TAKE NOTICE THAT A REGULAR MEETING OF THE BOARD OF COMMISSIONERS OF THE CITY OF PHARR, TEXAS WILL BE HELD AT CITY HALL, COMMISSIONERS' ROOM, 118 S. CAGE BLVD., 2ND FLOOR, PHARR, TEXAS COMMENCING AT 4:00 PM ON MONDAY, AUGUST 17, 2026

The City of Pharr has called this meeting as allowed pursuant to Texas law, city charter, and city ordinances. The governing body may recess from day to day when it does not complete consideration of a particularly long subject as authorized by law. All persons desiring to address the governing body must register with the presiding city clerk prior to the scheduled meeting.

1. CALL TO ORDER:

A) Roll call and possible action on the excusing of any absent member of the governing board.

B) Pledge of Allegiance/Invocation

2. PUBLIC TESTIMONY: *(Ordinance No. O-2019-45). A person intending on addressing the governing body may speak at a scheduled meeting of the governing body following registration with the presiding clerk and prior to the scheduled meeting. A registered speaker may speak only on items on the agenda and may not exceed 1.5 minutes when addressing the board regarding an agenda item. A registered speaker may not donate time to another speaker. A sign-in form for public testimony shall be promulgated by the presiding clerk and be made available at the city clerk's office. A person may sign up for public testimony beginning at the time the agenda is posted for the meeting. A person may not sign up later than one hour before the posted meeting is scheduled to begin. No registered speaker may be allowed to speak regarding an item once the public testimony portion of the agenda has ended.*

3. PUBLIC HEARINGS: *(Ordinance No. O-2019-31). A registered speaker during the public hearing may not exceed 1.5 minutes when addressing the board. A sign-in form for participation in public a hearing shall be promulgated by the presiding clerk and be made available at the city clerk's office. The public hearing sign-in form shall include the person or entity's name, address, telephone number, other contact information, organization if applicable, and other notices, authorizations, and acknowledgements as may be allowed by law from time to time. No registered speaker may be allowed to address the governing body once the public hearing has closed.*

A) Public hearing on development services cases

4. CITY MANAGER'S REPORTS: *(City Manager's Administrative Reports and discussion, if any, with governing body. The City Manager may also assign a designated spokesperson for any particular listed topic)*

A) Trailblazer of the Month Recognition

B) Recognition of Games of Texas Athletes

C) City Events of Interest

5. CONSENT AGENDA: *(All items listed under consent Agenda are considered to be routine and non-controversial by the Governing Body and will be enacted by one motion. Any Commissioner may remove items from the consent agenda by making such request prior to a motion and vote on the Consent Agenda)*

A) Approval of Minutes for July 06, 2026 — Regular Called Meeting; July 20, 2026 - Regular Called Meeting; and August 03, 2026 - Regular Called Meeting. **This item supports SG - Sound Governance and Fiscal Sustainability.** (CITY CLERK'S OFFICE)

B) Consideration and action, if any, on Ordinance amending Ordinance O-2007-40 decreasing Library Board Members from nine (9) to five (5) members and adding an ex officio member. ***(3rd and Final Reading)*** **This item supports SG - Sound Governance and Fiscal Sustainability.** (LIBRARY)

C) Consideration and action, if any, on Ordinance relating to monument, headstone, and marker restoration, repair, maintenance, and replacement in city-owned or city-maintained cemeteries. ***(3rd and Final Reading)***. **This item supports QL - Quality of Life.** (LIBRARY)

D) Consideration and action, if any, authorizing City Manager to advertise for sealed bids on a Service Contract for City Wide Landscaping Services. **This item supports QL - Quality of Life.** (MAINTENANCE)

E) Consideration and action, if any, authorizing City Manager to advertise for bids on construction of the South Regional Detention Facility and Drainage Improvements Project. **This item supports IF - Infrastructure**. (ENGINEERING)

F) Consideration and action, if any, on Development Services Cases:

1. Quintanilla, Headley and Associates, Inc. representing Cubic Walls LLC., owner, has filed with the Planning and Zoning Commission a request for a Life of the Use Conditional Use Permit to allow a Self-Storage facility in a General Business District (C). The property is legally described as being a 4.10 acre tract of land, more or less, out of Lot 97, Kelly-Pharr Subdivision, Pharr, Hidalgo County, Texas. The property is physically located at 4621 North Veterans Boulevard. CUP# 260607 **This item supports EV - Economic Vitality.**

2. CNMK Texas Properties, LLC, d/b/a Cinemark El Centro Mall 16, is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C). The property is legally described as being Lot 3A, Re-plat of Vacated Car-Mel Subdivision, Vacated El Centro Mall No. 3 and 4 Subdivision, Pharr, Hidalgo County, Texas. The property's physical address is 600 North Jackson Road. CUP# 131046 **This item supports EV - Economic Vitality.**

3. Topgolf USA Pharr, LLC., is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C). The property is legally described as being a 1.48 acre tract of land, more or less, out of Lot 1, Top Golf Pharr Subdivision, Pharr, Hidalgo County, Texas. The property is located at 1901 W Interstate Highway 2. CUP#170846 **This item supports EV - Economic Vitality.**

G) PLATS:

1. CEI Engineering Associates, Inc, representing Coy Haynes, Manager for CG Cage &Moore LLC, a Texas Limited Liability Company, is requesting final plat approval of the proposed Pharr Corners Subdivision. The property is legally described as being a 1.34 acre tract, out of the North 10 acres of the West one-half of Lot 221, Kelly-Pharr Subdivision, Hidalgo County, Texas. The property is within the 1800 Block of South Cage Boulevard. SUB#250725 **This item supports EV - Economic Vitality.**

2. R. Gutierrez Engineering Corporation, representing Victor Hugo Resendez and wife, Rosalinda Resendez, owner, is requesting preliminary and final plat approval of the proposed Rosalinda Resendez Subdivision. The property is legally described as being a 0.20 acre tract of land out of Lot "Q", Original Townsite of Pharr, Hidalgo County, Texas. The property is located within the 700 Block of S. Dogwood St. SUB#260515 **This item supports EV - Economic Vitality.**

REGULAR AGENDA - OPEN SESSION:

6. ORDINANCES AND RESOLUTIONS:

A) Consideration and action, if any, on Ordinance amending Ordinance No. O-2024-37 Municipal Fiber Optic Fee Schedule ***(1st Reading)***. **This item supports SG - Sound Governance and Fiscal Sustainability.** (IT)

B) Consideration and action, if any, on Resolution adopting the City of Pharr Title VI Program and authorizing its implementation. **This item supports SG - Sound Governance and Fiscal Sustainability.** (HR)

C) Consideration and action, if any, on Resolution appointing/re-appointing two (2) members to the Bridge Board.**This item supports EV - Economic Vitality.** (BRIDGE)

D) Consideration and action, if any, on Resolution adopting the City of Pharr's One-Year Action Plan for Program Year 2026 to the U.S. Department of Housing and Urban Development (HUD).**This item supports QL - Quality of Life.** (GMCD)

7. ADMINISTRATIVE:

A) Discussion and action for vote on Proposed Tax Rate increase and to schedule a Public Hearing. **This item supports SG - Sound Governance and Fiscal Sustainability.** (FINANCE)

B) Submission of Certified Totals for Tax Assessed Values 2026 for Fiscal Year 2026-2027. **This item supports SG - Sound Governance and Fiscal Sustainability.** (FINANCE)

8. CONTRACTS/AGREEMENTS:

A) Consideration and action, if any, amending Interlocal Cooperative Agreement for Rural Emergency Services between the City of Pharr and Hidalgo County. **This item supports SSC - Safe and Secure Community**. (FIRE)

B) Consideration and action, if any, on Change Order No. 2 with Mor-Wil LLC. for the Collection System Improvement and Lift Station Elimination Project. **This item supports IF - Infrastructure**. (ENGINEERING)

C) Consideration and action, if any, on Change Order No. 3, for the Donation Acceptance Program for Fiscal Year 2016 construction contract with D. Wilson Construction Company of McAllen, Tx. **This item supports IF - Infrastructure**. (ENGINEERING)

D) Consideration and action, if any, on Amendment No. 1 with Texas Department of Transportation for the I-Road Phase II Project for the replacement of the bridge on I Road at South Floodwater Channel (CSJ: 0921-02-491). **This item supports IF - Infrastructure**. (ENGINEERING)

E) Consideration and action, if any, on Amendment No. 3 with Texas Department of Transportation for the I-Road Phase II Project from Dicker Road to US Military Hwy 281 (CSJ: 0921-02-499). **This item supports IF - Infrastructure**. (ENGINEERING)

F) Consideration and action, if any, on Amendment No. 4 with Texas Department of Transportation for the I-Road Phase II Project from Rancho Blanco Road to Dicker Road (CSJ: 0921-02-363). **This item supports IF - Infrastructure**. (ENGINEERING)

G) Consideration and action, if any, on Amendment No. 2 with Brownstone Consultants, LLC. to the Construction Management Services for the Donation Acceptance Program (DAP) Fiscal Year 2016 Project. This item supports IF - Infrastructure. (ENGINEERING)

H) Consideration and action, if any, on Amendment No. 9 to the Professional Engineering Services Agreement with Halff Associates, Inc. for the Donations Acceptance Program Fiscal Year 2016 (DAP FY16). **This item supports IF - Infrastructure**. (ENGINEERING)

I) Consideration and action, if any, on Amendment No. 9 to the Professional Engineering Services Agreement with Structural Engineering Associates, Incorporated (SEA) for the Pharr-Reynosa International Bridge Expansion Project. **This item supports IF - Infrastructure**. (ENGINEERING)

J) Consideration and action, if any, on renewal of Cloud Management Subscription Services from Calix, Inc. for Pharr Connect. **This item supports SE - Service Excellence**. (IT)

9. CLOSED SESSION: *In accordance with Chapter 551 of the Texas Gov't. Code, the Pharr Board of Commissioners hereby gives notice that it may meet in a closed (non-public) executive session to discuss the items listed on the public portion of the meeting agenda in accordance with the following below:*

Pursuant to Section 551.071, the Board may convene in a closed, non-public meeting with its attorney and discuss any matters related **to legal advice on pending or contemplated litigation, settlement offer, and/or on a matter in which the duty of the attorney to the governmental body under the**

Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with this chapter. The City and its attorney may also discuss such issues with the appropriate staff so as to obtain necessary and relevant information so that such discussion is informative and developed.

Pursuant to Section 551.072, the Board may convene in a closed, non-public meeting to discuss any matters related to **real property and deliberate the purchase, exchange, lease, or value of real property as such would be detrimental to negotiations between the City and a third party in an open meeting.** The City and its attorney may also discuss such issues with the appropriate staff so as to obtain necessary and relevant information so that such discussion is informative and developed.

Pursuant to Section 551.074, the Board may convene in a closed, non-public meeting to discuss any matters related to **appointment, employment, evaluation, reassignment, duties and discipline or dismissal of a public officer or employee and to hear any complaints or charges against an officer or employee.** The City and its attorney may also discuss such issues with the appropriate staff including members so as to obtain necessary and relevant information so that such discussion is informative and developed.

Pursuant to Section 551.076, the Board may convene in a closed, non-public meeting to discuss any matters on the **deployment, or specific occasions for implementation, of security personnel or devices**. The City and its attorney may also discuss such issues with the appropriate staff so as to obtain necessary and relevant information so that such discussion is informative and developed.

Pursuant to Section 551.084, the Board may convene in a closed, non-public meeting to discuss any matters involving an **investigation and may exclude a witness from hearing during the examination of another witness in the investigation.** The City and its attorney may also discuss such issues with the appropriate staff so as to obtain necessary and relevant information so that such discussion is informative and developed.

Pursuant to Section 551.087, the Board may convene in a closed, non-public meeting to discuss any matters regarding **economic development issues.** The City and its attorney may also discuss such issues with the appropriate staff so as to obtain necessary and relevant information so that such discussion is informative and developed.

10. RECONVENE: *into Regular Session and consider action, if necessary, on any items(s) discussed in closed session.*

11. ADJOURNMENT:

NOTICE OF ASSISTANCE AT THE PUBLIC MEETING

City Hall is wheelchair accessible and accessible parking spaces are available. Requests for accommodations or interpretive services must be made 48 hours prior to this meeting. Please contact the City Clerk's Office at 956-402-4200 Ext 1201 or FAX 956-475-3442 or Email cityclerksoffice@pharr-tx.gov for further information. Braille is not available.2

I, the undersigned authority, do hereby certify that the above notice of said Regular Meeting of the City Commission of the City of Pharr was posted on the bulletin board at City Hall and on the City's web page at www.pharr-tx.gov. This Notice was posted on the 11th of August 2026 at 5:00 p.m. and will remain posted continuously for at least three (3) business days preceding the scheduled time of said Meeting, in compliance with Chapter 551 of the Government Code, Vernon's Texas Codes, Annotated (Open Meetings Act).

WITNESS MY HAND AND SEAL, this 11th day of August 2026

ALESSANDRA GARCIA, CPM
ASSISTANT CITY CLERK

I certify that the attached notice and agenda of items to be considered by the City Commission was removed from the bulletin board of City Hall on the _____ day of _____, 20___ by,

Name:_____ Title: _____

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 3.A.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Administration

DIRECTOR:

Agenda Item: Public hearing on development services cases

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue:

Fiscal Consideration:

Staff Recommendation:

Alternatives:

Exclude Material from Public Packet? No
Reason:

ROUTING:

Alessandra Garcia Created/Initiated - 08/06/2026

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 4.A.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: City Clerk's Office

DIRECTOR: Jonathan Flores

Agenda Item: Trailblazer of the Month Recognition

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Trailblazer of the Month Recognition

Fiscal Consideration: N / A

Staff Recommendation: Staff recommends recognition of Trailblazer of the month recipient.

Alternatives: N / A

Exclude Material from Public Packet? No
Reason: N / A

ROUTING:

Alessandra Garcia Created/Initiated - 08/06/2026

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 4.B.
DATE SUBMITTED: August 10, 2026
MEETING DATE: August 17, 2026

FROM: Elva Guajardo, Administrative Assistant

DEPARTMENT: Parks

DIRECTOR: Sergio Alanis

Agenda Item: Recognition of Games of Texas Athletes.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Parks and Recreation department wishes to recognize Games of Texas athletes.

Fiscal Consideration: N/A

Staff Recommendation: N/A

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Elva Guajardo	Created/Initiated - 08/10/2026
Anthony Rivera	Approved - 08/10/2026
Melanie Cano	Approved - 08/10/2026
City Management Office	New -

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 4.C.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Administration

DIRECTOR:

Agenda Item: City Events of Interest

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue:

Fiscal Consideration:

Staff Recommendation:

Alternatives:

Exclude Material from Public Packet? No
Reason:

ROUTING:

Alessandra Garcia Created/Initiated - 08/06/2026

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.A.
DATE SUBMITTED: August 4, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: City Clerk's Office

DIRECTOR: Imelda Perez

Agenda Item: Approval of Minutes for July 06, 2026 — Regular Called Meeting; July 20, 2026 - Regular Called Meeting; and August 03, 2026 - Regular Called Meeting.
This item supports SG - Sound Governance and Fiscal Sustainability.

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: Approval of Minutes for July 06, 2026 — Regular Called Meeting; July 20, 2026 - Regular Called Meeting; and August 03, 2026 - Regular Called Meeting

Fiscal Consideration: N / A

Staff Recommendation: Staff recommends approval of minutes as presented.

Alternatives: N / A

Exclude Material from Public Packet? No
Reason: N / A

ROUTING:

Alessandra Garcia
City Management Office

Created/Initiated - 08/04/2026
Final Approval - 08/04/2026

MINUTES
BOARD OF COMMISSIONERS
REGULAR CALLED MEETING
MONDAY, JULY 6, 2026
118 SOUTH CAGE 2nd FLOOR

The Board of Commissioners of the City of Pharr, Texas, met in a Regular Called Meeting on Monday, July 06, 2026, and the following is the record of attendance.

BOARD OF COMMISSIONERS PRESENT: Mayor Ambrosio Hernandez
Comm. Ramiro Caballero
Comm. Daniel Chavez
Comm. Ricardo Medina

BOARD OF COMMISSIONERS ABSENT: Comm. Roberto Carrillo
Comm. Itza Flores
Comm. Michael Pacheco

STAFF PRESENT: Jonathan Flores, City Manager
Cynthia Garza Reyes, Deputy City Manager
Hilda Pedraza, Assistant City Manager
Imelda Perez, City Clerk
Patrizia Longoria, City Engineer
Jamison Merrick, Finance Director
Laura Parra, HR Director
Juan Villescas, Municipal Court Judge
Juan Gonzalez, Chief of Police
Pilar Rodriguez, Fire Chief
Alyn Cervantes, Code Comp. Asst. Director
Joe Garza, Asst. Development Services Dir.
Luis Marin, Public Works Director
Keyla Jalife, OSE Director
Jesse Trejo, Public Utilities Asst. Director
Samantha Guzman, Asst. Parks & Rec Director
Adolfo Garcia, Library Director
Jose Pena, I.T. Director
Luis Bazan, Bridge Director
Maricela Moreno, Purchasing Manager
Ben Martinez, Assistant EMS Chief
Lya Yllades, Asst. Chief Comm. Officer
Sara Salinas, P.S. Comm. Director
Elizabeth Diaz, Public Health Director
Will Borowski, Golf Director
Abel Molina, Special Events Director
Napoleon Coca, Grants Mgmt. Director
Sara Guerra, Maintenance Asst. Director
Victoria Brewster, Dir. of External Relations
Kenneth Walsch, Food Service Director

CITY ATTORNEY: Andres Guerra, Attorney

DRAFT

ITEM 1. CALL TO ORDER

A) ROLL CALL AND POSSIBLE ACTION ON THE EXCUSING OF ANY ABSENT MEMBER OF THE GOVERNING BOARD.

Mayor Hernandez called the meeting to order at 4:00 p.m. Roll call established a quorum.

Comm. Medina **moved** to excuse absent members. Comm. Chavez seconded the motion, and when put to a vote, it carried unanimously.

B) PLEDGE OF ALLEGIANCE/INVOCATION

Luis Bazan, Bridge Director, led the pledge of allegiance and said the invocation.

ITEM 2. PUBLIC TESTIMONY

There were no comments from the public.

ITEM 3. PUBLIC HEARINGS

A) PUBLIC HEARING ON DEVELOPMENT SERVICES CASES

There were no comments from the public.

ITEM 4. CITY MANAGER'S REPORTS

A) SUBMISSION OF SALES TAX COLLECTION REPORT FOR JUNE 2026.

Jonathan Flores, City Manager, introduced the item. He briefly reported the City of Pharr showed an increase of 5.85% year to date true growth and an 8.28% increase compared to last year.

B) CITY ENGINEER'S REPORT

Jonathan Flores, City Manager, introduced the item. He briefly stated City Engineer was in the audience, and questions could be entertained at this time.

C) RECOGNITION OF BUILDING OFFICIAL JOSE I. ALVARADO ON OBTAINING THE MASTER CODE PROFESSIONAL CERTIFICATION

Jonathan Flores, City Manager, introduced the item and called upon Alyn Cervantes, Building & Code Compliance Assistant Director.

Alyn Cervantes, Building & Code Compliance Assistant Director, recognized Jose Ismael Alvarado for earning the International Code Council's Master Code Professional certification. Mr. Cervantes commended Jose I. Alvarado for his exceptional achievement,

dedication, and commitment to excellence, noting the certification was a rare distinction in Texas.

Jose Ismael Alvarado thanked the city for the recognition and stated earning the Master Code Professional certification required significant dedication and personal investment. He expressed appreciation for the opportunity to serve the City of Pharr and encouraged continued support for employee training and professional development.

D) PRESENTATION OF A PROCLAMATION ISSUED BY THE OFFICE OF GOVERNOR GREG ABBOTT RECOGNIZING THE 36TH ANNIVERSARY OF THE AMERICANS WITH DISABILITIES ACT (ADA) AND PROMOTING AWARENESS, INCLUSION, AND OPPORTUNITIES FOR INDIVIDUALS WITH DISABILITIES.

Jonathan Flores, City Manager, introduced the item and called upon Elizabeth Diaz, Public Health Department Director.

Elizabeth Diaz, Public Health Department Director, stated an event was held on June 23 recognizing People with Disabilities Awareness and noted a proclamation had been presented. A video recap of the event was then shown.

Evelyn Cano, Executive Director of the Disability Chamber of Commerce and member of the Governor's Committee on People with Disabilities, presented proclamations recognizing the City's efforts to promote accessibility and inclusion. She commended the city for its commitment to supporting individuals with disabilities and encouraged continued collaboration on future initiatives.

E) CITY EVENTS OF INTEREST

Jonathan Flores, City Manager, introduced the item.

Kenia Gomez, Director of City Communications, presented a series of video recaps highlighting Cody's 8th Birthday Celebration, the Veterans Aqua Reset, the Pharr Connect Expansion to Pharr Housing Authority, and the 2026 Independence Day Festival.

Kenia Gomez, Director of City Communications, reported on the Pharr City Limits event scheduled for Friday, July 10, 2026. She stated this event would be held from 6:00 p.m. to 11:00 p.m. at the Pharr One Amphitheater and would feature live music, food trucks, market vendors and family friendly activities.

Kenia Gomez, Director of City Communications, further reported on the upcoming low-cost pet vaccination clinic scheduled for July 11, 2026, from 9:00 a.m. to 1:00 p.m. at the Jose "Pepe" Salinas Recreation Center. She encouraged the public to register and noted the event was to include vaccinations, microchips, pet tags, rabies vaccinations, and other pet services.

Lastly, Kenia Gomez, Director of City Communications, reported on the upcoming ADA Annual Celebration scheduled for July 17, 2026, from 10:00 a.m. to 1:00 p.m. at the Jose “Pepe” Salinas Recreation Center. She stated the event would feature community resource organizations and disability service providers in support of accessibility and inclusion and invited the community to attend.

ITEM 5. CONSENT AGENDA

A) APPROVAL OF MINUTES FOR JUNE 15, 2026 — REGULAR CALLED MEETING. THIS ITEM SUPPORTS SG - SOUND GOVERNANCE AND FISCAL SUSTAINABILITY.

B) CONSIDERATION AND ACTION, IF ANY, ON ORDINANCE AMENDING ORDINANCE O-2025-46 REGULATING PUBLIC AMUSEMENTS, OPEN-AIR MARKETS, MASS GATHERINGS AND OTHER APPLICABLE EVENTS OR ACTIVITIES; UPDATING REQUIREMENTS, CATEGORIES, FEES, AND ADMINISTRATIVE APPROVAL PROCESSES. *(3RD AND FINAL READING)* THIS ITEM SUPPORTS QL - QUALITY OF LIFE.

C) CONSIDERATION AND ACTION, IF ANY, ON AMENDMENT TO RESOLUTION R-2026-05 FOR THE OPERATION LONE STAR GRANT PROGRAM. THIS ITEM SUPPORTS SSC - SAFE AND SECURE COMMUNITY.

D) CONSIDERATION AND ACTION, IF ANY, ON DEVELOPMENT SERVICES CASES:

1. PICARO'S PIZZA LLC., D/B/A PICARO'S PIZZA REQUESTED A CONDITIONAL USE PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS BEING 0.02 ACRES, MORE OR LESS, OUT OF LOT 3, RIVERAINE SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE SUBJECT SITE IS LOCATED AT 6502 SOUTH CAGE BOULEVARD, SUITE 2. CUP# 260506 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (DEVELOPMENT SERVICES)

2. MICHAEL WRIGHT, CFO., DBA PARRY’S PIZZA, REQUESTED RENEWAL OF THE CONDITIONAL USE PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS BEING LOT 1B OF THE 2ND REPLAT OF VACATED CAR-MEL SUBDIVISION, VACATED EL CENTRO MALL NO. 3 AND 4 SUBDIVISIONS, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY’S PHYSICAL ADDRESS IS 550 NORTH JACKSON ROAD. CUP#231132 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (DEVELOPMENT SERVICES)

3. PIZZA PROPERTIES, INC., D/B/A PETER PIPER PIZZA #63, REQUESTED RENEWAL OF THE CONDITIONAL USE PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS LOT 1, PLEASANTON SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY'S PHYSICAL ADDRESS IS 1715 SOUTH CAGE

BOULEVARD. CUP#060104 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (DEVELOPMENT SERVICES)

4. **TAQUERIA TEPEQUE EXPRESS REQUESTED RENEWAL OF THE CONDITIONAL USE PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS BEING 0.041 ACRES, MORE OR LESS, OUT OF LOT 2, HACIENDA SANTA LUCIA SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY'S PHYSICAL ADDRESS IS 701 EAST NOLANA LOOP, SUITE #3A. CUP#230384 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (DEVELOPMENT SERVICES)**

5. **JOSE ALBERTO HERNANDEZ, D/B/A DOC'S BILLIARDS & SPORTS BAR, REQUESTED RENEWAL OF THE CONDITIONAL USE PERMIT AND LATE HOURS PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C).THE PROPERTY IS LEGALLY DESCRIBED AS BEING THE S150' OF LOTS 17, 18 AND 19, BLOCK 1, SAN PATRICIA ACRES SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY'S PHYSICAL ADDRESS IS 917 WEST FERGUSON AVENUE. CUP# 130630 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (DEVELOPMENT SERVICES)**

6. **MAURICIO JARAMILLO, D/B/A REGENCY FIESTA, REQUESTED RENEWAL OF THE CONDITIONAL USE PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS BEING 0.102 ACRES OUT OF LOT 1, REGENCY SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY'S PHYSICAL ADDRESS IS 1020 WEST FERGUSON AVENUE. CUP# 071271 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (DEVELOPMENT SERVICES)**

Jonathan Flores, City Manager, introduced consent agenda and recommended approval.

Comm. Chavez **moved** to approve as recommended. Comm. Caballero seconded the motion and when put to a vote, it carried unanimously.

Ordinance No. O-2026-20 and Resolution No. R-2026-35 are filed with the City Clerk's Office.

REGULAR AGENDA - OPEN SESSION

ITEM 6. ORDINANCES AND RESOLUTIONS

A) CONSIDERATION AND ACTION, IF ANY, ON ORDINANCE AMENDING ORDINANCE O-2007-40 DECREASING LIBRARY BOARD MEMBERS FROM NINE (9) TO FIVE (5) MEMBERS AND ADDING AN EX OFFICIO MEMBER. *(1ST READING)* THIS ITEM SUPPORTS SG - SOUND GOVERNANCE AND FISCAL SUSTAINABILITY.

Jonathan Flores, City Manager, introduced the item and recommended approval.

Mayor Hernandez asked Adolfo Garcia, Library Director, why staff recommended reducing the board membership from ten members to five. Mr. Garcia explained the board had experienced ongoing quorum challenges. He stated recruitment efforts and adjustments to meeting times had been attempted but did not resolve the issue. He therefore recommended reducing the board size to improve efficiency

There being no further discussion, Comm. Chavez **moved** to approve as recommended. Comm. Medina seconded the motion and when put to a vote, it carried unanimously.

B) CONSIDERATION AND ACTION, IF ANY, ON ORDINANCE RELATING TO MONUMENT, HEADSTONE, AND MARKER RESTORATION, REPAIR, MAINTENANCE, AND REPLACEMENT IN CITY-OWNED OR CITY-MAINTAINED CEMETERIES. *(1ST READING)*. THIS ITEM SUPPORTS QL - QUALITY OF LIFE.

Jonatha Flores, City Manager, introduced the item and recommended approval.

Comm. Medina **moved** to approve as recommended. Comm. Chavez seconded the motion and when put to a vote, it carried unanimously.

C) CONSIDERATION AND ACTION, IF ANY, ON RESOLUTION DETERMINING A PUBLIC NECESSITY TO ACQUIRE CERTAIN REAL PROPERTY, GIVING NOTICE OF AN OFFICIAL DETERMINATION TO ACQUIRE REAL PROPERTY FOR PUBLIC PURPOSES, ESTABLISHING PROCEDURES FOR THE ACQUISITION OF MARKET VALUE FOR THE PROPERTY TO BE ACQUIRED, AND DIRECTING THE CITY MANAGER OR DESIGNEE TO COMMUNICATE OFFERS TO OWNERS FOR PURCHASE OF PROPERTY, APPROPRIATE FUNDS, AND AUTHORIZE CONDEMNATION PROCEEDING BY CITY ATTORNEY, CONTINGENT ON AVAILABLE FUNDING. THIS ITEM SUPPORTS IF - INFRASTRUCTURE.

Jonathan Flores, City Manager, introduced the item and recommended the item be tabled.

Comm. Chavez **moved** to table the item. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

D) CONSIDERATION AND ACTION, IF ANY, ON RESOLUTION AUTHORIZING THE SUBMISSION OF PROJECT APPLICATION TO THE RIO GRANDE VALLEY - METROPOLITAN PLANNING ORGANIZATION (RGV-MPO) FOR TRANSPORTATION FUNDING AND COMMITTING TO A LOCAL MATCH FOR THE EAST HI LINE ROAD PROJECT. THIS ITEM SUPPORTS IF - INFRASTRUCTURE.

DRAFT

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Chavez **moved** to approve as recommended. Comm. Medina seconded the motion and when put to a vote, it carried unanimously.

Resolution No. R-2026-36 is filed with the City Clerk's Office.

ITEM 7. CONTRACTS/AGREEMENTS

A) CONSIDERATION AND ACTION, IF ANY, AUTHORIZING CITY MANAGER TO ENTER INTO A SERVICE CONTRACT FOR CITY WIDE STREET SWEEPING SERVICES. THIS ITEM SUPPORTS IF - INFRASTRUCTURE.

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Medina **moved** to approve as recommended. Comm. Chavez seconded the motion, and when put to a vote, it carried unanimously.

B) CONSIDERATION AND ACTION, IF ANY, ON THE GUARANTEED MAXIMUM PRICE AMENDMENT NO. 2 (GMP #2) TO THE EXISTING CONSTRUCTION MANAGER AT RISK (CMAR) CONTRACT WITH D. WILSON CONSTRUCTION (DWCC) FOR THE CITY OF PHARR MULTI-USE FACILITY. THIS ITEM SUPPORTS IF - INFRASTRUCTURE.

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Chavez **moved** to approve as recommended. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

C) CONSIDERATION AND ACTION, IF ANY, AUTHORIZING CITY MANAGER TO NEGOTIATE AND ENTER INTO A SERVICE CONTRACT FOR PLANTING AND LANDSCAPE INSTALLATION SERVICES FOR THE SCHOOLYARD FORESTRY PROJECT. THIS ITEM SUPPORTS QL - QUALITY OF LIFE.

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Chavez **moved** to approve as recommended. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

D) CONSIDERATION AND ACTION, IF ANY, RATIFYING SERVICE CONTRACT WITH GDJ ENGINEERING, LLC. FOR PROFESSIONAL SERVICES FOR GRANT APPLICATION PREPARATION. THIS ITEM SUPPORTS IF - INFRASTRUCTURE.

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Medina **moved** to approve as recommended. Comm. Chavez seconded the motion, and when put to a vote, it carried unanimously.

E) CONSIDERATION AND ACTION, IF ANY, ON MEMORANDUM OF UNDERSTANDING (MOU) WITH DRISCOLL HEALTH PLAN TO EXPAND COMMUNITY ACCESS TO HIGH-QUALITY LITERACY RESOURCES THROUGH CITY FACILITIES AND PROGRAMS. THIS ITEM SUPPORTS QL - QUALITY OF LIFE.

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Chavez **moved** to approve as recommended. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

ITEM 8. CLOSED SESSION

None

ITEM 9. RECONVENE

None

ITEM 10. ADJOURNMENT

There being no other business to come before the board, Comm. Medina **moved** to adjourn. Comm. Chavez seconded the motion, and when put to a vote, the motion carried unanimously. Meeting adjourned at 4:55 p.m.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

STATE OF TEXAS
COUNTY OF HIDALGO
CITY OF PHARR

ON THIS THE 6th DAY OF JULY 2026 the Board of Commissioners of the City of Pharr, Texas convened in a **REGULAR CALLED MEETING** at the Commissioner's Room located at 118 S. Cage, 2nd Floor, Pharr, Texas. The meeting being open to the public and notice of said meeting, giving the date, place, subject, hereof, having been posted in accordance with Chapter 551, Texas Government Code (Open Meetings Act) and there being present a quorum, I, **IMELDA PEREZ, CITY CLERK**, of the City of Pharr, Texas, certify that this is a true and correct copy of the minutes.

ATTEST:

_____
IMELDA PEREZ
CITY CLERK

APPROVED:

DRAFT

MINUTES
BOARD OF COMMISSIONERS
REGULAR CALLED MEETING
MONDAY, JULY 20, 2026
118 SOUTH CAGE 2nd FLOOR

The Board of Commissioners of the City of Pharr, Texas, met in a Regular Called Meeting on Monday, July 20, 2026, and the following is the record of attendance.

BOARD OF COMMISSIONERS PRESENT: Mayor Ambrosio Hernandez
Comm. Ramiro Caballero
Comm. Roberto Carrillo
Comm. Ricardo Medina
Comm. Itza Flores

BOARD OF COMMISSIONERS ABSENT: Comm. Michael Pacheco
Comm. Daniel Chavez

STAFF PRESENT: Jonathan Flores, City Manager
Cynthia Garza Reyes, Deputy City Manager
Hilda Pedraza, Assistant City Manager
Imelda Perez, City Clerk
Patrizia Longoria, City Engineer
Jamison Merrick, Finance Director
Alexandra Rangel, Asst. HR Director
Juan Villescas, Municipal Court Judge
Juan Gonzalez, Chief of Police
Pilar Rodriguez, Fire Chief
Roy Rodriguez, Code Comp. Director
Roland Gomez, Development Services Dir.
Luis Marin, Public Works Director
Alec Cortez, Asst. OSE Director
Ruben Rosales, Public Utilities Director
Sergio Alanis, Parks & Rec Director
Adolfo Garcia, Library Director
Jose Pena, I.T. Director
Luis Bazan, Bridge Director
Maritza Magallan, Purchasing Director
Ben Martinez, Assistant EMS Chief
CJ Sanchez, Pharr Chamber President
Kenia Gomez, Chief Comm. Officer
Sara Salinas, P.S. Comm. Director
Elizabeth Diaz, Public Health Director
Napoleon Coca, Grants Mgmt. Director
Isaac Escobedo, Maintenance Director
Kenneth Walsch, Food Service Director
Yuri Gonzalez, Int'l Comm. Dev. Dir.

CITY ATTORNEY: Ricardo Rodriguez, Attorney

DRAFT

ITEM 1. CALL TO ORDER

A) ROLL CALL AND POSSIBLE ACTION ON THE EXCUSING OF ANY ABSENT MEMBER OF THE GOVERNING BOARD.

Comm. Carrillo called the meeting to order at 4:01 p.m. Roll call established a quorum.

Comm. Medina **moved** to excuse absent members. Comm. Caballero seconded the motion, and when put to a vote, it carried unanimously.

Mayor Hernandez was not present at the time of roll call but arrived at 4:10 p.m.

B) PLEDGE OF ALLEGIANCE/INVOCATION

Luis Bazan, Bridge Director, led the pledge of allegiance and said the invocation.

ITEM 2. PUBLIC TESTIMONY

There were no comments from the public.

ITEM 3. PUBLIC HEARINGS

A) PUBLIC HEARING ON DEVELOPMENT SERVICES CASES

There were no comments from the public.

ITEM 4. CITY MANAGER'S REPORTS

A) SUBMISSION OF SALES TAX COLLECTION REPORT FOR JULY 2026

Jonathan Flores, City Manager, introduced the item. He briefly reported the City of Pharr showed an increase of 5.40% year to date true growth and stated Finance Director was in the audience, and questions could be entertained at this time.

B) TRAILBLAZER OF THE MONTH RECOGNITION

Jonathan Flores, City Manager, introduced the item.

Pilar Rodriguez, Fire Chief, announced Firefighter Eduardo Diaz of the Fire Department as the recipient of the June Trailblazer of the month. He commended him for his dedication, strong work ethic, and commitment to excellence. Chief Rodriguez stated that Firefighter Diaz is a model firefighter who consistently works hard and demonstrates a strong commitment to training, making him an outstanding representative of the Pharr Fire Department.

DRAFT

Eduardo Diaz, Firefighter, shared that he has previously served with several fire departments and considers the Pharr Fire Department to be the best department he has ever worked for. He expressed his appreciation for the opportunity to serve the Pharr community and stated that he is grateful to God for placing him in the right place at the right time.

C) PRESENTATION OF PLAQUE FROM SUZANNAH SMILES FOR SPINA BIFIDA 250

Jonathan Flores, City Manager, introduced the item and stated presentation would take place at the next city commission meeting.

D) CITY EVENTS OF INTEREST

Jonathan Flores, City Manager, introduced the item.

Kenia Gomez, Director of City Communications, presented a series of video recaps highlighting Fresh On The Border Event, the Ribbon Cutting for Mother-Friendly Room, and the Eat Smart, Being Active event.

Kenia Gomez, Director of City Communications, reported on the upcoming Trash Bash event scheduled for Saturday, July 25, 2026. She stated this event would be held from 8:00 a.m. to 12:00 p.m. at the Residential Collection Station located at 800 Maco Dr. and stated this was a one-visit opportunity to dispose of bulky household trash.

Kenia Gomez, Director of City Communications, reported on the upcoming Pharr Police Department Pharr Night Out event scheduled for Tuesday, August 4, 2026 to be held from 6:00 p.m. to 9:00 p.m. at Pharr Town Center – Main Event parking lot located at 500 N. Jackson Rd. She stated that the event would feature live music, food, family activities and free school supplies while supplies last. She further extended an invitation to the public to attend.

Lastly, Kenia Gomez, Director of City Communications, announced the City of Pharr was named National Finalist for 2026 Malcolm Baldrige National Quality Award. She stated this was the nation's highest presidential honor recognizing organizational performance excellence, honoring organizations that serve as national role models. Ms. Gomez stated only thirteen (13) organizations nationwide were selected as finalists this year and the City of Pharr is the only city in the United States to earn finalist status in the 2026 award cycle.

ITEM 5. CONSENT AGENDA

A) CONSIDERATION AND ACTION, IF ANY, ON ORDINANCE AMENDING ORDINANCE O-2007-40 DECREASING LIBRARY BOARD MEMBERS FROM NINE (9) TO FIVE (5) MEMBERS AND ADDING AN EX OFFICIO MEMBER. *(2ND*

READING) **THIS ITEM SUPPORTS SG - SOUND GOVERNANCE AND FISCAL SUSTAINABILITY. (LIBRARY)**

B) CONSIDERATION AND ACTION, IF ANY, ON ORDINANCE RELATING TO MONUMENT, HEADSTONE, AND MARKER RESTORATION, REPAIR, MAINTENANCE, AND REPLACEMENT IN CITY-OWNED OR CITY-MAINTAINED CEMETERIES. *(2ND READING)*. THIS ITEM SUPPORTS QL - QUALITY OF LIFE. (LIBRARY)

C) CONSIDERATION AND ACTION, IF ANY, AUTHORIZING CITY MANAGER TO ADVERTISE FOR SEALED BIDS ON A TERM CONTRACT FOR THE PURCHASE AND DELIVERY OF HMAC, COLD MIX AND CALICHE. THIS ITEM SUPPORTS IF - INFRASTRUCTURE. (PUBLIC WORKS)

D) CONSIDERATION AND ACTION, IF ANY, ON DEVELOPMENT SERVICES CASES:

1. **AIESTY, INC., D/B/A SEOUL ASIAN MARKET, REQUESTED RENEWAL OF THE CONDITIONAL USE PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS BEING 0.3 ACRE TRACT OF LAND, MORE OR LESS, OUT OF LOT 4A, REPLAT OF VACATED CARMEL SUBDIVISION, VACATED EL CENTRO SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY'S PHYSICAL ADDRESS IS 500 NORTH JACKSON ROAD, SUITE M. CUP#191272 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY.**

2. **R.G.V. & ASSOCIATES/LAURA L. GARZA, D/B/A GEORGE'S DANCE HALL, REQUESTED RENEWAL OF THE CONDITIONAL USE PERMIT AND LATE HOURS PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS BEING LOTS 197, 198, AND 199, VALLE DE LA PRIMAVERA SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY'S PHYSICAL ADDRESS IS 6801 SOUTH JACKSON ROAD. CUP#120529 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY.**

3. **7-ELEVEN INC. DBA 7-ELEVEN CONVENIENCE STORE'S AND STRIPES STORES, REQUESTED RENEWAL OF THE CONDITIONAL USE PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON PREMISE CONSUMPTION IN A GENERAL BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS LOT 1, CIRCLE K #9142 SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY'S PHYSICAL ADDRESS IS 7401 SOUTH JACKSON ROAD. CUP#231107 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY.**

Jonathan Flores, City Manager, introduced the consent agenda and recommended approval of items.

Comm. Carrillo **moved** to approve as recommended. Comm. Caballero seconded the motion, and when put to a vote, it carried unanimously.

REGULAR AGENDA - OPEN SESSION

ITEM 6. ORDINANCES AND RESOLUTIONS

A) CONSIDERATION AND ACTION, IF ANY, ON RESOLUTION DETERMINING A PUBLIC NECESSITY TO ACQUIRE CERTAIN REAL PROPERTY, GIVING NOTICE OF AN OFFICIAL DETERMINATION TO ACQUIRE REAL PROPERTY FOR PUBLIC PURPOSES, ESTABLISHING PROCEDURES FOR THE ACQUISITION OF MARKET VALUE FOR THE PROPERTY TO BE ACQUIRED, AND DIRECTING THE CITY MANAGER OR DESIGNEE TO COMMUNICATE OFFERS TO OWNERS FOR PURCHASE OF PROPERTY, APPROPRIATE FUNDS, AND AUTHORIZE CONDEMNATION PROCEEDING BY CITY ATTORNEY, CONTINGENT ON AVAILABLE FUNDING. *(TABLED)* THIS ITEM SUPPORTS IF - INFRASTRUCTURE. (ENGINEERING)

Jonathan Flores, City Manager, introduced the item and recommended to un-table item.

Comm. Carrillo **moved** to un-table item. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Carrillo **moved** to approve as recommended. Comm. Medina seconded the motion, and when put to a vote, it carried by majority vote of four (4) ayes and one (1) abstention. Comm. Caballero abstained from voting.

ITEM 7. PURCHASING

A) CONSIDERATION AND ACTION, IF ANY, ON THE PURCHASE OF A 2027 KENWORTH 2000-GALLON WATER TRUCK FROM FRENCH ELLISON TRUCK CENTER OF PHARR, TEXAS, UTILIZING SOURCEWELL PURCHASING COOPERATIVE CONTRACT NO. 032824-KTC.THIS ITEM SUPPORTS QL - QUALITY OF LIFE. (PUBLIC WORKS)

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Carrillo **moved** to approve as recommended. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

ITEM 8. CONTRACTS/AGREEMENTS

A) CONSIDERATION AND ACTION, IF ANY, ON THE FINAL RECONCILIATION OF QUANTITIES, RELEASE OF RETAINAGE AND CLOSE OUT OF THE SUGAR AND MINNESOTA TRAFFIC SIGNAL PROJECT. THIS ITEM SUPPORTS IF - INFRASTRUCTURE. (ENGINEERING)

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Carrillo **moved** to approve as recommended. Comm. Flores seconded the motion, and when put to a vote, it carried unanimously.

B) CONSIDERATION AND ACTION, IF ANY, ON UPDATED REGIONAL MUTUAL AID AGREEMENT WITH THE RIO GANDE VALLEY DEVELOPMENT COUNCIL. THIS ITEM SUPPORTS SSC - SAFE AND SECURE COMMUNITY. (EMERGENCY MANAGEMENT)

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Carrillo **moved** to approve as recommended. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

C) CONSIDERATION AND ACTION, IF ANY, ON CHANGE ORDER NO. 1 ADDING 31 DAYS TO THE CONTRACT TIME FOR THE COLLECTION SYSTEM IMPROVEMENT AND LIFT STATION ELIMINATION PROJECT. THIS ITEM SUPPORTS IF - INFRASTRUCTURE. (ENGINEERING)

Jonathan Flores, City Manager, introduced the item and recommended approval.

Comm. Carrillo **moved** to approve as recommended. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

At this time, Mayor Hernandez stated they would deviate from the agenda and go into closed session. There was no objection.

ITEM 10. CLOSED SESSION

The time being 4:21 p.m., Mayor Hernandez stated the commission would be entering into closed session in accordance with Chapter 551 of the Texas Govt. Code to discuss agenda items listed in the public portion of the agenda and Pursuant to Sections 551.071, 551.072, 551.074, 551.076, 551.084 and 551.087.

ITEM 11. RECONVENE

The time being 4:56 p.m., Mayor Hernandez stated the commission would be resuming the open meeting.

DRAFT

ITEM 9. LEGAL

A) DISCUSSION AND POSSIBLE ACTION REGARDING APPROVAL OF LEGAL SERVICES AGREEMENT TO ASSIST THE CITY OF PHARR TO PARTICIPATE IN THE NATIONAL PFAS PHASE 2 SETTLEMENT PROGRAM, REVIEW OF ELIGIBILITY STATUS, AUTHORIZATION TO COLLECT AND SUBMIT REQUIRED SYSTEM INFORMATION, AND PRESERVATION OF ALL RIGHTS AVAILABLE UNDER THE COURT-APPROVED PFAS SETTLEMENTS BEFORE THE JULY 31, 2026 DEADLINE. (ADMINISTRATION)

Jonathan Flores, City Manager, introduced the item.

Comm. Carrillo **moved** to approve as discussed in closed session. Comm. Medina seconded the motion, and when put to a vote, it carried unanimously.

ITEM 12. ADJOURNMENT

There being no other business to come before the board, Comm. Carrillo **moved** to adjourn. Comm. Medina seconded the motion, and when put to a vote, the motion carried unanimously. Meeting adjourned at 4:57 p.m.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

STATE OF TEXAS
COUNTY OF HIDALGO
CITY OF PHARR

ON THIS THE 20th DAY OF JULY 2026 the Board of Commissioners of the City of Pharr, Texas convened in a **REGULAR CALLED MEETING** at the Commissioner's Room located at 118 S. Cage, 2nd Floor, Pharr, Texas. The meeting being open to the public and notice of said meeting, giving the date, place, subject, hereof, having been posted in accordance with Chapter 551, Texas Government Code (Open Meetings Act) and there being present a quorum, I, **IMELDA PEREZ, CITY CLERK**, of the City of Pharr, Texas, certify that this is a true and correct copy of the minutes.

ATTEST:

_____
IMELDA PEREZ
CITY CLERK

APPROVED:

MINUTES
BOARD OF COMMISSIONERS
REGULAR CALLED MEETING
MONDAY, AUGUST 3, 2026
118 SOUTH CAGE 2nd FLOOR

The Board of Commissioners of the City of Pharr, Texas, met in a Regular Called Meeting on Monday, August 03, 2026, and the following is the record of attendance.

BOARD OF COMMISSIONERS PRESENT: Comm. Michael Pacheco
Comm. Ricardo Medina
Comm. Itza Flores

BOARD OF COMMISSIONERS ABSENT: Mayor Ambrosio Hernandez
Comm. Roberto Carrillo
Comm. Ramiro Caballero
Comm. Daniel Chavez

STAFF PRESENT: Jonathan Flores, City Manager
Melanie Cano, Assistant City Manager
Hilda Pedraza, Assistant City Manager
Imelda Perez, City Clerk
Patrizia Longoria, City Engineer
Jamison Merrick, Finance Director
Laura Parra, HR Director
Juan Villescas, Municipal Court Judge
Juan Gonzalez, Chief of Police
Pilar Rodriguez, Fire Chief
Roy Rodriguez, Code Compliance Director
Roland Gomez, Development Services Dir.
Luis Marin, Public Works Director
Keyla Jalife, OSE Director
Ruben Rosales, Public Utilities Director
Sergio Alanis, Parks & Rec Director
Adolfo Garcia, Library Director
Jose Pena, I.T. Director
Luis Bazan, Bridge Director
Maricela Moreno, Purchasing Manager
Daniel Ramirez, EMS Chief
Kenia Gomez, Chief Comm. Officer
Elizabeth Diaz, Public Health Director
Abel Molina, Special Events Director
Napoleon Coca, Grants Mgmt. Director
Isaac Escobedo, Maintenance Director
Kenneth Walsch, Food Service Director

CITY ATTORNEY: Andres Guerra, Attorney

DRAFT

ITEM 1. CALL TO ORDER

A) ROLL CALL AND POSSIBLE ACTION ON THE EXCUSING OF ANY ABSENT MEMBER OF THE GOVERNING BOARD.

The meeting was called to order by Mayor Pro-Tem Michael Pacheco at 4:03 p.m. It was noted that a quorum of the City Commission was not present.

Due to lack of quorum, no official action would be taken. The City Commission proceeded only with the scheduled ceremonial presentations and recognitions, and city reports.

B) PLEDGE OF ALLEGIANCE/INVOCATION

Luis Bazan, Bridge Director, led the pledge of allegiance and said the invocation.

ITEM 2. PUBLIC TESTIMONY

ITEM 3. PUBLIC HEARINGS

A) PUBLIC HEARING ON DEVELOPMENT SERVICES CASES

ITEM 4. CITY MANAGER'S REPORTS

A) CITY ENGINEER'S REPORT

Jonathan Flores, City Manager, introduced the item and no questions were asked.

B) PRESENTATION OF PLAQUE FROM SUZANNAH SMILES FOR SPINA BIFIDA 250

Daniel Ramirez, EMS Chief, went over the SB250 charity bike ride and recognized Victoria Chapa for serving as an event medic.

Casey and Jackie Swanson of Susanna Smiles thanked the City Commission and EMS for their continued support and presented a plaque to the City from Suzannah Smiles for Spina Bifida 250.

C) RECOGNITION OF THE CITY OF PHARR INITIATIVE INTERNSHIP PROGRAM

The City of Pharr recognized the twenty interns participating in the City’s Internship Program and the three interns participating in the PSJA Pathways Internship Program. The interns were recognized for their participation and contributions to the City during their internship.

D) RECOGNITION OF PSJA PATHWAYS INTERNS

E) CITY EVENTS OF INTEREST

Kenia Gomez, Director of City Communications, presented a series of video recaps highlighting the Parks & Recreation Theater Program, the TAAF Regional Meet, and the Blue Zones Presentation.

Kenia Gomez, Director of City Communications, reported the Pharr City Limits would be held Friday, August 7, 2026 from 6:00 p.m. to 11:00 p.m. at the City Hall Amphitheater. She also reported the Trash-Off Event would take place on Saturday, August 8, 2026, at 8:00 a.m. at the Pharr Baseball Complex.

Kenia Gomez, Director of City Communications, further reported the Parks and Recreation Department would be hosting the Sneakerphest on August 15, 2026, from 11:00 a.m. to 4:00 p.m. at the Jose Pepe Salinas Recreation Center. Lastly, she reported the Lucha Libros would be held on Sunday August 16, 2026, from 5:00 p.m. to 8:00 p.m. at the Pharr Development and Research Center.

Due to the absence of a quorum, Items 5 through 9 below were not considered by the Board and will be placed on a future agenda.

ITEM 5. CONSENT AGENDA

A) APPROVAL OF MINUTES FOR JULY 06, 2026 — REGULAR CALLED MEETING; AND JULY 20, 2026 - REGULAR CALLED MEETING. THIS ITEM SUPPORTS SG - SOUND GOVERNANCE AND FISCAL SUSTAINABILITY. (CITY CLERK'S OFFICE)

B) CONSIDERATION AND ACTION, IF ANY, ON ORDINANCE AMENDING ORDINANCE O-2007-40 DECREASING LIBRARY BOARD MEMBERS FROM NINE (9) TO FIVE (5) MEMBERS AND ADDING AN EX OFFICIO MEMBER. *(3RD AND FINAL READING)* THIS ITEM SUPPORTS SG - SOUND GOVERNANCE AND FISCAL SUSTAINABILITY. (LIBRARY)

C) CONSIDERATION AND ACTION, IF ANY, ON ORDINANCE RELATING TO MONUMENT, HEADSTONE, AND MARKER RESTORATION, REPAIR, MAINTENANCE, AND REPLACEMENT IN CITY-OWNED OR CITY-MAINTAINED CEMETERIES. *(3RD AND FINAL READING)*. THIS ITEM SUPPORTS QL - QUALITY OF LIFE. (LIBRARY)

D) CONSIDERATION AND ACTION, IF ANY, ON DEVELOPMENT SERVICES CASES:

1. CNMK TEXAS PROPERTIES, LLC, D/B/A CINEMARK EL CENTRO MALL 16, IS REQUESTING RENEWAL OF THE CONDITIONAL USE PERMIT AND LATE HOURS PERMIT TO ALLOW THE SALE OF ALCOHOLIC BEVERAGES FOR ON-PREMISE CONSUMPTION IN A GENERAL

BUSINESS DISTRICT (C). THE PROPERTY IS LEGALLY DESCRIBED AS BEING LOT 3A, RE-PLAT OF VACATED CAR-MEL SUBDIVISION, VACATED EL CENTRO MALL NO. 3 AND 4 SUBDIVISION, PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY'S PHYSICAL ADDRESS IS 600 NORTH JACKSON ROAD. CUP# 131046 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (DEVELOPMENT SERVICES)

E) PLATS:

1. R. GUTIERREZ ENGINEERING CORPORATION, REPRESENTING VICTOR HUGO RESENDEZ AND WIFE, ROSALINDA RESENDEZ, OWNER, IS REQUESTING PRELIMINARY AND FINAL PLAT APPROVAL OF THE PROPOSED ROSALINDA RESENDEZ SUBDIVISION. THE PROPERTY IS LEGALLY DESCRIBED AS BEING A 0.20 ACRE TRACT OF LAND OUT OF LOT "Q", ORIGINAL TOWNSITE OF PHARR, HIDALGO COUNTY, TEXAS. THE PROPERTY IS LOCATED WITHIN THE 700 BLOCK OF S. DOGWOOD ST. SUB#260515 THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (DEVELOPMENT SERVICES)

REGULAR AGENDA - OPEN SESSION

ITEM 6. ORDINANCES AND RESOLUTIONS

A) CONSIDERATION AND ACTION, IF ANY, ON RESOLUTION ADOPTING THE CITY OF PHARR TITLE VI PROGRAM AND AUTHORIZING ITS IMPLEMENTATION. THIS ITEM SUPPORTS SG - SOUND GOVERNANCE AND FISCAL SUSTAINABILITY. (HR)

B) CONSIDERATION AND ACTION, IF ANY, ON RESOLUTION APPOINTING/RE-APPOINTING TWO (2) MEMBERS TO THE BRIDGE BOARD.THIS ITEM SUPPORTS EV - ECONOMIC VITALITY. (BRIDGE)

C) CONSIDERATION AND ACTION, IF ANY, ON RESOLUTION ADOPTING THE CITY OF PHARR'S ONE-YEAR ACTION PLAN FOR PROGRAM YEAR 2026 TO THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD).THIS ITEM SUPPORTS QL - QUALITY OF LIFE. (GMCD)

ITEM 7. CLOSED SESSION

ITEM 8. RECONVENE

ITEM 9. ADJOURNMENT

There being no other ceremonial presentations, the meeting was concluded at 4:40 p.m. No motions, votes, or other official action were taken due to the absence of a quorum.

CITY OF PHARR

_____

AMBROSIO HERNANDEZ
MAYOR

STATE OF TEXAS
COUNTY OF HIDALGO
CITY OF PHARR

ON THIS THE 3rd DAY OF AUGUST 2026 the Board of Commissioners of the City of Pharr, Texas convened in a **REGULAR CALLED MEETING** at the Commissioner's Room located at 118 S. Cage, 2nd Floor, Pharr, Texas. The meeting being open to the public and notice of said meeting, giving the date, place, subject, hereof, having been posted in accordance with Chapter 551, Texas Government Code (Open Meetings Act) and there not being present a quorum, I, **IMELDA PEREZ, CITY CLERK**, of the City of Pharr, Texas, certify that this is a true and correct copy of the minutes.

ATTEST:

_____
IMELDA PEREZ
CITY CLERK

APPROVED:

DRAFT

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.B.
DATE SUBMITTED: August 4, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Library

DIRECTOR: Adolfo Garcia

Agenda Item: Consideration and action, if any, on Ordinance amending Ordinance O-2007-40 decreasing Library Board Members from nine (9) to five (5) members and adding an ex officio member. ***(3rd and Final Reading)*** **This item supports SG - Sound Governance and Fiscal Sustainability.**

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: The Library board currently has nine (9) members and would like to reduce it to five (5) members. To ensure we consistently meet our quorums.

Fiscal Consideration: N/A

Staff Recommendation: Staff recommends reducing library board members

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Alessandra Garcia	Created/Initiated - 08/04/2026
Adolfo Garcia	Approved - 08/05/2026
Hilda Pedraza	Approved - 08/06/2026
Ricardo Rodriguez	Approved - 08/06/2026
City Management Office	New -

ORDINANCE NO. O-2026-_

AN ORDINANCE AMENDING ORDINANCE O-2007-40 CHAPTER 74, ARTICLE I, SECTION 74 OF THE CODE OF ORDINANCES OF THE CITY OF PHARR; DECREASING LIBRARY BOARD MEMBERS FROM NINE (9) TO FIVE (5); ADDING EX OFFICIO MEMBER; PROVIDING FOR A QUORUM; SEVERABILITY CLAUSE; CUMULATIVE CLAUSE AND EFFECTIVE DATE

WHEREAS, currently the Pharr Memorial Library consists of nine (9) members, and one (1) ex officio; and

WHEREAS, the number of members shall be decreased from nine (9) to five (5); and

WHEREAS, Ordinance O-2007-40 is hereby amended and reinstated to read as follows:

THEREFORE, BE IT ORDAINED BY THE BOARD OF COMMISSIONERS OF THE CITY OF PHARR, TEXAS, THAT:

SECTION A. MODIFICATIONS TO ADVISORY BOARD

ARTICLE I: ADVISORY BOARD

SECTION 1. Membership - Composition.

The Pharr Memorial Library Board shall be composed of five (5) regular members and one (1) ex officio member. The ex officio member shall not be entitled to vote on any matters of the board.

The members shall be selected by a majority vote of the City of Pharr Board of Commissioners.

SECTION 2. Terms; Renewal; Organization.

A. Terms. The terms of office of the members of the Library Board shall be as follows:

1. Appointment of terms. The city commission shall appoint five (5) members to serve two (2)-year terms.

2. Vacancies. In the event a vacancy occurs prior to the expiration of a full term, the city commission shall appoint a new member to complete the unexpired term. All members shall serve until their successors have been appointed and qualified, unless they forfeit their office as set out herein.

B. Quorum. Any three (3) members of the Library Board shall constitute a quorum for the transaction of business.

C. Officers. The Library Board members shall elect a Chairman and a Vice-Chairman at the first meeting of the calendar year. The vice-chairman shall preside in the absence of the chairman.

SECTION 3. CUMULATIVE CLAUSE

This Ordinance shall be cumulative of all other ordinances dealing with the subject, and other ordinances in direct conflict with this ordinance are hereby repealed, and this ordinance shall supersede and provisions in conflict herewith; all other provisions of the above-described ordinances shall remain in full force and effect.

SECTION 4. SEVERABILITY CLAUSE

If any section or part of the provisions of this Ordinance is declared unconstitutional or invalid, such declaration shall not affect the validity of the remaining sections, parts, or provisions of this Ordinance.

SECTION 5. EFFECTIVE DATE

This Ordinance shall take effect upon receiving final approval by the governing body following three (3) readings of the Board of Commissioners.

PASSED AND APPROVED ON THE FIRST READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the _____day of _____, 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

PASSED AND APPROVED ON THE SECOND READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the _____ day of _____, 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

PASSED AND APPROVED ON THE THIRD AND FINAL READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the____ day of _____, 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.C.
DATE SUBMITTED: August 4, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Library

DIRECTOR: Adolfo Garcia

Agenda Item: Consideration and action, if any, on Ordinance relating to monument, headstone, and marker restoration, repair, maintenance, and replacement in city-owned or city-maintained cemeteries. ***(3rd and Final Reading)***. **This item supports QL - Quality of Life.**

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: Creating ordinance relating to monuments in the Guadalupe Cemetery.

Fiscal Consideration: The Maintenance Department will fund this ordinance with the General Fund.

Staff Recommendation: Staff recommends approval.

Alternatives: Three readings for the ordinance to get approved.

Exclude Material from Public Packet? No
Reason: No exclusion.

ROUTING:

Alessandra Garcia	Created/Initiated - 08/04/2026
Adolfo Garcia	Approved - 08/06/2026
Hilda Pedraza	Approved - 08/07/2026
Ricardo Rodriguez	Approved - 08/10/2026
City Management Office	New -

ORDINANCE NO. O-2026-___

AN ORDINANCE OF THE CITY OF PHARR, TEXAS, AMENDING THE CODE OF ORDINANCES BY ADDING A NEW SECTION RELATING TO MONUMENT, HEADSTONE, AND MARKER RESTORATION, REPAIR, MAINTENANCE, AND REPLACEMENT IN CITY OWNED OR CITY MAINTAINED CEMETERIES; PROVIDING FINDINGS; PROVIDING AUTHORITY FOR CITY ACCESS AND MAINTENANCE; PROVIDING NOTICE PROCEDURES; PROVIDING PROCEDURES FOR UNKNOWN OR UNLOCATED PLOT OWNERS, HEIRS, OR NEXT OF KIN; PRESERVING PLOT OWNER AND FAMILY RIGHTS; PROVIDING HISTORIC PRESERVATION SAFEGUARDS; PROVIDING THAT NO HUMAN REMAINS MAY BE DISTURBED OR REMOVED EXCEPT AS AUTHORIZED BY STATE LAW; PROVIDING A REPEALER CLAUSE; PROVIDING A CUMULATIVE CLAUSE; PROVIDING A SEVERABILITY CLAUSE; PROVIDING FOR CODIFICATION; AND PROVIDING AN EFFECTIVE DATE

WHEREAS, the City of Pharr, Texas, is a Home Rule Municipality acting under its Charter adopted by the electorate pursuant to Article XI, Section 5 of the Texas Constitution, Section 51.072 of the Texas Local Government Code, and Chapter 9 of the Texas Local Government Code; and

WHEREAS, the City of Pharr owns, operates, maintains, or has responsibility for certain cemetery property within the City; and

WHEREAS, the City Commission finds that cemeteries are places of public importance, family remembrance, historical value, and community heritage; and

WHEREAS, the City Commission desires to preserve the historical integrity, dignity, appearance, accessibility, and safety of City-owned or City-maintained cemeteries; and

WHEREAS, Texas Health and Safety Code Chapter 711 defines a “memorial” to include a headstone, tombstone, gravestone, monument, or other marker denoting a grave; and

WHEREAS, Texas Health and Safety Code Chapter 711 recognizes rights of plot owners and persons with rights of interment, and the City Commission intends that this ordinance be administered in a manner that respects those rights; and

WHEREAS, Texas Health and Safety Code Chapter 713 authorizes municipalities to regulate, enclose, improve, and maintain municipal cemeteries; and

WHEREAS, Texas Health and Safety Code Section 713.011 provides that a municipality that operates or has jurisdiction over a public cemetery shall maintain the cemetery in a condition that does not endanger public health, safety, comfort, or welfare, including leveling or straightening markers or memorials; and

WHEREAS, deteriorated, unstable, leaning, broken, sunken, displaced, illegible, or unsafe monuments, headstones, and markers may create safety hazards, interfere with cemetery maintenance, reduce accessibility, or impair the historical and respectful appearance of cemetery grounds; and

WHEREAS, the City Commission finds that the restoration, repair, resetting, stabilization, preservation, and, when necessary, replacement of monuments, headstones, and markers is a public purpose related to cemetery maintenance, safety, historical preservation, and respect for the deceased and their families; and

WHEREAS, the City Commission intends that existing monuments and markers be preserved whenever reasonably feasible before replacement is considered; and

WHEREAS, the City Commission further intends that no action under this ordinance shall authorize the disturbance, disinterment, relocation, or removal of human remains except in strict compliance with applicable state law, including Texas Health and Safety Code Chapter 711; and

WHEREAS, the City Commission finds that reasonable due diligence, documentation, owner and family notification, and public notice should be required before a monument, headstone, or marker is permanently removed or replaced, except where immediate action is necessary to protect public health or safety.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COMMISSION OF THE CITY OF PHARR, TEXAS, THAT:

SECTION 1. FINDINGS.

The findings and recitals set forth above are hereby found to be true and correct and are incorporated into this Ordinance as if fully set forth herein.

SECTION 2. CODE AMENDMENT.

The Code of Ordinances of the City of Pharr, Texas, is hereby amended by adding a new section to read as follows:

SECTION 3. MONUMENT RESTORATION, REPAIR, MAINTENANCE, AND REPLACEMENT IN CITY CEMETERIES

Sec. 3.001. Purpose.

The purpose of this section is to preserve the historical integrity, appearance, safety, dignity, and accessibility of City-owned, City-operated, or City-maintained cemeteries

while respecting the rights of plot owners, heirs, next of kin, descendants, and families of persons interred within such cemeteries.

This section shall be administered to favor the preservation of existing monuments, headstones, and markers, whenever feasible, through documentation, cleaning, repair, restoration, resetting, or stabilization before replacement is considered.

Sec. 3.002. Definitions.

For purposes of this section:

City Cemetery means any cemetery, burial ground, or cemetery property owned, operated, maintained, or controlled by the City of Pharr.

Director means the City Manager, or the City Manager's designee, including any department director, cemetery administrator, or other City official assigned responsibility for cemetery maintenance.

Monument or Marker means any memorial, headstone, tombstone, gravestone, monument, tablet, plaque, or other marker denoting or identifying a grave, plot, or person interred in a City Cemetery.

Permanent Removal means removal of a Monument or Marker from its grave, plot, or cemetery location without intent to return it to the same general location after repair, restoration, or stabilization.

Replacement means installation of a new Monument or Marker when the existing Monument or Marker is missing, destroyed, illegible beyond practical restoration, unsafe beyond practical repair, or otherwise cannot reasonably be preserved.

Temporary Safety Action means immediate stabilization, laying down, bracing, removal, relocation, or storage of a Monument or Marker when necessary to protect cemetery visitors, employees, contractors, volunteers, or the public.

Unknown or Unlocated Owner means a plot owner, heir, next of kin, descendant, or other person with a known interest in a grave or plot who cannot be identified or contacted after reasonable due diligence.

Sec. 3.003. City Access and Authority.

The City of Pharr is authorized to enter upon any portion of a City Cemetery, including individual plots and gravesites, for the limited purposes of inspection, documentation, maintenance, cleaning, restoration, repair, resetting, stabilization, preservation, safety work, accessibility improvements, cemetery improvement projects, and replacement of Monuments or Markers in accordance with this section.

This authority does not transfer ownership of any plot, grave, burial right, right of sepulture, or family interest. This authority also does not authorize disturbance, disinterment, relocation, or removal of human remains.

Sec. 3.004. Priority for Preservation.

A. The City of Pharr shall make reasonable efforts to preserve existing Monuments and Markers whenever feasible.

B. Preservation methods may include:

1. Cleaning using appropriate conservation methods;

2. Resetting or leveling;

3. Repairing broken or separated pieces;

4. Stabilizing leaning or unsafe Monuments or Markers;

5. Restoring inscriptions when feasible and historically appropriate;

6. Improving the base or foundation of a Monument or Marker; and

7. Documenting and preserving original materials.

C. Replacement shall be considered only when the Director determines that preservation, repair, restoration, or stabilization is not reasonably feasible, is unsafe, or would not preserve the identification of the decedent.

Sec. 3.005. Unsafe Monuments or Markers.

A. If a Monument or Marker is determined to pose a safety hazard, the City may take Temporary Safety Action without prior notice.

B. Temporary Safety Action may include stabilizing, bracing, laying down, removing, relocating, or storing the Monument or Marker to protect visitors, employees, contractors, volunteers, or the public.

C. Before or as soon as practical after taking Temporary Safety Action, the City shall document the condition of the Monument or Marker through photographs, written notes, location information, and any visible inscription.

D. Temporary Safety Action shall not be considered Permanent Removal or Replacement.

E. After Temporary Safety Action is taken, the City shall determine whether the Monument or Marker can be repaired, reset, restored, or returned to its original or appropriate location.

Sec. 3.006. Documentation Required.

Before Permanent Removal or Replacement of any Monument or Marker, the City shall create a record that includes, when reasonably available:

1. The cemetery name;
2. The plot, block, lot, row, section, or GPS location;
3. The name of the decedent, if known;
4. Photographs of the Monument or Marker before work begins;
5. Photographs of inscriptions, symbols, dates, military service information, or other identifying features;
6. A description of the condition of the Monument or Marker;
7. The reason repair, restoration, resetting, or stabilization is not feasible or is not recommended;
8. A summary of efforts made to identify and contact the plot owner, heirs, next of kin, descendants, or other interested persons;
9. Public notice records, if applicable;
10. The final action taken; and
11. Photographs after completion of the work.

Sec. 3.007. Owner and Family Notification.

A. Before Permanent Removal or Replacement of a Monument or Marker, the City shall make reasonable efforts to identify and contact the plot owner, heirs, next of kin, descendants, or other persons reasonably believed to have an interest in the grave or plot.

B. Reasonable efforts may include review of:

1. City cemetery records;
2. Deeds, certificates, receipts, or other burial right records;
3. County Clerk property or cemetery records;
4. Funeral home or burial records, when available;

5. Obituaries;
6. Public genealogy or family history sources;
7. Public records;
8. Prior City correspondence;
9. Contact information provided by family members; and
10. Any other reasonably available source.

C. If a mailing address, email address, or telephone number is identified, the City shall provide notice by one or more reasonable methods, including mail, email, telephone, text message, or personal contact.

D. The notice shall include:

1. The name of the cemetery;
2. The name of the decedent, if known;
3. The location of the grave or plot, if known;
4. A general description of the Monument or Marker;
5. The proposed action;
6. The reason for the proposed action;
7. Instructions for submitting comments, documentation, ownership information, or objections;
8. The deadline to respond, which shall be not less than thirty (30) days from the date notice is mailed, sent, or posted; and
9. Contact information for the City department handling the matter.

Sec. 3.008. Public Notice When Owner or Family Cannot Be Located.

A. If the City cannot identify or contact a plot owner, heir, next of kin, descendant, or other interested person after reasonable due diligence, the City shall provide public notice for not less than thirty (30) days before Permanent Removal or Replacement.

B. Public notice may include:

1. Posting on the City's website;
2. Posting at City Hall;

3. Posting at the cemetery entrance or other visible cemetery location;
4. Posting near the affected Monument or Marker, when practical;
5. Social media notice through official City channels;
6. Newspaper publication, when determined appropriate by the Director or City Attorney; and
7. Any other method reasonably calculated to provide notice to interested persons.

C. Public notice shall include the information required under **Sec. 3.007(D)**, to the extent known.

Sec. 3.009. Objections and Review.

A. Any plot owner, heir, next of kin, descendant, or interested person may submit written comments, documents, or objections before the deadline stated in the notice.

B. If an objection is received, the Director shall review the objection and may:
1. Approve the proposed action;
2. Modify the proposed action;
3. Delay the proposed action to allow additional review;
4. Require additional documentation;
5. Allow the family or interested person to repair or replace the Monument or Marker at private expense in accordance with City standards; or
6. Refer the matter to the City Commission.

C. Except for Temporary Safety Action, Permanent Removal or Replacement shall be delayed while a timely objection is under review.

D. The City Commission may make the final determination when staff determines that the matter involves historical significance, family dispute, substantial public concern, or uncertainty regarding ownership, identification, or appropriate treatment.

Sec. 3.010. Unknown or Unlocated Owner Determination.

A. After reasonable due diligence and completion of the public notice process, the Director may recommend that the City Commission determine that the plot owner, heirs, next of kin, descendants, or other interested persons are

unknown or unlocated for the limited purpose of authorizing Monument or Marker restoration, repair, replacement, or cemetery improvement work.

B. A determination under this section:

1. Does not declare the plot abandoned for purposes of sale or reuse;
2. Does not transfer ownership of any plot or burial right;
3. Does not affect any right of sepulture or interment;
4. Does not authorize removal or disturbance of human remains;
5. Does not prevent a family member or interested person from later providing documentation or requesting review; and
6. Applies only to the Monument or Marker work identified in the City's documentation.

C. If a person later provides credible documentation showing ownership, family relationship, or other legitimate interest, the City shall maintain such documentation in the cemetery records and may review any future work in light of the information provided.

Sec. 3.011. Abandoned Unused Plots.

Nothing in this section shall be interpreted to replace, expand, or modify the statutory process for presumed abandoned plots under Texas Health and Safety Code Section 713.012 or any successor statute.

A City Commission declaration that a plot is presumed abandoned for purposes of sale, reuse, conveyance, or exclusive right of sepulture shall be made only when authorized by state law and only after all required notice, hearing, findings, and appeal procedures have been satisfied.

Sec. 3.012. Replacement Standards.

A. When Replacement is necessary, the City may install a uniform marker, flat marker, upright marker, or other Monument or Marker consistent with cemetery standards, available funding, historic preservation goals, and site conditions.
B. A replacement Monument or Marker shall preserve, to the extent known and feasible:

1. The decedent's name;
2. Date of birth and date of death;
3. Military service or veteran status;

4. Religious, cultural, or fraternal symbols shown on the original marker;

5. Spouse or family identification shown on the original marker; and

6. Any inscription or historical information that can be reasonably documented.

C. Replacement shall be respectful, durable, and compatible with the character of the cemetery.

D. When the original Monument or Marker is partially legible, the City shall not add uncertain information unless the information is verified by cemetery records, official records, family documentation, or other reliable sources.

Sec. 3.013. Historic Preservation.

A. Monuments or Markers determined to have historical, architectural, cultural, military, artistic, or community significance shall be preserved whenever practical.

B. Before altering, permanently removing, relocating, replacing, or materially changing a historically significant Monument or Marker, the City shall consider:

1. The age of the Monument or Marker;

2. The age of the cemetery;

3. Whether the cemetery or grave is associated with significant persons, events, veterans, early settlers, community leaders, or historically underserved communities;

4. Whether the Monument or Marker has unique craftsmanship, materials, symbols, or inscriptions;

5. Whether preservation in place is feasible; and

6. Whether consultation with the Texas Historical Commission, County Historical Commission, or qualified preservation professional is appropriate or required.

C. For publicly owned cemeteries that are fifty (50) years old or older, the City shall provide notice to or consult with the Texas Historical Commission when required by the Antiquities Code of Texas or other applicable law before work that exceeds ongoing maintenance or daily cemetery activities.

D. Original Monuments or Markers removed for safety, restoration, or replacement may be retained, relocated within the cemetery, displayed, archived, or stored by the City when preservation in place is not feasible.

Sec. 3.014. No Disturbance or Removal of Human Remains.

A. No action under this section shall authorize the disturbance, disinterment, relocation, or removal of human remains.

B. Any removal, relocation, or disturbance of human remains shall comply with Texas Health and Safety Code Chapter 711, Texas Department of State Health Services requirements, applicable court orders, and any other applicable state or federal law.

C. If human remains, suspected human remains, burial containers, grave shafts, or previously unknown burial features are discovered during work, the City shall stop work in the affected area and follow applicable legal reporting, preservation, and review procedures.

Sec. 3.015. Family or Private Maintenance.

A. A plot owner, heir, next of kin, descendant, or other person with a lawful interest in a grave or burial lot may beautify or maintain a grave or burial lot at private expense, subject to reasonable City rules and cemetery standards.

B. Private repair, restoration, replacement, or installation of a Monument or Marker shall require prior City approval to ensure compliance with cemetery standards, safety requirements, historic preservation requirements, and applicable law.

C. The City may deny or condition private work that may damage a Monument or Marker, interfere with cemetery maintenance, create a safety hazard, disturb remains, or conflict with cemetery standards.

Sec. 3.016. Records.

The City shall maintain records of Monument and Marker restoration, repair, replacement, removal, storage, relocation, and notice actions as part of the City's cemetery records.

Such records may include photographs, notices, family contacts, ownership information, work orders, contractor reports, Commission action, and final disposition of original or replacement Monuments or Markers.

Sec. 3.017. Emergency Conditions.

When the Director determines that immediate action is necessary due to storm damage, vandalism, collapse, vehicle impact, public safety hazard, or other emergency condition, the City may take Temporary Safety Action without prior notice.

The City shall document the emergency condition and provide notice after the fact when a plot owner, heir, next of kin, descendant, or interested person can be reasonably identified.

Sec. 3.018. No Private Cause of Action; Governmental Immunity.

This section is adopted to establish City policy and procedures for cemetery maintenance and preservation. Nothing in this section creates a private cause of action, waives governmental immunity, or creates liability against the City, its officers, employees, agents, contractors, or volunteers.

SECTION 4. REPEALER.

All ordinances, resolutions, policies, or parts thereof in conflict with this Ordinance are hereby repealed to the extent of such conflict only.

SECTION 5. CUMULATIVE CLAUSE.

This Ordinance shall be cumulative of all provisions of the Code of Ordinances of the City of Pharr, Texas, except where the provisions of this Ordinance are in direct conflict with existing provisions, in which event the provisions of this Ordinance shall control to the extent of the conflict.

SECTION 6. SEVERABILITY.

If any section, subsection, sentence, clause, phrase, or provision of this Ordinance is for any reason held to be invalid, illegal, or unconstitutional by a court of competent jurisdiction, such invalidity shall not affect the remaining provisions of this Ordinance, and the City Commission hereby declares that it would have adopted the remaining provisions regardless of the invalid provision.

SECTION 7. SAVINGS CLAUSE.

All rights, remedies, duties, obligations, proceedings, and actions existing prior to the effective date of this Ordinance shall remain in full force and effect, and this Ordinance shall not affect any pending action or proceeding unless expressly provided herein.

SECTION 8. CODIFICATION.

The City Secretary is hereby authorized to codify this Ordinance in the Code of Ordinances of the City of Pharr, Texas, and to make non-substantive formatting, numbering, and style changes necessary for codification.

SECTION 9. BE IT FURTHER ORDAINED, if any part of this Ordinance is found to be invalid or unconstitutional by a court having competent jurisdiction, then such invalidity or unconstitutionality shall not affect the remaining parts hereof, and such remaining parts shall remain in full force and effect, and to that extent this Ordinance is considered severable.

SECTION 10. PUBLICATION AND EFFECTIVE DATE. The ordinance shall take effect and be in force from and after its passage and approval on three (3) separate readings in accordance with Section 8, Article 3 of the Charter of the City of Pharr, Texas. Publication shall also be in caption form as allowed under Section 9 of the City of Pharr Charter.

PASSED AND APPROVED ON THE FIRST READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the 6th day of July, 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

PASSED AND APPROVED ON THE SECOND READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the 20th day of July, 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

PASSED AND APPROVED ON THE THIRD AND FINAL READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the 3rd day of August, 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.D.
DATE SUBMITTED: August 3, 2026
MEETING DATE: August 17, 2026

FROM: Daniela Villarreal, Buyer II

DEPARTMENT: Maintenance

DIRECTOR: Isaac Escobedo

Agenda Item: Consideration and action, if any, authorizing City Manager to advertise for sealed bids on a Service Contract for City Wide Landscaping Services. **This item supports QL - Quality of Life.**

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Staff is hereby requesting authorization to go out for sealed bid proposals for the City Wide Landscaping Services Contract. The current agreement has fulfilled its original term, and has exhausted all renewals. Staff believes it is in the City's best interest to seek competition to ensure the City continues to receive the best overall value, pricing, and service.
Project No. 2526-01-534-S39-207

Fiscal Consideration: N/A

Staff Recommendation: Staff recommends approval authorizing to go out for sealed bid proposals for the landscaping services contract.

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Daniela Villarreal	Created/Initiated - 08/03/2026
Maritza Magallan	Approved - 08/06/2026
Isaac Escobedo	Approved - 08/06/2026
Hilda Pedraza	Approved - 08/07/2026
Ricardo Rodriguez	Approved - 08/10/2026
Jamison Merrick	Approved - 08/10/2026
City Management Office	New -

AGENDA MEMORANDUM

BOARD:

AGENDA ITEM #: 5.E.
DATE SUBMITTED: August 4, 2026
MEETING DATE: August 17, 2026

FROM: Jose Reyes, Capital Improvement Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Patrizia Longoria

Agenda Item: Consideration and action, if any, authorizing City Manager to advertise for bids on construction of the South Regional Detention Facility and Drainage Improvements Project. **This item supports IF - Infrastructure**.

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: N/A

Fiscal Consideration: N/A

Staff Recommendation: Staff recommends authorizing the City Manager to advertise for bids for construction for the South Regional Detention and Drainage Improvement Project.

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Jose Reyes	Created/Initiated - 08/04/2026
Patrizia Longoria	Approved - 08/05/2026
Ricardo Rodriguez	Approved - 08/06/2026
Jamison Merrick	Approved - 08/10/2026
City Management Office	New -

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.F.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Administration

DIRECTOR:

Agenda Item: Consideration and action, if any, on Development Services Cases:

Classification: Public Hearing
(* If closed session, City Attorney must review and approve.)

Issue:

Fiscal Consideration:

Staff Recommendation:

Alternatives:

Exclude Material from Public Packet? No
Reason:

ROUTING:

Alessandra Garcia Created/Initiated - 08/06/2026

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.F.1.
DATE SUBMITTED: August 10, 2026
MEETING DATE: August 17, 2026

FROM: Nancy Hernandez, Administrative Assistant

DEPARTMENT: Development Services

DIRECTOR: Roland Gomez

Agenda Item: Quintanilla, Headley and Associates, Inc. representing Cubic Walls LLC., owner, has filed with the Planning and Zoning Commission a request for a Life of the Use Conditional Use Permit to allow a Self-Storage facility in a General Business District (C). The property is legally described as being a 4.10 acre tract of land, more or less, out of Lot 97, Kelly-Pharr Subdivision, Pharr, Hidalgo County, Texas. The property is physically located at 4621 North Veterans Boulevard. CUP# 260607 **This item supports EV - Economic Vitality.**

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: Quintanilla, Headley and Associates, Inc. representing Cubic Walls LLC., owner, has filed with the Planning and Zoning Commission a request for a Life of the Use Conditional Use Permit to allow a Self-Storage facility in a General Business District (C).

Fiscal Consideration: N/A

Staff Recommendation: Development Services recommends approval of the request for a Life of the Use Conditional Use Permit to allow a Self-Storage facility in a General Business District (C).

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Nancy Hernandez	Created/Initiated - 08/10/2026
Joe Garza	Approved - 08/10/2026
Melanie Cano	Final Approval - 08/10/2026

Pharr
Development Services

MEMORANDUM

DATE: **MONDAY, AUGUST 17, 2026**

TO: **MAYOR AND CITY COMMISSION**

FROM: **ROLAND GOMEZ, DIRECTOR OF DEVELOPMENT SERVICES**

THROUGH: **JONATHAN B. FLORES, CITY MANAGER**

SUBJECT: CONDITIONAL USE PERMIT FOR LIFE OF THE USE (SELF-STORAGE) FILE NO. **CUP#260607**

GENERAL INFORMATION:

APPLICANT: Quintanilla, Headley and Associates, Inc., representing Cubic Walls LLC., owner, has filed with the Planning and Zoning Commission a request for a Life of the Use Conditional Use Permit to allow a Self-Storage facility in a General Business District (C).

LEGAL DESCRIPTION: The property is legally described as being a 4.10-acre tract of land, more or less, out of Lot 97, Kelly-Pharr Subdivision, City of Pharr, Hidalgo County, Texas.

LOCATION: The property is physically located at 4621 North Veterans Boulevard.

ZONING: The property is currently zoned General Business District (C). The properties to the north are zoned Single-Family Residential District (R-1). The properties to the south and west are zoned General Business District (C). The city limits lie to the east. This area is generally designated for commercial use in the Land Use Plan.

COMMENTS:	**FIRE DEPARTMENT:**	Pending inspection of the Conditional Use Permit.
	CODE COMPLIANCE:	Pending inspection of the Conditional Use Permit.
	DEVELOPMENT SERVICES:	Pending inspection of the Conditional Use Permit.

NOTIFICATION OF PUBLIC:

Fifty-one (51) surrounding property owners were notified of the request by letter on July 24, 2026, and a legal notice was published in The Advance News Journal on July 22, 2026. Staff received no response to the letters or the legal notice.

DEVELOPMENT SERVICES RECOMMENDATIONS:

Development Services is recommending **approval** of the request for a Life of the Use Conditional Use Permit to allow a Self-Storage facility in a General Business District (C) subject to the applicant and site being in compliance with all City Ordinances and City Department requirements.

PLANNING & ZONING COMMISSION:

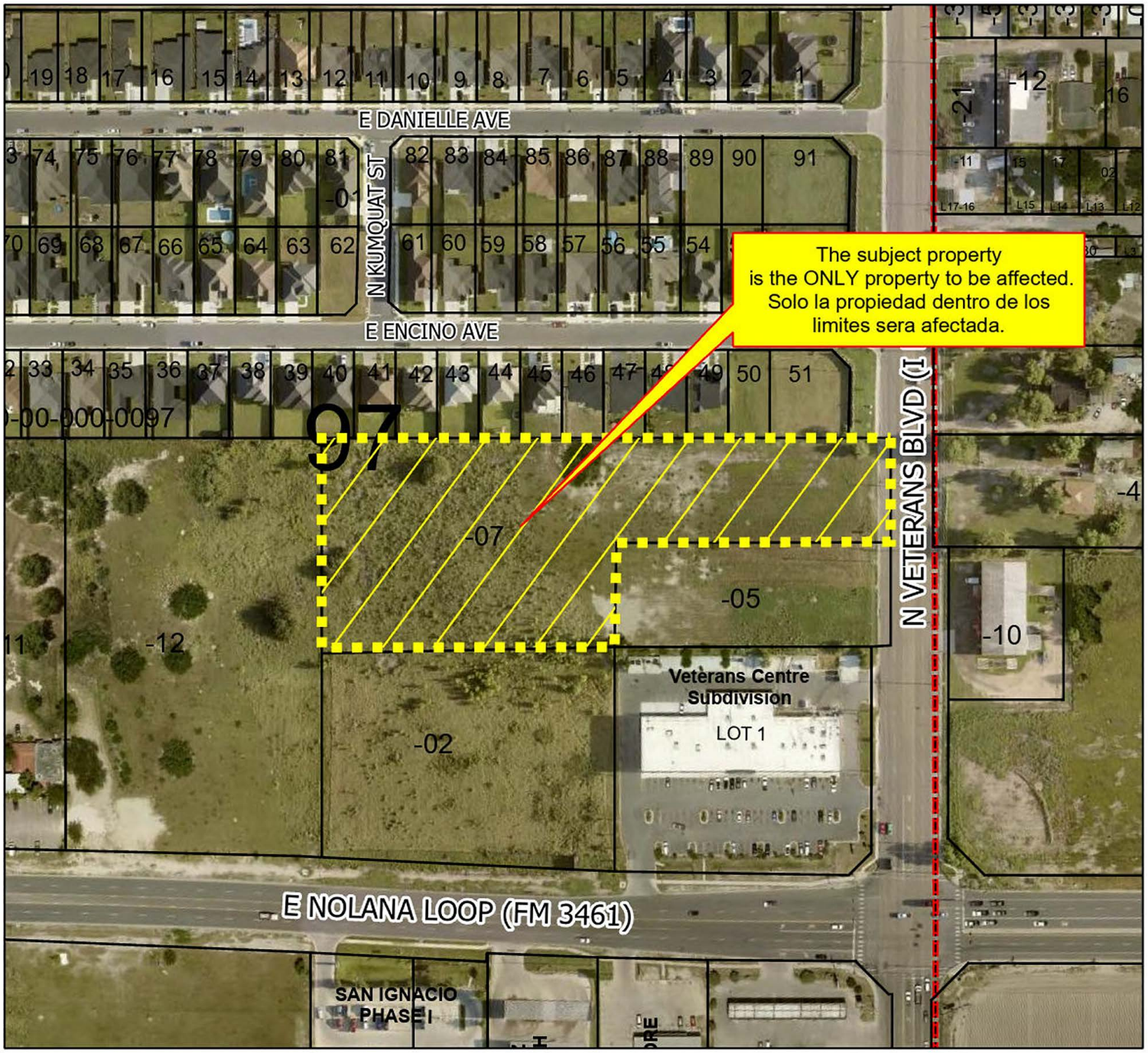
At the Planning and Zoning Commission meeting of August 6, 2026, the Board voted unanimously to recommend approval of the request for a Life-of-the-Use Conditional Use Permit to allow a Self-Storage facility in a General Business District (C) subject to the applicant and site being in compliance with all City Ordinances and City Department requirements. There were six members present and voting.

1. This permit shall be for the Life-of-the Use and issued to the current owner only;
2. No living amenities shall be installed in any unit;
3. Applicant shall comply with all City of Pharr Ordinances and codes, any violation will terminate this Conditional Use Permit;
4. Must be in compliance with Ordinance O-2019-23;
5. Applicant must acquire a building permit before start of construction;
6. Any request to revise, alter or amend the conditions or requirements shall require the applicant to apply for a new Conditional Use Permit;

7. The following shall be considered as grounds for the revocation of the Conditional Use Permit:

- Any change in use or change in extent of use, area or location.
- Failure to allow periodic inspections by representatives of the City of Pharr at any reasonable time.
- Conditional Use Permits that have been revoked may not be applied for again until a period of one year has lapsed from the date of revocation.

Proposed Conditional Use Permit
A 4.10 ac tract of land, more or less, out of Lot 97 Kelly-Pharr Subdivision 4621 N Veterans Blvd
Mauricio Paredes
AERIAL



G:\City of Pharr\GIS\Projects\1-Planning\PRO Conditional Use Permits\CUP 260607 4600 N Veterans Blvd\aprx\00_BASE Project File.aprx

Pharr City Limit
300 ft. Notification Buffer
Notified Properties
Location

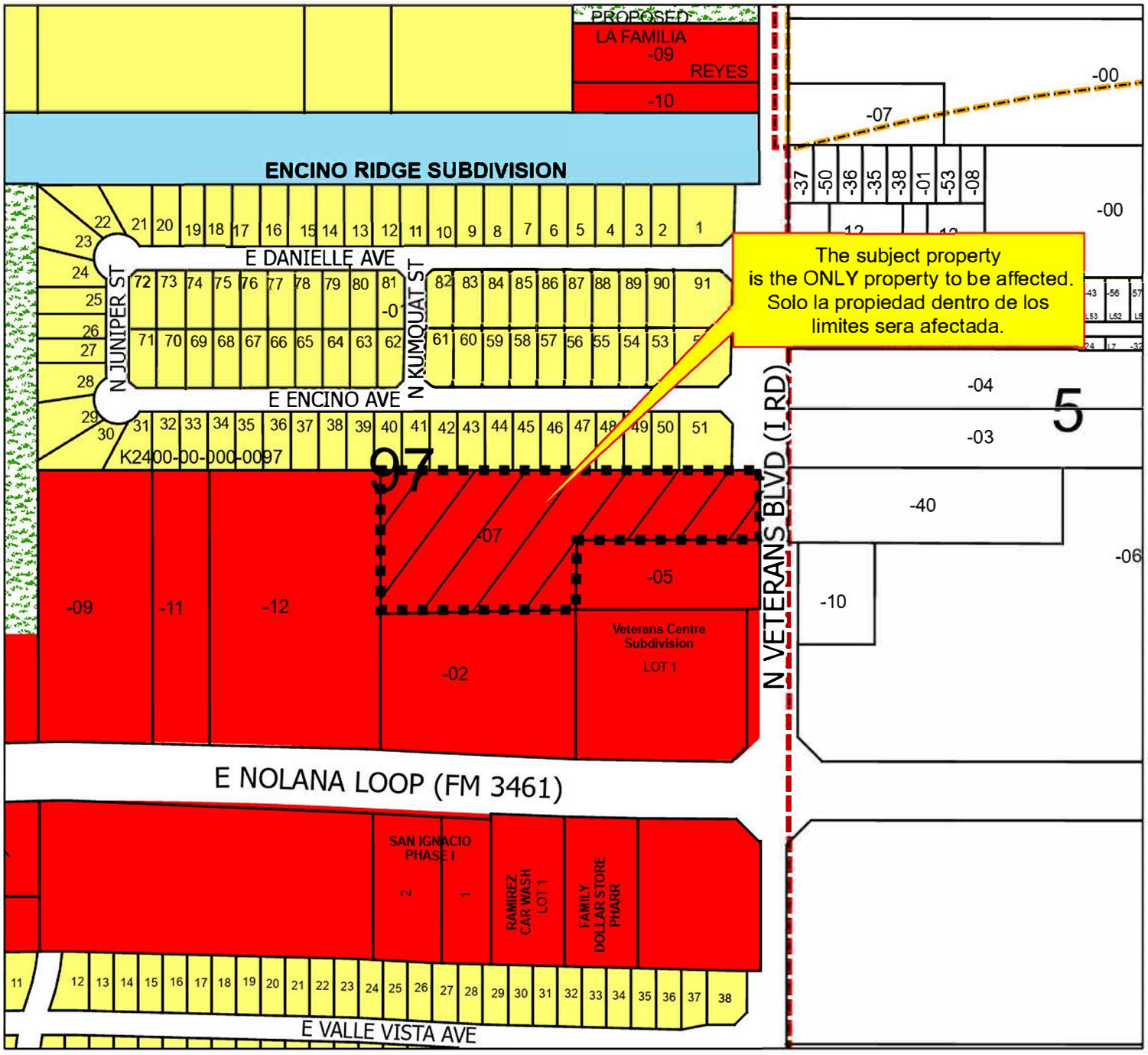
All information displayed on this map is subject to verification by field survey or by the agency responsible for maintaining the information. This map is intended for general information only.

City of Pharr, Texas
Engineering Department
956.402.4221
Date: 7/2/2026

Scale: 1:2,400

0 100 200 400 600 800 Feet

Proposed Conditional Use Permit
A 4.10 ac tract of land, more or less, out of Lot 97 Kelly-Pharr Subdivision 4621 N Veterans Blvd
Mauricio Paredes
ZONING



G:\City of Pharr\GIS\Projects\1-Planning\PRO Conditional Use Permits\CUP 260607 4600 N Veterans Blvd\aprx\00_BASE Project File.aprx

- Pharr City Limit
- 300 ft. Notification Buffer
- Notified Properties
- Location
- Agricultural Open Space
- Single Family
- Single Family Small Lot
- Residential Multi-Family
- Residential Multi-Family High Density
- Mobile Home
- Townhouse
- HUD Code
- Rail Road R.O.W
- Government Owned
- General Business
- Business District
- Drainage Easement
- Heavy Commercial
- Heavy Industrial
- Limited Industrial
- Neighborhood Commercial
- Office Professional
- PSJA ISD
- Hidalgo ISD
- Valley View ISD
- Planned Unit Development

All information displayed on this map is subject to verification by field survey or by the agency responsible for maintaining the information. This map is intended for general information only.

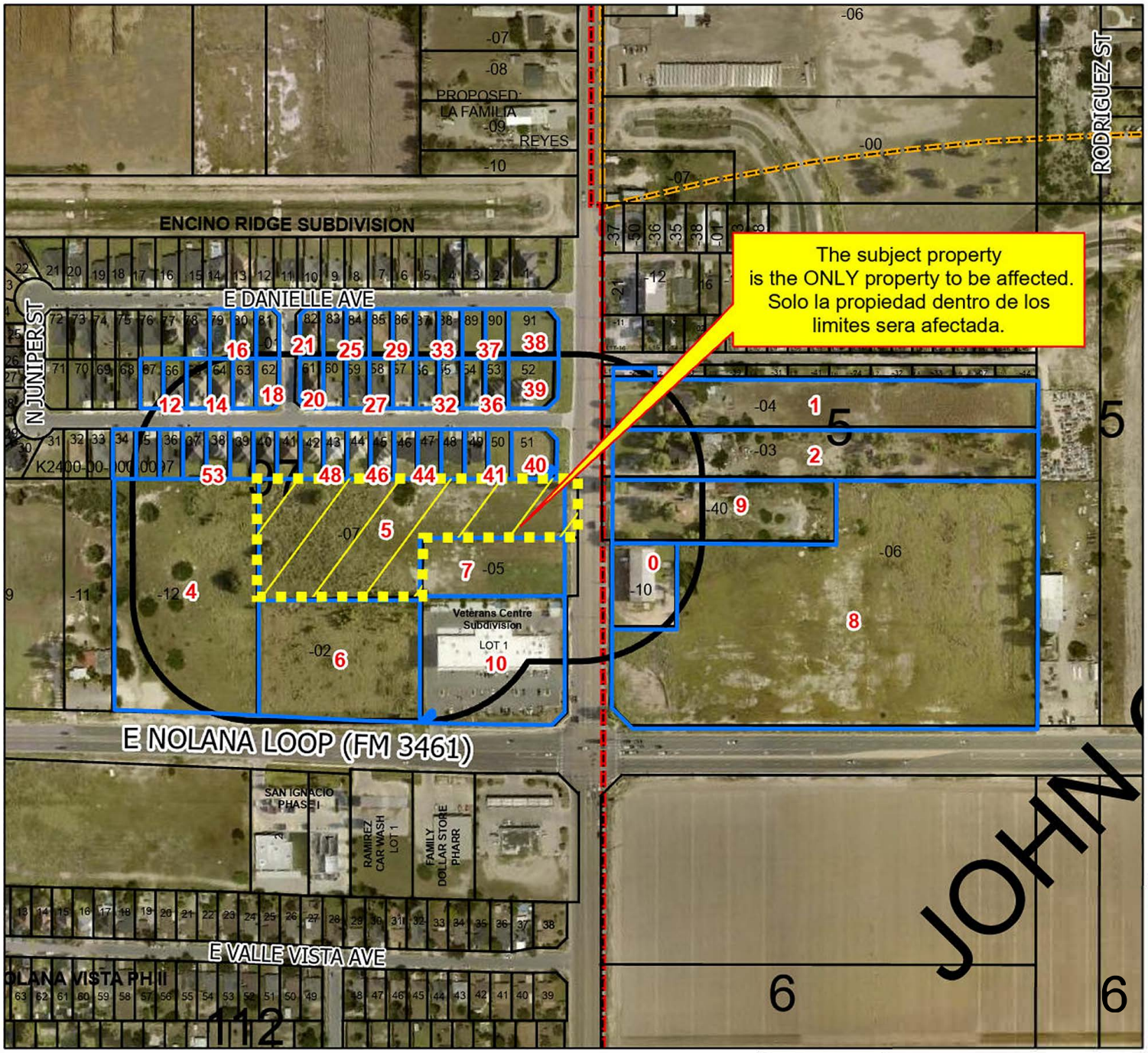
City of Pharr, Texas
Engineering Department
956.402.4221

Date: 7/2/2026

Scale: 1:3,600

0 150 300 600 900 1,200 Feet

Proposed Conditional Use Permit
A 4.10 ac tract of land, more or less, out of Lot 97 Kelly-Pharr Subdivision 4621 N Veterans Blvd
Mauricio Paredes
RADIUS



Pharr City Limit
300 ft. Notification Buffer
Notified Properties
Location

All information displayed on this map is subject to verification by field survey or by the agency responsible for maintaining the information. This map is intended for general information only.

City of Pharr, Texas
Engineering Department
956.402.4221
Date: 7/2/2026

Scale: 1:4,254

0 175 350 700 1,050 1,400 Feet

G:\City of Pharr\GIS\Projects\1-Planning\PRO Conditional Use Permits\CUP 260607 4600 N Veterans Blvd\aprx\00_BASE Project File.aprx

SCALE: 1" = 30'

EXIST. SANITARY SEWER M.H. TOP=101.50

EXIST. TYPE "A" INLET TOP=95.57

EXIST. TYPE "A" INLET TOP=96.15

EXIST. 100.00' R.O.W.

WEST R.O.W. LINE

13.88'

S 81°35'00" E 741.91'

PROP. STORAGE BLDG.

30.36' 25.00' 25.00' 25.00' 10.00' 15.00' 15.12'

PARKING LOT

GATE

GATE

PROP. STORAGE BLDG.

LOT 1

PROP. BLDG.

PARKING LOT

N 08°27'12" E 299.97'

S 08°30'39" W 150.00'

60.00'

N 81°34'21" W 353.64'

14.50'

40.00'

C. VETERANS BLVD.

EXIST. 8" P.V.C. N.A.W.S.C. WATERLINE

29.17'

PROP. DETENTION AREA

50.00'

368.00'

S 08°19'13" W 149.99'

N 81°35'25" W 388.46'

EXIST. SAN-SEWER M.H. TOP=103.56 FL=95.31

EXIST. SAN-SEWER M.H. TOP=102.84 FL=94.74

EXISTING FIRE HYDRANT

EXIST. 12"X6" W/ 6" VALVE AND FIRE HYDRANT

EXIST. 12" SAN-SEWER LINE

12" P.V.C. N.A.W.S.C. WATERLINE

Z:\data\SUBDIVISIONS\EDINBURG\VETERANS WALLS SUBD.\DWGS\WATER AND SAN-SEWER

DATE PREPARED	PREPARED BY	CHECKED BY	APPROVED BY
7-30-2021	JULIS CVZS		
DATE REVISED	REVISED BY	CHECKED BY	APPROVED BY
9-16-2021	JULIS CVZS		

JOB NO. 7-30-21
DATE 05-20-26 JG
REVISION 1"=30'
SCALE JULIS CVZS
DRAWN BY
SHEET

VETERANS WALLS SUBDIVISION
PROPOSED SITE PLAN

5-20-26

QUINTANILLA, HEADLEY AND ASSOCIATES, INC.
CONSULTING ENGINEERS
124 E. STUBBS ST.
EDINBURG, TEXAS 78539
ENGINEERING REGISTRATION NUMBER F-1513
SURVEYING REGISTRATION NUMBER 100411-00
LAND SURVEYORS
PHONE 956-381-6480
FAX 956-381-0527
ALFONSOQ@QHA-ENG.COM

Pharr
Development Services

Site Photo

Within the 4600 Blk of N Veterans Blvd

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.F.2.
DATE SUBMITTED: August 5, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Development Services

DIRECTOR: Roland Gomez

Agenda Item: CNMK Texas Properties, LLC, d/b/a Cinemark El Centro Mall 16, is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C). The property is legally described as being Lot 3A, Re-plat of Vacated Car-Mel Subdivision, Vacated El Centro Mall No. 3 and 4 Subdivision, Pharr, Hidalgo County, Texas. The property's physical address is 600 North Jackson Road. CUP# 131046 **This item supports EV - Economic Vitality.**

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: CNMK Texas Properties, LLC, d/b/a Cinemark El Centro Mall 16, is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C).

Fiscal Consideration: N/A

Staff Recommendation: Development Services recommends approval of the renewal request for the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C).

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Alessandra Garcia	Created/Initiated - 08/05/2026
Joe Garza	Approved - 08/07/2026
Melanie Cano	Final Approval - 08/07/2026

Pharr
Development Services

MEMORANDUM

DATE: MONDAY, AUGUST 3, 2026

TO: MAYOR AND CITY COMMISSION

FROM: ROLAND GOMEZ, DEVELOPMENT SERVICES DIRECTOR

THROUGH: JONATHAN FLORES, CITY MANAGER

SUBJECT: CONDITIONAL USE PERMIT & LATE HOURS PERMIT **RENEWAL** FOR ABC – FILE NO. **CUP#131046** (CINEMARK EL CENTRO MALL 16)

GENERAL INFORMATION:

APPLICANT: CNMK Texas Properties, LLC, d/b/a Cinemark El Centro Mall 16, is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C).

LEGAL DESCRIPTION: The property is legally described as being Lot 3A, Re-plat of Vacated Car-Mel Subdivision, Vacated El Centro Mall No. 3 and 4 Subdivision, Pharr, Hidalgo County, Texas.

LOCATION: The property's physical address is 600 North Jackson Road.

ZONING: The property is currently zoned General Business District (C). The surrounding area is zoned Heavy Commercial District (H-C) and General Business District (C) to the north, General Business District (C) to the south and east and the corporate city limits of McAllen to the west. The area is generally designated for commercial use in the Land Use Plan.

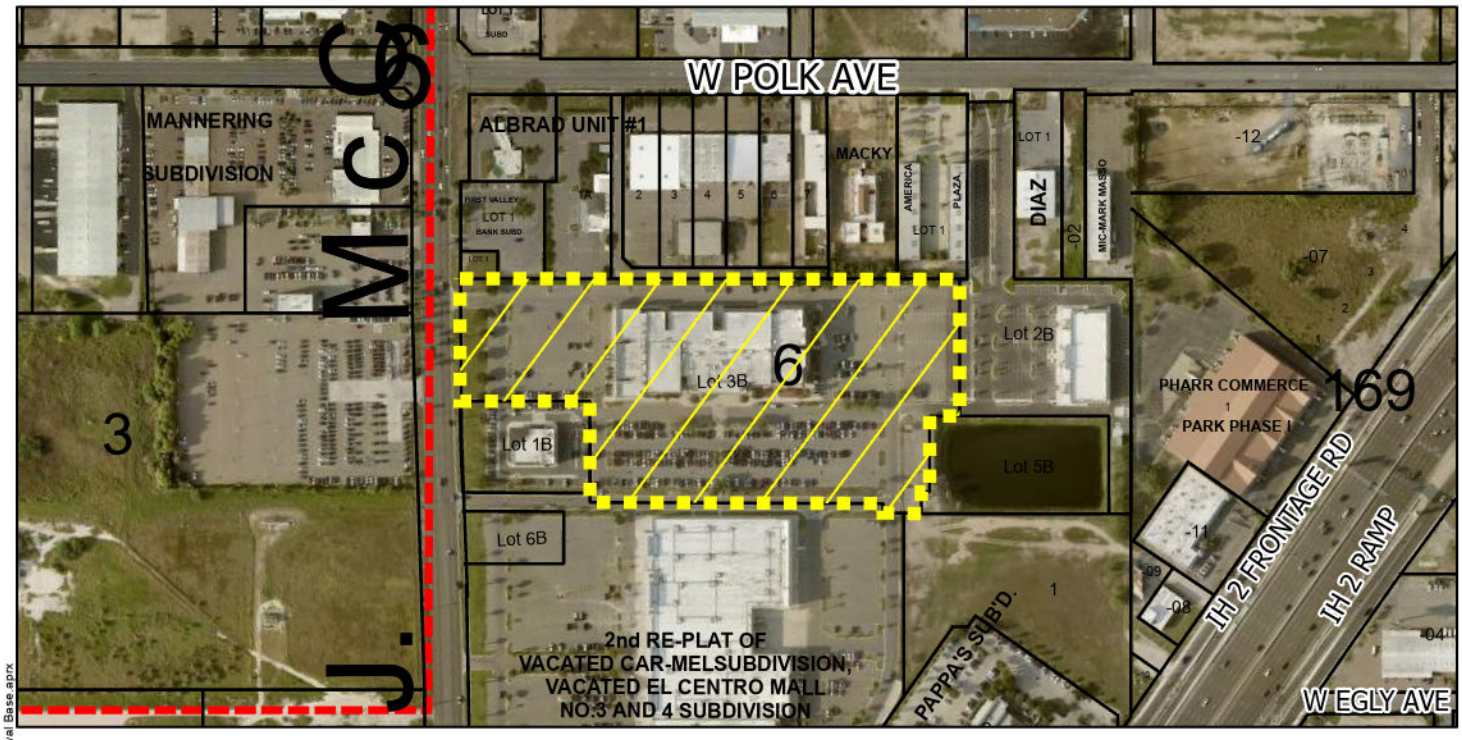
COMMENTS: **POLICE CHIEF:** Recommends approval of the Conditional Use Permit.

FIRE DEPARTMENT:	Recommends approval of the Conditional Use Permit.
BUILDING:	Recommends approval of the Conditional Use Permit.
HEALTH:	Recommends approval of the Conditional Use Permit.
DEVELOPMENT SERVICES:	Recommends approval of the Conditional Use Permit.

DEVELOPMENT SERVICES RECOMMENDATION:

Development Services recommends **approval** of the renewal request for the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C) subject to site and applicant being in compliance with all City Ordinances and City Department requirements.

CUP Renewal #2026-00042
Being Lot 3A, Re-plat of Vacated Car-Mel Subdivision, Vacated El Centro Mall No, 3 and 4 Subdivision
600 N JACKSON RD
CNMK Texas Properties d/b/a Cinemark



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- Subject Property
- Pharr City Limit
- Agricultural Open Space
- Single Family
- Single Family Small Lot
- Residential Multi-Family
- Residential Multi-Family High Density
- Mobile Home
- Townhouse
- HUD Code
- Rail Road R.O.W
- Government Owned
- General Business
- Business District
- Drainage Easement
- Heavy Commercial
- Heavy Industrial
- Limited Industrial
- Neighborhood Commercial
- Office Professional
- PSJA ISD
- Hidalgo ISD
- Valley View ISD
- Planned Unit Development

Scale: 1:4,910

0 205 410 820 1,230 1,640 Feet

N W E S

Date: 5/20/2026

City of Pharr, Texas
Engineering Department
956.402.4221

Executive Summary Letter

August 3, 2026

Conditional Use Permit **Renewal** for ABC – CNMK Texas Properties, LLC, d/b/a Cinemark El Centro Mall 16

Background:

CNMK Texas Properties, LLC, d/b/a Cinemark El Centro Mall 16, is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption. This request constitutes the 11th renewal for Cinemark El Centro Mall 16.

The property is located at 600 North Jackson Road. It is zoned General Business District (C) and is in conformance with the Future Land Use Plan. All required inspections have been conducted and have passed.

Recommendations:

Staff recommends **approval** of the renewal request for the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption subject to the site and applicant being in compliance with all City Ordinances and City Department requirements.

Pharr
Development Services

Site Photo

600 North Jackson Road

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.F.3.
DATE SUBMITTED: August 10, 2026
MEETING DATE: August 17, 2026

FROM: Nancy Hernandez, Administrative Assistant

DEPARTMENT: Development Services

DIRECTOR: Roland Gomez

Agenda Item: Topgolf USA Pharr, LLC., is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C). The property is legally described as being a 1.48 acre tract of land, more or less, out of Lot 1, Top Golf Pharr Subdivision, Pharr, Hidalgo County, Texas. The property is located at 1901 W Interstate Highway 2. CUP#170846 **This item supports EV - Economic Vitality.**

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: Topgolf USA Pharr, LLC., is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C).

Fiscal Consideration: N/A

Staff Recommendation: Development Services recommends approval of the renewal request for of the Conditional Use Permit and Late Hour Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C).

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Nancy Hernandez	Created/Initiated - 08/10/2026
Joe Garza	Approved - 08/10/2026
Melanie Cano	Final Approval - 08/10/2026

Pharr
Development Services

MEMORANDUM

DATE: MONDAY, AUGUST 17, 2026

TO: MAYOR AND CITY COMMISSION

FROM: ROLAND GOMEZ, DIRECTOR OF DEVELOPMENT SERVICES

THROUGH: JONATHAN FLORES, CITY MANAGER

SUBJECT: CONDITIONAL USE PERMIT **RENEWAL** FOR ABC – FILE NO. **CUP#170846** (**TOPGOLF USA PHARR, LLC**)

GENERAL INFORMATION:

APPLICANT: Topgolf USA Pharr, LLC., is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C).

LEGAL DESCRIPTION: The property is legally described as being a 1.48 acre tract of land, more or less, out of Lot 1, Top Golf Pharr Subdivision, Pharr, Hidalgo County, Texas.

LOCATION: The property is located at 1901 W Interstate Highway 2.

ZONING: The property is currently zoned General Business District (C). The surrounding area is zoned General Business District (C) to the north, south, east and southwest portion of the property and City of Pharr limits lie to the northwest portion of the property. This area is generally designated for commercial use in the Land Use Plan.

COMMENTS:

POLICE CHIEF: Recommends approval of the Conditional Use Permit.

FIRE DEPARTMENT:	Recommends approval of the Conditional Use Permit.
BUILDING:	Recommends approval of the Conditional Use Permit.
HEALTH:	Recommends approval of the Conditional Use Permit.
DEVELOPMENT SERVICES:	Recommends approval of the Conditional Use Permit.

DEVELOPMENT SERVICES RECOMMENDATION:

Development Services recommends **approval** of the renewal request for of the Conditional Use Permit and Late Hour Permit to allow the sale of alcoholic beverages for on-premise consumption in a General Business District (C) subject to site and applicant being in compliance with all City Ordinances and City Department requirements.

Executive Summary Letter

August 17, 2026

Conditional Use Permit for **Renewal** for ABC – Topgolf USA Pharr, LLC

Background:

Topgolf USA Pharr, LLC., is requesting renewal of the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption. This request constitutes the 7th renewal for Topgolf USA Pharr, LLC.

The property is located at 1901 West Interstate Highway 2. It is zoned General Business District (C) and is in conformance with the Future Land Use Plan. All required inspections have been conducted and have passed.

Recommendations:

Staff recommends **approval** of the renewal request for the Conditional Use Permit and Late Hours Permit to allow the sale of alcoholic beverages for on-premise consumption subject to the site and applicant being in compliance with all City Ordinances and City Department requirements.

CUP Renewal #2026-00033
15.347 ac tract of land, more or less, out of
Lot 1 Topgolf Pharr Subdivision / 1901 W IH 2
Topgolf USA Pharr, LLC

G:\City of Pharr\GIS\Projects\1-Planning\PRO CUP Renewal\CUP Renewal 2026-00033 1901 W IH 2\00_Renewal Base.aprx

- Subject Property
- Pharr City Limit
- Agricultural Open Space
- Single Family
- Single Family Small Lot
- Residential Multi-Family
- Residential Multi-Family High Density
- Mobile Home
- Townhouse
- HUD Code
- Rail Road R.O.W
- Government Owned
- General Business
- Business District
- Drainage Easement
- Heavy Commercial
- Heavy Industrial
- Limited Industrial
- Neighborhood Commercial
- Office Professional
- PSJA ISD
- Hidalgo ISD
- Valley View ISD
- Planned Unit Development

Scale: 1:5,000

0 205 410 820 1,230 1,640 Feet

N W E S

City of Pharr, Texas
Engineering Department
956.402.4221

Date: 5/12/2026

Pharr
Development Services

Site Photo

1901 W Interstate Highway 2

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.G.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Administration

DIRECTOR:

Agenda Item: PLATS:

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue:

Fiscal Consideration:

Staff Recommendation:

Alternatives:

Exclude Material from Public Packet? No
Reason:

ROUTING:

Alessandra Garcia Created/Initiated - 08/06/2026

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.G.1.
DATE SUBMITTED: August 10, 2026
MEETING DATE: August 17, 2026

FROM: Nancy Hernandez, Administrative Assistant

DEPARTMENT: Development Services

DIRECTOR: Roland Gomez

Agenda Item: CEI Engineering Associates, Inc, representing Coy Haynes, Manager for CG Cage &Moore LLC, a Texas Limited Liability Company, is requesting final plat approval of the proposed Pharr Corners Subdivision. The property is legally described as being a 1.34 acre tract, out of the North 10 acres of the West one-half of Lot 221, Kelly-Pharr Subdivision, Hidalgo County, Texas. The property is within the 1800 Block of South Cage Boulevard. SUB#250725 **This item supports EV - Economic Vitality.**

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: CEI Engineering Associates, Inc, representing Coy Haynes, Manager for CG Cage &Moore LLC, a Texas Limited Liability Company, is requesting final plat approval of the proposed Pharr Corners Subdivision.

Fiscal Consideration: N/A

Staff Recommendation: Development Services recommends final plat approval of the proposed Pharr Corners Subdivision.

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Nancy Hernandez	Created/Initiated - 08/10/2026
Joe Garza	Approved - 08/10/2026
Melanie Cano	Final Approval - 08/10/2026

Pharr
Development Services

MEMORANDUM

DATE:	MONDAY, AUGUST 17, 2026
TO:	MAYOR AND CITY COMMISSION
FROM:	ROLAND GOMEZ, DIRECTOR OF DEVELOPMENT SERVICES
THROUGH:	JONATHAN B. FLORES, CITY MANAGER
SUBJECT:	PHARR CORNERS SUBDIVISION SUBDIVISION FILE NO. **SUB250725**

GENERAL INFORMATION

APPLICANT:	CEI Engineering Associates, Inc, representing Coy Haynes, Manager for CG Cage & Moore LLC, a Texas Limited Liability Company is requesting final plat approval of the proposed Pharr Corners Subdivision Subdivision.
LEGAL DESCRIPTION:	The property is legally described as being a 1.34 acre tract, out of the North 10 acres of the West one-half of Lot 221, Kelly-Pharr Subdivision, Hidalgo County, Texas.
LOCATION:	The property is within the 1800 Block of South Cage Boulevard.
ZONING:	The property is currently zoned General Business District (C). The adjacent zones are General Business District (C) to the north, south, east and west. The property is designated for commercial use in the Land Use Plan.
VARIANCES:	None Requested.
RECOMMENDATIONS:	Development Services recommends final plat approval of the proposed Pharr Corners Subdivision subject to the following conditions:

PLANNING AND ZONING COMMISSION:
The Planning and Zoning Commission voted unanimously to approve final plat of the proposed Pharr Corners Subdivision at their meeting on 08/06/2026.

LOCATION:
118 S. CAGE BLVD
1st FLOOR
PHARR, TX 78577
PHONE: 956-402-4221

Pharr Engineering

REVIEWED BY:
OFSMAN QUINTANA
GRADUATE ENGINEER
OFSMAN.QUINTANA@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: PHARR CORNERS SUBDIVISION

Revise as builts.

LOCATION:
118 S. CAGE BLVD
3rd FLOOR
PHARR, TX 78577
PHONE: 956-402-4400

Pharr Fire Department

REVIEWED BY:
JOSE NAVARRO
FIRE INVESTIGATOR/INSPECTOR
JOSE.NAVARRO@FD.PHARR-TX.GOV

STAFF REVIEW MEETING FOR: PHARR CORNERS SUBDIVISION

At the time of building permit, to install concrete collars around valves.

LOCATION:
104 W. POLK AVE
PHARR,TX 78577
PHONE: 956-402-4900

Pharr
Innovation & Technology

REVIEWED BY:
GERARDO PADRON
BROADBAND GRADUATE ENGINEER
GERARDO.PADRON@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: PHARR CORNERS SUBDIVISION

Fiber already existing, update as builts to show existing fiber.

LOCATION:
118 S. CAGE BLVD
1st FLOOR
PHARR, TX 78577
PHONE: 956-402-4242

Pharr
Development Services

REVIEWED BY:
HERIBERTO MARTINEZ
PLANNER III
EDDIE.MARTINEZ@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: PHARR CORNERS SUBDIVISION

Revise as built plans

LOCATION:
1015 E. FERGUSON
PHARR,TX 78577
PHONE: 956-402-4350

Pharr Public Works

REVIEWED BY:
ERIK ESPINOZA
STORMWATER INSPECTOR
ERIK.ESPINOZA@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: PHARR CORNERS SUBDIVISION

House keeping

LOCATION:
801 E. SAM HOUSTON
PHARR, TEXAS 78577
PHONE: 956-402-4300

Pharr Public Utilities

REVIEWED BY:
JAVIER RODRIGUEZ
PUBLIC UTILITIES - WD DISTRIBUTION SUPERVISOR
JAVIER.RODRIGUEZ@PHARR-TX.GOV

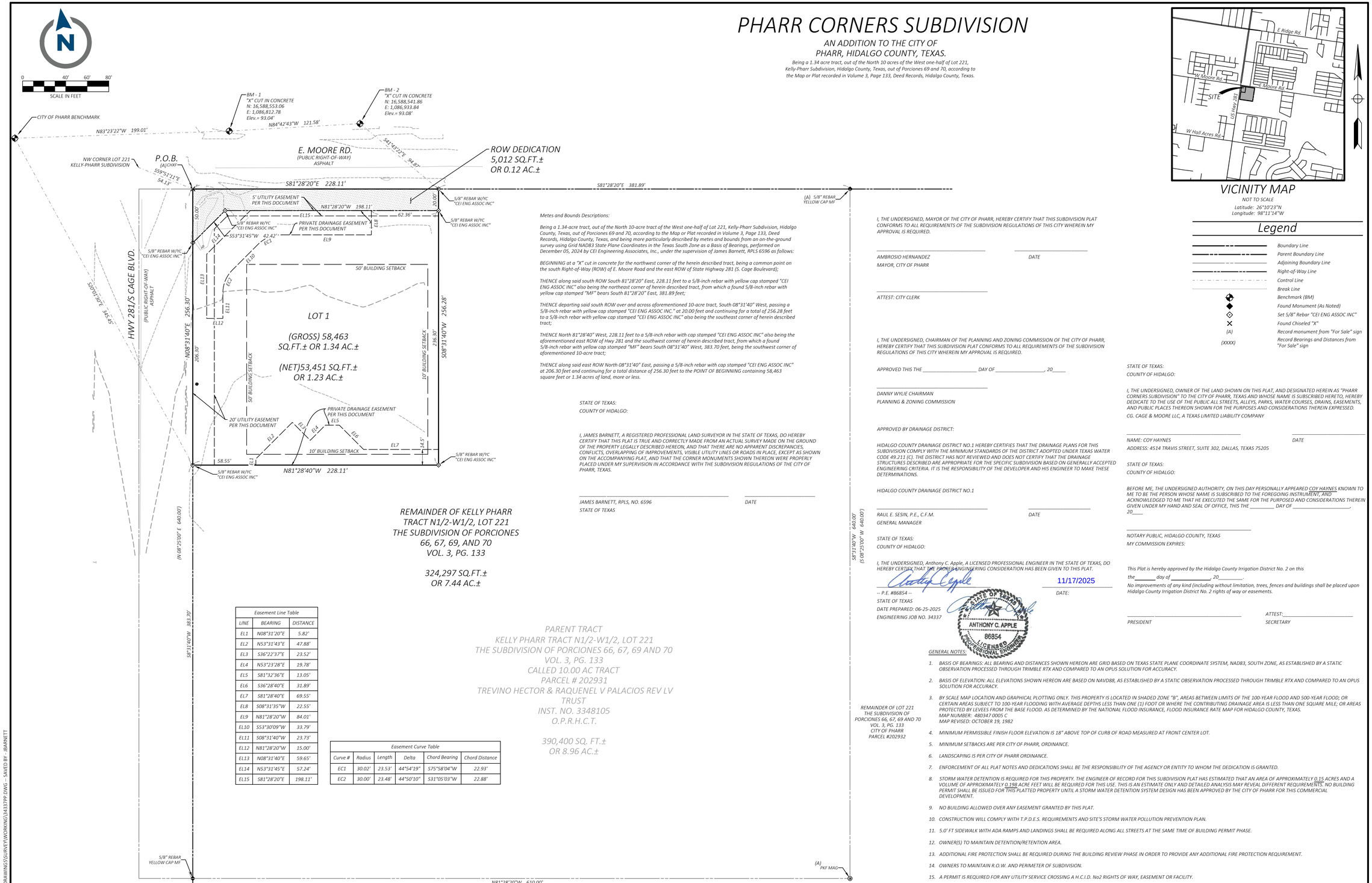
STAFF REVIEW MEETING FOR: PHARR CORNERS SUBDIVISION

Fire hydrant needs to be adjusted and concrete collar 30 x 30 x 6 mesh.

PHARR CORNERS SUBDIVISION

AN ADDITION TO THE CITY OF PHARR, HIDALGO COUNTY, TEXAS.

Being a 1.34 acre tract, out of the North 10 acres of the West one-half of Lot 221, Kelly-Pharr Subdivision, Hidalgo County, Texas, out of Porciones 69 and 70, according to the Map or Plat recorded in Volume 3, Page 133, Deed Records, Hidalgo County, Texas.



REMAINDER OF KELLY PHARR
TRACT N1/2-W1/2, LOT 221
THE SUBDIVISION OF PORCIONES
66, 67, 69, AND 70
VOL. 3, PG. 133

324,297 SQ.FT.±
OR 7.44 AC.±

PARENT TRACT
KELLY PHARR TRACT N1/2-W1/2, LOT 221
THE SUBDIVISION OF PORCIONES 66, 67, 69 AND 70
VOL. 3, PG. 133
CALLED 10.00 AC TRACT
PARCEL # 202931
TREVINO HECTOR & RAQUENEL V PALACIOS REV LV TRUST
INST. NO. 3348105
O.P.R.H.C.T.

390,400 SQ. FT.±
OR 8.96 AC.±

REMAINDER OF LOT 221
THE SUBDIVISION OF PORCIONES 66, 67, 69 AND 70
VOL. 3, PG. 133
CITY OF PHARR
PARCEL #202932

REMAINDER OF LOT 221
THE SUBDIVISION OF
PORCIONES 66, 67, 69 AND 70
VOL. 3, PG. 133
CITY OF PHARR
PARCEL #202932

Easement Line Table		
LINE	BEARING	DISTANCE
EL1	N08°31'20"E	5.82'
EL2	N53°31'43"E	47.88'
EL3	S36°22'37"E	23.52'
EL4	N53°23'28"E	19.78'
EL5	S81°32'36"E	13.05'
EL6	S36°28'40"E	31.89'
EL7	S81°28'40"E	69.55'
EL8	S08°31'35"W	22.55'
EL9	N81°28'20"W	84.01'
EL10	S53°30'09"W	33.79'
EL11	S08°31'40"W	23.73'
EL12	N81°28'20"W	15.00'
EL13	N08°31'40"E	59.65'
EL14	N53°31'45"E	57.24'
EL15	S81°28'20"E	198.11'

Easement Curve Table					
Curve #	Radius	Length	Delta	Chord Bearing	Chord Distance
EC1	30.02'	23.53'	44°54'19"	S75°58'04"W	22.93'
EC2	30.00'	23.48'	44°50'10"	S31°05'03"W	22.88'

Metes and Bounds Descriptions:

Being a 1.34-acre tract, out of the North 10-acre tract of the West one-half of Lot 221, Kelly-Pharr Subdivision, Hidalgo County, Texas, out of Porciones 69 and 70, according to the Map or Plat recorded in Volume 3, Page 133, Deed Records, Hidalgo County, Texas, and being more particularly described by metes and bounds from an on-the-ground survey using Grid NAD83 State Plane Coordinates in the Texas South Zone as a Basis of Bearings, performed on December 05, 2024 by CEI Engineering Associates, Inc., under the supervision of James Barnett, RPLS 6596 as follows:

BEGINNING at a "X" cut in concrete for the northwest corner of the herein described tract, being a common point on the south Right-of-Way (ROW) of E. Moore Road and the east ROW of State Highway 281 (S. Cage Boulevard);

THENCE along said south ROW South 81°28'20" East, 228.11 feet to a 5/8-inch rebar with yellow cap stamped "CEI ENG ASSOC INC" also being the northeast corner of herein described tract, from which a found 5/8-inch rebar with yellow cap stamped "MF" bears South 81°28'20" East, 381.89 feet;

THENCE departing said south ROW over and across aforementioned 10-acre tract, South 08°31'40" West, passing a 5/8-inch rebar with yellow cap stamped "CEI ENG ASSOC INC." at 20.00 feet and continuing for a total of 256.28 feet to a 5/8-inch rebar with yellow cap stamped "CEI ENG ASSOC INC" also being the southeast corner of herein described tract;

THENCE North 81°28'40" West, 228.11 feet to a 5/8-inch rebar with cap stamped "CEI ENG ASSOC INC" also being the aforementioned east ROW of Hwy 281 and the southwest corner of herein described tract, from which a found 5/8-inch rebar with yellow cap stamped "MF" bears South 08°31'40" West, 383.70 feet, being the southwest corner of aforementioned 10-acre tract;

THENCE along said east ROW North 08°31'40" East, passing a 5/8-inch rebar with cap stamped "CEI ENG ASSOC INC" at 206.30 feet and continuing for a total distance of 256.30 feet to the POINT OF BEGINNING containing 58,463 square feet or 1.34 acres of land, more or less.

STATE OF TEXAS:
COUNTY OF HIDALGO:

I, JAMES BARNETT, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECTLY MADE FROM AN ACTUAL SURVEY MADE ON THE GROUND OF THE PROPERTY LEGALLY DESCRIBED HEREON, AND THAT THERE ARE NO APPARENT DISCREPANCIES, CONFLICTS, OVERLAPPING OF IMPROVEMENTS, VISIBLE UTILITY LINES OR ROADS IN PLACE, EXCEPT AS SHOWN ON THE ACCOMPANYING PLAT, AND THAT THE CORNER MONUMENTS SHOWN THEREON WERE PROPERLY PLACED UNDER MY SUPERVISION IN ACCORDANCE WITH THE SUBDIVISION REGULATIONS OF THE CITY OF PHARR, TEXAS.

JAMES BARNETT, RPLS, NO. 6596 *DATE*
STATE OF TEXAS

I, THE UNDERSIGNED, MAYOR OF THE CITY OF PHARR, HEREBY CERTIFY THAT THIS SUBDIVISION PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION REGULATIONS OF THIS CITY WHEREIN MY APPROVAL IS REQUIRED.

AMBROSIO HERNANDEZ *DATE*
MAYOR, CITY OF PHARR

ATTEST: CITY CLERK

I, THE UNDERSIGNED, CHAIRMAN OF THE PLANNING AND ZONING COMMISSION OF THE CITY OF PHARR, HEREBY CERTIFY THAT THIS SUBDIVISION PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION REGULATIONS OF THIS CITY WHEREIN MY APPROVAL IS REQUIRED.

APPROVED THIS THE _____ DAY OF _____, 20_____

DANNY WYLIE CHAIRMAN
PLANNING & ZONING COMMISSION

APPROVED BY DRAINAGE DISTRICT:

HIDALGO COUNTY DRAINAGE DISTRICT NO.1 HEREBY CERTIFIES THAT THE DRAINAGE PLANS FOR THIS SUBDIVISION COMPLY WITH THE MINIMUM STANDARDS OF THE DISTRICT ADOPTED UNDER TEXAS WATER CODE 49.211 (C). THE DISTRICT HAS NOT REVIEWED AND DOES NOT CERTIFY THAT THE DRAINAGE STRUCTURES DESCRIBED ARE APPROPRIATE FOR THE SPECIFIC SUBDIVISION BASED ON GENERALLY ACCEPTED ENGINEERING CRITERIA. IT IS THE RESPONSIBILITY OF THE DEVELOPER AND HIS ENGINEER TO MAKE THESE DETERMINATIONS.

HIDALGO COUNTY DRAINAGE DISTRICT NO.1

RAUL E. SESIN, P.E., C.F.M. *DATE*
GENERAL MANAGER

STATE OF TEXAS:
COUNTY OF HIDALGO:

I, THE UNDERSIGNED, Anthony C. Apple, A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, DO HEREBY CERTIFY THAT THE PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN TO THIS PLAT.

-- P.E. #86854 -- *DATE:* 11/17/2025
STATE OF TEXAS
DATE PREPARED: 06-25-2025
ENGINEERING JOB NO. 34337

STATE OF TEXAS
ANTHONY C. APPLE
86854
LICENSED
PROFESSIONAL ENGINEER

STATE OF TEXAS:
COUNTY OF HIDALGO:

I, THE UNDERSIGNED, OWNER OF THE LAND SHOWN ON THIS PLAT, AND DESIGNATED HEREIN AS "PHARR CORNERS SUBDIVISION" TO THE CITY OF PHARR, TEXAS AND WHOSE NAME IS SUBSCRIBED HERETO, HEREBY DEDICATE TO THE USE OF THE PUBLIC ALL STREETS, ALLEYS, PARKS, WATER COURSES, DRAINS, EASEMENTS, AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED.

CG. CAGE & MOORE LLC, A TEXAS LIMITED LIABILITY COMPANY

NAME: COY HAYNES *DATE*
ADDRESS: 4514 TRAVIS STREET, SUITE 302, DALLAS, TEXAS 75205

STATE OF TEXAS:
COUNTY OF HIDALGO:

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED COY HAYNES KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSED AND CONSIDERATIONS THEREIN GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS THE _____ DAY OF _____, 20____

NOTARY PUBLIC, HIDALGO COUNTY, TEXAS
MY COMMISSION EXPIRES:

This Plat is hereby approved by the Hidalgo County Irrigation District No. 2 on this the_____ day of _____, 20_____.
No improvements of any kind (including without limitation, trees, fences and buildings shall be placed upon Hidalgo County Irrigation District No. 2 rights of way or easements.

PRESIDENT *ATTEST:_____*
SECRETARY

GENERAL NOTES:

1. *BASIS OF BEARINGS: ALL BEARING AND DISTANCES SHOWN HEREON ARE GRID BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, NAD83, SOUTH ZONE, AS ESTABLISHED BY A STATIC OBSERVATION PROCESSED THROUGH TRIMBLE RTX AND COMPARED TO AN OPUS SOLUTION FOR ACCURACY.*
2. *BASIS OF ELEVATION: ALL ELEVATIONS SHOWN HEREON ARE BASED ON NAVD88, AS ESTABLISHED BY A STATIC OBSERVATION PROCESSED THROUGH TRIMBLE RTX AND COMPARED TO AN OPUS SOLUTION FOR ACCURACY.*
3. *BY SCALE MAP LOCATION AND GRAPHICAL PLOTTING ONLY. THIS PROPERTY IS LOCATED IN SHADED ZONE "B", AREAS BETWEEN LIMITS OF THE 100-YEAR FLOOD AND 500-YEAR FLOOD; OR CERTAIN AREAS SUBJECT TO 100-YEAR FLOODING WITH AVERAGE DEPTHS LESS THAN ONE (1) FOOT OR WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN ONE SQUARE MILE; OR AREAS PROTECTED BY LEVEES FROM THE BASE FLOOD. AS DETERMINED BY THE NATIONAL FLOOD INSURANCE, FLOOD INSURANCE RATE MAP FOR HIDALGO COUNTY, TEXAS. MAP NUMBER: 480347 0005 C MAP REVISED: OCTOBER 19, 1982*
4. *MINIMUM PERMISSIBLE FINISH FLOOR ELEVATION IS 18" ABOVE TOP OF CURB OF ROAD MEASURED AT FRONT CENTER LOT.*
5. *MINIMUM SETBACKS ARE PER CITY OF PHARR, ORDINANCE.*
6. *LANDSCAPING IS PER CITY OF PHARR ORDINANCE.*
7. *ENFORCEMENT OF ALL PLAT NOTES AND DEDICATIONS SHALL BE THE RESPONSIBILITY OF THE AGENCY OR ENTITY TO WHOM THE DEDICATION IS GRANTED.*
8. *STORM WATER DETENTION IS REQUIRED FOR THIS PROPERTY. THE ENGINEER OF RECORD FOR THIS SUBDIVISION PLAT HAS ESTIMATED THAT AN AREA OF APPROXIMATELY 0.15 ACRES AND A VOLUME OF APPROXIMATELY 0.198 ACRE FEET WILL BE REQUIRED FOR THIS USE. THIS IS AN ESTIMATE ONLY AND DETAILED ANALYSIS MAY REVEAL DIFFERENT REQUIREMENTS. NO BUILDING PERMIT SHALL BE ISSUED FOR THIS PLATTED PROPERTY UNTIL A STORM WATER DETENTION SYSTEM DESIGN HAS BEEN APPROVED BY THE CITY OF PHARR FOR THIS COMMERCIAL DEVELOPMENT.*
9. *NO BUILDING ALLOWED OVER ANY EASEMENT GRANTED BY THIS PLAT.*
10. *CONSTRUCTION WILL COMPLY WITH T.P.D.E.S. REQUIREMENTS AND SITE'S STORM WATER POLLUTION PREVENTION PLAN.*
11. *5.0' FT SIDEWALK WITH ADA RAMPS AND LANDINGS SHALL BE REQUIRED ALONG ALL STREETS AT THE SAME TIME OF BUILDING PERMIT PHASE.*
12. *OWNER(S) TO MAINTAIN DETENTION/RETENTION AREA.*
13. *ADDITIONAL FIRE PROTECTION SHALL BE REQUIRED DURING THE BUILDING REVIEW PHASE IN ORDER TO PROVIDE ANY ADDITIONAL FIRE PROTECTION REQUIREMENT.*
14. *OWNERS TO MAINTAIN R.O.W. AND PERIMETER OF SUBDIVISION.*
15. *A PERMIT IS REQUIRED FOR ANY UTILITY SERVICE CROSSING A H.C.I.D. No2 RIGHTS OF WAY, EASEMENT OR FACILITY.*
16. *CITY OF PHARR BENCHMARK #32*
    N: 16,588,320.08'
    E: 1,086,650.69'
    Elev.= 90.31'

City of Pharr Benchmark Information

Benchmark: City of Pharr's Bench Mark: BM #32 located 58 feet west of the west R.O.W. line of the intersection of Cage Boulevard and W. Moore Road.
Coordinates provided to Surveyor: Northing= 16588320.0780', Easting= 1086650.6890', Elevation= 90.31'

The following are the coordinates observed on BM #32 by the surveyor:
Northing= 16588575.97', Easting= 1086615.09', Elevation= 92.55'

CEI Benchmark Information

Benchmark #1: A "X" CUT IN CONCRETE ON THE SOUTH SIDE OF A SIDEWALK LOCATED ON THE NORTH SIDE OF E. MOORE RD. APPROXIMATELY 31' EAST OF A SIGNAL LIGHT POLE. ELEV=93.04' NAVD88

Benchmark #2: A "X" CUT IN CONCRETE ON THE NORTH SIDE OF A SIDEWALK LOCATED ON THE NORTH SIDE OF E. MOORE RD. APPROXIMATELY 152' EAST OF A SIGNAL LIGHT POLE. ELEV=93.08' NAVD88

VICINITY MAP

NOT TO SCALE
Latitude: 26°10'23"N
Longitude: 98°11'14"W

Legend

- *Boundary Line*
- *Parent Boundary Line*
- *Adjoining Boundary Line*
- *Right-of-Way Line*
- *Control Line*
- *Break Line*
- *Benchmark (BM)*
- *Found Monument (As Noted)*
- *Set 5/8" Rebar "CEI ENG ASSOC INC"*
- *Found Chiseled "X"*
- *(A) Record monument from "For Sale" sign*
- *(XXXX) Record Bearings and Distances from "For Sale" sign*

CEI ENGINEERING ASSOCIATES, INC.
2600 NE 11TH ST, SUITE 300
BENTONVILLE, AR 72712
PHONE: (479) 273-9472
FAX: (479) 273-0844
CORPORATE TBPLS FIRM #10031500

3030 LBJ FREEWAY, SUITE 920
DALLAS, TX 75234
PHONE: (972) 488-3737
FAX: (972) 488-6732

PHARR CORNERS SUBDIVISION
Murphy Oil USA, Inc.
NE corner of E Moore Rd. & S Cage Blvd.
City of Pharr, Hidalgo County, Texas

STATE OF TEXAS
JAMES BARNETT
6596
11/17/2025
PROFESSIONAL
LAND SURVEYOR

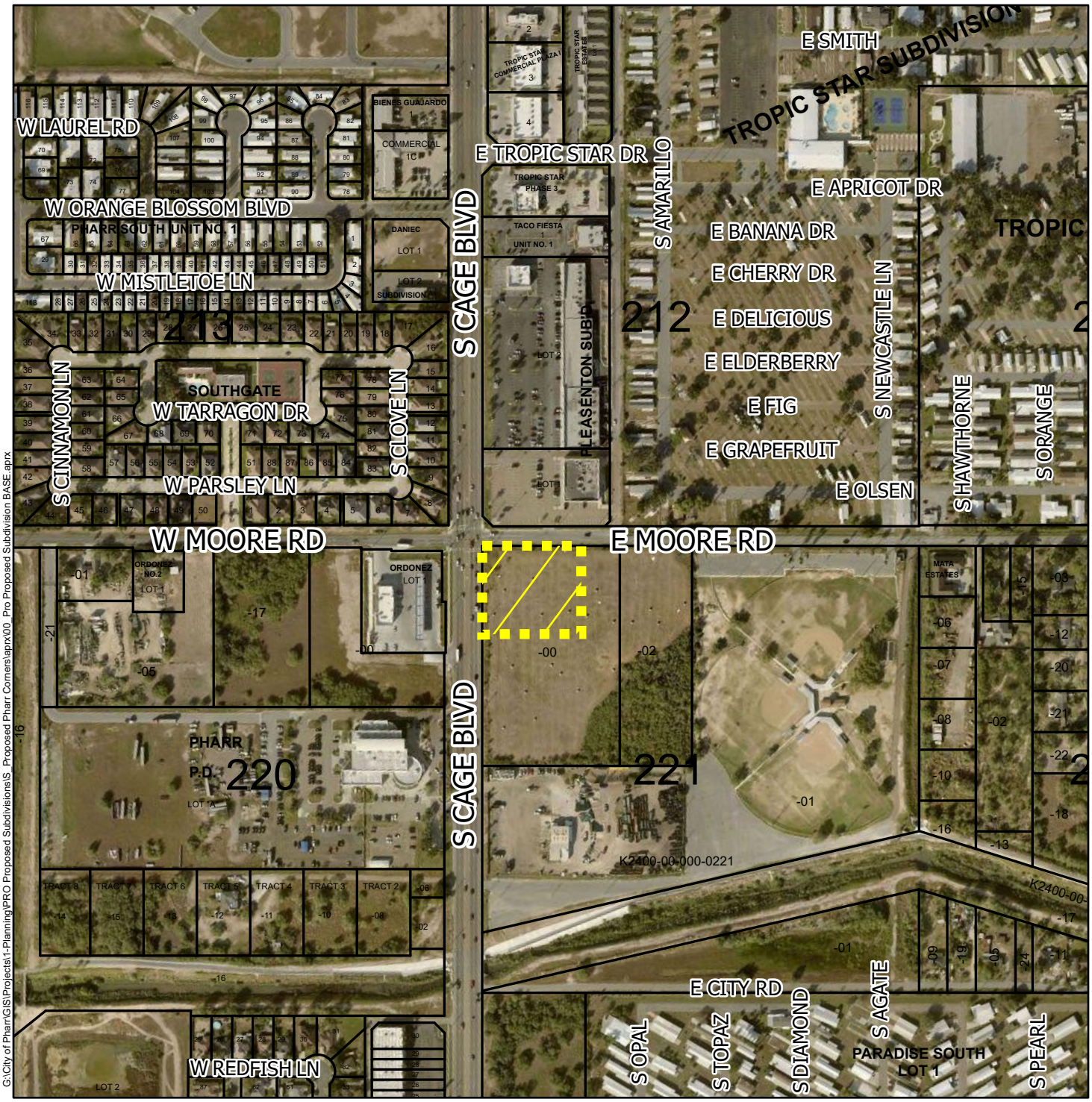
PROFESSIONAL OF RECORD	JKB
DESIGNER	CDG
FIELD WORK	RA
CEI PROJECT NUMBER	34337
DATE	11/17/2025
REVISION	REV-0

PLAT
SHEET TITLE
SHEET NUMBER
1 OF 1

DRAWING LOCATION - S:\34000\34337\DRAWINGS\SURVEY\WORKING\34337P.DWG -- SAVED BY: JBARNETT

© 2025 CEI ENGINEERING ASSOCIATES, INC.

Proposed Subdivision Pharr Corners
Being a 1.34 acre tract, out of the North 10 acres of the West one-half of Lot 221
AERIAL



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Subject Property

Pharr City Limit

City of Pharr, Texas
Engineering Department
956.702.5355

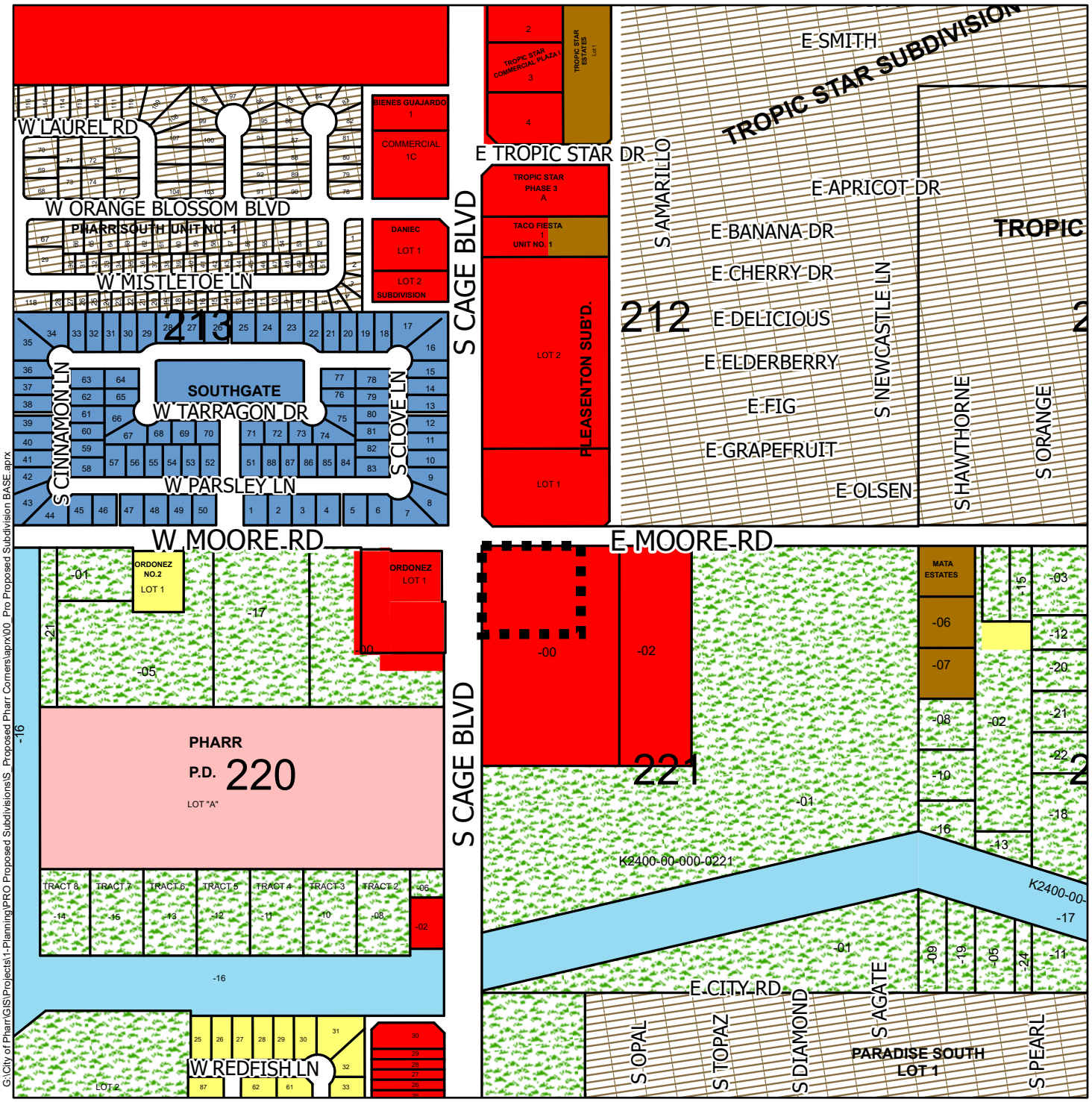
Scale: 1:5,000

0 205 410 820 1,230 1,640 Feet

N W E S

Date: 11/13/2025

Proposed Subdivision Pharr Corners
Being a 1.34 acre tract, out of the North 10 acres of the West one-half of Lot 221
ZONING



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- Subject Property
- Pharr City Limit
- Agricultural Open Space
- Single Family
- Single Family Small Lot
- Residential Multi-Family
- Residential Multi-Family High Density
- Mobile Home
- Townhouse
- HUD Code
- Rail Road R.O.W
- Government Owned
- General Business
- Business District
- Drainage Easement
- Heavy Commercial
- Heavy Industrial
- Limited Industrial
- Neighborhood Commercial
- Office Professional
- PSJA ISD
- Hidalgo ISD
- Valley View ISD
- Planned Unit Development

Scale: 1:5,000

0 205 410 820 1,230 1,640 Feet

City of Pharr, Texas
Engineering Department
956.702.5355

Date: 11/13/2025

Pharr
Development Services

Site Photo

1800 Block of S. Cage Boulevard

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 5.G.2.
DATE SUBMITTED: August 5, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Development Services

DIRECTOR: Roland Gomez

Agenda Item: R. Gutierrez Engineering Corporation, representing Victor Hugo Resendez and wife, Rosalinda Resendez, owner, is requesting preliminary and final plat approval of the proposed Rosalinda Resendez Subdivision. The property is legally described as being a 0.20 acre tract of land out of Lot "Q", Original Townsite of Pharr, Hidalgo County, Texas. The property is located within the 700 Block of S. Dogwood St. SUB#260515 **This item supports EV - Economic Vitality.**

Classification: Consent
(* If closed session, City Attorney must review and approve.)

Issue: R. Gutierrez Engineering Corporation, representing Victor Hugo Resendez and wife, Rosalinda Resendez, owner, is requesting preliminary and final plat approval of the proposed Rosalinda Resendez Subdivision.

Fiscal Consideration: N/A

Staff Recommendation: Development Services recommends approval of the request of the preliminary and final plat approval of the proposed Rosalinda Resendez Subdivision.

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Alessandra Garcia	Created/Initiated - 08/05/2026
Joe Garza	Approved - 08/07/2026
Melanie Cano	Final Approval - 08/07/2026

Pharr
Development Services

MEMORANDUM

DATE:	MONDAY, AUGUST 3, 2026
TO:	MAYOR AND CITY COMMISSION
FROM:	ROLAND GOMEZ, DIRECTOR OF DEVELOPMENT SERVICES
THROUGH:	JONATHAN B. FLORES, CITY MANAGER
SUBJECT:	ROSALINDA RESENDEZ SUBDIVISION SUBDIVISION FILE NO. **SUB260515**

GENERAL INFORMATION

APPLICANT:	R. Gutierrez Engineering Corporation, representing Victor Hugo Resendez and wife, Rosalinda Resendez is requesting preliminary and final plat approval of the proposed Rosalinda Resendez Subdivision Subdivision.
LEGAL DESCRIPTION:	The property is legally described as being A 0.20 acre tract of land out of Lot "Q", Original Townsite of Pharr, Hidalgo County, Texas.
LOCATION:	The property is located within the 700 Block of S. Dogwood St.
ZONING:	The property is currently zoned Single Family Residential District (R-1). The adjacent zones are Single Family Residential District (R-1) to the north, south, east and west. The property is designated for single family residential use in the Land Use Plan.
VARIANCES:	None Requested.
RECOMMENDATIONS:	Development Services recommends preliminary and final plat approval of the proposed Rosalinda Resendez Subdivision subject to the following conditions:

PLANNING AND ZONING COMMISSION:
The Planning and Zoning Commission voted unanimously to approve preliminary and final plat of the proposed Rosalinda Resendez Subdivision at their meeting on Thursday, July 16, 2026.

LOCATION:
118 S. CAGE BLVD
1st FLOOR
PHARR, TX 78577
PHONE: 956-402-4242

Pharr
Development Services

REVIEWED BY:
HERIBERTO MARTINEZ
PLANNER III
EDDIE.MARTINEZ@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: ROSALINDA RESENDEZ SUBDIVISION

1. Provide north arrow for location map.
2. Plat note #5, location description of B.M., redo.
3. Both owners to sign plat.
4. Provide additional notary block.
5. Mayors signature block add: City Clerks signature line.
6. Remove plat note #7.
7. Provide square footage of lot.

LOCATION:
801 E. SAM HOUSTON
PHARR, TEXAS 78577
PHONE: 956-402-4300

Pharr Public Utilities

REVIEWED BY:
JAVIER RODRIGUEZ
PUBLIC UTILITIES - WD DISTRIBUTION SUPERVISOR
JAVIER.RODRIGUEZ@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: ROSALINDA RESENDEZ SUBDIVISION

PLAT REVIEW MEETING FOR:
ROSALINDA RESENDEZ SUBDIVISION

****

COMMENTS: Initials: J.R. JUNE 17, 2026

****

WATER:

- Ok as proposed.
- Comments made may change depending on the circumstances.
- Follow City of Pharr Construction Standards Manual.

SEWER:

- Ok as proposed.
- The sewer service remains private.
- Comments made may change depending on the circumstances.
- Follow City of Pharr Construction Standards Manual.

Developer/Owner/Responsible Party must comply with the conditions stated above. WATER METERS WILL NOT BE INSTALLED IF THERE IS A failure to comply with ANY OF THE conditions. METERS WILL BE INSTALLED UPON PAYMENT AND COMPLIANCE WITH ALL CONDITIONS STATED. By signing this you understand you must comply with the condition(s) or the water meter(s) will not be installed.

LOCATION:
118 S. CAGE BLVD
1st FLOOR
PHARR, TX 78577
PHONE: 956-402-4221

Pharr Engineering

REVIEWED BY:
OFSMAN QUINTANA
GRADUATE ENGINEER
OFSMAN.QUINTANA@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: ROSALINDA RESENDEZ SUBDIVISION

PLAT

1. Signatures from P.E. & R.P.L.S. are required.
2. Note no. 5---Revise benchmark information: Northing:16593593.187, Easting: 1087438.540, Elevation: 110.72.
3. Note no. 10---Revise note to say… “Erosion and sediment control during construction shall be in accordance with current Texas pollution discharge elimination system (TPDES).

DRAINAGE

1. Drainage plan to be reviewed and approved at building permit stage.
2. Detention area shall be stabilized with sod or hydro-mulch prior to final inspection/final walkthrough.

RAINAGE

CLOSEOUT DOCUMENTS

1. All As-builts must have the following requirements:
    - As-builts must reflect current field changes. Mark all field changes as existing.
    - Must be Geo referenced, and in an AUTOCAD file.
    - Submit a physical and electronic copy (USB or CD).

LOCATION:
118 S. CAGE BLVD
3rd FLOOR
PHARR, TX 78577
PHONE: 956-402-4400

Pharr Fire Department

REVIEWED BY:
ROBERTO ROMERO
ASSISTANT FIRE MARSHAL
ROBERTO.ROMERO@FD.PHARR-TX.GOV

STAFF REVIEW MEETING FOR: ROSALINDA RESENDEZ SUBDIVISION

Pharr fire marshal office reviewed plans by fire marshal Mike Navarro and found to be in reasonable compliance.

LOCATION:
1015 E. FERGUSON
PHARR,TX 78577
PHONE: 956-402-4350

Pharr Public Works

REVIEWED BY:
ERIK ESPINOZA
STORMWATER INSPECTOR
ERIK.ESPINOZA@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: ROSALINDA RESENDEZ SUBDIVISION

- Missing a Sediment Erosion Control Plan.
- Obtain any necessary curb cut, street cut, bore, and discharge permits from the Public Works Department.

LOCATION:
104 W. POLK AVE
PHARR,TX 78577
PHONE: 956-402-4900

Pharr
Innovation & Technology

REVIEWED BY:
GERARDO PADRON
BROADBAND GRADUATE ENGINEER
GERARDO.PADRON@PHARR-TX.GOV

STAFF REVIEW MEETING FOR: ROSALINDA RESENDEZ SUBDIVISION

Upon review of the submitted preliminary plat and site plans, the following items are approved for compliance with City of Pharr Utility Fiber Optical Infrastructure Ordinances. As all infrastructure within the subdivision exists, no proposed installations are required.

1. Existing Conduit and Hand-Hole Details
a. Existing conduit and hand-hole configurations are acknowledged as sufficient for compliance.
b. No new conduit or hand-hole installations are required.
2. Existing Utility Site Plans and General Note.
a. The current site plans accurately reflect the existing pathway for Pharr Connect Utility conduit and fiber optic cable, which is shown externally along the easement.
3. Sheet Utility Site Plan
a. The fiber optic cabling pathway indicated on Utility Site Plans reflects the existing underground installation) via underground utility easement) and existing termination points with hand-holes.
b. NO additional documentation or new determinations by Pharr Connect IT are required.
4. Inspection Requitement
a. As all infrastructure exists, no new inspection is required prior to the final subdivision meeting. Existing compliance is acknowledged.

The plat and Utility site plans are approved as submitted. These items confirm complete and accurate documentation of Pharr Connect's existing infrastructure within the development.

Should you have questions or need further clarification, do not hesitate to contact our office.

Thank you for your attention to these requirements.

From: jbs_hcid2@att.net
To: Eddie Martinez
Cc: jl_hcid2@att.net
Subject: RE: Subdivision Review: Rosalinda Resendez
Date: Tuesday, June 9, 2026 10:28:01 AM
Attachments: image001.png
image002.png
image003.png

***** This is an email from an EXTERNAL source. DO NOT click links or open attachments without positive sender verification of purpose. Never enter USERNAME, PASSWORD or sensitive information on linked pages from this email. *****

Hello Eddie,

H.C.I.D. No. 2 initial reservations and comments for the proposal:

1. We have the general right of way covering all the lot. Vol. 19, Pg. 257 deed records.
2. We need the general warranty deed of the current owner.
3. Update the signature block by removing the last statement: APPROVAL OF … SHOWN OR NOT.
4. The proposed Subdivision is from an excluded area and will not need to submit a petition form.

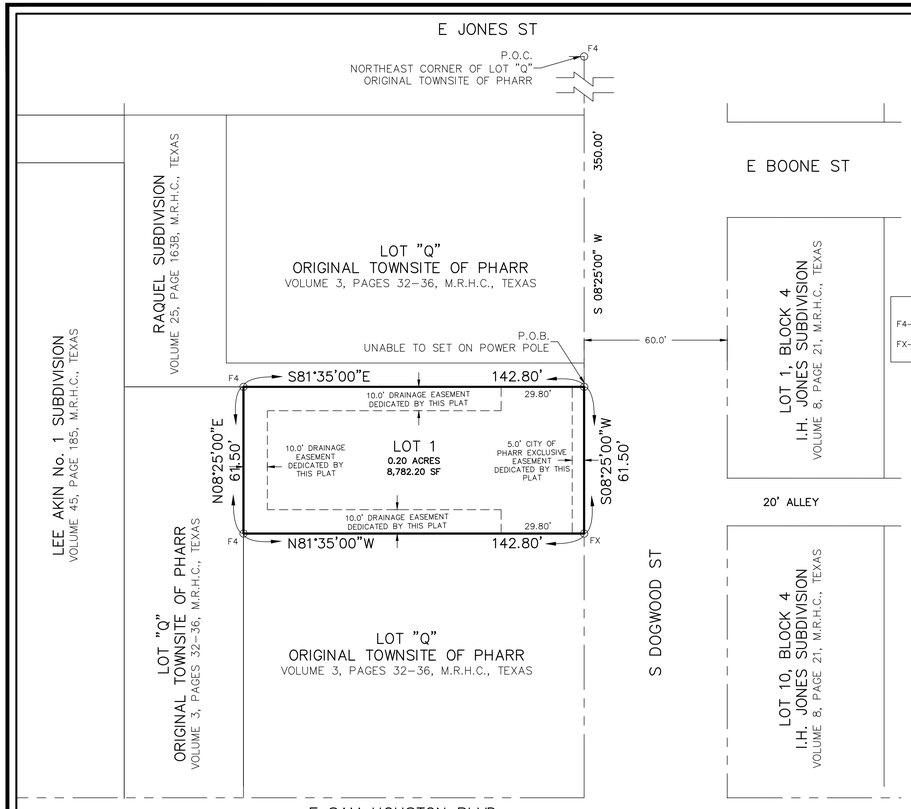
If there are any questions or concerns, please advise.

Thank you.

John Salinas
Hidalgo County Irrigation District No. 2
P.O. Box 6
San Juan, TX 78589
Office: (956) 787-1422
Fax: (956) 781-7622
Email: jbsalinas@hcid2.org

From: Eddie Martinez <eddie.martinez@pharr-tx.gov>
Sent: Monday, June 8, 2026 4:10 PM
To: isaac.gonzalez@hcdd1.org; esther.mireles@hcdd1.org; hcid2@sbcglobal.net; jbs_hcid2@att.net; jl_hcid2@att.net; peter.garza@usps.gov; jl3008@att.com; Erick.Torres@charter.com; Rafael.Macias@onegas.com; Rene.Casares@onegas.com; svallejo@rgv911.org; rafael.gonzales@psjaisd.us; tammy.saenz@psjaisd.us; mavaldes@aep.com; dlucio@aep.com; khernandez@aep.com; jolague@aep.com; jlozano@magicvalley.coop; Lucas.Pena@txdot.gov
Subject: Subdivision Review: Rosalinda Resendez

Ladies and Gentlemen,



METES AND BOUNDS DESCRIPTION:

A 0.20 ACRE TRACT OF LAND OUT OF LOT "Q", ORIGINAL TOWNSITE OF PHARR, AS PER MAP RECORDED IN VOLUME 3, PAGE 32-36, MAP RECORDS OF HIDALGO COUNTY, TEXAS. SAID 0.20 ACRE TRACT OF LAND IS VESTED TO VICTOR HUGO RESENDEZ AND WIFE, ROSALINDA RESENDEZ, BY VIRTUE OF A WARRANTY DEED DATED MARCH 24, 2026, RECORDED IN DOCUMENT NO. 3736147, OFFICIAL RECORDS OF HIDALGO COUNTY, TEXAS. SAID 0.20 ACRE TRACT OF LAND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

COMMENECING AT THE NORTHEAST CORNER LOT "Q", ORIGINAL TOWNSITE OF PHARR; THENCE, SOUTH 08 DEGREES 25 MINUTES 00 SECONDS WEST, WITH THE EAST LINE OF SAID LOT "Q", ORIGINAL TOWNSITE OF PHARR, A DISTANCE OF 350.00 FEET TO A POINT FOR THE NORTHEAST CORNER OF THIS TRACT OF LAND AND THE **POINT OF BEGINNING**;

THENCE, SOUTH 08 DEGREES 25 MINUTES 00 SECONDS WEST, WITH THE EAST LINE OF LOT "Q", PHARR ORIGINAL TOWNSITE, A DISTANCE OF 61.50 FEET TO AN "X" CUT FOUND ON CONCRETE, FOR THE SOUTHEAST CORNER OF THIS TRACT OF LAND;

THENCE, NORTH 81 DEGREES 35 MINUTES 00 SECONDS WEST, WITH THE NORTH LINE OF THE CARLOS GARCIA, JR. PROPERTY AS PER WARRANTY DEED WITH VENDOR'S LIEN RECORDED IN VOLUME 1832, PAGE 427, DEED RECORDS OF HIDALGO COUNTY, TEXAS, A DISTANCE OF 142.80 FEET TO A No. 4 REBAR FOUND FOR THE SOUTHWEST CORNER OF THIS TRACT OF LAND;

THENCE, NORTH 08 DEGREES 25 MINUTES 00 SECONDS EAST, WITH THE EAST LINE OF THE GRACIELA MONTOYA PROPERTY, PROPERTY ID NUMBER 258812, A DISTANCE OF 61.50 FEET TO A No. 4 REBAR FOUND AT THE NORTHEAST CORNER OF THE SAID GRACIELA MONTOYA PROPERTY FOR THE NORTHWEST CORNER OF THIS TRACT OF LAND;

THENCE, SOUTH 81 DEGREEES 35 MINUTES 00 SECONDS EAST, WITH THE SOUTH LINE OF RAQUEL SUBDIVISION AS PER MAP RECORDED IN VOLUME 25, PAGE 163B, MAP RECORDS OF HIDALGO COUNTY, TEXAS, A DISTANCE OF 142.80 TO THE **POINT OF BEGINNING** AND CONTAINING 0.20 OF AN ACRE, MORE OR LESS.

THE STATE OF TEXAS-COUNTY OF HIDALGO DRAINAGE DISTRICT No. 1 CERTIFICATION

HIDALGO COUNTY DRAINAGE DISTRICT No. 1 HEREBY CERTIFIES THAT THE DRAINAGE PLANS FOR THIS SUBDIVISION COMPLIES WITH THE MINIMUM STANDARDS OR THE DISTRICT ADOPTED UNDER TEXAS WATER CODE SECTION 49.211 (c). THE DISTRICT HAS NOT REVIEWED AND DOES NOT CERTIFY THAT THE DRAINAGE STRUCTURES DESCRIBED ARE APPROPRIATE FOR THE SPECIFIC SUBDIVISION, BASED ON GENERALLY ACCEPTED ENGINEERING CRITERIA. IT IS THE RESPONSIBILITY OF THE DEVELOPER OF THE SUBDIVISION AND ITS ENGINEER TO MAKE THESE DETERMINATIONS.

HIDALGO COUNTY DRAINAGE DISTRICT No. ONE _____ DATE
RAUL SESIN, P.E., C.F.M. (GENERAL MANAGER)

OWNER ACKNOWLEDGMENT

STATE OF TEXAS §
COUNTY OF HIDALGO §
OWNER'S DEDICATION, CERTIFICATION AND ATTESTATION:

KNOWN ALL MEN BY THESE PRESENTS, THAT I, VICTOR HUGO RESENDEZ AND WIFE, ROSALINDA RESENDEZ, OWNER OF THE LAND SHOWN ON THIS PLAT, AND DESIGNATED HEREIN AS STATE SUBDIVISION TO THE CITY OF PHARR, COUNTY OF HIDALGO, TEXAS AND WHO NAME IS SUBSCRIBED HERETO, DOES (DO) HEREBY SUBDIVIDE SUCH PROPERTY AND DEDICATE TO THE USE OF THE PUBLIC ALL STREETS, ALLEYS, PARKS, WATER COURSES, DRAINS, EASEMENTS, AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED.

WITNESS MY HAND ON THIS THE _____ DAY OF _____ 20__.

OWNER: VICTOR HUGO RESENDEZ AND ROSALINDA RESENDEZ
ADDRESS: 22700 ENGELMAN GARDENS RD., EDCOUCH, HIDALGO COUNTY, TEXAS 78538

STATE OF TEXAS §
COUNTY OF HIDALGO §

BEFORE ME, THE UNDERSIGNED AUTHORITY, PERSONALLY APPEARED _____, KNOWN TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND HE ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

WITNESS MY HAND ON THIS THE _____ DAY OF _____ 20__.

NOTARY PUBLIC IN AND FOR HIDALGO COUNTY, TEXAS

PRINTED NAME: _____ MY COMMISSION EXPIRES _____

OWNER ACKNOWLEDGMENT

STATE OF TEXAS §
COUNTY OF HIDALGO §
OWNER'S DEDICATION, CERTIFICATION AND ATTESTATION:

KNOWN ALL MEN BY THESE PRESENTS, THAT I, VICTOR HUGO RESENDEZ AND WIFE, ROSALINDA RESENDEZ, OWNER OF THE LAND SHOWN ON THIS PLAT, AND DESIGNATED HEREIN AS STATE SUBDIVISION TO THE CITY OF PHARR, COUNTY OF HIDALGO, TEXAS AND WHO NAME IS SUBSCRIBED HERETO, DOES (DO) HEREBY SUBDIVIDE SUCH PROPERTY AND DEDICATE TO THE USE OF THE PUBLIC ALL STREETS, ALLEYS, PARKS, WATER COURSES, DRAINS, EASEMENTS, AND PUBLIC PLACES THEREON SHOWN FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED.

WITNESS MY HAND ON THIS THE _____ DAY OF _____ 20__.

OWNER: VICTOR HUGO RESENDEZ AND ROSALINDA RESENDEZ
ADDRESS: 22700 ENGELMAN GARDENS RD., EDCOUCH, HIDALGO COUNTY, TEXAS 78538

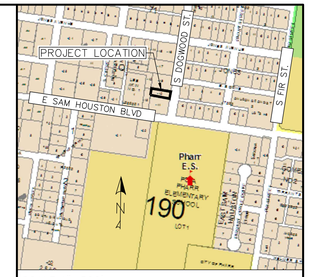
STATE OF TEXAS §
COUNTY OF HIDALGO §

BEFORE ME, THE UNDERSIGNED AUTHORITY, PERSONALLY APPEARED _____, KNOWN TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND HE ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATION THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

WITNESS MY HAND ON THIS THE _____ DAY OF _____ 20__.

NOTARY PUBLIC IN AND FOR HIDALGO COUNTY, TEXAS

PRINTED NAME: _____ MY COMMISSION EXPIRES _____



SCALE: 1"=500'

LOCATION MAP

PREPARED BY: **R. GUTIERREZ ENGINEERING CORP.**
130 E. PARK AVE.
PHARR, TEXAS 78577

DATE PREPARED: **PREPARED**
DATE SURVEYED: **SURVEYED**

CITY OF PHARR PLANNING AND ZONING CERTIFICATION

I, THE UNDERSIGNED, CHAIRMAN OF THE PLANNING AND ZONING COMMISSION OF THE CITY OF PHARR, HEREBY CERTIFY THAT THE SUBDIVISION PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION REGULATIONS OF THIS CITY WHEREBY MY APPROVAL IS REQUIRED.

DANNY WYLIE, CHAIRMAN, PLANNING AND ZONING COMISSION — DATE:

CITY OF PHARR APPROVAL CERTIFICATION

I, THE UNDERSIGNED, MAYOR OF THE CITY OF PHARR, TEXAS, HEREBY CERTIFY THAT THIS SUBDIVISION PLAT CONFORMS TO ALL REQUIREMENTS OF THE SUBDIVISION REGULATIONS OF THE CITY WHEREIN MY APPROVAL IS REQUIRED.

DR. AMBROSIO HERNANDEZ, MAYOR, CITY OF PHARR — DATE:

CITY CLERK — DATE:

HIDALGO COUNTY IRRIGATION DISTRICT No. 2 CERTIFICATION

THIS PLAT IS HEREBY APPROVED BY THE HIDALGO COUNTY IRRIGATION DISTRICT No. 2 ON THIS THE _____ DAY OF _____, 20____.

NO IMPROVEMENTS OF ANY KIND (INCLUDING WITHOUT LIMITATION, TREES, FENCES, AND BUILDINGS) SHALL BE PLACED UPON HIDALGO COUNTY IRRIGATION DISTRICT No. 2 RIGHTS OF WAYS OR EASEMENTS. APPROVAL OF THIS PLAT DOES NOT RELEASE ANY RIGHTS THAT THE DISTRICT MAY HAVE WHETHER SHOWN OR NOT.

PRESIDENT — ATTEST: SECRETARY

ENGINEER CERTIFICATION

I, RAMIRO GUTIERREZ, P.E., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS, HEREBY STATE THAT PROPER ENGINEERING CONSIDERATION HAS BEEN GIVEN TO THIS PLAT.

STATE OF TEXAS — RAMIRO GUTIERREZ — 65948 — REGISTERED PROFESSIONAL ENGINEER

PRELIMINARY-SUBJECT TO REVISION
RAMIRO GUTIERREZ, P.E.
REGISTERED PROFESSIONAL ENGINEER No. 65948
R. GUTIERREZ ENGINEERING CORP.
130 E. PARK
PHARR, TEXAS 78577

SURVEYOR CERTIFICATION

I, PABLO SOTO, JR., A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, HEREBY CERTIFY THAT THIS PLAT IS TRUE AND CORRECTLY MADE AND IS PREPARED FROM AN ACTUAL SURVEY ON THE PROPERTY MADE UNDER MY SUPERVISION ON THE GROUND AND THAT ALL ASPECTS OF IT ARE IN ACCORDANCE WITH HIDALGO COUNTY SUBDIVISION ORDINANCE AND ALL STATE STATUES GOVERNING SURVEYS.

STATE OF TEXAS — PABLO SOTO JR. — 4541 — REGISTERED PROFESSIONAL LAND SURVEYOR

PRELIMINARY-SUBJECT TO REVISION
PABLO SOTO, JR., R.P.L.S. No. 4541
R. GUTIERREZ ENGINEERING CORPORATION
130 E. PARK AVENUE
PHARR, TEXAS 78577

SUBDIVISION PLAT NOTES:

1. FLOOD ZONE STATEMENT:
   FLOOD ZONE DESIGNATION: ZONE "B"
   ZONE "B" AREAS BETWEEN LIMITS OF THE 100-YEAR FLOOD AND 500-YEAR FLOOD; OR CERTAIN AREAS SUBJECT TO 100-YEAR FLOODING WITH AVERAGE DEPTHS LESS THAN ONE (1) FOOT OR WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN ONE SQUARE MILE; OR AREAS PROTECTED BY LEVEES FROM THE BASE FLOOD. COMMUNITY-PANEL NUMBER 4803470005 C, MAP REVISED: OCTOBER 19, 1982.
2. MINIMUM BUILDING SETBACK LINES AS PER THE CITY OF PHARR ORDINANCES.
3. MINIMUM FINISHED FLOOR ELEVATION SHALL BE 18" ABOVE THE CENTER LINE OF STREET AT CENTER OF LOT OR 18" ABOVE NATURAL GROUND, WHICHEVER IS GREATER.
4. BENCHMARK: CITY OF PHARR MONUMENT No. 40 - LOCATED APPROXIMATELY AT SOUTHWEST CORNER OF EAST SAM HOUSTON BLVD. AND S CAGE BLVD. INTERSECTION.
   ELEVATION: 110.72
   N: 16593593.187
   E: 1087438.540
5. STORM WATER RETENTION IS REQUIRED FOR THIS PROPERTY. THE ENGINEER OF RECORD FOR THIS SUBDIVISION PLAT HAS ESTIMATED THAT AN AREA OF APPROXIMATELY 0.20 ACRES AND A VOLUME OF APPROXIMATELY 465 CF (0.011 ACRE-FEET) WILL BE REQUIRED FOR THIS USE. THIS IS AN ESTIMATE ONLY AND A DETAILED ANALYSIS MAY REVEAL DIFFERENT REQUIREMENTS.
6. OWNERS TO MAINTAIN RETENTION AREA. RETENTION AREA SHALL BE STABILIZED WITH SOD OR HYDRO-MULCH.
7. LANDSCAPING REQUIREMENTS AS PER CITY ORDINANCE.
8. ADDITIONAL FIRE PROTECTION MAY BE REQUIRED DURING THE BUILDING PERMIT PHASE IN ORDER TO PROVIDE ANY ADDITIONAL FIRE PROTECTION REQUIREMENT.
9. EROSION & SEDIMENT CONTROL DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM (TPDES).
10. NO STRUCTURE SHALL BE PERMITTED OVER ANY EASEMENTS.
11. ENFORCEMENT OF ALL PLAT NOTES AND DEDICATIONS SHALL BE THE RESPONSIBILITY OF THE AGENCY OR ENTITY TO WHOM THE DEDICATION IS GRANTED.
12. 5 FOOT SIDEWALK SHALL BE REQUIRED ALONG ALL STREETS AT TIME OF BUILDING PERMIT PHASE.
13. OWNERS TO MAINTAIN ROW AND PERIMETER OF SUBDIVISION.

PRINCIPAL CONTACTS

NAME		ADDRESS	PHONE No.
OWNER:	VICTOR HUGO RESENDEZ AND ROSALINDA RESENDEZ	130 E. PARK AVE. PHARR TX. 78577	(956) 778-4371
ENGINEER:	RAMIRO GUTIERREZ, P.E.	130 E. PARK AVE. PHARR TX. 78577	(956) 782-2557
SURVEYOR:	PABLO SOTO, JR., P.E., R.P.L.S.	130 E. PARK AVE. PHARR TX. 78577	(956) 782-2557

R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE PHARR, TEXAS 78577
(TEL) 956 782-2557 (FAX) 956 782-2558
ENGINEERING FIRM No.: 8811 SURVEYING FIRM No.: 101650-00

THE COUNTY OF HIDALGO TEXAS

FILED FOR RECORD IN
HIDALGO COUNTY
ARTURO GUAJARDO, JR.
HIDALGO COUNTY CLERK

ON: _____ AT _____
AM/PM INSTRUMENT
No. _____ OF
THE MAP RECORDS OF HIDALGO
COUNTY, TEXAS
BY: _____
DEPUTY

SUBDIVISION PLAT
OF
ROSALINDA RESENDEZ SUBDIVISION
A 0.20 ACRE TRACT OF LAND OUT OF LOT "Q", ORIGINAL TOWNSITE OF PHARR, HIDALGO COUNTY, TEXAS, AS PER MAP RECORDED IN VOLUME 3, PAGE 32-26, MAP RECORDS OF HIDALGO COUNTY, TEXAS.

P.O.C.
NORTHEAST CORNER OF LOT "Q"
ORIGINAL TOWNSITE OF PHARR
F4

SCALE: 1"=10'

LOT "Q"
ORIGINAL TOWNSITE OF PHARR
VOLUME 3, PAGES 32–36, M.R.H.C., TEXAS

OWNER:
JAIME FLORES AND DALIA FLORES

RAQUEL SUBDIVISION
VOLUME 25, PAGE 163B,
M.R.H.C., TEXAS

OWNER:
ISMAEL RIVAS AND WIFE, BLANCA RIVAS

LOT 1, BLOCK 4
I.H. JONES SUBDIVISION
VOLUME 8, PAGE 21, M.R.H.C., TEXAS

S 08°25'00" W
350.00'

P.O.B.

F4 S81°35'00"E 142.80'

N08°25'00"E
61.50'

S08°25'00"W
61.50'

LOT 1
0.20 AC
8,782.2 SF

EXISTING PAVERS
(TO BE REMOVED)

EXISTING CANOPY
(TO BE REMOVED)

EXISTING BUILDING
(TO BE REMOVED)

EXISTING SHED
(TO BE REMOVED)

EXISTING CANOPY
(TO BE REMOVED)

EXISTING WATER METER
(TO REMAIN)

EXISTING CLEAN OUT
(TO REMAIN)

EXISTING CONCRETE
(TO BE REMOVED)

110.00 110.20 110.16 110.25 110.13 110.25 110.50 110.75 110.04 110.25 110.16 111.00 110.50 110.06 110.16 110.29 110.00

F4 N81°35'00"W 142.80' FX

EXISTING CLEAN OUT
(TO REMAIN)

20' ALLEY

S DOGWOOD ST

EXISTING
CONCRETE

LEE AKIN No.
1 SUBDIVISION
VOLUME 45, PAGE
185, M.R.H.C.,
TEXAS

OWNER:
DIARSP
PROPERTIES,
LTD.

LOT "Q"
ORIGINAL TOWNSITE OF
PHARR
VOLUME 3, PAGES 32–36,
M.R.H.C., TEXAS

OWNER:
MONTOYA GRACIELA

LOT "Q"
ORIGINAL TOWNSITE OF PHARR
VOLUME 3, PAGES 32–36, M.R.H.C., TEXAS

OWNER:
CARLOS GARCIA, JR., AND DELIA D. VALADEZ
WARRANTY DEED WITH VENDOR'S LIEN
VOL. 1831, PG. 427
D.R.H.C., TX.

LOT 10, BLOCK 4
I.H. JONES SUBDIVISION
VOLUME 8, PAGE 21, M.R.H.C., TEXAS

LEGEND

w	CHAIN LINK FENCE
s	DRAINAGE LINE
D	SANITARY SEWER LINE
x	WATER LINE
	CONCRETE
	BUILDING
	PAVERS
	LANDSCAPE VEGETATION
	POWER POLE
W	WATER METER
	MAILBOX
G	GAS METER
	CLEAN OUT
S	SANITARY SEWER MANHOLE
D	STORM SEWER MANHOLE
FX	FOUND "X" MARK ON CONCRETE
F4	FOUND No. 4 REBAR
	BENCHMARK

R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956 782-2557 • (FAX) 956 782-2558
FIRM No. 486

PRELIMINARY–FOR REVIEW ONLY
These documents are for Design Review, were not prepared for Construction, Bidding or Permit Purposes. They were prepared by, or under the supervision of:
RAMIRO GUTIERREZ 65948
Print Name PE# Date

ROSALINDA RESENDEZ SUBDIVISION

TOPOGRAPHY MAP

BY	DATE	REVISION

SCALE: AS SHOWN
DATE:
FB. No.:
SURVEY BY:
DRAWN BY:
PREPARED BY:
CHECKED BY:

SHEET
2

P.O.C.
NORTHEAST CORNER OF LOT "Q"
ORIGINAL TOWNSITE OF PHARR

F4

SCALE: 1"=10'

LOT "Q"
ORIGINAL TOWNSITE OF PHARR
VOLUME 3, PAGES 32–36, M.R.H.C., TEXAS

OWNER:
JAIME FLORES AND DALIA FLORES

RAQUEL SUBDIVISION
VOLUME 25, PAGE 163B,
M.R.H.C., TEXAS

OWNER:
ISMAEL RIVAS AND WIFE, BLANCA RIVAS

LOT 1, BLOCK 4
I.H. JONES SUBDIVISION
VOLUME 8, PAGE 21, M.R.H.C., TEXAS

EXISTING 36" STORM SEWER LINE

EXISTING 4" PVC WATER LINE

EXISTING 6" SANITARY SEWER LINE

EXISTING 4" PVC WATER LINE

EXISTING 6" SANITARY SEWER LINE

EXISTING STORM SEWER MANHOLE

EXISTING SANITARY SEWER MANHOLE

EXISTING CONCRETE

EXISTING 2" AC WATER LINE

EXISTING 6" SANITARY SEWER LINE

20' ALLEY

S DOGWOOD ST

LOT 10, BLOCK 4
I.H. JONES SUBDIVISION
VOLUME 8, PAGE 21, M.R.H.C., TEXAS

PROPOSED 139 LF OF SILT FENCE

PROPOSED 85 LF OF SILT FENCE

PROPOSED RETENTION POND

PROPOSED 139 LF OF SILT FENCE

P.O.B.

S81°35'00"E 142.80'

N81°35'00"W 142.80'

N08°25'00"E 61.50'

S08°25'00"W 61.50'

S 08°25'00" W 350.00'

93.0' 10.0' 29.8'

5.0'

A

A

10.0' DRAINAGE EASEMENT

5.0' CITY OF PHARR EXCLUSIVE EASEMENT

10.0' DRAINAGE EASEMENT

LOT 1
0.20 AC
8,782.2 SF

51.5'

LEE AKIN No. 1 SUBDIVISION
VOLUME 45, PAGE 185, M.R.H.C., TEXAS

OWNER:
DIARSP PROPERTIES, LTD.

LOT "Q"
ORIGINAL TOWNSITE OF PHARR
VOLUME 3, PAGES 32–36, M.R.H.C., TEXAS

OWNER:
MONTOYA GRACIELA

LOT "Q"
ORIGINAL TOWNSITE OF PHARR
VOLUME 3, PAGES 32–36, M.R.H.C., TEXAS

OWNER:
CARLOS GARCIA, JR., AND DELIA D. VALADEZ
WARRANTY DEED WITH VENDOR'S LIEN
VOL. 1831, PG. 427
D.R.H.C., TX.

LEGEND

w	CHAIN LINK FENCE
s	DRAINAGE LINE
D	SANITARY SEWER LINE
x	WATER LINE
	CONCRETE
	LANDSCAPE VEGETATION
	POWER POLE
W	WATER METER
	MAILBOX
G	GAS METER
C O	CLEAN OUT
S	SANITARY SEWER MANHOLE
D	STORM SEWER MANHOLE
FX	FOUND "X" MARK ON CONCRETE
F4	FOUND No. 4 REBAR
	BENCHMARK

10.0' DRAINAGE ESMT.
5.0' 5.0'
2.5' 2.5'
PROPERTY LINE
3:1 3:1
10"
SECTION A–A

R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956 782-2557 • (FAX) 956 782-2558
FIRM No. 486

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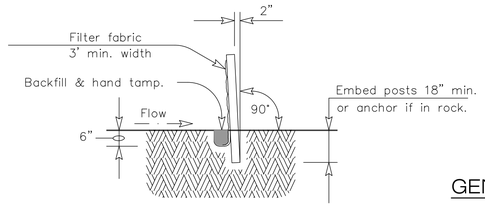
RAMIRO GUTIERREZ 65948 Date
Print Name PE#

ROSALINDA RESENDEZ SUBDIVISION
UTILITY LAYOUT

	BY	DATE	REVISION

SCALE: AS SHOWN
DATE:
FB. No.:
SURVEY BY:
DRAWN BY:
PREPARED BY:
CHECKED BY:

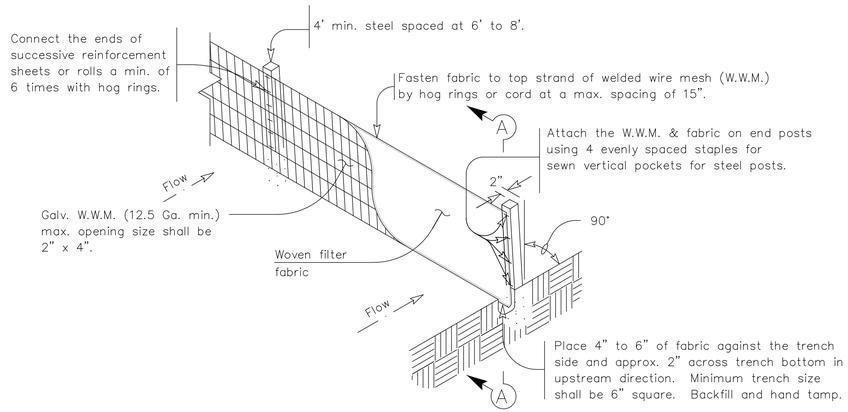
SHEET
3



SECTION A-A

GENERAL NOTES

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



TEMPORARY SEDIMENT CONTROL FENCE

SCF

NOTE: CONTRACTOR SHALL CONSTRUCT AND MAINTAIN BERM AROUND THE PROPERTY TO KEEP WATER FROM FLOWING OFF PROJECT SITE. CONSTRUCTION OF THE BERM TO BE DONE AT THE BEGINNING OF THE PROJECT.

R. Gutierrez Engineering Corporation
Professional Engineers & Land Surveyors
130 E. PARK AVENUE • PHARR, TEXAS 78577
(TEL) 956 782-2557 • (FAX) 956 782-2558
FIRM No. 486

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RAMIRO GUTIERREZ 65948
Print Name PE # Date

ROSALINDA RESENDEZ SUBDIVISION

MISCELLANEOUS DETAILS

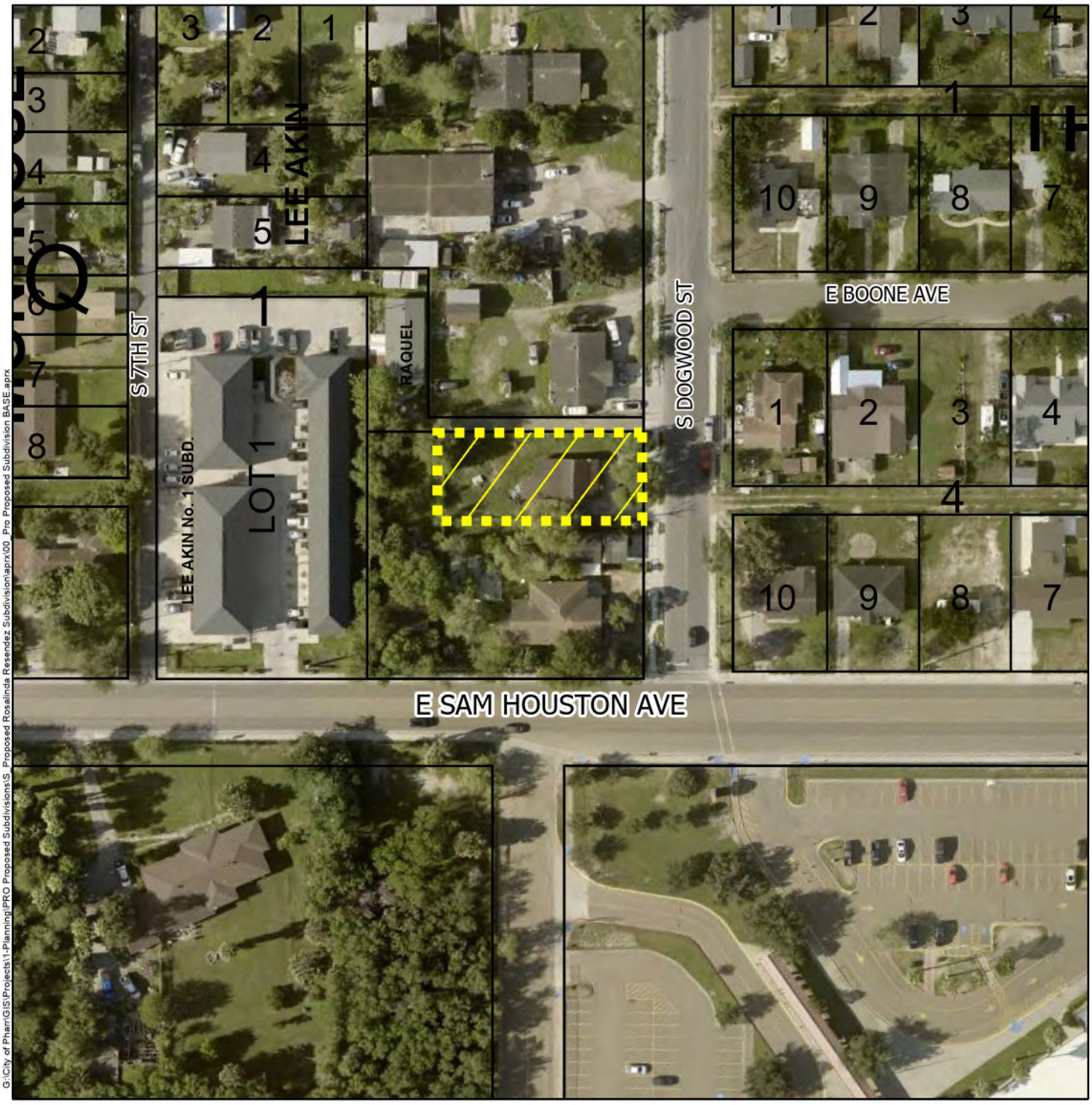
BY	DATE	REVISION

SCALE: AS SHOWN
DATE:
FB. No.:
SURVEY BY:
DRAWN BY:
PREPARED BY:
CHECKED BY:

SHEET
4

Proposed Subdivision Rosalinda Resendez Subdivision

AERIAL



G:\City of Pharr\GIS\Projects\1-Planning\PRO Proposed Subdivisions\S_Proposed Rosalinda Resendez Subdivision\aprx\00_Pro Proposed Subdivision BASE.aprx

Subject Property

Pharr City Limit

City of Pharr, Texas
Engineering Department
956.702.5355

Scale: 1:1,200

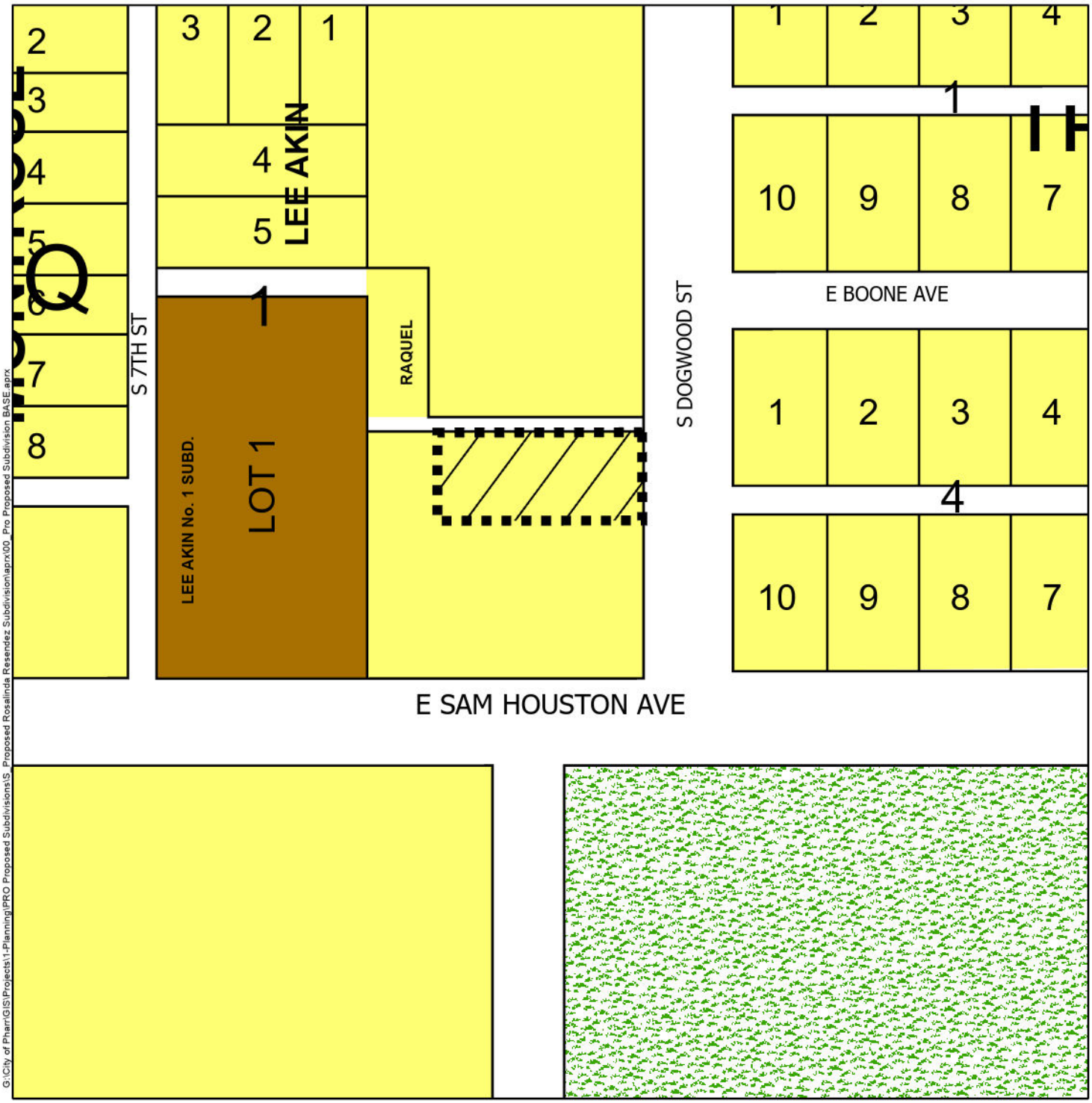
0 50 100 200 300 400 Feet

N W E S

Date: 6/9/2026

Proposed Subdivision Rosalinda Resendez Subdivision

ZONING



- Subject Property
- Pharr City Limit
- Agricultural Open Space
- Single Family
- Single Family Small Lot
- Residential Multi-Family
- Residential Multi-Family High Density
- Mobile Home
- Townhouse
- HUD Code
- Rail Road R.O.W
- Government Owned
- General Business
- Business District
- Drainage Easement
- Heavy Commercial
- Heavy Industrial
- Limited Industrial
- Neighborhood Commercial
- Office Professional
- PSJA ISD
- Hidalgo ISD
- Valley View ISD
- Planned Unit Development

Scale: 1:1,200

0 50 100 200 300 400 Feet

N W E S

City of Pharr, Texas
Engineering Department
956.702.5355

Date: 6/9/2026

Pharr
Development Services

Site Photo

700 Block of S. Dogwood St.

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 6.A.
DATE SUBMITTED: August 10, 2026
MEETING DATE: August 17, 2026

FROM: Jose Pena, IT Director

DEPARTMENT: IT

DIRECTOR: Jose Pena

Agenda Item: Consideration and action, if any, on Ordinance amending Ordinance No. O-2024-37 Municipal Fiber Optic Fee Schedule ***(1st Reading)***. **This item supports SG - Sound Governance and Fiscal Sustainability.**

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Fee ordinance is being amended to include the new battery backup and engineering design fees.

Fiscal Consideration: NA

Staff Recommendation: Staff recommends approval.

Alternatives: NA

Exclude Material from Public Packet? No
Reason: NA

ROUTING:

Jose Pena	Created/Initiated - 08/10/2026
Rogelio Jr. Martinez	Approved - 08/10/2026
Hilda Pedraza	Approved - 08/11/2026
Ricardo Rodriguez	Approved - 08/12/2026
Jamison Merrick	New -
City Management Office	-

ORDINANCE NO. O-2026-___

AN ORDINANCE AMENDING ORDINANCES O-2024-37 AND O-2022-36 AMENDING THE MUNICIPAL FIBER OPTIC SERVICE FEE SCHEDULE, PROVIDING FOR REPEALING OF CONFLICTING ORDINANCE(S) CLAUSE, AND PROVIDING FOR AN EFFECTIVE DATE

WHEREAS, the Board of Commissioners of the City of Pharr desire to provide reliable, high-speed internet to the residents and businesses of Pharr, for the benefit and growth of economic and community goals; and

WHEREAS, the Board of Commissioners find that providing fiber-optic services will provide reliable, high-speed internet serves a public purpose; and

WHEREAS, the Board of Commissioners has approved a municipally owned fiber-optic broadband network to provide fast and reliable internet service to residential and commercial customers; and

WHEREAS, a community survey was conducted for residents and businesses to determine the appropriate monthly service rates; and

WHEREAS, home-ruled cities may take actions authorized by the City charter and not specifically prohibited or preempted by the Texas Constitution, state, or federal law; and

WHEREAS, Cities may regulate a range of local services to promote the general welfare of the City's residents; and

WHEREAS, the City, as a home-rule municipality, can provide a service and charge a user fee for its use; and

WHEREAS, the Board of Commissioners seeks to establish user fees for the cost of providing the services; and

WHEREAS, the City has adopted a schedule of fees, charges, expenses and a collection procedure for municipal fiber optic services and other such matters pertaining to this ordinance; and

WHEREAS, all existing and prior ordinances are hereby amended and reinstated to read as follows:

NOW, THEREFORE BE IT ORDAINED BY THE BOARD OF COMMISSIONERS OF THE CITY OF PHARR, THAT:

SECTION 1: Ordinance No. 2026-____is hereby adopted.

SECTION 2. RATES AND FEES.

A. FIBER OPTIC MONTHLY SERVICE RATES

1. Residential Monthly Rates

Residential	Speed	Monthly Rate
Blue Plan	500 Mbps	$25.00
Gold Plan	1 Gbps	$50.00
Platinum Plan	2 Gbps	$80.00

2. **Small Business Commercial Monthly Rates –** shall apply to small and medium sized businesses requiring a wireless modem.

Small Business	Speed	Monthly Rate
Silver Plan	300 Mpps	$70.00
Blue Plan	500 Mbps	$100.00
Gold Plan	1 Gbps	$150.00
Platinum Plan	2 Gbps	$200.00

3. **Enterprise Commercial Monthly Rates –** shall apply to businesses that require dedicated fiber connection.

Enterprise	Speed (Mbps)	Monthly Rate
Green Plan	300 Mbps	$750.00
Blue Plan	500 Mbps	$1,000.00
Gold Plan	1 Gbps	$1,500.00
Enterprise 2 G	2 Gbps	$2,000.00
Enterprise 5 G	5 Gbps	$3,000.00
Enterprise 10 G	10 Gbps	$4,000.00

B. FIRST MONTH SERVICE FEE

The initial monthly statement will reflect a prorated service charge calculated from the date of installation through the end of the current billing month, in addition to the full-service fee for the subsequent month.

C. MISCELLANEOUS FEES

Type	Fee
SmartBiz Business Application	$10.00/month
Bark Parental Controls	$12.00/month
No Premise Access	$25.00
Missed Appointment	$25.00
Reconnection	$25.00
Upgraded Wireless Access Point	$5.00/month
Wireless Mesh Device	$5.00/device/month

Outdoor Wireless Mesh Device	$10.00/device/month
Battery Backup	$5.00/month for Residential Blue Plan subscribers
Engineering Design Services	Fee and ETA
Small – Design under 2,999 linear feet	$1,000 – 3 to 5 business days
Medium – Design between 3,000 to 9,999 linear feet	$3,000 – 6 to 10 business days
Large – Design over 10,000 linear feet	$5,000 – 10 to 15 business days
Expedited Design	Double Standard Fee, half the time
Equipment Fees if not returned	
UPS battery backup	$65.00
Fiber ONT	$120.00
Standard Wifi Access Point	$100.00
Upgraded Wifi Access Point	$165.00
Wireless Mesh Device	$100.00
Outdoor Wireless Mesh Device	$220.00
Static IP Addresses	
One-time Setup	$50.00
SmartPak 1 (1 useable)	$5.00
SmartPak 2 (5 useable)	$25.00
SmartPak 3 (13 useable)	$65.00
SmartPak 4 (29 useable)	$145.00

(*Note) – Standard modem is included at no charge.

SECTION 3: REPEALING CLAUSE.

All ordinances or parts of ordinances or conflict with this ordinance are hereby repealed.

SECTION 4: SEVERABILITY CLAUSE.

The invalidity of any section, clause, sentence, or provision of this ordinance shall not affect the validity of any other part thereof.

SECTION 5: EFFECTIVE DATE; PUBLICATION.

The Ordinance shall take effect and be in force from and after its passage and approval on three (3) separate readings in accordance with Section 8, Article 3 of the Charter of the City of Pharr, Texas. Publication, if necessary, may also be in caption form as allowed under Section 9 of the Pharr City Charter.

SECTION 6: PROPER NOTICE AND MEETING.

It is hereby officially found and determined that the meeting at which this Ordinance was passed was open to the public and that public notice of the time, place and purpose of said meeting was given as required by the Open Meetings Act, Chapter 551 of the Texas Government Code.

PASSED AND APPROVED ON THE FIRST READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the ____ day of September 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

PASSED AND APPROVED ON THE SECOND READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the _____ day of September, 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEEREZ, CITY CLERK

PASSED AND APPROVED ON THE THIRD AND FINAL READING BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the __day of September, 2026.

CITY OF PHARR

_____
AMBROSIO HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 6.B.
DATE SUBMITTED: August 4, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: HR

DIRECTOR: Laura Parra

Agenda Item: Consideration and action, if any, on Resolution adopting the City of Pharr Title VI Program and authorizing its implementation. **This item supports SG - Sound Governance and Fiscal Sustainability.**

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue:

Request approval of the City of Pharr Title VI/Nondiscrimination Plan as required by the Federal Highway Administration (FHWA), the Texas Department of Transportation (TxDOT), and Title VI of the Civil Rights Act of 1964.**This item supports SG - Sound Governance and Fiscal Sustainability.**

Fiscal Consideration:

There is no direct fiscal impact associated with adoption of this plan. Existing City staff will administer the program as part of ongoing compliance res**This item supports SG - Sound Governance and Fiscal Sustainability.**ponsibilities.

Staff Recommendation: approval**This item supports SG - Sound Governance and Fiscal Sustainability.**

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Alessandra Garcia	Created/Initiated - 08/04/2026
Laura Parra	Approved - 08/06/2026
Ricardo Rodriguez	Approved - 08/06/2026
City Management Office	New -

Title VI Plan

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Introduction

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in any program or activity receiving federal financial assistance. Several other federal legal authorities supplement Title VI by extending protections based on age, sex, and disability. In addition, the Civil Rights Restoration Act of 1987 clarified Title VI enforcement by mandating that Title VI requirements apply to *all* programs and activities of federal-aid recipients regardless of whether any particular program or activity involves federal funds. Taken together, these laws require recipients and subrecipients of federal funds to ensure all programs and services are delivered to the public without discrimination.

City of Pharr, Texas, as a recipient of federal financial assistance, will ensure full compliance with Title VI of the Civil Rights Act of 1964; 49 C.F.R. Part 21 (Department of Transportation Regulations for the Implementation of Title VI of the Civil Rights Act of 1964); 49 C.F.R. Part 21; and related statutes and regulations. City of Pharr, Texas acknowledges it is subject to and will comply with Federal Highway Administration Title VI Assurances.

This plan explains how City of Pharr, Texas incorporates the requirements of Title VI and related legal authorities into its operations. The plan will be used as a reference for City of Pharr, Texas and an informational resource for the public. The plan will be updated every 3 years to reflect changes in Title VI compliance operations.

Discrimination under Title VI

It is the responsibility of every City of Pharr, Texas employee to prevent, minimize, and eradicate any form of discrimination. There are two types of discrimination prohibited under Title VI and its related statutes: (1) disparate treatment that alleges similarly situated persons are treated differently because of their race, color, or national origin (*i.e.*, intentional discrimination); and (2) disparate impact/effects when a facially neutral policy, procedure, or practice results in different or inferior services or benefits to members of a protected group. The focus of disparate impact is on the consequences of a decision, policy, or practice rather than the intent.

Prohibited forms of discrimination may include, but not be limited to, the following:

- The denial of services, financial aid, or other benefits provided under a program;
- Distinctions in the quality, quantity, or manner in which a benefit is provided;
- Segregation or separation of persons in any part of the program;
- Restriction in the enjoyment of any advantages, privileges, or other benefits provided to others;
- Differing standards or requirements for participation;
- Methods of administration that directly or indirectly, or through contractual relationships would defeat or impair the accomplishment of effective nondiscrimination; or
- Discrimination in any activities or services related to a highway, infrastructure or facility built or repaired in whole or in part with federal funds.

City of Pharr, Texas, efforts to prevent such discrimination must address, but not be limited to, how a program or activity:

- Impacts the public;
- Provides accessibility;
- Provides equal access to benefits;
- Encourages participation;
- Provides services equitably;
- Initiates contracting and training opportunities;
- Investigates complaints;
- Allocates funding; and
- Prioritizes projects.

Authorities

The authorities applicable to City of Pharr, Texas Title VI/Nondiscrimination Program include:

- **Title VI of the Civil Rights Act of 1964** (42 U.S.C. §2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- **49 CFR Part 21** (entitled *Nondiscrimination in Federally-Assisted Programs of the Department of Transportation-Effectuation of Title VI of The Civil Rights Act of 1964*);
- **23 CFR Part 200** (FHWA's Title VI/Nondiscrimination Regulation);
- **28 CFR Part 50.3** (U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964); and,
- **Texas Administrative Code** §9.4, Civil Rights – Title VI Compliance Title VI Policy Statement

It is the policy of City of Pharr, Texas that no person shall on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination in any operation of City of Pharr, Texas as provided by Title VI of the Civil Rights Act of 1964 and related statutes.

This policy applies to all operations of City of Pharr, Texas, including its contractors and anyone who acts on behalf of City of Pharr, Texas. This policy also applies to the operations of any department or agency to which City of Pharr, Texas extends federal financial assistance. Federal financial assistance includes grants, training, use of equipment, donations of surplus property, and other assistance.

The nondiscrimination statement signed by City of Pharr, Texas City Manager Dr. Jonathan Flores, is included as **Attachment 1**.

Standard DOT Assurances

The U.S. DOT requires that federal financial assistance be provided on the condition that the recipient provides an assurance that its programs and activities will be conducted in compliance with Title VI of the Civil Rights Act of 1964. The requirement is located at 49 CFR 21.7(a). To support the implementation of this requirement, the U.S. DOT provided an assurances agreement in U.S. DOT Order 1050.2A that federal fund recipients and subrecipients must sign as a condition of receiving federal financial assistance.

The assurances agreement provides specific non-discrimination language, City of Pharr, Texas, is required to include in bid solicitations or requests for proposal, contracts, and real estate agreements. City of Pharr, Texas is committed to ensuring the necessary language is used as prescribed in the assurances
agreement.

In accordance with this requirement, City of Pharr, Texas has signed the U.S. DOT Standard Title VI/Non-Discrimination Assurances and Appendices. The documents are attached as **Attachment 2 and Attachment 3.**

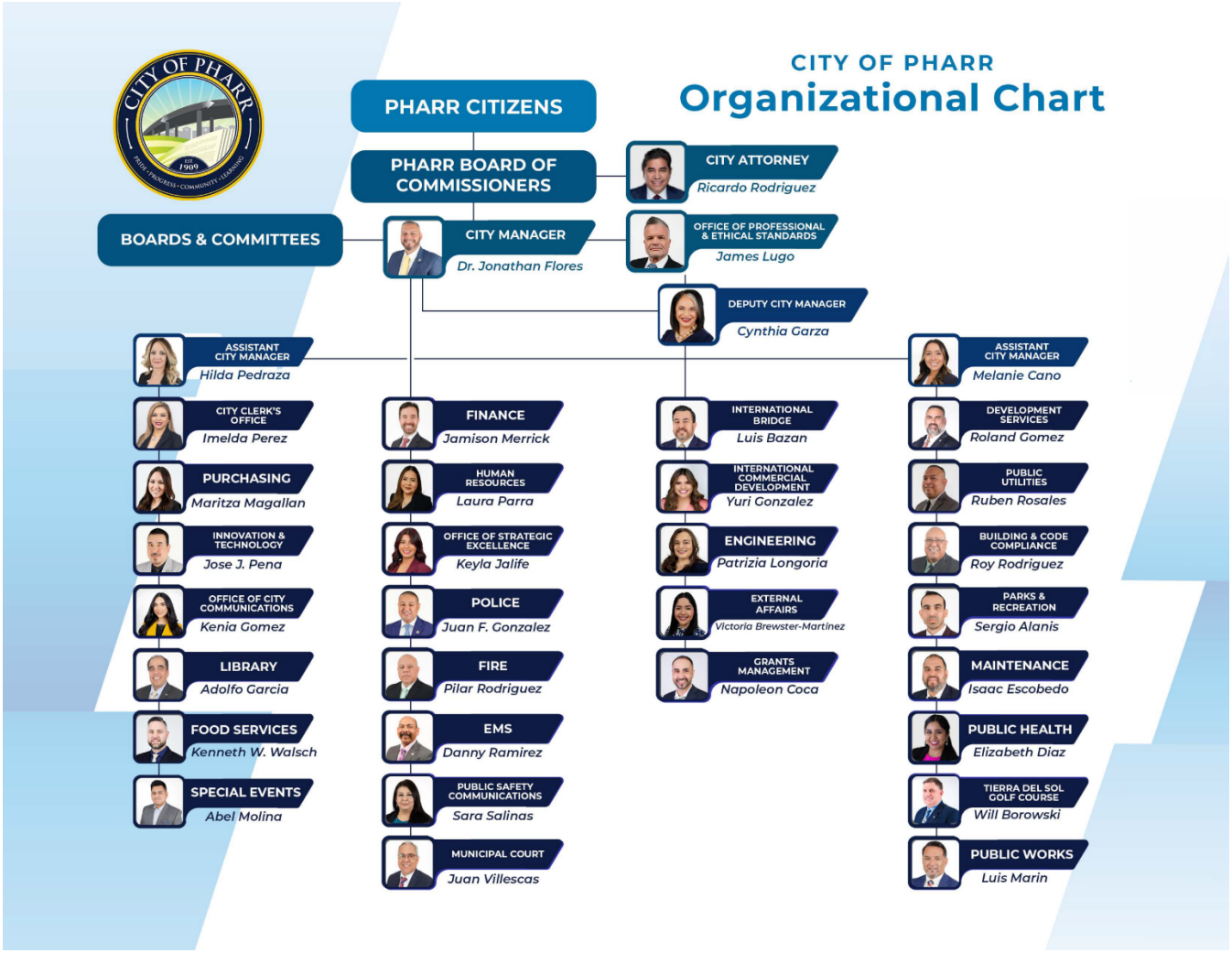
Organization and Staffing

City Manager Dr. Jonathan Flores is ultimately responsible for assuring full compliance with the provisions of Title VI of the Civil Rights Act of 1964 and related statutes and has directed that non-discrimination is required of all agency employees, contractors, and agents pursuant to 23 C.F.R. Part 200 and 49 C.F.R. Part 21.

City of Pharr, Texas has assigned Laura Parra, Human Resources Director, to perform the duties of the Title VI Coordinator and ensure implementation of the agency's Title VI program. The position of Human Resources Director is located within Human Resources.

The Title VI Coordinator is responsible for:

- Maintaining and updating the Title VI plan on the agency's behalf;
- Ensuring relevant agency staff receive necessary Title VI training;
- Ensuring prompt processing of Title VI complaints and referral to Texas Department of Transportation;
- Developing procedures for the collection and analysis of statistical data;
- Developing a program to conduct Title VI reviews of program areas; and
- Developing Title VI information for dissemination internally and externally;


CITY OF PHARR
Organizational Chart
PHARR CITIZENS
PHARR BOARD OF COMMISSIONERS
BOARDS & COMMITTEES
CITY ATTORNEY
Ricardo Rodriguez
CITY MANAGER
Dr. Jonathan Flores
OFFICE OF PROFESSIONAL & ETHICAL STANDARDS
James Lugo
DEPUTY CITY MANAGER
Cynthia Garza
ASSISTANT CITY MANAGER
Hilda Pedraza
CITY CLERK'S OFFICE
Imelda Perez
PURCHASING
Maritza Magallan
INNOVATION & TECHNOLOGY
Jose J. Pena
OFFICE OF CITY COMMUNICATIONS
Kenia Gomez
LIBRARY
Adolfo Garcia
FOOD SERVICES
Kenneth W. Walsch
SPECIAL EVENTS
Abel Molina
FINANCE
Jamison Merrick
HUMAN RESOURCES
Laura Parra
OFFICE OF STRATEGIC EXCELLENCE
Keyla Jalife
POLICE
Juan F. Gonzalez
FIRE
Pilar Rodriguez
EMS
Danny Ramirez
PUBLIC SAFETY COMMUNICATIONS
Sara Salinas
MUNICIPAL COURT
Juan Villescas
INTERNATIONAL BRIDGE
Luis Bazan
INTERNATIONAL COMMERCIAL DEVELOPMENT
Yuri Gonzalez
ENGINEERING
Patrizia Longoria
EXTERNAL AFFAIRS
Victoria Brewster-Martinez
GRANTS MANAGEMENT
Napoleon Coca
ASSISTANT CITY MANAGER
Melanie Cano
DEVELOPMENT SERVICES
Roland Gomez
PUBLIC UTILITIES
Ruben Rosales
BUILDING & CODE COMPLIANCE
Roy Rodriguez
PARKS & RECREATION
Sergio Alanis
MAINTENANCE
Isaac Escobedo
PUBLIC HEALTH
Elizabeth Diaz
TIERRA DEL SOL GOLF COURSE
Will Borowski
PUBLIC WORKS
Luis Marin

Primary Program Area Descriptions & Review Procedures

The City of Pharr, Texas engages in the following program areas:

Program Area and General Description	Title VI/Non-Discrimination Concerns and Responsibilities	Review Procedures for Ensuring Non-Discrimination
Right of Way: Issues public right of way permits for construction, transportation, business, and other activities. Coordinates relocation of citizens whose property has been acquired for a right of way.	Public right of way permits and relocations should not create unfair burdens. Collecting demographic data from property owners who may be subject to right of way activities. Ensuring property owners impacted by right of way activities are made aware of their right to be free from discrimination on the basis of race, color, or national origin under Title IV of the Civil Rights Act of 1964.	Reviewing permits and relocations to ensure nondiscrimination. Ensure demographic data is part of necessary right of way templates or forms. Ensure Title IV notice is consistently provided to property owners impacted by right of way activities.
Contracting: Develops and manages contracts and contracting opportunities, including specifications, bidding process, and contract execution.	Maintaining an open and fair bidding process for all contracts. Ensure Title VI Assurances appendices are included in contracts as specified within the assurances document.	Reviewing contracts for necessary Title VI language. Reviewing any available data on contract recipients to ensure nondiscrimination in contracting. Reviewing bidding procedures to ensure nondiscrimination and equal opportunity.
Planning: Short-term and long-term planning of transportation projects	Ensuring comprehensive public participation to ensure all stakeholders have a chance to voice their opinions. Collecting demographic data from public engagement activities regarding demographics of public participants. Providing language access as needed.	Review planning decisions to ensure nondiscrimination. Reviewing public engagement activities periodically to determine whether engagement opportunities were offered to all communities. Documenting language access requests.
Public Engagement: Coordinates public engagement activities for planning and project development, as well as relationship-building engagement activities.	Comprehensive public participation to ensure all stakeholders have an opportunity to voice their opinions. Collecting demographic data from public engagement activities regarding demographics of public participants. Providing language access as needed. Disseminating Title VI information to the public to ensure they are aware	Reviewing public engagement activities periodically to determine whether engagement opportunities were offered to all communities. Reviewing public engagement activities periodically to determine whether engagement opportunities were offered to all communities. Documenting language access requests.

	of their rights to be free from discrimination.	
Maintenance: Services roadways and right of ways, including, but not limited to, providing: Repair Signage Drainage Snow and ice removal	Ensuring no communities are subject to a disparate lack of maintenance services based on a protected class.	Reviewing resources provided to the community and determining whether any protected class communities have disproportionately benefited or been harmed by the delivery of maintenance services.

Data Collection and Analysis

Program Area	Type of Data Collected & Process for Collecting	Purpose for Collecting the Data)
Right of Way	Collecting demographic data from property owners who may be subject to right of way activities by including inputs for demographic data on the field title report form.	Ensuring right of way activities do not disproportionately affect individuals or groups based on a protected class status.
Contracting	Identifying contractors who are a: Disadvantaged Business Enterprise (DBE) Historically Underutilized Business (HUB) Small Business Enterprise (SBE)	Ensuring equal opportunity in contracting to all individuals and groups.
Planning	Reviewing data from the U.S. Census Bureau and other credible sources to determine demographic make-up of the local community.	Ensuring project impacts do not disproportionately impact any individuals or groups based on a protected class status.
Public Engagement	Reviewing data from the U.S. Census Bureau and other credible sources to determine demographic make-up of the local community. Providing demographic questionnaires to public engagement participants and including demographic questions in public surveys.	Ensuring communications and interactions with the public sufficiently reach all local demographics.
Maintenance	Reviewing maintenance activities by geography and demographic makeup of communities receiving the maintenance services	Ensuring no communities are subject to a disparate lack of maintenance services based on a protected class.

Potential sources of data and analysis tools include:

- Census Data
- American Community Survey
- School Districts
- Forms or Surveys from the public
- Field Observations

Title VI Complaint Procedures

Scope of Title VI Complaints

No person or groups of persons shall, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any and all programs, services, or activities administered by City of Pharr, Texas, and its contractors on the grounds of race, color, or national

origin. The scope of Title VI covers all internal and external activities of City of Pharr, Texas.

The following types of actions are prohibited under Title VI protections (See 49 C.F.R. 21.5):

- Excluding individuals or groups from participation in programs or activities
- Denying program services or benefits to individuals or groups Providing a different service or benefit or providing them in a manner different from what is provided to others
- Denying an opportunity to participate as a member of a planning, advisory or similar body that is an integral part of the program
- Retaliation for making a complaint or otherwise participating in any manner in an investigation or proceeding related to Title VI of the Civil Rights Act of 1964

How to File a Formal Title VI Complaint

Any person(s) or organization(s) believing they have been discriminated against on the basis of the protected classes stated above by City of Pharr, Texas or its contractors may file a Title VI complaint.

Discrimination complaints **must be received no more than 180 days after the alleged incident** unless the time for filing is extended by the processing agency.

Complaints should be in writing and signed and may be filed by mail, fax, in person, or e-mail. A complaint should contain the following information:

- A written explanation of the alleged discriminatory actions;
- The complainant's contact information, including, if available: full name, postal address, phone number, and email address;
- The basis of the complaint (e.g., race, color, national origin, etc.);
- The names of specific persons and respondents (e.g., agencies/organizations) alleged to have discriminated;
- Sufficient information to understand the facts that led the complainant to believe that discrimination occurred in a program or activity that receives Federal financial assistance; and
- The date(s) of the alleged discriminatory act(s) and whether the alleged discrimination is on-going.

Complainants are encouraged to submit complaints directly to the Texas Department of Transportation (TxDOT).

Complaints can also be filed by completing and submitting City of Pharr, Texas's Title VI Complaint Form available at https://pharr-tx.gov/government/departments/human-resources/ or by sending an email or letter with the necessary information to:

City of Pharr, Texas

Mailing Address: *118 S. Cage Blvd., Pharr, TX 78577*

Email*: INSERT EMAIL ADDRESS*

Phone: *956-402-2600*

If necessary, the complainant may call the phone number above and provide the allegations by telephone. The Title VI Coordinator will transcribe the allegations of the complaint as provided over the telephone and send a written complaint to the complainant for correction and signature.

Complaints can also be filed directly with the following agencies:

Federal Highway Administration
U.S. Department of Transportation Office of Civil Rights
HCR-20, Room E81-320
1200 New Jersey Avenue, SE
Washington, DC 20590
Email: CivilRights.FHWA@dot.gov

Texas Department of Transportation
Civil Rights Division
Attn: Title VI Program Manager
125 E. 11th Street Austin, Texas 78701

After submitting a complaint, the complainant will receive correspondence informing them of the status of the complaint within ten (10) business days from City of Pharr, Texas or other agency receiving the complaint.

Complaints received by City of Pharr, Texas Title VI Coordinator are forwarded to the TxDOT Office of Civil Rights (OCR). TxDOT OCR will forward the complaint to the FHWA Texas Division Office, along with a preliminary processing recommendation. The FHWA Texas Division Office will forward the complaint to FHWA Headquarters Office of Civil Rights (HCR).

FHWA HCR is responsible for all determinations regarding whether to accept, dismiss, or transfer Title VI complaints. There are four potential outcomes for processing complaints:

- **Accept**: if a complaint is timely filed, contains sufficient information to support a claim under Title VI, and concerns matters under the FHWA's jurisdiction, then HCR will send to the complainant, the respondent agency, and the FHWA Texas Division Office a written notice that it has accepted the complaint for investigation.
- **Preliminary review:** if it is unclear whether the complaint allegations are sufficient to support a claim under Title VI, then HCR may (1) dismiss it or (2) engage in a preliminary review to acquire additional information from the complainant and/or respondent before deciding whether to accept, dismiss, or refer the complaint.
- **Procedural Dismissal:** if a complaint is not timely filed, is not in writing and signed, or

features other procedural/practical defects, then HCR will send the complainant, respondent, and FHWA Texas Division Office a written notice that it is dismissing the complaint.

- **Referral\Dismissal:** if the complaint is procedurally sufficient but FHWA (1) lacks jurisdiction over the subject matter or (2) lacks jurisdiction over the respondent entity, then HCR will either dismiss the complaint or refer it to another agency that does have jurisdiction. If HCR dismisses the complaint, it will send the complainant, respondent, and FHWA Division Office a copy of the written dismissal notice. For referrals, FHWA will send a written referral notice with a copy of the complaint to the proper Federal agency and a copy to the USDOT Departmental Office of Civil Rights.

Complaints are not investigated by City of Pharr, Texas. FHWA HCR is responsible for investigating all complaints. FHWA HCR may also delegate the investigation to TxDOT OCR, who would then conduct all data requests, interviews, and analysis and create a Report of Investigation (ROI). TxDOT OCR will have sixty (60) business days from the date the investigation is delegated to prepare the ROI and send it to HCR. HCR will review the ROI and compose a Letter of Finding based on the ROI.

For further information about the FHWA investigation process and potential complaint outcomes, please visit the Questions and Answers for Complaints Alleging Violations of Title VI of the Civil Rights Act of 1964.

Complaint Log

City of Pharr, Texas maintains a complaint log to document all activity related to the complaint. Information captured includes:

- Complainant's name, and if provided, race, color, and national origin;
- Respondent's name;
- Basis(es) of the discrimination complaint;
- Allegation(s)/Issue(s) surrounding the discrimination complaint;
- Date the discrimination complaint was filed; Date the investigation was complete;
- Disposition;
- Disposition date; and
- Other pertinent information.

Notice of Rights

In accordance with 23 CFR 200.9(a)(12), City of Pharr, Texas is required to develop Title VI information for dissemination to the general public and, where appropriate, in languages other than English. Notice of City of Pharr, Texas Title VI policies and procedures are listed in many places such as Public Notice Board outside of City Hall, Public Notice Board inside lobby of City Hall, and City of Pharr, Texas website.

Notification to Beneficiaries

City of Pharr, Texas website is continuously updated to ensure Title VI information is readily accessible to the public. The website informs the public of their rights under Title VI and provides information on how to file a complaint. Title VI information available on City of Pharr, Texas Website includes:

- City of Pharr, Texas Title VI/Nondiscrimination Plan
- Title VI and Related Statutes Nondiscrimination Statement (English and Spanish)
- Title VI Nondiscrimination Assurances
- TxDOT's External Discrimination Complaint Form (English and Spanish)
- Title VI Poster
- City of Pharr, Texas Language Assistance Plan

Public Involvement

It is the goal of City of Pharr, Texas to provide continuous, effective and transparent access to all stakeholders. City of Pharr, Texas strives to inform all stakeholders about proposed plans and projects and seeks input when appropriate. City of Pharr, Texas utilizes the following methods to communicate information regarding upcoming activities and opportunities for public and stakeholder participation in the planning process:

- NEWSLETTER/MAILINGS
- EMAIL BLASTS
- ONLINE ENGAGEMENT PLATFORMS
- MEDIA RELEASES
- NOTICES PUBLISHED IN THE TEXAS REGISTER
- VISUALIZATION PRESENTATIONS/TECHNIQUES
- LOCAL COMMUNITY PUBLIC MEETINGS
- STATEWIDE PUBLIC HEARINGS
- CITY OF PHARR, TEXAS WEB SITE

Traditionally underserved communities can find it more difficult to engage with decision making entities due to scheduling conflicts, lack of transportation to public involvement events, language barriers, lack of childcare, etc. Genuine public involvement takes place at all levels and so City of Pharr, Texas aims to identify communities that may be affected by a project in order to plan appropriately
and effectively for the potentially impacted groups. Sources of data used were listed above in the Data Gathering section. City of Pharr, Texas specifically uses the following sources to identify minority and populations with limited English proficiency.

- US CENSUS TABLE P9 – HISPANIC OR LATINO AND NOT HISPANIC OR LATINO BY RACE
- ACS TABLE B16001 – LANGAUGE SPOKEN AT HOME BY ABILITY TO SPEAK ENGLISH FOR THE POPULATION 5 YEARS AND OVER

City of Pharr, Texas will use the following techniques to ensure that all members of the community have the opportunity to participate in the decision-making process:

- HOLDING MEETINGS AT DIFFERENT TIMES OR ON THE WEEKEND
- HOLDING MEETINGS AT LOCATIONS IN NEIGHBORHOOD LIKE SCHOOLS OR PARKS
- PROVIDING VIRTUAL OPTIONS
- TRANSLATING DOCUMENTS INTO LANGUAGES OTHER THAN ENGLISH
- PROVIDING CHILD CARE AT MEETINGS
- HOLDING EVENTS ACCESSIBLE BY PUBLIC TRANSPORTATION

Language Assistance and Limited English Proficiency

Individuals with Limited English Proficiency (LEP) are those who do not speak English as their primary language and have a limited ability to read, write, speak, or understand English as a result of their national origin. Under Title VI, these individuals may be entitled to language assistance with respect to a particular type of service, benefit, or encounter.

Per USDOT LEP guidance, as outlined on FHWA's Civil Rights website, recipients of federal funds are required to take reasonable steps to ensure meaningful access to their programs and activities by LEP persons. While designed to be a flexible and fact-dependent standard, the starting point is an individualized assessment that balances the following four factors.

Four-Factor Analysis
Factor 1: Number or Proportion of LEP Persons Eligible to Be Served or Likely to Be Encountered

The City of Pharr, Texas, is located in Hidalgo County and serves a diverse population with a significant number of residents whose primary language is Spanish. According to recent U.S. Census Bureau and American Community Survey (ACS) estimates, Pharr has a population exceeding 79,000 residents, with approximately 90 percent identifying as Hispanic or Latino.

Because of the City's demographic composition, Spanish is the predominant language spoken other than English. A substantial portion of residents age five and older speak Spanish at home, and many report speaking English less than "very well." As a result, Spanish-speaking individuals represent the largest LEP population likely to interact with City programs, services, public meetings, transportation projects, public notices, and community outreach activities.

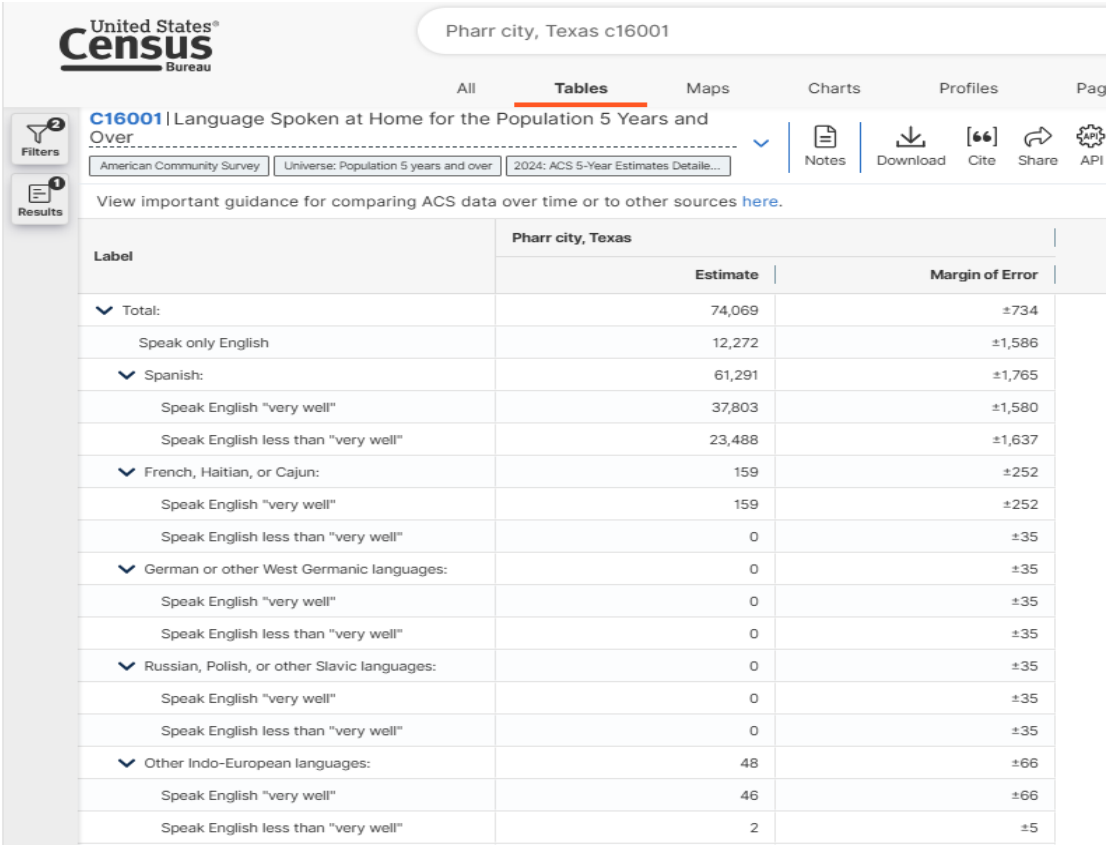
The City recognizes that language barriers may limit access to government services and public participation opportunities. Therefore, the City routinely evaluates the need for language assistance and strives to provide meaningful access to individuals with Limited English Proficiency.

Based on available demographic information, the primary language groups encountered within the City include:

Language	Estimated Prevalence
Spanish	Predominant LEP Language
English	Primary Language
Other Languages	Minimal Representation

Given the high concentration of Spanish-speaking residents, the City of Pharr considers Spanish translation and interpretation services to be essential components of its Title VI compliance efforts.

The City will periodically review updated Census and ACS data to monitor demographic trends and ensure language assistance services continue to meet community needs.



Label	Pharr city, Texas	
	Estimate	Margin of Error
Total:	74,069	±734
Speak only English	12,272	±1,586
Spanish:	61,291	±1,765
Speak English "very well"	37,803	±1,580
Speak English less than "very well"	23,488	±1,637
French, Haitian, or Cajun:	159	±252
Speak English "very well"	159	±252
Speak English less than "very well"	0	±35
German or other West Germanic languages:	0	±35
Speak English "very well"	0	±35
Speak English less than "very well"	0	±35
Russian, Polish, or other Slavic languages:	0	±35
Speak English "very well"	0	±35
Speak English less than "very well"	0	±35
Other Indo-European languages:	48	±66
Speak English "very well"	46	±66
Speak English less than "very well"	2	±5

Designation of Vital Documents

The City of Pharr, Texas designates the following documents as vital documents and will make them available in both English and Spanish:

- Title VI Policy Statement
- Title VI Complaint Form
- Title VI Complaint Procedures
- Notices of Nondiscrimination
- Public Participation Notices for Major Transportation Projects
- Language Assistance Notices
- Public Hearing and Public Meeting Announcements related to federally funded projects
- Any additional documents determined to be critical for participation in federally funded programs and services

The City of Pharr, Texas will periodically review demographic data and update its language assistance measures as necessary to ensure continued compliance with Title VI requirements.

Factor 2: Frequency with Which LEP Individuals Come in Contact with the City

The City of Pharr, Texas routinely interacts with Limited English Proficiency individuals, particularly Spanish-speaking residents, through its daily operations, public services, community outreach activities, and federally funded programs.

Departments that frequently encounter LEP individuals include:

- Public Works
- Utility Billing
- Municipal Court
- Parks and Recreation
- Public Health
- Human Resources
- Police Department
- Fire Department
- Emergency Management
- Development Services and Planning
- City Administration

Given the demographic composition of the community, Spanish-speaking residents regularly access City services, attend public meetings, participate in community events, and engage with City staff. As a result, language assistance is often necessary to ensure meaningful access to information and services.

To better evaluate language assistance needs, the City of Pharr will implement an annual review process coordinated by the Title VI Coordinator. Departments will be asked to:

- Track requests for language assistance.
- Document the use of translation and interpretation services.
- Identify public meetings or events requiring bilingual support.
- Report emerging language access needs.

The information collected will be reviewed annually and used to improve language access planning, outreach efforts, and resource allocation.

Factor 3: Nature and Importance of City Programs, Activities, and Services

The programs, services, and activities provided by the City of Pharr are critical to the health, safety, welfare, and quality of life of residents.

Many City of Pharr, Texas services involve matters that directly affect an individual's ability to receive essential services, understand public safety information, access employment opportunities, participate in public decision-making, and benefit from federally funded programs.

Examples include:

- Public transportation and transportation improvement projects
- Emergency preparedness and disaster response communications
- Public health programs and services
- Water and utility services
- Housing and community development initiatives
- Public safety services
- Employment and workforce development opportunities
- Public meetings and hearings

- Parks, recreation, and community programs

Failure to provide meaningful access to LEP individuals could limit participation in important public processes and reduce access to critical services. Therefore, the City places a high priority on ensuring that language barriers do not prevent residents from accessing programs, services, and benefits.

Each federally funded project, program, or public engagement activity will be evaluated individually to determine the appropriate level of language assistance required.

Factor 4: Language Assistance Resources Available to the City of Pharr

The City of Pharr has several resources available to provide language assistance to LEP individuals. These resources include:

- Bilingual English-Spanish City employees across multiple departments.
- Translation of vital Title VI documents into Spanish.
- Bilingual public notices, outreach materials, and meeting announcements when appropriate.
- Spanish-speaking staff available during public meetings and community events.

Because Spanish is the predominant LEP language within the City of Pharr, Texas, bilingual communication is integrated into many daily operations. When necessary, departments may request additional interpretation or translation support to ensure meaningful access.

While this Four-Factor Analysis provides a general framework for language access planning, the City of Pharr, Texas recognizes that language assistance needs may vary depending on the nature of a specific project, program, meeting, or public outreach effort. Therefore, a project-specific assessment will be conducted when appropriate to determine the most effective means of providing meaningful access to LEP individuals.

Training

City of Pharr, Texas will ensure that its staff understand Title VI of the Civil Rights Act of 1964 and how it may apply to their work. The following options are available for providing training:

Review of the City of Pharr, Texas Title VI Plan

- Attendance at any available Title VI trainings provided by the Texas Department of Transportation, U.S. Department of Transportation or its applicable operating administrations, or the U.S. Department of Justice.
- Viewing the video Title VI at TxDOT produced by TxDOT. This training provides a general Title VI overview as well as TxDOT specific information.
- Viewing the video Understanding and Abiding by Title VI of the Civil Rights Act of 1964 produced by the U.S. Department of Justice

City of Pharr, Texas will maintain records indicating that staff have received sufficient training on a periodic basis.

MEMORANDUM

Purpose

Request approval of the City of Pharr Title VI/Nondiscrimination Plan as required by the Federal Highway Administration (FHWA), the Texas Department of Transportation (TxDOT), and Title VI of the Civil Rights Act of 1964.

Background

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in any program or activity receiving federal financial assistance. As a recipient of federal funding, the City of Pharr is required to maintain and implement a current Title VI Plan demonstrating compliance with all applicable federal civil rights requirements.

The Title VI Plan establishes the City's framework for ensuring nondiscrimination in all federally assisted programs, services, and activities. It outlines the City's policies, complaint procedures, public participation strategies, language assistance for individuals with Limited English Proficiency (LEP), staff training requirements, data collection practices, and monitoring procedures. The plan also designates the Human Resources Director as the City's Title VI Coordinator responsible for overseeing compliance.

Why This Is Needed

Approval of the Title VI Plan is necessary to:

- Ensure the City remains in compliance with federal civil rights laws and U.S. Department of Transportation regulations.
- Maintain eligibility for current and future federal and TxDOT funding opportunities.
- Demonstrate the City's commitment to providing equal access to programs, services, and benefits without discrimination.
- Establish standardized procedures for handling Title VI complaints and ensuring public participation.
- Provide language assistance and meaningful access to City services for individuals with Limited English Proficiency.
- Support transparency, accountability, and equitable delivery of City services.

Failure to maintain an approved and current Title VI Plan could jeopardize the City's eligibility for federal transportation funding and place the City at risk of compliance findings during state or federal reviews.

Fiscal Impact

There is no direct fiscal impact associated with adoption of this plan. Existing City staff will administer the program as part of ongoing compliance responsibilities.

Recommendation

Staff recommends approval of the City of Pharr Title VI/Nondiscrimination Plan and authorization to implement the program in accordance with applicable federal and state requirements.

RESOLUTION NO. R-2026-___

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF PHARR, TEXAS, ADOPTING THE CITY OF PHARR TITLE VI PROGRAM; AFFIRMING THE CITY'S COMMITMENT TO NONDISCRIMINATION IN ACCORDANCE WITH TITLE VI OF THE CIVIL RIGHTS ACT OF 1964 AND APPLICABLE FEDERAL AUTHORITIES; DESIGNATING A TITLE VI COORDINATOR; AUTHORIZING IMPLEMENTATION OF THE TITLE VI PROGRAM; AND PROVIDING AN EFFECTIVE DATE

WHEREAS, Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq.) provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, denied the benefits of, or otherwise subjected to discrimination under any program or activity receiving federal financial assistance; and

WHEREAS, the City of Pharr receives federal and state financial assistance through various programs administered by the Texas Department of Transportation (TxDOT) and other federal agencies; and

WHEREAS, as a recipient of federal financial assistance, the City of Pharr is required to develop, maintain, and implement a Title VI Program in accordance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 13166 regarding Limited English Proficiency, applicable provisions of the Americans with Disabilities Act, and regulations of the United States Department of Transportation and the Texas Department of Transportation; and

WHEREAS, the City Commission acknowledges that adoption of this Resolution and the City of Pharr Title VI Program supports the City's continued eligibility to receive federal and state transportation funding administered by the Texas Department of Transportation and demonstrates the City's commitment to full compliance with all applicable federal civil rights laws and regulations; and

WHEREAS, the City Commission recognizes the importance of ensuring that all residents, employees, contractors, consultants, and members of the public are afforded equal access to City programs, services, activities, and benefits without unlawful discrimination; and

WHEREAS, adoption of the City of Pharr Title VI Program demonstrates the City's commitment to fairness, equal opportunity, accessibility, transparency, and accountability while strengthening public confidence in municipal government; and

WHEREAS, the City Commission finds that adoption of the Title VI Program is in the best interest of the City of Pharr and its residents.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF PHARR, TEXAS, THAT:

Section 1. Adoption of the Title VI Program.

The City Commission hereby adopts the City of Pharr Title VI Program, including all policies, procedures, complaint processes, assurances, and related documents necessary to comply with Title VI of the Civil Rights Act of 1964 and applicable federal and state requirements, as may be amended from time to time to maintain compliance.

Section 2. Commitment to Nondiscrimination.

The City of Pharr reaffirms its commitment that no person shall, on the basis of race, color, or national origin, be excluded from participation in, denied the benefits of, or otherwise subjected to discrimination under any City program or activity receiving federal financial assistance. The City further affirms its commitment to providing equal access consistent with all applicable federal and state civil rights laws.

Section 3. Administration.

The City shall designate the appropriate department or employee(s) responsible for administering and overseeing the City's Title VI Program and ensuring compliance with applicable federal and state nondiscrimination requirements.

Section 4. Implementation.

The City shall implement and maintain the Title VI Program and take all actions necessary to ensure compliance with applicable federal and state civil rights laws, regulations, and funding requirements**.**

Section 5. Program Maintenance.

The City shall periodically review and update the Title VI Program, policies, procedures, and related documents as necessary to maintain compliance with applicable federal and state requirements and to support the City's continued eligibility for federal and state funding.

PASSED AND APPROVED BY THE BOARD OF COMMISSIONERS OF THE CITY OF PHARR, TEXAS, ON THIS 3rd DAY OF AUGUST 2026.

CITY OF PHARR:

_____
AMBROSIO HERNANDEZ, MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 6.C.
DATE SUBMITTED: August 4, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: Bridge

DIRECTOR: Luis Bazan

Agenda Item: Consideration and action, if any, on Resolution appointing/re-appointing two (2) members to the Bridge Board.**This item supports EV - Economic Vitality.**

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: The terms of Board members, Adalberto Campero and Roberto Garza expire on August 1, 2026.

Fiscal Consideration: N/A

Staff Recommendation: Staff recommends re-appointment of both Bridge Board members.

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Alessandra Garcia	Created/Initiated - 08/04/2026
Luis Bazan	Approved - 08/10/2026
Ricardo Rodriguez	Approved - 08/10/2026
City Management Office	New -

STATE OF TEXAS	**§**	**R E S O L U T I O N**
COUNTY OF HIDALGO	**§**	**NO. R-2026- _____**
CITY OF PHARR	**§**	

WHEREAS, the International Bridge is of great importance to the trade and commerce of the City of Pharr, and the Board of City Commissioners desires to foster and encourage the promotion of the bridge project; and

WHEREAS, there is therefore, created a Toll Bridge Board consisting of five (5) resident qualified voters of the City of Pharr and shall include as ex-officio members the Mayor, Mayor Pro-Tem and the City Manager; and

WHEREAS, Ordinance No. O-2007-48 allows for the appointment of a person to a board or committee, without regard to residency, if that person is an owner of a business in which the primary location of the business and central decision-making authority is physically located within the boundaries of the City of Pharr; and

WHEREAS, the terms of Adalberto Campero (Position #1) and Roberto Garza (Position #2) expired on August 1, 2026, and appointment/re-appointment of two (2) member to the Toll Bridge Board is needed at this time.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COMMISSIONERS OF THE CITY OF PHARR, TEXAS, THAT: The following members are hereby appointed/re-appointed to the Toll Bridge Board:

NAME	**POSITION # 1**
1.	LENGTH OF TERM (3-Year term to expire 8/01/29)
	POSITION # 2
2.	LENGTH OF TERM (3-Year term to expire 8/01/29)

PASSED AND APPROVED BY THE BOARD OF COMMISSIONERS OF THE CITY OF PHARR, TEXAS, on this the 3rd day of August 2026.

CITY OF PHARR

_____
AMBROSIO “AMOS” HERNANDEZ
MAYOR

ATTEST:

_____
IMELDA PEREZ, CITY CLERK

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 6.D.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Alessandra Garcia, Assistant City Clerk

DEPARTMENT: GMCD

DIRECTOR: Napoleon Coca

Agenda Item: Consideration and action, if any, on Resolution adopting the City of Pharr's One-Year Action Plan for Program Year 2026 to the U.S. Department of Housing and Urban Development (HUD).**This item supports QL - Quality of Life.**

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: No comments were received during the 30-day comment period. The Community Development Council approved on June 18, 2026. CDBG Staff recommends approval

Fiscal Consideration: N/A

Staff Recommendation: Staff Recommends Approval

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Alessandra Garcia	Created/Initiated - 08/06/2026
Napoleon Coca	Approved - 08/06/2026
Ricardo Rodriguez	Approved - 08/06/2026
City Management Office	New -

STATE OF TEXAS

COUNTY OF HIDALGO **R E S O L U T I O N**

CITY OF PHARR **NO. R-2026-_____**

WHEREAS, the City of Pharr, Texas has received formal notification from the U.S. Department of Housing and Urban Development (HUD) on its Program Year (PY) 2026 One- Year Action Plan allocation, and

WHEREAS, the City of Pharr's One-Year Action Plan allocation for Program Year 2026 of the Community Development Block Grant (CDBG) Program has been set at $1,164,326.00 by HUD; and

WHEREAS, the City of Pharr has followed its Citizens Participation Process in identifying the demands and needs of the residents to award CDBG funds to Community Development activities in the City as outlined in Exhibit "A".

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COMMISSIONERS OF THE CITY OF PHARR, TEXAS, THAT:

SECTION 1: The Board of City Commissioners approves that the City of Pharr hereby submits its PY 2026 Community Development Block Grant One-Year Action Plan to the U.S. Department of Housing and Urban Development.

SECTION 2: The Mayor is hereby authorized to sign any and all documents in relation to the One-Year Action Plan and designate the City Manager as an alternate authorized signatory.

APPROVED AND ADOPTED BY THE BOARD OF CITY COMMISSIONERS OF THE CITY OF PHARR, TEXAS ON THIS THE _____DAY OF AUGUST 2026

CITY OF PHARR:

_____
AMBROSIO HERNANDEZ, MAYOR

ATTEST:

_____
IMELDA PEREZ,
CITY CLERK

EXHIBIT "A"

CITY OF PHARR, HIDALGO COUNTY, TEXAS
2026 ONE-YEAR
ACTION PLAN

HUD MATRIX CODE	ACTIVITY DESCRIPTION	RECOMMENDATIONS
14C	**REHABILITATION:**	
	Emergency Repair Program	$297,000.00
	Emergency Repairs	
03F	**PARK RECREATION AND FACILITIES STREET**	$ 150,00.00
	Jones Box Park	
	Project will consist of the purchase and installation of playground equipment	
03J	**WATER/SEWER LINE IMPROVEMENTS**	$ 100,000.00
	Public Utilities	
	Upgrade of waterlines & fire hydrants	
03K	**STREET IMPROVEMENTS and FACILITIES**	$ 100,00.00
	Public Works	
	Project will consist of purchase and installation of solar lighting in South Pharr	
03O	**FIRE STATION EQUIPMENT**	$ 9,811.90
	Fire Department	
	Project consists of public safety and emergency preparedness outreach materials supporting fire station operations	
03Z	***OTHER PUBLIC IMPROVEMENTS***	$ 100,000.00
	Housing Authority Broadband	
	Project expenditures include but are not limited to the installation	
05A	**SENIOR SERVICES**	
	Amigos Del Valle	$ 20,000.00
	(Meals on Wheels)	
	Area Agency on Aging	$ 20,000.00
	(Medical Equipment Assistance)	
	Silver Ribbon	$ 3,000.00
	Utility Assistance	
	LRGDVC-Aging and Disability Resource Center	$ 3,000.00
	Funds will be used to assist Pharr elderly with resources to cover daily living expenses	
	Comfort House	$ 5,000.00
	Funds will be used on the partial salary one (1) Pharr patients' caregiver	
05E	**TRANSPORTATION SERVICES**	
	Lower Rio Grande Valley Development Council	$ 55,148.90
	Valley Metro Transit System	
05G	**SERVICES FOR VICTIMS OF DOMESTIC VIOLENCE**	
	Women Together	$ 6,500.00
	Funds will assist battered and abused women	
05N	**SERVICES FOR ABUSED AND NEGLECTED CHILDREN**	
	Children's Advocacy Center	$ 10,000.00

	Funds will be used on partial 2 Forensic Interviewer Salaries	
	CAMP University	$ 5,000.00
	Funds will assist supportive stipends/mileage for advocates assisting severely handicapped Pharr young adults	
	CASA DE HIDALGO	$ 3,000.00
	Funds will be used for supportive stipends/mileage of 2 court appointed social advocates	
05Z	**OTHER PUBLIC SERVICES**	
	AVE-Frontera	$ 8,000.00
	Funds will assist Pharr residents for counseling	
	To Give International (Creative Arts Studio)	$ 8,000.00
	Funds will be used to assist Pharr residents with instrumental classes	
	Food Bank of RGV	$ 10,000.00
	Funds will be used to provide food pantry for residents and HA units, City of Pharr residents, and emergency distribution	
	Team Mario	$ 5,000.00
	To improve the quality of life for individuals with autism spectrum disorder through education	
	Make a Wish Foundation	$ 3,000.00
	Supports children that are severely ill	
	The Possible Dream Foundation	$ 10,000.00
	Focused on education and workforce for adults who did not finish high school	
21A	**GENERAL PROGAM ADMINISTRATION**	$ 232,865.20
	Planning and Administration	

Allocation total **$ 1,164,326.00**

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 7.A.
DATE SUBMITTED: August 10, 2026
MEETING DATE: August 17, 2026

FROM: Sabrina Solis, Comptroller of Operations

DEPARTMENT: Finance

DIRECTOR: Jamison Merrick

Agenda Item: Discussion and action for vote on Proposed Tax Rate increase and to schedule a Public Hearing. **This item supports SG - Sound Governance and Fiscal Sustainability.**

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Texas requires all municipalities to hold a public hearing whenever the proposed tax rate exceeds the no-new tax revenue rate. See Notice Attached. A Record vote has to be taken, and the City has to announce the date of public hearing.

Fiscal Consideration: N/A

Staff Recommendation: To approve the proposed tax rate and schedule public hearings as follows:
September 21, 2026 at 4:00 p.m.

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Sabrina Solis	Created/Initiated - 08/10/2026
Ricardo Rodriguez	Approved - 08/10/2026
Jamison Merrick	Approved - 08/11/2026
City Management Office	New -

NOTICE OF PUBLIC HEARING ON TAX INCREASE FOR 2026 TAX YEAR FOR CITY OF PHARR

A tax rate of $0.7676 per $100 valuation has been proposed for adoption by the governing body of City of Pharr.

PROPOSED TAX RATE	$0.7676	per $100
NO-NEW TAX REVENUE RATE	$0.7495	per $100
VOTER APPROVAL RATE	$0.9827	per $100

The no-new revenue tax rate is the tax rate for the 2026 tax year that will raise the same amount of property tax revenue for City of Pharr from the same properties in both the 2025 tax year and the 2026 tax year.

The voter approval rate is the highest tax rate that City of Pharr may adopt without holding an election to seek voter approval rate.

The proposed tax rate is greater than the no-new revenue tax rate. This means that City of Pharr is proposing to increase property taxes for the 2026 tax year.

A PUBLIC HEARING ON THE PROPOSED TAX INCREASE RATE WILL BE HELD ON September 21st, 2026, at 4:00 p.m., at City of Pharr 118 C. Cage Blvd. Pharr, TX 78577. Second Floor Commissioners' room.

The proposed tax rate is not greater than the voter-approval tax rate. As a result, City of Pharr is not required to hold an election at which voters may accept or reject the proposed tax rate. However, you may express your support for or the opposition to the proposed tax rate by contacting the City Manager's Office of the City of Pharr at their offices or by attending the public hearing mentioned.

YOUR TAX OWED UNDER ANY OF THE ABOVE RATES CAN BE CALCULATED AS FOLLOWS:

Property tax amount= (rate) x (taxable value of your property)/100

FOR the proposal:
AGAINST the proposal:
PRESENT and not voting:
ABSENT:

The 86th Legislature modified the manner in which the voter-approval rate is calculated to limit the rate of growth of property taxes in the state.

The following table compares the taxes imposed on the average residence homestead by City of Pharr last year to the taxes proposed to be imposed on the average residence homestead by City of Pharr this year.

	2026	2025	Change
Total Tax Rate (Per $100 of Value)	0.7676	0.7676	0.0%
Average Homestead Taxable Value	$157,434	$148,771	5.8%
Tax on Average Homestead	$1,209	$1,142	$67 or 5.9%
Total Tax Levy on All Properties	$34,952,569	$32,683,395	6.9%

For assistance or detailed information about tax calculations, please contact:

Pablo (Paul) Villarreal, Jr.
City of Pharr Tax Assessor-Collector
2804 S Business Hwy 2281
Edinburg, TX 78539 (956) 318-2157

propertytax@hidalgocountytax.org

http://www.hidalgocountytax.org

TAXPAYER IMPACT STATEMENT
FOR 2026 TAX YEAR FOR CITY OF PHARR

A tax rate of $0.7676 per $100 valuation has been proposed for adoption by the governing body of City of Pharr.

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The proposed tax rate is greater than the no-new revenue tax rate. This means that City of Pharr is proposing to increase property taxes for the 2026 tax year.

The proposed tax rate is not greater than the voter-approval tax rate. As a result, City of Pharr is not required to hold an election at which voters may accept or reject the proposed tax rate.

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Total Tax Levy on All Properties	$34,952,569	$32,683,395	6.9%

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 7.B.
DATE SUBMITTED: August 10, 2026
MEETING DATE: August 17, 2026

FROM: Sabrina Solis, Comptroller of Operations

DEPARTMENT: Finance

DIRECTOR: Jamison Merrick

Agenda Item: Submission of Certified Totals for Tax Assessed Values 2026 for Fiscal Year 2026-2027. **This item supports SG - Sound Governance and Fiscal Sustainability.**

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Hidalgo County finalized the City of Pharr Property Assessment Value for Tax Year 2026 on July 17, 2026.

The total Net Taxable Value for 2025 is: $5,505,182,855 or $5,505 billion (rounded), which represents an increase of 1.29% compared to last year.

Refer to attached report.

Fiscal Consideration: N/A

Staff Recommendation: Presentation Only

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Sabrina Solis	Created/Initiated - 08/10/2026
Ricardo Rodriguez	Approved - 08/10/2026
Jamison Merrick	Approved - 08/11/2026
City Management Office	New -

CITY OF PHARR

	NOT UNDER REVIEW	UNDER REVIEW	TOTAL
REAL PROPERTY & MFT HOMES	(Count) (26,356)	(Count) (6)	(Count) (26,362)
Land HS Value	709,862,164	217,434	710,079,598
Land NHS Value	1,669,181,883	5,178,500	1,674,360,383
Land Ag Market Value	155,780,643	0	155,780,643
Land Timber Market Value	0	0	0
Total Land Value	**2,534,824,690**	**5,395,934**	**2,540,220,624**
Improvement HS Value	1,436,788,828	338,110	1,437,126,938
Improvement NHS Value	2,483,556,898	253,135	2,483,810,033
Total Improvement	**3,920,345,726**	**591,245**	**3,920,936,971**
Market Value	**6,455,170,416**	**5,987,179**	**6,461,157,595**
BUSINESS PERSONAL PROPERTY	(2,339)	(0)	(2,339)
Market Value	**685,111,490**	**0**	**685,111,490**
OIL & GAS / MINERALS	(294)	(0)	(294)
Market Value	**1,262,890**	**0**	**1,262,890**
OTHER (Intangibles)	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
	(Total Count) (28,989)	(Total Count) (6)	(Total Count) (28,995)
TOTAL MARKET	**7,141,544,796**	**5,987,179**	**7,147,531,975**
Ag Productivity	751,893	0	751,893
Ag Loss (-)	155,028,750	0	155,028,750
Timber Productivity	0	0	0
Timber Loss (-)	0	0	0
APPRAISED VALUE	**6,986,516,046**	**5,987,179**	**6,992,503,225**
	99.9%	0.1%	100.0%
HS CAP Limitation Value (-)	190,485,905	11,557	190,497,462
CB CAP Limitation Value (-)	91,311,464	13,262	91,324,726
NET APPRAISED VALUE	**6,704,718,677**	**5,962,360**	**6,710,681,037**
Total Exemption Amount	1,205,478,182	20,000	1,205,498,182
NET TAXABLE	**5,499,240,495**	**5,942,360**	**5,505,182,855**
TAX LIMIT/FREEZE ADJUSTMENT	**567,218,313**	**366,181**	**567,584,494**
LIMIT ADJ TAXABLE (I&S)	**4,932,022,182**	**5,576,179**	**4,937,598,361**
CHAPTER 312 ADJUSTMENT	**0**	**0**	**0**
CHAPTER 313 ADJUSTMENT	**0**	**0**	**0**
LIMIT ADJ TAXABLE (M&O)	**4,932,022,182**	**5,576,179**	**4,937,598,361**

APPROX TOTAL LEVY = LIMIT ADJ TAXABLE * (TAX RATE / 100) + ACTUAL TAX

$40,191,741.94 = 4,937,598,361 * (0.767600 / 100) + $2,290,736.92

CITY OF PHARR

Tax Limit Adjustment Breakdown

(Freeze)

NOT UNDER REVIEW

Limitation	Net Appr	Taxable	Act Tax	Ceiling	Count
DP	39,263,407	37,390,079	155,745.14	161,829.8	321
DPS	259,536	259,536	752.24	752.24	2
OV65	568,182,276	499,856,561	2,045,011.03	2,089,863	4,537
OV65S	36,099,169	29,712,137	86,923.25	94,330.02	292
Total	643,804,388	567,218,313	2,288,431.66	2,346,775.06	5,152

Tax Rate: 0.767600

UNDER REVIEW

Limitation	Net Appr	Taxable	Act Tax	Ceiling	Count
OV65	386,181	366,181	2,305.26	2,363.03	2
Total	386,181	366,181	2,305.26	2,363.03	2

Tax Rate: 0.767600

TOTAL

Limitation	Net Appr	Taxable	Act Tax	Ceiling	Count
DP	39,263,407	37,390,079	155,745.14	161,829.8	321
DPS	259,536	259,536	752.24	752.24	2
OV65	568,568,457	500,222,742	2,047,316.29	2,092,226.03	4,539
OV65S	36,099,169	29,712,137	86,923.25	94,330.02	292
Total	644,190,569	567,584,494	2,290,736.92	2,349,138.09	5,154

Tax Rate: 0.767600

EXEMPTIONS	NOT UNDER REVIEW		UNDER REVIEW		TOTAL	
Exemption	Total	Count	Total	Count	Total	Count
Homestead Exemptions						
OV65-Local	46,575,518	4,815	20,000	2	46,595,518	4,817
OV65-State	0	0	0	0	0	0
OV65-Prorated	0	0	0	0	0	0
OV65S-Local	2,780,000	296	0	0	2,780,000	296
OV65S-State	0	0	0	0	0	0
OV65S-Prorated	0	0	0	0	0	0
DP-Local	0	0	0	0	0	0
DP-State	0	0	0	0	0	0
DP-Prorated	0	0	0	0	0	0
DPS-Local	0	0	0	0	0	0
DPS-State	0	0	0	0	0	0
DPS-Prorated	0	0	0	0	0	0
DVHS	54,865,276	243	0	0	54,865,276	243
DVHS-Prorated	385,297	5	0	0	385,297	5
DVHSS	5,609,384	30	0	0	5,609,384	30
DVHSS-Prorated	0	0	0	0	0	0
DVHSS-UD	137,300	1	0	0	137,300	1
FRSS	202,522	1	0	0	202,522	1
Subtotal for Homestead Exemptions	**110,555,297**	**5,391**	**20,000**	**2**	**110,575,297**	**5,393**
Disabled Veterans Exemptions						
DV1	801,000	79	0	0	801,000	79
DV1S	10,000	2	0	0	10,000	2
DV2	369,000	36	0	0	369,000	36
DV2S	15,000	2	0	0	15,000	2
DV3	456,000	41	0	0	456,000	41
DV3S	20,000	2	0	0	20,000	2
DV4	1,597,890	136	0	0	1,597,890	136
DV4S	276,000	23	0	0	276,000	23
Subtotal for Disabled Veterans Exemptions	**3,544,890**	**321**	**0**	**0**	**3,544,890**	**321**
Special Exemptions						
Charitable Org	3,817,734	1	0	0	3,817,734	1
EX-11.35 1	121,199	8	0	0	121,199	8
EX-11.35 1 PRORATED	0	0	0	0	0	0
EX-11.35 2	125,606	7	0	0	125,606	7
EX-11.35 2 PRORATED	0	0	0	0	0	0
EX366	355	11	0	0	355	11
FR	81,024,386	28	0	0	81,024,386	28
PC	213,199	1	0	0	213,199	1
SO	577,827	5	0	0	577,827	5
Subtotal for Special Exemptions	**85,880,306**	**61**	**0**	**0**	**85,880,306**	**61**

EXEMPTIONS	NOT UNDER REVIEW		UNDER REVIEW		TOTAL	
Exemption	Total	Count	Total	Count	Total	Count
Absolute Exemptions						
EX	8,683,027	1	0	0	8,683,027	1
EX-Prorated	0	0	0	0	0	0
Exempt UD	65,816	15	0	0	65,816	15
EX-XU	395,310	1	0	0	395,310	1
EX-XU-PRORATED	0	0	0	0	0	0
EX-XV	885,675,062	639	0	0	885,675,062	639
EX-XV-PRORATED	87,932	1	0	0	87,932	1
EX-XV-PRORATED-	246,693	2	0	0	246,693	2
Subtotal for Absolute Exemptions	**895,153,840**	**659**	**0**	**0**	**895,153,840**	**659**
Other Exemptions						
Animal Feed Held For Sale	28,222	1	0	0	28,222	1
BPPEX	86,384,743	1,716	0	0	86,384,743	1,716
BPPEX-AL	7,777,509	210	0	0	7,777,509	210
BPPEX-TU	9,466,008	256	0	0	9,466,008	256
BPPEX-UD	6,687,367	157	0	0	6,687,367	157
Subtotal for Other Exemptions	**110,343,849**	**2,340**	**0**	**0**	**110,343,849**	**2,340**
Total:	**1,205,478,182**	**8,772**	**20,000**	**2**	**1,205,498,182**	**8,774**

New Value

Total New Market Value: $79,031,485

Total New Taxable Value: $72,467,131

JETI

New Market Value: $0

New Taxable Value: $0

Chapter 313

New Market Value: $0

New Taxable Value: $0

TIF/TIRZ

New Market Value: $0

New Taxable Value: $0

Exemption Loss

New Absolute Exemptions

Exemption	Description	Count	Last Year Market Value
EX-XV	Other Exemptions (including public property, reli...	11	1,748,044
Absolute Exemption Value Loss:		**11**	**1,748,044**

New Partial Exemptions

Exemption	Description	Count	Partial Exemption Amt
AFHS	Animal Feed Held For Sale	1	28,222
BPPEX	BPPEX	1596	83,798,124
BPPEX-AL	BPPEX-AL	202	7,525,072
BPPEX-TU	BPPEX-TU	224	9,424,948
CHODO	11.182 Community Housing Development Organi...	1	3,817,734
DP	Disability	5	0
DV1	Disabled Veterans 10% - 29%	3	15,000
DV2	Disabled Veterans 30% - 49%	1	12,000
DV3	Disabled Veterans 50% - 69%	4	46,000
DV4	Disabled Veterans 70% - 100%	22	250,523
DV4S	Disabled Veterans Surviving Spouse 70% - 100%	1	12,000
DVHS	Disabled Veteran Homestead	10	2,281,773
DVHSS	Disabled Veteran Homestead Surviving Spouse	1	501,079
FR	FREEPORT	21	49,395,962
OV65	Over 65	127	1,210,000
OV65S	OV65 Surviving Spouse	8	70,000
SO	Solar (Special Exemption)	3	219,827
Partial Exemption Value Loss:		**2,230**	**158,608,264**
Total NEW Exemption Value			**160,356,308**

Increased Exemptions

Exemption	Description	Count	Increased Exemption Amt
Increased Exemption Value Loss:		**0**	**0**
Total Exemption Value Loss:			**160,356,308**

New Special Use (Ag/Timber)

Count	2025 Market Value	2026 Special Use	Loss

New Annexations/Deannexations

Count	Market Value	Taxable Value

Average Homestead Value

Categor	Count of HS Res	Avg Market	Avg Exempt	Med Market	Med Exempt	Avg Taxable	Med Taxable

Average Homestead Value

Categor	Count of HS Res	Avg Market	Avg Exempt	Med Market	Med Exempt	Avg Taxable	Med Taxable
A Only	11,793	177,841	4,613	162,824	0	157,295	146,548
A & E	11,812	177,990	4,605	162,858	0	157,434	146,590

Property Under Review - Lower Value Used

Count	Market Value	Lower Market Value	Estimated Lower Taxable Value
6	5,987,179	5,835,029	5,793,744

CITY OF PHARR

State Category Breakdown

Not Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	18,841		25,462,627	3,061,336,312	2,745,243,680
B	Multifamily Residential	1,271		12,275,361	550,835,894	539,492,064
C1	Vacant Lots and Tracts	1,730		8,708,938	190,260,622	179,848,857
D1	Qualified Open-Space Land	189	2,252.06	0	155,780,643	751,099
D2	Farm or Ranch Improvements on Qualified	11		0	103,239	100,010
E	Rural Land,Not Qualified for Open-Space Land	51		161,528	17,262,793	16,265,635
F1	Commercial Real Property	1,649		25,657,805	1,514,747,737	1,460,432,067
F2	Industrial Real Property	1		0	1,322,820	1,322,820
G1	Oil and Gas	261		0	1,187,300	1,019,027
J1	Water Systems	1		0	1,572	1,556
J2	Gas Distribution Systems	6		0	4,213,949	4,081,819
J3	Electric Companies (including Co-ops)	41		120,370	72,743,320	72,368,323
J4	Telephone Companies (including Co-ops)	17		0	4,257,927	3,953,381
J5	Railroads	4		0	86,960	0
J6	Pipelines	5		0	359,391	228,741
J7	Cable Companies	3		0	8,585,890	8,460,897
L1	Commercial Personal Property	2,063		0	530,038,926	350,750,345
L2	Industrial and Manufacturing Personal Property	104		629,850	7,993,592	1,764,641
M1	Mobile Homes	2,162		516,155	63,093,545	56,111,882
O	Residential Inventory	34		97,756	1,110,083	1,110,083
S	Special Inventory	109		0	61,393,292	55,933,568
XU	MiscellaneousExemptions (§11.23)	1		0	395,310	0
XV	Other Totally Exempt Properties (including	684		5,401,095	894,433,679	0
		Totals:	2,252.06	79,031,485	7,141,544,796	5,499,240,495

Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	5		0	919,888	875,069
C1	Vacant Lots and Tracts	1		0	5,067,291	5,067,291
		Totals:	0	0	5,987,179	5,942,360

CITY OF PHARR

State Category Breakdown

Grand Totals

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	18,846		25,462,627	3,062,256,200	2,746,118,749
B	Multifamily Residential	1,271		12,275,361	550,835,894	539,492,064
C1	Vacant Lots and Tracts	1,731		8,708,938	195,327,913	184,916,148
D1	Qualified Open-Space Land	189	2,252.06	0	155,780,643	751,099
D2	Farm or Ranch Improvements on Qualified	11		0	103,239	100,010
E	Rural Land,Not Qualified for Open-Space Land	51		161,528	17,262,793	16,265,635
F1	Commercial Real Property	1,649		25,657,805	1,514,747,737	1,460,432,067
F2	Industrial Real Property	1		0	1,322,820	1,322,820
G1	Oil and Gas	261		0	1,187,300	1,019,027
J1	Water Systems	1		0	1,572	1,556
J2	Gas Distribution Systems	6		0	4,213,949	4,081,819
J3	Electric Companies (including Co-ops)	41		120,370	72,743,320	72,368,323
J4	Telephone Companies (including Co-ops)	17		0	4,257,927	3,953,381
J5	Railroads	4		0	86,960	0
J6	Pipelines	5		0	359,391	228,741
J7	Cable Companies	3		0	8,585,890	8,460,897
L1	Commercial Personal Property	2,063		0	530,038,926	350,750,345
L2	Industrial and Manufacturing Personal Property	104		629,850	7,993,592	1,764,641
M1	Mobile Homes	2,162		516,155	63,093,545	56,111,882
O	Residential Inventory	34		97,756	1,110,083	1,110,083
S	Special Inventory	109		0	61,393,292	55,933,568
XU	MiscellaneousExemptions (§11.23)	1		0	395,310	0
XV	Other Totally Exempt Properties (including	684		5,401,095	894,433,679	0
		Totals:	2,252.06	79,031,485	7,147,531,975	5,505,182,855

CITY OF PHARR

Top Taxpayers

Rank	Owner ID	Taxpayer Name	Market Value	Taxable Value
1	934078	AEP TEXAS INC-27H	$66,143,710	$66,018,711
2	1155525	PTC TX HOLDINGS LLC	$61,187,415	$61,187,415
3	1154119	46TH STREET INVESTORS & PWIP LLC &	$39,681,935	$39,681,935
4	537928	HEB GROCERY COMPANY LP	$27,343,253	$27,009,775
5	1322528	STX TY AUTO LTD	$23,216,878	$23,091,878
6	169148	WILDER CORPORATION OF DELAWARE	$18,776,700	$18,684,399
7	1012296	PHARR BRIDGE INVESTMENT COMPANY	$19,406,208	$17,466,087
8	299908	RAY AUDIE E	$15,170,319	$15,127,026
9	606207	FJRS INVESTMENTS LTD	$14,636,853	$14,636,853
10	693431	EAN HOLDINGS LLC	$13,674,329	$13,549,329
11	954522	AEP TEXAS CENTRAL COMPANY	$13,623,706	$13,527,475
12	980463	PENSKE TRUCK LEASING CO LP	$13,564,832	$13,314,832
13	992533	COSTCO WHOLESALE CORP	$13,380,648	$13,255,648
14	1148056	BISSELL SOUTHWEST DC LEASING LLC	$14,399,347	$13,101,453
15	1277633	ECS-MCALLEN PROPCO LLC	$12,942,363	$12,942,363
16	969271	COSTCO WHOLESALE CORP	$12,387,407	$12,387,407
17	1219225	BFI NEWCO HOLDINGS INC	$12,203,296	$12,203,296
18	1033508	CLARK KNAPP MOTOR CO LC	$12,289,278	$12,165,212
19	1235264	OUTWESTERN LLC	$11,546,933	$11,546,933
20	931213	EAN HOLDINGS LLC	$11,609,522	$11,484,522
		Total	$427,184,932	$422,382,549

CITY OF PHARR TAX INCREMENT

	NOT UNDER REVIEW	UNDER REVIEW	TOTAL
REAL PROPERTY & MFT HOMES	(Count) (260)	(Count) (0)	(Count) (260)
Land HS Value	1,147,504	0	1,147,504
Land NHS Value	84,960,299	0	84,960,299
Land Ag Market Value	57,525,459	0	57,525,459
Land Timber Market Value	0	0	0
Total Land Value	**143,633,262**	**0**	**143,633,262**
Improvement HS Value	2,058,385	0	2,058,385
Improvement NHS Value	201,721,864	0	201,721,864
Total Improvement	**203,780,249**	**0**	**203,780,249**
Market Value	**347,413,511**	**0**	**347,413,511**
BUSINESS PERSONAL PROPERTY	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
OIL & GAS / MINERALS	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
OTHER (Intangibles)	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
	(Total Count) (260)	(Total Count) (0)	(Total Count) (260)
TOTAL MARKET	**347,413,511**	**0**	**347,413,511**
Ag Productivity	351,894	0	351,894
Ag Loss (-)	57,173,565	0	57,173,565
Timber Productivity	0	0	0
Timber Loss (-)	0	0	0
APPRAISED VALUE	**290,239,946**	**0**	**290,239,946**
	100.0%	0.0%	100.0%
HS CAP Limitation Value (-)	129,025	0	129,025
CB CAP Limitation Value (-)	10,100,514	0	10,100,514
NET APPRAISED VALUE	**280,010,407**	**0**	**280,010,407**
Total Exemption Amount	7,418,334	0	7,418,334
NET TAXABLE	**272,592,073**	**0**	**272,592,073**
TAX LIMIT/FREEZE ADJUSTMENT	**290,500**	**0**	**290,500**
LIMIT ADJ TAXABLE (I&S)	**272,301,573**	**0**	**272,301,573**
CHAPTER 312 ADJUSTMENT	**0**	**0**	**0**
CHAPTER 313 ADJUSTMENT	**0**	**0**	**0**
LIMIT ADJ TAXABLE (M&O)	**272,301,573**	**0**	**272,301,573**

APPROX TOTAL LEVY = LIMIT ADJ TAXABLE * (TAX RATE / 100) + ACTUAL TAX

$0 = 272,301,573 * (0.000000 / 100) + $0

CITY OF PHARR TAX INCREMENT

Tax Limit Adjustment Breakdown

(Freeze)

NOT UNDER REVIEW

Limitation	Net Appr	Taxable	Act Tax	Ceiling	Count
OV65	300,500	290,500	0	0	1
Total	300,500	290,500	0	0	1

Tax Rate: 0.000000

UNDER REVIEW

TOTAL

Limitation	Net Appr	Taxable	Act Tax	Ceiling	Count
OV65	300,500	290,500	0	0	1
Total	300,500	290,500	0	0	1

Tax Rate: 0.000000

CITY OF PHARR TAX INCREMENT

Exemptions

EXEMPTIONS	NOT UNDER REVIEW		UNDER REVIEW		TOTAL	
Exemption	Total	Count	Total	Count	Total	Count
Homestead Exemptions						
OV65-Local	90,000	10	0	0	90,000	10
OV65-State	0	0	0	0	0	0
OV65-Prorated	0	0	0	0	0	0
OV65S-Local	20,000	2	0	0	20,000	2
OV65S-State	0	0	0	0	0	0
OV65S-Prorated	0	0	0	0	0	0
DVHS	195,030	1	0	0	195,030	1
DVHS-Prorated	0	0	0	0	0	0
Subtotal for Homestead Exemptions	**305,030**	**13**	**0**	**0**	**305,030**	**13**
Disabled Veterans Exemptions						
DV4	12,000	1	0	0	12,000	1
Subtotal for Disabled Veterans Exemptions	**12,000**	**1**	**0**	**0**	**12,000**	**1**
Absolute Exemptions						
EX-XV	7,101,304	32	0	0	7,101,304	32
EX-XV-PRORATED	0	0	0	0	0	0
Subtotal for Absolute Exemptions	**7,101,304**	**32**	**0**	**0**	**7,101,304**	**32**
Total:	**7,418,334**	**46**	**0**	**0**	**7,418,334**	**46**

New Value

Total New Market Value: $2,508,962

Total New Taxable Value: $2,508,962

JETI		Chapter 313		TIF/TIRZ	
New Market Value:	$0	New Market Value:	$0	New Market Value:	$0
New Taxable Value:	$0	New Taxable Value:	$0	New Taxable Value:	$0

Exemption Loss

New Absolute Exemptions

Exemption	Description	Count	Last Year Market Value
EX-XV	Other Exemptions (including public property, reli...	1	0
Absolute Exemption Value Loss:		**1**	**0**

New Partial Exemptions

Exemption	Description	Count	Partial Exemption Amt
Partial Exemption Value Loss:		**0**	**0**
Total NEW Exemption Value			**0**

Increased Exemptions

Exemption	Description	Count	Increased Exemption Amt
Increased Exemption Value Loss:		**0**	**0**
Total Exemption Value Loss:			**0**

New Special Use (Ag/Timber)

Count	2025 Market Value	2026 Special Use	Loss

New Annexations/Deannexations

Count	Market Value	Taxable Value

Average Homestead Value

Categor	Count of HS Res	Avg Market	Avg Exempt	Med Market	Med Exempt	Avg Taxable	Med Taxable
A Only	14	202,110	13,931	218,352	0	178,963	190,138
A & E	16	192,042	12,189	199,789	0	171,789	177,383

Property Under Review - Lower Value Used

Count	Market Value	Lower Market Value	Estimated Lower Taxable Value

CITY OF PHARR TAX INCREMENT

State Category Breakdown

Not Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	27		0	4,606,703	4,170,648
C1	Vacant Lots and Tracts	47		0	18,809,668	18,599,228
D1	Qualified Open-Space Land	69	1,083.26	0	57,525,459	351,894
D2	Farm or Ranch Improvements on Qualified	2		0	7,623	7,623
E	Rural Land,Not Qualified for Open-Space Land	17		0	4,229,826	4,017,859
F1	Commercial Real Property	89		2,508,962	254,916,269	245,228,162
J3	Electric Companies (including Co-ops)	1		0	210,763	210,763
M1	Mobile Homes	1		0	5,896	5,896
XV	Other Totally Exempt Properties (including	32		0	7,101,304	0
		Totals:	1,083.26	2,508,962	347,413,511	272,592,073

CITY OF PHARR TAX INCREMENT

State Category Breakdown

Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
Totals:						

CITY OF PHARR TAX INCREMENT

State Category Breakdown

Grand Totals

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	27		0	4,606,703	4,170,648
C1	Vacant Lots and Tracts	47		0	18,809,668	18,599,228
D1	Qualified Open-Space Land	69	1,083.26	0	57,525,459	351,894
D2	Farm or Ranch Improvements on Qualified	2		0	7,623	7,623
E	Rural Land,Not Qualified for Open-Space Land	17		0	4,229,826	4,017,859
F1	Commercial Real Property	89		2,508,962	254,916,269	245,228,162
J3	Electric Companies (including Co-ops)	1		0	210,763	210,763
M1	Mobile Homes	1		0	5,896	5,896
XV	Other Totally Exempt Properties (including	32		0	7,101,304	0
		Totals:	1,083.26	2,508,962	347,413,511	272,592,073

CITY OF PHARR TAX INCREMENT

Top Taxpayers

Rank	Owner ID	Taxpayer Name	Market Value	Taxable Value
1	1154119	46TH STREET INVESTORS & PWIP LLC &	$39,681,935	$39,681,935
2	1012296	PHARR BRIDGE INVESTMENT COMPANY	$17,989,083	$16,048,962
3	1148056	BISSELL SOUTHWEST DC LEASING LLC	$14,399,347	$13,101,453
4	1277633	ECS-MCALLEN PROPCO LLC	$12,942,363	$12,942,363
5	1235264	OUTWESTERN LLC	$11,546,933	$11,546,933
6	1203970	WAREHOUSE LEASING OF TEXAS LLC	$9,027,145	$9,027,145
7	1242334	OCP CAPOTE 2022 LP	$8,987,431	$8,987,431
8	1279200	OCP CAPOTE 2023 LP	$8,987,431	$8,987,431
9	1194905	CEUTA PROPERTIES INC	$6,677,072	$6,677,072
10	933301	BAKER PROSPERITY LLC	$6,113,938	$6,113,938
11	1095890	INDEX FRESH OF TEXAS LLC	$5,150,000	$5,150,000
12	1062361	CAMPERO HOLDINGS COMPANY LLC	$6,632,766	$5,106,563
13	1196232	OMG INVESTMENTS LLC	$4,708,076	$4,708,076
14	1215176	CAMPERO LAND & DEVELOPMENT LLC	$7,326,890	$4,375,000
15	272470	BEBO DISTRIBUTING COMPANY INC	$5,324,997	$4,270,584
16	944988	EL ROSAL COLD STORAGE LLC	$4,202,573	$4,202,573
17	1249672	LAKEWAY FOODS LLC	$4,136,650	$4,136,650
18	1188576	QUEENSTOWN PARK LLC	$4,000,000	$4,000,000
19	1016294	RODRIGUEZ JOSE ALFREDO & LAURA M	$3,903,140	$3,903,140
20	1145976	FAAT INVESTMENT GROUP LLC	$3,756,279	$3,756,279
		Total	$185,494,049	$176,723,528

CITY OF PHARR TAX INCREMENT

	NOT UNDER REVIEW	UNDER REVIEW	TOTAL
REAL PROPERTY & MFT HOMES	(Count) (206)	(Count) (0)	(Count) (206)
Land HS Value	6,085,421	0	6,085,421
Land NHS Value	55,850,868	0	55,850,868
Land Ag Market Value	14,551,074	0	14,551,074
Land Timber Market Value	0	0	0
Total Land Value	**76,487,363**	**0**	**76,487,363**
Improvement HS Value	17,161,798	0	17,161,798
Improvement NHS Value	104,197,202	0	104,197,202
Total Improvement	**121,359,000**	**0**	**121,359,000**
Market Value	**197,846,363**	**0**	**197,846,363**
BUSINESS PERSONAL PROPERTY	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
OIL & GAS / MINERALS	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
OTHER (Intangibles)	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
	(Total Count) (206)	(Total Count) (0)	(Total Count) (206)
TOTAL MARKET	**197,846,363**	**0**	**197,846,363**
Ag Productivity	34,808	0	34,808
Ag Loss (-)	14,516,266	0	14,516,266
Timber Productivity	0	0	0
Timber Loss (-)	0	0	0
APPRAISED VALUE	**183,330,097**	**0**	**183,330,097**
	100.0%	0.0%	100.0%
HS CAP Limitation Value (-)	867,928	0	867,928
CB CAP Limitation Value (-)	1,100,799	0	1,100,799
NET APPRAISED VALUE	**181,361,370**	**0**	**181,361,370**
Total Exemption Amount	20,871,727	0	20,871,727
NET TAXABLE	**160,489,643**	**0**	**160,489,643**
TAX LIMIT/FREEZE ADJUSTMENT	**0**	**0**	**0**
LIMIT ADJ TAXABLE (I&S)	**160,489,643**	**0**	**160,489,643**
CHAPTER 312 ADJUSTMENT	**0**	**0**	**0**
CHAPTER 313 ADJUSTMENT	**0**	**0**	**0**
LIMIT ADJ TAXABLE (M&O)	**160,489,643**	**0**	**160,489,643**

APPROX TOTAL LEVY = NET TAXABLE * (TAX RATE / 100)

$0 = 160,489,643 * (0.000000 / 100)

CITY OF PHARR TAX INCREMENT

Exemptions

EXEMPTIONS	NOT UNDER REVIEW		UNDER REVIEW		TOTAL	
Exemption	Total	Count	Total	Count	Total	Count
Homestead Exemptions						
DVHS	315,000	1	0	0	315,000	1
DVHS-Prorated	0	0	0	0	0	0
Subtotal for Homestead Exemptions	**315,000**	**1**	**0**	**0**	**315,000**	**1**
Disabled Veterans Exemptions						
DV1	5,000	1	0	0	5,000	1
Subtotal for Disabled Veterans Exemptions	**5,000**	**1**	**0**	**0**	**5,000**	**1**
Absolute Exemptions						
EX-XV	20,551,727	4	0	0	20,551,727	4
EX-XV-PRORATED	0	0	0	0	0	0
Subtotal for Absolute Exemptions	**20,551,727**	**4**	**0**	**0**	**20,551,727**	**4**
Total:	**20,871,727**	**6**	**0**	**0**	**20,871,727**	**6**

New Value

Total New Market Value: $967,244

Total New Taxable Value: $967,244

JETI		Chapter 313		TIF/TIRZ	
New Market Value:	$0	New Market Value:	$0	New Market Value:	$0
New Taxable Value:	$0	New Taxable Value:	$0	New Taxable Value:	$0

Exemption Loss

New Absolute Exemptions

Exemption	Description	Count	Last Year Market Value
Absolute Exemption Value Loss:		**0**	**0**

New Partial Exemptions

Exemption	Description	Count	Partial Exemption Amt
Partial Exemption Value Loss:		**0**	**0**
Total NEW Exemption Value			**0**

Increased Exemptions

Exemption	Description	Count	Increased Exemption Amt
Increased Exemption Value Loss:		**0**	**0**
Total Exemption Value Loss:			**0**

New Special Use (Ag/Timber)

Count	2025 Market Value	2026 Special Use	Loss

New Annexations/Deannexations

Count	Market Value	Taxable Value

Average Homestead Value

Categor	Count of HS Res	Avg Market	Avg Exempt	Med Market	Med Exempt	Avg Taxable	Med Taxable
A Only	66	331,338	4,773	326,639	0	314,301	309,705
A & E	66	331,338	4,773	326,639	0	314,301	309,705

Property Under Review - Lower Value Used

Count	Market Value	Lower Market Value	Estimated Lower Taxable Value

CITY OF PHARR TAX INCREMENT

State Category Breakdown

Not Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	90		162,629	30,136,778	28,823,971
B	Multifamily Residential	74		0	34,441,911	33,718,754
C1	Vacant Lots and Tracts	12		0	5,951,568	5,951,568
D1	Qualified Open-Space Land	5	85.48	0	14,551,074	34,808
F1	Commercial Real Property	23		804,615	92,213,305	91,960,542
XV	Other Totally Exempt Properties (including	4		0	20,551,727	0
		Totals:	85.48	967,244	197,846,363	160,489,643

CITY OF PHARR TAX INCREMENT

State Category Breakdown

Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
Totals:						

CITY OF PHARR TAX INCREMENT

State Category Breakdown

Grand Totals

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	90		162,629	30,136,778	28,823,971
B	Multifamily Residential	74		0	34,441,911	33,718,754
C1	Vacant Lots and Tracts	12		0	5,951,568	5,951,568
D1	Qualified Open-Space Land	5	85.48	0	14,551,074	34,808
F1	Commercial Real Property	23		804,615	92,213,305	91,960,542
XV	Other Totally Exempt Properties (including	4		0	20,551,727	0
		Totals:	85.48	967,244	197,846,363	160,489,643

CITY OF PHARR TAX INCREMENT

Top Taxpayers

Rank	Owner ID	Taxpayer Name	Market Value	Taxable Value
1	1155525	PTC TX HOLDINGS LLC	$46,318,088	$46,318,088
2	1219225	BFI NEWCO HOLDINGS INC	$12,203,296	$12,203,296
3	1342697	1100 W MINNESOTA RD PROPERTY	$8,121,793	$8,121,793
4	1067699	PAPPAS RESTAURANTS INC	$4,838,168	$4,838,168
5	1136755	AATTIC X1 LIMITED PARTNERSHIP	$3,995,189	$3,995,189
6	1238106	MCALLEN HOSPITALS LP	$3,571,672	$3,571,672
7	1126427	SABINE 2014-2 LLC	$2,202,047	$2,202,047
8	1099043	MCALLEN HOSPITALS LP	$2,181,703	$2,181,703
9	1046195	AZ & SA FAMILY LP	$2,610,094	$1,967,040
10	1317536	AUSTIN 495 PLAZA LLC	$1,864,384	$1,864,384
11	1129706	STORE MASTER FUNDING XII LLC	$1,636,492	$1,636,492
12	1126424	SABINE 2014-2 LLC	$1,547,889	$1,547,889
13	1252542	KO WASH LLC	$1,482,116	$1,482,116
14	1204578	INSPIRED PROPERTIES LLC	$1,456,787	$1,456,787
15	1128979	SABINE 2014-2 LLC	$1,432,170	$1,432,170
16	1096643	TEXAS Q LLC	$1,301,220	$1,301,220
17	1125603	DOMUM GROUP LLC	$1,282,736	$1,282,736
18	1177665	CANTU LEAL INVESTMENTS LLC	$1,233,000	$1,233,000
19	331269	MARCLYN DEV CO LTD	$1,224,094	$1,224,094
20	1164724	CALA CALA LLC	$1,092,177	$1,092,177
		Total	$101,595,115	$100,952,061

COUNTY - CITY OF PHARR TAX

	NOT UNDER REVIEW	UNDER REVIEW	TOTAL
REAL PROPERTY & MFT HOMES	(Count) (260)	(Count) (0)	(Count) (260)
Land HS Value	1,147,504	0	1,147,504
Land NHS Value	84,960,299	0	84,960,299
Land Ag Market Value	57,525,459	0	57,525,459
Land Timber Market Value	0	0	0
Total Land Value	**143,633,262**	**0**	**143,633,262**
Improvement HS Value	2,058,385	0	2,058,385
Improvement NHS Value	201,721,864	0	201,721,864
Total Improvement	**203,780,249**	**0**	**203,780,249**
Market Value	**347,413,511**	**0**	**347,413,511**
BUSINESS PERSONAL PROPERTY	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
OIL & GAS / MINERALS	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
OTHER (Intangibles)	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
	(Total Count) (260)	(Total Count) (0)	(Total Count) (260)
TOTAL MARKET	**347,413,511**	**0**	**347,413,511**
Ag Productivity	351,894	0	351,894
Ag Loss (-)	57,173,565	0	57,173,565
Timber Productivity	0	0	0
Timber Loss (-)	0	0	0
APPRAISED VALUE	**290,239,946**	**0**	**290,239,946**
	100.0%	0.0%	100.0%
HS CAP Limitation Value (-)	129,025	0	129,025
CB CAP Limitation Value (-)	10,100,514	0	10,100,514
NET APPRAISED VALUE	**280,010,407**	**0**	**280,010,407**
Total Exemption Amount	7,473,334	0	7,473,334
NET TAXABLE	**272,537,073**	**0**	**272,537,073**
TAX LIMIT/FREEZE ADJUSTMENT	**285,500**	**0**	**285,500**
LIMIT ADJ TAXABLE (I&S)	**272,251,573**	**0**	**272,251,573**
CHAPTER 312 ADJUSTMENT	**0**	**0**	**0**
CHAPTER 313 ADJUSTMENT	**0**	**0**	**0**
LIMIT ADJ TAXABLE (M&O)	**272,251,573**	**0**	**272,251,573**

APPROX TOTAL LEVY = LIMIT ADJ TAXABLE * (TAX RATE / 100) + ACTUAL TAX

$0 = 272,251,573 * (0.000000 / 100) + $0

COUNTY - CITY OF PHARR TAX

Tax Limit Adjustment Breakdown

(Freeze)

NOT UNDER REVIEW

Limitation	Net Appr	Taxable	Act Tax	Ceiling	Count
OV65	300,500	285,500	0	0	1
Total	300,500	285,500	0	0	1

Tax Rate: 0.000000

UNDER REVIEW

TOTAL

Limitation	Net Appr	Taxable	Act Tax	Ceiling	Count
OV65	300,500	285,500	0	0	1
Total	300,500	285,500	0	0	1

Tax Rate: 0.000000

COUNTY - CITY OF PHARR TAX

Exemptions

EXEMPTIONS	NOT UNDER REVIEW		UNDER REVIEW		TOTAL	
Exemption	Total	Count	Total	Count	Total	Count
Homestead Exemptions						
OV65-Local	135,000	10	0	0	135,000	10
OV65-State	0	0	0	0	0	0
OV65-Prorated	0	0	0	0	0	0
OV65S-Local	30,000	2	0	0	30,000	2
OV65S-State	0	0	0	0	0	0
OV65S-Prorated	0	0	0	0	0	0
DVHS	195,030	1	0	0	195,030	1
DVHS-Prorated	0	0	0	0	0	0
Subtotal for Homestead Exemptions	**360,030**	**13**	**0**	**0**	**360,030**	**13**
Disabled Veterans Exemptions						
DV4	12,000	1	0	0	12,000	1
Subtotal for Disabled Veterans Exemptions	**12,000**	**1**	**0**	**0**	**12,000**	**1**
Absolute Exemptions						
EX-XV	7,101,304	32	0	0	7,101,304	32
EX-XV-PRORATED	0	0	0	0	0	0
Subtotal for Absolute Exemptions	**7,101,304**	**32**	**0**	**0**	**7,101,304**	**32**
Total:	**7,473,334**	**46**	**0**	**0**	**7,473,334**	**46**

New Value

Total New Market Value: $2,508,962

Total New Taxable Value: $2,508,962

JETI		Chapter 313		TIF/TIRZ	
New Market Value:	$0	New Market Value:	$0	New Market Value:	$0
New Taxable Value:	$0	New Taxable Value:	$0	New Taxable Value:	$0

Exemption Loss

New Absolute Exemptions

Exemption	Description	Count	Last Year Market Value
EX-XV	Other Exemptions (including public property, reli...	1	0
Absolute Exemption Value Loss:		**1**	**0**

New Partial Exemptions

Exemption	Description	Count	Partial Exemption Amt
Partial Exemption Value Loss:		**0**	**0**
Total NEW Exemption Value			**0**

Increased Exemptions

Exemption	Description	Count	Increased Exemption Amt
Increased Exemption Value Loss:		**0**	**0**
Total Exemption Value Loss:			**0**

New Special Use (Ag/Timber)

Count	2025 Market Value	2026 Special Use	Loss

New Annexations/Deannexations

Count	Market Value	Taxable Value

Average Homestead Value

Categor	Count of HS Res	Avg Market	Avg Exempt	Med Market	Med Exempt	Avg Taxable	Med Taxable
A Only	14	202,110	13,931	218,352	0	178,963	190,138
A & E	16	192,042	12,189	199,789	0	171,789	177,383

Property Under Review - Lower Value Used

Count	Market Value	Lower Market Value	Estimated Lower Taxable Value

COUNTY - CITY OF PHARR TAX

State Category Breakdown

Not Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	27		0	4,606,703	4,120,648
C1	Vacant Lots and Tracts	47		0	18,809,668	18,599,228
D1	Qualified Open-Space Land	69	1,083.26	0	57,525,459	351,894
D2	Farm or Ranch Improvements on Qualified	2		0	7,623	7,623
E	Rural Land,Not Qualified for Open-Space Land	17		0	4,229,826	4,012,859
F1	Commercial Real Property	89		2,508,962	254,916,269	245,228,162
J3	Electric Companies (including Co-ops)	1		0	210,763	210,763
M1	Mobile Homes	1		0	5,896	5,896
XV	Other Totally Exempt Properties (including	32		0	7,101,304	0
		Totals:	1,083.26	2,508,962	347,413,511	272,537,073

COUNTY - CITY OF PHARR TAX

State Category Breakdown

Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
Totals:						

COUNTY - CITY OF PHARR TAX

State Category Breakdown

Grand Totals

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	27		0	4,606,703	4,120,648
C1	Vacant Lots and Tracts	47		0	18,809,668	18,599,228
D1	Qualified Open-Space Land	69	1,083.26	0	57,525,459	351,894
D2	Farm or Ranch Improvements on Qualified	2		0	7,623	7,623
E	Rural Land,Not Qualified for Open-Space Land	17		0	4,229,826	4,012,859
F1	Commercial Real Property	89		2,508,962	254,916,269	245,228,162
J3	Electric Companies (including Co-ops)	1		0	210,763	210,763
M1	Mobile Homes	1		0	5,896	5,896
XV	Other Totally Exempt Properties (including	32		0	7,101,304	0
		Totals:	1,083.26	2,508,962	347,413,511	272,537,073

COUNTY - CITY OF PHARR TAX

Top Taxpayers

Rank	Owner ID	Taxpayer Name	Market Value	Taxable Value
1	1154119	46TH STREET INVESTORS & PWIP LLC &	$39,681,935	$39,681,935
2	1012296	PHARR BRIDGE INVESTMENT COMPANY	$17,989,083	$16,048,962
3	1148056	BISSELL SOUTHWEST DC LEASING LLC	$14,399,347	$13,101,453
4	1277633	ECS-MCALLEN PROPCO LLC	$12,942,363	$12,942,363
5	1235264	OUTWESTERN LLC	$11,546,933	$11,546,933
6	1203970	WAREHOUSE LEASING OF TEXAS LLC	$9,027,145	$9,027,145
7	1242334	OCP CAPOTE 2022 LP	$8,987,431	$8,987,431
8	1279200	OCP CAPOTE 2023 LP	$8,987,431	$8,987,431
9	1194905	CEUTA PROPERTIES INC	$6,677,072	$6,677,072
10	933301	BAKER PROSPERITY LLC	$6,113,938	$6,113,938
11	1095890	INDEX FRESH OF TEXAS LLC	$5,150,000	$5,150,000
12	1062361	CAMPERO HOLDINGS COMPANY LLC	$6,632,766	$5,106,563
13	1196232	OMG INVESTMENTS LLC	$4,708,076	$4,708,076
14	1215176	CAMPERO LAND & DEVELOPMENT LLC	$7,326,890	$4,375,000
15	272470	BEBO DISTRIBUTING COMPANY INC	$5,324,997	$4,270,584
16	944988	EL ROSAL COLD STORAGE LLC	$4,202,573	$4,202,573
17	1249672	LAKEWAY FOODS LLC	$4,136,650	$4,136,650
18	1188576	QUEENSTOWN PARK LLC	$4,000,000	$4,000,000
19	1016294	RODRIGUEZ JOSE ALFREDO & LAURA M	$3,903,140	$3,903,140
20	1145976	FAAT INVESTMENT GROUP LLC	$3,756,279	$3,756,279
		Total	$185,494,049	$176,723,528

COUNTY - CITY OF PHARR TAX

	NOT UNDER REVIEW	UNDER REVIEW	TOTAL
REAL PROPERTY & MFT HOMES	(Count) (206)	(Count) (0)	(Count) (206)
Land HS Value	6,085,421	0	6,085,421
Land NHS Value	55,850,868	0	55,850,868
Land Ag Market Value	14,551,074	0	14,551,074
Land Timber Market Value	0	0	0
Total Land Value	**76,487,363**	**0**	**76,487,363**
Improvement HS Value	17,161,798	0	17,161,798
Improvement NHS Value	104,197,202	0	104,197,202
Total Improvement	**121,359,000**	**0**	**121,359,000**
Market Value	**197,846,363**	**0**	**197,846,363**
BUSINESS PERSONAL PROPERTY	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
OIL & GAS / MINERALS	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
OTHER (Intangibles)	(0)	(0)	(0)
Market Value	**0**	**0**	**0**
	(Total Count) (206)	(Total Count) (0)	(Total Count) (206)
TOTAL MARKET	**197,846,363**	**0**	**197,846,363**
Ag Productivity	34,808	0	34,808
Ag Loss (-)	14,516,266	0	14,516,266
Timber Productivity	0	0	0
Timber Loss (-)	0	0	0
APPRAISED VALUE	**183,330,097**	**0**	**183,330,097**
	100.0%	0.0%	100.0%
HS CAP Limitation Value (-)	867,928	0	867,928
CB CAP Limitation Value (-)	1,100,799	0	1,100,799
NET APPRAISED VALUE	**181,361,370**	**0**	**181,361,370**
Total Exemption Amount	20,871,727	0	20,871,727
NET TAXABLE	**160,489,643**	**0**	**160,489,643**
TAX LIMIT/FREEZE ADJUSTMENT	**0**	**0**	**0**
LIMIT ADJ TAXABLE (I&S)	**160,489,643**	**0**	**160,489,643**
CHAPTER 312 ADJUSTMENT	**0**	**0**	**0**
CHAPTER 313 ADJUSTMENT	**0**	**0**	**0**
LIMIT ADJ TAXABLE (M&O)	**160,489,643**	**0**	**160,489,643**

APPROX TOTAL LEVY = NET TAXABLE * (TAX RATE / 100)

$0 = 160,489,643 * (0.000000 / 100)

COUNTY - CITY OF PHARR TAX

Exemptions

EXEMPTIONS	NOT UNDER REVIEW		UNDER REVIEW		TOTAL	
Exemption	Total	Count	Total	Count	Total	Count
Homestead Exemptions						
DVHS	315,000	1	0	0	315,000	1
DVHS-Prorated	0	0	0	0	0	0
Subtotal for Homestead Exemptions	**315,000**	**1**	**0**	**0**	**315,000**	**1**
Disabled Veterans Exemptions						
DV1	5,000	1	0	0	5,000	1
Subtotal for Disabled Veterans Exemptions	**5,000**	**1**	**0**	**0**	**5,000**	**1**
Absolute Exemptions						
EX-XV	20,551,727	4	0	0	20,551,727	4
EX-XV-PRORATED	0	0	0	0	0	0
Subtotal for Absolute Exemptions	**20,551,727**	**4**	**0**	**0**	**20,551,727**	**4**
Total:	**20,871,727**	**6**	**0**	**0**	**20,871,727**	**6**

New Value

Total New Market Value: $967,244

Total New Taxable Value: $967,244

JETI		Chapter 313		TIF/TIRZ	
New Market Value:	$0	New Market Value:	$0	New Market Value:	$0
New Taxable Value:	$0	New Taxable Value:	$0	New Taxable Value:	$0

Exemption Loss

New Absolute Exemptions

Exemption	Description	Count	Last Year Market Value
Absolute Exemption Value Loss:		**0**	**0**

New Partial Exemptions

Exemption	Description	Count	Partial Exemption Amt
Partial Exemption Value Loss:		**0**	**0**
Total NEW Exemption Value			**0**

Increased Exemptions

Exemption	Description	Count	Increased Exemption Amt
Increased Exemption Value Loss:		**0**	**0**
Total Exemption Value Loss:			**0**

New Special Use (Ag/Timber)

Count	2025 Market Value	2026 Special Use	Loss

New Annexations/Deannexations

Count	Market Value	Taxable Value

Average Homestead Value

Categor	Count of HS Res	Avg Market	Avg Exempt	Med Market	Med Exempt	Avg Taxable	Med Taxable
A Only	66	331,338	4,773	326,639	0	314,301	309,705
A & E	66	331,338	4,773	326,639	0	314,301	309,705

Property Under Review - Lower Value Used

Count	Market Value	Lower Market Value	Estimated Lower Taxable Value

COUNTY - CITY OF PHARR TAX

State Category Breakdown

Not Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	90		162,629	30,136,778	28,823,971
B	Multifamily Residential	74		0	34,441,911	33,718,754
C1	Vacant Lots and Tracts	12		0	5,951,568	5,951,568
D1	Qualified Open-Space Land	5	85.48	0	14,551,074	34,808
F1	Commercial Real Property	23		804,615	92,213,305	91,960,542
XV	Other Totally Exempt Properties (including	4		0	20,551,727	0
		Totals:	85.48	967,244	197,846,363	160,489,643

COUNTY - CITY OF PHARR TAX

State Category Breakdown

Under Review

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
Totals:						

COUNTY - CITY OF PHARR TAX

State Category Breakdown

Grand Totals

Code	Description	Count	Acres	New Value	Market Value	Taxable Value
A	Single-family Residential	90		162,629	30,136,778	28,823,971
B	Multifamily Residential	74		0	34,441,911	33,718,754
C1	Vacant Lots and Tracts	12		0	5,951,568	5,951,568
D1	Qualified Open-Space Land	5	85.48	0	14,551,074	34,808
F1	Commercial Real Property	23		804,615	92,213,305	91,960,542
XV	Other Totally Exempt Properties (including	4		0	20,551,727	0
		Totals:	85.48	967,244	197,846,363	160,489,643

COUNTY - CITY OF PHARR TAX

Top Taxpayers

Rank	Owner ID	Taxpayer Name	Market Value	Taxable Value
1	1155525	PTC TX HOLDINGS LLC	$46,318,088	$46,318,088
2	1219225	BFI NEWCO HOLDINGS INC	$12,203,296	$12,203,296
3	1342697	1100 W MINNESOTA RD PROPERTY	$8,121,793	$8,121,793
4	1067699	PAPPAS RESTAURANTS INC	$4,838,168	$4,838,168
5	1136755	AATTIC X1 LIMITED PARTNERSHIP	$3,995,189	$3,995,189
6	1238106	MCALLEN HOSPITALS LP	$3,571,672	$3,571,672
7	1126427	SABINE 2014-2 LLC	$2,202,047	$2,202,047
8	1099043	MCALLEN HOSPITALS LP	$2,181,703	$2,181,703
9	1046195	AZ & SA FAMILY LP	$2,610,094	$1,967,040
10	1317536	AUSTIN 495 PLAZA LLC	$1,864,384	$1,864,384
11	1129706	STORE MASTER FUNDING XII LLC	$1,636,492	$1,636,492
12	1126424	SABINE 2014-2 LLC	$1,547,889	$1,547,889
13	1252542	KO WASH LLC	$1,482,116	$1,482,116
14	1204578	INSPIRED PROPERTIES LLC	$1,456,787	$1,456,787
15	1128979	SABINE 2014-2 LLC	$1,432,170	$1,432,170
16	1096643	TEXAS Q LLC	$1,301,220	$1,301,220
17	1125603	DOMUM GROUP LLC	$1,282,736	$1,282,736
18	1177665	CANTU LEAL INVESTMENTS LLC	$1,233,000	$1,233,000
19	331269	MARCLYN DEV CO LTD	$1,224,094	$1,224,094
20	1164724	CALA CALA LLC	$1,092,177	$1,092,177
		Total	$101,595,115	$100,952,061

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.A.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Maritza Magallan, Director

DEPARTMENT: Fire

DIRECTOR: Pilar Rodriguez

Agenda Item: Consideration and action, if any, amending Interlocal Cooperative Agreement for Rural Emergency Services between the City of Pharr and Hidalgo County. **This item supports SSC - Safe and Secure Community**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: The City of Pharr Fire Department provides emergency services in the rural and unincorporated portions of Hidalgo County. The City currently has an interlocal agreement with Hidalgo County for reimbursement of these services. The amendment updates the existing agreement by revising the contract term to June 1, 2026 through December 31, 2026 and a month-to-month rate of $4,8611.11 per month. City Commission approval is requested to authorize execution of the amendment

Fiscal Consideration: N/A

Staff Recommendation: Staff recommends approval of amendment to the Interlocal Cooperative Agreement for Rural Emergency Services

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Maritza Magallan	Created/Initiated - 08/06/2026
Pilar Rodriguez	Approved - 08/07/2026
Hilda Pedraza	Approved - 08/11/2026
Ricardo Rodriguez	Approved - 08/12/2026
Jamison Merrick	New -
City Management Office	-

STATE OF TEXAS

COUNTY OF HIDALGO

INTERLOCAL COOPERATION AGREEMENT BETWEEN (ENTITY) AND HIDALGO COUNTY, TX

This Interlocal Cooperation Agreement is made on the **21st** day of July, by and between the COUNTY OF HIDALGO, TEXAS, hereafter called ("County"), and the **City of Pharr, TEXAS**, a municipal corporation/non-incorporated area hereinafter called ("CITY/ENTITY"), collectively referred to as "Parties". Entity and County are authorized to enter into this Agreement pursuant to the Interlocal Cooperation Act, Texas Government Code 791.001 et seq., which authorizes local governments to contract with each other to perform Governmental functions.

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1.0 TERMS

1.1 This contract shall be for a period commencing on **June 1, 2026**, and shall terminate on **December 31, 2026**.

1.2 Should it become necessary, the services provided herein may continue at County's discretion after the expiration date, subject to all of the terms and conditions of this Agreement at a month-to-month rate of **$4,861.11 per month**.

1.3 Either party has the option to terminate this Contract without cause by written notification, to the other on sixty (60) day notice.

1.4 The Rural Emergency Service Incident Report (Exhibit "A") form must be utilized as part of the monthly report submitted to the County Fire Marshal or his designee.

1.5 All Incident Reports should be submitted to County Fire Marshal's Office within (fifteen) 15 days of the following month.

2.0 DEFINITIONS

BASIC FIRST AID - Refers to the initial process of assessing and addressing the needs of someone who has been injured or is in physiological distress due to choking, minor scrapes and bruises, allergic reactions, drugs or other medical emergencies. Basic first aid allows you to quickly determine a person's physical condition and the correct course of treatment. You should always follow correct first aid procedures for it can be the difference between life and death.

BEE ATTACK – Any response to a situation where there is an on-going attack on person(s), domestic animal(s), and/or livestock, or a recent attack that requires first responder entrance into the immediate scene to rescue any person(s.) **INCLUDING** situations of bee removal of

hazards where no attack is in progress when arriving at emergency scene, or sustained at the time of response where firefighters are required to utilize bee suits and equipment.

BODY RECOVERY – Any recovery of a deceased human remains.

CATEGORY – All and any emergency response shall be categorized in a category that will be enumerated as I, II, III. Categories are designed to simplify reporting.

COUNTY FIRE MARSHAL – the person appointed by the Commissioners Court in accordance with LGC 352 who is responsible for the administration of fire investigations, fire safety inspections, and fire prevention activities, administration of the Rural Emergency Services Contract and enforcement of the most recently adopted International Fire Code. This is a sworn position.

COUNTY FIRE INVESTIGATORS – Those officers designated as such, by the County Fire Marshal that are responsible for all duties which may be assigned.

CHIEF DEPUTY / DEPUTY FIRE MARSHAL – Those officers designated and commissioned by the County Fire Marshal that are responsible for all duties which may be assigned by the County Fire Marshal.

ENTITY – The parent organization of a Fire Department whose members are full time, part time, paid or unpaid volunteers and for the purposes of this contract includes any elements from any regional response team/public works department that are requested or deployed to assist with the suppression, control or extinguishment of a fire.

FALSE ALARM CALL - Any emergency response to a mischievous or malicious call, or false call that requires fire personnel to investigate the scene or incident to make a determination as to whether or not there is an emergency incident. If there are multiple alarms at the same location the responding Primary/Secondary Entity shall notify the Fire Marshal's Office by the next Business Day.

FIREFIGHTING – Any incident upon arrival that is a Working Structural and/or Vehicle Fire, a Petroleum Based Fire, or Brush, Grassland or Rubbish Fire requires the action or process of extinguishing fires by Entities

GOOD INTENT CALLS – Any emergency incident response where fire personnel were summoned, but were not required to take any action (investigation, standby, or there was no actual incident). **Response to this type of call must come through a dispatch point.**

HAZARDOUS MATERIAL FIRST RESPONDER INCIDENT – response to any incident at a First Responder **(Awareness & Operations)** Level, as defined by the Environmental Protection Agency and/or the Texas Commission on Environmental Quality and includes, hazardous material Identification, low level containment / Mitigation, i.e. (fuel spills **below 35 gallons**, from any vehicle, including motor vehicles, trains, motorcycle or aircraft.)

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HAZARDOUS MATERIAL TECHNICIAN LEVEL INCIDENT– response to any incident at the Technician Level, as defined by the Environmental Protection Agency and/or the Texas Commission on Environmental Quality and includes, hazardous material Identification via Monitoring / Identification devices, and or specialized equipment for such purposes, High level containment / Mitigation, (i.e. Solid, Liquid, Gas (Vapor) Chemical / Fuel spills **above 35 gallons** from any structure, vehicle, and or storage type facility.

INCORPORATED / UNINCORPORATED AREA(S) - any area(s) within Hidalgo County that exist at time of execution thereof, and as they may be amended by reasons of annexation and/or de-annexation of property by any respective city shall not be covered in this contract.

LAW ENFORCEMENT ASSISTANCE – any non-fire assistance requested by County, State, or Federal Law Enforcement Agency, and includes, but is not limited to – vehicle recovery (water), crowd control, and "standing-by" for any situation in pursuance of a law enforcement, and or Investigative mission. **Excluding** MVA duties (Traffic Control, Wash downs, Patient Packaging).

MASS CASUALTY INCIDENT – any emergency rescues and/or recovery of victims, eight (8) victims or more, from any major incident or accident, (i.e. Haz-Mat, aircraft, any passenger transportation bus, regardless of cause, building collapse, or assembly area.)

MEDICAL CALL – In an emergency situation, under exigent circumstances and the situation dictates immediate medical attention excluding Basic First Aid, An EMS protocol shall be set up as follows:
Medical calls to be eligible for this category shall be limited to:

1. Burns/Explosions
2. Carbon Monoxide/Inhalation/Haz-Mat/CBRN
3. Electrocutions/Lightning
4. Inaccessible Incident, Other Entrapments (non-traffic)
5. Psychiatric/Abnormal Behavior/Suicide Attempt
6. Traffic/Transportation Incidents
7. Heart Problems– Stroke - Chest Pains – Cardiac or Respiratory Arrest/Death
8. Person Down – Unconscious/Non Responsive, Fatality
9. Breathing Problems -Choking
10. Traumatic Injuries

This section is not to be construed as a reimbursement plan for a fire-based department that operates an emergency medical service (EMS) otherwise covered by any other contracts that are already in place.

MUTUAL AID – When a Primary Entity response to an emergency event where the situation is of such magnitude, either upon arrival or during the actual response, that the primary city/entity must declare a multiple alarm and request response from one or more Secondary Entity(s) and such assistance is necessary to control, extinguish, or otherwise assist with the response. This includes any element of Public Works/Am-Bus/Regional Response Teams that is called upon to help mitigate the emergency. The call for additional resources is made by the

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Primary Entity and the call from Secondary Entity may be based on the extenuating circumstances, and may be made by the On-Scene Incident Commander, and must go through a dispatch point. The Fire Marshal may authorize and/or request mutual aid at any time whether or not on-scene, when the request is made directly to them.

PETROLEUM BASED INCIDENT – any emergency incident or fire whose main fuel source includes natural gas, liquefied gas, crude or refined oil or any other petroleum based product that may be used or processed as fuel or as a precursor for fuel. It also includes any storage container, conveyance of said product, whether by motor vehicle, pipeline or any other type of transport medium

PRIMARY ENTITY – An Entity who has contracted as a party with the County and is assigned to respond as the Lead Emergency Incident-Based Response Agency to the geographical area assigned to the Entity within the rural areas of the County, wherein the respective Entity Shall be responsible for primary response to an emergency incident as per Section II, Paragraph A, of this contract. This may be based on geographical assignments or capability.

PUBLIC WORKS/REGIONAL RESPONSE TEAM/AM-BUS RESPONSE – Any incident response that requires operational support elements from what is commonly referred to as Public Works, to respond to an emergency situation, to help mitigate, control, or otherwise facilitate the overall response. This response may only be requested and authorized by the On-Scene Incident Commander through the County Fire Marshal's Office. The Am-Bus is an additional resource that may respond to any special situation to provide tactical rescue/EMS assistance and support for any first responder regardless of discipline. The Regional Response Teams are based and maintained from the Lower Rio Grande Valley Development Council (LRGVDC) Homeland Security Association Committee (HSAC).

REIMBURSEMENT PLAN – County method by which contracted Entity is reimbursed by the County for emergency services rendered in any rural area within Hidalgo County.

RUBBISH/BRUSH/GRASS//WILDLAND FIRE– Any fire occurring in vegetative areas, trash, garbage, brush, grass or other unwanted things, and includes any tangible item discarded, collected, or recycled arranged as to burn for cleaning / clearing as a part of a controlled situation, whether permitted or not regardless of ignition sources, damages or benefits. An uncontrolled fire in grassland, brush-land, or land sown crops.

RURAL AREA – any non-incorporated areas within Hidalgo County, as they exist at the time of execution thereof, and as they may be amended by reasons of annexation and/or de-annexation of property by any respective city or any incorporated area within Hidalgo County that does not provide its own emergency services or response.

RURAL RESPONSE DISTRICT – The area designated for the respective Primary Entity for emergency response within a delineated geographical area as depicted and described in Exhibit "B", attached hereof. The rural response district may be amended from time to time pursuant to Section3.2.

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SEARCH and RESCUE CALLS – all rescues of person(s), from water, high angle, confined space, or all rescue/extrication of person(s) from entanglement, entrapment, enclosed areas, elevators, building collapse **Excluding** Recovery, and/or Vehicle Extrication.

SECONDARY CITY – the Entity who is a party to a cooperative agreement with the County and is assigned or requested to respond to assist the primary city in any type of emergency response to an area where the emergency occurred (Mutual Aid). The response may occur anywhere within the rural County and may be based on geographical assignment or capability **EXCLUDING** any aid to any other Jurisdictions in their city limits or other counties.

SERVICE CALLS – any call involving, smoke scare, mischievous or malicious calls, and alarm system malfunctions requiring fire personnel to deal with an incident, but where no actual services, investigation or standby was rendered or needed.

STRUCTURE – any construction within reason, or any production or piece of work artificially built or composed of parts joined together in some definite manner, that is built, under construction or constructed and it includes any edifice, or building of any kind.

TRAFFIC CONTROL – Any incident response where the nature of the call is strictly for traffic control assistance.

MOTOR VEHICULAR ACCIDENT (MVA) – any motor vehicle or automobile collision regardless of amount of or type of vehicles involved, where services other than "VEHICULAR EXTRICATION" is performed.

VEHICULAR EXTRICATION – any emergency extrication of person(s) with the use of any specialized tools; hydraulic, and/or manual tools from wreckage entanglement as a result of an automobile collision, regardless of motor vehicle type.

VEHICLE FIRE -A working fire – upon arrival that involves any vehicle fire. (i.e. Semi-Truck and or Trailer, Transport Vehicle, Service Vehicles, commuter bus or personal vehicle, car, truck, van).

WASH DOWN – Any spill where there is no fire and the spill consists of vegetation such as fruits & vegetables and any other non-petroleum based products on roadway, parking lots, etc. that requires a wash down – no vehicular accident.

WIRELINE INCIDENTS (All TYPES) – where the response is of such nature that there is a "downed-wire" or "low-hanging wire" or energized or with/without fire and the responding **Entity must standby and await the arrival of a utility company or responding Entity must remove, and or mitigate the non-emergency situation.** Any situation where there is immediate danger to the public from an electrical wire, and the situation dictate immediate traffic control, or public redirection or any situation where there is no immediate danger to the public from an electrical wire, and the situation does not dictate immediate traffic control, or

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public redirection. **Any situation where the Entity is not required to stand-by for the service company will be classified as a Service Call.**

3.0 ENTITY RESPONSIBILITIES

3.1 Entity hereby agrees to provide emergency incident response based services, ***if resources are available*****,** to the geographically assigned Rural Response District, within the County, as may be required by the County Fire Marshal or otherwise as delineated within this contract.

3.2 Entity hereby agrees to the designation of Primary (response) within their designated Rural Response District as depicted in the attached map, as Exhibit "B". Each Entity Rural Response District may be amended from time to time during the period of this contract by annexation or de-annexation of property by any respective city(s), or by agreement of the County Fire Marshal, and Fire Chief(s) responsible for the existing Rural Response District. The Response Districts and assigned Entity will be provided to the designated 911 Coordinator and the Sheriff's Office. A map depicting the Rural Response Districts of all participating Entity(s) shall be maintained and provided upon request by the County Fire Marshal, at their designated office.

3.3 Entity hereby agrees to seek authorization from the County Fire Marshal prior to responding to a call outside of the Rural Response Districts' geographical area as delineated and depicted in Exhibit "B" unless authorized by the County Fire Marshals and/or Entity of the Rural Response District.

3.4 Entity hereby agrees to provide the County Fire Marshal, with any and all records, reports, and documents, to include, but not limited to, statistics, data, calls for service records, dispatch logs, and any other records or other documents requested. In the absence of the Fire Marshal, said records, reports, and documents may be provided to the County Judge or his designee.

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3.5 Entity agrees that in multi-agency response calls, the communications interoperability radio channels will be used as primary communications with the designated incident commander. The Incident Commander or assigned communications officer may designate user and sub-user groups as necessary.

3.6 Entity agrees to allow the County Fire Marshal, full access to any and all operational communications frequencies / talk groups, that the Entity operates on and authorize the County Fire Marshal to use those frequencies/talk groups during a response to a designated emergency situation that the Entity responds to. This will include assigning user-identification numbers (if available) to any County Fire Marshal communications radio.

3.7 Entity agrees to practice NIMS/ICS during any multi-agency – multi-tiered response.

3.8 Entity agrees to provide its' own insurance for equipment, vehicles, and personnel used in performing any of the services described herein. Emergency vehicles and fire-fighting equipment must be owned and/or managed by the Entity. Entity agrees to provide proof of

current and adequate vehicle, equipment and workmen's compensation insurance to the County upon submission of this contract or upon request from the County Fire Marshal.

3.9 During extended operations as designated by the Incident Commander, the Entity agrees to provide adequate hydration and sustenance for its firefighters/emergency response personnel.

3.10 Entity agrees that it will not cause, create or allow any type of "roving-patrols" or "smoke-hunting / chasing" operations by full-time employees, volunteers or paid-volunteers, in an effort to seek out emergency responses. A simple trash burning call will be referred to the appropriate law enforcement agency, i.e... Fire Marshal, Constable Office or Sheriff's Office, unless the Roving preventive fire patrol activity is requested and authorized by the Fire Marshal in writing during an emergency situation, burn ban period, or fireworks ban period.

4.0 COUNTY RESPONSIBILITIES

4.1 In consideration for the Entity's Rural Emergency Services, the County will provide a lump sum payment of **$29,166.67**.

4.2 The County shall designate a person and office that shall be known as the County Fire Marshal and County Fire Marshal's Office, who shall have the following responsibilities;

4.2.1.1 **ADMINISTRATION**

a. Administration of Fire Marshal's Office
b. Cause Burn Ban Signs (during designated times) to be displayed in conspicuous locations at all major roadway entrances to the County.
c. Commercial Building Inspections
d. Fire Safety Inspections
e. Adult and Child Day Care Facility Inspections
f. Health Care Facility Inspections
g. Existing and New Construction Inspections
h. Implementation and Enforcement of the most current version of the International Fire Code.
i. Issuance and Regulation of Burn Permits in Rural County areas
j. Monitor weather conditions and cause burn bans and fireworks bans to be enacted by the Commissioners Court, as appropriate.
k. Plat/Plan Reviews and approvals

4.2.2 **INVESTIGATIONS**

a. Conduct Fire Investigations
b. Assist and guide other law enforcement agencies with Fire Code violations and enforcement.
c. Provide Information and Reports
d. May provide assistance to Municipal Fire Marshal(s) or representative with Fire Investigations, upon request.

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e. May provide primary assistance to contracted entity where there is no fire investigator at present the county may with advanced notification to HCFMO so that arrangements can be made.
f. Issue Citations, make arrests, and file criminal cases as appropriate.

4.2.3 **FIRE PREVENTION**

a. Plan, coordinate and direct activities.
b. Conduct and participate in training with all Fire Departments.
c. Acquire and maintain equipment.
d. Conduct public education.
e. Perform fire safety presentations.

4.2.4 **ADMINISTER RURAL EMERGENCY SERVICES CONTRACT**

a. Review and process all payments in a timely manner.
b. Confer with appropriate Fire Chief on any discrepancies.
c. Determine if a Rural Response District may respond outside of the Rural Response Districts' geographical area as delineated and depicted in Exhibit "B".

4.2.5 **RESPONSE**

a. When requested, respond to a fire scene within a reasonable time to conduct an investigation into the cause of the fire.
b. Will respond to any major incidents.
c. Will integrate into the NIMS/ICS structure as appropriate
d. Will assist the Incident Commander with any duties as assigned.
e. Will provide Law Enforcement assistance/coordination as needed

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5.0 LIABILITY

5.1 Entity and County agree pursuant to Section 352.004, Texas Local Government Code that the acts of any person or persons traveling to or from or in a manner as defined in Section 352.004(c), shall be deemed as the acts of agents or employees of the County in all respects, notwithstanding such person or persons may otherwise be employees or firefighters of the Entity.

5.2 The County of Hidalgo and Entity agree that they will provide general liability insurance coverage for liabilities caused by vehicles, equipment, and personnel. Entity shall be responsible for any damage to its vehicles or equipment used in performing services under this Agreement. Each party agrees that it shall provide general liability insurance coverage for the action of their respective employees and firefighters.

5.3 Nothing herein shall be construed to prevent either party from becoming self-insured. Each Entity participating and entering into this contract must provide written proof of insurance to the County when submitting the contract for approval. Upon request by the County or it's duly authorized representative, the Entity must provide documentation of completion of any other State or Federal fire-fighting training requirements.

5.4 If either party cannot acquire the insurance required herein, this Agreement shall be void and the parties shall negotiate their respective obligations regarding emergency services response in the rural areas of Hidalgo County at the time. If at any time during the year the respective Entity loses its insurance capacity, it must immediately report this to the Fire Marshal and cease any responses to their assigned Rural Response District.

6.0 PAYMENT PLAN

6.1 County shall pay Entity for services provided hereunder in a lump sum payment to be made annually.

6.1.1 Entity shall keep true and accurate records of all rural emergency services provided hereunder and shall submit, on a monthly basis (within a reasonable time), any Rural Emergency Service Incident Reports to the County Fire Marshal, reporting is a condition of receiving payment from the County. The Rural Emergency Service Incident Report form(s), and supporting documents as listed in Section 3.4 shall be required as part of the monthly report. Accident Prevention Plan documentation is required from any Entity that utilized the County Worker's Compensation Policy, as described in Section 5.3.

6.1.2 County Fire Marshal shall accumulate records of all rural emergency service responses provided by all Entity(s) within Hidalgo County.

a. Any and all disputes of Entity reports shall be addressed directly to the Fire Marshal and/or the Entity in writing.

b. If a resolution of dispute for emergency response services cannot be reached, the reporting Entity may appeal to the Hidalgo County Executive Chief Officer.

c. If a resolution of dispute for emergency response services cannot be reached, the reporting Entity may appeal to the Hidalgo County Commissioner's Court.

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7.0. ASSIGNMENT

In the event a Rural Fire District(s) is created for the rural, non-incorporated areas of Hidalgo County, this contract may be assigned by County to such District, and Entity shall look solely to the District(s) to perform and assume all Obligations and Responsibilities of County.

8.0. AUDIT

Any and all requests from Entity for payment from County or any past reimbursements made under this contract or its predecessors shall be subject to audit by the County Auditor's Office, and/or the Fire Marshal. Should an audit procedure be invoked, Entity agrees to provide any and all records, photographs, videos, or other documents, pertaining to any request or claim for payment or reimbursement made or paid hereunder that are requested by the Auditor or Fire Marshal.

Should the County Auditor determine that any payments made were not properly claimed under the terms of this contract, Entity agrees to remit the amount of payments so found by the County Auditor to the County within ten (10) working days, following the date of receipt of Entity of County Auditors written determination.

9.0. MISCELLANEOUS

9.1 CONFLICT WITH APPLICABLE LAW. Nothing in this Agreement shall be construed so as to require the commission of any act contrary to law, and whenever there is any conflict between the provision of this Agreement and any present or future law, ordinance, or administrative, executive or judicial regulation, order or decree, or amendment thereof, contrary to which the parties have no legal right to contract, the latter shall prevail, but in such event the affected provision or provisions of this Agreement shall be modified only to the extent necessary to bring them within the legal requirements and only during the time such conflict exists.

9.2 NO WAIVER. No waiver by any party hereto of any breach of any provision of this Agreement shall be deemed to be a waiver of any preceding or succeeding breach of the same or any other provision hereof.

9.3 ENTIRE AGREEMENT – This agreement contains the entire contract among the parties hereto, and each party acknowledges that no other party has made (either directly or indirectly or through any agent or representative), any representations or agreements in connection with this agreement not specifically set forth herein. This Agreement may be modified or amended only by agreement in writing executed by both parties. This Agreement supersedes any and all agreements by and between the parties hereto. All previous agreements concerning the subject matter hereof between the parties are terminated as of the date of this Agreement.

9.4 TEXAS LAW TO APPLY. This agreement shall be construed under and in accordance with the Laws of the State of Texas, and all obligations of the parties created hereunder are performable in Hidalgo County, Texas. The parties hereby consent to personal jurisdiction in Hidalgo County, Texas.

9.5 NOTICE. Except as may be otherwise specifically provided in this Agreement, all notices, demands, request for communications required or permitted hereunder shall be in writing and shall either be (i) personally delivered against a written receipt, or (ii) sent by registered or certified mail, return receipt requested, postage pre-paid and addressed to the parties at the addresses set forth below, or at such other addresses as may have been therefore specified by written notice delivered in accordance herewith:

If to Entity City of Pharr, TX
Attn: Dr. Ambrosio Hernandez, Mayor
Address: 118 S. Cage Blvd. 4th Floor
Pharr, TX 78577

If to County: County of Hidalgo

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County Judge's Office
100 E. Cano St. 2nd Floor, Edinburg, Texas 78539 or
P.O. Box 1356, Edinburg, Texas 78540

Each notice, demand, request or communication which shall be delivered or mailed in the manner described above shall be deemed sufficiently given for all purposes of such time as it is personally delivered to the addressee or, if mailed, at such time as it is deposited in the United States Mail.

9.6 ADDITIONAL DOCUMENTS. The parties hereto covenant and agree that they will execute such other and further instruments and documents as are or may become necessary or convenient to effectuate and carry out the terms of this Agreement.

9.7 SUCCESSORS. This agreement shall be binding upon and insure to the benefit of the parties hereto and their respective heirs, executors, administrators, legal representatives, successors, and assigns where permitted by this Agreement.

9.8 HEADINGS. The headings and captions contained in this Agreement are solely for convenient reference and shall not be deemed to affect the meaning or interpretation of any provision or paragraph hereof.

9.9 GENDER and NUMBER. All pronouns used in this Agreement shall include the other gender, whether used in the masculine, feminine, or neutral gender, and the singular shall include the plural whenever and as often as may be appropriate.

9.10 AUTHORITY TO EXECUTE. The execution and performance of this Agreement by each of the parties hereto has been duly authorized by all necessary laws, resolutions, ordinances, or governing body action, and the Agreement constitutes, the valid and enforceable obligations of the parties hereto in accordance with its terms.

9.11 PERFORMANCE of GOVERNMENT FUNCTIONS. Each party hereto is entering into this Agreement for the purpose of providing for governmental services or functions, and will pay for such services out of current revenues available to the paying party as herein provided.

9.12 IMMUNITIES. Nothing in this Agreement is intended to and Parties do not hereby waive, release or relinquish any right to assert any of the defenses Parties enjoy by virtue of the state or federal constitution, laws, rules or regulations, and any sovereign, official or qualified immunity available to Parties as to any claim or action of any person, entity, or individual against Parties.

9.13 COMMITMENT of CURRENT REVENUES. In the event that, during any term hereof, the Commissioners Court does not appropriate sufficient funds to meet the obligations of County under this Agreement, County may terminate this Agreement upon ninety (90) days written notice to Entity. County agrees, however, to use reasonable efforts to secure funds necessary for the continued performance of this Agreement. The parties intend this provision to be a continuing right to terminate this Agreement at the expiration of each budget period of County.

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9.14 MUTUAL INDEMNIFICATION. Without waiving its sovereign immunity, and to the extent provided by law, each party shall indemnify and hold harmless each other, its officers, officials, and employees from and against all claims and liabilities of any nature or kind, including costs and expenses for or on account of any claims, damages, losses, or expenses of any character whatsoever resulting in whole or in part from the negligent performance or omission of either party's employees or representatives connected with the activities described herein.

(Signature Page to Follow)

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EXECUTED as of the day and year first written above.

APPROVED BY COMMISSIONERS' COURT ON July 21, 2026.

Agenda Item No. 104009 **Executive Office: _____**

CITY OF Pharr, TX

_____ _____
Dr. Ambrosio Hernandez, Mayor **Date**

ATTEST:

_____
Imelda Perez, City Secretary

COUNTY OF HIDALGO

_____ _____
Richard Cortez, County Judge **Date**

ATTEST:

_____
Arturo Guajardo, Jr., County Clerk

DRAFT

Approved as to Form:
Office of Criminal District Attorney's Office
Toribio "Terry" Palacios

By: _____
Michelle Lopez, Assistant District Attorney

Pharr Rural Response Area

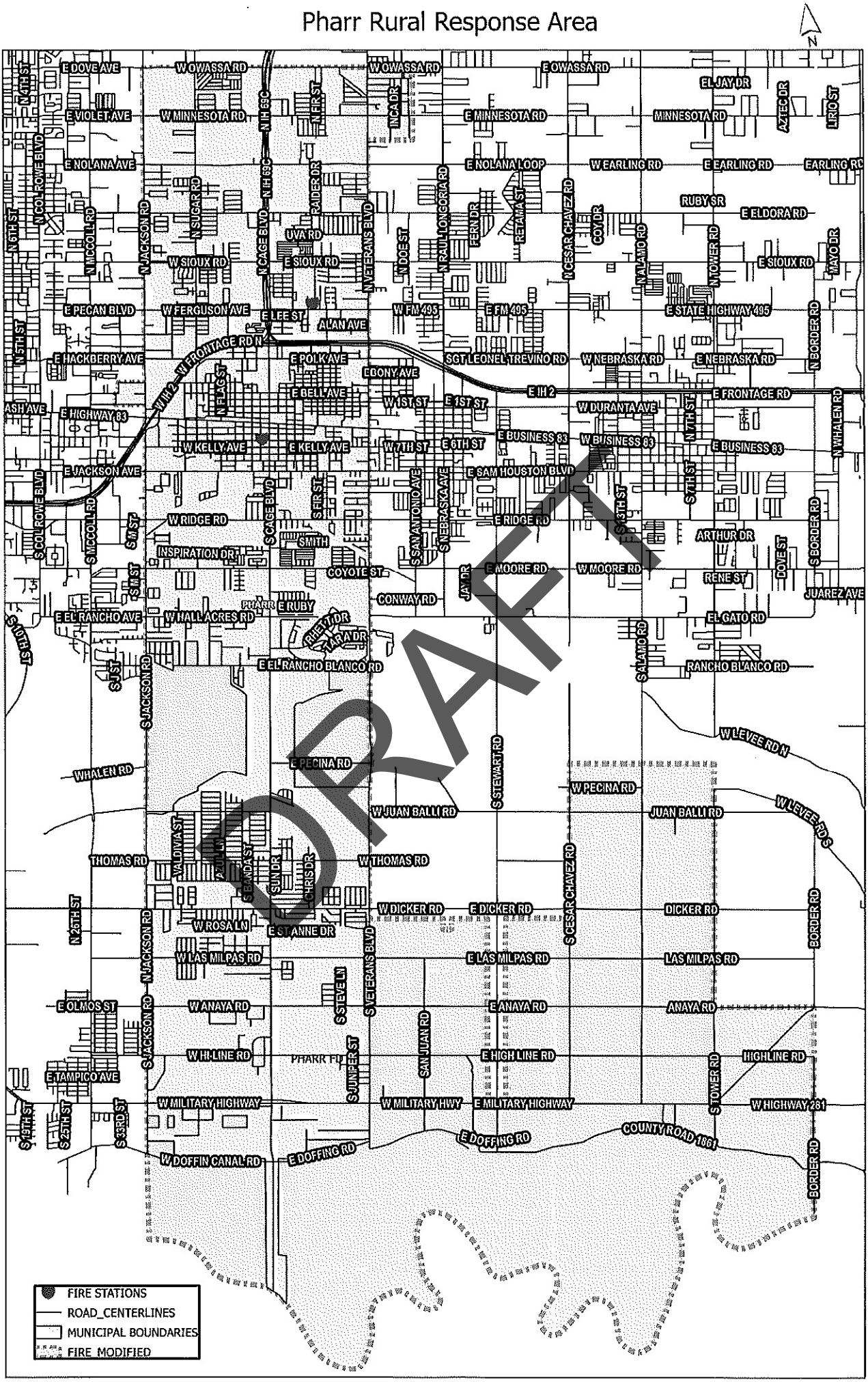

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EXHIBIT "A"

Department: _____ County Incident: _____

Date: _____ Alarm Time: _____ Arrival Time: _____ Depart Time: _____

Situation Reported: _____ Situation Found: _____

Mutual Aid: _____ Given: _____ Received: _____ Department(s): _____

Non-Applicable: _____ Department: _____

Caller Name: _____ Requesting Person: _____

Incident Location: _____

GPS Coordinates: _____

Occupant Name: _____

Owner Name: _____

Owner Address: _____

Owner Phone #: _____ Occupant Phone#: _____

Incident Cause: _____

Type Action Taken: _____

Units Responding: _____ Units Committed: _____

# of Personnel: _____ Mileage (Round Trip): _____ Advised County Fire Marshal: Yes _____ No _____

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Check All That Apply:

- O House Fire
- O Vehicle Fire
- O Haz-Mat
- O Rescue Call
- O Vehicular Extrication
- O Public Works/Reg. Teams, and/or AM-Bus Response
- O Regional Medical Response Team
- O Secondary Entity
- O Special Situations
- O Rubbish/Brush/Grass/Wildland (above 1HR)
- O Bee Attacks
- O Human Remains Recovery Calls
- O Rubbish/Grass//Wildland (31 mins to 1HR)
- O Haz-Mat/ Wash Down
- O Law Enforcement Assistance
- O Mutual Aid
- O Medic Calls
- O False Alarm
- O Landing Zone
- O MVA
- O Petroleum Based Incident Stand By
- O Traffic Control
- O Wireline Incidents (all types)
- O Basic First Aid
- O Rubbish/Brush/Grass/Wildland (30 mins & below)
- O Good Intent Calls
- O Service Calls

AGENDA MEMORANDUM

BOARD:

AGENDA ITEM #: 8.B.
DATE SUBMITTED: August 4, 2026
MEETING DATE: August 17, 2026

FROM: Jose Reyes, Capital Improvement Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Patrizia Longoria

Agenda Item: Consideration and action, if any, on Change Order No. 2 with Mor-Wil LLC. for the Collection System Improvement and Lift Station Elimination Project. **This item supports IF - Infrastructure**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Change Order No. 2 for a time extension of 10 days to abandon and dispose existing reinforced concrete pipe (RCP) laterals and brick manhole beneath the asphalt pavement along N. Dogwood St. Install approximately 54-feet of new two 24-inch reinforced concrete pipe (RCP) and a 4-foot by 4-foot junction box, set flush with the finished pavement grade. (Attached Request for Proposal No.1).
Change Order No. 2 $24,536.00
(Project No. 2324-61-587-C02-535)

Fiscal Consideration: Original Contract: $6,749,668.03
Change Order #1: $0.00 - 31 days
Change Order #2: $24,536.00 - 10 days
Contract Total: $6,774,204.03

Staff Recommendation: Staff recommends approval of the Change Order No. 2 and adding the additional 10 days.

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Jose Reyes	Created/Initiated - 08/04/2026
Patrizia Longoria	Approved - 08/06/2026
Maritza Magallan	Approved - 08/06/2026
Ricardo Rodriguez	Approved - 08/06/2026
Jamison Merrick	Approved - 08/10/2026
City Management Office	New -

CHANGE ORDER

Contractor: Mor-Will, LLC
Project: Collection System Improvements and Lift Station Elimination Project
Project No. 2324-61-587-C02-535
CSJ:

Change Order No.: 2
Date: 8/4/2026

Notice to Proceed Date: 20-Dec-24
Change Order Amount: $24,536.00

You are directed to make the following changes in the Contract Documents:

Add 15 days to the contract completion date, as well as $24,536.00 to the contract amount.

Reason for Change Order:
To abandon and dispose existing reinforced concrete pipe (RCP) laterals and brick manhole beneath the asphalt pavement along N. Dogwood St. Install approximately 54-feet of new two 24-inch reinforced concrete pipe (RCP) and a 4-foot by 4-foot junction box, set flush with the finished pavement grade. Refer to Attachment A for details.

	Contract Price		Contract Time (Days)	
Original Contract:	$	6,749,668.03	Original Completion Date:	27-Aug-26
Previous Change Order: (+/-)	$	-	Additional Days:	10
This Change Order: (+/-)	$	24,536.00	Revised Completion Date:	6-Sep-26
Revised Contract Amount:	$	6,774,204.03		

It is agreed by the Contractor that this Change Order includes any and all costs associated with or resulting from change(s) ordered herein, including all impact, delays, and acceleration costs. Other than the dollar amount and time allowance listed above, there shall be no further time or dollar compensation as a result of this Change Order.

THIS DOCUMENT SHALL BECOME AN AMMENDMENT TO THE CONTRACT AND ALL STIPULATIONS AND COVENANTS OF THE CONTRACT SHALL APPLY HERETO.

Accepted:

Mor-Will, LLC		
Contractor	Authorized Signature	Date

Recommended:

Garcia Infrastructure Consultants, LLC		
Project Engineer	Authorized Signature	Date
Patrizia Longoria, PE		
City Engineer	Authorized Signature	Date

Approved:

Dr. Jonathan B. Flores		
City Manager	Authorized Signature	Date

City of Pharr

GARCIA INFRASTRUCTURE CONSULTANTS, LLC

REQUEST FOR PROPOSAL
No: 1

DATE: July 21, 2026

CONTRACTOR: MOR-WIL, LLC

808 S Shary Rd., Ste 5 PMB 274, Mission, TX, 78572

PROJECT: Collection System Improvements and Lift Station 1, 29, and 33 Elimination Project

PROJECT NO.: 2223-61-587-C03-412

THE FOLLOWING MODIFICATION TO THE CONTRACT HAS BEEN IDENTIFIED. PURSUANT TO THE GENERAL CONDITIONS, PLEASE PROVIDE A QUOTATION FOR THE ALTERATION DESCRIBED IN ITEM 1. THE QUOTATION SHOULD INCLUDE AN ITEMIZED BREAKDOWN OF CONTRACTOR AND SUBCONTRACTOR COSTS, INCLUDING LABOR, MATERIALS, RENTALS, APPROVED SERVICES, OVERHEAD, AND PROFIT. THIS REQUEST SHALL NOT BE CONSIDERED AUTHORIZATION TO PROCEED WITH THE WORK HEREIN DESCRIBED.

TO BE COMPLETED BY INITIATOR OF REQUEST:

1. SCOPE OF WORK: (INCLUDE LIST OF ATTACHMENTS)

Abandon and dispose existing reinforced concrete pipe (RCP) laterals and brick manhole beneath the asphalt pavement along N. Dogwood St. Install approximately 54-feet of new two 24-inch reinforced concrete pipe (RCP) and a 4-foot by 4-foot junction box, set flush with the finished pavement grade. Refer to **Attachment A** for details.

Work includes the following:

a. Abandon and dispose existing reinforced concrete pipe (RCP) laterals connected to the existing brick storm sewer manhole located beneath the asphalt pavement. Refer to **Keynote No. 1** in **Attachment A**.
b. Abandon and dispose of the existing brick storm sewer manhole located beneath the asphalt pavement at STA 40+25. Refer to **Keynote No. 2** in **Attachment A**.
c. Install approximately 34 linear feet of 24-inch reinforced concrete pipe (RCP) with concrete collars. Core new openings at the existing curb inlets located on the north and south side of E. Juarez Avenue to accommodate the new 24-inch RCP, as shown in **Attachment A.**
d. Install approximately 20 linear feet of 24-inch reinforced concrete pipe (RCP) with a concrete collar. Core a new opening in the east wall of the existing curb inlet located on the south side of E. Juarez Avenue to accommodate the new 24-inch RCP, as shown in **Attachment A.**
e. All exposed (pre-existing) cores to be patched/sealed per manufacturer's recommendation.
f. Install a new 4-ft by 4-ft junction box set flush with the finished pavement grade elevation as shown in **Attachment A.**

2. JUSTIFICATION FOR MODIFICATION:

The existing brick storm sewer manhole, where the storm sewer laterals connect, is located beneath the asphalt pavement, making it inaccessible to the City of Pharr for inspection and maintenance. Installing a new junction box at the proposed pavement elevation will provide the city with future access to inspect and maintain the system. The new junction will receive runoff from the adjacent curb inlets and convey the flow to the existing 24-inch storm sewer line.

3. APPROVAL OF REQUEST

DESIGN ENGINEER: _____ DATE: 7/21/2026

City of Pharr

REQUEST FOR PROPOSAL
No: 1

TO BE COMPLETED BY CONTRACTOR

4. TOTAL COST OF MODIFICATION $ 24,536.00
   4. b. ATTACH DETAILED BREAKDOWN FOR "RFP" TOTAL COST

5. WILL A MODIFICATION TO THE CONTRACT TIME BE REQUIRED?
   ☑ YES ☐ NO DURATION: 15 (CALENDAR DAYS)

7. APPROVAL OF QUOTATION

CONTRACTOR: A. Garza DATE: 07/21/2026

PROPOSAL

Project: City of Pharr Collection System Improvements and Lift Station Elimination Project

DATE: 7/20/2026 **EFFECTIVE DATE:** _____

OWNER: City of Pharr
118 S. Cage Blvd.
Pharr, Tx. 78577

CONTRACTOR: Mor-Wil, L.L.C
808 Shary Rd. Ste. 5 PMB 274
Mission, Texas 78572

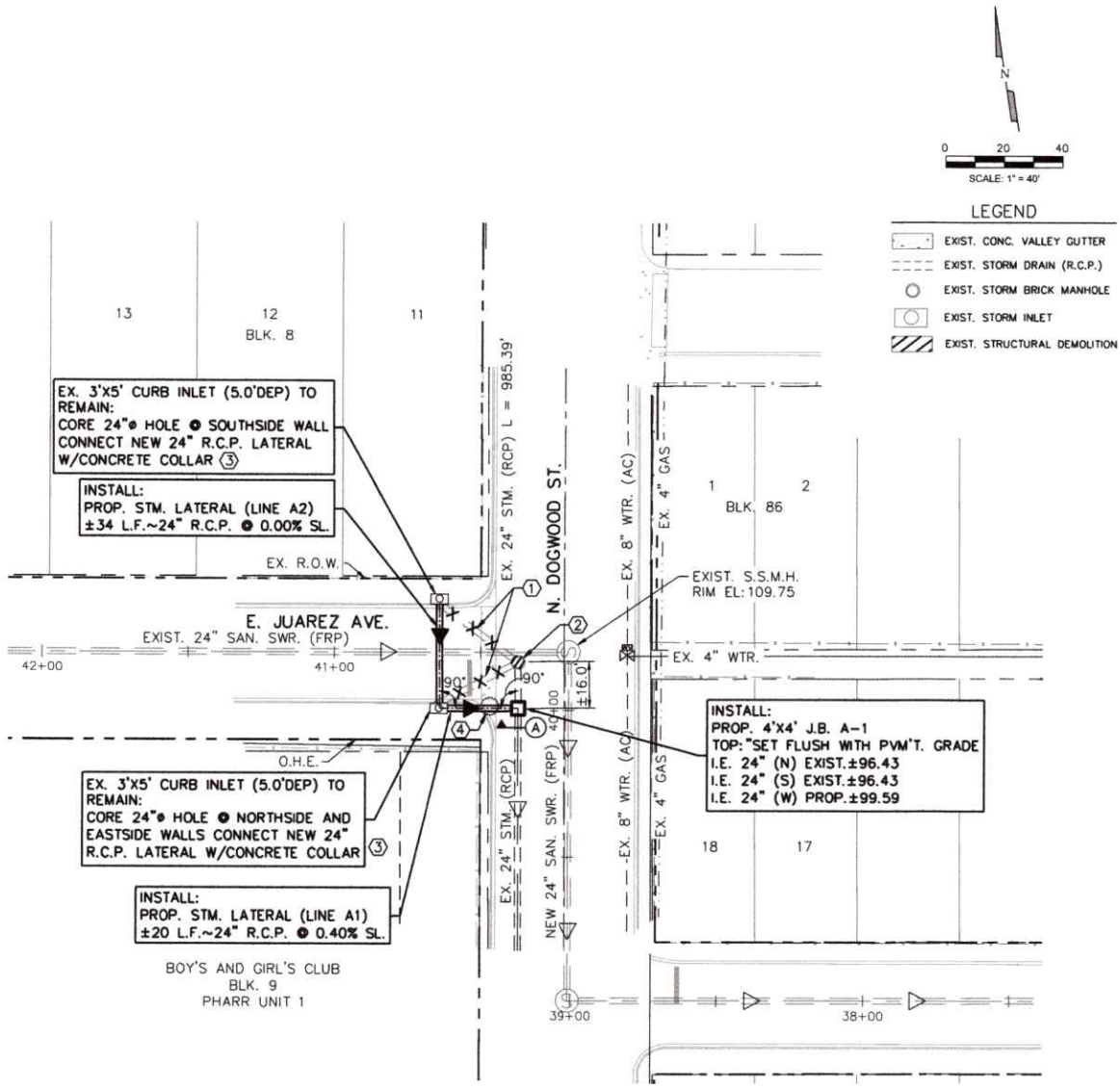
ENGINEER: Garcia Infrastructure Consultants, LLC
12042 Blanco Rd., Ste. 175
San Antonio, Tx. 78216

QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	AMOUNT
1	LS	Removal of existing storm sewer	$ 5,500.00	$ 5,500.00
3	EA	Concrete Collars at Inlet boxes	$ 2,000.00	$ 6,000.00
1	EA	4x4 Juntion Box	$ 8,500.00	$ 8,500.00
54	LF	24" RCP	$ 84.00	$ 4,536.00
		*Note we are on hold at the moment so we appreciate a quick response.		
Notes			**Subtotal**	**$ 24,536.00**
TIME - ADDITION	**15**	**Due to delays and additional work**		

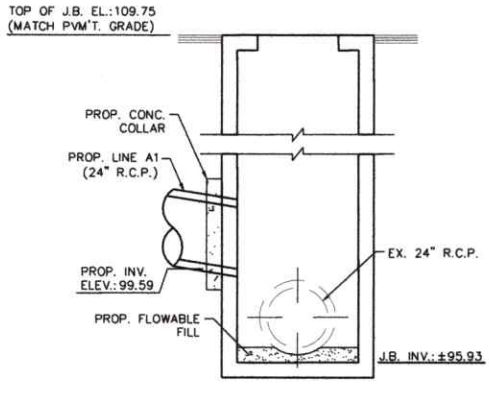
ALL INQUIRIES TO:
Albert Garza
(956) 456-0628
email: albert.garza03@yahoo.com

ATTACHMENT A

Proposed Improvements Exhibit



LINE A - 24" STORM DRAIN PLAN



JUNCTION BOX SECTION A

SCALE: 1/4" =1'-0"

KEY NOTES:

① EXISTING R.C.P. LATERALS HAVE BEEN REMOVED. NEW R.C.P. LATERALS TO BE INSTALLED. RETROFIT EXIST. INLET TO ACCEPT NEW 24" R.C.P. LATERALS.

② ABANDON AND DISPOSE OF EXISTING BRICK MANHOLE.

③ EXISTING 3'X5' CURB INLET TO REMAIN IN PLACE AND PROTECTED DURING STORM LATERAL CONSTRUCTION. ANY EXISTING PENETRATIONS NOT USED SHALL BE CAPPED AND SEALED.

④ EXISTING VALLEY GUTTER TO BE RECONSTRUCTED AS PER DETAIL NO. 8 CONCRETE VALLEY GUTTER.

SHEET NOTES:

1. TRENCH SAFETY PROTECTION SHALL BE USED WHERE DEPTH IS AT OR EXCEEDS 4-FEET.
2. ALL DEWATERING SYSTEM NEEDED FOR PROJECT WILL BE SUBSIDIARY TO PIPE LINE QUANTITY.
3. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY DEPTHS BEFORE STARTING ANY CONSTRUCTION.
4. CONTRACTOR TO COORDINATE WITH PROPERTY OWNERS WHEN CONSTRUCTION WILL TAKE PLACE.
5. EXIST. 24" STORM SEWER CROSSING ABOVE NEW 24" FRP SANITARY SEWER MAIN.
6. CONTRACTOR MUST SECURE PRIVATE PROPERTY WHEN CONSTRUCTION IS IN PLACE.
7. CONTRACTOR TO VISIT SITE TO OBSERVE ALL OBSTRUCTIONS IN AREA BEFORE CONSTRUCTION.

TRENCH EXCAVATION SAFETY PROTECTION:
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURE/DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

PROJ. NO.: 1035 DESIGNED: J.G. DRAWN: H.H.H. APPVD: J.G.	Garcia Infrastructure Consultants, LLC Texas Firm No. F-17794 1803 Mozelle St., Pharr, Texas 78577 Ph. (956) 497-5355	CITY OF PHARR 118 S. CAGE BLVD. PHARR, TEXAS 78577	COLLECTION SYSTEM IMPROVEMENTS AND LIFT STATION 1, 29, AND 33 ELIMINATION PROJECT R.F.P. NO. 1 STORM DRAIN EXHIBIT E. JUAREZ AVE.

File: L:\SHARE1\CADD\Pharr\1035\Dwgs\Sheet\1035-FLDCHC-01.dwg Last plotted by: Hector Herrera Plot Style: GIC-BW.ctb Plot Date: 7/20/2026 5:33 PM

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.C.
DATE SUBMITTED: July 22, 2026
MEETING DATE: August 17, 2026

FROM: Maria Rangel, Capital Improvement Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Patrizia Longoria

Agenda Item: Consideration and action, if any, on Change Order No. 3, for the Donation Acceptance Program for Fiscal Year 2016 construction contract with D. Wilson Construction Company of McAllen, Tx. **This item supports IF - Infrastructure**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Change Order (CO) #3 is in the amount of $143,478.13 with an additional 35 working days. It includes the following nine (9) Potential Change Orders (PCO) that were previously vetted and approved by staff:

01. Proposed Change Order #32: ($1,564.24) - Unit Heater Change*
02. Proposed Change Order #33: ($27,686.53) - Electrical Conduits Damages*
03. Proposed Change Order #35: ($38,093.71) - Controls for Cold Storage Units***
04. Proposed Change Order #37: ($2,852.75) - Fire Inspectors Test Valve Relocation *
05. Proposed Change Order #40: ($114,293.90) - HVAC Controls*
06. Proposed Change Order #43: (-$17,857.50) - Credit for Acid Waste Piping*
07. Proposed Change Order #45: (-$32,700.00) - Credit for Sand/Oil Separator*
08. Proposed Change Order #46: ($9,544.50) - Plastic Laminate Countertops*
09. Proposed Change Order #49: $0.00 - Additional Days - Time Extension

Notes:
* Amount to be added to CSJ 0921-02-433
** Amount to be added to CSJ 0921-02-424
*** Amount to be added to CSJ 0921-02-425

Approval of CO #3 is contingent on approval from TxDOT.
(CSJ: 0921-02-424, 425, and 433)
(Project No. 2324-71-510-C08-406)

Fiscal Consideration:
Original Contract: $45,253,972.12
Change Order #1: $22,835.40
Change Order #2: $49,781.94

Change Order #3: $143,478.13
Revised Contract: $45,470,066.59

Staff Recommendation: Staff recommends approval of Change Order #3 in the amount of $143,478.13 and 35 additional workweek days.

Alternatives: No alternatives. The PCOs that compose this CO were thoroughly vetted before being approved at the staff level. In most cases, work associated with this CO have already been completed.

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Maria Rangel	Created/Initiated - 07/22/2026
Patrizia Longoria	Approved - 08/09/2026
Maritza Magallan	Approved - 08/10/2026
Ricardo Rodriguez	Approved - 08/11/2026
Jamison Merrick	Approved - 08/11/2026
City Management Office	New -

BROWNSTONE CONSULTANTS

August 06, 2026

David M. Chacon, PE, CCM, CFM.
Director of CEI
Brownstone Consultants LLC
PO Box 3898
McAllen, TX 78505

María Rangel, PE
Capital Project Engineer
City of Pharr
118 S. Cage Blvd
Pharr, TX 78577

Re: Pharr FY16 DAP Dock Expansion PH I & II and Agricultural Lab - Change Order No. 03 Recommendation Letter

Ms. Rangel,

Brownstone Consultants has reviewed and analyzed the following proposed change orders (PCO's) submitted by D. Wilson Construction (Contractor):

01. **Proposed Change Order #32: $1,564.24 - Unit Heater Change -** Per RFI 28, the specified UH-1 unit heaters did not match the electrical characteristics of Panel HES1 (480V/3-phase versus the originally specified 208V/single-phase model). The response required a substitute heater, Model P3P5103CA1N, which carries a slightly higher cost. This increased the contract by $1,564.24.

02. **Proposed Change Order #33: $27,686.53 - Electrical Conduits Damages -** During work near the existing chiller pad, damaged electrical conduits were discovered at the newly installed electrical duct bank (10 ea. 4", 3 ea. 1½", 2 ea. 2", 1 ea. 1" conduits). Investigation confirmed the damage was caused by Leidos (CBP Contractor) during their own line boring/installation work for the adjacent MEP project. This PCO covers the repair cost, including investigation, excavation and backfill, as a back charge to Leidos, increasing the contract by $27,686.53 (to be recovered from Leidos).

03. **Proposed Change Order #35: $38,093.71 - Controls for Cold Storage Units -** Per ASI 16, the refrigeration system design was revised to add KE2 controls to the condensing units and upgrade the standard KE2 EM+ manager to a BACnet-capable unit, requiring an additional control switch and added programming labor for the cold storage system. Separately, the equipment supplier (KeepRite) issued a 3.5% price increase effective for orders placed after 2/27/2026. Because the BACnet integration had to occur at the factory, the equipment order couldn't be released until the controls scope was finalized, pushing it past the price-increase deadline. Both factors combined increased the contract by $38,093.71.

04. **Proposed Change Order #37: $2,852.75 - Fire Inspectors Test Valve Relocation -** Per ASI 15/RFI 86, the Fire Protection Plan for Area B was revised due to a conflict between the existing drain/valve and a proposed wall at Grid line G. The existing Inspector's Test Valve for the fire sprinkler system was relocated to drain to the exterior of the building (surface-mounted). This increased the contract by $2,852.75.

BROWNSTONE CONSULTANTS

05. **Proposed Change Order #40: $114,293.90 - HVAC Controls -** Per ASI 16, the building automation controls scope for the Ag Lab was revised following newly issued GSA guidelines and specifications, requiring updated submittals. The revision required the addition of Niagara controllers and network devices to integrate the system into GSA's existing building automation controls, along with the programming needed to bring the equipment online in that system. The scope also required integrating the new TXDOT expansion dock equipment into the existing automation platform, while fiber optic cable and related wiring for the Northbound lanes were excluded from this proposal. This increased the contract by $114,293.90.

06. **Proposed Change Order #43: $($17,857.50) - Credit for Acid Waste Piping -** Per ASI 13, and further coordination with USDA, the acid waste piping and one acid waste sample well were removed from the project, with schedule 40 PVC DWV piping used in its place. This credited $3,270.00 for 25 LF of 3" acid waste pipe, $12,262.50 for 4" acid waste pipe, and $2,725.00 for one sample well, offset by a $400.00 add for the PVC DWV pipe substitution. Combined, these items decreased the contract by $17,857.50, with no schedule impact.

07. **Proposed Change Order #45: ($32,700.00) - Credit for Sand/Oil Separator -** RFI 117 questioned the location and specification of the Sand/Oil Separator shown on the civil drawings. After further coordination with the engineer of record, it was concluded that the separator was unnecessary in the design, and CBP/GSA agreed to its removal from the Cold Storage sanitary waste system. This scope reduction results in a $32,700.00 credit to the City of Pharr.

08. **Proposed Change Order #46: $9,544.50 - Plastic Laminate Countertops -** Per CBP and GSA's request, four originally enclosed offices in the Agriculture Lab building were combined into one open-area office with four workstations. The new layout required plastic laminated countertops in Office 146, increasing the contract by $9,544.50.

09. **Proposed Change Order #49: $0.00 – Additional Days - 35-Day Time Extension -** Leidos Damages to Electrical Ductbank - During work near the existing chiller pad, electrical conduits were damaged by Leidos (CBP Contractor) during their own MEP work, disrupting the planned sequence of underground electrical work and delaying the Footings and Retaining Walls for Area A and the Building Pad for Areas A and B. A Time Impact Analysis supported a 41-working-day extension for these repairs; however, the requested time impact was negotiated down to 35 working days, extending the contract time by 35 days, with no cost impact.

Brownstone Consultants recommends approval of the above-referenced Proposed Change Orders (PCOs) as part of Change Order No. 3, totaling $143,478.13, and including an extension of thirty five (35) additional working days to the project schedule.

Please feel free to contact us with any questions or concerns.

Sincerely,

David M. Chacon, PE, CCM, CFM

Attachments:

- City of Pharr Change Order Form
- TxDOT Form 2146-L
- D. Wilson Construction – PCO Nos. 32,33,35,37,40, 43,45, 47 & 49.

BROWNSTONE CONSULTANTS

CC:

Cynthia Garza – City of Pharr Assistant City Manager
Patrizia Longoria – City of Pharr City Engineer
Benjamin Luna, PE – Halff Transportation Engineer
Carlos Del Angel, PMP, CCM – Brownstone Project Executive

Pharr Engineering

CHANGE ORDER

Contractor: D Wilson Construction | Change Order No.: 3

Project: Pharr FY16 DAP-Dock Expansion PH I & II and Agricultural Lab | Date: 8/6/2026

CSJ: 0921-02-424, 0921-02-425, 0921-02-433

Notice to Proceed Date: 23-Oct-24 | Change Order Amount: $143,478.13

You are directed to make the following changes in the Contract Documents:

01. Proposed Change Order #32: ($1,564.24) - Unit Heater Change*
02. Proposed Change Order #33: ($27,686.53) - Electrical Conduits Damages*
03. Proposed Change Order #35: ($38,093.71) - Controls for Cold Storage Units***
04. Proposed Change Order #37: ($2,852.75) - Fire Inspectors Test Valve Relocation *
05. Proposed Change Order #40: ($114,293.90) - HVAC Controls*
06. Proposed Change Order #43: (-$17,857.50) - Credit for Acid Waste Piping*
07. Proposed Change Order #45: (-$32,700.00) - Credit for Sand/Oil Separator*
08. Proposed Change Order #46: ($9,544.50) - Plastic Laminate Countertops*
09. Proposed Change Order #49: $0.00 - Additional Days - Time Extension

Reason for Change Order:

01. Proposed Change Order #32: $1,564.24 - Unit Heater Change - Per RFI 28, the specified UH-1 unit heaters did not match the electrical characteristics of Panel HES1. A substitute heater, Model P3P5103CA1N, was required, increasing the contract by $1,564.24.

02. Proposed Change Order #33: $27,686.53 - Electrical Conduits Damages - During work near the existing electrical yard, damaged electrical conduits were discovered at the newly installed electrical duct bank. Investigation confirmed the damage was caused by Leidos (CBP Contractor) during adjacent MEP work and is being back-charged accordingly, increasing the contract by $27,686.53.

03. Proposed Change Order #35): $38,093.71 - Controls for Cold Storage Units - Per ASI 16, the refrigeration system design was revised to add KE2 controls and a BACnet-capable manager for the cold storage system. Combined with a supplier price increase on the affected equipment, this increased the contract by $38,093.71.

04. Proposed Change Order #37: $2,852.75 - Fire Inspectors Test Valve Relocation - ASI 15 / RFI 86 - Per ASI 15/RFI 86, the Fire Protection Plan for Area B was revised, relocating the Inspector's Test Valve to drain to the building exterior, increasing the contract by $2,852.75.

05. Proposed Change Order #40: $114,293.90 - HVAC Controls - Per ASI 16, the controls scope for the Agricultural Lab was revised to update submittals per newly provided GSA guidelines, requiring the additional Niagara and network devices for integration into the existing GSA Building Automation System, and to integrate the new expansion dock and agricultural lab building equipment into the existing automation system, increasing the contract by $114,293.90.

06. Proposed Change Order #43: $($17,857.50) - Credit for Acid Waste Piping - Per ASI 13 and coordination with USDA, the acid waste piping and sample well were removed and replaced with schedule 40 PVC DWV piping, decreasing the contract by $17,857.50, with no schedule impact.

07. Proposed Change Order #45: ($32,700.00) - Credit for Sand/Oil Separator - Credit for Sand/Oil Separator - Per RFI 117 and coordination with the engineer of record, the Sand/Oil Separator was determined unnecessary and removed from the Cold Storage sanitary waste system, crediting $32,700.00.

08. Proposed Change Order #46: $9,544.50 - Plastic Laminate Countertops - Per CBP and GSA's request, four enclosed offices in the Agriculture Lab were combined into one open-area office, requiring plastic laminate countertops, increasing the contract by $9,544.50.

09. Proposed Change Order #49: $0.00 - Additional Days - Time Extension - The repair of electrical conduits damaged by Leidos (CBP Contractor) during adjacent MEP work disrupted the planned underground electrical sequence, building foundation and building pad for the Agricultural Lab building. Additional 35 working days will be granted to the contractor for the delays associated with this activity.

Notes:

** Amount to be added to CSJ 0921-02-433*

*** Amount to be added to CSJ 0921-02-424*

***** Amount to be added to CSJ 0921-02-425

Original Contract:	$	45,253,971.12	Original Completion Date:	18-Sep-26
Previous Change Order: (+/-)	$	72,617.34	Additional Days:	35
This Change Order: (+/-)		$143,478.13	Revised Completion Date:	9-Nov-26
Revised Contract Amount:	$	45,470,066.59		

It is agreed by the Contractor that this Change Order includes any and all costs associated with or resulting from change(s) ordered herein, including all impact, delays, and acceleration costs. Other than the dollar amount and time allowance listed above, there shall be no further time or dollar compensation as a result of this Change Order.

THIS DOCUMENT SHALL BECOME AN AMMENDMENT TO THE CONTRACT AND ALL STIPULATIONS AND COVENANTS OF THE CONTRACT SHALL APPLY HERETO.

Accepted:

Contractor	Authorized Signature	Date

Recommended:

David M. Chacon, PE, CCM, CFM		
Project Engineer/Architect/Manager	Authorized Signature	Date
Maria Rangel, P.E		
Capital Project Engineer	Authorized Signature	Date

Approved:

Dr. Jonathan Flores		
City Manager	Authorized Signature	Date

Form 2146-L
(Rev. 10/11)
Page 1 of 1

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: 03

1. CONTRACTOR: D. WILSON CONSTRUCTION

2. Change Order Work Limits: Sta. _____ to Sta. _____

3. Type of Change (on federal-aid non-exempt projects): (Major/Minor)

4. Describe the change and the reason for the change order. When necessary, include exceptions to this agreement.

See attachment below

CCSJ:	0921-02-424
Project:	F2024 (824)
Highway:	Pharr Int. Bridge
County:	Hidalgo
District:	Pharr - 21
Contract Number:	

5. New or revised plan sheet(s) are attached and numbered: _____

Each signatory hereby warrants that each has the authority to execute this Change Order.

By signing this change order, the contractor agrees to waive any and all claims for additional compensation due to any and all other expenses; additional changes for time, overhead and profit; or loss of compensation as a result of this change. Further, the contractor agrees that this agreementis made in accordance with Item 4 and the Contract. Exceptions should be noted in the response for #5 above.

THE CONTRACTOR Date _____

By _____

Typed/Printed Name _____

Typed/Printed Title _____

The following information must be provided

Time Ext. #: _____ Days added on this C.O.: 35

Amt. added by this change order: $ 0.00

For TxDOT use only:

Days participating: _____

Amount participating: _____

_____ _____
Signature Date

_____
Name/Title

RECOMMENDED FOR EXECUTION:

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED ☐ REQUEST APPROVAL

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED ☐ REQUEST APPROVAL

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_____ _____
Name/Title Date
☐ APPROVED

Engineer's Seal:

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: 03

Estimated Cost:

CCSJ: 0921-02-424

Paid by Invoice? (◯ Yes ◯ No)

TABLE A: Force Account Work and Materials Placed into Stock

LABOR	HOURLY RATE	EQUIPMENT	HOURLY RATE

TABLE B: Contract Items

				ORIGINAL + PREVIOUSLY REVISED		NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
PCO 49	Additional Days Time Extension	LS			0.00	1.00	0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: _____

TABLE B: Contract Items (Continued)

CCSJ: _____

				ORIGINAL + PREVIOUSLY REVISED		NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00

Form 2146-L
(Rev. 10/11)
Page 1 of 1

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: 03

1. CONTRACTOR: D. WILSON CONSTRUCTION

2. Change Order Work Limits: Sta. _____ to Sta. _____

3. Type of Change (on federal-aid non-exempt projects): (Major/Minor)

4. Describe the change and the reason for the change order. When necessary, include exceptions to this agreement.

See attachment below

CCSJ:	0921-02-425
Project:	F2024 (825)
Highway:	Pharr Int. Bridge
County:	Hidalgo
District:	Pharr - 21
Contract Number:	

5. New or revised plan sheet(s) are attached and numbered: _____

Each signatory hereby warrants that each has the authority to execute this Change Order.

By signing this change order, the contractor agrees to waive any and all claims for additional compensation due to any and all other expenses; additional changes for time, overhead and profit; or loss of compensation as a result of this change. Further, the contractor agrees that this agreementis made in accordance with Item 4 and the Contract. Exceptions should be noted in the response for #5 above.

THE CONTRACTOR Date _____

By _____

Typed/Printed Name _____

Typed/Printed Title _____

The following information must be provided

Time Ext. #: _____ Days added on this C.O.: 35

Amt. added by this change order: $ 38,093.71

For TxDOT use only:

Days participating: _____

Amount participating: _____

_____ _____
Signature Date

_____
Name/Title

RECOMMENDED FOR EXECUTION:

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED ☐ REQUEST APPROVAL

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED ☐ REQUEST APPROVAL

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED ☐ REQUEST APPROVAL

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED

Engineer's Seal:

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: 03

Estimated Cost:

CCSJ: 0921-02-425

Paid by Invoice? (◯ Yes ◯ No)

TABLE A: Force Account Work and Materials Placed into Stock

LABOR	HOURLY RATE	EQUIPMENT	HOURLY RATE

TABLE B: Contract Items

				ORIGINAL + PREVIOUSLY REVISED		NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
PCO 35	Controls for Cold Storage Units	LS	38,093.71		0.00	1.00	38,093.71	38,093.71
PCO 49	Additional Days Time Extension	LS	0.00		0.00	1.00	0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: _____

TABLE B: Contract Items (Continued)

CCSJ: _____

				ORIGINAL + PREVIOUSLY REVISED		NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00

Form 2146-L
(Rev. 10/11)
Page 1 of 1

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: 03

1. CONTRACTOR: D. WILSON CONSTRUCTION

2. Change Order Work Limits: Sta. _____ to Sta. _____

3. Type of Change (on federal-aid non-exempt projects): (Major/Minor)

4. Describe the change and the reason for the change order. When necessary, include exceptions to this agreement.

CCSJ:	0921-02-433
Project:	F2024 (823)
Highway:	Pharr Int. Bridge
County:	Hidalgo
District:	Pharr-21
Contract Number:	

5. New or revised plan sheet(s) are attached and numbered: _____

Each signatory hereby warrants that each has the authority to execute this Change Order.

By signing this change order, the contractor agrees to waive any and all claims for additional compensation due to any and all other expenses; additional changes for time, overhead and profit; or loss of compensation as a result of this change. Further, the contractor agrees that this agreementis made in accordance with Item 4 and the Contract. Exceptions should be noted in the response for #5 above.

THE CONTRACTOR Date _____

By _____

Typed/Printed Name _____

Typed/Printed Title _____

The following information must be provided

Time Ext. #: _____ Days added on this C.O.: 35

Amt. added by this change order: $105,384.42

For TxDOT use only:

Days participating: _____

Amount participating: _____

_____ _____
Signature Date

_____
Name/Title

RECOMMENDED FOR EXECUTION:

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED ☐ REQUEST APPROVAL

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED ☐ REQUEST APPROVAL

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED ☐ REQUEST APPROVAL

_____ _____
Name/Title Date

_____ _____
Name/Title Date
☐ APPROVED

Engineer's Seal:

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: 03

Estimated Cost:

CCSJ: 0921-02-433

Paid by Invoice? (◯ Yes ◯ No)

TABLE A: Force Account Work and Materials Placed into Stock

LABOR	HOURLY RATE	EQUIPMENT	HOURLY RATE

TABLE B: Contract Items

				ORIGINAL + PREVIOUSLY REVISED		NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
PCO 32	Unit Heater Change	LS	1,564.24		0.00	1.00	1,564.24	1,564.24
PCO 33	Electrical Conduits Damages	LS	27,686.53		0.00	1.00	27,686.53	27,686.53
PCO 37	Fire Inspectors Test Valve Relocatio	LS	2,852.75		0.00	1.00	2,852.75	2,852.75
PCO 40	HVAC Controls	LS	114,293.90		0.00	1.00	114,293.90	114,293.90
PCO 43	Credit for Acid Waste Piping	LS	- 17,857.50		0.00	1.00	- 17,857.50	- 17,857.50
PCO 45	Credit for Sand/Oil Separator	LS	- 32,700.00		0.00	1.00	- 32,700.00	- 32,700.00
PCO 46	Plastic Laminate Countertops	LS	9,544.50		0.00	1.00	9,544.50	9,544.50
PCO 49	Additional Days Time Extension	LS	0.00		0.00	1.00	0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00
TOTALS					0.00		105,384.42	105,384.42

CONSTRUCTION CONTRACT CHANGE ORDER NUMBER: _____

TABLE B: Contract Items (Continued)

CCSJ: _____

				ORIGINAL + PREVIOUSLY REVISED		NEW		
ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	ITEM COST	QUANTITY	ITEM COST	OVERRUN/ UNDERRUN
					0.00		0.00	0.00
					0.00		0.00	0.00
					0.00		0.00	0.00

PCO #032

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

DRAFT

Prime Contract Potential Change Order #032: RFI 28 Unit Heaters UH-1

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	032 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Buster Smith **(D & F Industries, Inc.)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Draft	**CREATED DATE:**	11/4/2025
REFERENCE:	SBT	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	0 days	**TOTAL AMOUNT:**	$1,564.24

POTENTIAL CHANGE ORDER TITLE: RFI 28 Unit Heaters UH-1

CHANGE REASON: Design Development

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
CE #43 - RFI 28 Unit Heaters UH-1 Models
As per RFI 28, the specified unit heaters did not meet the proposed electrical requirements. The response to said RFI was to provide an alternate unit heater Model P3P5103CA1N which had the electrical characteristics as 3.3KW Heat, 480 Volts/3 Phase. The cost to exchange those Unit heaters specified to the proposed heaters is as follows:

ATTACHMENTS:

#	Budget Code	Description	Amount
1	112.15-500.S	RFI 28 -Cost to exchange the existing Unit Heaters UH-1 per RFI response	$1,475.00
		Subtotal:	**$1,475.00**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$73.75
		Bond (1.00% Applies to All Line Items):	$15.49
		Grand Total:	**$1,564.24**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

02/03/2026
SIGNATURE **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

2/13/26
SIGNATURE **DATE**

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

D & F Industries, Inc
P.O Box 1680 3106 N. Sugar Road
Pharr Texas 78577
(PH) 956-781-2496

ADDITIONAL WORK QUOTE

Project Name:
24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)

Submitted By:
Julio Monroy

Issued To:
D. Wilson Construction, D. Wilson Construction, Vanessa Garza, D. Wilson Construction, Roberto Villela

Reference #:

Date:
23 October 2025

Required By:
13 November 2025

Details of Work

Exchanging UH-1 models to match with electrical characteristics

Exclusions

The value of this quotation is based on labour, material, Trade contractor or Subcontractor work as listed herein only. The quotation is based on regular working hours unless noted otherwise. This quotation does not include for delay, disruptions, re-scheduling, acceleration and/or impact cost nor for the cumulative effect of changes.

Schedule Impacts:	No. of Days of Impact:	Schedule Impact Cost:	Quote Validity:
TBD	TBD	TBD	15 Day(s)

Subtotal	**$1,475.00**
Contractor Allowance(s)	**$0.00**
Schedule Impact Cost	**$0.00**
Total	**$1,475.00**

INDUSTRIES, INC.

D & F Industries, Inc
P.O Box 1680 3106 N. Sugar Road
Pharr Texas 78577
(PH) 956-781-2496

Cost Breakdown

Labor	QTY	Rate	Total
Mech/Elec Project Manager_ RFI & following up with GC & vendor	**10.00**	**120.00**	**$1,200.00**
Labor Subtotal			**$1,200.00**

Equipment	QTY	Rate	Total
EH-1 price diffrence	**1.00**	**275.00**	**$275.00**
Equipment Subtotal			**$275.00**

Subtotal		**$1,475.00**
Contractor Allowance - Own Forces	**0.00%**	**$0.00**
Contractor Allowance - Subcontractors	**10.00%**	**$0.00**
Schedule Impact Cost		**$0.00**
Total		**$1,475.00**

D & F Industries, Inc
P.O Box 1680 3106 N. Sugar Road
Pharr Texas 78577
(PH) 956-781-2496

PROPOSED CHANGE

Project Name: 24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)
Initiated By: Julio Monroy
Issued To: Team Member

Change Item #: 6
Date: 23 October 2025
Required By: 27 October 2025

Subject

Unit Heater

Action

Please advise of any costs differences from your contract by no later than 27 October 2025. A complete breakdown and quotation is to be submitted to explain any/all changes to your contract. Please note, you are NOT to proceed with any additional work until written authorization has been provided to you.

Details

Unit Heater on mechanical schedule was changed from model HF1B5103N to P3P5103CA1N per RFI #28 response. This was to match the electrical characteristics in Electrical PANEL HES1

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
P: (956) 686-9573

Project: 24-235 Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

RFI #28: Unit Heater Submittal Comment

Status	Open		
To	Sabrina Alvarez (Brownstone Consultants, LLC) Rolando Ayala (Brownstone Consultants, LLC) David Chacon (Brownstone Consultants, LLC)	**From**	Shukan Bhakta (D Wilson Construction Company) PO Box 3455 McAllen, Texas 78502
Date Initiated	Feb 6, 2025	**Due Date**	Feb 13, 2025
Location		**Project Stage**	
Cost Impact	Yes (Unknown)	**Schedule Impact**	
Spec Section	23 82 39 - Unit Heaters	**Cost Code**	
Drawing Number	M-603A, E-610, E-605	**Reference**	
Linked Drawings			
Received From	Leo Vela (D & F Industries, Inc.)	**Sub Job**	
Copies To	Pilar Anzaldua-Garza (D Wilson Construction Company), Vanessa Garza (D Wilson Construction Company), Emiliano Larios (D Wilson Construction Company), Sabas Lopez (D Wilson Construction Company), Claudio Velasco (D Wilson Construction Company), Roberto Villela (D Wilson Construction Company)		

Activity

Question

Question from Shukan Bhakta D Wilson Construction Company *on Thursday, Feb 6, 2025 at 10:44 AM CST*

The returned unit heater submittal review (submittal #43) for the electrical section only was to revise and resubmit. The revise and resubmit comment was based on the electrical characteristics for the unit heater. Sheet M-603A, Unit Heater Schedule shows the electrical characteristics as 2.5kw heat, 208 volts/ single phase/ 60 hertz, 11.9 amps. Sheet E-610 Mechanical Equipment Connection Schedule - Unit Heater shows the heater to be served from Panel HES1. Sheet E-605 Panel HES1 is described as 277/480 volt. Please have the A/E/O team review this installation.

Attachments
unit-heater-submittal-comment-rfi-3.pdf

Official Response

Response from Emiliano Larios D Wilson Construction Company *on Monday, Mar 24, 2025 at 01:00 PM CDT*

Response from LeRoy Martinez, PE 3/21/2025:
Refer to unit heater model number highlighted in green. Model P3P5103CA1N has electrical characteristics as 3.3kw heat, 480 volts/ three phase.

Attachments
RFI #28 - Unit Heater Submittal Comment - Response.pdf

Request for Information Response

To:	D. Wilson Construction Attn. Shukan Bhakta, APM 1207 E Pecan Blvd, McAllen, TX 78501	**Date:**	3/21/2025		
From:	LeRoy Martinez, PE	**AVO:**	57325.002	**RFI No.:**	028
Email:	lmartinez@halff.com	**Project:**	Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II		
Subject:	RFI #28 – Unit Heater Submittal Comment				

☐ Letter dated: ☐ Email dated:

☐ Phone call dated:

This confirms and records a request for information. Unless notified in writing within three days of date noted above, it is agreed that a response generated from the request shall be provided to this office within five days.

REQUEST

1. The returned unit heater submittal review (submittal #43) for the electrical section only was to revise and resubmit. The revise and resubmit comment was based on the electrical characteristics for the unit heater. Sheet M-603A, Unit Heater Schedule shows the electrical characteristics as 2.5kw heat, 208 volts/ single phase/ 60 hertz, 11.9 amps. Sheet E-610 Mechanical Equipment Connection Schedule - Unit Heater shows the heater to be served from Panel HES1. Sheet E-605 Panel HES1 is described as 277/480 volt. Please have the A/E/O team review this installation.

2. **ANSWER**

   Refer to unit heater model number highlighted in green. Model P3P5103CA1N has electrical characteristics as 3.3kw heat, 480 volts/ three phase.

Answered by: LeRoy Martinez, PE

P51

COPIES: ☐ File ☒ Owner ☒ Contractor ☐ Other

Attachments: Original RFI Documents Provided by Brownstone

Standard Models

MFG CATALOG NUMBER	MFG MODEL NUMBER	KW	BTUs/H	VOLTS	PH	AMPS	CONTROL VOLTAGE	TEMP RISE	AIR THROW	CFM	RECOMMENDED MOUNTING HT.		WT. (LBS)
											Horizontal	Vertical	
06450802	F1F5103N	3.3	11.2	208	1	15.9 / 9.17	208						
06451002	HF1B5103N	3.3/2.5	11.2 / 8.5	240/208	1	13.7 / 11.9	240 / 208						
06456802	F2F5103N	3.3	11.2	208	1/3	15.9 / 9.17	208						
06457002	HF2B5103N	3.3/2.5	11.2 / 8.5	240/208	1/3	13.7 / 11.9	240 / 208	26° F	12'	400	9'	9'	25
					3	7.9/6.9							
06457202	G1G5103N	3.3	11.2	277	1	11.9	277						
06451202	P3P5103CA1N*			480	3	4.0	24						
06455402	F1F5105N	5.0	17.1	208	1	24.1	208						
06455602	HF1B5105N	5.0/3.7	17.1 / 12.8	240/208	1	20.9 / 18.1	240 / 208						25
06451402	F2F5105N	5.0	17.1	208	1/3	24.1	208						
					3	13.9		40° F	12'	400	9'	9'	
06451602	HF2B5105N	5.0	17.1	240	1/3	20.8 / 18.1	240						
		3.7	12.8	208	1/3	17.1 / 10.4	208						27
06458402	G1G5105N	5.0	17.1	277	1	18.1	277						
06451802	P3P5105CA1N*	5.0	17.1	480	3	6.1	24						
06452002	F2F5107CA1L*	7.5	25.6	208	1/3	36.1 / 20.8	24	34° F	22'	700	10'	12'	54
06452202	HF2B5107CA1L	7.5	25.6	240	1/3	27.1 / 31.3							
		5.6	19.2	208	1/3	31.3 / 27.1							
06459202	G1G5107CA1L*	7.5	25.6	277	1	27.1							
06452402	P3P5107CA1N*	7.5	25.6	480	3	9.1							
06452602	F2F5110CA1L*	9.9	33.8	208	1/3	47.8 / 27.4		45° F	22'	700	10'	14'	55
06452802	HF2B5110CA1L	10.0	34.1	240	1/3	41.2 / 24.0							
		7.5	25.6	208	1/3	36.1 / 20.8							
06456402	G1G5110CA1N*	10.0	34.1	277	1	36.1							
06453002	P3P5110CA1N*	10.0	34.1	480	3	12.4							
06453202	F3F5115CA1L*	15.0	51.2	208	3	41.7		43° F	32'	1100	11'	20'	64
06453402	HF3B5115CA1L	15.0/11	51.2 / 38.4	240/208	3	36.1 / 31.3							
06453602	P3P5115CA1N*	15.0	51.2	480	3	18.1							
06453802	HF3B5120CA1L	19.7/14	67.2 / 50.5	240/208	3	47.8 / 41.1		57° F	32'	1100	12'	18'	65
06454002	P3P5120CA1N*	20.0	68.3	480	3	4124.1.7							
06458802	F3F5125CA1L*	25.0	85.3	208	3	69.5		40/44° F	45'	2000/180(	12'	22'	120
06459402	HF3B5125CA1L	25.0/18	85.3 / 64.0	240/208	3	60.2 / 52.1							
06459802	P3P5125CA1N*	25.0	85.3	480	3	30.1							
06454202	F3F5130CA1L*	30.0	102.4	208	3	83.4		47/53° F	40'	2000/180(	12'	20'	120
06454402	HF3B5130CA1L	30.0/22	102.4 / 76.8	240/208	3	72.3 / 62.5							
06454602	P3P5130CA1N*	30.0	102.4	480	3	36.2							
06440402	F3F5140CA1L*	40.0	136.5	208	3	111.2		40/45° F	55'	3100/280(	15'	24'	120
06440602	HF3B5140CA1L	40.0/30	136.5 / 102.4	240/208	3	96.4 / 83.4							
06440802	P3P5140CA1N*	39.0	133.1	480	3	47.0							
06454802	F3F5150CA1L*	49.6	169.3	208	3	139.0		51/56° F	50'	3100/280(	15'	22'	120
06455002	HF3B5150CA1L	50.0/37	170.6 / 128.(	240/208	3	120.5 / 104.3							
06455202	P3P5150CA1N	50.0	170.6	480	3	60.3							

From: Julio Monroy
To: Roberto Villela; Buster Smith - D & F Industries, Inc.; Charles Smith; Leo Vela
Cc: Pilar Anzaldua-Garza; Vanessa J. Garza; Emiliano Larios; Claudio Velasco; Jacob Madrigal
Subject: RE: Unit Heater UH-1 | 1288-2 | 24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)
Date: Thursday, October 23, 2025 3:12:27 PM
Attachments: image001.png
image002.png
Unit Heater Electrical RFI_2025-3-25-12-34-44-609 pages.pdf

Caution:

This email originated from outside of D. Wilson Construction. Do not click links or open attachments unless you recognize the sender's email address (and not just the name) and know the content is safe.

Robert,

Unit Heater Model P3P5103CA1N is what we're getting for this project. (Per Leroy, Halff response)
This Heater has the electrical characteristics that matches with electrical panel in electrical schedule.
I will send the change order for this heater, since it's a little more expensive than the one on the mechanical schedule.

Julio

From: Roberto Villela <robertov@dwilsonconstruction.com>
Sent: Thursday, October 23, 2025 8:23 AM
To: Buster Smith - D & F Industries, Inc <BusterSmith@df.smrtsub.app>; Charles Smith <csmith@dandfindustries.com>; Leo Vela <lvela@dandfindustries.com>
Cc: Pilar Anzaldua-Garza <pilara@dwilsonconstruction.com>; Shukan Bhakta <shukanb@dwilsonconstruction.com>; Vanessa J. Garza <vanessag@dwilsonconstruction.com>; Emiliano Larios <Emilianol@dwilsonconstruction.com>; Julio Monroy <jmonroy@dandfindustries.com>; Claudio Velasco <claudiov@dwilsonconstruction.com>; Jacob Madrigal <jacob@dandfindustries.com>
Subject: Re: Unit Heater UH-1 | 1288-2 | 24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)

D&F Team,

Circling back to this email that was sent last week Thursday, please provide us with an update before the end of day.

Please see below from Brownstone and address accordingly.

RA **Rolando Ayala<rolando@bstone.biz>** Reply | Reply all | Forward

To: Roberto Villela
Thu 10/16/2025 9:34 AM

Cc: Claudio Velasco; Emiliano Larios; Pilar Anzaldua-Garza; Vanessa J. Garza; Denisse Serna; Arturo Perez; Jose Pequeno; **+3 others**

Caution:

This email originated from outside of D. Wilson Construction. Do not click links or open attachments unless you recognize the sender's email address (and not just the name) and know the content is safe.

Good morning, Rob

Thank you for your responses. It appears that there are still a significant number of submittals that need to be resubmitted. Please see below the response I have for one of your comments.

11. Submittal #43 - Unit Heaters - Mechanical review response was Approved. Electrical review response was R&R. DWCC issued RFI #28 in regard to the Unit Heaters issue. Official response was: "Refer to unit heater model number highlighted in green. Model P3P5103CA1N has electrical characteristics as 3.3kw heat, 480 volts/ three phase". Therefore, this submittal should be closed as Approved. The product data that was provided in the submittal does not match the required electrical characteristics. A submittal needs to be resubmitted, by selecting the correct unit heater type with the correct electrical requirements mentioned in the RFI #28 response.

Please let me know if you have any questions.

Thank you,

Rob Villela
Assistant Project Manager

Office: (956) 686-9573 ext 1133
Fax: (956) 686-3270
Cell: (956) 376-0026
Email: robertov@DWilsonConstruction.com
Web: www.dwilsonconstruction.com
Address: P.O. Box 3455, McAllen, Texas 78502-3455

D. WILSON CONSTRUCTION CO.
An Employee-Owned Company

From: Roberto Villela <robertov@dwilsonconstruction.com>
Sent: Thursday, October 16, 2025 9:37 AM
To: Buster Smith - D & F Industries, Inc <BusterSmith@df.smrtsub.app>; Charles Smith <csmith@dandfindustries.com>; lvela@dandfindustries.com <lvela@dandfindustries.com>
Cc: Pilar Anzaldua-Garza <pilara@dwilsonconstruction.com>; Shukan Bhakta <shukanb@dwilsonconstruction.com>; Vanessa J. Garza <vanessag@dwilsonconstruction.com>; Emiliano Larios <Emilianol@dwilsonconstruction.com>; jmonroy@dandfindustries.com <jmonroy@dandfindustries.com>; Claudio Velasco <claudiov@dwilsonconstruction.com>; Jacob Madrigal <jacob@dandfindustries.com>
Subject: Re: Unit Heater UH-1 | 1288-2 | 24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)

D&F Team,

Please see below from Brownstone and address accordingly.

RA

Rolando Ayala<rolando@bstone.biz>

Reply | Reply all | Forward

To: Roberto Villela

Thu 10/16/2025 9:34 AM

Cc: Claudio Velasco; Emiliano Larios; Pilar Anzaldua-Garza; Vanessa J. Garza; Denisse Serna; Arturo Perez; Jose Pequeno; **+3 others**

Caution:

This email originated from outside of D. Wilson Construction. Do not click links or open attachments unless you recognize the sender's email address (and not just the name) and know the content is safe.

Good morning, Rob

Thank you for your responses. It appears that there are still a significant number of submittals that need to be resubmitted. Please see below the response I have for one of your comments.

11. Submittal #43 - Unit Heaters - Mechanical review response was Approved. Electrical review response was R&R. DWCC issued RFI #28 in regard to the Unit Heaters issue. Official response was: "Refer to unit heater model number highlighted in green. Model P3P5103CA1N has electrical characteristics as 3.3kw heat, 480 volts/ three phase". Therefore, this submittal should be closed as Approved. The product data that was provided in the submittal does not match the required electrical characteristics. A submittal needs to be resubmitted, by selecting the correct unit heater type with the correct electrical requirements mentioned in the RFI #28 response.

Please let me know if you have any questions.

Thank you,

Rob Villela

Assistant Project Manager

Office: (956) 686-9573 ext 1133

Fax: (956) 686-3270

Cell: (956) 376-0026

Email: robertov@DWilsonConstruction.com

Web: www.dwilsonconstruction.com

Address: P.O. Box 3455, McAllen, Texas 78502-3455

D. WILSON CONSTRUCTION CO.

An Employee-Owned Company

From: Buster Smith - D & F Industries, Inc <BusterSmith@df.smrtsub.app>
Sent: Tuesday, June 3, 2025 9:35 AM
To: Roberto Villela <robertov@dwilsonconstruction.com>
Cc: Pilar Anzaldua-Garza <pilara@dwilsonconstruction.com>; Shukan Bhakta <shukanb@dwilsonconstruction.com>; Vanessa J. Garza <vanessag@dwilsonconstruction.com>; Emiliano Larios <Emilianol@dwilsonconstruction.com>; jmonroy@dandfindustries.com <jmonroy@dandfindustries.com>; lvela@dandfindustries.com <lvela@dandfindustries.com>; Claudio Velasco <claudiov@dwilsonconstruction.com>
Subject: Unit Heater UH-1 | 1288-2 | 24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)

Caution:

This email originated from outside of D. Wilson Construction. Do not click links or open attachments unless you recognize the sender's email address (and not just the name) and know the content is safe.

Please see attached mechanical EOR review letter stating the unit heaters are approved.

D&F has changed the RR code to R in our submittal register, and the heater is being released for fabrication based on the mechanical EOR's review comment.

The electrical designer's comments need to be addressed through D&F's electrical department (copied in this email).

Due to email account limits on file sizes, any attached file or combination of files greater than 10mb, will only be available as a link that will need to be downloaded by the recipient.
You will find attachments at the following link(s):

EOR Approval.pdf

Buster Smith
Mech. Div.Mgr.
D & F Industries, Inc
P: 956-781-2496
C: 956-624-8639

Powered by

D. WILSON CONSTRUCTION CO.

PCO #033

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

DRAFT

Prime Contract Potential Change Order #033: Leidos Damages to Electrical

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	033 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Draft	**CREATED DATE:**	1/6/2026
REFERENCE:	Leidos Backcharge	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	0 days	**TOTAL AMOUNT:**	$27,686.53

POTENTIAL CHANGE ORDER TITLE: Leidos Damages to Electrical

CHANGE REASON: Backcharge

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
CE #44 - Leidos Damages to Electrical Ductbank
D&F uncovered some damaged conduits at the ductbanks which were caused during Leido's installation/boring of their lines at the existing chiller pad.
As part of an agreement, Leido's agreed to clear the flowable fill around the electrical conduits so they could investigate for damages to the electrical conduit.
We have discovered the damaged conduits to be (10 ea 4" conduits, 3 ea 1 ½", 2 ea 2" conduits and 1 ea 1" conduit. The rough order of magnitude cost for the repair is as follows:
Materials $7,109.00
Labor $ 21,804.00
Refer to attached for detailed proposal

ATTACHMENTS:
Repair Damages Caused by Leidos 8-29-25.pdf

#	Budget Code	Description	Amount
1	112.16-100.S	Damages by Leidos 8/29/2025	$27,141.00
		Subtotal:	**$27,141.00**
		Overhead and Profit (1.00% Includes Cost Type (20)):	$271.41
		Bond (1.00% Applies to All Line Items):	$274.12
		Grand Total:	**$27,686.53**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

01/08/2026
SIGNATURE **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

Maria Luisa Rangel 01/13/2026
SIGNATURE **DATE**

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

Pharr FY16 DAP - Agricultural Lab, Dock Expan I & II

COR 1291-1-XXXX

Damages by Leidos 8-29-25

Labor Rate	$	50.48
Overhead		10%
Markup		5%

Act No.	Take Off Items	Material	Labor Hrs	Labor Cost	Total Cost
	Material & Labor	$ 2,565	176	$ 8,884	$ 11,449
	Invest before flow fill removal		74	$ 3,736	$ 3,736
	Invest after flow fill removal		42	$ 2,120	$ 2,120
	Backhoe / Excavator	$ 2,500		$ -	$ 2,500
	Tamper	$ 760		$ -	$ 760
				$ -	$ -
				$ -	$ -
				$ -	$ -
				$ -	$ -
	Miscellaneous Material	$ 80	18	$ 909	$ 989
	Fuel	$ 250		$ -	$ 250
		$ 6,155	**310**	**$ 15,649**	**$ 21,804**

	Costs	Overhead	Markup	Totals
Material Total	$ 6,155	$ 616	$ 339	**$ 7,109**
Labor Total	$ 15,649	$ 1,565	$ 861	**$ 18,074**
Superintendent	$ 943	$ 94	$ 52	**$ 1,090**
Project Management	$ 634	$ 63	$ 35	**$ 733**
				$ 27,006
			Warranty	**$ 135**
				$ 27,141
			Bond	**$ -**
			Grand Total	**$ 27,141**

Total Labor Hours	310
Total Mandays	39
Average Crew Size	3
Estimated Crew Days	12.9

PCO #035

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #035: CU Controls for Cold Storage

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	035 / 2	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Pending - Proceeding	**CREATED DATE:**	2/27/2026
REFERENCE:	ASI 16	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	5 days	**TOTAL AMOUNT:**	$38,093.71

POTENTIAL CHANGE ORDER TITLE: CU Controls for Cold Storage

CHANGE REASON: Client Request

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
CE #046 - CU Controls for Cold Storage
Per Preliminary ASI 016, received 12/11/2025, we will need to add KE2 controls to the condensing units and upgrade our KE2 EM+ manager to the KE2 EM+ manager w/ BACNet. This change order reflects the addition of the added condensing unit controls,(1) additional KE2 switch required due to the added condensing unit controls, price for the upgraded EM+ w/BACNet, the credit issued for the standard EM+, as well as the additional labor required to program all of the additional requested controls. Pricing has been revised to incorporate items discussed between ARI, the City of Pharr, and Brownstone.
Breakdown as follows:
$11,140.74 Material (CU Controls)
3,500.00 Additional Labor $3,500.00
564.80 Additional KE2 Switch $564.80
$15,205.54 Subtotal
$20,714.91 Price increase in A2L equipment $20,714.97 (BACNet needs to be integrated into equipment at factory). Equipment cannot be released until determination is made.

ATTACHMENTS:
CO 2_Pharr Dock CU Controls_2026.04.16 v4.pdf , _ASI 016 Narrative & Sheets - PRELIMINARY.pdf

#	Budget Code	Description	Amount
1	116.15-500.S	HVAC Controls for Cold Storage Equipment	$15,205.54
2	116.15-500.S	Price Increase on A2L Equipment effective 2/27/2026	$20,714.97
		Subtotal:	**$35,920.51**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$1,796.03
		Bond (1.00% Applies to All Line Items):	$377.17
		Grand Total:	**$38,093.71**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

SIGNATURE 05/06/2026 **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

SIGNATURE Maria Luisa Rangel 05/08/2026 **DATE**

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

PCO #035

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #035: CU Controls for Cold Storage

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	035 / 1	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Pending - Proceeding	**CREATED DATE:**	2/27/2026
REFERENCE:	ASI 16	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	TO BE DETERMINED	**TOTAL AMOUNT:**	$42,348.82

POTENTIAL CHANGE ORDER TITLE: CU Controls for Cold Storage

CHANGE REASON: Client Request

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*

CE #046 - CU Controls for Cold Storage
Per Preliminary ASI 016, received 12/11/2025, we will need to add KE2 controls to the condensing units and upgrade our KE2 EM+ manager to the KE2 EM+ manager w/ BACNet. This change order reflects the addition of the added condensing unit controls,(1) additional KE2 switch required due to the added condensing unit controls, price for the upgraded EM+ w/BACNet, the credit issued for the standard EM+, as well as the additional labor required to program all of the additional requested controls.
Breakdown as follows:
$11,140.74 Material (CU Controls)
7,000.00 Additional Labor $7,000.00
564.80 Additional KE2 Switch $564.80
1,218.20 KE2 EM+ Manager w/BACNet
- 705.83 EM+ Credit
$19,217.91 Subtotal
$20,714.91 Price increase in A2L equipment $20,714.97 (BACNet needs to be integrated into equipment at factory). Equipment cannot be released until determination is made.

EXTENSION OF TIME TO BE DETERMINED AT A LATER DATE

ATTACHMENTS:

CO 2_Pharr Dock CU Controls_2026.02.23.pdf , _ASI 016 Narrative & Sheets - PRELIMINARY.pdf

#	Budget Code	Description	Amount
1	116.15-500.S	HVAC Controls for Cold Storage Equipment	$19,217.91
2	116.15-500.S	Price Increase on A2L Equipment effective 2/27/2026	$20,714.97
		Subtotal:	**$39,932.88**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$1,996.64
		Bond (1.00% Applies to All Line Items):	$419.30
		Grand Total:	**$42,348.82**

NOTE: THIS PROPOSAL IS ONLY FOR THE HVAC CONTROLS AND A2L EQUIPMENT AS IT APPLIES TO THE COLD STORAGE BUILDING AND EXCLUDES ELECTRICAL OR ANY ITEMS NOT SPECIFICALLY LISTED IN THIS PROPOSAL Extension of Time to be determined at a later date.

Brownstone Consultants, LLC	**City Of Pharr**	**D Wilson Construction Company**
P.O. Box 3898	PO Box 1729	PO Box 3455
McAllen, Texas 78505	Pharr, Texas 78577	McAllen, Texas 78502
SIGNATURE **DATE**	**SIGNATURE** **DATE**	**SIGNATURE** **DATE**

04/27/2026 8:10 AM
Prepared By: John Campbell
Project No: 25001

1122 North Cherry St
San Antonio, Texas, 78202
(210) 225-5493

Change Order #04

Customer Information:	Project Information:
Rob Villela D. Wilson Construction Co PO Box 3455 McAllen, TX 78502-3455	Pharr Dock 9901 S Cage Blvd Pharr, TX 78577

Scope

Per attached price increase notification letter, dated 12/19/2025, the refrigeration equipment for the project has incurred a 3.5% price increase on 02/27/2026.

- **A2L equipment**
  - Condensing Unit Original Price = $315,683.95
  - CU Price w/ 3.5% Price Increase = **$326,732.89**
  - Evaporators Original Price = $276,172.29
  - Evaporators w/ 3.5% Price Increase = **$285,838.32**
  - Equipment Total Original Price = $591,856.24
  - New Total w/ 3.5% Price Increase = **$612,571.21**
  - **Price Difference = $20,714.97**

ACCEPTANCE LIMIT: 10 Days
COMPLETION DATE EXTENSION: N/A

Customer: _____
Signature: _____
Title: _____
Date: _____

Arnold Refrigeration, Inc.
Signature: _____
Title: _____
Date: _____

159 Roy Blvd., Box 2020
Brantford, Ontario, N3R 7K1
Phone: (519) 751-0444 / 800-463-9517

6032 Alliance Way
Kilgore, TX 75662
Phone: (844) 866-5337

12-19-2025

To: KeepRite Refrigeration Customers

Navigating the ever-changing supply chain over the past several years has come with unique challenges. The disruptions observed in the first half of 2025 seem to have normalized into a more traditional inflationary cadence. To keep pace with these rising input costs, KeepRite Refrigeration will implement a price increase of 3.5% on all orders placed after February 27, 2026.

Current pricing will remain in effect for orders placed on or before February 27, 2026 and ship within current lead times. Orders received after February 27 will be subject to new pricing that will be updated in price sheets and our quoting software before that date.

As always, we value your support in our mission to satisfy our customers, develop long term profitable partnerships, and provide market leadership.

Sincerely,

Bob Schindler
Vice President, Sales
KeepRite Refrigeration
940 Bent Oak Court
Lake St. Louis, MO 63367

Cell: (636) 699-6766
Bschindler@k-rp.com

04/01/2026 8:10 AM
Prepared By: John Campbell
Project No: 25001

1122 North Cherry St
San Antonio, Texas, 78202
(210) 225-5493

Change Order #04

Customer Information:	Project Information:
Rob Villela D. Wilson Construction Co PO Box 3455 McAllen, TX 78502-3455	Pharr Dock 9901 S Cage Blvd Pharr, TX 78577

Scope

Per attached price increase notification letter, dated 12/19/2025, the refrigeration equipment for the project has incurred a 3.5% price increase on 02/27/2026.

- **A2L equipment**
  - Original Price = $591,856.24
  - New Total w/ 3.5% Price Increase = $612,571.21
  - **Price Difference = $20,714.97**

ACCEPTANCE LIMIT: 10 Days
COMPLETION DATE EXTENSION: N/A

Customer: _____
Signature: _____
Title: _____
Date: _____

Arnold Refrigeration, Inc.
Signature: _____
Title: _____
Date: _____

Outlook

Re: 2026 Price Increases

From Tamie Bocanegra <tbocanegra@ari.tech>
Date Mon 2026-04-27 8:22 AM
To Tamie Bocanegra <tbocanegra@ari.tech>

From: Jonah Greco <jgreco@k-rp.com>
Sent: Monday, January 5, 2026 10:35 AM
To: Moises Benitez <mbenitez@ari.tech>
Cc: Charles Wernette <cwernette@ari.tech>; John Campbell <jcampbell@ari.tech>; Tamie Bocanegra <tbocanegra@ari.tech>; Deborah Gamboa <dgamboa@ari.tech>
Subject: RE: 2026 Price Increases

Happy new year!

Yessir, see attached letter. There will be a price increase of 3.5% that will go into effect February 28th.

Thanks,
Jonah

Jonah Greco | *Regional Sales Engineer*
jgreco@k-rp.com
636-395-1687
https://k-rp.com
South Central Region

KeepRite REFRIGERATION 80 YEARS
Design Tools for Refrigeration Professional: k-rp.com/dt

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From: Moises Benitez <mbenitez@ari.tech>
Sent: Monday, January 5, 2026 8:52 AM
To: Jonah Greco <jgreco@k-rp.com>
Cc: Charles Wernette <cwernette@ari.tech>; John Campbell <jcampbell@ari.tech>; Tamie Bocanegra <tbocanegra@ari.tech>; Deborah Gamboa <dgamboa@ari.tech>
Subject: 2026 Price Increases

Hi Jonah,
Happy New Year!

Have you heard of any upcoming price increases for 2026?

159 Roy Blvd., Box 2020
Brantford, Ontario, N3R 7K1
Phone: (519) 751-0444 / 800-463-9517

6032 Alliance Way
Kilgore, TX 75662
Phone: (844) 866-5337

12-19-2025

To: KeepRite Refrigeration Customers

Navigating the ever-changing supply chain over the past several years has come with unique challenges. The disruptions observed in the first half of 2025 seem to have normalized into a more traditional inflationary cadence. To keep pace with these rising input costs, KeepRite Refrigeration will implement a price increase of 3.5% on all orders placed after February 27, 2026.

Current pricing will remain in effect for orders placed on or before February 27, 2026 and ship within current lead times. Orders received after February 27 will be subject to new pricing that will be updated in price sheets and our quoting software before that date.

As always, we value your support in our mission to satisfy our customers, develop long term profitable partnerships, and provide market leadership.

Sincerely,

Bob Schindler
Vice President, Sales
KeepRite Refrigeration
940 Bent Oak Court
Lake St. Louis, MO 63367

Cell: (636) 699-6766
Bschindler@k-rp.com

04/16/2026 3:27 PM
Prepared By: John Campbell
Project No: 25001

1122 North Cherry St
San Antonio, Texas, 78202
(210) 225-5493

Change Order #02

Customer Information:	Project Information:
Rob Villela D. Wilson Construction Co PO Box 3455 McAllen, TX 78502-3455	Pharr Dock 9901 S Cage Blvd Pharr, TX 78577

Scope

Per ASI 016, received 12/11/2025, we will need to add KE2 controls to the condensing units. This change order reflects the addition of the added condensing unit controls,(1) additional KE2 switch required due to the added condensing unit controls, the additional labor required to program the additional requested controls, as well as the 3.5% price increase that went into effect on February 27, 2026.

Summary

Description	Total
Added Condensing Unit Controls	11,140.74
Additional Labor	3,500.00
Additional KE2 Switch	564.80
Total	**$15,205.54**

ACCEPTANCE LIMIT: 10 Days
COMPLETION DATE EXTENSION: N/A

Customer: _____
Signature: _____
Title: _____
Date: _____

Arnold Refrigeration, Inc.
Signature: _____
Title: _____
Date: _____

159 Roy Blvd., Box 2020
Brantford, Ontario, N3R 7K1
Phone: (519) 751-0444 / 800-463-9517

6032 Alliance Way
Kilgore, TX 75662
Phone: (844) 866-5337

12-19-2025

To: KeepRite Refrigeration Customers

Navigating the ever-changing supply chain over the past several years has come with unique challenges. The disruptions observed in the first half of 2025 seem to have normalized into a more traditional inflationary cadence. To keep pace with these rising input costs, KeepRite Refrigeration will implement a price increase of 3.5% on all orders placed after February 27, 2026.

Current pricing will remain in effect for orders placed on or before February 27, 2026 and ship within current lead times. Orders received after February 27 will be subject to new pricing that will be updated in price sheets and our quoting software before that date.

As always, we value your support in our mission to satisfy our customers, develop long term profitable partnerships, and provide market leadership.

Sincerely,

Bob Schindler
Vice President, Sales
KeepRite Refrigeration
940 Bent Oak Court
Lake St. Louis, MO 63367

Cell: (636) 699-6766
Bschindler@k-rp.com

NATIONAL REFERIGERATION AND
AIR CONDITIONING CANADA CORP.
159 ROY BLVD. PO BOX 2020
BRANTFORD ON
CANADA N3T 5Y6

KVD070M9-HT4E-A

Lrg Vertical Air-Cooled Semi Hermetic Condensing Units-Air

PURCHASER: **Arnold Refrigeration**	SUBMITTED BY: **Jonah M Greco**
SYSTEM NAME: **Equipment**	DATE: **Thursday, May 29, 2025**
PROJECT #: **Q17BXJMGC**	ITEM #: **001** QTY: **3**
QUOTE #: **Q17BXJMGC-B**	ID #:
PURCHASER'S PO #: **87023**	TAGGING:

STANDARD FEATURES

- 3/8" Tubing coil construction (reduces refrigerant operating charge)
- Anti-short cycle time delay
- Compressor head cooling fans on low temp models
- Adjustable pressure fan cycling on two-fan and longer models
- Crankcase heater
- Discharge and suction vibration eliminators
- Flexible hose on all compressor pressure control connections
- Fused condenser fan motors
- Lock out relay
- Oil failure control (on applicable models)
- Part-winding start on all 30 HP and up, operating on 208/230V-3Ph
- Receiver inlet/outlet valves and safety pressure relief valve
- Replaceable liquid line drier & sight glass
- Spring mount compressor with discharge vibration eliminator
- Sub-cooling circuit on medium and low temperature units
- Suction and discharge service valves Adjustable
- flooded head pressure control (unless otherwise indicated)
- Copeland DiscusTM with CoreSense Protection
- Adjustable individual high & low pressure controls
- Red Tags indicating A2L Refrigerant Use

MODEL OPTIONS

OPTION PACKAGES
- [ ] Vertical B (Good@Warm/Moderate)
- [ ] Vertical D (Better@Warm/Moderate)
- [ ] Vertical F (Best@Warm/Moderate)
- [ ] Vertical C (Good@Moderate/Cold)
- [ ] Vertical E (Better@Moderate/Cold)
- [ ] Vertical G (Best@Moderate/Cold)

[ ] **115V Control Circuit**

CAPACITY CONTROL - HOT GAS BYPASS
- [ ] To Inlet of Evaporator
- [ ] To Suction Line

CAPACITY CONTROL - UNLOADING
- [ ] 1 Bank per Compressor
- [1] 2 Banks per Compressor

[1] **Compressor Circuit Breaker**

CONDENSING UNIT PRISON PACKAGE
- [ ] Tamper Proof Screws

[ ] **Crankcase Pressure Regulator**

CONTACTORS
- [ ] 30A Contactor
- [ ] 40A Contactor
- [ ] 60A Contactor
- [ ] 90A Contactor

DEFROST FUSING - SHOW SET QTY
- [ ] Up to 30 Amps
- [ ] 35 Amps to 60 Amps
- [ ] Over 60 Amps

DEMAND DEFROST ELECTRONIC CONTROLLER
- [ ] KE2Therm Evaporator Efficiency

DEFROST KIT (USE W/KE2 EVAP EFF)
- [ ] 35A to 50A per Evap
- [ ] Over 50A per Evap

[1] **Discharge Line Check Valve**

[1] **Discharge Muffler**

DISCONNECT SWITCH
- [1] Fused
- [ ] Non-Fused

[ ] **Dual Entering Service**

EC FAN MOTORS + SPEED CONTROLLER
- [ ] All Motors Variable Speed - 460V Units
- [ ] Shafted EC on Lead Fan Only

ELECTRONIC CONTROLLER
- [ ] KE2 Condensing Unit Controler

[ ] **Export Crating**

EXTENDED 4-YEAR COMPRESSOR WARRANTY
- [1] Copeland

COIL COATING
- [ ] Heresite Coating
- [ ] E-Coat

FIN MATERIAL
- [ ] Gold Coat Fins
- [ ] Copper Fins

[ ] **Heated and Insulated Receiver**

[ ] **Insulated Suction Line**

LIMITROL+ HEAD PRESS CTRL SYSTEM
- [ ] 460V Condensing Units

LIQUID LINE SOLENOID VALVE
- [ ] Manual Stem 115V Coil (Shipped Loose)
- [ ] Manual Stem 230V Coil (Shipped Loose)
- [ ] Standard 230V Coil (Shipped Loose)
- [ ] Standard 115V Coil (Shipped Loose)

[ ] **Manual Reset High Pressure Switch**

[1] **Nitrogen Charged and Sealed**

[ ] **Oil Management System**

OIL SEPARATOR
- [1] With Oil Filter and Solenoid

[ ] **Opposite Side Field Connections**

[1] **Oversized Receiver (Next larger size)**

[ ] **Parallel Piped Compressors**

PHASE / VOLTAGE MONITOR
- [1] 6-Lead (MotorSaver455)

[1] **Pump Down Toggle Switches**

RECEIVER LEVEL INDICATOR
- [ ] Dial Gauge
- [ ] Dial Gauge with Alarm
- [ ] Dial Gauge with Analog Output

SUCTION ACCUMULATOR
- [ ] With Heat Exchanger
- [1] Without Heat Exchanger

SUCTION FILTER
- [1] Replaceable Core

[ ] **Thermosaver - Hot Gas Defrost System**

[ ] **Thermosaver Hot Gas Components**

TIME CLOCK
- [ ] Paragon 8145 Style (Factory Installed)
- [ ] 230V Paragon 8145 Style (Shipped Loose)
- [ ] 115V Paragon 8145 Style (Shipped Loose)

[ ] **Less Flooding Valve(s)**

[ ] **EC Fan Motor Inverse Operation 10V-0V**

[ ] **Discharge Line Temperature Sensors**

[ ] **Process Cooling/Freezing Application**

[ ] **100K SCCR**

MANUAL OPTIONS
- [1] A2L Compressor

Notes : **† MCA.. Minimum Circuit Ampacity, ‡ MOP.. Maximum Overcurrent Protection**
MCA & MOP are for the condensing unit ONLY. Single point connections WILL show different on dataplate.

APPROVALS

APPROVED BY : **DATE :**

Approval of this drawing signifies that the equipment is acceptable under the provision of the job specifications. Any change made hereon by any person whomsoever subject to acceptance by NATIONAL REFRIGERATION at its home office.

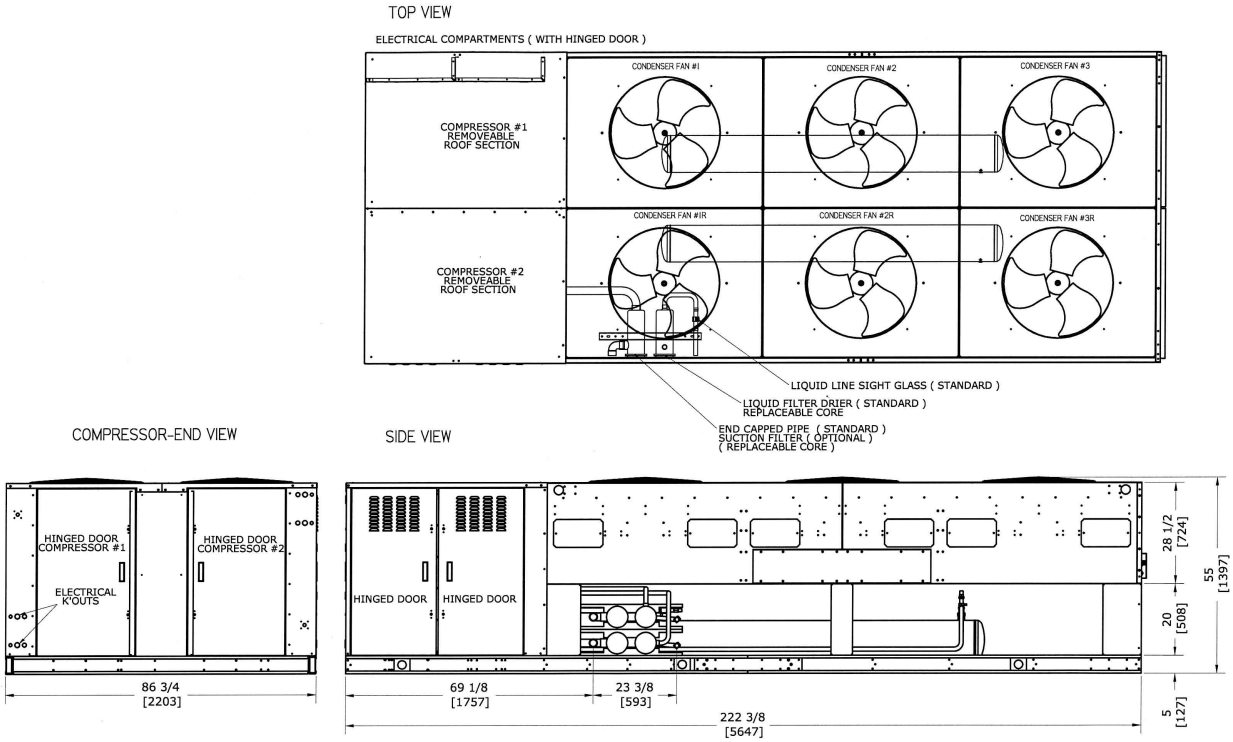
NATIONAL REFERIGERATION AND
AIR CONDITIONING CANADA CORP.
159 ROY BLVD. PO BOX 2020
BRANTFORD ON
CANADA N3T 5Y6

KVD070M9-HT4E-A

Lrg Vertical Air-Cooled Semi Hermetic Condensing Units-Air

PURCHASER: **Arnold Refrigeration**	SUBMITTED BY: **Jonah M Greco**
SYSTEM NAME: **Equipment**	DATE: **Thursday, May 29, 2025**
PROJECT #: **Q17BXJMGC**	ITEM #: **001** QTY: **3**
QUOTE #: **Q17BXJMGC-B**	ID #:
PURCHASER'S PO #: **87023**	TAGGING:

Dimensions shown are for standard unit less options.



DIMENSIONS				FIELD CONNECTIONS				OTHER	
DIMENSION A	222 3/8 in	DIMENSION E		LIQUID	1 1/8 in	PAN LOOP		SHIPPING WEIGHT	5515 lb
DIMENSION B		DIMENSION F		SUCTION	2 1/8 in	HOT GAS SIDE PORT		REFRIGERANT CHARGE	
DIMENSION C		DIMENSION G		DRAIN		HOT GAS INLET		RECEIVER CAPACITY	185 lb
DIMENSION D		DIMENSION H		WATER		HOT GAS OUTLET		AWEF COMPLIANT	
				DISCHARGE					

Voltage	SYSTEM REFRIGERANT	RATING	Suction Temp	Ambient Temp	CAPACITY
460/3/60	R454A	70Hp (2x35Hp)	22.5 °F	105 °F	514400 BTUH

Fans			COMPRESSOR				CIRCUIT TOTAL			
QTY	Power	FLA/FAN	Type	QTY	RLA	LRA	AMPS	WATTS	MCA†	MOP‡
6	11100 W	3.1	6YHNR32ME-TSK	2	73.6	283	92.2		184.2	250

LIQUID	1 1/8 in	SOUND		REC CAPACITY	185 lb	APPROVALS:	cULus
SUCTION	2 1/8 in	WEIGHT	5515 lb	REF CHARGE			

Notes : **† MCA.. Minimum Circuit Ampacity, ‡ MOP.. Maximum Overcurrent Protection**
MCA & MOP are for the condensing unit ONLY. Single point connections WILL show different on dataplate.

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NATIONAL REFERIGERATION AND
AIR CONDITIONING CANADA CORP.
159 ROY BLVD. PO BOX 2020
BRANTFORD ON
CANADA N3T 5Y6

KHP146ME-T4F-S

High Profile
Evaporators

PURCHASER: **Arnold Refrigeration**	SUBMITTED BY: **Jonah M Greco**
SYSTEM NAME: **Equipment**	DATE: **Thursday, May 29, 2025**
PROJECT #: **Q17BXJMGC**	ITEM #: **003** QTY: **12**
QUOTE #: **Q17BXJMGC-B**	ID #:
PURCHASER'S PO #: **87023**	TAGGING:

STANDARD FEATURES

- Factory installed solenoid valve wire harness
- Full collar aluminum plate fins on expanded seamless copper tubes ensure optimum heat transfer efficiency
- Heavy gauge textured aluminum cabinet with galvanized steel hangers, support channels and end plates
- Hinged drain pan for ease of cleaning and service
- Rugged heavy-gauge galvanized steel rail motor mount / support
- Schrader fitting and external equalizer line
- Stackable design
- Unit is shipped upright for convenient handling and quick installation
- Hinged access panels to spacious electrical and header compartments
- Unit shipped with Nitrogen Holding Charge
- 6 FPI
- Compatible with Low GWP Refrigerants Standard
- 175' throw, 110' with optional wire guard
- A2L Mitigation package

MODEL OPTIONS

PRE-ASSEMBLED EVAP
- [1] ESP+ Electronic Package
- [ ] ESP+ Electronic Package w/man stem solvlv
- [ ] Sporlan TXV, LLSV,T-stat
- [ ] Copeland TXV, LLSV,T-stat
- [ ] EEV Kit - Sporlan EEV + Kelvin II
- [ ] EEV Kit - Copeland EEV + EXD-SH1
- [ ] KE2 Evap Efficiency w/Sporlan TXV (Factory Installed)
- [ ] KE2 Evap Efficiency w/Sporlan EEV (Factory Installed)
- [ ] KE2 Evap Efficiency w/Sporlan TXV (Shipped Loose)
- [ ] KE2 Evap Efficiency w/Sporlan EEV (Shipped Loose)
- [ ] **115V Control Circuit**
- [ ] **Aux Sideport Connector**

CABINET FINISH
- [ ] Painted White
- [ ] Painted Black
- [ ] Stainless Steel

SENSORS FOR CPC BOARDS
- [ ] Coil Temp Sensor
- [ ] Return Air Temp Sensor
- [ ] Suction Pressure Transducer

DEMAND DEFROST ELECTRONIC CONTROLLER
- [ ] KE2 Therm Evaporator Efficiency (Factory Installed)
- [ ] KE2 Therm Evaporator Efficiency (Shipped Loose)
- [ ] **Dual Circuit**

ELECTRONIC CONTROLLER
- [1] ESP+ Control Board and Display (Factory Installed)

EXPANSION VALVE
- [ ] Sporlan TXV
- [ ] Copeland TXV
- [ ] Sporlan EEV
- [ ] Copeland EEV
- [1] EEV for ESP+

SENSOR + TRANSDUCER FOR EEV
- [ ] for use with Copeland EEV
- [ ] for use with KE2 Therm EEV
- [ ] Other Brand - Specify in Notes

ELECTRONIC SH CONTROLLER FOR EEV
- [ ] Sporlan Kelvin II EEV Controller (Shipped Loose)
- [ ] Copeland EEV Controller (Shipped Loose)
- [ ] Other EEV Controller- Specify MFR Model in Notes (Shipped Loose)

EVAPORATOR PRISON PACKAGE
- [ ] Tamper Proof Screws
- [ ] **Export Crating**

COIL COATING
- [ ] Heresite Coating
- [ ] E-Coat

FIN MATERIAL
- [ ] Gold Coat Fins
- [ ] Copper Fins
- [ ] **Floor Mount Leg Kit**
- [1] **Insulated Drain Pan**

KE2 THERM
- [ ] CAT5e Shielded Cable - 50ft w/connectors (Shipped Loose)
- [ ] Temp Sensors for Shipped Loose Controller
- [ ] Ethernet Adapter Kit
- [ ] Remote Combo Display (Shipped Loose)

LIQUID / SUCTION HEAT EXCHANGER
- [ ] (Shipped Loose)

LIQUID LINE SOLENOID VALVE
- [1] Sporlan (Factory Installed)
- [ ] Copeland (Factory Installed)
- [ ] By Others Field Supplied
- [ ] Manual Stem (Factory Installed)
- [ ] **Dual Voltage Coil 120-230V Field Wired**
- [ ] **Nitrogen Charged and Sealed**

ROOM THERMOSTATS
- [ ] Johnson: A421ABD-412D (Shipped Loose)
- [ ] Johnson A421ABD-412D (Factory Installed)
- [ ] Ranco ETC-111000 (Factory Installed)
- [ ] Ranco ETC-111000 (Shipped Loose)
- [ ] **Wire Fan Guards**

REMOTE DEFROST PANEL
- [ ] 230V Control (Shipped Loose)
- [ ] 115V Control (Shipped Loose)
- [ ] **Process Cooling/Freezing Application**

CRN REGISTRATION
- [ ] For Evaporators

USED WITH MECHANICAL SUBCOOLER
- [ ] Circuit for sub-cooled Liquid - note temperature

MANUAL OPTIONS
- [1] A2L Components

Notes : **† MCA.. Minimum Circuit Ampacity, ‡ MOP.. Maximum Overcurrent Protection**
CSOV and SSOV Valves Shipped loose

APPROVALS

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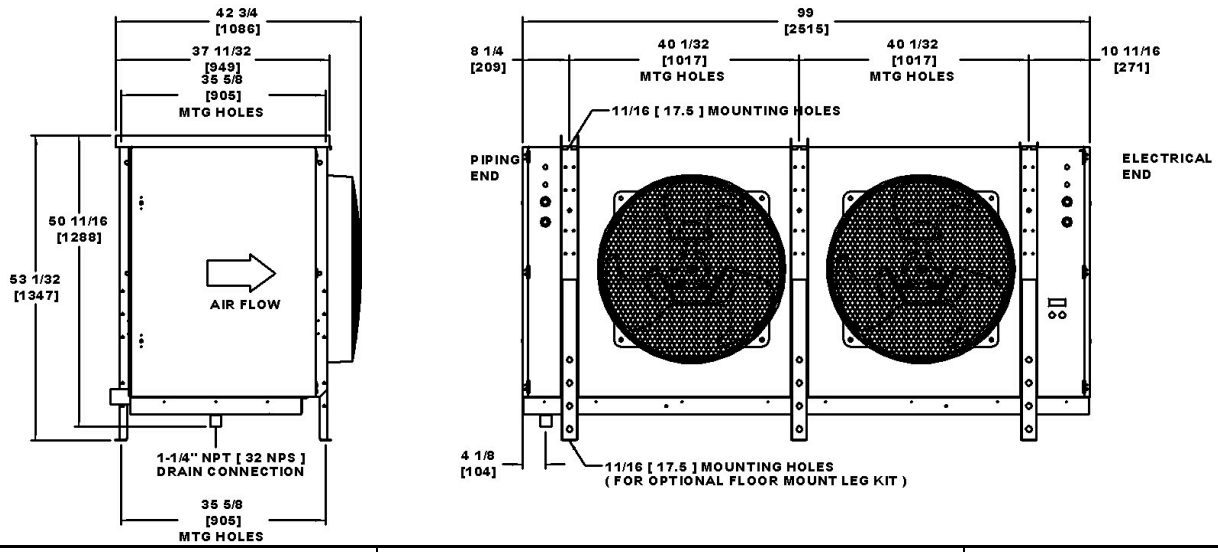
159 ROY BLVD. PO BOX 2020
BRANTFORD ON
CANADA N3T 5Y6

KHP146ME-T4F-S

High Profile
Evaporators

PURCHASER: **Arnold Refrigeration**	SUBMITTED BY: **Jonah M Greco**
SYSTEM NAME: **Equipment**	DATE: **Thursday, May 29, 2025**
PROJECT #: **Q17BXJMGC**	ITEM #: **003** QTY: **12**
QUOTE #: **Q17BXJMGC-B**	ID #:
PURCHASER'S PO #: **87023**	TAGGING:

Dimensions shown are for standard unit less options.



DIMENSIONS				FIELD CONNECTIONS				OTHER	
DIMENSION A		DIMENSION E		LIQUID	1 3/8 in	PAN LOOP		SHIPPING WEIGHT	732 lb
DIMENSION B		DIMENSION F		SUCTION	2 1/8 in	HOT GAS SIDE PORT		REFRIGERANT CHARGE	29 lb
DIMENSION C		DIMENSION G		DRAIN		HOT GAS INLET		RECEIVER CAPACITY	
DIMENSION D		DIMENSION H		WATER		HOT GAS OUTLET		AWEF COMPLIANT	NO
				DISCHARGE					

Voltage	SYSTEM REFRIGERANT	AIR FLOW	Evap Temp	Box Temp	CAPACITY
460/3/60	R454A	16100 CFM	23 °F	32 °F	131166 BTUH

Fans			HEATERS			CIRCUIT TOTAL			
QTY	Power	FLA/FAN	Type	QTY	AMPS	AMPS	WATTS	MCA†	MOP‡
2	1.5 HP	2.8	DEFROST HEATERS			5.6	24500	40.5	45

DISTRIBUTOR	1 3/8 in	SOUND	75	REC CAPACITY		APPROVALS:	cULus
SUCTION	2 1/8 in	WEIGHT	732 lb	REF CHARGE	22 lb		

Notes : **† MCA.. Minimum Circuit Ampacity, ‡ MOP.. Maximum Overcurrent Protection**

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KE2 EdgeManagers

KE2-EM Plus

Introduction:

The KE2-Edge Manager Plus (KE2-EM Plus) automatically finds and dashboards up to 35 KE2 Therm controllers and wireless devices.

The KE2-EM Plus is an advanced communication that creates a common dashboard integrating KE2 Therm controllers and wireless devices. The dashboard displays sensor data and allows easy access to in-depth system operational information from KE2 Therm controllers.

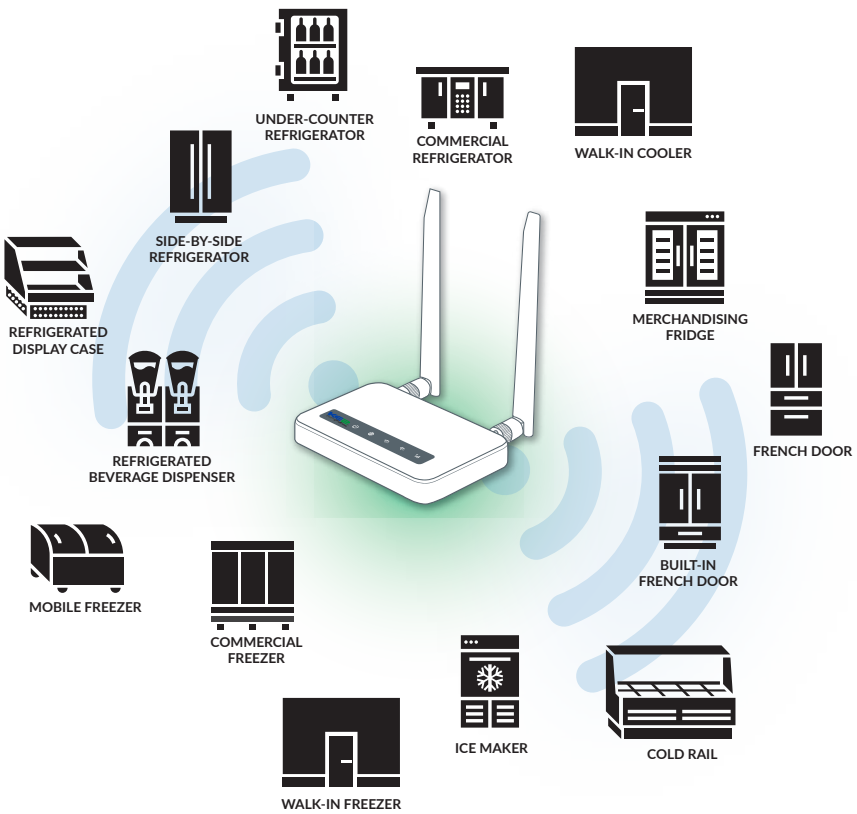
In addition, the KE2-EM Plus provides real-time tracking, storing, and uploading of data from KE2 Therm controllers and sensors, such as room temperature, relative humidity, suction pressure, superheat, and more. The data is stored on the KE2-EM Plus device, providing the user ownership and free local access to the data as a data-log or graph.

Accessing the dashboard has also never been easier. Simply type in the IP address of the KE2-EM Plus while in the local network space, or access it remotely for a nominal annual fee via the KE2 SmartAccess portal

Applications:

Walk-ins ▪ Reach-ins ▪ Under Counter ▪ Cold Rails ▪ Commercial Fridge

The KE2-EM Plus, when used with KE2 Therm controllers or KE2 Wireless Sensors provides the ability to remotely monitor and receive alarm notifications in almost any refrigeration application – from warehouses to walk-ins, reach-ins, cold rails, under-counter, and more.



Features & Benefits:

- Automatically provides a real-time dashboard of up to 35 KE2 Therm controllers and wireless sensors.
- Email and email to text alerts from the KE2-EM Plus help prevent food loss.
- Improve accuracy and eliminate the time and expense of manual tracking with built-in data-logging.
- Detailed graphs and data-logs with time stamps.
- Connect to the KE2-EM Plus locally with a smart device or laptop. Connect remotely via the KE2 SmartAccess portal for a nominal annual fee.
- Serves as the BACnet/IP gateway for KE2 Therm devices (PN 21920).
- Wirelessly bridge to an existing Wi-Fi network for Internet access without running Ethernet cable. Dual 2.4 GHz and 5 GHz radio provide superior Wi-Fi connection.
- Provides a wireless access point to refrigeration controllers and sensors. Diagnose and service systems without standing in the refrigerated space.
- Wireless range of up to 300 ft. line of sight.
- Cellular model available (KE2-EM Cell). Works with GSM cellular providers.

NOTE: Max of 32 KE2 Therm Modbus controllers per KE2-EM Plus. This includes the KE2 Temp + Air Defrost, KE2 Low Temp, KE2 Adaptive, and KE2 Temp + Valve.

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KE2 EdgeManager
KE2-EM Plus

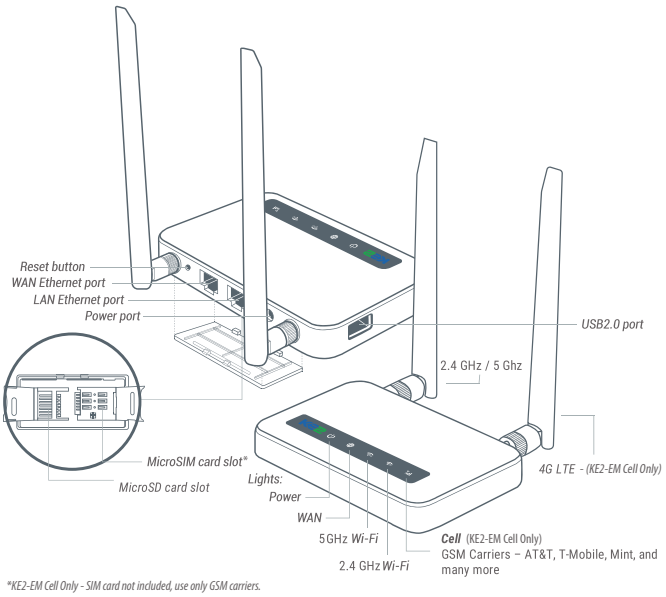
Specifications & Dimensions:

Frequency	2.4GHz: 20dBm (11b) Max 5GHz: 20dBm (11a) Max
Protocol	IEEE 802.11a/b/g/n/ac
WAN/LAN	2 x 10/100M
Power Input	12V/1.5A
Power Consumption	<6W
Temperature Range	-22°F to 150°F (-30°C to 66°C)
Dimension/Weight	4.53 x 2.91 x 0.87 Inches/3oz 115 x 74 x 22mm / 86g
Data logging interval	Variable interval from 1 minute to 6 hours
Data logging storage	30 days at 1 minute interval 15 months at 15 minute interval 30 months at 30 minute interval 60 months at 1 hour interval

KE2 Edge Manager & KE2 Wireless Sensors Description and Part Numbers

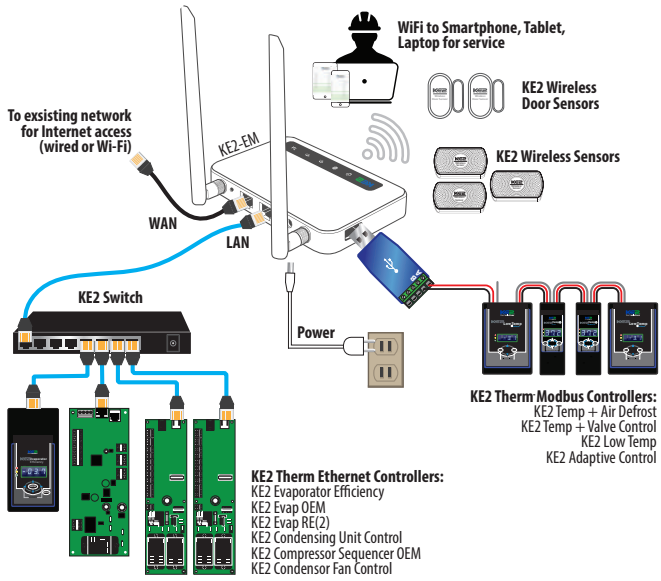
Description	Part Number
KE2-EM Plus	21902
KE2-EM Plus w/BACnet	21920
KE2-EM Plus Mounting Bracket	21924
KE2-EM Cell	21903
KE2-EM Cell w/BACnet	21926
KE2 Wireless Sensor w/Remote Probe	21633
KE2 Wireless Sensor w/Remote Probe *(10 Pack)*	21688
Replacement USB to RS-485 Adaptor	21354

KE2-EM Plus Layout



*KE2-EM Cell Only - SIM card not included, use only GSM carriers.

General Wiring Diagram/Layout



RoHS COMPLIANT FC IC

FC IC

FCC: 2A0PP-21902
IC: 23545-21902

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B.5.10 May 2024 supersedes all prior publications.

KE2 Therm Solutions
12 Chamber Drive . Washington, MO 63090
1.888.337.3358 . www.ke2therm.com

EM Series - BACnet Gateway services installation instructions

1. Connect to the EM Series Gateway – Wired or Wirelessly
    a. Wired – Connect RJ45 Ethernet cable to Laptop or Desktop and the other end to LAN Port of EM35
        i. Open browser (Chrome, Internet Explorer, Edge, Firefox, Safari, etc) and type in http://192.168.50.1 and press enter
    b. Wireless – Locate the Wireless Network of the EM35 – It will be listed on a label on the back of the unit (Ex. KE2EDGE-4F2A1A)
        i. Open browser (Chrome, Internet Explorer, Edge, Firefox, Safari, etc) and type in http://192.168.50.1 and press enter

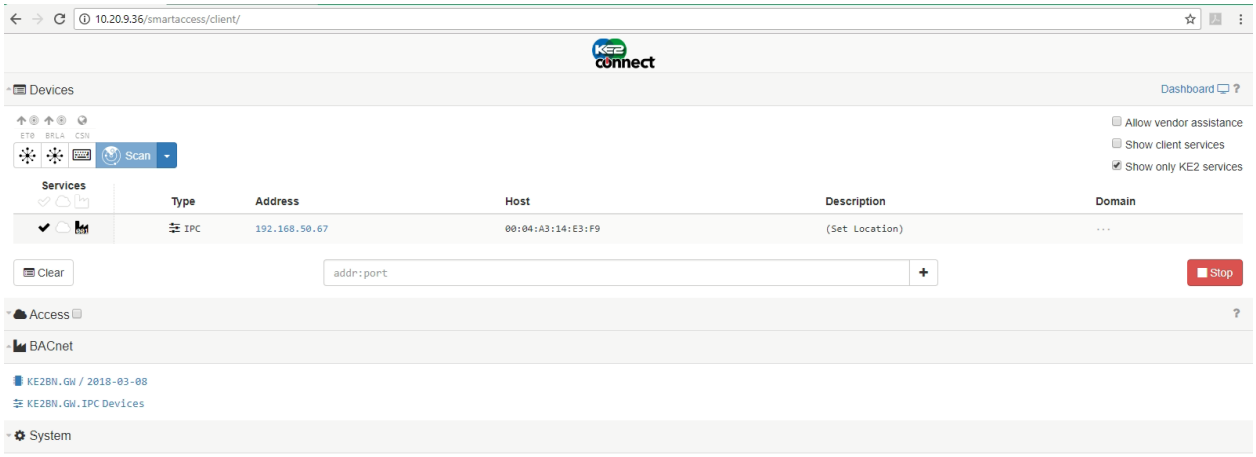
2. Connect the EM Series Gateway WAN Port into the EMS / BMS network. For your convenience, this port has already been configured as a DHCP Client. To configure a STATIC IP address on the WAN Port, visit the EM Series documentation for details.

3. Select the ***Manage*** link from the EM Dashboard. Note: You will be prompted for login credentials (located on the bottom of the unit) if you haven't already signed in.

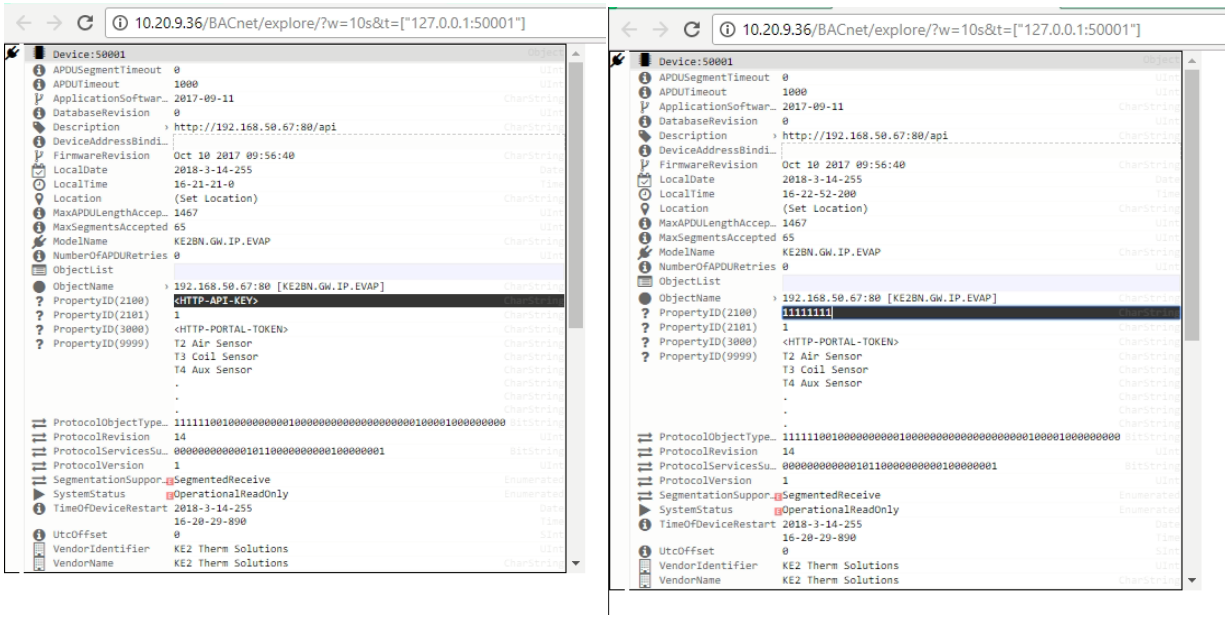
   You will now see a list of controller(s) available for Gateway services to the BAS (Building Automation System) / EMS (Energy Management System). At this time, only the KE2 Evaporator Efficiency is available for this Gateway service.

4. On the left, in the Services section, click the Industrial Building icon AND the Check Mark icon to ***ENABLE*** BACnet Gateway services. The icon will turn black once services have started. If you have multiple controllers listed, simply click the Industrial Building and Check Mark on any/all controllers you wish to provide BACnet Gateway services for.

5. Now, click on the BACnet Menu bar, once expanded, click ***KE2BN.GW.IPCDevices***. This step is necessary to allow the BMS/EMS access to READ/WRITE setpoints on the KE2 controller(s).



6. Once ***KE2BN.GW.IPCDevice*** has been clicked, a new tab will appear. Locate the <HTTP-API-KEY> field and input the 8-16 character controller API key – **DO NOT INPUT** the **< >** characters. The controller API key can be located on the SETTINGS page of the controller. Note: You must be logged in to set/see the controller API Key. See controller documentation as necessary.

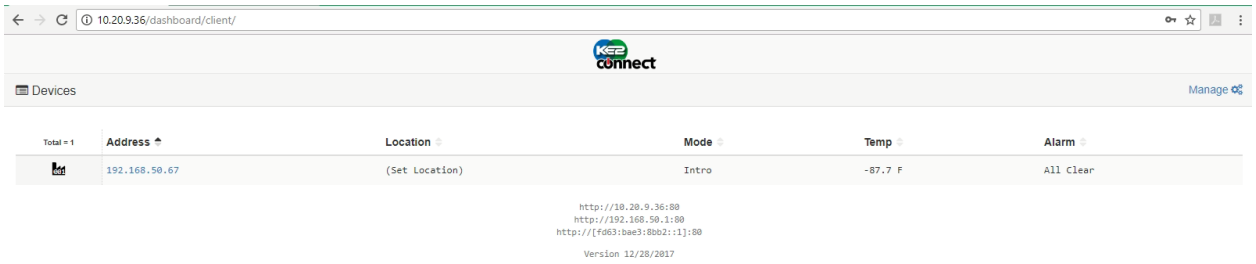


Ex: Assuming controller API Key is 11111111

7. Close the ***KE2BN.GW.IPCDevice*** services tab, and now click on the ***DASHBOARD*** link to return to the EM Dashboard.

Congratulations!!

You now have successfully configured BACnet Gateway services on the EM Series product.



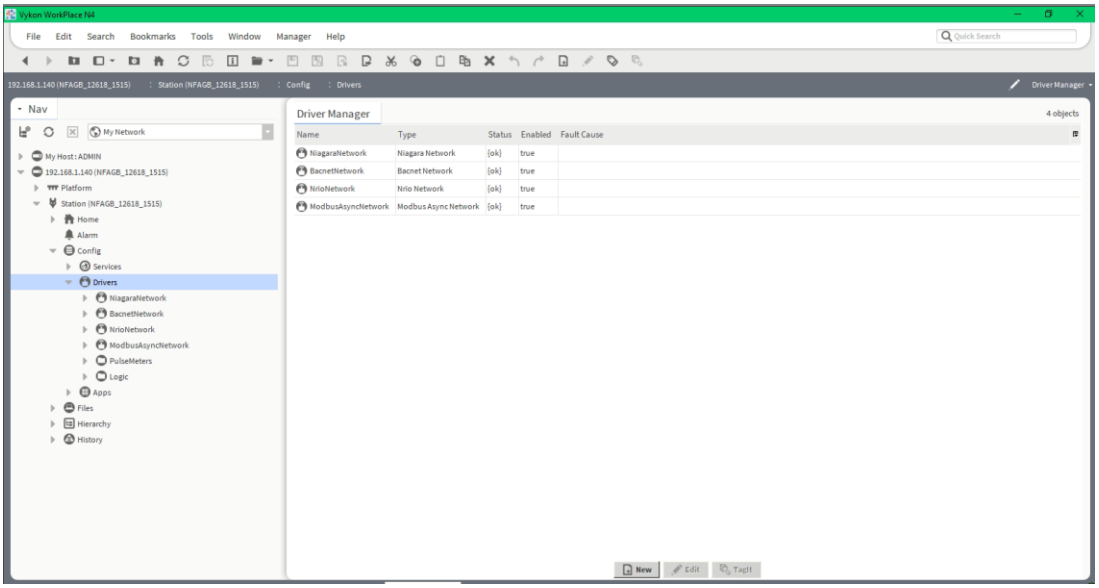
You should see the controller(s) listed on the EM Dashboard that have been configured. The black Industrial Building icon indicates the controller(s) is actively delivering controller data via BACnet/IP.

EM Series - BACnet Gateway services installation instructions

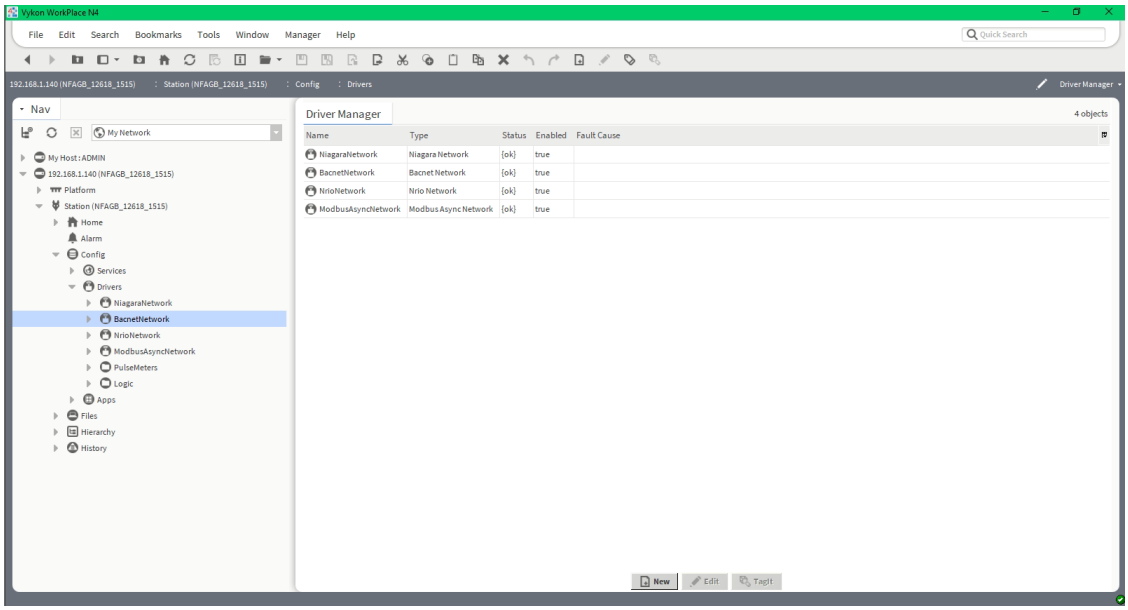
Niagara Configuration

1. Log into the Vykon Workplace. Make sure ALL services are started and running

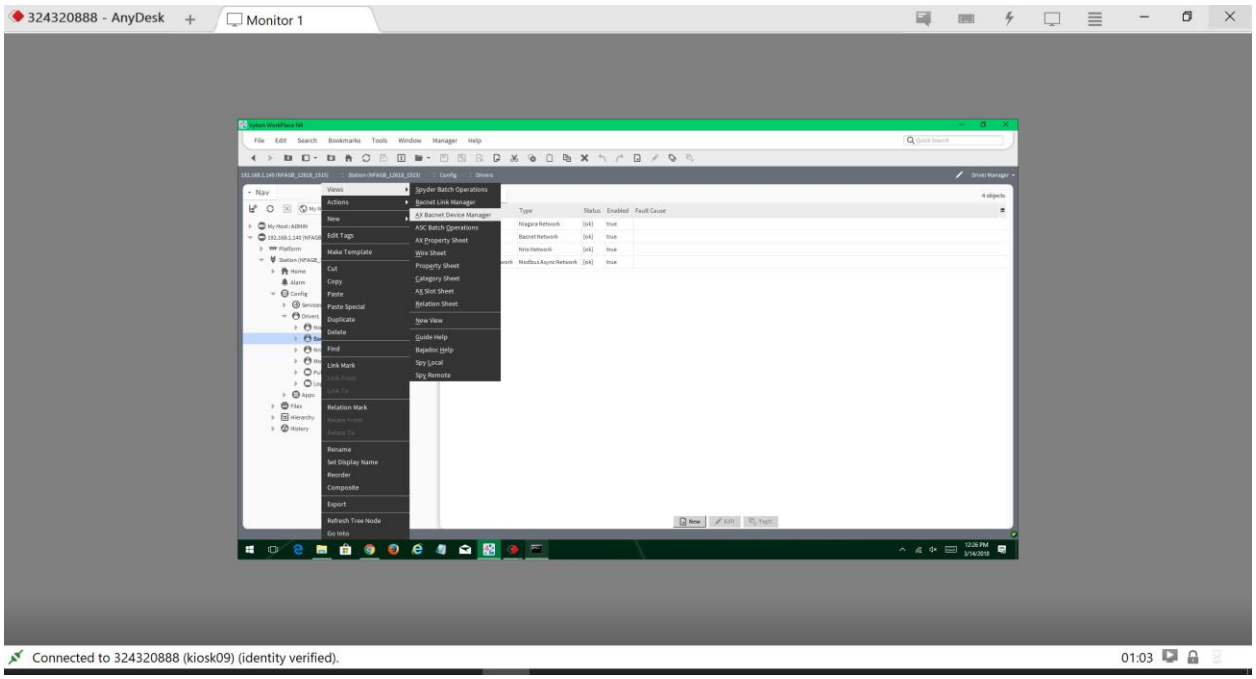
2. Drill down into ***Station***, then into ***Drivers***



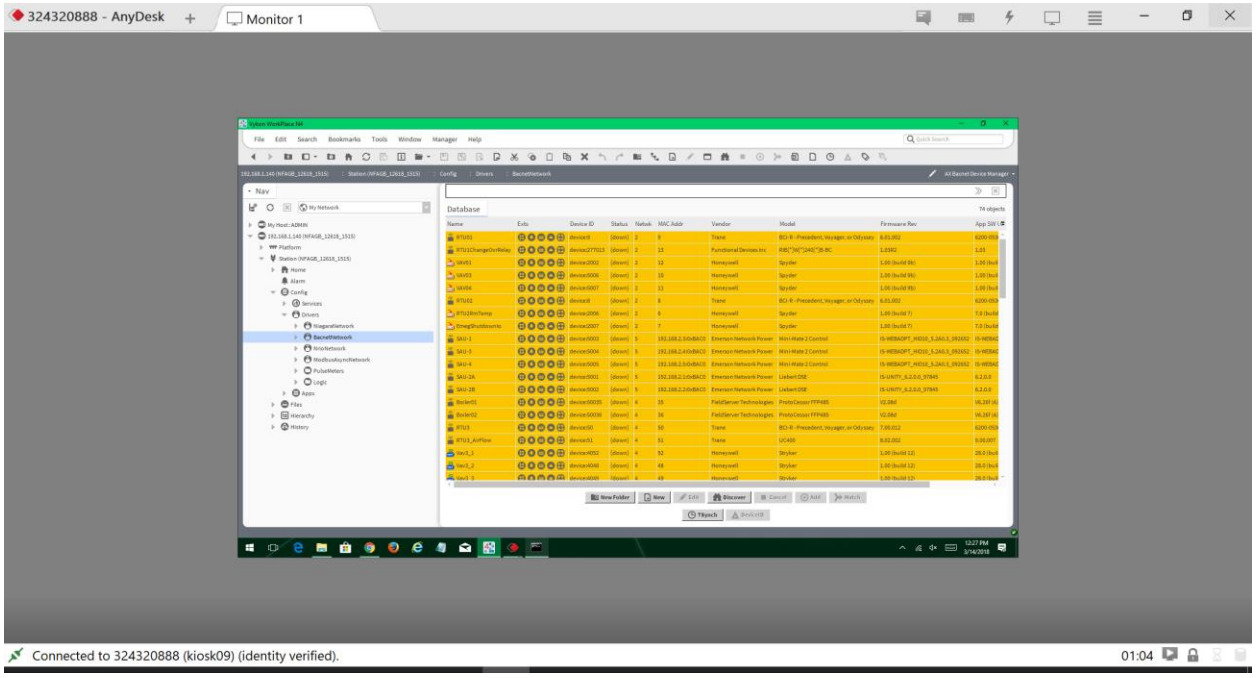
3. Click ***BacnetNetwork*** to configure this service for KE2 EM Series BACnet Gateway Services



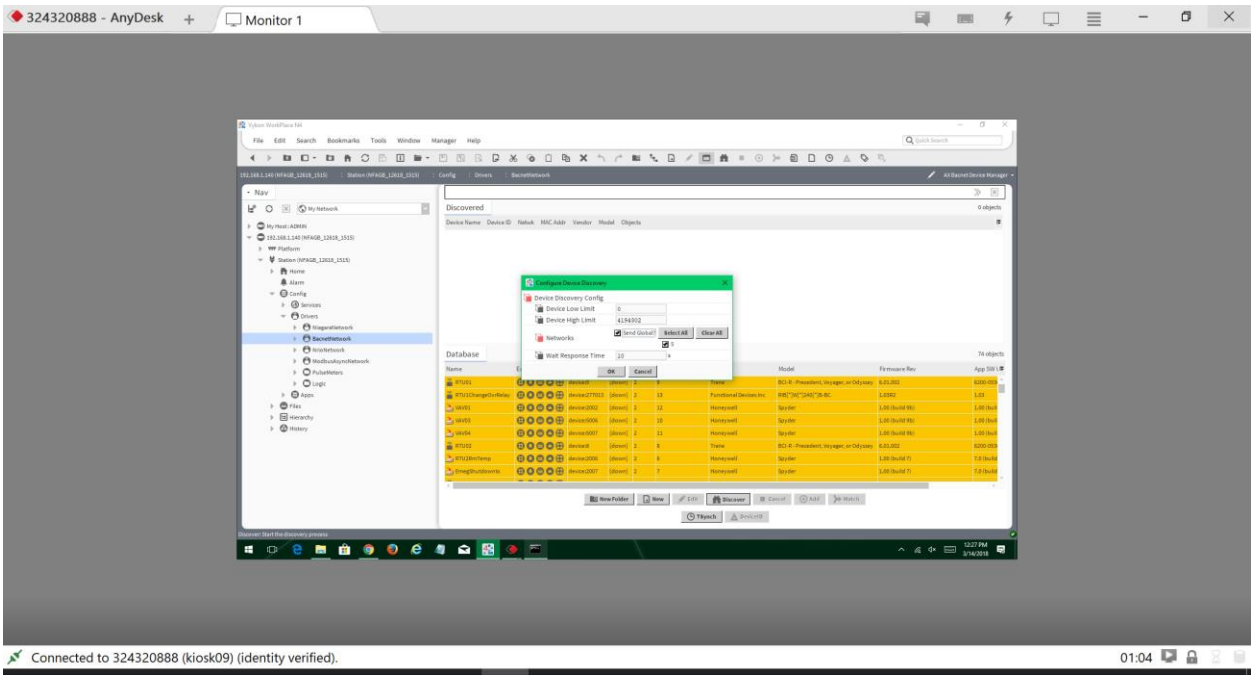
4. Right click ***BacnetNetwork***, then click sub-menu ***Views***, then click ***AX Bacnet Device Manager***.



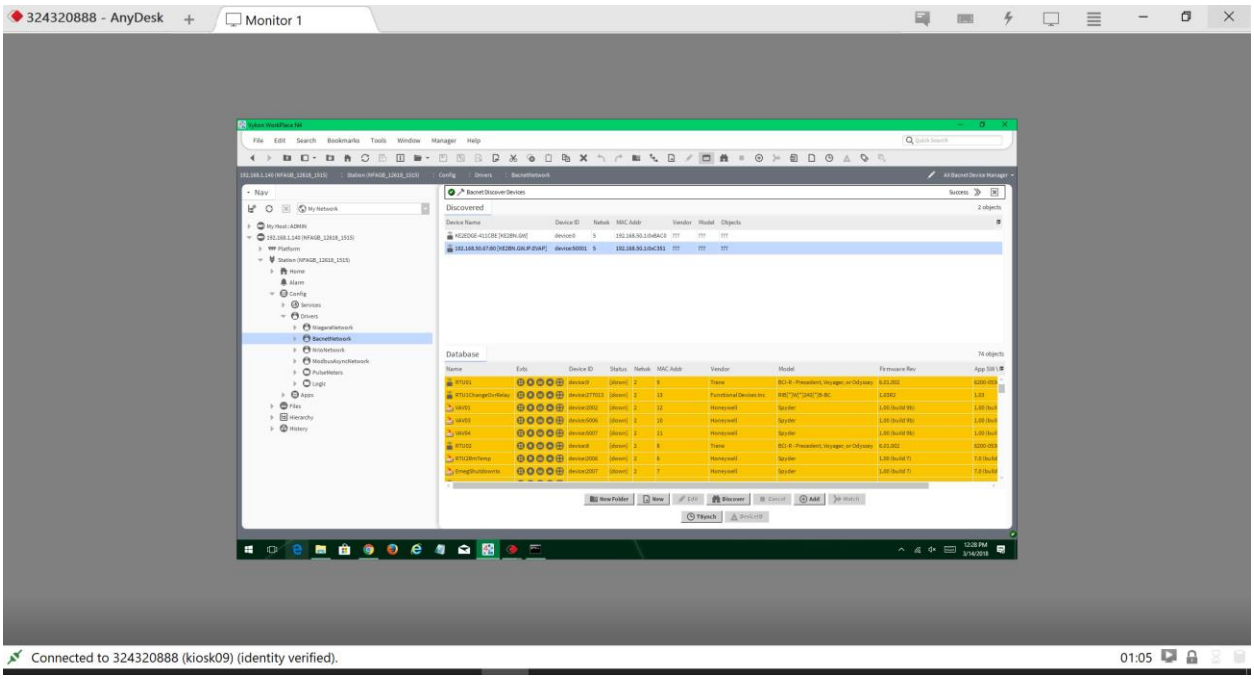
5. Click ***Discover*** to automatically locate the controllers being presented by the EM Series BACnet Gateway Services



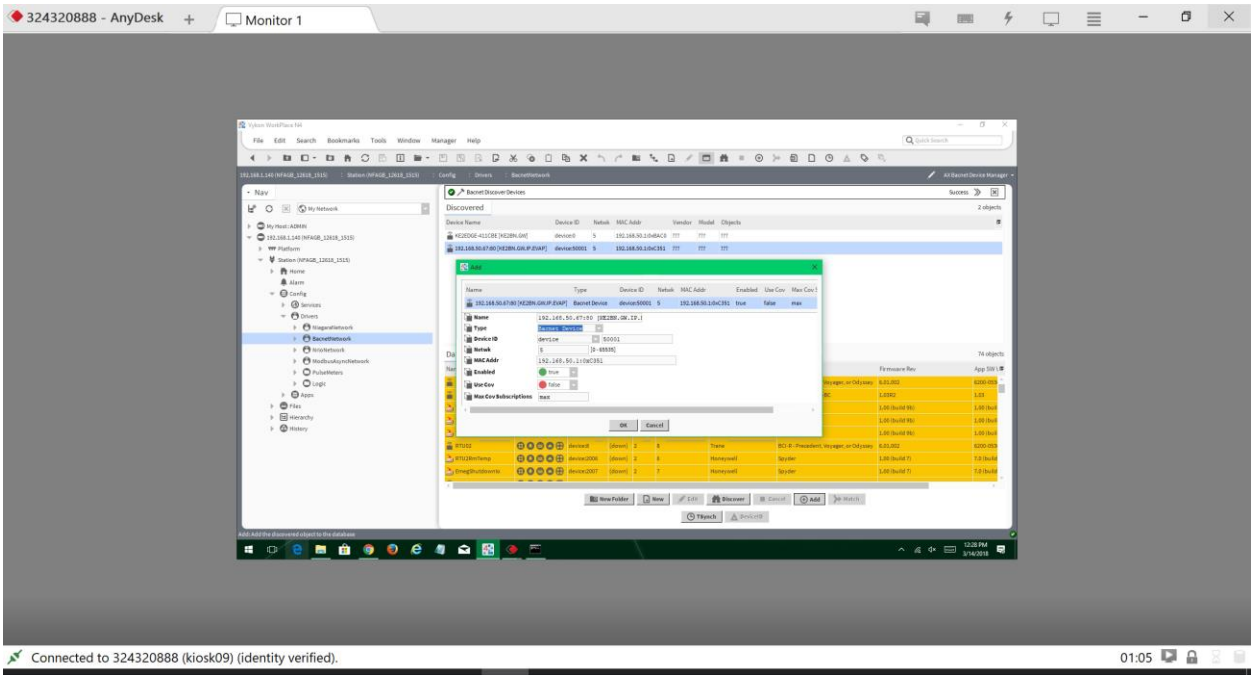
6. You will have the option to configure the Discovery methods, however the default selections should work appropriately. If you have questions, or have a special configuration, please contact your Niagara support representative, or your local BMS/EMS controls admin / technician / engineer for site specific support.



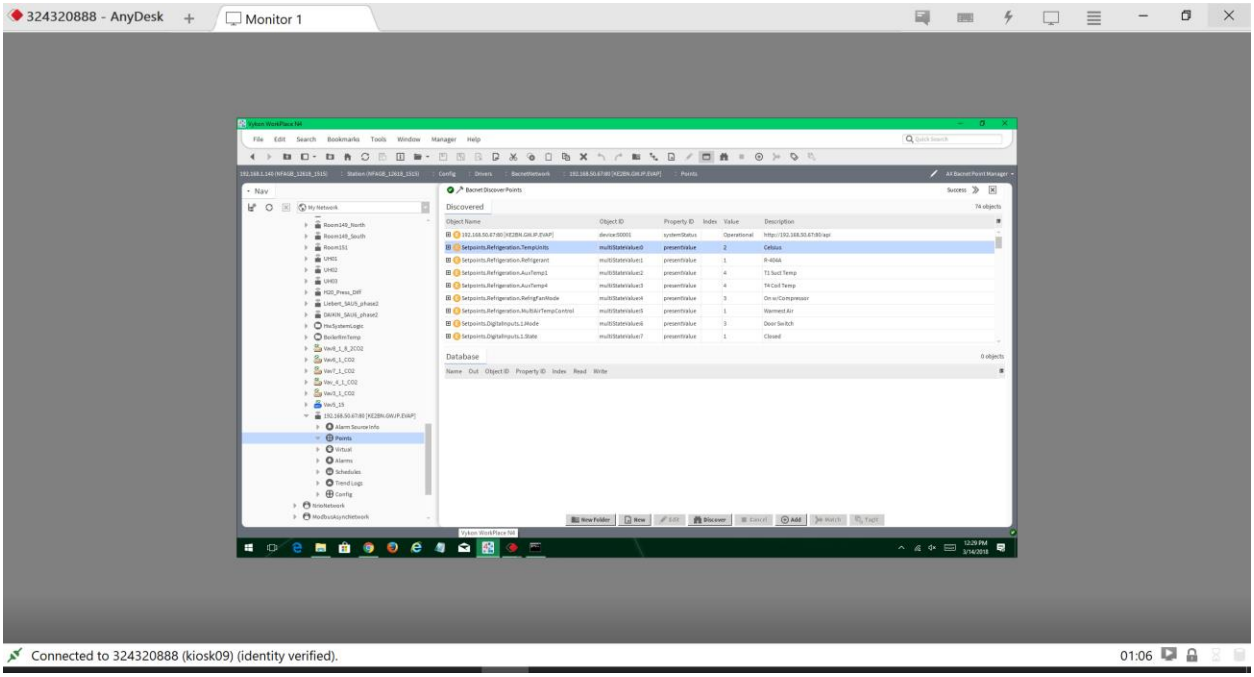
7. Once the discovery process has completed, click on the KE2 Therm Controller(s) you want to monitor. You can select multiple controllers here as well. The KE2 Therm Controller(s) will be shown as follows: ***KE2BN.GW.IP.EVAP*** and will show a Device ID starting at/above 50000.



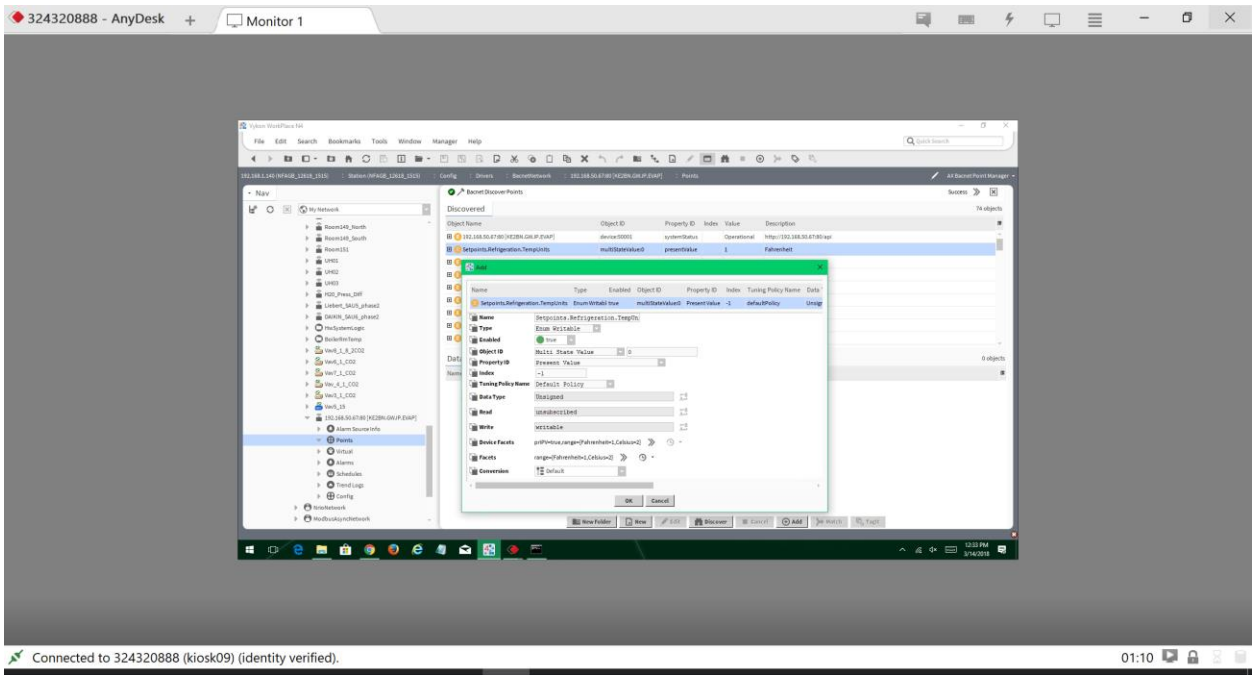
8. Now, click the ***ADD*** button to populate the KE2 Therm Controllers setpoints into the Vykon Manager BacnetNetwork. Make sure to set the device Type to ***BACNET Device*** and select ***OK*** when finished.



9. You should now see the KE2 Therm Controller(s) listed on the left navigation window. The BACnet points that have been discovered are listed on the right.



10. Select the points you wish to monitor/control and click ***ADD***. If you have questions, or have a special configuration requirement, please contact your Niagara support representative, or your local BMS/EMS controls admin / technician / engineer for site specific support.



Congratulations!!

You now have successfully completed the configuration of the EM Series BACnet Gateway services on the Niagara Vykon Management Platform

FAQs for EMS/BMS Configurations:

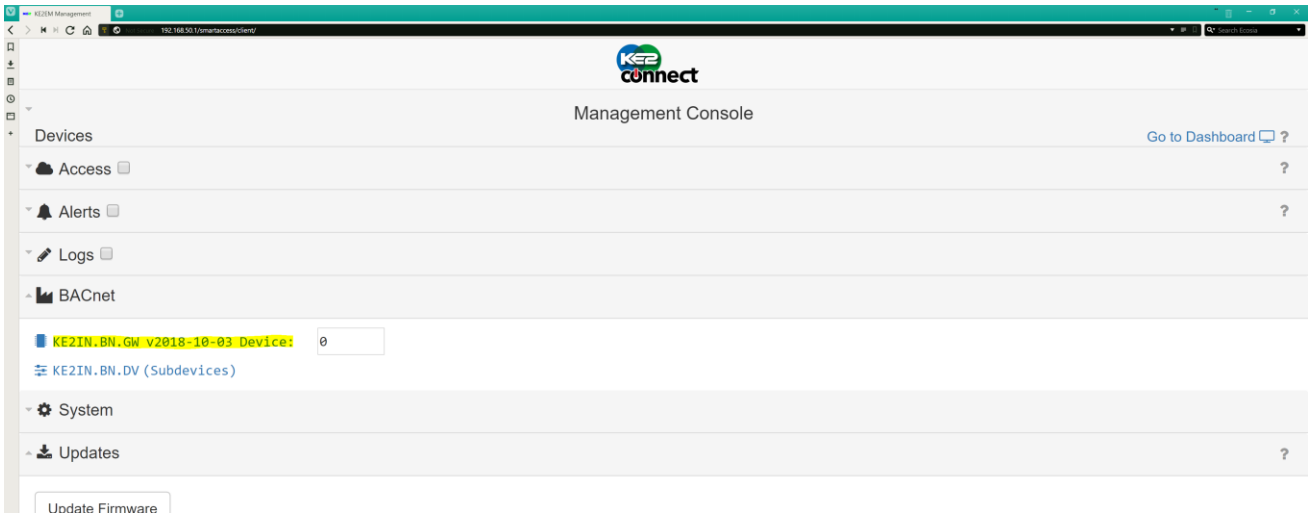
Question 1: I am seeing the controller(s) in my EMS/BMS, however I am not seeing the KE2 Therm Controller points updating. How can I check if the EM Series BACnet Gateway Service is working properly?

Question 2: I am receiving an error "WriteAccessDenied" from the EM while attempting to change setpoints using the EM Bacnet tool.

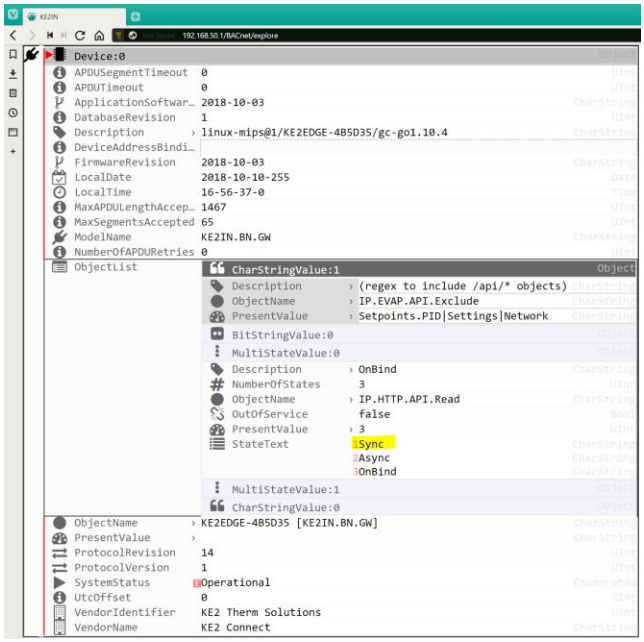
Answer: Make sure the EM Series BACnet Gateway services is in ***SYNC MODE***.

You can do this by connecting to the EM Series Gateway as described in STEP 1 above. Once connected, navigate to the Management Page (log in if necessary).

Under the BACnet menu, click on the ***KE2BN.GW / DATE*** object.



A new tab will display. Close your popup blocker if you do not see this page. In the ObjectList, locate the MultiState Value:0 and verify StateText is set to ***Sync***.

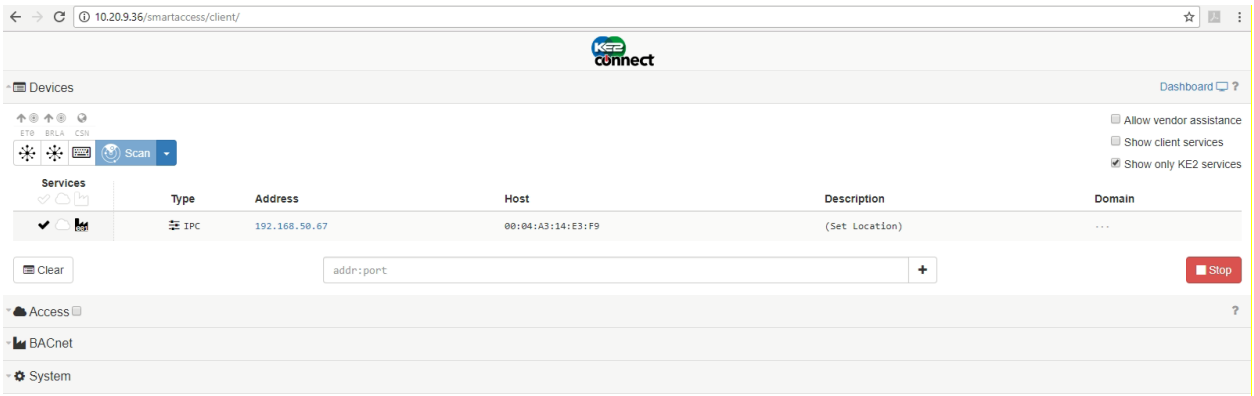


Question #3: Why don't I see the points updating immediately?

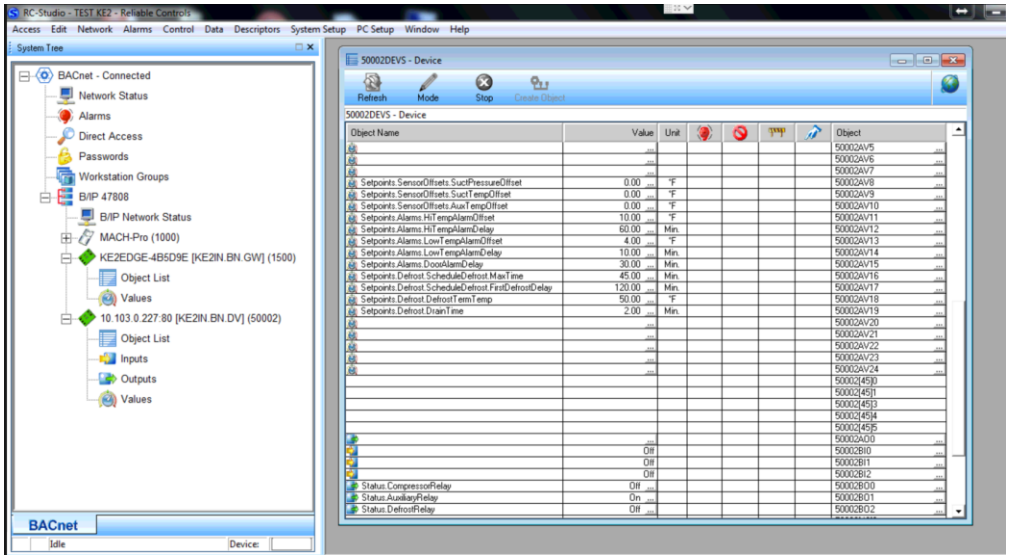
Answer: The EM Series BACnet services gateway can deliver controller updates REALTIME however, most BMS / EMS environments are configured to poll their devices at a much lower frequency for various reasons. These settings are configurable and can be accomplished but are out of the scope of this document. If you have questions, or have a special configuration requirement, please contact your EMS/BMS support representative, or your local BMS/EMS controls admin / technician / engineer for site specific software support.

Question #4: How can I tell if a KE2 Therm controller has been enabled for BACnet Services?

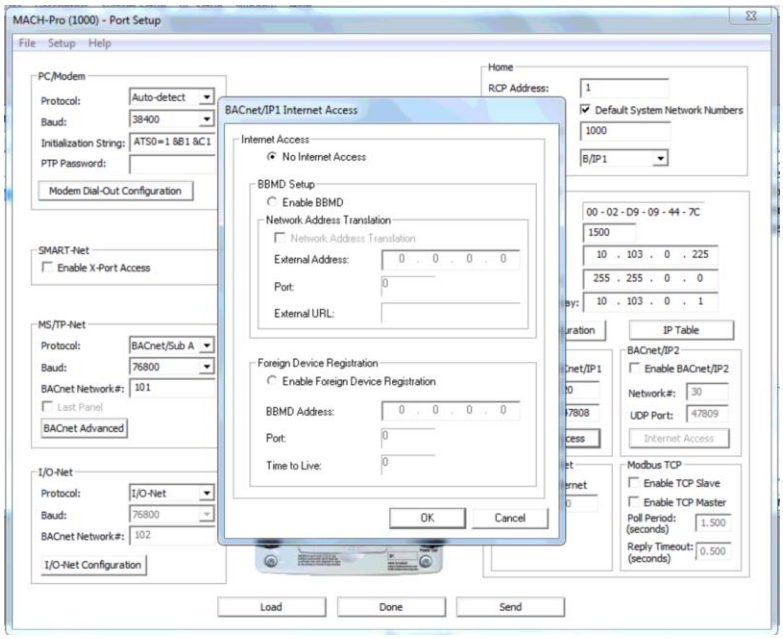
Answer: Look for the Industrial Building icon located next to the Controller listing. If it is enabled, it will be DARK black filled, with numbers. See example image below.

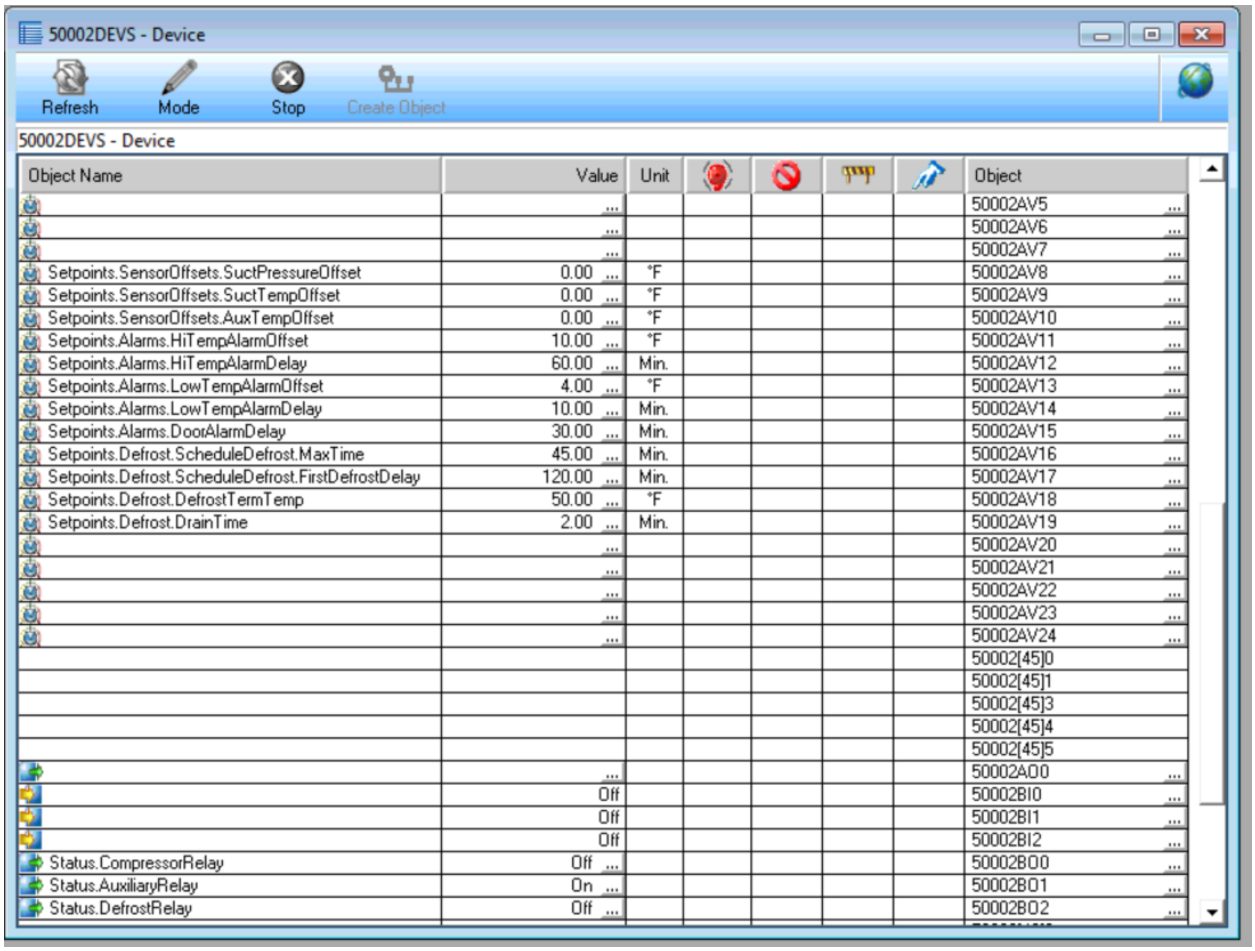


Reliable Controls – RC Studio 2.0 Configuration



DO NOT enable BBMD!!!! It will not work. This must be OFF




50002DEVS - Device
Refresh
Mode
Stop
Create Object
50002DEVS - Device
Object Name
Value
Unit
Object
Setpoints.SensorOffsets.SuctPressureOffset 0.00 °F 50002AV8
Setpoints.SensorOffsets.SuctTempOffset 0.00 °F 50002AV9
Setpoints.SensorOffsets.AuxTempOffset 0.00 °F 50002AV10
Setpoints.Alarms.HiTempAlarmOffset 10.00 °F 50002AV11
Setpoints.Alarms.HiTempAlarmDelay 60.00 Min. 50002AV12
Setpoints.Alarms.LowTempAlarmOffset 4.00 °F 50002AV13
Setpoints.Alarms.LowTempAlarmDelay 10.00 Min. 50002AV14
Setpoints.Alarms.DoorAlarmDelay 30.00 Min. 50002AV15
Setpoints.Defrost.ScheduleDefrost.MaxTime 45.00 Min. 50002AV16
Setpoints.Defrost.ScheduleDefrost.FirstDefrostDelay 120.00 Min. 50002AV17
Setpoints.Defrost.DefrostTermTemp 50.00 °F 50002AV18
Setpoints.Defrost.DrainTime 2.00 Min. 50002AV19
50002AV5
50002AV6
50002AV7
50002AV20
50002AV21
50002AV22
50002AV23
50002AV24
50002[45]0
50002[45]1
50002[45]3
50002[45]4
50002[45]5
50002AO0
Off 50002BI0
Off 50002BI1
Off 50002BI2
Status.CompressorRelay Off 50002BO0
Status.AuxiliaryRelay On 50002BO1
Status.DefrostRelay Off 50002BO2

Other known BACnet Gateways currently tested and working with EM Series:

TRANE

Tracer™ SC

Tracer™ ES

Ignition! by inductive automation

kepware

Johnson Controls

METASYS

TRIDIUM

Reliable controls

PCO #037

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #037: ASI 15 - Inspector's FS Test Valve Relocation

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	037 / 1	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Pending - Proceeding	**CREATED DATE:**	3/19/2026
REFERENCE:	ASI 15	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:		**TOTAL AMOUNT:**	$2,852.75

POTENTIAL CHANGE ORDER TITLE: ASI 15 - Inspector's FS Test Valve Relocation

CHANGE REASON: Existing Condition

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
CE #047 - ASI 15 - Inspector's FS Test Valve Relocation
ASI 15Rev. 1 -Sheet FP-102 Conceptual Fire Protection Plan - Area B

1. This sheet is associated with RFI 86 - Proposed wall conflict with existing drain and valve at Grid line G
2. The Inspectors test valve location for the fire sprinkler system was updated to drain to the exterior of the building. This will be surface mounted and we exclude painting the piping.

ATTACHMENTS:
ASI 015 Narrative & Sheets - Rev.1.pdf

#	Budget Code	Description	Amount
1	114.15-300.S	Relocate the existing Inspector's Test Valve to drain to the exterior of the building as per ASI 15/RFI 86 respone.	$2,690.00
		Subtotal:	**$2,690.00**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$134.50
		Bond (1.00% Applies to All Line Items):	$28.25
		Grand Total:	**$2,852.75**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

SIGNATURE 04/21/2026 **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

SIGNATURE Maria Luisa Rangel 04/23/2026 **DATE**

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

PCO #037

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #037: ASI 15 - Inspector's FS Test Valve Relocation

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	037 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:		**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Pending - Proceeding	**CREATED DATE:**	3/19/2026
REFERENCE:		**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:		**TOTAL AMOUNT:**	$4,857.09

POTENTIAL CHANGE ORDER TITLE: ASI 15 - Inspector's FS Test Valve Relocation

CHANGE REASON: Existing Condition

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
CE #047 - ASI 15 - Inspector's FS Test Valve Relocation
ASI 15Rev. 1 -Sheet FP-102 Conceptual Fire Protection Plan - Area B

1. This sheet is associated with RFI 86 - Proposed wall conflict with existing drain and valve at Grid line G
2. The Inspectors test valve location for the fire sprinkler system was updated to drain to the exterior of the building.
3. Remove and reinstall the metal soffit before and after relocation of the sprinkler line.

ATTACHMENTS:
ASI 015 Narrative & Sheets - Rev.1.pdf

#	Budget Code	Description	Amount
1	114.07-500.S	Remove and replace the existing soffit to allow for the relocation of the fire sprinkler test valve .	$1,890.00
2	001.15-300.S	Relocate the existing Inspector's Test Valve to drain to the exterior of the building as per ASI 15/RFI 86 respone.	$2,690.00
		Subtotal:	**$4,580.00**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$229.00
		Bond (1.00% Applies to All Line Items):	$48.09
		Grand Total:	**$4,857.09**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

SIGNATURE **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

SIGNATURE **DATE**

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

Change Order Proposal

March 19th, 2026

RE: Pharr Dock - DWCC

Summary:

TADCO Roofing & Waterproofing is please to present the pricing below for approval. Pricing is derived from the labor & material required to complete the removal and re-install of the decorative soffit at the existing structure, as required by ASI 15.

Inclusions:

- Removal & re-install of soffit, as required.

Exclusions:

- Sales Tax
- Any Additional Scope not referenced above.
- Equipment Rentals
- Workmanship warranty

Proposed Price Impact: $1,890.00

X _____

Luis Daniel Lucio
Senior Project Manager
TADCO Roofing & Waterproofing

Fire License #: ACR-1918136
Security License #: B19177

12005 N BRYAN RD
MISSION, TX 78573

November 26, 2025

ALMA SUAREZ
D. WILSON CONSTRUCTION
P.O. BOX 3455
MCALLEN, TX 78502

Re: PHARR DOCKING STATION
Bid # C10030 CO— 003 ASI #15 — RFI #86

Thank you for the opportunity to submit the following proposal for the above referenced project.

Scope of Work:

INSPECTORS TEST VALVE RELOCATION
SERVICE TO DRAIN AND RESTORE SYSTEM IN ORDER TO REMOVE AND RELOCATE THE INSPECTORS TEST VALVE ON THE OPPOSITE DIRECTION AS PER PLANS FP—102 DATED 10—3—25 PROVIDED. ADDITIONAL PIPING WILL BE REQUIRED TO MAKE SURE THE IT REACHES PROPOSED LOCATION. OUR QUOTATION INCLUDES LABOR, MATERIALS, AND EQUIPMENT NEEDED FOR THE MODIFICATION OF EXISTING SYSTEM. REMOVAL OF PANELS/DECORATIVE CEILING TO BE DONE BY OTHERS.

LABOR: $1,860.0
MATERIALS: $830.0

ANY DEFICIENCIES WITHIN THE SYSTEM, SHALL BE QUOTED SEPARATELY

EXCLUDING THE FOLLOWING: 1. PAINTING/STENCILING OF PIPE 2. ELECTRICAL POWER OR ALARM WORK 3. UNDERGROUND WORK 4. ADEQUATE WATER SUPPLY 5. ACCESS PANELS 6. ADEQUATE HEAT TO BE PROVIDED BY OTHERS 7. COVERAGE OF OUTDOOR OR ADJACENT SPACES/CANOPIES/BALCONIES 8. FIRE PUMP/STANDPIPE/EXTINGUISHERS/CLEAN AGENT/FIRE HOSE—CABINETS/DRY OR SPECIAL SYSTEMS 9. CUTTING OR PATCHING OF STREET, ASPHALT, CONCRETE, PAVERS 10. REPAIR OR REPLACEMENT OF ANY UNMARKED UTILITIES 11. BORING OR CASTING 12. PERMITS 13. INTEGRITY OF BUILDING STRUCTURE 14. CENTER TILE SPRINKLER HEADS 15. FREEZE PROTECTION OR COATING 16.BIM/ISO/BOND 17. PLAN REVIEW 18.PE LETTER/CERTIFICATION 19. EXCESSIVE INSURANCE 20. SPECIAL ITEMS/TRAINING 21. FIRE WATCH 22. RELOCATING/ADDING OF MAINS OR BRANCHLINES

Total Price $2,690.00

I hope you find this proposal complete and to your satisfaction. Furnish all Cad files to Safeguard at no cost. Quote not valid after 30—days from date above.

RESPECTFULLY,
HECTOR MARQUEZ
956—655—7919

_____
Authorized Signature Date

October 24, 2025
57325.002

ASI 015

Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
GSA & CBP
TxDOT

This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, amplify, add to, delete from, or otherwise explain the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.

CONSTRUCTION DOCUMENT SHEETS

FIRE PROTECTION

FP-102: CONCEPTUAL FIRE PROTECTION PLAN – AREA B

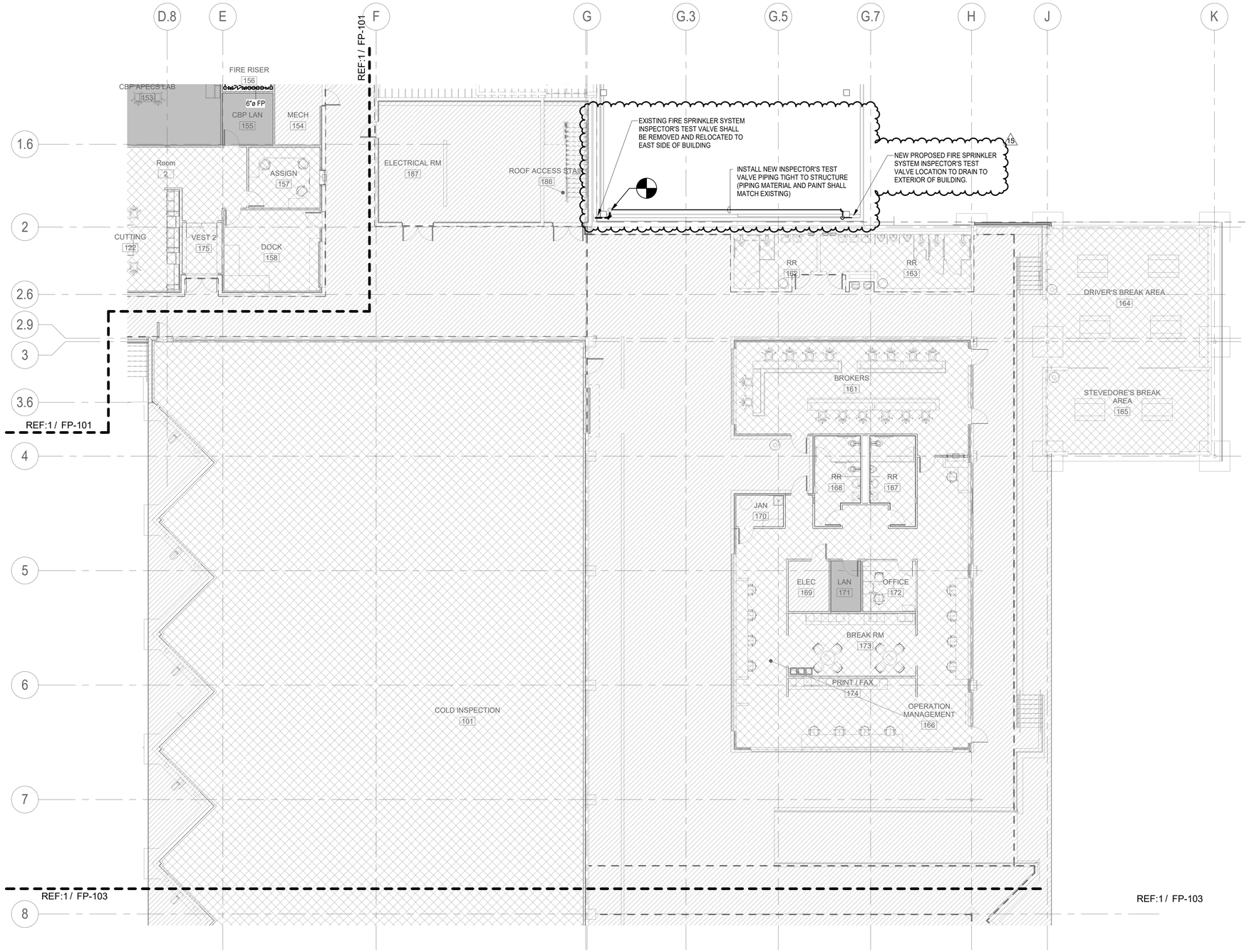
- This sheet is associated with RFI #86 - Proposed Wall Conflict with Existing Drain & Valve at Gridline G.
- The test valve location for the Fire Sprinkler System was updated to drain to the exterior of the building.

STRUCTURAL

S-501: MASONRY DETAILS

- This sheet is associated with RFI #90 - (Detail S-501 Clarification).
- The 40” Bond Beam and 48” Bond Beam have been updated.

AVO# 33135



1 CONCEPTUAL FIRE PROTECTION PLAN - AREA B
3/32" = 1'-0"

LEGEND

LIGHT HAZARD FOR CLASS ROOMS, OFFICES, CORRIDORS, GYMNASIUM, CAFETERIA, AUDITORIUM (EXCEPT STORAGE AREA), LIBRARY (EXCEPT LARGE STACK ROOM AREAS). DESIGN DENSITY IS 0.10 GPM/SQ.FT. 100 GPM HOSE ALLOWANCE DESIGN AREA=1500 SQ. FT.

ORDINARY HAZARD GROUP 1. DESIGN DENSITY IS 0.15 GPM/SQ.FT. 250 GPM HOSE ALLOWANCE DESIGN AREA=1500 SQ. FT.

ORDINARY HAZARD GROUP 2 FOR STORAGE ROOMS, MECHANICAL ROOMS, LARGE STACK ROOM AREAS OF THE LIBRARY (IF ANY). DESIGN DENSITY IS 0.20 GPM/SQ.FT. 250 GPM HOSE ALLOWANCE DESIGN AREA=1500 SQ. FT.

GENERAL NOTES

1. UNCONDITIONED LOADING AND DOCK AREAS SHALL BE PROTECTED WITH A NITORGEN DRY PIPE SPRINKLER SYSTEM. PROVIDE AN ADD-ALTERNATE PRICE FOR DRY PIPE COVERAGE IN ALL EXTERIOR EXPOSED AREAS OF BUILDING. INCLUDING ALL ACCESSORIES, NITROGEN GENERATOR.
2. COLD INSPECTION DOCK AREAS WHERE TEMPERATURES ARE BELOW 40 DEGREES FAHRENHEIT SHALL BE PROTECTED WITH A NITROGEN DRY PIPE SPRINKLER SYSTEM.
3. FOR ALL DRY PIPE FIRE SPRINKLER SYSTEMS ALL PIPING SHALL BE SCHEDULE 40 AND SHALL BE PITCHED IN ACCORDANCE WITH NFPA 13 TO ALLOW FOR FULL DRAINING OF SYSTEM.
4. HOSE STREAM ALLOWANCE FOR WAREHOUSES SHALL BE 500 GPM FOR 90 MINUTES PER NFPA 13.
5. HLVS FANS WHERE INDICATED ON MECHANICAL DRAWINGS MUST BE INSTALLED A MINIMUM OF 3 FEET BELOW SPRINKLER DEFLECTOR AND CENTERED BETWEEN (4) FOUR ADJACENT SPRINKLERS PER NFPA 12.1.4.1.
6. PROVIDE A WET-PIPE FIRE SPRINKLER SYSTEM WITH A SUPERVISED ISOLATION CONTROL VALVE FOR ALL LAN/TELEPHONE ROOMS. PROVIDE CONCEALED TYPE FIRE SPRINKLERS WITH A TEMPERATURE RATING OF 212 DEGREES F. THE SPRINKLER PIPING FOR ALL LAN/TELEPHONE ROOMS SHALL BE HYDROSTATICALLY TESTED AT 220 PSI MINIMUM FOR TWO HOURS.
7. IN ADDITION TO THE FIRE SPRINKLER SYSTEM, A SUPPLEMENTAL CHEMICAL FIRE SUPPRESSION SYSTEM SHALL ALSO BE INSTALLED FOR ALL LAN ROOMS. REFER TO SPECIFICATION SECTION 212200 FOR SYSTEM PERFORMANCE REQUIREMENTS AND SPECIFICATIONS.
8. ALL FIRE PROTECTION SYSTEM PIPING SHALL BE CLEAN, PRIMED AND PAINTED WITH ONE COAT OF RED ALKYD GLOSS ENAMEL PAINT. EXPOSED PIPING IN FINISHED AREAS SHALL BE PAINTED TO MATCH ADJACENT SURFACES AND PROVIDED WITH 2-INCH WIDE RED ALKYD FLOSS ENAMEL PAINT BANDS EVERY 10 FEET AND ON BOTH SIDES OF WALL, CEILING AND FLOOR PENETRATIONS. SUBJECT TO APPROVAL BY CBP, PAINTING ALL EXPOSED PIPING IN FINISHED AREAS WITH RED ALKYD GLOSS ENAMEL PAINT MAY BE CONSIDERED AN ACCEPTABLE ALTERNATIVE TO PAINTING BANDS.

THESE CONCEPTUAL FIRE SPRINKLER PROTECTION PLANS ARE FOR INFORMATION PURPOSES ONLY. ALL FIRE SPRINKLER AND CIVIL PLANS ARE TO BE SUBMITTED SEPARATELY TO ISO AND TO THE RESPECTIVE AUTHORITY GOVERNING THE FIRE DEPARTMENT FOR REVIEW OF COMPLIANCE STANDARDS.

halff

October 24, 2025
57325.002

ASI 015
Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
GSA & CBP
TxDOT

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CONSTRUCTION DOCUMENT SHEETS

FIRE PROTECTION

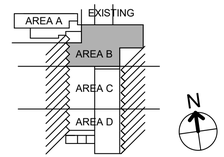
FP-102: CONCEPTUAL FIRE PROTECTION PLAN – AREA B

- This sheet is associated with RFI #86 - Proposed Wall Conflict with Existing Drain & Valve at Gridline G.
- The test valve location for the Fire Sprinkler System was updated to drain to the exterior of the building.

STRUCTURAL

S-501: MASONRY DETAILS

- This sheet is associated with RFI #90 - (Detail S-501 Clarification).
- The 40" Bond Beam and 48" Bond Beam have been updated.



No.	Date	Description
14	10/03/2025	Garbage Disposer
15	10/03/2025	RFI#86 Proposed Wall Conflict with Existing Drain & Valve at Gridline G

10/03/2025
STATE OF TEXAS
MARK ANDREW SISLEN
97234
LICENSED PROFESSIONAL ENGINEER

Pharr
CITY OF PHARR, TEXAS

GSA
GENERAL SERVICES ADMINISTRATION
819 TAYLOR STREET
FORT WORTH, TEXAS 76102-6195
817-978-3334
www.gsa.gov

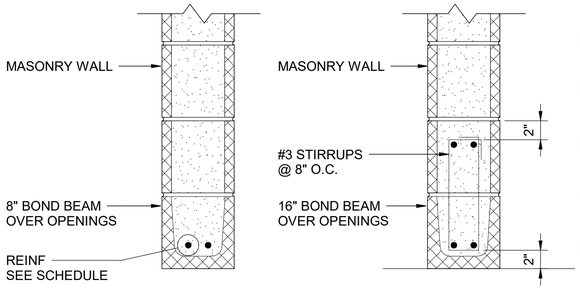
© 2018
TEXAS DEPARTMENT OF TRANSPORTATION

halff
5000 WEST MILITARY, SUITE 100, McALLEN, TEXAS 78503
TEL (956) 664-0286 FAX (956) 664-0282 TBPE FIRM #F-312

PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS CONCEPTUAL FIRE PROTECTION PLAN - AREA B

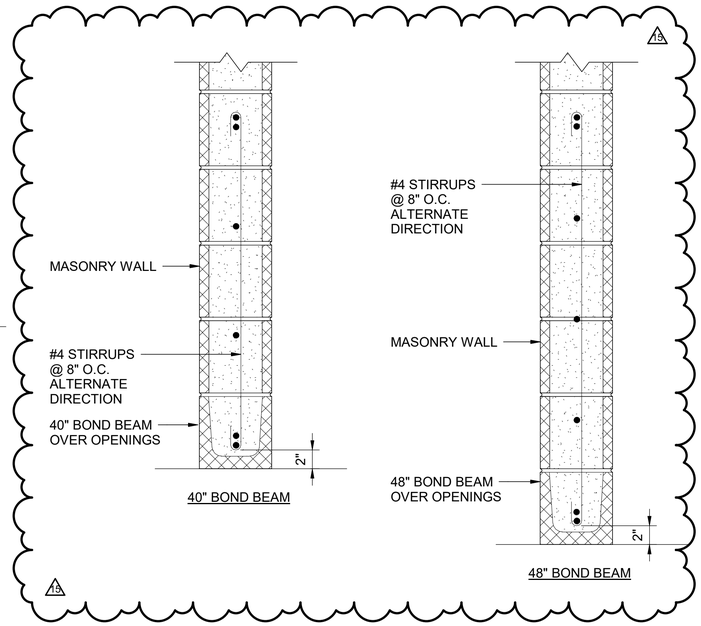
SCALE: AS NOTED				SHEET	OF
DN:	CONT	SECT	JOB	HIGHWAY	
CK DN:	921	02	424,425,433	PHARR INT. BRIDGE	
DW:	DIST	COUNTY		SHEET NO.	
CK DW:	PHR	HIDALGO		FP-102	
TR:					
CK TR:					

AVO# 33135



8" BOND BEAM

16" BOND BEAM

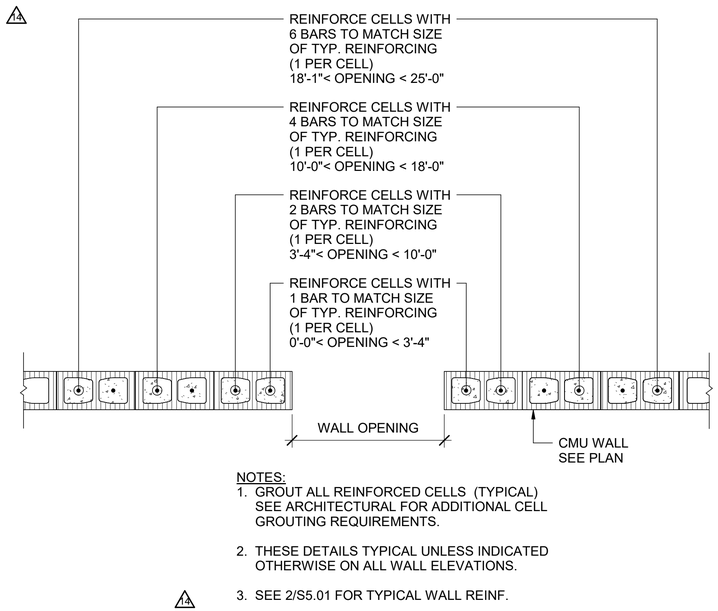


40" BOND BEAM

48" BOND BEAM

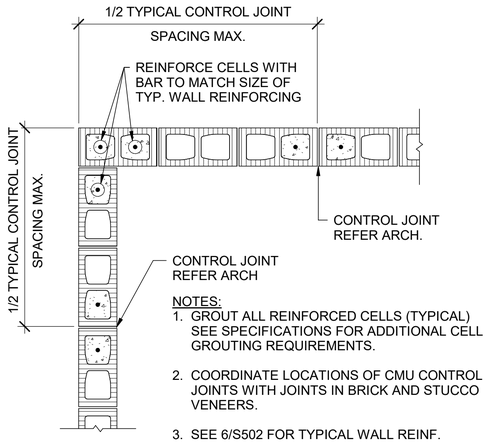
MASONRY LINTEL SCHEDULE			
WALL THICKNESS	OPENING WIDTH	LINTEL	REINFORCING
8"	LESS THAN 6'-9"	8" DEEP	2 - #5
8"	6'-9" TO 10'-0"	16" DEEP	2 - #5 TOP & BOTTOM
8"	10'-1" TO 12'-0"	16" DEEP	2 - #6 TOP & BOTTOM
8"	12'-1" TO 18'-0"	40" DEEP	2 - #7 TOP & BOTTOM, 2-#5 SIDES
8"	18'-1" TO 25'-0"	48" DEEP	2 - #8 TOP & BOTTOM, 3-#6 SIDES

1 MASONRY LINTEL DETAILS
1 1/2" = 1'-0"



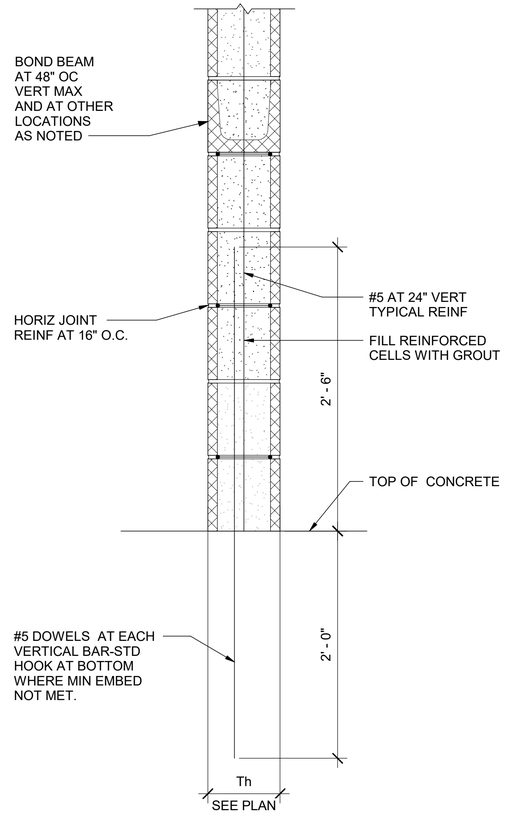
NOTES:
1. GROUT ALL REINFORCED CELLS (TYPICAL) SEE ARCHITECTURAL FOR ADDITIONAL CELL GROUTING REQUIREMENTS.
2. THESE DETAILS TYPICAL UNLESS INDICATED OTHERWISE ON ALL WALL ELEVATIONS.
3. SEE 2/S5.01 FOR TYPICAL WALL REINF.

3 REINFORCING AT WALL OPENING
1/2" = 1'-0"

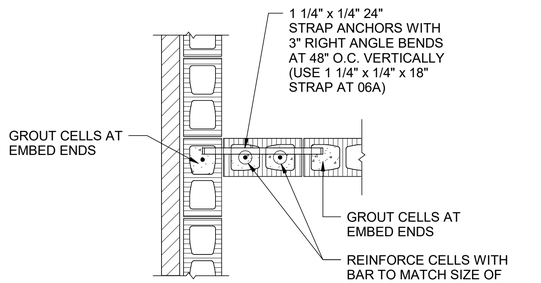


NOTES:
1. GROUT ALL REINFORCED CELLS (TYPICAL) SEE SPECIFICATIONS FOR ADDITIONAL CELL GROUTING REQUIREMENTS.
2. COORDINATE LOCATIONS OF CMU CONTROL JOINTS WITH JOINTS IN BRICK AND STUCCO VENEERS.
3. SEE 6/S502 FOR TYPICAL WALL REINF.

4 CMU WALL CORNER DETAIL
1/2" = 1'-0"



2 TYPICAL CMU WALL SECTION
1 1/2" = 1'-0"



NOTES:
1. SEE 6/S502 FOR TYPICAL WALL REINF.

5 CMU WALL INTERSECTION DETAIL
1/2" = 1'-0"

halff

October 24, 2025
57325.002

ASI 015

Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II
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STRUCTURAL

S-501: MASONRY DETAILS

- This sheet is associated with RFI #90 - (Detail S-501 Clarification).
- The 40" Bond Beam and 48" Bond Beam have been updated.

No.	Date	Description
14	09/15/2025	RFI #90
15	09/30/2025	RFI #90.1

09/30/2025

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY:
NAME: JAMES C. VESTER
PE #: 128858
DATE: 09/30/2025
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AVO# 33135

Pharr
CITY OF PHARR, TEXAS

GSA
GENERAL SERVICES ADMINISTRATION
819 TAYLOR STREET
FORT WORTH, TEXAS 76102-6195
817-978-3334
www.gsa.gov

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TEXAS DEPARTMENT OF TRANSPORTATION

HALFF
5000 WEST MILITARY, SUITE 100, McALLEN, TEXAS 78503
TEL (956) 664-0286 FAX (956) 664-0282 TBPE FIRM #F-312

PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

MASONRY DETAILS

SCALE: AS NOTED	SHEET OF			
DN:	CONT	SECT	JOB	HIGHWAY
CK DN:	921	02	424,425,433	PHARR INT. BRIDGE
DW:	DIST	COUNTY		SHEET NO.
CK DW:	PHR	HIDALGO		S-501
TR:				
CK TR:				

PCO #040

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #040: ASI 16R Controls Changes

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	040 / 2	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Pending - In Review	**CREATED DATE:**	4/21/2026
REFERENCE:	ASI 16	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	90 days	**TOTAL AMOUNT:**	$114,293.90

POTENTIAL CHANGE ORDER TITLE: ASI 16R Controls Changes

CHANGE REASON: Client Request

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*

CE #049 - Changes to Controls per GSA Notes
ASI 16 Changes to Controls Original Scope:

1. Revise submittals according to ASI 016 project update and newly provided GSA guidelines and specifications.
2. Add required Niagara and network devices for integration into existing GSA Building automation controls.
3. Perform integration of new TXDOT expansion Dock equipment into existing GSA automation system.
4. No Fiber Optic, wire or other control components are provided for Northbound lanes. EXCLUDED
5. No specifications for fiber optic cable are provided. This item is excluded from this proposal.
6. Breakdown:
    - $12,000.00 Engineering: Submittals revisions, etc
    - $19,000.00 DDC Programming: Niagara programming and GSA integration
    - $12,000.00 Graphics/Software: Niagara graphics
    - $16,000.00 Equipment: Added JACE and related components
    - $ 8,000.00 Wiring: Optical fiber cable, CAT6
    - $32,000.00 Installation of components: Fiber run, CAT6 runs
    - $ 3,100.00 Terminations: Fiber connections, CAT6 & related power terminations
7. Revised proposal to include reduction of the fiber run as mentioned on the 7/27/26 correspondence.

NOTE: ANY ITEM NOT SPECIFICALLY LISTED HERE IS EXCLUDED. THIS PROPOSAL EXCLUDES ANY ELECTRICAL,CONDUIT, FIBER, ETC THAT MIGHT BE REQUIRED
EXTENSION OF TIME TO BE DETERMINED AT A LATER DATE

ATTACHMENTS:

PCO #040

#	Budget Code	Description	Amount
1	112.15-500.S	ASI 16 Controls for Ag Lab CHANGES TO ORIGINAL SCOPE A) Revise submittals according to ASI#016 project update and newly provided GSA guidelines and specifications. B) Add required Niagara and network devices for integration into existing GSA building automation controls. C) Perform integration of new TXDOT Expansion Dock equipment into existing GSA automation system. D) No fiber optic, wire or other control components are provided for Northbound lanes E) No specifications for fiber optic cable provided.	$107,773.60
		Subtotal:	**$107,773.60**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$5,388.68
		Bond (1.00% Applies to All Line Items):	$1,131.62
		Grand Total:	**$114,293.90**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

City Of Pharr
PO Box 1729
Pharr, Texas 78577

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

07/31/2026
SIGNATURE **DATE**

Maria L. Rangel 08/04/2026
SIGNATURE **DATE**

SIGNATURE **DATE**

D & F Industries, Inc
P.O Box 1680 3106 N. Sugar Road
Pharr Texas 78577
(PH) 956-781-2496

ADDITIONAL WORK QUOTE

Project Name:
24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)

Submitted By:
Julio Monroy

Issued To:
Roberto Villela

Reference #:

Date:
27 July 2026

Required By:
17 August 2026

Details of Work

Updated quote for ASI#16

Exclusions

The value of this quotation is based on labour, material, Trade contractor or Subcontractor work as listed herein only. The quotation is based on regular working hours unless noted otherwise. This quotation does not include for delay, disruptions, re-scheduling, acceleration and/or impact cost nor for the cumulative effect of changes.

Schedule Impacts:	No. of Days of Impact:	Schedule Impact Cost:	Quote Validity:
TBD	TBD	TBD	15 Day(s)

Subtotal	**$97,976.00**
Contractor Allowance(s)	**$9,797.60**
Schedule Impact Cost	**$0.00**
Total	**$107,773.60**

Name: **Title:** **Company Name:**

Signature: **Date:**

INDUSTRIES, INC.

D & F Industries, Inc
P.O Box 1680 3106 N. Sugar Road
Pharr Texas 78577
(PH) 956-781-2496

Cost Breakdown

Sub-Contractors	Tax Code	QTY	Rate	Total
Perry Mechanical Systems		**1.00**	**97976.00**	**$97,976.00**
Sub-Contractors Subtotal				**$97,976.00**

Subtotal		**$97,976.00**
Contractor Allowance - Own Forces	**15.00%**	**$0.00**
Contractor Allowance - Subcontractors	**10.00%**	**$9,797.60**
Schedule Impact Cost		**$0.00**
Total		**$107,773.60**

1959 Saratoga Blvd., #202
Corpus Christi, TX 78417
Phone: 361-854-7768
Fax: 361-854-7782

PERRY MECHANICAL SERVICE

3623 W. Alberta Rd.
Edinburg, TX 78539
Phone: 956-357-2928
Fax: 956-386-1255

CHANGE ORDER QUOTATION rev 260727

Date: 7/27/2026 **From: Ivan Herbert (956) 566-1596**
Re: TXDOT Pharr Dock Expansion – BAS controls change order quote

We are pleased to quote the following:

Item A: Building Automation System -Change Order
Distech Building Automation System, complete with the following:

Equipment controlled by BAS:
- -Qty (5) HP VRV condensing units via iTM BACnet interface
- -Qty (19) VRV indoor units via iTM BACnet interface
- -Qty (7) MiniSplit systems with BACnet interface
- -Qty (3) DOAS units with factory controls and BACnet interface
- -Qty (5) Exhaust Fans

Equipment monitored by BAS:
- -Qty (1) Lab exhaust fan VFD with BACnet interface
- -Qty (1) Outdoor air conditions

-Controls user and programming software is included
-Complete functional building automation system that includes all necessary wiring, sensors, programming, graphics, labor
-System shall be web accessible with web browsers, iPads, tablets, and smart phones connected
-System shall include floor plans
-Owner training
-1 year warranty from date of acceptance by owner

CHANGES TO ORIGINAL SCOPE

A) Revise submittals according to ASI#016 project update and newly provided GSA guidelines and specifications.
B) Add required Niagara and network devices for integration into existing GSA building automation controls.
C) Perform integration of new TXDOT Expansion Dock equipment into existing GSA automation system.
D) No fiber optic, wire or other control components are provided for Northbound lanes
E) No specifications for fiber optic cable provided.

CLARIFICATIONS/EXCLUSIONS

-Owner shall provide IP addresses and data drops to host the equipment requiring IP addresses.
-Electrical 120vac drops for control panels to be done by others.
-Rough-in for all T-stats and any sensors to be done by others.
-Any equipment wiring (outdoor to indoor unit for mini splits), local thermostat or sensor wiring, or any low voltage wiring not terminated to our BAS controllers is not included.
-Conduit for controls wiring is not included.
-Sales taxes and bonding not included
-Any trenching required or undergound conduit is not included with our proposal.
-Installation of smoke detectors, hot taps, pressure ports, wells, control valves, manual valves, gauges, control dampers are not included.
-All labor performed will be during normal business hours (Monday – Friday, 8AM – 5PM).
-Perry Mechanical does not have employees subject to the prevailing wage requirements of the Davis-Bacon Act and other similar statutes.

-Lighting controls, fire dampers, fire/smoke dampers, smoke detectors, fire alarm system, and any life safety equipment is not included.
-Excludes all work associated with Electrical and TN sheets. This change order only applies to work shown on M-706.

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ORIGINAL CONTRACT PRICE $100,000
Add Change order amount for ASI 16.....$100,000
Deduct for removing 160 ft of fiber cable.....<$2,024>

TOTAL NEW CONTRACT AMOUNT $197,976

-This quotation is subject to change without notice and void after 30 days.
-Add to the prices quoted any sales tax payable on the transaction under any effective Federal or State statute.
-F.O.B. Factory, Per Mutually Agreed Schedule. No material to be returned without written authorization.
-PAYMENT TERMS: Net 30 Days, Upon Receipt of Satisfactory Credit Information. In the event of default in payment, Purchaser agrees to pay all costs of collection incurred by the Company including but not limited to collection agency fees, attorney fees and court costs. Late payments will be subject to maximum interest rates allowable by law.
-Subject to Manufacturers Terms and Conditions Only
-PMS equipment will be supplied based upon approved submittal data
-Retainage is not allowed. PMS is a material supplier, and will be supplying the entire purchase order value upon delivery of equipment
-Payment to PMS cannot be conditioned on receipt of payment from the owner by a contractor, construction manager, or customer
-PMS standard warranty, parts only, is for 12 months from start up date, not to exceed 18 months from ship date, unless specifically noted otherwise in the quote.
-Warranty coverage will start at 6 months from shipment or at startup, whichever occurs first per standard industry terms. The purchaser is welcome to purchase as much additional warranty as necessary to meet the contract requirements as long is it is purchased prior to equipment leaving the factory. If warranties are specified to begin at substantial completion, the purchaser is responsible for adding additional warranty above and beyond the manufacturer's standard terms and conditions (beginning at startup or 6 months from shipment, which ever occurs first). We do not have control over the construction schedule, so cannot quote warranty to start at substantial completion, but we can provide pricing for a specified amount of time when requested by the Purchaser prior to equipment leaving the factory in order to meet any specification or construction schedule requirements.
-Diagnostics of equipment is not covered under warranty. The purchaser must diagnose a problem prior to making a warranty call for service. If we dispatch a technician for a warranty call and it is determined that there are no mechanical issues with the equipment, the customer will be charged for a service call.
-Commissioning of equiment is the responsibility of the purchaser. Commissioning is not included with standard startup of equipment. Commissioning can be quoted or provided at our standard hourly service rates if required.
-The purchaser is responsible for making sure all startup paperwork is turned into the factory, unless the equipment is purchased with startup included. If startup paperwork is not turned in, warranty will begin on the ship date.
-PMS is responsible and accountable only for the acts and omissions of PMS

PCO #040

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #040: ASI 16R Controls Changes

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	040 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Pending - In Review	**CREATED DATE:**	4/21/2026
REFERENCE:	ASI 16	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	90 days	**TOTAL AMOUNT:**	$116,655.00

POTENTIAL CHANGE ORDER TITLE: ASI 16R Controls Changes

CHANGE REASON: Client Request

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*

CE #049 - Changes to Controls per GSA Notes
ASI 16 Changes to Controls Original Scope:

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5. No specifications for fiber optic cable are provided. This item is excluded from this proposal.
6. Breakdown:
    - $12,000.00 Engineering: Submittals revisions, etc
    - $19,000.00 DDC Programming: Niagara programming and GSA integration
    - $12,000.00 Graphics/Software: Niagara graphics
    - $16,000.00 Equipment: Added JACE and related components
    - $ 8,000.00 Wiring: Optical fiber cable, CAT6
    - $32,000.00 Installation of components: Fiber run, CAT6 runs
    - $ 3,100.00 Terminations: Fiber connections, CAT6 & related power terminations

NOTE: ANY ITEM NOT SPECIFICALLY LISTED HERE IS EXCLUDED. THIS PROPOSAL EXCLUDES ANY ELECTRICAL,CONDUIT, FIBER, ETC THAT MIGHT BE REQUIRED
EXTENSION OF TIME TO BE DETERMINED AT A LATER DATE

ATTACHMENTS:

PCO #040

#	Budget Code	Description	Amount
1	112.15-500.S	ASI 16 Controls for Ag Lab CHANGES TO ORIGINAL SCOPE A) Revise submittals according to ASI#016 project update and newly provided GSA guidelines and specifications. B) Add required Niagara and network devices for integration into existing GSA building automation controls. C) Perform integration of new TXDOT Expansion Dock equipment into existing GSA automation system. D) No fiber optic, wire or other control components are provided for Northbound lanes E) No specifications for fiber optic cable provided.	$110,000.00
		Subtotal:	**$110,000.00**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$5,500.00
		Bond (1.00% Applies to All Line Items):	$1,155.00
		Grand Total:	**$116,655.00**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

SIGNATURE **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

SIGNATURE **DATE**

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

From: Jason King
Sent: Tuesday, June 23, 2026 9:31 AM
To: Julio Monroy; Ivan Herbert
Subject: RE: Pharr DAP FY 16 AG Lab, Dock and Cold Storage Expansion 24235-PCO 040 ASI 16 Controls Changes.pdf

Julio,
See a more detailed breakdown below.

Item	Labor	Materials	Description
Engineering			
	$11,700.00		60 hr @$195 Controls submittals, revisions, product selection
		$300.00	Software & Technology surcharge
DDC Programming / Graphics / Software			
	$19,500.00		100hr @ $195 BAS controls programming
		$11,000.00	Distech Niagara technician software licensing & tech support
Project Management			
	$9,750.00		50 hr @$195 Project coordination, background clearances, costs calculation
Equipment			
		$3,005.00	EC-BOS-9 Hardware (JACE)
		$4,880.00	EC-BOS-9 Core software - 100 Devices/5000 Points
		$3,385.00	EC-BOS-9 (100 Device Core) 5 year SMA
		$4,730.00	EC-Net Facilities Designer 10000
Wire / Fiber			
		$4,650.00	Multimode optical fiber cable, 6 fiber
		$2,700.00	CAT-6 replaces CAT-5 cable on change order
Intallation of components			
	$8,000.00		Installation of fiber cable
		$10,000.00	Cable supports, conduit piping & mounting hardware
	$5,000.00		Installation of panels & conduit raceway
Terminations			
	$3,000.00		Fiber & copper cable crimping, I/O wiring terminations
		$500.00	Fiber LC connectors
Totals	$56,950.00	$45,150.00	$102,100.00

Subtoital		$ 24,000.00	$ 78,100.00	$ 100,000.00
Subcontractor OH & Profit		10%		$ 10,000.00
D&F Const				$ 110,000.00
DWC OH & Profit		5%		$ 5,500.00
Subotal				$ 115,500.00
DWC OH & Profit		1%		$ 1,155.00
Total Add				$ 116,655.00

ITEM	DESCRIPTION OF WORK	MATERIALS	LABOR	COMMENTS
1	Engineering		$12,000.00	Submittals revisions, etc
2	DDC Programming		$19,000.00	Niagara programming and GSA integration
3	Graphics/Software		$12,000.00	Niagara graphics
5	Equipment	$16,000.00		Added JACE and related components
6	Wiring	$8,000.00		Optical fiber cable, CAT6
7	Installation of components		$32,000.00	Fiber run, CAT6 runs
8	Terminations		$3,100.00	Fiber connections, CAT6 & related power terminations
Subtoital		$ 24,000.00	$ 78,100.00	$ 100,000.00
Subcontractor OH & Profit		10%		$ 10,000.00
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DWC OH & Profit		1%		$ 1,155.00
Total Add				$ 116,655.00

PCO #040

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McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #040: ASI 16R Controls Changes

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	040 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Pending - In Review	**CREATED DATE:**	4/21/2026
REFERENCE:	ASI 16	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	TBD	**TOTAL AMOUNT:**	$116,655.00

POTENTIAL CHANGE ORDER TITLE: ASI 16R Controls Changes

CHANGE REASON: Client Request

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*

CE #049 - Changes to Controls per GSA Notes
ASI 16 Changes to Controls Original Scope:

1. Revise submittals according to ASI 016 project update and newly provided GSA guidelines and specifications.
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EXTENSION OF TIME TO BE DETERMINED AT A LATER DATE

ATTACHMENTS:

#	Budget Code	Description	Amount
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		Subtotal:	**$110,000.00**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$5,500.00
		Bond (1.00% Applies to All Line Items):	$1,155.00
		Grand Total:	**$116,655.00**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

SIGNATURE **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

SIGNATURE **DATE**

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

D & F Industries, Inc
P.O Box 1680 3106 N. Sugar Road
Pharr Texas 78577
(PH) 956-781-2496

ADDITIONAL WORK QUOTE

Project Name:
24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)

Submitted By:
Julio Monroy

Issued To:
Roberto Villela

Reference #:

Date:
02 April 2026

Required By:
23 April 2026

Details of Work

Exclusions

The value of this quotation is based on labour, material, Trade contractor or Subcontractor work as listed herein only. The quotation is based on regular working hours unless noted otherwise. This quotation does not include for delay, disruptions, re-scheduling, acceleration and/or impact cost nor for the cumulative effect of changes.

Schedule Impacts:	No. of Days of Impact:	Schedule Impact Cost:	Quote Validity:
TBD	TBD	TBD	15 Day(s)

Subtotal	**$100,000.00**
Contractor Allowance(s)	**$10,000.00**
Schedule Impact Cost	**$0.00**
Total	**$110,000.00**

Name: **Title:** **Company Name:**

Signature: **Date:**

D & F Industries, Inc
P.O Box 1680 3106 N. Sugar Road
Pharr Texas 78577
(PH) 956-781-2496

Cost Breakdown

Sub-Contractors	Tax Code	QTY	Rate	Total
Perry Mechanical Systems		**1.00**	**100000.00**	**$100,000.00**
Sub-Contractors Subtotal				**$100,000.00**

Subtotal		**$100,000.00**
Contractor Allowance - Own Forces	**15.00%**	**$0.00**
Contractor Allowance - Subcontractors	**10.00%**	**$10,000.00**
Schedule Impact Cost		**$0.00**
Total		**$110,000.00**

1959 Saratoga Blvd., #202
Corpus Christi, TX 78417
Phone: 361-854-7768
Fax: 361-854-7782

PERRY MECHANICAL SERVICE

3623 W. Alberta Rd.
Edinburg, TX 78539
Phone: 956-357-2928
Fax: 956-386-1255

CHANGE ORDER QUOTATION

Date: 4/1/2026 **From: Ivan Herbert (956) 566-1596**
Re: TXDOT Pharr Dock Expansion – BAS controls change order quote

We are pleased to quote the following:

Item A: Building Automation System -Change Order

Distech Building Automation System, complete with the following:

Equipment controlled by BAS:

-Qty (5) HP VRV condensing units via iTM BACnet interface
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-Qty (1) Lab exhaust fan VFD with BACnet interface
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-System shall include floor plans
-Owner training
-1 year warranty from date of acceptance by owner

CHANGES TO ORIGINAL SCOPE

A) Revise submittals according to ASI#016 project update and newly provided GSA guidelines and specifications.
B) Add required Niagara and network devices for integration into existing GSA building automation controls.
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-Rough-in for all T-stats and any sensors to be done by others.
-Any equipment wiring (outdoor to indoor unit for mini splits), local thermostat or sensor wiring, or any low voltage wiring not terminated to our BAS controllers is not included.
-Conduit for controls wiring is not included.
-Sales taxes and bonding not included
-Any trenching required or undergound conduit is not included with our proposal.
-Installation of smoke detectors, hot taps, pressure ports, wells, control valves, manual valves, gauges, control dampers are not included.
-All labor performed will be during normal business hours (Monday – Friday, 8AM – 5PM).
-Perry Mechanical does not have employees subject to the prevailing wage requirements of the Davis-Bacon Act and other similar statutes.

-Lighting controls, fire dampers, fire/smoke dampers, smoke detectors, fire alarm system, and any life safety equipment is not included.

ORIGINAL CONTRACT PRICE $100,000
Add Change order amount for ASI 16.....$100,000

TOTAL NEW CONTRACT AMOUNT $200,000

-This quotation is subject to change without notice and void after 30 days.
-Add to the prices quoted any sales tax payable on the transaction under any effective Federal or State statute.
-F.O.B. Factory, Per Mutually Agreed Schedule. No material to be returned without written authorization.
-PAYMENT TERMS: Net 30 Days, Upon Receipt of Satisfactory Credit Information. In the event of default in payment, Purchaser agrees to pay all costs of collection incurred by the Company including but not limited to collection agency fees, attorney fees and court costs. Late payments will be subject to maximum interest rates allowable by law.
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-Diagnostics of equipment is not covered under warranty. The purchaser must diagnose a problem prior to making a warranty call for service. If we dispatch a technician for a warranty call and it is determined that there are no mechanical issues with the equipment, the customer will be charged for a service call.
-Commissioning of equiment is the responsibility of the purchaser. Commissioning is not included with standard startup of equipment. Commissioning can be quoted or provided at our standard hourly service rates if required.
-The purchaser is responsible for making sure all startup paperwork is turned into the factory, unless the equipment is purchased with startup included. If startup paperwork is not turned in, warranty will begin on the ship date.
-PMS is responsible and accountable only for the acts and omissions of PMS

ITEM	DESCRIPTION OF WORK	MATERIALS	LABOR	COMMENTS
1	Engineering		$12,000.00	Submittals revisions, etc
2	DDC Programming		$19,000.00	Niagara programming and GSA integration
3	Graphics/Software		$12,000.00	Niagara graphics
5	Equipment	$16,000.00		Added JACE and related components
6	Wiring	$8,000.00		Optical fiber cable, CAT6
7	Installation of components		$32,000.00	Fiber run, CAT6 runs
8	Terminations		$3,100.00	Fiber connections, CAT6 & related power terminations
		$ 24,000.00	$ 78,100.00	$ 102,100.00

D & F Industries, Inc
P.O Box 1680 3106 N. Sugar Road
Pharr Texas 78577
(PH) 956-781-2496

PROPOSED CHANGE

Project Name: 24-235 Pharr FY16 DAP Agricultural Lab & Dock Expansion (HVAC)
Initiated By: Julio Monroy
Issued To: Team Member

Change Item #: 7
Date: 02 April 2026
Required By: 06 April 2026

Subject

ASI #16

Action

Please advise of any costs differences from your contract by no later than 06 April 2026. A complete breakdown and quotation is to be submitted to explain any/all changes to your contract. Please note, you are NOT to proceed with any additional work until written authorization has been provided to you.

Details

Added items based on revised controls submittal by ASI#16

February 26, 2026
57325.002

ASI 016

Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
GSA & CBP
TxDOT

This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, amplify, add to, delete from, or otherwise explain the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.

CONSTRUCTION DOCUMENT SHEETS

MECHANICAL

M-701: MECHANICAL CONTROLS

- Bas Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING AIR) graphic was updated.

M-702: MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706: HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet being added to the set showing the site plan and the location and routing of the fiber from the CBP building to the new building.

SPECIFICATIONS

SECTION 230900 – INSTRUMENTATION AND CONTROL FOR HVAC

- These specs have been revised.
- Additions are highlighted in Grey.
- Removed text is shown as ~~strike through.~~
- GSA appendices have been added to the end of the spec section.

AVO# 33135

SEQUENCE OF OPERATIONS FOR RTU-DOAS-1, RTU-DOAS-2

SUMMARY:

THE ROOFTOP UNIT SHALL BE A LOW PRESSURE DRAW THROUGH 100% OUTSIDE AIR UNIT WITH A DX COOLING COIL, DUAL SCROLL COMPRESSORS (1 FIXED, 1 INTERTER MODULATING COMPRESSOR), MODULATING HOT GAS REHEAT COIL, AND MODULATING NATURAL GAS HEAT EXCHANGER.

THE RTU SHALL BE PROGRAMMED FOR CONSTANT VOLUME, FIXED SUPPLY TEMPERATURE OPERATION WITH A DEHUMIDIFICATION SEQUENCE. THE UNIT IS DESIGNED FOR PARTIAL COOLING / HEATING OF CORRIDOR AREAS IN THE FACILITY.

THE SYSTEM SHALL BE SET UP FOR 24 / 7 / 365 OPERATION.

DEHUMIDIFICATION CONTROL IS BASED ON A LOCAL ZONE MOUNTED RELATIVE HUMIDITY SENSOR (SEE PLANS FOR LOCATIONS).

SUPPLY DISCHARGE TEMPERATURE SETPOINTS:

COOLING SETPOINT (OACS): 60 °F
HEATING SETPOINT (OAHS): 65 °F
RELATIVE HUMIDITY: 50%

SUPPLY FAN CONTROL:

THE SUPPLY FAN VFD SHALL BE USED TO ADJUST A CONSTANT CFM OUTPUT FOR THE 100% O/A UNIT.

INITIAL START SIGNAL SHALL BE 15Hz (MINIMUM). AFTER VFD REACHES 15Hz THE FAN SHALL BE SLOWLY RAMPED TO A PRE-DETERMINED SETPOINT BY TEST & BALANCE FIRM.

OCCUPIED SPEED: 100% FULL BALANCED FLOW.

AIR FLOW MEASURING STATION SHALL BE FACTORY INSTALLED IN THE UNIT. THE OUTPUT FROM THE AIR FLOW MEASURING STATION SHALL FEED INTO A PI LOOP WITH A FIXED AIRFLOW SETPOINT. THE PI LOOP OUTPUT SHALL COMMAND VFD SPEED TO MAINTAIN CONSTANT AIRFLOW.

DAMPER CONTROL:

WHEN THE UNIT IS COMMANDED 'ON' THE OUTSIDE AIR DAMPER SHALL BE COMMANDED TO OPEN WHEN THE FAN IS RUNNING. THE O/A DAMPER SHALL BE OPEN 24/7. UNLESS THE UNIT IS POWERED DOWN FOR MAINTENANCE.

OPERATIONAL MODES OF OUTSIDE AIR UNIT :

ALL MODES LISTED BELOW ARE ENABLED BY THE MAIN UNIT CONTROL MODULE. ALL CONTROLS SHALL BE INTERNAL TO THE OUTSIDE AIR ROOFTOP UNIT.

- SENSIBLE COOLING
- COOLING WITH DEHUMIDIFICATION (HOT GAS REHEAT)
- VENT MODE
- HEAT MODE (MODULATING NATURAL GAS HEAT)

THE UNIT WILL USE OUTSIDE AIR TEMPERATURE AND HUMIDITY FOR MODE CONTROL.

VENT MODE:

IF THERE IS NO DEMAND FOR HEATING OR SENSIBLE COOLING AND AND THERE IS NO CALL FOR DEHUMIDIFICATION, THE UNIT WILL SWITCH TO 'VENT MODE'. VENT MODE WILL BE DISABLED UPON THE FOLLOWING EVENTS:

- OA-TEMP RISES ABOVE OACS OR FALLS BELOW OAHS.
- OUTDOOR AIR RELATIVE HUMIDITY INITIATES DEHUMIDIFICATION MODE.

ONCE IN COOLING, HEATING OR DEHUMIDIFICATION MODE THE SEQUENCES IN THE SECTIONS LISTED BELOW WILL APPLY.

SENSIBLE ONLY COOLING CONTROL:

COOLING CONTROL SHALL BE ACCOMPLISHED VIA A DISCHARGE TEMPERATURE PI LOOP

WHEN THE SUPPLY TEMPERATURE COOLING LOOP OUTPUT IS GREATER THAN 0% THE AIR HANDLER SHALL BE IN 'OCCUPIED COOLING MODE' OR 'UNOCCUPIED COOLING MODE'. THIS MODE SHALL BE INDICATED ON THE GRAPHICS SCREEN FOR THE ROOFTOP UNIT.

THE NATURAL GAS VALVE SHALL BE LOCKED OUT WHEN THE RTU IS IN SENSIBLE COOLING MODE.

THE OUTPUT OF THE SUPPLY TEMP PI LOOP SHALL CONTROL THE STAGING OF THE FIXED COMPRESSOR AND MODULATION OF THE INVERTER COMPRESSOR IN THE UNIT. INTERNAL UNIT CONTROLS SHALL MODULATE TO A MINIMUM COOLING TEMPERATURE SETPOINT AS THE COOLING DISCHARGE SUPPLY TEMPERATURE LOOP RANGES FROM 0%-50%.

AS THE DISCHARGE TEMPERATURE COOLING PI LOOP RANGES FROM 51%-100% THE UNIT SHALL MODULATE CAPACITY TO MAINTAIN A FIXED MINIMUM DISCHARGE TEMPERATURE.

REFER TO THE TEMPERATURE CONTROLS DIAGRAM ON THIS DRAWING FOR AN ILLUSTRATION.

HEATING CONTROL:

HEATING CONTROL SHALL BE ACCOMPLISHED VIA A DISCHARGE TEMPERATURE SENSOR PI LOOP.

THE OUTPUT OF THE GAS VALVE SHALL BE MODULATED BY THE RTU INTERNAL CONTROLS TO MAINTAIN PROPER DISCHARGE AIR TEMPERATURE SETPOINT.

WHEN THE DISCHARGE TEMPERATURE HEATING LOOP OUTPUT IS GREATER THAN 0% THE ROOFTOP UNIT SHALL BE IN 'OCCUPIED HEATING MODE' OR 'UNOCCUPIED HEATING MODE'. THIS MODE SHALL BE INDICATED ON THE GRAPHICS SCREEN FOR THE ROOFTOP UNIT.

THE COMPRESSORS SHALL BE LOCKED OUT WHEN THE RTU IS IN HEATING MODE.

REFER TO THE TEMPERATURE DIAGRAM BELOW FOR AN ILLUSTRATION.

DEHUMIDIFICATION MODE:

DEHUMIDIFICATION IS DISABLED WHEN THE UNIT IS IN EITHER THE HEATING OR MINIMUM COOLING DISCHARGE AIR TEMPERATURE STATE.

RTU SHALL SWITCH TO ' **DEHUMIDIFICATION MODE** ' WHEN THE FOLLOWING OCCURS:

DISCHARGE SUPPLY DUCT RELATIVE HUMIDITY SENSOR RISES ABOVE SETPOINT: 50% (ADJUSTABLE)

DURING DEHUMIDIFICATION MODE, THE OPERATOR WORKSTATION SHALL INDICATE **'DEHUMIDIFICATION MODE'** ON THE SCREEN FOR THIS ROOFTOP UNIT. THE BAS SHALL MONITOR THE %RH AND RESET THE DISCHARGE AIR TEMPERATURE DOWN TO THE MINIMUM DISCHARGE AIR TEMPERATURE.

HOT GAS REHEAT:

IN CONJUNCTION WITH DEHUMIDIFICATION, MODULATING HOT GAS REHEAT (HGRH) IS USED TO RAISE THE TEMPERATURE OF THE SUBCOOLED AIR TO A DESIRABLE VALUE. MODULATING HGRH IS COMPRISED OF A PARALLEL COIL ARRANGEMENT, WITH DUAL MODULATING REHEAT VALVES (WHICH OPERATE IN CONCERT WITH ONE ANOTHER) AND A CHECK VALVE.

DEHUMIDIFICATION CONTROL IS PERFORMED BY THE RTU CONTROLLER.

DURING DEHUMIDIFICATION CONTROL WITH MODULATING HOT GAS REHEAT (MHGRH), AN ANALOG SIGNAL (0-10VDC) IS CONTROLLED AS DESCRIBED BELOW.

- A PI LOOP IS USED TO CONTROL THE HGRH VALVES TO MAINTAIN THE DISCHARGE AIR TEMPERATURE FROM THE REHEAT COIL
- COMPRESSOR SPEED DURING REHEAT (OR DEHUMIDIFICATION) WILL BE CONTROLLED BY THE LEAVING DX COIL TEMPERATURE. FOR INCREASED DEHUMIDIFICATION DURING REHEAT, THE STANDARD DEFAULT COMPRESSOR STAGING RANGE IS 45°F – 52°F.
- WHEN DEHUMIDIFICATION IS ACTIVE IN THE COOLING STATE, THE REHEAT SET POINT EQUALS THE CURRENT DISCHARGE AIR TEMPERATURE COOLING SETPOINT.
- COMMUNICATION WITH THE REHEAT CONTROL VALVES IS ACCOMPLISHED BY PROVIDING A 0-10VDC SIGNAL TO A PAIR OF INTERFACE BOARDS WHICH IN TURN SUPPLY THE CONTROL SIGNAL TO THE REHEAT VALVES (STEP TYPE)

TERMINATION OF DEHUMIDIFICATION:

DEHUMIDIFICATION IS TERMINATED IF THE RELATIVE HUMIDITY, DROPS BELOW THE HUMIDITY SETPOINT BY MORE THAN HALF ITS DEADBAND. DEHUMIDIFICATION IS ALSO TERMINATED IF COOLING IS DISABLED FOR ANY REASON OR THE UNIT ENTERS EITHER THE HEATING OR MINIMUM DISCHARGE AIR TEMPERATURE STATE. COMPRESSOR CAPACITY IS REDUCED AND EVENTUALLY SHUT OFF WHEN COMPRESSOR CYCLE TIMERS ARE SATISFIED.

DEHUMIDIFICATION START FROM VENT MODE (DEADBAND):

INTERNAL OEM CONTROLS

IN THE FAN ONLY STATE 'VENT MODE', NO SENSIBLE COOLING IS REQUIRED, BUT DEHUMIDIFICATION MODE WILL STILL BE ENABLED IF THE DISCHARGE DUCT HUMIDITY SENSOR IS NOT SATISFIED. REHEAT SET POINTS SHALL BE AS FOLLOWS:

OUTDOOR TEMPERATURE: GREATER THAN 72.5F < 75F, REHEAT SHALL BE SET TO 75F.
OUTDOOR TEMPERATURE: GREATER THAN 70F <72.5F, REHEAT SHALL BE SET TO 70F.

THE COMPRESSORS SHALL ENGAGE TO SUBCOOL THE AIR AND THE REHEAT VALVE SHALL MODULATE TO SETPOINT DURING DEHUMIDIFICATION.

DIRTY FILTER ALARM:

THE BAS SHALL MONITOR THE FILTER SWITCH ACROSS THE MAIN FILTER BANK ON THE ROOFTOP UNIT. AN ALARM SHALL BE GENERATED WHEN THE DIFFERENTIAL PRESSURE EXCEEDS SETPOINT.

SETPOINT FOR THE FILTER BANK TO BE SET BY TEST & BALANCE FIRM BASED ON FILTER MANUFACTURER'S REPLACEMENT STATIC PRESSURE RECOMMENDATIONS.

SMOKE DETECTOR AND FIRE ALARM SHUTDOWN:

ALL INDIVIDUAL DUCT SMOKE DETECTORS SHALL MONITOR AIR CONDITIONS. UPON DETECTION OF SMOKE, THE DETECTORS SHALL SEND A HARD WIRED SIGNAL TO THE FIRE ALARM SYSTEM. A FIRE ALARM RELAY SHALL DE-ENERGIZE THE SUPPLY FAN UPON DETECTION OF ALARM CONDITIONS. BAS CONTRACTOR SHALL PROVIDE THE SHUT-DOWN WIRING FROM THE FIRE ALARM RELAY TO THE FAN VFD.

FIRE ALARM CONTRACTOR TO PROVIDE AND INSTALL CONNECTION TO FIRE ALARM PANEL FROM SMOKE DETECTORS.

SUPPLY FAN OVERPRESSURE:

INDIVIDUAL STATIC PRESSURE LIMIT CONTROLLER SHALL MONITOR THE STATIC PRESSURE ON THE DISCHARGE SIDE OF THE SUPPLY FAN. THE LIMIT DEVICE SHALL BE HARDWIRED INTO THE FAN VFD SAFETY RELAY AND SHALL DE-ENERGIZE THE SUPPLY FAN UPON DETECTION OF ALARM PRESSURE CONDITIONS.

INITIAL HIGH LIMIT SETPOINT: SET DURING T&B PHASE OF PROJECT.

BAS MONITORING:

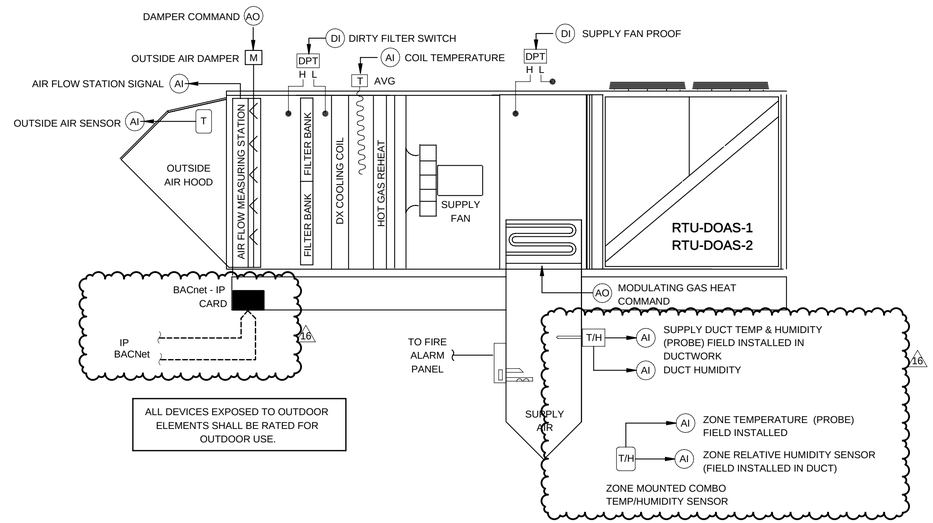
THE BAS SHALL CONNECT TO THE BACNET CARD THROUGH BACNET IP CONNECTIONS

THE BAS SHALL BE ABLE TO MAKE OCCUPIED COOLING AND HEATING SETPOINT CHANGES.

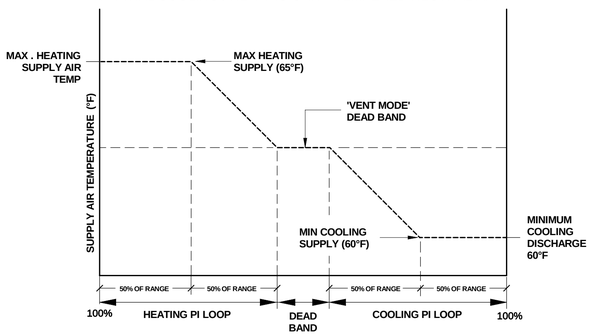
ON THE GRAPHICS SHOW THE FOLLOWING POINTS:

- FAN COMMAND (ON / OFF)
- OA DAMPER COMMAND STATUS (OPEN / CLOSED)
- RTU MODE (COOLING, HEATING, DEHUMIDIFICATION, VENT MODE)
- FIRE ALARM STATUS
- DIRTY FILTER STATUS
- SUPPLY FAN PROOF STATUS (CURRENT SENSOR OR DP SWITCH)
- MODULATING GAS HEAT COMMAND VALUE
- SHOW DISCHARGE DUCT TEMPERATURE VALUE
- SHOW DISCHARGE DUCT HUMIDITY SENSOR VALUES
- OUTSIDE AIR TEMPERATURE
- COOLING COIL TEMPERATURE
- AIRFLOW MEASURING STATION VALUE
- GENERAL UNIT FAULT ALARM

16



100% OA - CONSTANT VOLUME - SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING AIR)



PARTIAL COOLING / HEATING UNIT - TEMPERED NEUTRAL AIR

100% OA - TEMPERATURE CONTROL DIAGRAM

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February 26, 2026
57325.002

ASI 016
Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
GSA & CBP
TxDOT

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CONSTRUCTION DOCUMENT SHEETS

MECHANICAL

M-701: MECHANICAL CONTROLS

- Bas Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING AIR) graphic was updated.

M-702: MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706: HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet being added to the set showing the site plan and the location and routing of the fiber from the CBP building to the new building.

SPECIFICATIONS

SECTION 230900 – INSTRUMENTATION AND CONTROL FOR HVAC

- These specs have been revised.
- Additions are highlighted in Grey.
- Removed text is shown as ~~strike through~~.
- GSA appendices have been added to the end of the spec section.

No.	Date	Description
16	02/25/2026	ASI 016 - RFI #87 - HVAC Instrumentation & Control

STATE OF TEXAS
MARK ANDREW SISLEN
97234
LICENSED PROFESSIONAL ENGINEER
02/25/2026

Pharr
CITY OF PHARR, TEXAS

GSA
GENERAL SERVICES ADMINISTRATION
819 TAYLOR STREET
FORT WORTH, TEXAS 76102-6195
817-978-3334
www.gsa.gov

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TEXAS DEPARTMENT OF TRANSPORTATION

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5000 WEST MILITARY, SUITE 100, McALLEN, TEXAS 78503
TEL (956) 664-0286 FAX (956) 664-0282 TBPE FIRM #F-312

PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

MECHANICAL CONTROLS

SCALE: AS NOTED				SHEET OF
DN:	CONT	SECT	JOB	HIGHWAY
CK DN:	921	02	424,425,433	PHARR INT. BRIDGE
DW:	DIST	COUNTY		SHEET NO.
CK DW:	PHR	HIDALGO		M-701
TR:				
CK TR:				

SEQUENCE OF OPERATIONS FOR RTU-DOAS-3

SUMMARY:

THE ROOFTOP UNIT SHALL BE A LOW PRESSURE DRAW THROUGH 100% OUTSIDE AIR UNIT WITH A DX COOLING COIL, DUAL SCROLL COMPRESSORS (1 FIXED, 1 INTERTER MODULATING COMPRESSOR), MODULATING HOT GAS REHEAT COIL, AND MODULATING NATURAL GAS HEAT EXCHANGER.

THE RTU SHALL BE PROGRAMMED FOR 2 SPEED CFM OUTPUT, VARIABLE SUPPLY TEMPERATURE OPERATION WITH A DEHUMIDIFICATION SEQUENCE. THE RTU SHALL BE SETUP FOR COOLING AND HEATING A LAB SPACE WITH 100% OA.

THE SYSTEM SHALL BE SET UP FOR 24 / 7 / 365 OPERATION.

DEHUMIDIFICATION CONTROL IS BASED ON A LOCAL ZONE MOUNTED RELATIVE HUMIDITY SENSOR (SEE PLANS FOR LOCATIONS).

TEMPERATURE & HUMIDITY ZONE SETPOINTS:

COOLING: 74
HEATING: 70
RELATIVE HUMIDITY: 50%

SUPPLY FAN CONTROL:

THE SUPPLY FAN VFD SHALL BE USED TO ADJUST TO TWO (2) SEPARATE BALANCED SPEEDS.

INITIAL START SIGNAL SHALL BE 15Hz (MINIMUM). AFTER VFD REACHES 15Hz THE FAN SHALL BE SLOWLY RAMPED TO A PRE-DETERMINED SETPOINT BY TEST & BALANCE FIRM.

OCCUPIED SPEED SETPOINT: 100% FULL BALANCED FLOW.
UNOCCUPIED SPEED SETPOINT: 50% OF FULL BALANCED FLOW.

A FACTORY PROVIDED AIR FLOW MEASURING STATION SHALL FEED INTO A PI LOOP WITH THE SETPOINTS AS LISTED ABOVE. THE OUTPUT FROM THE PI LOOP SHALL COMMAND THE VFD FAN SPEED.

DAMPER CONTROL:

WHEN THE UNIT IS COMMANDED 'ON' THE OUTSIDE AIR DAMPER SHALL BE COMMANDED TO OPEN WHEN THE FAN IS RUNNING. THE O/A DAMPER SHALL BE OPEN 24/7. UNLESS THE UNIT IS POWERED DOWN FOR MAINTENANCE.

COOLING CONTROL:

COOLING CONTROL SHALL BE ACCOMPLISHED VIA CASCADED PI LOOPS WHERE THE DISCHARGE AIR TEMPERATURE LOOP IS AN ORDER OF MAGNITUDE FASTER THAN THE ZONE TEMPERATURE CONTROL LOOP FOR STABILITY. THE INVERTER COMPRESSOR SHALL BE RELEASED TO MODULATE WHEN THE UNIT IS NOT IN HEATING MODE. THE DISCHARGE AIR TEMPERATURE SETPOINT SHALL SPAN FROM THE ZONE COOLING TEMPERATURE SETPOINT TO 55°F AS THE ZONE COOLING LOOP OUTPUT RANGES FROM 0 TO 100%.

WHEN ZONE COOLING TEMPERATURE LOOP OUTPUT IS GREATER THAN 0% THE AIR HANDLER SHALL BE IN 'OCCUPIED COOLING MODE' OR 'UNOCCUPIED COOLING MODE'. THIS MODE SHALL BE INDICATED ON THE GRAPHICS SCREEN FOR THE AIR HANDLER.

A SECONDARY PI LOOP SHALL CONTROL THE INVERTER COMPRESSOR OUTPUT TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT THE DISCHARGE AIR TEMPERATURE SETPOINT.

BOTH LOOPS SHALL BE CASCADED AND TUNED FOR STABILITY SUCH THAT THE DISCHARGE TEMPERATURE LOOP'S RESPONSE TIME IS FASTER THAN THE ZONE TEMPERATURE SENSOR LOOP.

THE ZONE TEMPERATURE SENSOR SHALL FEED INTO A REVERSE ACTING PI LOOP. THE OUTPUT FROM THE PI LOOP SHALL COMMAND THE COMPRESSORS AS FOLLOWS:

DEAD BAND: COMPRESSOR OFF.

0-50% LOOP OUTPUT: THE INVERTER COMPRESSOR MODULATE PROPORTIONALLY TO LOWER THE SUPPLY TEMPERATURE DOWN TO 55°F AS THE SUPPLY TEMPERATURE IS RESET BY THE CASCADED PI LOOPS.

51-100% LOOP OUTPUT: THE INVERTER COMPRESSOR SHALL USE THE COOLING COIL DISCHARGE TEMPERATURE SENSOR PI LOOP OUTPUT TO MODULATE TO A FIXED 55°F DISCHARGE AIR SETPOINT.

REFER TO THE TEMPERATURE DIAGRAM FOR AN ILLUSTRATION.

HEATING CONTROL:

HEATING CONTROL SHALL BE ACCOMPLISHED VIA CASCADED PI LOOPS WHERE THE DISCHARGE AIR TEMPERATURE LOOP IS AN ORDER OF MAGNITUDE FASTER THAN THE ZONE TEMPERATURE CONTROL LOOP FOR STABILITY. THE GAS HEAT EXCHANGER SHALL BE RELEASED TO MODULATE WHEN THE UNIT IS NOT IN COOLING MODE. THE DISCHARGE AIR TEMPERATURE SETPOINT SHALL RESET FROM THE ZONE CURRENT HEATING TEMPERATURE SETPOINT TO 90°F AS THE ZONE HEATING LOOP OUTPUT RANGES FROM 0 TO 100%.

WHEN ZONE HEATING TEMPERATURE LOOP OUTPUT IS GREATER THAN 0% THE AIR HANDLER SHALL BE IN 'OCCUPIED HEATING MODE' OR 'UNOCCUPIED HEATING MODE'. THIS MODE SHALL BE INDICATED ON THE GRAPHICS SCREEN FOR THE AIR HANDLER.

A SECONDARY PI LOOP SHALL MODULATE THE GAS VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT THE DISCHARGE AIR HEATING TEMPERATURE SETPOINT.

BOTH LOOPS SHALL BE CASCADED AND TUNED FOR STABILITY SUCH THAT THE DISCHARGE TEMPERATURE LOOP'S RESPONSE TIME IS FASTER THAN THE ZONE TEMPERATURE SENSOR LOOP.

THE ZONE TEMPERATURE SENSOR SHALL FEED INTO A DIRECT ACTING PI LOOP. THE OUTPUT FROM THE PI LOOP SHALL CONTROL THE GAS HEAT EXCHANGER AS FOLLOWS:

DEAD BAND: GAS VALVE LOCKED OUT

0-50% LOOP OUTPUT: THE ZONE TEMPERATURE DIRECT ACTING PI LOOP SHALL CONTINUOUSLY RESET DISCHARGE TEMPERATURE AS THE LOOP OUTPUT SPANS FROM 0-50%. THE MAXIMUM SETPOINT SHALL BE LIMITED AT 90F. THE DISCHARGE TEMPERATURE 'PI' LOOP SHALL MODULATE THE GAS VALVE.
THE TWO LOOPS SHALL BE CASCADED AND TUNED FOR STABILITY SO THAT THE DISCHARGE LOOP'S RESPONSE TIME IS FASTER THAN THE TEMPERATURE ZONE LOOP.

51-100% LOOP OUTPUT: THE GAS VALVE SHALL USE THE HEATING COIL DISCHARGE TEMPERATURE SENSOR 'PI' LOOP OUTPUT TO MODULATE TO A FIXED 90°F DISCHARGE AIR SETPOINT.

REFER TO THE CONTROL LOOP TEMPERATURE DIAGRAM ON THIS DRAWING FOR AN ILLUSTRATION.

DEHUMIDIFICATION MORE:

DEHUMIDIFICATION IS DISABLED WHEN THE UNIT IS IN EITHER THE HEATING OR MINIMUM COOLING DISCHARGE AIR TEMPERATURE STATE.

RTU SHALL SWITCH TO 'DEHUMIDIFICATION MODE' WHEN THE FOLLOWING OCCURS:

ZONE RELATIVE HUMIDITY SENSOR RISES ABOVE SETPOINT: 50% (ADJUSTABLE)

DURING DEHUMIDIFICATION MODE, THE OPERATOR WORKSTATION SHALL INDICATE **'DEHUMIDIFICATION MODE'** ON THE SCREEN FOR THIS ROOFTOP UNIT. THE BAS SHALL MONITOR THE ZONE %RH AND RESET THE DISCHARGE AIR TEMPERATURE DOWN TO THE MINIMUM DISCHARGE AIR TEMPERATURE.

HOT GAS REHEAT:

IN CONJUNCTION WITH DEHUMIDIFICATION, MODULATING HOT GAS REHEAT (HGRH) IS USED TO RAISE THE TEMPERATURE OF THE SUBCOOLED AIR TO A DESIRABLE VALUE. MODULATING HGRH IS COMPRISED OF A PARALLEL COIL ARRANGEMENT, WITH DUAL MODULATING REHEAT VALVES (WHICH OPERATE IN CONCERT WITH ONE ANOTHER) AND A CHECK VALVE.

DEHUMIDIFICATION CONTROL IS PERFORMED BY THE RTU CONTROLLER.

DURING DEHUMIDIFICATION CONTROL WITH MODULATING HOT GAS REHEAT (MHGRH), AN ANALOG SIGNAL (0-10VDC) IS CONTROLLED AS DESCRIBED BELOW.

- A PI LOOP IS USED TO CONTROL THE HGRH VALVES TO MAINTAIN THE DISCHARGE AIR TEMPERATURE FROM THE REHEAT COIL
- COMPRESSOR SPEED DURING REHEAT (OR DEHUMIDIFICATION) WILL BE CONTROLLED BY THE LEAVING DX COIL TEMPERATURE. FOR INCREASED DEHUMIDIFICATION DURING REHEAT, THE STANDARD DEFAULT COMPRESSOR STAGING RANGE IS BETWEEN 45°F & 52°F.
- WHEN DEHUMIDIFICATION IS ACTIVE IN THE COOLING STATE, THE REHEAT SET POINT EQUALS THE CURRENT DISCHARGE AIR TEMPERATURE COOLING SETPOINT.
- COMMUNICATION WITH THE REHEAT CONTROL VALVES IS ACCOMPLISHED BY PROVIDING A 0-10VDC SIGNAL TO A PAIR OF INTERFACE BOARDS WHICH IN TURN SUPPLY THE CONTROL SIGNAL TO THE REHEAT VALVES (STEP TYPE)

TERMINATION OF DEHUMIDIFICATION:

DEHUMIDIFICATION IS TERMINATED IF THE RELATIVE HUMIDITY OR DEW POINT, DROPS BELOW THE HUMIDITY SETPOINT BY MORE THAN HALF ITS DEADBAND. DEHUMIDIFICATION IS ALSO TERMINATED IF COOLING IS DISABLED FOR ANY REASON OR THE UNIT ENTERS EITHER THE HEATING OR MINIMUM DISCHARGE AIR TEMPERATURE STATE. COMPRESSOR CAPACITY IS REDUCED AND EVENTUALLY SHUT OFF WHEN COMPRESSOR CYCLE TIMERS ARE SATISFIED.

DEHUMIDIFICATION FROM FAN ONLY STATE (DEADBAND):

INTERNAL OEM CONTROLS

IN THE FAN ONLY STATE, NO SENSIBLE COOLING IS REQUIRED, BUT DEHUMIDIFICATION MODE WILL STILL BE ENABLED IF THE HUMIDITY SENSOR IS NOT SATISFIED. REHEAT SET POINT VARIES FROM A MAXIMUM VALUE (DEFAULT 65°F) WHEN THE CONTROL TEMPERATURE IS AT OR BELOW THE HEATING CHANGEOVER SETPOINT TO A MINIMUM VALUE (DEFAULT 55°F) WHEN THE CONTROL TEMPERATURE IS AT OR ABOVE THE COOLING CHANGEOVER SETPOINT.

DIRTY FILTER ALARM:

THE BAS SHALL MONITOR THE FILTER SWITCH ACROSS THE MAIN FILTER BANK ON THE ROOFTOP UNIT. AN ALARM SHALL BE GENERATED WHEN THE DIFFERENTIAL PRESSURE EXCEEDS SETPOINT.

SETPOINT FOR THE FILTER BANK TO BE SET BY TEST & BALANCE FIRM BASED ON FILTER MANUFACTURER'S REPLACEMENT STATIC PRESSURE RECOMMENDATIONS.

SMOKE DETECTOR AND FIRE ALARM SHUTDOWN:

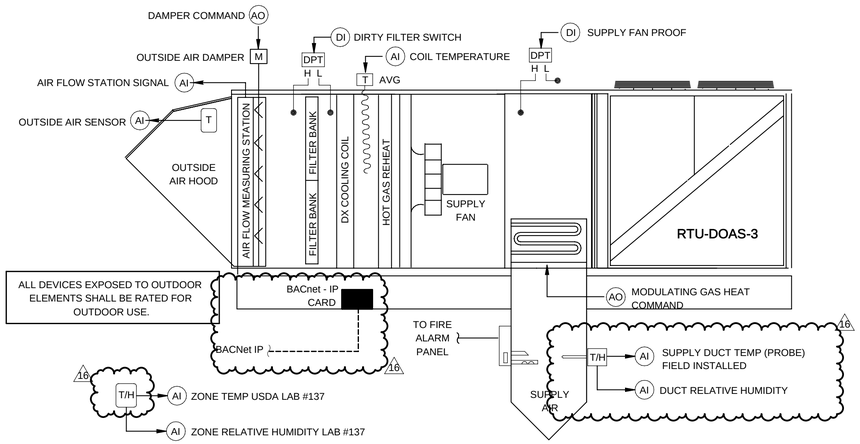
ALL INDIVIDUAL DUCT SMOKE DETECTORS SHALL MONITOR AIR CONDITIONS. UPON DETECTION OF SMOKE, THE DETECTORS SHALL SEND A HARD WIRED SIGNAL TO THE FIRE ALARM SYSTEM. A FIRE ALARM RELAY SHALL DE-ENERGIZE THE SUPPLY FAN UPON DETECTION OF ALARM CONDITIONS. BAS CONTRACTOR SHALL PROVIDE THE SHUT-DOWN WIRING FROM THE FIRE ALARM RELAY TO THE FAN VFD.

FIRE ALARM CONTRACTOR TO PROVIDE AND INSTALL CONNECTION TO FIRE ALARM PANEL FROM SMOKE DETECTORS.

SUPPLY FAN OVERPRESSURE:

INDIVIDUAL STATIC PRESSURE LIMIT CONTROLLER SHALL MONITOR THE STATIC PRESSURE ON THE DISCHARGE SIDE OF THE SUPPLY FAN. THE LIMIT DEVICE SHALL BE HARDWIRED INTO THE FAN VFD SAFETY RELAY AND SHALL DE-ENERGIZE THE SUPPLY FAN UPON DETECTION OF ALARM PRESSURE CONDITIONS.

INITIAL HIGH LIMIT SETPOINT: SET DURING T&B PHASE OF PROJECT.



100% OA - CONSTANT VOLUME - ZONE TEMPERATURE CONTROL

BAS MONITORING:

THE BAS SHALL CONNECT TO THE BACNET CARD THROUGH BACNET IP CONNECTIONS

THE BAS SHALL BE ABLE TO MAKE OCCUPIED COOLING AND HEATING SETPOINT CHANGES.

ON THE GRAPHICS SHOW THE FOLLOWING POINTS:

- FAN COMMAND (ON / OFF)
- OA DAMPER COMMAND POSITION
- RTU MODE (COOLING, HEATING, DEHUMIDIFICATION, VENT MODE)
- FIRE ALARM STATUS
- DIRTY FILTER STATUS
- SUPPLY FAN PROOF STATUS (CURRENT SENSOR OR DP SWITCH)
- GAS HEAT COMMAND VALUE
- SHOW TEMPERATURE ZONE VALUE
- SHOW ZONE HUMIDITY SENSOR VALUES
- OUTSIDE AIR TEMPERATURE
- COOLING COIL TEMPERATURE
- SUPPLY DUCT TEMPERATURE
- SUPPLY DUCT HUMIDITY
- AIRFLOW MEASURING STATION VALUE
- GENERAL UNIT FAULT ALARM

16

AFTER-HOURS OVERRIDE OCCUPANCY SENSOR:

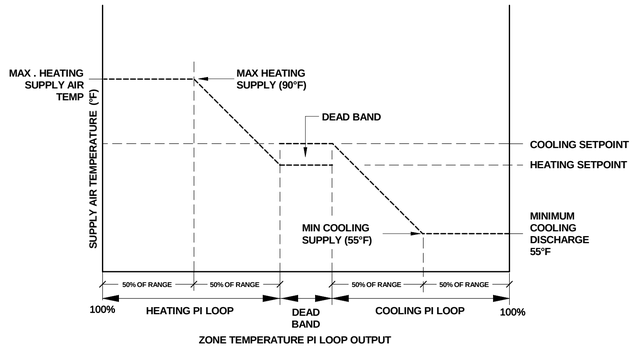
A CEILING-MOUNTED OCCUPANCY SENSOR SHALL BE INSTALLED IN THE LAB/COLLECTIONS AREA. THIS SENSOR SHALL HAVE A DRY CONTACT AND SHALL RESET THE **RTU-DOAS-3** AND **LEF-1** INTO A 2 HOUR 100% OCCUPANCY OVERRIDE.

WHEN THE OCCUPANCY SENSOR DRY CONTACT IS CLOSED THE CONTROL SYSTEM SHALL START A TIMER AND CHANGE ITS MODE TO 'OCCUPIED' FOR A PERIOD OF 2-HOURS (ADJUSTABLE).

AFTER THE TIME PERIOD HAS ELAPSED, THE SYSTEM SHALL SWITCH ITS MODE BACK TO 'UNOCCUPIED' AND RESUME NORMAL SCHEDULING.

CONTROLS CONTRACTOR SHALL PROVIDE POWER PACK TO PROVIDE POWER FOR OCCUPANCY SENSOR. COORDINATE WITH ELECTRICAL

REFER TO DRAWING M-705 FOR ADDITIONAL INFORMATION. 16



100% OA - SINGLE ZONE AHU TEMPERATURE CONTROL DIAGRAM

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February 26, 2026
57325.002

ASI 016
Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
GSA & CBP
TxDOT

This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, amplify, add to, delete from, or otherwise explain the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.

CONSTRUCTION DOCUMENT SHEETS

MECHANICAL

M-701: MECHANICAL CONTROLS
- Bas Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING AIR) graphic was updated.

M-702: MECHANICAL CONTROLS
- BAS Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706: HVAC CONTROLS NETWORK SITE PLAN
- This is a new sheet being added to the set showing the site plan and the location and routing of the fiber from the CBP building to the new building.

SPECIFICATIONS

SECTION 230900 – INSTRUMENTATION AND CONTROL FOR HVAC
- These specs have been revised.
- Additions are highlighted in Grey.
- Removed text is shown as ~~strike through~~.
- GSA appendices have been added to the end of the spec section.

No.	Date	Description
16	02/25/2026	ASI 016 - RFI #87 - HVAC Instrumentation & Control

STATE OF TEXAS
MARK ANDREW SISLEN
97234
LICENSED PROFESSIONAL ENGINEER
02/25/2026

Pharr
CITY OF PHARR, TEXAS

GSA
GENERAL SERVICES ADMINISTRATION
819 TAYLOR STREET
FORT WORTH, TEXAS 76102-6195
817-978-3334
www.gsa.gov

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TEXAS DEPARTMENT OF TRANSPORTATION

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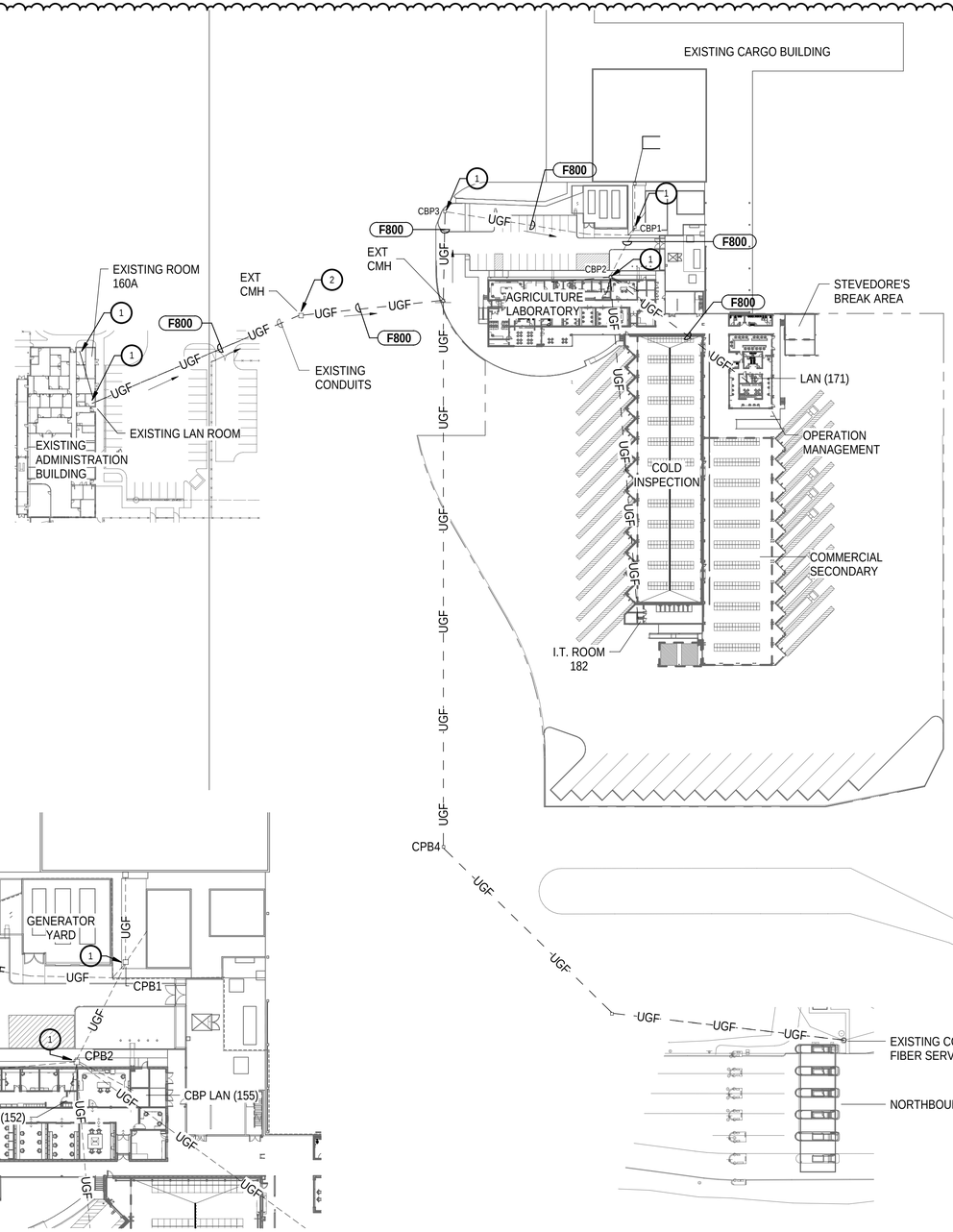
5000 WEST MILITARY, SUITE 100, McALLEN, TEXAS 78503
TEL (956) 664-0286 FAX (956) 664-0282 TBPE FIRM #F-312

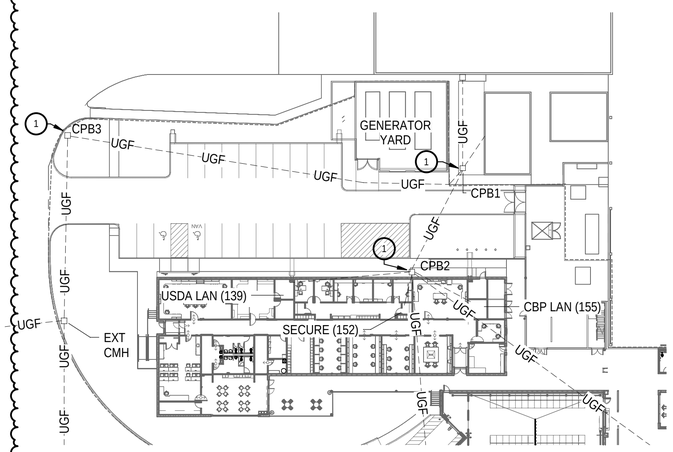
PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

MECHANICAL CONTROLS

SCALE: AS NOTED				
DN:			SHEET	OF
CK DN:	CONT	SECT	JOB	HIGHWAY
DW:	921	02	424,425,433	PHARR INT. BRIDGE
CK DW:	DIST	COUNTY		SHEET NO.
TR:	PHR	HIDALGO		M-702
CK TR:				

AVO# 33135





2 ENLARGED HVAC CONTROLS NETWORK SITE PLAN

1" = 40'-0"

1 HVAC CONTROLS UNDERGROUND FIBER SITE PLAN

1" = 80'-0"

GENERAL NOTES:

A. REFER TO SHEET M-001 FOR GENERAL NOTES.
B. REFER TO GSA CONTROLS STANDARDS FOR UNDERGROUND FIBER CONNECTIONS.

KEY NOTES: (#)

16

1. PROVIDE NEW FIBER CONNECTION FROM BSN SWITCH IN CBP ADMINISTRATION BUILDING TO LAN 171 AT OPERATIONS CENTER. ROUTE FROM CBP BUILDING TO EXISTING CONCRETE MANHOLE, THEN TO CBP3, CBP1, CBP2 THEN TO LAN #171. UTILIZE EXISTING UNDERGROUND TELECOM DUCTBANK. FIBER TO ROUTE OVERHEAD INSIDE CBP ADMINISTRATION BUILDING INSIDE CONDUIT PROVIDED BY CONTRACTOR (FROM BSN SWITCH TO DUCTBANK). LOCATIONS SHOWN ARE APPROXIMATE (FIELD VERIFY).
2. ROUTE NEW UNDERGROUND FIBER CONNECTION TO MANHOLE.

CONTROLS NOTES:

BSN SWITCH PROVIDED BY GSA, ALL CABLES TO BE CAT-6, NOT EXCEEDING 328FT IN LEGNTH.

BSN CONSOLE (ONE PER SITE) IS ALREADY EXISTING ON THIS SITE AND LOCATED IN THE CBP BUILDING.

EXISTING BSN SWITCH LOCATED IN ROOM #160A.
JACE LOCATED IN ADMIN-MECHANICAL ROOM.

MECHANICAL CONTRACTOR TO PROVIDE NEW SWITCH IN LAN #171

HVAC CONTROLS SITE PLAN LINE TYPE LEGEND

EXISTING UNDERGROUND COMMUNICATION CONDUIT

UGF — UGF — NEW OR EXISTING DUCTBANK FOR UNDERGROUND FIBER OPTIC CONDUIT PROVIDED BY OTHER DISCIPLINES. HVAC FIBER SHARED IN THIS DUCTBANK.

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February 26, 2026
57325.002

ASI 016

Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
GSA & CBP
TxDOT

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CONSTRUCTION DOCUMENT SHEETS

MECHANICAL

M-701: MECHANICAL CONTROLS

- Bas Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING AIR) graphic was updated.

M-702: MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706: HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet being added to the set showing the site plan and the location and routing of the fiber from the CBP building to the new building.

SPECIFICATIONS

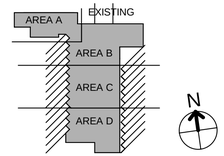
SECTION 230900 – INSTRUMENTATION AND CONTROL FOR HVAC

- These specs have been revised.
- Additions are highlighted in Grey.
- Removed text is shown as ~~strike through~~.
- GSA appendices have been added to the end of the spec section.

NETWORK FIBER OPTICS SCHEDULE

FIBER OPTIC	DUCTBANK	FROM:	TO:	REMARKS
F800	DUCTBANK F	EXISTING LAN ROOM	EXT CMH	REUSE EXISTING DUCTBANK AND RACEWAY, MULTI MODE, 1-10GIG, W/ 'LC' CONNECTORS
F800	DUCTBANK D	EXT CMH	EXT CMH	REUSE EXISTING DUCTBANK AND RACEWAY, MULTI MODE, 1-10GIG, W/ 'LC' CONNECTORS
F800	DUCTBANK D	EXT CMH	CBP 3	REUSE EXISTING DUCTBANK AND RACEWAY, MULTI MODE, 1-10GIG, W/ 'LC' CONNECTORS
F800	DUCTBANK C	CBP 3	CBP 1	REUSE EXISTING DUCTBANK AND RACEWAY, MULTI MODE, 1-10GIG, W/ 'LC' CONNECTORS
F800	-	CBP 1	CBP 2	REUSE EXISTING DUCTBANK AND RACEWAY, MULTI MODE, 1-10GIG, W/ 'LC' CONNECTORS
F800	-	CPB 2	LAN (171)	REUSE EXISTING DUCTBANK AND RACEWAY, MULTI MODE, 1-10GIG, W/ 'LC' CONNECTORS

NOTES:
EACH RACEWAY SHALL BE PROVIDED WITH (2) NYLON PULL STRINGS.



No.	Date	Description
6	04/07/2025	ASI 006
16	02/25/2026	ASI 016 - RFI #87 - HVAC Instrumentation & Control

STATE OF TEXAS
MARK ANDREW SISLEN
97234
LICENSED PROFESSIONAL ENGINEER
02/25/2026

Pharr
CITY OF PHARR, TEXAS

GSA
GENERAL SERVICES ADMINISTRATION
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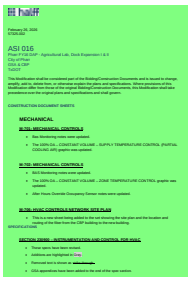
5000 WEST MILITARY, SUITE 100, McALLEN, TEXAS 78503
TEL (956) 664-0286 FAX (956) 664-0282 TBPE FIRM #F-312

PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

HVAC CONTROLS NETWORK SITE PLAN

16

SCALE: AS NOTED			SHEET	OF
DN:	CONT	SECT	JOB	HIGHWAY
CK DN:	921	02	424,425,433	PHARR INT. BRIDGE
DW:	DIST	COUNTY		SHEET NO.
CK DW:	PHR	HIDALGO		M-706
TR:				
CK TR:				



PHARR FY16-DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes control equipment for HVAC systems and components including but not limited to the following equipment.
   1. VRV/VRF Systems & Central Controllers
   2. DOAS rooftop units
   3. Exhaust Fans
   4. Lab Exhaust Fans & Variable Geometry Outlet Controllers
   5. Cold Storage Evaporators/Condensers

B. Related Sections include the following:

   1. Division 23 Section "Meters and Gages for HVAC Piping" for measuring equipment that relates to this Section.

C. The work contained in this project is an expansion of the existing controls system that is located in the existing buildings on the campus. The following GSA exhibits shall govern if there are any inconsistencies with this document and the following documents. All work shall comply with the following GSA standards and specifications:

   1. Exhibit A – Division 230900 Building Automation System GSA
      a. (Arkansas, Louisiana, New Mexico, Oklahoma, Texas)
   2. Exhibit B – GSA Data Normalization for Building Automation Systems
   3. Exhibit C – GSA Smart Building Implementation Guide
   4. Exhibit D – History Points to be Mapped into Region 7 AMS
   5. Exhibit E – N4 Graphic Format Bid Document
   6. Exhibit F – Building Technologies Technical Reference Guide – Version 3.0 – May 2024
   7. Exhibit G – R7 BAS Network CUI Riser Template

These documents are attached after the specification.

1.3 DEFINITIONS

A. DDC: Direct digital control.

B. I/O: Input/output.

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C. BACnet: A communication protocol specifically designed to allow building automation devices to communicate with each other, regardless of the manufacturer.

~~D. LonWorks: A control network technology platform for designing and implementing interoperable control devices and networks.~~

E. MS/TP: Master slave/token passing.

F. PC: Personal computer.

G. PID: Proportional plus integral plus derivative.

H. RTD: Resistance temperature detector.

1.4 SYSTEM PERFORMANCE

A. Comply with the following performance requirements:

1. Refer to GSA Specification 230900 “Building Automation System”

~~2. Graphic Display: Display graphic with minimum 20 dynamic points with current data within 10 seconds.~~
~~3. Graphic Refresh: Update graphic with minimum 20 dynamic points with current data within 8 seconds.~~
~~4. Object Command: Reaction time of less than two seconds between operator command of a binary object and device reaction.~~
~~5. Object Scan: Transmit change of state and change of analog values to control units or workstation within six seconds.~~
~~6. Alarm Response Time: Annunciate alarm at workstation within 45 seconds. Multiple workstations must receive alarms within five seconds of each other.~~
~~7. Program Execution Frequency: Run capability of applications as often as five seconds, but selected consistent with mechanical process under control.~~
~~8. Performance: Programmable controllers shall execute DDC PID control loops, and scan and update process values and outputs at least once per second.~~
9. Reporting Accuracy and Stability of Control: Report values and maintain measured variables within tolerances as follows:
   a. Space Temperature: Plus or minus 1 deg F.
   b. Ducted Air Temperature: Plus or minus 1 deg F.
   c. Outside Air Temperature: Plus or minus 2 deg F.
   ~~d. Dew Point Temperature: Plus or minus 3 deg F.~~
   ~~e. Temperature Differential: Plus or minus 0.25 deg F.~~
   f. Relative Humidity: Plus or minus 5 percent.
   ~~g. Airflow (Pressurized Spaces): Plus or minus 3 percent of full scale.~~
   h. Airflow (Measuring Stations): Plus or minus 5 percent of full scale.
   ~~i. Airflow (Terminal): Plus or minus 10 percent of full scale.~~
   ~~j. Air Pressure (Space): Plus or minus 0.01-inch wg.~~
   ~~k. Air Pressure (Ducts): Plus or minus 0.1-inch wg.~~

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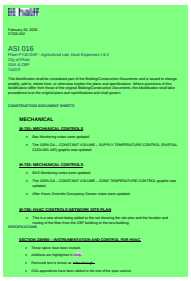
Bill Hailff
February 26, 2016
ASI 016
Phase 1F (ALEM) - Agricultural Lab, Dock Expansion I & II
City ofPharr
TCEQ # 2997
TxDOT CSJ #
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CONSTRUCTION DOCUMENT SHEETS:
MECHANICAL
M-700- MECHANICAL CONTROLS
New Monitoring notes were updated.
The SERN-GL - CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING ARP) graphic was updated.
M-702- MECHANICAL CONTROLS
BAS Monitoring notes were updated.
The SERN-GL - CONSTANT VOLUME - ZONE TEMPERATURE CONTROL graphic was updated.
After Hours Override Occupancy Sensor notes were updated.
M-704- HVAC CONTROLS NETWORK SITE PLAN
This is a new sheet listing added to the set showing the site plan and the location and routing of the fiber from the CMP building to the new building.
SPECIFICATIONS
SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC
Group specs have been revised.
Additions are highlighted in Grey.
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GSA appendices have been added to the end of the spec sections.

~~l. Carbon Monoxide: Plus or minus 5 percent of reading.~~
~~m. Carbon Dioxide: Plus or minus 50 ppm.~~
~~n. Electrical: Plus or minus 5 percent of reading.~~

1.5 SEQUENCE OF OPERATION

A. Refer to HVAC plans.

B. Refer to Specification Section 230993 “Sequence of Operations for HVAC Controls”

1.6 SUBMITTALS

A. Product Data: Include manufacturer's technical literature for each control device. Indicate dimensions, capacities, performance characteristics, electrical characteristics, finishes for materials, and installation and startup instructions for each type of product indicated.

1. DDC System Hardware: Bill of materials of equipment indicating quantity, manufacturer, and model number. Include technical data for interface equipment, control units, transducers/transmitters, sensors, actuators, valves, relays/switches, control panels, and operator interface equipment.
2. Control System Software: Include technical data for operating system software, operator interface, color graphics, and other third-party applications.
3. Controlled Systems: Instrumentation list with element name, type of device, manufacturer, model number, and product data. Include written description of sequence of operation including schematic diagram.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Bill of materials of equipment indicating quantity, manufacturer, and model number.
2. All bidding contractors shall conduct a site visit of the existing site to review and identify existing systems, system locations, and quantity of controllers. If new JACE 9000 is needed, provide in submittal.
3. Schematic flow diagrams showing air handlers, fans, pumps, coils, dampers, valves, and control devices.
4. Wiring Diagrams: Power, signal, and control wiring.
5. Details of control panel faces, including controls, instruments, and labeling.
6. Written description of sequence of operation.
7. Schedule of dampers including size, leakage, and flow characteristics.
8. Schedule of valves including flow characteristics.
9. DDC System Hardware:

a. Wiring diagrams for control units with termination numbers.
b. Schematic diagrams and floor plans for field sensors and control hardware.

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c. Schematic diagrams for control, communication, and power wiring, showing trunk data conductors and wiring between operator workstation and control unit locations.

10. Control System Software: List of color graphics indicating monitored systems, data (connected and calculated) point addresses, output schedule, and operator notations.
11. Controlled Systems:

a. Schematic diagrams of each controlled system with control points labeled and control elements graphically shown, with wiring.
b. Scaled drawings showing mounting, routing, and wiring of elements including bases and special construction.
c. Written description of sequence of operation including schematic diagram.
d. Points list.

C. Data Communications Protocol Certificates: Certify that each proposed DDC system component complies with ASHRAE 135.

~~D. Data Communications Protocol Certificates: Certify that each proposed DDC system component complies with LonWorks.~~

E. Software and Firmware Operational Documentation: Include the following:

1. Software operating and upgrade manuals.
2. Program Software Backup: On a magnetic media or compact disc, complete with data files.
3. Device address list.
4. Printout of software application and graphic screens.
5. Software license required by and installed for DDC workstations and control systems.

F. Software Upgrade Kit: For Owner to use in modifying software to suit future systems revisions or monitoring and control revisions.

G. Qualification Data: For Installer and manufacturer.

H. Field quality-control test reports as delineated in Part 3-Field Quality Control. THIS IS A SUBMITTAL THAT INCLUDES POINT BY POINT VERIFICATION OF THE ENTIRE DDC SYSTEM. IT IS REQUIRED.

I. Fiber interconnects:
1. Show documentation of underground fiber routing for connection from existing buildings to new buildings.
2. Underground Fiber Scope
a. Type of Fiber (Multi mode Only)
b. LC Connectors at ends (Fiber 1Gig -10Gig Capacity on Fiber)
c. Fiber strand count
d. Pull Boxes / Manhole locations
e. Fiber connection types

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f. Patch panel locations on campus
g. Manufacturer cut-sheets for all fiber components (cable, termination kits, switches, etc..)

J. Operation and Maintenance Data: For HVAC instrumentation and control system to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Maintenance instructions and lists of spare parts for each type of control device and compressed-air station.
2. Interconnection wiring diagrams with identified and numbered system components and devices.
3. Keyboard illustrations and step-by-step procedures indexed for each operator function.
4. Inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
5. Calibration records and list of set points.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Automatic control system manufacturer's authorized representative who is trained and approved for installation of system components required for this Project.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with ASHRAE 135 for DDC system components.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Factory-Mounted Components: Where control devices specified in this Section are indicated to be factory mounted on equipment, arrange for shipping of control devices to equipment manufacturer.

B. System Software: Refer to GSA Specification 23 09 00 “BUILDING AUTOMATION SYSTEM”.

1.9 COORDINATION

A. Coordinate location of thermostats, humidistats, and other exposed control sensors with plans and room details before installation.

B. Coordinate equipment with Division 26 Section "Intrusion Detection" to achieve compatibility with equipment that interfaces with that system and with building master clock.

C. Coordinate equipment with Division 26 Section "Access Control" to achieve compatibility with equipment that interfaces with that system.

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D. Coordinate equipment with Division 26 Section "Clock Systems" to achieve compatibility with equipment that interfaces with that system.

E. Coordinate equipment with Division 26 Section "PLC Electronic Detention Monitoring and Control Systems" to achieve compatibility with equipment that interfaces with that system.

F. Coordinate equipment with Division 26 Section "Network Lighting Controls" to achieve compatibility with equipment that interfaces with that system.

G. Coordinate equipment with Division 28 Section "Fire Detection and Alarm" to achieve compatibility with equipment that interfaces with that system.

H. Coordinate supply of conditioned electrical branch circuits for control units and operator workstation.

I. Coordinate equipment with Division 26 Section "Electrical Power Monitoring and Control" to achieve compatibility of communication interfaces.

J. Coordinate equipment with Division 26 Section "Panelboards" to achieve compatibility with starter coils and annunciation devices.

K. Coordinate equipment with Division 26 Section "Motor-Control Centers" to achieve compatibility with motor starters and annunciation devices.

L. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Cast-in-Place Concrete."

1.10 ELECTRICAL SERVICE

A. The HVAC Controls Contractor shall be responsible for the provision of line voltage electrical power to each individual HVAC control component that requires it. As each HVAC Control system has unique electrical requirements, it is unreasonable for the project documents to account for each scenario by designing for worst case. Rather, it is logical for the respective HVAC Controls Contractor to account for the specific power requirements of their individual system. As such, the HVAC Controls Contractor shall either self-perform this work using licensed electricians of their employ or contract with the project's electrical contractor to perform this work. In doing so, all electrical specifications from the project manual apply. All work shall be performed and completed to comply with and maintain all electrical warranties.

1.11 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Replacement Materials: One replacement diaphragm or relay mechanism for each unique valve actuator, controller, thermostat and positioning relay.

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2. Maintenance Materials: Two thermostat adjusting key(s).

1.12 SCHEDULE OF VALUES

1. By the very nature of HVAC Control systems, much of the true value to the Owner occurs with the final programming to make the system operational and commissioning to ensure compliance with the design sequences and provide operation efficiency. Unfortunately, to often, the DDC Contractor focuses on the equipment and infrastructure installation and does not prioritize the latter phases of a successful DDC system implementation. To help mitigate this, the following allocation of fee for the work shall apply:
   - Approved submittals 5%
   - Delivery of equipment to site 25%
   - Installation of equipment to/Hardware 40%
   - Software and System programming 15%
   - System commissioning, verification, close-out 15%

   These allocations reference the DDC price only. Any applicable withholding of retainage are separate and above.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 CONTROL SYSTEM

A. Manufacturers:
   1. Refer to GSA Specification 23 09 00 “BUILDING AUTOMATION SYSTEM”
   ~~2. SIEMENS Building Technologies, Inc.~~
   ~~3. Trane~~
   ~~4. Distech.~~

B. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, accessories, and software connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems. An operator workstation permits interface with the network via dynamic color graphics with each mechanical system, building floor plan, and control device depicted by point-and-click graphics.

C. Additional controllers shall be added to existing system for expansion as required for new equipment and points.

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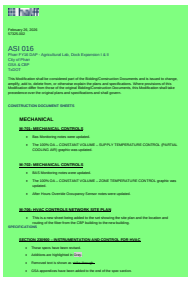
Bill Hall

February 26, 2016
ASI 016

ASI 016
Phase 1F CALEXP - Agricultural Lab, Dock Expansion / & II
City ofPharr
TCH. #: 2387
Date: 2/26/16

This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, clarify, add to, delete from, or otherwise explain the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.

CONSTRUCTION DOCUMENT SHEETS:

MECHANICAL

M-700, MECHANICAL CONTROLS

- Box Monitoring notes were updated.
- The SERN-GL - CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING' diffy graphic was updated.

M-702, MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The SERN-GL - CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- Alter Hours Override Occupancy Sensor notes were updated.

M-706, HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet listing added to the set showing the site plan and the location and routing of the fiber from the CMP building to the new building.

SPECIFICATIONS

SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

- Three spare have been revised.
- Additions are highlighted in Grey.
- Removed text is shown as ~~strikethrough~~.
- ODA appendices have been added to the end of the spec sections.

D. Control system shall include the following:

1. Building intrusion detection system specified in Division 28 Section "Intrusion Detection."
2. ~~Building clock control system specified in Division 27 Section "Clock Systems."~~
3. Building lighting control system specified in Division 28 Section "Network Lighting Controls."
4. Fire alarm system specified in Division 28 Section "Fire Detection and Alarm."

2.3 DDC EQUIPMENT

~~A. Operator Workstation: One PC-based microcomputer(s) with minimum configuration as follows:~~

~~1. Motherboard: With 8 integrated USB 2.0 ports, integrated Intel Pro 10/100 (Ethernet), integrated audio, bios, and hardware monitoring.~~
~~2. Processor: Intel Core 2 Duo 2.2GHz.~~
~~3. Random-Access Memory: 2GB.~~
~~4. Graphics: Video adapter, minimum 1280 x 1024 pixels, 256-MB video memory, with TV out.~~
~~5. Monitor: 19 inches , LCD color.~~
~~6. Keyboard: QWERTY, 105 keys in ergonomic shape.~~
~~7. Hard-Disk Drive: 80 GB.~~
~~8. CD-ROM Read/Write Drive: 48x24x48.~~
~~9. Mouse: Three button, optical.~~
~~10. Uninterruptible Power Supply: 2 kVa.~~
~~11. Operating System: Microsoft Windows XP Professional (or alternate as coordinated with owner) with high-speed Internet access.~~

~~a. ASHRAE 135 Compliance: Workstation shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.~~
~~b. LonWorks Compliance: Control units shall use LonTalk protocol and communicate using EIA/CEA 709.1 datalink/physical layer protocol.~~

~~12. Application Software:~~

~~a. I/O capability from operator station.~~
~~b. System security for each operator via software password and access levels.~~
~~c. Automatic system diagnostics; monitor system and report failures.~~
~~d. Database creation and support.~~
~~e. Automatic and manual database save and restore.~~
~~f. Dynamic color graphic displays with up to 20 screen displays at once.~~
~~g. Custom graphics generation and graphics library of HVAC equipment and symbols.~~
~~h. Alarm processing, messages, and reactions.~~
~~i. Trend logs retrievable in spreadsheets and database programs.~~
~~j. Alarm and event processing.~~

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k. Object and property status and control.
l. Automatic restart of field equipment on restoration of power.
m. Data collection, reports, and logs. Include standard reports for the following:

1) Current values of all objects.
2) Current alarm summary.
3) Disabled objects.
4) Alarm lockout objects.
5) Logs.

n. Custom report development.
o. Utility and weather reports.
p. Workstation application editors for controllers and schedules.
q. Maintenance management.

13. Custom Application Software:

a. English language oriented.
b. Full-screen character editor/programming environment.
c. Allow development of independently executing program modules with debugging/simulation capability.
d. Support conditional statements.
e. Support floating-point arithmetic with mathematic functions.
f. Contains predefined time variables.

B. Diagnostic Terminal Unit: Portable notebook-style, PC-based microcomputer terminal capable of accessing system data by connecting to system network with minimum configuration as follows:

1. System: With one integrated USB 2.0 port, integrated Intel Pro 10/100 (Ethernet), integrated audio, bios, and hardware monitoring.
2. Processor: Intel Core 2 Duo, 2.2GHz MHz.
3. Random-Access Memory: 2GB.
4. Graphics: Video adapter, minimum 1024 x 768 pixels, 256-MB video memory.
5. Monitor: 15 inches, LCD color.
6. Keyboard: QWERTY 105 keys in ergonomic shape.
7. Hard-Disk Drive: 80 GB.
8. CD-ROM Read/Write Drive: 48x24x48.
9. Pointing Device: Touch pad or other internal device.

C. Control Units: Modular, comprising processor board with programmable, nonvolatile, random-access memory; local operator access and display panel; integral interface equipment; and backup power source.

1. Units monitor or control each I/O point; process information; execute commands from other control units, devices, and operator stations; and download from or upload to operator workstation or diagnostic terminal unit.

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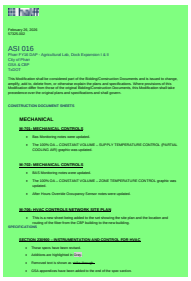
Bill Hall

February 26, 2026
ASI 016

ASI 016
Phase 1F CALEXP - Agricultural Lab, Dock Expansion I & II
City of Pharr
TCEQ # 23567
TDLR # 23567

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CONSTRUCTION DOCUMENT SHEETS:

MECHANICAL

M-700, MECHANICAL CONTROLS

- Box Monitoring notes were updated.
- The SERVICE - CONSTANT VOLUME - SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING ONLY) graphic was updated.

M-702, MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The SERVICE - CONSTANT VOLUME - ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706, HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet being added to the set showing the site plan and the location and routing of the fiber from the CWF building to the new building.

SPECIFICATIONS

SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

- Three spare have been revised.
- Additions are highlighted in Gray.
- Removed text is shown as ~~strikethrough~~.
- CO2 appendices have been added to the end of the spec sections.

2. Stand-alone mode control functions operate regardless of network status. Functions include the following:

    a. Global communications.
    b. Discrete/digital, analog, and pulse I/O.
    c. Monitoring, controlling, or addressing data points.
    d. Software applications, scheduling, and alarm processing.
    e. Testing and developing control algorithms without disrupting field hardware and controlled environment.

3. Standard Application Programs:

    a. Electric Control Programs: Demand limiting, duty cycling, automatic time scheduling, start/stop time optimization, night setback/setup, on-off control with differential sequencing, staggered start, antishort cycling, PID control, DDC with fine tuning, and trend logging.
    b. HVAC Control Programs: Optimal run time, supply-air reset, and enthalpy switchover.
    ~~c. Chiller Control Programs: Control function of condenser-water reset, chilled-water reset, and equipment sequencing.~~
    d. Programming Application Features: Include trend point; alarm processing and messaging; weekly, monthly, and annual scheduling; energy calculations; run-time totalization; and security access.
    e. Remote communications.
    f. Maintenance management.
    g. Units of Measure: Inch-pound and SI (metric).

4. Local operator interface provides for download from or upload to operator workstation or diagnostic terminal unit.
5. ASHRAE 135 Compliance: Control units shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.
~~6. LonWorks Compliance: Control units shall use LonTalk protocol and communicate using EIA/CEA 709.1 datalink/physical layer protocol.~~

D. Local Control Units: Modular, comprising processor board with electronically programmable, nonvolatile, read-only memory; and backup power source.

1. Units monitor or control each I/O point, process information, and download from or upload to operator workstation or diagnostic terminal unit.
2. Stand-alone mode control functions operate regardless of network status. Functions include the following:

    a. Global communications.
    b. Discrete/digital, analog, and pulse I/O.
    c. Monitoring, controlling, or addressing data points.

3. Local operator interface provides for download from or upload to operator workstation or diagnostic terminal unit.

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4. ASHRAE 135 Compliance: Control units shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.
5. ~~LonWorks Compliance: Control units shall use LonTalk protocol and communicate using EIA/CEA 709.1 datalink/physical layer protocol.~~

E. I/O Interface: Hardwired inputs and outputs may tie into system through controllers. Protect points so that shorting will cause no damage to controllers.

1. Binary Inputs: Allow monitoring of on-off signals without external power.
2. Pulse Accumulation Inputs: Accept up to 10 pulses per second.
3. Analog Inputs: Allow monitoring of low-voltage (0- to 10-V dc), current (4 to 20 mA), or resistance signals.
4. Binary Outputs: Provide on-off or pulsed low-voltage signal, selectable for normally open or normally closed operation with three-position (on-off-auto) override switches and status lights.
5. Analog Outputs: Provide modulating signal, either low voltage (0- to 10-V dc) or current (4 to 20 mA) with status lights, two-position (auto-manual) switch, and manually adjustable potentiometer.
6. ~~Tri-State Outputs: Provide two coordinated binary outputs for control of three-point, floating-type electronic actuators.~~
7. Universal I/Os: Provide software selectable binary or analog outputs.

F. Power Supplies: Transformers with Class 2 current-limiting type or overcurrent protection; limit connected loads to 80 percent of rated capacity. DC power supply shall match output current and voltage requirements and be full-wave rectifier type with the following:

1. Output ripple of 5.0 mV maximum peak to peak.
2. Combined 1 percent line and load regulation with 100-mic.sec. response time for 50 percent load changes.
3. Built-in overvoltage and overcurrent protection and be able to withstand 150 percent overload for at least 3 seconds without failure.

G. Power Line Filtering: Internal or external transient voltage and surge suppression for workstations or controllers with the following:

1. Minimum dielectric strength of 1000 V.
2. Maximum response time of 10 nanoseconds.
3. Minimum transverse-mode noise attenuation of 65 dB.
4. Minimum common-mode noise attenuation of 150 dB at 40 to 100 Hz.

2.4 UNITARY CONTROLLERS

A. Unitized, capable of stand-alone operation with sufficient memory to support its operating system, database, and programming requirements, and with sufficient I/O capacity for the application.

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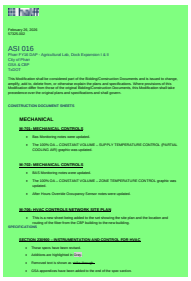
Bill Hall

February 26, 2026
8:54 AM

ASI 016
Phase 1F DA-DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
TCEQ # 2997
TDLR # 27,000

This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, clarify, add to, delete from, or otherwise revise the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.

CONSTRUCTION DOCUMENT SHEETS:

MECHANICAL

M-700, MECHANICAL CONTROLS

- Box Monitoring notes were updated.
- The VERA-DL - CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING ARE) graphic was updated.

M-702, MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The VERA-DL - CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706, HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet listing added to the set showing the site plan and the location and routing of the fiber from the CMP building to the new building.

SPECIFICATIONS

SECTION 230900 – INSTRUMENTATION AND CONTROL FOR HVAC

- Three spans have been revised.
- Additions are highlighted in Gray.
- Removed text is shown as ~~strikethrough~~.
- CSA appendices have been added to the end of the spec sections.

1. Configuration: Local keypad and display; diagnostic LEDs for power, communication, and processor; wiring termination to terminal strip or card connected with ribbon cable; memory with bios; and 72-hour battery backup.
2. Operating System: Manage I/O communication to allow distributed controllers to share real and virtual object information and allow central monitoring and alarms. Perform automatic system diagnostics; monitor system and report failures.
3. ASHRAE 135 Compliance: Communicate using read (execute and initiate) and write (execute and initiate) property services defined in ASHRAE 135. Reside on network using MS/TP datalink/physical layer protocol and have service communication port for connection to diagnostic terminal unit.
4. ~~LonWorks Compliance: Communicate using EIA/CEA 709.1 datalink/physical layer protocol using LonTalk protocol.~~
5. Enclosure: Dustproof rated for operation at 32 to 120 deg F.

2.5 ALARM PANELS

A. Unitized cabinet with suitable brackets for wall or floor mounting. Fabricate of 0.06-inch thick, furniture-quality steel or extruded-aluminum alloy, totally enclosed, with hinged doors and keyed lock and with manufacturer's standard shop-painted finish. Provide common keying for all panels.

B. Indicating light for each alarm point, single horn, acknowledge switch, and test switch, mounted on hinged cover.

1. Alarm Condition: Indicating light flashes and horn sounds.
2. Acknowledge Switch: Horn is silent and indicating light is steady.
3. Second Alarm: Horn sounds and indicating light is steady.
4. Alarm Condition Cleared: System is reset and indicating light is extinguished.
5. Contacts in alarm panel allow remote monitoring by independent alarm company.

2.6 ANALOG CONTROLLERS

A. Step Controllers: 6- or 10-stage type, with heavy-duty switching rated to handle loads and operated by electric motor.

B. Electric, Outdoor-Reset Controllers: Remote-bulb or bimetal rod-and-tube type, proportioning action with adjustable throttling range, adjustable set point, scale range minus 10 to plus 70 deg F, and single- or double-pole contacts.

C. Electronic Controllers: Wheatstone-bridge-amplifier type, in steel enclosure with provision for remote-resistance readjustment. Identify adjustments on controllers, including proportional band and authority.

1. Single controllers can be integral with control motor if provided with accessible control readjustment potentiometer.

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D. Fan-Speed Controllers: Solid-state model providing field-adjustable proportional control of motor speed from maximum to minimum of 55 percent and on-off action below minimum fan speed. Controller shall briefly apply full voltage, when motor is started, to rapidly bring motor up to minimum speed. Equip with filtered circuit to eliminate radio interference.

2.7 TIME CLOCKS

A. Solid-state, programmable time control with 8 separate programs each with up to 100 on-off operations; 1-second resolution; lithium battery backup; keyboard interface and manual override; individual on-off-auto switches for each program; 365-day calendar with 20 programmable holidays; choice of fail-safe operation for each program; system fault alarm; and communications package allowing networking of time controls and programming from PC.

2.8 ELECTRONIC SENSORS

A. Description: Vibration and corrosion resistant; for wall, ~~immersion~~, or duct mounting as required.

1. Accuracy: Plus or minus 0.5 deg F at calibration point.
2. Wire: Twisted, shielded-pair cable.
3. Insertion Elements in Ducts: Single point, 8 inches long; use where not affected by temperature stratification or where ducts are smaller than 9 sq. ft.
4. Averaging Elements in Ducts: As required 36 inches or 72 inches long, flexible; use where prone to temperature stratification or where ducts are larger than 10 sq. ft.
5. ~~Insertion Elements for Liquids: Brass or stainless-steel socket with minimum insertion length of 2-1/2 inches.~~
6. Room Sensor Cover Construction: Manufacturer's standard locking covers.
    a. Set-Point Adjustment: Exposed.
    b. Set-Point Indication: Exposed.
    c. Thermometer: Concealed.
    d. Color: Manufacturer's standard.
7. Outside-Air Sensors: Watertight inlet fitting, shielded from direct sunlight.
8. Room Security Sensors: Stainless-steel cover plate with insulated back and security screws.

B. RTDs and Transmitters:

1. Accuracy: Plus or minus 0.2 percent at calibration point.
2. Wire: Twisted, shielded-pair cable.
3. Insertion Elements in Ducts: Single point, 8 inches long; use where not affected by temperature stratification or where ducts are smaller than 9 sq. ft..
4. Averaging Elements in Ducts: 24 feet long, flexible; use where prone to temperature stratification or where ducts are larger than 9 sq. ft.; length as required.

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~~5. Insertion Elements for Liquids: Brass socket with minimum insertion length of 2-1/2 inches.~~

6. Room Sensor Cover Construction: Manufacturer's standard locking covers.

    a. Set-Point Adjustment: Exposed.
    b. Set-Point Indication: Exposed.
    c. Thermometer: Concealed.
    d. Color: Manufacturer's standard.

7. Outside-Air Sensors: Watertight inlet fitting, shielded from direct sunlight.
8. Room Security Sensors: Stainless-steel cover plate with insulated back and security screws.

C. Humidity Sensors: Bulk polymer sensor element.

1. Accuracy: 2 percent full range with linear output.
2. Room Sensor Range: 20 to 80 percent relative humidity.
3. Room Sensor Cover Construction: Manufacturer's standard locking covers.

    a. Set-Point Adjustment: Exposed.
    b. Set-Point Indication: Exposed.
    c. Thermometer: Concealed.
    d. Color: manufacturer's standard.

4. Duct Sensor: 20 to 80 percent relative humidity range with element guard and mounting plate.
5. Outside-Air Sensor: 20 to 80 percent relative humidity range with mounting enclosure, suitable for operation at outdoor temperatures of 32 to 120 deg FDuct and Sensors: With element guard and mounting plate, range of 0 to 100 percent relative humidity.

D. Pressure Transmitters/Transducers:

1. Static-Pressure Transmitter: Nondirectional sensor with suitable range for expected input, and temperature compensated.

    a. Accuracy: 1 percent of full scale with repeatability of 0.5 percent.
    b. Output: 4 to 20 mA.
    c. Building Static-Pressure Range: 0- to 0.25-inch wg.
    d. Duct Static-Pressure Range: 0- to 5-inch wg.

~~2. Water Pressure Transducers: Stainless-steel diaphragm construction, suitable for service; minimum 150-psig operating pressure; linear output 4 to 20 mA.~~

~~3. Water Differential-Pressure Transducers: Stainless-steel diaphragm construction, suitable for service; minimum 150-psig operating pressure and tested to 300-psig; linear output 4 to 20 mA.~~

4. Differential-Pressure Switch (Air or Water): Snap acting, with pilot-duty rating and with suitable scale range and differential.

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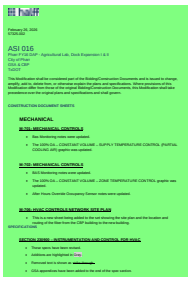
Bill Hall

February 26, 2016
ASI 016

ASI 016
Phase 1F (ALSAP - Agricultural Lab, Dock Expansion) I & II
City of Pharr
TCEQ # 2997
TPWD # 0

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- Box Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING' diffs graphic was updated.

M-702, MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The 100% OA – CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706, HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet listing added to the set showing the site plan and the location and routing of the fiber from the CWF building to the new building.

SPECIFICATIONS

SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

- Temp/ sensors have been revised.
- Additions are highlighted in Grey.
- Removed item is shown as ~~strikethrough~~.
- OSA apparatus have been added to the end of the spec sections.

5. Pressure Transmitters: Direct acting for gas, liquid, or steam service; range suitable for system; linear output 4 to 20 mA.

E. Room sensor accessories include the following:

1. Insulating Bases: For sensors located on exterior walls.
2. Guards: Locking; heavy-duty, transparent plastic; mounted on separate base.
3. Adjusting Key: As required for calibration and cover screws.

2.9 STATUS SENSORS

A. Status Inputs for Fans: Differential-pressure switch with pilot-duty rating and with adjustable range of 0- to 5-inch wg.

B. Status Inputs for Pumps: Differential-pressure switch with pilot-duty rating and with adjustable pressure-differential range of 8 to 60 psig, piped across pump.

C. Status Inputs for Electric Motors: Comply with ISA 50.00.01, current-sensing fixed- or split-core transformers with self-powered transmitter, adjustable and suitable for 175 percent of rated motor current.

D. Voltage Transmitter (100- to 600-V ac): Comply with ISA 50.00.01, single-loop, self-powered transmitter, adjustable, with suitable range and 1 percent full-scale accuracy.

E. Power Monitor: 3-phase type with disconnect/shorting switch assembly, listed voltage and current transformers, with pulse kilowatt hour output and 4- to 20-mA kW output, with maximum 2 percent error at 1.0 power factor and 2.5 percent error at 0.5 power factor.

F. Current Switches: Self-powered, solid-state with adjustable trip current, selected to match current and system output requirements.

G. Electronic Valve/Damper Position Indicator: Visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.

H. Water-Flow Switches: Bellows-actuated mercury or snap-acting type with pilot-duty rating, stainless-steel or bronze paddle, with appropriate range and differential adjustment, in NEMA 250, Type 1 enclosure.

2.10 GAS DETECTION EQUIPMENT

~~A. Carbon Monoxide Detectors: Single or multichannel, dual-level detectors using solid-state plug-in sensors with a 3-year minimum life; suitable over a temperature range of 32 to 104 deg F; with 2 factory-calibrated alarm levels at 50 and 100 ppm.~~

~~B. Carbon Dioxide Sensor and Transmitter: Single detectors using solid-state infrared sensors; suitable over a temperature range of 23 to 130 deg F and calibrated for 0 to 2 percent, with continuous or averaged reading, 4- to 20-mA output.~~

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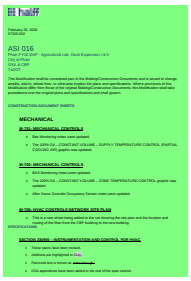
Bill Hall
February 26, 2016
ASI 016
Phase 1F DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
TCEQ # 2997
TxDOT #
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CSI appendices have been added to the end of the spec sections.

C. Occupancy Sensor: Passive infrared, with time delay, daylight sensor lockout, sensitivity control, and 180-degree field of view with vertical sensing adjustment; for flush mounting.

2.11 FLOW MEASURING STATIONS

A. Duct Airflow Station: Combination of air straightener and multiport, self-averaging pitot tube station.

1. Casing: Galvanized-steel frame.
2. Flow Straightener: Aluminum honeycomb, 3/4-inch parallel cell, 3 inches deep.
3. Sensing Manifold: Copper manifold with bullet-nosed static pressure sensors positioned on equal area basis.

2.12 THERMOSTATS

A. Combination Thermostat and Fan Switches: Line-voltage thermostat with push-button or lever-operated fan switch.

1. Label switches "FAN ON-OFF".
2. Mount on single electric switch box.

B. Electric, solid-state, microcomputer-based room thermostat with remote sensor.

1. Automatic switching from heating to cooling.
2. Preferential rate control to minimize overshoot and deviation from set point.
3. Set up for four separate temperatures per day.
4. Instant override of set point for continuous or timed period from 1 hour to 31 days.
5. Short-cycle protection.
6. Programming based on every day of week.
7. Selection features include degree F or degree C display, 12- or 24-hour clock, keyboard disable, remote sensor, and fan on-auto.
8. Battery replacement without program loss.
9. Thermostat display features include the following:

    a. Time of day.
    b. Actual room temperature.
    c. Programmed temperature.
    d. Programmed time.
    e. Duration of timed override.
    f. Day of week.
    g. System mode indications include "heating," "off," "fan auto," and "fan on."

C. Fire-Protection Thermostats: Listed and labeled by an NRTL acceptable to authorities having jurisdiction; with fixed or adjustable settings to operate at not less than 75 deg F above normal maximum operating temperature, and the following:

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1. Reset: Manual.

D. Immersion Thermostat: Remote-bulb or bimetal rod-and-tube type, proportioning action with adjustable throttling range and adjustable set point.

E. Airstream Thermostats: Two-pipe, fully proportional, single-temperature type; with adjustable set point in middle of range, adjustable throttling range, plug-in test fitting or permanent pressure gage, remote bulb, bimetal rod and tube, or averaging element.

F. Electric, Low-Limit Duct Thermostat: Snap-acting, single-pole, single-throw, manual-reset switch that trips if temperature sensed across any 12 inches of bulb length is equal to or below set point.

1. Bulb Length: Minimum 20 feet.
2. Quantity: One thermostat for every 20 sq. ft. of coil surface.

G. Electric, High-Limit Duct Thermostat: Snap-acting, single-pole, single-throw, manual-reset switch that trips if temperature sensed across any 12 inches of bulb length is equal to or above set point.

1. Bulb Length: Minimum 20 feet.
2. Quantity: One thermostat for every 20 sq. ft. of coil surface.

2.13 HUMIDISTATS

A. Duct-Mounting Humidistats: Electric insertion, 2-position type with adjustable, 2 percent throttling range, 20 to 80 percent operating range, and single- or double-pole contacts.

2.14 ACTUATORS

A. Electric Motors: Size to operate with sufficient reserve power to provide smooth modulating action or two-position action.

1. Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."
2. Permanent Split-Capacitor or Shaded-Pole Type: Gear trains completely oil immersed and sealed. Equip spring-return motors with integral spiral-spring mechanism in housings designed for easy removal for service or adjustment of limit switches, auxiliary switches, or feedback potentiometer.
3. Nonspring-Return Motors for Valves Larger Than NPS 2-1/2: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.
4. Spring-Return Motors for Valves Larger Than NPS 2-1/2: Size for running and breakaway torque of 150 in. x lbf.
5. Nonspring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running torque of 150 in. x lbf and breakaway torque of 300 in. x lbf.

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6. Spring-Return Motors for Dampers Larger Than 25 Sq. Ft.: Size for running and breakaway torque of 150 in. x lbf.

B. Electronic Actuators: Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.

1. Manufacturers:

a. Belimo Aircontrols (USA), Inc.

2. Valves: Size for torque required for valve close off at maximum pump differential pressure.
3. Dampers: Size for running torque calculated as follows:

a. Parallel-Blade Damper with Edge Seals: 7 inch-lb/sq. ft. of damper.
b. Opposed-Blade Damper with Edge Seals: 5 inch-lb/sq. ft. of damper.
c. Parallel-Blade Damper without Edge Seals: 4 inch-lb/sq. ft of damper.
d. Opposed-Blade Damper without Edge Seals: 3 inch-lb/sq. ft. of damper.
e. Dampers with 2- to 3-Inch wg of Pressure Drop or Face Velocities of 1000 to 2500 fpm: Increase running torque by 1.5.
f. Dampers with 3- to 4-Inch wg of Pressure Drop or Face Velocities of 2500 to 3000 fpm: Increase running torque by 2.0.

4. Coupling: V-bolt and V-shaped, toothed cradle.
5. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
6. Fail-Safe Operation: Mechanical, spring-return mechanism. Provide external, manual gear release on nonspring-return actuators.
7. Power Requirements (Two-Position Spring Return): 24-V ac.
8. Power Requirements (Modulating): Maximum 10 VA at 24-V ac or 8 W at 24-V dc.
9. Proportional Signal: 2- to 10-V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
10. Temperature Rating: 40 to 104 deg F.
11. Temperature Rating (Smoke Dampers): Minus 22 to plus 250 deg F.
12. Run Time: 30 seconds;

2.15 CONTROL VALVES

A. Control Valves: Factory fabricated, of type, body material, and pressure class based on maximum pressure and temperature rating of piping system, unless otherwise indicated.

B. Hydronic system globe valves shall have the following characteristics:

1. NPS 2 and Smaller: Class 125 bronze body, bronze trim, rising stem, renewable composition disc, and screwed ends with backseating capacity repackable under pressure.

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2. NPS 2-1/2 and Larger: Class 125 iron body, bronze trim, rising stem, plug-type disc, flanged ends, and renewable seat and disc.
3. Internal Construction: Replaceable plugs and stainless-steel or brass seats.

    a. Single-Seated Valves: Cage trim provides seating and guiding surfaces for plug on top and bottom.
    b. Double-Seated Valves: Balanced plug; cage trim provides seating and guiding surfaces for plugs on top and bottom.

4. Sizing: 5-psig maximum pressure drop at design flow rate or the following:

    a. Two Position: Line size.
    b. Two-Way Modulating: Either the value specified above or twice the load pressure drop, whichever is more.
    c. Three-Way Modulating: Twice the load pressure drop, but not more than value specified above.

5. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics.
6. Close-Off (Differential) Pressure Rating: Combination of actuator and trim shall provide minimum close-off pressure rating of 150 percent of total system (pump) head for two-way valves and 100 percent of pressure differential across valve or 100 percent of total system (pump) head.

C. Butterfly Valves: 200-psig maximum pressure differential, ASTM A 126 cast-iron or ASTM A 536 ductile-iron body and bonnet, extended neck, stainless-steel stem, field-replaceable EPDM or Buna N sleeve and stem seals.

1. Body Style: Lug.
2. Disc Type: Stainless steel.
3. Sizing: 1-psig maximum pressure drop at design flow rate.

D. Pressure Independent Characterized control Valves: Brass body, brass trim, two ports, replaceable plugs and seats, and union and threaded ends.

1. Rating: 600 psi at 212 of operating conditions.
2. Sizing: 5-50 psi operating range to close against 200 psi.
3. Flow Characteristics: Two-way valves shall have equal percentage characteristics.

2.16 DAMPERS

A. Dampers: AMCA-rated, parallel or opposed-blade design; 0.108-inch- minimum thick, galvanized-steel or 0.125-inch- minimum thick, extruded-aluminum frames with holes for duct mounting; damper blades shall not be less than 0.064-inch- thick galvanized steel with maximum blade width of 8 inches and length of 48 inches.

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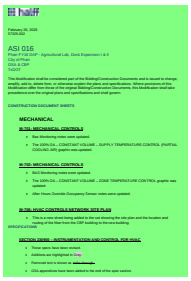
Bill Hall

February 26, 2016
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ASI 016
Phase: P1A (GSA) - Agricultural Lab, Dock Expansion I & II
City of Pharr
TCEA: 0.2567
Project #: 0

This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, clarify, add to, delete from, or otherwise revise the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.

CONSTRUCTION DOCUMENT SHEETS:

MECHANICAL

M-700, MECHANICAL CONTROLS

- Sec Monitoring notes were updated.
- The 100% OA - CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING' with) graphic was updated.

M-702, MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The 100% OA - CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706, HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet being added to the set showing the site plan and the location and routing of the fiber from the CMP building to the new building.

SPECIFICATIONS

SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

- Three specs have been revised.
- Additions are highlighted in Grey.
- Removed text is shown as ~~strikethrough~~.
- GSA appendices have been added to the end of the spec sections.

1. Secure blades to 1/2-inch- diameter, zinc-plated axles using zinc-plated hardware, with oil-impregnated sintered bronze blade bearings, blade-linkage hardware of zinc-plated steel and brass, ends sealed against spring-stainless-steel blade bearings, and thrust bearings at each end of every blade.
2. Operating Temperature Range: From minus 40 to plus 200 deg F.
3. Edge Seals, Standard Pressure Applications: Closed-cell neoprene.
4. Edge Seals, Low-Leakage Applications: Use inflatable blade edging or replaceable rubber blade seals and spring-loaded stainless-steel side seals, rated for leakage at less than 10 cfm per sq. ft. of damper area, at differential pressure of 4-inch wg when damper is held by torque of 50 in. x lbf; when tested according to AMCA 500D.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that conditioned power supply is available to control units and operator workstation.

3.2 INSTALLATION

A. Refer to GSA Exhibits A through F for additional information.

B. All controls personnel will require a “PIV” card from GSA. All controls personnel will require access to integrate the BAS system. All staff working on system shall be Niagara certified with 3-5 years experience.

C. Install software in control units ~~and operator workstation(s)~~. Using existing software on-site: Implement all features of programs to specified requirements and as appropriate to sequence of operation.

D. Connect and configure equipment and software to achieve sequence of operation specified.

E. Verify location of thermostats, humidistats, and other exposed control sensors with Drawings and room details before installation. Install devices 48 inches above the floor.

1. Install averaging elements in ducts and plenums in crossing or zigzag pattern.

F. Install guards on thermostats in the following locations:

1. Entrances.
2. Public areas.
3. Where indicated.

G. Install automatic dampers according to Division 23 Section "Air Duct Accessories."

H. Install damper motors on outside of duct in warm areas, not in locations exposed to outdoor temperatures.

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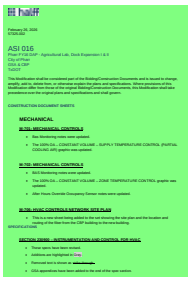
Bill Hall

February 26, 2016
ASI 016

ASI 016
Phase 1 of 1 DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
TCEQ # 2997
TDA # 15-16C

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CONSTRUCTION DOCUMENT SHEETS:

MECHANICAL

M-700, MECHANICAL CONTROLS

- Bas Monitoring notes were updated.
- The 100% OA - CONSTANT VOLUME + SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING' diffy graphic was updated.

M-702, MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The 100% OA - CONSTANT VOLUME - ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706, HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet being added to the set showing the site plan and the location and routing of the fiber from the CMP building to the new building.

SPECIFICATIONS

SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

- Temp sensors have been revised.
- Additions are highlighted in Grey.
- Removed text is shown as ~~strikethrough~~.
- CO2 apparatus have been added to the end of the spec sections.

I. Install labels and nameplates to identify control components according to Division 23 Section "Mechanical Identification."

~~J. Install hydronic instrument wells, valves, and other accessories according to Division 15 Section "Hydronic Piping."~~

K. Install duct volume-control dampers according to Division 23 Sections specifying air ducts.

3.3 ELECTRICAL WIRING AND CONNECTION INSTALLATION

A. Install raceways, boxes, and cabinets according to Division 26 Section "Raceway and Boxes for Electrical Systems."

B. Install building wire and cable according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

C. Install signal and communication cable:

1. Conceal cable, except in mechanical rooms and areas where other conduit and piping are exposed.
2. Install exposed cable in raceway.
3. Install concealed cable in raceway.
4. Bundle and harness multiconductor instrument cable in place of single cables where several cables follow a common path.
5. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.
6. Number-code or color-code conductors for future identification and service of control system, except local individual room control cables.
7. Install wire and cable with sufficient slack and flexible connections to allow for vibration of piping and equipment.

D. Connect manual-reset limit controls independent of manual-control switch positions. Automatic duct heater resets may be connected in interlock circuit of power controllers.

E. Connect hand-off-auto selector switches to override automatic interlock controls when switch is in hand position.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Perform the following field tests and inspections and prepare test reports:

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove and replace malfunctioning units and retest.

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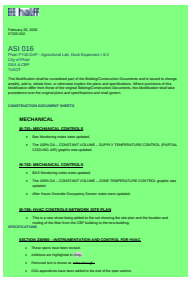
Bill Hall
February 26, 2026
ASI 016
Phase 1F (16,000) - Agricultural Lab, Dock Expansion I & II
City of Pharr
TCEQ # 23567
Pharr, Texas
This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, clarify, add to, delete from, or otherwise revise the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.
CONSTRUCTION DOCUMENT SHEETS:
MECHANICAL
M-700, MECHANICAL CONTROLS
See Monitoring notes were updated.
The SERN-GL - CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING ONLY) graphic was updated.
M-702, MECHANICAL CONTROLS
BAS Monitoring notes were updated.
The SERN-GL - CONSTANT VOLUME - ZONE TEMPERATURE CONTROL graphic was updated.
Alter Hours Override Occupancy Sensor notes were updated.
M-706, HVAC CONTROLS NETWORK SITE PLAN
This is a new sheet listing added to the set showing the site plan and the location and routing of the fiber from the CMT building to the new building.
SPECIFICATIONS
SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC
Three items have been revised.
Additions are highlighted in Gray.
Removed text is shown as strikethrough.
OSA appendices have been added to the end of the spec sections.

2. Test and adjust controls and safeties.
3. Test calibration of electronic controllers by disconnecting input sensors and stimulating operation with compatible signal generator.
4. Test each point through its full operating range to verify that safety and operating control set points are as required.
5. Test each control loop to verify stable mode of operation and compliance with sequence of operation. Adjust PID actions.
6. Test each system for compliance with sequence of operation.
7. Test software and hardware interlocks.

C. DDC Verification:

1. Verify that instruments are installed before calibration, testing, and loop or leak checks.
2. Check instruments for proper location and accessibility.
3. Check instrument installation for direction of flow, elevation, orientation, insertion depth, and other applicable considerations.
4. Check instrument tubing for proper fittings, slope, material, and support.
5. Check flow instruments. Inspect tag number and line and bore size, and verify that inlet side is identified and that meters are installed correctly.
6. Check pressure instruments, piping slope, installation of valve manifold, and self-contained pressure regulators.
7. Check temperature instruments and material and length of sensing elements.
8. Check control valves. Verify that they are in correct direction.
9. Check DDC system as follows:

    a. Verify that DDC controller power supply is from emergency power supply, if applicable.
    b. Verify that wires at control panels are tagged with their service designation and approved tagging system.
    c. Verify that spare I/O capacity has been provided.
    d. Verify that DDC controllers are protected from power supply surges.

D. Replace damaged or malfunctioning controls and equipment and repeat testing procedures.

3.5 ADJUSTING

A. Calibrating and Adjusting:

1. Calibrate instruments.
2. Make three-point calibration test for both linearity and accuracy for each analog instrument.
3. Calibrate equipment and procedures using manufacturer's written recommendations and instruction manuals. Use test equipment with accuracy at least double that of instrument being calibrated.
4. Control System Inputs and Outputs:

    a. Check analog inputs at 0, 50, and 100 percent of span.

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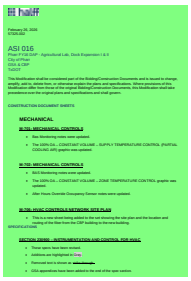
Bill Hall

February 26, 2016
ASI 016

ASI 016
Phase 1F CALEXP - Agricultural Lab, Dock Expansion I & II
City of Pharr
TCEQ # 2387
TxDOT CSJ #

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CONSTRUCTION DOCUMENT SHEETS:

MECHANICAL

M-700, MECHANICAL CONTROLS

- Sec Monitoring notes were updated.
- The 100% OA - CONSTANT VOLUME + SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING' diffs graphic was updated.

M-702, MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The 100% OA - CONSTANT VOLUME - ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706, HVAC CONTROLS NETWORK SITE PLAN

- The bi-wire wired listing added to the set showing the ride plan and the location and routing of the fiber from the CMP building to the new building.

SPECIFICATIONS

SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

- Three specs have been revised.
- Additions are highlighted in Gray.
- Removed text is shown as ~~strikethrough~~.
- CSA appendices have been added to the end of the spec sections.

b. Check analog outputs using milliampere meter at 0, 50, and 100 percent output.
c. Check digital inputs using jumper wire.
d. Check digital outputs using ohmmeter to test for contact making or breaking.
e. Check resistance temperature inputs at 0, 50, and 100 percent of span using a precision-resistant source.

5. Flow:

a. Set differential pressure flow transmitters for 0 and 100 percent values with 3-point calibration accomplished at 50, 90, and 100 percent of span.
b. Manually operate flow switches to verify that they make or break contact.

6. Pressure:

a. Calibrate pressure transmitters at 0, 50, and 100 percent of span.
b. Calibrate pressure switches to make or break contacts, with adjustable differential set at minimum.

7. Temperature:

a. Calibrate resistance temperature transmitters at 0, 50, and 100 percent of span using a precision-resistance source.
b. Calibrate temperature switches to make or break contacts.

8. Stroke and adjust control valves and dampers without positioners, following the manufacturer's recommended procedure, so that valve or damper is 100 percent open and closed.
9. Stroke and adjust control valves and dampers with positioners, following manufacturer's recommended procedure, so that valve and damper is 0, 50, and 100 percent closed.
10. Provide diagnostic and test instruments for calibration and adjustment of system.
11. Provide written description of procedures and equipment for calibrating each type of instrument. Submit procedures review and approval before initiating startup procedures.

B. Adjust initial temperature and humidity set points.

C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to three visits to Project during other than normal occupancy hours for this purpose.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain HVAC instrumentation and controls. Refer to Division 01 Section "Demonstration and Training."

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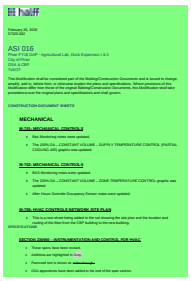
Bil Huff

February 28, 2020
8:04 AM

ASI 016

Phase: P1A (SUP) - Agricultural Lab, Dock Expansion I & II

City: HPPhar

FOR: E-CRP

Date: 2/28/20

This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, clarify, add to, delete from, or otherwise revise the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.

CONSTRUCTION DOCUMENT SHEETS:

MECHANICAL

M-700, MECHANICAL CONTROLS

- Bas Monitoring notes were updated.
- The 100% DX – CONSTANT VOLUME – SUPPLY TEMPERATURE CONTROL (PARTIAL COOLING' with) graphic was updated.

M-702, MECHANICAL CONTROLS

- BAS Monitoring notes were updated.
- The 100% DX – CONSTANT VOLUME – ZONE TEMPERATURE CONTROL graphic was updated.
- After Hours Override Occupancy Sensor notes were updated.

M-706, HVAC CONTROLS NETWORK SITE PLAN

- This is a new sheet being added to the set showing the site plan and the location and routing of the fiber from the CRP building to the new building.

SPECIFICATIONS

SECTION 230900 – INSTRUMENTATION AND CONTROL FOR HVAC

- Three specs have been revised.
- Additions are highlighted in Grey.
- Removed text is shown as ~~strikethrough~~.
- GSA appendices have been added to the end of the spec sections.

B. Allocate 8 hours to demonstrate proper operation of any and all control sequences to the design engineer. Should the system be at a level of performance that requires additional time for verification of proper operation by the design engineer, this time shall be compensated to the engineer by the contractor at a rate of $200/hour.

3.7 REMOTE USER ACCESS

A. The following shall be only through approval by GSA Region 7 BAS Team.

B. Controls contractor shall provide read-only access to the project HVAC Control System. Access shall be available to the HVAC design engineer and to the Commissioning Agent, where applicable. It shall be either software housed on a computer located in the Engineer's (or Cx) office or internet accessible at industry standard speeds and shall be available for a minium of one year form Substantial Completion of the project.

END OF SECTION 230900

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SECTION 230900 - BUILDING AUTOMATION SYSTEM

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions, and Division 1, Division [23] [28], and Division [26] [27] [28] Specifications apply to this Section.

1.02 SUMMARY

A. The Contractor shall provide and install a system which shall provide Direct Digital Control, Energy Management and Building Automation Functions for the Heating, Ventilating and Air Conditioning, (HVAC) systems, including interfacing with other microprocessor-based building subsystems, such as sub meters on gas, water, electric, and lighting automation, as shown on the drawings and as specified. The Contractor shall furnish and install the required hardware, wiring, computing equipment and software as defined in this specification and as required to cause these systems to operate in accordance with the specified Sequence of Operation.

B. The BAS (Building Automation System) is an extension of the GSA Intranet, a U.S. Government Information Technology Network with Security Requirements mentioned within this specification.

C. This specification shall be accompanied by the GSA Region 7 Graphic Format Bid Document document and GSA Object Point Naming & Tagging Standard document that shall be strictly followed. These document(s) are complimentary by the GSA to remove risk or costly rework by the GSA acceptance of the BAS.

D. The system installed shall be seamlessly integrated to all building automation and metering systems regardless of system subtype. i.e. HVAC, lighting, metering, and security devices should easily coexist on the same network channel without the need for gateways.

E. The system shall operate stand alone at the field network level, building network level, and building supervisor network level. The system shall be networked on a WAN to a remote GSA server; however, in the event of a WAN network failure, or server failure, such condition shall not affect the ability to operate the building from stand alone condition on a non-volatile flash memory platform described herein. The field level unitary controllers shall fail in an “occupied / operational state” until network connection resumes.

F. GSA requires a **“Fully Open Building Automation System” as defined from Section 1.04 of this document.** The GSA Region 7 standard networking protocol for new construction shall be “BacNet”. See detailed information in Paragraph 1.02.**G.** (immediately below). for BACnet protocol. At no time shall two or more protocols be installed at the same building, or site without the prior-approval of the GSA regional Smart Buildings Program Specialist. All BacNet systems shall be seamlessly integratable / fully compatible and directly connected with existing Niagara systems without the use of gateways or point servers. All systems shall fit within the existing GSA risk management framework / cybersecurity.

G. The BAS shall use native BACnet MS/TP, BACnet TCP/IP architecture and be in strict accordance with ASHRAE Standard 135. All controllers shall be BACnet Testing Labs (BTL) Certified. All BACnet points shall only use native BACnet BTL Certified standardized PICS (Protocol Implementation Conformance Statement) and BIBBS (BACNET Interoperability Building Blocks). 100% of the physical and virtual points shall be programmed as BACnet Objects and Events without any exceptions.

H. 100% of Unitary Controllers for DDC HVAC Automation, Lighting Control, and Metering shall be fully programmable from a Niagara Framework engineering tool. Third party engineering tools and drivers are prohibited without the prior-approval of the GSA regional Smart Buildings Program Specialist. Niagara Framework Engineering tools shall be embedded on the site JACEs. Niagara Framework Engineering tools and required supporting software shall be installed by the installing contractor on dedicated building engineering laptops for use during site integration and long-term/life-cycle maintenance of the system.

I. Use of wireless technology used in a GSA project or a GSA facility requires written consent from GSA regional Smart Buildings Program Specialist and approval from the GSA OCIO IT Department.

J. All physical and virtual points contained within building automation I/O controllers shall be exposed for use with all other networked control devices. All points shall be discoverable, configurable, writable, and readable across building automation communications bus for 100% Fully Open BAS integrations, two-way communication, and modification/expansion to the system architecture.

K. The Niagara Framework system shall communicate with another location as chosen by the Owner, via the Internet or an intranet via IPv4 addressable schema. The BAS shall employ WEB based thin-client technology for efficient communication with remote sites. Operator interface devices shall utilize a standard WEB browser utilizing the latest GSA IT approved software environment to communicate with the system server.

L. The BAS JACE front end shall be capable of expansion to encompass the entire facility. The intent of this project is to provide all hardware and software required to accommodate the future expansion of the BAS by multiple vendors.

JACEs shall be configured and integrated to the GSA Wide Area Network on GSA managed IPv4 switches with the use of IPv4 addresses provided by GSA IT Office of the Chief Information Officer.

At the end of the construction warranty period, 100% of the DDC unitary field level controllers shall have 20% spare capacity for growth and expansion and DDC Niagara supervisory controllers shall have 30% spare capacity for growth and expansion. Contractor shall provide reporting to GSA.

The JACE front end shall employ FIPS 140-2 encryption licensing on 100% of the JACEs. FIPS 140-2, level 1 conformance licenses which activate encryption are available from most Niagara vendors. It is incumbent of the controls contractor to choose a vendor that supplies FIPS 140-2 licenses for the Niagara JACEs.

M. Any contractor provided Ethernet device connected to the GSA ENT network must be approved for use through the GSA IT Security Remediation process. Location of provided devices must be coordinated with the GSA property management or GSA BAS Group Program Specialist.

N. The following exhibits will accompany this contract specification as engineering principles examples and requirements to be adhered to for regional consistency

1. GSA Region 7 Graphic Format Bid Document
2. GSA Object Point Naming & Tagging Standard v2.5
3. BAS Network Riser Template
4. GSA Region 7 Building point histories for Advanced Metering
5. GSA Smart Buildings Implementation Guide V1.2

O. The Regional BAS Virtual Web Supervisor Server(s) are located on the GSA network and may be accessed by secure remote connection provided by GSA.

P. GSA buildings are equipped with IT infrastructure. Existing switch and riser diagrams shall be provided to contractors for reference. All connections and additions to the IT network are to be documented and coordinated with the GSA BAS IT Specialist. New construction or buildings requiring network hardware and back bone installation shall be coordinated early on in the project with the GSA IT Department GSA Central Office, Washington D.C. The Government will provide IT engineering expertise to coordinate the installation of the IT infrastructure.

1.03 APPROVED MANUFACTURERS AND BIDDERS

A. The Contractor shall be an established supplier of control components consisting of all employees required to prepare the system installation drawings/submittal, acquire the product, install the system, calibrate, program, adjust, troubleshoot and repair. The Contractor shall be adequately equipped and staffed to maintain a service organization capable of warranty maintenance, as well as to provide extended service on installed systems upon request and/or as specified hereinafter. Subject to compliance with the specification requirements, provide building automation/control systems by any Factory Authorized Tridium JACE Systems Integrator whose credentials are authorized by the GSA Operations Branch and the Engineer of Record, and employ the use of JACE at front end of the BAS.

B. Multiple vendors may be located through the use of the following web links:vykon

http://www.vykon.com/purchase#top (Open Market)

http://www.gsaelibrary.gsa.gov/ElibMain/sinDetails.do?executeQuery=YES&scheduleNumber=03FAC&flag=&filter=&specialItemNumber=003+01 (GSA 03 FAC 003 01 Schedule, Smart Buildings System Integrator)

1.04 DEFINITIONS

A. BACnet: The Building Automation and Control networking communication protocol ANSI/ASHRAE, Standard 135-1995, developed by ASHRAE to provide a universal means by which building automation devices from various manufacturers can share data and work together.

B. BIBBS: BACNET Interoperability Building Blocks

C. Bridge: A device that connects two or more LAN segments at the physical and data link layers. This device may also perform message filtering if programmed to do so.

D. Browser: A computer program that accesses and displays information from the Internet or intranet.

E. Category 6 cable: A type of wiring used for twisted pair Ethernet. The electrical characteristics of Cat 6 wiring make it less susceptible to electrical interference than lower categories.

F. Client: A system or device that makes use of another device for some particular purpose through a system request.

G. Chiller Plant Optimization: A group of BAS software routines designed to cause a chiller plant to operate with maximum efficiency.

H. Conformance Classes: The set of requirements to be met in order for a device to conform to BACnet. BACnet defines six (6) levels of required support for standard objects and services. The higher the Conformance Class, the greater number of services provided.

I. Control Devices: Valves, dampers, variable frequency drives, and other appurtenances that change the properties and henceforth vary the conditions of the controlled parameter, such as temperature, air flow, pressure, etc.

J. Controlled Parameter: Air, water, glycol, steam or other media whose conditions are maintained or varied by the automatic control system and the control devices.

K. Data Link Layer: Part of the Protocol Stack. The layer resides between the Physical Layer and the Network Layer. It passes to the Network Layer only acceptable incoming BACnet messages received from the Physical Layer. The Data Link Layer is responsible for adding a code to outgoing messages to identify them as BACnet messages before passing them on to the Physical Layer. L. DDE: Dynamic Data Exchange.

M. Device (BACnet): A device, real or virtual, that supports digital communication using the BACnet protocol. Examples would be an operator terminal, router, unitary controller, etc.

N. Ethernet: Ethernet is a widely used Local Area Network (LAN). Ethernet, which conforms to IEEE
Standard 802.3.

O. Events: Changes in the state of an object, typically between Normal, Off-Normal, and Fault Condition. Events may be reported to other BACnet devices. P.

Fiber: An abbreviation for optical fiber.

Q. Firewall: A security mechanism placed at the connection between networks and/or at networks outside connections. The firewall restricts access to the network.

R. Fully Open BAS: Building Automation System that all materials, hardware, firmware, software, and licenses can be procured through open market non-proprietary vendor warehouse distribution channels; in addition to being installed and maintained by any JACE factory authorized/qualified Building Automation

and Controls Company. Single/sole vendor source materials, hardware, firmware, software, and licenses are prohibited from installation on GSA facilities.

S. Gbps: Gigabits per second. A unit of data transfer speed equal to 1024 Mbps.

T. GUI: Graphical User Interface, a type of Operator Interface Device for a BAS.

U. Instance: A number which uniquely identifies an object within a device (e.g., Analog Input No.1, No. 2, etc.). Device Objects are required to have an instance number that is unique to their internetwork. Instance numbers may range from 0 to 4194303. V. ID: Identification (name, number, plate, or tag).

W. Internetwork: Two or more networks connected by routers (the Internet itself and internetwork), up to 65,535 interconnected networks are allowed by BACnet. A BACnet internetwork provides only one message path between two devices. Internetworks may contain similar or dissimilar physical types, so an internetwork may consist of two Ethernet LANs, or an Ethernet LAN and several MS/TP LANs, etc.

X. Intranet: A computer network with restricted access, as within a corporation, that uses software and protocols developed for the Internet.

Y. IP: Internet Protocol. The protocol that defines both the format of packets used on a TCP/IP internet or intranet and the mechanism for routing a packet to its destination.

Z. IPv6: Internet protocol that uses a 128-bit address, theoretically allowing 2128, or approximately 3.4×1038 addresses. IPv6 is the most recent version of the Internet Protocol (IP), the communications protocol that provides an identification and location system for computers on networks and routes traffic across the Internet. IPv6 was developed by the Internet Engineering Task Force (IETF) to deal with the long-anticipated problem of IPv4 address exhaustion. IPv6 is intended to replace IPv4.

AA. IP address: A 32-bit address assigned to a device that uses TCP/IP protocols.

BB. Java: A programming language defined by Sun Microsystems for use in Internets.

CC. JACE: JAVA Application Control Engine.

DD. Kbps: A unit of data transfer equal to 1024 bits per second.

EE. LAN: A LAN is a network of interconnected hardware devices sharing resources within a relatively small geographic area.

FF. Mbps: A unit of data transfer equal to 1024 Kbps.

GG. MS/TP: The Master-Slave/Token-Passing EIA-485 LAN developed for BACnet by ASHRAE. Operates at 9600, 19.2K, 38.4K and 76.8 K BPS. Master nodes (devices) pass around a speaking token which entitles the holder to initiate BACnet messages. Slave nodes can only respond to messages from Masters.

HH. Native BACnet: A Building Automation System that uses the BACnet protocol for its data transfer between hardware devices.

II. NIST: The National Institute of Standards and Technology is developing a BACnet device-compliance testing facility in Gaithersburg, MD.

JJ. NODE: A computer or digital device connected to a network, with an address on that network.

KK. OBJECT (BACnet): BACnet objects represent, in a standardized way, the information required for a building automation control system. The analog input object, for example, represents sensor inputs such as temperature sensors.

LL. OID: Operator interface device.

MM. Optical fiber: Glass fiber used in digital networks.

NN. OSI: Open System Interconnection standards.

OO. Packet: A small, self-contained parcel of data sent across a digital network.

PP. PC: Personal Computer.

QQ. Peer-to-Peer Communication: Communication between equals. In BACnet, application programs (performing the functions of the BACnet devices on which they run) in devices of the appropriate conformance class talk to each other as peers, using the Protocol Stacks to deliver their message to each other. Likewise, Network Layers may talk as peers to determine how to route messages.

RR. Physical Segment: A single continuous medium to which nodes are attached.

SS. PICS (Protocol Implementation Conformance Statement): A written document identifying the particular BACnet objects and services and other capabilities that are implemented in the device (see also Section 1.3.C, “Conformance Classes”).

TT. Property: A particular characteristic of a BACnet object. Examples of properties are Description (a text description of what the object represents, such as OSA for outside air, and analog input object), Present Value (22 for the same input) and engineering units (degrees Celsius).

UU. Protocol: A design that specifies the details of how digital devices interact.

VV. Protocol Stack: The four layers through which BACnet messages pass when sent to or from a BACnet device. The Protocol stack provides data encoding, packetizing, sequencing, segmenting, routing and communication services.

WW. Repeater: A device that connects two or more physical segments of a LAN at the physical layer and exactly reproduces the electrical signals on either side so that nodes on either side of the repeater are considered to be on the same network.

XX. Router: A device which connects two or more networks, of same or different types, so that a BACnet message may be transferred across the appropriate networks to reach its destination.

YY. RS-232-C: The technical name of the standard for serial data connections such as those between a computer and a keyboard.

ZZ. Server: A computer or hardware device which stores the resources accessed by other computers or hardware devices (clients).

AAA. Services (BACnet): BACnet defines 26 standard services; some services read or write properties of objects in the receiving device, others convey notification of alarms or other special events, others read and write files, and so on.

BBB. SNMP: Simple Network Management Protocol. The protocol that specifies how a network management station communicates with agent software in remote devices such as routers. SNMP defines the format of messages and their meaning.

CCC. SMTP: Simple Mail Transfer Protocol. E-mail or text message application. Often resides on a server.

DDD. TCP/IP: The protocol suite used in the Internet. Although the suite contains many protocols, TCP and IP are two of the most important.

EEE. Thin-client architecture: A term used to describe server/client system architectures in which one or more powerful hardware devices (servers) store the resources accessed by other less powerful hardware devices (clients).

FFF. Unitary Controller: Devices which controls and/or monitors a single piece of equipment.

GGG. WEB: A synonym for the World Wide Web. In modern usage pertains to both the Internet and to intranets using the TCP/IP Protocol.

1.05 SYSTEM DESCRIPTION

A. The system shall consist of a series of digital controllers interconnected by the LAN. One or more operator interface devices (OIDs) shall be connected to the LAN to provide access to the controllers for the purpose of receiving information or issuing commands. The controllers shall be located adjacent to the equipment they monitor or control and shall be sized for the task assigned to them. The system shall utilize distributed processing architecture and one controller shall be provided for each major piece of equipment controlled or monitored except that the equipment associated with the chiller plant and the heating plant shall be controlled from separate controllers. Central Plant control system installation shall provide for continuous operation of active plant system in the event of controller failure or building wide communications loss. Chilled water and Heating water plant programming shall auto-rotate chiller/boiler and pumps in the event of hardware or equipment failure.

B. The communication network between general purpose, unitary, and terminal unit digital field controllers shall be BACnet/IP or BACnet/MSTP over EIA-485. All devices utilizing Internet Protocol (IP) must be IPv6 capable when deployed.

C. The BAS software shall be based on a server/thin-client architecture, designed around the open standards of web technology. The BAS server shall communicate using the ASHRAE BACnet/IP protocol, and in

addition, offer concurrent support over the same data-link of the following protocols: LonWorks, MODBUS, and SNMP. The Server shall be accessed using a web browser.

The intent of the thin-client architecture is to provide the operator(s) complete access to the BAS via a web browser. The thin-client web browser Graphical User Interface (GUI) shall support the latest GSA approved Microsoft Operating Systems and browser. No special software shall be required for the PC's used to access the BAS via a web browser. Graphical User Interface (GUI) shall support software current versioning of software languages.

The web browser GUI shall provide a completely interactive user interface and must offer the following features as a minimum:

1. Trending
2. Scheduling
3. Real time "live" Graphic Programs
4. Tree Navigation
5. Parameter change of properties
6. Set point Adjustments
7. Alarm / Event information
8. Configuration of operators
9. Execution of global commands

D. Input devices such as temperature sensors, humidity sensors, pressure sensors, motor current sensors, relays and other devices to sense or measure conditions of equipment or space, shall be provided as part of the system to meet the requirements of the sequences of operation or input list.

E. Output devices such as valves, dampers, damper operators, relays, solenoids, transducers, or other devices to control equipment, shall be utilized as part of the system to meet the requirements of the sequences of operation or output list.

F. Control System includes: [Sequence of Operations as indicated in the construction drawings.] [Sequence of Operations as specified in SECTION 230901 – SEQUENCE OF OPERATION FOR HVAC CONTROLS.]

G. System Software:

1. Provide and install the software indicated in Part 2 of this specification. The database required for implementation shall be provided, including point description, alarm limit, calibration variable graphics, report, and point summaries.
2. The system described herein is a distributed processing system, which utilizes DDC to perform each logic and control decision and operation for each piece of HVAC equipment. An OID shall not be required to operate the system. Each item of large equipment, such as air handling units, boilers and PDDU units, shall be provided with a separate digital controller panel (DCP) with readout capability. Each equipment shall be controlled by a separate application-specific field controller (ASC).

H. Labeling:

1. Provide a comprehensive labeling system for each wiring and component using the designations shown on the approved submittals. All labeling of room names and equipment shall correspond with the

actual room numbers not necessarily the construction document room numbers, contractor shall confirm with signage/architectural drawings prior to issuing control submittals.

I. Electrical Work:

1. This shall include power requirements for control panels, field controllers, sensors and other control devices. Provide transformers required to step down from the available voltage to the voltage required to operate the control system products and control devices.

J. Other Work:

1. The work included under this Division shall include the drawings, documentation, equipment, labor, materials, software licensing, specifications, submittals, technical supervision, training services, transportation, warranty, and other appurtenant work as required to furnish and install a fully operational system to monitor and control, set forth, in strict accordance with these specifications and subject to the terms and conditions of the Contract. An apparatus, appliance, material or work not shown on the drawings but mentioned in the specifications, or vice versa, or incidental accessories required to make the work entirely complete and ready for operation, even if not particularly specified, shall be furnished, delivered and installed by the Contractor without additional expense to the Owner.

K. Completion:

1. It is the intention of the specifications and drawings to call for furnished work, tested, and ready for operation. Wherever the word “provide” is used, it shall mean “provide and install complete and ready for use.”

L. Omissions:

1. Minor details not usually shown or specified but required for proper installation and operations shall be included, as if herein specified and/or shown.

M. Contractor’s Esoteric Omissions:

1. The omission of hardware, firmware, and software components required to satisfy the specified configuration(s), but not specified due to the esoteric requirements of a particular manufacturer’s product design shall not relieve the Contractor from the responsibilities of providing and installing omitted apparatuses, (i.e. feed-back circuits, calibration resistors, and override detection interface devices).

1.06 APPLICABLE CODES

A. The following issues of the publications referred to thereafter by basic designations only, form a part of this specification. Inclusion in this listing is intended to call particular attention to the subject matter covered:

1. FIPS: Federal Information Processing Standards Publications: FIPS PUB 15: Subsets of the Standard Codes for Information Exchange.
2. ANSI: American National Standards Institute Publications:
    1. B31.1-1977 Power Piping (including addenda) B31.1b (1971); B31.1c (1972); and B31.1d (1972).
    2. C2-1981 National Electrical Safety Code.
    3. C12-1975 Electricity Metering.

4. C57.13 1968 Requirements for Instrument Transformers.

3. EIA: Electronic Association Standards: RS-232C Interface between data terminal equipment and data communication equipment employing serial binary data exchange. 1.

4. AWS: American Welding Society Publication: B30-77 Welding Procedures and Performance
Qualification.

5. NFPA: National Fire Protection Association Publication: 70 and National Electrical Code.

6. NEMA: National Electrical Manufacturer's Association (NEMA): ED 20-75, Watt-hour Meters.

1.07 OPEN PROTOCOL

A. All 100% of the physical and virtual points shall be exposed to either a non-proprietary BACnet communication network bus. Two protocols shall not be used in the same building automation system in the same building without written consent from GSA.

B. BACnet Selection: Each component of the system, including the LANs and software, shall be in full compliance with ASHRAE Standard 135, commonly referred to as BACnet. The BAS shall use native BACnet MS/TP, BACnet TCP/IP architecture and be in strict accordance with ASHRAE Standard 135. All controllers shall be BACnet Testing Labs (BTL) Certified. All BACnet points shall only use native BACnet BTL Certified standardized PICS (Protocol Implementation Conformance Statement) and BIBBS (BACNET Interoperability Building Blocks). All physical and virtual points shall be programmed as BACnet Objects and Events without any exceptions.

1.08 SUBMITTALS/DELIVERABLES

A. Submit each item in this Article according to the Conditions of the Contract, Division 1 Specification Sections.

B. IT Riser Diagram: The contractor shall submit a full detail IT riser diagram depicting the following items by room number and floor: GSA provided computers, GSA T-1 Circuit, GSA router / switch location(s), connected devices including port number, control wire type and length between devices, Example: Cat 6 (5 feet); two conductor (25 feet), fiber optic (450 feet), manufacturer/model number (for manufacture and model use legend for simplicity).

C. Product Data for Each Type of Product Specified. Include manufacturer's technical Product Data for each control device furnished, indicating dimensions, capacities, performance characteristics, and electrical characteristics, finishes of materials, installation instructions, and start-up instructions.

D. Equipment: Shop drawings from manufacturer, detailing equipment assemblies and indicating dimensions, weights, loadings, required clearances, method of field assembly, components, and location and size of each field connection. Submit damper leakage and flow characteristics, including size schedule for control dampers and control valves.

E. Control System Shop Drawings: Submit shop drawings containing the following information for each control system:

1. Schematic flow diagram, showing fans, pumps, coils, dampers, valves, and control devices.
2. Each control device, labeled with setting or adjustable range of control.
3. Details of the control panel, including controls, instruments, and labeling.
4. Communications cable schematic, showing device locations and communication conductor pathway.
5. Listing of connected data points, including connected control unit and input device.
6. System graphics, indicating monitored systems, data (connected and calculated) point reading and setpoint values, and operator notations.
7. System configuration, showing peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.
8. Software description and sequence of operation.
9. Provide graphic flow chart diagrams for each software program, and a separate graphic for each system's data point addresses.

F. Wiring Devices. Submit wiring diagrams, detailing wiring for power, signal, and control systems and differentiating clearly between manufacturer/manufacturer's installed and field installed wiring.

G. Sample Covers: Submit samples of each type of space humidity and temperature sensor cover for approval prior to ordering the covers.

H. Field Test Reports: Submit procedure and certification of control system.

I. Testing and Adjusting During and After Installation: The testing and adjusting submittal includes the submission of a test plan which describes in detail the method by which each component, subsystem, and

system will be tested, calibrated, adjusted, and retested after installation in accordance with the specified sequences of operation and other characteristics of the control system.

J. Reporting and Demonstration: This phase shall include the submission of a written report describing the actions taken during the testing phase, including the set points and operating ranges of each piece of equipment and a demonstration that the system performs in accordance with contract requirements.

K. Operating Instructions and Training: This phase includes the training of operating personnel, utilizing written operating instructions, prepared and approved under the "Submittals" paragraph of this Section, and the mounting of laminated control diagrams where directed.

L. JACE License Forms: Submit license forms, proof of purchase / GSA ownership with final shop drawings.

M. Engineering Tools: Workbench version 4.x or higher and all Field Level programming tools shall be installed on the GSA Government Laptop designated for the site. The contractor shall provide the appropriate quantity of legal copies of all software tools, configuration tools, management tools, and utilities used during system commissioning and installation. All tools shall be generally available in the market. No closed and/or unavailable tools will be permitted. Contractor shall convey all software tools, their legal licenses, and proof of purchase showing GSA as owner at project close out.

N. JACE Programming Files: All programming files associated with each JACE shall be backed up and neatly labeled and organized by relevant file name including site designation number for easy recognition on the Government Laptop.

O. Proprietary and Non-Proprietary Programming Files: All programming files associated with each field level device shall be backed up and neatly organized by equipment item for easy recognition on the Government Laptop.

P. Backup Disks: Provide labeled backup disks (1ea copies) of Workbench version 4.x or higher and Field Level programming tools licensed to GSA Regional Office. Provide (3ea copies) labeled JACE Programming Files, and Site Field Level Programming files. Upon job completion provide all drawings, product information, resource files, configuration files, etc. on standard storage media.

1.09 DOCUMENTATION

A. General: A description of the material to be included in the reference manuals is contained in the following paragraphs. Three (3) copies of the manuals bound in hardback, loose-leaf binders or an approved equivalent shall be provided to the Owner. In addition the manuals shall be furnished in PDF format. One complete set of manuals shall be furnished before the contract is complete. The identification of contents in each manual shall be inscribed on the cover and the spine. The manuals shall include the name, address and telephone number of each subcontractor installing equipment and systems and of the local representative for each specific item of equipment and each system provided. Manuals provided shall include:

1. Functional Design Manual.
2. Hardware Manual.
3. Software Manual.
4. Operations Manual.
5. Maintenance Manual.

System revisions and/or additions provided for or required under this contract shall be included in this documentation in the form of updated documents.

B. Functional Design Manual: The functional design manual shall identify the operational requirements for the system and explain the theory of operation, design philosophy, and specific functions. Hardware and software functions, interfaces, and requirements shall be provided for each system operating mode.

C. Hardware Manual: The hardware manual shall describe the system and each piece of equipment provided, as follows:
   1. General description and specifications.
   2. System architecture overview.
   3. Hardware cut-sheets and product descriptions.
   4. Installation, mounting and connection details for piece of field hardware and accessories.
   5. Electrical schematics and layouts drawings.
   6. Color-coded small scale building plans showing different colors for each HVAC system.
   7. Commissioning, setup and emergency backup procedures for each system controller(s)/ accessories, and BAS software, and database.
   8. Manufacturers' repair parts lists indicating sources of supply.
   9. Interface definition.
   10. Listing of basic terminology, alarms/messages, error messages and frequently used commands or shortcuts.
   11. An identification of the specific device, component, or system provided (for data sheets that include multiple options, clearly identify the one(s) actually provided for this project).

D. Software Manual: The software manual shall describe programming and testing, starting with a system overview and proceeding to a detailed description of each logic routine, software module, and other information required to enable proper integration, loading, testing, and program execution. The manual's organization shall be as follows:
   1. A printout of each program, detailing the application to specific HVAC equipment and electrical/mechanical subsystems allowing for logical step-by-step analysis of the programs.
   2. Graphical "flow chart" representation of the mechanical equipment hierarchy for the project including each piece of equipment controlled by the BAS. For example: a VAV terminal box may be the source for increased cooling demand and require the primary VAV AHU to operate which, in turn, requires the chillers to operate.
   3. Description of the algorithms for the application programs.
   4. Descriptions of communication protocols, including addressing, numbering, identification, etc.
   5. Detailed listing of each alarm and event message programmed for designated mechanical/electrical equipment and required operator action.

E. Operations Manual: The Operations manual shall describe the operations of the complete system and include:
   1. System overview.
   2. Networking concepts.
   3. Launching and use of a web browser from a networked PC and login.
   4. Graphical User Interface (GUI) screen menus and their definitions.
   5. Creating, modifying or deleting schedules.
   6. Creating historical trends, collecting trend data and generating trend graphs.

7. Enabling and assigning alarms and messages to reporting actions/groups.
8. Report generation.
9. Operating instructions for 'third party software'.
10. Backing up software and data files.

F. Maintenance Manual: The maintenance manual shall provide descriptions of maintenance for each piece of equipment, including inspection, periodic preventative maintenance, fault diagnosis, and repair or replacement of defective components as recommended by the manufacturer. The Maintenance Manual shall contain the following:
1. Maintenance instructions and lists of recommended spare parts for each type of control device.
2. Interconnection wiring diagrams with identified and numbered system components and devices.
3. Recommended inspection period, cleaning methods, cleaning materials, and calibration tolerances.
4. Calibration records and complete list of set points that were active at time of final acceptance.

G. Qualification Data: Include information considered essential to pre-qualify firms and persons specified in the Quality Assurance article.

1.10 QUALITY ASSURANCE

A. Products shall be standard manufacturer products having been in commercial or industrial use for at least one year prior to the bid date for this project. Products shall comply with the following as a minimum: 1. NFPA 90A, "Installation of Air Conditioning and Ventilation Systems."
2. NISTIR 6392 for DDC system control components.
3. ANSI/ASHRAE Standard 135-1995 for BACnet compatible system control components.
4. Applicable provisions of NFPA code.
5. Applicable provisions of NEC.

C. Contractor shall have been in business installing and maintaining the same brand of equipment as used on this project for at least three (3) years prior to the bid date of this project.

D. Installer Qualifications: Installer shall have at least 5 years' experience installing BAS and JACE web-based BAS and shall be an experienced installer who is a certified installer of the BAS manufacturer for both installation and maintenance of products and systems required for this project. A firm experienced in manufacturing products for BASs the same as or similar to those required for this project and with a record of successful in-service performance for a minimum of one year prior to the bid date for this project. Programming technicians shall be no farther than 300 road/highway miles away from the integration site.

E. Manufacturer Qualifications: Must comply with the "Buy America Act" or relevant executive order(EO).

F. Material Qualifications: Installer shall use Hardware, Software, and Firmware that is available for purchase during and after the project from multiple non-proprietary warehouse distribution channels and/or available for procurement from the GSA Advantage Federal Acquisition Services GSA Schedule.

G. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and certified and marked for intended use.

1.11 DELIVERY, STORAGE AND HANDLING

A. Contractor shall receive, store and deliver to the jobsite the materials required for this project.

B. Materials that are specified to be factory-mounted in equipment furnished by others, such as components for terminal equipment, shall be shipped directly to the manufacturer of that equipment for factory installation.

C. Materials which are to be installed in sheet metal or piping systems, such as valves, wells, pressure taps, flow meters, dampers and sensors, shall be delivered directly to the sheet metal or piping contractor for Installation.

1.12 COORDINATION

A. Coordinate material delivery to comply with project schedule.

B. Coordinate conduit, and wiring installation with other trades to avoid conflicts.

C. Coordinate panel locations and installation with other trades to avoid conflicts and to provide power and other requirements.

D. Coordinate equipment transmission systems and software protocols with Lighting Control System in Division 26 of the Specifications to achieve compatibility with equipment that interfaces with those systems.

E. Coordinate equipment, transmission systems and software protocols with the Sequence of Operations in [the construction drawings] [SECTION 230901 – SEQUENCE OF OPERATION FOR HVAC CONTROLS] of the Specifications to achieve compatibility with equipment that interfaces with that system.

1.13 MAINTENANCE AND SERVICE

A. Provide parts and labor repair during the warranty period at no cost to the Owner. Warranty period shall be not less than 1 year from the date of final acceptance of the total system.

1.14 NAMEPLATES AND LABELS

A. Label all controllers, wires and control components in control cabinets to match naming convention on control drawings using electronic label maker to clearly define different components in each cabinet.

1.15 COMMISSIONING

A. The BAS shall be actively commissioned by a 3rd party commissioning contractor to be installed per specifications and fully functioning prior to Demonstration and Acceptance Periods and Contract Close Out. The commissioning agent shall complete and turn over to the owner’s representative a commissioning report showing the date of commissioning and the technician name and telephone number for each input and output in the system. Report shall be signed by the technician performing the commissioning. The contractor shall inspect, start, test, adjust, and calibrate the work and/or systems under this Contract, as described below:

1. Test, calibrate, and adjust each digital and analog sensing, and actuating device. Calibrate each sensor by making a comparison between the BAS display and the reading at the sensor, using an

instrument traceable to the National Institute of Standards and Technology. This instrument shall be at least twice as accurate as the sensor to be calibrated. The measured value and displayed value for each sensor shall be in the ATC/BAS Pre-Commissioning Report.

2. Check and set zero and span adjustments for each actuating device. Manually activate damper and valve operators to verify free travel and fail condition. Check valve or damper to ensure that it shuts off tight when the appropriate signal is applied to the operator.
3. Check each digital control point by making a comparison between the control command at the OID and the status of the controlled device. Check each digital input point by making a comparison of the state of the sensing device and the OID display. Record the results for each device in the Commissioning Report.
4. Verify proper sequence and operation of each specified function.
5. Tune each control loop to obtain the fastest stable response without hunting, offset or overshoot.

1.16 DEMONSTRATION AND INSPECTION

A. System: The complete Building Automation System shall be demonstrated to the Owner's representative to perform as specified, and Owner's operating personnel shall be instructed in the operating procedures until they are familiar with the system.

B. Operation: Every BAS component, wiring, and control program installed under this section shall be demonstrated to the Owner's representative to be in working condition. Once each component operation has been verified and the system has been properly commissioned with the rest of the equipment and building systems, the systems will be ready for final acceptance. At that time, the warranty period will begin and will extend only to the replacement of material with manufacturer's defects, and to normal or recommended recalibration or adjustments.

1.17 ACCEPTANCE

A. Upon completion of the installation and commissioning of the systems, the contractor shall notify the owner's representative in writing, together with a copy of the commissioning report, that the system is complete and ready for acceptance testing. The owner's representative shall schedule a starting day for system acceptance testing. The contractor shall demonstrate calibration, testing, and adjusting of points or systems selected by the owner's representative. After an adequate sampling of points and sequences have been verified to satisfy the owner's representative that the system is performing in accordance with the contract documents, the system shall be accepted and the warranty period shall begin. If the system fails this acceptance testing, the contractor shall be responsible to reimburse the owner's representative for required expenses plus a reasonable hourly rate to retest the system.

1.18 WARRANTY

A. The system herein specified shall be free from defects in workmanship and material under normal use and service. If within 12 months from the date of acceptance by the Owner/Architect, equipment or software herein described is proven to be defective in workmanship or material, it shall be adjusted, repaired, or replaced free of charge. This system warranty shall also include each software program, upgrade and maintenance.

B. At the conclusion of the warranty period, the contractor shall install the latest software versions for the systems installed under this contract at no additional cost for labor or materials required for a full upgrade. All software shall be delivered to the government including all associated licenses.

PART 2 – PRODUCTS

2.01 GENERAL

A. General: Provide a complete Building Automation System for the HVAC system equal to the equipment below, including the control accessories and devices required to accomplish the desired results, whether specifically mentioned herein or not. The BAS shall employ direct digital control (DDC) technology. Field controllers shall be DDC. The DDC system shall maintain stable temperature, pressure, and flow control 52 and other conditions as indicated. The end-to-end accuracy of the system, including intermediate errors and the A/D conversion and display, shall be ±1-deg F or as specified for the particular sensor point, for temperature, and be ± 3%RH for relative humidity.

B. The BAS shall consist of one OID(s), multiple LAN connecting components, field control panels and terminal unit controllers. The software control programs shall reside in the local controller for each item of equipment. The alarms shall be sent to the designated operator interface device, where they shall be processed according to priority and job requirements.

C. Communications between the field control panels and other OIDs, and between the field control panels and the terminal unit controllers shall be through LANs. Communications between buildings shall be through wide area networks (WAN) and shall use WEB based technology. The communications protocols and wiring types shall be in strict accordance with ASHRAE Standard 135, BACnet.

2.02 BAS SERVER HARDWARE

A. GSA's intent is to or currently employs an Enterprise Web Supervisor Server current version that shall be integrated to by the individual JACE(s) at the building level within this project on secure point-to-point GSA Intranet broadband circuits. GSA will provide managed switches to the site for the JACE(s) to be terminated to by using GSA issued IP addresses.

B. JACE supervisory controllers will perform the BAS function as the front end at the building level. The controls contractor shall provide JACE 8000 hardware running the latest GSA Approved Niagara 4 software as supervisory controllers.
   1. Controllers will require GSA IT approval, hardening, and scanning prior to installation on GSA buildings. Firmware or software patches from the vendor and/or guidance by GSA IT security shall be adhered to by the contractor installing the BAS hardware components.
   2. The JACE(s) role is to host the Graphical User Interface (GUI), equipment schedules, 14-day FIFO trends/history, system user access, alarm console, and alarm enunciation.
   3. The JACE shall be licensed for a 5-year software maintenance agreement term.
   4. The JACE shall be licensed at the latest and highest industry standard available at installation and shall be updated during the warranty period at no additional cost to the government.
   5. The JACE shall be licensed with FIPS-140-2 encryption and factory default username and passwords shall be removed and replaced with GSA issued station and platform username and passwords.

6. HSPD-12 (Homeland Security Presidential Directive-12) clearances will have to be initiated on all personnel that will be performing programming on Building Automation Systems behind the Agency firewall prior to work being initiated.
7. The GSA shall be free to direct the modification of any software or hardware license (Niagara Workbench, Niagara Web Supervisor, and Niagara JACE(s)/Devices, regardless of supplier by the requirement that all host IDs shall be added to the Niagara Asset Management Tool/ Enterprise License Manager (ELM) virtual server environment with designation to the "GSA 1800F" Central Office Account. https://www.niagara-community.com/Login?nav=comm All host IDs shall also be identified by the marker tag of "Region 7" within the Niagara Asset Management Tool. As a deliverable to the project, the contractor shall verify that all software and hardware licenses are viewable in the "GSA 1800F" account by requesting a screenshot from GSA Central Office PBS IT Technology Department for verification. The intent is to ensure that the installed JACE products may be completely "open" for integrations. In addition, GSA shall receive ownership of all job specific software configuration documentation, data files, and application-level software developed for the project. This shall include all custom, job specific software code and documentation for all configuration and programming that is generated for a given project and /or configured for use within Niagara Framework (JACE) based controllers and/or servers and any related hardware devices. Any and all required Ids and passwords for access to any component or software program shall be provided to "GSA REGION 7". It is "GSA REGION 7's" intent to purchase an open system capable of being serviced and expanded by any acceptable system integrator that has and maintains certification (TCP) to work on Niagara Framework systems.
8. The Tridium Niagara Licensing and Niagara Compatibility Statement (NiCS) for all Niagara software instances shall allow fully open access to Niagara Workbench and Niagara Station database connectivity regardless of brand name by having "wildcards" entered as follows: *accept.station.out="*" accept.wb.in="*" accept.wb.out="*" accept.station.in="*"* . Additionally, the "Web Workbench" feature shall be set to true with the statement: 'ui.wb.admin="true"'. In all cases, "GSA REGION 7" shall be named as owner and maintain the right to direct contractor to modify any software license, regardless of supplier, as desired by "GSA REGION 7". The Contractor shall not install any "brand specific" software, applications or utilities on Niagara Framework based devices. All hardware and field level devices installed, (i.e.; ASCs, PDUs), for the project shall not be limited in their ability to communicate with a specific brand of Niagara Framework device. The Contractor shall also provide "GSA REGION 7" with Admin role login in credentials and the passphrase so that "GSA REGION 7" may have full access to all Niagara Framework products installed. The contractor shall NOT use brand specific software/firmware on the BAS DDC Niagara Framework operating system at the Web Supervisor level, JACE controller level, Unitary device level, or utilize third party Niagara or Proprietary DDC engineering tool(s) to program the at the Web Supervisor level, JACE controller level, Unitary device level. The contractor shall NOT use brand specific hardware products that are not available through open market distribution channels as determined/categorized/defined by "GSA REGION 7". The contractor shall provide BOTH Admin Level Login Credentials and the Passphrase for 100% of all Niagara Framework devices through the specified project.
9. GSA will provide a site circuit, switch, and a range of dedicated IPv4 addresses to the project for each assigned JACE. Physical addresses from each JACE shall be supplied to GSA IT once the controls contractor procures and receives them. Routers and Switches will be provided by GSA and installed by the controls contractor. GSA IT request procedures must be followed to receive

GSA Intranet configured switches and routers which shall be ordered with consideration of a 60 day lead time. Coordination with GSA IT shall be made to set up switches to communicate behind the GSA firewall.

10. Contractor will furnish Enterprise Web Supervisor software; utilize the standard Work Place toolbox for graphic development to promote consistency across the region. Any reutilization of existing graphics will not be permitted. GSA Operations Branch will provide graphics examples that shall be used as a standard design for BAS graphics. Supervisor engineering tool software shall be licensed to GSA and installed on the GSA provided laptop. Engineering tool back-up disks shall be turned over to GSA as a deliverable.
11. Graphics files shall be stored on the JACE locally at the building and stored/ provisioned as a 14day FIFO cycle on the GSA Regional web supervisor server for backup/ redundancy. The implemented BAS solution shall operate stand alone at the building and shall **not be** reliant on the GSA WAN Wide Area Network for GUI (Graphical User Interface) operation.
12. GSA will provide an up to date laptop PC to be used to access the BAS and to be used as the primary programming tool for the BAS as Government furnished property. After scanning/hardening/imaging, GSA IT will ship the PC to the project management on site and will be available for BAS integrator. The laptop shall be turned over to the GSA property manager at the end of the project. All programming software (engineering tools) and complete, neatly organized programming files shall be left on the laptop for easy modification and changes to the programming of the BAS. Software updates shall be updated at the end of the warranty period at no additional expense to the Government.
13. Integration of each JACE onto the GSA Regional Niagara Framework web supervisors shall occur. 100% integration, communication, mapping, set up, configuration, and sharing of points between the GSA Regional BAS Niagara Framework Applications Server and the AMS (Advanced Metering System) are required. AMS point histories and configuration shall be set up and operational in the RDBMS driver on the server level for use in the AMS application for trending, month-to-year archiving, and analysis.
14. The BAS shall not have a dial up modem or any other broadband connection to an outside LAN or WAN other than the GSA WAN. The JACE supervisor controller, Laptop Workstation/Programming PC that have all been hardened/scanned/imaged, shall be the only devices that shall have network capability designated to the GSA Intranet only.
15. Where applicable, Electric, Gas, Solar Photovoltaic, Condenser Water Conductivity and Treatment points, Cooling Tower Water Feed and Bleed, and Domestic Water pulse meters points shall be monitored by the BAS JACE and served up to the Regional BAS Supervisor Servers and AMS application. The metering devices shall be connected such that demand and consumption can be recorded at 15-minute intervals. Coordination with the utility companies prior to construction shall occur to ensure integration issues are addressed prior to construction phase.

pv

Building point Histories to be mapped into GSA Regional BAS Niagara Framework Applications Server

The points listed below shall be configured as a 14 day FIFO history within the Building JACE Controller. These listed points shall then be archived to the BAS Server hosting the building as a non expiring, unlimited size history. Configure all metering demand and consumption (1 hour, 1 day, total readings) histories in the server's RDBMS driver to be archived as a non-expiring, unlimited size history for use in the Advanced Metering Application.

Note, the histories listed below are not the complete list of 14 day FIFO histories that are to be stored within the JACE controller. This list only describes those histories that are to be archived to the server for long term storage and for display by the energy monitoring applications.

- kW Demand from all electrical meters serving and within the building.
    - If there is a direct communication link by Modbus, BACnet to the meters monitoring the building electrical demand, map the Watt values into the Building JACE controller and program the calculations within the JACE to provide the kW Demand to the Building BAS and server History databases.
- kWh Consumption from all electrical meters serving and within the building. Configured as an ever increasing value with no data resets configured.
    - If there is a direct communication link by Modbus, BACnet to the meters monitoring the building electrical consumption, map the Watt values into the Building JACE controller and program the calculations within the JACE to provide the kWh Consumption to the Building BAS and server History databases.
- Gas Meter Consumption in Cubic feet for all Gas Meters serving the building. Configured as an ever increasing value with no data resets configured
- Water Meter Consumption in Cubic feet for all Water Meters serving the building. This includes Irrigation Water Meters, Cooling Tower Makeup and Blowdown meters. Configured as an ever increasing value with no data resets configured

- Solar PV and or Wind Generators kW Demand from all electrical meters serving and within the generating equipment.
    - If there is a direct communication link by Modbus, BACnet to the meters monitoring the PV System electrical demand, map the Watt values into the Building JACE controller and program the calculations within the JACE to provide the PV kW Generated to the Building BAS and AMS History databases.
- Solar PV and or Wind Generators kWh Generation from all electrical meters serving and within the generating equipment. Configured as an ever increasing value with no data resets configured o If there is a direct communication link by Modbus, BACnet to the meters monitoring the PV System electrical Generation Capacity, map the Watt values into the Building JACE controller and program the calculations within the JACE to provide the PV power kWh Generated to the Building BAS and server History databases.
- Solar Thermal systems GPM, Entering and Leaving fluid temperature
- Chilled Water Supply and Return for each Chiller
- Primary Chilled Water Loop Supply and Return Temperature
- Building/Secondary Loop Supply and Return Temperature
- Condenser Water Supply and Return Temperature for each Chiller
- Condenser Water Loop Supply and Return Temperature
- Condenser Water pH
- Condenser Water Conductivity
- Condenser Water M. Conductivity
- Condenser Water ORP
- Condenser Water M. Cycles
- Condenser Water flow rate (per Min)
- Condenser Water system conductivity set point
- Condenser Water system Calibration

- Plate and Frame Heat Exchanger Condenser Water Supply and Return Temperature
- Plate and Frame Heat Exchanger Chilled Water Supply and Return Temperature
- Plate and Frame Heat Exchanger Hot Water Supply and Return Temperature
- Plate and Frame Heat Exchanger Domestic Water Supply and Return Temperature
- Hot Water Supply and Return Temperature for each Boiler
- Building Loop Hot Water Supply and Return Temperature
- Building Chilled, Condenser and Hot Water Flow Meter in gpm
- Building Consumption in Tons of Chilled, Condenser and Heating Systems
- Steam Pressure for each Boiler
- Domestic Hot Water Supply and Return Temperature
- Chiller Status of each Chiller o Amp draw of each Chiller
- Boiler Status of each Boiler
- Chilled Water Pump Status of each pump – Primary and Secondary o Amp draw of each pump
- Condenser Water Pump status of each pump o Amp draw of each pump
- Cooling Tower Fan Status of each fan o Amp draw of each fan
- Domestic Water Pump Status of each pump
- Solar Thermal Pump status of each pump

Note – All Status histories are to have both a history configured in a 15 minute interval as well as a history configured to record on a Change of State (COV History). Both history types are to be archived to the BAS Server.

2.03 GENERAL PURPOSE DIGITAL CONTROLLERS

A. BACnet BIBBs: General Purpose Digital Controllers shall use BACnet as the native communications protocol between controllers, which shall as a minimum, support the following BIBBs:

Data Sharing	Alarm Event	Schedule	Trend	Device Man.
DS-RP-A, B	AE-N-B	SCHED-B	T-VMT-B	DM-DDB-A, B
DS-RPM-B	AE-ACK-B		T-ATR-B	DM-DOB-B
DS-WP-A, B	AE-ASUM-B			DM-DCC-B
DS-WPM-B				DM-TS-B
DS-COVU-A, B				DM-UTC-B
				DM-RD-B

B. Interoperability: Unitary or Terminal Digital Controllers shall be 100% programmable with the use of an embedded Niagara workbench on the JACE. No other third party software shall be required or is permitted for use on this DDC Automation System. Full programmability and sequence changes shall be capable from on unitary DDC controllers from a JACE and shall be fully considered during equipment selection.

C. Shall have the ability to operate stand-alone apart from the JACE and fail-safe mode to last known command maintaining sequence of operations of the DDC systems and sub-systems (i.e. chill/heating water plant, AHUs).

D. Communication Speed: Controllers shall communicate at a minimum of 150 Kbps using Ethernet or ARCNET implemented over EIA-485, using an unshielded twisted pair at the Data Link Layer.

E. Gateways shall not be used unless specifically authorized in writing. Use of a gateway requires submittal of the documentation as required by the owner or owner's representative. It is the intent of

this specification that gateways be limited to integrating legacy systems where applicable. Acceptance of gateways is at the sole discretion of the owner.

F. General Specification: Each General Purpose Digital Controller shall be capable of stand-alone DDC operation utilizing its own 16 or 32-bit processor, non-volatile flash memory, input/output, 10-bit A to D conversion, hardware clock/calendar, and voltage transient and lightning protection devices. Non-volatile flash memory shall have a battery backup of at least five years. Firmware revisions to the controller shall be made from the BAS server or remotely over the intranet or Internet. Controllers shall not require component changes to implement firmware revisions.

G. Self-Test Diagnostics: Each controller shall include self-test diagnostics, enabling the controller to automatically report malfunctions to the server.

H. Each General Purpose Multiple Application Digital Controller shall contain both software and firmware to perform full DDC Proportional, Integral, and Derivative (PID) control loops and programs.

I. Input/Output Processing:
1. Digital outputs shall be relays, each configured as normally open or normally closed. Each output shall have a manual Hand-Off-Auto switch to allow for override and a LED to indicate the operating mode of the output.
2. Universal inputs shall be Thermistor, RTD 0-10VDC, 0-20 mA, resistive and dry contact.
3. Analog output shall be electronic, voltage mode 0-10 VDC or current mode 4-20mA.
4. Analog pneumatic outputs shall be 0-20 psi. Each pneumatic output shall have a feedback transducer to be used in the system for software programming needs. The feedback transducer shall measure the actual psi output value and not a calculated value. Each output shall have a manual override switch that will allow the output to be configured in one of three ways: open, closed, or automatic operation. A LED shall indicate the state of each output.

2.04 UNITARY OR TERMINAL DIGITAL CONTROLLERS

A. BACnet BIBBs: The Unitary Controllers shall use BACnet as the native communications protocol between controllers on the unitary controller network and must, as a minimum, support the following BIBBs:

Data Sharing	Device Man.
DS-RP-B	DM-RD-B
DS-WP-B	DM-PT-B

B. Interoperability: Unitary or Terminal Digital Controllers shall be 100% programmable with the use of an embedded Niagara workbench on the JACE. No other third party software shall be required or is permitted for use on this DDC Automation System.

C. Communication Speed: The communication between unitary controllers shall be 38.4 Kbps, minimum, over EIA-485, using ARNET or MS/TP architecture.

D. Sensor Support: Each unitary controller shall be able to support various types of zone temperature sensors, such as temperature sensor only, and temperature sensor with built-in set point adjustment slider. Sensors with built-in local override, LCD zone temp display, and RJ-11 Ethernet ports are not acceptable.

E. Each Unitary Controller for VAV application shall have a built-in air flow transducer for accurate air flow measurement in order to provide the pressure independent VAV operation.

F. Each Unitary Controller for VAV applications shall have an integral direct-coupled electronic actuator.

G. Visual Status: Each unitary controller and unitary controller interface shall have LED indication for visual status of communication, power, and each output.

H. Standalone Algorithm: In the event of a loss of communication, each Unitary Controller shall control from a stand-alone algorithm to maintain the assigned space temperature until communication with the unitary control module interface is restored.

I. Input/Output Processing:
1. Digital Outputs shall be relays, 24 Volts AC or DC maximum, having 3-amp maximum current. Each relay shall be configured as normally open or normally closed, and either dry contact or bussed.
2. Universal Inputs shall be Thermistor, RTD, dry contacts or 0-5VDC.
3. Enhanced Zone Sensor Input: The input shall provide one Thermistor input, one local setpoint adjustment, one timed local override switch, and one occupancy LED indicator.
4. Analog Output electronic, voltage made 0-10VDC or current mode 4-20mA.

2.05 BRIDGES AND ROUTERS

A. The controller network shall use BACnet as its native communication protocol. Network bridges and routers must be of a modular design to ensure reliability and system performance. Routers and bridges must be used between system LANs and between the system and third party devices requiring interfaces.

B. BACnet Router: The central system shall use the building's Local Area Network (LAN) for communication. The communication between the central server and the controllers shall be BACnet/IP. A router shall be provided as required to bridge BACnet/IP and the data link used between controllers (BACnet Ethernet, BACnet ARCNET, and BACnet MS/TP). Proprietary networks and proprietary protocols are not acceptable.

1. BACnet Building Interoperability Building Blocks (BIBBs): BACnet routers must use BACnet as the native communication protocol and must, as a minimum, support the following BIBBs:

Data Sharing	Alarm Event	Schedule	Trend	Device Man.	Network Man.
DS-RP-A, B	AE-N-B	SCHED-B	T-VMT-B	DM-DBB-A, B	NM-RC-A
DS-RPM-B	AE-ACK-B		T-ATR-B		
DS-WP-A, B	AE-ASUM-B			DM-DOB-B	
DS-WPM-B				DM-DCC-B	
DS-WPM-B					
DS-COVU-A, B					

2. Firmware Updates: The BACnet routers shall utilize flash memory to allow firmware upgrades to be performed remotely.

C. Unitary Controller Router

1. A router shall be provided as required to bridge between the unitary controller network and the main controller network.
2. BACnet BIBBs: The unitary controller router shall use BACnet as the native communications protocol between controllers on the unitary controller network and must, as a minimum, support he following BIBBs:

Data Sharing	Alarm Event	Schedule	Trend	Device Man.
DS-RP-A, B	AE-N-B	SCHED-B	T-VMT-B	DM-DDB-A, B
DS-RPM-B	AE-ACK-B		T-ATR-B	DM-DOB-B
DS-WP-A, B	AE-ASUM-B			DM-DCC-B
DS-WPM-B				DM-TS-B
DS-COVU-A, B				DM-UTC-B
				DM-RD-B

2.06 PANELS

A. Cabinet: Each DDC Controller shall be enclosed in a field panel or equipment enclosure. The field panel cabinet shall be constructed of 16 US gauge sheet steel. Provide sufficient access for wire and conduit to enter the cabinet. Each of the field control panel locks for the project shall be keyed alike. The cabinet shall be shipped to the project for installation without electronics. The electronics shall be added at the time of wire termination and system commissioning. The control wiring and system communications shall be electrically terminated inside the field panel. Each panel shall include the following:
   1. Receptacles: Provide a 20 ampere duplex receptacle inside or immediately adjacent to the field control panel.
   2. Master Disconnect Switch: Provide a master electrical power disconnect switch inside the field control panel to disconnect the external power to the cabinet for maintenance and repair. The disconnect switch shall not affect the duplex receptacle hereinbefore specified.
   3. Terminal Strips: Provide screw type terminal strips in the field control panel for the termination of field wiring. Lay out terminal strips in a neat and orderly fashion and label each termination. Wiring entering the panel shall be routed through the panel wire-ways in a neat and workmanlike manner, properly tied or laced and terminated.

2.07 INPUT/**OUTPUT** HARDWARE

A. Input/output sensors and devices shall be closely matched to the requirements of the DDC for accurate, responsive, noise free signal input/output. Control input response shall be high sensitivity and matched to the loop gain requirements for precise and responsive control.

B. Input Points:
   1. Analog: All analog inputs shall be linear over the range being controlled or sensed. In cases where accuracy is greater than ±[1 degrees F] [0.5°C] , ±3 percent R.H., or ±[1 PSIG] [249 Pa]., a transmitter shall be used which shall have span and zero adjustments and a 4-20 ma or 0-10VDC signal. Standard temperature sensors shall be RTD platinum or nickel wire provided their resistance characteristics are specifically accounted for through a curve fitting program in software.

   2. Digital/Binary inputs: All digital or binary inputs shall be form C contacts, N.O. or N.C. as

required.

C. Output Points:

1. Analog Points: All control output points shall be analog. No PWM or tri-state outputs shall be used. The analog output shall be O-10VDC or 4-20 ma as required for electronic actuators. In the case where a sequenced heating and cooling source are to be controlled, separate outputs on the NMCU or LCU panels shall be used. No sequencing from one electronic output is acceptable.

2. Digital Points: All digital (on/off) points shall be form C DPDT dry (voltage free) contacts. The digital output from the NMCU or LCU shall be a Triac with 24 VAC actuation. A low voltage relay shall be added for each control circuit requiring the interface to line voltage equipment such as starters, etc.

D. Temperature Sensors: Vibration and corrosion resistant, for wall, immersion, or duct mounting as required.

1. General purpose temperature sensors shall have an accuracy of +/- [0.5°F] [0.3°C] at calibration

point.

2. Mixed temperature sensors shall be the averaging type and have an accuracy of +/- [1°F] [0.3°C].
3. Outside Air Temperature Sensors shall have an accuracy shall be within +/- [1°F] [0.5°C] in the range of [-52°F to 120°F] [-46.6°C to 48.9°C]. Outside air wall mounted sensors shall be provided with an insulated sun shield painted to match surrounding surface.
4. Room temperature sensors shall have an accuracy of +/-[0.36°F] [0.25°C] in the range of [32°F to 96°F] [0°C to 35.5°C].. Each space temperature sensor shall include a terminal jack integral to the sensor assembly. The terminal jack shall be used to connect a portable laptop or similar operator's terminal to control and monitor all hardware and software points associated with the controller. Space temperature sensors shall be provided with blank covers.
5. Chilled water and condenser water sensors shall have an accuracy of +/-[0.25°F] [0.15°C] in the range [30°F to 70°F] [-1.1°C to 21.1°C]. Water temperature sensors shall be provided with a separable copper, monel or stainless steel well.
6. Hot water temperature sensors shall have an accuracy of +/-[0.75°F[[0.3°C] over the range of

[50°F to 250°F] [10°C to 121.1°C].

7. Duct and unit mounted temperature sensors shall be rigid stem or averaging type as required. Where duct or unit has any dimensions in height or width over 36 inches, averaging type sensors shall be provided.
8. Low Temperature Protection Thermostats: Shall be the manual reset type with reset from panel and shall have sensing elements not less than 20 feet in length. The thermostat shall operate in response to the coldest one-foot length of the sensing element regardless of the temperature at other parts of the element. The element shall be properly supported to cover the entire duct width.
9. Provide a calibration port next to all sensors.

E. Humidity Sensors: Vibration and corrosion resistant, for wall, immersion, or duct mounting as required.

1. Accuracy: ± 2% of operating range, with linear output.

2. Room Sensors: With locking cover, matching room temperature sensors, span of 25% to 90% R.H.
3. Duct and Outside Air Sensors: With element guard and mounting plate, range of 0% to 100%

R.H., with repeatable accurate readings from 10% to 90% R.H.

F. Pressure and Differential Pressure:

1. Static Pressure Sensor Transmitter: Non-directional sensor with suitable range for expected input, temperature compensated.
   a. Accuracy: 2% of full scale with repeatability of 0.5%.
   b. Output: 4 to 20 mA. or 0-10VDC
   c. Building Static Pressure Range: [0 inch to 0.25 inch wg.] [0 to 62 Pa].
   d. Duct Static Pressure Range: [0 inch to 5 inches wg.] [0 to 1243 Pa].
   e. End of Line Primary Fan System Discharge Duct Static Pressure Range: [0 to 4 inches wg.] [(0 to 995 Pa].
   f. Return Air and Outside Air Static Pressure Range: [-2 to +2 inches wg.] [-497 to 497 Pa].
2. Pressure Transmitters: Direct acting for gas or liquid service, range suitable for system, proportional output 4 to 20 mA or 0-10VDC.
3. Differential-Air-Pressure Transmitters: Direct acting, double bell, unidirectional with suitable range for expected input. Temperature compensated. Accuracy: 5 percent of full range and 2 percent of full scale at midrange. Output Signal: [3 to 15 psig] [21 to 103 kPa] over sensed variable change.
4. Water Flow Switches shall be provided with a single pole, double throw snap-action switch. Switches shall be provided with totally sealed vapor-tight switch enclosure. Make-point of switch shall be screw adjustable. Three-in-one paddle shall be suitable for pipe size from one inch to three inches. Paddles shall be constructed of stainless steel.
5. Water differential pressure switches shall be provided with a single pole, double throw snap action switch. Switches shall be provided with totally sealed vapor-tight switch enclosure.
6. Air Differential Pressure Switches shall be provided with static pressure taps. Switch shall have screw adjustable pressure differential set point. Switch shall have a Buna-N diaphragm with stainless steel calibration spring.
7. Air Static Pressure and Differential Pressure Sensors shall consist of a probe with pressure transducer. The probe shall be a minimum of 4 inches long to avoid influences by wall effects. The probe and transducer shall have an accuracy of +/-0.01 inch wg. over the range of the sensor with temperature variations from 0-160 ^{o}F . Sensor ranges shall be approximately 1.5 times the maximum duct static pressure range at the sensor location.
8. Fan proof-of-flow switches shall be UL listed adjustable set point type or adjustable current switches as specified in the Sequence of Operation or Data Point Summary. For fractional horsepower and non-ducted fans, relays or auxiliary contacts may be used.

G. Liquid Flow:

1. Water flow sensors shall be an insertion type with a non-magnetic impeller. The flow sensor shall be an all-solid state precision industrial type, with stainless steel meter body. Flow sensor shall have a maximum error of no more than 1% of full scale, a repeatability of ±0.3% of flow, a rangeability of 30:1, and a full scale flow rate of 1 to 30 FPS. The flow sensor shall be provided with a local digital display to display the flow in gallons (liters) per minute, and a signal to be

connected to the field control panel. Sensor shall be provided with insertion tool and ball valve for hot tap insertion and removal of sensor. Provide water flow meters at each of the pump discharge points installed per the manufacturer's instructions. Variable water flow lines shall be carefully selected to provide accurate readout from minimum (10% of full flow) to maximum expected flow (120% of design flow).

2. Differential-Pressure Transmitters: Direct acting for gas, liauid, or steam service. Linear-output, with range of [0 to 50 psig] [0 to 344 kPa], and [3- to 15 psig] [21- to 103 kPa] output signal.
3. Pump proof-of-flow switches shall be UL listed adjustable differential pressure or flow type or adjustable current switches as specified in the sequence of operation or data point summary. Devices shall be 150 PSI rated except chilled water flow switches shall be provided with totally sealed vapor tight switch enclosure on 300 PSI body.

2.08 THERMOSTATS

A. Combination Thermostat and Fan Switches:
   1. Line-voltage thermostat with two-, three-, or four-position, push-button or lever-operated fan switch.
   2. Label switches "FAN ON-OFF," "FAN HIGH-LOW-OFF," or "FAN HIGH-MED-LOW-OFF." 3. Provide unit for mounting on two-gang switch box.
   4. Separate and cooling setpoint with locking exposed setpoint adjustment.
   5. Automatic switching from heating to cooling.

B. Low-Voltage, On-Off Thermostats: NEMA DC 3, 24-V, bimetal-operated mercury-switch type, with adjustable anticipation heater.

C. Electric Low-Limit Duct Thermostat:
   1. Snap-acting, single-pole, single-throw, manual- or automatic-reset switch that trip if temperature sensed across a randomly selected [12 inches] [300 mm] portion of bulb length is equal to or below set point.
   2. Bulb Length: Minimum [20 feet] [6 m], to be serpentined across the leaving side of the coil surface.
   3. Quantity: One thermostat for every [20 sq. ft.] [2 sq. m] of coil surface.

2.09 OTHER CONTROL COMPONENTS

A. Valve and Damper Actuators:
   1. Valve actuators, electric, shall be motor operated from an analog 0-10V DC, 4-20 ma, etc. control signal. Actuators for valves under 2 inches shall be 50# force and over 2 inches shall be 210# force.
   2. Damper actuators, electric, shall be motor operated from either an analog 0-10V DC, 4-20 ma, etc. signal, or a 3 wire open-off-close signal. All damper actuators for dampers used at air handling units shall be controlled from the analog signal. Two position and VAV box actuators may be 3 wire open-off-close. Damper actuators for Outside Air and Relief Air shall be spring return.
   3. Actuators, magnetic, shall be magnetically driven from a 0-20V DC signal.
   4. Damper actuators shall be properly sized to provide sufficient torque to position the damper throughout its operating range.

5. Each 48-inch by 48-inch damper section shall be equipped with a separate actuator.

B. DDC Indication and Monitoring Devices:
1. Each motor which is started or stopped by the BAS shall have its status indicated at the related LCU. Operation shall be verified either by air flow in fan systems, water flow in hydronic systems or by current switches on motors.
2. Demand signals shall readout as status ON/OFF, valve percent of stroke toward open, face damper percent of stroke toward open, and fresh-air intake damper percent of stroke toward open.

C. Space Mounted Sensing Devices: Per the operational sequences specified hereinafter, space sensors are DDC affiliated. They shall consist of non-adjustable and adjustable elements.

D. Additional Components: The BAS shall incorporate all additional components (relays, manual devices, networks, diodes, boosters, switching, filters, for electrical lines for noise suppression transducers, servos, surge protectors, controllers, wiring, electrical apparatus, hardware, etc.) having all the set points, functions, and miscellaneous features specified or required.

E. VAV Terminal Unit Velocity Sensors: Single point air velocity sensing is not acceptable. Sensors shall be multi-point, center-averaging, cross flow type providing accurate flow sensing regardless of inlet duct configuration to VAV terminal unit. Velocity sensor shall be attached to the inlet side of the terminal unit as an extension to the inlet duct collar. Coordinate with terminal unit manufacturer for factory mounting of Contractor furnished devices.

F. Electronic Valve/Damper local Position Indication: Visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.

G. Carbon-Monoxide Detector: Electronic, microprocessor-based, designed to measure carbon monoxide (CO) and provide a digital display and analog output proportional to the CO level being sensed. Unit shall display and report CO levels of between 0 and 200 ppm. Units shall be furnished in either wall mount or duct mount configuration as required for the specified installation. Detectors shall have automatic calibration and shall employ multiple sensors and one power supply.

H. Carbon-Dioxide Sensor and transmitter: Electronic, designed to monitor CO_2 level in HVAC systems for use in demand controlled ventilation systems according to ASHRAE Standard 62. Units shall have linear analog output of 0-10VDC/4-21mA, over a range of 0-3000 ppm of CO_2. Units shall be furnished with a 5-year calibration guarantee.

I. Occupancy Sensor; Passive infrared, with time delay, daylight sensor lockout, sensitivity control, and 180-degree field of view with vertical sensing adjustment, flush mounting for finished areas (offices, entries, etc.), and wall mounted for storage areas, garages, shops, etc..

2.10 CONTROL VALVE

A. Control Valves: Factory fabricated, of type, body material, and pressure class based on maximum pressure and temperature rating of the piping system in which the valve is being installed, unless otherwise indicated.

B. Globe Valves DN 50 (NPS 2) and Smaller: Bronze body, bronze trim, rising stem, renewable 316 stainless steel disc, screwed ends with back-seating capacity, and re-packable under system pressure.

C. Globe Valves DN 65 (NPS 2-1/2) and Larger: Cast iron body, bronze trim, rising stem, plug-type disc, flanged ends, and renewable seat and stainless steel disc.

D. Ball Valves NPS 2 (DN 50) and Smaller: Forged brass body with nickel plating, characterized stainless steel ball and trim, and Teflon seats and seals.

E. Hydronic system valves shall have the following characteristics:
1. Rating: Class 125 for service at [125 psig] [862 kPa] and [250 deg F] [121 deg C] operating conditions.
2. Sizing: [3-psig] [21-kPa] maximum pressure drop at design flow rate.
3. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics. Operators shall close valves against 1.5 times pump shutoff head.

F. Steam system valves shall have the following characteristics:

1. Rating: Class 125 for service at [125 psig] [862 kPa] and [250 deg F] [121 deg C] operating conditions.
2. Sizing: [10-psig] [69-kPa] inlet pressure and [5-psig] [35-kPa] pressure drop at design flow rate.
3. Sizing: Pressure drop at maximum flow of 80 percent of inlet pressure for low-pressure systems and 42 percent of inlet pressure for high-pressure systems.
4. Flow Characteristics: Modified linear.

G. Butterfly Valves:

1. [200-psig] [1380-kPa], [150-psig] [1035-kPa] maximum pressure differential, ASTM A 126 cast-iron or ASTM A 536 ductile-iron body and bonnet, extended neck, stainless-steel stem, field-replaceable EPDM or Buna N sleeve and stem seals.

2. Body Style**:** [Wafer] [Lug] [Grooved].

3. Disc Type: [Nickel-plated ductile iron] [Aluminum bronze] [Elastomer-coated ductile iron] [Epoxy-coated ductile iron].
4. Sizing: 1-psig (7-kPa) maximum pressure drop at full open at design flow rate.

H. Terminal Unit Control Valves:

1. Bronze or brass body, bronze trim, two- or three-port as indicated, stainless steel ball union and threaded ends, 100 psi close-off rating.

2. Rating: Class 125 for service at [125 psig] [862 kPa] and [250 deg F] [121 deg C] operating conditions.
3. Sizing: [3-psig] [21-kPa] maximum pressure drop at design flow rate, and actuator to close against 1.5 times pump operating differential pressure.
4. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics.

2.11 CONTROL DAMPER

A. Dampers: AMCA-rated, [parallel] [opposed]-blade design; [0.1084-inch] [2.8-mm] minimum, galvanized-steel frames with holes for duct mounting; damper blades shall not be less than [0.0635-inch] [1.6-mm] (galvanized steel with maximum blade width of [8 inches] [203 mm] for modulating dampers and 12 inches (304.8 mm) for two-position dampers.

B. Blades shall be secured to [1/2-inch] [13-mm] diameter, zinc-plated axles using zinc-plated hardware, with nylon blade bearings, blade-linkage hardware of zinc-plated steel and brass, ends sealed against spring-stainless-steel blade bearings, and thrust bearings at each end of every blade.

C. Operating Temperature Range: From [minus 40 to plus 200 deg F] [minus 40 to plus 93 deg C].

D. Seals: Closed-cell neoprene edging around damper frame.

E. For low-leakage applications, use parallel- or opposed-blade design with inflatable seal blade edging, or replaceable rubber seals, rated for leakage at less than [10 cfm per sq. ft] [51 L/s per sq. m] of damper area, at differential pressure of 995 Pa (4 inches wg) when damper is being held by torque of [50 in./lbs] [5.6 N x m]; when tested according to AMCA 500D.

2.12 WIRE AND CABLE

A. Exposed cables installed in air plenums shall be specifically listed for air plenum use. (See specifications for specific wire and cable installation requirements.)

B. Cables, both fiber and copper, shall be as recommended by the manufacturer of the BAS, and shall be as required to support the specified LAN BACnet transmission type.

C. Contractor shall install Category 6 plenum “purple color scheme” cable for connection to Ethernet bus field level panels and to the GSA Intranet switch(s) for the JACE on distances less than 300 feet (91 Meters).

D. Contractor shall install Fiber Optic Cable for connection to the GSA Intranet switch(s) for the JACE on distances greater than 300 feet (91 Meters).

E. Contractor SHALL NOT daisy chain IT Switches. All switches shall be home run to the main switch adjacent to the GSA point of entry T-1 circuit.

F. Contractor shall install data cable connection between the main GSA Intranet switch and the GSA provided BAS Desktop PC.

2.13 CENTRAL SOFTWARE

A. System Software Overview: The BAS Contractor shall provide the OID software required for efficient operation of the BAS specified herein. Software shall be modular in design to provide maximum flexibility, expandability, and to permit future revision of the system. The functionality described herein shall be regarded as a minimum. The system software shall include the following, as a minimum:
   1. Complete database entry.
   2. Configuration of the controller and operator workstation application programs to provide the sequence of operation indicated.
   3. Dynamic color Graphics of each system.
   4. Configuration of the reports and point summaries indicated.
   5. Event/alarms comprised of Urgent Alarms, Alarms, and Messages as specified.

B. Server and Web Browser:
   1. The JACE Web Supervisor version 4.x is available to be integrated as current Government Property located in the GSA Data Center.
   2. The JACE Web Supervisor version 4.x requires a full HSPD-12 NACI clearance to be able to program virtually with the use of Government provided laptops via a VPN connection.
   3. The JACE GUI shall be thin-client or browser-based and shall meet the following criteria:
      a. Only a GSA approved browser (currently Internet Explorer) will be required as the GUI, and a valid connection to the server network. No installation of custom software shall be required on the GUI workstation/client. Connection shall be over an intranet or the Internet. A firewall shall be installed in each system connected to the Internet.
      b. Communication between the Web Browser JACE GUI and BAS server supervisor version 4.x shall be encrypted, using a minimum of 256-bit encryption technology within Secure Socket Layers (SSL). Communication protocol shall be Hyper-Text Transfer Protocol (HTTPS)

C. Graphical User Interface (GUI) Software

   1. The GUI shall be a 64-bit full-featured software application compatible with Microsoft Windows. The intent of the GUI is to provide an easy to use graphical OID that enables operators to manage their facilities on a day-to-day basis. The user may navigate within the system to check on environmental conditions, setpoints, schedules, etc. Using a mouse, it shall be possible to easily navigate through floor plans and different areas within a facility or multiple facilities. In addition, manual commands may be used to navigate directly to each point in the system and a tree structure shall show the control system hierarchy.
   2. GSA has developed a Graphics Design Guide that shall be used as on all graphics implementations. GSA will ensure that the latest version is available to accompany this specification. The purpose of the design guide is to provide standardization of all GSA Regional graphics representations by providing example graphics and guidance on alarms, trends, and required format.
   3. For ease-of-use, the GUI shall make extensive use of color to communicate information related to point values, setpoints, and comfort conditions, and shall comply with at least the following:
      a. The GUI workstation software shall graphically display images in 1280 by 1024 pixels, 32 bit True Color or higher.
      b. The control network shall be organized into a logical hierarchy of systems, sites, areas, and equipment. The intent of the GUI is to ensure the operator is always aware of the

position within the system as well as how to logically progress through the graphical hierarchy to select a desired graphic or other source of information.

c. General area maps shall show locations of controlled buildings in relation to local landmarks.

d. Floor plan maps shall show dynamic heating and cooling conditions throughout the buildings. Locations of space sensors shall be shown for each zone. Zone temperatures outside of the acceptable comfort range shall be displayed in red.

e. The system shall be capable of utilizing the mouse to change the individual zone temperature bar to an increased or decreased temperature setpoint within that zone. The floor plan graphic shall dynamically update the colors on a zone-by-zone basis to reflect the actual temperature relative to the desired heating or cooling setpoint. The system shall permit globally changing of the setpoints.

f. Mechanical system graphics shall show the type of mechanical system components serving the zone through the use of a pictorial representation of components. It shall also provide a current status of each I/O point being controlled and applicable to each piece of equipment, including analog readouts, in appropriate engineering units at appropriate locations on the graphic representation.

g. The building operator shall be able to communicate and direct the control functions through the use of a 2-button mouse operator interface to monitor and control the functions and sequences within the system.

h. Operator changes shall automatically be transferred to the appropriate digital controller.

i. The system software shall be programmed to provide a separate color graphic for:

(1) Each piece of equipment monitored or controlled, including each terminal unit.

(2) Each building, indicating the comfort condition by floor.

(3) Each floor, indicating the comfort condition by each zone controlled.

j. Each color graphic supplied for this project shall be of a quality consistent with the manufacturer’s demonstration program.

k. Each color graphic shall display the outside air temperature, relative humidity, and wind direction and velocity.

l. Each color graphic shall include a hot button to permit advancing to the next system color graphic, returning to the previous system color graphic, moving to the appropriate heating system color graphic, moving to the appropriate cooling system color graphic, and moving to the main building color graphic.

m. The main building color graphic shall include hot buttons to permit the operator to directly move to each floor, or each system(s) serving each floor, and to go directly to the color graphics for the heating and cooling plants.

n. The color graphics for each floor shall include hot buttons to permit the operator to go to each system, including terminal units, serving spaces on that floor.

4. The User shall be able to trend (numerically or graphically), and display each physical, virtual or calculated point from each GUI.

2.14 SYSTEM CONFIGURATION BY OPERATORS

A. Database Creation and Modification. Changes shall be done utilizing standard procedures and while the system is on-line and operating. The system shall allow changes to be made either at the local site through a portable computer or at the central OID.

B. The system shall permit the operator to perform the following, as a minimum:
   1. Add and delete BACnet objects and points
   2. Assign BACnet Object/Device Instance numbers and Network numbers
   3. Modify point parameters, control sequences and programs
   4. Reconfigure application programs
   5. Create and/or modify graphics

C. Each of the data points within the database shall be accessible as independent or dependent variables for custom programming, calculation, interlocking, or manipulation.

D. OID GUI software shall permit generating standard ASCII file formats for use with third-party software (Excel, Lotus 123, etc.) to generate and store custom designed reports.

E. In addition, it shall be possible to exchange information with other Windows programs via Dynamic Date Exchange (DDE).

2.15 ALARM AND EVENT REPORTING

A. Alarms or events designated as 'critical' shall be delivered immediately. Non-critical events or alarms may be programmed to be delivered on operator request or automatically, on a scheduled timer. Each alarm or event condition may be assigned an urgency priority. Urgent alarms or events may be programmed to sound external audible devices and/or to email individual workstations, cell phones or alphanumeric pagers. Systems that have Ethernet connections and Telephone Modems for access/alarming are not permitted. The events generated at the DDC module level shall include at least the following information:
   1. Time/Date Stamp, using the standalone control module time/date.
   2. Site location and network address.
   3. Alpha-numeric event ID.

2.16 ADVANCED METERING SYSTEM

A. The metering system shall be connected in this building to electric and gas meters capable of a pulse output, such that demand and consumption can be recorded at 15-minute intervals. The installation of any such meters and/or pulse boxes required for connection to the metering system in this building may have to be installed by the utility companies, but shall be at no additional expense to the government. This shall be coordinated with the utility companies before construction of the building utilities begins.

B. The metering system shall be integrated at the building with the Tridium JACE (currently JACE 8000) for the Building Automation System (BAS) control system as specified herein.

C. The metering system shall include domestic main water consumption, sub-metering of cooling tower(s), electric consumption, electric demand, gas consumption, and gas demand.

2.17 INDOOR AIR QUALITY SENSORS :

A. CO_2 levels shall be measured in the return air stream of each primary air handling unit as shown on the drawings to document and maintain adequate ventilation within the facility.

B. Total Volatile Organic Compound (TVOC) levels shall be measured in the return air stream of each primary air handling unit as shown on the drawings to document and maintain adequate ventilation within the facility.

C. Humidity control shall be measured in the return air stream of each primary air handling unit as shown on the drawings to document levels of humidity within the facility.

D. Static pressure shall be measured and incorporated into the sequence of operations to provide a slightly positive building envelope during occupied hours.

2.18 DDC CONTROLLER SOFTWARE:

A. The General Services Administration shall be the named license holder / owner of all software associated with any and all incremental work on the project. Upon acceptance of the contract by the Government and agreement of payment by the Government, all non-patented or non-copyrighted software and firmware become the property of the Government subject to the Contractors' legitimate intellectual property rights in patented or copyrighted proprietary data, which are at all times retained by the Contractor. Intellectual property rights are defined as the licensed copyrighted software or firmware programs and applications that are lawfully restricted or copyrighted, or other patented engineering application programming tools that were copyrighted or patented independent of the project. The government will be given a full and complete license to use these tools, copyrights, patents, or applications if needed. This license shall be limited to the project work and to the building included in this project. The cost of the license (s) is included in the project cost and shall run for the useful life of the system to which they apply.
The General Services Administration requires that the site system software licenses, firmware licenses, and hardware licenses are managed by the GSA Region 7 Energy Branch through the use of the vendor neutral Tridium Asset Management Tool tracking virtual server application.

B. The system shall continuously perform DDC functions at the local control module in a standalone mode. The operator shall be able to design and modify the control loops to meet the requirements of the system being operated. The operators shall use system-provided displays for tuning of PID loops. These displays shall include the past three input variable values, the set point for the loop, the sample interval and the results of the PID effects on the final output.

C. Each control module shall perform the following functions:
1. Identify and report alarm conditions.
2. Execute each application program indicated in the sequences of operation.
3. Execute DDC algorithms.
4. Trend and store data.
5. Maintain time-of-day schedules.

D. Scheduled Start/Stop Program: Provide software to start and stop equipment based on the time of day and day of week, including holidays. The program shall monitor the controlled equipment status to verify that the start and stop command has been carried out, and provide the system with an alarm when the equipment does not start or stop, fails, or is locally started or stopped, or is manually overridden via the controller HOA switches and/or local motor starter HOA switch. The system shall be capable of the following scheduling features:

1. Scheduling will be by building, area, zone, groups of zones, individually controlled equipment and groups of individually controlled equipment. Each schedule shall provide beginning and ending dates and times (hh:mm). A weekly repeating schedule, i.e. between 8:00 a.m. and 5:00 p.m., Monday through Friday shall constitute one schedule, not five.
2. Dated schedules shall be entered up to 9 years in advance.
3. Schedules shall be self-deleting when effective dates have passed.
4. Leap years and Daylight Savings Time shall be adjusted automatically without operator intervention.

For maximum speed in the communication of schedules, the operator shall have the ability to communicate schedules at the most efficient level with one scheduling command through the mouse interface. This ranges from system wide to individual zones, groups or pieces of equipment.
The system shall allow the operator to designate every combination of equipment to form a group that can be scheduled with a single operator command through the mouse interface at the OID. Each designated group or piece of equipment shall have the capability to be a member of more than one group.

The operator shall be able to make schedule additions, modifications and deletions using the mouse and appropriate dialog boxes. In addition, the operator shall have the capability to edit schedules offline and then download each schedule change to the control modules with a single operator command through the mouse interface. In the event that a schedule in the control module is different from the workstation, the operator shall have the capability to upload each schedule from the control module to the OID.

The operator shall be able to view a color-coded forecast of schedules for instant overview of each schedule. Schedule graphic forecast shall include a color-coded indication of the types of schedules, i.e. normal, holiday and special day override.

E. In the event of a controller failure, the points under its control shall be commanded to the failure mode as indicated on the I/O Summary Table. The DDC software shall reside in the respective control module.

F. Power Failure/Automatic Restart:
   1. Power failures shall cause the control module to go into an orderly shutdown with no loss of program memory.
   2. Upon resumption of power, the Control module shall automatically restart and print out the time and date of the power failure and restoration at the respective OID.
   3. Prior to taking action, the controller shall look at the actual time-of-day and the programmed schedule for the controlled systems. If systems are operating, the restart program shall automatically restart affected field equipment. The operator shall be able to define an automatic power up time delay for each piece of equipment under control.

G. Optimum Start/Stop (OSS)/Optimum Enable/Disable (OED) Program: Provide software to start and stop equipment on a sliding schedule based on the individual zone temperature, the outside air temperature and the heating/cooling capacity, in deg. F/hour, of the equipment serving that zone. The heating/cooling capacity value shall be operator adjustable. Temperature compensated peak demand limiting shall remain in effect during morning start up to avoid setting a new demand peak for the month.

H. Source Temperature Optimization (STO) Program: The system shall automatically perform source optimization for each air handling units, chillers and boilers in response to the needs of operating downstream pieces of equipment, by increasing or decreasing supply temperature set points, i.e. chilled

water, discharge air, etc., using owner-defined parameters. In addition to optimization, the STO capability shall also provide for starting and stopping primary mechanical equipment based on zone occupancy and/or zone load conditions.

The STO program will allow set points for various equipment in the heating/cooling chain to be reset between an owner-defined maximum and a minimum set point based on the actual requirements of the building zones and the most efficient mode of operation. The actual set point shall be calculated based on the number of heating or cooling requests which are currently being received from the equipment or zones served. Once every update period, the STO program shall survey the network to see if each piece of equipment requires additional heating or cooling from its source. The individual zones and pieces of equipment shall be arranged to permit assigning a relative weighting factor to its call for heating or cooling.

I. Energy Conservation Temperature Compensated Demand Limiting (DL) Program:

1. The DL application shall be programmable for a minimum of six separate time of day KW demand billing rate periods. The system shall be capable of measuring electrical usage from multiple meters serving one building and each piece of equipment being controlled by the BAS shall be programmable to respond to the peak demand information from its respective meter and time of day.
2. The demand control function shall utilize a sliding window method, with the operator being able to establish the KW threshold for a minimum of three adjustable demand levels. The sliding window interval shall be operator-selectable in increments of one minute, from 1 to 60 minutes. Systems that incorporate rotating shed tables will not be acceptable.

3. The operator shall be permitted to set the individual equipment temperature set points for each operator defined demand level. Equipment shall not be shed if these reset set points are not satisfied, rather the set point shall be revised for the different established demand levels. The system shall have failed meter protection, such that when a KW pulse is not received from the utility within an operator adjustable time period, an alarm will be generated. The system software will automatically default to a predetermined, operator changeable fail-safe shed level.

4. The system shall have the ability to archive demand and usage information for use at a later time. System shall permit the operator access to this information on a current day, month-to-date, and a year-to-date basis.

5. The system shall have the ability to remotely change the Chill water and Heating water set points via interface cards with the boiler and chiller providing 100% connectivity and control. Start/Stop status, set points, and operating temperatures of chillers and boilers shall active viewable points.

J. Day/Night Setback (DNS) Program:

1. The system shall allow the space temperature to drift down or up within a preset operator-adjustable unoccupied temperature range. The heating and cooling shall be activated upon reaching either end of the DNS range and shall remain activated until the space temperature returns to within the DNS range.

2. The system shall close outside air and exhaust air dampers during the unoccupied period, except for 100% outside air units.

3. Unoccupied space temperatures shall be monitored by the DDC temperature sensors located in the individual zones being controlled or within representative rooms in the building if full DDC is not being implemented.

K. High Performance Green Building Program Strategy:

1. The engineer of record will be expected to bring other high performance green building operating strategy to the attention of the GSA Regional Engineers and Energy Branch Specialist for review of addition strategy to be incorporated into the sequence of operation that is well thought out, makes sense and planned to be incorporated into the building designated for this specification taking into consideration the special characteristics of that building.

L. The user shall be able to define, modify or delete the following parameters.

1. DNS setpoint temperature(s).
2. Temperature band for night heating (night low limit) operation.
3. Period when the DNS is to be activated.

M. Timed Local Override (TLO) Program:

1. The system shall have TLO input points which permit the occupants to request an override of equipment which has been scheduled OFF. The system shall turn the equipment ON upon receiving a request from the local input device. Local input devices shall be push button (momentary contact), wind-up timer, or ON/OFF switches, as specified.

2. If a momentary contact push button is used, the system operator shall be able to define the duration of equipment ON time per input pulse and the total maximum ON time override permitted. Override time already entered shall be canceled by the occupant at the input point. If a wind-up timer is used, the equipment operation shall stay in override mode until the timer expires. Year to date, month-to-date and current day override history shall be maintained for each TLO input point. History data shall be accessible by the operator continually and shall be capable of being automatically stored on hard disk and/or printed on a daily basis, and/or output to a third party software program.

N. Space Temperature Control (STC) Program:

1. There shall be two individually adjustable space temperature setpoints, one for cooling and one for heating, separated by an energy conserving dead-band. Both setpoints shall be operative at continually. The cooling system shall function if the actual space temperature is equal to or greater than the cooling setpoint. The heating system shall function if the actual space temperature is equal to or less than the heating setpoint. In addition, there are two modes of operation for both setpoints, one for the occupied mode example: heating = 72°F, cooling = 76°F and one for the unoccupied mode example: heating = 55°F, cooling = 90°F.

2. The occupied/unoccupied modes may be scheduled by time, date, or day of week.

3. The heating system control shall modulate around the heating setpoint and the cooling system shall modulate around the cooling setpoint. Under no condition shall the cooling system cool to the heating setpoint, and vice versa.

4. Each setpoint and offset shall be operator definable. When in the occupied mode, start-up mode, or when heating or cooling during the (night setback) unoccupied mode, a request shall be sent over

the network to other equipment in the HVAC chain, such as to an AHU fan that serves the space, to run for ventilation. The operator shall be able to disable this request function if desired, such as when there is a radiation heating system in addition to the air system.

5. When comfort conditions are warmer than ideal, a request for additional cooling shall be sent over the network to other cooling equipment in the HVAC chain, such as an air handling unit or a chiller system. This information shall be used for optimization of equipment in the HVAC chain. The operator shall be able to disable this function if desired.

6. When comfort conditions are cooler than ideal other than as a result of too much mechanical cooling, a request for additional heating shall be sent over the network to other heating equipment in the HVAC chain, such as a boiler system. This information shall be used for optimization of equipment in the HVAC chain. The operator shall be able to disable this function if desired.

7. The cooling and electric heating setpoints may be increased or decreased under demand control conditions, to reduce the cooling and heating load on the building during the demand control period. Up to three levels of demand control strategy shall be provided. The operator may predefine the amount of setpoint increase or decrease for each of the three levels. Each space temperature sensor in the building may be programmed independently.

8. An optimum start-up program shall transition the system operation from the unoccupied setpoints to the occupied setpoints. The optimum start-up algorithm shall consider the rate of space temperature rise for heating and the rate of space temperature fall for coolin] under nominal outside and inside relative conditions; it also considers the outside temperature, and the heat loss and gain coefficients of the space envelope (AI: Space Temperature outside air temperature and relative humidity, and the wind direction and velocity).

9. The DDC (PID control loop) comparing the actual space temperature to its setpoint, shall modulate the dampers and valves or stage the heating or cooling to achieve the setpoint target throughout the STC program operation.

O. Auto Alarm Notification Programs

1. Transmission: The console shall automatically alarm both locally and remotely (through Email via GSA Niagara Web Supervisor and SMTP servers) in the event of an operator specified alarm condition. The operator shall be able to disable each alarm condition. The operator shall be able to disable each alarm condition to an active or inactive state. No situation, short of communication equipment failure or disconnect, should be possible that would block this alarm reporting. The console shall automatically email up to a minimum of three (3) email addresses in the event of an alarm. The alarm identification, limit, message, and the email address(es) shall be software definable. If the system is unable to make a connection with the Email Server, it shall retry a pre-programmed number (adjustable) of times. If it is still unable to make a connection, it will buffer the message until the connection to the Email Server is restored at which time it will transmit all buffered messages. It will continue to do this until a valid connection is made and the alarm message(s) is/are sent and an acknowledgement is made by an operator.
2. Email Compatible Pager Annunciation: The console shall be configured to email designated pagers of the type designated by the Owner. The console shall be user programmable to email pagers in an order specified by the operator. This feature shall be initially programmed by the

installing contractor. The console shall connect and successfully send an alphanumeric data string to the pager service. The console shall email pagers only for after-hours CRITICAL alarm annunciation. Each of the other alarm types shall email only the designated recipients.

3. Alarm text messages shall be short, well defined, and easy to understand by property managers.
4. Alarm text messages shall be for major equipment such as boiler/chiller water temp failure to achieve +/- 2 degrees of loop set point.
5. Alarm text messages shall not be nuisance alarms in any event.
6. A list of property managers and equipment operators designated as alarm recipients will be provided upon request.
7. Alarm List: The following is considered to be a minimum list of operator definable alarm conditions:
    a. Each operation (on/off, modulate, etc.) commanded by the controller that failed to occur.
    b. Change-of-state of each status input other than programmed change of state.
    c. Exceeding a high or low limit on each analog input.
    d. Exceeding a maximum or minimum difference between two or more analog inputs.
    e. Switching of the control outputs from automatic mode (controller) into either manual on or off position at the controller HOA switch.
    f. Return of each control outputs from manual on or off to automatic mode at the controller HOA switch.
    g. Controller component failure.

P. Other Programs: The console shall also execute at least the following functions:
    1. Minimum on/off time (each output).
    2. Equation generation of up to 100 equations minimum, per master controller, utilizing at least multiply, divide, add, subtract, square root, greater than, less than, equal to, and Boolean operation for controlling outputs based on inputs, time-of-day, elapsed time, and alarm conditions.
    3. Direct Digital Control.
    4. High and low alarming on each analog inputs.
    5. Trending or history of a group of at least 32 variables, and plot or print the data.
    6. Access Levels and Passwords for security, a minimum of 3 password access control levels, and 30 individual passwords.
    7. Save and restore functions for dumping the memory to external storage device and back.

Q. Software Integration: The programs should be integrated into a single working system and each of the above functions should be executed in real time and automatically when needed, such as to optimize the controlled equipment.

R. Lighting Control: Where applicable/specified on drawings, lighting control scheduling utility programs shall be available and programmed to schedule occupancy periods in multi-zone applications.

2.19 SOFTWARE MAINTENANCE

A. During the warranty period, the Contractor shall be responsible to update, maintain, change, modify, and correct software deficiencies upon request by the Owner, to meet the specified sequence of operation. During this period, when software problems cause comfort or equipment problems, the Contractor shall

implement corrective measures within four hours of notification by the Owner. Corrective action may be taken by local or remote access of the BAS.

2.20 SEQUENCE OF OPERATION

A. [Sequence of Operations as indicated in the construction drawings.] [Sequence of Operations as specified in SECTION 230901 – SECQUENCE OF OPERATION FOR HVAC CONTROLS.]

B. Emergency Shut-down of OA in accordance with Department of Homeland Security Interagency Security Committee Physical Security Criteria for Federal Facilities, dated April 12, 2010. Include Emergency "OFF" trigger on BAS main page. Close all OA dampers and shut down AHU delivery systems. Turn off exhaust fans connected to BAS.

PART 3 – EXECUTION

3.01EXAMINATION

A. General: The Contractor shall verify that properly conditioned power supply is available to control units and OIDs (see Electrical drawings). Contractor shall verify that field end devices and wiring are installed, tested, and certified, before proceeding with installation of BAS electronic equipment.

3.02INSTALLATION

A. General: The Contractor shall install indicated equipment to comply with manufacturer's written instructions and local codes.

B. Software: The Contractor shall install software in control units, field control panels and OIDs. Contractor shall implement each specified feature into programs to meet the specified and required sequences of operation.

C. Connection: The Contractor shall connect and configure equipment and software to achieve the sequences of operation specified.

D. Location: The Contractor shall verify location of temperature and humidity sensors and other exposed control sensors with plans and room details before installation. Locate space sensors 48 inches above floor, as per ADA requirement.
   1. The Contractor shall install averaging elements in ducts and plenums serpentined across the plenum or duct.

E. Thermostat Guards: Provide guards on sensors or self-aspirating flush mounted sensors in the following locations:
   1. Entrances.
   2. Public areas.
   3. Where indicated.

F. Damper Motor Installation: N/A.

G. Label and Nameplate Installation: Install labels and nameplates to identify BAS components according to Division 15 Sections specifying mechanical identification.

H. Hydronic Instrument Installation: Install hydronic instrument wells, valves, and other accessories according to Division 15, Section 15510, "Hydronic Piping."

I. Duct Volume Control Damper Installation: N/A

J. All safety circuits (fire alarm, freeze protection, high and low static pressure, etc.) shall be hard wired and perform their control safety functions independent of the DDC/BAS and the position of the Hand-Off-Auto switch. Indication and alarm of safety functions to the BAS shall be provided as specified.

K. Permanently mark terminal blocks for identification. Protect all circuits to avoid interruption of service due to short-circuiting or other conditions. Line-protect all wiring that comes from external sources to the site from lightning and static electricity.

L. Label or code each field wire at each end. Permanently label or code each point of all field terminal strips to show the instrument or item served. Color-coded cable with cable diagrams may be used to accomplish cable identification.

M. Signal Transmission System Equipment shall be installed as follows:

1. No splices shall be allowed in shielded and coaxial cables. Terminations shall be in accessible locations. Cables shall be harnessed with cable ties.
2. Fit all equipment contained in cabinets or panels with service loops, each loop being at least 12 inches long. Equipment for fiber optics system shall be rack mounted, as applicable, in ventilated, self-supporting, code gauge steel enclosure. Cables shall be supported for minimum sag.
3. Keep cable runs as short as possible; however, cable runs must be parallel to building lines. Allow extra length for connecting to the terminal board.
4. Do not bend flexible coaxial cables in a radius less than ten times the cable outside diameter.
5. Use vinyl tape, sleeves, or grommets to protect cables from vibration at points where they pass around sharp corners, through walls, panel cabinets, etc.
6. Grounding shall be in accordance with NFPA 70. All ground wire shall be bare copper.
7. MCR Grounding: Resistance to solid earth shall not exceed three ohms for signal and shall be demonstrated by the contractor.

N. Temperature sensor assemblies shall be readily accessible and adaptable to each type of application in such a manner as to permit for quick, easy replacement and servicing without special tools.

O. Mount duct sensors in locations to sense the correct temperature of the air only, within the vibration and velocity limits of the sensing element. Mount extended surface element, when used, securely within the duct and position to measure the best average temperature. Thermally isolate elements from brackets and supports to respond to air temperature only. Securely seal duct penetrations. P. Mount water temperature sensors in immersion wells.

Q. Mount all flow switches, flow sensors and pressure sensors in locations to sense the correct flow or pressure. Install pipe taps for sensor pickup.

R. Provide additional wells in pipes and ports in ducts adjacent to all sensors for calibration of the sensor.

S. All panels, controllers, and wiring shall be labeled and identified.

3.03 ELECTRICAL WIRING AND CONNECTIONS

A. Electrical:

1. Furnish and install all power, control interlock wiring (fire alarm interlocks, freeze protection, high and low static pressure limits, etc.), circuit breakers and appurtenances required for a complete, functioning control system. Installation shall conform to Division 16. Power for the controls shall be obtained from the nearest electrical panel having available capacity. Circuits for the control system shall be clearly marked at the panel directory and on the electrical record drawings.
2. The system shall consist of 3 areas of installation:
    a. Low Voltage Wiring: All low voltage wiring (24V or less) shall be no less than #16 conductor twisted pairs of stranded wire. All analog input points shall be shielded regardless of length. All low voltage wiring will be run concealed (out of sight) in areas outside of equipment and mechanical rooms. Within equipment and mechanical rooms and exposed areas, the low voltage cable will be run in EMT conduit with compression fittings for protection. All low voltage wiring above 8 feet that is concealed (out of sight) can be run without conduit. Control wiring run in air plenums will require the use of UL approved plenum rated cable. Provide grounding as required.
    b. Line Voltage Wiring: All line voltage wiring (greater than 24V) will be #12 THHN AWG or larger and will be run in EMT conduit with compression fittings.
    c. Communications Cable (LAN Network): All data communications cable shall be Fiber Optic RG62U coax or Belden 8760 or equal TSP #18. Signal levels (milli-volts) shall be DC voltage. All communication cable shall be run concealed where possible. When exposed it shall be installed in conduit. In areas where a return or supply air plenum exists, the cable shall be a UL approved plenum rated cable. When Fiber Optic cable is used, there shall be a hub at each node. The hub shall convert fiber optic to coax and shall be furnished in single port or multi-port hubs. No two nodes on the network will experience a delay of longer than 31 microseconds. Active hub designs shall be used where beneficial and shall be fixed port stand-alone, variable port modular, active link, or board level.

B. Cable Installation:

1. Concealment: Conceal cable, except in mechanical rooms and areas where other conduit and piping are exposed.
2. Exposed Cable: Install exposed cable in raceway.
3. Concealed Cable: Install concealed cable in raceway.
4. Multi-Conductor Instrument Cable: Bundle and harness multi-conductor instrument cable in place of single cables where a number of cables follow a common path.
5. Flexible Conductors: Fasten flexible conductors, bridging cabinets and doors, neatly along hinge side; protect against abrasion. Tie and support conductors in neat and workmanlike manner.
6. Number or Color Code Conductors: Number code or color code conductors, except local individual room controls, for future identification and servicing of control system.

C. Electrical Components: Connect electrical components to wiring systems and to ground as indicated and instructed by manufacturer. Tighten connectors and terminals, including screws and bolts, according to

equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's tightening requirements are not indicated, tighten connectors and terminals according to tightening requirements specified in UL 486A.

D. Manual Reset Limit Controls: Connect manual-reset limit controls independent of manual control switch positions.

E. Selector Switches: Connect HAND-OFF-AUTO selector switches to override interlock controls when switch is in HAND position only.

3.04 COMMISSIONING

A. Manufacturer's Field Services: The Contractor shall provide the services of a factory authorized service representative to assist an independent commissioning agent to start up the BAS, and to commission each component included in the BAS.

B. Controls and Safeties: Test and adjust controls and safeties as follows:
   1. Inspection: Inspect each individual control panel, component, field device, the connecting wiring and terminations for proper installation, correct placement, and conformance to shop drawings.
   2. Labeling: Label each field device with the point ID, date and time of verification, and the commissioning technician’s initials.
   3. Testing and Calibration: Test, calibrate, and set each of the digital and analog sensing and actuating devices. Calibrate each instrumentation device by making a comparison between the central computer or field control panel display and the reading at the device, using an instrument traceable to the National Bureau of Standards, which shall be at least twice as accurate as the device to be calibrated. Record the measured value and displayed value for each device in the Commissioning Report.
   4. Checking and Setting Zero and Span Adjustments: Check and set zero and span adjustments for each of the actuating devices. Manually activate damper and valve operators to verify free travel and fail condition. Check valve or damper to ensure that it shuts off tight when the appropriate signal is applied to the operator.
   5. Checking Digital and Analog Control Points: Check each individual digital and analog control point by making a comparison between the control command at the operator’s console and the status of the controlled device while switching the unit from one state to the other, i.e., starting and stopping a fan. Check each digital input point by making a comparison of the state of the sensing device and the console display. Record the results for each device in the Commissioning Report.
   6. Validate Sequences of Operation: Verify each sequence of operation by using the approved commissioning checklists to record results and submit the sheets with the Commissioning Report. Verify proper sequence of operation of specified functions on each of the systems being controlled by the BAS.
   7. Tuning Control Loops: Tune each control loop to obtain the fastest stable response without hunting, offset, or overshoot.

3.05 OPERATIONAL PERFORMANCE

A. Installation and performance verification shall be accomplished as follows:

1. Operational Tests: The Contractor shall conduct an operational test of each system and subsystem, including each of the associated field control panels, components, and field devices, to verify the proper sequence of operation and the actual performance of the installed BAS subsystem.
2. Documentation: Provide written documentation of the system commissioning and performance verification processes described above, including an itemized inspection and validation report complete with dates and second test results, and a performance test report for each system and each Sequence of Operation.

3.06 DEMONSTRATION

A. General: The contractor shall demonstrate the operation of the BAS hardware, software, and each of the related components, systems and subsystems to the satisfaction of the Owner. The Contractor shall schedule the demonstration with the Owner's representative at least 2 weeks in advance of the proposed demonstration. Demonstration shall not be scheduled until each of the hardware and software submittals, and the Commissioning Test Report are received and approved. If the work fails to conform to Contract specifications, scheduling of additional site visits by the Contractor for re-demonstration is required.

B. Personnel and Equipment: The Contractor shall supply the required personnel and equipment for the demonstration, including, but not limited to, instruments, ladders, paper, etc. The contractor-supplied personnel shall be competent with and knowledgeable of the project-specific hardware, software, and the HVAC systems. Complete training documentation and a complete copy of the BAS submittals shall be on file at the job site.

C. Procedure: The system shall be demonstrated following the same procedures used in the Commissioning Test by using the approved Commissioning Checklists and Commissioning Agent. Demonstrations shall include, but not necessarily be limited to, the following:

1. Software: The Contractor shall demonstrate that the required software is installed in each of the operator interface devices and DDC controllers. Demonstrate that the graphics screens, alarms, trends, and reports are installed as specified, submitted and approved.
2. Interrogation and Command: The Contractor shall demonstrate that each of the points specified and shown can be interrogated and/or commanded (as applicable) from each OID and controllers as specified.
3. Contractor will demonstrate proper connectivity with the Regional server located on the GSA WAN.
4. Calibration: The Contractor shall demonstrate that the calibration of each of the input/output devices is correct by using the same methods specified for the Commissioning Tests. A minimum of 10 percent of the I/O points shall be selected at random for this demonstration. Upon failure of one device to meet the specified end-to-end accuracy, an additional 10 percent of I/O points shall be selected at random for this demonstration. This process shall be repeated until 100 percent of randomly selected I/O points have been demonstrated to meet specified end-to-end accuracy.
5. Remote Location Software: The Contractor shall demonstrate that the DDC and other specified point-related software programs exist at respective controllers. The DDC programming and point database shall be as submitted and approved.
6. Direct Digital Controls: The Contractor shall demonstrate that the DDC programs accomplish the specified sequences of operation.

7. Power Failure Recovery: The Contractor shall demonstrate that the field control panels automatically recover from power failures, as specified and return the systems to the state specified for the time-of-day if the power restoration, i.e., if a fan is to be off at the time power is restored, the fan shall not start after the power is restored, until the fan's next scheduled on time.
8. Stand-Alone Operation: The Contractor shall demonstrate that the stand-alone operation of panels meets the requirements of these Specifications. Demonstrate that the controller's response to LAN communication failures meets the requirements of these Specifications.

D. Plans: Prior to the Demonstration, the Contractor shall provide the Owner with three sets of the following documentation for approval:
   1. "As-Built" Control Diagrams: Marked-up "As-Built" diagrams showing the interfaces between each of the panels, controls, and equipment. The drawings shall identify the panels and equipment connections by word description, terminal numbers, and wiring colors and numbers. Copies of drawings shall also be provided on CD in AutoCAD Release 14 or later format.
   2. Floor Plan Drawings and System Graphic Displays: The Floor Plan drawings and system graphic displays shall show the location of each of the sensors, control panels, miscellaneous devices and wiring between each of the inputs, outputs, local panels, and the field control panels. The wiring and terminal strip schedules shall show the color-coding and the wire numbers for the entire control system. Copies of the drawings shall also be provided on disks in AutoCAD format.

E. Physical Demonstration of Response to System Conditions: System acceptance shall include demonstrations that each of the components function properly by actual response to system conditions that may be encountered. The Contractor shall furnish the materials such as sources of temporary heating and cooling required to cause the system components to go through the required sequences. Computer simulations of possible operating conditions are not acceptable for demonstration of system performance. Proposed methods of demonstrating component operation shall be submitted to the Owner. Representatives of Owner will also witness the tests.

F. Operation History Printout: Prior to scheduling the initial control demonstration, the Contractor shall furnish to the Owner an operating history printout (in graphical and text formats) of the temperature readings of the instruments for each of the zones on a 5-minute basis covering a 24-hour period. The reading printout shall be separated into individual zones with time headings and with instrument identification and location in English, so temperature sequence can be followed readily.

G. Orientation: The demonstration shall include, as a minimum, one orientation period sufficiently comprehensive to familiarize the Owner's operating and maintenance personnel with the overall installation and one detailed technical session long enough to instruct maintenance personnel on maintenance and repair procedures. The technical session or sessions shall continue until each of the attending personnel have a thorough understanding of the procedures involved (see System Training).

3.07 START-UP AND TEST

A. Start-up and Test: Upon completion of integration and installation of the software, the Contractor shall inspect and test run the entire software package for verification of the proper sequence of operation for each component and system. The Contractor shall submit a certification to the Owner that each of the programs have been field tested for proper function prior to final system test (see Commissioning).
   1. Final Inspection: Prior to final acceptance by the Owner, a final inspection shall be conducted by the Owner and representatives of the Owner. This is not to preclude the requirement for a

pre-inspection to be made by the Contractor to check the completion of the work prior to the final inspection. The final inspection shall, at a minimum, include confirmation and validation that the specified software and control strategies have been loaded into the BAS at the facility being inspected. The Contractor shall be able to demonstrate that each of the required software strategies have been installed and that the equipment is being controlled by those strategies. The Contractor shall have the software completely loaded and functional at least one week prior to a scheduled inspection and a complete set of histories shall have been submitted to the Owner for review and approval. The intent of this is to determine whether or not installed software is functioning as intended and specified.

As there may be more points requiring trending than a single history program's capability, more than one run of histories may be required to record the required data. Prior to submitting a history, the Contractor shall perform a self-review to identify and correct each problem. Histories shall be presented at 5-minute intervals for a 24-hour period, unless directed otherwise. During the final inspection and during the warranty period, if a malfunction occurs in the system operation, systems being monitored shall be operated with an effective occupancy schedule; i.e. indications that a system was scheduled off for the 24 hours of the history and remained off are of no value. During this inspection, each of the system setpoints (both calculated and manual inputs) shall be provided with the histories. If malfunction occurs during subsequent histories' reviews, the system in question shall have each of the pertinent setpoints logged in the history and be retested. Inspections shall not occur without the systems operating in either the mechanical heating or cooling mode; if scheduled delivery of the product falls during a period in which the systems are not operating, the inspection will be delayed until such time as the systems have been operating under control for one week. The systems shall be retested for opposite season (heating or cooling) operation at a mutually agreeable time after the opposite system has been operating at least 10 working days. The following constitutes those items which, at a minimum, shall be included in a start-up submittal:

a. Outdoor Air:
    (1) Dry bulb temperature.
    (2) Wet bulb temperature and/or relative humidity.
    (3) Calculated Enthalpy.
b. Electrical Power, Phase, Voltage, Frequency: Histories should indicate time and duration of each occurrence of power interruption and normal power resumption.
c. Overrides: Run status.
d. Secondary chilled water Loop:
    (1) Chilled water supply temperature.
    (2) Chilled water return temperature.
e. Chillers:
    (1) Scheduled run status.
    (2) Actual run status.
    (3) Amperage.
    (4) Log of alarmed outages.
    (5) Chilled water supply temperature from each chiller.
    (6) Chilled water return temperature to each chiller.
    (7) Condenser water return temperature leaving each chiller.
    (8) Condenser water supply temperature entering each chiller.
    (9) Lead/lag selection.

(10) Capacity control command.

f. Chilled Water Pumps:
   (1) Scheduled run status.
   (2) Actual run status.
   (3) Logged alarmed outages.
   (4) Amperage.

g. Condenser Water Pumps:
   (1) Scheduled run status.
   (2) Actual run status.
   (3) Logged alarmed outages.
   (4) Amperage.

h. System Secondary Chilled Water Pumps:
   (1) Scheduled run status.
   (2) Actual run status.
   (3) Logged alarmed outages.
   (4) Amperage.
   (5) % speed.
   (6) Speed control signal.
   (7) System differential pressure (controlling sensor value).

i. Cooling Tower:
   (1) Scheduled run status and fan speed sequencing.
   (2) Actual run status and fan speed sequencing.
   (3) Amperage.
   (4) Log alarmed outages.
   (5) Condenser water supply temperature.
   (6) Condenser water return temperature.
   (7) Calculated condenser water reset temperature.
   (8) Outside air dry bulb and wet bulb temperatures (% RH).
   (9) Reset valve position.
   (10) % speed.
   (11) % speed control command signal.

j. Air Handling Units
   (1) Supply fan scheduled run status.
   (2) Supply fan actual status.
   (3) Supply air temperature.
   (4) Return air temperature.
   (5) Mixed air temperature.
   (6) Outdoor, return, and relief air dampers positions.
   (7) Valves cooling positions.
   (8) Outside air temperature.
   (9) Duct static pressure and VAV terminal units. (10) VAV control signal and VAV terminal units .
   (11) Fan % speed and VAV terminal units.

k. Exhaust Fans:
   (1)Scheduled run/enabled status.
   (2)Actual run status or enabled status.

(3) Histories shall show fans are in operation as interlocked with other equipment/systems controlled as such.

l. Variable Air Volume Terminals:

(1) Space air temperature.

(2) Air damper controller output signal.

(3) Heating coil valve controller output signal.

(4) Supply air temperature.

(5) Supply air volume.

2. History: During warranty period, a complete history of the performance of each of the systems and the trouble/repair logs shall be submitted by the Contractor.

3. Software upgrades: During the five-year warranty period, the Contractor shall provide and install software upgrades released by the manufacturer as applicable to the systems installed at the facility. At the conclusion of the warranty period, the Contractor shall submit to the Owner a signed certificate certifying that the software version currently installed is the latest release available from the manufacturer.

B. Instruction: Furnish the services of a factory-trained field representative to monitor and instruct other parties in system inspection, installation, checkout, testing and adjusting, as required, and for performing the work related to system start-up.

C. Documentation: As a part of the operation and maintenance manual, the Contractor shall provide a detailed copy of the finally accepted program for each field control panel and sufficient programming information and instruction to enable the Owner to modify or reprogram parts of the program as desired.

3.08 ACCEPTANCE PERIOD

A. General: After approval of the BAS Demonstration and prior to Contract Close-Out, the system shall enter an Acceptance Period of at least four weeks of uninterrupted operation. The Contractor shall schedule the beginning of the Acceptance Period with the Owner at least 2 weeks in advance. During the Acceptance Period, the system shall operate properly without malfunction, without alarm caused by control action or device failure, and with smooth and stable control of systems and equipment in conformance with these Specifications. At the end of the four-week period, the Contractor shall provide written notification of the pass/fail status of the Acceptance Period to the Owner, including documentation identifying each of the problems experienced. If the system failed the tests, the Contractor shall provide notice to the Owner that each of the problems have been corrected. The Acceptance Period shall be restarted at a mutually scheduled time for an additional one-week period. This process shall be repeated until the system has passed the Acceptance Period without exception.

B. Hard Copy Log of Alarms: During the Acceptance Period, the Contractor shall maintain a hard copy log of each of the alarms generated by the field control panels. For each alarm received, the Contractor shall diagnose the cause of the alarm, and shall list on the log for each alarm the diagnosed cause of the alarm, and the required corrective action taken. If, in the Contractor’s opinion, the cause of the alarm is not the responsibility of the Contractor, the Contractor shall immediately notify the Owner’s representative.

C. Trend Logs: During the Acceptance Period, the Contractor shall maintain the entire controller network and workstation hardware and software in a state that will allow remote access by the Owner for other representatives to access Trend Logs as discussed below:

1. General: Prepare controller and workstation software to display graphical format trend logs during the Acceptance Period. Trend logs shall demonstrate compliance with contract documents. Trend logs shall be set up to meet the following requirements.
2. Reset Schedule: Trend Logs shall include each of the analog and digital input values, analog and digital output values, and set points, both manual and as determined by a reset schedule.
3. Line Differentiation: Lines shall be labeled and shall be distinguished from each other by using either different line types or different line colors.
4. Graphic Keys: Indicate engineering units on the y-axis values; e.g. degrees F., inches wg, Btu/lb, percent wide open, etc.
5. Compatible Values: The x-axis scale shall be chosen so that each of the rendered values are in a readable range. Incompatible ranges of analog and digital points shall not be mixed on the automatically formatted graphics. The operator may choose to manually select these points at will.
6. Outside Air Trending: Trend outside air temperature, humidity, and enthalpy during each period in which other points are trended.
7. System Uniformity: Each of the points trended for one HVAC subsystem (e.g. air handling unit, chilled water system, PDU system, hot water system, etc.) shall be trended during the same trend period.
8. Labeling: Each graph shall be clearly labeled with HVAC subsystem title, date and times.
9. Trend Log Schedule: A complete set of trend logs shall consist of each of the required points, trended for 24 hours with 5-minute intervals.

3.09 ON-SITE OPERATOR TRAINING

A. Supplies: Provide up to three (3) complete sets of the approved Operations and Maintenance Manual to be used for training.

B. Personnel: Provide services of highly qualified technical personnel for three 6-hour days at project site to instruct Owner’s personnel in operation and maintenance of the installed BAS. Provide follow-up training consisting of one day per month for a period of 3 months following the date of Final Acceptance. One or more Owner’s representatives other than the maintenance and operations personnel shall witness training sessions. Instruction shall be in classroom setting at project site.

C. Taping: The entire training procedure shall be video and audio taped for later or follow-up usage by the Owner. Provide three copies of the video and audio tapes.

D. Lesson Plan: The Contractor shall submit a detailed lesson plan to the Owner at least 30 days prior to scheduling training for approval. The lesson plan shall identify:
   1. Subject.
   2. Time period.
   3. Synopsis.
   4. Tools or equipment used during lesson.
   5. Pre Qualifications of the personnel to be trained for each session.
   6. Biographical sketches of the proposed training personnel, listing experiences that qualify them for this particular training.

E. Material: The training provided by the Contractor shall cover the total amount of information required to completely familiarize the Owner’s personnel with the operation of the BAS and associated systems.

Required maintenance of interface equipment should be covered in this session. Also included shall be a system overview to familiarize engineering personnel with the basic system performance. The BAS hardware should not be treated as a secretive “black box”. Instead, every effort should be made by the Contractor to acquaint the Owner with the particulars of the system.

F. Personnel: Training will be provided for personnel as specified by the Owner. Training sessions should require only a very basic knowledge of control systems and computer operation. These training sessions shall be developed for a basic high school education only.

G. Schedule: The scope of the training course shall be submitted to the Owner for approval prior to scheduling the training sessions. The sessions should be scheduled after final checkout of the System and before the Acceptance Period. The successful completion of the training session will be considered as part of the final stage of the project construction and the project will not be considered complete until this is accomplished. Training shall take place at the site, on the specific system installed under this contract, and in classrooms provided by the Owner. The training equipment and supplies shall be provided by the Contractor.

3.10 MAINTENANCE

A. General: The Contractor shall provide the services, materials, and equipment required for the preventative maintenance service, inspection, calibration, and repair of the system hardware installed under this contract throughout the warranty period. The required materials, equipment, etc., required for the maintenance work shall be provided by the Contractor under this contract, at no additional cost to the Owner. The Contractor shall have qualified control personnel available during the warranty period to provide service to the BAS components as required at no additional cost to the Owner. The Contractor shall furnish the Owner with a telephone number where the appropriate service mechanic can be reached at all times.

B. Description of Work:
   1. General: The work covered on this specification shall include maintenance of the BAS equipment and appurtenances installed under this contract, including each of the sensors, control devices, interfacing equipment, hardware, and software.
   2. Minimum: As a minimum, the Contractor shall provide the manufacturer’s required preventative maintenance for those sensors and control devices that are incorporated into the BAS and maintenance requirements stated hereinafter.

C. Personnel: The Contractor shall furnish sufficiently qualified personnel and the proper equipment, and materials to accomplish, promptly and satisfactorily the work under this contract. Resumes of such personnel proposed for this work shall be supplied with the technical proposal as part of the offer.
   1. The Contractor shall furnish the required competent supervision, approved by the Owner, during the entire progress of the work, and with full authority to act for the Contractor. The Supervisor shall affect daily liaison during the normal working hours with the designated representative of the Owner. Such supervision shall be provided for the work done by the Contractor’s employees and subcontractors to assure performance in strict accordance with the provisions contained in this specification.
   2. Service Personnel: The service personnel shall be certified approved by the BAS manufacturer to maintain the installed system.

D. Routine Maintenance: During the warranty period, the Contractor shall provide at least one inspection per time frame listed below or more if required by the manufacturer or the services for the required maintenance.
   1. Following Final Approval:
      a. First Quarter: 1 day per week.
      b. Second Quarter: 2 days per month.
      c. Third Quarter: 1 day per month.
      d. Balance of Contract's warranty period: 1 day per month.
   2. Inspections:
      a. These inspections shall include but not be limited to visual and operational checks of each of the interface panels and sensors.
      b. The Contractor shall schedule and coordinate the scheduling of the performance of the inspections with the Owner.
      c. The Contractor shall, where required, provide the required services to adjust, repair, and maintain the system equipment as required to bring the system operation into compliance with the contract documents.
   3. Regular Service Calls: These calls shall be performed during regular working hours, 8:00 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays.

E. Emergency Service: The Owner will initiate service calls when there is indication that the system equipment is not functioning properly. The service mechanic shall be on the job ready to service the control system within 24 hours or the next working day, whichever is sooner, after receiving a request for service and the work shall be prosecuted continuously until the system is back in reliable operating condition.

F. Recurring Maintenance: Recurring maintenance shall include the on-going incidental repair of parts or complete systems, and the removal of defective parts or complete systems, and the testing of the installation of new parts or systems in place of those removed. Each of the incidental repair and replacement parts or complete systems shall equal or exceed the original manufacturer's specifications. It is the intent of these specifications that the maintenance personnel to "cure" chronic maintenance problems, rather than cause the Owner to undergo frequent repetitions of the same or similar problems on a given specific component, equipment, or system. Failure of a specific item, component, equipment, and/or software routine that occurs with a frequency exceeding three occurrences in three months shall result in the Contractor replacing the failing item of hardware and/or software, and for the warranty on that item to commence afresh. The Contractor shall issue a new warranty certificate for this part or system, indicating the new expiration date.

G. Records and Logs: The Contractor shall keep records and logs shall be kept of each maintenance task. Cumulative records for each major component and for the complete aggregate system shall be organized chronologically. Forms, in the format prescribed by the Owner shall be completed and submitted monthly to the designated Owner's staff member by the tenth day of the succeeding month indicating that planned and systematic maintenance has been accomplished for the Owner and what specific services have been performed.

H. Work Requests: Each service call request, when received, shall be separately recorded on an approved form by the Contractor. The form shall include the serial number identifying the component involved, its location, date, and the time the call was received, nature of trouble, names of the Contractor's employee(s) assigned to the task, instructions as to what is to be done, the amount and nature of the materials to be used, the time and date work started, time and date of completion, and a space for the Owner's inspector to

indicate approval or further corrective action where found required. The designated Owner's staff member shall receive, within five (5) days after work is accomplished, a record of the work performed.

I. System Modifications: Recommendations for system modification shall be provided in writing to the designated Owner's staff member. No system modification, including operating parameters and control is allowed without proper notification.

END OF SECTION 230900

GSA Public Buildings Service

Office of Facilities Management - Facility Technologies

GSA Data Normalization for Building Automation Systems

Required NCMMS asset parameters, how NCMMS interacts with Building Automation System (BAS) points, standardizing BAS point names and standardizing data tagging methods within the GSA.

DOCUMENT CHANGE LOG

Date	Revision	Comment	By
01/17/2019	2.5	Additional language for Siemens based systems, modified Asset Matching section to support new “BAS Name” field, updated Appendix B and C.	CPayne
04/05/2018	2.4	Additional language for Niagara based systems, corrections to Appendix-C, updated Appendix-B	CPayne
11/27/2017	2.3	Compliance for 508 added.	CPayne
10/06/2017	2.2	Added Variable Refrigerant Flow (VRF) to Appendix C	CPayne
9/8/2017	2.1	Modified Appendix B per BIM Program review.	CPayne
8/8/2017	2.0	Edited based on final draft review and BAS manufacturer review. Release version 2.0 created	CPayne
7/25/2017	1.3	Edited based on regional Smart Building POC comments and suggestions (all regions.) Final Draft.	CPayne
7/03/2017	1.2	Post QC review modifications completed and NCMMS team review modifications completed.	CPayne
6/16/2017	1.1	Document restructuring after initial review. New draft created with comments reset for QC review.	CPayne
6/2/2017	1.0	Draft document created for review.	CPayne

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SECTION 1 - INTRODUCTION

The GSA has created national programs and implemented enterprise technology to better utilize the time required to manage the thousands of GSA facilities. As part of leveraging this technology, the GSA intends to standardize data for building systems by implementing a standard for BAS equipment/point naming conventions and point tagging. As regional buildings are connected at the national level for systems such as NCMMS-Maximo and GSAlink, normalizing provides a smoother and faster path to integration when programmers know what to expect when connecting to various Building Automation Systems.

This document is designed to establish standardized requirements related to BAS point naming, implement Haystack tagging requirements, and clarify the necessary fields in the National CMMS Maximo system for matching assets to Building Automation System (BAS) equipment across the GSA portfolio.

In the following sections, this document will guide you through the requirements for BAS point naming, outline the requirement for data tagging by standardizing on the Project Haystack open source data initiative and cover the proper procedure when configuring NCMMS Asset naming.

SECTION 2 - INTENDED AUDIENCE & APPLICABILITY

1. **GSA AND O&M PERSONNEL** shall use this document to correctly configure the National CMMS assets (Section 7) so that all BAS related assets match the equipment as named in the BAS. This document can also be utilized to better understand the BAS naming convention and the Haystack tagging requirements.

2. **BMC SYSTEM CONTRACTORS** shall utilize this document to configure all building systems with the perspective of the GSA's overall portfolio. All new installation and *renovated systems shall be configured with the naming and tagging conventions as described within this document to provide consistency throughout all of the GSA. All BMC system-related documentation and submittal packages shall reflect these naming and tagging conventions. A point summary table shall be created by the BAS contractor and kept current throughout the duration of the project as the master list of all I/O points. A minimum BAS server-level point list is provided within this document to accurately engineer, specify, and quote BAS projects. Project closeout documents shall include an up-to-date and accurate "Point Summary Table", along with relevant commissioning documentation related to point tagging checkout. For each project, the contractor shall submit the documentation for approval prior to final acceptance of the system. The point summary table shall be used as a reference and guide throughout the commissioning process.

   **Renovated systems applies to major upgrades which replace existing programming along with equipment and system renovations. The standard as described within this document does not require partial renovations to modify existing programming and point names that don't fall under the scope of work or may negatively impact other existing programming.*

SECTION 3 - DEFINITIONS

1. **Point** – Points are typically a software level variable representing a digital or analog sensor or actuator type object or entity (sometimes called *hard points*). Points can also represent a configuration or programmed value such as a setpoint or schedule log (sometimes called *soft points*). Typically, the attributes of a point constitute a point object.

2. **Tag** – A *tag* is a name/value pair applied to an object or entity within the Building Automation System and is further defined by referencing Project Haystack. A tag defines a fact or attribute about an object or entity and can also be known as "metadata."

3. **NCMMS** – The GSA's National Computerized Maintenance Management System. The National CMMS is a central repository (database) for all maintainable GSA assets that runs on the Maximo software platform. The NCMMS provides a mandatory, agency-wide means and method for processing and reporting all maintenance work and repairs done for PBS regardless of region or contractor.

4. **NCMMS Asset** – NCMMS assets are used to store asset numbers and corresponding information, such as parent, location, vendor, status, description, and maintenance costs for each asset in the Maximo system. You can build the asset hierarchy as an arrangement of buildings, departments, assets, and subassemblies.

SECTION 4 - NATIONAL BAS OBJECT NAMING STANDARD

As stated in the introduction, implementing a standard for BAS equipment and point naming provides added value to the GSA. As regional buildings are connected at the national level for systems such as NCMMS-GSAlink and SkySpark, normalizing offers a smoother and faster path to integration, as programmers know what to expect when connecting to various BAS.

As times and technology have progressed, there are now different methods utilized to normalize data. One method is to standardize BAS object and point naming conventions. The second method covered in this document will be described in "Section 6 –Tagging". There is a great deal of value in normalizing regional/building server BAS names, building names, global controller names, floor IDs, equipment abbreviations and point names. Having a unified hierarchy across the GSA portfolio will make national level implementations less complex and less costly overall.

This GSA Smart Building Technology Device & Object Naming Standard is intended to standardize the names and tagging of BAS, Lighting, Metering, and other devices and control objects.

Note: *It is understood that certain BAS manufacturers will have different requirements and limitations regarding acceptable character types and overall character length limitations.*

> **Note for Niagara Integrators:** *It is understood that certain manufacturers allow for more generalized "tree" structuring of objects which means aspects like equipment name and building do not necessarily have to be included in the point name due to parent/child folder structuring (see example under Object Name Anatomy or in Appendix-C.)*
>
> **Note for Siemens Integrators:** *It is understood that certain Siemens legacy controllers do not support the underscore "_" separator within the object or point name. In these instances, a period "." shall be used to separate the different portions of the object or point name (see example under Object Name Anatomy or in Appendix-C.)*

The provided documentation and diagrams in Appendix-C are intended to give the project engineer and technician the ability to find the appropriate names and tags for each object based on GSA requirements. The diagrams show generic HVAC, lighting, metering, and other equipment containing control points and objects, some of which may or may not be present in a particular application.

All device tagging and object naming shall be submitted to the GSA Regional Office of Facility Management (OFM) or the Facilities Management Division (FMD) for review and approval prior to implementation – any system objects implemented prior to OFM/FMD approval shall be corrected by the vendor at no additional cost to GSA.

Any control object, tag or point that is not represented in this document must be submitted to the OFM/FMD via RFI. A response will be generated identifying the name that should be used for the application. If the supplied name is not currently represented in the standard document, it may be added.

Note: *It is understood that the object names for some products cannot be modified (i.e. "canned application" or "pre-configured" controllers.) These devices/object names shall be submitted with an indication that the controller cannot be customized.*

1. Process

This Object Naming Standard shall be implemented according to the following process:

a. Engineer automation system to understand what objects are required.
b. Using the National BAS Object Naming & Tagging Standard document (APPENDIX-C), identify and document the standardized names and tags for the control objects and devices.
c. Submit the proposed names to the OFM/FMD.
d. Receive comments back, correct errors, and resubmit. Repeat process until all issues are resolved.
e. Object naming is approved by OFM/FMD.
f. Implement names and tags into the BAS database and programming.

Failure to follow and complete these steps in order may result in substantial re-work by and at the expense of the BAS contractor.

2. Scope

This Object Naming Standard covers all BACnet-discoverable devices and objects which includes:

a. AI, AO, AV, BI, BO, BV, MO, & MV point types
b. Calendar objects (Cldr)
c. Schedule objects (Sched)
d. Trend Log objects (Td)
e. Event Enrollment objects (Evt)
f. Notification Class objects (Not)
g. File objects (File)
h. Command objects (Cmd)
i. Devices

This Standard also covers all points, registers, etc. (objects) that are mapped using a driver, integration device, or system (such as Niagara Framework), and any additional objects created in the integration device or system. For example, registers mapped from a third-party Modbus device to a BAS controller or integration device using a driver must be named using this Standard.

3. Understanding the Standard

To properly implement this Object Naming Standard, it is important to understand the intended goal, the desired outcome, the design philosophy of the naming system and the methodology used to meet those goals.

GOAL:
Ensure that the way the BAS devices and objects are named, enables any user of the system or system data to instantly identify the device or object and understand the function of system objects, whether they are sensors, actuators, schedules, trend logs, etc. A user can be a human operator, but it can also be a computer that stores or processes information from the system.

PHILOSOPHY:
To allow a human to instantly identify a device or object simply by reading the name. At minimum, the name must indicate which building, what equipment/system to which it is associated, the type of object, and the object's primary function. The parts of the name must be human-readable using standardized abbreviations. These standardizations allow an operator or analyst to read, search, sort, group, and filter objects with ease.

A computer interpreter of any type would be able to use the building and equipment/system indications to group objects. To make the function of an object clear to a machine, the object type/function portion of the name is composed of standardized "camel-cased" abbreviations that a computer can break apart and use to automatically apply metadata tags. These tags allow applications, such as analytics engines or CMMS, to interpret information directly from the BAS or from a trend archive and create actionable responses and outputs.

METHODOLOGY:
To create names that are both human-readable and machine-readable, the structure and abbreviations of the names are standardized. Each name has three parts separated by underscores: Building Number, Equipment Designator, and Object Name. (See the "Object Name Anatomy" section below for technical details on structure standardization.) Building Numbers are provided by GSA in accordance with a pre-existing numbering system. The "Equipment Designator" is a free-form field; the mechanical drawings equipment schedule can be used as a guide. The "Object Name" is a camel-cased, standardized name for the object.

4. Object Unit Descriptions

Object units are suggested in parentheses, such as: (°F)

For analog points, the engineering units are provided. Engineering units are standardized, and the OFM/FMD should be consulted where the standard units are inappropriate for the measurement or application.

Generally, analog outputs are expressed in percent (%, or pct). For valves and dampers, %open/%closed is used. 0% open would indicate that the control object is closed. 100% open would indicate that the control object is open. For mixing dampers, diverting valves, face/bypass dampers, etc., see unit indications where objects are found in diagrams in this document.

Binary outputs are generally expressed with (Off/On). Other binary units are provided depending on the application. The order of the state text labels is determined by the default position of the device. For example, a damper that is normally closed would use the units (Closed/Open), whereas a damper that is normally open would use (Open/Closed).

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5. Object Name Anatomy

Object Name Anatomy

Building_Equipment_Object

Underscore "_" Delimiter
(Siemens legacy controllers utilize period ".")

SS####_EEEEEE_PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP

Building Number
Always 6 characters, always designated by GSA

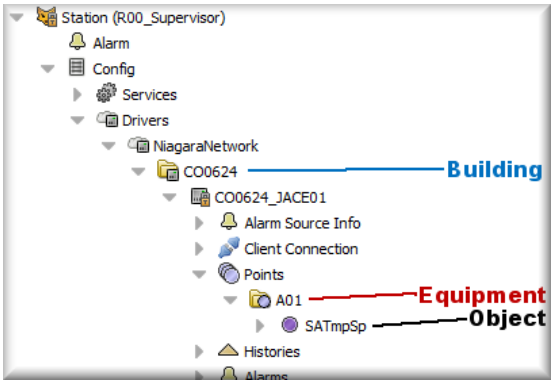
Equipment/ Location Designation
No formal standard – best practice is to use the equipment designations used in the building's mechanical drawings
Up to 6 characters as-needed

Full Name Example

CO0624_A01_SATmpSp

- CO0624 is DFC Building 810
- A01 — Air Handling Unit 1
- SATmpSp — Supply Air Temperature Set Point

Niagara Example



IMPORTANT
NEVER EXCEED 45 CHARCTERS

See ABRV page for Standard Point Name abbreviations.

See MTR page for metering object naming standard – metering objects follow a modified naming standard

Standard Object Name

16-31 characters as-needed

Number of characters available depends on BAS product limitations. At the beginning of a project, the BAS limitation should be considered to ensure that names can be accommodated within the characters available. Some adjustments may be required.

Always use standardized names found in this document.

6. Typical Conventions (Suffixes with Examples)

Ena

Usually applied to BV objects. An “Ena” point indicates that conditions have been met to allow a device to be commanded, but is not the actual command.

- CHWSysEna
- HHWSysEna
- BlrEna
- EconEna

Cmd

Usually applied to BO and AO objects, and sometimes BV and AV objects also. A “Cmd” point commands something – starts a motor, modulates a valve, etc.

- SFCmd
- ChlrCmd
- MADmprCmd
- BlrCmd
- CCVlvCmd
- CTDivVlvCmd

Sts

Usually applied to BI objects. Corresponds to the “Cmd” point. This is the actual status of the commanded equipment.

- SFSts
- ChlrSts
- SFVFDSts
- CHWPmpSts

Pos

Applied to AI objects, “Pos” is feedback from a device such as a valve or a VFD. Corresponds to command (Cmd) in the case of a valve or damper, or speed (Spd) in the case of a VFD.

- CCVlvPos
- CTFPos
- MADmprPos
- SashPos

Sp

Applied to AV objects, “Sp” is shorthand for Setpoint. Used to indicate the setpoint that corresponds to a control variable.

- SATmpSp
- CHWSTmpSp
- SAStPrsSp
- HWSFlwRatSp
- CHWSysOATmpEnaSp

Alm

Usually applied to BI or BV objects (but not limited to). Alarm (Alm) should only be used on objects that have a corresponding event notification.

- BlrAlm
- MATmpAlm
- LowTempAlm
- DAStPrsAlm
- FireAlm
- ServiceAlm

Td

Applied to the end of an object name to indicate that it is the trend object associated with the control point object.

- SATmpTd
- SFStsTd
- CCVlvCmdTd
- MATmpSpTd

Sched

Applied to schedule objects.

- AHU01_Sched
- IceSys_Sched
- CHW_Sched
- EF01_Sched

SECTION 5 - BAS SERVER LEVEL POINT REQUIREMENTS

To effectively and efficiently integrate GSA buildings at a national level (GSAlink), there is a requirement to have certain data points available over the network from the BAS supervisor/server. These data points or histories should be made available via an open protocol as described below.

The GSA has a standard requirement that states, all high-level network-based control applications like scheduling, overrides, etc. shall exist at the global network controller level within the building. In the event of a network outage, the O&M still retains the ability to directly connect to the controllers and make necessary modifications while the server is unavailable (disaster recovery procedure). Though the control level aspects of the programming shall reside in the global network controllers, the long-term trends will be maintained at the server level and the I/O points shall be mapped to the server for display on the Graphical User Interface (GUI) and made available via an open protocol for national level integrations.

This can be accomplished in many ways and will differ depending on the BAS manufacturer utilized for the project. The goal is to have relevant, national-level historical trend data accessible utilizing a 1:1 connection from the national server (i.e. GSAlink, SkySpark, etc.) to the BAS server. For example:

1. NiagaraAX and Niagara4 (i.e. Vykon, Honeywell, Johnson FX, etc.) based systems shall have the required data points for operations and maintenance imported to the Niagara Supervisor so these points/historical trends can be accessed by national-level systems with a 1:1 connection to the server.

2. All other Building Automation Systems shall conform to a similar practice of providing open source access to point or historical data at the BAS-server level by either enabling the BACnet Server feature of the software application (if available) or exporting historical point data to a GSA-provided SQL Database.

Utilize the table found in "Appendix A - Points Required at the BAS Server Level" to determine and configure the necessary server-level historical trend data. **Note:** *If the entire point or historical database is made available as described above by exporting over BACnet or exporting to an SQL database, there is no need to use the table to select points since all points will be accessible to the national-level system/s*.

SECTION 6 - TAGGING

Discussed within this section and further detailed in Appendix-C, are the requirements for "tagging" BAS objects with the correct metadata when configuring systems for the GSA. Equipment and point naming was covered previously within this document, but as mentioned, the key to normalizing BAS data and providing the greatest impact is to properly tag objects with "facts" or "attributes" that give the data better meaning, thus providing more ways to analyze, prioritize and act upon the collected data.

The standard tagging model for the GSA will be modeled after Project Haystack. The tagging requirements described in Appendix-C are modeled after the Haystack documentation which can be found here.

Note: *If the Building Automation System has the capability to implement tagging, the standards detailed in "Appendix C – National BAS Object Naming & Tagging Standard" shall be used for all new construction and renovation projects within the GSA.*

Why Haystack?

As tagging is adopted and implemented by more BAS manufacturers, there is no guarantee that all manufacturers will adopt the Haystack tagging method as their base tagging model. Even so, Haystack has developed a very robust list of available tags along with the ability to create custom libraries and those tags should be available or creatable using any manufacturer tagging process in the future.

For example, the BACnet committee is currently working on a tagging scheme that supports multiple namespaces such as Haystack and any other tagging schemes that may come along in the future. Similarly, ASHRAE is also pursuing a published list of tags for Standard 223 in conjunction with the BACnet committee's efforts. Both efforts are in the early stages of design but both seek alignment with Haystack wherever possible.

What is Haystack?

Project Haystack is an open source initiative to streamline working with data from the Internet of Things. We standardize semantic data models and web services with the goal of making it easier to unlock value from the vast quantity of data generated by the smart devices that permeate our homes, buildings, factories, and cities. Applications include automation, control, energy, HVAC, lighting, and other environmental systems.

Why Do We Need Tagging?

Macro trends in technology are making it increasingly cost effective to instrument and collect data about the operations and energy usage of buildings. We are now awash in data and the

new problem is how to make sense of it. Today most operational data has poor semantic modeling and requires a manual, labor-intensive process to "map" the data before value creation can begin. Pragmatic use of naming conventions and taxonomies can make it more cost effective to analyze, visualize, and derive value from our operational data.

Vendor Specific Haystack/tagging Information

- Niagara AX/N4 (applies to any Niagara-based OEM controller).
  - Niagara AX and N4 can easily support Haystack tagging.
  - The tag dictionary from the “NHAYSTACK” module shall be used as the primary resource for all tagging. The module can be downloaded here.
  - When a tag or relationship type is required that does not currently exist in the NHAYSTACK library, a new tag dictionary shall be created by the contractor and named using the unique GSA building ID (i.e. NY0282).

- Honeywell EBI
  - Today, EBI does not have a tagging database to associate tags to objects in the database. This is currently being reviewed for inclusion in future updates of EBI.

- Schneider Electric
  - Schneider IA Series (AX and N4) adhere to the same Haystack tagging methods described above in the Niagara AX/N4 section.
  - SmartStruxure support and standards to be determined.

- Siemens
  - The current Siemens Insight and Desigo CC versions do not include any standards or guidelines for the usage of Haystack but these standards are currently in development for future releases of the software.
  - Siemens does support Haystack tagging through compatibility with the Niagara Framework.

- Alerton
  - Alerton is currently in the process of adding tagging capability in Compass. Once tagging support is added, Haystack will be supported by the Alerton Standard Applications.
  - Alerton dealers will also be allowed to configure custom applications related to tagging.

- Automated Logic
  - Currently, Automated Logic does not support tagging, but development plans include support for the BACnet Standard tagging scheme with semantic tagging that was recently adopted by the BACnet committee in 2017 (SSPC 135) and referenced above in the “Why Haystack” section.

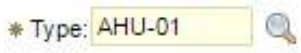
SECTION 7 - NCMMS ASSET MATCHING

The National CMMS naming convention is not configured in a fashion that completely aligns with typical BAS naming conventions. The way NCMMS defines an Air Handling Unit (AHU), for example, is not by AHU name (i.e. "AHU-01-LBY"), but rather by AHU "Type" (size in tonnage). A separate field is utilized to associate the NCMMS Asset with the BAS equipment name. Appendix C lists and defines all the available Asset options within NCMMS. To properly configure an NCMMS Asset, one would need to know some specific details about the equipment like, but not limited to:

- Equipment name as described in the Building Automation System
- AHU size (Tonnage)
- Chiller type (Absorption, Centrifugal, Screw, etc.)
- Chiller size (Tonnage)
- Boiler type (Gas, Oil, Electric, etc.)
- Boiler size (MBH)
- Use the table in Appendix C to determine the necessary assets for a given project

Among the many parameters within NCMMS that are required for proper asset management, there are two (2) parameters that require proper configuration to ensure asset matching and correct labeling within the system when associating NCMMS records with BAS labels.

- The first is the "***Type***" record. As discussed above and displayed in Appendix-B, the "Type" field is used to describe the type of equipment and sizing parameters. *This field is **not used** to display the equipment name as shown in the BAS*. The user cannot enter any value into this field, but must use the pre-defined values shown in the equipment list. This list can be viewed by clicking the Search button (magnifying glass) next to the field.



- The second is the "***BAS Name***" record. This field is utilized for the equipment description as shown in the BAS. For example, a site may have several "AHU-01" *Types* (because the building has several AHUs sized 3 to 24 tons), but it will only have one "AHU-01-LBY" *BAS Name* for the associated asset. This field is a large format alpha-numeric data field which means it allows both letters and numbers and will allow plenty of characters for proper description. The BAS equipment description as shown on the graphic pages should be entered in this field. Section 4 and Appendix-C describes the required naming convention and abbreviations for GSA equipment and point names.

A list of available "Type" records and the corresponding equipment description can be found in Appendix B - NCMMS Asset "Type" Option List. NCMMS manages more than just BAS assets, so there are many "Types" that will not be utilized when matching assets to BAS equipment.

APPENDICES

APPENDIX A - POINTS REQUIRED AT THE BAS SERVER LEVEL

The purpose of the required BAS Server Level Points is not to require additional equipment or sensors, but rather indicate the points that should be considered as value added monitoring points and be included in the Building Control System design. These points should be made accessible to third party systems over Open Protocol data sources (i.e. BACnet, SQL, etc.).

It should be stressed that the purpose of this point list is to influence system design and not to restrict the use or availability of control or monitoring points that exist in a system. As with all big data applications, the more data made available the greater value add to the analyses being performed. This list should be utilized to verify that the largest pool of data is available for fault detection and diagnostics.

The point list table below shows the points currently utilized in the GSAlink rules (highlighted) as well as an additional set of control points that have proven to bring value in fault detection and diagnostics.

#	Equipment Description	Point Type	Required If Available	Preferred
	AHU			
1	AHU Cold Deck Supply Temp	Physical	Yes	Yes
2	AHU Cold Deck Fan Status	Physical	Yes	Yes
3	AHU Hot Deck Supply Temp	Physical	Yes	Yes
4	AHU Hot Deck Fan Status	Physical	Yes	Yes
5	Building Air Pressure	Physical		Yes
6	Building Air Pressure Setpoint	Virtual		Yes
7	Bypass Damper Status	Physical	Yes	Yes
8	Chilled Water Pump	Physical	Yes	Yes
9	Chiller Plant Mode	Virtual	Yes	Yes
10	Cooling Lockout OA Temp	Virtual		Yes
11	Cooling Max Airflow	Virtual		Yes
12	Cooling Min Airflow	Virtual		Yes
13	Cooling Mode	Virtual	Yes	Yes
14	Cooling Valve Position	Physical		Yes
15	Cooling Valve Status	Physical	Yes	Yes
16	Dehumidification Mode	Virtual	Yes	Yes
17	Dehumidification Setpoint	Virtual		Yes
18	Dewpoint Setpoint	Virtual		Yes
19	Supply Fan Status	Physical	Yes	Yes

20	Supply Temp	Physical	Yes	Yes
21	Supply Temp Setpoint	Virtual	Yes	Yes
22	Duct Static Pressure	Physical		Yes
23	Duct Static Pressure Setpoint	Virtual		Yes
24	Economizer Enabled Command	Virtual		Yes
25	Economizer Enthalpy Disable Setpoint	Virtual		Yes
26	Economizer Mode	Virtual	Yes	Yes
27	Economizer Temp Disable Setpoint	Virtual		Yes
28	Economizer Temp Enable Setpoint	Virtual		Yes
29	Exhaust Air Damper Position	Physical		Yes
30	Free Cooling Temp Setpoint	Virtual		Yes
31	Global OA Temp	Physical		Yes
32	Heat Exchanger Valves	Physical	Yes	Yes
33	Heating Lockout OA Temp	Virtual		Yes
34	Heating Max Airflow	Virtual		Yes
35	Heating Mode	Virtual	Yes	Yes
36	Heating Valve Status	Physical	Yes	Yes
37	Hot Water Pump Command	Physical	Yes	Yes
38	Hot Water Pump Status	Virtual	Yes	Yes
39	Min Outside Air Damper Setpoint	Virtual		Yes
40	Min Outside Air Ratio	Virtual		Yes
41	Mixed Air Temp	Physical	Yes	Yes
42	Mixed Air Temp Setpoint	Virtual		Yes
43	Outside Air Airflow Sensor	Physical	Yes	Yes
44	Outside Air Damper Status	Physical	Yes	Yes
45	Outside Air Airflow Setpoint	Virtual	Yes	Yes
46	Outside Air Temp	Physical	Yes	Yes
47	Occupancy Mode	Virtual	Yes	Yes
48	Outside Air Damper Position/ Feedback	Physical		Yes
49	Outside Air Enthalpy	Virtual		Yes
50	Outside Air Damper Position	Physical		Yes
51	Return Air Damper Position	Physical		Yes
52	Return Air Fan Status	Physical		Yes
53	Return Air Temp	Physical	Yes	Yes
54	Static Pressure Sensor	Physical	Yes	Yes
55	Two Positon Outside Air Damper Command	Physical		Yes
56	Two Position Outside Air Damper Status	Physical		Yes
57	Zone Air Dewpoint Temp	Virtual		Yes
58	Zone Air RH	Physical		Yes

59	Zone Air Temp	Physical		Yes
60	Zone Air Temp Setpoint	Virtual		Yes
61	Zone Damper Position	Physical	Yes	Yes
62	Zone Damper Temp	Physical	Yes	Yes
63	Zone Supply Temp	Physical	Yes	Yes
Chiller				
64	Chilled Water Delta-T	Virtual		Yes
65	Chilled Water Return Temp	Physical	Yes	Yes
66	Chilled Water Supply Temp	Physical	Yes	Yes
67	Chiller Enabled	Virtual		Yes
68	Chiller Operation Mode	Virtual		Yes
69	Chiller Status	Physical	Yes	Yes
70	Chilled Water Diff Press Setpoint	Virtual	Yes	Yes
71	Chilled Water Differential Pressure	Physical	Yes	Yes
72	Chilled Water Pump Status	Physical	Yes	Yes
73	Chilled Water Supply Setpoint	Virtual	Yes	Yes
74	Compressor Refrigerant Supply Pressure	Physical		Yes
75	Compressor Refrigerant Supply Temp	Physical		Yes
76	Compressor Run Load	Physical		Yes
77	Compressor Start	Virtual		Yes
78	Compressor Voltage	Physical		Yes
79	Condenser Pump Command	Virtual		Yes
80	Condenser Refrigerant Pressure	Physical		Yes
81	Condenser Refrigerant Temp	Physical		Yes
82	Condenser Water Approach Temp	Physical		Yes
83	Condenser Water Delta-T	Virtual		Yes
84	Condenser Water Return Temp	Physical		Yes
85	Condenser Water Supply Temp	Physical		Yes
86	Cooling Mode	Virtual	Yes	Yes
87	Current Draw	Physical		Yes
88	Evaporator Approach Temp	Virtual		Yes
89	Evaporator Refrigerant Pressure	Physical		Yes
90	Evaporator Refrigerant Temp	Physical		Yes
91	Evaporator Water Return Temp	Physical		Yes
92	Evaporator Water Supply Temp	Physical		Yes
93	Expansion Valve Position	Physical		Yes
94	Heat Sink Temp	Physical		Yes
95	Lagging Chiller Enabled	Virtual		Yes
96	Lagging Chiller Enabled Setpoint	Virtual		Yes

97	Lead Chiller Enabled	Virtual		Yes
98	Lead Chiller Enabled Setpoint	Virtual		Yes
99	Lead Chiller Selection	Virtual		Yes
100	Occupancy Mode	Virtual	Yes	Yes
101	Primary Pump Command	Physical		Yes
102	Secondary Pump Command	Physical		Yes
Cooling Tower				
103	System Bypass Valve	Physical		Yes
104	Condenser Water Supply Temp Setpoint	Virtual		Yes
105	Condenser Water Return Temp Setpoint	Virtual		Yes
106	Condenser Water Supply Diff Press Setpoint	Virtual		Yes
107	Condenser Water Return Diff Press Setpoint	Virtual		Yes
108	Chiller Plant Enabled	Virtual		Yes
109	Condenser Pump Command	Physical		Yes
110	Condenser Pump Status	Physical	Yes	Yes
111	Cooling Tower Fan Enabled	Virtual		Yes
112	Cooling Tower Fan Feedback	Physical		Yes
113	Cooling Tower Return Temp	Physical	Yes	Yes
114	Cooling Tower Sump Temp	Physical		Yes
115	Cooling Tower Supply Setpoint	Virtual	Yes	Yes
116	Cooling Tower Supply Temp	Physical	Yes	Yes
117	Cooling Tower Water Level	Physical		Yes
118	Induction Loop Return Temp	Physical		Yes
119	Induction Loop Supply Temp	Physical		Yes
Terminal Units				
120	Average Space Temp	Virtual		Yes
121	Chilled Water Temp	Physical		Yes
122	Circulating Fan Command	Physical		Yes
123	Cooling Lockout Outside Air Temp	Virtual		Yes
124	Cooling Max Airflow	Virtual		Yes
125	Cooling Min Airflow	Virtual		Yes
126	Cooling Mode	Virtual	Yes	Yes
127	Cooling Temp Setpoint	Virtual	Yes	Yes
128	Cooling Valve Position	Physical		Yes
129	Dewpoint Setpoint	Virtual		Yes
130	Supply Fan Status	Physical	Yes	Yes
131	Fan Coil Enabled	Virtual		Yes
132	Fan Speed	Physical		Yes
133	Heating Lockout OA Temp	Virtual		Yes

134	Heating Max Airflow	Virtual		Yes
135	Heating Mode	Virtual	Yes	Yes
136	Heating Stage Command(s)	Virtual		Yes
137	Heating Temp Setpoint	Virtual	Yes	Yes
138	Electric Heating Coil Command	Physical		Yes
139	Hot Water Valve Position	Physical		Yes
140	Minimum Air Temp	Virtual		Yes
141	Occupancy Mode	Virtual	Yes	Yes
142	Return Air Temp	Physical		Yes
143	Room Temp	Physical		Yes
144	Room Temp Setpoint	Virtual		Yes
145	Supply Air Damper Position	Physical		Yes
146	Supply Airflow Limit	Virtual		Yes
147	Supply Air Temp	Physical		Yes
148	Supply Airflow	Physical		Yes
149	Supply Airflow Setpoint	Virtual		Yes
150	Ventilation Demand	Virtual		Yes
151	Zone Occupancy Status	Virtual		Yes
152	Zone Temp	Physical	Yes	Yes
153	Zone Temp Setpoint	Virtual	Yes	Yes
Boilers / Heat Exchangers				
154	Boiler Supply Temp	Physical	Yes	Yes
155	Boiler Runtime	Virtual		Yes
156	Boiler Start/Stop Command	Virtual		Yes
157	Boiler Status	Physical	Yes	Yes
158	Boiler Entering Temperature	Physical		Yes
159	Boiler Valve Command	Physical		Yes
160	Boiler Valve Status	Physical		Yes
161	HW Diff Press Setpoint	Virtual	Yes	Yes
162	HW Pressure Differential	Physical	Yes	Yes
163	HW Pump Status	Physical	Yes	Yes
164	HX Return Temp	Physical		Yes
165	HX Supply Temp	Physical	Yes	Yes
166	HX Mode	Virtual	Yes	Yes
167	HX Pump Status	Physical	Yes	Yes
168	HX Temp Setpoint	Virtual	Yes	Yes
169	HX Valve Status	Physical	Yes	Yes
170	Pump Override	Virtual		Yes
171	Pump Failure	Virtual		Yes

172	Pump Runtime	Virtual		Yes
173	Pump Start/Stop Command	Physical		Yes
174	Secondary Hot Water Return Temp	Physical		Yes
175	Secondary Hot Water Supply Temp	Physical		Yes
176	Secondary HW Pump	Physical	Yes	Yes
177	Zone Occupancy Status	Virtual		Yes
Roof Top Units				
178	Cooling Lockout Outside Air Temp	Virtual		Yes
179	Cooling Max Airflow	Virtual		Yes
180	Cooling Min Airflow	Virtual		Yes
181	Cooling Temp Setpoint	Virtual		Yes
182	Cooling Stage Command	Virtual		Yes
183	Dewpoint Setpoint	Virtual		Yes
184	Economizer Mode Enabled	Virtual		Yes
185	Economizer Enthalpy Disable Setpoint	Virtual		Yes
186	Economizer Temp Disable Setpoint	Virtual		Yes
187	Economizer Temp Enable Setpoint	Virtual		Yes
188	Energy Wheel Leaving Air Temp	Physical		Yes
189	Exhaust Fan Command	Virtual		Yes
190	Free Cooling Temp Setpoint	Virtual		Yes
191	Heating Lockout OA Temp	Virtual		Yes
192	Heating Max Airflow	Virtual		Yes
193	Heating Setpoint	Virtual		Yes
194	Heating Stage Command(s)	Virtual		Yes
195	Min Outside Air Damper Setpoint	Virtual		Yes
196	Min Outside Air Ratio	Virtual		Yes
197	Modulating Outside Air Damper	Physical		Yes
198	Outside Air Dewpoint	Virtual		Yes
199	Outside Air Enthalpy	Virtual		Yes
200	Outside Air Relative Humidity	Physical		Yes
201	Outside Air Temp	Physical		Yes
202	Return Air Temp	Physical		Yes
203	Supply Air Fan Command	Virtual		Yes
204	Supply Air Temp	Physical		Yes
205	Two Position Outside Air Damper	Physical		Yes
206	Unit Humidification Setpoint	Virtual		Yes
207	Unit Dehumidification Setpoint	Virtual		Yes
208	Zone Air Dewpoint Temp	Virtual		Yes
209	Zone Air Relative Humidity	Physical		Yes

210	Zone Air Temp	Physical		Yes
CRAC Units				
211	Cooling Coil Valve Position	Physical		Yes
212	Cooling Lockout OA Temp	Virtual		Yes
213	Cooling Max Airflow	Virtual		Yes
214	Cooling Min Airflow	Virtual		Yes
215	Dewpoint Setpoint	Virtual		Yes
216	Heating Lockout OA Temp	Virtual		Yes
217	Heating Stage Command(s)	Virtual		Yes
218	Humidification Enabled	Virtual		Yes
219	Minimum Outside Air Ratio	Virtual		Yes
220	Relative Humidity Setpoint	Virtual		Yes
221	Return Air Humidity	Physical		Yes
222	Return Air Temp	Physical		Yes
223	Return Air Temp Setpoint	Virtual		Yes
224	Supply Air Fan Command	Virtual		Yes
225	Supply Air Temp	Physical		Yes
226	Unit Cooling Status	Virtual		Yes
227	Unit Dehumidification Mode	Virtual		Yes
228	Unit Heating Status	Virtual		Yes
229	Unit Humidification Mode	Virtual		Yes
230	Unit Status	Virtual		Yes
Energy Meters				
231	Energy Meter Reading	Physical	Yes	Yes
232	Peak Energy Demand	Physical	Yes	Yes
233	Occupancy Mode	Virtual		Yes

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APPENDIX B - NCMMS ASSET "TYPE" OPTION LIST

#	Value	Description
1	ABL	Air Blower
2	ACC	Condenser, Air-Cooled
3	ACR-01	Computer Room Air-Conditioning Unit, Package: or Special Systems
4	ACR-02	Heat Pumps, Water Cooled (WSHP)
5	ACR-03	Air Conditioning Unit or Heat Pump Split System,
6	ACR-04	Air Conditioning Unit, Ceiling/Wall/Window Mounted
7	ACR-05	Air-Cooled Condenser
8	ACR-06	Evaporative Condenser
9	ACT	Air Curtain
10	ACU	Air Conditioner Package
11	ACW	Air Conditioner, Window
12	ADO	Audio System
13	ADR	Air Dryer
14	AER	Aerator
15	AGS-01	Tanks, Air, Refrigerant, LP Gas
16	AHU-01	Air Handling Unit, 3 ton thru 24 ton
17	AHU-02	Air Handling Unit, 25 ton thru 50 ton
18	AHU-03	Air Handling Unit, over 50 ton
19	AHU-04	Air Handling Unit, Computer Room
20	AHU-05	Packaged Air Handler, Predictive Maintenance
21	AHU-06	Air Washer or Wet Coil System
22	AHU-07	Application
23	AHU-08	AHU UV Treatment System
24	AIR-01	Air Dryer, Refrigerated or Regenerative Desiccant Type
25	AIR-02	Air Compressor
26	AIR-03	Glycol Dry Cooler, Special Purpose
27	AIR-04	After-Cooler/Separator
28	ALM	Fire Detection and Alarm System
29	ALM-01	Alarm Check Valves and Accessories
30	ALM-02	Fire Supervisory Signals - Testing
31	ALM-03	Automatic Fire Detection Smoke Detectors
32	ALM-04	Automatic Fire Detection Waterflow Alarms
33	ALM-05	Automatic Fire Detection, Heat Detectors
34	ALM-06	Smoke Control Systems -Operational Testing
35	ALM-07	Fire Alarm Control Panel and Remote Annunciators
36	ALM-08	Fire Alarm Control Panel -Special Systems
37	ALM-09	Central Station Transmitter
38	ALM-10	Central Station - Receiver and Re-Transmission Equipment
39	ALM-11	Fire Alarm System - Recorder
40	ALM-12	Fire Alarm System - Event Printer
41	ALM-13	Fire Alarm System -Audio Control Panel
42	ALM-14	Fire Alarm System -Remote Controller
43	ALM-15	Fire Alarm System -Remote Amplifiers
44	ALM-16	Manual Fire Alarm Stations -Coded and Uncoded
45	ALM-17	Fire Life Safety Fire Alarm
46	APL	Appliance - Washer Dryer Etc
47	ART	Artwork Sculptures Etc
48	ASP	Air Separator
49	AST	Fuel Storage Tank, Above Ground
50	ATP	Automatic Trap Primer
51	ATS	Switch, Automatic Transfer
52	ATS-01	Automatic Transfer Switches

53	AWS	Air Washer
54	BAR-01	Security Bollards, Barricade
55	BAS-01	Building Automation System, DDC
56	BAS-02	Building Automation System, Pneumatic
57	BAS-03	Building Automation System, Terminal End Devices
58	BAT	Battery
59	BDT-01	Metal Enclosed Busways (Busduct)
60	BFP	Backflow Prevention Device
61	BLR-01	Boiler
62	BLR-02	Boiler, Application
63	BLR-03	Boiler, Burner, Gas
64	BLR-04	Boiler, Burner, Oil
65	BLR-05	Boiler, Instrument Controls
66	BLR-E	Boiler, Electric
67	BLR-HW1	Boiler, Hot Water, Oil/Gas/Comb, up to 120 MBH
68	BLR-HW2	Boiler, Hot Water, Oil/Gas/Comb, 120 to 500 MBH
69	BLR-HW3	Boiler, Hot Water, Oil/Gas/Comb, 500 to 1000 MBH
70	BLR-HW4	Boiler, Hot Water, Oil/Gas/Comb, over 1000 MBH
71	BLR-MOD1	Modular Boiler, 42 MBH
72	BLR-MOD2	Modular Boiler, 57 MBH
73	BLR-MOD3	Modular Boiler, 85 MBH
74	BLR-MOD4	Modular Boiler, 112 MBH
75	BLR-MOD5	Modular Boiler, 140 MBH
76	BLR-MOD6	Modular Boiler, 167 MBH
77	BLR-MOD7	Modular Boiler, 194 MBH
78	BLR-ST1	Boiler, Steam, Oil/Gas/Comb, up to 120 MBH
79	BLR-ST2	Boiler, Steam, Natural Gas or Oil/Gas/Comb
80	BLR-ST3	Boiler, Steam, Oil/Gas/Comb, 500 to 1000 MBH
81	BLR-ST4	Boiler, Steam, Oil/Gas/Comb, over 1000 MBH
82	BNG	Burner, Gas Oil
83	BSB	Heater, Baseboard
84	BSB-01	Radiant Baseboards, Convectors (Steam, Hot Water, or Electric, per section)
85	BSD	Electric Buss Duct
86	BTC	Battery Charger
87	BUF	Floor Buffer
88	BWS	Bird Wire System
89	CAO	Can Opener
90	CAP-01	Capacitors
91	CAP-02	Reactors-Dry-Type, Thermographic Survey
92	CAP-03	Reactors, Liquid-Filled, Oil Leakage
93	CBL-01	Cables, Low Voltage 600 Volt Maximum, Thermographic Survey
94	CBL-02	Cables, Medium Voltage
95	CBS-01	Active Chilled Beam
96	CBS-02	Passive Chilled Beam
97	CDE	Clothes Dryer, Electric
98	CHF	Chemical Feeder
99	CHL-A1	Chiller, Absorption unit, up to 500 tons
100	CHL-A2	Chiller, Absorption unit, 500 to 5000 tons
101	CHL-CW1	Chiller, Centrifugal, water cooled, up to 100 tons
102	CHL-CW2	Chiller, Centrifugal, water cooled, over 100 tons
103	CHL-MB1	Magnetic Bearing Chiller, Less 500 Tons
104	CHL-MB2	Magnetic Bearing Chiller, 500-1000 Tons
105	CHL-MB3	Magnetic Bearing Chiller, over 1000 Tons
106	CHL-MOD1	Modular Chiller, 20-Ton
107	CHL-MOD2	Modular Chiller, 25-Ton
108	CHL-MOD3	Modular Chiller, 30-Ton

109	CHL-MOD4	Modular Chiller, 35-Ton
110	CHL-MOD5	Modular Chiller, 40-Ton
111	CHL-MOD6	Modular Chiller, 45-Ton
112	CHL-MOD7	Modular Chiller, 50-Ton
113	CHL-RA1	Chiller, Recip, Air Cooled, up to 25 tons
114	CHL-RA2	Chiller, Recip, Air Cooled, over 25 tons
115	CHL-S1	Chiller, Screw, Water Cooled
116	CHL-S2	Chiller, Screw, Water Cooled
117	CHL-W1	Chiller, Recip, Water Cooled, up to 50 tons
118	CHL-W2	Chiller, Recip, Water Cooled, over 50 tons
119	CHM-01	Chemical Storage Tanks
120	CKB-01	Circuit Breakers, Air, Insulated-Case, Molded-Case
121	CKB-02	Circuit Breakers, Air, Low-Voltage Power
122	CKB-03	Circuit Breakers, Air, Medium Voltage
123	CKB-04	Circuit Breakers, Oil, Medium-Voltage
124	CKB-05	Circuit Breakers, Vacuum, Medium-Voltage
125	CLK	Clocks
126	CLK-01	Clocks, Central System
127	CLR-01	Central Chilled Water Package Unit:
128	CLR-02	Rotary Screw & Scroll Chiller
129	CLR-03	Centrifugal Chiller
130	CLR-04	Refrigeration Machine, Absorption Unit
131	CLR-05	Chiller Control Panel
132	CLR-06	Refrigerant Monitor
133	CLR-07	Refrigerant Purge Units
134	CLR-08	Vibration Analysis, Chillers
135	CLR-09	Non-Destructive Tube Analysis (Eddy Current Analysis)
136	CLS-01	Coils Cooling, Heating, Preheat, Reheat, Etc.
137	CMD	Carbon-Monoxide Detection Sensors
138	CMI	Carbon Dioxide (CO2) Concentration Measuring Instrument
139	CMP	Air Compressor
140	CMP-R	Air Compressor, Recip
141	CND-01	Condensing Unit, Refrigeration
142	COF	Coffee Maker/Urn
143	COL	Coil, Heating/Cooling
144	CON	Control Panel
145	CPZ	Cathodic Protection Zinc
146	CRAC	Computer Room A.C.1 (CRAC Unit)
147	CRN-01	Crane, Electric
148	CTR	Cooling Tower
149	CUT	Cutter, Food
150	CVC	Video Control System
151	CWD	Clothes Washer, Domestic
152	DAV	Davits/Roof Anchors/Fall Protection
153	DAV-01	Davits
154	DCS-01	DC Battery System, Lead Acid
155	DCS-02	Primary Battery (Dry Cell)
156	DCS-03	Nickel Cadmium Battery
157	DCS-04	DC Battery System, Chargers
158	DCT	Switch, Disconnect
159	DDC-01	BAS Server
160	DDC-02	BAS Server Client Workstation
161	DDC-03	Network, Management Level
162	DDC-04	Network, Building Level
163	DDC-05	Field Panel
164	DDC-06	Controller

165	DDC-07	Sensors, Electronic
166	DDC-08	Alarm Maintenance
167	DDC-09	BAS Wireless Electronic, Pneumatic end devices (Thermostats)
168	DEA	Deaerator Tank
169	DES	Deaerating System
170	DET	Detector, Leak
171	DFB	Defibrillator
172	DFF	Fryer, Pressurized Broaster, Gas/Electric
173	DFS	Diffuser-Linear and Lay in
174	DKL	Dock Leveler
175	DMP-01	Motorized Dampers, Pneumatic or Electric
176	DMW-01	Dumbwaiter
177	DOR	Exterior Doors
178	DOR-01	Door, Power Operated
179	DOR-02	Door; Hydraulic, Electric or Pneumatic Operated
180	DOR-03	Door, Manual, Overhead
181	DOR-04	Door, Manually Operated Entrance
182	DOZ-1	Bulldozer, Standard Track
183	DOZ-2	Bulldozer, Articulated Track
184	DPP	Damper, Powered
185	DPS	Differential Pressure Switch
186	DRD	Drink Dispenser
187	DRN	Drain
188	DRN-01	Roof Drains, Downspout, and Gutter Inspection
189	DRN-02	Drains: Areaway, Driveway, Storm
190	DSE	Duplex Sewage Ejector
191	DSH-01	Dishwashing Machine
192	DSH-1	Dishwasher - Elect
193	DSH-2	Dishwasher - Steam
194	DSH-3	Dish/Tray Busing Conveyor
195	DSK	Digital Signage/Kiosk Hardware
196	DTT	Transformer, Dry
197	DWS-01	Domestic Hot Water Heater - Gas
198	DWS-02	Domestic Hot Water Heater - Electric
199	DWS-03	Hot Water Heater Steam Coil
200	DWS-04	Water Softener
201	DWS-05	Water Filter
202	DWV-01	Sewage Ejector (Pneumatic Tank Type Ejectors)
203	DWV-02	Sewage Ejector, Sump Type
204	DWV-03	Sump Pump
205	DWV-04	Emergency Wash
206	DWV-05	Emergency Shower
207	DWV-06	Septic Tank and Drain Field
208	EFP	Flagpole, Electric
209	EHC	Exhaust Hood, Commercial Kitchen
210	EHF	Exhaust Hood, Fume
211	ELT	Emergency Lighting
212	ELV-01	Elevators, Hydraulic
213	ELV-02	Elevators, Electric
214	ELV-03	Elevators, Electric or Hydraulic
215	ELV-1	Hydraulic Elevator
216	ELV-2	Electric Traction Elevator
217	EMG-01	Emergency Diesel Generator
218	EMG-02	Emergency Natural Gas Generator
219	EMS	Energy Management System
220	END-01	End Devices

221	EPB	Panelboard, Power Distribution
222	EPR-01	Emergency Generators, Gasoline, or Natural Gas Engines
223	EPR-02	Electric Emergency Generators, Diesel Engine Powered
224	EPR-03	Emergency Generators
225	EPR-04	Emergency Pumps and Ventilators
226	EPR-05	Fuel Oil Filter/Strainer
227	EPR-06	Fuel Oil Heater
228	EPR-07	Emergency Generator Steam Turbine Driven
229	EPR-08	Load Bank Testing
230	EQP-01	Child Care Equipment
231	ESC	Escalator
232	ESC-01	Escalator
233	EVP	Evaporative Cooler
234	EVP-01	Indirect Evaporative Cooling System
235	EVP-02	Direct Evaporative Cooling System
236	EVP-03	Humidification Systems
237	EWC	Drinking Fountain, Packaged
238	EXJ	Expansion Joint
239	EXM-1	Exercise Machine, Treadmill
240	EXM-2	Exercise Machine, Elliptical
241	EXS	Exit Signs
242	EXT	Expansion Tank
243	EYE	Eyewash/Shower Unit
244	FACILITIES	Facilities Assets
245	FAF	Furnace, Forced Air, Natural Gas
246	FAN-01	Fan, Axial
247	FAN-02	Fan, Centrifugal
248	FAN-03	Fan, Make-up
249	FAN-04	Fan, Utility Set
250	FCP	Food Cart, Process
251	FCU	Fan Coil Unit
252	FCU-01	Fan Coil Unit
253	FDR-01	Fire Door - Swinging
254	FDR-02	Fire Door - Sliding & Rolling
255	FEX	Fire Extinguishers
256	FEX-01	Fire Extinguishers - Inspection
257	FEX-02	Fire Extinguishers, Stored Pressure with Gauge
258	FEX-03	Fire Extinguishers - Non-rechargeable
259	FEX-04	Fire Extinguishers, Gas Cartridge or Cylinder (No Gauge)
260	FEX-05	Water Spray Extinguishing Systems
261	FEX-06	Fire Extinguishing Systems -
262	FHC	Cabinet, Fire Hose
263	FKT	Forklift Truck
264	FLEET	Fleet Assets
265	FLF	Filter, Fuel/Oil
266	FLT	Filter, Air
267	FLT-01	Filters, Throw Away
268	FLT-02	Filters, Roll, Disposable
269	FLT-03	Filters, Electrostatic
270	FLT-04	Filters, Viscous Type (Wire Mesh)
271	FLT-05	Filters, Charcoal
272	FLT-06	Filters, Special situations or conditions.
273	FLT-1	Filter, OR
274	FLT-2	Filter, Sand
275	FLT-3	Filter, Water
276	FMT	Flow Meter

277	FNG	Fences and Gates
278	FOL-01	Tanks, Fuel Oil Storage
279	FPL	Fireplace
280	FPL-01	Fireplace
281	FPL-02	Incinerator
282	FPM-01	Fire Pump, Electric-Drive
283	FPM-02	Fire Pump, Diesel
284	FRG	Refrigerator unit/display case w/external condenser
285	FRY-01	Fryer
286	FRZ	Refrigerator/Freezer, walk-in box w/external condenser
287	FSD	Fire and Smoke Dampers
288	FSD-01	Fire and Smoke Dampers
289	FSP-01	Wet-Pipe Sprinkler Systems
290	FSP-02	Dry-Pipe Sprinkler Systems
291	FSP-03	Preaction Sprinkler Systems
292	FSP-04	Clean-Agent Fire-Extinguishing Systems
293	FUR	Furniture
294	GAG	Gauge
295	GBG	Garbage Disposal
296	GDS	Fuel-Gas Detection Sensors
297	GET	Grounds Equipment, Lawn Tractor, Carts
298	GFS	Glycol Feed System
299	GND	Bench Grinder
300	GRD-01	Grounding Systems
301	GRL	Grill
302	GRL-01	Grill
303	GRR	Gear Reduction Unit
304	GTP	Grease Trap
305	GTY	Gateway (generic)
306	GWS-01	Geothermal Well System, Vertical
307	GWS-02	Geothermal Well System, Horizontal
308	HCU	Heating/Cooling Unit
309	HDY	Hand/Hair Dryer
310	HPT	Pallet Truck, Hand
311	HPU	High Efficiency Purge Unit
312	HSE	Fire Hose / Hose Connections
313	HSE-01	Fire Hose, 1.5 inch. Racked in Buildings
314	HSE-02	Fire Department Hose Connections - Standpipe Outlets
315	HSE-03	Fire Department Pumper Connections - Standpipe or Sprinkler
316	HST	Hoist
317	HST-01	Chain Hoist and Trolley
318	HST-02	Hoist, Electric
319	HST-03	Hoist, Lighting
320	HTP-1	Heat Pump, Air Cooled
321	HTP-2	Heat Pump, Water Cooled
322	HUM	Humidifier, Evaporative Pan w/ Heating Coil
323	HVU	Heating & Ventilating Units
324	HWC	Hot Water Converter
325	HWS-01	Hot Water Converter Steam
326	HWS-02	Solar Heating System
327	HXR-01	Heat Exchanger, Flat Plate
328	HXR-02	Heat Exchanger, Tube (Shell and Tube)
329	HYD	Fire Hydrant
330	HYD-01	Fire Hydrant Flow Test-Dry Barrel and Wet Barrel
331	ICD	Ice Cream Dispenser
332	ICE	Ice Machine

333	ICE-02	Ice Maker
334	ICM-01	Ice Cream maker and Shake Maker
335	IEX	Intercom Exchange Unit
336	INC	Incinerator
337	IRG	Irrigation System
338	IT	IT Assets
339	ITR-01	Instrument Transformers
340	KCS	Keycard System/Access Control
341	KTL	Kettle, Steam
342	KTL-01	Kettle
343	LCP	Lighting Control Panel
344	LFT	Lift, Scissor/Fork
345	LFT-01	Lift, Electric, Stage Screen
346	LFT-02	Material Handling Equipment, Electric Lift Trucks
347	LFT-03	Loading Ramp, Adjustable
348	LFT-04	Lift, Automobile
349	LFV	Lift, Vehicle
350	LGD	Lighting, Dimmer Control
351	LGE	Lighting, Exterior
352	LGI	Lighting, Interior
353	LGU	Light, Ultraviolet
354	LND-01	Fountain, Memorial or Decorative
355	LND-02	Gates and Fences, Security and Access
356	LND-03	Lawn Sprinkler Nozzles
357	LND-04	Flag Pole, Electric and Manual
358	LND-05	Lawn Mower and Edger
359	LND-06	Power Trimmer
360	LOT	Parking Lots (Paving)
361	LPS	Lightning Protection System
362	LSP	Lawn Sprinkler
363	LTG-01	Dimmer and Control, Stage and General Lighting
364	LTG-02	Fluorescent Lighting Fixture, Washing and Relamping
365	LTG-03	Lighting, Special Feature
366	LTG-04	Lighting, Outside Incandescent and Fluorescent
367	LTG-05	Spotlights, Fixed and Portable
368	LTG-06	Emergency Lighting, Closed Systems
369	LTG-07	Emergency Lighting, Wet Cell
370	MCC	Motor Control Center
371	MCC-01	Low Voltage Motor Starters
372	MCC-02	Medium Voltage Motor Starters
373	MCC-03	Low Voltage Motor Control Center
374	MCC-04	Medium Voltage Motor Control Center
375	MCW	Microwave, Commercial
376	MHL	Manhole
377	MHL-01	Manhole, Electrical
378	MHL-02	Manhole, Sewer
379	MHL-03	Manhole (Water, Steam, and Fuel Oil)
380	MIX	Mixer, Electric
381	MOT	Motor
382	MOT-01	Motor, Fan
383	MOT-02	Motor, Pump
384	MTR	Metering Devices
385	MTR-01	Metering Devices
386	MTR-02	Advanced Metering
387	NWP	Network Protector
388	NWP-01	Network Protectors, 600V Class

389	OIC	Oil Interceptor
390	OVM	Oven, Microwave
391	OVN-01	Oven
392	OVN-1	Oven, Convection, Gas or Elect
393	OVN-2	Oven, Rotary, Elect
394	OVN-3	Oven, Rotary, Gas
395	OZG	Ozone Generator
396	PAC	Physical Access Controller
397	PAG	Parking Arm Gates
398	PCS	Pigeon Control System
399	PDR	Doors, Powered
400	PFC	Power Factor Converter
401	PGE	Playground Equipment
402	PHN	Telecommunication-Telephone-System
403	PKM	Popcorn Machine
404	PLB	Plumbing as a System, Sinks, Toilers, Urinals Etc
405	PLB-01	Expansion Joints In Piping
406	PLB-02	Strainer, Y-Type
407	PLB-03	Strainer, Bolted Flange Type (Water and Steam)
408	PLB-04	Dual Strainer
409	PLB-05	Backwash Strainer
410	PLB-06	Steam Traps (High Pressure)
411	PLB-07	Distiller, Water, Laboratory use only
412	PMP	Pump
413	PMP-01	Pump, Centrifugal
414	PMP-02	Pump, Chilled Water
415	PMP-03	Pump, Condensate
416	PMP-04	Pump, Condensate Return
417	PMP-05	Pump, Condensate Return, Duplex
418	PMP-06	Pump, Condenser
419	PMP-07	Pump, Fuel Oil
420	PMP-08	Pump, In-line
421	PMP-09	Pump, Re-Circulation
422	PMP-10	Pump, Water, Boiler Feed
423	PMP-C	Pump, Circulating
424	PMP-CF	Pump, Chemical Feed
425	PMP-HW	Pump, Circulating, Hot Water
426	PMP-I	Irrigation Pump
427	PMP-V	Pump, Vacuum, Duplex
428	PNB	Panelboard, Lighting & Appliance
429	PNU-01	Control Air System
430	PNU-02	Receiver Controllers
431	PNU-03	Control Air Filter
432	PPB-01	Paper Baler
433	PPT	Pallet Truck, Powered
434	PRODUCTION	Production Assets
435	PRP	Press, Printing
436	PRW	Pressure Washer
437	PSP	Power Supply
438	PTC	Pneu Tube Carrier
439	PTD	Pressure Transducer
440	PVG	Photovoltaic - PV Solar Power Generation System
441	PVH	Photovoltaic - PV Solar Water Heater
442	PVS-01	Photovoltaic Systems
443	PVT	Photovoltaic System
444	RAC	Remote Access Cards

445	RAD-01	Radiator, Finned Tube
446	RAD-02	Radiator, Steam
447	REG-01	Step-Voltage Regulators
448	REG-02	Induction Regulators
449	REG-03	Load Tap-changers
450	REL	Relay
451	RFG-01	Walk - In Refrigerators, Freezers
452	RFG-02	Reach in, pass-thru Refrigerator, Freezers
453	RFM	Refrigerant Monitor
454	RFR	Refrigeration Machine
455	RFS	Roof System and Drains
456	RFS-01	Roof Inspection, Built Up Type
457	RFS-02	Roof Inspection, Shingle Type
458	RFS-03	Extensive and Intensive Vegetative Roof
459	RLY-01	Protective Relays, Electrical Service, All Types
460	RNG	Range, Gas
461	RNG-01	Range
462	RRS	Refrigerant Recovery System
463	RTU	Package Unit, Air or Water Cooled
464	SAP	Software Appliance
465	SCB-01	Scrubbing Machine, Battery or Propane Powered
466	SCL	Scale, Weight
467	SCP	Spa Circulating Pump, Whirlpool
468	SCS	Security Control System
469	SCT-01	Key Card System
470	SCT-02	Parking Arm Gates
471	SDR	Shredder
472	SDS	Smoke Detection Sensors
473	SEC-01	Child Care secured perimeter systems
474	SHS	Humidifier, Steam
475	SMP	Sump Pump
476	SMS	Snow Melt System
477	SNK	Sink Heater
478	SNO-01	Snow Blower
479	SPC-01	Child Care Areas
480	SRG-01	LV Surge Arresters
481	SRG-02	Medium Voltage Surge Arresters
482	SSG	Steam Generator, Steam Room
483	SSH	Sauna Unitary Heater
484	STM-01	Condensate or Vacuum Pump
485	STN	Strainer Y Type
486	STR	Steam Trap
487	STR-01	Lightning Protection
488	STS	Steam Station
489	SWB	Switchboard, Electrical
490	SWB-01	Switchgear and Switchboard Assemblies
491	SWM-01	Storm Water Management, Green Roofs
492	SWM-02	Storm Water Management, Rainwater Harvesting
493	SWM-03	Storm Water Management, Impervious Surface Disconnection
494	SWM-04	Storm Water Management, Permeable Pavement Systems
495	SWM-05	Storm Water Management, Bioretention
496	SWM-06	Storm Water Management, Filtering Systems
497	SWM-07	Storm Water Management, Infiltration
498	SWM-08	Storm Water Management, Open Channel
499	SWM-09	Storm Water Management, Ponds
500	SWM-10	Storm Water Management, Wetlands

501	SWM-11	Storm Water Management, Storage Practices
502	SWM-12	Storm Water Management, Propriety Practices/Filtering Systems
503	SWM-13	Lake/Canal
504	SWM-14	Aqueduct
505	SWP-01	Sweeper, Riding
506	SWT-01	Low-Voltage Air Switches
507	SWT-02	Switches, Air, Medium-Voltage, Metal-Enclosed
508	SWT-03	Medium- and High-Voltage Open Switches
509	SWT-04	Medium-Voltage Oil Switches
510	SWT-05	Medium-Voltage Vacuum Switches
511	SWT-06	Medium-Voltage SF-6 Switches
512	SWT-07	Cutout, Switches
513	TAB-01	Test-And-Balance
514	TCC	Trash Compactor, Commercial
515	TCP-01	Trash Compactor
516	THS	Temp/Humidity Sensor
517	TKT	Tank, Septic
518	TKW	Tank, Waste Storage
519	TMC	Time Clock
520	TMR	Timer
521	TMU	Terminal Unit
522	TMU-01	Terminal Units, Pneumatic or Electric
523	TMU-02	Terminal Units, Pneumatic or Electric, Predictive Maintenance
524	TNK-01	Tank, Fuel
525	TNK-02	Tank, Hot Water
526	TNK-03	Tank, Oil Storage
527	TNK-04	Tank, Water
528	TRC	Tractor
529	TRN	Transformer, Oil-Filled
530	TRN-01	Small Dry Transformers
531	TRN-02	Large Dry Transformers
532	TRN-03	Transformers, Liquid-Filled
533	TST	Thermostat
534	TTC	Toaster, Commercial
535	TUS	Turbine, Steam
536	TVC	CC TV, Camera
537	TVM	CC TV Monitor
538	TWR-01	Cooling Tower, Cleaning
539	UHH	Heat Trace
540	UHT-01	Space Heater
541	UHT-02	Unit Heater
542	UHT-03	Unit Heater, Cabinet
543	UPS	UPS (Uninterruptable Power Supply)
544	UPS-01	Uninterruptible Power System
545	UST	Underground Storage Tank (UST)
546	UST-01	Underground Storage Tanks
547	UVL	Under Voltage Relay
548	VAC-01	Vacuum Cleaner, Heavy Duty, Tank Type
549	VAC-02	Vacuum, Central System
550	VAN	Van
551	VAP	Vaporizer, Liquid Gas
552	VAV	VAV (Variable Air Volume Boxes)
553	VCC	Vacuum Cleaner, Central
554	VCP	Vacuum Pump
555	VFD	Variable Frequency Drive
556	VFD-01	Variable Frequency Drives

557	VHL-01	Material Handling Equipment, Engine Driven Vehicles
558	VHL-02	Carts and Scooters, Engine or Battery Powered
559	VLT	Voltage Regulator
560	VLV	Valves
561	VLV-01	Dry Pipe, Deluge and Preaction Valves
562	VLV-02	Post Indicator Valves
563	VLV-03	Fire Control Valves
564	VLV-04	Valves, Fire System Pressure Regulating
565	VLV-05	Valve, Backflow Preventer
566	VRF-01	Air Cooled Heat Pump with Variable Refrigerant Flow, 2-Pipe
567	VRF-02	Air Cooled Heat Pump with Variable Refrigerant Flow, 3-Pipe
568	VTC	Electric Transportation Vehicle, Golf Cart
569	WAL	Exterior Walls
570	WCC	Condenser, Water-Cooled
571	WHT-01	Water Heater, Electric
572	WHT-02	Water Heater, Natural Gas
573	WIN	Exterior Windows
574	WIN-01	Window Washing Scaffold, Power Operated
575	WLD	Welder, Electric
576	WLF	Wheelchair Lift
577	WLF-01	Wheel Chair Lift
578	WMR	Warmer, Kitchen Equipment
579	WSA	Weather Station
580	WSF	Water Softener
581	WTM	Water Treatment (Chemical)
582	WTM-01	Water Treatment Standard
583	WTM-03	Chemical Feeder
584	WTM-04	Water Treatment, Chemical Free
585	WTR-01	Tanks, Water Storage
586	WTV	Water Transportation Vessel, Rowboat/Skiff
587	WWE	Window Washing Equipment
588	XXX	Unknown

NCMMS "Type" Record List as of January 2019

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APPENDIX C - NATIONAL BAS OBJECT NAMING & TAGGING STANDARD

The following drawing set of this document is a guideline specification for Building Automation System object naming, point naming, and tagging.

The language in Section-4 of this document is repeated on the “INTRO” page of the following drawings. This document shall be utilized while implementing the naming standard process for any GSA project.

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General Services Administration

Public Buildings Service
Office of Facilities Management
Facility Technologies

GSA Data Normalization for Building Automation Systems

Appendix C – National BAS Object Naming & Tagging Standard

GSA PBS OFM – Building Automation System Object Naming & Tagging National Standard

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Facility Technologies

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National BAS Object Naming & Tagging Standard

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1.3	7/24/2017	Added Tagging
2.0	8/8/2017	Release Version
2.2	10/4/2017	Added VRF Systems
2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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COVER

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3	INTRO	Introduction
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5	ABRV-1	Abbreviations & Eng. Units page 1
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7	LEGEND-1	Symbol legend, page 1
8	LEGEND-2	Symbol legend, page 2
9	POINTTAG	Point tag requirements
10	AHUVAV	VAV AHU
11	AHUMISC	Miscellaneous AHU control points
12	AHUTAG	AHU tag requirements
13	AHUMZ	Multi-zone AHU
14	AHUDD	Dual-duct AHU
15	AHUOA	100% outside air AHU
16	AHUHX	AHU heat recovery
17	AHUDX	AHU with DX
18	ZONE	Zone control points
19	ZONETAG	Zone tag requirements
20	VAV CV VVT	VAV, CV, VVT terminal units
21	VAVTAG	VAV tag requirements
22	FTU	Fan terminal units
23	FCU	Fan coil units, baseboard, radiant
24	UNITAG	Unitary equip. tag requirements
25	CHBEAM	Chilled beam units
26	CRAC	Computer room AC units
27	VRV	Variable refrigerant volume units
28	CHLR	Chillers
29	CHWS	Chilled water systems
30	CHW TER	Tertiary CHW systems
31	CHWPLNTTAG	Chilled water plant tag requirements
32	PMP	Pump systems
33	CHW ICE	Ice storage systems
34	CWS1	Condenser water systems (1)
35	CWS2	Condenser water systems (2)
36	WSHP	Water-source heat pumps
37	GEO	Geothermal systems
38	HWS1	Hot water systems (1)
39	HWS2	Hot water systems (2)
40	HX	Heat exchangers
41	STM	Steam boilers & heat exchangers
42	HWPLNTTAG	Hot water plant tag requirements
43	LAB	Laboratory controls
44	EXH	Exhaust systems
45	VLV	Valves
46	VFD	Variable frequency drives
47	VFDTAG	VFD tag requirements
48	VRF-2P	Variable Refrigerant Flow, 2-Pipe
49	VRF-3P	Variable Refrigerant Flow, 3-Pipe
50	VRFTAG	VRF Tag requirements
51	LGT	Lighting systems
52	LGTTAG	Lighting tag requirements
53	MTR	Metering devices
54	ENGYTAG	Energy tag requirements
55	ELEC	Electrical devices
56	MISC	Miscellaneous objects
57	NETTAG	Network tag requirements

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
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CONTENTS

INTRODUCTION

This GSA Smart Building Technology Device & Object Naming Standard is intended to standardize the names and tagging of BAS, Lighting, Metering, and other devices and control objects. Character limitations vary between BAS products.

The provided diagrams are intended to aid the technician in finding the appropriate names and tags for each object. The diagrams show generic HVAC, lighting, metering, and other equipment containing control points and objects, some of which may or may not be present in a particular application.

All device tagging and object naming shall be submitted to the GSA Regional Office of Facility Management (OFM) or the Facilities Management Division (FMD) for review and approval prior to implementation – any system objects implemented prior to OFM approval shall be corrected by the vendor at no additional cost to GSA.

Any control object, tag or point that is not represented in this standards document must be submitted to the OFM/FMD via RFI. A response will be generated identifying the name that should be used for the application. If the supplied name is not currently represented in the standard document, it may be added.

It is understood that the object names for some products cannot be modified (i.e. "canned application" or "pre-configured" controllers.) These devices/object names shall be submitted with an indication that the controller cannot be customized.

Object Units Descriptions

Object units are suggested in parentheses, such as: (°F)

For analog points, the engineering units are provided. Engineering units are standardized, and the OFM/FMD should be consulted where the standard units are inappropriate for the measurement or application.

Generally, analog outputs are expressed in percent (%, or pct). For valves and dampers, %open/%closed is used. 0% open would indicate that the control object is closed. 100% open would indicate that the control object is open. For mixing dampers, diverting valves, face/bypass dampers, etc., see unit indications where objects are found in diagrams in this document.

Binary outputs are generally expressed with (Off/On). Other binary units are provided depending on the application. The order of the state text labels is determined by the default position of the device. For example, a damper that is normally closed would use the units (Closed/Open), whereas a damper that is normally open would use (Open/Closed).

PROCESS

This Object Naming Standard shall be implemented according to the following process:

1) Engineer automation system to understand what objects are required.
2) Using the National Object Naming & Tagging Standard document (this document), identify and document the standardized names and tags for the control objects and devices.
3) Submit the proposed names to the OFM/FMD.
4) Receive comments back, correct errors, and resubmit. Repeat process until all issues are resolved.
5) Object naming and tagging is approved by the OFM/FMD.
6) Implement names and tags into the BAS database and programming.

Failure to follow and complete these steps in order may result in substantial re-work by and at the expense of the BAS contractor.

SCOPE

This Object Naming Standard covers all BACnet-discoverable devices and objects. These include:

- AI, AO, AV, BI, BO, BV, MO, & MV point types
- Calendar objects (Cldr)
- Schedule objects (Sched)
- Trend Log objects (Td)
- Event Enrollment objects (Evt)
- Notification Class objects (Not)
- File objects (File)
- Command objects (Cmd)
- Devices

This Standard also covers all points, registers, etc. (objects) that are mapped using a driver, integration device, or system (such as Niagara Framework), and any additional objects created in the integration device or system. For example, registers mapped from a 3rd-party Modbus device to a BAS controller or integration device using a driver must be named using this Standard.

UNDERSTANDING THE STANDARD

In order to properly implement this Object Naming Standard, it is important to understand the goal it is intended to accomplish, the design philosophy of the naming system, and the methodology used to meet those goals.

GOAL:
Ensure that the way the BAS devices and objects are named enables any user of the system or system data to instantly identify the device or object and understand the function of system objects, whether they are sensors, actuators, schedules, trend logs, etc. A user can be a human operator, but it can also be a computer that stores or processes information from the system.

PHILOSOPHY:
To allow a human to instantly identify a device or object simply by reading the name, at minimum the name must indicate which building it is in, what equipment or system it is associated with, what type of object it is, and what it does. These parts of the name must be human-readable using standardized abbreviations. These standardizations allow an operator or analyst to read, search, sort, group, and filter objects with ease.

A computer interpreter of a name would be able to use the building and equipment/system indications to group objects. To make the function of an object clear to a machine, the object type/function portion of the name is composed of standardized "camel-cased" abbreviations that a computer can break apart and use to automatically apply metadata tags. These tags allow applications, such as analytics engines or CMMS, to interpret information directly from the BAS or from a trend archive and create actionable responses and outputs.

METHODOLOGY:
To create names that are both human-readable and machine-readable, the structure and abbreviations of the names are standardized. Each name has three parts separated by underscores: Building Number, Equipment Designator, and Object Name. (See the "ANATOMY" page for technical details on structure standardization.) Building Numbers are provided by GSA in accordance with a pre-existing numbering system. The Equipment Designator is a free-form field; the mechanical drawings equipment schedule can be used as a guide. The Object Name is a camel-cased, standardized name for the object.

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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INTRO

Object Name Anatomy

Building_Equipment_Object

Underscore "_" Delimiter
(Siemens legacy controllers utilize period ".")

SS####_EEEEEE_PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP

Building Number
Always 6 characters, always designated by GSA

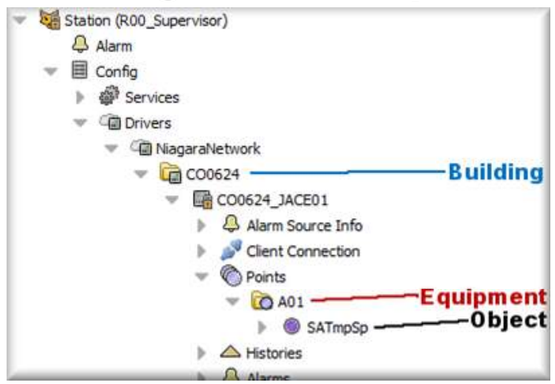
Equipment/ Location Designation
No formal standard – best practice is to use the equipment designations used in the building's mechanical drawings
Up to 6 characters as-needed

Full Name Example

CO0624_A01_SATmpSp

- CO0624 is DFC Building 810
- A01: Air Handling Unit 1
- SATmpSp: Supply Air Temperature Set Point

Niagara Example



IMPORTANT
NEVER EXCEED 45 CHARCTERS

See ABRV page for Standard Point Name abbreviations.

See MTR page for metering object naming standard – metering objects follow a modified naming standard

Standard Object Name

16-31 characters as-needed

Number of characters available depends on BAS product limitations. At the beginning of a project, the BAS limitation should be considered to ensure that names can be accommodated within the characters available. Some adjustments may be required.

Always use standardized names found in this document.

TYPICAL CONVENTIONS

SUFFIXES:

Ena
Usually applied to BV objects. An "Ena" point indicates that conditions have been met to allow a device to be commanded, but is not the actual command. Examples:

CHWSysEna	HHWSysEna
BlrEna	EconEna

Cmd
Usually applied to BO and AO objects, and sometimes BV and AV objects also. A "Cmd" point commands something – starts a motor, modulates a valve, etc. Examples:

SFCmd	ChlrCmd
MADmprCmd	BlrCmd
CCVlvCmd	CTDivVlvCmd

Sts
Usually applied to BI objects. Corresponds to the "Cmd" point. This is the actual status of the thing. Examples:

SFSts	ChlrSts
SFVFDSts	CHWPmpSts

Pos
Applied to AI objects, "Pos" is feedback from a device such as a valve or a VFD. Corresponds to "Cmd" in the case of a valve or damper, or "Spd" in the case of a VFD. Examples:

CCVlvPos	CTFPos
MADmprPos	SashPos

Sp
Applied to AV objects, "Sp" is shorthand for Setpoint. Used to indicate the setpoint that corresponds to a control variable.
Examples:

SATmpSp	CHWSTmpSp
SAStPrsSp	HWSFlwRatSp
CHWSysOATmpEnaSp	

Alm
Usually applied to BI or BV objects. "Alm" should only be used on objects that have a corresponding event notification. Examples:

BlrAlm	MATmpAlm
LowTempAlm	DAStPrsAlm
FireAlm	ServiceAlm

Td
Applied to the end of an object name to indicate that it is the trend object associated with the control point object.
Examples:

SATmpTd	SFStsTd
CCVlvCmdTd	MATmpSpTd

Sched
Applied to schedule objects.
Examples:

AHU01_Sched	IceSys_Sched
CHW_Sched	EF01_Sched

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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ANATOMY

Standard Point Name Abbreviations (Page 1)

A	
A	Phase A
AcDn	Access Denied
AcGr	Access Granted
Act	Active
Adj	Adjustable, Adjust
ADR	Automatic Demand Response
AFMS	Air Flow Measuring Station
AHU	Air Handling Unit
Air	AIR
AirCond	Air Conditioning
AirDry	Air Dryer
Alm	Alarm (Off/On)
Alt	Alternate
Amp	Amperage/Current
AppPwr	Apparent Power (kVA)
Aprch	Approach
Asp	Aspirating
ATS	Automatic Transfer Switch
Auth	Authority
Auto	Automatic / Automatic Operation
Aux	Auxiliary
Avg	Average

B	
B	Phase B
Base	Baseline
Batt	Battery
Bb	Baseboard
Bldg	Building
Blr	Boiler
Box	Box
Brnch	Branch
Bstr	Booster
Btn	Button
BTU	British Thermal Unit
Buzz	Buzzer
Byp	Bypass

C	
C	Phase C
Cap	Capacity
CC	Cooling Coil
CD	Cold Deck
Cd	Condenser
CdPan	Condenser Pan
Cfctr	C-factor
CFM	Cubic Feet Per Minute
Chg	Change/Changeover/Switchover
Chlr	Chiller
CHW	Chilled Water
CHWP	Chilled Water Pump
CHWR	Chilled Water Return
CHWS	Chilled Water Supply
Cir	Circulating/Circulation
Ckt	Circuit
Clg	Cooling
Cls	Close
Clsd	Closed
Cmbs	Combustion
Cmd	Command (Off/On)
Cmn	Common
Cmp	Compressor
Cmpr	Compressor
Cnd	Condensate
CO2	Carbon Dioxide
Coeff	Coefficient
Comb	Combiner
Cond	Conditioning

C (continued)	
Cont	Contactor
Conv	Convector
Cplry	Capillary
CRAC	Computer Room Air Conditioner
CT	Cooling Tower
CtRatio	Current Transformer Ratio
Ctrl	Control
Cur	Current
CW	Condenser Water
CWP	Condenser Water Pump
CWR	Condenser Water Return
CWS	Condenser Water Supply

D	
DA	Unit Discharge Air
Day	Day
Db	Deadband
DC	Direct Current
DCV	Demand-Controlled Ventilation
Dec	Decrease
Deck	Deck
Det	Detector
Dew	Dewpoint (°F)
DHW	Domestic Hot Water
Dif	Differential
DirAct	Direct Acting
DirNorm	Direct Normal
Dis	Discharge
Div	Diverting
Dly	Delay
Dmd	Demand
Dmp	Damper
Door	Door
DR	Demand Response
DryB	Dry Bulb
Duct	Duct
DW	Domestic Water
Dwg	Drawing
DX	Direct Expansion

E	
E	East
Econ	Economizer
EDH	Electric Duct Heater
Eff	Effective
Elec	Electric
Enrg	Energy (kWh)
Elmt	Element
Emer	Emergency
Eject	Ejection
Ena	Enable
EVID	Electric Vehicle Identification
Ent	Enter/Entering
Enth	Enthalpy
ESS	Emergency Stop Switch
Ev	Evaporator
Exh	Exhaust
EA	Exhaust Air
EF	Exhaust Fan

F	
Fbyp	Face/Bypass
Fail	Failure
Fan	Fan
Fbk	Feedback
Freq	Frequency
Fclg	Free Cooling
FCU	Fan Coil Unit
FF	Flame Fail

F (continued)	
Flt	Filter
Flg	Flange
Flr	Floor
Fault	Fault
Flw	Flow
FPM	Feet Per Minute
Frst	Frost
Fast	Fast Fan Speed

G	
Gal	Gallon
Gas	Butane, Natural Gas, etc.
Gen	Generator
GH	Gas Heater
Glb	Global
Gly	Ethylene Glycol
GlyR	Glycol Return
GlyS	Glycol Supply
GPM	Gallons Per Minute
Grd	Ground
Grn	Green

H	
Hand	Manual
HC	Heating Coil
HD	Hot Deck
Hi	High
High	High Fan Speed
HL	High Limit
HOA	Hand/Off/Auto
Hor	Horizontal
HP	Horse Power
HPrs	High Pressure
Hr	Hour
HTCO	High Temp Cut Out
Htg	Heating
Htr	Heater
Hum	Humidifier
HW	Hot Water
HWP	Hot Water Pump
HWR	Hot Water Return
HWS	Hot Water Supply
HX	Heat Exchanger
Hz	Hertz

I	
IAQ	Indoor Air Quality
IEQ	Indoor Environmental Quality
IGV	Inlet Guide Vanes
In	Input
Inc	Increase
Ind	Indicator
Inf	Infectious
Inlet	Fan Air Inlet
Inv	Inverter
InvC	Invalid Card
INWC	Inches of Water Column
Irg	Irrigation
Irrad	Irradiance
Iso	Isolation

K	
Kfctr	K-factor
KVA	Kilo-Volt-Amperes
KVAR	Kilo-Volt-Amperes Reactive
Kw	Kilowatt
KwD	Kilowatt Demand
KwH	Kilowatt Hours

L	
Lb	Pound

L (continued)	
Lck	Lockout
Ldlg	Lead/Lag
Lkd	Locked
LL	Low Limit
Lmt	Limit
Lnk	Link
Lo	Low
Loop	Loop
Low	Low Fan Speed
LPrs	Low Pressure
LPrsStm	Low Pressure Steam
LTCO	Low temp Cut out
LtL	Line-to-Line
LtN	Line-to-Neutral
Lvg	Leaving
Lvl	Level
Lvr	Louver

M	
MA	Mixed Air
Man	Manual
Max	Maximum
MCDN	Morning Cool-Down
Med	Medium Fan Speed
Mf	Manifold
Mfr	Manufacturer
Min	Minimum
Misc	Miscellaneous
Mix	Mixing
Mod	Modulation, Modulating
Mode	Operating Mode
MPrs	Medium-Pressure
Mtr	Meter
MU	Make-Up
Multi	Multiple/Multi
MWUP	Morning Warm-Up

N	
N	North
Neg	Negative
Neut	Neutral
Nght	Night
NormClsd	Normally Closed
NormOpn	Normally Open
NR	Network Riser
Ntfcn	Notification

O	
OA	Outside Air
OAF	Outside Air Fan
Occ	Occupied
Off	Off
Offst	Offset
Oil	Oil
OL	OverLoad
On	On
Open	Open
Oper	Operation, Operator
OT	OverTime
OTL	Held Open Too Long
Out	Ouput
Ovrd	Override

P	
Par	Parallel
PC	Pre-Cool
Pct	Percent
PDU	Power Distribution Unit
Peak	Peak
Perf	Performance

P (continued)	
PH	Preheat
PhsRev	Phase Reversal
PID	Proportional/Integral/Derivative
PIU	Power Induction Unit
Plnt	Plant
Pls	Pulse, Pulses
Plt	Pilot
Pmp	Pump
Pneu	Pneumatic
Pnl	Panel
POA	Plane of Array
Pos	Position (%)
PPM	Parts Per Million
Precip	Precipitation
Prev	Previous
Pri	Primary
Prop	Proportional
Prop	Protective
Prs	Pressure (psi, inWC)
PtRatio	Potential Transformer Ratio
PVTS	Photovoltaic System
Pwr	Power (kW)
PwrFct	Power Factor

R	
RA	Return Air
Rad	Radiant
Rat	Rate
Rcl	Recool
RctPwr	Reactive Power (kVAR)
Rcv	Recovery, Recovered
Rec	Recovery
Rej	Rejection, Rejected
RelHum	Relative Humidity (%)
RelPwr	Real Power (kW)
Rem	Remaining
Req	Required
Rev	Reversing
RevAct	Reverse Acting
RF	Return Fan
Rfg	Refrigerant
RH	Re-Heat
Rlf	Relief
Rly	Relay
Rm	Room
Rmt	Remote
Rng	Range
RnTm	Run Time (hours)
RO	Relay Output
RPM	Revolutions Per Minute
Rptr	Repeater
Rst	Reset
RstH	High End of Reset Scale
RstL	Low End of Reset Scale
Rtn	Return
Rto	Ratio
RTU	Roof Top Unit
Run	Run

S	
S	South
SA	Supply Air
Sched	Schedule
Sct	Suction
Sec	Secondary
Sel	Select/Selection
Seq	Sequence
Ser	Series, Service

GSA

PROJECT

GSA
Public Buildings Service
Office of Facilities Management
Facility Technologies

GSA Data Normalization for Building Automation Systems
Appendix-C

National BAS Object Naming & Tagging Standard

#	DATE	DESCRIPTION
1.3	7/24/2017	Added Tagging
2.0	8/8/2017	Release Version
2.2	10/4/2017	Added VRF Systems
2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
5 of **57**

ABRV-1

Standard Point Name Abbreviations (Page 2)

S (continued)	
Serial	Serial Number
SF	Supply Fan
Slow	Slow Fan Speed
Smk	Smoke
Snsr	Sensor
Snw	Snow, Snow-melt
Sp	Setpoint
Spd	Speed Control Command (%)
SqFt	Square Feet
SS	Start-Stop
Stby	Standby
Std	Standard
Stg	Stage
Stm	Steam
Stop	Stop
Str	Strainer
Strt	Start
Strts	Starts
Sts	Status (Off/On)
Sump	Sump
Sumr	Summer
Sup	Supply
Sw	Switch
Sys	System
T	
Td	Trend (History)
THD	Total Harmonic Distortion
Tm	Time
Tmp	Temperature (°F)
Tmpr	Tamper
Tmr	Timer (s)
Tnk	Tank
TOD	Time Of Day
Tons	Tons of Refrigeration
Tot	Total
Trk	Tracking
TWP	Tempered Water Pump
TWR	Tempered Water Return
TWS	Tempered Water Supply
U	
UL	Underwriters Laboratories
Ulkd	Unlocked
Unbal	Unbalanced
Unit	Unit
UnitHtr	Unit Heater
UnitVent	Unit Ventilator
Uoc	Unoccupied
UPS	Uninterruptible Power Supply
Util	Utility
UTC	Universal Time Clock
Usr	Zone Occupant (User)
V	
VA	Volt Amperes/ Variable Air
VAC	Volts Alternating Current
Val	Value
VAV	Variable Air Volume
VDC	Volts Direct Current
Vel	Velocity
Vib	Vibration
Vent	Ventilation
VFD	Variable Frequency Drive
Vlv	Valve
Vol	Volume
Vlt	Voltage
VOC	Volatile Organic Compounds

W	
W	West
Warn	Warning
Wtr	Water
WTS	Water Treatment System
WetB	Wet Bulb
Wntr	Winter
Wh	Wheel
WmCl	Warm/Cool
Wrls	Wireless
Z	
Zn	Zone

Standard Engineering Units & Unit Abbreviations

Temperature:	Degrees Fahrenheit (°F)
Water Pressure:	Pounds per Square Inch (psiG)
Water Pressure Differential:	Pounds per Square Inch Differential (psiD)
Air Pressure:	Inches of Water Column (inWC, "WC)
Air Pressure Differential:	Inches of Water Column Differential (inWCD, "WCD)
Relative Humidity:	Percent (%)
Modulating Command:	Percent (%open/ %closed)
Time:	Seconds (s)
	Minutes (m)
	Hours (h)
Water Volume:	Gallons (Gal)
Natural Gas Volume:	Cubic Feet (CF)
	Hundred Cubit Feet (CCF)
	Thousand Cubit Feet (MCF)
Thermal Energy:	British Thermal Unit (BTU)
	Thousand BTU (MBTU)
	Million BTU (MMBTU)
	Tons of Cooling (Tons)
Electrical Power (real):	Watt (W)
	Kilowatt (kW)
	Megawatt (MW)
	Gigawatt (GW)
Electrical Energy (real):	Watt-hour (Wh)
	Kilowatt-hour (kWh)
	MW-hour (MWh)
Electrical Power (apparent):	Volt-amperes (VA)
	Kilovolt-amperes (kVA)
Electrical Energy (apparent):	Volt-ampere-hour (VAh)
	Kilovolt-ampere-hour (kVAh)
Electrical Voltage:	Direct Current Volts (VDC)
	Alternating Current Volts (VAC)
	Millivolts (mV)
Electrical Current:	Amperes (A)
	Milliamps (mA)
Carbon Dioxide (CO2):	Parts per Million (ppm)
Carbon Monoxide (CO):	Parts per Million (ppm)
Volatile Organic Compound (VOC):	Parts per Million (ppm)
Air Flow Volume:	Cubic Feet per Minute (cfm)
Air Flow Velocity:	Feet per minute (fpm)

Min/Max/Hi/Lo/HL/LL Usage

Min = Lowest value in a set
Max = Highest value in a set

Avg = Average or mean of a set

Hi = Value is considered too high
Lo = Value is considered too low

HL = Highest allowable value – high limit
LL = Lowest allowable value – low limit

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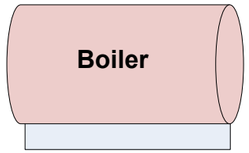
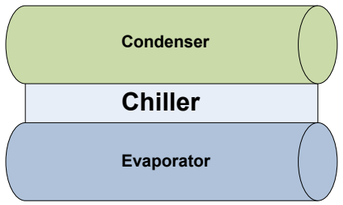
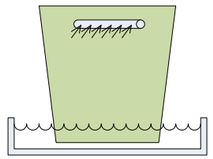
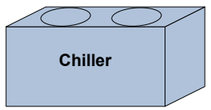
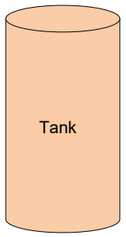
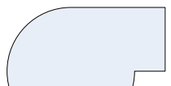
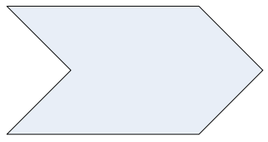
SHEET TITLE & NUMBER:

	Boiler
	Water-Cooled Chiller
	Cooling Tower
	Air-Cooled Chiller
	Storage Tank
	Fan or Pump
	Ductwork

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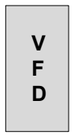	Variable Frequency Drive
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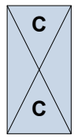
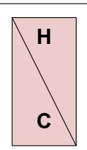
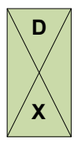
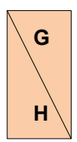
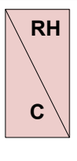
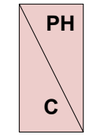
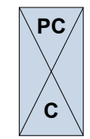
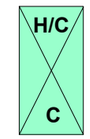
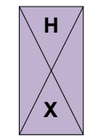
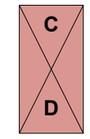
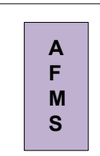
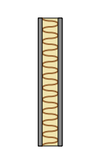
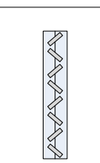
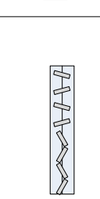
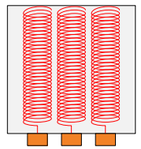
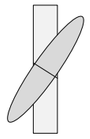
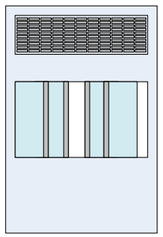
	Cooling Coil
	Heating Coil
	DX Coil
	Gas Duct Heater
	Reheat Coil

	Pre-Heating Coil
	Pre-Cooling Coil
	2-Pipe Heating/ Cooling Coil
	Heat Exchanger Coil
	Condenser Coil
	Air Flow Measuring Station
	Filter
	Control Damper
	Face/Bypass Damper

	Electric Duct Heater
	Terminal Unit Damper
	Lab Fume Hood
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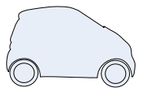
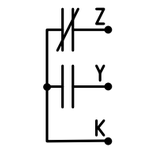
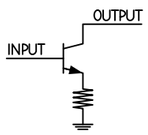
	Electric Vehicle
	Pulse Output
	Open Collector Output
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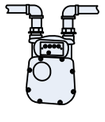	Gas Meter
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	Fuse
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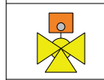	3-Way Valve
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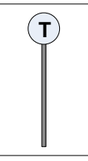
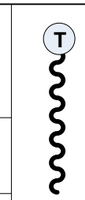
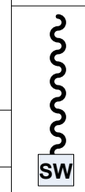
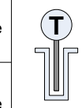
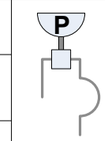
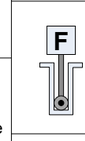
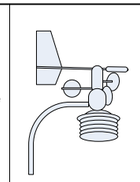
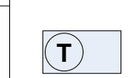
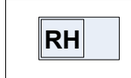
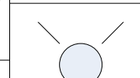
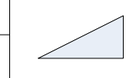
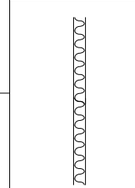
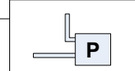
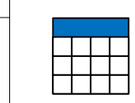
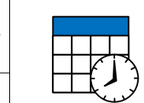
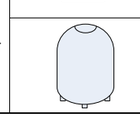
	Air Temperature Duct Sensor
	Static Air Pressure Duct Sensor
	Relative Humidity Duct Sensor
	Air Quality Duct Sensor

	Averaging Duct Temperature Sensor
	Averaging Duct Temperature Switch
	Duct Smoke Detector
	Well Temperature Sensor
	Hydronic Pressure Sensor
	Hydronic Pressure Differential Sensor
	Hydronic Flow Sensor
	Air Pressure Differential Switch
	Air Pressure Differential Switch
	OSA Temperature Sensor
	OSA Relative Humidity Sensor
	OSA Air Quality Sensor
	Pyranometer

	Weather Station
	Space Temperature Sensor
	Space Relative Humidity Sensor
	Space Air Quality Sensor
	Space Occupancy Sensor
	Lighting Load
	Lighting Level
	Wall
	Air Pressure Differential Sensor
	Calendar
	Schedule
	Refrigerant
	Delta
	Compressor

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#	DATE	DESCRIPTION
1.3	7/24/2017	Added Tagging
2.0	8/8/2017	Release Version
2.2	10/4/2017	Added VRF Systems
2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5

DRAWN BY: Mike Grush / Craig Payne

REV. DATE: **1/23/19**

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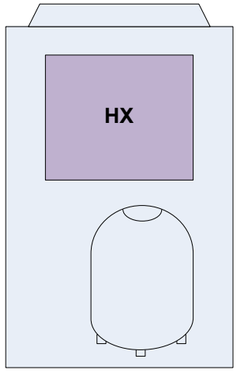
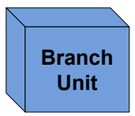
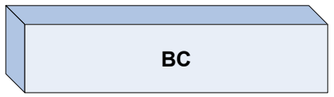
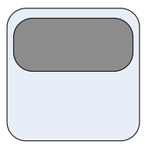
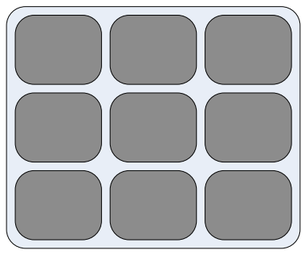
LEGEND-1

	Variable Refrigerant Flow (VRF) Outdoor Unit		VRF Separation (Y) Tube
			VRF Refrigerant Branch Unit
	Variable Refrigerant Flow (VRF) Indoor Unit		
	Variable Refrigerant Flow (VRF) Branch Controller		
	Variable Refrigerant Flow (VRF) Wireless Sensor		
	Variable Refrigerant Flow (VRF) Wired Sensor		
	Variable Refrigerant Flow (VRF) Central Remote Controller		

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5

DRAWN BY: Mike Grush / Craig Payne

REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:

LEGEND-2

Point Tag Requirements

Overview

Points are typically a digital or analog sensor or actuator entity (sometimes called hard points). Points can also represent a configuration value such as a setpoint or schedule log (sometimes called soft points). Point entities are tagged with the point tag.

All points are further classified as *sensors*, *commands*, or *setpoints* using one of the following three tags:

- sensor: input, AI/BI, sensor
- cmd: output, AO/BO, actuator, command
- sp: setpoint, internal control variable, schedule

All points must be associated with a site via the siteRef tag and a specific piece of equipment via the equipRef tag. If a point doesn't have physical equipment relationship, then use a virtual equip entity to model a logical grouping.

By convention multiple tags are used to model the role of a point:

- where: discharge, return, exhaust, outside
- what: air, water, steam
- measurement: temp, humidity, flow, pressure

Example of an AHU discharge air temperature input point:

id: @whitehouse.ahu3.dat
dis: "White House AHU-3 DischargeAirTemp"
point
siteRef: @whitehouse
equipRef: @whitehouse.ahu3
discharge
air
temp
sensor
kind: "Number"
unit: "°F"

Point Kinds

Points are classified as Bool, Number, or Str using the kind tag:

Bool: model digital points as true/false. Bool points may also define an enum tag for the text to use for the true/false states

Number: model analog ponts such as temperature or pressure. These points should also include the unit to indicate the point's unit of measurement.

Str: models an enumerated point with a mode such as "Off, Slow, Fast". Enumeraed points should also define an enum tag.

Point Min/Max

The following tags may be used to define a minimum and/or maximum for the point:

- minVal: minimum point value
- maxVal: maximum point value

When these tags are applied to a sensor point, they model the range of values the sensor can read and report. Values outside of these range might indicate a fault condition in the sensor.

When these tags are applied to a cmd or sp, they model the range of valid user inputs when commanding the point.

Point His

A "*historized*" point means that there is a time-series sampling of the point's value over a time range. History-enabled points are sometimes called *logged* or *trended* points. History-enabled points should be tagged with the his tag.

If a point implements the his tag, then it should also implement these tags:

- tz: all history points must define this tag with their timezone name (must match the point's site timezone)
- hisInterpolate: defined to indicate whether the point is logged by interval or change-of-value
- hisTotalized: defined to indicate if a point is collecting an ongoing or accumulated value

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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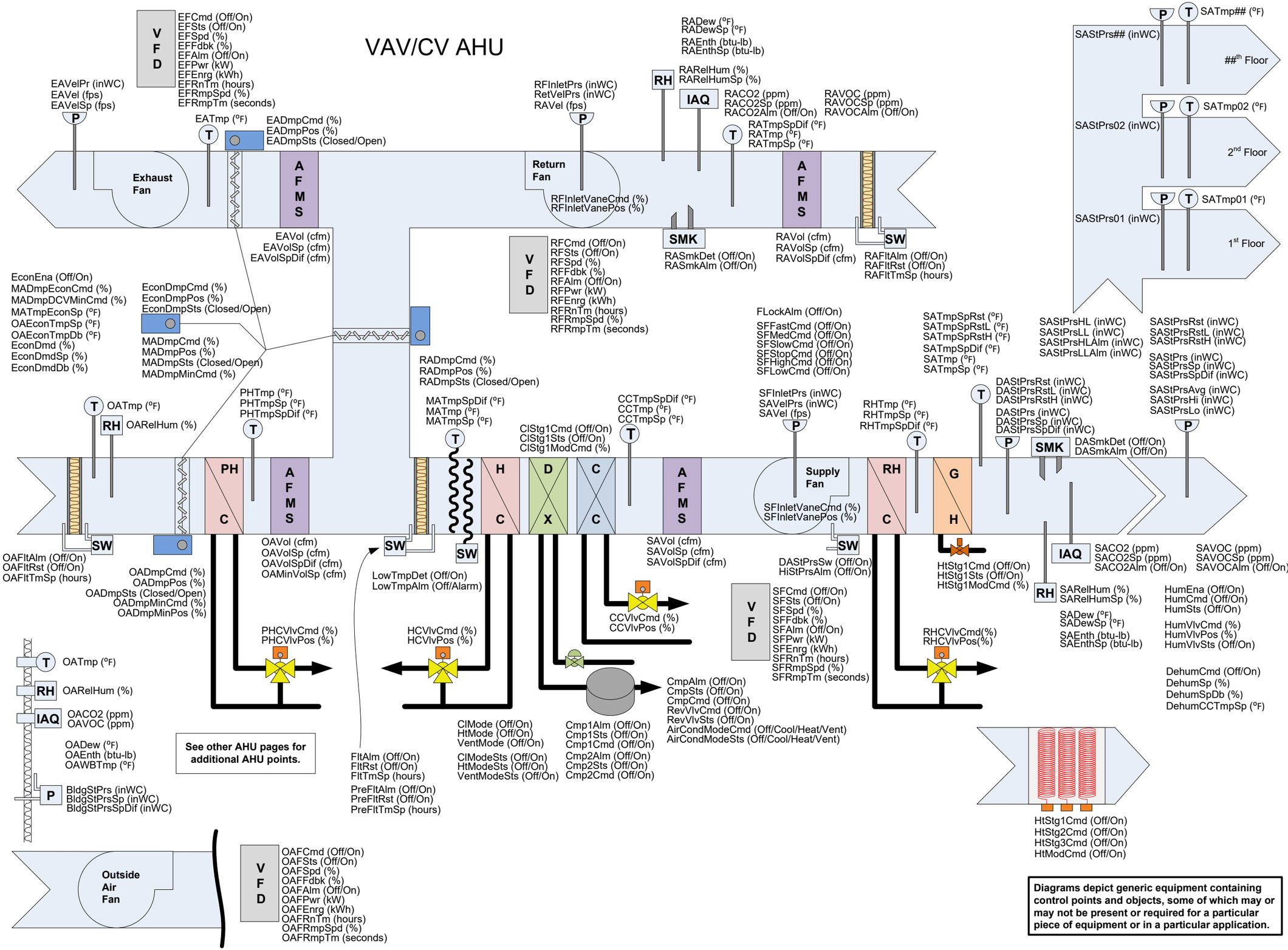
POINTTAG

VAV/CV AHU



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AHUVAV

AHU Control Parameters

Equipment Enable

SysEna (Off/On)
Ena (Off/On)

Equipment Schedule

SchedCmd (Off/On)
SchedSts (Off/On)
SchedEna (Off/On)

Occupied Mode

OccCmd (Occ/Uoc)
OccSts (Occ/Uoc)
EffOcc (Occ/Uoc)

Override Mode

OvrdCmd (Off/Ovrd)
OvrdSts (Off/Ovrd)
ManOvrdCmd (Off/Ovrd)
ManOvrdSts (Off/Ovrd)
OvrdTmSp (sec, min, hours)
OvrdTmr (sec, min, hours)
OvrdCnt (count)

Overtime Hours

OTOccCmd (Occ/Uoc)
OTOccSts (Occ/Uoc)
OTOccTm (hours)

Misc

StartDelay (sec)
AuxContact (Off/On)
RemoteSp (use applicable units)

Equipment Runtime

Ideally equipment runtime objects should use hours for the engineering units and should not refer to the units in the name. However, where multiple objects are used to express runtime for a single piece of equipment with different time units, the following names should be used (SFRnTm is used as an example):

SFRnTm (hours)
SFRnTmSec (seconds)
SFRnTmHr (hours)
SFRnTmDay (days)

Cooling/Heating/Ventilating

ClEna (Off/On)
ClEnaSp (ºF)
ClDmd (Off/On)

HtEna (Off/On)
HtEnaSp (ºF)
HtDmd (Off/On)

VentEna (Off/On)

Lockout Points

ClLckCmd (Off/On)
ClLckSts (Off/On)
ClLckTmpSp (ºF)
ClLckTmpDb (ºF)

HtLckCmd (Off/On)
HtLckSts (Off/On)
HtLckTmpSp (ºF)
HtLckTmpDb (ºF)

StmLck (Off/On)
RHtLck (Off/On)
PHtLck (Off/On)

Warm-Up/Cool-Down Modes

CoolDnMode (Off/On)
CoolDnCmd (Off/On)
CoolDnSts (Off/On)
CoolDnSATmpSp (ºF)
CoolDnRmTmpSp (ºF)

WarmUpMode (Off/On)
WarmUpCmd (Off/On)
WarmUpSts (Off/On)
WarmUpSATmpSp (ºF)
WarmUpRmTmpSp (ºF)

Unoccupied Modes

UocLLEna (Off/On)
UocLLCmd (Off/LL)
UocLLSts (Off/LL)

UocHLEna (Off/On)
UocHLCmd (Off/HL)
UocHLSts (Off/HL)

Alarm/Safety Objects

UnitAlm (Off/On)
ServiceAlm (Off/On)
SmkAlm (Off/On)
FireAlm (Off/On)

FireAlmShutdown (Off/On)

ShutdownRelay (Off/On)

FltAlm (Off/On)
FltRst (Off/On)
FltTmSp (hours)
FltTm (hours)

PreFltAlm (Off/On)
PreFltRst (Off/On)
PreFltTmSp (hours)
PreFltTm (hours)

LowTmpAlm (Off/Alarm)

Loop Control Objects

Loop control variables, where they are being assigned using system objects, should use the following names:

[process]LpPv (use process variable units)
[process]LpCv (use control variable units)
[process]LpSp (use process variable units)
[process]LpPGain (pgain)
[process]LpIGain (igain)
[process]LpDGain (dgain)
[process]LpErr (use process variable units)
[process]LpTm (sec)
[process]LpBias (use control variable units)
[process]LpDb (use process variable units)
[process]LpCvHL (use control variable units)
[process]LpCvLL (use control variable units)

Example using a simple Supply Air Temperature control loop controlling a Cooling Coil Valve:

SATmpLpPv (ºF) ...or SATmp (ºF)
SATmpLpCv (%) ...or CCVlvCmd (%)
SATmpLpSp (ºF) ...or SATmpSp (ºF)
SATmpLpPGain (pgain)
SATmpLpIGain (igain)
SATmpLpDGain (dgain)
SATmpLpError (ºF)
SATmpLpTm (sec)...or 1
SATmpLpBias (%)...or 50
SATmpLpDb (ºF)
SATmpLpCvHL (%)...or 100
SATmpLpCvLL (%) ...or 0

Example using a Temperature control loop controlling a Cooling Coil Valve and a Heating Coil Valve, with multiple temperature inputs and set-points depending on mode:

TmpLpPv (ºF) ...SATmp during Occ, RATmp during Uoc
TmpLpCv (null) ...Cv controls CCVlvCmd & HCVlvCmd
TmpLpSp (ºF) ...SATmpSp during Occ, RATmpSp during Uoc
TmpLpPGain (pgain)
TmpLpIGain (igain)
TmpLpDGain (dgain)
TmpLpError (ºF)
TmpLpTm (sec) ...or 1
TmpLpBias (null) … or 0
TmpLpDb (ºF)
TmpLpCvHL (null) ...100, 0 through 100 is for the cooling coil valve
TmpLpCvLL (null) …-100, 0 through -100 is for the heating coil valve

Optimal Start Stop (OSS)

OSS Objects (SSTO/SSTOCO)

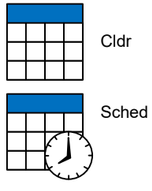
OptStZn (null)
OptStMode (null)
OptStNextStrtTm (min)
OptStNextStopTm (min)
OptStErlyStrtTm (min)
OptStLateStrtTm (min)
OptStNextOccTm (min)
OptStErlyStopTm (min)
OptStLateStopTm (min)
OptStNextUocTm (min)
OptStAdjStrtTm (min)
OptStAdjStopTm (min)
OptStSeason (Summer/Winter)
OptStZnTmp (ºF)
OptStOATmp (ºF)
OptStClgSp (ºF)
OptStClgCoeff1 (hours)
OptStClgCoeff2 (hours)
OptStClgCoeff3 (hours)
OptStClgCoeff4 (hours)
OptStHtgSp (ºF)
OptStHtgCoeff1 (hours)
OptStHtgCoeff2 (hours)
OptStHtgCoeff3 (hours)
OptStHtgCoeff4 (hours)

OSS Objects (Zone Optimization)

OptStClgSp (ºF)
OptStHtgSp (ºF)
OptStDesOper (null)
OptStEffClgSp (ºF)
OptStEffHtgSp (ºF)
OptStMode (null)
OptStLastMode (null)
OptStNextMode (null)
OptStNextOccTmr (min)
OptStNextOccTm (min)
OptStNextStrtTmr (min)
OptStNextStopTmr (min)
OptStNextStopTm (min)
OptStNextStrtTm (min)
OptStNextUocTmr (min)
OptStNextUocTm (min)
OptStOATmp (ºF)
OptStOATmpStop (ºF)
OptStOATmpStrt (ºF)
OptStOccClgSp (ºF)
OptStOccHtgSp (ºF)
OptStLastOccTm (min)
OptStPhase (null)
OptStStopDrtn (min)
OptStStopMode (null)
OptStStopTm (min)
OptStStrtDrtn (min)
OptStStrtMode (null)
OptStStrtTm (min)
OptStStopTmpDif (ºF)
OptStStrtTmpDif (ºF)
OptStStopTGTmp (ºF)
OptStStrtTGTmp (ºF)
OptStAdjStrtTm (min)
OptStAdjStopTm (min)
OptStUocClgSp (ºF)
OptStUocHtgSp (ºF)
OptStUocTm (min)
OptStZnTmp (ºF)
OptStZnTmpStop (ºF)
OptStZnTmpStrt (ºF)

Equipment Schedule

SchedCmd (Off/On)
SchedSts (Off/On)
SchedEna (Off/On)



Diagrams depict generic equipment containing control points and objects, some of which may or may not be present or required for a particular piece of equipment or in a particular application.

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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AHUMISC

AHU Tag Requirements

Overview

The ahu tag is used to model air handling equipment designed to heat or cool air. Packaged rooftop units are considered a special class of AHU. Packaged units use the ahu tag, but shall also specify the rooftop tag:

Equipment & Reference Tags

AHUs shall always be marked as ahu and equip. The following tags are also used:

- hvac: always specified to mark as an HVAC asset
- rooftop: if the AHU is a packaged rooftop unit (RTU)
- mau: if the AHU is a makeup air unit
- chilledWaterPlantRef: reference plant supplying chilled water
- hotWaterPlantRef: reference plant supplying hot water
- steamPlantRef: reference plant supplying steam

Heating & Cooling Method

AHUs shall always define their heating method using one of the following tags

- elecHeat
- hotWaterHeat
- steamHeat
- gasHeat

AHUs shall always define their cooling method using one of the following tags

- chilledWaterCool
- dxCool

Constant or Variable Volume

An AHU shall be tagged as either constantVolume or variableVolume based on its ability to adjust the volume of air flow. Typically, this distinction is based on whether the AHU's fan is single speed or a VFD.

Zone Air Delivery

A Variable Volume Temperature or VVT system is defined as a constant volume AHU with VAV terminal units. This is indicated by the presence of both the constantVolume and vavZone tags. The following tags define the system used to deliver air to the zones:

- directZone: AHU supplies air directly to the zone
- vavZone: AHU supplies air to VAV terminal units
- chilledBeamZone: AHU supplies air to chilled beam terminal units
- multiZone: air is split into a duct per zone

Ductwork

In multi-duct systems, the AHU discharges into multiple ducts for simultaneous cooling, heating, or neutral air:

- singleDuct: AHU uses a single duct
- dualDuct: the AHU discharges to two ducts which is some combination of hotDeck, coldDeck, or neutralDeck
- tripleDuct: the AHU discharges into three ducts which are the hotDeck, coldDeck, and neutralDeck

Sections

Most points in an AHU are associated with one of the following sections of the unit:

- discharge: air exiting the unit to be supplied to the zones/terminal units
- return: air returning from the zone back into the unit
- outside: fresh, outside air entering the unit for air quality and economizing
- exhaust: air exiting the unit back outside
- mixed: return and outside air mixed together before passing through the heating/cooling elements
- cool: cooling elements/coils
- heat: heating elements/coils
- zone: conditioned space associated with the unit

Points

The following list applies to point tags commonly used with an AHU and shall be applied appropriately:

Discharge
- discharge air temp sensor
- discharge air humidity sensor
- discharge air pressure sensor
- discharge air flow sensor
- discharge air fan cmd
- discharge air fan sensor

Return
- return air temp sensor
- return air humidity sensor
- return air pressure sensor
- return air flow sensor
- return air co2 sensor
- return air fan cmd
- return air damper cmd

Mixed
- mixed air temp sensor

Outside
- outside air temp sensor
- outside air humidity sensor
- outside air pressure sensor
- outside air flow sensor
- outside air flow sp
- outside air damper cmd

Exhaust
- exhaust air fan cmd
- exhaust air damper cmd

Conditioning
- cool stage cmd
- heat stage cmd
- humidifier cmd
- filter sensor

Misc
- freezeStat sensor
- heatWheel cmd
- faceBypass cmd
- bypass damper cmd

Zone (see also ZONETAG)
- zone air temp sensor
- zone air temp effective sp
- zone air temp occ cooling sp
- zone air temp occ heating sp
- zone air temp unocc cooling sp
- zone air temp unocc heating sp
- zone air temp standby cooling sp
- zone air temp standby heating sp
- zone air humidity sensor
- zone air co2 sensor
- zone air co2 sp

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2.0	8/8/2017	Release Version
2.2	10/4/2017	Added VRF Systems
2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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AHUTAG

Zone Control

Zn##OccCmd (Off/On)

Zn##EffTmp (°F)
Zn##EffSp (°F)
Zn##OccClgSp (°F)
Zn##OccHtgSp (°F)
Zn##UocClgSp (°F)
Zn##UocHtgSp (°F)
Zn##StbyClgSp (°F)
Zn##StbyHtgSp (°F)

T
Zn##Tmp (°F)
Zn##TmpSp (°F)

RH
Zn##RelHum (%)
Zn##RelHumSp (%)
Zn##Enth (btu-lb)
Zn##EnthSp (btu-lb)
Zn##Dew (°F)
Zn##DewSp (°F)

IAQ
Zn##CO2 (ppm)
Zn##CO2Sp (ppm)
Zn##CO2Alm (Off/On)
Zn##IAQAlm (Off/On)
Zn##VOC (ppm)
Zn##VOCSp (ppm)
Zn##VOCAlm (Off/On)

General Zone Management

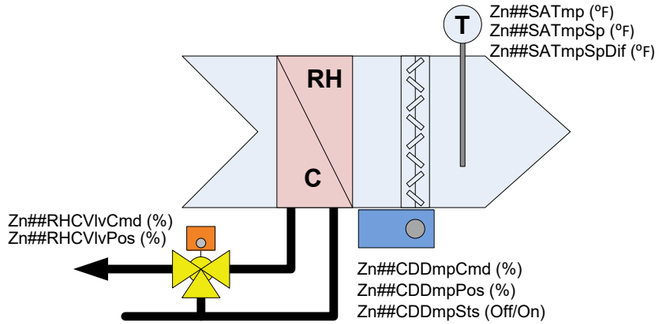
ZnDmpMax (%)
ZnDmpMin (%)
ZnDmpAvg (%)

ZnHDDmpMax (%)
ZnHDDmpMin (%)
ZnHDDmpAvg (%)

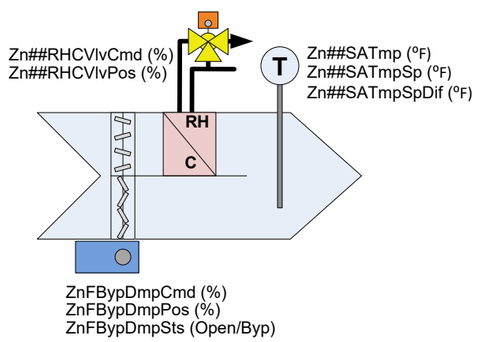
ZnCDDmpMax (%)
ZnCDDmpMin (%)
ZnCDDmpAvg (%)

ZnRHCVlvMax (%)
ZnRHCVlvMin (%)
ZnRHCVlvAvg (%)

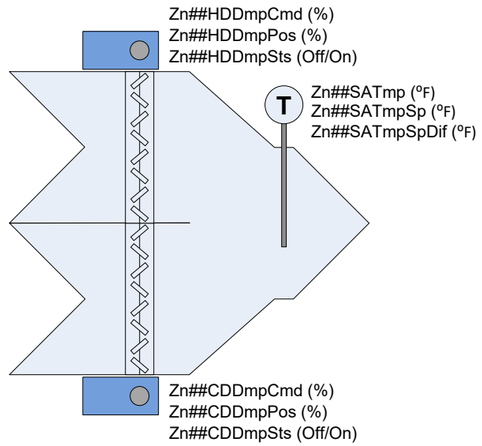
Single-duct Zone Damper



Face/Bypass Zone Damper



Dual-duct Zone Dampers



See other AHU pages for additional AHU points.

Diagrams depict generic equipment containing control points and objects, some of which may or may not be present or required for a particular piece of equipment or in a particular application.

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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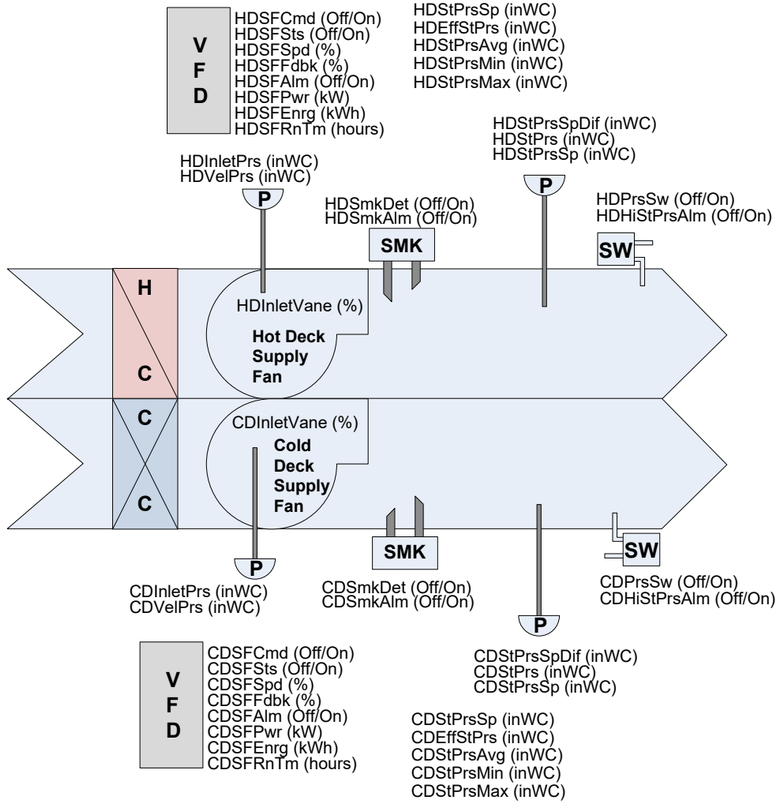
AHUMZ

Dual Supply Fan Dual Duct AHU



AHU Control Parameters

Unit Control Points

ManOvrdCmd (Off/On)

ScheduleCmd (Off/On)
ScheduleSts (Off/On)

OccCmd (Occ/Uoc)
OvrdCmd (Off/Ovrd)
OccSts (Occ/Uoc)
EffOcc (Occ/Uoc)
OTOcc (Occ/Uoc)
OTOccTm (hours)

NightLLCmd (Off/LL)
NightHLCmd (Off/HL)

ClEna (Off/On)
ClDmd (Off/On)
HtEna (Off/On)
HtDmd (Off/On)

RemoteSp (use applicable units)

StartDelay (sec)

Miscellaneous Points

AuxContact (Off/On)
ShutdownRelay (Off/On)
UnitAlm (Off/On)
ServiceAlm (Off/On)

SmkAlm (Off/On)
FireAlm (Off/On)

Lockout Points

ClLckCmd (Off/On)
ClLckSts (Off/On)
ClLckTmpSp (ºF)
ClLckTmpDb (ºF)

HtLckCmd (Off/On)
HtLckSts (Off/On)
HtLckTmpSp (ºF)
HtLckTmpDb (ºF)

StmLck (Off/On)
RHtLck (Off/On)
PHtLck (Off/On)

Zone Control Setpoints

OccCmd (Occ/Uoc)
UocOvrdCmd (Uoc/Ovrd)
OvrdTimeSp (hours)

T
Tmp (ºF)
TmpSp (ºF)

EffTmp (ºF)
EffSp (ºF)
OccClgSp (ºF)
OccHtgSp (ºF)
UocClgSp (ºF)
UocHtgSp (ºF)
StbyClgSp (ºF)
StbyHtgSp (ºF)

UserSpAdjEna (Off/On)
UserSpAdjRng (ºF)
UserSpAdjHL (ºF)
UserSpAdjLL (ºF)
UserSpAdj (ºF)
EffUserSp (ºF)
OccSnsrSts (Off/On)

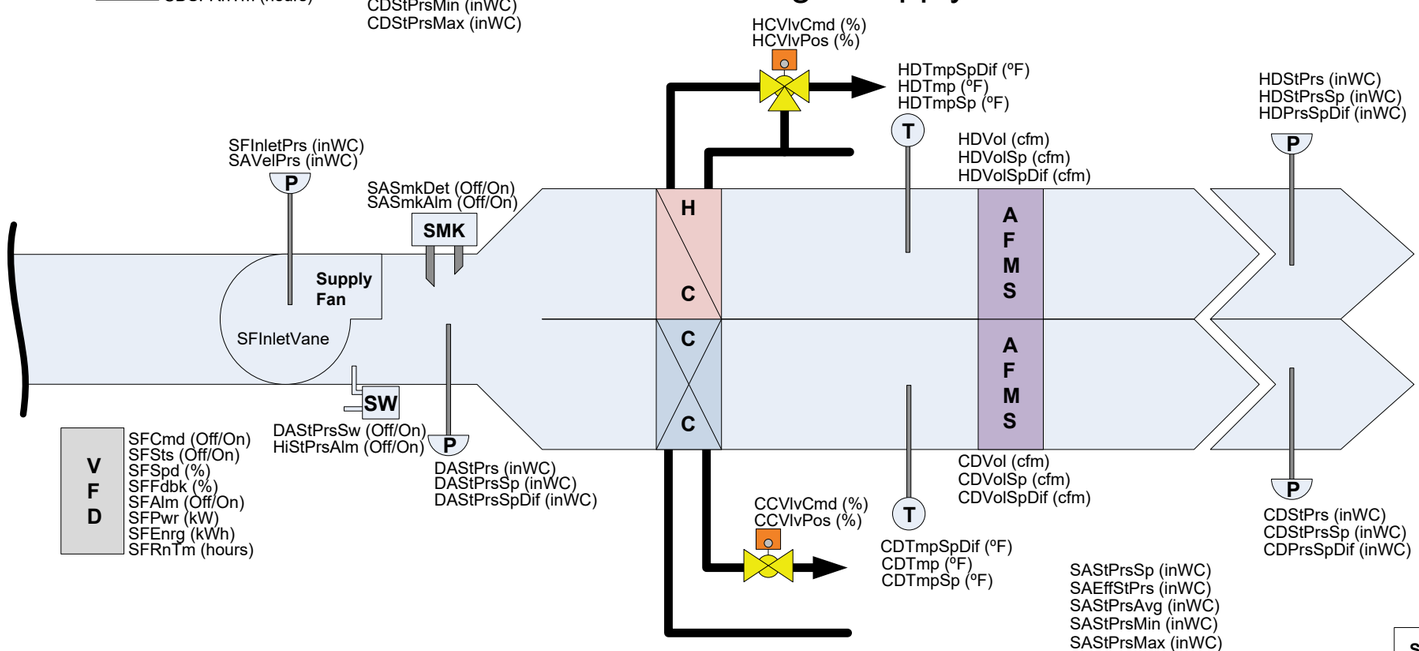
MinClVolSp (cfm)
MaxClVolSp (cfm)
MinHtVolSp (cfm)
MaxHtVolSp (cfm)
MinTotVolSp (cfm)
MaxTotVolSp (cfm)

AirFlowPct (%)
AirFlowPctSp (%)

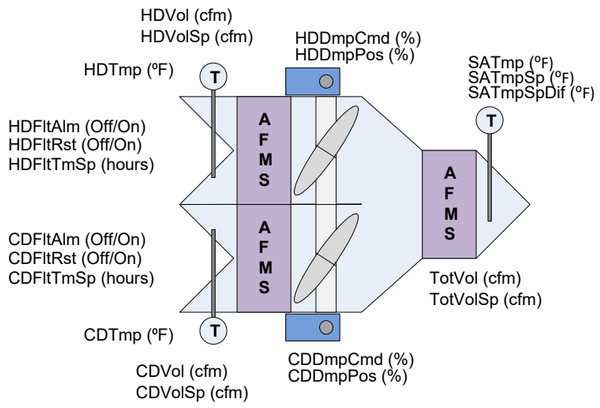
OccAirVolSp (cfm)
UocAirVolSp (cfm)

HDDuctArea (sqft)
HDVolCoeff (coeff)
CDDuctArea (sqft)
CDVolCoeff (coeff)

Single Supply Fan Dual Duct AHU



Dual-Duct Terminal Unit



See other AHU pages for additional AHU points.

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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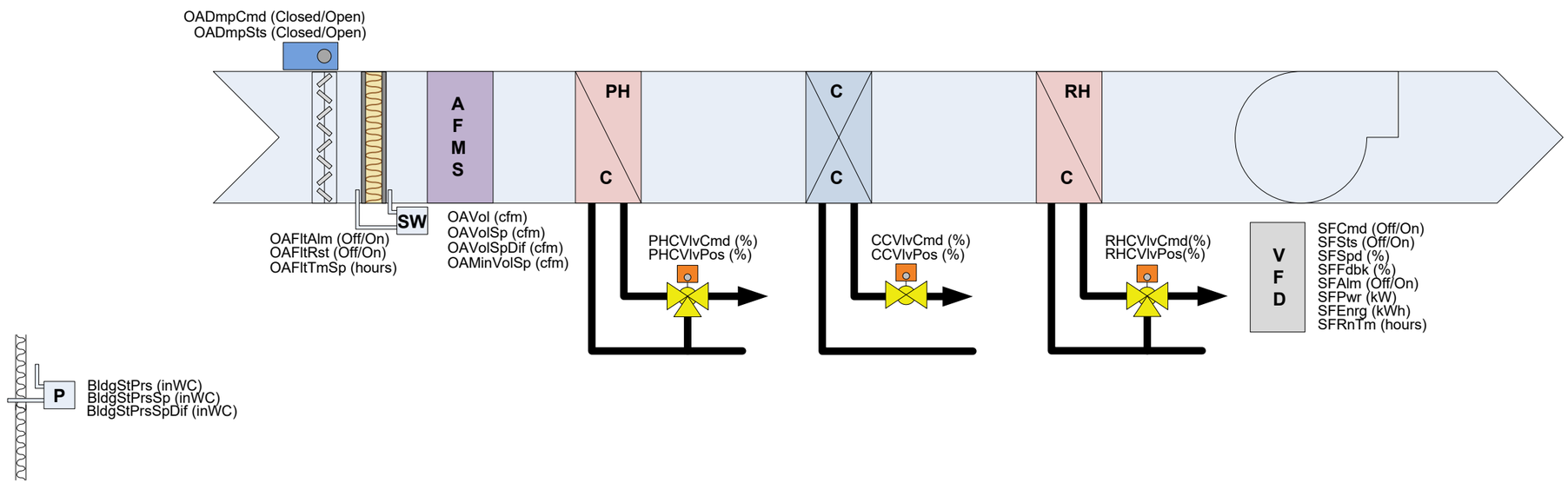
AHUDD

OSA AHU/MUA AHU



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STATUS: Version 2.5

DRAWN BY: Mike Grush / Craig Payne

REV. DATE: **1/23/19**

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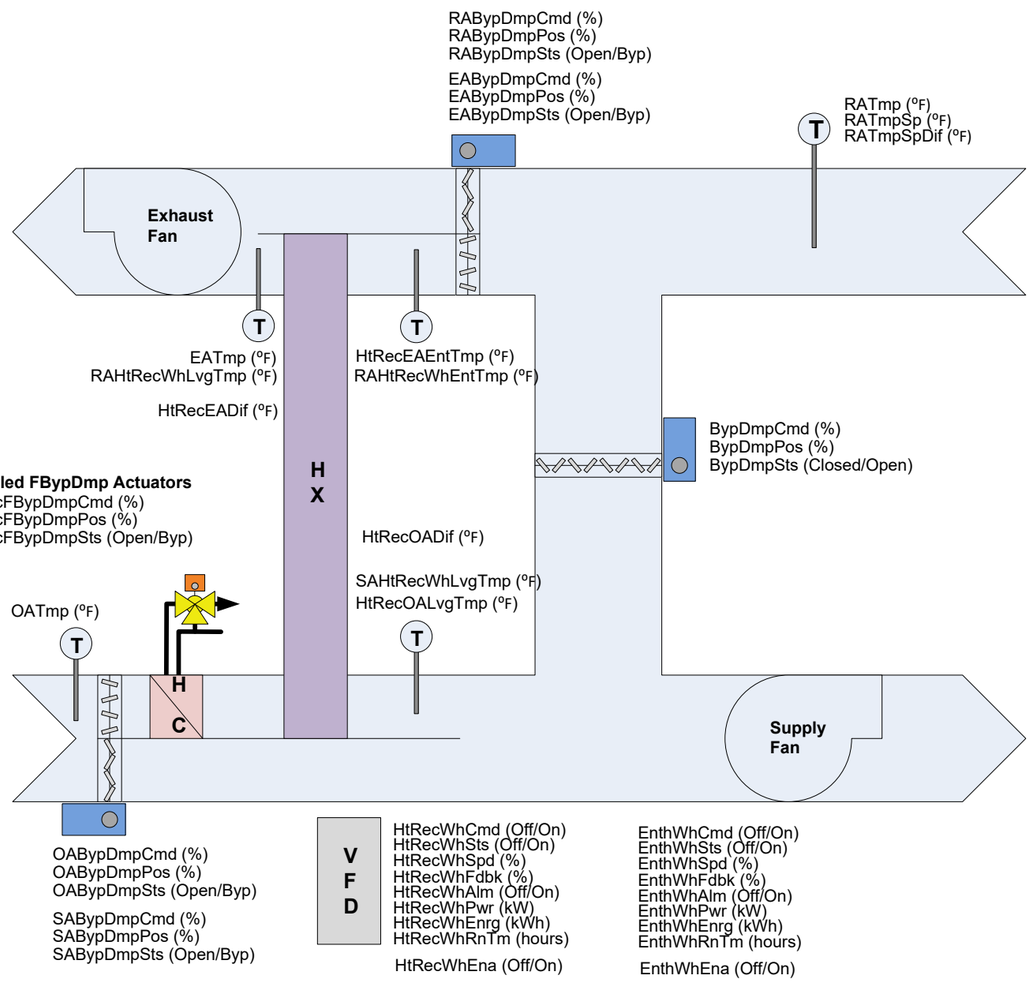
AHUOA

Air-to-Air Heat Recovery

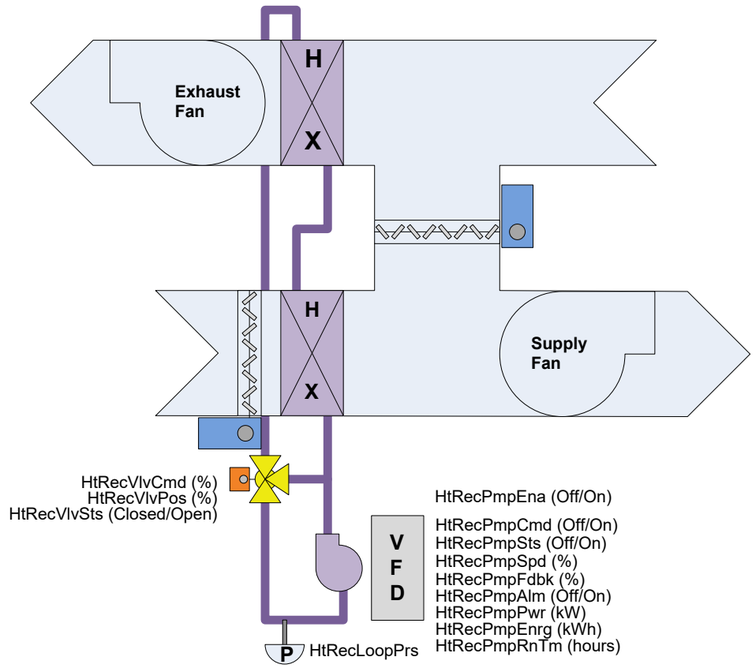


Heat Recovery Control Points

HtRecEna (Off/On)
HtRecMode (Recover/Reject)
HtRcvMode (Off/On)
HtRejMode (Off/On)
HtRecDif (ºF)
HtRecDifSp (ºF)
HtRecovered (btu)
HtRejected (btu)
HtRecEff (%)
HtRecEffBase (%)

HtRcvModeSp (ºF)
HtRejModeSp (ºF)
HtRcvModeDb (ºF)
HtRejModeDb (ºF)
HtRecOATmpSp (ºF)
HtRecOATmpDb (ºF)
HtRecDifSp (ºF)
HtRecDifDb (ºF)

Hydronic Heat Recovery



See other AHU pages for additional AHU points.

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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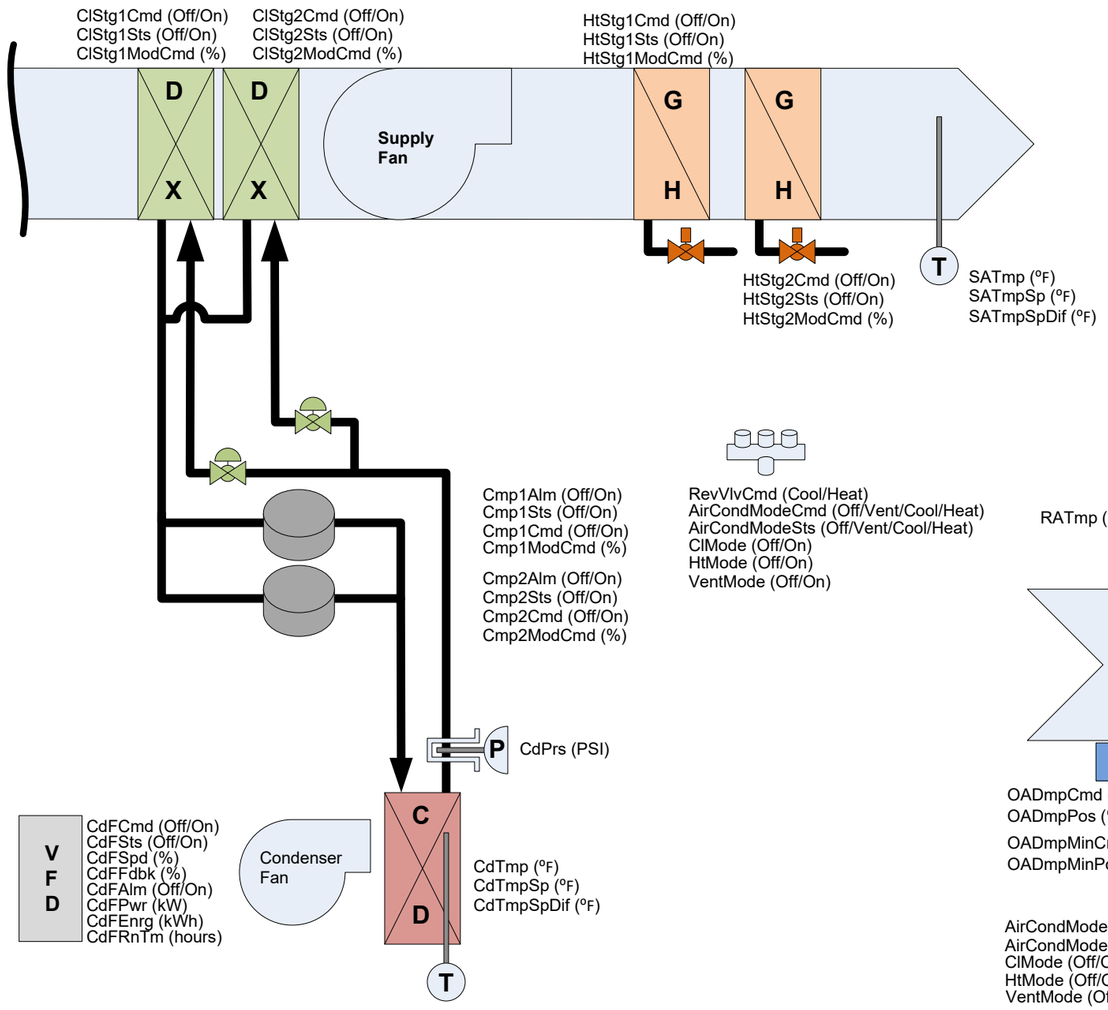
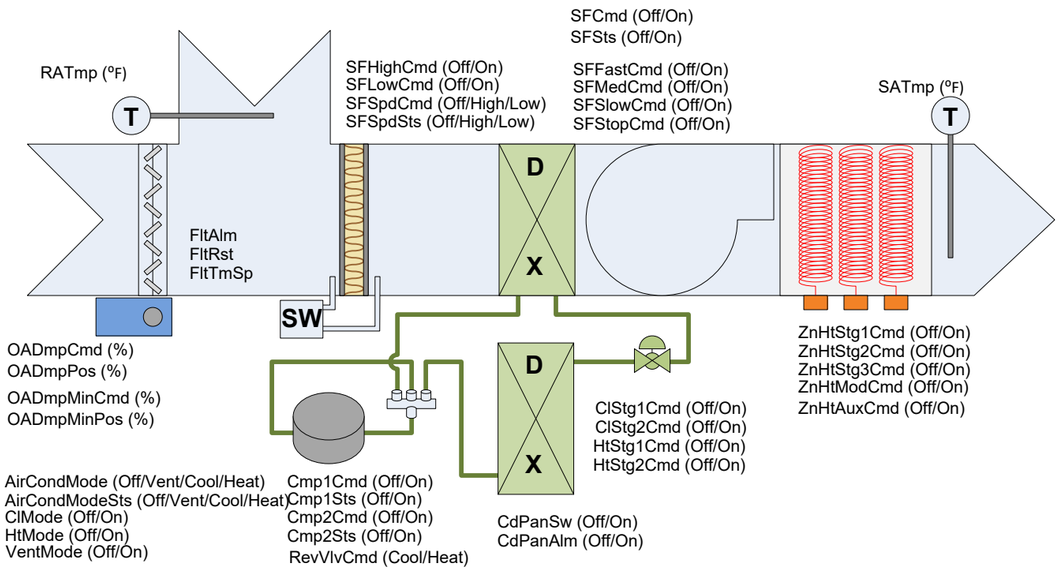
AHUHX

DX AHU w/ Gas Heat



Unit Ventilator/Heat Pump



See other AHU pages for additional AHU points.

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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AHUDX

Zone Control Points

OccCmd (Occ/Uoc)
UocOvrdCmd (Uoc/Ovrd)
OvrdTmSp (hours)

OccRmTmpSp (ºF)
UocRmTmpSp (ºF)

EffRmTmp (ºF)
EffRmTmpSp (ºF)
OccClgSp (ºF)
OccHtgSp (ºF)
UocClgSp (ºF)
UocHtgSp (ºF)
StbyClgSp (ºF)
StbyHtgSp (ºF)
EffHtgSp (ºF)
EffClgSp (ºF)

UserSpAdjEna (Off/On)
UserSpAdjRng (ºF)
UserSpAdjHL (ºF)
UserSpAdjLL (ºF)
UserSpAdj (ºF)
EffUserSp (ºF)
OccSnsrSts (Off/On)

OvrdEna (Off/On)
OvrdCmd (Uoc/Ovrd)
OvrdTmRem (min)

T

RmTmp (ºF)
RmTmpSp (ºF)
RmTmpSpHL (ºF)
RmTmpSpLL (ºF)

RH

RmRelHum (%)
RmRelHumSp (%)
RmEnth (btu-lb)
RmEnthSp (btu-lb)
RmDew (ºF)
RmDewSp (ºF)

IAQ

RmCO2 (ppm)
RmCO2Sp (ppm)
RmCO2Alm (Off/On)
RmIAQAlm (Off/On)
RmVOC (ppm)
RmVOCSp (ppm)
RmVOCAlm (Off/On)

AirCondModeCmd (Cool/Heat)
AirCondModeSts (Cool/Heat)
AirCondModeDb (ºF)
AirCondModeDly (sec)

ClgModeSts (Off/On)
HtgModeSts (Off/On)
VentModeSts (Off/On)
StbyModeSts (Off/On)

ClgVolSpLL (cfm)
ClgVolSpHL (cfm)
HtgVolSpLL (cfm)
HtgVolSpHL (cfm)

AirFlwPct (%)
AirFlwPctSp (%)

OccAirVolSp (cfm)
UocAirVolSp (cfm)

InletDuctArea (sqft)
InletAirVolCoeff (coeff)

See other pages for additional terminal unit points.

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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ZONE

Zone Tag Requirements

Overview

The zone tag is used for points associated with a conditioned space in a building. Zone points are used consistently by any equipment used to condition the space including:

- directZone ahu
- vav
- fcu
- uv
- heatPump

Sections

Not applicable

Points

The following are the standardized zone points:

Zone

- zone air temp sensor
- zone air temp effective sp
- zone air temp occ cooling sp
- zone air temp occ heating sp
- zone air temp unocc cooling sp
- zone air temp unocc heating sp
- zone air temp standby cooling sp
- zone air temp standby heating sp
- zone air humidity sensor
- zone air co2 sensor
- zone air co2 sp

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STATUS: Version 2.5

DRAWN BY: Mike Grush / Craig Payne

REV. DATE: **1/23/19**

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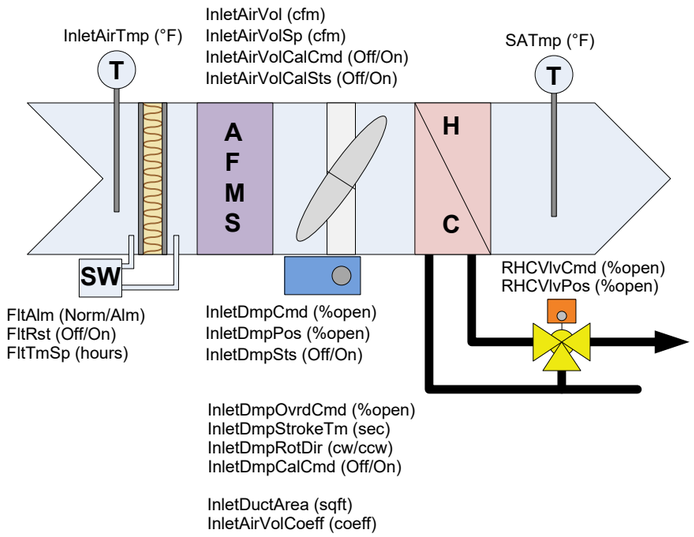
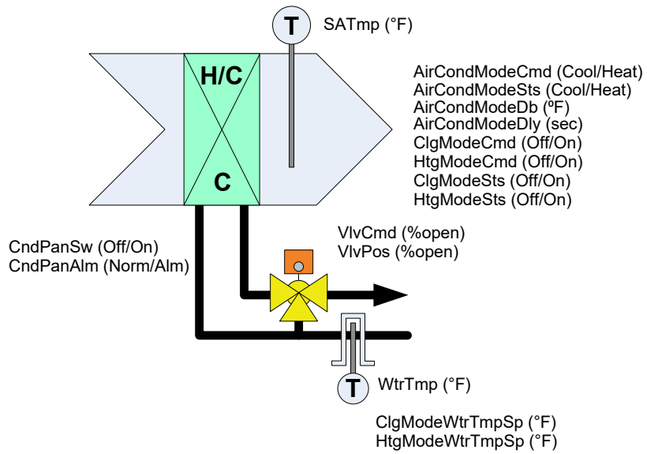
ZONETAG

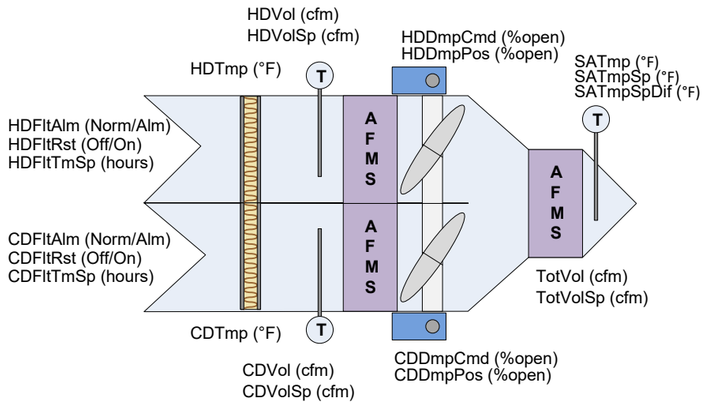
CV/VAV/VVT w/ HW Reheat



2-Pipe Coil



Dual-Duct Terminal Unit



See other pages for additional terminal unit points.

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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VAV CV VVT

VAV Tag Requirements

Overview

The vav tag is used to model variable air volume assets. VAVs shall always be marked as equip.

Equipment & Reference Tags

VAVs shall be classified with the following type tags:

coolOnly
series fanPowered elecReheat
series fanPowered hotWaterReheat
parallel fanPowered elecReheat
parallel fanPowered hotWaterReheat

These additional equip level tags shall be defined for VAVs:

hvac: always specified to mark as an HVAC asset
singleDuct or dualDuct: ductwork configuration
ahuRef: supply AHU
chilledWaterPlantRef: plant supplying chilled water if applicable
pressureDependent or pressureIndependent: control based on duct static pressure
hotWaterPlantRef: reference plant supplying hot water
steamPlantRef: reference plant supplying steam

Sections

Since most points are not clearly associated with the entering or discharge section we omit a section tag for most points. Any points which would conflict with the zone points must be qualified with either discharge or entering tags. Associate points with sections of a VAV using these tags:

entering: air entering the unit from the AHU
discharge: air exiting the unit to be supplied to the zones
zone: conditioned space associated with the unit

Points

The following list applies to point tags commonly used with a VAV and shall be applied appropriately:

VAV Points Include Zone Tags

zone air temp sensor
zone air temp effective sp
zone air temp occ cooling sp
zone air temp occ heating sp
zone air temp unocc cooling sp
zone air temp unocc heating sp
zone air temp standby cooling sp
zone air temp standby heating sp
zone air humidity sensor
zone air co2 sensor
zone air co2 sp

Other Standardized Tags

discharge air temp sensor
entering air temp sensor
air pressure sensor
air flow sensor
air flow effective sp
air flow min sp
air flow max sp
air flow reheating max sp
air flow standby sp
air fan cmd
air fan sensor
air damper cmd
reheat cmd
vavMode sp
ductArea sp
perimeterHeat cmd

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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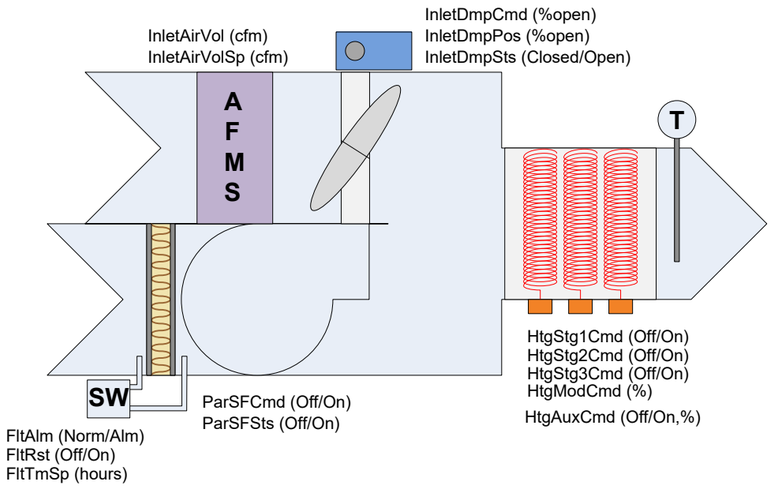
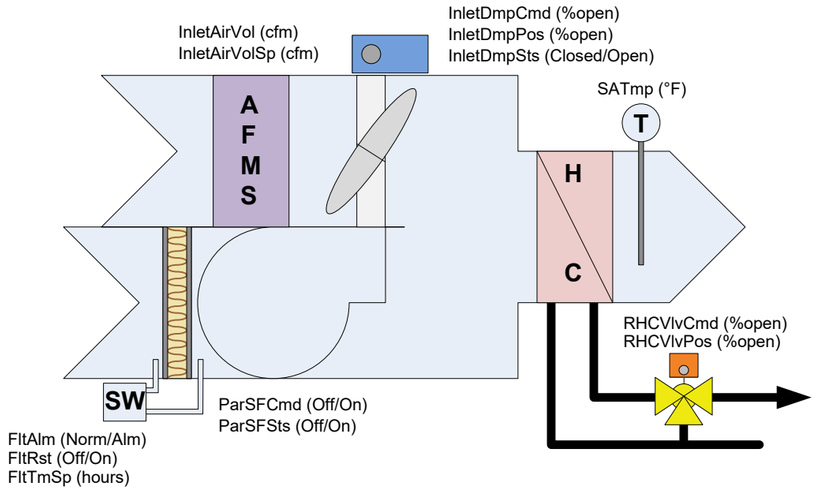
VAVTAG

VAV w/ Parallel Fan & Electric Reheat

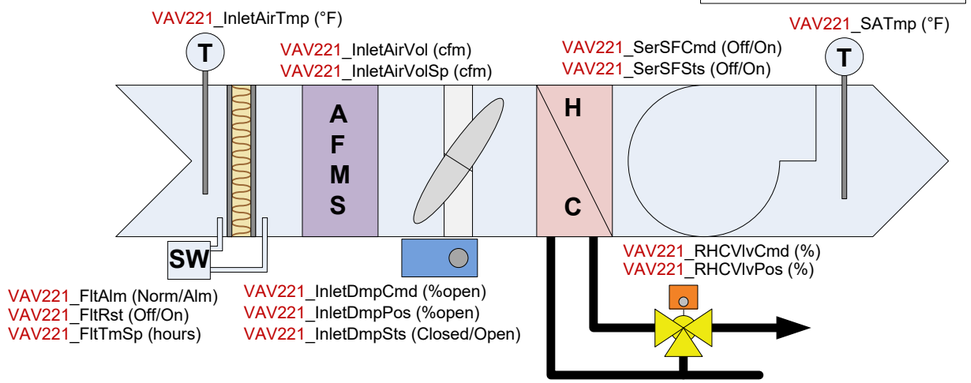


VAV w/ Parallel Fan & HW Reheat

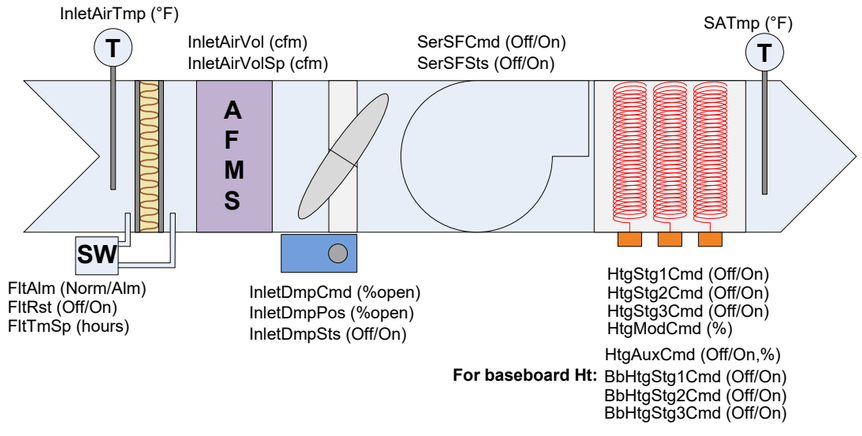


VAV w/ Series Fan & HW Reheat

In this example, "VAV221_" is the equipment designator.



VAV w/ Series Fan & Electric Reheat



See other pages for additional terminal unit points.

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2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:

FTU

Zone Control Points

OccCmd (Occ/Uoc)
UocOvrdCmd (Uoc/Ovrd)
OvrdTmSp (hours)

OccRmTmpSp (ºF)
UocRmTmpSp (ºF)

EffRmTmp (ºF)
EffRmTmpSp (ºF)
OccClgSp (ºF)
OccHtgSp (ºF)
UocClgSp (ºF)
UocHtgSp (ºF)
StbyClgSp (ºF)
StbyHtgSp (ºF)
EffHtgSp (ºF)
EffClgSp (ºF)

UserSpAdjEna (Off/On)
UserSpAdjRng (ºF)
UserSpAdjHL (ºF)
UserSpAdjLL (ºF)
UserSpAdj (ºF)
EffUserSp (ºF)
OccSnsrSts (Off/On)

OvrdEna (Off/On)
OvrdCmd (Uoc/Ovrd)
OvrdTmRem (min)

T
RmTmp (ºF)
RmTmpSp (ºF)
RmTmpSpHL (ºF)
RmTmpSpLL (ºF)

RH
RmRelHum (%)
RmRelHumSp (%)
RmEnth (btu-lb)
RmEnthSp (btu-lb)
RmDew (ºF)
RmDewSp (ºF)

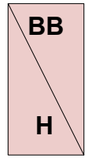
IAQ
RmCO2 (ppm)
RmCO2Sp (ppm)
RmCO2Alm (Off/On)
RmIAQAlm (Off/On)
RmVOC (ppm)
RmVOCSp (ppm)
RmVOCAlm (Off/On)

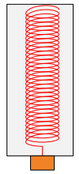
AirCondModeCmd (Cool/Heat)
AirCondModeSts (Cool/Heat)
AirCondModeDb (ºF)
AirCondModeDly (sec)

ClgModeSts (Off/On)
HtgModeSts (Off/On)
VentModeSts (Off/On)
StbyModeSts (Off/On)

Baseboard Heat Points

BbHtgEna (Off/On)
BbHtgOATmpSp (ºF)
BbHtgOATmpSpDb (ºF)





BbHtgVlvCmd (Off/On)
BbHtgVlvCmd (%)

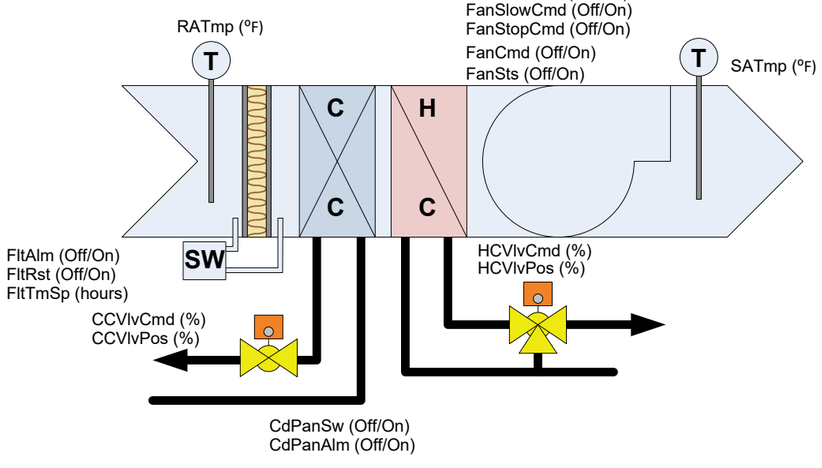
BbHtgCmd (Off/On)

Fan Coil Unit w/ 4-Pipe Cooling & Heating

FanHighCmd (Off/On)
FanLowCmd (Off/On)
FanSpdCmd (Off/Low/High)
FanSpdSts (Off/Low/High)

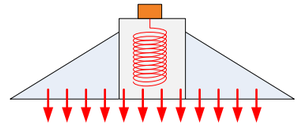
FanFastCmd (Off/On)
FanMedCmd (Off/On)
FanSlowCmd (Off/On)
FanStopCmd (Off/On)

FanCmd (Off/On)
FanSts (Off/On)



Radiant Heat Points

RadHtgEna (Off/On)
RadHtgOATmpSp (ºF)
RadHtgOATmpSpDb (ºF)



RadHtgCmd (Off/On)

See other AHU and Terminal Units pages for additional points.

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
23 of **57**

FCU

Unitary Equipment Tag Requirements

Overview

This section defines unitary HVAC equipment which combines heating and/or cooling into packaged units.

FCU Equipment & Reference Tags

The fcu and equip tag are used to model fan coil units. Fan coils are unitary equipment which use the zone for supply air.

hvac: always specified to mark as an HVAC asset

Unit Ventilator Equipment & Reference Tags

The uv tag is used to model unit ventilators. Unit ventilators differ from FCUs in that they have direct access to outside air.

hvac: always specified to mark as an HVAC asset

Heat Pump Equipment & Reference Tags

The heatPump tag is used to model heat pumps.

hvac: always specified to mark as an HVAC asset

Heating & Cooling Method

Like AHUs, unitary equipment shall always define their heating method using one of the following tags

elecHeat
hotWaterHeat
steamHeat
gasHeat

Like AHUs, unitary equipment shall always define their cooling method using one of the following tags

chilledWaterCool
dxCool

Sections

Like AHUs, unitary equipment points are associated with one of the following sections of the unit:

discharge: air exiting the unit to be supplied to the zones/terminal units
return: air returning from the zone back into the unit
outside: fresh, outside air entering the unit for air quality and economizing
exhaust: air exiting the unit back outside
mixed: return and outside air mixed together before passing through the heating/cooling elements
cool: cooling elements/coils
heat: heating elements/coils
zone: conditioned space associated with the unit

Points

The following list applies to point tags commonly used with unitary equipment and shall be applied appropriately:

Discharge
discharge air temp sensor
discharge air humidity sensor
discharge air pressure sensor
discharge air flow sensor
discharge air fan cmd
discharge air fan sensor

Return
return air temp sensor
return air humidity sensor
return air pressure sensor
return air flow sensor
return air co2 sensor
return air fan cmd
return air damper cmd

Mixed
mixed air temp sensor

Outside
outside air temp sensor
outside air humidity sensor
outside air pressure sensor
outside air flow sensor
outside air flow sp
outside air damper cmd

Exhaust
exhaust air fan cmd
exhaust air damper cmd

Conditioning
cool stage cmd
heat stage cmd
humidifier cmd
filter sensor

Misc
freezeStat sensor
heatWheel cmd
faceBypass cmd
bypass damper cmd

Zone (see also ZONETAG)
zone air temp sensor
zone air temp effective sp
zone air temp occ cooling sp
zone air temp occ heating sp
zone air temp unocc cooling sp
zone air temp unocc heating sp
zone air temp standby cooling sp
zone air temp standby heating sp
zone air humidity sensor
zone air co2 sensor
zone air co2 sp

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
24 of **57**

UNITAG

Zone Control Points

OccCmd (Occ/Uoc)
UocOvrdCmd (Uoc/Ovrd)
OvrdTmSp (hours)

OccRmTmpSp (ºF)
UocRmTmpSp (ºF)

EffRmTmp (ºF)
EffRmTmpSp (ºF)
OccClgSp (ºF)
OccHtgSp (ºF)
UocClgSp (ºF)
UocHtgSp (ºF)
StbyClgSp (ºF)
StbyHtgSp (ºF)
EffHtgSp (ºF)
EffClgSp (ºF)

UserSpAdjEna (Off/On)
UserSpAdjRng (ºF)
UserSpAdjHL (ºF)
UserSpAdjLL (ºF)
UserSpAdj (ºF)
EffUserSp (ºF)
OccSnsrSts (Off/On)

OvrdEna (Off/On)
OvrdCmd (Uoc/Ovrd)
OvrdTmRem (min)

T
RmTmp (ºF)
RmTmpSp (ºF)
RmTmpSpHL (ºF)
RmTmpSpLL (ºF)

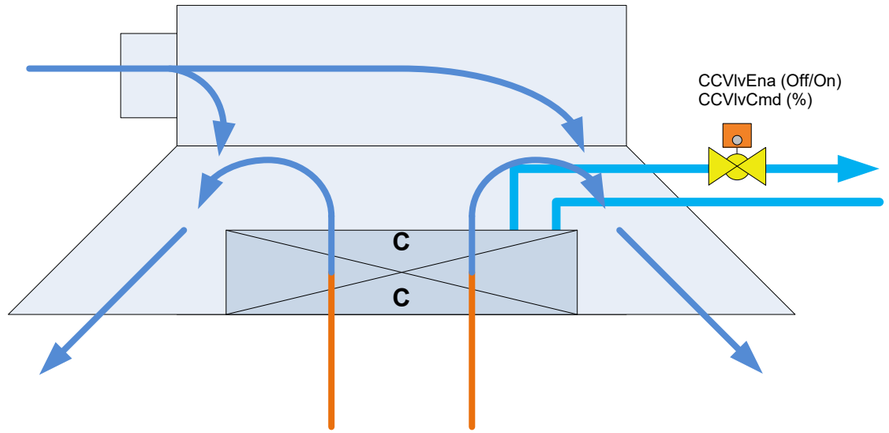
RH
RmRelHum (%)
RmRelHumSp (%)
RmEnth (btu-lb)
RmEnthSp (btu-lb)
RmDew (ºF)
RmDewSp (ºF)

IAQ
RmCO2 (ppm)
RmCO2Sp (ppm)
RmCO2Alm (Off/On)
RmIAQAlm (Off/On)
RmVOC (ppm)
RmVOCSp (ppm)
RmVOCAlm (Off/On)

AirCondModeCmd (Cool/Heat)
AirCondModeSts (Cool/Heat)
AirCondModeDb (ºF)
AirCondModeDly (sec)

ClgModeSts (Off/On)
HtgModeSts (Off/On)
VentModeSts (Off/On)
StbyModeSts (Off/On)

Chilled Beam Control Points



T
RmTmp (°F)
RmTmpSp (°F)

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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CHBEAM

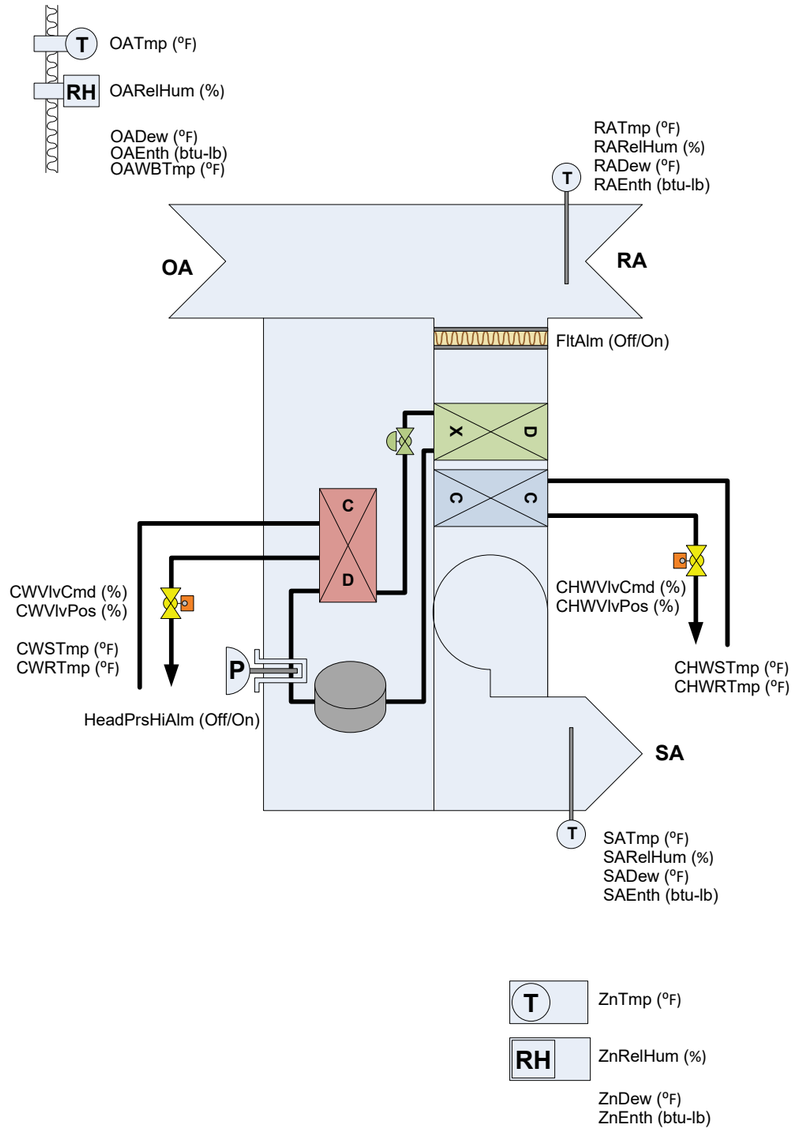
General Objects	Description
UnitStartCmd (Off/On)	Unit On/Off Command
SysSts (varies)	System Status
SysOpState (varies)	System Operating State
AutoMode (Manual/Auto)	System Operating State
Shtdn (Off/On)	Unit Shutdown
Stby (Off/On)	Unit Standby
SATmp (ºF)	Supply Air Temperature
RATmp (ºF)	Return Air Temperature
OATmp (ºF)	Outside Air Temperature
ZnTmp (ºF)	Zone Air Temperature
SARelHum (%)	Supply Air Relative Humidity
RARelHum (%)	Return Air Relative Humidity
OARelHum (%)	Outside Air Relative Humidity
ZnRelHum (%)	Zone Relative Humidity
SADew (ºF)	Supply Air Dew Point Temperature
RADew (ºF)	Return Air Dew Point Temperature
OADew (ºF)	Outside Air Dew Point Temperature
ZnDew (ºF)	Zone Air Dew Point Temperature
CHWSTmp (ºF)	Chilled Water Supply Temperature
CHWRTmp (ºF)	Chilled Water Return Temperature
CWSTmp (ºF)	Condenser Water Supply Temperature
CWRTmp (ºF)	Condenser Water Return Temperature
CHWFlwSw (Off/On)	Chilled Water Flow Switch
CWFlwSw (Off/On)	Condenser Water Flow Switch
CHWFlwRat (gpm)	Chilled Water Flow Rate
CWFlwRat (gpm)	Condenser Water Flow Rate
FanSts (Off/On)	Fan Status
CHWVlvPos (%)	Chilled Water Valve Position
CWVlvPos (%)	Condenser Water Valve Position
CmpSts (Off/On)	Compressor Status
PmpSts (Off/On)	Pump Status
ClMode (Off/On)	Cooling Mode
HtMode (Off/On)	Heating Mode
DehumMode (Off/On)	Dehumidification Mode
HumMode (Off/On)	Humidification Mode
EconMode (Off/On)	Economizer Mode
ActCapPct (%)	Active Capacity Percentage
ZnEnth (btu-lb)	Zone Enthalpy
SAEnth (btu-lb)	Supply Air Enthalpy
RAEnth (btu-lb)	Return Air Enthalpy
OAEnth (btu-lb)	Outside Air Enthalpy

Set Points	Description
ZnTmpSp (ºF)	Zone Temperature Set Point
ZnDewSp (ºF)	Zone Dew Point Temperature Set Point
ZnRelHumSp (%)	Zone Relative Humidity Set Point
ZnEnthSp (btu-lb)	Zone Enthalpy Set Point

Faults	Description
GeneralFault (Off/On)	General Fault
CHWVFault (Off/On)	Chilled Water Control Valve Failure
PwrFault (Off/On)	Ext Power Source Failure
TmpFault (Off/On)	Temperature Control Sensor Issue
AirFlwFault (Off/On)	Airflow Sensor Issue
SATmpFault (Off/On)	Supply Air Sensor Issue
RATmpFault (Off/On)	Return Air Sensor Issue
ZnTmpFault (Off/On)	Ext Air Sensor Issue
OATmpFault (Off/On)	Outside Air Sensor Issue
RARelHumFault (Off/On)	Return Air Relative Humidity Sensor Issue
FanFault (Off/On)	Fan Failure
CmpFault (Off/On)	Compressor Failure
FireAlm (Off/On)	External Fire Alarm Contacts
ExtDmpPosFault (Off/On)	External Air Damper Position Issue
WtrLeakFault (Off/On)	Water Leakage Detector Sensor Issue

Warnings	Description
MaintDue (Off/On)	Maintenance Due
ServiceReq (Off/On)	Service Required
SATmpHi (Off/On)	Supply Air Over Temperature
SATmpLo (Off/On)	Supply Air Under Temperature
RATmpHi (Off/On)	Return Air Over Temperature
RATmpLo (Off/On)	Return Air Under Temperature
ZnTmpHi (Off/On)	Ext Air Sensor Over Temperature
ZnTmpLo (Off/On)	Ext Air Sensor Under Temperature
RADewHi (Off/On)	Return Air Dew Point High
RADewLo (Off/On)	Return Air Dew Point High
RARelHumHi (Off/On)	Return Air Relative Humidity High
RARelHumLo (Off/On)	Return Air Relative Humidity Low
ZnDewHi (Off/On)	Zone Dew Point High
ZnDewLo (Off/On)	Zone Dew Point Low
ZnRelHumHi (Off/On)	Zone Relative Humidity High
ZnRelHumLo (Off/On)	Zone Relative Humidity Low
CHWSTmpHi (Off/On)	Supply Chilled Water Over Temp
ExtTmpHi (Off/On)	Ext Over Temperature
WtrUdrFlrFault (Off/On)	Water Under Floor
SmokeAlm (Off/On)	Smoke Alarm
FltAlm (Off/On)	Filter Alarm
HeadPrsHiAlm (Off/On)	High Head Pressure Alarm

CRAC Unit



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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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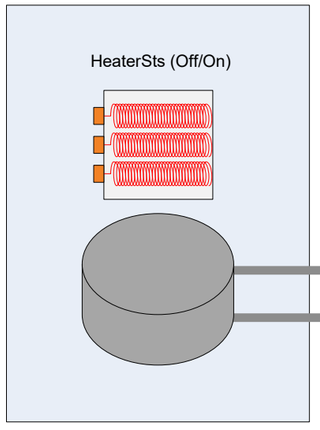
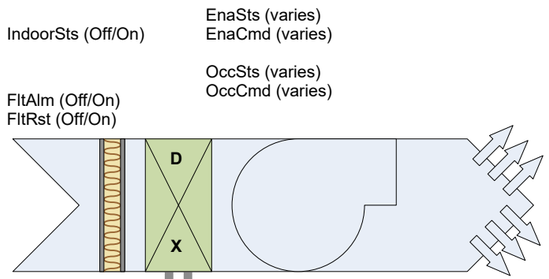
CRAC

VRV Outdoor Unit



VRV Indoor Unit



IndoorSts (Off/On)

EnaSts (varies)
EnaCmd (varies)

OccSts (varies)
OccCmd (varies)

FltAlm (Off/On)
FltRst (Off/On)

AirDirCmd (varies)
AirDirSts (varies)

T

RmTmp (ºF)
RmTmpSp (ºF)

RmTmpDualSp (Off/On)

OccClgSp (ºF)
OccHtgSp (ºF)

OpModeSts (varies)
OpModeCmd (varies)

FanSpdCmd (varies)
FanSpdSts (varies)

VentMode (Off/On)
ClMode (Off/On)
HtMode (Off/On)

AirCondModeCmd (Cool/Heat)
AirCondModeSts (Cool/Heat)

ClModeSts (Off/On)
HtModeSts (Off/On)
StbyModeSts (Off/On)

Rntm (hours)

ErrorSts (Off/On)
ErrorCode (varies)

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STATUS: Version 2.5

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REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:

VRV

Chiller Objects

Objects shown for single- or dual-compressor centrifugal chiller.

"MT0046" is an example building number.

MT0046_CHL01_ChlrEna (Off/On)
MT0046_CHL01_ChlrCmd (Off/On)
MT0046_CHL01_ChlrSts (Off/On)
CHL01A_ChlrSts (Off/On)
CHL01B_ChlrSts (Off/On)
MT0046_CHL01A_ChlrAlm (Norm/Alm)
CHL01B_ChlrAlm (Norm/Alm)

"CHL01A" refers to the "A" compressor or circuit. "CHL01B" refers to the "B" compressor or circuit. Use this example for other objects as required.

Power, Energy, & Capacity

ChlrPwr (kW)
ChlrEnrg (kWh)
ChlrCur (Amps)

CHWLoad (tons)
CWLoad (tons)
ChlrNomCap (tons, btu, mbtu)
ChlrActCapPct (%) or ChlrRLA (%)

Water Temps & Pressures & Flows

CdDifPrs (psi)
EvDifPrs (psi)
EvLvgTmp (°F) or CHWSTmp (°F) or GlySTmp (°F)
EvEntTmp (°F) or CHWRTmp (°F) or GlyRTmp (°F)
CdLvgTmp (°F) or CWRTmp (°F)
CdEntTmp (°F) or CWSTmp (°F)
ChlrEvApproach (°F)
ChlrCdApproach (°F)

CdFlwSw (Off/On)
EvFlowSw (Off/On)

CdFlwRat (gpm)
EvFlowRat (gpm)

Refrigerant Temps & Pressures

EvRfgTmp (°F)
CdRfgTmp (°F)
CdSatRfgTmp (°F)

EvRfgPrs (psi)
CdRfgPrs (psi)

RfgLvl (ppm)
RfgWarn (Norm/Warn)
RfgAlm (Norm/Alm)

Chiller Control

ChlrRunMode (varies)
ChlrOperMode (varies)
ChlrOvrdMode (Off/On)

CHW Temperature Set Point Control

ChlrLocRem (Local/Remote)
ChlrSpCtrlEna (Off/On)
ChlrSpCtrl (Local/Remote)
LocEvLvgTmpSp (°F) or LocCHWSTmpSp (°F)
RemEvLvgTmpSp (°F) or RemCHWSTmpSp (°F)
EvLvgTmpSp (°F) or CHWSTmpSp (°F)
EffEvLvgTmpSp (°F) or EffCHWSTmpSp (°F)

Demand/Capacity Control

ChlrLmtSpActive (Off/On)
ChlrLmtSpPct (%)
ChlrLmtSpPwr (kW)

ChlrBaseLmtSpPct (%)
ChlrBaseLoadReq (Off/On)

Head Pressure Control

ChlrHeadPrs (psi)
ChlrHeadPrsLmt (psi)
ChlrHeadPrsAlm (Norm/Alm)

CWCtrlVlv (%open)
CHWCtrlVlv (%open)

Pump & Isolation Valve Control

CdPmpRqst (Off/On)
PriPmpRqst (Off/On)

CWIsoVlv (Off/On)
CHWIsoVlv (Off/On)
CdEntIsoVlv (Off/On)
CdLvgIsoVlv (Off/On)
EvEntIsoVlv (Off/On)
EvLvgIsoVlv (Off/On)

Staging Control

ChlrLeadEna (Off/On)
ChlrLagEna (Off/On)
ChlrSeq (seq)

CTAssigned (CT)

Mechanical Details & Diagnostics

OilTmp (°F)
OilPrs (psi)
OilPrsH (psi)
OilPrsL (psi)

PurgeSts (Off/On)
PurgeTm (sec)

CmpStrts (starts)
CmpRntm (hours)
CmpAvgRntm (min)
ChlrStrts (starts)
ChlrRntm (hours)
ChlrAvgRntm (min)

InletGuideVanePos (%open)

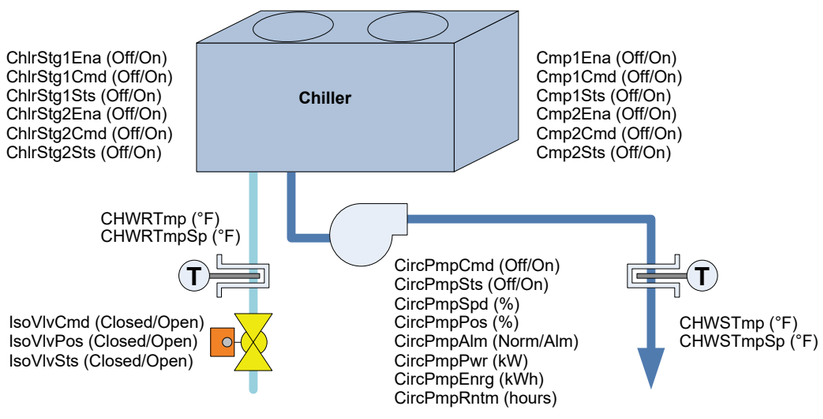
MinRnTmSp (sec, min)
MinRnTmRemain (sec, min)

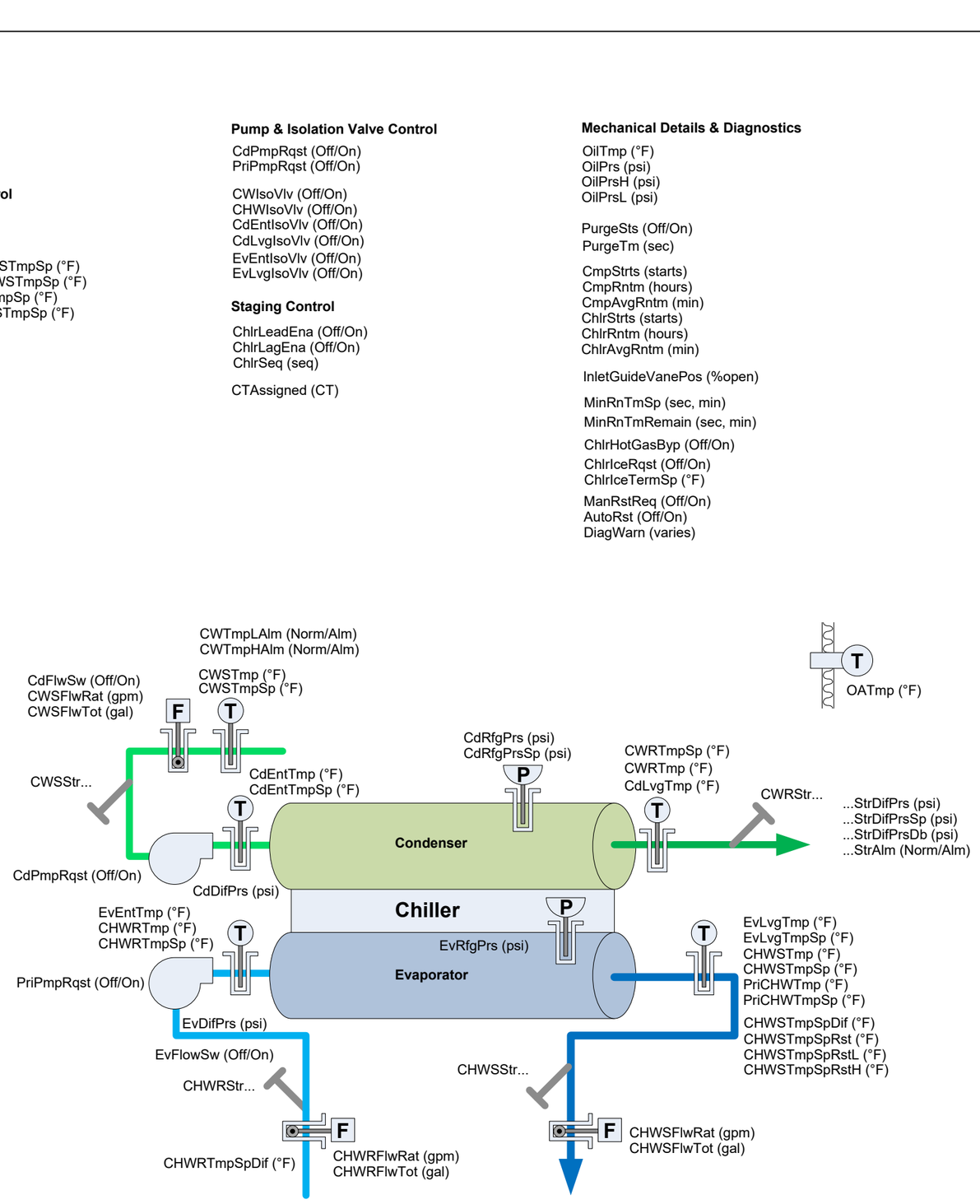
ChlrHotGasByp (Off/On)

ChlrIceRqst (Off/On)
ChlrIceTermSp (°F)

ManRstReq (Off/On)
AutoRst (Off/On)
DiagWarn (varies)

Air-Cooled Chiller





See other CHW pages for additional CHW points.

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2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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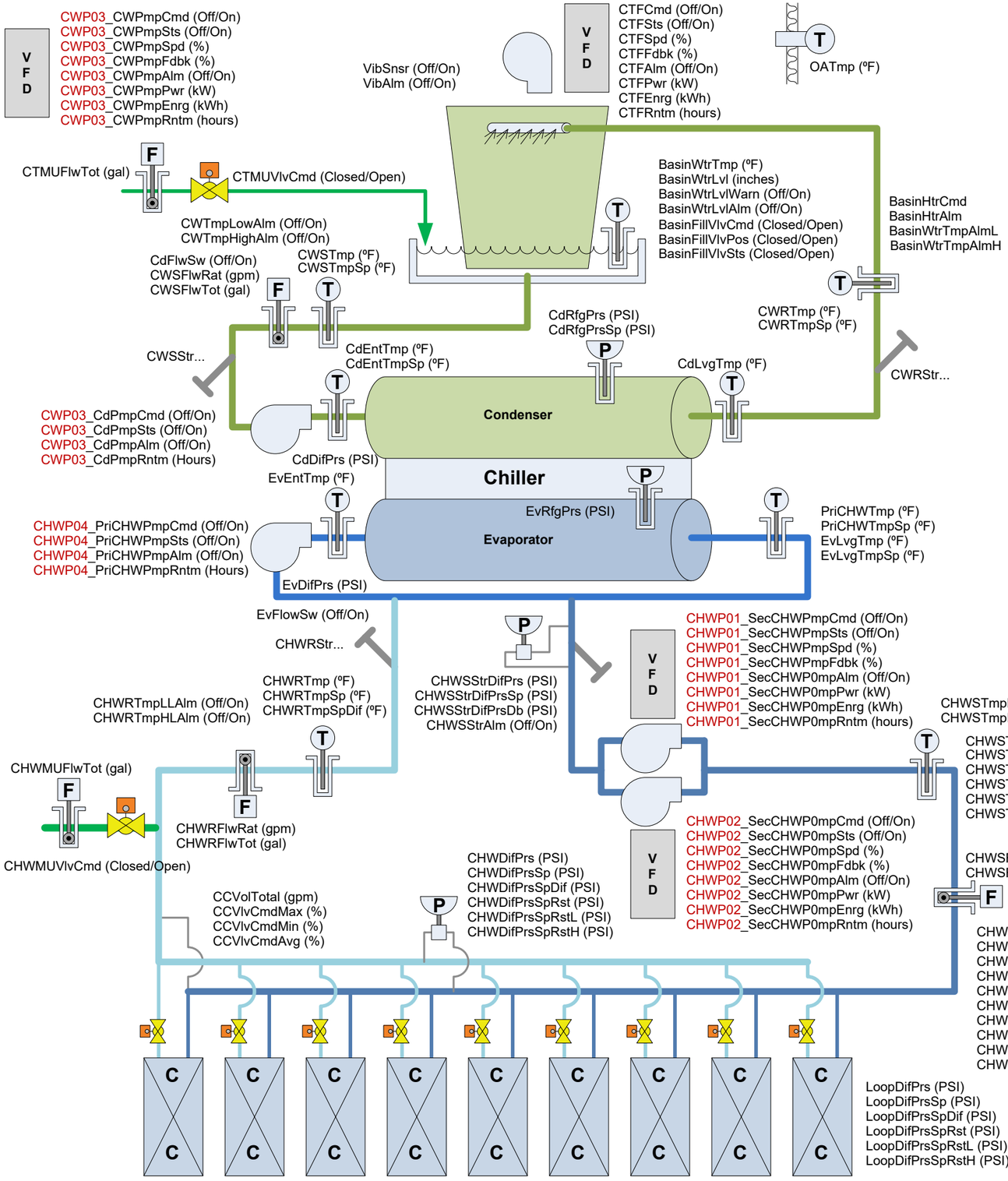
CHLR



Chillerplant Control Points

CHWSysEna (Off/On)
CHWSysLoad (tons,kbtu,Mbtu)
CHWSysCap (tons,kbtu,Mbtu)
CHWSysActCap (%)

ClgDmd (Off/On)
ClgLckCmd (Off/On)
ClgLckSts (Off/On)
OATmpLckSp (°F)
OATmpLckDb (°F)
OATmpLckDbL (°F)
OATmpLckDbH (°F)
OATmpSpRstL (°F)
OATmpSpRstH (°F)
OATmpSpRst (Off/On)

ChlrSeq (seq)
ChlrRotCmd (Off/On)
ChlrLead (chiller#)
ChlrLeadCmd (Off/On)
ChlrLagCmd (Off/On)
ChlrStgCmd (stage)
ChlrStg (stage)
ChlrStgDmd (stage)
ChlrRdyTot (chillers)
ChlrStsTot (chillers)

Refrigerant Monitoring
RfgAlm (Norm/Alm)
RfgLvl (ppm)
RfgLvlHL (ppm)
RfgWarn (Norm/Warn)
RfgLvlWarnSp (ppm)
RfgLvlAlmSp (ppm)

ChlrRotSched

FreeClgEna (Off/On)
FreeClgLck (Off/On)
FreeClgCmd (Off/On)
FreeClgOATmpSp (°F)
FreeClgOATmpSpDbH (°F)
FreeClgOATmpSpDbL (°F)
FreeClgOARelHumSp (%)
FreeClgOARelHumSpDbH (%)
FreeClgOARelHumSpDbL (%)
FreeClgOAWBTmpSp (°F)
FreeClgOAWBTmpSpDbH (°F)
FreeClgOAWBTmpSpDbL (°F)
FreeClgCap (tons,kbtu,Mbtu)
FreeClgCDWSTmpSp (°F)

MechClgEna (Off/On)
MechClgLck (Off/On)
MechClgCmd (Off/On)
MechClgOATmpSp (°F)
MechClgOATmpSpDbH (°F)
MechClgOATmpSpDbL (°F)
MechClgOARelHumSp (%)
MechClgOARelHumSpDbH (%)
MechClgOARelHumSpDbL (%)
MechClgOAWBTmpSp (°F)
MechClgOAWBTmpSpDbH (°F)
MechClgOAWBTmpSpDbL (°F)
MechClgCap (tons,kbtu,Mbtu)
MechClgCDWSTmpSp (°F)

HybrClgEna (Off/On)
HybrClgLck (Off/On)
HybrClgCmd (Off/On)
HybrClgOATmpSp (°F)
HybrClgOATmpSpDbH (°F)
HybrClgOATmpSpDbL (°F)
HybrClgOARelHumSp (%)
HybrClgOARelHumSpDbH (%)
HybrClgOARelHumSpDbL (%)
HybrClgOAWBTmpSp (°F)
HybrClgOAWBTmpSpDbH (°F)
HybrClgOAWBTmpSpDbL (°F)
HybrClgCap (tons,kbtu,Mbtu)
HybrClgCDWSTmpSp (°F)
HybrClgCHWRTmpSp (°F)

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
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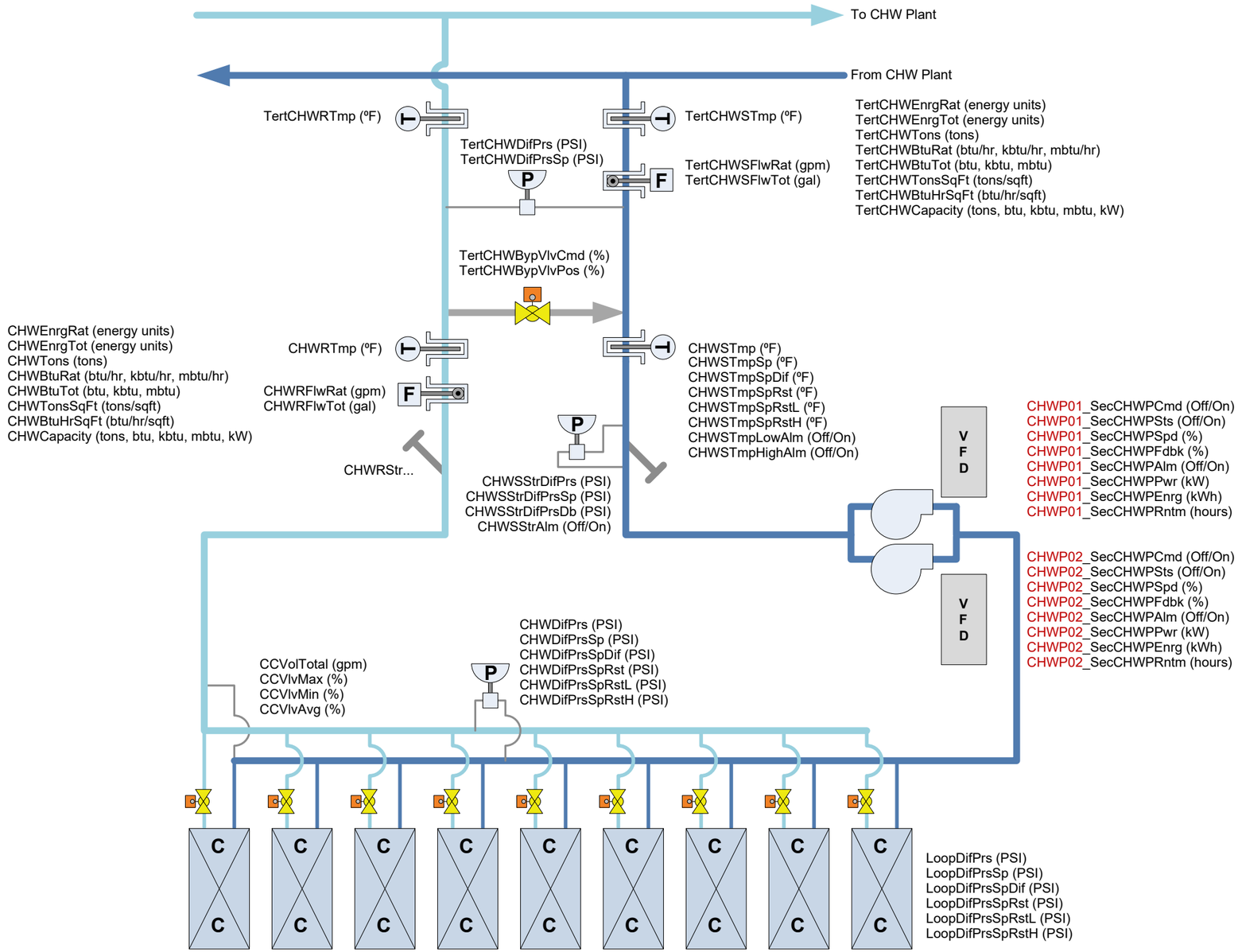
CHWS

Tertiary CHW



See other CHWS pages for additional CHWS points.

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CHW TER

Chilled Water Plant Tag Requirements

Overview

A chilled water plant is composed of multiple pieces of equipment used to generate chilled water. The entire plant is modeled as an equip with its own plant-level points. Sub-equipment such as chillers and cooling towers are also modeled as equip contained by the plant via the equipRef tag.

Note that the terminology for sensors/setpoints are based on the perspective of the equipment. The condenser water *leaving* the chiller, is the condenser water *entering* the cooling tower.

Chilled Water Plants

Model the entire plant using the chilledWaterPlant tag. The plant is modeled as an equip and it will define its own plant level points:

Pipework

Define the following tags for pipework and its associated equip and points:

primaryLoop: pipework within the plant
secondaryLoop: pipework from the plant to the building

Chillers

Chiller equipment shall be marked with the chiller tag. Equip level tags:

equipRef must reference parent chilledWaterPlant if associated with a plant
waterCooled or airCooled
absorption or if vapor compression: reciprocal, screw, or centrifugal
coolingCapacity

Cooling Towers

Cooling tower equipment is marked with the coolingTower tag. Equip level tags:

equipRef must reference parent chilledWaterPlant if associated with a plant
openLoop or closedLoop

Heat Exchangers

Heat exchangers are tagged with heatExchanger. Equip level tags:

equipRef must reference parent chilledWaterPlant if associated with a plant

Sections

Not applicable

Points

The following list applies to point tags commonly used with chiller plant equipment and shall be applied appropriately:

Run/Status

run cmd
run sensor
enable cmd
load cmd
load sensor
efficiency sensor
power sensor
energy sensor

Chilled water to/from AHUs

chilled water leaving temp sensor
chilled water leaving temp sp
chilled water leaving flow sensor
chilled water leaving pressure sensor
chilled water entering temp sensor
chilled water entering flow sensor
chilled water entering pressure sensor
chilled water delta temp sensor
chilled water delta flow sensor
chilled water delta pressure sensor
chilled water delta pressure sp
chilled water valve isolation cmd
chilled water bypass valve cmd

Condenser water to/from cooling towers

condenser water leaving temp sensor
condenser water leaving flow sensor
condenser water leaving pressure sensor
condenser water entering temp sensor
condenser water entering pressure sensor
condenser water entering flow sensor
condenser water valve isolation cmd
condenser water delta pressure sensor
condenser water bypass valve cmd

Miscellaneous Internal

condenser cmd
condenser refrig temp sensor
condenser refrig pressure sensor
evaporator refrig temp sensor
evaporator refrig pressure sensor

Cooling Towers

condenser water leaving temp sensor
condenser water leaving temp sp
condenser water leaving flow sensor
condenser water leaving pressure sensor
condenser water entering temp sensor
condenser water entering pressure sensor
condenser water entering flow sensor
fan cmd
fan sensor

Heat Exchangers

chilled water leaving temp sensor
chilled water entering temp sensor
condenser water leaving temp sensor
condenser water entering flow sensor

Note: not every combination of setpoint (sp) is listed, just the most common setpoints. Chillers share the same point modeling conventions as VFDs. Chillers which measure energy should model their points using the same conventions as elec meters or thermal meters.

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
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CHWPLNTTAG

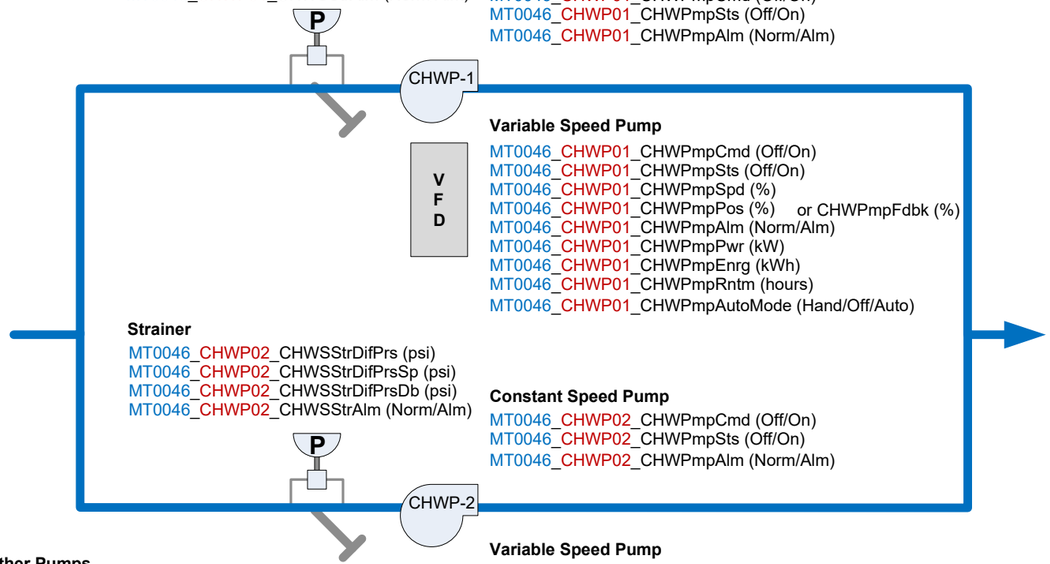
Pump Objects Example

"MT0046" is an example building number.
"CHWP01" and "CHWP02" are example equipment designations.

Pump Control Objects

CHWPmpSeq (seq)
CHWPmpRotCmd (Off/On)
CHWPmpRotSchedCmd (Off/On)
CHWPmpLeadEna (Off/On)
CHWPmpLagEna (Off/On)
CHWPmpEna (Off/On)
CHWPmpCmd (Off/On)
CHWPmpSts (Off/On)

CHWPmpRotSched



Strainer
MT0046_CHWP01_CHWSStrDifPrs (psi)
MT0046_CHWP01_CHWSStrDifPrsSp (psi)
MT0046_CHWP01_CHWSStrDifPrsDb (psi)
MT0046_CHWP01_CHWSStrAlm (Norm/Alm)

Constant Speed Pump
MT0046_CHWP01_CHWPmpCmd (Off/On)
MT0046_CHWP01_CHWPmpSts (Off/On)
MT0046_CHWP01_CHWPmpAlm (Norm/Alm)

Variable Speed Pump
MT0046_CHWP01_CHWPmpCmd (Off/On)
MT0046_CHWP01_CHWPmpSts (Off/On)
MT0046_CHWP01_CHWPmpSpd (%)
MT0046_CHWP01_CHWPmpPos (%) or CHWPmpFdbk (%)
MT0046_CHWP01_CHWPmpAlm (Norm/Alm)
MT0046_CHWP01_CHWPmpPwr (kW)
MT0046_CHWP01_CHWPmpEnrg (kWh)
MT0046_CHWP01_CHWPmpRntm (hours)
MT0046_CHWP01_CHWPmpAutoMode (Hand/Off/Auto)

Strainer
MT0046_CHWP02_CHWSStrDifPrs (psi)
MT0046_CHWP02_CHWSStrDifPrsSp (psi)
MT0046_CHWP02_CHWSStrDifPrsDb (psi)
MT0046_CHWP02_CHWSStrAlm (Norm/Alm)

Constant Speed Pump
MT0046_CHWP02_CHWPmpCmd (Off/On)
MT0046_CHWP02_CHWPmpSts (Off/On)
MT0046_CHWP02_CHWPmpAlm (Norm/Alm)

Other Pumps
MT0046_CWP01_CDWPmpCmd (Off/On)
MT0046_GP01_GlyPmpCmd (Off/On)
MT0046_CHWP01_PriCHWPmpCmd (Off/On)
MT0046_CHWP01_SecCHWPmpCmd (Off/On)
MT0046_CWP01_CdPmpCmd (Off/On)

Variable Speed Pump
MT0046_CHWP02_CHWPmpCmd (Off/On)
MT0046_CHWP02_CHWPmpSts (Off/On)
MT0046_CHWP02_CHWPmpSpd (%)
MT0046_CHWP02_CHWPmpPos (%) or CHWPmpFdbk (%)
MT0046_CHWP02_CHWPmpAlm (Norm/Alm)
MT0046_CHWP02_CHWPmpPwr (kW)
MT0046_CHWP02_CHWPmpEnrg (kWh)
MT0046_CHWP02_CHWPmpRntm (hours)
MT0046_CHWP02_CHWPmpAutoMode (Hand/Off/Auto)

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STATUS: Version 2.5
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PMP

IceSys_IceBuildCmdSched (Off/On)
IceSys_IceMeltCmdSched (Off/On)
IceSys_IceBuildCmd (Off/On)
IceSys_IceMeltCmd (Off/On)
IceSys_IceInventory (%)

IceSys_IceMeltCapRat (tons)
IceSys_IceMeltCapRatSp (tons)
IceSys_UnloadChlrCmd (Off/On)
IceSys_Mode (Off/Auto/Chlr/Par)
IceSys_IceMeltLck (Off/On)
IceSys_IceMeltLckRst (Off/On)

IceSys_CHWTons (tons)
IceSys_GlyTons (tons)
IceSys_CDWTons (tons)

ChwSys_CHWSTmp (°F)
ChwSys_CHWSTmpSp (°F)

CHWP1_CHWPmpCmd (Off/On)
CHWP-1
CHWP2_CHWPmpCmd (Off/On)
CHWP-2
CHWP03_CHWPmpCmd (Off/On)
CHWP-3

CHL05_ChlrCmd (Off/On)
Condenser
Chiller-5
Evaporator

CHL01B_ChlrCmd (Off/On)
Condenser
Chiller-1B
Evaporator

ChwSys_CHWMUVlvCmd (Close/Open)
ChwSys_CHWMUFlwRat (gpm)
ChwSys_CHWMUFlwTot (gal)

ChwSys_CHWRTmp (°F)

CHL05_ChlrIsoVlvCmd (Off/On,%open)
CHL05_ChlrIsoVlvPos (Closed/Open,%open)

CHL01B_ChlrIsoVlvCmd (Off/On,%open)
CHL01B_ChlrIsoVlvPos (Closed/Open,%open)

ChwSys_CHWBypVlvCmd (%byp)

IceSys_ChlrBypVlvCmd (Off/On,%open)
IceSys_ChlrBypVlvPos (Closed/Open,%open)

IceSys_GlySTmpLL (°F)
IceSys_GlySTmp (°F)
IceSys_GlySTmpSp (°F)

IceSys_HXIsoVlvCmd (Off/On)
IceSys_HXIsoVlvPos (Closed/Open)

IceSys_HXHotCHWLvgTmp (°F)
IceSys_HXHotCHWLvgTmpSp (°F)

IceSys_HXColdBypVlvCmd (%byp)

HX01_VlvCmd (%open)
HX-1
HX-2
HX-3
HX01_HXHotCHWLvgTmp (°F)
HX01_HXHotCHWLvgTmpSp (°F)
HX01_HXHotCHWEntTmp (°F)
HX01_HXColdGlyEntTmp (°F)
HX01_HXColdGlyLvgTmp (°F)

IceSys_IceBypVlvCmd (Off/On,%byp)
IceSys_IceBypVlvPos (Closed/Open,%byp)

IceSys_IceIsoVlvCmd (Off/On,%open)
IceSys_IceIsoVlvPos (Closed/Open,%open)

IceSys_IceLvgTmp (°F)
IceSys_IceLvgTmpSp (°F)
IceSys_IceBuildLvgTmpSp (°F)
IceSys_IceMeltLvgTmpSp (°F)

IceSys_IceEntTmp (°F)
IceSys_IceEntTmpSp (°F)
IceSys_IceBuildEntTmpSp (°F)
IceSys_IceMeltEntTmpSp (°F)

IceSys_IceEntFlwRat (gpm)

IceSys_GlyPmpSpd (%)

GP01_GlyPmpCmd (Off/On)
GP-1
GP02_GlyPmpCmd (Off/On)
GP-2
GP03_GlyPmpCmd (Off/On)
GP-3
GP04_GlyPmpCmd (Off/On)
GP-4

Glyco
l Fill

IceSys_GlyRTmp (°F)
IceSys_HXIsoVlvCmd (%open)
IceSys_HXColdLvgTmp (°F)

IceSys_GlyRFlwRat (gpm)
IceSys_GlyRFlwRatSp (gpm)
IceSys_GlyRFlwRatEffSp (gpm)
IceSys_IceBuildGlyRFlwRatSp (gpm)
IceSys_IceMeltGlyRFlwRatSp (gpm)
IceSys_ChlrGlyRFlwRatSp (gpm)
IceSys_ParGlyRFlwRatSp (gpm)

HXLP01_HXPmpCmd (Off/On)
HXLP-1
HXLP02_HXPmpCmd (Off/On)
HXLP-2

See other CHW pages for additional CHW points.

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
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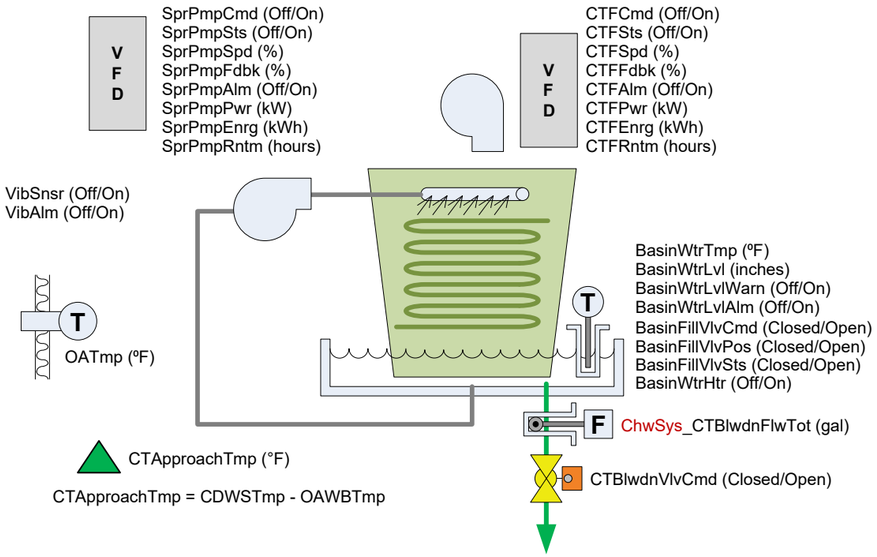
CHW ICE

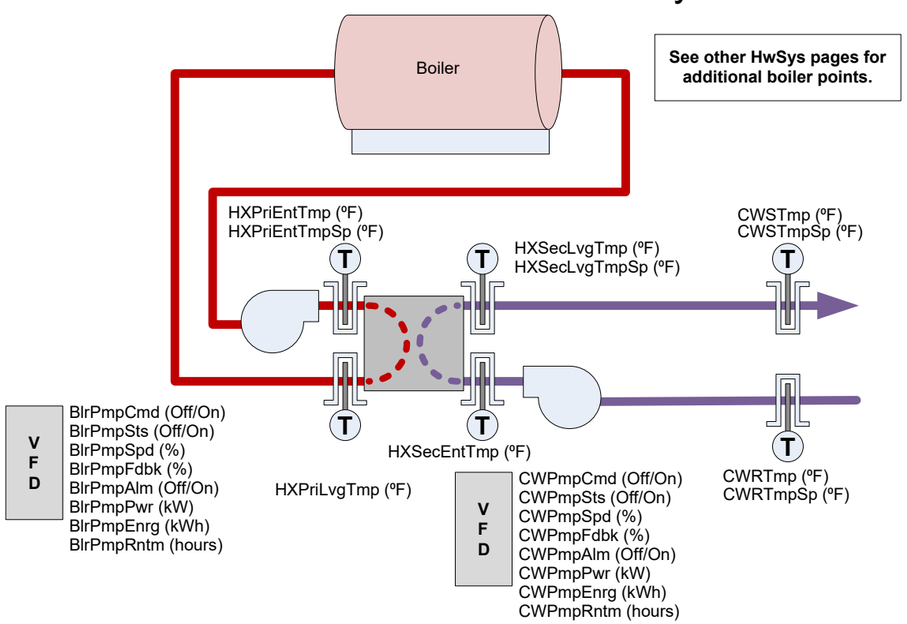
Closed-Loop Cooling Tower

For open-loop cooling tower, see ChwSys page.

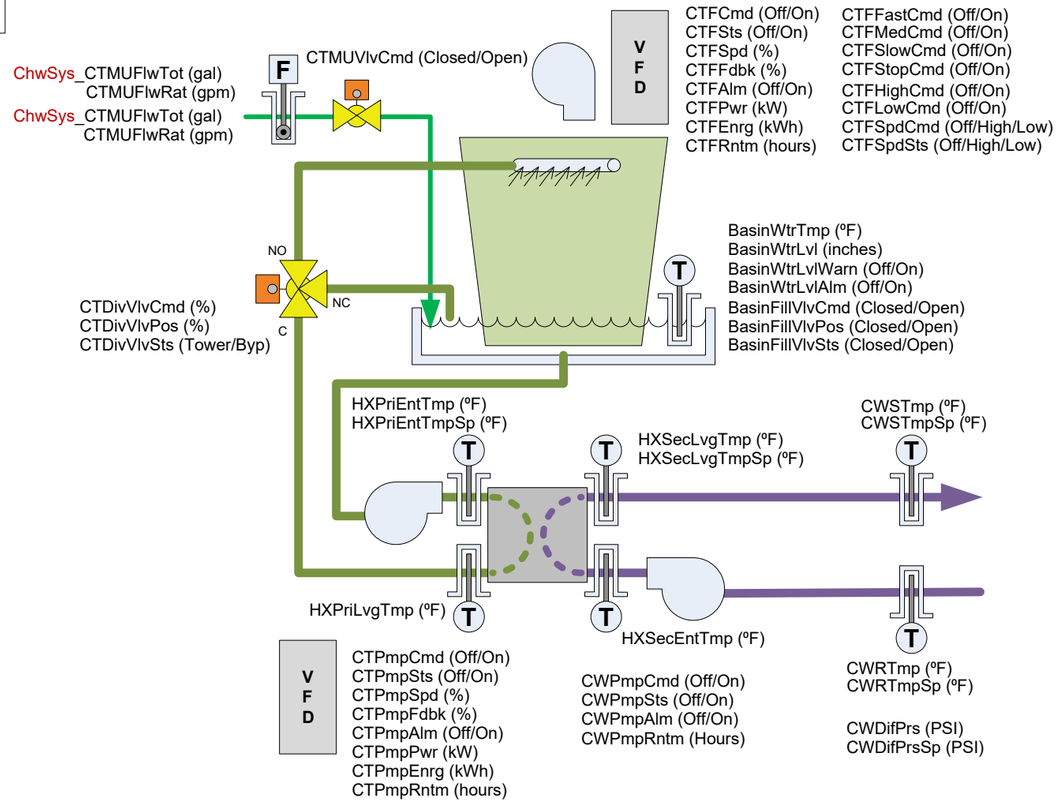


Condenser HW Water System

See other HwSys pages for additional boiler points.



Condenser Water System/ Evaporative Cooling System



Condenser System Energy

CWEnrgRat (energy units)
CWEnrgTot (energy units)
CWTons (tons)
CWkWTon (kW/ton)
CWBtuRat (btu/hr, kbtu/hr, mbtu/hr)
CWBtuTot (btu, kbtu, mbtu)
CWBtukWh (btu/kWh)
CWTonsSqFt (tons/sqft)
CWBtuHrSqFt (btu/hr/sqft)
CWCapacity (tons, btu, kbtu, mbtu, kW)

CTApproachTmp (°F)
CTCapacity (tons, btu, kbtu, mbtu, kW)

See other CWS pages for additional CWS points.

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STATUS: Version 2.5
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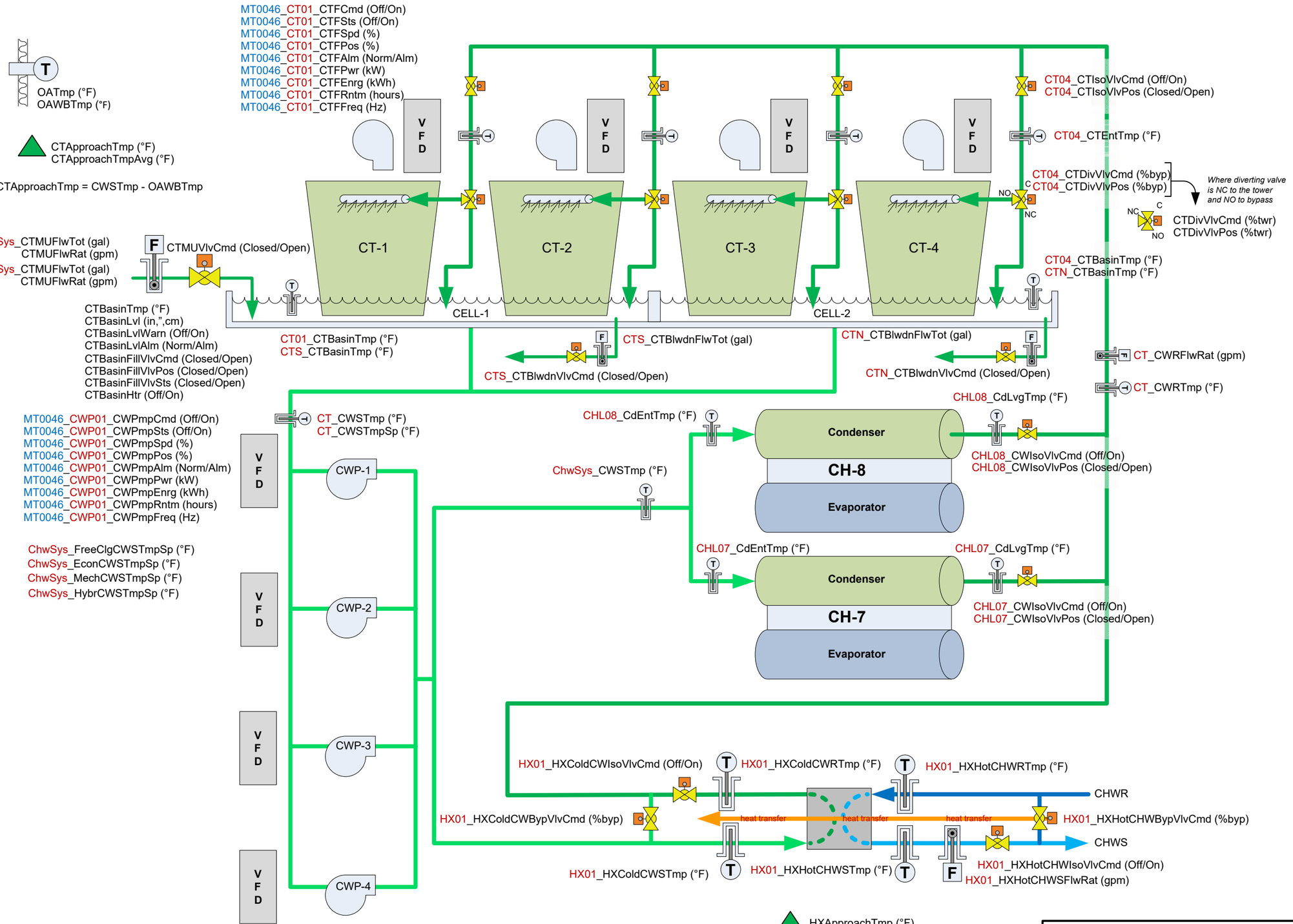
CWS1



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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
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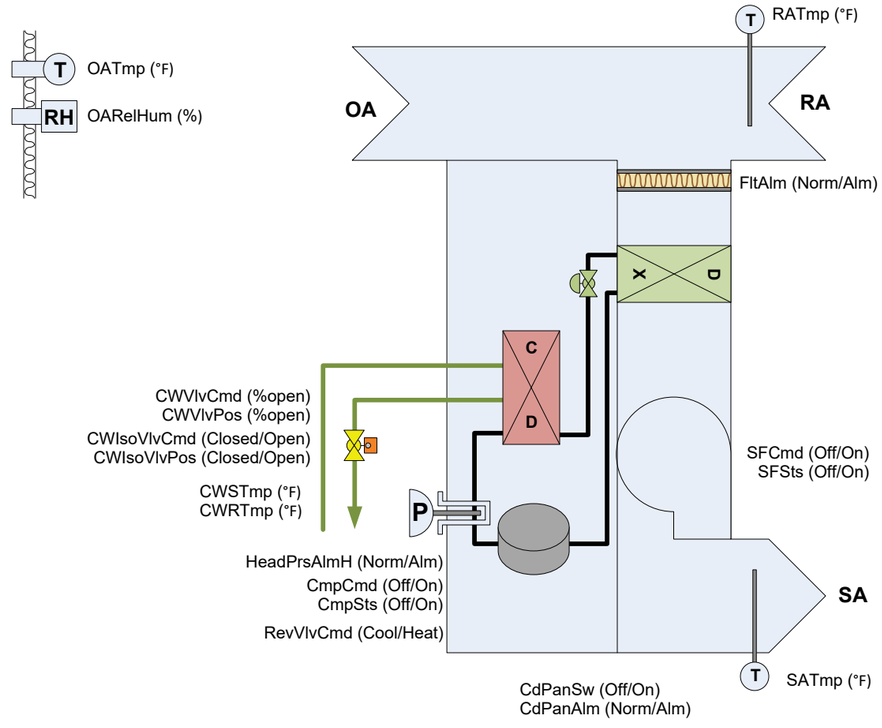
CWS2

Water Source Heat Pump



Room Control Setpoints

OccCmd (Occ/Uoc)
UocOvrdCmd (Uoc/Ovrd)
OvrdTimeSp (hours)

OccRmTmpSp (°F)
UocRmTmpSp (°F)

EffRmTmp (°F)
EffRmTmpSp (°F)
OccClgSp (°F)
OccHtgSp (°F)
UocClgSp (°F)
UocHtgSp (°F)
StbyClgSp (°F)
StbyHtgSp (°F)

UsrSpAdjEna (Off/On)
UsrSpAdjRng (°F)
UsrSpAdjHL (°F)
UsrSpAdjLL (°F)
UsrSpAdj (°F)
EffUsrSp (°F)
OccSnsrSts (Off/On)

AirCondModeCmd (Cool/Heat)
AirCondModeSts (Cool/Heat)
ClgModeSts (Off/On)
HtgModeSts (Off/On)
StbyModeSts (Off/On)
VentMode (Off/On)

T — RmTmp (°F)
RmTmpSp (°F)

RH — RmRelHum (%)
RmRelHumSp (%)

IAQ — RmCO2 (ppm)
RmCO2Sp (ppm)
RmCO2Alm (Norm/Alm)
RmIAQAlm (Norm/Alm)
RmVOC (ppm)
RmVOCSp (ppm)
RmVOCAlm (Norm/Alm)

Diagrams depict generic equipment containing control points and objects, some of which may or may not be present or required for a particular piece of equipment or in a particular application.

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National BAS Object Naming & Tagging Standard

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2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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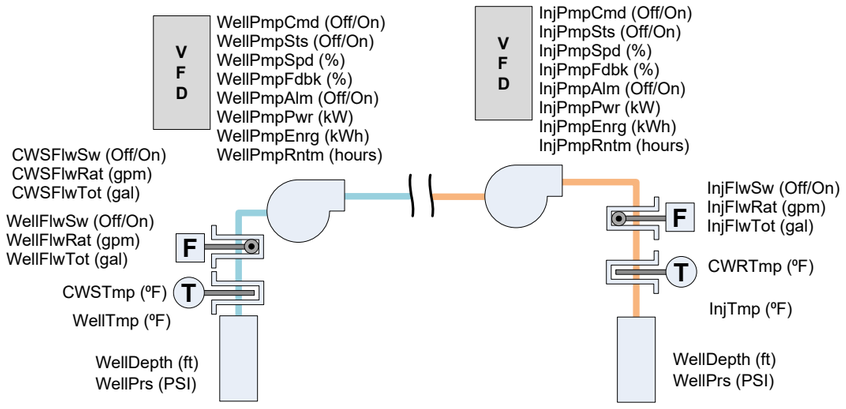
WSHP

Geothermal Condenser Water System



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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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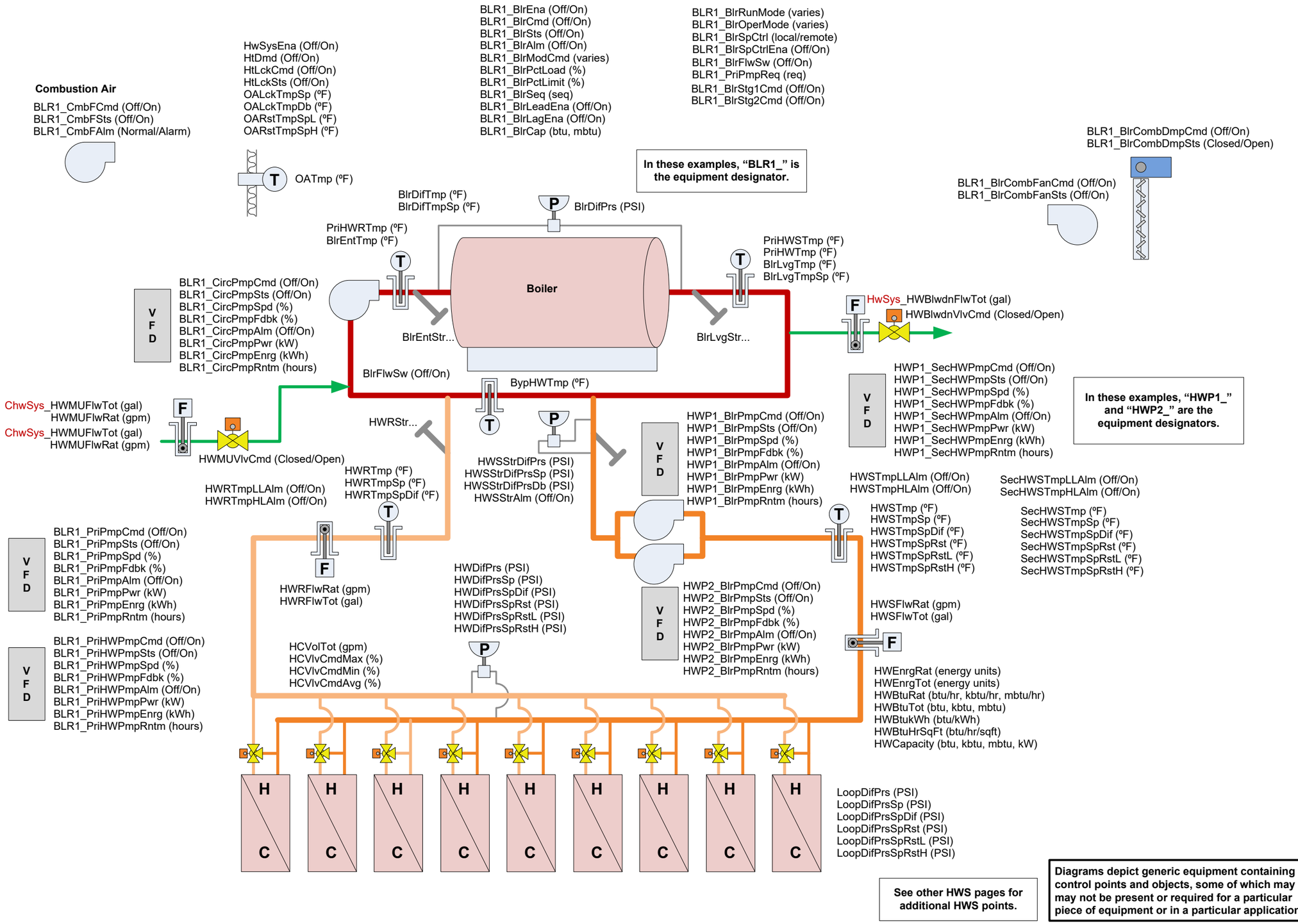
GEO



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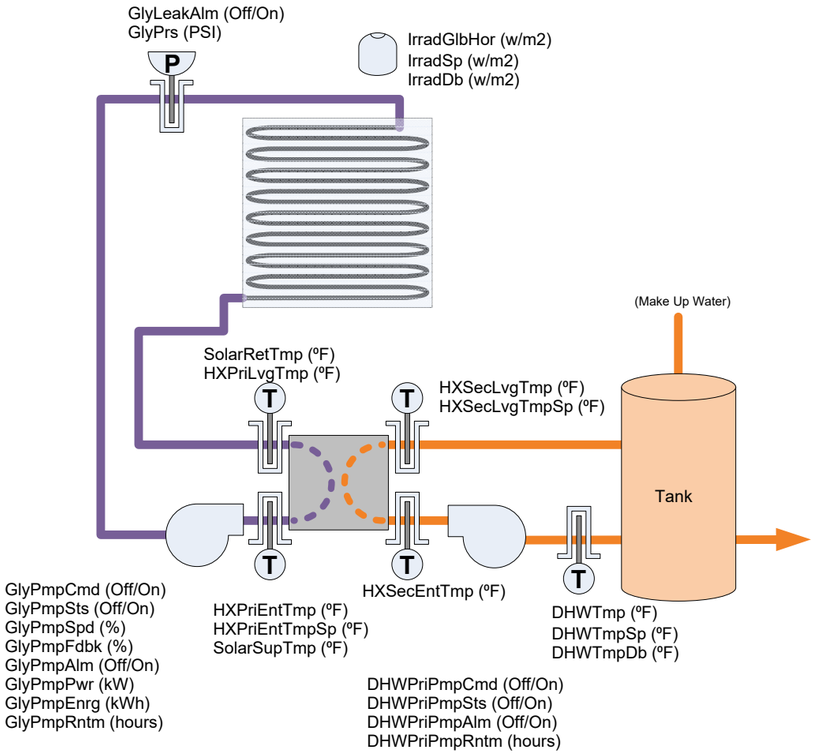
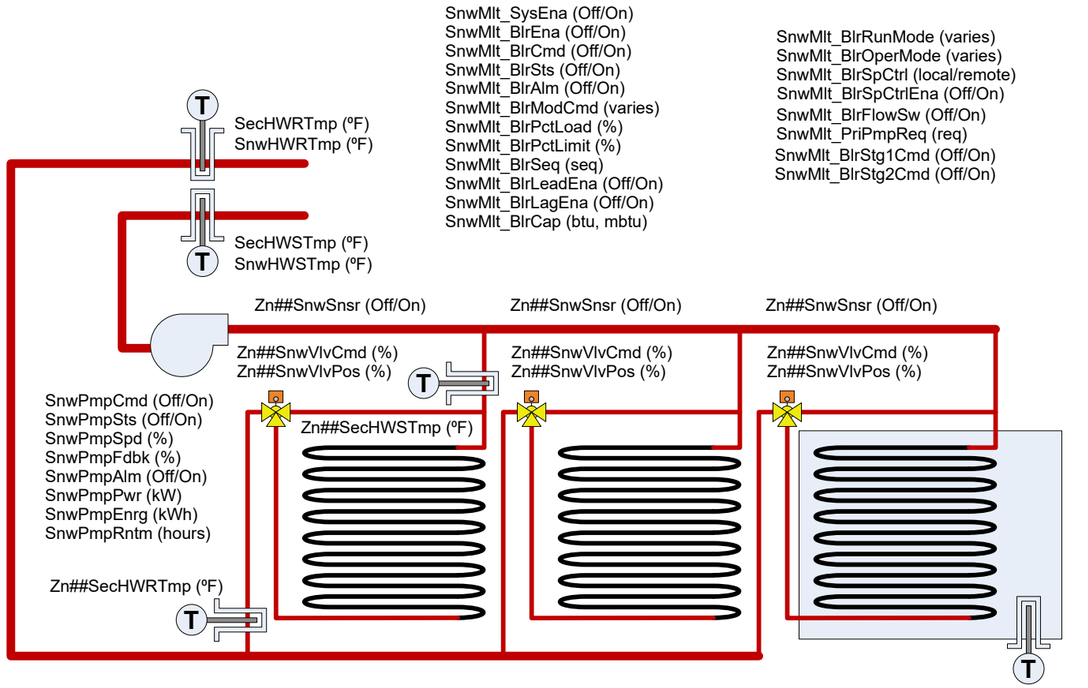
SHEET TITLE & NUMBER:

HWS1

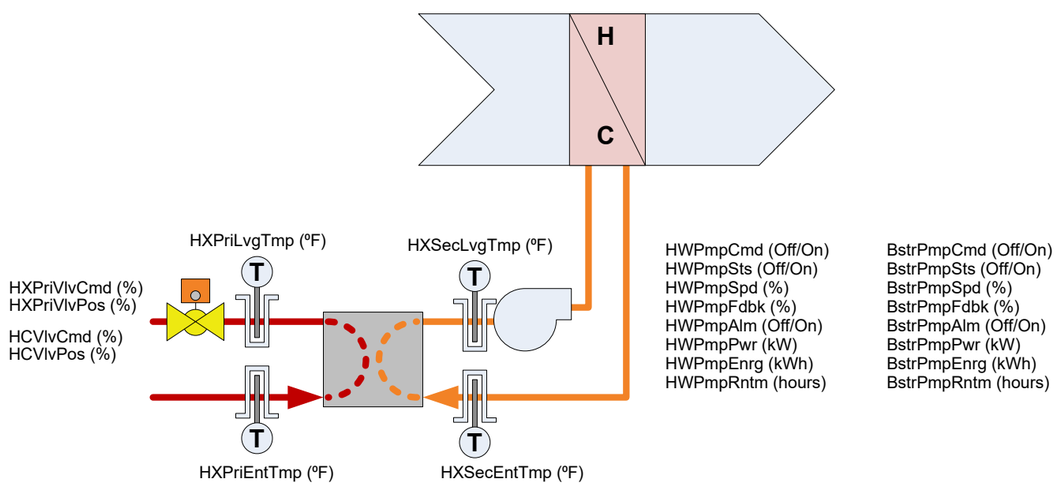
Solar Thermal Hot Water



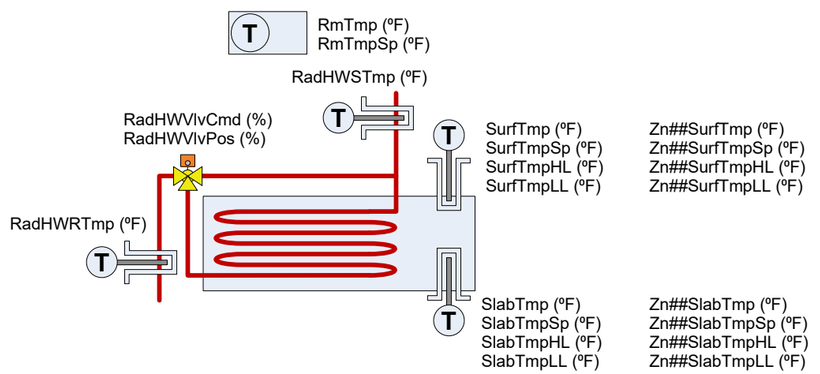
Snow Melt System



HW HX & Booster Pump



Radiant Floor Heat



See other HWS pages for additional HWS points.

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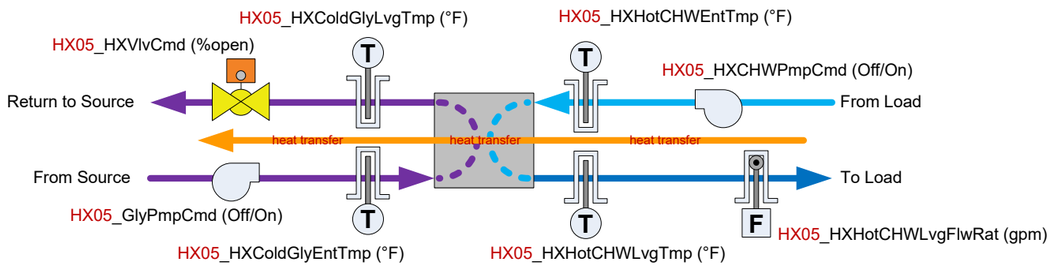
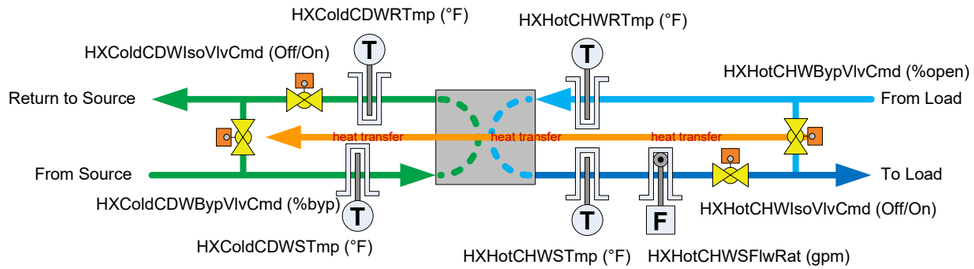
HWS2

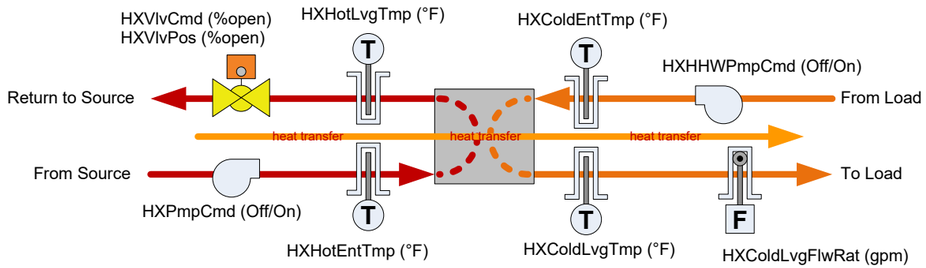
Glycol Cooling Application



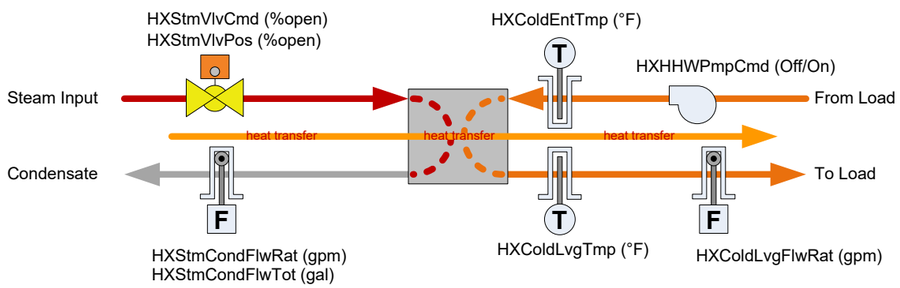
Free-Cooling Condenser Water Application



Hot Water Heating Application



Steam/Hot Water Heating Application



See CHW, HWS, and PMP pages for additional points.

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STATUS: Version 2.5
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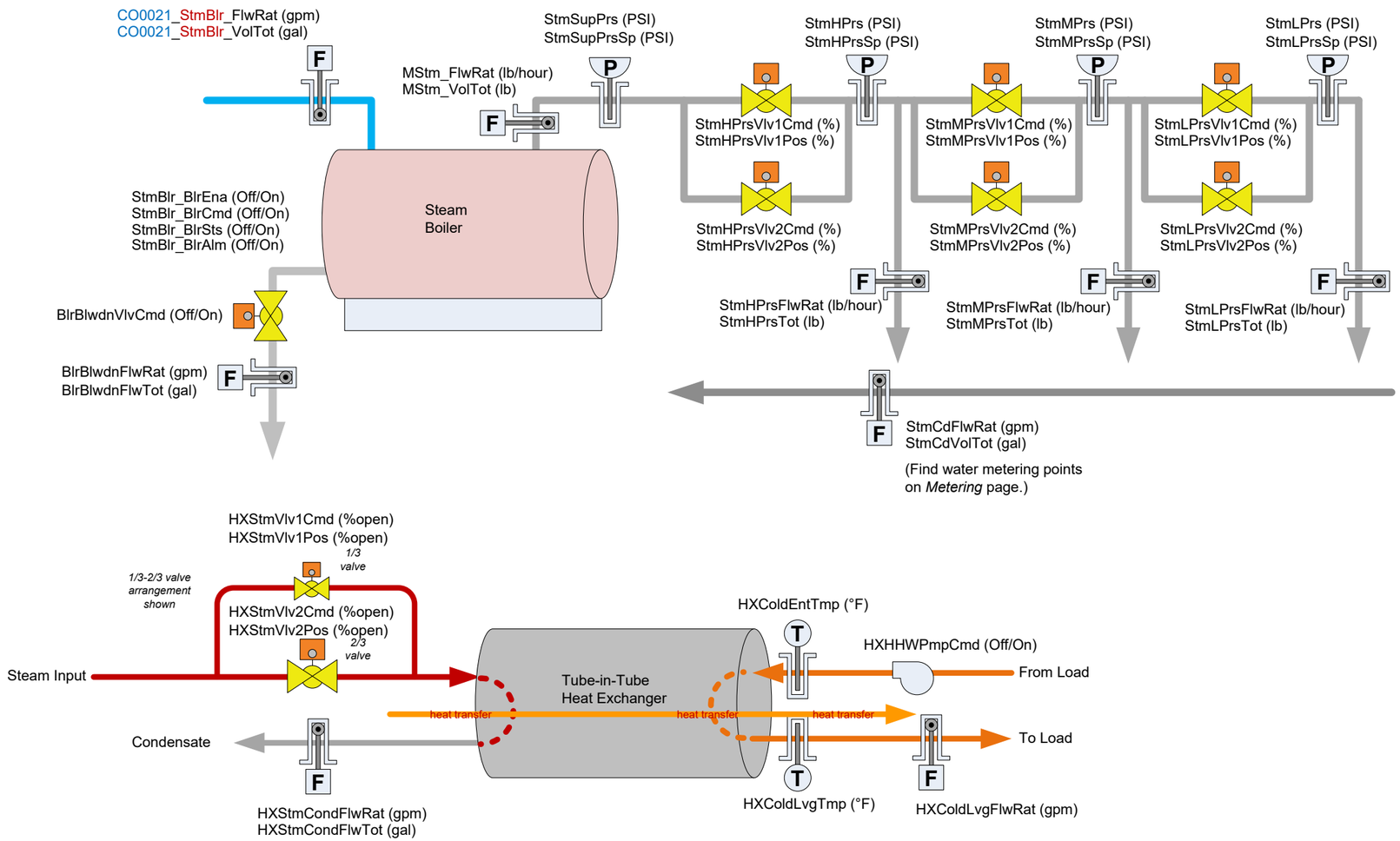
HX

In this example, "CO0021_" is the building number. The meter is a make-up water meter for the steam boiler.

Steam Reduction Station



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STM

Hot Water Plant Tag Requirements

Overview

A hot water plant is composed of multiple pieces of equipment and modeled based on their output of Hot Water or Steam. The entire plant is modeled as an equip with its own plant-level points. Sub-equipment such as Boilers, Heat Exchangers and Storage Tanks are also modeled as equip contained by the plant via the equipRef tag.

Note that the terminology for sensors/setpoints are based on the perspective of the equipment.

Hot Water Plants

The hotWaterPlant tag is used to model the plant and its system of equipment to generate hot water.

Pipework

Heating plants share the following terminology with chilled water plants:

primaryLoop: pipework within the plant
secondaryLoop: pipework from the plant to the building

Steam Plants

The steamPlant tag is used to model the plant and its system of equipment to generate steam.

Boilers

The boiler tag is used to model boiler assets as an equip. Equip level tags include:

equipRef must reference parent plant if associated with a plant
hot water or steam
oil or gas

Heat Exchangers

Heat exchangers are tagged with heatExchanger. Equip level tags:

equipRef must reference parent hot water or steam plant

The points for a heat exchanger will be based on the fluids between the two loops. In general, use primaryLoop and secondaryLoop to qualify the points.

Tanks

The tank tag models a storage tank. It is always paired with the equip tag. The following tags should be used to define what the tank stores:

hot water
domestic water
condensate water
gas
oil

Sections

Not applicable

Points

The following list applies to point tags commonly used with hot water plant equipment and shall be applied appropriately:

Plant Level

hot water leaving temp sensor
hot water leaving temp sp
hot water entering temp sensor
hot water leaving flow sensor
hot water leaving pressure sensor
hot water entering flow sensor
hot water entering pressure sensor
hot water delta pressure sensor
hot water delta flow sensor
hot water delta temp sensor
hot water bypass valve cmd
hot water mixing valve cmd
makeup water flow sensor
outside air damper cmd
flue temp sensor

Steam Plant

steam leaving temp sensor
steam leaving temp sp
steam leaving flow sensor
steam leaving pressure sensor
steam entering flow sensor
steam entering pressure sensor
steam delta pressure sensor
steam delta flow sensor
steam delta temp sensor
steam bypass valve cmd
steam mixing valve cmd
steam header pressure sensor
condensate entering temp sensor
makeup water flow sensor
outside air damper cmd
flue temp sensor

Boiler

run cmd
run sensor
enable cmd
circ pump cmd
circ pump sensor
condensate pump cmd
condensate pump sensor

Storage Tanks

temp sensor
pressure sensor
level sensor

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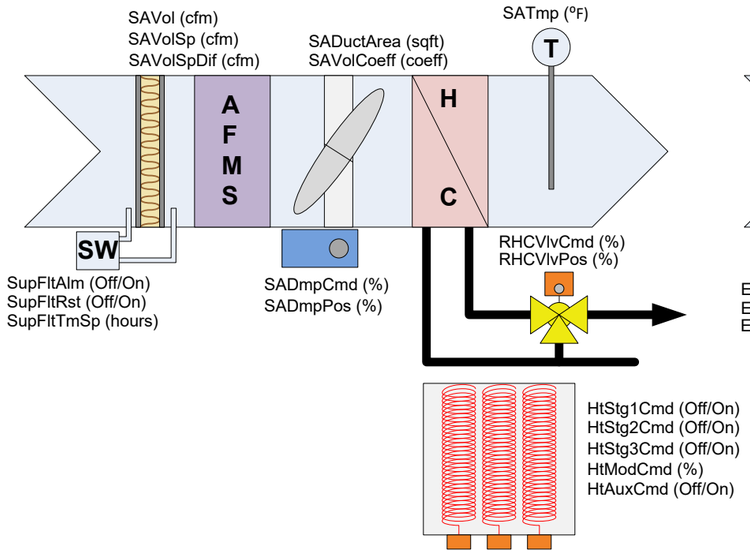
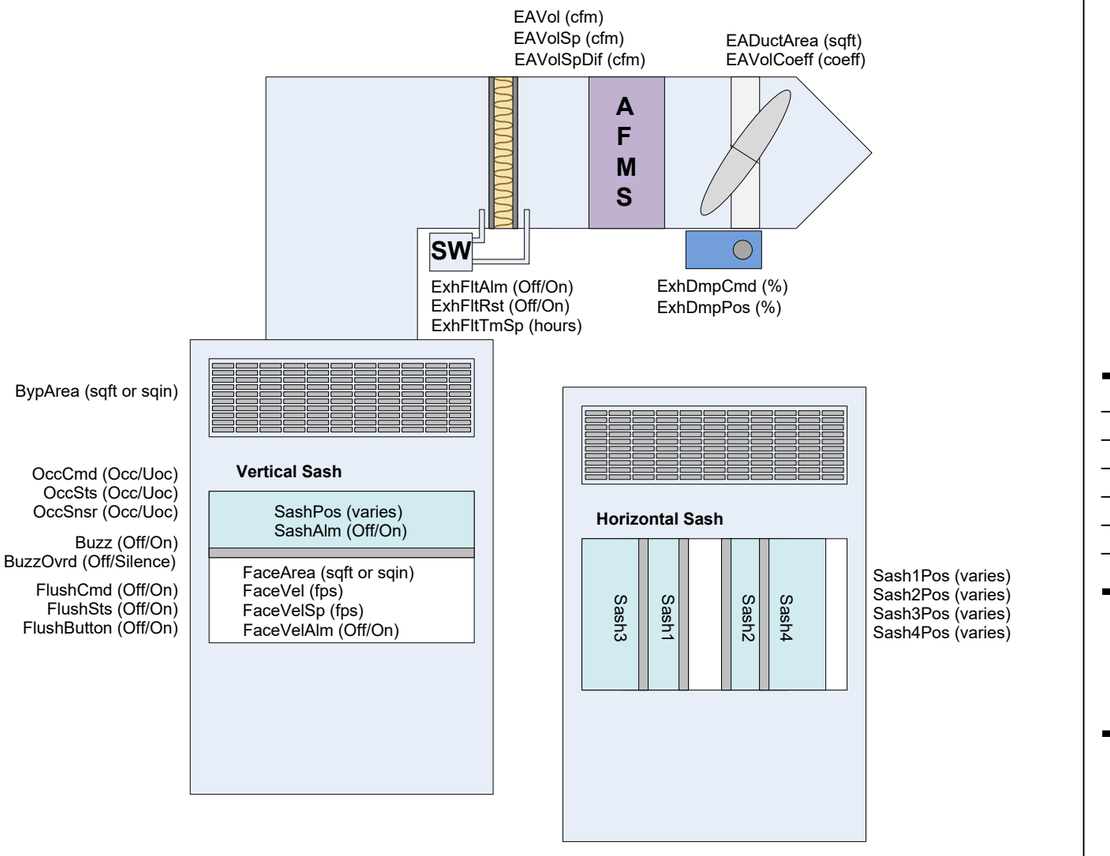
HWPLNTTAG

Lab Room Terminal Unit Points



Fume Hood Points



Lab Room Control System Points

OccSnsr (Occ/Uoc)
OccCmd (Occ/Uoc)
OccSts (Occ/Uoc)
OccOvrd (Uoc/Ovrd)
FlushCmd (Off/On)
FlushSts (Off/On)
FlushBtn (Off/On)
DifVolAlm (Off/On)
SAVolAlm (Off/On)
EAVolAlm (Off/On)
Buzz (Off/On)
BuzzOvrd (Off/Silence)
DoorSw (Closed/Open)
DoorAlm (Off/On)

IsoModeCmd (neut/pro/inf)
IsoModeSts (neut/pro/inf)
PrsModeCmd (neut/pos/neg)
PrsModeSts (neut/pos/neg)
PrsAlm (Off/On)
PrsWarn (Off/On)

RmTmp (°F)
EffRmTmpSp (°F)
OccRmTmpSp (°F)
UocRmTmpSp (°F)
OccClgSp (°F)
OccHtgSp (°F)
UocClgSp (°F)
UocHtgSp (°F)

SupAirVolTot (cfm)
SupAirVolTotSp (cfm)
EAVolTot (cfm)
EAVolTotSp (cfm)
EAVolTot (cfm)
DifVolTot (cfm)
DifVolTotSp (cfm)
SAVolSpMax (cfm)
SAVolSpMin (cfm)
EAVolSpMax (cfm)
EAVolSpMin (cfm)
TmpCtrlVol (cfm)
TrkModeCmd (none/ETS/STE)
TrkModeSts (none/ETS/STE)
AirChgRat (cph)
AirChgRatSp (cph)
RmVol (cf)

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STATUS: Version 2.5
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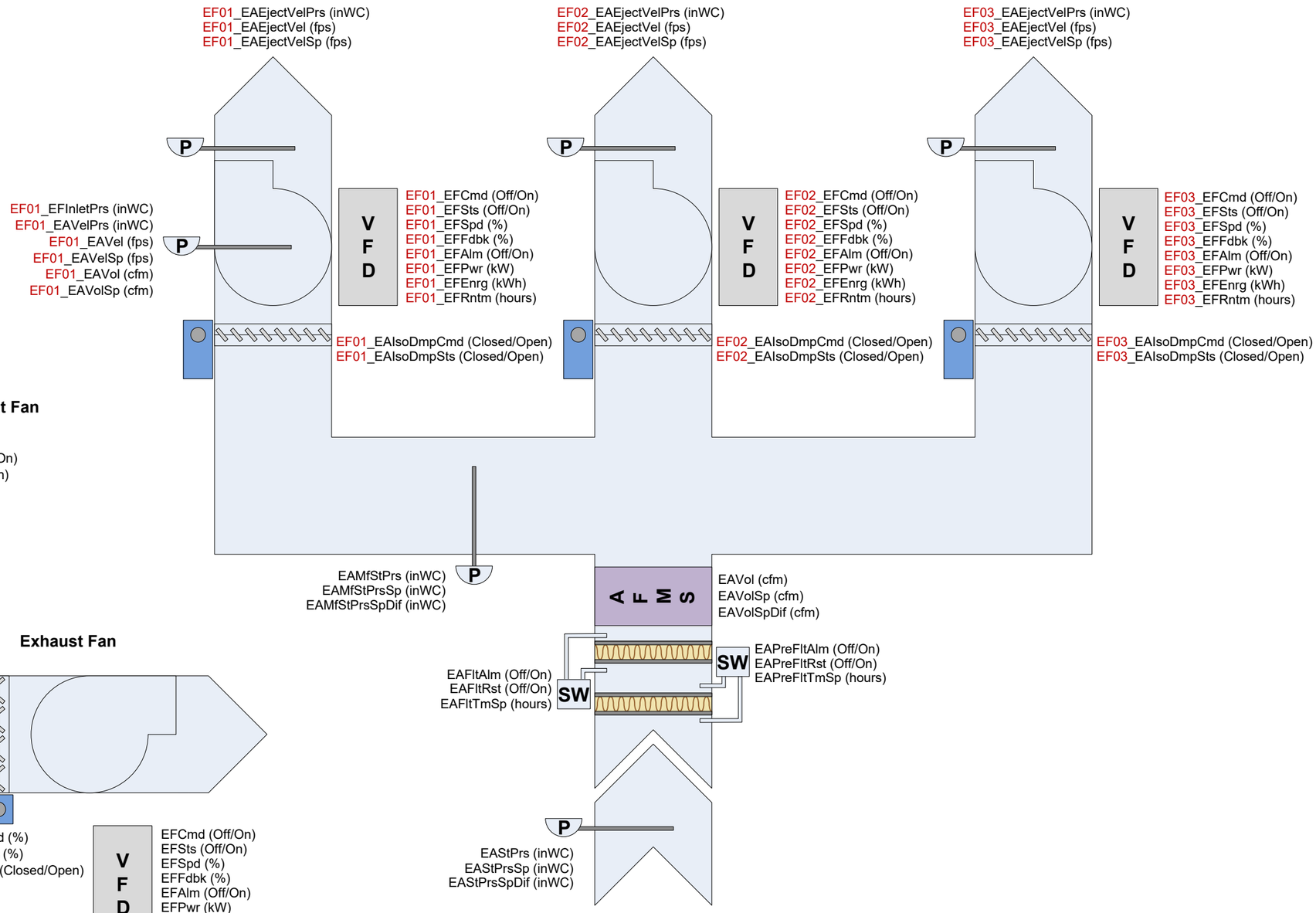
LAB

Exhaust System Control Points

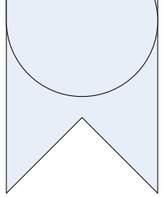
ExhSys_ExhEna (Off/On)
ExhSys_EFRotCmd (Off/On)
ExhSys_EFSeq (Seq)
ExhSys_EFLeadEna (Off/On)
ExhSys_EFLagEna (Off/On)

ExhSys_EFCmd (Off/On)
ExhSys_EFSpd (%)
ExhSys_EFPwr (kW)
ExhSys_EFEnrg (kWh)
ExhSys_EFRntm (hours)

Exhaust Manifold System

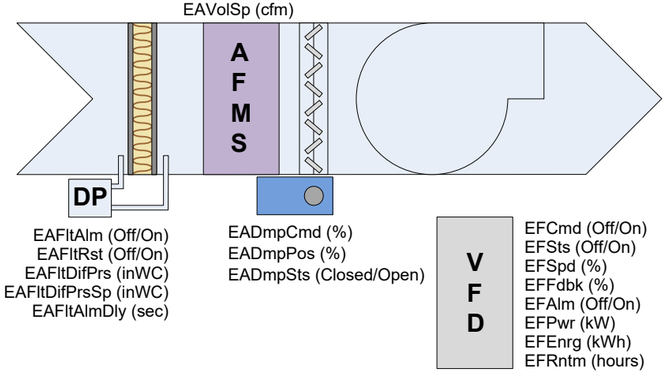


Simple Exhaust Fan



EF49_EFCmd (Off/On)
EF49_EFSts (Off/On)

Exhaust Fan



EAFltAlm (Off/On)
EAFltRst (Off/On)
EAFltDifPrs (inWC)
EAFltDifPrsSp (inWC)
EAFltAlmDly (sec)

EADmpCmd (%)
EADmpPos (%)
EADmpSts (Closed/Open)

EFCmd (Off/On)
EFSts (Off/On)
EFSpd (%)
EFFdbk (%)
EFAlm (Off/On)
EFPwr (kW)
EFEnrg (kWh)
EFRntm (hours)

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STATUS: Version 2.5
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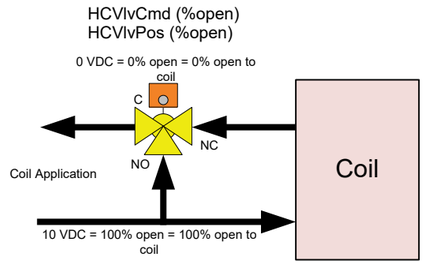
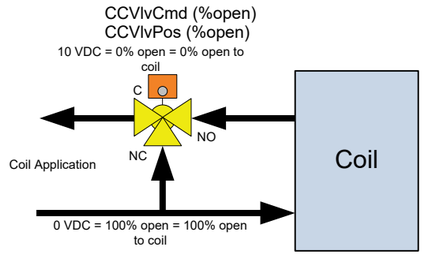
EXH

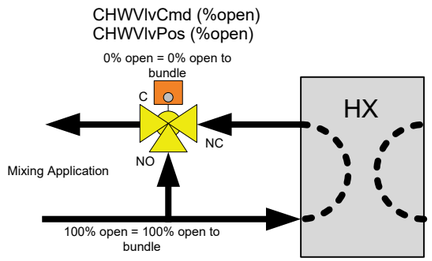
Normally Closed HW Valve



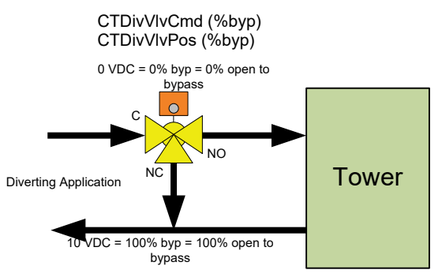
Normally Open CHW Valve



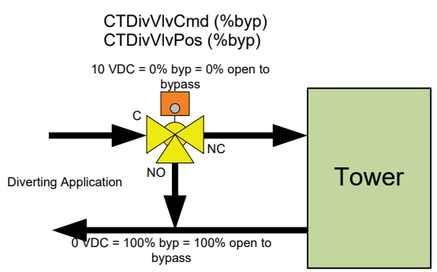
Normally Closed Mixing Valve



Normally Open Diverting Valve



Normally Bypassing Diverting Valve



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VLV

V
F
D

Common VFD Objects

"MT0046" is an example building number.
"CDWP01" is an example equipment designation.

MT0046_CDWP01_CDWPmpCmd (Off/On)
MT0046_CDWP01_CDWPmpSts (Off/On)
MT0046_CDWP01_CDWPmpSpd (%)
MT0046_CDWP01_CDWPmpPos (%) or CDWPmpFdbk (%)
MT0046_CDWP01_CDWPmpAlm (Norm/Alm)
MT0046_CDWP01_CDWPmpPwr (kW)
MT0046_CDWP01_CDWPmpEnrg (kWh)
MT0046_CDWP01_CDWPmpRntm (hours)
MT0046_CDWP01_CDWPmpFreq (Hz)
MT0046_CDWP01_CDWPmpAutoMode (Hand/Auto)
MT0046_CDWP01_CDWPmpCur (Amps)
MT0046_CDWP01_CDWPmpVltAC (VAC)
MT0046_CDWP01_CDWPmpVltDC (VDC)

Regenerative VFD Objects

MT0046_CDWP01_CDWPmpBrakeSts (Off/On)
MT0046_CDWP01_CDWPmpRegenSts (Off/On)
MT0046_CDWP01_CDWPmpRegenPos (%) or CDWPmpRegenFdbk (%)
MT0046_CDWP01_CDWPmpRegenFault (Norm/Fault)
MT0046_CDWP01_CDWPmpRegenPwr (kW)
MT0046_CDWP01_CDWPmpRegenEnrg (kWh)
MT0046_CDWP01_CDWPmpRegenRntm (hours)
MT0046_CDWP01_CDWPmpRegenFreq (Hz)
MT0046_CDWP01_CDWPmpRegenCur (Amps)
MT0046_CDWP01_CDWPmpRegenVltAC (VAC)
MT0046_CDWP01_CDWPmpRegenVltDC (VDC)

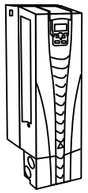


ABB ACH550 BACnet Object Map

"VFD" is used in place of the object name prefix.

Basic Commands

BV12 = VFDEna (Off/On)
BV10 = VFDCmd (Off/On)
AV16 = VFDRef1Spd (%) or VFDSpd (%)
AV17 = VFDRef2Spd (%)
BV11 = VFDDirCmd (Fwd/Rev)

Basic Feedback

BV00 = VFDSts (Stop/Run)
AV00 = VFDPos (%)
AV01 = VFDFreq (Hz)
AV05 = VFDTorq (lb-ft)
AV02 = VFDVltDC (VDC)
AV03 = VFDOutputVlt (VDC)
AV04 = VFDCur (Amps)
AV06 = VFDPwr (kW)
AV08 = VFDEnrg (kWh)
AV09 = VFDEnrgTot (MWh)
AV14 = VFDRnTm (hours)
AV15 = VFDMotorTmp (°C)
AV07 = VFDDriveTmp (°C)
BV01 = VFDDirSts (Fwd/Rev)
BV04 = VFDAutoMode (Auto/Hand)

Fault Feedback

BV02 = VFDFaultSts (OK/Fault)
BV14 = VFDFaultRst (Off/On)
AV18 = VFDFaultLast (fault code)
AV19 = VFDFaultPrev1 (fault code)
AV20 = VFDFaultPrev2 (fault code)

Other Parameters

BV13 = VFDRefSelCmd (EXT1/EXT2)
BV03 = VFDRefSelSts (EXT1/EXT2)
BV05 = VFDAlmSts (OK/Alm)
BV06 = VFDMaintSts (OK/Maint)
BV07 = VFDReady (Not Ready/Ready)
BV08 = VFDAtSp (No/Yes)
BV09 = VFDEna (Off/On)
BV17 = VFDKeypadLck (Unlock/Lock)
BV18 = VFDBACnetCtrlCmd (Off/On)
BV19 = VFDBACnetCtrlSts (Off/On)
AV23 = VFDRampUpTm (sec)
AV24 = VFDRampDnTm (sec)
AV25 = VFD??? (???) *custom-programmable*
AV26 = VFD??? (???) *custom-programmable*
BV15 = VFD??? (???) *custom-programmable*
BV16 = VFD??? (???) *custom-programmable*

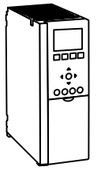
Drive I/O

BO00= VFDRO1Cmd (Off/On)
BO01 = VFDRO2Cmd (Off/On)
BO02 = VFDRO3Cmd (Off/On)
BO03 = VFDRO4Cmd (Off/On)
BO04 = VFDRO5Cmd (Off/On)
BO05 = VFDRO6Cmd (Off/On)
BI00 = VFDRO1Sts (Off/On)
BI01 = VFDRO2Sts (Off/On)
BI02 = VFDRO3Sts (Off/On)
BI03 = VFDRO4Sts (Off/On)
BI04 = VFDRO5Sts (Off/On)
BI05 = VFDRO6Sts (Off/On)

BI06 = VFDDI1Sts (Off/On)
BI07 = VFDDI2Sts (Off/On)
BI08 = VFDDI3Sts (Off/On)
BI09 = VFDDI4Sts (Off/On)
BI10 = VFDDI5Sts (Off/On)
BI11 = VFDDI6Sts (Off/On)

AO21 = VFDAO1Pos (mA)
AO22 = VFDAO2Pos (mA)

AI00 = VFDAI1 (varies)
AI01 = VFDAI2 (varies)



Danfoss VLT VFD BACnet Object Map

"VFD" is used in place of the object name prefix.

Basic Commands

BV01 = VFDCmd (Off/On)
AV01 = VFDRef1Spd (%) or VFDSpd (%)
AV02 = VFDRef2Spd (%)
BV25 = VFDDirCmd (CW/CCW)

Basic Feedback

BV33 = VFDSts (Stop/Run)
AV03 = VFDPos (%)
AV25 = VFDFreq (Hz)
AV26 = VFDTorq (%)
AV27 = VFDVltDC (VDC)
AV24 = VFDOutputVlt (VDC)
AV05 = VFDCur (Amps)
AV06 = VFDPwr (kW)
AV23 = VFDEnrg (kWh)
BV28 = VFDEnrgRst (Off/On)
AV22 = VFDRnTm (hours)
BV29 = VFDRnTmRst (Off/On)
AV28 = VFDDriveTmp (°C)
BV30 = VFDDirSts (Fwd/Rev)
BV06 = VFDAutoMode (Auto/Hand)

Fault Feedback

BV05 = VFDFaultSts (OK/Fault)
BV03 = VFDFaultRst (Off/On)
AV51 = VFDFaultLast (fault code)
BV21 = VFDWarnSts (OK/Fault)
BV22 = VFDTripSts (OK/Fault)

Other Parameters

BV02 = VFDRefSelCmd (REF1/REF2)
AV01 = VFDRef1Pos (%)
AV02 = VFDRef2Pos (%)
BV27 = VFDRst (Off/On)
BV31 = VFDAtSp (No/Yes)

Drive I/O

BO00= VFDDO27Cmd (Off/On)
BO01 = VFDDO29Cmd (Off/On)
BO02 = VFDGPIOX306Cmd (Off/On)
BO03 = VFDGPIOX307Cmd (Off/On)
BO04 = VFDRO1Cmd (Off/On)
BO05 = VFDRO2Cmd (Off/On)

AI00 = VFDAI53 (%)
AI01 = VFDAI54 (%)

Diagrams depict generic equipment containing control points and objects, some of which may or may not be present or required for a particular piece of equipment or in a particular application.

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National BAS Object Naming & Tagging Standard

#	DATE	DESCRIPTION
1.3	7/24/2017	Added Tagging
2.0	8/8/2017	Release Version
2.2	10/4/2017	Added VRF Systems
2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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VFD

VFD Tag Requirements

Overview

Fans, pumps, and compressors which use a variable frequency drive or VFD are typically sophisticated devices that expose many points. VFDs should be modeled as their own equip entity using the vfd tag. If the VFD is a sub-component of a larger piece of equip then it can be nested via the equipRef tag.

Standard points for VFDs

The standardized points for VFDs are:

- run cmd
- run sensor
- enable cmd
- speed cmd
- freq cmd

The primary on/off point of the equipment is always modeled with the run tag. Paired with cmd it models the on/off command point; paired with sensor it models the run status point. Many VFDs also include a secondary enable point which requires both run and enable to be commanded to true in order for the equipment to be on.

Speed of the VFD is commanded separately via the speed or freq point. The use of these points require that the equipment has already been commanded on.

Many VFDs will also provide many of the same points as an electric meter. Measurements such as electric demand, consumption, voltage, and current should follow the same conventions as elec meters.

Fans

Fans shall be defined as either an equip or a point. If the fan motor is a VFD then it is recommended to make the fan a sub-equip. However, in many cases a simple fan in a terminal unit such as a vav is better modeled as a point.

Pumps

Pumps shall be defined as either an equip or a point. If the pump is a VFD then it is recommended to make it an equip level entity. However if the pump is modeled as a simple on/off point as a component within a large piece of equipment such as a boiler then it is modeled as just a point. Pumps should follow the same point and equip level modeling conventions as fans.

Fan Equips

When the fan motor is a VFD it should be modeled as an equip entity using the standard VFD points described to the right. As a standard, model all fans as equip. Simple non-VFDs fans shall define their state via a run point.

Points

The following list applies to point tags commonly used with VFD, Fan and Pump equipment and shall be applied appropriately:

Fan Points

In simple cases where the fan is just a command and/or feedback sensor then it shall be modeled as a point.

If annotated as an output with the cmd tag, then the point models the command status of the fan:
- false (off) or true (on)
- if variable speed then it is 0% (off) to 100% (full speed)

If annotated as an input with the sensor tag, then the point models a sensor used to verify if the fan status:
- false indicated no air flow (off) or true indicates successful airflow (fan is on)
- if numeric, the point is differential pressure across the fan measured in "inH_2O" or "kPa"

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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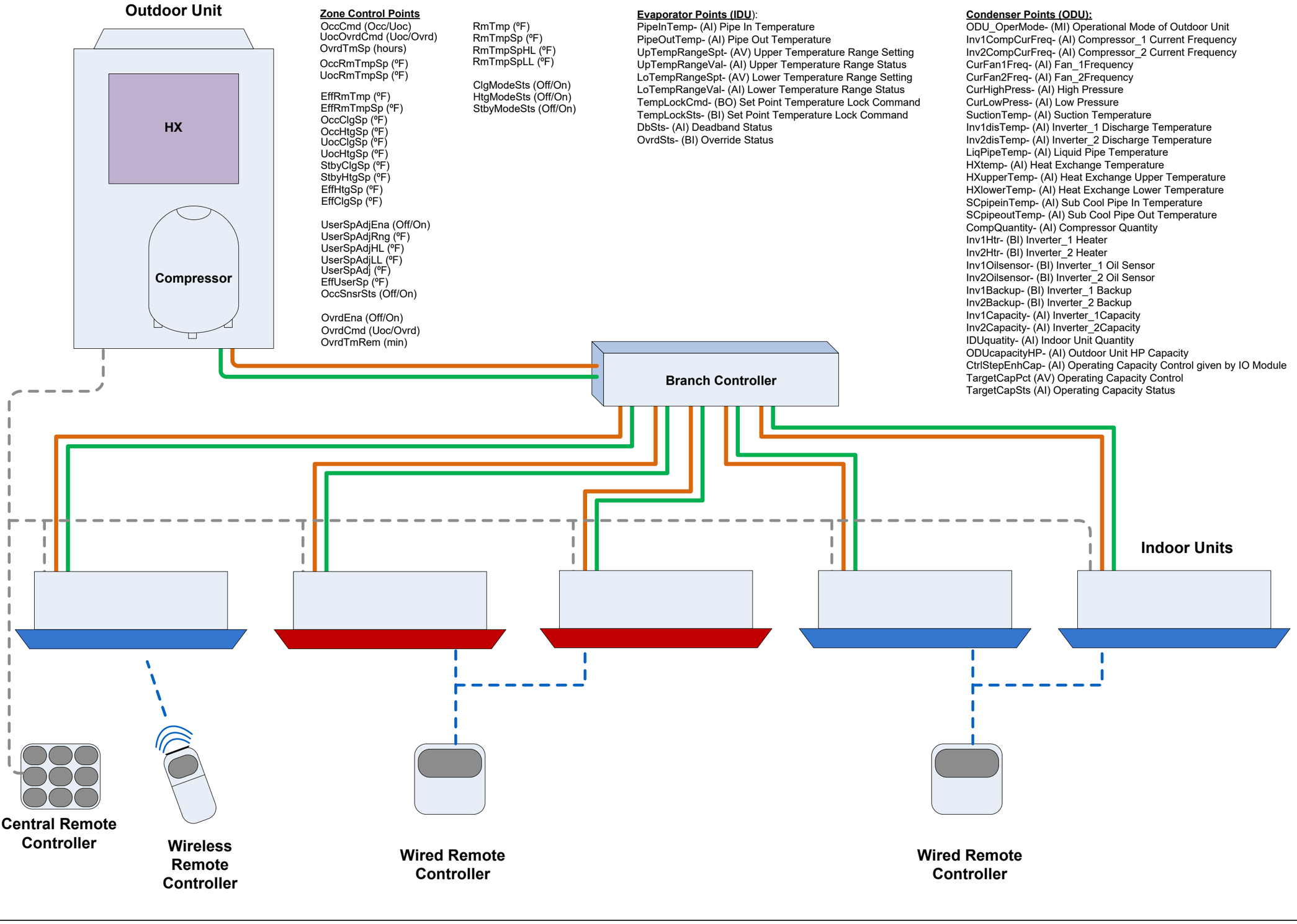
VFDTAG

VRF – 2 Pipe System



Zone Control Points
OccCmd (Occ/Uoc)
UocOvrdCmd (Uoc/Ovrd)
OvrdTmSp (hours)

OccRmTmpSp (ºF)
UocRmTmpSp (ºF)

EffRmTmp (ºF)
EffRmTmpSp (ºF)
OccClgSp (ºF)
OccHtgSp (ºF)
UocClgSp (ºF)
UocHtgSp (ºF)
StbyClgSp (ºF)
StbyHtgSp (ºF)
EffHtgSp (ºF)
EffClgSp (ºF)

UserSpAdjEna (Off/On)
UserSpAdjRng (ºF)
UserSpAdjHL (ºF)
UserSpAdjLL (ºF)
UserSpAdj (ºF)
EffUserSp (ºF)
OccSnsrSts (Off/On)

OvrdEna (Off/On)
OvrdCmd (Uoc/Ovrd)
OvrdTmRem (min)

RmTmp (ºF)
RmTmpSp (ºF)
RmTmpSpHL (ºF)
RmTmpSpLL (ºF)

ClgModeSts (Off/On)
HtgModeSts (Off/On)
StbyModeSts (Off/On)

Evaporator Points (IDU):
PipeInTemp- (AI) Pipe In Temperature
PipeOutTemp- (AI) Pipe Out Temperature
UpTempRangeSpt- (AV) Upper Temperature Range Setting
UpTempRangeVal- (AI) Upper Temperature Range Status
LoTempRangeSpt- (AV) Lower Temperature Range Setting
LoTempRangeVal- (AI) Lower Temperature Range Status
TempLockCmd- (BO) Set Point Temperature Lock Command
TempLockSts- (BI) Set Point Temperature Lock Command
DbSts- (AI) Deadband Status
OvrdSts- (BI) Override Status

Condenser Points (ODU):
ODU_OperMode- (MI) Operational Mode of Outdoor Unit
Inv1CompCurFreq- (AI) Compressor_1 Current Frequency
Inv2CompCurFreq- (AI) Compressor_2 Current Frequency
CurFan1Freq- (AI) Fan_1Frequency
CurFan2Freq- (AI) Fan_2Frequency
CurHighPress- (AI) High Pressure
CurLowPress- (AI) Low Pressure
SuctionTemp- (AI) Suction Temperature
Inv1disTemp- (AI) Inverter_1 Discharge Temperature
Inv2disTemp- (AI) Inverter_2 Discharge Temperature
LiqPipeTemp- (AI) Liquid Pipe Temperature
HXtemp- (AI) Heat Exchange Temperature
HXupperTemp- (AI) Heat Exchange Upper Temperature
HXlowerTemp- (AI) Heat Exchange Lower Temperature
SCpipeinTemp- (AI) Sub Cool Pipe In Temperature
SCpipeoutTemp- (AI) Sub Cool Pipe Out Temperature
CompQuantity- (AI) Compressor Quantity
Inv1Htr- (BI) Inverter_1 Heater
Inv2Htr- (BI) Inverter_2 Heater
Inv1Oilsensor- (BI) Inverter_1 Oil Sensor
Inv2Oilsensor- (BI) Inverter_2 Oil Sensor
Inv1Backup- (BI) Inverter_1 Backup
Inv2Backup- (BI) Inverter_2 Backup
Inv1Capacity- (AI) Inverter_1Capacity
Inv2Capacity- (AI) Inverter_2Capacity
IDUquatity- (AI) Indoor Unit Quantity
ODUcapacityHP- (AI) Outdoor Unit HP Capacity
CtrlStepEnhCap- (AI) Operating Capacity Control given by IO Module
TargetCapPct (AV) Operating Capacity Control
TargetCapSts (AI) Operating Capacity Status

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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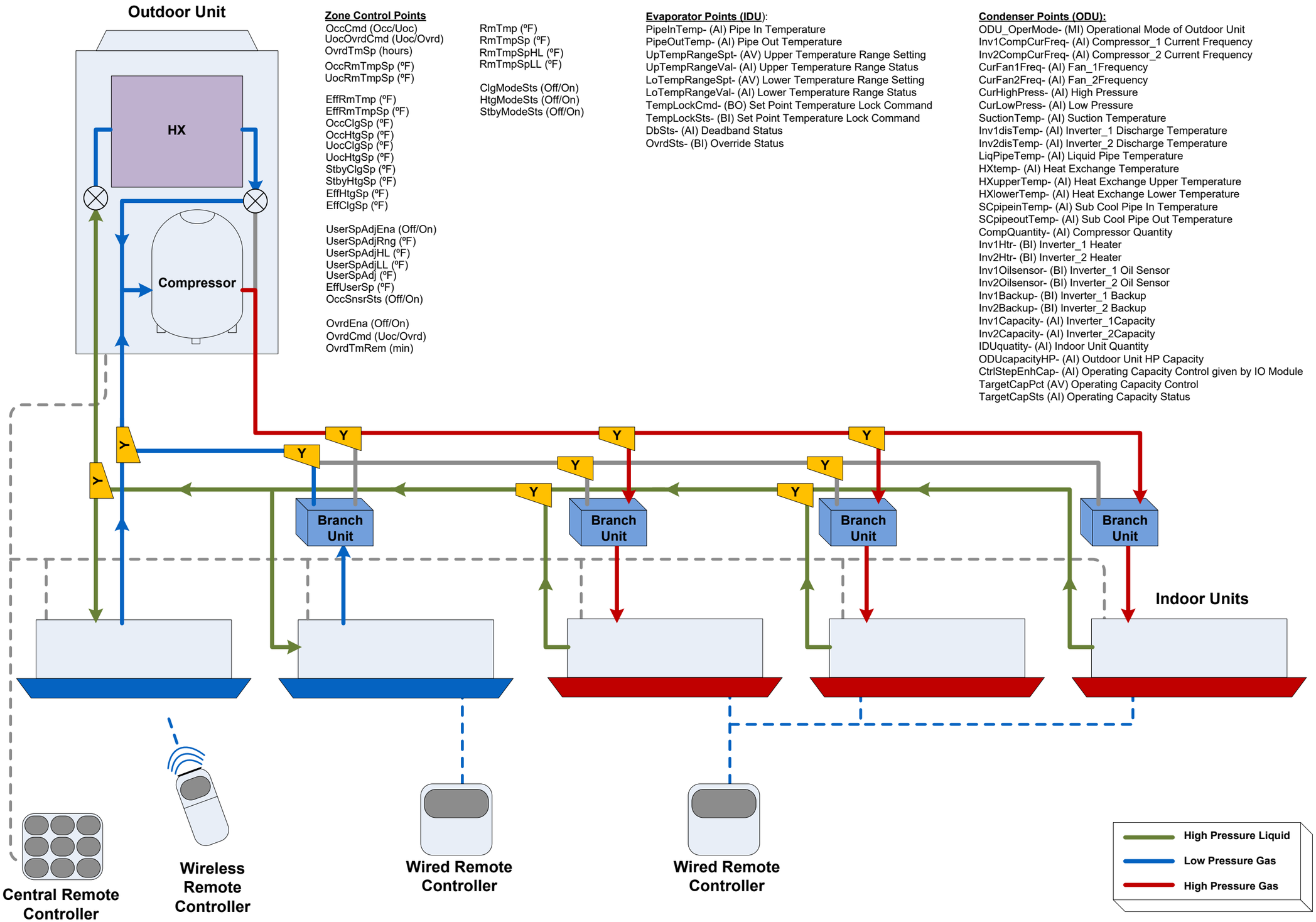
VRF-2P

VRF – 3 Pipe System



Zone Control Points

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UocOvrdCmd (Uoc/Ovrd)
OvrdTmSp (hours)

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UocRmTmpSp (ºF)

EffRmTmp (ºF)
EffRmTmpSp (ºF)
OccClgSp (ºF)
OccHtgSp (ºF)
UocClgSp (ºF)
UocHtgSp (ºF)
StbyClgSp (ºF)
StbyHtgSp (ºF)
EffHtgSp (ºF)
EffClgSp (ºF)

UserSpAdjEna (Off/On)
UserSpAdjRng (ºF)
UserSpAdjHL (ºF)
UserSpAdjLL (ºF)
UserSpAdj (ºF)
EffUserSp (ºF)
OccSnsrSts (Off/On)

OvrdEna (Off/On)
OvrdCmd (Uoc/Ovrd)
OvrdTmRem (min)

RmTmp (ºF)
RmTmpSp (ºF)
RmTmpSpHL (ºF)
RmTmpSpLL (ºF)

ClgModeSts (Off/On)
HtgModeSts (Off/On)
StbyModeSts (Off/On)

Evaporator Points (IDU):

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PipeOutTemp- (AI) Pipe Out Temperature
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Inv2CompCurFreq- (AI) Compressor_2 Current Frequency
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CurFan2Freq- (AI) Fan_2Frequency
CurHighPress- (AI) High Pressure
CurLowPress- (AI) Low Pressure
SuctionTemp- (AI) Suction Temperature
Inv1disTemp- (AI) Inverter_1 Discharge Temperature
Inv2disTemp- (AI) Inverter_2 Discharge Temperature
LiqPipeTemp- (AI) Liquid Pipe Temperature
HXtemp- (AI) Heat Exchange Temperature
HXupperTemp- (AI) Heat Exchange Upper Temperature
HXlowerTemp- (AI) Heat Exchange Lower Temperature
SCpipeinTemp- (AI) Sub Cool Pipe In Temperature
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Inv2Oilsensor- (BI) Inverter_2 Oil Sensor
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Inv2Backup- (BI) Inverter_2 Backup
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Inv2Capacity- (AI) Inverter_2Capacity
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ODUcapacityHP- (AI) Outdoor Unit HP Capacity
CtrlStepEnhCap- (AI) Operating Capacity Control given by IO Module
TargetCapPct (AV) Operating Capacity Control
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2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:

VRF-3P

Variable Refrigerant Flow (VRF) Tag Requirements

Overview

The vrf tag is used to model variable refrigerant flow assets. VRFs shall always be marked as equip.

Equipment & Reference Tags

VRFs shall be classified with the following type tags:

- twoPipe
- threePipe
- hvac: always specified to mark as an HVAC asset
- rooftop: any equipment in the outdoor unit

Sections

Since most points are not clearly associated with the entering or discharge section we omit a section tag for most points. Any points which would conflict with the zone points must be qualified with either discharge or entering tags. Associate points with sections of a VRF using these tags:

- entering: gas/fluid entering the unit from the zones
- discharge: gas/fluid exiting the unit to be supplied to the zones
- zone: conditioned space associated with the unit
- cool: cooling components
- heat: heating components

Points

The following list applies to point tags commonly used with indoor VRF equipment and shall be applied appropriately:

Indoor VRF Points Include Zone Tags

- zone air temp sensor
- zone air temp effective sp
- zone air temp occ cooling sp
- zone air temp occ heating sp
- zone air temp unocc cooling sp
- zone air temp unocc heating sp
- zone air temp standby cooling sp
- zone air temp standby heating sp
- zone air humidity sensor
- zone air co2 sensor
- zone air co2 sp

Equipment, Setpoint & Sensor Points

- leaving temp sensor
- leaving temp sp
- entering temp sensor
- leaving pressure sensor
- entering pressure sensor

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5

DRAWN BY: Mike Grush / Craig Payne

REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:

VRFTAG

Lighting Panel EPLA

1	Rm0101_LgtCmd (Off/On)	EPLA01_BrkSts (Off/On/Trip)		EPLA02_BrkSts (Off/On/Trip)	Zn12_LgtCmd (Off/On)	2
3	Rm0102_LgtCmd (Off/On)	EPLA03_BrkSts (Off/On/Trip)		EPLA04_BrkSts (Off/On/Trip)	WHall_LgtCmd (Off/On)	4
5	Rm0103_LgtCmd (Off/On)	EPLA05_BrkSts (Off/On/Trip)		EPLA06_BrkSts (Off/On/Trip)	Cnf_LgtCmd (Off/On)	6
7	Rm0254_LgtCmd (Off/On)	EPLA07_BrkSts (Off/On/Trip)		EPLA08_BrkSts (Off/On/Trip)	Off400_LgtCmd (Off/On)	8
9	Rm0258_LgtCmd (Off/On)	EPLA09_BrkSts (Off/On/Trip)		EPLA10_BrkSts (Off/On/Trip)	Cpy_LgtCmd (Off/On)	10
11	Rm0844_LgtCmd (Off/On)	EPLA11_BrkSts (Off/On/Trip)		EPLA12_BrkSts (Off/On/Trip)	GymN_LgtCmd (Off/On)	12
13	Rm0845_LgtCmd (Off/On)	EPLA13_BrkSts (Off/On/Trip)		EPLA14_BrkSts (Off/On/Trip)	GymS_LgtCmd (Off/On)	14
15	Rm1012_LgtCmd (Off/On)	EPLA15_BrkSts (Off/On/Trip)		EPLA16_BrkSts (Off/On/Trip)	BbFld_LgtCmd (Off/On)	16
17	LbyCan_LgtCmd (Off/On)	EPLA17_BrkSts (Off/On/Trip)		EPLA18_BrkSts (Off/On/Trip)	LkrRm_LgtCmd (Off/On)	18
19	LbyAcc_LgtCmd (Off/On)	EPLA19_BrkSts (Off/On/Trip)		EPLA20_BrkSts (Off/On/Trip)	WdwCan_LgtCmd (Off/On)	20
21	LbyDpy_LgtCmd (Off/On)	EPLA21_BrkSts (Off/On/Trip)		EPLA22_BrkSts (Off/On/Trip)	WdwSpt_LgtCmd (Off/On)	22
23	Sgn_LgtCmd (Off/On)	EPLA23_BrkSts (Off/On/Trip)		EPLA24_BrkSts (Off/On/Trip)	Stage_LgtCmd (Off/On)	24
25	PkgN_LgtCmd (Off/On)	EPLA25_BrkSts (Off/On/Trip)		EPLA26_BrkSts (Off/On/Trip)	Stg_LgtCmd (Off/On)	26
27	PkgW_LgtCmd (Off/On)	EPLA27_BrkSts (Off/On/Trip)		EPLA28_BrkSts (Off/On/Trip)	Clr101_LgtCmd (Off/On)	28
29	ExtFnt_LgtCmd (Off/On)	EPLA29_BrkSts (Off/On/Trip)		EPLA30_BrkSts (Off/On/Trip)	Roof_LgtCmd (Off/On)	30
31	ExtBck_LgtCmd (Off/On)	EPLA31_BrkSts (Off/On/Trip)		EPLA32_BrkSts (Off/On/Trip)	LdgFld_LgtCmd (Off/On)	32

EPLA_LgtPnlSts (varies)
EPLA_LgtPnlFault (Off/On)
EPLA_LgtPnlAlm (Off/On)

Lighting Abbreviations

Acc = Accent lights
BbFld = Baseball Field
Brk = Breaker
Can = Can lights
Clr = Classroom
Cmd = Command
Cnf = Conference Room
Cpy = Copy Room
Dpy = Display
E = East
Ena = Enable
Ext = Exterior
FbFld = Football Field
Fld = Field/Flood lights
Grp = Group
Gym = Gymnasium
Int = Interior
Lby = Lobby
Lck = Lockout
Ldg = Loading
Lgt = Light/Lighting
Lkr = Locker Room
Lvl = Level
N = North
Occ = Occupancy
Off = Office
Out = Output
Ovrd = Override
Pos = Position
Pkg = Parking
Rly = Relay
Rm = Room
S = South
Sgn = Signage
Shd = Shade
Snsr = Sensor
Spt = Spot lights
Stg = Seating
Sts = Status
W = West
Wdw = Window
Wrk = Work
Zn = Zone

Diagrams depict generic equipment containing control points and objects, some of which may or may not be present or required for a particular piece of equipment or in a particular application.

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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LGT

Lighting Tag Requirements

Overview

Lighting groups may model a single light switch, room, physical circuit, lighting panel, or logical grouping of lights. The lighting group's purpose is primarily to organize one or more lighting points to match the standardized site+equip+point model for navigation and analytics.

The lightsGroup tag is used to model the equip level of the lighting system and shall follow all the standard rules for equip entities.

Sections

Not applicable

Points

The following list applies to point tags commonly used with the lighting group and shall be applied appropriately:

Lighting

lights: primary actuator point indicating whether the lights are commanded on/off. The lights point must be either a binary point (on/off) or a numeric point if dimmable (0% to 100%). A lightsGroup must have one or more of these points.
lightLevel: sensor indicating current lighting level measured in "lux" or "lumen". A lightsGroup can have zero or more of these points.
occupancyIndicator: sensor indicating whether room is currently occupied. Point must be Bool where true indicates occupied and false indicates unoccupied. A lightsGroup can have zero or more of these points.

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2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
52 of **57**

LGTTAG

Meter Object Name Anatomy

Building_TYPE.Meter_Object

GSA Building Number
Always 6 characters, always designated by GSA

Meter Type
Always two characters - use standardized meter type abbreviations

Meter/Location Designation
No formal standard – best practice is to use the equipment designations used in the building's mechanical drawings

Standard Object Name
Always use standardized names found in this document

SS####_TT.EEEEEEEE_PPPPPPPPPPPPPPPPPPPPPPPP

- 6 characters always
- Underscore Delimiter
- 2 characters for standardized meter type
- Period Delimiter
- Up to 8 characters as-needed
- Underscore Delimiter
- 11-26 characters as-needed
  Number of characters available depends on BAS product limitations

IMPORTANT
NEVER EXCEED 45 CHARCTERS

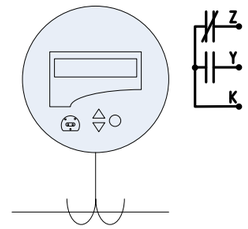
CO0624_EL.MSB1_Pwr

- CO0624 is DFC Building 810
- Electrical Meter MSB1
- Power

Standard Meter Type Abbreviations

CH = Chilled Water
CW = Condenser Water
DF = Diesel Fuel
DH = Domestic Hot Water
DW = Domestic Water
EL = Electricity
FO = Fuel Oil
GW = Gray (Reclaimed) Water
HW = Heating Hot Water
IW = Irrigation Water
MW = Make-up Water
NG = Natural Gas
PG = Propane Gas
PV = Photovoltaic Electricity
SH = Solar (Heat) Thermal Energy
ST = Steam
TE = Thermal Energy
TW = Tempered Water

Electric Meters



See ELEC page for additional electrical metering points.

EL.MSB_VltAC (VAC)
EL.MSB_Cur (Amps)
EL.MSB_Pwr (kW)
EL.MSB_Enrg (kWh)

EL.MSB_VltAB (VAC)
EL.MSB_VltBC (VAC)
EL.MSB_VltCA (VAC)
EL.MSB_VltLLAvg (VAC)
EL.MSB_VltLLMin (VAC)
EL.MSB_VltLLMax (VAC)
EL.MSB_VltLLMean (VAC)

EL.MSB_VltAN (VAC)
EL.MSB_VltBN (VAC)
EL.MSB_VltCN (VAC)
EL.MSB_VltLNAvg (VAC)
EL.MSB_VltLNMin (VAC)
EL.MSB_VltLNMax (VAC)
EL.MSB_VltLNMean (VAC)

EL.MSB_CurA (Amps)
EL.MSB_CurB (Amps)
EL.MSB_CurC (Amps)
EL.MSB_CurAvg (Amps)
EL.MSB_CurMin (Amps)
EL.MSB_CurMax (Amps)
EL.MSB_CurMean (Amps)

EL.MSB_Freq (Hz)

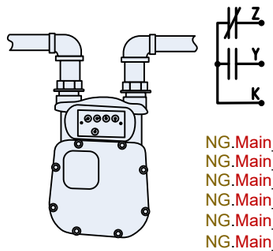
EL.MSB_EnrgRec (kWh)
(imported from grid)
EL.MSB_EnrgDel (kWh)
(exported to grid)

EL.MSB_PlsTot (pulses)
EL.MSB_PlsTotRst (Off/On)
EL.MSB_PlsGain (coeff)

Water Meters

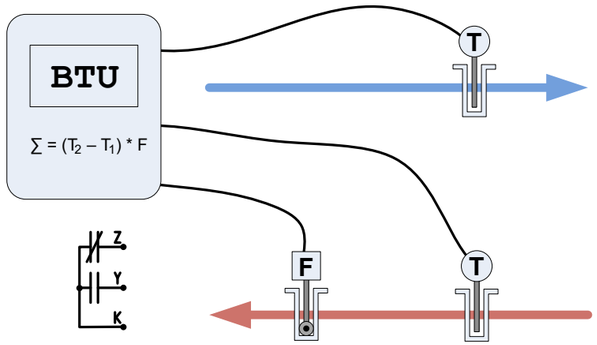
DW.Main_PlsTot (pulses)
DW.Main_PlsTotRst (Off/On)
DW.Main_PlsGain (coeff)
DW.Main_VolTot (gal)
DW.Main_FlwRat (gpm)
DW.Main_FlwRatMax (gpm)
DW.Main_VolTotNet (gal)
DW.CTMU_VolTot (gal)
DW.CTBlwDn_VolTot (gal)

Gas Meters



NG.Main_PlsTot (pulses)
NG.Main_PlsTotRst (Off/On)
NG.Main_PlsGain (coeff)
NG.Main_VolTot (cf, ccf)
NG.Main_FlwRat (cfm)
NG.Main_FlwRatMax (cfm)
NG.Main_VolTotNet (cf, ccf)
NG.Main_EnrgTot (btu, kbtu, mbtu, therms, kW, MW)
NG.Main_EnrgContent (btu/cf)

Thermal Energy (BTU) Meters



TE.CHW_FlwRat (gpm)
TE.CHW_FlwRatMax (gpm)
TE.CHW_CHWSTmp (ºF)
TE.CHW_CHWRTmp (ºF)
TE.CHW_DifTmp (ºF)
TE.CHW_DifTmpMax (ºF)
TE.CHW_EnrgFlwRat (btu/hr, kbtu/hr)
TE.CHW_EnrgTot (btu, kbtu, mbtu, kW)
TE.CHW_EnrgRatMax (btu/hr, kbtu/hr)
TE.CHW_EnrgTotRst (Off/On)

TE.CHW_PlsTot (pulses)
TE.CHW_PlsTotRst (Off/On)
TE.CHW_PlsGain (coeff)

Diagrams depict generic equipment containing control points and objects, some of which may or may not be present or required for a particular piece of equipment or in a particular application.

GSA

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Public Buildings Service
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Facility Technologies

GSA Data Normalization for Building Automation Systems
Appendix-C

National BAS Object Naming & Tagging Standard

#	DATE	DESCRIPTION
1.3	7/24/2017	Added Tagging
2.0	8/8/2017	Release Version
2.2	10/4/2017	Added VRF Systems
2.3	1/5/2018	508 Compliance
2.4	4/5/2018	Abbreviation corrections
2.5	1/17/2019	Siemens notes added

STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
53 of **57**

MTR

Energy Tag Requirements

Overview

The general issues addressed by the energy tags are:
- modeling meters
- modeling submeters and their relationships
- modeling equip and point loads on meters

Meters

Meters are modeled as equip entities with the meter tag. The following meter types are defined:

elec meter
gas meter
domestic water meter
chilled water meter
condenser water meter
hot water meter
makeup water meter
blowdown water meter
condensate water meter
steam meter

All meters must additionally define one of these two tags:

siteMeter: marker applied to the main site level meter
submeterOf: Ref to parent meter

Meter Loads

Modeling the equip and point loads under specific meters can be used for analysis and visualization. Loads are modeled by applying a tag formatted as "{type}MeterLoad" on an equip or point. The meter load tag should be Ref to its associated meter. If modeling submeters, then the load should reference the closest submeter. Standardized load tags:

elecMeterLoad
gasMeterLoad
waterMeterLoad (no distinction between which type of water meter)
steamMeterLoad

Meter loads have the same types of points as their associated meters.

Electric Meters

Electricity meters are probably the most common type of meters modeled. They are tagged as elec meter. This model is designed to scale from very simple meters (just a power and energy point) up to a comprehensive point list for three-phase power quality meters.

Electricity meter points are described by combining tags from the lists given below. The tags in each set are mutually exclusive. (For example, a power point cannot be both active and reactive.)

The primary measured quantities in an electrical system are:

power: typically measured in "kW"
energy: typically measured in "kWh"
volt: typically measured in "V"
current: typically measured in "A"
freq: typically measured in "Hz"
pf: power factor

AC power measurements are further qualified by:

active: typically measured in "kW" (assumed as default)
reactive: typically measured in "kVAR"
apparent: typically measured in "kVA"

Voltage and current measurements are further qualified by:

mag: magnitude (assumed as default)
angle: phase angle, typically measured in "deg"
imbalance: imbalance between phases, measured in "%"
thd: total harmonic distortion, measured in "%"

Electrical Meters (cont.)

Three phase electrical measurements are qualified by:

phase: A, B, C, AB, BC, CA, N
avg: for current, voltage, and power factor (assumed as default)
total: for power and energy (assumed as default)

Energy exchange with the utility is qualified by:

import: energy imported from the grid
export: energy exported to the grid
net: net exchange (assumed as default)

In addition, define the following general-purpose tags:

ac: alternating current
dc: direct current

Flow Meters

Water and gas meters' measure flow rate and total volume consumed. Standardized points are:

flow: rate of volume flowing through the meter per unit time
volume: total volume consumption of the meter

Thermal Meters

Thermal meters measure energy as temperature differentials. Energy demand and consumption is modeled using the same tags as electric meters:

power: energy consumed per unit time such as "BTU/h"
energy: energy consumption such as "BTU"

Electrical Meter Points

The following list applies to point tags commonly used with electrical meters and shall be applied appropriately:

Power
power net sensor
power export sensor
power import sensor
active power total sensor
active power phase sensor
apparent power total sensor
apparent power phase sensor
reactive power total sensor
reactive power phase sensor

Energy
energy net sensor
energy export sensor
energy import sensor
energy total sensor
energy phase sensor

Voltage
volt mag avg sensor
volt mag phase sensor
volt angle avg sensor
volt angle phase sensor
volt thd avg sensor
volt thd phase sensor
volt imbalance sensor

Current
current mag avg sensor
current mag phase sensor
current angle avg sensor
current angle phase sensor
current thd avg sensor
current thd phase sensor
current imbalance sensor

Power Factor
pf avg sensor
pf phase sensor

Frequency
freq sensor

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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ENGYTAG

Common Electric Smart Meter Points

Basic Meter

EL.[circuit]_VltAC (VAC)
EL.[circuit]_Cur (Amps)
EL.[circuit]_Pwr (kW)
EL.[circuit]_Enrg (kWh)

DC Systems

EL.[circuit]_VltDC (VDC)
EL.[circuit]_Cur (Amps)
EL.[circuit]_Pwr (kW)
EL.[circuit]_Enrg (kWh)

EL.[circuit]_VltAB (VAC)
EL.[circuit]_VltBC (VAC)
EL.[circuit]_VltCA (VAC)
EL.[circuit]_VltLLAvg (VAC)
EL.[circuit]_VltLLMin (VAC)
EL.[circuit]_VltLLMax (VAC)
EL.[circuit]_VltLLMean (VAC)

EL.[circuit]_VltAN (VAC)
EL.[circuit]_VltBN (VAC)
EL.[circuit]_VltCN (VAC)
EL.[circuit]_VltLNAvg (VAC)
EL.[circuit]_VltLNMin (VAC)
EL.[circuit]_VltLNMax (VAC)
EL.[circuit]_VltLNMean (VAC)

EL.[circuit]_CurA (Amps)
EL.[circuit]_CurB (Amps)
EL.[circuit]_CurC (Amps)
EL.[circuit]_CurAvg (Amps)
EL.[circuit]_CurMin (Amps)
EL.[circuit]_CurMax (Amps)
EL.[circuit]_CurMean (Amps)

EL.[circuit]_Freq (Hz)

EL.[circuit]_RelPwrA (kW)
EL.[circuit]_RelPwrB (kW)
EL.[circuit]_RelPwrC (kW)
EL.[circuit]_RelPwrTotal (kW)
EL.[circuit]_RelPwrMax (kW)

EL.[circuit]_EnrgRec (kWh)
(imported from grid)

EL.[circuit]_EnrgDel (kWh)
(exported to grid)

EL.[circuit]_EnrgRecNet (kWh)
EL.[circuit]_EnrgDelNet (kWh)

EL.[circuit]_AppPwrA (kVA)
EL.[circuit]_AppPwrB (kVA)
EL.[circuit]_AppPwrC (kVA)
EL.[circuit]_AppPwrTotal (kVA)
EL.[circuit]_AppPwrMax (kVA)
EL.[circuit]_AppEnrgRec (kVAh)
EL.[circuit]_AppEnrgDel (kVAh)

EL.[circuit]_RctPwrA (kVAR)
EL.[circuit]_RctPwrB (kVAR)
EL.[circuit]_RctPwrC (kVAR)
EL.[circuit]_RctPwrTotal (kVAR)
EL.[circuit]_RctPwrMax (kVAR)
EL.[circuit]_RctEnrgRec (kVARh)
EL.[circuit]_RctEnrgDel (kVARh)

EL.[circuit]_PwrFctrA (%)
EL.[circuit]_PwrFctrB (%)
EL.[circuit]_PwrFctrC (%)
EL.[circuit]_PwrFctrAvg (%)

EL.[circuit]_VltUnbal
EL.[circuit]_CurUnbal
EL.[circuit]_PhsRev (False/True)
EL.[circuit]_VltPhsSeq

EL.[circuit]_PlsOut1 (Off/On)
EL.[circuit]_PlsOut2 (Off/On)
EL.[circuit]_PlsOut3 (Off/On)
EL.[circuit]_PlsOut4 (Off/On)

EL.[circuit]_PlsIn1 (Off/On)
EL.[circuit]_PlsIn2 (Off/On)
EL.[circuit]_PlsIn3 (Off/On)
EL.[circuit]_PlsIn4 (Off/On)

EL.[circuit]_PlsTot1 (pulses)
EL.[circuit]_PlsTot2 (pulses)
EL.[circuit]_PlsTot3 (pulses)
EL.[circuit]_PlsTot4 (pulses)

EL.[circuit]_THDVltA (THD)
EL.[circuit]_THDVltB (THD)
EL.[circuit]_THDVltC (THD)

EL.[circuit]_THDCurA (THD)
EL.[circuit]_THDCurB (THD)
EL.[circuit]_THDCurC (THD)

EL.[circuit]_KfctrCurA (coeff)
EL.[circuit]_KfctrCurB (coeff)
EL.[circuit]_KfctrCurC (coeff)

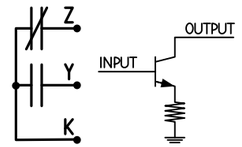
EL.[circuit]_CfctrCurA (coeff)
EL.[circuit]_CfctrCurB (coeff)
EL.[circuit]_CfctrCurC (coeff)

EL.[circuit]_CtRatio (Ratio)
EL.[circuit]_PtRatio (Ratio)
EL.[circuit]_Serial (SN)

EL.[circuit]_RO1 (Off/On)
EL.[circuit]_RO2 (Off/On)
EL.[circuit]_RO3 (Off/On)
EL.[circuit]_RO4 (Off/On)

Standard Electrical Meter Type Abbreviations

EL = Electricity
PV = Photovoltaic Electricity
WD = Wind Electricity



KYZ & Open Collector Pulses

EL.[circuit]_PlsTot (pulses)
EL.[circuit]_PlsTotRst (Off/On)
EL.[circuit]_PlsGain (coeff)

Common Photovoltaic System Points

PV System Points

Inverter

EL.INV1_ModuleTmp (ºF)
EL.INV1_IrradPOA (W/m^2)
EL.INV1_IrradGlbHor (W/m^2)
EL.INV1_GndFlt (Off/On)
EL.INV1_Perf (%)
EL.INV1_ModuleTmpCoeff (coeff)
EL.INV1_InvPwrMax (kW)
EL.INV1_InvPwrMax (kW)
EL.INV1_Comb###Cur (Amps)
EL.INV1_Comb###Vlt (VDC)
EL.INV1_Comb###Enrg (kWh)
EL.INV1_InvSts (varies)
EL.INV1_InvMode (varies)
EL.INV1_DCLnkVlt (VDC)
EL.INV1_DCBusVlt (VDC)

EL.Array1_ArrayPwrMax (kW)
EL.Array1_IrradPOA (W/m^2)
EL.Array1_IrradGlbHor (W/m^2)
EL.Array1_Perf (%)
EL.Array1_ModuleTmpCoeff (coeff)

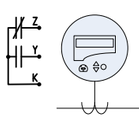
Common Generator Points

PwrCap (kW)
PwrPct (%)
BattVlt (VDC)
OilPrs (PSI)
OilTmp (ºF)
CoolantTmp (ºF)
FuelRat (gal/hr)
EngSpd (rpm)
EngStarts (starts)
EngRntm (hours)

EngStartCmd (Off/On)
RstCmd (Off/On)
FaultCode (varies)
WarnCode (varies)
FuelRem (gal)
RntmRem (hours)
ExhLvrCmd (Off/On)
ExhLvrSts (Off/On)
GenTest (Off/On)
AtsSts (Off/On)
GenAlm (Off/On)

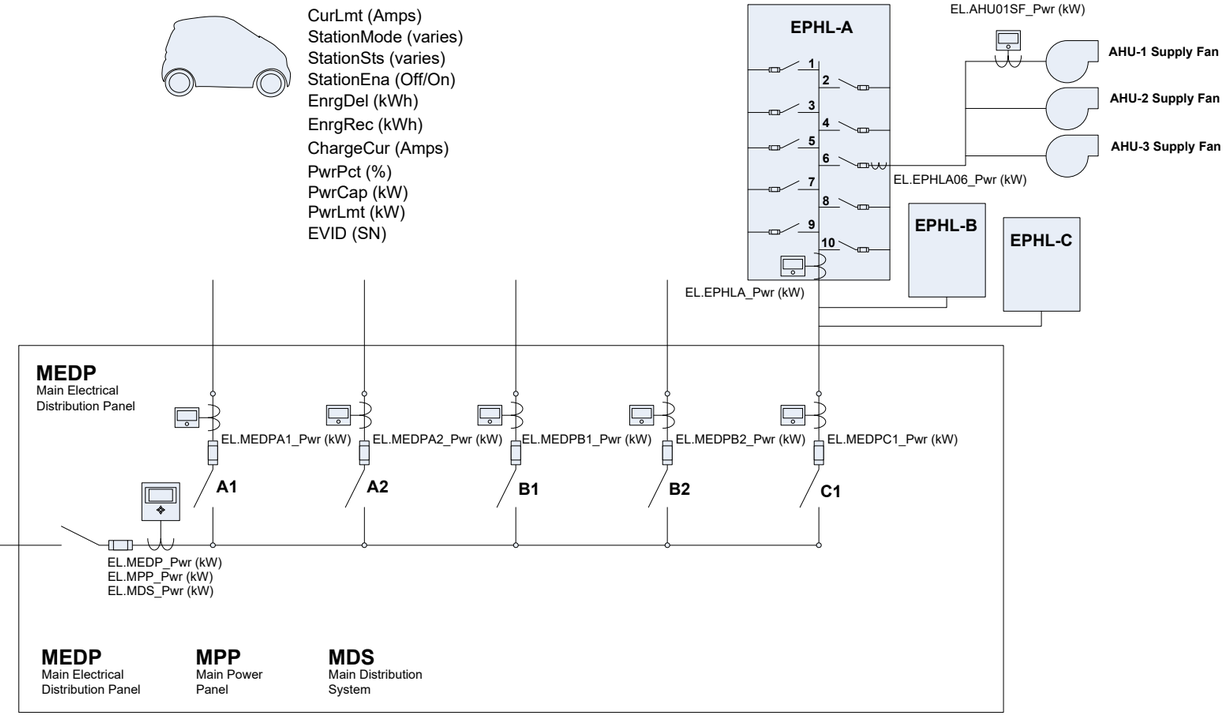
Utility Pulse Points

EL.Util_PlsTot (pulses)
EL.Main_Enrg (kWh)



Common EV Charging Station Points

CurLmt (Amps)
StationMode (varies)
StationSts (varies)
StationEna (Off/On)
EnrgDel (kWh)
EnrgRec (kWh)
ChargeCur (Amps)
PwrPct (%)
PwrCap (kW)
PwrLmt (kW)
EVID (SN)



See MTR page for meter naming anatomy.

Diagrams depict generic equipment containing control points and objects, some of which may or may not be present or required for a particular piece of equipment or in a particular application.

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

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ELEC

Devices

Example Device Names

MT0046_ChwSys_SC4
MT0046_ChwSys_UC60012
MT0046_CHL01_UC800
MT0046_GP04_VFD
UT0174_ChwSys_SC5
UT0174_ChwSys_UC60021
UT0174_CHL06A_UC800
UT0174_CT1C1F_VFD
ND0205_ChwSys_SC1
ND0205_ChwSys_UC6001
ND0205_CHL01_UC800
ND0205_CWP04_VFD
SD0240_A01_CDCtlr
SD0240_A01_HDCtlr
SD0240_A01_SF1AVFD
SD0240_A01_SF1BVFD
WY0119_A04_GCM05
WY0119_A04_SFVFD
WY0119_A04_OAFMS
WY0119_RmS110_JACE7AX
WY0119_LGT_Zn01

Device

Generic Device Points

DevSts (OK/Fault)
DevAlm (Norm/Alm)
DevMfg (Manufacturer)
DevModel (Model)
DevHWVer (Version)
DevSWVer (Version)
DevFWVer (Version)
DevSerial (sn)

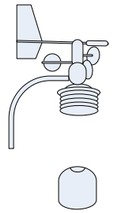
DevBootCount (boots)
ErrorCode (varies)
Uptime (sec, min, hours)
PcbTmp (°F)
DevFault (Off/On)
PrevFaultCode (varies)
ActiveFaultCode (varies)
FaultCount (faults)
RstCmd (Off/On)
RebootCmd (Off/On)
UTC (UTC)

Device Communications Points

DevComSts (OK/Fault)
DevLink (varies)
DevMACAdd (MAC Address)
DevID (Device ID)
DevIPAdd (IP Address)
DevNetID (Network ID)
DevAdd (Device Address)

Wireless Device Points

Signal (%)
NodesTot (nodes)
NodesOnline (nodes)
RadioGrp (group)
RadioAdd (address)
RadioSts (Off/On)
NodeSts (Off/On)
BattSts (Off/On)
BattAlm (Off/On)
BattRem (%)



Weather Points

Wthr_OATmp (°F)
Wthr_OATmpMax (°F)
Wthr_OATmpMin (°F)
Wthr_OATmpAvg (°F)

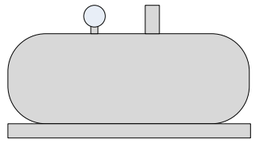
Wthr_OARelHum (%)
Wthr_OADew (°F)
Wthr_OAPrs (inHg)
Wthr_OAEnth (btu-lb)

Wthr_WindChill (°F)
Wthr_HtIndex (°F)

Wthr_PrecipGauge (in)
Wthr_PrecipSts (Off/On)

Wthr_WindSpd (mph, fps)
Wthr_WindDir (deg)
Wthr_WindSpdMax (mph, fps)

Wthr_IrradGlbHor (W/m^2)
Wthr_IrradDirNorm (W/m^2)



Compressed Air – Control Air

CMP01_CtlAirCmpSts (Off/On)
CMP01_CtlAirCmpAlm (Normal/Alarm)
CMP01_CtlAirCmpFault (Normal/Fault)
CMP01_CtlAirStPrs (PSI)
CMP01_CtlAirStPrsSp (PSI)
CMP01_CtlAirStPrsLL (PSI)
CMP01_CtlAirStPrsAlmL (Normal/Alarm)

Compressed Air – Lab Air

CMP02_LabAirCmpSts (Off/On)
CMP02_LabAirCmpAlm (Normal/Alarm)
CMP02_LabAirCmpFault (Normal/Fault)
CMP02_LabAirStPrs (PSI)
CMP02_LabAirStPrsSp (PSI)
CMP02_LabAirStPrsLL (PSI)
CMP02_LabAirStPrsAlmL (Normal/Alarm)

Water Treatment Systems

WTS_pH
WTS_Conductivity
WTS_MConductivity
WTS_ORP
WTS_STmp
WTS_MTemp
WTS_WtrMtrTotVal
WTS_MCycles
WTS_CncntCycles
WTS_MtrFlwRat (per MIN)
WTS_ConductSp
WTS_Calibration

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STATUS: Version 2.5
DRAWN BY: Mike Grush / Craig Payne
REV. DATE: **1/23/19**

SHEET TITLE & NUMBER:
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MISC

Network Tag Requirements

Overview

Network level tagging includes devices, networks and communication connections between devices.

Devices

The device tag models a physical device. Devices include servers, area controllers, field controllers, etc.

Networks

The network tag models a network. Networks are used to setup logical connections between devices.

Connections

Device-to-device communication is modeled using a connection with the following tags:

- connection: marker tag
- protocol: string enumeration communications protocol
- device1Ref: first device end point
- device2Ref: second device end point
- networkRef: network used for the communication

As a general principle, if a device sits "higher" in the network architecture, then it should be tagged with device1Ref. For example, given a connection between a server and area controller, then the server should be device1Ref and the area controller should be device2Ref. In peer-to-peer networking, this distinction should not matter.

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STATUS: Version 2.5

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REV. DATE: **1/23/19**

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GSA Smart Building Implementation Guide

Version Control

Revision	Date	Description
1.2.1	4/29/22	Updates to document links and adding new focus areas
1.2.0	5/14/18	Corrections and update to Point Naming Standard
1.0.0	6/10/15	GSA Smart Building Implementation Guide

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1 Introduction

The GSA Smart Buildings Implementation Guide is intended to assist GSA project managers, architectural and engineering firms and general contractors on all PBS BMC projects to understand and implement the attributes of "smart buildings". Requirements shall comply with the GSA Smart Buildings Directive, and follow requirements outlined in the Technology Policy, Building Technologies Technical Reference Guide, and other applicable PBS standards.

1.1 Audience and Use

As part of any project, the *GSA Smart Buildings Program Guide* should be used to determine which, if any, Operational Technology will be implemented in the project. These decisions are based on budget, goals and limitations that are unique to each facility and/or project. *The GSA Smart Buildings Implementation Guide* is designed to provide conceptual guidance language for implementing BMC, OT, and/or IoT systems in PBS managed Federal Facilities.

The Implementation Guide is broken into sections that focus on specific building systems and features of the systems. Every section has an introduction to the building system followed by "Requirements", "Recommendations" and "Considerations" for each system. The requirements are the minimum system configuration and features that should be applied to every system, should it be included in the project. Recommendations are the features and configurations that are not necessary for a successful smart building system but can add value, increase efficiencies or somehow otherwise improve the system. Considerations are additional features, system interactions or design aspects that should be considered when implementing the system.

2 Smart Building Attributes

2.1 Open/ Converged/ Normalized – All Systems

As defined in The GSA Smart Buildings Program Guide, all building systems must meet the Smart Buildings Pillars' requirements of Open, Converged and Normalized.

O/C/N Requirements:

- All building systems shall utilize **open** protocols where available.
- All building systems shall reside on a **converged** network infrastructure*, coordinated and managed by GSA IT Services as defined in the *Building Technology Technical Reference Guide*.
- To facilitate **normalized** data, all building systems shall use GSA point naming standards found in the GSA Data Normalization for Building Monitoring and Control Systems. GSA employees, contractors, or representatives shall work with regional SB contacts, or their designees, to initiate projects and confirm official sign off, including any waivers or exemptions, to be obtained through key project milestones.

- All building systems shall require unique usernames and passwords for every user. Generic usernames (i.e. “admin” or “engineer”) are not permitted.
- All building systems shall allow for system audit, allowing for system logging of user access and control. This log shall show history of users entering and leaving the system as well as any point status changes made by the user. Log shall include username and timestamp of each action.

* Systems that require specific network configurations for code, security or life-safety concerns are excluded from this converged network

2.2 Master System Integrator

Several aspects of Smart Buildings can be effectively realized by strategically executing with a Master System Integrator leading the integration side of the project. Individual building systems were historically installed by the local vendors and operated as stand-alone systems. Open, converged and normalized buildings now allow these systems to communicate with one another and to control the building as a single intelligent entity. Introducing an MSI allows a single contractor to take responsibility for integrating these individual systems and ensuring that the building is controlled holistically. MSIs also open the door for more potential smart building aspects like unified user interfaces or integrated sequences of operations.

The role of the MSI varies greatly by the technical capability of the MSI and the goals and requirements of the project. At a minimum, the MSI’s role is to coordinate the network convergence and ensure the individual systems are connected and coordinated properly. In more complex projects, the MSI may take on the role of system integrator to engineer integrated sequences of operations and user interfaces. It is important to define these expectations when introducing the MSI role.

Requirements:

- MSI shall be responsible for managing converged network design and coordinating with GSA IT Building and Energy project managers.
- MSI shall be responsible for ensuring communication between disparate systems.
- MSI shall support commissioning agents and act as the “smart buildings commissioning agent”, ensuring system integration and open protocol usage.
- MSI shall implement an integrated sequence of operations (when applicable).
- MSI shall be responsible for Unified User Interface (when applicable).
- MSI should enforce the point naming standards set in the GSA Data Normalization for Building Monitoring and Control Systems document.

Recommendations:

- MSI should be responsible for coordination of sub-system installation contractors, including system commissioning and network integration.
- Sub-system sequence of operations should be coordinated with the MSI to ensure the holistic operation of the building is considered.

Considerations:

- The role of the MSI depends on cooperation from sub-system installation contractors. Contracting the MSI as an “on-par” contractor with the electrical or mechanical contractor, or consider adding language to sub-contractors’ requirements to ensure this cooperation.
- If a region or site has a contract with a specific O&M, evaluate if using them as the MSI for your project is the best option.
- Are there existing regional arrangements for local MSIs?
- Is there a current service agreement that could be utilized for MSI services?

2.2.1 Unified User Interface

A UUI is a singular graphical user interface that can be used to monitor and control various building systems. When implementing a UUI it is important to ensure that the interface includes graphics for monitoring and controlling the systems for daily operations and maintenance. This user interface should be the centralized tool for O&M contractors and building managers to operate a building.

UUI’s should be considered when multiple systems will be maintained by one contractor. In addition to reducing the learning curve for operations on multiple systems and offering a central location for building control, unified user interfaces offer an opportunity to reduce the cost of the development of graphics on each individual system interface. When implementing a UUI it is important to limit graphics requirements from the scope of any other system. A UUI is often implemented by a master system integrator and should be considered if an MSI is appropriate for the project

Requirements:

- UUI shall include access control levels to allow for viewing, controlling, and administration.
- When implementing a UUI, sub-system installers **shall not** develop individual graphics for sub-system console control.
- UUI shall provide methods for controlling, reporting and overriding sub-systems.
- UUI shall require unique usernames and passwords for every user. Generic usernames (i.e. “admin” or “engineer”) are not permitted.
- UUI shall allow for system audit, allowing for system logging of user access and control. This log shall show history of users entering and leaving system as well as any point status changes made by user. Log shall include username and timestamp of each action.
- UUI shall support and be integrated with the various systems which support the GSA Smart Building Program. These systems include, but are not limited to: GSAlink, NCMMS, AMS, Smart Sensor Technology, Smart Work Solutions, BAS open protocols, and other direct or API supported integrations.

- UUI should be “point and click” navigation allowing for intuitive navigation and control.

Recommendations:

- UUI should include help screens that help users to navigate systems and control subsystems.
- O&M contract structure can often add complexities to the specifics of how building operations and maintenance are performed. Early planning is needed to ensure the O&M contract includes maintaining the building using all of the tools deployed/provided by GSA.
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Considerations:

- Typically, a UUI will not completely replace configuration software or engineering tools. This software will likely be needed for system programming and hardware maintenance. The intent of the UUI is to provide a tool for much of the “day to day” building control.

2.2.2 Integrated Sequence of Operations

Successful designs hinge on the smooth, integrated interaction between the systems installed in a building and the functions they are to perform. Integrated Sequence of Operations (ISOO) allows for more unified controls strategies and can not only save energy but improve the tenant experience. By allowing building systems to act in unison and react to changing conditions identified by each system, a smarter, more efficient solution can be realized. Integrated sequences should be considered in all designs and their successful implementation may benefit from an MSI to ensure proper coordination between multiple systems.

Requirements:

- Integrated sequences of operation shall be verified as part of the commissioning process.
- ISOOs must be programmed and tested to verify that a loss of communication between systems does not cause unexpected results from either system.
- When utilizing ISOOs, systems shall be configured to run in a default mode in cases of communication loss
- ISSO deliverables must be provided and should include but not be limited to equipment drawings showing their network connection, input/output tables, etc.

Recommendations:

- ISOOs should be programmed by the Master System Integrator with the input of the system owner, tenant and building system installers.
- ISOOs should be designed in a manner that allows them to be easily manipulated by the system owner, allowing for “stand alone” or “integrated” operating modes.

- ISOOs should include occupancy based sequences, emergency scenario sequences, and other sequences developed by system owners.
- ISOOs should be designed to utilize the standard BACnet priority array.

Considerations:

- ISOOs are a chance to integrate multiple systems and allow the building systems to act as a complete, single system. Some of these new sequences will change the way tenants and building operators interact with the building. Careful documentation and education needs to be included in system turnover. System operators need to understand that the triggers for actions in one system may come from another and need to understand how to disconnect the systems to test and verify modifications or repairs.

2.2.3 Machine Learning (ML) & Artificial Intelligence (AI)

Machine learning and artificial intelligence is an emerging technology in the smart building space. While this new tech can provide great value, it is only as good as the quality of data available to it.

Requirements:

- ML/AI hardware and/or software solutions shall improve the efficiency of the GSAlink program which is already well established and providing significant savings.
- Expansion of available data points would be required to maximize the ML/AI functionality.

Recommendations:

- It is best practice for point names to be standardized prior to deploying a ML/AI solution. See GSA Data Normalization for Building Monitoring and Control Systems document.
- Haystack auto-tagging feature should be used when possible.
- Obtaining ID points list for mechanical equipment is highly encouraged to ensure the proper data is currently available for analytics.
- If near real-time energy rate data is available, there exists the possibility to use demand/ response rates to configure setpoint setbacks based on cost-benefit and expected occupancy needs.

Considerations:

- Take into account how many devices need to be included and how much manual clicking is required to roll out the ML/AI system.
- Rolling out an ML/AI offering could present O&M challenges with where responsibility and maintenance of BAS and mechanical equipment lies.
- Many providers offer individual and often proprietary analytic hardware/software solutions so it is important to understand all options and challenges in the evaluation and maintenance of these specialized or one off solutions.

2.3 HVAC/Building Automation Systems

Building Automation Systems (BAS) are often thought of as the central system for smart buildings. These systems are designed to control the Heating, Ventilation and Air Conditioning (HVAC) equipment from the chiller plant to the thermostat on the wall. HVAC is a major energy consumer in most commercial facilities and therefore offers a big opportunity for energy savings.

2.3.1 BAS Controllers

Building Automation systems generally rely on network controllers that communicate to a server and control edge devices. These controllers are general to the system engines, making much of the control decisions.

Requirements:

- Building automation systems shall be 100% direct digital control (DDC) systems, utilizing a server, controller, edge device hierarchy.
- BAS Controllers shall be programmed to maintain schedules, set point and normal operation control in cases of network connection loss. Network connection loss scenarios shall be tested and verified as part of the commissioning process for any BAS.

Recommendations:

- BAS controllers should be capable of storing data and uploading data in case the server connection is lost.
- BAS controllers should host graphics or terminal interfaces to allow for direct connection and control from a workstation for emergency control. This could be accomplished over IP, serial or USB connections.
- BAS controllers should be capable of network-wide management for patching and updating. This capability gives the system owners and vendors an easy method for remediating any security vulnerabilities discovered without requiring physical presence at every controller.
- BAS Controllers should have embedded tools or means to direct connect that allow for troubleshooting or programming in cases of communication loss. Means to “direct connect” to building system controls could include IP, Serial cable or USB connectivity options.

Considerations:

- As technology has advanced, more and more of the computing and logic of the building system has moved from the server to the controller. These controllers have less reliance on network connectivity for executing the control sequences, and utilize the server as a historian and management connection. This system configuration should be considered for new building automation system installations.

2.3.2 BAS Software

Building systems traditionally rely on network management software, application configuration software, system monitoring software and other system software tools for operating and maintaining a building system.

Requirements:

- BAS software must be installed in the GSA environment, including server software, client software and any additional tools needed for management and control of the system. This includes system update tools, network management tools and any software that is used to make changes to the controllers.
- BAS software shall be compatible with the most current version of required standard software and all OS and database software updates (i.e. Microsoft Server, Linux, SQL, etc.)
- BAS software must be capable of trending and exporting data.
- BAS software shall have multiple user level controls, including administrator, programmer and users. These user levels shall be capable of an audit to determine operator's use.
- BAS software credentials shall be unique for every user.
- BAS software shall be installed with a minimum number of licenses needed for system use. In cases of virtual environment installation, the number of licenses required should consider the cases that client use could come from an off-site user.
- BAS client software shall have point and click graphics, configured for system operators, unless a Unified User Interface is included in the project scope.
- BAS software licenses shall be software licenses and not rely on a physical license key or dongle.
- BAS must be licensed to GSA. End user license agreements (EULA) must be approved by GSA IT prior to installation onto GSA equipment.
- BAS software should support open protocols, open support structure and open integration for third party software.
- When configuring BAS software the virtual environment of the BSN should be understood and the system should be configured to best meet the requirements of the BSN. This includes but is not limited to the desire of the GSA to build a single server to run all applications needed for building control including server and client software.

Recommendations:

- BAS software should be capable of residing on a virtual server and on a separate VLAN from the devices. This software includes the server, client, and management tools.
- BAS client software should be a thin-client, allowing for an unlimited number of users to access graphics and system management tools via a web browser on a connected network.

2.3.3 BAS Communication Protocols

Requirements:

- BAS Systems shall utilize BACnet or LonMark communication protocols:
  - Because Layer 2 network traffic cannot be effectively managed currently on the GSA network between subnets, BACnet/Ethernet is expressly prohibited from being implemented on the GSA WAN. BACnet/Ethernet can be used at a given field site, provided all devices are on the same subnet.
  - All device instance numbers associated with a BACnet network must be unique. This can be challenging on the GSA network because a vendor installing a BACnet system is likely not aware of the device instances of other BACnet systems that have devices, which may be discoverable over the GSA WAN.
    To prevent BACnet collisions, systems with BACnet devices communicating on the network must comply with the GSA's UDP port range requirements. 24 unique UDP ports have been assigned to each region. Vendors must coordinate with the region on any additional details regarding UDP port designations within these ranges as their individual management requirements may differ (building based, vendor based, etc.).
- Multicasting is not allowed on the GSA WAN, and should not be applied when configuring a BACnet system on the GSA network.

2.3.4 Point Naming

GSA has created a point naming convention for standardization of point naming for all new construction, ESPC and R&A projects. The intent of this standard is to establish and require a consistent means of naming building automation points across the GSA portfolio. The term 'Point' is a generic description for the class of object represented by analog and binary inputs, outputs, and values either physical or virtual. All systems shall use this naming convention and process. Any deviations from this process require prior approval of the GSA and/or their representative. Point naming shall be consistent through system drawings, records, files and documents. Please reference *the GSA Data Normalization for Building Monitoring and Control Systems* for more information.

2.3.5 Minimum Point Lists

Designs for Building Control System and HVAC controllers are unique to every project. Designs can be influenced by budget, climate, system type, size of system, desired sequence of operations, existing infrastructure, and a multitude of other factors. As such, the equipment, level of control, sensors and sophistication of systems will vary greatly. Good system design and proper control sequence documentation will always clearly dictate the points in a BAS required to execute the control sequence.

The purpose of the "GSA Minimum Point List" is not to require additional equipment or sensors, but rather indicate the points that should be considered as value added monitoring points to be included in the Building Control System design and made accessible to third party systems. Please reference *GSA Data Normalization for Building Monitoring and Control Systems* for more information.

2.3.6 Variable Refrigerant Flow (VRF) Systems

VRF systems have been used internationally for over 30 years but only in the states since the early 2000s. Traditionally these systems are known for their energy efficiency and ability to offer a relatively quick return on investment. With that said, careful evaluation is necessary to determine if a VRF system is appropriate for your building. In general, system design usually takes into account: Building Characteristics, Cooling and Heating Load Requirements, Peak Occurrence, Simultaneous Heating and Cooling Requirements, Fresh Air Needs, Accessibility Requirements, Minimum and Maximum Outdoor Air Temperatures, Sustainability Goals and Acoustic Characteristics.

Requirements:

- VRF systems shall be 100% direct digital control (DDC) systems, utilizing a server, controller, edge device hierarchy.
- Controllers shall be programmed to maintain schedules, set point and normal operation control in cases of network connection loss. Network connection loss scenarios shall be tested and verified as part of the commissioning process for any VRF system.
- The system must be capable of integrating to 3rd party systems/software through open communication protocols such as BACnet.
- Should the VRF system require any software for full functionality, it must be installed in the GSA environment, including server software, client software and any additional tools needed for management and control of the system. This includes system update tools, network management tools and any software that is used to make changes to the controllers.
- The VRF system should be integrated into the existing BAS.

Recommendations:

- Make sure the VRF manufacturer meets your efficiency and thermal comfort goals.
- Select a system and vendor who is capable of advising on the water source system design side of the system.
- If using a system offering twinning, make sure the unit will still function if one compressor goes down. If the whole unit goes down when one compressor fails, then there is little benefit to twinning.
- Ensure the system can account for less than 25% load conditions.
- Select a 3 pipe system when possible as it offers higher efficiency.

Considerations:

- VRF systems usually contain highly proprietary technology so ensure the vendor you're working with is capable of and has the knowledge and means to meet the project requirements.
- Is the system capable of measuring heat/cool delivery like a hydronic system?
- Does the system operate in true variable fashion or does it function more in steps?
- How frequently do filters need to be changed and how easily are they to access?
- Are there any specialized controllers or controller cards needed for true variable flow operation? If there are any points used for system control within these cards they will need to be made available to the BAS.

2.4 Digital Lighting Control

Digital lighting offers a means of controlling one of the largest cost factors in commercial buildings. Digital lighting control can accomplish load reduction, load shedding, demand response, daylight harvesting and data collection. Digital lighting can be as simple as scheduled lighting scenes or occupancy sensors or can be advanced control integrated into 3rd party systems for complex scenario control. Digital lighting control should be considered in any large building as it offers some of the best energy savings of any building system.

Requirements:

- Lighting system shall allow for time and date based scheduling for lighting control.
- Lighting systems shall allow for occupancy sensors to trigger occupancy timed lighting sequences.
- Lighting systems shall control to the fixture level.
- Lighting system shall provide a graphical based control platform and include historic usage.
- Lighting systems should use industry standard open protocols to communicate between ballasts and panels. These open protocols include BACnet, Lon, or DALI.
- Lighting systems should be capable of override by software or hardware.
- Lighting system servers should be capable of running in virtual environments, specifically allowing communication between devices and servers to pass through wide area networks.

Recommendations:

- Lighting systems should provide energy usage monitoring and reporting.
- Lighting system should be capable of daylight harvesting or utilizing natural light and artificial light together to provide the minimum lighting scenario, as required.
- Lighting systems should allow for integration into plug load circuit control, offering an occupancy or schedule based circuit control.

- Lighting systems installed in conference rooms should be capable of storing and recalling multiple lighting scenes, including scenes that override occupancy lighting for projection or video display. These scenes should be controlled by hardware or software commands.
- Lighting systems should be capable of load shedding and demand response. This can be either automated or manually triggered sequences that reduce the lighting energy load.
- Lighting systems should be capable of notifications of ballast failures, maintenance requirements or other system alarms.

Considerations:

- Shade Control should be considered when utilizing digital lighting control, particularly when implementing daylight harvesting technologies.
- Occupancy sensing can be used by HVAC systems to control set points in areas for unoccupied setback. When lighting control systems are utilized with occupancy control, Integrated Sequences of Operations should be considered.
- Lighting control systems can be powerful tools for tenant pressure, when utilizing hoteling, consider integrating the hoteling schedule into the lighting control. Lighting scenarios can operate on the hoteling software schedule, discouraging “squatting” or pop in area use.

2.4.1 Shade Control

Shade control, often implemented as a function of the digital lighting control, is a system that allows for automated adjustments in natural light into spaces. The shade control system can be programmed to operate on a schedule or adjust dynamically to the lighting conditions present. Introduction of natural light offers opportunities to lower the demand on artificial lighting and reduce energy consumption. Shade control should be strongly considered if using a digital lighting control system.

Requirements:

- Shade control shall be controlled by schedule, date or calendar.
- Shade control shall allow for overrides by software or hardware.

Recommendations:

- Shade Control should consider area use case when programming shades and shade schedule. Office space should try to allow for daylight while limiting screen glare. Conference space should allow for shades to utilize natural light or to dim light for presentations.
- Shade control should utilize daylight sensors to maximize natural light, when possible.
- When utilizing daylight sensors, shade control should require a minimum outdoor light threshold before lowering shades.

Considerations:

- Shades can be used as security means, minimizing visibility into areas after hours. This could be coordinated with the building security team.
- While natural light can minimize the lighting power load, the addition of solar heat should be considered in hot months, particularly for southern exposure windows.

2.5 Metering and Submetering

One of the most important steps in reducing energy usage is understanding utility usage in a facility. Metering systems allow for precise monitoring of usage, allowing system owners to track, trend, and understand their usage.

2.5.1 Utility Metering

Utility metering tracks the large utility costs incurred in building operation.

Requirements:

- Main electric, water, steam, gas and oil use shall be metered, where applicable.
- Metering device(s) shall store metering data for a minimum of 90 days.
- Metering systems should store data indefinitely for archives and allow for annual comparison.
- Metering system data should be accessible by third party applications for analysis, alarming, and publishing.
- Main electric, water, steam, gas and oil use shall be metered, where applicable per the P100.
- Utility meter data shall be integrated into both the enterprise software solution and the BAS, when possible.
- Metering graphics shall be created in the building BAS for ease of monitoring and reporting when integrated.
- Historical trending intervals for meter data shall be coordinated with building sequences and demand response programs to be used for verification and tracking of energy savings.
- Independent metering systems or software shall not be used unless otherwise directed or required for a project. The intent is for all metering systems to be tied to the national system.

Recommendations:

- Metering systems should store data for archives and annual comparison.
- Metering system data should be accessible by third party applications for analysis, alarming, and publishing.
- Compatibility of equipment - Advanced electric metering projects shall use GSA remediated meters or integration gateways to ensure full compatibility.

- GSA utilizes an enterprise energy management system to manage utility data across the portfolio. While an open protocol will be used in connecting the meters and software, advanced metering functions (such as waveform capture, remote reprogramming of instrumentation wiring and ratios, etc.) requires matching the software and meter brands for full compatibility.
- Meters shall use Modbus or other open communication protocol if integration is required.

Considerations:

- Turndown ratios must be considered when specifying and installing meters based on the expected minimum and maximum flows of the service being measured.

2.5.2 Sub-metering

Beyond main utilities, individual circuits can be segmented with sub-metering to paint a clearer picture of energy usage. Sub-metering should be designed with the end user in mind. Sub-metering provides a wealth of information but if that information is not monitored or utilized, sub-metering can be a costly expense with little return.

Requirements:

- Sub-Metering data shall be integrated into the existing BAS, lighting system or other user interface accessible by the property management and operations and maintenance teams.

Recommendations:

- Meters should be specified that do not require proprietary current transformers.
- Communication interfaces should be utilized instead of pulse outputs, whenever possible.
- Meters should be able to temporarily record meter data in the event communication to its historian database is disrupted. Meters should also be capable of syncing data with the server to avoid gaps in data quality.
- Sub metering should include these systems when applicable:
  - Lighting
  - HVAC Equipment
  - Tenant Space (if multi-tenants or large overtime utility use expected)
  - Major Energy consuming equipment (IT Closets, Tenant equipment, etc.)

Considerations:

- Consider evaluating the use of multi-circuit meters in lieu of multiple individual meters when evaluating sub metering of multiple loads in a confined area.
- Consider using voltage output current transformers to avoid needing shorting blocks.

- Sub-metering should be strongly considered for Measurement and Verification (M&V) applications related to energy savings performance contracts and other energy based projects. This includes central plants (kW/ton), lighting/plug loads, cooling tower make-up/blowdown, major HVAC, etc.
- Ensure sufficient straight runs are available for applicable metering applications and meters are appropriately sized to the process being measured.
- Sub-metering is useful for measurement and verification (M&V) in energy savings performance contracts and other energy based projects. In cases where the sub-metering data is to be used for M&V careful coordination with the system installer should be made.

2.6 Energy Generation, Storage & Management

Innovations in the power distribution grid allow buildings and the systems within to dynamically react to valuable utility data and load shed commands. By lowering the energy use when the demand, and therefore costs are high, alleviates the demand on the grid and the cost of the energy. Some of the systems include but are not limited to Automated Demand Response (ADR), Photovoltaic panels (PV), ground heating/cooling systems (geothermal), Battery Energy Storage Systems (BESS) and Electric Vehicle Supply Equipment (EVSE).

2.6.1 Automated Demand Response (ADR)

ADR is fully automated signaling from an electricity supplier that allows connectivity to the customer's control system. This connectivity can help your facility reach sustainable goals through credits towards LEED, NetZero and more.

Requirements:

- Automated demand response (ADR) sequences shall be developed with the input from Facilities Management & Services Programs Division Energy Branch, system owners and tenants.
- Demand response sequences shall not interfere with critical operation, IT equipment or any life safety requirements of a given space.
- Automated demand response shall be configurable by system owners to override in cases that permit peak loads.
- Automated demand response shall be commissioned to ensure that demand response sequences produce the expected load reduction.
- Automated demand response sequences shall be coordinated with local utility companies to ensure proper demand reduction, and to ensure the GSA receives any incentives available.

Recommendations:

- Automated demand response sequences should be communicated with tenant agencies to clearly communicate any manner that tenant space will be affected by load shedding.
- Automated demand response should utilize lighting, HVAC and other power centers to allow for peak demand reduction.
- Automated demand response should be programmed to allow for multiple level demand response. This tiered programming will allow for low to no impact demand reduction, medium impact demand reduction and emergency level load reduction (in cases that utilities fear brown-outs).

Considerations:

- ☐ Automated demand response and smart grid technology is a newly blossoming field. Careful communication should be made with GSA Facilities Management & Services Programs Division Energy Branch to ensure that any incentives for energy reduction from local utilities are accounted for and that methods for triggering demand reduction are understood from both utility provider and system owner.

2.6.2 Native Power

Enterprise workspace is increasingly converged to IP network infrastructure. Power over Ethernet (PoE) is one of the most widely deployed technologies to provide power to networked devices. System contractors and designers should consider utilizing POE if controls and edge devices can be purchased with PoE configurations, where the application presents itself and is life cycle cost effective. These PoE devices may be controllers, edge devices or sensors.

Requirements:

- When utilizing Native Power or Power over Ethernet devices, contractors shall coordinate with GSA IT to ensure properly sized and configured PoE switches and wiring are included in the project budget.

Recommendations:

- Determine if a building/site has existing switches that support PoE. If none are available, evaluate if switch replacement is an option or if non-PoE devices should be procured.

Considerations:

- Will a PoE injector device meet project requirements if only a non-PoE switch is available?
- Maximum cable length for PoE devices is 100 meters (328 feet).

2.6.3 Battery Energy Storage System (BESS)

BESS's are devices that enable energy from renewables like solar and wind, to be stored and then released when the customers need power most.

Requirements:

- The BESS should be installed outdoors. Lithium batteries heat up making them a potential fire hazard and electrolyte batteries don't burn but create hydrogen.
- Install only UL rated systems. This includes sub-systems and components as well.
- Ensure the system accounts for battery leak detection and containment.

Recommendations:

- Engage with fire protection experts in the early planning and design phases.
- Initiate communication with the utility company to iron out details about feeding the grid, rate structures/schedules and their final signoff on the system when you flip the switch on.
- Identify up front if the design intent is for resiliency or for equipment payback as is seen in ESPC/UESC projects.

Considerations:

- ☐ A BESS is typically very heavy so placing one anywhere other than at ground level will require significant structural reinforcements on an existing structure.
- ☐ For an indoor/outdoor open air application like a parking garage, make sure to consult with executives and judges to ensure they're okay with BESS placement.
    - Judge's typically don't want these next to or near their parking space.

2.6.4 Electric Vehicle Supply Equipment (EVSE)

As the government and other industries move towards green vehicle technologies it is important that there is infrastructure in place to support these new vehicles.

Requirements:

- You must apply for a Charging Equipment Installation permit and be granted approval prior to breaking ground on the installation of electric vehicle charging equipment.
- Coordinate with your local utility company so they can account for increased loads placed on the grid due to charging and also for assisting with any rebates that might be available.
- EVSE should use open communication protocols.
- Hardwired connection shall be used when connecting to the GSA network.
    - This will require scanning and remediation of any hardware/software that touches the GSA network.

Recommendations:

- Check with the state for charging station guidelines as they likely differ from state to state.

- Select a system that has the ability to be connected to solar panels, battery energy storage systems or other renewable technologies.
- Software As A Service (SaaS) would probably be needed when implementing this system.
    - This will also require scanning and remediation of the software that is used.

Considerations:

- Will the GSA allow individuals to use government EVCS? If so, should the GSA look at charging fees to offset the initial investment in equipment?
- Identify if you will be using Level 1, 2 or 3 (DC quick charging) charging.
- Does the system have a Software as a Service (SaaS) or cloud component to it?

For specific details on connecting systems to the GSA network or connecting to the BAS, please visit the GSA Smart Buildings website and future updates to this guide.

2.6.5 Photovoltaic Panels (PV)

PV panels capture light energy from the sun and use it to offset or reduce the use of energy traditionally provided by the local utility company. These panels can be used to power a variety of items from small signs to large commercial buildings.

Requirements:

- The International Building Code requires rooftop solar systems to have the same fire classification as the roof assembly.
- Minimum rooftop design loads and wind load engineering calculations must be provided.

Recommendations:

- Minimize the length of wire runs.
- Consider your inverter placement carefully.
- Use larger gauge wire. Larger wire equals less resistance.
- Design your system with higher voltage to overcome resistance.
- Consult with your local utility company to determine if they allow grid-tied systems or not.

Considerations:

- When PV systems are being utilized it can be beneficial to integrate them to Battery Energy Storage Systems and/or Electric Vehicle Supply Equipment.
- Make sure there are no historical or architectural limitations that would prevent PV panels being used.
- Verify if there are any minimum import requirements set by the utility company.
- Does the system have a Software as a Service (SaaS) or cloud component to it?

For specific details on connecting systems to the GSA network or connecting to the BAS, please visit the GSA Smart Buildings website and future updates to this guide.

2.6.6 Advanced Metering System (AMS)

An AMS is a computer-aided tool used by power system operators to monitor, control and carry out optimal energy management. The purpose of an AMS is to determine power generation or power demands that minimize a certain objective such as generation cost, power loss or environmental effect.

Requirements:

- Advanced metering solutions shall not use devices or software that utilize proprietary communication protocols.
- The AMS must scale across a large portfolio.
- An Advanced Metering System should have customization capabilities.
- Integration of 3rd party information should be available. This assists in predicting trends, monitoring performance and managing expenditures.

Recommendations:

- Select an AMS that is easy to use.
- Choose a system that has built in utility invoice auditing.

Considerations:

- ☐ Look at systems that will allow user specific accounts. A national energy manager does not need the same access or view as an individual building manager.

2.7 Content Management Solution

Central Office commissioned a national digital signage project which created a standardized technical architecture, content development, and content management platform that can be deployed and operated in a secure, consistent, and cost effective manner. If a project intends to utilize digital signage, project teams should contact the National Digital Signage team at (digitalsignage@gsa.gov).

Requirements:

- Building must be on the GSA ENT network.
- The site is responsible for purchasing specified equipment including kiosk computer(s), display(s) and any mounting options.
- Electric and network cabling is needed at the location of the kiosk(s).

Recommendations:

- Flexible mounting options allow for matching existing architectural aesthetics.
- Location of kiosk should be in high traffic areas for best experience

Considerations:

- Local content can only be created/edited by authorized site personnel with an ENT account.
- Installation location may be determined by historic and/or architectural design teams.

2.8 Hoteling & Space Utilization

Effective management of tenants and space utilization presents another unique way to save resources across a portfolio. These systems, in unison with mechanical and electrical building systems, cannot only provide efficiencies but can improve tenant satisfaction.

Hoteling systems allow for automated control of building populations and space sharing. Implementing a system that can dynamically control population, and distribution of tenants can allow for a greater balance of resources in a smaller footprint. Hoteling systems should be considered when building populations are flexible and operations allow for a mobile tenant.

Requirements:

- Hoteling systems shall be coordinated with tenant agencies, building managers and operations & maintenance organizations to ensure the understanding of multi-use tenant space and how it affects the building operation plan (BOP).
- System should allow mobile accessibility and utilize interactive floor plans.

Recommendations:

- Select a system that integrates well with existing systems the GSA is already using.
- Have a booking process in place.

Considerations:

- When utilizing a hoteling system, the information available on occupancy, space utilization and population density should be used to best manage the other building systems. This information may be connected directly to schedules of HVAC and lighting controls to ensure the systems are only occupied when spaces are reserved, or may be useful indicators to system operators of expected building population for a given day.
- If tenant space is flexible and reservations are required, building managers and operators should consider using the reservation system to “dynamically stack” the building. By consolidating the population into a select area, areas, wings or entire floors could be put into an “unoccupied” mode, reducing the energy use. This dynamic stacking requires flexible tenants and tenant spaces but offers great energy savings when fully deployed.

2.9 Smart Sensors

Public buildings or offices that share spaces can have large fluctuations in the building population, air quality, building & plug load, etc. and these variances often go unnoticed by building systems. Deploying applicable sensor technology can help maximize building utilization, manage effective use of shared workspaces, improve indoor environmental quality and extend the operational life of mechanical systems.

Requirements:

- Sensors should communicate using an open protocol.
- Proprietary or 3rd party software should not be required to interface with the smart sensors.
- Directly integrate with open protocol or through API.

Recommendations:

- When possible wired solutions are preferred as fully wireless systems often have issues with reliable communications in some buildings.
- Integrate to the BAS to improve building management decisions and capture energy savings.

Considerations:

- Evaluate technologies such as Occupancy, IAQ/IEQ, Vibration sensors, etc. For a full list of recommended sensors, please reference the *Smart Sensor Implementation Guide*.

2.10 Network Integrated Elevator Systems

As buildings have become larger over time, it is important that operations and maintenance teams can monitor their buildings and it's tenants more efficiently. In the event of a stopped elevator or if a patron falls in the elevator and is unable to reach the call button or phone, this system allows for the O&M team to assess the situation remotely before mobilizing to the elevator.

Requirements:

- If the system utilizes cameras, they should point down in a manner that only captures the entire elevator floor.
- The system should not record and/or collect facial images.
- This system should reside on the OT network.
- Network Integrated Elevator Systems should provide energy usage and reporting.

Recommendations:

- Verify the elevators on site to ensure the platform you're evaluating can be installed with minimal reconfiguration of panels.

- Some of these systems prefer DHCP IP schemes. GSA IT does not allow this type of configuration so the functionality of a Static IP setup should be tested prior to a full deployment.

Considerations:

- Are there any cars (elevators) that cannot have video or other types of monitoring?
- Can the system integrate through a 3rd party system?
- Who monitors the system?

2.11 Water Management Systems

The Energy Act 2020 now requires management reporting and performance tracking which has brought on the need for water management systems. These systems can include any items outside of domestic water which the Advanced Metering System (AMS) already manages. A few examples of these systems are: cooling tower blowdown, rainwater harvesting, chemical treatments, etc.

Requirements:

- This system should work with existing treatment systems that might already be in place or added at a later date.
- The water management system should utilize open communication protocols so that it may interface with other smart building systems.
- System should allow for 3rd party integrations without the need for proprietary hardware or software.

Recommendations:

- Utilize systems that can handle multiple aspects of water management.

Considerations:

- Are there multiple systems to integrate?
- How will this system be integrated?

3 Other Smart Building Project Considerations

3.1 System Design

With all Smart Building Projects, as with all technology in general, the benefits of the systems are reliant on their use and maintenance. It is critical to consider the lifespan and end user of every system when designing and implementing a building system. Coordination with facility managers, operation and maintenance engineers and other parties invested in the technology should be considered early and often during design stages. Goals of the system use should be agreed upon by the project team for the building operators to have targets for building metrics.

3.2 Commissioning

Beyond design coordination, it is important to ensure that systems are commissioned as integrated systems as well as standalone systems. Commissioning agents should have a thorough understanding of the system integration and the fail-over sequences in cases that the integration is lost. These sequences should be tested including a test to ensure the failover and return-to-normal operations execute as expected.

3.3 Training

System training is crucial to the success of smart building systems and programs. Training on systems should cover day to day operation of the building systems as well as detailed system maintenance, administration and troubleshooting. This training should be recorded for future building operators to reference and re-train. Project teams should ensure that system training is budgeted for and that system turnover is well documented.

3.4 System Maintenance

Systems must be maintained to continue to provide reliable data to the users. Regular maintenance instructions should be explained to system owners and building managers. For complex systems, particularly building automation systems, service agreements must be included for regular upkeep and updates. System patches, clean up, backups and tuning must be included in these maintenance agreements to ensure the system continues to run as expected through the lifespan.

3.4.1 Building Monitoring and Control (BMC) Backstock Equipment

Emergency operational failures may benefit from the use of ‘back stock’ devices. GSA retaining a few devices as ‘stock’ may allow for ease in deployment to reinstate operations in case of failure. This contingency must be balanced with ongoing efforts to ensure CyberSecurity threats are minimized. For a full breakdown on guidance please refer to the Guidance to Evaluate Back-Stock BMC Equipment document.

Building point Histories to be mapped into and configured for Region 7 AMS (Advanced Metering System)

The points listed below shall be configured as a 14 day FIFO history within the Building JACE Controller. These listed points shall then be archived to the BAS Server hosting the building as a non expiring, unlimited size history. Configure these histories then to be copied to and archived as a non expiring, unlimited size history in the AMS Server #3.

Note, the histories listed below is not the complete list of 14 day FIFO histories that are to be stored within the JACE controller. This list only describes those histories that are to be archived to the AMS Server for display by the energy monitoring applications.

- kW Demand from all electrical meters serving and within the building.
    - If there is a direct communication link by Modbus, BACnet or Lon to the meters monitoring the building electrical demand, map the Watt values into the Building JACE controller and program the calculations within the JACE to provide the kW Demand to the Building BAS and AMS History databases.
- kWh Consumption from all electrical meters serving and within the building. Configured as an ever increasing value with no data resets configured.
    - If there is a direct communication link by Modbus, BACnet or Lon to the meters monitoring the building electrical consumption, map the Watt values into the Building JACE controller and program the calculations within the JACE to provide the kWh Consumption to the Building BAS and AMS History databases.

- Gas Meter Consumption in Cubic feet for all Gas Meters serving the building. Configured as an ever increasing value with no data resets configured

- Water Meter Consumption in Cubic feet for all Water Meters serving the building. This includes Irrigation Water Meters, Cooling Tower Makeup and Blowdown meters. Configured as an ever increasing value with no data resets configured

- Solar PV and or Wind Generators kW Demand from all electrical meters serving and within the generating equipment.
    - If there is a direct communication link by Modbus, BACnet or Lon to the meters monitoring the PV System electrical demand, map the Watt values into the Building JACE controller and program the calculations within the JACE to provide the PV kW Generated to the Building BAS and AMS History databases.
- Solar PV and or Wind Generators kWh Generation from all electrical meters serving and within the generating equipment. Configured as an ever increasing value with no data resets configured
    - If there is a direct communication link by Modbus, BACnet or Lon to the meters monitoring the PV System electrical Generation Capacity, map the Watt values into the Building JACE controller and program the calculations within the JACE to provide the PV power kWh Generated to the Building BAS and AMS History databases.

- Solar Thermal systems GPM, Entering and Leaving fluid temperature
- Chilled Water Supply and Return for each Chiller
- Primary Chilled Water Loop Supply and Return Temperature
- Building/Secondary Loop Supply and Return Temperature
- Condenser Water Supply and Return Temperature for each Chiller
- Condenser Water Loop Supply and Return Temperature
- Plate and Frame Heat Exchanger Condenser Water Supply and Return Temperature
- Plate and Frame Heat Exchanger Chilled Water Supply and Return Temperature

- Plate and Frame Heat Exchanger Hot Water Supply and Return Temperature
- Plate and Frame Heat Exchanger Domestic Water Supply and Return Temperature
- Hot Water Supply and Return Temperature for each Boiler
- Building Loop Hot Water Supply and Return Temperature
- Building Chilled, Condenser and Hot Water Flow Meter in gpm
- Building Consumption in Tons of Chilled, Condenser and Heating Systems
- Steam Pressure for each Boiler
- Domestic Hot Water Supply and Return Temperature
- Chiller Status of each Chiller
    - Amp draw of each Chiller
- Boiler Status of each Boiler
- Chilled Water Pump Status of each pump – Primary and Secondary
    - Amp draw of each pump
- Condenser Water Pump status of each pump
    - Amp draw of each pump
- Cooling Tower Fan Status of each fan
    - Amp draw of each fan
- Domestic Water Pump Status of each pump
- Solar Thermal Pump status of each pump
- Condenser Water
    - System- pH
    - System- Conductivity
    - System- M. Conductivity
    - System- ORP
    - System- S. Temp
    - System- M. Temp
    - Water Meter- Total Value
    - System- M. Cycles
    - Flow Meter- Flow Rate (per MIN)
    - System- Conductivity Set point
    - System- Calibration

Note – All Status histories are to have both a history configured in a 15 minute interval as well as a history configured to record on a Change of State (COV History). Both history types are to be archived to the BAS Server and to the AMS Server.

GSA Region 7
BAS Graphic Format

The following pages represent the required BAS graphics format.

Strict adherence to this format will maintain consistency throughout the region regardless of the system integrator working on the systems

General notes

- The following pages represent the minimum requirements for the Graphic Display Pages on the Region 7 BAS.
- Each Integrator is responsible for maintaining continuity within the system. All pages must be formatted for 1280 x 1024 dpi.
- All Graphic displays must be created using elements from the Tridium N4 “kitPx” libraries located on the GSA Region 7 Server located in Fort Worth.
  - All Graphic elements created by any one integrator must be stored on the server for use by all other integrators. Before creating a new graphic, check the library to determine if there is already a representation of the equipment in the library folder for your use
    - For example, Throughout GSA Region 7, all Cooling only VAV Boxes will use the same graphic, All Parallel Fan Powered Boxes will use the same graphic, etc. **Careful attention to point naming will be required in order that the same graphic can be used by multiple integrators.**
  - Photos of equipment and Manufacture’s graphics of actual Chillers and Boilers are acceptable where the likeness can not be created from the kitPx libraries. Photos or manufacture’s drawings are to be scaled to be in proportion to the mechanical plant
- Please note that these graphics must reside on both the JACE and the GSA Region 7 BAS Web Supervisor Server.
- Hotlinks to sites outside of the GSA Firewall are not allowed.
- Graphic displays that are static and or copies of old BAS system graphics are not allowed.
- All Floor Plan Graphic pages are to be approved by the GSA Property Manager prior to installation on the Server or in the JACE controller

JACE and Station Naming

- Each integrator is to follow the Station and JACE Naming standard
- (For a full list of GSA IT Location Codes, please email R7BAS@gsa.gov.

JACE and Station Login and Passwords

- The JACE and Station Login and Passwords are pre-established for the programmers use. Please contact email R7BAS@gsa.gov to receive these login and passwords.

JACE and Web Supervisor Station User Prototypes

- JACE and Web Supervisor Station User Prototypes are created on the web supervisor and shall be used.

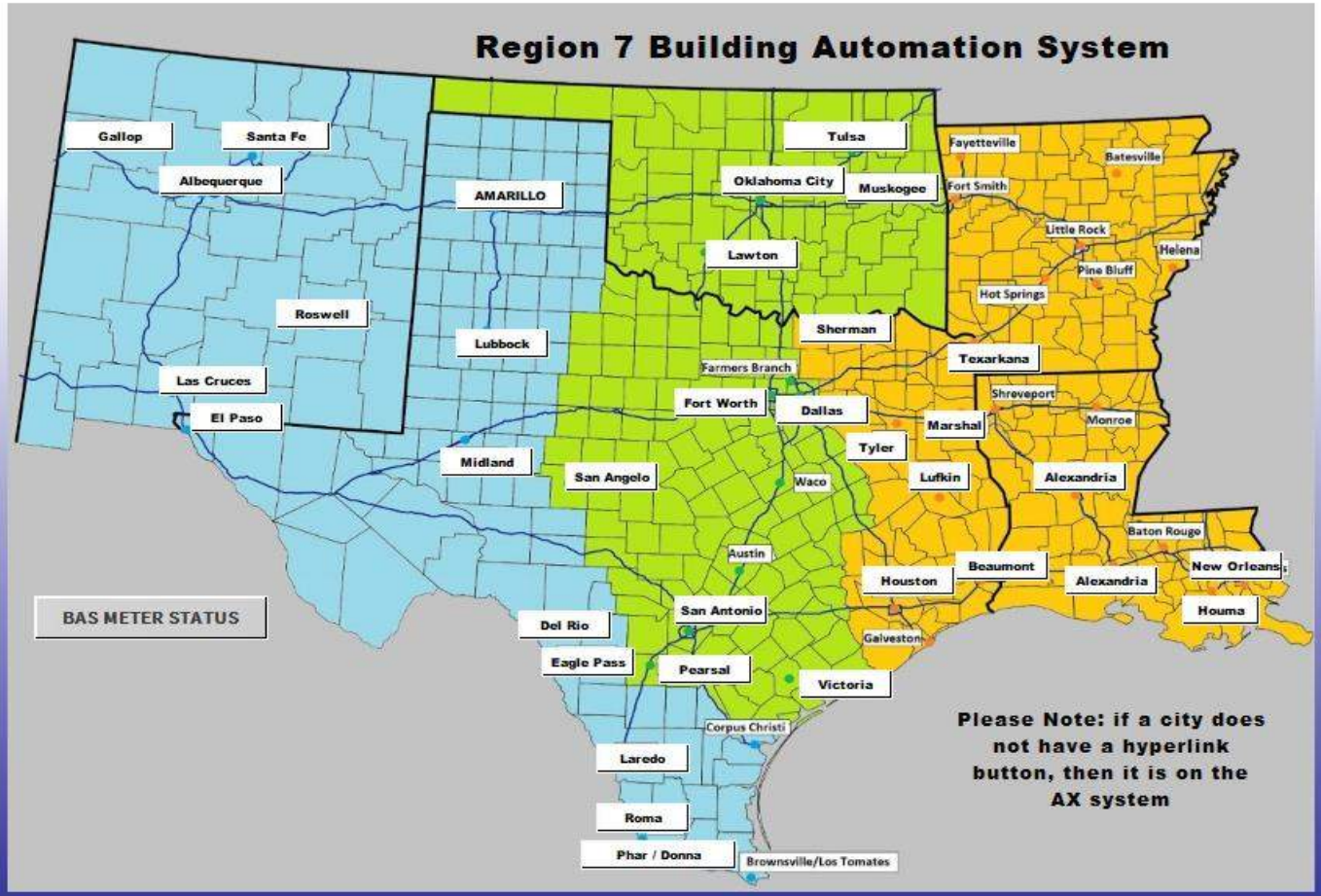
Single Sign-on for multiple JACEs

- Each integrator is to provide the GSA with the name, IP address and MAC address of each building JACE.

Utility Data Page

- The GSA requires a separate graphics page for the utility data.
  - For instance photovoltaic, gas, electric, water, pulse meters and BACnet chemical treatment/cooling tower bleed data points that are a part of the BAS are to be displayed in a Utility Data Page
- Graphic displays on this page shall be constructed from elements in the Tridium N4 “kitPx” libraries, from digital pictures of the actual meter or from manufacture's graphics
- All Graphic elements created by any one integrator must be stored on the server for use by all other integrators.
- The Utility Data page shall be accessible by a hotlink from the home page

R7 BAS Home Page



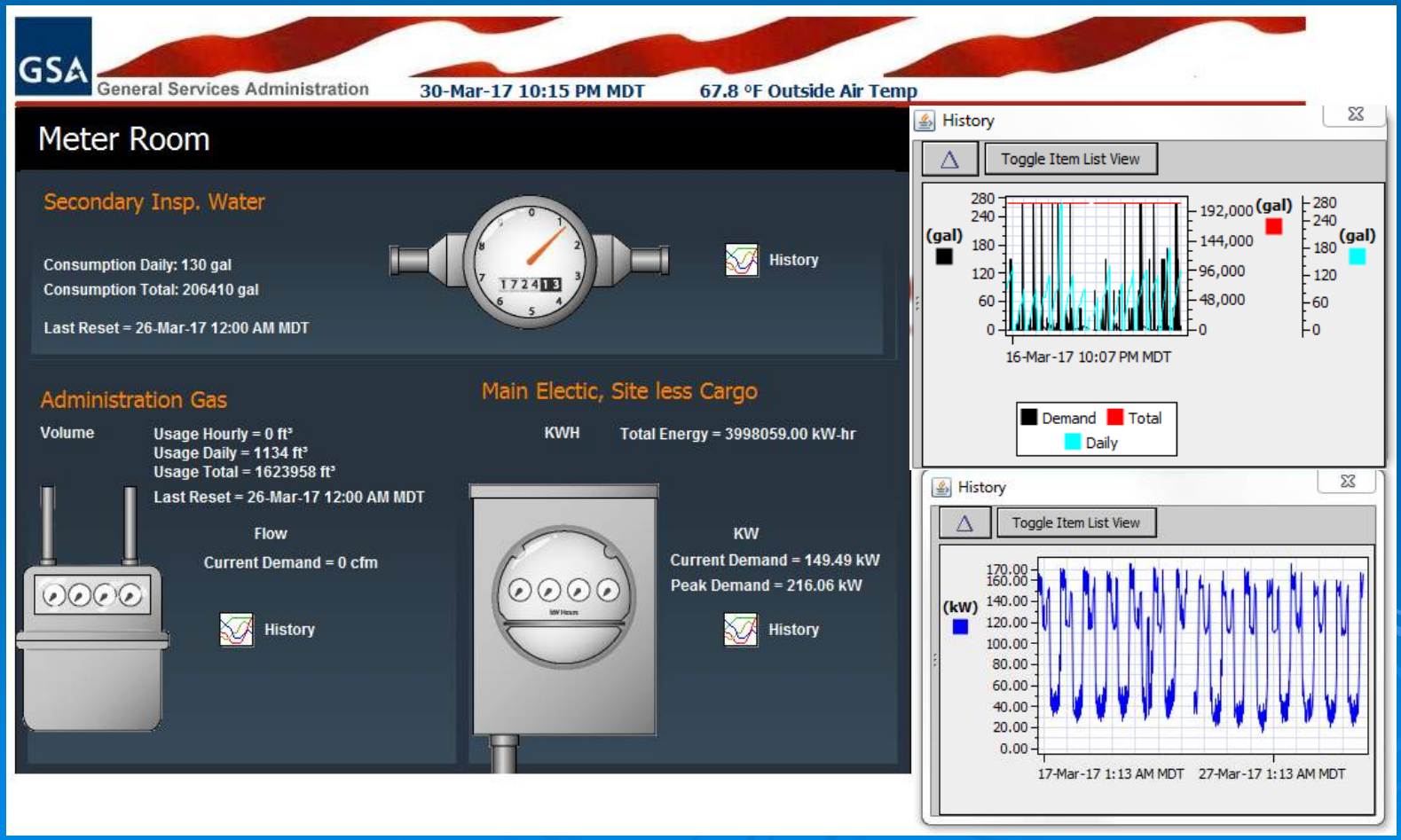
Building Home Page

Example of required building Home Page

- Example of building “Home Page” shown at right
- Link from this page to overall building plan with links to each floor plan
- Display the Building kWh and kW Demand on the “Home Page” with hotlink to the points history trend
- Include Hotlink to Energy page.
- Display the Outdoor Air Temperature and Outdoor Humidity on the “Home Page” with hotlink to the points history trend
- Display a link to the building Weather Page
- Set Picture size to 1280x1024

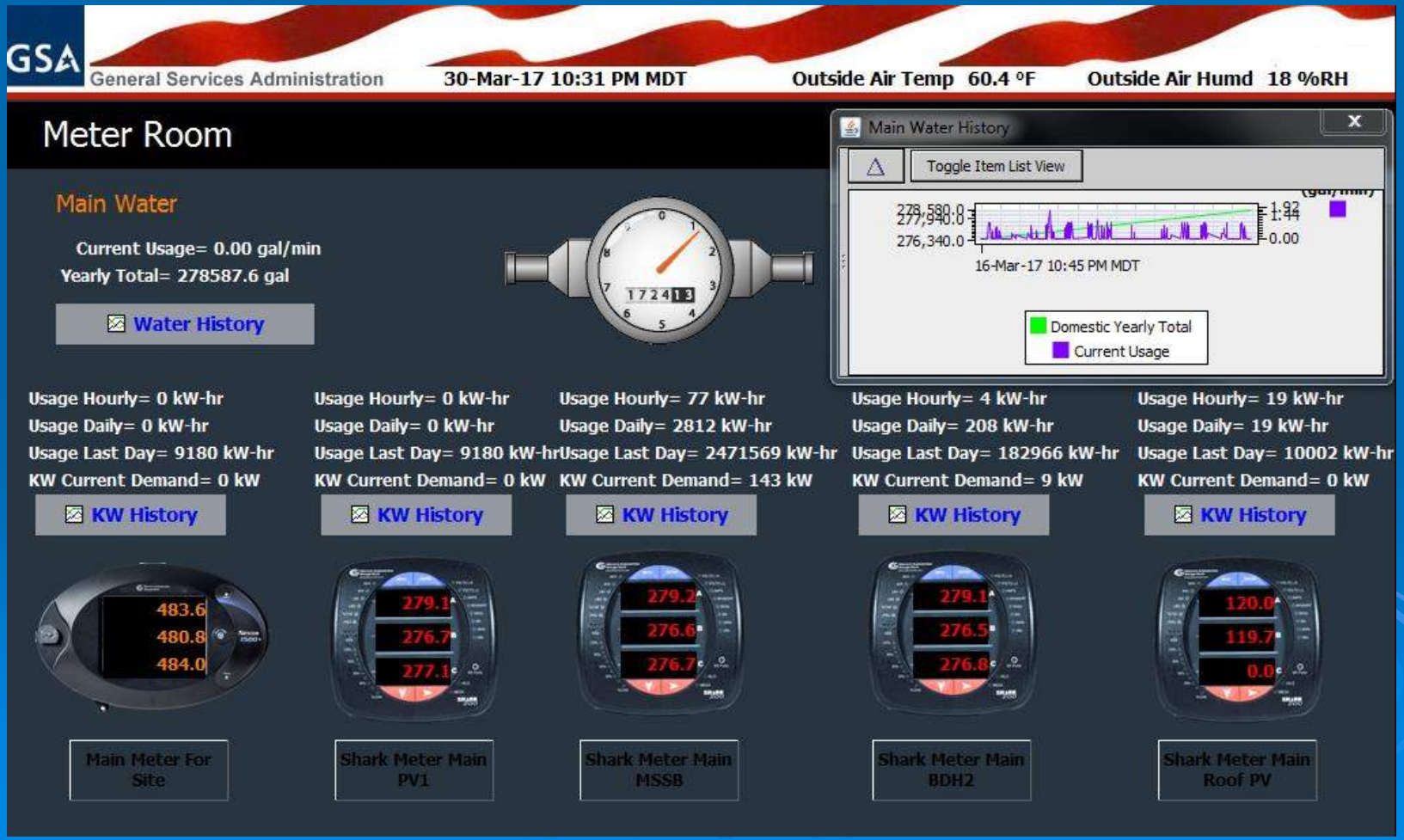
Pulse Meter Page

- The GSA requires a separate graphics page for the Meter Page.
  - The page shown below exists as a .px file on the N4 Server for use by all integrators. Once the page is loaded into the JACE and the configuration modified to show the correct meter information.



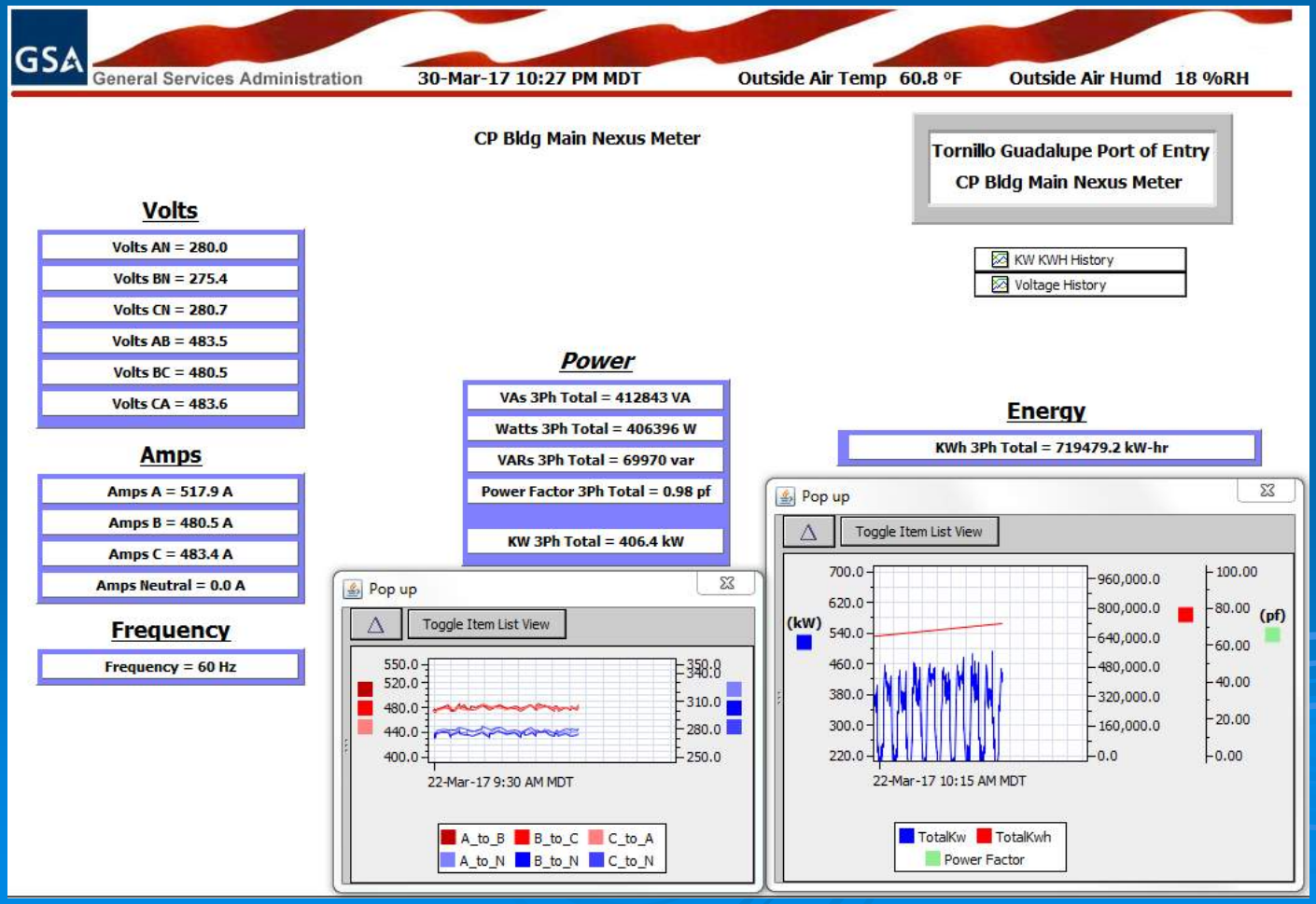
Smart Meter Page 1

- The GSA requires a separate graphics page for the Meter Page.
  - The page shown below exists as a .px file on the N4 Server for use by all integrators. Once the page is loaded into the JACE and the configuration modified to show the correct meter information.



Smart Meter Page 2

- The GSA requires a separate graphics page for the Meter Page.
  - The page shown below exists as a .px file on the N4 Server for use by all integrators. Once the page is loaded into the JACE and the configuration modified to show the correct meter information.



Weather Page

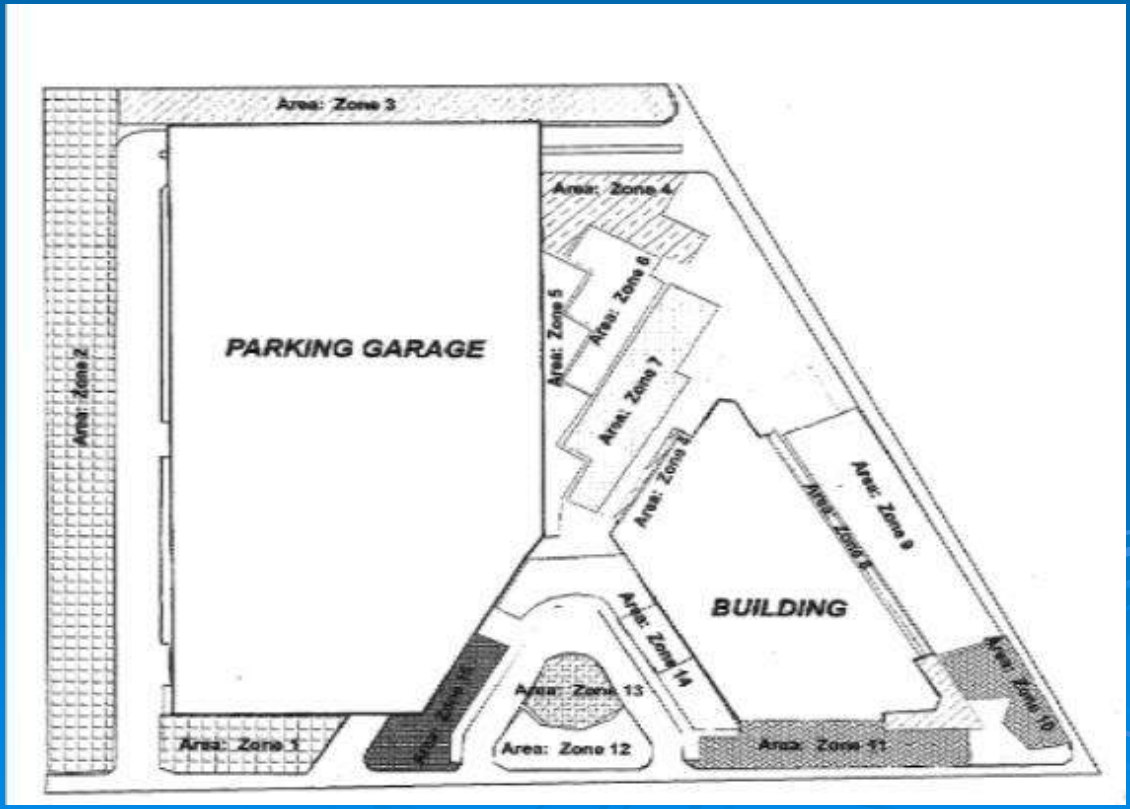
- The GSA requires a separate graphics page for weather data.
  - The page shown below exists on the N4 Server for use by all integrators. Once the page is loaded into the JACE and the configuration modified to show the correct weather station information.

Integrated Irrigation Page 1

- The GSA requires a separate graphics page for integrated irrigation.
  - The page shown below exists on the N4 Server for use by all integrators. Once the page is loaded into the JACE and the configuration modified to show the correct weather station information, remove the three blocks that allow the ability to change the station and insert the Solar Radiation, Rainfall Gauge and Soil Moisture Sensor points.

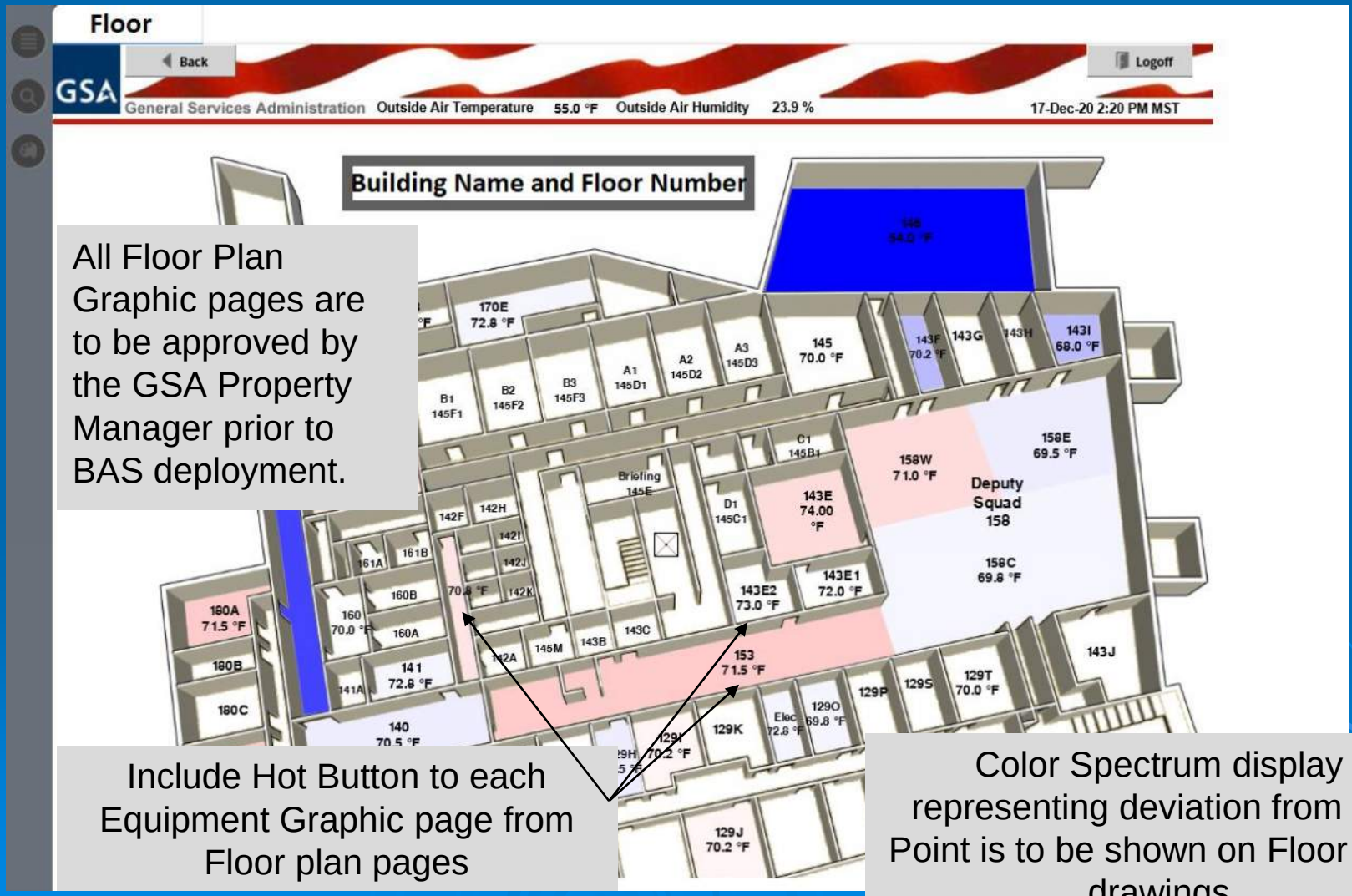
Integrated Irrigation Page 2

- The GSA requires a separate graphics page for integrated irrigation.
  - The page shown below indicates the irrigation zones per the prior Niagara graphic page. An irrigation zone map and sequence of operations shall be hyperlinked on the Niagara graphic page as a .pdf file(s) to aid the building engineer. Navigation from the .pdf file back to the Niagara graphic Zone location schedule shall be seamless and intuitive.



Example of Floor Plan Graphic

Note – Color Spectrum display of Room Temperature Deviation from Setpoint



Hot Links from Page to Page

- Hotlinks are to follow the path described here.
  - Hotlink from overall “Home Page” to Floor Plans
  - Hotlink from Floor Plan to Air Terminal Device (ATD) controlling space (VAV, FPVAV, VVR, FCU, CV-AHU, RTU)
  - Hotlink from ATD to VAV AHU
  - Hotlinks from AHU to Chilled Water and Heating Plant
  - On each graphic page, provide Hot Link back to the Floor Plan or Building Home Page

Required Display pages for buildings with HotLink from Home or Floor Plan Graphic Page

Hot Links to Equipment Graphics pages

Hot Links to Floor Plan Graphics pages

GSA General Services Administration Outside Air Temp = 46.7 °F Outside Air RH = 29.5 % 17-Dec-20 3:17 PM MST

Building Name
Floor Number

VAV Name	Room Number	SpaceTemp	Setpoint	AirFlowClg	DamperCmdClg	DamperPosClg	AirFlowHtg	DamperCmdHtg	DamperPosHtg
VAV-2-1	Room 2515	77.2 °F	80 °F	216 cfm	39 %	37 %	0 cfm	0 %	0 %
VAV-2-2	Room 2511	69.2 °F	72 °F	284 cfm	31 %	32 %	308 cfm	30 %	32 %
VAV-2-3	Room 2507	71.2 °F	70 °F	256 cfm	33 %	34 %	0 cfm	0 %	14 %
VAV-2-4	Room 2505	74.0 °F	74 °F	172 cfm	32 %	33 %	76 cfm	0 %	0 %
VAV-2-5	Room 2402	70.5 °F	70 °F	236 cfm	42 %	47 %	0 cfm	0 %	2 %
VAV-2-6	Room 2321	68.0 °F	68 °F	212 cfm	38 %	53 %	44 cfm	20 %	28 %
VAV-2-7	Room 2202	72.8 °F	73 °F	240 cfm	33 %	34 %	76 cfm	0 %	4 %
VAV-2-8	Room 2208	71.5 °F	70 °F	272 cfm	33 %	38 %	52 cfm	0 %	0 %
VAV-2-9	Room 2233	69.5 °F	70 °F	220 cfm	34 %	34 %	0 cfm	0 %	0 %
VAV-2-10	Room 2301	69.5 °F	72 °F	232 cfm	34 %	34 %	56 cfm	97 %	91 %
VAV-2-11	Room 2201	72.2 °F	70 °F	228 cfm	26 %	30 %	0 cfm	0 %	0 %
VAV-2-12	Room 2021	71.5 °F	72 °F	728 cfm	81 %	79 %	52 cfm	0 %	0 %
VAV-2-13	Room 2313	71.0 °F	70 °F	256 cfm	25 %	29 %	84 cfm	13 %	0 %
VAV-2-14	Elev Lobby	71.00 °F	70.00 °F	228.00	30.00 %	29.60 %	0.00	0.00 %	0.00 %
VAV-2-15	Room 2103	71.75 °F	70.00 °F	220.00	23.20 %	23.60 %	0.00	0.00 %	0.00 %
VAV-2-16	Room 2011	70.2 °F	70 °F	240 cfm	33 %	41 %	120 cfm	32 %	28 %
VAV-2-17	Room 2018	70.8 °F	70 °F	272 cfm	42 %	44 %	36 cfm	0 %	14 %
VAV-2-18	Room 2016	69.8 °F	70 °F	220 cfm	44 %	43 %	108 cfm	46 %	28 %
VAV-2-19	Room 2012	74.8 °F	74 °F	292 cfm	32 %	34 %	44 cfm	0 %	0 %
VAV-2-20	Room 2001	70.5 °F	70 °F	256 cfm	42 %	47 %	160 cfm	38 %	32 %
VAV-2-21	Room 2001	70.5 °F	70 °F	236 cfm	45 %	57 %	128 cfm	51 %	35 %
VAV-2-22	Room 2103	71.0 °F	70 °F	236 cfm	30 %	33 %	292 cfm	43 %	40 %
VAV-2-23	Room 2104	66.2 °F	70 °F	196 cfm	66 %	77 %	108 cfm	68 %	56 %
VAV-2-24	Room 2402	68.2 °F	70 °F	232 cfm	52 %	58 %	420 cfm	63 %	64 %
VAV-2-25	Room 2019	72.5 °F	72 °F	228 cfm	38 %	45 %	472 cfm	94 %	100 %
VAV-2-26	Room 2303	69.50 °F	71.00 °F	216.00	28.80 %	28.00 %	0.00	0.00 %	0.00 %

Indicate deviation from set point by color spectrum. White at 0.0 df, Dark Blue at -5 df and Bright Red at +5 df

Apply as many TCU boxes as possible per page. Create as many pages as required to display all TCU setpoint and Room Temperature

Required Overview Page for AH Units

Hot Link to Floor Plan Graphic page

Color indicates unit status.
Green = AHU running
Red = AHU in Alarm
Gray = AHU off

Supply Air / Zone Temp
Adjustable Set point

Occupied

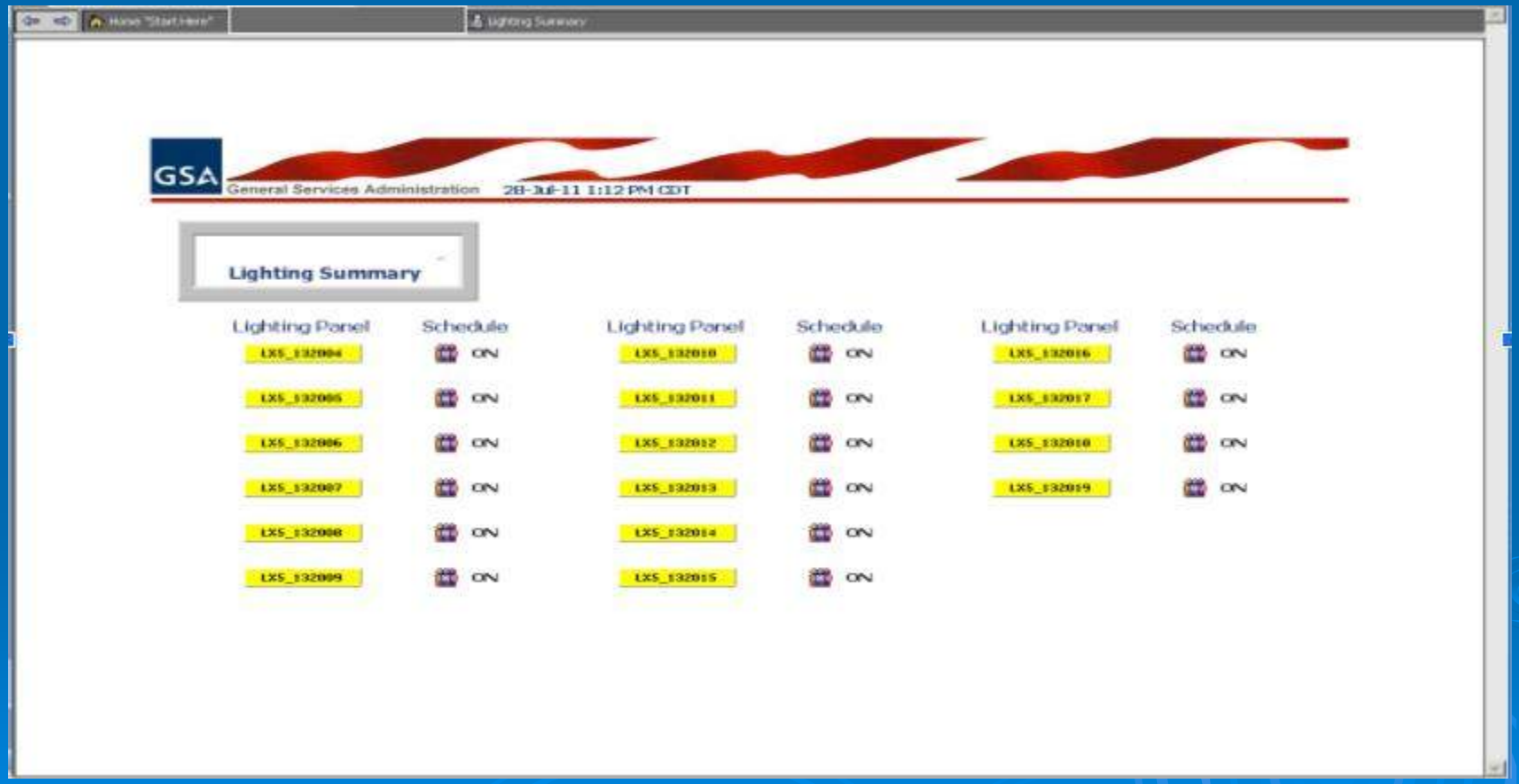
Un-Occupied

Create link to AHU Equipment graphic.

Link to AHU Schedule and indicate Schedule Status by graphic element.

Indicate deviation from set point by color spectrum. White at 0.0 df, Dark Blue at -5 df and Bright Red at +5 df

Required Overview Page for Lighting



Point Naming Standards

- Refer to document: GSA Data Normalization for Building Automation Systems v2.5 for BAS point naming and tagging standard guidance. This documentation is available by e-mail from R7BAS@gsa.gov.
- GSA point naming / tagging standards shall be used at the N4 JACE Supervisory controller and Unitary layer controllers on all GSA R7 Projects.
- For complete DDC new installation or retrofit, mandatory GSA point naming / tagging standards are also required at the Unitary / field controller layer.

Setpoint and Override limiting

- Setpoint Limiting as well as Binary Output Command points that are to have the override capability should be set with the following limits
  - Permanent - Disabled and not displayed
  - 1 Minute
  - 15 Minutes
  - 30 Minutes
  - 1 Hour
  - 2 Hours
  - 3 Hours
  - Custom configured to a minimum of 8 Hours
- Adjustable temperature setpoints are to be programmed with a range limit of +/- 5 degrees of GSA standard settings. Other system settings to be limited to manufacturer recommended limits. Exceptions will be addressed on a case by case basis.

Setpoint and Override limiting

- US Court House Court Rooms [Parameters used to sub cool space prior to court room proceedings]
- Disable Optimal Start (if applicable)
- Set point Limiting as well as Binary Output Command points that are to have the override capability should be set with the following limits

  - Permanent - Disabled and not displayed
  - 1 Minute
  - 30 Minute
  - 1 Hour
  - 2 Hours
  - 3 Hours
  - Custom configured to a minimum of 12 Hours

- "Set" to be programmed to limit the Space temp override minimum set point temperature of 65 degrees. After 12 hour override 70 degree minimum temperature default.

Point Trending

- From the BAS and accessible from a unit graphic page, there shall be hot links to stored Chart Logs for points useful and relevant for troubleshooting the equipment displayed and monitored. At a minimum, links to the Chart Logs for the following points shall be accessible from the graphic page. The local trended data shall be stored for 14 days in the JACE. Trended data shall be archived to the N4 WS once each 24 hours for use with M & V verification.

VAV Box

Space Temperature/Humidity
Discharge/Supply Air Temperature
Air Flow CFM

VAV Box with Heat

Space Temperature/Humidity
Discharge/Supply air Temperature
Air Flow CFM
Valve position

FPVAV Box with Heat

Space Temperature/Humidity
Discharge/Supply Air Temperature
Air Flow CFM
Valve position
Fan Status

Point Trending continued

- VAV AHU
  - Fan Status
  - Fan Speed
  - Space Temperature
  - Discharge/Supply Air Temperature
  - Duct Static Pressure
  - Chilled Water Valve position
  - Co2 ppm
  - OAD/Economizer Damper Position
  - Mixed Air Temperature
- Constant Volume AHU
  - Fan Status
  - Space Temperature/Humidity
  - Discharge/Supply Air Temperature
  - Chilled Water Valve position
  - Hot Water Valve position
  - Co2 ppm
  - OAD/Economizer Damper Position
  - Mixed Air Temperature

Point Trending continued

- Multi Zone AHU
  - Fan Status
  - Space Temperature/Humidity
  - Cold Deck Air Temperature
  - Hot Deck Air Temperature
  - Chilled Water Valve position
  - Hot Water Valve position
  - Co2 ppm
  - OAD/Economizer Damper Position
  - Mixed Air Temperature
- Fan Coil Unit
  - Fan Status
  - Space Temperature/Humidity
  - Discharge/Supply Air Temperature
  - OAD Damper Position
  - Chilled Water Valve position
  - Hot Water Valve position

Point Trending continued

Chilled Water Plant

- Chiller Status (for each Chiller)
- Chiller Amps
- Chilled Water Pump Status (for each CHWP)
- Condenser Water Pump Status (for each CWP)
- Entering Chilled Water Temperature (at each Chiller)
- Leaving Chilled Water Temperature (at each Chiller)
- Entering Condenser Water Temperature (at each Chiller)
- Leaving Condenser Water Temperature (at each Chiller)
- Secondary CHWP Status
- Secondary CHWP Speed
- Secondary CHW Loop Supply and Return Temperature
- Tower Fan Status (for each fan)
- Tower Fan Speed (for each fan)
- Condenser Water Bypass Valve position

Plate Frame Heat Exchanger

(If Building so equipped)

- Chilled Water Isolation Valve position
- Condenser Water Isolation Valve position
- Entering Chilled Water Temperature
- Leaving Chilled Water Temperature
- Entering Condenser Water Temperature
- Leaving Condenser Water Temperature
- Chilled Water Mixing Valve

Point Trending continued

Hot Water Plant

- Boiler Status (for each Boiler)
- Hot Water Pump Status (for each HWP)
- Entering Hot Water Temperature (at each Boiler)
- Leaving Hot Water Temperature (at each Boiler)
- Secondary HWP Status
- Secondary HWP Speed
- Secondary HW Loop Supply and Return Temperature
- Hot Water Mixing Valve position

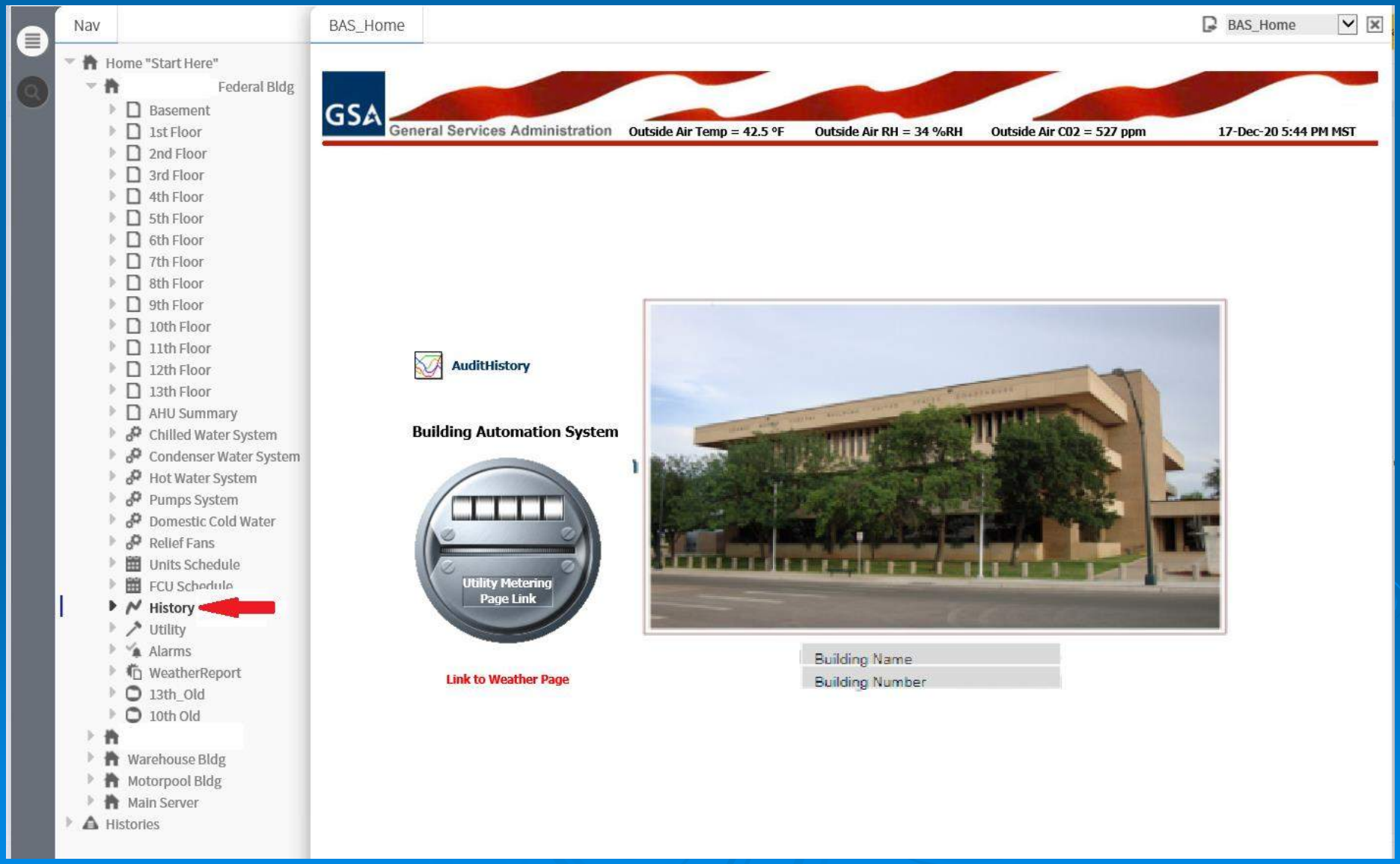
Miscellaneous Points

- Exhaust Fan(s) Status
- Outdoor Air Temperature
- Outdoor Humidity or Dew Point
- Heat Recovery Unit(s) Fan Status
- HRU Entering Building Air Temperature
- HRU Building Exhaust Air Temperature
- HRU Outdoor Air Temperature after HRU

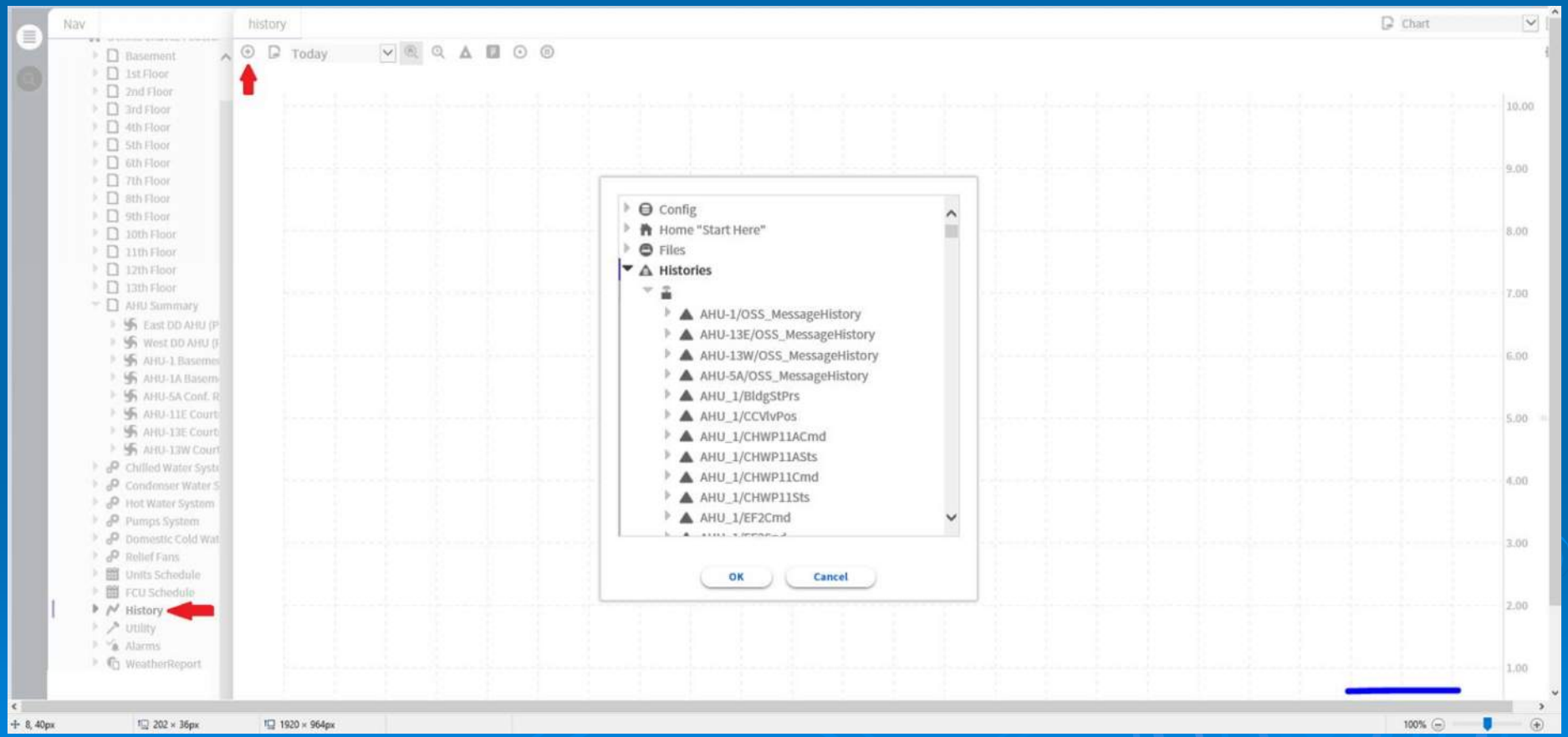
Point Trending continued

- The previous slides list Hot Links to trend values for various types of equipment.
- In no way is this listing meant to define all of the points that are to be logged and trended for a specific type of equipment.
- These slides are only showing the minimum number of points that are to be accessed and plotted from the graphic page.
- Trends shall be configured for all pertinent points
- All Trends shall have the ability to be manually enabled and once enabled shall automatically terminate after 14 days of collecting data

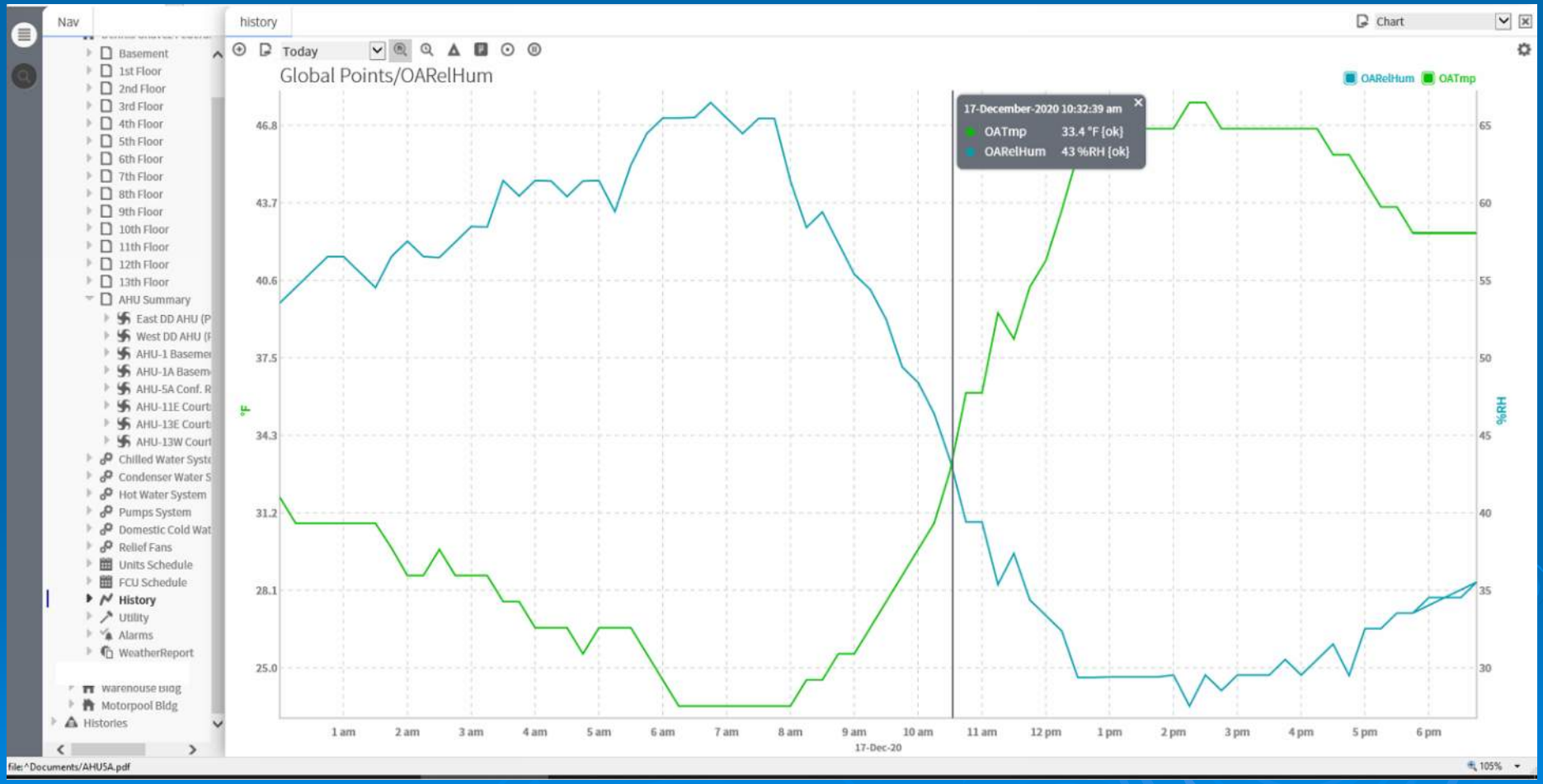
Point Trending Navigation



Point Trending Log



Point Trending Graphing



Critical Alarms and Reporting

Below is the list of alarms that are critical and need to be transmitted by Alpha-Numeric pagers or email to specific individuals for each building.

- N4 Niagara Network Web Supervisor communication ping failure to JACE.
- Chiller Water System failure – Example: Chill Water Loop Temperature 3 degrees above set point for consistent (5) minutes.
- Heating Water System failure – Example: Heating Water Loop Temperature 3 degrees below set point for consistent five (5) minutes.
- Lift Station High Sump Pump Pit Level Alarm
- Fire Alarm
- Low Limit Cut Off (LTCO) --Commonly referred to "Freeze Stat"
- Major plant equipment failure to start
- Tower Vibration Alarm

Critical Alarms and Reporting

- Upon Request, GSA will provide a list of names to whom the remote notifications need to be sent such as GSA Property Manager, Mechanical Inspector, and Operations and Maintenance Project Manager.
- The following information may help when setting up remote notifications to Smart Phone devices:

T-Mobile: *phonenumber*@**tmomail.net**
Virgin Mobile: *phonenumber*@**vmobl.com**
Cingular: *phonenumber*@**cingularme.com**
Sprint: *phonenumber*@**messaging.sprintpcs.com**
Verizon: *phonenumber*@**vtext.com**
Nextel: *phonenumber*@**messaging.nextel.com**

Alltel
[10-digit phone number]@message.alltel.com

AT&T Wireless (now part of Cingular)
[10-digit phone number]@mmode.com

Critical Alarms and Reporting

Boost Mobile

[10-digit phone number]@myboostmobile.com

AT&T

[10-digit phone number]@txt.att.net

Sprint PCS (now Sprint Nextel)

[10-digit phone number]@messaging.sprintpcs.com

T-Mobile

[10-digit phone number]@tmomail.net

Verizon

[10-digit phone number]@vtext.com

Virgin Mobile USA

[10-digit phone number]@vmobl.com

US Cellular

[10-digit phone number]@email.uscc.net).

Cricket Wireless

[10-digit phone number]@sms.mycricket.com.

N4 Provisioning

- Referencing Niagara N4.8 Niagara Provisioning Guide, Updated June 11, 2019, install and configure Provisioning on the N4 Supervisor at the Region 7 Data Center.

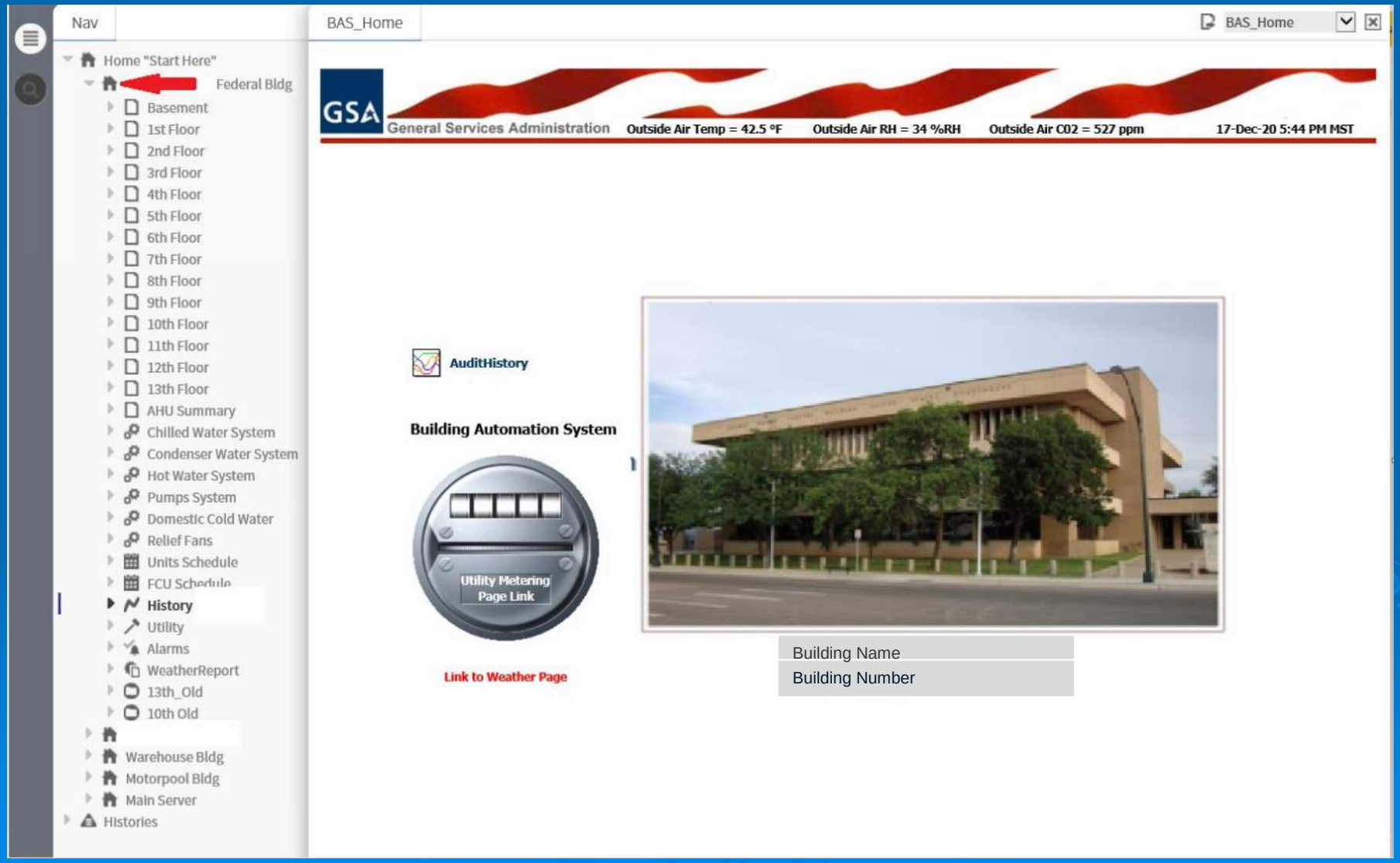
- Configure a provisioning job step to create a “Backup Station Step”. Configure this step to backup all JACE controllers in all buildings no less than once every week.

Sample of Tridium Graphics

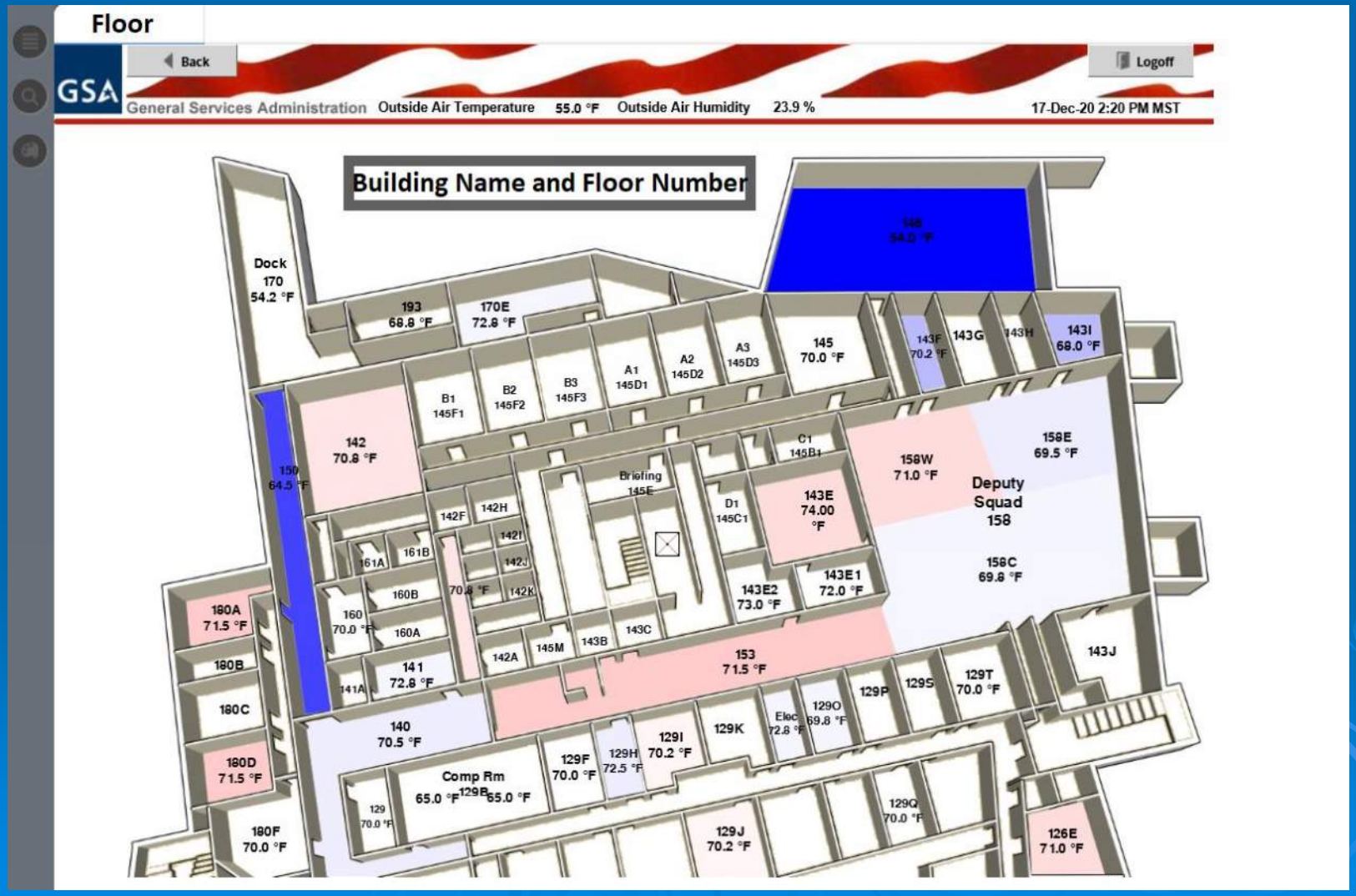
- The following pages show screen captures of Unit Graphic Displays created using the **Niagara graphics library**. All unit displays must adhere to the use of elements from this library in the creation of the new graphic displays.
- All graphic page backgrounds are to be white.
- Each Integrator is responsible for maintaining continuity within the system. All pages must be formatted for 1280x 1024 dpi.
- All Graphic displays must be created using elements from the Tridium N4 “kitPxHvac” library located on the GSA Region 7 Server located in Fort Worth.
  - All Graphic elements created by any one integrator must be stored on the server for use by all other integrators.
    - Throughout GSA Region 7, all Cooling only VAV Boxes will use the same graphic, All Parallel Fan Powered Boxes will use the same graphic, etc.
- All Graphic Elements and Displays are to be approved by the GSA prior to placing them on the Server or JACE
- From each equipment graphic page there shall be a hotlink to a pdf file with the unit Sequence of Operation
- Every control valve or damper shall indicate the fail position as NO or NC on the graphic page
- Each graphic page shall accurately display all devices and data
  - Display all sensors and safeties that control or protect the equipment whether the device is a part of the BAS or not.

- The next series of slides represent graphics displays for various types of HVAC Equipment and Lighting. All of these drawings have been created using the Tridium library of graphic elements

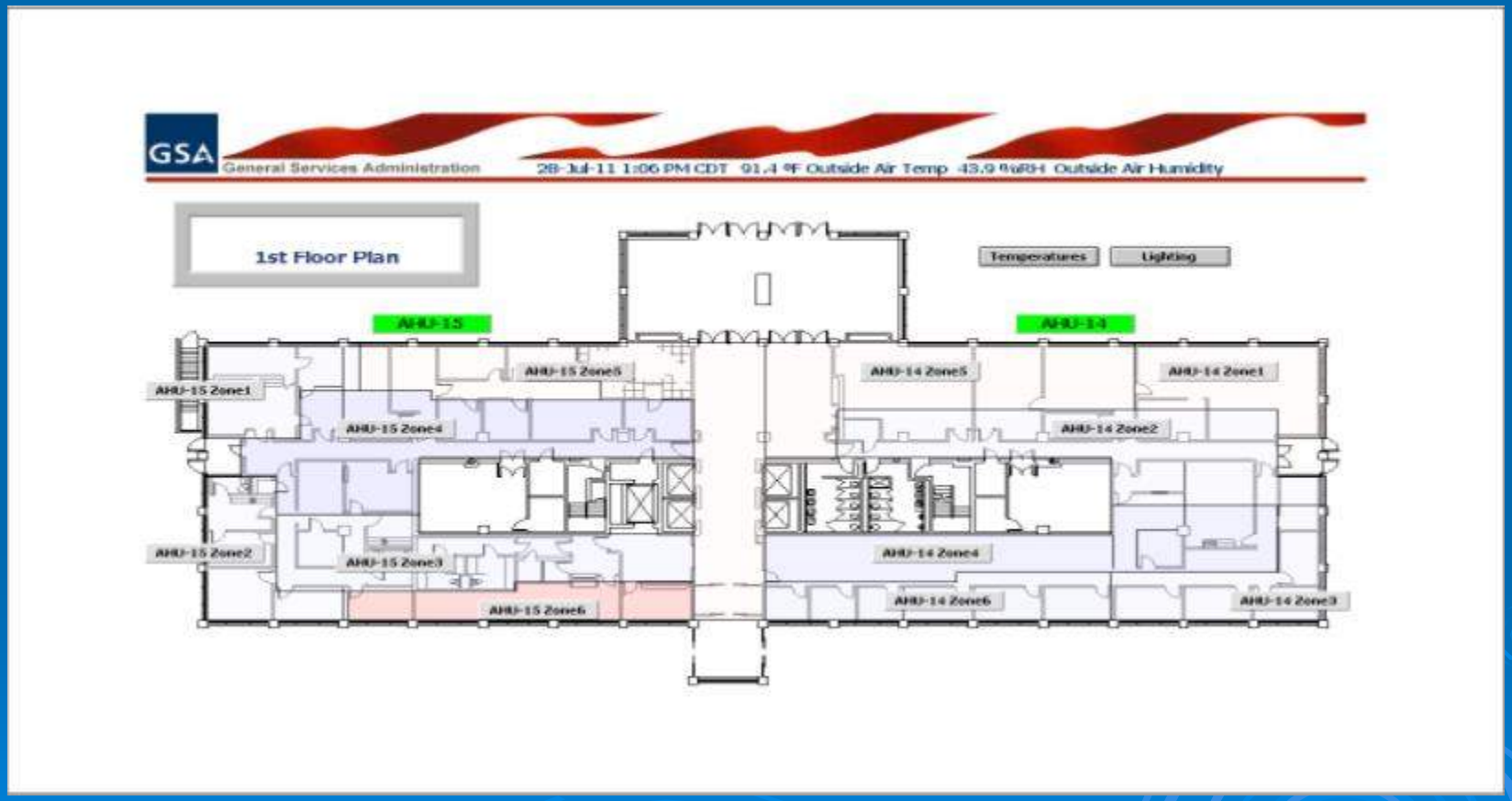
Niagara N4 Navigation



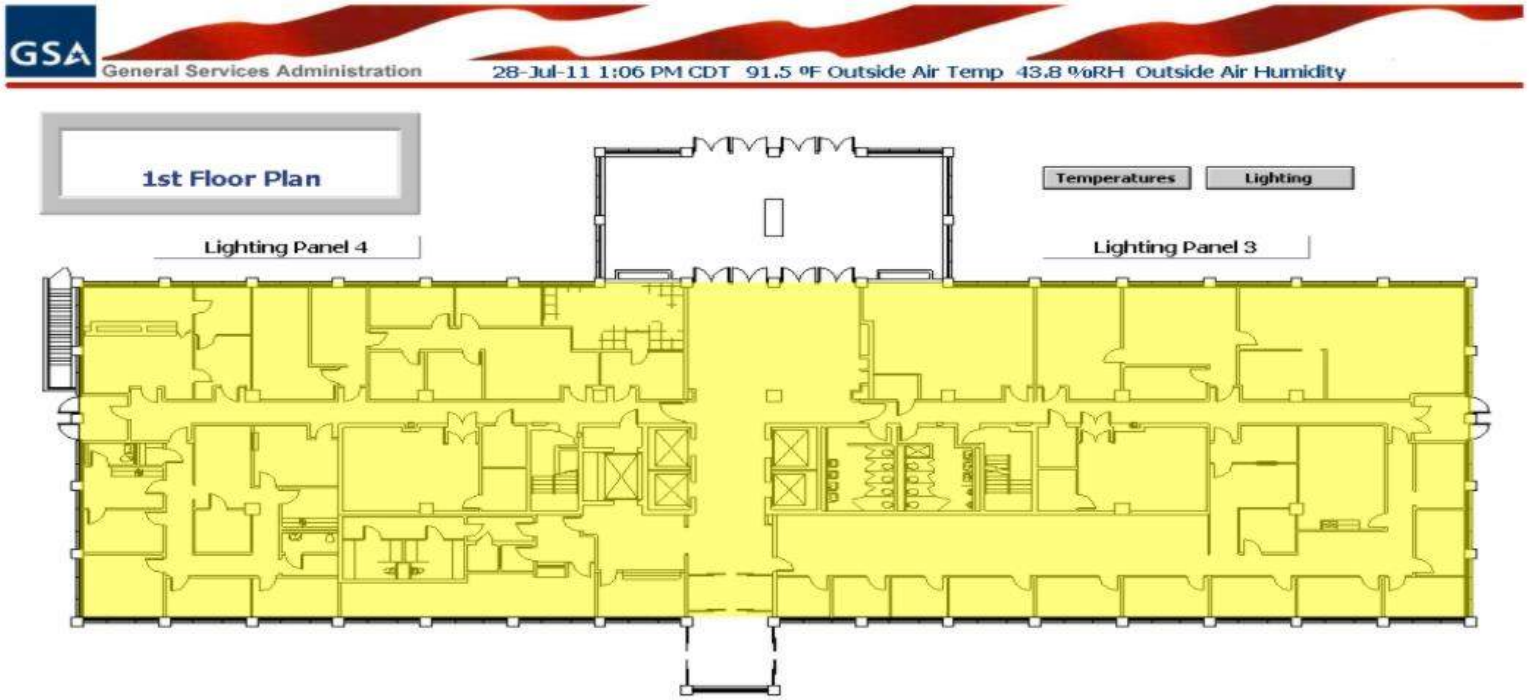
Niagara N4 Navigation



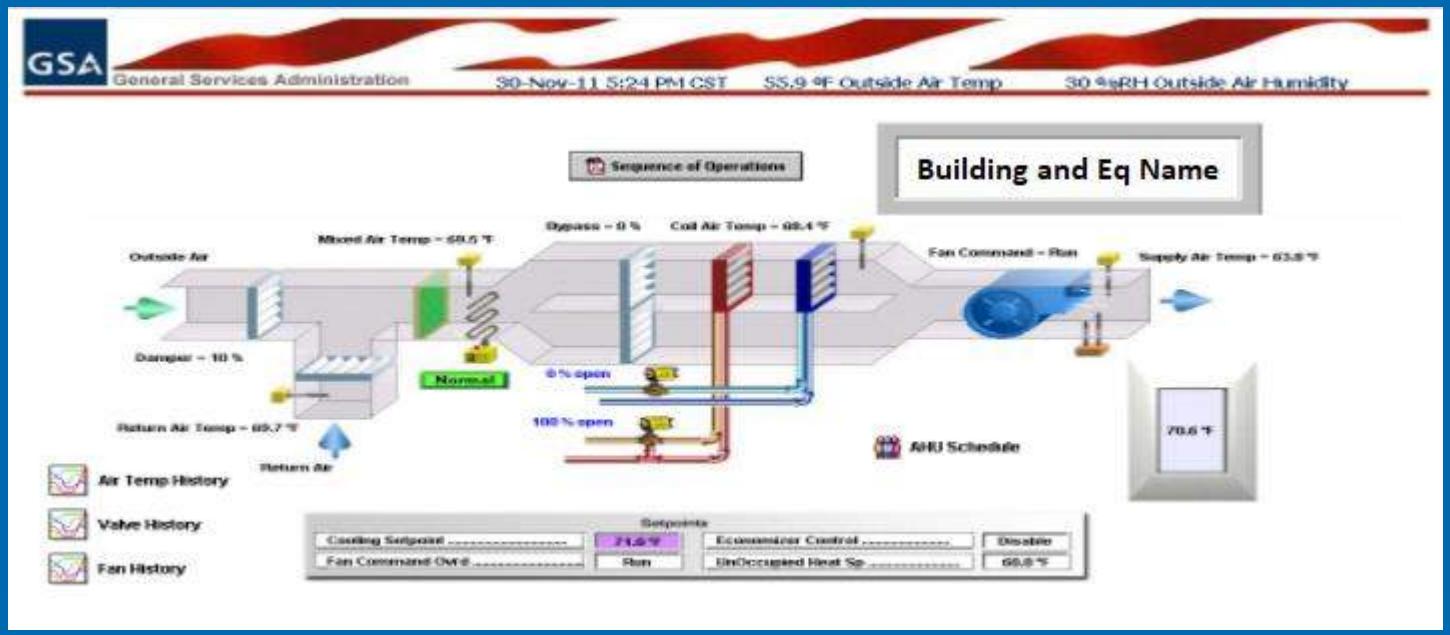
Niagara N4 Navigation Lighting



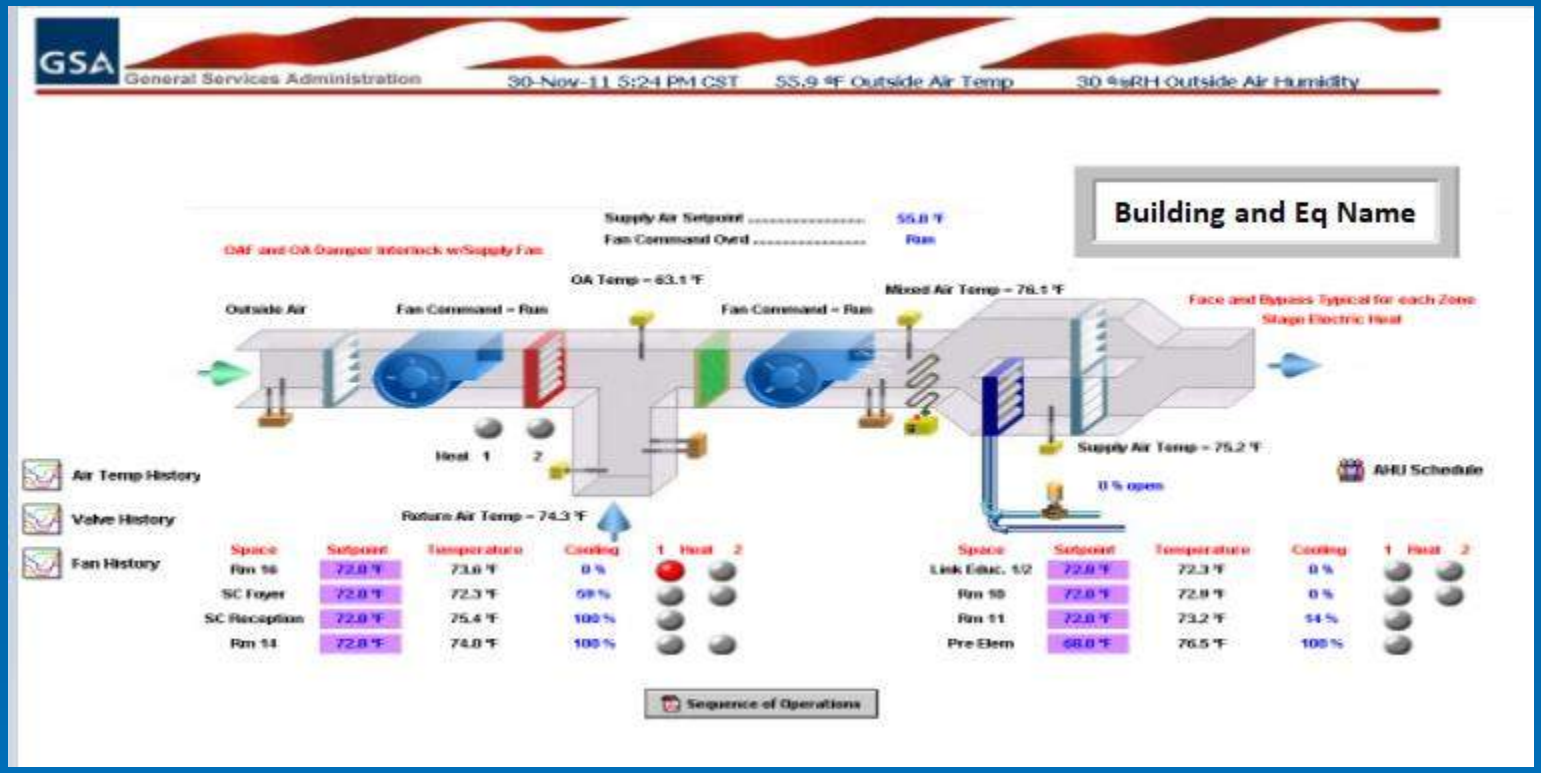
Niagara N4 Navigation Lighting



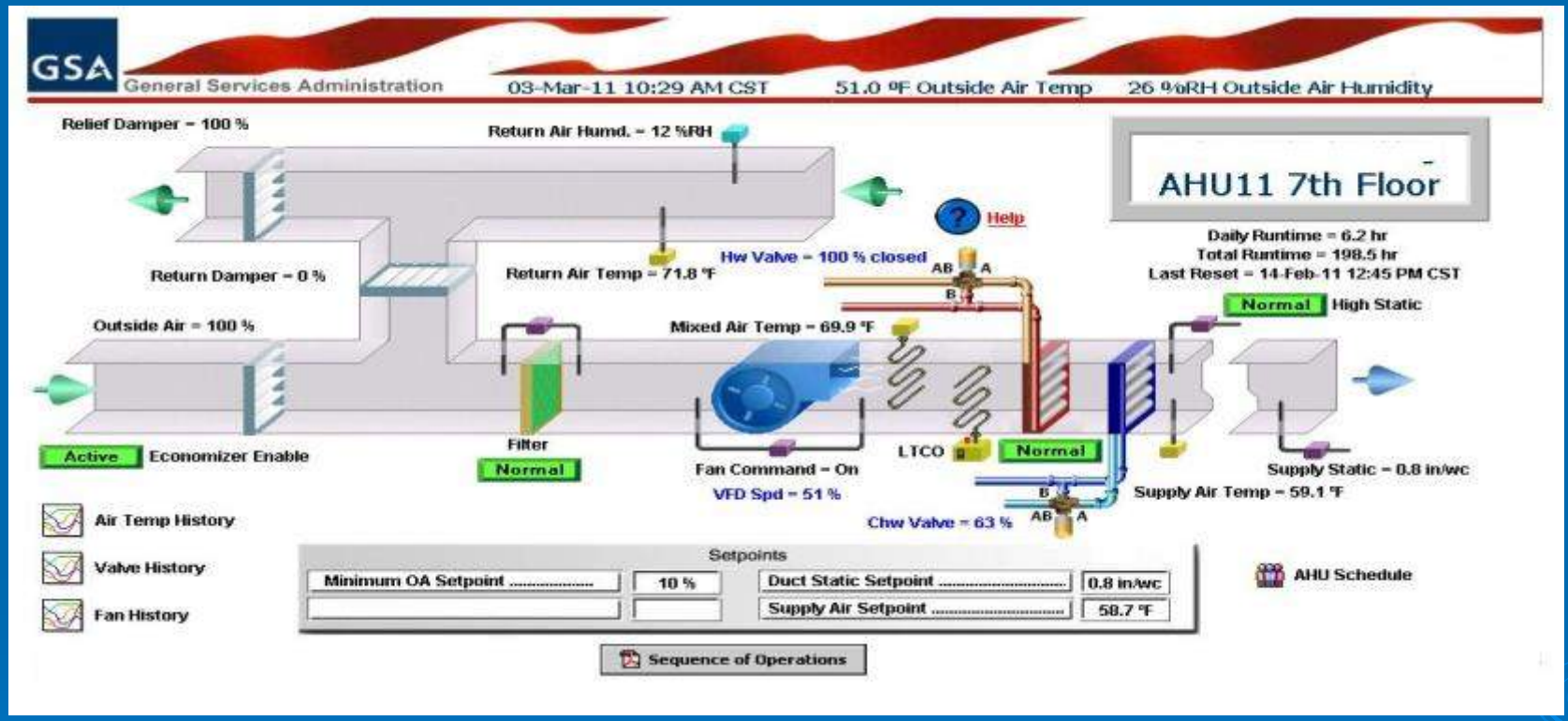
Single Zone, Face & Bypass AHU



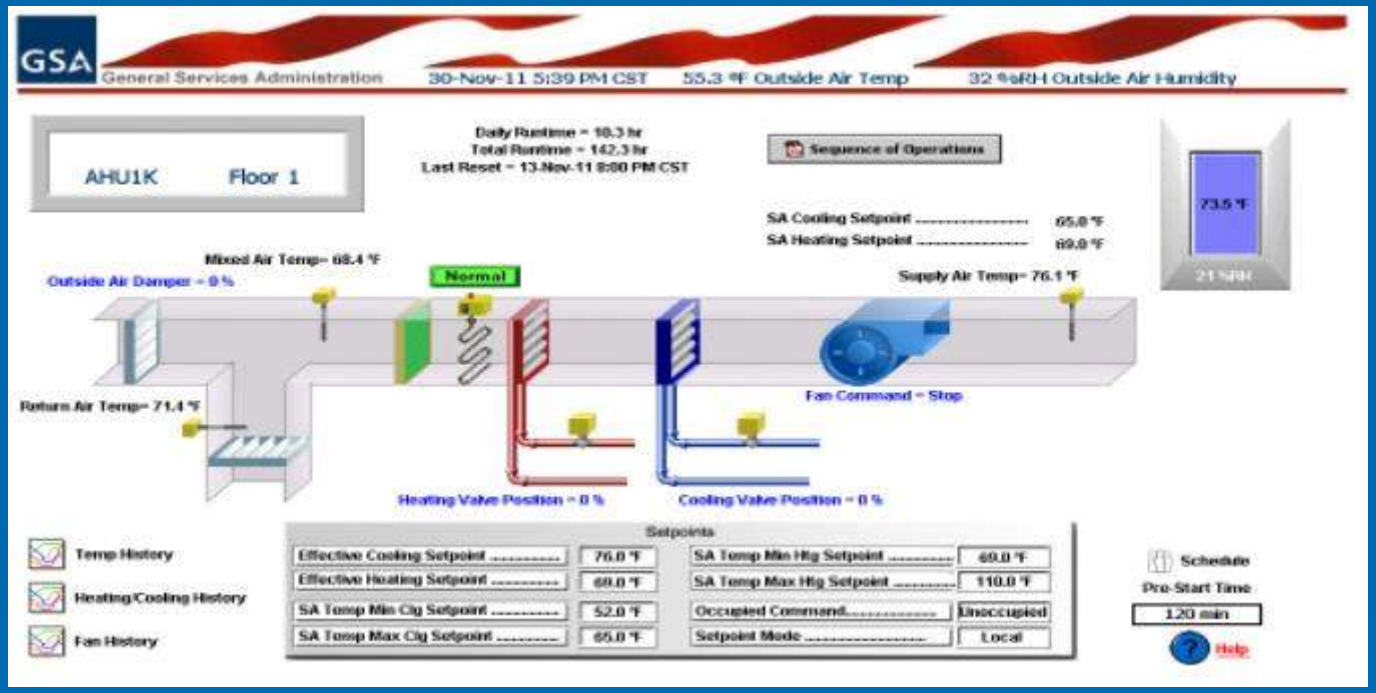
Multizone AHU Graphic



Single Zone AHU – Draw Through, Preheat



Single Zone AHU



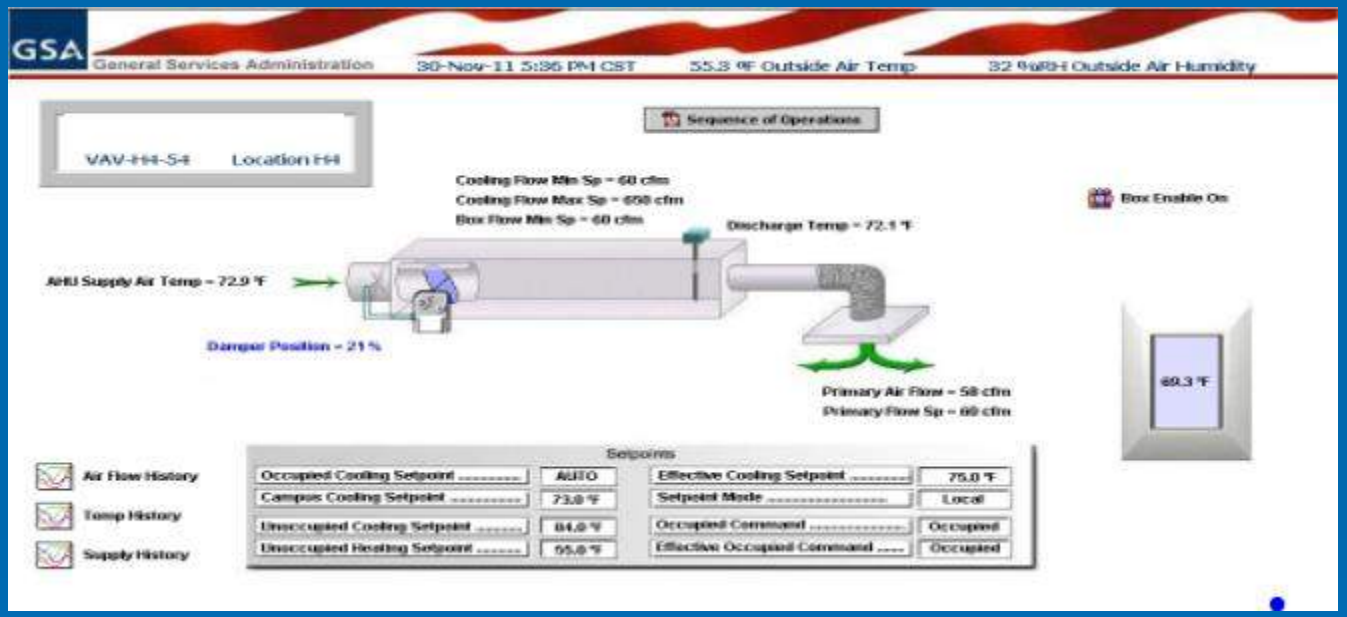
VAV Overview

GSA General Services Administration Outside Air Temp = 46.7 °F Outside Air RH = 29.5 % 17-Dec-20 3:17 PM MST

Building Name
Floor Number

VAV Name	Room Number	SpaceTemp	Setpoint	AirFlowClg	DamperCmdClg	DamperPosClg	AirFlowHtg	DamperCmdHtg	DamperPosHtg
VAV-2-1	Room 2515	77.2 °F	80 °F	216 cfm	39 %	37 %	0 cfm	0 %	0 %
VAV-2-2	Room 2511	69.2 °F	72 °F	284 cfm	31 %	32 %	308 cfm	30 %	32 %
VAV-2-3	Room 2507	71.2 °F	70 °F	256 cfm	33 %	34 %	0 cfm	0 %	14 %
VAV-2-4	Room 2505	74.0 °F	74 °F	172 cfm	32 %	33 %	76 cfm	0 %	0 %
VAV-2-5	Room 2402	70.5 °F	70 °F	236 cfm	42 %	47 %	0 cfm	0 %	2 %
VAV-2-6	Room 2321	68.0 °F	68 °F	212 cfm	38 %	53 %	44 cfm	20 %	28 %
VAV-2-7	Room 2202	72.8 °F	73 °F	240 cfm	33 %	34 %	76 cfm	0 %	4 %
VAV-2-8	Room 2208	71.5 °F	70 °F	272 cfm	33 %	38 %	52 cfm	0 %	0 %
VAV-2-9	Room 2233	69.5 °F	70 °F	220 cfm	34 %	34 %	0 cfm	0 %	0 %
VAV-2-10	Room 2301	69.5 °F	72 °F	232 cfm	34 %	34 %	56 cfm	97 %	91 %
VAV-2-11	Room 2201	72.2 °F	70 °F	228 cfm	26 %	30 %	0 cfm	0 %	0 %
VAV-2-12	Room 2021	71.5 °F	72 °F	728 cfm	81 %	79 %	52 cfm	0 %	0 %
VAV-2-13	Room 2313	71.0 °F	70 °F	256 cfm	25 %	29 %	84 cfm	13 %	0 %
VAV-2-14	Elev Lobby	71.00 °F	70.00 °F	228.00	30.00 %	29.60 %	0.00	0.00 %	0.00 %
VAV-2-15	Room 2103	71.75 °F	70.00 °F	220.00	23.20 %	23.60 %	0.00	0.00 %	0.00 %
VAV-2-16	Room 2011	70.2 °F	70 °F	240 cfm	33 %	41 %	120 cfm	32 %	28 %
VAV-2-17	Room 2018	70.8 °F	70 °F	272 cfm	42 %	44 %	36 cfm	0 %	14 %
VAV-2-18	Room 2016	69.8 °F	70 °F	220 cfm	44 %	43 %	108 cfm	46 %	28 %
VAV-2-19	Room 2012	74.8 °F	74 °F	292 cfm	32 %	34 %	44 cfm	0 %	0 %
VAV-2-20	Room 2001	70.5 °F	70 °F	256 cfm	42 %	47 %	160 cfm	38 %	32 %
VAV-2-21	Room 2001	70.5 °F	70 °F	236 cfm	45 %	57 %	128 cfm	51 %	35 %
VAV-2-22	Room 2103	71.0 °F	70 °F	236 cfm	30 %	33 %	292 cfm	43 %	40 %
VAV-2-23	Room 2104	66.2 °F	70 °F	196 cfm	66 %	77 %	108 cfm	68 %	56 %
VAV-2-24	Room 2402	68.2 °F	70 °F	232 cfm	52 %	58 %	420 cfm	63 %	64 %
VAV-2-25	Room 2019	72.5 °F	72 °F	228 cfm	38 %	45 %	472 cfm	94 %	100 %
VAV-2-26	Room 2303	69.50 °F	71.00 °F	216.00	28.80 %	28.00 %	0.00	0.00 %	0.00 %

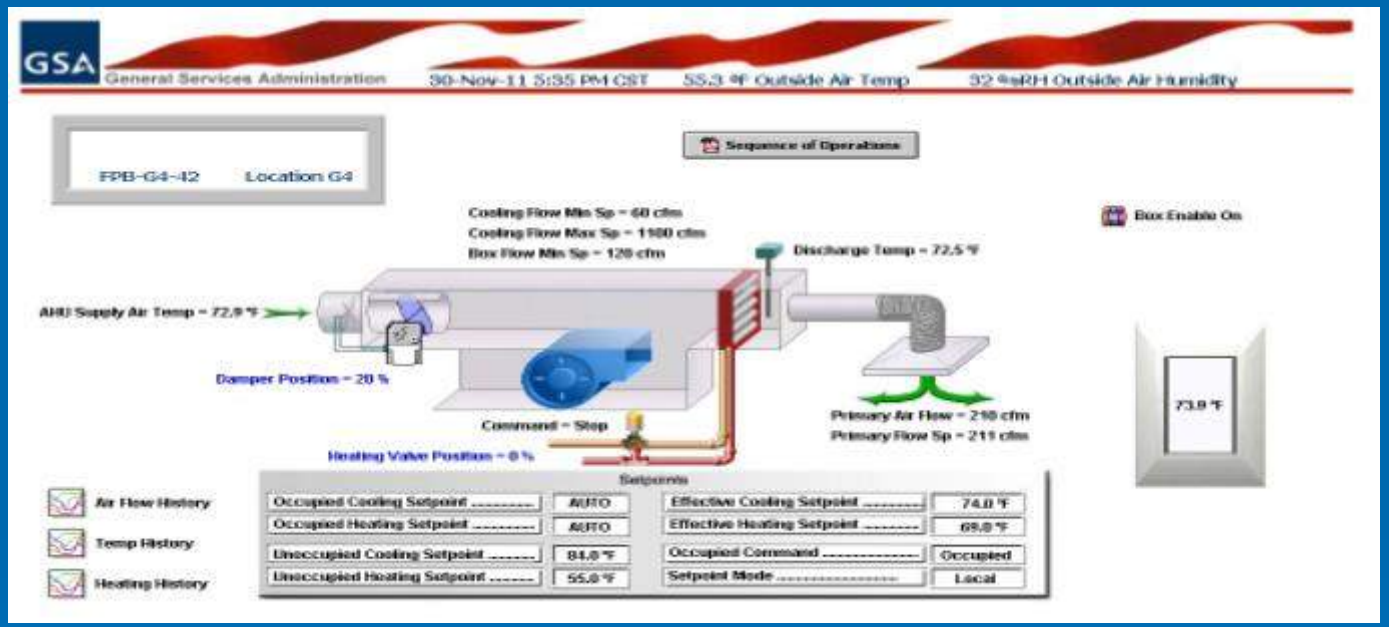
VAV Graphic


GSA
General Services Administration
30-Nov-11 5:36 PM CST
55.3 °F Outside Air Temp
32 %RH Outside Air Humidity
VAV-HH-S4
Location HH
Sequence of Operations
Cooling Flow Min Sp = 60 cfm
Cooling Flow Max Sp = 650 cfm
Box Flow Min Sp = 60 cfm
Discharge Temp = 72.1 °F
Box Enable On
AHU Supply Air Temp = 72.9 °F
Damper Position = 21 %
69.3 °F
Primary Air Flow = 58 cfm
Primary Flow Sp = 60 cfm
Air Flow History
Temp History
Supply History
Setpoints
Occupied Cooling Setpoint ..... AUTO
Campus Cooling Setpoint ..... 73.0 °F
Unoccupied Cooling Setpoint ..... 84.0 °F
Unoccupied Heating Setpoint ..... 55.0 °F
Effective Cooling Setpoint ..... 75.0 °F
Setpoint Mode ..... Local
Occupied Command ..... Occupied
Effective Occupied Command ..... Occupied

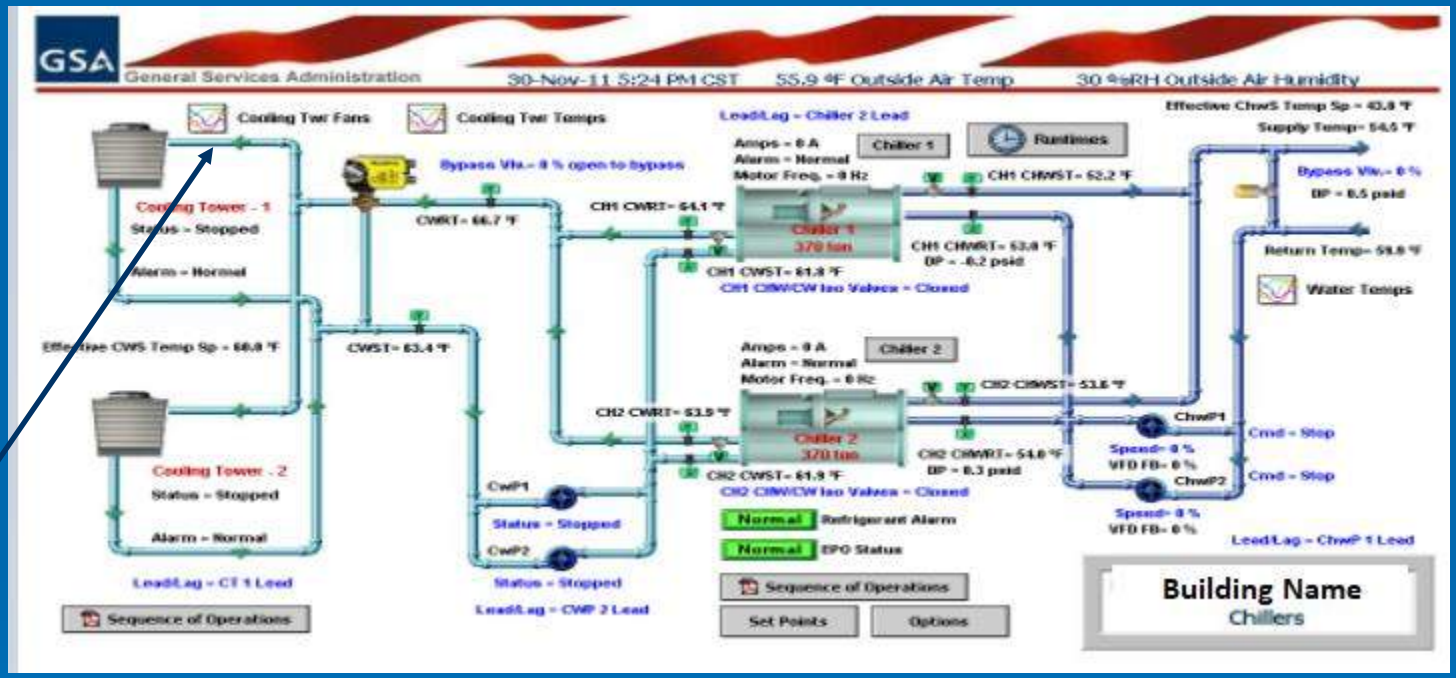
Fan Powered Box Overview

VAV Name	Room Name	Occ Cmnd	Space Temp	Effective SP	Setpoint Mode	Air Flow	Air Flow SP	HW Valve	Dmpr Position	Supply Temp	Fan Cmnd
FPB_H5_55	Location H5	Occupied	68.7 °F	70.0 °F	Local	120 cfm	120 cfm	100 %	13 %	69.3 °F	Run
FPB_H4_41	870	Occupied	72.0 °F	74.0 °F	Local	59 cfm	60 cfm	0 %	22 %	71.9 °F	Stop
FPB_H2_33	8608	Occupied	73.3 °F	74.0 °F	Local	57 cfm	60 cfm	0 %	24 %	71.9 °F	Stop
FPB_G4_42	Location G4	Occupied	73.9 °F	74.0 °F	Local	213 cfm	216 cfm	0 %	20 %	72.5 °F	Stop
FPB_G4_52	840	Occupied	73.1 °F	74.0 °F	Local	60 cfm	60 cfm	0 %	12 %	72.9 °F	Stop
FPB_F1_83	Location F1	Occupied	71.7 °F	72.0 °F	Local	505 cfm	490 cfm	0 %	40 %	72.3 °F	Stop
FPB_C2_83	Location C2	Occupied	72.1 °F	74.0 °F	Local	57 cfm	60 cfm	0 %	2 %	71.9 °F	Stop
FPB_A4_91	Location A4	Occupied	71.9 °F	76.0 °F	Local	56 cfm	60 cfm	0 %	8 %	72.7 °F	Stop
FPB_C1_73	Location C1	Occupied	72.8 °F	76.0 °F	Local	72 cfm	60 cfm	0 %	11 %	73.9 °F	Stop

Fan Powered Box Graphic



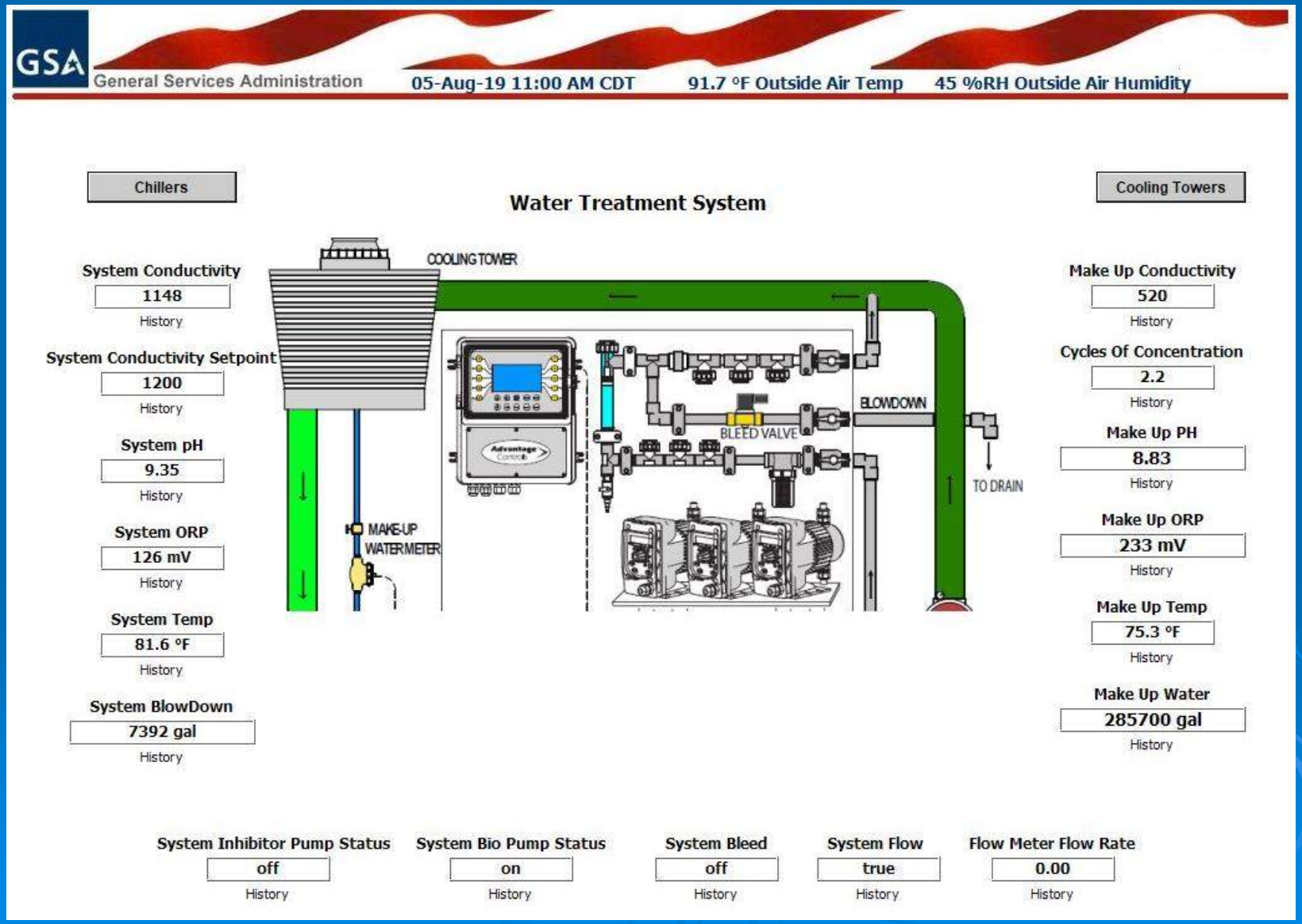
Basic Chilled Water Plant



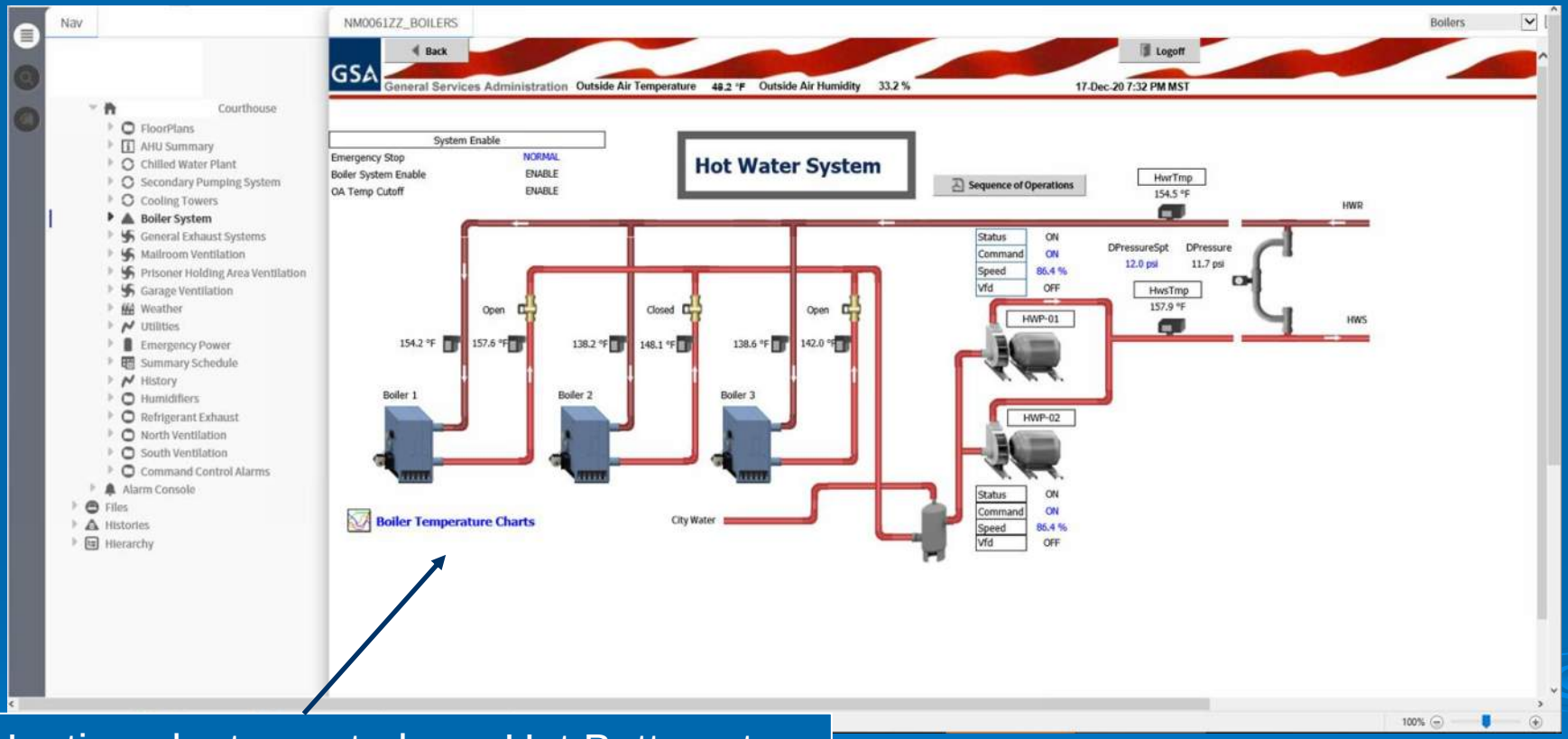
Chiller plants are to have Hot Buttons to logged and trended data for all points pertinent to the system displayed. Graphic is to display points required to assess current plant operation.

Include the ability to modify the Chilled Water Setpoint / Reset Schedule from the Chiller Graphic Page.

Water Treatment System



Heating Plant Points



Heating plants are to have Hot Buttons to logged and trended data for all points pertinent to the system displayed. Graphic is to display points required to assess current plant operation.

Include the ability to modify the Hot Water Setpoint / Reset Schedule from the Boiler Graphic Page.

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Building Technologies Technical Reference Guide

Version 3.0

May 1, 2024

DocuSign Envelope ID: A17E92B7-9680-4BF9-84F2-E8432B628868

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Introduction

The nation's buildings are increasingly relying on Building Monitoring and Control (BMC) systems with embedded communications technology, and many are enabled via the Internet. While the advent of the Internet of Things (IoT) allows for ease of use, remote access, and data reporting/integration, it can also create easy targets for hackers and those with malicious intent. Attackers can exploit these systems to gain unauthorized access to facilities. These technologies can also be used as an entry point to the traditional informational technology (IT) systems and data which can cause physical destruction of building equipment and expose an organization to significant financial obligations to contain and eradicate malware or recover from a cyber-event. Federal facilities can include courthouses, laboratories, and regional office buildings, many of which are part of the nation's critical infrastructure. These facilities contain building control systems (i.e. heating, ventilation and air conditioning) as well as physical access control systems (i.e. electronic card readers and closed-circuit camera systems) that are increasingly being automated and integrated to other information systems or networks and the Internet. As these systems are becoming more integrated, so is their vulnerability to potential cyber-attacks.

As the world has learned from highly visible cybersecurity incidents at many large business organizations and the Office of Personnel Management (OPM), hacking is a growing trend. The external threats are real enough to raise concerns and the GSA does not want to be the next target. Cyber incidents can compromise Personally Identifiable Information (PII) and cause outages related to power, network, or other issues. This will cause major damage to the security infrastructure of a building, and it can also have a long-term rippling effect that can go on for many years. Building a platform with emphasis on security and disaster recovery in mind will limit these types of incidents as well as protect the infrastructure, including the building systems, which can be vulnerable to internal or external sources.

The Building Technology Services Division (BTSD) was established under GSA IT as a response to growing cybersecurity concerns related to Building Monitoring Control (BMC) systems. BTSD resides within the Office of GSA IT's PBS Public Building IT Services (PB-ITS) and specializes in IT Project Management support for building systems projects that depend on the GSA network or require remote connectivity. This includes new capital projects, system migrations and system upgrade projects. Additionally, BTSD creates standards, procedures, and provides guidance and resources for buildings located across the eleven PBS regions. BTSD is at the forefront of assessing and managing risk posed by hardware and software components of BMC Systems and works closely with IT Security to facilitate the BMC systems security assessment process. BTSD also supports network integration activities related to IoT technologies. BTSD serves in a cross-functional role, collaborating across multiple groups and organizations including:

- Office of Chief Information Officer (OCIO)/GSA IT
- Office of Facilities Management (OFM)
    - Smart Buildings Program
    - Energy Program Division
    - GSA Proving Ground (GPG)
- Office of Federal High Performance Buildings

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- Office of Mission Assurance (OMA)
- Office of Project Delivery

The Building Technologies Technical Reference Guide (BTTRG) was developed due to a growing demand for formalized guidance related to the technical integration of BMC Systems to the GSA network and within GSA's information technology (IT) environment. BMC Systems include, but are not limited to, building technologies such as building automation systems (BAS), advanced metering systems (AMS), lighting control systems (LCS), physical access control systems (PACS), renewable energy systems, and national digital signage (NDS). These systems, while closely related to the scope of facilities management, are IT systems and do collect GSA building data, and as such are subject to the same federal (i.e. the Federal Information Security Management Act (FISMA)) and agency specific policies and security standards as any other federal IT system. It is the intent of this document to inform on those policies and standards. Additionally, this document establishes a consistent and repeatable approach for how these technologies will be implemented and supported within GSA. The audience for this guide is facility managers, operations and maintenance staff, and potential and/or contracted vendors and integrators.

This guide was initiated and published by the Public Buildings Information Technology Services (PB-ITS) in participation with GSA IT Security, Office of Mission Assurance (OMA), multiple offices of PBS including Office of Facilities Management (OFM), Office of Design and Construction (ODC), as well as with participants from the regions. Each chapter of this guide covers a functional area and the content for each was developed through working group meetings, which included the participation of stakeholders and subject matter experts.

The BTTRG aligns with existing Federal and GSA specific IT policies and is partnered with the Technology Policy for PBS-Owned Buildings Monitoring and Control Systems (latest version posted on InSite). For guidance on smart building implementations and industry best practices for building automation systems, please refer to:

- GSA Smart Buildings Program Guide
- GSA Smart Building Implementation Guide
- GSA Data Normalization for Building Monitoring & Control Systems

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Revision History

Version	Date
Version 1.0	June 2011
Version 1.1	February 2014
Version 1.2	September 2016
Version 2.0	June 2021
Version 3.0	May 2024

This guide will be updated every few years to illustrate improvements to processes, evolved best practices, and any new or updated policies and standards relevant to the implementation of BMC Systems. Users of this guide are encouraged to provide feedback that will lead to improvements in future versions by emailing the BTSD at buildingtechnologyservicesdivision@gsa.gov.

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Chapter 1

Policy, Standards, and IT Security Requirements

1.0 Overview

This chapter details the General Services Administration's (GSA) and Public Building Services' (PBS) standards and Information Technology (IT) security policies with respect to the implementation of BMC systems devices/applications. It documents the comprehensive system requirements related to approved software, standard hardware, network connectivity, user access, security clearances and Building Systems Network (BSN). Additionally, policies and procedures contained herein will guide PBS in preparing for assessment and authorization activities required for building systems projects.

Current policies for assessment and authorization of systems and devices on the BSN are based on the *National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53 Rev. 5, Security and Privacy Controls for Information Systems and Organizations* and the *National Institute of Standards and Technology (NIST) Special Publication (SP) 800-213A, IoT Device Cybersecurity Guidance for the Federal Government: IoT Device Cybersecurity Requirement Catalog*. The BSN servers supporting the BMC systems and associated devices have been issued a FISMA Moderate Authority to Operate (ATO). Additionally, the GSA IT Security Team has issued guidance and procedure documents. The documents cover the BMC systems security assessment process, roles and responsibilities and the Service Level Agreements (SLA) for evaluation.

1.1 BMC Systems Roles and Responsibilities

- **GSA IT Buildings Technology Services Division (BTSD):** The BTSD is the liaison between the Regional PBS Project Teams, vendors/contractors and GSA IT for all BMC systems that need to be integrated onto the GSA network. ***Please Note: See Section 1.5.4 for the steps on how to integrate a site onto the GSA network.***

- **GSA IT Network Operations and Management Team (Network Team):** The network team has command responsibility for the GSA Wide Area Network (WAN) and Local Area Network (LAN). They are responsible for the entire IP transport layer and are the sole provider for IP/subnet allocation at the building level. In addition, they manage network devices (i.e. routers and switches) and the BSN's connectivity. ***Please Note: PBS is responsible for the controllers/devices. GSA IT provides connectivity up to the switch port.***

- **GSA IT Technical Operations Team (TechOps):** TechOps is responsible for all PBS servers on the GSA network. This includes VMware/virtual server builds, operating systems (OS), databases, server/application services and system backups/restores. ***Please Note: See Chapter 4 for more details on TechOps's role in provisioning BMC systems servers.***

- **GSA IT Security Team:** The GSA IT Security Team is responsible for providing cybersecurity to PBS including endpoint protection, perimeter defense, vulnerability scanning and enterprise logging. They

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perform regular scans of BSN servers as part of compliance validation. In addition, they are also responsible for authoring the Assessment and Accreditation (A&A) documents, performing risk assessments, managing system compliance over the life of the ATO and managing the POA&M items specific to the BSN.

- **GSA IT BMC Systems Security Assessment Team:** The BMC Systems Security Assessment Team performs hardware, firmware, and software assessments on devices designated as BMC systems components. They are also responsible for reporting the proper configuration of the device and any residual risks associated with use of the device within the GSA network. ***Please Note: See Section 1.4 for more details on the BMC Systems Security Assessment Process.***

- **Regional PBS Project Teams:** This includes regional Smart Building Team members, BAS specialists, contracting officers, project managers and facility management. They are responsible for ensuring that any BMC systems contracted, purchased, owned and/or operated in the regions adhere to all GSA policy and implementation guidance. They are also responsible for the installation, configuration, and management of the application hardware, firmware and/or software. In addition, the regions are responsible for contacting the BTSD prior to the award for applicable contract and implementation requirements. ***Please Note: See Chapter 4 for links to required documents.***

- **Vendor/Contractor:** The vendor/contractor is responsible for adhering to GSA IT policies. This includes ensuring BMC systems hardware, firmware and software meet Security Assessment Report (SAR) provisions and provide maintenance/support of their products connected to the GSA network.

1.2 Policies and Requirements for Interconnectivity

The following section provides information regarding GSA IT policies and standards with which PBS-IT systems, vendors, manufacturers, and integrators shall comply.

1.2.1 Trusted Internet Connection (TIC)

Trusted Internet Connections (TIC) is a mandate from the Office of Management and Budget (OMB). The purpose is to reduce the number of internet gateways on the federal government network and to ensure that all external connections are routed through a government agency that has been designated as an approved TIC Access Provider. All BSN network traffic must transit through a TIC, which is a network circuit that is managed by GSA IT.

2100.1P CIO GSA Information Technology (IT) Security Policy (latest version as of May 2024) states:

“All GSA owned or managed network devices must maintain a connection to a GSA facility, which handles GSA data shall be strategically positioned behind a GSA firewall to provide analysis/correlation, management structure, and minimize threats presented by external attacks.”

TIC will allow GSA to provide monitoring, incident response, vulnerability assessment/management, incident reporting, engineering support, and the enforcement of the agency’s specific security policy at the hosted facility. It will also allow trained, qualified, and cleared staff to support security functions 24x7.

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external/commercial network connection for managing or monitoring of building systems in any GSA owned, non-delegated, building will not be tolerated. Such connections will be removed upon discovery.

1.2.2 Cellular Connection

BMC systems devices are to be connected to the GSA Building Systems Network. GSA realizes that under certain circumstances, connecting BMC systems devices to the Building Systems Network is not feasible, and other network transport technologies may need to be employed. The use of a cellular transport is by exception only, based on a GSA OCISO risk assessment. All cellular transport must be facilitated by a device with the following security capabilities: stateful firewall, audit logging, and VPN. GSA IT security must be provided administrative access to the device facilitating the cellular transport. All BMC systems devices utilizing cellular transport must successfully complete the BMC Systems Security Assessment Process and undergo annual penetration tests. The GSA OCISO may grant exceptions to the security capabilities based on the results of a GSA OCISO risk assessment. ***Please Note: All cellular connections, whether they are a part of the GSA network or not, are subject to security testing and validation.***

1.2.3 Government Furnished Equipment

Federal Acquisition Regulation (FAR) Part 45 defines Government Furnished Equipment (GFE) as "equipment that is owned by the government and delivered to, or made available to a contractor". As such, GFE hardware must be used to access IT systems. This applies to all networking infrastructure, IP enabled devices, servers and workstations associated with BMC systems. Citrix VDI can be used as an alternative to GFE, when applicable. Vendor-provided computer hardware is not allowed to connect to the GSA network and can only be used for pre-commissioning purposes. If vendor-provided devices, workstations, or servers are discovered, they are subject to removal without warning.

- **Network Equipment:** This includes, but is not limited to, any equipment that provides networking capabilities, i.e. routers, switches, and wireless access points (WAP). ***Please Note: WAPs are provisioned on a case-by-case basis. The use of WAPs to support BMC systems is under review. Please discuss with your BTSD IT PM for the latest information.***

- **Computer Hardware**: This includes servers, printers, computers, smart devices, and their peripherals (monitors, mice, and keyboards), etc.

As buildings are integrated with the GSA network, GSA IT will make every effort to provide at least one laptop to these sites. The purpose of the laptop is to provide building management staff with access to their BMC systems application interfaces. Facility managers and project managers are responsible for ensuring that the GFE are in a locked IT closet or secure location that only approved/cleared personnel can access.

Please Note: Availability of hardware is dependent on the availability of funding. Existing GSA workstation refreshes will still be coordinated through the regional GSA IT manager's office. Hardware (switches, laptops, etc.) will not be provided unless an approved network diagram is submitted. See Section 2.4 for details about network diagram requirements and submission.

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1.2.4 BMC Systems Device Whitelisting Process

Cisco Identity Services Engine (ISE) is an identity and access-control policy platform that allows enforcement of security and access policies for endpoint devices connected to GSA's routers and switches. ISE is a mandated security policy to ensure that unauthorized systems are not connected to the network. It is applied to GSA switches which, in turn, block devices that are not recognized as approved devices, including rogue circuits and unmanaged switches.

The GSA rolled out the Mac Address Bypass (MAB) process in June 2017. For a device to be allowed to communicate over the GSA network, its MAC address must be whitelisted by GSA IT. All devices will need to be remediated before they are whitelisted. ***Please Note: See Section 1.4 for details on the BMC Systems Security Assessment Process.***

1.3 GSA Network Access to Perform Duties

This section demonstrates how any GSA employee, contract staff, or vendor personnel can obtain access to GSA IT systems, which includes all hardware, system software, data, and network access. Each of these requirements must be met for access to be granted. ENT domain credential and VPN access require a *Homeland Security Presidential Directive-12 (HSPD-12): Policy for a Common Identification Standard for Federal Employees and Contractors* adjudication. ***Please Note: To ensure uninterrupted support from vendor personnel, government sponsors/project POCs must ensure vendor personnel maintain their ENT accounts and keep them active. This includes timely completion of all tasks required to keep an ENT account active, such as annual IT Security Training courses, and regularly logging into their email.***

1.3.1 HSPD-12 Credentialing and Systems Privileges

Homeland Security Presidential Directive 12: Policy for a Common Identification Standard for Federal Employees and Contractors (HSPD-12) is a mandated policy for a common identification standard for federal employees, and contractors. HSPD-12 requires all federal executive agencies and departments to conduct personnel investigations, adjudicate results, and issue a Personal Identity Verification (PIV) or Access Card to all federal employees, contractors, or personnel that require routine or regularly scheduled access to federally controlled facilities, and IT systems. Please visit the GSA Identify, Credentials, and Access Management site for details on how to initiate the credentialing process.

Government sponsors/project POCs need to ensure vendor personnel maintain their ENT accounts and keep them active, to be able to provide technical support going forward. This includes timely completion of all tasks required to keep an ENT account active, such as annual GSA IT Security Training courses and accounts must be accessed at least once every 60 days.

1.3.2 Background Investigations

Per *2100.1P CIO GSA Information Technology (IT) Security Policy* (latest version as of May 2024), those individuals whose duties require a higher degree of trust, such as IT system administrators (or administrative access to building systems server, applications and devices), those who handle financial transactions, or those who deal with PII and other sensitive information (i.e. building drawings, etc.) will require a Tier 2 clearance.

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All access to GSA information systems must comply with the requirements of *2100.1P CIO GSA Information Technology (IT) Security Policy* (latest version as of May 2024). Non-privileged access to a GSA information system categorized at the FIPS 199 High or Moderate level via a network requires Multi-Factor Authentication (MFA), and privileged access to any GSA information system via a network requires MFA.

1.4 BMC Systems Device, Appliance and Software Security Assessment Process

Before any IP-addressable hardware, software or IT device/system is allowed to be connected to the GSA network, GSA IT will need to assess and approve the solution. Any device that is not approved will not have the Authority to Operate (ATO). More information regarding the assessment process can be found in *BMC Systems Security Assessment Process [CIO IT Security 16-76 Rev 4]* (latest version as of May 2024), which is located under IT Security Procedural Guides on insite.gsa.gov.

1.4.1 GSA IT Security Scanning Process

The BMC Security Assessment Team has four types of assessments: Wired, Wireless, Server Software/ Supervisory Control Software (SCS), and BSN Console/Desktop Software. The BMC systems security assessment process applies to Wired, Wireless and Server Software. The process is broken down into six steps: Pre-Assessment, Induction, Assessment, Initial SAR Issuance, Vendor Remediation, and Post-Assessment. ***Please Note: See Section 1.4.4 for the process of BSN Console/Desktop Software assessments.***

1.4.1.1 Step 1: Pre-Assessment

To request a scan, the hardware or software being proposed must be sponsored through an active project. To begin the process, an Assessment Request Form (ARF) must be completed, before the device is shipped to the BMC Security Assessment Team. The assessment request forms must be completed, and all relevant documentation (installation manual, configuration management plan, hardening guide) must be submitted and reviewed before Security is ready to receive the device. The ARF includes instructions on how to submit documentation to the BMC Security Assessment Team. ***Please Note: This form is available to anyone with access to the GSA network. An offline version of the ARF can also be sent to POCs without access to the GSA network.***

The BTSD is responsible for working with BMC systems vendors to identify solutions requiring assessment. Pre-assessment requirements include electrical specifications, technical prerequisites and submitting the required forms. The BMC Security Assessment Team will review the submission and technical specifications to identify compliance with minimum security requirements and accept or reject the BMC systems solution into the BMC Assessment Lab.

The device should be sent configured and hardened as it will be installed on the GSA network (unnecessary ports and services closed, etc.) and be properly assembled for power. The BMC Security Assessment Team is not permitted to work with any electrical wiring, and any device that cannot immediately be plugged into a 110V wall outlet will be delayed (either returned for proper configuration, or on hold until someone can come to the BMC Security Assessment Lab and configure appropriately).

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The following items are against GSA IT Security policy and best practices:

- No Remote Access (back doors) from outside of the GSA network – access must use GSA provided access (Citrix, Virtual Desktop Interface [VDI], or Government Furnished Equipment [GFE] with Virtual Private Network [VPN]).
- Use of third-party providers (cloud, hosting, etc.) is restricted to only GSA approved and Federal Information Security Modernization Act [FISMA] reviewed third-party providers.
- Protocols such as Telnet, Secure Shell (SSH), Trivial File Transfer Protocol [TFTP] and FTP, Hypertext Transfer Protocol [HTTP], will not be accepted due to the unencrypted nature of the protocols.
- The BMC systems device must not allow changes to security configuration without authentication.
- The BMC systems device must not have hardcoded credentials.
- Use of compromised or weak wireless technology, such as Zigbee (default configuration without any modification), Z-Wave (default configuration without any modification), Bluetooth, 802.11 Wired Equivalent Privacy/ Wireless Protected Access (WEP/WPA) and low-level frequency without protection, such as Global System for Mobile Communications (GSM) Band and Code Division Multiple Access (CDMA) (3G/4G/LTE).
- BACnet will be reviewed on a case-by-case basis.
    - BACnet/Ethernet - Because Layer 2 network traffic cannot be effectively managed on the GSA network between subnets, BACnet/Ethernet is expressly prohibited from being implemented on the GSA Wide Area Network (WAN). BACnet/Ethernet can be used at a given field site, provided all BACnet devices are on the same subnet.
    - BACnet/Internet Protocol (IP) Multicast (B/IP-M) - BACnet multicasting is another way to communicate BACnet messages from one subnet or broadcast domain to another. However, GSA does not allow multicasting over its WAN. Therefore, this approach should not be applied when configuring a BACnet system on the GSA network.
- Windows and Linux based controllers not capable of compliance hardening and monthly OS patching.
- Devices which are not IPv6 capable when connected directly to the GSA switch.
- Server software not capable of utilizing Windows Server 2022.
- BSN console software not capable of utilizing Windows 11.

The following will be needed with each device that is submitted:

- Manufacturer POC
- All relevant information and documentation must be provided to PBS-IT Security, including:
    - Firmware and software versions (these are essential for determining a security baseline)
    - Technical specifications (including information on all inbound and outbound communication on the device, required ports and services, etc.)

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- User Manual
- Installation and Configuration Guide
- Operation and Maintenance Guide
- Configuration/Hardening Guide
- Network diagram detailing network ports, protocols, and services utilized.

- The device and software documentation must provide information related to the system configuration management plan, explaining:
  - How will the device be configured on the GSA network, and how can this configuration be monitored?
  - How will the device be hardened (which ports and services are unnecessary and will be turned off when installed on the GSA network)?
    - All unnecessary ports must be closed.
    - All unnecessary services must be disabled.
  - How will the device be upgraded / patched when updates to firmware or software are released?
- All new contracts with building automation system vendors shall include support language to ensure that security requirements / upgrades will be remediated by the vendor or manufacturer at no additional cost to GSA.
- For wireless technology submissions, include the following information: FCC ID, protocol specification, operational documentation and commissioning guides.

Before shipping the device, make sure the device is configured with the following:

- The device must have sufficient access controls, including:
  - Login screen
  - Password field on the login screen must be masked.
  - Passwords must meet GSA policy strength requirements: passwords must contain a minimum of sixteen (16) characters with uppercase and lowercase letters, symbols, and numbers.
  - Logins must be encrypted.
  - An automatic logout must be configured when inactive for 15 minutes or more.
  - A warning banner on the login screen must be displayed, and configurable.
- The device must be capable of managing user access rights:
  - Least privilege – nobody should have more rights than needed (i.e. a user with a need for read-only/monitoring access should not be able to make changes to the device or the things controlled

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by the device)

- Documentation should state how user access rights are managed (i.e. administrators, general users, etc.)

- The device must be capable of utilizing TLS (SSL is not sufficient) for the encryption of sensitive data and/or login credentials:
  - Project POC must state what kind of data is being transmitted through these devices (i.e. metering data, energy use data, sensitive data, etc.)
  - Have TLS v1.2 encryption or higher with High Strength ciphers enabled only. Disable SSL v1.0, SSL v2.0, SSL v3.0, TLS v1.0, and TLS v1.1. ***Please Note: TLS v1.3 will become a requirement in the future. Please confirm the latest policy with the BTSD PM.***
  - All web-based logins must utilize TLS v1.2
  - Configured HTTPS to be enabled and HTTP disabled.
  - Enable HTTPS Strict Transport Security (HSTS)
  - Passwords at rest must be encrypted and hashed with AES 256 bit at minimum.
  - Be configured with FIPS 140-2 Compliance (Level 1 at minimum)

- Audit and Accountability (instructions for accessing logs and information detailing what events are audited). The device must be capable of logging the following auditable events:
  - Successful and unsuccessful account logon events
  - Account management events (creation or deletion of user accounts, change in user privileges, etc.)
  - Privilege use events (i.e. administrator functions, changes to or erasure of system logs, etc.)
  - System events (i.e. power failures, lost connection to a server, or other availability issues, system time changes, NTP server synchronizations, etc.)
  - If the device has a web application, the web application must be capable of logging the following auditable events:
    - All administrator activity
    - Authentication checks (i.e. user logons)
    - Authorization checks (i.e. checks of user privileges or access rights)
    - Permission changes (i.e. change in user privileges)

- The device must be capable of being updated:
  - To address code vulnerabilities in the firmware

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- Updates shall be carried out in an offline manner, rather than requiring Internet Access
- All firmware must have integrity checks in place (i.e. Signed packages, checksums, etc.) and only administrators may be allowed to perform the update
- To improve the software or firmware in general ***(Please Note: Major firmware revisions may require reassessment and reauthorization of the device.)***

- If the device uses a Microsoft Windows or UNIX/Linux based operating system, antivirus software must be installed, and a plan must be in place for keeping the AV definitions updated.
- Windows and Linux based controllers must be capable of compliance hardening and monthly OS patching. A patching agreement must be signed by the customer and the vendor.
  - Compliance hardening is based on the NIST US Government Configuration Baseline (USGCB) and must meet 85% compliance or higher.
  - Administrative access is required for GSA to maintain and occasionally perform security validation.
- All devices connected directly to the GSA switch must be IPv6 capable.
  - Addressing must be done at the device level for each NIC and at the application layer.
  - IPv6 addresses must be statically set, via stateless configuration (SLAAC)
- All server software must be capable of utilizing Windows Server 2022.
- All BSN console software must be capable of utilizing Windows 11.
- Any BMC systems device that has 2 or more ethernet ports must provide traffic isolation. Alternatively, if not isolated, provide the ability to disable the port.
- Disable protocols such as Telnet, SSH, TFTP, FTP, MQTT (Only use MQTT-S “Secure”).
- Disable wireless communications unless previously specified as required (802.11 Wi-Fi, Bluetooth, ZigBee, Z-Wave, UHF/RHF, etc.)

Please Note: Any misconfiguration or lack of documentation required by GSA IT may result in delaying the BMC systems security assessment process. Contact bmc.it.security@gsa.gov for any further questions regarding this process. Once IT Security is ready to receive the device, they will provide detailed instructions about shipment.

1.4.1.2 Step 2: Induction

The BMC Assessment Team will attempt to power on, access and establish network connectivity to the BMC systems device.

1.4.1.3 Step 3: Assessment

The BMC Systems Security Assessment Process utilizes a framework to evaluate every type of system (i.e., Building Automation, Lighting Controls, Advanced Metering Solutions, Physical Access Controls

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systems and/or wireless technology). The assessment process consists of several types of checklists to test all aspects of a solution. It includes testing using automated scan tools to identify any known vulnerabilities at the operating system, web layer, and network layer of the device.

1.4.1.4 Step 4: Initial SAR Issuance

Upon completion of the BMC Systems Security Assessment Process, the BMC Assessment Team will issue a Security Assessment Report (SAR). This document contains all findings and vulnerabilities identified during the assessment, broken down by vulnerability level (Critical, High, Moderate or Low) and recommended mitigations. The SAR will also include the scan reports and the manual assessment checklist attached at the end of the document.

1.4.1.5 Step 5: Vendor Remediation/Final SAR Issuance

All BMC systems solutions are required to go through the remediation process if the SAR is issued with open ‘critical’, ‘high’, or ‘moderate’ findings. The BMC Assessment Team will distribute the initial SAR to the BMC systems vendor and appropriate PBS stakeholders with a review meeting is held to go over the findings and provide guidance to the vendor for remediation or mitigation of the findings. The vendor is responsible for addressing the identified vulnerabilities. ***Please Note: The resolution of the findings is ultimately at the discretion of the vendor to address or reject. Based on the vendor’s priorities this process could take time to remediate (i.e. months to years).***

Once the vendor reviews the SAR, they will provide their remediation plans. This could include documentation updates, a firmware update, or a software update. The BMC Assessment Team will verify the remediation plans and ensure that it meets the security requirements. Once the update is provided, the BMC Assessment Team will install the update and re-scan. If the remediation scan comes back free of vulnerabilities, then the BMC Assessment Team can mark the product as Remediated and issue the Final SAR. If the remediation plan does not adhere to the security requirements, then the BMC Assessment Team has the right to reject the product and mark it as non-remediated. If a BMC systems component is identified as non-remediated, GSA is prohibited from being on the GSA network. The status of each product will be displayed on the Device Scanning Dashboard (AN-RR Dashboard).

The BMC Final SAR is a snapshot in time, whose results lose relevancy over time as new vulnerabilities and exploit techniques are identified. The SAR validation is for three years and after this expires, a re-scan is required.

1.4.1.6 Step 6: BMC Systems Service and Support

It is the responsibility of the PBS Business Line to ensure a service support contract is in place to support any additional remediation or upgrades to the device. If the device undergoes changes as a part of the System Development Life Cycle (SDLC) process, or has an identified security incident, there may be a need to reassess the device/SCS.

In the production environment, if a device or software has a new vulnerability discovered, the vendor must provide a patch. If a patch is not available yet, the vendor must provide a remediation plan and the project POC must request an Acceptance of Risk (AoR) from the Authorizing Official (AO) to accept the risk that the device/system would impose on the GSA network. Once the patch is provided, the PBS Business Line must apply the patch per the timelines below.

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GSA Standard Timelines

- Within 30 days for Critical (Very High) and High vulnerabilities.
- Within 90 days for Moderate vulnerabilities.
- Within 120 days for Low vulnerabilities for Internet-accessible systems/services.

Binding Operational Directive Timelines

- Remediation within 14 days for vulnerabilities added to CISA's KEV Catalog with a CVE date post FY21.
- Per the CISA KEV catalog date or GSA Standard timelines above, whichever is earlier, for vulnerabilities in the CISA KEV catalog with a CVE date in FY21 or earlier.
- Within 15 days for Critical (Very High) vulnerabilities for Internet-accessible systems or services.

Please Note: For any BMC systems device that is a Windows or Linux based Operating System, the PBS Business Line is responsible for having a signed agreement between the vendor and GSA adhering to patching monthly. The vendor will be responsible for patching the devices.

1.4.2 Wireless Assessments

GSA IT Security will need to evaluate non-IP wireless devices due to the higher level of threat they pose. Wireless technologies must have a minimum level of AES 256-bit encryption, with the only exception being Zigbee, which currently does not support AES 256-bit encryption. All 802.11 solutions must adhere to the *2100.2C CIO GSA Wireless Local Area Network (WLAN) Security* guide before they can be connected to the GSA network. Additionally, other non 802.11 wireless solutions are required to be scanned, remediated, and the solutions evaluated and approved by GSA IT Security in advance of any implementation.

Use of compromised or weak wireless technology results in broken encryption that can be exploited to leak sensitive information and are not permitted. These include:

- Zigbee (default configuration without any modification),
- Z-Wave (default configuration without any modification),
- Bluetooth (less than v4.1),
- 802.11 Wired Equivalent Privacy/ Wireless Protected Access (WEP/WPA)
- Low level frequency without protection, such as Global System for Mobile Communications (GSM) Band and Code Division Multiple Access (CDMA) (3G/LTE)

Wireless connections can be permitted with the following requirements in place:

- **802.11 Requirements:**
    - Infrastructure Mode (BMC systems device to BSN Infrastructure): All new GSA wireless LAN implementations must meet 802.11i requirements for encryption using the Counter Mode with CBC-

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MAC (CCMP) protocol and AES as its encryption algorithm. In addition, it must use 802.1X port-based network access control for authorization and authentication (EAP). The EAP authentication mechanism that must be used is Protected EAP (PEAP- MSCHAPv2).

- Ad-hoc Mode (Device to Device): Any BMC systems device to BSN console or other BSN peripheral, must have the ability to utilize WPA2-AES 256-bit at minimum.

- **ZigBee Requirements:**
  - AES 128-bit level encryption is implemented.
  - Each new pairing requires a unique handshake.
  - The 802.15.4 Medium Access Control (MAC) Layer is encrypted.
  - The ZigBee Network & Application Layers are encrypted.
  - The vendor has not implemented any publicly known encryption keys.
  - The master key is not transferred over Cleartext before encryption.
  - ZigBee will be disabled when not needed.
- **Proprietary RF (6LoWPAN, LoRa, Z-Wave, ISM band, etc.) Requirements:**
  - AES 256-bit level encryption is implemented.
  - Each new pairing requires a unique handshake.
  - Proprietary RF will be disabled when not needed.
- **Bluetooth Requirements:**
  - Devices must use the Bluetooth Protocol version 4.1 or later.
  - Encryption must always be enabled for Bluetooth connections (i.e. "Security Mode 1" does not enable encryption, and therefore should never be used).

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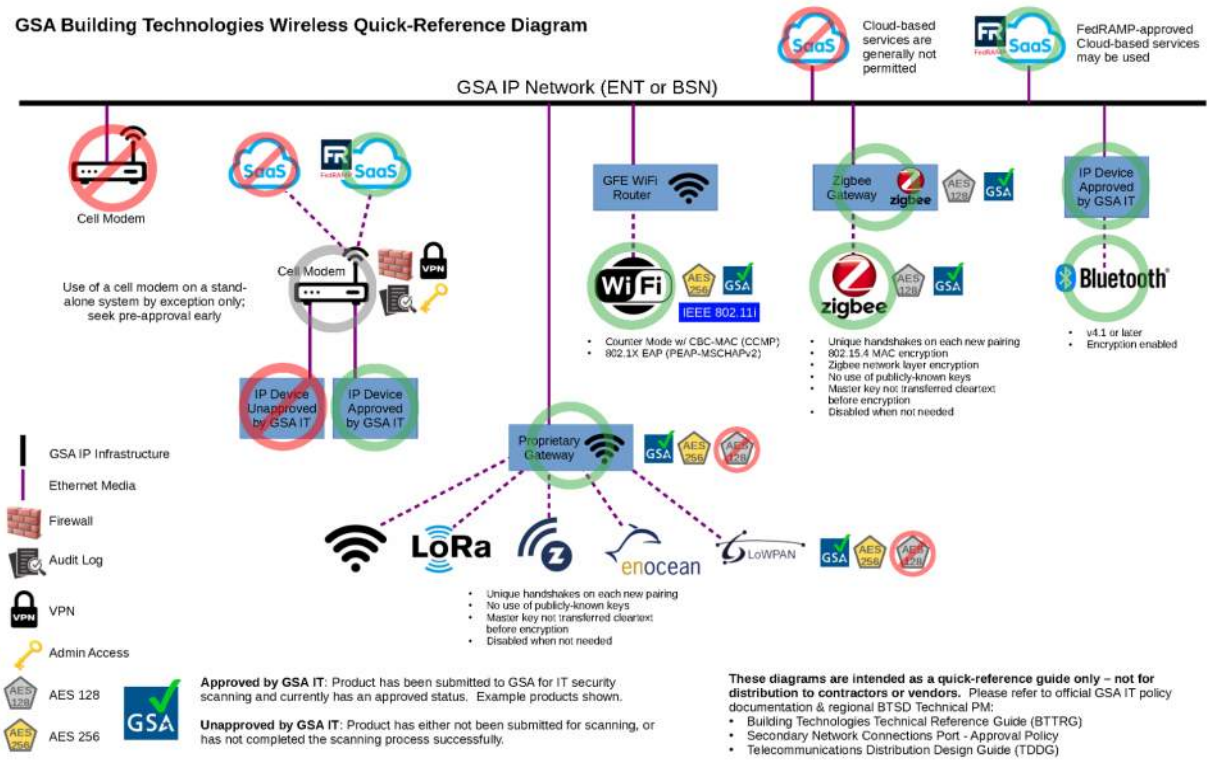

1.4.3 Encryption

The Federal Information Processing Standard (FIPS) 140-2 is a U.S. government computer security standard used to accredit cryptographic modules, which is necessary in order to maintain the confidentiality and integrity of the information system. Once a system has been designed and deployed using FIPS compliant technologies it must be operated following documented procedures to ensure keys are created, stored, retired, revoked, and otherwise managed in a consistent and secure manner. All file/data transfers inbound to or outbound from the device or software must be encrypted using FIPS 140-2 compliant protocols, as well as machine-to-machine transfers.

1.4.4 Non-Standard Software Review Process (BSN Console Software)

Non-standard software refers to applications that are not readily available on standard images on a GSA workstation, or software that is not yet listed as approved on ServiceNow (GSA's enterprise ticketing system). All non-standard software, that has not yet been assessed by GSA IT, will need to complete the evaluation process. GSA IT performs an assessment of the non-standard software, which focuses on ensuring software is currently supported, is 508-compliant and is generally secure and free of vulnerabilities.

To start the evaluation process, submit an Assessment Request Form (ARF) from the PB-ITS InSite page. The BMC Assessment Team will reach out to collect the software installation package(s) and relevant documentation. The status can be tracked via the AN-RR Dashboard. Projects need to ensure that only approved software is installed on GFEs, including the BSN consoles.

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1.4.5 Variable Refrigerant Flow (VRF) in HVAC Controls

VRF Systems are inherently very proprietary and the main vendors (e.g. Trane, Mitsubishi, etc.) have been historically unwilling to participate in the GSA IT remediation process. Additionally, any second-tier communication over BACnet or through a Gateway is not an option due to the open protocol interface of these devices limiting the exposure of important data points and control features.

Because of the challenges GSA cannot connect their systems directly nor through second tier communications. These systems can only be operated in stand-alone, island mode, which limits operational monitoring and control of these systems for the long term.

In addition, due to OFM and GSA IT concerns related to useful life of VRF systems, total cost of ownership, carbon/refrigerant emissions, and risk factors that could impact life safety the following minimum requirements for use or incorporation of a VRF's are:

- The VRF must be connected to the building BAS system.
- The VRF proprietary controller must pass GSA PB-ITS security scanning and be fully remediated.
- The controls must be native BACnet, and we must be able to get into the controls not only to monitor but to control.
- The list of connected points specifically for VRF systems must be those in the GSA Data Normalization for Building Automation Systems, Version 2.5, Appendix C, Sheets 48 through 50. All the listed points must be provided for remote monitoring and control.

1.5 Building Systems Network (BSN)

While advances have been made in the core functionality necessary for making buildings easier to operate, this also introduces increased risks. The building systems industry is not yet positioned to maintain a secure posture, like traditional IT systems.

GSA-owned facilities have been making use of IP enabled building control devices to support increased capability, ease of use, remote access and/or data integration. A significant percentage of building technologies have critical or high security vulnerabilities that have end-of-life components which require upgrades. To reduce this risk, GSA IT has architected a secure network infrastructure to house building systems. GSA established the Building Systems Network (BSN) in 2012 and has continued to improve the BSN to have a scalable, secure, and centrally managed architecture.

The BSN is a logically identified network, which makes use of the GSA's physical network, and uses an organization of Virtual Local Area Networks (VLAN), and firewalls to segment the IP communications from building control system application(s) and devices from the rest of the GSA business network (otherwise knowns as GSA ENT domain). The application of a private Class B network is used for IP address assignment to building control system components, servers, and workstations. This facilitates the use of microsegmentation to allow what is effectively "whitelisted" communication to GSA services required to enable IT support of GSA IT infrastructure within the BSN or to allow communications with approved external services for building systems.

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Please Note: The BSN is NOT intended as a replacement for the ongoing remediation of building systems devices and applications. All new solutions procured for GSA facilities are required to meet the NIST and FISMA standards and require an Authority to Operate (ATO).

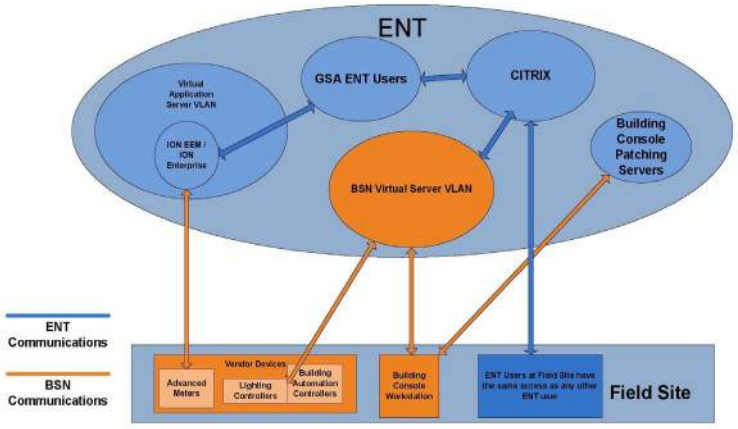
1.5.1 BSN Operations and Maintenance Roles and Responsibilities

The BSN was designed with the participation of multiple groups within GSA IT and with cooperation from subject matter experts in the regions.

- The network management portion of the BSN is the responsibility of GSA IT's Network Team.
- The Citrix team and TechOps manage and support Citrix Virtual Desktop Infrastructure (VDI).
- Regional GSA IT Deskside Services configures and supports workstations.
- TechOps configures and supports BMC systems virtual servers.
- The BTSD is responsible for project management in all the regions across GSA facilities.

1.5.2 BSN Evolvement and Implementation

As of August 2012, any building monitoring and control system in any region that requires access to GSA's network was integrated onto the BSN (as opposed to the ENT domain). This means all IP enabled building systems hardware and software assets are moved to BSN assigned VLANs and are protected by microsegmentation, where communication is restricted. The BSN migration continues to take place today.



NOTE: This graphic illustrates GSA ENT and BSN network communications, highlighting a scenario in which a BSN virtual server (s) is used to host BMC applications.

1.5.2.1 History of BSN

In FY12, BSN I was implemented on the GSA network, as a security measure, to reduce the risk of vulnerabilities posed by unsecured building systems components. The BSN leverages virtual networks to enable logical network segmentation between building systems and the GSA ENT domain. In FY16, GSA IT re-architected the BSN to BSN II, with enhanced network scalability and simplified administration of the

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network. This solution uses a firewall stack solution for traffic segmentation. In FY17, GSA IT re-architected the BSN II to BSN III by purchasing Cisco Viptela equipment to migrate selected GSA field office sites to the SD-WAN.

1.5.2.2 Current Implementation of BSN (Trustsec and Microsegmentation)

In FY21, GSA IT started re-architecting the BSN III to BSN IV by implementing Cisco's TrustSec security solution. The advantage of the BSN IV design is that it makes use of all the existing physical infrastructure currently supporting building systems, eliminating system level changes, and requiring no expenditure or level of effort to effect this change. This architecture is part of the GSA's Zero Trust Framework, which expands visibility of device and user traffic across field sites, while harnessing DHS Continuous Diagnostics and Mitigation (CDM) technologies such as ForeScout, Cisco ISE and BigFix for inventory management. Security and risk of BMC system devices will be limited by leveraging existing Cisco ISE capabilities and policy enforcement using Access Control Lists (ACL) which are pushed to the switch ports, where IP devices are connected. The major two impacts to sites are the enforcement of the approved methods for BSN assets to communicate, and the deployment of new assets at a site.

TrustSec enforces communication flows by permitting allowed methods of communication between BSN assets and denying all other methods. This means that sites not following the approved methods of communication with BSN assets will now have to align to the authorized methods (i.e. GSA ENT laptops are not authorized to connect to BSN assets). This has a direct impact on deploying new devices at a site. Any projects at a site must coordinate with the BTSD IT PM to ensure that any BMC systems assets being deployed are added to TrustSec.

The impact of BSN IV is how the system users access the application(s) and the IP enabled devices from a GSA workstation. The only way to access BSN assets is via BSN console or Citrix VDI.

The sole purpose and capability of the BSN console is to provide direct access to application(s), and IP enabled building system controllers. BSN consoles are specifically configured to only operate at their assigned field office. ***Please Note: See Chapter 5 for more details on BSN consoles.***

By using Citrix VDI as the gateway for ENT-based and/or remote system access, the BSN will make remote access simpler and more readily available. While ENT credentials are still required, vendors will no longer need a GSA laptop with VPN access to log in to a server. They will be able to launch RDP sessions or access published web apps (if available) right from Citrix VDI, which will save them time and potentially regional funds. When vendors are on site, they can make use of the BSN console to access the server, system applications and devices through use of a web browser, client software or an RDP client. ***Please Note: See Section 4.5 for details on accessing Citrix VDI.***

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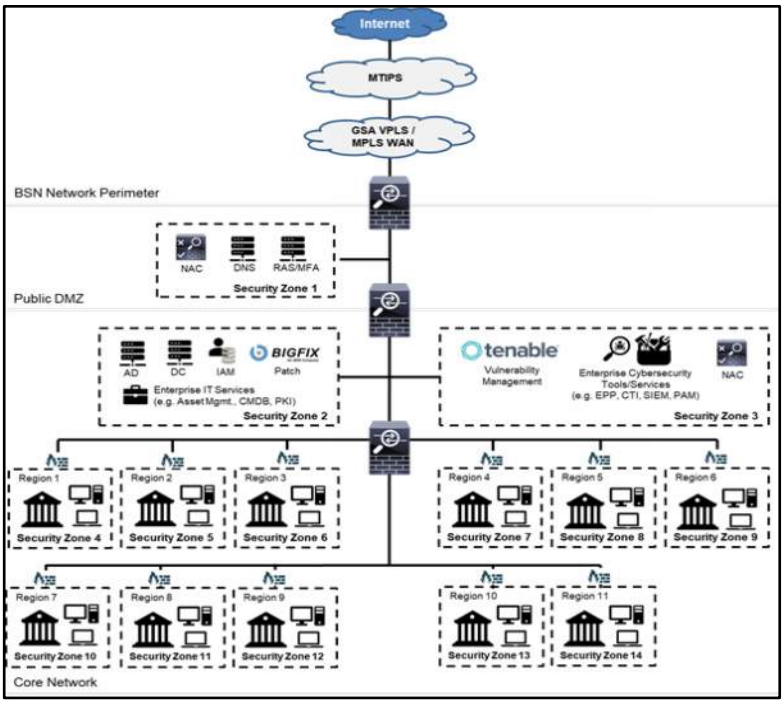

1.5.3 Standard BSN Configurations

BAS applications, BMC devices, and BSN consoles must be configured in accordance with GSA policies, guidelines, and standards. This reduces operational risk and improves the operational efficiency of the BSN.

- **Domain Name System (DNS):** GSA network security only permits network traffic to authorized GSA DNS servers. All BSN assets must be configured with authorized DNS servers. BSN assets that are not configured with authorized GSA DNS servers will be unable to resolve hosts, and therefore not be able to communicate with those hosts. The use of external DNS such as Google is prohibited.

- **Network Time Protocol (NTP):** The GSA network security only permits network traffic to authorized GSA NTP servers. All BSN assets must be configured with authorized NTP servers. BSN assets that are not configured with authorized GSA NTP servers will be unable to properly sync their time. The use of external NTP servers such as the US Naval observatory is prohibited.

- **Default Credentials:** Many applications, and devices use a default set of credentials for the initial installation or configuration process. Finding the default credentials for applications, and devices is as simple as a Google search. It is extremely important that the password used for the default credentials is changed. The use of default credentials is the path of least resistance for a malicious person to breach the BSN.

- **Simple Mail Transport Protocol (SMTP) Relay:** The GSA network security only permits network traffic to authorized GSA SMTP relay servers. All BSN assets must be configured with authorized SMTP relay servers. BSN assets that are not configured with authorized GSA SMTP relay servers will be unable to properly send information via SMTP. The use of external SMTP relay servers is prohibited.

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- **Phone Home Features:** All phone home features of BSN applications and devices must be disabled. Phone home features include but are not limited to software updates or uploading of device health information.

- **Internet Access:** BSN applications, and devices are not authorized to access the Internet directly. An authorized GSA proxy must be used for outbound Internet access. The sites must also be approved and added to the whitelist. Access to BSN application, and devices from the Internet is strictly prohibited.

- **Use of Google Suite (gSuite)**: With the rollout of Microsoft Office 365, BSN consoles no longer have the Microsoft Office Suite (products such as Word, Excel, and other Microsoft (MS) Office applications) installed. To mitigate this issue, sites that have this need, can request to have their BSN consoles access to the Google Suite (Google Docs and Google Sheets), in place of MS Office. In addition to being able to use the Google Suite of applications from BSN consoles, users can also perform routine functions such as checking their GSA email. ***Please Note: If there is a console that also needs access to the gSuite, please let the regional BTSD IT PM or RBITS know. The necessary configuration settings can be applied to the BSN Console.***

1.5.4 Steps to Integrate Sites onto the BSN

The GSA requires all new sites to be integrated into the BSN. However, older integrated sites still exist on the ENT domain and will need to migrate over to the BSN as soon as that becomes possible. To accomplish this endeavor there are several steps and tasks that must be completed for a successful migration. Below are the steps and tasks needed to accomplish this. All steps will be coordinated by the BTSD IT PM.

- Are the BMC systems devices remediated and approved to be placed onto the GSA network?
    - Yes - Move onto the next step.
    - No - There must be a project in place to upgrade all BMC systems devices to meet GSA IT security requirements. ***Please Note: See Section 1.4 for details on how to submit new devices to the BMC Assessment Team.***
- Is there a GSA network onsite?
    - Yes - Move onto the next step.
        - Verify the location currently operates on a subnet compatible with BSN, which is the Class B 172.XXX.XX.XXX range. If the site does not operate on this or a valid range, then the regional BTSD IT PM will submit a ServiceNow “New Circuit Request” ticket within ServiceNow for a new IP range.
    - No - Request a new GSA circuit via the Network Team ***Please Note: See Section 2.4.2 for details on how to order a GSA circuit.***
        - Once the GSA circuit is added to the site, the regional BTSD IT PM will submit a ServiceNow “IP Address Request” ticket for a new IP range.
- The contractor and/or property management will need to ensure the cables for the network are in place and in accordance with GSA IT requirements before the BTSD IT PM can order switches. ***Please Note: See Chapter 3 for cabling requirements.***

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- The BTSD IT PM will determine the necessary amount of GSA switches for the integration project. They will submit a ServiceNow “Switch Request” ticket for new network switches.
- The BTSD IT PM will submit a ServiceNow “VLAN Change/ISE Exception Request” ticket to “whitelist” the devices that will be connecting to the network.
- The BTSD IT PM will provide the static IP, subnet, and gateway information to the O&M contractor/project integrator to implement the device configuration settings.
- The BTSD IT PM will submit a ServiceNow “GSA Workstation” ticket for a BSN console. They will ensure that the BSN console has the correct configuration and all software necessary to operate the building.
- All building staff and those requiring access to BSN will need to have Citrix VDI accounts and confirm access to the “PBS Building System Desktop” within Citrix VDI prior to BSN cutover. ***Please Note: See Section 4.5 for further information on how to access the BSN via Citrix VDI.***
- The SBS team will determine which shortcuts are needed and then help create an RDP shortcut in the “BMC RDP Shortcuts” folder within Citrix VDI. Then, the SBS team will need to train facilities management/O&M personnel on accessing BMC systems via BSN Console or Citrix VDI.
- For sites that rely on DNS, the BAS navigation will need to be updated with the removal of any DNS entries for it to operate effectively on the BSN.
- The BTSD IT PM will coordinate with the O&M contractor/project integrator and GSA IT security on implementing TrustSec enforcement mode.

1.6 Incident Response (IR) and Building Recovery (BR) Exercises

Since IP addressable BMC systems reside on the GSA network, they are subject to interruptions in service. In the event of a data circuit failure, Local Area Network (LAN) outage, cyber-attack or application server failure, GSA facility managers and O&M staff must be prepared to operate the facility locally.

1.6.1 Incident Response

An incident is defined as a violation or an imminent threat of violation of information security or privacy policies, acceptable use policies, or standard security practices. An IR entails the contractors’ ability to identify a potential cyber incident and immediately report the issue to GSA IT (itservicedesk@gsa.gov or 866-450-5250). For additional questions, please reach out to the regional BTSD IT PM.

1.6.2 Building Recovery Exercises

A properly developed BR plan will ensure that while network communications may be temporarily unavailable, building control system components will continue to function (i.e. in the event of a LAN or WAN outage, all sites need to make sure the controllers have a set default setting programmed, and have an ability to directly connect to the controllers to manage the system manually). A designated facility POC will be required to document and submit operational procedures to monitor and control systems in case of an outage. To make the documentation process easier, please reach out to the regional BTSD IT PM for a copy of the BR Exercise template. Once the documentation is completed, please reach out to the BTSD IT PM so that they can submit a ServiceNow generic ticket for an outage simulation. Executing the BR exercise

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will require coordination and participation from Facility Management, O&M, the regional BTSD IT PM and, if applicable, the integrator. At the start of the BR exercise, the BTSD IT PM will simulate the outage. Then, the O&M will need to follow the BR procedures to ensure continued operation of the system. When the operation of the system is confirmed, the network connection will be re-established, and the O&M will provide a written summary of their findings. The findings should include any necessary updates to the procedures and/or lessons learned. ***Please Note: It is strongly recommended to add BR exercises to any new projects/ contracts. For language on how to include BR exercises into the Scope of Work (SOW), please see Chapter 9 for more details.***

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Chapter 2

Network Infrastructure

2.0 Overview

A network can be defined as a collection of interconnected devices that facilitate communication among a set of users or devices, allowing them to share hardware, software, resources, and information. Networks use a variety of protocols to organize and communicate data amongst the devices connected to that network. Primarily, an ethernet-based network, which supports the TCP/IP protocol, is used to form an inter-building or site network. Other intra-building networks can be used to connect devices within a facility (i.e. BACnet). Wired technologies include Cat5e (if adding to existing infrastructure), Cat6 (all new cabling), and optical fiber cable. There are two main geographically based configurations for ethernet networks. A Local Area Network (LAN) is a network that connects computers and devices in a limited geographical area such as an office building, or a closely positioned group of buildings (i.e. campuses or border stations). A Wide Area Network (WAN) covers a large geographical area such as a city, or a country. GSA's WAN connects all the regional office buildings, field offices and data centers together onto an enterprise network.

This chapter will focus on networking protocols, specifically TCP/IP (used to form an inter-building network) and BACnet (a data communication protocol for building automation and control networks). It will define acceptable network topologies, standards for interconnection with the GSA network and the process by which network designs will be approved.

2.1 Network Roles and Responsibilities

- **GSA IT Building Technology Services Division (BTSD):** The BTSD is responsible for all information technology systems within PBS and facilitating the review and approval of network design diagrams.

- **GSA IT Network Operations and Management Team (Network Team):** The network team has command responsibility for the GSA Wide Area Network (WAN) and Local Area Network (LAN). They are responsible for the entire IP transport layer and are the sole provider for IP/subnet allocation at the building level. In addition, they manage network devices (i.e. routers and switches) and the BSN's connectivity. ***Please Note: PBS is responsible for the controllers/devices. GSA IT provides connectivity up to the switch port.***

- **GSA IT Security Operations Team (SecOps):** The SecOps Team provides network security management for GSA infrastructure to include firewalls, intrusion detections and virus detection systems.

- **Office of Facility Management (Facility Managers):** The facility managers are responsible for securing network equipment properly in GSA-owned IT spaces. They are also responsible for funding and managing the installation, maintenance and repair of cabling and switch cabinets or brackets.

- **Vendor/Contractor:** The vendor/contractor is responsible for adhering to GSA IT policies. This

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includes a GSA network riser diagram. ***Please Note: See Section 2.4 for details about network diagram requirements and submission.***

2.2 Standards for Interoperability

The following information will cover the standards for interoperability for all BSN/BMC Systems.

- All new networked federal BMC systems must be IPv6 capable. The intent is to phase out IPv4. ***Please Note: As of July 2023, IPv4 will no longer be allowed for new projects/assessments. Devices communicating via secondary tier communications or native protocol (i.e. BACnet/MSTP, Modbus/MSTP, etc.) are not impacted.***

- Only GSA-furnished equipment (GFE) hardware is permissible (i.e. routers, switches, servers, and workstations) for BMC integrated systems. Vendor-provided intermediary devices such as media converters, hubs, switches, and routers on the GSA network. GSA IT switches are configured to detect and disengage with such devices on the network.

- Where possible, utilize an existing switch to support all approved agency hardware, including ENT user workstations, printers, BMC systems devices, BSN consoles, etc. Additional switches will be provided to accommodate new projects if the existing switches are inadequate (i.e. port saturation, distance, etc.).

- Switches should be connected using the assigned trunk port only.

- When adding a new switch, there must be a dedicated power source.

- All cabling must meet the latest Telecommunications Distribution Design Guide version 8 requirements (latest version as of May 2024).

- All Ethernet (IP enabled) devices need to terminate at a GSA switch.

- All IP enabled devices, prior to deployment, will be subject to scanning and certification. ***Please Note: See Section 1.4 for details on the BMC Systems Security Assessment Process.***

- All whitelisted devices must connect to a GSA switch. ***Please Note: See Section 1.2.3 for details on the BMC Device Whitelisting Process.***

- BMC systems devices shall not be plugged directly into workstations or servers for daily building operations.

- Data collection shall only be done on systems classified and operated as servers and not workstations.

- Per the *P100: Facilities Standards for the Public Buildings Service* (Latest is version 1 as of May 2024): “Except for mass notification, a fire alarm and emergency communication system are not permitted to be integrated with other building systems such as building automation, energy management, security, and so on. Fire alarm and emergency communication systems must be self-contained, standalone systems able to function independently of other building systems.” As such, GSA IT does not provide UL switches. However, the new Fire and Life Safety SOP for dual path communicators requires that the communicators (e.g. Bosch 465) be connected to the GSA Network. The primary line will utilize a

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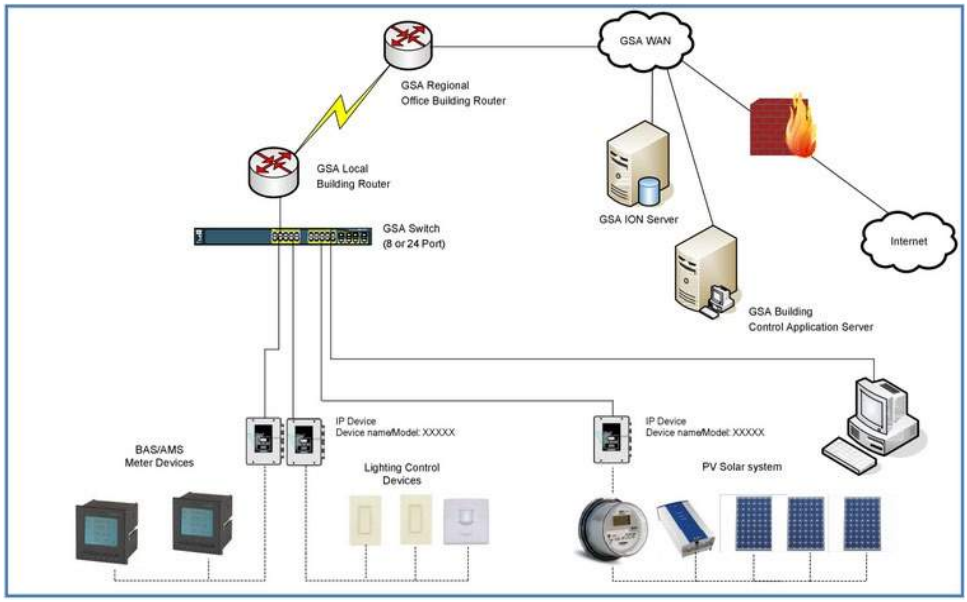
GSA Network switch to relay out the alarm to the third-party monitoring station and cellular connection as the back-up or fail over means of relaying the alarm. The dual path communicator must be remediated and approved in the same manner as all other BMC systems devices.

- Per the *ASME A17.1-2022/CSA B44:22: Safety Code for Elevators and Escalators* (latest version as of May 2024), a new emergency communication system has been mandated. The new code requires video transmission in the event of an emergency. As such, the system will need to be connected to the GSA Network and the BMC Systems Security Assessment Process for connecting devices to the BSN applies. Reach out to your BTSD PM or Regional Elevator SME for more information.

2.3 Network Topology

The following figure is a topology that demonstrates an example of interconnections between GSA WAN and LAN and the vendor-provided devices. This example provides a foundational approach for the design of an integrated building controls and/or energy system.



2.3.1 Network Design Requirements

These are the following items that need to be addressed in the proposed network diagram sent to the GSA IT Network Team:

- Location of Demarc Room
- Location of Demarc Extension Room (if applicable)
- Location of Router
- Cabling:
    - Switch to switch connections and the type of cable being used. Minimum standard for Ethernet is plenum-rated, Unshielded Twisted Pair (UTP), Cat5e (if adding to existing) cable. Any new cabling

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requires Cat6, certified RJ45 (M/F) and patch panels.

- Depict cable home runs from access layer switches to the core/distribution switches. In the instance that it is cost prohibitive or not feasible, daisy chaining may be allowed based on the Network Team's discretion. If needed, the daisy chained switches must not exceed a maximum of three (3) hops from the core/distribution switch. ***Please Note: The facility or project manager must sign off on risk associated with daisy chaining. If a switch fails, it may cause a ripple effect on switches that are daisy chained to it.***
- For any fiber optic cable runs, detail the type of fiber, single mode or multimode, shielded, or armored, and the type of connector (ST, SC, FC, MT-RJ, & LC).

- Switches:
  - Location of switches (building ID, floor, and room numbers) ***Please Note: It is not necessary to deploy a switch on every floor. Hardware from adjacent floors can be connected to switches on adjacent floors, provided it is within the attenuation limitations maximum distance of 300 ft.***
  - Port density requirements for every deployed switch
- IP-Addressable Devices (each device requires the following information):
  - Manufacturer
  - Model
  - Firmware
  - MAC address
  - Switch and port number the device will connect to
  - Location of Device (building, floor, and room numbers)
  - Cable length between device and switch
  - In the instance a secondary NIC architecture is approved, the vendor must provide a network diagram of all downstream devices, including all types of cabling. ***Please note: See Section 2.4.5.2 for more details on the different types of alternate connections.***
- Controlled Unclassified Information (CUI) Federal Employees and Contractors (FEDCON) notice must be included on the top right hand corner network diagrams.

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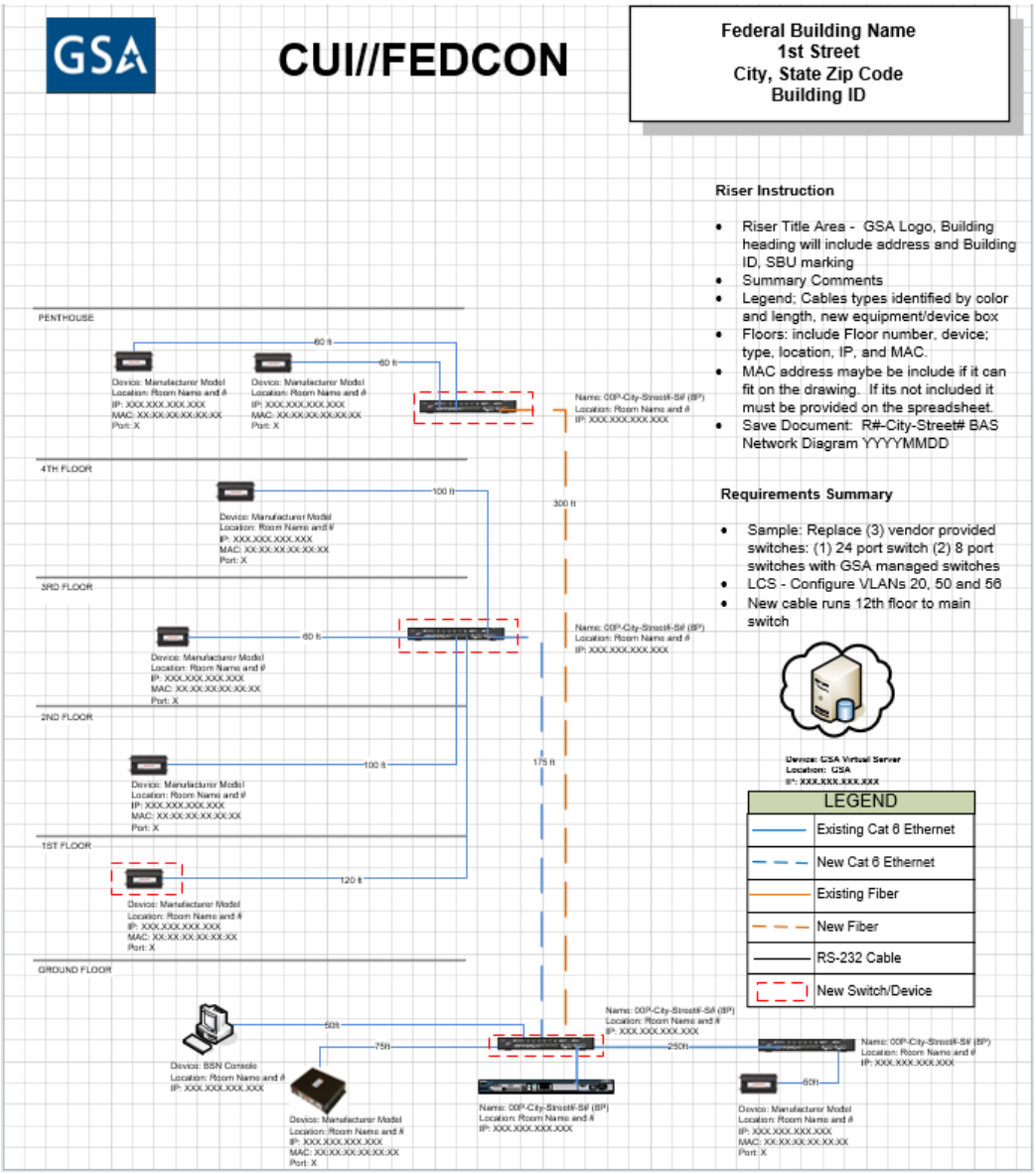
2.3.2 Sample Network Design Diagram

The following is a sample depiction of an acceptable network design diagram. The diagram illustrates all the requirements mentioned above. The vendor will need to provide an acceptable network design diagram to the GSA IT before any hardware is sent to the project. Please work with the BTSD Technical PM and RBITS to have the network design diagram reviewed by the Network Team.



2.4 Requesting and Installing a GSA Circuit

This section will cover the steps of how to locate the demarc room and the demarc extension room, how to request a GSA circuit and the installation process, and important considerations for installing a GSA circuit.

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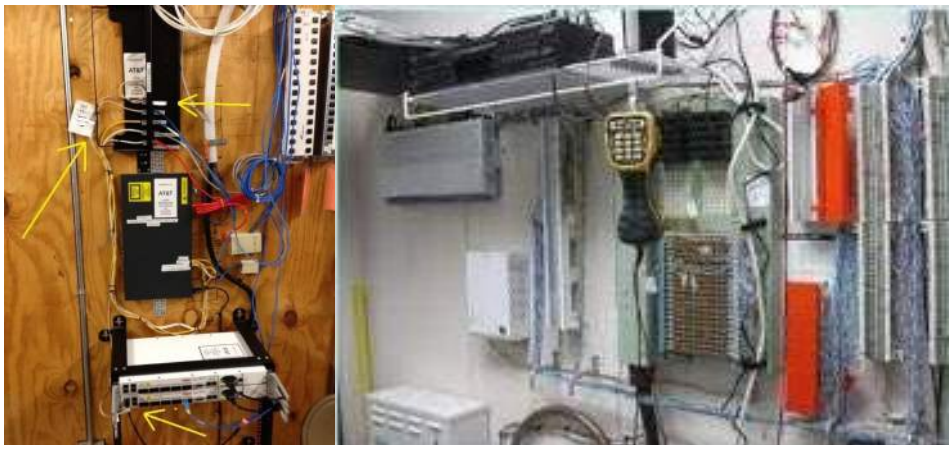
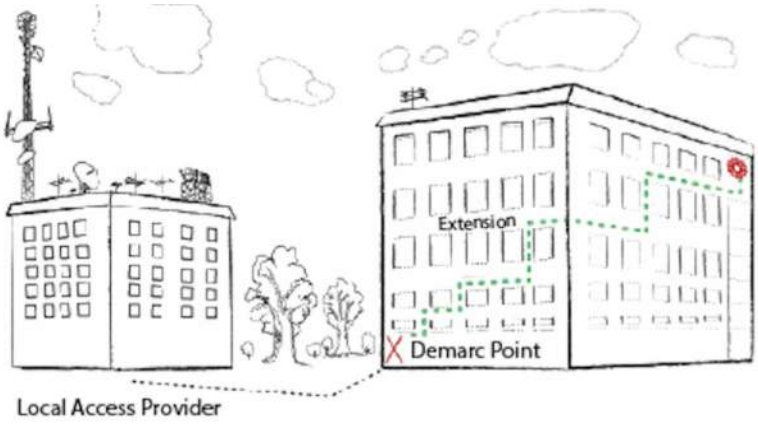
2.4.1 How to Locate the Demarc Room and Demarc Extension Room

The demarc room and demarc extension room need to be located before requesting a new GSA circuit. The demarc room, also referred to as the main point of entry (MPOE), is the physical location where cable/phone companies bring their service into the building. The room may look like the photos below. You might see boxes from carriers like AT&T or Verizon if another agency already has a network in the building.



The demarc extension is the end point where the service needs to be extended to in the building, which is also where the router will need to be located. The room is usually in an office, or it may be close to where a building automation/metering system will be installed. The demarc room and demarc extension room will need a cable run installed between the two points.



2.4.2 How to Request a GSA Circuit and the Installation Process

Before any project begins, the project sponsors/POC must reach out to the BTSD IT PM to see if a GSA circuit exists at the site. If not, they must work with the BTSD IT PM to order a GSA circuit before starting the migration project. The circuit installation or upgrade process typically takes anywhere from three months to a year from the day that the order is submitted by the Network Team to Mettel (not when the ServiceNow ticket is submitted). Potential delays include, but are not limited to location of site, onsite personnel not available to escort, construction activities required by the provider, etc. To submit a request for a circuit, the government sponsor/project POC must:

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- The BTSD IT PM will submit the ServiceNow “New Circuit Request” ticket on the customer’s behalf. The information needed will be:
    - Building Code
    - Exact Building Address (the building that the circuit will terminate in)
    - Demarc Room
    - Demarc Extension Room
    - Estimated Distance between Demarc Room and Extension
    - On-Site POC (Name, Phone Number(s), and Email)
    - Total # of Users
    - Number of Users Per Floor
    - Power over Ethernet Required?
    - Wi-Fi Requested?
    - BSN Required?
    - Customer Wanted Date
    - Application List
    - Telephone number that is in the building where the circuit will terminate (not a cell phone but a landline)
    - Requirements if users will be supported by the circuit in addition to the BMC systems.
- The Network Team will schedule a call with the local on-site POC to validate all information provided.
- The Network Team will request Mettel to add the site to the contract.
- The Network Team will submit the new order to Mettel.
- Mettel will then get an NSC code, which is an identifying code for billing. Then, once the NSC code is created, it will need to be added to the contract as a task order. This process can take anywhere from one to two months.
- Once the NSC code is added to the task order, the Network Team can place an order for a new circuit.
- Once the order is placed, Mettel hires a local vendor who works with the on-site POC to do the installation and construction of the project. Sometimes this process can take anywhere from one to six months, depending on how much work needs to be done. Fiber is not always readily available at a site and a contractor would need to be hired to extend the fiber to the building.
- Once the installation is complete, DIGIT will set up the prep calls.

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- Once the circuit is installed, DIGIT works with the site to schedule an activation date/call. Based on the availability of the provider tech and the site, this step can take up to one month.

Please Note: Although the BTSD IT PM submits the "New Circuit Request" ticket on your behalf, the Network Team is responsible for ordering the circuit and deploying it on the customer's behalf. For any status updates, issues, etc. please reach out to the Requirements Analysis Team (requirements.analysisteam@gsa.gov).

2.4.3 Important Considerations in the Circuit Installation Process

Proper design and placement of the circuit and router are paramount for a successful and on-time project completion. This is especially important during the design phase to avoid having to move the circuit from the location where it was initially ordered. Circuit moves based on a mistake, from other than the telephone vendor, will incur additional charges that will be passed on to the project and will extend the delivery time of the completed circuit. A good address for the site location is also critical in this process. A physical address is not always the same as the telecommunications address. A good address is an address verified from the postal service website or Google Maps. A carrier will not accept a non-specific address and will cause delays in the installation timeline.

2.5 Hardware Standards and Policy

This section will cover the configuration and connection of switches and routers, and standard and non-standard hardware connectivity options. ***Please Note: The Network Team does not provide any hardware necessary to mount the switches and routers in place. The local site needs to provide and install all items necessary to mount the hardware, such as cabinets, shelves, etc.***

2.5.1 Requesting and Installing Switches

Once the network diagram is approved and the site's GSA circuit availability is confirmed, the project sponsor/POC will need to work with the BTSD IT PM to coordinate the ordering, delivery, installation, and connection of the switches. Before any switches are ordered, a POC, date and time for installing and connecting the switches must be determined. Once the information is confirmed, the BTSD IT PM will submit a ServiceNow "Switch Request" ticket on behalf of the project sponsor/POC. A switch request for 1-2 switches may take up to two weeks from the date the BTSD IT PM submitted the ticket. Switch counts exceeding that will be determined on a case-by-case basis. The preferred POC to install the switches is either a POC onsite or the cabling vendor. If neither are viable options, BTSD IT PM will work with the Network Team to dispatch a SmartHands technician at an additional cost. ***Please Note: Emergency requests (replacements/failures) are addressed by the Network Team.***

2.5.2 Installing and Connecting Hardware

All hardware designed for implementation must be scanned and approved by the GSA IT Security Team prior to implementation. Once the devices are cleared to be put on the network, the BTSD IT PM will submit a ServiceNow "VLAN Change/ISE Exception Request" ticket. This will change the VLAN for designated ports on the switches to the correct BSN VLAN as well as "whitelist" the devices to allow communication to the GSA BSN network. It is imperative that this ticket is resolved prior to physically connecting the devices onto the network. If a device is physically connected prior to being whitelisted, the site risks the port on the switch locking down and not allowing any communication. ***Please Note: See Section 1.4 for details on***

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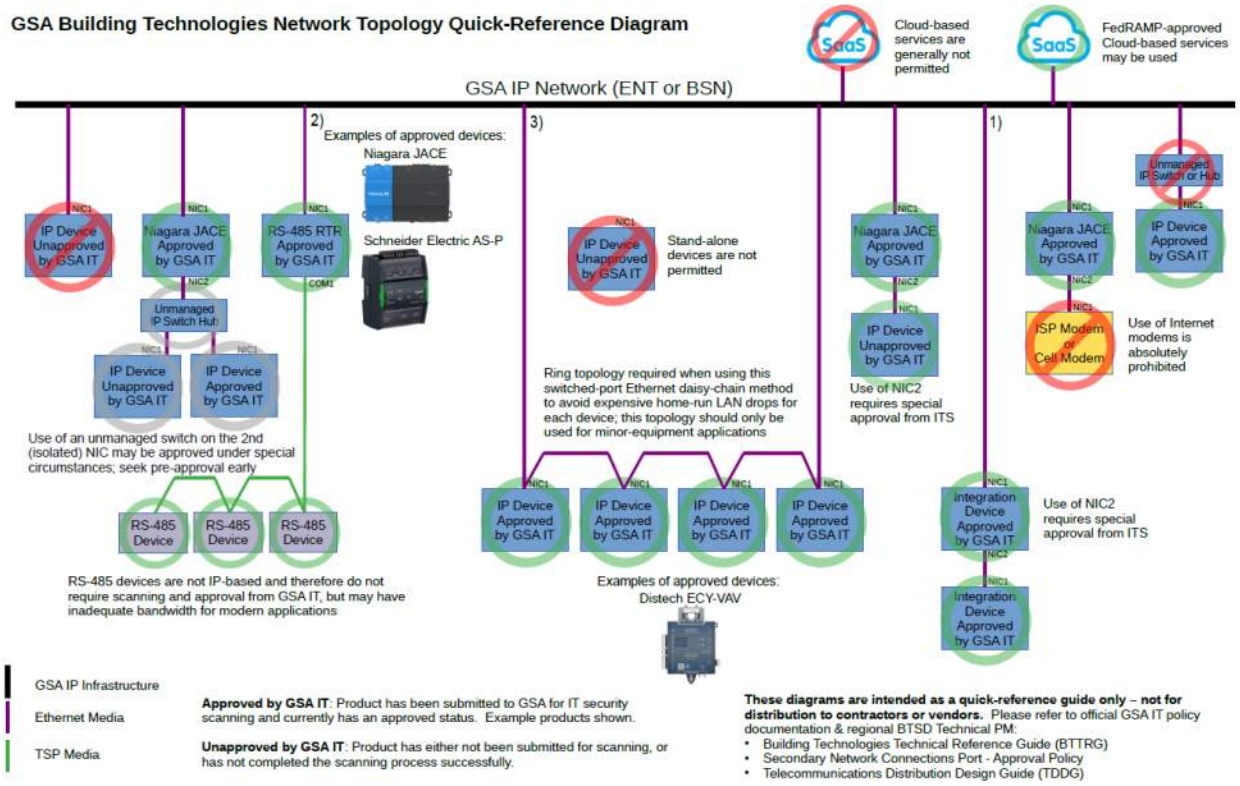
the BMC Systems Security Assessment Process.

2.5.2.1 Types of Connections Allowed

The following figure shows the approved network topologies that are or are not allowed on the BSN or ENT.
Please Note: The gray circled scenarios can be approved by BMC-IT Security on a case-by-case basis.



2.5.2.2 Alternate Connectivity Options for Approved BMC Devices

Building Management Controls (BMC) system devices have expansion ports onboard that offer a great deal of flexibility. However, GSA IT Security has frowned upon its usage and in some cases prohibited their use. This guidance is being created to bring forth common situations where these ports may be necessary for business operations and allow for exceptions to the guidance.
The following scenarios are examples of common usages for each technology:

- **Secondary Network Interface Card (NIC)** - BMC IT Security will **only** allow the use of the 2nd NIC when the device has been reviewed and approved through the assessment process. Devices that wish to be connected to the 2nd NIC can be remediated, un-remediated, or have never gone through the lab as long as the 2nd NIC is not visible from a GSA switch and can only be visible via the “master” device (which is remediated). Currently there are two main networking architectures for the 2nd NIC:
    - Switched networking (all traffic on the 2nd NIC is shared between the primary NIC)
    - Isolated networking (all traffic on the 2nd NIC is hidden and completely segregated)

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- **Serial Ports (RS-232, RS-422, RS-485)** - Used for connecting End of Life (EoL) devices, Remediated devices, non-remediated devices, and devices which have not gone through the assessment review process or do not have/are not utilizing an IP based connection by which they may be assessed. Serial MSTP connections do not require GSA IT approval.
- **Universal Serial Bus (USB)** - Used for updating the firmware, exporting data, terminal shell access, external display output, troubleshooting, and non-routine maintenance.
- **Spanning Tree** - Daisy Chaining is connecting (several like devices) together in a linear series over an ethernet connection. Connecting devices in a daisy-chain fashion is prohibited on the GSA network. Spanning Tree Protocol (STP) is a Layer 2 network protocol used to prevent looping within a network topology. Other common configurations include Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree Protocol (MSTP).
    - As of May 2024, GSA continues to research and collaborate with Cisco and multiple BMC systems vendors on the implementation of RSTP (or similar). GSA will continue to utilize MSTP while this research continues.
    - Per an internal memo released in July 2023, all GSA projects will continue to utilize MSTP unless the contract has been awarded and the installation is underway. If that is the case, then the following need to occur:
        - The maximum number of devices in a “chain” is limited to seven with the maximum number of devices allowed on a Cisco 9300 (C9K) is eighty-four.
        - All loops must start and end on the same switch. NetOps has indicated that only the Cisco 9300s switches are allowed to utilize RSTP Loop. ***Please Note: Connecting devices in a RSTP fashion using an ethernet connection will require additional configuration on the switch. The BTSD IT PMs need to submit a request ticket for this step to the BMC ISSO and NetOps for approval. Validation of network hardware is required to ensure any of these solutions will be supported.***
        - Ticket to NetOps needs to note:
            - RSTP Loop Configuration required (support authentication for multiple MAC addresses on the switch)
            - Configuration for loop devices, remove Spanning-tree PortFast command, and add authentication mode multi-auth to specific loop interfaces.

2.6 BACnet

BACnet, by definition, is a "Data Communication Protocol for Building Automation and Control Networks" developed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). BACnet is neither software, hardware, nor firmware. BACnet functions as a standardized set of rules that governs how computers exchange information. These rules enable the integration of control products made by different manufacturers into a single, cohesive system. While it is first being used in HVAC applications, the BACnet standard is designed to support other building control systems such as life safety, security, and lighting. ***Please Note: While we prefer BACnet SC (secure), we will still accept legacy BACnet (insecure) connections.***

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2.6.1 How Does BACnet Make Use of IP Networks?

For BACnet to utilize the Internet for communication, it must speak the language of the Internet known as Internet Protocol (IP). IP by itself is little more than an envelope with a "from" and "to" address and a place for a message within. For equipment to communicate on the Internet a second transport layer protocol must also be used. Currently there are two primary transport layer protocols, "Transmission Control Protocol" or TCP and "User Datagram Protocol" or UDP. TCP is a reliable connection-oriented transport service that provides end-to-end reliability, re-sequencing, and flow control. Simple analogy: TCP/IP is like a telephone call providing means of communication between two parties and BACnet is the language being spoken between the two parties. UDP is a connectionless "datagram" transport service. It is used by applications that do not require the level of service of TCP, provide the same services, or that wish to use communication services not available from TCP such as multicast and broadcast delivery. Since the BACnet protocol itself provides for the guaranteed delivery of packets, re-sequencing, and flow control, it does not require the use of TCP and therefore utilizes UDP. UDP/IP was added to the BACnet specification first in Annex H.3 and later with Annex J and requires specific devices or services to be available on the BACnet network.

2.6.2 BACnet Key Definitions

- **BACnet Object:** The general reference to sensors, actuators, and other functional elements that make up a BACnet device. The objects fall into categories specified by BACnet protocol. Analog Input object and Analog Output object are a couple of the most used objects

- **BACnet Device**: Any device, real or virtual, that supports digital communication using the BACnet protocol. Data inside a BACnet device is organized as a series of BACnet objects. Each object has a type and a set of properties. There is always at least one object in a device that is used to represent the device itself.

- **Device Instance:** This is the logical address that matters to BACnet. Whether on an MS/TP link or IP network, the device instance for a particular BACnet system must be unique across all subnets and routed links. There are over 4 million possible unique device instances based on the BACnet protocol.

- **BACnet Broadcast:** A message sent as a single unit, which may apply to more than one device.

- **Broadcast Domain:** This is the collection of available BACnet objects that can be reached by a broadcast message. With respect to IP, it is analogous to the IP subnet that one or more BACnet devices reside on. For example, in GSA, each field site may have one IP subnet that each of its building control devices resides on. A BACnet broadcast from a device on that subnet cannot communicate via a BACnet broadcast to any other BACnet device on a different IP subnet. It would require direct communication from a BACnet Router or BACnet Broadcast Management Device (BBMD) as described below.

- **UDP/IP:** The UDP side of the stack operates in parallel to TCP and is automatically included in most implementations of an Ethernet based protocol stack. TCP is considered a "connection" protocol, and all communication takes place in a session that has overhead to ensure delivery of all packets. UDP is considered "connectionless", has minimal overhead, and allows the application to deal with whether the packets were delivered or not. is used when data efficiency and latency is important and not data integrity or order in which it's received. Services that use UDP are live streaming data such as VOIP, video broadcast or sensor values now. TCP is used when the data integrity and the order in

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which it's received is important. Services that use TCP are the transfer of files in which all data and the order the data is received is important, otherwise the file will be corrupted.

- **BACnet Router:** This is a BACnet device that connects two or more networks, or two or more segments of a single network.

- **BACnet Broadcast Management Device (BBMD):** This is a specialized router for BACnet broadcast messages used to forward broadcast messages between IP subnets or to distribute broadcast messages within subnets that do not allow multicasting. For BACnet devices to operate as a system, they must be able to broadcast messages. However, standard IP technology dictates that routers do not forward broadcast messages. The BBMD resolves this problem by providing a re-broadcast on the local domain for any message originally broadcast on another domain. It is not necessary for all BACnet IP devices to support BBMD. Only one device on an IP domain needs to function as the BBMD. It will be configured to interact with BBMD's on other domains to provide the broadcast support. Additionally, a BBMD can perform a discovery of all BACnet objects reachable to a BACnet system. This functionality is primarily what distinguishes it from a BACnet router.

- **Foreign Device:** A BACnet device that has an IP subnet address different from those comprising the BACnet/IP network which the device seeks to join. The foreign device may be a full-time node on the foreign subnet or may be a part-time participant, as would be the case if the device accessed the internet via a Serial Line Internet Protocol (SLIP) or Point to Point Protocol (PPP) connection.

- **Foreign Device Registration:** For a foreign device to fully participate in the activities of a BACnet/IP network, the device must register itself with a BBMD serving one of the IP subnets comprising that network. "Full participation" implies the ability to send and receive both directed and broadcast messages. Each device that registers as a foreign device shall be placed in an entry in the BBMD's Foreign Device Table (FDT). The Register-Foreign-Device message from the client to the BBMD or BACnet router is always from one IP device to another.

2.6.3 Implementing BACnet on a Wide Area Network (WAN)

This type of implementation involves a BACnet system that has one or more BACnet objects and/or devices located on a different IP subnet than the other BACnet objects and/or devices, which are part of the same BACnet system. BACnet communicates its messages either through broadcast, which can only occur within one broadcast domain, or directed communications, which involves a message being transmitted from an IP addressable device on one broadcast across the WAN to another IP addressable device on a different broadcast domain. By making use of the GSA WAN, applications can be hosted virtually, allowing sites that share a common manufacturer to leverage the same server, as well as providing opportunities to trend and store data on a central server. Also, it is the most scalable approach that allows the creation of larger BACnet systems that may provide increased opportunities to Facilities Management related to the integration of different types of BACnet systems, such as lighting with building automation. However, projects must ensure they are effectively managing the project in such a way to avoid BACnet conflicts among different systems. Consequently, it is possible for the BACnet implementation errors from one site to negatively impact another site, perhaps even in a different region.

There are a few primary issues to consider and things to avoid when implementing BACnet on the GSA WAN:

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- All device instances associated with a BACnet network are required to be unique. ***Please Note: This can be particularly challenging on the GSA WAN, because a BACnet system implementer is likely not to be aware of the device instances of other BACnet systems that have devices, which may be discoverable over the GSA WAN.***

- Although the foreign registration process provides the ability for remote devices to participate in a particular BACnet/IP network, there may be occasions when it is desirable for two collections of BACnet/IP devices to interoperate more closely. This type of interoperation can only produce results consistent with the assumptions and intent contained in the original BACnet standard if the configuration of the two BACnet/IP networks has been coordinated.

    - If device object identifiers are not unique, the 'Who-Is' service will produce ambiguous results.

    - If multiple instances of objects with identical object identifiers exist, the 'Who-Has' service may become useless for dynamic configuration applications.

- Issues can arise when BACnet objects that are not associated with each other share a broadcast domain.

    - Most virtual servers supporting building control applications share the same IP subnet and many of those are BACnet applications. If those applications are broadcasting BACnet messages across that subnet, they can be read by any other BACnet application sharing the same UDP. Since the vast majority of BACnet systems use the default UDP, these BACnet objects are exposed to other BACnet systems. ***Please Note: Do not duplicate device instances in any single BACnet system. All regions should take inventory of their device instances and consider a regional schema and management approach to assigning device instances.***

2.6.3.1 UDP Port Assignment

BACnet systems implemented in the GSA environment shall never utilize the standard or default UDP port number designated as 47808 (BAC0) but shall be changed per regional guidance as described below. It was agreed upon by the BACnet Steering Committee that even if BACnet objects were on the same broadcast domain, they could only communicate to each other if they were using the same UDP port number. Therefore, GSA has taken a full range of possible UDP ports and assigned them to each region. Regional PBS stakeholders need to ensure they assign UDP ports that have been assigned to their respective regions. Essentially, this allows each region to take the initiative to protect itself from potential BACnet conflicts with systems in other regions. Please work with the BTSD Technical PM to access UDP port assignments for any region and/or building.

2.6.3.2 BACnet/Ethernet

Because Layer 2 network traffic cannot be effectively managed on the GSA network between subnets, BACnet/Ethernet is expressly prohibited from being implemented on the GSA WAN. BACnet/Ethernet can be used (not recommended) at a given field site, provided all BACnet devices are on the same subnet.

2.6.3.3 Using a BACnet Broadcast Management Device (BBMD)

Each IP subnet that is part of a BACnet/IP network consisting of two or more subnets shall have only one BBMD. Each BBMD shall possess a table called a Broadcast Distribution Table (BDT) which shall be the

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same in every BBMD in each BACnet/IP network. If the BBMD has also been designated to register foreign devices, it shall also possess a Foreign Device Table (FDT).

As an example, a region may make use of BBMD devices at each field site, which enables communication of BACnet messages from their virtually hosted application servers to the BACnet objects at each field site and vice versa. In their configuration, one of the BBMDs registers the application server as a Foreign Device and keeps a table of the other BBMDs in the manufactured system's BACnet network. BACnet messages to and/or from a specific field site, or BACnet messages to and/or from the server intended for BACnet objects at specific field sites must pass through and be directed by the BBMD that has registered the server as a foreign device.

BBMDs are necessary to perform discovery of BACnet objects and can be used to affect direct communication of BACnet messages from one IP subnet to another. Only one BBMD can reside on an IP subnet on any single UDP port. This includes the subnet that hosts the virtual servers. Due to multiple BACnet applications on virtual servers that share the same subnet, a BBMD cannot be implemented on the primary virtual server VLAN. To implement a BBMD on a virtual server VLAN, two conditions must be met:

- The BBMD must be software based and able to be installed on a server that runs Windows Server 2019 (or the latest approved OS by GSA IT).

- A separate subnet must be created on the virtual server VLAN to host the BACnet system application(s) and the software based BBMD.

2.6.3.4 Foreign Device Registration

A BACnet device registered as a foreign device to a BBMD can only be referenced as a foreign device to one BBMD that is part of that BACnet system. For example, if a region has a BACnet application virtually hosted that supports multiple sites that use that application server, the server application can be registered as a Foreign Device on a BBMD at only one of the field sites. The other sites will each have one BBMD, but the Foreign Device will only be in the table of one of those BBMDs. Therefore, the BACnet messages from that server application will have to pass through the BBMD at the site that has registered the server application as a Foreign Device and then be directed to the site that BACnet message is intended for or from.

2.6.3.5 BACnet/IP Multicast

BACnet multicasting is another way to communicate BACnet messages from one subnet or broadcast domain to another. However, the GSA does not allow multicasting over its WAN. Therefore, this approach should not be considered when configuring a BACnet system on the GSA network.

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Chapter 3

Cabling

3.0 Overview

This chapter will provide guidance on cable installation to support the implementation of BMC systems such as Building Automation Systems (BAS), Lighting Controls Systems (LCS), Advanced Metering Systems (AMS), Physical Access Control Systems (PACS), Photovoltaic (PV), Fire & Life Safety and Elevators. This chapter will primarily focus on guidance for Ethernet cabling, which includes Cat 5e, Cat 6/6a and Fiber Optic cabling for IP based components. ***Please Note: For questions regarding cabling for local BMC systems networks, consult with the "Building Automation Systems" chapter of the GSA Telecommunications Distribution Design Guide (TDDG).***

3.1 Cabling Roles and Responsibilities

- **GSA IT Building Technology Services Division (BTSD):** The BTSD team will work with the project managers and vendors by effectively communicating standards and providing guidance from the beginning of the design phase all the way through installation. They will also be responsible for supporting all devices on the network once cabling, switch installations/connections and device installations/connections are completed.

- **Regional PBS Project Teams:** This includes either facility managers and/or project managers. They are responsible for ensuring that all cabling for BMC systems contracted, purchased, owned and/or operated in the regions adhere to the *GSA Telecommunications Distribution Design Guide* (TDDG). In addition, they are responsible for contacting the BTSD prior to the award for applicable contract and implementation requirements. ***Please Note: See Chapter 4 for links to required documents.***

- **Vendors/Contractors**: The vendor/contractor is responsible for providing, installing, and labeling all network cabling. The labeling requirements are to be referenced from the *GSA Telecommunications Distribution Design Guide* (TDDG), Chapter 4, Section 4.10. ***Please Note: Regions need to take measures to ensure maintenance of the control system sub-network cables, by the vendors, are stipulated in the O&M contracts.***

3.2 Cabling Infrastructure Standards

All Ethernet cabling in the GSA buildings need to be done in accordance with the Building Industry Consulting Service International (BICSI) standards and the *GSA Telecommunications Distribution Design Guide* (TDDG). All other types of cabling installations will be handled on a case-by-case basis. All BMC systems devices require color coding the cables according to the color scheme below as well as proper labels.

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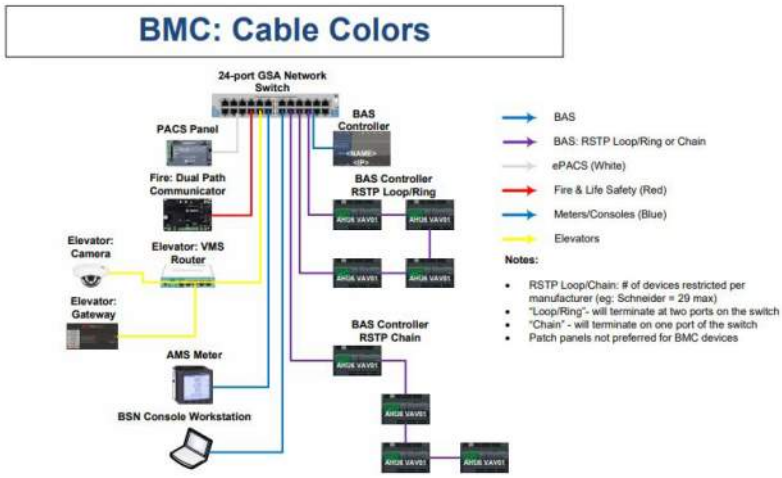

CUI//FEDCON

Please Note: Cabling for existing BMC devices may or may not already adhere to this color scheme. Regardless, all cables must be labeled clearly and concisely to indicate what type of BSN device it is connected to.

3.2.1 Minimum Requirement for Ethernet Cabling

Please consult the *GSA Telecommunication Distribution Design Guide* (TDDG) for the latest cabling requirements as the cabling categories are rapidly changing. Depending on the scope and requirements of the cabling work, a funding source may need to be identified by the project.

- **Cabling for New Infrastructure:** For new infrastructure, the projects need to work with their controls integrator or related vendor to complete the cabling for all IP enabled devices back to the GSA provided network switches. Per the guidance mentioned in this chapter, GSA IT's approval of the GSA IP network cabling design is required.

- **Cabling Infrastructure for Existing or Migrating Systems:** To migrate an existing cabling infrastructure to a GSA approved system, cabling may need to be redesigned. In the cases, where there is not an available contract with a vendor, regions may work with their regional GSA IT manager to complete this cabling. Depending on the location of the site, and the time it will take to complete the work, arrangements for the cabling can vary, and will be handled on a case-by-case basis.

Please Note: Cat 6a is required for the device side of any wireless component installations and Cat 5e is allowed only when there is already an existing 5e infrastructure.

3.2.2 Attenuation Limit

Installing the wrong network cable can result in poor signal quality, that is why following the cabling standards is very important. The attenuation limit for Cat 5e/6 cable is 300 feet. Beyond this length, the signal quality may become unstable and transmission errors will occur. For cable runs longer than this

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length, GSA IT will likely recommend a fiber optic run.

3.2.3 How are GSA IT Cabling Standards Enforced?

Any cabling that will provide the connection between a GSA furnished router or switch to a device that resides on the GSA Network will be required to be reviewed and approved by GSA IT. All other cabling components are to comply with Industry standards as specified in the TDDG. Any issues with cabling installed by the vendor will need to be addressed by the vendor before closing out the contract. ***Please Note: GSA IT does not assume responsibility for cabling that has not been installed in accordance with TDDG and industry standards. Please ensure the vendor is held responsible for completing the work per the TDDG.***

3.3 Cabling Installation

GSA IT encourages project managers to let vendors handle all cabling for all BMC system devices connecting to the GSA switch. This includes serial cabling, Category 5e and Category 6 ethernet cabling between the building controllers and the GSA switch. ***Please Note: Cat 6a is required for the device side of any wireless component installations and Cat 5e is allowed only when there is already an existing 5e infrastructure.***

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Chapter 4

BMC Systems Servers

4.0 Overview

This chapter will provide information on the roles and responsibilities, the BMC systems server standards, server deployment process, application installation and methods for accessing BMC systems servers.

4.1 BMC Systems Server Roles and Responsibilities

- **Technical Operations Team (TechOps):** TechOps provides guidance to the PBS organization for IT hardware, OS, database, and security compliance within the GSA standards for BMC systems, national, and regional applications for PBS systems. They are responsible for architecture design, server deployment, patching for OS and DB, providing server access when needed and troubleshooting server related issues.

- **Regional Project Teams:** The Regional Project Teams are responsible for installing the application onto the server, upgrading, and patching the application as necessary, and maintaining any other non-OS or DB components and devices.

4.2 BMC Server Standards

GSA provides virtual machines (VMs) to host building monitoring and control applications. To help meet the energy efficiency goals of GSA and move towards a virtual environment, it is standard practice for TechOps to provide VMs hosted at a GSA data center.

4.2.1 Why Go Virtual?

There are several reasons why GSA IT encourages virtualization of servers to host the BMC systems applications:

- In 2009, President Obama signed the Executive Order (EO) 3514 "to establish an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas emissions (GHG) a priority for federal agencies." This executive order gives GSA and other agencies the responsibility and opportunity to find solutions to reduce energy usage and costs throughout the government.

- In 2010, Martha Johnsons' Zero Environmental Footprint Initiative (ZEF) set an agency goal for a zero environmental footprint and a 30% reduction of greenhouse gas emissions by greening the federal supply chain and creating sustainable innovation within its building portfolio. As part of ZEF, GSA IT began embracing virtualization of servers and consolidation of data centers.

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- In 2012, an Office of Management and Budget (OMB) directive was issued to reduce the amount of infrastructure and promote data center consolidation (DCCI).

Please Note: GSA IT no longer provides physical servers for BMC systems. If the project stakeholders determine there is a valid need for physical hardware, procurement of the server will be the responsibility of the project stakeholders. However, they will need approval at the leadership level, and will need to coordinate hardware specifications with GSA IT to ensure compliance.

The benefits of virtualization are:

- **Reduced Downtime:** Eliminating planned downtime and preventing or reducing unplanned downtime is done through the sharing of hardware and automated restart of application servers. Properly implemented, virtualization can enable a dramatic reduction in time to recovery following a disaster.

- **High Availability:** VMware's VMotion technology enables the live migration of running virtual machines. Virtual machines do not need to be shut down for most physical server maintenance events. The VMware infrastructure will detect physical server failures and automatically restart VMs on another host. Also, TechOps has multiple access paths to the VMs compared to a single connection point with a physical server at a remote office. When a physical server at a remote office fails, server downtime is dependent on local network failures or having someone being dispatched to the site.

- **Dynamic Load Balancing:** The VMware infrastructure automatically distributes the load across a cluster of physical servers to ensure the maximum performance of all running virtual machines.

- **Hardware Flexibility:** Changing the resources available to a virtual machine is possible through a simple configuration change. Storage, processor, and memory resources can be added to meet the demand of matched to actual resource usage throughout the lifetime of the hosted application.

- **Reduced Power Consumption:** With virtualization, a single physical server can host tens of virtual machines, which reduces the power consumed per system.

- **Fast Provisioning:** Virtual machines can be provisioned quickly from a template versus installing, configuring, and shipping a physical server.

4.2.2 BMC Systems Server Hardware and Software Specifications

The GSA uses VMware software to provide a virtual environment where multiple virtual machines run in isolation, side-by-side on the same physical server host. Each virtual machine has its own virtual hardware (i.e. RAM, CPU, NIC, hard disks, etc.) and operating system to load applications. The operating system on a virtual machine does not see the hardware components of the actual physical host or any other virtual servers that utilize the physical host’s resources.
As of May 2024, the BMC systems server hardware specifications are:

- Hypervisor vendor: VMware
- Memory: 8 GB
- CPU: 2 vCPUs

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- Hard Drives
  - System Drive: 100 GB
  - Application Data Drive: 100 GB

The BMC systems server software specifications are:

- Operating System: Microsoft Windows Server 2019
- Database: Microsoft SQL 2019 R2
- Web Server: IIS 10.0 (Updated as Microsoft releases)

Please Note: These specifications are subject to change. Please check with the BTSD IT PM for the latest BMC systems server build specifications.

4.2.3 BMC Systems Application Requirements

Requirements to ensure proper functionality and support on the GSA network:

- Work on VMware in a remote data center.
- Be compatible with the GSA standard hardware and software previously mentioned.
- Comply with all CIS Benchmarks for Microsoft OS and Microsoft SQL hardening.
- Allow for each cleared individual to have BMC systems software credentials.

GSA IT will <u>not</u> accept BMC systems applications that require these technologies:

- Hardware-based USB licensing (use software licensing instead)
- Applications that require Java (use HTML 5.0 instead) or any other plugins that are EOL.
- Additional embedded virtual machines
- Local computer accounts (non-Active Directory) on server for application to function.

If the application requirements are beyond the current specifications, notify the regional BTSD IT PM to avoid delays. The specifications for a new virtual server may be tailored to a specific requirement after a requirements analysis is done by TechOps. Virtual resources may also be added in the future if an application is not functioning optimally.

4.3 BMC Systems Deployment Process

The planning of BMC systems implementations that meet GSA IT standards is a collaborative effort among the TechOps, BTSD, government sponsor/project POC and BMC systems vendors.

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4.3.1 Step 1: Submit BMC Server Request Form

Prior to submitting a BMC Server Request Form, please ensure that all BMC systems software has been remediated by GSA IT Security. ***Please Note: See Section 1.4 for more details on the BMC Systems Security Assessment Process.***

Once verifying the planned BMC systems software is approved by GSA IT Security, complete a BMC Server Request Form found on PBS Systems Support Google Site. Please coordinate completing this form with the vendor and submit it to pbssystems.support@gsa.gov.

4.3.2 Step 2: Schedule Server Solutions Meeting with TechOps

- Schedule a meeting with TechOps by using the appointment calendar or contact TechOps by email at pbssystems.support@gsa.gov to request a Server Solutions Meeting. The instructions for how to schedule an appointment are here.
- The stakeholders that should attend the Server Solutions Meeting are:
    - TechOps team member (mandatory)
    - Regional GSA POC(s) (mandatory)
    - Vendor/integrator assigned to install the application (mandatory)
    - BTSD IT PM (optional)

TechOps will review the form, plan out the architecture with the project's stakeholders and provide an estimated server delivery date.

4.3.3 Step 3: Server Deployment Process

Standard server builds are typically completed within two weeks lead time. Non-standard server builds may take longer. Once TechOps has completed the server build, they will notify all affected parties of the completion and provide the system details. All server builds include the following:

- Operating system installation and security hardening
- Database installation and security hardening
- Security and compliance measures
- Server component configuration
- Web SSL certificate generated by GSA's Internal Certificate Authority
    - SSL certificates are required to be implemented on the web interfaces of BMC systems applications hosted on GSA BMC systems servers.
    - The GSA provided SSL certificates will secure and ensure the validity of the website along with allowing these websites to be automatically trusted when accessed via web browsers of client

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systems such as BSN consoles or the PBS Building Systems Desktop in GSA's Virtual Desktop Environment (VDI).

- The vendor assigned to install the application should have familiarity with the specific process for installing third-party SSL certificates onto the web interface for their application.

4.3.4 Do's and Don'ts for Application Installations

Do:

- Verify the installer has HSPD-12 clearance, an ENT account, and gsa.gov email account from the regional government sponsors/POCs. This is a requirement to access any GSA server.
- Use the E:\ (DATA) drive to install all software on virtual servers.
- Submit a BMC Server Monitor and Backup Request Form after installation is complete.
- Provide the BMC systems application software to TechOps to move it onto the server. This will avoid delays during the installation process.
- If full attention from a TechOps server technician will be needed during the application installation, please coordinate a date and time frame with TechOps for the requested support.
- To transfer installation files to the server, please reach out to TechOps for assistance.
- For assistance with configuring Simple Mail Transfer Protocol (SMTP)/email notifications, please reach out to TechOps.

Do Not:

- Upgrade BAS software patches/minor updates without GSA IT Security Team approval.
- Use manufacturer default passwords.
- Create a local account on the server without consulting with TechOps.
- Perform any changes related to the security policies installed or configured on the system.
- Change file/folder permissions on the server without consulting with TechOps.

4.4 Application Access

This section will discuss how to request different types of access and all the methods of access. There are two ways to access an application using either a BSN console or Citrix VDI: via web browser or Remote Desktop Protocol (RDP). The preferred method of access is via web browser (i.e. Niagara Web Access). For applications that cannot be accessed directly via web browser (i.e. Niagara Workbench, Alerton Compass, Siemens Desigo, etc.), RDP shortcut links can be used in Citrix VDI to directly login to the server. This section will describe how to request server access and how to access an application.

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4.4.1 How to Request Different Types of Access

Temporary Server Administrator Access:

The regional Smart Building Specialist POC or BTSD IT PM can request temporary server administration access on the installer's behalf. The instructions are:

- Go to GSA IT ServiceNow.
- Click on Self-Service Catalog.
- Select "PBS BSN Temporary Admin Remote Access".
- For detailed instructions on how to fill out the ticket, please refer to Temporary Admin Access Instructions.

Remote Desktop Protocol Access (Please limit the use of this type of method):

- Please email pbssystems.support@gsa.gov.
    - Include the ENT username of the POC who requires access.
    - The request must be from a gsa.gov email (must be approved by the appropriate government server POC).
    - Include server name and business case.

Citrix VDI:

- Please email pbssystems.support@gsa.gov.
    - Include the ENT username of the POC who requires access.
    - The request must be from a gsa.gov email (must be approved by the appropriate government server POC).
    - Request VDI access to "PBS Building Systems Desktop" (This desktop is required to access BMC systems resources).

Server Reboot:

- Please email pbssystems.support@gsa.gov.
    - Include the ENT username of the POC who requires access.
    - The request must be from a gsa.gov email (must be approved by the appropriate government server POC).
    - Include server name and business case.

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4.4.2 Methods for Accessing an Application via Web Browser

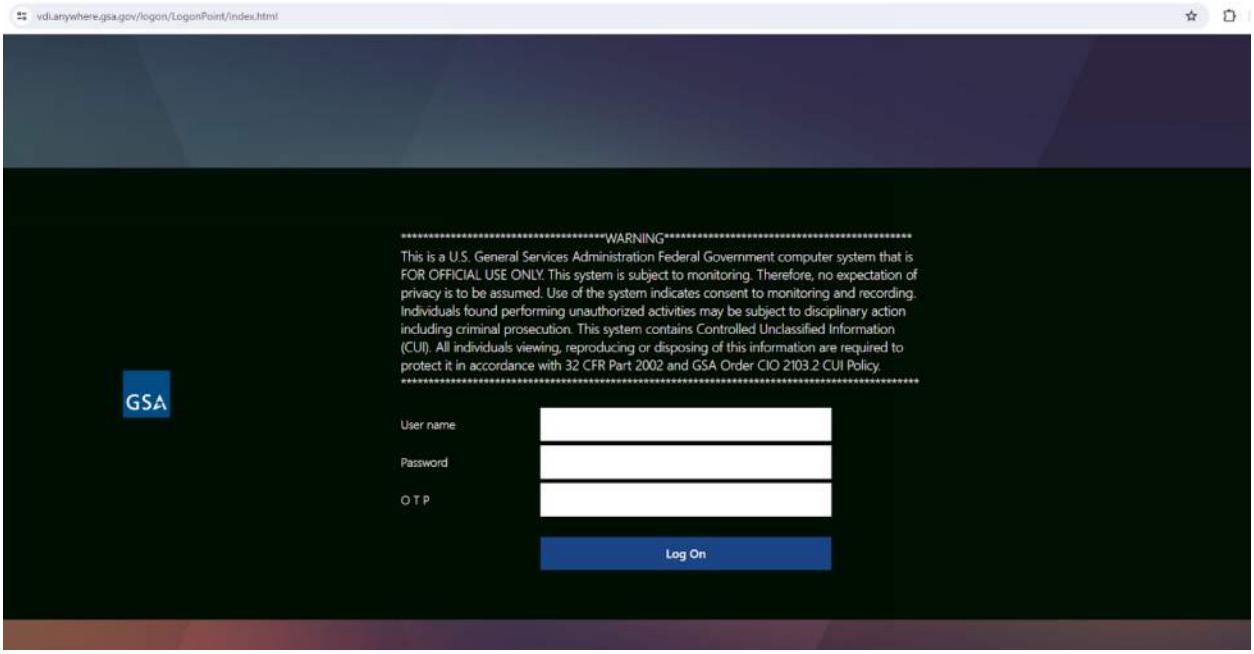
Web browsers are the preferred method for accessing any BSN application.

4.4.2.1 How to Request Access to a Web Application

Contractors requiring access to BMC systems servers must work with their government sponsors/project POCs to obtain proper clearance and the necessary credentials before system access can be granted by GSA IT.

4.4.2.2 How to Access a Web Application via Citrix VDI

- Open a web browser and go to https://vdi.anywhere.gsa.gov/
- Enter ENT username, ENT password and OTP code (See information below for obtaining OTP code).
    - Install SecureAuth OTP on IOS device
    - Install SecureAuth OTP on Android device
    - No mobile device? Use http://otp.gsa.gov to obtain a one-time passcode.



If this is the first time connecting from a web browser, there may be a prompt with a “Welcome to Citrix” window.

- There are two options to select from:
    - **Detect Receiver:** Clicking the “Detect Receiver” button will attempt to detect if the Citrix client is already installed. If it finds the client, the available Citrix VDI desktops will show up.

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- **Light Version:** Clicking “Use light version” opens the HTML5 (web) version of Citrix VDI. Use this version if the Citrix client is not installed or administrator privileges are not available to install it.

- The Citrix VDI Desktops available will be presented.

- Click and open the “PBS Building System Desktop” to launch the VDI desktop.
- Open the web browser (either Chrome or Edge) and type in the URL of the BSN application. Credentials to the application should have been provided by the regional government sponsor/project POC.

4.4.2.3 How to Access a Web Application via BSN Console

- Login to the BSN Console. ***Please Note: See Section 5.3 for details on BSN console credentials.***
- Open a web browser (either Chrome or Edge).
- Type in the URL for the application in the address bar.
- Log into the BSN application with the credentials supplied by the government sponsor/project POC.

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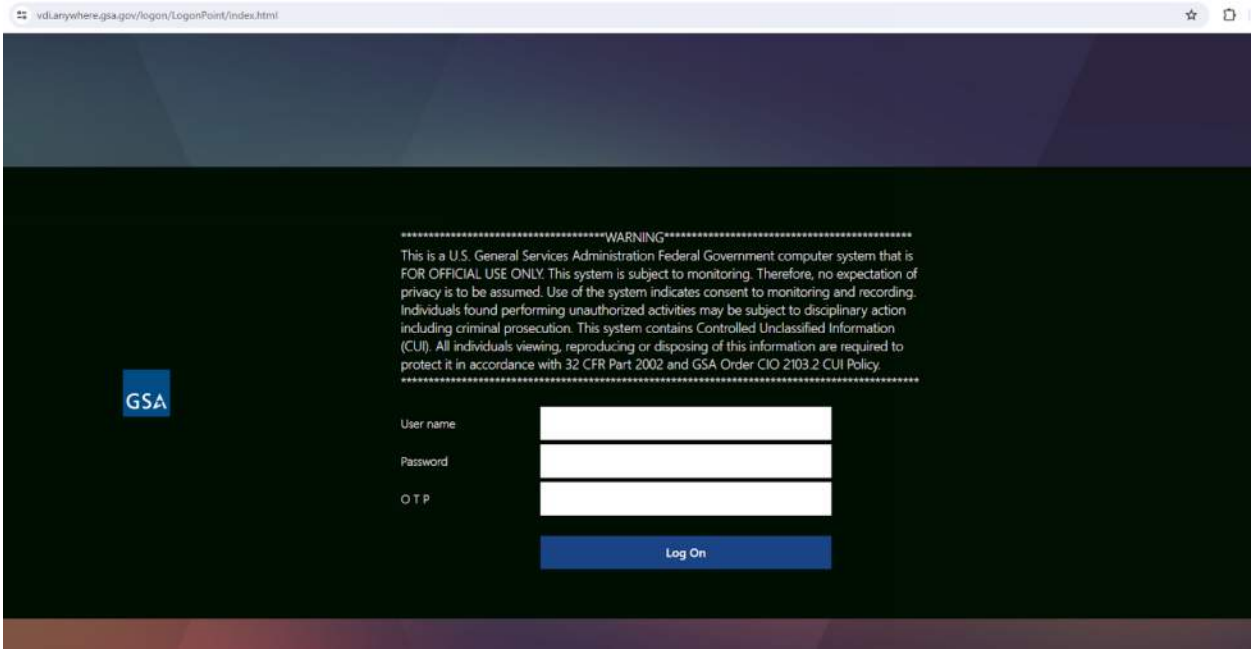
4.4.3 Methods for Accessing an Application via RDP to a Server

RDP access should be limited to applications that cannot be easily accessed via web browser.

4.4.3.1 How to RDP to a Server via Citrix VDI

- Open a web browser and go to https://vdi.anywhere.gsa.gov/.
- Enter ENT username, ENT password and OTP code (See information below for obtaining OTP code)
  - Install SecureAuth OTP on IOS device
  - Install SecureAuth OTP on Android device
  - No mobile device? Use http://otp.gsa.gov to obtain a one-time passcode.



If this is the first time connecting from a web browser, there may be a prompt with a “Welcome to Citrix” window.

- There are two options to select from:
  - **Detect Receiver:** Clicking the “Detect Receiver” button will attempt to detect if the Citrix client is already installed. If it finds the client, the available Citrix VDI desktops will show up.
  - **Light Version:** Clicking “Use light version” opens the HTML5 (web) version of Citrix VDI. Use this version if the Citrix client is not installed or administrator privileges are not available to install it.

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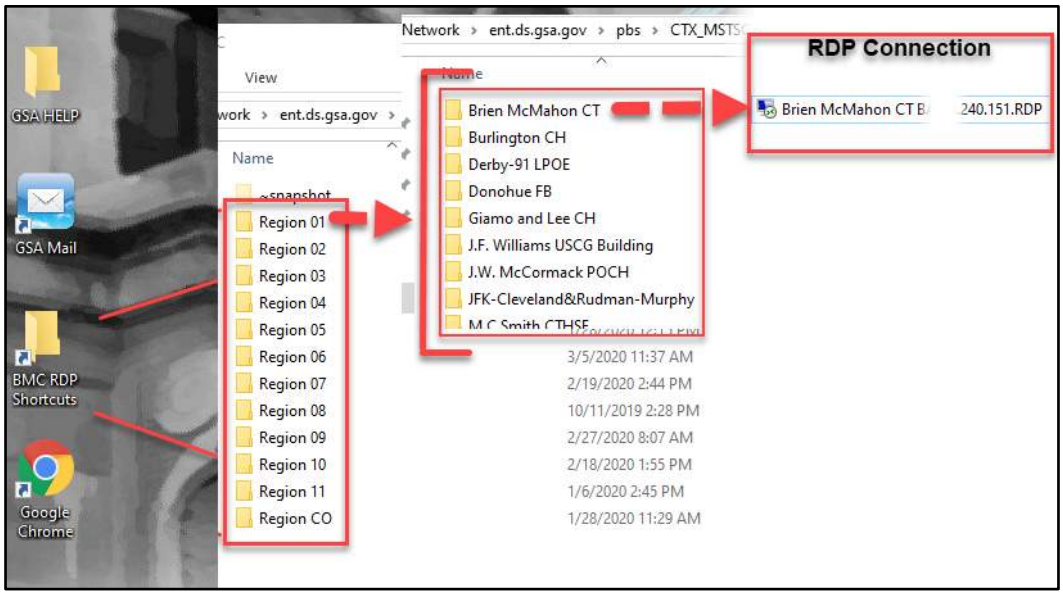
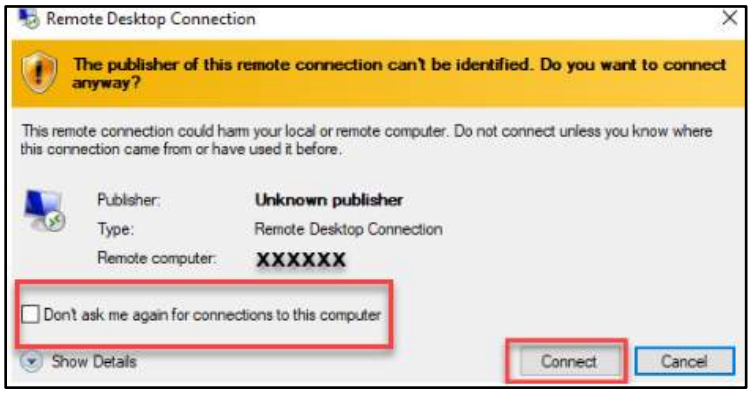
- The Citrix VDI Desktops available will be presented.

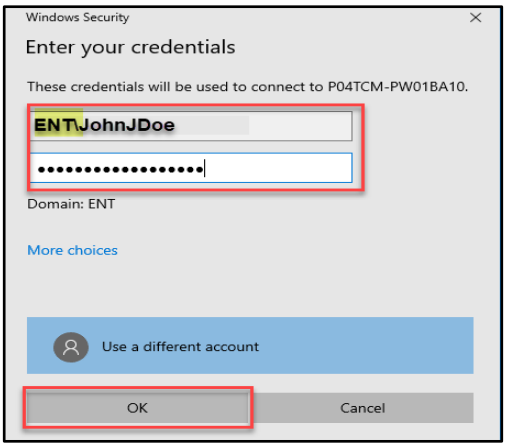
- Click and open the “PBS Building System Desktop” to launch the VDI desktop.
- Open the BMC RDP Shortcuts folder on the VDI desktop.
- Open the correct regional folder.
- Open the correct field site folder.
- Click on the appropriate RDP shortcut link.



- For convenience, check the “Don’t ask me again for connections to this computer” box. Then click “Connect” to continue.



- On the next screen, enter ENT credentials to connect to the BAS server. Click “OK”.



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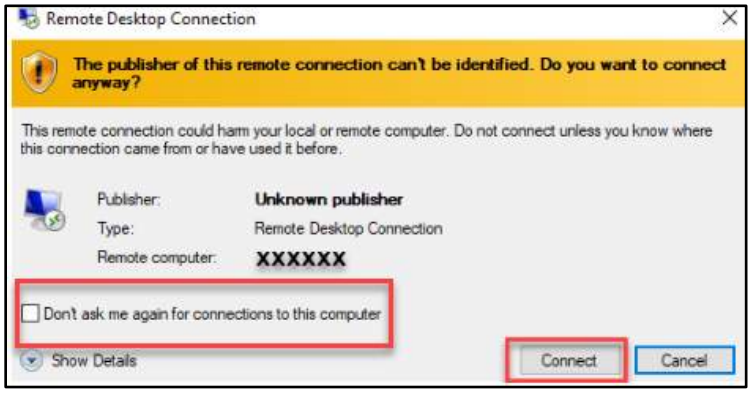
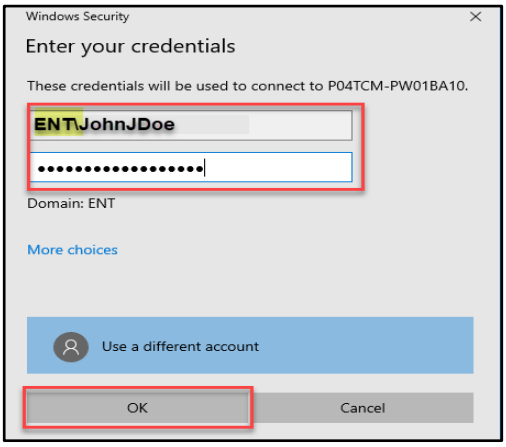
- Once on the server desktop, login to the application using the supplied credentials.

4.4.3.2 How to RDP to a Server via BSN Consoles

- Login to the BSN console using the supplied credentials.
- Open the server RDP shortcut on the BSN console.
- For convenience check the, “Don’t ask me again for connections to this computer” box. Then click “Connect” to continue.



- On the next screen, enter ENT credentials to connect to the BAS server. Click “OK”.



- Once on the server desktop, login to the application using the supplied credentials.

4.4.3.3 How to Log Off a Remote Desktop Session on a BMC Systems Server

- Right click the “Start” button from the bottom left corner.
- Hover over “Shut down or sign out”.
- Left click “Sign Out”.

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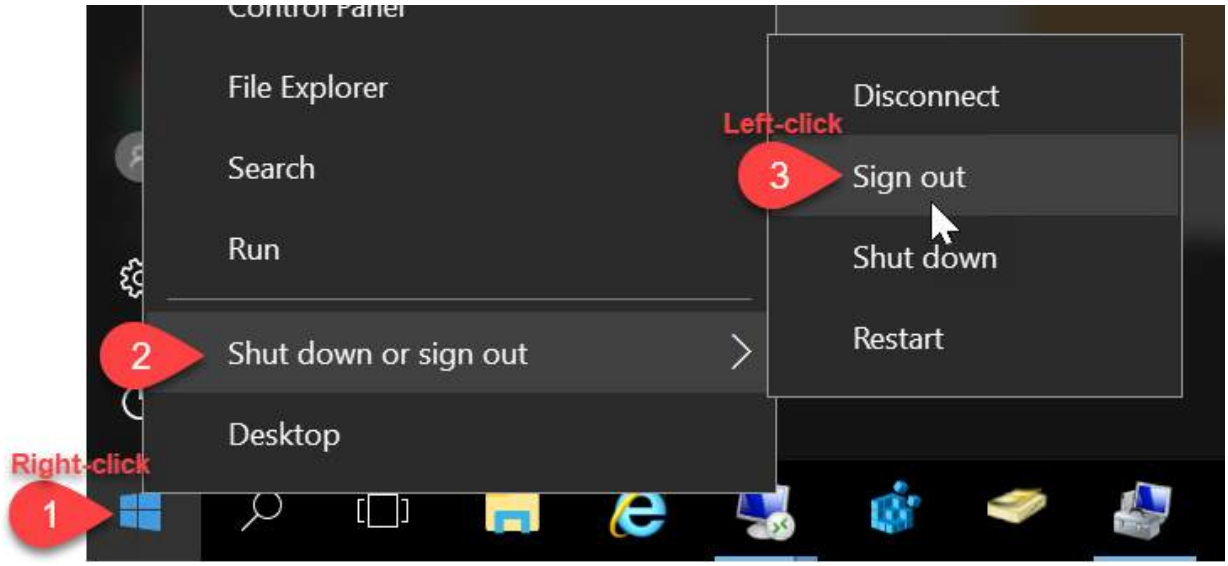

***Please Note:* Disconnect should be avoided as it stops the desktop but leaves the session open which consumes resources on the VDI host.**

4.5 Server Maintenance and Support

This section will describe server monitoring, backup solutions, patching and communications.

4.5.1 Server Monitoring and Backup

TechOps uses a software package named “Applications Manager” to monitor the health and availability of managed servers and applications. Basic server monitoring includes an availability monitor, which checks to see if the server is online through ping tests every five minutes. Advanced monitoring includes the ability to monitor services, processes, websites, and databases. TechOps is notified in the event of server health and availability failure and will take appropriate action.

Monitors will only be added if a BMC Server Monitor and Backup Request Form is submitted for the server, with the exception of server health and availability monitors. Below is a listing of the monitoring options that are offered by PB-ITS:

Windows Servers:

- Server Availability
- Disk Utilization
- Memory Usage
- Service Availability Monitoring

Websites:

- Availability Up/Down

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- Average Response Time
- Page Size
- SSL Expiration for GSA supplied SSL certificates.

Databases:

- Availability Up/Down
- Connection Times
- Log Files
- Table Space

Database Size:

- Buffer Hit Ratio
- Read, Write, Input/Output (I/O)
- SQL Statistics and Locks

Virtual servers are fully backed up. Each server's configuration, database, application, and settings are captured in one snapshot and backed up to one of GSA's data centers. Snapshots are automatically performed once a day Monday through Friday and retained locally for 30 days, which makes them readily available. After 30 days, the snapshots are kept on a tape backup for up to one year. ***Please Note: For physical servers, backups need to be discussed on a case-by-case basis with BTSD IT PM and TechOps.***

4.5.2 Server Patching

Most known vulnerabilities can be solved, and potential system attacks can be prevented by patching computers on a regular basis. TechOps performs Windows operating system patching monthly on the weekends. Microsoft's patch release day occurs on the second Tuesday of each month and is referred to as "Patch Tuesday". TechOps' development and test server patching occurs four days after Microsoft's "Patch Tuesday". Production server patching is done two weeks after development server patching or 18 days after Microsoft's patch release day, "2nd Tuesday".

- Database patches are performed on a quarterly basis.
- Zero-Day patches are applied as soon as possible.

Please Note: It is recommended that the building POCs test their application for any issues on the Monday after BSN server patching. If any issues arise, report them to TechOps immediately.

4.5.2.1 Communications for BMC Systems Contacts

When communicating to a mass BMC systems audience, TechOps will use a comprehensive contact list.

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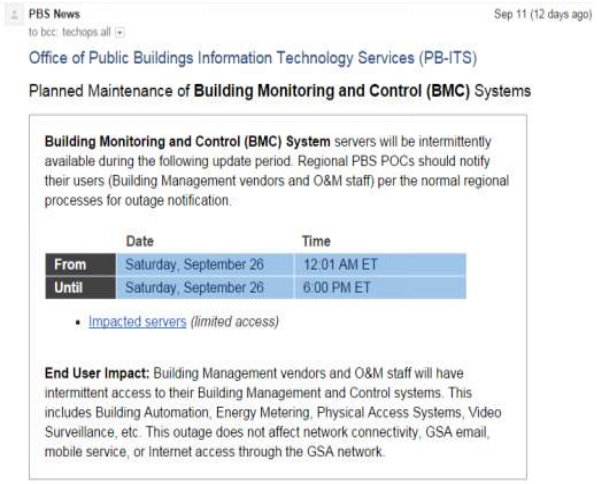
Please contact TechOps at pbssystems.support@gsa.gov to be added to the notifications if you are not already receiving them.

4.5.2.2 Planned Maintenance and Outages

TechOps will notify POCs/vendors of any planned outage via email and include application names in the notification (if applicable). Below is an example of what a planned maintenance notification email looks like:



PBS News Sep 11 (12 days ago)
to bcc: techops.all

Office of Public Buildings Information Technology Services (PB-ITS)

Planned Maintenance of **Building Monitoring and Control (BMC)** Systems

Building Monitoring and Control (BMC) System servers will be intermittently available during the following update period. Regional PBS POCs should notify their users (Building Management vendors and O&M staff) per the normal regional processes for outage notification.

	Date	Time
From	Saturday, September 26	12:01 AM ET
Until	Saturday, September 26	6:00 PM ET

- Impacted servers *(limited access)*

End User Impact: Building Management vendors and O&M staff will have intermittent access to their Building Management and Control systems. This includes Building Automation, Energy Metering, Physical Access Systems, Video Surveillance, etc. This outage does not affect network connectivity, GSA email, mobile service, or Internet access through the GSA network.

4.5.2.3 Unplanned Maintenance and Outages

The steps below are what TechOps does to respond to unplanned maintenance and outages:

- If a server availability outage alert is received, TechOps will immediately start to troubleshoot the issue.
- If TechOps can restore a server or application, they will send an email to the server POCs stating what was down and how it was resolved. They will also ask the server POCs to check the BMC systems application's functionality.
- If restoration of the server or application cannot be resolved and TechOps has exhausted all efforts, the following actions will be taken:
    - For all servers, an email will be sent to the server POCs stating what the issue is and what steps have been taken to that point.
    - TechOps may have to involve other GSA IT teams to resolve the issue (Server Services, network team, vendor, etc.)
    - TechOps may request to have the software vendor help resolve the issue. It is the discretion of the server POCs if it will be permitted.

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Chapter 5

BSN Consoles

5.0 Overview

BSN consoles are workstations that are used to access and maintain the BMC Systems on the BSN. The BSN consoles are government furnished equipment (GFE) which are supported by the Regional Building IT Specialists (RBITS). BSN consoles are GSA workstations that receive a standard GSA image but are not joined to the ENT domain the way GSA user workstations are. This means that they do not receive the same group policies and do not adhere to the same IT security standards that a user ENT workstation does. It also means that BSN consoles cannot communicate with the full set of sites or services that are made available on the GSA enterprise network. They can only communicate with building system application servers, building system IP based controllers and a limited set of websites that have been approved for access.

5.1 BSN Consoles System Standards

The standard hardware for BSN consoles is:

- CPU Intel i5
- RAM 16 GB
- Hard drive (HD) SSD 256 GB
- Current GSA supported version of Windows desktop operating system.

5.2 How to Obtain a BSN Console

BSN consoles are provided for each site to allow a direct, local connection to building control devices. The regional BTSD Technical PM is responsible for requesting a BSN console. They will request a laptop to be shipped from the BMC systems inventory at the warehouse to the regional GSA IT Deskside Services team. The regional GSA IT Deskside Services team will then configure the BSN console and reach out to the RBITS for quality assessment prior to being shipped to the building. Once consoles are deployed, the RBITS are the primary support team.

5.3 How to Access BSN Consoles

Users will be provided a user account by the RBITS team for accessing BSN consoles. For any issues regarding access, please contact the RBITS for support. If administrator rights are required to the BSN console for the purpose of installation or removal of software, please submit a BSN Console Admin Access Request ticket in ServiceNow for temporary administrator access.

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5.4 Installing Software on the BSN Console

Any software on any GSA computer, including a BSN console, must have been approved through the software approval process prior to installation. For any software that has not been previously approved, please contact the regional BTSD IT PM to begin the process. ***Please Note: See Section 1.4.4 for more details on the Non-Standard Software Review Process.***

5.5 BSN Console Maintenance and Support

TechOps performs system patching twice a month on consoles. Microsoft Windows operating system patching occurs four days after Microsoft's "Patch Tuesday", which is the second Tuesday of each month. Additional application patching occurs on the fourth Tuesday of each month. Zero-Day patches are applied as soon as possible. ***Please Note: The RBITS regularly check to see if the BSN consoles are online and ready for BSN console patching. However, it is recommended that the building POCs test their application for any issues post-patch. If any issues arise, please report them to the RBITS immediately***.

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Chapter 6

Technical Support for BMC Systems

6.0 Overview

There are various teams involved in supporting and troubleshooting all the different components of the BMC systems. To simplify things and get efficient help quickly, it is strongly encouraged to reach out to the regional BTSD IT PM and the SBS POC whenever there is a BMC systems related issue. Both groups can get the proper parties involved to help assist with troubleshooting efforts. This chapter outlines BMC systems maintenance and support for most of the common issues.

6.1 Technical Support Roles and Responsibilities

- **GSA IT Service Desk (ITSD):** The ITSD is the initial point of contact for all technical issues across GSA during normal business hours. They are responsible for gathering the information, creating tickets for customers, and triaging the issue to the appropriate escalation teams.

- **GSA IT Buildings Technology Services Division (BTSD):** The BTSD is the liaison between the Regional PBS Project Teams, vendors/contractors and GSA IT for all BMC systems that need to be integrated onto the GSA network. They are also one of the main points of contact for any assistance in troubleshooting the BMC systems.

- **Smart Building Specialists (SBS):** The Smart Building Specialist (SBS) POCs are the liaison between facility management, operations and maintenance (O&M) technicians and GSA IT. They are also one of the main points of contact for any assistance in troubleshooting the BMC Systems.

- **Regional Building IT Specialist (RBITS):** The RBITS primary responsibilities are to support the integration activities of building systems to the GSA network and to provide support for production systems. The individuals in this group are often located in the Regional Office Buildings (ROB) and can be sent to a site which is experiencing issues that GSA IT is unable to resolve remotely.

- **GSA IT Technical Operations Team (TechOps):** TechOps is responsible for addressing server hardware issues and server operating system issues. They are also responsible for coordinating the restoration of data backups for the applications that reside on BMC systems servers and patching the servers and consoles.

- **GSA IT Enterprise Monitoring and Event Management Team (EM&EM Team):** The EM&EM Team is responsible for troubleshooting the entire IP transport layer on the GSA IT network including all GFE routing and switching equipment. They are available for support 24/7.

- **PBS Facilities Management:** Facility manager and O&M contract staff must serve as “eyes, ears and hands” to address physical issues at the direction of the GSA IT. This may include surveying cable connections, restarting/rebooting hardware, and the installation of hardware.

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- **Vendors/Contractors:** If GSA IT has determined that the issue resides with BMC systems software or hardware, the facility manager or other on-site personnel must contact the controls vendor to provide full support of the application and its proprietary hardware.

6.2 Initial Troubleshooting Steps

This is meant to be a basic troubleshooting guide for connectivity issues. If these steps do not help resolve the issue, further escalation may be needed to the appropriate team depending on the issue.

Scenario 1: Troubleshooting IP Enabled BMC Systems Hardware (Down or Unresponsive)

1) Inspect the device:

   a) Check if it is powered on/plugged in (must be always powered on).

   b) Ensure it is physically connected to the network cable.

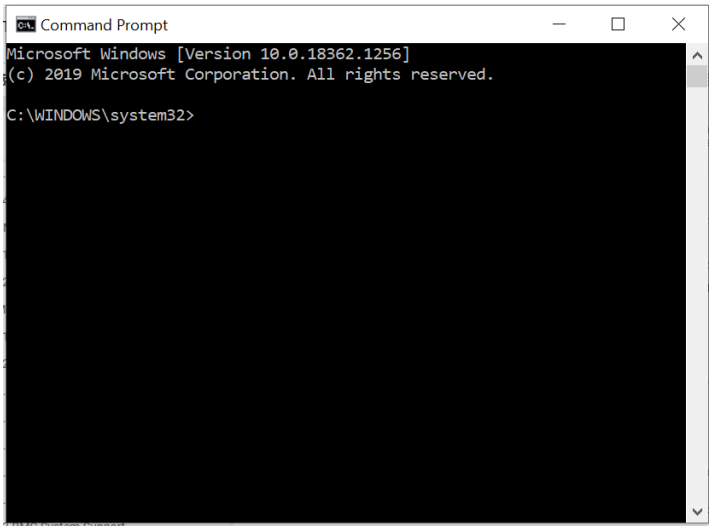
   c) Ensure the network cable is blinking at the connection (insert picture for this as an example).

2) Given that the device passed the physical inspection, attempt to ping the device from a BSN console:

   a) Log onto the BSN console.

   b) Click on the Start Menu window icon in the bottom left-hand corner.

   c) Next, type ***cmd***. Click on the command prompt to open it.



   d) Obtain IP address. If you do not have it already, please contact your BTSD Technical PM or RBITS.

   e) Type <Ping (Insert IP Address)>

      i) If the ping comes back:

         (1) If you have access rights to your application, utilize the BAS software (i.e. Niagara Workbench, Desigo, etc.) to continue troubleshooting efforts.

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(2) If you do not have access rights, please contact your sub to troubleshoot the issue.

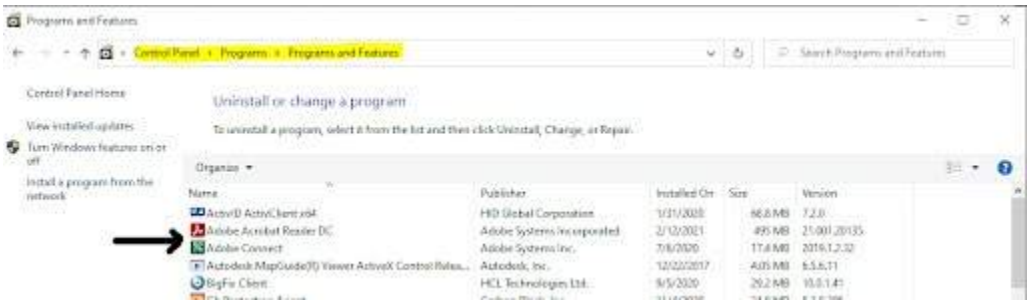
ii) if the ping fails, please contact your RBITS to further investigate the network issue. ***Please Note: Not every device is programmed to respond to a ping.***

Scenario 2: Troubleshooting BMC Systems Software

1) Please make sure that the software is installed on the BSN Console.

   a) Locate the icon on the desktop.

   b) If it's not on the desktop, go to the windows icon, control panel, program, programs and features. Confirm that it is installed.



   c) If the software is not installed, please contact your RBITS to help get the application installed.

Scenario 3: BSN Console Not Working

Please Note: The BSN Console should always be powered on and plugged into the GSA network when not being used.

1) Inspect the device:

   a) Check if it is powered on/plugged in (must be always powered on).

   b) Ensure it is physically connected to the network cable.

   c) Ensure the network cable is blinking at the connection (insert picture for this as an example).

2) Reboot the BSN console:

   a) Are there any error messages, etc.? ***Please Note: It is normal for a BSN console to display a message that there is no internet connection.***

   b) Take a screenshot of the error message and email it to (insert either RBITS and PM or distro for region or BTSD distro)

6.3 Reporting a BMC Systems Issue

Whenever a site experiences a BMC systems issue, they need to contact the appropriate personnel to assist with troubleshooting. When speaking with the support agent, be sure to first mention that the issue is related to "Building Monitoring and Control Systems." Provide the following pieces of information:

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- Building name

  Building number

  Building location (city, state, and region)

  Server, console, device name and/or IP address, if applicable

  BMC system or software name, if applicable

  MAC address, if applicable

  Network connectivity issues, if applicable

  Application or device accessibility from BSN Console, Citrix VDI or Remote Desktop Protocol, if applicable

  Last known date or time the system was working/ approximate date or time when the issue started.

  Any recent changes made in the environment that could have caused the problem.

  Provide screenshots, if possible

For normal business hours, the site POC must go through the regular channels to create an Incident ticket.

- Call the GSA IT Service Desk hotline at 866-450-5250. Their normal business hours are Monday - Friday, 7am - 8 pm Eastern Standard Time.
- Select option 5 “Application Support”.
- Then, select option 2 “Building Monitoring and Control Systems”.
- Once the ticket is created, please send an email to the regional BTSD IT PM and SBS POCs with the ticket number as well as any other pertinent information and they will contact the appropriate groups as needed.

Please Note: GSA IT has limited support options after hours. The main two types of options are support for servers at the OS level and any network connectivity issues.

For any server related emergency requests after hours:

- Email TechOps at pbssystems.support@gsa.gov and copy the regional BTSD Technical PM and SBS POCs. For any emergency requests, they will typically respond within an hour. Any non-emergency requests will be addressed the next business day.
- If there is planned maintenance on a system outside of normal business hours that requires support from TechOps, please coordinate this prior to the scheduled maintenance.

For any network related issues after hours:

- Call EM&EM at 1-800-903-4472.

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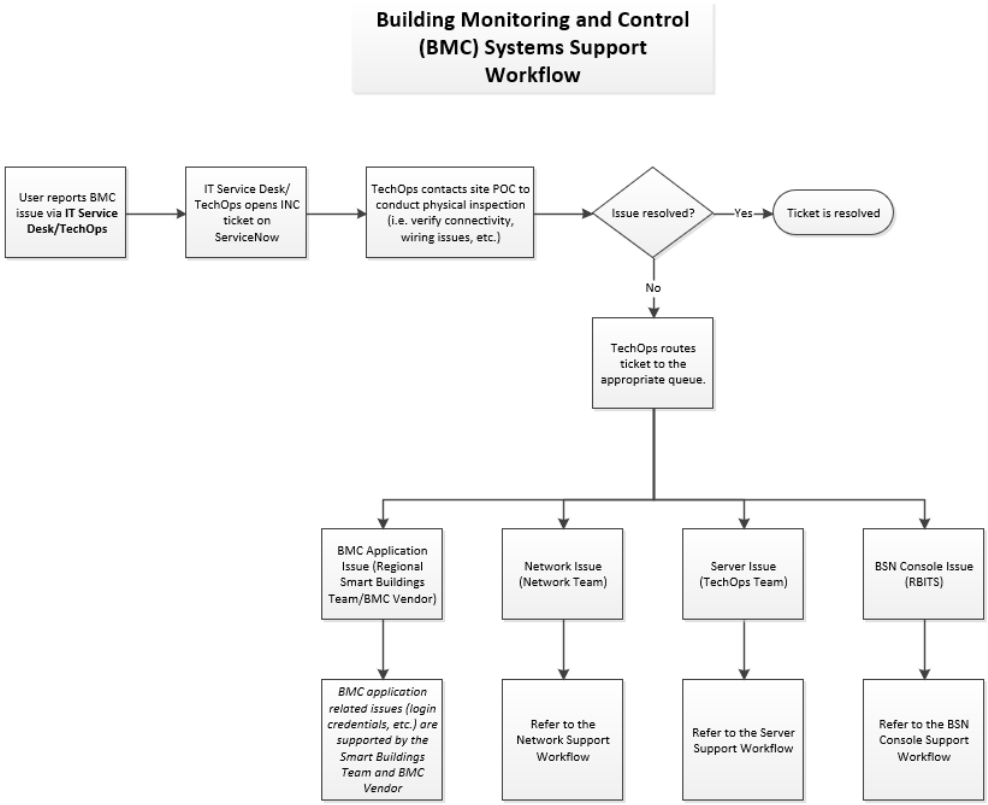
- Select option 2 to report a critical enterprise-wide outage or service disruption. This option will escalate you to a person who can assist immediately.
- Once the ticket is created, please send an email to your BTSD IT PM and SBS POC(s) with the Incident ticket number as well as any other pertinent information. If the ticket is still not resolved after hours, they will escalate to the appropriate groups the next business day.

6.4 BMC Systems Support Workflow

Below is an example of a typical troubleshooting workflow. The IT Service Desk opens an incident ticket, which they route to other queues depending on the suspected issue. The four main categories that issues typically fall under are BMC systems applications, BMC systems hardware, network, server, or BSN console.



6.4.1 BMC Systems Application Issue

If the BTSD IT PM or Smart Buildings Specialist (SBS) PM suspects it's a BMC systems application issue, the SBS PM will reach out to the appropriate vendor support contract personnel to troubleshoot issues such as login credentials, etc.

6.4.2 BMC Systems Hardware

If the BTSD IT PM or Smart Buildings Specialist (SBS) PM suspects it's a BMC systems hardware issue, they will help the site POC get pricing for the replacement of the hardware, put together the contract necessary to replace the device and schedule the work.

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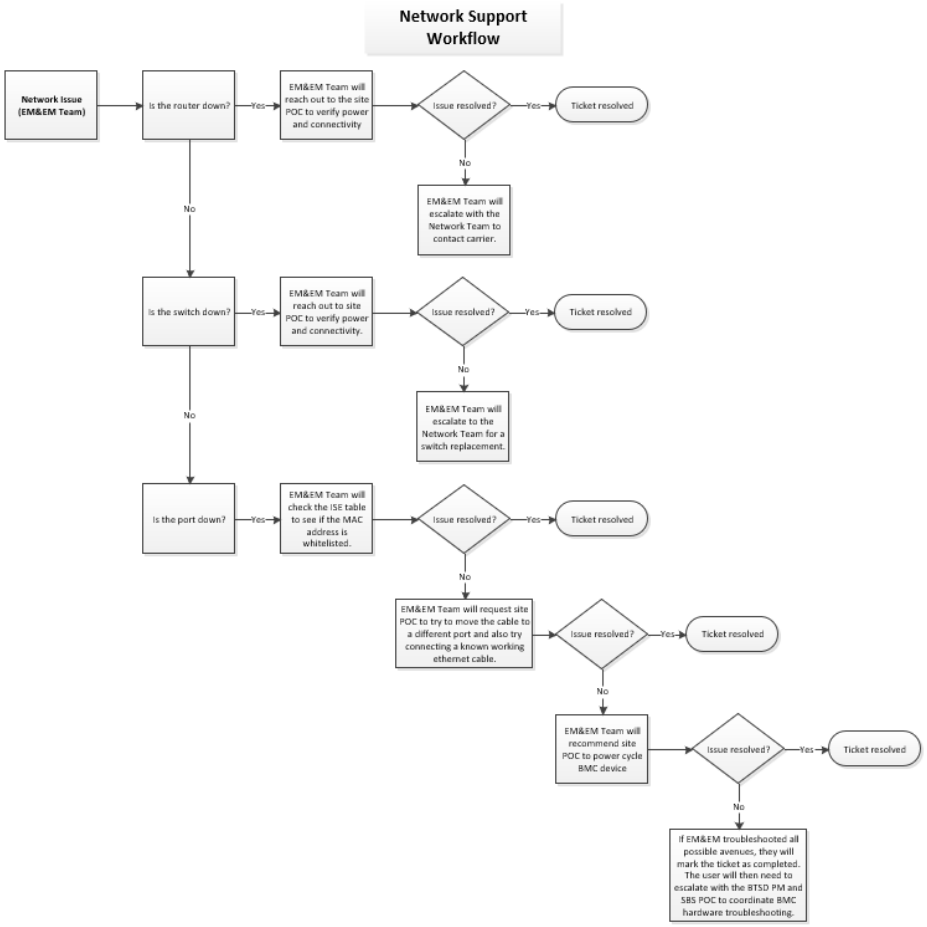
6.4.3 Network Issue

If the BTSD IT PM or Smart Buildings Specialist (SBS) PM suspects that the issue is related to a router, switch, etc. they will typically route the ticket to the EM&EM (formerly known as the NOC). Below is the workflow demonstrating the troubleshooting steps the EM&EM team takes when trying to resolve a network issue. The contact information for the EM & EM team is 1-800-903-4472, option 2. They support the buildings 24/7 for major network outages or incidents.



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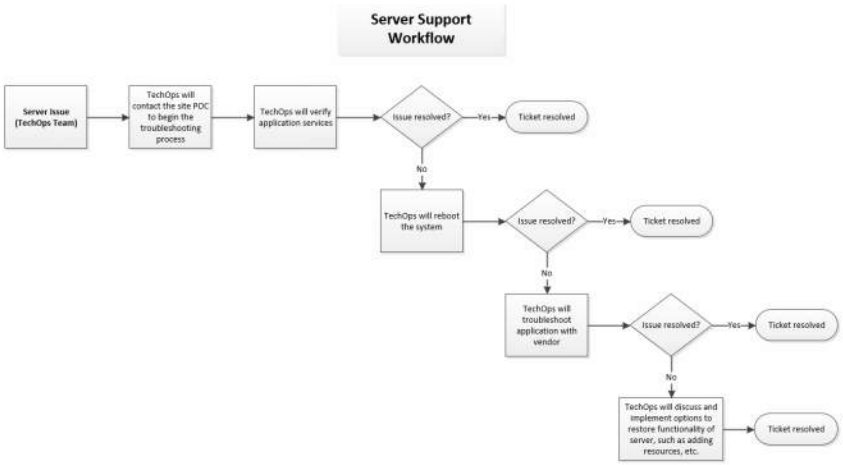
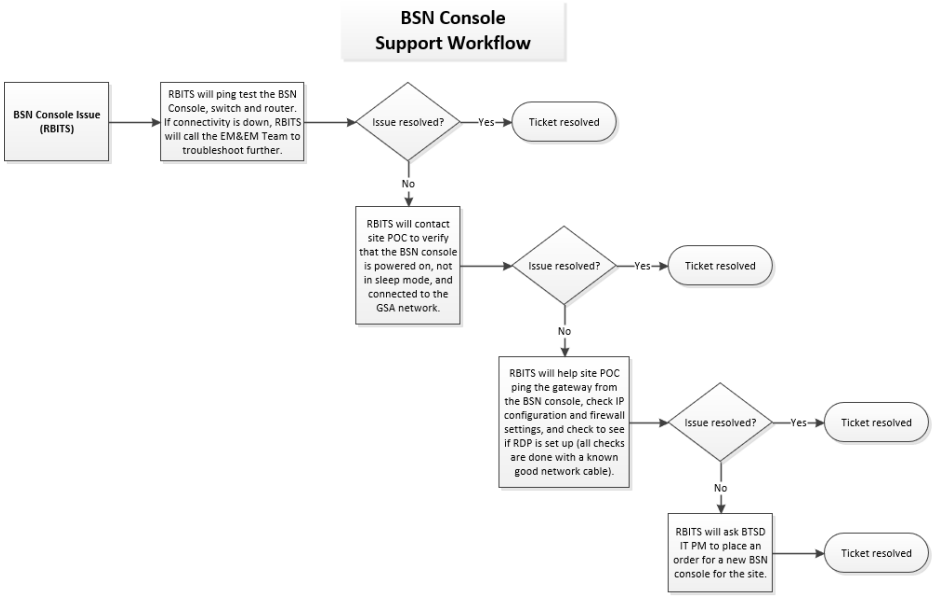
6.4.4 BMC Server Issue

If the BTSD IT PM or Smart Buildings Specialist (SBS) PM suspects that the issue is related to a BMC systems server, they will reach out to TechOps to help troubleshoot the issue. Below is the workflow demonstrating the troubleshooting steps the PBS System Support Team takes when trying to resolve a server issue. The contact information for TechOps is pbssystems.support@gsa.gov or 866-274-0781 and their normal business hours are Monday through Friday 7am - 7pm Eastern Standard Time. They can be reached after hours from 7pm - 7am Eastern Standard Time for emergency related requests only.



6.4.5 BSN Console Issue

If the BTSD IT PM or Smart Buildings Specialist (SBS) PM suspects that the issue is related to a BSN console, they will reach out to the RBITS to help troubleshoot the issue. Below is the workflow demonstrating the troubleshooting steps the RBITS Team takes when trying to resolve a BSN console issue. The contact information for RBITS is pbs-regional-building-it-specialists@gsa.gov and their normal business hours are Monday through Friday 8am - 5pm Eastern Standard Time.



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Chapter 7

Advanced Metering System (AMS)

7.0 Overview

The advanced metering program is a multi-tiered, Commercial-off-the-Shelf (COTS) solution designed to monitor and store energy consumption that includes 11 production servers. It collects meter data on electricity, gas, steam, hot water, domestic water, photovoltaic and limited sub-metering. GSA has an inventory of approximately 40 unique devices with over 700 IP enabled devices, and 1900 serial meters, across approximately 500 facilities.

The platform consists of one enterprise cloud server, currently hosting Envizi (MUSE) application, and 11 dedicated regional metering servers (R1-R11), hosting the Schneider Power Monitoring Expert (PME) application. The 11 servers are managed centrally, as part of the Advanced Metering Systems (AMS) program by GSA IT. The Schneider PME application is supported by a team of consultants from Schneider Electric. The metering hardware is maintained by an O&M group, Redhorse, who is responsible for resolving metering issues.

7.1 Advanced Metering System Roles and Responsibilities

- **IT Project Manager for Advanced Metering Systems:** The AMS IT project manager works closely with the PBS program office, coordinates upgrades and releases with TechOps and works closely with ISSO to ensure the application is compliant with security requirements.

- **PBS Program Manager Advanced Metering Systems:** The program manager conducts a daily review of Source Activity and trend summaries to identify any data issues at a regional or national level. They also conduct bi-weekly project calls with Schneider Electric to discuss all integration efforts, application issues, upcoming projects, security scans and issues, training needs and software issues and conduct weekly project calls with Redhorse regarding all aspects of metering support. They also monitor Uplight (virtual auditing program) reports to trends to ensure that buildings with evaluation requirements have the data needed for evaluations. Additionally, they coordinate training webinars for end-users and conduct quarterly metering network calls with the national and regional AMS community.

- **Program Lead:** The program lead is responsible for providing end users with dashboards and training necessary to effectively interpret metering data (facility managers, O&M contractors, etc.). They are responsible for maintaining the metering infrastructure and installation. Program leads use the data as a tool for finding opportunities for energy savings. They also use the data to evaluate building performance for design development and use data post-construction to evaluate building performance.

- **Regional Lead:** The regional lead documents and manages the inventory of regional advanced meters. Project manages the initial installations, integrations, and replacements of regional advanced meters according to the priorities set forth by the PBS Program Manager Advanced Metering System and Facility Management. The regional lead works closely with a team of engineers to serve as the liaisons

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between the facility managers and the advanced metering contractors (Red Horse and Schneider Electric). The regional lead is also the front facing role for all advanced meters inquiries initiated by regional management and building managers.

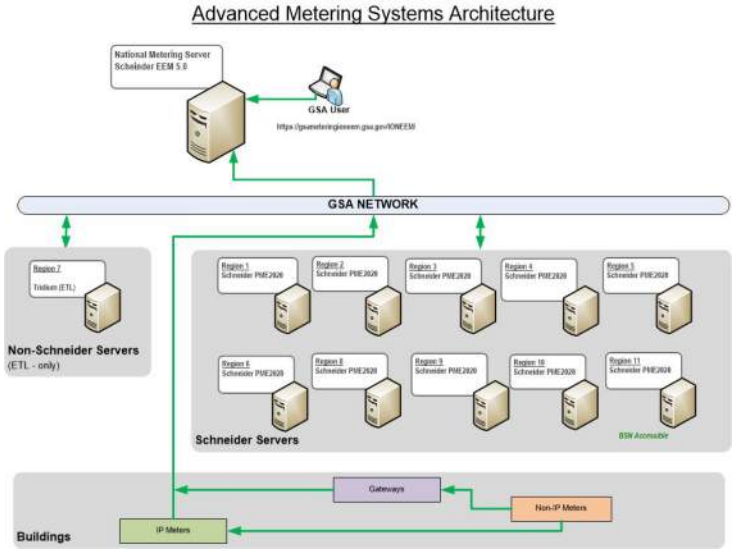
- **Schneider Electric:** Schneider Electric has a dedicated team of technical support consultants that are responsible for the PME application. They provide metering support from the application to the end-user, which includes metering integration, updating network diagrams, source management, ensuring the system is functioning and reporting on system health.

- **Redhorse:** Redhorse is a contracting support service company that logs and manages all the tickets related to the Advanced Metering program and produces the weekly Source Activity Report that provides a count of all advanced meters that are down across GSA. They are also responsible for the repair and replacement of meters and other hardware components like gateways, transponders, converters, and wiring. Along with Schneider Electric, they provide the information necessary for Schneider Electric to update AMS network diagrams.

- **Facility Managers/O&M Contractors:** Facility Managers/O&M contractors are responsible for confirming meter communication status at their locations and looking at metering data on a regular basis. The O&M partners with GSA to fully utilize the AMS to develop and implement strategies that will result in an overall reduction in energy consumption. The O&M must verify daily that each of the advanced meter(s) are functioning properly and are communicating to the regional and Central Office server, as applicable, and are accessible via end-user interface. The O&M are also responsible for correcting any onsite communication failure immediately to mitigate any loss of data.

7.2 Advanced Metering System Architecture

The AMS Architecture includes approximately 40 unique devices with over 700 IP enabled devices, and 1900 serial meters, across approximately 500 facilities. Most of the devices report 15-minute interval data directly to the corresponding regional PME server. Subsequently the data is moved to the national metering server (MUSE) to provide users with dashboards, reports, and trends.



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7.3 Standards for Interoperability

The following is a high-level list of items to consider for the implementation of any new meters.

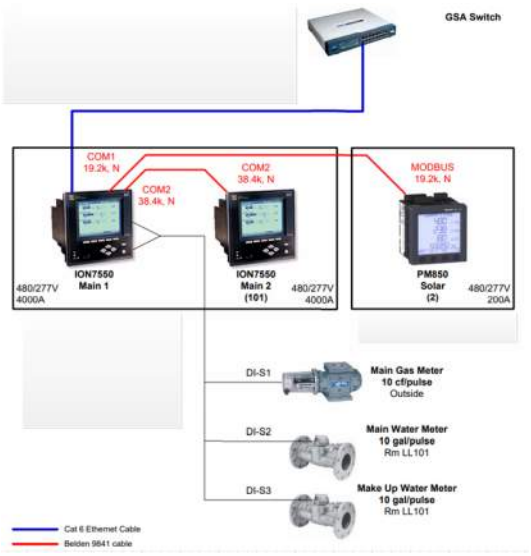
- Prior to deployment, all IP enabled meters will be subject to scanning and certification. ***Please Note: See Section 1.4 for details on the BMC Systems Security Assessment Process.***
- All IP ranges/addresses are provided by GSA IT Network Team, in coordination with the BTSD IT PMs.
- The MAC address for all IP meters must be whitelisted before they are allowed to connect to the GSA network. ***Please Note: See Section 1.2.4 for the process of whitelisting devices.***
- All devices must be IPv6 capable to be installed on the network.
- All IP meters on the GSA network are subject to continuous monitoring and periodic scanning by GSA IT.

7.4 New Installations

This section will discuss the requirements for the network diagram as well as cabling installation.

7.4.1 Sample Network Diagram

Network diagrams (see simplified sample below) help the AMS support team or GSA IT expedite resolution of issues. In the example below, the site has one IP enabled ION 7650 electrical meter, and a gateway that is connected directly to the switch. Downstream of that meter/gateway is a serially connected ION 7650, a Solar meter connected serially via Modbus, and 3 serially connected water meters.



Please Note: This diagram is different from a network diagram. See Section 2.3.2 for a sample network riser diagram that needs to be submitted to the BTSD IT PM for all new metering integrations.

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7.4.2 Cabling

GSA IT requires facility managers to coordinate cabling with a local vendor for completing all runs back to the GSA-provided switches and shall be installed in collaboration and in accordance with the *GSA Telecommunications Distribution Design Guide* (TDDG). ***Please Note: Troubleshooting cabling issues is not the responsibility of GSA IT and will need to be coordinated with the cabling vendor.***

7.5 Technical Support for AMS

Redhorse is responsible for supporting the meters at GSA on a national level. They monitor PME and MUSE on a regular basis to see what IP enabled meters are offline. Typically, Redhorse is proactive about troubleshooting offline meters with GSA IT and Schneider and will reach out to the site for assistance as needed. Additionally, some regions have a contract with the O&M staff to recalibrate, repair or troubleshoot the AMS. If this is the case, then they can perform their initial troubleshooting steps and then contact Redhorse when further escalation is required.

7.5.1 Support Form

If the site experiencing issues does not have an O&M support contract in place for meters or needs further troubleshooting assistance from Redhorse, they can fill out the Advanced Metering: Support Request Form. This form provides Redhorse the information necessary for troubleshooting most issues. The following information must be collected by the regional POC/O&M tech to submit the form:

- Is this a new or existing problem?
- Region
- Type of Problem:
    - Communications or data loss with meter(s) at a specific building.
    - Data is reporting, but it is incorrect for a specific building.
    - ION EEM or PME server problems (e.g. problems with trends, subscriptions, modules, or other functionality)
    - I want nodes or meters deleted from the system.
- Building ID Code (i.e. AA0000ZZ)
- Point of Contacts:
    - Regional Point of Contact
    - Onsite Point of Contact (Property Manager, O&M Contractor, Facility Operations Specialists) ***Please Note: This is important, the submitter needs to give someone who Redhorse can work with to troubleshoot.***
    - Any Additional Point of Contacts

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- Offline Meter Type
    - ALL meters are not reporting.
    - Electric Main
    - Electric Sub Meter
    - Gas
    - Steam
    - Chilled Water
    - Water
    - Renewable energy (e.g. PV inverter)
- Meter Description: Utility, Manufacturer, Series, & Models
- Total Number of Devices Affected
- Building Switch Name (Upstream of Meter)
- Building Switch IP Address
- Building Switch Port
- Main Meter IP Address
- MAC Address
- Have you pinged the meter?
- A Network Diagram
- A Switch Matrix Spreadsheet
- Any pictures of the meters, cables, switches, or other equipment that can help diagnose the problem.
- Additional comments or notes about the meters at this location including previous steps taken or known events at the building that could have caused the problem.

For assistance with filling out the support form, please contact:

- james.shull@gsa.gov
- robert.case@gsa.gov
- latoya.leek@gsa.gov
- mario.ledesma@gsa.gov

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7.5.2 Troubleshooting Process

- Redhorse will generate an Incident Ticket in ServiceNow based on the responses from the Support Request Form.
- Based on the responses in the Support Request Form, Redhorse can generally determine what type of issue it is: application, network, or hardware.
- For application issues, Redhorse will contact the AMS IT PM. The AMS IT PM would then determine if the issue resides in MUSE or PME.
    - If the issue resides in MUSE, the AMS IT PM would contact IBM to troubleshoot the issue.
    - If the issue resides in PME, then the AMS IT PM would contact Schneider Electric to troubleshoot the issue.
    - If the data in PME passes through the GSA Secure File Transfer Services (SFTS) server, the AMS IT PM would contact the GSA SFTS server team to troubleshoot the issue.
- For network issues, Redhorse does initial troubleshooting steps (i.e. pinging devices, etc.) After a failed ping, Redhorse may arrange a physical inspection of the device with the help of the Regional POC/O&M Tech. They may ask to power cycle the switch. If that does not help with the connectivity issue, they would call EM&EM to further troubleshoot the network connectivity.
- For hardware issues, Redhorse may ask the O&M tech onsite to power cycle the metering device. If the device still does not work properly, Redhorse will have to repair or replace the device. Redhorse would have to then contract a local vendor or integrator (i.e. American Systems) to do a site survey and give an estimate for the work. Redhorse then would purchase the meter and provide a purchase order to the experienced technician (i.e. Schneider) to get the meter replaced and integrated.
- Redhorse will resolve the incident ticket when an agreeable solution is provided for the issue.

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Chapter 8

Physical Access Control System (PACS)

8.0 Overview

This chapter will provide guidance on access management tools being utilized for GSA-controlled space leveraging the GSA IT infrastructure. A system composed of hardware and software components that control authenticated access to physical facilities by granting/denying access based upon results from electronic validation and authentication. Physical Access Control System (PACS) is a form of access management tools consistent with governing policies. PACS is a physical access control system that utilizes contact/contactless smart-card recognition, access codes, biometrics, or a combination thereof to gain entrance into secured areas.

All GSA related PACS projects and/or GSA controlled space within the GSA inventory must be fully compliant with *Homeland Security Presidential Directive 12: Policy for a Common Identification Standard for Federal Employees and Contractors*, *FIPS 201-2 Personal Identity Verification (PIV) of Federal Employees and Contractors*, and *OMB Memorandum 19-17*, which sets the Federal Identity, Credential and Access Management (ICAM) standards. Therefore, all GSA PACS projects will adhere to *GSA Order ADM 5900.1* as the guiding document for the agency's national strategy related to PACS requirements.

Most compromises to the GSA network originate from within GSA (ENT) networks because of users downloading malware via spam or from a compromised site. The malware seeks to burrow deeper into systems via this "pivot point." This aspect, in combination with the inherently sensitive nature of information (PII), potentially accessible via PACS, requires a more robust approach to security than currently required with other BMC systems. To this effect, a dedicated chapter was developed for these systems.

8.1 Physical Access Control Systems Roles and Responsibilities

- **GSA IT Deskside Services:** The Deskside Services Team (formally known as "local support") model for these types of systems will be the same as other BMC systems projects. GSA IT will provide, image, and support GSA PACS Enrollment and Guard-Viewing Stations, like any other ENT machine. GSA IT will be responsible from the remote end of the Ethernet cabling termination back to and through the GSA network and will ensure network transport of IP traffic. The region/site is responsible to secure any additional funding or support that exceeds what the National PBS contract provides at a basic level.

- **GSA IT Technical Operations Team (TechOps):** TechOps will support any virtual server supplied by TechOps for any initiative related to a PACS deployment per their normal Standard Operating Procedures (SOP) and support guidelines.

- **GSA IT Building Technologies Service Division (BTSD):** The BTSD team's roles and responsibilities related to PACS will be like other BMC Systems. The BTSD will work in conjunction with The Office of Mission Assurance (OMA), GSA IT and PBS. The BTSD will assist with the network infrastructure, authorize, and issue IP addresses, submit MAC whitelisting requests (after provided by OMA), and

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perform basic troubleshooting for connectivity issues the integrator may experience, or if needed, coordinate with the network team for larger scale complications. PBS will act as the primary Project Manager for all PACS projects, while OMA will continue to maintain oversight, provide SOPs for on-boarding, migration strategies, methods of compliance, and requirements.

- **GSA IT Network Operations Division (Network Team):** The Network Team is responsible for providing network connectivity for the entire IP transport layer to PACS. They shall provide installation, network management and monitoring, and security and reporting services for PACS. The support services include management and monitoring of IP network switches, routers, and physical network connections to PACS. They are responsible for producing and analyzing network statistics for the various components of the network to determine and implement adjustments and improvements for optimized network performance. Lastly, the Network Team provides high level troubleshooting, fault isolation, and correction support for the PACS networks. They shall perform the following services:

    - Provide design, configuration, installation, and documentation services for PACS network.

    - Coordinate configuration, testing, adjustment, and implementation of PACS connections.

    - Participate in the installation, de-installation, and interconnection of PACS LAN equipment as well as interconnection between WAN equipment and circuit interfaces.

    - Participate in the installation, de-installation, and interconnection of PACS to the LAN interfaces.

    - Segment PACS on Virtual Local Area Networks (VLANs), VLANs 55 and 504/505 respectively, and subnets.

    - Establish access control list (ACL). Only authorized systems will be allowed access to PACS systems.

Please Note: As previously identified, the differences between Building Monitoring and Control Systems and the need for an elevated security posture for the PACS systems that comply with the National Scope of Work dictate that they must NOT reside on the BSN and will not be able to communicate directly with any system/device(s) that are on the BSN.

- **Public Building Service (PBS):** PBS is responsible for providing a project manager, facility or building manager, and contracting officer for any PACS projects. PBS will work with OMA to ensure all PACS projects comply with ADM 5900.1 and align with the OMA National PACS Framework. PBS will coordinate all aspects of facility management and work with OMA and GSA IT to ensure all agency requirements are met with regards to PACS installations and maintenance, including basic site troubleshooting.

- **Office of Mission Assurance (OMA):** OMA is responsible for issuance and maintenance of all agency internal documents related to the implementation of a national (enterprise wide) EPACS solution. OMA ensures all GSA related PACS projects and/or space within the GSA inventory is compliant with *Homeland Security Presidential Directive 12: Policy for a Common Identification Standard for Federal Employees and Contractors*, *FIPS 201-2 Personal Identity Verification (PIV) of Federal Employees and Contractors*, and *OMB Memorandum 19-17*, which sets the Federal Identity, Credential and Access Management (ICAM) standards. OMA ensures GSA projects for GSA controlled space follows the *National EPACS Scope of Work (SOW) for PACS Integration Migration* and adheres to *GSA Order*

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ADM 5900.1 as the guiding document for the agency's national strategy related to PACS requirements. It will be the responsibility of OMA (with the support of GSA IT and PBS) to ensure PACS compliance with all related and referenced policy documents. OMA will provide guidance on the procurement, implementation, administration, and oversight for physical security countermeasures (aka "fixtures") as outlined in the *Memorandum of Understanding (MOU) Addenda 002 Between General Services Administration (GSA) and Department of Homeland Security (DHS)*. Regarding O&M of PACS, OMA will manage National PACS O&M and Licensing contracts to provide minimal support for PACS components, a pathway to a certified installer/technician, and licensing to avoid lapses in SSAs and licensing requirements. For any hardware or system related PACS issues, OMA will work with PBS and GSA IT to triage and troubleshoot or escalate to the PACS O&M contractor to resolve. OMA will work with GSA IT and PBS to continually assess and determine the best and most cost-effective approach for support. OMA will work to ensure policy or mandate changes are communicated to all stakeholders accordingly to facilitate compliance.

8.2 Security

All PACS devices that are, will be or are being considered for use on the GSA network not only must comply with the OMA National PACS Framework but must also be evaluated and remediated in accordance with BMC IT Security procedures. The evaluation process will consist of security scans, a manual evaluation, and the creation of a Security Assessment Report (SAR). The assessment process is detailed in *BMC Systems Security Assessment Process [CIO IT Security 16-76 Rev 4]*. ***Please Note: For more information on the BMC Systems Security Assessment Process, please see Section 1.4.***

Specific Security Requirements for GSA PACS Systems:

- All PACS devices that will be implemented on the GSA network must adhere to current GSA IT security policies.
- All critical and high vulnerabilities identified must be mitigated within 30 days and all moderate vulnerabilities mitigated within 90 days or require an Acceptance of Risk to be signed by the Authorizing Official (AO).
- All hardware must be hardened according to GSA hardening guides or CIS Level 1 benchmarks.
- All system users must have appropriate HSPD-12 background investigations completed.
- Systems must have on-going support to achieve or maintain an Authority to Operate and remain in compliance with GSA Security policies.

8.3 PACS Architecture and Integration

The PACS network architecture consists of a centralized headend and centralized certificate management server that each Field Office Building (FOB) connects to and is integrated with. All PACS projects and integrations must meet current GSA, GSA IT, OMA policies, and other applicable Federal guidance, directives, policies, and mandates. Each PACS project must communicate and coordinate with the OMA Physical Access Control Systems Branch to ensure the PACS project meets the standards set-forth by OMA, GSA and other applicable Federal guidance, directives, policies, and mandates. It is required that the vendors selected to do the PACS implementation and integration be certified installers for the field

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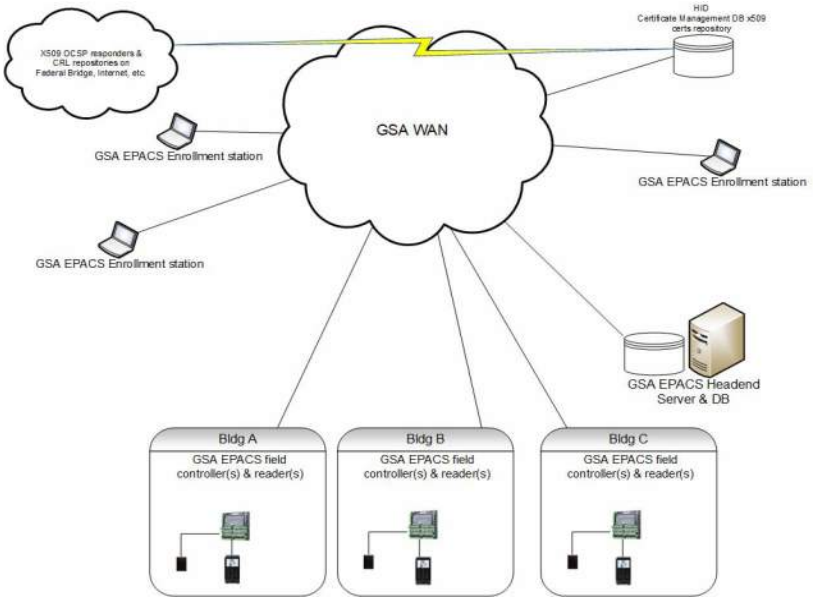
devices as well as the centralized headend and certificate management devices. ***Please Note: Head-end refers to a server-based system that pushes settings down to the respective readers/panels.***

The following diagram provides the layout for the regional network architect:



8.4 Project Flow

The following are basic process flows for PACS projects from identification through installation and integration. ***Please Note: The Central Office Review Team consists of TechOps, Network Team and Security Team. The following process diagrams are providing a high-level overview only & are not to be used to represent every step in either process.***

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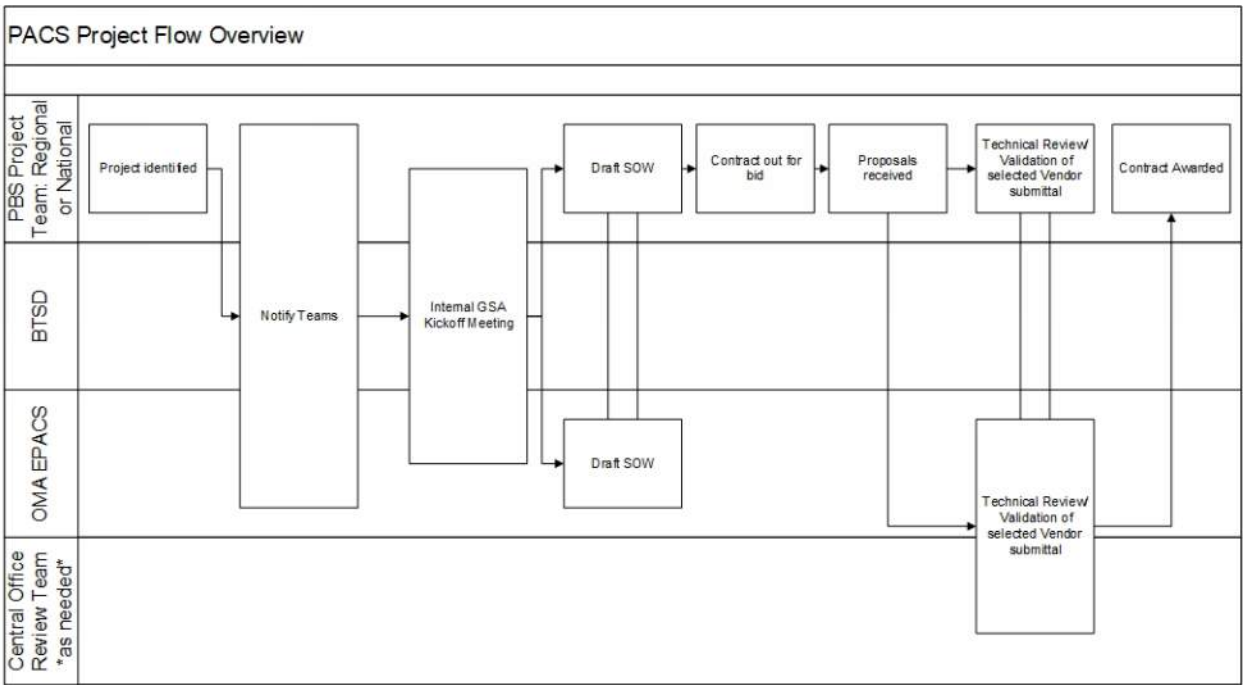

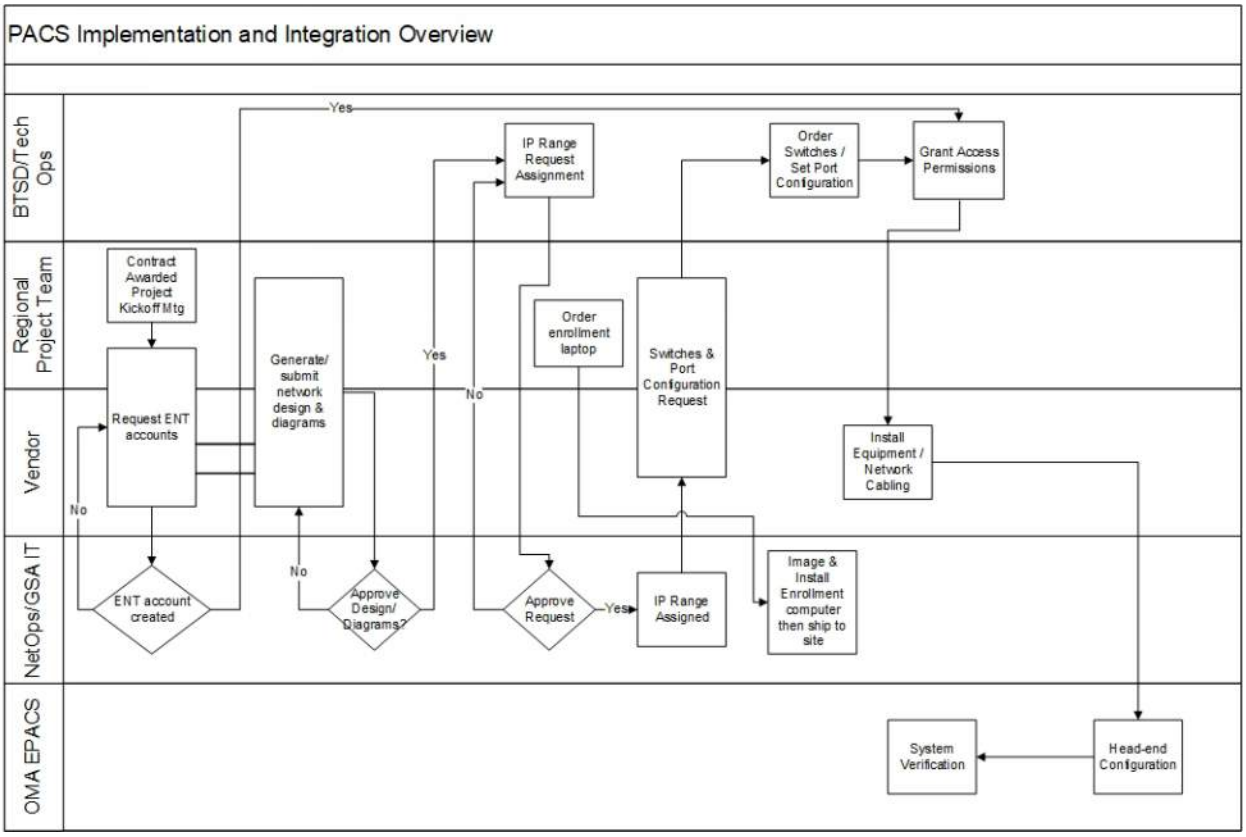

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8.5 GSA IT EPACS Support

All EPACS system and hardware troubleshooting and triage starts at the EPACS level. In the instance a user needs assistance, please contact eng.epacs@gsa.gov. ***Please Note: Any user or card-related issues do not fall under this type of elevated support.***

All user and card-related issues are managed at the facility level and are sent to epacs@gsa.gov. During triage of any PACS issues related to hardware connected to the GSA network, any necessary involvement with Network Services or GSA IT needing IT tickets for these systems will follow the same flow as for all other BMC systems. TechOps and/or the Network Team will triage the tickets as they currently do for BMC systems related issues. ***Please Note: See Section 5.4 for details on how to report a BMC systems issue.***

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Chapter 9

BMC Systems Procurement: Contract Language & IT Requirements in Scope of Work

9.0 Overview

This chapter entails recommended 'scope of work' and contract language requirements for building systems procurements. This document also includes pertinent IT security policy references. Please work with the Contracting Officer to incorporate these requirements into the proper sections of the building controls solicitation. ***Please Note: PBS regions may have further defined requirements, or standards may exist that would otherwise add to and/or specify use of regional standardized systems. In those cases, vendors must adhere to those requirements. If there are no specific regional standards in place, then requirements will default to PBS' national standards (i.e. the Building Automation System (BAS) BPA).***

9.1 Contract Language IT Security Requirements

1.0 IT Security Requirements

Vendors of [X Project] are required to meet the GSA IT Security and Privacy requirements identified in the ensuing sections.

2.0 IT Security Assessment and Authorization Requirements

Contractors must obtain an Authorization to Operate (ATO) for the proposed solution at the FIPS 199 Moderate impact level. Service Providers offering solutions delivered as-a-service in the cloud, meeting the *NIST SP 800-145: The NIST Definition of Cloud Computing*, consistent with the OMB FedRAMP Policy memo, are subject to FedRAMP cloud information security and privacy requirements. Vendors with traditional on-premise or cloud deployments (not delivered as SaaS) are required to meet traditional GSA Assessment and Authorization (A&A) requirements. Vendors having mobile application components are required to meet the additional mobile application security requirements as defined in Section 9.2.5. Further, any software required for installation on Government Furnished Equipment (GFE), or hardware required for deployment in GSA Facilities is subject to GSA software and device testing processes as defined in section 9.2.4.

3.0 Cloud Delivered as-a-Service (Requires FedRAMP)

Cloud computing offers an opportunity for the Federal Government to take advantage of cutting-edge information technologies to dramatically reduce procurement and operating costs and greatly increase the efficiency and effectiveness of services provided to its agencies and citizens. Established by OMB in 2011, The Federal Risk and Authorization Management Program (FedRAMP) is a government-wide program that promotes the adoption of secure cloud services across the federal government by providing a standardized

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approach to security assessment, authorization, and continuous monitoring for cloud products and services. FedRAMP empowers agencies to use modern cloud technologies, with emphasis on security and protection of federal information. Federal executive departments and agencies procuring commercial and non-commercial cloud services that are provided by information systems that support the operations and assets of the departments and agencies are required to ensure applicable contracts appropriately require cloud service providers (CSPs) to comply with FedRAMP security authorization requirements. This includes systems across all cloud deployment models (e.g., Public Clouds, Community Clouds, Private Clouds); Hybrid Clouds) and all cloud service models (e.g., Infrastructure as a Service, Platform as a Service, Software as a Service) as defined per *NIST SP 800-145: The NIST Definition of Cloud Computing*.

The Cloud Information Systems – IT Security and Privacy Requirements identified in Chapter 5 of the *Security and Privacy Requirements for IT Acquisition Efforts [CIO-IT Security 09-48, Rev. 7]*, Security Language for IT Acquisition Efforts is applicable at the FIPS 199 Moderate impact level. Personally Identifiable Information (PII) is ***not*** in the scope of acquisition and PII is not expected to be stored in the service provider's cloud solution.

Vendors are required to submit and receive GSA's approval of documentation as evidence of complying with the security requirements listed in Chapter 5 prior to being able to accept any orders.
Changes to the platform that impact the security authorization throughout the period of performance will require attendant changes to maintain the security authorization.

Vendors are required to either be already FedRAMP authorized or be able to achieve a FedRAMP Moderate authorization within One (1) year of the contract award. If not already FedRAMP authorized at the FIPS 199 Moderate impact level, GSA can work with the vendor to obtain a GSA MiSaaS (Moderate Impact Software as a Service) Authority to Operate (ATO) from GSA IT Security within 150 days of the notice to proceed. Onboard base year projects within 30 days of obtaining MiSaaS ATO. **No Government data can be uploaded into the production software application until the GSA Authority to Operate (ATO) is obtained**.

Vendors pursuing awards under this solicitation are required to partner with a Third-Party Assessment Organization (3PAO) to facilitate an independent assessment of the offeror's documented and implemented NIST 800-53 security controls. Vendors are encouraged to also attain 3PAO services for documentation preparation.

Vendor shall adhere to a milestone schedule to ensure compliance with first year FedRAMP requirement. If at any time, the vendor is either unwilling or unable to meet any of the process requirements, GSA may choose to terminate the award.

4.0 Traditional On-Premise or Cloud Delivered (not SaaS)

- **4.1 External Hosted or Cloud Delivered**

  Vendors choosing to offer a solution hosted on their system should reference The External Information Systems – IT Security and Privacy Requirements identified in Chapter 2 of the *Security and Privacy Requirements for IT Acquisition Efforts [CIO-IT Security 09-48, Rev. 7]*. Security Language for IT Acquisition Efforts is applicable at the FIPS 199 Moderate impact level. The vendor shall be required to obtain a GSA IT-Security Authority to Operate (ATO). For further guidance on ATO, reference *Managing Enterprise Cybersecurity Risk [CIO-IT Security 06-30 Rev-24]*.

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- **4.2 On-Premise (GSA) Hosted**
  - Vendors choosing to offer a solution hosted within GSA environment should reference the Internal Information Systems - IT Security and Privacy Requirements identified in Chapter 3 of the *Security and Privacy Requirements for IT Acquisition Efforts [CIO-IT Security 09-48, Rev. 7]* is applicable at the FIPS 199 Moderate impact level. The vendor shall be required to obtain a GSA IT-Security Authority to Operate (ATO). For further guidance on ATO, reference *Managing Enterprise Cybersecurity Risk [CIO-IT Security 06-30 Rev-24]*.

  - Additionally for any smart buildings or IoT components, the vendor should adhere to the Building Technologies Technical Reference Guide version 3.0 (or the latest posted version).

Vendors pursuing awards under this solicitation are required to partner with an independent assessor (GSA is required to approve) to facilitate an independent assessment of the offeror's documented and implemented *National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53 Rev. 5, Security and Privacy Controls for Information Systems and Organizations* security controls. Vendors are encouraged to leverage a 3PAO for assessment services and for documentation preparation.

5.0 Hardware Device and Software Security Testing for Components Required for Deployment in GSA Facilities/Networks (If any)

Per *BMC Systems Security Assessment Process [CIO IT Security 16-76 Rev 4]*, all IP addressable devices, appliances and software applications that will communicate over the GSA network shall be reviewed by GSA IT. Before any hardware, software or IT/IoT device/system is connected to its network, a security risk assessment of selected management, operational, and technical security controls is performed, to determine the extent to which the controls are implemented correctly, operating as intended, and producing the desired outcome with respect to meeting the security requirements for the system. A security assessment report is produced by GSA IT, which will be provided to the PBS stakeholders and the vendor. The assessment report will allow GSA to understand and accept the risk to agency operations (including mission, functions, image, or reputation), agency assets, or individuals, based on the implementation of an agreed-upon set of security controls. The contractor/vendor shall therefore be held responsible for mitigating all security risks identified.

Vulnerabilities shall be mitigated, within the following timeframes:

Severity	
Critical and high vulnerabilities	≤ 30 business days
Moderate vulnerabilities	≤ 90 business days

The GSA IT Security Team performs security control reviews utilizing a systematic, repeatable approach, which is utilized to uniformly evaluate any device, application, or general support system.

Once the device/application has completely gone through the remediation process and has a remediation/hardening plan in place, all other projects can use that report to configure the named device,

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or application accordingly. This assessment is revisited every three years, or upon release of any major new revision of the solution, at any stage when new vulnerabilities are uncovered and reported (i.e. ICS-CERT advisories). The contractor(s) will therefore need to have a strategy to address evolving vulnerabilities in timelines set by GSA.

- **5.1** Per White House *Office of Management and Budget (OMB) Memorandum 21-07 (M-21-07)*, the Federal Government will deliver information services, operate networks, and access services of others using only IPv6. Starting no later than FY23, all new networked federal BMC systems must be IPv6 enabled when deployed. The intent is to phase out IPV4 for all federal BMC systems. Currently, our network and client devices are IPv6-enabled, but the applications and the systems they run on, including servers and databases are likely not capable based on their current configuration. GSA must accept only IPv6 enabled systems when deploying new networked federal BMC systems. The intent is to phase out all IPv4 systems over the next several years. IPv4 will no longer be allowed for new projects/assessments starting July 2023. Break/Fix replacements of existing (deployed) hardware should prioritize utilizing an IPv6 capable replacement when possible.

- **5.2** Per the *Internet of Things Cybersecurity Improvement Act of 2020* and the White House *Office of Management and Budget (OMB) Memorandum M-24-04*, the Federal Government will only purchase Internet of Things devices that comply with *NIST SP 800-213: IoT Device Cybersecurity Guidance for the Federal Government: Establishing IoT Device Cybersecurity Requirements*. As defined in the guide, any devices provided by the contractor that meet the definition of IoT, must meet the guide's security requirements.

6.0 Mobile Application Security Requirements (If Applicable)

The contractor shall adhere to the following requirements and guidelines for developing mobile applications. All requirements and guidelines are found in the *Securing Mobile Devices and Applications [CIO-IT Security-12-67 Rev. 6]*, which will be provided upon contract award.

A mobile application, most referred to as an app, is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer. Mobile applications frequently serve to provide users with similar services to those accessed on PCs. Apps are generally small, individual software units with limited capabilities and isolated functionality. The simplest apps are developed to utilize the web browser of the mobile device to provide a feature set integration much like what is found on a user's PC. However, as mobile app development has grown, a more sophisticated approach involves developing applications specifically for the mobile environment, taking advantage of both its limitations and advantages. For example, apps that use location-based features are inherently built from the ground up with an eye to mobile devices given that you do not have the same concept of location on a PC. With this new paradigm in both mobile platforms and the applications loaded on them, GSA will concentrate security focus on the following goals:

- That all apps loaded have an initial assessment by GSA for acceptability and then a security assessment & authorization, when required.

- That all apps are deployed from only trusted sources, following their BMC systems security assessment process – This presently is the Apple iTunes store for iOS and the Google Play store for Android. MaaS360 may also be used, once retrieved from these sources, for enterprise deployment.

- That Terms of Service (ToS) discipline is adhered to, based on acceptability of an app – either as an individual user or for GSA as an Agency

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- That apps deemed to be unacceptable are blacklisted, using MaaS360.
- That a mobile app inventory for all devices be maintained
- That GSA developed apps are assessed, evaluated, and approved by the AO for the system they support before deployment.

7.0 Identification and Authentication Requirements

- The vendor shall support configurable integrations with GSA operated, and government-wide operated, identity and authentication / single sign on services. The vendor shall support SAML 2.0 and/or OpenID Connect integrations. GSA will identify and provide the services upon award.
- The vendor shall support multi-factor authentication for GSA administrator users (privileged users) through integrations with a GSA managed identity and authentication service. The vendor shall support SAML 2.0 and/or OpenID Connect integrations.

8.0 Other Security and Privacy Requirements

- Compliance with Section 889 Part A and B of the *John S. McCain National Defense Authorization Act (NDAA)*.
- No third-party integrations are authorized without the expressed permission of the GSA CISO and/or Authorizing Official and an assessment and authorization of the third-party offering having been completed prior to the integration.
- The Contractor shall comply with GSA administrative, physical, and technical security controls to ensure that all Government's security requirements are met. The Contractor is responsible for addressing any issues or concerns raised by PBS within five (5) workdays.
- Safeguarding Sensitive Data and Information Technology Resources
    - In accordance with FAR clause FAR 39.105: Privacy and GSAM clause GSAM Subpart 539.70: Requirements for GSA Information Systems, this section is included in the contract.
    - This section applies to all who access or use GSA information technology (IT) resources or sensitive data, including awardees, Contractors, subcontractors, lessors, suppliers, and manufacturers.
    - The GSA policies as identified in paragraphs (d), (e) and (f) of this section are applicable to the contract. These policies can be found at https://www.gsa.gov/directives or https://insite.gsa.gov/directives.
    - All the GSA policies listed in this paragraph shall be followed.
        - *1878.3A CIO Developing and Maintaining Privacy Threshold Assessments, Privacy Impact Assessments, Privacy Act Notices, and System of Records Notices*
        - *2100.1P CIO GSA Information Technology (IT) Security Policy*
        - *2180.2 CIO GSA Rules of Behavior for Handling Personally Identifiable Information (PII)*
        - *2231.1 CIO GSA Data Release Policy*

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- *9297.2C CIO CHGE 1 GSA Information Breach Notification Policy*

- All the GSA policies listed in this paragraph shall be followed, when inside a GSA building or inside a GSA firewall.
  - *2100.2C CIO GSA Wireless Local Area Network (WLAN) Security*
  - *2104.1B CIO CHGE 2 GSA Information Technology (IT) General Rules of Behavior*
  - *2181.1A ADM Homeland Security Presidential Directive-12, Personal Identity Verification and Credentialing, and Background Investigations for Contractors*
  - *9732.1E ADM Personnel Security and Suitability Program Handbook*
- The GSA Policies listed in this paragraph shall be followed. The contractor shall assume that all policies are applicable unless otherwise stipulated by the GSA Office of the Chief Information Security Officer.
  - *2101.2 CIO GSA Enterprise Information Technology Management (ITM) Policy*
  - *2105.1D CIO GSA Section 508: Managing Information and Communications Technology (ICT) for Individuals with Disabilities*
  - *2106.2A OSC GSA Social Media Policy*
  - *2107.1 CIO GSA Open Source Software (OSS) Policy*
  - *2108.2 CIO Software License Management*
  - *2160.2B CIO CHGE 4 GSA Electronic Messaging and Related Services*
  - *2160.4B CIO Provisioning of Information Technology (IT) Devices*
  - *2162.2 CIO GSA Digital Signature Policy*
  - *2165.2 CHGE 1 CIO P GSA Telecommunications Policy*
- The contractor and subcontractors shall insert the substance of this section in all subcontracts.

9.0 Relevant FAR Clauses

- FAR 552.239-70 Information Technology Security Plan and Security Authorization
- FAR 52.239-1 Privacy or Security Safeguards
- FAR 552.239-71 Security Requirements for Unclassified Information Technology Resources

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9.2 Scope of Work Template (BAS Hardware/Software Upgrades)

Building ID – Sample Building Name
Building Automation System Upgrade Scope of Work
BAS Hardware and Software Upgrade

1.0 Background

In recent years, building systems have advanced to resemble more closely that of IT systems given the way in which they communicate both internally and externally with other systems. As such, many of the building systems inherently utilize Internet Protocol (IP) connectivity as part of their core functionality. The *GSA Technology Policy for PBS-Owned Building Monitoring and Control (BMC) Systems* mandates that all building technologies which require network or internet connectivity must utilize the GSA network. GSA's Office of Facilities Management (OFM), within the office of Public Buildings Services (PBS), in collaboration with the Public Buildings Information Technology Services (PB-ITS), within the office of the Chief Information Officer (CIO), is working to integrate the building systems onto a secure envelope, known as the Building Systems Network (BSN). This document is designed to specify the steps that will be required to complete for the network integration.

The facilities BMC systems will be upgraded to use BACnet/IP as the standard open protocol and eliminate obsolete controller hardware. The current BAS primarily communicates using proprietary protocols on slow serial networks and are composed of obsolete controllers. Project goals include:

- Increase the interoperability of devices, creating opportunities for energy and operational savings.
- Eliminate risk associated with legacy and obsolete BMC systems controllers and End of Life (EOL) components.
- Improve accessibility to operational and energy data.
- Leverage IT infrastructure to improve BMC systems reliability and performance.

2.0 Sample Scope of Work Assumptions

- Building Automation System Retrofit
- 1 - Eight (8) story building + basement
- 1 - Central chiller & boiler plant w/ VFD controlled water loops; 175 data points
- 9 - Air Handling Units (one for each floor); 40 data points each
- 340 - VAV Terminal Units (spread throughout floors); 12 data points each

3.0 General Scope

- Replace all ten Level-3 (Automation IP Level) Global Network Controllers (GNC) and applicable I/O, protocol port, or add-on modules with new GNCs. Upgrades shall include the database, modules, licenses, programming, graphics, etc. be upgraded to the latest PB-ITS remediated version of the manufacturer software.

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- Replace all Level-4 (Field Level) controllers and any applicable I/O extensions. Upgrade shall include database, graphics, trends, alarms, etc. to the latest PB-ITS remediated version of the manufacturer software.

- Upgrade and reconfigure any existing database files, backups, graphics, etc. to the latest remediated version of the manufacturer software and install on a new GSA provided virtual server.

- All software licenses shall include an additional 5-year Software Maintenance Agreement (SMA) post project turnover and necessary support hours to provide software upgrades to the system and mitigate IT Security vulnerabilities during the 5-year period.

4.0 Codes and Standards

Work shall be in accordance with the following:

- NFPA 70, National Electric Code (NEC)
- Model Building Codes (Building, Mechanical, Plumbing)
- ANSI C12.20, Class 0.5
- Facilities Standards for the Public Building Service, P-100
- GSA Data Normalization for Building Automation Systems

5.0 Required IT Security Documents

- Building Technologies Technical Reference Guide Version 3.0 (latest version as of May 2024)
- Telecommunications Distribution Design Guide Version 8 (latest version as of May 2024)
- BMC Systems Security Assessment Process [CIO IT Security 16-76 Rev 4] (latest version as of May 2024)
- Key Management [CIO IT Security 09-43, Rev 5] (latest version as of May 2024)
- 2100.1P CIO GSA Information Technology (IT) Security Policy (latest version as of May 2024)
- Managing Enterprise Cybersecurity Risk [CIO-IT Security 06-30 Rev-24] (latest version as of May 2024)
- 2180.2 CIO GSA Rules of Behavior for Handling Personally Identifiable Information (PII) (latest version as of May 2024)
- 2181.1A ADM Homeland Security Presidential Directive-12, Personal Identity Verification and Credentialing, and Background Investigations for Contractors (latest version as of May 2024)
- 2100.2C CIO GSA Wireless Local Area Network (WLAN) Security (latest version as of May 2024)
- IT Policy Requirements Guide [CIO-IT Security 12-2018 Rev 3] (latest version as of May 2024)
- Security and Privacy Requirements for IT Acquisition Efforts [CIO-IT Security 09-48, Rev. 7] (latest

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version as of May 2024)

- National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53 Rev. 5, Security and Privacy Controls for Information Systems and Organizations (latest version as of May 2024)
- National Institute of Standards and Technology (NIST) Special Publication (SP) 800-82 Rev. 3, Guide to Operational Technology (OT) Security (latest version as of May 2024)

6.0 Reference Documents

The following are intended to be advisory for the interpretation of the requirements in this statement of work:

- GSA New Project Smart Buildings Design and Implementation Guidelines
- GSA Data Normalization for Building Automation Systems
- Access Card Policy and Guidance Resources
- CIW – HSPD-12 Request Form

7.0 Technical and Performance Requirements

- Capacity: All BAS shall be sized to accommodate growth and should never be at maximum capacity for storage, CPU, historical trending, licenses, or users, etc. Contractor shall adhere to the 30% rule in all aspects of the BAS design. If any aspect of the system reaches 100% capacity, the contractor shall include the additional components (HW, SW, licenses, users, etc.) and/or resources to reduce the load to 70%.

- Clearances: Contractor shall comply with the requirements pertaining to mandatory HSPD-12 security clearances: The mandatory minimum security clearance level for contractor access to any GSA IT system is a Tier 1 clearance, which is a prerequisite to acquiring ENT (GSA user domain) credentials, necessary to access any GSA furnished workstation or server.

    - Per *2100.1P CIO GSA Information Technology (IT) Security Policy*, those individuals whose duties require a higher degree of trust, such as IT system administrators (or administrative access to building systems servers, applications, and devices), those who handle financial transactions, or those who deal with PII, and other sensitive information (i.e. building drawings, etc.) will require a Tier 2 clearance.

    - Within 10 days of award, contractors shall submit a CIW V4 for every member of the team who does not hold a HSPD-12 clearance.

    - Users who complete the HSPD-12 process will receive GSA ENT accounts for access to GSA hosted servers and workstations.

    - Contractor is responsible for maintaining ENT accounts for all its employees. This includes logging into account regularly, changing ENT passwords every 90 days, ensuring the mandatory GSA training is completed, on the GSA On-Line University (OLU), by due dates. Failure to comply will have an impact on CPARS/contract evaluation reviews.

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- Cabling: All cabling in GSA buildings must be designed and installed in accordance with the latest version of the Building Industry Consulting Service International Inc. (BICSI) and the *GSA Telecommunications Distribution and Design Guide (TDDG)*, as it relates to Ethernet cabling.

- Schedule and Meetings: Within [X] days of contract award, the contractor's project manager shall produce a project schedule prepared in Microsoft Project or equivalent, listing all planned work activities, the duration, interdependencies, planned start and finish with a Gantt style chart. This schedule shall be continuously updated weekly until the project is complete. The project manager shall also hold a project kick-off meeting to review the schedule and update on any planned work in the upcoming weeks.

- Government Furnished Equipment (GFE): Any required computer or server hardware (i.e. PC, laptop) and peripherals (i.e. mouse, keyboard, monitor) and/or routing and switching equipment, used to provide GSA network connectivity, will be government furnished and provided by the GSA. The BAS vendor shall not include GFE, as defined, in their proposal.

8.0 Work Included

Engineering, Submittals, and IT Security Requirements:

- Contractor shall provide complete design of the proposed replacement system. Design shall include indications of devices that will be replaced, wiring diagrams of IP network, BACnet MS/TP (or other) network and I/O.

- Contractor shall provide a detailed schedule of system replacement. Schedule shall be coordinated with O&M to assure the building maintains operation throughout system replacement or work is scheduled for non-occupied hours to minimize tenant impact.

- A network riser diagram of all IP addressable devices that terminate on the GSA network shall be provided to the BTSD Technical PM, in a Microsoft Visio format. The GSA shall be included in the design phase of the network infrastructure.

- Any contractor provided hardware and software requiring access to the GSA network, must be pre-approved for use by the GSA IT.

- In accordance with OMB M-21-07, Completing the Transition to Internet Protocol Version 6 (IPv6) (2020) and GSA's Internet Protocol Version 6 (IPv6) Policy, 2120.1 CIO (2022), all new networked federal information systems must be IPv6 capable at the time of deployment. IPv4 will no longer be allowed for new projects/assessments going forward. ***Please Note: See also GSAR § 511.170(e), which requires contracting officers to include IPv6 requirements in all contracts and orders for information technology that will have the capability to access the Internet or any network utilizing Internet Protocol.***

- All IP enabled devices will be evaluated and scanned by GSA IT to determine any potential IT security vulnerabilities. The GSA IT Security Team performs security control reviews utilizing a systematic, repeatable approach, which is utilized to uniformly evaluate any device, application, or general support system. Upon completion of the security review the GSA IT Security Team can determine the extent to which the security controls associated with the device/application (information system) are implemented correctly, operating as intended, and producing the desired

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outcome with respect to meeting the established security requirements. The GSA IT Security Team works closely with the vendor/manufacturer or the designated device POC to address specific actions taken or planned to correct deficiencies in the security controls and to reduce or eliminate known vulnerabilities in the information system. Upon successful completion of the security review, the GSA will have the information needed to determine the risk to agency operations, agency assets, or individuals and thus, will be able to render an appropriate security decision for the information system. Contractors **must** make any required configuration changes before their product will be accepted for use. Configuration changes are not a change in scope and are not subject to equitable adjustment under the contract. The contractor must provide reasonable assurance to the GSA that all applicable system specific security controls are in place prior to implementing the given IT application or system, in a production environment. It is incumbent upon the vendor selected to review and understand the government and the GSA IT security requirements. Failure to meet the GSA IT requirements will be subject to liquidated damages.

- At no time should a GSA hosted BMC system(s) be made accessible to the public internet or via any 3rd party network connection, referred to as “rogue circuits”. All network traffic must transit through a trusted internet connection (TIC), which is a network circuit that is managed by the GSA IT. Any use of external/commercial network connection for managing or monitoring of building systems in any GSA owned or non-delegated building will not be tolerated. Such connections will be removed upon discovery and will negatively impact the vendor’s performance rating.

- Any Contractor proposed non-standard software must be pre-approved by GSA IT before it is deployed. "Nonstandard software" is defined as software which is not widely dispersed and commercially available on GFE. The GSA will **not** accept the use of legacy technologies or systems such as:

    - Hardware-based USB/dongle licensing (software licensing should be used)
    - Applications that require Java (should use HTML 5.0)
    - Use of local accounts (non-Active Directory) on servers for applications to function or be used.
    - Use of additional embedded virtual machines
    - Proprietary protocols that cannot be remediated
    - Software that requires elevated privileges for operation (i.e. super-user or administrator)

- All proposed standard installation, operation, maintenance, updates, and/or patching of software shall not alter the configuration settings from the approved United States Government Configuration Baseline (USGCB).

- All software licenses are to be titled to the GSA and shall not be under the BAS vendor’s ownership.

- Any contractor proposed software solution shall require minimal administrative rights at the operating system (OS) level. Administrative rights shall be limited for software installation, updates, patching, and in unique cases such as for troubleshooting issues. For day-to-day operations, the application will run with normal user level rights. ***Please Note: This is not in reference to full rights to the application itself, only elevated rights to the root level of the operating systems.***

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- Upon completion of the project, all licenses purchased shall have all rights and permissions transferred to the GSA to manage, edit, and move at its discretion. The GSA retains all ownership and licenses purchased should reflect the GSA as owner where necessary.

- BAS software shall be loaded onto GSA-provided virtual servers. This configuration allows for flexibility in access and system control over the BSN.

- Incident response (IR) and building recovery (BR) exercises - Since BMC Systems that reside on the GSA network rely on IP network communications and computer hardware, they are subject to the impacts associated with interruptions in service of that IT infrastructure. To prepare GSA facility's BMC System in the event of a data circuit failure, Local Area Network (LAN) outage, cyber-attack or application server failure, BR preparations need to be planned and tested.

    - IR entails the contractors' ability to identify a potential cyber incident and the ability to immediately report the issue to GSA IT (itservicedesk@gsa.gov or 866-450-5250). An incident is a violation or an imminent threat of violation of information security or privacy policies, acceptable use policies, or standard security practices.

    - An effectively developed BR plan will ensure that while network communications may be temporarily unavailable, building control system components will continue to function, and in fact may also be programmable if local software-based tools are available, ensuring that building operations will not be significantly impacted. This means the BMC systems contractor will need to document and submit operational procedures to monitor and control systems in case of an outage, to ensure continuity of operations, as part of the commissioning process. Once the plan is developed, a BR exercise will be conducted where an IT outage is simulated. The exercise can consist of limiting the ability of IP based controllers to communicate to the application server and/or to other parts of the network. Executing the BR exercise will require coordination and participation from Facility Management, Operations and Maintenance and GSA IT. Contractor shall submit BR operational procedures in case of wide area network (WAN) connection loss. BR procedures shall ensure continued operation of the system in cases of network loss and shall instruct operators how to monitor and control systems in cases of internet outages.

    - To meet the requirements of the Smart Building Design Standards, all building system data points must be exposed on the GSA network for future third-party integration. Proposed controls systems must include the ability to transfer data to a third-party via an automated data push or third-party initiated query using an open and published methodology including, but not limited to, BACnet/IP, oBIX, OPC, Haystack, ModbusTCP etc. The contractor shall document a proposed means of data transfer for this system.

Building Automation System Installation and Configuration:

- Where new programming and point mapping must be completed, Contractor shall adhere to the supplied "GSA Data Normalization for Building Automation Systems" document for standard point naming conventions and tagging requirements for GSA systems.

- Contractor shall replace all existing Global Network Controllers, I/O modules (and 3rd Party Modules), or protocol port modules with new hardware and include necessary database conversions, programming, graphics, and historical trending.

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- Contractor shall ensure that all new hardware is configured with the latest GSA IT remediated Software and Firmware and hardened per the SAR guidelines.

- Contractor shall install and license the latest GSA IT remediated version of the Building Automation System Software on a GSA provided Virtual Machine and migrate/upgrade the existing BAS Database to the new server. BAS Software will be required to run (at minimum) on Windows Server 2019 (or latest Operating Systems approved by GSA IT). BAS Software must be supported by the manufacturer on the designated Server OS. All licenses for BSN console software licensing or other device configuration tools for local controllers acquired through projects must be in GSA's name.

- Replacement controllers and software shall be configured to utilize existing devices and sequences as currently utilized in the existing BAS. Contractor shall document sequences before and after system migration and provide a list to the GSA of any I/O found not in working order prior to replacing controllers.

- Contractor shall work with the building O&M personnel to determine and provide a list of overridden points within the system prior to cutover and ensure any existing overrides are enabled or re-enabled after cutover to ensure proper building operation.

- At the time of "Cut Over," the existing BMC network unmanaged switches (if applicable) shall be removed, replaced with Government Furnished Switches, all network terminations shall be made, and each IP enabled device shall be migrated. Upon completion of work, documentation of any deviations shall be made on the record drawing set and published. GSA IT will request various forms to be completed documenting the project which must be completed and provided within 5 business days of the cutover.

- Every IP level device shall be configured to the proper GSA IT Building System Network IP address as directed by GSA IT. The BACnet/Ethernet communication protocol is not permitted on the GSA network so BACnet/IP must be implemented as the communication protocol.

- IP addresses for all BAS IP level devices will be issued and distributed by BTSD after receiving the make, model, MAC address of each IP device (to be whitelisted), and the inspection and approval of the network diagram.

- Contractor shall be responsible for configuring any BACnet, UDP or TCP traffic between controllers, servers, and clients to prevent broadcast "storms" or "collisions" or any other network disruptions. This may include installing and configuring a BBMD or reconfiguring BACnet ports to a specified port as directed by the GSA.

- Contractor shall provide necessary testing and documentation showing that the system has been successfully transferred to the new GSA provided Server.

Building Automation Network Configuration (Pre-Migration):

- The BAS network shall comply with the GSA TDDG, specifically distance and network hop limits. Fiber or copper connections from the core switch to risers shall prevent "daisy chaining" of network switches.

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- Contractor shall be responsible for connecting the Building Automation Network core switch and GSA Network demarcation.

Building Automation System Cutover (Migration):

- Upon completion of all pre-migration work and after receipt of the government furnished network switches (if necessary), the BMC systems contractor shall coordinate a date to “Cut Over,” the BMC System from the existing server and onto the new BMC systems server. The BMC systems contractor shall prepare a detailed procedure of all planned work activities, pointing out possible risks and impact to the building of all work. A risk management plan to identify risks with a planned procedure of steps to be taken if such a risk event arises shall be presented and discussed with all team members.

- At the time of “Cut Over,” all necessary network terminations shall be made, and each IP enabled device shall be migrated. Upon completion of work, documentation of any deviations shall be made on the record drawing set and published. The GSA IT department will request various forms to be completed documenting the project which must be completed and provided within 5 business days of the cutover.

- The BAS contractor shall be required to confirm communication and functionality after completion of a GSA network integration, including device to device and device to server.

- The BAS contractor/cabling vendor is responsible for all cabling to BAS controllers, GFE switches and BSN Workstations (if applicable).

- At the completion of the “cut over,” the old controllers, and any unused wiring/cabling component of the BMC System shall be wiped and removed from the building, following GSA’s excess process, by the contractor.

- At the completion of the system migration, the contractor shall complete the SAR Hardening Verification form. A member from the BMC Security Assessment Team will reach out if any hardening steps have not been completed and the contractor must take corrective actions to resolve any outstanding hardening steps.

- At completion of the system migration, the contractor shall coordinate and verify a BR operation exercise Facility Management and Operations and Maintenance staff present. This exercise shall ensure continued operations and emergency system maintenance procedures in cases of network loss.

9.0 Software Maintenance Agreement (SMA)

- Contractor shall provide an additional 5-year (SMA), that begins post project turnover, and include the necessary support hours to provide software upgrades to the system and mitigate any future IT Security vulnerabilities.

- SMA shall include minor and major software/firmware releases to all BAS software and hardware as defined by the GSA.

- All firmware/software versions must be remediated and approved by GSA IT and installation

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coordinated through the GSA Facility Management Team at the building.

- Upgrades shall be performed within timeframes agreeable to GSA to mitigate risk and/or downtime to the GSA facility.

- For any BMC systems device that is a Windows or Linux based Operating System, the Contractor will sign an agreement between the vendor and GSA adhering to patching monthly. The Contractor will be responsible for patching the devices monthly.

10.0 Work Not Included

- Costs for providing internal GSA security escort and technical personnel.

- GSA shall ensure a connection to the GSA LAN is present and functioning.

- GSA shall provide all network switches, servers, workstations, and peripherals.

11.0 Warranty

Provide information of the manufacturer’s warranty including date of commissioning/startup, points of contact, 2 years parts and labor of all components and software.

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Chapter 10

Best Practices for BMC Systems Project Implementations

10.0 Overview

This chapter entails best practices for integration of BMC Systems to the GSA network.

10.1 Tips for Running a Successful BMC Systems Project

- Contact the appropriate project representative during the preparation and planning stages of the project. This will ensure that the solution is compliant with GSA IT security and network connectivity requirements. Potential Stakeholders include:
    - BTSD IT PM
    - Facility Manager (Contact the local GSA POC)
        - The onsite GSA facility managers must be involved from start to finish. Their input is imperative as it could change daily operations affecting multiple federal agency tenants.
        - Do they need to consult any clients in advance for feedback on operations, or for their early awareness on project planning? (i.e. thermostat inside judge's chambers requiring access or noise concerns)
    - Project Managers (i.e. Design and Construction, Facility Management, Service Center)
    - Contracting Officer and Contract Specialist - Consider use of the national BAS BPA. Contact regional Energy/Smart Buildings SMEs for details and share with the Regional Acquisition Team.
    - Client Representative
    - Operations and Maintenance (O&M) Contractors, Master Systems Integrators (MSIs), Energy Saving Performance Contractors (ESPC) or Utility Energy Saving Contractors (UESC) Contractors - Contact local operators to document concerns on the system.
        - What do they know about the needs of the building or system?
        - Based on their backgrounds, will a more advanced system be a potential issue even after training?
    - PBS Smart Buildings Intelligent Building Industry Experts (IBIEs)
    - Regional Facility Management Smart Building Subject Matter Experts (SMEs)

    Considerations for Scope of Work Development

    - Ensure security language and GSA IT requirements are included in the scope of work (SOW) of

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the procurements. ***Please Note: See Section 9.2 for more details.***

- Interoperability
  - Strive for a cohesive system with interoperability capabilities (i.e. advanced metering, national digital signage (NDS), GSALink, etc.)
  - Consider conducting building system analysis or review to plan for compatibility across systems for controls.
- Technical Considerations for Requirements
  - Device naming standards, BAS account creation process and account naming standards must be implemented.
  - If using the BACnet protocol, ensure the contractor is not using the default User Datagram Protocol (UDP) port number for 47808. Regional PBS stakeholders need to ensure they assign UDP ports that have been assigned to their respective regions. Essentially, this allows each region to take the initiative to protect itself from potential BACnet conflicts with systems in other regions. Please work with the BTSD Technical PM to access UDP port assignments.
  - Consideration for special operations, systems, or clients. Are there unique mechanical systems onsite or client impacts based on noise or operations for the project? (i.e. glycol systems, geographically challenging locations, unique clients/tenants). Does the facility operate 24/7 or support large computer/data/server centers?
  - What is the big picture? Are there other upcoming projects that would align the major building equipment? Can timelines be aligned? Investigate equipment onsite to ensure it is operational and has substantial (10+ years) remaining prior to attempting integration without consultation to all stakeholders. Work with the regional Portfolio Manager to obtain plans or details for the facility.
  - Special Licensing Requirements - All licenses for BSN console software licensing or other device configuration tools for local controllers acquired through projects must be in GSA's name.
  - Include requirements for advanced notice to stakeholders regarding the scheduling of Control System Switch over.
  - END OF LIFE (EOL) - Require Dates for EOL equipment/software. This is helpful for decisions on partial system replacement VS full system replacement. Require dates of EOL for equipment so that it can be vetted by region for decisions on partial system renovations vs full system replacements.
  - WARRANTY PERIOD - Are there any special warranty period commencement requirements? Define regional minimums within the task order.
    - Ensure contracts include a 5-year software SMA, that begins post project turnover, and include the necessary support hours to provide software upgrades to the system and mitigate any future IT Security vulnerabilities. Potential Language: *"Service Maintenance Agreements (SMAs) for software subscriptions shall be a minimum of 5 years and shall include all labor, associated travel and expenses for a minimum of 1 year (tracking warranty*

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period) from GSA acceptance of a project."

- Be certain that a warranty of the devices, patching and security updates are included as part of the scope of work.

- Training - Implement a GSA user training for the O&M as part of the project closeout. Are there any special training requirements? Items for consideration to include in requirements:
  - Specifics on training date coordination.
  - Format of Training.
  - Topics & documentation on using the system.
  - Remote access & building recovery procedures.
  - How to contact GSA IT.
  - and/or review of any final deliverables.
- Make sure to have COOP planning in place and perform a BR exercise. Ensure controllers have appropriate settings.
  - Have an ability to directly connect to the controllers to manually control the system. Doing this should allow the system to be managed locally, in the event of an outage, if/when the server is not accessible.
  - Conduct a BR exercise to make sure the O&M can control the system in the event of an outage.

- Post Implementation Delivery Recommendations
  - Remind facility managers and O&M to consult regional program SMEs before implementing any changes to maintenance plans. Example: O&M contractor decided to stop using chemicals in the cooling towers and instead pressure wash it regularly at a newly constructed Federal Courthouse. This resulted in damage to the media fins in the cooling towers which broke off and got sucked into the circulating pumps causing multiple problems.
  - Document lessons learned to share with regional and national network peers.
  - Update Contractor Performance Assessment Reporting System (CPARS) to help support evaluation of future contractors for GSA.
  - Ensure network access (ENT) is maintained for the project staff:
    - Logging into the network at least every 60 days.
    - Changing ENT password every 90 days.
    - Taking the annual mandatory training on the GSA OLU.

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10.2 BMC Systems Checklist for Projects

Before the cutover, defer to the best practices of the O&M contractor and industry standards to verify that the system is functioning properly.

10.2.1 Unitary Controller Configuration

- Verify types of networks, and number of field devices agree with submittals.
- Verify field networks are operational.
- Verify field devices are operational on the network.
- Verify that any points, objects, programming wizards, tools, etc. that are associated with manufacturer specific modules or JAR files are operational.
- Compare Sequence of Operation to logic program provided by BMC systems Integrator/Contractor. Sequences shall automatically lead/lag equipment when equipment or hardware failure occurs.
- Provide record that 30% spare capacity remains on the DDC controllers for future expansion of the system as required by the P-100.
- Verify unitary network controllers operate at last known <fail safe> state by shutting the global controller down and observing the plant or AHUs.
- Verify unitary network controllers <fail safe> occupied when the loose heartbeat from the supervisory global controller with the schedules.

10.2.2 Server/AMS Configuration

- Global Controllers are required to be networked TCP/IP to regional AMS Schneider PME Server.
- Global Controllers are required to be provisioned for automatic backup (if applicable) to BMC systems servers.
- The Alarm Recipient (Server) shall route alarms properly.
- AMS points are required to be shared from the BMC systems global controller metering graphic page.
- AMS points are required to be mapped to AMS Server.

10.2.3 General Documentation and Deliverables

- Provide Global controller license files.
- Back up all BMC systems project deliverable files on Google Drive. If the server is used to store backups, work with the TechOps Server Team to identify an appropriate/dedicated location server so that it can be backed up properly.
- Update MS Visio Riser Diagram.

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- 100% Points Commissioning Document provided to the GSA SOW.
- Send designated Global Controller names and IP addresses.
- Provide updated “as-built” control drawings and points list.
- Complete a Building Recovery Plan, if applicable.

10.2.4 Application Account Administration

- Use of vendor established administrative level usernames and passwords to be provided by the GSA or provided to the GSA upon completion of the project.
- The vendor shall not establish any administrative level usernames or passwords that would otherwise lock out the GSA from their own systems.
- The vendor shall understand that in certain instances some regional POC will issue & control all passwords for use on a project along with account expiration dates. Vendors cannot alter their usernames or expiration dates.
- Prior to adding additional user accounts in applications and/or hardware, the vendor must seek permission from the SME POC/BTSD Technical PM and provide the details of what accounts would be created so that the GSA is aware of each user and permission level the user will have.
- Sensitive handling measures must take place in transmitting Controlled Unclassified Information (CUI) information. All CUI information must use secure transmission channels, and by using GSA.gov domain email address.

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Appendix

Appendix A: Contact Information

Team/Division	Contact Information
Buildings Technology Services Division	buildingstechnologyservicesdivision@gsa.gov
BTSD IT Project Managers	pbs.pbios@gsa.gov
Regional Building IT Specialists	pbs-regional-building-it-specialists@gsa.gov
GSA IT Service Desk	itservicedesk@gsa.gov or 866-450-5250
Business Application Service Desk	866-450-6588
Technical Operations Team (TechOps)	pbssystems.support@gsa.gov
Network Team	netops@gsa.gov
Requirements Analysis Team	requirements.analysisteam@gsa.gov
EM&EM Team	iisc@gsa.gov
GSA IT BMC Security	bmc.it.security@gsa.gov
Advanced Metering Support Team	Advanced Metering: Support Request Form
Physical Access Controls Support Team	eng.epacs@gsa.gov
HSPD-12 Team	hspd12.security@gsa.gov (For GSA PIV Cards) hspd12@gsa.gov (For USAccess)
Contractor On and Off Board	idscontractoronoffboard@gsa.gov

Appendix B: Listing of Reference Policies

Document Name	Link
National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53 Rev. 5, Security and Privacy Controls for Information Systems and Organizations	https://csrc.nist.gov/publications/detail/sp/800-53/rev-5/final
National Institute of Standards and Technology (NIST) Special Publication (SP) 800-213A, IoT Device Cybersecurity Guidance for the Federal Government: IoT Device Cybersecurity Requirement Catalog	https://csrc.nist.gov/pubs/sp/800/213/a/final
2100.1P CIO GSA Information Technology (IT) Security Policy	https://www.gsa.gov/directives-library/gsa-information-technology-it-security-policy-16
Federal Acquisition Regulation (FAR) Part 45	https://www.acquisition.gov/far/part-45
Homeland Security Presidential Directive 12: Policy for a Common Identification Standard for Federal Employees and Contractors	https://www.dhs.gov/homeland-security-presidential-directive-12
BMC Systems Security Assessment Process [CIO IT Security 16-76 Rev 4]	https://www.gsa.gov/policy-regulations/policy/information-technology-policy/it-

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Document Name	Link
	security-procedural-guides
2100.2C CIO GSA Wireless Local Area Network (LAN) Security	https://www.gsa.gov/directives-library/gsa-wireless-local-area-network-wlan-security
FIPS 140-2	https://csrc.nist.gov/pubs/fips/140-2/upd2/final
P100: Facilities Standards for the Public Buildings Service	https://www.gsa.gov/real-estate/design-and-construction/engineering/facilities-standards-for-the-public-buildings-service
ASME A17.1-2022: Safety Code for Elevators and Escalators	https://blog.ansi.org/asme-a17-1-2022-safety-code-elevator-csa-b44/
Telecommunications Distribution Design Guide Version 8	https://insite.gsa.gov/services-and-offices/staff-offices/office-of-gsa-it/it-organizations/office-of-the-deputy-cio/office-of-public-buildings-it-services/building-technology-services-division/library-of-documentation-guidance-and-resources?term=TDDG
FIPS 201-2 Personal Identity Verification (PIV) of Federal Employees and Contractors, and Federal Identity	https://csrc.nist.gov/pubs/fips/201-2/final
Office of Management and Budget (OMB) Memorandum (M-19-17)	https://www.whitehouse.gov/omb/information-for-agencies/memoranda/
GSA Order ADM 5900.1	https://www.gsa.gov/directives-library/physical-access-control-systems-in-us-general-services-administration-controlled-space
NIST SP 800-145: The NIST Definition of Cloud Computing	https://csrc.nist.gov/pubs/sp/800/145/final
Security and Privacy Requirements for IT Acquisition Efforts [CIO-IT Security 09-48, Rev. 7]	https://insite.gsa.gov/employee-resources/information-technology/it-security-and-privacy/it-security/it-security-procedural-guides
Managing Enterprise Cybersecurity Risk [CIO-IT Security 06-30 Rev-24]	https://insite.gsa.gov/employee-resources/information-technology/it-security-and-privacy/it-security/it-security-procedural-guides
Office of Management and Budget (OMB) Memorandum 21-07 (M-21-07)	https://www.whitehouse.gov/omb/information-for-agencies/memoranda/
Internet of Things Cybersecurity Improvement Act of 2020	https://www.congress.gov/bill/116th-congress/house-bill/1668
Office of Management and Budget (OMB) Memorandum (M-24-04)	https://www.whitehouse.gov/omb/information-for-agencies/memoranda/
NIST SP 800-213: IoT Device Cybersecurity Guidance for the Federal Government: Establishing IoT Device Cybersecurity Requirements	https://csrc.nist.gov/pubs/sp/800/213/final
Securing Mobile Devices and Applications [CIO-IT Security-12-67 Rev. 6]	https://insite.gsa.gov/employee-resources/information-technology/it-security-and-privacy/it-security/it-security-procedural-guides
John S. McCain National Defense Authorization	https://www.acquisition.gov/Section-889-Policies

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Document Name	Link
Act (NDAA) (Section 889 Part A and B)	
1878.3A CIO Developing and Maintaining Privacy Threshold Assessments, Privacy Impact Assessments, Privacy Act Notices, and System of Records Notices	https://www.gsa.gov/directives-library/developing-and-maintaining-privacy-threshold-assessments-privacy-impact-assessments-privacy-act-notices-and-system-of-records-notices-3
2180.2 CIO GSA Rules of Behavior for Handling Personally Identifiable Information (PII)	https://www.gsa.gov/directives-library/gsa-rules-of-behavior-for-handling-personally-identifiable-information-pii-2
2231.1 CIO GSA Data Release Policy	https://www.gsa.gov/directives-library/gsa-data-release-policy-2
9297.2C CIO CHGE 1 GSA Information Breach Notification Policy	https://www.gsa.gov/directives-library/gsa-information-breach-notification-policy-5
2100.2C CIO P GSA Wireless Local Area Network (LAN) Security	https://www.gsa.gov/directives-library/gsa-wireless-local-area-network-wlan-security
2104.1B CIO CHGE 2 GSA Information Technology (IT) General Rules of Behavior	https://www.gsa.gov/directives-library/gsa-information-technology-it-general-rules-of-behavior-4
2181.1A ADM Homeland Security Presidential Directive-12, Personal Identity Verification and Credentialing, and Background Investigations for Contractors	https://insite.gsa.gov/directives-library/homeland-security-presidential-directive12-personal-identity-verification-and-credentialing-and-background-investigations-for-contractors-21811-adm
9732.1E ADM Personnel Security and Suitability Program Handbook	https://www.gsa.gov/directives-library/personnel-security-and-suitability-program-handbook
2101.2 CIO GSA Enterprise Information Technology Management (ITM) Policy	https://www.gsa.gov/directives-library/gsa-enterprise-information-technology-management-itm-policy-1
2105.1D CIO GSA Section 508: Managing Information and Communications Technology (ICT) for Individuals with Disabilities	https://www.gsa.gov/directives-library/gsa-section-508-managing-information-and-communications-technology-ict-for-individuals-with-disabilities-1
2106.2A OSC GSA Social Media Policy	https://www.gsa.gov/directives-library/gsa-social-media-policy-2
2107.1 CIO GSA Open Source Software (OSS) Policy	https://www.gsa.gov/directives-library/gsa-open-source-software-oss-policy-1
2108.2 CIO Software License Management	https://www.gsa.gov/directives-library/software-license-management-1
2160.2B CIO CHGE 4 GSA Electronic Messaging and Related Services	https://www.gsa.gov/directives-library/gsa-electronic-messaging-and-related-services-3
2160.4B CIO Provisioning of Information Technology (IT) Devices	https://www.gsa.gov/directives-library/provisioning-of-information-technology-it-devices-2
2162.2 CIO GSA Digital Signature Policy	https://www.gsa.gov/directives-library/gsa-digital-signature-policy
2165.2 CHGE 1 CIO P GSA Telecommunications Policy	https://www.gsa.gov/directives-library/gsa-telecommunications-policy-1

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Document Name	Link
GSA Technology Policy for PBS-Owned Building Monitoring and Control (BMC) Systems	https://insite.gsa.gov/services-and-offices/public-buildings-service/facilities-management/facility-technology-innovation/technology-guidance?check_logged_in=1
Key Management [CIO IT Security 09-43, Rev 5]	https://insite.gsa.gov/employee-resources/information-technology/it-security-and-privacy/it-security/it-security-procedural-guides
National Institute of Standards and Technology (NIST) Special Publication (SP) 800-82 Rev. 3, Guide to Operational Technology (OT) Security	https://csrc.nist.gov/pubs/sp/800/82/r3/final

Appendix C: Change Log

Revision	Chapter	Change
Revision 1.1	1	TIC
	1	Formal Security Evaluation
	1	Security Evaluation Criteria
	1	Devices Risk Assessments
	1	Scanned Device List
	1	Client Software (Non-Standard Software)
	1	Non-Standard Software on GSA Servers
	1	GSA-IT Security Scanning Process
	1	Building Systems Network (BSN)
	2	BACnet
	3	Cabling Installation Options

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	3	Overview of Data Circuit Installation
	4	Responsibilities Respective to Server and Application Support
	4	Server Installation Guidelines
	4	Methods for Remotely Accessing a PBS Technical Operations Server
	4	System Documentation and Monitoring
	4	Backup Solutions
	4	Planned/Unplanned Outages and Maintenance
	6	Reporting an BMC Issue
	6	BMC Support System Workflow
	7	PACS (New Chapter)
Revision 1.2	1	Introduction
	1	Scanning Process
	1	What is BSN?
	2	Issues with Daisy Chaining Switches
	4	Solution Architecture and Requirements Analysis
	4	Server Standards
	4	Application Installation and Maintenance Guidelines
	4	Server Access
	4	Methods for Remotely Accessing a PBS Technical Operations

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		Server
	4	System Documentation and Monitoring
	4	How to Request Remote Desktop User Access
	4	How to Request Administrator Access
	4	Copying Files to a Server on the BSN
	4	Methods for Remotely Accessing a PBS Technical Operations Server
	5	New SOW format and language
	6	Reporting a BMC Issue
	6	PBS Technical Operations Team
	6	BMC Outage Process
	6	BMC Admin, RDP, and Reboot Process
	6	SFTP (Secure File Transfer Protocol) Request Process
	6	SMTP Email Server Information
	8	Best Practices (New Chapter)
Revision 2.0	Introduction	Updated Introduction
	1	Updated Section 1.1 “Roles and Responsibilities”
	1	Moved and Updated Section 1.2 “Policies and Requirements for Interconnectivity”
	1	Moved and Updated Section 1.2.1 “Trusted Internet Connection (TIC)”

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	1	Added Section 1.2.2 “Cellular Connection”
	1	Added Section 1.2.4 “BMC Whitelisting Process”
	1	Moved and Updated Section 1.3 “GSA Network Access to Perform Duties”
	1	Removed Section 1.3.2 “Server Security Assessment”
	1	Removed Section 1.3.3 “Device Security Assessment”
	1	Updated Section 1.4 to reflect the entire “BMC Device and Application Security Assessment Process”
	1	Added Section 1.4.1 “IT Security Scanning Process” Wireless Assessments
	1	Added Section 1.4.2 “Wireless Assessments”
	1	Added Section 1.4.3 “Encryption”
	1	Moved and Updated Section 1.4.4 “Non-Standard Software Review Process (BSN Servers/ Consoles)”
	1	Moved and Updated Section 1.5 “Building Systems Network (BSN)”
	1	Updated Section 1.5.1 “What is the Building Systems Network (BSN)?”
	1	Removed Section “Why is the BSN Necessary?”
	1	Updated Section 1.5.2 “BSN Operations and Maintenance Roles and Responsibilities”
	1	Updated Section 1.5.3 “BSN Evolvement and Implementation”
	1	Added Section 1.5.3.1 “BSN I: ACLs and Dedicated VLANs”
	1	Added Section 1.5.3.2 “BSN II: Dynamic Multipoint Virtual Private Network (DMVPN)

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	1	Added Section 1.5.3.3 “BSN III: Software-Defined Wide Area Network (SD-WAN)”
	1	Added Section 1.5.3.4 “BSN IV: Trustsec and Microsegmentation”
	1	Updated Section 1.5.4 “Expected Changes Once the BSN ACL is Applied”
	1	Updated Section 1.5.5 “How to Access Virtual Servers in BSN”
	1	Updated Section 1.5.6 “BSN Consoles”
	1	Added Section 1.5.6.1 “How to Obtain a BSN Console”
	1	Moved and Updated Section 1.5.6.2 “How to Access a BSN Console”
	1	Moved and Updated Section 1.5.6.3 “Installing Software on the BSN Console”
	1	Moved and Updated Section 1.5.9 “Steps to Integrate Sites onto the BSN from the ENT Domain”
	1	Moved and Updated Section 1.5.9.1 “Preparation”
	1	Moved and Updated Section 1.5.9.2 “BSN Preparation Meeting/Training”
	1	Moved and Updated Section 1.5.9.3 “Citrix-VDI Access and Use”
	1	Moved and Updated Section 1.5.9.4 “Migration”
	1	Disaster Recovery Changed to Building Recovery
	1	Moved and Updated Section 1.6 “Incident Response (IR) and Building Recovery (BR) Exercises”
	1	Moved and Updated Section 1.6.1 “Incident Response”
	1	Moved and Updated Section 1.6.2 “Building Recovery Exercises”

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	2	Updated Overview
	2	Updated Section 2.1 “Network Roles and Responsibilities”
	2	Removed Figure 2-1 “GSA MPLS Logical Backbone”
	2	Moved Section 2.2 “GSA Network and Uptime” from Best Practices Chapter
	2	Updated Section 2.4.1 “Network Design Requirements”
	2	Updated Section 2.4.2 “Sample Network Design Diagrams” with an updated sample of an acceptable network design diagram
	2	Moved Section 2.5 to 2.4.3 “Acceptance of Non-Standard Hardware”
	2	Added Section 2.5.1 “Requesting a GSA Circuit”
	2	Moved Section 2.5.1 to 2.5.2 “Requesting Switches and Routers”
	2	Moved Section 2.5.2 to 2.5.3 “Configuration and Connection of the Switches and the Routers”
	2	Moved Section 2.5.3 to 2.5.4 “Acceptance of Non-Standard Hardware”
	2	Moved and Updated Section 2.6 “BACnet”
	2	Updated Section 2.6.1 “How Does a BACnet Make Use of IP Networks?”
	2	Updated Section 2.6.2 “BACnet Key Definitions”
	2	Removed “Implementing BACnet on a Local Area Network (LAN)”
	2	Updated Section 2.6.3 “Implementing BACnet on a Wide Area Network (WAN)”
	2	Updated Section 2.6.3.1 “UDP Port Assignment”

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	2	Updated Section 2.6.3.2 “BACnet/Ethernet”
	2	Moved and Updated Section 2.6.3.3 “Using a BACnet Broadcast Management Device (BBMD)”
	2	Moved and Updated Section 2.6.3.4 “Foreign Device Registration”
	2	Moved and Updated Section 2.6.3.5 “BACnet/IP Multicast (B/IP-M)”
	3	Updated Overview
	3	Updated Section 3.1 “Applicable Standards for Cabling Infrastructure”
	3	Moved and Updated Section 3.1.1 “Minimum Requirement for Ethernet Cabling”
	3	Moved and Updated Section 3.1.2 “Attenuation Limit”
	3	Moved and Updated Section 3.1.3 “How are GSA-IT’s Cabling Standards Enforced?”
	3	Moved and Updated Section 3.2 “Cabling Installation”
	3	Moved and Updated Section 3.2.1 “Cabling Installation Roles and Responsibilities”
	3	Moved Section 3.2.2 “General Architecture”
	3	Moved and Updated Section 3.2.3 “Cable Installation Options”
	3	Moved and Updated Section 3.2.4 “Cable Installation Support”
	3	Moved and Updated Section 3.3 “Data Circuit Installation”
	3	Moved and Updated Section 3.3.1 “Data Circuit Installation Roles and Responsibilities”
	3	Moved and Updated Section 3.3.2 “Process for Data Circuit Requests and Site Visits”

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	3	Moved and Updated Section 3.3.3 “Important Considerations in the Circuit Installation Process”
	4	Updated Overview
	4	Updated Section 4.1 “BMC Server Roles and Responsibilities”
	4	Moved and Updated Section 4.2 “BMC Server Standards”
	4	Moved and Updated Section 4.2.1 “Why Go Virtual?” from Best Practices Chapter
	4	Moved and Updated Section 4.2.2 “BMC Server Hardware and Software Specifications”
	4	Moved and Updated Section 4.2.3 “BMC Application Requirements”
	4	Moved and Updated Section 4.2.4 “Server Security Hardening”
	4	Moved and Updated Section 4.3 “BMC Deployment Process”
	4	Added Section 4.3.1 “Step 1: Submit BMC Server Request Form”
	4	Added Section 4.3.2 “Step 2: Schedule Server Solutions Meeting with TechOps”
	4	Added Section 4.3.3 “Step 3: Server Deployment Process”
	4	Moved and Updated Section 4.4 “Application Installation and Maintenance Guidelines”
	4	Moved and Updated Section 4.4.1 “Installation and Maintenance Roles and Responsibilities”
	4	Moved, Renamed and Updated Section 4.4.2 “Do’s and Don’ts for Application Instructions”
	4	Moved Authority Approval Table from Chapter 6 to Chapter 4 Section 4.4.4
	4	Updated Section 4.4.5 “Dedicated Server Support During

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		Installation”
	4	Added Section 4.4.6 “Copying Files to a Server on the BSN”
	4	Moved and Updated Section 4.4.6 with The Secure File Transfer Protocol (SFTP) Request Process
	4	Moved and Updated Section 4.4.7 “Simple Mail Transfer Protocol (SMTP) Email Server Information” from Chapter 6 to Chapter 4
	4	Moved and Updated Section 4.5 “Application Access”
	4	Added Section 4.5.1 “Methods for Accessing an Application via Web Browser”
	4	Added Section 4.5.1.1 “How to Request Access to a Web Application”
	4	Added Section 4.5.1.2 “How to Access a Web Application via Citrix VDI”
	4	Added Section 4.5.1.3 “How to Access a Web Application via BSN Console”
	4	Moved and Updated Section 4.5.2 “Methods for Accessing an Application via RDP to a Server”
	4	Moved and Updated Section 4.5.2.1 “How to Request RDP Access to a Server”
	4	Moved and Updated Section 4.5.2.2 “How to RDP to a Server via Citrix VDI”
	4	Moved and Updated Section 4.5.2.3 “How to RDP to a Server via BSN Consoles”
	4	Added Section 4.5.2.4 “How to Log Off a Remote Desktop Session on a BMC Server”
	5	Moved Chapter 6 to Chapter 5 “Technical Support for BMC Servers and Consoles”
	5	Updated Overview

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	5	Moved and Updated Section 5.1 “Technical Support Roles and Responsibilities”
	5	Moved and Updated Section 5.2 “Server Maintenance and Support” from Chapter 4 to Chapter 5
	5	Moved and Updated Section 5.2.1 “Server Monitoring” from Chapter 4 to Chapter 5
	5	Added Section 5.2.2 “Server Backup Solutions”
	5	Moved and Updated Section 5.2.3 “Server Patching” from Chapter 4 to Chapter 5
	5	Combined and Updated Section 5.3.2.1 “Planned Maintenance and Outages” from Chapter 4 and Chapter 6 to Chapter 5
	5	Combined and Updated Section 5.3.2.2 “Unplanned Maintenance and Outages” from Chapter 4 and Chapter 6 to Chapter 5
	5	Moved and Updated Section 5.2.4 “Communications for BMC Contacts” from Chapter 5 to Chapter 5
	5	Added Section 5.3 “BSN Console Maintenance”
	5	Added Section 5.3.1 “BSN Console Patching”
	5	Added Section 5.3.2 “BSN Console IT Support”
	5	Moved and Updated Section 5.4 “BMC Issue”
	5	Added Section 5.4.1 “Initial Troubleshooting Steps”
	5	Added Section 5.4.2 “Different Methods of Reporting a BMC Issue”
	5	Added Section 5.4.2.1 “Option 1: Call TechOps”
	5	Added Section 5.4.2.2 “Option 2: Email TechOps”

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	5	Moved and Updated Section 5.4.2.3 “Option 3: Call the GSA-IT Service Desk Hotline”
	5	Moved and Updated Section 5.4.2.4 “Option 4: Submit a GSA-IT Service Desk Ticket with ServiceNow”
	5	Moved and Updated Section 5.4.2.5 “Describing a BMC Issue”
	5	Added Section 5.4.3 “BMC Support System Workflow”
	5	Added Section 5.4.3.1 “BMC Application Issue”
	5	Added Section 5.4.3.2 “Network Issue”
	5	Added Section 5.4.3.3 “BMC Server Issue”
	5	Added Section 5.4.3.4 “BSN Console Issue”
	5	Added Section 5.4.3.5 “Advanced Metering System (AMS) Issue”
	5	Added Section 5.4.3.6 “Troubleshooting Points of Contact”
	6	Added Chapter 6 “Advanced Metering System (AMS)”
	7	Updated Overview
	7	Moved and Updated Section 7.1 “Physical Access Control Systems Roles and Responsibilities”
	7	Moved and Updated Section 7.2 “Security”
	7	Moved and Updated Section 7.3 “Network Architecture and Integration”
	7	Moved and Updated Section 7.4 “Project Flow”
	7	Moved and Updated Section 7.5 “Support”
	8	Moved Chapter 5 to Chapter 8 “IT Requirements in Scope of Work (SOW) for BMC Procurements”

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	8	Updated Section 8.0 Overview
	8	Updated Section 8.1 “Scope of Work Template (BAS Hardware/Software Upgrades)”
	9	Moved Best Practices from Chapter 8 to Chapter 9
	9	Updated Overview
	9	Moved and Updated Section 9.1 “Tips for Running a Successful BMC Project”
	9	Added Section 9.2 “BMC Checklist for Projects”
	9	Added Section 9.2.1 “Unitary Controller Configuration”
	9	Added Section 9.2.2 “Server/AMS Configuration”
	9	Added Section 9.2.3 “General Documentation and Deliverables”
	9	Added Section 9.2.4 “Application Account Administration”
	Appendix	Combined Appendix into 1 List
	Appendix	Appendix A: Updated Contact Information
	Appendix	Appendix B: Listing of Reference Policies
Revision 3.0	Introduction	Updated Introduction
	1	Updated Section 1.0 “Overview”
	1	Updated Section 1.1 “BMC Systems Roles and Responsibilities”
	1	Updated Section 1.2.1 “Trusted Internet Connection (TIC)”
	1	Updated Section 1.2.2 “Cellular Connection”

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	1	Updated Section 1.2.3 “Government Furnished Equipment”
	1	Updated Section 1.2.4 “BMC Systems Device Whitelisting Process”
	1	Updated Section 1.3.2 “Background Investigations”
	1	Updated Section 1.4 “BMC Systems Device, Appliance and Software Security Assessment Process”
	1	Updated Section 1.4.1 “GSA IT Security Scanning Process”
	1	Updated Section 1.4.1.1 “Step 1: Pre-Assessment”
	1	Updated Section 1.4.1.2 “Step 2: Induction”
	1	Updated Section 1.4.1.3 “Step 3: Assessment”
	1	Updated Section 1.4.1.4 “Step 4: Initial SAR Issuance”
	1	Updated Section 1.4.1.5 “Step 5: Vendor Remediation/SAR Issuance”
	1	Updated Section 1.4.1.6 “Step 6: BMC Systems Service and Support”
	1	Updated Section 1.4.2 “Wireless Assessments”
	1	Updated Section 1.4.3 “Encryption”
	1	Updated Section 1.4.4 “Non-Standard Software Review Process (BSN Consoles)”
	1	Added Section 1.4.5 “Variable Refrigerant Flow (VRF) in HVAC Controls”
	1	Updated Section 1.5 “Building Systems Network (BSN)”
	1	Removed Previous Section 1.5.1 “What is the Building Systems Network (BSN)?”

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	1	Moved and Updated Section 1.5.1 “BSN Operations and Maintenance Roles and Responsibilities”
	1	Moved and Updated Section 1.5.2 “BSN Evolvement and Implementation”
	1	Added Section 1.5.2.1 “History of BSN”
	1	Moved and Updated Section 1.5.2.2 “Current Implementation of BSN (TrustSec and Microsegmentation)”
	1	Removed Section 1.5.3.1 “BSN I: ACLs and Dedicated VLANs”
	1	Removed Section 1.5.3.2 “BSN II: Dynamic Multipoint Virtual Private Network (DMVPN)”
	1	Removed Section 1.5.3.3 “BSN III: Software-Defined Wide Area Network (SD-WAN)”
	1	Removed Previous Section 1.5.4 “Expected Changes Once the BSN ACL is Applied”
	1	Removed Previous Section 1.5.5 “How to Access Virtual Servers in the BSN”
	1	Removed Section 1.5.6 “BSN Consoles”
	1	Removed Section 1.5.6.1 “How to Obtain a BSN Console”
	1	Removed Section 1.5.6.2 “How to Access BSN Consoles”
	1	Removed Section 1.5.6.3 “Installing Software on the BSN Console”
	1	Moved and Updated Section 1.5.3 “Standard BSN Configurations”
	1	Removed Section 1.5.8 “Using Citrix VDI and BSN Consoles”
	1	Moved and Updated Previous Section 1.5.4 “Steps to Integrate Sites onto the BSN”

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	1	Removed Previous Section 1.5.9.1 “Preparation”
	1	Removed Previous Section 1.5.9.2 “BSN Preparation Meeting and Training”
	1	Removed Previous Section 1.5.9.3 “Citrix VDI Access and Use”
	1	Removed Previous Section 1.5.9.4 “Migration”
	1	Updated Section 1.6 “Incident Response (IR) and Building Recovery (BR) Exercises”
	1	Updated Section 1.6.1 “Incident Response”
	1	Updated Section 1.6.2 “Building Recovery Exercises”
	2	Updated Section 2.0 “Overview”
	2	Updated Section 2.1 “Network Roles and Responsibilities”
	2	Removed Previous Section 2.2 “GSA Network and Uptime”
	2	Moved and Updated Section 2.2 “Standards for Interoperability”
	2	Moved and Updated Section 2.3 “Network Topology”
	2	Moved and Updated Section 2.3.1 “Network Design Requirements”
	2	Added Section 2.4 “Requesting and Installing a GSA Circuit”
	2	Added Section 2.4.1 “How to Locate a Demarc Room and Demarc Extension Room”
	2	Updated and Moved Section 2.4.2 “How to Request a GSA Circuit and the Installation Process”
	2	Moved and Updated Section 2.4.3 “Important Considerations in the Circuit Installation Process”

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	2	Moved and Updated Section 2.5.1 “Requesting and Installing Switches”
	2	Moved and Updated Section 2.5.2 “Installing and Connecting Hardware”
	2	Removed Section 2.5.4 “Acceptance of Non-Standard Hardware”
	2	Added Section 2.5.2.1 “Types of Connections Allowed”
	2	Added Section 2.5.2.2 “Alternate Connectivity Options for Approved BMC Devices”
	2	Updated Section 2.6 “BACnet”
	2	Updated Section 2.6.3 “Implementing BACnet on a Wide Area Network (WAN)”
	2	Updated 2.6.3.1 “UDP Port Assignment”
	2	Updated 2.6.3.3 “Using a BACnet Broadcast Management Device (BBMD)”
	3	Updated Section 3.0 “Overview”
	3	Moved and Updated Section 3.1 “Cabling Roles and Responsibilities”
	3	Moved and Updated Section 3.2 “Cabling Infrastructure Standards”
	3	Moved and Updated Section 3.2.1 “Minimum Requirement for Ethernet Cabling”
	3	Removed Previous Section 3.2.2 “General Architecture”
	3	Moved and Updated Section 3.2.2 “Attenuation Limit”
	3	Removed Previous Section 3.2.3 “Cabling Installation Options”
	3	Moved and Updated Section 3.2.3 “How are GSA IT Cabling Standards Enforced?”

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	3	Removed Section 3.2.4 “Cabling Installation Support”
	3	Removed Previous Section 3.3 “Data Circuit Installation”
	3	Moved and Updated Section 3.3 “Cabling Installation”
	3	Removed Previous Section 3.3.1 “Data Circuit Installation Roles and Responsibilities”
	3	Removed Previous Section 3.3.2 “Process for Data Circuit Requests and Sites Visits”
	3	Removed Previous Section 3.3.3 “Important Considerations in the Data Installation Process”
	4	Updated Section 4.1 “BMC Systems Server Roles and Responsibilities”
	4	Updated Section 4.2.1 “Why Go Virtual?”
	4	Removed Section 4.2.4 “Server Security Hardening”
	4	Updated Section 4.3.1 “Step 1: Submit Server Request Form”
	4	Updated Section 4.3.2 “Step 2: Schedule Server Solutions Meeting with TechOps”
	4	Updated Section 4.3.3 “Step 3: Server Deployment Process”
	4	Moved and Updated Section 4.3.4 “Do’s and Don’ts for Application Installations”
	4	Removed Previous Section 4.4 “Application Installation and Maintenance Guidelines”
	4	Moved and Updated Section 4.4 “Application Access”
	4	Removed Previous Section 4.4.1 “Installation and Maintenance Roles and Responsibilities”
	4	Added Section 4.4.1 “How to Request Different Types of Access”

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	4	Moved and Updated Section 4.4.2.2 “How to Access a Web Application via Citrix VDI”
	4	Removed Previous Section 4.4.3 “Temporary Server Administrator Access Requests and Reboots”
	4	Moved and Updated Section 4.4.3.1 “How to RDP to a Server via Citrix VDI”
	4	Removed Previous Section 4.4.4 “Approval Authority Table”
	4	Removed Previous Section 4.4.5 “Dedicated Server Support During Installation”
	4	Removed Previous Section 4.4.6 “Copying Files to a Server on the BSN”
	4	Removed Previous Section 4.4.7 “Simple Mail Transfer Protocol (SMTP) Email Server Information”
	4	Moved Section 4.5 “Server Maintenance and Support”
	4	Moved Section 4.5.1 “Server Monitoring and Backup”
	4	Moved Section 4.5.2 “Server Patching”
	4	Removed Previous Section 4.5.2.1 “How to Request RDP Access to a Server”
	4	Moved and Updated Section 4.5.2.1 “Communications for BMC Systems Contacts”
	4	Moved and Updated Section 4.5.2.2 “Planned Maintenance and Outages”
	4	Moved and Updated Section 4.5.2.3 “Unplanned Maintenance and Outages”
	5	Added Chapter 5 “BSN Consoles”
	6	Moved Previous Chapter 5 to Chapter 6

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	6	Updated Section 6.0 “Overview”
	6	Updated Section 6.1 “Technical Support Roles and Responsibilities”
	6	Moved Section 6.2 “Initial Troubleshooting Steps”
	6	Added Section 6.3 “Reporting a BMC Systems Issue”
	6	Moved and Updated Section 6.4 “BMC Systems Support Workflow”
	6	Moved and Updated Section 6.4.1 “BMC Systems Application Issue”
	6	Added Section 6.4.2 “BMC Systems Hardware”
	6	Moved and Updated Section 6.4.3 “Network Issue”
	6	Moved and Updated Section 6.4.4 “BMC Server Issue”
	6	Moved and Updated Section 6.4.5 “BSN Console Issue”
	7	Moved Previous Chapter 6 to Chapter 7
	7	Updated Section 7.0 “Overview”
	7	Updated Section 7.1 “Advanced Metering System Roles and Responsibilities”
	7	Updated Section 7.2 “Advanced Metering System Architecture”
	7	Updated Section 7.3 “Standards for Interoperability”
	7	Updated Section 7.4 “New Installations”
	7	Moved and Updated Section 7.4.1 “Sample Network Diagram”
	7	Added Section 7.4.2 “Cabling”

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	7	Moved and Updated Section 7.5 “Technical Support for AMS”
	7	Moved and Updated Section 7.5.1 “Support Form”
	7	Moved and Updated Section 7.5.2 “Troubleshooting Process”
	8	Moved Previous Chapter 7 to Chapter 8
	8	Updated Section 8.0 “Overview”
	8	Updated Section 8.1 “Physical Access Control Systems Roles and Responsibilities”
	8	Updated Section 8.2 “Security”
	8	Updated Section 8.4 “Project Flow”
	8	Updated Section 8.5 “GSA IT EPACS Support”
	9	Moved Previous Chapter 8 to Chapter 9
	9	Added Section 9.1 “Contract Language IT Security Requirements”
	9	Updated Section 9.2 “Scope of Work Template (BAS Hardware/Software Upgrades)”
	10	Moved Previous Chapter 9 to Chapter 10
	10	Updated Section 10.0 “Overview”
	10	Updated Section 10.1 “Tips for Running a Successful BMC Systems Project”

Please don't share outside of GSA

GSA R7 Greater Southwest Region

Please don't share outside of GSA

CUI//FEDCON

A Federal Building
1st Street
A state 333323
A 111111

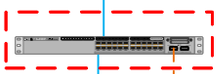
PENTHOUSE

Device: PXC36-EF.A (Siemens)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

Device: SmartX IP-IO (Schneider Electric)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

60 ft

270 ft



Name: 07P-Fort Worth-99 -S4
Cisco 9300 24p
Location: Main Mech Rm
IP: 172.xxx.xxx.xxx

8TH FLOOR

Device: Jene – PC9000 (Lynxspring)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

Device: JeneSYS Edge 534 (Lynxspring)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

BacNet-IP Field Controller 90 ft

100 ft

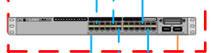
6TH FLOOR

Device: EC-BOS-9 (Distech JACE)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

BacNet-IP Field Controller 60 ft

Device: DXR2.M12P-102B (Siemens)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

135 ft



Name: 07P-Fort Worth-99 -S3
Cisco 9300 24p
Location: Main Mech Rm
IP: 172.xxx.xxx.xxx

4TH FLOOR

BacNet-IP Field Controller 95 ft

Device: JACE-8000 (Tridium)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

Device: PXC24.2-M.A (Siemens)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

182 ft

2ND FLOOR

Device: JACE-9000 (Tridium)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

Device: PXC24.2-M.A (Siemens)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

120 ft

220 ft

GROUND FLOOR

Device: BSN Console
Location: Mech Rm
IP: 172.16.xxx.xxx

50ft

225ft

45ft

Name:07P-Fort Worth-99 -S2
Cisco 9300 24p
Location: Mechanical Rm
IP: 172.25.xxx.xxx

Name: 07P-Fort Worth-99
Location: Mechcanical Rm
IP: 172.25.xxx.xxx

Device: Shark 200 Meter
Location: Electrical Rm
IP:172.16.xxx.xxx
MAC:XXXXXXX
Port:X

Device: 6000 HS (Gallagher PACS)
Name: Device Name
IP: xxx.xxx.xxx.xxx
MAC: 00:00:00:00:00:00
Loc: Room#

Riser Instruction

- Riser Title Area - GSA Logo, Building heading will include address and building ID, SBU marking
- Summary comments
- Legend; cables types identified by color and length, new equipment/device box
- Floors: include Floor number, device; type, location, IP, and MAC.
- MAC address maybe be include if it can fit on the drawing. If its not included it must be provided on the spreadsheet.

Device: GSA Virtual Niagara Server
Location: GSA
IP: 172.XXX.XXX.XXX

Cable Matrix

	Existing Ethernet Cable
	New Ethernet Cable
	Existing Fiber
	New Fiber
	RS-232/485
	New Equipment

CUI//FEDCON

Please don't share outside of GSA

Please don't share outside of GSA

PCO #043

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #043: CE #052 - Credit for Acid Waste Piping

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	043 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Pilar Anzaldua-Garza **(D Wilson Construction Company)**
STATUS:	Pending - Proceeding	**CREATED DATE:**	5/6/2026
REFERENCE:	ASI 13	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	0 days	**TOTAL AMOUNT:**	($17,857.50)

POTENTIAL CHANGE ORDER TITLE: CE #052 - Credit for Acid Waste Piping

CHANGE REASON: No Change Reason

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
CE #052 - Credit for Acid Waste Piping
Acid Waste Piping Credit
As per ASI 13, the acid waste piping was to be omitted as well as one sample well, however, schedule 40 piping will still be required.

ATTACHMENTS:

#	Budget Code	Description	Amount
1	001.15-100.S	ASI 13 Credit for acid waste piping Line Item 7400-6001 25 LF @ 130.80 = <3,270.00>	$(3,270.00)
2	001.15-100.S	ASI 13 Credit for acid waste piping Line item 7400-6002	$(12,262.50)
3	001.15-100.S	ASI 13 Credit for one Sample Well Line Item 7400-6003	$(2,725.00)
4	001.15-100.S	ASI 13 Use PVC DWV Schedule 40 in lieu of Acid Waste Pipe	$400.00
		Subtotal:	**$(17,857.50)**
		Overhead and Profit (0.00% Includes Cost Type (20)):	$0.00
		Bond (0.00% Applies to All Line Items):	$0.00
		Grand Total:	**$(17,857.50)**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

07/07/2026
SIGNATURE **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

Maria L. Rangel
SIGNATURE **DATE**
07/07/2026

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

Draft Print

04/29/2026 3:49:31 PM

Project: Pharr FY16 DAP - Dock Expansion Phase I, Phase II , and Agricultural Lab
CSJ: 0921-02-424, 0921-02-425, 0921-02-433
Job #: 24-235
Retainage: 5%

Application No: 18
Application Date: 4/29/2026
Period From: 3/26/2026
To: 4/25/2026

CONTRACT									PREVIOUS		THIS PERIOD		TO-DATE				
ITEM	TxDOT	REF	DESCRIPTION	UOM	QTY	UNIT PRICE	AMOUNT		QTY	AMOUNT	QTY	AMOUNT	QTY	AMOUNT	% COMPLETE	BALANCE TO FINISH	RETAINAGE
81	6500	6007	800A4 - 2/4" COND - 4-600 KMIL, #1/0 89600) 2(1/0) 2(4")	LF	125.00	$ 422.92	$ 52,865.00		-	$ -	-	$ -	-	$ -		$ 52,865.00	$ -
82	6500	6008	1600A4 - 4/4" COND - 4-600 KML, #4/0 16(600) 4(4/0) 4(4")	LF	75.00	$ 990.81	$ 74,310.75		-	$ -	-	$ -	-	$ -		$ 74,310.75	$ -
83	6500	6009	RELOCATE EXISTING ELECTRICAL SERVICE EQUIPMENT. DIS	LS	1.00	$ 75,618.75	$ 75,618.75		0.53	$ 40,077.94	-	$ -	0.53	$ 40,077.94	53.00%	$ 35,540.81	$ 2,003.90
84	7017	6002	SANITARY SEWER (3") (PVC) (C900)	LF	23.00	$ 256.15	$ 5,891.45		-	$ -	-	$ -	-	$ -		$ 5,891.45	$ -
85	7017	6005	SANITARY SEWER (8 IN) (PVC) (C900)	LF	210.00	$ 141.70	$ 29,757.00		-	$ -	210.00	$ 29,757.00	210.00	$ 29,757.00	100.00%	$ -	$ 1,487.85
86	7017	6015	SANITARY SEWER (4 IN) (PVC) (C900)	LF	6.00	$ 430.55	$ 2,583.30		-	$ -	6.00	$ 2,583.30	6.00	$ 2,583.30	100.00%	$ -	$ 129.17
87	7017	6051	MANHOLE (SAN SEWER) (4' DIA)	EA	3.00	$ 19,075.00	$ 57,225.00		-	$ -	2.00	$ 38,150.00	2.00	$ 38,150.00	66.67%	$ 19,075.00	$ 1,907.50
88	7017	6200	YARD CLEAN OUTS	EA	1.00	$ 1,362.50	$ 1,362.50		-	$ -	-	$ -	-	$ -		$ 1,362.50	$ -
89	7017	6201	SAND/OIL SEPARATOR	EA	-	$ 32,700.00	$ -			$ -			-	$ -		$ -	$ -
90	7112	6002	PRESSURE WTR PIPE C-900 DR-18 PVC 8"	LF	127.00	$ 125.35	$ 15,919.45		127.00	$ 15,919.45	-	$ -	127.00	$ 15,919.45	100.00%	$ -	$ 795.97
91	7112	6003	PRESSURE WTR PIPE C-900 DR-18 PVC 6"	LF	486.00	$ 87.20	$ 42,379.20		182.00	$ 15,870.40	-	$ -	182.00	$ 15,870.40	37.45%	$ 26,508.80	$ 793.52
92	7112	6004	CONNECT TO EXISTING WATER LINE 8"	EA	2.00	$ 4,905.00	$ 9,810.00		1.00	$ 4,905.00	-	$ -	1.00	$ 4,905.00	50.00%	$ 4,905.00	$ 245.25
93	7112	6011	GATE VALVE W/ BOX ASSEMBLY 8"	EA	2.00	$ 5,177.50	$ 10,355.00		2.00	$ 10,355.00	-	$ -	2.00	$ 10,355.00	100.00%	$ -	$ 517.75
94	7112	6015	FIRE HYDRANT, VALVE & ASSEMBLY	EA	2.00	$ 11,172.50	$ 22,345.00		1.00	$ 11,172.50	-	$ -	1.00	$ 11,172.50	50.00%	$ 11,172.50	$ 558.63
95	7049	6373	SERVICE LINE (SHORT SIDE)(2-1/2" TO 4")	LF	9.00	$ 4,360.00	$ 39,240.00		-	$ -	-	$ -	-	$ -		$ 39,240.00	$ -
96	7112	6041	COMPOUND WATER METER 2-1/2" DIA	EA	1.00	$ 5,450.00	$ 5,450.00		-	$ -	-	$ -	-	$ -		$ 5,450.00	$ -
97	7112	6042	BOX, MISC VALVES, FITTINGS	EA	1.00	$ 14,715.00	$ 14,715.00		1.00	$ 14,715.00	-	$ -	1.00	$ 14,715.00	100.00%	$ -	$ 735.75
98	7112	6043	DOUBLE CHECK VALVE BACKFLOW ASSEMBLY	EA	1.00	$ 30,520.00	$ 30,520.00		-	$ -	-	$ -	-	$ -		$ 30,520.00	$ -
99	7112	6044	VAULT, MISC VALVES, FITTINGS	EA	1.00	$ 22,890.00	$ 22,890.00		1.00	$ 22,890.00	-	$ -	1.00	$ 22,890.00	100.00%	$ -	$ 1,144.50
100	7112	6045	FREE STANDING FDC	EA	1.00	$ 4,905.00	$ 4,905.00		1.00	$ 4,905.00	-	$ -	1.00	$ 4,905.00	100.00%	$ -	$ 245.25
101	7112	6046	4" FDC LINE	LF	240.00	$ 59.95	$ 14,388.00		240.00	$ 14,388.00	-	$ -	240.00	$ 14,388.00	100.00%	$ -	$ 719.40
102	7266	6036	ENCASEMENT PIPE (16")	LF	24.00	$ 490.50	$ 11,772.00		-	$ -	-	$ -	-	$ -		$ 11,772.00	$ -
103	7400	6001	ACID WASTE PIPE 3" DIA.	LF	25.00	$ 130.80	$ 3,270.00		-	$ -	-	$ -	-	$ -		$ 3,270.00	$ -
104	7400	6002	ACID WASTE PIPE 4" DIA.	LF	75.00	$ 163.50	$ 12,262.50		-	$ -	-	$ -	-	$ -		$ 12,262.50	$ -
105	7400	6003	ACID WASTE SAMPLE WELL	EA	2.00	$ 2,725.00	$ 5,450.00		1.00	$ 2,725.00	-	$ -	1.00	$ 2,725.00	50.00%	$ 2,725.00	$ 136.25
106	7401	6001	GAS PIPE 1/2" DIA.	LF	225.00	$ 16.35	$ 3,678.75		-	$ -	-	$ -	-	$ -		$ 3,678.75	$ -
107	7401	6002	GAS PIPE 3/4" DIA.	LF	150.00	$ 18.53	$ 2,779.50		-	$ -	-	$ -	-	$ -		$ 2,779.50	$ -
108	7401	6003	GAS PIPE 1" DIA.	LF	200.00	$ 27.25	$ 5,450.00		-	$ -	-	$ -	-	$ -		$ 5,450.00	$ -
109	7401	6004	GAS METER & REGULAR ASSEMBLY	EA	1.00	$ 3,270.00	$ 3,270.00		-	$ -	-	$ -	-	$ -		$ 3,270.00	$ -
110	7401	6005	GAS CONNECTIONS	LS	1.00	$ 3,815.00	$ 3,815.00		-	$ -	-	$ -	-	$ -		$ 3,815.00	$ -
111	7401	6006	GAS PIPE 2" DIA.	LF	1,409.00	$ 119.90	$ 168,939.10		1,485.00	$ 178,051.50	-	$ -	1,485.00	$ 178,051.50	105.39%	$ (9,112.40)	$ 8,902.58
									-	$ -	-	$ -	-	$ -		$ -	$ -
112	9700	6003	**AGRICULTURAL LAB BLDG (COMPLETE) SUBTOTAL**	**LS**	**1.00**	**$ 12,728,700.00**	**$ 12,728,700.00**		0.59	$ 7,524,233.53	0.0278	$ 353,474.58	0.62	$ 7,877,708.11	61.89%	$ 4,850,991.89	$ 393,885.41
									-	$ -	-	$ -	-	$ -		$ -	$ -

PCO #045

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #045: Credit for Sand Oil Separator

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	045 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Roberto Villela **(D Wilson Construction Company)**
STATUS:	Pending - In Review	**CREATED DATE:**	6/4/2026
REFERENCE:	RFI-117	**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:		**TOTAL AMOUNT:**	($32,700.00)

POTENTIAL CHANGE ORDER TITLE: Credit for Sand Oil Separator

CHANGE REASON: Design Development

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
PCO 45 - Line Item 7017-6201 - RFI 117 - Credit for Sand Oil Separator

ATTACHMENTS:

#	Budget Code	Description	Amount
1	001.15-100.S	PCO 45 - Line Item 7017-6201 - RFI 117 - Credit for Sand Oil Separator	$(32,700.00)
		Grand Total:	**$(32,700.00)**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

06/15/2026
SIGNATURE **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

Maria L. Rangel
SIGNATURE **DATE**
06/15/2026

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
P: (956) 686-9573

Project: 24-235 Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Email - 7017-6201 Sand/Oil Separator Clarification #117: 7017-6201 Sand/Oil Separator Clarification

Subject:	**24-235 Pharr FY16 DAP - RFI #117: 7017-6201 Sand/Oil Separator Clarification**	**Sent: May 18, 2026 04:46 PM CDT**

From Emiliano Larios (D Wilson Construction Company)

To AJ Saldana, Adrian Aguilar, Albert Gallwas, Alex Saldana, Alma Bazarte, Armando Guevara, Arturo Perez, Augie Arreola, Austin Arreola, Bookkeeping Soil Tech, Brandon Sligar, Brenda Herrera, Brian Aguilar, Buster Smith, Carlos Coronado, Chad Wright, Charles Wernette, Christian Quiroz, Claudette Minor, Claudio Velasco, Clemente Cruz, Cliff Carnahan, David Navarro, Debbie Graham, Deborah Ochoa, Denisse Serna, Dennis Covert, Dickie Friedrichs, Dustin Kitchen, Edgar Perez, Eduardo Gonzalez, Eleazar Salinas, Elishia Thornton, Elizabeth Garcia, Eloy Salazar, Emiliano Larios, Erasmo Escamilla, Erik Rubio, Estanislado Mireles, Frank Anzaldua, Gene Espinoza, Gene Espinoza, Gerardo Negrete, Giovanni Mares, Hector Marquez, Hector Noyola, Hector Rodriguez, Isaac Moreno, Jacob M, James Longoria, Janete Castillo, Javier Rodriguez, Jerry Ring, Joanna Colunga, Joe Pequeno, John Campbell, Jose Manuel Saenz, Jose Tovar, Joshua Jaramillo, Jr Longoria, Juan Cadena, Juan Leon, Julio Monroy, Karla Garza, Kyle Hunter, Laura Alvarez, Leo Rodriguez, Leo Vela, Lisa Ring, Lucy Navarro, Luis Daniel Lucio, Luis Martinez, Luis Rodea, Marco Minor, Michael Keim, Miguel Tamez, Mike Kehner, Moises Benitez, Nelda Guerrero, Nick Gonzalez, Norman Munoz, Omar Salinas, Orlando Limon, Pedro Aguilar, Pete Salinas, Peyton Ruiz, Pilar Anzaldua-Garza, Ray Gonzales, Rizelle Saxe, Robert Arevalo, Roberto Villela, Roger Gonzales, Rolando Leal, Rosalia Villegas, Samantha Sambrano, Scarlett Olivares Chapa, Tamie Bocanegra, Tavo Tenorio, Trent Hausenfluck, Vanessa Garcia, Vanessa Garza, Vicente Garza

Cc Arturo Perez, Claudio Velasco, Emiliano Larios, Pilar Anzaldua-Garza, Roberto Villela

Attachments 24-235 Pharr DAP RFI 117 - 0717-6201 Sand-Oil Separator Clarification 5-18-26.pdf

Message

Good Afternoon Team:

Attached is the response to **RFI #117: 7017-6201 Sand/Oil Separator Clarification** for **24-235 Pharr FY16 DAP.** While this response may not impact your scope of work, it is being distributed to all subcontractors to ensure awareness of any clarifications or potential changes. It remains the subcontractor's responsibility to thoroughly review the document and determine if modifications affect their scope of work. The impacted areas related to this RFI will be marked up in Procore drawings. Please use these markups as a reference only and continue to review the full document for scope implications.

If this document impacts your scope, please provide your proposal for the specified scope as soon as possible. Subcontractors shall submit any cost impacts and additional days required due to this document if it affects the project schedule or their scope of work. Any revisions resulting from this document will be considered at NO COST and NO DELAY to the project if the subcontractor does not respond within **five (5) working days** of receipt. No work related to this document shall proceed until any additional cost and time are formally approved.

Emiliano Larios
Assistant Project Manager
Office: (956) 686-9573
Email: EmilianoL@DWilsonConstruction.com
Web: www.dwilsonconstruction.com
Address: P.O. Box 3455, McAllen, TX 78502-3455

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
P: (956) 686-9573

Project: 24-235 Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

RFI #117: 7017-6201 Sand/Oil Separator Clarification

Status	Closed on 05/18/26		
To	Alex Corona (Brownstone Consultants, LLC) David Chacon (Brownstone Consultants, LLC) Rolando Ayala (Brownstone Consultants, LLC) Sabrina Alvarez (Brownstone Consultants, LLC)	**From**	Emiliano Larios (D Wilson Construction Company) PO Box 3455 McAllen, Texas 78502
Date Initiated	Apr 21, 2026	**Due Date**	Apr 28, 2026
Location		**Project Stage**	
Cost Impact	TBD	**Schedule Impact**	TBD
Spec Section		**Cost Code**	
Drawing Number	C-007, C-010, C-401	**Reference**	
Linked Drawings	C-010, C-007, C-401		
Received From	Emiliano Larios (D Wilson Construction Company)	**Sub Job**	
Copies To	Pilar Anzaldua-Garza (D Wilson Construction Company), Vanessa Garza (D Wilson Construction Company), Emiliano Larios (D Wilson Construction Company), Isaac Moreno (D Wilson Construction Company), Joe Pequeno (D Wilson Construction Company), Arturo Perez (D Wilson Construction Company), Denisse Serna (D Wilson Construction Company), Claudio Velasco (D Wilson Construction Company), Roberto Villela (D Wilson Construction Company)		

Activity

Question

Question from Emiliano Larios D Wilson Construction Company *on Tuesday, Apr 21, 2026 at 04:27 PM CDT*

On Sheet C-007, the quantity for Item 7017-6201 Sand/Oil Separator is shown as one (1). Sheet C-010 references that Item 7017-6201 Sand/Oil Separator is located on Sheet C-401; however, Sheet C-401 does not indicate or label the location of the Sand/Oil Separator. Please clarify the exact location of the unit on the plans.
Additionally, there is no specification or schedule on the plans referencing the Sand/Oil Separator. Please provide the applicable specifications, including product requirements and any relevant details and information.

Attachments
RFI 117 - 7017-6201 Sand-Oil Separator Clarification.pdf

Official Response

Response from Emiliano Larios D Wilson Construction Company *on Monday, May 18, 2026 at 04:19 PM CDT*

Response from Brownstone on 05/18/2026:

Both CBP and GSA have confirmed no objection to the removal of the sand/oil separator from the Cold Storage sanitary waste system.
All stakeholders are in agreement. Please proceed with closing the RFI.

Attachments
RFI #117 - 7017-6201 Sand-Oil Separator Clarification - Response REV.1.pdf

Outlook

Re: Pharr FY16 DAP - RFI #117 - Sand-Oil Separator

From Sabrina Alvarez <Sabrina@bstone.biz>

Date Mon 5/18/2026 3:46 PM

To Emiliano Larios <Emilianol@dwilsonconstruction.com>

Cc Rolando Ayala <rolando@bstone.biz>; Claudio Velasco <claudiov@dwilsonconstruction.com>; Roberto Villela <robertov@dwilsonconstruction.com>; Pilar Anzaldua-Garza <pilara@dwilsonconstruction.com>; Arturo Perez <arturop@dwilsonconstruction.com>; Vanessa J. Garza <vanessag@dwilsonconstruction.com>; 25-247 Donna Todd MS <com-inbound-donna-todd-ms-addition--reno-oukdnmu8dp@procoretech.com>; David Chacon <david@bstone.biz>; pharr_fy16_dap_lpoe-eqmabpblyt4j56j@corr.acc.autodesk.com <pharr_fy16_dap_lpoe-eqmabpblyt4j56j@corr.acc.autodesk.com>; Maria Rangel <maria.rangel@pharr-tx.gov>

Caution:

This email originated from outside of D. Wilson Construction. Do not click links or open attachments unless you recognize the sender's email address (and not just the name) and know the content is safe.

Hi Emiliano,

Both CBP and GSA have confirmed no objection to the removal of the sand/oil separator from the Cold Storage sanitary waste system.

All stakeholders are in agreement. Please proceed with closing the RFI.

Thanks,

Sabrina Alvarez, M.S.C.E

Project Control Specialist, Brownstone Consultants

2205 N. Jackson Rd,
McAllen, TX 78501

956.307.3057

sabrina@bstone.biz

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
P: (956) 686-9573

Project: 24-235 Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

RFI #117: 7017-6201 Sand/Oil Separator Clarification

Status	Closed on 05/18/26		
To	Alex Corona (Brownstone Consultants, LLC) David Chacon (Brownstone Consultants, LLC) Rolando Ayala (Brownstone Consultants, LLC) Sabrina Alvarez (Brownstone Consultants, LLC)	**From**	Emiliano Larios (D Wilson Construction Company) PO Box 3455 McAllen, Texas 78502
Date Initiated	Apr 21, 2026	**Due Date**	Apr 28, 2026
Location		**Project Stage**	
Cost Impact	TBD	**Schedule Impact**	TBD
Spec Section		**Cost Code**	
Drawing Number	C-007, C-010, C-401	**Reference**	
Linked Drawings	C-010, C-007, C-401		
Received From	Emiliano Larios (D Wilson Construction Company)	**Sub Job**	
Copies To	Pilar Anzaldua-Garza (D Wilson Construction Company), Vanessa Garza (D Wilson Construction Company), Emiliano Larios (D Wilson Construction Company), Isaac Moreno (D Wilson Construction Company), Joe Pequeno (D Wilson Construction Company), Arturo Perez (D Wilson Construction Company), Denisse Serna (D Wilson Construction Company), Claudio Velasco (D Wilson Construction Company), Roberto Villela (D Wilson Construction Company)		

Activity

Question

Question from Emiliano Larios D Wilson Construction Company *on Tuesday, Apr 21, 2026 at 04:27 PM CDT*

On Sheet C-007, the quantity for Item 7017-6201 Sand/Oil Separator is shown as one (1). Sheet C-010 references that Item 7017-6201 Sand/Oil Separator is located on Sheet C-401; however, Sheet C-401 does not indicate or label the location of the Sand/Oil Separator. Please clarify the exact location of the unit on the plans.
Additionally, there is no specification or schedule on the plans referencing the Sand/Oil Separator. Please provide the applicable specifications, including product requirements and any relevant details and information.

Attachments
RFI 117 - 7017-6201 Sand-Oil Separator Clarification.pdf

Response

Response from Emiliano Larios D Wilson Construction Company *on Tuesday, May 12, 2026 at 01:17 PM CDT*

Response from Matias Ramos, III, EIT ON 05/12/2026:
The design has concluded that there is no need for a sand-oil separator and will revise the sheets to remove it once the CBP and GSA have both agreed.

Attachments
RFI #117 - 7017-6201 Sand-Oil Separator Clarification - Response.pdf

Request for Information Response

To:	D. Wilson Construction Attn. Shukan Bhakta, APM 1207 E Pecan Blvd, McAllen, TX 78501	**Date:**	5/12/2026		
From:	Matias Ramos, III, EIT	**AVO:**	57325.002	**RFI No.:**	117
Email:	mramos@halff.com	**Project:**	Pharr FY 16 DAP – Agricultural Lab, Dock Expansion I & II		
Subject:	7017-6201 Sand-Oil Separator Clarification				

☐ Letter dated:
☒ Email dated: 04/22/2026
☐ Phone call dated:

This confirms and records a request for information. Unless notified in writing within three days of date noted above, it is agreed that a response generated from the request shall be provided to this office within five days.

REQUEST

1. On Sheet C-007, the quantity for Item 7017-6201 Sand/Oil Separator is shown as one (1). Sheet C-010 references that Item 7017-6201 Sand/Oil Separator is located on Sheet C-401; however, Sheet C-401 does not indicate or label the location of the Sand/Oil Separator. Please clarify the exact location of the unit on the plans.
2. Additionally, there is no specification or schedule on the plans referencing the Sand/Oil Separator. Please provide the applicable specifications, including product requirements and any relevant details and information.

ANSWER

The design has concluded that there is no need for a sand-oil separator and will revise the sheets to remove it once the CBP and GSA have both agreed.

Answered by: Matias Ramos, III, EIT

COPIES: ☐ File ☒ Owner ☒ Owner ☐ Other

Attachments: Original RFI Document Provided by Brownstone.

RFI detail

#117 7017-6201 Sand-Oil Separator Clarification

Status	**Open** In Review
Created on	Apr 22, 2026 by **Sabrina Alvarez** (Brownstone Consultants)
RFI type	Default RFI workflow
Ball in court	**Rolando Ayala**
Due date	-

Question

-

References and Attachments

Files (1)

- 7017-6201 Sand-Oil Separator Clarificati.pdf

Impact

Cost impact	-
Schedule impact	-

Other attributes

Priority	Normal
Discipline	-
Category	-
Location	-
Location details	-

External ID	-
Co-reviewer(s)	-

Activities	By	At
Sabrina Alvarez added a reference to a File **7017-6201 Sand-Oil Separator Clarificati.pdf**	**Sabrina Alvarez**	Apr 22, 2026, 8:15 AM CDT
Sabrina Alvarez (Brownstone Consultants) created this RFI in **Open** In Review status and set Ball in court to **Rolando Ayala**.	**Sabrina Alvarez**	Apr 22, 2026, 8:15 AM CDT

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
P: (956) 686-9573

Project: 24-235 Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

RFI #117: 7017-6201 Sand/Oil Separator Clarification

Status	Open		
To	Alex Corona (Brownstone Consultants, LLC) David Chacon (Brownstone Consultants, LLC) Rolando Ayala (Brownstone Consultants, LLC) Sabrina Alvarez (Brownstone Consultants, LLC)	**From**	Emiliano Larios (D Wilson Construction Company) PO Box 3455 McAllen, Texas 78502
Date Initiated	Apr 21, 2026	**Due Date**	Apr 28, 2026
Location		**Project Stage**	
Cost Impact	TBD	**Schedule Impact**	TBD
Spec Section		**Cost Code**	
Drawing Number	C-007, C-010, C-401	**Reference**	
Linked Drawings			
Received From	Emiliano Larios (D Wilson Construction Company)	**Sub Job**	
Copies To	Pilar Anzaldua-Garza (D Wilson Construction Company), Vanessa Garza (D Wilson Construction Company), Emiliano Larios (D Wilson Construction Company), Isaac Moreno (D Wilson Construction Company), Joe Pequeno (D Wilson Construction Company), Arturo Perez (D Wilson Construction Company), Denisse Serna (D Wilson Construction Company), Claudio Velasco (D Wilson Construction Company), Roberto Villela (D Wilson Construction Company)		

Activity

Question

Question from Emiliano Larios D Wilson Construction Company *on Tuesday, Apr 21, 2026 at 04:27 PM CDT*

On Sheet C-007, the quantity for Item 7017-6201 Sand/Oil Separator is shown as one (1). Sheet C-010 references that Item 7017-6201 Sand/Oil Separator is located on Sheet C-401; however, Sheet C-401 does not indicate or label the location of the Sand/Oil Separator. Please clarify the exact location of the unit on the plans.
Additionally, there is no specification or schedule on the plans referencing the Sand/Oil Separator. Please provide the applicable specifications, including product requirements and any relevant details and information.

Attachments
RFI 117 - 7017-6201 Sand-Oil Separator Clarification.pdf

Awaiting an Official Response

ESTIMATE QUANTITY AGRICULTURAL LAB CSJ: 0921-02-433

ITEM CODE	DESC. CODE	DESCRIPTION	UNIT	TOTAL EST.	TOTAL FINAL
100	6002	PREPARING ROW	AC	7	
104	6001	REMOVING CONC (PAV)	SY	6080	
104	6015	REMOVING CONC (SIDEWALKS)	SY	28	
104	6022	REMOVING CONC (CURB AND GUTTER)	LF	1450	
110	6001	EXCAVATION	CY	6546	
132	6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	4335	
160	6003	FURNISHING AND PLACING TOPSOIL (4")	SY	4975	
164	6027	CELL FBR MLCH SEED (PERM) (URBAN) (CLAY)	SY	4975	
164	6100	LANDSCAPING & IRRIGATION	LS	1	
168	6001	VEGETATIVE WATERING	MG	50	
216	6001	PROOF ROLLING	HR	20	
260	6043	LIME (HYD, COM OR QK)(SLURRY)	TON	761	
260	6084	LIME TRT (SUBGRADE) (12")	SY	21774	
292	6004	ASPHALT STAB BASE (GR 2)(PG 76)	TON	744	
310	6009	PRIME COAT (MC-30)	GAL	4355	
3076	6050	D-GR HMA TY-D SAC-B PG76-22	TON	6066	
360	6001	CONC PVMT (CONT REINF - CRCP) (7")	SY	1050	
360	6015	CONC PVMT (CONT. REINF - CRCP) (12 1/2")	SY	20652	
400	6007	CUT & RESTORE CONC PAVING	SY	520	
402	6001	TRENCH EXCAVATION PROTECTION	LF	1828	
420	6007	CL A CONC (FLUME)	CY	2	
423	6050	SLAB ON GRADE 6" (COMPLETE) W/FORMS, FILL, REINF, FINISH	SF	1260	
423	6051	CONC PADS FOR EMERG GENERATORS - 12' THICK	SF	715	
423	6052	CONC STRIP FOOTING (1'-6" X 2'-6" DEPTH)	CY	35	
423	6053	CONC STRIP FOOTING (4'-0" X 3'-2" DEPTH)	CY	6	
423	6054	CMU WALL (8") W/ REINF, CLN & PT 2-S (SHAFOLDING)	SF	1790	
442	6040	METAL GRATING WALKWAYS, STEPS, & RAILING (EM GEN)	SF	120	
464	6017	RC PIPE (CL IV) (18IN)	LF	164	
464	6018	RC PIPE (CL IV) (24IN)	LF	1495	
464	6019	RC PIPE (CL IV) (30IN)	LF	83	
465	6002	MANH (COMPL) (PRM) (48IN)	EA	1	
465	6004	MANH (COMPL) (PRM) (72IN)	EA	1	
465	6127	INLET (COMPL) (PSL) (FG) (4FTX4FT-3FTX3FT)	EA	5	
465	6137	INLET (COMPL) (PSL) (FG) (5FTX6FT-3FTX3FT)	EA	2	
465	6700	CONNECT TO EXISTING INLET/STORM LINE	EA	3	
467	6388	SET (TY II) (24IN) (RCP) (3:1)	EA	3	
496	6002	REMOV STR (INLET)	EA	2	
496	6018	REMOV STR (CONC)	EA	6	
496	6201	REMOV STR (TEL/COMM DUCTBANK UNDERGROUND)	LF	1088	
496	6202	REMOV STR (TEL/COMM MANHOLE)	EA	1	
496	6150	REMOV STR (WATER MAIN) (8")	LF	556	
496	6151	REMOV STR (STORM SEWER)	LF	535	
496	6152	REMOV STR (GAS MAIN)	LF	673	1 7
496	6153	REMOV STR (ELECTRICAL DUCTBANK UNDERGROUND)	LF	1883	
496	6154	REMOV STR (ELECTRICAL BOX)	EA	4	
496	6155	REMOV STR (SITE POLE LITE)	EA	4	
500	6001	MOBILIZATION	LS	1	
502	6001	BARRICADES, SIGNS, AND TRAFFIC HANDLING	MO	22	
506	6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	700	
506	6024	CONSTUCTION EXITS (REMOVE)	SY	700	
506	6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1350	
506	6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1350	
506	6047	TEMP SDMT CONT FENCE (INLET PROTECTION) (INSTALL)	LF	196	
506	6047	TEMP SDMT CONT FENCE (INLET PROTECTION) (REMOVE)	LF	196	
506	6060	EROSION CONTROL MAINTENANCE	MO	18	
529	6005	CONC CURB (MONO) (TY II)	LF	1542	
531	6001	CONC SIDEWALKS (4")	SY	235	
531	6004	CURB RAMPS (TY 1)	EA	1	
531	6005	CURB RAMPS (TY 2)	EA	2	
550	6008	CHAIN LINK FENCE (INSTALL) (8') GALV SL, 6 GA., 2" POSTS @ 10' OC, INCL BASE	LF	1905	
550	6040	CHAIN LINK FENCE (INSTALL) (8') GALV SL, 6 GA., POSTS INCL BASE	EA	1	

ESTIMATE QUANTITY AGRICULTURAL LAB CSJ: 0921-02-433

ITEM CODE	DESC. CODE	DESCRIPTION	UNIT	TOTAL EST.	TOTAL FINAL
618	6033	2-4" PVC CONDUITS, F/O" 12 STRAND, 100 PR CAT 6 CUC CA. CONC ENCASSEMENT. & EXCAV, BF, CMPT	LF	1723	
618	6034	4" PVC CONDUIT, 100 PR CAT 6 CU CA. CONC ENCASEMENT. & EXCAV, BF, CMPT	LF	1600	
636	6002	ALUMINUM SIGNS (TY G)	SF	24	
644	6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2	
666	6309	RE PM W/RET REQ TY I (W) 6" (SLD) (100 MIL)	LF	11052	
666	6356	REFL PAV MRK TY II (R&W) 6" (FIRE LANE)	LF	3500	
668	6055	RE PM TY B (ACC PRK) (BL&WH) (W/BORDER) LG	EA	2	
690	6027	REMOVAL OF SIGNAL RELATED SIGNS	EA	10	
690	6127	REMOVE LUMINAIRE POLE	EA	4	
4122	6050	HDPE (18 IN) STORM SEWER LINE	LF	150	
4122	6051	HDPE STORM DRAIN BASIN	EA	3	
5008	6001	WHEEL STOPS	EA	2	
5084	6001	FIXED BOLLARD	EA	30	
6500	6001	STNLS STL WALL MTD PULL BOX (3'X3'X3')	EA	1	
6500	6002	H-SERIES POLYMER PULL BOX (4'X4'X4')	EA	5	
6500	6003	CONNECT TO EXISTING COMM DUCTBANK & PROTECT EXISTING	LS	1	
6500	6004	UTILITY TRANSFORMER, 480/277V, 3-PH, 4-W SECY	EA	1	
6500	6005	ELECT METER	EA	1	
6500	6006	GROUND ROD (COMPLETE)	EA	1	
6500	6007	800A4 - 2/4" COND - 4-600 KMIL, #1/0 89600) 2(1/0) 2(4")	LF	125	
6500	6008	1600A4 - 4/4" COND - 4-600 KML, #4/0 16(600) 4(4/0) 4(4")	LF	75	
6500	6009	RELOCATE EXISTING ELECTRICAL SERVICE EQUIPMENT. DISCONNECT CONDUIT FROM ENCLOSED CIRCUIT BREAKER. SAW CINC SLAB TO REMOVE UNGRD CONDUIT. VERIFY EQUIP BEING FED. WORK TO BE DONE DURING NON-OPERATING HOURS. DEMOLITION OF STORAGE BLDG APPROX 400SF. DEMO CMU WALL. SITE IMPROVEMENTS: CMU WALL, CONC SLAB & FOUNDATION, UTILITTY YARD GATE 12'W X 7' HI-GALV SQ POSTS, 2" CORR METAL PNLS	LS	1	
7017	6004	SANITARY SEWER (6") (PVC) (C900)	LF	23	
7017	6005	SANITARY SEWER (8 IN) (PVC) (C900)	LF	210	
7017	6015	SANITARY SEWER (4 IN) (PVC) (C900)	LF	6	
7017	6051	MANHOLE (SAN SEWER) (4' DIA)	EA	3	
7017	6200	YARD CLEAN OUTS	EA	8	
7017	6201	SAND/OIL SEPARATOR	EA	1	
7112	6002	PRESSURE WTR PIPE C-900 DR-18 PVC 8"	LF	127	
7112	6003	PRESSURE WTR PIPE C-900 DR-18 PVC 6"	LF	486	
7112	6004	CONNECT TO EXISTING WATER LINE 8"	EA	2	
7112	6011	GATE VALVE W/ BOX ASSEMBLY 8"	EA	2	
7112	6015	FIRE HYDRANT, VALVE & ASSEMBLY	EA	2	
7049	6373	SERVICE LINE (SHORT SIDE)(2-1/2" TO 4")	LF	9	
7112	6041	COMPOUND WATER METER 2-1/2" DIA	EA	1	
7112	6042	BOX, MISC VALVES, FITTINGS	EA	1	
7112	6043	DOUBLE CHECK VALVE BACKFLOW ASSEMBLY	LS	1	
7112	6044	VAULT, MISC VALVES, FITTINGS	LS	1	
7112	6045	FREE STANDING FDC	EA	1	
7112	6046	4" FDC LINE	LF	240	
7266	6036	ENCASEMENT PIPE (16")	LF	24	
7400	6001	ACID WASTE PIPE 3" DIA.	LF	25	
7400	6002	ACID WASTE PIPE 4" DIA.	LF	75	
7400	6003	ACID WASTE SAMPLE WELL	EA	2	
7401	6001	GAS PIPE 1/2" DIA.	LF	225	
7401	6002	GAS PIPE 3/4" DIA.	LF	150	
7401	6003	GAS PIPE 1" DIA.	LF	200	
7401	6005	GAS CONNECTIONS	LS	1	
7401	6006	GAS PIPE 2" DIA.	LF	1423	7
9700	6003	AGRICULTURAL LAB BUILDING (COMPLETE)	LS	1	

halff

April 18, 2025
57325.002

ASI 007

Pharr FY16 DAP - Agricultural Lab, Dock Expansion I & II
City of Pharr
GSA & CBP
TxDOT

This Modification shall be considered part of the Bidding/Construction Documents and is issued to change, amplify, add to, delete from, or otherwise explain the plans and specifications. Where provisions of this Modification differ from those of the original Bidding/Construction Documents, this Modification shall take precedence over the original plans and specifications and shall govern.

CONSTRUCTION DOCUMENT SHEETS

C-007
- Increase in quantity for Item 496 6152 – REMOV STR (GAS MAIN) from 620 Linear Feet to 673 Linear Feet.
- Decrease in quantity for Item 7401 6006 – GAS PIPE 2" DIA. From 1444 Linear Feet to 1423 Linear Feet.

C-012
- Increase in quantity for Item 496 6152 – REMOV STR (GAS MAIN) from 620 Linear Feet to 673 Linear Feet.
- The existing gas line servicing the generator located east of the Ag Building has been shifted southward to more accurately depict the location of this gas line.

C-402
- Clarification to connect existing gas lines servicing the existing building and generator to the proposed 2" gas line. Refer to RFI #17 response for additional information.
- Decrease in quantity for Item 7401 6006 – GAS PIPE 2" DIA. From 309 Linear Feet to 288 Linear Feet.

STATE OF TEXAS
SOLVEIG A. KLASSEN
147784
LICENSED
PROFESSIONAL ENGINEER
4/18/2025

REVISION LOG		
NO.	DATE	DESCRIPTION
1	11/13/2024	ASI 001
7	4/18/2025	ASI 007 RFI #17

ISSUED FOR CONSTRUCTION

STATE OF TEXAS
ROBERT L. SAENZ
82072
REGISTERED
PROFESSIONAL ENGINEER
5-15-2024

Pharr
CITY OF PHARR, TEXAS

GSA
GENERAL SERVICES ADMINISTRATION
819 TAYLOR STREET
FORT WORTH, TEXAS 76102-6195
817-978-3334
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TEXAS DEPARTMENT OF TRANSPORTATION

halff
5000 WEST MILITARY, SUITE 100, McALLEN, TEXAS 78503
TEL (956) 664-0286 FAX (956) 664-0282 TBPE FIRM #F-312

PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

ESTIMATE QUANTITY

SCALE: AS NOTED				SHEET 1 OF 2
DN:	CONT	SECT	JOB	HIGHWAY
CK DN:	921	02	424,425,433	PHARR INT. BRIDGE
DW: IE	DIST	COUNTY		SHEET NO.
CK DW: RD	PHR	HIDALGO		C-007
TR:				
CK TR:				

AGRICULTURAL LAB CSJ: 0921-02-433 WATER SUMMARY

LOCATION (SHEET)	7112-6002	7112-6003	7112-6004	7112-6011	7112-6015	7049-6373	7112-6041	7112-6046	7112-6045
	PRESSURE WATER PIPE C-900 DR-18 PVC (8")	PRESSURE WATER PIPE C-900 DR-18 PVC (6")	CONNECT TO EXISTING WATER LINE (8")	GATE VALVE W/ BOX ASSEMBLY (8")	FIRE HYDRANT, VALVE & ASSEMBLY	SERVICE LINE (SHORT SIDE)(2-1/2" TO 4")	COMPOUND WATER METER 2-1/2" DIA	4" FDC LINE	FREE STANDING FDC
	LF	LF	EA	EA	EA	LF	EA	LF	EA
C-401	0	304	1	0	1	0	0	0	0
C-402	127	182	1	2	1	9	1	240	1
TOTAL	127	486	2	2	2	9	1	240	1

AGRICULTURAL LAB CSJ: 0921-02-433 WASTEWATER SUMMARY

LOCATION (SHEET)	7017-6004	7017-6005	7017-6051	7017-6015	7017-6200	7017-6201	7112-6042	7112-6043	7112-6044	7266-6036
	SANITARY SEWER (6IN) (PVC)(C900)	SANITARY SEWER (8IN) (PVC)(C900)	MANHOLE (SANITARY SEWER) (4' DIA)	SANITARY SEWER (4 IN) (PVC) (SDR 26)	YARD CLEAN OUTS	SAND/OIL SEPARATOR	BOX, MISC VALVES, FITTINGS	DOUBLE CHECK VALVE BACKFLOW ASSEMBLY	VAULT, MISC VALVES, FITTINGS	ENCASEMENT PIPE (16")
	LF	LF	EA	LF	EA	EA	EA	LS	LS	LF
C-401	0	210	2	6	8	1	0	0	0	0
C-402	23	0	1	0	0	0	1	1	1	24
TOTAL	23	210	3	6	8	1	1	1	1	24

AGRICULTURAL LAB CSJ: 0921-02-433 STORM WATER POLLUTION PREVENTION PLAN (SW3P) SUMMARY

LOCATION (SHEET)	160-6003	164-6027	168-6001	216-6001	402-6001	506-6020	506-6024	506-6038	506-6039	506-6047	506-6048	506-6060
	FURNISHING AND PLACING TOPSOIL (4")	CELL FBR MLCH SEED (PERM) (URBAN) (CLAY)	VEGETATIVE WATERING	PROOF ROLLING	TRENCH EXCAVATION PROTECTION	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	TEMP SEDMT CONT FENCE (INLET PROTECTION) (INSTALL)	TEMP SEDMT CONT FENCE (INLET PROTECTION) (REMOVE)	EROSION CONTROL MAINTENANCE
	SY	SY	MG	HR	LF	SF	SF	LF	LF	LF	LF	MO
C-601	4975	4975	50	20	1828	700	700	1350	1350	196	196	18
TOTAL	4975	4975	50	20	1828	700	700	1350	1350	196	196	18

AGRICULTURAL LAB CSJ: 0921-02-433 MISCELLANEOUS ITEMS SUMMARY

LOCATION (SHEET)	164-6100	423-6050	423-6051	423-6052	423-6053	423-6054	442-6040	5008-6001	5084-6001	6500-6001	6500-6002	6500-6003	6500-6004	6500-6005	6500-6006	6500-6007	6500-6008	6500-6009
	LANDSCAPING & IRRIGATION	SLAB ON GRADE 6" (COMPLETE) W/FORMS, FILL, REINF, FINISH	CONC PADS FOR EMERG GENERATORS - 12' THICK	CONC STRIP FOOTING (1'-6" X 2'-6" DEPTH)	CONC STRIP FOOTING (4'-0" X 3'-2" DEPTH)	CMU WALL (8") W/ REINF, CLN & PT 2-S (SHAFOLDING)	METAL GRATING WALKWAYS, STEPS, & RAILING (EM GEN)	WHEEL STOPS	FIXED BOLLARD	STNLS STL WALL MTD PULL BOX (3'X3'X3')	H-SERIES POLYMER PULL BOX (4'X4'X4')	CONNECT TO EXISTING COMM DUCTBANK & PROTECT EXISTING	UTILITY TRANSFORMER, 480/277V, 3-PH, 4-W SECY	ELECT METER	GROUND ROD (COMPLETE)	800A4 - 2/4" COND - 4-600 KMIL, #1/0 89600) 2(1/0) 2(4")	1600A4 - 4/4" COND - 4-600 KMIL, #4/0 16(600) 4(4/0) 4(4")	RELOCATE EXISTING ELECTRICAL SERVICE EQUIPMENT. DISCONNECT CONDUIT FROM ENCLOSED
	LS	SF	SF	CY	CY	SF	SF	EA	EA	EA	EA	LS	EA	EA	EA	LF	LF	LS
C-011	1	1260	715	35	6	1790	120	2	30	1	5	1	1	1	1	125	75	1
TOTAL	1	1260	715	35	6	1790	120	2	30	1	5	1	1	1	1	125	75	1

AGRICULTURAL LAB CSJ: 0921-02-433 MISCELLANEOUS ITEMS SUMMARY

LOCATION (SHEET)	550-6008	550-6040	618-6033	618-6034
	CHAIN LINK FENCE (INSTALL) (8') GALV SL, 6 GA., 2" POST @ 10' OC, INCL BASE	CHAIN LINK FENCE (INSTALL) (8') GALV SL, 6 GA., POST INCL BASE	2-4" PVC CONDUITS, F/O 12 STRAND, 100 PR CAT 6 CUC CA. CONC ENCASSEMENT. & EXCAV, BF, CMPT	4" PVC CONDUIT, 100 PR CAT 6 CU CA. CONC ENCASEMENT. & EXCAV, BF, CMPT
	LF	EA	LF	LF
C-011	1905	1	1723	1600
TOTAL	1905	1	1723	1600

ISSUED FOR CONSTRUCTION

STATE OF TEXAS
ROBERT L. SAENZ
82072
REGISTERED PROFESSIONAL ENGINEER
5-15-2024

Pharr
CITY OF PHARR, TEXAS

GSA
GENERAL SERVICES ADMINISTRATION
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TEXAS DEPARTMENT OF TRANSPORTATION

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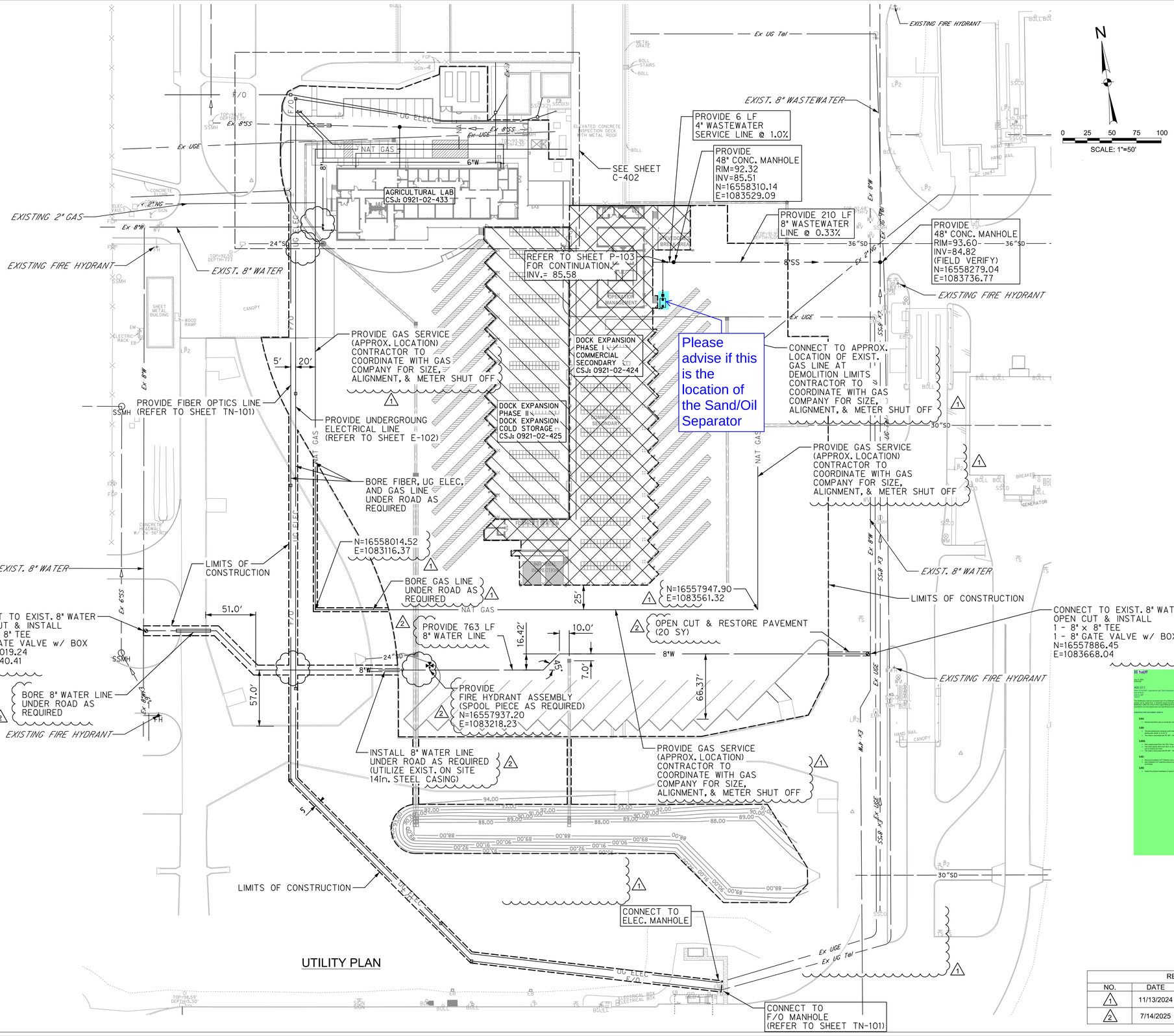
TEL (956) 664-0286 FAX (956) 664-0282 TBPE FIRM #F-312

PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

SUMMARIES

SCALE: AS NOTED	SHEET 2 OF 2			
DN:	CONT	SECT	JOB	HIGHWAY
CK DN:				
DW: IE	921	02	424,425,433	PHARR INT. BRIDGE
CK DW: RD	DIST	COUNTY		SHEET NO.
TR:				
CK TR:	PHR	HIDALGO		C-010


EXISTING 2" GAS
EXISTING FIRE HYDRANT
EXIST. 8" WATER
PROVIDE GAS SERVICE (APPROX. LOCATION) CONTRACTOR TO COORDINATE WITH GAS COMPANY FOR SIZE, ALIGNMENT, & METER SHUT OFF
PROVIDE FIBER OPTICS LINE SSMH (REFER TO SHEET TN-101)
PROVIDE UNDERGROUNG ELECTRICAL LINE (REFER TO SHEET E-102)
BORE FIBER, UG ELEC, AND GAS LINE UNDER ROAD AS REQUIRED
N=16558014.52
E=1083116.37
BORE GAS LINE UNDER ROAD AS REQUIRED
N=16557947.90
E=1083561.32
LIMITS OF CONSTRUCTION
CONNECT TO EXIST. 8" WATER
OPEN CUT & INSTALL
1 - 8" x 8" TEE
1 - 8" GATE VALVE w/ BOX
N=16558019.24
E=1082940.41
BORE 8" WATER LINE UNDER ROAD AS REQUIRED
PROVIDE 763 LF 8" WATER LINE
PROVIDE FIRE HYDRANT ASSEMBLY (SPOOL PIECE AS REQUIRED)
N=16557937.20
E=1083218.23
INSTALL 8" WATER LINE UNDER ROAD AS REQUIRED (UTILIZE EXIST. ON SITE 14in. STEEL CASING)
OPEN CUT & RESTORE PAVEMENT (20 SY)
CONNECT TO ELEC. MANHOLE
CONNECT TO F/O MANHOLE (REFER TO SHEET TN-101)
SEE SHEET C-402
PROVIDE 6 LF 4" WASTEWATER SERVICE LINE @ 1.0%
PROVIDE 48" CONC. MANHOLE RIM=92.32 INV=85.51 N=16558310.14 E=1083529.09
PROVIDE 210 LF 8" WASTEWATER LINE @ 0.33%
REFER TO SHEET P-103 FOR CONTINUATION INV.= 85.58
PROVIDE 48" CONC. MANHOLE RIM=93.60 INV=84.82 (FIELD VERIFY) N=16558279.04 E=1083736.77
CONNECT TO APPROX. LOCATION OF EXIST. GAS LINE AT DEMOLITION LIMITS CONTRACTOR TO COORDINATE WITH GAS COMPANY FOR SIZE, ALIGNMENT, & METER SHUT OFF
Please advise if this is the location of the Sand/Oil Separator
AGRICULTURAL LAB CSJ: 0921-02-433
DOCK EXPANSION PHASE I COMMERCIAL SECONDARY CSJ: 0921-02-424
DOCK EXPANSION PHASE II DOCK EXPANSION COLD STORAGE CSJ: 0921-02-425
EXISTING FIRE HYDRANT
EXIST. 8" WASTEWATER
EXIST. 8" WATER
LIMITS OF CONSTRUCTION
CONNECT TO EXIST. 8" WATER
OPEN CUT & INSTALL
1 - 8" x 8" TEE
1 - 8" GATE VALVE w/ BOX
N=16557886.45
E=1083668.04
PROVIDE GAS SERVICE (APPROX. LOCATION) CONTRACTOR TO COORDINATE WITH GAS COMPANY FOR SIZE, ALIGNMENT, & METER SHUT OFF
Ex UG Tel
Ex UGE
Ex UG ELEC
Ex 8"W
Ex 6"SS
8"SS
24"SD
30"SD
36"SD
NAT GAS
UG ELEC
F/O
SSMH
SSCO
SSCO(2)
SSCO(3)
SSCO(4)
SSCO(5)
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SSCO(40)
SSCO(41)

PCO #046

NoD. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #046: CPR 01 - Ag Bldg Office 146 Plastic Laminated Counter Tops

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	046 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Jose Tovar **(BND Architectural Woodwork LLC)**	**CREATED BY:**	Roberto Villela **(D Wilson Construction Company)**
STATUS:	Pending - In Review	**CREATED DATE:**	6/16/2026
REFERENCE:		**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	TBD	**TOTAL AMOUNT:**	$9,544.50

POTENTIAL CHANGE ORDER TITLE: CPR 01 - Ag Bldg Office 146 Plastic Laminated Counter Tops

CHANGE REASON: Design Development

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
CE #023 - CPR 01 - Ag Lab Offices Combined
Description:
Four of the proposed initially enclosed office spaces inside the Agriculture Lab building are to be modified and converted into a single large open-area office space with four individual workstations.
Change Reason: CBP and the GSA have requested a modification to the proposed office space layout of the Agriculture Lab building.

Office 146 - Plastic Laminated Counter Tops

ATTACHMENTS:

City of Pharr Land Port of Entry Import Dock & AG Lab Improvements CPR 1 Additional Millwork CO.pdf , _CPRequest 01 - Ag Lab Office Changes - Comb.pdf

#	Budget Code	Description	Amount
1	112.06-400.S	CPR 01 -Changes to Ag Lab Rooms - Room 146 plastic laminated counter tops	$9,000.00
		Subtotal:	**$9,000.00**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$450.00
		Bond (1.00% Applies to All Line Items):	$94.50
		Grand Total:	**$9,544.50**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

SIGNATURE 06/16/2026 DATE

City Of Pharr
PO Box 1729
Pharr, Texas 78577

SIGNATURE Maria L. Rangel 06/17/2026 DATE

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE DATE

BND

ARCHITECTURAL WOODWORK L.L.C

06/13/2026

Additional Millwork

Import Dock & AG Lab Improvements
City of Pharr Land Port of Entry
Pharr, TX

Attn.: Estimating Department, the additional cost to furnish and install new interior architectural plastic laminated counter tops for the above referenced Project as per CPR 01, is as follows.

Agricultural Lab

1. Office - 146

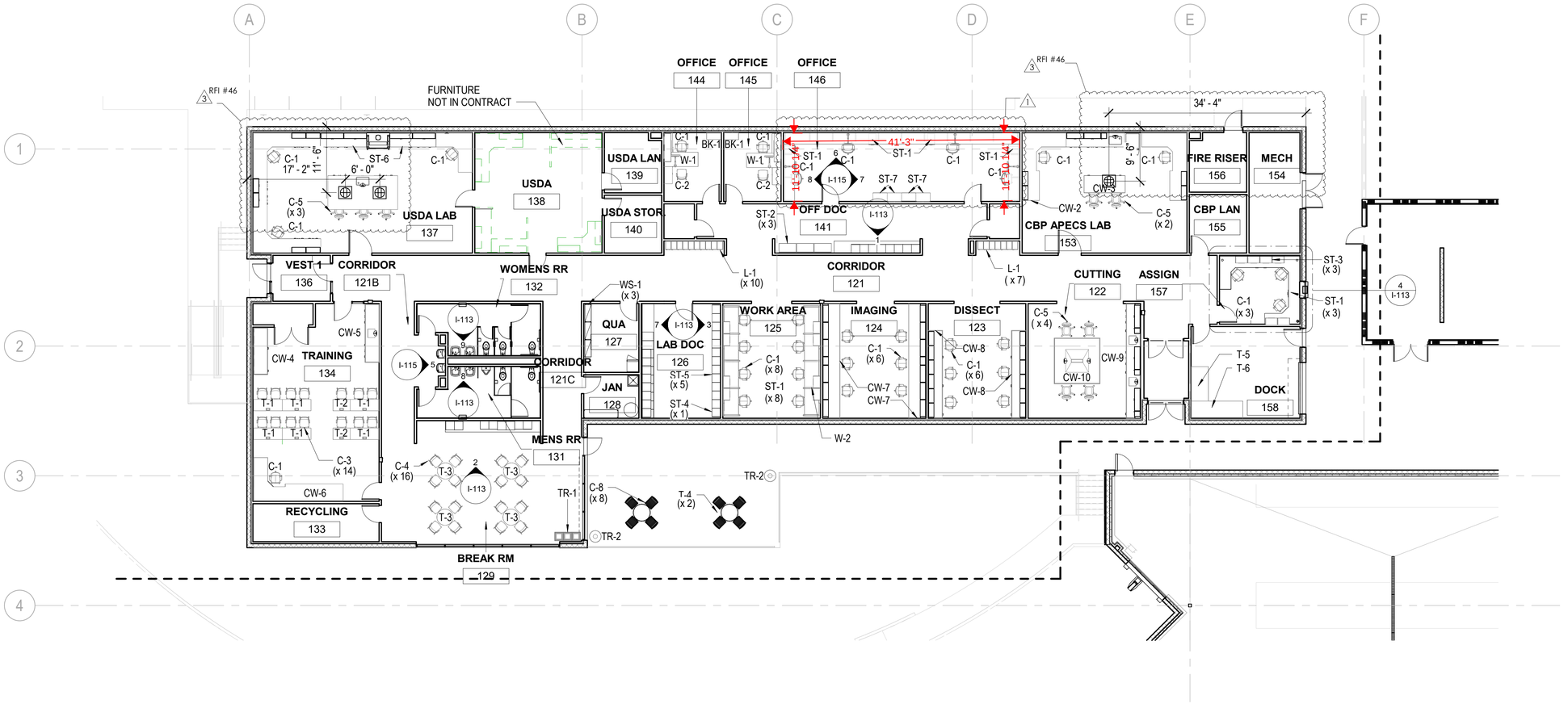
Total of $ 9,000.00

AWI Members in good standing.

Not Included: TAX, PP BOND, GYPSUM BOARD, SOLID SURFACE, STAINLESS STEEL, EQUIPMENT, GLASS, FRP, WALL PANELS, BULLET PROOF TRANSACTION WINDOW, METAL, OUTLETS, ELECTRICAL FIXTURES, ELECTRICAL BOXES, PLUMBING FIXTURES, FLOORING, CEILINGS, ROUGH OR FINISH CARPENTRY, BASE TRIM, INTERIOR DOORS OR TRIM, FURNITURE, LOCKERS, CABINET LOCKS, SINKS OR ANY OTHER ITEM NOT SPECIFICALLY MENTIONED ABOVE.

Brandon R Tovar - BND Architectural Woodwork LLC | 35482 Kretz Rd. Los Fresnos, TX 78566

Ph: (808)365-9376 | E-mail: brandon@bndarchitectural.com | Website: bndarch.com



4 FURNITURE FLOOR PLAN - AREA - A

3/32" = 1'-0"

FURNITURE NOTES

1. REFER TO SPECIFICATION SECTIONS 12 51 00 OFFICE FURNITURE AND 12 51 01 OFFICE FURNITURE SELECTIONS FOR ALL DETAILS AND QUANTITIES
2. REFER TO SPECIFICATIONS SECTIONS 12 35 53 LABORATORY CASEWORK SELECTIONS AND 12 35 54 LABORATORY CASEWORK SELECTIONS FOR ALL DETAILS AND QUANTITIES
3. DOUBLE DUPLEX RECEPTACLE IN FLOOR BOX (REFER TO MEP DRAWINGS).

RFI #46

FURNITURE LEGEND

BK-1	BOOK CASE
C-1	TASK CHAIR
C-2	GUEST CHAIR / WITH ARMS
C-3	SEMINAR CHAIR / WITH ARMS
C-4	STACKING CHAIR / ARMLESS
C-5	LAB STOOL
C-8	EXTERIOR CHAIR
CW-1	LAB CASEWORK UNIT
CW-2	LAB CASEWORK UNIT
CW-3	LAB CASEWORK UNIT
CW-4	LAB CASEWORK UNIT
CW-5	LAB CASEWORK UNIT
CW-6	LAB CASEWORK UNIT
CW-7	LAB CASEWORK UNIT
CW-8	LAB CASEWORK UNIT
CW-9	LAB CASEWORK UNIT
CW-10	LAB CASEWORK UNIT
CW-11	LAB CASEWORK UNIT
L-1	3 TIER LOCKER
ST-1	MOBILE PEDESTAL / CASTERS
ST-2	3 DRAWER LATERAL FILE 36"
ST-3	UPPER STORAGE
ST-4	3 DRAWER LATERAL FILE 42"
ST-5	3 DRAWER LATERAL FILE 30"
ST-6	CHEMICAL CABINET
ST-7	ALLSTEEL ESSENTIALS 5 DRAWER LATERAL FILE 30"
T-1	TRAINING TABLE / FLIP TOP
T-2	TRAINING TABLE / FLIP TOP
T-3	BREAKROOM TABLE
T-4	EXTERIOR TABLE
T-5	STAINLESS STEEL TABLE WITH SINK
T-6	STAINLESS STEEL TABLE
TR-1	RECYCLING RECEPTACLE
TR-2	EXTERIOR RECEPTACLE
W-1	WORKSTATION UNIT
W-2	WORKSTATION UNIT
WS-1	WIRE SHELVING

STATE OF TEXAS
KARLA CRISTINA DODSON
11326
REGISTERED INTERIOR DESIGNER
4.17.19

Pharr
CITY OF PHARR, TEXAS

GSA
GENERAL SERVICES ADMINISTRATION
819 TAYLOR STREET
FORT WORTH, TEXAS 76102-6195
817-978-3334
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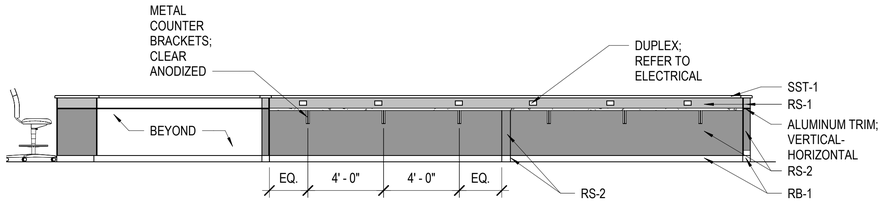
TEXAS DEPARTMENT OF TRANSPORTATION

HALFF
5000 WEST MILITARY, SUITE 100, McALLEN, TEXAS 78503
TEL (956) 664-0286 FAX (956) 664-0282 TBPE FIRM #F-312

PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

FURNITURE FLOOR PLAN - AREA A

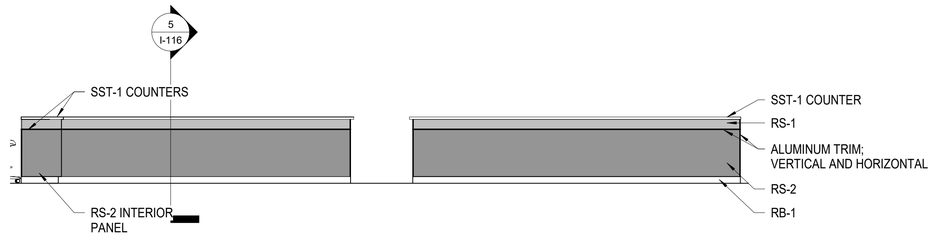
SCALE: AS NOTED				SHEET OF
DN:	CONT	SECT	JOB	HIGHWAY
CK DN:	921	02	424,425,433	PHARR INT. BRIDGE
DW:	DIST	COUNTY		SHEET NO.
CK DW:	PHR	HIDALGO		I-111
TR:				
CK TR:				



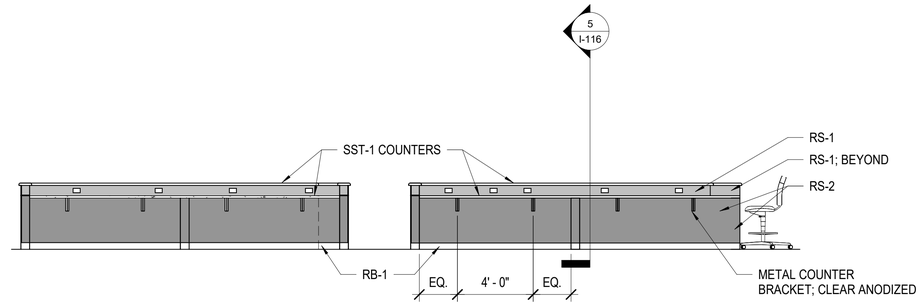
1 BROKERS 161 - DESK INTERIOR ELEVATION
1/4" = 1'-0"

NOTES

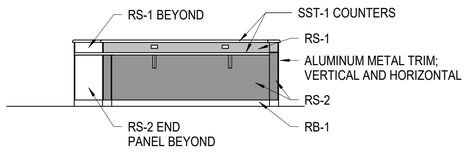
1. INSTALL PLASTIC LAMINATE AT ALL EXPOSED EDGES AND OPEN BACK SURFACES.
2. PROVIDE BLOCKING BEHIND WALL FOR COUNTER AND WALL STORAGE SUPPORT.
3. REFER TO AWI CABINETRY SERIES NUMBERING SYSTEM.
4. COUNTER BRACKETS SPACED AT 4'-0" MAX O.C..
5. REFER TO SHEET I-601 FOR WALL TILE PATTERN



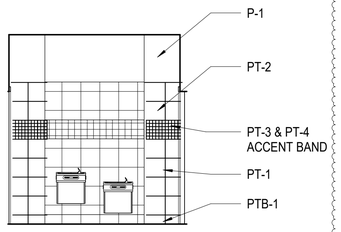
2 BROKERS 161 - DESK FRONT ELEVATION
1/4" = 1'-0"



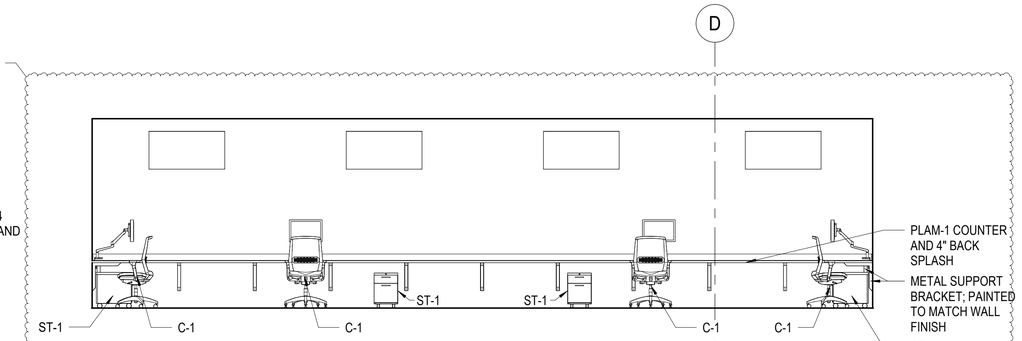
3 BROKERS 161 - DESK INTERIOR ELEVATION
1/4" = 1'-0"



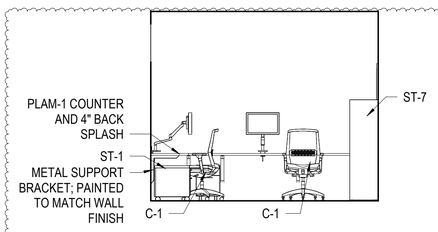
4 BROKERS 161 - DESK INTERIOR ELEVATION
1/4" = 1'-0"



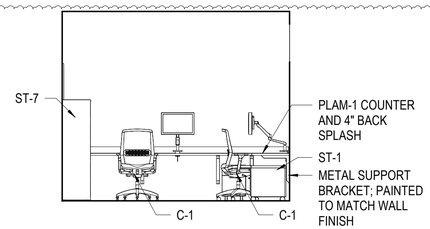
5 DRINKING FOUNTAIN
1/4" = 1'-0"



6 OFFICE 146 - DESK NORTH INTERIOR ELEVATION
1/4" = 1'-0"



7 OFFICE 146 - DESK EAST INTERIOR ELEVATION
1/4" = 1'-0"



8 OFFICE 146 - DEST WEST INTERIOR ELEVATION
1/4" = 1'-0"

STATE OF TEXAS
KARLA CRISTINA DODSON
11326
REGISTERED INTERIOR DESIGNER
4·17·19

Pharr
CITY OF PHARR, TEXAS

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PHARR FY16 DAP - IMPORT DOCK AND AG LAB IMPROVEMENTS

INTERIOR ELEVATIONS

SCALE: AS NOTED					
DN:	SHEET	OF			
CK DN:	CONT	SECT	JOB	HIGHWAY	
DW:	921	02	424,425,433	PHARR INT. BRIDGE	
CK DW:	DIST	COUNTY		SHEET NO.	
TR:	PHR	HIDALGO		I-115	
CK TR:					

PCO #049

D. Wilson Construction
PO Box 3455
McAllen, Texas 78502
Phone: (956) 686-9573

Project: 24-235 - Pharr FY16 DAP-Agricultural Lab, Dock Expansion I & II
9901 S Cage Blvd
Pharr, Texas 78577

Prime Contract Potential Change Order #049: CE #44 - Leidos Damages to Electrical Ductbank

TO:	City Of Pharr PO Box 1729 Pharr, Texas 78577	**FROM:**	D Wilson Construction Company PO Box 3455 McAllen, Texas 78502
PCO NUMBER/REVISION:	049 / 0	**CONTRACT:**	24-235 - City of Pharr Dock Expansion
REQUEST RECEIVED FROM:	Rolando Ayala **(Brownstone Consultants, LLC)**	**CREATED BY:**	Roberto Villela **(D Wilson Construction Company)**
STATUS:	Pending - In Review	**CREATED DATE:**	8/4/2026
REFERENCE:		**PRIME CONTRACT CHANGE ORDER:**	None
EXECUTED:	No	**SIGNED CHANGE ORDER RECEIVED DATE:**	
SCHEDULE IMPACT:	41 days	**TOTAL AMOUNT:**	$0.00

POTENTIAL CHANGE ORDER TITLE: CE #44 - Leidos Damages to Electrical Ductbank

CHANGE REASON: Existing Condition

POTENTIAL CHANGE ORDER DESCRIPTION: *(The Contract Is Changed As Follows)*
This PCO is submitted for review and consideration of a 41-working-day contract time extension associated with PCO 033 – Damaged Electrical Conduits, included as part of Change Order #03. The unforeseen conduit repairs disrupted the planned sequence of underground electrical work, resulting in a measurable impact to the Project Schedule.
DWCC has included the Time Impact Analysis and updated project schedules as supporting documentation for the requested contract time extension.

ATTACHMENTS:

Repair Damages Caused by Leidos 8-29-25.pdf

#	Budget Code	Description	Amount
1	112.16-100.S	Additional Days Request for Delays	$0.00
		Subtotal:	**$0.00**
		Overhead and Profit (5.00% Includes Cost Type (20)):	$0.00
		Bond (1.00% Applies to All Line Items):	$0.00
		Grand Total:	**$0.00**

Brownstone Consultants, LLC
P.O. Box 3898
McAllen, Texas 78505

SIGNATURE **DATE**

City Of Pharr
PO Box 1729
Pharr, Texas 78577

SIGNATURE **DATE**

D Wilson Construction Company
PO Box 3455
McAllen, Texas 78502

SIGNATURE **DATE**

TIME IMPACT ANALYSIS

DAMAGED ELECTRICAL CONDUITS

Project Title: FY16 DAP DOCK EXPANSION PHASE I, PHASE II, & AGRICULTURAL RE-BID, Pharr, TX

Project Number: 23-2471510

TIME IMPACT ANALYSIS NARRATIVE

BASELINE (Pre-Delay): This Time Impact Analysis uses the August 2025 update (Data Date: 25-Aug-25) as the analysis base.

NTP Project: 04-Nov-24
Substantial Completion: 22-Oct-26

COMPARISON (Post-Delay): This Time Impact Analysis uses the July 2026 update (Data Date: 25-Jul-26) as the comparison.

NTP Project: 04-Nov-24
Substantial Completion: 01-Apr-27

METHOD: Retained Logic with Delay Window Illustration

DELAY: Project experienced delays from August 2025 to October 2025 to repair damaged electrical conduits. These unforeseen repairs interrupted the planned sequence of underground electrical work, requiring D&F to suspend ongoing installation activities while damaged conduits were investigated, exposed, repaired, tested, and restored before work could resume.

The delay directly impacted the work sequence and labor resources for footing and retaining wall (Area A), building pad (Areas A and B), and other underground utility activities.

As illustrated in the model, the delay activity starts on 29-Aug-25 with the investigation and uncovering of the damaged conduits. The repair work was completed on 28-Oct-25.

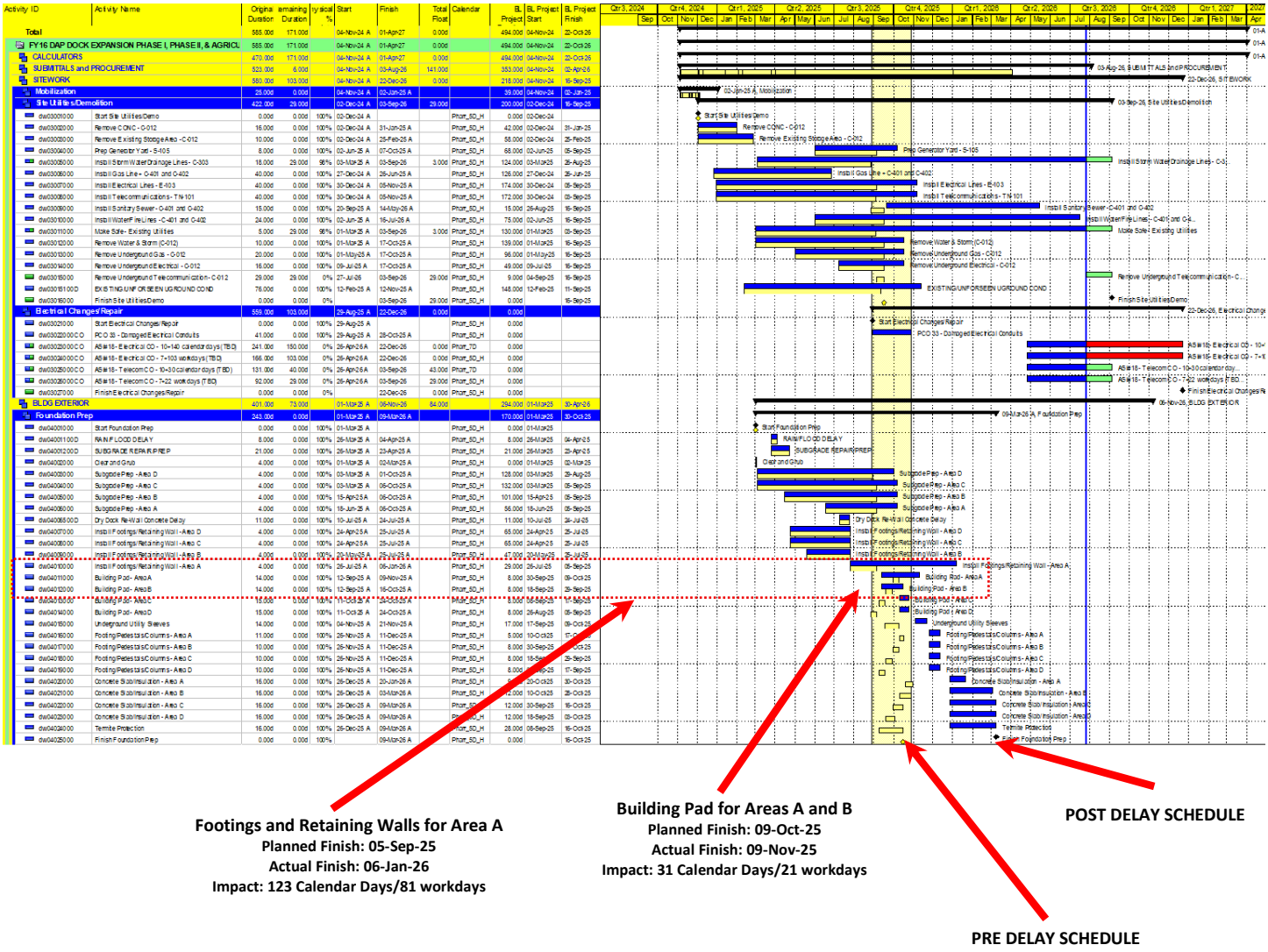
MODEL: The delay is modeled in the schedule by adding the following activity using the project's workday calendar (Pharr_5day_H):

ID	Name	Duration	Start	Finish
dw03022000 CO	PCO 33 - Damaged Electrical Conduits	41.00d	29-Aug-25 A	28-Oct-25 A

Calander: Pharr_5D_H
Predecessor: dw03021000 Start Electrical Changes/Repair
Successor: dw03027000 Finish Electrical Changes/Repair

Since the repair activities impacted more than one area of the project and forced the reassignment of the available labor and equipment resources, the delay model is not directly tied to a construction activity. The impacted windows of activities are highlighted in the fragnet illustration.

FRAGNET



IMPACT: The delay shows 41 workdays of impact to the sitework and foundation activities.

PRE-Delay (August 2025 Update)

Footings and Retaining Walls for Area A	**Planned Finish: 05-Sep-25**
Building Pad for Areas A and B	**Planned Finish: 09-Oct-25**

POST-Delay (July 2026 Update)

Footings and Retaining Walls for Area A	**Actual Finish: 06-Jan-26** **Impact: 123 Calendar Days/81 workdays**
Building Pad for Areas A and B	**Actual Finish: 09-Nov-25** **Impact: 31 Calendar Days/21 workdays**

APPENDICES

Appendix A – Pre-Delay Schedule Activity Report - August 2025 Update - Data Date: 25-Aug-25

Appendix B – Post-Delay Schedule Activity Report – July 2026 Update - Data Date: 25-Jul-262

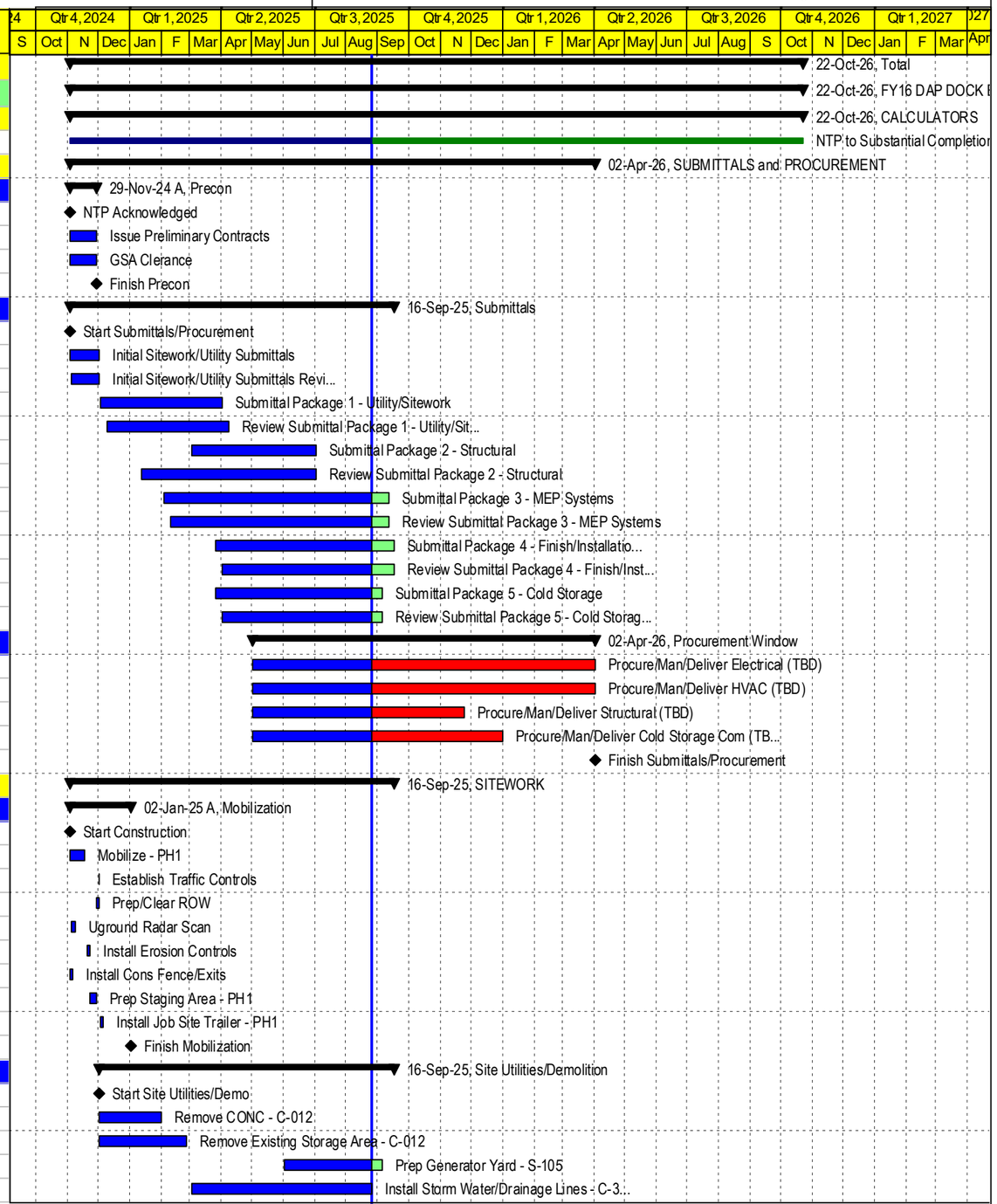
Appendix C – July 2026 to August 2025 Comparison

Appendix A – Pre-Delay Schedule Activity Report

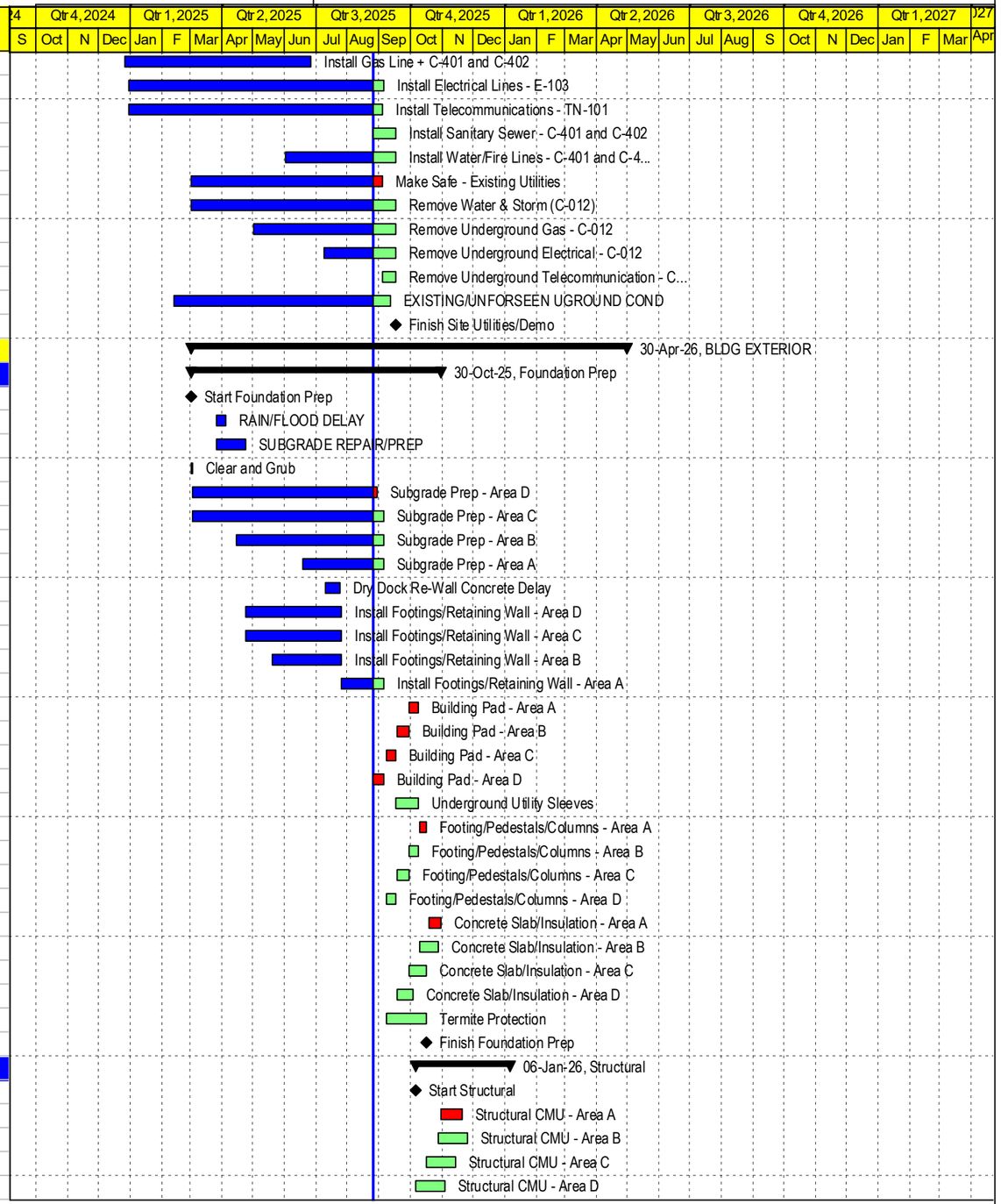
August 2025 Update

Data Date: 25-Aug-25

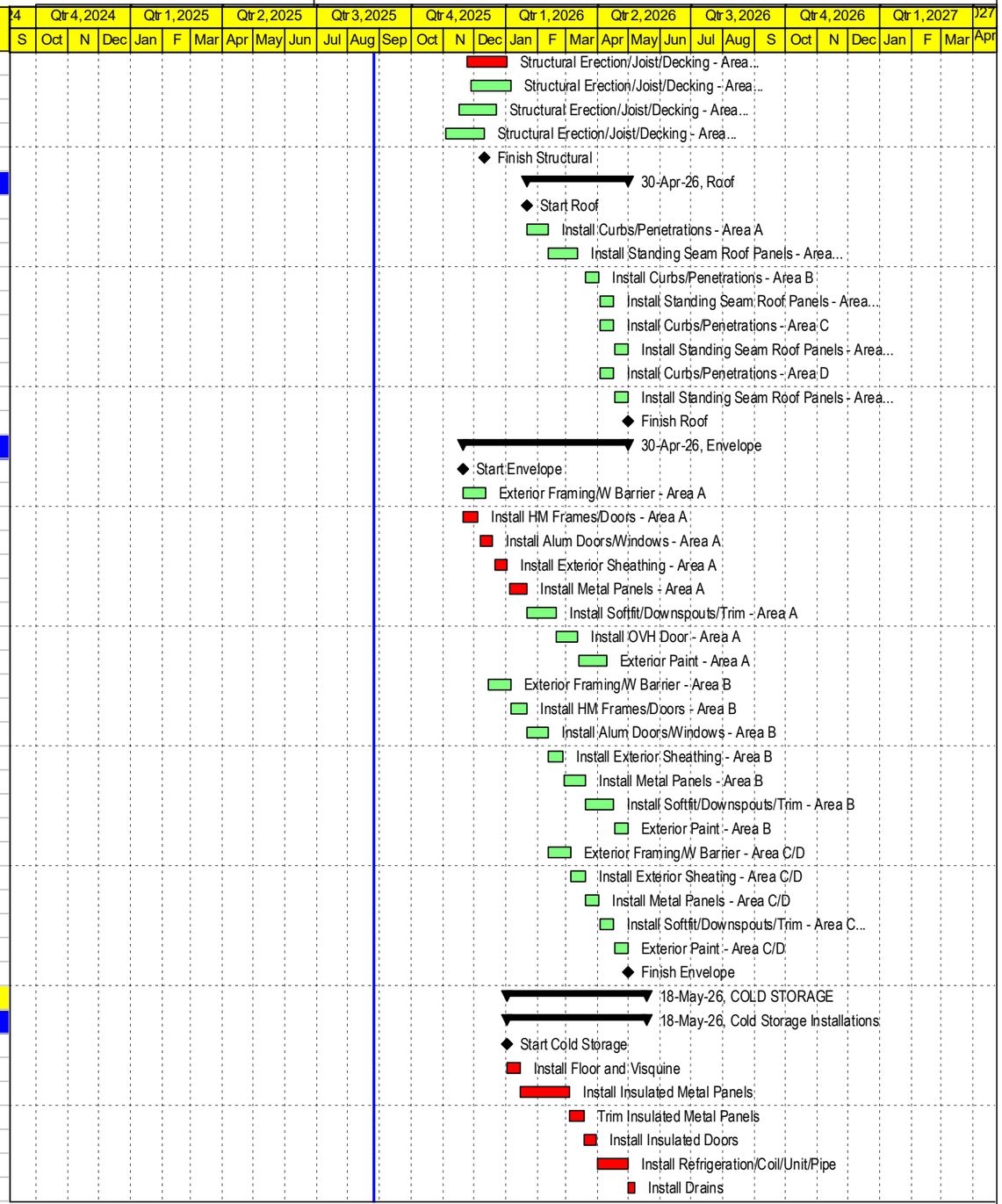
Activity ID	Activity Name	Original Duration	maining Duration	Physical % omplete	Start	Finish	Total Float	Calendar
Total		476.00d	291.00d		04-Nov-24 A	22-Oct-26	0.00d	
FY16 DAP DOCK EXPANSION PHASE I, PHASE II, & AGRIC		476.00d	291.00d		04-Nov-24 A	22-Oct-26	0.00d	
CALCULATORS		455.00d	291.00d		04-Nov-24 A	22-Oct-26	0.00d	
dw00000010 C	NTP to Substantial Completion (workdays)	455.00d	291.00d	41%	04-Nov-24 A	22-Oct-26	0.00d	Pharr_5D_H
SUBMITTALS and PROCUREMENT		335.00d	150.00d		04-Nov-24 A	02-Apr-26	0.00d	
Precon		18.00d	0.00d		04-Nov-24 A	29-Nov-24 A		
dw00001000 P	NTP Acknowledged	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H
dw00002000 P	Issue Preliminary Contracts	18.00d	0.00d	100%	04-Nov-24 A	29-Nov-24 A		Pharr_5D_H
dw00003000 P	GSA Clerance	18.00d	0.00d	100%	04-Nov-24 A	29-Nov-24 A		Pharr_5D_H
dw00004000 P	Finish Precon	0.00d	0.00d	100%		29-Nov-24 A		Pharr_5D_H
Submittals		166.00d	15.00d		04-Nov-24 A	16-Sep-25	85.00d	
dw01001000 NN	Start Submittals/Procurement	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H
dw01002000 NN	Initial Sitework/Utility Submittals	9.00d	0.00d	100%	04-Nov-24 A	02-Dec-24 A		Pharr_5D_H
dw01003000 NN	Initial Sitework/Utility Submittals Review	9.00d	0.00d	100%	05-Nov-24 A	02-Dec-24 A		Pharr_5D_H
dw01004000 NN	Submittal Package 1 - Utility/Sitework	65.00d	0.00d	100%	03-Dec-24 A	01-Apr-25 A		Pharr_5D_H
dw01005000 NN	Review Submittal Package 1 - Utility/Sitework	65.00d	0.00d	100%	10-Dec-24 A	08-Apr-25 A		Pharr_5D_H
dw01006000 NN	Submittal Package 2 - Structural	65.00d	0.00d	100%	03-Mar-25 A	02-Jul-25 A		Pharr_5D_H
dw01007000 NN	Review Submittal Package 2 - Structural	65.00d	0.00d	100%	13-Jan-25 A	02-Jul-25 A		Pharr_5D_H
dw01008000 NN	Submittal Package 3 - MEP Systems	65.00d	12.00d	85%	03-Feb-25 A	11-Sep-25	88.00d	Pharr_5D_H
dw01009000 NN	Review Submittal Package 3 - MEP Systems	65.00d	12.00d	85%	10-Feb-25 A	11-Sep-25	88.00d	Pharr_5D_H
dw01010000 NN	Submittal Package 4 - Finish/Installations	43.00d	15.00d	85%	26-Mar-25 A	16-Sep-25	85.00d	Pharr_5D_H
dw01011000 NN	Review Submittal Package 4 - Finish/Installations	10.00d	15.00d	85%	01-Apr-25 A	16-Sep-25	85.00d	Pharr_5D_H
dw01012000 NN	Submittal Package 5 - Cold Storage	43.00d	8.00d	95%	26-Mar-25 A	05-Sep-25	79.00d	Pharr_5D_H
dw01013000 NN	Review Submittal Package 5 - Cold Storage	10.00d	8.00d	95%	01-Apr-25 A	05-Sep-25	79.00d	Pharr_5D_H
Procurement Window		214.00d	150.00d		01-May-25 A	02-Apr-26	0.00d	
dw01014000 LL	Procure/Man/Deliver Electrical (TBD)	232.00d	220.00d	90%	01-May-25 A	02-Apr-26	0.00d	Pharr_7D
dw01015000 LL	Procure/Man/Deliver HVAC (TBD)	262.00d	220.00d	75%	01-May-25 A	02-Apr-26	0.00d	Pharr_7D
dw01016000 LL	Procure/Man/Deliver Structural (TBD)	114.00d	91.00d	90%	01-May-25 A	24-Nov-25	0.00d	Pharr_7D
dw01017000 LL	Procure/Man/Deliver Cold Storage Com (TBD)	184.00d	129.00d	80%	01-May-25 A	01-Jan-26	0.00d	Pharr_7D
dw01018000 LL	Finish Submittals/Procurement	0.00d	0.00d	0%		02-Apr-26	0.00d	Pharr_7D
SITEWORK		200.00d	15.00d		04-Nov-24 A	16-Sep-25	9.00d	
Mobilization		25.00d	0.00d		04-Nov-24 A	02-Jan-25 A		
dw02001000	Start Construction	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H
dw02002000	Mobilize - PH1	10.00d	0.00d	100%	04-Nov-24 A	18-Nov-24 A		Pharr_5D_H
dw02003000	Establish Traffic Controls	1.00d	0.00d	100%	02-Dec-24 A	02-Dec-24 A		Pharr_5D_H
dw02004000	Prep/Clear ROW	10.00d	0.00d	100%	29-Nov-24 A	02-Dec-24 A		Pharr_5D_H
dw02005000	Uground Radar Scan	10.00d	0.00d	100%	05-Nov-24 A	08-Nov-24 A		Pharr_5D_H
dw02006000	Install Erosion Controls	5.00d	0.00d	100%	20-Nov-24 A	22-Nov-24 A		Pharr_5D_H
dw02007000	Install Cons Fence/Exits	7.00d	0.00d	100%	04-Nov-24 A	06-Nov-24 A		Pharr_5D_H
dw02008000	Prep Staging Area - PH1	5.00d	0.00d	100%	23-Nov-24 A	29-Nov-24 A		Pharr_5D_H
dw02009000	Install Job Site Trailer - PH1	4.00d	0.00d	100%	03-Dec-24 A	05-Dec-24 A		Pharr_5D_H
dw02010000	Finish Mobilization	0.00d	0.00d	100%		02-Jan-25 A		Pharr_5D_H
Site Utilities/Demolition		179.00d	15.00d		02-Dec-24 A	16-Sep-25	9.00d	
dw03001000	Start Site Utilities/Demo	0.00d	0.00d	100%	02-Dec-24 A			Pharr_5D_H
dw03002000	Remove CONC - C-012	16.00d	0.00d	100%	02-Dec-24 A	31-Jan-25 A		Pharr_5D_H
dw03003000	Remove Existing Storage Area - C-012	10.00d	0.00d	100%	02-Dec-24 A	25-Feb-25 A		Pharr_5D_H
dw03004000	Prep Generator Yard - S-105	8.00d	8.00d	50%	02-Jun-25 A	05-Sep-25	9.00d	Pharr_5D_H
dw03005000	Install Storm Water/Drainage Lines - C-303	18.00d	0.00d	90%	03-Mar-25 A	26-Aug-25	0.00d	Pharr_5D_H



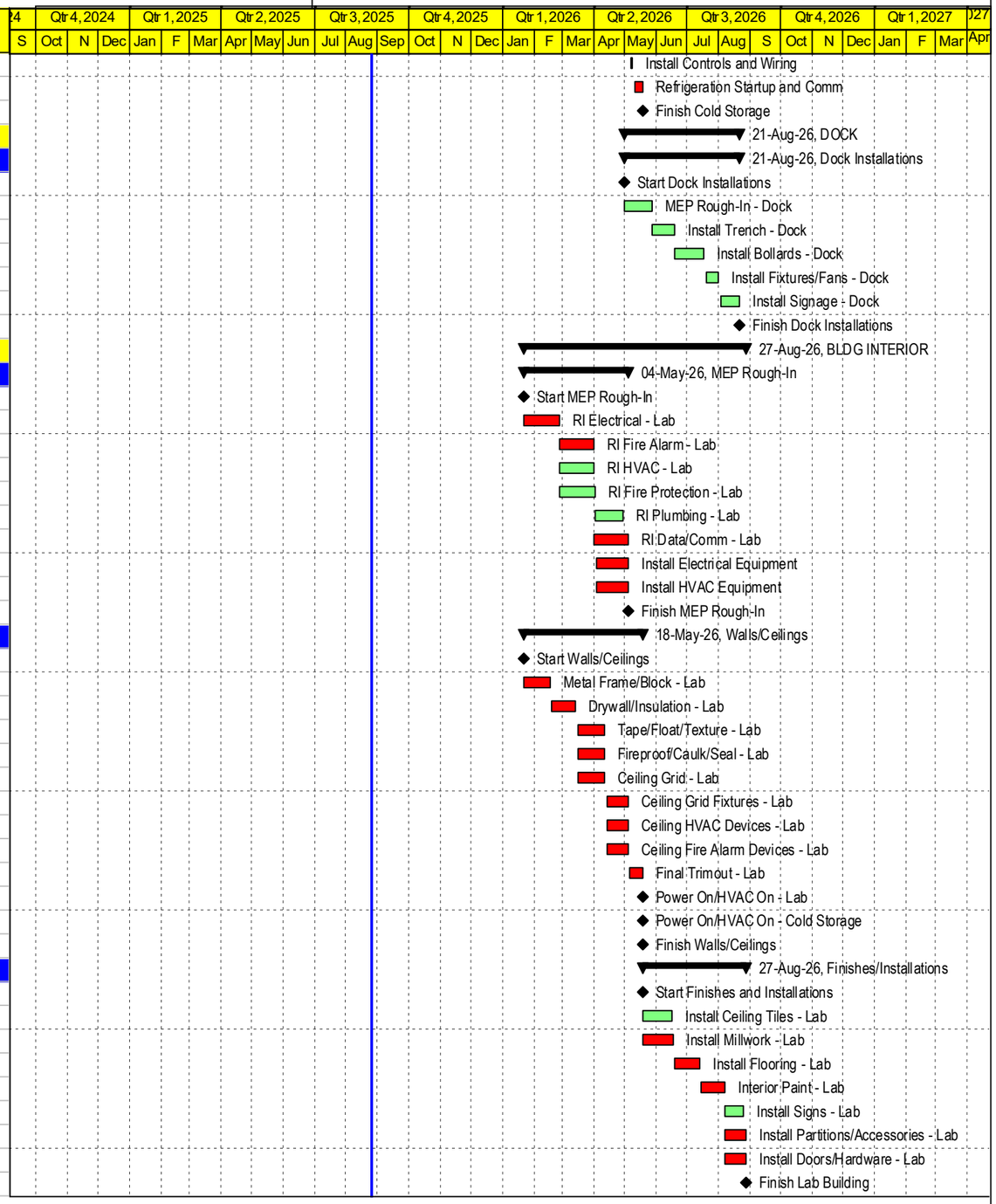
Activity ID	Activity Name	Original Duration	maining Duration	Physical % omplete	Start	Finish	Total Float	Calendar
dw03006000	Install Gas Line + C-401 and C-402	40.00d	0.00d	100%	27-Dec-24 A	26-Jun-25 A		Pharr_5D_H
dw03007000	Install Electrical Lines - E-103	40.00d	8.00d	90%	30-Dec-24 A	05-Sep-25	9.00d	Pharr_5D_H
dw03008000	Install Telecommunications - TN-101	40.00d	6.00d	90%	30-Dec-24 A	03-Sep-25	9.00d	Pharr_5D_H
dw03009000	Install Sanitary Sewer - C-401 and C-402	15.00d	15.00d	0%	26-Aug-25	16-Sep-25	9.00d	Pharr_5D_H
dw03010000	Install Water/Fire Lines - C-401 and C-402	24.00d	15.00d	25%	02-Jun-25 A	16-Sep-25	9.00d	Pharr_5D_H
dw03011000	Make Safe - Existing Utilities	5.00d	6.00d	90%	01-Mar-25 A	03-Sep-25	0.00d	Pharr_5D_H
dw03012000	Remove Water & Storm (C-012)	10.00d	15.00d	95%	01-Mar-25 A	16-Sep-25	9.00d	Pharr_5D_H
dw03013000	Remove Underground Gas - C-012	20.00d	15.00d	60%	01-May-25 A	16-Sep-25	9.00d	Pharr_5D_H
dw03014000	Remove Underground Electrical - C-012	16.00d	15.00d	40%	09-Jul-25 A	16-Sep-25	9.00d	Pharr_5D_H
dw03015000	Remove Underground Telecommunication - C-012	9.00d	9.00d	0%	04-Sep-25	16-Sep-25	9.00d	Pharr_5D_H
dw03015100 D	EXISTING/UNFORSEEN UGROUND COND	76.00d	12.00d	70%	12-Feb-25 A	11-Sep-25	12.00d	Pharr_5D_H
dw03016000	Finish Site Utilities/Demo	0.00d	0.00d	0%		16-Sep-25	9.00d	Pharr_5D_H
BLDG EXTERIOR		269.00d	170.00d		01-Mar-25 A	30-Apr-26	2.00d	
Foundation Prep		145.00d	46.00d		01-Mar-25 A	30-Oct-25	21.00d	
dw04001000	Start Foundation Prep	0.00d	0.00d	100%	01-Mar-25 A			Pharr_5D_H
dw04001100 D	RAIN/FLOOD DELAY	8.00d	0.00d	100%	26-Mar-25 A	04-Apr-25 A		Pharr_5D_H
dw04001200 D	SUBGRADE REPAIR/PREP	21.00d	0.00d	100%	26-Mar-25 A	23-Apr-25 A		Pharr_5D_H
dw04002000	Clear and Grub	4.00d	0.00d	100%	01-Mar-25 A	02-Mar-25 A		Pharr_5D_H
dw04003000	Subgrade Prep - Area D	4.00d	4.00d	95%	03-Mar-25 A	29-Aug-25	0.00d	Pharr_5D_H
dw04004000	Subgrade Prep - Area C	4.00d	8.00d	95%	03-Mar-25 A	05-Sep-25	16.00d	Pharr_5D_H
dw04005000	Subgrade Prep - Area B	4.00d	8.00d	95%	15-Apr-25 A	05-Sep-25	16.00d	Pharr_5D_H
dw04006000	Subgrade Prep - Area A	4.00d	8.00d	90%	18-Jun-25 A	05-Sep-25	16.00d	Pharr_5D_H
dw04006500 D	Dry Dock Re-Wall Concrete Delay	11.00d	0.00d	100%	10-Jul-25 A	24-Jul-25 A		Pharr_5D_H
dw04007000	Install Footings/Retaining Wall - Area D	4.00d	0.00d	100%	24-Apr-25 A	25-Jul-25 A		Pharr_5D_H
dw04008000	Install Footings/Retaining Wall - Area C	4.00d	0.00d	100%	24-Apr-25 A	25-Jul-25 A		Pharr_5D_H
dw04009000	Install Footings/Retaining Wall - Area B	4.00d	0.00d	100%	20-May-25 A	25-Jul-25 A		Pharr_5D_H
dw04010000	Install Footings/Retaining Wall - Area A	4.00d	8.00d	60%	26-Jul-25 A	05-Sep-25	16.00d	Pharr_5D_H
dw04011000	Building Pad - Area A	8.00d	8.00d	0%	30-Sep-25	09-Oct-25	0.00d	Pharr_5D_H
dw04012000	Building Pad - Area B	8.00d	8.00d	0%	18-Sep-25	29-Sep-25	0.00d	Pharr_5D_H
dw04013000	Building Pad - Area C	8.00d	8.00d	0%	08-Sep-25	17-Sep-25	0.00d	Pharr_5D_H
dw04014000	Building Pad - Area D	8.00d	8.00d	0%	26-Aug-25	05-Sep-25	0.00d	Pharr_5D_H
dw04015000	Underground Utility Sleeves	17.00d	17.00d	0%	17-Sep-25	09-Oct-25	29.00d	Pharr_5D_H
dw04016000	Footing/Pedestals/Columns - Area A	5.00d	5.00d	0%	10-Oct-25	17-Oct-25	0.00d	Pharr_5D_H
dw04017000	Footing/Pedestals/Columns - Area B	8.00d	8.00d	0%	30-Sep-25	09-Oct-25	23.00d	Pharr_5D_H
dw04018000	Footing/Pedestals/Columns - Area C	8.00d	8.00d	0%	18-Sep-25	29-Sep-25	31.00d	Pharr_5D_H
dw04019000	Footing/Pedestals/Columns - Area D	8.00d	8.00d	0%	08-Sep-25	17-Sep-25	13.00d	Pharr_5D_H
dw04020000	Concrete Slab/Insulation - Area A	9.00d	9.00d	0%	20-Oct-25	30-Oct-25	0.00d	Pharr_5D_H
dw04021000	Concrete Slab/Insulation - Area B	12.00d	12.00d	0%	10-Oct-25	28-Oct-25	23.00d	Pharr_5D_H
dw04022000	Concrete Slab/Insulation - Area C	12.00d	12.00d	0%	30-Sep-25	16-Oct-25	31.00d	Pharr_5D_H
dw04023000	Concrete Slab/Insulation - Area D	12.00d	12.00d	0%	18-Sep-25	03-Oct-25	13.00d	Pharr_5D_H
dw04024000	Termite Protection	28.00d	28.00d	0%	08-Sep-25	16-Oct-25	25.00d	Pharr_5D_H
dw04025000	Finish Foundation Prep	0.00d	0.00d	0%		16-Oct-25	25.00d	Pharr_5D_H
Structural		62.00d	62.00d		06-Oct-25	06-Jan-26	37.00d	
dw04026000	Start Structural	0.00d	0.00d	0%	06-Oct-25		18.00d	Pharr_5D_H
dw04027000	Structural CMU - Area A	14.00d	14.00d	0%	31-Oct-25	20-Nov-25	0.00d	Pharr_5D_H
dw04028000	Structural CMU - Area B	20.00d	20.00d	0%	29-Oct-25	26-Nov-25	23.00d	Pharr_5D_H
dw04029000	Structural CMU - Area C	20.00d	20.00d	0%	17-Oct-25	14-Nov-25	31.00d	Pharr_5D_H
dw04030000	Structural CMU - Area D	20.00d	20.00d	0%	06-Oct-25	03-Nov-25	13.00d	Pharr_5D_H



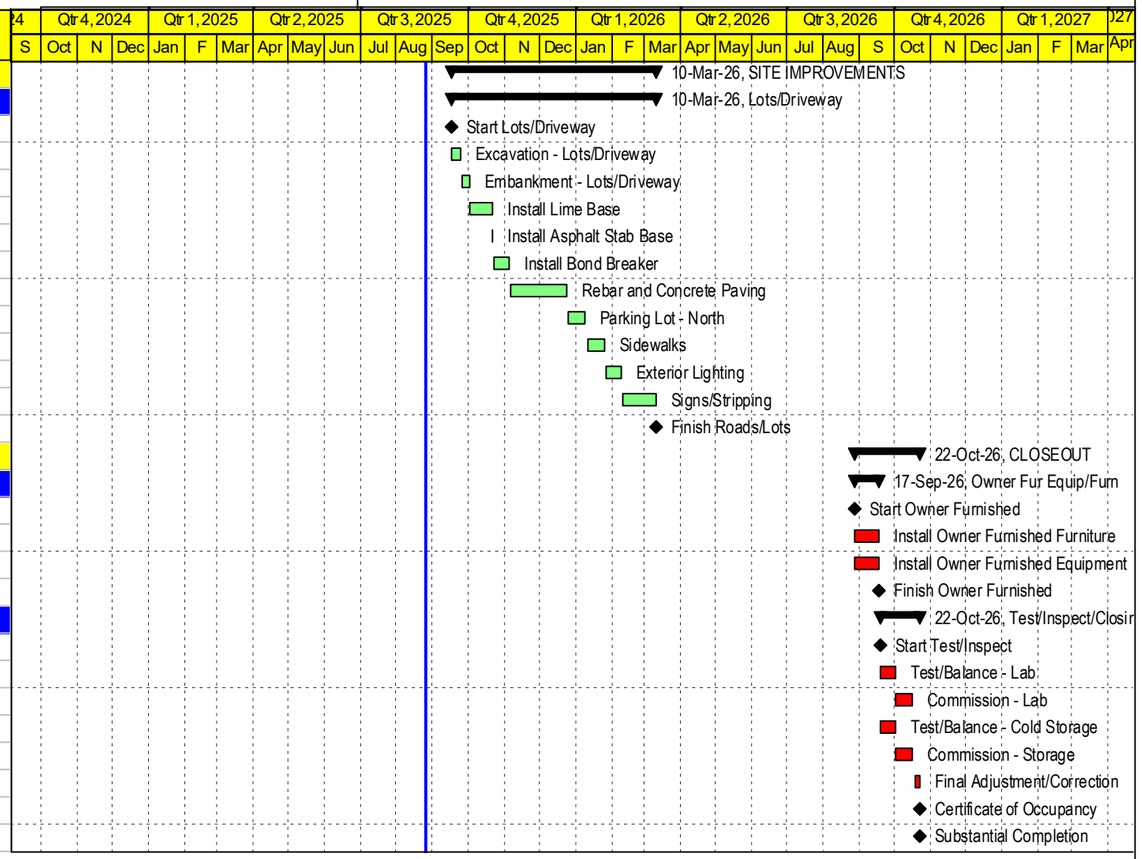
Activity ID	Activity Name	Original Duration	maining Duration	Physical % omplete	Start	Finish	Total Float	Calendar
dw04031000	Structural Erection/Joist/Decking - Area A	26.00d	26.00d	0%	25-Nov-25	02-Jan-26	0.00d	Pharr_5D_H
dw04032000	Structural Erection/Joist/Decking - Area B	26.00d	26.00d	0%	28-Nov-25	06-Jan-26	37.00d	Pharr_5D_H
dw04033000	Structural Erection/Joist/Decking - Area C	26.00d	26.00d	0%	17-Nov-25	23-Dec-25	35.00d	Pharr_5D_H
dw04034000	Structural Erection/Joist/Decking - Area D	26.00d	26.00d	0%	04-Nov-25	11-Dec-25	13.00d	Pharr_5D_H
dw04035000	Finish Structural	0.00d	0.00d	0%		11-Dec-25	13.00d	Pharr_5D_H
Roof		70.00d	70.00d		22-Jan-26	30-Apr-26	2.00d	
dw04036000	Start Roof	0.00d	0.00d	0%	22-Jan-26		17.00d	Pharr_5D_H
dw04037000	Install Curbs/Penetrations - Area A	15.00d	15.00d	0%	22-Jan-26	11-Feb-26	17.00d	Pharr_5D_H
dw04038000	Install Standing Seam Roof Panels - Area A	20.00d	20.00d	0%	12-Feb-26	12-Mar-26	17.00d	Pharr_5D_H
dw04039000	Install Curbs/Penetrations - Area B	10.00d	10.00d	0%	20-Mar-26	02-Apr-26	2.00d	Pharr_5D_H
dw04040000	Install Standing Seam Roof Panels - Area B	10.00d	10.00d	0%	03-Apr-26	16-Apr-26	2.00d	Pharr_5D_H
dw04041000	Install Curbs/Penetrations - Area C	10.00d	10.00d	0%	03-Apr-26	16-Apr-26	2.00d	Pharr_5D_H
dw04042000	Install Standing Seam Roof Panels - Area C	10.00d	10.00d	0%	17-Apr-26	30-Apr-26	2.00d	Pharr_5D_H
dw04043000	Install Curbs/Penetrations - Area D	10.00d	10.00d	0%	03-Apr-26	16-Apr-26	2.00d	Pharr_5D_H
dw04044000	Install Standing Seam Roof Panels - Area D	10.00d	10.00d	0%	17-Apr-26	30-Apr-26	2.00d	Pharr_5D_H
dw04045000	Finish Roof	0.00d	0.00d	0%		30-Apr-26	2.00d	Pharr_5D_H
Envelope		110.00d	110.00d		21-Nov-25	30-Apr-26	2.00d	
dw04046000	Start Envelope	0.00d	0.00d	0%	21-Nov-25		0.00d	Pharr_5D_H
dw04047000	Exterior Framing/W Barrier - Area A	15.00d	15.00d	0%	21-Nov-25	12-Dec-25	2.00d	Pharr_5D_H
dw04048000	Install HM Frames/Doors - Area A	10.00d	10.00d	0%	21-Nov-25	05-Dec-25	0.00d	Pharr_5D_H
dw04049000	Install Alum Doors/Windows - Area A	10.00d	10.00d	0%	08-Dec-25	19-Dec-25	0.00d	Pharr_5D_H
dw04050000	Install Exterior Sheathing - Area A	8.00d	8.00d	0%	22-Dec-25	02-Jan-26	0.00d	Pharr_5D_H
dw04051000	Install Metal Panels - Area A	12.00d	12.00d	0%	05-Jan-26	21-Jan-26	0.00d	Pharr_5D_H
dw04052000	Install Softfit/Downspouts/Trim - Area A	20.00d	20.00d	0%	22-Jan-26	19-Feb-26	7.00d	Pharr_5D_H
dw04053000	Install OVH Door - Area A	15.00d	15.00d	0%	20-Feb-26	12-Mar-26	7.00d	Pharr_5D_H
dw04054000	Exterior Paint - Area A	20.00d	20.00d	0%	13-Mar-26	09-Apr-26	7.00d	Pharr_5D_H
dw04055000	Exterior Framing/W Barrier - Area B	15.00d	15.00d	0%	15-Dec-25	06-Jan-26	2.00d	Pharr_5D_H
dw04056000	Install HM Frames/Doors - Area B	10.00d	10.00d	0%	07-Jan-26	21-Jan-26	2.00d	Pharr_5D_H
dw04057000	Install Alum Doors/Windows - Area B	15.00d	15.00d	0%	22-Jan-26	11-Feb-26	2.00d	Pharr_5D_H
dw04058000	Install Exterior Sheathing - Area B	10.00d	10.00d	0%	12-Feb-26	26-Feb-26	2.00d	Pharr_5D_H
dw04059000	Install Metal Panels - Area B	15.00d	15.00d	0%	27-Feb-26	19-Mar-26	2.00d	Pharr_5D_H
dw04060000	Install Softfit/Downspouts/Trim - Area B	20.00d	20.00d	0%	20-Mar-26	16-Apr-26	2.00d	Pharr_5D_H
dw04061000	Exterior Paint - Area B	10.00d	10.00d	0%	17-Apr-26	30-Apr-26	2.00d	Pharr_5D_H
dw04062000	Exterior Framing/W Barrier - Area C/D	15.00d	15.00d	0%	12-Feb-26	05-Mar-26	2.00d	Pharr_5D_H
dw04063000	Install Exterior Sheating - Area C/D	10.00d	10.00d	0%	06-Mar-26	19-Mar-26	2.00d	Pharr_5D_H
dw04064000	Install Metal Panels - Area C/D	10.00d	10.00d	0%	20-Mar-26	02-Apr-26	2.00d	Pharr_5D_H
dw04065000	Install Softfit/Downspouts/Trim - Area C/D	10.00d	10.00d	0%	03-Apr-26	16-Apr-26	2.00d	Pharr_5D_H
dw04066000	Exterior Paint - Area C/D	10.00d	10.00d	0%	17-Apr-26	30-Apr-26	2.00d	Pharr_5D_H
dw04067000	Finish Envelope	0.00d	0.00d	0%		30-Apr-26	2.00d	Pharr_5D_H
COLD STORAGE		95.00d	95.00d		02-Jan-26	18-May-26	0.00d	
Cold Storage Installations		95.00d	95.00d		02-Jan-26	18-May-26	0.00d	
dw05001000	Start Cold Storage	0.00d	0.00d	0%	02-Jan-26		0.00d	Pharr_5D_H
dw05002000	Install Floor and Visquine	10.00d	10.00d	0%	02-Jan-26	15-Jan-26	0.00d	Pharr_5D_H
dw05003000	Install Insulated Metal Panels	32.00d	32.00d	0%	16-Jan-26	04-Mar-26	0.00d	Pharr_5D_H
dw05004000	Trim Insulated Metal Panels	10.00d	10.00d	0%	05-Mar-26	18-Mar-26	0.00d	Pharr_5D_H
dw05005000	Install Insulated Doors	8.00d	8.00d	0%	19-Mar-26	30-Mar-26	0.00d	Pharr_5D_H
dw05006000	Install Refrigeration/Coil/Unit/Pipe	23.00d	23.00d	0%	31-Mar-26	30-Apr-26	0.00d	Pharr_5D_H
dw05007000	Install Drains	4.00d	4.00d	0%	01-May-26	06-May-26	0.00d	Pharr_5D_H



Activity ID	Activity Name	Original Duration	maining Duration	Physical % omplete	Start	Finish	Total Float	Calendar
dw05008000	Install Controls and Wiring	2.00d	2.00d	0%	07-May-26	08-May-26	0.00d	Pharr_5D_H
dw05009000	Refrigeration Startup and Comm	6.00d	6.00d	0%	11-May-26	18-May-26	0.00d	Pharr_5D_H
dw05010000	Finish Cold Storage	0.00d	0.00d	0%		18-May-26	0.00d	Pharr_5D_H
DOCK		79.00d	79.00d		01-May-26	21-Aug-26	4.00d	
Dock Installations		79.00d	79.00d		01-May-26	21-Aug-26	4.00d	
dw06001000	Start Dock Installations	0.00d	0.00d	0%	01-May-26		4.00d	Pharr_5D_H
dw06002000	MEP Rough-In - Dock	18.00d	18.00d	0%	01-May-26	27-May-26	4.00d	Pharr_5D_H
dw06003000	Install Trench - Dock	16.00d	16.00d	0%	28-May-26	18-Jun-26	4.00d	Pharr_5D_H
dw06004000	Install Bollards - Dock	20.00d	20.00d	0%	19-Jun-26	17-Jul-26	4.00d	Pharr_5D_H
dw06005000	Install Fixtures/Fans - Dock	10.00d	10.00d	0%	20-Jul-26	31-Jul-26	4.00d	Pharr_5D_H
dw06006000	Install Signage - Dock	15.00d	15.00d	0%	03-Aug-26	21-Aug-26	4.00d	Pharr_5D_H
dw06007000	Finish Dock Installations	0.00d	0.00d	0%		21-Aug-26	4.00d	Pharr_5D_H
BLDG INTERIOR		153.00d	153.00d		22-Jan-26	27-Aug-26	0.00d	
MEP Rough-In		72.00d	72.00d		22-Jan-26	04-May-26	0.00d	
dw07001000	Start MEP Rough-In	0.00d	0.00d	0%	22-Jan-26		0.00d	Pharr_5D_H
dw07002000	RI Electrical - Lab	24.00d	24.00d	0%	22-Jan-26	25-Feb-26	0.00d	Pharr_5D_H
dw07003000	RI Fire Alarm - Lab	24.00d	24.00d	0%	26-Feb-26	31-Mar-26	0.00d	Pharr_5D_H
dw07004000	RI HVAC - Lab	24.00d	24.00d	0%	26-Feb-26	31-Mar-26	2.00d	Pharr_5D_H
dw07005000	RI Fire Protection - Lab	25.00d	25.00d	0%	26-Feb-26	01-Apr-26	3.00d	Pharr_5D_H
dw07006000	RI Plumbing - Lab	20.00d	20.00d	0%	02-Apr-26	29-Apr-26	3.00d	Pharr_5D_H
dw07007000	RI Data/Comm - Lab	24.00d	24.00d	0%	01-Apr-26	04-May-26	0.00d	Pharr_5D_H
dw07008000	Install Electrical Equipment	22.00d	22.00d	0%	03-Apr-26	04-May-26	0.00d	Pharr_5D_H
dw07009000	Install HVAC Equipment	22.00d	22.00d	0%	03-Apr-26	04-May-26	0.00d	Pharr_5D_H
dw07010000	Finish MEP Rough-In	0.00d	0.00d	0%		04-May-26	0.00d	Pharr_5D_H
Walls/Ceilings		82.00d	82.00d		22-Jan-26	18-May-26	0.00d	
dw07011000	Start Walls/Ceilings	0.00d	0.00d	0%	22-Jan-26		0.00d	Pharr_5D_H
dw07012000	Metal Frame/Block - Lab	18.00d	18.00d	0%	22-Jan-26	17-Feb-26	0.00d	Pharr_5D_H
dw07013000	Drywall/Insulation - Lab	18.00d	18.00d	0%	18-Feb-26	13-Mar-26	0.00d	Pharr_5D_H
dw07014000	Tape/Float/Texture - Lab	20.00d	20.00d	0%	16-Mar-26	10-Apr-26	0.00d	Pharr_5D_H
dw07015000	Fireproof/Caulk/Seal - Lab	20.00d	20.00d	0%	16-Mar-26	10-Apr-26	0.00d	Pharr_5D_H
dw07016000	Ceiling Grid - Lab	20.00d	20.00d	0%	16-Mar-26	10-Apr-26	0.00d	Pharr_5D_H
dw07017000	Ceiling Grid Fixtures - Lab	16.00d	16.00d	0%	13-Apr-26	04-May-26	0.00d	Pharr_5D_H
dw07018000	Ceiling HVAC Devices - Lab	16.00d	16.00d	0%	13-Apr-26	04-May-26	0.00d	Pharr_5D_H
dw07019000	Ceiling Fire Alarm Devices - Lab	16.00d	16.00d	0%	13-Apr-26	04-May-26	0.00d	Pharr_5D_H
dw07020000	Final Trimout - Lab	10.00d	10.00d	0%	05-May-26	18-May-26	0.00d	Pharr_5D_H
dw07021000	Power On/HVAC On - Lab	0.00d	0.00d	0%		18-May-26	0.00d	Pharr_5D_H
dw07022000	Power On/HVAC On - Cold Storage	0.00d	0.00d	0%		18-May-26	0.00d	Pharr_5D_H
dw07023000	Finish Walls/Ceilings	0.00d	0.00d	0%		18-May-26	0.00d	Pharr_5D_H
Finishes/Installations		71.00d	71.00d		19-May-26	27-Aug-26	0.00d	
dw07024000	Start Finishes and Installations	0.00d	0.00d	0%	19-May-26		0.00d	Pharr_5D_H
dw07025000	Install Ceiling Tiles - Lab	20.00d	20.00d	0%	19-May-26	16-Jun-26	1.00d	Pharr_5D_H
dw07026000	Install Millwork - Lab	21.00d	21.00d	0%	19-May-26	17-Jun-26	0.00d	Pharr_5D_H
dw07027000	Install Flooring - Lab	17.00d	17.00d	0%	18-Jun-26	13-Jul-26	0.00d	Pharr_5D_H
dw07028000	Interior Paint - Lab	18.00d	18.00d	0%	14-Jul-26	06-Aug-26	0.00d	Pharr_5D_H
dw07029000	Install Signs - Lab	12.00d	12.00d	0%	07-Aug-26	24-Aug-26	3.00d	Pharr_5D_H
dw07030000	Install Partitions/Accessories - Lab	15.00d	15.00d	0%	07-Aug-26	27-Aug-26	0.00d	Pharr_5D_H
dw07031000	Install Doors/Hardware - Lab	15.00d	15.00d	0%	07-Aug-26	27-Aug-26	0.00d	Pharr_5D_H
dw07032000	Finish Lab Building	0.00d	0.00d	0%		27-Aug-26	0.00d	Pharr_5D_H



Activity ID	Activity Name	Original Duration	maining Duration	Physical % omplete	Start	Finish	Total Float	Calendar
SITE IMPROVEMENTS		118.00d	118.00d		17-Sep-25	10-Mar-26	9.00d	
Lots/Driveway		118.00d	118.00d		17-Sep-25	10-Mar-26	9.00d	
dw08001000	Start Lots/Driveway	0.00d	0.00d	0%	17-Sep-25		9.00d	Pharr_5D_H
dw08002000	Excavation - Lots/Driveway	7.00d	7.00d	0%	17-Sep-25	25-Sep-25	9.00d	Pharr_5D_H
dw08003000	Embankment - Lots/Driveway	5.00d	5.00d	0%	26-Sep-25	02-Oct-25	9.00d	Pharr_5D_H
dw08004000	Install Lime Base	12.00d	12.00d	0%	03-Oct-25	21-Oct-25	9.00d	Pharr_5D_H
dw08005000	Install Asphalt Stab Base	1.00d	1.00d	0%	22-Oct-25	22-Oct-25	9.00d	Pharr_5D_H
dw08006000	Install Bond Breaker	10.00d	10.00d	0%	23-Oct-25	05-Nov-25	9.00d	Pharr_5D_H
dw08007000	Rebar and Concrete Paving	33.00d	33.00d	0%	06-Nov-25	24-Dec-25	9.00d	Pharr_5D_H
dw08008000	Parking Lot - North	10.00d	10.00d	0%	26-Dec-25	09-Jan-26	9.00d	Pharr_5D_H
dw08009000	Sidewalks	10.00d	10.00d	0%	12-Jan-26	26-Jan-26	9.00d	Pharr_5D_H
dw08010000	Exterior Lighting	10.00d	10.00d	0%	27-Jan-26	09-Feb-26	9.00d	Pharr_5D_H
dw08011000	Signs/Stripping	20.00d	20.00d	0%	10-Feb-26	10-Mar-26	9.00d	Pharr_5D_H
dw08012000	Finish Roads/Lots	0.00d	0.00d	0%		10-Mar-26	9.00d	Pharr_5D_H
CLOSEOUT		38.00d	38.00d		28-Aug-26	22-Oct-26	0.00d	
Owner Fur Equip/Furn		14.00d	14.00d		28-Aug-26	17-Sep-26	0.00d	
dw09001000	Start Owner Furnished	0.00d	0.00d	0%	28-Aug-26		0.00d	Pharr_7D
dw09002000	Install Owner Furnished Furniture	21.00d	21.00d	0%	28-Aug-26	17-Sep-26	0.00d	Pharr_7D
dw09003000	Install Owner Furnished Equipment	21.00d	21.00d	0%	28-Aug-26	17-Sep-26	0.00d	Pharr_7D
dw09004000	Finish Owner Furnished	0.00d	0.00d	0%		17-Sep-26	0.00d	Pharr_7D
Test/Inspect/Closing		24.00d	24.00d		18-Sep-26	22-Oct-26	0.00d	
dw09005000	Start Test/Inspect	0.00d	0.00d	0%	18-Sep-26		0.00d	Pharr_5D_H
dw09006000	Test/Balance - Lab	10.00d	10.00d	0%	18-Sep-26	01-Oct-26	0.00d	Pharr_5D_H
dw09007000	Commission - Lab	10.00d	10.00d	0%	02-Oct-26	16-Oct-26	0.00d	Pharr_5D_H
dw09008000	Test/Balance - Cold Storage	10.00d	10.00d	0%	18-Sep-26	01-Oct-26	0.00d	Pharr_5D_H
dw09009000	Commission - Storage	10.00d	10.00d	0%	02-Oct-26	16-Oct-26	0.00d	Pharr_5D_H
dw09010000	Final Adjustment/Correction	4.00d	4.00d	0%	19-Oct-26	22-Oct-26	0.00d	Pharr_5D_H
dw09011000	Certificate of Occupancy	0.00d	0.00d	0%		22-Oct-26	0.00d	Pharr_5D_H
dw09012000	Substantial Completion	0.00d	0.00d	0%		22-Oct-26	0.00d	Pharr_5D_H

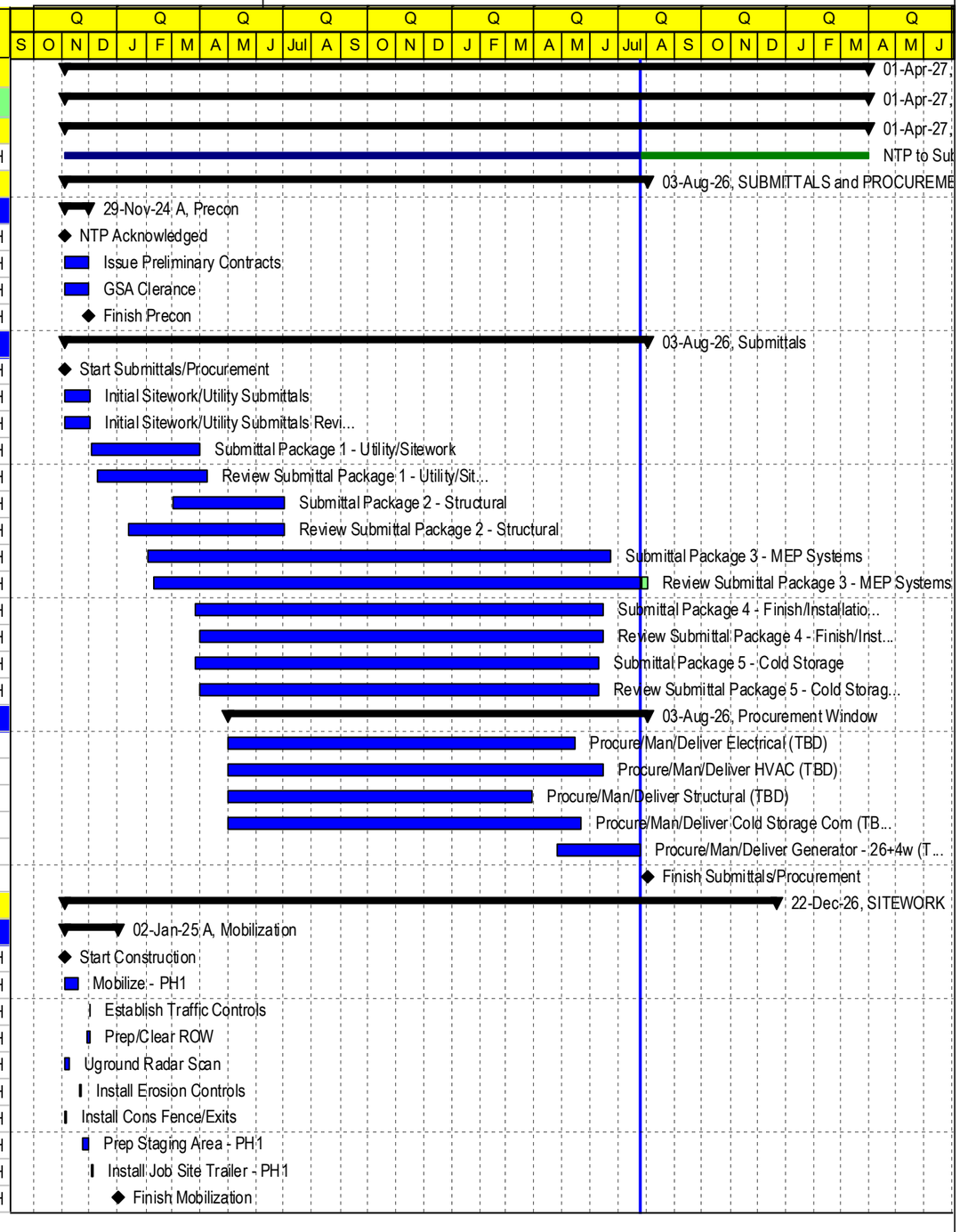


Appendix B – Post-Delay Schedule Activity Report

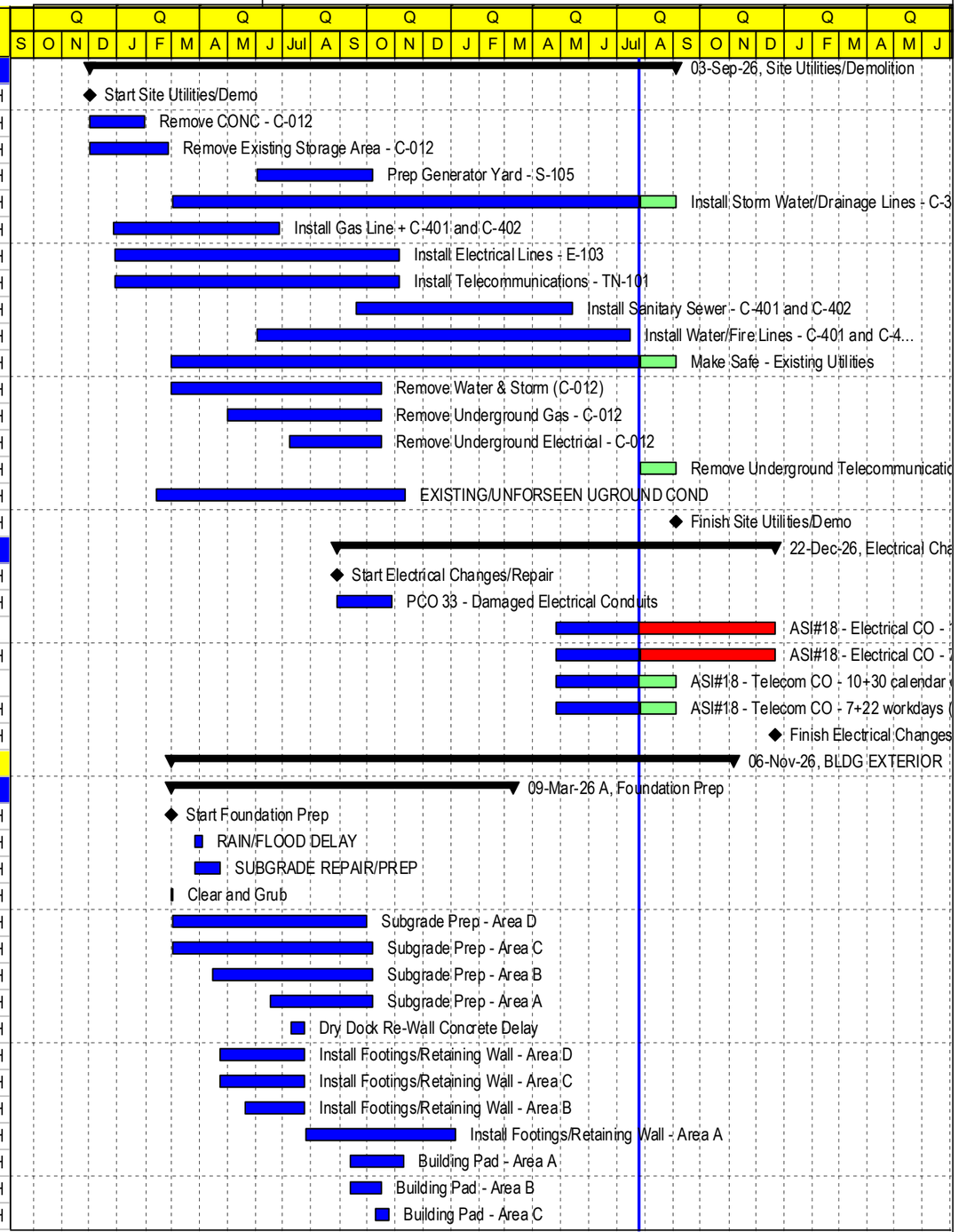
July 2026 Update

Data Date: 25-Jul-26

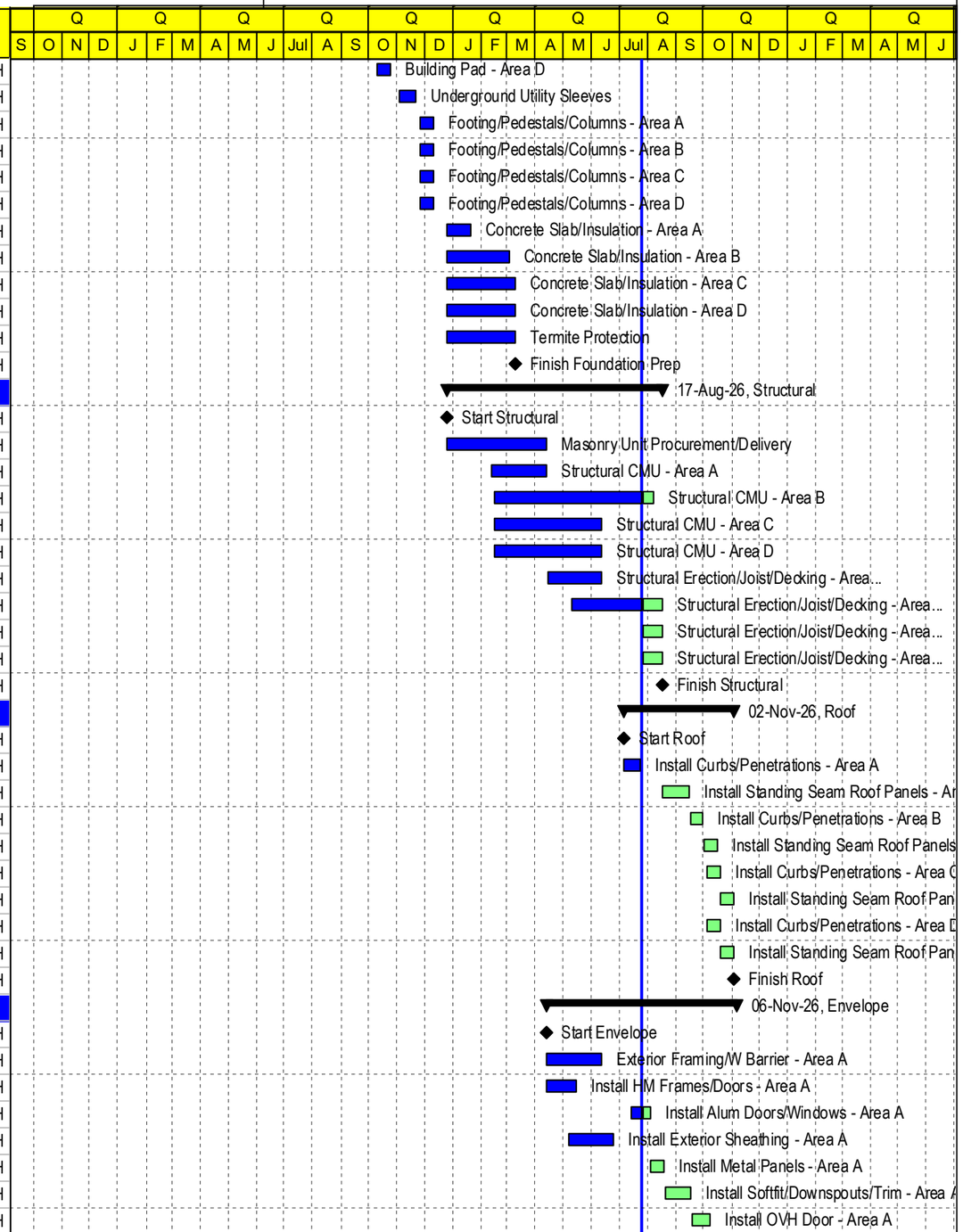
Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar
Total		585.00d	171.00d		04-Nov-24 A	01-Apr-27	0.00d	
FY16 DAP DOCK EXPANSION PHASE I, PHASE II, & AGR		585.00d	171.00d		04-Nov-24 A	01-Apr-27	0.00d	
CALCULATORS		470.00d	171.00d		04-Nov-24 A	01-Apr-27	0.00d	
dw00000010 C	NTP to Substantial Completion (workdays)	470.00d	171.00d	78%	04-Nov-24 A	01-Apr-27	0.00d	Pharr_5D_H
SUBMITTALS and PROCUREMENT		523.00d	6.00d		04-Nov-24 A	03-Aug-26	141.00d	
Precon		18.00d	0.00d		04-Nov-24 A	29-Nov-24 A		
dw00001000 P	NTP Acknowledged	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H
dw00002000 P	Issue Preliminary Contracts	18.00d	0.00d	100%	04-Nov-24 A	29-Nov-24 A		Pharr_5D_H
dw00003000 P	GSA Clerance	18.00d	0.00d	100%	04-Nov-24 A	29-Nov-24 A		Pharr_5D_H
dw00004000 P	Finish Precon	0.00d	0.00d	100%		29-Nov-24 A		Pharr_5D_H
Submittals		166.00d	6.00d		04-Nov-24 A	03-Aug-26	87.00d	
dw01001000 NN	Start Submittals/Procurement	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H
dw01002000 NN	Initial Sitework/Utility Submittals	9.00d	0.00d	100%	04-Nov-24 A	02-Dec-24 A		Pharr_5D_H
dw01003000 NN	Initial Sitework/Utility Submittals Review	9.00d	0.00d	100%	05-Nov-24 A	02-Dec-24 A		Pharr_5D_H
dw01004000 NN	Submittal Package 1 - Utility/Sitework	65.00d	0.00d	100%	03-Dec-24 A	01-Apr-25 A		Pharr_5D_H
dw01005000 NN	Review Submittal Package 1 - Utility/Sitework	65.00d	0.00d	100%	10-Dec-24 A	08-Apr-25 A		Pharr_5D_H
dw01006000 NN	Submittal Package 2 - Structural	65.00d	0.00d	100%	03-Mar-25 A	02-Jul-25 A		Pharr_5D_H
dw01007000 NN	Review Submittal Package 2 - Structural	65.00d	0.00d	100%	13-Jan-25 A	02-Jul-25 A		Pharr_5D_H
dw01008000 NN	Submittal Package 3 - MEP Systems	65.00d	0.00d	100%	03-Feb-25 A	22-Jun-26 A		Pharr_5D_H
dw01009000 NN	Review Submittal Package 3 - MEP Systems	65.00d	6.00d	95%	10-Feb-25 A	03-Aug-26	87.00d	Pharr_5D_H
dw01010000 NN	Submittal Package 4 - Finish/Installations	43.00d	0.00d	100%	26-Mar-25 A	15-Jun-26 A		Pharr_5D_H
dw01011000 NN	Review Submittal Package 4 - Finish/Installations	10.00d	0.00d	100%	01-Apr-25 A	15-Jun-26 A		Pharr_5D_H
dw01012000 NN	Submittal Package 5 - Cold Storage	43.00d	0.00d	100%	26-Mar-25 A	10-Jun-26 A		Pharr_5D_H
dw01013000 NN	Review Submittal Package 5 - Cold Storage	10.00d	0.00d	100%	01-Apr-25 A	10-Jun-26 A		Pharr_5D_H
Procurement Window		402.00d	0.00d		01-May-25 A	03-Aug-26	141.00d	
dw01014000 LL	Procure/Man/Deliver Electrical (TBD)	232.00d	0.00d	100%	01-May-25 A	15-May-26 A		Pharr_7D
dw01015000 LL	Procure/Man/Deliver HVAC (TBD)	262.00d	0.00d	100%	01-May-25 A	15-Jun-26 A		Pharr_7D
dw01016000 LL	Procure/Man/Deliver Structural (TBD)	114.00d	0.00d	100%	01-May-25 A	29-Mar-26 A		Pharr_7D
dw01017000 LL	Procure/Man/Deliver Cold Storage Com (TBD)	184.00d	0.00d	100%	01-May-25 A	22-May-26 A		Pharr_7D
dw01017500 CO	Procure/Man/Deliver Generator - 26+4w (TBD)	161.00d	0.00d	100%	26-Apr-26 A	25-Jul-26 A		Pharr_7D
dw01018000 LL	Finish Submittals/Procurement	0.00d	0.00d	0%		03-Aug-26	209.00d	Pharr_7D
SITEWORK		580.00d	103.00d		04-Nov-24 A	22-Dec-26	0.00d	
Mobilization		25.00d	0.00d		04-Nov-24 A	02-Jan-25 A		
dw02001000	Start Construction	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H
dw02002000	Mobilize - PH1	10.00d	0.00d	100%	04-Nov-24 A	18-Nov-24 A		Pharr_5D_H
dw02003000	Establish Traffic Controls	1.00d	0.00d	100%	02-Dec-24 A	02-Dec-24 A		Pharr_5D_H
dw02004000	Prep/Clear ROW	10.00d	0.00d	100%	29-Nov-24 A	02-Dec-24 A		Pharr_5D_H
dw02005000	Uground Radar Scan	10.00d	0.00d	100%	05-Nov-24 A	08-Nov-24 A		Pharr_5D_H
dw02006000	Install Erosion Controls	5.00d	0.00d	100%	20-Nov-24 A	22-Nov-24 A		Pharr_5D_H
dw02007000	Install Cons Fence/Exits	7.00d	0.00d	100%	04-Nov-24 A	06-Nov-24 A		Pharr_5D_H
dw02008000	Prep Staging Area - PH1	5.00d	0.00d	100%	23-Nov-24 A	29-Nov-24 A		Pharr_5D_H
dw02009000	Install Job Site Trailer - PH1	4.00d	0.00d	100%	03-Dec-24 A	05-Dec-24 A		Pharr_5D_H
dw02010000	Finish Mobilization	0.00d	0.00d	100%		02-Jan-25 A		Pharr_5D_H



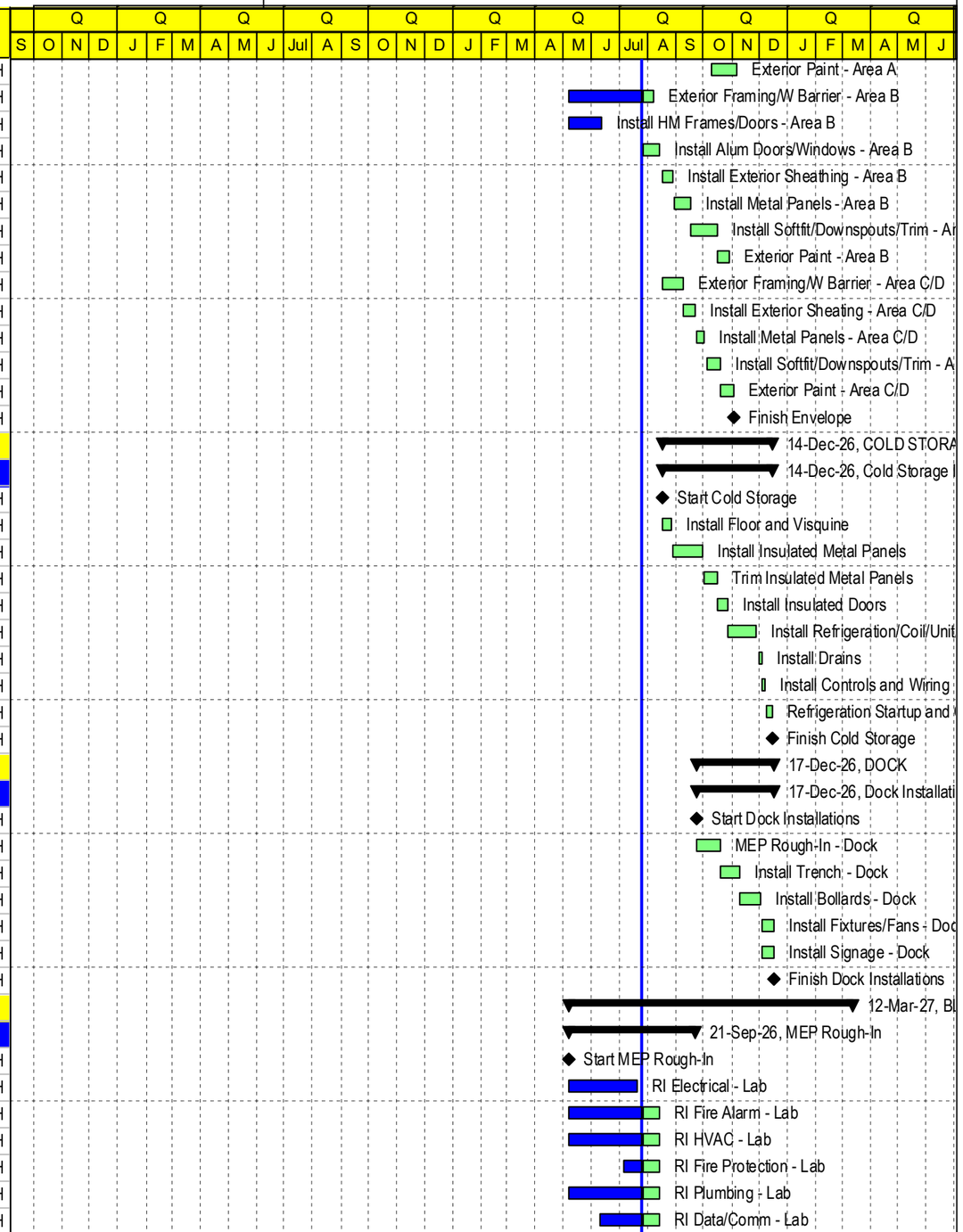
Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar
Site Utilities/Demolition		422.00d	29.00d		02-Dec-24 A	03-Sep-26	29.00d	
dw03001000	Start Site Utilities/Demo	0.00d	0.00d	100%	02-Dec-24 A			Pharr_5D_H
dw03002000	Remove CONC - C-012	16.00d	0.00d	100%	02-Dec-24 A	31-Jan-25 A		Pharr_5D_H
dw03003000	Remove Existing Storage Area - C-012	10.00d	0.00d	100%	02-Dec-24 A	25-Feb-25 A		Pharr_5D_H
dw03004000	Prep Generator Yard - S-105	8.00d	0.00d	100%	02-Jun-25 A	07-Oct-25 A		Pharr_5D_H
dw03005000	Install Storm Water/Drainage Lines - C-303	18.00d	29.00d	98%	03-Mar-25 A	03-Sep-26	3.00d	Pharr_5D_H
dw03006000	Install Gas Line + C-401 and C-402	40.00d	0.00d	100%	27-Dec-24 A	26-Jun-25 A		Pharr_5D_H
dw03007000	Install Electrical Lines - E-103	40.00d	0.00d	100%	30-Dec-24 A	05-Nov-25 A		Pharr_5D_H
dw03008000	Install Telecommunications - TN-101	40.00d	0.00d	100%	30-Dec-24 A	05-Nov-25 A		Pharr_5D_H
dw03009000	Install Sanitary Sewer - C-401 and C-402	15.00d	0.00d	100%	20-Sep-25 A	14-May-26 A		Pharr_5D_H
dw03010000	Install Water/Fire Lines - C-401 and C-402	24.00d	0.00d	100%	02-Jun-25 A	16-Jul-26 A		Pharr_5D_H
dw03011000	Make Safe - Existing Utilities	5.00d	29.00d	98%	01-Mar-25 A	03-Sep-26	3.00d	Pharr_5D_H
dw03012000	Remove Water & Storm (C-012)	10.00d	0.00d	100%	01-Mar-25 A	17-Oct-25 A		Pharr_5D_H
dw03013000	Remove Underground Gas - C-012	20.00d	0.00d	100%	01-May-25 A	17-Oct-25 A		Pharr_5D_H
dw03014000	Remove Underground Electrical - C-012	16.00d	0.00d	100%	09-Jul-25 A	17-Oct-25 A		Pharr_5D_H
dw03015000	Remove Underground Telecommunication - C-012	29.00d	29.00d	0%	27-Jul-26	03-Sep-26	29.00d	Pharr_5D_H
dw03015100 D	EXISTING/UNFORSEEN UGROUND COND	76.00d	0.00d	100%	12-Feb-25 A	12-Nov-25 A		Pharr_5D_H
dw03016000	Finish Site Utilities/Demo	0.00d	0.00d	0%		03-Sep-26	29.00d	Pharr_5D_H
Electrical Changes/Repair		559.00d	103.00d		29-Aug-25 A	22-Dec-26	0.00d	
dw03021000	Start Electrical Changes/Repair	0.00d	0.00d	100%	29-Aug-25 A			Pharr_5D_H
dw03022000 CO	PCO 33 - Damaged Electrical Conduits	41.00d	0.00d	100%	29-Aug-25 A	28-Oct-25 A		Pharr_5D_H
dw03023000 CO	ASI#18 - Electrical CO - 10+140 calendar days (TI	241.00d	150.00d	0%	26-Apr-26 A	22-Dec-26	0.00d	Pharr_7D
dw03024000 CO	ASI#18 - Electrical CO - 7+103 workdays (TBD)	166.00d	103.00d	0%	26-Apr-26 A	22-Dec-26	0.00d	Pharr_5D_H
dw03025000 CO	ASI#18 - Telecom CO - 10+30 calendar days (TBD)	131.00d	40.00d	0%	26-Apr-26 A	03-Sep-26	43.00d	Pharr_7D
dw03026000 CO	ASI#18 - Telecom CO - 7+22 workdays (TBD)	92.00d	29.00d	0%	26-Apr-26 A	03-Sep-26	29.00d	Pharr_5D_H
dw03027000	Finish Electrical Changes/Repair	0.00d	0.00d	0%		22-Dec-26	0.00d	Pharr_5D_H
BLDG EXTERIOR		401.00d	73.00d		01-Mar-25 A	06-Nov-26	84.00d	
Foundation Prep		243.00d	0.00d		01-Mar-25 A	09-Mar-26 A		
dw04001000	Start Foundation Prep	0.00d	0.00d	100%	01-Mar-25 A			Pharr_5D_H
dw04001100 D	RAIN/FLOOD DELAY	8.00d	0.00d	100%	26-Mar-25 A	04-Apr-25 A		Pharr_5D_H
dw04001200 D	SUBGRADE REPAIR/PREP	21.00d	0.00d	100%	26-Mar-25 A	23-Apr-25 A		Pharr_5D_H
dw04002000	Clear and Grub	4.00d	0.00d	100%	01-Mar-25 A	02-Mar-25 A		Pharr_5D_H
dw04003000	Subgrade Prep - Area D	4.00d	0.00d	100%	03-Mar-25 A	01-Oct-25 A		Pharr_5D_H
dw04004000	Subgrade Prep - Area C	4.00d	0.00d	100%	03-Mar-25 A	06-Oct-25 A		Pharr_5D_H
dw04005000	Subgrade Prep - Area B	4.00d	0.00d	100%	15-Apr-25 A	06-Oct-25 A		Pharr_5D_H
dw04006000	Subgrade Prep - Area A	4.00d	0.00d	100%	18-Jun-25 A	06-Oct-25 A		Pharr_5D_H
dw04006500 D	Dry Dock Re-Wall Concrete Delay	11.00d	0.00d	100%	10-Jul-25 A	24-Jul-25 A		Pharr_5D_H
dw04007000	Install Footings/Retaining Wall - Area D	4.00d	0.00d	100%	24-Apr-25 A	25-Jul-25 A		Pharr_5D_H
dw04008000	Install Footings/Retaining Wall - Area C	4.00d	0.00d	100%	24-Apr-25 A	25-Jul-25 A		Pharr_5D_H
dw04009000	Install Footings/Retaining Wall - Area B	4.00d	0.00d	100%	20-May-25 A	25-Jul-25 A		Pharr_5D_H
dw04010000	Install Footings/Retaining Wall - Area A	4.00d	0.00d	100%	26-Jul-25 A	06-Jan-26 A		Pharr_5D_H
dw04011000	Building Pad - Area A	14.00d	0.00d	100%	12-Sep-25 A	09-Nov-25 A		Pharr_5D_H
dw04012000	Building Pad - Area B	14.00d	0.00d	100%	12-Sep-25 A	16-Oct-25 A		Pharr_5D_H
dw04013000	Building Pad - Area C	15.00d	0.00d	100%	11-Oct-25 A	24-Oct-25 A		Pharr_5D_H



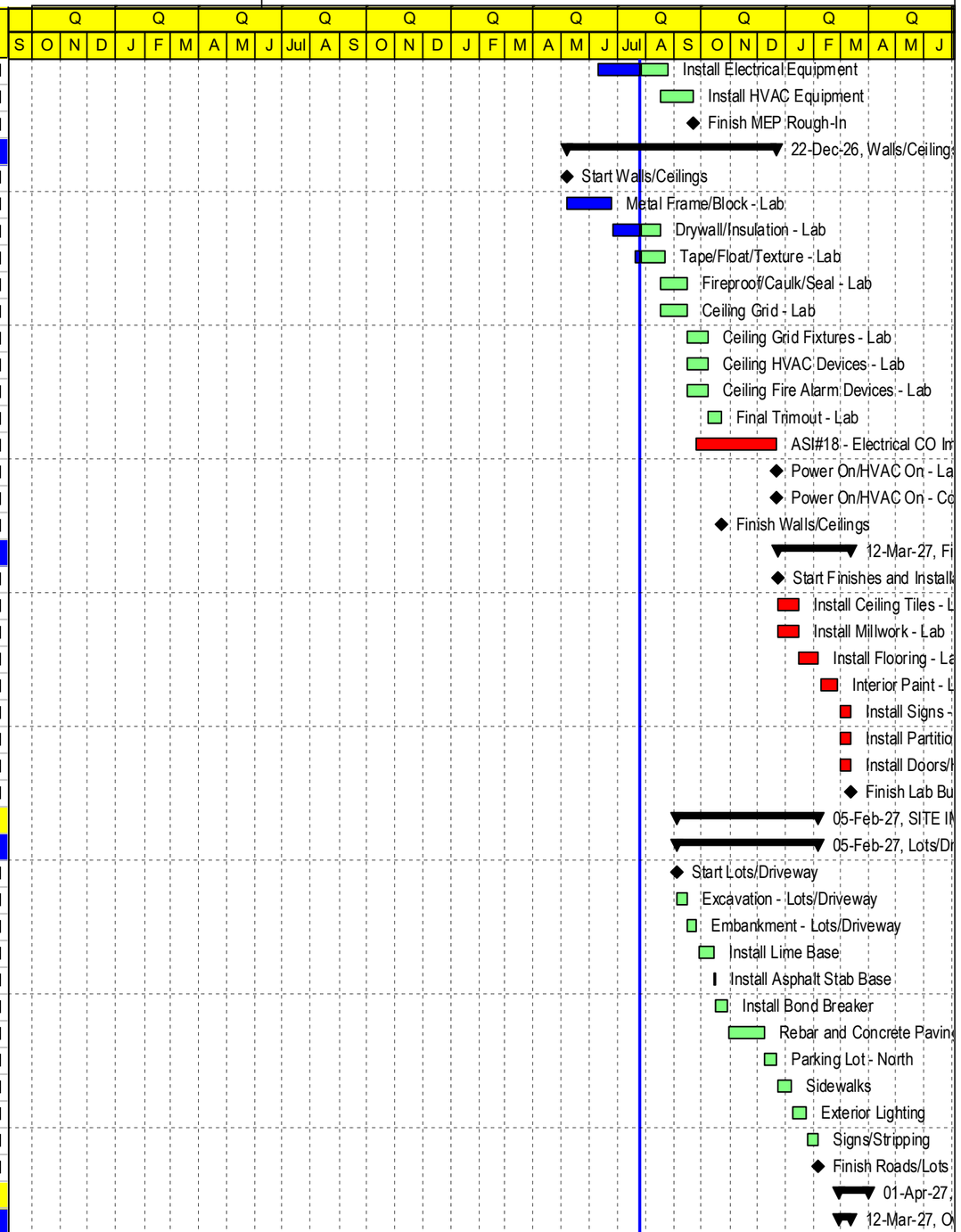
Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar
dw04014000	Building Pad - Area D	15.00d	0.00d	100%	11-Oct-25 A	24-Oct-25 A		Pharr_5D_H
dw04015000	Underground Utility Sleeves	14.00d	0.00d	100%	04-Nov-25 A	21-Nov-25 A		Pharr_5D_H
dw04016000	Footing/Pedestals/Columns - Area A	11.00d	0.00d	100%	26-Nov-25 A	11-Dec-25 A		Pharr_5D_H
dw04017000	Footing/Pedestals/Columns - Area B	10.00d	0.00d	100%	26-Nov-25 A	11-Dec-25 A		Pharr_5D_H
dw04018000	Footing/Pedestals/Columns - Area C	10.00d	0.00d	100%	26-Nov-25 A	11-Dec-25 A		Pharr_5D_H
dw04019000	Footing/Pedestals/Columns - Area D	10.00d	0.00d	100%	26-Nov-25 A	11-Dec-25 A		Pharr_5D_H
dw04020000	Concrete Slab/Insulation - Area A	16.00d	0.00d	100%	26-Dec-25 A	20-Jan-26 A		Pharr_5D_H
dw04021000	Concrete Slab/Insulation - Area B	16.00d	0.00d	100%	26-Dec-25 A	03-Mar-26 A		Pharr_5D_H
dw04022000	Concrete Slab/Insulation - Area C	16.00d	0.00d	100%	26-Dec-25 A	09-Mar-26 A		Pharr_5D_H
dw04023000	Concrete Slab/Insulation - Area D	16.00d	0.00d	100%	26-Dec-25 A	09-Mar-26 A		Pharr_5D_H
dw04024000	Termite Protection	16.00d	0.00d	100%	26-Dec-25 A	09-Mar-26 A		Pharr_5D_H
dw04025000	Finish Foundation Prep	0.00d	0.00d	100%		09-Mar-26 A		Pharr_5D_H
Structural		143.00d	16.00d		26-Dec-25 A	17-Aug-26	88.00d	
dw04026000	Start Structural	0.00d	0.00d	100%	26-Dec-25 A			Pharr_5D_H
dw04026500 D	Masonry Unit Procurement/Delivery	16.00d	0.00d	100%	26-Dec-25 A	13-Apr-26 A		Pharr_5D_H
dw04027000	Structural CMU - Area A	30.00d	0.00d	100%	12-Feb-26 A	13-Apr-26 A		Pharr_5D_H
dw04028000	Structural CMU - Area B	30.00d	10.00d	95%	16-Feb-26 A	07-Aug-26	56.00d	Pharr_5D_H
dw04029000	Structural CMU - Area C	44.00d	0.00d	100%	16-Feb-26 A	11-Jun-26 A		Pharr_5D_H
dw04030000	Structural CMU - Area D	44.00d	0.00d	100%	16-Feb-26 A	11-Jun-26 A		Pharr_5D_H
dw04031000	Structural Erection/Joist/Decking - Area A	14.00d	0.00d	100%	14-Apr-26 A	11-Jun-26 A		Pharr_5D_H
dw04032000	Structural Erection/Joist/Decking - Area B	15.00d	16.00d	25%	10-May-26 A	17-Aug-26	88.00d	Pharr_5D_H
dw04033000	Structural Erection/Joist/Decking - Area C	16.00d	16.00d	0%	27-Jul-26	17-Aug-26	47.00d	Pharr_5D_H
dw04034000	Structural Erection/Joist/Decking - Area D	16.00d	16.00d	0%	27-Jul-26	17-Aug-26	47.00d	Pharr_5D_H
dw04035000	Finish Structural	0.00d	0.00d	0%		17-Aug-26	50.00d	Pharr_5D_H
Roof		53.00d	53.00d		06-Jul-26 A	02-Nov-26	78.00d	
dw04036000	Start Roof	0.00d	0.00d	100%	06-Jul-26 A			Pharr_5D_H
dw04037000	Install Curbs/Penetrations - Area A	15.00d	0.00d	100%	06-Jul-26 A	24-Jul-26 A		Pharr_5D_H
dw04038000	Install Standing Seam Roof Panels - Area A	20.00d	20.00d	0%	18-Aug-26	15-Sep-26	90.00d	Pharr_5D_H
dw04039000	Install Curbs/Penetrations - Area B	10.00d	10.00d	0%	17-Sep-26	30-Sep-26	79.00d	Pharr_5D_H
dw04040000	Install Standing Seam Roof Panels - Area B	11.00d	11.00d	0%	01-Oct-26	16-Oct-26	79.00d	Pharr_5D_H
dw04041000	Install Curbs/Penetrations - Area C	10.00d	10.00d	0%	05-Oct-26	19-Oct-26	78.00d	Pharr_5D_H
dw04042000	Install Standing Seam Roof Panels - Area C	10.00d	10.00d	0%	20-Oct-26	02-Nov-26	78.00d	Pharr_5D_H
dw04043000	Install Curbs/Penetrations - Area D	10.00d	10.00d	0%	05-Oct-26	19-Oct-26	78.00d	Pharr_5D_H
dw04044000	Install Standing Seam Roof Panels - Area D	10.00d	10.00d	0%	20-Oct-26	02-Nov-26	78.00d	Pharr_5D_H
dw04045000	Finish Roof	0.00d	0.00d	0%		02-Nov-26	78.00d	Pharr_5D_H
Envelope		136.00d	73.00d		13-Apr-26 A	06-Nov-26	84.00d	
dw04046000	Start Envelope	0.00d	0.00d	100%	13-Apr-26 A			Pharr_5D_H
dw04047000	Exterior Framing/W Barrier - Area A	14.00d	0.00d	100%	13-Apr-26 A	12-Jun-26 A		Pharr_5D_H
dw04048000	Install HM Frames/Doors - Area A	10.00d	0.00d	100%	13-Apr-26 A	15-May-26 A		Pharr_5D_H
dw04049000	Install Alum Doors/Windows - Area A	16.00d	7.00d	98%	14-Jul-26 A	04-Aug-26	84.00d	Pharr_5D_H
dw04050000	Install Exterior Sheathing - Area A	8.00d	0.00d	100%	08-May-26 A	25-Jun-26 A		Pharr_5D_H
dw04051000	Install Metal Panels - Area A	11.00d	11.00d	0%	05-Aug-26	19-Aug-26	84.00d	Pharr_5D_H
dw04052000	Install Softfit/Downspouts/Trim - Area A	20.00d	20.00d	0%	20-Aug-26	17-Sep-26	84.00d	Pharr_5D_H
dw04053000	Install OVH Door - Area A	15.00d	15.00d	0%	18-Sep-26	08-Oct-26	84.00d	Pharr_5D_H



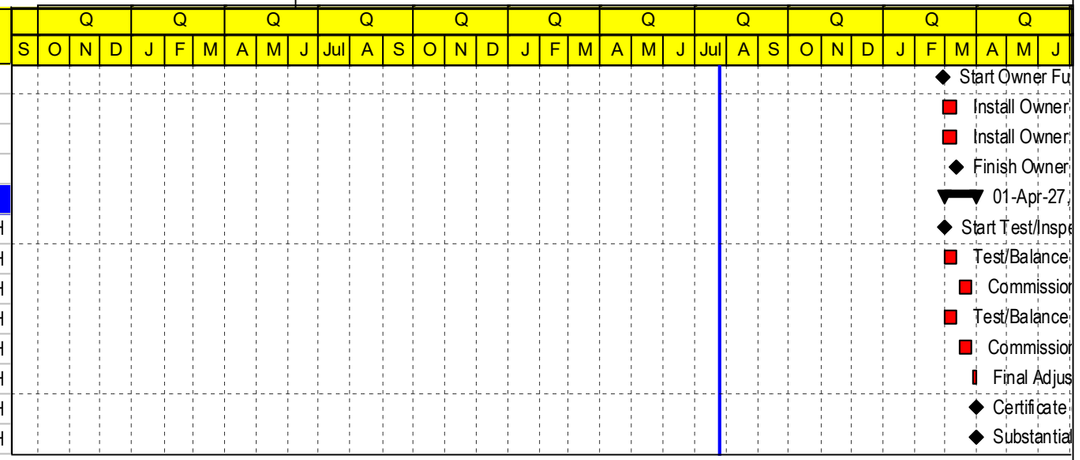
Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar
dw04054000	Exterior Paint - Area A	20.00d	20.00d	0%	09-Oct-26	06-Nov-26	84.00d	Pharr_5D_H
dw04055000	Exterior Framing/W Barrier - Area B	15.00d	10.00d	90%	08-May-26 A	07-Aug-26	48.00d	Pharr_5D_H
dw04056000	Install HM Frames/Doors - Area B	10.00d	0.00d	100%	08-May-26 A	12-Jun-26 A		Pharr_5D_H
dw04057000	Install Alum Doors/Windows - Area B	15.00d	15.00d	0%	27-Jul-26	14-Aug-26	48.00d	Pharr_5D_H
dw04058000	Install Exterior Sheathing - Area B	10.00d	10.00d	0%	17-Aug-26	28-Aug-26	79.00d	Pharr_5D_H
dw04059000	Install Metal Panels - Area B	12.00d	12.00d	0%	31-Aug-26	16-Sep-26	79.00d	Pharr_5D_H
dw04060000	Install Softfit/Downspouts/Trim - Area B	20.00d	20.00d	0%	17-Sep-26	15-Oct-26	80.00d	Pharr_5D_H
dw04061000	Exterior Paint - Area B	10.00d	10.00d	0%	16-Oct-26	29-Oct-26	80.00d	Pharr_5D_H
dw04062000	Exterior Framing/W Barrier - Area C/D	15.00d	15.00d	0%	18-Aug-26	08-Sep-26	47.00d	Pharr_5D_H
dw04063000	Install Exterior Sheating - Area C/D	10.00d	10.00d	0%	09-Sep-26	22-Sep-26	47.00d	Pharr_5D_H
dw04064000	Install Metal Panels - Area C/D	8.00d	8.00d	0%	23-Sep-26	02-Oct-26	78.00d	Pharr_5D_H
dw04065000	Install Softfit/Downspouts/Trim - Area C/D	10.00d	10.00d	0%	05-Oct-26	19-Oct-26	78.00d	Pharr_5D_H
dw04066000	Exterior Paint - Area C/D	10.00d	10.00d	0%	20-Oct-26	02-Nov-26	78.00d	Pharr_5D_H
dw04067000	Finish Envelope	0.00d	0.00d	0%		02-Nov-26	78.00d	Pharr_5D_H
COLD STORAGE		81.00d	81.00d		18-Aug-26	14-Dec-26	50.00d	
Cold Storage Installations		81.00d	81.00d		18-Aug-26	14-Dec-26	50.00d	
dw05001000	Start Cold Storage	0.00d	0.00d	0%	18-Aug-26		50.00d	Pharr_5D_H
dw05002000	Install Floor and Visquine	8.00d	8.00d	0%	18-Aug-26	27-Aug-26	50.00d	Pharr_5D_H
dw05003000	Install Insulated Metal Panels	23.00d	23.00d	0%	28-Aug-26	30-Sep-26	50.00d	Pharr_5D_H
dw05004000	Trim Insulated Metal Panels	10.00d	10.00d	0%	01-Oct-26	15-Oct-26	50.00d	Pharr_5D_H
dw05005000	Install Insulated Doors	8.00d	8.00d	0%	16-Oct-26	27-Oct-26	50.00d	Pharr_5D_H
dw05006000	Install Refrigeration/Coil/Unit/Pipe	21.00d	21.00d	0%	28-Oct-26	27-Nov-26	50.00d	Pharr_5D_H
dw05007000	Install Drains	4.00d	4.00d	0%	30-Nov-26	03-Dec-26	50.00d	Pharr_5D_H
dw05008000	Install Controls and Wiring	2.00d	2.00d	0%	04-Dec-26	07-Dec-26	50.00d	Pharr_5D_H
dw05009000	Refrigeration Startup and Comm	5.00d	5.00d	0%	08-Dec-26	14-Dec-26	50.00d	Pharr_5D_H
dw05010000	Finish Cold Storage	0.00d	0.00d	0%		14-Dec-26	50.00d	Pharr_5D_H
DOCK		59.00d	59.00d		23-Sep-26	17-Dec-26	47.00d	
Dock Installations		59.00d	59.00d		23-Sep-26	17-Dec-26	47.00d	
dw06001000	Start Dock Installations	0.00d	0.00d	0%	23-Sep-26		47.00d	Pharr_5D_H
dw06002000	MEP Rough-In - Dock	18.00d	18.00d	0%	23-Sep-26	19-Oct-26	47.00d	Pharr_5D_H
dw06003000	Install Trench - Dock	15.00d	15.00d	0%	20-Oct-26	09-Nov-26	47.00d	Pharr_5D_H
dw06004000	Install Bollards - Dock	15.00d	15.00d	0%	10-Nov-26	02-Dec-26	47.00d	Pharr_5D_H
dw06005000	Install Fixtures/Fans - Dock	11.00d	11.00d	0%	03-Dec-26	17-Dec-26	47.00d	Pharr_5D_H
dw06006000	Install Signage - Dock	11.00d	11.00d	0%	03-Dec-26	17-Dec-26	47.00d	Pharr_5D_H
dw06007000	Finish Dock Installations	0.00d	0.00d	0%		17-Dec-26	47.00d	Pharr_5D_H
BLDG INTERIOR		175.00d	157.00d		08-May-26 A	12-Mar-27	0.00d	
MEP Rough-In		68.00d	40.00d		08-May-26 A	21-Sep-26	53.00d	
dw07001000	Start MEP Rough-In	0.00d	0.00d	100%	08-May-26 A			Pharr_5D_H
dw07002000	RI Electrical - Lab	23.00d	0.00d	100%	08-May-26 A	20-Jul-26 A		Pharr_5D_H
dw07003000	RI Fire Alarm - Lab	24.00d	15.00d	85%	08-May-26 A	14-Aug-26	71.00d	Pharr_5D_H
dw07004000	RI HVAC - Lab	24.00d	15.00d	85%	08-May-26 A	14-Aug-26	3.00d	Pharr_5D_H
dw07005000	RI Fire Protection - Lab	25.00d	15.00d	85%	06-Jul-26 A	14-Aug-26	78.00d	Pharr_5D_H
dw07006000	RI Plumbing - Lab	20.00d	15.00d	85%	08-May-26 A	14-Aug-26	78.00d	Pharr_5D_H
dw07007000	RI Data/Comm - Lab	21.00d	15.00d	85%	11-Jun-26 A	14-Aug-26	78.00d	Pharr_5D_H



Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar
dw07008000	Install Electrical Equipment	22.00d	22.00d	60%	11-Jun-26 A	25-Aug-26	71.00d	Pharr_5D_H
dw07009000	Install HVAC Equipment	25.00d	25.00d	0%	17-Aug-26	21-Sep-26	3.00d	Pharr_5D_H
dw07010000	Finish MEP Rough-In	0.00d	0.00d	0%		21-Sep-26	53.00d	Pharr_5D_H
Walls/Ceilings		121.00d	103.00d		08-May-26 A	22-Dec-26	44.00d	
dw07011000	Start Walls/Ceilings	0.00d	0.00d	100%	08-May-26 A			Pharr_5D_H
dw07012000	Metal Frame/Block - Lab	15.00d	0.00d	100%	08-May-26 A	25-Jun-26 A		Pharr_5D_H
dw07013000	Drywall/Insulation - Lab	18.00d	16.00d	55%	27-Jun-26 A	17-Aug-26	41.00d	Pharr_5D_H
dw07014000	Tape/Float/Texture - Lab	20.00d	20.00d	15%	20-Jul-26 A	21-Aug-26	57.00d	Pharr_5D_H
dw07015000	Fireproof/Caulk/Seal - Lab	20.00d	20.00d	0%	18-Aug-26	15-Sep-26	41.00d	Pharr_5D_H
dw07016000	Ceiling Grid - Lab	20.00d	20.00d	0%	18-Aug-26	15-Sep-26	41.00d	Pharr_5D_H
dw07017000	Ceiling Grid Fixtures - Lab	16.00d	16.00d	0%	16-Sep-26	07-Oct-26	41.00d	Pharr_5D_H
dw07018000	Ceiling HVAC Devices - Lab	16.00d	16.00d	0%	16-Sep-26	07-Oct-26	41.00d	Pharr_5D_H
dw07019000	Ceiling Fire Alarm Devices - Lab	16.00d	16.00d	0%	16-Sep-26	07-Oct-26	41.00d	Pharr_5D_H
dw07020000	Final Trimout - Lab	10.00d	10.00d	0%	08-Oct-26	22-Oct-26	41.00d	Pharr_5D_H
dw07020500 CO	ASI#18 - Electrical CO Impact	60.00d	60.00d	0%	25-Sep-26*	22-Dec-26	0.00d	Pharr_5D_H
dw07021000	Power On/HVAC On - Lab	0.00d	0.00d	0%		22-Dec-26	0.00d	Pharr_5D_H
dw07022000	Power On/HVAC On - Cold Storage	0.00d	0.00d	0%		22-Dec-26	44.00d	Pharr_5D_H
dw07023000	Finish Walls/Ceilings	0.00d	0.00d	0%		22-Oct-26	41.00d	Pharr_5D_H
Finishes/Installations		54.00d	54.00d		23-Dec-26	12-Mar-27	0.00d	
dw07024000	Start Finishes and Installations	0.00d	0.00d	0%	23-Dec-26		0.00d	Pharr_5D_H
dw07025000	Install Ceiling Tiles - Lab	15.00d	15.00d	0%	23-Dec-26	14-Jan-27	0.00d	Pharr_5D_H
dw07026000	Install Millwork - Lab	15.00d	15.00d	0%	23-Dec-26	14-Jan-27	0.00d	Pharr_5D_H
dw07027000	Install Flooring - Lab	15.00d	15.00d	0%	15-Jan-27	05-Feb-27	0.00d	Pharr_5D_H
dw07028000	Interior Paint - Lab	14.00d	14.00d	0%	08-Feb-27	26-Feb-27	0.00d	Pharr_5D_H
dw07029000	Install Signs - Lab	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H
dw07030000	Install Partitions/Accessories - Lab	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H
dw07031000	Install Doors/Hardware - Lab	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H
dw07032000	Finish Lab Building	0.00d	0.00d	0%		12-Mar-27	0.00d	Pharr_5D_H
SITE IMPROVEMENTS		104.00d	104.00d		04-Sep-26	05-Feb-27	14.00d	
Lots/Driveway		104.00d	104.00d		04-Sep-26	05-Feb-27	14.00d	
dw08001000	Start Lots/Driveway	0.00d	0.00d	0%	04-Sep-26		14.00d	Pharr_5D_H
dw08002000	Excavation - Lots/Driveway	7.00d	7.00d	0%	04-Sep-26	15-Sep-26	14.00d	Pharr_5D_H
dw08003000	Embankment - Lots/Driveway	8.00d	8.00d	0%	16-Sep-26	25-Sep-26	14.00d	Pharr_5D_H
dw08004000	Install Lime Base	12.00d	12.00d	0%	28-Sep-26	14-Oct-26	14.00d	Pharr_5D_H
dw08005000	Install Asphalt Stab Base	1.00d	1.00d	0%	15-Oct-26	15-Oct-26	14.00d	Pharr_5D_H
dw08006000	Install Bond Breaker	10.00d	10.00d	0%	16-Oct-26	29-Oct-26	14.00d	Pharr_5D_H
dw08007000	Rebar and Concrete Paving	26.00d	26.00d	0%	30-Oct-26	08-Dec-26	14.00d	Pharr_5D_H
dw08008000	Parking Lot - North	10.00d	10.00d	0%	09-Dec-26	22-Dec-26	14.00d	Pharr_5D_H
dw08009000	Sidewalks	10.00d	10.00d	0%	23-Dec-26	07-Jan-27	14.00d	Pharr_5D_H
dw08010000	Exterior Lighting	10.00d	10.00d	0%	08-Jan-27	22-Jan-27	14.00d	Pharr_5D_H
dw08011000	Signs/Stripping	10.00d	10.00d	0%	25-Jan-27	05-Feb-27	14.00d	Pharr_5D_H
dw08012000	Finish Roads/Lots	0.00d	0.00d	0%		05-Feb-27	14.00d	Pharr_5D_H
CLOSEOUT		24.00d	24.00d		27-Feb-27	01-Apr-27	0.00d	
Owner Fur Equip/Furn		10.00d	10.00d		27-Feb-27	12-Mar-27	0.00d	

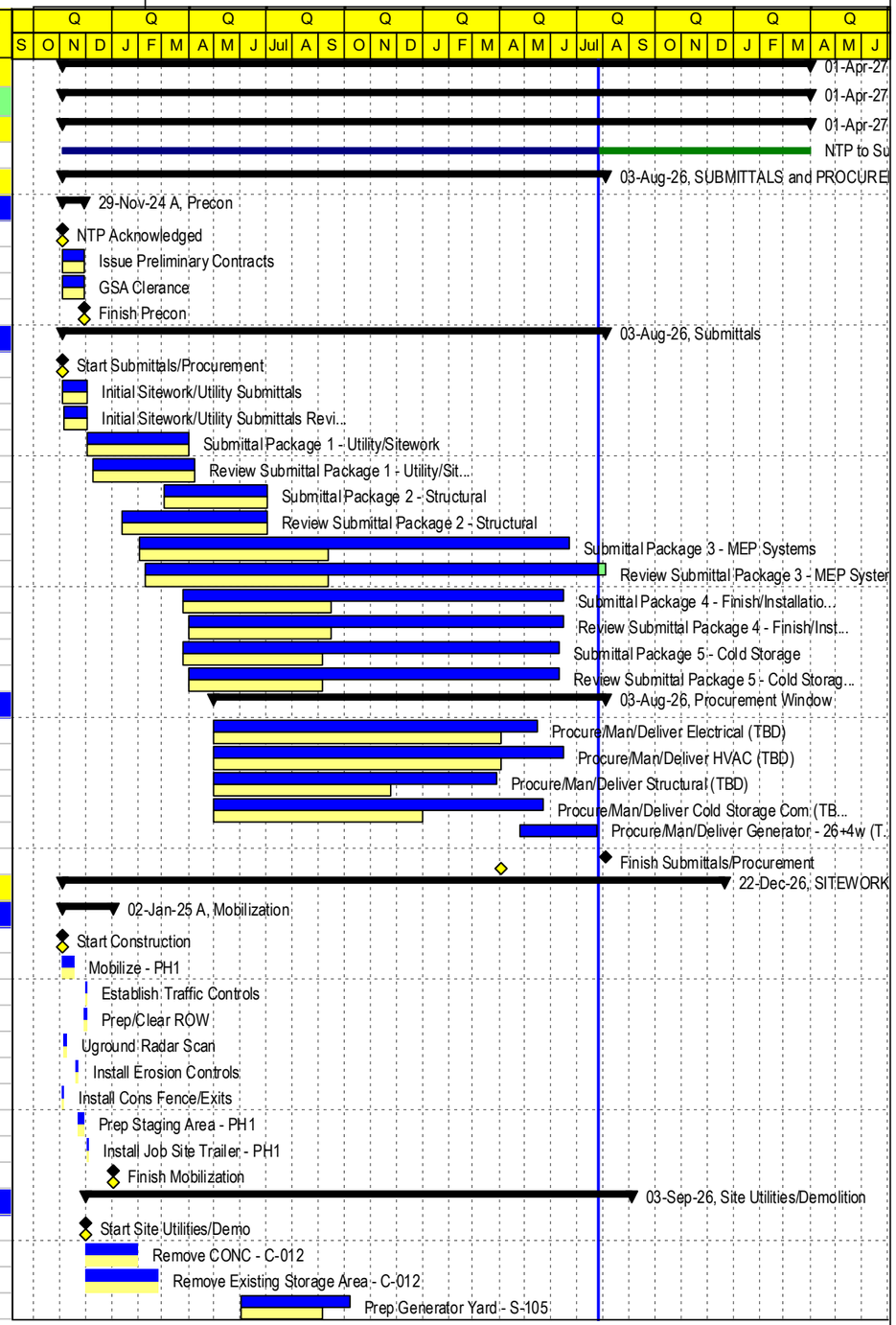


Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar
dw09001000	Start Owner Furnished	0.00d	0.00d	0%	27-Feb-27		2.00d	Pharr_7D
dw09002000	Install Owner Furnished Furniture	14.00d	14.00d	0%	27-Feb-27	12-Mar-27	2.00d	Pharr_7D
dw09003000	Install Owner Furnished Equipment	14.00d	14.00d	0%	27-Feb-27	12-Mar-27	2.00d	Pharr_7D
dw09004000	Finish Owner Furnished	0.00d	0.00d	0%		12-Mar-27	2.00d	Pharr_7D
Test/Inspect/Closing		24.00d	24.00d		01-Mar-27	01-Apr-27	0.00d	
dw09005000	Start Test/Inspect	0.00d	0.00d	0%	01-Mar-27		0.00d	Pharr_5D_H
dw09006000	Test/Balance - Lab	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H
dw09007000	Commission - Lab	10.00d	10.00d	0%	15-Mar-27	26-Mar-27	0.00d	Pharr_5D_H
dw09008000	Test/Balance - Cold Storage	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H
dw09009000	Commission - Storage	10.00d	10.00d	0%	15-Mar-27	26-Mar-27	0.00d	Pharr_5D_H
dw09010000	Final Adjustment/Correction	4.00d	4.00d	0%	29-Mar-27	01-Apr-27	0.00d	Pharr_5D_H
dw09011000	Certificate of Occupancy	0.00d	0.00d	0%		01-Apr-27	0.00d	Pharr_5D_H
dw09012000	Substantial Completion	0.00d	0.00d	0%		01-Apr-27	0.00d	Pharr_5D_H

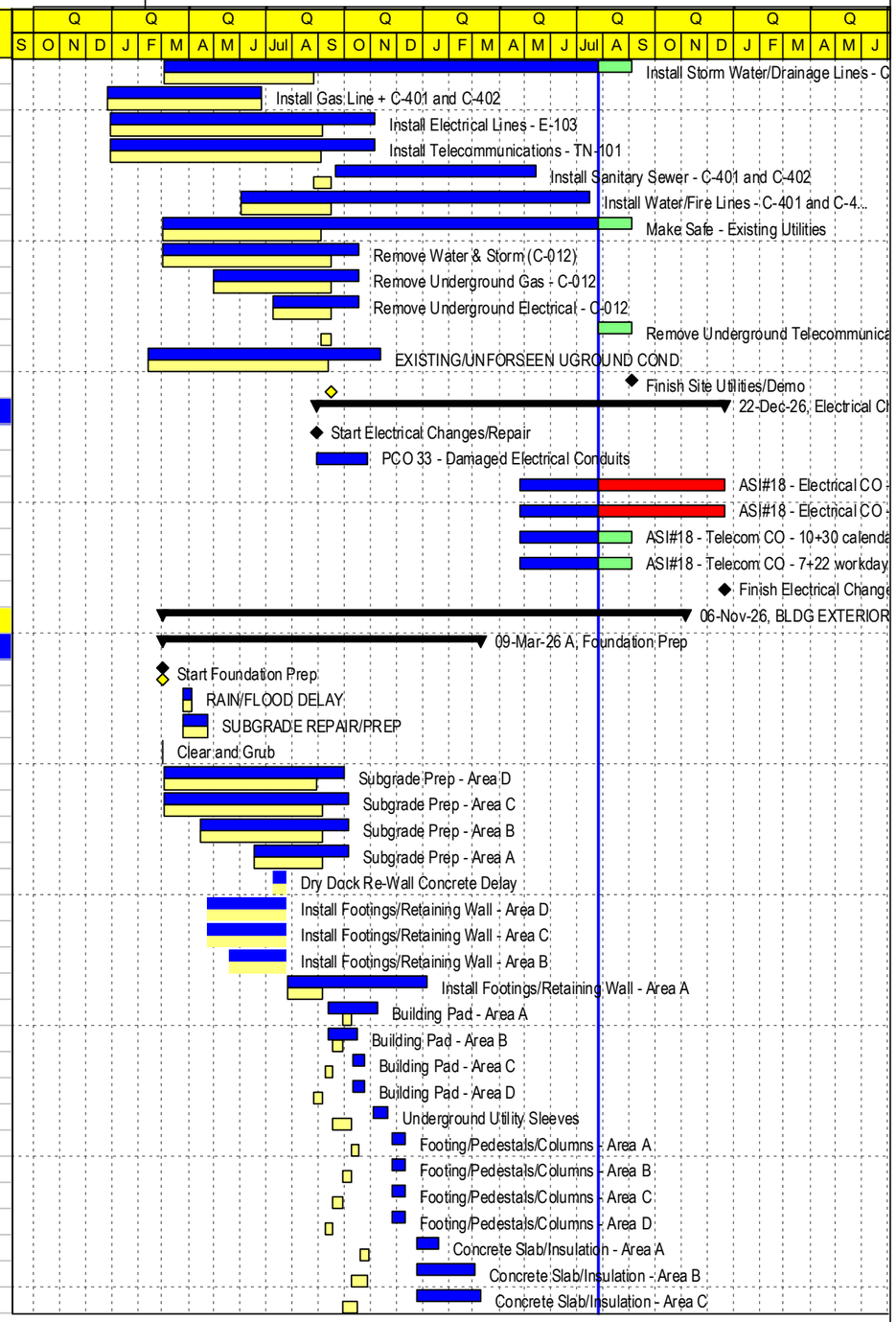


Appendix C – July 2026 to August 2025 Comparison

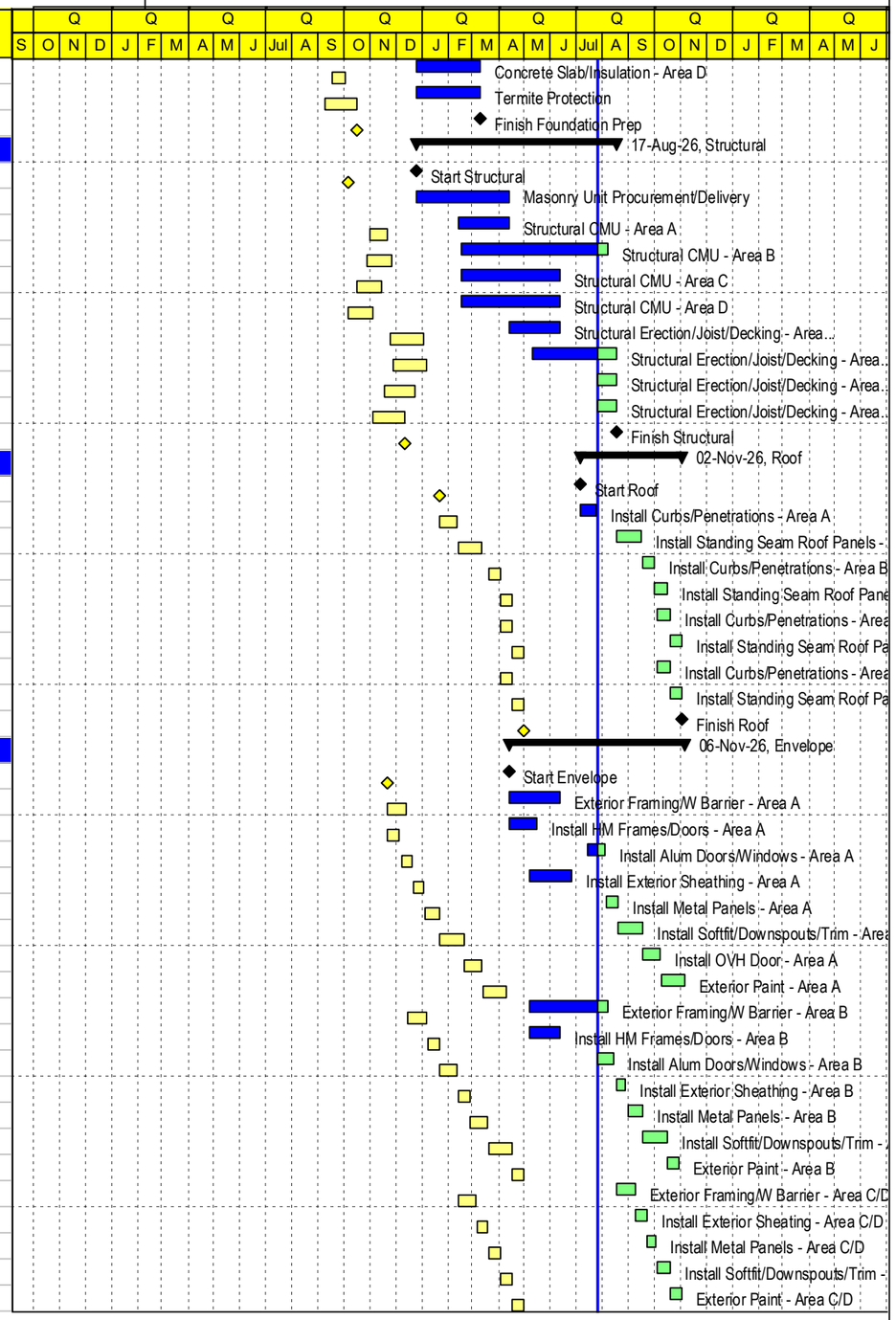
Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar	BL Project Duration	BL Project Start	BL Project Finish
Total		585.00d	171.00d		04-Nov-24 A	01-Apr-27	0.00d		494.00d	04-Nov-24	22-Oct-26
FY16 DAP DOCK EXPANSION PHASE I, PHASE II, & AGR		585.00d	171.00d		04-Nov-24 A	01-Apr-27	0.00d		494.00d	04-Nov-24	22-Oct-26
CALCULATORS		470.00d	171.00d		04-Nov-24 A	01-Apr-27	0.00d		494.00d	04-Nov-24	22-Oct-26
dw00000010 C	NTP to Substantial Completion (workdays)	470.00d	171.00d	78%	04-Nov-24 A	01-Apr-27	0.00d	Pharr_5D_H	494.00d	04-Nov-24	22-Oct-26
SUBMITTALS and PROCUREMENT		523.00d	6.00d		04-Nov-24 A	03-Aug-26	141.00d		353.00d	04-Nov-24	02-Apr-26
Precon		18.00d	0.00d		04-Nov-24 A	29-Nov-24 A			18.00d	04-Nov-24	29-Nov-24
dw00001000 P	NTP Acknowledged	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H	0.00d	04-Nov-24	
dw00002000 P	Issue Preliminary Contracts	18.00d	0.00d	100%	04-Nov-24 A	29-Nov-24 A		Pharr_5D_H	18.00d	04-Nov-24	29-Nov-24
dw00003000 P	GSA Clerance	18.00d	0.00d	100%	04-Nov-24 A	29-Nov-24 A		Pharr_5D_H	18.00d	04-Nov-24	29-Nov-24
dw00004000 P	Finish Precon	0.00d	0.00d	100%		29-Nov-24 A		Pharr_5D_H	0.00d		29-Nov-24
Submittals		166.00d	6.00d		04-Nov-24 A	03-Aug-26	87.00d		218.00d	04-Nov-24	16-Sep-25
dw01001000 NN	Start Submittals/Procurement	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H	0.00d	04-Nov-24	
dw01002000 NN	Initial Sitework/Utility Submittals	9.00d	0.00d	100%	04-Nov-24 A	02-Dec-24 A		Pharr_5D_H	19.00d	04-Nov-24	02-Dec-24
dw01003000 NN	Initial Sitework/Utility Submittals Review	9.00d	0.00d	100%	05-Nov-24 A	02-Dec-24 A		Pharr_5D_H	18.00d	05-Nov-24	02-Dec-24
dw01004000 NN	Submittal Package 1 - Utility/Sitework	65.00d	0.00d	100%	03-Dec-24 A	01-Apr-25 A		Pharr_5D_H	82.00d	03-Dec-24	01-Apr-25
dw01005000 NN	Review Submittal Package 1 - Utility/Sitework	65.00d	0.00d	100%	10-Dec-24 A	08-Apr-25 A		Pharr_5D_H	82.00d	10-Dec-24	08-Apr-25
dw01006000 NN	Submittal Package 2 - Structural	65.00d	0.00d	100%	03-Mar-25 A	02-Jul-25 A		Pharr_5D_H	87.00d	03-Mar-25	02-Jul-25
dw01007000 NN	Review Submittal Package 2 - Structural	65.00d	0.00d	100%	13-Jan-25 A	02-Jul-25 A		Pharr_5D_H	120.00d	13-Jan-25	02-Jul-25
dw01008000 NN	Submittal Package 3 - MEP Systems	65.00d	0.00d	100%	03-Feb-25 A	22-Jun-26 A		Pharr_5D_H	155.00d	03-Feb-25	11-Sep-25
dw01009000 NN	Review Submittal Package 3 - MEP Systems	65.00d	6.00d	95%	10-Feb-25 A	03-Aug-26	87.00d	Pharr_5D_H	150.00d	10-Feb-25	11-Sep-25
dw01010000 NN	Submittal Package 4 - Finish/Installations	43.00d	0.00d	100%	26-Mar-25 A	15-Jun-26 A		Pharr_5D_H	122.00d	26-Mar-25	16-Sep-25
dw01011000 NN	Review Submittal Package 4 - Finish/Installations	10.00d	0.00d	100%	01-Apr-25 A	15-Jun-26 A		Pharr_5D_H	118.00d	01-Apr-25	16-Sep-25
dw01012000 NN	Submittal Package 5 - Cold Storage	43.00d	0.00d	100%	26-Mar-25 A	10-Jun-26 A		Pharr_5D_H	115.00d	26-Mar-25	05-Sep-25
dw01013000 NN	Review Submittal Package 5 - Cold Storage	10.00d	0.00d	100%	01-Apr-25 A	10-Jun-26 A		Pharr_5D_H	111.00d	01-Apr-25	05-Sep-25
Procurement Window		402.00d	0.00d		01-May-25 A	03-Aug-26	141.00d		231.00d	01-May-25	02-Apr-26
dw01014000 LL	Procure/Man/Deliver Electrical (TBD)	232.00d	0.00d	100%	01-May-25 A	15-May-26 A		Pharr_7D	337.00d	01-May-25	02-Apr-26
dw01015000 LL	Procure/Man/Deliver HVAC (TBD)	262.00d	0.00d	100%	01-May-25 A	15-Jun-26 A		Pharr_7D	337.00d	01-May-25	02-Apr-26
dw01016000 LL	Procure/Man/Deliver Structural (TBD)	114.00d	0.00d	100%	01-May-25 A	29-Mar-26 A		Pharr_7D	208.00d	01-May-25	24-Nov-25
dw01017000 LL	Procure/Man/Deliver Cold Storage Com (TBD)	184.00d	0.00d	100%	01-May-25 A	22-May-26 A		Pharr_7D	246.00d	01-May-25	01-Jan-26
dw01017500 CO	Procure/Man/Deliver Generator - 26+4w (TBD)	161.00d	0.00d	100%	26-Apr-26 A	25-Jul-26 A		Pharr_7D	0.00d		
dw01018000 LL	Finish Submittals/Procurement	0.00d	0.00d	0%		03-Aug-26	209.00d	Pharr_7D	0.00d		02-Apr-26
SITEWORK		580.00d	103.00d		04-Nov-24 A	22-Dec-26	0.00d		218.00d	04-Nov-24	16-Sep-25
Mobilization		25.00d	0.00d		04-Nov-24 A	02-Jan-25 A			39.00d	04-Nov-24	02-Jan-25
dw02001000	Start Construction	0.00d	0.00d	100%	04-Nov-24 A			Pharr_5D_H	0.00d	04-Nov-24	
dw02002000	Mobilize - PH1	10.00d	0.00d	100%	04-Nov-24 A	18-Nov-24 A		Pharr_5D_H	10.00d	04-Nov-24	18-Nov-24
dw02003000	Establish Traffic Controls	1.00d	0.00d	100%	02-Dec-24 A	02-Dec-24 A		Pharr_5D_H	1.00d	02-Dec-24	02-Dec-24
dw02004000	Prep/Clear ROW	10.00d	0.00d	100%	29-Nov-24 A	02-Dec-24 A		Pharr_5D_H	2.00d	29-Nov-24	02-Dec-24
dw02005000	Uground Radar Scan	10.00d	0.00d	100%	05-Nov-24 A	08-Nov-24 A		Pharr_5D_H	4.00d	05-Nov-24	08-Nov-24
dw02006000	Install Erosion Controls	5.00d	0.00d	100%	20-Nov-24 A	22-Nov-24 A		Pharr_5D_H	3.00d	20-Nov-24	22-Nov-24
dw02007000	Install Cons Fence/Exits	7.00d	0.00d	100%	04-Nov-24 A	06-Nov-24 A		Pharr_5D_H	3.00d	04-Nov-24	06-Nov-24
dw02008000	Prep Staging Area - PH1	5.00d	0.00d	100%	23-Nov-24 A	29-Nov-24 A		Pharr_5D_H	4.00d	23-Nov-24	29-Nov-24
dw02009000	Install Job Site Trailer - PH1	4.00d	0.00d	100%	03-Dec-24 A	05-Dec-24 A		Pharr_5D_H	3.00d	03-Dec-24	05-Dec-24
dw02010000	Finish Mobilization	0.00d	0.00d	100%		02-Jan-25 A		Pharr_5D_H	0.00d		02-Jan-25
Site Utilities/Demolition		422.00d	29.00d		02-Dec-24 A	03-Sep-26	29.00d		200.00d	02-Dec-24	16-Sep-25
dw03001000	Start Site Utilities/Demo	0.00d	0.00d	100%	02-Dec-24 A			Pharr_5D_H	0.00d	02-Dec-24	
dw03002000	Remove CONC - C-012	16.00d	0.00d	100%	02-Dec-24 A	31-Jan-25 A		Pharr_5D_H	42.00d	02-Dec-24	31-Jan-25
dw03003000	Remove Existing Storage Area - C-012	10.00d	0.00d	100%	02-Dec-24 A	25-Feb-25 A		Pharr_5D_H	58.00d	02-Dec-24	25-Feb-25
dw03004000	Prep Generator Yard - S-105	8.00d	0.00d	100%	02-Jun-25 A	07-Oct-25 A		Pharr_5D_H	68.00d	02-Jun-25	05-Sep-25



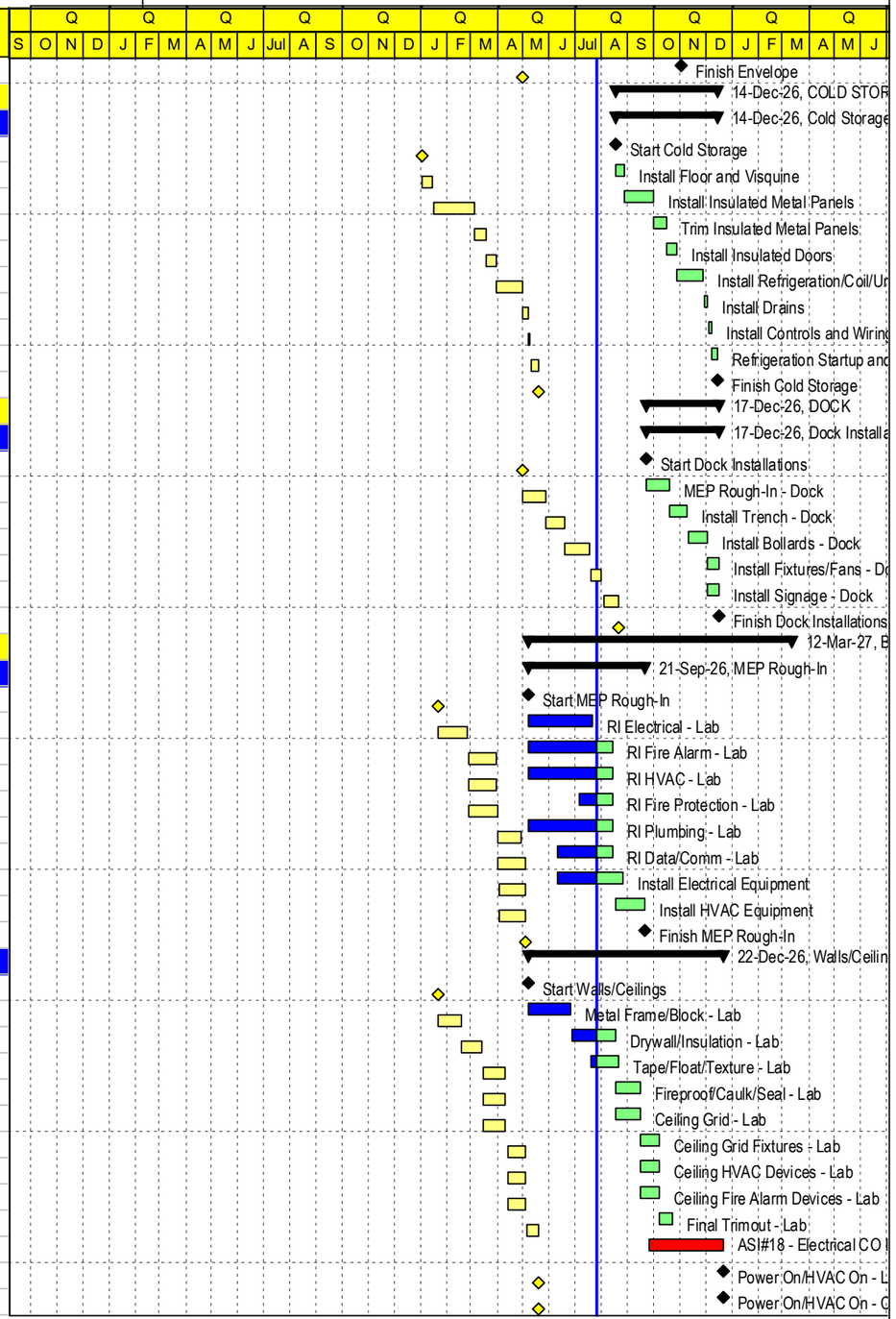
Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar	BL Project Duration	BL Project Start	BL Project Finish
dw03005000	Install Storm Water/Drainage Lines - C-303	18.00d	29.00d	98%	03-Mar-25 A	03-Sep-26	3.00d	Pharr_5D_H	124.00d	03-Mar-25	26-Aug-25
dw03006000	Install Gas Line + C-401 and C-402	40.00d	0.00d	100%	27-Dec-24 A	26-Jun-25 A		Pharr_5D_H	126.00d	27-Dec-24	26-Jun-25
dw03007000	Install Electrical Lines - E-103	40.00d	0.00d	100%	30-Dec-24 A	05-Nov-25 A		Pharr_5D_H	174.00d	30-Dec-24	05-Sep-25
dw03008000	Install Telecommunications - TN-101	40.00d	0.00d	100%	30-Dec-24 A	05-Nov-25 A		Pharr_5D_H	172.00d	30-Dec-24	03-Sep-25
dw03009000	Install Sanitary Sewer - C-401 and C-402	15.00d	0.00d	100%	20-Sep-25 A	14-May-26 A		Pharr_5D_H	15.00d	26-Aug-25	16-Sep-25
dw03010000	Install Water/Fire Lines - C-401 and C-402	24.00d	0.00d	100%	02-Jun-25 A	16-Jul-26 A		Pharr_5D_H	75.00d	02-Jun-25	16-Sep-25
dw03011000	Make Safe - Existing Utilities	5.00d	29.00d	98%	01-Mar-25 A	03-Sep-26	3.00d	Pharr_5D_H	130.00d	01-Mar-25	03-Sep-25
dw03012000	Remove Water & Storm (C-012)	10.00d	0.00d	100%	01-Mar-25 A	17-Oct-25 A		Pharr_5D_H	139.00d	01-Mar-25	16-Sep-25
dw03013000	Remove Underground Gas - C-012	20.00d	0.00d	100%	01-May-25 A	17-Oct-25 A		Pharr_5D_H	96.00d	01-May-25	16-Sep-25
dw03014000	Remove Underground Electrical - C-012	16.00d	0.00d	100%	09-Jul-25 A	17-Oct-25 A		Pharr_5D_H	49.00d	09-Jul-25	16-Sep-25
dw03015000	Remove Underground Telecommunication - C-012	29.00d	29.00d	0%	27-Jul-26	03-Sep-26	29.00d	Pharr_5D_H	9.00d	04-Sep-25	16-Sep-25
dw03015100 D	EXISTING/UNFORSEEN UGROUND COND	76.00d	0.00d	100%	12-Feb-25 A	12-Nov-25 A		Pharr_5D_H	148.00d	12-Feb-25	11-Sep-25
dw03016000	Finish Site Utilities/Demo	0.00d	0.00d	0%		03-Sep-26	29.00d	Pharr_5D_H	0.00d		16-Sep-25
Electrical Changes/Repair		559.00d	103.00d		29-Aug-25 A	22-Dec-26	0.00d		0.00d		
dw03021000	Start Electrical Changes/Repair	0.00d	0.00d	100%	29-Aug-25 A			Pharr_5D_H	0.00d		
dw03022000 CO	PCO 33 - Damaged Electrical Conduits	41.00d	0.00d	100%	29-Aug-25 A	28-Oct-25 A		Pharr_5D_H	0.00d		
dw03023000 CO	ASI#18 - Electrical CO - 10+140 calendar days (TI	241.00d	150.00d	0%	26-Apr-26 A	22-Dec-26	0.00d	Pharr_7D	0.00d		
dw03024000 CO	ASI#18 - Electrical CO - 7+103 workdays (TBD)	166.00d	103.00d	0%	26-Apr-26 A	22-Dec-26	0.00d	Pharr_5D_H	0.00d		
dw03025000 CO	ASI#18 - Telecom CO - 10+30 calendar days (TBD)	131.00d	40.00d	0%	26-Apr-26 A	03-Sep-26	43.00d	Pharr_7D	0.00d		
dw03026000 CO	ASI#18 - Telecom CO - 7+22 workdays (TBD)	92.00d	29.00d	0%	26-Apr-26 A	03-Sep-26	29.00d	Pharr_5D_H	0.00d		
dw03027000	Finish Electrical Changes/Repair	0.00d	0.00d	0%		22-Dec-26	0.00d	Pharr_5D_H	0.00d		
BLDG EXTERIOR		401.00d	73.00d		01-Mar-25 A	06-Nov-26	84.00d		294.00d	01-Mar-25	30-Apr-26
Foundation Prep		243.00d	0.00d		01-Mar-25 A	09-Mar-26 A			170.00d	01-Mar-25	30-Oct-25
dw04001000	Start Foundation Prep	0.00d	0.00d	100%	01-Mar-25 A			Pharr_5D_H	0.00d	01-Mar-25	
dw04001100 D	RAIN/FLOOD DELAY	8.00d	0.00d	100%	26-Mar-25 A	04-Apr-25 A		Pharr_5D_H	8.00d	26-Mar-25	04-Apr-25
dw04001200 D	SUBGRADE REPAIR/PREP	21.00d	0.00d	100%	26-Mar-25 A	23-Apr-25 A		Pharr_5D_H	21.00d	26-Mar-25	23-Apr-25
dw04002000	Clear and Grub	4.00d	0.00d	100%	01-Mar-25 A	02-Mar-25 A		Pharr_5D_H	0.00d	01-Mar-25	02-Mar-25
dw04003000	Subgrade Prep - Area D	4.00d	0.00d	100%	03-Mar-25 A	01-Oct-25 A		Pharr_5D_H	128.00d	03-Mar-25	29-Aug-25
dw04004000	Subgrade Prep - Area C	4.00d	0.00d	100%	03-Mar-25 A	06-Oct-25 A		Pharr_5D_H	132.00d	03-Mar-25	05-Sep-25
dw04005000	Subgrade Prep - Area B	4.00d	0.00d	100%	15-Apr-25 A	06-Oct-25 A		Pharr_5D_H	101.00d	15-Apr-25	05-Sep-25
dw04006000	Subgrade Prep - Area A	4.00d	0.00d	100%	18-Jun-25 A	06-Oct-25 A		Pharr_5D_H	56.00d	18-Jun-25	05-Sep-25
dw04006500 D	Dry Dock Re-Wall Concrete Delay	11.00d	0.00d	100%	10-Jul-25 A	24-Jul-25 A		Pharr_5D_H	11.00d	10-Jul-25	24-Jul-25
dw04007000	Install Footings/Retaining Wall - Area D	4.00d	0.00d	100%	24-Apr-25 A	25-Jul-25 A		Pharr_5D_H	65.00d	24-Apr-25	25-Jul-25
dw04008000	Install Footings/Retaining Wall - Area C	4.00d	0.00d	100%	24-Apr-25 A	25-Jul-25 A		Pharr_5D_H	65.00d	24-Apr-25	25-Jul-25
dw04009000	Install Footings/Retaining Wall - Area B	4.00d	0.00d	100%	20-May-25 A	25-Jul-25 A		Pharr_5D_H	47.00d	20-May-25	25-Jul-25
dw04010000	Install Footings/Retaining Wall - Area A	4.00d	0.00d	100%	26-Jul-25 A	06-Jan-26 A		Pharr_5D_H	29.00d	26-Jul-25	05-Sep-25
dw04011000	Building Pad - Area A	14.00d	0.00d	100%	12-Sep-25 A	09-Nov-25 A		Pharr_5D_H	8.00d	30-Sep-25	09-Oct-25
dw04012000	Building Pad - Area B	14.00d	0.00d	100%	12-Sep-25 A	16-Oct-25 A		Pharr_5D_H	8.00d	18-Sep-25	29-Sep-25
dw04013000	Building Pad - Area C	15.00d	0.00d	100%	11-Oct-25 A	24-Oct-25 A		Pharr_5D_H	8.00d	08-Sep-25	17-Sep-25
dw04014000	Building Pad - Area D	15.00d	0.00d	100%	11-Oct-25 A	24-Oct-25 A		Pharr_5D_H	8.00d	26-Aug-25	05-Sep-25
dw04015000	Underground Utility Sleeves	14.00d	0.00d	100%	04-Nov-25 A	21-Nov-25 A		Pharr_5D_H	17.00d	17-Sep-25	09-Oct-25
dw04016000	Footing/Pedestals/Columns - Area A	11.00d	0.00d	100%	26-Nov-25 A	11-Dec-25 A		Pharr_5D_H	5.00d	10-Oct-25	17-Oct-25
dw04017000	Footing/Pedestals/Columns - Area B	10.00d	0.00d	100%	26-Nov-25 A	11-Dec-25 A		Pharr_5D_H	8.00d	30-Sep-25	09-Oct-25
dw04018000	Footing/Pedestals/Columns - Area C	10.00d	0.00d	100%	26-Nov-25 A	11-Dec-25 A		Pharr_5D_H	8.00d	18-Sep-25	29-Sep-25
dw04019000	Footing/Pedestals/Columns - Area D	10.00d	0.00d	100%	26-Nov-25 A	11-Dec-25 A		Pharr_5D_H	8.00d	08-Sep-25	17-Sep-25
dw04020000	Concrete Slab/Insulation - Area A	16.00d	0.00d	100%	26-Dec-25 A	20-Jan-26 A		Pharr_5D_H	9.00d	20-Oct-25	30-Oct-25
dw04021000	Concrete Slab/Insulation - Area B	16.00d	0.00d	100%	26-Dec-25 A	03-Mar-26 A		Pharr_5D_H	12.00d	10-Oct-25	28-Oct-25
dw04022000	Concrete Slab/Insulation - Area C	16.00d	0.00d	100%	26-Dec-25 A	09-Mar-26 A		Pharr_5D_H	12.00d	30-Sep-25	16-Oct-25



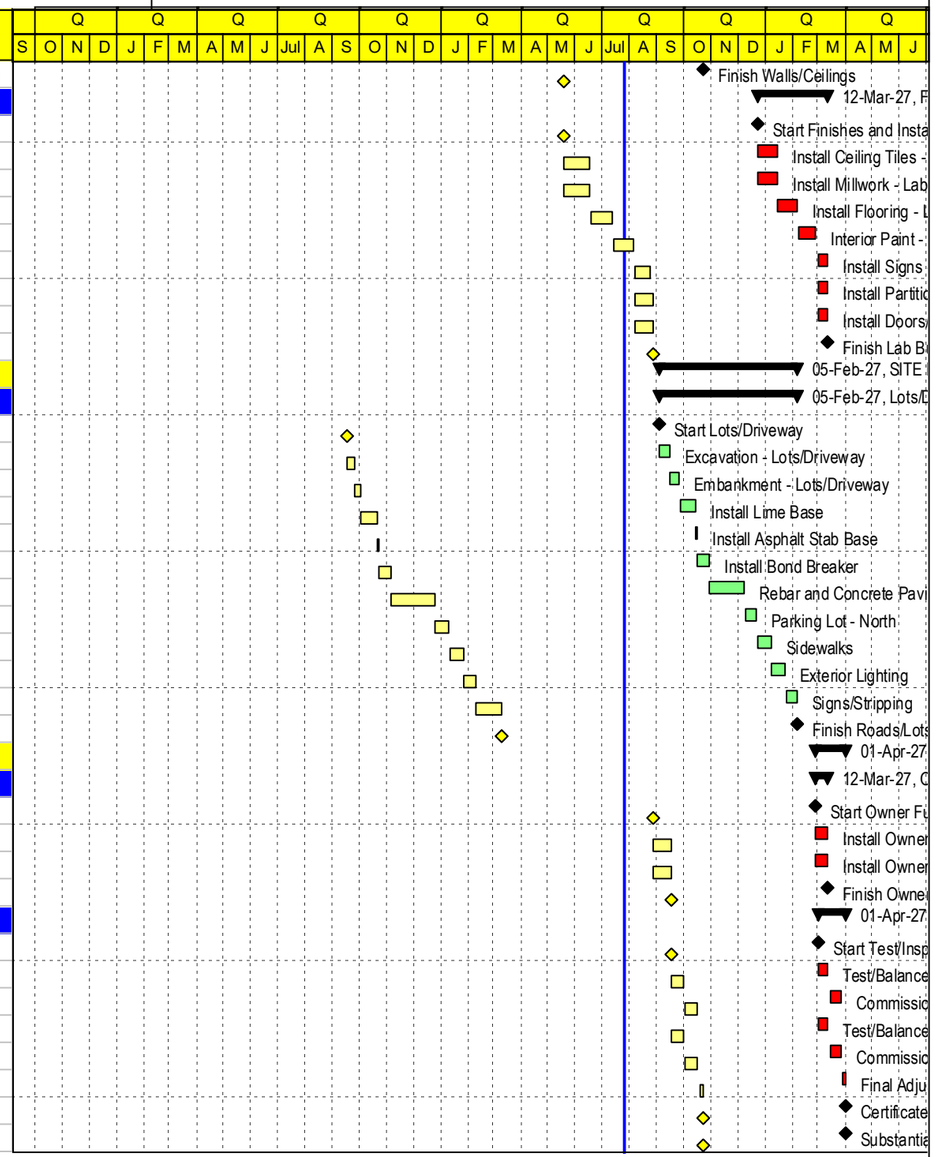
Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar	BL Project Duration	BL Project Start	BL Project Finish
dw04023000	Concrete Slab/Insulation - Area D	16.00d	0.00d	100%	26-Dec-25 A	09-Mar-26 A		Pharr_5D_H	12.00d	18-Sep-25	03-Oct-25
dw04024000	Termite Protection	16.00d	0.00d	100%	26-Dec-25 A	09-Mar-26 A		Pharr_5D_H	28.00d	08-Sep-25	16-Oct-25
dw04025000	Finish Foundation Prep	0.00d	0.00d	100%		09-Mar-26 A		Pharr_5D_H	0.00d		16-Oct-25
Structural		143.00d	16.00d		26-Dec-25 A	17-Aug-26	88.00d		62.00d	06-Oct-25	06-Jan-26
dw04026000	Start Structural	0.00d	0.00d	100%	26-Dec-25 A			Pharr_5D_H	0.00d	06-Oct-25	
dw04026500 D	Masonry Unit Procurement/Delivery	16.00d	0.00d	100%	26-Dec-25 A	13-Apr-26 A		Pharr_5D_H	0.00d		
dw04027000	Structural CMU - Area A	30.00d	0.00d	100%	12-Feb-26 A	13-Apr-26 A		Pharr_5D_H	14.00d	31-Oct-25	20-Nov-25
dw04028000	Structural CMU - Area B	30.00d	10.00d	95%	16-Feb-26 A	07-Aug-26	56.00d	Pharr_5D_H	20.00d	29-Oct-25	26-Nov-25
dw04029000	Structural CMU - Area C	44.00d	0.00d	100%	16-Feb-26 A	11-Jun-26 A		Pharr_5D_H	20.00d	17-Oct-25	14-Nov-25
dw04030000	Structural CMU - Area D	44.00d	0.00d	100%	16-Feb-26 A	11-Jun-26 A		Pharr_5D_H	20.00d	06-Oct-25	03-Nov-25
dw04031000	Structural Erection/Joist/Decking - Area A	14.00d	0.00d	100%	14-Apr-26 A	11-Jun-26 A		Pharr_5D_H	26.00d	25-Nov-25	02-Jan-26
dw04032000	Structural Erection/Joist/Decking - Area B	15.00d	16.00d	25%	10-May-26 A	17-Aug-26	88.00d	Pharr_5D_H	26.00d	28-Nov-25	06-Jan-26
dw04033000	Structural Erection/Joist/Decking - Area C	16.00d	16.00d	0%	27-Jul-26	17-Aug-26	47.00d	Pharr_5D_H	26.00d	17-Nov-25	23-Dec-25
dw04034000	Structural Erection/Joist/Decking - Area D	16.00d	16.00d	0%	27-Jul-26	17-Aug-26	47.00d	Pharr_5D_H	26.00d	04-Nov-25	11-Dec-25
dw04035000	Finish Structural	0.00d	0.00d	0%		17-Aug-26	50.00d	Pharr_5D_H	0.00d		11-Dec-25
Roof		53.00d	53.00d		06-Jul-26 A	02-Nov-26	78.00d		70.00d	22-Jan-26	30-Apr-26
dw04036000	Start Roof	0.00d	0.00d	100%	06-Jul-26 A			Pharr_5D_H	0.00d	22-Jan-26	
dw04037000	Install Curbs/Penetrations - Area A	15.00d	0.00d	100%	06-Jul-26 A	24-Jul-26 A		Pharr_5D_H	15.00d	22-Jan-26	11-Feb-26
dw04038000	Install Standing Seam Roof Panels - Area A	20.00d	20.00d	0%	18-Aug-26	15-Sep-26	90.00d	Pharr_5D_H	20.00d	12-Feb-26	12-Mar-26
dw04039000	Install Curbs/Penetrations - Area B	10.00d	10.00d	0%	17-Sep-26	30-Sep-26	79.00d	Pharr_5D_H	10.00d	20-Mar-26	02-Apr-26
dw04040000	Install Standing Seam Roof Panels - Area B	11.00d	11.00d	0%	01-Oct-26	16-Oct-26	79.00d	Pharr_5D_H	10.00d	03-Apr-26	16-Apr-26
dw04041000	Install Curbs/Penetrations - Area C	10.00d	10.00d	0%	05-Oct-26	19-Oct-26	78.00d	Pharr_5D_H	10.00d	03-Apr-26	16-Apr-26
dw04042000	Install Standing Seam Roof Panels - Area C	10.00d	10.00d	0%	20-Oct-26	02-Nov-26	78.00d	Pharr_5D_H	10.00d	17-Apr-26	30-Apr-26
dw04043000	Install Curbs/Penetrations - Area D	10.00d	10.00d	0%	05-Oct-26	19-Oct-26	78.00d	Pharr_5D_H	10.00d	03-Apr-26	16-Apr-26
dw04044000	Install Standing Seam Roof Panels - Area D	10.00d	10.00d	0%	20-Oct-26	02-Nov-26	78.00d	Pharr_5D_H	10.00d	17-Apr-26	30-Apr-26
dw04045000	Finish Roof	0.00d	0.00d	0%		02-Nov-26	78.00d	Pharr_5D_H	0.00d		30-Apr-26
Envelope		136.00d	73.00d		13-Apr-26 A	06-Nov-26	84.00d		110.00d	21-Nov-25	30-Apr-26
dw04046000	Start Envelope	0.00d	0.00d	100%	13-Apr-26 A			Pharr_5D_H	0.00d	21-Nov-25	
dw04047000	Exterior Framing/W Barrier - Area A	14.00d	0.00d	100%	13-Apr-26 A	12-Jun-26 A		Pharr_5D_H	15.00d	21-Nov-25	12-Dec-25
dw04048000	Install HM Frames/Doors - Area A	10.00d	0.00d	100%	13-Apr-26 A	15-May-26 A		Pharr_5D_H	10.00d	21-Nov-25	05-Dec-25
dw04049000	Install Alum Doors/Windows - Area A	16.00d	7.00d	98%	14-Jul-26 A	04-Aug-26	84.00d	Pharr_5D_H	10.00d	08-Dec-25	19-Dec-25
dw04050000	Install Exterior Sheathing - Area A	8.00d	0.00d	100%	08-May-26 A	25-Jun-26 A		Pharr_5D_H	8.00d	22-Dec-25	02-Jan-26
dw04051000	Install Metal Panels - Area A	11.00d	11.00d	0%	05-Aug-26	19-Aug-26	84.00d	Pharr_5D_H	12.00d	05-Jan-26	21-Jan-26
dw04052000	Install Softfit/Downspouts/Trim - Area A	20.00d	20.00d	0%	20-Aug-26	17-Sep-26	84.00d	Pharr_5D_H	20.00d	22-Jan-26	19-Feb-26
dw04053000	Install OVH Door - Area A	15.00d	15.00d	0%	18-Sep-26	08-Oct-26	84.00d	Pharr_5D_H	15.00d	20-Feb-26	12-Mar-26
dw04054000	Exterior Paint - Area A	20.00d	20.00d	0%	09-Oct-26	06-Nov-26	84.00d	Pharr_5D_H	20.00d	13-Mar-26	09-Apr-26
dw04055000	Exterior Framing/W Barrier - Area B	15.00d	10.00d	90%	08-May-26 A	07-Aug-26	48.00d	Pharr_5D_H	15.00d	15-Dec-25	06-Jan-26
dw04056000	Install HM Frames/Doors - Area B	10.00d	0.00d	100%	08-May-26 A	12-Jun-26 A		Pharr_5D_H	10.00d	07-Jan-26	21-Jan-26
dw04057000	Install Alum Doors/Windows - Area B	15.00d	15.00d	0%	27-Jul-26	14-Aug-26	48.00d	Pharr_5D_H	15.00d	22-Jan-26	11-Feb-26
dw04058000	Install Exterior Sheathing - Area B	10.00d	10.00d	0%	17-Aug-26	28-Aug-26	79.00d	Pharr_5D_H	10.00d	12-Feb-26	26-Feb-26
dw04059000	Install Metal Panels - Area B	12.00d	12.00d	0%	31-Aug-26	16-Sep-26	79.00d	Pharr_5D_H	15.00d	27-Feb-26	19-Mar-26
dw04060000	Install Softfit/Downspouts/Trim - Area B	20.00d	20.00d	0%	17-Sep-26	15-Oct-26	80.00d	Pharr_5D_H	20.00d	20-Mar-26	16-Apr-26
dw04061000	Exterior Paint - Area B	10.00d	10.00d	0%	16-Oct-26	29-Oct-26	80.00d	Pharr_5D_H	10.00d	17-Apr-26	30-Apr-26
dw04062000	Exterior Framing/W Barrier - Area C/D	15.00d	15.00d	0%	18-Aug-26	08-Sep-26	47.00d	Pharr_5D_H	15.00d	12-Feb-26	05-Mar-26
dw04063000	Install Exterior Sheating - Area C/D	10.00d	10.00d	0%	09-Sep-26	22-Sep-26	47.00d	Pharr_5D_H	10.00d	06-Mar-26	19-Mar-26
dw04064000	Install Metal Panels - Area C/D	8.00d	8.00d	0%	23-Sep-26	02-Oct-26	78.00d	Pharr_5D_H	10.00d	20-Mar-26	02-Apr-26
dw04065000	Install Softfit/Downspouts/Trim - Area C/D	10.00d	10.00d	0%	05-Oct-26	19-Oct-26	78.00d	Pharr_5D_H	10.00d	03-Apr-26	16-Apr-26
dw04066000	Exterior Paint - Area C/D	10.00d	10.00d	0%	20-Oct-26	02-Nov-26	78.00d	Pharr_5D_H	10.00d	17-Apr-26	30-Apr-26



Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar	BL Project Duration	BL Project Start	BL Project Finish
dw04067000	Finish Envelope	0.00d	0.00d	0%		02-Nov-26	78.00d	Pharr_5D_H	0.00d		30-Apr-26
COLD STORAGE		81.00d	81.00d		18-Aug-26	14-Dec-26	50.00d		95.00d	02-Jan-26	18-May-26
Cold Storage Installations		81.00d	81.00d		18-Aug-26	14-Dec-26	50.00d		95.00d	02-Jan-26	18-May-26
dw05001000	Start Cold Storage	0.00d	0.00d	0%	18-Aug-26		50.00d	Pharr_5D_H	0.00d	02-Jan-26	
dw05002000	Install Floor and Visquine	8.00d	8.00d	0%	18-Aug-26	27-Aug-26	50.00d	Pharr_5D_H	10.00d	02-Jan-26	15-Jan-26
dw05003000	Install Insulated Metal Panels	23.00d	23.00d	0%	28-Aug-26	30-Sep-26	50.00d	Pharr_5D_H	32.00d	16-Jan-26	04-Mar-26
dw05004000	Trim Insulated Metal Panels	10.00d	10.00d	0%	01-Oct-26	15-Oct-26	50.00d	Pharr_5D_H	10.00d	05-Mar-26	18-Mar-26
dw05005000	Install Insulated Doors	8.00d	8.00d	0%	16-Oct-26	27-Oct-26	50.00d	Pharr_5D_H	8.00d	19-Mar-26	30-Mar-26
dw05006000	Install Refrigeration/Coil/Unit/Pipe	21.00d	21.00d	0%	28-Oct-26	27-Nov-26	50.00d	Pharr_5D_H	23.00d	31-Mar-26	30-Apr-26
dw05007000	Install Drains	4.00d	4.00d	0%	30-Nov-26	03-Dec-26	50.00d	Pharr_5D_H	4.00d	01-May-26	06-May-26
dw05008000	Install Controls and Wiring	2.00d	2.00d	0%	04-Dec-26	07-Dec-26	50.00d	Pharr_5D_H	2.00d	07-May-26	08-May-26
dw05009000	Refrigeration Startup and Comm	5.00d	5.00d	0%	08-Dec-26	14-Dec-26	50.00d	Pharr_5D_H	6.00d	11-May-26	18-May-26
dw05010000	Finish Cold Storage	0.00d	0.00d	0%		14-Dec-26	50.00d	Pharr_5D_H	0.00d		18-May-26
DOCK		59.00d	59.00d		23-Sep-26	17-Dec-26	47.00d		79.00d	01-May-26	21-Aug-26
Dock Installations		59.00d	59.00d		23-Sep-26	17-Dec-26	47.00d		79.00d	01-May-26	21-Aug-26
dw06001000	Start Dock Installations	0.00d	0.00d	0%	23-Sep-26		47.00d	Pharr_5D_H	0.00d	01-May-26	
dw06002000	MEP Rough-In - Dock	18.00d	18.00d	0%	23-Sep-26	19-Oct-26	47.00d	Pharr_5D_H	18.00d	01-May-26	27-May-26
dw06003000	Install Trench - Dock	15.00d	15.00d	0%	20-Oct-26	09-Nov-26	47.00d	Pharr_5D_H	16.00d	28-May-26	18-Jun-26
dw06004000	Install Bollards - Dock	15.00d	15.00d	0%	10-Nov-26	02-Dec-26	47.00d	Pharr_5D_H	20.00d	19-Jun-26	17-Jul-26
dw06005000	Install Fixtures/Fans - Dock	11.00d	11.00d	0%	03-Dec-26	17-Dec-26	47.00d	Pharr_5D_H	10.00d	20-Jul-26	31-Jul-26
dw06006000	Install Signage - Dock	11.00d	11.00d	0%	03-Dec-26	17-Dec-26	47.00d	Pharr_5D_H	15.00d	03-Aug-26	21-Aug-26
dw06007000	Finish Dock Installations	0.00d	0.00d	0%		17-Dec-26	47.00d	Pharr_5D_H	0.00d		21-Aug-26
BLDG INTERIOR		175.00d	157.00d		08-May-26 A	12-Mar-27	0.00d		153.00d	22-Jan-26	27-Aug-26
MEP Rough-In		68.00d	40.00d		08-May-26 A	21-Sep-26	53.00d		72.00d	22-Jan-26	04-May-26
dw07001000	Start MEP Rough-In	0.00d	0.00d	100%	08-May-26 A			Pharr_5D_H	0.00d	22-Jan-26	
dw07002000	RI Electrical - Lab	23.00d	0.00d	100%	08-May-26 A	20-Jul-26 A		Pharr_5D_H	24.00d	22-Jan-26	25-Feb-26
dw07003000	RI Fire Alarm - Lab	24.00d	15.00d	85%	08-May-26 A	14-Aug-26	71.00d	Pharr_5D_H	24.00d	26-Feb-26	31-Mar-26
dw07004000	RI HVAC - Lab	24.00d	15.00d	85%	08-May-26 A	14-Aug-26	3.00d	Pharr_5D_H	24.00d	26-Feb-26	31-Mar-26
dw07005000	RI Fire Protection - Lab	25.00d	15.00d	85%	06-Jul-26 A	14-Aug-26	78.00d	Pharr_5D_H	25.00d	26-Feb-26	01-Apr-26
dw07006000	RI Plumbing - Lab	20.00d	15.00d	85%	08-May-26 A	14-Aug-26	78.00d	Pharr_5D_H	20.00d	02-Apr-26	29-Apr-26
dw07007000	RI Data/Comm - Lab	21.00d	15.00d	85%	11-Jun-26 A	14-Aug-26	78.00d	Pharr_5D_H	24.00d	01-Apr-26	04-May-26
dw07008000	Install Electrical Equipment	22.00d	22.00d	60%	11-Jun-26 A	25-Aug-26	71.00d	Pharr_5D_H	22.00d	03-Apr-26	04-May-26
dw07009000	Install HVAC Equipment	25.00d	25.00d	0%	17-Aug-26	21-Sep-26	3.00d	Pharr_5D_H	22.00d	03-Apr-26	04-May-26
dw07010000	Finish MEP Rough-In	0.00d	0.00d	0%		21-Sep-26	53.00d	Pharr_5D_H	0.00d		04-May-26
Walls/Ceilings		121.00d	103.00d		08-May-26 A	22-Dec-26	44.00d		82.00d	22-Jan-26	18-May-26
dw07011000	Start Walls/Ceilings	0.00d	0.00d	100%	08-May-26 A			Pharr_5D_H	0.00d	22-Jan-26	
dw07012000	Metal Frame/Block - Lab	15.00d	0.00d	100%	08-May-26 A	25-Jun-26 A		Pharr_5D_H	18.00d	22-Jan-26	17-Feb-26
dw07013000	Drywall/Insulation - Lab	18.00d	16.00d	55%	27-Jun-26 A	17-Aug-26	41.00d	Pharr_5D_H	18.00d	18-Feb-26	13-Mar-26
dw07014000	Tape/Float/Texture - Lab	20.00d	20.00d	15%	20-Jul-26 A	21-Aug-26	57.00d	Pharr_5D_H	20.00d	16-Mar-26	10-Apr-26
dw07015000	Fireproof/Caulk/Seal - Lab	20.00d	20.00d	0%	18-Aug-26	15-Sep-26	41.00d	Pharr_5D_H	20.00d	16-Mar-26	10-Apr-26
dw07016000	Ceiling Grid - Lab	20.00d	20.00d	0%	18-Aug-26	15-Sep-26	41.00d	Pharr_5D_H	20.00d	16-Mar-26	10-Apr-26
dw07017000	Ceiling Grid Fixtures - Lab	16.00d	16.00d	0%	16-Sep-26	07-Oct-26	41.00d	Pharr_5D_H	16.00d	13-Apr-26	04-May-26
dw07018000	Ceiling HVAC Devices - Lab	16.00d	16.00d	0%	16-Sep-26	07-Oct-26	41.00d	Pharr_5D_H	16.00d	13-Apr-26	04-May-26
dw07019000	Ceiling Fire Alarm Devices - Lab	16.00d	16.00d	0%	16-Sep-26	07-Oct-26	41.00d	Pharr_5D_H	16.00d	13-Apr-26	04-May-26
dw07020000	Final Trimout - Lab	10.00d	10.00d	0%	08-Oct-26	22-Oct-26	41.00d	Pharr_5D_H	10.00d	05-May-26	18-May-26
dw07020500 CO	ASI#18 - Electrical CO Impact	60.00d	60.00d	0%	25-Sep-26*	22-Dec-26	0.00d	Pharr_5D_H	0.00d		
dw07021000	Power On/HVAC On - Lab	0.00d	0.00d	0%		22-Dec-26	0.00d	Pharr_5D_H	0.00d		18-May-26
dw07022000	Power On/HVAC On - Cold Storage	0.00d	0.00d	0%		22-Dec-26	44.00d	Pharr_5D_H	0.00d		18-May-26



Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	Total Float	Calendar	BL Project Duration	BL Project Start	BL Project Finish
dw07023000	Finish Walls/Ceilings	0.00d	0.00d	0%		22-Oct-26	41.00d	Pharr_5D_H	0.00d		18-May-26
Finishes/Installations		54.00d	54.00d		23-Dec-26	12-Mar-27	0.00d		71.00d	19-May-26	27-Aug-26
dw07024000	Start Finishes and Installations	0.00d	0.00d	0%	23-Dec-26		0.00d	Pharr_5D_H	0.00d	19-May-26	
dw07025000	Install Ceiling Tiles - Lab	15.00d	15.00d	0%	23-Dec-26	14-Jan-27	0.00d	Pharr_5D_H	20.00d	19-May-26	16-Jun-26
dw07026000	Install Millwork - Lab	15.00d	15.00d	0%	23-Dec-26	14-Jan-27	0.00d	Pharr_5D_H	21.00d	19-May-26	17-Jun-26
dw07027000	Install Flooring - Lab	15.00d	15.00d	0%	15-Jan-27	05-Feb-27	0.00d	Pharr_5D_H	17.00d	18-Jun-26	13-Jul-26
dw07028000	Interior Paint - Lab	14.00d	14.00d	0%	08-Feb-27	26-Feb-27	0.00d	Pharr_5D_H	18.00d	14-Jul-26	06-Aug-26
dw07029000	Install Signs - Lab	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H	12.00d	07-Aug-26	24-Aug-26
dw07030000	Install Partitions/Accessories - Lab	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H	15.00d	07-Aug-26	27-Aug-26
dw07031000	Install Doors/Hardware - Lab	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H	15.00d	07-Aug-26	27-Aug-26
dw07032000	Finish Lab Building	0.00d	0.00d	0%		12-Mar-27	0.00d	Pharr_5D_H	0.00d		27-Aug-26
SITE IMPROVEMENTS		104.00d	104.00d		04-Sep-26	05-Feb-27	14.00d		118.00d	17-Sep-25	10-Mar-26
Lots/Driveway		104.00d	104.00d		04-Sep-26	05-Feb-27	14.00d		118.00d	17-Sep-25	10-Mar-26
dw08001000	Start Lots/Driveway	0.00d	0.00d	0%	04-Sep-26		14.00d	Pharr_5D_H	0.00d	17-Sep-25	
dw08002000	Excavation - Lots/Driveway	7.00d	7.00d	0%	04-Sep-26	15-Sep-26	14.00d	Pharr_5D_H	7.00d	17-Sep-25	25-Sep-25
dw08003000	Embankment - Lots/Driveway	8.00d	8.00d	0%	16-Sep-26	25-Sep-26	14.00d	Pharr_5D_H	5.00d	26-Sep-25	02-Oct-25
dw08004000	Install Lime Base	12.00d	12.00d	0%	28-Sep-26	14-Oct-26	14.00d	Pharr_5D_H	12.00d	03-Oct-25	21-Oct-25
dw08005000	Install Asphalt Stab Base	1.00d	1.00d	0%	15-Oct-26	15-Oct-26	14.00d	Pharr_5D_H	1.00d	22-Oct-25	22-Oct-25
dw08006000	Install Bond Breaker	10.00d	10.00d	0%	16-Oct-26	29-Oct-26	14.00d	Pharr_5D_H	10.00d	23-Oct-25	05-Nov-25
dw08007000	Rebar and Concrete Paving	26.00d	26.00d	0%	30-Oct-26	08-Dec-26	14.00d	Pharr_5D_H	33.00d	06-Nov-25	24-Dec-25
dw08008000	Parking Lot - North	10.00d	10.00d	0%	09-Dec-26	22-Dec-26	14.00d	Pharr_5D_H	10.00d	26-Dec-25	09-Jan-26
dw08009000	Sidewalks	10.00d	10.00d	0%	23-Dec-26	07-Jan-27	14.00d	Pharr_5D_H	10.00d	12-Jan-26	26-Jan-26
dw08010000	Exterior Lighting	10.00d	10.00d	0%	08-Jan-27	22-Jan-27	14.00d	Pharr_5D_H	10.00d	27-Jan-26	09-Feb-26
dw08011000	Signs/Stripping	10.00d	10.00d	0%	25-Jan-27	05-Feb-27	14.00d	Pharr_5D_H	20.00d	10-Feb-26	10-Mar-26
dw08012000	Finish Roads/Lots	0.00d	0.00d	0%		05-Feb-27	14.00d	Pharr_5D_H	0.00d		10-Mar-26
CLOSEOUT		24.00d	24.00d		27-Feb-27	01-Apr-27	0.00d		38.00d	28-Aug-26	22-Oct-26
Owner Fur Equip/Furn		10.00d	10.00d		27-Feb-27	12-Mar-27	0.00d		14.00d	28-Aug-26	17-Sep-26
dw09001000	Start Owner Furnished	0.00d	0.00d	0%	27-Feb-27		2.00d	Pharr_7D	0.00d	28-Aug-26	
dw09002000	Install Owner Furnished Furniture	14.00d	14.00d	0%	27-Feb-27	12-Mar-27	2.00d	Pharr_7D	21.00d	28-Aug-26	17-Sep-26
dw09003000	Install Owner Furnished Equipment	14.00d	14.00d	0%	27-Feb-27	12-Mar-27	2.00d	Pharr_7D	21.00d	28-Aug-26	17-Sep-26
dw09004000	Finish Owner Furnished	0.00d	0.00d	0%		12-Mar-27	2.00d	Pharr_7D	0.00d		17-Sep-26
Test/Inspect/Closing		24.00d	24.00d		01-Mar-27	01-Apr-27	0.00d		24.00d	18-Sep-26	22-Oct-26
dw09005000	Start Test/Inspect	0.00d	0.00d	0%	01-Mar-27		0.00d	Pharr_5D_H	0.00d	18-Sep-26	
dw09006000	Test/Balance - Lab	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H	10.00d	18-Sep-26	01-Oct-26
dw09007000	Commission - Lab	10.00d	10.00d	0%	15-Mar-27	26-Mar-27	0.00d	Pharr_5D_H	10.00d	02-Oct-26	16-Oct-26
dw09008000	Test/Balance - Cold Storage	10.00d	10.00d	0%	01-Mar-27	12-Mar-27	0.00d	Pharr_5D_H	10.00d	18-Sep-26	01-Oct-26
dw09009000	Commission - Storage	10.00d	10.00d	0%	15-Mar-27	26-Mar-27	0.00d	Pharr_5D_H	10.00d	02-Oct-26	16-Oct-26
dw09010000	Final Adjustment/Correction	4.00d	4.00d	0%	29-Mar-27	01-Apr-27	0.00d	Pharr_5D_H	4.00d	19-Oct-26	22-Oct-26
dw09011000	Certificate of Occupancy	0.00d	0.00d	0%		01-Apr-27	0.00d	Pharr_5D_H	0.00d		22-Oct-26
dw09012000	Substantial Completion	0.00d	0.00d	0%		01-Apr-27	0.00d	Pharr_5D_H	0.00d		22-Oct-26



AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.D.
DATE SUBMITTED: August 10, 2026
MEETING DATE: August 17, 2026

FROM: Edwin Manrique, Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Patrizia Longoria

Agenda Item: Consideration and action, if any, on Amendment No. 1 with Texas Department of Transportation for the I-Road Phase II Project for the replacement of the bridge on I Road at South Floodwater Channel (CSJ: 0921-02-491). **This item supports IF - Infrastructure**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Amendment No. 1 will revise the contract in order to terminate the advance funding agreement (AFA) with TxDOT.

City of Pharr owes $1,472.51 to the State in accordance with provision 4.P of the AFA, for direct project costs incurred during project development. This amount was taken from the refund for CSJ 0921-02-363 bringing that refund to $192,359.97.

Fiscal Consideration: Amendment #1: $1,472.51

This amount was deducted from the refund from Amendment No. 4 (CSJ 0921-02-363) bringing that refund to $192,359.97, addressing the City's pending responsibility.

Staff Recommendation: Staff recommends approval of the Amendment No. 1

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Edwin Manrique	Created/Initiated - 08/10/2026
Patrizia Longoria	Approved - 08/10/2026
Ricardo Rodriguez	Approved - 08/10/2026
Jamison Merrick	Approved - 08/11/2026
City Management Office	New -

Docusign Envelope ID: 0AD0DAF4-A8EE-80A6-8390-60941B19E41F

TxDOT:					Federal Highway Administration:	
CCSJ #	0921-02-499	AFA ID	Z00004909		CFDA No.	20.205
AFA CSJs	0921-02-491				CFDA Title	Highway Planning and Construction
District #	21	Code Chart 64#	32600			
Project Name	I Rd @ South Floodwater Channel				*AFA Not Used For Research & Development*	

THE STATE OF TEXAS §

THE COUNTY OF TRAVIS §

ADVANCE FUNDING AGREEMENT
For
Highway Bridge Program
Off-System

AMENDMENT #1

THIS AMENDMENT is made by and between the State of Texas, acting through the Texas Department of Transportation, called the "State", and the **City of Pharr**, acting by and through its duly authorized officials, called the "Local Government". The State and Local Government shall be collectively referred to as "the parties" hereinafter.

In Process

WITNESSETH

WHEREAS, the parties executed a contract on **August 15, 2023** to effectuate their agreement to replace the bridge on I Road @ South Floodwater Channel (NBI: 21-109-0-AA06-57-001) in Hidalgo County.; and,

WHEREAS, it has become necessary to amend that contract in order to terminate this agreement due to project inactivity resulting in de-obligation of federal funds;

WHEREAS, the Local Government previously paid its total estimated participation of $3,344.

WHEREAS, the State has performed a final accounting of Project costs of in accordance with provision 4.P. of the AFA and determined that the State incurred a total of $4,816.51 in direct costs.

WHEREAS, the Local Government owes $1,472.51 to the State in accordance with provision 4.P. of the AFA.

NOW THEREFORE, in consideration of the premises and of the mutual covenants and agreements of the parties, the parties do agree as follows:

AGREEMENT

In accordance with the original Advance Funding Agreement, the contract will terminate effective when signed by the last party of whose signing makes this Amendment fully executed.

In accordance with provision 4.P. of the AFA, the Local Government shall pay $1,472.51 to the State.

Docusign Envelope ID: 0AD0DAF4-A8EE-80A6-8390-60941B19E41F

TxDOT:					Federal Highway Administration:	
CCSJ #	0921-02-499	AFA ID	Z00004909		CFDA No.	20.205
AFA CSJs	0921-02-491				CFDA Title	Highway Planning and Construction
District #	21	Code Chart 64#	32600			
Project Name	I Rd @ South Floodwater Channel				*AFA Not Used For Research & Development*	

Signatory Warranty
Each signatory warrants that the signatory has necessary authority to execute this agreement on behalf of the entity represented.

Each party is signing this Agreement on the date stated under that party's signature.

THE STATE OF TEXAS	THE LOCAL GOVERNMENT
Signature	Signature
Typed or Printed Name	Typed or Printed Name
Typed or Printed Title	Typed or Printed Title
Date	Date

In Process

Certificate Of Completion

Envelope Id: 0AD0DAF4-A8EE-80A6-8390-60941B19E41F
Status: Sent
Subject: PHR - AFA Amend #1 - CSJ 0921-02-491 / Z00004909 - City of Pharr
Source Envelope:
Document Pages: 25
Signatures: 0
Envelope Originator:
Certificate Pages: 5
Initials: 0
Cara Vickery
AutoNav: Enabled
125 E. 11th Street
EnvelopeId Stamping: Enabled
Austin, TX 78701
Time Zone: (UTC-06:00) Central Time (US & Canada)
Cara.Vickery@txdot.gov
IP Address: 209.112.107.133

Record Tracking

Status: Original
Holder: Cara Vickery
Location: DocuSign
8/10/2026 8:12:59 AM
Cara.Vickery@txdot.gov
Security Appliance Status: Connected
Pool: StateLocal

Signer Events	Signature	Timestamp
Ambrosio Hernandez mayor@pharr-tx.gov Mayor Security Level: Email, Account Authentication (Optional) **Electronic Record and Signature Disclosure:** Accepted: 12/12/2025 12:52:19 PM ID: 1f3f3513-994f-40da-adf0-5f33f9b96133		Sent: 8/10/2026 8:18:54 AM
Kenneth Stewart kenneth.stewart@txdot.gov Security Level: Email, Account Authentication (Optional) **Electronic Record and Signature Disclosure:** Not Offered via Docusign		

In Process

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp
Edgar Perez edgar.perez@txdot.gov Transportation Engineer Texas Department of Transportation Security Level: Email, Account Authentication (Optional) **Electronic Record and Signature Disclosure:** Not Offered via Docusign	COPIED	Sent: 8/10/2026 8:18:53 AM
Patrizia Longoria patrizia.longoria@pharr-tx.gov Security Level: Email, Account Authentication (Optional) **Electronic Record and Signature Disclosure:**	COPIED	Sent: 8/10/2026 8:18:54 AM Viewed: 8/10/2026 8:19:11 AM

Carbon Copy Events	Status	Timestamp
Not Offered via Docusign		

Fin - LocalParticipation

fin_local-participation@txdot.gov

Security Level: Email, Account Authentication (Optional)

Electronic Record and Signature Disclosure:
Not Offered via Docusign

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	8/10/2026 8:18:53 AM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

In Process

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

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Unless you tell us otherwise in accordance with the procedures described herein, we will provide electronically to you through your DocuSign user account all required notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to you during the course of our relationship with you. To reduce the chance of you inadvertently not receiving any notice or disclosure, we prefer to provide all of the required notices and disclosures to you by the same method and to the same address that you have given us. Thus, you can receive all the disclosures and notices electronically or in paper format through the paper mail delivery system. If you do not agree with this process, please let us know as described below. Please also see the paragraph immediately above that describes the consequences of your electing not to receive delivery of the notices and disclosures electronically from us.

How to contact Texas Department of Transportation:

You may contact us to let us know of your changes as to how we may contact you electronically, to request paper copies of certain information from us, and to withdraw your prior consent to receive notices and disclosures electronically as follows:
To contact us by email send messages to: kevin.setoda@txdot.gov

To advise Texas Department of Transportation of your new e-mail address

To let us know of a change in your e-mail address where we should send notices and disclosures electronically to you, you must send an email message to us at kevin.setoda@txdot.gov and in the body of such request you must state: your previous e-mail address, your new e-mail address. We do not require any other information from you to change your email address..

In addition, you must notify DocuSign, Inc to arrange for your new email address to be reflected in your DocuSign account by following the process for changing e-mail in DocuSign.

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To request delivery from us of paper copies of the notices and disclosures previously provided by us to you electronically, you must send us an e-mail to kevin.setoda@txdot.gov and in the body of such request you must state your e-mail address, full name, US Postal address, and telephone number. We will bill you for any fees at that time, if any.
To withdraw your consent with Texas Department of Transportation

To inform us that you no longer want to receive future notices and disclosures in electronic format you may:

i. decline to sign a document from within your DocuSign account, and on the subsequent page, select the check-box indicating you wish to withdraw your consent, or you may;

ii. send us an e-mail to kevin.setoda@txdot.gov and in the body of such request you must state your e-mail, full name, IS Postal Address, telephone number, and account number. We do not need any other information from you to withdraw consent.. The consequences of your withdrawing consent for online documents will be that transactions may take a longer time to process..

Required hardware and software

Operating Systems:	Windows2000? or WindowsXP?
Browsers (for SENDERS):	Internet Explorer 6.0? or above
Browsers (for SIGNERS):	Internet Explorer 6.0?, Mozilla FireFox 1.0, NetScape 7.2 (or above)
Email:	Access to a valid email account
Screen Resolution:	800 x 600 minimum
Enabled Security Settings:	• Allow per session cookies

	• Users accessing the internet behind a Proxy Server must enable HTTP 1.1 settings via proxy connection

** These minimum requirements are subject to change. If these requirements change, we will provide you with an email message at the email address we have on file for you at that time providing you with the revised hardware and software requirements, at which time you will have the right to withdraw your consent.

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To confirm to us that you can access this information electronically, which will be similar to other electronic notices and disclosures that we will provide to you, please verify that you were able to read this electronic disclosure and that you also were able to print on paper or electronically save this page for your future reference and access or that you were able to e-mail this disclosure and consent to an address where you will be able to print on paper or save it for your future reference and access. Further, if you consent to receiving notices and disclosures exclusively in electronic format on the terms and conditions described above, please let us know by clicking the 'I agree' button below.

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- I can access and read this Electronic CONSENT TO ELECTRONIC RECEIPT OF ELECTRONIC RECORD AND SIGNATURE DISCLOSURES document; and
- I can print on paper the disclosure or save or send the disclosure to a place where I can print it, for future reference and access; and
- Until or unless I notify Texas Department of Transportation as described above, I consent to receive from exclusively through electronic means all notices, disclosures, authorizations, acknowledgements, and other documents that are required to be provided or made available to me by Texas Department of Transportation during the course of my relationship with you.

In Process

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.E.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Edwin Manrique, Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Patrizia Longoria

Agenda Item: Consideration and action, if any, on Amendment No. 3 with Texas Department of Transportation for the I-Road Phase II Project from Dicker Road to US Military Hwy 281 (CSJ: 0921-02-499). **This item supports IF - Infrastructure**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Amendment No. 3 will revise the contract in order to terminate the advanced funding agreement (AFA) with TxDOT.

City of Pharr has received a refund from the State (TxDOT) for **$120,182.95** in accordance with provision 4.P of the AFA.

Fiscal Consideration: The City received a refund in the amount of $120,182.95.

Staff Recommendation: Staff recommends approval of the Amendment no. 3.

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Edwin Manrique	Created/Initiated - 08/06/2026
Patrizia Longoria	Approved - 08/09/2026
Ricardo Rodriguez	Approved - 08/10/2026
Jamison Merrick	Approved - 08/10/2026
City Management Office	New -

Docusign Envelope ID: 4A0890AC-E607-821E-808A-0766025AF13F

TxDOT:					Federal Highway Administration:	
CCSJ #	0921-02-499	AFA ID	Z00003725		CFDA No.	20.205
AFA CSJs	0921-02-499				CFDA Title	Highway Planning and Construction
District #	21	Code Chart 64#	32600			
Project Name	I Road (Dicker to Military)				*AFA Not Used For Research & Development*	

THE STATE OF TEXAS §

THE COUNTY OF TRAVIS §

ADVANCE FUNDING AGREEMENT
For
Surface Transportation Program
Metropolitan Mobility and Rehabilitation Project
Off-System

AMENDMENT #3

THIS AMENDMENT is made by and between the State of Texas, acting through the **Texas Department of Transportation**, called the "State", and the **City of Pharr**, acting by and through its duly authorized officials, called the "Local Government". The State and Local Government shall be collectively referred to as "the parties" hereinafter.

WITNESSETH

In Process

WHEREAS, the parties executed a contract on **August 12, 2023** to effectuate their agreement to **reconstruct and widen I Road in Hidalgo County**; and,

WHEREAS, the parties executed Amendment **#1** to the contract on **February 27, 2024** to **reflect the utilization of Transportation Development Credits (TDC) in place of Local Government participation**; and,

WHEREAS, the parties executed Amendment **#2** to the contract on **May 9, 2025** to **reallocate $462,800.00 of category 7 funds from construction engineering to construction due to the increase of construction cost**; and,

WHEREAS, it has become necessary to amend that contract in order to **terminate this agreement due to project inactivity resulting in de-obligation of federal funds**;

WHEREAS, the Local Government previously paid its total estimated participation of $125,878.00.

WHEREAS, the State has performed a final accounting of Project costs of in accordance with provision 4.P. of the AFA and determined that the State incurred a total of $5,695.05 in direct costs.

WHEREAS, the State should refund $120,182.95 to the Local Government in accordance with provision 4.P. of the AFA.

NOW THEREFORE, in consideration of the premises and of the mutual covenants and agreements of the parties, the parties do agree as follows:

AGREEMENT

Docusign Envelope ID: 4A0890AC-E607-821E-808A-0766025AF13F

TxDOT:					Federal Highway Administration:	
CCSJ #	0921-02-499	AFA ID	Z00003725		CFDA No.	20.205
AFA CSJs	0921-02-499				CFDA Title	Highway Planning and Construction
District #	21	Code Chart 64#	32600			
Project Name		I Road (Dicker to Military)			*AFA Not Used For Research & Development*	

1. The parties agree that the Agreement is amended as follows:

   In accordance with the original Advance Funding Agreement, the contract will terminate effective when signed by the last party of whose signing makes this Amendment fully executed.

   The project was let, but a contract was not awarded. No construction work was performed; hence, no payment reimbursements occurred. Federal funds were de-obligated, and the project CSJ will be cancelled.

Signatory Warranty
Each signatory warrants that the signatory has necessary authority to execute this agreement on behalf of the entity represented.

Each party is signing this Agreement on the date stated under that party's signature.

THE STATE OF TEXAS	THE LOCAL GOVERNMENT
Signature	Signature
Typed or Printed Name	Typed or Printed Name
Typed or Printed Title	Typed or Printed Title
Date	Date

VOID

**For review only, this needs to be signed through DocuSign

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.F.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Edwin Manrique, Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Patrizia Longoria

Agenda Item: Consideration and action, if any, on Amendment No. 4 with Texas Department of Transportation for the I-Road Phase II Project from Rancho Blanco Road to Dicker Road (CSJ: 0921-02-363). **This item supports IF - Infrastructure**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Amendment No. 4 will revise the contract in order to terminate the advance funding agreement (AFA) with TxDOT.

City of Pharr has received a refund from the State (TxDOT) for **$192,359.97** in accordance with provision 4.P of the AFA.

CSJ 0921-02-491 had a negative balance of $1,472.51 that was taken from 0921-02-363. The original amount was $193,832.48.

Fiscal Consideration: The City received a refund in the amount of **$192,359.97**, which was $193,832.48 minus $1,472.51.

Staff Recommendation: Staff recommends approval of the Amendment no. 4

Alternatives: N/A

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Edwin Manrique	Created/Initiated - 08/06/2026
Patrizia Longoria	Approved - 08/09/2026
Ricardo Rodriguez	Approved - 08/10/2026
Jamison Merrick	Approved - 08/10/2026
City Management Office	New -

Docusign Envelope ID: 71014880-1BE3-8789-8177-9B997E10E4E9

TxDOT:					Federal Highway Administration:	
CCSJ #	0921-02-499	AFA ID	Z00001731		CFDA No.	20.205
AFA CSJs	0921-02-363				CFDA Title	Highway Planning and Construction
District #	21	Code Chart 64#				
Project Name	092102363 CS HIDALGO ("I" RD)				*AFA Not Used For Research & Development*	

THE STATE OF TEXAS §

THE COUNTY OF TRAVIS §

ADVANCE FUNDING AGREEMENT
For
Metropolitan Mobility Funds
Off-System

AMENDMENT #4

THIS AMENDMENT is made by and between the State of Texas, acting through the **Texas Department of Transportation**, called the "State", and the **City of Pharr**, acting by and through its duly authorized officials, called the "Local Government". The State and Local Government shall be collectively referred to as "the parties" hereinafter.

WITNESSETH

WHEREAS, the parties executed a contract on **March 22, 2021** to effectuate their agreement to **reconstruct a 2-lane roadway with shoulders on I Road, from Rancho Blanco Road to Military Highway (US 281)**; and,

WHEREAS, the parties executed Amendment **#1** to the contract on **April 21, 2023** to **separate the original "I" Road project into two segments, revise the scope and to increase the contract budget with Coronavirus Response and Relief Supplemental Appropriations Act (CRRSAA) funds programmed for construction**; and,

WHEREAS, the parties executed Amendment **#2** to the contract on **February 29, 2024** to **reflect the utilization of Transportation Development Credits (TDC) in place of Local Government participation**; and,

WHEREAS, the parties executed Amendment **#3** to the contract on **April 16, 2025** to **reallocate category 7 funds from construction engineering to construction due to the increase of construction cost**; and,

WHEREAS, it has become necessary to amend that contract in order to **Terminate this Agreement due to project inactivity resulting in de-obligation of federal funds**;

WHEREAS, the Local Government previously paid its total estimated participation of $264,250.00.

WHEREAS, the State has performed a final accounting of Project costs in accordance with provision 4.P of the AFA and determined that the State incurred a total of $70,417.52 in direct state costs.

WHEREAS, the State is obligated to refund $193,832.48 to the Local Government in accordance with provision 4.P. of the AFA.

NOW THEREFORE, in consideration of the premises and of the mutual covenants and agreements of the parties, the parties do agree as follows:

Docusign Envelope ID: 71014880-1BE3-8789-8177-9B997E10E4E9

TxDOT:					Federal Highway Administration:	
CCSJ #	0921-02-499	AFA ID	Z00001731		CFDA No.	20.205
AFA CSJs	0921-02-363				CFDA Title	Highway Planning and Construction
District #	21	Code Chart 64#				
Project Name	092102363 CS HIDALGO ("I" RD)				*AFA Not Used For Research & Development*	

AGREEMENT

In accordance with the original Advance Funding Agreement, the contract will terminate effective when signed by the last party of whose signing makes this Amendment fully executed.

The project was let, but a contract was not awarded. No construction work was performed; hence, no payment reimbursements occurred. Federal funds were de-obligated, and the project CSJ will be cancelled.

In accordance with provision 4.P. of the AFA, the State will refund $193,832.48 to the Local Government.

Signatory Warranty
Each signatory warrants that the signatory has necessary authority to execute this agreement on behalf of the entity represented.

Each party is signing this Agreement on the date stated under that party's signature.

THE STATE OF TEXAS	THE LOCAL GOVERNMENT
Signature	Signature
Typed or Printed Name	Typed or Printed Name
Typed or Printed Title	Typed or Printed Title
Date	Date

In Process

VOID

**For review only, this needs to be signed through DocuSign

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.G.
DATE SUBMITTED: August 6, 2026
MEETING DATE: August 17, 2026

FROM: Maria Rangel, Capital Improvement Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Patrizia Longoria

Agenda Item: Consideration and action, if any, on Amendment No. 2 with Brownstone Consultants, LLC. to the Construction Management Services for the Donation Acceptance Program (DAP) Fiscal Year 2016 Project. This item supports IF - Infrastructure.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Amendment No. 2 to the Professional Construction Management Services Agreement with Brownstone for FY16 DAP is to extend their services as a result of the extended project schedule. The professional services under this amendment will commence in August 2026 and run through February 2027 (substantial completion). Project No. 2021-01-528-S040-001

Fiscal Consideration:
Original: $1,758,362.00
Amendment 1: $2,227,429.00
Amendment 2: $621,306.00
Revised Agreement Amount: $4,607,097.00

Staff Recommendation: Staff recommends authorizing the City Manager to negotiate and execute Amendment No. 2, in an amount not to exceed $621,306, with Brownstone for FY 16 DAP.

Alternatives: No alternatives. As construction manager, Brownstone needs to be kept on the project through completion and close-out.

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Maria Rangel	Created/Initiated - 08/06/2026
Patrizia Longoria	Approved - 08/09/2026
Maritza Magallan	Approved - 08/10/2026
Ricardo Rodriguez	Approved - 08/10/2026
Jamison Merrick	Approved - 08/11/2026
City Management Office	New -

BROWNSTONE CONSULTANTS

July 30, 2026

City of Pharr
Dr. Jonathan B. Flores
City Manager
118 S. Cage Blvd.
Pharr, TX 78577

Re: FY 16 DAP Project – Brownstone Consultants LLC Proposal for Construction Management Services Extension (Amendment No. 2)

Dear Dr. Flores,

Attached is Brownstone's proposal to continue to provide Construction Management Services to the City of Pharr to complete the FY 16 DAP Project. Brownstone Consultants remains committed to providing exceptional quality assurance oversight as the City's representative, to the completion and success of the project, and to continue to work closely with TxDOT, General Services Administration (GSA), Customs and Border Protection (CBP), and other key stakeholders.

This proposal is based on the most recent project schedule and construction documents. Brownstone's current authorization for time and associated fees concludes in July 2026; however, the current project schedule reflects substantial completion of construction on February 14, 2027, followed by a sixty (60) day post-construction phase concluding April 15, 2027, for the three remaining phases (CSJs) of work. The principal reason for this shift in the completion date has been the longer-than-anticipated review and approval turnaround times experienced throughout the project in coordination with the General Services Administration (GSA) and U.S. Customs and Border Protection (CBP). Extended government response times on submittals, requests for information (RFIs), and compliance determinations have materially affected the pace at which construction activities could proceed, notwithstanding the project team's continuous efforts to maintain progress.

A representative example is the Build America, Buy America Act (BABAA) compliance determination for the project's plumbing fixtures. This matter was first raised in December 2024 and formally submitted for direction in January 2025 (RFI No. 24); an official determination was not received until more than a year later. Throughout that period, Brownstone actively facilitated the resolution, performing much of the supporting research and maintaining consistent follow-up with the responsible agencies to move the item toward closure. This item is illustrative of the extended coordination timelines that have driven the need for additional contract time.

Throughout our involvement, Brownstone has remained focused on protecting the City's interests and maximizing the value of its investment. As summarized in the attached Savings Optimization Log (SOL), Brownstone's oversight, negotiation, and value-engineering efforts have generated documented savings and value added to the City of Pharr exceeding **Six Million Dollars ($6,000,000.00)** to date, substantially more than the fee requested under this amendment. The complete log is attached as Exhibit E for the City's reference.

Brownstone further wishes to bring to the City's attention that the fees proposed under this amendment have been developed using our original 2023 contract rates. Although our rate schedule provides for an annual escalation of three percent (3.0%), and although the work under this amendment will be performed in 2026 and 2027, Brownstone has elected to hold the 2023 rates in place for the entire duration of this amendment. Applying the published 2026 contract rates to the same staffing plan would yield a fee of $678,669.00. By voluntarily forgoing escalation, Brownstone is extending the City a reduction of **Fifty-Seven Thousand, Three Hundred Sixty-Three Dollars ($57,363.00)** on this amendment alone.

Accordingly, we respectfully request the City's consideration of this proposal to extend the contract time and associated fees, allowing Brownstone to maintain approximately three (3) Full-Time Equivalents (FTEs) and continue providing the level of construction management services required to see this project through to successful completion.

We appreciate the opportunity to continue to support the City of Pharr. If you have any questions, please feel free to contact me.

Sincerely,

Carlos Del Angel, PMP, CCM
Managing Partner
Brownstone Consultants LLC

BROWNSTONE CONSULTANTS

PROPOSAL

Brownstone Consultants LLC is pleased to submit its proposal to continue to provide Construction Management Services for the FY16 DAP Project located in Pharr, Texas. This proposal is based on the following project assumptions.

| ASSUMPTIONS

1. The 100% PS&E package provided by Halff has been reviewed and approved by GSA and CBP and are the final plans that will be used for construction.
2. D. Wilson Construction Co. is the contractor under contract for this project and will remain under contract through completion.
3. Halff Associates is the design engineer of record, and they have time allocated for their specific construction administration tasks.
4. Brownstone estimates a remaining construction duration of approximately six and one-half (6.5) months, concluding February 14, 2027, followed by a sixty (60) day post-construction phase concluding April 15, 2027.
5. The estimated construction cost is approximately $45 Million Dollars ($45,000,000.00).
6. Project consists of three phases (CSJs): 1) Phase 1: Dry Dock Expansion, 2) Phase 2: Cold Storage Dock Expansion, and 3) Agricultural Lab and Site Improvements.
7. Contract time will consist of the TxDOT 5-day standard work week. (No night shift or weekend work other than the regularly scheduled concrete placement.) Durations shown on the execution plan (Exhibit B) are expressed in calendar days.
8. The project schedule shown in this proposal accounts for weather delays, days approved via change orders, and anticipated time extensions due to unforeseen conditions.

| PERIOD OF PERFORMANCE

The period of performance under this amendment is nine (9) months, commencing August 2026 and concluding April 2027. This period comprises the remaining construction duration through February 14, 2027, and the sixty (60) day post-construction phase concluding April 15, 2027. Staffing is reduced in April 2027 to reflect the partial month and the completion of final close-out, reconciliation, and record turnover. Invoicing under this amendment commences upon exhaustion of the currently authorized fee.

| SCOPE OF SERVICES

Refer to Exhibit A for a complete scope of services.

| PROJECT SCHEDULE

Please refer to Exhibit B for the execution plan / project schedule.

BASE FEE TOTAL

Stipulated Sum Fee of ***Six Hundred Twenty-One Thousand, Three Hundred Six Dollars and 00/100 ($621,306.00).***

Please refer to Exhibit C (Standard Labor Rates) & C-1 (Fee Schedule).

All labor under this amendment is billed at Brownstone's original 2023 contract rates. The three percent (3.0%) annual escalation provided for in Exhibit C has been voluntarily waived for the full duration of this amendment, representing a reduction of $57,363.00 to the City.

PAYMENT SCHEDULE

Please refer to Exhibit D for the payment schedule of values.

SAVINGS OPTIMIZATION LOG

Please refer to Exhibit E for the complete Savings Optimization Log (SOL).

ADDITIONAL SERVICES

Any services not stated in this proposal will constitute an additional service and will be billed at our hourly fee schedule (reference Exhibit C) or by separate proposal.

EXCLUSIONS

This proposal excludes the following services:

- Architectural or Engineering Design Services
- Site Surveys and Platting
- Construction Materials Testing
- Environmental and Geotechnical Testing
- Commissioning

Should you have any questions regarding this proposal, do not hesitate to call me at (956) 307-3057.

Sincerely,

Carlos Del Angel, PMP, CCM
Managing Partner

1. **Procurement Phase**
    a. Assist the City of Pharr Purchasing & Engineering Departments in the preparation of bid documents. Bid documents will include, but are not limited to; bid advertisement, general conditions, special conditions, notices, bid tabulations, bid forms, etc.

    b. Contractor outreach and prequalification of Contractors. Brownstone will identify and conduct outreach to contractors who have the capacity and resources to successfully complete a project of this size and scope. Brownstone will develop an outreach log to document contractors and project interest.

    c. Coordinate and Conduct Pre-Bid Conference. Brownstone will assist the Engineer and the City of Pharr develop the meeting agenda and conduct/participate in the pre-bid conference.

    d. Assist in the development of responses to Contractors Pre-Bid questions. Brownstone will coordinate the receipt of questions from Contractors and ensure they are responded to prior to the deadline. Brownstone will assist the City of Pharr procurement department in developing and issuing the addendum with all questions and their respective responses.

    e. Coordinate the issuance of any Addendum(a) – Brownstone will coordinate the issuance of any addendum with the key stakeholders and ensure that any required concurrences are received prior to issuance.

    f. Bid Opening, Tabulation, Review and Analysis – Brownstone will be present at the bid opening and will document all bids received. Brownstone will review all responsive bids and prepare a bid tabulation indicating the bid prices for each item for each bidder along with the estimated prices for each bid. We will then analyze the bids for reasonable conformance to the estimated prices to determine if the contract should be awarded or if all bids should be rejected.

    g. Prepare formal recommendation letter and any state agency concurrence letters required (if applicable).

    h. Assist in contract development. – Brownstone will assist the City of Pharr's Purchasing Department in developing and compiling all required contract documents in compliance with TxDOT's local government development procedures.

    i. Updates to Project Budget. – After project letting, Brownstone will update the Total Project Cost (TPC) to include the construction contract amount. The project management information system (PMIS) budget module will also be updated to include the contractor's schedule of values (SOV).

    j. Updates to Project Schedule. – After project letting, Brownstone will update the overall project schedule to include the contractor's detailed construction schedule. The project management information system (PMIS) schedule module will also be updated to include the contractor's detailed construction schedule.

    k. Develop and distribute monthly reports to Owner – On or around the 10th of every month, Brownstone will distribute a monthly report to the Owner detailing all project information and activities from the previous month. The monthly report will include but is not limited to executive summary, issues, budget, schedule, tasks, and thirty-day look ahead.

    l. Assist in the procurement of other project consultants – Brownstone will assist in the selection and procurement of other required project consultants. These consultants include but are not limited to, construction materials testing, furniture, commissioning, and AVIT.

    m. Meetings and Coordination for Project Development – Brownstone will conduct both scheduled and impromptu meetings with the City of Pharr and other stakeholders throughout all phases of the project. These meetings include bi-weekly project status meetings, monthly updates to executive management, monthly bridge board meetings, meetings with various city departments, meetings with the design team, internal meetings, and any required site visits prior to construction.

2. **Construction Phase**
    a. Develop and coordinate issuance of NTP. – Brownstone will assist the City of Pharr in developing and issuing the Notice to Proceed (NTP) letter. We will ensure that all contract execution requirements have been met prior to issuing the NTP and that the NTP letter contains the date of commencement and the method of time charges.
    b. Organize and facilitate a Pre-Construction Conference. – Brownstone will assist the City of Pharr in organizing and facilitating a Pre-Construction Conference with all parties, including TxDOT.
    c. Administer the construction contract.
        i. Records Organization and Retention (Document Control) – Brownstone will create an organization system at the beginning of the project and properly store documents as they are received. An electronic folder filing system will be created for each required element of the project. This will include but is not limited to, RFI's, Submittals, DBE, SW3P, Shop Drawings, Transmittals, etc.
        ii. Specification Compliance – Brownstone will ensure that the contract elements included in the P, S, & E and the bid documents are adhered to by the selected Contractor.
        iii. Davis Bacon Implementation and Oversight
            1. Payroll Reporting
    d. Conduct/Attend bi-weekly construction meetings.
    e. Daily Site Visits to monitor and record construction activities. Daily reports will be developed using the Raken App Software and will be distributed to the team at predetermined intervals.
        i. Develop daily reports documenting the following:
            1. Safety
            2. Location
            3. Weather
            4. Crews – Manpower
            5. Material on Hand (Quantities)
            6. Equipment
            7. Images (Progress Photos)
            8. Production
            9. Issues
            10. As-builts Review
            11. Quality Assurance
            12. Delays
            13. SW3P
            14. Non-project Visitors
            15. Construction Material Testing (if applicable)
    f. Monthly aerial project progress photos.
    g. Quality Assurance Program – Implement a quality assurance program to ensure the materials and workmanship incorporated into the project are in conformance with the approved plans and specifications.
    h. Coordinate change management process. Review Contract Change Directives (CCD's) and Proposed Change Orders (PCO's). Prepare and process Contingency Expenditure Authorizations (CEA's) and Change Orders for Owner (CO's) as needed.

i. Coordinate construction material testing and review CMT reports. Develop failed test log to ensure deficiencies are cleared and retests are charged to the Contractor.

j. Perform QA reviews of applications for payment, execute and distribute to the City.

k. Updates to Project Budget. – After construction starts, Brownstone will update the Total Project Cost (TPC) monthly to include work completed to date. The project management information system (PMIS) budget module will also be updated to include the contractor's most recent application for payment.

l. Updates to Project Schedule. – After construction starts, Brownstone will update the overall project schedule monthly to include the contractor's scheduled activities. The project management information system (PMIS) schedule module will also be updated.

m. Develop and distribute monthly report to Owner. – On or around the 10th of every month, Brownstone will distribute a monthly report to the Owner detailing all project information and activities from the previous month. The monthly report will include but is not limited to executive summary, issues, budget, schedule, tasks, and thirty-day look ahead.

n. Meetings and Coordination for Project Development. – Brownstone will conduct both scheduled and impromptu meetings with the City of Pharr and other stakeholders throughout all phases of the project. These meetings include bi-weekly project status meetings, monthly updates to executive management, monthly bridge board meetings, meetings with various city departments, meetings with the design team, internal meetings, and any required site visits prior to construction.

o. Participate in the development of the punch-list and make recommendations on the issuance of certificates of substantial completion.

3. Post-Construction Phase

a. Conduct final inspections with Contractor and City personnel. Participate in and make recommendations on the issuance of the certificate of final completion.

b. Ensure that the efforts of City departments are coordinated with the Contractor activities.

c. Manage and facilitate the implementation of all commissioning processes through project completion.

d. Assist in coordinating equipment installation as requested by the City and key stakeholders.

e. Administer post construction close-out, start-up, and transition to operation including ensuring receipt of all operations and maintenance manuals, warranties, and as-built drawings.

f. Attend and video record (if applicable) all equipment trainings. All videos will be catalogued in the close out documents.

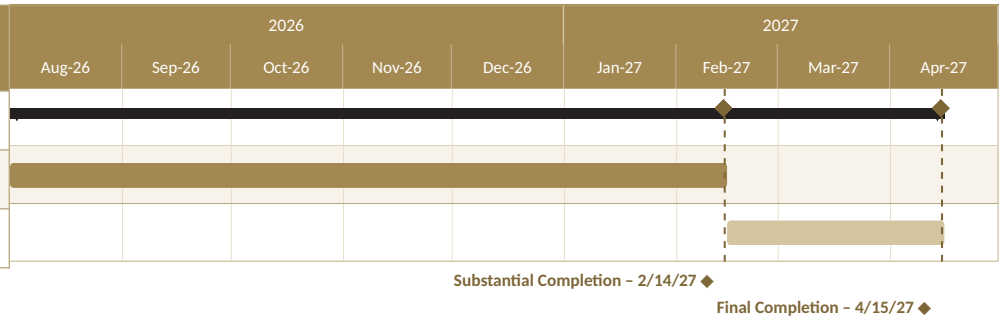
g. Expedite final Project close out and approval for final payment and assist in all post construction dispute resolution as necessary.

h. Coordinate "as-built" drawings with the contractor and Architect/Engineer of record.

i. Review close-out requirements and documentation submitted by the Contractor.

j. Prepare and issue final reconciliation change order and provide recommendation for final payment.

ID	Task Name	Duration	Start	Finish
1	**Amendment No. 2 Period of Performance**	**258 days**	**Sat 8/1/26**	**Thu 4/15/27**
2	Construction Phase (Extension) – Remaining	198 days	Sat 8/1/26	**Sun 2/14/27**
3	Post Construction Phase	60 days	Mon 2/15/27	**Thu 4/15/27**



Amendment No. 2 Period of Performance Construction Phase (Extension) – Remaining Duration Post Construction Phase ◆ Milestone

This exhibit depicts only the period of performance requested under Amendment No. 2 — August 1, 2026 through April 15, 2027.

BROWNSTONE CONSULTANTS

EXHIBIT C - LABOR RATE SCHEDULE

Labor Category / Personnel	Base Rate	2023* Contract Rate	2024 Contract Rate	2025 Contract Rate	2026 Contract Rate
Principal in Charge / Executive	$ 104.00	$ 280.80	$ 289.22	$ 297.90	$ 306.84
Senior Construction Manager (CCM/PMP)	$ 86.50	$ 233.55	$ 240.56	$ 247.77	$ 255.21
Construction Manager	$ 72.00	$ 194.40	$ 200.23	$ 206.24	$ 212.43
Assistant Construction Manager	$ 58.00	$ 156.60	$ 161.30	$ 166.14	$ 171.12
Project Engineer	$ 44.00	$ 118.80	$ 122.36	$ 126.03	$ 129.82
Sr. Construction Inspector	$ 43.50	$ 117.45	$ 120.97	$ 124.60	$ 128.34
Construction Inspector	$ 36.00	$ 97.20	$ 100.12	$ 103.12	$ 106.21
Record Keeper	$ 32.00	$ 86.40	$ 88.99	$ 91.66	$ 94.41
Unmanned Aircraft System (UAS) Pilot - Drone	$ 30.00	$ 81.00	$ 83.43	$ 85.93	$ 88.51
Project Control Specialist	$ 28.00	$ 75.60	$ 77.87	$ 80.20	$ 82.61
Admin/Clerical	$ 22.00	$ 59.40	$ 61.18	$ 63.02	$ 64.91
Direct Expenses	**Rate**				
Travel					
Lodging (per night)	$ 150.00				
Per Diem (Meals)	$ 60.00				
Airfare	**Cost**				
Car Rental (per day)	$ 60.00				
Parking	**Cost**				
Mileage (per mile)	$ 0.655				
Copies					
8.5 x 11 (per sheet)	$ 1.00				
11 x 17 (per sheet)	$ 2.00				
Overnight Mail (EA)	$ 25.00				
Unmanned Aircraft System (UAS) Flight - Drone (per hour)	$ 250.00				

Contract Rates include labor, overhead, and profit. Once rates are negotiated, they are not subject to change or adjustment.

** Indicates rates used for development of fee proposal.*

FEE SUMMARY

Year	Hours	CM Fee
2026 (Aug – Dec)	2,360	$369,036.00
2027 (Jan – Apr)	1,584	$249,544.80
Sub-Total Billable Hourly Fee	**3,944**	**$618,580.80**

DIRECT EXPENSES

Type	Unit	Qty	Rate	Total
Mileage	mile	4,160	$0.655	$2,724.80
Sub-Total Direct Expenses				**$2,724.80**

Sub-Total Billable Hourly Fee	$618,580.80
Sub-Total Direct Expenses	$2,724.80
Computed Total	$621,305.60
STIPULATED SUM FEE (ROUNDED)	**$621,306.00**

Stipulated Sum rounded up to the nearest whole dollar. The $0.40 rounding adjustment is applied to the final invoice on Exhibit D.

BASIS OF FEE

Direct (Billable) Hours / Year	1,920
Hours per Month	160
Period of Performance	Aug 2026 – Apr 2027 (9 months)
Rate Basis	2023 Contract Rates
Annual Rate Escalation per Exhibit C	3.0% — **waived**
Fee at published 2026 rates	$678,668.88
Reduction to City from waived escalation	**$57,363.28**

All labor billed at Brownstone's original 2023 contract rates for the full duration of this amendment. Mileage held at the 2023 rate of $0.655 per mile. Amounts cited in the cover letter are rounded to the nearest whole dollar.

STAFFING PLAN — 2026

Role	Rate	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Total Hrs	Amount
Principal in Charge / Executive	$280.80	0.10	0.10	0.10	0.10	0.10	80	$22,464.00
Senior Construction Manager (CCM/PMP)	$233.55	0.50	0.50	0.50	0.50	0.50	400	$93,420.00
Construction Manager	$194.40	1.00	1.00	1.00	1.00	1.00	800	$155,520.00
Construction Inspector	$97.20	1.00	1.00	1.00	1.00	1.00	800	$77,760.00
Project Control Specialist	$75.60	0.25	0.25	0.25	0.25	0.25	200	$15,120.00
Admin / Clerical	$59.40	0.10	0.10	0.10	0.10	0.10	80	$4,752.00
Total FTE		**2.95**	**2.95**	**2.95**	**2.95**	**2.95**	**2,360**	**$369,036.00**
Monthly Billing (Exhibit D)		$73,807.20	$73,807.20	$73,807.20	$73,807.20	$73,807.20	472 hr/mo	$369,036.00

STAFFING PLAN — 2027

Role	Rate	Jan-27	Feb-27	Mar-27	Apr-27	Total Hrs	Amount
Principal in Charge / Executive	$280.80	0.10	0.10	0.10	–	48	$13,478.40
Senior Construction Manager (CCM/PMP)	$233.55	0.50	0.50	0.50	0.20	272	$63,525.60
Construction Manager	$194.40	1.00	1.00	1.00	0.50	560	$108,864.00
Construction Inspector	$97.20	1.00	1.00	1.00	0.25	520	$50,544.00
Project Control Specialist	$75.60	0.25	0.25	0.25	0.10	136	$10,281.60
Admin / Clerical	$59.40	0.10	0.10	0.10	–	48	$2,851.20
Total FTE		**2.95**	**2.95**	**2.95**	**1.05**	**1,584**	**$249,544.80**
Monthly Billing (Exhibit D)		$73,807.20	$73,807.20	$73,807.20	$28,123.20	—	$249,544.80

Construction Management Services – Fee Proposal – Brownstone Consultants LLC. Rates shown are 2023 contract rates per Exhibit C and include labor, overhead, and profit. April 2027 reflects reduced staffing for the partial month through completion of the post-construction phase on April 15, 2027, including final close-out, reconciliation, and record turnover.

BROWNSTONE CONSULTANTS

EXHIBIT D

PAYMENT SCHEDULE OF VALUES

INV #	Month / Year	Monthly	Cumulative	Project Phase
1	Aug-26	$73,807.20	$73,807.20	Construction
2	Sep-26	$73,807.20	$147,614.40	Construction
3	Oct-26	$73,807.20	$221,421.60	Construction
4	Nov-26	$73,807.20	$295,228.80	Construction
5	Dec-26	$73,807.20	$369,036.00	Construction
6	Jan-27	$73,807.20	$442,843.20	Construction
7	Feb-27	$73,807.20	$516,650.40	Construction
8	Mar-27	$73,807.20	$590,457.60	Post-Construction
9	Apr-27	$30,848.40	$621,306.00	Post-Construction
TOTAL		**$621,306.00**	**$621,306.00**	—

Invoice No. 9 comprises $28,123.20 in labor at reduced staffing for the partial month plus $2,724.80 in direct expenses (mileage), together with a $0.40 adjustment reflecting the rounding of the Stipulated Sum to the nearest whole dollar. Construction is scheduled to reach substantial completion February 14, 2027; the sixty (60) day post-construction phase concludes April 15, 2027.

BY AND BETWEEN THE CITY OF PHARR, AS OWNER, AND BROWNSTONE CONSULTANTS LLC AS CONSTRUCTION MANAGER FOR THE FY16 DAP PROJECT

BROWNSTONE CONSULTANTS

Pharr FY16 DAP – Dock Expansion Phase I & II and Agricultural Lab

EXHIBIT E — SAVINGS OPTIMIZATION LOG (SOL)

Project Manager: David M. Chacon, PE **Approved:** _____

Date: July 28, 2026

#	Phase	Item Description	Estimated Value	Remarks
1	Construction	Bid Rejection and Rebid – FY16 DAP Dock Expansion / Ag Lab	$4,905,742.72	Per Brownstone's bid analysis letter, the sole bid received (N3M Contracting / NM Contracting) came in at $50,159,714.89 — 10.4% over the engineer's estimate, with unreasonable unit price variances ranging from -100% to +8,906%. Based on Brownstone's recommendation, the City rejected the bid and rebid the project. The rebid produced a final negotiated contract value of $45,253,972.10, resulting in **savings** of nearly $4.9 million for the City of Pharr.
2	Construction	PCO 003 – Jack Bore 14" Steel Casing	$17,556.03	Boring under the existing concrete roadway was required for the 6" water line, as GSA and TxDOT did not approve an open-trench installation. Following several negotiations and a review of the change proposal, the total amount was reduced from $23,937.00 to $6,380.97, resulting in a **savings** of $17,556.03 for the City of Pharr.
3	Construction	PCO 005 – RFI 26 Existing Electrical Infrastructure to TxDOT Canopy	$7,263.40	Additional infrastructure was needed to maintain power to the TxDOT exit canopies. The contractor submitted a proposal of $69,610.20. Brownstone negotiated and reduced the price to $62,346.80. The negotiation resulted in actual **savings** of $7,263.40 for the City of Pharr.
4	Construction	PCO 006 – DOAS Basis of Design	$134,996.18	During the RTU submittal review, two non-compliant DAIKIN units were replaced with approved units, resulting in a **credit**. The change order was reduced from $116,484.18 to -$18,512.00, resulting in potential **savings** of $134,996.18 for the City of Pharr.
5	Construction	PCO 010 – Value Engineering Credit: PVC vs. Cast Iron Below Slab	$25,600.00	After review and consultation with the design team and GSA, the cast iron sanitary waste and vent piping under the slab was replaced with PVC piping. The VE substitution resulted in a **credit** to the City of Pharr.
6	Construction	PCO 011 – Omit Chain Link Fencing in its Entirety	$88,508.00	After review of the construction documents, and consulting with the design team, the chain link fence was not shown on any of the design drawings. The removal of the chain link fence from the scope of work resulted in a **credit** for the installation of the chain link fence and gates.
7	Construction	PCO 012 – RFI 34 Additional MVEC Electrical Primary	$15,670.34	MVEC notified the team that an additional transformer would be needed for the project. The contractor provided pricing to install the conduit to run the service. The PCO was for $108,174.18, and after coordination, clarifications, and negotiation, the PCO was reduced to $92,503.84 with actual **savings** of $15,670.34.
8	Construction	PCO 013 – Construction Exit Savings	$14,383.00	The proposed construction entrance was substituted to a reusable and cost-efficient type of construction entrance, resulting in a **credit** of $14,383.00 under Item 506-6020.
9	Construction	PCO 014 – ASI 01: Credit for Gas Line Revisions	$11,811.24	Quantities for the removal of the existing gas line were reduced, resulting in a **credit** for the City of Pharr.
10	Construction	PCO 015 – RFI 67 Steel Casing	$11,772.00	24 LF of 16" steel casing at the sanitary sewer line is no longer required; a **credit** will be issued.
11	Construction	PCO 016 – Omit Building Plaque	$3,860.00	After review of the construction documents and consulting with City of Pharr management, the building plaque is not required, resulting in a **credit** of $3,860.00 to the City of Pharr.
12	Construction	PCO 018 – Omit Landscaping and Irrigation	$100,280.00	After review of the construction documents, the landscaping and irrigation scope of work was no longer required, resulting in a **credit** of $100,280.00 to the City of Pharr.

#	Phase	Item Description	Estimated Value	Remarks
13	Construction	PCO 017 – Foundation Slope Adjustments at Docks	$8,156.97	Contractor provided a price to remove the retaining wall formwork and adjust the reinforcement to provide a proper slope for the dock slab. The PCO came in at $32,435.00. After negotiations the revised PCO was for $24,278.03, with actual **savings** of $8,156.97.
14	Construction	PCO 025 – Duct Banks Weather Delay Impact	$50,703.57	The contractor submitted a request for additional compensation for re-work performed as a result of a weather impact. The monetary claim was rejected, resulting in **savings** of $50,703.57.
15	Construction	PCO 026 – Bulletproof Doors & Frames	$1,392.41	Per ASI 04 and 11 and RFI No. 51, bullet-resistant openings in Area B were revised. Two windows were reduced in size and infilled with CMU, and one door and window were added at Door 161A and Storefront M13. These revisions reduced the overall scope, resulting in **savings** of $1,392.41 for the City of Pharr.
16	Construction	PCO 027 – Guardrails & Handrails	$12,103.75	According to ASI 11 and RFI No. 50, the contractor suggested guardrails on both sides of the north sidewalk at the Ag. Lab building. After review, only one side of the sidewalk required handrails. The final amount was reduced from $23,421.14 to $11,317.39, **saving** $12,103.75 for the City of Pharr.
17	Construction	PCO 033 – Leidos Damages to Electrical	$5,000.00	Subcontractor D&F requested compensation for damaged conduits at the electrical ductbanks caused by Leidos during their installation of electrical lines near the existing generator yard. Through negotiations by Brownstone, the total repair cost was reduced by approximately $5,000.00, resulting in a potential **saving** for the City of Pharr.
18	Construction	PCO 007 – Cement Stabilized Sand	$16,141.84	The contractor requested additional funds for cement-stabilized sand backfill associated with the stormwater sewer RCP installation. The change proposal was rejected, resulting in a **credit** of $16,141.84 to the City of Pharr.
19	Construction	PCO 006 – Excavation and Embankment	$233,834.02	The contractor submitted a request for additional compensation for the difference between the bid excavation quantities and the actual excavation quantities. After several disputes, the change proposal was rejected, and the excavation quantity surplus will be paid as an overrun of the existing line item at the original bid price, resulting in a **credit** of $233,834.02 to the City of Pharr.
20	Construction	Additional Working Days	$180,000.00	The contractor requested 165 additional working days; however, only 45 days were approved, resulting in potential **savings** of $180,000.00 to the City of Pharr.
21	Construction	PCO 024 – Water Line	$62,710.33	The contractor requested additional compensation for the installation of an additional 763 LF of 8" PVC water line at an increased unit price. This change proposal was rejected. The surplus linear footage will be paid at the original unit price, resulting in **savings** of $62,710.33 for the City of Pharr.
22	Construction	PCO 023 – RFI 66 Feeder to Existing Panel EITH	$2,608.18	The contractor submitted a request for additional compensation for the installation of approximately 50 LF of conduit for the feeder to Panel EITH (per RFI 66), requesting $42,540.31. Brownstone found the pricing excessive and requested a revision; the final negotiated price came to $39,932.13, resulting in **savings** of $2,608.18 to the City of Pharr.
23	Construction	PCO 028 – Storm Line Changes	$16,966.64	The contractor submitted a request to perform HDPE storm sewer modifications. The request came in at $23,613.32. After Brownstone required removal of items to be billed as overruns, the revised request was for $16,966.64. Upon further review, Brownstone determined these items were already covered under the existing contract and directed that the work be billed using existing contract line items instead, resulting in **savings** of $16,966.64 to the City of Pharr.
24	Construction	PCO 030 – Sanitary Sewer Lines	$13,552.68	The contractor submitted a request for compensation related to the sanitary sewer modifications. The initial request came in at $19,342.06 without accounting for a credit for the sanitary sewer manhole that was no longer being installed. Brownstone required the manhole credit be included, reducing the final amount to $5,789.38, resulting in **savings** of $13,552.68 to the City of Pharr.

#	Phase	Item Description	Estimated Value	Remarks
25	Construction	PCO 035 – Cold Storage Units Controls	$4,255.11	The contractor submitted a request for HVAC controls for the cold storage equipment and related A2L equipment price increase (ASI 16), which came in at $42,348.82. After Brownstone requested a more detailed cost breakdown and negotiated the controls pricing, the revised request was reduced to $38,093.71, resulting in **savings** of $4,255.11 to the City of Pharr.
26	Construction	PCO 041 – Fire Sprinkler Redesign	$7,423.50	The contractor submitted a request for additional compensation for a redesign to split the system, attributing the change to a GSA comment. Brownstone rejected the change proposal because GSA's comment was a recommendation, not a directive, meaning the City was not responsible for the redesign, resulting in **savings** of $7,423.50 to the City of Pharr.
27	Construction	PCO 042 – Dock Doors Price Increase	$10,684.54	The contractor requested additional compensation for a price increase on the cold storage insulated doors, attributing it to market conditions and an extended submittal/RFI review cycle. Brownstone and the City rejected the change proposal because no written notice of the pending price increase or claim was provided until the PCO was submitted on April 24, 2026, despite the subcontractor reportedly being aware of the cost impact since October 2025, resulting in **savings** of $10,684.54 to the City of Pharr.
28	Construction	PCO 043 – Credit for Acid Waste Piping	$17,857.50	The contractor submitted a credit for the acid waste piping and one sample well, which were removed from the scope after several coordination meetings with the design team, CBP, USDA and GSA, resulting in a **credit** of $17,857.50 to the City of Pharr.
29	Construction	PCO 045 – Credit for Sand/Oil Separator	$32,700.00	The contractor submitted a credit for the sand/oil separator, which Brownstone, in coordination with CBP and GSA and the design team, reviewed and confirmed was no longer needed for the Cold Storage sanitary waste system, resulting in a **credit** of $32,700.00 to the City of Pharr.
Total Value Added			**$6,013,533.95**	

PROJECT AGREEMENT FOR
PROFESSIONAL ENGINEERING SERVICES

AMENDMENT NO. 2

The Contract between **Brownstone Consultants, LLC,** and the **City of Pharr,** which was executed by the parties on **September 30, 2021** for the construction management of the **FY16 Donations Acceptance Program (DAP) - Pharr LPOE Cargo Inspection Dock & Cold Inspection Facility Expansion and Agriculture Lab & Training Center Facility**, is hereby amended by mutual agreement as follows:

A. Modification to Section 1 – Scope of Work – Additional Scope of Work for Professional Re-Bidding Services as outlined in Exhibit A

B. Modification to Section 5 – Professional Service Fee – Increase to Fee of $32,325 as stated in Exhibit A

This amendment adds **$621,306** to the contract and the maximum total payable under the entire contract, including all amendments, is changed from $ 3,985,791.00 to **$ 4,607,097.00.**

All other terms and conditions of the existing contract not changed by this Amendment shall remain in full force and effect.

APPROVAL OF AMENDMENT NO. 2

Brownstone Consultants LLC.
3909 South M Street,
McAllen, TX 78503

_____
Rhea Mora
President
Brownstone Consultants, LLC

SIGNED on this the _____ day of _____, 20 ____.

_____
Dr. Jonathan B. Flores
City Manager
City of Pharr, Texas

SIGNED on this the _____ day of _____, 20 ___.
.

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.H.
DATE SUBMITTED: July 22, 2026
MEETING DATE: August 17, 2026

FROM: Maria Rangel, Capital Improvement Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Patrizia Longoria

Agenda Item: Consideration and action, if any, on Amendment No. 9 to the Professional Engineering Services Agreement with Halff Associates, Inc. for the Donations Acceptance Program Fiscal Year 2016 (DAP FY16). **This item supports IF - Infrastructure**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Amendment No. 9 to the Professional Engineering Services Agreement with Halff for DAP FY 16 is for additional construction administration services needed as a result of the extended project schedule. The original end date for the professional services was February 2026, but the project is slated to be completed by February 2027 (substantial completion).
Amendment No. 9 $327,540.00
Project No. 1617-01-528-0081

Fiscal Consideration:
Original Contract: $62,000 (data acquisition and concept development)
Amendment No. 1: $1,705,800 (design services)
Amendment No. 2: $132,000 (LEED services)
Amendment No. 3: $59,000 (re-format plans according to TxDOT guidelines)
Amendment No. 4: $85,000 (re-design of the air-conditioning equipment, and affected roofing system and mechanical room)
Amendment No. 5: $1,500 (bidding services)
Amendment No. 6: $9,000 (re-bidding services)
Amendment No. 7: $574,000 (construction administration services)
Amendment No. 8: $32,325 (MEP engineering services for redesign for AIM Act)
Amendment No. 9: $327,540 (additional construction administration services for extended project timeline)
Total: $2,988,165.00

Staff Recommendation: Staff recommends authorizing the City Manager to negotiate and execute Amendment No. 9, in an amount not to exceed $327,540, with Halff for DAP FY 16.

Alternatives: No alternatives. As the design engineer, Halff needs to be kept on the project through completion and close-out.

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Maria Rangel	Created/Initiated - 07/22/2026
Patrizia Longoria	Approved - 08/05/2026
Maritza Magallan	Approved - 08/06/2026
Ricardo Rodriguez	Approved - 08/06/2026
Jamison Merrick	Approved - 08/10/2026
City Management Office	New -

PROJECT AGREEMENT FOR
PROFESSIONAL ENGINEERING SERVICES

AMENDMENT NO. 9

The Contract between **Halff Associates, Inc.,** and the **City of Pharr,** which was executed by the parties on **August 7, 2017** for the design of the **FY16 Donations Acceptance Program (DAP) - Pharr LPOE Cargo Inspection Dock & Cold Inspection Facility Expansion and Agriculture Lab & Training Center Facility**, is hereby amended by mutual agreement as follows:

A. Modification to Section 1 – Scope of Work – Additional Scope of Work for Professional Re-Bidding Services as outlined in Exhibit A

B. Modification to Section 5 – Professional Service Fee – Increase to Fee of $32,325 as stated in Exhibit A

This amendment adds **$327,540** to the contract and the maximum total payable under the entire contract, including all amendments, is changed from $ 2,660,625.00 to **$ 2,988,165.00.**

All other terms and conditions of the existing contract not changed by this Amendment shall remain in full force and effect.

APPROVAL OF AMENDMENT NO. 9

Halff Associates, Inc.
5000 W Military Hwy #100,
McAllen, TX 78503

_____
Robert L. Saenz, PE, CFM, PMP
Vice President
Halff Associates, Inc.

SIGNED on this the _____ day of _____, 20 ____.

_____
Dr. Jonathan B. Flores
City Manager
City of Pharr, Texas

SIGNED on this the _____ day of _____, 20 ___.
.

July 24, 2026
57325.002

Maria Rangel, City of Pharr – Capital Project Engineer
118 S. Cage Blvd.
Pharr, TX 78577

Re: Proposal for Additional Construction Administration Services Project No. 2324-71-510-C03-260 FY 16 DAP – Dock Expansion Phase I, Phase II and Agricultural Lab (Amendment 9)

Dear Ms. Rangel,

We are pleased to submit this proposal to provide supplemental professional engineering services for the proposed project referenced above. We are excited to be a part of your design team and look forward to contributing our expertise to ensure a successful project.

Attachment "A" provides our proposed scope of services and fees. The proposed fees identified shall be considered lump sum, unless otherwise noted, and will not be exceeded without your prior approval. Our services will be invoiced monthly based on a percent of completion of the total lump sum and/or the number of hours expended.

Direct costs including review fees, printing and reproduction, postage messenger services, long distance telephone calls and travel will be considered reimbursable expenses. Reimbursable expenses will be billed separately at 1.10 times the direct cost incurred.

The proposed fees established are based on the information provided by the Owner or Client. The proposed fees identified do not include scope revisions or additions once the project is underway. Additional work requested by the Owner or Client will require a revision to the scope and fees established in this proposal.

We trust this proposal meets your requirements for this project. We appreciate the opportunity to be of service to you and trust that our association on this project will be mutually beneficial. **Please sign below acknowledging your approval of this proposal, consisting of this cover letter (1 page), Attachment "A" (4 pages), Attachment "B" – Original Fee Breakdown (1 page), Attachment "C" – Amendment 7 Fee Breakdown (1 page) and Attachment "D" – Amendment 9 Fee Breakdown (1 page).** The original terms and conditions of the contract shall remain in full force and effect and shall apply to this supplemental agreement. We will commence services upon receipt of the executed proposal with signature below.

We are excited to be working with you and look forward to expanding our working relationship in the future.

Respectfully,

Raul Garcia, Jr., P.E.
Vice President
Director of Public Works, McAllen

Approved by:

_____
Signature

_____
Print Name

_____
Date

ATTACHMENT "A" PROFESSIONAL SERVICES

Project Assumptions - The scope of services for this proposal has been established using the following assumptions as a basis for its preparation:

1. The scope of services applies to Construction Phase Services Only.
2. Geotechnical testing is not included in this scope and will be provided by the Client.
3. Coordination, preparation of documents, and submittal to local Registered Accessibility Specialist for plan review and inspection shall be provided by others.
4. Filing and Permit Fees of this subject lot is not included in this scope.
5. Any Change Orders to the Construction Documents are to be handled by the City of Pharr with Halff concurrence.
6. State Reimbursement Processes will be handled by the City of Pharr Engineering and Finance Departments.
7. City of Pharr will be the point of contact for any TxDOT Coordination items.
8. As-Builts/ As-Built Survey is not included in this scope.

Project Background - Amendment 7 was originally presented to the City of Pharr for Construction Administration Services totaling a fee of **$889,000.00** (refer to Attachment "B" – Original Fee Breakdown) to include the following services:

- Attendance at Pre-Construction Meeting
- Halff Attendance to Bi-Monthly Owner, Engineer, Contractor Meetings (OEC) **(44 Total)**
- Ensure timely delivery of all deliverables including electronic files, and hard copies of all pertinent information.
- Review and response to a maximum of **100 RFI's** for related improvements are included in this scope. Review and responses to RFI's over the 100 maximum can be provided by additional services.
- **200 Submittal Reviews** are included in this scope which includes one revision per submittal when necessary. If more than 2 reviews are required due to Contractor's negligence on providing a complete submittal package, the submittal review effort will be at the contractors expense. Additional Submittal Reviews can be provided as additional services. The contractor is required to submit each discipline submittal as a complete package.
- One Site Punchlist walkthrough.
- One Final Site Walkthrough to confirm Punchlist has been addressed.
- One Building Punchlist walkthrough (Cold Storage, Dry Dock, and Ag Lab).
- One Final Building Walkthrough (Cold Storage, Dry Dock, and Ag Lab) to confirm Punchlist has been addressed.
- Project Close Out and Record Drawings (Halff will prepare record drawings of civil improvements from the general contractor's construction plan redline markups. No additional field surveying will be provided for this task. Record drawings will only include improvements designed by Halff Associates.)
- Review of Buy America Submittals
- CA Phase Administrative Support

After review by City staff, and at completion of negotiations, Amendment 7 (Attachment "C" – Amendment 7 Fee Breakdown) was awarded for a total compensation of $574,000.00 for the scope identified below:

- Attendance at Pre-Construction Meeting
- General Site Visits **(22 Total)**
- Halff Attendance to Bi-Monthly Owner, Engineer, Contractor Meetings (OEC) **(44 Total)**
- Ensure timely delivery of all deliverables including electronic files, and hard copies of all pertinent information.
- Review and response to a maximum of **50 RFI's** for related improvements are included in this scope. Review and responses to RFI's over the 50 maximum can be provided by additional services.
- **200 Submittal Reviews** are included in this scope which includes one revision per submittal when necessary. If more than 2 reviews are required due to Contractor's negligence on providing a complete submittal package, the submittal review effort will be at the contractors expense. Additional Submittal Reviews can be provided as additional services. The contractor is required to submit each discipline submittal as a complete package.
- One Site Punchlist walkthrough.
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- One Building Punchlist walkthrough (Cold Storage, Dry Dock, and Ag Lab).
- One Final Building Walkthrough (Cold Storage, Dry Dock, and Ag Lab) to confirm Punchlist has been addressed.
- Project Close Out and Record Drawings (Halff will prepare record drawings of civil improvements from the general contractor's construction plan redline markups. No additional field surveying will be provided for this task. Record drawings will only include improvements designed by Halff Associates.)
- Review of Buy America Submittals
- CA Phase Administrative Support

Construction Administration Services

1. Additional Construction Administration Services

Task 1 – Review and Response to RFI's for Related Improvements

This task includes the review of and response to Request for Information (RFIs). The level of effort and associated fees have been developed through coordination meeting between the City of Pharr, Brownstone, and Halff. Brownstone has evaluated the total number of RFIs processed to date. Amendment No. 7 included review and response services for up to 50 RFIs. The RFI review and response services included under the original agreement have been exhausted. This task will cover all remaining effort associated with reviewing and responding to RFIs received to date, in addition to those anticipated during the remainder of the project.

Task 2 – Review of Submittals for Related Improvements
This task includes the review of and response to project materials, shop drawings and specification submittals. The level of effort and associated fee has been developed through coordination with meetings between the City of Pharr, Brownstone, and Halff. Amendment No. 7 included review and response services for up to 200 submittals. The submittal review and response services included in Amendment No. 7 have been utilized. This task will cover all remaining effort associated with reviewing and responding to submittals received to date, as well as any additional submittals anticipated for the remainder of the project.

Task 3 – Review of Buy America Submittals
This task includes the review of submittals for Buy America compliance and the evaluation of alternative products and materials when items specified in the original contract documents are no longer compliant, available, or suitable. The level of effort associated with this task is based on Buy America compliance reviews completed to date, as well as the anticipated review and coordination efforts required through project completion.

Task 4 – CA Phase Administrative Support
This task covers the continued construction administration services provide by Halff beyond the originally anticipated project completion. Services included in this task entail project coordination, general document review and processing, site visits, pre-installation meetings, construction observation, invoicing, internal project team meetings, in-wall rough-in inspections of all facilities, and general engineering support. The proposed fee covers all remaining construction administration effort required through final project completion. All inspections and observations performed under this task will be visual in nature and are intended to assess general conformance with the contract documents. This scope does not include material testing, product testing, and laboratory services.

Task 5 – Structural Site Visit & Assessment
This task covers a structural site visit and assessment performed on May 28, 2026, in response to cracking observed in the cold storage concrete slabs. At the request of the City of Pharr, Halff's structural engineer conducted an on-site evaluation of the observed conditions and provided recommendations regarding the extent of slab removal, appropriate remediation measures, and structural considerations associated with the cracking. Halff's findings and recommendations were documented and provided to the project team, including supporting photographic documentation.

Task 6 – Backup Power Options Analysis and Electrical Systems Update
This task covers Halff's evaluation of the backup power systems serving the cold storage HVAC units. At the City's request, Halff analyzed the electrical distribution system and developed four alternatives to reduce backup power and generator requirements, with the goal of minimizing construction costs and schedule impacts. After the City selected a preferred alternative, Halff prepared and issued revised electrical design plan sheets reflecting the updated backup power configuration. The revised plan sheets were submitted to the City on June 26, 2026.

Task 7 – Electrical and Plumbing In-Wall Rough-in Site Visit & Inspection
This task covers the electrical and plumbing in-wall rough-in site visit and inspection performed by Halff on July 15, 2026. At the City's request Halff performed an on-site inspection of the

electrical and plumbing rough-in installation prior to wall closure. The site visit included observation of the installed electrical and plumbing infrastructure, photographic documentation of observed conditions, and a written report documenting items requiring further review, correction, or consideration. This inspection was visual in nature and did no included material testing, product testing or laboratory testing.

Fee Summary

The Owner will pay Halff a lump sum for providing services authorized as shown in the Summary of Fees table. The Fees for these services will not exceed those identified and will provide full and total compensation for all services listed, as well as for all expenses incurred in performing these services. For services listed, Halff will submit monthly statements for services rendered. The statement will be based on Halff's estimate (and with Owner concurrence) of the proportion of the total services completed at the time of billing. The Owner will make prompt monthly payments in response to Halff's monthly statements.

TASK	FEE AMOUNT
Professional Services	
1. Additional Construction Administration Services (Amendment 9)	
Task 1: Review and Response to RFI's for Related Improvements	$151,200.00
Task 2: Review of Submittals for Related Improvements	$10,800.00
Task 3: Review of Buy America Submittals	$4,000.00
Task 4: CA Phase Administrative Support	$138,240.00
Task 5: Structural Site Visit & Assessment	$3,600.00
Task 6: Backup Power Options Analysis and Electrical Systems Update	$17,200.00
Task 7: Electrical and Plumbing In-Wall Rough-in Site Visit & Inspection	$2,500.00
Total:	$327,540.00

Unless otherwise stated, fees quoted in this proposal exclude state and federal sales taxes on professional services. Current Texas law requires assessment of sales tax, on certain kinds of surveying services, but does not require sales taxes on other professional services. In the event that new or additional state or federal taxes are implemented on the professional services provided under this contract during the term of the work, such taxes will be added to the applicable billings and will be in addition to the quoted fees.

Attachment "B" - Original Fee Breakdown

Project Fee Breakdown

Task 1	**Attendance at Pre-Construction Meeting(s) (5 Total)**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Manager	1	2	$ 280.00	$ 560.00	$ 960.00
	Project Lead Engineer	1	2	$ 200.00	$ 400.00	
Task 2	**General Site Visits**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Manager	0	0	$ 280.00	$ -	$ -
	Project Lead Engineer	0	0	$ 200.00	$ -	
	Construction Inspector	0	0	$ 145.00	$ -	
Task 3	**Halff Attendance to Bi-Weekly Owner, Engineer, Contractor Meetings (OEC)**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Manager	44	2	$ 280.00	$ 24,640.00	$ 42,240.00
	Project Lead Engineer	44	2	$ 200.00	$ 17,600.00	
Task 4	**Review and response to a minimum of 100 RFI's for related improvements are included in this scope. Review and responses to RFI's over the 100 maximum can be provided by additional services.**					
	Personnel	Number of RFIs	Hours per RFI	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	100	4	$ 200.00	$ 80,000.00	$ 352,000.00
	EIT / Architect Intern	100	16	$ 170.00	$ 272,000.00	
Task 5	**Minimum 200 Submittal Reviews are included in this scope which includes one revision per submittal when necessary. If more than 2 reviews are required due to Contractor's negligence on providing a complete submittal package, the submittal review effort will be at the contractors expense. Additional Submittal Reviews can be provided as additional services. The contractor is required to submit each discipline submittal as a complete package.**					
	Personnel	Number of Submittals	Hours per Review	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	200	4	$ 200.00	$ 160,000.00	$ 432,000.00
	EIT / Architect Intern	200	8	$ 170.00	$ 272,000.00	
Task 6	**One Site Punchlist walkthrough.**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	1	6	$ 200.00	$ 1,200.00	$ 2,070.00
	Construction Inspector	1	6	$ 145.00	$ 870.00	
Task 7	**One Final Site Walkthrough to confirm Punchlist has been addressed.**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	1	3	$ 200.00	$ 600.00	$ 1,035.00
	Construction Inspector	1	3	$ 145.00	$ 435.00	
Task 8	**One Building Punchlist walkthrough (Cold Storage, Dry Dock, and Ag Lab).**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	1	8	$ 200.00	$ 1,600.00	$ 2,760.00
	Construction Inspector	1	8	$ 145.00	$ 1,160.00	
Task 9	**One Final Building Walkthrough (Cold Storage, Dry Dock, and Ag Lab) to confirm Punchlist has been addressed.**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	1	6	$ 200.00	$ 1,200.00	$ 2,070.00
	Construction Inspector	1	6	$ 145.00	$ 870.00	
Task 10	**Project Close Out and Record Drawings (Halff will prepare record drawings of civil improvements from the general contractor's construction plan redline markups. No additional field surveying will be provided for this task. Record drawings will only include improvements designed by Halff Associates.)**					
	Personnel		Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect		16	$ 200.00	$ 3,200.00	$ 6,800.00
	CAD Tech		24	$ 150.00	$ 3,600.00	
Task 11	**Review of Buy America Submittals**					
	Personnel		Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect		32	$ 200.00	$ 6,400.00	$ 6,400.00
Task 12	**CA Phase Administrative Support**					
	Personnel		Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect		150	$ 200.00	$ 30,000.00	$ 40,200.00
	Administrative Assistant		85	$ 120.00	$ 10,200.00	
					Grand Total:	$ 888,535.00

Attachment "C" - Amendment 7 Fee Breakdown

Project Fee Breakdown

Task 1	**Attendance at Pre-Construction Meeting(s) (5 Total)**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Manager	5	2	$ 280.00	$ 2,800.00	$ 4,800.00
	Project Lead Engineer	5	2	$ 200.00	$ 2,000.00	
Task 2	**General Site Visits**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Manager	22	1	$ 280.00	$ 6,160.00	
	Project Lead Engineer	22	1	$ 200.00	$ 4,400.00	$ 13,750.00
	Construction Inspector	22	1	$ 145.00	$ 3,190.00	
Task 3	**Halff Attendance to Bi-Monthly Owner, Engineer, Contractor Meetings (OEC) (44 Total)**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Manager	44	2	$ 280.00	$ 24,640.00	$ 42,240.00
	Project Lead Engineer	44	2	$ 200.00	$ 17,600.00	
Task 4	**Review and response to a minimum of 50 RFI's for related improvements are included in this scope. Review and responses to RFI's over the 50 maximum can be provided by additional services.**					
	Personnel	Number of RFIs	Hours per RFI	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	50	6	$ 200.00	$ 60,000.00	$ 162,000.00
	EIT / Architect Intern	50	12	$ 170.00	$ 102,000.00	
Task 5	**Minimum 200 Submittal Reviews are included in this scope which includes one revision per submittal when necessary. If more than 2 reviews are required due to Contractor's negligence on providing a complete submittal package, the submittal review effort will be at the contractors expense. Additional Submittal Reviews can be provided as additional services. The contractor is required to submit each discipline submittal as a complete package.**					
	Personnel	Number of Submittals	Hours per Review	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	200	3	$ 200.00	$ 120,000.00	$ 290,000.00
	EIT / Architect Intern	200	5	$ 170.00	$ 170,000.00	
Task 6	**One Site Punchlist walkthrough.**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	1	6	$ 200.00	$ 1,200.00	$ 2,070.00
	Construction Inspector	1	6	$ 145.00	$ 870.00	
Task 7	**One Final Site Walkthrough to confirm Punchlist has been addressed.**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	1	3	$ 200.00	$ 600.00	$ 1,035.00
	Construction Inspector	1	3	$ 145.00	$ 435.00	
Task 8	**One Building Punchlist walkthrough (Cold Storage, Dry Dock, and Ag Lab).**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	1	8	$ 200.00	$ 1,600.00	$ 2,760.00
	Construction Inspector	1	8	$ 145.00	$ 1,160.00	
Task 9	**One Final Building Walkthrough (Cold Storage, Dry Dock, and Ag Lab) to confirm Punchlist has been addressed.**					
	Personnel	Number of Meetings	Hours per Meeting	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	1	6	$ 200.00	$ 1,200.00	$ 2,070.00
	Construction Inspector	1	6	$ 145.00	$ 870.00	
Task 10	**Project Close Out and Record Drawings (Halff will prepare record drawings of civil improvements from the general contractor's construction plan redline markups. No additional field surveying will be provided for this task. Record drawings will only include improvements designed by Halff Associates.)**					
	Personnel		Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect		16	$ 200.00	$ 3,200.00	$ 6,800.00
	CAD Tech		24	$ 150.00	$ 3,600.00	
Task 11	**Review of Buy America Submittals**					
	Personnel		Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect		32	$ 200.00	$ 6,400.00	$ 6,400.00
Task 12	**CA Phase Administrative Support**					
	Personnel		Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect		150	$ 200.00	$ 30,000.00	$ 40,200.00
	Administrative Assistant		85	$ 120.00	$ 10,200.00	
					Grand Total:	$ 574,125.00

Attachment "D" - Amendment 9 Fee Breakdown

Project Fee Breakdown for Amendment 9					
Task 1	**Review and Response to RFI's for Related Improvements**				
	Personnel	Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	280	$ 200.00	$ 56,000.00	$ 151,200.00
	EIT / Architect Intern	560	$ 170.00	$ 95,200.00	
Task 2	**Review of Submittals for Related Improvements.**				
	Personnel	Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	20	$ 200.00	$ 4,000.00	$ 10,800.00
	EIT / Architect Intern	40	$ 170.00	$ 6,800.00	
Task 3	**Review of Buy America Submittals**				
	Personnel	Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	20	$ 200.00	$ 4,000.00	$ 4,000.00
Task 4	**CA Phase Administrative Support**				
	Personnel	Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	384	$ 200.00	$ 76,800.00	$ 138,240.00
	Administrative Assistant	512	$ 120.00	$ 61,440.00	
Task 5	**Structural Site Visit & Assessment**				
	Personnel	Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	18	$ 200.00	$ 3,600.00	$ 3,600.00
Task 6	**Backup Power Options Analysis and Electrical Systems Update**				
	Personnel	Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	18	$ 200.00	$ 3,600.00	$ 17,200.00
	EIT / Architect Intern	80	$ 170.00	$ 13,600.00	
Task 7	**Electrical and Plumbing In-Wall Rough-in Site Visit & Inspection**				
	Personnel	Hours	Rate	Sub Total	Task Total
	Project Lead Engineer / Architect	4	$ 200.00	$ 800.00	$ 2,500.00
	EIT / Architect Intern	10	$ 170.00	$ 1,700.00	
				Grand Total:	$ 327,540.00

AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.I.
DATE SUBMITTED: August 5, 2026
MEETING DATE: August 17, 2026

FROM: Maria Rangel, Capital Improvement Project Engineer

DEPARTMENT: Engineering

DIRECTOR: Maria Rangel

Agenda Item: Consideration and action, if any, on Amendment No. 9 to the Professional Engineering Services Agreement with Structural Engineering Associates, Incorporated (SEA) for the Pharr-Reynosa International Bridge Expansion Project. **This item supports IF - Infrastructure**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Amendment #9 to the Professional Engineering Services Agreement with SEA for the Pharr-Reynosa International Bridge Expansion Project, more commonly known as the Twin Span Bridge, is for additional construction phase services and overall project management to cover the period between December 28, 2024, to September 30, 2026. The amendment also includes surveying to cover IBWC permit requirements.

The additional 642 calendar days is to account for the time between December 28, 2024, to September 30, 2026. The December 2024 date is the end date of the originally approved construction phase services. The September date is when construction is expected to be completed.

Amendment No. 9 $216,300 and an additional 642 calendar days
Project No. 1920-01-528-S012-001 Professional Engineering Services for the Pharr-Reynosa Presidential Permit Application

Fiscal Consideration:
Original Agreement: $1,656,735.44 (Presidential permit)
Amend. No. 1: $3,988,334.00 (design and construction phase services)
Amend. No. 2: $50,001.00 (archeological investigation + air quality and noise evaluation)
Amend. No. 3: $88,243.73 (Public Meeting material translation and publicization + VE study)
Amend. No. 4: $168,881.50 (geo-archaeological services + underwater archaeological survey)
Amend. No. 5: $0.00 (additional 866 calendar days for previous amendments)
Amend. No. 6: $39,124.25 (additional geotechnical boring + incorporation of additional ROW to environmental)
Amend. No. 7: $12,000 (additional design services for permit from USIBWC)

Amend. No. 8: $52,145 (nesting surveys by a qualified biologist)
Amend. No. 9: $216,300 (additional construction phase services and surveying)
Revised Agreement: $6,271,764.92

Staff Recommendation: Staff recommends approval of Amendment #9 in the amount of $216,300 and the additional 642 calendar days to the agreement with SEA for the Pharr-Reynosa International Bridge Expansion Project.

Alternatives: No alternative. The City of Pharr needs to keep the design engineer on the project through the end of construction and close-out.

Exclude Material from Public Packet? No
Reason: N/A

ROUTING:

Maria Rangel	Created/Initiated - 08/05/2026
Patrizia Longoria	Approved - 08/06/2026
Maritza Magallan	Approved - 08/06/2026
Ricardo Rodriguez	Approved - 08/06/2026
Jamison Merrick	Approved - 08/10/2026
City Management Office	New -

PROJECT AGREEMENT FOR
PROFESSIONAL ENGINEERING SERVICES

AMENDMENT NO. 9

The Contract between **Structural Engineering Associates, Inc.** and the **City of Pharr** which was executed by the parties on **October 24, 2018** for the **Pharr-Reynosa Bridge Expansion Presidential Permit Application**, is hereby amended by mutual agreement as follows:

A. Modification to Section 1 – Scope of Work – Additional Scope of Work as stated on Exhibit A.

B. Modification to Section 5 – Professional Service Fee – Increase to Fee as stated in Exhibit A.

C. Modification to Section 4—Termination---Increase to Work Schedule as stated in Exhibit B.

This amendment adds **$216,300.00** to the contract and the maximum total payable under the entire contract, including all amendments, is changed from $ 6,055,464.62 to **$ 6,271,764.92.**

All other terms and conditions of the existing contract not changed by this Amendment shall remain in full force and effect.

APPROVAL OF AMENDMENT NO. 9

Structural Engineering Associates, Inc.
3838 N.W. Loop 410
San Antonio, TX 78229

_____
David T. Covarrubias, PE
ENGINEER

SIGNED on this the _____ day of _____, 20 ____.

_____
Dr. Jonathan B. Flores
City Manager
City of Pharr, Texas

SIGNED on this the _____ day of _____, 20 ___.
.

A JMT DIVISION

July 27, 2026

Ms. Maria Rangel, P.E.
Engineering Department
The City of Pharr
118 S. Cage Blvd.
Pharr, Texas 78577

Ref: Pharr International Bridge Expansion Project
Additional Professional Services Request #9 (Revised 07-27-26)

Dear Ms. Rangel,

As you are aware, the construction phase of this project has required more overall time than was originally envisioned, and thus we are respectfully requesting additional professional services to cover this additional time required to complete the constructionof the project. And, we are requesting **a revised** additional professional services for additional surveying that has been recently requested by the U.S. International Boundary and Water Commission (IBWC). **Our apologies as the actual proposed fee amounts from Pape-Dawson came into our office on 07-24-26, after the previous revised request was already sent to you.**

Our currently approved construction phase services amounts were established based upon an original construction time allowed of 16 months, between the first of August 2024 and the end of November 2025. It was anticipated earlier this year that the project will be declared substantially complete by the end of July 2026 which would add 8 more months, for an adjusted total of 24 months. Therefore, we believe that our construction phase services will be extended by a minimum of 8 months (24-16).

Our contract also includes an item for Overall Project Management, which was also established based upon the number of months to complete the construction, plus 3 months to finalize all of the required project documentation, which is a total of 19 months. We now believe that only 2 months beyond substantial complete will be required to finalize the project documentation, which would be a revised total time of 24 + 2 months or 26 months. This would be a minimum extension for overall project management services of 7 months (26-19).

The professional services contract time calculated between our contract notice to proceed of March 3, 2020 and the anticipated completion project documents by September 30, 2026 would be 2402 calendar days. Our current contract includes 1760 calendar days, so we are now requesting that 642 additional days be added to our contract time for completion.

During recent on-site meetings with the IBWC, for the purpose of determining the physical International Boundary Line (IBL), the IBWC survey group required that our project survey team (Pape-Dawson) prepare and mark the proposed IBL location on the international span, and they would review and confirm. A second survey crew mobilization is also required, once the bridge structure is complete, in order to mark the IBL location for the bridge plaques. We will also be required to perform an "as-built" survey of the extended levee retaining wall and submit the data to IBWC for their records. **We have now received and attached the fee proposal from Pape-Dawson for this additional surveying, copies of which are attached.**

In summary, we are requesting the following additional amount of professional services fee, and additional construction phase services time and additional survey services:

6) Construction Phase Services (Lump Sum Items)	
A2) Limited Construction Observation (US)	= $ 86,400.00
A4) Limited Construction Management (US)	= $ 54,900.00
Subtotal Construction Phase Services	= $141,300.00
3A) Overall Project Management (Hourly Billing, Not to Exceed)	
Overall Project Management	= $ 30,000.00
7B) Final Required Permits – IBWC (Hourly Billing, Not to Exceed)	
Pape-Dawson Surveying for IBWC International Boundary Determination	= $ 22,000.00
Pape-Dawson Surveying for IBWC Levee Retaining Wall As Builts	= $ 23,000.00
Total Request for Professional Services	= $216,300.00

Contract Time Request - Original Contract = 894 days (March 3, 2020 to August 13, 2022)
Amendment # 5 = 866 days (August 14, 2022 to December 27, 2024)
Amendment # 9 = 642 days (December 28, 2024 to September 30, 2026)
Total Contract Time = 2402 days

As always please do not hesitate to contact us should you have any further questions and/or comments regarding this request, and we greatly appreciate your prompt attention to this matter.

Sincerely,

Sidney A. Mielke, P.E.
Senior Project Manager

Attachment: Fee Breakdown Spreadsheet

Cc: David T. Covarrubias, P.E., SEA/JMT
Martin Covarrubias, P.E., SEA/JMT
Denise Martinez, JMT Accounting
Cheryl Smith, JMT Accounting

CITY OF PHARR, TEXAS
PHARR-REYNOSA INTERNATIONAL BRIDGE
INTERNATIONAL BRIDGE EXPANSION - CONSTRUCTION PHASE SERVICES
AMENDMENT NO. 9 REQUEST

REVISED
7/27/2026
7/22/2026

STRUCTURAL ENGINEERING ASSOCIATES, INC./A JMT DIVISION ***02-Jun-26***
PROPOSED MANHOURS/FEES - TOTAL FEE PROPOSAL

	Task Description	Project Manager	Sr. Stuctural Engineer	Structural Engineer	Jr. Eng'r/ EIT	CADD Operator	Clerical	Other Direct Expenses	Total Hours	Total Fee
6	**CONSTRUCTION PHASE SERVICES**									
	;(TO BE BILLED AS LUMP SUM)									
A2	LIMITED CONSTR OBSV (US SIDE) - SEA	200	200					$2,800.00	400	$86,400.00
A4	LIMITED CONSTR MANAGEMENT (US SIDE)	128	128					$1,396.00	256	$54,900.00
7B	**FINAL REQUIRED PERMITS - IBWC**									
	(TO BE BILLED AS HOURLY NOT TO EXCEED)									
	PD SURVEYING FOR IBWC - INTERNATIONAL BOUNDARY LOCATION									$22,000.00
	PD SURVEYING FOR IBWC - AS BUILTS AT LEVEE ROAD RET. WALL									$23,000.00
3A3	**OVERALL PROJ MANAGEMENT (CONST)**	70	70					$740.00	140	$30,000.00
	(TO BE BILLED AS HOURLY NOT TO EXCEED)									
		398	398	0	0	0	0		796	**$216,300.00**
	Hourly Rates	$209.00	$209.00	$168.00	$116.00	$98.00	$85.00			

PAPE–DAWSON

July 24, 2026

Mr. David Covarrubias
Structural Engineering Associates, a JMT Company
3838 N.W. Loop 410
San Antonio, TX 78229

Re: Pharr-International Bridge II Expansion
Job No. 12053-02
Additional Services Request No. 02

Dear Mr. Covarrubias:

This letter is to request funding for additional services for the above referenced site. These services are considered above and beyond previously authorized work, and include the following:

I. ADDITIONAL SURVEY – INTERNATIONAL BORDER LINE (TASK 191) NTE $22,000

Additional survey was requested to confirm the location of the International Border. Pape-Dawson conducted 3 trips to survey the border location. This task is intended to recover effort associated with the border survey and allow for 1 additional trip if necessary. Survey crew time previously billed is not included. Effort includes:

- Office staff time to prepare survey information.
- Survey crew time for traveling to and from site, surveying/marking the location of the International Border Line.
- Coordination with project team and client to support survey effort.
- RPLS effort to review office survey data, to travel to and from site, and witness surveying/marking of the IBL.
- Other tasks as requested.
- Direct expenses (mileage, hotel, etc.) associated with the survey, if any (estimated at $2,000).

II. AS-BUILT PREPARATION (TASK 404) NTE $23,000

Additional effort was requested to provide as-built documentation of the retaining wall, rip rap and levee road improvements, as required by the International Boundary Water Commission (IBWC). Effort includes:

- As-built field survey of improvements noted above.
- Preparation of as-built document in accordance with IBWC requirements.
  i. Actual as-built coordinates
  ii. Dimensional details
  iii. Material type
  iv. Confirmation that construction is consistent with approved IBWC drawings and previously approved design report and hydraulic modeling.

- Coordination with project team and client.
- Other tasks as requested.
- Direct expenses (mileage, hotel, etc.) associated with as-built preparation, if any (estimated at $1,000).

I.	Additional Survey – International Border Line	Task 191	*Not to Exceed*	$22,000
II.	As-Built Preparation	Task 404	*Not to Exceed*	$23,000
			Total:	**$ 45,000**

A budget increase of **$45,000** is the estimated cost of Pape-Dawson's current understanding of the additional services identified above. This effort will be billed on a time and materials basis. Upon signing of this ASR by the client, this ASR to be governed by the existing proposal for this project signed by the client and engineer on the 6th day of January 2022.

We appreciate the opportunity to work with you on this project. If you concur with this request, please acknowledge your approval by signing in the space provided below and returning this letter to our office via email, fax, or US Mail for our records. If you have questions or need additional information, please do not hesitate to contact me at your earliest convenience.

Sincerely,
Pape-Dawson Consulting Engineers, LLC

Jake Powell, P.E., CFM
Vice President

ACKNOWLEDGED & ACCEPTED

Signature:_____

Print Name:_____

Title:_____

Date:_____

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AGENDA MEMORANDUM

BOARD: BOARD OF COMMISSIONERS

AGENDA ITEM #: 8.J.
DATE SUBMITTED: August 8, 2026
MEETING DATE: August 17, 2026

FROM: Jose Pena, IT Director

DEPARTMENT: IT

DIRECTOR: Jose Pena

Agenda Item: Consideration and action, if any, on renewal of Cloud Management Subscription Services from Calix, Inc. for Pharr Connect. **This item supports SE - Service Excellence**.

Classification: Regular
(* If closed session, City Attorney must review and approve.)

Issue: Calix is the hardware and software used by Pharr Connect to run its services. This renewal introduces new software AI capabilities and simplifies billing.

Fiscal Consideration: $504,600.00

Staff Recommendation: Staff recommends approval.

Alternatives: NA

Exclude Material from Public Packet? No
Reason: NA

ROUTING:

Jose Pena	Created/Initiated - 08/08/2026
Rogelio Jr. Martinez	Approved - 08/10/2026
Maritza Magallan	Approved - 08/10/2026
Hilda Pedraza	Approved - 08/11/2026
Ricardo Rodriguez	Approved - 08/12/2026
Jamison Merrick	New -
City Management Office	-

SmartMDU & SmartHome OnRamp Order Document

Customer Information

Company Name City of Pharr, Texas
Business Address: 118 S Cage Blvd. - IT DEPT,
Pharr, TX 78577
United States

Customer Contact
Name: Jose Peña
Email: jose.pena@pharr-tx.gov
Phone: +1 956-402-4900
Shipping Contact
Name: Jose Peña
Email: jose.pena@pharr-tx.gov

This Order Document for SmartMDU & SmartHome OnRamp ("Services") is effective as of the date last signed ("Effective Date"), the Service Start Date is as outlined in the Pricing section below (“Service Start Date”), and this Order Document is subject to the Calix Master Purchase and License Agreement ("Agreement") between the undersigned ("Customer") and Calix, Inc. ("Calix"). Calix and Customer may be referred to herein individually as "Party" or together as "Parties".

Existing Order

Whereas Customer and Calix are Parties to the Calix Marketing Cloud Order Document (Ref#2023-218575-4156) last signed September 20, 2023, the Calix Operations Cloud Order Document (Ref#2023-218553-7475) last signed September 20, 2023, the Calix Support Cloud Order Document (Ref#2023-218551-4566) last signed September 20, 2023, the Subscriber Experience Program Purchase Order Form (Ref#2023-218577-9223) last signed September 20, 2023, and the Smart Biz Order Document (Ref#2024-264078-5925) last signed December 19, 2024 (collectively, the "Existing ODs"). The Existing ODs are hereby terminated on August 31, 2026 ("Termination Date") and replaced with this Order Document as of the Service Start Date. For the avoidance of doubt, Services and billing under the Existing ODs will continue until the Termination Date.

Service Start Date: September 01, 2026 A Service Start Date is required for this Order Document to be valid. Customer acknowledges that the Service Start Date is appropriate, and invoicing will commence as described herein.

Pricing Terms

Period 1: 12 months	Unit Of Measure	Duration	Price/Mo.	Qty	Ext. Price
000-01365	CSC Managed Subs	12 Months	$2.90	14500	$504,600.00
SmartMDU and SmartHome OnRamp					
000-01309	None	12 Months	$0.25	0	$0.00
Calix Service Cloud for Gateway Management					
000-01256					$1,000.00
Clouds Implementation Bundle					
			Period 1 Total		**$505,600.00**

Period 2: 12 months	Unit Of Measure	Duration	Price/Mo.	Qty	Ext. Price
000-01365	CSC Managed Subs	12 Months	$2.90	15000	$522,000.00
SmartMDU and SmartHome OnRamp					
000-01309	None	12 Months	$0.25	0	$0.00
Calix Service Cloud for Gateway Management					
			Period 2 Total		**$522,000.00**

Period 3: 12 months	Unit Of Measure	Duration	Price/Mo.	Qty	Ext. Price
000-01365 SmartMDU and SmartHome OnRamp	CSC Managed Subs	12 Months	$2.90	15500	$539,400.00
000-01309 Calix Service Cloud for Gateway Management	None	12 Months	$0.25	0	$0.00
			Period 3 Total		**$539,400.00**

SmartMDU & SmartHome OnRamp includes the following:

- Service Cloud for SmartHome Support
- Service Cloud for SmartHome Guidance
- Calix Service Cloud for SmartHome
- SmartHome Upgrade
- Calix Service Cloud for Gateway Management
- SmartMDU Upgrade
- Engagement Cloud Support
- Calix Engagement Cloud Plus
- Engagement Cloud Guidance
- Operations Cloud Guidance
- Operations Cloud Support
- Calix Operations Cloud Service

SmartMDU & SmartHome OnRamp Implementation includes the following:

- Calix Engagement Cloud Plus Migration Service

Payment

The Services are billed monthly in advance at the prices above in USD. Billed quantity is based on the greater of the minimum quantity listed, or the previous month's usage determined by Calix. Payments are due within thirty (30) days of invoice date. Payment is subject to the terms and conditions as outlined in the Agreement.

All Services fees shall be invoiced upon the Service Start Date with the exception of Implementation Service Fees. Implementation Services shall be invoiced upon the earlier of completion or three (3) months from the Service Start Date.

Term, Renewal and ETF

The Services will commence on the Services Start Date and shall continue for an initial term of 36 months plus an initial period (if applicable). Thereafter, the Services will automatically renew for successive 36 month periods beginning at the end of the most recent term, unless either party provides written notice to not renew not less than 60 days before the end of the then-current term. Calix reserves the right to increase the pricing upon automatic renewal by up to 10% of the then-current price. In the event of non-renewal, this Order Document shall terminate upon the end of the then-current term. Customer shall pay Calix fees for early termination ("ETF") for the termination of Services prior to the end of the then-current term in an amount equal to the remaining months of the term multiplied by the applicable monthly fees. Beginning on the Service Start Date, the Service will be enabled.

Additional Calix Terms and Conditions

1. Miscellaneous
    a. Customer instructs Calix to leverage proprietary algorithms to develop models to create insights and audience segments for marketing Customer's products and services.
    b. This Order Document shall not be interpreted as granting to the Customer any license or right not expressly granted herein or in the Agreement. Customer agrees that it will not do any of the following and will not permit others to do any of the following with regard to the Services : (i) use the Services for determining terms or eligibility of an individual for employment, credit, healthcare treatment, or insurance or government funds; (ii) use the Services for any purpose for which a consumer report may be used under the Fair Credit Reporting Act or that could result in disparate impact or treatment on a prohibited basis under the Equal Credit Opportunity Act or the Fair Housing Act; (iii) use the Services in conjunction with any content, including marketing communications, solicitation or ad copy, that is discriminatory, profane, obscene, or illegal, or that refers to selection criteria, presumed knowledge, or the source of personal information about a recipient; or (iv) use the Services for any attempt to identify or re-identify an individual from any portion of the Enrichment

Data; for clarity, this prohibition does not apply to any Services that are provided and presented by Calix to Customer in a form that already identifies an individual. Customer's use of the Services and Enrichment Data is strictly limited to use in connection with this Order Document and the Agreement. Calix reserves all rights to the Services not expressly granted herein. Customer agrees to abide by the copyright laws of the United States and all other relevant jurisdictions. Customer agrees to immediately cease using the Services and Enrichment Data if it fails to comply with this paragraph or any other part of this Order Document and the Agreement.

c. Services described in this Order Document are provided remotely. Any travel is not included and shall be invoiced separately.

2. Terms Regarding Processing of Enrichment Data
   a. Calix procures Enrichment Data, on behalf of Customer, from one or more data brokers. Customer purchases Enrichment Data about its subscribers and prospective subscribers directly from data brokers for use by Customer within Calix Engagement Cloud.
   b. Customer agrees that any Enrichment Data is sold directly to and solely for use on behalf of Customer.

   c. Customer is the controller or business of subscriber personal information processed under the Agreement and any Enrichment Data procured by Calix on behalf of Customer. Calix performs Services as a processor or service provider in accordance with the instructions of Customer. Calix is prohibited from:
      1. Selling or sharing any subscriber personal information Customer provides to Calix under the Agreement;
      2. retaining, using, or disclosing the information for any purpose other than for the business purposes specified in the Agreement in place with Calix or as otherwise permitted by applicable law;
      3. retaining, using, or disclosing the information outside of the direct business relationship between Calix and Customer; and
      4. combining the subscriber personal information Calix receives from or on behalf of Customer with personal information which Calix receives from or on behalf of another person or persons or collects from its own interaction with a subscriber.
3. Data Processing Agreement
   a. The Data Processing Agreement attached as Exhibit A to this Order Document ("DPA") is incorporated herein. In the event of a conflict between this DPA and a separate data processing agreement entered into between Calix and Customer, the attached DPA will prevail.

Customer has chosen to enrich Customer's subscriber data with data procured by Calix, on behalf of Customer, from one or more data brokers ("Enrichment Data"). Calix does not buy or resell Enrichment Data. Calix serves only as a procurement agent and service provider to Customer. By adding data to the datafile and beginning a new file upload as described in the section entitled, "Calix Marketing Cloud Plus Migration Services", Customer enriches its subscriber data with the Enrichment Data.

Customer Base Area

The Services and Enrichment Data, as defined above, will be made available only within Customer's base area, which will be limited to the ZIP codes provided by Customer to Calix's implementation services team ("Base Area"). Customer will promptly notify Calix in writing of any changes to Customer's Base Area.

Cloud Guidance Service

Calix Cloud Guidance Services are delivered through teams who have experience with the customers' business challenges and are described in the following Service Description Document (SDD).

https://www.calix.com/content/dam/calix-com/assets/services/sd/customer-success-services.pdf

Smart Start Services

Smart Start Services are available with the initial delivery of the Service. Smart Start Services are delivered through teams who have experience with the customers' business challenges and are described in the following Service Description Document (SDD).

https://www.calix.com/content/dam/calix-com/assets/services/sd/smart-start-for-managed-services.pdf

IN WITNESS, WHEREOF, each party hereto has caused this Order Document to be executed by an authorized representative as of the Effective Date.

Calix, Inc.	**City of Pharr, Texas**
By _____	By _____
Name _____	Name _____
Title _____	Title _____
Date _____	Date _____

Purchase Authorization

A purchase order reference is required for all periods prior to processing this order and commencement of Services. The following purchase orders have been authorized to fund this purchase:

Period 1 PO:

Period 2 PO:

Period 3 PO:

Note: If Customer's business practice is not to issue purchase orders for all or some of the periods, please note the reference number 2026-317687-6427 as the PO# authorizing Calix to use the reference number for booking and invoicing purposes. “TBD” or invalid purchase order references will not be accepted.

Exhibit A
Calix Data Processing Agreement

Calix, Inc. (“Calix” or “us” or “our”) and the entity listed above (“Customer”) are parties to the master agreement referenced above (“Contract”). Calix protects Customer Personal Data in compliance with the terms of this Data Processing Agreement (“DPA”). “Customer Personal Data” means personal data relating to named or identifiable individuals that subscribe to Customers' services that Customer provides to Calix when Customer accesses or uses Calix products and services purchased under the Agreement (“Services”).

1. Control and Ownership. Customer owns and controls all Customer Personal Data. Calix does not use Customer Personal Data, except: (a) in the interest and on behalf of the Customer; (b) as necessary to provide the Services, or (c) as contemplated or directed by the Contract. Calix returns or deletes Customer Personal Data at Customer’s request, as agreed in the Contract, or after the Contract expires or is terminated.

2. Use and Transfer Limitations. Calix will not access, collect, store, retain, transfer, use or otherwise process in any manner any Customer Personal Data, except: (a) in the interest and on behalf of Customer; (b) as directed by authorized personnel of Customer in writing; and (c) in accordance with applicable law. Without limiting the generality of the foregoing, Calix will only make Customer Personal Data accessible to its subprocessors listed at Trust Center (calix.com)(requires Customer account representative login) and Customer consents to such access, or upon written instructions from Customer. Subprocessors will be subject to written agreements that contain obligations no less restrictive than those in this DPA. If Calix adds additional subprocessors in the future, Customer will have an opportunity to object before Calix makes Customer Personal Data accessible to any subprocessors. Customer instructs Calix to store Customer Personal Data in data centers around the world including located in the United States and Canada. Calix will return or delete any Customer Personal Data at the end of Customer's relationship with Calix and at any time at Customer’s request. Calix will keep Customer Personal Data confidential, and Calix ensures that persons authorized to process Customer Personal Data on Calix’s behalf commit themselves to confidentiality obligations and other contractual obligations that are at least as protective of Customer Personal Data as this DPA. Calix will only process Customer Personal Data for a business purpose as defined in the California Consumer Privacy Act of 2018, as amended, including the California Privacy Rights Act of 2020 ("CCPA"). Business purposes of the transfer to, and further processing of Customer Personal Data by, Calix are to perform Services on behalf of Customer including providing analytics services.

3. Security. Calix applies technical, administrative and organizational data security measures that meet or exceed the requirements described in Calix’s technical and organizational measures for security (TOMS) posted in the Trust Center on MyCalix (requires customer account representative login) available here: Trust Center (calix.com). Calix may update and modify its TOMs from time to time, provided that Calix must not reduce the level of security provided thereunder, except with Customer’s consent or with 90 days’ prior written notice.

4. Cooperation with Compliance Obligations. At Customer’s reasonable request, Calix will (a) reasonably assist Customer with Customer Personal Data access, deletion, portability and other requests, subject to compensation for any custom efforts required of Calix and (b) enter into additional contractual agreements to meet specific requirements that are imposed by mandatory laws on Customer pertaining to Customer Personal Data and that, due to their nature, can only be satisfied by Calix in its role as service provider, subject to additional cost reimbursement or fees as appropriate. At Customer’s request, Calix will agree to applicable Standard Contractual Clauses for cross-border transfers to processors. If Customer can no longer legally use Calix’s products due to changes in applicable law related to the processing of Customer Personal Data which make Customer unable to use the Services as intended, Calix shall allow Customer to terminate the applicable Order Document and provide transition or migration assistance of Customer Personal Data as reasonably required, subject to termination charges and fees as mutually agreed in good faith by the parties. Customer will inform Calix of any consumer request made pursuant to applicable law with respect to Customer Personal Data and provide Calix the information necessary to comply with the request. Calix will notify Customer if it determines that it can no longer meet its obligations under the CCPA.

5. Audits. Calix conducts industry standard data security and privacy compliance audits and agrees to share audit report results with Customer upon request.

6. Security Breach Notification. Calix agrees to notify Customer of unauthorized access, use, disclosure, alteration, destruction, or loss of Customer Personal Data as required by applicable law.

7. No Information Selling or Sharing for Cross-Context Behavioral Advertising. Calix does not accept or disclose any Customer Personal Data as consideration for any payments, services, or other items of value. Calix does not sell or share any Customer Personal Data, as the terms “sell” and “share” are defined in the CCPA. Calix does not retain, use, or disclose Customer Personal Data (a) for cross-context behavioral advertising, or (b) outside the direct business relationship with Customer.

8.

Integration. This DPA is binding on Calix if and to the extent it is expressly agreed or incorporated by reference in a duly signed Contract. This DPA shall not create third party beneficiary rights. Calix does not accept or submit to additional requirements relating to Customer Personal Data, except as specifically and expressly agreed in writing with explicit reference to the Contract and this DPA.