COUNTY PURCHASING AGENT

Fort Bend County, Texas

Brooke Lindemann
Purchasing Agent

(281) 341-8640
Fax (281) 341-8645

June 25, 2025

TO: All Prospective Bidders

RE: Addendum No. 1 – Fort Bend County BID 25-067 – Construction of Mustang Park Community Center Renovation and New Construction in Precinct Two

Addendum 1:

Attached is Addendum 1. Vendors are to utilize Addendum 1 document while preparing their solicitation response. Changes include, Q&A #2, bid due date extension to July 15, 2025 at 2:00 PM., Addendum Transmittal, Added and revised Specifications, and Updated Plan Sheets, provided by Architect.

****

Immediately upon your receipt of this addendum, please fill out the following information and email this page to Tyler Kendziora at tyler.kendziora@fortbendcountytx.gov

_____

Company Name

_____

Signature of person receiving addendum Date

If you have any questions, please contact this office.

Sincerely,

Tyler Kendziora

Tyler Kendziora
Senior Buyer

Construction of Mustang Park Community Center Renovation and New Construction in Precinct Two
BID 25-067

Q&A #2

Question 1: Would you consider breaking up the project documents into two documents; solicitation information and plans? The document is SO big that it's been hard to share within our team and takes so long to load.

Answer: At this time, the project document will be left as is. Upon downloading the document, the vendor may separate the pages if desired.

Question 2: Could you please confirm based on the plans that there is an addition to the existing community center with exterior updates? The scope is a little confusing for me to notate as I build an outline for our construction team (even ChatGPT can't help because of the size of the document). Could you provide a breakdown of what the "new" portion scope is and then the "renovation" scope?

Answer: Yes, the scope includes ***a new addition to the existing community center as well as renovations to portions of the existing structure****, along with associated exterior upgrades.*
Here is a general breakdown:

- ***New Construction Scope****: includes a new building addition (approximately 2,700SF) containing enclosed program spaces such as offices, storage rooms, meeting rooms, a recording studio, and a digital library. This scope also covers all new structural systems, roofing, exterior envelope, and MEP systems serving the new addition. Site work directly related to the addition—such as paving, ramps, and utility connections—is also included. Additionally, the existing building will receive a new architectural "crown" element, as shown on Sheet B-A211.*
- *For reference, Sheets B-A202 and B-A211 help distinguish between the existing building and the new construction.*
- ***Renovation Scope****: Involves selective interior modifications to the existing building, including layout reconfigurations, new ceiling system, restroom upgrades, MEP tie-ins, and floor / wall finish updates. Exterior upgrades (paint) to portions of the existing façade are also part of the renovation to align visually with the new construction.*

Question 3: Is a HUB or Minority Subcontracting plan required?

Answer: No HUB or Minority Subcontracting Plan is required.

Question 4: Is there an engineer's estimate or budget for this project and if so, please provide.

Answer: No.

Question 5: There are specifications missing for Section 27,.The specifications for the Division 27 items are not available on Construct Connect. They are also not displayed in the "TABLE OF CONTENTS DOCUMENT 00010 - TABLE OF CONTENTS - 6 – 03/14/20258" on the FB Website. Please provide the specifications for section 27.

Answer: Specifications for the noted sections will be issued in Addendum #1.

Question 6: For the "Construction of Mustang Park Community Center Renovation and New Construction in Precinct Two" project, Spec section 329413 is missing.

Please advise.

Answer: Specifications for the noted sections will be issued in Addendum #1.

Question 7: On the Vendor Information Form, please clarify what is required for the Company's Gross Annual Receipts

Answer: Gross Annual Receipts are the total amounts the organization received from all sources during its annual accounting period, without subtracting any costs or expenses.

Question 8: Please provide a copy of the scoring/criteria of this proposal, since not solely-based on pricing alone.

Answer: Please see Section 1.13 Evaluation and Section 30.0 Award in the Bid Solicitation. Note that the solicitation is not a Request for Proposals, it is an Invitation for Bid.

Question 9: Please provide a copy of the contract for this project.

Answer: The Contract sheet on page 34 of the solicitation is executed following Commissioners Court approval. The successful vendors returned initialed and signed solicitation documents will become the contract upon award and execution. Please see solicitation document posted on the county website containing all pages requiring signatures or initials.

Question 10: How many copies are required of our response?

Answer: Only the original Bid response will be required, no additional copies are required.

Question 11: When do you anticipate awarding this contract?

Answer: An award can be anticipated approximately 1-2 months after bid opening.

Question 12: On previous submittals, there was a section called "Evaluation Criteria" that included a transmittal letter, executive summary, experience, etc. I am not seeing where this is asked for in the documents provided for this project. Has this been eliminated, or will it be required?

Answer: The Solicitation does not contain a section labeled "Evaluation Criteria" because it is awarded to the overall lowest bidder meeting specifications. Please use the information provided on the county website when creating your response.

Question 13: The fire alarm system is currently set up with all buildings as a separate monitoring system. In the long term, the monitoring cost will be higher with this configuration. Confirm if it is acceptable to tie all buildings together instead of making them separate. Please note that this will require that all the buildings have the same address.

Answer: It is acceptable to tie all three fire alarm systems together. Please coordinate single address with building Owner.

Question 14: E100 note 7 states to see civil and mechanical drawings for PIV locations. PIV's are not noted on C301 or M100. Please indicate the PIV locations.

Answer: Vault locations for the PIVs will be identified on revised sheet C301, and corresponding vault details will be provided on revised sheet C608. Both sheets will be issued as part of forthcoming Addendum #1.

Question 15: Documents note to have an AHJ approved firm to review install and compliance for any equipment specified or furnished that is not UL labeled. State who the AHJ for this project will be and provide a list of AHJ approved firms for this application.

Answer: The referenced note has been revised to state: 'All equipment provided shall be UL labeled.' As a result, the requirement for AHJ-approved firms is no longer applicable. This change will be included in forthcoming Addendum #1.

Question 16: Do you have CAD files available that include both existing and proposed elevation data?

Answer: The requested CAD files are not available for distribution at this time. Following award of the project, a file transfer agreement will be executed between the Contractor and the Architect. Upon execution of that agreement, the CAD files will be provided.

**Amended 6/25/25*

Fort Bend County, Texas
Invitation for Bid

Construction of Mustang Park Community Center Renovation and New Construction in Precinct Two
BID 25-067

SUBMIT BIDS TO:

Fort Bend County
Purchasing Department
Travis Annex
301 Jackson, Suite 201
Richmond, TX 77469

Note: All correspondence must include the term "Purchasing Department" in address to assist in proper delivery

SUBMIT NO LATER THAN:

***Tuesday, July 15, 2025, ~~July 1, 2025~~**
2:00 PM (Central)

LABEL ENVELOPE:

BID 25-067
Mustang Park Community Center

ALL BIDS MUST BE RECEIVED IN AND TIME/DATE STAMPED BY THE PURCHASING OFFICE OF FORT BEND COUNTY ON OR BEFORE THE SPECIFIED TIME/DATE STATED ABOVE.

BIDS RECEIVED AS REQUIRED WILL THEN BE OPENED AND PUBLICLY READ.

BIDS RECEIVED AFTER THE SPECIFIED TIME, WILL BE RETURNED UNOPENED.

Results will not be given by phone.
Results will be provided to bidder in writing after Commissioners Court award.

Requests for information must be in writing and directed to:
Tyler Kendziora
Senior Buyer
Tyler.Kendziora@fortbendcountytx.gov

Vendor Responsibilities:

- Download and complete any addendums. (Addendums will be posted on the Fort Bend County website no Later than 48 hours prior to bid opening)
- Submit response in accordance with requirements stated on the cover of this document.
- DO NOT submit responses via email or fax.

Prepared: 05/21/25
Issued: 06/08/25

HINES
ARCHITECTURE
+DESIGN

ADDENDUM TRANSMITTAL

Addendum No.: 001
Issue Date: 06/20/2025
Project Name: Mustang Park Community Center
Project No.: 2024-02

To: Fort Bend County
Attn: Tyler Kendziora | Project Manager

From: Gregory L. Lake | Principal
Subject: Addendum No. 01 - Fort Bend County Fire Marshal comments, TAS review comments and general coordination.

PURPOSE: This Addendum includes miscellaneous revisions, clarifications, and updates to the construction documents across multiple disciplines, including Architectural, Civil, Landscape, MEP, A/V, and Technology. All changes supersede previously issued drawings and specifications where applicable.. The summary below outlines the revisions made to the applicable drawing sheets to reflect this change.

LIST OF REVISED DRAWINGS & DESCRIPTION OF CHANGES:

General:

1. G001: Index updated with added sheets.
2. G110: Roll-in Shower detail added.
3. G200: Addition of sprinkler per FBC amendment.
4. G201: Addition of sprinkler per FBC amendment.
5. G202: Addition of sprinkler per FBC amendment.
6. G203: Addition of sprinkler per FBC amendment.

Civil:

C101: Note for the sanitary line easement updated

1. C102: clearing extended at the south of the existing pavement
2. C103: Islands added in the existing parking
3. C104: Changes in the sheet due to removal of proposed drive and relocation of the pump station
4. C201: Notes for the drainage updated
5. C202: Updated forcemain and outfall structures
6. C202.0:1 New sheet added
7. C203: Updated forcemain
8. C204: Updated forcemain

9. C204.01: New sheet added
10. C204.02: New sheet added with plan and profile and the outfall structure details
11. C205: Calculations updated
12. C206: Updated 10yr and 25yr wse
13. C207: Updated 10yr and 25yr wse, orifice structure details removed
14. C208: updated grading for the fireline changes
15. C209: updated grading for the fireline changes and relocated pump pit
16. C301: Fire water line, Vault with FDC taps, easements, fire hydrants and rpz and check valve relocated and/or added
17. C401: Fire water line, Vault with FDC taps, easements, fire hydrants and rpz and check valve relocated and/or added, Location markers updated
18. C402: location markers updated
19. C501: New sheet added
20. C502: New sheet added
21. C606: Pump Details and storm box updated
22. C608: Details for water RPZ and fdc updated
23. C609: New details added
24. C610: New details added

Landscape

L601, L602, L603, L604: Irrigation Plans, Details, Notes & Legend

Architecture

1. A101: Clarification of van and handicap parking symbols in parking lot per Texas Accessibility Standards (TAS)..
2. A921: Clarification to Ceiling systems, including a revision to Ceiling 3 to add an alternate. Clarification to T1 and revisions to finish schedule.
3. A961: Dimensional Clarification to mirror height, Drinking fountain height and grab bars per Texas Accessibility Standards (TAS).
4. A-A201: Addition of sprinkler equipment as required per FBC Fire Marshal review.
5. A-A221: Clarification to tile designation
6. A-A301: Clarification to Ceiling systems, including a revision to Ceiling 3 to add an alternate. Modification to lighting type at reception and corridor.
7. A-A401: Revised roll-in showers per Texas Accessibility Standards (TAS).
8. A-A601: Addition of surface mounted hooks to the applicable walls in the natatorium. Clarification to tile designation.
9. A-A701: Clarification to lighting
10. A-A702: Clarification to lighting
11. A-A821: Dimensional clarification to wall systems
12. B-A101: Clarification to existing range and overhead microwave per FBC Fire Marshal review.

13. B-A102: Added Demolition scope.
14. B-A201: Conversion of a closet into a sprinkler equipment room to support the need for this building to be sprinkled per FBC amendment. Addition of ventilation system for existing range. Room layout clarification @ Electrical / IT closet B107a & CLO B107.
15. B-A221: Clarification to flooring type at closet due to change in function & removed base in toilet rooms.
16. B-A301: Clarification to ceiling systems, including ceiling 3 to add alternate.
17. B-A901: Clarification to lighting scope @ the Crown.
18. C-A101: Clarification to demolition scope associated with the existing metal framing canopy.
19. C-A201: Addition of sprinkler equipment room to support the need for this building to be sprinkled per FBC amendment.
20. C-A301: Clarification to Ceiling systems, including a revision to Ceiling 3 to add an alternate.
21. C-A601: Clarification to wall covering scope. Clarification to wall covering at all columns, coordination of understage speaker and projector w/ AV.
22. C-A711: Add note for mechanical wall penetration detail
23. C-A723: New sheet; includes mechanical wall penetration detail.
24. D-A301: Clarification to ceiling panel layout. Updated definition to BL1
25. D-A501: Add back lit signage
26. D-A702: Included paint colors to ceiling
27. D-A802: Add back lit signage, Add Control Joints, dimensional clarification
28. D-A803: Add back lit signage, Add Control Joints, dimensional clarification
29. D:A821: Clarification to detail

Mechanical

1. A-M101:
    a. ADD Propellor Fan Schedule.
2. A-M201:
    a. Plan Notes Add note 3, provide guards over thermostats and switches, and Add note 4, Provide protective / security screens at each condenser fan on condensing units for vandalism.
    b. Changing Room A109, rotate 40x12 AL duct up and exhaust grille from east wall to south wall.
    c. Reception A101, See plan note 3.
    d. Pool, See plan note 3.
    e. Admin A103, See plan note 3.
    f. Fitness A104, See plan note 3.
    g. Mech A115, Add wall heater WH-1-A.
    h. Grid A4 & AC, adjust 42x26 to clear beam above into Mech Room.
3. A-M202:
    a. Mech Room Equipment Plan: 42x26 duct adjusted to clear beam in mech room.
    b. Pump Room HVAC Plan: Location of boiler combustion and flue through roof.
    c. Pump Room Roof Plan: Flue through roof location.

4. A-M301:
    a. Adjust location of return duct penetrating in the mech room to clear beam above duct.
    b. Location of ERV-1-A was adjusted including associated ductwork.
5. B-M201:
    a. Added Wall Heater WH-1-B in Sprinkler Equip room B123.
    b. Wall between B107 and B107a moved, adjust the location of ceiling supply diffusers.
    c. Plan Notes Add note 3, provide guards over thermostats and switches, and Add note 4, Provide protective / security screens at each condenser fan on condensing units for vandalism.
6. B-M301:
    a. Main supply duct size changed.
7. C-M201:
    a. Plan Notes Add note 3, provide guards over thermostats and switches, and Add note 4, Provide protective / security screens at each condenser fan on condensing units for vandalism.
    b. Add supply diffusers and ductwork in rooms both men's and women's restrooms.
    c. Relocate return duct down to return grille in room C108.
    d. Relocate return duct down to return grille in room C106 northwest corner.
8. C-M301:
    a. Main supply duct size changed.
9. M200:
    a. Added Refrigerant Piping Riser detail and Pipe size schedule.

Electrical

1. E100: Modified General Note #4. Added Electrical Note #2.
2. E101: Updated lighting layout on "Crown lighting plan".
3. A-E2.01: Revised lighting in corridor A102 and Reception 101.
4. A-E3.01: Added connection to compressor, heater and valves in new sprinkler riser room. Added connection to water fountain.
5. A-E4.01: Removed smoke detectors throughout building A, not required for a sprinklered building.
6. A-E5.01: Updated panel schedule 2N2.
7. A-E5.02: Updated mechanical equipment connection schedule to include new wall heater.
8. B-E2.01: Updated lighting to match Architectural Floor plan changes.
9. B-E3.01: Added connection to compressor, heater and valves in new sprinkler riser room. Relocated electrical connections for IT room equipment. Revised Electrical Room layout.
10. B-E4.01: Removed smoke detectors throughout building B, not required for a sprinklered building.
11. B-E5.01: Updated panel schedule 2C2. Revised Electrical room layout to match new floor plans.
12. B-E5.02: Updated mechanical equipment connection schedule to include new wall heater.
13. C-E3.01: Added new heater location in sprinkler room. Added Electrical Note #10.
14. C-E5.01: Updated panel schedule 2M1.
15. C-E5.02: Updated mechanical equipment connection schedule to include new wall heater.

Plumbing

1. P002:
    a. WC-2 correct make and model number.
    b. UR-1 correct make and model number, correct flush valve.
    c. FD-1 correct make and model number.

P100:

a. Add Fire Main into Community Center room B123.
b. Add 6” waste into Community Center room B123.

A-P101:

a. Add Natural Gas Regulator Schedule.

A-P200:

a. Adjust below floor plumbing to match new fixture locations.

A-P201:

a. Adjust overhead piping to new plumbing fixture locations.
b. Pool Pump Room add Gas Regulator GR-1, gas piping and gas vent through roof.

A-P202:

a. Add 6” VTR and 2” GVTR.

A-P203:

a. Water Riser Diagram - Correct pipe sizing to water closets.

B-P200:

a. Add Fire main and 6” waste and associated waste piping for standpipe and floor drain in new sprinkler equipment room B123.

B-P201:

a. Add Trap primer, 6” standpipe, 3” vent, 2” FD-1, and fire sprinkler main in the sprinkler equipment room B123.

B-P202:

a. Add 3” VTR.

Instruction to Bidders: *The attached documents are issued as part of this Addendum and modifies the original bid documents. Bidders are instructed to review all included drawings, specifications, and narrative descriptions in full and incorporate all scope revisions into their bid pricing accordingly.*

Distribution: Fort Bend County, Bidders, HinesAD Project Files

PROJECT MANUAL

Issued for Addendum No. 1

20 June 2025

Mustang Park Community Center

Fort Bend County, Texas

Project Number: **2024-002**

PROJECT MANUAL

Mustang Park Community Center
Fort Bend County, Texas

June 20, 2024 **Issue for Addendum No. 1**

Owner
Fort Bend County
Address1517 Eugene Heimann Circle
Richmond, Texas 77469

Design Team

Hines Architecture + Design
8 Greenway Plaza, Suite 1525
Houston, Texas 77046
Telephone: 713-909-0983

Vogt Engineering
2203 Timberloch Place, Suite 124
The Woodlands, Texas 77380
Telephone: 281-651-2972

Jenny Qualls Landscape Architecture, LLC
600 Valencia Street
Dallas, Texas 75223
Telephone: 940-231-0309

Jaymark Engineering Corporation
3730 Cypress Creek Parkway, Suite 108
Houston, Texas 77068
Telephone: 346-316-1181

CSI Global Inc.
15810 Park Ten Place
Suite 355
Houston, Texas 77084
Telephone: 832-857-0138

Water Technology Inc.
6636 N Riverside Drive
Suite 500B
Fort Worth, Texas 76137
Telephone: 682-708-7007

Jordan Consultants
P. O. BOX 7825
Houston, Texas 77270
Telephone: 713-366-0320

Project Numbers: 2024-002

END OF DOCUMENT

DOCUMENT 00 01 10

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DIVISION 22 – PLUMBING

P	22 05 00	General Provisions	14 Mar 2025

DISC	SECTION NUMBER	SECTION TITLE	ISSUE DATE
P	22 05 05	Project Closeout and System Setup	14 Mar 2025
P	22 05 13	Electrical Provisions	14 Mar 2025
P	22 05 15	Basic Materials and Methods	14 Mar 2025
P	22 05 20	Demolition	14 Mar 2025
P	22 05 23	Valves	14 Mar 2025
P	22 05 48	Vibration Isolation	14 Mar 2025
P	22 05 50	Seismic Control	14 Mar 2025
P	22 05 93	Testing, Adjusting, and Balancing	14 Mar 2025
P	22 07 00	Mechanical Insulation	14 Mar 2025
P	22 08 10	Systems Training	14 Mar 2025
P	22 08 11	Systems Operations and Maintenance Manuals	14 Mar 2025
P	22 11 16	Domestic Water System	14 Mar 2025
P	22 11 23	Natural Gas Piping	14 Mar 2023
P	22 13 00	Soil, Waste, and Vent Piping System	14 Mar 2025
P	22 21 10	Piping	14 Mar 2025
P	22 21 15	Piping Specialties	14 Mar 2025
P	22 21 23	Plumbing Pumps	14 Mar 2025
P	22 30 00	Plumbing Equipment	14 Mar 2025
P	22 40 00	Plumbing Fixtures	14 Mar 2025
DIVISION 23 – MECHANICAL			
M	23 05 00	General Provisions	14 Mar 2025
M	23 05 05	Project Closeout and System Startup	14 Mar 2025
M	23 05 12	Indoor Air Quality	14 Mar 2025
M	23 05 13	Electrical Provisions	14 Mar 2025
M	23 05 15	Basic Materials and Methods	14 Mar 2025
M	23 05 20	Demolition	14 Mar 2025
M	23 05 48	Vibration Isolation	14 Mar 2025
M	23 05 50	Seismic Control	14 Mar 2025
M	23 05 93	Testing, Adjusting and Balancing	14 Mar 2025
M	23 07 00	Mechanical Insulation	14 Mar 2025
M	23 08 00	Mechanical Systems Commissioning	14 Mar 2025
M	23 08 10	Systems Training	14 Mar 2025
M	23 08 11	Systems Operations and Maintenance Manuals	14 Mar 2025
M	23 09 00	Automatic Temperature Controls	14 Mar 2025
M	23 23 00	Refrigerant Piping Systems	14 Mar 2025
M	23 31 00	Air Distribution	14 Mar 2025
M	23 33 00	Air Distribution Accessories	14 Mar 2025
M	23 34 00	Air Distribution Equipment	14 Mar 2025
M	23 37 00	Air Devices	14 Mar 2025
M	23 41 00	Filters	14 Mar 2025
M	23 81 00	Packaged HVAC Equipment	14 Mar 2025
M	23 84 16	Natatorium System	14 Mar 2025
DIVISION 26 – ELECTRICAL			
E	26 01 26	Maintenance Testing for Electrical Systems	14 Mar 2025
E	26 05 00	Common Work Results for Electrical Systems	14 Mar 2025
E	26 05 19	Low Voltage Electrical Power Conductors and Cables	14 Mar 2025
E	26 05 26	Grounding and Bonding for Electrical Systems	14 Mar 2025
E	26 05 33	Raceway and Boxes for Electrical Systems	14 Mar 2025
E	26 05 53	Identification of Electrical Systems	14 Mar 2025

DISC	SECTION NUMBER	SECTION TITLE	ISSUE DATE
E	26 09 43	Lighting Controls	14 Mar 2025
E	26 22 13	Dry-Type Transformers	14 Mar 2025
E	26 24 13	Electrical Switchboards	14 Mar 2025
E	26 24 16	Panelboards	14 Mar 2025
E	26 27 26	Wiring Devices	14 Mar 2025
E	26 28 13	Fuses	14 Mar 2025
E	26 28 16	Enclosed Switches and Circuit Breakers	14 Mar 2025
E	26 43 13	Transient Voltage Surge Suppression System	14 Mar 2025
E	26 50 00	Lighting	14 Mar 2025
DIVISION 27 – COMMUNICATIONS			
T	27 05 26	Grounding and Bonding for Communications Systems	20 Jun 2025
T	27 05 28	Pathways for Communications Systems	20 Jun 2025
T	27 05 29	Hangers and Supports for Communications Systems	20 Jun 2025
T	27 05 36	Cable Trays for Communications Systems	20 Jun 2025
T	27 05 53	Identification for Communications Systems	20 Jun 2025
T	27 11 00	Communications Equipment Room Fittings	20 Jun 2025
T	27 13 23	Communications Optical Fiber Backbone Cabling	20 Jun 2025
T	27 15 13	Communications Copper Horizontal Cabling	20 Jun 2025
T	27 21 33	Wireless Communications Systems	20 Jun 2025
T	27 33 53	Rack Mounted Uninterruptible Power Supply	20 Jun 2025
T	27 40 10	Digital Displays	20 Jun 2025
T	27 41 10	Audio Visual System	20 Jun 2025
DIVISION 28 – ELECTRONIC SAFETY AND SECURITY			
E	28 31 00	Fire Detection and Alarm	14 Mar 2025
SITE AND INFRASTRUCTURE SUBGROUP			
DIVISION 31 – EARTHWORK			
C	31 12 00	Selective Clearing	14 Mar 2025
C	31 13 00	Selective Tree and Shrub Removal	14 Mar 2025
S	31 23 00	Building Pad, Dug Foundations, and Footings	14 Mar 2025
C	31 23 00	Excavation, Backfilling, and Compacting	14 Mar 2025
C	31 25 00	Erosion and Sedimentation Controls	14 Mar 2025
C	31 25 13	Erosion Controls	14 Mar 2025
C	31 25 15	Filter Fabric Barrier and Reinforced Filter Fabric Barrier	14 Mar 2025
A	31 31 16	Termite Control	14 Mar 2025
C	31 32 10	Cement Stabilized Sand	14 Mar 2025
C	31 32 13	Lime-Flyash Soil Stabilization	14 Mar 2025
C	31 32 13	Lime Stabilization Subgrade	14 Mar 2025
C	31 33 10	Stabilized Construction Exit	14 Mar 2025
S	31 63 29	Drilled Piers	14 Mar 2025
DIVISION 32 – EXTERIOR IMPROVEMENTS			
C	32 12 00	Flexible Base	14 Mar 2025
C	32 12 16	Hot Mix Asphalt Concrete	14 Mar 2025
L	32 13 13	Landscape Concrete Paving	14 Mar 2025
L	32 14 13	Precast Concrete Unit Paving	14 Mar 2025

DISC	SECTION NUMBER	SECTION TITLE	ISSUE DATE
L	32 14 40	Stone Paving	14 Mar 2025
L	32 15 40	Aggregate Surfacing	14 Mar 2025
C	32 17 23	Pavement Markings	14 Mar 2025
L	32 17 26	Tactile Warning Surfacing	14 Mar 2025
L	32 31 19	Decorative Metal Fences and Gates	14 Mar 2025
L	32 32 53	Stone retaining walls	14 Mar 2025
L	32 33 00	Site Furnishings	14 Mar 2025
L	32 84 00	Planting Irrigation	14 Mar 2025
L	32 91 13	Soil Prepartation	14 Mar 2025
L	31 81 19	Landscape Grading	14 Mar 2025
L	32 94 13	Metal Landscape Edging	20 Jun 2025
L	32 93 19	Trees, Shrubs, and Groundcover	14 Mar 2025

DIVISION 33 – UTILITIES

C	33 11 00	Water Utility Distribution Piping	14 Mar 2025
C	33 31 13	Sanitary Utility Sewerage Piping	14 Mar 2025
C	33 41 13	Storm Utility Drainage Piping	14 Mar 2025
L	33 43 00	Landscape Drainage	14 Mar 2025
L	33 46 00	Subdrainage	14 Mar 2025

PROCESS EQUIPMENT SUBGROUP

DIVISIONS 40 – 49 – NOT USED

END OF TABLE OF CONTENTS

SECTION 01 23 00
ALTERNATES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for alternates.

1.02 DEFINITIONS

A. Alternate: Amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. Cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.03 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Acceptance of Alternates: Alternates will be reviewed and accepted or rejected at Owner's option. Execute accepted alternates under the same conditions as other work of the Contract.

1. Owner Review Time: Provide 30 days for Owner review and decision of acceptance or rejection of Alternates.

D. Execute accepted alternates under the same conditions as other Work of the Contract.

E. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES

A. Alternate No. 1 – Decorative Paving.

1. Base Bid: Provide concrete paverers as indicated on Drawings and as specified.
2. Alternate: Where indicated, in lieu of concrete pavers, provide decorative concrete as indicated on Drawings and as specified.

B. Alternate No. 2 – Electrical Feeders to Panel.

1. Base Bid: Provide copper feeders as specified.
2. Alternate: In lieu of copper feeders, provide aluminum feeders.

C. Alternate No. 3 – Ceiling 3 at Natatorium.

1. Base Bid: Provide linear metal ceiling as indicated on Drawings and as Specified.
2. Alternate: ~~To be selected by Architect.~~ CBI Europe Linear Strips Cubic Edge System No. ST130CC with finish to match Basis of Design product.

D. Alternate No. 4 – Artistic paint finish.

1. Base Bid: Provide quartz aggregate finish as indicated and as specified.
2. Alternate: Provide custom artwork by a commissioned artist as specified by Allowance No. 5.

E. Alternate No. 5 – Translucent plastic panels.

1. Base Bid: Provide translucent polycarbonate panels for luminous ceilings as indicated on the Drawings and as specified in Section 09 54 16 - Luminous Ceilings.
2. Alternate: In lieu of specified translucent panel, provide custom artistic translucent panel system manufactured by. Tomonoshi, LLC.

F. Alternate No. 6 – Multipurpose building ceiling.

1. Base Bid: Provide Ceiling 2 at Multipurpose building.
2. Alternate: In lieu of Ceiling 2 and AP1 provide exposed structure; paint exposed walls, structural components and underside of decking/insulation

G. Alternate No. 7 – Canopy ceiling.

1. Base Bid: Provide LMP at canopy ceiling.
2. Alternate: In lieu of LMP provide 3/4-inch fiber cement board with field paint finish

H. Alternate No. 8 – Starting platform.

1. Base Bid: Provide Spectrum Aquatics starting platform.
2. Alternate: In lieu of Spectrum Aquatics starting platform, provide Xcellerator platform with 24- by 32-inch platform, tilted 10 degrees, side step, single post anchor, 30-inch setback.

I. Alternate No. 9 – Exterior light fixtures

1. Base Bid: Provide light fixture types L7 and L5 at canopy and site as indicated on Drawings and as specified..
2. Alternate: Omit light fixturet ypes L7 and L5 in their entirety.

J. Alternate No. 10 – Canopy columns

1. Base Bid: Provide HSS 8x8 steel columns at canopy as indicated on Drawings.
2. Alternate: In lieu of HSS 8x8 steel columns, provide HSS 6x6 steel columns at canopy.

K. Alternate No. 11 – New trees

1. Base Bid: Provide new trees as indicated on Drawings and as specified.
2. Alternate: Trees to be furnished by Fort Bend County Parks Department for installation by the Contractor.

L. Alternate No. 12 – Skylight

1. Base Bid: Provide skylight as indicated on Drawings and as specified.
2. Alternate: Remove skylight in its entirety.

M. Alternate No. 13 – Ultra-violet disinfection

1. Base Bid: Provide UV disinfection system for swimming pool as indicated and as specified.
2. Alternate: Delete UV disinfection system and associated piping from recirculation system.

END OF SECTION

SECTION 09 54 23
LINEAR PLANK METAL CEILINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Linear plank metal ceilings and suspension systems for ceilings.

1.02 DEFINITIONS

A. LR: Light Reflectance coefficient.

B. NRC: Noise Reduction Coefficient.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Performance Data: For installed products indicated to comply with design loads and other criteria, include structural analysis and other analytical data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below:

1. Linear Metal Pan: Set of 12-inch- (300-mm-) long Samples of each type and color and a 12-inch- (300-mm-) long spliced section.
2. Suspension System Members: 12-inch- (300-mm-) long Sample of each type.
3. Exposed Molding and Trim: Set of 12-inch- (300-mm-) long Samples of each type, finish, and color.
4. End Cap: Full size.

D. Coordination Drawings: Reflected ceiling plans, drawn to minimum scale of 1/4 inch = 1 foot (1:48), on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Linear pattern.
2. Joint pattern.
3. Ceiling suspension members.
4. Method of attaching hangers to building structure.

5. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, and access panels.
6. Ceiling perimeter and penetrations through ceiling; trim and moldings.

E. Maintenance Data: For finishes to include in maintenance manuals.

1.04 QUALITY ASSURANCE

A. Source Limitations: Obtain each set of linear metal pans and suspension systems from one source with resources to provide products of consistent quality in appearance, physical properties, and performance.

B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver linear metal pans, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Handle linear metal pans, suspension system components, and accessories carefully to avoid damaging units and finishes in any way.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Do not install linear metal ceilings until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.07 COORDINATION

A. Coordinate layout and installation of linear metal pans and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Design is based on products scheduled on Drawings manufactured by USG Ceilings Plus. Subject to compliance with requirements, provide named product or comparable product approved by Architect~~. m,anufacturedby one of the follwoing:~~

1. Alternate Product: CBI Europe Linear Strips Cubic Edge System No. ST130CC with finish to match Basis of Design product

~~Armstrong.~~

~~Hunter Douglas Architectural Products, Inc.~~

2.02 LINEAR METAL CEILING PANS

A. Sheet Metal Characteristics: For metal components exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, roughness, stains, or discolorations.

1. Aluminum Sheet: Roll-formed aluminum sheet, complying with ASTM B209/B209M; alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Pan Fabrication: Manufacturer's standard units of size, profile, and edge treatment indicated, formed from metal indicated to snap on and be securely retained on carriers without separate fasteners, and finished to comply with requirements indicated.

C. Pan Splices: Construction same as pans, in lengths 8 to 12 inches (200 to 300 mm); with manufacturer's standard finish.

D. End Caps: Metal matching pans; fabricated to fit and conceal exposed ends of pans.

E. Filler Strips: Manufacturer's standard material, integral with pans; fabricated to uninterruptedly close voids between pans.

F. Moldings and Trim: Provide manufacturer's standard moldings and trim for exposed members, and as indicated or required, for edges and penetrations of ceiling, around fixtures, at changes in ceiling height, and for other conditions; of same metal and finish as linear metal ceiling pans.

2.03 METAL SUSPENSION SYSTEMS

A. Metal Suspension Systems Standard: Provide ceiling manufacturer's standard metal suspension systems of types and finishes indicated that comply with applicable ASTM C635/C635M requirements.

B. Suspension Systems: Provide systems complete with carriers, splice sections, connector clips, alignment clips, leveling clips, hangers, molding, trim, retention clips, load-resisting struts, fixture adapters, and other suspension components required to support ceiling units and other ceiling-supported construction.

C. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, Direct Hung, unless otherwise indicated.

D. Wire Hangers, Braces, and Ties: Provide wire complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at 3 times the hanger design load indicated in ASTM C635/C635M, Table 1, Direct Hung will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.

E. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

F. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed from 0.04-inch- (1.0-mm-) thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- (8-mm-) diameter bolts.

G. Carriers: Factory finished with matte-black baked finish.

1. Main Carriers: Aluminum, not less than 0.240-inch (6.0-mm) rolled sheet, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, complying with ASTM B209/B209M.
2. Adaptable Carriers: Manufacturer's standard carriers for direct attachment to existing suspended tees.
3. Flexible Radial Carriers: Manufacturer's standard radial carriers.
4. Expansion Carriers: Manufacturer's standard carriers allowing for irregularities or other unusual space conditions.

H. Carrier Splices: Same metal, profile, and finish as indicated for carriers.

I. Stabilizer Channels, Tees, and Bars: Manufacturer's standard components for stabilizing main carriers at regular intervals and at light fixtures, air-distribution equipment, access doors, and other equipment; spaced as standard with manufacturer for use indicated; and factory finished with matte-black baked finish.

J. Edge Moldings and Trim: Provide exposed members as indicated or required to comply with seismic requirements of authorities having jurisdiction, to conceal edges of penetrations through ceiling, to conceal ends of pans and carriers, for fixture trim and adapters, for fasciae at changes in ceiling height, and for other conditions; of metal and finish matching linear metal pans or extruded plastic unless otherwise indicated.

1. For Circular Penetrations of Ceiling: Fabricate edge moldings to diameter required to fit penetration exactly.

2.04 ACCESSORIES

A. Access Panels: For access at locations indicated, provide door hinge assembly, retainer clip, and retainer bar, assembled with ceiling panels and carrier sections into access doors of required size, permitting upward or downward opening.

2.05 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.06 ALUMINUM FINISHES

A. Color-Coated Finish: Custom wood grain finish, resistant to humidity and chlorine, and specifically recommended by manufacturer for use in enclosed natoriums..

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which linear metal ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of linear metal ceilings.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Measure each ceiling area and establish layout of linear metal pans to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width or -length pans at borders, and comply with layout shown on reflected ceiling plans and Coordination Drawings.

3.03 INSTALLATION

A. Comply with ASTM C636/C636Mand seismic requirement indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.

4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate to which hangers are attached and for type of hanger involved.
5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers but without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of linear metal ceiling area and where necessary to conceal edges and ends of linear metal pans.

1. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.
2. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension system carriers so they are aligned and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Cut linear metal pans for accurate fit at borders and at interruptions and penetrations by other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness exceeding referenced standards for stretcher-leveled metal sheet.

G. Install linear metal pans in coordination with suspension system and exposed moldings and trim.

1. Align joints in adjacent courses to form uniform, straight joints parallel to room axis in both directions unless otherwise indicated.
2. Fit adjoining units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around construction penetrating ceiling.
3. Install pans with butt joints using internal pan splices and in the following joint configuration:
4. Staggered a minimum of 12 inches (300 mm), unless otherwwise indicated.
5. Install directionally textured metal pans in directions indicated.
6. Where metal pan ends are visible, install end caps unless trim is indicated.

3.04 CLEANING

A. Clean exposed surfaces of linear metal ceilings, including trim and edge moldings after removing strippable, temporary protective covering if any. Comply with manufacturer's written instructions for stripping of temporary protective covering, cleaning, and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, including dented and bent units.

END OF SECTION

SECTION 27 05 26

GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

C. Refer to ICT Ground Bonding Conductor Size schedule on the contract drawings for grounding and bonding conductor sizes.

1.2 SUMMARY

A. Section Includes:

1. Grounding conductors.
2. Grounding connectors.
3. Grounding busbars.
4. Grounding labeling.

1.3 DEFINITIONS

A. BCT: Bonding conductor for telecommunications.

B. EMT: Electrical metallic tubing.

C. ICT: Information and Communication Technology

D. PBB: Primary bonding busbar (formerly TMGB).

E. SBB: Secondary bonding busbar (formerly TGB).

F. TBB: Telecommunications bonding backbone

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

A. As-Built Data: Plans showing as-built locations of grounding and bonding infrastructure, including the following:

1. BCT, PBB, SBBs, TBBs and routing of their bonding conductors.

B. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For grounding to include in operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI on staff.

1. Installation Supervision: Installation shall be under the direct supervision of ITS Technician, who shall be present at all times when Work of this Section is performed at Project site.
2. Field Inspector: Currently registered by BICSI as a registered communications distribution designer to perform the on-site inspection.

PART 2 - PRODUCTS

2.1 SYSTEM COMPONENTS

A. Comply with J-STD-607-A.

2.2 CONDUCTORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Harger Lightning & Grounding.
2. Panduit Corp.
3. Engineer Approved Equal

B. Comply with UL 486A-486B.

C. Insulated Conductors: Stranded copper wire, green or green with yellow stripe insulation, insulated for 600 V, and complying with UL 83.

1. Ground wire for custom-length equipment ground jumpers shall be No. 6 AWG, 19-strand, UL-listed, Type THHN wire.
2. Cable Tray Equipment Grounding Wire: No. 6 AWG.

D. Cable Tray Grounding Jumper:

1. Not smaller than No. 6 AWG and not longer than 12 inches. If jumper is a wire, it shall have a crimped grounding lug with two holes and long barrel for two crimps. If jumper is a flexible braid, it shall have a one-hole ferrule. Attach with grounding screw or connector provided by cable tray manufacturer.

E. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
4. Bonding Cable: 28 kcmils, 14 strands of No. 17 AWG conductor, and 1/4 inch in diameter.
5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
6. Bonding Jumper: Tinned-copper tape, braided conductors terminated with two-hole copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.3 CONNECTORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Burndy; Part of Hubbell Electrical Systems.
2. Chatsworth Products, Inc.
3. Harger Lightning & Grounding.
4. Panduit Corp.
5. Engineer Approved Equal

B. Irreversible connectors listed for the purpose. Listed by an NRTL as complying with NFPA 70 for specific types, sizes, and combinations of conductors and other items connected. Comply with UL 486A-486B.

C. Compression Wire Connectors: Crimp-and-compress connectors that bond to the conductor when the connector is compressed around the conductor. Comply with UL 467.

1. Electroplated tinned copper, C and H shaped.

D. Busbar Connectors: Cast silicon bronze, solderless compression-type, mechanical connector; with a long barrel and two holes spaced on 5/8-inch centers for a two-bolt connection to the busbar.

E. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.4 GROUNDING BUSBARS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Panduit GB4B0612TPI-1
2. Harger Lightning & Grounding TGBI14412TMGB.

B. PBB: Predrilled, wall-mounted, rectangular bars of hard-drawn solid copper, 1/4 by 4 inches in cross section, length as indicated on Drawings. The busbar shall be NRTL listed for use as SBB and shall comply with J-STD-607-A.

1. Predrilling shall be with holes for use with lugs specified in this Section.
2. Mounting Hardware: Stand-off brackets that provide a 4-inch clearance to access the rear of the busbar. Brackets and bolts shall be stainless steel.
3. Stand-off insulators for mounting shall be Lexan or PVC. Comply with UL 891 for use in 600-V switchboards, impulse tested at 5000 V.

C. SBB: Predrilled rectangular bars of hard-drawn solid copper, 1/4 by 4 inches in cross section, length as indicated on Drawings. The busbar shall be for wall mounting, shall be NRTL listed as complying with UL 467, and shall comply with J-STD-607-A.

1. Predrilling shall be with holes for use with lugs specified in this Section.
2. Mounting Hardware: Stand-off brackets that provide at least a 2-inch clearance to access the rear of the busbar. Brackets and bolts shall be stainless steel.
3. Stand-off insulators for mounting shall be Lexan or PVC. Comply with UL 891 for use in 600-V switchboards, impulse tested at 5000 V.

D. Rack and Cabinet Grounding Busbars: Rectangular bars of hard-drawn solid copper, accepting conductors ranging from No. 14 to No. 2/0 AWG, NRTL listed as complying with UL 467, and complying with J-STD-607-A. Predrilling shall be with holes for use with lugs specified in this Section.

1. Cabinet-Mounted Busbar: Terminal block, with stainless-steel or copper-plated hardware for attachment to the cabinet.
2. Rack-Mounted Horizontal Busbar: Designed for mounting in 19 in. equipment racks. Include a copper splice bar for transitioning to an adjoining rack, and stainless-steel or copper-plated hardware for attachment to the rack. See drawings for detailed information concerning rack-mounted horizontal busbars.
3. Rack-Mounted Vertical Busbar: Designed for mounting inside the vertical wire manager. Vertical busbar shall run the height of the vertical wire manager unless shown otherwise on the drawings. Include a copper splice bar for transitioning to an adjoining rack, and stainless-steel or copper-plated hardware for attachment

to the rack. See drawings for detailed information concerning rack-mounted vertical busbars.

2.5 LABELING

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Brother International Corporation.
2. HellermannTyton.
3. Engineer Approved Equal

B. Comply with TIA/EIA-606-C and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the ac grounding electrode system and equipment grounding for compliance with requirements for maximum ground-resistance level and other conditions affecting performance of grounding and bonding of the electrical system.

B. Inspect the test results of the ac grounding system measured at the point of BCT connection.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with connection of the BCT only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Bonding shall include the ac utility power service entrance, the communications cable entrance, and the grounding electrode system. The bonding of these elements shall form a loop so that each element is connected to at least two others.

B. Comply with NECA 1.

C. Comply with J-STD-607-A.

3.3 APPLICATION

A. Conductors: Install solid conductor for No. 8 AWG and smaller and stranded conductors for No. 6 AWG and larger unless otherwise indicated.

B. Conductor Size: Refer to ICT Ground Bonding Conductor Size schedule on the contract drawings for grounding and bonding conductor sizes.

C. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Connections to Structural Steel: Welded connectors.

D. Conductor Support:

1. Install grounding and bonding conductors in conduit.

E. Grounding and Bonding Conductors:

1. Install in the straightest and shortest route between the origination and termination point, and no longer than required. The bend radius shall not be smaller than eight times the diameter of the conductor. No one bend may exceed 90 degrees.
2. Install without splices.
3. Install in conduit.
4. If a grounding and bonding conductor is installed in ferrous metallic conduit, bond the conductor to the conduit using a grounding bushing that complies with requirements in Section 270528 "Pathways for Communications Systems," and bond both ends of the conduit to a SBB.

3.4 GROUNDING ELECTRODE SYSTEM

A. The BCT between the PBB and the ac service equipment ground shall be as detailed on the drawings. Refer to ICT Ground Bonding Conductor Size schedule on the contract drawings for grounding and bonding conductor sizes.

3.5 CONNECTIONS

A. Bond metallic equipment in a telecommunications equipment room to the grounding busbar in that room, using equipment grounding conductors not smaller than No. 6 AWG.

B. Stacking of conductors under a single bolt is not permitted when connecting to busbars.

C. Assemble the wire connector to the conductor, complying with manufacturer's written instructions and as follows:

1. Use crimping tool and the die specific to the connector.
2. Pre-twist the conductor.
3. Apply an antioxidant compound to all bolted and compression connections.

D. Primary Protector: Bond to the PBB with insulated bonding conductor.

E. Interconnections: Interconnect all SBBs to the PBB with the telecommunications backbone conductor. If more than one PBB is installed, interconnect PBBs using the grounding equalizer conductor.

F. Telecommunications Enclosures and Equipment Racks: Bond metallic components of enclosures to the telecommunications bonding and grounding system. Install top-mounted rack grounding busbar unless the enclosure and rack are manufactured with the busbar. Bond the equipment grounding busbar to the SBB.

G. Structural Steel: Where the structural steel of a steel frame building is readily accessible within the room or space, bond each SBB and PBB to the vertical steel of the building frame.

H. Electrical Power Panelboards: Where electrical panelboards for telecommunications equipment is located in the same room or space, bond each SBB to the ground bar of each panelboard.

I. Shielded Cable: Bond the shield of shielded cable to the SBB in communications rooms and spaces. Comply with TIA/EIA-568-B.1 and TIA/EIA-568-B.2 when grounding screened, balanced, twisted-pair cables.

J. Rack- and Cabinet-Mounted Equipment: Bond powered equipment chassis to the cabinet or rack grounding bar. Power connection shall comply with NFPA 70; the equipment grounding conductor in the power cord of cord- and plug-connected equipment shall be considered as a supplement to bonding requirements in this Section.

3.6 IDENTIFICATION

A. Labels shall be preprinted or computer-printed type.

1. Label PBB(s) with "fs-PBB," where "fs" is the telecommunications space identifier for the space containing the PBB.
2. Label SBB(s) with "fs-SBB," where "fs" is the telecommunications space identifier for the space containing the SBB.
3. Label the BCT and each telecommunications backbone conductor at its attachment point: "WARNING! TELECOMMUNICATIONS BONDING CONDUCTOR. DO NOT REMOVE OR DISCONNECT!"

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
2. Test the bonding connections of the system using an AC earth ground-resistance tester, taking two-point bonding measurements in each telecommunications equipment room containing a PBB and a SBB and using the process recommended by BICSI TDMM. Conduct tests with the facility in operation.

    a. Measure the resistance between the busbar and the nearest available grounding electrode. The maximum acceptable value of this bonding resistance is 100 milliohms.

3. Test for ground loop currents using a digital clamp-on ammeter, with a full-scale of not more than 10 A, displaying current in increments of 0.01 A at an accuracy of plus/minus 2.0 percent.

    a. With the grounding infrastructure completed and the communications system electronics operating, measure the current in every conductor connected to the PBB and in each SBB. Maximum acceptable ac current level is 1 A.

C. Excessive Ground Resistance: If resistance to ground at the BCT exceeds 5 ohms, notify Design Consultant promptly and include recommendations to reduce ground resistance.

D. Grounding system will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

END OF SECTION

SECTION 27 05 28

PATHWAYS FOR COMMUNICATIONS SYSTEMS

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

1.2 SUMMARY

A. Section Includes:

1. Metal conduits and fittings.
2. Fire Rated Cable Pathways
3. Boxes, enclosures, and cabinets.

1.3 DEFINITIONS

A. ARC: Aluminum rigid conduit.

B. GRC: Galvanized rigid conduit.

C. IMC: Intermediate metal conduit.

1.4 ACTION SUBMITTALS

A. Product data: For each type of product.

PART 2 - PRODUCTS

2.1 METAL CONDUITS AND FITTINGS

A. Description: Metal raceway of circular cross section with manufacturer-fabricated fittings.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. AFC Cable Systems; a part of Atkore International.
2. Allied Tube & Conduit; a part of Atkore International.
3. Alpha Wire.
4. Anamet Electrical, Inc.
5. Electri-Flex Company.
6. O-Z/Gedney; a brand of Emerson Industrial Automation.
7. Picoma Industries, Inc.
8. Plasti-Bond.
9. Republic Conduit.
10. Southwire Company.
11. Thomas & Betts Corporation; A Member of the ABB Group.
12. Western Tube and Conduit Corporation.
13. Engineer Approved Equal.

C. General Requirements for Metal Conduits and Fittings:

1. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.
2. Comply with TIA-569-D.

D. GRC: Comply with ANSI C80.1 and UL 6.

E. IMC: Comply with ANSI C80.6 and UL 1242.

F. EMT: Comply with ANSI C80.3 and UL 797.

G. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.

1. Fittings for EMT:

a. Material: Steel.
b. Type: compression.

2. Expansion Fittings: Steel to match conduit type, complying with UL-467, rated for environmental conditions where installed, and including flexible external bonding jumper.

H. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

I. Conduit Colors:

1. Blue (all system)
2. Green (Wi-Fi)

3. Red (Fire Alarm / Fire Protections)

2.2 FIRE RATED CABLE PATHWAYS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Hilti North America - Firestop Speed Sleeve
2. Wiremold/Legrand Flamestopper
3. Specified Technologies Inc. (STI) - EZ Path Fire-Rated Pathway
4. Engineer Approved Equal

B. General Requirements for fire rated cable pathways:

1. Fire rated cable pathway devices shall be used in fire-rated construction for low-voltage, video, data and voice cabling and optical fiber cabling at locations shown on the drawings.
2. Fire rated cable pathways shall contain a built-in fire sealing system sufficient to maintain the hourly fire-rating of fire rated wall and or floor penetrated.
3. The self-contained sealing system shall adjust to the installed cable loading and shall permit cables to be installed or removed without the need to remove or reinstall firestop materials.
4. Fire rated cable pathways shall be engineered such that two or more devices may be ganged together for larger cable capacities.
5. Affix adhesive wall label immediately adjacent to devices to communicate to future cable technicians, authorities having jurisdiction and others the manufacturer of the device and the corresponding UL System number installed.
6. Fire rated cable pathway shall replace conduit sleeves with firestop sealant/putty in walls and floors, and;

    a. When installed individually in walls/floors, devices shall pass through core-drilled opening utilizing tested wall/floor plates.
    b. When multiple units are ganged in walls/floors, devices shall be anchored by means of a tested grid.

7. Cable tray/cable runway shall terminate at each wall/floor and resume on the other side such that cables pass independently through fire rated pathway devices. Cable tray/cable runway shall be properly supported on each side of the wall/floor.
8. Fire rated cable pathways shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479).

2.3 BOXES, ENCLOSURES, AND CABINETS

A. Description: Enclosures for communications.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Adalet.
2. Carlon; a brand of Thomas & Betts Corporation.
3. Crouse-Hinds, an Eaton business.
4. EGS/Appleton Electric.
5. Erickson Electrical Equipment Company.
6. FSR Inc.
7. Hoffman; a brand of Pentair Equipment Protection.
8. Milbank Manufacturing Co.
9. Molex Industrial Products Group; Woodhead Brand.
10. MonoSystems, Inc.
11. Oldcastle Enclosure Solutions.
12. O-Z/Gedney; a brand of Emerson Industrial Automation.
13. Plasti-Bond.
14. Quazite: Hubbell Power Systems, Inc.
15. Randl Industries, Inc.
16. Siemon
17. Steel City
18. Engineer Approved Equal.

C. General Requirements for Boxes, Enclosures, and Cabinets:

1. Comply with TIA-569-D.
2. Boxes, enclosures, and cabinets installed in wet locations shall be listed and labeled as defined in NFPA 70, by an NRTL, and marked for use in wet locations.
3. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
4. Device Box Dimensions: 5 inches square by 3 inches deep.
5. Device Box Accessories: Integral cable management.

D. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

E. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

G. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, galvanized, cast iron with gasketed cover.

H. Hinged-Cover Enclosures and Cabinets: Comply with UL 50 and NEMA 250, with continuous-hinge cover, screw down clamps, padlock hasp and mounting panel unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

2. Nonmetallic Enclosures:

    a. Material: Fiberglass.
    b. Finished inside with radio-frequency-resistant paint.

3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
4. Accessory feet where required for freestanding equipment.
5. Refer to drawings for required NEMA ratings.

PART 3 - EXECUTION

3.1 PATHWAY APPLICATION

A. Outdoors: Apply pathway products as specified below unless otherwise indicated:

1. Exposed Conduit: GRC.
2. Concealed Conduit, Aboveground: GRC.
3. Boxes and Enclosures, Aboveground: NEMA 250, Type 4.

B. Indoors: Apply pathway products as specified below unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: GRC. Pathway locations include the following:

    a. Corridors used for traffic of baggage tugs and carts.

4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Damp or Wet Locations: IMC.
6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel units in institutional and commercial kitchens and NEMA 250, Type 4 painted steel units in damp or wet locations.

C. Minimum Pathway Size: 3/4-inch trade size for copper cables, and 1 inch for optical-fiber cables.

D. Pathway Fittings: Compatible with pathways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. EMT: Use compression, steel fittings. Comply with NEMA FB 2.10.

E. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.

F. Install surface pathways only where indicated on Drawings.

G. Pathways indicated on the drawing sets are approximate. The contractor shall validate the pathways shown, prior to installation, and reflect any alterations due to physical conflicts on shop drawing submittals.

H. Coordinate telecommunications and technology pathways with other raceways. Changes may be made to the pathway system indicated on the drawings to accommodate site conditions or simplify installation as long as adequate sizing is maintained and coordination drawings are submitted for review and approval.

I. Cable pathways within rooms will run parallel to walls unless otherwise noted on the drawings.

J. Provide proper bonding and grounding of all horizontal pathways in accordance with applicable electrical codes and standards, and ANSI/TIA-607-C.

K. All penetrations of architectural barriers shall be completely sealed at the conclusion of each day of installation.

L. Conduit runs shall not contain 90° conduit bodies, LBs, LRs, or LLs.

M. Conduit runs in excess of 100 feet require an accessible pull box. Any exceptions require pre-approval by the stakeholder.

N. Maintain proper conduit bend radius in accordance with ANSI/TIA-569-D. For conduits with an internal diameter of 2" or less, maintain a bend radius of at least 6 times the internal conduit diameter. For conduit with an internal diameter greater than 2", maintain a bend radius of at least 10 times the internal conduit diameter.

O. For conduits requiring more than two 90° bends, provide an accessible pull box between sections with 2 bends or less. If a conduit run requires a reverse bend between 100° and 180°, place an accessible pull box at each bend having an angle from 100° and 180°. This requires pre-approval by the stakeholder. For conduits requiring more than two 90° bends between pull boxes, for each additional bend:

1. De-rate the conduit capacity by 15% or
2. Use the next larger size conduit.
3. This requires pre-approval by the stakeholder.

P. Do not consider a pull box as a bend. All conduits must run straight through a pull box with the bend either before or after the pull box.

Q. Provide an amount of spare, unused conduit not less than 25% of the utilized conduits in each run. A minimum of 1 spare conduit shall remain available for every pathway requiring conduit between the MDF and the IDF it serves.

3.2 INSTALLATION

A. Comply with the following standards for installation requirements except where requirements on Drawings or in this Section are stricter:

1. NECA 1.
2. NECA/BICSI 568.
3. TIA-569-D.
4. NECA 101
5. NECA 102.
6. NECA 105.
7. NECA 111.

B. Cabling shall be concealed where possible and shall be installed as follows

1. Copper telecommunications cables shall be installed in conduit or cable tray.
2. Optical fiber cables shall be installed in conduit.
3. J-hook supports shall not be allowed.
4. Route conduit and cables to suit field conditions.

C. Comply with NFPA 70 limitations for types of pathways allowed in specific occupancies and number of floors.

D. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.

E. Comply with requirements in Section 270529 "Hangers and Supports for Communications Systems" for hangers and supports.

F. Keep pathways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal pathway runs above water and steam piping.

G. Complete pathway installation before starting conductor installation.

H. Arrange stub-ups so curved portions of bends are not visible above finished slab.

I. Install no more than the equivalent of two 90-degree bends in any pathway run. Support within 12 inches (300 mm) of changes in direction. Utilize long radius ells for all optical-fiber cables.

J. Conceal rigid conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

K. Ream all conduit ends. Fit stubbed conduits with an insulated bushing to eliminate sharp edges that may damage cable during installation or service. Equip all conduit with pull cord with a minimum test rating of 200 lbs.

L. Cabling shall be supported at a 5' maximum interval for all pathway types.

M. Support conduit within 12 inches (300 mm) of enclosures to which attached.

N. Stub-ups to Above Recessed Ceilings:

1. Use EMT, IMC, or RMC for pathways.

2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

O. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of pathway and fittings before making up joints. Follow compound manufacturer's written instructions.

P. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install insulated bushings on conduits terminated with locknuts.

Q. Install pathways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus one additional quarter-turn.

R. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure, to assure a continuous ground path.

S. Cut conduit perpendicular to the length. For conduits of 2-inch (50-mm) trade size and larger, use roll cutter or a guide to ensure cut is straight and perpendicular to the length.

T. Install pull wires in empty pathways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Secure pull wire, so it cannot fall into conduit. Cap pathways designated as spare alongside pathways in use.

U. Pathways for Optical-Fiber and Communications Cable: Install pathways, metal and nonmetallic, rigid and flexible, as follows:

1. 1-Inch (25-mm) Trade Size and Larger: Install pathways in maximum lengths of 75 feet (23 m).
2. Install with a maximum of two 90-degree bends or equivalent for each length of pathway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

V. Install pathway-sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed pathways, install each fitting in a flush steel box with a blank cover plate having a finish like that of adjacent plates or surfaces. Install pathway-sealing fittings according to NFPA 70.

W. Install suitable pliable compound to seal pathway interiors at accessible locations. Locate seals, so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all pathways at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where an underground service pathway enters a building or structure.
3. Where an above grade pathway enters or exits a building structure.
4. Where otherwise required by NFPA 70, Article 300.7 (A).

X. Expansion-Joint Fittings:

1. Install in each run of aboveground metal that is located where environmental temperature change may exceed 100 deg F (55 deg C), and that has straight-run length that exceeds 100 feet (30 m).
2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:

    a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
    b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.
    c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.
    d. Attics: 135 deg F (75 deg C) temperature change.

3. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F (0.0115 mm per meter of length of straight run per deg C) of temperature change for metal conduits.
4. Install expansion fittings at all locations where conduits cross building or structure expansion and seismic joints.
5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

Y. Fire Rated Pathways

1. Before beginning installation, verify that substrate conditions previously installed under other sections are acceptable for installation of firestopping in accordance with manufacturer’s installation instructions and technical information.
2. Install systems in accordance with Performance Criteria and in accordance with the conditions of testing and classification as specified in the published design.
3. Comply with manufacturer’s instructions for installation of products.
4. Place system stickers on each side of wall penetrations.

Z. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

AA. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block and install box flush with surface of wall. Prepare block surface to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box.

BB. Horizontally separate boxes mounted on opposite sides of walls, so they are not in the same vertical channel.

CC. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

DD. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.3 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.4 PROTECTION

A. Protect coatings, finishes, and cabinets from damage or deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

SECTION 27 05 29

HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

1.2 SUMMARY

A. Section Includes:

1. Steel slotted support systems for communication raceways.
2. Conduit and cable support devices.
3. Support for digital displays.
4. Support for conductors in vertical conduit.
5. Structural steel for fabricated supports and restraints.
6. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
7. Fabricated metal equipment support assemblies.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Slotted support systems, hardware, and accessories.
b. Clamps.
c. Hangers.
d. Brackets.

2. Include rated capacities and furnished specialties and accessories.

B. Shop Drawings: Fabrication and installation details for communications hangers and support systems signed and sealed by a qualified professional engineer, licensed in the state where Project is located, who is responsible for their preparation.

1. Trapeze hangers. Include product data for components.
2. Equipment supports.

C. Delegated-Design Submittal: For hangers and supports for communications systems signed and sealed by a qualified professional engineer, licensed in the state where Project is located, who is responsible for their preparation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design hanger and support system.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch- (10-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c. in at least one surface. Provide fittings and accessories that mate and match with steel slotted support systems and are of the same manufacturer.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. B-line, an Eaton business.
   b. Unistrut; Part of Atkore International.
   c. Engineer Approved Equal.

2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
3. Material for Channel, Fittings, and Accessories: Galvanized steel.
4. Channel Width: Selected for applicable load criteria.
5. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
6. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
7. Channel Dimensions: Selected for applicable load criteria.
8. Provide steel channels with hot-dip galvanized finish for all outdoor locations.

B. Conduit and Cable Support Devices: Steel clamps, hangers, and associated fittings, designed for types and sizes of raceway or cable to be supported.

C. Support for digital displays: Steel channels, steel clamps, hangers, and associated fittings designed for types and sizes of digital display mounting brackets.

D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored communications conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be made of malleable iron.

E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M steel plates, shapes, and bars; black and galvanized.

F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

        1) Hilti, Inc.
        2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
        3) MKT Fastening, LLC.

2. Mechanical-Expansion Anchors: Insert-wedge-type zinc-coated steel for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

        1) B-line, an Eaton business.
        2) Empire Tool and Manufacturing Co., Inc.
        3) Hilti, Inc.
        4) ITW Ramset/Red Head; Illinois Tool Works, Inc.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.

5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:

1. NECA 1.
2. NECA/BICSI 568.
3. TIA-569-D.
4. NECA 101
5. NECA 102.
6. NECA 105.
7. NECA 111.

B. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.

C. Comply with requirements for pathways specified in Section 270528 "Pathways for Communications Systems."

D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMTs, IMCs, and RMCs as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.2 SUPPORT INSTALLATION

A. Strength of Support Assemblies: Where not indicated, select sizes of components, so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

B. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten communications items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Use approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Use expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated-driven threaded studs, provided with lock washers and nuts, may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
6. To Steel: Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that comply with seismic-restraint strength and anchorage requirements.

C. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 PAINTING

A. Galvanized Surfaces: Clean bolted connections, and abraded areas, and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

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SECTION 27 05 36

CABLE TRAYS FOR COMMUNICATIONS SYSTEMS

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

1.2 SUMMARY

A. Section Includes:

1. Wire-mesh cable tray.
2. Cable tray accessories.
3. Warning signs.

B. Related Requirements:

1. Section 260536 "Cable Trays for Electrical Systems" for cable trays and accessories serving electrical systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cable tray.

1. Include data indicating dimensions and finishes for each type of cable tray indicated.

B. Delegated-Design Submittal: For cable tray support.

1. Cable tray support: Signed and sealed by a qualified professional engineer, licensed in the state where Project is located, who is responsible for their preparation.
2. Design Calculations: Calculate requirements for selecting cable tray support.
3. Detail fabrication, including anchorages and attachments to structure and to supported cable trays.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cable tray supports.

2.2 GENERAL REQUIREMENTS FOR CABLE TRAYS

A. Cable Trays and Accessories: Identified as defined in NFPA 70 and marked for intended location, application, and grounding.

1. Source Limitations: Obtain cable trays and components from single manufacturer.

B. Structural Performance: See articles for individual cable tray types for specific values for the following parameters:

1. Uniform Load Distribution: Capable of supporting a uniformly distributed load on the indicated support span when supported as a simple span and tested according to NEMA VE 1.
2. Concentrated Load: A load applied at midpoint of span and centerline of tray.
3. Load and Safety Factors: Applicable to both side rails and rung capacities.

2.3 WIRE-MESH CABLE TRAY

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. B-line, an Eaton business (use for DOA-AIS systems).
2. Chalfant Manufacturing Company.
3. Cooper Industries; Cooper B-Line; GS Metals Corp.
4. Hubbell Incorporated; Wiring Device-Kellems.
5. Legrand US.
6. MP Husky USA Cable Tray & Cable Bus.
7. Chatsworth Products (use for Delta Airlines systems).
8. Engineer Approved Equal.

B. Description:

1. Configuration: steel wire mesh, complying with NEMA VE 1.
2. Width: As indicated on Drawings.
3. Minimum Usable Load Depth: 3 inches or as indicated on Drawings.
4. Straight Section Lengths: 10 feet (3.0 m), except where shorter lengths are required to facilitate tray assembly.

5. Structural Performance: Capable of supporting a maximum cable load, with a safety factor of 1.5, plus a 200-lb (90-kg) concentrated load, when tested according to NEMA VE 1.
6. NEMA Class Designation: Comply with NEMA VE 1, NEMA Class 12B (75 lbs. per linear foot).
7. Splicing Assemblies: Bolted type using serrated flange locknuts.
8. Splice-Plate Capacity: Splices located within support span shall not diminish rated loading capacity of cable tray.
9. UL classified to serve as an equipment ground conductor.

C. Materials and Finishes:

1. Steel:

a. Straight Sections and Fittings: Steel complies with the minimum mechanical properties of ASTM A 1008/A 1008M, Grade 33, Type 2.
b. Steel Tray Splice Plates: ASTM A 1011/A 1011M, HSLAS, Grade 50, Class 1.
c. Fasteners: Steel complies with the minimum mechanical properties of ASTM A 510/A 510M, Grade 1008.
d. Finish: Electro-galvanized.

1) Hardware: Chromium-zinc plated, ASTM F 1136.

2.4 CABLE TRAY ACCESSORIES

A. Fittings: Tees, crosses, risers, elbows, cable drop out fittings and other fittings as indicated, of same materials and finishes as cable tray.

B. Cable tray supports and connectors, including bonding jumpers, as recommended by cable tray manufacturer.

2.5 WARNING SIGNS

A. Lettering: 1-1/2-inch- (40-mm-) high, black letters on yellow background with legend "Warning! Not To Be Used as Walkway, Ladder, or Support for Ladders or Personnel."

B. Comply with requirements for fasteners in Section 260553 "Identification for Electrical Systems."

2.6 SOURCE QUALITY CONTROL

A. Testing: Test and inspect cable trays according to NEMA VE 1.

PART 3 - EXECUTION

3.1 CABLE TRAY INSTALLATION

A. Install cable trays according to NEMA VE 2.

B. Install cable trays as a complete system, including fasteners, hold-down clips, support systems, adjustable horizontal and vertical splice plates, elbows, reducers, tees, crosses, cable dropouts, adapters, covers, and bonding.

C. Install cable trays so that the tray is accessible for cable installation and all splices are accessible for inspection and adjustment.

D. Remove burrs and sharp edges from cable trays.

E. Fasten cable tray supports to building structure.

F. Construct supports from channel members, threaded rods, and other appurtenances furnished by cable tray manufacturer. Arrange supports in trapeze or wall-bracket form as required by application.

G. Support bus assembly to prevent twisting from eccentric loading.

H. Locate and install supports according to NEMA VE 2. Do not install more than one cable tray splice between supports.

I. Support wire-basket cable trays with trapeze hangers or wall brackets. Center hung trapeze hangers shall not be allowed.

J. Install protective cover over all threaded rod supports to prevent cable damage.

K. Make connections to equipment with flanged fittings fastened to cable trays and to equipment. Support cable trays independent of fittings. Do not carry weight of cable trays on equipment enclosure.

L. Install expansion connectors where cable trays cross building expansion joints and in cable tray runs that exceed dimensions recommended in NEMA VE 2. Space connectors and set gaps according to applicable standard.

M. Make changes in direction and elevation using manufacturer's recommended fittings.

N. Make cable tray connections using manufacturer's recommended fittings.

O. Seal penetrations through fire and smoke barriers. Comply with requirements in Section 078413 "Penetration Firestopping."

P. Install capped metal sleeves for future cables through firestop-sealed cable tray penetrations of fire and smoke barriers.

Q. Install cable trays with enough workspace to permit access for installing cables.

R. Install barriers to separate cables of different systems, such as communications and security.

S. Install warning signs in visible locations on or near cable trays after cable tray installation.

3.2 CABLE TRAY GROUNDING

A. Ground cable trays according to NFPA 70 unless additional grounding is specified. Comply with requirements in Section 270526 "Grounding and Bonding for Communications Systems."

B. Cable trays shall be bonded together with splice plates listed for grounding purposes or with listed bonding jumpers.

3.3 CABLE INSTALLATION

A. Install cables only when each cable tray run has been completed and inspected.

B. Fasten cables on horizontal runs with velcro tie wraps every 18 inches (450mm). Different cable types shall be bundled separately.

C. Fasten cables on vertical runs to cable trays with velcro tie wraps every 18 inches (450 mm). Different cable types shall be bundled separately.

D. Fasten and support cables that pass from one cable tray to another or drop from cable trays to equipment enclosures. Fasten cables to the cable tray at the point of exit and support cables independent of the enclosure. The cable length between cable trays or between cable tray and enclosure shall be no more than 36 inches (900 mm).

E. Tie MI cables down every 36 inches (900 mm) where required to provide a 2-hour fire rating and every 72 inches (1800 mm) elsewhere.

F. In existing construction, remove inactive or obsolete cables from cable trays.

G. Install cabling so no cable bundles lay on top of fiber cables.

3.4 CONNECTIONS

A. Remove paint from all connection points before making connections. Repair paint after the connections are completed.

B. Connect pathways to cable trays according to requirements in NEMA VE 2.

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. After installing cable trays and after electrical circuitry has been energized, survey for compliance with requirements.
2. Visually inspect cable insulation for damage. Correct sharp corners, protuberances in cable trays, vibrations, and thermal expansion and contraction conditions, which may cause or have caused damage.
3. Verify that the number, size, and voltage of cables in cable trays do not exceed that permitted by NFPA 70. Verify that communications and other low voltage cabling are separated from power circuits by barriers or are installed in separate cable trays.
4. Verify that there are no intruding items such as pipes, hangers, or other equipment in the cable tray.
5. Remove dust deposits, industrial process materials, trash of any description, and any blockage of tray ventilation.
6. Visually inspect each cable tray joint and each ground connection for mechanical continuity. Check bolted connections between sections for corrosion. Clean and retorque in suspect areas.
7. Check for improperly sized or installed bonding jumpers.
8. Check for missing, incorrect, or damaged bolts, bolt heads, or nuts. When found, replace with specified hardware.
9. Perform visual and mechanical checks for adequacy of cable tray grounding; verify that all takeoff raceways are bonded to cable trays. Test entire cable tray system for continuity. Maximum allowable resistance is 1 ohm.

B. Prepare test and inspection reports.

3.6 PROTECTION

A. Protect installed cable trays and cables.

1. Install temporary protection for cables in open trays to safeguard exposed cables against falling objects or debris during construction. Temporary protection for cables and cable tray can be constructed of wood or metal materials and shall remain in place until the risk of damage is over.
2. Repair damage to galvanized finishes with zinc-rich paint recommended by cable tray manufacturer.
3. Repair damage to paint finishes with matching touchup coating recommended by cable tray manufacturer.

END OF SECTION

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SECTION 27 05 53

IDENTIFICATION FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Underground-line warning tape.
2. Bands and tubes.
3. Cable ties.
4. Miscellaneous identification products.
5. Labels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Identification Schedule:

1. Outlets: Scaled drawings indicating location and proposed designation.
2. Backbone Cabling: Riser diagram showing each communications room, backbone cable, and proposed backbone cable designation.
3. Racks: Scaled drawings indicating location and proposed designation.
4. Patch Panels: Enlarged scaled drawings showing rack row, number, and proposed designations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with NFPA 70 and TIA 606-B.

B. Comply with ANSI Z535.4 for safety signs and labels.

C. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label prin

D. ters, shall comply with UL 969.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Equipment Identification Labels:

1. Black letters on a white field.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters of raceway or cable they identify, that stay in place by gripping action.

C. Self-Adhesive Wraparound Labels: Preprinted, 3-mil- (0.08-mm-) thick vinyl flexible labels with acrylic pressure-sensitive adhesive.
1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating protective shields over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
2. Marker for Labels:

a. Permanent, waterproof black ink marker recommended by tag manufacturer.
b. Machine-printed, permanent, waterproof black ink recommended by printer manufacturer.

D. Self-Adhesive Labels: **Vinyl**, thermal, transfer-printed, 3-mil- (0.08-mm-) thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.

1. Minimum Nominal Size:

a. 1-1/2 by 6 inches (37 by 150 mm) for raceway and conductors.
b. 3-1/2 by 5 inches (76 by 127 mm) for equipment.
c. As required by authorities having jurisdiction.

2.4 SIGNS

A. Baked-Enamel Signs:

1. Preprinted aluminum signs, **high-intensity reflective,** punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch (6.4-mm) grommets in corners for mounting.
3. Nominal Size: 7 by 10 inches (180 by 250 mm).

B. Laminated-Acrylic or Melamine-Plastic Signs:

1. Engraved legend.
2. Thickness:

a. For signs up to 20 sq. in. (129 sq. cm), minimum 1/16 inch (1.6 mm) thick.
b. For signs larger than 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick.
c. Engraved legend with black letters on white face.
d. Self-adhesive.
e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.5 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C) according to ASTM D638: 12,000 psi (82.7 MPa).
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black, except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C) according to ASTM D638: 12,000 psi (82.7 MPa).
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black.

C. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C) according to ASTM D638: 7000 psi (48.2 MPa).
3. UL 94 Flame Rating: 94V-0.

4. Temperature Range: Minus 50 to plus 284 deg F (Minus 46 to plus 140 deg C).
5. Color: Black.

2.6 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All labels shall be TIA/EIA-606-B compliant labeling products. All cables, faceplates, patch panels, pathways, cable trays, conduit, Innerduct and patch cords shall be labeled to TIA/EIA-606-B standards.

B. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

C. Verify identity of each item before installing identification products.

D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of communications systems and connected items.

G. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.

H. Vinyl Wraparound Labels:

1. Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.
3. Provide label 6 inches (150 mm) from cable end.

I. Snap-Around Labels:

1. Secure tight to surface at a location with high visibility and accessibility.
2. Provide label 6 inches (150 mm) from cable end.

J. Self-Adhesive Wraparound Labels:

1. Secure tight to surface at a location with high visibility and accessibility.
2. Provide label 6 inches (150 mm) from cable end.

K. Self-Adhesive Labels:

1. On each item, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.

L. Cable Ties: General purpose, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.2 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations with high visibility. Identify by system and circuit designation.

C. Accessible Fittings for Raceways and Cables within Buildings: Identify covers of each junction and pull box with self-adhesive labels containing wiring system legend. Identify every section of conduit and cable tray at each end and at 100’ increments.

1. System legends shall be as follows:

a. Technology.
b. Origination location.
c. Colon.
d. Termination location.

D. Faceplates: Label individual faceplates with self-adhesive labels. Place label at top of faceplate. Each faceplate shall be labeled with its individual, sequential designation, numbered clockwise when entering room from primary egress, composed of the following, in the order listed:

1. Wiring closet designation.
2. Colon.
3. Faceplate number.

E. Equipment Room Labeling:

1. Racks, Frames, and Enclosures: Identify front and rear of each with self-adhesive labels containing equipment designation.
2. Patch Panels: Label individual rows in each rack, starting at top and working down, with self-adhesive labels. Label individual rows and outlets, starting at the left and working down, with self-adhesive labels.
3. Data Outlets: Label each outlet with a self-adhesive label indicating the following, in the order listed:

    a. Room number being served.
    b. Colon.
    c. Faceplate number.

4. All cabling shall be labeled on both ends. Coordinate labeling scheme with Fort Bend County.
5. Patch panel labeling should match faceplate labeling and faceplate labeling should match patch panel labeling.
6. Labeled patch cords on each end. Coordinate labeling scheme with Fort Bend County.

F. Backbone Cables: Label each cable with a self-adhesive wraparound label indicating the location of the far or other end of the backbone cable. Patch panel or punch down block where cable is terminated should be labeled identically.

G. Horizontal Cables: Label each cable with a self-adhesive wraparound label indicating the following, in the order listed:

1. Room number.
2. Colon.
3. Faceplate number.

H. Instructional Signs: Self-adhesive labels.

I. Warning Labels for Indoor Cabinets, Boxes, and Enclosures: Self-adhesive labels.

1. Apply to exterior of door, cover, or other access.

J. Equipment Identification Labels:

1. Indoor Equipment: Self-adhesive label.
2. Outdoor Equipment: Laminated-acrylic or melamine-plastic sign.
3. Equipment to Be Labeled:

    a. Communications cabinets.
    b. Uninterruptible power supplies.
    c. Computer room air conditioners.
    d. Fire-alarm and suppression equipment.
    e. Egress points.
    f. Power distribution components.

END OF SECTION

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SECTION 27 11 00

COMMUNICATIONS EQUIPMENT ROOM FITTINGS

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

1.2 SUMMARY

A. Section Includes:

1. Backboards.
2. Telecommunications equipment racks and cabinets.
3. Power distribution units (PDU).
4. Cable runway

B. Related Requirements:

1. Section 270526 "Grounding and Bonding for Communications Systems" for grounding associated with system panels and devices.
2. Section 270536 "Cable Trays for Communications Systems" for cable trays and accessories.
3. Section 271313 "Communications Copper Backbone Cabling" for copper data cabling associated with system panels and devices.
4. Section 271323 "Communications Optical Fiber Backbone Cabling" for optical fiber data cabling associated with system panels and devices.
5. Section 271513 "Communications Copper Horizontal Cabling" for copper data cabling associated with system panels and devices.

1.3 DEFINITIONS

A. BICSI: Building Industry Consulting Service International.

B. LAN: Local area network.

C. RCDD: Registered Communications Distribution Designer.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Cabling Installer must have personnel certified by BICSI on staff.

1. Layout Responsibility: Preparation of Shop Drawings shall be under the direct supervision of RCDD.
2. Field Inspector: Currently registered by BICSI as RCDD to perform the on-site inspection.

1.7 WARRANTY

A. Period: The Contractor shall warranty all labor, workmanship, and materials for a period of one (1) year from the date of substantial completion acceptance as authorized by the Owner

B. Should a Manufacturer's standard product warranty exceed one (1) year, the Manufacturer's warranty will take precedence over the Contractor's warranty and still be honored by the Contractor.

C. All product warranties shall list DOA as the Owner upon Final Acceptance of the project.

PART 2 - PRODUCTS

2.1 BACKBOARDS

A. Backboards: Plywood, fire-retardant treated, A-C grade or better, 3/4 by 48 by 96 inches. Comply with requirements for plywood backing panels specified in Section 061053 "Miscellaneous Rough Carpentry."

B. Install backboards starting at 6” AFF with 96-inch (2440-mm) dimension vertical. Butt adjacent sheets tightly, and form smooth gap-free corners and joint, unless noted otherwise on drawings.

C. Install backboards with stainless steel screws.

D. Backboards shall be painted with (2) coats of white, fire-retardant paint (leaving (1) certification label exposed and unpainted) on all sides. Backboards shall be painted prior to installation.

2.2 TELECOMMUNICATIONS EQUIPMENT RACKS AND CABINETS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. APC by Schneider Electric
2. Chatsworth Products, Inc.
3. Hubbell Premise Wiring.
4. Leviton Manufacturing Co., Inc.
5. Middle Atlantic Products, Inc.
6. Ortronics, Inc.
7. Panduit Corp.
8. Great Lakes Case & Cabinet Co., Inc.
9. Engineer Approved Equal

B. General Frame Requirements:

1. Distribution Frames: Freestanding and wall-mounting, modular-steel units designed for telecommunications terminal support and coordinated with dimensions of units to be supported.
2. Module Dimension: Width compatible with EIA 310-D standard, 19-inch (480-mm) panel mounting.
3. Finish: Manufacturer's standard, baked-polyester powder coat.

C. 2-Post Open Frame Relay Racks

1. Basis of Design: Panduit R2P
2. Size: Fully adjustable 19-inch mounting verticals. Overall height shall be 84" with a minimum of 45 RU.
3. Construction:

a. Racks shall be manufactured from aluminum extrusion. Each rack shall have two L-shaped top angles, two L-shaped base angles and two C-shaped equipment-mounting channels. The base angles shall be pre-punched for attachment to the floor. Baked-polyester powder coat finish.
b. Equipment mounting channels shall be 3” deep and punched on the front and rear flange with the EIA-310-D Universal hole pattern, 1-3/4” rack-

mount units (RU), to provide 45RU for equipment. Each mounting space (RU) shall be marked and numbered on the mounting channel.

c. Equipment attachment points shall be drilled and tapped on both sides with 12-24 mounting holes at universal EIA spacing.

4. Mounting: All racks shall be floor mounted and permanently fixed to the floor with bolt-down kits. Multiple racks shall be connected together.
5. Grounding: Provide grounding busbar as shown on drawings. Busbar shall consist of a 19" horizontal ground bar. All non-conductive coatings such as paint, lacquer, etc. shall be removed prior to making a ground connection at any point on the rack.

D. Data Cabinets:

1. Basis of Design: Panduit XG74512BS00FQ
2. Size: Fully adjustable 19-inch mounting verticals. Overall minimum dimensions shall be 30" wide, 42" deep with an overall height of 84", with at least 45 RU.
3. Panels: Front, side, bottom, and top panels shall be fully and easily removable by a latching mechanism. Front and rear panels shall be vented to allow airflow with a keyed locking mechanism, all cabinets shall be keyed alike. Bottom panel shall be vented for airflow and slotted for cable access from below.
4. Construction: The frame shall be made of extruded aluminum. Adjustable vertical mounting rails shall be drilled and tapped with 12-24 mounting holes at universal EIA spacing.
5. Cable Management: Cabinets shall contain integral vertical cable managers on both sides of the cabinet. Cable management shall run the entire height of the cabinet. If managers are not integral provide vertical cable managers as specified elsewhere in this specification.
6. Mounting: All cabinets shall be floor mounted with adjustable leveling feet and permanently fixed to the floor with bolt-down kits. Multiple cabinets shall be connected together with side panels removed for routing of cables between cabinets, provide ganging kits as required.
7. Grounding: Provide grounding busbar as shown on drawings. Busbar shall consist of a 19" horizontal ground bar. All non-conductive coatings such as paint, lacquer, etc. shall be removed prior to making a ground connection at any point on the cabinet.

E. Cable Management Accessories

1. Racks and Cabinets:

a. Vertical: Vertical cable management shall be provided on both sides of the mounting rails and located at the front and rear of the cabinet. Vertical cable managers shall contain cable guides (fingers) spaced 1 RU apart.
b. Horizontal: Provide horizontal managers at locations shown on drawings. Horizontal managers shall be 1.75" high (1RU) x 19" wide x 2.7" deep. Horizontal managers shall contain cable guide fingers spaced 1.75" apart with a snap on or hinged cover.

1) Basis of Design: Panduit WMPLFSE

2. 2-Post Open Frame Relay Racks

a. Vertical: Provide vertical cable manager at locations shown on drawings. Vertical managers shall be 45RU, 6” wide, double sided with molded plastic fingers and two full-length metal, dual-hinging, push-to-close doors.

1) Basis of Design: Panduit PR2VD06

3.

2.3 POWER DISTRIBUTION UNITS (PDU)

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Eaton
2. APC
3. Raritan (A brand of Legrand)
4. Tripp-Lite
5. Panduit
6. Engineer Approved Equal

B. Vertical PDU Type 1:

1. Basis of Design: Eaton EMI101-10
2. Provide vertical PDU’s as shown on the drawings.
3. Mounting: Vertical PDU’s shall be mounted on the interior side wall of the cabinet or cabinet so as not to interfere with cable routing or prohibit the use of mounting equipment to the rear mounting rails. PDU shall utilize 0 RU when installed.
4. Quantity: See the drawings for the number and type of PDU to provide in each rack and cabinet.
5. Input: 20A, 120VAC, 1-phase. NEMA 5-20P plug type with 10-foot cord.
6. Output: 1.92KW, 120VAC, 1-phase. Provide the following outlets:

a. (24) NEMA 5-20R Outlets, 120VAC

7. Overload Protection: (1) 20A single-pole circuit breaker
8. Metering: Integral meter displaying input current per-phase.
9. Size: 66.5” high.
10. UL Listed

C. Horizontal PDU Type 2:

1. Basis of Design: Tripp-Lite PDUMH20HV
2. Provide horizontal PDU’s as shown on the drawings.

3. Mounting: Horizontal PDU shall mount on 19” rack rails. PDU shall require no more than 1RU for mounting.
4. Quantity: See the drawings for the number and type of PDU to provide in each rack and cabinet.
5. Input: 20A, 208VAC, 1-phase. NEMA L6-20P plug type with 12-foot cord.
6. Output: 3.7KW, 208VAC, 1-phase. Provide the following outlets:

    a. (8) C13 Outlets, 208VAC.
    b. (2) C19 Outlets, 208VAC

7. Overload Protection: (1) 20A double-pole circuit breaker.
8. Metering: Integral meter displaying input current.
9. UL Listed
10. Basis of Design: Tripp-Lite Model No. PDUMH30

D. Vertical PDU Type 3:

1. Basis of Design: APC APDU9970
2. Provide vertical PDU’s as shown on the drawings.
3. Mounting: Vertical PDU’s shall be mounted on the interior side wall of the cabinet or cabinet so as not to interfere with cable routing or prohibit the use of mounting equipment to the rear mounting rails. PDU shall utilize 0 RU when installed.
4. Quantity: See the drawings for the number and type of PDU to provide in each rack and cabinet.
5. Input: 30A, 208VAC, 1-phase. NEMA L14-20P plug type with 10-foot cord.
6. Output: 4.99KW, 120VAC, 1-phase. Provide the following outlets:

    a. (16) NEMA 5-20R Outlets, 120VAC

    b. (7) C13/C15

    c. (1) C19/C21

7. Overload Protection: (1) 30A, 208V single-pole circuit breaker
8. Metering: Integral meter displaying input current per-phase.
9. Communication Type: 10/100/1000BASE-T
10. Size: 72.01” high.
11. UL Listed

E.

2.4 CABLE RUNWAY

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Chatsworth Products, Inc. – UL Classified Cable Runway

2. Cooper B-Line – Cable Runway
3. Engineer Approved Equal

B. Construction: Cable runway shall be manufactured from 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high tubular steel with .065" (1.65 mm) wall thickness. Cable runway (side stringers) will be 9'-8½ "(2959mm) long. Cross members will be welded in between stringers on 9" (230 mm) intervals/centers beginning 4-1/4" (108 mm) from one end.

C. UL Listed: Cable runway will be UL Classified for suitability as an equipment grounding conductor only (Contractor shall remove paint or use ground straps at splices and intersections).

D. Sizes: Provide cable runway sizes as defined on drawings.

E. Finish shall be epoxy-polyester hybrid powder coat (paint) in black, unless noted otherwise.

F. Connector Assemblies: Turns, transitions, corners and brackets shall meet the same specification as the cable runway section.

G. Connector Assembly Capacity: Splices located within support span shall not diminish rated loading capacity of cable runway.

H. Hardware and Fasteners: Steel, zinc plated matching same color as cable runway section.

I. Support: Provide a combination of wall mount, data cabinet to cable runway mount, relay rack to cable runway mount and ceiling trapeze cable runway support. The use of a single center hung support rod shall not be allowed.

J. Grounding: Grounding kits are required to provide a method of bonding cable runway sections and turns together that is independent of the pathway splices. The grounding kit shall be constructed of UL Listed components. The preferred solution is a #6 AWG green insulated stranded copper conductor connected on both ends to ladder rack using two-hole compression lugs and stainless-steel hardware.

K. Accessories: All accessories shall be manufactured from same material as cable runway section. Provide following accessories:

1. Cable straps used for attaching cable bundles to the cable runway cross members must be reusable with a hook and loop-style closure.
2. End caps used to cover the ends of cable runway shall be manufactured from a black fire-retardant rubberized material.
3. End closing kits used to cover the end of cable runway. Kits shall consist of a bar cut to match the width of the cable runway and the hardware required to attach the bar to the end of a length of cable runway.
4. Radius drops used to create a radius to form cables over as the cables exit or enter the cable runway. The extrusion will be formed in a 90° arc with a minimum bend radius of 3" (75 mm). Radius drops will attach to either the side stringer or

the cross member of the cable runway using a clevis pin. Provide radius drops at all sections where cable exits runway:

a. Panduit WGSWF4BL Wyr-Grid Cable Side Waterfall, Black

b. Engineer Approved Equal

2.5 LABELING

A. Comply with TIA-606-B and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

PART 3 - EXECUTION

3.1 ENTRANCE FACILITIES

A. Comply with requirements in Section 270528 "Pathways for Communications Systems" for materials and installation requirements for underground pathways.

3.2 INSTALLATION

A. Comply with NECA 1.

B. Comply with BICSI TDMM for layout and installation of communications equipment rooms.

C. Bundle, lace, and train conductors and cables to terminal points without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.

D. Coordinate layout and installation of communications equipment with Owner's telecommunications and LAN equipment and service suppliers. Coordinate service entrance arrangement with local exchange carrier.

1. Meet jointly with telecommunications and LAN equipment suppliers, local exchange carrier representatives, and Owner to exchange information and agree on details of equipment arrangements and installation interfaces.
2. Record agreements reached in meetings and distribute them to other participants.
3. Adjust arrangements and locations of distribution frames, cross-connects, and patch panels in equipment rooms to accommodate and optimize arrangement and space requirements of LAN equipment.
4. Adjust arrangements and locations of equipment with distribution frames, cross-connects, and patch panels of cabling systems of other communications, electronic safety and security, and related systems that share space in the equipment room.

E. Coordinate location of power raceways and receptacles with locations of communications equipment requiring electrical power to operate.

3.3 FIRESTOPPING

A. Comply with requirements in Section 270528 "Pathways for Communications Systems" for fire rated pathways.

B. Comply with TIA-569-D, Annex A, "Firestopping."

C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.4 IDENTIFICATION

A. Identify system components, wiring, and cabling complying with TIA-606-B. Comply with requirements noted elsewhere in Division 27 for specific labeling requirements.

B. Labels shall be preprinted or computer-printed type. Provide self-adhesive vinyl or vinyl-cloth wraparound tape markers, machine printed with alphanumeric cable designators.

END OF SECTION

SECTION 27 13 23

COMMUNICATIONS OPTICAL FIBER BACKBONE CABLING

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

1.2 SUMMARY

A. Section Includes:

1. Single-mode, armored, indoor plenum rated, optical fiber cable.
2. Single-mode, non-armored, indoor plenum rated, optical fiber cable.
3. Optical fiber cable connecting hardware, patch panels, and patch cords.
4. Cabling identification products.

1.3 DEFINITIONS

A. BICSI: Building Industry Consulting Service International.

B. Cross-Connect: A facility enabling the termination of cable elements and their interconnection or cross-connection.

C. LAN: Local area network.

D. RCDD: Registered Communications Distribution Designer.

E. APC: Angled Physical Contact

F. UPC: Ultra Physical Contact

1.4 OPTICAL FIBER BACKBONE CABLING DESCRIPTION

A. Optical fiber backbone cabling system shall provide interconnections between communications equipment rooms and entrance facilities in the telecommunications cabling system structure. Cabling system consists of backbone cables, patch panels,

connectors, and patch cords or jumpers used for backbone-to-backbone cross-connection.

B. Backbone cabling cross-connects may be located in communications equipment rooms or at entrance facilities.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Reviewed and stamped by RCDD.

1. System Labeling Schedules: Electronic copy of labeling schedules, in software and format selected by Owner.
2. Floor Plans: that identify cable routes and quantities, cable types, riser locations.

C. Fiber optic cable testing plan.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For RCDD.

B. Source quality-control reports.

C. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For optical fiber cable, splices, and connectors to include in maintenance manuals.

1.8 WARRANTY

A. Period: The Contractor shall warranty all labor, workmanship, and materials for a period of one (1) year from the date of final Owner acceptance. Should a failure occur within this warranty period, the Contractor shall provide all labor and materials necessary to restore the system to the condition required for the final test and acceptance for this contract, at no cost to the Owner.

B. Extended Warranty: The manufacturer shall guarantee in writing that the optical fiber backbone cable channels as installed by this contract are free from defects in materials and workmanship and will meet the applicable ANSI/TIA/EIA and ISO/IEC channel transmission requirements in effect at the time of installation and will support any current or future application ratified by IEEE, ANSI, or ISO designed to operate over the applicable ANSI/TIA/EIA-568-B and ISO/IEC 11801 standards in effect at the time of installation. The duration of this warranty shall be for a period of 25 years from date

of final Owner acceptance. Defective products shall be repaired or replaced by the manufacturer, at no cost to the Owner.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: Cabling installer must be a certified installer meeting all requirements for the cable manufacturer's 25-year warranty program and must have personnel certified by BICSI on staff.

1. Layout Responsibility: Preparation of Shop Drawings by an RCDD.
2. Installation Supervision: Installation shall be under the direct supervision of Registered Technician, who shall be present at all times when Work of this Section is performed at Project site.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Test cables upon receipt at Project site.

1. Test optical fiber cable to determine the continuity of the strand end to end. Use optical loss test set.

1.11 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.12 COORDINATION

A. Coordinate layout and installation of telecommunications pathways and cabling with all other trades and service providers, if applicable.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. General Performance: Backbone cabling system shall comply with transmission standards in TIA-568-C.1, when tested according to test procedures of this standard.

B. Surface-Burning Characteristics: Flame spread shall not exceed 5 ft (1.5 m) when tested in accordance with NFPA 262.

C. Telecommunications Pathways and Spaces: Comply with TIA-569-D.

D. Grounding: Comply with TIA-607-B.

2.2 SINGLE-MODE, ARMORED, INDOOR PLENUM RATED, OPTICAL FIBER CABLE

A. Description: Single mode, armored, plenum rated, indoor 9/125-micrometer, tight-buffered, optical fiber cable. Refer to drawings for strand count.

B. Manufacturers: Subject to compliance with requirements, manufacturer offering products that may be incorporated into the Work are limited to the following:

1. Corning Cable Systems.
2. No substitutions allowed.

C. Standards:

1. Comply with TIA-492CAAB for detailed specifications.
2. Comply with TIA-568-C.3 for performance specifications.
3. Comply with ICEA S-83-596 for mechanical properties.

D. General: Fiber optic cable construction shall consist of 8.3 µm single mode optical fibers typically formed in groups of six (6) or twelve (12) fibers each. Size, strand count and routing of fiber optic cables shall be as indicated on the drawings. These groups and individual fibers shall exceed all requirements for ANSI/TIA/EIA-568-B.3 and support high speed communication network applications. These groups assembled to form a single compact core, which is covered by a protective sheath.

E. Optical Fiber Requirements and Performance:

1. Core Diameter: 8.3µm
2. Cladding Diameter: 125µm ± 1µm
3. Cladding Non-Circularity: ≤ 1%
4. Core/Cladding Concentricity Error: 0.5µm
5. Colored Fiber Diameter: 254µm ±7µm
6. Minimum Bandwidth: 20GHz
7. Maximum Attenuation:

    a. 1310nm ≤ 0.65 dB/km
    b. 1550nm ≤ 0.50 dB/km

F. Design Specifications: Provide cable suitable for installation in indoor (plenum) environments with tight-buffered cables surrounded by an interlocking armor. Cable jacket shall meet the following specification:

1. Jacket Color: Yellow.
2. Cable cordage jacket, fiber, unit, and group color shall be according to TIA-598-D.
3. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:

    a. Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.

G. Single-mode (Dispersion Un-shifted): All single-mode fiber shall support 10 Gigabit Ethernet (10 Gbps) to distances of up to 10,000 meters @ 1310 nm and 40,000 meters @ 1550 nm per IEEE 802.3 performance. The single-mode fiber utilized in the optical fiber cable shall meet TIA-492CAAB, "Detail Specification for Class Iva Dispersion-Unshifted Single-Mode Optical Fibers with Low Water Peak," and ITU recommendation G.652 "Characteristics of a single-mode optical fiber cable."

H. Identification: The individual fibers shall be color coded for identification. The optical fiber color coding shall be in accordance with EIA/TIA-598, "Optical Fiber Cable Color Coding." When buffered fibers are grouped into individual subunits, each subunit jacket shall be numbered for identification, with the exception of filler subunits where used. The outer jacket shall be marked with the manufacturer's name or ETL file number, date of manufacture, fiber count, fiber type, flame rating, listing symbol, and sequential length markings every two feet.

2.3 SINGLE-MODE, NON-ARMORED, INDOOR PLENUM RATED, OPTICAL FIBER CABLE

A. Description: Single mode, non-armored, plenum rated, indoor 9/125-micrometer, tight-buffered, optical fiber cable. Refer to drawings for strand count.

B. Manufacturers: Subject to compliance with requirements, manufacturer offering products that may be incorporated into the Work are limited to the following:

1. Corning Cable Systems.
2. No substitutions allowed.

C. Standards:

1. Comply with TIA-492CAAB for detailed specifications.
2. Comply with TIA-568-C.3 for performance specifications.
3. Comply with ICEA S-83-596 for mechanical properties.

D. General: Fiber optic cable construction shall consist of 8.3 µm single mode optical fibers typically formed in groups of six (6) or twelve (12) fibers each. Size, strand count and routing of fiber optic cables shall be as indicated on the drawings. These groups and individual fibers shall exceed all requirements for ANSI/TIA/EIA-568-B.3 and support high speed communication network applications. These groups assembled to form a single compact core, which is covered by a protective sheath.

E. Optical Fiber Requirements and Performance:

1. Core Diameter: 8.3µm
2. Cladding Diameter: 125µm ± 1µm

3. Cladding Non-Circularity: ≤ 1%
4. Core/Cladding Concentricity Error: 0.5µm
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6. Minimum Bandwidth: 20GHz
7. Maximum Attenuation:

    a. 1310nm ≤ 0.65 dB/km
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1. Jacket Color: Yellow.
2. Cable cordage jacket, fiber, unit, and group color shall be according to TIA-598-D.
3. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).
4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:

    a. Plenum Rated, Nonconductive: Type OFNP, complying with NFPA 262.

G. Single-mode (Dispersion Un-shifted): All single-mode fiber shall support 10 Gigabit Ethernet (10 Gbps) to distances of up to 10,000 meters @ 1310 nm and 40,000 meters @ 1550 nm per IEEE 802.3 performance. The single-mode fiber utilized in the optical fiber cable shall meet TIA-492CAAB, "Detail Specification for Class Iva Dispersion-Unshifted Single-Mode Optical Fibers with Low Water Peak," and ITU recommendation G.652 "Characteristics of a single-mode optical fiber cable."

H. Identification: The individual fibers shall be color coded for identification. The optical fiber color coding shall be in accordance with EIA/TIA-598, "Optical Fiber Cable Color Coding." When buffered fibers are grouped into individual subunits, each subunit jacket shall be numbered for identification, with the exception of filler subunits where used. The outer jacket shall be marked with the manufacturer's name or ETL file number, date of manufacture, fiber count, fiber type, flame rating, listing symbol, and sequential length markings every two feet.

2.4 OPTICAL FIBER CABLE HARDWARE AND PATCH CORDS

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work are limited to the following:

1. Corning Cable Systems.
2. No substitutions allowed.

B. Rack Mount Patch Panel Housings

1. Basis of Design: Corning Closet Connector Housings – CCH-01, CCH-02, CCH-04
2. Fiber Optic housings shall provide a means for securing, strain-relieving, protecting, and labeling of fiber optic cable terminations.
3. Rack-Mount Housing Specifications

    a. Housings shall be designed for rack-mounted or frame-mounted applications that support conventional cross-connection and interconnection schemes as well as splicing applications.
    b. Housings shall be available in 1U, 2U, 3U and 4U. See drawings for exact size of housings.

4. The housings shall meet the design requirements of ANSI/TIA/EIA-598 and the plastics flammability requirements of UL 94 V-0.
5. The connector housings shall have a labeling scheme that complies with ANSI/TIA/EIA- 606.
6. The housings shall support cross-connection, inter-connection and/or splicing applications and routing schemes in the same housing.
7. The housing shall contain a front compartment whose function is to protect and manage jumpers that interface with the main housing behind it. The front jumper assembly compartment shall be removable and be accessible via a translucent door.
8. The front compartment shall contain jumper egress openings on both sides that are edged with protective pass-through grommets that provide bend radius support for optical fiber jumpers.
9. The rear assembly housing shall be accessible via a hinged door. The door shall contain a routing and cable sub-unit slack storage bracket for interior management of cable sub-units and buffer tubes.
10. The housing shall contain a brushed entry on both sides of the rear of the housing.
11. The housing shall provide means for strain-relieving fiber optic cables both interior to and exterior on the rear assembly housing.
12. The rear of the housing shall contain provisions for routing and maintaining fiber optic cable components, including cable sub-units and buffer tuber, 900 um optical fiber, and buffer tube transition kits.
13. The floor/base of the rear of the housing shall provide holes or slots for the installation (and removal) of fiber retention or slack management clips.
14. The floor/base of the rear assembly housing shall provide holes or slots for the installation (and removal) of transitional strain-relief clips.

C. Wall Mount Patch Panel Housings

1. Basis of Design: Corning Wall-Mountable Connector Housings – WCH-02P, WCH-04P, WCH-06P
2. The housing shall provide a base enclosure with a front (main) door, and back-plate, as well as top and bottom cable entries.

3. The housing shall provide necessary protection from incidental contact, dust, and debris.
4. The housing shall be fully accessible from the front and sides (either left or right depending on mounting orientation of the housing).
5. The housing shall provide all necessary provisions for proper management and administration of optical fiber, fiber optic connectors, splices, cable-subunits, transition kits and other related components.
6. The housing shall support cross-connection, inter-connection and/or splicing applications and routing schemes in the same housing.
7. The housing shall accommodate direct connector installations or terminations via connector panels. Connector panels shall be held in place via push-pull plungers that are affixed to the housing itself.
8. The housing shall accommodate pigtail splicing via an internal splice organizer with pigtailed connector panels.
9. The front or main entry of the housing and interior shall be accessible via a solid metal door. The rear or base of the housing shall be accessible via a solid metal back-plate.
10. The housing shall contain openings on both the top and bottom sides of it that allow fiber optic cables to enter the housing in either a through or mid-span configuration. The housing shall provide means for strain-relieving fiber optic cables inside the housing.
11. The housing's interior shall contain provisions for routing and maintaining fiber optic cable components, including cable sub-units and buffer tubes, 900 µm optical fiber, and buffer tube transition kits.
12. The housing's base shall incorporate pre-stamped metal lances for affixing a splice organizer capable of holding fiber optic splice protectors.
13. Installation of the adapter or connector panel (including loaded connector pigtails) shall not interfere with the internal cable sub-unit routing.
14. The base of the housing, following removal of the back-plate, shall contain corner openings that allow cable sub-units to route between housings in a stacked configuration.
15. Wall-mountable connector housings shall accept an interchangeable connector panel. The connector panel shall have the following characteristics:

    a. The connector panel shall utilize a single mounting footprint and shall be available with various connector adapters and different adapter counts in each panel.
    b. The connector panel shall be interchangeable between the rack and wall-mountable hardware being proposed.
    c. The panel shall be attached to the housing or splice or slack storage cassette with latches to allow quick installation and removal.

D. Wall Mount Single-Panel Housing

1. Basis of Design: Corning Wall-Mountable Single-Panel Housing – SPH-01P.
2. The single-panel housing shall provide a base enclosure with a front (main) door, and back-plate, as well as top and bottom cable entries.

3. The housing shall provide necessary protection from incidental contact, dust and debris.
4. The housing shall be fully accessible from the front and sides (either left or right depending on mounting orientation of the housing).
5. The housing shall provide all necessary provisions for proper management and administration of optical fiber, fiber optic connectors, splices, cable-subunits, transition kits and other related components.
6. The single-panel housing shall support cross-connection, inter-connection and/or splicing applications and routing schemes in the same housing.
7. The housing shall accommodate direct connector installations or terminations via connector panels. Connector panels shall be held in place via push-pull plungers that are affixed to the housing itself.
8. The housing shall be capable of holding up to one (1) connector panel that loads directly into the side of the housing.
9. The housing shall accommodate pigtail splicing via an internal splice organizer with pigtailed connector panels.
10. The front or main entry of the housing and interior shall be accessible via a solid metal door. The rear or base of the housing shall be accessible via a solid metal back-plate.
11. The housing shall contain openings on both the top and bottom sides of it that allow fiber optic cables to enter the housing in either a through or mid-span configuration. The housing shall provide means for strain-relieving fiber optic cables inside the housing.
12. The housing's interior shall contain provisions for routing and maintaining fiber optic cable components, including cable sub-units and buffer tubes, 900 µm optical fiber, and buffer tube transition kits.
13. The housing's base shall incorporate pre-stamped metal lances for affixing a splice organizer capable of holding 12 to 24 fiber optic splice protectors.
14. Installation of the adapter or connector panel (including loaded connector pigtails) shall not interfere with the internal cable sub-unit routing.
15. The base of the housing, following removal of the back-plate, shall contain corner openings that allow cable sub-units to route between housings in a stacked configuration.
16. Wall-mountable connector housings shall accept an interchangeable connector panel. The connector panel shall have the following characteristics:

    a. The connector panel shall utilize a single mounting footprint and shall be available with various connector adapters and different adapter counts in each panel.
    b. The connector panel shall be interchangeable between the rack and wall-mountable hardware being proposed.
    c. The panel shall be attached to the housing or splice or slack storage cassette with latches to allow quick installation and removal.

E. Fiber Optic Adapter Panels

1. Basis of Design:

    a. Corning Model No. CCH-CP12-A9 (for Data)

2. Rack and wall mountable connector housings shall accept an interchangeable connector panel.
3. The adapter panel shall utilize a single mounting footprint and shall be interchangeable between the rack and wall mountable hardware used.
4. The panel shall be attached with two push-pull latches to allow quick installation and removal.
5. The adapter panel shall be available with industry standard single fiber and small form factor multi-fiber adapters, including the SC simplex, LC duplex and MPO.
6. The adapter panel shall accommodate optical fiber.
7. Pigtailed panel shall consist of an adapter panel as described above, factory-loaded with factory-terminated pigtails, 3 m in length.
8. Blank adapter panels shall be available to fill unused space within housings. Housings shall be supplied with blank adapter panels for all available positions unless the housing is ordered with optical fiber adapters panels pre-installed. The blank panel shall be attached with at least two spring clips to allow quick installation and removal.

F. Fiber Optic Patch Cords:

1. Single-mode, UPC, duplex fiber patch cable shall be LC-LC, yellow (for Data).
2. The single-mode, duplex fiber patch cable shall consist of 9-micron core and a 125-micron cladding. The fiber cladding shall be covered by aramid yarn and OFNR rated, unless otherwise indicated on the drawings.
3. Contractor shall field verify the type and lengths of patch cables, prior to placing order.
4. Contractor shall provide all patch cords required to perform the patching as designated on the contract drawings and specifications. Provide one (1) patch cord for each terminated fiber port at both ends. All slack in the patch cords shall be appropriately dressed using vertical and horizontal patch cord organizers to maintain a neat appearance.
5. Fiber optic patch cords shall be manufactured and certified by the same manufacturer of the permanent link cabling.

G. UPC Fiber Optic Connector:

1. LC, Single-mode, UPC, ceramic ferrule, field installable, blue housing, blue boot, pre-polished connector.
2. Comply with Optical Fiber Connector Intermateability Standards (FOCIS) specifications of TIA-604-2-B for Type LC connectors and TIA-604-5-D for Type MPO connectors. Comply with TIA-568-C.3.
3. Quick-connect, duplex, Type LC connectors. Insertion loss not more than 0.25 dB.
4. UPC connectors shall be used for data connectivity.

H. APC Fiber Optic Connector:

1. SC, Single-mode, APC, ceramic ferrule, field installable, green housing, green boot, pre-polished connector.

2. Comply with Optical Fiber Connector Intermateability Standards (FOCIS) specifications of TIA-604-2-B for Type SC connectors. Comply with TIA-568-C.3.
3. Quick-connect, simplex, Type SC connectors. Insertion loss not more than 0.25 dB.
4. APC connectors shall be used for Distributed Antenna Systems (DAS) connectivity.

I. Terminations

1. LC – Preferred
2. ST – Acceptable when needed.

J. All new fiber pulls are to be single-mode and the Fiber switch ports may need to be upgraded to accommodate.

K. Each new Communications room will be on two separate fiber runs for redundancy. The RED and BLUE network will need to be terminated in separate racks in the MDF.

L. Fiber optic and copper cables must have their own, separate path.

2.5 GROUNDING

A. Comply with requirements in Section 270526 "Grounding and Bonding for Communications Systems" for grounding conductors and connectors.

B. Comply with TIA-607-B.

2.6 IDENTIFICATION PRODUCTS

A. Comply with TIA-606-B and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

2.7 SOURCE QUALITY CONTROL

A. Factory test optical fiber cables according to TIA-526-14-B and TIA-568-C.3.

B. Factory test pre-terminated optical fiber cable assemblies according to TIA-526-14-B and TIA-568-C.3.

C. Cable will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 WIRING METHODS

A. Wiring Method: Install non-armored cables in conduits for entire cable length. It is acceptable to install armored cables in cable tray.

1. Install plenum cable in environmental air spaces, including plenum ceilings.
2. Comply with requirements for pathways specified in Section 270528 "Pathways for Communications Systems."

B. Wiring within Enclosures: Bundle, lace, and train cables within enclosures. Connect to termination points without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

3.2 INSTALLATION OF OPTICAL FIBER BACKBONE CABLES

A. Comply with NECA 301.

B. General Requirements for Cabling:

1. Comply with TIA-568-C.1 and TIA-568-C.3.
2. Comply with BICSI ITSIMM, Ch. 6, "Cable Termination Practices."
3. Terminate and test all cables; no cable shall contain unterminated elements. Make terminations only at indicated patch panels.
4. Cables may not be spliced. Secure and support cables at intervals not exceeding 36 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
5. Install lacing bars to restrain cables, to prevent straining connections, and to prevent bending cables to smaller radii than minimums recommended by manufacturer.
6. Bundle, lace, and train cable to termination points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIMM, "Cabling Termination Practices" Chapter. Use lacing bars and distribution spools.
7. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination points. Remove and discard cable if damaged during installation and replace it with new cable.
8. Cold-Weather Installation: Bring cable to room temperature before de-reeling. Heat lamps shall not be used for heating.
9. In the communications equipment room, install a 10-foot (3-m) long service loop on each end of cable.
10. Pulling Cable: Comply with BICSI ITSIMM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.
11. Cable may be terminated on connecting hardware that is rack or cabinet mounted.

C. Group connecting hardware for cables into separate logical fields.

3.3 FIRESTOPPING

A. Comply with requirements in Section 078413 "Penetration Firestopping."

B. Comply with TIA-569-D, Annex A, "Firestopping."

C. Comply with BICSI TDMM, "Firestopping Systems" Article.

3.4 GROUNDING

A. Shields/armors shall be grounded according to BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.

B. Comply with TIA-607-B and NECA/BICSI-607.

C. Bond metallic equipment to the grounding bus bar, using not smaller than No. 6 AWG equipment grounding conductor.

3.5 IDENTIFICATION

A. Cable Management Software: This contractor shall be responsible for updating the existing airport cable management software program with all communication optical fiber backbone cables installed as part of this project.

B. Identify system components, wiring, and cabling complying with TIA-606-B. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

C. Cable and Wire Identification:

1. Label each cable within 4 inches (100 mm) of each termination, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
2. Label each unit and field within distribution racks and frames.
3. Identification within patch panels in communication equipment rooms: Label each connector and each discrete unit of cable-terminating and connecting hardware.

D. Labels shall be preprinted or computer-printed type with printing area and font color that contrasts with cable jacket color but still complies with requirements in TIA 606-B, for the following:

1. Cables use flexible vinyl or polyester that flexes as cables are bent.

3.6 FIELD QUALITY CONTROL AND TESTING

A. General:

1. This Section includes the minimum requirements for the test certification, identification and administration of backbone and horizontal optical fiber cabling.

2. This Section includes minimum requirements for:
    a. Fiber optic test instruments
    b. Fiber optic testing
    c. Administration
    d. Test results documentation
3. Testing shall be carried out in accordance with this document. This includes testing the attenuation and polarity of the installed cable plant with an optical loss test set (OLTS). In addition to OLTS testing the optical fiber cabling will require testing with an optical time domain reflectometer (OTDR).
4. All tests shall be documented including OLTS dual wavelength attenuation measurements and OTDR traces with event tables as well as OTDR maps.

B. Requirements:
1. All testing procedures and field-test instruments shall comply with the latest version and applicable requirements of ANSI/TIA/EIA standards addressing the testing and administration of optical fiber cabling.
2. Trained technicians who have successfully attended an appropriate training program, which includes testing with an OLTS and an OTDR and have obtained a certificate as proof thereof shall execute the tests.
3. The Owner or the Owner's representative shall be invited to witness field-testing.
    a. The Owner or the Owner's representative shall be notified of the start date of the testing phase five (5) business days before testing commences.
4. Manufacturers catalog sheets and specifications for fiber optic field-test instruments including optical loss test sets (OLTS; power meter and source) and optical time domain reflectometer (OTDR).
5. A schedule (list) of all optical fibers to be tested.
6. Sample test reports.

C. Test Limits and Parameters
1. Unless otherwise specified by the Owner or the Owners representative, each cabling link shall be in compliance with the following test limits:
    a. Optical Loss Testing
        1) Multimode and Singlemode links: The link attenuation shall be calculated by the following formulas as specified in ANSI/TIA-568-C.0.
            a) Link Attenuation (dB) = Cable_Attn (dB) + Connector_Attn (dB) + Splice_Attn (dB)
            b) Cable_Attn (dB) = Attenuation_Coefficient (dB/km) * Length (Km)
            c) Connector_Attn (dB) = number_of_connector_pairs * connector_loss (dB)
            d) Maximum allowable connector_loss = 0.75 dB
            e) Splice_Attn (dB) = number_of_splices * splice_loss (dB)
            f) Maximum allowable splice_loss = 0.3 dB

g) The values for the Attenuation_Coefficient (dB/km) are listed in the table below:

Type of Optical Fiber	Wavelength (nm)	Attenuation coefficient (dB/km)	Wavelength (nm)	Attenuation coefficient (dB/km)
Multimode 62.5/125 µm	850	3.5	1300	1.5
Multimode 50/125 µm	850	3.5	1300	1.5
Single-mode (Inside plant)	1310	1.0	1550	1.0
Single-mode (Outside plant)	1310	0.5	1550	0.5

2. OTDR Testing
   a. In addition to OLTS testing, OTDR testing shall be required for all optical fiber cabling.
   b. Reflective events (connections) shall not exceed:
      1) 0.75 dB in optical loss when bi-directionally averaged
      2) -35 dB Reflectance for multimode connections
      3) -40 dB reflectance for UPC singlemode connections
      4) -55 dB reflectance for APC singlemode connections
   c. Non-reflective events (splices) shall not exceed 0.3 dB.
3. All installed cabling links and channels shall be field-tested and pass the test requirements and analysis as described under Optical Fiber Cable Testing section of this specification. Any link or channel that fails these requirements shall be diagnosed and corrected. Any corrective action that must take place shall be documented and followed with a new test to prove that the corrected link or channel meets performance requirements. The final and passing result of the tests for all links and channels shall be provided in the test results documentation in accordance with the Optical Fiber Cable Testing section of this specification.
4. Acceptance of the test results shall be given in writing after the project is fully completed and tested in accordance with Contract Documents and to the satisfaction of the Owner.

D. Testing Equipment:
   1. The field-test instrument shall be within the calibration period recommended by the manufacturer and a copy of the calibration certificate made available.
   2. Acceptable manufacturers
      a. Fluke Networks
      b. Tektronix
      c. Engineer Approved Equal

E. Test Records:

1. Administration of the documentation shall include test results of each fiber link and channel.
2. The test result information for each link shall be recorded in the memory of the field-test instrument upon completion of the test.
3. The test result records saved within the field-test instrument shall be transferred into a Windows™-based database utility that allows for the maintenance, inspection and archiving of these test records.

F. Optical Fiber Testing

1. Field-test instruments shall have the latest software and firmware installed.
2. Testing shall be performed on each cabling link (connector to connector).
3. Testing shall be performed on each cabling channel (equipment to equipment) as identified in the contract documents.
    a. Testing shall not include any active devices or passive devices within the link or channel other than cable, connectors, and splices, i.e., link attenuation does not include such devices as optical bypass switches, couplers, repeaters, or optical amplifiers.
4. Testing of the cabling shall be performed using high-quality test reference cords of the same core size as the cabling under test, terminated with reference grade connectors. Reference grade connectors are defined as having a loss not exceeding 0.1 dB for multimode and 0.2 dB for singlemode.
5. OLTS Testing
    a. Horizontal/Backbone link
        1) Multimode links shall be tested in one direction at 850 nm and 1300 nm in accordance with ANSI/TIA-526-14-B, one-cord reference method, with an Encircled Flux compliant launch.
        2) Singlemode backbone links shall be tested in one direction at 1310 nm and 1550 nm in accordance with ANSI/TIA/EIA-526-7, Method A.1 (One-cord reference method).
        3) Link attenuation does not include any active devices or passive devices other than cable, connectors, and splices, i.e., link attenuation does not include such devices as optical bypass switches, couplers, repeaters, or optical amplifiers.
6. OTDR Testing
    a. Fiber links shall be tested at these wavelengths for anomalies and to ensure uniformity of cable attenuation, connector insertion loss and reflectance.
        1) Multimode: 850 nm and 1300 nm.
        2) Singlemode: 1310 nm and 1550 nm.
    b. Each fiber link and channel shall be tested in both directions.
        1) The launch and tail fibers shall remain in place for the measurement in the opposite direction – failing to do so will result in an increase in measurement uncertainty.

2) The use of a loop back fiber at the far end with a tail fiber at the near end on the adjacent fiber is permitted for bi-directional testing, so long as the OTDR can split the trace automatically into two traces for the two fibers under test.

c. A launch cable shall be installed between the OTDR and the first link connection.

d. A tail cable shall be installed after the last link connection.

7. Length Measurement

a. The optical length of each fiber shall be recorded using an OLTS or OTDR.

8. Polarity Testing

a. Paired duplex fibers in multi-fiber cables shall be tested to verify polarity in accordance with Clause E.5.3 of ANSI/TIA 568 C.0. The polarity of the paired duplex fibers shall be verified using an OLTS.

G. Administration

1. Test results documentation

a. The test results documentation shall be available for inspection by the Owner or the Owner's representative during the installation period and shall be passed to the Owner's representative within 5 working days of completion of tests.

b. The database for the complete project shall be stored and delivered on CD/DVD prior to Owner acceptance of the building in the original format used by the cabling vendors' software.

c. Circuit IDs reported by the test instrument should match the cable label ID.

d. The detailed test results documentation data is to be provided in an electronic database for each tested optical fiber and shall contain the following information

1) The identification of the customer site as specified by the end-user.
2) The name of the test limit selected to execute the stored test results.
3) The name of the personnel performing the test.
4) The date and time the test results were saved in the memory of the tester.
5) The manufacturer, model, and serial number of the field-test instrument.
6) The version of the test software and the version of the test limit database held within the test instrument.
7) The fiber identification number.
8) The length for each optical fiber.
9) The index of refraction used for length calculation when using length capable OLTS.
10) The backscatter coefficient of the fiber under test when using an OTDR.
11) Test results to include OLTS attenuation link and channel measurements at the appropriate wavelength(s) and the margin (difference between the measured attenuation and the test limit value).

12) Test results to include OTDR link and channel traces, event tables at the appropriate wavelength(s) and a map of the link tested.
13) The length for each optical fiber as calculated by the OTDR.
14) The overall Pass/Fail evaluation of the link-under-test for OLTS and OTDR measurements

END OF SECTION

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SECTION 27 15 13

COMMUNICATIONS COPPER HORIZONTAL CABLING

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

1.2 SUMMARY

A. Section Includes:

1. Category 6a twisted pair cable.
2. Twisted pair cable hardware, including plugs and jacks.
3. Surge Protectors
4. Gigabit Ethernet Copper-to-Fiber POE+ Media Converters
5. Media Converter Rack-Mounting Shelf
6. Media Converter Rack Mount Powered Chassis
7. Cabling identification products.
8. Grounding provisions for twisted pair cable.
9. Source quality control requirements for twisted pair cable.

1.3 DEFINITIONS

A. Cross-Connect: A facility enabling the termination of cable elements and their interconnection or cross-connection.

B. EMI: Electromagnetic interference.

C. IDC: Insulation displacement connector.

D. LAN: Local area network.

E. Jack: Also commonly called an "outlet," it is the fixed, female connector.

F. Plug: Also commonly called a "connector," it is the removable, male telecommunications connector.

G. RCDD: Registered Communications Distribution Designer.

H. UTP: Unscreened (unshielded) twisted pair.

1.4 COPPER HORIZONTAL CABLING DESCRIPTION

A. Copper horizontal cabling system shall provide interconnections between communications equipment room and the equipment outlet. Cabling system consists of horizontal cables, intermediate and main cross-connects, mechanical terminations, and patch cords used for horizontal-to-horizontal cross-connection.

1. Horizontal cabling shall contain no more than one transition point or consolidation point between the horizontal cross-connect and the telecommunications equipment outlet.
2. Bridged taps and splices shall not be installed in the horizontal cabling.

B. The maximum allowable horizontal cable length is 295 feet (90 m). This maximum allowable length does not include an allowance for the length of 16 feet (4.9 m) to the workstation equipment and 16 feet (4.9 m) in the horizontal cross-connect.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Reviewed and stamped by RCDD.

1. System Labeling Schedules: Electronic copy of labeling schedules, in software and format selected by Owner.
2. Floor Plans: that identify device locations, cable routes and quantities, cable types, riser locations.

C. Copper horizontal cable testing plan.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For RCDD.

B. Source quality-control reports.

C. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For splices, patch panels and connectors to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Category 6A Cable: One box (1000') of new cable.
   2. Faceplates: Ten of each type.

1.9 WARRANTY

A. Period: The Contractor shall warranty all labor, workmanship, and materials for a period of one (1) year from the date of final Owner acceptance. Should a failure occur within this warranty period, the Contractor shall provide all labor and materials necessary to restore the system to the condition required for the final test and acceptance for this contract, at no cost to the Owner.

B. Extended Warranty: The manufacturer shall guarantee in writing that the copper horizontal cable channels as installed by this contract are free from defects in materials and workmanship and will meet the applicable ANSI/TIA/EIA and ISO/IEC channel transmission requirements in effect at the time of installation and will support any current or future application ratified by IEEE, ANSI, or ISO designed to operate over the applicable ANSI/TIA/EIA-568-B and ISO/IEC 11801 standards in effect at the time of installation. The duration of this warranty shall be for a period of 25 years from date of final Owner acceptance. Defective products shall be repaired or replaced by the manufacturer, at no cost to the Owner.

1.10 QUALITY ASSURANCE

A. Installer Qualifications: Cabling installer must be a certified installer meeting all requirements for the cable manufacturer's 25-year warranty program and must have personnel certified by BICSI on staff.

   1. Layout Responsibility: Preparation of Shop Drawings by an RCDD.
   2. Installation Supervision: Installation shall be under the direct supervision of Registered Technician, who shall be present at all times when Work of this Section is performed at Project site.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Test cables upon receipt at Project site.

   1. Test each pair of twisted pair cable for open and short circuits.

1.12 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install cables and connecting materials until wet work in spaces is complete and dry, and temporary HVAC system is operating

and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.13 COORDINATION

A. Coordinate layout and installation of telecommunications pathways and cabling with all other trades, LAN equipment suppliers and service providers, if applicable.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Horizontal cabling system shall comply with transmission standards in TIA-568-C.1, when tested according to test procedures of this standard.

B. Surface-Burning Characteristics: Flame spread shall not exceed 5 ft (1.5 m) when tested in accordance with NFPA 262.

C. Telecommunications Pathways and Spaces: Comply with TIA-569-D.

D. Grounding: Comply with TIA-607-B.

2.2 GENERAL CABLE CHARACTERISTICS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with the applicable standard and NFPA 70 for the following types:

1. Communications, Plenum Rated: Type CMP complying with UL 910.

B. RoHS compliant.

2.3 CATEGORY 6A TWISTED PAIR CABLE

A. Description: Four-pair, balanced-twisted pair cable, with internal spline, certified to meet transmission characteristics of Category 6A cable at frequencies up to 500MHz.

B. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work are limited to the following:

1. Panduit
2. No substitutions allowed

C. General Performance Specifications: The minimum requirements for Category 6A cables shall conform to TIA/EIA 568B Commercial Building Telecommunications

Cabling Standard, Horizontal Cable Section. Application standards supported should include, but not limited to:

1. 10Base-T through 10GBase-T Ethernet
2. Power over Ethernet (Poe & PoE+) - IEEE 802.3af/at Type 1 & 2
3. 4PPoE+ - IEEE 802.3bt Type 3 and 4 draft D1.2
4. 155Mb/s ATM and token ring
5. HDBaseT Class A & B
6. 550MHz Broadband Video
7. Backwards compatible to legacy protocols and applications.

D. General Design Specifications: Indoor horizontal cable shall be plenum, Category 6A, Unshielded Twisted Pair (UTP) composed of 23 AWG bare solid-copper conductors, insulated (FEP). The insulated conductors are twisted into pairs and sheathed with a low smoke PVC jacket. Cable shall be classified as a small diameter Category 6A cable meeting the following minimum design specifications:

1. Basis of Design: Panduit TX6A
2. Overall Diameter: 0.230”
3. Pair Count: 4
4. Conductor: Solid annealed copper 23 AWG
5. Insulation CMP: FEP
6. Separator: Full Cross-web
7. Jacket CMP: FR, low smoke PVC, white in color
8. Impedance: 100Ω ± 15
9. Velocity of Propagation: CMP: 71%
10. Performance Compliance: UL 444, UL 1666, NFPA 262, ANSI/TIA-568-C.2, Article 800, NEC (NFPA 70)
11. NRTL Programs: UL Verified CAT 6A, UL Listed CMP-LP (0.6)
12. Standard: Comply with TIA-568-C.2 for Category 6A cables.

2.4 CATEGORY 6A TWISTED PAIR CABLE HARDWARE

A. Description: Hardware designed to connect, splice, and terminate twisted pair copper communications cable. Category 6 and Category 6A cabling shall be terminated on a dedicated patch panel and outlet of the corresponding category class. In no case shall different Category cabling be terminated on the same patch panel.

B. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work are limited to the following:

1. Panduit
2. No substitutions allowed

C. General Requirements for Twisted Pair Cable Hardware:

1. Comply with the performance requirements of Category 6A.

2. Comply with TIA-568-C.2, IDC type, with modules designed for punch-down caps or tools.
3. Cables shall be terminated with connecting hardware of same category or higher.

D. Source Limitations:

1. Category 6A cabling and connecting hardware shall be from the same manufacturer.

E. Patch Panel: Blank modular patch panels housing numbered jack units with ability to accept an IDC-type keystone jack at each port location. Patch panels containing fixed, irreplaceable jacks are not acceptable.

1. Basis of Design:

a. Panduit CPPLA24WBLY (24 Port Patch Panel)
b. Panduit CPPLA48WBLY (48 Port Patch Panel)

2. High density supporting 24 or 48 open modular ports.
3. Angled front design.
4. 1U and 2U mounting height.
5. Labeling areas adjacent to ports.
6. Construction: 16-gauge steel and mountable on 19-inch (483 mm) equipment racks.
7. Number of Jacks per Field: One for each four-pair cable indicated.
8. Patch panel labeling shall match faceplate labeling.

F. Patch Panel Pivoting Strain Relief Bar: Strain relief bar shall consist of a metal bar that attaches to the back of a patch panel for cable support.

1. Basis of Design:

a. Panduit SRBPBL

2. Flange on back of strain relief bar shall provide up or down pivoting of the bar to allow easy access to the back of the patch panel and to secured connections.
3. Provide (1) patch panel pivoting strain relief bar for each installed patch panel.

G. Plugs and Plug Assemblies:

1. Male; eight position (8P8C); color-coded modular telecommunications connector designed for termination of a single four-pair, 100-ohm, Category 6 or Category 6A unshielded twisted pair cable. Terminate all four cable pairs per jack unless noted otherwise on drawings.
2. Standard: Comply with TIA-568-C.2.
3. Marked to indicate transmission performance.

H. Category 6A Jacks and Jack Assemblies

1. Basis of Design: Panduit CJ6X88TG
2. Female; eight position; modular; fixed telecommunications connector designed for termination of a single four-pair, 100-ohm, Category 6A unshielded twisted pair cable.
3. Designed to snap-in to a patch panel or faceplate.
4. Standard: Comply with TIA-568-C.2.
5. Marked to indicate transmission performance.
6. Color:
   a. Green (Wi-Fi)
   b. Blue (all other system)
   c. Red (Fire Alarm/Fire Protection)

I. Faceplates

1. Basis of Design: Panduit NK4FEIY
2. Four port, vertical single gang faceplates designed to mount to single gang wall boxes or adapter.
3. Plastic Faceplate: High-impact plastic.
4. Color: Electric Ivory
5. For use with snap-in jacks accommodating any combination of twisted pair, optical fiber, and coaxial work area cords.
6. Flush mounting jacks.
7. Integral, reusable clear plastic label field above and below ports.
8. Faceplate Blanks: Panduit CMBEI
   a. .

J. Category 6A Patch Cords: Factory-made, four-pair cables; terminated with an eight-position modular plug at each end. Contractor shall confirm required lengths prior to placing order.

1. Basis of Design: Panduit UTP28X x (White in color)
2. Patch cords shall have bend-relief-compliant boots and color-coded icons to ensure performance. Patch cords shall have latch guards to protect against snagging.
3. Patch cords shall be manufactured and certified by the same manufacturer of the permanent link cabling.
4. Quantity:

   a. Provide one (1) patch cord for each terminated port inside the telecommunication rooms.
   b. Provide one (1) patch cord for each terminated station outlet.
   c. Contractor shall coordinate exact length of each patch cord with network system equipment provider and owner prior to ordering. Submit list of patch cords including length for each telecommunication room for approval by DOA prior to ordering.

K. Surge Protectors

1. Provide surge protection devices for specific equipment as shown on drawings.

2. Point of Use Surge Protector

    a. Shall protect circuits that use Power over Ethernet connections.
    b. The point of use surge protector is compatible with CAT5e, CAT6 and CAT6A cabling infrastructure, and can be installed either at the equipment end, or ahead of injectors or midspan devices.
    c. PoE Plus, HiPoE ready for high-wattage applications
    d. RJ45 connections with external grounding screw
    e. Complies with IEEE Std. 802.3af and 802.3at for PoE
    f. Technical Specifications:

        1) Service Voltage: <60V
        2) Protection Modes: L-G (All), L-L (All)
        3) Clamping Voltage Common Mode (L-G): 75V
        4) Clamping Voltage Differential Mode (L-L): 72V
        5) Surge Current Rating: 20kA/Pair
        6) Max. Continuous Current: 1.5 Amps
        7) Power Handling: 144 Watts
        8) Data Rate: Up To 10GbE
        9) Environmental: -40F – 158F (-40C – 70C), 95% non-condensing

    g. UL Listed UL 497B
    h. Warranty: 10 Years

L. Gigabit Ethernet Copper-to-Fiber POE+ Media Converters

1. Basis of Design: Omnitron GPoE+/S
2. Description: 1000BASE-T Copper to 1000BASE-X Fiber Media Converter.
3. Standards Compliances: IEEE 802.3at
4. Regulatory Compliances: UL, CE, FCC Class A, RoHS, WEEE, REACH
5. Frame Size: Supports frame sizes up to 10K bytes.
6. Port Types: Dual copper 1000BASE-T (RJ-45), Fiber 1000BASE-X (LC, Duplex)
7. Temperature: -40 to 60° C.
8. Warranty: Lifetime

M. Media Converter Rack-Mounting Shelf

1. Basis of Design: Omnitron 4392
2. 1RU shelf supports up to (5) media converter modules.

N. Media Converter Rack Mount Powered Chassis

1. Basis of Design: Omnitron 4395
2. 14-module chassis with two AC power supplies

O. Legend:

1. Machine printed, in the field, using adhesive-tape label.

2. Snap-in, clear-label covers and machine-printed paper inserts.

2.5 IDENTIFICATION PRODUCTS

A. Comply with TIA-606-B and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

2.6 GROUNDING

A. Comply with requirements in Section 270526 "Grounding and Bonding for Communications Systems" for grounding conductors and connectors.

B. Comply with TIA-607-B.

2.7 SOURCE QUALITY CONTROL

A. Factory test cables on reels according to TIA-568-C.1.

B. Factory test twisted pair cables according to TIA-568-C.2.

C. Cable will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 WIRING METHODS

A. Wiring Method: Install cables in conduit or cable tray. Conceal raceway and cables, except in unfinished spaces.

1. Install plenum cable in environmental air spaces, including plenum ceilings.
2. Comply with requirements for raceways and boxes specified in Section 270528 "Pathways for Communications Systems."

B. Wiring within Enclosures: Bundle, lace, and train cables within enclosures. Connect to termination points without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

3.2 INSTALLATION OF PATHWAYS

A. Comply with requirements for demarcation point, cabinets, and racks specified in Section 271100 "Communications Equipment Room Fittings."

B. Comply with Section 270528 "Pathways for Communications Systems."

C. Comply with Section 270529 "Hangers and Supports for Communications Systems."

D. Comply with Section 270536 "Cable Trays for Communications Systems."

3.3 INSTALLATION OF TWISTED-PAIR HORIZONTAL CABLES

A. Comply with NECA 1 and NECA/BICSI 568.

B. General Requirements for Cabling:

1. Comply with TIA-568-C.0, TIA-568-C.1, and TIA-568-C.2.
2. Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems," "Cable Termination Practices" Section.
3. Do not untwist twisted pair cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.
4. Terminate all conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.
5. Cables may not be spliced. Secure and support cables at intervals not exceeding 36 inches not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
6. Install lacing bars to restrain cables, prevent straining connections, and prevent bending cables to smaller radii than minimums recommended by manufacturer.
7. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems," "Cable Termination Practices" Section. Use lacing bars and distribution spools.
8. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
9. Cold-Weather Installation: Bring cable to room temperature before de-reeling. Heat lamps shall not be used for heating.
10. In the communications equipment room, install a 10-foot (3-m) long service loop on each end of cable.
11. Pulling Cable: Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems," "Pulling and Installing Cable" Section. Monitor cable pull tensions.
12. Cable shall be terminated on connecting hardware that is rack or cabinet mounted.

C. Cable Installation:

1. Comply with TIA-568-C.0 and TIA-568-C.2.
2. Install cabling with horizontal and vertical cable guides in communications equipment rooms with terminating hardware and interconnection equipment.
3. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.

D. Group connecting hardware for cables into separate logical fields.

E. Separation from EMI Sources:

1. Comply with recommendations from BICSI's "Telecommunications Distribution Methods Manual" and TIA-569-D for separating unshielded copper communication cable from potential EMI sources, including electrical power lines and equipment.
2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:
    a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
    b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (300 mm).
    c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (600 mm).
3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:
    a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
    b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
    c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches (300 mm).
4. Separation between communications cables in grounded metallic raceways, power lines, and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
    a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
    b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches (76 mm).
    c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches (150 mm).
5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches (1200 mm).
6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).
7. Delta Airlines: Patch one PC to the Red network and another to the Blue network to ensure redundancy.

3.4 FIRESTOPPING

A. Comply with requirements in Section 078413 "Penetration Firestopping."

B. Comply with TIA-569-D, Annex A, "Firestopping."

C. Comply with "Firestopping Systems" Article in BISCI's "Telecommunications Distribution Methods Manual."

3.5 GROUNDING

A. Install grounding according to the "Grounding, Bonding, and Electrical Protection" chapter in BICSI's "Telecommunications Distribution Methods Manual."

B. Comply with TIA-607-B and NECA/BICSI-607.

3.6 IDENTIFICATION

A. Cable Management Software: This contractor shall be responsible for updating the existing airport cable management software program with all communications copper horizontal cables installed as part of this project.

B. Identify system components, wiring, and cabling complying with TIA-606-B. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

C. Paint and label colors for equipment identification shall comply with TIA-606-B for Class 2 level of administration.

D. Cable and Wire Identification:

1. Label each cable within 4 inches (100 mm) of each termination and tap, where it is accessible in a cabinet or junction or outlet box, and elsewhere as indicated.
2. Identification within patch panels in communication equipment rooms: Label each connector and each discrete unit of cable terminating and connecting hardware.

E. Labels shall be preprinted or computer-printed type, with a printing area and font color that contrast with cable jacket color but still comply with TIA-606-B requirements for the following:

1. Cables use flexible vinyl or polyester that flexes as cables are bent.

3.7 FIELD QUALITY CONTROL AND TESTING

A. General:

1. This Section includes the minimum requirements for the test certification, identification, and administration of horizontal balanced twisted pair cabling.
2. This Section includes minimum requirements for:
    a. Copper cabling test instruments
    b. Copper cabling testing
    c. Administration
    d. Test results documentation
3. Testing shall be carried out in accordance with this document.

4. Testing shall be performed on each cabling link. (100% testing)
5. All tests shall be documented.

B. Requirements

1. All testing procedures and field-test instruments shall comply with the latest version and applicable requirements of ANSI/TIA/EIA standards addressing the testing and administration of Category 6A copper horizontal cabling.
2. Trained technicians who have successfully attended an appropriate training program and have obtained a certificate as proof thereof shall execute the tests.
3. The Owner or the Owner's representative shall be invited to witness field-testing.
    a. The Owner or the Owner's representative shall be notified of the start date of the testing phase five (5) business days before testing commences.
4. Manufacturers catalog sheets and specifications for the test equipment.
5. A schedule (list) of all balanced twisted-pair copper links to be tested.
6. Sample test reports.

C. Test Limits and Parameters

1. Unless otherwise specified by the Owner or the Owners representative, each cabling link shall be tested for:
    a. Wire Map
    b. Length
    c. Propagation Delay
    d. Delay Skew
    e. DC Loop Resistance
    f. DC Resistance Unbalance within a pair
    g. DC Resistance Unbalance between pairs
    h. Insertion Loss
    i. NEXT (Near-End Crosstalk)
    j. PS NEXT (Power Sum Near-End Crosstalk)
    k. ACR-N (Attenuation to Crosstalk Ratio Near-End)
    l. PS ACR-N (Power Sum Attenuation to Crosstalk Ratio Near-End)
    m. ACR-F (Attenuation to Crosstalk Ratio Far-End)
    n. PS ACR-F (Power Sum Attenuation to Crosstalk Ratio Far-End)
    o. Return Loss
    p. TCL (Transverse Conversion Loss)
    q. ELTCTL (Equal Level Transverse Conversion Transfer Loss)
    r. PS ANEXT (Power Sum Alien Near-End Crosstalk)
    s. Average PS ANEXT (Average Power Sum Alien Near-End Crosstalk)
    t. PS AACR-F (Power Sum Alien Attenuation to Crosstalk Ratio Far-End)
    u. Average PS AACR-F (Average Power Sum Alien Attenuation to Crosstalk Ratio Far-End)
2. All installed cabling Permanent Links shall be field-tested and pass the test requirements and analysis as described in the Copper Horizontal Cable Testing section. Any Permanent Link that fails these requirements shall be diagnosed and corrected. Any corrective action that must take place shall be documented and followed with a new test to prove that the corrected Permanent Link meets performance requirements. The final and passing result of the tests for all

Permanent Links shall be provided in the test results documentation in accordance with the Copper Horizontal Cable Testing section of this specification.

3. Acceptance of the test results shall be given in writing after the project is fully completed and tested in accordance with Contract Documents and to the satisfaction of the Owner.

D. Testing Equipment

1. The field-test instrument shall be within the calibration period recommended by the manufacturer and a copy of the calibration certificate made available.
2. Acceptable manufacturers
    a. Fluke Networks
    b. Tektronix
    c. Engineer Approved Equal

E. Administration

1. Administration of the documentation shall include test results of each Permanent Link.
2. The test result information for each link shall be recorded in the memory of the field-test instrument upon completion of the test.
3. The test result records saved within the field-test instrument shall be transferred into a Windows™-based database utility that allows for the maintenance, inspection and archiving of these test records.

F. Copper Horizontal Cable Testing

1. All outlets, cables, patch panels and associated components shall be fully assembled and labeled prior to field-testing. Any testing performed on incomplete systems shall be redone on completion of the work.
2. Field-test instruments shall have the latest firmware installed.
3. Permanent Link test results, including the individual frequency measurements from the tester, shall be recorded in the test instrument upon completion of each test for subsequent uploading to a Windows™-based database utility in which the administrative documentation (reports) may be generated.
4. Permanent Link testing shall be performed on each cabling segment (connector to connector). Sampling is not acceptable.
5. Alien Crosstalk testing shall be performed using a sampling plan. An acceptance quality level (AQL) of 0,4 %, normal inspection, general inspection level I as defined in ISO 2859-1 for populations of up to 500,000 links shall be used. The following table represents this sampling level.

Total number of links (N)	Sample size (No. of links to test)
3 – 33	3 or 0.1 x N (whichever is greatest)
34 – 3,200	33
3,201 – 35,000	126
35,001 – 150,000	201

150,001 – 500,000	315

6. Disturbed (Victim) links chosen for Alien Crosstalk testing shall be an equal combination of short, medium, and long links.
7. Provide test results for each parameter listed under paragraph 3.07-C.1, this section. All tests shall meet or exceed the limits found in ANSI/EIA-568-C.2, 6.3.

G. Administration:

1. Test Results Documentation

a. The test results documentation shall be available for inspection by the Owner or the Owner's representative during the installation period and shall be passed to the Owner's representative within 5 working days of completion of tests.
b. The database for the complete project shall be stored and delivered on CD/DVD prior to Owner acceptance of the building in the original format used by the cabling vendors' software.
c. Circuit IDs reported by the test instrument should match the cable label ID.
d. The detailed test results documentation data is to be provided in an electronic database for each tested optical fiber and shall contain the following information:

1) The overall Pass/Fail evaluation of the link-under-test
2) The date and time the test results were saved in the memory of the tester
3) The identification of the customer site as specified by the end-user
4) The name of the test limit selected to execute the stored test results
5) The name of the personnel performing the test
6) The version of the test firmware and the version of the test limit database held within the test instrument
7) The manufacturer, model and serial number of the field-test instrument
8) The adapters used
9) The factory calibration date
10) Provide test results for each parameter listed under paragraph 3.07-C.1, this section.

e. For Alien Crosstalk testing, the detailed test results documentation data is to be provided for each tested balance twisted pair and shall contain the following information:

1) The overall Pass/Fail evaluation of the link-under-test
2) The date and time the measurements were made
3) The identification of the customer site as specified by the end-user
4) The name of the test limit selected to execute the stored test results
5) The name of the personnel performing the test
6) The version of the test software
7) PS ANEXT, worst case margin for all four pairs
8) Average PS ANEXT, worst case margin
9) PS AACR-F, worst case margin for all four pairs
10) Average PS AACR-F, worst case margin

END OF SECTION

SECTION 27 21 33

WIRELESS COMMUNICATIONS SYSTEMS

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.

B. Provide work specified but not shown on Drawings, as well as work shown on Drawings but not specified, as though expressly required by both.

1.2 SUMMARY

A. The scope of work for this project includes all materials, equipment, hardware, software, and labor to install and make Wi-Fi coverage ready for use. The Contractor shall perform all work, coordination, systems integration, channel planning, surveying, and testing. The contractor shall provide all products required to ensure a fully operative system with seamless Wi-Fi coverage with minimal overlap.

B. Contractors shall include in the construction submittal all necessary details about the proposed installation, including equipment, Wi- Fi coverage projection, network connections, Wi-Fi Access Point (AP) installation, IT rooms to be accessed/used, and estimated cost/installation duration.

C. Contractors are responsible for providing and coordinating final equipment arrangements, locations, phased activities, and construction methods that minimize disruption to airport/terminal operations in providing complete and operational Wi-Fi systems.

D. Contractors shall coordinate with telecom contractor for the provisioning of horizontal conduit and field boxes required to accommodate cabling of all Wi-Fi APs and other system equipment.

E. Fort Bend will provide an operational SSID for use. Fort Bend shall provide a RADIUS server IP address to which Fort Bend will direct operational traffic. Clients must be capable of supporting WPA2 Enterprise (802.1x).

1.3 DEFINITIONS

A. ANSI – American National Standards Institute

B. AP – Access Point

C. BICSI – Building Industry Consulting Service International

D. EIA – Electronic Industries Alliance

E. Gbps – Gigabits per second

F. IEEE – Institute of Electrical and Electronics Engineers

G. IP – Internet Protocol

H. LAN: Local Area Network

I. MAC – Media Access Control

J. ms – Milliseconds

K. NECA – National Electrical Contractors Association

L. NFPA – National Fire Protection Association

M. PoE – Power over Ethernet

N. RTLS – Real Time Location System

O. TIA – Telecommunications Industry Association

P. TR – Telecommunication Room

Q. WCS – Wireless Controller System

R. WPA – Wireless Protected Access

1.4 SUBMITTALS

A. Product Data shall include the following:

1. Product Data: Provide manufacturer's specification sheets for each component. Provide electrical power consumption rating and heat generation for each power-consuming device, and a summary of the entire system being provided.

B. Action Submittals

1. A scale, plan view drawing showing approximate desired coverage area and a call out indicating the square footage.
2. Proposed number of APs to be installed that are based on the user density.
3. Estimated average and maximum number of wireless users.
4. Method of user authentication shall be WPA2 Enterprise, 802.1x.

5. Submit a Detailed Bill-of-Materials listing all manufacturers, part numbers, and quantities.
6. Submit all proposed labeling materials and nomenclature.
7. Submit Wireless Riser diagram.
8. Submit details of proposed Wi-Fi system, AP locations, bandwidth(s) requirement and usage.
9. Submit preliminary scaled floor plans with labeled AP names and area dimensions (in both PDF and AutoCAD MAP 3D) formats.
10. Submit floor plans with heat maps overlay that show the results of predicative analysis modeling to indicate areas of coverage and extrapolated signal strength. The heat map files shall be in Ekahau.esx format.
11. Submit all testing plans (acceptance and endurance) for review and approval prior to the performance of any test.

C. Closeout Submittals – If the construction of the proposed Wi-Fi system is approved and the system is installed, contractors must submit to Fort Bend as-built system drawings for record. The drawings shall be in current AutoCAD DWG and Adobe PDF format and shall include:

1. Marked-up copies of Contract Drawings
2. Marked-up copies of Shop Drawings
3. Newly prepared Drawings
4. Marked-up copies of Specifications, Addenda and Change Orders
5. Marked-up Project Data submittals
6. Record Samples and Wireless Riser Diagrams
7. Field records for variable and concealed conditions
8. Record information on work that is recorded only schematically
9. Record drawings, and As-built drawings
10. All AP's labeled on outside with IT tags visible from floor
11. Operation and maintenance manuals

1.5 WARRANTY

A. The warranty period for all equipment, devices, software, and hardware installed by the Contractor will start on the date of beneficial occupancy by Fort Bend of the facilities. The Contract will include in the base bid the cost to assure coverage of all 3rd party equipment, hardware, devices, software, and licenses installed to be covered through the full first year of operation.

B. Manufacturer shall provide a Standard Warranty for all products to be free of defects in material and workmanship subject to license agreement terms and conditions.

C. The minimum warranty period is one (1) year from beneficial occupancy unless standard manufactures warranty exceeds this period.

D. All Software upgrades and patches required in the first year of warranty shall be included in the cost of the initial warranty period.

E. Contractor shall guarantee and warranty all equipment, materials, workmanship, and installation, for a period of one (1) year.

1.6 QUALITY ASSURANCE

A. Manufacturer Requirements:

1. Latest technology products and materials shall be operationally and functionally equivalent or superior to the specified products and materials. Products and materials shall be purchased by the Contractor in a timely manner to meet construction schedules but shall not be purchased so far advanced of the date(s) of installation that they become technologically obsolete or replaced with newer technologies or with newer models and version. The contractor shall coordinate with Fort Bend IT to ensure that all hardware and software within this specification still meets Fort Bend requirements, before procurement.

B. Installer Requirements:

1. Network equipment installer must be a certified professional meeting all requirements for the equipment manufacturer's reseller and warranty programs. Proof of such certifications must be provided with bid response.
2. The Contractor must provide documentation as part of their bid response to indicate that they have a minimum of 10 years project experience within the last five years in Commercial Airports.

C. Supplier Requirements:

1. The Contractor providing the Wi-Fi equipment shall assign a project manager that directly reports to the Fort Bend Construction Manager to support the specific coordination requirements associated with the installation of the Wi-Fi equipment.

D. Required Certifications:

1. Cisco Certified Network Professional Enterprise (CCNP) – WLAN Concentration.

E. Installer Qualifications:

1. Qualifications: network equipment installer must be a Cisco certified professional meeting all requirements for the equipment manufacturer's reseller and warranty programs.
2. The Contractor providing the Wi-Fi equipment shall assign a project manager that directly reports to the Fort Bend Construction Manager to support the specific coordination requirements associated with the installation of the Wi-Fi equipment.

F. Service Facility:

1. The contractor shall have service facilities within one hundred (100) miles of Fort Bend project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Access points and related equipment must be tested by the Contractor upon receipt at Project site

1. Verify that equipment received from the manufacturer is not Dead-on Arrival (DoA) and the parts match what was ordered.
2. Fort Bend Representatives must be afforded the option to witness successful testing prior to system acceptance.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install access points and connecting materials in wet conditions. The access points and connecting materials must be installed in an ambient temperature with humidity conditions at occupancy levels during the remainder of the construction period.

B. Proposal Evaluation: Access Point (AP) locations and positions are preliminary. The design is subject to active and passive (pre-implementation and post-implementation) survey results. The Fort Bend coverage and bandwidth requirements, the locations and positions of the APs are subject to change.

1.9 COORDINATION

A. Coordinate layout, installation of telecommunications pathways, and installation of cabling with all other trades. Coordinate with Fort Bend's Wi-Fi equipment suppliers and service providers as applicable.

PART 2 - PRODUCTS

2.1 GENERAL DESCRIPTION

A. The Contractor shall provide all equipment, materials, labor, design, and coordination services necessary to complete all parts of the Wireless Local Area Network Equipment. The Contractor shall also ensure that they comply with requirements stated or reasonably inferred by this Specification. Wherever herein the term provides or provided is used it shall be defined as procure, install and program as required for a fully functional and correctly operational System. All equipment under this Section shall be provided, maintained, and operated during the construction and implementation period, tested, and commissioned by the Contractor.

B. The Contractor shall perform all required coordination with the Fort Bend

Representative and stakeholders to finalize all functional, operational, and performance requirements of the Wi-Fi design.

C. Approved Manufacturers

1. Wireless Access Points: Cisco Systems

D. This specification requires sole sourced parts and smarts furnished by approved manufacturers, no exceptions. Materials and labor sourced from alternate manufacturers will be unacceptable.

E. Contractors performing the wireless implementation must coordinate with the designated Fort Bend IT Representative to verify utilized equipment is on the latest approved Fort Bend WLAN equipment list.

F. Any substitution from the approved WLAN equipment list must receive Fort Bend IT Infrastructure Division's approval. Approval of alternate equipment or material shall in no way void other Specification requirements set forth in this document.

G. Under no circumstances shall Fort Bend be required to prove that an item proposed for substitution is not equivalent to the specified item. It shall be mandatory the Contractor submits to Fort Bend all evidence to support the assertion the item proposed for substitution, is equal to the specified item. Fort Bend decision, as to the equality of substitution, shall be final and without further recourse.

H. WLAN Design Summary:

1. All indoor Wireless Access Points (WAPs) must support 2.4, 5, and 6 GHz, be IEEE 802.1X compliant, support Bluetooth 5 (BLE5), and provide internal omnidirectional antennas **with the option for DART connected external antenna.**
2. All Wireless Access Points (WAPs) must at least support Wi-Fi 6 (802.11ax). Each Wireless Access Points (WAPs) will require structured cabling (at least four (4) data drops per AP) from a dedicated telecommunication room or network equipment enclosure. Two (2) of the four (4) data drops must be active. Additionally, the two (2) active data drops must provide multigigabit uplink connections (up to 5 Gbps per uplink) to each access layer switch.
3. The new Wireless Access Points shall utilize existing Wireless Controller Systems.
4. All Wireless covered area shall be enhanced by wireless monitoring solution.
5. The Wireless monitoring solution shall passively monitor radio channels and ensure the quality of the signal meets Fort Bend IT standards.
6. An Ekahau Predictive RTLS (Real Time Location Tracking) survey must be performed, and design approved by AIS. All Ekahau raw data to be provided to AIS for quality review and proper formatting.

I. RESILIENCY:

1. Access Points should ensure proper "airtime" allocation, ensuring bandwidth availability for all.
2. No single group of mobile devices should be able to monopolize network resources.
3. Access Points should consider the mobile device behavior in high-density environments.

J. AUTHENTICATION AND ACCESS CONTROL:

1. User authentication via IEEE 802.1x.
2. Wi-Fi- Protected Access (WPA2 and WPA3) key management.
3. Extensible Authentication Protocol (EAP-TLS).
4. MAC Address Authentication to the Network.

2.2 GENERAL REQUIREMENTS

A. This section includes the minimum requirements for Wi-Fi deployment to ensure seamless coverage.

B. Wireless coverage should provide enough overlap to ensure seamless roaming with Fort Bend evice requirements.

C. The Fort Bend Wireless Local Area Network be designed to support Real Time Location System (RTLS) services.

D. Each Wireless Access Points (WAPs) must support Orthogonal Frequency-Division Multiple Access (OFDMA) and Multiuser Multiple Input, Multiple Output (MU-MIMO).

E. All wireless access points (WAP) need to be appropriately licensed with Cisco DNA Center software.

F. The equipment in this specification shall be installed inside the Fort Bend to include any necessary secured areas. Therefore, the wireless integrator should anticipate some installation processes may require security screening or security escorts.

G. The Contractor shall be responsible for the supply, installation, and initial testing of the Wi-Fi equipment of Fort Bend. All functional requirements provided in this document must be met or exceeded.

H. The scope of work for this project includes all materials, equipment, hardware, software, installation labor, and testing of Wi-Fi equipment for use. It is the responsibility of the Contractor to coordinate with the Fort Bend Construction Manager, Fort Bend Representative, and other contractors performing work associated with this project to ensure all networking requirements are met by Cisco Installation specifications.

I. The Contractor shall be responsible for providing the following installation items as they relate to the Wi-Fi implementation:

1. The coordination with the Fort Bend Construction Manager, Fort Bend Representative, and the cabling infrastructure installation contractor to review, assess, and perform all necessary coordination with the cabling infrastructure.
2. All structured cabling and copper patch cords between all networking devices that are described herein and are required for a complete, fully functional system.
3. All structured cabling provided by Contractor shall be in conformance with BICSI and ANSI/TIA/EIA standards and approved by the Fort Bend Construction Manager or Fort Bend Representative.
4. The coordination of drawings or other reference materials with the Fort Bend Construction Manager or Fort Bend Representative.
5. The labeling of all newly installed Wi-Fi components shall be coordinated with the Fort Bend representative and approved prior to installation.
6. The coordination of electrical requirements for the Wi-Fi equipment with the Fort Bend Construction Manager, including specific plug configurations to support the network switches providing PoE support for the Wi-Fi equipment.

J. The Contractor shall verify system operability and proper installation via completion of all required test plans.

K. Real Time Location Service Design Requirements:

1. For mobile devices to be tracked appropriately, a minimum of three wireless access points must be detecting and reporting on the received signal strength indicator (RSSI) of any device.
2. Design and testing shall be based on 802.11a (5.0ghz) and 802.11ax (6ghz).
3. Signal strength in these areas should be at least -62 dBm, and 25 Signal-to-Noise Ratio (SNR) on any Primary Access Point and -75 on Secondary and Tertiary Access Point Signal Strength's. (reference: Ekahau Coverage Requirements – Location Tracking (RTLS)).

2.3 INDOOR OMNIDIRECTIONAL WIRELESS ACCESS POINTS

A. The wireless network equipment shall be located throughout the Fort Bend campus. The following list of software and hardware represent the current Basis of Design reference model:

1. C9136I-B
2. AIR-AP-T-RAIL-R
3. AIR-AP-BRACKET-1

B. All equipment licensing shall be procured and assigned to the designated Fort Bend IT Representative. License duration and requirements are as follows:

1. AIR-DNA-A-5Y
2. AIR-DNA-NWSTACK-A
3. D-DNAS-ACT-UPG-5Y
4. SPACES-EXT-5Y
5. SW9136-CAPWAP-K9

6. NETWORK-PNP-LIC

2.4 IDENTIFICATION PRODUCTS

A. Comply with TIA-606-B and UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall install all system components including equipment and accessories. Installations must be in accordance with the manufacturer's instructions, NFPA 70, and ANSI-C2. The Contractor shall furnish all cables, connectors, terminators, interconnections, services, and adjustments required for a complete and operable system.

B. Grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.

C. The Contractor's Quality Assurance Inspector shall conduct a visual inspection of all installations to verify that the installations are in accordance with the Fort Bend's and manufacturer's specifications. Records of the inspections signed and dated by the Quality Assurance Inspector shall be provided to the Fort Bend Representative. The Fort Bend Representative shall be notified by the Contractor of any inspection(s) and the Fort Bend Representative may elect to participate in any inspection(s).

D. The Contractor shall conduct predictive and post-deployment site surveys to ensure proper implementation for coverage and traffic requirements are met as well as avoiding any other network problems.

E. The Contractor shall utilize Cisco's best practices during channel planning.

1. APs should be deployed in a manner where wireless clients experience minimal packet loss by choosing APs with the strongest signal when roaming.

F. APs must be deployed with overlapping coverage cells. Coverage should be adjusted using Cisco's configuration guidelines.

3.2 HARDWARE INSTALLATION

A. Design plans for hardware selection, installation location, and installation details shall be provided to the Fort Bend Representative for approval and the Installation of hardware shall be in accordance with the manufacturer's installation instructions, if the conflicts do not affect the functionality or performance of the solution, does not affect security, and the integrity of the network. The Fort Bend representative will have the

deciding vote.

B. Installation of hardware shall be coordinated with the Fort Bend Representative.

C. The Contractor shall install and inspect all hardware required to fully meet the functional, operational, and performance requirements of this section.

3.3 QUALITY CONTROL

3.4 Phases of Testing

A. On-Site Performance Verification Testing

B. On-Site Endurance Testing

3.5 Test Plan/Procedure

A. The Contractor shall submit a Test Plan for each testing phase for the review and approval of the Fort Bend IT Team. The test plan for each phase shall detail the objectives of all tests. The tests shall clearly demonstrate the system and its components fully comply with the requirements specified herein. The test plan shall be provided at least fifteen (15) days prior to the scheduled start of each test. Test plans shall contain at a minimum:

1. Functional procedures including use of any test equipment.
2. Test equipment is to be identified by manufacturer and model. The Contractor shall provide current calibration certificates for all test equipment as well as technician training certificates.
3. Interconnection of test equipment and steps of operation shall be defined.
4. Expected results required to comply with specifications.
5. Record of test results with witness initials or signature and date performed.
6. Pass or fail evaluation with comments.
7. The test procedures shall provide conformity to all specification requirements. Satisfactory completion of the test procedure is necessary as a condition of system acceptance.
8. Documentation verification, both interconnects and functionality shall be part of the test. Where documentation is not in accordance with the installed system interconnect and operating procedures, the system shall not be considered accepted until the system and documentation correlate.
9. The Contractor shall cooperate with and provide Fort Bend representative(s) the opportunity(s) to witness any or all the tests.
10. Test Reports: The Contractor shall submit for each test, a test report document to certify the successful completion of each test. Submit for review and acceptance within seven (7) days following each test. The test report shall contain, at a minimum:

    a. Summary and commentary on test results.

b. A listing and discussion of all discrepancies between expected and actual results and of all failures encountered during the test and their resolution.
c. Complete copy of test procedures and test data sheets with annotations showing dates, times, initials, and any other annotations entered during execution of the test.
d. Signatures of persons who performed and witnessed the test.
e. Test Resolution: Any discrepancies or problems discovered during these tests shall be corrected by the Contractor at no cost to the Owner. The problems identified in each phase shall be corrected and the percentage of the entire system retested determined by the Design Consultant/ Fort Bend, before any subsequent testing phase is performed.

3.6 PERFORMANCE VERIFICATION TESTING:

A. Wireless Access Point (WAP) Testing **(1 thru 4) with the following:**

1. Verify Ethernet Link light of the AP when the other end of the cable is connected to a network switch.
2. Verify the AP had successfully joined a Wi-Fi controller by examining the solid ring light on the front cover of the AP.
3. Verify the radio frequency coverage with Ekahau WLAN modeling and survey solution performed through a “Active Survey” on 5.0/6.0 GHz primary with 2.4 GHz secondary.
4. Provide WLAN Spectrum Analysis report.
5. Provide Ekahau raw data to AIS for detailed review.

B. Complete operational testing of all components and systems shall be witnessed by designated Fort Bend Representatives

C. Schedule test with Fort Bend. Do not begin testing until:

1. All systems have been installed and individually and jointly tested to ensure they are operating properly.
2. Written permission from Fort Bend has been received.

D. Testing: As part of performance verification, test all components of system. The tests shall demonstrate system features.

E. Verification: Verify correct operation of the required system functionality as defined in these specifications.

F. Adjustment, Correction, and Completion:

1. Correct deficiencies and retest affected components.
2. Make necessary adjustments and modification to system after obtaining approval of Fort Bend.
3. Completion: Performance verification test shall be complete when testing or retesting of each component has produced a positive result and has been approved in writing by Fort Bend.

G. Recording:

1. Describe actual operational tests performed and equipment used and list personnel performing tests.
2. Record in tabular form all test results, deficiencies, and corrective measures.

H. Termination

I. Performance verification test shall be terminated by Fort Bend when:

1. Individual components, subsystems, or the integrated system fail to perform as specified.
2. It is determined that system is missing components or installation is not complete.
3. Upon termination, corrective work shall be performed, and performance verification test rescheduled with Fort Bend.
4. Retesting shall be performed by Contractor at no additional expense.
5. Contractor shall continue to perform corrective actions and retest until system passes all tests to satisfaction of Fort Bend.

3.7 Endurance Testing

A. The Contractor shall provide personnel to monitor the systems 24 hours per day, including weekends and holidays during endurance testing .

B. Start test after:

1. Successful completion of performance verification testing
2. Training as specified has been completed.
3. Correction of deficiencies has been completed.
4. Receipt of written start notification from Fort Bend

C. Monitor all systems during endurance testing. Coordinate monitoring with Fort Bend

D. Recording: Record data on approved forms to provide a continuous log of systems performance. Include:

1. Date and time for all entries
2. Name of individual making entry
3. Environmental conditions
4. Authority activities in process
5. Description of all alarm annunciations, responses, corrective actions, and causes of alarms. Classify as to type of alarm.
6. Description of all equipment failures, including software errors
7. Description of all maintenance and adjustment operations performed on system.
8. Daily and weekly tabulations
9. Daily entries of performance data shall be reviewed by Fort Bend’s representative designated to observe monitoring of system.

E. Fort Bend may terminate testing at any time when the system fails to perform as specified. Upon termination of testing the Contractor shall commence an assessment period as described in Phase II

F. Testing a. Phase I - Initial Testing:

1. Time: 24 hours per day for 15 consecutive calendar days
2. Make no repairs during this phase unless authorized in writing by Fort Bend.
3. If system experiences no failures, proceed to Phase III - Final Testing

G. Phase II - Initial Assessment:

1. After conclusion of Phase I or terminating of testing, identify all failures, determine causes, and repair. Submit report explaining: Nature of each failure, corrective action taken, results of tests performed to verify corrective action as being successful, and recommended point for resumption of testing.
2. After submission of report, schedule review meeting at job site. Schedule date and time with Fort Bend.
3. At review meeting, demonstrate all failures have been corrected by performing verification tests.
4. Based on report and review meeting, Fort Bend will direct the Contractor to repeat Phase I, restart Phase I, or proceed to Phase III - Final Testing .

H. Phase III - Final Testing:

1. Time: 24 hours per day for 15 consecutive calendar days.
2. Make no repairs during this phase unless authorized in writing by Fort Bend.

I. Phase IV - Final Assessment:

1. After conclusion of Phase III or termination of testing, identify all failures, determine causes and repair. Submit explaining the nature of each failure, corrective action taken, results of tests performed, and recommended point for resumption of testing.
2. After submission of report schedule review meeting at job site. Schedule a date and time with Fort Bend for a review meeting.
3. At the review meeting, demonstrate that all failures have been corrected by performing verification tests.
4. Based on report and review meeting, Fort Bend will approve endurance test or direct the Contractor to repeat all or part of Phases III and IV.

J. Adjustment, Correction, and Maintenance:

1. During endurance testing adjust and corrections to system only after obtaining written approval of Fort Bend.
2. During endurance testing, perform required maintenance on systems including provision of replacement parts.

3.8 Commissioning Testing

A. The Contractor shall develop a commissioning test plan that includes the following components, as a minimum:

1. Fort Bend operational readiness
2. Operational procedures verification
3. Disaster recovery procedures
4. Change management procedures

B. The commissioning test plan/procedures shall be submitted to Fort Bend for review and approval.

3.9 Final Inspection and Acceptance

A. After endurance testing is complete, review records with Fort Bend.

B. The Contractor will not be responsible for failures caused by:

1. Outage of main power in excess of backup power capability provided that automatic initiation of all backup sources was accomplished, and automatic shutdowns and restarts of systems performed as specified.
2. Failure of any Fort Bend furnished power, communications, and control circuits provided failure was not due to the Contractor furnished equipment, installation, or software.
3. Failure of existing Fort Bend equipment provided failure was not due to the Contractor furnished equipment, installation, or software.

C. When performance of integrated system does not fall within the above limits, determine cause of deficiencies, correct, and retest.

D. When requested by Fort Bend, extend monitoring period for a time as designated by Fort Bend.

E. Period shall not exceed 60 days exclusive of retesting periods caused by termination of Phases I or III and assessment period of Phases II and IV.

F. Submit final report of endurance testing containing all recorded data.

3.10 STARTUP

A. The Contractor shall not apply power to the system until after:

1. System and components have been installed and inspected in accordance with the manufacturer's installation instructions.
2. A visual inspection of the system components has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.

3. System wiring has been tested and verified as correctly connected as indicated.
4. All system grounding and transient protection systems have been verified as properly installed and connected, as indicated.
5. Satisfaction of the above requirements shall not relieve the Contractor of responsibility for incorrect installations, defective equipment items, or collateral damage because of Contractor work/equipment.

3.11 IDENTIFICATION

A. Labels shall be preprinted or computer-printed type, with a printing area and font color that contrast with equipment exterior color but still comply with TIA-606-B requirements.

END OF SECTION

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SECTION 27 33 53

RACK MOUNT UNINTERRUPTIBLE POWER SUPPLY

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

C. Refer to “Uninterruptible Power Supply (UPS) Schedule” on the contract drawings for UPS requirements and additional information.

1.2 SUMMARY

A. Section Includes:

1. Single-phase UPS units with the following features:

    a. Surge suppression.
    b. Inverter.
    c. Rectifier and charger.
    d. Controls and indications.
    e. Static bypass transfer switch.
    f. Output distribution.
    g. Remote monitoring provisions.
    h. Battery and battery disconnect device.
    i. Battery monitoring.

2. Maintenance Bypass and Output Distribution Units

    a. Allows removal of the UPS without powering down the connected equipment.

1.3 DEFINITIONS

A. UPS: Uninterruptible power supply.

1.4 SUBMITTALS

A. Product Data: For each type of UPS.

1. Include construction details, material descriptions, dimensions of individual components and profiles for UPS.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Warranties:

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For UPS units to include in emergency, operation, and maintenance manuals.

1.6 WARRANTY

A. Contractor Warranty Period: Contractor shall warranty all equipment, materials, workmanship, and installation for a period of one (1) year from date of UPS start-up.

B. Manufacturer Warranty Period: Five years from date of UPS start-up.

C. Manufacturer Warranty Services:

1. On-site service support.
2. 100% parts coverage, including internal batteries, POD and web card.
3. 100% labor and travel coverage 7 days/week, 24 hours/day.
4. 24-Hour Customer Resolution Center via 1-800-LIEBERT
5. Access to Customer Services Network portal.

PART 2 - PRODUCTS

2.1 OPERATIONAL REQUIREMENTS

A. Automatic operation includes the following:

1. Normal Conditions: Load is supplied with power flowing from the normal power input terminals, through the rectifier-charger and inverter, maintaining a full battery charge while AC line voltage is present.
2. Abnormal Supply Conditions: If normal supply deviates from specified and adjustable voltage, voltage waveform, or frequency limits, the battery supplies energy to maintain constant, regulated inverter power output to the load without switching or disturbance.

3. Power Failure: If normal power fails, energy supplied by the battery through the inverter continues supply-regulated power to the load without switching or disturbance.
4. When power is restored at the normal supply terminals of the system, controls shall automatically synchronize the inverter with the external source before transferring the load. Power will be supplied to the load through the inverter and simultaneously recharge the battery.
5. If the battery becomes discharged and normal supply is available, the rectifier-charger shall charge the battery. The rectifier-charger shall automatically shift to float-charge mode on reaching full charge.
6. If any element of the UPS system fails and power is available at the normal supply terminals of the system, the static bypass transfer switch shall switch the load to the normal ac supply circuit without disturbance or interruption.

2.2 PERFORMANCE REQUIREMENTS

A. UL Compliance: Listed and labeled by an NRTL to comply with UL 1778.

B. NFPA Compliance: UPS components shall be listed and labeled by an NRTL as suitable for installation in computer rooms according to NFPA 75.

C. Minimum Duration of Supply: If battery is sole energy source supplying rated full-load UPS current at 80 percent power factor, duration of supply is five minutes minimum.

D. Input Voltage: Refer to “Uninterruptible Power Supply (UPS) Schedule” on the contract drawings for required input voltage.

E. Output Voltage: Refer to “Uninterruptible Power Supply (UPS) Schedule” on the contract drawings for required output voltage.

2.3 UPS SYSTEMS

A. Description: Self-contained, battery backup device and accessories that provides single-phase electrical power in the event of failure or sag in the normal power system.

B. Refer to “Uninterruptible Power Supply (UPS) Schedule” on the contract drawings for UPS manufactures and capacities.

C. Electronic Equipment: Solid-state devices using hermetically sealed, semiconductor elements. Devices include rectifier-charger, inverter, static bypass transfer switch, and system controls.

D. Enclosures: Comply with NEMA 250, Type 1, unless otherwise indicated.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

F. UPS Cabinet Ventilation: Integral to unit.

2.4 SURGE SUPPRESSION

A. Protect internal UPS components from surges that enter at each ac power input connection. Protect rectifier-charger, inverter, controls, and output components.

1. Use factory-installed surge suppressors tested according to IEEE C62.41.1 and IEEE C62.41.2.

2.5 CONTROLS AND INDICATIONS

A. Description: Group displays, indications, and basic system controls on a common control panel on front of UPS enclosure.

2.6 STATIC BYPASS TRANSFER SWITCH

A. Description: Integral switching device providing uninterrupted transfer to automatically provide electrical isolation for the UPS.

B. Switch Rating: Continuous duty at the rated full-load UPS current, minimum.

2.7 REMOTE MONITORING

A. Description: Communication module in unit provides capability for remote monitoring of status, parameters, and alarms. The remote computer and the connecting signal wiring are not included in this Section. Include the following features:

1. Connectors and integral network interface units for data transmission via Ethernet link.
2. Software designed for control and monitoring of UPS functions.

2.8 BATTERY

A. Description: Maintenance-free sealed lead-acid battery, factory assembled in a leakproof compartment.

2.9 MAINTENANCE BYPASS AND OUTPUT DISTRIBUTION UNIT

A. Description: Allows removal of the UPS without powering down the connected equipment.

B. Mounts to rear of UPS.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for conditions affecting performance of the UPS.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with NECA 1.

B. Equipment Mounting: Mount as indicated on the “Uninterruptible Power Supply (UPS) Schedule” on the contract document drawings.

C. Maintain minimum clearances and workspace at equipment according to manufacturer's written instructions and NFPA 70.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections per the manufacturer’s installation and start-up instructions.

B. Install UPS monitoring software on owner’s computer and perform test to confirm UPS communication link and software is fully functional.

END OF SECTION

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SECTION 27 40 10

DIGITAL DISPLAYS

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

1.2 SUMMARY

A. Section Includes:

1. LCD Displays
2. Display Mounts

B. Contractor: The Contractor shall perform the following services and provide the following equipment and documentation:

1. Digital displays and other equipment as specified.
2. Installation and setup of the digital displays.
3. System Warranty as specified.
4. Provide all project documentation and Submittals.
5. Comply with all codes, ordinances, regulations, and other legal requirements of public authorities that bear on performance and execution of the work.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For displays to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of equipment required for this Project.

1.6 WARRANTY

A. Period: The Contractor shall warranty all labor, workmanship, and materials for a period of one (1) year from the date of substantial completion acceptance as authorized by the Owner. Should a failure occur within this warranty period, the Contractor shall provide all labor and materials necessary to restore the system to the condition required for the final test and acceptance for this contract, at no cost to the Owner.

B. Should a Manufacturer's standard product warranty exceed one (1) year, the Manufacturer's warranty will take precedence over the Contractor's warranty and still be honored by the Contractor.

C. All product warranties shall list DOA as the Owner upon Final Acceptance of the project.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Unless noted otherwise, the stated requirements shall apply to all displays.

B. The system shall include equipment and appurtenances necessary for a fully functional system.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

B. LCD Displays:

1. LG
2. Samsung
3. Planar
4. Engineer Approved Equal

C. Display Mounts:

1. Peerless
2. Chief Manufacturing, Inc.
3. Engineer Approved Equal

2.3 HARDWARE REQUIREMENTS

A. All hardware requirements given are the minimum requirements. The Contractors product shall meet or exceed these requirements. Additionally, the hardware selected shall meet the operational, functional, and performance requirements specified herein.

B. Conference rooms displays will be controlled by a video conferencing equipment mounted behind each display.

1. Displays shall be furnished and installed by contractor.
2. Display mounts shall be furnished and installed by contractor.
3. DDCs shall be furnished by and installed by contractor.
4. CAT 6 and HDMI cables shall be furnished and installed by contractor.

C. Signage Display will be controlled by a display device controller (DDC) mounted behind each display.

1. Displays shall be furnished and installed by contractor.
2. Display mounts shall be furnished and installed by contractor.
3. DDCs shall be furnished by and installed by contractor.
4. CAT 6 and HDMI cables shall be furnished and installed by contractor.

D. Fitness displays will be controlled by local naïve controls at display.

1. Displays shall be furnished and installed by contractor.
2. Display mounts shall be furnished and installed by contractor.
3. CAT 6 and HDMI cables shall be furnished and installed by contractor.

E. Display Devices:

1. Refer to drawings for display size

    a. Refer to plans for display locations and quantities.
    b. Refer to Digital Display Schedule on drawings for orientation, display information and data source.
    c. Monitors shall have an aspect ratio of 16:9.
    d. Display format resolution shall be at least 3840 x 2160 non-interlaced at minimum 120 Hz vertical scan.
    e. Viewing angle in the horizontal and vertical plane with respect to the monitor baseline shall be no less than 178 degrees.
    f. Internal memory: 8GB
    g. Brightness: capable of at least 500 nit
    h. Refresh Rate: No more than 8 ms
    i. Monitor and controller shall be capable of displaying at least 65,000 colors simultaneously from a palette of at least 16.7 million colors.
    j. Regulatory: UL 1950, FCC CFR 47 Class A
    k. Power: 115 VAC, 60 Hz auto switching.
    l. Power Consumption: No greater than 145W in full power consumption mode
    m. Remote Operation: Provide addressable infrared remote control for tuning of adjustable parameters.
    n. External Interfaces: Power in shall be standard IEC socket with separate main on/off switch.
    o. Network connection: Ethernet 10/100 Base RJ-45

p. Video connections shall include:

(1) DVI-D
(1) Display Port
(3) HDMI ports

q. Backlight: LED
r. Reliability: The backlight lifetime (to ½ brightness) shall be rated at no less than 50,000 hours.
s. Mounting: VESA patterns, 300 x 300
t. Provide with optional VESA Adapter if required to match display mount
u. Bezel: no more than 18 mm
v. Rated for 24/7/365 continuous operation

2. Display Mounts

a. Refer to digital display mounting details on the contract drawings for required display mounts.

PART 3 - EXECUTION

3.1 HARDWARE INSTALLATION

A. The Contractor shall install and inspect all hardware required in this Specification in accordance with the manufacturer's installation instructions.

B. The Contractor shall provide all tools and test equipment required to install, verify, and test the installation and to determine that it meets the specifications. The Contractor shall furnish all necessary materials required to implement and to achieve the required work performance.

3.2 SYSTEM STARTUP

A. The Contractor shall not apply power to the displays until after:

1. Displays and components have been installed and inspected in accordance with the manufacturer's installation instructions.
2. A visual inspection of the components has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.
3. System wiring has been tested and verified as correctly connected.
4. All system grounding and transient protection systems have been verified as properly installed and connected.
5. Power supplies to be connected to the system and equipment have been verified as the correct voltage, phasing, and frequency as indicated.

B. Satisfaction of the above requirements shall not relieve the Contractor of responsibility for incorrect installations, defective equipment items, or collateral damage as a result of Contractor work/equipment.

3.3 GENERAL TESTING REQUIREMENTS

A. Phases of Testing:

1. Display Performance Verification Testing
2. 168 Hour Continuous On-Site Endurance Testing

B. Project Testing: Each display shall not be considered complete until Display Performance Verification and On-Site Endurance Testing are completed. In general, these tests shall verify:

1. Proper function and information display.
2. System is performing within defined parameters.
3. On-Site Endurance Testing

C. The test procedures shall provide conformity to display manufacturer's Specification requirements. Satisfactory completion of the test procedure is necessary as a condition of system acceptance.

D. The Contractor's Quality Assurance organization shall review all formal test procedures prepared by the Contractor and deliverable under the contract to assure the tests cover all requirements and that there is conformity between the conducted test, the test results and Specification requirements.

E. The Contractor shall provide Owner's representative the opportunity(s) to participate in any or all tests.

F. Test Reports: The Contractor shall prepare, for each test, a test report document that shall certify successful completion of that test. Six (6) copies of the test report shall be submitted for review and acceptance within seven (7) days following each test. The test report shall contain, at a minimum:

1. Commentary on test results.
2. A listing and discussion of all discrepancies between expected and actual results and of all failures encountered during the test and their resolution.
3. Complete copy of test procedures and test data sheets with annotations showing dates, times, initials, and any other annotations entered during execution of the test.
4. Signatures of persons who performed and witnessed the test.

G. Test Resolution: Any discrepancies or problems discovered during these tests shall be corrected by the Contractor at no cost to Owner.

H. Test: The purpose is to test the equipment installed under this project and demonstrate that all specified features and performance criteria are met. All requirements of the Specification shall be tested including:

1. Display response time.
2. Hardware interaction.
3. Hardware and software interaction.
4. Display performance

I. Acceptance: Acceptance of system to perform sufficiently and provide specified functions shall be determined by Owner's representative.

1. Acceptance Criteria: Performance of system shall equal or exceed criteria stated in individual Specification sections.
2. If system does not perform satisfactorily, the Contractor shall make corrections and modifications and schedule a new test.

J. Reporting:

1. Record all test procedures and results.
2. Submit report in accordance with reporting requirements in the previous General Testing Requirements section.

END OF SECTION

Issuance Record:
Package 1 | Package 2 | Package 3

SECTION 27 41 10
AUDIO VISUAL SYSTEMS

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.

B. Provide work specified but not shown on Drawings, and work shown on Drawings but not specified, as though expressly required by both.

C. Related Sections

1. 27 1513 – Communications Copper Horizontal Cabling

2. 28 3111 – Addressable Fire Alarm

1.2 SUMMARY

A. Section Includes:

1. Network Amplifiers

2. Digital Sound Processors

3. Speakers and Cabling

1.3 DEFINITIONS

A. Channels: Separate parallel signal paths, from sources to speakers or speaker zones, with separate amplification and switching that permit selection between paths for speaker alternative program signals.

B. Zone: Separate group of loudspeakers and associated supply wiring that may be arranged for selective switching between different channels.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Wiring Diagrams: For power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Test and inspection reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For public address systems to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of equipment required for this Project.

1. PAS Contractor shall install all required equipment for a complete, turnkey, standalone PA system as indicated on the drawings. Hardware, speaker configuration, zoning and devices placements shall be as indicated in the documents. The system shall be tested and commissioned as a complete system using a simplified software configuration for testing and commissioning as defined in these documents. The testing plan shall be provided to the project team for approval 30 days prior to commissioning. It is understood that once commissioned as fully functional the contractor shall provide all files including any uncompiled code to the Owner and General Contractor. General Contractor will provide these files and documents to the ATL Public Address System O&M provider responsible for campus wide integration of PA and Control systems. ATL Public Address System O&M provider will be responsible for final programming of operable system. PAS Contractor is not relieved of any responsibility to support the hardware as installed. PAS Contractor shall work in good faith to support the ongoing operations of the system as related to their initial work and installation.

1.8 WARRANTY

A. Period: The Contractor shall warranty all labor, workmanship, and materials for a period of one (1) year from the date of substantial completion acceptance as authorized by the Owner. Should a failure occur within this warranty period, the Contractor shall provide all labor and materials necessary to restore the system to the condition required for the final test and acceptance for this contract, at no cost to the Owner.

B. Should a Manufacturer's standard product warranty exceed one (1) year, the Manufacturer's warranty will take precedence over the Contractor's warranty and still be honored by the Contractor.

C. All product warranties shall list DOA as the Owner upon Final Acceptance of the project.

PART 2 - PRODUCTS

2.1 SCOPE OF WORK

A. The scope includes purchase and installation of new audio visual system

B. The scope includes muting of public address system during a fire alarm condition.

2.2 AV EQUIPMENT

A. Audio Equipment:

1. AMP-A
   Basis of Design: Bose - P4300A
   Equal as Approved

   a. 4-ch Audio Amplifier,Frequency Input Connectors: Euroblock (balanced)
   b. Output Connectors: 4-position Euroblock connector for each channel
   c. Cooling: variable speed fanl
   d. Protection Circuitry: Includes short circuit, overload, and thermal protection
   e. Mounting: 1RU
   f. Power Requirements: 100-240V AC, 50-60 Hz.

2. AMP-B
   Basis of Design: Bose-PSX4804
   Equal as Approved

   a. 4-ch Audio Amplifier, Class D, 4800W
   b. Network Audio: Supports AES67 for digital audio transport
   c. Input Connectors: 3-pin Euroblock (balanced)
   d. Output Connectors: 2-position Euroblock
   e. Cooling: Variable-speed fan cooling with front-to-back airflow
   f. Protection Circuitry: Includes short circuit, overload, DC, and thermal protection
   g. Mounting: Standard 1RU rack-mountable
   h. Power Requirements: 100-240V AC, 50-60 Hz with universal power supply

3. DSP-A
   Basis of Design: Bose – ex-1280

Equal as Approved

a. Digital Signal Processor, integrated audio, video, and control (AV&C) processing system
b. Processing Capability:
   1) Integrated audio, video, and control (AV&C) processing via the Q-SYS platform.
   2) Supports up to 128 x 128 channels of networked digital audio over Q-LAN and AES67.
   3) 16 channels of Acoustic Echo Cancellation (AEC) with advanced processing for conferencing applications.
   4) Flexible DSP processing for mixing, equalization, dynamics, and more, configurable via Q-SYS Designer software.
c. Networking and Connectivity:
   1) Dual Gigabit Ethernet ports for AES67 audio streaming.
   2) USB ports for audio transport and control.
d. Physical Specifications:
   1) Form Factor: 1RU rack-mountable chassis for efficient installation.
   2) Cooling: Varible flow Fan.
e. Power Requirements:
   1) 100-240V AC, 50-60 Hz with automatic power factor correction.

2.3 SPEAKERS

A. Speaker Type 1 (S-TYPE 1) – Bose - DM6PE

1. 4 inch pendant-mounted loudspeaker
2. 90° conical coverage
3. 80W transformer with 70V tap selector switch
4. Sensitivity: 89dB @1W/1m
5. Dimensions: 12.1” Diameter x 14.8” Height
6. Metal enclosure (attached)
7. Magnetically attached grille
8. Hanging/Mounting Hardware, Designer Sleeve
9. UL2043 – Return air plenum space

B. Speaker Type 2 (S-TYPE 2) – Bose – FS4CE

1. 4.5 inch two-way ceiling-mounted loudspeaker
2. 145° conical coverage

3. 50W transformer with 70V tap selector switch
4. Sensitivity: 88dB @1W/1m
5. Dimensions: 10.7” Diameter x 6.8” Height
6. Metal enclosure (attached)
7. Magnetically attached grille
8. C-ring with support rails
9. UL2043 – Return air plenum space

C. Speaker Type 4 (S-TYPE 4) – Bose – DM3C

1. 3.5 inch two-way high-ceiling loudspeaker
2. 135° conical coverage
3. 30W transformer with 70V tap selector switch
4. Sensitivity: 83dB @1W/1m
5. Dimensions: 10” Diameter x 6” Height
6. Metal enclosure (attached)
7. Magnetically attached grille
8. C-ring with support rails
9. UL2043 – Return air plenum space
10. IP-65 Outdoor Rated

D. Speaker Type 5 (S-TYPE 5) – Bose – DM5C

1. 5.25 inch two-way high-ceiling loudspeaker
2. 130° conical coverage
3. 60W transformer with 70V tap selector switch
4. Sensitivity: 87dB @1W/1m
5. Dimensions: 9.6” Diameter x 7.6” Height
6. UL2043 – Return air plenum space

7. IP-65 Outdoor Rated

E. Speaker Type 6 (S-TYPE 6) – Bose – MSA12X

1. Powered beam steering array loudspeaker
2. 160° Horizontal Dispersion
3. 36 x 50W amplifier channel
4. Sensitivity: 95dB @1W/1m
5. Dimensions: 38.7 inch tall by 4.2 inch wide by 8.3 inch depth
6. UL2043 – Return air plenum space

F. Speaker Type 7 (S-TYPE 7) – Bose – AMS115

1. Multipurpose subwoofer
2. Omnidirectional
3. 500W Power handling
4. Sensitivity: 90dB @1W/1m
5. Dimensions: 18.5 inch tall by 18.5 inch wide by 20.0 inch depth

G. Speaker Type 8 (S-TYPE 8) – Bose – AMU108

1. 5.25 inch two-way high-ceiling loudspeaker
2. 90° by 60° coverage
3. 80W transformer with 70V tap selector switch
4. Sensitivity: 93dB @1W/1m
5. Dimensions: 9.3 by 18.5 by 11.0 inches
6. IP-65 Outdoor Rated

2.4 CABLES

A. IP Cable: (1) Category 6A EIA/TIA compliant cable.

B. Speaker Cable: Minimum 2 conductor, 12 AWG, tinned copper, plenum rated jacket.

2.5 PATHWAYS

A. Conduit and Boxes: Comply with Section 270528 "Pathways for Communications Systems."

1. Outlet boxes shall be not less than 2 inches (50 mm) wide, 3 inches (75 mm) high, and 2-1/2 inches (64 mm) deep.

PART 3 - EXECUTION

3.1 WIRING METHODS

A. Wiring Method: Install cables in conduit. Conceal pathway and cables except in unfinished spaces.

1. Install plenum cable in environmental air spaces, including plenum ceilings.

2. Comply with requirements for pathways and boxes specified in Section 270528 "Pathways for Communications Systems."

B. Wiring within Enclosures: Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

3.2 INSTALLATION OF PATHWAYS

A. Comply with requirements in Section 270528 "Pathways for Communications Systems." for installation of conduits and cable trays.

B. Install manufactured conduit sweeps and long-radius elbows whenever possible.

3.3 INSTALLATION OF CABLES

A. Comply with NECA 1.

B. General Cable Installation Requirements:

1. Terminate conductors; no cable shall contain unterminated elements. Make terminations only at outlets and terminals.

2. Splices, Taps, and Terminations: Arrange on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures. Cables may not be spliced.

3. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.

4. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.

5. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.

6. Cold-Weather Installation: Bring cable to room temperature before de-reeling. Heat lamps shall not be used.

7. All cables shall be bundled with Velcro tie-wraps every 18 inches. Different cable types shall be bundled separately.

C. Separation of Wires: Separate speaker cables and power wiring runs. Install in separate pathways or, where exposed or in same enclosure, separate conductors at least 12 inches (300 mm) apart for speaker cables and adjacent parallel power and data and voice wiring. Separate other communication equipment conductors as recommended by equipment manufacturer.

3.4 INSTALLATION

A. Coordinate layout and installation of system components and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

B. Identification of Conductors and Cables: Color-code conductors and apply wire and cable marking tape to designate wires and cables so they identify media in coordination with system wiring diagrams.

C. Equipment Cabinets and Racks:

1. Group items of same function together, either vertically or side by side, and arrange controls symmetrically.

2. Arrange all inputs, outputs, interconnections, and test points so they are accessible at rear of rack for maintenance and testing, with each item removable from rack without disturbing other items or connections.

D. Volume Limiter/Compressor: Equip each zone with a volume limiter/compressor. Arrange to provide a constant input to power amplifiers.

E. Conductor Sizing: Unless otherwise indicated, size speaker circuit conductors from racks to loudspeaker outlets not smaller than No. 12 AWG.

F. Speaker-Line Matching Transformer Connections: Make initial connections using tap settings indicated on Drawings.

3.5 GROUNDING

A. Ground cable shields and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.

B. Signal Ground Terminal: Locate at main equipment cabinet. Isolate from power system and equipment grounding.

C. Comply with TIA-607 Latest Version Grounding and Bonding standard.

3.6 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Schedule tests with at least seven days' advance notice of test performance.

2. After installing public address system and after electrical circuitry has been energized, test for compliance with requirements.

3. Operational Test: Perform tests that include originating program and page messages at microphone, preamplifier program inputs, and other inputs. Verify proper routing and volume levels and that system is free of noise and distortion.

4. Signal-to-Noise Ratio Test: Measure signal-to-noise ratio of complete system at normal gain settings as follows:

   a. Disconnect microphone at connector or jack closest to it and replace it in the circuit with a signal generator using a 1000-Hz signal. Replace all other microphones at corresponding connectors with dummy loads, each equal in impedance to microphone it replaces. Measure signal-to-noise ratio.
   b. Repeat test for each separately controlled zone of loudspeakers.
   c. Minimum acceptance ratio is 50 dB.

5. Distortion Test: Measure distortion at normal gain settings and rated power. Feed signals at frequencies of 50, 200, 400, 1000, 3000, 8000, and 12,000 Hz into

each preamplifier channel. For each frequency, measure distortion in the paging and all-call amplifier outputs. Maximum acceptable distortion at any frequency is 3 percent total harmonics.

6. Acoustic Coverage Test: Feed pink noise into system using octaves centered at 500 and 4000 Hz. Use sound-level meter with octave-band filters to measure level at five locations in each zone. For spaces with seated audiences, maximum permissible variation in level is plus or minus 2 dB. In addition, the levels between locations in same zone and between locations in adjacent zones must not vary more than plus or minus 3 dB.

7. Power Output Test: Measure electrical power output of each power amplifier at normal gain settings of 50, 1000, and 12,000 Hz. Maximum variation in power output at these frequencies must not exceed plus or minus 1 dB.

8. Signal Ground Test: Measure and report ground resistance at public address equipment signal ground. Comply with testing requirements specified in Section 270526 "Grounding and Bonding for Communications Systems."

D. Inspection: Verify that units and controls are properly labelled, and interconnecting wires and terminals are identified. Prepare a list of final tap settings of paging speaker-line matching transformers.

E. Public address system will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports.

1. Include a record of final speaker-line matching transformer-tap settings and signal ground-resistance measurement certified by Installer.

3.7 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements.

2. Complete installation and startup check according to manufacturer's written instructions.

3.8 ADJUSTING

A. On-Site Assistance: Engage a factory-authorized service representative to provide on-site assistance in adjusting sound levels, resetting transformer taps, and adjusting controls to meet occupancy conditions.

B. 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 two visits to Project during other-than-normal occupancy hours for this purpose.

END OF SECTION

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SECTION 32 94 13
METAL LANDSCAPE EDGING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Labor, materials, tools, equipment, and installation for steel landscape edging as indicated on Drawings.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each type of edging, stake, and accessory.

1.03 QUALITY ASSURANCE

A. Edging and accessories shall match manufacturer's standards.

B. Preinstallation Conference: Conduct conference at Project site to review installation requirements, coordination with adjacent work, and verify site conditions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers/Products:

1. Sure-Loc Edging Corporation – Sure-Loc Steel Edging.
2. Permaloc Corporation – CleanLine® or CleanLine XL®.
3. EverEdge USA – EverEdge Steel Edging.
4. Border Concepts, Inc. – Steel Landscape Edging.

2.02 MATERIALS

A. Steel Landscape Edging:

1. Material: ASTM A569 hot-rolled carbon steel.
2. Dimensions: 3/16 inch thick by 4 inches high by 16 feet long; actual installed coverage approximately 15 feet 4 inches.
3. Stake Pockets: Spaced at approximately 30 inches on center.

4. Finish: Hot-dip galvanized per ASTM A123, minimum 3.0 mil zinc coating.

B. Stakes:

1. Steel tapered stakes, minimum 16 inches long, galvanized finish to match edging.

C. Accessories:

1. Provide start and end profiles, 90-degree corners, splicers, and radius or circle elements as required for complete installation.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install landscape edging in accordance with the manufacturer's written instructions.

B. Layout per Drawings or field-marked lines. Excavate trench to appropriate depth based on edging height, typically 3 to 6 inches below finish grade.

C. Connect sections using manufacturer-recommended connectors or joint systems. Overlap or secure joints as required.

D. Drive stakes or anchors through stake pockets or loops at maximum 30 to 32 inches on center. Provide additional stakes at joints and curves.

E. Set top edge flush with or slightly above finished grade. Ensure smooth, continuous alignment.

F. Compact backfill on both sides to stabilize. Cut edging cleanly at terminations and install end caps or returns at exposed ends.

G. Protect installed edging from displacement or damage during the Work. Reset or replace damaged or dislodged edging prior to final acceptance.

3.02 LAYOUT AND ALIGNMENT

A. Field-locate all edging positions.

B. Install edging true to line, grade, and alignment.

3.03 ANCHORING

A. Anchor edging with stakes at a maximum of 30 inches on center through stake pockets.

B. Double-stake at joints.

C. Drive stakes into undisturbed subgrade.

3.04 DAMAGED WORK

A. Replace sections that are deformed, displaced, or otherwise damaged during installation.

3.05 TREE ROOT CONFLICTS

A. If tree roots greater than 1 inch in diameter interfere with installation, notify the Landscape Architect for direction.

END OF SECTION

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G200	LIFE SAFETY CODE ANALYSIS, SITE PLAN
G201	LIFE SAFETY PLAN - NATATORIUM
G202	LIFE SAFETY PLAN - COMMUNITY CENTER
G203	LIFE SAFETY PLAN - MULTI PURPOSE

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C205	DETENTION BASIN MITIGATION AND CALCS
C206	DETENTION BASIN PLAN AND PROFILE
C207	DETENTION BASIN SECTIONS
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C401	DIM CONTROL, PAVING AND FIRELANE PLAN
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C603	RAMP DETAILS
C604	RAMP AND MISC DETAILS
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L604	IRRIGATION NOTES & LEGEND
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A-S103	NATATORIUM MASONRY DETAILS
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B-S102	COM. CTR. CROWN ELEVATIONS
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AV603C	AV ONE-LINE DIAGRAM

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6/23/2025 10:49:00 AM

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:

Mustang Park Renovation & New Construction

4521 FM 521
Fresno, TX 77545

Prepared For:

FORT BEND COUNTY

5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

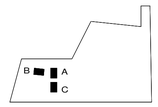
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Key Plan

A: NATATORIUM
B: COMMUNITY CENTER
C: MULTI PURPOSE



Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: NS Reviewed by: GL

Project No: 2024-002

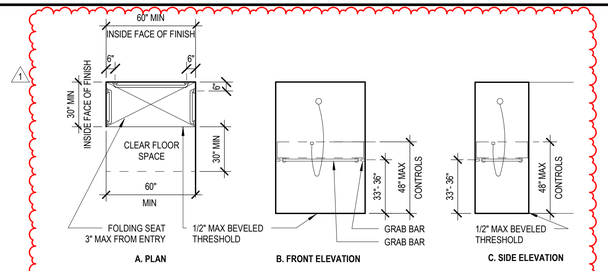
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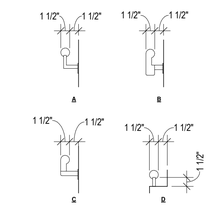
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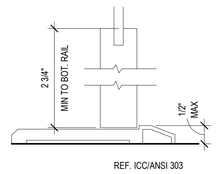
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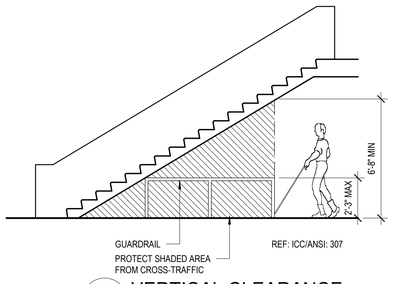
18 ACCESSIBLE SHOWER
1/4" = 1'-0"



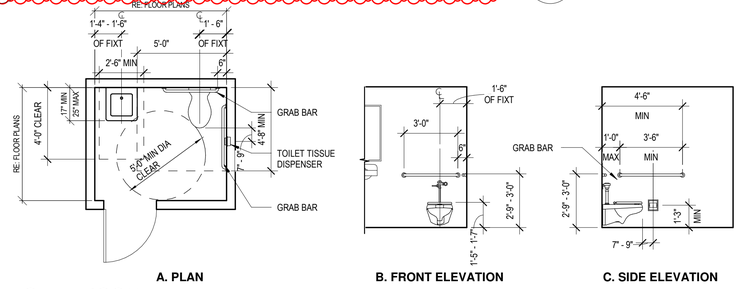
17 HANDRAILS
1" = 1'-0"



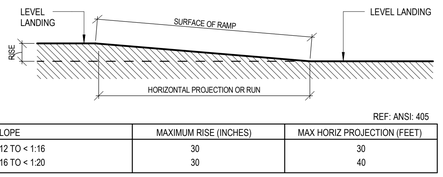
16 CHANGE IN LEVEL
6" = 1'-0"



15 VERTICAL CLEARANCE
1/4" = 1'-0"

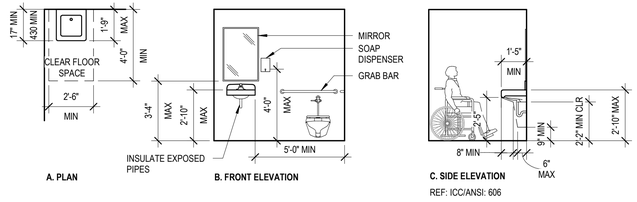


14 TOILET ROOM
1/4" = 1'-0"

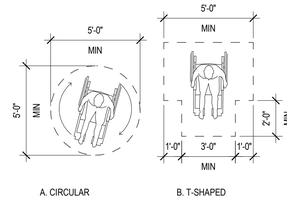


SLOPE	MAXIMUM RISE (INCHES)	MAX HORIZ PROJECTION (FEET)
1:12 TO < 1:16	30	30
1:16 TO < 1:20	30	40

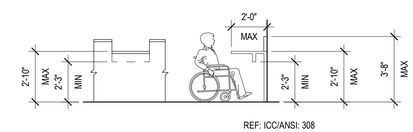
12 ALLOWABLE RAMP LENGTHS
1/4" = 1'-0"



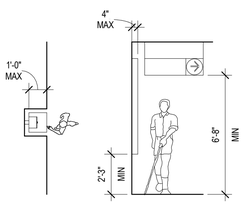
11 ACCESSIBLE LAVATORY
1/4" = 1'-0"



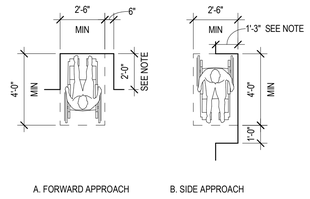
10 WHEELCHAIR TURNING RADIUS
1/4" = 1'-0"



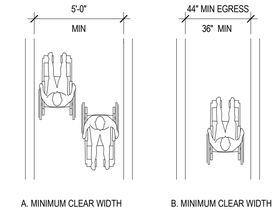
9 CLEARANCE FOR COUNTERS
1/4" = 1'-0"



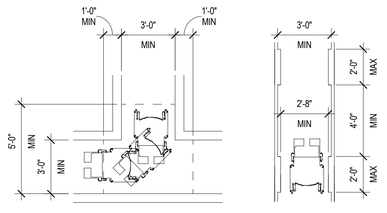
8 PROTUDING OBJECTS
1/4" = 1'-0"



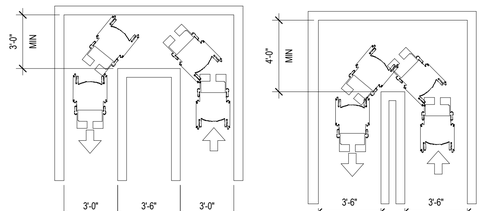
7 CLEARANCE AT ALCOVES
1/4" = 1'-0"



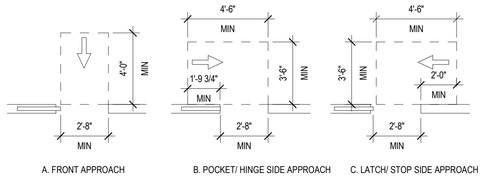
6 MIN CORRIDOR WIDTH
1/4" = 1'-0"



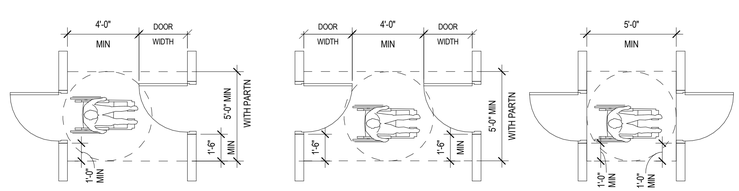
5 MIN CLEAR WIDTH
1/4" = 1'-0"



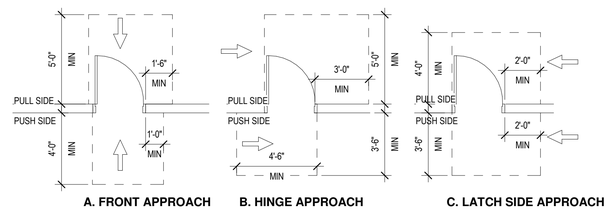
4 CORRIDOR TURNING SPACE
1/4" = 1'-0"



3 SLIDING DOOR APPROACH
1/4" = 1'-0"



2 TWO HINGED DOORS
1/4" = 1'-0"



1 MIN CORRIDOR WIDTH
1/4" = 1'-0"

ACCESSIBILITY NOTES

DOORS
A. DOORS WITH TWO INDEPENDENTLY OPERATED LEAVES SHALL HAVE AT LEAST ONE, ACTIVE LEAF COMPLY WITH ACCESSIBILITY REQUIREMENTS.

B. DOORWAYS SHALL HAVE A MINIMAL CLEAR OPENING OF 32" WIDTH THE DOOR OPEN 90 DEGREES

C. MINIMUM MANEUVERING CLEARANCES AT DOOR SHALL BE PROVIDED
- FLOOR OR GROUND AREA WITHIN THE REQUIRED CLEARANCE SHALL BE LEVEL AND CLEAR
- AN OBSTRUCTED FLOOR SPACE SHALL EXTEND AT LEAST 18" BEYOND THE STRIKE JAMB ON THE PULL SIDE AN UNOBSTRUCTED FLOOR SPACE SHALL EXTEND AT LEAST 12" BEYOND THE STRIKE JAMB ON THE PUSH SIDE WHEN THE DOOR EQUIPPED WITH A LOCK CLOSER AND LATCH

D. WHERE TWO DOORS ARE IN SERIES THE MINIMUM DISTANCE BETWEEN THE HINGED PR PIVOTED DOORS SHALL BE 48" IN ADDITION TO ANY AREA NEEDED FOR DOOR SWING.

1 E. DOOR CLOSERS AND GATE CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12 DEGREES FROM THE LATCH IS 5 SECONDS MINIMUM.

F. HANDLES, PULLS, LATCHES, LOCKS, ETC. SHALL BE LEVER OPERATED, PUSH-TYPE AND U SHAPED HANDLES. MOUNTING HEIGHT SHALL NOT BE MORE THAN 48"

G. INTERIOR DOOR OPENING FORCE SHALL BE 5 LBS. MAX EXTERIOR DOOR OPENING FORCE SHALL BE 8.5 LBS MAX.

SINKS
A. CLEAR FLOOR SPACE OF 30" WIDE X 48" DEPTH MIN.

B. MOUNTING HEIGHT TO THE SINK OR COUNTER SURFACE SHALL BE 34" MAX. A.F.F.

C. KNEE CLEARANCE SHALL NOT BE LESS THAN 34" IN HEIGHT, 30" IN WIDTH AND 19" MIN. IN DEPTH UNDER SINK

D. PROVIDE INSULATION OR SCREEN FOR EXPOSED HOT WATER AND DRAIN PIPES

E. FAUCET SHALL BE LEVER TYPE AND SHALL NOT EXCEED FORCE OF 5 LBS. TO OPERATE.

F. SINK DEPTH SHALL NOT BE MORE THAN 6"

CHANGES IN LEVEL
A. 1/2" MAX VERTICAL EDGE

B. UP TO 1/2" MAX. WITH BEVELED EDGE AND WITH SLOPE NOT GREATER THAN 1:2

C. GREATER THAN 1/2" SHALL BE ACCOMPLISHED BY MEANS OF RAMP.

FINISHES
A. CARPET SHALL HAVE 1/2" MAX PILE THICKNESS

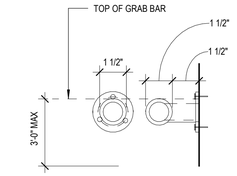
B. CARPET EDGES SHALL BE FASTENED TO FLOOR

C. IF CUSHIONS OR PAD ARE USED, THEY SHALL BE FIRM

FIXTURES
A. RECEPTACLES, LIGHT SWITCHES, ECT, SHALL HAVE A MIN. MOUNTING HEIGHT OF 18" AND A MAX. MOUNTING HEIGHT OF 42" O.C.

B. GRAB BARS STRUCTURAL STRENGTH AND MOUNTING DEVICE SHALL WITHSTAND MORE THAN 250 LBS. AND A MAX. MOUNTING HEIGHT OF 36".

C. WATER CLOSET SHALL BE 33"-36" A.F.F.



NOTE: ALLOWABLE STRESSES SHALL NOT BE EXCEEDED FOR MATERIALS USED WHERE A VERTICAL OR HORIZONTAL FORCE OF 250LBS IS APPLIED AT ANY POINT ON THE GRAB BAR FASTENER MOUNTING DEVICE OR SUPPORTING

13 GRAB BAR
3" = 1'-0"

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
Fresno, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

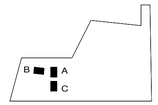
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Key Plan

A: NATATORIUM
B: COMMUNITY CENTER
C: MULTI PURPOSE



Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: NS Reviewed by: GL

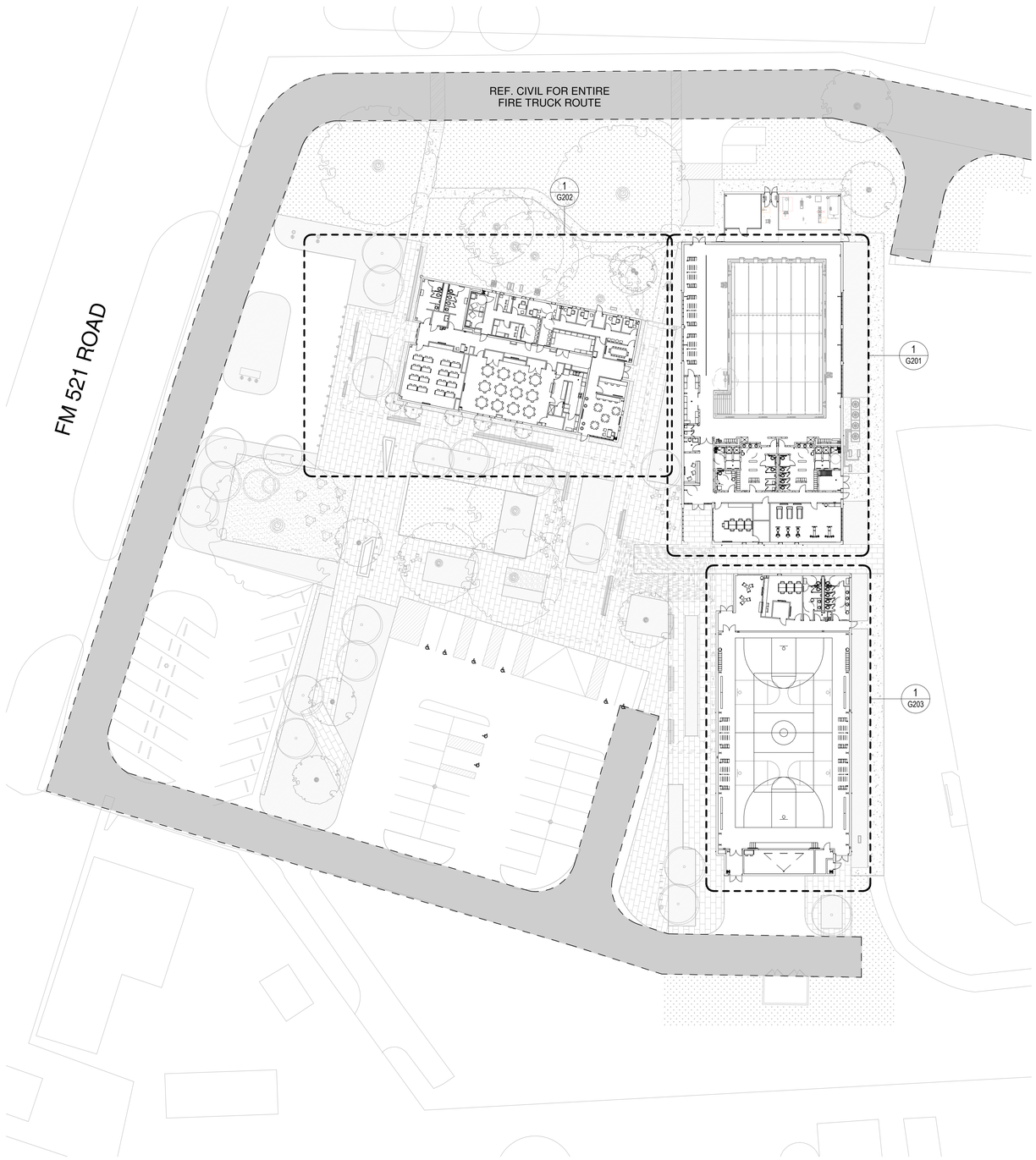
Project No: 2024-002

Sheet Title:
ACCESSIBILITY DIAGRAMS

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number
G110

6/20/2025 12:31:11 PM



1 SITE PLAN - LIFE SAFETY
1" = 30'-0"

SYMBOL KEY

- XXX — NO OF OCCUPANT EXITING
- 168 / 32" / 34" — NUMBER OF OCCUPANTS / EXIT WIDTH REQUIRED / EXIT WIDTH PROVIDED
- OC — OCCUPANCY CLASSIFICATION
- SF — SQUARE FOOTAGE
- OL — OCCUPANT LOAD FACTOR
- # — NUMBER OF OCCUPANTS
- FIRE ESCAPE ROUTE & START POINT WITH DIRECTIONAL ARROWS
- RATED WALL ASSEMBLY
- FE — FIRE EXTINGUISHER - SURFACE MOUNTED
- FEC1 — FIRE EXTINGUISHER CABINET - SURFACE MOUNTED
- FEC2 — FIRE EXTINGUISHER CABINET - SEMI RECESSED
- EXIT SIGN - SHADED AREA DENOTES FACE
- LIGHT FIXTURE ON EMER. BRANCH CIRCUIT, CIRCUIT NUMBER ADJ. TO FIXT. INDICATES EMER. CIRCUIT CONNECTED TO FIXT. PROVIDE UNSWITCHED HOT, NEUTRAL, & GROUND FOR ALL EMER. LIGHTING ORIGINATING FROM THE EMER. CIRCUIT SHOWN
- FIRE ALARM CONTROL PANEL
- H — HEAT DETECTOR
- S — SMOKE DETECTOR
- F — FIRE ALARM
- SPRINKLER HEAD 1

GENERAL NOTES - LIFE SAFETY

FIRE ACTION
ANY PERSON DISCOVERING A FIRE OR EMERGENCY
1. SOUND THE ALARM.
2. FOLLOW ESTABLISH EMERGENCY PROCEDURES.
3. LEAVE THE BUILDING BY THE DESIGNATED ROUTE.
4. REPORT TO ASSEMBLY POINT IMMEDIATELY.
5. DO NOT RETURN TO THE BUILDING FOR ANY REASON UNTIL AUTHORIZED TO DO SO.

CONSTRUCTION NOTES
1. ALL FIRE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATION, SKETCHES AND ALL OTHER DRAWINGS / DOCUMENT RELATED TO THE PERFORMANCE OF THE WORKS.
2. IT SHALL NOT BE THE INTENT OF THESE PLAN / SPECIFICATION TO SHOW EVERY MINOR DETAILS OF CONSTRUCTION. THE CONTRACTOR SHALL BE EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE FIRE ALARM SYSTEM AND PROVIDE ALL EQUIPMENTS NECESSARY FOR EQUIPMENT TO BE PLACE IN PROPER WORKING CONDITION.
3. ANY DISCREPANCY BETWEEN THE SPECIFICATION AND DRAWINGS AND SHALL BE BROUGHT TO THE NOTICE OF THE ARCHITECT IN WRITING BEFORE THE COMMENCEMENT OF THE WORK WHICH IS THE SUBJECT OF THE DISCREPANCY.
4. THE CONTRACTOR SHALL NOT SCALE THE FIRE ALARM DRAWINGS, REFER TO THE ARCHITECTURAL DRAWING (PLANS / ELEVATION / ETC.) FOR EXACT LOCATION OF ALL EQUIPMENT UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AND INSTALL CONDUIT AND BOXES AS REQUIRED FOR A COMPLETE INSTALLATION.
6. REFERENCE ARCHITECTURE FOR DOORS, PARTITION, STAIR & RAILING DETAILS, SCHEDULES AND LAYOUTS
7. REFERENCE SPECIFICATIONS FOR FIRE PROTECTION SPRINKLER SYSTEM
8. REFERENCE ELECTRICAL FOR FIXTURES DETAILS, SCHEDULES AND LAYOUTS
9. REFERENCE MECHANICAL FOR DAMPER DETAILS, SCHEDULES AND LAYOUTS

Code Summary:
A.00 Applicable Codes
2021 International Building Code
2018 Uniform Mechanical Code
2020 National Electric Code
2018 Uniform Plumbing Code
2005 Uniform Fire Code
2019 International Swimming Pool and Spa Code
2012 Texas Accessibity Standards (TAS)
2021 International Fire Code with Fort Bend County Amendments 1
Risk Category: II | Wind Speed: 139 MPH

B.00 Occupancy Classification
Refer to Chapter 3

Natatorium:
Group A-4: Assembly 303.1

Community Center:
Mixed Use Occupancy: 508.3
Group B: Office Building 304.1
Group A-3: Assembly 303.1
Table 10.4
Kitchen - 200 Gross

Multi Purpose:
Mixed Use Occupancy: 508.3
Group A-3: Assembly 303.1

B.01 Occupancy Separations
Refer to Section 508.3 & Table 508.2.5
No occupancy separation required. It is proposed to incorporate Nonseparated mixed use provision based on more restrictive requirements of Chapter 9

C.00 Construction Type Classification
Refer to Table 506.2
One story above plane equipped throughout with an automatic sprinkler system

Natatorium: Type IIB
Community Center: Type IIB (currently not sprinklered)
Multi Purpose: Type IIB

C.01 Construction Type

Occupancy	Allowable Area	Allowable Height
Group A-3	38,000 SF	3 Stories
Group A-4	38,000 SF	3 Stories

C.02 Building Height
Highest occupied floor of office building is less than 75 feet above lowest fire department fire access. As such building is not classified as high-rise structure.

D.00 Fire Resistance Requirements
Refer to Table 601
1. Fully Sprinklered
2. Primary Structural Frames: 0hr
3. Bearing walls (Exterior & Interior): 0hr
4. Shaft Enclosure: N/A
5. Floor Construction / Roof Construction: 0hr

Standby and emergency power for all required fire protection and life safety systems
Portable fire extinguishers required Per section 906 of the IFC
Means of egress in compliance with Chapter 10

TABLE 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A[e]	B	A[e]	B	HT	A[e]	B
Primary structural frame[f] (see Section 202)	3[c]	2[c]	1	0	1	0	HT	1	0
Bearing walls Exterior[d, f] Interior	3 3[c]	2 2[c]	1 1	0 0	2 1	2 0	2 1/HT	1 1	0 0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior[e]	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction and associated secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and associated secondary members (see Section 202)	1 1/2[b]	1[b,c]	1[b,c]	0[c]	1[b,c]	0	HT	1[b,c]	0

For SI: 1 foot = 304.8 mm.
a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
b. Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
c. In all occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.
d. An approved automatic sprinkler system in accordance with Section 903.3.1.1 shall be allowed to be substituted for 1-hour fire-resistance-rated construction, provided such system is not otherwise required by other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. The 1-hour substitution for the fire resistance of exterior walls shall not be permitted.
e. Not less than the fire-resistance rating required by other sections of this code.
f. Not less than the fire-resistance rating based on fire separation distance (see Table 602).
g. Not less than the fire-resistance raitne as referenced in Section 704.10

E.00 Egress
Exception: 0.2 means of egress capacity factor can be used if sprinklered and with emergency voice/alarm

Section 1005.3.2 Other Egress components:
Exception: 0.15 factor can be used if sprinklered and with emergency voice/alarm

Section 1003.2:
The means of egress shall have a ceiling height of not less than 7'- 6" aff

E.01 Arrangement of Exits
Number of Exits
Occupant Load: 1 - 500 = **2** exits required (min)
Occupant Load: 501 - 1,000 = **3** exits required (min)

Section 1015.2.2
Three or more exits or exit access doorways: In sprinklered building, at least two exit doors or exit access doorways shall be placed a distance apart equal to at least 1/3 maximum overall diagonal of building, measured in a straight line between exit doors or exit access doorways.

Section 1010.1.1 Door Sizes:
The minimum clear opening Door width of not less than 32"
The minimum clear openig Door height shall not be less than 80"

Section 1010.1.2.1 Occupant load 50 or more:
Doors shall swing in the direction of egress travel

E.02 Maximum Travel Distance
Refer to Table 1017.2

Existing Building	200 feet
Natatorium & Multi Purpose	250 feet

E.03 Common Path of Egress Travel
Section 1014.3, Exception 1:
Maximum common path of egress travel in sprinklered building is:

Occupancy B	100 feet
Occupancy A	75 feet

E.04 Dead End Corridor
In occupancies in Group A, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 1020.5, the length of the dead-end corridors shall not exceed 20 feet.

F.00 Occupancy Load
Refer to Table 1004.5

Natatorium (Cumulative Occupant Loads):
Assembly w/out fixed seat - Unconcentrated: 15net/
Pool Deck = 15gross | Fitness = 50gross | Business = 150gross Storage = 200gross

1. Pool: 3387/50 = 68
2. Deck: 2520/15 = 168
3. Exercise/ Fitness: 670/50 (w/ equip.) = 13
4. Admin: 547/150 = 4
5. Storage: 84+168/200 = 1
6. Assembly: 620/15 = 45
7. **Total Occ Load: 299** (Table 1006.3.3: Min number of exist req'd = 2) 1

Section 1006.3.3: Min Number of Exits Required = 2
Building is required to be sprinklered due to occupant load being great than 300; Refer to Section 9 & Fort Bend County Amendments

Community Center (Cumulative Occupant Loads):
Assembly w/out fixed seat – Unconcentrated: 15net/
Kitchen = 200gross | Business = 150gross | Storage = 200gross

1. Concentrated Bus: 23 seats
2. Vocational 113/50= 3
3. Business: 1187/150 = 8
4. Storage: 195/200 = 1
5. **Total Occ Load: 35** 1

Section 1006.3.3: Minimum Number of Exits Required = 1 + Existing = 2
Building required to be sprinklered; Refer to Fort Bend County Admendments

Multi Purpose (Cumulative Occupant Loads):
Assembly w/out fixed seat - Unconcentrated: 15net / Stage: 15net | Business = 150gross | Storage = 200gross

1. Assembly: 6,933/15 = 462
2. Stage: 517/15 = 34
3. Business: 605/150 = 4
4. Storage: 107/200 = 1
5. **TOTAL Occ Load: 501** 1

Section 1006.3.3: Minimum Number of Exits Required = 3
Building is required to be sprinklered; Refer to section 9 & Fort Bend County Admendments

NOTE: 1004.9 - Every room or space that is an assembly occupancy shall have the occupant load of the room or space posted in a conspicuous place, near the main exit from the room.

G.00 Plumbing Fixtures
Refer to Table 2902.1

Natatorium:
Multi-Occ: 235
1. Men: 118/75 = 2
2. Women: 117/40 = 3
3. Toilet Room: 50/50 = 1
4. **Total Water Closet: 2 men, 3 women, 1 toilet rm**
   1. Lavatories: 1 per 150: 235/150 = 2
   2. Drinking Fountain: 1 per 1000: 235/1000 = 1

Community Center:
Multi-Occ: 35
1. Men: 35/125 = 1
2. Women: 36/65 = 1
3. **Total Water Closet: 1 men, 1 women**
   1. Lavatories: 1 per 200: 35/200 = 1
   2. Drinking Fountain: 1 per 500: 35/500 = 1

Multi Purpose:
Multi-Occ: 501 WC - Men: 1/125 | Women: 1/65
1. Men: 251/125 = 2
2. Women: 250/65 = 4
3. **Total Water Closet: 2 men, 4 Women**
   1. Lavatories: 1 per 200: 501/200 = 3
   2. Drinking Fountain: 1 per 500: 501/500 = 1

H. Automatic Sprinkler System
Refer to Section 903

903.2.1.3: An automatic sprinkler system shall be provided throughout stories containing Group A-3 & A-4 occupancies and throughout all stories from the Group A-3 & A-4 occupancy to and including the levels of exit discharge serving that occupancy where one of the following conditions exists: The fire area has an occupant load of **300** or more.

J.00 Fire Extinguishers (Section 906.1 International Fire Code)
Placement required:
maximum travel distance of 75'-0"
maximum floor area per extinguisher 11,250 SF
within 30'-0" of commercial cooking equipment
areas of flammable or combustible liquids are stored, used, or dispensed
special hazardous areas including computer rooms and generator rooms or where required by the local fire marshall.
Reference floorplans.

K.00 Finishes
Refer to Table 803.13
a. Group A for Exit enclosure and exit passageways: **Class B Finishes**
b. Group B for Exit enclosure and exit passageways: **Class C Finishes**
c. Group A & B for Corridors and rooms/enclosed spaces: **Class C Finishes**

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5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

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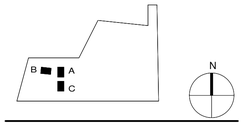
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Key Plan

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Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: NS Reviewed by: GL

Project No: 2024-002

Sheet Title:

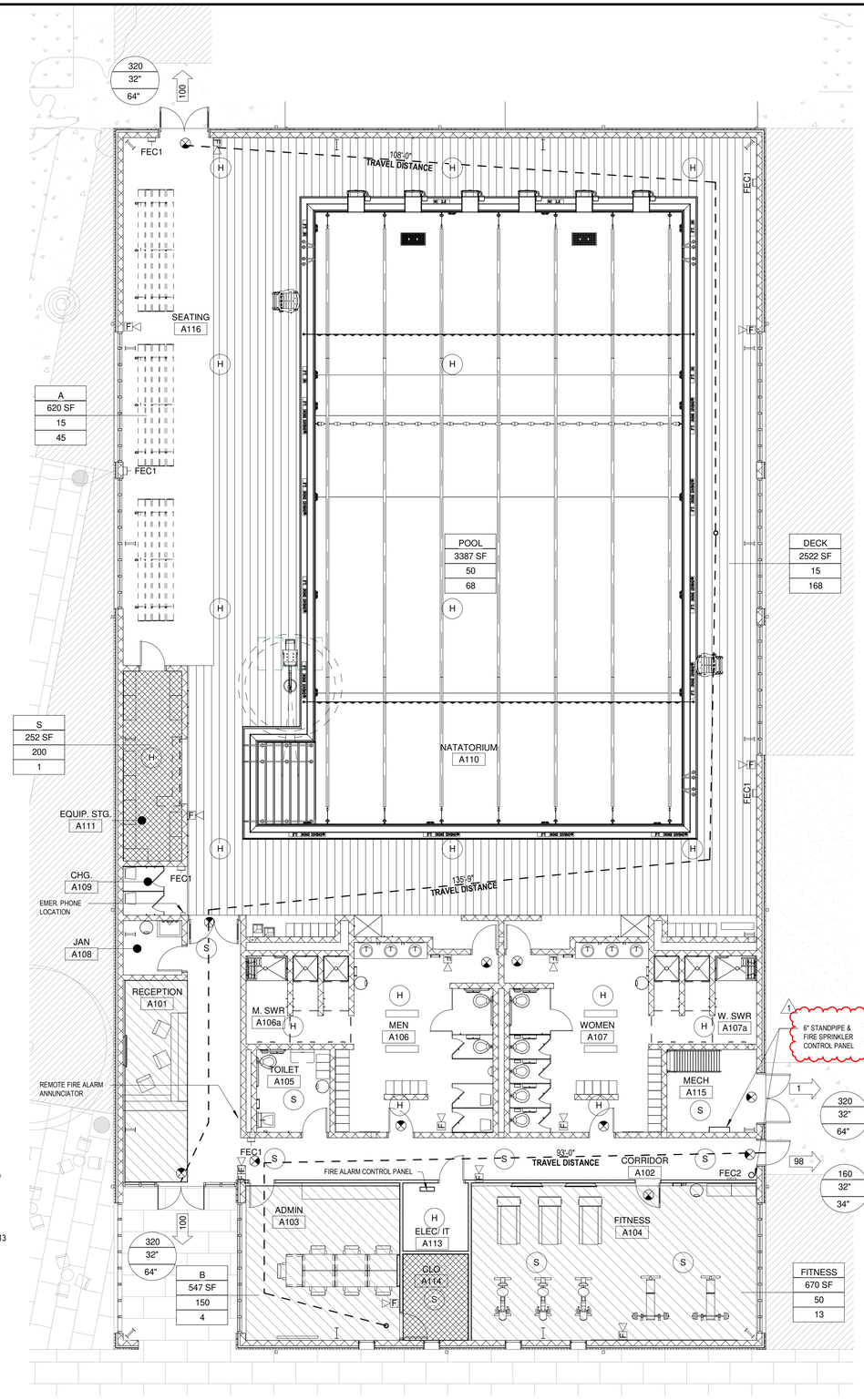
LIFE SAFETY CODE ANALYSIS, SITE PLAN

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

G200

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Natatorium (Cumulative Occupant Loads):
Assembly w/out fixed seat - Unconcentrated: 15net/
Pool Deck = 15gross | Fitness = 50gross
Business = 150gross | Storage = 200gross

1. Pool: 3387/50 = 68
2. Deck: 2520/15 = 168
3. Exercise/ Fitness: 670/50 (w/ equip.) = 13
4. Admin: 547/150 = 4
5. Storage: 84+168/200 = 1
6. Assembly: 620/15 = 45
7. **Total Occ Load: 299**

1 LIFE SAFETY PLAN - NATATORIUM
1/8" = 1'-0"

SYMBOL KEY

- XXX — NO OF OCCUPANT EXITING
- 168 / 32" / 34" — NUMBER OF OCCUPANTS / EXIT WIDTH REQUIRED / EXIT WIDTH PROVIDED
- OC — OCCUPANCY CLASSIFICATION
- SF — SQUARE FOOTAGE
- OL — OCCUPANT LOAD FACTOR
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- RATED WALL ASSEMBLY
- FE — FIRE EXTINGUISHER - SURFACE MOUNTED
- FEC1 — FIRE EXTINGUISHER CABINET - SURFACE MOUNTED
- FEC2 — FIRE EXTINGUISHER CABINET - SEMI RECESSED
- EXIT SIGN - SHADED AREA DENOTES FACE
- LIGHT FIXTURE ON EMER. BRANCH CIRCUIT, CIRCUIT NUMBER ADJ. TO FIXT. INDICATES EMER. CIRCUIT CONNECTED TO FIXT. PROVIDE UNSWITCHED HOT, NEUTRAL, & GROUND FOR ALL EMER. LIGHTING ORIGINATING FROM THE EMER. CIRCUIT SHOWN
- FIRE ALARM CONTROL PANEL
- H — HEAT DETECTOR
- S — SMOKE DETECTOR
- F — FIRE ALARM
- SPRINKLER HEAD

GENERAL NOTES - LIFE SAFETY

FIRE ACTION
ANY PERSON DISCOVERING A FIRE OR EMERGENCY
1. SOUND THE ALARM.
2. FOLLOW ESTABLISH EMERGENCY PROCEDURES.
3. LEAVE THE BUILDING BY THE DESIGNATED ROUTE.
4. REPORT TO ASSEMBLY POINT IMMEDIATELY.
5. DO NOT RETURN TO THE BUILDING FOR ANY REASON UNTIL AUTHORIZED TO DO SO.

CONSTRUCTION NOTES
1. ALL FIRE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATION, SKETCHES AND ALL OTHER DRAWINGS / DOCUMENT RELATED TO THE PERFORMANCE OF THE WORKS.
2. IT SHALL NOT BE THE INTENT OF THESE PLAN / SPECIFICATION TO SHOW EVERY MINOR DETAILS OF CONSTRUCTION. THE CONTRACTOR SHALL BE EXPECTED TO FURNISH AND INSTALL ALL ITEMS FOR A COMPLETE FIRE ALARM SYSTEM AND PROVIDE ALL EQUIPMENTS NECESSARY FOR EQUIPMENT TO BE PLACE IN PROPER WORKING CONDITION.
3. ANY DISCREPANCY BETWEEN THE SPECIFICATION AND DRAWINGS AND SHALL BE BROUGHT TO THE NOTICE OF THE ARCHITECT IN WRITING BEFORE THE COMMENCEMENT OF THE WORK WHICH IS THE SUBJECT OF THE DISCREPANCY.
4. THE CONTRACTOR SHALL NOT SCALE THE FIRE ALARM DRAWINGS, REFER TO THE ARCHITECTURAL DRAWING (PLANS / ELEVATION / ETC.) FOR EXACT LOCATION OF ALL EQUIPMENT UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AND INSTALL CONDUIT AND BOXES AS REQUIRED FOR A COMPLETE INSTALLATION.
6. REFERENCE ARCHITECTURE FOR DOORS, PARTITION, STAIR & RAILING DETAILS, SCHEDULES AND LAYOUTS
7. REFERENCE SPECIFICATIONS FOR FIRE PROTECTION SPRINKLER SYSTEM
8. REFERENCE ELECTRICAL FOR FIXTURES DETAILS, SCHEDULES AND LAYOUTS
9. REFERENCE MECHANICAL FOR DAMPER DETAILS, SCHEDULES AND LAYOUTS

THE STATE OF TEXAS · FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

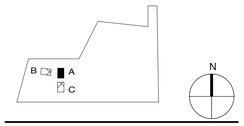
Design Team:

HINES ARCHITECTURE + DESIGN
8 Greenway Plaza Suite 1525
Houston, TX 77046 USA
t +1 713 909 0983
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Key Plan

A: NATATORIUM
B: COMMUNITY CENTER
C: MULTI PURPOSE



Professional Seals



03-14-2025

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Drawn by: NS Reviewed by: GL

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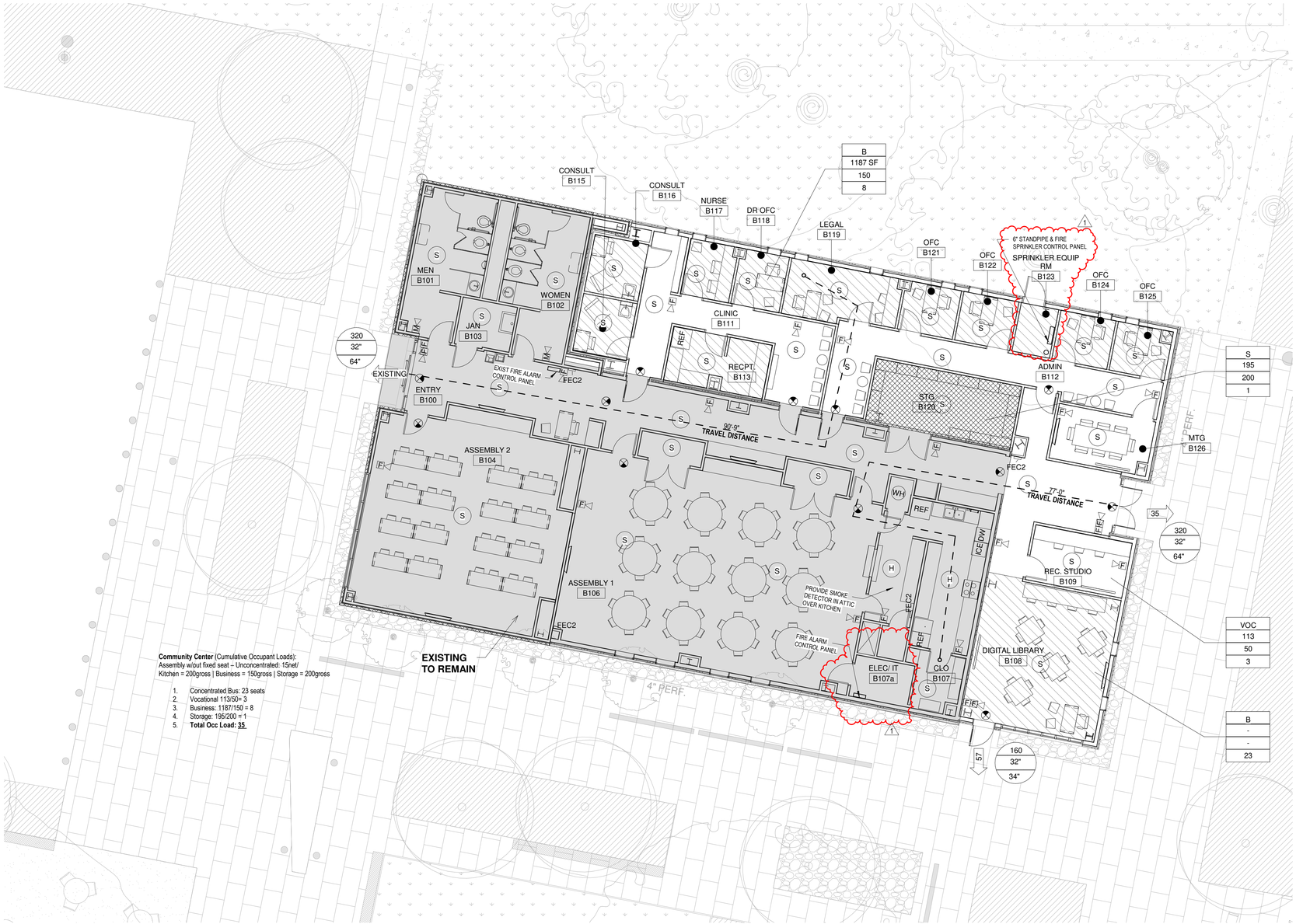
LIFE SAFETY PLAN - NATATORIUM

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

G201

6/18/2025 12:14:31 PM



Community Center (Cumulative Occupant Loads):
Assembly w/out fixed seat – Unconcentrated: 15net/
Kitchen = 200gross | Business = 150gross | Storage = 200gross

1. Concentrated Bus: 23 seats
2. Vocational 113/50= 3
3. Business: 1187/150 = 8
4. Storage: 195/200 = 1
5. **Total Occ Load: 35**

1 LIFE SAFETY PLAN - COMMUNITY CENTER
1/8" = 1'-0"

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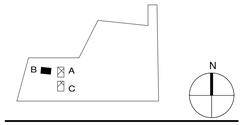
Contract No: 2024-002
Design Team:

HINES ARCHITECTURE + DESIGN
8 Greenway Plaza Suite 1525
Houston, TX 77046 USA
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Key Plan

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Professional Seals



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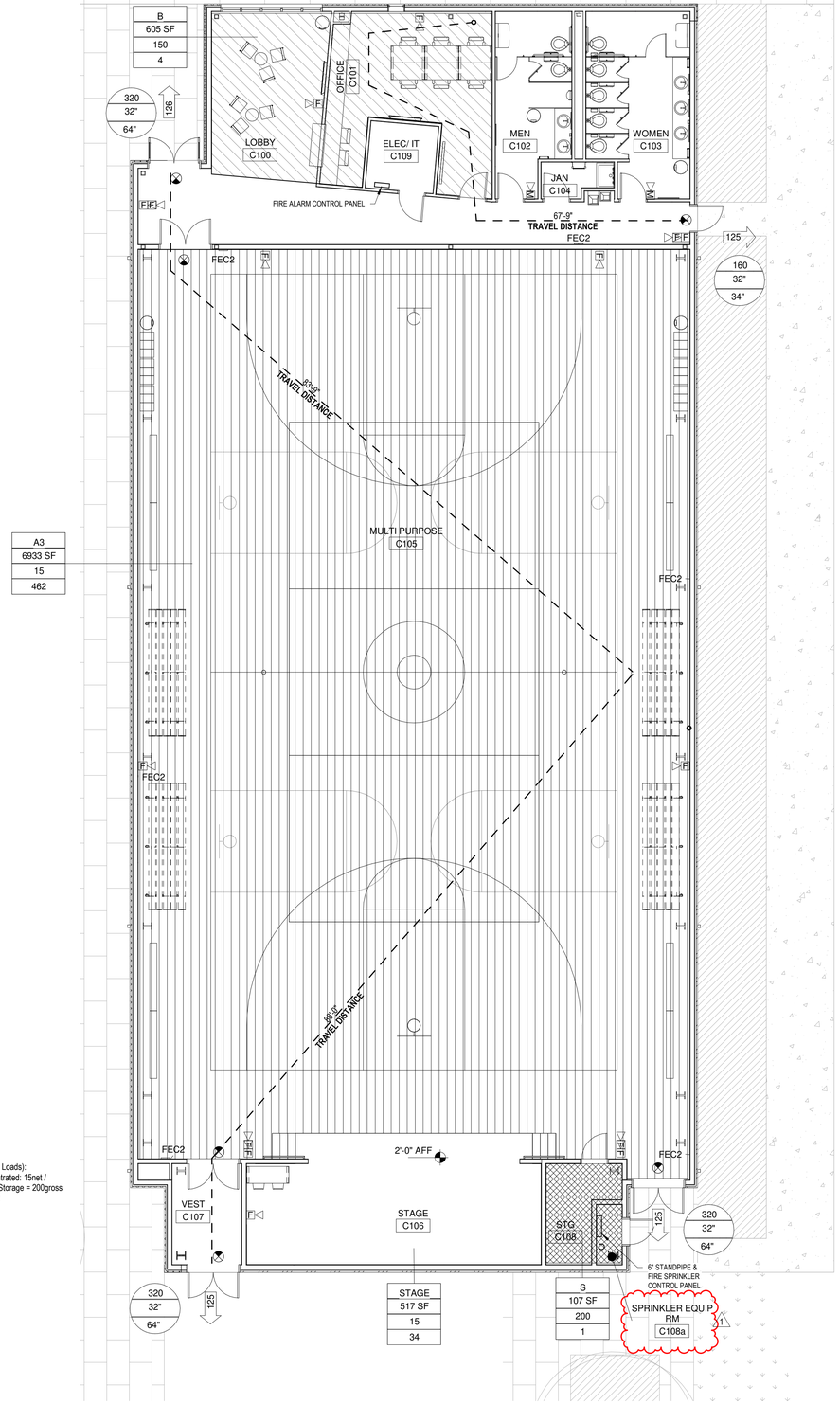
Project No: 2024-002

Sheet Title:
LIFE SAFETY PLAN - COMMUNITY CENTER

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number
G202

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Multi Purpose (Cumulative Occupant Loads):
Assembly w/out fixed seat - Unconcentrated: 15net /
Stage: 15net | Business = 150gross | Storage = 200gross

1. Assembly: 6,933/15 = 462
2. Stage: 517/15 = 34
3. Business: 605/150 = 4
4. Storage: 107/200 = 1
5. **TOTAL Occ Load: 501**

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1 LIFE SAFETY PLAN - MULTI PURPOSE
1/8" = 1'-0"

THE STATE OF TEXAS · FORT BEND COUNTY ·

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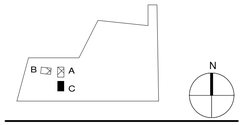
Contract No: 2024-002
Design Team:

HINES ARCHITECTURE + DESIGN
8 Greenway Plaza Suite 1525
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www.hinesad.com

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Professional Seals



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	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: NS Reviewed by: GL

Project No: 2024-002

Sheet Title:
LIFE SAFETY PLAN - MULTI PURPOSE

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number
G203

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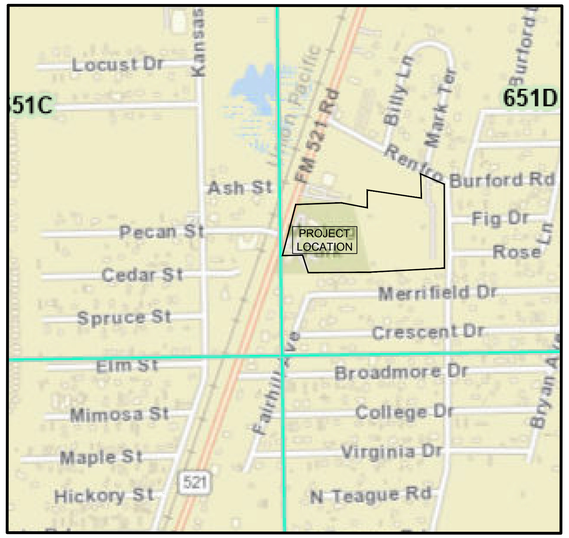
CIVIL CONSTRUCTION PLANS FOR PAVING, GRADING, DRAINAGE, DETENTION POND AND STORM SEWER TO SERVE THE

MUSTANG PARK RENOVATION AND NEW CONSTRUCTION

MAY 2025

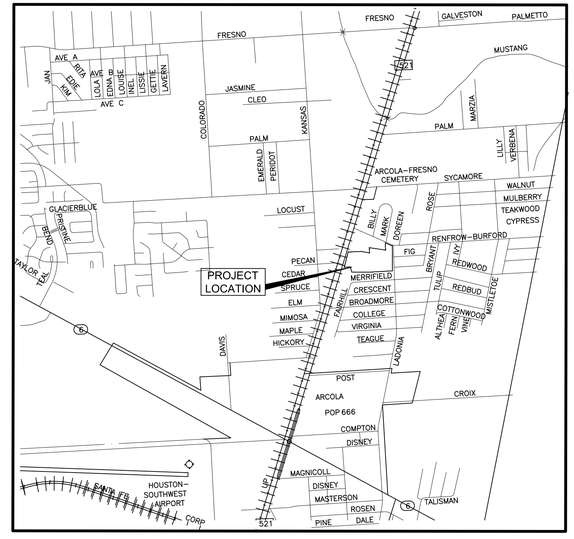
PREPARED FOR
FORT BEND COUNTY

SITE ADDRESS:
4521 FM 521
FRESNO, TX 77545



FORT BEND COUNTY
KEYMAP NO. 651C & 651D
(N.T.S.)

C100	COVER
C101	EXISTING CONDITION
C102	CLEARING AND EROSION CONTROL PLAN
C103	DEMOLITION PLAN-I
C104	DEMOLITION PLAN - II
C201	EXISTING DRAINAGE AREA MAP
C202	PROPOSED DRAINAGE AREA MAP AND STORM SEWER PLAN
C202.01	STORM SEWER CALCS
C203	STORM SEWER HGL P&P I
C204	STORM SEWER HGL P&P II
C204.01	STORM SEWER HGL P&P III
C204.02	STORM SEWER HGL P&P IV AND OUTFALL P&P
C205	DETENTION BASIN AND MITIGATION CALCULATIONS
C206	DETENTION BASIN PLAN AND PROFILE
C207	DETENTION BASIN SECTIONS
C208	GRADING PLAN-I
C209	GRADING PLAN-II
C301	UTILITY PLAN
C401	DIM CTRL PAV AND FIRLANE PLAN
C402	DIM CTRL PAV AND FIRLANE PLAN-II
C501	SITE PLAN
C502	DRIVEWAY PLAN
C601	CONSTRUCTION NOTES AND PAVEMENT DETAILS
C602	TXDOT AND RAMP DETAILS
C603	RAMP DETAILS
C604	RAMP AND MISCELLANEOUS DETAILS
C605	SWPPP AND MISCELLANEOUS DETAILS
C606	STORM AND PUMP DETAILS
C607	STORM DETAILS
C608	SAN AND MISC DETAILS
C609	TXDOT DRIVEWAY DETAILS
C610	TXDOT BACKFILL AND EXCAVATION DETAILS



VICINITY MAP
(N.T.S.)

FEMA INFORMATION

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

BOUNDARY SURVEY OF A 15.7235 ACRE (684,915 SQ. FT.) TRACT OF LAND OUT OF THE MANUEL ESCALERO SURVEY ABSTRACT 170 FORT BEND COUNTY, TEXAS

SURVEY NOTES

1.ALL BEARINGS AND COORDINATES SHOWN HEREON ARE TIED TO THE NSRS AND EXPRESSED IN THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE 4204, NAD 83' (2011), ITRF (EPOCH 2010.0000), NAVD '88 (GEOID 18).

2.ALL DISTANCES SHOWN HEREON ARE SURFACE VALUES. ALL COORDINATES SHOWN HEREON ARE GRID VALUES UNLESS OTHERWISE NOTED. TO CONVERT SURFACE VALUES TO GRID VALUES MULTIPLY BY THE SCALE FACTOR OF 0.999869492002.

3.ABSTRACT RESEARCH PROVIDED BY COURTHOUSE SPECIALIST..

4.PROJECT TIED TO FORT BEND COUNTY CONTROL MONUMENTS 259, 437 & 438.

5.TEXAS RAILROAD COMMISSION WEBSITE SHOWS A 4.5" HIGH VOLATILE PIPELINE OWNED BY DOW PIPELINE, LLC, STATES THE PIPELINE IS ABANDONED, CONTACT # (713) 654-3636. NO PIPELINE MARKERS FOUND DURING SURVEY AND DOW PIPELINE, LLC, DID NOT PROVIDE ANY RECORDS FOR THE PIPELINE. ONE CALL DOES NOT SHOW ANY PIPELINES.

THE CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING AND VOGT ENGINEERING, L.P. 48 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION

PREPARED BY
VOGT ENGINEERING
2203 Timberloch Pl., Suite 124
The Woodlands, Texas 77380
T 281.651.2972
www.vogtengineering.com

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ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG !!
DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE
PROCEEDING WITH ANY EXCAVATION

FORT BEND COUNTY ENGINEER

ENGINEER: _____
J. Stacy Slawinski, P.E.

DATE: _____

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEAR FROM DATE OF APPROVAL.

APPROVED: _____
Development Staff

DATE: _____

THE STATE OF TEXAS
FORT BEND COUNTY

Project:
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4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
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MISSOURI CITY, TX 77549

HINESAD

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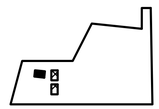
Design Team:

VOGT ENGINEERING
TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place , Suite 124
The Woodlands, TX 77380

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Key Plan



Professional Seals



06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
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1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:

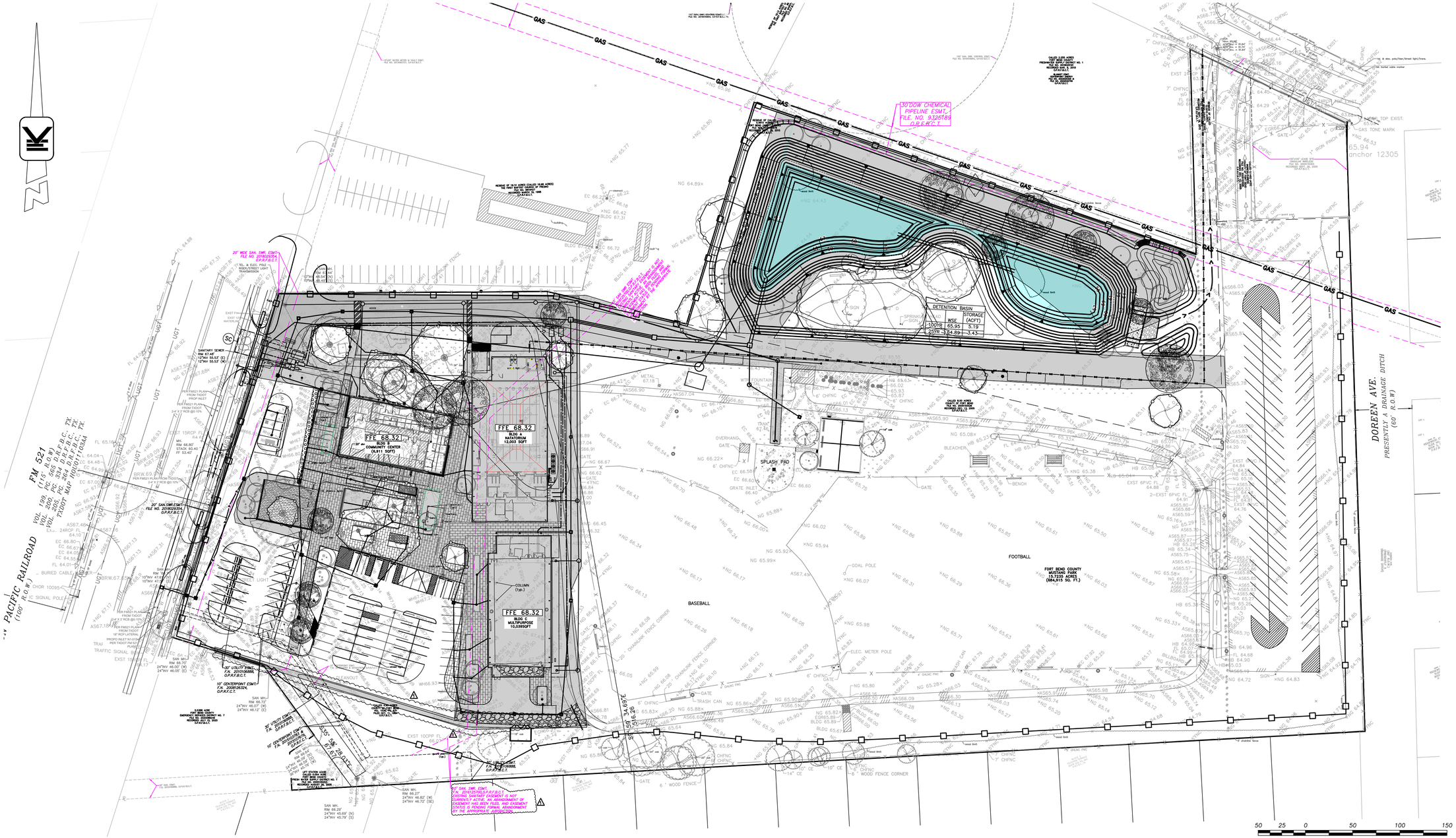
COVER

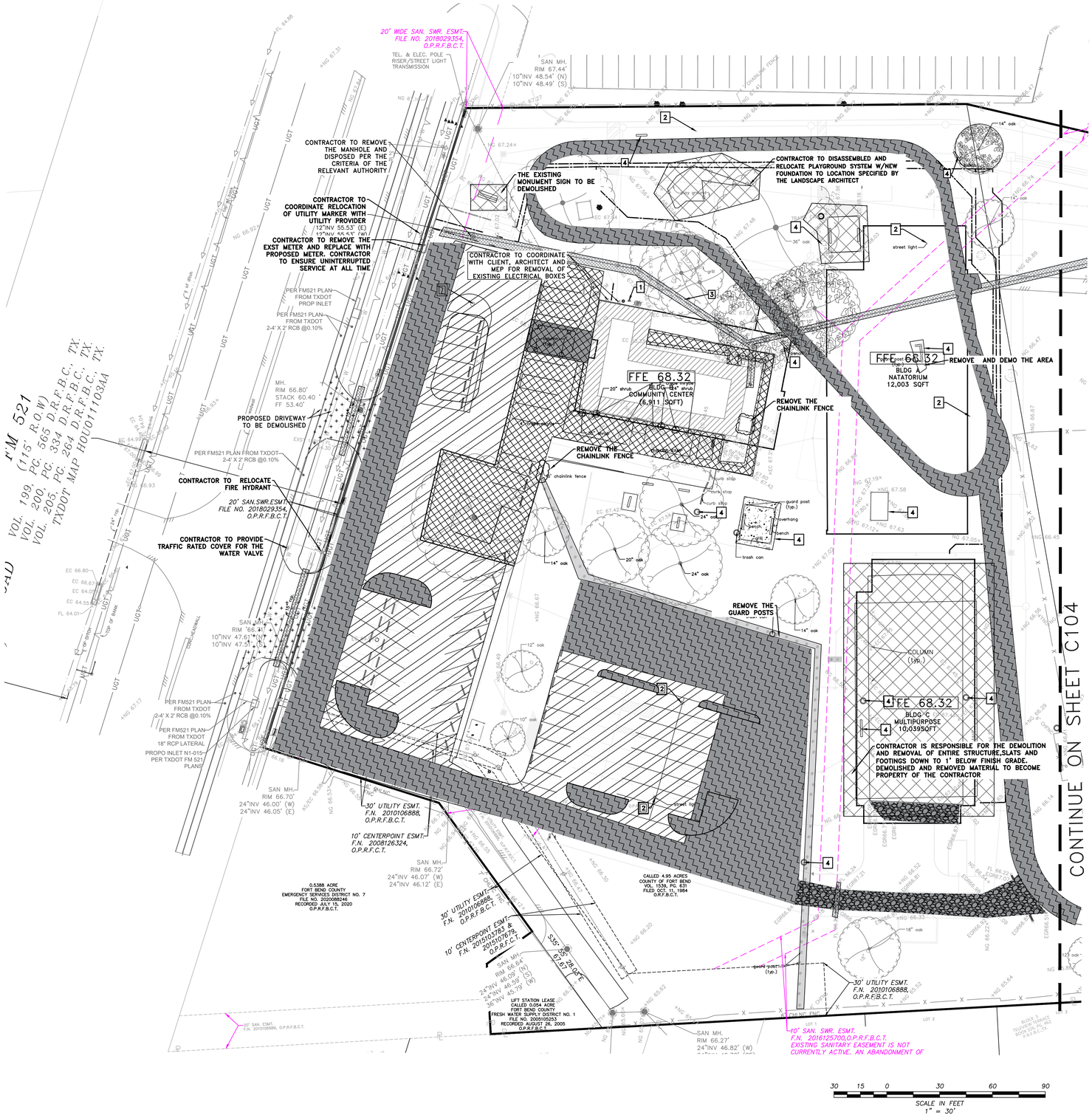
Sheet Number

C100

G:\SHARED DRIVES\CLIENTS\639 HINES ARCHITECTURE + DESIGN\639.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C100 COVER.DWG Jun 20, 2025--4:54 PM KOSHA SHAH


30' DOW CHEMICAL PIPELINE ESMT. FILE. NO. 9325186 O.P.R.P.C.T.
30' DOW CHEMICAL PIPELINE ESMT. FILE. NO. 9326186 O.P.R.P.C.T.
20' WIDE SAN. SWR. ESMT. FILE NO. 2018023254, O.P.R.P.R.C.T.
PM 521
(115' R.O.W.)
VOL. 199, PG. 585, D.R.F.B.C., TX.
VOL. 100, PG. 634, D.R.F.B.C., TX.
VOL. 250, PG. 284, D.R.F.B.C., TX.
TXDOT MAP #0500711036A
UNION PACIFIC RAILROAD
(100' R.O.W.)
20' SAN.SWR.ESMT. FILE NO. 2018023254, O.P.R.P.R.C.T.
10' CENTERPOINT ESMT. F.N. 2008126324, O.P.R.P.C.T.
30' UTILITY ESMT. F.N. 2010105886, O.P.R.P.R.C.T.
15' CENTERPOINT ESMT. & 30' UTILITY ESMT. F.N. 2010105886, O.P.R.P.R.C.T.
30' UTILITY ESMT. F.N. 2010105886, O.P.R.P.R.C.T.
50' SAN. SWR. ESMT. F.N. 2016125700,O.P.R.F.B.C.T. EXISTING SANITARY EASEMENT IS NOT LOCATED WITHIN THE BOUNDARY LINES OF EASEMENT HAS BEEN FILED AND EASEMENT STATUS IS PENDING FORMAL ABANDONMENT BY THE APPROPRIATE AUTHORITIES.
FORT BEND COUNTY MUSTANG PARK 15.7235 ACRES (684,915 SQ. FT.)
DOREEN AVE.
PRESENTLY A DRAINAGE DITCH
(60' R.O.W)
S69°34'26"E 2697.05'
S45°58'29"E 67.03'
FFE 68.41
FFE 68.36
FFE 68.22
FFE 68.32
COLUMN (typ.)
GOAL POLE
ELEC. METER POLE
BLEACHER
SPRINKLER HEAD
TRASH CAN
GATE
OVERHANG
SAN MH. RIM 67.47' 10"NW 48.54' (N) 10"NW 48.64' (S) 12"NW 55.55' (W) 12"NW 55.55' (E)
SAN MH. RIM 66.72' 24"NW 46.07' (W) 24"NW 46.12' (E)
SAN MH. RIM 66.27' 24"NW 46.82' (W) 24"NW 46.72' (SE)
SAN MH. RIM 66.24' 24"NW 45.69' (N) 24"NW 45.79' (S)
SANITARY SEWER RIM 67.48' 12"NW 55.55' (S) 12"NW 55.55' (N)
MH RIM 66.90' STACK 65.40' 8" 53.40'
FIRE HYDRANT
POWER POLE
TRAFFIC SIGNAL POLE
ELECTRIC BOX
TEL. BURIED CABLE MARKER
ANCHOR 10095
TRAFFIC SIGNAL BOX
EXIST 18RCP FL 63.41
EXIST 24RCP FL 64.10
EXIST 6PVC FL 64.88
EXIST 10CPP FL 66.21
EXIST 8PVC FL 64.64
EXIST 12PVC FL 64.91
EXIST 6"PVC FL 64.91
EXIST 8"PVC FL 64.76
EXIST 6"PVC FL 64.68
EXIST 8"PVC FL 64.94
EXIST 6PVC FL 64.54
EXIST 8PVC FL 64.76
EXIST 12RCP FL 63.75
EXIST 24"DIP FL 63.16
EXIST 24"CIP FL 63.16
EXIST 18"CIP FL 63.66
EXIST 12"CIP FL 64.16
EXIST 8"CIP FL 64.66
EXIST 6"CIP FL 65.16
EXIST 4"CIP FL 65.66
EXIST 2"CIP FL 66.16
EXIST 1"CIP FL 66.66
EXIST 6"CHFNC FL 64.29
EXIST 6"CHFNC FL 64.36
EXIST 6"CHFNC FL 64.40
EXIST 6"CHFNC FL 64.44
EXIST 6"CHFNC FL 64.48
EXIST 6"CHFNC FL 64.52
EXIST 6"CHFNC FL 64.56
EXIST 6"CHFNC FL 64.60
EXIST 6"CHFNC FL 64.64
EXIST 6"CHFNC FL 64.68
EXIST 6"CHFNC FL 64.72
EXIST 6"CHFNC FL


GAS
30' DOW CHEMICAL PIPELINE ESMT. FILE NO. 9326189 O.R.F.B.C.T.
DETENTION BASIN
STORAGE (ACFT)
WSE
10YR 65.95 5.19
25YR 66.89 7.43
FFE 68.32
BLDG A NATATORIUM 12,003 SQFT
FFE 68.32
BLDG B COMMUNITY CENTER (6,811 SQFT)
FFE 68.32
BLDG C MULTIPURPOSE 10,039SQFT
SPLASH PAD
FOOTBALL
BASEBALL
FORT BEND COUNTY MUSTANG PARK 13.7235 ACRES (597,815 SQ. FT.)
DORREEN AVE.
PRESENTLY A DRAINAGE DITCH
(60' R.O.W.)
FM 521
(115' R.O.W.)
VOL. 199, PG. 565 D.R.F.B.C. TX.
VOL. 200, PG. 334 D.R.F.B.C. TX.
VOL. 2000, PG. 481 D.R.F.B.C. TX.
PACIFIC RAILROAD
(100' R.O.W.)
20' SAN./SWR.ESMT. FILE NO. 2018029354 O.P.R.F.B.C.T.
20' WIDE SAN. SWR. ESMT. FILE NO. 2018029354 O.P.R.F.B.C.T.
30' UTILITY ESMT. F.N. 2010105055 O.P.R.F.B.C.T.
10' DRAINAGE ESMT. F.N. 2009125426 O.P.R.F.B.C.T.
30' UTILITY ESMT. F.N. 2009125426 O.P.R.F.B.C.T.
10' DRAINAGE ESMT. F.N. 2009125426 O.P.R.F.B.C.T.
15' SAN. SWR. ESMT. F.N. 2009125426 O.P.R.F.B.C.T.
SANITARY SEWER RIM 67.65 12"NW 55.53' (E) 12"NW 55.53' (N)
SAN MH- RIM 66.70' 24"NW 46.00' (W) 24"NW 46.00' (E)
SAN MH- RIM 66.57' 24"NW 46.07' (W) 24"NW 46.12' (E)
SAN MH- RIM 66.23' 24"NW 46.82' (W) 24"NW 46.72' (E)
SAN MH- RIM 66.39' 24"NW 45.69' (N) 24"NW 45.79' (S)
TRAFFIC SIGNAL POLE
IC SIGNAL POLE
GAS TONE MARK
WATER TOP EXIST.
anchor 12305
65.94
COLUMN (typ.)
ELEC. METER POLE
6' CHNFC
6' WOOD FENCE
6' WOOD FENCE CORNER
CHAINLINK FENCE CORNER
TRASH CAN
GOAL POST
GATE
SPRINKLER
BENCH
BLEACHER
OVERHANG
GRATE INLET
METAL
WOOD
CONCRETE
BRICK
WATER
GRASS
TREE
BUSH
EXIST 10CPP FL
EXIST 15CPP FL
EXIST 18CPP FL
EXIST 24RCP FL
EXIST 6PVC FL
EXIST 8PVC FL
EXIST 10PVC FL
EXIST 12PVC FL
EXIST 15PVC FL
EXIST 18PVC FL
EXIST 24PVC FL
BURIED CABLE
OHP
UGT
SAN
STORM
SS
SC
BRW.69.00
BRW.69.03
BRW.69.07
BRW.69.10
BRW.69.13
BRW.69.17
BRW.69.20
BRW.69.23
BRW.69.27
BRW.69.30
BRW.69.33
BRW.69.37
BRW.69.40
BRW.69.43
BRW.69.47
BRW.69.50
BRW.69.53
BRW.69.57
BRW.69.60
BRW.69.63
BRW.69.67
BRW.69.70
BRW.69.73
BRW.69.77
BRW.69.80
BRW.69.83
BRW.69.87
BRW.69.90
BRW.69.93
BRW.69.97
BRW.70.00
BRW.70.03
BRW.70.07
BRW.70.10
BRW.70.13
BRW.70.17
BRW.70.20
BRW.70.23
BRW.70.27



CLEARING & EROSION NOTES:

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2. CONTRACTOR TO PROVIDE A COPY OF THE SITE NOTICE TO THE COUNTY PRIOR TO COMMENCING CONSTRUCTION.
3. CLEAR ALL AREAS AS INDICATED (2' BEHIND ALL PROPOSED CURBS, 10' FROM ALL PROPOSED STORM AND SANITARY SEWER, 5' FROM ALL PROPOSED WATERLINE, 10' FROM BUILDINGS AND FOOTINGS, 5' FROM ALL MISC STRUCTURES AND EDGE OF REGRADED AREAS UNLESS OTHERWISE SHOWN).
4. WITHIN SEVEN (7) DAYS OF CLEARING AND PRIOR TO ANY OTHER WORK, THE CONTRACTOR MUST FURNISH AND INSTALL 6' TALL CHAIN LINK PROTECTIVE FENCING AROUND THE ENTIRE INTERIOR EDGE OF THE FOREST PRESERVE. CONTRACTOR TO PROVIDE GATED ENTRANCE FOR CONSTRUCTION ACCESS.
5. CONTRACTOR SHALL USE SOD TO STABILIZED SITE EXCEPT WHERE NOTED.
6. THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT AND MAINTAIN ALL EROSION CONTROL MEASURES SHOWN ON THE DRAWINGS.
7. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED TO PREVENT SEDIMENT FROM LEAVING THE SITE AS CONSTRUCTION PROGRESSES.
8. PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY LANDSCAPE PLANS FOR ANY TREE REMOVAL AND TREE PROTECTION FENCE.

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL 2, 2014.

SURVEY NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE TIED TO THE NSRS AND EXPRESSED IN THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE 4204, NAD 83' (2011), ITRF (EPOCH 2010.0000), NAVD '88 (GEOID 18).
2. ALL DISTANCES SHOWN HEREON ARE SURFACE VALUES. ALL COORDINATES SHOWN HEREON ARE GRID VALUES UNLESS OTHERWISE NOTED. TO CONVERT SURFACE VALUES TO GRID VALUES MULTIPLY BY THE SCALE FACTOR OF 0.999869492002.
3. ABSTRACT RESEARCH PROVIDED BY COURTHOUSE SPECIALIST..
4. PROJECT TIED TO FORT BEND COUNTY CONTROL MONUMENTS 259, 437 & 438.
5. TEXAS RAILROAD COMMISSION WEBSITE SHOWS A 4.5" HIGH VOLATILE PIPELINE OWNED BY DOW PIPELINE, LLC, STATES THE PIPELINE IS ABANDONED, CONTACT @ (713) 654-3636. NO PIPELINE MARKERS FOUND DURING SURVEY AND DOW PIPELINE, LLC, DID NOT PROVIDE ANY RECORDS FOR THE PIPELINE. ONE CALL DOES NOT SHOW ANY PIPELINES.

DEMOLITION NOTES AND LEGEND:

- EXISTING PAVEMENT, SIDEWALK AND CURB AND GUTTER TO BE REMOVED. ALL DEMOLISHED AND REMOVED MATERIAL TO BECOME PROPERTY OF THE CONTRACTOR
- CONTRACTOR TO FIELD VERIFY THE LOCATION OF THE EXISTING LINE. REMOVE THE EXISTING UTILITY. CONTRACTOR TO COORDINATE WITH THE ENGINEER FOR ANY DISCREPANCY
- REMOVE THE GRAVEL DRIVE
- TREE REMOVAL OR REPLACE AS PER THE PLANS BY LANDSCAPE ARCHITECT PLANS
- REMOVE GUARD POSTS IN THE AREA
- REMOVE CHAIN LINK FENCE SYSTEM
- CONTRACTOR TO REFER AND COORDINATE WITH ARCHITECT FOR THE EXISTING ENTRY DEMOLITION EXTENT, CANOPY, COLUMN AND FOUNDATION DOWN TO 1' BELOW FINISH FLOOR
- CONTRACTOR TO RESURFACE AND RESTRIPE THE AREA

1. REMOVE EXISTING APPURTENANCES. CONTRACTOR TO COORDINATE WITH MEP FOR THE CURRENT USAGE OF THE METER AND RELOCATE.
2. REMOVE LIGHT POLE AND CONCRETE BASE. LOCATE AND REMOVE ELECTRICAL CONDUIT
3. CONTRACTOR TO LOCATE SANITARY CLEAN OUTS AND THE 4" LINE. CONTRACTOR TO COORDINATE WITH THE ENGINEER FOR THE REMOVAL AND/OR CAPPING OF THE LINE AND THE CONNECTION.
4. REMOVE FURNITURE, REMOVE TRASH CANS, BENCHES, MISC. FURNITURE, TABLES, SHADE STRUCTURE, WOOD BOLLARDS, MISC CHAIN GUARDS AND REMOVE THE BASE. CONTRACTOR TO COORDINATE THE CUTTING AND REMOVAL OF ALL FURNITURE, BENCHES AND WOOD BOLLARDS WITH THE COMMISSIONED ARTIST FOR FURNITURE ART /SCULPTURE

NOTE: ALL DEMOLISHED AND REMOVED MATERIAL TO BECOME PROPERTY OF THE CONTRACTOR

EXISTING LEGEND:

- STORM SEWER
- SANITARY SEWER
- WATERLINE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- CABLE
- FIBER OPTIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- ELECTRICAL JUNCTION BOX
- LAMP POST
- GAS VALVE
- PULL BOX
- LIGHT POLE
- CTM FIBER
- SIGN POLE
- PEDESTAL
- PIPELINE MARKER
- FLOOD LIGHT FIXTURE
- FIRE HYDRANT

PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
- OVERHEAD ELECTRIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- LANDSCAPE INLETS

ONE-CALL NOTIFICATION SYSTEM
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AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION

THE STATE OF TEXAS — FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

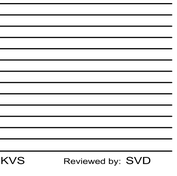
Contract No: 2024-002

Design Team:

VOGT ENGINEERING
TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals



06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

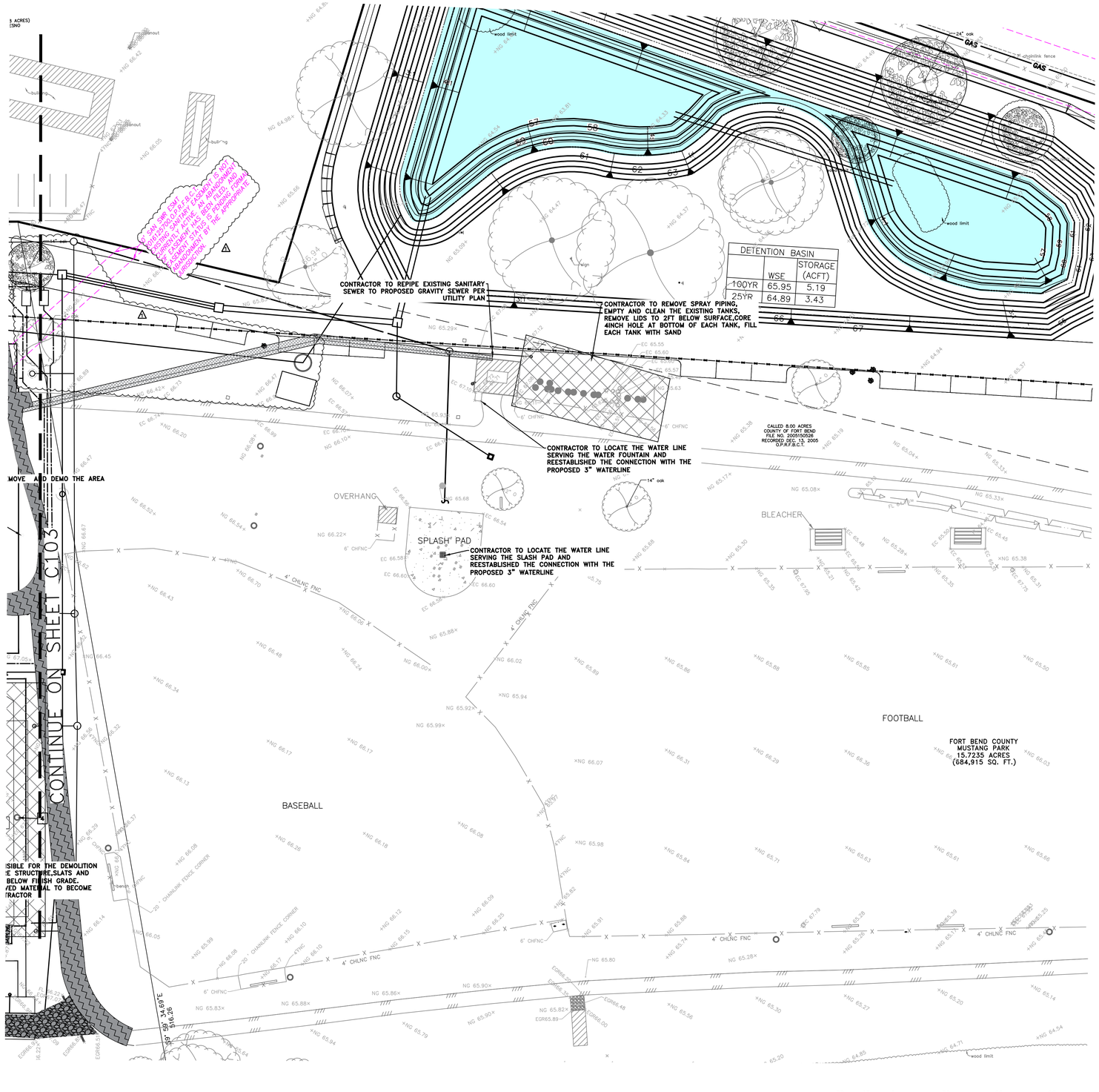
Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
DEMOLITION PLAN I

Sheet Number
C103

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\103 DRAFTING\REVISIONS\REV 01\C103 DEMOLITION PLAN.DWG Jun. 20, 2025-4:56 PM KISHA SHAH



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- TELEPHONE
- CABLE
- FIBER OPTIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- ELECTRICAL JUNCTION BOX
- LAMP POST
- GAS VALVE
- PULL BOX
- LIGHT POLE
- CTM FIBER
- SIGN POLE
- PEDESTAL
- PIPELINE MARKER
- FLOOD LIGHT FIXTURE
- FIRE HYDRANT

PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
- OVERHEAD ELECTRIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- LANDSCAPE INLETS

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

SURVEY NOTES

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ONE-CALL NOTIFICATION SYSTEM
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(HOUSTON: 713-432-0365)
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THE STATE OF TEXAS · FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

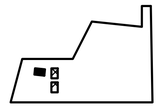
Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
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The Woodlands, TX 77380
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Key Plan



Professional Seals

STATE OF TEXAS · SERGIO VAN DUSEN · 97434 · LICENSED PROFESSIONAL ENGINEER

06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
DEMOLITION PLAN-II

Sheet Number
C104

G:\SHARED DRIVES\CLIENTS\639 HINES ARCHITECTURE + DESIGN\639.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C103 DEMOLITION PLAN.DWG Jun. 20, 2025 - 4:55 PM KOSHA SHAH



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DRAINAGE LEGEND:

- X-# / #.## — AREA / ACREAGE
- DRAINAGE AREA BREAK LINE
- DRAINAGE AREA NUMBERS
- 1 / 0.18 Q5 =1.12 — TOTAL RUNOFF IN CFS, FREQUIUENCY, TOTAL AREA IN ACRES
- SHEET FLOW DIRECTION

EXISTING LEGEND:

- STORM SEWER
- SANITARY SEWER
- WATERLINE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- CABLE
- FIBER OPTIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- ELECTRICAL PEDESTAL
- GUY WIRE
- TRAFFIC SIGNAL POLE
- FIRE HYDRANT
- POWER POLE
- IRRIGATION VALVE
- WATER VALVE
- WATER METER
- TELEPHONE PEDESTAL
- TRASH CAN
- GUARD POST
- CLEANOUT
- GRATE INLET
- EXISTING TREE
- TREE STUMP

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

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Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

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Key Plan

Professional Seals

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06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

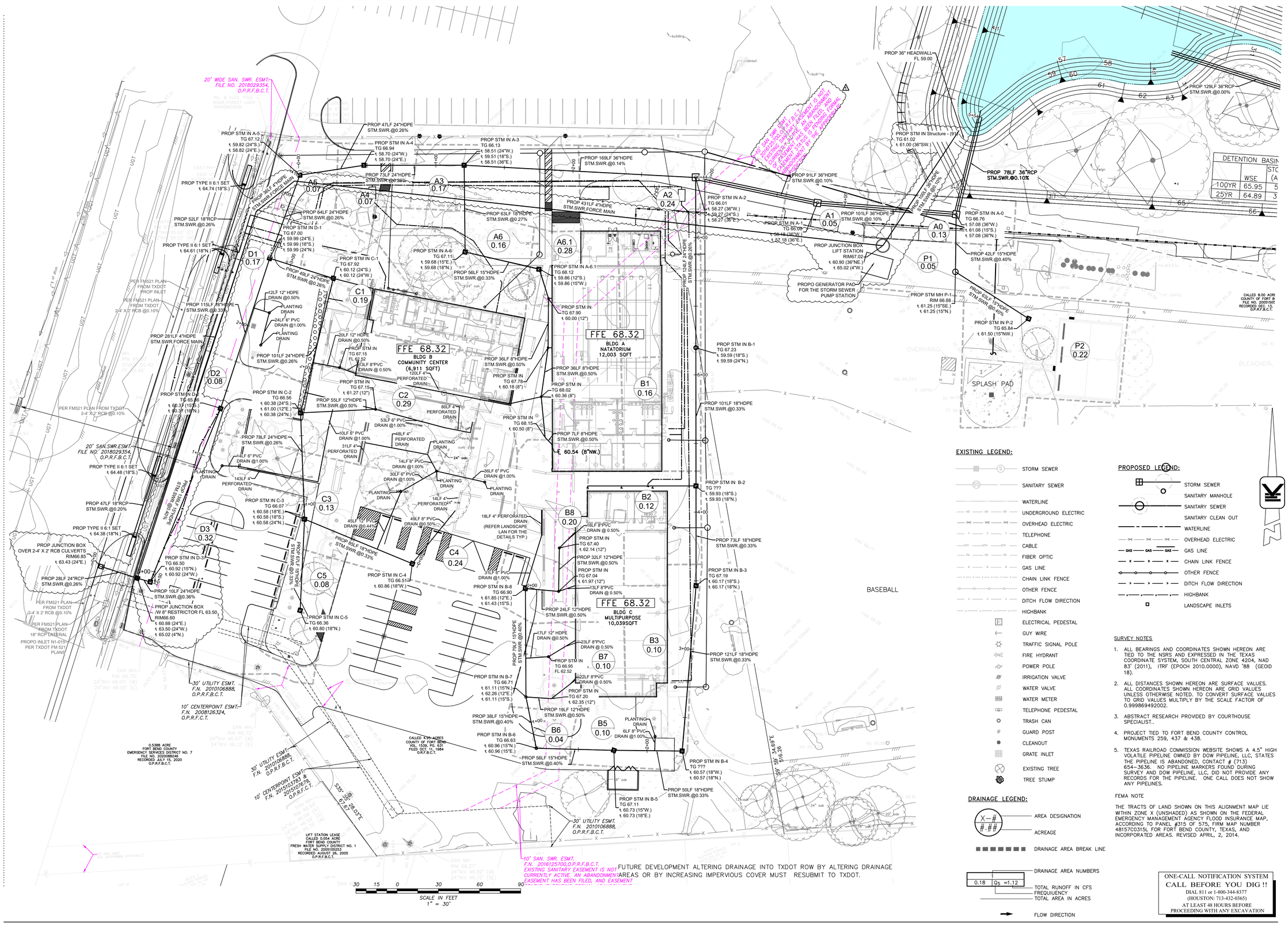
Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
EXISTING DRAINAGE AREA MAP

Sheet Number
C201

G:\SHARED DRIVES\CLIENTS\39 HINES ARCHITECTURE + DESIGN\39.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C201 EXISTING DRAINAGE AREA MAP.DWG Jun. 20, 2025—4:56 PM KOSHA SHAH



DETENTION BASIN

	WSE	STO (A
100YR	65.95	5
25YR	64.89	3

EXISTING LEGEND:

- STORM SEWER
- SANITARY SEWER
- WATERLINE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- CABLE
- FIBER OPTIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- ELECTRICAL PEDESTAL
- GUY WIRE
- TRAFFIC SIGNAL POLE
- FIRE HYDRANT
- POWER POLE
- IRRIGATION VALVE
- WATER VALVE
- WATER METER
- TELEPHONE PEDESTAL
- TRASH CAN
- GUARD POST
- CLEANOUT
- GRATE INLET
- EXISTING TREE
- TREE STUMP

DRAINAGE LEGEND:

- X–# / #.## — AREA DESIGNATION / ACREAGE
- DRAINAGE AREA BREAK LINE
- 1 / 0.18 Q5 =1.12 — DRAINAGE AREA NUMBERS; TOTAL RUNOFF IN CFS; FREQUENCY; TOTAL AREA IN ACRES
- FLOW DIRECTION

PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
- OVERHEAD ELECTRIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- LANDSCAPE INLETS

SURVEY NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE TIED TO THE NSRS AND EXPRESSED IN THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE 4204, NAD 83' (2011), ITRF (EPOCH 2010.0000), NAVD '88 (GEOID 18).
2. ALL DISTANCES SHOWN HEREON ARE SURFACE VALUES. ALL COORDINATES SHOWN HEREON ARE GRID VALUES UNLESS OTHERWISE NOTED. TO CONVERT SURFACE VALUES TO GRID VALUES MULTIPLY BY THE SCALE FACTOR OF 0.999869492002.
3. ABSTRACT RESEARCH PROVIDED BY COURTHOUSE SPECIALIST..
4. PROJECT TIED TO FORT BEND COUNTY CONTROL MONUMENTS 259, 437 & 438.
5. TEXAS RAILROAD COMMISSION WEBSITE SHOWS A 4.5" HIGH VOLATILE PIPELINE OWNED BY DOW PIPELINE, LLC, STATES THE PIPELINE IS ABANDONED, CONTACT # (713) 654–3636. NO PIPELINE MARKERS FOUND DURING SURVEY AND DOW PIPELINE, LLC, DID NOT PROVIDE ANY RECORDS FOR THE PIPELINE. ONE CALL DOES NOT SHOW ANY PIPELINES.

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

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DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place, Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS · SERGIO VAN DUSEN · 97434 · LICENSED · PROFESSIONAL ENGINEER
06/20/2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

03-14-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
PROPOSED DRAINAGE AREA MAP AND STORM SEWER PLAN

Sheet Number
C202

G:\SHARED DRIVES\CLIENTS\539 HINES ARCHITECTURE + DESIGN\539.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C202 PROPOSED DRAINAGE AREA MAP.DWG Jun. 20, 2025--4:57 PM KOSHA SHAH

MUSTANG PARK RENOVATION & NEW CONSTRUCTION
STORM SEWER CAPACITY ANALYSIS
BY: Vogt Engineering

RAINFALL INTESITY PARAMETERS
TXDOT b = 51.7
d = 5.09
e = 0.6222
RAINFALL FREQUENCY = 25yr
C_F = 1.1

Area Designation	Up-stream Inlet	Down-stream Inlet	Area (acres)	Cummulative Area (acres)	Runoff Coefficient C	Time of Conc. (min)	Intensity [In/Hr]	Sum of Flows [cfs]	Reach Length (ft)	Pipe Diam [Inch]	Slope [%]	Manning's "n"	Design Velocity [fps]	Design Capacity [cfs]	Flowline Elevation Upstream [ft]	Flowline Elevation Dnstream [ft]	Actual Velocity [fps]	Change in Head [ft]	Hydraulic Gradient [%]	Hydraulic Gradient Upstream [ft]	Hydraulic Gradient Dnstream [ft]	Critical Elevation Upstream [ft]	Critical Elevation Dnstream [ft]
D3	D-3	D-2	0.32	0.32	0.85	10	9.54	**2.87**	136	24	0.26%	0.012	3.99	12.53	60.65	60.30	0.91	0.02	0.014%	61.93	61.91	66.27	66.32
D2	D-2	D-1	0.08	0.40	0.85	10.06	9.52	**3.54**	114.9	24	0.26%	0.012	3.99	12.53	60.30	60.00	1.13	0.02	0.021%	61.91	61.88	66.32	67.00
C4	C-4	C-3	0.24	0.24	0.85	10	9.54	**2.16**	84.88	18	0.33%	0.012	3.71	6.55	60.86	60.58	1.22	0.03	0.036%	62.03	62.00	66.51	66.07
C5	C-5	C-3	0.08	0.08	0.46	10	9.54	**0.37**	67	18	0.33%	0.012	3.71	6.55	60.80	60.58	0.21	0.00	0.001%	62.00	62.00	66.36	66.07
C3	C-3	C-2	0.13	0.45	0.72	10.09	9.51	**3.39**	77.5	24	0.26%	0.012	3.99	12.53	60.58	60.38	1.08	0.01	0.019%	62.00	61.98	66.07	66.49
C2	C-2	C-1	0.29	0.74	0.85	10.16	9.48	**6.52**	99	24	0.26%	0.012	3.99	12.53	60.38	60.12	2.08	0.07	0.070%	61.98	61.92	66.49	67.93
C1	C-1	D-1	0.19	0.93	0.655	10.22	9.46	**6.32**	48	24	0.26%	0.012	3.99	12.53	60.12	60.00	2.01	0.03	0.066%	61.92	61.88	67.93	67.00
D1	D-1	A-5	0.17	1.50	0.85	10.28	9.43	**13.22**	70	24	0.26%	0.012	3.99	12.53	60.00	59.82	4.21	0.20	0.289%	61.88	61.68	67.00	66.81
A5	A-5	A-4	0.07	1.57	0.525	10.35	9.41	**8.51**	48	24	0.26%	0.012	3.99	12.53	58.82	58.70	2.71	0.06	0.120%	61.68	61.62	66.81	66.94
A4	A-4	A-3	0.07	1.64	0.525	10.41	9.38	**8.86**	73	24	0.26%	0.012	3.99	12.53	58.70	58.51	2.82	0.10	0.130%	61.62	61.53	66.94	66.13
A6.1	A-6.1	A-6	0.28	0.28	0.85	10	9.54	**2.51**	56	15	0.40%	0.012	3.62	4.44	58.94	58.71	2.04	0.07	0.128%	61.60	61.53	68.12	67.11
A6	A-6	A-3	0.16	0.44	0.2	10.11	9.50	**0.92**	63	18	0.33%	0.012	3.71	6.55	58.71	58.51	0.52	0.00	0.007%	61.53	61.53	67.11	66.13
A3	A-3	A-2	0.17	2.24	0.584931	10.20	9.46	**13.67**	169	36	0.14%	0.012	3.84	27.11	58.51	58.27	1.93	0.06	0.036%	61.53	61.47	66.13	66.10
B8	B-8	B-7	0.20	0.20	0.85	10	9.54	**1.80**	79.08	15	0.40%	0.012	3.62	4.44	61.43	61.11	1.47	0.05	0.066%	62.18	62.13	66.90	66.71
B7	B-7	B-6	0.10	0.30	0.85	10.11	9.50	**2.71**	38	15	0.40%	0.012	3.62	4.44	61.11	60.96	2.21	0.06	0.149%	62.13	62.07	66.71	66.63
B6	B-6	B-5	0.04	0.35	0.85	10.23	9.46	**3.07**	56.45	15	0.40%	0.012	3.62	4.44	60.96	60.73	2.50	0.11	0.191%	62.07	61.96	66.63	67.11
B5	B-5	B-4	0.10	0.45	0.85	10.34	9.41	**3.96**	50	18	0.33%	0.012	3.71	6.55	60.73	60.57	2.24	0.06	0.121%	61.96	61.90	67.11	67.56
	B-4	B-3	0.00	0.45	0.85	10.43	9.38	**3.95**	121	18	0.33%	0.012	3.71	6.55	60.57	60.17	2.23	0.14	0.120%	61.90	61.76	67.56	67.19
B3	B-3	B-2	0.10	0.55	0.72	10.52	9.34	**4.05**	73	18	0.33%	0.012	3.71	6.55	60.17	59.93	2.29	0.09	0.126%	61.76	61.66	67.19	68.78
B2	B-2	B-1	0.12	0.67	0.655001	10.61	9.31	**4.49**	101	18	0.33%	0.012	3.71	6.55	59.93	59.59	2.54	0.16	0.155%	61.66	61.51	68.78	67.23
B1	B-1	A-2	0.16	0.83	0.525	10.70	9.28	**4.43**	124	24	0.26%	0.012	3.99	12.53	59.59	59.27	1.41	0.04	0.032%	61.51	61.47	67.23	66.01
A2	A-2	A-1	0.24	3.32	0.594148	10.77	9.25	**20.05**	91	36	0.10%	0.012	3.24	22.91	58.27	58.18	2.84	0.07	0.077%	61.47	61.40	66.10	67.10
A1	A-1	A-0	0.05	3.37	0.85	10.82	9.23	**29.05**	101	36	0.10%	0.012	3.24	22.91	58.18	58.08	4.11	0.16	0.161%	61.40	61.24	67.10	67.02
P2	P-2	P-1	0.22	0.22	0.33	10	9.54	**0.75**	63	15	0.40%	0.012	3.62	4.44	61.50	61.25	0.61	0.01	0.011%	61.29	61.28	65.84	65.93
P3	P-1	A-0	0.05	0.27	0.85	10.11	9.50	**2.36**	42	15	0.40%	0.012	3.62	4.44	61.25	61.08	1.92	0.05	0.113%	61.28	61.24	65.93	67.02
A0	A-0	Pond	0.13	3.76	0.85	10.87	9.22	**32.40**	78	36	0.10%	0.012	3.24	22.91	58.08	58.00	4.58	0.16	0.200%	61.24	61.08	67.02	0.00

STORM SEWER CAPACITY ANALYSIS
BY: Vogt Engineering

TXDOT b = 42.99
d = 1.08
e = 0.5274
NFALL FREQUENCY = 5yr
C_F = 1.25

Area Designation	Up-stream Inlet	Down-stream Inlet	Area (acres)	Cummulative Area (acres)	Runoff Coefficient C	Time of Conc. (min)	Intensity [In/Hr]	Sum of Flows [cfs]	Reach Length (ft)	Pipe Diam [Inch]	Slope [%]	Manning's "n"	Design Velocity [fps]	Design Capacity [cfs]	Flowline Elevation Upstream [ft]	Flowline Elevation Dnstream [ft]	Actual Velocity [fps]	Change in Head [ft]	Hydraulic Gradient [%]	Hydraulic Gradient Upstream [ft]	Hydraulic Gradient Dnstream [ft]	Critical Elevation Upstream [ft]	Critical Elevation Dnstream [ft]
D3	D-3	D-2	0.32	0.32	0.85	10.00	12.09	**4.13**	136	24	0.26%	0.012	3.99	12.53	60.65	60.30	1.32	0.04	0.028%	66.70	66.66	66.27	66.32
D2	D-2	D-1	0.08	0.40	0.85	10.00	12.09	**5.12**	115	24	0.26%	0.012	3.99	12.53	60.30	60.00	1.63	0.05	0.043%	66.66	66.61	66.32	67.00
C4	C-4	C-3	0.24	0.24	0.85	10.00	12.09	**3.11**	85	18	0.33%	0.012	3.71	6.55	60.86	60.58	1.76	0.06	0.074%	66.92	66.86	66.51	66.07
C5	C-5	C-3	0.08	0.08	0.46	10.00	12.09	**0.54**	67	18	0.33%	0.012	3.71	6.55	60.80	60.58	0.30	0.00	0.002%	66.86	66.86	66.36	66.07
C3	C-3	C-2	0.13	0.45	0.72	10.00	12.09	**4.90**	78	24	0.26%	0.012	3.99	12.53	60.58	60.38	1.56	0.03	0.040%	66.86	66.83	66.07	66.49
C2	C-2	C-1	0.29	0.74	0.85	10.00	12.09	**9.45**	99	24	0.26%	0.012	3.99	12.53	60.38	60.12	3.01	0.15	0.148%	66.83	66.68	66.49	67.93
C1	C-1	D-1	0.19	0.93	0.66	10.00	12.09	**9.18**	48	24	0.26%	0.012	3.99	12.53	60.12	60.00	2.92	0.07	0.140%	66.68	66.61	67.93	67.00
D1	D-1	A-5	0.17	1.50	0.85	10.00	12.09	**19.25**	70	24	0.26%	0.012	3.99	12.53	60.00	59.82	6.13	0.43	0.614%	66.61	66.18	67.00	66.81
A5	A-5	A-4	0.07	1.57	0.53	10.00	12.09	**12.43**	48	24	0.26%	0.012	3.99	12.53	58.82	58.70	3.96	0.12	0.256%	66.18	66.06	66.81	66.94
A4	A-4	A-3	0.07	1.64	0.53	10.00	12.09	**12.98**	73	24	0.26%	0.012	3.99	12.53	58.70	58.51	4.13	0.20	0.279%	66.06	65.86	66.94	66.13
A6.1	A-6.1	A-6	0.28	0.28	0.85	10.00	12.09	**3.61**	56	15	0.40%	0.012	3.62	4.44	58.94	58.71	2.94	0.15	0.265%	66.01	65.87	68.12	67.11
A6	A-6	A-3	0.16	0.44	0.20	10.00	12.09	**1.33**	63	18	0.33%	0.012	3.71	6.55	58.71	58.51	0.75	0.01	0.014%	65.87	65.86	67.11	66.13
A3	A-3	A-2	0.17	2.24	0.58	10.00	12.09	**19.84**	169	36	0.14%	0.012	3.84	27.11	58.51	58.27	2.81	0.13	0.075%	65.86	65.73	66.13	66.10
B8	B-8	B-7	0.20	0.20	0.85	10.00	12.09	**2.59**	79	15	0.40%	0.012	3.62	4.44	61.43	61.11	2.11	0.11	0.136%	67.25	67.14	66.90	66.71
B7	B-7	B-6	0.10	0.30	0.85	10.00	12.09	**3.92**	38	15	0.40%	0.012	3.62	4.44	61.11	60.96	3.19	0.12	0.311%	67.14	67.02	66.71	66.63
B6	B-6	B-5	0.04	0.35	0.85	10.00	12.09	**4.46**	56	15	0.40%	0.012	3.62	4.44	60.96	60.73	3.64	0.23	0.404%	67.02	66.80	66.63	67.11
B5	B-5	B-4	0.10	0.45	0.85	10.00	12.09	**5.78**	50	18	0.33%	0.012	3.71	6.55	60.73	60.57	3.27	0.13	0.257%	66.80	66.67	67.11	67.56
	B-4	B-3	0.00	0.45	0.85	10.00	12.09	**5.78**	121	18	0.33%	0.012	3.71	6.55	60.57	60.17	3.27	0.31	0.257%	66.67	66.36	67.56	67.19
B3	B-3	B-2	0.10	0.55	0.72	10.00	12.09	**5.95**	73	18	0.33%	0.012	3.71	6.55	60.17	59.93	3.37	0.20	0.272%	66.36	66.16	67.19	68.78
B2	B-2	B-1	0.12	0.67	0.66	10.00	12.09	**6.62**	101	18	0.33%	0.012	3.71	6.55	59.93	59.59	3.75	0.34	0.337%	66.16	65.82	68.78	67.23
B1	B-1	A-2	0.16	0.83	0.53	10.00	12.09	**6.56**	124	24	0.26%	0.012	3.99	12.53	59.59	59.27	2.09	0.09	0.071%	65.82	65.73	67.23	66.01
A2	A-2	A-1	0.24	3.32	0.59	10.00	12.09	**29.77**	91	36	0.10%	0.012	3.24	22.91	58.27	58.18	4.21	0.15	0.169%	65.73	65.58	66.10	67.10
A1	A-1	A-0	0.05	3.37	0.85	10.00	12.09	**43.23**	101	36	0.10%	0.012	3.24	22.91	58.18	58.08	6.12	0.36	0.356%	65.58	65.22	67.10	67.02
P2	P-2	P-1	0.22	0.22	0.33	10.00	12.09	**1.07**	63	15	0.40%	0.012	3.62	4.44	61.50	61.25	0.88	0.01	0.023%	65.33	65.32	65.84	65.93
P3	P-1	A-0	0.05	0.27	0.85	10.00	12.09	**3.41**	42	15	0.40%	0.012	3.62	4.44	61.25	61.08	2.78	0.10	0.236%	65.32	65.22	65.93	67.02
A0	A-0	Pond	0.13	3.76	0.85	10.00	12.09	**48.31**	78.00	36	0.10%	0.012	3.24	22.91	58.08	58.00	6.84	0.35	0.445%	65.22	64.87	67.02	

SURVEY NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE TIED TO THE NSRS AND EXPRESSED IN THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE 4204, NAD 83' (2011), ITRF (EPOCH 2010.0000), NAVD '88 (GEOID 18).
2. ALL DISTANCES SHOWN HEREON ARE SURFACE VALUES. ALL COORDINATES SHOWN HEREON ARE GRID VALUES UNLESS OTHERWISE NOTED. TO CONVERT SURFACE VALUES TO GRID VALUES MULTIPLY BY THE SCALE FACTOR OF 0.999869492002.
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PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
- OVERHEAD ELECTRIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- LANDSCAPE INLETS

EXISTING LEGEND:

- STORM SEWER
- SANITARY SEWER
- WATERLINE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- CABLE
- FIBER OPTIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK

50 25 0 50 100 150
SCALE IN FEET
1" = 50'

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG !!
DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE
PROCEEDING WITH ANY EXCAVATION

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING
TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS
SERGIO VAN DUSEN
97434
LICENSED
PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

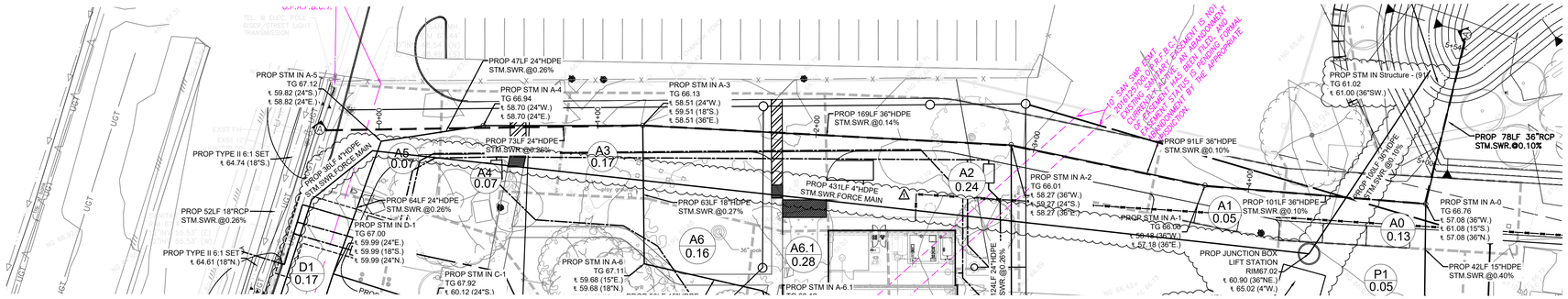
Drawn by: KVS Reviewed by: SVD

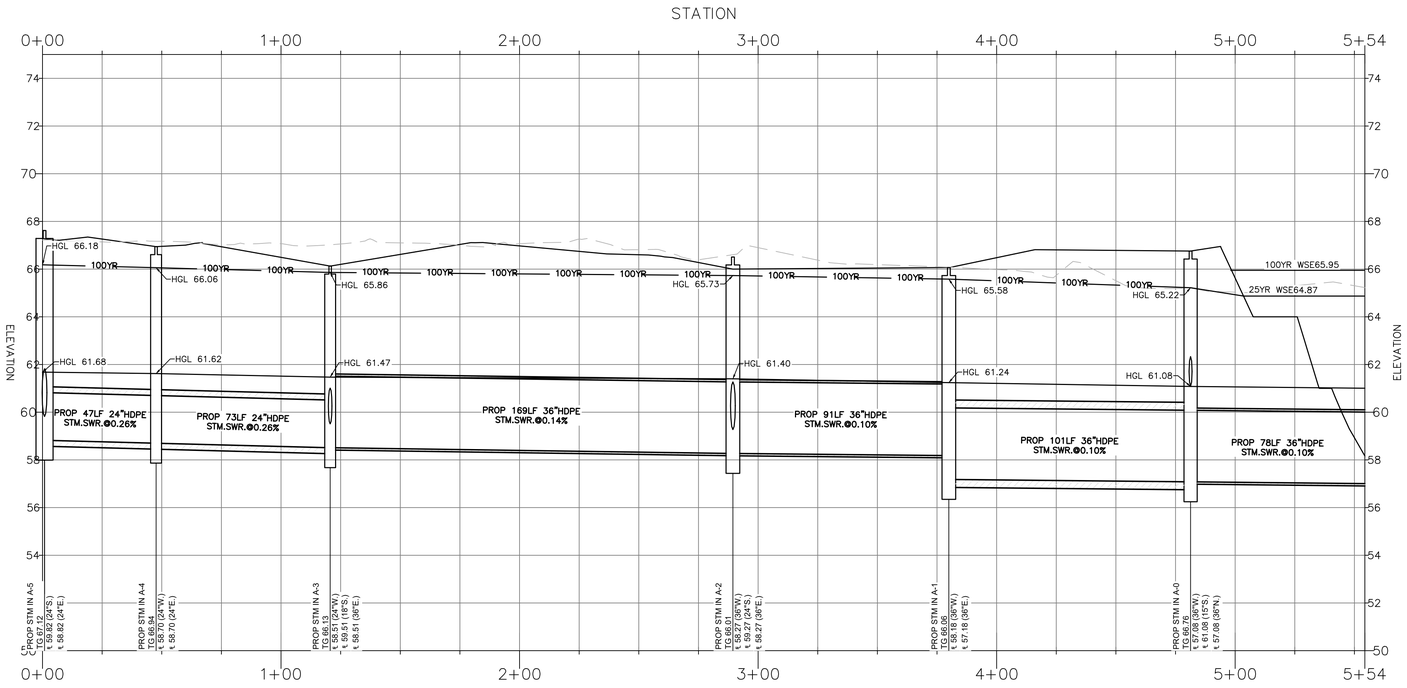
Project No: 2024-002

Sheet Title:
STORM SEWER CALCS

Sheet Number
C202.01

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C202 PROPOSED DRAINAGE AREA MAP.DWG Jun 20, 2025 - 4:59 PM KOSHA SHAH





ALIGNMENT A–A PROFILE
STORM SEWER WITH HGL
SCALE : 1" = 30' (H)
1" = 3' (V)

SURVEY NOTES

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THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

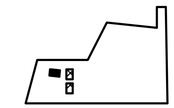
Contract No: 2024-002

Design Team:

VOGT ENGINEERING

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Key Plan



Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

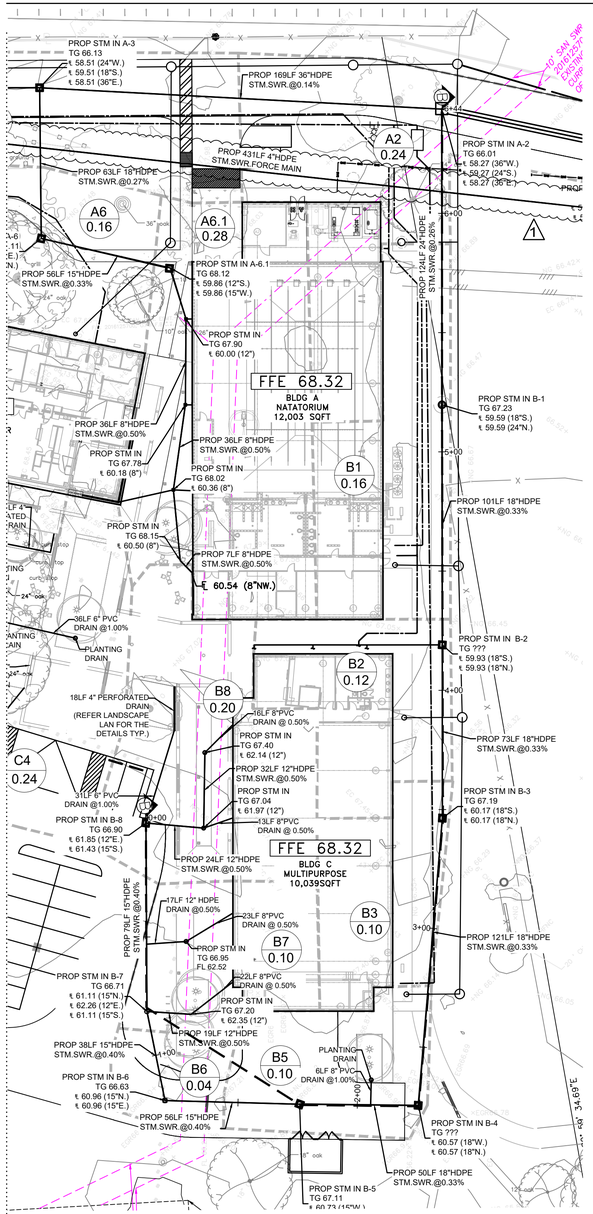
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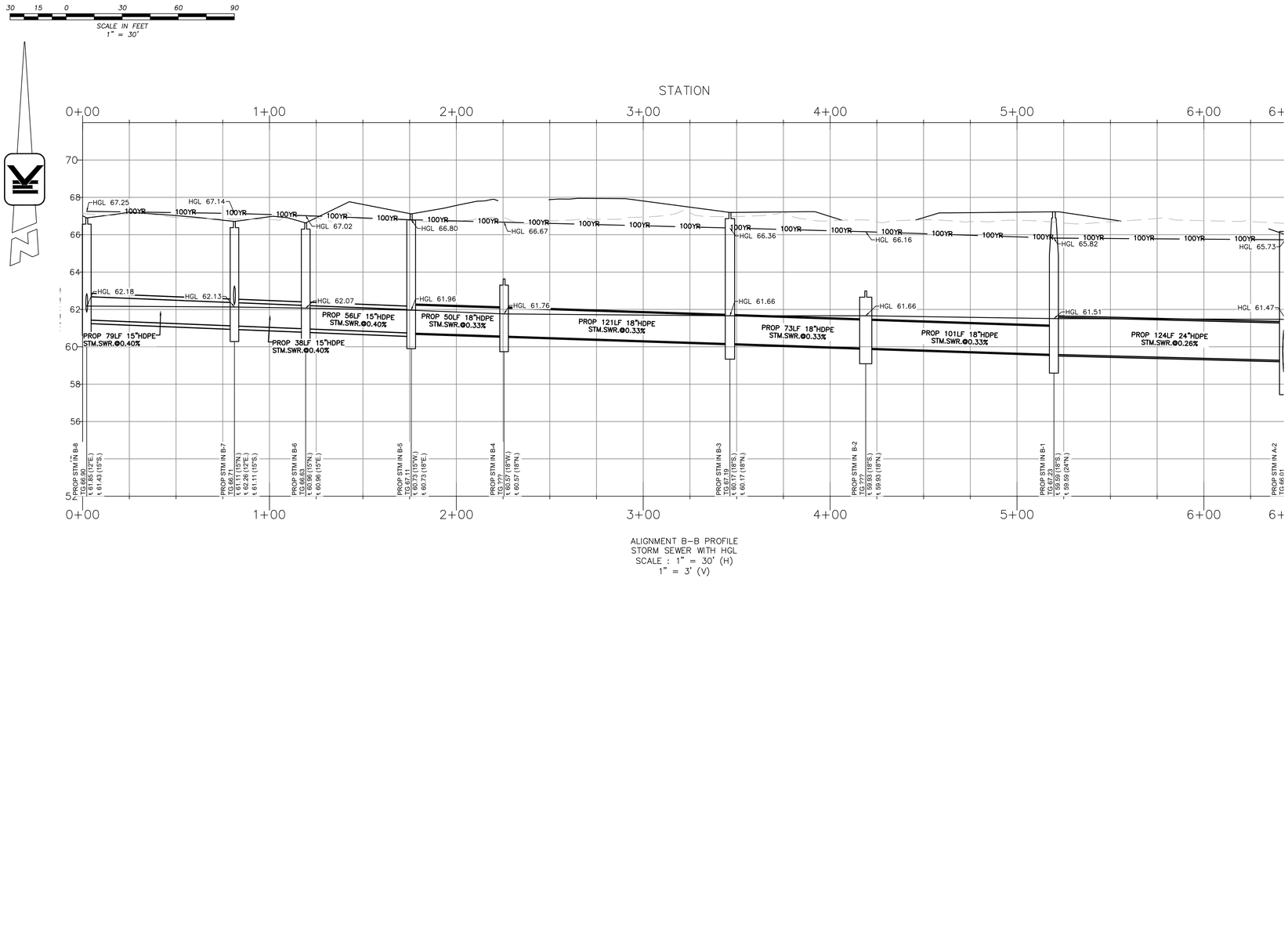
Project No: 2024-002

Sheet Title:
STORM SEWER HGL
P&P I

Sheet Number
C203

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C202 PROPOSED DRAINAGE AREA MAP.DWG Jun. 20, 2025–4:59 PM KOSHA SHAH





ALIGNMENT B–B PROFILE
STORM SEWER WITH HGL
SCALE : 1" = 30' (H)
1" = 3' (V)

SURVEY NOTES

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Prepared For:
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MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

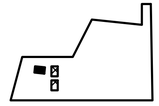
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06/20/2025

03-14-2025

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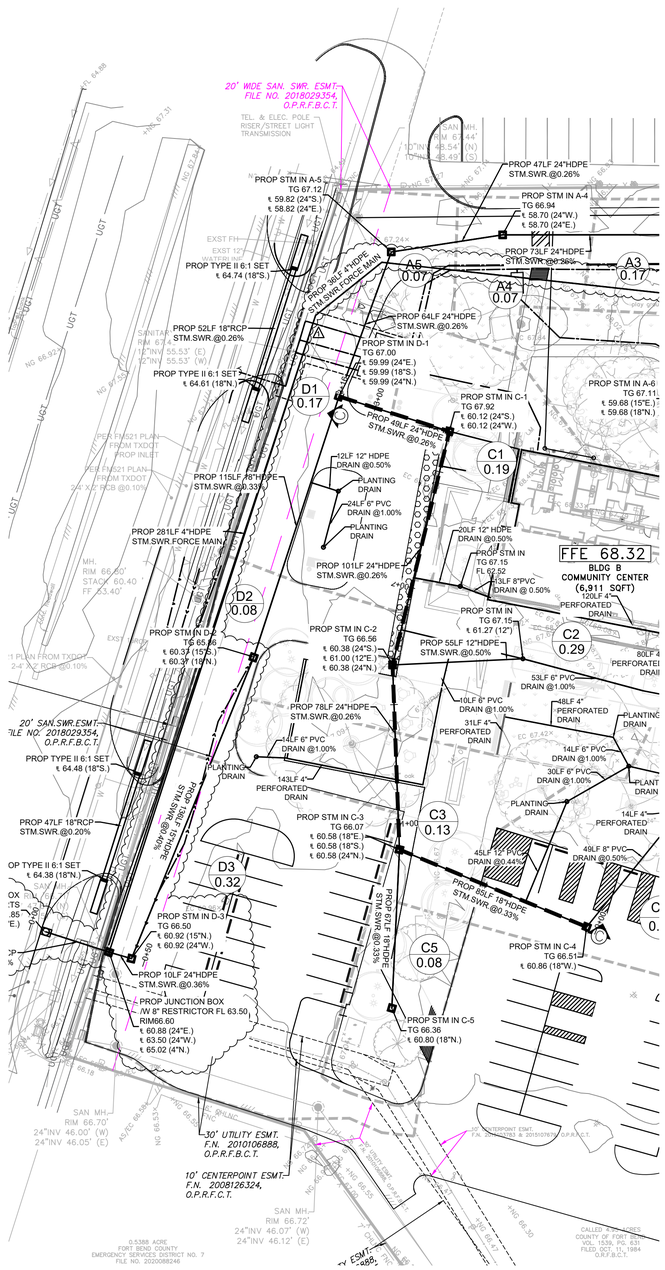
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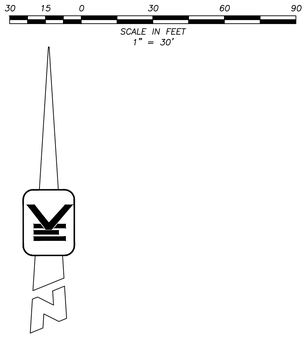
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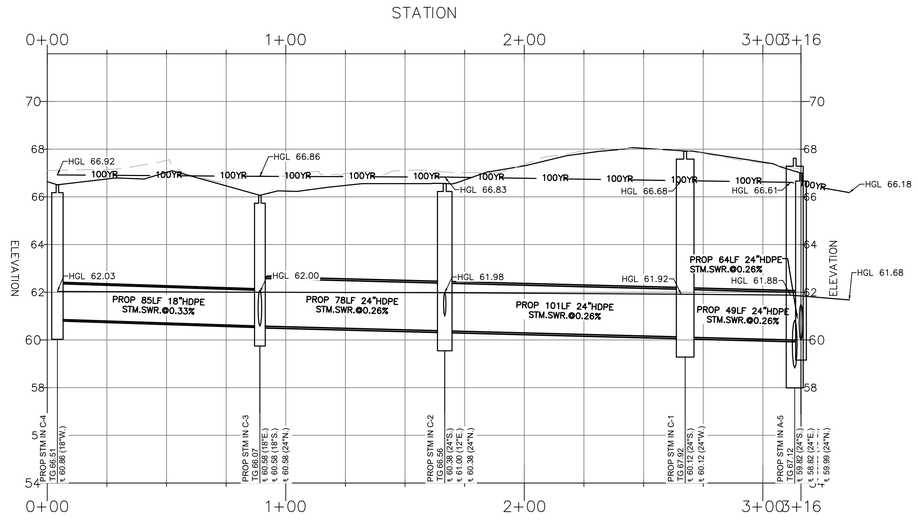
Sheet Title:
STORM SEWER HGL
P&P II

Sheet Number
C204

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ALIGNMENT C–C PROFILE
STORM SEWER WITH HGL
SCALE : 1" = 30' (H)
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HINESAD

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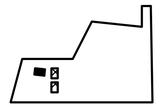
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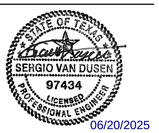
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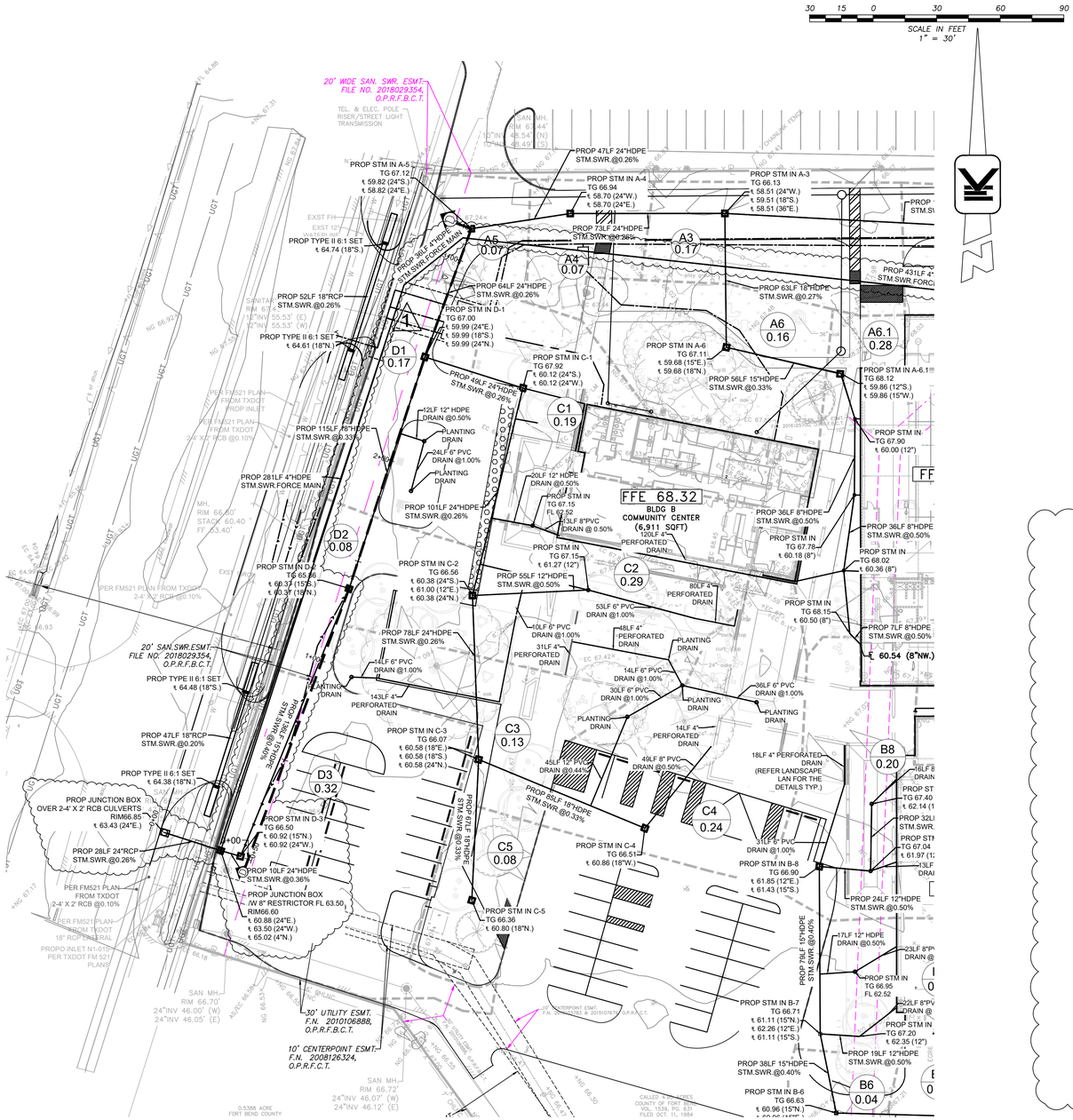
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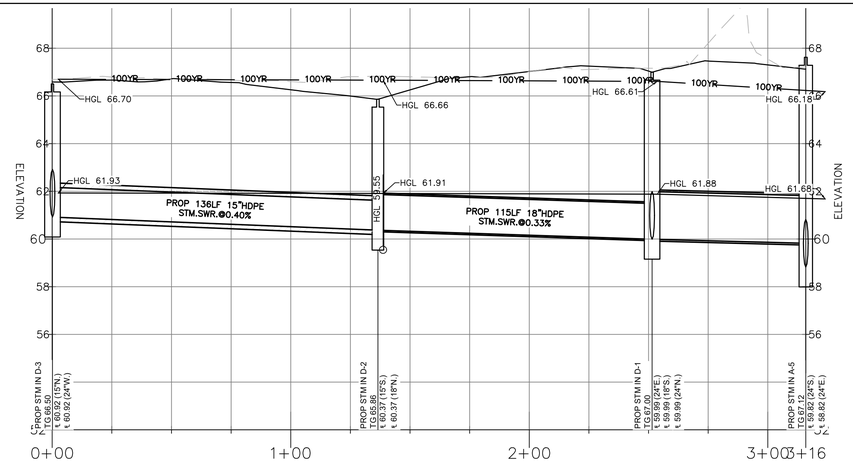
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Sheet Title:
STORM SEWER HGL
P&P III

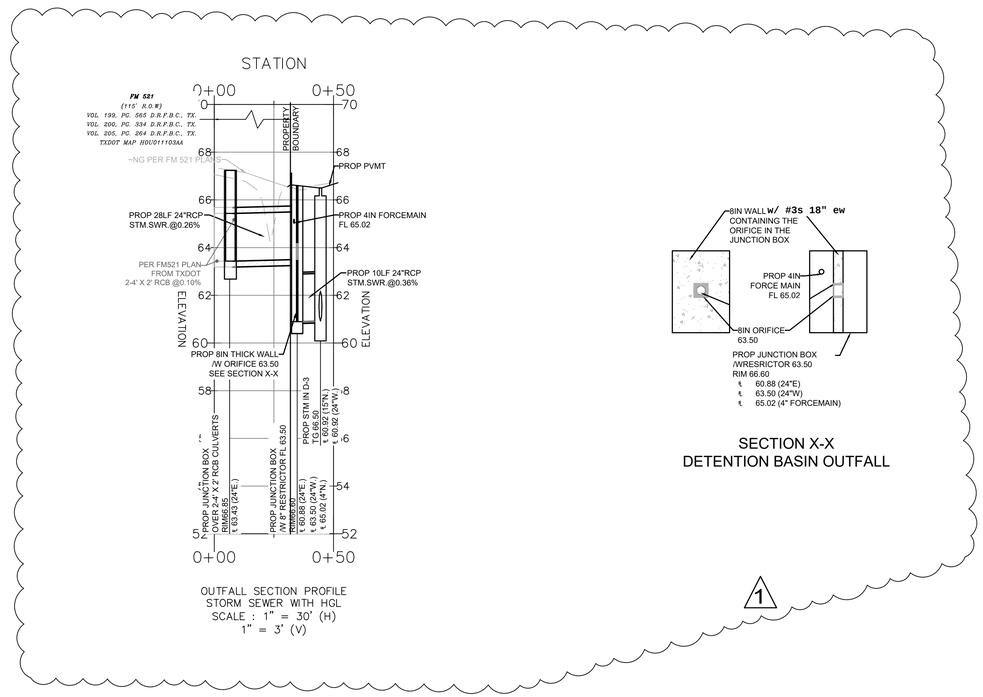
Sheet Number
C204.01

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ALIGNMENT D–D PROFILE
STORM SEWER WITH HGL
SCALE : 1" = 30' (H)
1" = 3' (V)



OUTFALL SECTION PROFILE
STORM SEWER WITH HGL
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SECTION X-X
DETENTION BASIN OUTFALL

1

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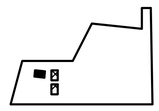
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Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
STORM SEWER HGL
P&P IV AND OUTFALL
P&P

Sheet Number
C204.02

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HYDRAULIC DESIGN FOR THE AREA MORE THAN 5AC
Project: Mustang Park Renovation and New Construction
PN: 639.005

RATIONAL METHOD

TOTAL SITE AREA	1.92 ACRES 83,635.20 S.F.

AREA (AC)	TYPE OF AREA	
0.69	Developed Areas	0.40
1.23	STREETS AND IMPERVIOUS SURFACES	0.90
WEIGHTED C VALUE FOR DEVELOPED AREA		0.72

PREDEVELOPED FLOW CALCULATION

Time of Concentration (Tc) — 10.00 Minutes / 0.17 Hours

Rainfall Event	C	C_f	*i (in/hr)	A(acres)	Q_t (cfs)
2-YR	0.72	1.00	5.65	1.92	**7.82**
5 YR	0.72	1.00	6.96	1.92	**9.62**
10 YR	0.72	1.00	8.04	1.92	**11.11**
25 YR	0.72	1.10	9.54	1.92	**14.52** ←
50 YR	0.72	1.20	10.80	1.92	**17.93**
100 YR	0.72	1.25	12.09	1.92	**20.90** ←

Sheet Flow

ELVN 1 = 67.42
ELVN2 = 66.98
LENGTH = 100.00
n = 0.01

$$T_t = \frac{0.007(n*L)^{0.8}}{(P_2)^{0.5}*s^{0.4}} = \frac{0.007554612}{0.257477902}$$

1.76 min. / 0.03 hrs.

Travel Time (hours)	=	T_t	(hours)	0.03
Manning's roughness coefficient	=	n	-----	0.011
Overland flow distance	=	L	(ft)	100
2-Year, 24-hour rainfall depth	=	P_2	(inches)	5.09
Land Slope	=	S	(ft/ft)	0.44%

Shallow Concentrated Flow

$$T_t = \frac{D_f}{60*V} =$$

MIN.	6.61	0.00	0.00	6.61	min. (Total)
HRS	0.11	0.00	0.00	0.11	hrs. (Total)

SEGMENT	1	2	3
ELVN 1	66.98	66.77	0
ELVN2	66.77	0.00	0.00
LENGTH	239.00	0.00	0.00
SURFACE	(paved)	(unpaved)	(unpaved)

Overland flow time	=	T	(min)	6.61	0.00	0.00
Flow Distance	=	DF	(ft)	239	0	0
Avg Velocity of runoff flo	=	V	(ft/sec)	0.60	0.00	0.00
Velocity presented in SCS TR-55						
16.1345 $(S)^{.5}$ (unpaved)	=	V	(f/s)	0.48	0.00	0.00
20.3282 $(S)^{.5}$ (paved)	=	V	(f/s)	0.60	0.00	0.00
Overland Slope	=	S	(ft/ft)	0.09%	0.00%	0.00%

	2yr	5yr	10yr	25yr	50yr	100yr
b=	45.19	53.74	55.66	51.65	47.69	42.99
d=	8.51	8.3	7.43	5.09	3.04	1.08
e=	0.7122	0.7033	0.6771	0.6222	0.5782	0.5274

1

TOTAL SITE AREA	5.791 ACRES 252,257.23 S.F.

o

AREA (AC)	TYPE OF AREA	
1.44	POND	1.00
1.35	LANDSCAPE	0.20
3.00	IMPERVIOUS SURFACES	0.85
WEIGHTED C VALUE FOR DEVELOPED AREA		0.74

POSTDEVLOPED FLOW CALCULATION

Time of Concentration (Tc) — 10.00 Minutes / 0.17 Hours

Rainfall Event	C	C_f	*i (in/hr)	A(acres)	Q_t (cfs)
2-YR	0.74	1.00	5.65	5.79	**24.10**
5 YR	0.74	1.00	6.96	5.79	**29.65** ←
10 YR	0.74	1.00	8.04	5.79	**34.25**
25 YR	0.74	1.10	9.54	5.79	**44.73**
50 YR	0.74	1.20	10.80	5.79	**55.25**
100 YR	0.74	1.25	12.09	5.79	**64.41** ←

TxDOT Tracking number (TR#)	TR25040066
Highway	FM 521
TxDOT frontage	381 FT
TxDOT Area (the strip of site within 150-ft frontage)	1.31 AC
Total tract area based on submitted survey map	15.72 AC
Proposed disturbed area	5.791 AC
Project contributing drainage area to TxDOT	5.791 AC
Off-site contributing drainage area (if applicable)	AC
Increased impervious area	3.2 AC
10-yr required detention volume	3.2 AC-FT
10-yr proposed detention volume	2.51 C-FT
10-yr design W.S.E.	64.01 FT
10-yr Pre-developed peak flow	11.11 CFS
10-yr Post-developed peak flow (Before de te nti on/restrictor)	34.25 CFS
10-yr Proposed discharge to TxDOT R.O.W. (With detention/restrictor)	3.26 CFS
100-yr required detention volume	5.19 AC-FT
100-yr proposed detention volume	5.19 AC-FT
100-yr design W.S.E.	65.95 FT
100-yr Pre-developed peak flow	20.90 CFS
100-yr Post-developed peak flow (Before de te nti on/restrictor)	64.29 CFS
100-yr Proposed discharge to TxDOT R.O.W. (With detention/restrictor)	3.26 CFS
TxDOT as-built or calculated allowable discharge	4.11 CFS
Primary tie-in/outfall structure size	24 Inch
Primary restrictor size	8 Inch
Primary restrictor maximum discharge	3.26 CFS
Secondary outfall device size (If applicable)	CFS
Secondary outfall discharge (If applicable)	CFS
Maximum combined pumped discharge (If applicable)	0.5 ~~GPM~~ (CFS)
% Pumped discharge volume (If applicable)	34%
Effective gravity discharge elevation (If applicable)	63.50 FT
B.F.E. per effective FIRM (If applicable)	FT
Proposed fill below B.F.E. (If applicable)	AC-FT
Proposed cut below B.F.E. (If applicable)	AC-FT

1. **FUTURE DEVELOPMENT ALTERING DRAINAGE INTO TXDOT ROW BY ALTERING DRAINAGE AREAS OR BY INCREASING IMPERVIOUS COVER MUST RESUBMIT TO TXDOT**
2. **THE ADDITIONAL 3.87-ACRE AREA EXHIBITS VERY FLAT TOPOGRAPHY AND DOES NOT HAVE A DEFINED FLOW PATH TO FM 521 IN EITHER EXISTING OR PROPOSED CONDITIONS. BASED ON THIS, IT IS NOT CONSIDERED A DIVERTED DRAINAGE AREA. HOWEVER, DETENTION HAS BEEN CONSERVATIVELY DESIGNED TO ACCOMMODATE THE FULL 5.79 ACRES**

Natural Resource Conservation Center - USDA - Hydrologic Soil Group: 'C/D'

CN= 100 POND
CN= 74 LANDSCAPE
CN= 98 IMPERVIOUS SURFACES
CN= 93 Composite

	100yr	25yr	10yr	
S(inches)= (1000/CN)-10 =	0.76	0.76	0.76	Inches
P (inches) =	16.80	11.40	8.55	Inches
Q= (P-0.2S)^2 / (P+0.8S) =	15.92	10.53	7.70	Inches
Q =	7.68	5.08	3.71	Acre-Feet
B=	10389.97	9898.60	9449.67	
I=	64.41	44.73	34.25	
O=	20.90	14.52	11.11	
B=(43560Vr)/(0.5I) =	10389.97	9898.60	9449.67	Sec
=	173.17	164.98	157.49	Minute
=	2.89	2.75	2.62	Hours

B= Duration of inflow to the basin (sec)
Vr= Total Basin inflow volume (ac-ft)
I= Peak Inflow (ft^3/sec)
O= Peak Discharge rate (ft^3/sec)

$$Storage\ Volume\ S = \frac{0.5B*(I-O)}{43560} = \quad 5.19 \quad 3.43 \quad 2.51$$

STORAGE PROVIDED

Elevation (Ft)	Area (SF)	Area (Ac)	h	Storage (CF)	Storage (Ac-FT)	Storage (CY)
61	28715.62	0.66	0.00	0.00	0.00	0.00
62	31784.49	0.73	1.00	30,237.07	0.69	1,119.89
63	34910.21	0.80	1.00	63,572.21	1.46	2,354.53
64	56964.81	1.31	1.00	109,061.99	2.50	4,039.33
65	60133.83	1.38	1.00	167,604.16	3.85	6,207.56
66	63354.78	1.45	1.00	229,341.47	5.26	8,494.13

100-Year Water Surface Elevation: 65.95
25-Year Water Surface Elevation: 64.89
10-Year Water Surface Elevation: 64.01

RESTRICTOR CALCULATIONS

Orifice Equation: Q= CA(2gh)^0.5
A= Q/(C* (2gh)^0.5)

	100 YR
Q_{100} (cfs)=	4.11
C=	0.80
g (ft/sec^2) =	32.20
h (ft) =	2.11
A (sqft)=	0.44
Diameter (ft)=	0.75
Diameter (in)=	8.99
Use Orifice with Diameter (in) =	**8.00**
Area (sqft) =	0.35
Restricted Flow (cfs) =	**3.26**
Pump Output (CFS) =	**0.50**
Allowable Q (cfs) =	**4.11**

THE ALLOWABLE FLOW CALCULATION ARE BASED ON THE PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT BY DEC EXCELLENCE ENGINEERING PROJECT NO F 2023 (494). THE ORIFICE CALCULATIONS ARE BASED ON THE TXDOT CRITERIA

PROPOSED LEGEND:

STORM SEWER
SANITARY MANHOLE
SANITARY SEWER
SANITARY CLEAN OUT
WATERLINE
OVERHEAD ELECTRIC
GAS LINE
CHAIN LINK FENCE
OTHER FENCE
DITCH FLOW DIRECTION
HIGHBANK
LANDSCAPE INLETS

EXISTING LEGEND:

STORM SEWER
SANITARY SEWER
WATERLINE
UNDERGROUND ELECTRIC
OVERHEAD ELECTRIC
TELEPHONE
CABLE
FIBER OPTIC
GAS LINE
CHAIN LINK FENCE
OTHER FENCE
DITCH FLOW DIRECTION
HIGHBANK

50 25 0 50 100 150
SCALE IN FEET
1" = 50'

ONE-CALL NOTIFICATION SYSTEM
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DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE
PROCEEDING WITH ANY EXCAVATION

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING
TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS · SERGIO VAN DUSEN · 97434 · LICENSED · PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

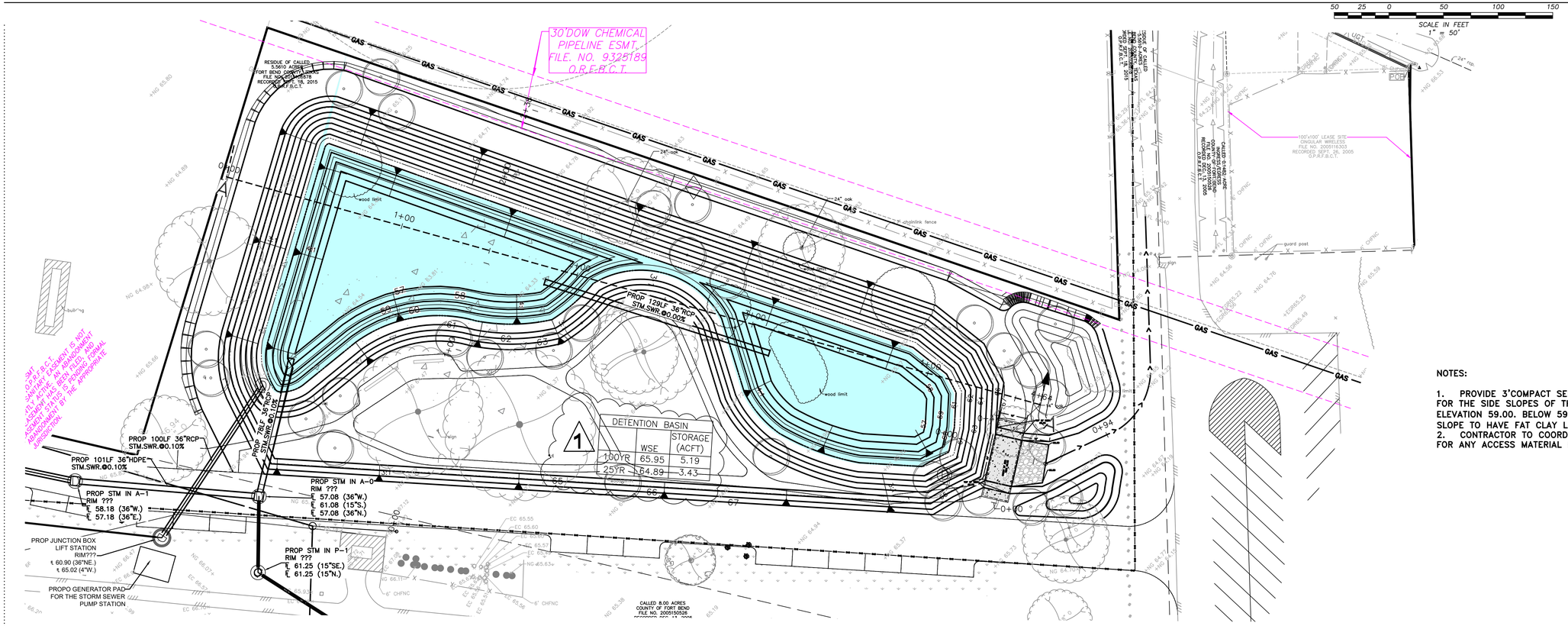
Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
DETENTION BASIN AND MITIGATION CALCULATIONS

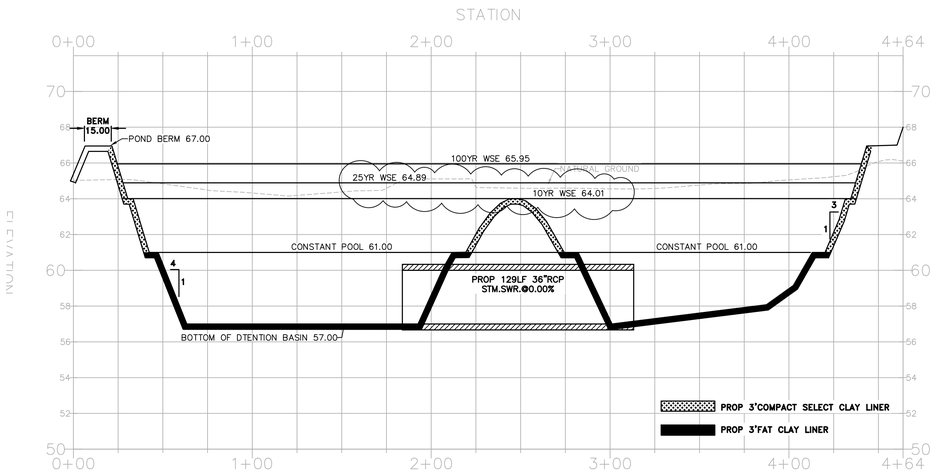
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C205

G:\SHARED DRIVES\CLIENTS\639 HINES ARCHITECTURE + DESIGN\639.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C204 DETENTION POND CALCULATIONS.DWG Jun. 20, 2025 - 5:02 PM KOSHA SHAH



NOTES:

1. PROVIDE 3'COMPACT SELECT CLAY LINER FOR THE SIDE SLOPES OF THE POND ABOVE ELEVATION 59.00. BELOW 59.00' THE POND SIDE SLOPE TO HAVE FAT CLAY LINER 3'THICK
2. CONTRACTOR TO COORDINATE WITH OWNER FOR ANY ACCESS MATERIAL HAUL OFF

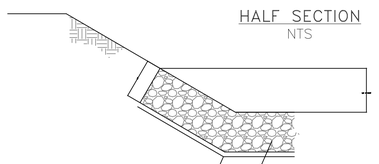


SECTION A–A PROFILE
SCALE 1"=40'(H)
1"=4'(V)

TYPICAL RIP RAP PROTECTION

HALF SECTION

NTS



DETAIL X–X
SCALE N.T.S

PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
- OVERHEAD ELECTRIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- LANDSCAPE INLETS

EXISTING LEGEND:

- STORM SEWER
- SANITARY SEWER
- WATERLINE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- CABLE
- FIBER OPTIC
- GAS LINE
- CHAIN LINK FENCE
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- HIGHBANK
- ELECTRICAL PEDESTAL
- GUY WIRE
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- FIRE HYDRANT
- POWER POLE
- IRRIGATION VALVE
- WATER VALVE
- WATER METER
- TELEPHONE PEDESTAL
- TRASH CAN
- GUARD POST
- CLEANOUT
- GRATE INLET
- EXISTING TREE
- TREE STUMP

SURVEY NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE TIED TO THE NSRS AND EXPRESSED IN THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE 4204, NAD 83' (2011), ITRF (EPOCH 2010.0000), NAVD '88 (GEOID 18).
2. ALL DISTANCES SHOWN HEREON ARE SURFACE VALUES. ALL COORDINATES SHOWN HEREON ARE GRID VALUES UNLESS OTHERWISE NOTED. TO CONVERT SURFACE VALUES TO GRID VALUES MULTIPLY BY THE SCALE FACTOR OF 0.99986949202.
3. ABSTRACT RESEARCH PROVIDED BY COURTHOUSE SPECIALIST.
4. PROJECT TIED TO FORT BEND COUNTY CONTROL MONUMENTS 259, 437 & 438.
5. TEXAS RAILROAD COMMISSION WEBSITE SHOWS A 4.5" HIGH VOLATILE PIPELINE OWNED BY DOW PIPELINE, LLC, STATES THE PIPELINE IS ABANDONED, CONTACT # (713) 654–3636. NO PIPELINE MARKERS FOUND DURING SURVEY AND DOW PIPELINE, LLC, DID NOT PROVIDE ANY RECORDS FOR THE PIPELINE. ONE CALL DOES NOT SHOW ANY PIPELINES.

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

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Key Plan

Professional Seals

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LICENSED PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

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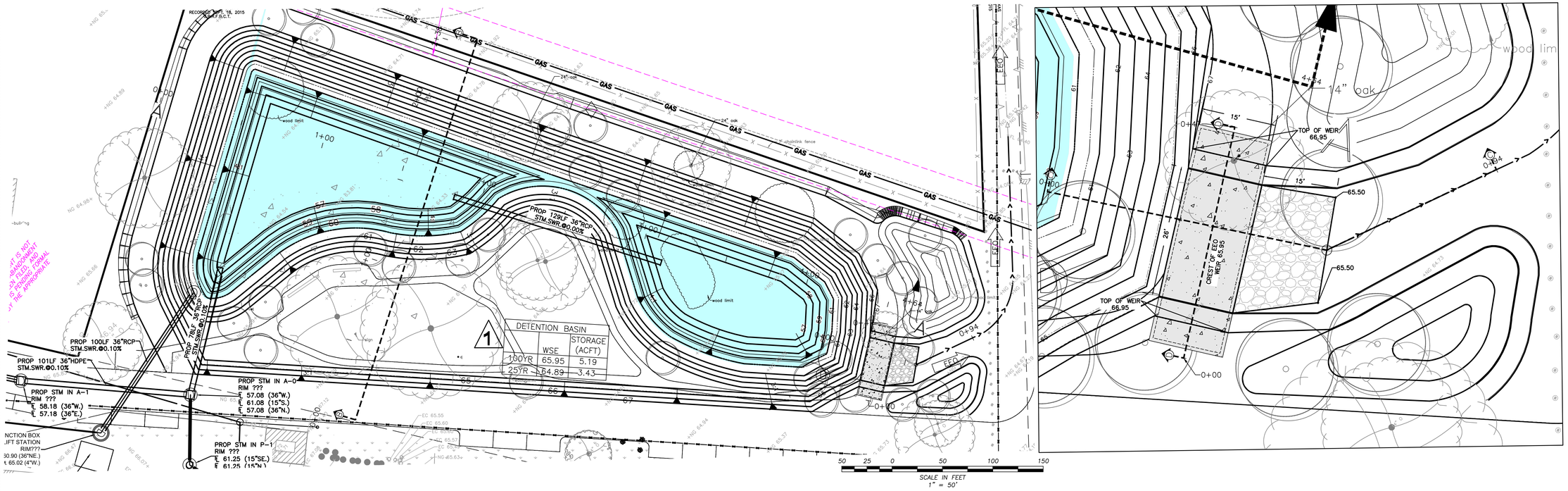
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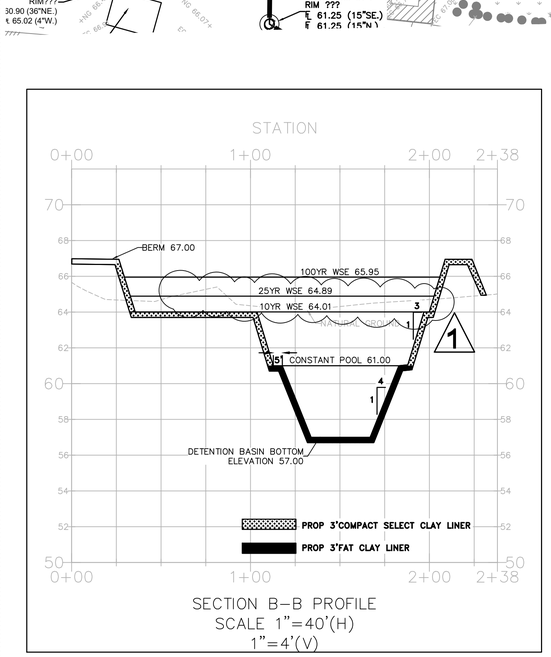
Project No: 2024-002

Sheet Title:
DETENTION BASIN
PLAN AND PROFILE

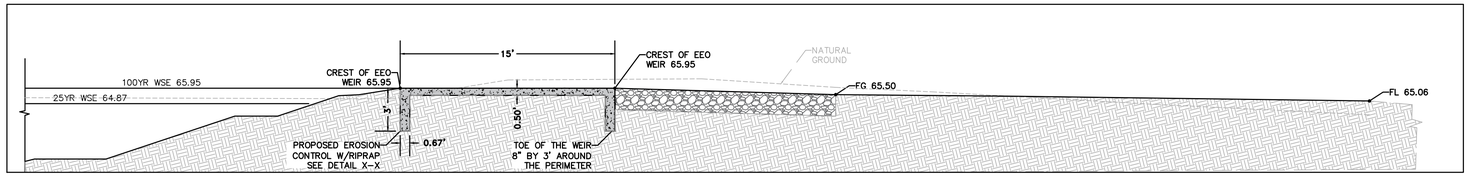
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G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C204 DETENTION POND CALCULATIONS.DWG Jun. 20, 2025–5:04 PM KOSHA SHAH

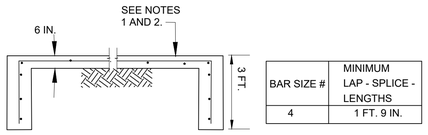




SECTION B–B PROFILE
SCALE 1"=40'(H)
1"=4'(V)



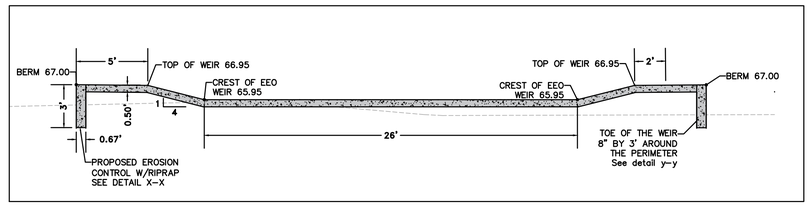
SECTION C–C
SCALE 1"= 5'



BAR SIZE #	MINIMUM LAP - SPLICE - LENGTHS
4	1 FT. 9 IN.

1. STRUCTURAL CONCRETE FOR CONCRETE CHANNEL LINING AND NONSTRUCTURAL CONCRETE FOR SEAL SLAB SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 03310-CONCRETE.
2. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION NO. 03310-CONCRETE.
3. MINIMUM #4 BARS (GRADE 60) AT 12 INCHES ON CENTER EACH WAY.

DETAIL Y–Y
SCALE N.T.S



SECTION D–D
SCALE 1"= 5'

PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
- OVERHEAD ELECTRIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- LANDSCAPE INLETS

EXISTING LEGEND:

- STORM SEWER
- SANITARY SEWER
- WATERLINE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- CABLE
- FIBER OPTIC
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- CHAIN LINK FENCE
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- HIGHBANK
- ELECTRICAL PEDESTAL
- GUY WIRE
- TRAFFIC SIGNAL POLE
- FIRE HYDRANT
- POWER POLE
- IRRIGATION VALVE
- WATER VALVE
- WATER METER
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FORT BEND COUNTY

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Contract No: 2024-002

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Key Plan

Professional Seals

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LICENSED
PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

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1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

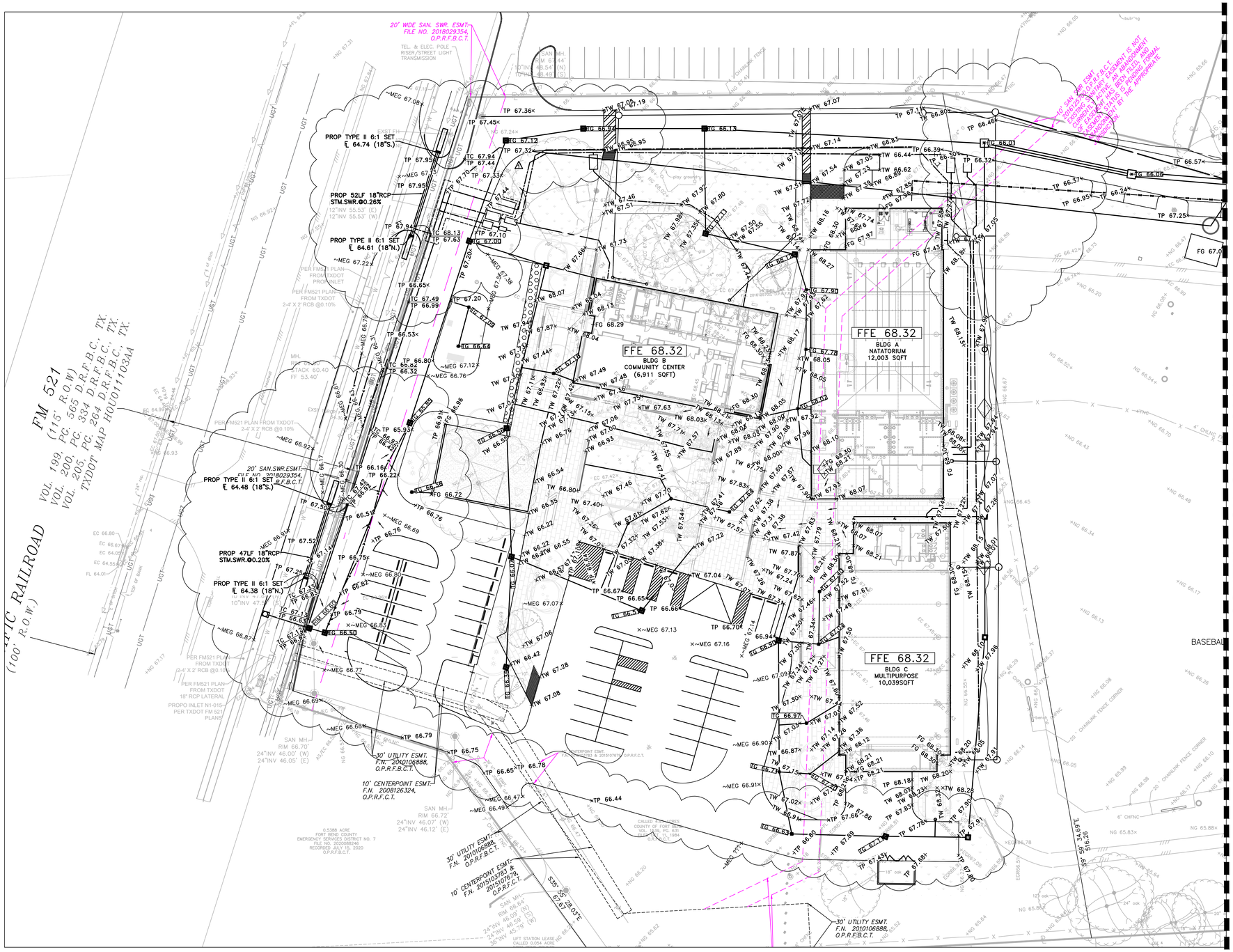
Sheet Title:
DETENTION BASIN SECTIONS

Sheet Number
C207

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G:\SHARED DRIVES\CLIENTS\639 HINES ARCHITECTURE + DESIGN\639.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C204 DETENTION POND CALCULATIONS.DWG Jun. 20, 2025–5:01 PM KOSHA SHAH

SCALE IN FEET
1" = 20'


20' WIDE SAN. SWR. ESMT. FILE NO. 2018029354, O.P.R.F.B.C.T.
FM 521
(115' R.O.W.)
VOL. 199, PG. 565 D.R.F.B.C., TX.
VOL. 200, PG. 334 D.R.F.B.C., TX.
VOL. 2057, PG. 264 D.R.F.B.C., TX.
TXDOT MAP HOU01103AA
UNION PACIFIC RAILROAD
(100' R.O.W.)
PROP TYPE II 6:1 SET
℄ 64.74 (18"S.)
PROP 52LF 18"RCP
STM.SWR.@0.26%
PROP TYPE II 6:1 SET
℄ 64.61 (18"N.)
PROP TYPE II 6:1 SET
℄ 64.48 (18"S.)
PROP 47LF 18"RCP
STM.SWR.@0.20%
PROP TYPE II 6:1 SET
℄ 64.38 (18"N.)
20' SAN.SWR.ESMT. F.I.F. NO. 2018029354, O.P.R.F.B.C.T.
FFE 68.32
BLDG B
COMMUNITY CENTER
(6,911 SQFT)
FFE 68.32
BLDG A
NATATORIUM
12,003 SQFT
FFE 68.32
BLDG C
MULTIPURPOSE
10,039SQFT
30' UTILITY ESMT. F.N. 2010106888, O.P.R.F.B.C.T.
10' CENTERPOINT ESMT. F.N. 2008126324, O.P.R.F.B.C.T.
30' UTILITY ESMT. F.N. 2010106888, O.P.R.F.B.C.T.
10' CENTERPOINT ESMT. F.N. 2015103785 & 2015103787, O.P.R.F.B.C.T.
30' UTILITY ESMT. F.N. 2010106888, O.P.R.F.B.C.T.
20' SAN.SWR.ESMT. F.I.F. NO. 2018029354, O.P.R.F.B.C.T.
EXISTING SANITARY EASEMENT IS NOT CURRENTLY IN USE AND HAS BEEN ABANDONED AND REPLACED WITH A NEW SANITARY EASEMENT. THE EXISTING SANITARY EASEMENT WILL BE ABANDONED AT THIS TIME IT IS KNOWN NORMAL ABANDONMENT WILL BE BY THE APPROPRIATE
SAN MH. RIM 67.41' (N) 66.54' (N) 66.49' (S)
SAN MH. RIM 66.72' 24"INV 46.07' (W) 24"INV 46.12' (E)
SAN MH. RIM 66.72' 24"INV 46.00' (W) 24"INV 46.05' (E)
SAN MH. RIM 66.64' 24"INV 46.09' (S) 24"INV 46.59' (W) 36"INV 46.79' (E)
MH RIM 60.40 FF 53.40'
0.5388 ACRE FORT BEND COUNTY EMERGENCY SERVICES DISTRICT NO. 7 FILE NO. 2020088246 RECORDED JULY 15, 2020 O.P.R.F.B.C.T.
CALLED 4.7 ACRES COUNTY OF FORT BEND VOL. 631, PG. 1084
LIFT STATION LEASE CALLED 0.054 ACRE
PER FM521 PLAN FROM TXDOT 2-4' X 2' RCB @0.10%
PER FM521 PLAN FROM TXDOT 18" RCP LATERAL
PROPO INLET N1-015 PER TXDOT FM 521 PLANS
PER FM521 PLAN FROM TXDOT PROP INLET
PER FM521 PLAN FROM TXDOT 2-4' X 2' RCB @0.10%
TEL. & ELEC. POLE RISER/STREET LIGHT TRANSMISSION
CONTINUE ON SHEET C211
BASEBALL
FG 67.0
FG 66.01
FG 66.08
FG 66.57
FG 66.64
FG 66.72
FG 66.76
FG 66.50
FG 66.67
FG 66.37
FG 66.91
FG 67.43
FG 67.78
FG 67.90
FG 68.05
FG 68.27
FG 68.30
FG 68.21
FG 68.07
FG 67.91
FG 67.43
FG 67.69
FG 67.86
FG 67.76
FG 67.91
FG 68.07
FG 68.21
FG 68.19
FG 68.30
FG 68.21
FG 68.30
FG 68.21
FG 68.21
FG 68.21

CONTINUE ON SHEET C211

DETENTION BASIN		
	WSE	STORAGE (ACFT)
100YR	65.95	5.19
25YR	64.89	3.43

CALLED 8.00 ACRES
COUNTY OF FORT BEND
FILE NO. 2005150526
RECORDED ON MAY 13, 2005
O.P.R.F.B.C.T.

OVERHANG

SPLASH PAD

BLEACHER

30 15 0 30 60 90
SCALE IN FEET
1" = 30'

GENERAL NOTES

1. For drainage, use a 4" perforated pipe as shown, or omit mortar from every other vertical joint in the first course above ground to drain in own property.
2. Water shall not be drained to adjacent property.
3. No surcharge load is allowed.
4. Use type M or type S concrete masonry units w/ 1900 psi compressive strength.
5. Minimum grout compressive strength = 2000 psi
6. Retaining walls 4'-0" or less in height, measured from the bottom of the footing to the top of the wall, are exempt from construction permits.

EXISTING LEGEND:

- STORM SEWER
- SANITARY SEWER
- WATERLINE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- CABLE
- FIBER OPTIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK

PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
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FEMA NOTE

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GRADING LEGEND:

TC	TOP OF CURB
TP	TOP OF PAVEMENT
FG	FINISH GRADE
FL	FLOW LINE
TOW	TOP OF WALK
MEG	MATCH EXISTING GRADE
###.##	PROPOSED GRADE
→	FLOW DIRECTION
	HIGH POINT

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG !!
DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE
PROCEEDING WITH ANY EXCAVATION

UNION PACIFIC RAILROAD
(100' R.O.W.)

FM 521
(115' R.O.W)
VOL. 199, PG. 565 D.R.F.B.C., TX.
VOL. 200, PG. 334 D.R.F.B.C., TX.
VOL. 205, PG. 264 D.R.F.B.C., TX.
TXDOT MAP HOU01103AA

DRIVEWAY GRADING

30 15 0 30 60 90
SCALE IN FEET
1" = 30'

THE STATE OF TEXAS
FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS
SERGIO VAN DUSEN
97434
LICENSED PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

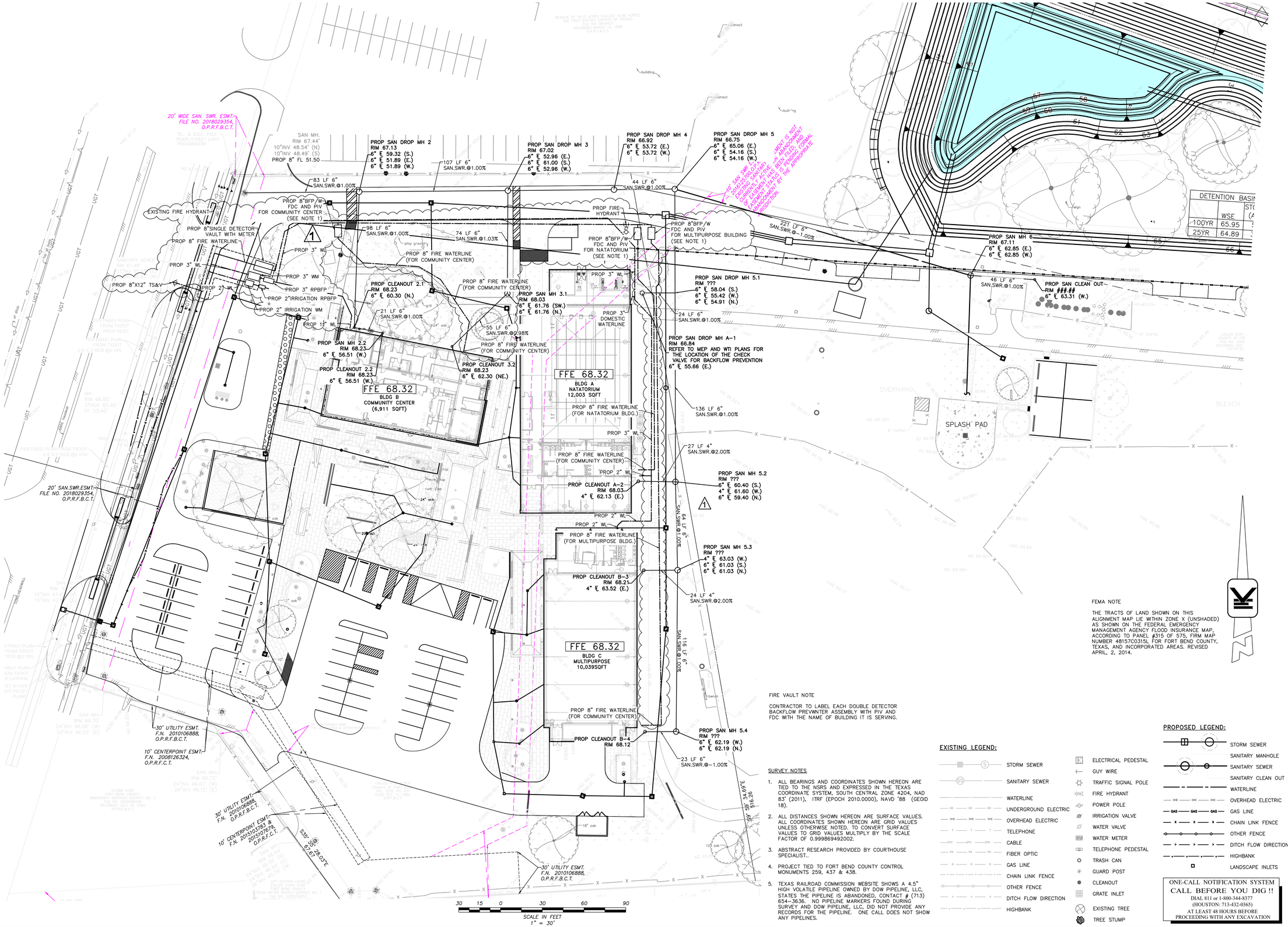
Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
GRADING PLAN II

Sheet Number
C209

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAWINGS\REVISIONS\REV 01\C209 GRADING PLAN—II.DWG Jun. 20, 2025–5:04 PM KOSHA SHAH



FIRE VAULT NOTE

CONTRACTOR TO LABEL EACH DOUBLE DETECTOR BACKFLOW PREVWNTER ASSEMBLY WITH PIV AND FDC WITH THE NAME OF BUILDING IT IS SERVING.

SURVEY NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE TIED TO THE NSRS AND EXPRESSED IN THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE 4204, NAD 83" (2011), ITRF (EPOCH 2010.0000), NAVD '88 (GEOID 18).
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EXISTING LEGEND:

- STORM SEWER
- SANITARY SEWER
- WATERLINE
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- TELEPHONE
- CABLE
- FIBER OPTIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
- DITCH FLOW DIRECTION
- HIGHBANK
- ELECTRICAL PEDESTAL
- GUY WIRE
- TRAFFIC SIGNAL POLE
- FIRE HYDRANT
- POWER POLE
- IRRIGATION VALVE
- WATER VALVE
- WATER METER
- TELEPHONE PEDESTAL
- TRASH CAN
- GUARD POST
- CLEANOUT
- GRATE INLET
- EXISTING TREE
- TREE STUMP

PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
- OVERHEAD ELECTRIC
- GAS LINE
- CHAIN LINK FENCE
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THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
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Key Plan

Professional Seals

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06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

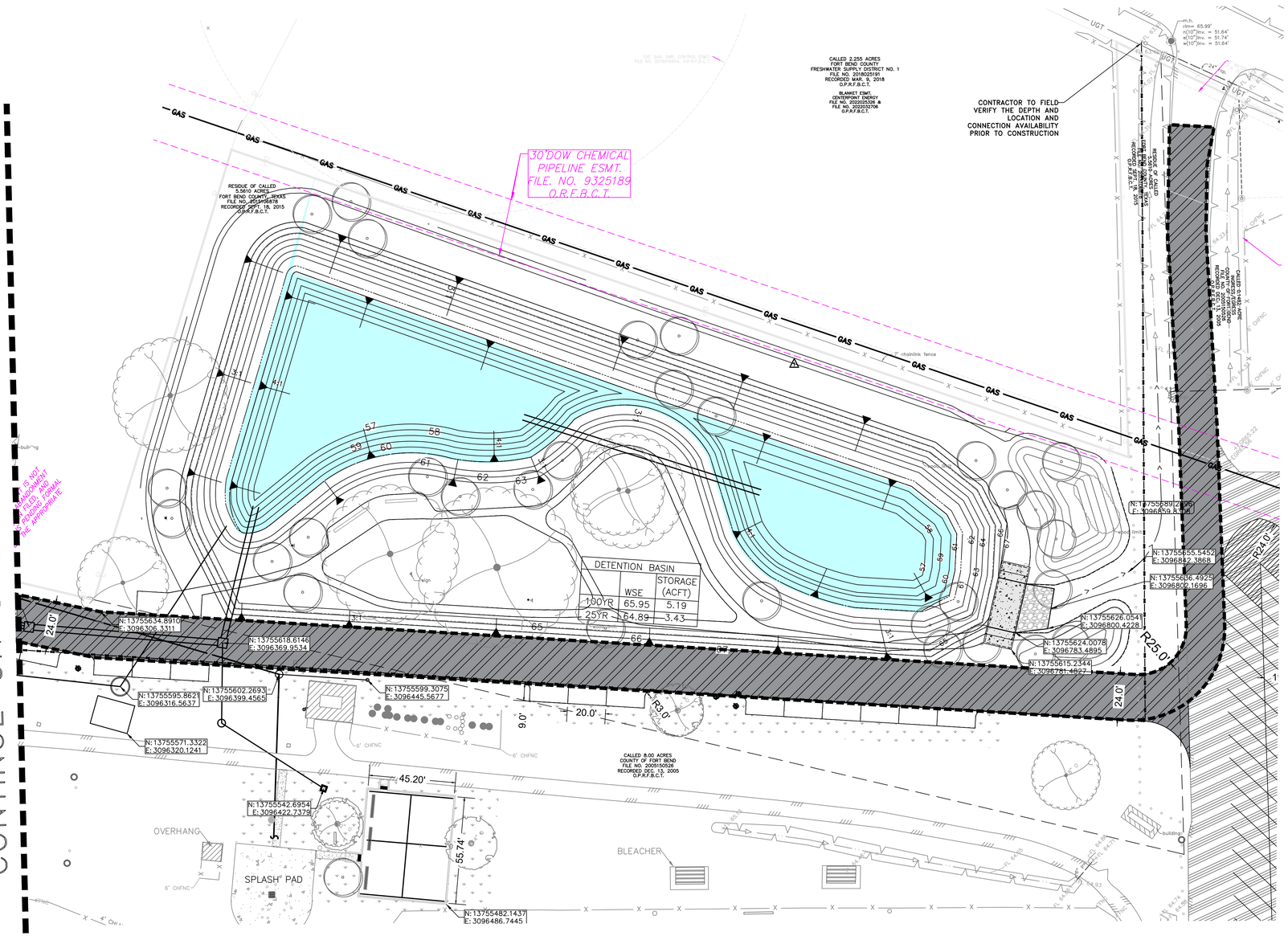
Project No: 2024-002

Sheet Title:
UTILITY PLAN

Sheet Number
C301

G:\SHARED DRIVES\CLIENTS\839 HINES ARCHITECTURE + DESIGN\839.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C301 UTILITY PLAN.DWG Jun 20, 2025-5:03 PM KOSHA SHAH

CONTINUE ON SHEET C401



50 25 0 50 100 150

SCALE IN FEET
1" = 50'

FIRE LANE NOTES:

1. CURBS LOCATED ON EITHER SIDE OF A FIRE LANE SHALL BE PAINTED RED OR A RED STRIPE FOUR (4) INCHES IN WIDTH SHALL BE PLACED ALONG THE PAVEMENT WHERE THERE IS NO CURB.
2. WHERE A FIRE LANE PASSES BETWEEN HEAD–IN PARKING SPACES, THE RED STRIPE SHOULD BE PLACED ALONG THE REAR OF THESE SPACES CLEARLY DEFINING THE FIRE LANE.
3. PAINTED CURBS AND FIRE LANE STRIPES SHALL ALSO BE CONSPICUOUSLY AND LEGIBLY MARKED WITH THE WARNING "FIRE LANE – TOW AWAY ZONE" IN WHITE LETTERS AT LEAST THREE (3) INCHES IN HEIGHT AT INTERVALS NOT EXCEEDING FIFTY (50) FEET.
4. WHERE FIRE LANES ARE CLEARLY DEFINED BY CURB/PAVEMENT STRIPING, FIRE LANE SIGNS ARE NOT REQUIRED.
5. FIRE LANE SIGNS SHOULD BE PLACED EVERY SEVENTY–FIVE (75) FEET ALONG ANY FIRE LANE WHERE PAVEMENT OR CURB STRIPING IS NOT PRACTICAL.
6. ANY COLOR OTHER THAN RED MAY BE USED IN "NO PARKING" AREAS THAT ARE NOT APPROVED FIRE LANES. RED COLORED CURBS, PAVEMENT STRIPING OR WHEEL STOPS SHALL BE USED ONLY TO DESIGNATE APPROVED FIRE LANES.
7. ALL FIRE LANES WILL HAVE AN UNOBSTRUCTED VERTICAL CLEARANCE OF AT LEAST THIRTEEN AND ONE–HALF (13.5) FEET.

PROPOSED PAVEMENT LEGEND:

- PROPOSED ASPHALT PAVEMENT
- EXISTING PAVEMENT TO BE RESURFACED AND RSTRIPE
- PROPOSED FIRE LANE
- PROPOSED 8" CONCRETE DUMPSTER PAD

PROPOSED LEGEND:

- STORM SEWER
- SANITARY MANHOLE
- SANITARY SEWER
- SANITARY CLEAN OUT
- WATERLINE
- OVERHEAD ELECTRIC
- GAS LINE
- CHAIN LINK FENCE
- OTHER FENCE
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THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING
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Key Plan

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STATE OF TEXAS
SERGIO VAN DUSEN
97434
LICENSED PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
DIM CTRL PAV AND FIRLANE PLAN

Sheet Number
C401

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C401 DIM CTRL, PAVING AND FIRELANE PLAN.DWG Jun. 20, 2025–5:11 PM KOSHA SHAH



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THE STATE OF TEXAS · FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

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No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:
C401DIM CTRL PAV AND FIRLANE PLAN-II

Sheet Number
C402

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BOUNDARY SURVEY OF A 15.7235 ACRE (684,915 SQ. FT.) TRACT OF LAND OUT OF THE MANUEL ESCALERO SURVEY ABSTRACT 170 FORT BEND COUNTY, TEXAS

SURVEY NOTES

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE TIED TO THE NSRS AND EXPRESSED IN THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE 4204, NAD 83' (2011), ITRF (EPOCH 2010.0000), NAVD '88 (GEOID 18).
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PROPOSED LEGEND:

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THE STATE OF TEXAS
FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

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LICENSED
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06/20/2025

03-14-2025

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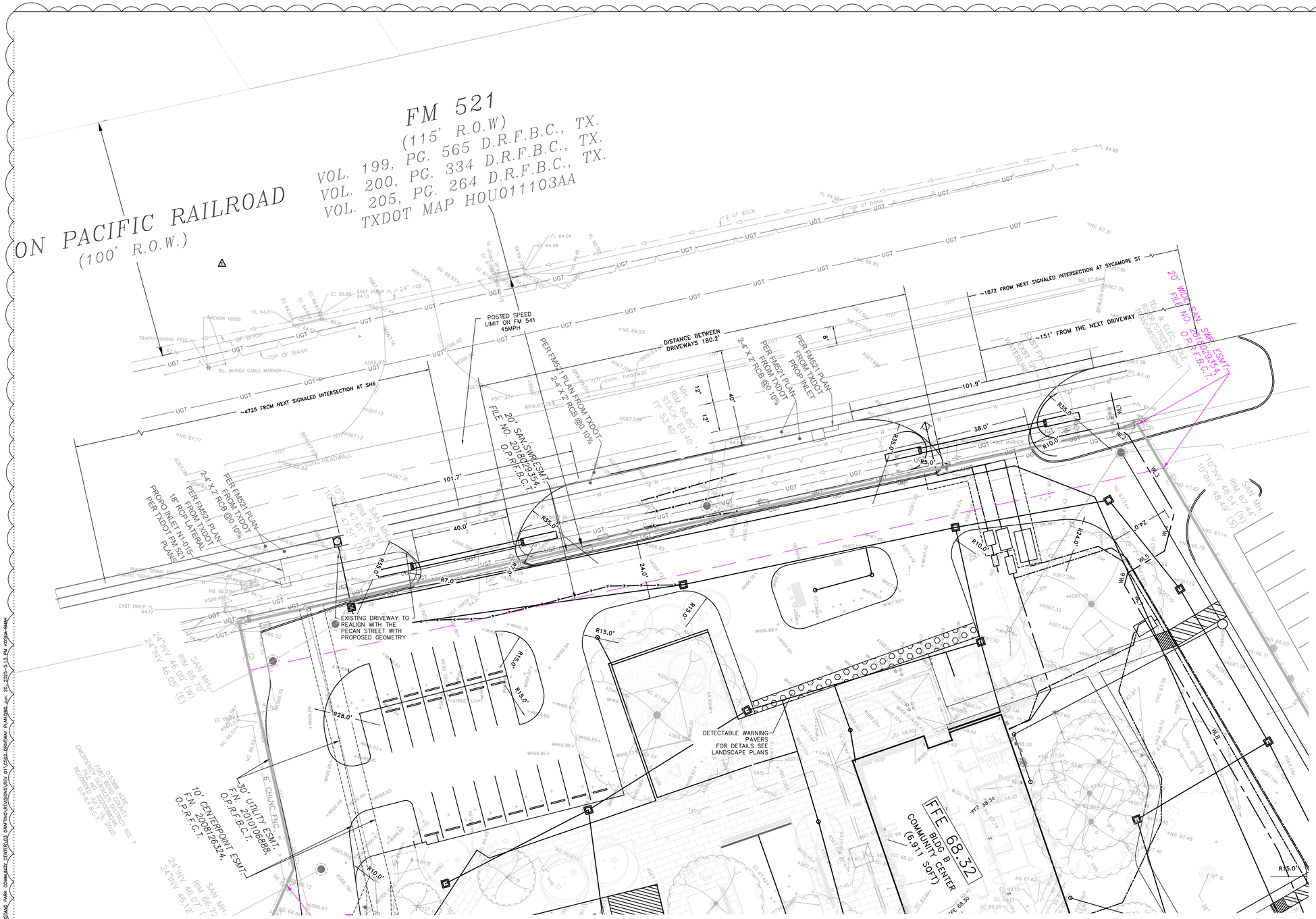
Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title: **SITE PLAN**

Sheet Number
C501

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20 10 0 20 40 60
SCALE IN FEET
1" = 20'

EXISTING LEGEND:

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THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

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FRESNO, TX 77545

Prepared For:
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No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:

DRIVEWAY PLAN

Sheet Number

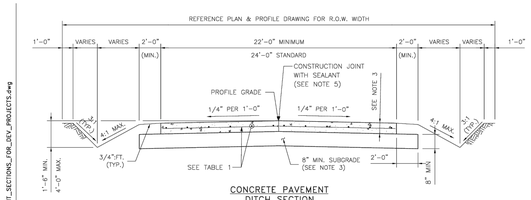
C502

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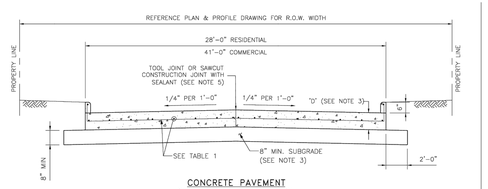
CONSTRUCTION

1. FORT BEND COUNTY MUST BE INVITED TO THE PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND 48 HOUR NOTICE TO ANY CONSTRUCTION ACTIVITY WITHIN THE LIMITS OF THE PAVING AT CONSTRUCTION@FBCTX.GOV.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FROM FORT BEND COUNTY PRIOR TO COMMENCING CONSTRUCTION OF ANY IMPROVEMENTS WITHIN COUNTY ROAD RIGHT OF WAYS.
4. ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY "RULES, REGULATIONS AND REQUIREMENTS" RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS AS CURRENTLY AMENDED.
5. ALL ROAD WIDTHS, CURB RADII AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB.
6. A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.
7. ALL CONCRETE PAVEMENT SHALL BE 5½ SACK CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60 FEET.
8. ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
9. 4" X 12" REINFORCED CONCRETE CURB SHALL BE PLACED IN FRONT OF SINGLE FAMILY LOTS ONLY. ALL OTHER AREAS SHALL BE 6" REINFORCED CONCRETE CURB.
10. CURB HEADERS ARE REQUIRED AT CURB CONNECTIONS TO HANDICAP RAMPS, WITH NO CONSTRUCTION JOINT WITHIN 5' OF RAMPS.
11. GUIDELINES ARE SET FORTH IN THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", AS CURRENTLY AMENDED, SHALL BE OBSERVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION – BOTH DAY AND NIGHT.
12. ALL R1-1 STOP SIGNS SHALL BE A MINIMUM OF 36"X36" WITH DIAMOND GRADE SHEETING PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
13. STREET NAME SIGNAGE SHALL BE ON A 9" HIGH SIGN FLAT BLADE W/REFLECTIVE GREEN BACKGROUND. STREET NAMES SHALL BE UPPER AND LOWERCASE LETTERING WITH UPPERCASE LETTERS OF 6" MINIMUM AND LOWERCASE LETTERS OF 4.5" MINIMUM. THE LETTERS SHALL BE REFLECTIVE WHITE. STREET NAME SIGNS SHALL BE MOUNTED ON STOP SIGN POST.
14. A BLUE DOUBLE REFLECTORIZED BUTTON SHALL BE PLACED AT ALL FIRE HYDRANT LOCATIONS. THE BUTTON SHALL BE PLACED 12 INCHES OFF OF THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE HYDRANT.
15. THE PROJECT AND ALL PARTS THEREOF SHALL BE SUBJECT TO INSPECTION FROM TIME TO TIME BY INSPECTORS DESIGNATED BY FORT BEND COUNTY. NO SUCH INSPECTIONS SHALL RELIEVE THE CONTRACTOR OF ANY OF ITS OBLIGATIONS HEREUNDER. NEITHER FAILURE TO INSPECT NOR FAILURE TO DISCOVER OR REJECT ANY OF THE WORK AS NOT IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS, REQUIREMENTS AND SPECIFICATIONS OF FORT BEND COUNTY OR ANY PROVISION OF THIS PROJECT SHALL BE CONSTRUED TO IMPLY AN ACCEPTANCE OF SUCH WORK OR TO RELIEVE THE CONTRACTOR OF ANY OF ITS OBLIGATIONS HEREUNDER.
16. STABILIZED SUBGRADE: DETERMINE THE THICKNESS OF THE STABILIZED SUBGRADE AFTER CURING AND COMPACTION. IF THE SUBGRADE DEPTH IS GREATER THAN THE PROPOSED THICKNESS BY 20% OR MORE, THE CMT LAB MUST PROVIDE VERIFICATION THE PERCENTAGE OF MATERIAL BEING USED TO STABILIZE THE SUBGRADE MEETS OR EXCEEDS PROJECT REQUIREMENTS. TEST RESULTS REQUIRED.

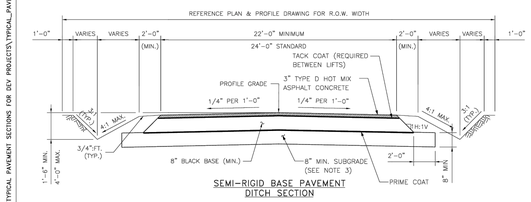
NOTE: FORT BEND COUNTY NOTES SUPERSEDE ANY CONFLICTING NOTES.



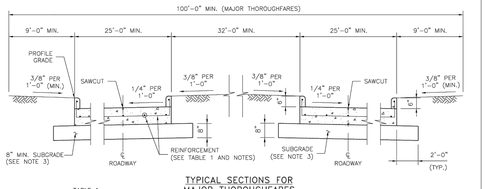
CONCRETE PAVEMENT
DITCH SECTION



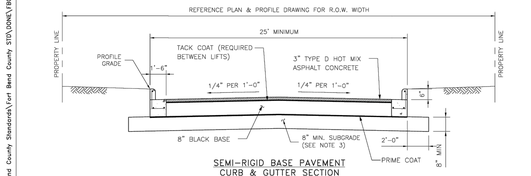
CONCRETE PAVEMENT
CURB & GUTTER SECTION
(PARABOLIC CROWN IS AN ACCEPTABLE OPTION)



SEMI-RIGID BASE PAVEMENT
DITCH SECTION



TYPICAL SECTIONS FOR
MAJOR THOROUGHFARES



SEMI-RIGID BASE PAVEMENT
CURB & GUTTER SECTION

TABLE 1
(CONSTRUCTION JOINT DOWELS)

DOWEL SIZE	PAVEMENT DEPTH
#4 BAR	< 6"
#5 BAR	6" ≤ D < 9"
#6 BAR	≥ 9"

DOWEL SHALL BE DRILLED INTO EXISTING PAVEMENT (MIN. 10", MAX. 12") AND EPOXIED. (SEE ITEM 361.3)

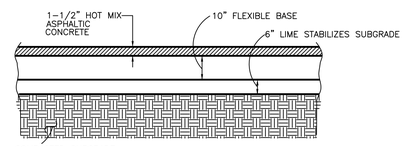
NOTES:

1. PAVEMENT SECTIONS SHOWN ARE INTENDED FOR DEVELOPMENT PROJECTS AND NOT FOR PUBLIC PROJECTS, WHERE WIDTH OF R.O.W. MAY VARY.
2. PAVEMENT SECTIONS SHALL BE LOCATED IN CENTER OF R.O.W.
3. SUBGRADE TREATMENT AND PAVEMENT THICKNESS AS DESIGNATED IN PLANS.
4. REFERENCE CONSTRUCTION JOINT DETAIL ON THE STANDARD CIVIL DRAWING "CONCRETE PAVEMENT DETAILS – SHEET 1 OF 2" FOR JOINT AND SEALANT REQUIREMENTS.
5. NO TRAFFIC ON CONCRETE PAVEMENT FOR 7 DAYS AND COMPRESSIVE STRENGTH OF 3,500 psi HAS BEEN REACHED.
6. ALL CONSTRUCTION JOINTS SHALL BE SEALED

HORIZONTAL SCALE: 1"=3'-0"
VERTICAL SCALE: 1"=1'-6"

SLAB AND REBAR NOTES:

1. TYPICAL SLAB THICKNESS D=8"
2. TYPICAL REBAR SIZE AND SPACING ARE:
   a. #4 BAR @ 18" C-C LONGITUDINAL
   b. #4 BAR @ 18" C-C TRANSVERSE
3. REBAR SIZE FOR PAVEMENT LESS THAN 8" THICK
   a. #4 BAR @ 24" C-C LONGITUDINAL
   b. #4 BAR @ 24" C-C TRANSVERSE
4. REBAR SHALL NOT BE PLACED WITHIN 3" FROM THE EDGE OF PAVEMENT.
5. TYPICAL STABILIZED SUBGRADE THICKNESS IS 8 INCHES.
6. FOR HEAVY INDUSTRIAL TRAFFIC, SLAB THICKNESS AND REBAR SIZE AND SPACING WILL BE AS PER GEOTECHNICAL RECOMMENDATION.
7. ALL BENT BARS SHALL BE GRADE 40 STEEL, ALL OTHER SHALL BE GRADE 60.
8. MINIMUM LAP SPLICE 16".
9. LAP SPLICES SHOULD BE ON ALTERNATING BARS, ADJACENT LAP SPLICES ARE NOT ACCEPTABLE.

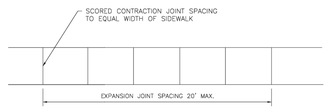


1 1/2" ASPHALT PAVING DETAIL
SCALE: N.T.S

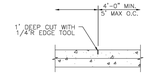
NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			
6			

FORT BEND COUNTY
ENGINEERING DEPARTMENT

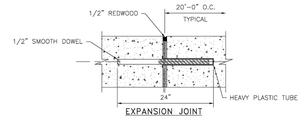
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CKD BY: INIT
SCALE: AS NOTED
DATE: 2-1-22
SHEET DESCRIPTION: TYPICAL PAVEMENT SECTIONS
FOR DEVELOPMENT PROJECTS
APPROVED BY:
FBCED STANDARD 09
SHEET NO. 1



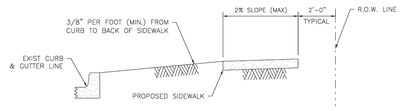
SIDEWALK JOINT DETAILS

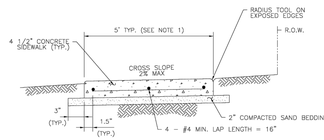


CONTRACTION JOINT SEAL



EXPANSION JOINT





SIDEWALK CROSS SECTION

NOTES:

1. TYPICAL SIDEWALK WIDTH IS 5'. SIDEWALKS OF 4' WIDTH ARE ALLOWED IN FRONT OF SINGLE FAMILY HOMES IF ALL DRIVEWAYS PROVIDE A 5' AREA FOR PASSING. SIDEWALKS OF 4' WITH 5' X 5' PASSING ZONES MUST BE SPECIFICALLY APPROVED BY FORT BEND COUNTY
2. THE MAXIMUM WIDTH BETWEEN EXPANSION JOINTS SHALL NOT EXCEED 20'-0"
3. EXPANSION JOINT IS TO BE 1/2" THICK CLEAR HEART REDWOOD DOWELS
4. SCORED CONTRACTION JOINTS SHALL BE EVERY 5' OR EQUAL TO SIDEWALK WIDTH
5. ALL EARTHEN AREAS ARE TO BE SODDED UNLESS SHOWN OTHERWISE ON DRAWINGS.
6. SIDEWALKS ARE TO BE REINFORCED CONCRETE (3500 PSI) WITH #3 BARS, 18 INCHES C-C.
7. USE RADIUS TOOL ON ALL EXPOSED EDGES.
8. MEMBRANE CURING COMPOUND IS REQUIRED AS DESCRIBED IN ITEM 526 IN THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION
9. SIDEWALK EXPANSION JOINTS SHALL CONFORM TO STREET EXPANSION JOINT STANDARDS

NOTE:

BANK SAND IS DEFINED AS A WELL-GRADED SAND, FREE OF SILT, CLAY, LOAM, FRIABLE OR SOLUBLE MATERIALS AND ORGANIC MATTER, MEETING THE UNIFIED SOILS CLASSIFICATION SYSTEM GROUP SW CRITERIA W/ A PLASTICITY INDEX OF LESS THAN 10, AND NO MORE THAN 12% OF MATERIAL CAN PASS THE NO. 200 SIEVE.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			
6			

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:
DRAWN BY: INIT
CKD BY: INIT
SCALE: AS NOTED
DATE: 2-1-22
SHEET DESCRIPTION: SIDEWALK DETAILS
APPROVED BY:
FBCED STANDARD 13
SHEET NO. 1

APPROVED: _____
Development Staff

DATE: _____

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG !!
DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE
PROCEEDING WITH ANY EXCAVATION

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

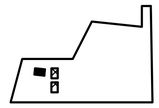
Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan



Professional Seals



06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:

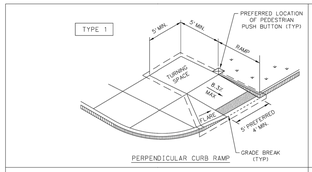
CONSTRUCTION NOTES AND PAVEMENT DETAILS

Sheet Number

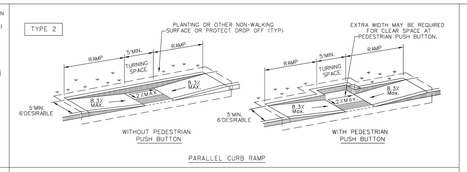
C601

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun 20, 2025-5:12 PM KOSHA SHAH

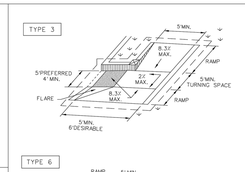
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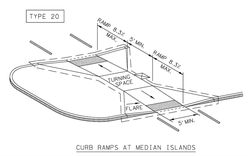
PERPENDICULAR CURB RAMP



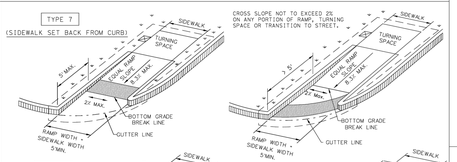
PARALLEL CURB RAMP

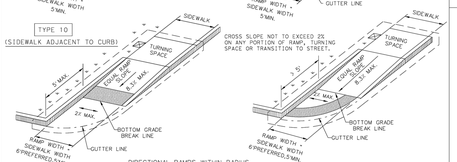


COMBINATION CURB RAMPS

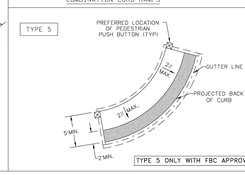


CURB RAMPS AT MEDIAN ISLANDS

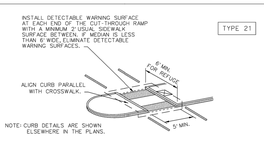




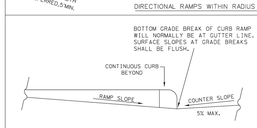
DIRECTIONAL RAMPS WITHIN RADIUS



TYPE 5 ONLY WITH FBC APPROVAL



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

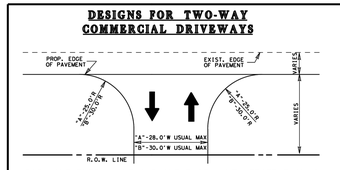
NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	1-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:		
DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: PED-18 RAMP DETAILS	14
SCALE: 1" = 1'	SHEET 1 OF 4	SHEET NO: /
DATE: 2-1-22	APPROVED BY:	

A:\17045\17045\Standard Sheets\07 FBC PED-18 RAMP DETAILS\PED-18_RAMP_DETAILS.dwg

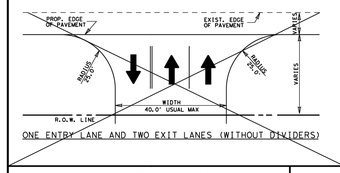
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



"A"- ONE ENTRY LANE AND ONE EXIT LANE, FEWER THAN 4 LARGE VEHICLES PER HOUR

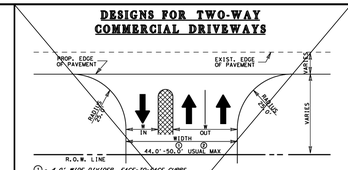
"B"- ONE ENTRY LANE AND ONE EXIT LANE, 4 OR MORE SINGLE UNIT VEHICLES PER HOUR

① - DRIVEWAY DESIGNS FOR LARGER VEHICLES WILL BE CONSIDERED ON A CASE BY CASE BASIS



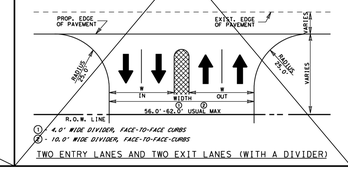
ONE ENTRY LANE AND TWO EXIT LANES (WITHOUT DIVIDERS)

DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



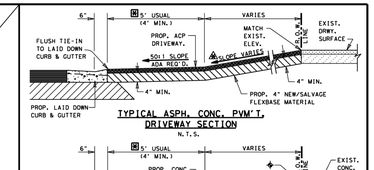
① - 4.0' WIDE DIVIDER, FACE-TO-FACE CURBS
② - 10.0' WIDE DIVIDER, FACE-TO-FACE CURBS

ONE ENTRY LANE AND TWO EXIT LANES (WITH A DIVIDER)



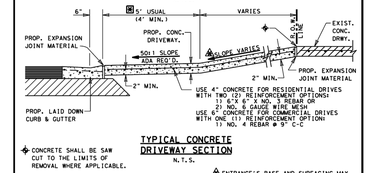
① - 4.0' WIDE DIVIDER, FACE-TO-FACE CURBS
② - 10.0' WIDE DIVIDER, FACE-TO-FACE CURBS

TWO ENTRY LANES AND TWO EXIT LANES (WITH A DIVIDER)



TYPICAL ASPH. CONC. PVM'T. DRIVEWAY SECTION

N.T.S.



TYPICAL CONCRETE DRIVEWAY SECTION

N.T.S.

◆ CONCRETE SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

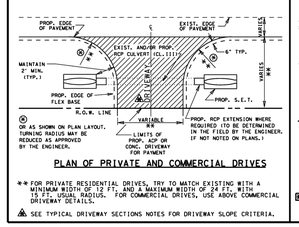
Ⓟ PROP./FUTURE SIDEWALK CROSSING LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. SEE P&P SHEETS FOR PROP. SIDEWALK LOCATION IF SIDEWALKS ARE INCLUDED AS PART OF PROJECT. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

▲ ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

PROP. DRY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% MAX.
RESIDENTIAL DRIVEWAYS @ A = 8% MAX.

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX.
RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER

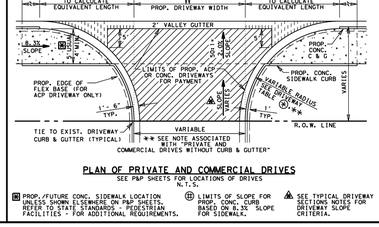


PLAN OF PRIVATE AND COMMERCIAL DRIVES

** FOR PRIVATE RESIDENTIAL DRIVES, TRY TO MATCH EXISTING WITH A MINIMUM WIDTH OF 12 FT. AND A MAXIMUM WIDTH OF 24 FT. WITH 15 FT. USUAL RADIUS. FOR COMMERCIAL DRIVES, USE ABOVE COMMERCIAL DRIVEWAY DETAILS.

▲ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES

N.T.S.

Ⓟ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

Ⓛ LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK.

▲ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

LF OF VALLEY GUTTER= W + X1 + X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

TY. PB-1
EXIST. PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 17#/SY ACP, (HMA-D PG 64-22 SAC B MEETING ITEM 340)

CONCRETE (RESIDENTIAL)
EXIST. PRIVATE DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

CONCRETE (COMMERCIAL)
EXIST. BUSINESS DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 6" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

© TxDOT 2021

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

REV. 08/22 DRIVEWAY2.DGN

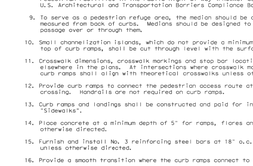
DIST. COUNTY	PROJECT NO.	FILE NO.	SHEET NO.
6			
STATE	DIST. NO. COUNTY	CONT. SECT. JOB	HIGHWAY NO.
TEXAS	21		



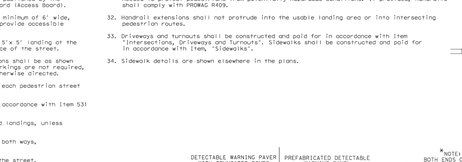
PERPENDICULAR CURB RAMP

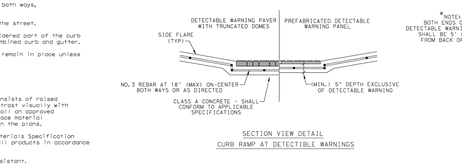
PARALLEL CURB RAMP

COMBINATION CURB RAMPS

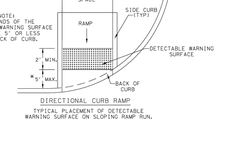


CURB RAMPS AT MEDIAN ISLANDS

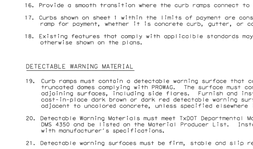




DIRECTIONAL RAMPS WITHIN RADIUS



TYPE 5 ONLY WITH FBC APPROVAL



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:		
DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: PED-18 RAMP DETAILS	15
SCALE: 1" = 1'	SHEET 2 OF 4	SHEET NO: /
DATE: 2-1-22	APPROVED BY:	

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across. Returned curbs may cause the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including slope flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

DETECTABLE WARNING SURFACE DETAILS

PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:		
DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: PED-18 RAMP DETAILS	15
SCALE: 1" = 1'	SHEET 2 OF 4	SHEET NO: /
DATE: 2-1-22	APPROVED BY:	

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G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun. 20, 2025-5:27 PM KOSHA SHAH

APPROVED: _____
Development Staff

DATE: _____

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CALL BEFORE YOU DIG !!
DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION

THE STATE OF TEXAS · FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-590
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS · Brad Parks · SERGIO VAN DUSEN · 97434 · LICENSED · PROFESSIONAL ENGINEER

06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025

Drawn by: KVS Reviewed by: SVD

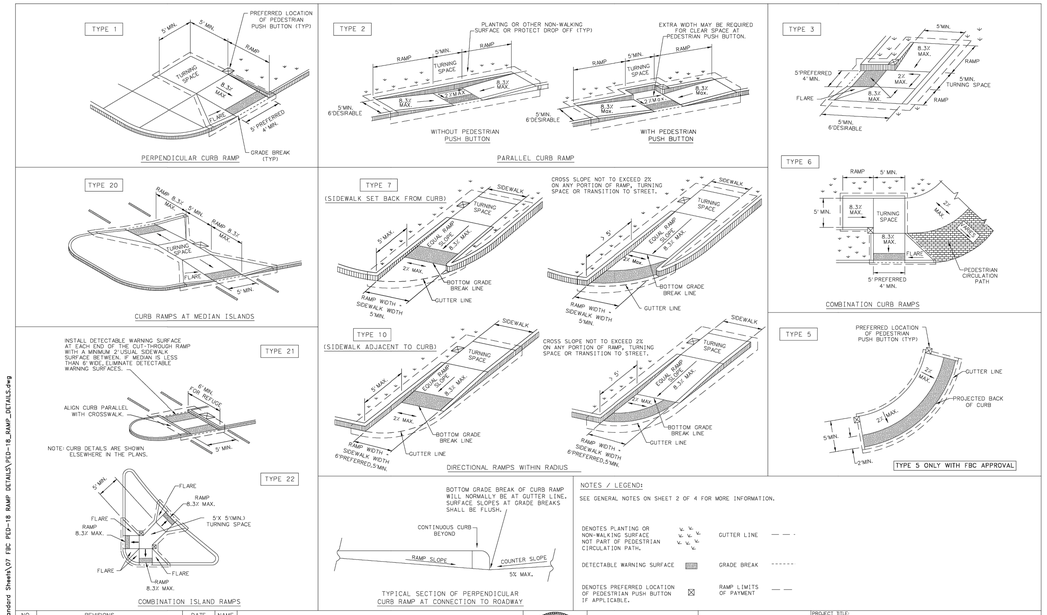
Project No: 2024-002

Sheet Title:

RAMP DETAILS

Sheet Number

C602



NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	1-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:

DRAWN BY: INIT		FBCED STANDARD
DES'D BY: INIT	SHEET DESCRIPTION: PED-18 RAMP DETAILS	14
SCALE: 1" = 1'	SHEET 1 OF 4	SHEET NO. 1
DATE: 2-1-22	APPROVED BY:	

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GENERAL NOTES

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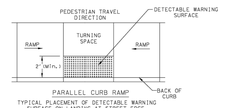
DETECTABLE WARNING PAVERS (IF USED)

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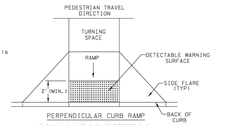
SIDEWALKS

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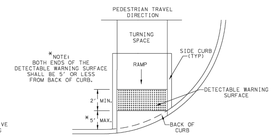
DETECTABLE WARNING SURFACE DETAILS



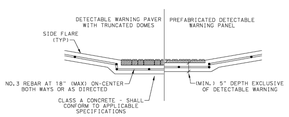
PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



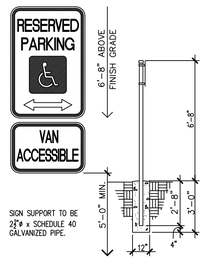
PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

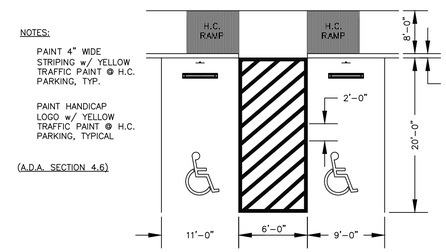


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

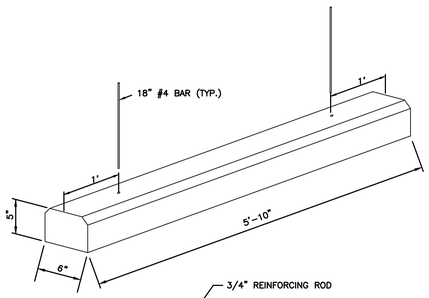


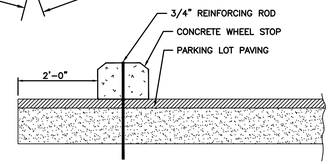
NOTES:

1. SIGN SUPPORT TO BE 2 1/2"ø x SCHEDULE 40 GALVANIZED PIPE.
2. CONCRETE SHALL BE 2500 P.S.I. @ 28 DAYS.
3. ROUND POST BRACKET SHALL BE # 222491-501 AS MFG. BY VULCAN SIGN & STAMPING, INC. OR EQUAL.
4. POST CAP SHALL BE SLIP ON GALVANIZED TYPE FITTING.
5. COLOR
   GREEN – LEGEND AND BORDER
   WHITE – SYMBOL ON BLUE BACKGROUND
   WHITE – BACKGROUND

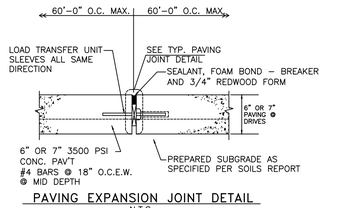


ACCESSIBLE DETAILS
SCALE: NTS





STANDARD REINFORCED CONCRETE WHEEL STOP
N.T.S.



PAVING EXPANSION JOINT DETAIL
N.T.S.

APPROVED: _____
Development Staff

DATE: _____

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

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CALL BEFORE YOU DIG !!
DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0565)
AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:

DRAWN BY: INIT		FBCED STANDARD
DES'D BY: INIT	SHEET DESCRIPTION: PED-18 RAMP DETAILS	15
SCALE: 1" = 1'	SHEET 2 OF 4	SHEET NO. 2
DATE: 2-1-22	APPROVED BY:	

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun. 20, 2025-5:12 PM KOSHA SHAH

THE STATE OF TEXAS
FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan



Professional Seals



06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025

Drawn by: KVS Reviewed by: SVD

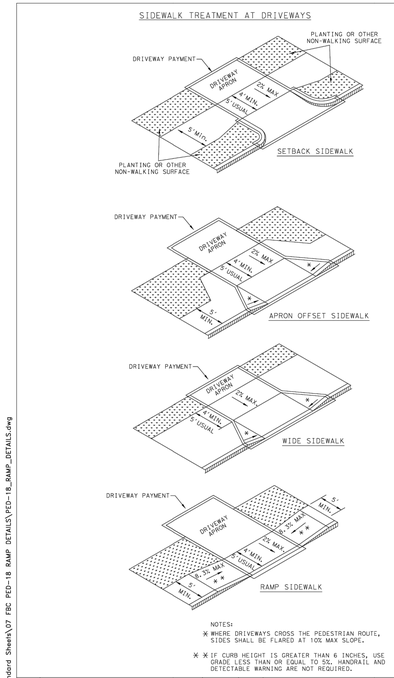
Project No: 2024-002

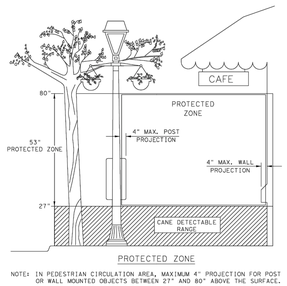
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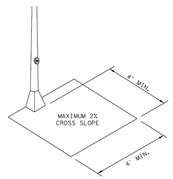
RAMP DETAILS

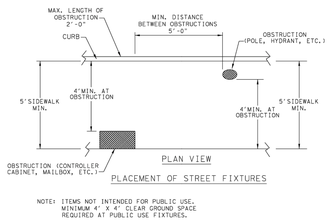
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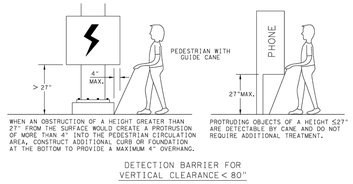
C603









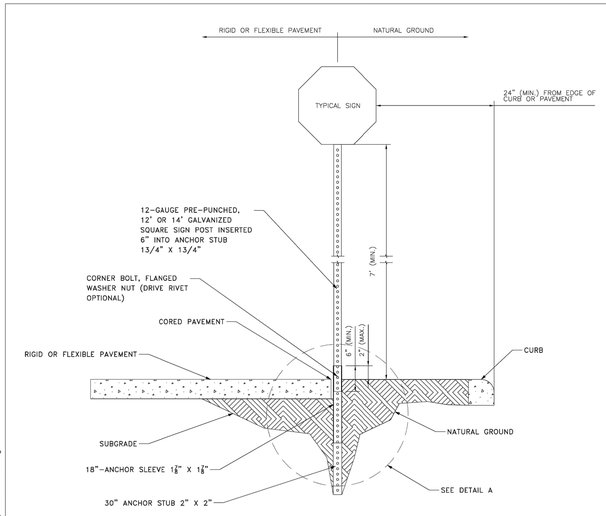


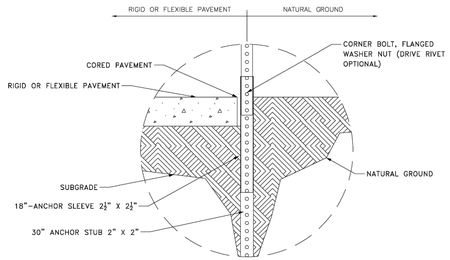
NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:	
DRAWN BY: INIT	FBCED STANDARD
CKD BY: INIT	SHEET DESCRIPTION: PED-18 RAMP DETAILS — 16
SCALE: 1" = 1'	SHEET 3 OF 4 — SHEET NO: /
DATE: 2-1-22	APPROVED BY:

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TYPICAL GROUND SIGN INSTALLATION
DETAIL A

NOTES:
1. THE CROSS SECTION OF ALL MEMBERS SHALL BE SQUARE TUBE FORMED OF 12 GAUGE AND MANUFACTURED FROM HOT-GALVANIZED STEEL
2. THE TELESCOPE BREAKAWAY SYSTEM OR "SYSTEM" IS DEFINED AS FOLLOW:
   - A MINIMUM 30" ANCHOR STUB;
   - 18" ANCHOR SLEEVE.
3. DRIVE THE SYSTEM TOGETHER MAKING SURE THE HOLES ARE ALIGNED.
4. THE SYSTEM IS TO BE DRIVEN INTO NATURAL GROUND EXPOSED SUBGRADE UNTIL ONLY 1 TO 2 INCHES ARE LEFT EXPOSED.
5. ATTACH THE SIGN TO AN 1 3/4" SQUARE POST AT THE DESIRED HEIGHT, SUCH THAT IT MEETS THE MINIMUM VERTICAL CLEARANCE.
6. SIGNS ARE FASTENED TO THE POST BY USING DRIVE RIVETS OR BOLTS.
7. INSERT THE SIGN POST APPROXIMATELY 6 TO 8 INCHES INTO THE ANCHOR BASE.
8. BOLT THE SIGN POST TO THE ANCHOR ASSEMBLY WITH A CORNER BOLT.
9. WHEN INSTALLING IN RIGID OR FLEXIBLE PAVEMENT, USE A CORING MACHINE TO EXPOSE THE SUBGRADE MATERIAL AND INSTALL THE SYSTEM.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:	
DRAWN BY: INIT	FBCED STANDARD
CKD BY: INIT	SHEET DESCRIPTION: TYPICAL GROUND SIGN INSTALLATION — 52
SCALE: AS NOTED	SHEET NO: /
DATE: 2-1-22	APPROVED BY:

J:\1704\1703\Standard Sheets\OSH FORT BEND STANDARDS\Expansion Joints.dwg

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun 20, 2025-5:11 PM KOSHA SHAH

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

APPROVED: _____
Development Staff

DATE: _____

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THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place . Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS · Brad Sparks · SERGIO VAN DUSEN · 97434 · LICENSED · PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025

Drawn by: KVS Reviewed by: SVD

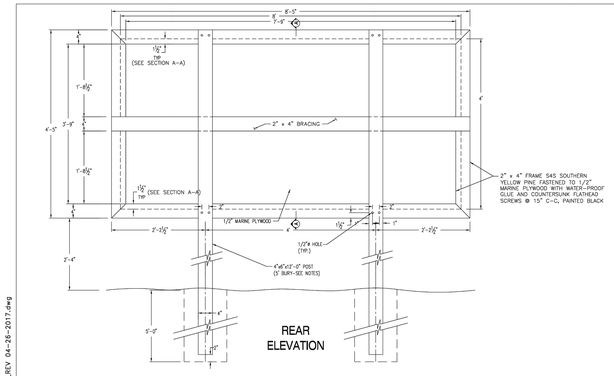
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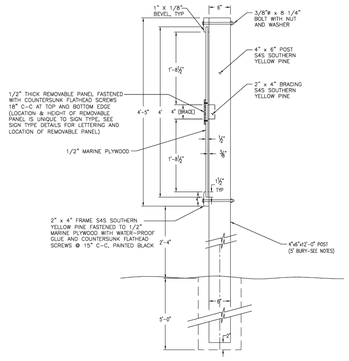
RAMP AND MISCELLANEOUS DETAILS

Sheet Number

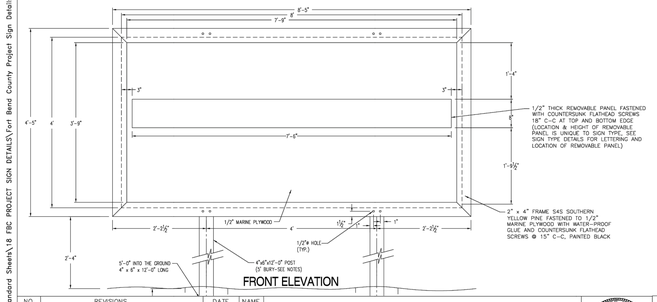
C604



REAR ELEVATION



SECTION A-A



FRONT ELEVATION

GENERAL NOTES:

1. THE SIGN SHALL HAVE BLACK LETTERS WITH WHITE BACKGROUND.
2. ALL LETTERING SHALL BE EITHER ARIAL FONT OR HELVETICA FONT.
3. SIGN SHALL BE MOUNTED ON 4" x 4" POSTS AND LOCATED BY THE ENGINEER.
4. REMOVABLE PANEL SHALL BE 1/2" MARINE PLYWOOD.
5. ALL BOLTS, SCREWS, NAILS, NUTS AND WASHERS SHALL BE GALVANIZED OR CADMIUM PLATED.
6. ALL WOOD POST SHALL BE RECLAIMIZED OR PENTACHLOROPHENOL SOLACE.
7. ALL WOOD SURFACES SHALL HAVE PRIME COAT AND TWO (2) COATS OF SHERWIN-WILLIAMS ACM-LUSTRA ENAMEL OR EQUAL.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS

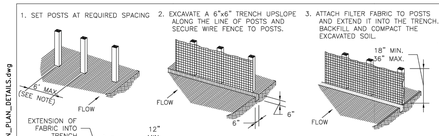
FORT BEND COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:

DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: PROJECT SIGN DETAILS	35
SCALE: NONE	SHEET 1 OF 4	SHEET NO. /
DATE: 2-1-22	APPROVED BY:	

J:\1704\160\Fort Bend County Standards\Fort Bend County STD\DWG\FBC STORM WATER POLLUTION PREVENTION PLAN DETAILS\STORM_WATER_POLLUTION_PREVENTION_PLAN_DETAILS.dwg

1. SET POSTS AT REQUIRED SPACING
2. EXCAVATE A 6"x6" TRENCH UPSLOPE ALONG THE LINE OF POSTS AND SECURE WIRE FENCE TO POSTS.
3. ATTACH FILTER FABRIC TO POSTS AND EXTEND IT INTO THE TRENCH. BACKFILL AND COMPACT THE EXCAVATED SOIL.

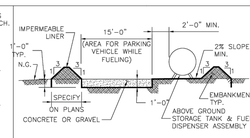


REINFORCED FILTER FABRIC BARRIER

RFB SYMBOL

GENERAL NOTES:

1. SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
2. SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
4. REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.
5. SILT FENCE MINIMUM 2' BEHIND CURB.

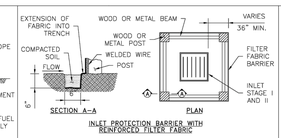


ABOVE GROUND TEMP. VEHICLE & EQUIPMENT FUELING AREA WITH TANK

TFA SYMBOL

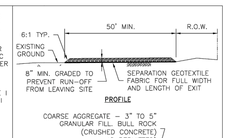
GENERAL NOTES:

1. THE SIZE OF TANK FOUNDATION AREA DEPENDS ON THE SIZE OF ABOVE GROUND STORAGE TANK AND DISPENSER ASSEMBLY.
2. PROVIDE A MINIMUM SLOPE OF 2 % TOWARD THE SUMP PIT.
3. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS.

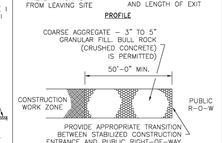


SECTION A-A PLAN

INLET PROTECTION BARRIER WITH REINFORCED FILTER FABRIC



PROFILE



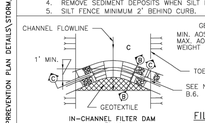
PLAN

STABILIZED CONSTRUCTION ACCESS

SC-1 SYMBOL

GENERAL NOTES:

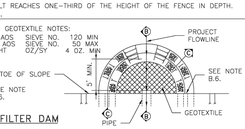
1. MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
2. CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
3. UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
4. WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
5. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
6. PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
7. MINIMUM 14' WIDTH FOR ONE WAY TRAFFIC AND 20' WIDTH FOR TWO WAY TRAFFIC.



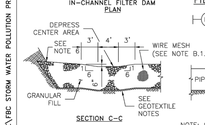
IN-CHANNEL FILTER DAM PLAN

FILTER DAM

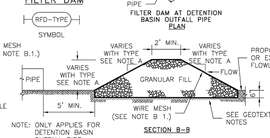
RFD-TYPE SYMBOL



FILTER DAM AT DETENTION BASIN OUTFALL PIPE PLAN



SECTION C-C



SECTION B-B

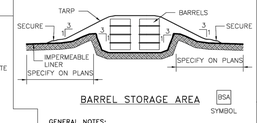
NOTE: ONLY APPLIES FOR DETENTION BASIN OUTFALL PIPE PROTECTION.

A. TYPES OF FILTER DAMS

1. TYPE 1 (NON-REINFORCED)
   - a. HEIGHT – 18-24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   - b. TOP WIDTH = 2 FEET (MINIMUM)
   - c. SLOPES – 2:1 (MAXIMUM).
2. TYPE 2 (REINFORCED).
   - a. HEIGHT – 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   - b. TOP WIDTH = 2 FEET (MINIMUM).
   - c. SLOPES – 2:1 (MAXIMUM).
3. TYPE 3 (REINFORCED)
   - a. HEIGHT – 36-48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   - b. TOP WIDTH = 2 FEET (MINIMUM).
   - c. SLOPES – 3:1 (MAXIMUM).
4. TYPE 4 (GABION)
   - a. HEIGHT – 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
   - b. TOP WIDTH = 2 FEET (MINIMUM).
5. TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.

1. TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
2. PLACE GRANULAR FILL ON THE WIRE MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
   - a. 3–5 INCHES FOR ROCK FILTER DAM TYPES 1, 2 AND 4.
   - b. 4–8 INCHES FOR ROCK FILTER DAM TYPE REFER TO GRANULAR FILL IN SPECIFICATION SECTION No. 02378 RIPRAP AND GRANULAR FILL.
3. FOLD WIRE MESH AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
4. IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
5. SEE HCFCD SPECIFICATION SECTION NO. 02364–FILTER DAMS.
6. EMBED ONE FOOT MINIMUM INTO SLOPE AND RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA AT SLOPE.



BARREL STORAGE AREA

BSA SYMBOL

GENERAL NOTES:

1. ALTERNATIVELY, STORE BARRELS IN AN ENCLOSED BUILDING OR SHED.
2. INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS. 60 mil MINIMUM.
3. CONSTRUCT BERMED AREA WITH VOLUME GREATER THAN OR EQUAL TO 110% VOLUME OF BARRELS.



PLAN

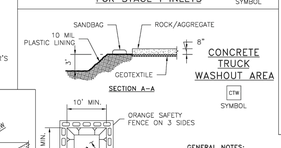
INLET PROTECTION BARRIER WITH FIBER ROLLS

GENERAL NOTES:

1. FIBER ROLLS WILL BE UTILIZED ONLY WHEN SITE CONDITIONS DO NOT PERMIT THE USE OF FILTER FABRIC BARRIER, AND AS APPROVED BY THE ENGINEER.

INLET PROTECTION BARRIERS FOR STAGE I INLETS

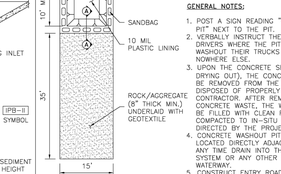
IPB SYMBOL



SECTION A-A

CONCRETE TRUCK WASHOUT AREA

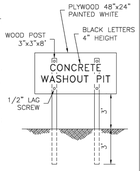
CTW SYMBOL



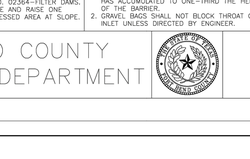
PLAN

GENERAL NOTES:

1. POST A SIGN READING "CONCRETE WASHOUT PIT" NEXT TO THE PIT.
2. VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASHOUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
3. UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR AFTER REMOVAL OF THE CONCRETE WASTE, THE WASHOUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
4. CONCRETE WASHOUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
5. CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.



SIGN DETAIL (OR EQUIVALENT)



INLET PROTECTION BARRIERS FOR STAGE II INLETS

IPB-II SYMBOL

GENERAL NOTES:

1. REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.
2. GRAVEL BAGS SHALL NOT BLOCK THROAT OF INLET UNLESS DIRECTED BY ENGINEER.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS

FORT BEND COUNTY
ENGINEERING DEPARTMENT

PROJECT TITLE:

DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: STORM WATER POLLUTION PREVENTION PLAN DETAILS	54
SCALE: NONE		SHEET NO. /
DATE: 2-1-22	APPROVED BY:	

APPROVED: _____
Development Staff

DATE: _____

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

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THE STATE OF TEXAS
FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS
SERGIO VAN DUSEN
97434
LICENSED
PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

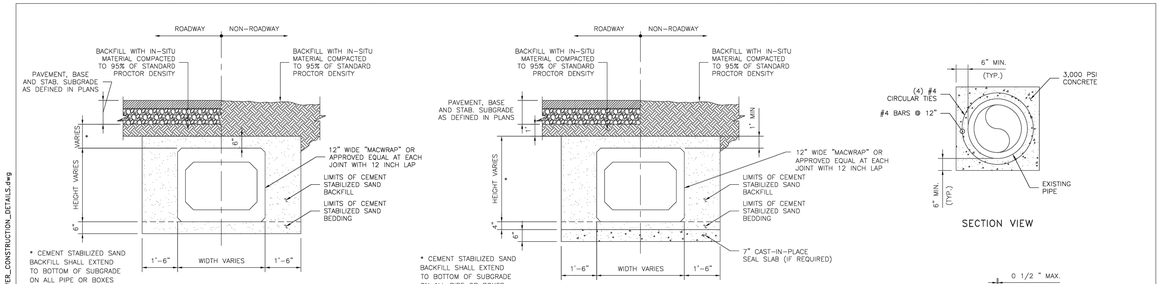
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SWPPP AND MISCELLANEOUS DETAILS

Sheet Number

C605

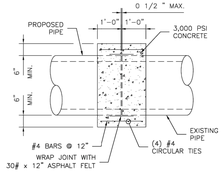
G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun 20, 2025-5:11 PM KOSHA SHAH



PRECAST REINFORCED CONCRETE BOX

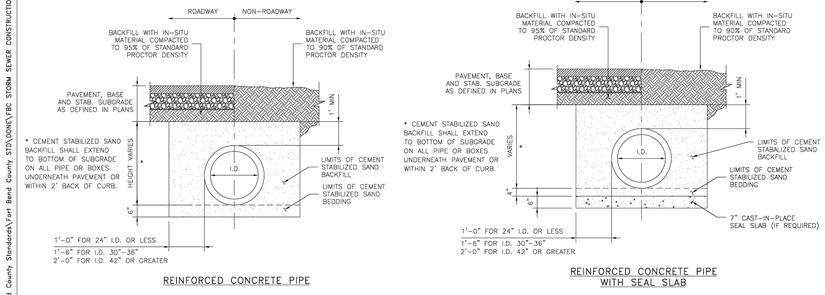
PRECAST REINFORCED CONCRETE BOX WITH SEAL SLAB

SECTION VIEW



ELEVATION VIEW

TYPICAL CONCRETE COLLAR FOR 36" & SMALLER RCP



REINFORCED CONCRETE PIPE

REINFORCED CONCRETE PIPE WITH SEAL SLAB

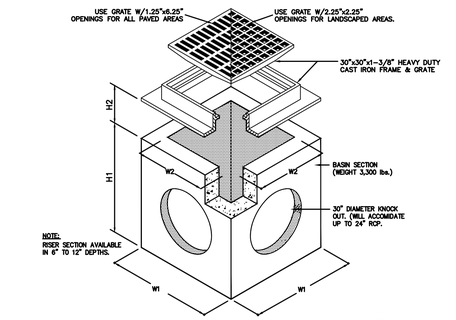
GENERAL NOTES:

1. FOR RCP LARGER THAN 36" DIAMETER, CONCRETE COLLARS MUST BE DESIGNED BY THE ENGINEER OF RECORD.
2. ALL TRENCHES IN ROW SHALL BE BACKFILLED WITH 1.5 SACK CEMENT STABILIZED SAND TO WITHIN 1' OF SUBGRADE. COMPACTED TO 95% STANDARD PROCTOR DENSITY

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:	
DRAWN BY: INIT	FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: STORM SEWER CONSTRUCTION DETAILS — 18
SCALE: 1"=1'-6"	SHEET NO: /
DATE: 2-1-22	APPROVED BY:



SPECIFICATIONS

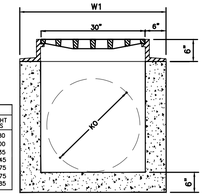
CONCRETE : Class I concrete with of design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth. Rated for H-20 Loading.

REINFORCEMENT: Grade 60 reinforced with steel rebar to conform to ASTM A615 on required centers or equal.

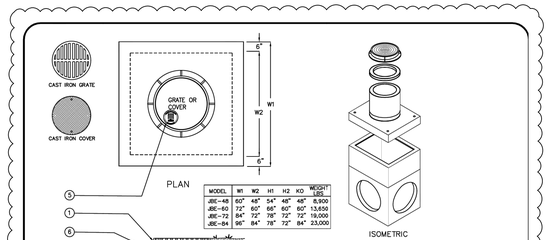
C.I. CASTINGS: Cast iron frames and grates are manufactured of grey cast iron conforming to ASTM A48-76 Class 30.

MODEL #		DIMENSIONS							
CATCH BASIN	JUNCTION BOX [2]	W1	W2	H1	H2	T1	KO	GRATE SIZE	WEIGHT LBS
CB12 [1]	JB12	15"	10"	21"	18"	2"	10"	12"x12"x1"	180
CB18	JB18	24"	16"	34"	30"	4"	15"	18"x18"x1"	1,000
CB20	JB20	26"	18"	34"	30"	4"	17"	20"x20"x1"	1,335
CB24	JB24	33"	22"	41"	36"	5"	22"	24"x24"x2"	2,245
CB27	JB27	37"	25"	42"	36"	6"	24"	27"x27"x2"	2,875
CB30	JB30	42"	30"	42"	36"	6"	30"	32"x32"x2"	3,675
CB36	JB36	48"	36"	42"	36"	6"	32"	38"x38"x2"	4,585

1. CB12 CATCHBASIN IS RATED FOR PEDESTRIAN LOADING. ALL OTHERS ARE TRAFFIC DUTY.
2. ALL JUNCTION BOXES ARE STANDARD PEDESTRIAN DUTY OR OPTIONAL TRAFFIC DUTY.



TYPE 'A' GRATE INLET
CUSTOM DET: INLET-A



MODEL	W1	W2	H1	H2	KO	WEIGHT LBS
JBE-48	60"	48"	54"	48"	48"	8,900
JBE-60	72"	60"	66"	60"	60"	13,650
JBE-72	84"	72"	78"	72"	72"	19,000
JBE-84	96"	84"	78"	72"	84"	23,000

KEYED NOTES		
MARK	QTY	DESCRIPTION
1	1	CAST IRON FRAME & COVER/GRATE, FURNISHED LOOSE OR CAST-IN
2	1	PRECAST CONCRETE EXTENSION, AS REQUIRED
3	1	PRECAST CONCRETE RISER SECTION
4	4	THIN WALL KNOCKOUT ON ALL 4 SIDES, SEE KO DIMENSION FOR MAXIMUM PIPE O.D.
5	1	NAMEPLATE INDICATING: MFG: PARKUSA 888-611-PARK WWW.PARKUSA.COM MODEL: JBE-1 DATE MANUFACTURED
6	–	GRADE RINGS AS REQUIRED
7	–	LIFTING LUGS AS REQUIRED
8	–	ALL JOINTS SEALED WATER-TIGHT WITH RAM-NEK
9	1	PRECAST CONCRETE BOTTOM SECTION

SPECIFICATIONS

CONCRETE : CLASS II CONCRETE WITH OF DESIGN STRENGTH OF 4500 PS AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. RATED FOR H-20 LOADING.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

C.I. CASTINGS: CAST IRON FRAMES AND GRATES ARE MANUFACTURED OF GREY CAST IRON CONFORMING TO ASTM A48-76 CLASS 30.

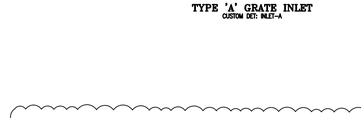
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PARK USA — A Northwest Pipe Company

JUNCTION BOX
MODEL JBE – 48" THRU 84"

PM	PC	DRN	CHK
-	-	-	-

DWG. NO. JBE-1
DATE 2023
REV. A



RISING & FALLING WATER LEVELS
(DEFINE LEAD/LAG SIGNAL TRIGGER POINTS)

FLOAT No. (NO or NC)	LEVEL SETTING	RESULT of ACTION (RISING)
FLS-2 NO ++ C	51.25'	LEAD PUMP TURNS "ON"
FLS-3 NO ++ C	58.25'	LAG PUMP TURNS "ON", (LEAD PUMP TURNS "OFF.)
FLS-4 NO ++ C	63.00'	ALARM HI-LEVEL TURNS "ON"
FLS-5 NO ++ C	TBD'	HIGH WATER IN DITCH, ALL PUMPS TURN "OFF"
		(FALLING)
FLS-4 NO ++ C	63.00'	ALARM HI-LEVEL TURNS "OFF"
FLS-5 NO ++ C	TBD'	HIGH WATER IN DITCH, ALL PUMPS TURN "ON"
FLS-1 NO ++ C	55.75'	ALL PUMPS "OFF." LAG PUMP ALTERNATES TO LEAD PUMP

WET WELL BOM w/ NOTES

BOM No.	QTY REQ.	DESCRIPTION
1	1	8'-48" x 12'-7" DIST REINFORCED CONCRETE
2	1	30" x 36" ALUMINUM HATCH/WAY w/ SAFETY GU
3	1	4" DIA ALLY CONCRETE TOP
4	1	4" DIA ALLY CONCRETE FLOOR
5	1	PIPE w/KON-SHRINK GROUT (BY INSTALLING C
6	2	3" SCH 80 PVC 90° ELBOW
7	2	3" SCH 80 PVC DISCHARGE PIPE
8	2	3" BRONZE SWING CHECK VALVE
9	2	3" PLUG VALVE
10	2	3" BASE ELBOW
11	2	3" PUMP LIFT-OUT ASSY (2 3" PUMPS
12	2	3" NON-CLOG SUBMERSIBLE PUMPS
13	1	4" HDG VENT
14	AS REQD	WATER TIGHT PLASTIC FLEXIBLE GASKET
15	1	FLS-1, LEVEL CONTROL FLOAT, SYSTEM SHUT
16	1	FLS-2, LEVEL CONTROL FLOAT, LEAD PUMP ON
17	1	FLS-3, LEVEL CONTROL FLOAT, LAG PUMP ON
18	1	FLS-4, LEVEL CONTROL FLOAT, HI-LEVEL WATE
19	1	FLS-5, HIGH LEVEL DITCH CONTROL FLOAT "
20	1	4" X 3" SCH80 PVC REDUCING COUPLING (BY
21	1	CLEVIS HANG., DUPLEX, RIPH 40 FRP w/CHA
22	2	SS U-BOLTS
23	2	SS UPPER GUIDE RAIL BRACKETS
24	2	RAILLOINT RUBBER BOOT
25	1	SS CABLE/CORD HANGER
26	4	SS GUIDE RAILS
27	AS REQD	REINFORCEMENT REBAR (per specification)
28	1	3" X 2" SCH80 PVC REDUCING BUSHING
29	2	3" X 3" SCH80 PVC REDUCING ADAPTER
30	2	3" X 3" LONG SCH 80 PVC NIPPLE
31	1	3" SCH80 PVC 45° ELBOW (BY INSTALLING CO
32	1	3" SCH 80 WYE (BY INSTALLING CONTRACTOR
		LIFT GAC SALES ORDER # MODEL No.: NC-48-2/3 DATE MFG.: PHONE No.: 281-808-8719
NOTES:	A.	DRAWING IS REPRESENTATIVE ONLY UNTIL "CL
	B.	ALL DASHED LINES ARE BY OTHERS UNLESS C
	C.	ALL ELEVATIONS MUST BE VERIFIED PRIOR TO
	CONCRETE GRADE:	TYPE I/II CONCRETE w/ GRADE STRENGTH OF 4 ALL CONCRETE CONSTRUCTION IS "MONOLITHIC ASSTM or ACI301/S-437A CLASS 4500 PSI 28 DAYS 4000# PSI REINFORCEMENT STEEL REBAR w/ REQUIRED CENTERS. ANY WALL OPEN 45 BAR MIN. SPLICE LENGTHS. #4 = 22", #5
BOM No. 2	HATCHWAY:	GALVANIZED HATCH 36# PSF RATED, 6.25" AN PLATE, SS TAMPERPROOF FASTENERS, HINGES
BOM No. 12	PUMPS:	PUMPS: SUBMERSIBLE CENTRIFUGAL NON-CLO (see PUMP SCHEDULE for mechanical/electri
BOM No. 20	CONTROLS:	CONTROLS: NEMA 4X ENCLOSURE (REMOTE M (see CONTROLS SCHEDULE for electrical det
	SUBMITTALS:	SUBMITTAL TO FOLLOW AFTER RECEIPT OF AW APPROVAL BY CLIENT'S AUTHORIZED REPRE

PUMPS and CONTROLS SCHEDULE

PUMP No.	CLASS	PUMP SPECIFICATION
PUMP 1	SUBMERSIBLE NON-CLOG	112 USgpm @ 26.13' TDH 3.5 HP, 1800 RPM, 3/60/230VAC
PUMP 2	SUBMERSIBLE NON-CLOG	112 USgpm @ 26.13' TDH 3.5 HP, 1800 RPM, 3/60/230VAC
		CONTROL PANEL SPECIFICATION
PANEL 1	NEMA 4X PWA, UL	Duplex Type w/ IEC Starter, Circuit Breakers, Alarm Circuit Fuse, H-O-A, Alternator Relay, Generator Receptacle, Visual Alarm Beacon (mounted & wired by contractor)

REV	BY	DESCRIPTION
B	JLE	REV B - REV A - 06-19-25-ORIGINAL DRAWING

PROJECT:	MUSTANG PARK RENOVATION & NEW CONSTRUCTION
ENGINEER:	VOGT ENGINEERING
DATE:	19-JUNE-2025
TITLE:	STORM WATER LIFT STATION
LIFT GAC MANUFACTURER:	TBD
LIFT GAC CONTRACTOR/REPAIR:	TBD
LIFT GAC 1165 TYLER HOUSTON, TX 77043	
LIFT GAC 1165 TYLER HOUSTON, TX 77043	
LIFT GAC PO BOX 79 HONDO TX 78073	
SIZE: B	ITEM NO. XXXXXXXX
DWG. NO. NC-48-2/3	

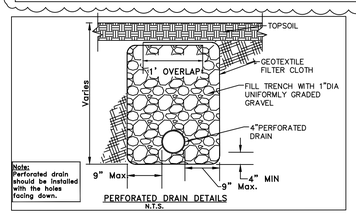
FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

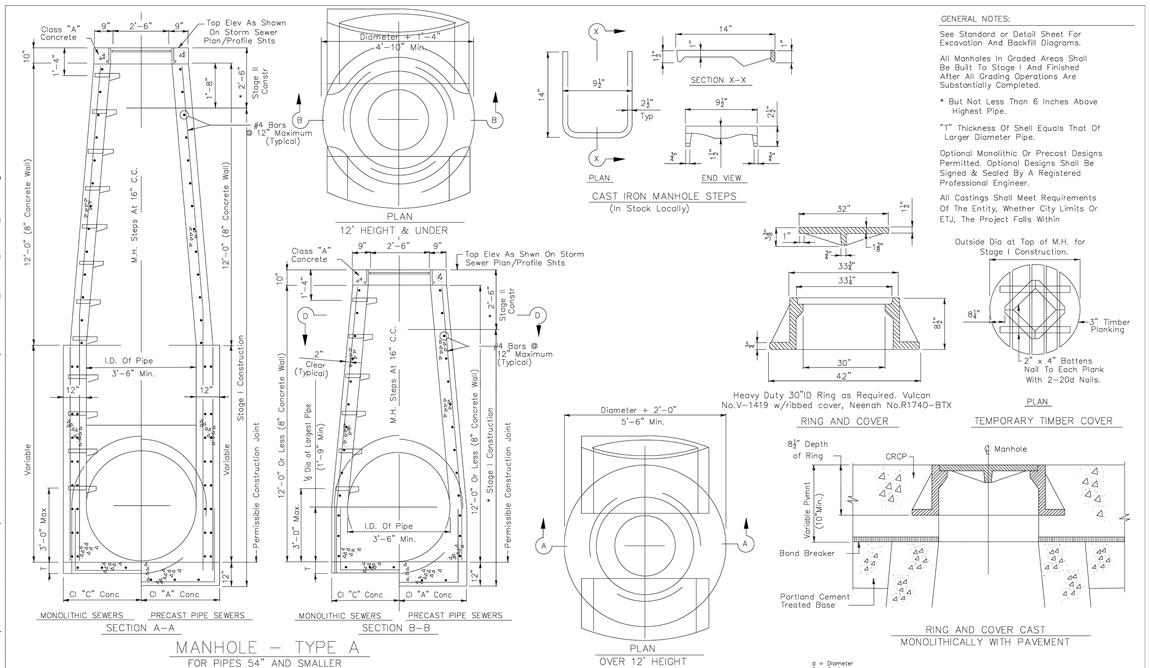
APPROVED: _____ Development Staff

DATE: _____

ONE-CALL NOTIFICATION SYSTEM
CALL BEFORE YOU DIG !!
DIAL 811 or 1-800-344-8377
(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE
PROCEEDING WITH ANY EXCAVATION



PERFORATED DRAIN DETAILS
N.T.S.



GENERAL NOTES:

See Standard or Detail Sheet For Excavation And Backfill Diagrams.

All Manholes In Graded Areas Shall Be Built To Stage I And Finished After All Grading Operations Are Substantially Completed.

* But Not Less Than 6 Inches Above Highest Pipe.

"T" Thickness Of Shell Equals That Of Larger Diameter Pipe.

Optional Monolithic Or Precast Designs Permitted. Optional Designs Shall Be Signed & Sealed By A Registered Professional Engineer.

All Castings Shall Meet Requirements Of The Entity, Whether City Limits Or ETJ, The Project Falls Within

d = Diameter
R = Radius

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:	
DRAWN BY: INIT	FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: CAST-IN-PLACE CONCRETE MANHOLE DETAILS — 19
SCALE: AS NOTED	SHEET NO: /
DATE: 2-1-22	APPROVED BY:

THE STATE OF TEXAS · FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS · Brad Sparks · SERGIO VAN DUSEN · 97434 · LICENSED · PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

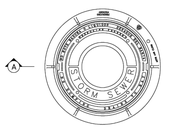
Project No: 2024-002

Sheet Title:

STORM SEWER DETAILS-I

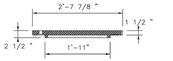
Sheet Number
C606

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun. 20, 2025-5:12 PM KOSHA SHAH
J:\170A\160\Fort Bend County Standards\Acad Fort Bend Standards\13 FBC PRECAST CONCRETE MANHOLE DETAILS\CAST-IN-PLACE_CONCRETE_MANHOLE_DETAILS.dwg
J:\170A\170S\Standard Sheets\ACAD FORT BEND STANDARDS\13 FBC PRECAST CONCRETE MANHOLE DETAILS\CAST-IN-PLACE_CONCRETE_MANHOLE_DETAILS.dwg
J:\170A\160\Fort Bend County Standards\City Of Fresno\FBC STORM SEWER CONSTRUCTION DETAILS\STORM_SEWER_CONSTRUCTION_DETAILS.dwg

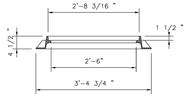


PLAN VIEW
FRAME AND COVER
SCALE: 1" = 1'-0"

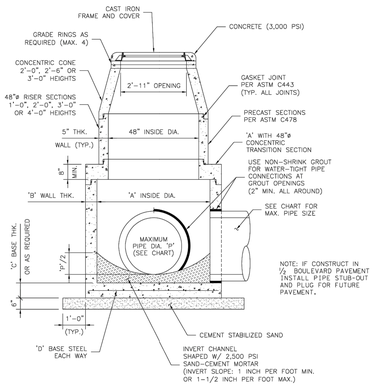
NOTE: IF PROJECT IS WITHIN A CITY ETJ OR CITY LIMITS, USE CITY'S STD MANHOLE COVER



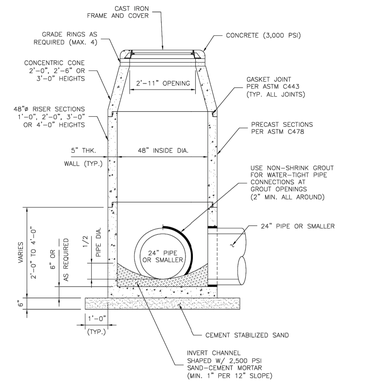
COVER SECTION A-A
SCALE: 1" = 1'-0"



FRAME SECTION A-A
SCALE: 1" = 1'-0"



PRECAST CONCENTRIC MANHOLE
FOR PIPE SIZES GREATER THAN 24"
SCALE: 1" = 1'-0"



48"ø PRECAST CONCENTRIC MANHOLE
FOR PIPE SIZES 24" OR SMALLER
SCALE: 1" = 1'-0"

MAXIMUM PIPE DIA. 'P'	INSIDE DIA. 'A'	WALL THICKNESS 'B'	BASE THICKNESS 'C'	BASE STEEL 'D'
30"	5'-0"	6"	8"	#5 @ 8"
42"	6'-0"	7"	8"	#5 @ 8"
54"	7'-0"	8"	10"	#6 @ 12" (2 LAYERS)
60"	8'-0"	9"	10"	#6 @ 12" (2 LAYERS)

GENERAL NOTES:

1. CONSTRUCTION AND MATERIALS SHALL MEET REQUIREMENTS OF ITEM 471 "PRECAST CONCRETE MANHOLES."
2. CONCRETE FOR MANHOLE: MINIMUM 4,000 PSI IN 28 DAYS.
3. HS-20 LOADING; MANHOLE DESIGN SHALL MEET OR EXCEED ASTM C478 REQUIREMENTS.
4. GASKET JOINT: PER ASTM C443
5. FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS MODEL V-1420 OR APPROVED EQUAL.
6. SHOP DRAWINGS WITH MANUFACTURER'S CERTIFICATION SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL.

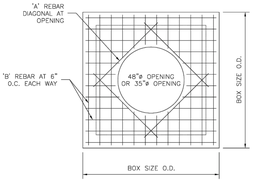
NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY
ENGINEERING DEPARTMENT

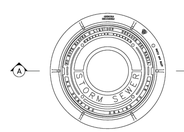
PROJECT TITLE:		
DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: PRECAST CONCRETE STORM SEWER MANHOLE DETAILS	20
SCALE: AS NOTED		SHEET NO.
DATE: 2-1-22	APPROVED BY:	/

BOX SIZE I.D.	MAX. OPENING SIZE	FLAT SLAB THK.	WALL THK.	BASE THK.	BAR 'A'	BAR 'B'	BAR 'C'	*BAR 'D'
4'X4'	48"	8"	6"	6"	#4	#4	#4	#4
5'X5'	60"	10"	6"	8"	#5	#5	#4	#4
6'X6'	72"	10"	8"	8"	#5	#5	#5	#5
7'X7'	84"	10"	8"	8"	#5	#5	#5	#5
8'X8'	96"	10"	8"	8"	#5	#5	#5	#5

* FOR 7'X7' AND 8'X8' BOX SIZE; TWO LAYERS OF STEEL REQUIRED. (FOR DEPTHS GREATER THAN 15')



PLAN VIEW
FLAT SLAB WITH OPENING
SCALE: 1"=1'-0"



PLAN VIEW
FRAME AND COVER
SCALE: 1"=1'-0"

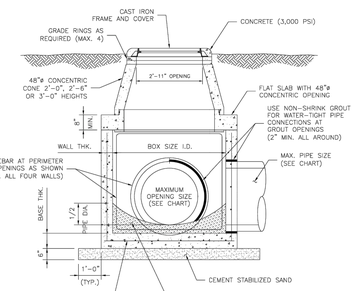
NOTE: IF PROJECT IS WITHIN A CITY ETJ USE CITY'S STD MANHOLE COVER



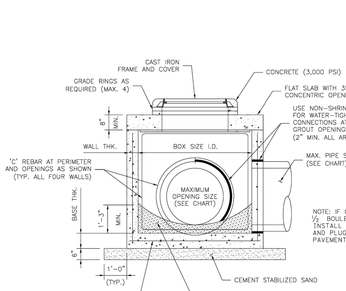
COVER SECTION A-A
SCALE: 1"=1'-0"



FRAME SECTION A-A
SCALE: 1"=1'-0"



JUNCTION BOX/MANHOLE
WITH CONCENTRIC CONE
SCALE: 1"=1'-0"



JUNCTION BOX/MANHOLE
WITH FLAT SLAB
SCALE: 1"=1'-0"

NOTE: IF CONSTRUCT IN ½ BOULEVARD PAVEMENT INSTALL PIPE STUB-OUT AND PLUG FOR FUTURE PAVEMENT.

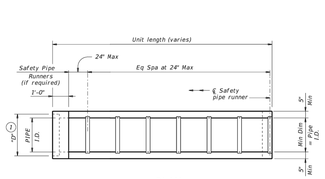
GENERAL NOTES:

1. CONSTRUCTION AND MATERIALS SHALL MEET REQUIREMENTS OF ITEM 471 "PRECAST CONCRETE MANHOLES."
2. CONCRETE FOR JUNCTION BOX: MINIMUM 4,000 PSI IN 28 DAYS.
3. HS-20 LOADING; MANHOLE DESIGN SHALL MEET OR EXCEED ASTM C478 AND ASTM C913 REQUIREMENTS.
4. JOINT SEALANT: RAM-NEK GASKET MATERIAL
5. FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS MODEL V-1420 OR APPROVED EQUAL.
6. SHOP DRAWINGS WITH MANUFACTURER'S CERTIFICATION SHALL BE SUBMITTED FOR ENGINEER'S APPROVAL.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS
2			
3			
4			
5			

FORT BEND COUNTY
ENGINEERING DEPARTMENT

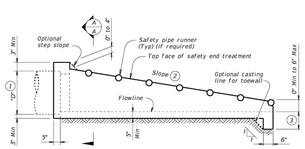
PROJECT TITLE:		
DRAWN BY: INIT		FBCED STANDARD
CK'D BY: INIT	SHEET DESCRIPTION: JUNCTION BOX/ MANHOLE DETAILS	21
SCALE: AS NOTED		SHEET NO.
DATE: 2-1-22	APPROVED BY:	/



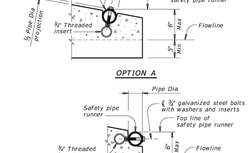
PLAN
(Showing bell end connection.)



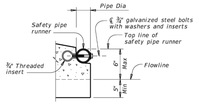
INSTALLATION DETAIL FOR
SAFETY PIPE RUNNERS
(If required)



LONGITUDINAL ELEVATION
(Showing bell end connection.)

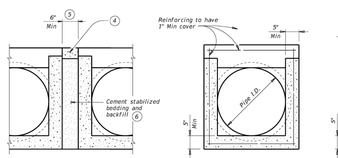


OPTION A



OPTION B

END DETAILS FOR INSTALLATION
OF SAFETY PIPE RUNNERS
(If required)

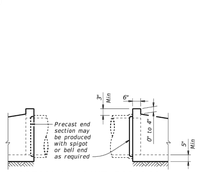


MULTIPLE PIPE INSTALLATION

OPTION WITH SQUARE BOTTOM

OPTION WITH INVERT BOTTOM

SECTION A-A



OPTIONAL JOINT FOR RCP
(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR
CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness (2)	TP Wall Thickness (2)	"D" (1)	Slope	Min Length	Pipe Runners Required: Single Pipe	Pipe Runners Required: Multiple Pipe	Required Pipe Runner Size: Nominal Dia.	Required Pipe Runner Size: O.D.	Required Pipe Runner Size: I.D.
12"	2"	1.13"	17.00"	6:1	4' - 9"	No	Yes, for > 2 sizes	3" STD	3.500"	3.068"
15"	2 ½"	1.30"	20.50"	6:1	6' - 5"	No	Yes, for > 2 sizes	3" STD	3.500"	3.068"
18"	2 ½"	1.60"	24.00"	6:1	8' - 0"	No	Yes, for > 2 sizes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' - 3"	No	Yes, for > 2 sizes	3" STD	3.500"	3.068"
30"	3 ½"	2.65"	38.50"	6:1	14' - 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' - 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	2.7"	52.50"	6:1	21' - 2"	Yes	Yes	4" STD	4.500"	4.026"

(1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(7) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below.

A. Provide welded wire reinforcing of #4 at 6" (Grade 65) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 3"x3" - D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'_c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), or ASTM A500 (Grade B), or API 5L52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

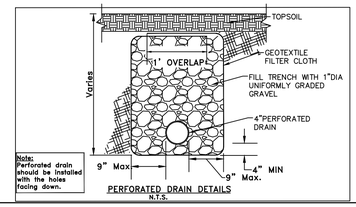
Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe." Connect TP by grooving. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation | Bridge Division Standard

PRECAST SAFETY END TREATMENT
TYPE II ~ PARALLEL DRAINAGE

PSET-SP

FILE: CO-PSET-SP-21.dgn	DN: RLB	CK: KLR	DW: JTR	CK: SAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42"-72"	DIST	COUNTY		SHEET NO.



PERFORATED DRAIN DETAILS
N.T.S.

APPROVED: _____
Development Staff

DATE: _____

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THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

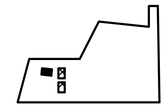
Design Team:

VOGT ENGINEERING

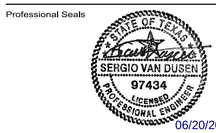
TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
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The Woodlands, TX 77380
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Key Plan



Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:

STORM SEWER DETAILS-II

Sheet Number

C607

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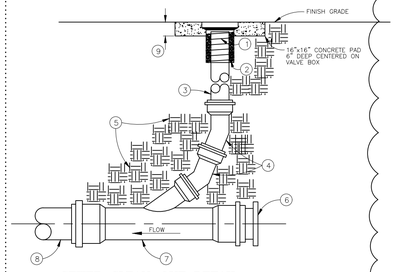
G:\SHARED DRIVES\CLIENTS\A39 HINES ARCHITECTURE + DESIGN\A39.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun. 20, 2025-5:11 PM KOSHA SHAH

J:\179A\1601\Fort Bend County Standards\Fort Bend County STD\DONE\TBC PRECAST CONCRETE MANHOLE DETAILS\PRECAST_CONCRETE_MANHOLE_DETAILS.dwg

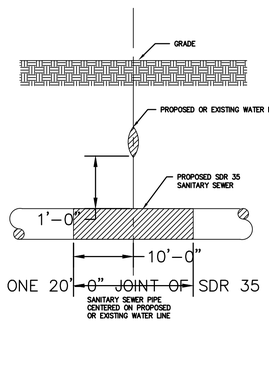
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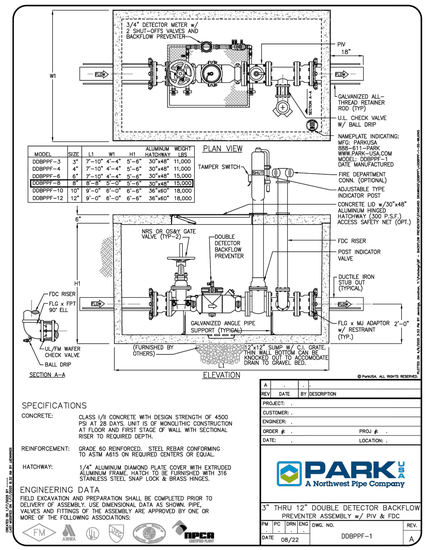
NOTE:

1. SCREW TYPE VALVE BOX TOP AND COVER
2. SAND
3. 4" P.V.C. PIPE
4. 2 – 22 1/2° ELBOWS
5. BACKFILL & COMPACT TO SPECIFICATIONS
6. BELL TYPE PLUG
7. WYE W/ 45° ELBOW (ALL BELL FITTINGS)
8. SEWER, LINE, SEE PLAN FOR SIZE
9. END 4" P.V.C. 3' FROM FINISH GRADE



SEWER CLEAN-OUT DETAIL
DET. NO: SEWERCLDWG (N.T.S.)





SPECIFICATIONS

CONCRETE: CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT: GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

HATCHWAY: 1/4" ALUMINUM DIAMOND PLATE COVER WITH EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SNAP LOCK & BRASS HINGES.

ENGINEERING DATA

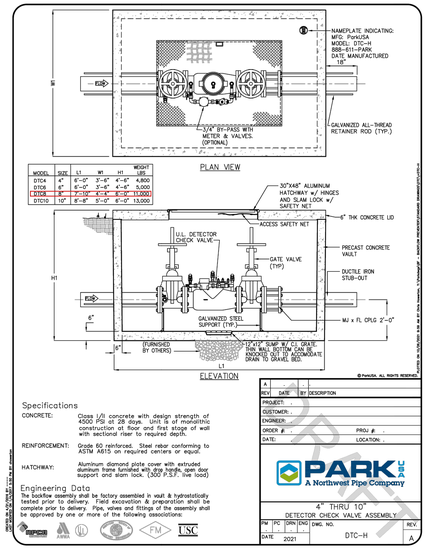
FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF ASSEMBLY. USE DIMENSIONAL DATA AS SHOWN. PIPE, VALVES AND FITTINGS OF THE ASSEMBLY ARE APPROVED BY ONE OR MORE OF THE FOLLOWING ASSOCIATIONS

A		
REV.	DATE	BY DESCRIPTION
PROJECT:		
CUSTOMER:		
ENGINEER:		
ORDER #:		PROJ #:
DATE:		LOCATION:

PARK USA
A Northwest Pipe Company

3" THRU 12" DOUBLE DETECTOR BACKFLOW PREVENTER ASSEMBLY w/ PIV & FDC

PM	PC	DRN	ENG	DWG. NO.	REV.
DATE 08/22				DDBPPF-1	A



Specifications

CONCRETE: Class I/II concrete with design strength of 4500 PSI at 28 days. Unit is of monolithic construction at floor and first stage of wall with sectional riser to required depth.

REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.

HATCHWAY: Aluminum diamond plate cover with extruded aluminum frame furnished with grip handle, open door support and slam lock. (300 P.S.F. live load)

Engineering Data

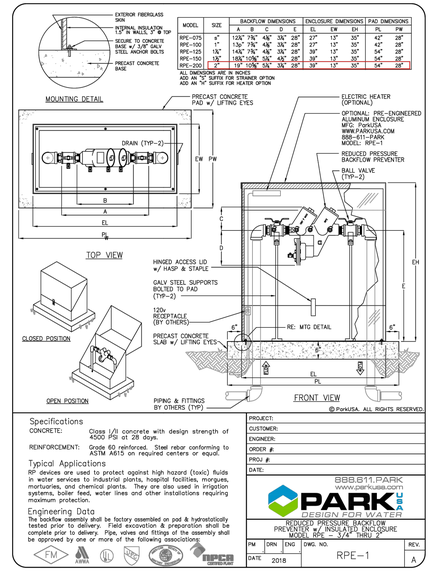
The backflow assembly shall be factory assembled in vault & hydrostatically tested prior to delivery. Field excavation & preparation shall be complete prior to delivery. Pipe, valves and fittings of the assembly shall be approved by one or more of the following associations:

A		
REV.	DATE	BY DESCRIPTION
PROJECT:		
CUSTOMER:		
ENGINEER:		
ORDER #:		PROJ #:
DATE:		LOCATION:

PARK USA
A Northwest Pipe Company

4" THRU 10" DETECTOR CHECK VALVE ASSEMBLY

PM	PC	DRN	ENG	DWG. NO.	REV.
DATE 2021				DTC-H	A



MODEL	SIZE	BACKFLOW DIMENSIONS A	B	C	D	E	ENCLOSURE DIMENSIONS EL	EW	EH	PAD DIMENSIONS PL	PW
RPE-075	¾"	1'-2⅞"	7⅝"	4⅜"	3⅞"	2'-8"	2'-7"	1'-3"	3'-5"	4'-2"	2'-8"
RPE-100	1"	1'-3⅜"	7⅝"	4⅜"	3⅞"	2'-8"	2'-7"	1'-3"	3'-5"	4'-2"	2'-8"
RPE-125	1¼"	1'-4⅜"	7⅝"	4⅜"	3⅞"	2'-8"	2'-7"	1'-3"	3'-5"	4'-2"	2'-8"
RPE-150	1½"	1'-6⅝"	10⅝"	5⅜"	4⅜"	2'-8"	3'-0"	1'-3"	3'-5"	4'-2"	2'-8"
RPE-200	2"	1'-9"	10⅝"	5⅜"	4⅜"	2'-8"	3'-0"	1'-3"	3'-5"	4'-2"	2'-8"

ALL DIMENSIONS ARE IN INCHES
ADD 6" TO EW FOR HEATER OPTION
ADD AN "H" SUFFIX FOR HEATER OPTION

Specifications

CONCRETE: Class I/II concrete with design strength of 4500 PSI at 28 days.

REINFORCEMENT: Grade 60 reinforced. Steel rebar conforming to ASTM A615 on required centers or equal.

Typical Applications

RP devices are used to protect against high hazard (toxic) fluids in water services to industrial plants, hospital facilities, morgues, mortuaries, and chemical plants. They are also used in irrigation systems, boiler feed, water lines and other installations requiring maximum protection.

Engineering Data

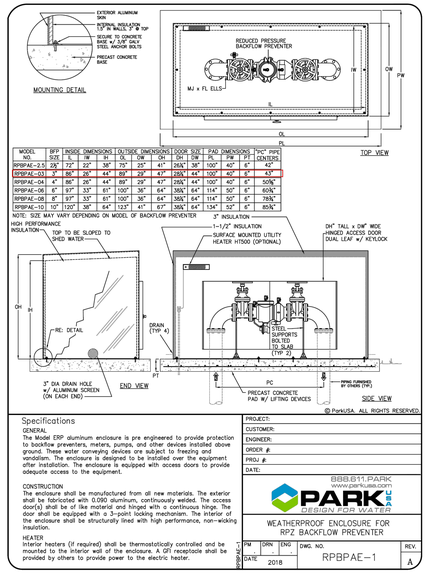
The backflow assembly shall be factory assembled on pad & hydrostatically tested prior to delivery. Field excavation & preparation shall be complete prior to delivery. Pipe, valves and fittings of the assembly shall be approved by one or more of the following associations:

PROJECT:
CUSTOMER:
ENGINEER:
ORDER #:
PROJ #:
DATE:

BBB.611.PARK
www.parkusa.com
PARK USA
DESIGN FOR WATER

REDUCED PRESSURE BACKFLOW PREVENTER w/ INSULATED ENCLOSURE MODEL RPE – 3/4" THRU 2"

PM	DRN	ENG	DWG. NO.	REV.
DATE 2018			RPE-1	A



MODEL NO.	BFP SIZE	INSIDE DIMENSIONS IL	IW	IH	OUTSIDE DIMENSIONS OL	OW	OH	DOOR SIZE DW	DH	PAD DIMENSIONS PL	PW	"PC" PIPE CENTERS PT	C
RPBPAE-2.5	2½"	72"	22"	36"	75"	25"	41"	26½"	38"	100"	40"	6"	42"
RPBPAE-03	3"	86"	26"	44"	89"	29"	47"	28½"	44"	100"	40"	6"	43"
RPBPAE-04	4"	86"	26"	44"	89"	29"	47"	28½"	44"	100"	40"	6"	50⅝"
RPBPAE-06	6"	97"	33"	61"	100"	36"	64"	36½"	64"	114"	50"	6"	60⅝"
RPBPAE-08	8"	97"	33"	61"	100"	36"	64"	36½"	64"	114"	50"	6"	78⅝"
RPBPAE-10	10"	120"	38"	64"	123"	41"	67"	36½"	64"	134"	52"	6"	85⅞"

NOTE: SIZE MAY VARY DEPENDING ON MODEL OF BACKFLOW PREVENTER

HIGH PERFORMANCE INSULATION — 3" INSULATION — 1-1/2" INSULATION — SURFACE MOUNTED UTILITY HEATER H1500 (OPTIONAL) — TOP TO BE SLOPED TO SHED WATER — DW" TALL x DW" WIDE HINGED ACCESS DOOR DUAL LEAF w/ KEYLOCK — RE: DETAIL — GALV STEEL SUPPORTS BOLTED TO SLAB (TYP 2) — DRAIN (TYP 4)

Specifications

GENERAL

The Model ERP aluminum enclosure is pre engineered to provide protection to backflow preventers, meters, pumps, and other devices installed above ground. These water conveying devices are subject to freezing and vandalism. The enclosure is designed to be installed over the equipment after installation. The enclosure is equipped with access doors to provide adequate access to the equipment.

CONSTRUCTION

The enclosure shall be manufactured from all new materials. The exterior shall be fabricated with 0.080 aluminum, continuously welded. The access door(s) shall be of like material and hinged with a continuous hinge. The door shall be equipped with a 3-point locking mechanism. The interior of the enclosure shall be structurally lined with high performance, non-wicking insulation.

HEATER

Interior heaters (if required) shall be thermostatically controlled and be mounted to the interior wall of the enclosure. A GFI receptacle shall be provided by others to provide power to the electric heater.

PROJECT:
CUSTOMER:
ENGINEER:
ORDER #:
PROJ #:
DATE:

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PARK USA
DESIGN FOR WATER

WEATHERPROOF ENCLOSURE FOR RPZ BACKFLOW PREVENTER

PM	DRN	ENG	DWG. NO.	REV.
DATE 2018			RPBPAE-1	A

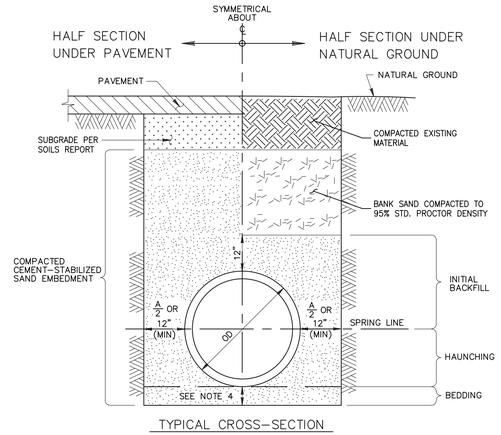
SAN. SWR. & W.L. CROSSING DETAIL

NOTES:

1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS.
2. MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

3. MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
4. MIN BEDDING DEPTH SHALL BE THE GREATER OF ? OD OR 6 INCHES.
5. SELECT BACKFILL FOR RIGID PAVEMENT; FLEXIBLE BASE MATERIAL FOR ASPHALT PAVEMENT.

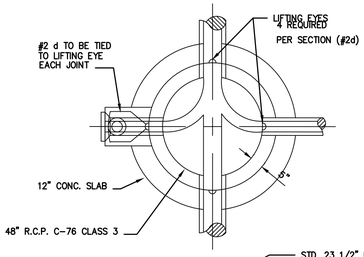


TYPICAL CROSS-SECTION

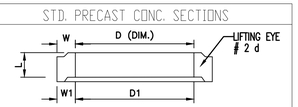
SANITARY OR STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH

NOTIFIY ENGINEER WHEN ENCOUNTERING UNSTABLE CONDITIONS

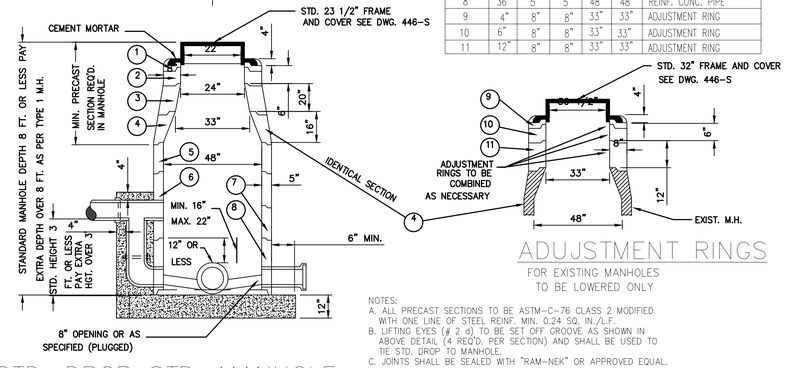
(N.T.S.)



STD. PRECAST CONC. SECTIONS



NO.	L	W	W1	D	D1	DESCRIPTION
1	4"	8"	8"	24"	24"	REINF. CONC. PIPE
2	6"	8"	8"	24"	24"	REINF. CONC. PIPE
3	20"	8"	8"	24	33"	REINF. CONC. TAPER
4	16"	8"	5"	33"	48"	REINF. CONC. TAPER
5	6"	5"	5"	48"	48"	REINF. CONC. PIPE
6	12"	5"	5"	48"	48"	REINF. CONC. PIPE
7	24"	5"	5"	48"	48"	REINF. CONC. PIPE
8	36"	5"	5"	48"	48"	REINF. CONC. PIPE
9	4"	8"	8"	33"	33"	ADJUSTMENT RING
10	6"	8"	8"	33"	33"	ADJUSTMENT RING
11	12"	8"	8"	33"	33"	ADJUSTMENT RING



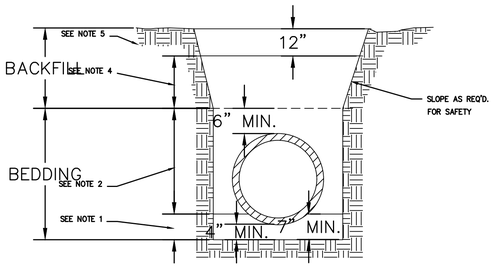
STD. DROP STD. MANHOLE

ADJUSTMENT RINGS

FOR EXISTING MANHOLES TO BE LOWERED ONLY

NOTES:
A. ALL PRECAST SECTIONS TO BE ASTM-C-76 CLASS 2 MODIFIED WITH ONE LINE OF STEEL REINF. MIN. 0.24 SQ. IN./L.F.
B. LIFTING EYES (# 2 d) TO BE SET OFF GROOVE AS SHOWN IN ABOVE DETAIL (4 REQ'D. PER SECTION) AND SHALL BE USED TO TIE STD. DROP TO MANHOLE.
C. JOINTS SHALL BE SEALED WITH "RAM-NEK" OR APPROVED EQUAL.
D. NO STEPS REQUIRED IN MANHOLE.
E. DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.

TYPE 4 SANITARY SEWER MANHOLE DETAIL



NOTES:
1. PLACE CEMENT-STABILIZED SAND BEFORE PIPE IS LAID (7" MIN.)
2. PLACE AND ROD THOROUGHLY CEMENT-STABILIZED SAND EQUALLY ON BOTH SIDES OF PIPE TO AVOID PIPE DISPLACEMENT.
3. WHERE SOIL CONDITIONS REQUIRE, THE ENGINEER MAY ORDER USE OF WASHED SHELL OR APPROVED GRANULAR MATERIAL IN lieu OF CEMENT- STABILIZED SAND BEDDING, NO DIRECT PAYMENT FOR WASHED SHELL.
4. PROVIDE CEMENT-STABILIZED SAND BACKFILL UNDER AND OUT TO ONE- FOOT BEYOND PAVING. IN OTHER AREAS, PROVIDE EITHER CEMENT- STABILIZED SAND BACKFILL OR SELECT, COMPACTED BACKFILL PER NOTE 5.
5. COMPACT SELECT SOIL IN 8-INCH LOOSE LIFTS WASH A MINIMUM DENSITY OF 95% OF MAXIMUM DENSITY PER ASTM D-698. ADJUST SOIL MOISTURE CONTENT TO ±2% OF OPTIMUM MOISTURE CONTENT.
6. BACKFILL TAMPTED WITH PNEUMATIC HAND TAMPER EACH LIFT

SANITARY SEWER BEDDING DETAIL

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

APPROVED: _____
Development Staff

DATE: _____

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(HOUSTON: 713-432-0365)
AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION

THE STATE OF TEXAS
FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRING WAY
MISSOURI CITY, TX 77549

HINESAD

Contract No: 2024-002

Design Team:

VOGT ENGINEERING

TEXAS BOARD OF PROFESSIONAL ENGINEERS FIRM REGISTRATION F-390
2203 Timberloch Place Suite 124
The Woodlands, TX 77380
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Key Plan

Professional Seals

STATE OF TEXAS
Brad Parks
SERGIO VAN DUSEN
97434
LICENSED
PROFESSIONAL ENGINEER
06/20/2025

03-14-2025

No.	Issue Description	MM-DD-YYYY
-	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

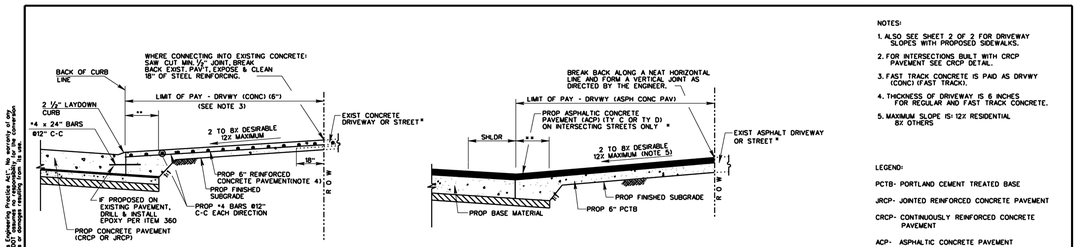
Sheet Title:

SANITARY SEWER AND MISCELLANEOUS DETAILS

Sheet Number

C608

G:\SHARED DRIVES\CLIENTS\439 HINES ARCHITECTURE + DESIGN\439.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun. 20, 2025-5:11 PM KOSHA SHAH



PROPOSED DRIVEWAY DETAIL
REINFORCED CONCRETE AT CONCRETE
CURB AND GUTTER ROADWAY

PROPOSED DRIVEWAY DETAIL
ASPHALT W/ PCTB AT ASPHALT ROADWAY

NOTES:

1. ALSO SEE SHEET 2 OF 2 FOR DRIVEWAY SLOPES WITH PROPOSED SIDEWALKS.
2. FOR INTERSECTIONS BUILT WITH CRCP PAVEMENT SEE CRCP DETAIL.
3. FAST TRACK CONCRETE IS PAID AS DRVWY (CONC) (FAST TRACK).
4. THICKNESS OF DRIVEWAY IS 6 INCHES FOR REGULAR AND FAST TRACK CONCRETE.
5. MAXIMUM SLOPE IS: 12X RESIDENTIAL 8X OTHERS

LEGEND:

PCTB- PORTLAND CEMENT TREATED BASE

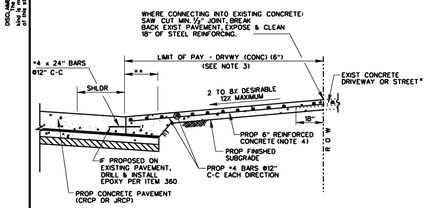
JRCP- JOINTED REINFORCED CONCRETE PAVEMENT

CRCP- CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

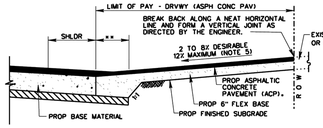
ACP- ASPHALTIC CONCRETE PAVEMENT

* FOR STREET INTERSECTIONS REFER TO PAVING DETAILS AND INTERSECTION DETAILS FOR REINFORCING STEEL AND SECTION REQUIREMENTS.

** PROPOSED LIMIT OF ROADWAY BASE AND/OR SUBGRADE



PROPOSED DRIVEWAY DETAIL
REINFORCED CONCRETE AT CONCRETE ROADWAY



PROPOSED DRIVEWAY DETAIL
ASPHALT W/ FLEX BASE AT ASPHALT ROADWAY

SHEET 1 OF 3

Texas Department of Transportation — Houston District Standard

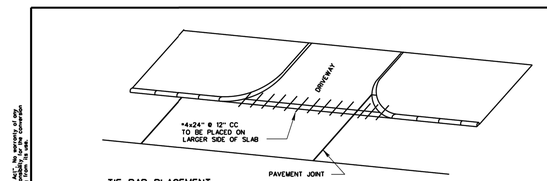
DRIVEWAY DETAILS

DD-25 (HOU)

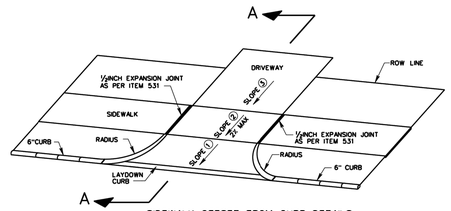
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02-25-2024 Spec Updates				
☐ TXDOT	☐ TXDOT	☐ TXDOT	☐ TXDOT	☐ TXDOT
CONT	SECT	JOB	HIGHWAY	
DIST	COUNTY		SHEET NO.	

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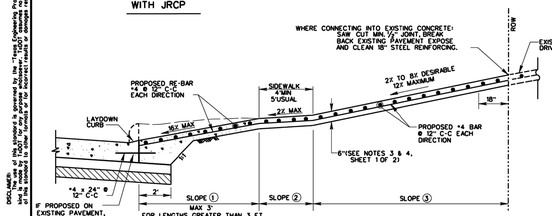
DATE:
FILE:



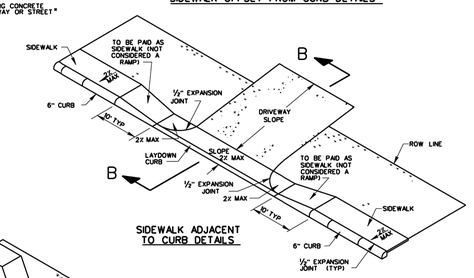
TIE BAR PLACEMENT
WITH JRCP



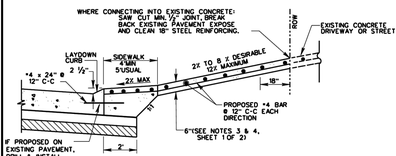
SIDEWALK OFFSET FROM CURB DETAILS



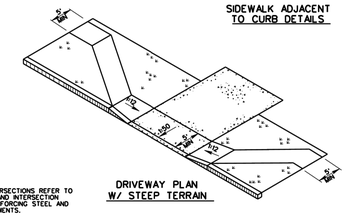
SLOPES W/ SIDEWALKS OFFSET FROM CURB
(SECTION A-A)



SIDEWALK ADJACENT
TO CURB DETAILS



DRIVEWAY SLOPES W/ SIDEWALKS ADJACENT TO CURB
(SECTION B-B)



DRIVEWAY PLAN
W/ STEEP TERRAIN

* FOR STREET INTERSECTIONS REFER TO PAVING DETAILS AND INTERSECTION DETAILS FOR REINFORCING STEEL AND SECTION REQUIREMENTS.

SHEET 2 OF 3

Texas Department of Transportation — Houston District Standard

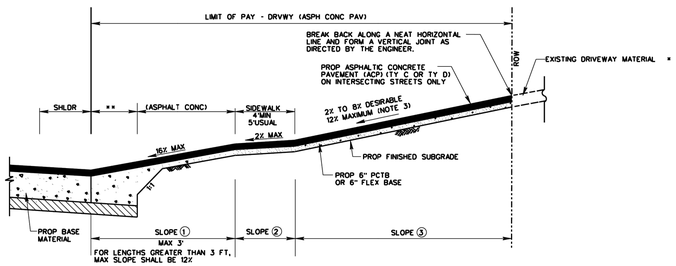
DRIVEWAY DETAILS

DD-25 (HOU)

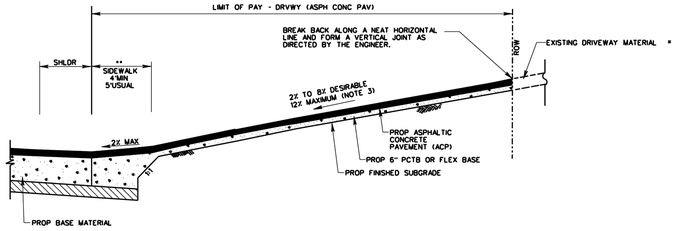
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02-25-2024 Spec Updates				
☐ TXDOT	☐ TXDOT	☐ TXDOT	☐ TXDOT	☐ TXDOT
CONT	SECT	JOB	HIGHWAY	
DIST	COUNTY		SHEET NO.	

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DATE:
FILE:



PROPOSED DRIVEWAY SLOPES
WITH SIDEWALKS OFFSET



PROPOSED DRIVEWAY SLOPES
WITH SIDEWALKS ADJACENT

NOTES:

1. ALSO SEE SHEET 2 OF 3 FOR DRIVEWAY SLOPES WITH PROPOSED SIDEWALKS.
2. FOR INTERSECTIONS BUILT WITH CRCP PAVEMENT SEE CRCP DETAIL.
3. MAXIMUM SLOPE IS: 12X RESIDENTIAL 8X OTHERS

LEGEND:

PCTB- PORTLAND CEMENT TREATED BASE

ACP- ASPHALTIC CONCRETE PAVEMENT

* FOR STREET INTERSECTIONS REFER TO PAVING DETAILS AND INTERSECTION DETAILS.

** PROPOSED LIMIT OF ROADWAY BASE AND/OR SUBGRADE

SHEET 3 OF 3

Texas Department of Transportation — Houston District Standard

DRIVEWAY DETAILS

DD-25 (HOU)

FILE: DD-25 (HOU).dgn		ⓒ TxDOT February 2025		REVISIONS
02-25-2024 Spec Updates				
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CONT	SECT	JOB	HIGHWAY	
DIST	COUNTY		SHEET NO.	

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DATE:
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APPROVED: _____
Development Staff

DATE: _____

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

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THE STATE OF TEXAS · FORT BEND COUNTY

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Key Plan

Professional Seals

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06/20/2025

03-14-2025

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1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:

TXDOT DRIVEWAY DETAILS

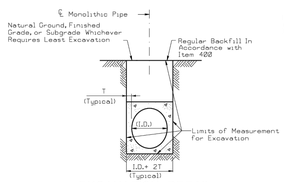
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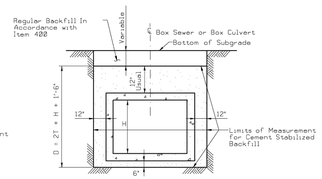
G:\SHARED DRIVES\CLIENTS\639 HINES ARCHITECTURE + DESIGN\639.005 MUSTANG PARK COMMUNITY CENTER\03 DRAFTING\REVISIONS\REV 01\C610 TXDOT BACKFILL AND EXCAVATION DETAILS.DWG Jun. 20, 2025-5:12 PM KOSHA SHAH

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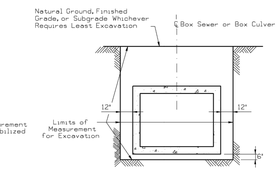
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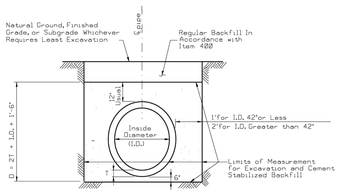
EXCAVATION DETAIL
MONOLITHIC PIPE
IN A PAVED OR GRADED AREA



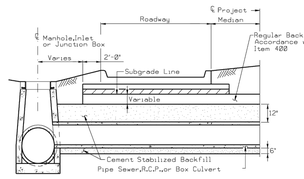
BACKFILL DETAIL
BOX CULVERTS
IN A GRADED OR PAVED AREA
INCLUDING DETOURS •



EXCAVATION DETAIL
BOX CULVERTS
IN A GRADED AREA



EXCAVATION & BACKFILL DETAIL
REINFORCED CONCRETE PIPE
& THERMOPLASTIC PIPE
IN A GRADED OR PAVED AREA
INCLUDING DETOURS



BACKFILL DETAIL
AT MANHOLE, INLET OR JUNCTION BOX

NOTE:
Cement stabilized backfill may be omitted in private driveways as indicated elsewhere in the plans.

Rubber gaskets shall be required for all joints on proposed cross drainage, pipe culverts and proposed storm sewer systems, unless otherwise shown in the plans.

• Backfill with cement stabilized material will be required for all structures under detours unless noted otherwise in the General Notes.

REINFORCED CONCRETE PIPE
EXCAVATION AND BACKFILL QUANTITIES

PIPE DIA. IN.	T FT.	CULVERT OR SEWER EXCAVATION IN A PAVED OR GRADED AREA C.Y. PER L.F. PER FT. OF DEPTH	CEMENT STABILIZED BACKFILL IN A PAVED OR GRADED AREA C.Y. PER L.F. OF PIPE
18	0.19	0.144	0.383
24	0.23	0.165	0.478
30	0.29	0.188	0.586
36	0.33	0.210	0.692
42	0.38	0.231	0.808
48	0.42	0.327	1.394
54	0.46	0.349	1.568
60	0.50	0.370	1.731
66	0.54	0.392	1.927
72	0.58	0.414	2.088
78	0.62	0.435	2.275
84	0.67	0.457	2.474

THERMOPLASTIC PIPE
EXCAVATION AND BACKFILL QUANTITIES

PIPE DIA. IN.	T FT.	CULVERT OR SEWER EXCAVATION IN A PAVED OR GRADED AREA C.Y. PER L.F. PER FT. OF DEPTH	CEMENT STABILIZED BACKFILL IN A PAVED OR GRADED AREA C.Y. PER L.F. OF PIPE
12	0.184	0.119	0.274
15	0.113	0.129	0.320
18	0.142	0.148	0.368
24	0.167	0.168	0.457
30	0.229	0.184	0.564
36	0.229	0.202	0.654
42	0.225	0.220	0.747
48	0.254	0.315	1.302
60	0.296	0.355	1.610

MONOLITHIC PIPE
EXCAVATION QUANTITIES

PIPE DIA. IN.	T FT.	EXCAVATION C.Y. PER L.F. PER FT. OF DEPTH
36	0.417	0.142
42	0.458	0.164
48	0.458	0.182
54	0.500	0.204
60	0.583	0.228
66	0.583	0.247
72	0.625	0.269
78	0.625	0.287
84	0.625	0.305

D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

SHEET 1 OF 2

Texas Department of Transportation — Houston District Standard

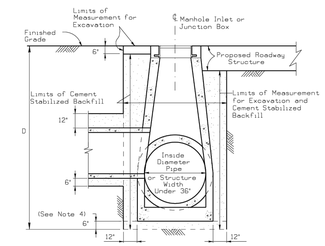
EXCAVATION AND BACKFILL DIAGRAMS

E&BD-24 (HOU)

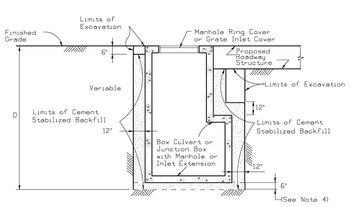
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©TxDOT December 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	$CB $SB	$JB	HWY	
	DIST	COUNTY		SHEET NO.
	DST	CTY		

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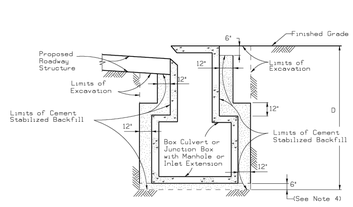
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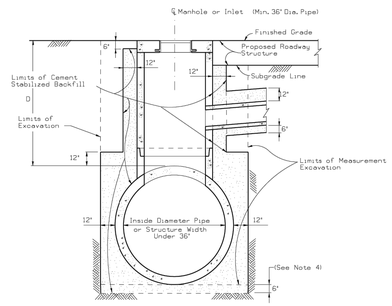
EXCAVATION AND BACKFILL DETAIL
MANHOLES SMALLER THAN 36 IN.
IN A PAVED OR GRADED AREAS
N.T.S.



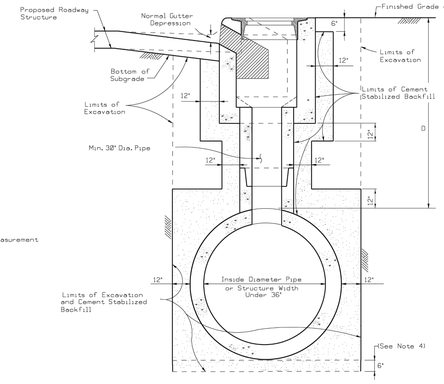
EXCAVATION AND BACKFILL DETAIL
JUNCTION BOXES IN A
PAVED OR GRADED AREA
N.T.S.



EXCAVATION AND BACKFILL DETAIL
INLET EXTENSIONS ON A BOX CULVERT
IN A PAVED OR GRADED AREA
N.T.S.



EXCAVATION AND BACKFILL DETAIL
MANHOLES 36 IN. AND GREATER
IN A PAVED OR GRADED AREA
N.T.S.



EXCAVATION AND BACKFILL DETAIL
CURB INLETS IN A PAVED OR GRADED AREA
N.T.S.

TABLE I
SCHEDULE FOR PAY QUANTITIES OF CEMENT STABILIZED BACKFILL (SEE NOTE 1)

MANHOLE OR INLET DEPTH (D) IN FEET	CEMENT STABILIZED BACKFILL IN CUBIC YARDS
Ø through 5	5.75
> 5 through 10	8.25
greater than 10	12.75

TO BE PAID UNDER ITEM 400-7011 CEMENT STABILIZED BACKFILL (INLET OR MANHOLE)

NOTES:
1. The Contractor is paid a fixed estimated amount for cement stabilized backfill based on depth (D) and Table I.
2. Proposed roadway structure includes pavement, base and any subgrade.
3. For backfill of intersecting pipes and box culverts, see "Excavation and Backfill Diagram for Pipes and Box Culverts."
4. 6' cement stabilized backfill will be required only for precast units.

D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

SHEET 2 OF 2

Texas Department of Transportation — Houston District Standard

EXCAVATION AND BACKFILL DIAGRAMS

E&BD-24 (HOU)

FILE: E&BD-24 (HOU).DGN	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT December 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	$CB $SB	$JB	HWY	
	DIST	COUNTY		SHEET NO.
	DST	CTY		

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THE STATE OF TEXAS · FORT BEND COUNTY ·

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06/20/2025

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1	ADDENDUM 1/PERMIT RESPONSE 1	05-20-2025

Drawn by: KVS Reviewed by: SVD

Project No: 2024-002

Sheet Title:

TXDOT BACKFILL AND EXCAVATION DETAILS

Sheet Number

C610

FEMA NOTE

THE TRACTS OF LAND SHOWN ON THIS ALIGNMENT MAP LIE WITHIN ZONE X (UNSHADED) AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE MAP, ACCORDING TO PANEL #315 OF 575, FIRM MAP NUMBER 48157C0315L FOR FORT BEND COUNTY, TEXAS, AND INCORPORATED AREAS. REVISED APRIL, 2, 2014.

APPROVED: _____
Development Staff

DATE: _____

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Irrigation in Texas is regulated by the Texas Commission of Environmental Quality (TCEQ), MC-178, P.O. Box 13087, Austin, Texas, 78711-3087. TCEQ website is: www.tceq.state.tx.us

L6.01

FM 521 RD.

LIMIT OF WORK

BLDG. B

BLDG. C

W I Y M M

2" TAP & SERVICE, IMPACT FEES, & METER BOX BY GC
2" WATER METER BY GC
2" ISOLATION VALVE BY LIC
2" WYE STRAINER BY LIC
2" DOUBLE CHECK ASSY BY LIC
2" MASTER VALVE BY LIC

ESP-48LXME2 WALLMOUNT CONTROLLER WITH WR2 RAIN/FREEZE SENSOR BY LIC (POWER BY GENERAL CONTRACTOR) (VERIFY EXACT LOCATION)

4" dow pipeline (abdn) (approx. location see note??)

1	1" V	3.0
2	1" DV	7.40
3	1" DV	7.75
4	1" DV	7.25
5	1" DV	5.10
6	1" DV	4.75
7	1" DV	3.90
8	1" V	24.0
9	1" V	16.0
10	1" DV	7.60
11	1" DV	7.25
12	1" DV	6.00
13	1" DV	6.70
14	1" DV	8.05
15	1" DV	8.30
16	1" DV	6.00
17	1" DV	5.80
18	1" DV	4.60
19	1" DV	7.75
20	1" DV	9.60
21	1-1/2"V	27.0
22	2" V	43.0
23	1" DV	6.10
24	1-1/2"V	35.0
25	1" DV	9.00
26	2" V	47.0
27	1" DV	6.40
28	1" DV	6.00
29	1" DV	6.80
30	1" DV	6.80
31	1" V	15.0
32	1" V	18.0

(3) 4" SLEEVES
(2) 4" SLEEVES
4" SLEEVE
1" SLEEVE

Irrigation Plan A
Scale: 1" = 20'
NORTH

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park

4521 FM 521
FRESNO, TX 77545

Prepared For:
Fort Bend County
5855 Sienna Springs Way
MISSOURI CITY, TEXAS 77459

HINESAD

Contract No:

Design Team:

SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-814-5141

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Key Plan

Professional Seals

STATE OF TEXAS · SETH A. HEIDMAN · 5881 · LICENSED IRRIGATOR
06-20-2025

No.	Issue Description	MM-DD-YYYY
	ADDENDUM 1	06/20/2025

Drawn by: Reviewed by:

Project No:

Sheet Title:
IRRIGATION PLAN

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number
L601

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L6.02

Irrigation Plan | A

Scale: 1" = 20'

NORTH

THE STATE OF TEXAS · FORT BEND COUNTY

Project:

Mustang Park

4521 FM 521
FRESNO, TX 77545

Prepared For:

Fort Bend County

5855 Sienna Springs Way
MISSOURI CITY, TEXAS 77459

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Key Plan

Professional Seals

STATE OF TEXAS · SETH A. HEIDMAN · 5881 · LICENSED IRRIGATOR · 03-14-2025

No.	Issue Description	MM-DD-YYYY
	ADDENDUM 1	06/20/2025

Drawn by: Reviewed by:

Project No:

Sheet Title:

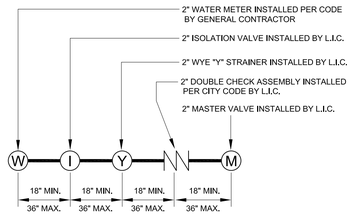
IRRIGATION PLAN

Orig. drawing is ARCH D.Do not scale contents of this drawing.

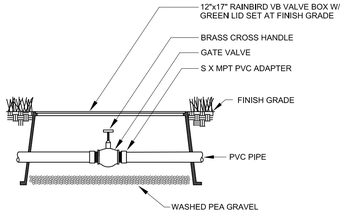
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L602

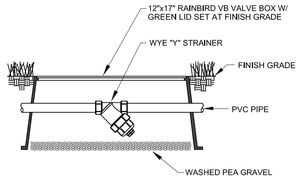
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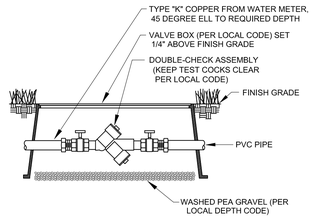
WATER SOURCE LAYOUT



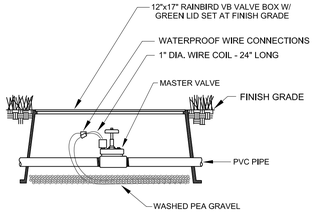
ISOLATION VALVE



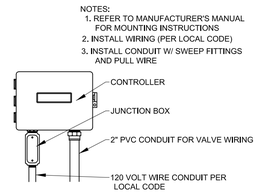
WYE "Y" STRAINER



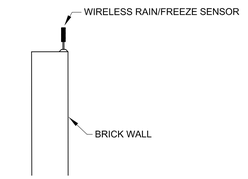
DOUBLE CHECK ASSEMBLY



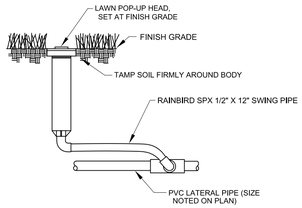
MASTER VALVE



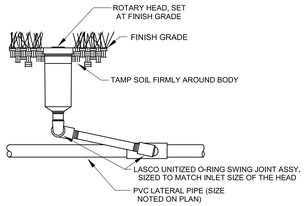
WALLMOUNT CONTROLLER



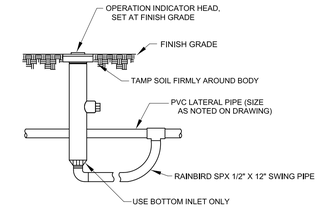
WALLMOUNT SENSOR



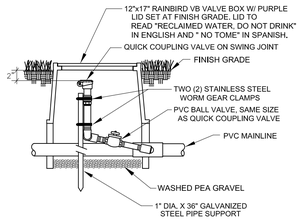
LAWN SPRAY HEAD



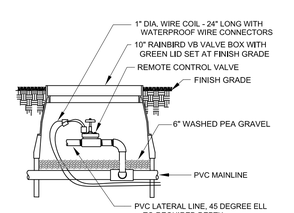
ROTARY HEAD



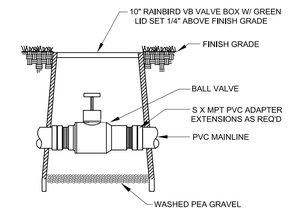
DRIP INDICATOR HEAD



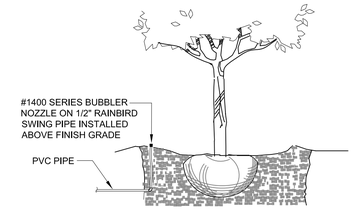
QUICK COUPLING VALVE W/ BALL VALVE



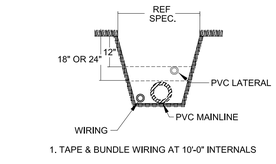
REMOTE CONTROL VALVE



BALL VALVE

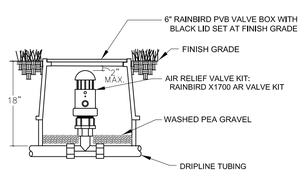


TREE BUBBLER

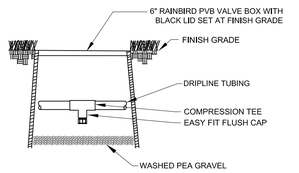


1. TAPE & BUNDLE WIRING AT 10'-0" INTERNALS

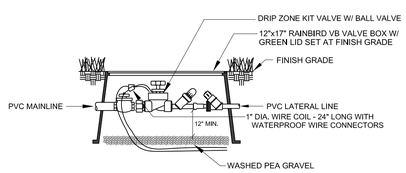
TRENCHING DETAIL



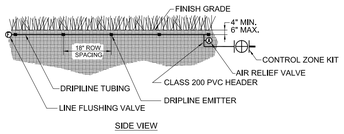
AIR RELIEF VALVE



DRIP FLUSH VALVE



REMOTE CONTROL DRIP ZONE KIT

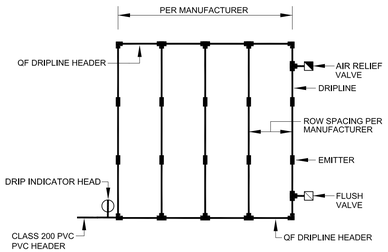


SIDE VIEW

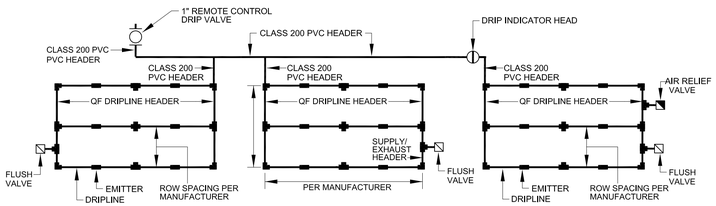
SUB-SURFACE DRIPLINE LAYOUT

	EQUIPMENT	LOSS
25'	2" SERVICE LINE	1.0
	2" WATER METER	2.0
	2" ISOLATION VALVE	0.5
	2" WYE STRAINER	1.5
	2" BACKFLOW DEVICE	4.0
	2" MASTER VALVE	2.5
	2-1/2" MAINLINE	7.0
	CONTROL VALVE	2.5
	LATERALS/FITTINGS	1.0
	ZONE	40.0
	TOTAL	60.0

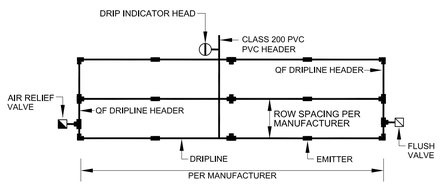
DESIGN PRESSURE LOSS



TYPICAL DRIPLINE LAYOUT



TYPICAL DRIPLINE LAYOUT



TYPICAL DRIPLINE LAYOUT

FLOW/GPM:	PIPE SIZE:
0 - 4.0	1/2"
4.1 - 9.5	3/4"
9.6 - 14.5	1"
14.6 - 27.0	1-1/4"
27.1 - 35.0	1-1/2"
35.1 - 55.0	2"
55.1 - 70.0	2-1/2"

PVC PIPE SIZE CHART

THE STATE OF TEXAS · FORT BEND COUNTY ·

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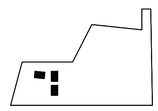
Contract No:

Design Team:

SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-814-5141

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Key Plan



Professional Seals



06-20-2025

No.	Issue Description	MM-DD-YYYY
	ADDENDUM 1	06/20/2025

Drawn by: Reviewed by:

Project No:

Sheet Title:

IRRIGATION DETAILS

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Sheet Number

L603

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NOTES:

1. 24 VOLT LEAD AND COMMON VALVE WIRING SHALL BE A MINIMUM OF UF-14 GA. SINGLE CONDUCTOR. WIRE SIZE. WIRE SPLICES SHALL BE 3M-DBY PERMANENT AND WATERPROOF PER THE SPECIFICATIONS.
2. COORDINATE INSTALLATION OF IRRIGATION SYSTEM WITH LANDSCAPE CONTRACTOR TO ENSURE ALL PLANT MATERIAL WILL BE WATERED IN ACCORDANCE WITH THE INTENT OF THE PLANTING PLANS AND SPECIFICATIONS.
3. LATERAL PIPING SHALL HAVE A MINIMUM OF 12" OF COVER. MAINLINE AND PIPING UNDER PAVING SHALL HAVE A MINIMUM OF 18" OF COVER. ALL FITTINGS TO BE SCHEDULE 40 PVC. USE SOLVENT WELD PVC GLUE AND PURPLE PRIMER FOR PVC CONNECTIONS. PIPING AND VALVES IN PAVING SHOWN FOR CLARITY, INSTALL IN ADJACENT PLANTING BED OR LAWN AREA. SIZE PIPING PER MANUFACTURER'S RECOMMENDATIONS OF NOT EXCEEDING 5 FPS. REFER TO PVC PIPE SIZE CHART.
4. MINIMUM DISTANCE BETWEEN MAIN LINE AND LATERAL LINE FITTINGS (EXCEPT FOR REDUCER BUSHINGS) TO BE EIGHTEEN (18") INCHES AND MINIMUM HORIZONTAL DISTANCE OF TWENTY-FOUR (24") INCHES BETWEEN ANY VALVES THAT ARE INSTALLED SIDE BY SIDE.
5. CONNECT LAWN SPRAY, HIGH-POP, TREE BUBBLER, AND DRIP INDICATOR HEADS TO LATERAL PIPING WITH RAINBIRD 1/2" SPX SWING PIPE. CONNECT ROTARY HEADS TO LATERAL PIPE WITH LASCO #T722 SERIES"UNITIZED", O-RING SWING JOINTS.
6. INSTALL QUICK COUPLING VALVES IN TWELVE BY SEVENTEEN (12"x17") INCH RAINBIRD VB VALVE BOX. CONNECT QUICK COUPLERS TO MAINLINE PIPE WITH LASCO #T722-212 "UNITIZED", O-RING SWING JOINT. SUPPLY OWNER WITH ONE (1) COUPLER KEY WITH SWIVEL HOSE BIBB EACH. VALVES TO BE INSTALLED SO THAT TOP OF QUICK COUPLER IS 2" BELOW BOTTOM OF VALVE BOX TOP. PURPLE LID READS "NON-POTABLE, NOT SAFE FOR DRINKING" IN ENGLISH AND SPANISH. INSTALL EVERY 200'-0" ALONG ENTIRE LENGTH OF MAINLINE.
7. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH LOCAL BUILDING CODE. POWER (120V) SHALL BE LOCATED IN A JUNCTION BOX AND HARDWIRED WITHIN FIVE (5') FEET OF CONTROLLER LOCATION BY GENERAL CONTRACTOR.
8. INSTALL REMOTE CONTROL VALVES AND WIRE SPLICES IN TEN (10") INCH RAINBIRD VB VALVE BOXES.
9. INSTALL SLEEVES UNDER ALL HARDSCAPE SURFACES SUCH AS ROADS, DRIVES, WALKS, ETC. WHETHER SHOWN OR NOT. SLEEVES SHALL BE CLASS 200 PVC, SIZED AS NOTED ON PLANS AND INSTALLED BY IRRIGATION CONTRACTOR.
10. ADJUST NOZZLES FOR SITUATIONS THAT REQUIRE LESS THAN 90 DEGREE RADIUS SPRAY. NO OVERSPRAY ALLOWED ON ANY HARDSCAPE SURFACES.
11. INSTALL REMOTE CONTROL DRIP ZONES IN TWELVE BY SEVENTEEN (12"x17") INCH RAINBIRD VB VALVE BOX.
12. INSTALL DRIPLINE MINIMUM OF 2" AND A MAXIMUM OF 4" FROM HARDSCAPE SURFACES. DO NOT EXCEED MANUFACTURER'S RECOMMENDATIONS OF 5'-0" PER SECOND IN DRIPLINE. INCLUDE DISTRIBUTION TUBING, STAKES, EMITTERS, TRANSFER FITTINGS, DIFFUSER BUG CAP, QF DRIPLINE HEADERS, CONTROL ZONE KITS, ETC. NECESSARY FOR PROPER INSTALLATION OF THE DRIP SYSTEM. ALL PVC HEADER PIPING TO BE CLASS 200 PVC SOLVENT WELD PIPE. INSERT XF BARBED INSERT FITTINGS PER MANUFACTURER'S RECOMMENDATIONS. INSTALL RAINBIRD OPERATION INDICATOR FOR EACH DRIP ZONE.
13. AIR RELIEF VALVE TO BE RAINBIRD AR VALVE KIT INSTALLED IN A SIX-INCH (6") RAINBIRD VB VALVE BOX WITH BLACK LID AND 6" OF GRAVEL SUMP. FLUSH VALVES TO BE 1/2" LASCO BALL VALVE ON IPS FLEXIBLE PIPE AND 1/2" SCHEDULE 40 FITTINGS INSTALLED IN A SIX-INCH (6") RAINBIRD VB VALVE BOX WITH BLACK LID AND 6" OF GRAVEL SUMP. INCLUDE THE FOLLOWING ALLOWANCES FOR PROVIDING AND INSTALLING AIR RELIEF VALVES AND FLUSH VALVES FOR THE DRIP SYSTEM. EXACT QUANTITY AND LOCATION OF THESE DEVICES WILL BE DETERMINED AT THE TIME OF INSTALLATION. IN GENERAL, ALL AIR RELIEF VALVES WILL BE INSTALLED AT THE HIGH POINTS AND FLUSH VALVES WILL BE INSTALLED AT THE LOW POINTS OF EXHAUST HEADER. ALLOW FOR APPROXIMATELY ONE (1) AIR RELIEF VALVE AND APPROXIMATELY ONE (1) FLUSH VALVE FOR EACH DRIP ZONE KIT.
14. XFS CV DRIPLINE AND DISTRIBUTION TUBING TO BE INSTALLED BELOW FINISH GRADE APPROXIMATELY 4" TO 6" PER MANUFACTURER'S RECOMMENDATIONS. VERIFY THE EXACT EMITTER FLOW, EMITTER SPACING, AND ROW SPACING WITH MANUFACTURER PRIOR TO INSTALLING TO PROVIDE PROPER PRECIPITATION RATE BASED ON PLANT MATERIAL AND SOIL TYPE. TUBING TO BE STAKED WITH RAINBIRD 12 GA. GALVANIZED TIE DOWNS. INSTALL STAKES EVERY 3'-0" ALONG ENTIRE LENGTH OF TUBING AND A MINIMUM OF 24" FROM ANY FITTINGS. INSTALL TEMPORARY ABOVEGROUND SPRAY IRRIGATION WITHIN TURF DRIPLINE FOR ESTABLISHMENT PER CITY CODE.
15. DO NOT INSTALL ANY MAINLINES, VALVES, OR CONTROL WIRES WITHIN THE R.O.W. UNLESS CITY APPROVED.
16. PROVIDE ALL LABOR AND MATERIAL NECESSARY TO HAND DIG WITHIN ALL EXISTING TREE ROOT ZONES. CONTRACTOR MUST STAKE DITCHES AND RECEIVE APPROVAL FROM LANDSCAPE ARCHITECT PRIOR TO ANY TRENCHING OR DIGGING.
17. PROVIDE ALL LABOR AND MATERIALS NECESSARY TO REPAIR AND MODIFY THE EXISTING IRRIGATION SYSTEM WITHIN THE SCOPE OF THIS PROJECT SO THAT IT IS 100% AUTOMATED AND OPERABLE UPON COMPLETION OF THIS PROJECT. VERIFY THE LOCATION AND CONDITION OF THE EXISTING SYSTEM PRIOR TO BIDDING. CONTRACTOR MUST COORDINATE THIS WORK WITH ALL DISCIPLINES PRIOR TO BEGINNING OF CONSTRUCTION.
18. PROVIDE ALL LABOR AND MATERIALS NECESSARY TO CONNECT THE PROPOSED IRRIGATION MAINLINE AND BALL VALVE TO THE EXISTING MAINLINE AT THIS APPROXIMATE LOCATION. VERIFY THE LOCATION AND SIZE OF THE EXISTING MAINLINE PRIOR TO BIDDING. CONTRACTOR MUST COORDINATE THIS WORK WITH ALL DISCIPLINES PRIOR TO BEGINNING OF CONSTRUCTION.
19. PROVIDE ALL LABOR AND MATERIALS NECESSARY TO INSTALL TEMPORARY IRRIGATION TO ALL DISTURBED AREAS THAT DO NOT HAVE PERMANENT IRRIGATION. TEMPORARY SYSTEM TO BE LEFT IN PLACE UNTIL PLANT MATERIAL IS ESTABLISHED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. SHOULD IT BECOME NECESSARY TO REMOVE AND REPLACE THE TEMPORARY SYSTEM FOR MOWING AND MAINTENANCE OPERATIONS, THE LANDSCAPE IRRIGATION CONTRACTOR SHALL CONSIDER THIS PART OF HIS SCOPE OF WORK. EXACT METHOD OF PROVIDING AND OPERATING THE TEMPORARY SYSTEM WILL BE THE LANDSCAPE IRRIGATION CONTRACTOR'S RESPONSIBILITY. OPERATION OF THE TEMPORARY SYSTEM MUST BE COORDINATED WITH THE PERMANENT SYSTEM TO INSURE PROPER HYDRAULIC OPERATION OF BOTH SYSTEMS. CONTRACTOR IS RESPONSIBLE TO REFERENCE THE LANDSCAPE PLANS FOR THE SCOPE OF THIS WORK.
20. DESIGN PRESSURE IS 62.0 PSI. STATIC PRESSURE IS 70 PSI. TEN DAYS PRIOR TO START OF CONSTRUCTION, VERIFY STATIC PRESSURE. IF STATIC PRESSURE IS LESS THAN STATED DO NOT START WORK UNTIL NOTIFIED TO PROCEED.
21. THIS IRRIGATION SYSTEM HAS BEEN DESIGNED IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL LAWS, ORDINANCES, RULES, REGULATIONS OR ORDERS WHETHER SHOWN OR NOT. THESE LAWS, ORDINANCES, RULES, REGULATIONS OR ORDERS SUPERCEDE THE PLANS, DETAILS, AND/OR SPECIFICATIONS FOR THIS PROJECT. CONTRACTOR IS CAUTIONED THAT THEY ARE TO INCLUDE ANY AND ALL COST NECESSARY TO MEET OR EXCEED THE LAWS OF THE STATE OF TEXAS OR LOCAL CODES CONCERNING LANDSCAPE IRRIGATION. A LICENSED IRRIGATOR OR LICENSED IRRIGATION TECHNICIAN SHALL BE ON-SITE AT ALL TIMES WHILE THE LANDSCAPE IRRIGATION SYSTEM IS BEING INSTALLED PER FORT BEND COUNTY REQUIREMENTS.

IRRIGATION LEGEND:

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO.
●	LAWN SPRAY HEAD	RAINBIRD (30 PSI)	1804-CV W/ MPR PLASTIC NOZZLE ON ON RAINBIRD 1/2" SPX SWING PIPE
■	LAWN CENTER STRIP HEAD	RAINBIRD (30 PSI)	1804-CV W/ #15CST PLASTIC NOZZLE ON RAINBIRD 1/2" SPX SWING PIPE
□	LAWN END STRIP HEAD	RAINBIRD (30 PSI)	1804-CV W/ #15EST PLASTIC NOZZLE ON RAINBIRD 1/2" SPX SWING PIPE
⊕	TREE BUBBLER HEAD ORNAMENTAL	RAINBIRD (30 PSI)	#1402 PLASTIC BUBBLER NOZZLE ON ON RAINBIRD 1/2" SPX SWING PIPE
◔	TREE BUBBLER HEAD SHADE	RAINBIRD (30 PSI)	#1404 PLASTIC BUBBLER NOZZLE ON ON RAINBIRD 1/2" SPX SWING PIPE
◑	ROTARY HEAD PART-CIRCLE	RAINBIRD (40 PSI)	5004-CV W/ #1.5 NOZZLE ON 3/4" LASCO T722-212 SWING JOINT
◎	ROTARY HEAD FULL-CIRCLE	RAINBIRD (40 PSI)	5004-CV W/ #3.0 NOZZLE ON 3/4" LASCO T722-212 SWING JOINT
◐	ROTARY HEAD PART-CIRCLE	RAINBIRD (40 PSI)	5004-CV W/ #4.0 NOZZLE ON 3/4" LASCO T722-212 SWING JOINT
⊙	ROTARY HEAD FULL-CIRCLE	RAINBIRD (40 PSI)	5004-CV W/ #8.0 NOZZLE ON 3/4" LASCO T722-212 SWING JOINT
▲	QUICK COUPLING VALVE	RAINBIRD	#33-DNP WITH LASCO BALL VALVE
⎔	REMOTE CONTROL VALVE	RAINBIRD	PEB W/ PRS-D PRESSURE REGULATOR, REFER TO PLANS FOR SIZE
●	BALL VALVE	LASCO	COMPACT, LINE SIZE
▬	CONTROLLER	RAINBIRD	ESP-LXME2 WALLMOUNT SERIES WITH WR2 RAIN AND FREEZE SENSOR
—— ——	MAINLINE PIPING	REFER TO SPEC.	2-1/2" SCHEDULE 40 PVC
——	LATERAL PIPING	REFER TO SPEC.	3/4" & LARGER - CLASS 200 PVC 1/2" - CLASS 315 PVC
⊕	REMOTE CONTROL DRIP VALVE	RAINBIRD	XCZ-100-PRB-COM CONTROL ZONE KIT
——	DRIP HEADER PIPING	REFER TO SPEC.	1-INCH CLASS 200 PVC
▭	PLANTING BED DRIPLINE TUBING	RAINBIRD	XFSCV-09-12 AT 12" O.C. WITH XF INSERT FITTINGS, TDS-050 GALVANIZED STAKES, QF HEADERS AND OPERATION INDICATOR
Ⓦ	WATER METER	REFER TO SPEC.	PER LOCAL BUILDING CODE
Ⓘ	ISOLATION VALVE	NIBCO	T-29, REFER TO PLAN FOR SIZE
Ⓨ	WYE STRAINER	FEBCO	650, REFER TO PLAN FOR SIZE
⋀⋀	BACKFLOW PREVENTER	FEBCO	850, REFER TO PLAN FOR SIZE
Ⓜ	MASTER VALVE	RAINBIRD	PEB, REFER TO PLAN FOR SIZE
▭	STATION NUMBER VALVE SIZE GPM (APPROX.)		

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park

4521 FM 521
FRESNO, TX 77545

Prepared For:
Fort Bend County
5855 Sienna Springs Way
MISSOURI CITY, TEXAS 77459

HINESAD

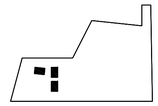
Contract No:

Design Team:

SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-814-5141

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Key Plan



Professional Seals



06-20-2025

No.	Issue Description	MM-DD-YYYY
	ADDENDUM 1	06/20/2025

Drawn by: Reviewed by:

Project No:

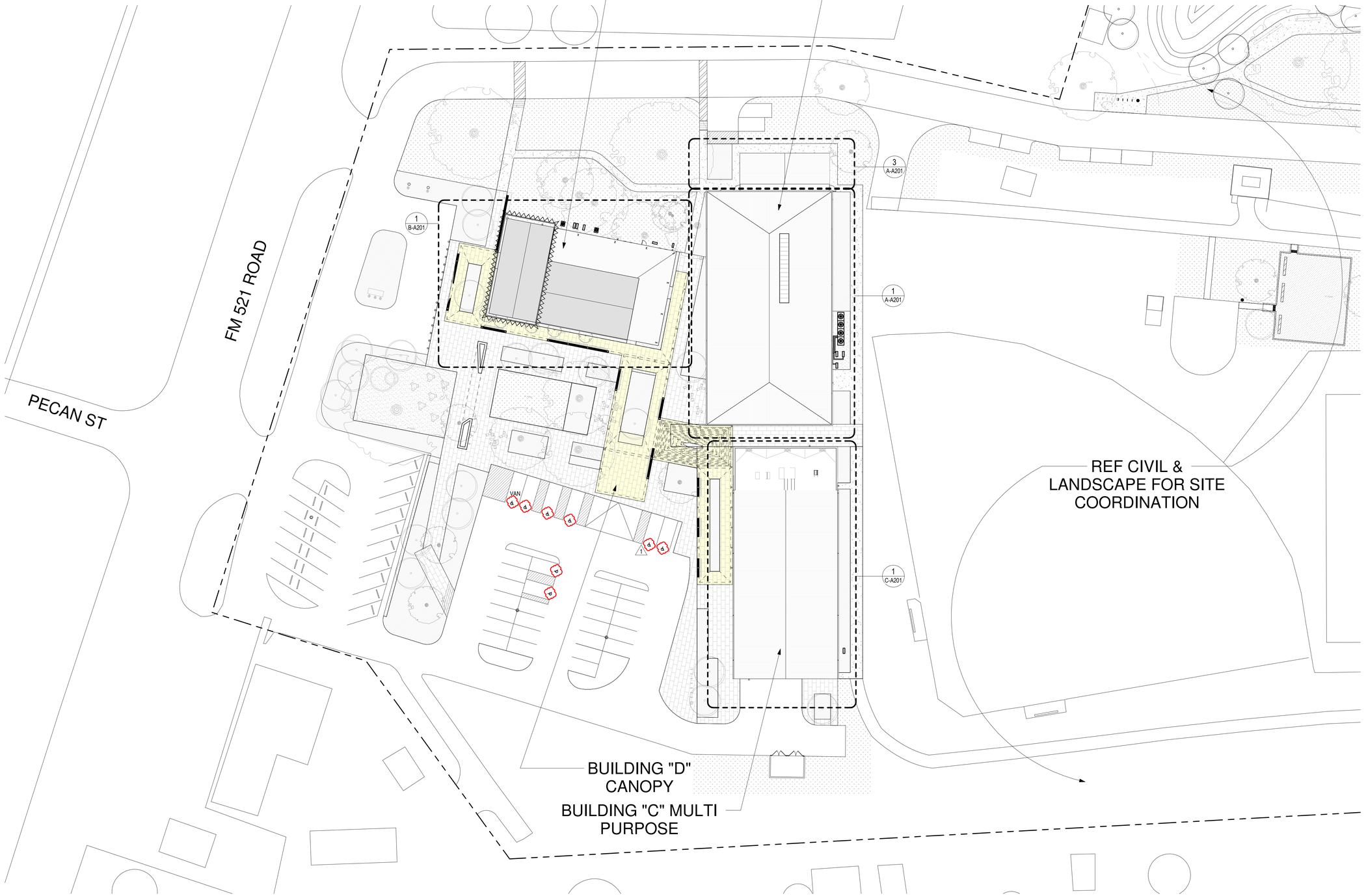
Sheet Title:

IRRIGATION NOTES AND LEGEND

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Sheet Number

L604



1 ARCHITECTURAL SITE PLAN
1" = 30'-0"

GENERAL NOTES

1. REFERENCE FLOOR PLANS AS DESIGNATED IN THE KEY PLAN IN A200 SERIES

2. PROVIDE CONC. PARKING STOP AT ALL PARKING STALLS

THE STATE OF TEXAS
FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
Fresno, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

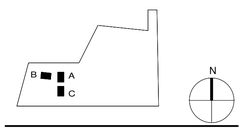
Design Team:

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Key Plan

A: NATATORIUM
B: COMMUNITY CENTER
C: MULTI PURPOSE



Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: AP Reviewed by: GL

Project No: 2024-002

Sheet Title:

ARCHITECTURAL SITE PLAN

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Sheet Number

A101

6/18/2025 12:13:51 PM

FURNITURE & EQUIPMENT LEGEND

TABLE

T1 — CONFERENCE TABLE - 8 PPL
96" RECTANGULAR W/ SLAB BASE - 1 3/8" TOP
MANUFACTURER: OTG
CODE:SL9644RECS
FINISH:AEL

T2 — OCCASIONAL TABLE
18" DIA - ZOLA TABLES
MANUFACTURER: KRUG
CODE:ZOL4 18D
FINISH: WHITE

T3 — CAFE TABLE
36" x 36" TOP, METAL "X" BASE
MANUFACTURER: OTG
CODE:SL36SQTOP, OTGXTB3642
FINISH: WHITE LAM, BLACK BASE

T4 — BANQUET TABLE - PLASTIC FOLDING
60" DIA POLYLITE
MANUFACTURER: PSFURNITURE
CODE: PT60DIGG-PLBL / PT60DIMG-PLBL
FINISH: GRAY

CHAIR

C1 — OFFICE TASK CHAIR - ARMS
MANUFACTURER: OTG
CODE:OTG11516B
FINISH: BLACK MESH

C2 — STACKABLE CHAIR
MANUFACTURER: OTG
CODE: OTG11310B
FINISH: BLACK

C3 — OFFICE TASK CHAIR - ARMLESS
MANUFACTURER: OTG
CODE: OTG11516B
FINISH: BLACK MESH

C4 — OCCASIONAL CHAIR
MANUFACTURER: OTG
CODE: OTG13051-BL2D
FINISH: BLK LUXHIDE, BLK LEG

C5 — EXAM CHAIR
26" BARIATIC
MANUFACTURER: IT
CODE:OFD-HC2600-BLK
FINISH: BLK ANTI MICROBIAL

C6 — LOCKER ROOM BLEACHER
48"W x 9.5"D x 16"H
MANUFACTURER: SCRANTON PRODUCTS
CODE: TUFFTEC
FINISH: HDPE CHARCOAL

C7 — PORTABLE BLEACHER
LYON ALUM TOP & PEDESTAL
96"W x 9-12"D x 17-18"H
MANUFACTURER: GLOBAL INDUSTRIES
CODE: T9AB271530/ NF5825

C8 — ROLL & TIP BLEACHERS
NATIONAL REP
3 ROW x 15'-0"L
MANUFACTURER: GLOBAL INDUSTRIES
CODE:T9AB1368392/ TR-0315PRF

C9 — POOFE
RUNNA, BLUE & GREEN
MANUFACTURER: INDIANA FURNITURE
CODE: RU-3

DESK

D1 — BENCH TABLE
60" x 24" W/ FLIP BASE
MANUFACTURER: OTG
CODE: SL6024TOP/ OTGFTBASE60
FINISH: WHITE LAM TOP

D2 — BENCH TABLE W/ FILE ON CASTERS
48" x 24" W/ FLIP BASE
MANUFACTURER: OTG
CODE: SL4824TOP/ OTGFTBASE48
SL22HBF-WHI
FINISH: WHITE LAM TOP

D3 — DESK @ CONSULT
INTERION 36"W x 24"D x 30"H
MANUFACTURER: GLOBAL INDUSTRIES
CODE: T9A249012AGY

LOCKERS

L1 — HDPE LOCKERS W/ BASE
3 WIDE, DOUBLE TIER
12" x 15" x 72"
MANUFACTURER: SCRANTON
CODE: TUFFTEC
FINISH: CHARCOAL

L2 — HDPE CUBBIES W/ BASE
3 WIDE, 6 TIER
12" x 15" x 72"
MANUFACTURER: SCRANTON
CODE: TUFFTEC
FINISH: CHARCOAL

L3 — STEEL LOCKERS - PORTABLE
3 WIDE, 6 TIER
36" x 18" x 78"
MANUFACTURER: SAFCO
CODE: 5527GR

ATHLETIC EQUIPMENT

AE1 — BASKETBALL EQUIP. W/
ADJUSTABLE HT GLASS BACKBOARD
AE1 - FIXED
AE1.1 - RETRACTABLE MOTORIZED
AE1.2 - RETRACTABLE MANUAL

AE2 — STATIONARY BIKE

AE3 — TREADMILL

AE4 — WEIGHT BENCH SET

AE5 — PORTABLE VOLLEY BALL
NET AND POLES

MISCELLANEOUS

M1 — MARKER BOARD
PORTABLE & REVERSABLE
72"W x 48"H
MANUFACTURER: GLOBAL INDUSTRIES
CODE: T9AB444999

M2 — A/V SPEAKERS - OFCI
REF A/V SERIES SHEETS

M3 — PROJECTOR & SCREEN - OFCI
REF A/V SERIES SHEETS

M4 — DRAINAGE MAT
NOTRAX T18 SUPERFLOW
5/8" x 3' x 5' BLACK
MANUFACTURER: GLOBAL INDUSTRIES
CODE:T9AB238095, T18S0035BL
SHOWER, KITCHEN, POOL DECK

M5 — TV - OFCI
WALL MOUNTED
60" AFF TO CENTER UNO
REF A/V SERIES SHEETS

M6 — BOOK VENDING MACHINE - OFCI
DIGITAL LIBRARY

M7 — SHELVING UNIT
36" x 18" x 72"
MANUFACTURER: SAFCO
CODE: 5276BL

M8 — SOUND ABSORBING RUG
8' x 10' x 0.2" (5mm)
MANUFACTURER: UNIKA VAEV
CODE: FRASTER FELT RUG
426 BLACK

M9 — RETRACTABLE BELT BARRIER
40" BLK POST, 10' BLK BELT
MANUFACTURER: GLOBAL INDUSTRIES
CODE: T9A708416BK

APPLIANCES - RESIDENTIAL

A1 — EXISTING OVER RANGE
MICROWAVE W/ EXHAUST
WHITE FINISH

A2 — EXISTING RANGE
WHITE FINISH
30"

A3 — EXISTING FRIDGE
WHITE FINISH
30"

A4 — EXISTING SIDE BY SIDE
FRIDGE/ FREEZER
42"

A5 — ICE MACHINE
UNDER COUNTER
24"

A6 — DISHWASHER
WHITE FINISH
24"

FINISHES LEGEND

VINYL TILE

V1 — 6" x 48" x .125" PREMIUM VINYL WOOD PLANK (LVT)
ROPEE: NORTHERN TIMBERS - 28 MIL
ITEM NUMBER: 273
COLOR: LIMED PALE OAK

V2 — 18" x 18" x .125" PREMIUM VINYL TILE (LVT)
ROPEE: DESERT COLLECTION - 28 MIL
ITEM NUMBER: 341
COLOR: MOJAVE

V3 — STAIR TREAD IMPRESSIONS LUXURY VINYL
SIX DEGREES FLOORING
ITEM NUMBER: IS174_C15(S) CAULK: IC174_C15
COLOR: STEELY ASH

V4 — STAGE NOSING PROFILE
KUBERT KSB
H:3mm W:42mm V:21mm
ITEM NUMBER: KS-B-030
COLOR: A1 SLIVER

ATHLETIC FLOORING

ATH1 — 27" x 27 "x 3/8" MULTI-USE RUBBER TILE
ROPEE: TUFLEX
ITEM NUMBER: 913
COLOR: CHARCOAL

ATH2 — 5'11" x 49" MULTI-USE VINYL SHEET
ROPEE: SCHOCKGUARD
ITEM NUMBER: 669
COLOR: BATTLESHIP
STRIPING AS REQ'D FOR SPORT

BASES

B1 — 4" VINYL COVE WALL BASE
ROPPE
ITEM NUMBER: 700 SERIES
COLOR: 100 BLACK

TILES

T1 — GREY PORCELAIN HOMOGENOUS TILE (FLOORS) 1
12" x 24"
MANUFACTURER: LANOVA
CODE: CONCRETE 24
MATTE W/ REQ'D SLIP RESISTANCE MIN .42 WET
DCOF AS PER ANSI A326.3

T2 — 2" X 2" CERAMIC TILE (SHOWER FLOORS)
MANUFACTURER: CERAMICA VOUGE
CODE: IG PERLA PEV IV
MATTE W/ REQ'D SLIP RESISTANCE MIN .42 WET
DCOF AS PER ANSI A326.3

T3 — 4" X 4" CERAMIC TILE (WALLS)
MANUFACTURER: CERAMICA VOUGE
CODE: IN GHIACCIO PEI IV
MATTE RAL 9003

TG — TILE GROUT
LATRICRETE
42 PLATINUM
(ALL TILE LOCATIONS)

MISC. FLOORS

SC1 — SEALED CONCRETE FLOOR
POOL DECK - ROUGH FINISH
REQ'D SLIP RESISTANCE MIN .42 WET
DCOF AS PER ANSI A326.3

SC2 — SEALED CONCRETE FLOOR
ROUGH FINISH
JAN/ ELEC CLOSET

COUNTERTOPS

QT1 — QUARTZ SLAB
POLISHED 2CM
MANUFACTURER: EARTH STONE & COLOURS
CODE: 9889
EDGE: EASED
COLOR: CARRARA

PL3 — HIGH IMPACT LAMINATE AT COUNTERTOPS
MANUFACTURER: WILSONART
CODE: WHITE -0354-60 MATTE FINISH
THICKNESS: 604- .032"

ACOUSTIC PANELS

AP1 — ACOUSTIC: HERADESIGN 1 DIRECT MOUNT WALLS
(24" x 48" or 24" x 96") MOUNTING A
PATTERN: ASHLAR
FINISH: BEIGE EDGE DETAIL: BEV/ BEV

AP2 — ACOUSTICAL FOAM PANEL
12"x 12" x 2"
DIRECT MOUNT: 50%
@ 48" AFF TO CEILING
MANUFACTURER: FOAM FACTORY
NRC: 0.75 FLAME RETARDANT

WALL COVERING

WC1 — 36" WAINSCOT WALL PANEL
LOCATION: ASSEMBLY
EDGE: FLAT TRIM ALL EXPOSED EDGES
FINISH: P8 LIGHT GRAY

WC2 — ATHLETIC WALL PROTECTION
LOCATION: MULTI PURPOSE
MANUFACTURER: PORTER
CODE: DURASAFE WALL PADS

LAMINATES

PL1 — HIGH IMPACT LAMINATE AT CABINETS
MANUFACTURER: WILSONART
CODE:NORTH SEA 090-60 - MATTE FINISH
THICKNESS: 605- .048"

PL2 — HIGH IMPACT LAMINATE AT INT DOORS
MANUFACTURER: WILSONART
CODE: TO MATCH EXISTING
THICKNESS: 604- .032"

WINDOW TREATMENTS

WT1 — LIGHT FILTERING DOWN SHADES - W CLUTCH
MANUFACTURER: SHEERWEAVE BY PHIFER
CODE: COLOR PEBBLE U83 (LIGHT GREY)
FULL HT AT EXTERIOR WINDOWS TYP, UNO

WT2 — MOTORIZED BLACK OUT SHADES
MANUFACTURER: SHEERWEAVE BY PHIFER
CODE: EBONY U65 (BLACKOUT)
FULL HT AT EXT. WINDOW W6 ONLY, UNO

METALS

MTL1 — BRUSHED STAINLESS STEEL#4 FINISH -
LOCATION AS NOTED
EXTERIOR - 316 GRADE , INTERIOR - 304 GRADE

MTL2 — BRUSHED ALUM FINISH
FITTINGS & FIXTURES

MTL3 — DOOR/ WINDOW FRAMES
TO MATCH P2

MTL4 — SCHLUTER- QUADEC TRIM
TO MATCH M2
NEW TILE CORNERS, EXPOSED EDGES

MTL5 — MOCKETT CABINET HARDWARE DP3B
TO MATCH M2
AT MILLWORK

PAINTS

(PAINT TYPE TO BE COMPATABLE W/ SURFACE, TYP.)

P1 — WHITE - COLOR TO MATCH:
SHERWIN WILLIAMS SW 7005 "PURE WHITE"
(WALLS, CEILINGS, EXPOSED STRUCT)

P2 — BLACK - COLOR TO MATCH:
SHERWIN WILLIAMS SW 6990 "CAVIAR"
(FRAMES, HANDRAILS, FENCING)

P3 — DK BLUE - COLOR TO MATCH
SHERWIN WILLIAMS SW 6510 LOYAL BLUE
(ACCENT - NATATORIUM)

P4 — BLUE - COLOR TO MATCH:
SHERWIN WILLIAMS SW 9684 AZURE TIDE
(ACCENT - COMMUNITY CENTER)

P5 — GREEN - COLOR TO MATCH:
SHERWIN WILLIAMS SW 6924 DIRECT GREEN
(ACCENT - COMMUNITY CENTER)

P6 — TEAL - COLOR TO MATCH
SHERWIN WILLIAM SW 6781 JAMAICA BAY
(ACCENT - MULTI PURPOSE)

P7 — DARK GRAY - COLOR TO MATCH:
SHERWIN WILLIAMS SW7076 CYBERSPACE
(ACCENT - GENERAL)

P8 — LIGHT GRAY - COLOR TO MATCH
SHERWIN WILLIAMS SW 7017 DORIAN GREY
(ACCENT - GENERAL)

EXTERIOR PAINTS

(PAINT TYPE TO BE COMPATABLE W/ SURFACE, TYP.)

PT1 — OLIVE DRAB - COLOR TO MATCH:
RAL 6022 OLIVE DRAB
(EXTERIOR CANOPY FASCIA, CANOPY COLUMNS)

PT2 — GREY OLIVE - COLOR TO MATCH:
RAL 6006 GREY OLIVE
(COMMUNITY CENTER ADDITION)

PT3 — DARK GRAY - COLOR TO MATCH:
SHERWIN WILLIAMS SW 7048 URBANE BRONZE
(EXISTING BRICK, EXISTING METAL PANEL SYSTEM)

PT4 — LIGHT GRAY - COLOR TO MATCH:
RAL 9006 WHITE ALUMINUM
(FORMED METAL PANEL SYSTEM AT NAT. & M.P.)

PT5 — MESTENGO SCU8
COLOR TO MATCH - RAL 6018
("CROWN" - COMMUNITY CENTER)

PT6 — FLEETING GREEN - COLOR TO MATCH:
SHERWIN WILLIAMS SW 6455 FLEETING GREEN
(NAT + MP ENTRY DOME)

PT7 — FROSTWORK - COLOR TO MATCH:
SHERWIN WILLIAMS SW 0059 FROSTWORK
(NAT + MP ENTRY DOME)

PT8 — SEA GREEN - COLOR TO MATCH:
SHERWIN WILLIAMS SW 2825 COLONIAL REVIVAL SEA GREEN
(NAT + MP ENTRY DOME)

PT9 — RESEDA GREEN - COLOR TO MATCH:
SHERWIN WILLIAMS SW 9040 RESEDA GREEN
(NAT + MP ENTRY DOME)

PT10 — GREENFIELD - COLOR TO MATCH:
SHERWIN WILLIAMS SW 6439
(NAT + MP ENTRY DOME)

PT11 — COURTYARD - COLOR TO MATCH:
SHERWIN WILLIAMS SW 6440 COURTYARD
(NAT + MP ENTRY DOME)

PT12 — BOTTLE GREEN - COLOR TO MATCH:
SHERWIN WILLIAMS SW 2847 ROYCROFT BOTTLE GREEN
(NAT + MP ENTRY DOME)

PT13 — BLACK EMERALD - COLOR TO MATCH:
SHERWIN WILLIAMS SW 2936 BLACK EMERALD
(NAT + MP ENTRY DOME)

EXTERIOR FINISHES

BRK1 — BRICK VENEER SYSTEM
ACME BRICK - WHITE BLUFF

BRK2 — BRICK VENEER SYSTEM
ACME BRICK - WESTCHESTER
(3 COURSES AT BASE) TYP.

FMP — FORMED METAL PANEL SYSTEM
ASTYL CORRUGAMI - CG46
COLOR: TBD
DISTRIBUTOR: HYBRID FAB
FRANK@HYBRIDFAB.COM

P-FMP — PERFORATED FORMED METAL PANEL SYSTEM
ASTYL CORRUGAMI - CRWN66
COLOR: MESTENGO - SCU8
DISTRIBUTOR: HYBRID FAB
FRANK@HYBRIDFAB.COM

LMP — LINEAR METAL PANEL SYSTEM
PAC CLAD FLUSH REVEAL 7" WIDE, 1" HIGH
COLOR: SUPER LIGHT NATURAL WALNUT TEXTURE

ACM — ALUMINUM COMPOSITE METAL SOFFIT
ALUCOBOND
COLOR: PT1

TPS — TRANSLUCENT PANEL SYSTEM
BASE BID: EXTECH FLEXI PANEL
ALTERNATE: CUSTOM ARTISTIC TRANSLUCENT
PANEL SYSTEM TOMONOSHI LLC
MARTY@TOMONOSHI.COM

FENCE & GATE SYSTEMS

F1 — AMERISTAR
6' MONTAGE PLUS
BLACK - MAJESTIC
PROVIDE PRIVACY MESH
MOUNTED INSIDE

ROOM FINISH SCHEDULE

Room Number	Room Name	Floor Finish	Base Finish	Wall Finish	Area	Comments
A101	RECEPTION	T1	B1	P1	410 SF	
A102	CORRIDOR	T1	B1	P1	327 SF	
A103	ADMIN	V1	B1	P1	366 SF	
A104	FITNESS	ATH1	B1	P1	682 SF	
A105	TOILET	T1	-	P1,T3	92 SF	T3 60" AFF UNO
A106	MEN	T1	-	P1,T3	406 SF	T3 60" AFF UNO
A106a	M. SWR	T2	-	T3	137 SF	
A107	WOMEN	T1	-	P1,T3	399 SF	T3 60" AFF UNO
A107a	W. SWR	T2	-	T3	137 SF	
A108	JAN	SC2	B1	P1	48 SF	
A109	CHG.	T2	B1	P1	47 SF	
A110	NATATORIUM	SC1	B1	P1	6656 SF	
A111	EQUIP. STG.	SC1	B1	P1	168 SF	EXTERIOR
A112	PUMP RM.	SC2	-	P8	1047 SF	EXTERIOR
A113	ELEC/ IT	SC2	B1	P1	67 SF	
A114	CLO	V1	B1	P1	85 SF	
A115	MECH	SC2	B1	P1	112 SF	
A116	SEATING	T2	B1	P1	720 SF	
A117	POOL EQUIP. STG.	SC2	-	P8	306 SF	
B100	ENTRY	V1	B1	P1	251 SF	
B101	MEN	T1	-	P1	202 SF	WALL TILE TO REMAIN
B102	WOMEN	T1	-	P1	203 SF	WALL TILE TO REMAIN
B103	JAN	SC2	B1	P1	53 SF	
B104	ASSEMBLY 2	V1	B1	P1	820 SF	
B105	KIT.	T1	B1	P1	326 SF	
B106	ASSEMBLY 1	V1	B1	P1	1287 SF	
B107	CLO	T1	B1	P1	57 SF	
B107a	ELEC/ IT	V1	B1	P1	51 SF	
B108	DIGITAL LIBRARY	V1	B1	P1	452 SF	P7 @ EXT MTL PANEL
B109	REC. STUDIO	V1	B1	P1	113 SF	
B110	CORRIDOR	V1	B1	P1	636 SF	
B111	CLINIC	V1	B1	P1	264 SF	
B112	ADMIN	V1	B1	P1	265 SF	
B113	RECPT.	V1	B1	P1	49 SF	
B114	COPY	V1	B1	P1	59 SF	
B115	CONSULT	V1	B1	P1	65 SF	
B116	CONSULT	V1	B1	P1	65 SF	
B117	NURSE	V1	B1	P1	56 SF	
B118	DR OFC	V1	B1	P1	55 SF	
B119	LEGAL	V1	B1	P1	123 SF	
B120	STG	SC2	B1	P1	195 SF	P7 @ EXT MTL PANEL
B121	OFC	V1	B1	P1	55 SF	
B122	OFC	V1	B1	P1	57 SF	
B123	SPRINKLER EQUIP RM	SC2	B1	P1	38 SF	
B124	OFC	V1	B1	P1	57 SF	
B125	OFC	V1	B1	P1	53 SF	
B126	MTG	V1	B1	P1	109 SF	
C100	LOBBY	V1	B1	P1	683 SF	
C101	OFFICE	V1	B1	P1	337 SF	
C102	MEN	T1	-	P1,T3	180 SF	T3 60" AFF UNO
C103	WOMEN	T1	-	P1,T3	252 SF	T3 60" AFF UNO
C104	JAN	SC2	B1	P1	32 SF	
C105	MULTI PURPOSE	ATH2	B1	P1	6933 SF	
C106	STAGE	V2	B1	P2	517 SF	
C107	VEST	SC2	B1	P1	98 SF	
C108	STG	SC2	B1	P1	79 SF	
C108a	SPRINKLER EQUIP RM	SC2	B1	P1	21 SF	
C109	ELEC/ IT	SC2	B1	P1	63 SF	

Grand total: 58

GENERAL NOTES - EXTERIOR FINISHES

REFERENCE FLOOR PLANS IN A200 SERIES FOR ADDITIONAL COORDINATION
REFERENCE EXTERIOR ELEVATIONS IN A300 SERIES FOR ADDITIONAL COORDINATION

1. THE CONTRACTOR SHALL PROVIDE COMPLETE PROJECT SYSTEMS AND COMPONENTS AND COMPLY WITH ALL REQUIREMENTS INDICATED ON THE PROJECT DOCUMENTS.

2. WORK WITHIN THE AREA BOUNDARIES INDICATED IN THE PROJECT DOCUMENTS, AND COMPLY WITH ALL APPLICABLE BUILDING CODE, REGULATION, & ORDINANCE REQUIREMENTS. OCCUPANTS ADJACENT TO THE PROJECT AREA BOUNDARIES SHALL CONTINUE UNINTERRUPTED OCCUPANCY DURING CONSTRUCTION OF THE PROJECT

3. VERIFY FIELD CONDITIONS AND COORDINATION WITH THE PROJECT DOCUMENTS PRIOR TO PROCEEDING WITH THE WORK.

4. COORDINATE THE WORK WITH ALL REQUIREMENTS INDICATED IN THE PROJECT DOCUMENTS.

5. PERFORM THE WORK AT THE PROJECT SITE DURING NORMAL BUSINESS HOURS, UNLESS OTHERWISE NOTED.

6. COORDINATE THE WORK WITH EQUIPMENT, FURNISHINGS, AND SYSTEMS PROVIDED BY THE OWNER.

7. ALL DIMENSIONS SHALL BE VERIFIED ON SITE BEFORE COMMENCEMENT OF WORK. ANY DISCREPANCIES SHALL BE MADE KNOWN TO ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.

8. CONTRACTOR TO SUBMIT REQUIRED SAMPLES TO ARCHITECT FOR WRITTEN APPROVAL AS OUTLINED IN CONTRACT DOCUMENTS

9. FOR PAINT SYSTEMS, REFER TO SPECIFICATIONS DOCUMENTS FOR ADDITIONAL INFORMATION

10. FOR WATERPROOFING SYSTEMS, REFER TO SPECIFICATION DOCUMENTS FOR ADDITIONAL INFORMATION AND REQUIRED SUBMITTALS

11. REFER TO SPECIFICATIONS FOR FULL SYSTEM REQUIREMENTS

GENERAL NOTES - INTERIOR FINISHES

REFERENCE FLOOR PLANS IN A200 SERIES FOR ADDITIONAL COORDINATION
REFERENCE INTERIOR ELEVATIONS IN A600 SERIES FOR ADDITIONAL COORDINATION

1. CONTRACTOR TO VERIFY ALL SURFACES ARE CLEAN AND READY TO RECEIVE NEW FINISHES. NO PAINTING OR INTERIOR FINISHING SHALL BE DONE UNDER CONDITIONS WHICH WILL JEOPARDIZED THE QUALITY OR APPEARANCE OF SUCH WORK. ALL WORKMANSHIP WHICH IS JUDGED LESS THAN FIRST QUALITY BY THE ARCHITECT WILL BE REJECTED. PER SECTION 803 (IBC 2009) FLAME SPREAD TO BE CLASS A: 0-25. SMOKE DEVELOPED INDEX TO BE LESS THAN 0-450.

2. ALL SURFACES SHALL BE PREPARED TO RECEIVE THE SPECIFIED FINISH. ALL GYPSUM BOARD PARTITIONS SHALL BE TAPED, SPACKLED AND SANDED SMOOTH AND PREPARED TO RECEIVE THE SPECIFIED FINISH. PAINT GRADE WOODWORK SHALL BE HAND SANDED BETWEEN COATS AND DUSTED CLEAN. ALL HOLES, PITCH POCKETS OR SAPPY PORTIONS SHALL BE SCRAPED AND SHELLACKED, OR SEALED WITH KNOT SEALER. NAIL HOLES, CRACKS OR DEFECTS SHALL BE PUTTIED AFTER FIRST COAT, WITH PUTTY MATCHING COLOR OF STAIN OR PAINT FINISH. REMOVE OIL OR GREASE WITH MINERAL SPIRITS.

3. INTERIOR GYPSUM BOARD SURFACES SHALL BE WIPED WITH A DAMP CLOTH JUST PRIOR TO APPLICATION OF THE FIRST COAT, IN ORDER TO LAY FLAT ANY NAP WHICH MAY HAVE FORMED IN SANDING PROCESS.

4. UPON COMPLETION, REMOVE ALL PAINT FROM WHERE IT HAS SPILLED, SPLASHED OR SPLATTERED ON EXPOSED SURFACES.

5. ALL VENEER STAINS SHALL HAVE UNIFORM COLOR.

6. EXAMINE ALL FINISH SURFACES AFTER COMPLETION OF WORK AND PROCEED WITH "TOUCH-UP" AS REQUIRED.

7. CONTRACTOR TO SUBMIT FINISHES SAMPLES TO ARCHITECT FOR WRITTEN APPROVAL PRIOR TO ORDERING MATERIALS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALLOWING FOR DELIVERY LEAD TIMES FOR ALL FABRICS AND OTHER CUSTOM FINISHES WITHIN THE CONSTRUCTION SCHEDULE. ALL DELIVERY TIMES MUST BE CONFIRMED, AND ANY EXCESSIVE LEAD TIME MUST BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY TO ALLOW FOR RE-SPECIFICATION IF NECESSARY. CONTRACTOR TO INSTALL ALL FINISHES AS PER MANUFACTURER'S INSTRUCTION AND USER MANUAL GUIDE.

8. SEE FINISH PLAN, ELEVATIONS AND DETAILS FOR CLARIFICATION OF EXTENT OF FINISH MATERIALS.

9. PAINT IS DEFINED AS ONE PRIMER COAT AND 2 FINISH COATS.

10. PAINT CEILING ACCESS PANELS WHERE THEY OCCUR TO MATCH ADJACENT CEILING FINISH.

11. STAINED AND PAINTED SURFACES SHALL BE FINISHED SUCH THAT JOINTS ARE NOT VISIBLE WHEN VIEWED FROM ANY ANGLE AS DETERMINED BY THE ARCHITECT.

12. APPLY WALL PANELING TYPES SO WALL IS DIVIDED WITH A MINIMUM NUMBER OF SEAMS, AND WITH EQUAL WIDTH PANELS, UON

13. ALL INTERSECTIONS OF FLOOR FINISH MATERIALS SHALL BE LOCATED DIRECTLY UNDER CENTER OF DOOR, WHERE OCCURS, UON

14. ALL OPEN CABINETRY SHALL MATCH LAMINATE ON ALL EXPOSED SURFACES, UON. APPLY WHITE MELAMINE TO INTERIOR OF CABINETRY WITH DOORS AND DRAWERS, UON. VERIFY LOCKABLE MILLWORK W/ OWNER

15. ALL DIMENSIONS SHALL BE VERIFIED ON SITE BEFORE COMMENCEMENT OF WORK. ANY DISCREPANCIES SHALL BE MADE KNOWN TO ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.

16. CENTER TILES IN ROOM UNO. ALIGN FLOOR AND WALL TILES, UNO

17. CONTRACTOR TO COORDINATE ALL REQUIRED SLAB DEPRESSIONS WITH STRUCTURAL ENGINEERING DRAWINGS. TO ACCOMMODATAE ALL FLOOR FINISH SYSTEMS, ALL REQUIRED EQUIPMENT SLAB DEPRESSIONS I.E. IN FLOOR AUTOMATIC DOOR OPENERS, KITCHEN EQUIPMENT, ELECTRICAL & MECHANICAL EQUIPMENT, PLUMBING EQUIPMENT, WINDOW/CURTAIN WALL SYSTEMS, ETC.
REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

GENERAL NOTES - FURNITURE

REFERENCE FURNITURE SCHEDULE AND LEGEND IN A900 SERIES SHEETS

1. ARCHITECTURAL FURNITURE PLANS INDICATE GENERAL TYPE AND SPECIFIC LOCATION OF FURNITURE, FIXTURES & EQUIPMENT DEVICES.

2. ELECTRICAL & TECHNOLOGY ENGINEERING DRAWINGS INDICATE CIRCUITING AND WIRING OF FF&E & SPECIFICATIONS.

3. CONTRACTOR TO PROVIDE MOCK UP OF EACH FURNITURE TYPE/ SYSTEM PRIOR TO INSTALLATION FOR ARCHITECTS APPROVAL

4. CONTRACTOR TO REVIEW ALL FF&E LOCATIONS FOR CONFLICT WITH MEPT DRAWINGS PRIOR TO INSTALLATION.

5. REFERENCE FURNITURE SHEETS & MILLWORK DETAILS FOR BUILT-IN FF&E

6. ALL SECURITY EQUIPMENT BY OWNER, FOR COORDINATION PURPOSES ONLY

7. ALL EQUIPMENT NOTED BY OWNER, FOR COORDINATION PURPOSES ONLY

8. ALL A/V EQUIP, PROJECTORS/ SCREENS, TVs, MENU BOARD, MONITORS, CAMERAS, BY OWNER, FOR COORDINATION PURPOSES ONLY

9. ALL COPY/ PRINTING EQUIPMENT BY OWNER, FOR COORDINATION PURPOSES ONLY

10. ALL KITCHEN EQUIPMENT AND APPLIANCES BY OWNER, FOR COORDINATION PURPOSES ONLY

11. ALL SIGNAGE, ACCESSORIES SUCH AS BUT NOT LIMITED TO POSTS, STANCHION POST & ROPES BY OWNER, FOR COORDINATION PURPOSES ONLY

REFLECTED CEILING PLAN LEGEND

REFERENCE RCP PLANS IN A300 SERIES
REFERENCE MEPT FOR ADDITIONAL COORDINATION

CEILING TYPES

CEILING 1: USG MARS CLIMAPLUS 90/30 #88139 LAY-IN ACOUSTICAL CEILING TILE AND GRID, 24" X 24" x 1" - FLB EDGE w/ 9/16" DXT SUSPENSION SYSTEM

CEILING 2: OPEN PLENUM CEILING w/ USG HERADESIGN 1 DIRECT MOUNT "CLOUDS" FASTENED TO USG DWSS DRYWALL SUSPENSIONS SYSTEM.
FINISH: BEIGE EDGE DETAIL: BEV/BEV PATTERN: ASHLAR

CEILING 3: ACOUSTIC USG LOOKER PLAIN UNIVERSAL w/ CD06319 MICRO-PERF. 2" POLYBAG BACKER, w/ CUSTOM EXTERIOR GRADE UNIVERSAL CARRIER ASSEMBLY. 1
FINISH: SERANTE – S-31 GOLDEN OAK
ALTERNATE: CBI EUROPE CUBIC EDGE LINEAR METAL CEILING SYSTEM – ST130CC, w/ APQ2 PERF. 2" POLYBAG BACKER.
FINISH: WOOD 6869 "FARM MAPLE"
REP CONTACT: adam@advantageinteriorsupply.com

CEILING 4: USG SHEETROCK GYPSUM BOARD CEILING SYSTEM. PAINTED WHITE, UNO

CEILING 5: USG MOLD TOUGH CEMENT PLASTER/ MOISTURE RESISTANT CEILING SYSTEM PAINTED WHITE, UNO

CEILING 6:EXTERIOR SOFFIT CEILING SYSTEM – USG SHEETROCK GYPSUM BOARD. PAINTED WHITE, UNO

CEILING 7: USG HERADESIGN 1 DIRECT MOUNT CEILINGS FASTENED TO USG DWSS DRYWALL SUSPENSION SYSTEM FINISH: BEIGE EDGE DETAIL: BEV/BEV PATTERN: ASHLAR

CEILING 8: EXTERIOR CANOPY (REF A921 EXTERIOR FINISHES, LMP - LINEAR METAL PANEL SYSTEM @ CANOPY SOFFIT

CEILING 9: NOT USED 1

EXPOSED STRUCTURE: FIREPROOFING/ INSULATION SPRAY AS REQ'D BY CODE
PAINTED WHITE, UNO

USG REP CONTACT : SUZANNE DISSETTE – SDissette@usg.com

LIGHT FIXTURES

A1, A6 - FLAT PANEL 24" x 48"

A2, A7 - FLAT PANEL 24" x 24"

A3, A5 - FLAT PANEL 24" x 48"

A4 - RECESSED 24" x 24"

C1 - PERIMETER COVE LIGHT

C2 - PERIMETER SURFACE MOUNT

D1, D2, D4 - DOWNLIGHT

D3 - DOWNLIGHT

E1 - EXTERIOR WALL MOUNTED

ES1, ES2 - 24", 36" UPLIGHT @ CROWN

H1 - HANGING STRIP - 80" MIN HT UNO

H2 - HANGING STRIP - BLACK FINISH - 80" MIN HT UNO

H3 - HANGING SEALED STRIP - 80" MIN HT UNO

H4 - STRIP LIGHT - 80" MIN HT UNO

LP1 - LINEAR PENDANT

LP2 - LINEAR PENDANT

LP3 - LINEAR PENDANT

P1 - PENDANT RING

P2 - PENDANT CYLINDAR

T1 - THEATER/ TRACK LIGHTING

T2 - THEATER/ TRACK LIGHTING

CEILING FAN
HIGH HUMIDITY TOLERANT

CW LIGHTING REP CONTACT: EDWARD FOLSE - efolse@cwlighting.com

GENERAL NOTES - RCP

REFERENCE RCP PLANS IN A300 SERIES
REFERENCE MEPT FOR ADDITIONAL COORDINATION

1. ARCHITECTURAL REFLECTED CEILING PLANS INDICATE GENERAL TYPE AND SPECIFIC LOCATION OF LIGHT FIXTURES & EQUIPMENT DEVICES.

2. ELECTRICAL ENGINEERING DRAWINGS INDICATE CIRCUITING AND WIRING OF LIGHT FIXTURES AND SWITCHES, LIFE SAFETY EQUIPMENT, LOCATION OF REQUIRED EMERGENCY LIGHT FIXTURES, & LIGHT FIXTURE SPECIFICATIONS.

3. MECHANICAL ENGINEERING DRAWINGS INDICATE DUCTS, AIR MOVEMENT REQUIREMENTS AND SIZES OF GRILLES AND REGISTERS.

4. FIRE PROTECTION DRAWINGS INDICATE LAYOUT, LOCATION AND SIZE OF SPRINKLER LINES AND HEADS, PRESSURE REQUIREMENTS, SPRINKLER HEAD SPECIFICATIONS, LOCATION OF FIRE PROTECTION RISERS AND WALL HYDRANTS.

5. ALL STROBES SHALL BE LOCATED @ +80" AFF. SEE ENGINEER'S DRAWINGS FOR LOCATIONS AND SPECIFICATIONS. ALL STROBES TO ALIGN VERTICALLY WITH RECEPTACLE BELOW WHERE OCCURS.

6. CONTRACTOR TO REVIEW ALL LIGHT/ CEILING FIXTURE, DIFFUSERS, SPRINKLERS, SMOKE DETECTORS LOCATIONS, OR IN CONFLICT WITH MEPT DRAWINGS PRIOR TO INSTALLATION.

7. INSTALL THE SUSPENDED CEILING GRID TO BE LEVEL WITHIN A TOLERANCE OF 1/8" IN 12'-0". ANCHOR AS REQUIRED.

8. WHERE ACOUSTICAL CEILING PANELS ARE REQUIRED TO BE CUT, CUT THE PANELS TO MAINTAIN A SHARP AND NEAT EDGE. CENTER GRID IN ROOM UNO.

9. INSTALL NEW SPRINKLER HEADS AND LIGHT FIXTURES AT THE CENTER OF THE ACOUSTICAL CEILING PANEL UON. ALIGN CEILING DEVICES TO LIGHT FIXTURES, TYP.

10. CONTRACTOR TO PROVIDE MOCK UP OF EACH CEILING TYPE SYSTEM PRIOR TO INSTALLATION FOR ARCHITECTS APPROVAL

11. EQUIPMENT BY OWNER, CONTRACTOR INSTALLED. TV/ MONITOR CL @ 5'-6" AFF UNO.

THE STATE OF TEXAS · FORT BEND COUNTY

Project:
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4521 FM 521
Fresno, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

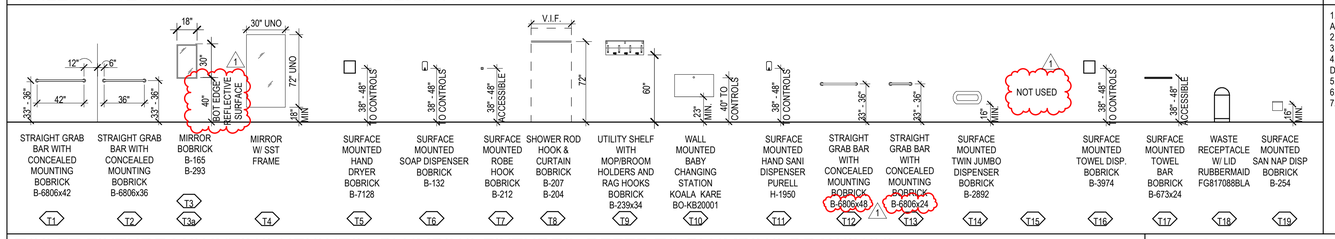
HINESAD

Contract No: 2024-002

Design Team:

HINES ARCHITECTURE + D

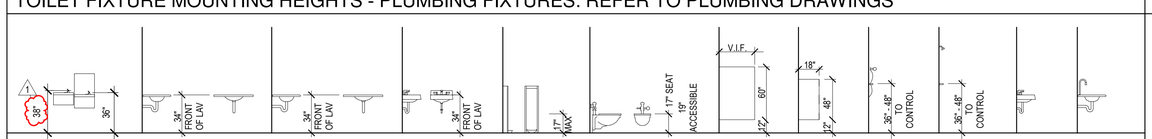
TOILET ACCESSORIES AND MOUNTING HEIGHTS



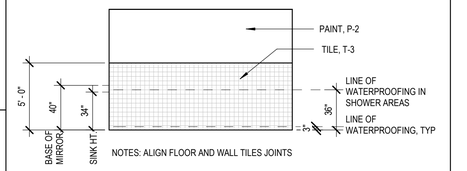
GENERAL NOTES

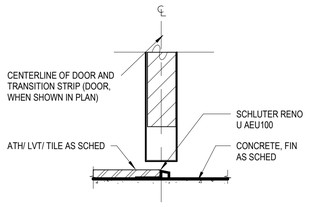
1. TOILET SIGNS PER ACCESSIBILITY CODES. PROVIDE ONE SIGN AT EACH TOILET ROOM HAVING HANDICAPPED FACILITIES.
2. T1, T2 TYPICAL ALL HC TOILET ROOMS/ STALLS
3. T3 TYPICAL CENTERED AT ALL LAVS UNO
4. T7 TYPICAL MOUNT ALL ROBE HOOKS TO TOILET SIDE OF DOOR
5. T9 TYPICAL AT ALL JANITOR ROOMS
6. T14 TYPICAL ALL TOILETS UNO
7. T15, T13, TYPICAL AT ALL HC SHOWER STALLS

TOILET FIXTURE MOUNTING HEIGHTS - PLUMBING FIXTURES: REFER TO PLUMBING DRAWINGS

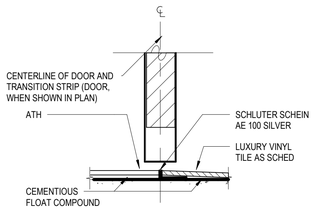


TYPICAL TILE PATTERN

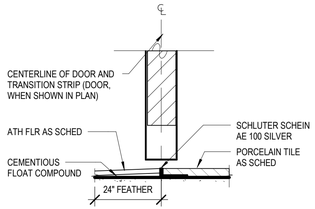




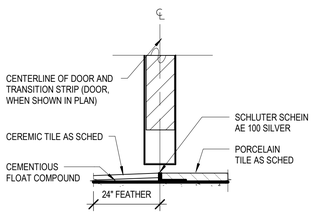
ATH /LVT/ TILE - CONC



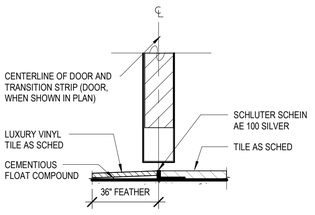
ATH - LVT



ATH - PORCELAIN TILE

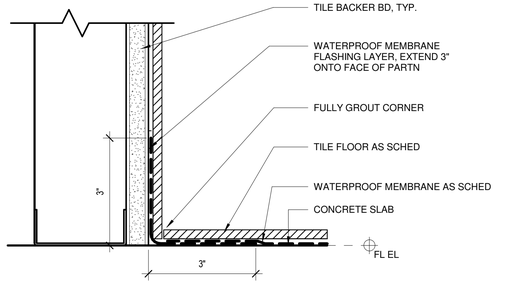


CEREMIC - PORCELAIN TILE

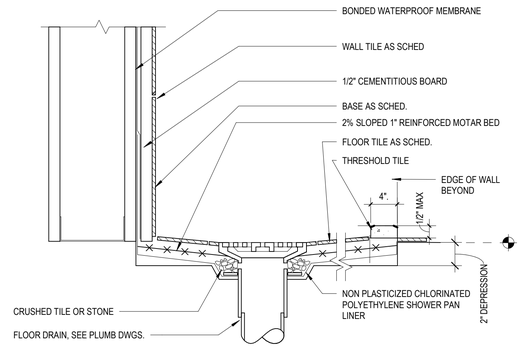


LVT - TILE

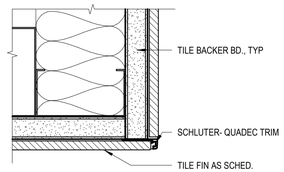
6 FLOOR FINISH TRANSITIONS
3" = 1'-0"



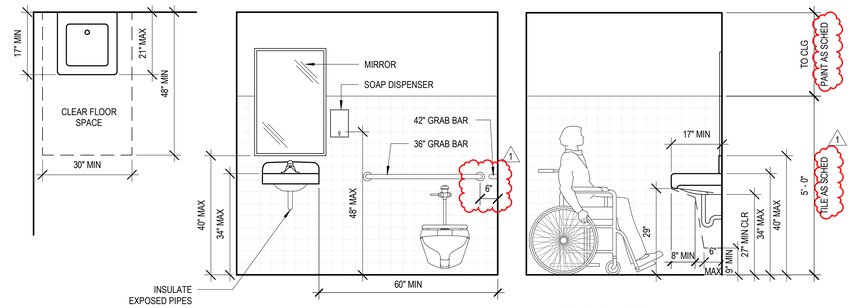
5 TILE WALL W/ WATERPROOFING DETAIL
6" = 1'-0"



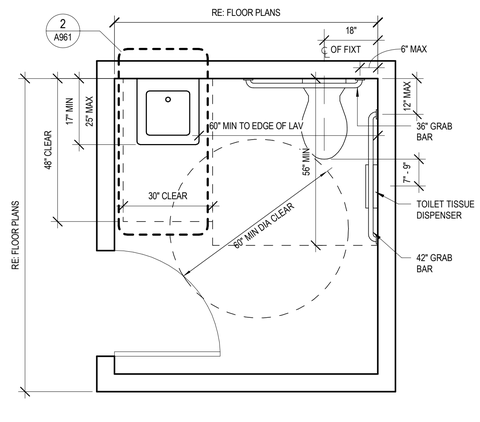
3 SHOWER DRAIN DETAIL
3" = 1'-0"



4 CORNER @ WALL TILE
6" = 1'-0"



2 ACCESSIBLE LAV
1/2" = 1'-0"



1 SINGLE-ACCOMODATION TOILET ROOM
1/2" = 1'-0"

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Project:
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4521 FM 521
Fresno, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
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HINESAD

Contract No: 2024-002

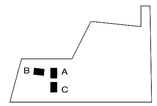
Design Team:

HINES ARCHITECTURE + DESIGN
8 Greenway Plaza Suite 1525
Houston, TX 77046 USA
t +1 713 909 0983
www.hinesad.com

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Key Plan

A: NATATORIUM
B: COMMUNITY CENTER
C: MULTI PURPOSE



Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: NS Reviewed by: GL

Project No: 2024-002

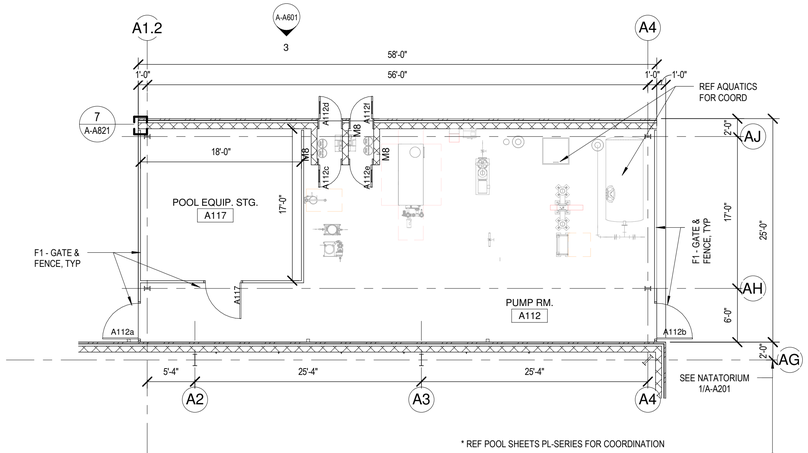
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INTERIOR FINISH DETAILS

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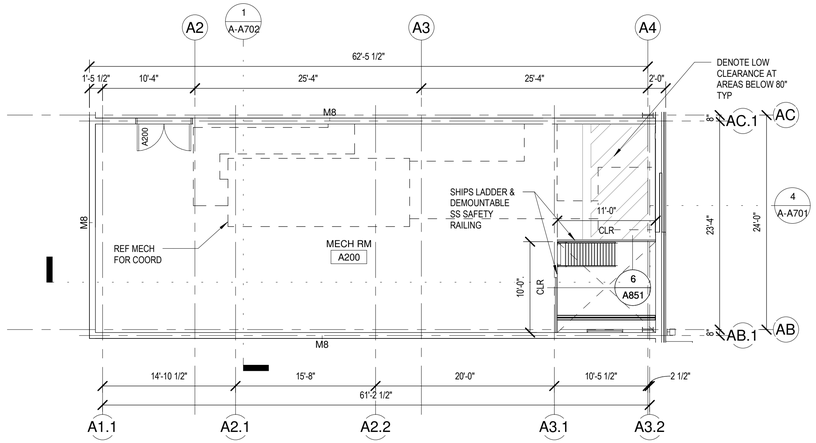
A961



* REF POOL SHEETS PL-SERIES FOR COORDINATION

3 FLOOR PLAN - POOL PUMP ROOM

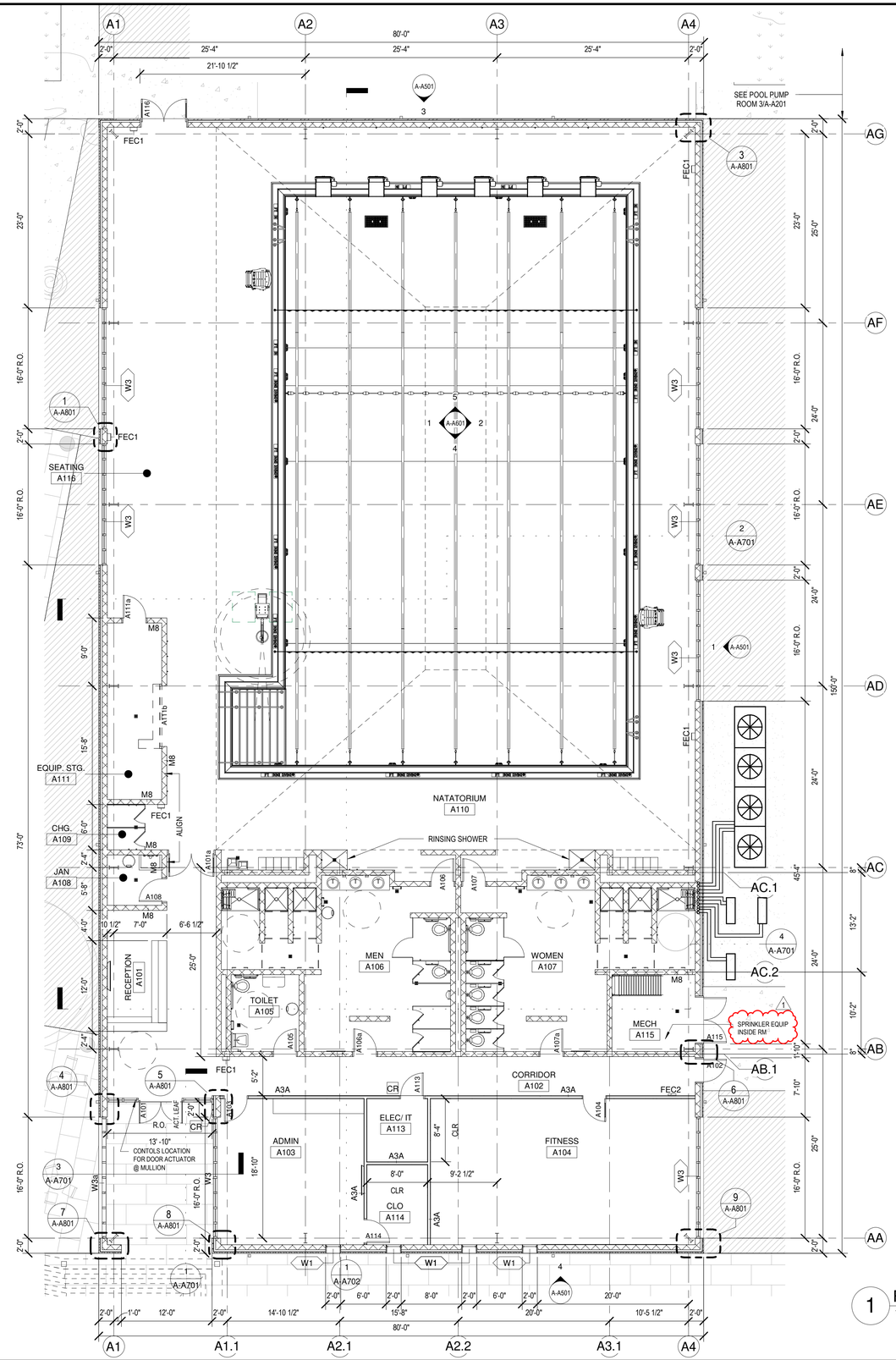
1/8" = 1'-0"



*REF MECHANICAL SHEETS M-SERIES FOR COORDINATION

2 FLOOR PLAN - MECH ROOM @ 10'-8" AFF

1/8" = 1'-0"



1 FLOOR PLAN - NATATORIUM

1/8" = 1'-0"

GENERAL NOTES

1. REFERENCE PLANS SHEETS X-A200 SERIES FOR DIMENSIONS AND PARTITION TYPES.
2. REFERENCE FINISH PLANS, SCHEDULE, AND GENERAL NOTES IN X-A220 AND A900 SERIES.
3. REFERENCE FURNITURE PLANS, SCHEDULE, AND GENERAL NOTES IN X-A230 AND A900 SERIES.
4. REFERENCE REFLECTED CEILING PLANS IN X-A300 SERIES.
5. REFERENCE PARTITION TYPES, GENERAL NOTES, AND DETAILS IN A900 SERIES.
6. REFERENCE DOOR AND FRAME TYPES AND GENERAL NOTES IN A900 SERIES.
7. VERIFY IN FIELD ALL EXISTING DIMENSIONS WHERE APPLICABLE. PROTECT ALL SURROUNDINGS NOT IN PROJECT SCOPE, REPAIR ANY DAMAGES TO MATCH EXISTING.
8. ITEMS FURNISHED BY FT BEND COUNTY/OWNER, GC TO INSTALL.
9. GC UPHOLSTERY TO VERIFY DIMENSIONS PRIOR TO ORDERING STAGE CURTAINS.
10. GRAPHICS AND SIGNAGE TO BE REVIEWED BY OWNER. GC TO FURNISH AND INSTALL.
11. GC TO PROVIDE BLOCKING THROUGHOUT AS REQ'D. IN PARTNS AT ALL A/V, EQUIP, MIRRORS, MILLWORK LOCATIONS, ETC.
12. PARTITIONS REQUIRED TO BE LEVEL 4 FINISH.
13. PLANS INDICATE GENERAL TYPE AND SPECIFIC LOCATION OF FURNITURE, FIXTURES & EQUIPMENT DEVICES. ALL EQUIPMENT PROVIDED BY OWNER SHOWN FOR COORDINATION PURPOSES ONLY.
14. CONTRACTOR TO REVIEW ALL FF&E LOCATIONS FOR CONFLICT WITH MEPT DRAWINGS PRIOR TO INSTALLATION.

THE STATE OF TEXAS · FORT BEND COUNTY ·

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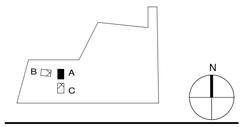
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03-14-2025

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1	ADDENDUM 1	06-20-2025

Drawn by: NS Reviewed by: GL

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Sheet Title:

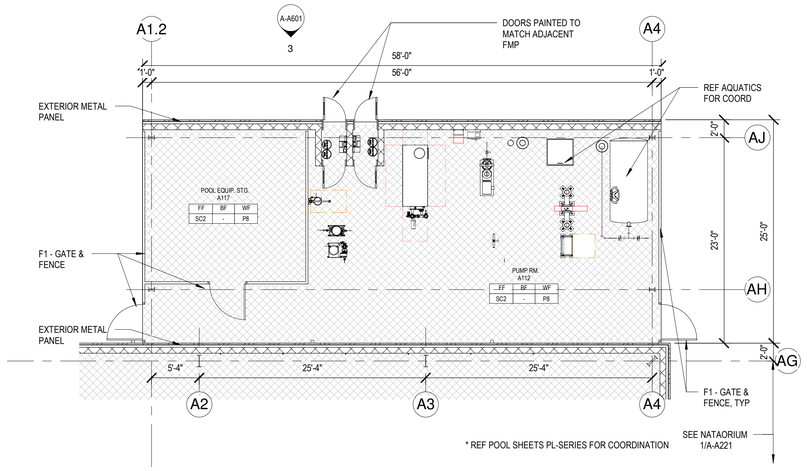
FLOOR PLAN - NATATORIUM

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Sheet Number

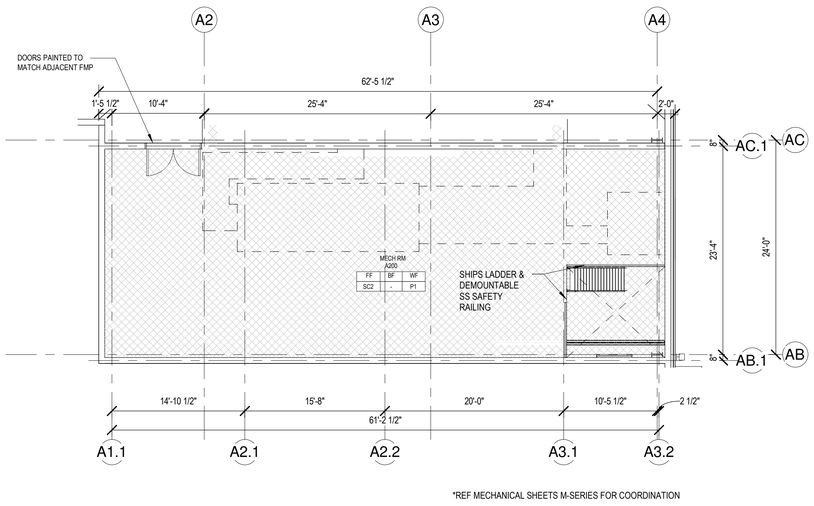
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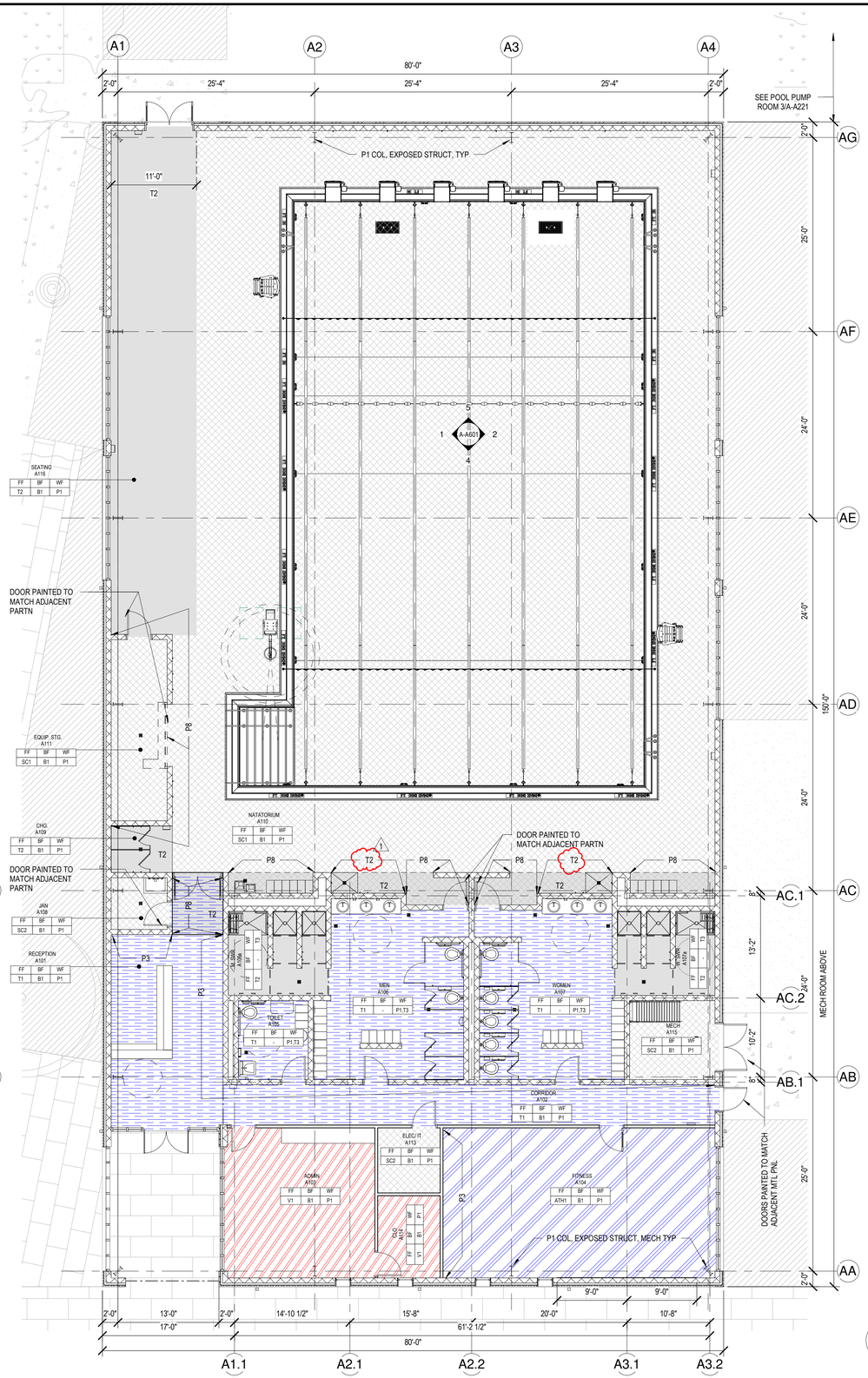
3 FINISH PLAN - POOL PUMP ROOM

1/8" = 1'-0"



2 FINISH PLAN - MECH ROOM

1/8" = 1'-0"



1 FINISH PLAN - NATATORIUM

1/8" = 1'-0"

GENERAL NOTES - INTERIOR FINISHES

REFERENCE FLOOR PLANS IN A200 SERIES FOR ADDITIONAL COORDINATION
REFERENCE INTERIOR ELEVATIONS IN A600 SERIES FOR ADDITIONAL COORDINATION

1. CONTRACTOR TO VERIFY ALL SURFACES ARE CLEAN AND READY TO RECEIVE NEW FINISHES. NO PAINTING OR INTERIOR FINISHING SHALL BE DONE UNDER CONDITIONS WHICH WILL JEOPARDIZED THE QUALITY OR APPEARANCE OF SUCH WORK. ALL WORKMANSHIP WHICH IS JUDGED LESS THAN FIRST QUALITY BY THE ARCHITECT WILL BE REJECTED. PER SECTION 803 (IBC 2009) FLAME SPREAD TO BE CLASS A: 0-25. SMOKE DEVELOPED INDEX TO BE LESS THAN 0-450.

2. ALL SURFACES SHALL BE PREPARED TO RECEIVE THE SPECIFIED FINISH. ALL GYPSUM BOARD PARTITIONS SHALL BE TAPED, SPACKLED AND SANDED SMOOTH AND PREPARED TO RECEIVE THE SPECIFIED FINISH. PAINT GRADE WOODWORK SHALL BE HAND SANDED BETWEEN COATS AND DUSTED CLEAN. ALL HOLES, PITCH POCKETS OR SAPPY PORTIONS SHALL BE SCRAPED AND SHELLACKED, OR SEALED WITH KNOT SEALER. NAIL HOLES, CRACKS OR DEFECTS SHALL BE PUTTIED AFTER FIRST COAT, WITH PUTTY MATCHING COLOR OF STAIN OR PAINT FINISH. REMOVE OIL OR GREASE WITH MINERAL SPIRITS.

3. INTERIOR GYPSUM BOARD SURFACES SHALL BE WIPED WITH A DAMP CLOTH JUST PRIOR TO APPLICATION OF THE FIRST COAT, IN ORDER TO LAY FLAT ANY NAP WHICH MAY HAVE FORMED IN SANDING PROCESS.

4. UPON COMPLETION, REMOVE ALL PAINT FROM WHERE IT HAS SPILLED, SPLASHED OR SPLATTERED ON EXPOSED SURFACES.

5. ALL VENEER STAINS SHALL HAVE UNIFORM COLOR.

6. EXAMINE ALL FINISH SURFACES AFTER COMPLETION OF WORK AND PROCEED WITH "TOUCH-UP" AS REQUIRED.

7. CONTRACTOR TO SUBMIT FINISHES SAMPLES TO ARCHITECT FOR WRITTEN APPROVAL PRIOR TO ORDERING MATERIALS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALLOWING FOR DELIVERY LEAD TIMES FOR ALL FABRICS AND OTHER CUSTOM FINISHES WITHIN THE CONSTRUCTION SCHEDULE. ALL DELIVERY TIMES MUST BE CONFIRMED, AND ANY EXCESSIVE LEAD TIME MUST BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY TO ALLOW FOR RE-SPECIFICATION IF NECESSARY. CONTRACTOR TO INSTALL ALL FINISHES AS PER MANUFACTURER'S INSTRUCTION AND USER MANUAL GUIDE.

8. SEE FINISH PLAN, ELEVATIONS AND DETAILS FOR CLARIFICATION OF EXTENT OF FINISH MATERIALS.

9. PAINT IS DEFINED AS ONE PRIMER COAT AND 2 FINISH COATS.

10. PAINT CEILING ACCESS PANELS WHERE THEY OCCUR TO MATCH ADJACENT CEILING FINISH.

11. STAINED AND PAINTED SURFACES SHALL BE FINISHED SUCH THAT JOINTS ARE NOT VISIBLE WHEN VIEWED FROM ANY ANGLE AS DETERMINED BY THE ARCHITECT.

12. APPLY WALL PANELING TYPES SO WALL IS DIVIDED WITH A MINIMUM NUMBER OF SEAMS, AND WITH EQUAL WIDTH PANELS, UON

13. ALL INTERSECTIONS OF FLOOR FINISH MATERIALS SHALL BE LOCATED DIRECTLY UNDER CENTER OF DOOR, WHERE OCCURS, UON

14. ALL OPEN CABINETRY SHALL MATCH LAMINATE ON ALL EXPOSED SURFACES, UON. APPLY WHITE MELAMINE TO INTERIOR OF CABINETRY WITH DOORS AND DRAWERS, UON. VERIFY LOCKABLE MILLWORK W/ OWNER

15. ALL DIMENSIONS SHALL BE VERIFIED ON SITE BEFORE COMMENCEMENT OF WORK. ANY DISCREPANCIES SHALL BE MADE KNOWN TO ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.

16. CENTER TILES IN ROOM UNO. ALIGN FLOOR AND WALL TILES, UNO

17. CONTRACTOR TO COORDINATE ALL REQUIRED SLAB DEPRESSIONS WITH STRUCTURAL ENGINEERING DRAWINGS. TO ACCOMMODATAE ALL FLOOR FINISH SYSTEMS, ALL REQUIRED EQUIPMENT SLAB DEPRESSIONS I.E. IN FLOOR AUTOMATIC DOOR OPENERS, KITCHEN EQUIPMENT, ELECTRICAL & MECHANICAL EQUIPMENT, PLUMBING EQUIPMENT, WINDOW/CURTAIN WALL SYSTEMS, ETC.
REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

FLOOR FINISH LEGEND

- ATH1
- ATH2
- SC1
- SC2
- T1
- T2
- V1
- V2

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Project:

Mustang Park Renovation & New Construction

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FRESNO, TX 77545

Prepared For:

FORT BEND COUNTY

5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

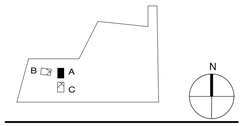
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Key Plan

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03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: NS Reviewed by: GL

Project No: 2024-002

Sheet Title:

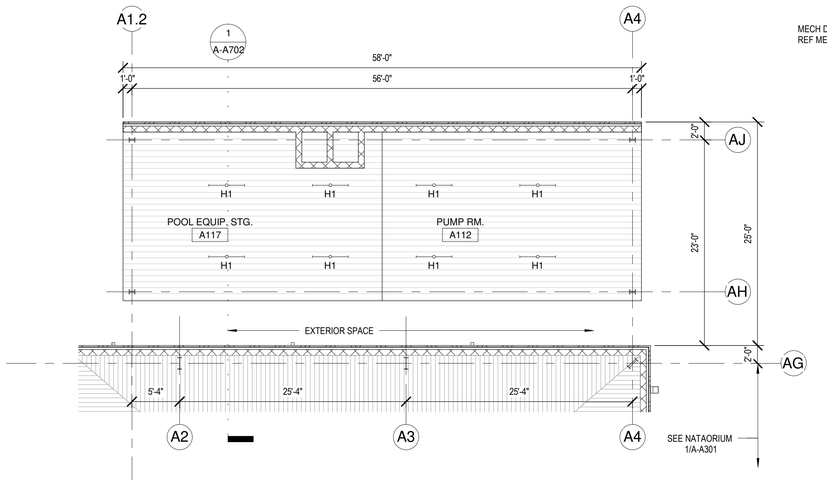
FINISH PLAN - NATATORIUM

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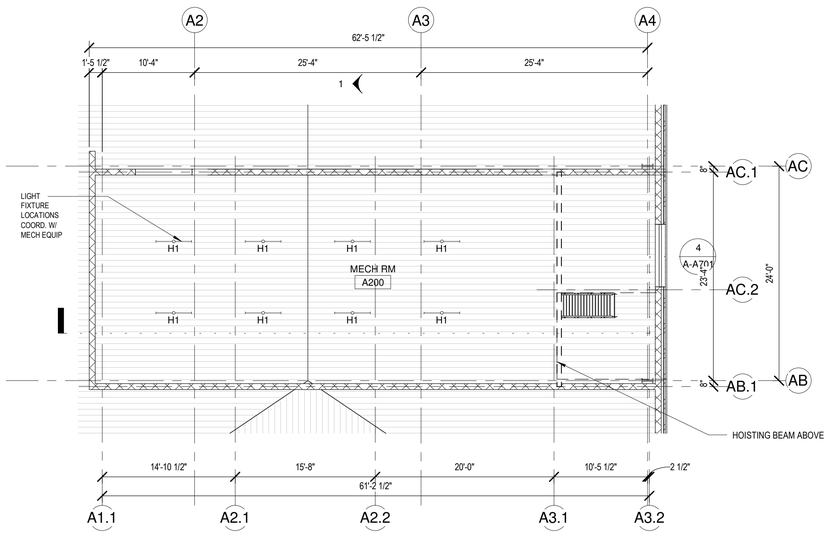
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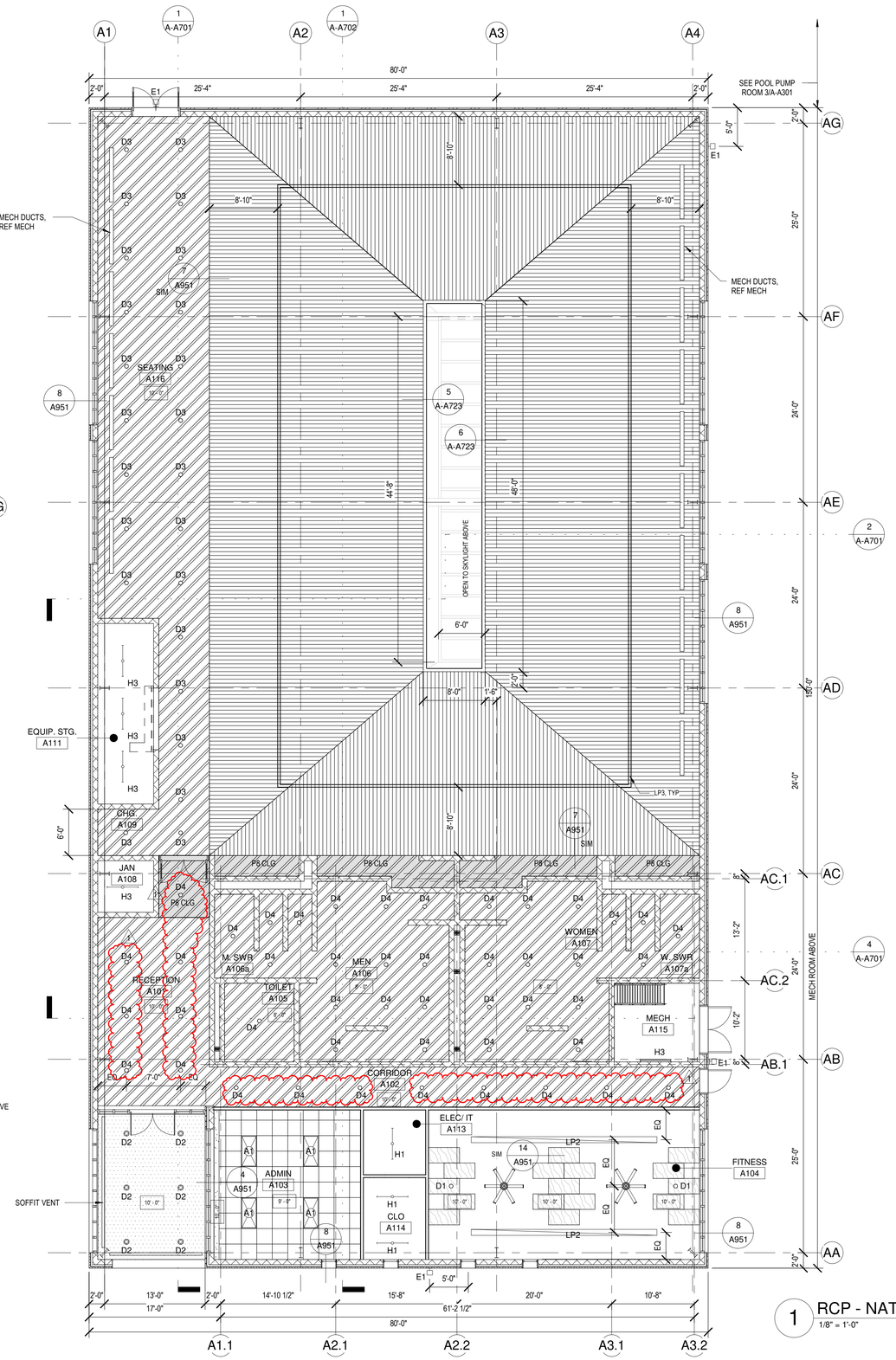
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3 RCP - POOL PUMP ROOM
1/8" = 1'-0"



2 RCP - MECH ROOM
1/8" = 1'-0"



1 RCP - NATATORIUM
1/8" = 1'-0"

REFLECTED CEILING PLAN LEGEND

REFERENCE RCP PLANS IN A300 SERIES
REFERENCE MEPT FOR ADDITIONAL COORDINATION

CEILING TYPES

- CEILING 1: USG MARS CLIMAPLUS 90/30 #88139 LAY-IN ACOUSTICAL CEILING TILE AND GRID, 24" X 24" x 1" - FLB EDGE w/ 9/16" DXT SUSPENSION SYSTEM
- CEILING 2: OPEN PLENUM CEILING w/ USG HERADESIGN 1 DIRECT MOUNT "CLOUDS" FASTENED TO USG DWSS DRYWALL SUSPENSIONS SYSTEM. FINISH: BEIGE EDGE DETAIL: BEV/BEV PATTERN: ASHLAR
- CEILING 3: CGC CF-SYSTEM CF-CLOUD PLUS, UNIVERSAL CD06319 MICRO-PERF. 2" POLYBAG BACKER, w/ CUSTOM EXTERIOR GRADE UNIVERSAL CARRIER ASSEMBLY. FINISH: SERANTE – S-31 GOLDEN OAK ALTERNATE: CBI EUROPE CUBIC EDGE LINEAR METAL CEILING SYSTEM – ST130CC, w/ APQ2 PERF. 2" POLYBAG BACKER. FINISH: WOOD 6869 "FARM MAPLE" REP CONTACT: adam@advantageinteriorsupply.com 1
- CEILING 4: USG SHEETROCK GYPSUM BOARD CEILING SYSTEM. PAINTED WHITE, UNO
- CEILING 5: USG MOLD TOUGH CEMENT PLASTER/ MOISTURE RESISTANT CEILING SYSTEM PAINTED WHITE, UNO
- CEILING 6:EXTERIOR SOFFIT CEILING SYSTEM – USG SHEETROCK GYPSUM BOARD. PAINTED WHITE, UNO
- CEILING 7: USG HERADESIGN 1 DIRECT MOUNT CEILINGS FASTENED TO USG DWSS DRYWALL SUSPENSION SYSTEM FINISH: BEIGE EDGE DETAIL: BEV/BEV PATTERN: ASHLAR
- CEILING 8: EXTERIOR CANOPY (REF A921 EXTERIOR FINISHES, LMP - LINEAR METAL PANEL SYSTEM @ CANOPY SOFFIT
- CEILING 9: NOT USED 1
- EXPOSED STRUCTURE: FIREPROOFING/ INSULATION SPRAY AS REQ'D BY CODE PAINTED WHITE, UNO

USG REP CONTACT : SUZANNE DISSETTE – SDissette@usg.com

LIGHT FIXTURES

- A1, A6 - FLAT PANEL 24" x 48"
- A2, A7 - FLAT PANEL 24" x 24"
- A3, A5 - FLAT PANEL 24" x 48"
- A4 - RECESSED 24" x 24"
- C1 - PERIMETER COVE LIGHT
- C2 - PERIMETER SURFACE MOUNT
- D1, D2, D4 - DOWNLIGHT
- D3 - DOWNLIGHT
- E1 - EXTERIOR WALL MOUNTED
- ES1, ES2 - 24", 36" UPLIGHT @ CROWN
- H1 - HANGING STRIP - 80" MIN HT UNO
- H2 - HANGING STRIP - BLACK FINISH - 80" MIN HT UNO
- H3 - HANGING SEALED STRIP - 80" MIN HT UNO
- H4 - STRIP LIGHT - 80" MIN HT UNO
- LP1 - LINEAR PENDANT
- LP2 - LINEAR PENDANT
- LP3 - LINEAR PENDANT
- P1 - PENDANT RING
- P2 - PENDANT CYLINDAR
- T1 - THEATER/ TRACK LIGHTING
- T2 - THEATER/ TRACK LIGHTING
- CEILING FAN HIGH HUMIDITY TOLERANT

CW LIGHTING REP CONTACT: EDWARD FOLSE - efolse@cwlighting.com

GENERAL NOTES - RCP

REFERENCE RCP PLANS IN A300 SERIES
REFERENCE MEPT FOR ADDITIONAL COORDINATION

1. ARCHITECTURAL REFLECTED CEILING PLANS INDICATE GENERAL TYPE AND SPECIFIC LOCATION OF LIGHT FIXTURES & EQUIPMENT DEVICES.
2. ELECTRICAL ENGINEERING DRAWINGS INDICATE CIRCUITING AND WIRING OF LIGHT FIXTURES AND SWITCHES, LIFE SAFETY EQUIPMENT, LOCATION OF REQUIRED EMERGENCY LIGHT FIXTURES, & LIGHT FIXTURE SPECIFICATIONS.
3. MECHANICAL ENGINEERING DRAWINGS INDICATE DUCTS, AIR MOVEMENT REQUIREMENTS AND SIZES OF GRILLES AND REGISTERS.
4. FIRE PROTECTION DRAWINGS INDICATE LAYOUT, LOCATION AND SIZE OF SPRINKLER LINES AND HEADS, PRESSURE REQUIREMENTS, SPRINKLER HEAD SPECIFICATIONS, LOCATION OF FIRE PROTECTION RISERS AND WALL HYDRANTS.
5. ALL STROBES SHALL BE LOCATED @ +80" AFF. SEE ENGINEER'S DRAWINGS FOR LOCATIONS AND SPECIFICATIONS. ALL STROBES TO ALIGN VERTICALLY WITH RECEPTACLE BELOW WHERE OCCURS.
6. CONTRACTOR TO REVIEW ALL LIGHT/ CEILING FIXTURE, DIFFUSERS, SPRINKLERS, SMOKE DETECTORS LOCATIONS, OR IN CONFLICT WITH MEPT DRAWINGS PRIOR TO INSTALLATION.
7. INSTALL THE SUSPENDED CEILING GRID TO BE LEVEL WITHIN A TOLERANCE OF 1/8" IN 12'-0". ANCHOR AS REQUIRED.
8. WHERE ACOUSTICAL CEILING PANELS ARE REQUIRED TO BE CUT, CUT THE PANELS TO MAINTAIN A SHARP AND NEAT EDGE. CENTER GRID IN ROOM UNO.
9. INSTALL NEW SPRINKLER HEADS AND LIGHT FIXTURES AT THE CENTER OF THE ACOUSTICAL CEILING PANEL UON. ALIGN CEILING DEVICES TO LIGHT FIXTURES, TYP.
10. CONTRACTOR TO PROVIDE MOCK UP OF EACH CEILING TYPE SYSTEM PRIOR TO INSTALLATION FOR ARCHITECTS APPROVAL
11. EQUIPMENT BY OWNER, CONTRACTOR INSTALLED. TV/ MONITOR CL @ 5'-6" AFF UNO.

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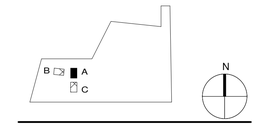
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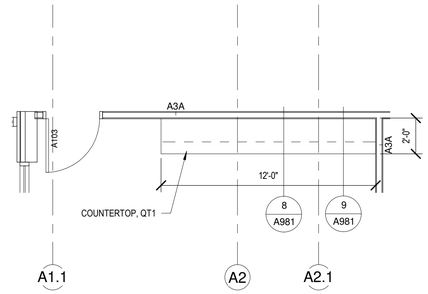
Project No: 2024-002

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CEILING PLAN - NATATORIUM

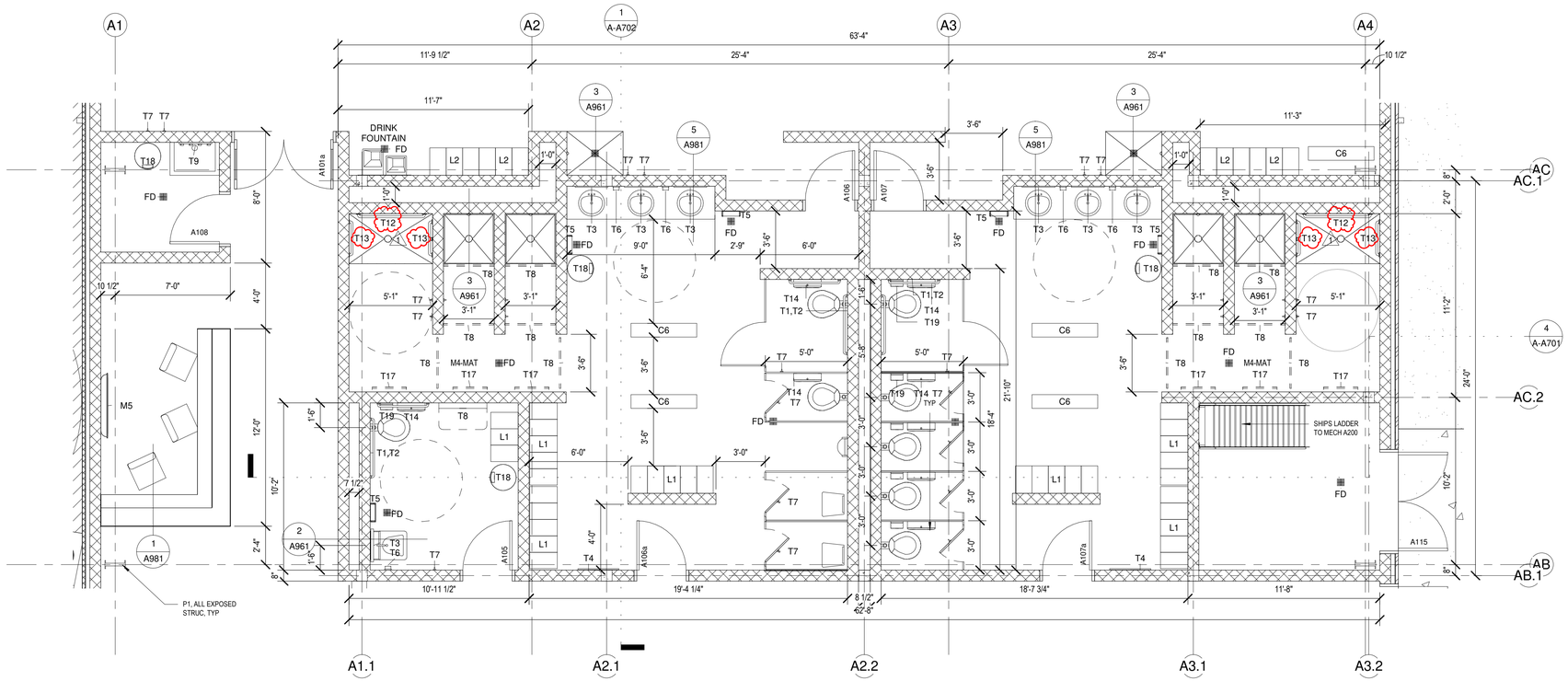
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Sheet Number
A-A301

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2 NAT ENLARGED PLAN - ADMIN
1/4" = 1'-0"



1 NAT ENLARGED PLAN - RECPT & LOCKER ROOMS
1/4" = 1'-0"

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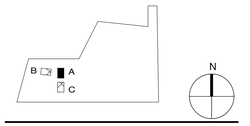
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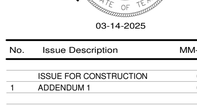
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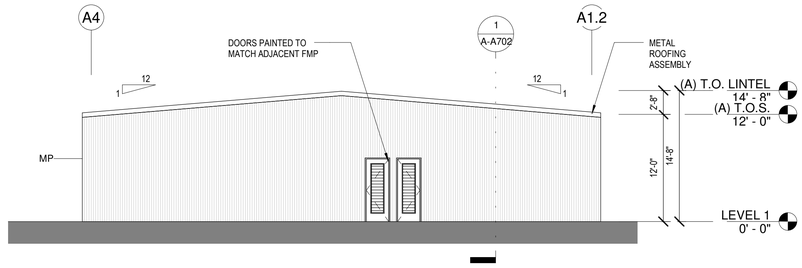
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ENLARGED PLANS - NATATORIUM

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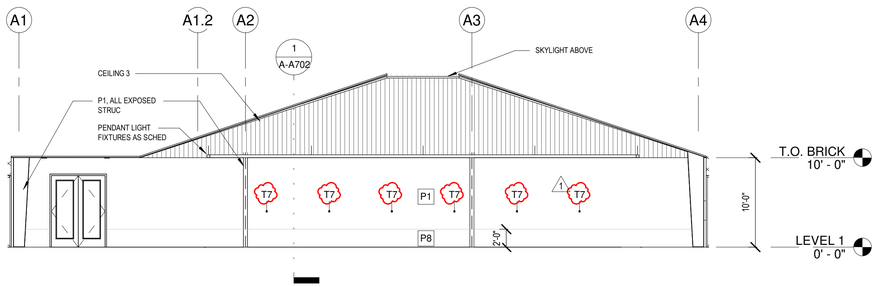
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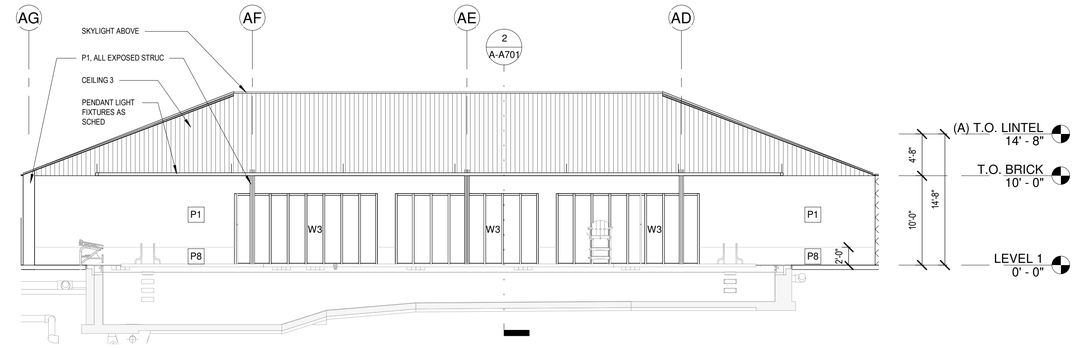
3 NATATORIUM POOL PUMP - NORTH ELEVATION

1/8" = 1'-0"



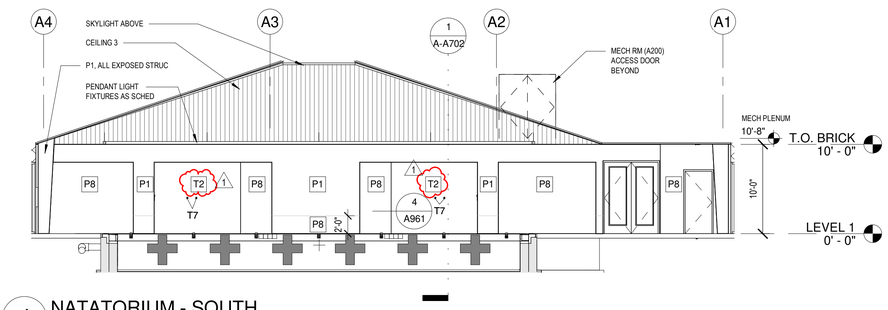
5 NATATORIUM - NORTH

1/8" = 1'-0"



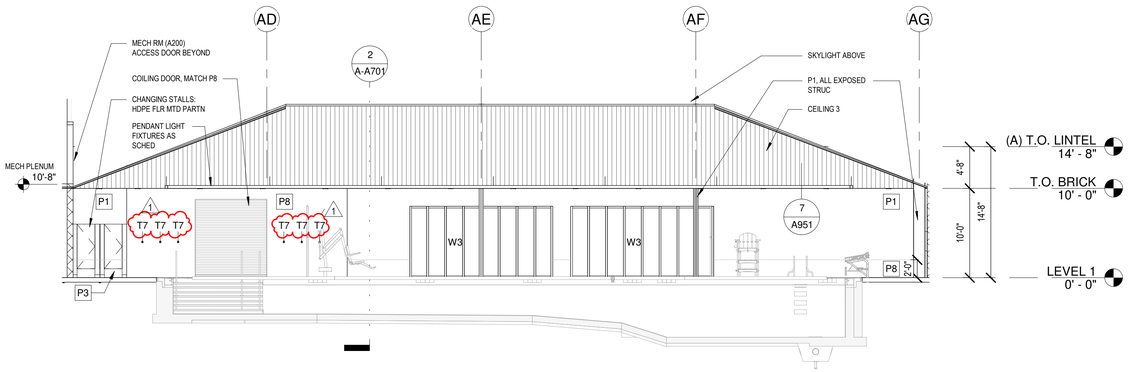
2 NATATORIUM - EAST

1/8" = 1'-0"



4 NATATORIUM - SOUTH

1/8" = 1'-0"



1 NATATORIUM - WEST

1/8" = 1'-0"

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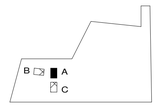
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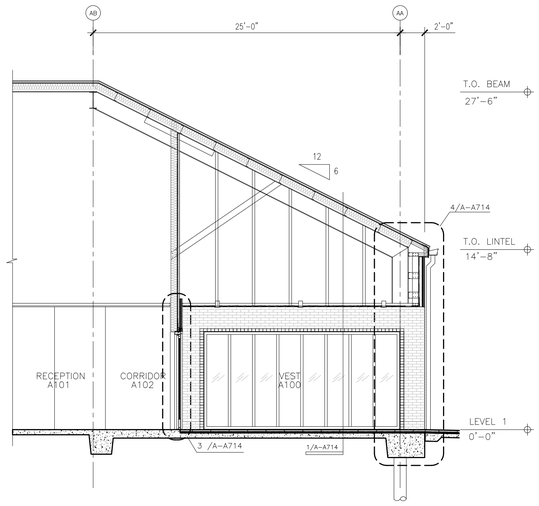
INTERIOR ELEVATIONS - NATATORIUM

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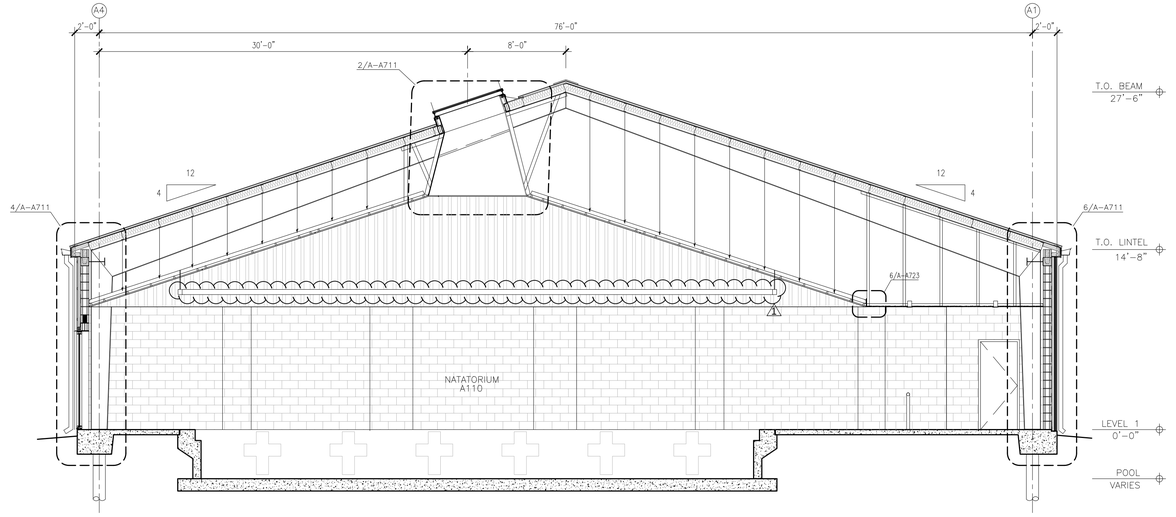
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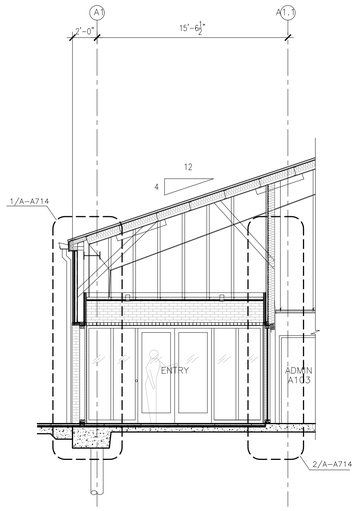
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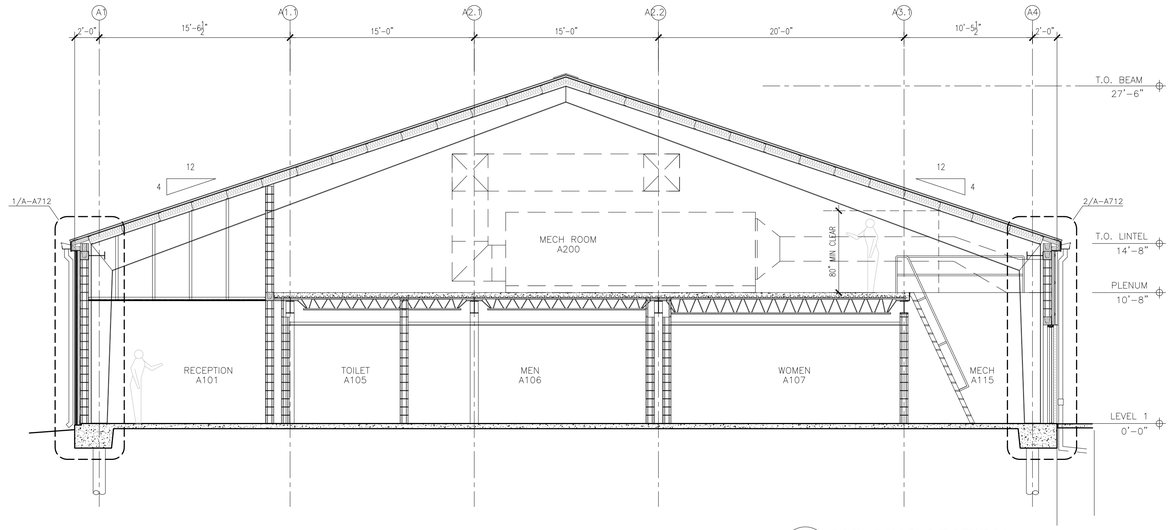
1 BUILDING SECTION
3/16" = 1'-0"



2 BUILDING SECTION
3/16" = 1'-0"



3 BUILDING SECTION
3/16" = 1'-0"



4 BUILDING SECTION
3/16" = 1'-0"

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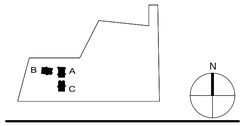
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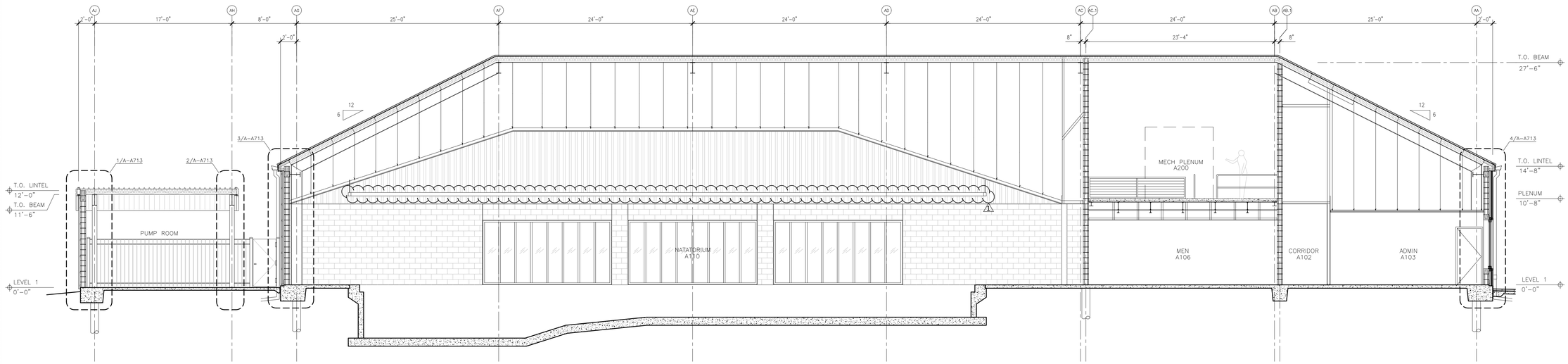
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Sheet Title:
BUILDING SECTIONS - NATATORIUM

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number
A-A701



1 BUILDING SECTION
3/16" = 1'-0"

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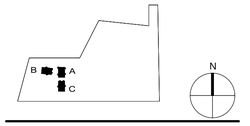
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Project No: 2024-002

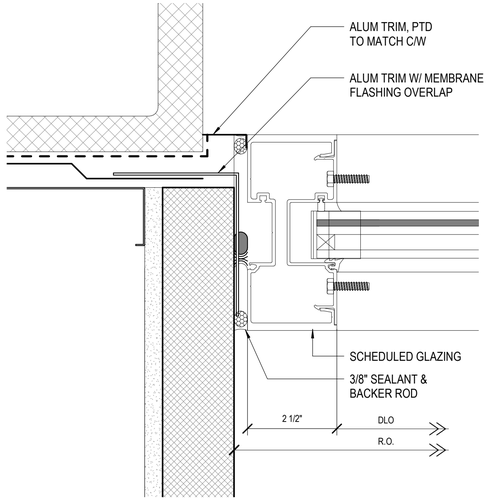
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BUILDING SECTIONS - NATATORIUM

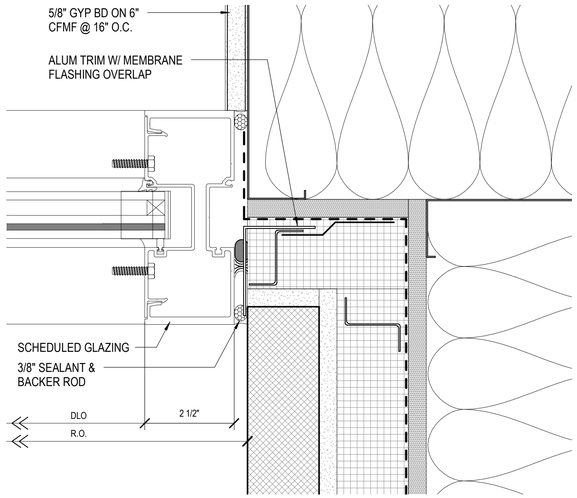
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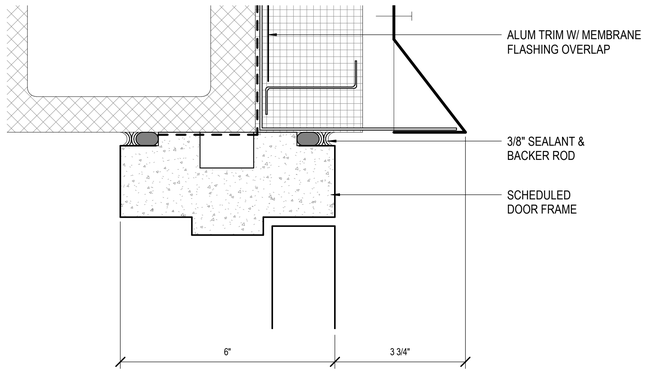
A-A702



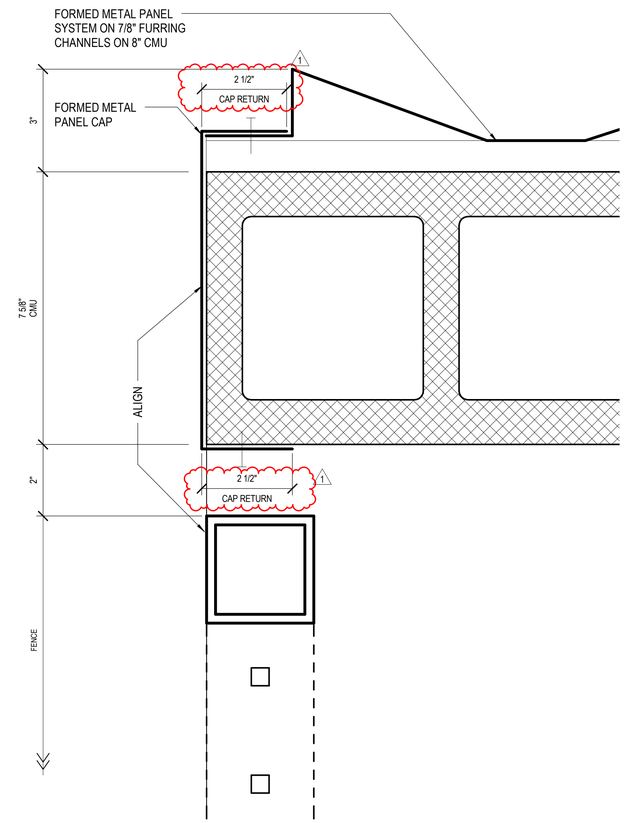
1 DETAIL
6" = 1'-0"



2 DETAIL
6" = 1'-0"

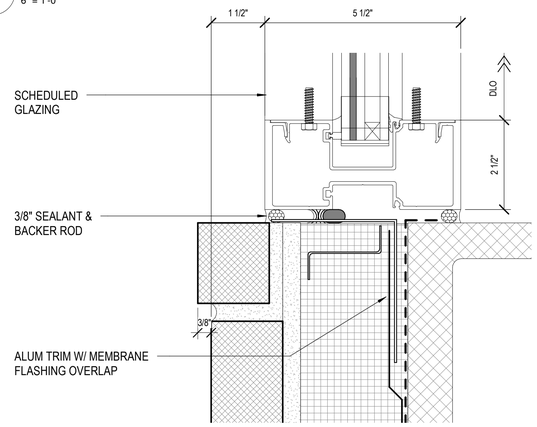


3 DETAIL
6" = 1'-0"



7 DETAIL
6" = 1'-0"

5 DETAIL
6" = 1'-0"



8 DETAIL
6" = 1'-0"

6 DETAIL
6" = 1'-0"

9 DETAIL
6" = 1'-0"

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Project:
Mustang Park Renovation & New Construction

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FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

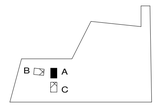
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1	ADDENDUM 1	06-20-2025

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Project No: 2024-002

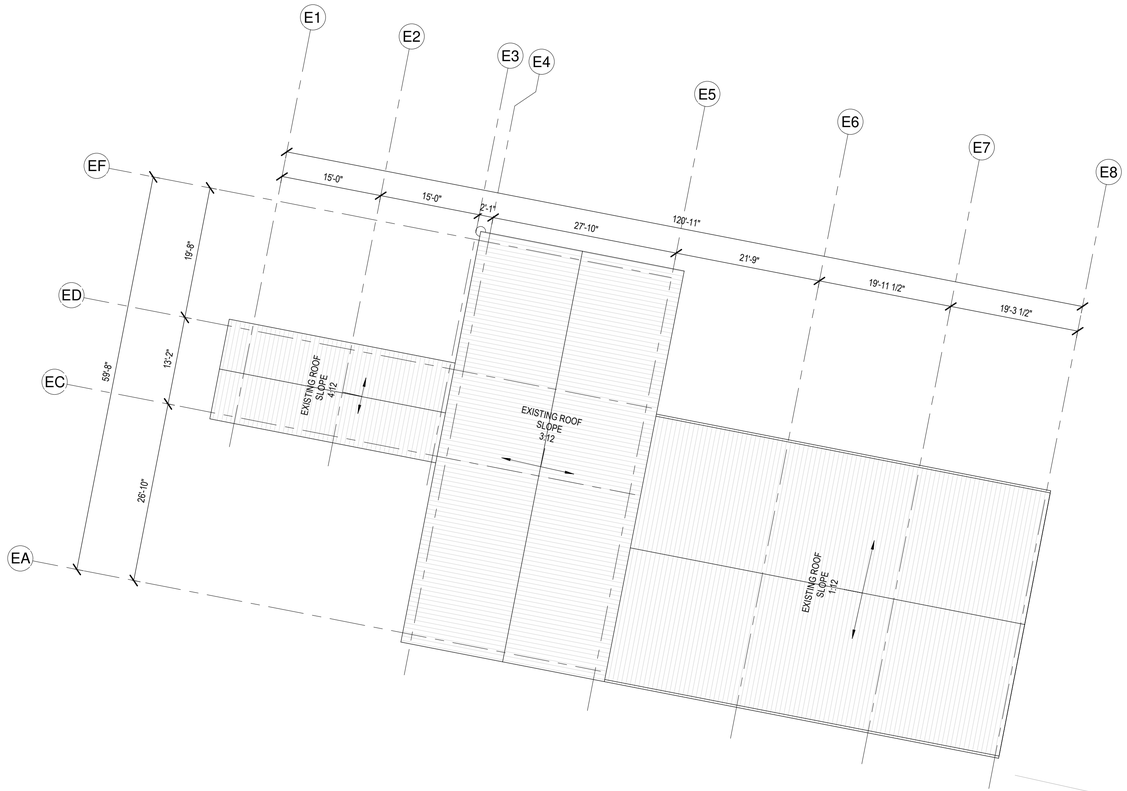
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ENLARGED PLAN DETAILS - NATATORIUM

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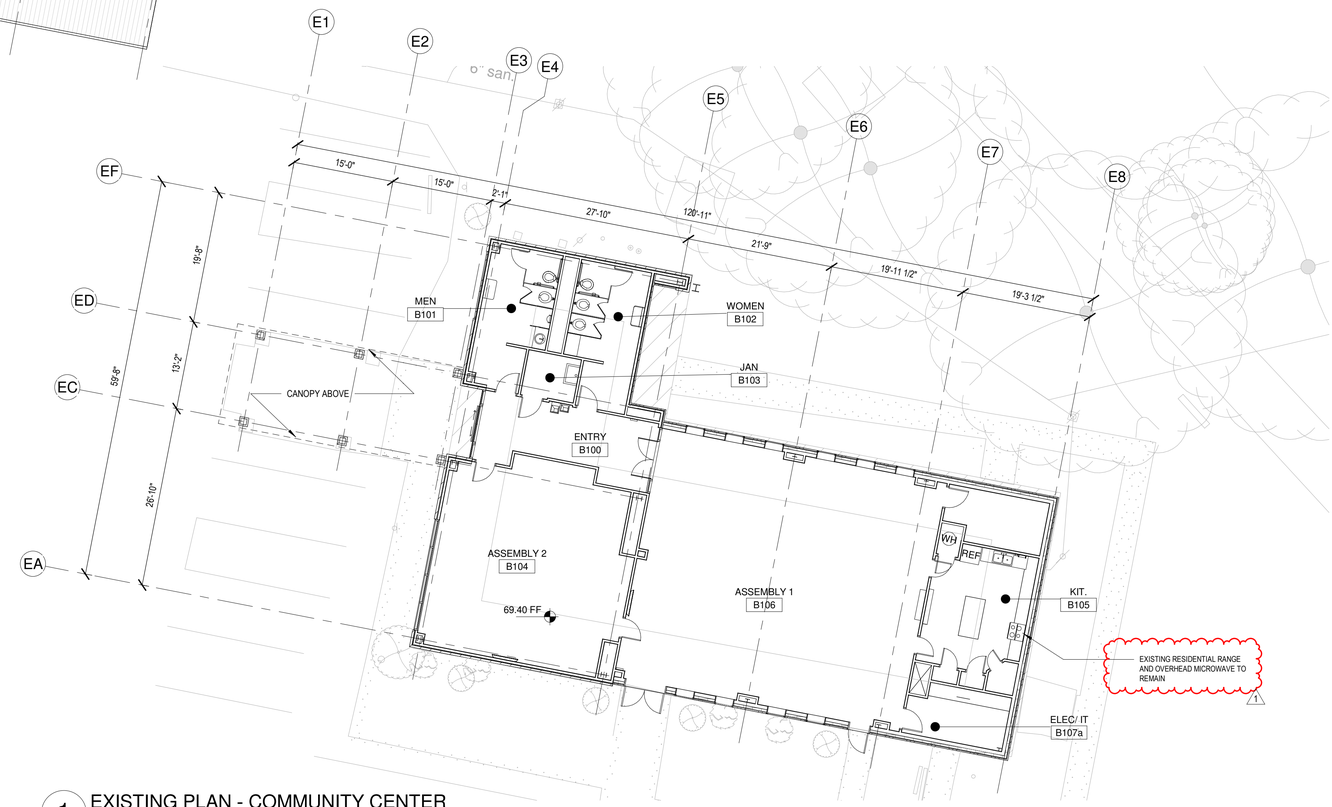
Sheet Number

A-A821



2 EXISTING ROOF PLAN - COMMUNITY CENTER

3/32" = 1'-0"



1 EXISTING PLAN - COMMUNITY CENTER

3/32" = 1'-0"

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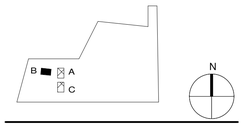
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Drawn by: NS Reviewed by: GL

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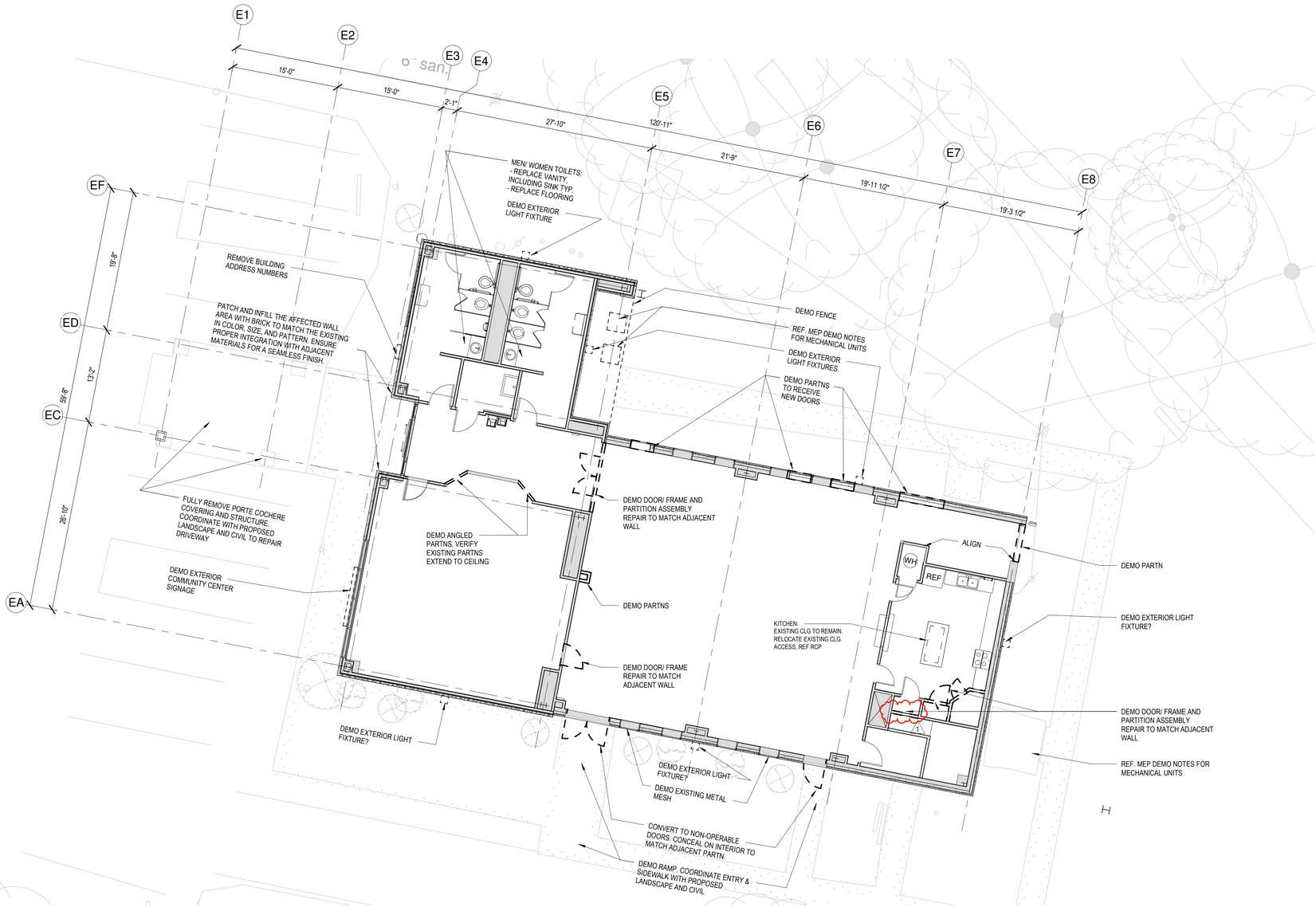
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EXISTING PLANS - COMMUNITY CENTER

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Sheet Number

B-A101



1 DEMO PLAN - COMMUNITY CENTER
1/8" = 1'-0"

DEMO NOTES

1. COORDINATE SCOPE OF DEMOLITION WITH PROPOSED NEW CONSTRUCTION WORK FOR CLARIFICATION.

2. PROTECT ALL SURROUNDINGS NOT IN PROJECT SCOPE. DEMOLITION SHALL BE ACCOMPLISHED WITH CARE SO AS NOT TO DISTURB, DAMAGE OR DISRUPT THE ADJACENT SURFACES, MATERIALS, CONSTRUCTION EQUIPMENT OR SEPARATIONS THAT ARE TO REMAIN. CONTRACTOR SHALL REPAIR, RESTORE, OR REPLACE SUCH DAMAGED AREAS TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST.

3. TOILET ROOM WALL TILE & TOILET PARTITIONS TO REMAIN, UNO.

4. ALL RECESSED AND WALL MOUNTED EQUIP TO REMAIN, UNO.

5. ALL FFE TO REMAIN, AS OWNER DIRECTED.

6. ALL EXISTING DOOR AND WINDOW FRAME ASSEMBLY TO REMAIN, UNO.

7. PAINT ALL EXISTING METAL FRAMES AND DOORS TO MATCH - P6, UNO.

8. VIF APPLIANCES TO REMAIN, COORDINATE W/ PROPOSED LOCATION.

PARTITION TYPE LEGEND

REFERENCE PARTITION TYPES AND GENERAL NOTES A900 SERIES FOR ADDITIONAL COORDINATION

- EXISTING PARTITION TO REMAIN
- DEMO EXISTING PARTITION
- NEW PARTITION

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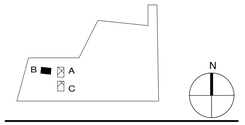
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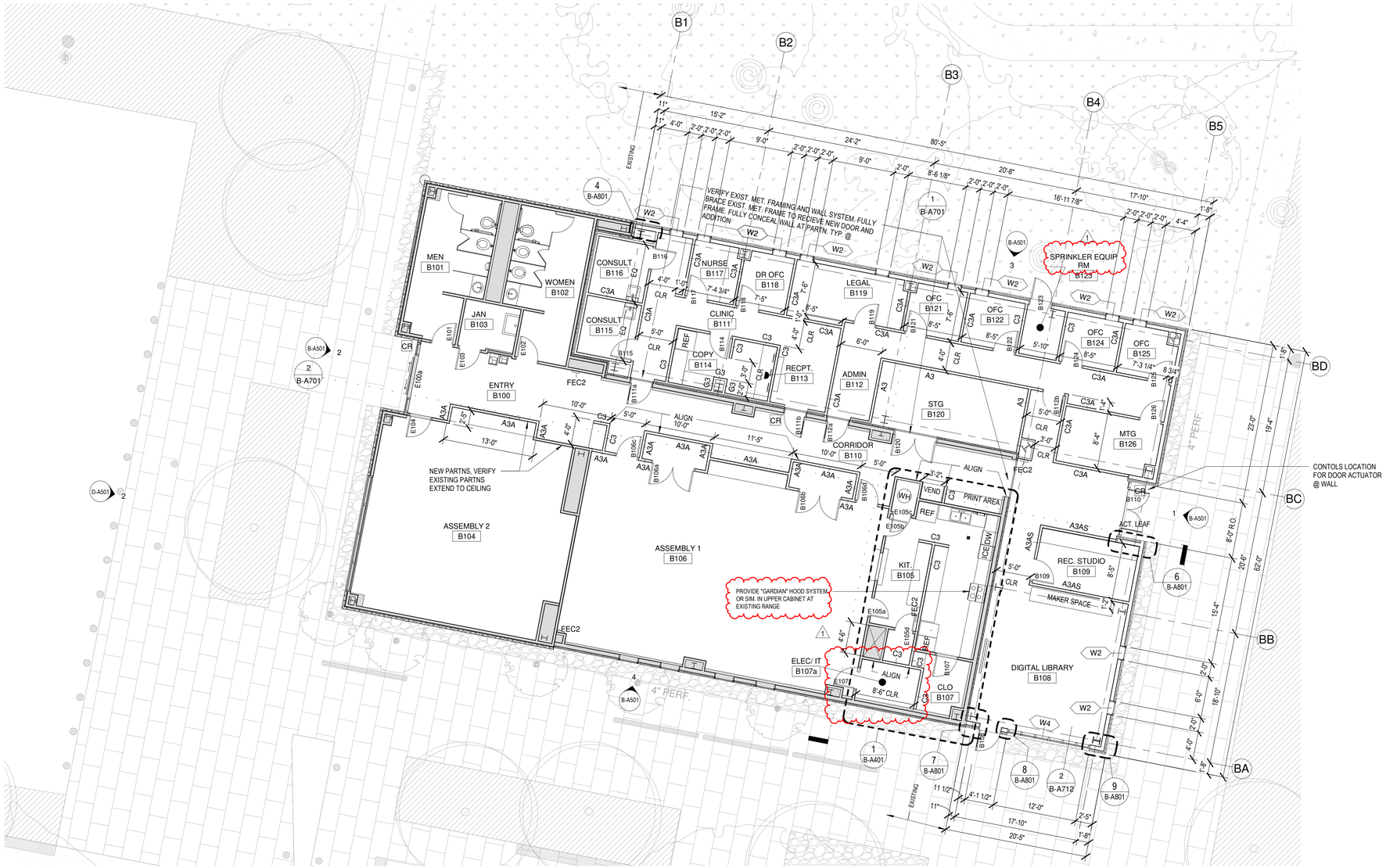
DEMO FLOOR PLAN - COMMUNITY CENTER

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Sheet Number

B-A102

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1 FLOOR PLAN - COMMUNITY CENTER

1/8" = 1'-0"

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GENERAL NOTES

1. REFERENCE PLANS SHEETS X-A200 SERIES FOR DIMENSIONS AND PARTITION TYPES.
2. REFERENCE FINISH PLANS, SCHEDULE, AND GENERAL NOTES IN X-A220 AND A900 SERIES.
3. REFERENCE FURNITURE PLANS, SCHEDULE, AND GENERAL NOTES IN X-A230 AND A900 SERIES.
4. REFERENCE REFLECTED CEILING PLANS IN X-A300 SERIES.
5. REFERENCE PARTITION TYPES, GENERAL NOTES, AND DETAILS IN A900 SERIES.
6. REFERENCE DOOR AND FRAME TYPES AND GENERAL NOTES IN A900 SERIES.
7. VERIFY IN FIELD ALL EXISTING DIMENSIONS WHERE APPLICABLE. PROTECT ALL SURROUNDINGS NOT IN PROJECT SCOPE, REPAIR ANY DAMAGES TO MATCH EXISTING.
8. ITEMS FURNISHED BY FT BEND COUNTY/OWNER, GC TO INSTALL.
9. GC UPHOLSTERY TO VERIFY DIMENSIONS PRIOR TO ORDERING STAGE CURTAINS.
10. GRAPHICS AND SIGNAGE TO BE REVIEWED BY OWNER. GC TO FURNISH AND INSTALL.
11. GC TO PROVIDE BLOCKING THROUGHOUT AS REQ'D. IN PARTNS AT ALL A/V, EQUIP, MIRRORS, MILLWORK LOCATIONS, ETC.
12. PARTITIONS REQUIRED TO BE LEVEL 4 FINISH.
13. PLANS INDICATE GENERAL TYPE AND SPECIFIC LOCATION OF FURNITURE, FIXTURES & EQUIPMENT DEVICES. ALL EQUIPMENT PROVIDED BY OWNER SHOWN FOR COORDINATION PURPOSES ONLY.
14. CONTRACTOR TO REVIEW ALL FF&E LOCATIONS FOR CONFLICT WITH MEPT DRAWINGS PRIOR TO INSTALLATION.

PARTITION TYPE LEGEND

REFERENCE PARTITION TYPES AND GENERAL NOTES A900 SERIES FOR ADDITIONAL COORDINATION

- EXISTING PARTITION TO REMAIN
- DEMO EXISTING PARTITION
- NEW PARTITION

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FLOOR PLAN - COMMUNITY CENTER

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Sheet Number

B-A201



1 FINISH PLAN - COMMUNITY CENTER

1/8" = 1'-0"

GENERAL NOTES - INTERIOR FINISHES

REFERENCE FLOOR PLANS IN A200 SERIES FOR ADDITIONAL COORDINATION
REFERENCE INTERIOR ELEVATIONS IN A600 SERIES FOR ADDITIONAL COORDINATION

1. CONTRACTOR TO VERIFY ALL SURFACES ARE CLEAN AND READY TO RECEIVE NEW FINISHES. NO PAINTING OR INTERIOR FINISHING SHALL BE DONE UNDER CONDITIONS WHICH WILL JEOPARDIZED THE QUALITY OR APPEARANCE OF SUCH WORK. ALL WORKMANSHIP WHICH IS JUDGED LESS THAN FIRST QUALITY BY THE ARCHITECT WILL BE REJECTED. PER SECTION 803 (IBC 2009) FLAME SPREAD TO BE CLASS A: 0-25. SMOKE DEVELOPED INDEX TO BE LESS THAN 0-450.

2. ALL SURFACES SHALL BE PREPARED TO RECEIVE THE SPECIFIED FINISH. ALL GYPSUM BOARD PARTITIONS SHALL BE TAPED, SPACKLED AND SANDED SMOOTH AND PREPARED TO RECEIVE THE SPECIFIED FINISH. PAINT GRADE WOODWORK SHALL BE HAND SANDED BETWEEN COATS AND DUSTED CLEAN. ALL HOLES, PITCH POCKETS OR SAPPY PORTIONS SHALL BE SCRAPED AND SHELLACKED, OR SEALED WITH KNOT SEALER. NAIL HOLES, CRACKS OR DEFECTS SHALL BE PUTTIED AFTER FIRST COAT, WITH PUTTY MATCHING COLOR OF STAIN OR PAINT FINISH. REMOVE OIL OR GREASE WITH MINERAL SPIRITS.

3. INTERIOR GYPSUM BOARD SURFACES SHALL BE WIPED WITH A DAMP CLOTH JUST PRIOR TO APPLICATION OF THE FIRST COAT, IN ORDER TO LAY FLAT ANY NAP WHICH MAY HAVE FORMED IN SANDING PROCESS.

4. UPON COMPLETION, REMOVE ALL PAINT FROM WHERE IT HAS SPILLED, SPLASHED OR SPLATTERED ON EXPOSED SURFACES.

5. ALL VENEER STAINS SHALL HAVE UNIFORM COLOR.

6. EXAMINE ALL FINISH SURFACES AFTER COMPLETION OF WORK AND PROCEED WITH "TOUCH-UP" AS REQUIRED.

7. CONTRACTOR TO SUBMIT FINISHES SAMPLES TO ARCHITECT FOR WRITTEN APPROVAL PRIOR TO ORDERING MATERIALS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALLOWING FOR DELIVERY LEAD TIMES FOR ALL FABRICS AND OTHER CUSTOM FINISHES WITHIN THE CONSTRUCTION SCHEDULE. ALL DELIVERY TIMES MUST BE CONFIRMED, AND ANY EXCESSIVE LEAD TIME MUST BE BROUGHT TO THE ARCHITECT'S ATTENTION IMMEDIATELY TO ALLOW FOR RE-SPECIFICATION IF NECESSARY. CONTRACTOR TO INSTALL ALL FINISHES AS PER MANUFACTURER'S INSTRUCTION AND USER MANUAL GUIDE.

8. SEE FINISH PLAN, ELEVATIONS AND DETAILS FOR CLARIFICATION OF EXTENT OF FINISH MATERIALS.

9. PAINT IS DEFINED AS ONE PRIMER COAT AND 2 FINISH COATS.

10. PAINT CEILING ACCESS PANELS WHERE THEY OCCUR TO MATCH ADJACENT CEILING FINISH.

11. STAINED AND PAINTED SURFACES SHALL BE FINISHED SUCH THAT JOINTS ARE NOT VISIBLE WHEN VIEWED FROM ANY ANGLE AS DETERMINED BY THE ARCHITECT.

12. APPLY WALL PANELING TYPES SO WALL IS DIVIDED WITH A MINIMUM NUMBER OF SEAMS, AND WITH EQUAL WIDTH PANELS, UON

13. ALL INTERSECTIONS OF FLOOR FINISH MATERIALS SHALL BE LOCATED DIRECTLY UNDER CENTER OF DOOR, WHERE OCCURS, UON

14. ALL OPEN CABINETRY SHALL MATCH LAMINATE ON ALL EXPOSED SURFACES, UON. APPLY WHITE MELAMINE TO INTERIOR OF CABINETRY WITH DOORS AND DRAWERS, UON. VERIFY LOCKABLE MILLWORK W/ OWNER

15. ALL DIMENSIONS SHALL BE VERIFIED ON SITE BEFORE COMMENCEMENT OF WORK. ANY DISCREPANCIES SHALL BE MADE KNOWN TO ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.

16. CENTER TILES IN ROOM UNO. ALIGN FLOOR AND WALL TILES, UNO

17. CONTRACTOR TO COORDINATE ALL REQUIRED SLAB DEPRESSIONS WITH STRUCTURAL ENGINEERING DRAWINGS. TO ACCOMMODATAE ALL FLOOR FINISH SYSTEMS. ALL REQUIRED EQUIPMENT SLAB DEPRESSIONS I.E. IN FLOOR AUTOMATIC DOOR OPENERS, KITCHEN EQUIPMENT, ELECTRICAL & MECHANICAL EQUIPMENT, PLUMBING EQUIPMENT, WINDOW/CURTAIN WALL SYSTEMS, ETC.
REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

FLOOR FINISH LEGEND

- ATH1
- ATH2
- SC1
- SC2
- T1
- T2
- V1
- V2

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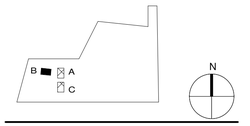
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FINISH PLAN - COMMUNITY CENTER

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Sheet Number

B-A221

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1 RCP - COMMUNITY CENTER
1/8" = 1'-0"

REFLECTED CEILING PLAN LEGEND

REFERENCE RCP PLANS IN A300 SERIES
REFERENCE MEPT FOR ADDITIONAL COORDINATION

CEILING TYPES

- CEILING 1: USG MARS CLIMAPLUS 90/30 #88139 LAY-IN ACOUSTICAL CEILING TILE AND GRID, 24" X 24" x 1" - FLB EDGE w/ 9/16" DXT SUSPENSION SYSTEM
- CEILING 2: OPEN PLENUM CEILING w/ USG HERADESIGN 1 DIRECT MOUNT "CLOUDS" FASTENED TO USG DWSS DRYWALL SUSPENSIONS SYSTEM. FINISH: BEIGE EDGE DETAIL: BEV/BEV PATTERN: ASHLAR
- CEILING 3: USG CUSTOM EXTERIOR GRADE LINEAR METAL CEILING CD06319 MICRO-PERF. 2" POLYBAG BACKER, w/ CUSTOM EXTERIOR GRADE UNIVERSAL CARRIER ASSEMBLY. FINISH: SERANTE – S-31 GOLDEN OAK ALTERNATE: CBI EUROPE CUBIC EDGE LINEAR METAL CEILING SYSTEM – ST130CC, w/ APQ2 PERF. 2" POLYBAG BACKER. FINISH: WOOD 6869 "FARM MAPLE" REP CONTACT: adam@advantageinteriorsupply.com 1
- CEILING 4: USG SHEETROCK GYPSUM BOARD CEILING SYSTEM. PAINTED WHITE, UNO
- CEILING 5: USG MOLD TOUGH CEMENT PLASTER/ MOISTURE RESISTANT CEILING SYSTEM PAINTED WHITE, UNO
- CEILING 6:EXTERIOR SOFFIT CEILING SYSTEM – USG SHEETROCK GYPSUM BOARD. PAINTED WHITE, UNO
- CEILING 7: USG HERADESIGN 1 DIRECT MOUNT CEILINGS FASTENED TO USG DWSS DRYWALL SUSPENSION SYSTEM FINISH: BEIGE EDGE DETAIL: BEV/BEV PATTERN: ASHLAR
- CEILING 8: EXTERIOR CANOPY (REF A921 EXTERIOR FINISHES, LMP - LINEAR METAL PANEL SYSTEM @ CANOPY SOFFIT
- CEILING 9: NOT USED 1
- EXPOSED STRUCTURE: FIREPROOFING/ INSULATION SPRAY AS REQ'D BY CODE PAINTED WHITE, UNO

USG REP CONTACT : SUZANNE DISSETTE – SDissette@usg.com

LIGHT FIXTURES

- A1, A6 - FLAT PANEL 24" x 48"
- A2, A7 - FLAT PANEL 24" x 24"
- A3, A5 - FLAT PANEL 24" x 48"
- A4 - RECESSED 24" x 24"
- C1 - PERIMETER COVE LIGHT
- C2 - PERIMETER SURFACE MOUNT
- D1, D2, D4 - DOWNLIGHT
- D3 - DOWNLIGHT
- E1 - EXTERIOR WALL MOUNTED
- ES1, ES2 - 24", 36" UPLIGHT @ CROWN
- H1 - HANGING STRIP - 80" MIN HT UNO
- H2 - HANGING STRIP - BLACK FINISH - 80" MIN HT UNO
- H3 - HANGING SEALED STRIP - 80" MIN HT UNO
- H4 - STRIP LIGHT - 80" MIN HT UNO
- LP1 - LINEAR PENDANT
- LP2 - LINEAR PENDANT
- LP3 - LINEAR PENDANT
- P1 - PENDANT RING
- P2 - PENDANT CYLINDAR
- T1 - THEATER/ TRACK LIGHTING
- T2 - THEATER/ TRACK LIGHTING
- CEILING FAN HIGH HUMIDITY TOLERANT

CW LIGHTING REP CONTACT: EDWARD FOLSE - efolse@cwlighting.com

GENERAL NOTES - RCP

REFERENCE RCP PLANS IN A300 SERIES
REFERENCE MEPT FOR ADDITIONAL COORDINATION

1. ARCHITECTURAL REFLECTED CEILING PLANS INDICATE GENERAL TYPE AND SPECIFIC LOCATION OF LIGHT FIXTURES & EQUIPMENT DEVICES.
2. ELECTRICAL ENGINEERING DRAWINGS INDICATE CIRCUITING AND WIRING OF LIGHT FIXTURES AND SWITCHES, LIFE SAFETY EQUIPMENT, LOCATION OF REQUIRED EMERGENCY LIGHT FIXTURES, & LIGHT FIXTURE SPECIFICATIONS.
3. MECHANICAL ENGINEERING DRAWINGS INDICATE DUCTS, AIR MOVEMENT REQUIREMENTS AND SIZES OF GRILLES AND REGISTERS.
4. FIRE PROTECTION DRAWINGS INDICATE LAYOUT, LOCATION AND SIZE OF SPRINKLER LINES AND HEADS, PRESSURE REQUIREMENTS, SPRINKLER HEAD SPECIFICATIONS, LOCATION OF FIRE PROTECTION RISERS AND WALL HYDRANTS.
5. ALL STROBES SHALL BE LOCATED @ +80" AFF. SEE ENGINEER'S DRAWINGS FOR LOCATIONS AND SPECIFICATIONS. ALL STROBES TO ALIGN VERTICALLY WITH RECEPTACLE BELOW WHERE OCCURS.
6. CONTRACTOR TO REVIEW ALL LIGHT/ CEILING FIXTURE, DIFFUSERS, SPRINKLERS, SMOKE DETECTORS LOCATIONS, OR IN CONFLICT WITH MEPT DRAWINGS PRIOR TO INSTALLATION.
7. INSTALL THE SUSPENDED CEILING GRID TO BE LEVEL WITHIN A TOLERANCE OF 1/8" IN 12'-0". ANCHOR AS REQUIRED.
8. WHERE ACOUSTICAL CEILING PANELS ARE REQUIRED TO BE CUT, CUT THE PANELS TO MAINTAIN A SHARP AND NEAT EDGE. CENTER GRID IN ROOM UNO.
9. INSTALL NEW SPRINKLER HEADS AND LIGHT FIXTURES AT THE CENTER OF THE ACOUSTICAL CEILING PANEL UON. ALIGN CEILING DEVICES TO LIGHT FIXTURES, TYP.
10. CONTRACTOR TO PROVIDE MOCK UP OF EACH CEILING TYPE SYSTEM PRIOR TO INSTALLATION FOR ARCHITECTS APPROVAL
11. EQUIPMENT BY OWNER, CONTRACTOR INSTALLED. TV/ MONITOR CL @ 5'-6" AFF UNO.

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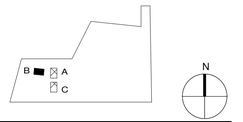
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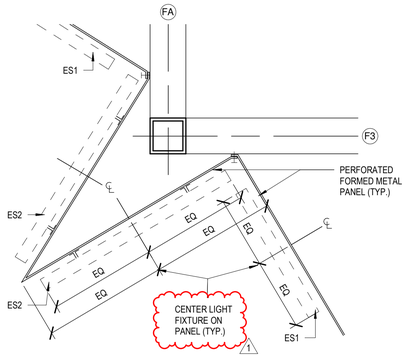
CEILING PLAN - COMMUNITY CENTER

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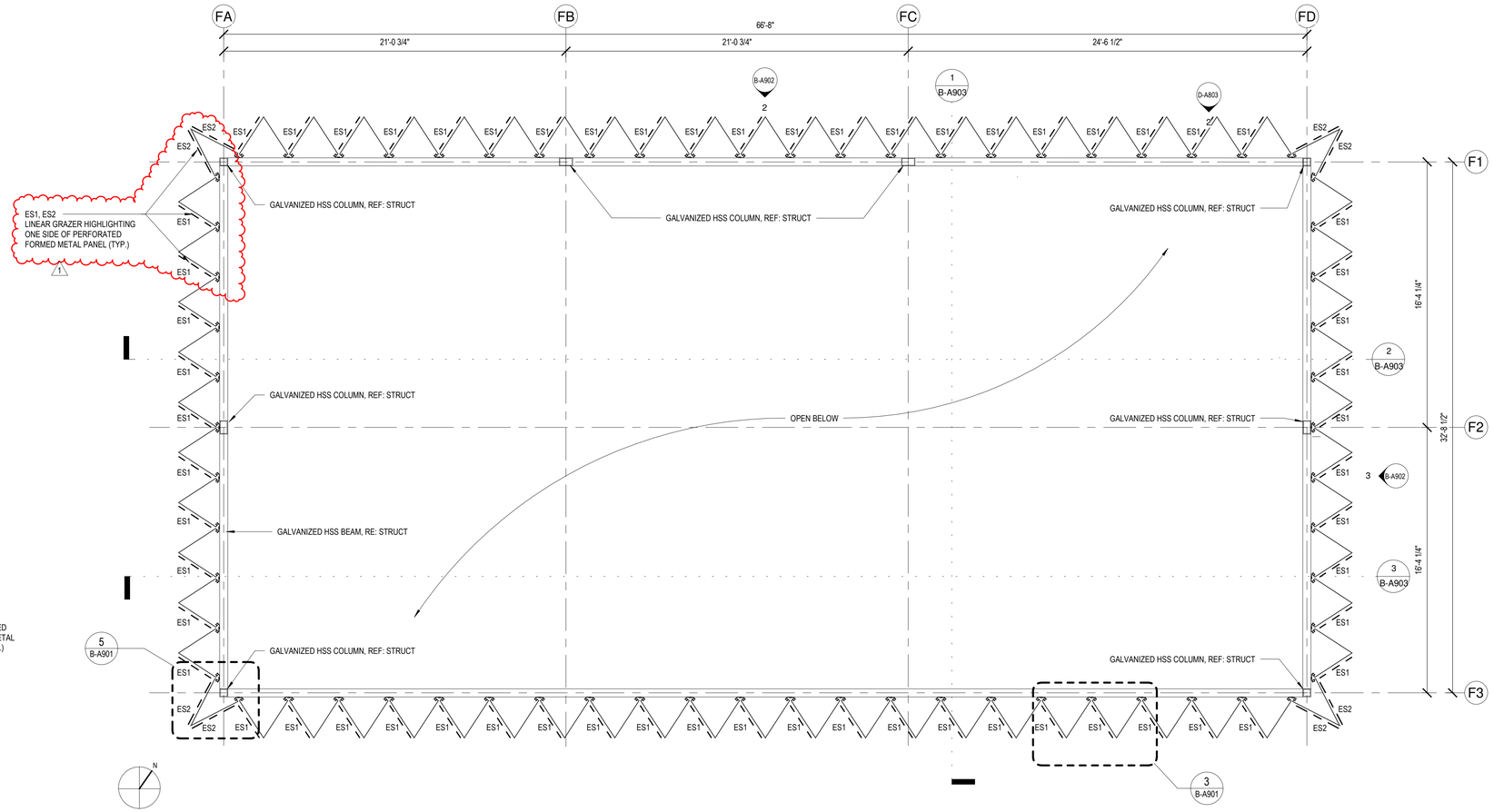
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B-A301

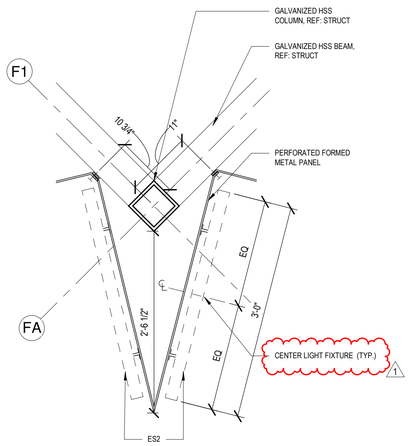
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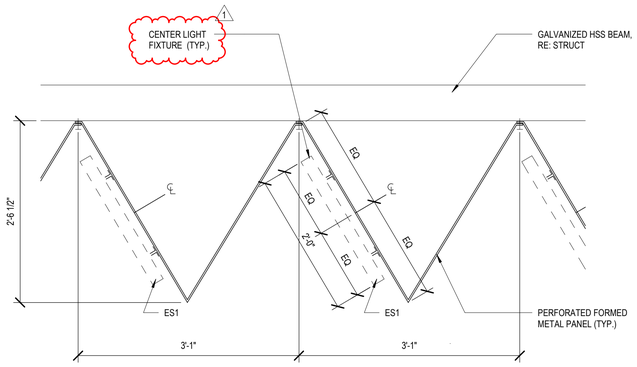
5 ENLARGED PLAN - CORNER PANEL
1" = 1'-0"



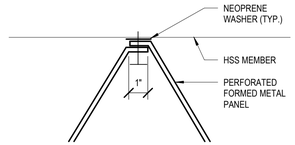
6 FLOOR PLAN - CROWN
1/4" = 1'-0"



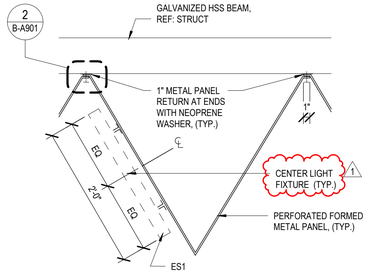
4 CORNER PANEL
1" = 1'-0"



3 ENLARGED PLAN - FIELD PANEL
1" = 1'-0"



2 DETAIL
3" = 1'-0"



1 FIELD PANEL
1" = 1'-0"

6/20/2025 9:36:03 AM

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

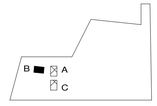
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Key Plan

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C: MULTI PURPOSE



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03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: AP Reviewed by: GL

Project No: 2024-002

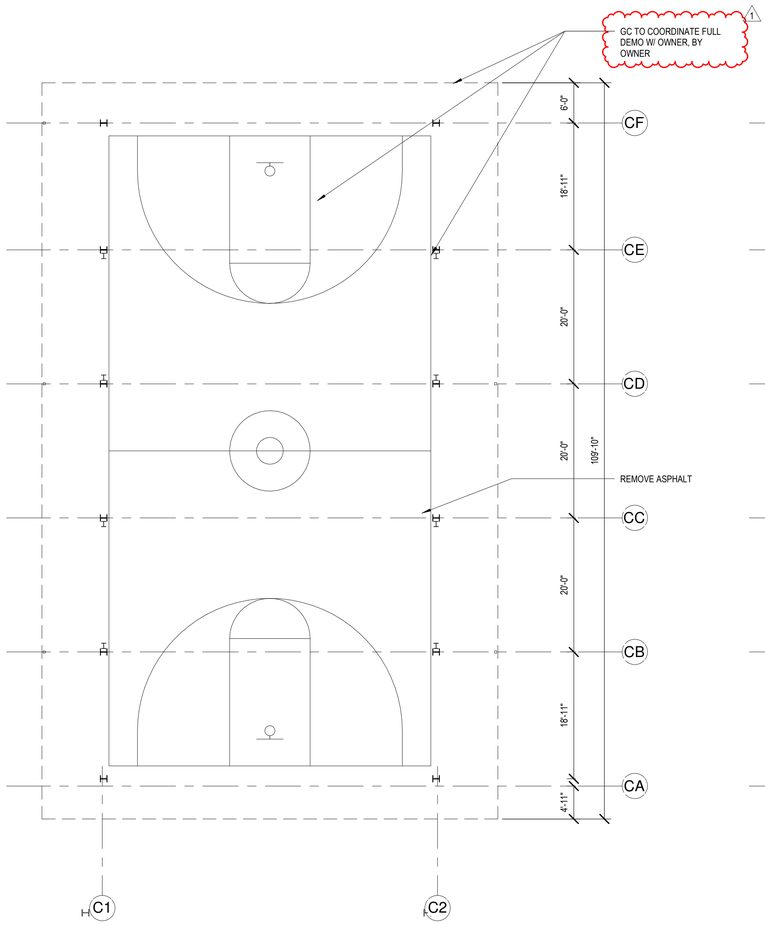
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CROWN FLOOR PLAN

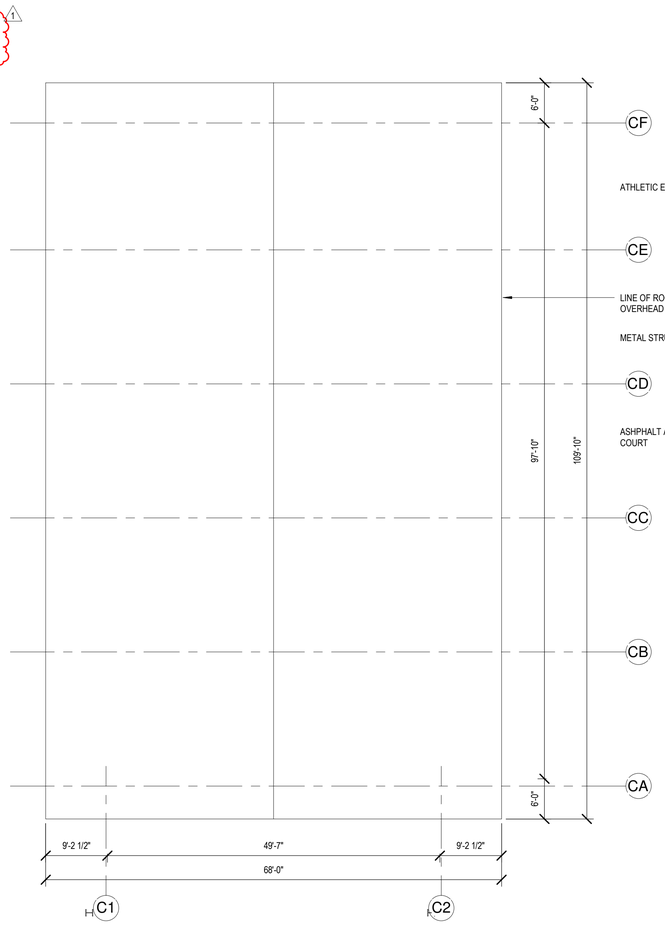
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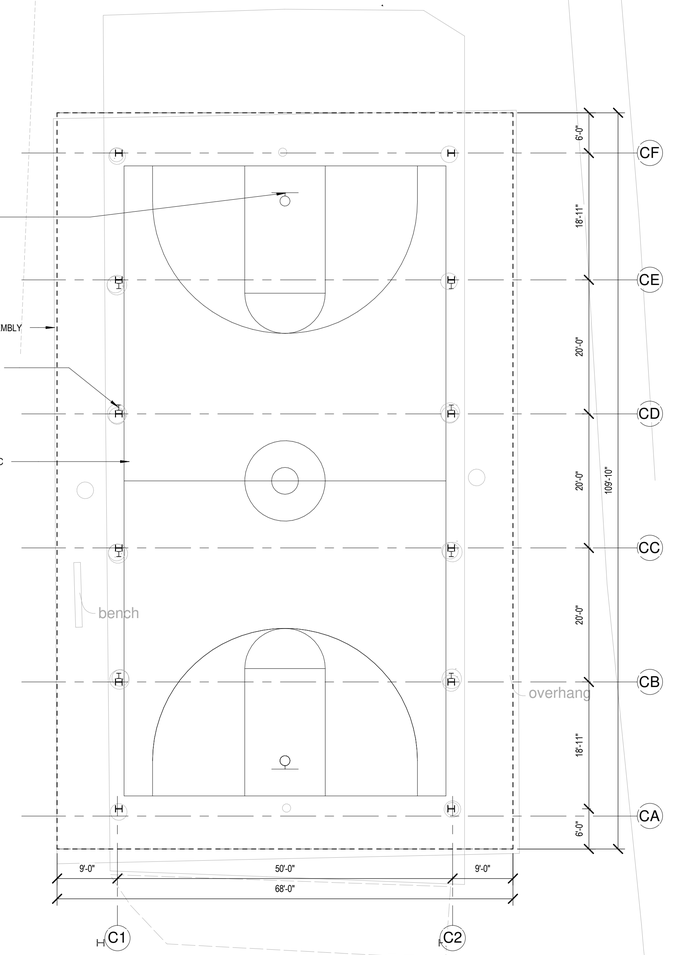
B-A901



3 DEMO PLAN - MULTI PURPOSE
3/32" = 1'-0"



2 EXISTING ROOF PLAN - MULTI PURPOSE
3/32" = 1'-0"



1 EXISTING PLAN - MULTI PURPOSE
3/32" = 1'-0"

6/20/2025 12:25:42 PM

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Prepared For:
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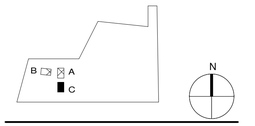
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Drawn by: NS Reviewed by: GL

Project No: 2024-002

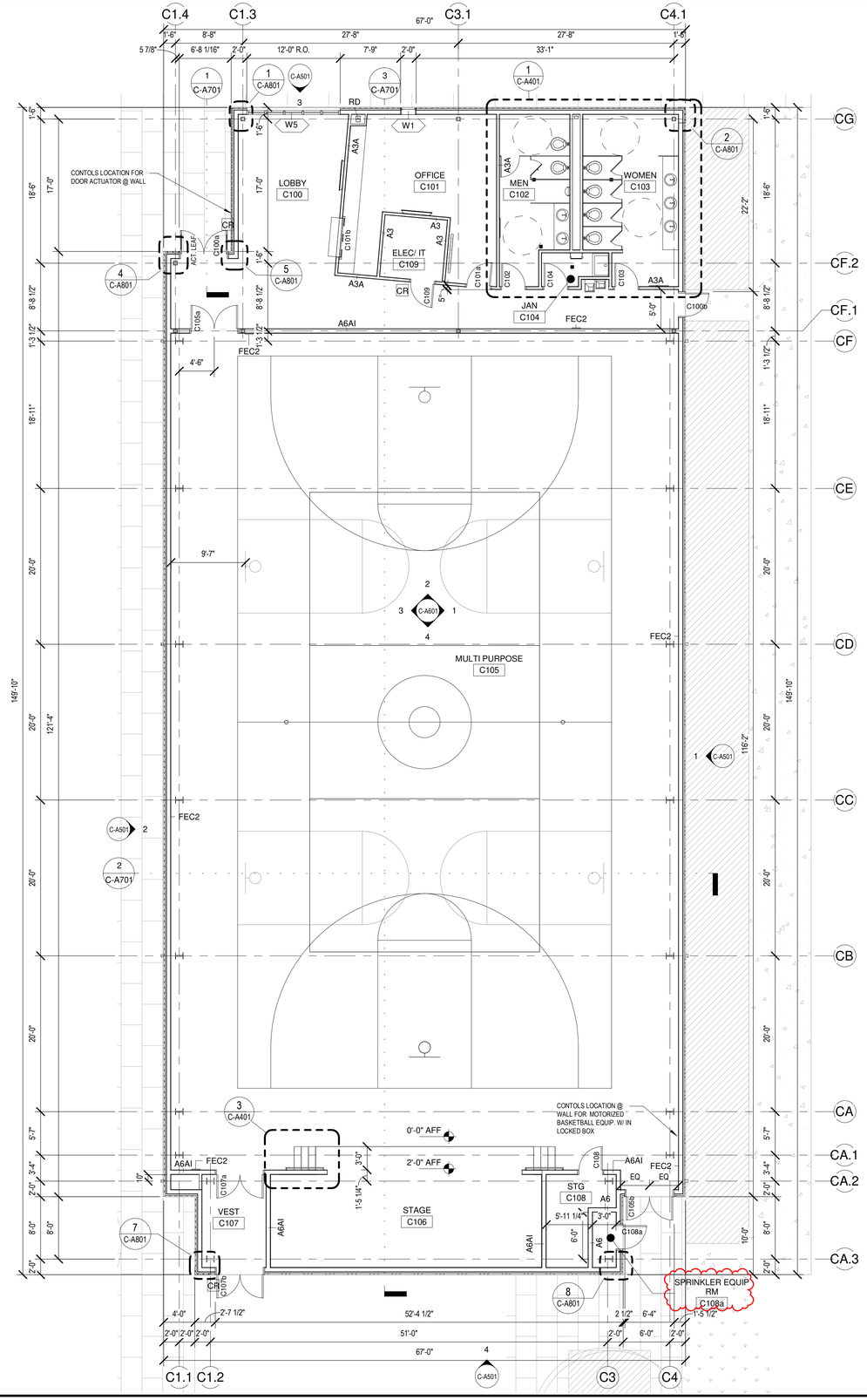
Sheet Title:

EXISTING/ DEMO FLOOR PLAN - MULTI PURPOSE

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Sheet Number

C-A101



1 FLOOR PLAN - MULTI PURPOSE
1/8" = 1'-0"

GENERAL NOTES

1. REFERENCE PLANS SHEETS X-A200 SERIES FOR DIMENSIONS AND PARTITION TYPES.

2. REFERENCE FINISH PLANS, SCHEDULE, AND GENERAL NOTES IN X-A220 AND A900 SERIES.

3. REFERENCE FURNITURE PLANS, SCHEDULE, AND GENERAL NOTES IN X-A230 AND A900 SERIES.

4. REFERENCE REFLECTED CEILING PLANS IN X-A300 SERIES.

5. REFERENCE PARTITION TYPES, GENERAL NOTES, AND DETAILS IN A900 SERIES.

6. REFERENCE DOOR AND FRAME TYPES AND GENERAL NOTES IN A900 SERIES.

7. VERIFY IN FIELD ALL EXISTING DIMENSIONS WHERE APPLICABLE. PROTECT ALL SURROUNDINGS NOT IN PROJECT SCOPE, REPAIR ANY DAMAGES TO MATCH EXISTING.

8. ITEMS FURNISHED BY FT BEND COUNTY/OWNER, GC TO INSTALL.

9. GC UPHOLSTERY TO VERIFY DIMENSIONS PRIOR TO ORDERING STAGE CURTAINS.

10. GRAPHICS AND SIGNAGE TO BE REVIEWED BY OWNER. GC TO FURNISH AND INSTALL.

11. GC TO PROVIDE BLOCKING THROUGHOUT AS REQ'D. IN PARTNS AT ALL A/V, EQUIP, MIRRORS, MILLWORK LOCATIONS, ETC.

12. PARTITIONS REQUIRED TO BE LEVEL 4 FINISH.

13. PLANS INDICATE GENERAL TYPE AND SPECIFIC LOCATION OF FURNITURE, FIXTURES & EQUIPMENT DEVICES. ALL EQUIPMENT PROVIDED BY OWNER SHOWN FOR COORDINATION PURPOSES ONLY.

14. CONTRACTOR TO REVIEW ALL FF&E LOCATIONS FOR CONFLICT WITH MEPT DRAWINGS PRIOR TO INSTALLATION.

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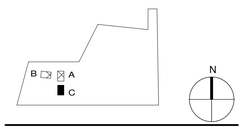
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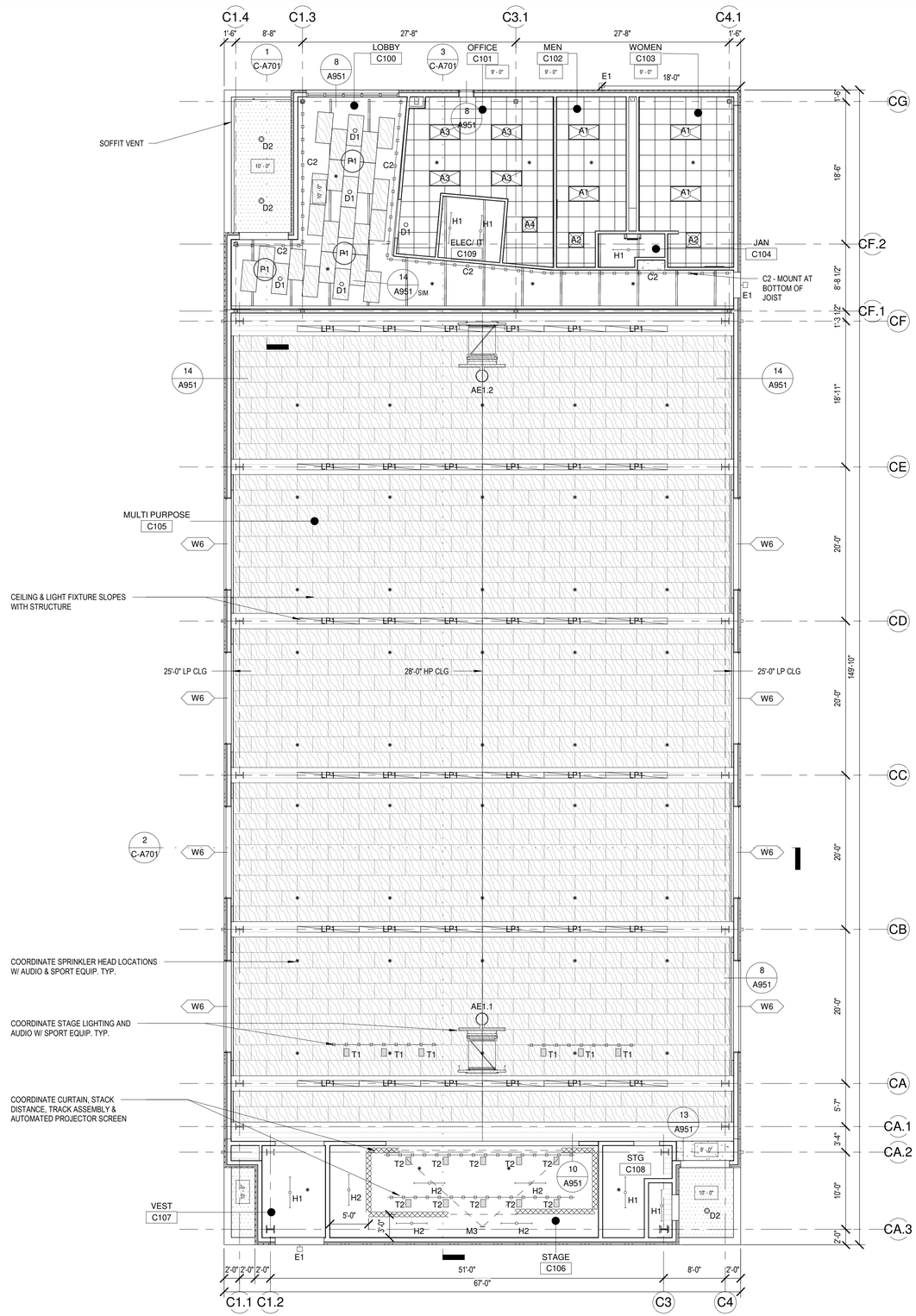
Project No: 2024-002

Sheet Title:
FLOOR PLAN - MULTI PURPOSE

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Sheet Number
C-A201

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REFLECTED CEILING PLAN LEGEND

REFERENCE RCP PLANS IN A300 SERIES
REFERENCE MEPT FOR ADDITIONAL COORDINATION

CEILING TYPES

- CEILING 1: USG MARS CLIMAPLUS 90/30 #88139 LAY-IN ACOUSTICAL CEILING TILE AND GRID, 24" X 24" x 1" - FLB EDGE w/ 9/16" DXT SUSPENSION SYSTEM
- CEILING 2: OPEN PLENUM CEILING w/ USG HERADESIGN 1 DIRECT MOUNT "CLOUDS" FASTENED TO USG DWSS DRYWALL SUSPENSIONS SYSTEM. FINISH: BEIGE EDGE DETAIL: BEV/BEV PATTERN: ASHLAR
- CEILING 3: USG CUSTOM EXTERIOR CEILING SYSTEM CD06319 MICRO-PERF. 2" POLYBAG BACKER, w/ CUSTOM EXTERIOR GRADE UNIVERSAL CARRIER ASSEMBLY. FINISH: SERANTE – S-31 GOLDEN OAK ALTERNATE: CBI EUROPE CUBIC EDGE LINEAR METAL CEILING SYSTEM – ST130CC, w/ APQ2 PERF. 2" POLYBAG BACKER. FINISH: WOOD 6869 "FARM MAPLE" REP CONTACT: adam@advantageinteriorsupply.com (1)
- CEILING 4: USG SHEETROCK GYPSUM BOARD CEILING SYSTEM. PAINTED WHITE, UNO
- CEILING 5: USG MOLD TOUGH CEMENT PLASTER/ MOISTURE RESISTANT CEILING SYSTEM PAINTED WHITE, UNO
- CEILING 6:EXTERIOR SOFFIT CEILING SYSTEM – USG SHEETROCK GYPSUM BOARD. PAINTED WHITE, UNO
- CEILING 7: USG HERADESIGN 1 DIRECT MOUNT CEILINGS FASTENED TO USG DWSS DRYWALL SUSPENSION SYSTEM FINISH: BEIGE EDGE DETAIL: BEV/BEV PATTERN: ASHLAR
- CEILING 8: EXTERIOR CANOPY (REF A921 EXTERIOR FINISHES, LMP - LINEAR METAL PANEL SYSTEM @ CANOPY SOFFIT
- CEILING 9: NOT USED (1)
- EXPOSED STRUCTURE: FIREPROOFING/ INSULATION SPRAY AS REQ'D BY CODE PAINTED WHITE, UNO

USG REP CONTACT : SUZANNE DISSETTE – SDissette@usg.com

LIGHT FIXTURES

- A1, A6 - FLAT PANEL 24" x 48"
- A2, A7 - FLAT PANEL 24" x 24"
- A3, A5 - FLAT PANEL 24" x 48"
- A4 - RECESSED 24" x 24"
- C1 - PERIMETER COVE LIGHT
- C2 - PERIMETER SURFACE MOUNT
- D1, D2, D4 - DOWNLIGHT
- D3 - DOWNLIGHT
- E1 - EXTERIOR WALL MOUNTED
- ES1, ES2 - 24", 36" UPLIGHT @ CROWN
- H1 - HANGING STRIP - 80" MIN HT UNO
- H2 - HANGING STRIP - BLACK FINISH - 80" MIN HT UNO
- H3 - HANGING SEALED STRIP - 80" MIN HT UNO
- H4 - STRIP LIGHT - 80" MIN HT UNO
- LP1 - LINEAR PENDANT
- LP2 - LINEAR PENDANT
- LP3 - LINEAR PENDANT
- P1 - PENDANT RING
- P2 - PENDANT CYLINDAR
- T1 - THEATER/ TRACK LIGHTING
- T2 - THEATER/ TRACK LIGHTING
- CEILING FAN HIGH HUMIDITY TOLERANT

CW LIGHTING REP CONTACT: EDWARD FOLSE - efolse@cwlighting.com

GENERAL NOTES - RCP

REFERENCE RCP PLANS IN A300 SERIES
REFERENCE MEPT FOR ADDITIONAL COORDINATION

1. ARCHITECTURAL REFLECTED CEILING PLANS INDICATE GENERAL TYPE AND SPECIFIC LOCATION OF LIGHT FIXTURES & EQUIPMENT DEVICES.
2. ELECTRICAL ENGINEERING DRAWINGS INDICATE CIRCUITING AND WIRING OF LIGHT FIXTURES AND SWITCHES, LIFE SAFETY EQUIPMENT, LOCATION OF REQUIRED EMERGENCY LIGHT FIXTURES, & LIGHT FIXTURE SPECIFICATIONS.
3. MECHANICAL ENGINEERING DRAWINGS INDICATE DUCTS, AIR MOVEMENT REQUIREMENTS AND SIZES OF GRILLES AND REGISTERS.
4. FIRE PROTECTION DRAWINGS INDICATE LAYOUT, LOCATION AND SIZE OF SPRINKLER LINES AND HEADS, PRESSURE REQUIREMENTS, SPRINKLER HEAD SPECIFICATIONS, LOCATION OF FIRE PROTECTION RISERS AND WALL HYDRANTS.
5. ALL STROBES SHALL BE LOCATED @ +80" AFF. SEE ENGINEER'S DRAWINGS FOR LOCATIONS AND SPECIFICATIONS. ALL STROBES TO ALIGN VERTICALLY WITH RECEPTACLE BELOW WHERE OCCURS.
6. CONTRACTOR TO REVIEW ALL LIGHT/ CEILING FIXTURE, DIFFUSERS, SPRINKLERS, SMOKE DETECTORS LOCATIONS, OR IN CONFLICT WITH MEPT DRAWINGS PRIOR TO INSTALLATION.
7. INSTALL THE SUSPENDED CEILING GRID TO BE LEVEL WITHIN A TOLERANCE OF 1/8" IN 12'-0". ANCHOR AS REQUIRED.
8. WHERE ACOUSTICAL CEILING PANELS ARE REQUIRED TO BE CUT, CUT THE PANELS TO MAINTAIN A SHARP AND NEAT EDGE. CENTER GRID IN ROOM UNO.
9. INSTALL NEW SPRINKLER HEADS AND LIGHT FIXTURES AT THE CENTER OF THE ACOUSTICAL CEILING PANEL UON. ALIGN CEILING DEVICES TO LIGHT FIXTURES, TYP.
10. CONTRACTOR TO PROVIDE MOCK UP OF EACH CEILING TYPE SYSTEM PRIOR TO INSTALLATION FOR ARCHITECTS APPROVAL
11. EQUIPMENT BY OWNER, CONTRACTOR INSTALLED. TV/ MONITOR CL @ 5'-6" AFF UNO.

1 RCP - MULTI PURPOSE
1/8" = 1'-0"

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Project:
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Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

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Contract No: 2024-002

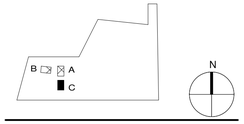
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1	ADDENDUM 1	06-20-2025

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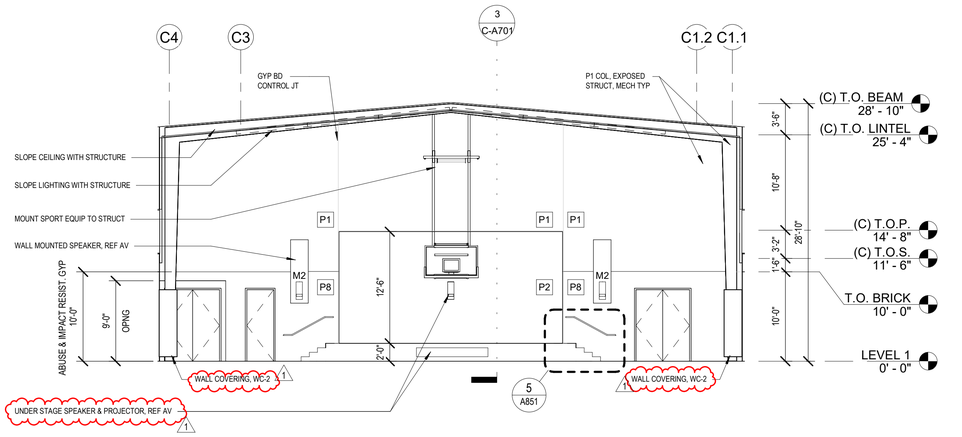
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Sheet Title:
CEILING PLAN - MULTI PURPOSE

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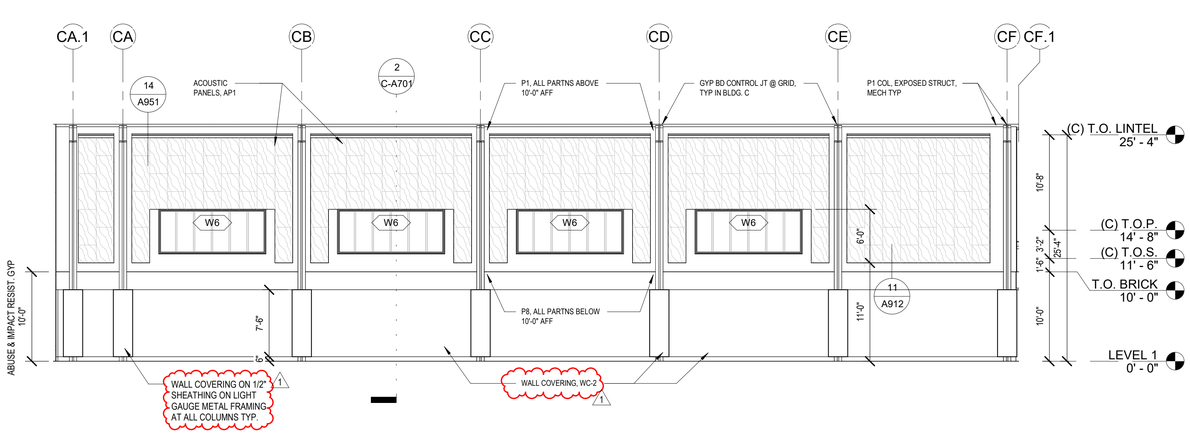
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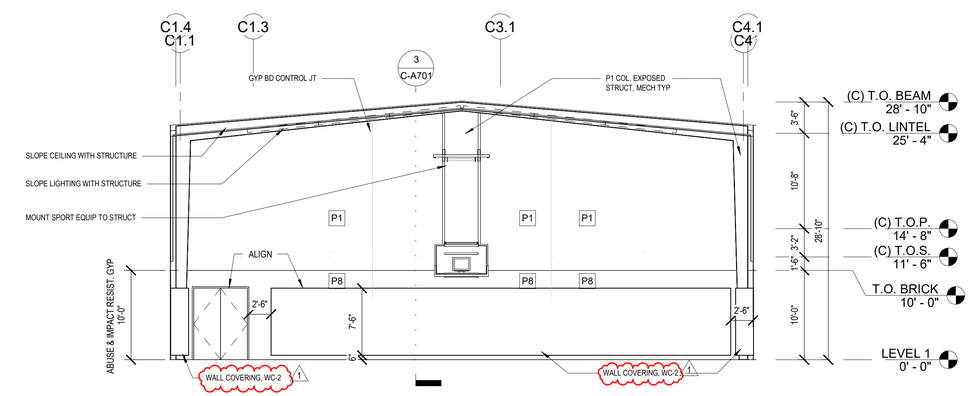
4 MULTI PURPOSE - SOUTH

1/8" = 1'-0"



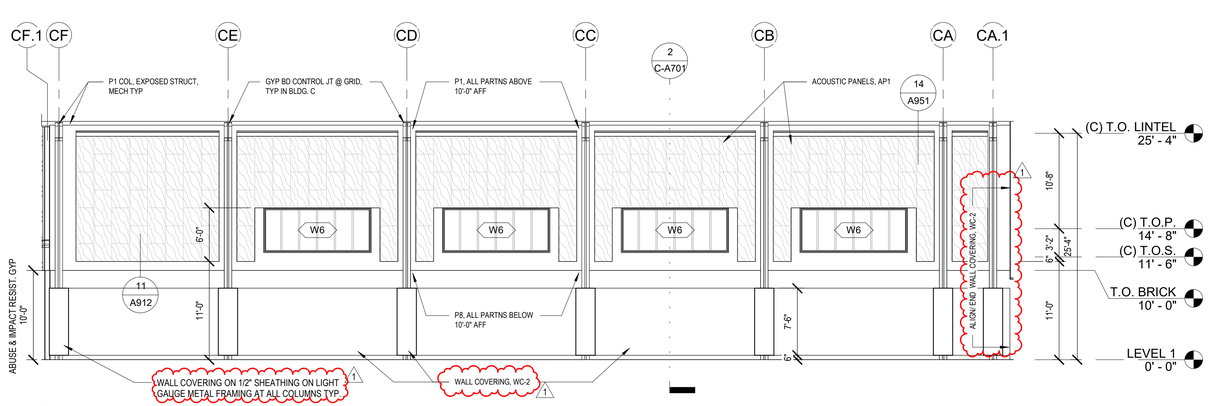
3 MULTI PURPOSE - WEST

1/8" = 1'-0"



2 MULTI PURPOSE - NORTH

1/8" = 1'-0"



1 MULTI PURPOSE - EAST

1/8" = 1'-0"

THE STATE OF TEXAS
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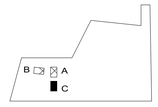
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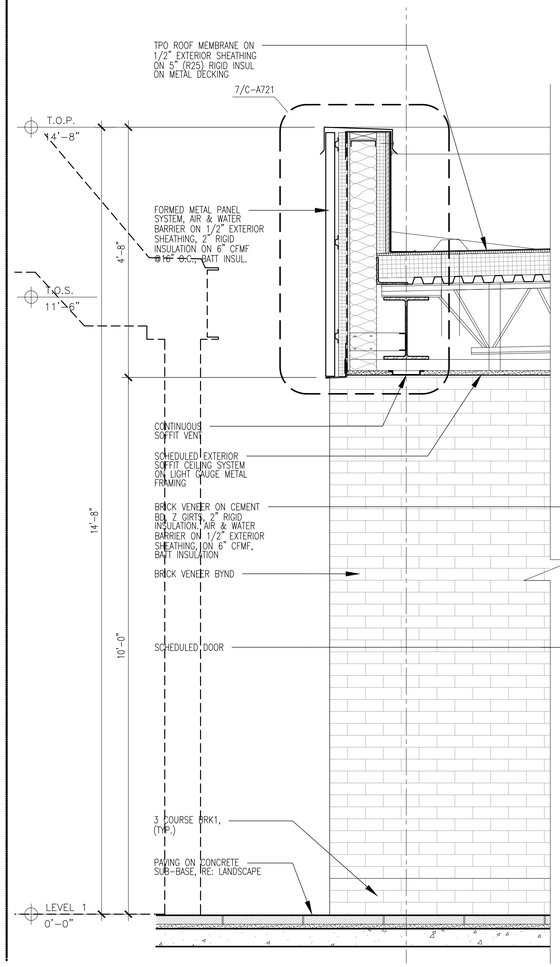
INTERIOR ELEVATIONS - MULTI PURPOSE

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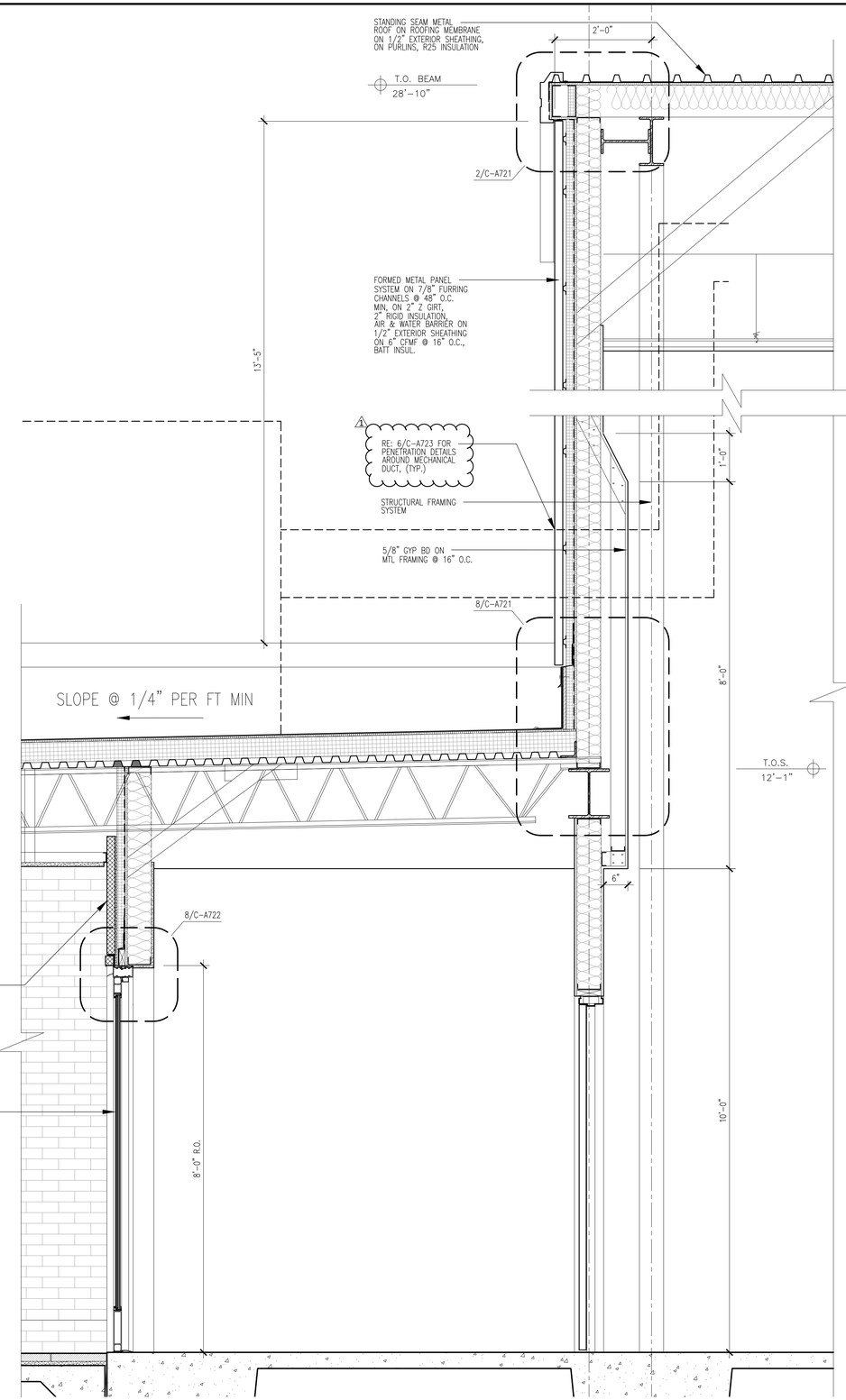
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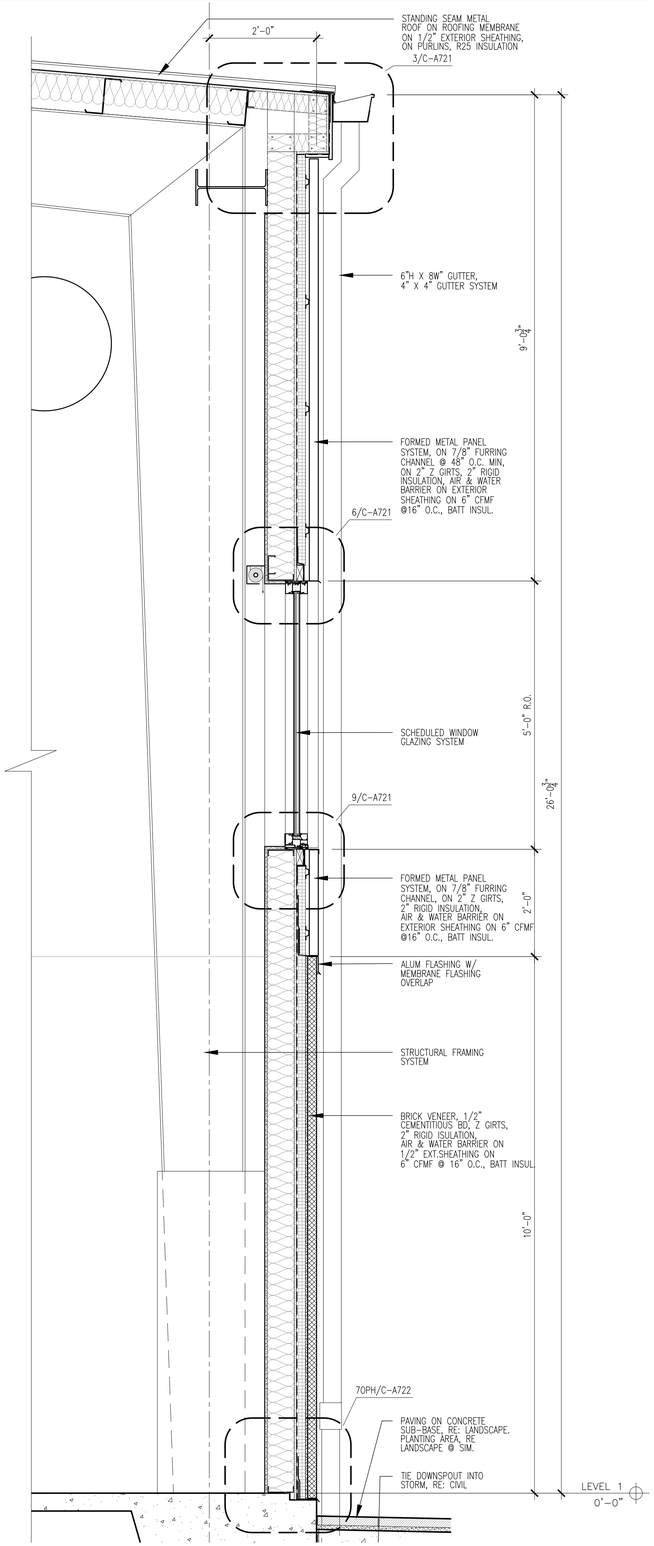
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1 WALL SECTION
3/4" = 1'-0"



2 WALL SECTION
3/4" = 1'-0"



3 WALL SECTION
3/4" = 1'-0"

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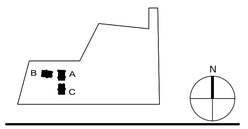
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Drawn by: AP Reviewed by: GL

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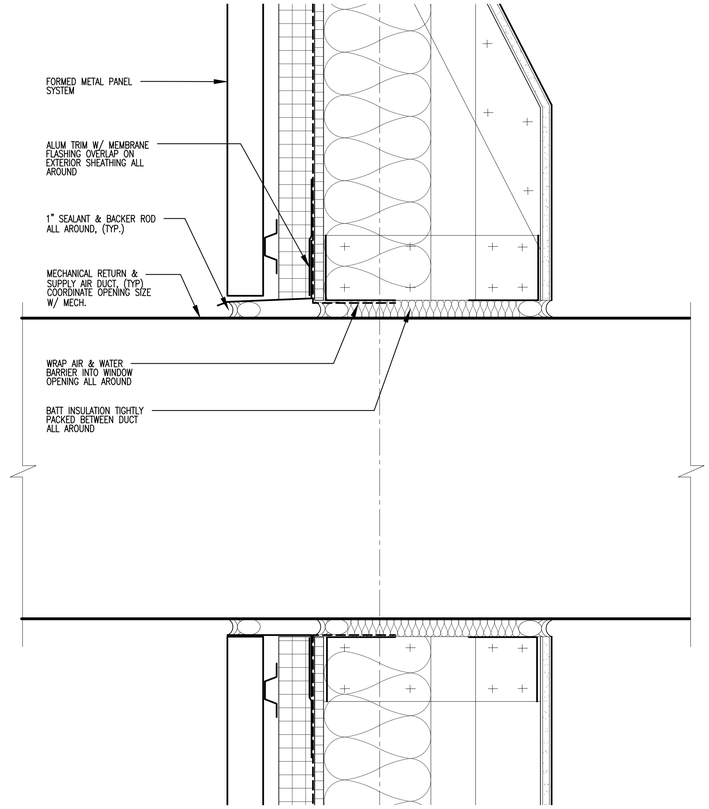
Sheet Title:

WALL SECTIONS - MULTIPURPOSE

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Sheet Number

C-A711



6 DETAIL
3" = 1'-0"

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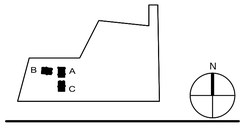
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Drawn by: AP Reviewed by: GL

Project No: 2024-002

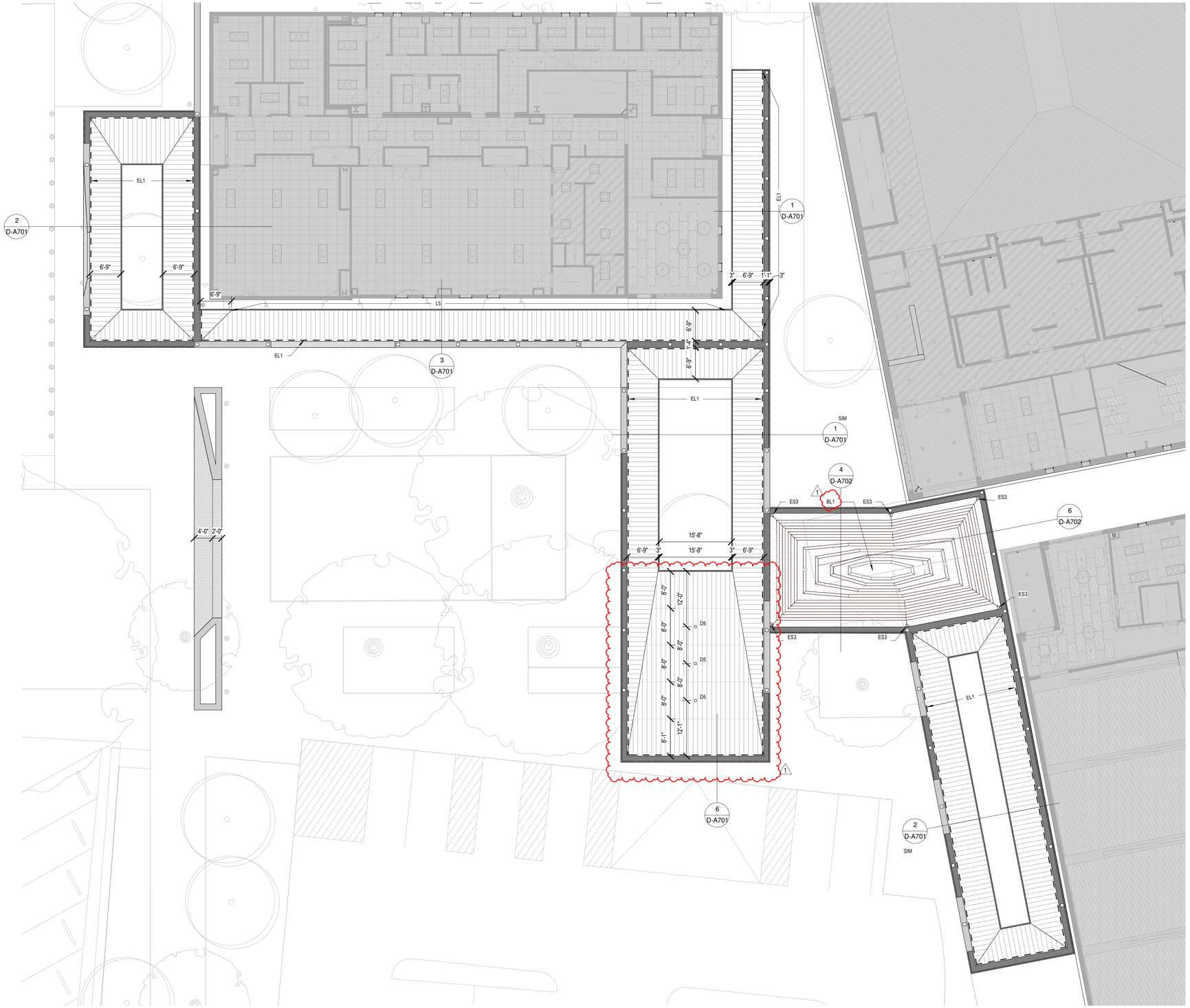
Sheet Title:

ENLARGED WALL SECTIONS - MULTIPURPOSE

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

C-A723



1 CANOPY CEILING PLAN
3/32" = 1'-0"

CANOPY REFLECTED CEILING PLAN LEGEND

REFERENCE INTERIOR RCP PLANS IN A300 SERIES
REFERENCE LANDSCAPE FOR SITE LIGHTING
REFERENCE MEPT FOR ADDITIONAL COORDINATION

CEILING TYPES

CEILING 6:EXTERIOR SOFFIT CEILING SYSTEM – USG SHEETROCK GYPSUM BOARD. PAINTED WHITE, UNO

CEILING 8: EXTERIOR CANOPY (REF A921 EXTERIOR FINISHES, LMP - LINEAR METAL PANEL SYSTEM @ CANOPY SOFFIT

EXTERIOR LIGHT FIXTURES

1 BL1 - BACKLIGHT W/ TRANSLUCENT PANEL SYSTEM
D5 - DOWNLIGHT
EL1 - LINEAR WITH REGRESSED LENS
ES3 - SURFACE MOUNT DOWNLIGHT

CW LIGHTING REP CONTACT: EDWARD FOLSE - efolse@cwlighting.com

THE STATE OF TEXAS · FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
Fresno, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

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Contract No: 2024-002

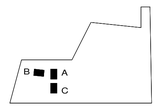
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03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

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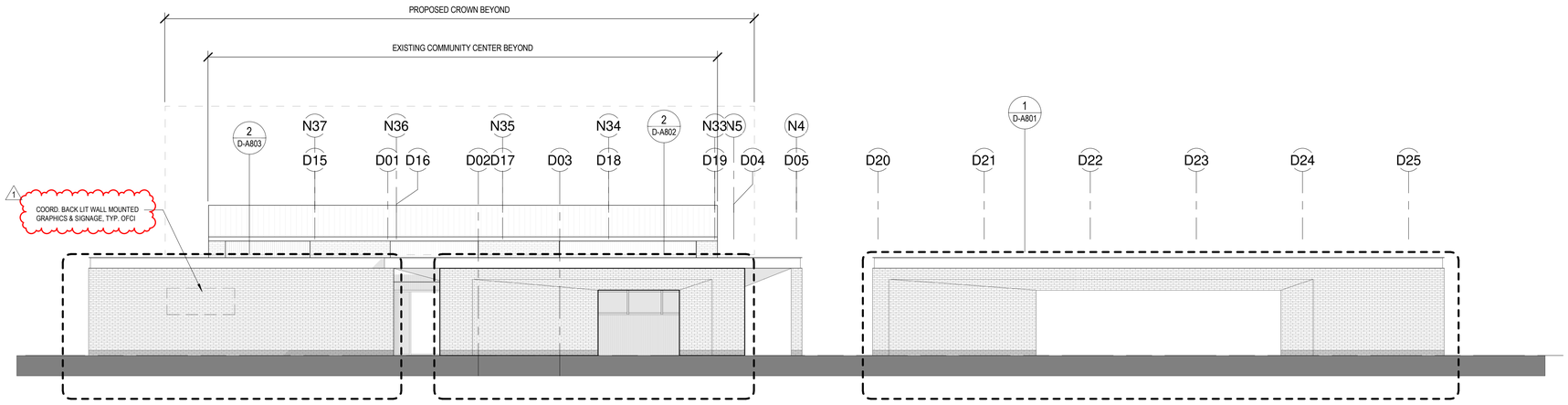
CEILING PLAN - CANOPY

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

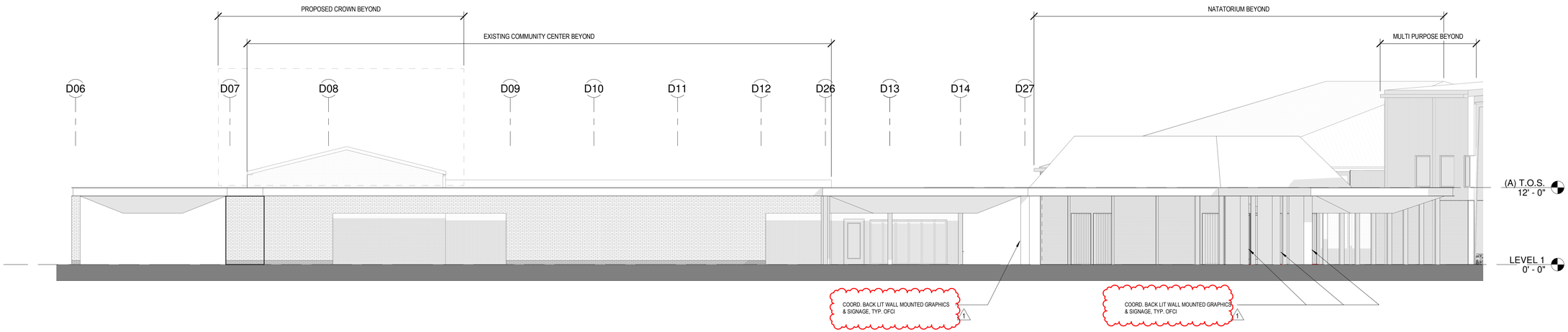
D-A301

6/18/2025 12:23:27 PM



2 CANOPY - WEST ELEVATION

1/8" = 1'-0"



1 CANOPY - SOUTH ELEVATION

1/8" = 1'-0"

6/11/2025 11:57:26 AM

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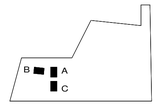
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Sheet Title:

ELEVATIONS - CANOPY

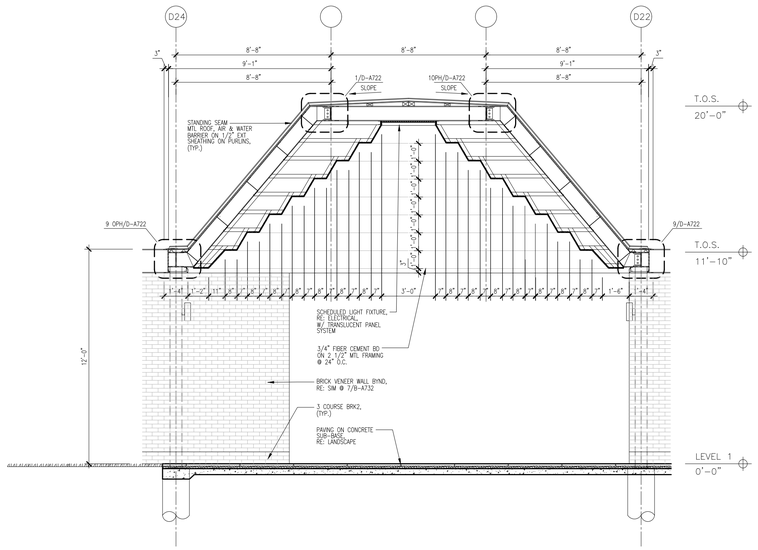
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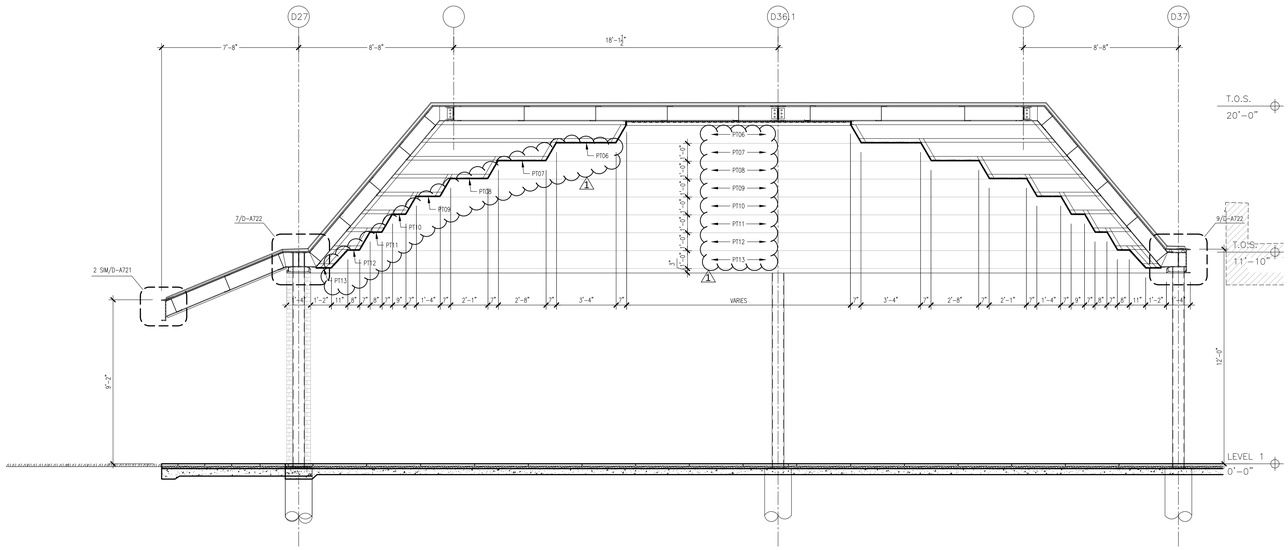
D-A501

GENERAL NOTES

1. REFERENCE A921 FOR EXTERIOR PAINT SCHEDULE



4 SECTION
1/4" = 1'-0"



6 SECTION
1/4" = 1'-0"

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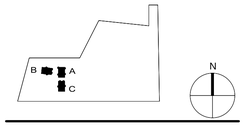
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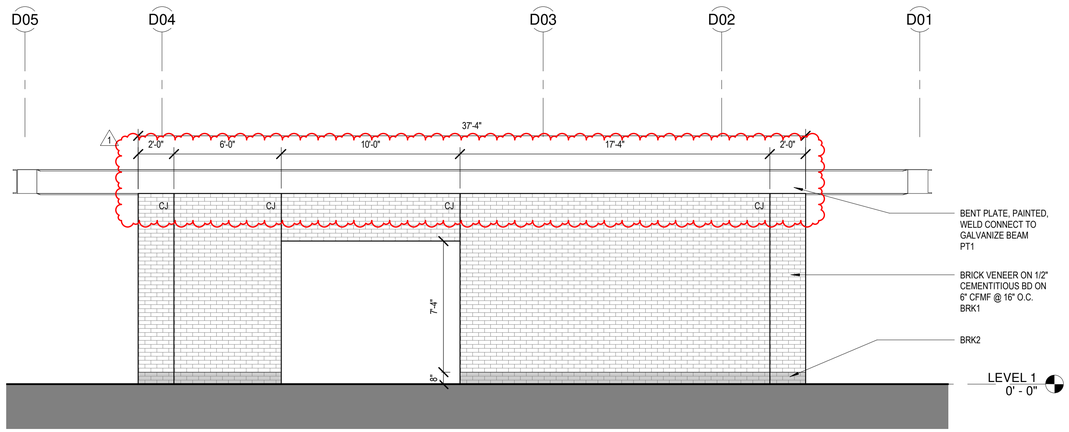
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CANOPY WALL SECTIONS

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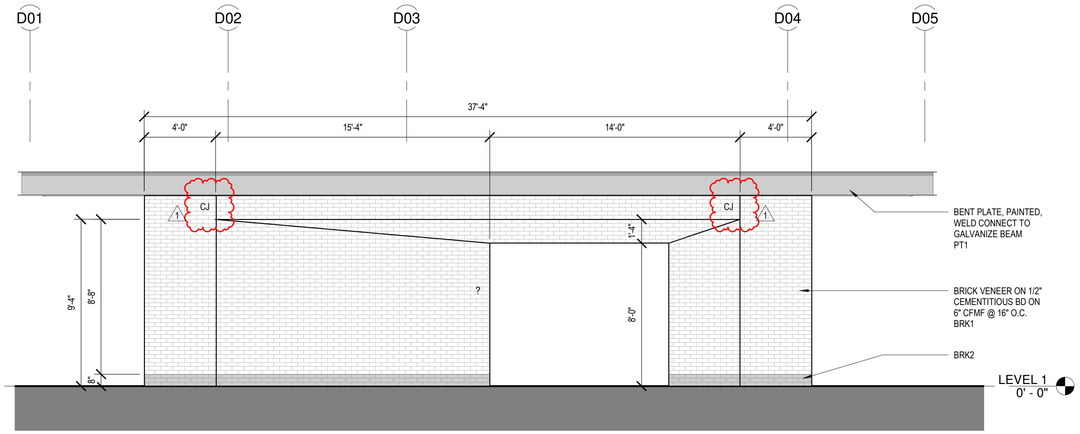
Sheet Number

D-A702



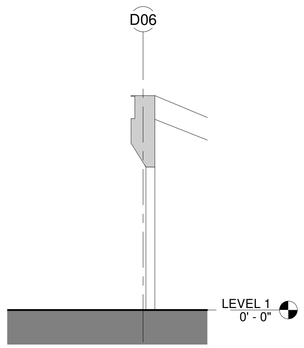
5 ENTRY PORTAL - EAST ELEVATION

1/4" = 1'-0"



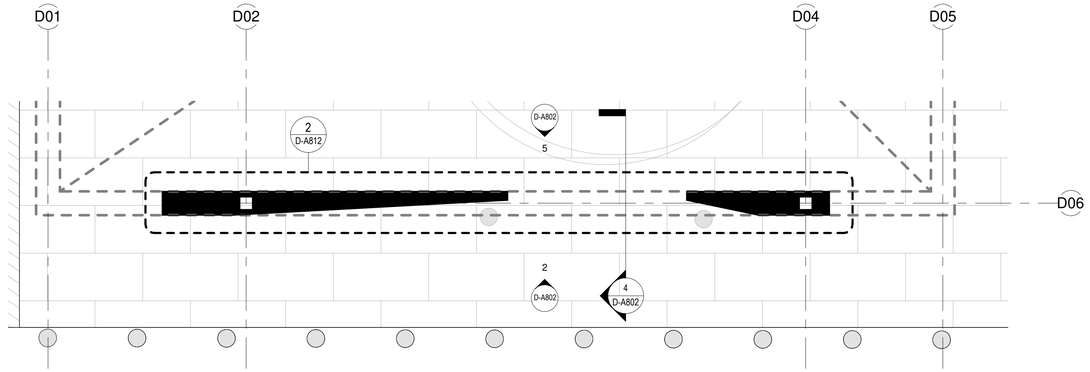
2 ENTRY PORTAL - WEST ELEVATION

1/4" = 1'-0"



4 PORTAL 2 SECTION

1/4" = 1'-0"



1 CANOPY ENTRY PORTAL

1/4" = 1'-0"

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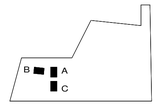
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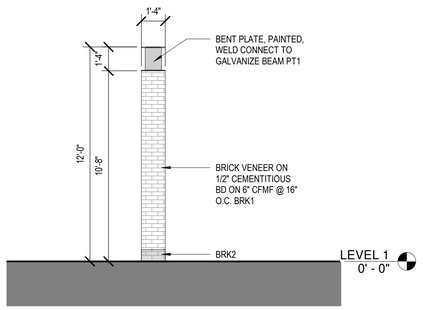
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ENTRY PORTAL

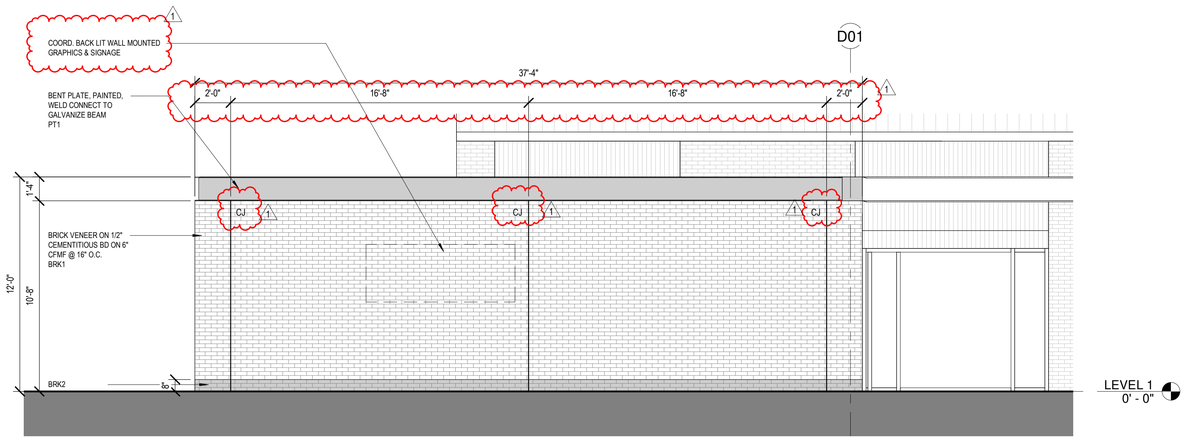
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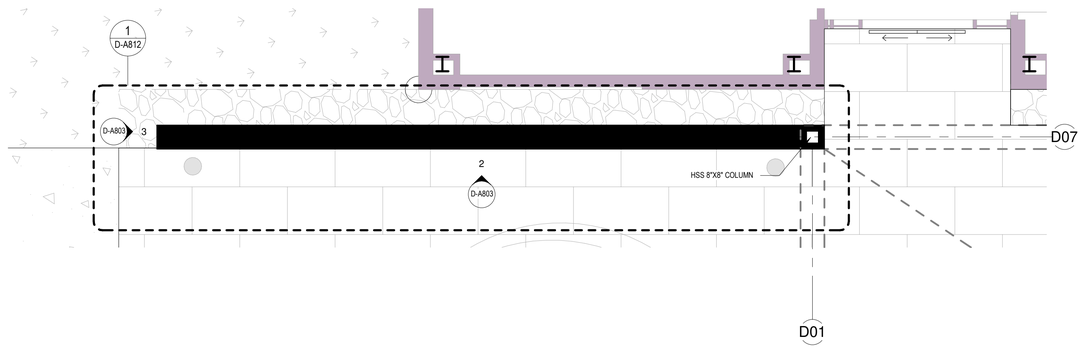
D-A802



3 EXTERIOR ENTRY WALL - NORTH
1/4" = 1'-0"



2 ELEVATION - EXTERIOR ENTRY WALL
1/4" = 1'-0"



1 CANOPY PLAN - EXTERIOR ENTRY WALL
1/4" = 1'-0"

6/11/2025 12:22:04 PM

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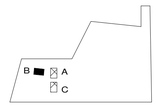
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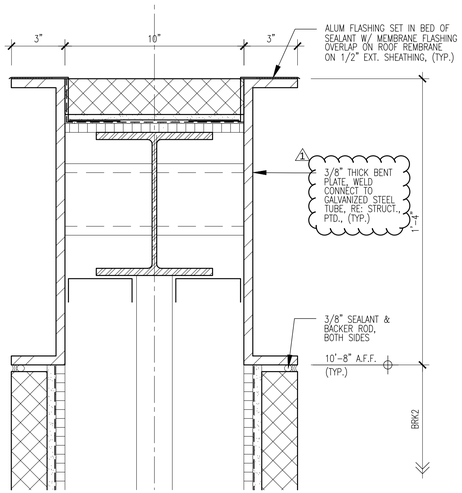
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EXTERIOR ENTRY WALL

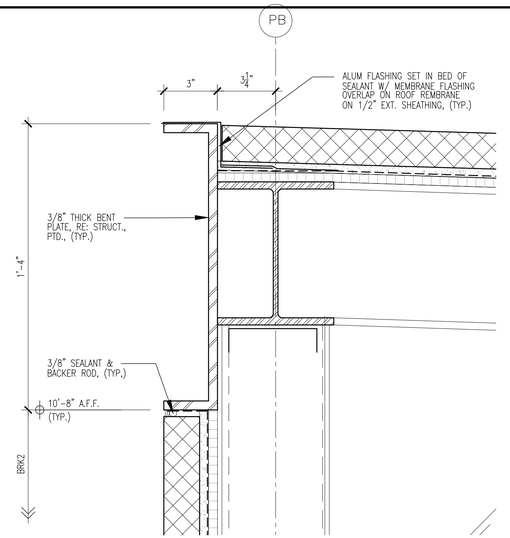
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Sheet Number

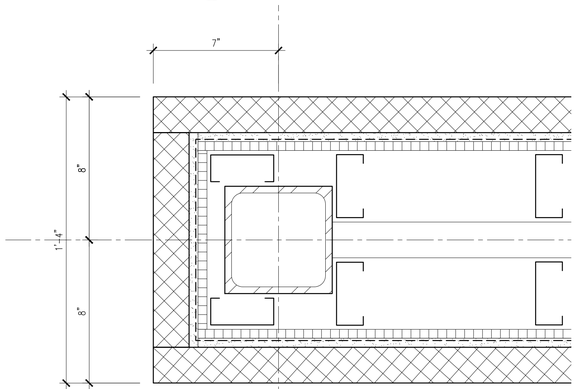
D-A803



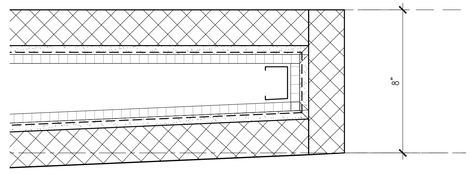
2 DETAIL
3" = 1'-0"



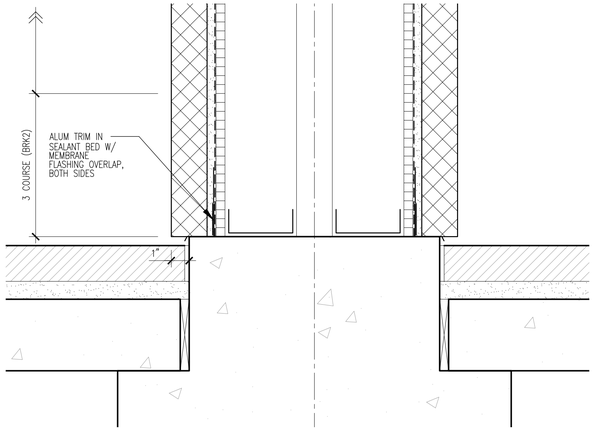
3 DETAIL
1/2" = 1'-0"



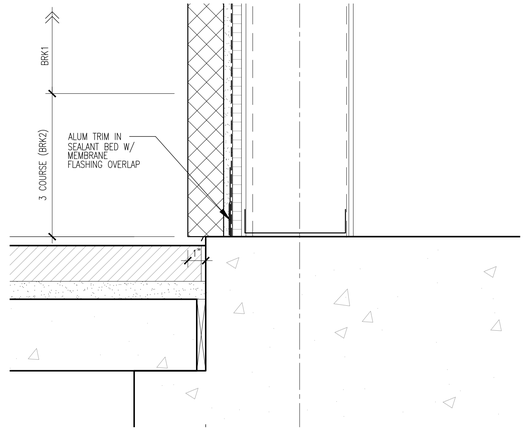
5 DETAIL
3/4" = 1'-0"



6 DETAIL
3/4" = 1'-0"



8 DETAIL
3/4" = 1'-0"



9 DETAIL
1/4" = 1'-0"

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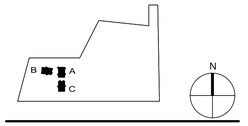
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Drawn by: AP Reviewed by: GL

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Sheet Title:

PORTAL - DETAILS

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Sheet Number

D-A821

VENTILATION CALCULATION BUILDING A

LEVEL	AREA SERVED	ROOM NUM.	AREA(SQ. FT.)	DISTRIBUTION EFFECTIVENESS	RATE (# PEOPLE / 1000 SQ. FT.)	POPULATION	OUTDOOR AIR RATE (CFM / PERSON)	AREA OUTDOOR AIR RATE (CFM / SQ. FT.)	AIRFLOW RATE (CFM)	OUTDOOR AIRFLOW PROVIDED	EXHAUST AIRFLOW RATE CFM	EXHAUST PROVIDED (CFM)
1	VEST	A100	105	1	30	3.15	0	0.06	6.30	10		
1	RECEPTION	A101	295	1	30	8.85	5	0.06	61.95	60		
1	CORRIDOR	A102	105	1	30	3.15	0	0.06	6.30	10		
1	ADMIN	A103	337	1	5	7	5	0.06	55.22	55		
1	MEN (TOILETS)	A106	555	1						600	600	600
1	JAN	A108	38	1				1			38	40
1	STG	A111	101	1						50	50	50
1	TOTAL ABOVE									785		
1	TOILET	A105		1							100	100
1	FITNESS	A104	854	1	10	8.54	20	0.06	222.04	225		
1	WOMEN (TOILETS)	A107	555	1						600	600	600
1	TOTAL ABOVE									825		1390
	NATATORIUM	A110	7541	1	10	75.41	0	0.48	3619.68	3620		

HEAT PUMP WITH OUTDOOR CONDENSING UNIT NOTES

1	NOMINAL COOLING CAPACITIES ARE BASSED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB)
2	NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 43°F (WB)
3	SEE OUT DOOR UNIT SCHEDULE FOR OUTDOOR AMBIENT CONDITIONS, CONNECTED CAPACITY, AND OTHER FACTORS ASSOCITATED WITH CORRECT CAPACITIES
4	SEE SCHEMATIC PIPING/CONTROL DIRAGRAM FOR INDICATION OF REQUIRED INDOOR UNIT REMOTE CONTROLLWERS, SYSTEM CONTROLLERS, AND INTEGRATION DEVICES.
5	PROVIDE CONDENSATE PUMP WITH RESEVOIR & SENSOR - 208/230 V
6	PROVIDE FILTER BOX WITH MERV 13 FILTERS.
7	EFFICIENCY VALUES FOR EER, IEER, COP ARE BASED ON AHRI 1230 TEST METHOD FOR MIXTURE DUCTED & NON-DUCTED INDOOR UNITS.
8	FOR SYSTEMS WITH MULTIPLE MODULES, REFRIGERANT PIPE DIMENSIONS INDICATE TOTAL SYSTEM COMBINED PIPING DOWNSTREAM OF MODULE TWINNING.
9	ADDED FIELD CHARGE LISTED IS IN ADDITION TO FACTORY CHARGE, THIS MUST BE UPDATED UPON FINAL AS-BUILT PIPING LAYOUT

HEAT PUMP WITH OUT DOOR CONDENSING UNIT SCHEDULE BUILDING A

MARK	LOCATION	MANUFACTURER/MODEL NO	AIRFLOW (CFM)	MIN OA (CFM)	SEER	SUPPLY FAN MOTOR			ELECTRICAL			COOLING (EAT)	COOLING (LAT)	COOLING (TONS)	HEATING (EAT)	HEATING (LAT)	HEATING INPUT (MBH)	HSPF	PHYSICAL		NOTES
						ESP (IN)	HP/WATTS	TYPE	V-PH	MCA	MOCP								LxWxH (INxINxIIN)	WEIGHT (LBS)	
FC-1-A	RECEPTION	MITSUBISHI PEFY-L36NMAU-A	1200	200	15	0.5	3/4	ECM	208/230-1			80°F	58.17°F	4	70°F	96.2°F	56.64	8.2	29 X 55 X10	86	
FC-2-A	FITNESS	MITSUBISHI PEFY-L36NMAU-A	1200	225	15	0.5	3/4	ECM	208/230-1			80°F	58.17°F	4	70°F	96.2°F	56.64	8.2	29 X 55 X10	86	
FC-3-A	ADMIN	MITSUBISHI PEFY-L36NMAU-A	1200	200	15	0.5	3/4	ECM	208/230-1			80°F	58.17°F	4	70°F	96.2°F	56.64	8.2	29 X 55 X10	86	

MARK	SYSTEM SERVED/LOCATION	MANUFACTURER/MODEL NO	AIRFLOW (CFM)	SEER	SUPPLY FAN MOTOR			ELECTRICAL			COOLING (EAT)	COOLING (LAT)	COOLING BTUH	HEATING (EAT)	HEATING (LAT)	HEATING INPUT (MBH)	SEER	PHYSICAL		NOTES
					ESP (IN)	HP/WATTS	TYPE	V-PH	MCA	MAX FUSE								LxWxH (INxINxIIN)	WEIGHT (LBS)	
CU-1-A	RECEPTION	MITSUBISHI MXZ-SM48NL						208/230-1	42	70			48,000			50,000	14	41 x 53 x 14	276	
CU-2-A	FITNESS	MITSUBISHI MXZ-SM48NL						208/230-1	42	70			48,000			50,000	14	41 x52 x 14	276	
CU-3-A	ADMIN	MITSUBISHI MXZ-SM48NL						208/230-1	42	70			48,000			50,000	14	41 x52 x 14	276	
CU-4-A	AHU-1-A / POOL	DESERT AIRE'S RC8 MODEL - RC8S030C						430-60-3	15.3	20			33,500			0	14	41 x52 x 14	1497	

FAN SCHEDULE BUILDING A

MARK	LOCATION BUILDING A	MANUFACTURER/MODEL NO.	FAN TYPE	DRIVE FLOW	AIRFLOW (CFM)	EXTERNAL STATIC PRESSURE	MAX SPEED - RPM	BHP	CONTROLLED BY	SPEED CONTROLLER	MAX DBA	LWA	HP (WATTS)	AMPS	VOLT - PHASE - HERTZ	WEIGHT	NOTES
EF-1-A	PLATFORM	GREENHECK / SQ-97-VG	INLINE	DIRECT	190	0.4	1416	0.25	TIME CLOCK	VARIGREEN	60	71	.09	3.6	120/60/1	47	

NOTES:

AIR HANDLING / DEHUMIDIFIER SCHEDULE

UNIT TAG	LOCATION BUILDING	MANUFACTURER	MODEL NO.	LOCATION	UNIT WEIGHT (LB)	FAN DATA					PERFORMANCE			UNIT ELECTRICAL				AUXILIARY HEATING		REMOTE CONDENSER DATA							
						SUPPLY AIR FLOW - CFM	S/A FAN ESP (in. W.C.)	TSP (in. W.C.)	S/A FAN HP	MIN OUTSIDE AIR FLOW - CFM OCCUPIED	OUTSIDE AIR FLOW - CFM (PURGE)	EAT DB | WB (degF) MOISTURE REMOVAL CAPACITY (LB/HR)	TOTAL COOLING CAPACITY (MBH)	TOTAL SENSIBLE CAPACITY (BTUH)	VOLTAGE	MOPD	MCA	SHORT CIRCUIT CURRENT RATING (SCCR)	TYPE	CAPACITY (MBH)	MODEL NUMBER	AMBIENT TEMPERATURE (F)	NO. OF FANS	WEIGHT (LBS)	VOLTAGE	MCA	MOPD	SCCR
AHU-1-A	BUILDING A	DESERT-AIRE	SA40CG4CCE	PLATFORM	7900	17900	1.8	3.39	15	2502	8950	84	519	271.82	460	175	167	65	ELECTRIC COIL	500	RC8S030C 4U22134	108	4	1497	460-3-60	15.3	20	5

NOTES: MAIN INDOOR DEHUMIDIFIER AIR HANDLER UNIT WILL INCLUDE A FACTORY UPGRADE MODULAR CABINET CONSTRUCTION WITH WIRING QUICK CONNECT HARNESSES BETWEEN SECTIONS TO ALLOW FOR FIELD ASSEMBLY IN THE MECHANICAL ROOM. EACH SECTION WILL NOT EXCEED 6' 11" IN HEIGHT 6' 11" IN LENGTH OR 8' IN WIDTH

ENERGY RECOVERY SCHEDULE

MARK	LOCATION BUILDING A	MANUFACTURER/MODEL NO.	FAN TYPE	DRIVE FLOW	AIR FLOW (MIN CFM)	AIRFLOW (MAX CFM)	MAX RECOVERY (BTUH)	MAX SPEED - RPM	EC FAN MAX (KW)	CONTROLLED BY	SPEED CONTROLLER	MAX DBA	LWA	HP (WATTS)	MCA	VOLT - PHASE - HERTZ	WEIGHT	NOTES
ER-1-A	PLATFORM	DESERT AIRE	INLINE	DIRECT	1400	3600	88013	1770	2.5	DDC CONTROL SYSTEM	VARIGREEN				20	460/3	610	

NOTES:
1

AIR DEVICE SCHEDULE

MARK	MANUFACTURER / MODEL NO.	SUPPLY / RETURN / EXH	DESCRIPTION	TYPE (BORDER TYPE)	FACE SIZE (LxW) (INxIN)	FRAME TYPE	FINISH	MATERIAL	ACC.	NOTES
A	TITUS TMSA	SUPPLY	SQUARE CEILING DIFFUSER	HARD OR LAY-IN	24x24	1	WHITE	STEEL	4-WAY	1,2
B	TITUS 350	RET/EXH	RETURN GRILLE	HARD OR LAY-IN	AS INDICATED ON PLANS	1	WHITE	STEEL		2
C	TITUS 301 RL	RET/EXH	RETURN GRILLE - WALL	HARD	AS INDICATED ON PLANS	1	WHITE	ALUMINUM	HEAVY DUTY	2
D	TITUS CT-541	SUPPLY	CEILING SUP	HARD	84"L x 6"W			ALUMINUM		
E	TITUS TMRA	SUPPLY	ROUND SUPPLY DIFFUSER		22"ROUND / 12" ROUND NECK	1	WHITE	ALUMINUM		2
F	TITUS 50RL	RET/EXH	EXHAUST GRILLE	HARD	AS INDICATED ON PLANS	1	WHITE	ALUMINUM	HEAVY DUTY	2

NOTES: 1 SIZE ON GRID CALLOUT REFERS TO DUCT RUNOUT SIZE.
2 PROVIDE PRIMER FINISH WHERE GRILLES ARE INSTALLED IN PAINTED CEILING OR WALL APPLICATION

ROOF HOOD SCHEDULE BLD'G A

MARK	LOCATION	MANUFACTURER / MODEL NO	TYPE	AIRFLOW (CFM)	FREE AREA (%)	APO (IN WG)	PHYSICAL			DAMPER TYPE	NOTES
							THROAT OPENING	CURB (INxIN)	HOOD HEIGHT		
RH-1-A	ROOF	GREENHECK - WRH	EXH	4990	50	0.045"	24"x44"	32" x 52"	19.75"	BAROMETRIC	
RH-2-A	ROOF	GREENHECK - WRH	EXH	8950	50	0.045"	48"x64"	52" x 72"	31"	BAROMETRIC	
RH-3-A	ROOF	GREENHECK - WIH	OSA	8950	50	0.045"	48"x64"	52" x 72"	31"	BAROMETRIC	

ENERGY RECOVERY VENTILATOR UNIT BUILDING A

MARK	LOCATION	MANUFACTURER	MODEL NO	AIRFLOW (CFM)	EFFECTIVENESS	SUPPLY FAN MOTOR			ELECTRICAL			PHYSICAL	DUCT CONNECTION		NOTES
						ESP (IN)	(dBA)	TYPE	V/HZ/PH	MCA	MOP	LxWxH (INxINxIIN)	DIA (IN)	WEIGHT (LBS)	
ERV-1-A	PLATFORM	DAIKIN	VAM1200GVJU	1100	68	0.24	39	ECM	208/60/1	7.6	15	47-13/16x63-3/4x30-7/8	14	346	

PROPELLAR FAN SCHEDULE

MARK	LOCATION BUILDING A	MANUFACTURER/MODEL NO.	FAN TYPE	MOTOR	AIRFLOW (LO/HI CFM)	FAN SPEED - RPM	CONTROLLED BY	SPEED CONTROLLER	HP (WATTS)	VOLT - PHASE - HERTZ	WEIGHT	NOTES
PF-1-A	FITNESS A104	65" MINKAAIRE F897L CAIRO	6 BLADE PROPELLAR	DC, 6 SPEED	3313 / 7570	52 / 141	TIME CLOCK	WALL MOUNT	27.4	120/60/1	22 LBS	1
PF-2-A	FITNESS A104	65" MINKAAIRE F897L CAIRO	6 BLADE PROPELLAR	DC, 6 SPEED	3313 / 7570	52 / 141	TIME CLOCK	WALL MOUNT	27.4	120/60/1	22 LBS	1

NOTES:
1 VERIFY COLOR WITH ARCHITECT PRIOR TO ORDERING

DUCT SYSTEMS INSULATION SCHEDULE

LOCATION OF DUCT	DUCT SYSTEM TYPE	DUCT CONFIGURATION	INSULATION TYPE	MINIMUM R-VALUE, INSULATION THICKNESS	NOTES
DUCT NOT WITHIN CONDITIONED SPACE	SUPPLY, RETURN, EXHAUST, MIXED, OUTSIDEM, AND TRANSFER AIR DUCTS	RECTANGULAR - EXPOSED	RIGID BOARD	R-7, 1 LAYER, 2 INCH THICK	
		RECTANGULAR - CONCEALED	DUCT WRAP	R-7, 1 LAYER, 3 INCH THICK	
		ROUND AND OVAL	DUCT WRAP	R-7, 1 LAYER, 3 INCH THICK	
DUCT WITHIN CONDITIONED SPACE	SUPPLY, RETURN, EXHAUST, GENERATOR EXHAUST, RELIEF, AND TRANSFER AIR DUCTS	RECTANGULAR - EXPOSED	RIGID BOARD	R-3.3, 1 INCH THICK	
		RECTANGULAR - CONCEALED	DUCT WRAP	R-3.3, 1 LAYER, 1-1/2 INCH THICK	
		ROUND AND OVAL	DUCT WRAP	R-3.3, 1 LAYER, 1-1/2 INCH THICK	
	MIXED AND OUTSIDE AIR DUCTS	RECTANGULAR - EXPOSED	RIGID BOARD	R-7, 1 LAYER, 2 INCH THICK	
		RECTANGULAR - CONCEALED	DUCT WRAP	R-7, 1 LAYER, 3 INCH THICK	
		ROUND AND OVAL	DUCT WRAP	R-7, 1 LAYER, 3 INCH THICK	
DUCTS AND PLENUMS WITHIN CONDITIONED SPACE FUNCTIONING AS PART OF BUILDING ENVELOPE	ALL DUCT TYPES	RECTANGULAR	RIGID BOARD	R-VALUE EQUAL TO BUILDING ENVELOPE, THICKNESS AS REQUIRED	NOTE 1
		ROUND AND OVAL	DUCT WRAP	R-VALUE EQUAL TO BUILDING ENVELOPE, THICKNESS AS REQUIRED	NOTE 1

NOTES:
1- INSULATE OUTSIDE, EXHAUST, AND RELIEF AIR DUCTS FROM BUILDING ENVELOPE TO BACKDRAFT DAMPER WITH R-VALUE EQUAL TO BUILDING ENVELOPE THICKNESS

WALL HEATER SCHEDULE BUILDING A

MARK	LOCATION BUILDING A	MANUFACTURER/MODEL NO.	UNIT SIZE AND CAPACTIY	UNIT SERIES	VOLT - PHASE - HERTZ	DIMENSIONS	NOTES
WH-1-A	MECH A115	QMARK / CZ1512T	1500/750	COS-E	120/60/1	7-7/8"X11-1/2"X4"	

NOTES:

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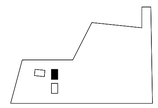
Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRINGS WAY
MISSOURI CITY, TEXAS 77459

HINESAD

Contract No: 2024-002

Design Team:
BURMAN DESIGN
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Key Plan



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03-14-2024

No.	Issue Description	MM-DD-YYYY
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1	ADDENDUM 1	06-20-2025

Drawn by: TP Reviewed by: LB

Project No: 2024-002

Sheet Title:
HVAC SCHEDULES NATATORIUM

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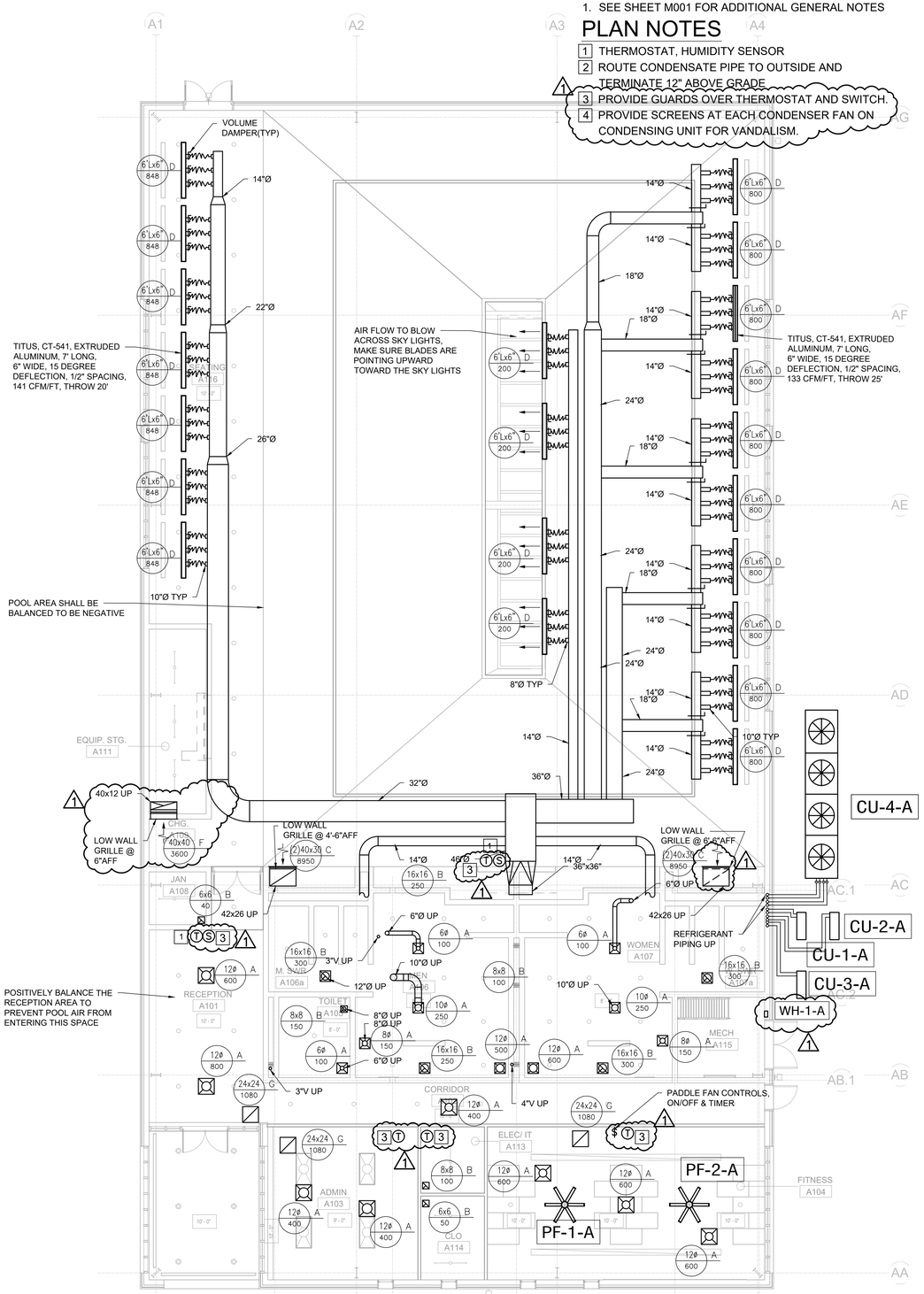
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GENERAL NOTES

1. SEE SHEET M001 FOR ADDITIONAL GENERAL NOTES

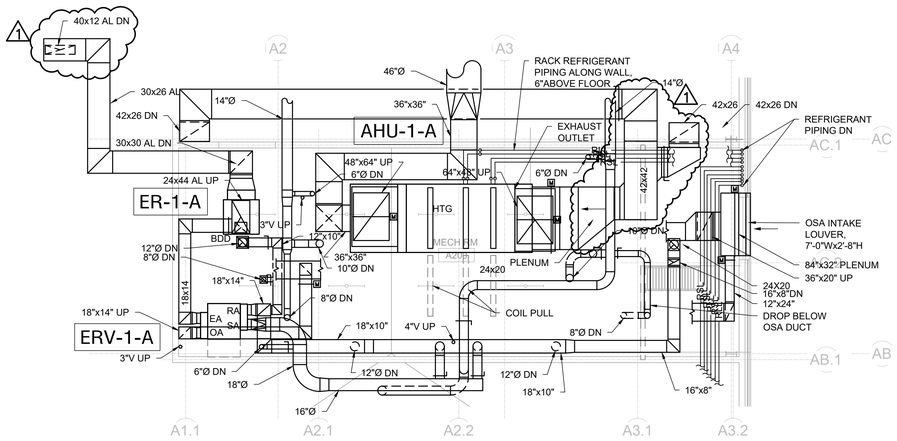
PLAN NOTES

1. THERMOSTAT, HUMIDITY SENSOR
2. ROUTE CONDENSATE PIPE TO OUTSIDE AND TERMINATE 12" ABOVE GRADE.
3. PROVIDE GUARDS OVER THERMOSTAT AND SWITCH.
4. PROVIDE SCREENS AT EACH CONDENSER FAN ON CONDENSING UNIT FOR VANDALISM.



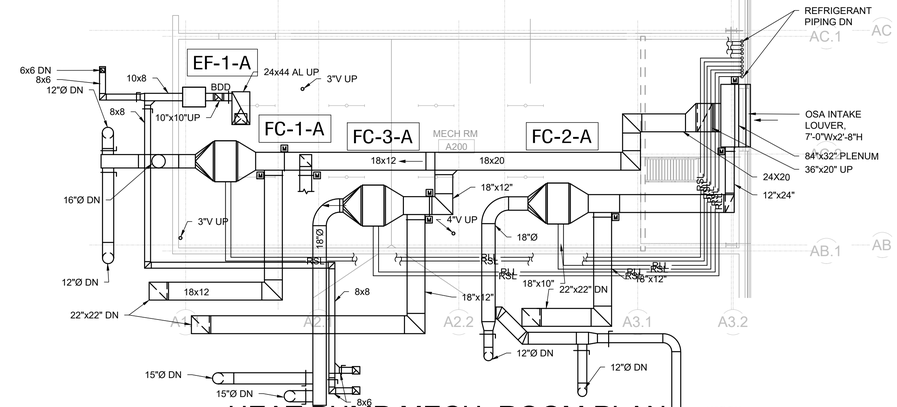
HVAC PLAN NATATORIUM

Scale: 1/8" = 1'-0"



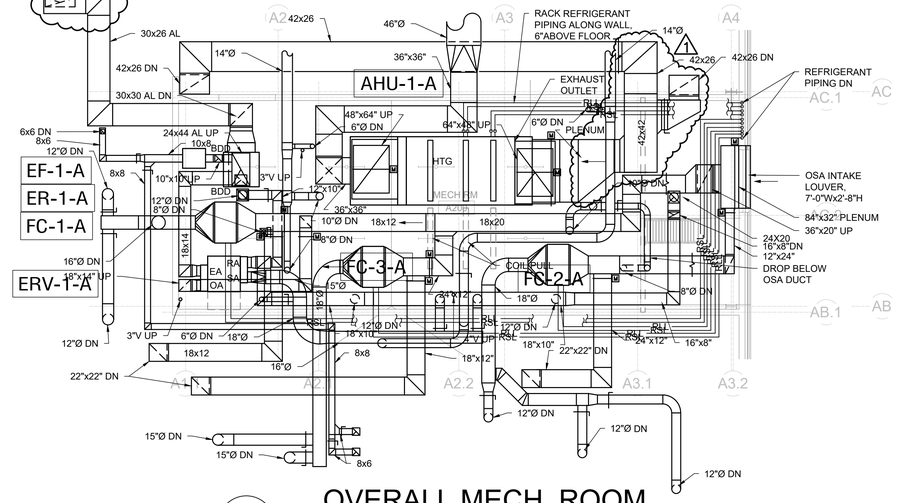
ERV & AHU-1 MECH. ROOM PLAN

Scale: 1/8" = 1'-0"



HEAT PUMP MECH. ROOM PLAN

Scale: 1/8" = 1'-0"



OVERALL MECH. ROOM

Scale: 1/8" = 1'-0"

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Project No: 2024-002

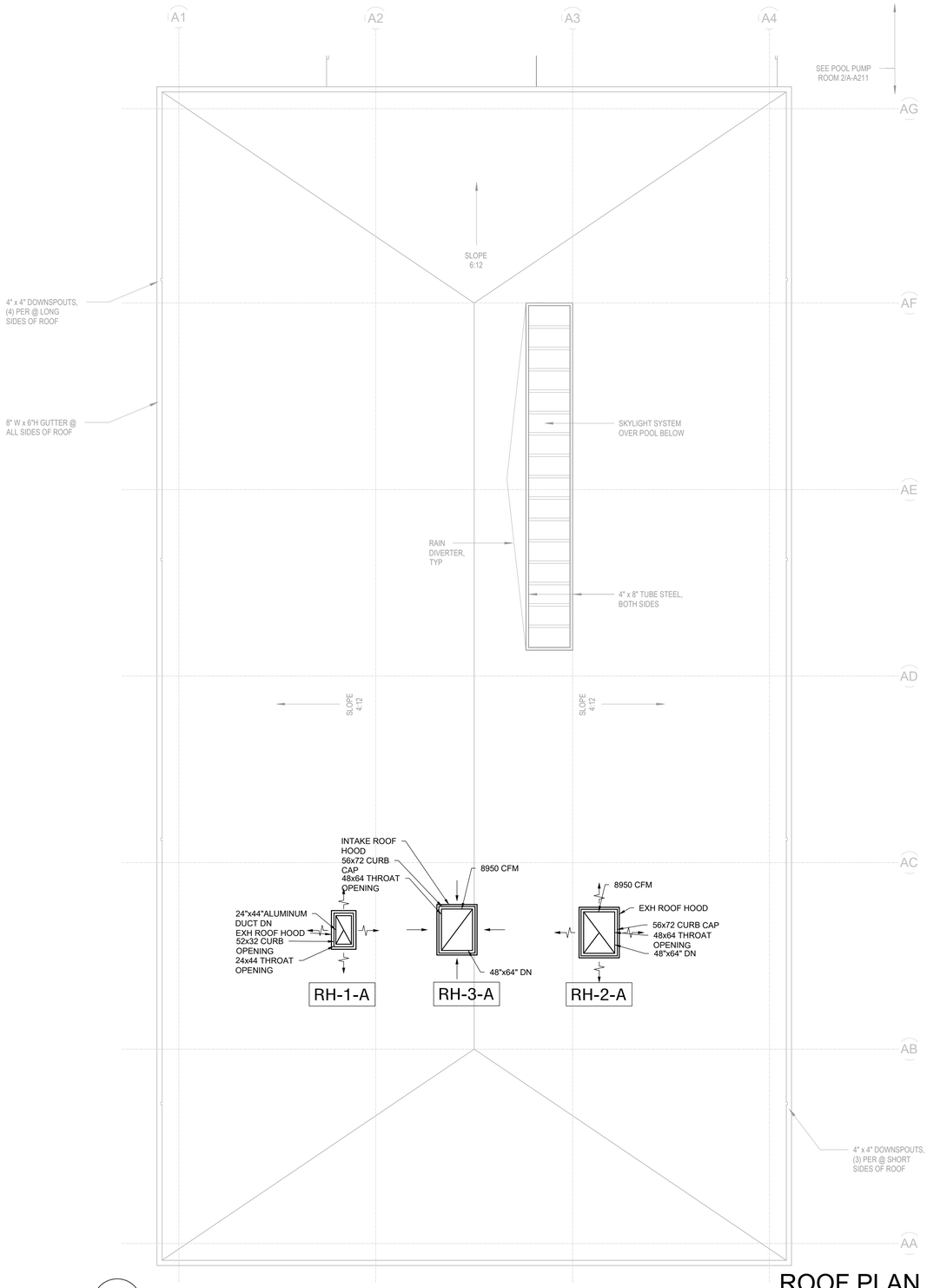
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HVAC PLAN NATATORIUM

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Sheet Number

A-M201



1

ROOF PLAN NATATORIUM

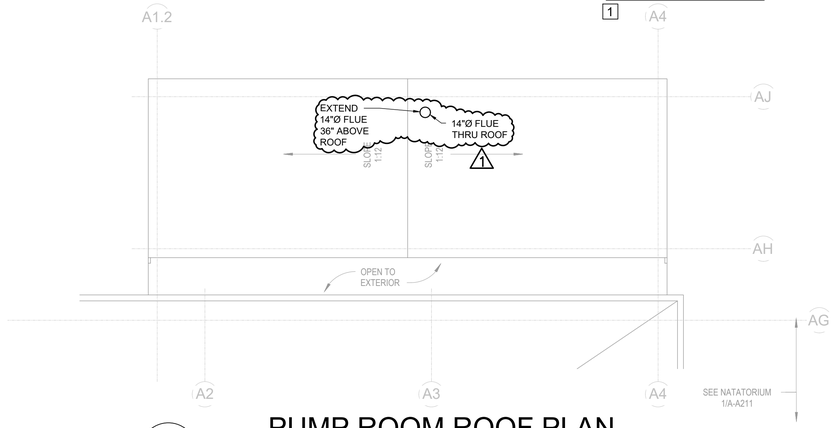
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GENERAL NOTES

1. SEE SHEET M001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

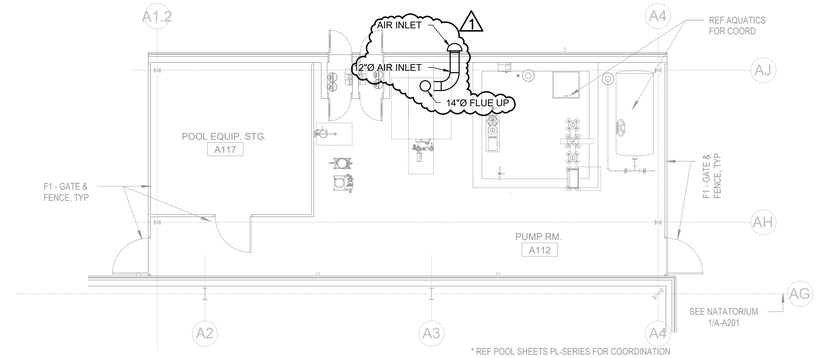
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2

PUMP ROOM ROOF PLAN

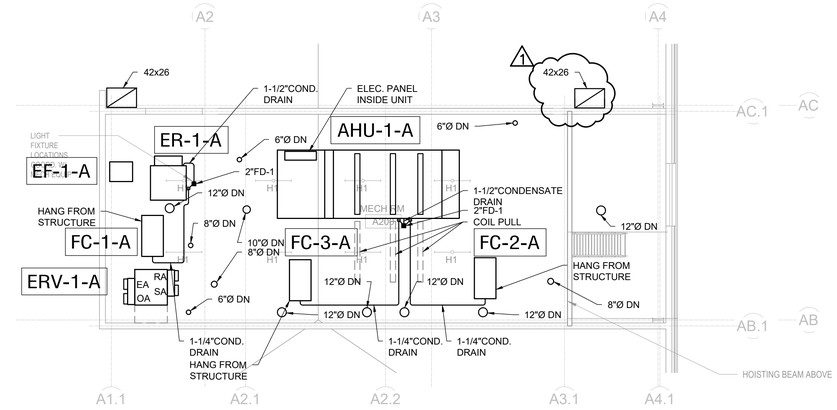
Scale: 1/8" = 1'-0"



3

PUMP ROOM HVAC PLAN

Scale: 1/8" = 1'-0"



4

MECH. ROOM EQUIPMENT PLAN

Scale: 1/8" = 1'-0"

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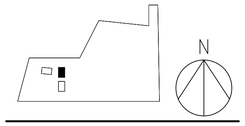
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Sheet Title:

ROOF PLAN NATATORIUM

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Sheet Number

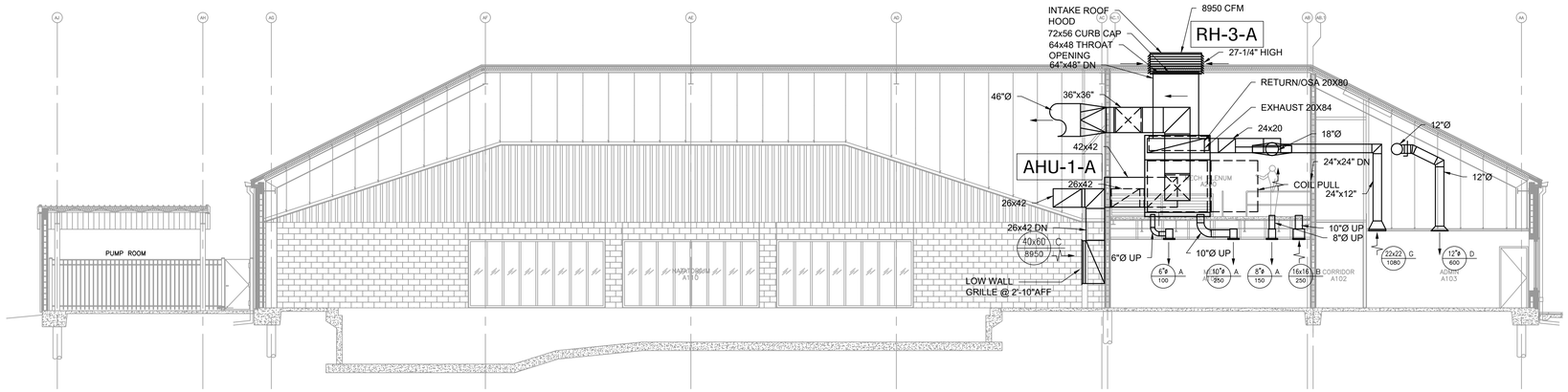
A-M202

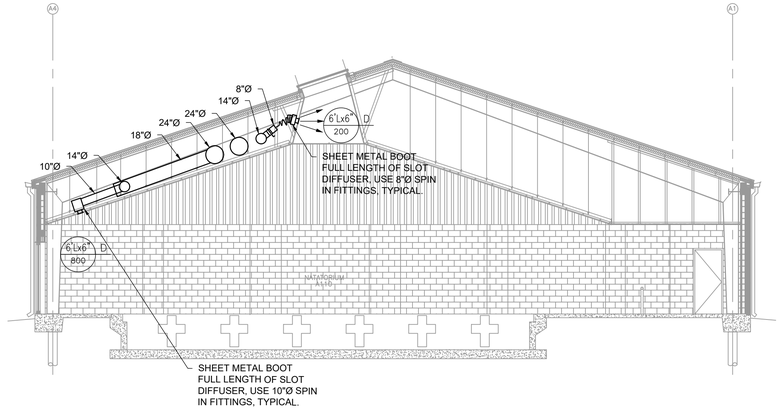
GENERAL NOTES

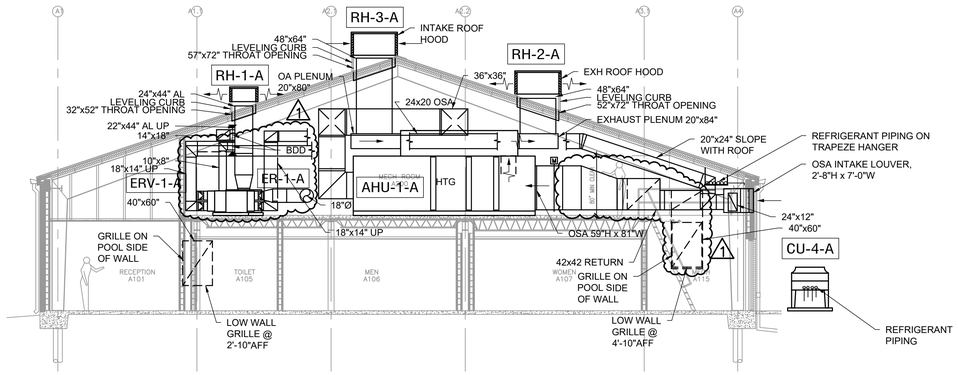
1. SEE SHEET M001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1







1

SECTIONS NATATORIUM

Scale: 1/8" = 1'-0"

Project:
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LINDA A. BURMAN
153831
PROFESSIONAL ENGINEER

03-14-2024

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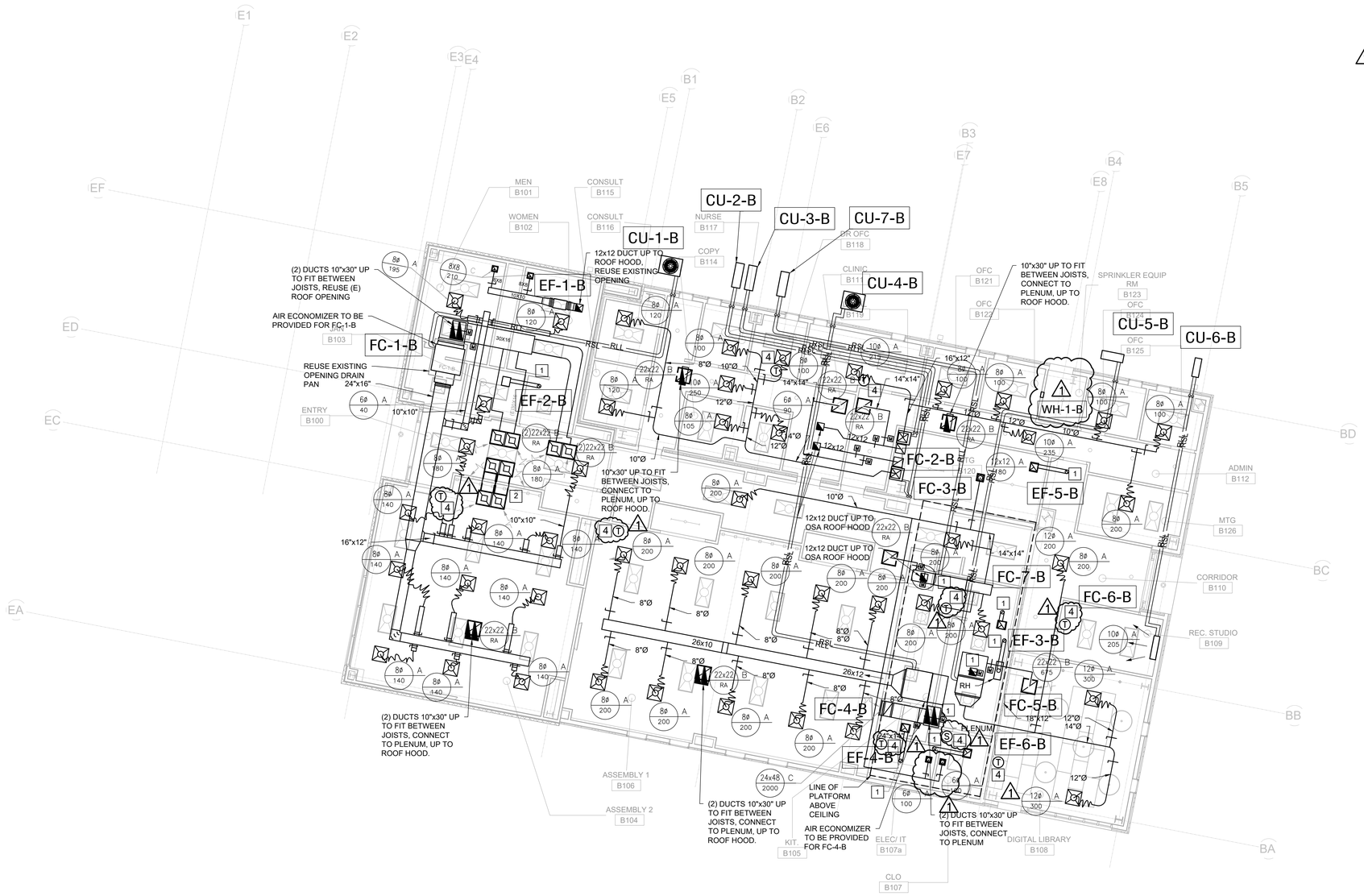
SECTIONS NATATORIUM

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Sheet Number

A-M301

WALL HEATER SCHEDULE BUILDING B							
MARK	LOCATION BUILDING B	MANUFACTURER/MODEL NO.	UNIT SIZE AND CAPACTIY	UNIT SERIES	VOLT - PHASE - HERTZ	DIMENSIONS	NOTES
WH-1-B	SPRINKLER EQUIP RM B123	QMARK / CZ1512T	1500/750	COS-E	120/60/1	7-7/8"X11-1/2"X 4"	
NOTES:							



GENERAL NOTES

1. SEE SHEET M001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1. EXHAUST DUCT UP TO ROOF CAP.
2. 22x10 SOUND LINED TRANSFER DUCTS WITH TYPE B GRILLES.
3. ROUTE CONDENSATE PIPE TO OUTSIDE AND TERMINATE 12" ABOVE GRADE
4. PROVIDE GUARDS OVER THERMOSTAT AND SWITCH.
5. PROVIDE SCREENS AT EACH CONDENSER FAN ON CONDENSING UNIT FOR VANDALISM.

1 HVAC PLAN COMMUNITY CENTER

Scale: 1/8" = 1'-0"

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Sheet Title:

HVAC PLAN
COMMUNITY CENTER

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Sheet Number

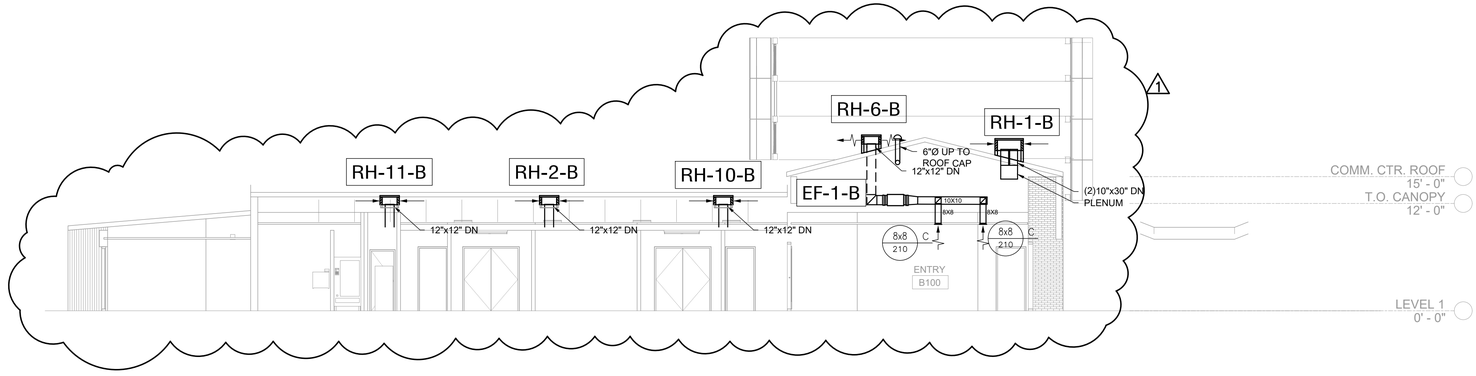
B-M201

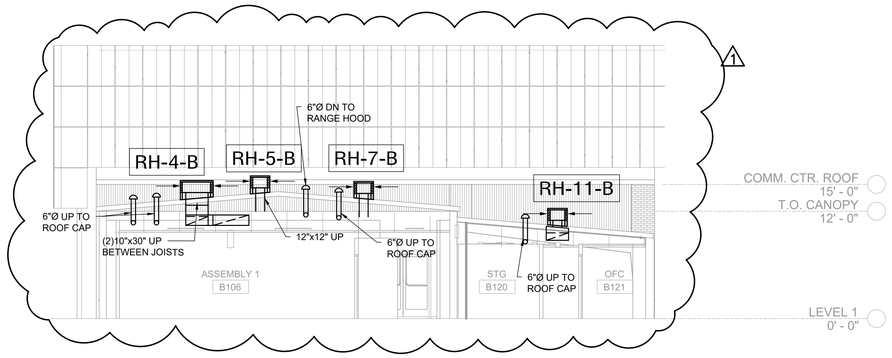
GENERAL NOTES

1. SEE SHEET M001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1





1 SECTIONS COMMUNITY CENTER

Scale: 1/8" = 1'-0"

THE STATE OF TEXAS
FORT BEND COUNTY

Project:

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Prepared For:

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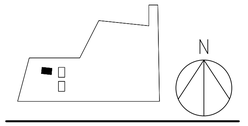
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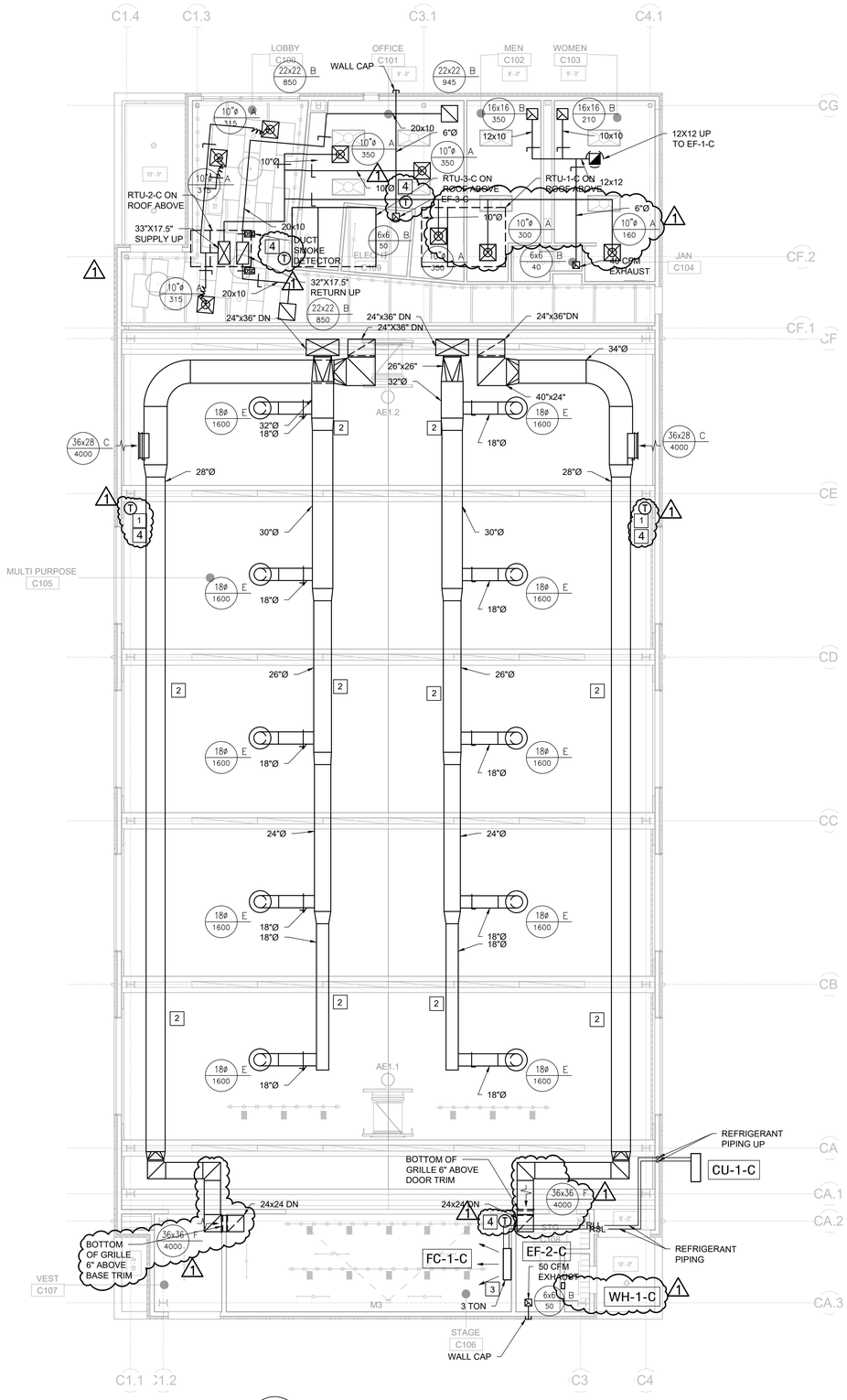
Sheet Title:

SECTIONS
COMMUNITY CENTER

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Sheet Number

B-M301



1

HVAC PLAN MULTI PURPOSE

Scale: 1/8" = 1'-0"

GENERAL NOTES

1. SEE SHEET M001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1. THERMOSTAT & OCCUPANCY (C02) SENSOR FOR DEMAND CONTROL VENTILATION.
2. EXPOSED DUCTWORK SHALL BE FABRICATED FOR BEST APPEARANCE. REMOVE ALL STICKERS AND PUTTY AND PREPARE FOR PAINTING.
3. SEE PLUMBING DRAWINGS FOR CONDENSATE PIPE ROUTE.
4. PROVIDE GUARDS OVER THERMOSTAT AND SWITCH.
5. PROVIDE SCREENS AT EACH CONDENSER FAN ON CONDENSING UNIT FOR VANDALISM.

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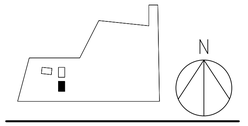
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HVAC PLAN MULTI PURPOSE

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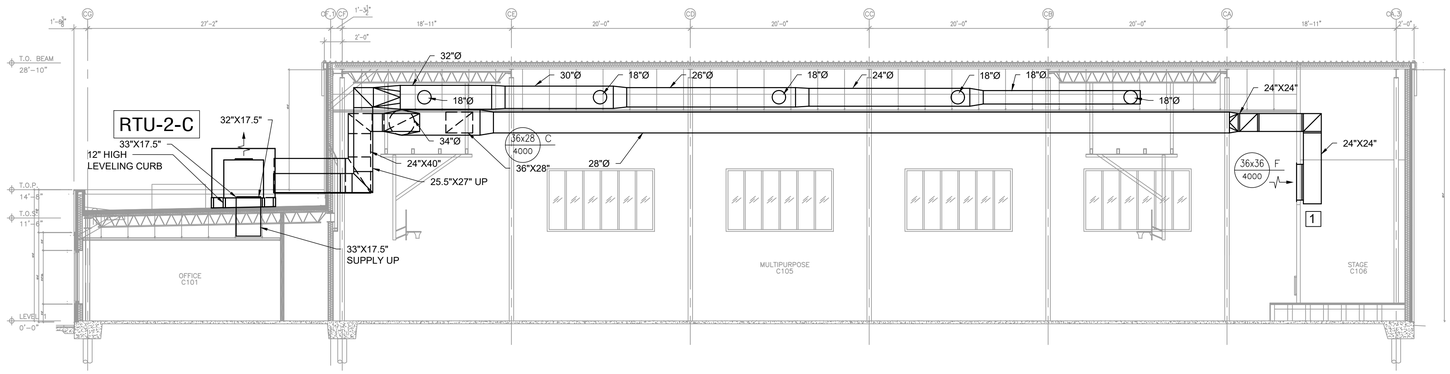
C-M201

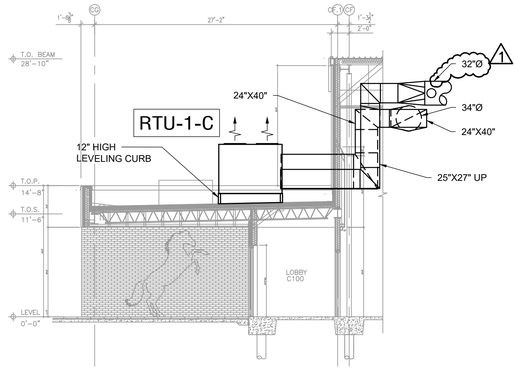
GENERAL NOTES

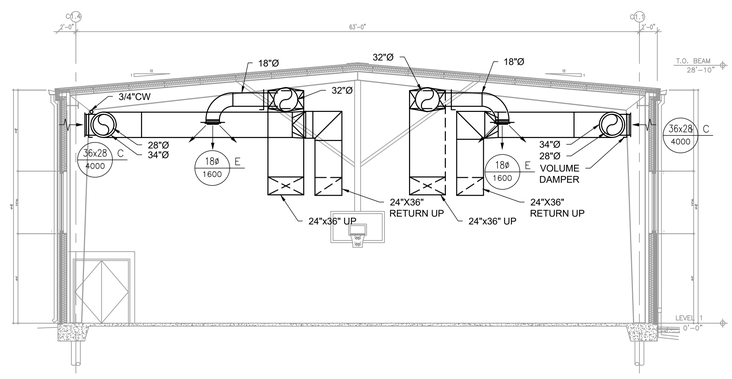
1. SEE SHEET M001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1 CONFIRM WALL GRILL LOCATIONS WITH ARCHITECTURAL PRIOR TO FRAMING OPENING







SECTIONS MULTI PURPOSE

Scale: 1/8" = 1'-0"

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRINGS WAY
MISSOURI CITY, TEXAS 77459

HINESAD

Contract No: 2024-002

Design Team:
BURMAN DESIGN
31620 23rd Ave S
Federal Way, WA 98003
www.Burman.design
(253) 508-2658

Key Plan

N

Professional Seals

STATE OF TEXAS
LINDA A. BURMAN
103831
LICENSED
PROFESSIONAL ENGINEER

03-14-2024

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

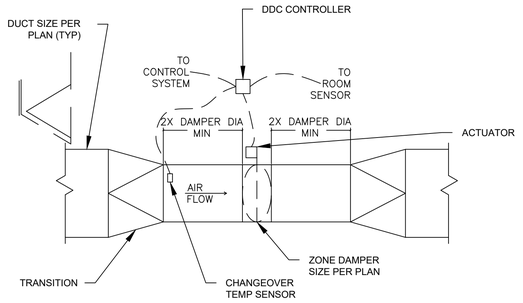
Drawn by: TP Reviewed by: LB

Project No: 2024-002

Sheet Title:
SECTIONS MULTI PURPOSE

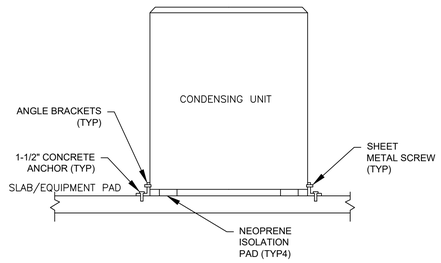
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Sheet Number
C-M301

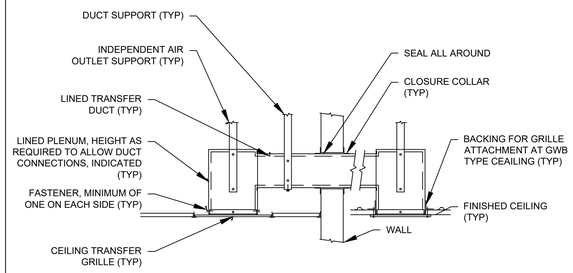


NOTES:
MINIMUM CFM IS 50% OF MAX., UNO.

1 ZONE DAMPER SCALE : NTS

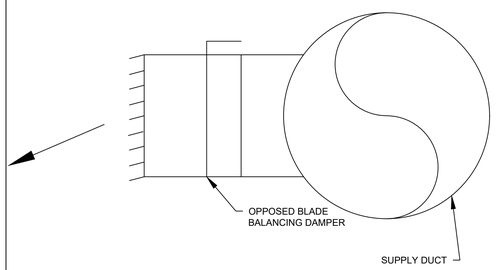


2 CONDENSING UNIT INSTALLATION SCALE : NTS



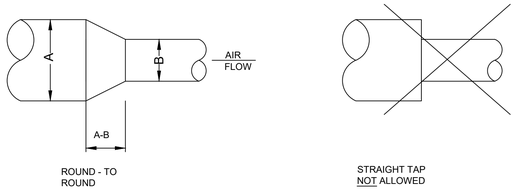
NOTES:
1. CEILING TYPE & AIR INLET FRAME STYLES MAY VARY FROM THAT DEPICTED
2. SEE PLAN FOR SIZE AND QUANTITY OF DUCT CONNECTIONS AND TRANSFER GRILLES
3. PROVIDE ADDED ELBOWS & FIRE/SMOKE DAMPERS AS SHOWN ON PLANS.

3 TRANSFER DUCT SCALE : NTS

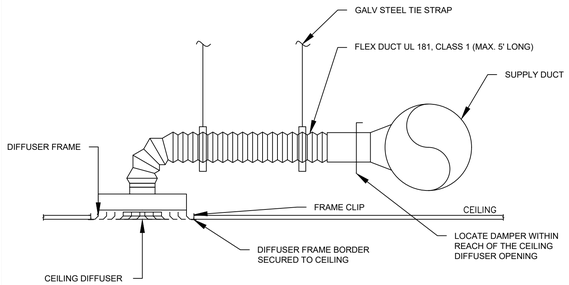


4 SIDE GRILLE INSTALLATION SCALE : NTS

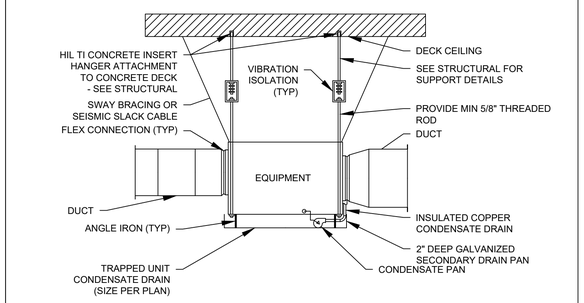




5 ROUND TO ROUND TRANSITIONS SCALE : NTS

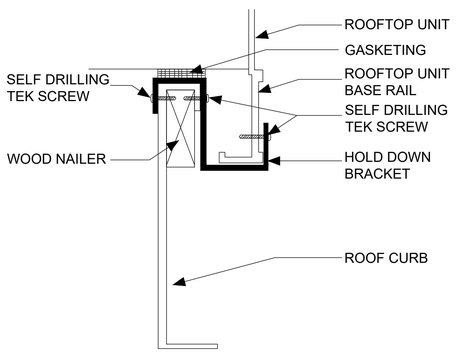


6 DIFFUSER CONNECTION SCALE : NTS

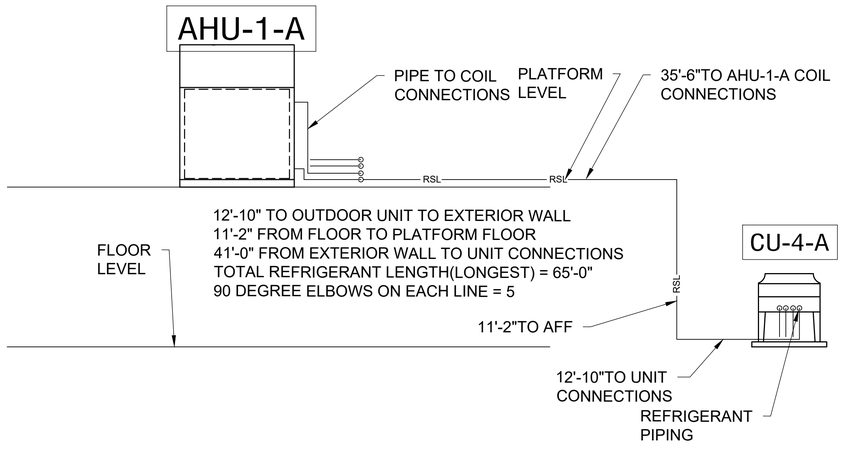


NOTES:
STRUCTURE MAY VARY. PROVIDE MANUFACTURER REQ'D CLEARANCES. FAN MAY VARY IN SIZE AND STYLE.

7 EQUIPMENT MOUNTING DETAIL SCALE : NTS



8 HOLD DOWN BRACKET SCALE : NTS



9 REFRIGERANT PIPING RISER DETAIL SCALE : NTS

REFRIERANT LINE SIZES		
	CIRCUIT A	CIRCUIT B
DISCHARGE LINE	1-1/8"	1-3/8"
LIQUID LINE	3/4"	7/8"
LINE AND CONDENSER CHANRGE REQUIRED	36.5 LBS	37.9 LBS
ESTIMACED EXTRA FIELD OIL REQUIRED	13 OZ	13 OZ
CONDENSING FEEDS PER CIRCUIT	29	49

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

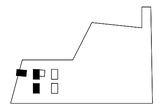
Prepared For:
FORT BEND COUNTY
5855 SIENNA SPRINGS WAY
MISSOURI CITY, TEXAS 77459

HINESAD

Contract No: 2024-002

Design Team:
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31620 23rd Ave S
Federal Way, WA 98003
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(253) 508-2658

Key Plan



Professional Seals



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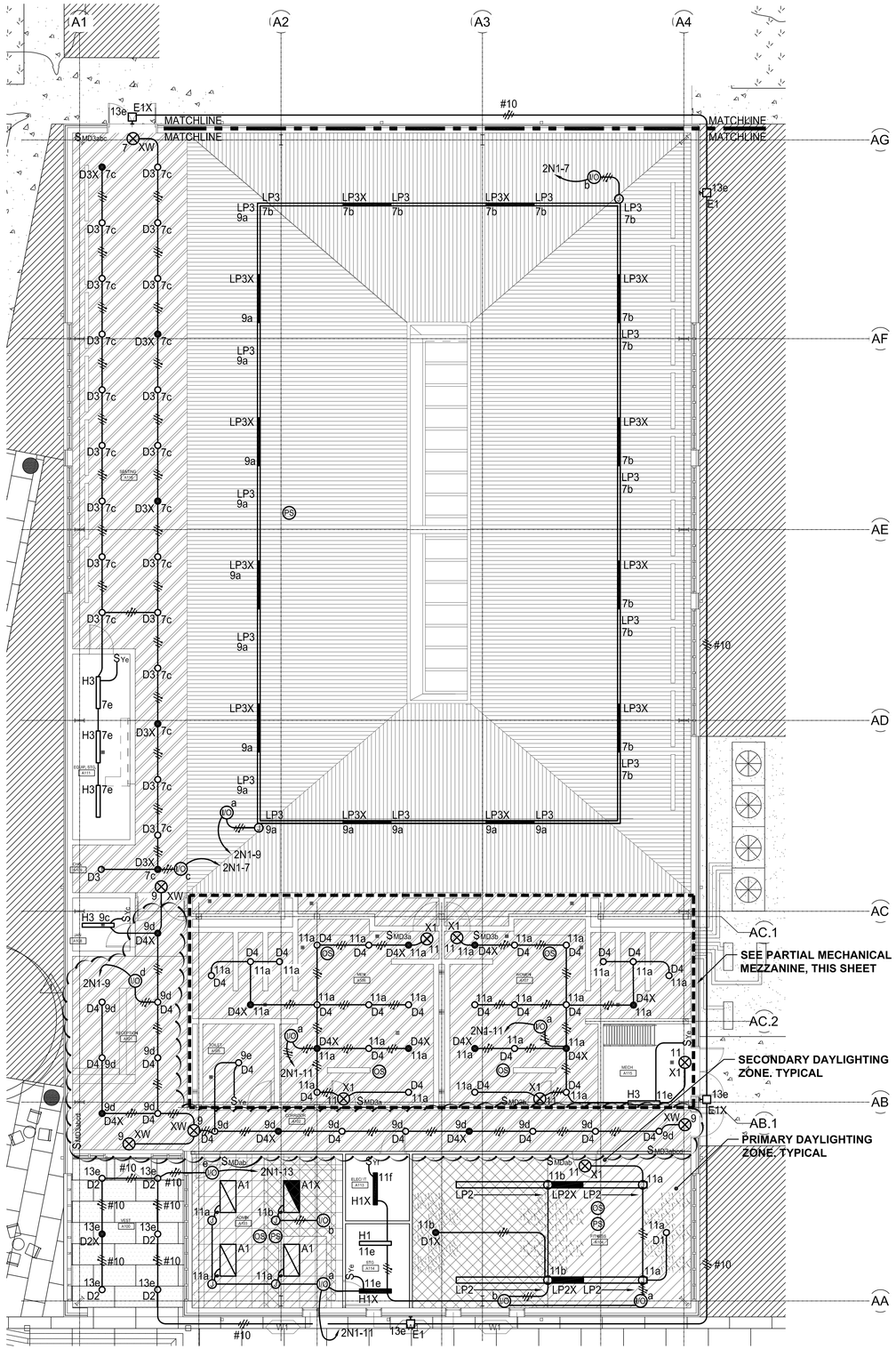
Drawn by: TP Reviewed by: LB

Project No: 2024-002

Sheet Title:
HVAC DETAILS

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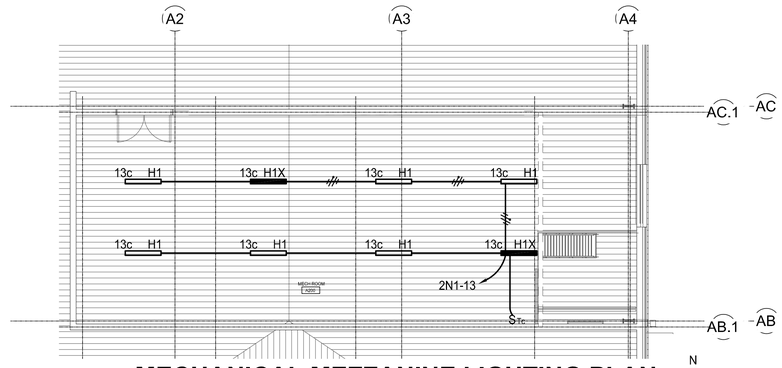
Sheet Number
M200



NATATORIUM LIGHTING PLAN

SCALE: 1/8"=1'-0"

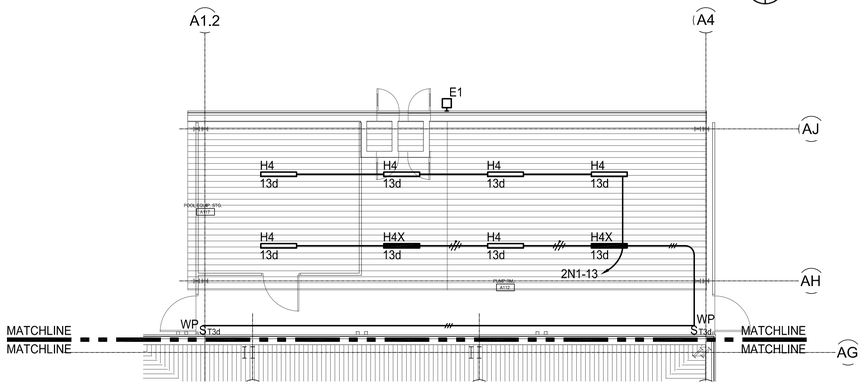
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MECHANICAL MEZZANINE LIGHTING PLAN

SCALE: 1/8"=1'-0"

N



NATATORIUM LIGHTING PLAN

SCALE: 1/8"=1'-0"

N

GENERAL NOTES:

1. ELECTRICAL REQUIREMENTS ARE NOT LIMITED TO ELECTRICAL DRAWINGS AND SPECIFICATIONS. THERE IS ADDITIONAL ELECTRICAL WORK REQUIRED TO BE INCLUDED IN THE BID, INDICATED ON ARCHITECTURAL, LANDSCAPE, CIVIL, MECHANICAL, DATA, AND AUDIO VISUAL DRAWINGS. ADDITIONAL ELECTRICAL WORK REQUIRED IN THE BID IS ALSO LOCATED IN THE SPECIFICATIONS. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL, CIVIL, LANDSCAPE, MECHANICAL, DATA, AND AUDIO VISUAL SPECIFICATIONS FOR ADDITIONAL ELECTRICAL INFORMATION AND INCLUDE COSTS FOR THIS WORK IN THE BID.
2. CONTRACTOR SHALL INCLUDE IN HIS BID LIGHTING CONTROL COMMISSIONING COSTS. CONTRACTOR SHALL PROVIDE THE OWNER A COMPLETE REPORT OF TEST PROCEDURES AND RESULTS INDICATING ALL LIGHTING CONTROLS HAVE BEEN TESTED, ADJUSTED AND OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS AND THE WASHINGTON STATE NONRESIDENTIAL ENERGY CODE, SECTION C408. CONTRACTOR SHALL PROVIDE A SPREAD SHEET INDICATING ROOM NUMBER, TYPE OF CONTROL (OCCUPANCY SENSOR, LOW VOLTAGE, ETC.), VERIFICATION OF PROPER WORKING ORDER, AND ADJUSTMENTS MADE.
3. CONTRACTOR SHALL CONCEAL CONDUIT WHEREVER POSSIBLE. CONTRACTOR SHALL SUBMIT TO ARCHITECT FOR REVIEW AND APPROVAL, ALL ROUTINGS OF ANY EXPOSED CONDUIT PRIOR TO ROUGH-IN. NO EXPOSED CONDUIT SHALL BE INSTALLED UNTIL APPROVAL IS PROVIDED IN WRITING FROM THE ARCHITECT. ALL EXPOSED CONDUIT SHALL BE ROUTED IN A NEAT AND WORKMANSHIP LIKE MANNER.
4. CONTRACTOR SHALL PROVIDE A HOT-WIRE OF THE SAME CIRCUIT FOR ALL LIGHT FIXTURES WITH BATTERY PACKS, SO THAT THE BATTERY PACK IS BEING CHARGED AT ALL TIMES.
5. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE AN AUTHORITY HAVING JURISDICTION APPROVED FIRM TO EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE WITH CODE AS REQUIRED PER W.A.C. 296-46B-901. FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.
7. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.
8. ALL JANITOR CLOSETS, STORAGE ROOMS, MECHANICAL/ELECTRICAL ROOMS, AND BACK OF HOUSE SPACES WILL BE PROVIDED WITH A 0-12 HOUR DIGITAL TIMER SWITCH. THE TIMER SWITCH SHALL BE SET TO 1 HOUR. LIGHTS SHALL BLINK THREE TIMES 1 MINUTE PRIOR TO TURNING OFF TO WARN OCCUPANTS. OCCUPANT MAY ACTIVATE THE SWITCH FOR ADDITIONAL TIME.
9. ALL SINGLE OCCUPANT OFFICES, SMALL CONFERENCE ROOMS, WORK ROOMS, COPY ROOMS, AND SIMILAR SPACES SHALL BE PROVIDED WITH OCCUPANCY SENSORS. OCCUPANCY SENSORS SHALL TURN LIGHTS OFF AFTER 30 MINUTES OF NOT SENSING OCCUPANTS.
10. LARGE OFFICE SPACES SHALL BE CONTROLLED VIA A LOW VOLTAGE CONTROL PANEL WITH AN INTEGRAL TIME CLOCK. THE WINDOW (DAYLIGHTING) ZONES SHALL BE CIRCUITED AND CONTROLLED SEPARATELY FROM THE REMAINDER OF THE ROOM BY SEPARATE SWITCHES. THE TIME CLOCK SHALL SWEEP THE LIGHTS AT 10:00PM AND 12:00AM.
11. CORRIDORS, LOBBIES, ENTRIES, AND SIMILAR SPACES WILL BE CONTROLLED VIA THE LOW VOLTAGE CONTROL PANEL WITH INTEGRAL TIME CLOCK. THESE SPACES WILL TURN ON AT 4:00AM AND TURN OFF AT 12:00AM. SELECT FIXTURES WILL BE LEFT ON 24 HOURS FOR SECURITY PURPOSES.
12. EXTERIOR LIGHTING WILL BE CONTROLLED VIA THE LOW VOLTAGE CONTROL PANEL WITH INTEGRAL TIME CLOCK AND PHOTOSENSOR. THE PHOTOSENSOR TAKES PRECEDENCE ON THE LIGHTING CONTROL. IF THE SENSOR MEASURES ADEQUATE NATURAL LIGHT, ALL EXTERIOR LIGHTING WILL BE OFF. PARKING AREA LIGHTING WILL BE CONTROLLED VIA THE TIME CLOCK TO BE ON FROM 4:00AM TO 8:00AM AND 4:00PM TO 12:00AM. BUILDING PERIMETER LIGHTS WILL BE ON FROM 6:00AM TO 8:00AM AND 4:00PM TO 10:00PM.

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:

Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:

FORT BEND COUNTY

5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

Design Team:

CROSS ENGINEERS, INC
923 MLK Jr. Way
Tacoma, WA 98405
Phone: (253) 759-0118
Job Number: 24-142
info@crossengineers.com

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Key Plan

Professional Seals

STATE OF TEXAS
STEVEN LEE HUBBS
115738
LICENSED
PROFESSIONAL ENGINEER

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUED FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:

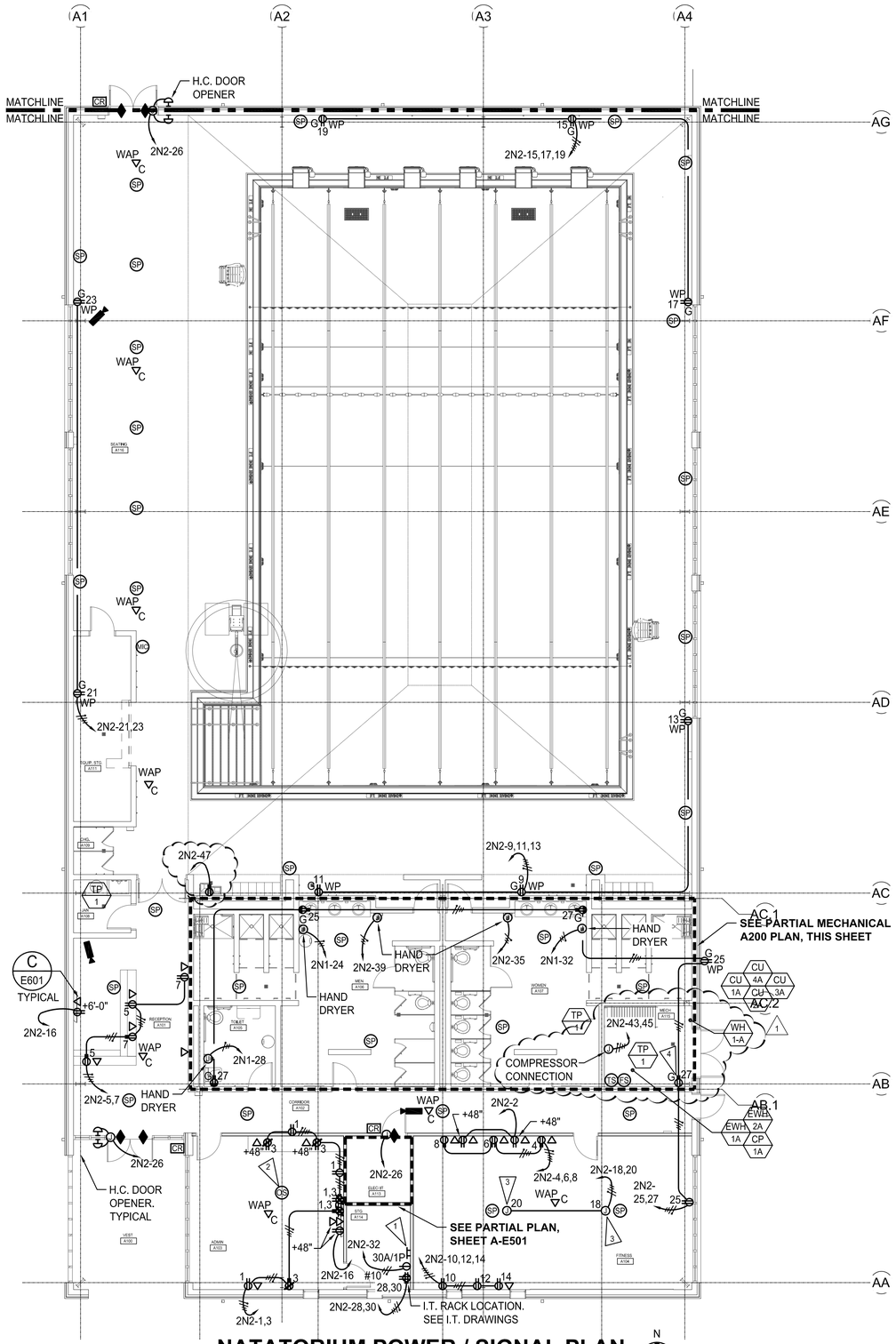
NATATORIUM LIGHTING PLAN

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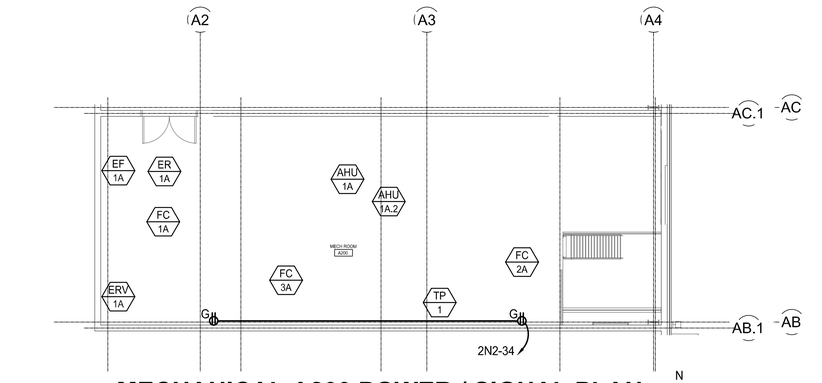
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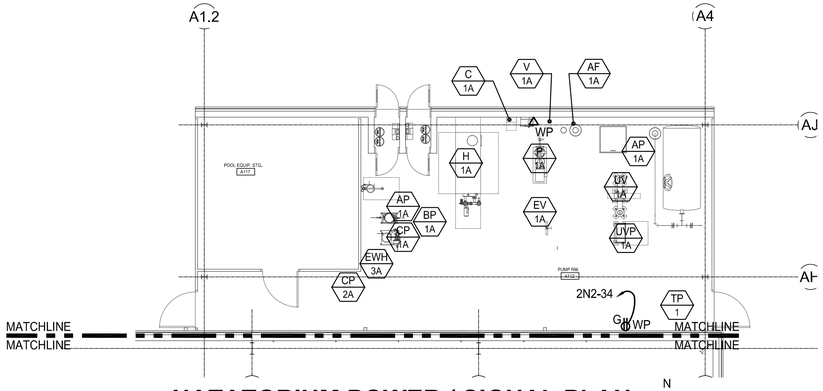
NATATORIUM POWER / SIGNAL PLAN

SCALE: 1/8"=1'-0"



MECHANICAL A200 POWER / SIGNAL PLAN

SCALE: 1/8"=1'-0"



NATATORIUM POWER / SIGNAL PLAN

SCALE: 1/8"=1'-0"

ELECTRICAL NOTES:

1. GROUND BAR PROVIDED BY TELECOM CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE #2 BARE CU CONDUCTOR BACK TO SERVICE GROUND. SEE DETAIL A, SHEET E601.
2. CONTRACTOR SHALL CONTROL 50% OF THE RECEPTACLES IN THIS ROOM WITH A CEILING MOUNTED OCCUPANCY SENSOR PER INTERNATIONAL ENERGY CONSERVATION CODE. SEE ELECTRICAL LEGEND FOR RECEPTACLES IDENTIFIED TO BE CONTROLLED.
3. CEILING FAN CONNECTION. CONTRACTOR SHALL PROVIDE CONDUIT, WIRE AND CONNECT CONTROLS PER MANUFACTURERS REQUIREMENTS.
4. CONTRACTOR SHALL TAP OF DUPLEX RECEPTACLE AND CONNECT SPRINKLER SYSTEM VALVES AS REQUIRED. COORDINATE WITH SPRINKLER CONTRACTOR.

GENERAL NOTES:

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2. ALL CONDUIT IS INTENDED TO BE CONCEALED. CONTRACTOR SHALL PROVIDE TO ARCHITECT/OWNER SHOP DRAWINGS INDICATING ROUTING OF ANY INTENDED EXPOSED CONDUIT PRIOR TO ROUGH-IN FOR ARCHITECT/OWNERS APPROVAL. CONTRACTOR SHALL NOT START ROUGH-IN FOR CONDUIT UNTIL WRITTEN APPROVAL IS RECEIVED.
3. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE AN AUTHORITY HAVING JURISDICTION APPROVED FIRM TO EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE WITH CODE AS REQUIRED. FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.
4. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR MAINTAINING ALL LOCATE MARKS ONCE THE UTILITIES HAVE BEEN LOCATED.
5. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.
6. CONTRACTOR SHALL PROVIDE TRENCHED 1"C-FIRE ALARM CONDUCTORS AND CONNECT THE POST INDICATOR VALVE TO THE FIRE ALARM SYSTEM FOR MONITORING. SEE CIVIL AND MECHANICAL DRAWINGS FOR LOCATIONS.
7. CONTRACTOR SHALL PROVIDE GROUNDING/BONDING CONNECTIONS TO ALL POOL EQUIPMENT AND POOL ACCESSORIES PER NEC 680. PROVIDE AND FIELD INSTALL GROUND LUGS ON ALL METAL PARTS, POOL EQUIPMENT AND ACCESSORIES.

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Key Plan

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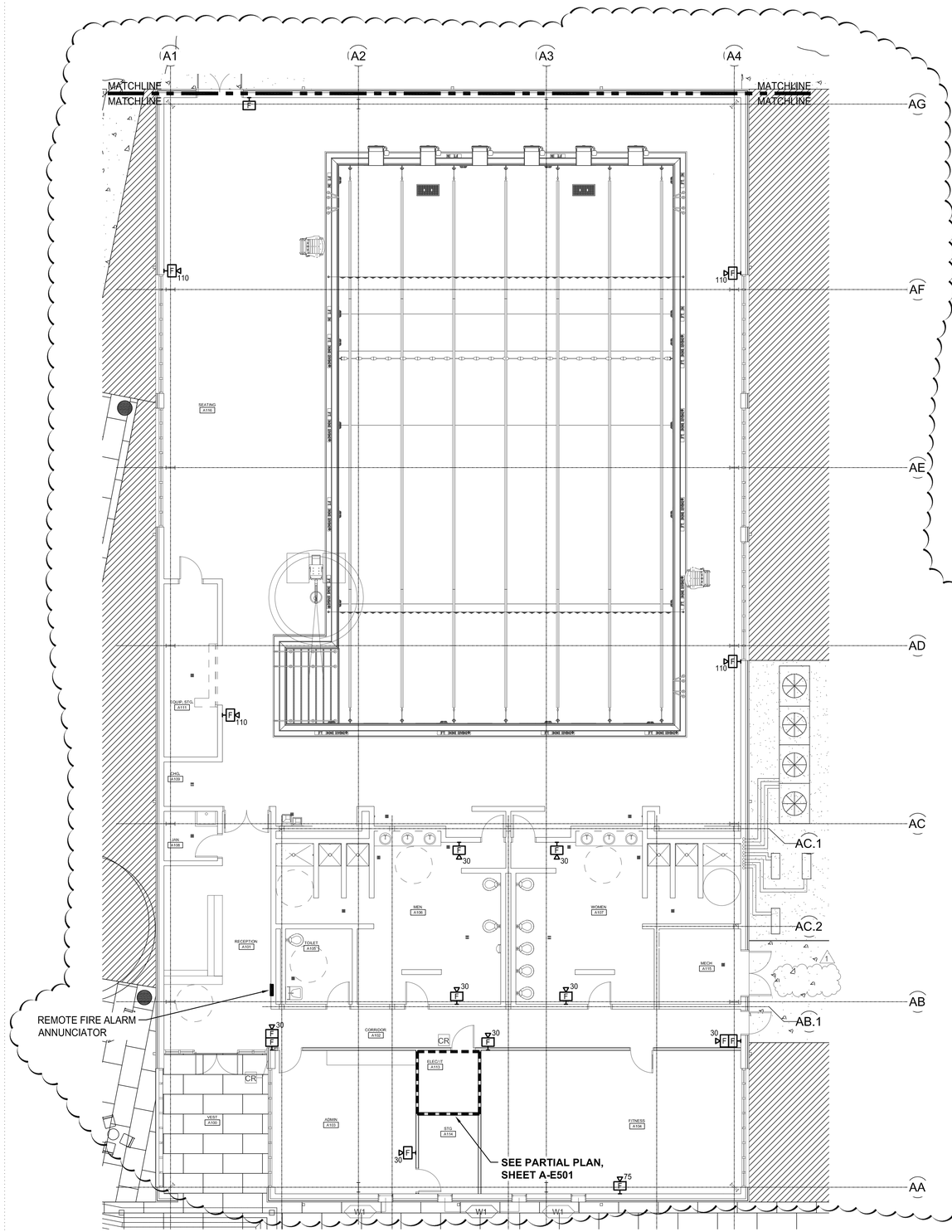
NATATORIUM POWER / SIGNAL PLAN

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

A-E301

8/16/2024 11:09:43 AM



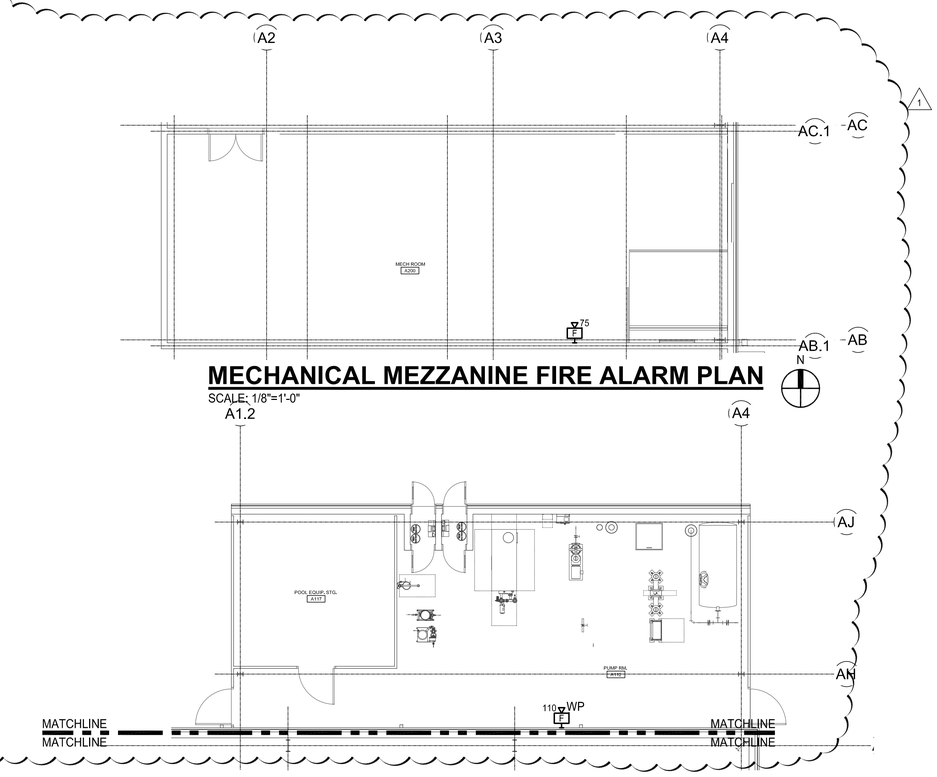
NATATORIUM FIRE ALARM PLAN

SCALE: 1/8"=1'-0"

N

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2. CONDUIT (OR PLENUM RATED CABLE WHERE ALLOWED) AND WIRING IS NOT SHOWN ON THE ELECTRICAL DRAWINGS FOR THE SIGNAL/SYSTEM DEVICES (FIRE ALARM, SECURITY, AND CAMERA) CONTRACTOR SHALL PROVIDE MANUFACTURER'S REQUIRED WIRING IN MINIMUM 3/4"C TO ALL SIGNAL/SYSTEM DEVICES OR PLENUM RATED CABLE WHERE ALLOWED BY CODE.
3. CONNECT FIRE/SMOKE DAMPERS SUPPLIED BY MECHANICAL CONTRACTOR AND POWERED BY 120 VAC FROM MECHANICAL PANEL THRU A CONTROL RELAY SUCH THAT DAMPERS ARE POWERED OPEN WHEN CONTROL RELAY IS ENERGIZED AND DAMPERS ARE CLOSED WHEN PANEL IS IN ALARM. PROVIDE SMOKE DETECTOR OR DUCT SMOKE DETECTOR WITHIN 5' OF EACH FIRE/SMOKE DAMPER. SEE MECHANICAL PLANS, SCHEDULES AND SPECIFICATIONS FOR FIRE/SMOKE DAMPER LOCATIONS. COORDINATE WITH MECHANICAL CONTRACTOR.
4. CONNECT ALL DOOR HOLDERS AND DOOR CLOSERS SUPPLIED WITH DOOR HARDWARE. THESE ITEMS SHALL BE POWERED BY THE FIRE ALARM CONTROL PANEL WITH 24V THRU A CONTROL RELAY SUCH THAT ALL DOORS RELEASE TO CLOSE WHEN PANEL IS IN ALARM. PROVIDE A SMOKE DETECTOR WITH AUXILIARY RELAY ON EACH SIDE OF DOOR. SEE ARCHITECTURAL PLANS, SCHEDULES AND SPECIFICATIONS FOR FIRE DOOR LOCATIONS.
5. PROVIDE FIRE ALARM CONDUIT AND WIRE CONNECTION FOR SHUTDOWN OF AIR HANDLING UNIT(S) AND EXHAUST FANS FOR SHUTDOWN ON ALARM AS REQUIRED PER THE UNIFORM MECHANICAL CODE. PROVIDE MONITOR/CONTROL MODULES FOR EXHAUST FANS LOCATED WITHIN 3 FEET OF FAN CONTROLLER, THRU ENERGIZED CONTROL RELAY SUCH THAT THE EXHAUST FANS SHUTDOWN UPON ALARM. SEE MECHANICAL PLANS, SCHEDULES AND SPECIFICATIONS FOR LOCATIONS. COORDINATE WITH MECHANICAL CONTRACTOR.
6. FIRE ALARM CONTRACTOR SHALL PROVIDE DETECTION COVERAGE IN ATTIC SPACE.
7. CONTRACTOR SHALL PROVIDE GROUNDING/BONDING CONNECTIONS TO ALL POOL EQUIPMENT AND POOL ACCESSORIES PER NEC 680. PROVIDE AND FIELD INSTALL GROUND LUGS ON ALL METAL PARTS, POOL EQUIPMENT AND ACCESSORIES.
8. FURNISH DUAL CONTACT DUCT SMOKE DETECTOR, INCLUDING SAMPLING TUBE, TO MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL LOCATE AND MOUNT THE DUCT SMOKE DETECTOR ENCLOSURE/SAMPLING TUBE FOR FIRE ALARM SYSTEM SHUTDOWN. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR SAMPLING TUBE LENGTH AND SIZE REQUIRED. ELECTRICAL CONTRACTOR SHALL PROVIDE NECESSARY CONDUIT (OR PLENUM RATED CABLE WHERE ALLOWED), WIRING, REMOTE INDICATORS AND ACCESSORIES TO SHUTDOWN EACH UNIT UPON ACTIVATION OF THAT UNIT'S SMOKE DETECTOR(S) REQUIRED PER THE MECHANICAL CODE. CONNECTIONS SHALL BE HARDWIRED, INDEPENDENT OF ANY CONTROL SYSTEM LOGIC, SO FAILURE OF THE CONTROL SYSTEM OR LOSS OF CONTROL SYSTEM POWER WILL NOT PREVENT THE FIRE ALARM SYSTEM, SHUTDOWN OF THE UNIT. IN ADDITION TO SHUTTING DOWN THE UNIT WITH THE ALARMED SMOKE DETECTOR, ALL EQUIPMENT INTERLOCKED OR SERVED BY THAT UNIT SHALL BE OFF. OTHER UNITS SHALL ALSO SHUT OFF TO AVOID BUILDING PRESSURE DIFFERENTIALS AND SIMILAR UNDESIRABLE EFFECTS. UPON RESET OF ALARMED DEVICE, SYSTEM SHALL AUTOMATICALLY RETURN TO NORMAL. MECHANICAL CONTRACTOR TO PROVIDE TIME DELAY START OF EQUIPMENT TO PREVENT EXCESS LOAD STARTING AT THE SAME TIME. CONTRACTOR SHALL PROVIDE CONDUIT AND WIRE AND CONNECT TO FIRE ALARM CONTROL PANEL. SEE MECHANICAL DRAWINGS, SCHEDULES AND SPECIFICATIONS FOR LOCATIONS.
9. CONTRACTOR SHALL PROVIDE CONDUIT, WIRE, AND CONNECT THE EXTERIOR FIRE ALARM BELL FURNISHED BY THE SPRINKLER CONTRACTOR. THE SPRINKLER SYSTEM IS A DESIGN BUILD SYSTEM. COORDINATE FINAL LOCATION WITH THE SPRINKLER CONTRACTOR. FOR 24V SPRINKLER BELLS, CONNECT THE BELL TO THE FIRE ALARM PANEL. FOR 120V SPRINKLER BELLS, CONNECT TO A DEDICATED SPARE 120V CIRCUIT.
10. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE AN AUTHORITY HAVING JURISDICTION APPROVED FIRM TO EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE WITH CODE AS REQUIRED. FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.
11. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.



MECHANICAL MEZZANINE FIRE ALARM PLAN

SCALE: 1/8"=1'-0"

N

NATATORIUM FIRE ALARM PLAN

SCALE: 1/8"=1'-0"

N

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:

Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:

FORT BEND COUNTY

5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

Design Team:

CROSS ENGINEERS, INC
923 MLK Jr. Way
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Job Number: 24-142

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Key Plan

Professional Seals

STATE OF TEXAS
STEVEN LEE HUBBS
152718
LICENSED
PROFESSIONAL ENGINEER

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUED FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:

NATATORIUM FIRE ALARM PLAN

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

A-E401

8/16/2024 11:09:43 AM

PANEL SCHEDULE

SURFACE MOUNTING
35,000 AIC

NO. **4N** | LOCATION: ELECTRICAL ROOM | SERVING: NATATORIUM | 480/277 VOLTS 3PHASE 4WIRE | 800 AMPS WITH 800 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.	
1	AHU-1A.2	12.70	30	20		SPARE	2	
3				20		SPARE	4	
5			3	20		SPARE	6	
7	SPARE		60	30		SPARE	8	
9							10	
11			3	3			12	
13	AHU-1A	138.61	200	30	16.60	ER-1A	14	
15							16	
17			3	3			18	
19	EWH-1A	36.00	60	30	12.70	CU-4A	20	
21							22	
23			3	3			24	
25	EWH-2A	36.00	60	30	11.62	V-1A/P-1A	26	*
27							28	
29			3	3			30	
31	EWH-3A	36.00	60	125	18.52	PANEL 2N2 (VIA XFMR)	32	
33							34	
35			3	3			36	
37	TVSS	-	30	125	60.80	PANEL 2N1 (VIA XFMR)	38	
39							40	
41			3	3			42	

REMARKS: SERVICE ENTRANCE RATED.

CONNECTED LOAD: 366.8 KVA 442 AMPS
DEMAND LOAD: 402.7 KVA 485 AMPS

* PROVIDE GFCI CIRCUIT BREAKER.

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 4N LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	4.65	X	1.25	220.19(A)(1)	=	5.81
RECEPTS TO 10KW	6.12	X	1.00	220.44	=	6.12
RECEPTS OVER 10KW	-	X	0.50	220.44	=	-
MOTORS (LARGEST)	138.61	X	1.25	430.24	=	173.26
MOTORS	92.56	X	1.00	430.24	=	92.56
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	108.00	X	1.00	220.51	=	108.00
MISCELLANEOUS	16.90	X	1.00		=	16.90
TOTAL CONNECTED	366.8 KVA (442 AMPS)			TOTAL DEMAND		402.7 KVA (485 AMPS)

PANEL SCHEDULE

SURFACE MOUNTING
22,000 AIC

NO. **2N1** | LOCATION: ELECTRICAL ROOM | SERVING: NATATORIUM | 120/208 VOLTS 3PHASE 4WIRE | 200 AMPS WITH 200 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.	
1	CP-1A	.50	20	20	.96	H-1A	2	*
3	CP-2A, TP-1 (QTY 5)	.50		20	1.08	H-1A	4	*
5	EF-1A	.43		20	.50	EV-1A	6	*
7	LIGHTING	1.46		30	2.40	CP-1A	8	*
9		1.28		20	.12	CP-1A	10	
11		1.14		30	2.40	C-1A	12	*
13	LIGHTING	.77		20	.12	C-1A	14	
15	SPARE		20	30	2.88	AF-1A	16	*
17	CU-1A	8.74	70	20	.12	AF-1A	18	*
19			2	30	2.40	AP-1A	20	*
21	CU-2A	8.74	70	20	.12	AP-1A	22	
23			2	20	1.50	HAND DRYER	24	
25	ERV-1A	1.58	30	2			26	
27			2	20	1.50	HAND DRYER	28	
29	FC-1A,2A,3A	4.31	30	2			30	
31			2	20	1.50	HAND DRYER	32	
33	CU-3A	8.74	70	2			34	
35			2	20	2.50	BP-1A	36	*
37	TVSS	-	30	2			38	
39				20	2.50	UV-1A	40	*
41			3	2			42	

REMARKS:

CONNECTED LOAD: 60.8 KVA 169 AMPS
DEMAND LOAD: 64.1 KVA 178 AMPS

* PROVIDE GFCI CIRCUIT BREAKER.

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 2N1 LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	4.65	X	1.25	220.19(A)(1)	=	5.81
RECEPTS TO 10KW	-	X	1.00	220.44	=	-
RECEPTS OVER 10KW	-	X	0.50	220.44	=	-
MOTORS (LARGEST)	8.74	X	1.25	430.24	=	10.93
MOTORS	42.90	X	1.00	430.24	=	42.90
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	-	X	1.00	220.51	=	-
MISCELLANEOUS	4.50	X	1.00		=	4.50
TOTAL CONNECTED	60.8 KVA (169 AMPS)			TOTAL DEMAND		64.1 KVA (178 AMPS)

PANEL SCHEDULE

SURFACE MOUNTING
22,000 AIC

NO. **2N2** | LOCATION: ELECTRICAL ROOM | SERVING: NATATORIUM | 120/208 VOLTS 3PHASE 4WIRE | 200 AMPS WITH 200 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.	
1	RECEPTACLES	.90	20	20	.60	TV'S (QTY 2)	2	
3		.90			1.00	TREADMILL	4	
5		.36			1.00	TREADMILL	6	
7		.36			1.00	TREADMILL	8	
9		.18			.60	BIKE	10	
11		.18			.60	BIKE	12	
13		.18			.60	BIKE	14	
15		.18			.60	TV'S (QTY 2)	16	
17		.18			.75	CEILING FAN	18	
19		.18			.75	CEILING FAN	20	
21		.18				SPARE	22	
23		.18				SPARE	24	
25		.54			.30	H.C. DOOR	26	
27	RECEPTACLES	.54			.18	I.T. RECEPTACLE	28	
29	SPARE			20	.18	I.T. RECEPTACLE	30	
31	SPARE			30	1.50	I.T. RECEPTACLES	32	
33	SPARE		20	20	.72	RECEPTACLES	34	
35	HAND DRYER	1.50	20	20	.10	FIRE ALARM PANEL	36	*
37			2	30	-	TVSS	38	
39	HAND DRYER	1.50	20	2			40	
41			2	3			42	
43	COMPRESSOR	3.00	20	20		SPARE	44	
45			2				46	
47	DRINKING FOUNTAIN	.18	20				48	**
49	WH-1A	1.50					50	
51	SPARE						52	
53							54	
55							56	
57							58	
59	SPARE		20	20		SPARE	60	

REMARKS: PROVIDE FEED THRU LUGS.

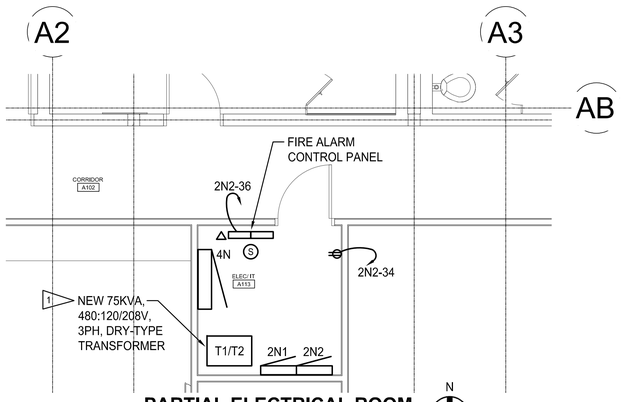
CONNECTED LOAD: 18.5 KVA 51 AMPS
DEMAND LOAD: 18.5 KVA 51 AMPS

* PROVIDE HANDLE LOCK.
** PROVIDE GFI CIRCUIT BREAKER

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 2N2 LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	-	X	1.25	220.19(A)(1)	=	-
RECEPTS TO 10KW	6.12	X	1.00	220.44	=	6.12
RECEPTS OVER 10KW	-	X	0.50	220.44	=	-
MOTORS (LARGEST)	-	X	1.25	430.24	=	-
MOTORS	-	X	1.00	430.24	=	-
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	-	X	1.00	220.51	=	-
MISCELLANEOUS	12.40	X	1.00		=	12.40
TOTAL CONNECTED	18.5 KVA (51 AMPS)			TOTAL DEMAND		18.5 KVA (51 AMPS)



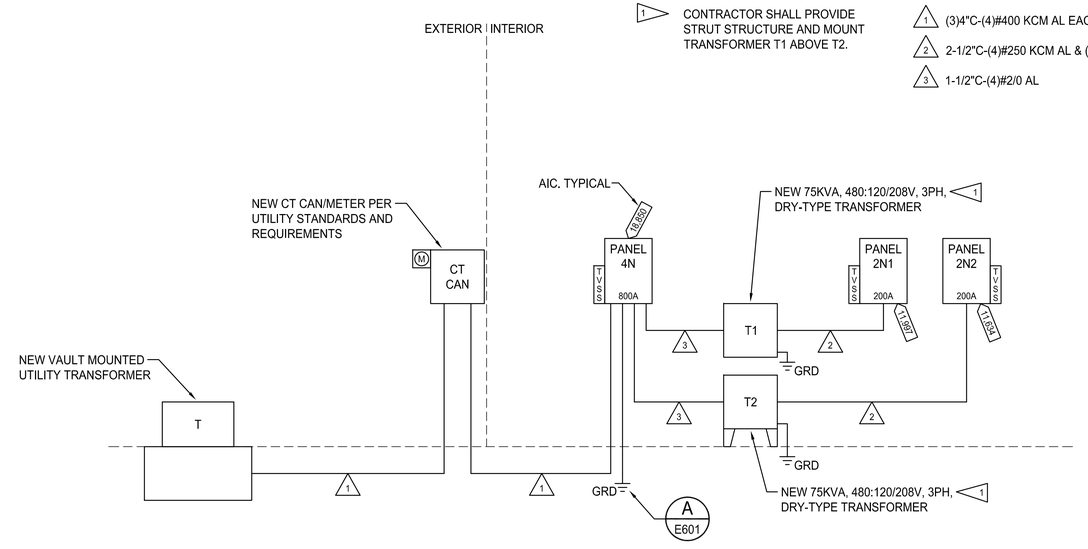
PARTIAL ELECTRICAL ROOM
SCALE: 1/4"=1'-0"

ELECTRICAL NOTES:

1 CONTRACTOR SHALL PROVIDE STRUT STRUCTURE AND MOUNT TRANSFORMER T1 ABOVE T2.

CONDUIT AND CONDUCTOR SCHEDULE:

1. (3)4"C-(4)#400 KCM AL EACH
2. 2-1/2"C-(4)#250 KCM AL & (1)#4 AL GRD
3. 1-1/2"C-(4)#2/0 AL



NATATORIUM POWER RISER DIAGRAM
NOT TO SCALE

8/16/2024 11:09:43 AM

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002
Design Team:

CROSS ENGINEERS, INC
923 MLK Jr. Way
Tacoma, WA 98405
Phone: (253) 759-0118
Job Number: 24-142
info@crossengineers.com

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Key Plan

Professional Seals

STATE OF TEXAS
STEVEN LEE HUBBS
152715
LICENSED
PROFESSIONAL ENGINEER
03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUED FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:
NATATORIUM POWER RISER DIAGRAM

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number
A-E501

BUILDING A - MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

ITEM	DESCRIPTION	LOCATION	VOLTS	PHASE	HP / KW	MIN. CIRCUIT AMPS	DISC. SWITCH	FUSES	MAGNETIC STARTER	FEEDER	CIRCUIT NUMBER	NOTES
AHU 1A	AIR HANDLER	PLATFORM	480	3	- / -	167.0	3P200	175	-	2-1/2"C-4#3/0 CU & 1#6 CU GRD	4N-13	(2)
AHU 1A.2	DEHUMIDIFIER COND. UNIT	ROOF	480	3	- / -	15.3	3P30	20	-	3/4"C-4#10 CU & 1#10 CU GRD	4N-1	
CP 1A	CIRCULATION PUMP	WH-1A	120	1	- / -	-	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2N1-1	
CP 2A	CIRCULATION PUMP	WH-2A	120	1	- / -	-	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2N1-3	
CU 1A	CONDENSING UNIT	EXTERIOR	208	1	- / -	42.0	2P100 NEMA 3R	70	-	1-1/4"C-3#2 CU & 1#8 CU GRD	2N1-17	
CU 2A	CONDENSING UNIT	EXTERIOR	208	1	- / -	42.0	2P100 NEMA 3R	70	-	1-1/4"C-3#2 CU & 1#8 CU GRD	2N1-21	
CU 3A	CONDENSING UNIT	EXTERIOR	208	1	- / -	42.0	2P100 NEMA 3R	70	-	1-1/4"C-3#2 CU & 1#8 CU GRD	2N1-33	
CU 4A	CONDENSING UNIT	EXTERIOR	480	3	- / -	15.3	3P30 NEMA 3R	20	-	3/4"C-4#10 CU & 1#10 CU GRD	4N-20	
EF 1A	EXHAUST FAN	ROOM 106	120	1	- / -	3.6	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2N1-5	
ER 1A	ENERGY RECOVERY	PLATFORM	480	3	- / -	20.0	3P30	25	-	3/4"C-4#10 CU & 1#10 CU GRD	4N-14	(2)
ERV 1A	ENERGY RECOV. VENTILATOR	PLATFORM	208	1	- / -	7.6	2P30	15	-	3/4"C-3#10 CU & 1#10 CU GRD	2N1-25	
FC 1A	FAN COIL UNIT	POOL OFFICE	208	1	3/4 / -	6.9 FLA	(1)	-	-	3/4"C-3#10 CU & 1#10 CU GRD	2N1-29	
FC 2A	FAN COIL UNIT	FITNESS	208	1	3/4 / -	6.9 FLA	(1)	-	-	3/4"C-3#10 CU & 1#10 CU GRD	2N1-29	
FC 3A	FAN COIL UNIT	ADMIN.	208	1	3/4 / -	6.9 FLA	(1)	-	-	3/4"C-3#10 CU & 1#10 CU GRD	2N1-29	
EWH 1A	WATER HEATER	BUILDING A	480	3	- / 36	-	3P60	60	-	1"C-4#6 CU & 1#10 CU GRD	4N-19	
EWH 2A	WATER HEATER	BUILDING A	480	3	- / 36	-	3P60	60	-	1"C-4#6 CU & 1#10 CU GRD	4N-25	
EWH 3A	WATER HEATER	POOL ROOM A112	480	3	- / 36	-	3P60	60	-	1"C-4#6 CU & 1#10 CU GRD	4N-31	
TP 1	TRAP PRIMER	SEE PLANS	120	1	- / -	-	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2N1-3	(3)
WH 1-A	WALL HEATER	A115	120	1	- / 1.5	-	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2N2-49	

1

MECHANICAL EQUIPMENT CONNECTION SCHEDULES NOTES:

(1) PROVIDE 20A MOTOR RATED TOGGLE SWITCH

(2) PROVIDE DUCT SMOKE DETECTOR. DIVISION 26 SHALL FURNISH DUCT SMOKE DETECTOR TO DIVISION 23 CONTRACTOR FOR LOCATE AND INSTALLATION. ALL CONNECTIONS TO FIRE ALARM BY DIVISION 26.

(3) QUANTITY OF (5)

POOL - EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

ITEM	DESCRIPTION	LOCATION	VOLTS	PHASE	HP / KW	MIN. CIRCUIT AMPS	DISC. SWITCH	FUSES	MAGNETIC STARTER	FEEDER	CIRCUIT NUMBER	NOTES
AP 1A	PH FEEDER	PUMP ROOM	120	1	- / -	1/20 FLA	(6) NEMA 4X	-	-	3/4"C-2#10 CU & 1#10 CU GRD	2N1-20,22	
AF 1A	AUTOFILL PUMP	PUMP ROOM	120	1	2 / -	-	(1) NEMA 4X	-	-	3/4"C-2#10 CU & 1#10 CU GRD	2N1-18	(7)
BP 1A	BOOSTER PUMP	PUMP ROOM	208	1	- / -	12.0 FLA	2P30 NEMA 4X	20	-	3/4"C-3#10 CU & 1#10 CU GRD	2N1-36	
C 1A	CHEMICAL CONTROLLER	PUMP ROOM	(2)120	1	1.5 / -	1/20 FLA	(5) NEMA 4X	-	-	3/4"C-2#10 CU & 1#10 CU GRD	2N1-12,14	(8)
CP 1A	CHLORINE FEEDER	PUMP ROOM	120	1	- / -	1/20 FLA	(6) NEMA 4X	-	-	3/4"C-2#10 CU & 1#10 CU GRD	2N1-8,10	
EV 1A	MOTORIZED VALVE	PUMP ROOM	120	1	- / -	-	(1) NEMA 4X	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2N1-6	(9)
H 1A	POOL HEATER	PUMP ROOM	(2)120	1	- / -	8/9 FLA	(2)(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2N1-2,4	(4)
P 1A	PUMP	PUMP ROOM	480	3	10 / -	14.0 FLA	3P30 NEMA 4X	30	-	3/4"C-4#10 CU & 1#10 CU GRD	(2)	
UV 1A	ULTRAVIOLET DISINFECTION	PUMP ROOM	208	1	- / 2.5	-	2P30 NEMA 4X	20	-	3/4"C-3#10 CU & 1#10 CU GRD	2N1-40	(3)
V 1A	VFD	PUMP ROOM	480	3	10 / -	14.0 FLA	-	-	-	3/4"C-4#10 CU & 1#10 CU GRD	4N-26	

POOL EQUIPMENT CONNECTION SCHEDULES NOTES:

(1) PROVIDE 20A MOTOR RATED TOGGLE SWITCH

(2) PROVIDE CONDUIT AND WIRE INDICATED AND CONNECT TO ASSOCIATED VFD FOR POWER.

(3) CONTRACTOR SHALL ROUTE THROUGH UV CONTROL PANEL (UVP1A). SEE WTI DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

(4) TWO(2) DEDICATED 120V, 1PH, GFCI CIRCUITS REQUIRED. ONE FOR POOL HEATER CONTROL PANEL AND ONE FOR POOL HEATER CIRCULATION PUMP. SEE WTI DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION. PROVIDE EMERGENCY POWER OFF (EPO) BUTTON PER WTI DRAWINGS AND SPECIFICATIONS.

(5) PROVIDE (2)RECEPTACLES - (1)20A, 120V, 1PH, GFCI, WP AND (1)30A, 120V, 1PH, GFCI, WP. COORDINATE WITH POOL CONTRACTOR.

Outlet 1 - Hard wire one outlet directly to the "Chlorine Feed Relay" on the chemical controller's terminal block. The chemical controller shall be the power source for this duplex outlet. This duplex outlet will provide power to the plug of the chemical feed system labeled "Controller". Label the outlet "Chlorine Feed System Controller". The "Chlorine Feed System Controller" controls the pump relay, that is integral to the chemical feed system. The solenoid valve power requirement is less than 1 Amp at 120 V.

Outlet 2 - Hard wire the second duplex outlet for a constant power of 120 V, 1-phase, 25 A. This duplex outlet will provide power to the plug labeled "120 VOLT". This outlet will provide power for the chlorine booster pump that is integral to the Chlorine Feed System. Label the outlet "Chlorine Feed System Power". The chlorine booster pump power requirement is 1.5 HP, 120 V, 1-phase, 25 Amp.

(6) PROVIDE (2)RECEPTACLES - (1)20A, 120V, 1PH, GFCI, WP AND (1)30A, 120V, 1PH, GFCI, WP. COORDINATE WITH POOL CONTRACTOR.

Outlet 1 - Hard wire one outlet directly to the "Acid Feed Relay" on the chemical controller's terminal block. The chemical controller shall be the power source for this duplex outlet. This duplex outlet will provide power to the plug of the chemical feed system labeled "Controller". Label the outlet "Acid Feed System Controller". The "Acid Feed System Controller" energizes a solenoid valve and controls the pump relay, that are integral to the chemical feed system. The solenoid valve power requirement is less than 1 Amp at 120 V.

Outlet 2 - Hard wire the second duplex outlet for a constant power of 120 V, 1-phase, 25 A. This duplex outlet will provide power to the plug labeled "120 VOLT". This outlet will provide power for the acid booster pump that is integral to the acid feed system. Label the outlet "Acid Feed System Power". The acid booster pump power requirement is 1.5 HP, 120 V, 1-phase, 25 Amp.

(7) PROVIDE 30A, 120V, 1PH CONNECTION TO BOOSTER PUMP CONTROL PANEL. PROVIDE 3/4"C-(2)#10 CU & (1)#10 CU GRD AND CONNECT TO PANEL 2N1-16. COORDINATE WITH POOL CONTRACTOR.

(8) PROVIDE 3/4"C-(2)#12 CU & (1)#12 CU GRD AND CONNECT WATER LEVEL CONTROL VALVE TO CHEMICAL CONTROLLER FOR POWER. COORDINATE WITH POOL CONTRACTOR.

(9) PROVIDE 3/4"C-(2)#12 CU & (1)#12 CU GRD AND CONNECT DIGITAL POSITION VALVE TO PANEL 2N1-6. EACH VALVE REQUIRES A SEPARATE CONNECTION. COORDINATE WITH POOL CONTRACTOR.

8/16/2024 11:09:43 AM

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

Design Team:

CROSS ENGINEERS, INC
923 MLK Jr. Way
Tacoma, WA 98405
Phone: (253) 759-0118
Job Number: 24-142
info@crossengineers.com

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Key Plan

Professional Seals

STATE OF TEXAS · STEVEN LEE HUBBS · 152719 · LICENSED · PROFESSIONAL ENGINEER

03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUED FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:

NATATORIUM MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

A-E502

GENERAL NOTES:

1. ELECTRICAL REQUIREMENTS ARE NOT LIMITED TO ELECTRICAL DRAWINGS AND SPECIFICATIONS. THERE IS ADDITIONAL ELECTRICAL WORK REQUIRED TO BE INCLUDED IN THE BID, INDICATED ON ARCHITECTURAL, LANDSCAPE, CIVIL, MECHANICAL, DATA, AND AUDIO VISUAL DRAWINGS. ADDITIONAL ELECTRICAL WORK REQUIRED IN THE BID IS ALSO LOCATED IN THE SPECIFICATIONS. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL, CIVIL, LANDSCAPE, MECHANICAL, DATA, AND AUDIO VISUAL SPECIFICATIONS FOR ADDITIONAL ELECTRICAL INFORMATION AND INCLUDE COSTS FOR THIS WORK IN THE BID.

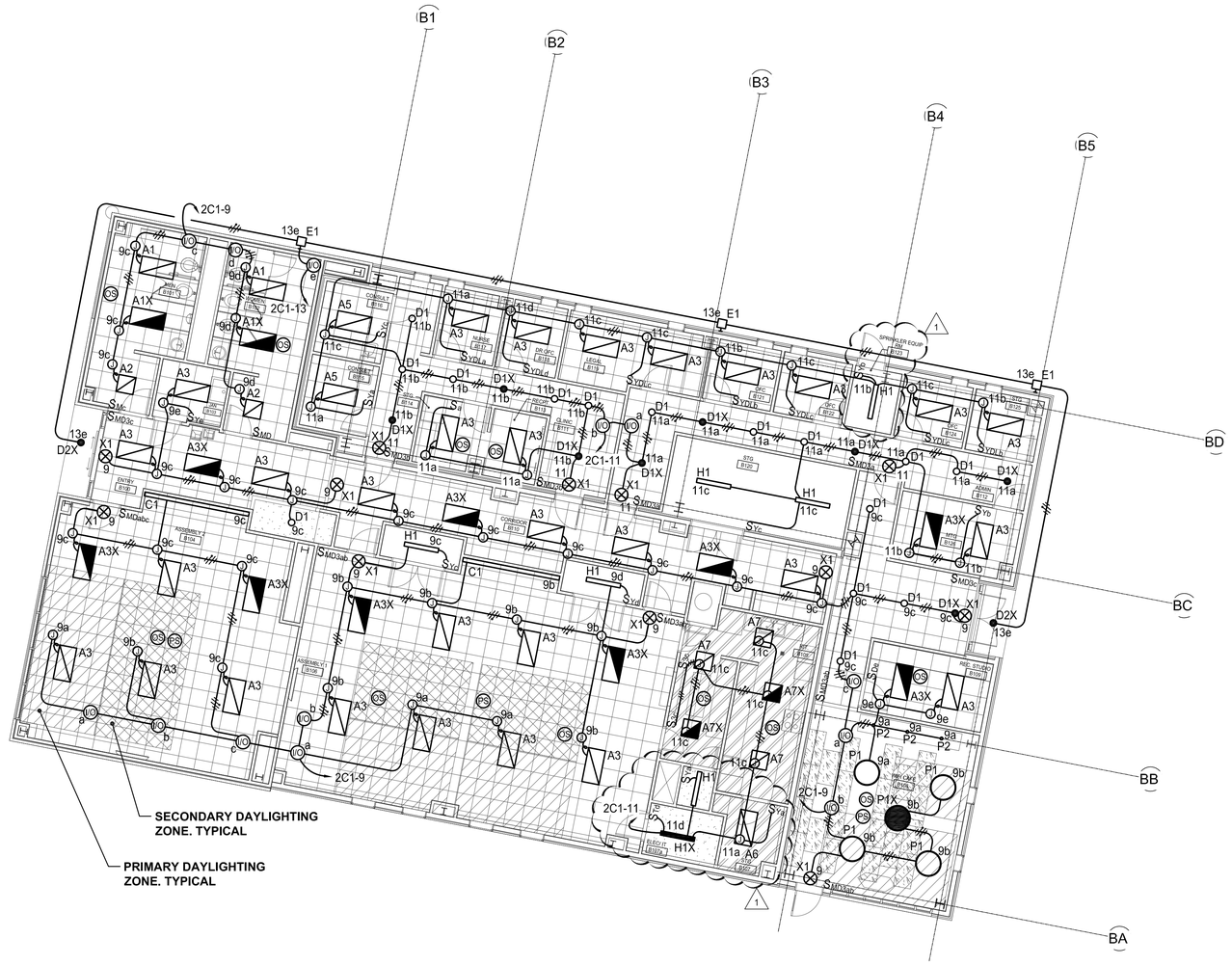
2. CONTRACTOR SHALL INCLUDE IN HIS BID LIGHTING CONTROL COMMISSIONING COSTS. CONTRACTOR SHALL PROVIDE THE OWNER A COMPLETE REPORT OF TEST PROCEDURES AND RESULTS INDICATING ALL LIGHTING CONTROLS HAVE BEEN TESTED, ADJUSTED AND OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS AND THE WASHINGTON STATE NONRESIDENTIAL ENERGY CODE, SECTION C408. CONTRACTOR SHALL PROVIDE A SPREAD SHEET INDICATING ROOM NUMBER, TYPE OF CONTROL (OCCUPANCY SENSOR, LOW VOLTAGE, ETC.), VERIFICATION OF PROPER WORKING ORDER, AND ADJUSTMENTS MADE.

3. CONTRACTOR SHALL CONCEAL CONDUIT WHEREVER POSSIBLE. CONTRACTOR SHALL SUBMIT TO ARCHITECT FOR REVIEW AND APPROVAL, ALL ROUTINGS OF ANY EXPOSED CONDUIT PRIOR TO ROUGH-IN. NO EXPOSED CONDUIT SHALL BE INSTALLED UNTIL APPROVAL IS PROVIDED IN WRITING FROM THE ARCHITECT. ALL EXPOSED CONDUIT SHALL BE ROUTED IN A NEAT AND WORKMANSHIP LIKE MANNER.

4. CONTRACTOR SHALL PROVIDE A HOT-WIRE OF THE SAME CIRCUIT FOR ALL LIGHT FIXTURES WITH BATTERY PACKS, SO THAT THE BATTERY PACK IS BEING CHARGED AT ALL TIMES.

5. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE AN AUTHORITY HAVING JURISDICTION APPROVED FIRM TO EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE WITH CODE AS REQUIRED. FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.

6. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.



COMMUNITY CENTER LIGHTING PLAN

SCALE: 1/8"=1'-0"

N

8/16/2024 11:09:43 AM

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:

Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:

FORT BEND COUNTY

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Key Plan

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

03-14-2025

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	ISSUED FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:

COMMUNITY CENTER LIGHTING PLAN

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

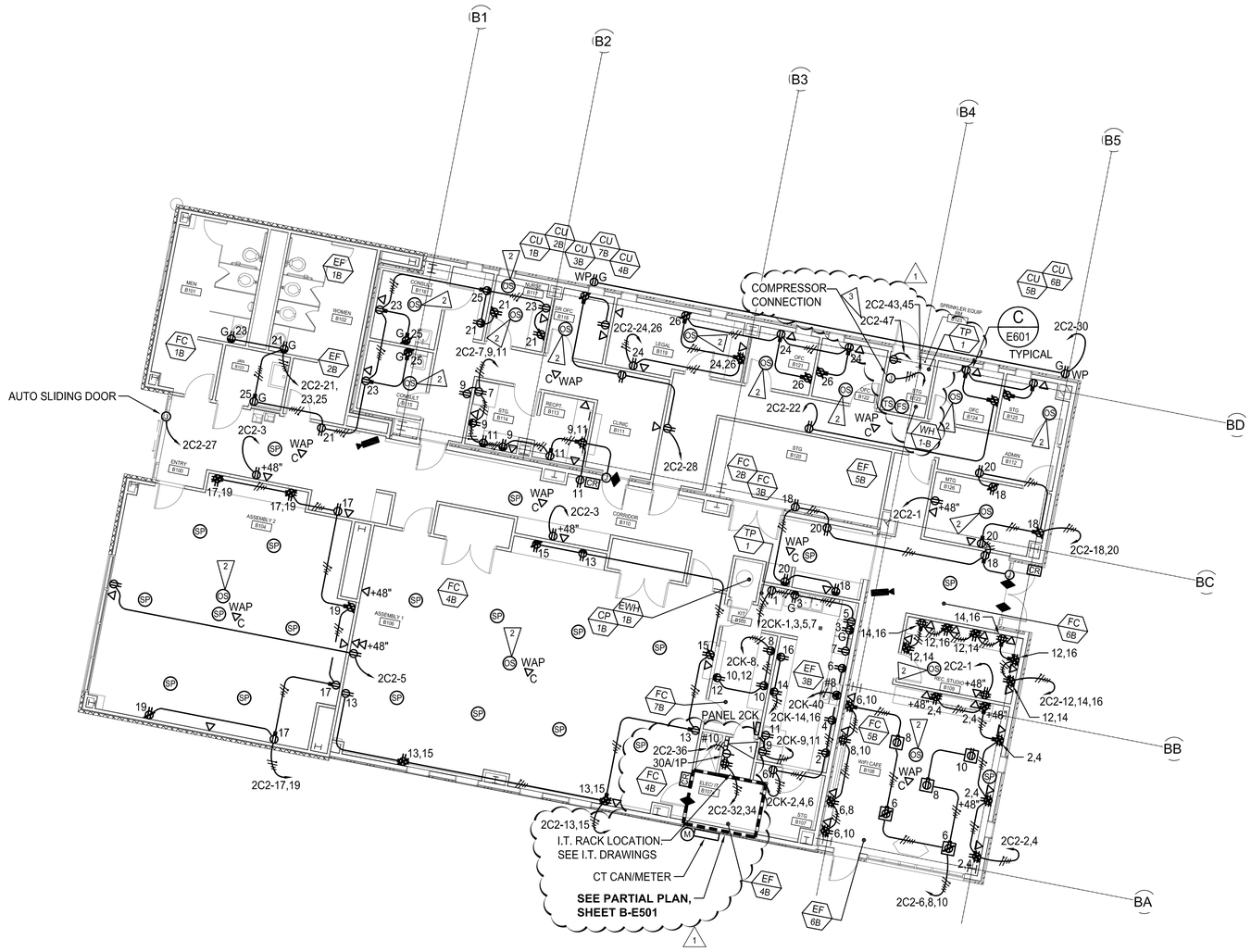
B-E201

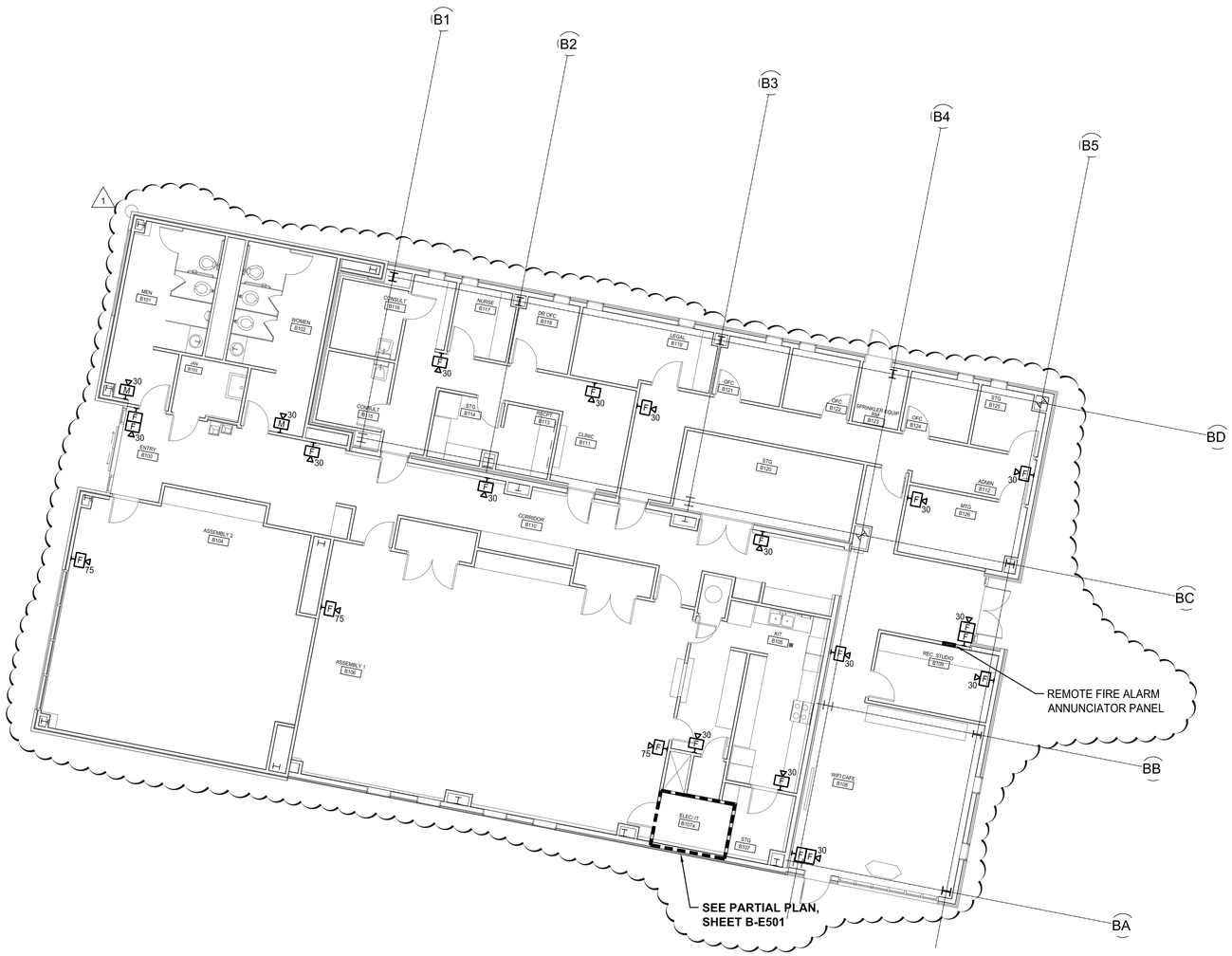
ELECTRICAL NOTES:

1. GROUND BAR PROVIDED BY TELECOM CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE #2 BARE CU CONDUCTOR BACK TO SERVICE GROUND. SEE DETAIL A, SHEET E601.
2. CONTRACTOR SHALL CONTROL 50% OF THE RECEPTACLES IN THIS ROOM WITH A CEILING MOUNTED OCCUPANCY SENSOR PER INTERNATIONAL ENERGY CONSERVATION CODE. SEE ELECTRICAL LEGEND FOR RECEPTACLES IDENTIFIED TO BE CONTROLLED.
3. CONTRACTOR SHALL TAP OF DUPLEX RECEPTACLE AND CONNECT SPRINKLER SYSTEM VALVES AS REQUIRED. COORDINATE WITH SPRINKLER CONTRACTOR.

GENERAL NOTES:

1. ELECTRICAL REQUIREMENTS ARE NOT LIMITED TO ELECTRICAL DRAWINGS AND SPECIFICATIONS. THERE IS ADDITIONAL ELECTRICAL WORK REQUIRED TO BE INCLUDED IN THE BID, INDICATED ON ARCHITECTURAL, LANDSCAPE, CIVIL, MECHANICAL, DATA, AND AUDIO VISUAL DRAWINGS. ADDITIONAL ELECTRICAL WORK REQUIRED IN THE BID IS ALSO LOCATED IN THE SPECIFICATIONS. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL, CIVIL, LANDSCAPE, MECHANICAL, DATA, AND AUDIO VISUAL SPECIFICATIONS FOR ADDITIONAL ELECTRICAL INFORMATION AND INCLUDE COSTS FOR THIS WORK IN THE BID.
2. ALL CONDUIT IS INTENDED TO BE CONCEALED. CONTRACTOR SHALL PROVIDE TO ARCHITECT/OWNER SHOP DRAWINGS INDICATING ROUTING OF ANY INTENDED EXPOSED CONDUIT PRIOR TO ROUGH-IN FOR ARCHITECT/OWNERS APPROVAL. CONTRACTOR SHALL NOT START ROUGH-IN FOR CONDUIT UNTIL WRITTEN APPROVAL IS RECEIVED.
3. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE AN AUTHORITY HAVING JURISDICTION APPROVED FIRM TO EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE WITH CODE AS REQUIRED. FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.
4. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR MAINTAINING ALL LOCATE MARKS ONCE THE UTILITIES HAVE BEEN LOCATED.
5. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.
6. CONTRACTOR SHALL PROVIDE TRENCHED 1"C-FIRE ALARM CONDUCTORS AND CONNECT THE POST INDICATOR VALVE TO THE FIRE ALARM SYSTEM FOR MONITORING. SEE CIVIL AND MECHANICAL DRAWINGS FOR LOCATIONS.


B1
B2
B3
B4
B5
BA
BB
BC
BD
AUTO SLIDING DOOR
2C2-27
2C2-3
2C2-21, 23,25
2C2-5
2C2-17,19
2C2-7,9,11
2C2-24,26
2C2-28
2C2-22
2C2-43,45
2C2-47
2C2-80
2C2-18,20
2C2-1
2C2-12,14,16
2C2-2,4
2C2-6,8,10
2C2-13,15
2C2-32,34
2C2-36
30A/1P
PANEL 2CK
2CK-1,3,5,7
2CK-8
10,12
2CK-40
2CK-14,16
2CK-9,11
2CK-2,4,6
COMPRESSOR CONNECTION
I.T. RACK LOCATION- SEE I.T. DRAWINGS
CT CAN/METER
SEE PARTIAL PLAN, SHEET B-E501
C E601 TYPICAL
WAP
WP
G
SP
CU 1B
CU 2B
CU 3B
CU 4B
CU 5B
CU 6B
EF 1B
EF 2B
EF 3B
EF 4B
EF 5B
EF 6B
FC 1B
FC 2B
FC 3B
FC 4B
FC 5B
FC 6B
EWH 1B
CP 1B
WH 1-B
TP 1
MEN B101
WOMEN B102
JAN B103
CONSULT B113
NURSE B111
RECEPT B111
SUPV B112
CONF B107
LEGAL B110
ADMIN B112
MTG B106
STG B104
STG B105
STG B107
STG B108
STG B109
STG B120
STG B121
STG B122
STG B123
STG B124
STG B125
STG B126
STG B127
STG B128
STG B129
STG B130
STG B131
STG B132
ENTRY B100
ASSEMBLY 1 B105
ASSEMBLY 2 B104
CORRIDOR B103
KIO B105
SPRINKLER EQUIP B101
WIFI CAFE B108
EXEC B109
ADMIN B112
OFC B117
OFC B118
OFC B119
OFC B120
OFC B121
OFC B122
OFC B123
OFC B124
OFC B125
OFC B126
OFC B127
OFC B128
OFC B129
OFC B130
OFC B131
OFC B132
OFC B133
OFC B134
OFC B135
OFC B136
OFC



COMMUNITY CENTER FIRE ALARM PLAN

SCALE: 1/8"=1'-0"

N

GENERAL NOTES:

1. ELECTRICAL REQUIREMENTS ARE NOT LIMITED TO ELECTRICAL DRAWINGS AND SPECIFICATIONS. THERE IS ADDITIONAL ELECTRICAL WORK REQUIRED TO BE INCLUDED IN THE BID, INDICATED ON ARCHITECTURAL, LANDSCAPE, CIVIL, MECHANICAL, DATA, AND AUDIO VISUAL DRAWINGS. ADDITIONAL ELECTRICAL WORK REQUIRED IN THE BID IS ALSO LOCATED IN THE SPECIFICATIONS. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL, CIVIL, LANDSCAPE, MECHANICAL, DATA, AND AUDIO VISUAL SPECIFICATIONS FOR ADDITIONAL ELECTRICAL INFORMATION AND INCLUDE COSTS FOR THIS WORK IN THE BID.
2. CONDUIT (OR PLENUM RATED CABLE WHERE ALLOWED) AND WIRING IS NOT SHOWN ON THE ELECTRICAL DRAWINGS FOR THE SIGNAL/SYSTEM DEVICES (FIRE ALARM, SECURITY, AND CAMERA) CONTRACTOR SHALL PROVIDE MANUFACTURER'S REQUIRED WIRING IN MINIMUM 3/4"C TO ALL SIGNAL/SYSTEM DEVICES OR PLENUM RATED CABLE WHERE ALLOWED BY CODE.
3. CONNECT FIRE/SMOKE DAMPERS SUPPLIED BY MECHANICAL CONTRACTOR AND POWERED BY 120 VAC FROM MECHANICAL PANEL THRU A CONTROL RELAY SUCH THAT DAMPERS ARE POWERED OPEN WHEN CONTROL RELAY IS ENERGIZED AND DAMPERS ARE CLOSED WHEN PANEL IS IN ALARM. PROVIDE SMOKE DETECTOR OR DUCT SMOKE DETECTOR WITHIN 5' OF EACH FIRE/SMOKE DAMPER. SEE MECHANICAL PLANS, SCHEDULES AND SPECIFICATIONS FOR FIRE/SMOKE DAMPER LOCATIONS. COORDINATE WITH MECHANICAL CONTRACTOR.
4. CONNECT ALL DOOR HOLDERS AND DOOR CLOSERS SUPPLIED WITH DOOR HARDWARE. THESE ITEMS SHALL BE POWERED BY THE FIRE ALARM CONTROL PANEL WITH 24V THRU A CONTROL RELAY SUCH THAT ALL DOORS RELEASE TO CLOSE WHEN PANEL IS IN ALARM. PROVIDE A SMOKE DETECTOR WITH AUXILIARY RELAY ON EACH SIDE OF DOOR. SEE ARCHITECTURAL PLANS, SCHEDULES AND SPECIFICATIONS FOR FIRE DOOR LOCATIONS.
5. PROVIDE FIRE ALARM CONDUIT AND WIRE CONNECTION FOR SHUTDOWN OF AIR HANDLING UNIT(S) AND EXHAUST FANS FOR SHUTDOWN ON ALARM AS REQUIRED PER THE UNIFORM MECHANICAL CODE. PROVIDE MONITOR/CONTROL MODULES FOR EXHAUST FANS LOCATED WITHIN 3 FEET OF FAN CONTROLLER, THRU ENERGIZED CONTROL RELAY SUCH THAT THE EXHAUST FANS SHUTDOWN UPON ALARM. SEE MECHANICAL PLANS, SCHEDULES AND SPECIFICATIONS FOR LOCATIONS. COORDINATE WITH MECHANICAL CONTRACTOR.
6. FURNISH DUAL CONTACT DUCT SMOKE DETECTOR, INCLUDING SAMPLING TUBE, TO MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL LOCATE AND MOUNT THE DUCT SMOKE DETECTOR ENCLOSURE/SAMPLING TUBE FOR FIRE ALARM SYSTEM SHUTDOWN. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR FOR SAMPLING TUBE LENGTH AND SIZE REQUIRED. ELECTRICAL CONTRACTOR SHALL PROVIDE NECESSARY CONDUIT (OR PLENUM RATED CABLE WHERE ALLOWED), WIRING, REMOTE INDICATORS AND ACCESSORIES TO SHUTDOWN EACH UNIT UPON ACTIVATION OF THAT UNIT'S SMOKE DETECTOR(S) REQUIRED PER THE MECHANICAL CODE. CONNECTIONS SHALL BE HARDWIRED, INDEPENDENT OF ANY CONTROL SYSTEM LOGIC, SO FAILURE OF THE CONTROL SYSTEM OR LOSS OF CONTROL SYSTEM POWER WILL NOT PREVENT THE FIRE ALARM SYSTEM, SHUTDOWN OF THE UNIT. IN ADDITION TO SHUTTING DOWN THE UNIT WITH THE ALARMED SMOKE DETECTOR, ALL EQUIPMENT INTERLOCKED OR SERVED BY THAT UNIT SHALL BE OFF. OTHER UNITS SHALL ALSO SHUT OFF TO AVOID BUILDING PRESSURE DIFFERENTIALS AND SIMILAR UNDESIRABLE EFFECTS. UPON RESET OF ALARMED DEVICE, SYSTEM SHALL AUTOMATICALLY RETURN TO NORMAL. MECHANICAL CONTRACTOR TO PROVIDE TIME DELAY START OF EQUIPMENT TO PREVENT EXCESS LOAD STARTING AT THE SAME TIME. CONTRACTOR SHALL PROVIDE CONDUIT AND WIRE AND CONNECT TO FIRE ALARM CONTROL PANEL. SEE MECHANICAL DRAWINGS, SCHEDULES AND SPECIFICATIONS FOR LOCATIONS.
7. CONTRACTOR SHALL PROVIDE CONDUIT, WIRE, AND CONNECT THE EXTERIOR FIRE ALARM BELL FURNISHED BY THE SPRINKLER CONTRACTOR. THE SPRINKLER SYSTEM IS A DESIGN BUILD SYSTEM. COORDINATE FINAL LOCATION WITH THE SPRINKLER CONTRACTOR. FOR 24V SPRINKLER BELLS, CONNECT THE BELL TO THE FIRE ALARM PANEL. FOR 120V SPRINKLER BELLS, CONNECT TO A DEDICATED SPARE 120V CIRCUIT.
8. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE AN AUTHORITY HAVING JURISDICTION APPROVED FIRM TO EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE WITH CODE AS REQUIRED. FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.
9. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.
10. FIRE ALARM CONTRACTOR SHALL PROVIDE DETECTION COVERAGE IN ATTIC SPACE.

THE STATE OF TEXAS · FORT BEND COUNTY ·

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Key Plan

Professional Seals

STATE OF TEXAS
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LICENSED
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03-14-2025

No.	Issue Description	MM-DD-YYYY
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1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:

COMMUNITY CENTER POWER PLAN

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

B-E401

8/16/2024 11:09:43 AM

NEW

SURFACE MOUNTING
35,000 AIC

PANEL SCHEDULE

NO. **4C** | LOCATION: ELECTRICAL ROOM | SERVING: COMMUNITY CENTER | 480/277 VOLTS 3PHASE 4WIRE 400 AMPS WITH 400 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS		TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	SPARE		20		20		SPARE	2
3								4
5								6
7								8
9								10
11								12
13								14
15								16
17								18
19								20
21								22
23	SPARE		20		20		SPARE	24
25	CU-4B	11.62	30		30		SPARE	26
27								28
29			3		3			30
31	CU-1B	11.62	30		125	38.70	PANEL 2C2 (VIA XFMR)	32
33								34
35			3		3			36
37	TVSS	-	30		125	65.80	PANEL 2C1 (VIA XFMR)	38
39								40
41			3		3			42

REMARKS: SERVICE ENTRANCE RATED.

CONNECTED LOAD: 127.7 KVA 154 AMPS
DEMAND LOAD: 127.9 KVA 154 AMPS

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 4C LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	11.35	X	1.25	220.19(A)(1)	=	14.19
RECEPTS TO 10KW	10.00	X	1.00	220.44	=	10.00
RECEPTS OVER 10KW	11.06	X	0.50	220.44	=	5.53
MOTORS (LARGEST)	11.62	X	1.25	430.24	=	14.53
MOTORS	57.08	X	1.00	430.24	=	57.08
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	9.00	X	1.00	220.51	=	9.00
MISCELLANEOUS	17.60	X	1.00		=	17.60
TOTAL CONNECTED	127.7 KVA (154 AMPS)			TOTAL DEMAND		127.9 KVA (154 AMPS)

NEW

SURFACE MOUNTING
22,000 AIC

PANEL SCHEDULE

NO. **2C1** | LOCATION: ELECTRICAL ROOM | SERVING: COMMUNITY CENTER | 120/208 VOLTS 3PHASE 4WIRE 200 AMPS WITH 200 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS		TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	CP-1B, TP-1	.50	20		30	2.50	FC-6B	2
3	EF-1B,2B	.22			2			4
5	EF-3B,4B	.60			30	3.95	FC-5B	6
7	EF-5B	.43			2			8
9	LIGHTING	1.46			30	2.46	FC-4B,7B	10
11	LIGHTING	1.33			2			12
13	EXTERIOR LIGHTING	.14			30	4.63	FC-1B,2B,3B	14
15	SITE LIGHTING	1.75			2			16
17		1.31			30	5.20	CU-5B	18
19		1.49			2			20
21		1.18			30	2.50	CU-6B	22
23	SITE LIGHTING	.99			2			24
25	MONUMENT SIGN	.50			60	7.49	CU-2B	26
27	SITE LIGHTING	1.20			2			28
29	SPARE		20		60	7.49	CU-3B	30
31	EWH-1B	9.00	60		2			32
33					60	7.49	CU-7B	34
35			3		2			36
37	TVSS	-	30		30		SPARE	38
39								40
41			3		3			42

REMARKS:

CONNECTED LOAD: 65.8 KVA 183 AMPS
DEMAND LOAD: 70.5 KVA 196 AMPS

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 2C1 LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	11.35	X	1.25	220.19(A)(1)	=	14.19
RECEPTS TO 10KW	-	X	1.00	220.44	=	-
RECEPTS OVER 10KW	-	X	0.50	220.44	=	-
MOTORS (LARGEST)	7.49	X	1.25	430.24	=	9.36
MOTORS	37.97	X	1.00	430.24	=	37.97
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	9.00	X	1.00	220.51	=	9.00
MISCELLANEOUS	-	X	1.00		=	-
TOTAL CONNECTED	65.8 KVA (183 AMPS)			TOTAL DEMAND		70.5 KVA (196 AMPS)

NEW

SURFACE MOUNTING
22,000 AIC

PANEL SCHEDULE

NO. **2C2** | LOCATION: ELECTRICAL ROOM | SERVING: COMMUNITY CENTER | 120/208 VOLTS 3PHASE 4WIRE 200 AMPS WITH 200 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS		TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	TV'S (QTY 2)	.60	20		20	.90	RECEPTACLES	2
3	TV'S (QTY 2)	.60				.90		4
5	TV'S (QTY 2)	.60				.90		6
7	REFRIGERATOR	.60				.72		8
9	RECEPTACLES	.72				.72		10
11		.72				.90		12
13		.90				.90		14
15		.72				.72		16
17		.90				.90		18
19		.90				.72		20
21		.90				.90		22
23		.72				.72		24
25	RECEPTACLES	.72				.72		26
27	AUTO DOOR	.50				.72		28
29	SPARE					.54	RECEPTACLES	30
31	SPARE					.50	I.T. RECEPTACLE	32
33	SPARE		20		20	.50	I.T. RECEPTACLE	34
35	PANEL 2CK	14.20	100		30	1.50	I.T. RECEPTACLE	36
37					30	-	TVSS	38
39			3					40
* 41	FIRE ALARM PANEL	.70	20		3			42
43	COMPRESSOR	3.00	20		20		SPARE	44
45			2					46
47	RECEPTACLES	.18	20					48
49	WH-1-B	1.50						50
51	SPARE							52
53								54
55								56
57								58
59	SPARE		20		20		SPARE	60

REMARKS: PROVIDE FEED THRU LUGS

CONNECTED LOAD: 38.7 KVA 107 AMPS
DEMAND LOAD: 33.1 KVA 92 AMPS

* PROVIDE HANDLE LOCK.

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 2C2 LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	-	X	1.25	220.19(A)(1)	=	-
RECEPTS TO 10KW	10.00	X	1.00	220.44	=	10.00
RECEPTS OVER 10KW	11.06	X	0.50	220.44	=	5.53
MOTORS (LARGEST)	-	X	1.25	430.24	=	-
MOTORS	-	X	1.00	430.24	=	-
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	-	X	1.00	220.51	=	-
MISCELLANEOUS	17.60	X	1.00		=	17.60
TOTAL CONNECTED	38.7 KVA (107 AMPS)			TOTAL DEMAND		33.1 KVA (92 AMPS)

NEW

SURFACE MOUNTING
10,000 AIC

PANEL SCHEDULE

NO. **2CK** | LOCATION: KITCHEN | SERVING: KITCHEN | 120/208 VOLTS 3PHASE 4WIRE 100 AMPS WITH MAIN LUGS

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS		TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	REFRIGERATOR	1.00	20		20	.18	RECEPTACLES	2
3	RECEPTACLES	.36				.18		4
5	DISHWASHER	.60				.36		6
7	DISHWASHER	.60				.18		8
9	REFRIGERATOR	1.00				.18		10
11	REFRIGERATOR	1.00				.18		12
13	SPARE					.18		14
15						.18	RECEPTACLES	16
17							SPARE	18
19							SPARE	20
21	SPARE		20		20		SPARE	22
23	SPACE						SPACE	24
25								26
27								28
29								30
31								32
33								34
35								36
37							SPACE	38
39				50	8.00		STOVE	40
41	SPACE			2				42

REMARKS: .

CONNECTED LOAD: 14.2 KVA 39 AMPS
DEMAND LOAD: 14.2 KVA 39 AMPS

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 2CK LOAD CALCULATIONS

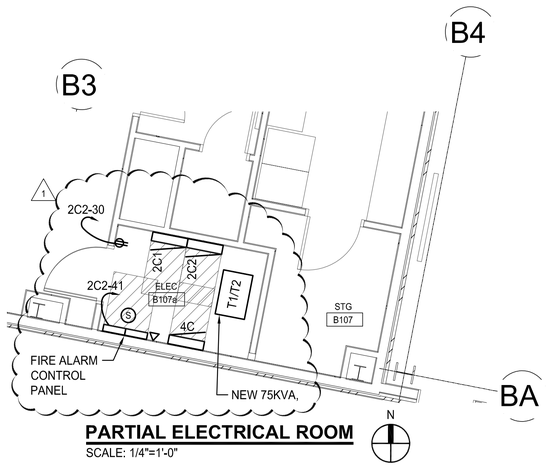
SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	-	X	1.25	220.19(A)(1)	=	-
RECEPTS TO 10KW	1.98	X	1.00	220.44	=	1.98
RECEPTS OVER 10KW	-	X	0.50	220.44	=	-
MOTORS (LARGEST)	-	X	1.25	430.24	=	-
MOTORS	-	X	1.00	430.24	=	-
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	-	X	1.00	220.51	=	-
MISCELLANEOUS	12.20	X	1.00		=	12.20
TOTAL CONNECTED	14.2 KVA (39 AMPS)			TOTAL DEMAND		14.2 KVA (39 AMPS)

ELECTRICAL NOTES:

1. CONTRACTOR SHALL PROVIDE STRUT STRUCTURE AND MOUNT TRANSFORMER T1 ABOVE T2.

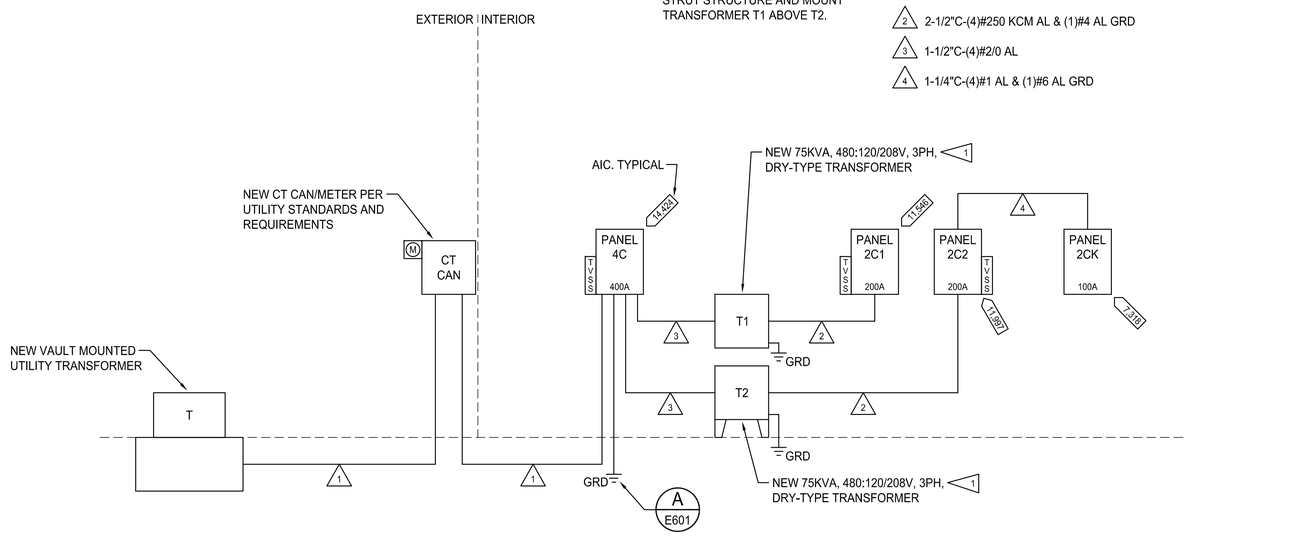
CONDUIT AND CONDUCTOR SCHEDULE:

1. (2)4"C-(4)#250 KCM AL EACH
2. 2-1/2"C-(4)#250 KCM AL & (1)#4 AL GRD
3. 1-1/2"C-(4)#2/0 AL
4. 1-1/4"C-(4)#1 AL & (1)#6 AL GRD



PARTIAL ELECTRICAL ROOM

SCALE: 1/4"=1'-0"



COMMUNITY CENTER POWER RISER DIAGRAM

NOT TO SCALE

8/16/2024 11:09:43 AM

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:

Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:

FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

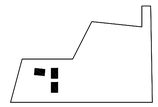
Contract No: 2024-002

Design Team:

CROSS ENGINEERS, INC
923 MLK Jr. Way
Tacoma, WA 98405
Phone: (253) 759-0118
Job Number: 24-142
info@crossengineers.com

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Key Plan



Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUED FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:

COMMUNITY CENTER POWER RISER DIAGRAM

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

B-E501

BUILDING B - LIGHTING CONTROL SCHEDULE

BUILDING	ROOM NUMBER	I/O CONTROLLER ID	TYPE OF CONTROL					REMARKS
			OCCUPANCY SENSOR	PHOTO SENSOR	DIMMING	SWITCHING		
B	B100/B110	c	N	N	Y	D		1 2 6
B	B101	c	Y	N	N	O		1 2 3
B	B102	d	Y	N	N	O		1 2 3
B	B104	a	Y	Y	Y	D		2 3 4
		b	Y	Y	Y	D		2 3 5
		c	Y	N	Y	D		2 3
B	B106	a	Y	Y	Y	D		2 3 4 6
		b	Y	N	Y	D		
B	B108	a	Y	Y	Y	D		2 3 5 6
		b	Y	Y	Y	D		2 3 4 6
B	B111	b	N	N	Y	D		1 2 6
B	B112	a	N	N	Y	D		1 2 6
B	EXTERIOR	e	N	N	N	O		7
SITE	SITE	a	N	N	N	O		7
		b	N	N	N	O		7
		c	N	N	N	O		7
		d	N	N	N	O		7
		e	N	N	N	O		7
		f	N	N	N	O		7
		g	N	N	N	O		7
		h	N	N	N	O		7

GENERAL NOTES:

1. LIGHTING CONTROL SYSTEM IS BASED AN WATTSTOPPER PLUS SYSTEM WITH WIRELESS SWITCHES AND CONTROL DEVICES. CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL SYSTEM PER MANUFACTURERS WIRING/WIRELESS WIRING DIAGRAMS.

2. ALL NETWORKED LIGHTING CONTROLS SHALL BE EXTERNAL TO LIGHT FIXTURES. NO INTERNAL MOUNTED NETWORKED LIGHTING CONTROL EQUIPMENT SHALL BE ACCEPTED.

NOTES:

1. LIGHTS SHALL BE SET TO BE ON FROM 6 AM TO 9 PM. IF LIGHTS ACTIVATE DURING OFF HOURS BY A LIGHT SWITCH THEY SHALL TURN OFF AFTER 2 HOURS.
2. LIGHTS SHALL GO TO "FULL ON" IF FIRE ALARM GOES INTO TROUBLE MODE.
3. LIGHTS SHALL TURN OFF AFTER 30 MINUTES OF OCCUPANCY SENSOR NOT DETECTING AN OCCUPANT. LIGHTS SHALL BE MANUAL ON VIA LIGHT SWITCH.
4. I/O MODULE SHALL BE BASED ON PRIMARY DAY LIGHTING ZONE
5. I/O MODULE SHALL BE BASED ON THE SECONDARY DAY LIGHTING ZONE
6. 3-WAY SWITCHING
7. CONTROLLED BY ASTRONOMICAL TIME CLOCK (DUSK TO DAWN) AND EXTERIOR PHOTOCELL.

LEGEND:

Y = YES
N = NO
O = ON/OFF
D = DIMMING
N/A = NOT APPLICABLE

BUILDING B - MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

ITEM	DESCRIPTION	LOCATION	VOLTS	PHASE	HP / KW	MIN. CIRCUIT AMPS	DISC. SWITCH	FUSES	MAGNETIC STARTER	FEEDER	CIRCUIT NUMBER	NOTES
CP 1B	CIRCULATION PUMP	BUILDING B	120	1	- / -	-	1	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2C1-1	
CU 1B	CONDENSING UNIT	EXTERIOR	480	3	- / -	14.0	3P30 NEMA 3R	20	-	3/4"C-4#10 CU & 1#10 CU GRD	4C-31	
CU 2B	CONDENSING UNIT	EXTERIOR	208	1	- / -	36.0	2P60 NEMA 3R	40	-	1"C-3#6 CU & 1#10 CU GRD	2C1-26	
CU 3B	CONDENSING UNIT	EXTERIOR	208	1	- / -	36.0	2P60 NEMA 3R	40	-	1"C-3#6 CU & 1#10 CU GRD	2C1-30	
CU 4B	CONDENSING UNIT	EXTERIOR	480	3	- / -	14.0	3P30 NEMA 3R	20	-	3/4"C-4#10 CU & 1#10 CU GRD	4C-25	
CU 5B	CONDENSING UNIT	EXTERIOR	208	1	- / -	25.0	2P30 NEMA 3R	30	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-18	
CU 6B	CONDENSING UNIT	EXTERIOR	208	1	- / -	12.0	2P30 NEMA 3R	20	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-22	
CU 7B	CONDENSING UNIT	EXTERIOR	208	1	- / -	36.0	2P60 NEMA 3R	40	-	1"C-3#6 CU & 1#10 CU GRD	2C1-34	
EF 1B	EXHAUST FAN	RESTROOMS	120	1	- / -	1.36 FLA	1	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2C1-3	
EF 2B	EXHAUST FAN	STORAGE B120	120	1	- / -	0.46 FLA	1	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2C1-3	
EF 3B	EXHAUST FAN	KITCHEN	120	1	- / -	1.38 FLA	1	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2C1-5	
EF 4B	EXHAUST FAN	ELEC. ROOM	120	1	- / -	3.60 FLA	1	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2C1-5	
EF 5B	EXHAUST FAN	STORAGE B120	120	1	- / -	3.60 FLA	1	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2C1-7	
FC 1B	FAN COIL UNIT	ASSEMBLY 2	208	1	3/4 / -	14.0	2P30	20	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-14	
FC 2B	FAN COIL UNIT	OFFICES	208	1	3/4 / -	4.13	2P30	15	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-14	
FC 3B	FAN COIL UNIT	B120	208	1	3/4 / -	4.13	2P30	15	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-14	
FC 4B	FAN COIL UNIT	ASSEMBLY 1	208	1	3/4 / -	7.7	2P30	15	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-10	
FC 5B	FAN COIL UNIT	DIGITAL LIBRARY	208	1	3/4 / -	19.0	2P30	25	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-6	
FC 6B	FAN COIL UNIT	STUDIO B109	208	1	3/4 / -	12.0	2P30	15	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-2	
FC 7B	FAN COIL UNIT	KITCHEN B120	208	1	3/4 / -	4.13	2P30	15	-	3/4"C-3#10 CU & 1#10 CU GRD	2C1-10	
EWH 1B	WATER HEATER	BUILDING B	208	3	- / 9.0	-	3P60	40	-	1"C-3#6 CU & 1#10 CU GRD	2C1-31	
TP 1	TRAP PRIMER	BUILDING B	120	1	- / -	-	1	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2C1-1	
WH 1-B	WALL HEATER	B123	120	1	- / 1.5	-	1	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2C2-49	

1

MECHANICAL EQUIPMENT CONNECTION SCHEDULES NOTES:

1. PROVIDE 20A MOTOR RATED TOGGLE SWITCH.

8/16/2024 11:09:43 AM

FORT BEND COUNTY

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002
Design Team:

CROSS ENGINEERS, INC
923 MLK Jr. Way
Tacoma, WA 98405
Phone: (253) 759-0118
Job Number: 24-142
info@crossengineers.com

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Key Plan

Professional Seals

STATE OF TEXAS
STEVEN LEE HUBBS
152718
LICENSED
PROFESSIONAL ENGINEER
03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUED FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

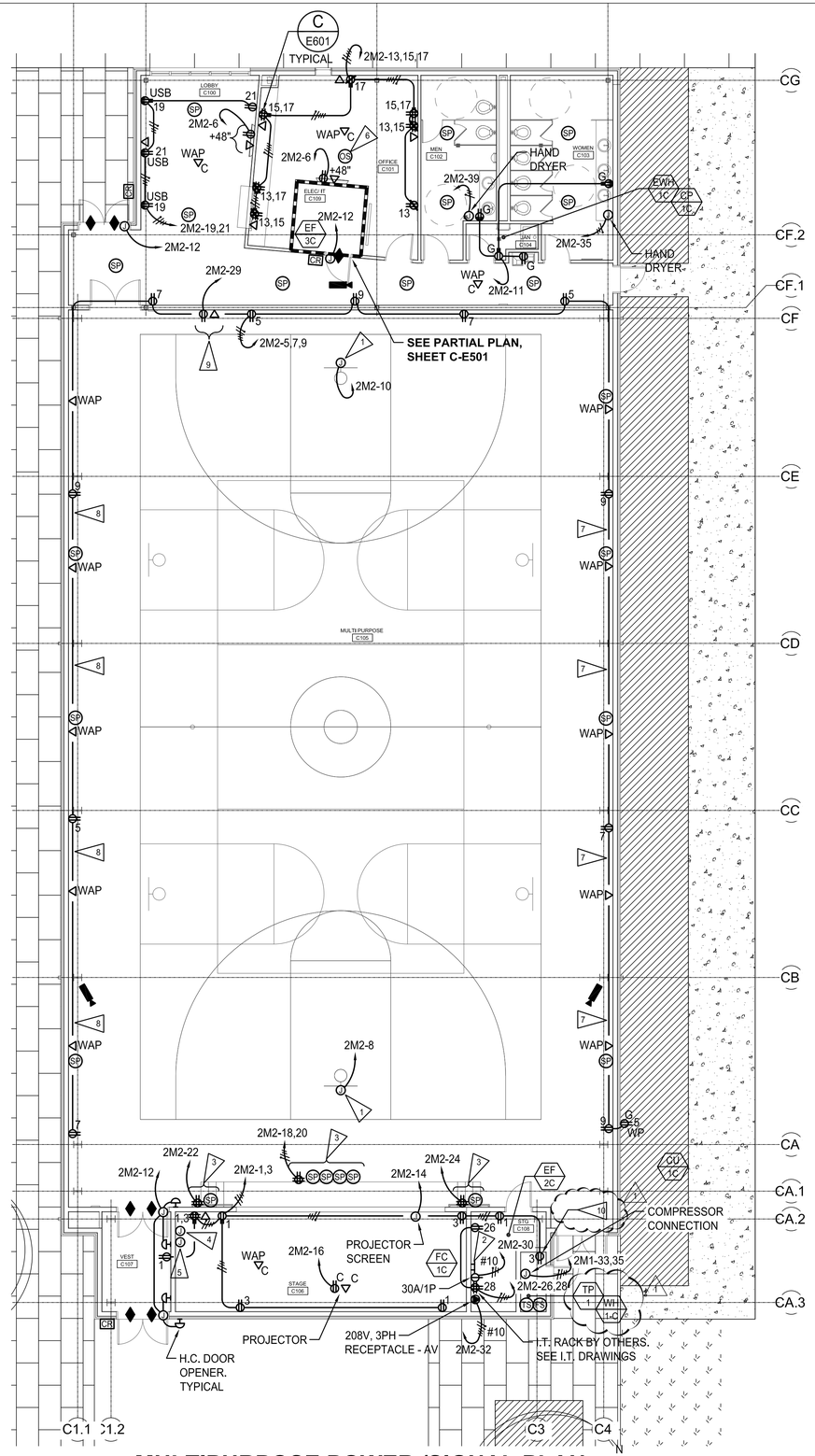
Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:
COMMUNITY CENTER MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number
B-E502



MULTIPURPOSE POWER /SIGNAL PLAN

SCALE: 1/8"=1'-0"

GENERAL NOTES:

1. ELECTRICAL REQUIREMENTS ARE NOT LIMITED TO ELECTRICAL DRAWINGS AND SPECIFICATIONS. THERE IS ADDITIONAL ELECTRICAL WORK REQUIRED TO BE INCLUDED IN THE BID, INDICATED ON ARCHITECTURAL, LANDSCAPE, CIVIL, MECHANICAL, DATA, AND AUDIO VISUAL DRAWINGS. ADDITIONAL ELECTRICAL WORK REQUIRED IN THE BID IS ALSO LOCATED IN THE SPECIFICATIONS. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL, CIVIL, LANDSCAPE, MECHANICAL, DATA, AND AUDIO VISUAL SPECIFICATIONS FOR ADDITIONAL ELECTRICAL INFORMATION AND INCLUDE COSTS FOR THIS WORK IN THE BID.
2. ALL CONDUIT IS INTENDED TO BE CONCEALED. CONTRACTOR SHALL PROVIDE TO ARCHITECT/OWNER SHOP DRAWINGS INDICATING ROUTING OF ANY INTENDED EXPOSED CONDUIT PRIOR TO ROUGH-IN FOR ARCHITECT/OWNERS APPROVAL. CONTRACTOR SHALL NOT START ROUGH-IN FOR CONDUIT UNTIL WRITTEN APPROVAL IS RECEIVED.
3. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE AN AUTHORITY HAVING JURISDICTION APPROVED FIRM TO EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE WITH CODE AS REQUIRED. FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.
4. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR MAINTAINING ALL LOCATE MARKS ONCE THE UTILITIES HAVE BEEN LOCATED.
5. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.
6. CONTRACTOR SHALL PROVIDE TRENCHED 1"C-FIRE ALARM CONDUCTORS AND CONNECT THE POST INDICATOR VALVE TO THE FIRE ALARM SYSTEM FOR MONITORING. SEE CIVIL AND MECHANICAL DRAWINGS FOR LOCATIONS.

ELECTRICAL NOTES:

1. POWERED BASKETBALL HOOP. CONTRACTOR SHALL PROVIDE POWER CONNECTION AND CONTROL WIRING TO CONTROL SWITCH PROVIDED WITH EQUIPMENT PER MANUFACTURERS REQUIREMENTS. SEE ARCHITECTURAL DRAWINGS FOR CONTROL LOCATION.
2. GROUND BAR PROVIDED BY TELECOM CONTRACTOR. ELECTRICAL CONTRACTOR SHALL PROVIDE #2 BARE CU CONDUCTOR BACK TO SERVICE GROUND. SEE DETAIL A, SHEET E601.
3. SEE AV DRAWINGS FOR MOUNTING HEIGHTS.
4. AV TOUCH PANEL CONTROL. PROVIDE 1"C TO ROOM C108. ALL WIRING AND DEVICES BY AV CONTRACTOR. SEE AV DRAWINGS FOR ADDITIONAL INFORMATION.
5. XLR WALL PLATE. PROVIDE 4" SQUARE JUNCTION BOX WITH 1"C TO ROOM C108. ALL WIRING AND DEVICES BY AV CONTRACTOR. SEE AV DRAWINGS FOR ADDITIONAL INFORMATION.
6. CONTRACTOR SHALL CONTROL 50% OF THE RECEPTACLES IN THIS ROOM WITH A CEILING MOUNTED OCCUPANCY SENSOR PER INTERNATIONAL ENERGY CONSERVATION CODE. SEE ELECTRICAL LEGEND FOR RECEPTACLES IDENTIFIED TO BE CONTROLLED.
7. ROLLER SHADES. CONTRACTOR SHALL PROVIDE DUPLEX RECEPTACLE, 3/4"C-#12 CU CONDUCTORS AND CONNECT TO 2M2-25. MOUNT RECEPTACLE AT 17'-0" AFF ADJACENT TO WINDOW. CONTRACTOR SHALL PROVIDE CONDUIT, LOW-VOLTAGE CONTROL WIRING, CONTROL SWITCHES AND INSTALL PER MANUFACTURERS REQUIREMENTS.
8. ROLLER SHADES. CONTRACTOR SHALL PROVIDE DUPLEX RECEPTACLE, 3/4"C-#12 CU CONDUCTORS AND CONNECT TO 2M2-27. MOUNT RECEPTACLE AT 17'-0" AFF ADJACENT TO WINDOW. CONTRACTOR SHALL PROVIDE CONDUIT, LOW-VOLTAGE CONTROL WIRING, CONTROL SWITCHES AND INSTALL PER MANUFACTURERS REQUIREMENTS.
9. FUTURE SCOREBOARD POWER. MOUNT AT 17'-0" AFF.
10. CONTRACTOR SHALL TAP OF DUPLEX RECEPTACLE AND CONNECT SPRINKLER SYSTEM VALVES AS REQUIRED. COORDINATE WITH SPRINKLER CONTRACTOR.

THE STATE OF TEXAS · FORT BEND COUNTY ·

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Key Plan

Professional Seals

STATE OF TEXAS
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03-14-2025

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1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:

MULTIPURPOSE POWER / SIGNAL PLAN

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

C-E301

8/16/2024 11:09:43 AM

PANEL SCHEDULE

SURFACE MOUNTING
35,000 AIC

NO. **4M** | LOCATION: ELECTRICAL ROOM | SERVING: MULTIPURPOSE BLDG. | 480/277 VOLTS 3PHASE 4WIRE 600 AMPS WITH 600 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS		TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	SPARE		20		20		SPARE	2
3	SPARE		20					4
5	SPARE		20					6
7	RF-1C	5.64	30					8
9								10
11			3					12
13	RF-2C	5.64	30					14
15								16
17			3					18
19	RF-2C	5.64	30					20
21								22
23			3		20		SPARE	24
25	RTU-2C	20.75	30		200	90.47	RTU-3C	26
27								28
29			3		3			30
31	RTU-1C	90.47	200		125	23.40	PANEL 2M2 (VIA XFMR)	32
33								34
35			3		3			36
37	TVSS	-	30		125	32.70	PANEL 2M1 (VIA XFMR)	38
39								40
41			3		3			42

REMARKS: SERVICE ENTRANCE RATED.

CONNECTED LOAD: 274.7 KVA 331 AMPS
DEMAND LOAD: 298.8 KVA 360 AMPS

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 4M LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	5.81	X	1.25	220.19(A)(1)	=	7.26
RECEPTS TO 10KW	7.56	X	1.00	220.44	=	7.56
RECEPTS OVER 10KW	-	X	0.50	220.44	=	-
MOTORS (LARGEST)	90.47	X	1.25	430.24	=	113.09
MOTORS	145.80	X	1.00	430.24	=	145.80
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	9.00	X	1.00	220.51	=	9.00
MISCELLANEOUS	16.06	X	1.00		=	16.06
TOTAL CONNECTED	274.7 KVA (331 AMPS)			TOTAL DEMAND		298.8 KVA (360 AMPS)

PANEL SCHEDULE

SURFACE MOUNTING
22,000 AIC

NO. **2M1** | LOCATION: ELECTRICAL ROOM | SERVING: MULTIPURPOSE BLDG. | 120/208 VOLTS 3PHASE 4WIRE 200 AMPS WITH 200 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS		TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	LIGHTING	1.22	20		20	.47	EF-1C,EF-2C,EF-3C	2
3		1.22				.32	CP-1C, TP-1	4
5		.66					SPARE	6
7	LIGHTING	.64						8
9	EXTERIOR LIGHTING	.15						10
11	TRACK LIGHTING	.24			20		SPARE	12
13		.24			60	7.07	CU-1C	14
15		.72			2			16
17	TRACK LIGHTING	.72			30		SPARE	18
19	UFMP4	.10			2			20
21	DIN1414 ENCLOSURE	.10			30		SPARE	22
23	SPARE				2			24
25					30		SPARE	26
27					2			28
29	SPARE				60	7.07	FC-1C	30
31	WH-1C	1.50	20		2			32
33	COMPRESSOR	3.00	20		60		SPARE	34
35			2		2			36
37	TVSS	-	30		60	9.00	EWH-1C	38
39								40
41			3		3			42

REMARKS: PROVIDE FEED THRU LUGS.

CONNECTED LOAD: 32.7 KVA 91 AMPS
DEMAND LOAD: 35.9 KVA 100 AMPS

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 2M1 LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	5.81	X	1.25	220.19(A)(1)	=	7.26
RECEPTS TO 10KW	-	X	1.00	220.44	=	-
RECEPTS OVER 10KW	-	X	0.50	220.44	=	-
MOTORS (LARGEST)	7.07	X	1.25	430.24	=	8.84
MOTORS	10.59	X	1.00	430.24	=	10.59
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	9.00	X	1.00	220.51	=	9.00
MISCELLANEOUS	.20	X	1.00		=	.20
TOTAL CONNECTED	32.7 KVA (91 AMPS)			TOTAL DEMAND		35.9 KVA (100 AMPS)

PANEL SCHEDULE

SURFACE MOUNTING
22,000 AIC

NO. **2M2** | LOCATION: ELECTRICAL ROOM | SERVING: MULTIPURPOSE BLDG. | 120/208 VOLTS 3PHASE 4WIRE 200 AMPS WITH 200 MAIN BREAKER

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS		TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	RECEPTACLES	.90	20		20		SPARE	2
3		.72					SPARE	4
5		.72				.60	TV'S (QTY 2)	6
7		.72				.60	B.B. HOOP	8
9		.72				.60	B.B. HOOP	10
11		.54				.30	HC DOORS	12
13		.72				.50	PROJECTOR SCREEN	14
15		.72				.50	PROJECTOR	16
17		.72				1.00	SPEAKERS	18
19		.36				1.00		20
21		.36				.83		22
23	RECEPTACLES	.36				.83	SPEAKERS	24
25	ROLLER SHADES	.50				.50	I.T. RECEPTACLE	26
27	ROLLER SHADES	.50			20	.50	I.T. RECEPTACLE	28
29	SCOREBOARD	1.00			30	1.50	I.T. RECEPTACLE	30
31	SPARE				30	2.50	A.V. RECEPTACLE	32
* 33	FIRE ALARM PANEL	.10	20					34
35	HAND DRYER	1.00	20		3			36
37			2		30	-	TVSS	38
39	HAND DRYER	1.00	20					40
41	SPARE		2		3			42
41			20		20		SPARE	42
41								42
41								42
41								42
41								42
41								42
41								42
41								42
41	SPARE		20		20		SPARE	42

REMARKS: PROVIDE FEED THRU LUGS

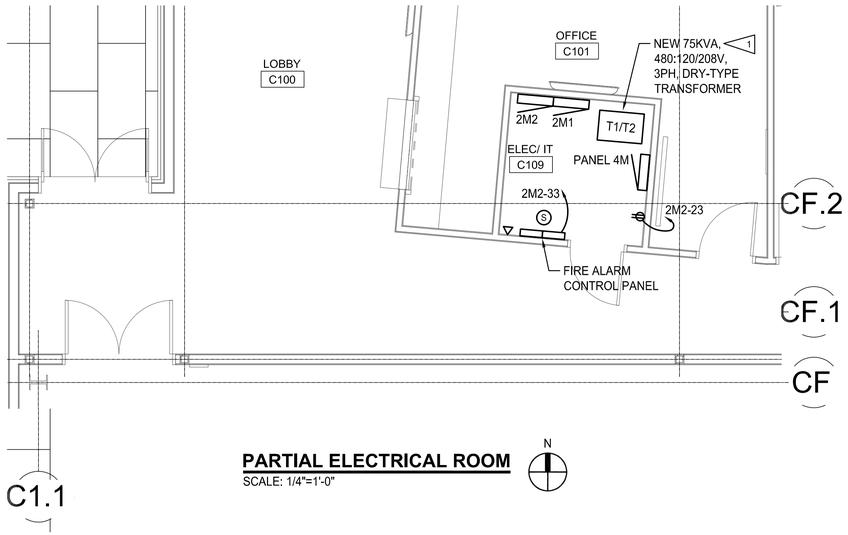
CONNECTED LOAD: 23.4 KVA 65 AMPS
DEMAND LOAD: 23.4 KVA 65 AMPS

* PROVIDE HANDLE LOCK.

PROVIDE HANDLE TIES FOR ALL MULTI-CIRCUIT HOMERUNS SHARING A NEUTRAL PER THE NATIONAL ELECTRIC CODE ARTICLE 210.4 MULTIWIRE BRANCH CIRCUITS, PART (B) DISCONNECTING MEANS. DRAWINGS ARE DIAGRAMMATIC. WHERE THE CONTRACTOR MODIFIES THE CIRCUITING, THE CONTRACTOR SHALL PROVIDE AN INDIVIDUAL NEUTRAL PER CIRCUIT, MULTI-POLE CIRCUIT BREAKERS, OR CIRCUIT BREAKER HANDLE TIE TO MEET THE NEC ARTICLE. ALL COSTS ASSOCIATED WITH MODIFICATIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.

PANEL 2M2 LOAD CALCULATIONS

SERVICE	KVA LOAD		FACTOR	NEC REF.		DEMAND LOAD
LIGHTING	-	X	1.25	220.19(A)(1)	=	-
RECEPTS TO 10KW	7.56	X	1.00	220.44	=	7.56
RECEPTS OVER 10KW	-	X	0.50	220.44	=	-
MOTORS (LARGEST)	-	X	1.25	430.24	=	-
MOTORS	-	X	1.00	430.24	=	-
KITCHEN EQUIP.	-	X	1.00	220.56	=	-
WELDERS	-	X	1.00	630.11(B)	=	-
AIR CONDITIONING	-	X	1.00	220.50	=	-
ELECTRIC HEAT	-	X	1.00	220.51	=	-
MISCELLANEOUS	15.86	X	1.00		=	15.86
TOTAL CONNECTED	23.4 KVA (65 AMPS)			TOTAL DEMAND		23.4 KVA (65 AMPS)



PARTIAL ELECTRICAL ROOM
SCALE: 1/4"=1'-0"

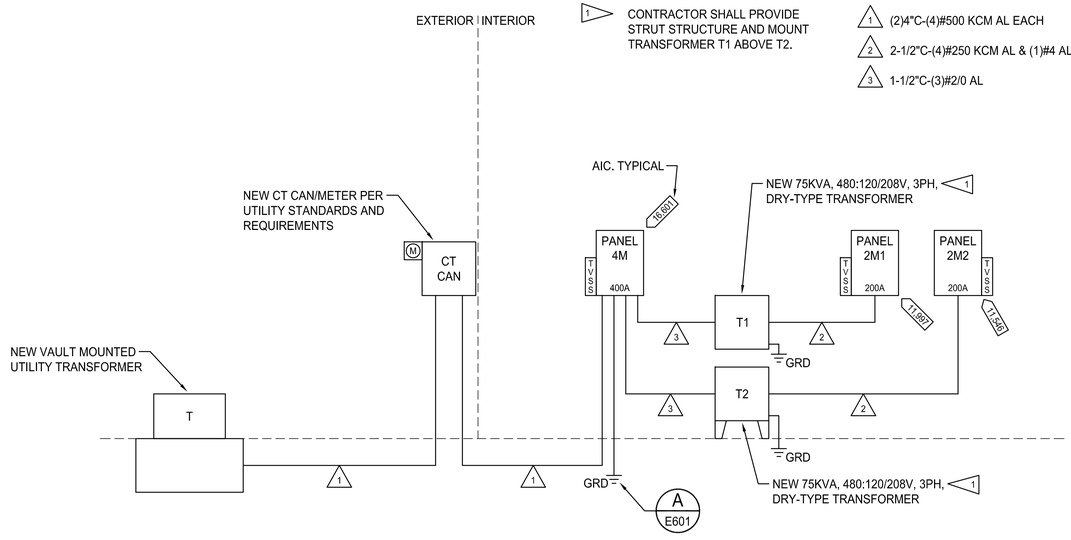
N

ELECTRICAL NOTES:

1. CONTRACTOR SHALL PROVIDE STRUT STRUCTURE AND MOUNT TRANSFORMER T1 ABOVE T2.

CONDUIT AND CONDUCTOR SCHEDULE:

1. (2)4"C-(4)#500 KCM AL EACH
2. 2-1/2"C-(4)#250 KCM AL & (1)#4 AL GRD
3. 1-1/2"C-(3)#2/0 AL



MULTIPURPOSE POWER RISER DIAGRAM
NOT TO SCALE

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THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

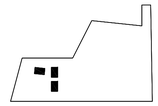
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Contract No: 2024-002
Design Team:

CROSS ENGINEERS, INC
923 MLK Jr. Way
Tacoma, WA 98405
Phone: (253) 759-0118
Job Number: 24-142
info@crossengineers.com

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Key Plan



Professional Seals



03-14-2025

No.	Issue Description	MM-DD-YYYY
	ISSUED FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

Sheet Title:

MULTIPURPOSE POWER RISER DIAGRAM

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Sheet Number

C-E501

BUILDING C - LIGHTING CONTROL SCHEDULE

BUILDING	ROOM NUMBER	I/O CONTROLLER ID	TYPE OF CONTROL					REMARKS
			OCCUPANCY SENSOR	PHOTO SENSOR	DIMMING	SWITCHING		
C	C100	a	N	Y	Y	D		(1)(2)(4)(5)(9)
		b	N	Y	Y	D		(1)(2)(5)(6)(9)
		c	N	N	Y	D		(1)(2)(3)(6)
C	C105	a	Y	N	Y	D		(2)(3)(7)
		b	Y	N	Y	D		(2)(3)(7)
C	C106	a	Y	N	Y	D		(2)(3)
C	C107	a	Y	N	Y	D		(2)(3)
C	EXTERIOR	e	N	N	N	O		(8)

GENERAL NOTES:

1. LIGHTING CONTROL SYSTEM IS BASED AN WATTSTOPPER PLUS SYSTEM WITH WIRELESS SWITCHES AND CONTROL DEVICES. CONTRACTOR SHALL PROVIDE A COMPLETE AND OPERATIONAL SYSTEM PER MANUFACTURERS WIRING/WIRELESS WIRING DIAGRAMS.
2. ALL NETWORKED LIGHTING CONTROLS SHALL BE EXTERNAL TO LIGHT FIXTURES. NO INTERNAL MOUNTED NETWORKED LIGHTING CONTROL EQUIPMENT SHALL BE ACCEPTED.

NOTES:

(1) LIGHTS SHALL BE SET TO BE ON FROM 6 AM TO 9 PM. IF LIGHTS ACTIVATE DURING OFF HOURS BY A LIGHT SWITCH THEY SHALL TURN OFF AFTER 2 HOURS.

(2) LIGHTS SHALL GO TO "FULL ON" IF FIRE ALARM GOES INTO TROUBLE MODE.

(3) LIGHTS SHALL TURN OFF AFTER 30 MINUTES OF OCCUPANCY SENSOR NOT DETECTING AN OCCUPANT. LIGHTS SHALL BE MANUAL ON VIA LIGHT SWITCH.

(4) I/O MODULE SHALL BE BASED ON PRIMARY DAY LIGHTING ZONE

(5) I/O MODULE SHALL BE BASED ON THE SECONDARY DAY LIGHTING ZONE

(6) 3-WAY SWITCHING

(7) 4-WAY SWITCHING

(8) CONTROLLED BY ASTRONOMICAL TIME CLOCK (DUSK TO DAWN) AND EXTERIOR PHOTOCELL.

(9) CONTRACTOR SHALL PROVIDE 250W MINI INVERTER (EMERGI-LITE #EMIU-250-LDC25 OR EQUAL) TO ILLUMINATE ALL LOBBY LIGHTING AT 25% WHEN POWER IS LOST. CONTRACTOR SHALL PROVIDE 0-10V WIRING BETWEEN INVERTER AND LIGHT FIXTURES PER MANUFACTURER REQUIREMENTS.

LEGEND:

Y = YES
N = NO
O = ON/OFF
D = DIMMING
N/A = NOT APPLICABLE

BUILDING C - MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

ITEM	DESCRIPTION	LOCATION	VOLTS	PHASE	HP / KW	MIN. CIRCUIT AMPS	DISC. SWITCH	FUSES	MAGNETIC STARTER	FEEDER	CIRCUIT NUMBER	NOTES
CP 1C	CIRCULATION PUMP	BUILDING C	120	1	- / -	-	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2M1-4	
CU 1C	CONDENSING UNIT	EXTERIOR	208	1	- / -	34.0	2P60 NEMA 3R	50	-	1"C-3#6 CU & 1#10 CU GRD	2M1-14	
EF 1C	EXHAUST FAN	RESTROOMS	120	1	- / -	2.2 FLA	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2M1-2	
EF 2C	EXHAUST FAN	BACK STAGE STORAGE	120	1	- / -	0.46 FLA	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2M1-2	
EF 3C	EXHAUST FAN	ELECTRICAL ROOM	120	1	- / -	2.2 FLA	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2M1-2	
FC 1C	FAN COIL UNIT	SEE MECH.	208	1	- / -	34.0	2P60	50	-	1"C-3#6 CU & 1#10 CU GRD	2M1-30	
RTU 1C	ROOF TOP UNIT	ROOF	480	3	- / 36	109.0	3P200 NEMA 3R	110	-	2-1/2"C-4#3/0 CU & 1#6 CU GRD	4M-31	(2)
RTU 2C	ROOF TOP UNIT	ROOF	480	3	- / 6	25.0	3P30 NEMA 3R	30	-	3/4"C-4#10 CU & 1#10 CU GRD	4M-25	(2)
RTU 3C	ROOF TOP UNIT	ROOF	480	3	- / 36	109.0	3P200 NEMA 3R	110	-	2-1/2"C-4#3/0 CU & 1#6 CU GRD	4M-26	(2)
RF 1C	ROOF TOP UNIT	ROOF	480	3	- / -	6.8	3P30 NEMA 3R	10	-	3/4"C-4#10 CU & 1#10 CU GRD	4M-7	(2)
RF 2C	ROOF TOP UNIT	ROOF	480	3	- / -	6.8	3P30 NEMA 3R	10	-	3/4"C-4#10 CU & 1#10 CU GRD	4M-13	(2)
RF 3C	ROOF TOP UNIT	ROOF	480	3	- / -	6.8	3P30 NEMA 3R	10	-	3/4"C-4#10 CU & 1#10 CU GRD	4M-19	(2)
EWH 1C	WATER HEATER	BUILDING C	208	3	- / 9	-	3P60	40	-	1"C-4#6 CU & 1#10 CU GRD	2M1-38	
TP 1	TRAP PRIMER	BUILDING C	120	1	- / -	-	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2M1-4	
WH 1-C	WALL HEATER	C108	120	1	- / 1.5	-	(1)	-	-	3/4"C-2#12 CU & 1#12 CU GRD	2M1-31	

1

MECHANICAL EQUIPMENT CONNECTION SCHEDULES NOTES:

(1) PROVIDE 20A MOTOR RATED TOGGLE SWITCH

(2) PROVIDE DUCT SMOKE DETECTOR. DIVISION 26 SHALL FURNISH DUCT SMOKE DETECTOR TO DIVISION 23 CONTRACTOR FOR LOCATE AND INSTALLATION. ALL CONNECTIONS TO FIRE ALARM BY DIVISION 26.

8/16/2024 11:09:43 AM

THE STATE OF TEXAS · FORT BEND COUNTY ·

Project:
Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:
FORT BEND COUNTY
5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002
Design Team:

CROSS ENGINEERS, INC
923 MLK Jr. Way
Tacoma, WA 98405
Phone: (253) 759-0118
Job Number: 24-142
info@crossengineers.com

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Key Plan

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03-14-2025

No.	Issue Description	MM-DD-YYYY
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1	ADDENDUM 1	06-20-2025

Drawn by: JAE Reviewed by: SLH

Project No: 2024-002

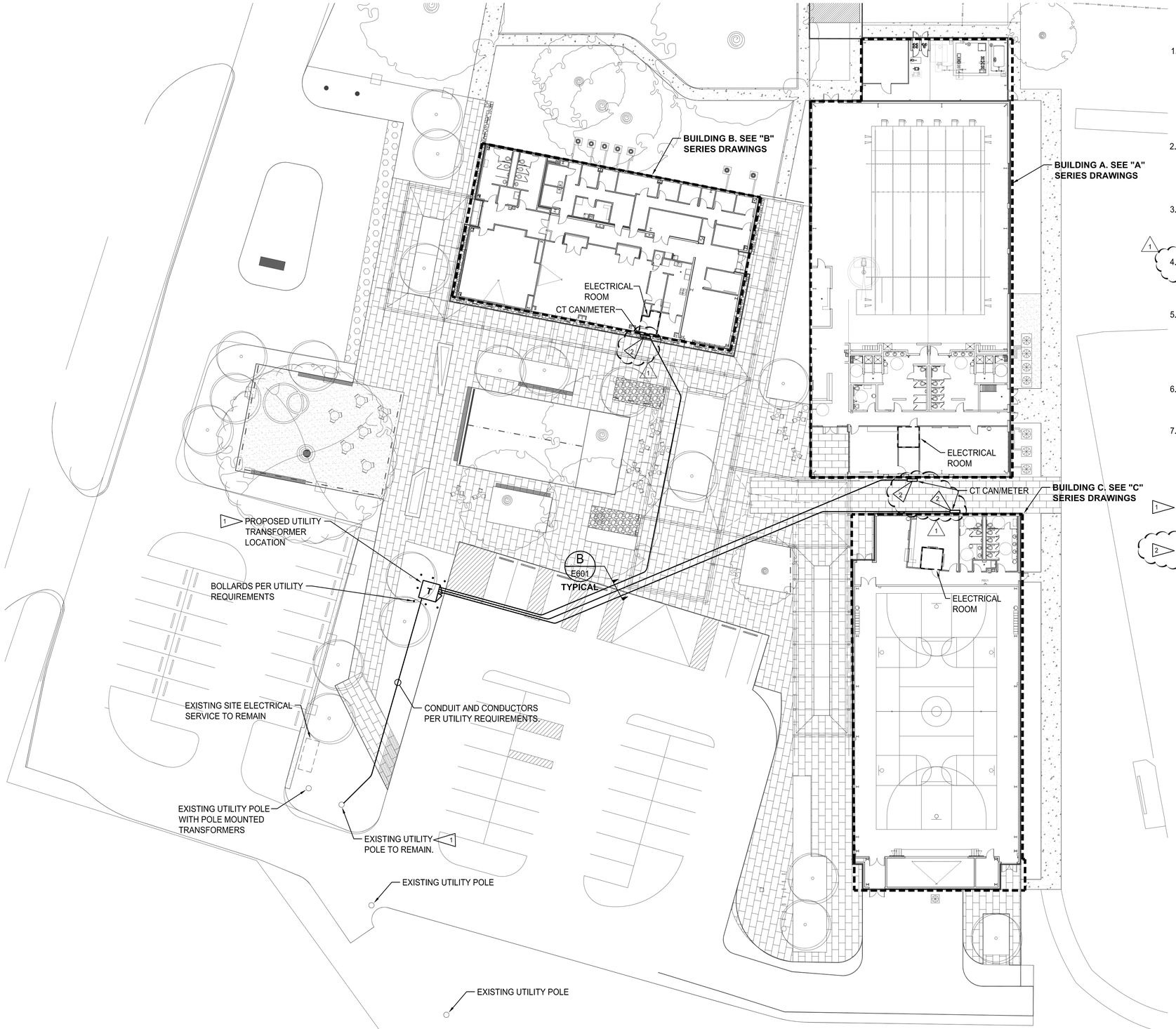
Sheet Title:

MULTIPURPOSE MECHANICAL EQUIPMENT ELECTRICAL CONNECTION SCHEDULE

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Sheet Number

C-E502



ELECTRICAL SITE PLAN

SCALE: 1"=20'-0"

N

GENERAL NOTES:

1. ELECTRICAL REQUIREMENTS ARE NOT LIMITED TO ELECTRICAL DRAWINGS AND SPECIFICATIONS. THERE IS ADDITIONAL ELECTRICAL WORK REQUIRED TO BE INCLUDED IN THE BID, INDICATED ON ARCHITECTURAL, LANDSCAPE, CIVIL, MECHANICAL, DATA, AND AUDIO VISUAL DRAWINGS. ADDITIONAL ELECTRICAL WORK REQUIRED IN THE BID IS ALSO LOCATED IN THE SPECIFICATIONS. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL, CIVIL, LANDSCAPE, MECHANICAL, DATA, AND AUDIO VISUAL SPECIFICATIONS FOR ADDITIONAL ELECTRICAL INFORMATION AND INCLUDE COSTS FOR THIS WORK IN THE BID.
2. ALL CONDUIT IS INTENDED TO BE CONCEALED. CONTRACTOR SHALL PROVIDE TO ARCHITECT/OWNER SHOP DRAWINGS INDICATING ROUTING OF ANY INTENDED EXPOSED CONDUIT PRIOR TO ROUGH-IN FOR ARCHITECT/OWNERS APPROVAL. CONTRACTOR SHALL NOT START ROUGH-IN FOR CONDUIT UNTIL WRITTEN APPROVAL IS RECEIVED.
3. CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR THE FIRE WALL SEPARATIONS. CONTRACTOR SHALL PROVIDE CAULKING, SEAL-OFFS, RATED PENETRATION BLOCK-OUTS, ETC. AS REQUIRED BY CODE TO RETAIN FIRE WALL SEPARATION RATINGS.
4. ALL EQUIPMENT FURNISHED SHALL BE UL LABELED.
5. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR MAINTAINING ALL LOCATE MARKS ONCE THE UTILITIES HAVE BEEN LOCATED.
6. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.
7. CONTRACTOR SHALL PROVIDE TRENCHED 1"C-FIRE ALARM CONDUCTORS AND CONNECT THE POST INDICATOR VALVE TO THE FIRE ALARM SYSTEM FOR MONITORING. SEE CIVIL AND MECHANICAL DRAWINGS FOR LOCATIONS.

ELECTRICAL NOTES:

1. CONTRACTOR SHALL COORDINATE WITH UTILITY FOR NEW ELECTRICAL SERVICES TO (3) NEW BUILDINGS AND LIFT STATION. SEE CIVIL DRAWINGS AND SPECIFICATIONS FOR LIFT STATION REQUIREMENTS.
2. CONTRACTOR SHALL MOUNT CT CAN AND UTILITY METER PER UTILITY STANDARDS AND REQUIREMENTS.

THE STATE OF TEXAS · FORT BEND COUNTY ·

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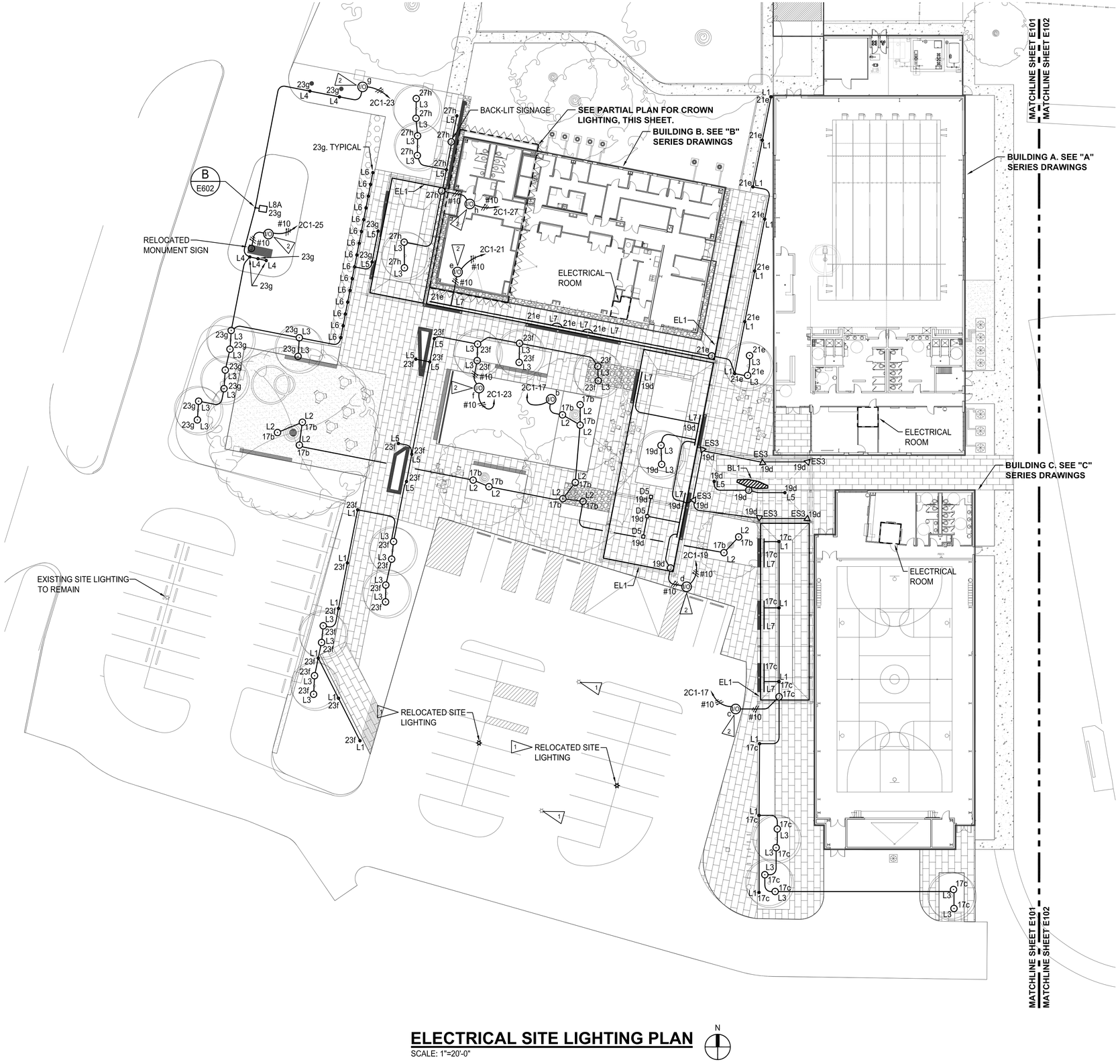
ELECTRICAL SITE PLAN

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Sheet Number

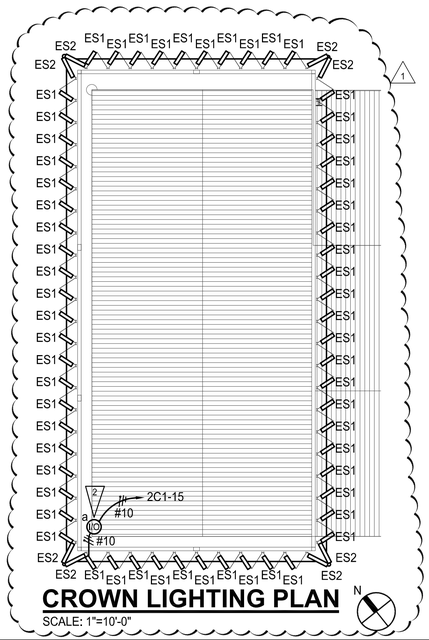
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ELECTRICAL SITE LIGHTING PLAN

SCALE: 1"=20'-0"



CROWN LIGHTING PLAN

SCALE: 1"=10'-0"

GENERAL NOTES:

1. ELECTRICAL REQUIREMENTS ARE NOT LIMITED TO ELECTRICAL DRAWINGS AND SPECIFICATIONS. THERE IS ADDITIONAL ELECTRICAL WORK REQUIRED TO BE INCLUDED IN THE BID, INDICATED ON ARCHITECTURAL, LANDSCAPE, CIVIL, MECHANICAL, DATA, AND AUDIO VISUAL DRAWINGS. ADDITIONAL ELECTRICAL WORK REQUIRED IN THE BID IS ALSO LOCATED IN THE SPECIFICATIONS. CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL, CIVIL, LANDSCAPE, MECHANICAL, DATA, AND AUDIO VISUAL SPECIFICATIONS FOR ADDITIONAL ELECTRICAL INFORMATION AND INCLUDE COSTS FOR THIS WORK IN THE BID.
2. ALL CONDUIT IS INTENDED TO BE CONCEALED. CONTRACTOR SHALL PROVIDE TO ARCHITECT/OWNER SHOP DRAWINGS INDICATING ROUTING OF ANY INTENDED EXPOSED CONDUIT PRIOR TO ROUGH-IN FOR ARCHITECT/OWNERS APPROVAL. CONTRACTOR SHALL NOT START ROUGH-IN FOR CONDUIT UNTIL WRITTEN APPROVAL IS RECEIVED.
3. CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR THE FIRE WALL SEPARATIONS. CONTRACTOR SHALL PROVIDE CAULKING, SEAL-OFFS, RATED PENETRATION BLOCK-OUTS, ETC. AS REQUIRED BY CODE TO RETAIN FIRE WALL SEPARATION RATINGS.
4. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE AN AUTHORITY HAVING JURISDICTION APPROVED FIRM TO EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE WITH CODE AS REQUIRED. FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.
5. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR MAINTAINING ALL LOCATE MARKS ONCE THE UTILITIES HAVE BEEN LOCATED.
6. ALL WALL PENETRATIONS SHALL BE NEATLY CORE-DRILLED, CAULKED AND SEALED TO MAINTAIN FIRE, AND WATERPROOF RATING. PATCH, REPAIR, AND PAINT TO MATCH EXISTING.
7. CONTRACTOR SHALL PROVIDE TRENCHED 1"C-FIRE ALARM CONDUCTORS AND CONNECT THE POST INDICATOR VALVE TO THE FIRE ALARM SYSTEM FOR MONITORING. SEE CIVIL AND MECHANICAL DRAWINGS FOR LOCATIONS.

ELECTRICAL NOTES:

1. CONTRACTOR SHALL RELOCATE EXISTING LIGHT POLE, POLE BASE, PROVIDE CONDUIT / CONDUCTORS AND RECONNECT TO EXISTING CIRCUITRY AND CONTROLS.
2. LIGHTING CONTROL MODULE INSIDE COMMUNITY BUILDING.

THE STATE OF TEXAS · FORT BEND COUNTY

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Drawn by: JAE Reviewed by: SLH

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Sheet Title:

ELECTRICAL SITE LIGHTING PLAN

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GENERAL

- EXISTING MECHANICAL TO BE REMOVED
- EXISTING MECHANICAL TO REMAIN
- MATCHLINE OR PROPERTY LINE
- ENLARGED PLAN BOUNDARY
- DETAIL/PLAN IDENTIFIER (1 / M1.01)
- SECTION IDENTIFIER (A / M1.01)
- ELEVATION IDENTIFIER (A / M1.01)
- REVISION CALLOUT (1)
- KEYED NOTE TAG (1)
- CODED NOTE (1)
- MECHANICAL EQUIPMENT TAG (AHU-01)
- INVERT ELEVATION OR POC

CONTROLS (PLAN VIEW)

- THERMOSTAT OR TEMPERATURE SENSOR (T / TU-XX)
- SENSOR: SHOWN WITH GUARD (TYPICAL ALL SENSORS) (S_G)
- HUMIDISTAT OR HUMIDITY SENSOR (S)
- CARBON MONOXIDE SENSOR (CO)
- CARBON DIOXIDE SENSOR (CO2)
- INDOOR AIR QUALITY SENSOR (IAQ)
- SWITCH BY MECHANICAL (S_X)

ELECTRICAL PROVISIONS FOR MECHANICAL WORK

- LOCATION OF STARTER, DISCONNECT & CONTROLS
- VARIABLE FREQUENCY DRIVE (VFD)
- HEAT TRACE BETWEEN SYMBOLS OR END OF RUN (HT ... HT)

ACCESS

- ACCESS DOOR (SPECIFIED OR AS SHOWN ON DWGS)
- MECHANICAL ACCESS (SPECIFIED OR AS SHOWN ON DWGS)

PIPING

- PIPE ELBOW UP OR PIPE TEE UP AND DOWN
- PIPE ELBOW DOWN
- PIPE TEE UP
- PIPE TEE DOWN
- PIPE RISE
- PIPE CAP
- PIPE PLUG
- FLOW DIRECTION
- PIPE BREAK
- CONDENSATE DRAIN (C)

SOIL AND WASTE WATER PIPING SYSTEM

- SANITARY SEWER/WASTE UNDERGROUND
- SANITARY SEWER/WASTE ABOVE GROUND
- VENT PIPING
- X" VTR — VENT THRU ROOF (INCLUDE SIZE)
- FLOOR DRAIN/FUNNEL FLOOR DRAIN
- WCO — CLEANOUT – FREE STANDING WALL MOUNTED
- FCO — CLEANOUT – FLUSH WITH FLOOR
- A — ACID WASTE

DOMESTIC WATER PIPING SYSTEM

- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC HOT WATER CIRCULATION
- TP — TRAP PRIMER WATER
- WATER METER
- BASKET STRAINER
- HOSE BIBB/WALL HYDRANT
- TRAP PRIMER BOX

VALVES

- VALVE: GATE, BALL, BUTTERFLY (REFER TO SPECIFICATIONS)
- GLOBE VALVE
- S — SOLENOID VALVE
- CHECK VALVE
- BALANCING VALVE

PIPING SPECIALTIES

- UNION
- FLANGE
- FLEX CONNECTOR
- THERMAL/SEISMIC FLEXIBLE LOOP
- EJ — THERMAL EXPANSION JOINT

NATURAL GAS PIPING SYSTEM

- G — LOW PRESSURE NATURAL GAS PIPING
- MPG — MEDIUM PRESSURE NATURAL GAS PIPING
- GAS COCK
- PRESSURE REGULATOR
- PRESSURE REGULATOR WITH VENT
- SEISMIC GAS SHUT–OFF
- GAS PRESSURE REDUCING VALVE WITH VENT

PLUMBING FIXTURE SCHEDULE

UNIT #	DESCRIPTION	MAKE / MODEL	NOTES	ACCESSORIES
WC-1	WATER CLOSET - WALL MOUNTED	KOHLER 4325-0	1.6 GALLONS PER FLUSH	MANUAL FLUSH VALVE SLOAN ROYAL 111 EXPOSED MANUAL WATER CLOSET FLUSHOMETER, SINGLE FLUSH, NON-HOLD-OPEN HANDLE, TOP SPUD CONNECTION, POLISHED CHROME FINISH
WC-2	ADA WATER CLOSET - WALL MOUNTED	KOHLER 4325-0 (1)	1.6 GALLONS PER FLUSH	MANUAL FLUSH VALVE SLOAN ROYAL 111 EXPOSED MANUAL WATER CLOSET FLUSHOMETER, SINGLE FLUSH, NON-HOLD-OPEN HANDLE, TOP SPUD CONNECTION, POLISHED CHROME FINISH
LV-1	LAVATORY - UNDERCOUNTER	KOHLER 2883-0	VITEROUS CHINA UNDERMOUNT	DELTA 701LF-HDF BATHROOM FAUCET, ADA APPROVED, SELF-CLOSING
LV-2	ADA LAVATORY - WALL MOUNTED	KOHLER 2035-1-0	VITEROUS CHINA UNDERMOUNT	DELTA 701LF-HDF BATHROOM FAUCET, ADA APPROVED, SELF-CLOSING
UR-1	URINAL - FLOOR - ADA	KOHLER K-25039-R-0 (1)	VITEROUS CHINA (1)	MANUAL FLUSH VALVE SLOAN REGAL 186 MANUAL URINAL FLUSHOMETER, SINGLE FLUSH, NON-HOLD-OPEN HANDLE, REAR SPUD CONNECTION, POLISHED CHROME FINISH
KS-1	ADA KITCHEN SINK	STERLING 11444	STAINLESS STEEL UNDERMOUNT, DOUBLEBASIN	DELTA KITCHEN FAUCET 55C1513. 1 HOLE. ADA APPROVED.
MS-1	MOP SINK	SINK: FIAT PRODUCTS STOCKTON TERRAZZO MOP BASIN - TSB3000	FLOOR MOUNTED	FAUCET: CHICAGO FAUCET 540-LD897SCP W/VAC BRKR | TRAP: McGUIRE B8902C, CAST IRON BODY, CHROME FINISH
SH-1	SHOWER	AMERICAN STANDARD STUDIO	-	ANGLE STOP: BRASSCRAFT KTSCR19
SH-2	ADA SHOWER	AMERICAN STANDARD STUDIO	-	CHICAGO 243260001
SH-3	ADA SHOWER POOL SHOWER	AMERICAN STANDARD STUDIO	-	P.O. PLUG: McGUIRE 155A, OPEN GRID, POLISHED CHROME, FURNISH WITH STAINLESS STELL CAPS ON ALL CURBS
BF-1	WALL MOUNTED DRINKING FOUNTAIN	ELKAY LZOTL8WSLK		DRINKING FOUNTAIN W/ BOTTLE FILLER
HB-1	HOSE BIBB - FREEZEPROOF	JAY R SMITH 1/4 TURN NON-FREEZE WALL HYDRANT WITH INETGRAL VACUUM BREAKER AND STAINLESS STEEL BOX, ENCLOSED FLUSH MOUNTED WALL BOX, 3/4" INLET. "T" HANDLE KEY, SELF DRAINING WITH HOSE CONNECTION		INTEGRAL VACUUM BREAKER, REMOVABLE KEY, RECESSED IN LOCKING BOX
HB-2	HOSE BIBB - INTERIOR	WOODFORD MODEL 122 HOT AND COLD WALL FAUCET FOR USE INSIDE W/VAC BRKR		
RD-1	ROOF DRAIN	JAY R SMITH FIGURE 1850 ROOF DRAIN		DUCO CAST IRON BODY, COUBLE DECK PLATE WITH SECURING HOLES, COMBINED FLASHING CLAMP AND GRAVEL STOP FOR ROOF DRAIN, PROVIDE WITH GALVANIZED CAST IRON DOMES, EXTENSION AS REQUIRED TO SUIT ROOF THICKNESS
OD-1	OVER FLOW DRAIN	JAY R SMITH FIGURE 1850 OVERFLOW DRAIN		DUCO CAST IRON BODY, COUBLE DECK PLATE WITH SECURING HOLES, COMBINED FLASHING CLAMP AND GRAVEL STOP FOR EXTERNAL WATER DAM FOR OVERFLOW DRAIN, PROVIDE WITH GALVANIZED CAST IRON DOMES, EXTENSION AS REQUIRED TO SUIT ROOF THICKNESS
FD-1	FLOOR DRAIN	(1) WADE 1100 SERIES, MODEL 1100-A5-1-ARC, DRAIN BODY: TWO PIECE DURA-COATED CAST IRON BODY, DOUBLE DRAINAGE FLANGE, REVERSIBLE FLASHING COLLAR, WEEPHOLES, BOTTOM OUTLET, STRAINER: 5 INCH ADJUSTABLE NICKLE BRONZE	-	CAST IRON DRAIN WITH NICKEL BRONZE GRATE, PRIMER CONNECTION, FINISHED AREAS
HD-1	HUB DRAIN			
TP-1	TRAP PRIMER	PPP PT-6, 120V	ELECTRONIC	

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FRESNO, TX 77545

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FORT BEND COUNTY
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MISSOURI CITY, TEXAS 77459

HINESAD

Contract No: 2024-002

Design Team:

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Key Plan

Professional Seals

STATE OF TEXAS · LINDA A. BURMAN · 153831 · REGISTERED ARCHITECT · PROFESSIONAL SEAL

03-14-2024

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1	ADDENDUM 1	06-20-2025

Drawn by: TP Reviewed by: LB

Project No: 2024-002

Sheet Title:

LEGEND

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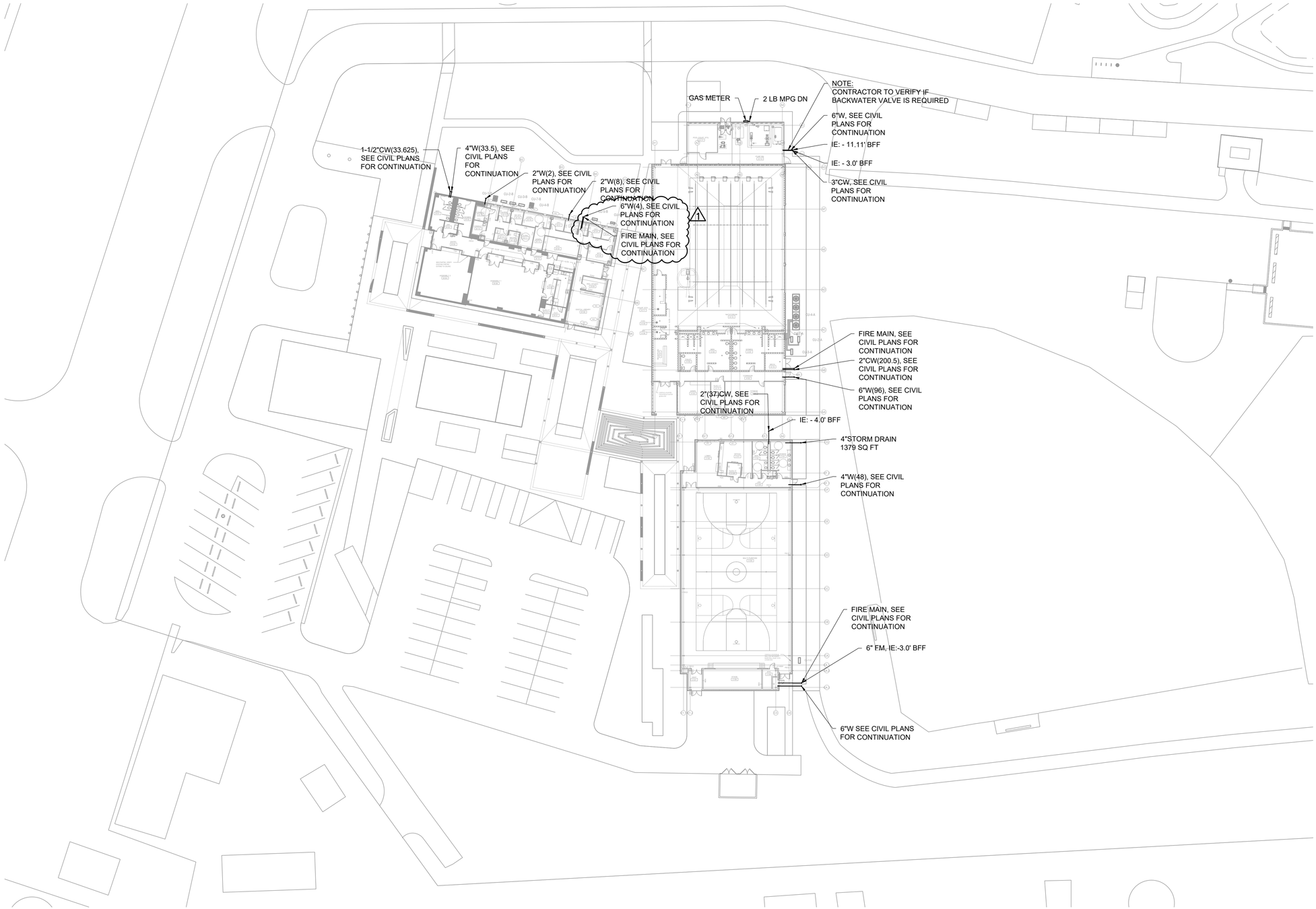
P002

GENERAL NOTES

1. SEE SHEET P001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1



1 SITE PLAN - PLUMBING

Scale: NTS

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SITE PLAN - PLUMBING

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Sheet Number

P100

PLUMBING FIXTURE AND DRAIN ROUGH-IN SCHEDULE - BUILDING A

MARK	FIXTURE TYPE	WASTE (IN)	VENT (IN)	CW (IN)	HW (IN)	NOTES
WC-1	WATER CLOSET	4"	2"	1"	-	-
WC-2	WATER CLOSET - ADA	4"	2"	1"	-	-
UR-1	URINAL	2"	2"	3/4"		
LV-1	LAVATORY	1-1/2"	1-1/2"	1/2"	1/2"	-
LV-2	LAVATORY - ADA	1-1/2"	1-1/2"	1/2"	1/2"	-
SH-1	SHOWER	2"	2"	1/2"	1/2"	-
SH-2	SHOWER - ADA	2"	2"	1/2"	1/2"	-
SH-3	RINSE SHOWER - ADA	2"	2"	1/2"	1/2"	-
BF-1	BOTTLE FILLER	1-1/4"	1-1/4"	1/2"	-	-
MS-1	MOP SINK	3"	2"	3/4"	3/4"	-
FS-1	FLOOR SINK	-	-	-	-	-
FD-1	FLOOR DRAIN	2"	2"	-	-	-
TD-1	TRENCH DRAIN	2"	2"	-	-	-
FCO	FLOOR CLEANOUT	NOTE 4	-	-	-	-
TP-1	TRAP PRIMER	-	-	1/2"	-	NOTE 2, 3
HB-1	HOSE BIBB	-	-	3/4"	-	-
VTR	VENT THRU ROOF	-	-	-	-	5
GENERAL NOTES						
A	PIPE SIZES LISTED MAY BE DIFFERENT THAN THE ACTUAL FIXTURE CONNECTION. PROVIDE BRANCH PIPE OF LISTED SIZE AND PIPE FITTINGS AND OFFSETS AS REQUIRED FOR COMPLETE INSTALLATION					
B	PROVIDE FINAL CONNECTIONS TO ALL FIXTURES					
C	PROVIDE WALL CLEANOUTS FOR ALL SINKS AND WATER CLOSETS					
NOTES						
1	ADA COMPLIANT WHERE INDICATED ON THE ARCHITECTURAL DRAWINGS. MOUNTING HEIGHT AS INDICATED ON ARCHITECTURAL DRAWINGS.					
2	PROVIDE TRAP PRIMER ASSEMBLY WITH NUMBER OF PORTS REQUIRED TO SERVE ADJACENT DRAINS. PROVIDE WITH SHUTOFF VALVE.					
3	CW CONNECTION VIA TRAP PRIMER.					
4	CLEANOUTS ARE TO BE INSTALLED EVERY 100 FEET.					

WATER AND WASTE SYSTEMS LOAD CALCULATIONS - BUILDING A

KIND OF FIXTURE	NUMBER OF FIXTURES	WATER SOURCE FIXTURE UNITS	TOTAL WFUS	HWFUS	WASTE DRAINGE UNITS PER FIXTURE	TOTAL DRAINAGE UNITS DFUS	
WC-1	5	2.5	12.5	0	4	20	
WC-2	3	2.5	7.5	0	4	12	
UR-1	1	2	2	0	2	2	
LV-1	6	1	6	4.5	1	6	
LV-2	1	1	1	0.75	1	1	
MS-1	1	3	3	2.25	3	3	
SH-1	4	4	16	12	2	8	
SH-2	2	4	8	6	2	4	
SH-3	2	4	8	6	2	4	
BF-1	2	0.5	1	0	0.5	1	
HB-1	1	2.5	2.5	0	0	0	
FD-1	15				2	30	
	TOTAL		67.5	31.5		91	
	METER-FIXTURE MAX. LENGTH (FT)		232				
	SUPPLY LINE PRESSURE (PSI)		50-55				

SUPPLY LINE SIZING	WATER PIPE SIZE (IN)	-	PRESSURE AVAILABLE	MINIMUM ALLOWABLE	MAXIMUM HEIGHT	
	METER SIZE (IN)	TBD Civil	50-55	25	15	
	TOTAL WSFU	67.5	FRICTION LOSS PER FOOT	28.55 PSI		

WATER LINE SIZING	**MAXIMUM LOADING OF WATER PIPE BASED ON 28.55 PSI DROP OVER 100 FEET AND MAX 8 FPS**						
	SIZE OF PIPE	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
	MAXIMUM GPM	3	13	20	30	40	72
	MAXIMUM WFU	3	6	10	15	30	130
	BASED ON COPPER TUBING TYPE M, L, K						

WASTE LINE SIZING	**MAXIMUM LOADING OF DRAINAGE & VENT PIPE**						
	SIZE OF PIPE	1-1/2"	2"	3"	4"	5"	6"
	MAXIMUM UNITS DRAINAGE PIPE						
	VERTICAL	2	16	48	256	600	1380
	HORIZONTAL	1	8	35	216	428	720
	VENT PIPING	8	24	84	256	600	1380
	BASED ON 1/4" PER FOOT SLOPE, MULTIPLY BY 0.8 FOR 1/8" SLOPE						

NATURAL GAS REGULATOR SCHEDULE

UNIT	DESCRIPTION	LOCATION	MAKE/MODEL	INLET PIPE SIZE	LOAD (CFH)	INLET PRESSURE	OUTLET PRESSURE
GR-1	REDUCED PRESSURE TO POOL BOILER	PUMP ROOM A112	MAXITROL, 325-9	2"	1800	2 PSI	7" W.C

APPROVED PIPE MATERIALS FOR DRAIN, WASTE, VENT PIPE AND FITTINGS

MATERIAL	UNDERGROUND DRAIN, WASTE, VENT PIPE AND FITTINGS	ABOVEGROUND DRAIN, WASTE, VENT PIPE AND FITTINGS	BUILDING SEWER PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
ABS (Schedule 40)	-	X	X	ASTM D2661, ASTM D2680	ASTM D2661, ASTM D2680
Copper and Copper Alloys (Type DWV)	X	X	X	ASTM B43, ASTM B75, ASTM B251, ASTM B302, ASTM B306	ASME B16.23, ASME B16.29
PVC (Schedule 40)	X	X	X	ASTM D1785, ASTM D2665, ASTM F794	ASTM D2665, ASTM F794, ASTM F1866
NOTE: SOLVENT CEMENT JOINTS TO BE IN ACCORDANCE WITH PLUMBING CODE AND ASTM F656 FOR PRIMER AND ASTM D2564 FOR SOLVENT CEMENTS. TYPICAL.					

PIPE MATERIALS FOR BUILDING SUPPLY AND WATER DISTRIBUTION PIPING AND FITTINGS

MATERIAL	BUILDING DISTRIBUTION PIPE AND FITTINGS	WATER DISTRIBUTION PIPE AND FITTINGS	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
Copper and Copper Alloys	X	X	ASTM B42, ASTM B43, ASTM B75, ASTM B88, ASTM B135, ASTM B251, ASTM B302, ASTM B447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.26, ASME B16.51
PEX	X	X	ASTM F876, ASTM F877, CSA B137.5, AWWA C904	ASSE 1061, ASTM F877, ASTM F1807, ASTM F1960, ASTM F1961, ASTM F2080, ASTM F2159, ASTM F2735, CSA B137.5
PVC	X	-	ASTM D1785, ASTM D2241, AWWA C900	ASTM D2464, ASTM D2466, ASTM D2467, ASTM F1970

PIPING SYSTEMS INSULATION SCHEDULE

TYPE OF PIPE	INSTALLATION LOCATION	INSULATION TYPE	PIPE SIZE (INCH)	INSULATION THICKNESS (INCH)	NOTES
COLD PLUMBING PIPING	INSIDE BUILDING ENVELOPE	FIBERGLASS	ALL SIZES	1" THICK	1
	OUTSIDE BUILDING ENVELOPE AND BURIED	ELASTOMERIC	ALL SIZES	MULTIPLE LAYERS FOR 1-1/2" TOTAL THICKNESS	1,3
	IN TRENCHES AND UTILIDORS	CELLULAR GLASS	ALL SIZES	1" THICK	2
HOT PLUMBING PIPING	INSIDE BUILDING ENVELOPE	FIBERGLASS	1-1/4 INCH AND SMALLER	1" THICK	
			1-1/2 INCH AND LARGER	1-1/2" THICK	1
	OUTSIDE BUILDING ENVELOPE AND BURIED	ELASTOMERIC	ALL SIZES	1-1/2" THICK	1
	IN TRENCHES AND UTILIDORS	CELLULAR GLASS	ALL SIZES	1-1/2" THICK	1,3
NOTES:					
1-INCLUDE POLYETHYLENE TUBING.					
2-INCLUDE MULTI-PLY LAMINATE JACKET.					
3-INCLUDE FACTORY APPLIED WEATHER PROOF JACKET OR MANUFACTURER RECOMMENDED COATING.					

CIRCULATION PUMP SCHEDULE - BUILDING A

MARK	LOCATION	SYSTEM SERVED	MANUFACTURER / MODEL NO.	PUMP			MOTOR		NOTES
				TYPE	FLOW (GPM)	HEAD (FT)	HP/W	V/PH	
CP-1-A	WATER HEATER	WH-1-A / WH-2-A	GRUNDFOS / UPS 15-58 FC	DOMESTIC CIRCULATOR	5	10		120/1	CONTROL PUMP W/ AQUASTATSET FOR 125 (ADJUSTABLE)
CP-2-A	WATER HEATER	WH-3-A	GRUNDFOS / UPS 15-58 FC	DOMESTIC CIRCULATOR	5	10		120/1	CONTROL PUMP W/ AQUASTATSET FOR 125 (ADJUSTABLE)
NOTES:									
1- PROVIDE WITH BRONZE BODY CONSTRUCTION									

WATER HEATER SIZING CALCULATION - BUILDING A

FIXTURE	HW FLOW RATE (GPH)	QUANTITY	TOTAL FLOW RATE (GPH)
HAND SINK	5	7	35
MOP SINK	20	1	20
SHOWERS	30	8	240
			0
TOTAL HW FLOW RATE (GPH)			295
DEMAND FACTOR			0.40
STORAGE FACTOR			1.00
PROBABLE DEMAND			118.00
REQUIRED STORAGE (GAL)			295.00
HOT WATER REQUIRED (GAL)			354.00

DOMESTIC WATER EXPANSION TANK SCHEDULE - BUILDING A

MARK	LOCATION	SYSTEM SERVED	MANUFACTURER / MODEL NO.	TANK VOLUME (GAL)	ACCEPTANCE FACTOR	SYSTEM CONN. (IN)	PHYSICAL		NOTES
							SIZE (DIAxL) (INxIN)	WEIGHT (LBS) WHEN FULL	
ET-1-A	WH-1-A	WH-1-A / WH-2-A	AMTROL ST-447C	53	1	3/4"	24"DIA x 45	718	1
ET-2-A	POOL RM A112-A	WH-3-A	AMTROL ST-447C	53	1	3/4"	24"DIA x 45	718	1
NOTE: EXPANSION TANK SHALL BE DELIVERED TO THE SITE PRE-CHARGED TO OPERATING PRESSURE. CONTRACTOR SHALL COORDINATE PRIOR TO ORDERING. PROVIDE SEISMIC BRACING AND ASME RATINGS.									

WATER HEATER SCHEDULE - BUILDING A

MARK	AREA SERVED	MANUFACTURER / MODEL NO.	GALLONS (GAL)	WATTAGE	V / PH.	RECOVERY (GAL/HR)	WATER RUNOUT (IN)	DIMENSION DxH (INxIN)	OPERATING WEIGHT (LBS)	NOTES
EWH-1-A	NATATORIUM	AO SMITH / DRE-120-36	120	36,000 WATTS	480/3	149		29-1/2" x 62-1/4"	1386	SET AT 140 DEG F
EWH-2-A	NATATORIUM	AO SMITH / DRE-120-36	120	36,000 WATTS	480/3	149		29-1/2" x 62-1/4"	1386	SET AT 140 DEG F
EWH-3-A	POOL ROOM A112	AO SMITH / DRE-120-36	120	36,000 WATTS	480/3	149		29-1/2" x 62-1/4"	1386	SET AT 140 DEG F
NOTES:	HEATER ELEMENTS ARE SIMULTANEOUS, WATER TO BE MIXED DOWN TO 120 degF.									

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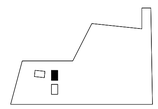
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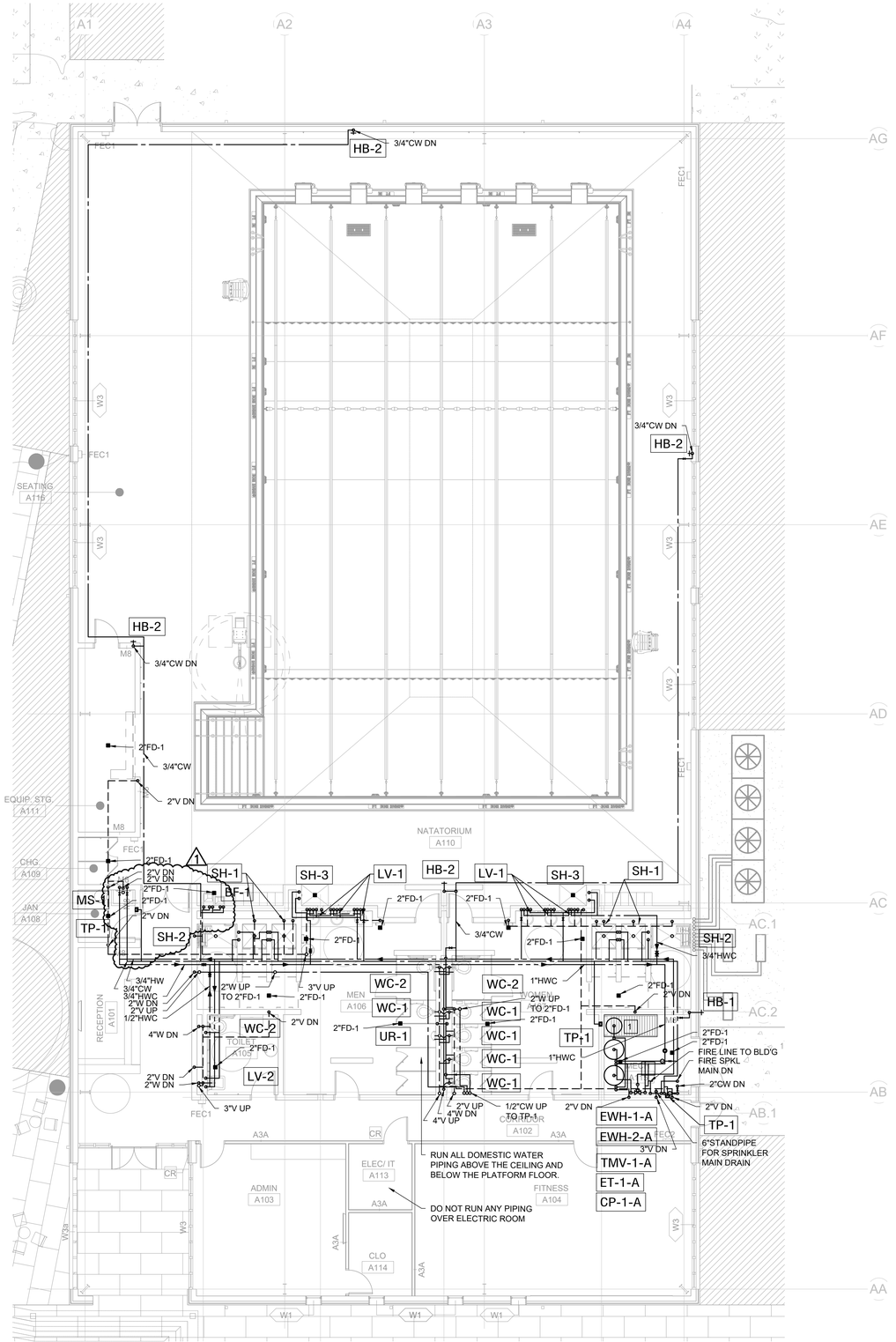
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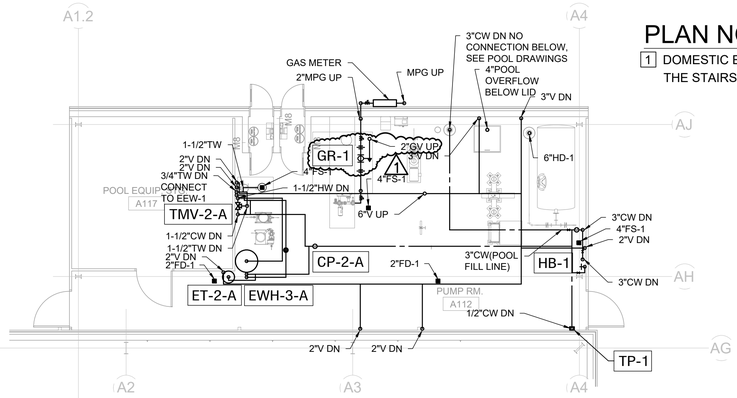
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PLUMBING PLAN NATATORIUM

1

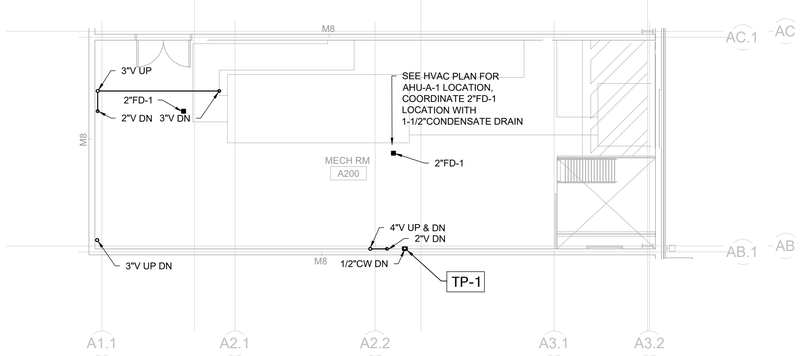
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PLUMBING PLAN - POOL PUMP ROOM

2

Scale: 1/8" = 1'-0"



PLUMBING PLAN - MECHANICAL ROOF AFT @10'-8"

3

Scale: 1/8" = 1'-0"

GENERAL NOTES

1. SEE SHEET P001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1 DOMESTIC EXPANSION TANK LOCATED UNDERNEATH THE STAIRS.

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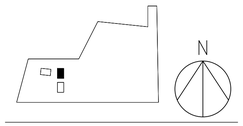
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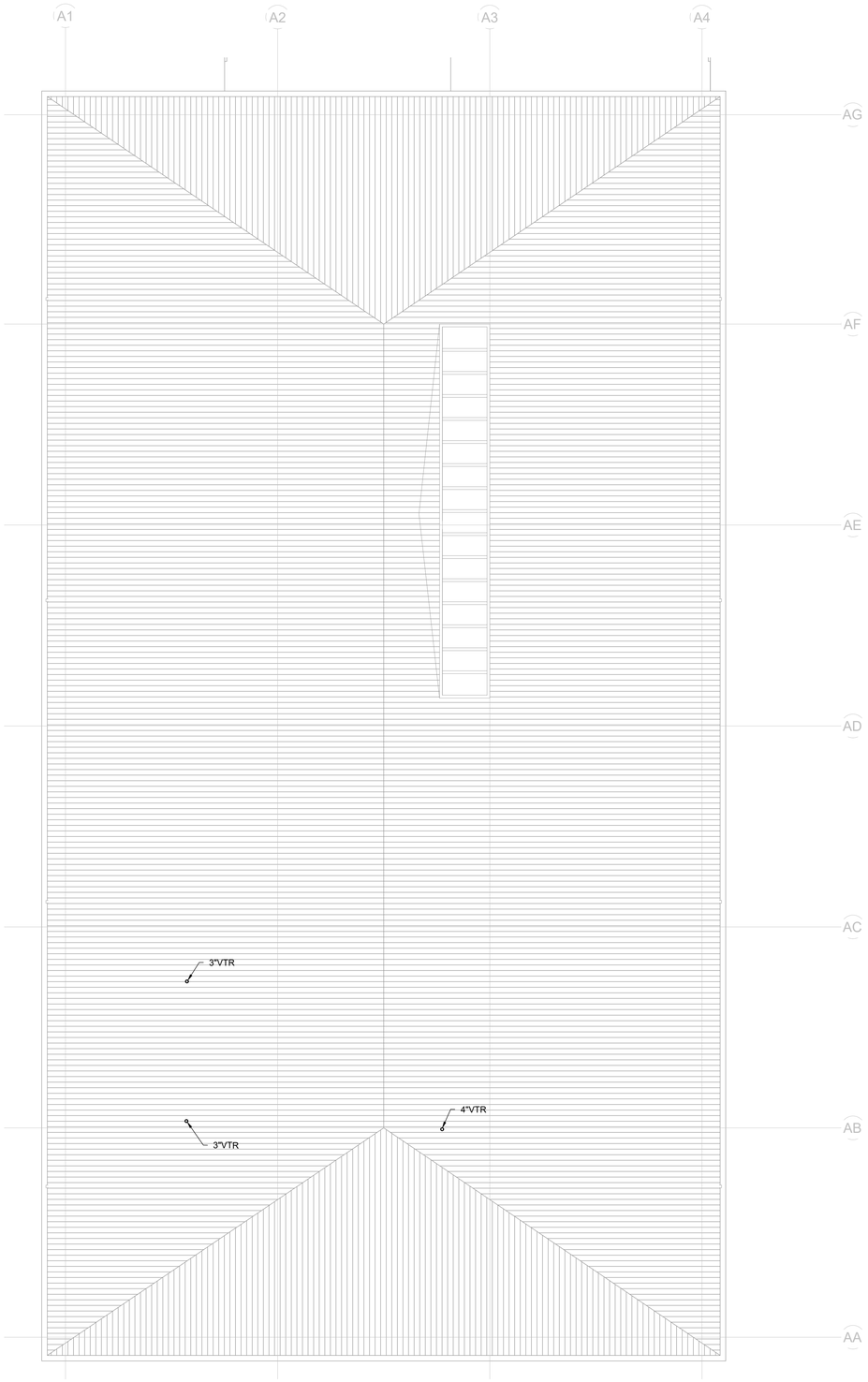
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PLUMBING PLAN
NATATORIUM

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A-P201



1 ROOF PLAN NATATORIUM

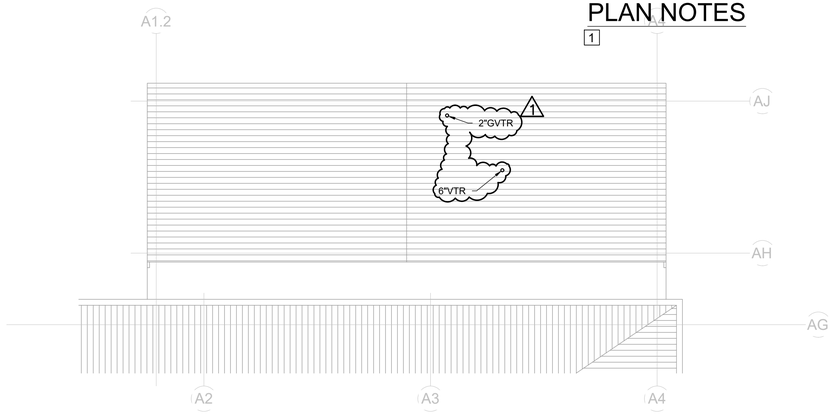
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GENERAL NOTES

1. SEE SHEET P001 FOR ADDITIONAL GENERAL NOTES

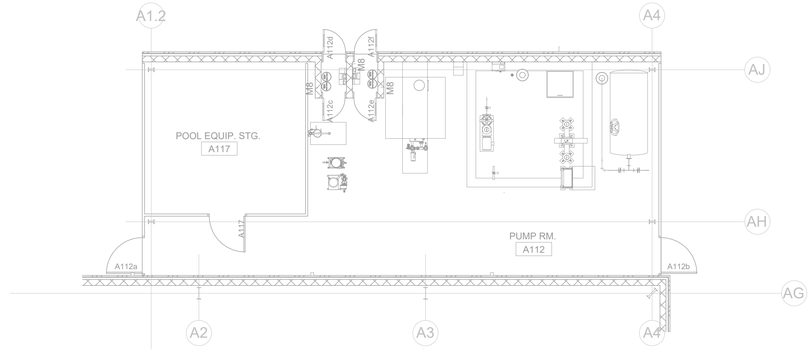
PLAN NOTES

1



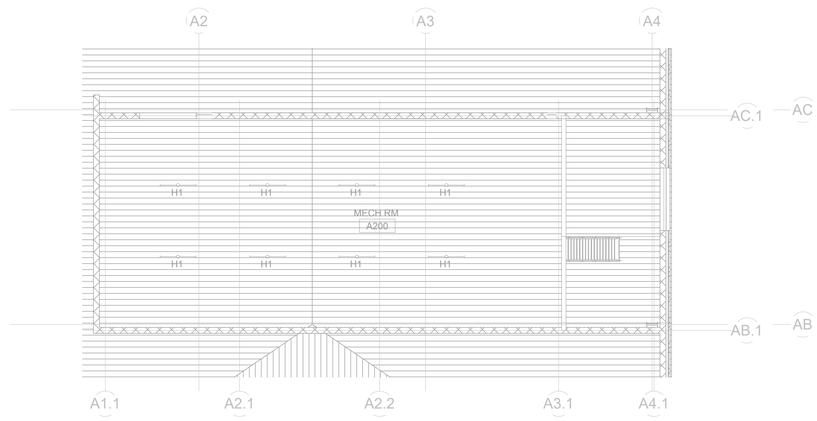
2 ROOF PLAN POOL PUMP ROOM

Scale: 1/8" = 1'-0"



3 FLOOR PLAN POOL PUMP ROOM

Scale: 1/8" = 1'-0"



4 ROOF PLAN MECHANICAL ROOM

Scale: 1/8" = 1'-0"

THE STATE OF TEXAS
FORT BEND COUNTY

Project:

Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:

FORT BEND COUNTY
5855 SIENNA SPRINGS WAY
MISSOURI CITY, TEXAS 77459

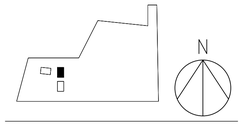
HINESAD

Contract No: 2024-002

Design Team:

BURMAN DESIGN
31620 23rd Ave S
Federal Way, WA 98003
www.Burman.design
(253) 508-2658

Key Plan



Professional Seals

STATE OF TEXAS
LINDA A. BURMAN
93831
LICENSED
PROFESSIONAL ENGINEER

03-14-2024

No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

Drawn by: TP Reviewed by: LB

Project No: 2024-002

Sheet Title:

ROOF PLAN NATATORIUM

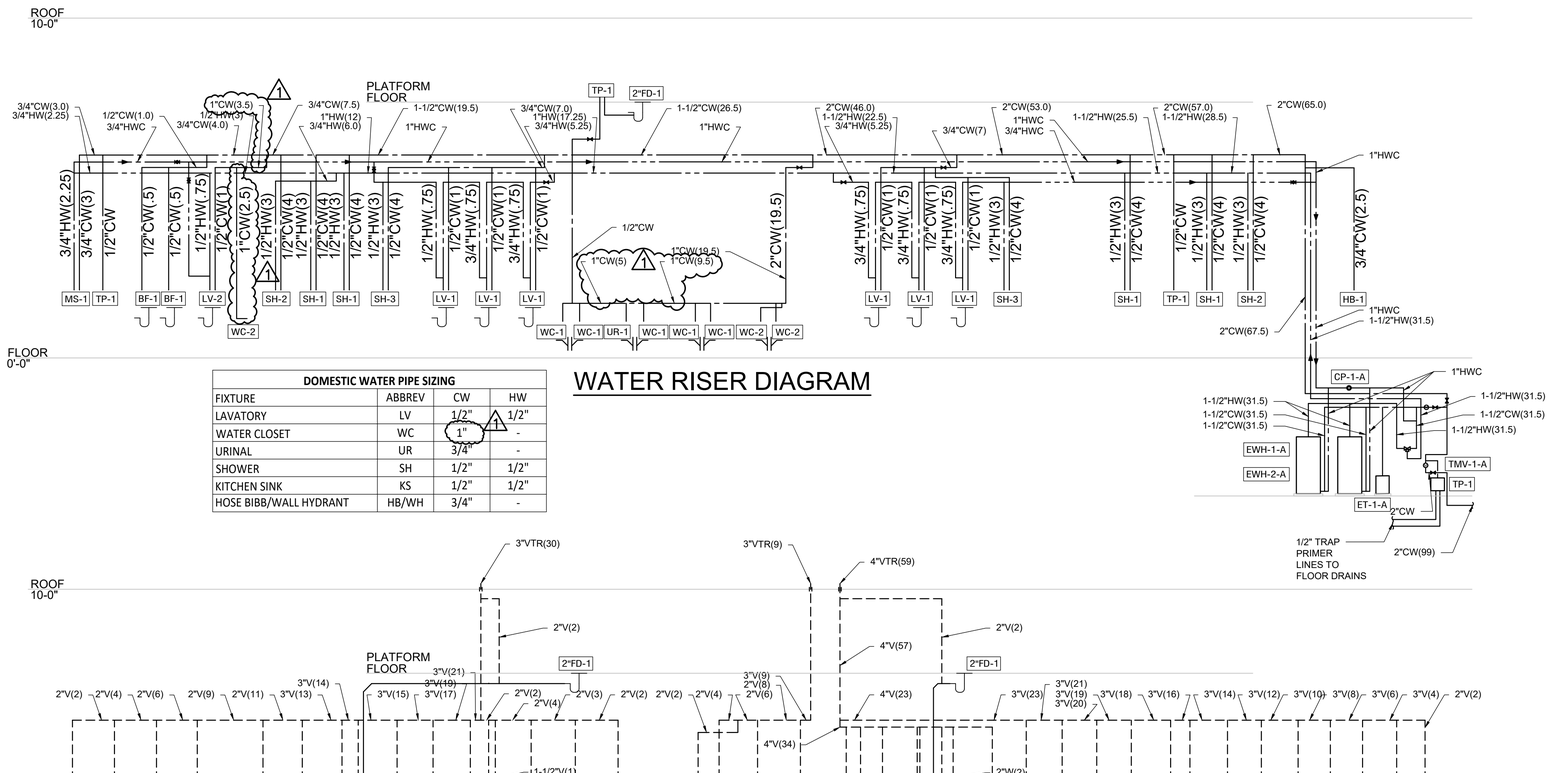
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Sheet Number

A-P202

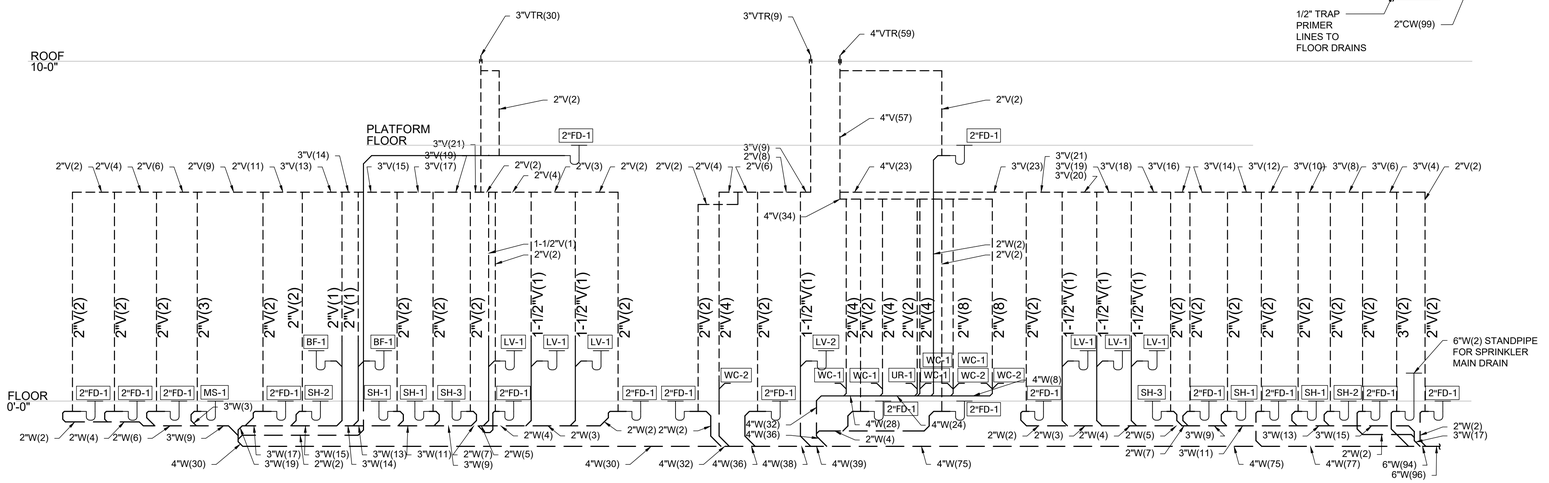
GENERAL NOTES

1. SEE SHEET P001 FOR ADDITIONAL GENERAL NOTES

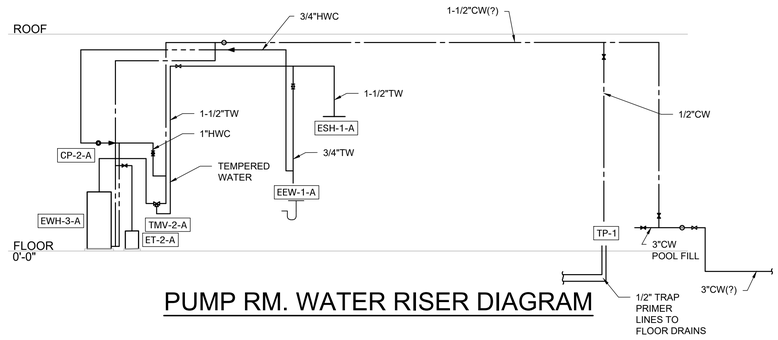


DOMESTIC WATER PIPE SIZING			
FIXTURE	ABBREV	CW	HW
LAVATORY	LV	1/2"	1/2"
WATER CLOSET	WC	1"	-
URINAL	UR	3/4"	-
SHOWER	SH	1/2"	1/2"
KITCHEN SINK	KS	1/2"	1/2"
HOSE BIBB/WALL HYDRANT	HB/WH	3/4"	-

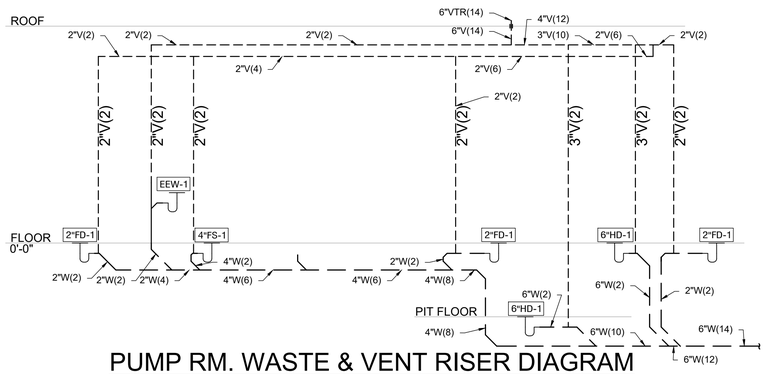
WATER RISER DIAGRAM



WASTE & VENT RISER DIAGRAM



PUMP RM. WATER RISER DIAGRAM



PUMP RM. WASTE & VENT RISER DIAGRAM

RISER DIAGRAMS NATATORIUM

1

Scale: NTS

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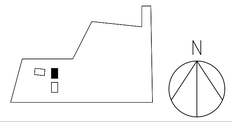
Prepared For:
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5855 SIENNA SPRINGS WAY
MISSOURI CITY, TEXAS 77459

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Design Team:
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Sheet Title:

RISER DIAGRAMS NATATORIUM

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Sheet Number

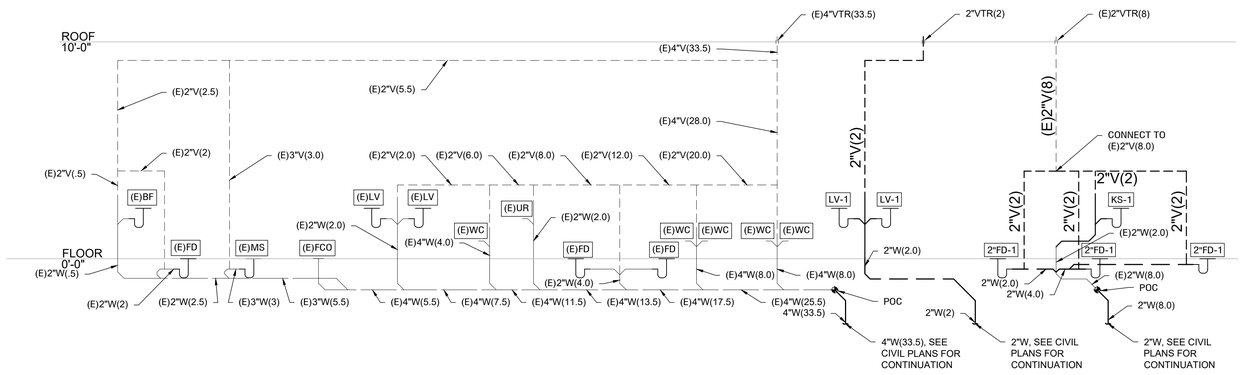
A-P203



FOUNDATION PLAN COMMUNITY CENTER

1

Scale: 1/8" = 1'-0"



WASTE RISER DIAGRAM

2

Scale: NTS

GENERAL NOTES

1. SEE SHEET P001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1

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MISSOURI CITY, TEXAS 77459

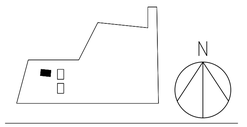
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No.	Issue Description	MM-DD-YYYY
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1	ADDENDUM 1	06-20-2025

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Project No: 2024-002

Sheet Title:

FOUNDATION PLAN COMMUNITY CENTER

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

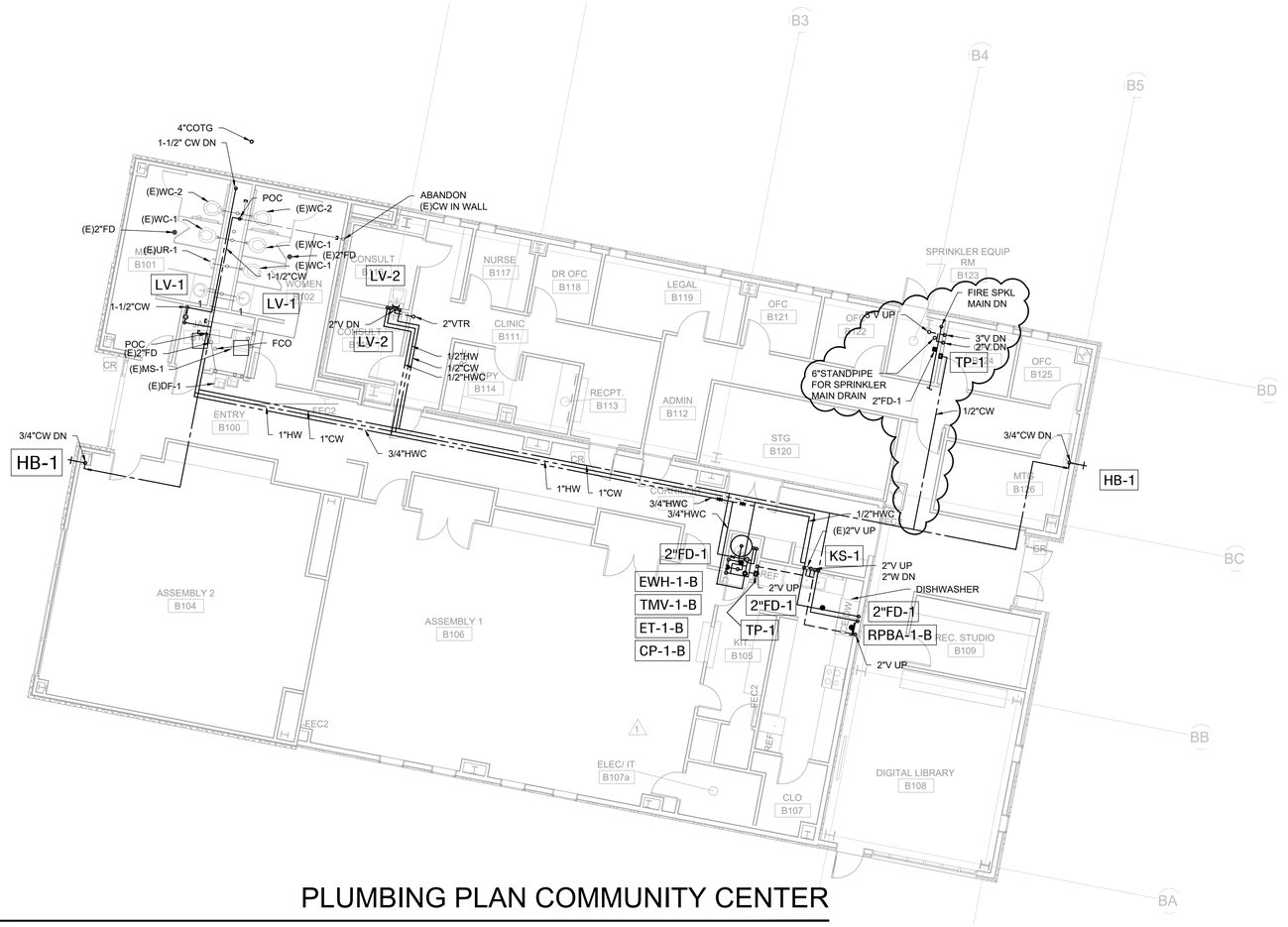
B-P200

GENERAL NOTES

1. SEE SHEET P001 FOR ADDITIONAL GENERAL NOTES

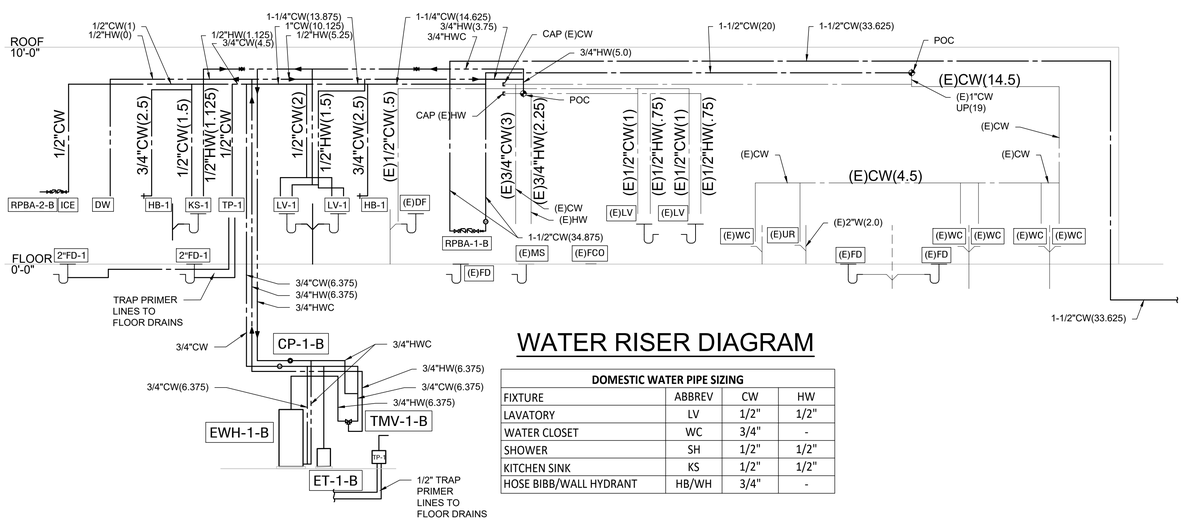
PLAN NOTES

1 RECONNECT EXISTING SERVICES TO LV-1.



1 PLUMBING PLAN COMMUNITY CENTER

Scale: 1/8" = 1'-0"



WATER RISER DIAGRAM

DOMESTIC WATER PIPE SIZING			
FIXTURE	ABBREV	CW	HW
LAVATORY	LV	1/2"	1/2"
WATER CLOSET	WC	3/4"	-
SHOWER	SH	1/2"	1/2"
KITCHEN SINK	KS	1/2"	1/2"
HOSE BIBB/WALL HYDRANT	HB/WH	3/4"	-

2 WATER RISER DIAGRAM

Scale: NTS

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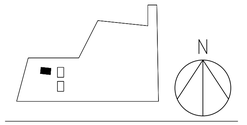
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1	ADDENDUM 1	06-20-2025

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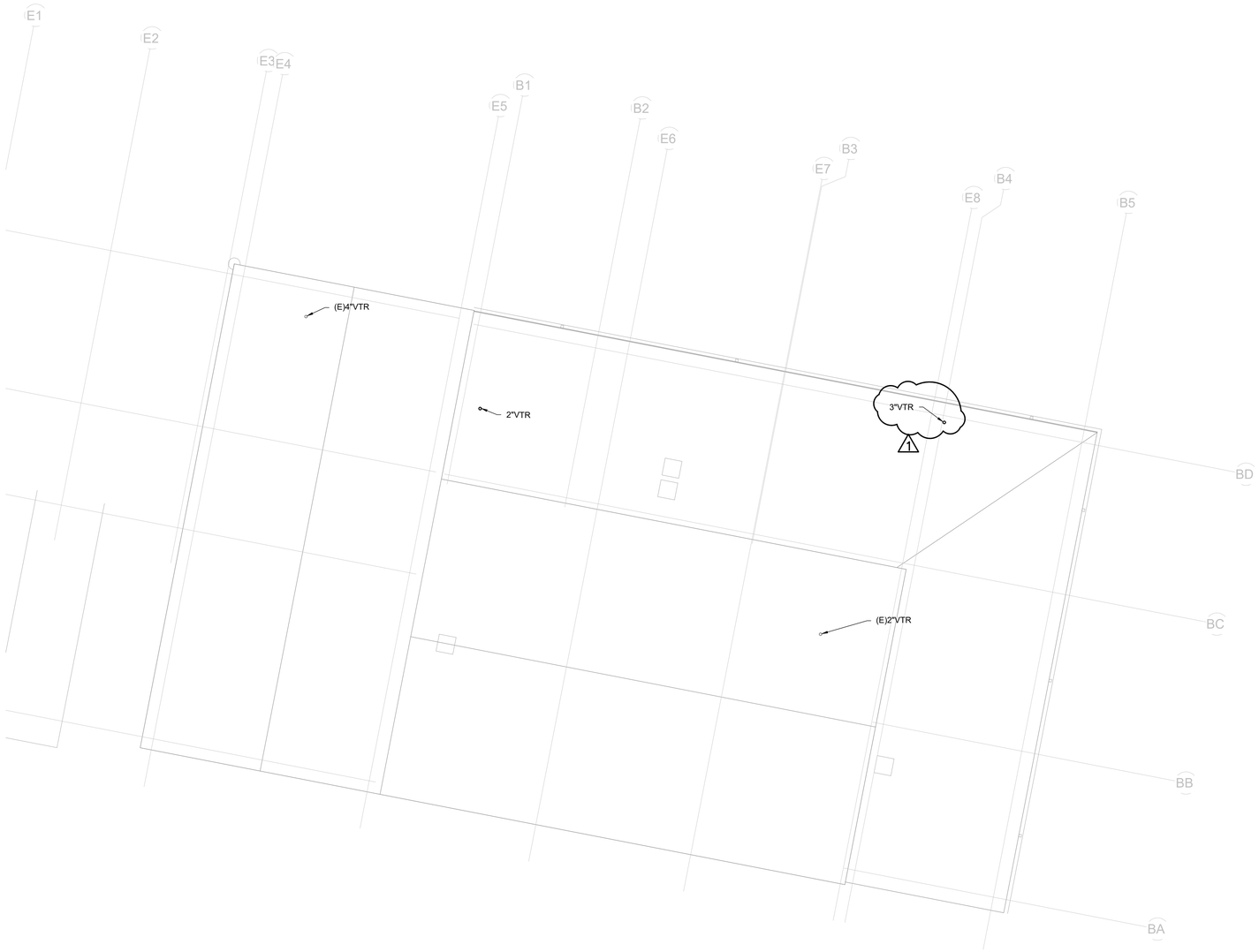
Sheet Title:

PLUMBING PLAN COMMUNITY CENTER

Orig. drawing is ARCH D.Do not scale contents of this drawing.

Sheet Number

B-P201



GENERAL NOTES

1. SEE SHEET P001 FOR ADDITIONAL GENERAL NOTES

PLAN NOTES

1

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Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:

FORT BEND COUNTY

5855 SIENNA SPRINGS WAY
MISSOURI CITY, TEXAS 77459

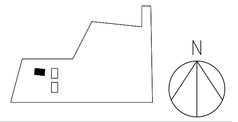
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Contract No: 2024-002

Design Team:

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LINDA A. BURMAN
153831
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PROFESSIONAL ENGINEER

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No.	Issue Description	MM-DD-YYYY
	ISSUE FOR CONSTRUCTION	03-14-2025
1	ADDENDUM 1	06-20-2025

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Project No: 2024-002

Sheet Title:

ROOF PLAN
COMMUNITY CENTER

1 ROOF PLAN COMMUNITY CENTER

Scale: 1/8" = 1'-0"

Orig. drawing is ARCH D.Do not scale contents of this drawing.

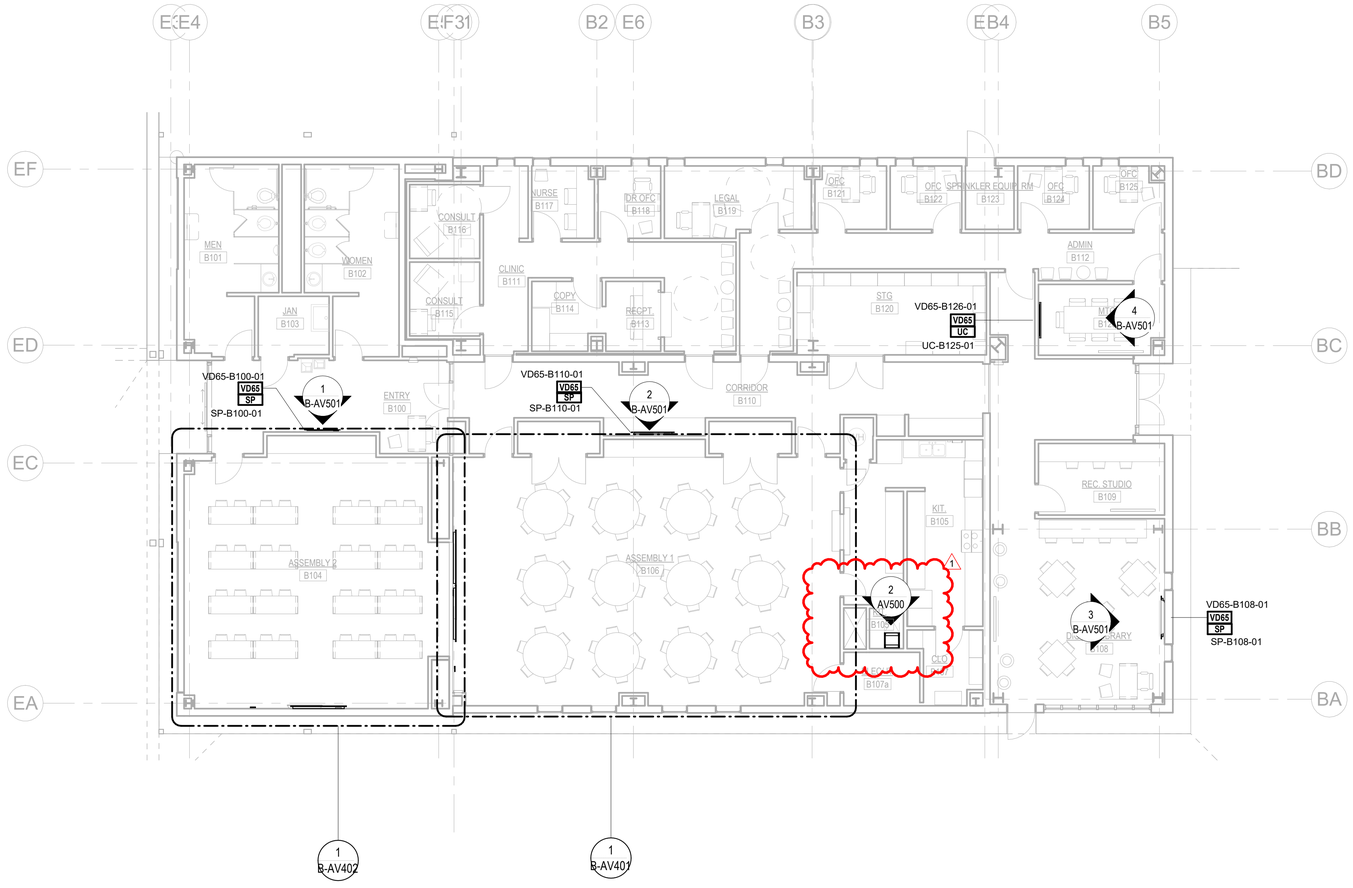
Sheet Number

B-P202

GENERAL NOTES

1. REFER TO AV000 FOR GENERAL NOTES.

KEYNOTES



1 AV - COMMUNITY CENTER

1/8" = 1'-0"

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FRESNO, TX 77545

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Missouri City, TX 77459

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Contract No: 2024-002

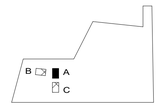
Design Team:

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Houston, TX 77071 USA
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Sheet Title:

AV FLOOR PLAN - COMMUNITY CENTER

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Sheet Number

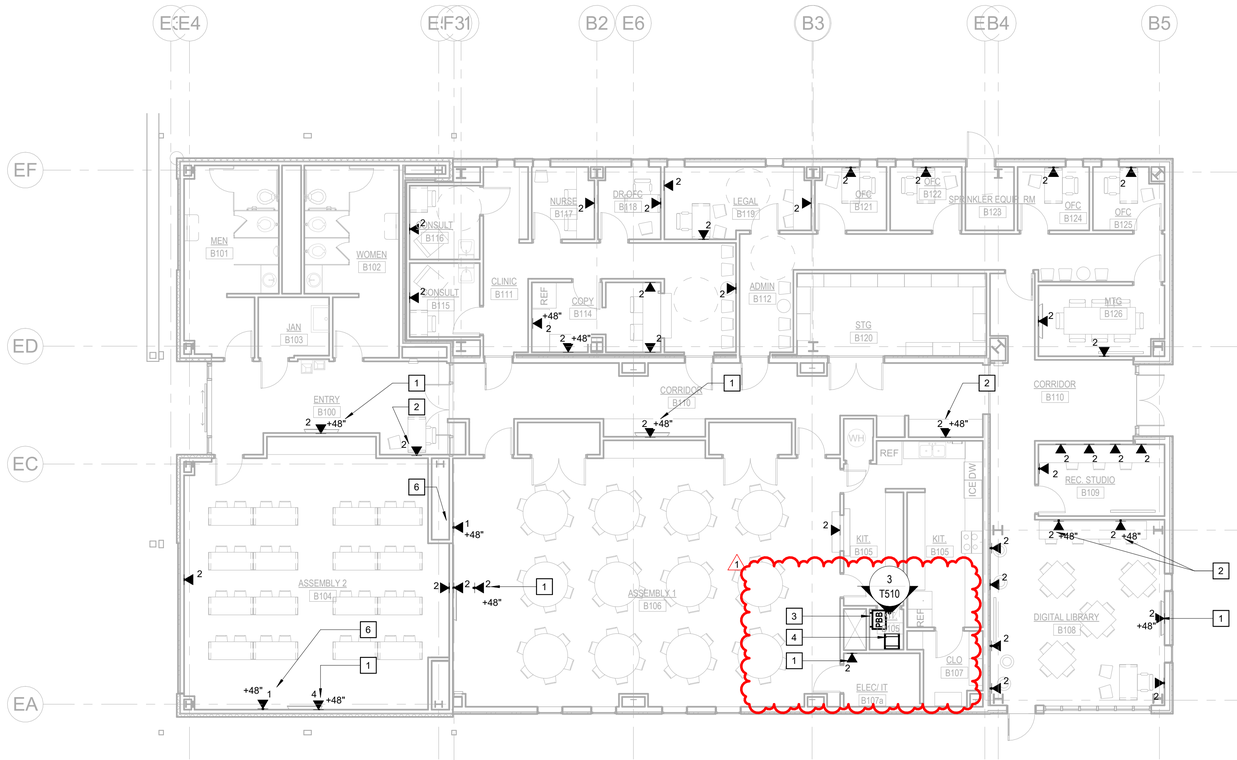
B-AV201

GENERAL NOTES

1. ALL DATA OULET LOCATIONS TO BE COORDINATED WITH ARCHITECTURAL, ELECTRICAL, AND FURNITURE PLANS. FIELD COORDINATED EXACT LOCATION WITH OTHER TRADES. REFER TO COVERSHEET ON T000 FOR ADDITIONAL INFORMATION.
2. ALL +48 AFF DATA OUTLETS TO BE COORDIANTED WITH AV CONTRACTOR PRIOR TO ROUGH-IN

KEYNOTES

1. DISPLAY DATA: DATA OUTLET FOR DISPLAY TO BE INSTALLED UNDER THE SAME COVERPLATE AS RECEPTACLES. COORDINATE EXACT LOCATION WITH OTHER TRADES IN THE FIELD.
2. MILLWORK: CONDUIT FOR DATA OUTLET TO ROUTE THRU MILLWORK FROM WALL. COORDINATE WILL MILLWORKER AND ELECTRICAL CONTRACTOR.
3. GROUNDING BAR: MOUNT 20"X4" GROUND BAR AT 6'-6" TO TOP.
4. OSP CONDUIT: OSP CONDUIT TO STUB UP 2" ABOVE FINSHED FLOOR. ALL CONDUIT TO BE TIED TO GROUND BUS BAR. REFER TO ELECTRICAL AND TELECOM SITE PLAN FOR ADDTIONAL INFORMATION.
5. BMS: EXACT LOCATION TO BE FIELD VERIFED WITH OTHER TRADES AND EQUIPMENT.
6. AV COORDINATION: EXACT LOCATION TO BE COORDIANTED WITH AV CONTRACTOR.



1 TELECOM - COMMUNITY CENTER

1/8" = 1'-0"

6/18/2025 11:16:26 PM

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Mustang Park Renovation & New Construction

4521 FM 521
FRESNO, TX 77545

Prepared For:

FORT BEND COUNTY

5855 Sienna Springs Way,
Missouri City, TX 77459

HINESAD

Contract No: 2024-002

Design Team:

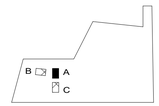
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Key Plan

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No.	Issue Description	MM-DD-YYYY
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Project No: 2024-002

Sheet Title:

TELECOM FLOOR PLAN - COMMUNITY CENTER

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Sheet Number

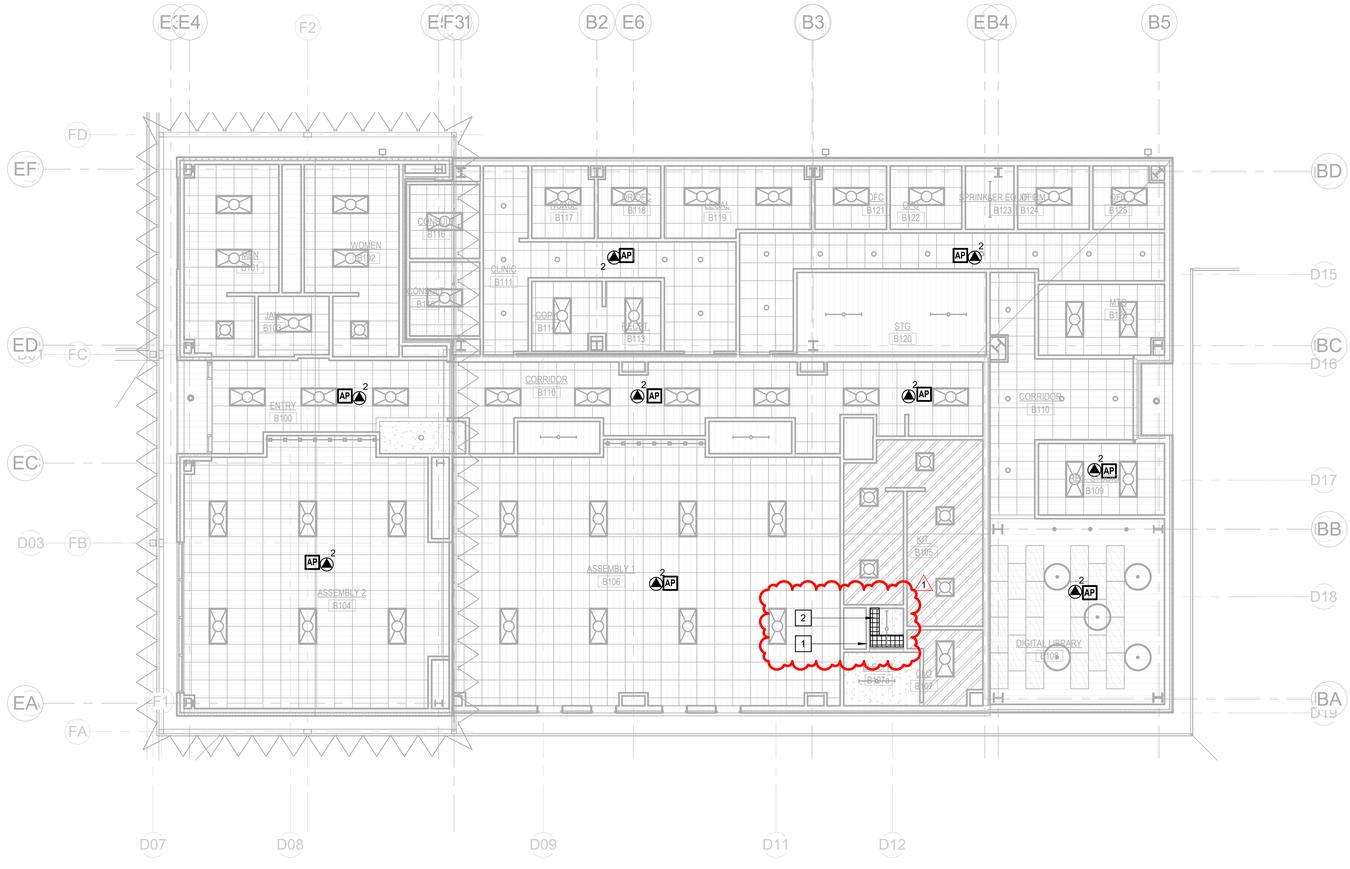
B-T201

GENERAL NOTES

1. ALL DATA OULET LOCATIONS TO BE COORDINATED WITH ARCHITECTURAL, ELECTRICAL, AND FURNITURE PLANS. FIELD COORDINATED EXACT LOCATION WITH OTHER TRADES. REFER TO COVERSHEET ON T000 FOR ADDITIONAL INFORMATION.
2. REFER TO COVERSHEET NOTES T000 FOR ADDTIONAL INFORMATION.

KEYNOTES

1. 20" CABLE TRAY: PROVIDE AND INSTALL 20"x4" CABLE TRAY FOR DATA CABLING ONLY. REFER TO DETAILS FOR ADDITTIONAL INFORMATION.
2. 12" CABLE TRAY: PROVIDE AND INSTALL 12"x4" CABLE TRAY FOR DATA CABLING ONLY. REFER TO DETAILS FOR ADDITTIONAL INFORMATION.



1 TELECOM CEILING PLAN - COMMUNITY CENTER

1/8" = 1'-0"

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Mustang Park Renovation & New Construction

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Prepared For:

FORT BEND COUNTY

5855 Sienna Springs Way,
Missouri City, TX 77459

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Contract No: 2024-002

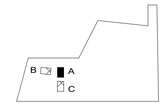
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1	ADDENDUM 1	06-20-2025

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Sheet Title:

TELECOM CEILING PLAN - COMMUNITY CENTER

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Sheet Number

B-T301

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