ADDENDUM NO. 1

Date: 12/03/2025

PROJECT: **PARD Campus Improvements**

FROM: Tyler Eaton, PE
Halff Associates, Inc.
14800 St. Mary's Lane, Suite 160
Houston, TX 77079

To: **Prospective Bidders and Interested Parties**

This addendum forms a part of the bidding documents and will be incorporated into the Contract Documents as applicable. Insofar as the original Contract Documents, Specifications, and Drawings are inconsistent, this Addendum shall govern. Please acknowledge receipt of this Addendum on the Bid Proposal form and Addendum Acknowledgement form.

FAILURE TO ACKNOWLEDGE RECEIPT OF ADDENDA ON THE BID PROPOSAL FORM MAY BE CAUSE FOR DISQUALIFICATION.

INCLUDED IN THIS ADDENDUM:

Prebid meeting questions and answers:

1. Q: Is there an estimated cost for this project?

   A. No, there is not an estimated cost for this project available to bidders.

2. Q: How is the submittal review time?

   A: Typically, 10 days, however the design team can expedite if needed.

3. Q: Is a project management software required?

   A: Yes

4. Q: Are we able to work weekends?

   A: Yes, but weekend work must be coordinated with the Township and Halff 48-72 hours before. Please note: the PARD Campus is active 7 days a week. Contractor must maintain access at all times.

5. Q: What's the process to bring subcontractors to the site for a visit?

   A: If GC's want to tour the site with subcontractors, they should notify Halff (Tyler Eaton or Kristin LeBlanc) and Halff will work with the Township to coordinate a date for the site visit.

6. Q: Can the existing PARD office (either building A or C) be utilized in lieu of a construction trailer?

   A: The Township is open to this idea as there is not room on the property for a temporary trailer. The location and logistics will need to be coordinated at the pre-construction meeting.

7. Q: There is an existing memorial marker behind building A. Will it be the GC's responsibility to relocate the memorial marker?

   A: The Woodlands Township will remove the existing memorial prior to construction.

8. Q: Are we able to photograph the site ahead of construction via drone?

   A: Yes, but the drone photos need to be coordinated with the Township.

9. Q: How often will progress meetings be required?

   A: Bi-weekly.

10. Q: The following pages are missing: Plans: E4-01B. Specs: 07 44 00. Please advise.

    A: Plan sheet E4-01B is not part of the plan set and will be removed from the sheet index on the cover sheet as part of Addendum 1. Spec 07440 will be removed from the spec list in Addendum 1.

11. Q: Please confirm whether there are any maximum allowable durations or fixed required dates for Notice to Proceed, Substantial Completion, or Final Completion for the PARD Campus Improvements, other than the bidder-provided calendar days on the Bid Form. If so, please state the required dates or maximum durations.

    A: There are no fixed dates right now. Each bidder is to provide their estimate for calendar days to substantial completion and final completion. After bids are received, they will be reviewed, and a recommendation will be provided to the Township. The Township will take the recommendation to the Board in late January for review and approval. It is anticipated that the contract will be executed as quickly as possible after board approval. The NTP date will be discussed with the selected contractor at the pre-construction meeting.

12. Q: Please confirm whether an existing hazardous materials survey [asbestos, lead-based paint, universal waste, etc.] has been performed for the buildings and site elements affected by this project and provide that report if available. Also clarify whether abatement of any identified hazardous materials in areas of contract work will be by the owner under a separate contract or is to be included in the general contractor's scope.

    A: An asbestos survey has not yet been completed. It will be the responsibility of the contractor to obtain an asbestos survey. A line item has been added to the bid form and details have been added to the architectural plans. Line item #429 has been added to the bid form for the asbestos survey, and details regarding the asbestos survey will be included on the cover sheet (G001) in Addendum 1.

13. Q: Please clarify what portions of the PARD Campus must remain operational to staff and the public during construction, including any required minimum number of parking spaces, required access routes, and any blackout dates or periods when site access or noisy work will be restricted due to Township events or operations.

    A: Yes, the site will remain operational to staff and the public during construction. An exhibit will be included with Addendum 1 providing further detail and information. Further logistics discussions will be held during the pre-construction meeting with the selected contractor.

14. Q: Please define the allowable duration, time of day, and notice requirements for planned shutdowns of electrical power, domestic water, sanitary sewer, data, and other utilities serving the campus, and confirm whether any utility systems must remain live at all times except for brief, preapproved interruptions.

    A: The site must remain operational during construction. Staff housed in building A and B will be relocated to temporary trailers during construction with the exception of the back portion of building B which will need to remain accessible during construction. Utilities to building A should be able to be shut down during construction. Shutdowns for utilities for building B will need to be scheduled with the Township ahead of time. Utilities serving the rest of the campus must remain active through construction unless coordinated with the Township.

15. Q: Please clarify the General Contractor's responsibility for removal, protection, storage, and reinstallation of Owner furnishings, IT equipment, security cameras, access control devices, and other Owner property within areas of work. Specifically, identify which items will be moved by the Owner and which are to be moved, protected, and reinstalled by the Contractor, and whether any Owner-furnished, Contractor-installed equipment is anticipated for this project.

    A: More clarification will be provided with updated drawings issued with Addendum 1 to be issued EOD Wednesday (12/3). Generally speaking:
    - *Office equipment (printers, copiers, etc.), IT components, etc. will be removed and reinstalled by the Township*
    - *Existing Vending machine - The Township will coordinate the relocation and reinstallation of this with the vending company*
    - *Refrigerator - Township to relocate the refrigerator(s) during construction. Contractor to reinstall in new breakroom.*
    - *Fire Extinguishers - Contractor to remove, store & protect during construction and reinstall.*
    - *Water and Ice Machine - The Township to remove and store during construction. Contractor to reinstall in new breakroom.*
    - *AED Equipment - The Township to remove and store during construction. Contractor to reinstall.*

    Sheets A101 & A107 will be updated with this information as part of Addendum 1.

16. Q: Premier SIPS has not returned our call or correspondence; do you have a direct point of contact?

    A: The contact person is Phil Ligon. 602-369-9247, pligon@premiersips.com.

17. Q: Can you please provide a specification for the roofing?

    A: Spec number 074113 – Metal Roof Panels will be included with Addendum 1.

18. Q: G001 States that CAD and BIM Files will not be provided to the GC. Will backgrounds be provided for shop drawings purposes?

    A: Yes, CAD files will be provided at time of request for shop drawing purposes. However, a waiver form will need to be signed for such request.

19. Q: Can you confirm that the landscaping will be done by others?

    A: Yes, the landscaping will be handled by the Township directly.

20. Q: Can you confirm that the low voltage and AV will be performed by others?

    A: Yes, the low voltage and AV will be performed by The Township's vendor.

21. Q: Is there a preferred fire alarm vendor?

    A: Yes, The Township uses omni Security (281-591-1944) for fire alarms and Western States (Ale Chanson, 888-274-8595) for fire extinguishers and inspections.

Notes from The Woodlands Township:

- An access exhibit for the project site has been included with this addendum to provide more information regarding the critical facilities and access points that will need to remain operational during construction.

Remove and replace bid form in its entirety with attached Addendum No. 1 Bid Form.

- Revised quantity of Item #400: Concrete pavement removal and disposal quantity increased to 716 SY.
- Revised quantity of Item #404: Decomposed granite removal and disposal quantity decreased to 15 SY.
- Revised description of Item #426: removed "security cameras" from description
- Added Item #429: Asbestos Survey as Described on Sheet G000.

Remove and replace the following Plan Sheets in their entirety.

- G001 Cover Sheet – Asbestos Survey Requirement notes added. Sheet Index updates
- C3.00 Phase 1 Demolition Plan – Keynotes 1, 3, & 4 descriptions changed for items to remain. Concrete removal hatch and N&Es associated with it removed from plan sheet for accessible ramp that will remain.
- C4.00 Phase 2 Demolition Plan – Keynote description 21 updated to specify removal and disposal of concrete pavement and quantity increased. Keynote 61 description revised

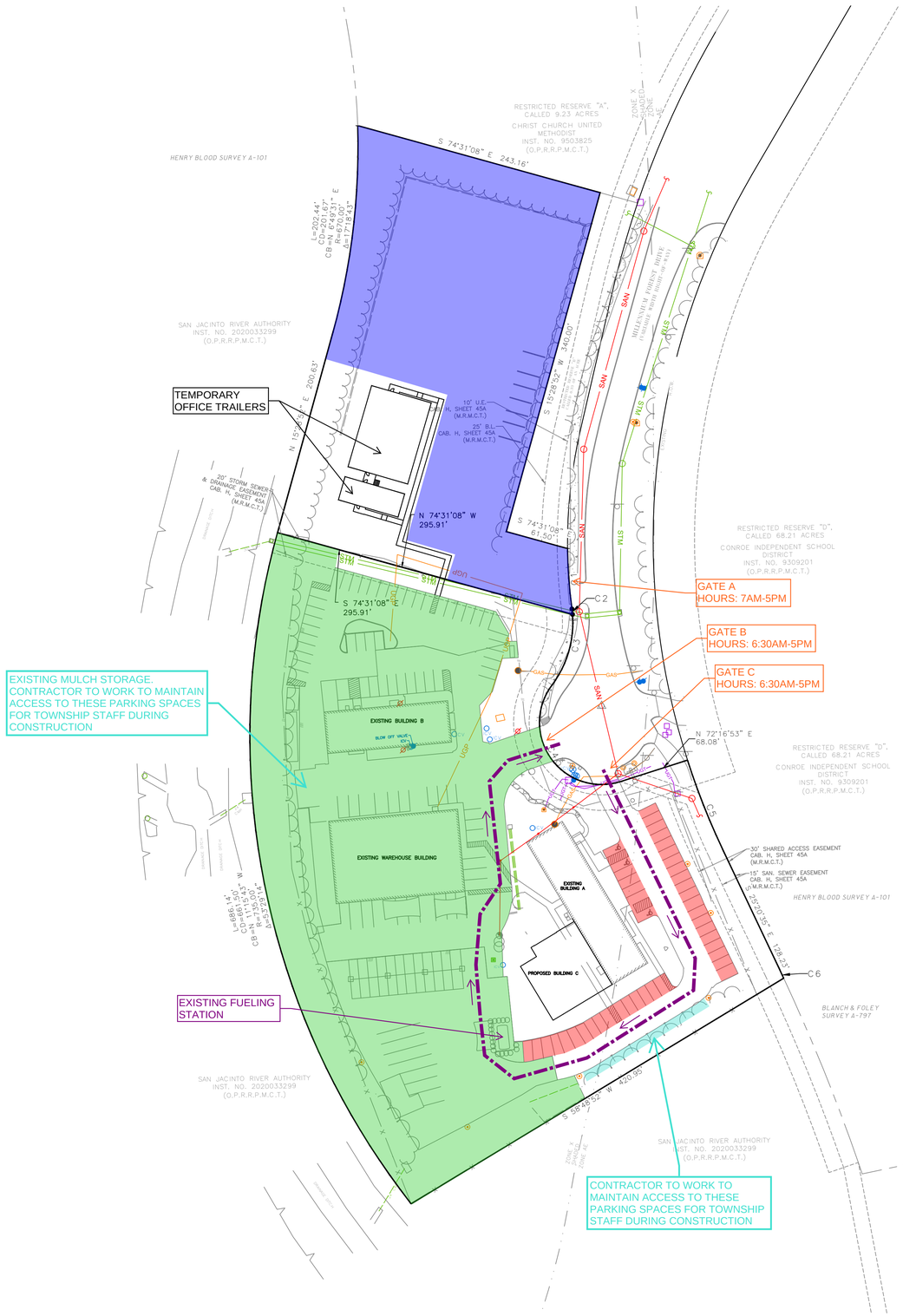
for security cameras to be removed and reinstalled by The Woodlands Township. Descriptions for Keynotes 34, 63, & 64 updated.

- C8.01 Details – Sanitary sewer manhole details removed
- A101 "BLDG A" Demo Floor Plan & RCP – Descriptions for Keynotes 7, 12, 14, 15, & 16 updated.
- A107 "BLDG B" Demo Floor Plan & RCP – Descriptions for Keynotes 10 & 11 updated.
- E1.01 Electrical Site Plan – Descriptions for Keynotes 2, 3, 4, & 5 updated and descriptions for keynotes 7, 8, 9, 10, & 11 added for revised and added design elements throughout the project site.
- E1.02A Electrical Demo Power and Lighting Plan - Bldg A – Descriptions for Keynotes 6 updated. Keynote 6 for IT Rack on the plan moved.
- E1.02B Electrical Demo Power and Lighting Plan - Bldg B – Descriptions for Keynotes 4 updated.
- E2.01AC Electrical Power Plan - Bldg A&C – Changes to receptacle, wall mounted data, and ceiling mounted junction box locations.
- E2.01B Electrical Power and Lighting Plan - Bldg B – Changes to receptacle locations in the Breakroom (305).
- E3.01AC Electrical Lighting Plan – Bldg A&C – Changes to ceiling exit light locations and design changes for restroom layout updates.
- E4.01AC Electrical Equipment Plan - Bldg A&C – Changes to motor switch locations in break room (210) and women's restroom (212).
- E7.01 Electrical Riser Diagram – Descriptions for Keynote 5 updated. Branch and Feeder Schedule added. Transformer Schedule added. Electrical Gutter Diagram removed.
- E8.01 Electrical Schedules – Changes to Panel AC Schedule.
- M2.01AC Mechanical Ductwork Plan - Bldg A&C – Design changes for restroom layout updates
- M8.01 Mechanical Schedules – Changes to Performance Data on Fan Schedule.
- P1.01 Plumbing Site Plan – 4" sanitary to serve temporary modular building removed.
- P2.00AC Plumbing Underfloor Plan - Bldg A&C - Design changes for restroom layout updates.
- P2.01AC Plumbing Floor Plan - Bldg A&C – Design changes for restroom layout updates.
- P7.01 Plumbing Riser Diagram – Changes to Domestic Water Riser and Sanitary Risers diagrams.
- S101 Building Expansion Foundation Plan – Restroom layout in Building C updated

Remove and replace the following specs in their entirety.

- Added spec 061200 Structural Insulated Panels – Premier SIPS
- Removed spec 074400 faced Panels – Mitrex
- Added spec 074113 Metal Roof Panels
- Added spec 074213 Metal Wall Panels
- Removed spec 097200 Wall Coverings
- Removed spec 098300 Acoustic Finishes
- Revised spec 102310 Glazed Interior Door and Wall Assemblies
- Revised spec 102800 Toilet, Bath, and Laundry Accessories

END OF ADDENDUM NO. 1



BONE YARD - MUST REMAIN ACCESSIBLE FOR THE WOODLANDS TOWNSHIP DURING CONSTRUCTION

CAMPUS - MUST REMAIN ACCESSIBLE FOR THE WOODLANDS TOWNSHIP DURING CONSTRUCTION

EXISTING PARKING - CONTRACTOR CAN UTILIZE THIS AREA FOR LAYDOWN AND OR STAGING IF NEEDED

ROUTE FOR REFILLING TRUCKS (SEMI TRUCKS) AND SHERIFF'S OFFICE VEHICLES - MUST MAINTAIN ACCESS TO THE FUELING STATION
** SEMI TRUCKS WILL NEED ACCESS EVERY 6-9 DAYS, DAYS CAN BE COORDINATED WITH THE WOODLANDS TOWNSHIP. REFILLING TAKES ~ 10MIN.
** SHERIFF'S OFFICE NEEDS ACCESS 24 HRS A DAY, 7 DAYS A WEEK. THEIR PATHWAY TO/FROM CAN BE MODIFIED IF NEEDED, BUT MUST BE APPROVED BY THE TOWNSHIP.

EXISTING GATES -
**GATES B AND C PROVIDE THE PRIMARY POINT OF ACCESS CURRENTLY.
**STAFF ACCESS WILL MOVE TO GATE A DURING CONSTRUCTION
**GATE A AND B WILL NEED TO REMAIN ACCESSIBLE DURING CONSTRUCTION

N

0 30 60 120
SCALE IN FEET

LEGEND

- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WATER VALVE
- ICV — EXISTING IRRIGATION CONTROL VALVE
- STM — EXISTING STORM LINE
- UGT — EXISTING UNDERGROUND TELECOM
- UGP — EXISTING UNDERGROUND POWER LINE
- GAS — EXISTING GAS LINE
- EXISTING LIGHT POLE
- EXISTING GROUND LIGHT
- EXISTING ELECTRIC BOX
- EXISTING GAS METER
- SAN — EXISTING SANITARY SEWER LINE
- EXISTING SANITARY MANHOLE
- W — EXISTING WATER LINE
- PROPERTY LINE
- PROPOSED 9' CHAINLINK FENCE
- EXISTING STORM CURB INLET
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM GRATE INLET
- EXISTING SIGN
- EXISTING FIBER HAND HOLE
- X — EXISTING 6' BARBWIRE FENCE
- // — EXISTING 9' CHAIN LINK FENCE
- EXISTING DITCH CENTER LINE
- EXISTING TOP OF BANK
- EXISTING TOE OF BANK
- EXISTING EASEMENT LINE
- EXISTING TREE LINE
- PROPOSED LIGHT POLE

NOTES:

1. PHASE 1 OF THE PROJECT INCLUDES INSTALLATION OF TEMPORARY TRAILERS BY OWNER TO HOUSE EMPLOYEES DISPLACED DURING THE RENOVATIONS TO BUILDINGS A & B AND CONSTRUCTION OF NEW BUILDING C. AT THE COMPLETION OF THE BUILDING CONSTRUCTION THE TEMPORARY TRAILERS WILL BE REMOVED BY OWNER, AND PARKING LOT NORTH OF BUILDING B IS TO BE REMOVED BY THE GENERAL CONTRACTOR FOR THE CONSTRUCTION OF THE PROPOSED PARKING LOT EXPANSION TO THE NORTH.

FIELD MEASURED CURVE TABLE					
CURVE #	DELTA	RADIUS	CHORD BEARING	CHORD DISTANCE	ARC LENGTH
C1	6°59'31"	480.00	S04°09'36"E	58.54	58.58
C2	3°00'10"	100.00	S06°09'18"E	5.24	5.24
C3	41°41'50"	100.00	S16°11'41"W	71.18	72.78
C4	144°45'34"	60.00	S35°20'15"E	114.37	151.59
C5	7°37'28"	700.00	S21°31'51"E	93.08	93.15
C6	0°17'26"	1830.00	S25°07'08"E	9.28	9.28

WARNING! ACTIVE ELECTRICAL LINES WITHIN PROJECT AREA. CONTRACTOR TO USE EXTREME CAUTION DURING CONSTRUCTION, ESPECIALLY DURING EXCAVATION. CONTRACTOR TO COORDINATE WITH ENTERGY (1-800-ENTERGY) PRIOR TO THE START OF CONSTRUCTION FOR DISCONNECT SERVICE AND EXISTING LINE LOCATE.

FLOODPLAIN STATEMENT

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) PANEL NO. 48048305106 WITH AN EFFECTIVE DATE OF AUGUST 18, 2014. THE PROPERTY IS LOCATED PARTIALLY IN ZONE "X" SHADED AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD AND PARTIALLY IN ZONE "AE" AREAS WITH A 1% ANNUAL CHANCE OF FLOODING, BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED.

BENCHMARK

ELEVATIONS REFERENCED HEREON WERE REFERENCED FROM NATIONAL GEODETIC SERVICE (NGS) MONUMENT AJ6405 (ELEV. 212.40) UTILIZING GEOID 18, NAVD88.

PARD
8203 MILLENNIUM FOREST DRIVE
SPRING, TX 77381

THE WOODLANDS TOWNSHIP
2801 TECHNOLOGY FOREST BLVD.
THE WOODLANDS, TX 77381

halff
14800 ST. MARY'S LN.
SUITE 100
HOUSTON, TX 77079
TEL: (713) 588-2450
TBPELS FIRM NO. F-312

REVISION NO.	DATE	DESCRIPTION

PRELIMINARY
FOR INTERIM REVIEW ONLY

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT INTENDED FOR REGULATORY APPROVAL, PERMIT, BIDDING OR CONSTRUCTION PURPOSES. THEY WERE PREPARED BY OR UNDER THE SUPERVISION OF:

TYLER EATON — 143886
NAME — P.E. LICENSE NO.
12/2/2025
DATE
TBPELS #F-312 — TX
FIRM / BUSINESS NO. — STATE

PROJECT NO.: 52417.009
ISSUED: 12/02/2025
DRAWN BY: CF
CHECKED BY: TE
SCALE: AS NOTED
SHEET TITLE:

ACCESS EXHIBIT

EX1

FILE NAME: A:\52000s\52417009\LD\CADD\Sheets\Exhibits\52417.009 Access Exhibit.dwg DATE: December 2, 2025, TIME: 1:13 PM, USER: ah4087

The Woodlands Township Park and Recreation
8203 Millennium Forest Dr.
The Woodlands, TX 77381

Invitation for Bid
PARD Campus
Contract Number: C-2025-0483

PURPOSE
Contractors shall provide all labor, materials, equipment, licensing, and supervision necessary for the construction of the PARD Campus improvements utilizing the plans and specifications included in the attached bid documents.

MANDATORY Pre-Bid Meeting Bid at 9:00 a.m. CST at 8203 Millennium Forest Drive, The Woodland, TX 77381	**November 18, 2025**
Deadline for Written Questions at 5:00 p.m. CST	**November 28, 2025**
Bids Due by 2:00 p.m. CST at 14800 St. Mary's Lane, Suite 160, Houston, TX 77079	**December 10, 2025**

TABLE OF CONTENTS

EXHIBIT A

BID CERTIFICATION 7

EXHIBIT B

BID FORM 12

ADDENDUM ACKNOWLEDGEMENT 15

EXHIBIT C

CONFLICT OF INTEREST QUESTIONNAIRE 16

EXHIBIT D

REFERENCES 18

EXHIBIT E

STATEMENT OF QUALIFICATIONS 19

EXHIBIT F

SUBCONTRACTORS 21

EXHIBIT G

INSURANCE REQUIREMENTS 22

EXHIBIT H

BID BOND (SAMPLE) 24

EXHIBIT I

PERFORMANCE/PAYMENT BOND (SAMPLE) 25

EXHIBIT J

BID SUBMISSION CHECKLIST 26

EXHIBIT K

CONTRACT 28

EXHIBIT L

GEOTECHNICAL REPORT 62

EXHIBIT M

SURVEY..... 101

EXHIBIT N

TECHNICAL SPECIFICATIONS 105

Bidder shall **complete every space** in the bidder proposal column with either **signed initials** to indicate the item being bid is exactly as specified or a description to indicate any deviation of item being bid from the specifications. Bidder may submit additional information explaining any proposed deviation.

1	GENERAL	Bidders Initials
1.1	The contract for these services, if awarded, shall be for **the contract duration agreed upon with the Township and selected bidder**. Any and all financial obligations of The Woodlands Township under a proposed contract are conditional as they relate to a yearly appropriation during the annual budget process.	
1.2	~~Within (180) days before the expiration of the Initial Term (June 1, 2025), The Woodlands Township may give written notice to Contractor of its desire to extend the Agreement (the "Renewal Notice") for an additional period of time. (the "Renewal Term"). If The Woodlands Township delivers the Renewal Notice, the Parties shall within thirty (30) days from the date of receipt of the Renewal Notice, use good faith efforts to negotiate the terms and conditions of the Renewal Term. Any agreed upon Renewal Terms shall be in writing and executed as a Modification of the Agreement. In the event the Parties are unable to agree upon the terms and conditions for the Renewal Term, then the Agreement shall expire upon the expiration of the current Term or otherwise terminate pursuant to the terms of the Agreement. Renewal Terms will be limited to a maximum of two (2), three (3) year renewal periods.~~	N/A
1.3	The Woodlands Township reserves the right to reject any or all bids, including without limitation the rights to reject any or all nonconforming, non-responsive, unbalanced or conditional bids and to reject the bid of any bidder if The Woodlands Township believes that it would not be in the best interest of the project to make an award to that bidder, whether because the bid is not responsive or the bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by The Woodlands Township.	
1.4	The Woodlands Township also reserves the right to waive all informalities and defects in the bids and the bidding process not involving price, time of submittal or changes in the work and to negotiate contract terms with the successful bidder. Discrepancies between the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words. In case of ambiguity or lack of clarity in stating the prices in the bid, The Woodlands Township reserves the right to consider the most advantageous bid thereof or to reject the bid.	
1.5	Prospective Bidders may obtain a bid package including specifications and bidding documents from The Woodlands Township website, online at www.thewoodlandstownship-tx.gov/bids and via CivCast at https://www.civcastusa.com/.	
1.6	Bidders should carefully examine the bid documents, specifications and other documents, visit the sites of the work, field verify quantities and fully inform themselves as to all conditions and matters which can in any way affect the work or the cost thereof. Should a bidder find discrepancies in or omissions from specifications, or other documents, or be in doubt as to their meaning, he should at once notify The Township and obtain clarification prior to submitting a bid.	
1.7	Addenda to the specifications shall be considered part of the contract documents. Bidder shall acknowledge receipt of addenda on the Bid Proposal Form. Oral and other interpretations or clarifications will be without legal effect.	
1.8	Any qualification or exception submitted by the contractor pertaining to the specifications and bid items may be cause for rejection of bid. (A conditional bid may be cause for rejection.)	
1.9	The Contractor's bid shall include unit prices as outlined in the Bid Tabulation Form. Quantities required and listed are substantially correct, but The Woodlands Township reserves the right to increase and/or decrease the amount of work to be done by any amount at the same unit cost bid.	

1.10	There will be no public bid opening; however, bid tabulations and related bid documents will be released once the Board of Directors has reviewed and approved them.	
1.11	ANY ALTERATIONS, ADDITIONS OR DELETIONS, TO EITHER THE INSTRUCTIONS TO BIDDERS, OR THE PROPOSAL FORM SHALL CONSTITUTE THE BID(S) AS UNACCEPTABLE.	
1.12	~~It is understood, that in addition to the items outlined in this bid package, The Woodlands Township's facilities, offices, terminals, parks, pools and sports fields are continually growing and the successful contractor must be capable of handling contract additions throughout the term of the contract to the same standards, frequencies and expectations outlined herein.~~	N/A
1.13	Contractor shall be capable of receiving communication by email, or via phone call/message/app.	
1.14	Contractor shall provide all equipment, labor, trucks, and material necessary to perform the required service. No equipment, material or personnel shall be provided by The Township to Contractor unless agreed upon in advance in writing by the Township.	
1.15	Contractor shall remove all rubbish, waste and discarded material on a daily basis that is a result of their services provided to the Township. If Contractor fails to comply with this obligation, and the Township is required to remedy, the Contractor agrees to reimburse the Township for all expenses incurred for the remedy.	
1.16	Each employee will be identified by a company uniform (shirt, pants or cap) and vehicles will be clean, and all marked with company name.	
1.17	Contractor shall behave and operate in an environmentally sound and professional way, as to not create damage or cause exposure by virtue of negligence or omission.	
1.18	Equipment must be well maintained and in good condition.	
1.19	Transportation of staff and equipment shall be done only in vehicles marked with contractor's company logo unless agreed in writing by Township staff.	
1.20	Working Day" is defined as any day not including Sundays or any legal holidays, in which weather or other conditions not under the control of the Contractor, will permit construction of the principal units of the Work for a continuous period of not less than seven (7) hours during the twelve (12) hours between 7:00 AM and 7:00 PM, or as identified in the bid document and by mutual written agreement. Work on Sundays may be permitted upon approval of the Owner. A "calendar day" is defined as any day indicated on the calendar, including Saturdays, Sundays and holidays. A Working Day that involves rain, sleet, and/or snow, shall be coordinated with the Owner's Project Manager. In order to classify rain, sleet, and/or snow, the National Weather Service will be used to determine if certain weather or conditions exist that would not permit construction on a specific Working Day. The Project Manager will determine if a Working Day shall be rescheduled due to weather conditions. The Woodlands Township may direct specific times for certain work to be performed so as to not interfere with lake/pond, park and/or community activities.	
1.21	Safety of residents and visitors is of the utmost importance. It will be the contractor's responsibility to secure areas in and around where the work is taking place.	
1.22	Service can only be requested by authorized personnel who include Township staff having a title of Foreman, Supervisor, Superintendent/Manager, Asst. Director, Director, Assistant General Manager, or President/Chief Executive Officer.	
1.23	Contractors shall understand that one of the main emphases of this community is the preservation of the natural existing environment which includes the trees, bushes, wildflowers and wildlife, and to enhance it by additional landscaping and the development of the lakes and open space. No trees, shrubs or vegetation should be unnecessarily removed or damaged. No trash, lumber, etc. can be dumped in the woods. No vehicles, etc. can be parked except in handicapped spaces or park reserves.	
1.24	~~Work Orders (WO) and service requests may be sent to Contractor multiple times a week via email, these emails or WO's should be acknowledged upon receipt. Work shall be addressed at the latest during the next regularly scheduled service visit.~~	N/A

1.25	Additions and modifications to the Contract, the Township will request a proposal for additional services and will add it to the contract, at their discretion. Missed services will be deducted from the monthly invoice based on the pricing reflected in the service matrix/bid tab.	
1.26	Any measurements contained herein should only be used as an estimate. Contractor is responsible for accurate measurement of all items. All potential bidders should examine areas included in this bid to ensure accurate measurements and price quotes.	
1.27	Contractor is responsible for obtaining such supplies, materials and parts if not provided directly by the Township. Such supplies, materials and parts shall be of good quality and the cost of such shall be billed as reflected in the proposal from the Contractor. Installed materials that fail before warranty shall be replaced by the contractor with new material at no cost to the Township other than labor to reinstall.	
1.28	Service locations are public and extremely sensitive to disruption. Contractor must ensure the general public and user's safety when performing services in and around all locations.	
1.29	Contractor shall not employ any subcontractor to fulfill any of the Contractor's obligations, in whole or in part, without the prior express written approval of The Woodlands Township and shall fully indemnify and defend the Township for any acts or omissions of any such sub-contractor.	
1.30	All maintenance operations shall be performed by the approved contractor or sub-contractor. A list of sub-contractors shall be submitted with the bid.	
1.31	Contractor is responsible for responding to emergencies as deemed by The Township i.e., hurricanes, tornadoes, flooding. Contractor shall provide an emergency response number(s), office and mobile number. Contactor must respond to the emergency in an appropriate amount of time as agreed upon as deemed by the Township and Contractor. **PLEASE NOTE: THE PROJECT LOCATION IS THE EMERGENCY OPERATIONS CENTER (EOC) FOR THE WOODLANDS TOWNSHIP. AS A RESULT, WORK STOPPAGE MAY BE REQUIRED IN THE EVENT OF A NATURAL DISASTER OR EMERGENCY. IF THE TOWNSHIP DETERMINES THAT A WORK STOPPAGE IS NEEDED, IT WILL BE COORDINATED BETWEEN THE TOWNSHIP AND THE CONTRACTOR BEFORE WORK IS STOPPED.**	
1.32	Contractors must include a detailed **EQUIPMENT LIST** necessary to complete the work outlined in these specifications and submit with the bid and annual schedule.	
1.33	Contractor is responsible for damage to persons and property caused during the performance of contracted work.	
1.34	The Contractor will be held responsible for any damages to trees, plants, shrubs, fences, walls, brick, pavers, glass, etc. that is caused by the Contractors errors or their failure to comply with the requirements of these specifications and will be assessed a fee. Values will be based on The Township's assessment and/or appraisal in accordance to Council of Tree and Landscape Appraisers or other mutually agreeable source.	
1.35	Contractor is responsible for applying all chemicals in a safe manner consistent with the label directions and federal and state laws and regulations. Application rates and frequencies are determined by the manufacturer's recommendations. Chemical mixing and application shall be supervised by a Licensed Pesticide Applicator. Records must be maintained according to applicable licensing regulatory body. ***These records shall be provided to The Township upon request within 2 hours.***	
1.36	Contractor is responsible for public notification when pesticides are to be applied in advance per manufacturers label instructions. Notification as is to include when, what, where, and how much. Verification of completion is to be noted.	
1.37	If through inspection and verification, in The Woodlands Township opinion, work as defined by the specifications has been carried out to an insufficient standard, the work shall be carried out again by the Contractor without creating a backlog to other maintenance schedule and at the expense of the Contractor.	

1.38	**In the event the contractor fails to accomplish any task under this scope of work, The Woodlands Township will provide reasonable notice to take corrective action. If the Contractor does not perform the service, The Woodlands Township may, at its option, cause the non-performed tasks to be accomplished through another source and deduct the cost of such from the amount normally due to the contractor for that monthly period based on the Supplemental Unit Prices	

2	LAWS, REGULATIONS, AND INSURANCE	Bidders Initials
2.1	Please be advised that in accordance with State of Texas Local Government Code Chapter 176, Bidder must submit Form CIQ	
2.2	In compliance with State of Texas Government Code, Section 2252.908, the successful business entity awarded a contract by the Board of Directors of The Woodlands Township must complete Form 1295 – "Certificate of Interested Parties" – and must provide a signed and notarized printed copy of the form and a separate certification of filing. The form can be found at www.ethics.state.tx.us	
2.3	At Contractor's own cost and expense, Contractor shall comply with all laws, ordinances, rules, and regulations of the federal, state and local and OSHA authorities and departments relating to or affecting the work hereunder, and shall secure and obtain any and all permits, licenses and consents as may be necessary in connection therewith.	
2.4	Contractor shall furnish to The Township copies of said licenses (State Texas Licensed Irrigator and Pesticide Applicator), permits prior to the commencement of any work hereunder.	
2.5	Traffic control, where and when needed, must meet the requirements of all state and local laws and regulations shall be included as part of the unit cost.	
2.6	All work, repairs, preventative maintenance and installations shall be made in compliance with the appropriate Certifications, Laws, and Codes as adopted by the State of Texas.	
2.7	Contractor shall provide The Woodlands Township acceptable proof of insurance and endorsement forms which meets the requirements as identified herein. Proof of Insurance must be provided before any Work is to begin.	
3	**INSTRUCTIONS**	**Bidders Initials**
3.1	A **mandatory Pre-Bid Meeting** will take place at The Woodlands Township, 8203 Millennium Forest Drive, The Woodlands, Texas 77381, **Tuesday, November 18 at 9:00 am CST.**	
3.2	Contractors should plan to tour the location after the pre-bid meeting on November 18 in order to best determine scope and expectations: The Woodlands Township strongly encourages all bidders to familiarize themselves with facilities and locations.	
3.3	**INTERPRETATIONS AND ADDENDA**- All questions about the meaning or intent of the Bidding Documents and the Contract Documents shall be submitted in writing to Tyler Eaton, Halff, at teaton@halff.com, and Kristin LeBlanc, Halff, kleblanc@halff.com. Interpretations, questions, or clarifications will be considered by the Township and if necessary be responded to by issuance of an Addendum. All questions are to be received no later than **Friday, November 28, at 5:00 p.m. CST**. Only answers issued by Addenda will be binding. All addendums will be posted on The Woodlands Township website http://www.thewoodlandstownship-tx.gov/bids and via CivCast at https://www.civcastusa.com/.	
3.4	**Sealed bids**, addressed to The Woodlands Township, Attention: Mitch Hall, Assistant Director of Parks and Recreation, and delivered to Halff Associates, Inc. at 14800 St. Mary's Lane, Suite 160, Houston, TX 77079, must be received at the above address no later than **Wednesday, December 10 at 2:00 p.m. CST** for furnishing all labor, materials, supplies, equipment, licensing, supervision and performing all work necessary to provide execute the project included in the bid documents in The Woodlands Township, Montgomery and Harris Counties, Texas. Bids shall be submitted in sealed envelopes using the blank Proposal forms furnished with this bid package, **additionally the Bid Matrix/Tab must be emailed to** mhall@thewoodlandstownship-tx.gov, Tyler Eaton, Halff, at teaton@halff.com, and Kristin LeBlanc, Halff, at kleblanc@halff.com **on the bid submittal due date.**	
3.5	Each sealed envelope containing the bid(s) must be clearly marked on the outside **BID for** PARD Campus Improvements Contract Number: C-2025-0483 – Project (Letter) and the envelope should bear on the outside the name of the bidder and company their address.	

3.6	All companies bidding on this project must include the information outlined in the **ITEMS TO BE INCLUDED IN BID SUBMITTAL** such as bid checklist, bid bond, statement of qualifications, list of subcontractors, list of equipment, references, list of proposed equipment, licenses, insurance requirements, and other items requested in this bid document.	
3.7	All Bids must be made on the required BID TABULATION FORM. All blanks spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted.	
3.8	Bidder is required to submit three (3) references of previous projects of similar or like nature size/value. Reference information shall include name, company, email, and phone number.	
3.9	**Bid Bond** -All bids shall be accompanied by a cashier's check, or certified check drawn upon a National or State bank, in the amount of 2% of total project bid, payable to The Woodlands Township, or a Bid Bond in the same amount, from a Surety Company licensed in the State of Texas, as a guarantee that the bidder will enter into a contract.	
3.10	**Performance/Payment Bond** -Contractor is required to provide The Woodlands Township a performance/payment bond in the full amount of the contract(s) value prior to the commencement of work, with premiums fully paid in advance by the contractor. The bonds will be on forms and drawn on sureties acceptable to The Woodlands Township and are included in the total project cost (s). See attached for sample of Performance Bond.	
4	**INVOICING AND PAYMENT**	**Bidders Initials**
4.1	Unit prices shall remain in effect for the length of this agreement.	
4.2	Evaluation of bid takes into account the following considerations: price, references, familiarization with The Woodlands, etc.	
4.3	THIS IS A TAX-EXEMPT CONTRACT. A TAX EXEMPTION CERTIFICATE WILL BE SUPPLIED TO THE CONTRACTOR WHO MAY THEN ISSUE A RESALE CERTIFICATE TO SUPPLIERS AND SUBCONTRACTORS.	
4.4	Unit price shall be inclusive of all charges (staff time, application equipment, disposal, truck charges, environmental charges, traffic control, etc.).	
4.5	Monthly invoices from the selected vendor must be submitted containing at least the following information: • Month of Service • Description of Unit Price • Copy of Services Tracker for that Month • Total Cost ***No payment will be made without backup documentation***	
4.6	**Added services**- Contractor shall submit to the Township invoices upon completion of any Work Order sent by The Woodlands Township staff no later than thirty (30) days after completion of the work.	
4.7	The Township will remit payment for each invoice to Contractor within 30 days of receipt of an approved Invoice, unless the Township disputes any portion of the Invoice, and the Contractor is not in default under the provisions of this contract.	
4.8	Contract payment will be on a monthly basis, based on a detailed invoice provided to The Township from the selected Contractor. The billing of services is on a per unit per month price which are submitted as a total monthly price.	
4.9	Monthly Statements – Contractor should provide a Monthly Statement of outstanding/pending invoices. Monthly Statement shall be sent on the 1st day of each Month.	

Exhibit A – Bid Certification

I, _____, certify that this bid, including the listed unit price in the bid tabulation, is made without prior understanding, agreement or connection with any corporation, firm, or person submitting a bid for the same materials, supplies or equipment and is in all respects fair and without collusion of fraud. I agree to honor the unit prices as submitted throughout the term of the **PARD Campus Improvements.**

Contract Numbers: C-2025-0483

and abide by all conditions of this bid and certify that I am authorized to sign this bid for the bidder.

_____

Date

_____ _____

Signature Name (please print)

_____ _____

Title Company Name

_____ _____

Address Phone Number

_____ _____

E-mail address Cell Phone Number

Exhibit B – Bid Form and Addendum Acknowledgement

BID PROPOSAL FOR
PARD CAMPUS IMPROVEMENTS
THE WOODLANDS TOWNSHIP

CONTRACTOR:_____ **DATE:**_____

Date visited site and signature:_____

I hereby acknowledge receiving the following addendums as applicable:
Addendum No. 1 **Sign:**_____ **Date:**_____
Addendum No. 2 **Sign:**_____ **Date:**_____
Addendum No. 3 **Sign:**_____ **Date:**_____

ITEM NO.	Spec	DESCRIPTION	QTY	UNIT	UNIT PRICE	EXTENDED TOTAL
SERIES 100: GENERAL						
100	1505	MOBILIZATION	1	LS		$ -
101		BONDS	1	LS		$ -
					SERIES 100 TOTAL	$ -
SERIES 200: STORM WATER POLLUTION PREVENTION PLAN						
200	COH 01570	SWPPP INSPECTION AND MAINTENANCE (MAX BID - $2,000/MO)	9	MO		$ -
201	COH 01575	CONCRETE TRUCK WASHOUT STRUCTURES (60% OF UNIT COST FOR FURNISH AND INSTALLATION, AND 40% OF UNIT COST FOR REMOVAL)	1	EA		$ -
202	COH 01570	INLET PROTECTION BARRIER (STAGE 2, WITH FIBER ROLLS; 60% OF UNIT COST FOR FURNISH AND INSTALLATION, AND 40% OF UNIT COST FOR REMOVAL)	2	EA		$ -
203	COH 01570	INLET PROTECTION BARRIER (STAGE 1, WITH FIBER ROLLS; 60% OF UNIT COST FOR FURNISH AND INSTALLATION, AND 40% OF UNIT COST FOR REMOVAL)	14	EA		$ -
204	COH 01575	STABILIZED CONSTRUCTION ACCESS (TYPE 1-ROCK; 60% OF UNIT COST FOR FURNISH AND INSTALLATION, AND 40% OF UNIT COST FOR REMOVAL)	106	SY		$ -
205	COH 01570	REINFORCED FILTER FABRIC FENCE (60% OF UNIT COST FOR FURNISH AND INSTALLATION AND 40% OF UNIT COST FOR REMOVAL)	624	LF		$ -
206	COH 01570	TPDES GENERAL PERMIT NO. TXR 150000, NOTICE OF INTENT (NOI) APPLICATION FEES (CONTRACTOR'S NOI FEE SHALL BE FIXED PRICE OF $225.00)	1	EA		$ -
					SERIES 200 TOTAL	$ -
SERIES 300: SITE PREPARATION AND EARTHWORK						
300	COH 02221	SITE PREPARATION INCLUDING BUT NOT LIMITED TO CLEARING OF TURF, LANDSCAPING, AND OTHER IMPROVEMENTS WITHIN THE WORK AREA	1.40	AC		$ -
301	COH 02322	FILL IMPORT USING LOCAL MATERIAL, INCLUDING HAULING AND COMPACTION	2240	CY		$ -
302	COH 02319	SELECTED BORROW FOR BUILDING PAD (IMPORTED SOIL)	434	CY		$ -
303	COH 02233	CLEARING AND GRUBBING OF EXISTING TREES, ALL SIZES, INCLUDING CHIPPING AND OFF-SITE DISPOSAL AS SHOWN ON APPROVED PLANS AND COORIDNATED WITH OWNER	0.04	AC		$ -
					SERIES 300 TOTAL	$ -
SERIES 400: DEMOLITION PHASE 2						
400	COH 02221	REMOVE AND DISPOSE CONCRETE PAVEMENT (ALL DEPTHS, INCLUDING SIDEWALK) INCLUDING SUB-BASE AND SUBGRADE	716	SY		$ -
401	COH 02221	REMOVE AND DISPOSE ASPHALT PAVEMENT (ALL DEPTHS) INCLUDING SUB-BASE, SUBGRADE, AND CURB	1,400	SY		$ -
402	COH 02221	REMOVE AND DISPOSE GRAVEL (ALL DEPTHS) INCLUDING SUB-BASE, SUBGRADE, AND CURB	1,949	SY		$ -
403	COH 02221	REMOVE AND DISPOSE BRICK PAVER	86	SY		$ -
404	COH 02221	REMOVE AND DISPOSE DECOMPOSED GRANITE (ALL DEPTHS) INCLUDING SUB-BASE	15	SY		$ -
405	COH 02221	DE-MUCK EXISTING SWALE, DRAIN, STRIP AND REMOVE ALL SOFT AND WET SOILS. DE-MUCKING SHALL EXTEND TO THE DEPTHS OF THE COMPETENT MATERIAL PER GEOTECH REPORT	122	LF		$ -
406	COH 02221	DE-MUCK EXISTING POND, DRAIN, STRIP AND REMOVE ALL SOFT AND WET SOILS. DE-MUCKING SHALL EXTEND TO THE DEPTHS OF THE COMPETENT MATERIAL PER GEOTECH REPORT	1	LS		$ -
407	COH 02762	REMOVE PAVEMENT MARKINGS	2043	LF		$ -
408	COH 02221	REMOVE AND DISPOSE EXISTING CONCRETE CURB	184	LF		$ -
409	COH 02221	REMOVE AND DISPOSE EXISTING AWNING	1	EA		$ -
410	COH 02221	REMOVE AND DISPOSE EXISTING 3" PVC PIPE	9	LF		$ -
411	COH 02221	REMOVE AND DISPOSE EXISTING 12" CPP STORM PIPE	229	LF		$ -
412	COH 02221	REMOVE AND DISPOSE EXISTING 15" CPP STORM PIPE	99	LF		$ -
413	COH 02221	REMOVE AND DISPOSE EXISTING 18" CPP STORM PIPE	20	LF		$ -
414	COH 02221	REMOVE AND DISPOSE 9" GRATE INLET	1	EA		$ -
415	COH 02221	REMOVE AND DISPOSE PLASTIC HEADWALL	4	EA		$ -
416	COH 02221	REMOVE AND DISPOSE EXISTING 4' WOODEN FENCE	50	LF		$ -
417	COH 02221	REMOVE AND DISPOSE EXISTING 10' CHAIN LINK FENCE	209	LF		$ -
418	COH 02221	REMOVE AND DISPOSE STEEL CABLE WITH WOODEN POSTS	28	LF		$ -
419	COH 02221	REMOVE AND DISPOSE EXISTING METAL SWING GATE AND POSTS	1	LS		$ -
420	COH 02221 / COH 02201	REMOVE AND RETURN EXISTING RAIN WATER COLLECTION TANK AND SYSTEM TO THE WOODLANDS TOWNSHIP	1	LS		$ -
421	COH 02221	REMOVE AND DISPOSE EXISTING IRRIGATION SYSTEM	1	LS		$ -
422	COH 02221	REMOVE AND DISPOSE EXISTING ELECTRICAL BOX	1	EA		$ -
423	COH 02221	REMOVE AND REPLACE STONE PLAQUE	1	EA		$ -
424	COH 02221	REMOVE AND REPLACE STEEL SCULPTURE	1	EA		$ -
425	COH 02221	REMOVE AND RELOCATE PEDESTRIAN STOP SIGN	2	EA		$ -

426	COH 02221	REMOVE AND RETURN EXISTING SITE FURNISHINGS INCLUDING STAIRS, WALKING BRIDGE, GATES AND POSTS, KEYPAD, BOLLARDS, BIKE RACK, WOOD POST, PARKING SIGN AND TRASH CANS TO THE WOODLANDS TOWNSHIP	1	LS		$ -
427	COH 02221 / DWG	REMOVE AND RETURN EXISTING LIGHT POLES, AC UNITS AND MISC. ELECTRICAL ITEMS TO THE WOODLANDS TOWNSHIP	1	LS		$ -
428	COH 02221	REMOVE AND DISPOSE OF EXISTING LIGHT POLE CONCRETE FOUNDATIONS	2	EA		$ -
429		ASBESTOS SURVEY AS DESCRIBED ON SHEET G001	1	LS		$ -
					SERIES 400 TOTAL	$ -

SERIES 500: UTILITIES						
500	COH 02611	18" RCP STORM SEWER (ALL DEPTHS), COMPLETE IN PLACE	187	LF		$ -
501		24" RCP STORM SEWER (ALL DEPTHS), COMPLETE IN PLACE	136	LF		$ -
502		6" HDPE STORM SEWER (ALL DEPTHS), COMPLETE IN PLACE	75	LF		$ -
503	COH 02511	TYPE "A" INLET, COMPLETE IN PLACE	9	EA		$ -
504		12"X12" NDS CATCH BASIN, COMPLETE IN PLACE	3	EA		$ -
505	COH 02531	6" SDR 26 PVC SANITARY SEWER BY OPEN CUT (ALL DEPTHS), COMPLETE IN PLACE	93	LF		$ -
506		FURNISH AND INSTALL 1" SCHEDULE 40 PVC CONDUIT	227	LF		$ -
507	COH 02260	TRENCH SAFETY SYSTEM	491	LF		$ -
					SERIES 500 TOTAL	$ -

SERIES 600: PAVING						
600	COH 02775	4" REINFORCED CONCRETE SIDEWALK WITH 2" SAND BASE, COMPLETE IN PLACE	353	SY		$ -
601	COPH 02741	2.5" ASPHALT PAVEMENT WITH 10" BASE MATERIAL AND 6" TREADED SUBGRADE, COMPLETE IN PLACE	3	TON		$ -
602	COH 02751	5" REINFORCED CONCRETE PAVEMENT, COMPLETE IN PLACE	1,818	SY		$ -
603	COH 02751	6" REINFORCED CONCRETE PAVEMENT, COMPLETE IN PLACE	2,522	SY		$ -
604	COH 02201	6" SUBGRADE PREPARATION. INCLUDES PROOF-ROLLING, MIXING STABILIZER OR SCARIFYING AND COMPACTING TO 95% OF ASTM D 698	4707	SY		$ -
605	COH 02336	HYDRATED LIME FOR SUBGRADE STABILIZATION (15 LB/SY @ 3% BY DRY UNIT WEIGHT), RFERENCE GEOTECHNICAL STUDY BY TERRACON, PROJECT NO. 97245057	36	TON		$ -
606	COH 02337	FLY-ASH FOR SUBGRADE STABILIZATION (40 LB/SY @ 8% BY DRY UNIT WEIGHT), RFERENCE GEOTECHNICAL STUDY BY TERRACON, PROJECT NO. 97245057	95	TON		$ -
607	COH 02771	6" REINFORCED CONCRETE CURB, COMPLETE IN PLACE	2,040	LF		$ -
608	COH 02767	4" SOLID WHITE TYPE II PAVEMENT MARKING, INCLUDING SURFACE PREPARATION, COMPLETE IN PLACE	2,815	LF		$ -
609	COH 02775	ADA CURB RAMP, COMPLETE IN PLACE	5	EA		$ -
610	COH 02771/ DWG	CONCRETE WHEELSTOPS, COMPLETE IN PLACE	43	EA		$ -
611	COH 02767	THERMOPLASTIC HANDICAP SYMBOL PREFABRICATED PAVEMENT MARKING, INCLUDING SURFACE PREPARATION, COMPLETE IN PLACE	8	EA		$ -
612	COH 02767	9" PAINTED HIGHWAY REFLECTIVE WHITE PAVEMENT INCLUDING MARKING SURFACE PREPARATION, COMPLETE IN PLACE	72	LF		$ -
613	COH 02767	12" PAINTED HIGHWAY REFLECTIVE WHITE PAVEMENT INCLUDING MARKING SURFACE PREPARATION, COMPLETE IN PLACE	52	LF		$ -
614	COH 02767	6" RED PAINTED FIRE LANE STRIPING PER MONTGOMERY COUNTY FIRE CODE, COMPLETE IN PLACE	1653	LF		$ -
615	DWG	4" DECOMPOSED GRANITE TRAIL INCLUDING 4" CRUSHED LIMESTONE COMPACTED BASE, COMPLETE IN PLACE.	2	CY		$ -
					SERIES 600 TOTAL	$ -

SERIES 700: LANDSCAPE AND IRRIGATION						
700	329200	CYNODON DACTYLON / BERMUDA GRASS SOD	12,531	SF		$ -
701	328400	TEMPORARY IRRIGATION SYSTEM, COMPLETE IN PLACE	12,531	SF		$ -
702	DWG	10' BLACK VINYL COATED CHAIN LINK FENCE, COMPLETE IN PLACE	158	LF		$ -
					SERIES 700 TOTAL	$ -

SERIES 800: ARCHITECTURAL, MEP, & STRUCTURAL						
800		RENOVATION OF BUILDINGS A & B AND CONSTRUCTION OF BUILDING C	1	LS		$ -
801		PARKING LOT LIGHTING, INCLUDING RELOCATION OF 2 SALVAGED LIGHT POLES AND FIXTURES AND INSTALLATION OF 3 NEW LIGHT POLE FOUNDATIONS, 1 LIGHT POLE, 1 FIXTURE, CONDUIT AND WIRING	1	LS		$ -
802		BUILDING HVAC, COMPLETE, INSTALLED AND OPERATIONAL PER PLANS AND SPECIFICTIONS INCLUDING BUT NOT LIMITED TO EQUIPMENT, INSTALLATION, START-UP, AIR-BALANCE, CLEANUP, O&M, TRAINING. LUMP SUM.	1	LS		$ -
803		BUILDING PLUMBING SYSTEM COMPLETE PER PLANS AND SPECIFICATIONS, INSTALLED AND OPERATIONAL INCLUDING BUT NOT LIMITED TO FIXTURES, EQUIPMENT AND PIPING, START-UP, TESTING, O&M TRAINING AND CLEANUP. LUMP SUM.	1	LS		$ -
804		SITE ELECTRICAL PER PLANS AND SPECIFICATIONS INCLUDING MODIFICATIONS TO SERVICE AND EXTERIOR DISTRIBUTION. LUMP SUM.	1	LS		$ -
805		BUILDING ELECTRICAL PER PLANS AND SPECIFICATIONS INCLUDING BUT NOT LIMITED TO LIGHTING, CONDUCTORS, CONDUIT, PANELS, BRANCH CIRCUIT BREAKERS, BRANCH CIRCUITE WIRE, ELECTRIC AND OTHER CONTROLS, RECEPTACLES, BOXES, WIRING DEVICES, SECURITY, SCADA, AND ACCESS WIRING FOR COMPLETE BUILDING ELECTRICAL SYSTEM.	1	LS		$ -
806		BUILDING FOUNDATION INCLUDING BUT NOT LIMITED TO CONCRETE, REBAR, INSTALLATION AND FINISH OUT.	1	LS		$ -

807		STRUCTURAL INSULATED PANEL SYSTEM WITH BEAMS AND POSTS, INSTALLED PER PLANS AND SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO MATERIAL, EQUIPMENT AND LABOR.	1	LS		$	-
808		METAL STUD FRAMING AND DRYWALL SYSTEM, INSTALLED AND FINISHED COMPLETE PER PLANS AND SPECIFICATIONS.	1	LS		$	-
809		DOORS, WINDOWS, STOREFRONT, HARDWARE, INSTALLED COMPLETE PER PLANS AND SPECIFICATIONS.	1	LS		$	-
810		FOLDING PARTITION, COMPLETE PER PLANS AND SPECIFICATIONS	1	LS		$	-
811		INSULATION, MATERIAL AND LABOR, INSTALLED PER PLANS AND SPECIFICTIONS.	1	LS		$	-
812		INTERIOR WALL FINISHES, MATERIAL AND LABOR, INSTALLED PER PLANS AND SPECIFICATIONS.	1	LS		$	-
813		INTERIOR FLOOR FINISHES, MATERIAL AND LABOR, INSTALLED PER PLANS AND SPECIFICATIONS.	1	LS		$	-
814		EXTERIOR WALL FINISHES, MATERIAL AND LABOR, INSTALLED PER PLANS AND SPECIFICATIONS.	1	LS		$	-
815		ROOF SYSTEM COMPLETE, MATERIAL AND LABOR, PER PLANS AND SPECIFICATIONS.	1	LS		$	-
816		MILLWORK AND CASE GOODS, MATERIAL AND LABOR, FURNISHED AND INSTALLED PER PLANS AND SPECIFICAOTIONS.	1	LS		$	-
817		TOILET PARTITIONS AND ACCESSORIES INCLUDING ADA ACCESSORIES, FURNISHED AND INSTALLED PER PLANS AND SPECIFICATIONS.	1	LS		$	-
818		INTERIOR SIGNAGE	1	LS		$	-
819		EXTERIOR SIGNAGE	1	LS		$	-
					SERIES 800 TOTAL	$	-

BID SUMMARY		
SERIES 100 - GENERAL	$	-
SERIES 200 - STORM WATER POLLUTION PREVENTION PLAN	$	-
SERIES 300 - SITE PREPARATION AND EARTHWORK	$	-
SERIES 400 - DEMOLITION PHASE 2	$	-
SERIES 500 - UTILITIES	$	-
SERIES 600 - PAVING	$	-
SERIES 700 - LANDSCAPING AND IRRIGATION	$	-
SERIES 800 - ARCHITECTURAL, MEP, & STRUCTURAL	$	-

Base Bid Subtotal $ -

CALENDAR DAYS NEEDED FOR SUBSTANTIAL COMPLETION _____

CALENDAR DAYS NEEDED FOR FINAL COMPLETION

Please acknowledge by signing and dating that you have seen the addenda posted with the bid on http://www.thewoodlandstownship-tx.gov/bids and via CivCast at https://www.civcastusa.com/.

Addenda #1 _____ Date Received _____/_____/ 2025
MM DD

Addenda #2 _____ Date Received_____/_____/ 2025
MM DD

Addenda #3 _____ Date Received _____/_____/ 2025
MM DD

Exhibit C – Conflict of Interest Questionnaire

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. *See* Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 **Name of vendor who has a business relationship with local governmental entity.**

2 ☐ **Check this box if you are filing an update to a previously filed questionnaire.** (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 **Name of local government officer about whom the information is being disclosed.**

_____

Name of Officer

4 **Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.**

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐ Yes ☐ No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

5 **Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.**

6 ☐ Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7

_____ _____

Signature of vendor doing business with the governmental entity Date

Form provided by Texas Ethics Commission www.ethics.state.tx.us Revised 11/30/2015

CONFLICT OF INTEREST QUESTIONNAIRE
For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

(A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;

(B) a transaction conducted at a price and subject to terms available to the public; or

(C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

(a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

***

(2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds $2,500 during the 12-month period preceding the date that the officer becomes aware that

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than $100 in the 12-month period preceding the date the officer becomes aware that:

(i) a contract between the local governmental entity and vendor has been executed; or

(ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

(a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.

(a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

(1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

(2) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or

(C) of a family relationship with a local government officer.

Exhibit D – References

Please provide information from three (3) references of similar work scope, representing experience within the past five (5) years:

1. Agency/Company:

   Contact Name:

   Contact Phone:

   Products delivered:

2. Agency/Company:

   Contact Name:

   Contact Phone:

   Products delivered:

3. Agency/Company:

   Contact Name:

   Contact Phone:

   Products delivered:

Exhibit E – Statement of Qualifications

DATE SUBMITTED _____

All questions must be answered, and the data given must be clear and comprehensive. ***This statement must be notarized.*** If necessary, questions may be answered on separate attached sheets. The Firm may submit any additional information that is pertinent.

1. Name of Firm - _____
2. Permanent main office address - _____
3. If a corporation, where incorporated - _____
4. How many years have you been engaged in the construction business? Under what firm or trade names and how long under each?

   _____

   _____
5. Contracts on hand (show gross dollar amount of each contract and the anticipated date of completion):

   _____

   _____

   _____
6. Are you licensed as Contractor in the State of Texas?
   Yes_____ No_____ If "Yes", please provide Contractor numbers?

   _____
7. General character of work performed by your firm - _____
8. Has your firm ever failed to complete any work awarded to you?
   Yes____ No____ If "Yes", where and why?

   _____

   _____
9. Has your firm ever defaulted on a contract?
   Yes____ No____ If "Yes", where and why?

   _____

   _____

10. List 5 projects of similar size and scope:

Firm Name	Contract Value	Contact Information
1.		
2.		
3.		
4.		
5.		

11. Are any lawsuits pending against you or your firm at this time?
    Yes____ No____ If "Yes", PROVIDE DETAILS.

    _____

    _____

    _____

12. Have any charges been filed against you or your firm or the bidding entity with the Texas Office of Contract Compliance, the Equal Opportunity Commission, the State of Texas Civil Rights Commission, or any other similarly constituted entity charges by any state or local government with the enforcement of anti-discrimination legislation or regulations?
    Yes____ No____ If "Yes", PROVIDE DETAILS.

    _____

    _____

    _____

13. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Associations in verification of the recitals compromising this Statement of Bidder's Qualifications.

DATED AT _____on this _____ day of _____ 20___.

(SEAL)

_____

(Name of Bidder)

By _____

(Signature)

Title _____

Exhibit F – Subcontractors

LIST OF SUBCONTRACTORS (Required with Bid Submittal)

Please list all subcontractors to be used and work that they will perform as part of this bid. Bidder certifies that all Subcontractors listed are eligible and legally able to perform the Work.

Subcontractor's Name	Subcontractor's Type of Work

If no Subcontractors are to be used, please make this page with the word NO SUBCONTRACTORS WILL BE USED

The Contractor whose Bid is accepted shall not substitute for a Subcontractor who is named herein, without written approval from The Woodlands Township.

Exhibit G – Insurance Requirements

Contractor agrees to procure and maintain at all times, at Contractor's sole cost and expense, during the performance of the Work and for so long as this Contract remains in effect, policies of insurance with carriers reasonably acceptable to the Township in the minimum amounts outlined below:

a. Worker's compensation and employer's liability coverage complying with the applicable laws of the State of Texas, covering all employees, agents and representatives of Contractor and all Subcontractors engaged in any manner in performance of the Work. Employer's liability coverage shall have a minimum limit of $1,000,000 for liability arising out of any accident related to the Work.

b. Comprehensive general liability insurance, including Contractor's protective liability, in Contractor's name, with combined bodily injury and property damage of not less than $1,000,000 per occurrence, and will include, without limitation, the following coverages:

(1) XCU Coverage,

(2) Contractual Liability Coverage,

(3) Completed Operations and/or Products Liability Coverage, commencing with issuance of Final Certificate for Payment, and extending for at least two (2) years from that date, and

(4) (X), (C) and (U) exclusions shall be removed.

c. Comprehensive Automobile Liability Insurance, with combined single limit bodily injury and property damage of not less than $1,000,000 per occurrence. Such coverage shall include owned, hired and non-owned vehicles of Contractor or Contractor's employees, agents, representatives or Subcontractors.

d. Cyber Risk Insurance (including professional oversight liability) covering acts, errors, and omissions arising out of operations or services with minimum limits of $1,000,000 per occurrence, $2,000,000 annual aggregate.

e. All insurance policies required by this Paragraph 7 shall contain a clause waiving any right of subrogation against The Woodlands Township. Insurance policies under (b), and (c), shall include The Woodlands Township as an additional insured.

f. With reference to the foregoing insurance requirement, Contractor shall specifically endorse applicable insurance policies as follows:

(1). The Woodlands Township shall be named as an additional insured with respect to General Liability and Automobile Liability.

(2). Additional insured for The Woodlands Township should be on a primary and non-contributory basis.

(3). All liability policies shall contain no cross-liability exclusions or insured versus insured restrictions.

(4). A waiver of subrogation in favor of The Woodlands Township shall be contained in the Workers Compensation and all liability policies.

(5). All insurance policies shall be endorsed to require the insurer to immediately notify The Woodlands Township of any material change in the insurance coverage.

(6). All insurance policies shall be endorsed to the effect that The Woodlands Township will receive at least thirty- (30) days' notice prior to cancellation or non-renewal of the insurance.

(7). All insurance policies, which name The Woodlands Township as an additional insured, must be endorsed to read as primary coverage regardless of the application of other insurance.

(8). Required limits may be satisfied by any combination of primary and umbrella liability insurances.

(9). Contractor may maintain reasonable and customary deductibles, subject to approval by The Woodlands Township.

(10). Insurance must be purchased from insurers that are financially acceptable to The Woodlands Township.

(11). Transmittal of proof of insurance should reference the Woodlands Township contract number (as listed in the footer below).

All insurance must be written on forms filed with and approved by the Texas Department of Insurance. Certificates of Insurance shall be prepared and executed by the insurance company or its authorized agent and shall contain provisions representing and warranting the following:

a. Sets forth all endorsements and insurance coverages according to requirements and instructions contained herein.

b. Shall specifically set forth the notice-of-cancellation or termination provisions to The Woodlands Township.

c. All contractors and Subcontractors must be meeting minimum OSHA safety requirements as applicable to their operations.

Contractor shall, before the Contract is signed, and at any time following execution thereof at the request of the Township, furnish the Township with a certificate and proof of such additional endorsements or other documentary evidence that the aforementioned insurance policies have been procured with such additional endorsements, that premiums have been paid and that such policies remain in place. Such certificate or other evidence shall bear an agreement that the Township will be given thirty (30) days prior written notice by the Insurance Company furnishing the certificate before the insurance is cancelled or changed in any manner or for any reason during the period of coverage as stated on the certificate.

The Township reserves the right to change the type of insurance required, limits required, and/or endorsements required as the Township sees fit.

Exhibit H – Bid Bond (Sample)

BID BOND – SAMPLE - (Bid Bond Required with Bid Submittal)

KNOW ALL MEN BY THESE PRESENTS: That we, the undersigned, _____ as Principal and _____, a _____duly organized under the laws of the State of _____ as Surety, are hereby held and firmly bound unto The Woodlands Township as Oblige in 2% of Principal's Bid Amount for the payment of which sum will and truly to be made, the Principal and Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally firmly by these presents.

WHEREAS, the above-named Principal submitted a bid for _____.

NOW, THEREFORE, (1) if the Oblige shall accept the Bid of the Principal and the Principal and Oblige shall execute The Township-Contractor Agreement which is part of these Contract Documents and the Principal shall provide all Bonds, as required by the Contract Documents, and the Principal shall, in all other respects, perform any obligations due the Oblige as a result of the submission of its Bid, or (2) the Oblige shall reject the Principal's Bid, or fail to execute The Township-Contractor Agreement within 7 days of receipt from the CONTRACTOR, then this obligation shall be null and void, but otherwise it shall remain in full force and effect.

ATTEST:

_____

PRINCIPAL

_____

By: _____

(Principal) Secretary

(SEAL)

_____

(Address)

_____

_____

(Witness as to Principal)

_____

(Address)

SAMPLE

Exhibit I – Performance/Payment Bond (Sample)

_____, as principal, hereinafter call the CONTRACTOR, and _____, as surety, with general offices in _____, a corporation organized under the laws of the State of _____, and authorized to transact business in the State of Texas, are hereby bound unto The Woodlands Township, as oblige, in the sum of 100% of the value of the Contract amount in United States currency, for the payment of which sum the CONTRACTOR and surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally. **WHEREAS**, the CONTRACTOR has entered into a written contract with the Township dated _____, 2025, Alden Bridge Sports Park Phase 1 in accordance with plans and specifications referenced in the Contract documents.

NOW THEREFORE, the conditions of this performance bond are such that, if the CONTRACTOR shall satisfactory perform the Contract for thirty-six (36) months, then this bond shall be null and void; otherwise, the surety shall pay the full amount of this performance bond.

In addition, if the CONTRACTOR or his subcontractor shall fail to duly pay for any labor, materials, team hire, sustenance, provisions, provender, or other supplies used or consumed by such CONTRACTOR or his subcontractor is performance of the Contract or shall fail to duly pay any person who supplies rental machinery, tools, or equipment in the prosecution of the work, then the surety shall pay the same in an amount not exceeding the sum specified in the bond together with interest at a rate of eight percent per annum.

THE UNDERSIGNED SURETY for value received hereby agrees that no extension of time, change in, addition to, or other modification of the terms of the Contract to be performed thereunder or of the specifications of the contract documents shall in any way affect its obligations on this bond and the surety does hereby waive notice of any such extension of time, change, addition, or modifications.

EXECUTED on this _____ day of _____, 2022

BY: _____
(Contractor)

ATTEST:

BY: _____ By: _____
(President) (Surety Company)

By: _____ By: _____
(Secretary) (Attorney-in-Fact)

SAMPLE

Exhibit J -Bid Submission Checklist

Only items marked with YES are applicable to this bid
If additional information is needed, please contact the project coordinator identified in this document
Vendor must initial each required task as it is completed.
Vendor must include this form as the cover page to the bid submittal.

Vendor Name:					
Individual submitting:					
Contract Number					
Required	Item	Bidder has included in Submitted Packet (Initial)	Required	Item	Bidder has included in Submitted Packet (Initial)
YES	General Specifications and Acknowledgement		**YES**	References	
YES	Bid Tabulation Form		**YES**	**Notarized** Statement of Bidders Qualifications	
YES	Bid Certification		**YES**	Bid Bond-2% of value of bid	
YES	Addendum Acknowledgment		**YES**	Sub-Contractor List	
NO	State Texas Licensed Pesticide Applicator		**YES**	**Signed** Conflict of Interest Questionnaire (CIQ)	
NO	State Texas Licensed Irrigator		**YES**	Equipment List	
YES	Staffing and Operations Plan		**YES**	Supporting Documents	
After awarded the following documents must be provided- Initial if you are prepared to provide these after awarded, as required					
Required		**Acknowledged**	**Required**		**Acknowledged**
YES	**Form 1295 –** "Certificate of Interested Parties"		**YES**	**Payment Bond** This applies to bids that exceed $25,000	
YES	**Performance Bond** Requirements. This applies to bids that exceed $25,000		**YES**	**Worker's Compensation** Check if you are prepared to provide this after award, inclusive of endorsement forms, as required, if applicable	
YES	**General Liability and Auto** Check if you are prepared to provide this after award, inclusive of endorsement forms, as required, if applicable				

It is the vendors responsibility to be thoroughly familiar with all bid requirements and specifications

Staff Initial _____	Staff Initial_____
Date & Time _____	Date & Time _____

Exhibit K – Contract

CONSTRUCTION CONTRACT
(C-2025-0483)
PARD Campus Improvements

This construction contract ("**Contract**") made and entered into effective as of the date fully executed by and between XXXXXXXXXXXXX ("**Contractor**"), a Texas corporation registered to do business in Texas as a Domestic For-Profit corporation, and THE WOODLANDS TOWNSHIP (the "**Owner**"), a political subdivision of the State of Texas duly created by Chapter 289, Acts of the 73rd Legislature, Regular Session, 1993, as amended (the "**Act**"), acting herein by and through its Board of Directors and pursuant to a resolution duly adopted by said Board of Directors and pursuant to the authority contained in the Act. The Owner and Contractor may hereinafter sometimes be referred to as a "**Party**" or collectively as the "**Parties**."

1. SCOPE OF WORK

Contractor agrees to furnish and perform the work as described in Exhibit "E" ("**Work**") in strict compliance with this Contract and the exhibits described in Paragraph 65 of this Contract, which are attached hereto and incorporated herein (collectively the "**Contract Documents**"), with all applicable Federal, State, County and local regulations, codes, laws and ordinances, and in conformity with the directions of the Owner. Contractor agrees to furnish all labor, materials and other requirements as set forth herein or as required to perform and complete the Work in a workmanlike and expeditious manner, with adequate, skilled and competent workers.

2. SITE OF THE WORK

The site of the Work is PARD Campus which is located at 8203 Millenium Forest, The Woodlands, TX 77381.

3. SCHEDULE OF WORK

Contractor shall start the Work not later than **XXXXXXX, 2026** following receipt of Owner's written notice to proceed. Substantial completion for PARD Campus Improvements shall be ***XXXXXXX, 2026***. Final Completion for PARD Campus Improvements is to be on or before ***XXXXXXX, 2026***. Any provisions in this Contract to the contrary notwithstanding, Owner shall not be liable to Contractor for any delays in Contactor's performance of the Work, including, but not limited to, any of Contractor's subcontractors, or for any other cause whatsoever, including, but not limited to, loss or damage incurred by Contractor in the event Contractor is unable to start or complete its Work, as herein contemplated.

4. EXTENSION OF TIME

Should the Contractor be delayed in the completion of the Work by any act or neglect of the Owner, or by changes ordered in the Work, or by strikes, lock outs, fires, and unusual delays by

common carriers, or unavoidable cause or causes beyond the Contractor's control, then a reasonable extension of time may be allowed for completing the Work, sufficient to compensate for the delay, the amount of the extension to be determined in the sole discretion of the Owner. Any and all claims for extension of time shall be made in writing to the Owner within three (3) days after the occurrence of the delay or after the cause of the delay has become apparent. Otherwise, they shall be deemed waived. In the case of a continuing cause of delay, only one claim is necessary. Delays caused by other Contractors or subcontractors, through no fault of the Owner shall not be a basis of claim by the Contractor herein.

5. SUBCONTRACTOR

The term "subcontractor," as employed herein, includes only those having a contract (which shall be in writing and otherwise in conformance with the requirements of this Contract) with the Contractor to perform any of the Work at the site, and it includes one who furnishes materials worked to a special design according to the drawings or specifications of this Work, but does not include one who merely furnishes material not so worked.

Contractor and any subcontractors must pay the local prevailing wage rates, including any overtime and for legal holidays, as required by TEX. GOVT. CODE §2258 and as determined by The Woodlands Township at http://www.thewoodlandstownship-tx.gov\bids.aspx.

6. PAYMENTS

In consideration of the prompt, complete and faithful performance of every provision of this Contract in accordance with the Contract Documents, Owner will pay to Contractor a total of WRITTEN OUT Dollars and WRITTEN OUT Cents ($_____.__) for the Work. Partial payments shall be made to Contractor according to Paragraph 44. No partial payment made for Work under the Contract shall constitute acceptance by Owner of the performance or non-performance of this Contract by Contractor, in whole or in part, and the final payment shall not constitute an acceptance of defective Work or improper materials. Any Added Work (as defined in Paragraph 50) shall be paid for under the unit prices method set out below. All amounts due under this Contract shall be billed and paid for in accordance with Owner's normal processes and procedures. For all undisputed amounts, each such invoice shall be payable within thirty (30) days after the date the invoice is received by Owner.

7. INSURANCE

Contractor agrees to procure and maintain at all times, at Contractor's sole cost and expense, during the performance of the Work and for so long as this Contract remains in effect, policies of insurance with carriers reasonably acceptable to the Township in the minimum amounts outlined below:

a. Worker's compensation and employer's liability coverage complying with the applicable laws of the State of Texas, covering all employees, agents and representatives of Contractor and all Subcontractors engaged in any manner in performance of the Work. Employer's liability coverage shall have a minimum limit of $1,000,000 for liability arising out of any accident related to the Work.

b. Comprehensive general liability insurance, including Contractor's protective liability, in Contractor's name, with combined bodily injury and property damage of not less than $1,000,000 per occurrence, and will include, without limitation, the following coverages:
   (1) XCU Coverage,
   (2) Contractual Liability Coverage,
   (3) Completed Operations and/or Products Liability Coverage, commencing with issuance of Final Certificate for Payment, and extending for at least two (2) years from that date, and
   (4) (X), (C) and (U) exclusions shall be removed.

c. Comprehensive Automobile Liability Insurance, with combined single limit bodily injury and property damage of not less than $1,000,000 per occurrence. Such coverage shall include owned, hired and non-owned vehicles of Contractor or Contractor's employees, agents, representatives or Subcontractors.

d. Cyber Risk Insurance (including professional oversight liability) covering acts, errors, and omissions arising out of operations or services with minimum limits of $1,000,000 per occurrence, $2,000,000 annual aggregate.

e. All insurance policies required by this Paragraph 7 shall contain a clause waiving any right of subrogation against The Woodlands Township. Insurance policies under (b), and (c), shall include The Woodlands Township as an additional insured.

f. With reference to the foregoing insurance requirement, Contractor shall specifically endorse applicable insurance policies as follows:
   (1). The Woodlands Township shall be named as an additional insured with respect to General Liability and Automobile Liability.
   (2). Additional insured for The Woodlands Township should be on a primary and non-contributory basis.
   (3). All liability policies shall contain no cross-liability exclusions or insured versus insured restrictions.
   (4). A waiver of subrogation in favor of The Woodlands Township shall be contained in the Workers Compensation and all liability policies.
   (5). All insurance policies shall be endorsed to require the insurer to immediately notify The Woodlands Township of any material change in the insurance coverage.
   (6). All insurance policies shall be endorsed to the effect that The Woodlands Township will receive at least thirty- (30) days' notice prior to cancellation or non-renewal of the insurance.

(7). All insurance policies, which name The Woodlands Township as an additional insured, must be endorsed to read as primary coverage regardless of the application of other insurance.
(8). Required limits may be satisfied by any combination of primary and umbrella liability insurances.
(9). Contractor may maintain reasonable and customary deductibles, subject to approval by The Woodlands Township.
(10). Insurance must be purchased from insurers that are financially acceptable to The Woodlands Township.
(11). Transmittal of proof of insurance should reference the Woodlands Township contract number (as listed in the footer below).

All insurance must be written on forms filed with and approved by the Texas Department of Insurance. Certificates of Insurance shall be prepared and executed by the insurance company or its authorized agent and shall contain provisions representing and warranting the following:

a. Sets forth all endorsements and insurance coverages according to requirements and instructions contained herein.
b. Shall specifically set forth the notice-of-cancellation or termination provisions to The Woodlands Township.
c. All contractors and Subcontractors must be meeting minimum OSHA safety requirements as applicable to their operations.

Contractor shall, before the Contract is signed, and at any time following execution thereof at the request of the Township, furnish the Township with a certificate and proof of such additional endorsements or other documentary evidence that the aforementioned insurance policies have been procured with such additional endorsements, that premiums have been paid and that such policies remain in place. Such certificate or other evidence shall bear an agreement that the Township will be given thirty (30) days prior written notice by the Insurance Company furnishing the certificate before the insurance is cancelled or changed in any manner or for any reason during the period of coverage as stated on the certificate.

The Township reserves the right to change the type of insurance required, limits required, and/or endorsements required as the Township sees fit.

8. LIENS

Contractor shall pay promptly when due and shall cause all subcontractors to promptly pay when due, for all labor, materials and other expenses incurred hereunder in connection with the Work, and hold Owner and all of the property comprising the project free from, all claims, liens (where applicable), judgments, court costs, attorney's fees and expenses from Contractor or any subcontractor, or any of their respective employees, agents, representatives, successors and

assigns. Any liens upon any or all of the property not paid or bonded by Contractor with ten (10) days after receipt of written notice thereof from Owner, may be paid or bonded by Owner, and Contractor shall pay to Owner, upon demand, or Owner may deduct from amounts owed Contractor, all costs thereby incurred, including, but not limited to, any of Owner's attorney's fees or administrative fees incurred in removing said liens.

9. DEFECTS, ERRORS AND GUARANTEES

CONTRACTOR HEREBY GUARANTEES THAT ALL WORK SHALL BE FREE FROM DEFECTS DUE TO FAULTY MATERIALS OR WORKMANSHIP FOR A PERIOD OF FIVE (5) YEARS FROM THE DATE OF FINAL ACCEPTANCE OF ALL OF THE WORK. CORRECTION OF DEFECTS, ERRORS AND GUARANTEE WORK SHALL BE PROMPTLY PERFORMED BY CONTRACTOR AT CONTRACTOR'S SOLE COST AND EXPENSE. CONTRACTOR SHALL INDEMNIFY AND HOLD OWNER HARMLESS FROM ANY AND ALL COSTS AND EXPENSES FOR ANY DEFECT OR ERROR CONTAINED IN THE WORK. SHOULD CONTRACTOR, UPON WRITTEN NOTICE FROM OWNER, REFUSE OR FAIL TO CORRECT, WITHIN THE TIME REQUIRED BY OWNER, ALL SUCH DEFECTS AND ERRORS TOGETHER WITH ANY AND ALL DAMAGE TO OTHER WORK CAUSED BY THE PERFORMANCE OF THIS CONTRACT, OWNER SHALL HAVE THE RIGHT TO REMEDY AND MAKE GOOD SUCH DEFECTS AND DAMAGE. OWNER SHALL PROVIDE NOTICE OF SUCH CHARGES, ERRORS OR DAMAGES TO CONTRACTOR IN WRITING, AND, AT OWNER'S SOLE DISCRETION, (I) CONTRACTOR SHALL PAY, WITHIN THE TIME PERIOD SPECIFIED BY OWNER, THE AMOUNT OF SUCH CHARGES SPECIFIED IN SUCH WRITTEN NOTICE, (II) OWNER SHALL DEDUCT THE AMOUNT OF SUCH CHARGES FROM ANY PAYMENT RETAINED AND WITHHELD BY OWNER, OR YET TO BE MADE BY OWNER HEREUNDER, OR (III) IF OWNER HAS ANY MONIES WHICH MAY BE PAYABLE TO CONTRACTOR PURSUANT TO THIS CONTRACT OR ANY OTHER CONTRACT, THEN OWNER SHALL HAVE THE RIGHT TO DEDUCT FROM THE MONIES OWED TO CONTRACTOR PURSUANT TO SUCH OTHER CONTRACT THE AMOUNT OF CHARGES SPECIFIED BY THE WRITTEN NOTICE TO CONTRACTOR. FINAL PAYMENT BY OWNER TO CONTRACTOR HEREUNDER SHALL IN NO EVENT AFFECT, ALTER OR DIMINISH CONTRACTOR'S WARRANTIES AND GUARANTEES PROVIDED TO OWNER HEREUNDER.

10. CLEAN UP

Contractor shall keep the premises neat and, where the Work is to be performed, free at all times from accumulation of waste materials, rubbish and debris, and at the completion of the Work shall clean the premises and improvements in a manner satisfactory to Owner and in compliance with Owner's applicable development standards, restrictions and covenants in regard to the premises. Should Contractor fail to comply with the provisions of this Paragraph within twenty-four (24) hours of receipt of written notice thereof, Owner may clean the area and/or remove said waste materials, rubbish or debris at Contractor's expense, and Contractor shall reimburse Owner, upon demand by Owner, for all costs or expenses thereby incurred.

11. MATERIALS AND WORKMANSHIP

The Contractor shall use only new materials in the permanent structures. The finished Work shall not include materials used for temporary purposes. Where materials or equipment are specified by a trade or brand name, it is not the intention of the Owner to discriminate against an equal product of another manufacturer, but rather to set a definite standard of quality or performance, and to establish an equal basis for the evaluation of bids. Items identified by a manufacturer's name and model designation or their equal shall be complete in every respect and shall be provided as specified under the Contract Documents. To qualify an item as equal to that specified under the Contract Documents, the Contractor shall submit evidence that the material is equal in quality, workmanship, appearance, finish and all other characteristics as specified by the named manufacturer. Where called for in the Contract Documents, the Contractor shall submit test data from an approved independent testing laboratory to show compliance with all characteristics specified. Contractor agrees and understands that Owner and its representatives have the right to observe and inspect the Work, any item of equipment, material, design, engineering, service, or workmanship to be provided hereunder and to observe all tests of the Work and the Project. Any such inspections are for the sole benefit of Owner and shall not relieve Contractor of the responsibility for providing quality control measures to assure that the Work complies with industry standards. No inspection by Owner or its representatives shall be construed as constituting or implying a waiver or acceptance. Upon reasonable written notice to Contractor by Owner, Contractor shall allow Owner and its representatives reasonable access to the Work. Contractor shall incorporate such rights into all purchase orders and subcontracts. To facilitate such observations and inspections, Contractor shall maintain a complete set of all drawings and construction schedule at the work site. Contractor shall comply with all inspection and testing requirements. Contractor shall be responsible for correcting any and all Work which has been found to be defective or which fails to conform to the Work contracts. Contractor shall bear all costs of correcting any rejected Work, including but not limited to, additional testing and inspections. Contractor shall begin correcting the defective or non-conforming Work within ten (10) days unless otherwise agreed upon with Owner in writing. The Owner may accept the manufacturer's certificates of compliance in lieu of the required laboratory tests at its sole discretion. The specifically designated item shall be used, unless a substitute has been approved in writing by the Owner. Owner shall have ample time to consider proposed substitutions.

12. WATER AND ELECTRICITY DURING CONSTRUCTION

The Owner may provide water and electricity in support of the Contractor at existing facilities within the site of the Work. If so provided, the Contractor shall make all connections, furnish all necessary extensions, and remove same upon completion of the Work.

13. PERMITS

Permits and licenses, inclusive of SWPPP, water taps and other service connections, necessary for the prosecution of the Work shall be secured and paid for by the Contractor.

14. WORKING DAY AND CALENDAR DAY

A “Working Day” is defined as any day not including Sundays or any legal holidays, in which weather or other conditions not under the control of the Contractor, will permit construction of the principal units of the Work for a continuous period of not less than seven (7) hours during the twelve (12) hours between 7:00 AM and 7:00 PM, or as identified in the bid document and by mutual written agreement. Work on Sundays may be permitted upon approval of the Owner. A “calendar day” is defined as any day indicated on the calendar, including Saturdays, Sundays and holidays. A Working Day that involves rain, sleet, and/or snow, shall be coordinated with the Owner’s Project Manager. In order to classify rain, sleet, and/or snow, the National Weather Service will be used to determine if certain weather or conditions exist that would not permit construction on a specific Working Day. The Project Manager will determine if a Working Day shall be rescheduled due to weather conditions.

15. LINES AND GRADES

Unless otherwise specified, the Contractor shall furnish and maintain all lines and grades, based upon existing site conditions or a bench mark established by the Owner. The lines and grades shall be checked periodically by the Contractor. The Contractor shall take immediate steps to correct errors or inconsistencies in all Work involved so that it shall be in conformity with the Contractor Documents. For purposes of this Contract, Contractor Documents are to include, but are not limited to, construction plans, standards, and specifications that relate to the Work. The Contractor shall be fully responsible for the accuracy of their work and the correction of it as required.

16. CONTRACTOR’S DUTY AND SUPERINTENDENT’S

The Contractor shall give full and adequate attention to the faithful execution and completion of the Contract Documents and the Work contemplated under the Contract Documents, in a good and workmanlike manner, and shall keep on the Work, during its progress, an experienced and duly qualified superintendent and any necessary assistants. The superintendent shall represent the Contractor in their absence, and all directions given to them shall be as binding as if given to the Contractor, and likewise, all directions and approvals given by them shall be as binding as if given by the Contractor. Other directions shall be so confirmed on written request in each case.

17. CONTRACTOR’S UNDERSTANDING

It is understood and agreed that the Contractor has, by careful examination, satisfied themself as to the nature and location of the Work, the confirmation of the ground, the character, quality and quantity of the materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the Work, the general and local conditions, and all other matters which can in any way affect the Work under the Contract Documents. No verbal agreement or conversation with any officer, agent or employee of the Owner, either

before or after the execution of the Contract Documents, shall affect or modify any of the terms or obligations herein contained.

18. CHARACTER OF WORKERS

The Contractor agrees to employ only orderly and competent workers, skillful in the performance of the type of Work required under their Contract, to do the Work, and further agrees that whenever the Owner shall inform Contractor in writing that any worker on the Work is, in Owner's opinion, incompetent, unfaithful or disorderly, such worker shall be discharged from the Work and shall not again be employed on the Work without the Owner's written consent.

19. DEFECTS AND THEIR REMEDIES

It is further agreed that if the Work or any part thereof, or any material brought on the site of the Work for use in the Work or selected for the same, shall be deemed by the Owner as unsuitable or not in conformity with the Contract Documents, the Contractor shall, upon receipt of written notice thereof from the Owner, forthwith remove such material and rebuild or otherwise remedy such Work so that it shall be in full accordance with the Contract Documents.

20. CHANGES AND ALTERATIONS

The Contractor further agrees that the Owner may make such changes and alterations as the Owner may see fit, in the line, grade, form dimensions, drawings or materials for the Work herein contemplated, or any part thereof, either before or after the beginning of the construction, without affecting the validity of the Contract Documents and accompanying bonds where required. If such changes or alterations diminish the quantity of the Work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the Work that may be dispensed with, except as hereinafter provided for unit price items.

No Work for which Contractor expects compensation in addition to the contract price shall be performed unless Contractor has prepared and secured Owner's written approval to a change order. In approving any change order request, Owner will base approval on the quantity actually done and the unit price, if any, established for such Work. If no unit price has been established nor any unit price agreed to, then such additional work shall be paid for as provided under "Added Work."

21. RIGHT OF ENTRY

The Owner reserves the right at any time, with or without notice, to enter the property or location on which the Work herein contracted for is to be constructed or installed by such agent or agents as he may elect, for the purpose of inspecting the Work, or for the purpose of constructing or installing such collateral Work as said Owner may desire.

22. COLLATERAL CONTRACTS

The Owner agrees to provide by separate contract or otherwise, all labor and materials reasonably essential to the completion of any work specifically excluded from the Contract Documents.

23. CUTTING, PATCHING AND FITTING

The Contractor shall use due diligence in performing all cutting, patching or fitting of its Work that may be required to make its several parts come together properly and fit to receive or to be received by work of others shown on, or reasonably implied by the drawings and specifications, for the completed facility. The Contractor shall not endanger any Work by cutting, digging, or otherwise, and shall not cut or alter the work of others unless specifically noted on the drawings and specifications.

24. OPERATIONS AND BUSINESS OF OWNER

It is of great importance that the Owner's operations meet with a minimum of interference resulting from the Work performed hereunder. The Contractor shall, therefore, conduct the Work in such a manner as to permit these continued operations and so as not to interfere with the activities of the Owner or Owner's employees, agents or representatives, other contractors of the Owner, or persons using Owner's facilities or the street rights-of-way. The Contractor and all subcontractors and suppliers shall use the route of entry designated by the Owner and restrict all work vehicles and personnel to this route and to the site of Work. The blocking or hindering of traffic (pedestrian, vehicle) on the site or in the right of way shall not be permitted.

25. COORDINATION WITH OWNER

The Contractor shall keep in daily contact with Owner and shall have someone responsible for the conduct of the job on the site of Work at all times during the Work, which project manager shall be reasonably available to Owner, in connection with the Work.

26. SAFETY, SECURITY AND INCONVENIENCE TO THE PUBLIC

The safety of the public, the convenience of traffic, and uninterrupted ingress and egress to private property shall be regarded as of prime importance. All operations shall be planned and executed in a manner that will cause minimum interference with traffic (vehicular, pedestrian, etc.). The approval of the proposed plan of operation, sequence of Work, and methods of providing for the safe passage of traffic shall be approved by Owner or appropriate county officials before it is placed into operation. If at any time during construction, the approved plan does not accomplish the intended purpose, due to weather or other conditions affecting the safe handling of traffic, the necessary changes therein to correct the unsatisfactory conditions shall immediately be made. Delays due to weather as mentioned in Section 14 above will be assessed

by the Project Manager and a determination will be made as to whether an extension of Working Days in the Contract is warranted. If an extension is required due to weather conditions, Owner and Contractor shall come to a written agreement on the additional days needed.

26.1 All work such as backfilling of excavations, repairs to roads and drives, and clean-up or other such operations shall follow as closely as practical to the laying or installing operations, in such manner that the public is not unnecessarily inconvenienced and no hazard to the public safety is created. If the Work forces or equipment are insufficient to such a degree that the public is inconvenienced, measures shall immediately be taken to remedy the problem. The Owner may require such changes in Work forces and equipment necessary to prevent or remedy unnecessary inconvenience to the public or hazard to the public safety. The notice of such required changes will be made in writing.

26.2 At night or on days when Work is not being performed by Contractor, all equipment not in use shall be stored and secured in such manner and at such locations as not to interfere with the safe passage of traffic, nor be a visual or an unattractive nuisance to residents of the community. Flagmen shall be provided and maintained at such points and for such periods of time as may be required to provide for the safety and convenience of public travel and Contractor's personnel, and as directed by the Owner.

26.3 Public safety shall be the direct responsibility of the Contractor. The Contractor shall provide barricades, lights, and warning and detour signs as required.

26.4 Contractor shall take any and all precautions that may be reasonably necessary to render all portions of the Work, the site, equipment, tools, materials, and any adjacent areas affected by the Work secure in every respect, to decrease the likelihood of accidents from any cause, and to avoid vandalism and other contingencies which are liable to delay the Work or give rise to any claims or liabilities. Such compliance with these requirements shall not relieve the Contractor of its responsibility to maintain security for the above noted items nor shall it be construed as limiting in any matter the Contractors obligation to undertake such reasonable action as may be required to establish and maintain secure conditions of the work site. All security measures shall be in place through substantial completion. Contractor acknowledges and agrees that they are responsible for all damage caused that can be shown to have been a result of Contractor's lack of sufficient precautions taken.

27. TRAFFIC

27.1 If the Work requires special traffic control signing and/or traffic control plan, including, but not limited to, flagmen or barricades, same shall be provided by Contractor. All signing shall conform to the Manual on Uniform Traffic Control and the applicable county's requirements.

27.2 When performing Work requiring vehicles or equipment to be parked on the shoulder of streets, an approved traffic hazard warning system shall be used, such as flagmen, traffic cones, flashing barricades, etc. No construction equipment or vehicle is to be parked within three (3) feet of any thoroughfare shoulder overnight. If it becomes necessary to leave equipment in a location which may create a traffic hazard, adequate warning devices, visible both day and night, shall be installed. It is the responsibility of Contractor to provide the approved signing as determined by the applicable county.

27.3 It is the responsibility of Contractor to keep the thoroughfare cleared of any traffic hazards that are not properly marked as such.

28. EXCAVATION

All excavations shall be marked with approved warning devices and barricaded or covered, when not attended, in a manner sufficient to keep the motoring public and pedestrian traffic from harm.

29. UNDERGROUND OBSTACLES

The Contractor shall make every effort to locate all underground pipelines, conduits, cables and structures, and shall contact owners of the underground installations by prospecting in advance of excavation. The repair of existing installations cut or damaged by the Contractor shall be made at the expense of the Contractor and shall be scheduled so as to cause the least possible inconvenience to the public and to the owners of the installations.

30. OCCUPATIONAL SAFETY AND HEALTH STANDARDS

The Work and the Contractor's operational activities shall at all times comply with all applicable provisions of the Department of Labor, safety and health regulations for construction, and applicable occupational safety and health standards.

31. EXAMINATION OF SITE

The Contractor shall make an examination of the site of the Work to become familiar with the conditions to be encountered. The actual site and the drawings and specifications shall be compared. No extra compensation will be allowed for any Work made necessary due to unusual conditions or obstacles encountered during the progress of the Work which could have been determined during a site visit.

32. CARE OF TREES AND SHRUBS

This Work is being performed in reserves and natural areas. No trees and shrubs shall be removed without the express written permission of the Owner or its representatives that are outside of

the clearing and grading plans. Needless damage to trees and shrubs which are to remain shall be prevented by means of protective wrapping or safety fencing that provides a buffer from equipment.

33. EQUIPMENT, MATERIALS AND CONSTRUCTION PLANT

The Contractor shall be responsible for the care, preservation, conservation and protection of all materials, supplies, machinery, equipment, tools, apparatus, accessories, facilities, all means of construction, and any and all parts of the Work, whether the Contractor has been paid, partially paid, or not paid for such Work, until the entire Work is completed and accepted.

34. DAMAGES.

In the event the Contractor is damaged in the course of the completion of the Work, and it is shown to be as a result of the sole and gross negligence or a material default of the Owner, the Owner agrees to reimburse the Contractor for the reasonable costs and expenses incurred as a result of such damages. In the event the Owner is damaged in the course of the Work by the negligence or default of the Contractor or its subcontractors, suppliers agents or employees, or should the Contractor unreasonably delay the progress of the Work being done by others on the job so as to cause loss for which the Owner becomes liable, then the Contractor shall reimburse the Owner for any and all such losses. NOTWITHSTANDING ANYTHING TO THE CONTRARY CONTAINED IN THIS CONTRACT, NOTHING CONTAINED IN THIS CONTRACT SHALL BE CONSTRUED AS A WAIVER, CONTRACTUAL OR OTHERWISE, OF THE PROTECTIONS AND LIMITATIONS ON LIABILITY PROVIDED TO OWNER AND ITS EMPLOYEES (INCLUDING ITS OFFICERS AND DIRECTORS).

35. PROTECTION AGAINST ACCIDENT TO EMPLOYEES AND THE PUBLIC

The Contractor shall at all times exercise reasonable precautions for the safety and well-being of employees and others on or near the Work and shall comply with all applicable provisions of Federal, State, and local safety laws and building and construction codes. All machinery and equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America except where incompatible with Federal, State or local laws or regulations or Owner's safety regulations, if any. The Contractor shall provide such machinery, guards, safety walkways, ladders, bridges, gangplanks, barricades, lights and other safety devices as may be considered requisite to the prevention of accidents. The safety precautions actually taken and their adequacy shall be the sole responsibility of the Contractor, acting at their discretion as an independent Contractor.

THE CONTRACTOR AGREES TO RELEASE, INDEMNIFY, SAVE AND HOLD HARMLESS THE OWNER FROM ANY AND ALL CLAIMS, DEMANDS, OR CAUSES OF ACTION, INCLUDING, BUT NOT LIMITED TO PROPERTY DAMAGE, PERSONAL INJURIES OR DEATH, AND ALL COURT COSTS AND

ATTORNEY'S FEES, ARISING OR GROWING OUT OF SUCH CLAIM, DEMAND OR CAUSE OF ACTION OR THE PERFORMANCE OF THE CONTRACT DOCUMENTS.

In any and all claims against the Owner or any of Owner's agents or employees or representatives by Contractor or any subcontractor, or any employee, agent or representative of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Workmen's Compensation Acts, Disability Benefit Acts or other Employee Benefit Acts.

36. LOSSES FROM NATURAL CAUSES

All loss or damage to the Contractor, arising out of the nature of the Work to be done, or from the action of the elements, or from any unforeseen circumstances in the prosecution of the same, or from unusual obstructions or difficulties which may be encountered in the prosecution of the Work, shall be sustained and borne by the Contractor at their sole cost and expense.

37. PROTECTION OF ADJOINING PROPERTY

THE SAID CONTRACTOR SHALL TAKE PROPER MEANS TO PROTECT THE ADJACENT OR ADJOINING PROPERTY OR PROPERTIES IN ANY WAY ENCOUNTERED, WHICH MIGHT BE INJURED OR SERIOUSLY AFFECTED BY ANY PROCESS OF CONSTRUCTION TO BE UNDERTAKEN UNDER THE CONTRACT DOCUMENTS, FROM ANY DAMAGE OR INJURY BY REASON OF SAID PROCESS OF CONSTRUCTION, AND CONTRACTOR SHALL BE LIABLE FOR ANY AND ALL CLAIMS FOR SUCH DAMAGE ON ACCOUNT OF THEIR FAILURE TO FULLY PROTECT ALL ADJOINING PROPERTY. THE CONTRACTOR AGREES TO INDEMNIFY, SAVE AND HOLD HARMLESS THE OWNER AGAINST ANY CLAIM OR CLAIMS FOR DAMAGES DUE TO ANY INJURY TO ANY ADJACENT OR ADJOINING PROPERTY, ARISING OR GROWING OUT OF THE PERFORMANCE OF THE CONTRACT.

38. BONDING REQUIREMENTS AND PROTECTION AGAINST CLAIMS OF SUBCONTRACTORS, VENDORS, ETC.

38.1 The Contractor must furnish the Owner both Performance and Payment Bond prior to commencing Work, each in the amount of 100 percent (100%) of the Contract Price, the Performance Bond as security for the faithful performance and the Payment Bond to ensure payment of all bills and obligations arising from the performance of the Contract, including the payment of the subcontractors, material suppliers and laborers. Contractors' Performance and Payment Bonds, both in the amount of the Contract Price, shall be delivered to the Owner with the executed Contract.

The conditions of this Performance bond are such that, if the Contractor shall satisfactorily perform the Contract, then this bond shall be null and void; otherwise, the surety shall pay the full amount of said performance bond. In addition, if the Contractor or their subcontractor shall fail to duly pay for any labor, materials, team hire, sustenance, provisions, provender, or other supplies used or consumed by such Contractor or their subcontractor is performance of the Contract or shall fail to duly pay any person who supplies rental machinery, tools, or equipment in the prosecution of the work, then the surety shall pay the same in an amount not exceeding the sum specified in the bond together with interest at a rate of eight percent per annum.

38.2 **THE CONTRACTOR AGREES TO INDEMNIFY AND SAVE THE OWNER HARMLESS FROM ANY AND ALL CLAIMS GROWING OR ARISING OUT OF THE LAWFUL DEMANDS OF SUBCONTRACTORS, LABORERS, WORKMEN, MECHANICS, MATERIAL MEN AND FURNISHERS OF MACHINERY AND PARTS THEREOF, EQUIPMENT, POWER TOOLS, AND ALL SUPPLIES, INCLUDING COMMISSARY, INCURRED IN THE FURTHERANCE OF THE PERFORMANCE OF THE CONTRACT DOCUMENTS.** The Contractor shall furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged or waived, as provided in the signed Contract. If the Contractor fails to do so, then the Owner may, at Owner's sole option, either pay directly any unpaid bills or claims, of which the Owner has written notice, and charge Contractor therefore, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to liquidate any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payment to the Contractor shall be resumed in full, in accordance with the terms of the Contract Documents, but in no event shall the exercise by Owner of the option provided in this Paragraph be construed to impose any obligation upon the Owner or to constitute a release or waiver of the duties of the Contractor of their surety.

39. LAWS AND ORDINANCES

39.1 **THE CONTRACTOR SHALL AT ALL TIMES OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS, ORDINANCES AND REGULATIONS WHICH IN ANY MANNER AFFECT THE CONTRACT OR THE WORK, AND SHALL INDEMNIFY AND SAVE HARMLESS THE OWNER AGAINST ANY CLAIM ARISING FROM THE VIOLATION OF ANY SUCH LAWS, ORDINANCES, AND REGULATIONS WHETHER BY THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR SUBCONTRACTORS. IF THE CONTRACTOR OBSERVES THAT ANY DIRECTIONS OR SPECIFICATIONS ARE AT VARIANCE THEREWITH, CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER IN WRITING OF ANY NECESSARY CHANGES IN THE WORK. IF THE CONTRACTOR PERFORMS ANY WORK KNOWING IT TO BE CONTRARY TO SUCH CODES, ORDINANCES, RULES AND REGULATIONS, CONTRACTOR SHALL BEAR ALL SUCH COSTS ARISING THERE FROM.**

Contractor affirms that it has submitted the necessary forms to comply with Texas Gov't Code Section 2252.908, Certificate of Interested Parties (Form 1295) (https://www.ethics.state.tx.us/filinginfo/1295/)
and Chapter 176, Texas Local Gov't Code, Conflict of Interest Questionnaire (Form CIQ) (https://www.ethics.state.tx.us/forms/conflict/) and has returned a fully executed copy of both as Exhibits "A" and "B" to this executed Contract and provide proof of filing of the latter to the Owner after filing with the Texas Ethics Commission as required by the referenced provision of the Texas Government Code.

39.2 **Statutorily Required Provisions:**

1. Verification Regarding Energy Company Boycotts. To the extent this Contract constitutes a contract for goods or services for which a written verification is required under Section 2274.002, Texas Government Code, (as added by Senate Bill 13, 87th Texas Legislature, Regular Session) as amended, Contractor hereby verifies that it and its parent company, wholly- or majority- owned subsidiaries, and other affiliates, if any, do not boycott energy companies and will not boycott energy companies during the term of this Contract. The foregoing verification is made solely to comply with Section 2274.002, Texas Government Code, as amended, to the extent Section 2274.002, Texas Government Code does not contravene applicable Texas or federal law. As used in the foregoing verification, "boycott energy companies" shall have the meaning assigned to the term "boycott energy company" in Section 809.001, Texas Government Code. Contractor understands "affiliate" to mean an entity that controls, is controlled by, or is under common control with the Underwriter and exists to make a profit.

2. Verification Regarding Discrimination Against Firearm Entity or Trade Association. To the extent this Contract constitutes a contract for the purchase of goods or services having a value of at least $100,000 that is paid wholly or partly from public funds for which a written verification is required under Section 2274.002, Texas Government Code, (as added by Senate Bill 19, 87th Texas Legislature, Regular Session), as amended, Contractor hereby verifies that it and its parent company, wholly- or majority- owned subsidiaries, and other affiliates, if any,

1. do not have a practice, policy, guidance or directive that discriminates against a firearm entity or firearm trade association; and
2. will not discriminate during the term of this Contract against a firearm entity or firearm trade association.

The foregoing verification is made solely to comply with Section 2274.002, Texas Government Code, as amended, to the extent Section 2274.002, Texas Government Code does not contravene applicable Texas or federal law. As used in the foregoing verification, "discriminate against a firearm entity or firearm trade association" shall have the meaning assigned to such term in Section 2274.001(3), Texas Government Code (as added by SB

19). Contractor understands "affiliate" to mean an entity that controls, is controlled by, or is under common control with the Underwriter and exists to make a profit.

3. <u>Certifications Regarding Terrorist Organizations and Boycott of Israel.</u> To the extent this Contract constitutes a contract for goods or services for which a written verification is required under Sections 2252.151-.154 Texas Government Code, Contractor hereby certifies that it and its parent company, wholly- or majority- owned subsidiaries, and other affiliates, if any, is not a company identified on the Texas Comptroller's list of companies known to have contracts with, or provide supplies or services to, a foreign organization designated as a Foreign Terrorist Organization by the U.S. Secretary of State under federal law.

To the extent this Contract constitutes a contract for goods or services for which a written verification is required under Sections 2271.001-002 Texas Government Code, Contractor and its parent company, wholly- or majority- owned subsidiaries, and other affiliates, if any, further certifies and verifies that it does not boycott Israel and agrees that it will not boycott Israel during the term of this Contract. For purposes of this Contract, the term "boycott" shall mean and include terminating business activities or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory. (Tex. Gov't Code §§ 2270.001-.002, 808.001-.006, .051-.057, .101-.102).

The foregoing verification is made solely to comply with Chapter 2271, Texas Government Code, as amended, to the extent the appliable provision in Chapter 2271.001, Texas Government Code does not contravene applicable Texas or federal law. As used in the foregoing verification, "boycott Israel" shall have the meaning assigned to such term in Section 808.001(1), Texas Government Code. Contractor understands "affiliate" to mean an entity that controls, is controlled by, or is under common control with the Underwriter and exists to make a profit.

40. ASSIGNMENT AND SUBLETTING

The Contractor further agrees that it will retain adequate control and will give sufficient attention to the fulfillment of the Contract Documents, and Contractor further agrees that it will not assign by power of attorney, or otherwise, or sublet said Contract without the prior written consent of the Owner, which consent may be withheld or conditioned by Owner in its absolute discretion. Any purported assignment by Contractor without such consent shall be void. Contractor further agrees that the subletting of any portion or feature of the Work, or materials required in the performance of the Contract Documents, shall not relieve Contractor from its full obligations to the Owner, as provided by the Contract Documents. With regard to the certain Work to be performed under the Contract Documents which the Owner reasonably believes should be performed by specialized experts in the applicable specialized field, Owner shall have the right to identify specific subcontractors for such Work to Contractor, which Contractor shall then contract

for performance of such specialized Work with such subcontractors, absent specific written objection to the contrary.

41. LIQUATED DAMAGES

Time is of the essence of the Contract. Delays inconvenience the traveling public, obstruct traffic, interfere with and delay commerce, and increase risk to roadway users. Because the Owner finds it impractical to calculate the actual cost of delays, it has adopted the following formula to calculate liquidated damages for failure to complete the Work of the Contract on time. Accordingly, the Contractor agrees:

a) To pay $1250 liquidated damages for each Working Day beyond the number of Working Days established for completion of the Work; or
b) To calculate based on the following formula, whichever is greater, and
c) To authorize the Owner to deduct these liquidated damages from any money due or coming due to the Contractor;

Liquidated Damages Formula

LD = 0.15C/T

Where:

LD = liquidated damages per Working Day (rounded to the nearest dollar)
C = original Contract amount
T = original time for completion

Liquidated damages will not be assessed for any days for which an extension of time is granted. No deduction or payment of liquidated damages will, in any degree, release the Contractor from further obligations and liabilities to complete the entire Contract. The Contractor agrees to authorize the Owner to deduct these liquidated damages from any money due or coming due to the Contractor.

42. QUANTITIES AND MEASUREMENT (FOR USE WHERE COMPENSATION IS BASED UPON UNIT PRICE METHOD)

No extra or customary measurements of any kind will be allowed, but the actual measured and/or computed length, solid contents, number and weight only shall be considered unless otherwise specifically provided.

43. ESTIMATED QUANTITIES (FOR USE WHERE COMPENSATION IS BASED UPON UNIT PRICE METHOD)

The Contract Documents are intended to show clearly all Work to be done and materials to be furnished hereunder. Where the estimated quantities are shown of the various classes of Work to be done and material to be furnished under the Contract Documents, they are approximate and are to be used only as a basis for estimating the probable cost of the Work and for comparing the proposals offered for the Work. It is understood and agreed that the actual amount of Work done and material to be furnished under the Contract Documents may differ from these estimates, and that where the basis for payment under the Contract Documents is the unit price method, payment shall be for the actual amount of such Work done and the material furnished.

Contractor agrees that it will make no claim for damages, anticipated profits or otherwise on account of any differences which may be found between the quantities of Work actually done or the materials actually furnished under the Contract Documents and the estimated quantities contemplated and contained in the Contract Documents; provided, however, that in case the actual quantity of any major item should become as much as twenty percent (20%) more than, or twenty percent (20%) less than the estimated or contemplated quantities for such item, then either Party, upon demand, shall be entitled to a revised consideration upon that portion of the Work above or below twenty percent of the estimated quantity. A "major item" shall be construed to be any individual bid item included in the Contract Documents that has a total cost equal to or greater than five percent (5%) of the total contract cost, computed on the basis of the Contract Documents' quantities and the Contract unit prices. Any revised consideration is to be determined by agreement between the Parties, otherwise by the terms of the Contract Documents, as provided under "Added Work."

44. PARTIAL PAYMENTS

Before the first application for payment on lump sum contracts, the Contractor shall submit to the Owner a schedule of values of the various portions of the Work, including quantities as required, aggregating the total contract sum. Each item shall include its proper share of overhead and profit. This schedule of values, when approved by the Owner, shall be used as a basis for review of applications for payment.

The Contractor shall submit to the Owner an application for partial payment, and if required, receipts or other vouchers, showing their payments for materials and labor, including payments to subcontractors. The Owner shall review the statement for its correctness concerning the quantity of the Work done up to and including the last day of the preceding month. Said statements shall include the value of all sound materials in place or fabricated into the Work, and seventy-five percent (75%) of the value of all sound materials delivered on site, but not in place.

The Owner shall then pay the Contractor during the subsequent Accounts Payable cycle, as prescribed by the Woodlands Township-Finance Department, the total amount of the approved statement, less ten percent (10%) of the amount thereof, which ten percent (10%) shall be retained until final payment and further less all previous payments and further sums that may be retained by the Owner under the terms of the Contract Documents.

45. USE OF COMPLETED PORTIONS

The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time established for the completion or partial completion of such Work may not have expired, but such taking possession and use shall not be deemed an acceptance of any Work not completed in accordance with the Contract Documents. If such prior use increases the cost or delays the Work, the Contractor shall be entitled to such extra compensation, or extension of time, or both as the Owner may determine.

46. FINAL COMPLETION AND ACCEPTANCE

Within ten (10) days after the Contractor has given the Owner written notice that the Work has been completed, the Owner shall inspect the Work and, if the Work has been found to be completed in accordance with the Contract Documents, the Owner shall issue a certificate of acceptance of the Work to the Contractor. If the Owner finds any defects in the Work, upon such inspection, Owner shall provide a written list of such defects and requirements for remedying such defects. Only upon the Work being found to have been completed in accordance with the Contract Documents and such defects having been remedied, shall a certificate of acceptance of the Work be issued to the Contractor.

47. FINAL PAYMENT

Owner shall pay the Contractor on or before the forty-fifth (45^{th}) day after the date of the certificate of acceptance, the balance due the Contractor under the terms of the Contract Documents, provided Contractor has fully performed its contractual obligations under the terms of the Contract Documents. Neither the certificate of acceptance nor the final payment, nor any provisions in the Contract Documents, shall relieve the Contractor of the obligation for fulfillment of any warranty which may be required in the Contract Documents.

Neither the final payment nor the remaining retained percentage shall become due until the Contractor submits appropriate affidavits of payment of all bills, consent of the Contractor's surety, or other data as may be requested by the Owner and/or required pursuant to the Contract Documents.

48. PAYMENT WITHHELD

The Owner may, on account of subsequently discovered evidence, withhold or nullify the whole or part of any payment to such extent as may be necessary to protect itself from loss resulting from:

a. Defective Work not remedied;
b. Claims filed or reasonable evidence indicating probable filing of claims;

c. Failure of the Contractor to make payments properly to subcontractors or for material of labor;
d. Damage to another contractor;
e. Reasonable doubt that the Work can be completed for the unpaid balance of the Contract sum;
f. Reasonable indication that the Work will not be completed within the contract time; or,
g. Breach of any of the terms of the Contract Documents by the Contractor.

49. DELAYED PAYMENTS

Should the Owner fail to make payment to the Contractor of the sum named in any partial or final statement, when payment is due, then the Owner shall pay the Contractor, in addition to the sum shown as due by such statement, interest thereon at the rate of six percent (6%) per annum from date due until fully paid, which shall fully liquidate any injury to the Contractor growing out of such delay in payment.

50. ADDED WORK

The term "Added Work" as used in the Contract Documents shall be understood to mean and include all work that may be required by the Owner to be done by the Contractor to accomplish any change, alteration or addition to the Work. It is agreed that the Contractor shall perform all Added Work when presented with a written work order signed by the Owner. It is also agreed that, unless otherwise specified in the Contract Documents, the compensation be paid to the Contractor for performing said Added Work shall be determined by agreed unit prices (described in Paragraph 42) or lump sum (described in Paragraph 43).

51. TIME OF FILING CLAIMS

It is further agreed by both Parties hereto that all questions of dispute or adjustment presented by the Contractor shall be in writing and filed with the Owner within ten (10) days after the receipt of the interpretation or decision to which the Contractor desires to take exception.

52. ABANDONMENT BY CONTRACTOR

In case the Contractor should abandon and fail or refuse to resume Work within three (3) days after written notification from the Owner, or if the Contractor fails to comply with the orders of the Owner, when such orders are consistent with the Contract Documents, then, and in that case, where performance bond exists, the surety on the bond shall be notified in writing and directed to complete the Work, and a copy of said notice shall be delivered to the Contractor.

After receiving said notice of abandonment, the Contractor shall not remove from the Work any machinery, equipment, tools, materials or supplies then on the job, but the same, together with any materials and equipment under contract for the Work, may be held for use on the Work by the Owner or the surety on the construction bond, or another contractor in completion of the Work, and the Contractor shall not receive any rental or credit therefore (except when used in connection with Added Work, where credit shall be allowed as hereinabove provided for), it being understood that the use of such equipment and materials will ultimately reduce the cost to complete the Work and be reflected in the final settlement.

Where there is no performance bond provided or in the case surety should fail to commence compliance with the notice for completion hereinabove provided for, within three (3) days after service of such notice then the Owner may provide for completion of the Work in either of the following manners:

52.1 The Owner may thereupon employ such force of men and use such machinery, equipment, tools, materials and supplies as said Owner may deem necessary to complete the Work and charge the expense of such labor, machinery, equipment, tools, materials and supplies to said Contractor, and the expense so charged shall be deducted and paid by the Owner out of such moneys as may be due, or that may thereafter at any time become due to the Contractor under and by virtue of the Contract Documents. In case such expense is greater than the sum which would have been payable under the Contract Documents, the Contractor and/or their surety shall pay the amount of such excess to the Owner; or

52.2 Owner may initiate the process to let the Contract for the completion of the Work under substantially the same terms and conditions, which are provided in the Contract, to any alternative contractor, at Owner's sole discretion. In case of any increase in cost to the Owner under the new contract, as compared to what would have been the cost under the Contract Documents, such increase shall be charged to the Contractor, and Contractor and the surety shall be and remain bound therefore.

When the Work shall have been completed, the Contractor and their surety shall be so notified and certificates of acceptance, as provided under "Final Completion and Acceptance," shall be issued. A complete itemized statement of the Contract accounts shall then be prepared and delivered to the Contractor and their surety, whereupon the Contractor and/or their surety or the Owner as the case may be, shall pay the balance due as reflected by said statement, within fifteen (15) days after the date of such certificate.

In the event the statement of accounts shows that the cost to complete the Work is less than that which would have been the cost to the Owner had the Work been completed by the Contractor under the terms of the Contract Documents, or when the Contractor and/or their surety shall pay the balance shown to be due by them to the Owner, then all

machinery, equipment, tools, materials or supplies left on the site of the Work shall be turned over to the Contractor and/or their surety. Should the cost to complete the Work exceed the Contract price, and the Contractor and/or their surety fail to pay the amount due to the Owner within the time designated hereinabove, and there remains any machinery, equipment, tools, materials, or supplies on the site of the Work, notice thereof, together with an itemized list of such equipment and materials, shall be mailed to the Contractor and their surety at the respective addresses designated in the Contract Documents; provided however, that actual written notice given in any manner will satisfy this condition. After mailing, or other giving of such notice, such property shall be held at the risk of the Contractor and their surety subject only to the duty of the Owner to exercise ordinary care to protect such property. After fifteen (15) days from the date said notice is received by Contractor, the Owner may sell such machinery, equipment, tools, materials or supplies and apply the net sum derived from such sale to the balance due Owner under the Contract Documents. Such sales may be made at either public or private sale, with or without notice, as the Owner may elect. The Owner shall release any machinery, equipment, tools, materials or supplies, which remain on the Work, and belong to persons other than the Contractor or their surety, to their proper owners. The books on all operations provided herein will be made available to Contractor and their surety for review at Owner's offices during normal business hours.

53. ABANDONMENT BY OWNER

Except in the event of Contractor's nonperformance or breach of the Contract Documents, if Owner shall fail to comply with the terms of this Contract, and should fail or refuse to comply with said terms within ten (10) days after written notification by the Contractor, then the Contractor may suspend or wholly abandon the Work, and may remove therefrom all machinery, tools and equipment and all materials on the site of the Work that have not been included in payments to the Contractor and have not been brought into the Work. In such case, Owner shall make an estimate of the total amount earned by the Contractor, which estimate shall include the value of all Work actually completed by said Contractor (at the prices stated in the attached proposal where unit prices are used), the value of all partially completed Work at a fair and equitable price, and the amount of all Added Work performed at the prices agreed upon or provided for by the terms of this Contract, and a reasonable sum to cover the cost of any provisions made by the Contractor to carry the whole Work to completion and which cannot be utilized. The Owner shall then make a final statement of the balance due to Contractor by deducting from the above estimate all previous payments by the Owner and all other sums that may be retained by the Owner under the terms of the Contract Documents, and shall certify same, whereupon Owner shall pay to the Contractor (on or before the 45th day after the date of the notification by the Contractor) the balance shown by said final statement as due the Contractor, if any, under the terms of the Contract Documents.

54. STATE SALES TAX

The Owner is a holder of an Exemption Certificate, and thus the Contractor shall not charge Owner for sales and use taxes attributable to the tangible personal property to be incorporated into the Work.

55. CONTRACT PRICE

It is the intent of this Contract that the contract price specified in Paragraph 6 shall cover all Work required by the Contract Documents, including furnishing of all materials, equipment and tools, and performing all necessary labor to fully complete the project. No item of Work that is required by the Contract Documents for the proper and successful completion of the Contract will be paid for outside of or in addition to the contract price.

56. WRITTEN NOTICE

Any notice required or permitted to be given under the Contract Documents shall be in writing and shall be deemed to have been given when actually delivered if given by hand delivery or transmitted by overnight courier service, or if mailed when deposited in a United States Post Office, registered or certified mail, postage prepaid, return receipt required; provided that the same is delivered to or addressed as follows:

If to Owner:

The Woodlands Township
2801 Technology Forest Blvd
The Woodlands, Texas 77381
Attention: _____
@thewoodlandstownship-tx.gov

If to Contractor:

Attention: _____
_____
_____
_____
_____@_____

or such other address as either Party may from time to time specify in writing to the other.

57. INDEPENDENT CONTRACTOR STATUS OF CONTRACTOR

Contractor shall be an independent contractor with respect to the performance of all Work, and neither Contractor nor anyone employed by Contractor shall be deemed for any purpose to be the employee, agent, servant, borrowed servant, or representative of Owner in the performance of any Work (despite Contractor's obligation to comply with various rules and regulations of the Owner). The Work contemplated herein shall meet the approval of Owner and be subject to the general right of inspection of Owner to secure the satisfactory completion thereof. The actual performance and supervision of all Work shall be by Contractor, but Owner or its representatives shall have full and complete access to the Work site to determine whether the Work is being performed by Contractor in accordance with all provisions of this Contract and for reasons otherwise stated in this Contract. Owner is not responsible for withholding, and shall not withhold, FICA or taxes of any kind from any payments it owes Contractor. Neither Contractor nor its employees shall be entitled to receive any benefits which employees of Owner are entitled to receive, and shall not be entitled to workers' compensation, unemployment compensation, medical insurance, life insurance, paid vacations, paid holidays, pension, profit sharing, or Social Security on account of their Work for Owner. Contractor is not the agent of Owner and is not authorized to make any representation, contract, or commitment on behalf of Owner unless specifically requested to do so, by Owner, in writing. No provisions herein shall be construed as creating a partnership, joint venture or other association whereby the Owner and Contractor would be jointly liable or liable as partners or co-ventures.

58. SUCCESSOR AND ASSIGNS

All of the terms of this Contract will apply to, be binding upon and inure to the benefit of the Parties hereto, their successors, permitted assigns, heirs and legal representatives, and all other persons claiming by, through or under them.

59. RIGHTS AND REMEDIES

The rights and remedies provided by this Contract are given in addition to any other rights and remedies either Party may have by law, statute, ordinance or otherwise. All such rights and remedies are intended to be cumulative, and the use of any one right or remedy by either Party shall not preclude or waive its right to any or all other rights or remedies.

60. NO WAIVER OF RIGHTS

If either Party fails to enforce any of the provisions of this Contract or any rights hereunder or fails to exercise any election provided in the Contract, it will not be considered to be a waiver of those provisions, rights or elections or in any way affect the validity of the Contract. The failure of either Party to exercise any of these provisions, rights or elections will not preclude or prejudice such Party from later enforcing or exercising the same or any other provisions, rights or elections, which it may have under this Contract.

61. SEVERABILITY

If any term, clause, or provision hereof is held invalid or unenforceable by a court of competent jurisdiction, such invalidity shall not affect the validity or operation of any other term, clause or provision, and such invalid term, clause or provision shall be deemed to be severed from this Contract.

62. ENTIRE AGREEMENT

The Contract Documents sets forth the entire agreement and understanding of the Parties relating to the subject matter hereof, and supersedes all prior agreements, arrangements and understandings, written or oral, between or among the Parties, except as specifically provided herein. Except as explicitly set forth herein, there are no promises, conditions, representations, understanding, interpretations or terms of any kind as conditions or inducement to the execution hereof or in effect among the Parties.

63. HEADINGS

The Paragraph headings included in this Contract are for convenience of reference only and shall not affect or be utilized in construing or interpreting this Contract.

64. COUNTERPARTS

(a) This Contract may be executed in several counterparts, each of which shall be deemed an original and all of which shall constitute one Contract, effective when counterparts have been signed by each - and delivered to - the other Parties; it being understood that all Parties need not sign the same counterparts.

(b) The exchange of copies of this Contract and of signature pages by facsimile transmission (whether directly from one facsimile device to another via either a dial-up connection or by the worldwide web), by electronic mail in “portable document format” (“.pdf”) form, or by any other electronic means intended to preserve the document’s original graphic and pictorial appearance, or by combination of such means, constitute effective execution and delivery of this Contract as to the Parties and may be used in lieu of the original Contract for all purposes. Signatures of the Parties transmitted by facsimile or by electronic means as described shall be deemed to be their original signatures for all purposes.

65. EXHIBITS

In the event of a conflict between this Contract and the Contract Documents attached as exhibits, this Contract shall control. All of the following Contract Documents are attached hereto and incorporated for all purposes as part of this Contract:

Exhibit “A”: Completed Certificate of Interested Parties Form 1295
Exhibit “B”: Completed Conflict of Interest Questionnaire
Exhibit “C”: Bond Documents (All required by this Contract)
Exhibit “D”: Certificate/Proof of Insurance
Exhibit “E”: Owner’s Invitation for Bid/Request for Proposal for the Work
Exhibit “F”: Contractor’s Bid Submittal

[Remainder of page intentionally left blank]
[Signatures on following page]

[insert contractor name]	**The Woodlands Township**
By:	By:
[Insert Name] [Insert Title] Tax I.D. No:	Monique Sharp President / Chief Executive Officer
Date:	Date:

Exhibit "A"
Completed Certificate of Interested Parties Form 1295

Exhibit "B"
Completed Conflict of Interest Questionnaire

Exhibit "C"
Bond Documents

Exhibit "D"
Certificate/Proof of Insurance

Exhibit "E"
Owner's Invitation for Bid/Request for Proposals for the Work

Exhibit "F"
Contractor's Bid Submittal

Exhibit L – Geotechnical Report

The Woodlands – PARDES Expansion

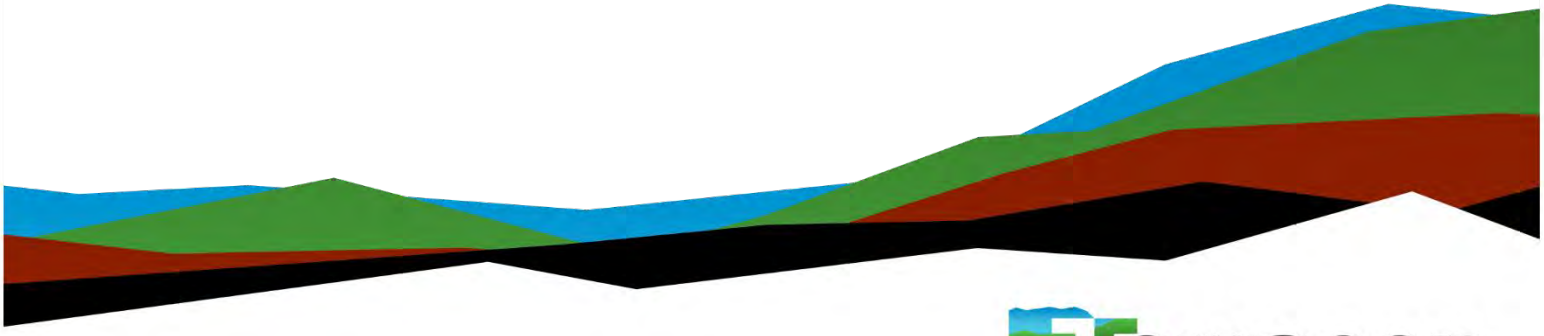
Geotechnical Engineering Report

Spring, Texas

September 17, 2024 | Terracon Project No. 97245057

Prepared for:

Halff Associates, Inc.
14800 St. Mary's Lane, Suite 160
Houston, Texas 77079



Terracon
Explore with us

Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials

11133 I-45 South, Building T
Conroe, Texas 77302
P (936) 539-1384
Terracon.com

September 17, 2024

Halff Associates, Inc.
14800 St. Mary's Lane, Suite 160
Houston, Texas 77079

Attn: Ms. Kristin LeBlanc, P.E.
P: (713) 588-2457
E: kleblanc@halff.com

Re: Geotechnical Engineering Report
The Woodlands – PARDES Expansion
8203 Millennium Forest Drive
Spring, Texas
Terracon Project No. 97245057

Dear Ms. LeBlanc:

We have completed the scope of Geotechnical Engineering services for the above referenced project in general accordance with Terracon Document No. P97245057 dated May 13, 2024. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon
(Texas Firm Registration No.: F-3272)

Marion Hall
Field Engineer

Bobbie Sue Hood, P.E.
Principal/Senior Engineer



Rebecca C. Rice, P.E.
Geotechnical Services Manager

Table of Contents

Introduction **1**
Project Description **1**
Site Conditions **2**
Geotechnical Characterization **3**
Geology 3
Subsurface Profile 3
Groundwater Conditions 4
Geotechnical Overview **5**
Earthwork **6**
Site Preparation 6
Existing Fill 7
Fill Material Types 7
Utility Trench Backfill 8
Grading and Drainage 9
Wet Weather/Soft Subgrade Considerations 9
Shallow Foundations **10**
Design Recommendations – Shallow Spread/Strip Footings 10
Construction Considerations – Shallow Spread/Strip Footings 11
Foundation Construction Monitoring 12
Floor Slab **12**
Temporary Building Floor Slab 13
Lateral Earth Pressures **13**
Pavements **14**
General Comments **18**

Figures

GeoModel

Attachments

Exploration and Testing Procedures
Site Location and Exploration Plan
Exploration and Laboratory Results
Supporting Information

Note: This report was originally delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon logo will bring you

back to this page. For more interactive features, please view your project online at **client.terracon.com**.

Refer to each individual Attachment for a listing of contents.

Introduction

Terracon Consultants, Inc. (Terracon) is pleased to submit our geotechnical engineering report for the proposed improvements within The Woodlands Township Parks, Recreation, and Environmental Services facility in Spring, Texas. This project was authorized by Ms. Kristin LeBlanc, P.E., with Halff Associates through signature of the " Standard Subcontract for Subsurface/Underground Services" between Halff Associates and Terracon on August 7, 2024.

The purpose of this report is to describe the subsurface conditions observed at the three test borings drilled for this project, analyze and evaluate the test data, and provide recommendations with respect to:

- Subsurface soil conditions
- Groundwater conditions
- Seismic site classification per IBC
- Site preparation and earthwork
- Foundation design and construction
- Floor slab design and construction
- Lateral earth pressures
- Seismic site classification
- Pavement design and construction

Maps showing the site and boring locations are shown on the **Site Location** and **Exploration Plan**, respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field exploration are included on the boring logs in the **Exploration Results** section.

Project Description

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	A written request for geotechnical services and site plan was provided by the client via email on May 6, 2024. Additional information regarding the proposed improvements was provided via email on May 14, 2024.

Item	Description
Project Description	The project includes a single-story addition to the Parks building located in the southeast portion of the site with an approximate footprint of 4,000 square feet. A temporary single-story building is planned to be located in the north section of the site with an approximate footprint of 4,000 square feet. Additionally, we understand the paved parking area immediately south of the proposed temporary building is planned to be expanded, and the existing swale enclosed; additional parking is also planned adjacent to the existing Parks building.
Finished Floor Elevation	We understand the finished floor elevations of the building addition are planned to match the finished floor elevation of the existing building. We understand grade will be raised two to six feet within the building addition.
Maximum Loads	In the absence of information provided by the design team, we will use the following loads in the estimating settlement based on our experience with similar projects. ■ Columns: 50 to 75 kips ■ Slabs: 125 pounds per square foot (psf)
Planned Foundation System	We anticipate the building addition will be supported on shallow spread/strip footings, and that the temporary building will be supported on CMU blocks.
Pavements	We assume both rigid (concrete) and flexible (asphalt) pavement sections are being considered.
Building Code	2018 IBC

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the grading limits, as modifications to our recommendations may be necessary.

Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration.

Item	Description
Parcel Information	The project is located within The Woodlands Township Parks, Recreation and Environmental Services at 8203 Millennium Forest Drive in Spring, Texas. See **Site Location**

Item	Description
Existing Improvements	Existing buildings and paved parking and drive areas.
Current Ground Cover	Heavily wooded within the footprint area of the building addition located in the southeast portion of the site. Lightly vegetated, with scattered trees, and concrete paved parking and drive areas around the site. The north portion of the site was occupied by vehicles and equipment at the time of our field program.
Existing Topography	Grade gradually slopes downward within the proposed building addition area with a grade of change of about 2 to 6 feet.

Geotechnical Characterization

Geology

Based on the geologic maps published by the Bureau of Economic Geology, the site for the proposed project is located on the upper Lissie formation, sometimes denoted the Montgomery formation. The upper Lissie formation is heterogeneous, containing interbedded layers of clay, sand and silt. This formation was deposited in mid-Pleistocene time in shallow coastal river channels and flood plains.

The coastal plain in this region has a complex tectonic geology, several major features of which are: Gulf Coastal geosyncline, salt domes, and major sea level fluctuations during the glacial stages, subsidence and geologic faulting activities. Most of these geologic faulting activities have ceased for millions of years, but some are still active. A detailed geologic fault investigation and study of the site geology are beyond the scope of this report.

Subsurface Profile

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of the site. Conditions observed at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** and the GeoModel can be found in the **Figures** attachment of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	Fill	Sandy Lean Clay, Clayey Sand, and Crushed Stone
2	Silty Sand	Dark gray and light gray, loose to very dense, with clay pockets and layers and trace gravel
3	Clayey Sand and Sandy Lean Clay	Light gray and tan, loose or stiff, with ferrous stains

Groundwater Conditions

Borings B-1 through B-3 were advanced using dry drilling techniques to the boring termination depths that ranged from approximately 5 to 20 feet in an effort to evaluate groundwater conditions at the time of our field program. Groundwater was not observed during or upon completion of drilling in these borings. Information regarding groundwater measurements can be found on the boring logs in the **Exploration Results** section.

These water level observations provide an approximate indication of the groundwater conditions existing on the site at the time the observations were made. Longer-term observations using cased holes or piezometers, sealed from the influence of surface water, would be required for a better evaluation of the groundwater conditions on this site.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. Also, trapped or "perched" water could be present within the sand or silt seams within native clay soils and/or in cohesionless soils above lower permeability clay soil layers. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

Seismic Site Class

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil properties observed

at the site and as described on the exploration logs and results, our professional opinion is for that a **Seismic Site Classification of D** be considered for the project. Subsurface explorations at this site extended to a maximum depth of 20 feet. The site properties below the boring depths to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

Geotechnical Overview

Based on the information obtained from our subsurface exploration, the site can be developed for the proposed project. A summary of our findings and recommendations is provided below.

- Fill soils were observed beneath the existing pavement and at the ground surface at borings B-2 and B-3 and extended to depths that ranged from about 2 to 3 feet. Fill may be present at varying depths and at other locations not explored during our field program. Support of the foundation elements, slabs, and flatworks on or above fill soils is discussed in this report. However, even with the recommended construction testing services, an inherent risk exists for the owner that compressible fill or unsuitable material within or buried by the fill will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill.
- The surficial soils observed in portions of the site exhibited low plasticities and a high silt and sand content. If wet and/or soft conditions are present at the time of construction, remedial efforts may be necessary for preparation of the surficial soils in the building and pavement areas to create a working surface. Remedial effort options are discussed in the **Wet Weather/Soft Subgrade Considerations** section of this report.
- We understand the proposed building addition at this site is planned to be supported on a foundation system consisting of a shallow spread/strip footings. This type of foundation may be utilized to support the proposed structures planned at this site provided the subgrade is prepared as discussed in this report.
- We understand the proposed temporary single-story building planned to be located in the north section of the site is planned to be supported by CMU blocks.
- A minimum 12-inch thick select fill pad should be placed under the proposed building addition to provide uniform support to the floor slab.
- Flexible pavement sections vary from 2.0 to 2.5 inches of asphaltic concrete over 8.0 to 10.0 inches of base material with chemically treated subgrade.

- Rigid pavement sections vary from 5.0 to 7.0 inches of reinforced concrete with chemically treated subgrade.

The **General Comments** section provides an understanding of the report limitations. The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the **Exploration Results**), engineering analyses, and our current understanding of the proposed project.

Earthwork

Earthwork is anticipated to include clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Construction areas should be stripped of vegetation, topsoil, trees, existing pavements, and other debris/unsuitable surface material. Roots of trees to be removed within the construction areas should be grubbed to full depths. Care should be taken to replace or recompact all soil removed or loosened by the removal of tree roots and stumps as recommended in subsequent paragraphs. The existing swale in the area of the proposed pavement should be drained, properly stripped, and de-mucked. De-mucking should remove all soft and wet soils, and should extend to the depths of competent material. Proper site drainage should be maintained during construction so that ponding of surface runoff does not occur and cause construction delays and/or inhibit site access.

Once final subgrade elevations have been achieved, the exposed subgrade should be carefully proofrolled with a 20 ton pneumatic roller or equivalent equipment, such as a fully loaded dump truck, to detect weak zones in the subgrade. Special care should be exercised when proofrolling areas containing fill soils in an attempt to observe soft/weak zones within the fill soils. Weak areas detected during proofrolling, as well as zones of fill containing organic matter and/or debris, should be removed and replaced with soils exhibiting similar classification, moisture content, and density as the adjacent in-situ soils. Proofrolling should be performed under the direct observation of the geotechnical engineer or his/her representative and may be waived at the discretion of the geotechnical engineer.

Subsequent to proofrolling, and just prior to placement of fill, the exposed subgrade within the construction area should be evaluated for moisture and density. If the moisture and/or density do not meet the criteria described in **Fill Compaction Requirements** for on-site soils, the subgrade should be scarified to a minimum depth of

6 inches, moisture adjusted, and compacted to at least 95 percent of the Standard Effort (ASTM D 698) maximum dry density.

Existing Fill

As noted in **Geotechnical Characterization**, borings B-1 and B-2 encountered previously placed fill to depths ranging from about 0 to 3 feet. We have no records to indicate the degree of control, and consequently, the fill is considered unreliable for support of foundation loads. Support of floor slabs and pavements on or above existing fill soils is discussed in this report. However, even with the recommended construction procedures, the inherent risk exists for the owner that compressible fill or unsuitable material, within or buried by the fill will, not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but can be reduced by following the recommendations contained in this report.

Fill Material Types

Select fill and on-site soils to be used at this site for grade adjustments should meet the following criteria:

Fill Type	USCS Classification	Acceptable Location for Placement
Select fill soils	CL and/or SC (10≤PI≤20)	Must be used to construct the select fill building pad under the floor slab and for all grade adjustments within the building addition area.
On-site soils[1]	Varies	The on-site soils, including the undocumented fill soils, appear suitable for use as fill within the pavement areas, provided they are free of organics and debris.

1. The utilization of on-site silty/sandy soils may present difficulties during construction due to the increased sand and silt content of these soils, especially during and soon after periods of wet weather. If the utilization of the silty/sandy soils as fill is planned in the pavement areas, treatment of these soils with lime-flyash should produce a material that would be more suitable for use as fill.

If blended or mixed soils are intended for use as select fill, Terracon should be contacted to provide additional recommendations. Blended or mixed soils do not occur naturally. These soils are a blend of sand and clay and will require mechanical mixing at the site with a pulvimixer. If these soils are not mixed thoroughly to break down the clay clods and blend-in the sand to produce a uniform soil matrix, the fill material may be detrimental to the performance of the foundations. If blended soils are used, we recommend that additional samples of the blended soils as well as the clay clods, be obtained prior to and during earthwork operations to evaluate if the blended soils can be

used in lieu of select fill. The actual type and amount of mechanical mixing at the site will depend on the amount of clay and sand, and properties of the clay.

Fill Compaction Requirements

Select fill and on-site soils should meet the following compaction requirements.

Item	Description
Fill lift thickness	The fill soils should be placed on prepared surfaces in lifts not to exceed 8 inches loose measure.
Compaction Requirements	■ Select fill and on-site soils below 4 feet of final grade should be compacted to 100 percent of the Standard Effort (ASTM D 698) maximum dry density. ■ Select fill and on-site soils within 4 feet of final grade should be compacted to at least 95 percent of the Standard Effort (ASTM D 698) maximum dry density. ■ The select fill and on-site soils should be moisture adjusted to within 2 percent of the optimum moisture content.

Prior to any filling operations, samples of the proposed borrow and on-site materials should be obtained for laboratory moisture-density testing. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to evaluate that proper levels of compaction, including dry unit weight and moisture content, are being attained.

Utility Trench Backfill

Utility trenches are a common source of water infiltration and migration. All utility trenches that penetrate beneath the structures should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the structure. The trench should provide an effective trench plug that extends at least 5 feet out from the face of the structure exterior. The plug material should consist of clay compacted at a water content at or above the soils optimum water content. The clay fill should be placed to completely surround the utility line and be compacted in accordance with recommendations in this report.

Grading and Drainage

All grades must provide effective drainage away from the proposed improvements during and after construction. Water permitted to pond next to the proposed improvements can result in distress in the structures. These greater movements can result in unacceptable differential slab movements, cracked slabs and walls, and roof leaks. Slabs and foundation performances described in this report are based on effective drainage for the life of the proposed improvements and cannot be relied upon if effective drainage is not maintained.

Exposed ground should be sloped away from the proposed structures for at least 10 feet beyond the perimeter of the structures. After construction and landscaping, we recommend verifying final grades to document that effective drainage has been achieved. Grades around the structures should also be periodically inspected and adjusted as necessary, as part of the structures' maintenance program.

Planters located within 10 feet of the proposed structures should be self-contained to prevent water accessing the building and pavement subgrade soils. Locate sprinkler mains and spray heads a minimum of 5 feet away from the building lines. Low-volume, drip-style landscaped irrigation should not be used near the building. Collect roof runoff in drains or gutters. Discharge roof drains and downspouts onto pavements and/or flatworks which slope away from the structures or extend down spouts a minimum of 10 feet away from the structures.

Flatworks will be subject to post construction movement. Maximum grades practical should be used for flatwork to prevent water from ponding. Allowances in final grades should also consider post-construction movement of flatwork, particularly if such movement would be critical. Where flatwork abuts the building, effectively seal and maintain joints to prevent surface water infiltration.

Wet Weather/Soft Subgrade Considerations

Due to the high silt and sand content and low plasticities of the surficial soils in portions of the site, proper compaction may be difficult to achieve. In addition, construction during and soon after wet weather periods may encounter difficulties due to wet and soft surficial soils becoming a general hindrance to equipment as a result of rutting and/or pumping of the soil surface. This condition is primarily due to their lack of cohesion (low clay content) and little to no confining pressure near the ground surface. If the subgrade cannot be adequately compacted to the minimum densities as described above, one of the following methods should be used to improve the soils: 1) removal and replacement with select fill, 2) chemical treatment of the soil to dry the subgrade, or 3) drying by natural means if the schedule allows.

Based on our experience with similar soils, chemical treatment is an efficient and effective method to increase the supporting value of wet and soft subgrade such as that observed at this site. Chemical treatment may be necessary to depths of approximately one to two feet or greater of the near-surface silty/sandy soils, depending on the condition of the subgrade at the time of construction. We suggest that a cost be included in the construction budget for chemical treatment of the soils using a lime-flyash mixture to aid drying and improve the condition of the soil if the soil is wet and/or soft at the time of construction. We recommend that this cost be in the form of a contingency or allowance to be used if needed. Terracon should be contacted for additional recommendations if chemical treatment of the soils is planned due to soft and/or wet subgrade.

Shallow Foundations

As stated previously, we understand the temporary building is planned to be supported by CMU block wall. In addition, we understand the building addition is planned to be supported by shallow/strip footings. If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations.

Design Recommendations – Shallow Spread/Strip Footings

Item	Description	
	Building Addition	**Temporary Building**
Minimum embedment depth[1]	2 feet below existing grade[1] (grade at the time of our field program)	N/A[2]
Allowable bearing pressures[3] **(individual footings)**	Net dead plus sustained live load – 2,000 psf Net total load – 3,000 psf	Net total load – 2,000 psf
Allowable bearing pressures[4] **(strip footing)**	Net dead plus sustained live load – 1,700 psf Net total load – 2,500 psf	N/A
Approximate post-construction settlement[5]	Approximately one inch	One inch or less
Estimated post-construction differential settlement[6]	Approximately ½ of post-construction settlement	Approximately ½ of total settlement
Allowable passive pressure[7]	750 psf	N/A
Allowable frictional resistance[8]	250 psf	200 psf

Item	Description	
	Building Addition	Temporary Building
Uplift resistance[9]	Foundation Weight (150 pcf) & Soil Weight (120 pcf)	Foundation Weight (150 pcf)

1. The footings should extend through the fill soils to bear upon undisturbed native soils.
2. To bear upon native undisturbed soils following stripping of organics and any granular material. Routine maintenance should be performed to ensure that soils do not erode in the area of the foundations.
3. Whichever condition yields a larger bearing area.
4. Defined as a footing at least twice as long as it is wide.
5. This estimated post-construction settlement of the shallow footings is based on proper construction practices being followed. A clear distance between footings of one footing size of the larger of the two footings should not produce overlapping stress distributions and would essentially behave as independent foundations.
6. The post-construction differential settlements may result from variances in subsurface conditions, loading conditions, and construction procedures. The settlement response of the footings will be more dependent upon the quality of construction than upon the response of the subgrade to the foundation loads.
7. The passive pressure along the exterior face of the footings should be neglected within the upper 4 feet due to surface effects and the presence of fill and expansive soils unless pavement is provided up to the edge of the structures. For interior footings, the allowable passive pressure may be used for the entire depth of the footing.
8. To be utilized on the base of the footings.
9. Structural uplift loads on the shallow footings may be resisted by the weight of the foundation plus the weight of any soil directly above the foundation. The ultimate uplift capacity of shallow footings should be reduced by an appropriate factor of safety to compute allowable uplift capacity.

Construction Considerations – Shallow Spread/Strip Footings

Excavations for shallow footings should be performed with equipment capable of providing a relatively clean bearing area. The bottom 6 inches of the foundation excavations should be completed with a smooth-mouthed bucket or by hand labor. The excavations should be neatly excavated and properly formed. Debris in the bottom of the excavation should be removed prior to steel placement. Based on the groundwater observations obtained during our field program (refer to **Groundwater Conditions**), significant groundwater seepage is not anticipated for shallow footings or grade beams at the recommended bearing depth. However, water should not be allowed to accumulate at the bottom of the foundation excavations. To reduce the potential for groundwater seepage into the excavations and to minimize disturbance to the bearing area, we recommend that concrete and steel be placed as soon as possible after the excavations are completed. Excavations should not be left open overnight. The bearing

surface of the shallow footings should be evaluated immediately prior to placing concrete or a seal slab.

A thin seal slab of lean concrete (approximately 2 to 4 inches thick) should be placed at the bottom of the footing excavation to protect the bearing surface of the footings from disturbance and/or infiltration of ground/surface water if the footing cannot be poured within the same day of excavation.

Foundation Construction Monitoring

The performance of the foundation systems will be highly dependent upon the quality of construction. Thus, we recommend that subgrade preparation, fill compaction, and foundation installation be observed full time by an experienced Terracon soil technician under the direction of our geotechnical engineer. During foundation construction, the base of the footing excavations should be observed to evaluate the condition of the subgrade. We would be pleased to develop a plan for compaction and foundation installation observation to be incorporated in the overall quality control program.

Floor Slab

As stated previously, we anticipate that the finished floor elevation for the proposed building addition will be approximately two to six feet above existing grade. Terracon should be contacted if the planned grading is changed so that we may review and/or modify the recommendations presented in this report.

The near surface soils observed at the site generally exhibited a low expansion potential. Based on the information developed from our field and laboratory programs and on method TEX-124-E in the Texas Department of Transportation (TxDOT) Manual of Testing Procedures, we estimate that the subgrade soils at this site exhibit a Potential Vertical Rise (PVR) of up to approximately one or less.

To provide uniform support to the grade-supported floor slab, we recommend that a minimum 12 inches of properly placed and compacted select fill material be constructed immediately beneath the floor slab. The select fill pad should extend a minimum of 3 feet beyond the edge of the proposed building addition area. The final exterior grade adjacent to the structure should be sloped to promote effective drainage away from the building addition.

Select fill should be utilized for all grade adjustments within the proposed structure areas. The subgrade and select fill soils should be prepared as outlined in **Earthwork**, which contains material and placement requirements for select fill, as well as other subgrade preparation recommendations.

The subgrade soils for flatwork outside of the structure which will be sensitive to movement should be prepared as discussed previously. This preparation will be important on surrounding sidewalks and paving immediately adjacent to the structure. If these adjacent flatwork areas are not prepared as stated above for the building area, the estimated PVR for these areas could approach those indicated previously for in-situ conditions. If the soils swell in those areas, this movement could result in significant distress to the adjacent sidewalks and paving and possibly result in reversed drainage (flow of runoff toward the structure) around the perimeter of the building addition.

Temporary Building Floor Slab

We understand the floor slab will be suspended above the ground surface with a void space approximately 8 to 12 inches above the subgrade soil. The grade beams, if any, should be structurally tied to the tops of the CMU blocks. The subgrade surface below the floor system should be sloped to appropriate drainage outlets to reduce the possibility of water accumulation in the void space. A high humidity environment in the void space could result in moisture penetration into the floor, which might cause distress to floor system, floor coverings, or equipment and materials that are sensitive to moisture.

If the temporary building is sensitive to movement, we recommend a minimum 12 inches of properly placed and compacted select fill be placed within the temporary building area to provided uniform support to the structure as described above.

Lateral Earth Pressures

We understand grade within the building addition slopes down about 6 feet from the existing building towards the west. The backfill soils adjacent to the retaining walls will impose active to at-rest earth pressures against the embedded walls. Design lateral earth pressures for backfill are estimated to be equivalent to a fluid pressure of 50 pounds per cubic foot (pcf) for clean sand backfill and 90 pcf for select fill backfill. These pressures do not include hydrostatic pressures nor do they include surcharge forces imposed by construction or vehicular loading. The lateral pressure produced by surcharge may be computed as 50 percent of the vertical surcharge pressure applied as a constant pressure over the full depth of the buried structure. A 2-foot compacted clay seal should be placed at the top of sand backfill (if any) to reduce the amount of infiltration of surface water.

Pavements

Once the subgrade is properly prepared, both flexible pavement systems (consisting of asphaltic concrete and base material) and rigid pavement systems may be considered for this project. Detailed traffic loads and frequencies were not available. However, we anticipate that traffic will consist primarily of passenger vehicles in the parking areas and passenger vehicles combined with garbage trucks and large multi-axle moving trucks in driveway areas.

Tabulated in the following table are the assumed traffic frequencies and loads used to design pavement sections for this project. When actual traffic conditions have been determined Terracon should be contacted to review the information to consider a need for revision of the pavement designs and related recommendations.

Pavement Area	Traffic Design Index[1]	Description
Automobile Parking Areas	DI-1	Light traffic (Few vehicles heavier than passenger cars, no regular use by heavily loaded two axle trucks.) (EAL[2]<6)
Driveways (Light Duty)	DI-2	Medium to light traffic (Similar to DI-1 including not over 50 loaded two axle trucks or lightly loaded larger vehicles per day. No regular use by heavily loaded trucks with three or more axles.) (EAL = 6-20)
Driveways and Truck Traffic Areas (Medium Duty)	DI-3	Medium traffic (Including not over 300 heavily loaded two axle trucks plus lightly loaded trucks with three or more axles and no more than 30 heavily loaded trucks with more than three axles per day.) (EAL = 21-75)

1. Based on NSSGA traffic indices.
2. Equivalent daily 18-kip single axle load applications.

The top 6 inches of the finished subgrade soils directly beneath the pavements should be chemically treated with a mixture of lime and flyash. The decision about the type and proper amount of additive should be made after the subgrade is open for inspection. Chemical treatment will increase the supporting value of the subgrade and decrease the effect of moisture on subgrade soils. This 6 inches of treatment is a required part of the pavement design and is not a part of the site and subgrade preparation for wet/soft subgrade conditions.

Listed below are pavement component thicknesses, which may be used as a guide for pavement systems at the site for the traffic classifications stated herein. These systems were derived based on general characterization of the subgrade. Specific testing (such as CBR's, resilient modulus tests, etc.) was not performed for this project to evaluate the support characteristics of the subgrade.

Rigid Pavement System			
Component	**Material Thickness, Inches**		
	DI-1	**DI-2**	**DI-3**
Reinforced concrete	5.0	6.0	7.0
Treated subgrade	6.0	6.0	6.0

Flexible Pavement System		
Component	**Material Thickness, Inches**	
	DI-1	**DI-2**
Asphaltic concrete	2.0	2.5
Base Material	8.0	10.0
Treated subgrade	6.0	6.0

Waste dumpster areas should be constructed of at least 7 inches of reinforced concrete pavement. The concrete pad areas should be designed so that the vehicle wheels of the collection truck are supported on the concrete while the dumpster is being lifted to support the large wheel loading imposed during waste collection.

Presented below are our recommended material requirements for the various pavement sections.

Reinforced Concrete Pavement – The materials and properties of reinforced concrete pavement should meet applicable requirements in the ACI Manual of Concrete Practice. The portland cement concrete mix should have a minimum 28 day compressive strength of 3,500 psi.

Reinforcing Steel – ACI recommendations indicate that distributed steel reinforcement is not necessary when the pavement is properly jointed to form short panel lengths that will help reduce intermediate cracking. Provided the concrete pavement is designed and constructed as stated herein, the installation of reinforcing steel is optional and should be evaluated by the design team. Proper layout and installation of the joints within the pavement is critical to help control intermediate cracking.

If reinforcing steel is planned to be utilized in the concrete pavement by the design team, the following amount of reinforcing steel should be used as a guideline:
DI-1: #3 bars spaced at 18 inches or #4 bars spaced at 24 inches on centers in both directions.
DI-2: #3 bars spaced at 12 inches or #4 bars spaced at 18 inches on centers in both directions.
DI-3: #4 bars spaced at 18 inches on centers in both directions.

Control Joint Spacing – ACI recommendations indicate that control joints should be spaced at a maximum spacing of 30 times the thickness of the pavement for

unreinforced parking lot pavements. Furthermore, ACI recommends a maximum control joint spacing of 12.5 feet for 5-inch pavements and a maximum control joint spacing of 15 feet for 6-inch or thicker pavements. Sawcut control joints should be cut within 4 to 12 hours of concrete placement to help control the formation of plastic shrinkage cracks as the concrete cures. The depth of the joint should be at least one-quarter of the slab depth when using a conventional saw or one inch when using early entry saws. The width of the cut should be in accordance with the joint sealant manufacturer recommendations.

Expansion Joint Spacing – ACI recommendations indicate that regularly spaced expansion joints may be deleted from concrete pavements. Therefore, the installation of expansion joints is optional and should be evaluated by the design team.

Construction Joints – When concrete is planned to be placed at different times, we recommend the use of a construction joint between paving areas. The construction joint should consist of a butt joint (not a keyway joint).

Concrete Curing Compound – A concrete curing compound, such as a Type 2 membrane curing compound conforming to TxDOT DMS-4650, "Hydraulic Cement Concrete Curing Materials and Evaporation Retardants" or equivalent, should be applied to the concrete surface immediately after placement of the concrete in accordance with TxDOT 2014 Standard Specifications Item 360.

Dowels at Expansion/Construction Joints – The dowels at expansion/construction joints should be spaced at 12-inch centers and consist of the following:
DI-1: 5/8-inch diameter, 12-inches long with 5-inch embedment.
DI-2: 3/4-inch diameter, 14-inches long with 6-inch embedment.
DI-3: 7/8-inch diameter, 14-inches long with 6-inch embedment.

Hot Mix Asphaltic Concrete Surface Course – The asphaltic concrete surface course should be plant mixed, hot laid Type D (Fine Graded Surface Course) meeting the requirements in TxDOT 2014 Standard Specifications Item 340. Specific criteria for the job specifications should include compaction to within an air void range of 3.8 to 8.5 percent calculated using the maximum theoretical specific gravity of the mix measured by TxDOT Tex-227-F. The asphalt cement content by percent of total mixture weight should be within ± 0.5 percent asphalt cement from the job mix design.

Base Material – Base material should be composed of crushed limestone or crushed concrete meeting the requirements of TxDOT 2014 Standard Specifications Item 247, Type A or D, Grade 1-2. The base material should be compacted to at least 95 percent of the Modified Effort (ASTM D1557) maximum dry density at moisture content within 2 percent of the optimum moisture content.

Lime-Flyash Treated Subgrade – The on-site silty sand, clayey sand, and low to medium plasticity clay soils should be treated with lime-flyash in accordance with TxDOT 2014

Standard Specifications Item 265. Based on the classification test results, we recommend about 2 to 3 percent lime and 7 to 8 percent flyash by dry weight be used for estimating and planning. The percentages are given as application by dry weight and are typically equivalent to about 10 to 15 pounds of lime and 35 to 40 pounds of flyash per square yard per 6-inch depth. Lime-flyash is also available pre-mixed, typically in percentages of 20 to 30 percent lime and 70 to 80 percent flyash. These pre-mixed products may be used if preferred at a rate of 50 pounds per square yard per 6-inch depth. The actual quantity of lime-flyash should be determined at the time of construction based on laboratory testing conducted using bulk samples of the subgrade soils. The subgrade should be compacted to at least 95 percent of the Standard Effort (ASTM D 698) maximum dry density at a moisture content within 2 percent of the optimum moisture content.

Preferably, traffic should be kept off the treated subgrade for 7 days to facilitate curing of the soil-chemical mixture. In addition, the subgrade is not suitable for heavy construction traffic prior to paving.

Post-construction subgrade movements and some cracking of pavements are not uncommon for subgrade conditions such as those observed at this site. Reducing moisture changes in the subgrade is important to reduce shrink/swell movements. Although chemical treatment will help to reduce such movement/cracking, this movement/cracking cannot be economically eliminated.

Related civil design factors such as subgrade drainage, shoulder support, cross-sectional configurations, surface elevations and environmental factors which will significantly affect the service life must be included in the preparation of the construction drawings and specifications. Normal periodic maintenance will be required.

Long-term pavement performance will be dependent upon several factors, including maintaining subgrade moisture levels and providing for preventative maintenance. The following recommendations should be implemented to help promote long-term pavement performance:

- The subgrade and the pavement surface should be designed to promote proper surface drainage, preferably at a minimum grade of 2 percent;
- Install joint sealant and seal cracks immediately;
- Extend curbs into the treated subgrade for a depth of at least 4 inches to help reduce moisture migration into the subgrade soils beneath the pavement section; and
- Place compacted, low permeability clayey backfill against the exterior side of the curb and gutter.

Preventative maintenance should be planned and provided for the pavements at this site. Preventative maintenance activities are intended to slow the rate of pavement

deterioration, and consist of both localized maintenance (e.g. crack and joint sealing and patching) and global maintenance (e.g. surface sealing). Prior to implementing any maintenance, additional engineering observations are recommended to determine the type and extent of preventative maintenance.

General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly effect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface

water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

Figures

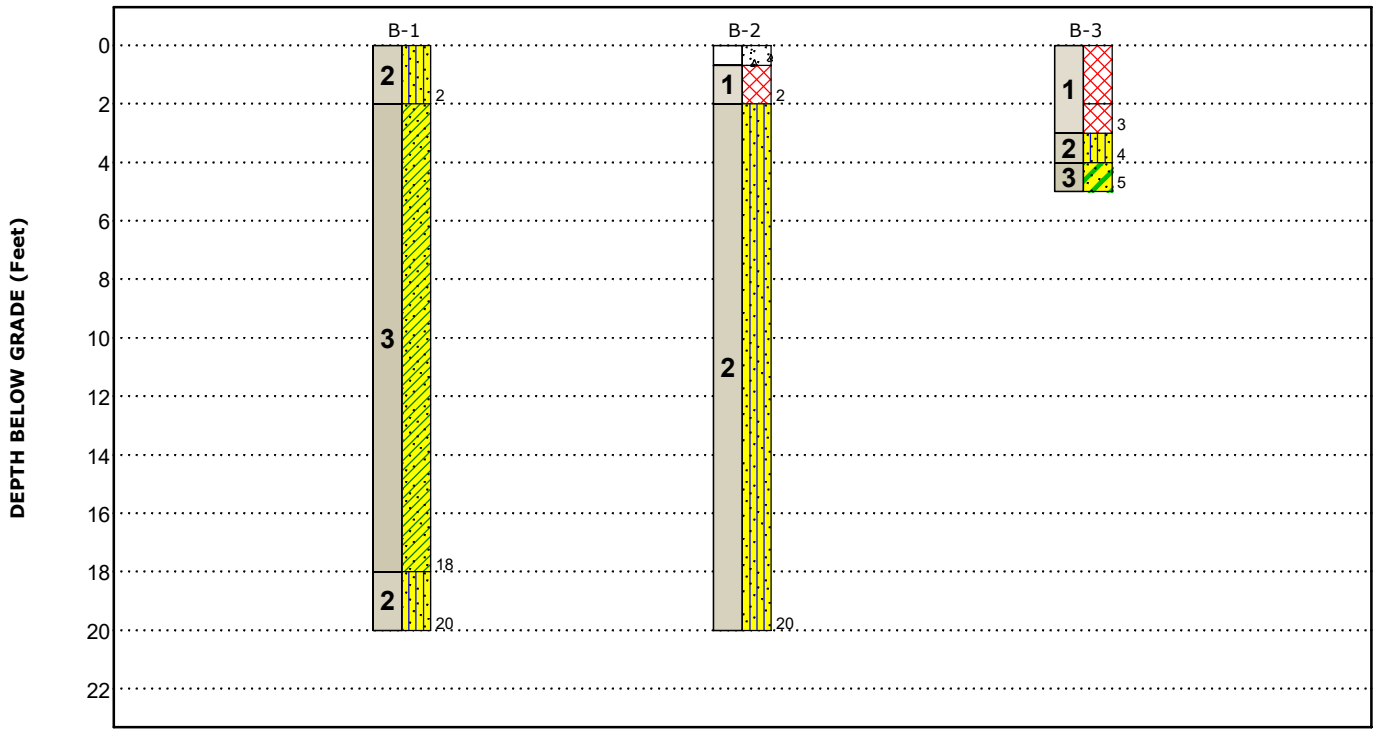
Contents:

GeoModel

The Woodlands - Pardes Expansion
8203 Millennium Forest | The Woodlands, Texas
Terracon Project No. 97245057

11133 Interstate 45 S Ste T
Conroe, TX

GeoModel



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Fill	Sandy Lean Clay, Clayey Sand, and Crushed Stone
2	Silty Sand	Dark gray and light gray, loose to very dense, with clay pockets and layers and trace gravel
3	Clayey Sand and Sandy Lean Clay	Light gray and tan, loose or stiff, with ferrous stains

Legend

- Silty Sand
- Sandy Lean Clay
- Concrete
- Fill
- Clayey Sand

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

Attachments

Exploration and Testing Procedures

Field Exploration

Number of Borings	Approximate Boring Depth (feet)	Location
2 (B-1 and B-2)	20	Building area
1 (B-3)	5	Parking/driveway area

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±20 feet) and referencing existing site features. The boring depths were measured from the existing ground surface at the time of our field activities.

Subsurface Exploration Procedures: We advanced the borings with an ATV-mounted rotary drill rig using continuous flight augers (solid stem). Six samples were obtained in the upper 12 feet of each boring and at intervals of 5 feet thereafter. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge was pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. For safety purposes, all borings were backfilled with auger cuttings after their completion. Pavements were patched with pre-mixed concrete.

We also observed the boreholes while drilling and at the completion of drilling for the presence of groundwater. Groundwater was not observed at these times in the boreholes.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- Moisture Content
- Atterberg Limits
- Percent Passing the No. 200 Sieve

The laboratory testing program included examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Samples not tested in the laboratory will be stored for a period of 30 days subsequent to the submittal of this report and will be discarded after this period unless we are notified otherwise.

Site Location and Exploration Plan

Contents:

Site Location
Exploration Plan

Note: All attachments are one page unless noted above.

Site Location

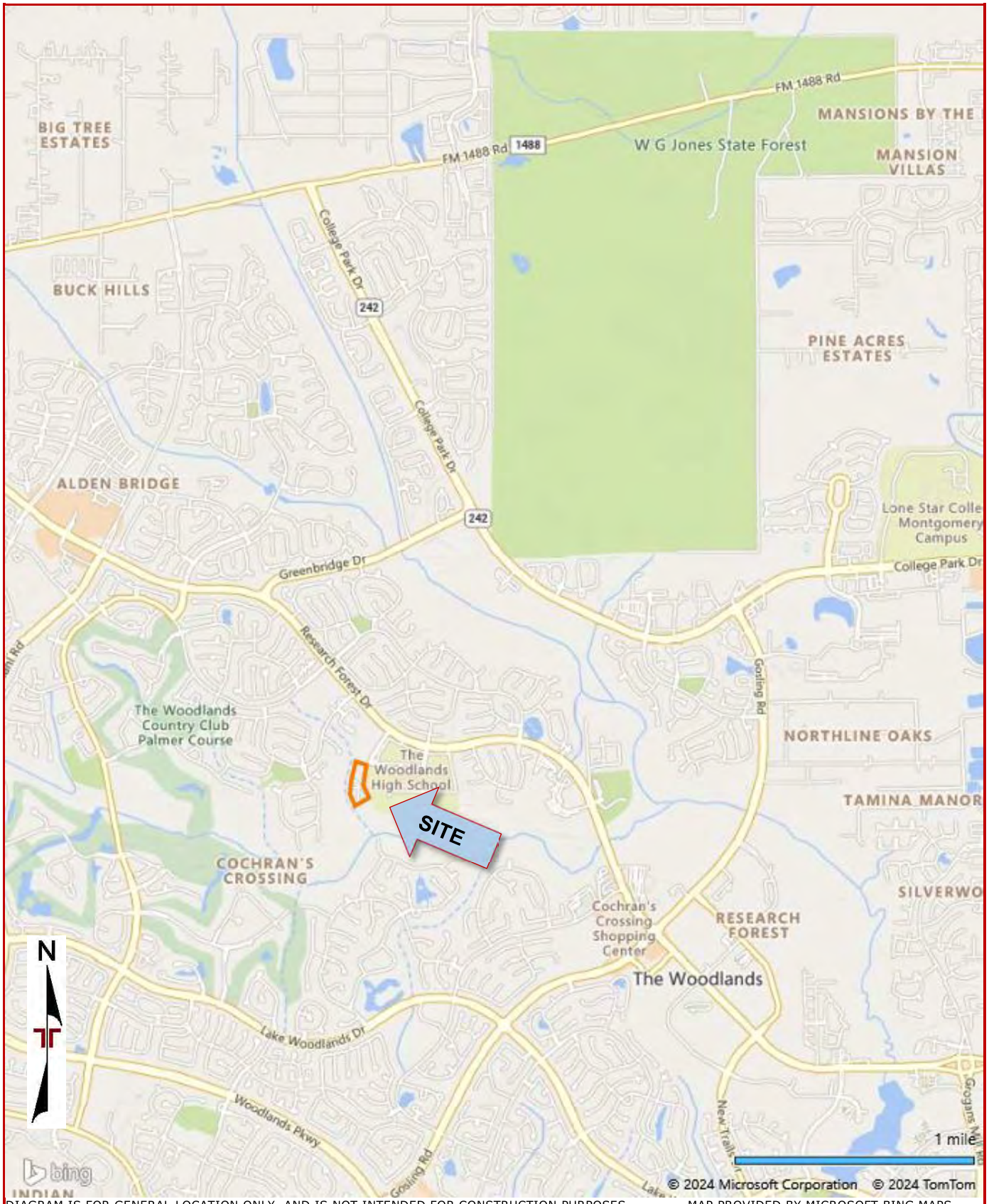


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan

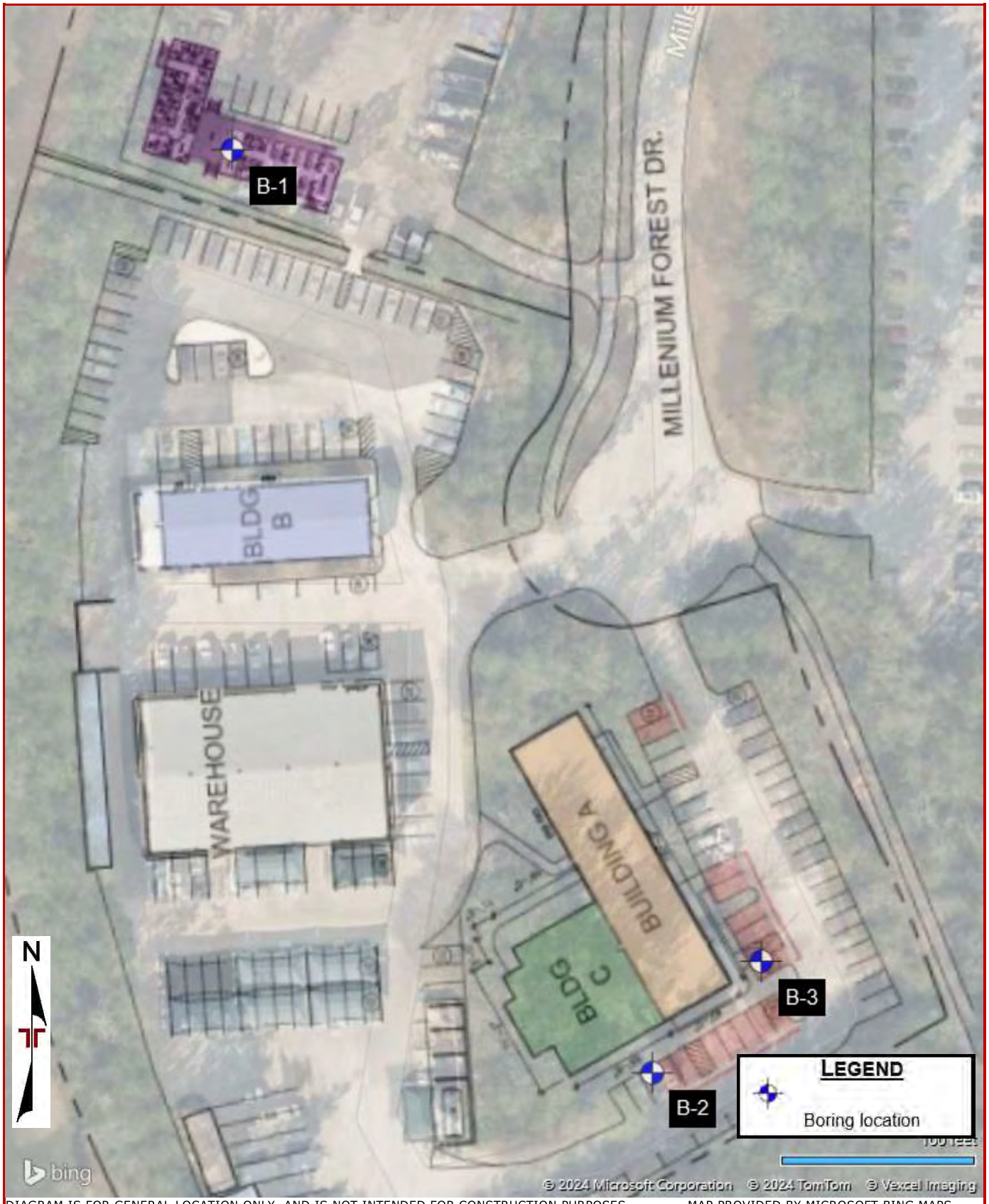


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

Exploration and Laboratory Results

Contents:

Boring Logs (B-1 through B-3)

Note: All attachments are one page unless noted above.

The Woodlands - Pardes Expansion
8203 Millennium Forest | The Woodlands, Texas
Terracon Project No. 97245057

Terracon
11133 Interstate 45 S Ste T
Conroe, TX

Boring Log No. B-1

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 30.1941° Longitude: -95.5085° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits: LL-PL-PI	Percent Fines
2		**SILTY SAND (SM)**, dark gray, loose, with clay pockets				1.5 (HP)							
		2.0											
3		**SANDY LEAN CLAY (CL)**, light gray and tan, stiff				2.0 (HP)				14.6		21-13-8	
			5			2.0 (HP)							
						2.0 (HP)							
		- with ferrous stains, 8 to 18 feet				1.5 (HP)				18.4		32-15-17	63
			10			1.5 (HP)							
						1.5 (HP)							
			15										
2		**SILTY SAND (SM)**, light gray, loose, with a clay layer				1.0 (HP)							
		20.0	20										
		Boring Terminated at 20 Feet											

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not observed during or upon completion of drilling

Drill Rig
ATV

Driller
DAS

Notes

Advancement Method
Dry augered to 20 feet.

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
G. Hernandez

Boring Started
08-20-2024

Boring Completed
08-20-2024

The Woodlands - Pardes Expansion
8203 Millennium Forest | The Woodlands, Texas
Terracon Project No. 97245057

Terracon
11133 Interstate 45 S Ste T
Conroe, TX

Boring Log No. B-2

Location: See Exploration Plan

Latitude: 30.1928° Longitude: -95.5078°

Model Layer	Graphic Log	Depth (Ft.)	Description	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits: LL-PL-PI	Percent Fines
		0.7	**PAVEMENT**, about 4 inches of concrete underlain by about 4 inches of sandy clay											
1		2.0	**FILL - SANDY LEAN CLAY (CL)**, reddish brown, with trace gravel				4.5 (HP)				11.0		25-11-14	
2			**SILTY SAND (SM)**, dark gray, light gray, and tan, loose to very dense - with clay pockets, 2 to 8 feet				1.5 (HP)							
				5			1.0 (HP)				13.7			34
							0.5 (HP)							
							5-6-8 N=14							
				10										
							6-8-10 N=18				15.5			17
			- light gray, with clay pockets below 13 feet											
							7-10-12 N=22							
				15										
			- with trace gravel below 18 feet				18-40-50/2" N=90/8"							
		20.0	***Boring Terminated at 20 Feet***	20										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not observed during or upon completion of drilling

Drill Rig
ATV

Hammer Type
Rope and Cathead

Driller
DAS

Logged by
G. Hernandez

Boring Started
08-20-2024

Boring Completed
08-20-2024

Notes

Advancement Method
Dry augered to 20 feet.

Abandonment Method
Boring backfilled with auger cuttings upon completion and patched at the surface with a concrete patch product.

The Woodlands - Pardes Expansion
8203 Millennium Forest | The Woodlands, Texas
Terracon Project No. 97245057

Terracon
11133 Interstate 45 S Ste T
Conroe, TX

Boring Log No. B-3

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 30.1929° Longitude: -95.5076° Depth (Ft.)	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits: LL-PL-PI	Percent Fines
1		**FILL - CRUSHED STONE**, with silt and clay pockets				0.5 (HP)							
		2.0											
		FILL - CLAYEY SAND (SC), tan, with trace gravel				1.5 (HP)				8.5			34
		3.0											
2		**SILTY SAND (SM)**, light gray, loose											
		4.0											
3		**CLAYEY SAND (SC)**, light gray, loose				2.0 (HP)							
		5.0	5										
		Boring Terminated at 5 Feet											

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Water Level Observations
Groundwater not observed during or upon completion of drilling

Drill Rig
ATV

Driller
DAS

Notes

Advancement Method
Dry augered to 5 feet.

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Logged by
G. Hernandez

Boring Started
08-20-2024

Boring Completed
08-20-2024

Supporting Information

Contents:

General Notes
Unified Soil Classification System

Note: All attachments are one page unless noted above.

Terracon
11133 Interstate 45 S Ste T
Conroe, TX

General Notes

Sampling	Water Level	Field Tests
Rock Core Shelby Tube Standard Penetration Test	Water Initially Encountered Water Level After a Specified Period of Time Water Level After a Specified Period of Time Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils
(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

Relative Density	Standard Penetration or N-Value (Blows/Ft.)
Very Loose	0 - 3
Loose	4 - 9
Medium Dense	10 - 29
Dense	30 - 50
Very Dense	> 50

Consistency of Fine-Grained Soils
(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

Consistency	Unconfined Compressive Strength Qu (tsf)	Standard Penetration or N-Value (Blows/Ft.)
Very Soft	less than 0.25	0 - 1
Soft	0.25 to 0.50	2 - 4
Medium Stiff	0.50 to 1.00	4 - 8
Stiff	1.00 to 2.00	8 - 15
Very Stiff	2.00 to 4.00	15 - 30
Hard	> 4.00	> 30

Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.

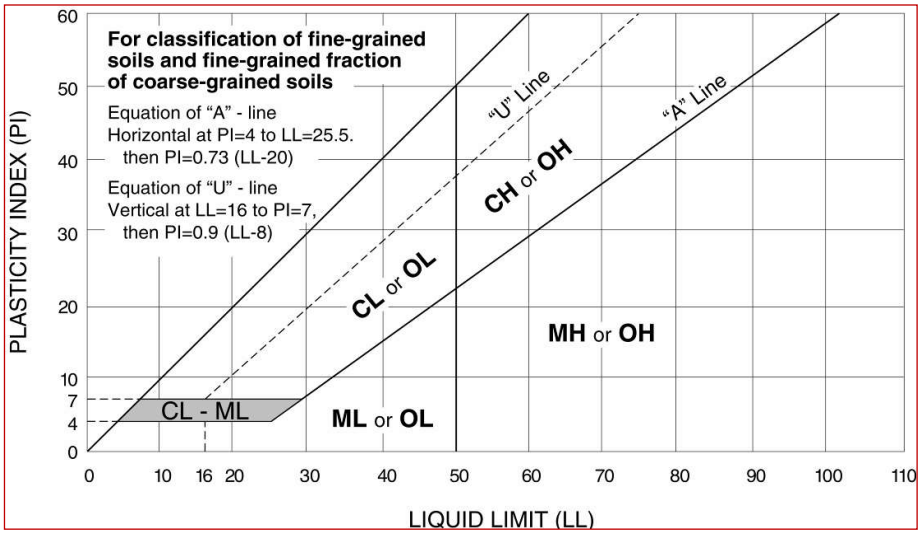


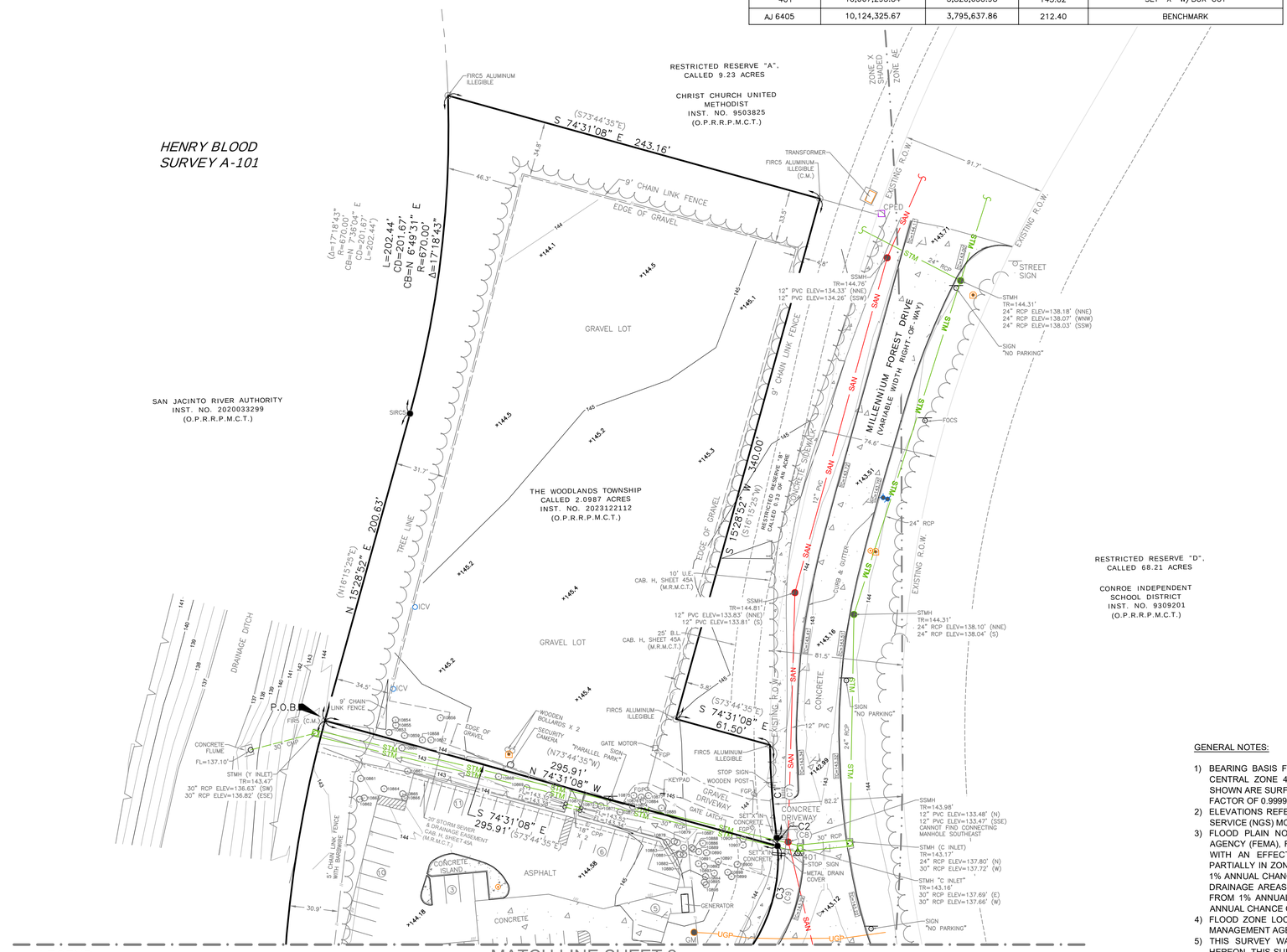
Exhibit M – Survey

FIELD MEASURED CURVE TABLE					
CURVE #	DELTA	RADIUS	CHORD BEARING	CHORD DISTANCE	ARC LENGTH
C1	6°59'31"	480.00	S04°09'36"E	58.54	58.58
C2	3°00'10"	100.00	S06°09'18"E	5.24	5.24
C3	41°41'50"	100.00	S16°11'41"W	71.18	72.78
C4	144°45'34"	60.00	S35°20'15"E	114.37	151.59
C5	7°37'28"	700.00	S21°31'51"E	93.08	93.15
C6	0°17'26"	1830.00	S25°07'08"E	9.28	9.28

DEED/PLAT CALLED CURVE TABLE					
CURVE #	DELTA	RADIUS	CHORD BEARING	CHORD DISTANCE	ARC LENGTH
C7	6°59'31"	480.00	S03°23'03"E	58.54	58.58
C8	3°00'10"	100.00	S05°18'18"E	5.24	5.24
C9	41°41'50"	100.00	N16°58'14"E	71.18	72.78
C10	144°45'34"	60.00	S34°33'42"E	114.37	151.59
C11	7°37'28"	700.00	S20°45'18"E	93.08	93.15
C12	0°17'26"	1830.00	S24°20'35"E	9.28	9.28

CONTROL POINT TABLE (GRID COORDINATES)
(Horizontal: NAD83 based on GPS observations)
(Vertical: NAVD88 based on GPS observations)
Coordinates can be converted to surface by dividing by project/county scale factor of 0.99997

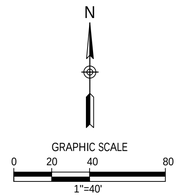
POINT NO.	GRID NORTHING	GRID EASTING	ELEVATION	DESCRIPTION
101	10,067,209.79	3,820,651.47	143.39	SET "X" TP
102	10,068,123.99	3,821,013.90	143.16	SET "X" TP
103	10,066,918.29	3,820,654.61	143.72	SET 60D TP
104	10,066,863.79	3,820,545.64	143.13	SET MAG NAIL W/WASHER TP
401	10,067,293.84	3,820,635.98	143.02	SET "X" W/BOX CUT
AJ 6405	10,124,325.67	3,795,637.86	212.40	BENCHMARK

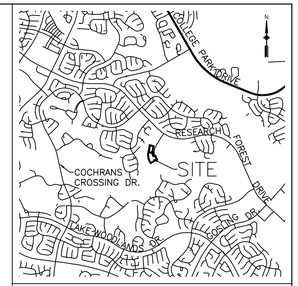


MATCH LINE SHEET 2

LEGEND

P.O.B.	POINT OF BEGINNING	CPED	CABLE TV PEDESTAL	FF	FINISHED FLOOR		SIGN (AS NOTED)		SUBJECT PROPERTLY LINE
FIR5	FOUND IRON ROD 5/8"	SSMH	SANITARY SEWER MANHOLE	Δ	DELTA ANGLE		TELECOM UTILITY (AS NOTED)		FEMA ZONE AE/X SHADED LINE
FIRC5	FOUND 5/8" IRON ROD W/CAP–AS NOTED	STMH	STORM SEWER MANHOLE		WATER METER				APPROXIMATE SURVEY LINE
SIRH5	SET 5/8" IRON ROD W/HALFF CAP	ICV	IRRIGATION CONTROL VALVE		WATER VALVE				EASEMENT LINE
CAB.	CABINET	FHH	FIBER OPTIC HANDHOLE		FIRE HYDRANT		TREE		ADJOINING PROPERTY LINE
VOL.	VOLUME	CMP	CORRUGATED METAL PIPE		C/Y INLET	UGP	UNDERGOUND POWER LINE		R.O.W. LINE
PG.	PAGE	CPP	CORRUGATED PLASTIC PIPE		GRATE INLET	UGT	UNDERGOUND TELECOM LINE		GRAVEL HATCHING
DOC. NO.	DOCUMENT NUMBER	PVC	POLYVINYL CHLORIDE PIPE		STORM MANHOLE	STM	UNDERGOUND STORM SEWER LINE		CONCRETE HATCHING
INST. NO.	INSTRUMENT NUMBER	FGP	FENCE GATE POST		SANITARY MANHOLE	SAN	UNDERGOUND SANITARY SEWER LINE	N 90°00'00"E 100.00'	FIELD MEASURED B&D
C.M.	CONTROLLING MONUMENT	GPLS	GAS PIPELINE SIGN		SANITARY SEWER CLEANOUT		CULVERT	(N 90°00'00"E)	DEED/PLAT CALLED BEARING
O.P.R.R.P.M.C.T.	OFFICIAL PUBLIC RECORDS OF MONTGOMERY COUNTY, TEXAS	U.E.	UTILITY EASEMENT				TREELINE		
M.R.M.C.T.	MAP RECORDS OF MONTGOMERY COUNTY TEXAS	B.L.	BUILDING LINE		GAS METER		EDGE OF ASPHALT	+100.00	SPOT ELEVATION
R.O.W.	RIGHT–OF–WAY	W.L.E.	WATER LINE EASEMENT		LIGHT POLE		EDGE OF GRAVEL		
	FOUND PROPERTY CORNERS	H.C.S.	HANDICAP SIGN		GROUND LIGHT		CHAIN LINK/WOODEN FENCE		TOP OF CURB ELEVATION
	SET PROPERTY CORNERS	L	ARC LENGTH		ELECTRIC BOX		BARBWIRE FENCE		
		CD	CHORD DISTANCE				TOP OF BANK		
		CB	CHORD BEARING						
		R	RADIUS						





LEGAL DESCRIPTION:

BEING a called 2.0987 acre tract of land situated in Montgomery County, Texas in the Henry Blood Survey, Abstract Number 101, said tract being all of that tract of land described in deed to The Woodlands Township recorded in Instrument Number 2023122112 of the Official Public Records of Real Property, Montgomery County, Texas; (O.P.R.R.P.M.C.T.) said tract being more particularly described by metes and bounds as follows:

BEGINNING, at a found 5/8–Inch iron rod marking the northwest corner of Restricted Reserve "C", Section 49, The Woodlands Village of Cochrans Crossing as recorded in Cabinet H, Sheet 45A, of the Map Records of Montgomery County, Texas (M.R.M.C.T.), said corner being in the east line of a tract of land described in deed to the San Jacinto River Authority (SJRA) in Instrument Number 2020033299 O.P.R.R.P.M.C.T. also being the southwest corner of the herein described tract of land;

THENCE, with the common line of said SJRA tract and the herein described tract of land North 15 degrees, 28 minutes, 52 seconds East, (called North 16 degrees, 15 minutes, 25 seconds East) to a 5/8–Inch iron rod with cap stamped "HALFF" set at a distance of 200.63 feet and beginning a curve to the left;

THENCE, northeasterly, continuing with said common line and with the arc of said curve to the left, having a central angle of 17 degrees, 18 minutes, 43 seconds, a radius of 670.00 feet, an arc length of 202.44 feet, and a chord bearing and distance of North 06 degrees, 49 minutes, 31 seconds East, 201.67 feet (called North 07 degrees, 36 minutes, 04 seconds East) to a 5/8–Inch iron rod with an illegible aluminum cap found marking the southwest corner of Restricted Reserve "A" of said Village of Cochrans Crossing, also being the northeast corner of the herein described tract of land;

THENCE, with the common line of said Restricted Reserve "A" and the herein described tract of land South 74 degrees, 31 minutes, 08 seconds East, (Called South 73 degrees, 44 minutes, 35 seconds East) to a 5/8–Inch iron rod with an illegible aluminum cap found a distance of 243.16' marking the northeast corner of Restricted Reserve "B" of said Village of Cochrans Crossing, also being the southeast corner of said Restricted Reserve "A", also being the northeast corner of the herein described tract of land;'

THENCE, with the common line of said Restricted Reserve "B" and the herein described tract of land South 15 degrees, 28 minutes, 52 seconds West (called South 16 degrees, 28 minutes, 25 seconds West) to a 5/8–Inch iron rod with an illegible aluminum cap found at a distance of 340.00 feet marking southwest corner of said Restricted Reserve "B", also being and interior corner of the herein described tract of land;

THENCE, continuing with said common line South 74 degrees, 31 minutes, 08 seconds East (called South 73 degrees, 44 minutes, 35 seconds East) to a 5/8–Inch iron rod with an illegible aluminum cap found at a distance of 61.50 feet in the west line of Millennium Forest Drive (variable width right–of–way) as recorded in said Village of Cochrans Crossing, and marking the southeast corner of said Restricted "B", also being an exterior corner of the herein described tract of land and beginning a curve to the left;

THENCE, southeasterly with the common line of said Millennium Forest Drive and the herein described tract of land and with the arc of said curve to the left having a central angle of 06 degrees, 59 minutes, 31 seconds, a radius of 480.00 feet, an arc length of 58.58 feet, and a chord bearing and distance of South 04 degrees, 09 minutes, 36 seconds East, 58.54 feet (called 03 degrees, 23 minutes, 03 seconds East) to a "X" cut in concrete set in the said common line and beginning a curve to the right;

THENCE, continuing with the said common line of Millennium Forest Drive and the herein described tract of land and with the arc of said curve to the right having a central angle of 03 degrees, 00 minutes, 10 seconds, a radius of 100 feet, an arc length of 5.24 feet and a chord bearing and distance of South 06 degrees, 09 minutes, 18 seconds East, 5.24 feet (called south 05 degrees, 18 minutes, 18 seconds East) to a "X" cut in concrete set marking the northeast corner of said Restricted Reserve "C", also being the southeast corner of the herein described tract of land;

THENCE, with the common line of said restricted Reserve "C" and the herein described tract of land North 74 degrees, 31 minutes, 08 seconds West, (called North 73 degrees, 44 minutes, 35 seconds West) a distance of 295.91 feet to the POINT OF BEGINNING and containing 2.0987 acres (91,419 square feet) of land.

GENERAL NOTES:

1) BEARING BASIS FOR THIS DRAWING IS THE TEXAS COORDINATE SYSTEM OF 1983, CENTRAL ZONE 4203, NAD83 (2011). COORDINATES SHOWN ARE GRID; DISTANCES SHOWN ARE SURFACE AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY A SCALE FACTOR OF 0.99997.
2) ELEVATIONS REFERENCED HEREON WERE REFERENCED FROM NATIONAL GEODETIC SERVICE (NGS) MONUMENT AJ6405 (ELEV. 212.40) UTILIZING GEOID 18, NAVD88.
3) FLOOD PLAIN NOTE : ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSUREANCE RATE MAP (FIRM) PANEL NUMBER 48048305106 WITH AN EFFECTIVE DATE OF AUGUST 18, 2014. THE PROPERTY IS LOCATED PARTIALLY IN ZONE "X" SHADED AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD AND PARTIALLY IN ZONE AE AREAS WITH A 1% ANNUAL CHANCE OF FLOODING, BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED.
4) FLOOD ZONE LOCATED BY GRAPHIC PLOTTING ONLY FROM FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP.
5) THIS SURVEY WAS PERFORMED EXCLUSIVELY FOR THE PARTIES CERTIFIED TO HEREON. THIS SURVEY REMAINS THE PROPERTY OF THE SURVEYOR. UNAUTHORIZED REUSE IS NOT PERMITTED WITHOUT THE EXPRESSED WITTEN PERMISSION OF THE SURVEYOR. THE USE OF THIS SURVEY BY ANYONE OTHER THAN THE CERTIFIED PARTIES OR FOR ANY UNINTENDED USE WILL NOT MAKE THE SURVEYOR LIABLE FOR ANY DAMAGES INCURRED.
6) THE SURVEYOR HAS NOT ABSTRACTED THE SUBJECT PROPERTY, NOR MADE ANY INDEPENDENT INVESTIGATION OR SEARCH FOR EASEMENTS OF RECORD, RESTRICTED COVENANTS OR ANY OTHER ENCUMBRANCES.
7) THIS SURVEY WAS PREFORMED IN SUBSTANTIAL ACCORDANCE WITH TEXAS SOCIETY OF PROFESSIONAL SURVEYORS (TSPS) CATEGORY 1-B, CONDITION 2 REQUIREMENTS. THIS DOES NOT INCLUDE THE PREPARATION OF A SEPARATE SURVEY MAP SUITABLE FOR TITLE INSURANCE PURPOSES OR FOR ADDRESSING SCHEDULE B ITEMS AND WAS PREFOREMD WITHOUT THE BENEFIT OF A TITLE COMMITMENT OR REPORT.
8) ALL EASEMENTS, SETBACKS AND RESTRICTIONS SHOULD BE VERIFIED BY THE OWNER, BUILDER, ARCHITECT OR OTHER PRIOR TO PLANNING, DESIGN, OR CONSTRUCTION.
9) THERE ARE NO GAPS, STRIPS OR GORES, AND THE LEGAL DESCRIPTION PRESENTED MATHEMATICALLY CLOSES.
10) VISIBLE IMPROVEMENTS AND UTILITIES WERE LOCATED ON THE SURVEY.

SURVEYOR'S CERTIFICATE:
TO THE WOODLANDS TOWNSHIP

MALCOLM T. MARTIN
REGISTERED PROFESSIONAL LAND SURVEYOR NO. 6962

THIS IS TO CERTIFY THAT THIS SURVEY MEETS THE REQUIREMENTS OF A CATEGORY 1B CONDITION II STANDARD LAND SURVEY. THIS CERTIFICATION IS REVOKED AND THE SURVEY NULL AND VOID IF THIS DOCUMENT IS ALTERED IN ANY MANNER, USED OR RELIED UPON BY ANY PERSON OTHER THAN THE PARTIES ADDRESSED ABOVE OR DOES NOT BEAR AN ORIGINAL SIGNATURE AND SEAL OF THE SURVEYOR.

Topographic and Boundary Survey
Of two tracts of lands
Situated in the Henry Blood Surey A-101
And the Blanch & Foley Survey A-797
In the Woodlands,
Montgomery County, Texas

halff
14800 ST. MARY'S LANE, SUITE 160
HOUSTON, TX 77079-2943
TEL (713) 588-2450
TBPELS SURVEYING FIRM #10029606

REVISION		
No.	DATE	DESCRIPTION

STATE OF TEXAS REGISTERED Malcolm T. Martin 6962 PROFESSIONAL LAND SURVEYOR

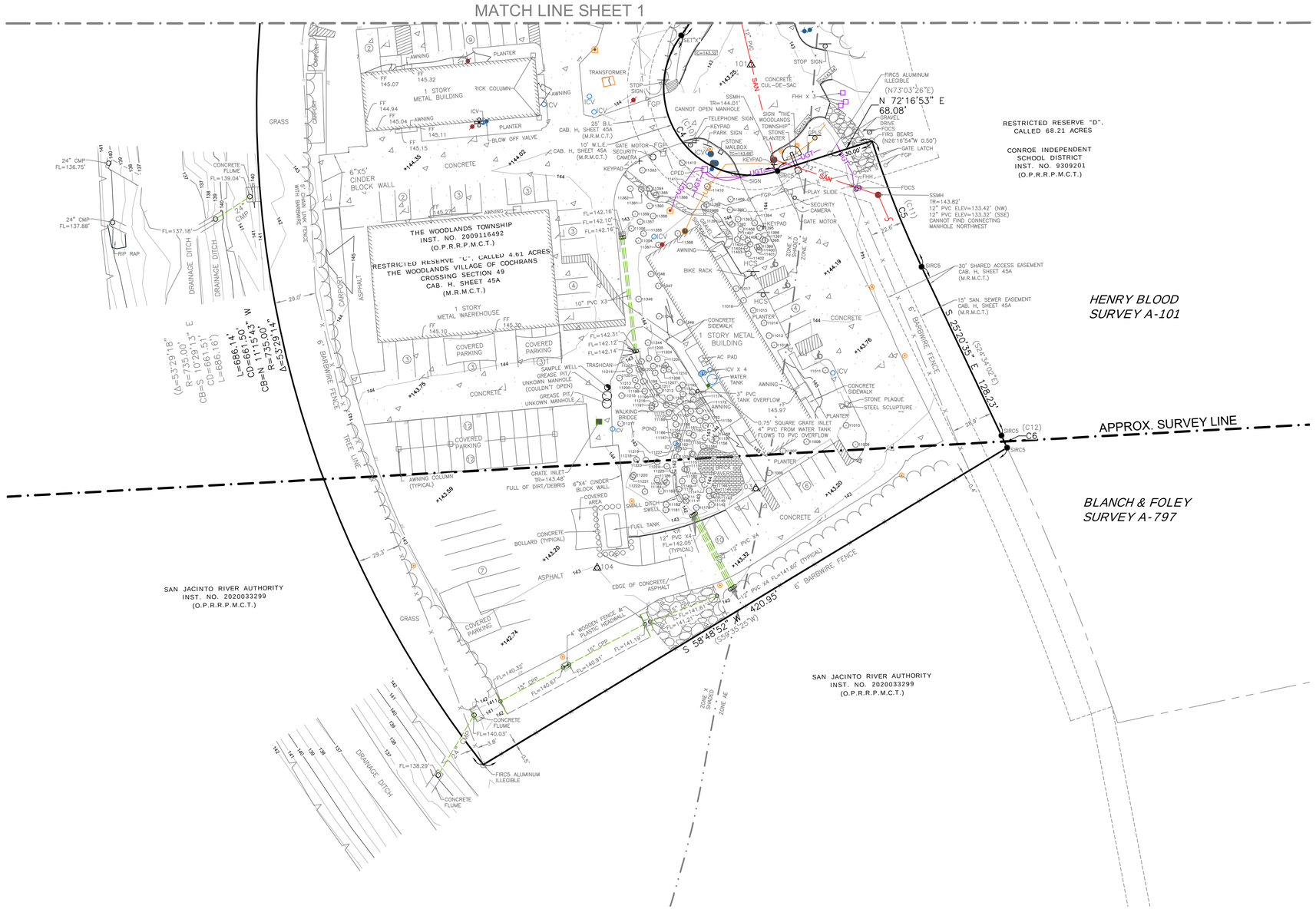
The seal appearing on this document was authorized by Malcolm T. Martin, RPLS#6962 Alteration of a sealed document without proper notification to the responsible surveyor is an offense under the Texas Professional Land Surveying Practices Act. The record copy of this drawing is on file at the offices of Halff Associates, Inc. 14800 St. Mary's Lane, Suite 160 Houston, Texas 77079-2943 TBPLS Registration No. 10029606

PROJECT NO:	52417.009
ISSUED:	9/5/2024
DRAWN BY:	BB
CHECKED BY:	MM

SHEET TITLE:
V-DS-52417.009-83S

PAGE: 1 OF 3

A:\52000s\52417.009\SURV\CADD\Sheets\V-DS-52417.009-83S.dwg
September 05, 2024, 9:46:26 AM, ahi2800



Topographic and Boundary Survey
Of two tracts of lands
Situated in the Henry Blood Surey A-101
And the Blanch & Foley Survey A-797
In the Woodlands,
Montgomery County, Texas

halff
14800 ST. MARY'S LANE, SUITE 160
HOUSTON, TX 77079-2943
TEL (713) 588-2450
TBPELS SURVEYING FIRM #10029606

REVISION No.	DATE	DESCRIPTION

The seal appearing on this document was authorized by Malcolm T. Martin, RPLS#6962. Alteration of a sealed document without proper notification to the responsible surveyor is an offense under the Texas Professional Land Surveying Practices Act. The record copy of this drawing is on file at the offices of Halff Associates, Inc. 14800 St. Mary's Lane, Suite 160 Houston, Texas 77079-2943 TBPLS Registration No. 10029606

PROJECT NO: 52417.009
ISSUED: 9/5/2024
DRAWN BY: BB
CHECKED BY: MM

SHEET TITLE:
V-DS-52417.009-83S

A:\52000s\52417\009\SURV\CADD\Sheets\V-DS-52417.009-83S.dwg
September 05, 2024, 9:39:33 AM, ah2900

Point Table		
Point #	Code	Description
10853	TREE	6IN OAK
11365	TREE	24IN PINE
10854	TREE	20IN PINE
11366	TREE	8IN OAK
10855	TREE	4IN OAK
11367	TREE	15IN CLUSTER
10856	TREE	26IN OAK
11368	TREE	15IN CLUSTER
10857	TREE	20IN PINE
10858	TREE	6IN PINE
10859	TREE	4IN CRAPE MERTLE
10860	TREE	10IN OAK CLUSTER
10861	TREE	18IN OAK
10862	TREE	28IN PINE
10863	TREE	10IN PINE
10864	TREE	10IN OAK
10865	TREE	8IN OAK
10866	TREE	6IN PINE
10867	TREE	4IN PINE
10868	TREE	12IN PINE

Point Table		
Point #	Code	Description
10869	TREE	8IN TALLOW
10870	TREE	6IN TALLOW
10871	TREE	6IN CLUSTER
10872	TREE	5IN CLUSTER
10873	TREE	10IN CLUSTER
10874	TREE	8IN PINE
10875	TREE	8IN PINE
11388	TREE	4IN OAK
10876	TREE	12IN PINE
11389	TREE	15IN PINE
10877	TREE	10IN PINE
11390	TREE	10IN PINE
10878	TREE	8IN PINE
11391	TREE	10IN PINE
10879	TREE	4IN PINE
11392	TREE	12IN PINE
10880	TREE	4IN PINE
11393	TREE	8IN PINE
10881	TREE	4IN PINE
11394	TREE	10IN OAK

Point Table		
Point #	Code	Description
10882	TREE	6IN PINE
11395	TREE	10IN PINE
10883	TREE	3IN PINE
11396	TREE	15IN PINE
10884	TREE	6IN CLUSTER
11397	TREE	6IN OAK
10885	TREE	12IN CLUSTER
11398	TREE	8IN OAK
10886	TREE	4IN OAK
11399	TREE	4IN PINE
10887	TREE	10IN PINE
11400	TREE	12IN PIN
10888	TREE	5IN PINE
11401	TREE	6IN OAK
10889	TREE	3IN PINE
11402	TREE	6IN OAK
10890	TREE	4IN PINE
11403	TREE	4IN OAK
10891	TREE	8IN PINE
11404	TREE	8IN PINE

Point Table		
Point #	Code	Description
10892	TREE	8IN PINE
11405	TREE	12IN PINE
10893	TREE	10IN PINE
10894	TREE	3IN PINE
11406	TREE	10IN PINE
10895	TREE	6IN PINE
11407	TREE	6IN OAK
10896	TREE	12IN PINE
11408	TREE	4IN OAK
10897	TREE	3IN PINE
11409	TREE	12IN PINE
10898	TREE	4IN OAK
11410	TREE	15IN OAK
10899	TREE	12IN PINE
11411	TREE	18IN OAK
10900	TREE	6IN PINE
11412	TREE	10IN OAK
10907	TREE	6IN CLUSTER
11006	TREE	4IN
11007	TREE	4IN

Point Table		
Point #	Code	Description
11008	TREE	5IN
11009	TREE	10IN OAK
11010	TREE	15IN CRAPE METLE CLUSTEER
11011	TREE	15IN OAK
11012	TREE	15IN CLUSTER
11013	TREE	8IN CLUSTER
11014	TREE	18IN ELM
11015	TREE	12IN CLUSTER
11016	TREE	6IN CLUSTER
11017	TREE	4IN
10906	TREE	4IN PINE
11142	TREE	6IN
11143	TREE	5IN OAK
11144	TREE	4IN PINE
11145	TREE	10IN PINE
11146	TREE	15IN HACKBERRY
11147	TREE	4IN PINE
11148	TREE	5IN OAK
11149	TREE	4IN PINE
11150	TREE	8IN PINE

Point Table		
Point #	Code	Description
11151	TREE	4IN PINE
11152	TREE	4IN PINE
11153	TREE	8IN PINE
11154	TREE	4IN OAK
11155	TREE	10IN PINE
11156	TREE	4IN PINE
11157	TREE	12IN PIN
11158	TREE	12IN PIN
11159	TREE	4IN OAK
11160	TREE	4IN PINE
11161	TREE	6IN PINE
11162	TREE	6IN PINE
11163	TREE	12IN PINE
11164	TREE	14IN OAK
11165	TREE	12IN PINE
11166	TREE	4IN PINE
11167	TREE	4IN PINE
11168	TREE	4IN PINE
11169	TREE	5IN PINE
11170	TREE	4IN PINE

Point Table		
Point #	Code	Description
11171	TREE	8IN PINE
11172	TREE	4IN PINE
11173	TREE	4IN OAK
11174	TREE	8IN OAK
11175	TREE	4IN OAK
11176	TREE	4IN PINE
11177	TREE	15IN PINE
11178	TREE	4IN OAK
11179	TREE	18IN OAK
11180	TREE	4IN OAK
11181	TREE	15IN PINE
11182	TREE	12IN OAK
11183	TREE	8IN PINE
11184	TREE	4IN PINE
11185	TREE	4IN PINE
11186	TREE	4IN PINE
11190	TREE	8IN OAK
11191	TREE	8IN PINE
11192	TREE	8IN OAK
11193	TREE	4IN OAK

Point Table		
Point #	Code	Description
11194	TREE	4IN OAK
11195	TREE	4IN OAK
11196	TREE	4IN OAK
11197	TREE	10IN PINE
11198	TREE	6IN PINE
11199	TREE	6IN PINE
11200	TREE	12IN PINE
11201	TREE	6IN PINE
11202	TREE	6IN PINE
11203	TREE	4IN PINE
11204	TREE	10IN PINE
11205	TREE	8IN PINE
11206	TREE	6IN OAK
11207	TREE	4IN OAK
11208	TREE	15IN PINE
11209	TREE	12IN OAK
11210	TREE	6IN OAK
11211	TREE	12IN PINE
11212	TREE	4IN OAK
11213	TREE	12IN OAK

Point Table		
Point #	Code	Description
11214	TREE	12IN PINE
11215	TREE	24IN OAK
11216	TREE	4IN PINE
11217	TREE	12IN PINE
11218	TREE	4IN PINE
11219	TREE	18IN OAK
11220	TREE	10IN PINE
11221	TREE	6IN OAK
11222	TREE	6IN PINE
11223	TREE	6IN PINE
11224	TREE	4IN PINE
11225	TREE	10IN PINE
11226	TREE	18IN MULTI TRUNK
11227	TREE	4IN PINE
11344	TREE	15 OAK
11345	TREE	18IN OAK
11346	TREE	4IN MAGNOLIA
11347	TREE	12IN CLUSTER
11348	TREE	12IN CLUSTER
11349	TREE	12IN CLUSTER

Point Table		
Point #	Code	Description
11354	TREE	15IN OAK MULTI TRUNK
11355	TREE	15IN OAK
11356	TREE	6IN OAK
11357	TREE	12IN OAK
11358	TREE	8IN PINE
11359	TREE	4IN OAK
11360	TREE	12IN OAK
11361	TREE	15IN PINE
11362	TREE	12IN MAGNOLIA
11363	TREE	12IN OAK
11364	TREE	6IN OAK

Topographic and Boundary Survey
Of two tracts of lands
Situated in the Henry Blood Surey A-101
And the Blanch & Foley Survey A-797
In the Woodlands,
Montgomery County, Texas

halff
14800 ST. MARY'S LANE, SUITE 160
HOUSTON, TX 77079-2943
TEL (713) 588-2450
TBPELS SURVEYING FIRM #10029606

REVISION		
No.	DATE	DESCRIPTION

The seal appearing on this document was authorized by Malcolm T. Martin, RPLS#6962. Alteration of a sealed document without proper notification to the responsible surveyor is an offense under the Texas Professional Land Surveying Practices Act. The record copy of this drawing is on file at the offices of Halff Associates, Inc. 14800 St. Mary's Lane, Suite 160 Houston, Texas 77079-2943 TBPLS Registration No. 10029606

PROJECT NO: 52417.009
ISSUED: 9/5/2024
DRAWN BY: BB
CHECKED BY: MM

SHEET TITLE:
V-DS-52417.009-83S

A:\52000s\52417\009\SURV\CADD\Sheets\V-DS-52417.009-83S.dwg
September 05, 2024, 9:39:56 AM, ah2800

Exhibit N – Technical Specifications

Standard Technical Specifications

City of Houston Standard Specifications

Design and Construction Standards | Houston Permitting Center

01255	CHANGE ORDER PROCEDURES
01270	MEASUREMENT AND PAYMENT
01312	COORDINATION AND MEETINGS
01330	SUBMITTAL PROCEDURES
01340	SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
01504	TEMPORARY FACILITIES AND CONTROLS
01520	TEMPORARY FIELD OFFICE
01562	TREE PROTECTION
01570	STORM WATER POLLUTION PREVENTION CONTROL
01575	STABILIZED CONSTRUCTION ACCESS/ CONCRETE TRUCK WASHOUT
01578	CONTROL OF GROUND AND SURFACE WATER
02090	FRAMES, GRATES, RINGS, AND COVERS
02201	SITE PREPERATION, GRADING RESTORATION AND SITE CLEAN UP
02221	REMOVING EXISTING PAVEMENTS, STRUCTURES, WOOD, AND DEMOLITION DEBRIS
02233	CLEARING AND GRUBBING
02260	TRENCH SAFETY SYSTEM
02316	EXCAVATION AND BACKFILL FOR STRUCTURES
02317	EXCAVATION AND BACKFILL FOR UTILITIES
02319	BORROW
02320	UTILITY BACKFILL MATERIAL
02321	CEMENT STABILIZED SAND
02337	LIME/FLY ASH STABILIZED SUBGRADE
02505	HIGH DENSITY POLYETHYLENE (HDPE) SOLID AND PROFILE WALL PIPE
02506	POLYVINYL CHLORIDE PIPE
02531	GRAVITY SANITARY SEWERS
02611	REINFORCED CONCRETE PIPE
02631	STORM SEWERS
02633	PRECAST CONCRETE INLETS, HEADWALLS, AND WINGWALLS
02713	RECYCLED CRUSHED CONCRETE BASE COURSE
02741	ASPHALTIC CONCRETE PAVEMENT
02751	CONCRETE PAVING
02752	CONCRETE PAVEMENT JOINTS
02753	CONCRETE PAVEMENT CURING
02754	CONCRETE DRIVEWAYS
02767	THERMOPLASTIC PAVEMENT MARKINGS
02771	CURB, CURB AND GUTER, AND HEADERS
02775	CONCRETE SIDEWALKS

Additional Standard Technical Specifications

01505 MOBILIZATION
011000 SUMMARY
012500 SUBSTITUTION PROCEDURES
014000 QUALITY REQUIREMENTS
015100 TEMPORARY UTILITIES
015213 FIELD OFFICES AND SHEDS
015500 VEHICULAR ACCESS AND PARKING
016000 PRODUCT REQUIREMENTS
016116 VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS
017000 EXECUTION AND CLOSEOUT REQUIREMENTS
017800 CLOSEOUT SUBMITTALS
024100 DEMOLITION
033000 CAST-IN-PLACE CONCRETE
040511 MASONRY MORTARING AND GROUTING
042000 UNIT MASONRY
052100 STEEL JOIST FRAMING
055000 METAL FABRICATIONS
061000 ROUGH CARPENTRY
061053 MISCELLANEOUS ROUGH CARPENTRY
061200 STRUCTURAL INSULATED PANELS – PREMIER SIPS 1
062000 FINISH CARPENTRY
064100 ARCHITECTURAL WOOD CASEWORK
072100 THERMAL INSULATION
074113 METAL ROOF PANELS 1
074213 METAL WALL PANELS
078400 FIRESTOPPING
079200 JOINT SEALANTS
080671 DOOR HARDWARE SCHEDULE
081113 HOLLOW METAL DOORS AND FRAMES
081116 ALUMINUM DOORS AND FRAMES
081416 FLUSH WOOD DOORS
084313 ALUMINUM-FRAMED STOREFRONTS
087100 DOOR HARDWARE
088000 GLAZING (PER COMCHECK)
090561 COMMON WORK RESULTS FOR FLOORING PREPARATION
092116 GYPSUM BOARD ASSEMBLIES
092216 NON-STRUCTURAL METAL FRAMING
092400 CEMENT PLASTERING
093000 TILING
095100 ACOUSTICAL CEILINGS
096500 RESILIENT FLOORING

096813 TILE CARPETING
099113 EXTERIOR PAINTING
099123 INTERIOR PAINTING
102310 GLAZED INTERIOR DOOR AND WALL ASSEMBLIES
102800 TOILET, BATH, AND LAUNDRY ACCESSORIES
104400 FIRE PROTECTION SPECIALTIES
123600 COUNTERTOPS
316329 DRILLED CONCRETE PIERS AND SHAFTS
328400 IRRIGATION
329100 SOIL
329200 TURF AND GRASSES

Additional Information

LSI STEEL POLES
LSI FLOOD LIGHT BRACKETS
BEACON RATIO FLOOD FIXTURES

Section 01505

MOBILIZATION

1.1 G E N E R A L

1.2 SECTION INCLUDES

A Mobilization of construction equipment and facilities onto the Work.

B Referenced Standards:
1. Texas Department of Transportation (TxDOT)
2. Texas Manual on Uniform Traffic Control Devices (Texas MUTCD)

1.3 MEASUREMENT AND PAYMENT

A. Payment for Mobilization is on a Lump Sum basis and shall not exceed three percent (3%) of the total bid price.

B. Payment for 50% of the Mobilization lump sum bid item may be included in the first monthly Application for Payment. Payment is subject to the receipt and approval by Engineer of the following items, as applicable:
1. Schedule of Values (Section 01350 – Submittals)
2. Trench Safety Program (Section 01570 – Trench Safety System)
3. Construction Schedule (Section 01350 – Submittals)
4. Pre-construction Photographs (Section 01380 – Construction Photographs)
5. Installation and acceptance of Project Identification Sign(s) (Section 01580 – Project Identification Signs)
6. Installation and acceptance of Field Office (Section 01500 – Temporary Facilities and Controls)
7. Installation and acceptance of TPDES requirements (Section 01565 - TPDES Requirements)

C. Payment for 25% of the Mobilization lump sum bid item may be included in the second monthly Application for Payment. Payment is subject to the receipt and approval by Engineer of the following items, as applicable:
1. Installation of High Speed Internet Access (Section 01500 – Temporary Facilities and Controls)

D. Payment for 15% of the Mobilization lump sum bid item may be included in the third monthly Application for Payment.

E. Payment for the remaining 10% of the Mobilization lump sum bid item may be included in the fourth monthly Application for Payment.

F. For contracts with a duration of less than 120 days, payment for the remaining 50% of the Mobilization lump sum bid item may be included in the second monthly Application for Payment. Payment is subject to the receipt and approval by Engineer of the items listed in B. and C. above, as applicable.

G. Mobilization payments will be subject to Retainage as stipulated in Section 00700 General Conditions of Agreement.

2.1 P R O D U C T S

2.2 PROJECT IDENTIFICATION SIGNS

A. Provide specified number of project identification sign(s) per Section 01580. The name, address and contact information of the general contractor for the project shall be shown on the sign per Section 01580 and the attached exhibit.

3.1 E X E C U T I O N

3.2 PLACEMENT OF PROJECT IDENTIFICATION SIGNS

A. Place a Project Identification Sign as described in Section 01580, part 1.03, D visible to passing traffic or as directed by Engineer.

END OF SECTION

SECTION 01 1000
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: Pardes Campus

B. Owner's Name: Parks and Recreation Department

C. Architect's Name: Heights Venture Architects LLP.

D. The Project consists of the construction of Project Description

1.02 OWNER OCCUPANCY

A. Owner intends to occupy the Project upon Substantial Completion.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Schedule the Work to accommodate Owner occupancy.

1.03 CONTRACTOR USE OF SITE AND PREMISES

A. Provide access to and from site as required by law and by Owner:

1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
2. Do not obstruct roadways, sidewalks, or other public ways without permit.

1.04 WORK SEQUENCE

A. Coordinate construction schedule and operations with Owner.

SECTION 01 2500
SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittal procedures, coordination.

B. Section 01 6000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

1.03 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
   1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
      a. Unavailability.
   2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
      a. Substitution requests offering advantages solely to the Contractor will not be considered.

1.04 REFERENCE STANDARDS

A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.

B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Has a minimum of 10 years experience
   3. Agrees to provide the same warranty for the substitution as for the specified product.
   4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
   5. Waives claims for additional costs or time extension that may subsequently become apparent.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.

C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
   1. Forms indicated in the Project Manual are adequate for this purpose, and must be used.

D. Limit each request to a single proposed substitution item.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Submittal Time Restrictions:

B. Submittal Form (before award of contract):

1. Submit substitution requests by completing CSI/CSC Form 1.5C - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Submittal Form (after award of contract):
   1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request (After Bidding/Negotiating). See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

B. Architect will consider requests for substitutions only within 15 days after date of Agreement.

C. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

D. Submit request for Substitution for Convenience within 14 days of discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
   1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
   2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
   3. Bear the costs engendered by proposed substitution of:
      a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.

E. Substitutions will not be considered under one or more of the following circumstances:
   1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
   2. Without a separate written request.
   3. When acceptance will require revisions to Contract Documents.

3.04 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

B. Architect will notify Contractor in writing of decision to accept or reject request.
   1. Architect's decision following review of proposed substitution with the stakeholders will be noted on the submitted form.

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Quality assurance.

C. References and standards.

D. Testing and inspection agencies and services.

E. Control of installation.

F. Mock-ups.

G. Tolerances.

1.02 RELATED REQUIREMENTS

A. Document 00 3100 - Available Project Information: Soil investigation data.

B. Document 00 7200 - General Conditions: Inspections and approvals required by public authorities.

1.03 DEFINITIONS

A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
2. Include required product data and shop drawings.
3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.

C. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.

1. Include:
   a. Date issued.
   b. Project title and number.
   c. Name of inspector.
   d. Date and time of sampling or inspection.
   e. Identification of product and specifications section.
   f. Location in the Project.
   g. Type of test/inspection.
   h. Date of test/inspection.
   i. Results of test/inspection.
   j. Compliance with Contract Documents.
   k. When requested by Architect, provide interpretation of results.
2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.05 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.06 TESTING AND INSPECTION AGENCIES AND SERVICES

A. Owner will employ and pay for services of an independent testing agency to perform other specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 3 EXECUTION

2.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

2.02 MOCK-UPS

A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.

B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.

C. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

D. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

E. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
   1. Architect will issue written comments within seven (7) working days of initial review and each subsequent follow up review of each mock-up.
   2. Make corrections as necessary until Architect's approval is issued.

F. Architect will use accepted mock-ups as a comparison standard for the remaining Work.

G. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

2.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

2.04 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.

C. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.

b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
c. To facilitate tests/inspections.
d. To provide storage and curing of test samples.

4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

2.05 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

SECTION 01 5100
TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities: Provision of electricity, lighting, heat, ventilation, and water.

1.02 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

1.03 TEMPORARY ELECTRICITY

A. Cost: By Contractor.

B. Provide power service required from utility source.

C. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required.

D. Provide main service disconnect and over-current protection at convenient location and meter.

E. Permanent convenience receptacles may be utilized during construction.

F. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.04 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain LED, compact fluorescent, or high-intensity discharge lighting as suitable for the application for construction operations in accordance with requirements of 29 CFR 1926 and authorities having jurisdiction.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lighting and provide routine repairs.

1.05 TEMPORARY HEATING

A. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

B. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

1.06 TEMPORARY VENTILATION

1.07 TEMPORARY WATER SERVICE

A. Cost of Water Used: By Contractor.

B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.

SECTION 01 5213
FIELD OFFICES AND SHEDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary field offices for use of Contractor.

B. Maintenance and removal.

PART 2 PRODUCTS

2.01 CONSTRUCTION

A. Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations, with steps and landings at entrance doors.

B. Construction: Structurally sound, secure, weather tight enclosures for office. Maintain during progress of Work; remove when no longer needed.

C. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy requirements.

D. Exterior Materials: Weather resistant, finished in one color.

E. Interior Materials in Offices: Sheet type materials for walls and ceilings, prefinished or painted; resilient floors and bases.

F. Lighting for Offices: 50 fc at desk top height, exterior lighting at entrance doors.

G. Fire Extinguishers: Appropriate type fire extinguisher at each office.

2.02 ENVIRONMENTAL CONTROL

A. Heating, Cooling, and Ventilating: Automatic equipment to maintain comfort conditions.

2.03 CONTRACTOR OFFICE AND FACILITIES

A. Size: For Contractor's needs and to provide space for project meetings.

B. Furnishings in Meeting Area: Conference table and chairs to seat at least eight persons; racks and files for Contract Documents, submittals, and project record documents.

PART 3 EXECUTION

3.01 PREPARATION

A. Fill and grade sites for temporary structures to provide drainage away from buildings.

3.02 INSTALLATION

A. Install office spaces ready for occupancy 15 days after date fixed in Notice to Proceed.

3.03 MAINTENANCE AND CLEANING

A. Weekly janitorial services for offices; periodic cleaning and maintenance for offices.

B. Maintain approach walks free of mud, water, and snow.

3.04 REMOVAL

A. At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

SECTION 01 5500
VEHICULAR ACCESS AND PARKING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Access roads.

B. Parking.

C. Maintenance.

D. Removal, repair.

E. Mud from site vehicles.

PART 2 PRODUCTS

2.01 MATERIALS

A. Temporary Construction: Contractor's option.

PART 3 EXECUTION

3.01 PREPARATION

A. Clear areas, provide surface and storm drainage of road, parking, area premises, and adjacent areas.

3.02 ACCESS ROADS

A. Construct new temporary all-weather access roads from public thoroughfares to serve construction area, of a width and load bearing capacity to provide unimpeded traffic for construction purposes.

B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.

C. Extend and relocate as work progress requires, provide detours as necessary for unimpeded traffic flow.

D. Provide and maintain access to fire hydrants free of obstructions.

3.03 PARKING

A. Arrange for temporary parking areas to accommodate use of construction personnel.

B. When site space is not adequate, provide additional off-site parking.

3.04 MAINTENANCE

A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, products, mud, snow, and ice.

B. Maintain existing paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.05 REMOVAL, REPAIR

A. Remove temporary roads when permanent paving is usable.

B. Remove underground work and compacted materials to a depth of 2 feet; fill and grade site as specified.

C. Repair existing facilities damaged by use, to original condition.

D. Remove equipment and devices when no longer required.

E. Repair damage caused by installation.

F. Remove post settings to a depth of 2 feet.

3.06 MUD FROM SITE VEHICLES

A. Provide means of removing mud from vehicle wheels before entering streets.

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Transportation, handling, storage and protection.

C. Product option requirements.

D. Substitution limitations.

E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

A. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.

B. Section 01 3000 - Administrative Requirements

C. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.

D. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.03 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Where other criteria are met, Contractor shall give preference to products that:

1. If used on interior, have lower emissions, as defined in Section 01 6116.
2. If wet-applied, have lower VOC content, as defined in Section 01 6116.
3. Are extracted, harvested, and/or manufactured closer to the location of the project.
4. Have longer documented life span under normal use.
5. Result in less construction waste. See Section 01 7419
6. Are made of vegetable materials that are rapidly renewable.
7. Are made of recycled materials.
8. If made of wood, are made of sustainably harvested wood, wood chips, or wood fiber.
9. If bio-based, other than wood, are or are made of Sustainable Agriculture Network certified products.

2.02 PRODUCT OPTIONS

A. Products, including materials, equipment and sytems described in the Contract Documents establish the standards of required function, dimension, appearance, quality and performance of the work. Base all bids on the "Standards" indicated.

B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named. See section 01 2500 for substitution procedures.

2.03 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 2500 - Substitution Procedures.

3.02 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

G. Comply with manufacturer's warranty conditions, if any.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

I. Prevent contact with material that may cause corrosion, discoloration, or staining.

J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

SECTION 01 6116
VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for Indoor-Emissions-Restricted products.

B. Requirements for VOC-Content-Restricted products.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittal procedures.

1.03 DEFINITIONS

A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:

B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
   1. Interior paints and coatings applied on site.
   2. Interior adhesives and sealants applied on site, including flooring adhesives.

C. Interior of Building: Anywhere inside the exterior weather barrier.

D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.

E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
   1. Concrete.
   2. Clay brick.
   3. Metals that are plated, anodized, or powder-coated.
   4. Glass.
   5. Ceramics.
   6. Solid wood flooring that is unfinished and untreated.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).

C. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2020.

D. SCAQMD 1113 - Architectural Coatings; 1977, with Amendment (2016).

E. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

1.06 QUALITY ASSURANCE

A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
   1. Evidence of Compliance: Acceptable types of evidence are:
      a. Report of laboratory testing performed in accordance with requirements.

B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

A. VOC-Content-Restricted Products: VOC content not greater than required by the following:
   1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
   2. Joint Sealants: SCAQMD 1168 Rule.
   3. Paints and Coatings: Each color; most stringent of the following:
      a. 40 CFR 59, Subpart D.
      b. SCAQMD 1113 Rule.
      c. CARB (SCM).

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.

B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Cutting and patching.

C. Surveying for laying out the work.

D. Cleaning and protection.

E. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 QUALIFICATIONS

A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

1.03 PROJECT CONDITIONS

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.04 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

D. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

F. Utilize recognized engineering survey practices.

G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:

1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations; and _____.
2. Grid or axis for structures.
3. Building foundation, column locations, ground floor elevations, and _____.

H. Periodically verify layouts by same means.

I. Maintain a complete and accurate log of control and survey work as it progresses.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-complying work.

C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.

I. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.06 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.07 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.09 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

E. Clean filters of operating equipment.

F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

G. Clean site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.10 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's comprehensive list of items to be completed or corrected.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project record documents.

B. Operation and maintenance data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Individual Product Sections: Specific requirements for operation and maintenance data.

C. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Operation and Maintenance Data:
   1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   3. Submit two sets of revised final documents in final form within 10 days after final inspection.

B. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 3 EXECUTION

2.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Addenda.
   3. Change Orders and other modifications to the Contract.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Record Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.

2.02 OPERATION AND MAINTENANCE DATA

A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

2.03 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Sequencing and staging requirements.

C. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

D. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

E. Section 01 5713 - Temporary Erosion and Sediment Control.

F. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

G. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

H. Section 01 7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

I. Section 31 1000 - Site Clearing: Vegetation and existing debris removal; earth stripping and stockpiling.

J. Section 31 2200 - Grading: Rough and fine grading.

K. Section 31 2323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Site Plan: Indicate:
   1. Areas for temporary construction and field offices.

C. Demolition Plan: Submit demolition plan as required by OSHA and local AHJs.
   1. Indicate extent of demolition, removal sequencing, bracing and shoring, and location and construction of barricades and fences.
   2. Demolition firm qualifications.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 3 EXECUTION

2.01 DEMOLITION

A. Remove portions of existing buildings in the following sequence:
   1. _____.
   2. _____.
   3. _____.

B. Remove other items indicated, for salvage, relocation, recycling, and _____.

C. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 2200.

2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
   6. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
   7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements to remain in place and not removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

2.03 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

2.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
   1. Verify construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Remove existing work as indicated and required to accomplish new work.
   1. Remove items indicated on drawings.

C. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as indicated.
   1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

D. Protect existing work to remain.
   1. Prevent movement of structure. Provide shoring and bracing as required.
   2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch to match new work.

2.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove materials not to be reused on site; comply with requirements of Section 01 7419 - Waste Management.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 031000 "Concrete Forming and Accessories" for form-facing materials, form liners, insulating concrete forms, and waterstops.
2. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.
3. Section 312000 "Earth Moving" for drainage fill under slabs-on-ground.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, and other pozzolans materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

1.4 ACTION SUBMITTALS

A. Product Data: For each of the following.

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Blended hydraulic cement.
5. Aggregates.
6. Admixtures:

a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

7. Vapor retarders.
8. Liquid floor treatments.
9. Curing materials.
10. Joint fillers.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Durability exposure class.
4. Maximum w/cm.
5. Calculated equilibrium unit weight, for lightweight concrete.
6. Slump limit.
7. Air content.
8. Nominal maximum aggregate size.
9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
10. Intended placement method.
11. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

a. Location of construction joints is subject to approval of the Architect.

D. Concrete Schedule: For each location of each Class of concrete indicated in "Concrete Mixtures" Article, including the following:

1. Concrete Class designation.
2. Location within Project.
3. Exposure Class designation.
4. Formed Surface Finish designation and final finish.
5. Final finish for floors.
6. Curing process.
7. Floor treatment if any.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Curing compounds.
4. Vapor retarders.
5. Joint-filler strips.

B. Material Test Reports: For the following, from a qualified testing agency:

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Blended hydraulic cement.
5. Aggregates.
6. Admixtures:

C. Research Reports: For concrete admixtures in accordance with ICC's Acceptance Criteria AC198.

D. Preconstruction Test Reports: For each mix design.

E. Field quality-control reports.

F. Minutes of preinstallation conference.

1.6 QUALITY ASSURANCE

A. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture.

1. Include the following information in each test report:

a. Admixture dosage rates.
b. Slump.
c. Air content.
d. Seven-day compressive strength.
e. 28-day compressive strength.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301

1.9 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.2 CONCRETE MATERIALS

A. Cementitious Materials:

1. Portland Cement: ASTM C150, Type I/II, gray.
2. Fly Ash: ASTM C618, Class C or F.
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C33/C33M, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.

1. Alkali-Silica Reaction: Comply with one of the following:

a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.
b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.
c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. (2.37 kg/cu. m) for moderately reactive aggregate or 3 lb./cu. yd. (1.78 kg/cu. m) for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301 (ACI 301M).

2. Maximum Coarse-Aggregate Size: **1 inch** nominal.

C. Air-Entraining Admixture: ASTM C260/C260M.

D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride[**in steel-reinforced concrete**].

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

E. Water and Water Used to Make Ice: ASTM C94/C94M, potable

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

2.3 VAPOR RETARDERS

A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A, not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.4 LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.

2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd when dry.

B. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

1. Color:

a. Ambient Temperature Below 50 deg F: Black.
b. Ambient Temperature between 50 deg F and 85 deg F: Any color.
c. Ambient Temperature Above 85 deg F: White.

C. Curing Paper: 8-feet- wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.

D. Water: Potable or complying with ASTM C1602/C1602M.

E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

F. Clear, Waterborne, Membrane-Forming, Nondissipating Curing Compound: ASTM C309, Type 1, Class B

G. Clear, Waterborne, Membrane-Forming, Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

2.6 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.

2.7 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash or Other Pozzolans: 25 percent by mass.
2. Slag Cement: 50 percent by mass.
3. Total of Fly Ash or Other Pozzolans, Slag Cement: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass.
4. Total of Fly Ash or Other Pozzolans: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

2.8 CONCRETE MIXTURES

A. Class A: Normal-weight concrete used for footings, grade beams, and tie beams.

1. Exposure Class: ACI 318 F1 S0 W1 C1.
2. Minimum Compressive Strength: 4000 psi at 28 days.
3. Maximum w/cm: 0.45.
4. Slump Limit: 3 inches, plus or minus 1 inch or 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
5. Air Content:

    a. Exposure Class F1: 4.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-inch nominal maximum aggregate size.

6. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

B. Class C: Normal-weight concrete used for interior slabs-on-ground.

1. Exposure Class: ACI 318 F1 S0 W1 C1.
2. Minimum Compressive Strength: 4000 psi at 28 days.
3. Maximum w/cm: 0.45.
4. Slump Limit: 3 inches, plus or minus 1 inch or 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
5. Air Content:

    a. Concrete for interior slabs shall not be air entrained.

6. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

2.9 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and furnish batch ticket information.

PART 3 - EXECUTION

3.1 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.2 INSTALLATION OF VAPOR RETARDER

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.

1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
2. Face laps away from exposed direction of concrete pour.
3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
4. Lap joints 6 inches and seal with manufacturer's recommended tape.
5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
6. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
7. Protect vapor retarder during placement of reinforcement and concrete.

a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder.

3.3 JOINTS

A. Construct joints true to line, with faces perpendicular to surface plane of concrete.

B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.

1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
2. Place joints perpendicular to main reinforcement.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

a. Continue reinforcement across construction joints unless otherwise indicated.
b. Do not continue reinforcement through sides of strip placements of floors and slabs.

3. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.

D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints:

1. Install dowel bars and support assemblies at joints where indicated on Drawings.
2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.

F. Dowel Plates: Install dowel plates at joints where indicated on Drawings.

3.4 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Engineer in writing, but not to exceed the amount indicated on the concrete delivery ticket.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.
2. Deposit concrete to avoid segregation.
3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.

a. Do not use vibrators to transport concrete inside forms.
b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Do not place concrete floors and slabs in a checkerboard sequence.
2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Maintain reinforcement in position on chairs during concrete placement.
4. Screed slab surfaces with a straightedge and strike off to correct elevations.
5. Level concrete, cut high areas, and fill low areas.
6. Slope surfaces uniformly to drains where required.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

3.5 FINISHING FORMED SURFACES

Retain types of formed finishes required in this article. Coordinate finishes retained with Drawing Room Finish Schedule, or indicate location of each finish on Drawings.

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.

a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
b. Remove projections larger than 1 inch.
c. Tie holes do not require patching.
d. Surface Tolerance: ACI 117 Class D.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

e. Apply to concrete surfaces not exposed to public view.

2. ACI 301 Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.

a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
b. Remove projections larger than 1/4 inch.
c. Patch tie holes.
d. Surface Tolerance: ACI 117 Class B.
e. Locations: Apply to concrete surfaces exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

3. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.
4. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.6 FINISHING FLOORS AND SLABS

A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface.
5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

ACI 301 (ACI 301M) suggests that all residential floors and nonresidential floors less than 10,000 sq. ft. (929 sq. m) be measured by straightedge method and that other nonresidential floors be measured by F-number system. Retain first subparagraph below for floor areas less than 10,000 sq. ft. (929 sq. m). Fourth option is requirement for gauged porcelain tile.

7. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch and also no more than 1/16 inch in 2 feet.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

3.7 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

3.8 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h, calculated in accordance with ACI 305.1, before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
3. If forms remain during curing period, moist cure after loosening forms.
4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:

    a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
    b. Continuous Sprinkling: Maintain concrete surface continuously wet.
    c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
    d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
    e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.

        1) Recoat areas subject to heavy rainfall within three hours after initial application.
        2) Maintain continuity of coating and repair damage during curing period.

C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:

1. Begin curing immediately after finishing concrete.
2. Interior Concrete Floors:

    a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.

a) Lap edges and ends of absorptive cover not less than 12 inches.
b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.

a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
b) Cure for not less than seven days.

3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:

a) Water.
b) Continuous water-fog spray.

b. Floors to Receive Penetrating Liquid Floor Treatments: Contractor has option of the following:

1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.

a) Lap edges and ends of absorptive cover not less than 12 inches.
b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.

a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
b) Cure for not less than seven days.

3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:

a) Water.
b) Continuous water-fog spray.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

c. Floors to Receive Urethane Flooring:

1) As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
2) Rewet absorptive cover, and cover immediately with polyethylene moisture-retaining cover with edges lapped 6 inches and sealed in place.
3) Secure polyethylene moisture-retaining cover in place to prohibit air from circulating under polyethylene moisture-retaining cover.
4) Leave absorptive cover and polyethylene moisture-retaining cover in place for duration of curing period, but not less than 28 days.

d. Floors to Receive Curing and Sealing Compound:

1) Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.
2) Recoat areas subjected to heavy rainfall within three hours after initial application.
3) Repeat process 24 hours later, and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.9 TOLERANCES

A. Conform to ACI 117.

3.10 APPLICATION OF LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment in accordance with manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than **seven** days' old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing.
4. Rinse with water; remove excess material until surface is dry.
5. Apply a second coat in a similar manner if surface is rough or porous.

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller in accordance with manufacturer's written instructions.

3.11 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

1. Testing agency to be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
2. Testing agency to immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.

    a. Test reports to include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:

        1) Project name.
        2) Name of testing agency.
        3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
        4) Name of concrete manufacturer.
        5) Date and time of inspection, sampling, and field testing.
        6) Date and time of concrete placement.
        7) Location in Work of concrete represented by samples.
        8) Date and time sample was obtained.
        9) Truck and batch ticket numbers.
        10) Design compressive strength at 28 days.
        11) Concrete mixture designation, proportions, and materials.
        12) Field test results.
        13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
        14) Type of fracture and compressive break strengths at seven days and 28 days.

B. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

C. Inspections:

1. Headed bolts and studs.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.
5. Verification of concrete strength before removal of shores and forms from beams and slabs.
6. Batch Plant Inspections: On a random basis, as determined by Architect.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd, but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C143/C143M:

a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
b. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete.

a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C1064/C1064M:

a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.

5. C31/C31M:

a. Cast and laboratory cure two sets of two 6-inch by 12-inch or 4-inch by 8-inch cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C39/C39M.

a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days.
b. A compressive-strength test to be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.
8. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
9. Additional Tests:

a. Testing and inspecting agency to make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.

1) Acceptance criteria for concrete strength to be in accordance with ACI 301, Section 1.6.6.3.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

10. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
11. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

E. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 72 hours of completion of floor finishing and promptly report test results to Architect.

3.12 PROTECTION

A. Protect concrete surfaces as follows:

1. Protect from petroleum stains.
2. Diaper hydraulic equipment used over concrete surfaces.
3. Prohibit vehicles from interior concrete slabs.
4. Prohibit use of pipe-cutting machinery over concrete surfaces.
5. Prohibit placement of steel items on concrete surfaces.
6. Prohibit use of acids or acidic detergents over concrete surfaces.
7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.
8. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using Floor Slab Protective Covering.

END OF SECTION 033000

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

SECTION 04 0511
MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar for masonry.

B. Grout for masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Installation of mortar.

B. Section 04 2600 - Half-High Concrete Unit Masonry: Installation of mortar.

C. Section 04 2616 - Adhered Masonry Veneer

D. Section 04 4313 - Stone Masonry Veneer: Installation of mortar.

E. Section 04 7200 - Cast Stone Masonry: Installation of mortar.

1.03 REFERENCE STANDARDS

A. ASTM C5 - Standard Specification for Quicklime for Structural Purposes; 2018.

B. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.

C. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.

D. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.

E. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

F. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.

G. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.

H. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

I. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength; 2022.

J. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2023b.

K. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2019a.

L. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2020.

M. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.07 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS

A. At Contractor's option, mortar and grout may be field-mixed from packaged dry materials, made from factory premixed dry materials with addition of water only, or ready-mixed.

B. Mortar Color: Natural gray unless otherwise indicated.

C. Mortar Mix Designs: ASTM C270, Property Specification.
   1. Masonry below grade and in contact with earth: Type S.
   2. Exterior Masonry Veneer: Type S.
   3. Exterior Cavity Walls: Type S mortar with Type N pointing mortar.

2.02 MATERIALS

A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Type S
   2. Color: Standard gray.
   3. Water repellent mortar for use with water repellent masonry units.

B. Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, graded sand, and chemical admixtures complying with ASTM C91/C91M with the addition of water only.
   1. Color: Natural gray.

C. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
   1. Type: Fine.

D. Portland Cement: ASTM C150/C150M.
   1. Type: Type I - Normal; ASTM C150/C150M.
   2. Color: Standard gray.

E. Masonry Cement: ASTM C91/C91M.
   1. Type: Type N; ASTM C91/C91M.

F. Hydrated Lime: ASTM C207, Type S.

G. Quicklime: ASTM C5, non-hydraulic type.

H. Mortar Aggregate: ASTM C144.

I. Water: Clean and potable.

J. No calcium chloride or fly ash shall be permitted in grout or mortar mix

K. Integral Water Repellent Admixture: Polymeric liquid admixture added to mortar at the time of manufacture.
   1. Performance of Mortar with Integral Water Repellent:
      a. Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours:
         1) No water visible on back of wall above flashing at the end of 24 hours.
         2) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
         3) No more than 25 percent of wall area above flashing visibly damp at end of test.
      b. Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
      c. Compressive Strength: ASTM C1314; maximum 5 percent decrease.

2. Use only in combination with masonry units produced with integral water repellent admixture.

2.03 MORTAR MIXING

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.

B. Maintain sand uniformly damp immediately before the mixing process.

C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

D. Do not use anti-freeze compounds to lower the freezing point of mortar.

E. If water is lost by evaporation, re-temper only within two hours of mixing.

2.04 GROUT MIXING

A. Mix grout in accordance with ASTM C94/C94M.

B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.

C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install mortar and grout to requirements of section(s) in which masonry is specified.

B. Work grout into masonry cores and cavities to eliminate voids.

3.02 GROUTING

A. Use either high-lift or low-lift grouting techniques, at Contractor's option, subject to other limitations of Contract Documents.

B. Low-Lift Grouting:
1. Limit height of pours to 12 inches.
2. Limit height of masonry to 16 inches above each pour.
3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

C. High-Lift Grouting:
1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.
2. Place grout for spanning elements in single, continuous pour.

SECTION 04 2000
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Mortar and grout.

C. Reinforcement and anchorage.

D. Flashings.

E. Lintels.

1.02 RELATED REQUIREMENTS

A. Section 04 0511 - Masonry Mortaring and Grouting.

B. Section 04 4313 - Stone Masonry Veneer: Stone bonded to masonry back-up.

C. Section 07 6200 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.

D. Section 04 2600 - Half-High Concrete Unit Masonry.

E. Section 04 2616- Adhered Masonry Veneer

1.03 REFERENCE STANDARDS

A. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019.

B. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2022.

C. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

D. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.

E. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

F. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units; 2021.

G. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength; 2022.

H. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2023b.

I. ASTM C1634 - Standard Specification for Concrete Facing Brick and Other Concrete Masonry Facing Units; 2023a.

J. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2019a.

K. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2020.

L. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.

M. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 8 inches.
   2. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at time of manufacture.
      a. Performance of Units with Integral Water Repellent:
         1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
            (a) No water visible on back of wall above flashing at the end of 24 hours.
            (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
            (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
         2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
         3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
      b. Use only in combination with mortar that also has integral water repellent admixture.
      c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

2.02 MORTAR AND GROUT MATERIALS

A. Mortar: As specified in Section 04 0511.

2.03 REINFORCEMENT AND ANCHORAGE

A. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.

B. Single Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Truss or ladder.
   2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.
   3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

2.04 FLASHINGS

A. Metal Flashing Materials: _____, as specified in Section 07 6200.

2.05 LINTELS

A. Prefabricated Steel Lintels:
   1. Manufacturers:
      a. Hohmann & Barnard, Inc; Engineered Concealed Lintel Systems: www.h-b.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.06 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
   1. Masonry below grade and in contact with earth: Type S.

B. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

3.03 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

3.04 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. Remove excess mortar and mortar smears as work progresses.

E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

3.05 WEEPS/CAVITY VENTS

A. Install weeps in veneer and cavity walls at 24 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.

3.06 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.

E. Lap joint reinforcement ends minimum 6 inches.

F. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

G. Embed ties and anchors in mortar joint and extend into masonry unit a minimum of 1-1/2 inches with at least 5/8 inch mortar cover to the outside face of the anchor.

3.07 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

3.08 LINTELS

A. Maintain minimum 4" inch bearing on each side of opening.

3.09 GROUTED COMPONENTS

A. Reinforce bond beams with 2, No. 4 bars, 1 inch from bottom web.

3.10 TOLERANCES

A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

3.11 CLEANING

A. Remove excess mortar and mortar droppings.

B. Clean soiled surfaces with cleaning solution.

SECTION 05 2100
STEEL JOIST FRAMING

PART 2 PRODUCTS

1.01 MATERIALS

A. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

H. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

I. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).

J. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019.

K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

M. SSPC-SP 2 - Hand Tool Cleaning; 2024.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.

1.05 QUALITY ASSURANCE

A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.

B. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Slotted Channel Framing: ASTM A653/A653M, Grade 33.

F. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

B. Lintels: As detailed; prime paint finish.

C. Door Frames for Overhead Door Openings, Wall Openings, and _____: Channel sections; prime paint finish.

2.04 FINISHES - STEEL

A. Prepare surfaces to be primed in accordance with SSPC-SP2.

B. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

C. Prime Painting: One coat.

D. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.05 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components as indicated on drawings.

D. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

F. After erection, prime welds, abrasions, and surfaces not shop primed , except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preservative treated wood materials.

B. Fire retardant treated wood materials.

C. Miscellaneous framing and sheathing.

D. Communications and electrical room mounting boards.

E. Concealed wood blocking, nailers, and supports.

F. Wall sheathing with factory applied water-resistive and air barrier sheet.

G. Roof sheathing with factory applied roofing underlayment.

1.02 RELATED REQUIREMENTS

A. Section 07 6200 - Sheet Metal Flashing and Trim: Sill flashings.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board; 2022.

C. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

D. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).

E. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

F. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing; 2019a.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

H. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2024, with Errata.

I. AWPA U1 - Use Category System: User Specification for Treated Wood; 2024.

J. PS 2 - Performance Standard for Wood Structural Panels; 2018.

K. PS 20 - American Softwood Lumber Standard; 2025.

L. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
   2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Roof Sheathing: Wood structural panels with noncombustible overlayment or coating factory-bonded to interior face of plywood panels.
   1. Plywood Panels:
   2. Products:
      a. Louisiana-Pacific Corporation; FlameBlock: www.lpcorp.com/#sle.
      b. PyroGuard frtw.com.
      c. Substitutions: See Section 01 2500 Substitution Procedures.

B. Wall Sheathing: PS 2 type.
   1. Bond Classification: Exterior.
   2. Grade: Structural I Sheathing.
   3. Span Rating: 24.
   4. Performance Category: 5/16 PERF CAT.
   5. Edge Profile: Square edge.

C. Wall Sheathing: Glass mat faced gypsum, ASTM C1177/C1177M, 5/8 inch Type X fire resistant.
   1. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Edges: Square.
   4. Products:
      a. CertainTeed Corporation; GlasRoc Brand: www.certainteed.com/#sle.
      b. Georgia-Pacific Gypsum; DensGlass Sheathing: www.gpgypsum.com/#sle.
      c. Substitutions: See Section 01 2500 Substitution Procedures.

D. Wall Sheathing: Wood structural panels with noncombustible overlayment or coating factory-bonded to interior face of plywood panels.
   1. Plywood Panels:
   2. Span Rating: 40/20.
   3. Products:
      a. Louisiana-Pacific Corporation; FlameBlock: www.lpcorp.com/#sle.
      b. PyroGuard frtw.com.

c. Substitutions: See Section 01 2500 Substitution Procedures.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

B. Sill Flashing: See Section 07 6200.

C. Subfloor Adhesives: Gap-filling construction adhesive for bonding wood structural panels to wood-based floor system framing; complying with ASTM D3498.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
   1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Do not use treated wood in direct contact with the ground.
   2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Treat rough carpentry items as indicated .
      c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes, AWC (WFCM) Wood Frame Construction Manual, and _____.

E. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

F. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

C. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

D. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.

B. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.

C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.

3.06 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.07 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

3.08 CLEANING

A. Waste Disposal: See Section 01 7419 - Construction Waste Management and Disposal.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

SECTION 06 1053
MISCELLANEOUS ROUGH CARPENTRY

PART 2 PRODUCTS

1.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
   2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

SECTION 06 12 00 - STRUCTURAL INSULATED PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Structural Insulated Panels (SIPs) and accessories.

B. Related Requirements:

1. Section 06 10 00 Rough Carpentry for requirements for miscellaneous framing, blocking, and nailers associated with installation of SIPs.
2. Division 07 water resistive barrier section for application on SIP walls.
3. Division 07 roofing section for underlayment application over SIP roofs.
4. Division 09 flooring section for separation layer application over SIP floors.
5. Division 23 Heating, Ventilation, and Air Conditioning (HVAC)

1.2 SYSTEM DESCRIPTION

A. Structural Insulated Panels (SIPs) consist of oriented strand board (OSB) laminated with a structural adhesive to an expanded polystyrene (EPS) or graphite polystyrene (GPS) insulation core.

B. SIP manufacturer-supplied accessories.

1.3 REFERENCES

A. ANSI/APA PRS 610.1 - Standard for Performance Rated Structural Insulated Panels in Wall Applications.

B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

C. ASTM D7446 - Standard Specification for Structural Insulated Panel (SIP) Adhesives for Laminating Oriented Strand Board (OSB) to Rigid Cellular Polystyrene Thermal Insulation Core Materials.

D. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.

E. ICC-ES AC04 – Sandwich Panel Acceptance Criteria

F. ICC-ES AC436- Establishing Seismic Equivalency to Code-prescribed Light-frame Shear Walls Sheathed with Wood Structural Panels Rated for Shear Resistance

G. ICC-ES AC05 - Acceptance Criteria for Sandwich Panel Adhesives.

H. ICC-ES AC239 – Acceptance Criteria for Termite-Resistant Foam-Plastics

1.4 PREINSTALLATION MEETINGS

A. Pre-Installation Conference: Conduct meeting to verify Project requirements, foundation/structural system/substrate conditions, SIP manufacturer’s installation instructions, SIP manufacturer’s warranty requirements, and requirements of authorities having jurisdiction.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Product Code Report: Provide copy of manufacturer's ICC-ES Report
2. Quality Assurance Program: Provide evidence of manufacturer's third-party quality assurance program.
3. Manufacturer's instructions: Provide manufacturer's Design Manual and Load Design Charts.
4. SIPA Membership: Provide certificate indicating SIPs manufacturer is a Structural Insulated Panel Association (SIPA) manufacturing member in good standing.
5. Experience: Provide evidence of manufacturer's minimum of 5 years' experience manufacturing SIPs for projects of similar scope and size.

B. Installer: Installer shall have at least one of the following qualifications:

1. Field Supervisor having completed SIPA Registered Builder SIP Builder Training Program https://www.sips.org/training/sipa-registered-builder-program.
2. Field Supervisor having completed Carpenters International Training Fund (CITF) Program on Structural Insulated Panels https://www.carpenters.org/wp-content/uploads/2019/04/55505_CITF_TSC-SP-01-19_Special_Catalog_OPT.pdf
3. Field Supervisor having completed training provided by the SIP manufacturer.
4. Field Supervisor shall have a minimum of three verifiable SIP installations in successful service.

C. Professional Engineer: Experienced professional engineer licensed in the Project jurisdiction.

D. SIP Manufacturer's Installation Instructions: Instructions shall be available onsite.

1.6 ACTION SUBMITTALS

A. Product Data: For SIPs and accessories.
1. ICC-ES Report.
2. Design Manual.
3. Load Design Charts.
4. R-values and U-values
5. SIP Sealant Product Data (reference: 1.3 H, 1.7 G, 1.8 C)
6. SIP Screw Product Data.
7. SIP Tape Product Data.

B. Shop Drawings: Show fabrication layout, supports required by this Section, and installation details for SIPs.

1. Indicate locations of structural supports not specified in this Section.
2. Indicate location and type of field-installed lumber.
3. Indicate type, size, and spacing requirements for fasteners.

C. Delegated Design: For SIPs indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Manufacturer, Installer , and Professional Engineer.

B. Product Code Report: ICC-ES Report in conformance with AC04 and AC436.

1. Label each SIP with identification of third-party inspection agency and evaluation report number.

C. Product Code Report: Evaluation Report in conformance AC239 for termite resistant expanded polystyrene (EPS) or graphite polystyrene (GPS) insulation core

D. Shop drawings: Shop drawings for SIPs showing layout and elevations.

E. Engineering: Provide structural calculations by a registered architect or professional engineer [in the state of] to verify SIPs meet project requirements.

F. Clean Air Certification information for a complete SIP component assembly and the requirements for complying to the CDPH Standard Method v1.2: Private Office and School Classroom.

G. Clean Air Certification information for Sealants and the requirements for complying to CDPH Method v1.2: Private Office and School Classroom.

1.8 CLOSEOUT SUBMITTALS

A. Warranty: Executed copy of manufacturer warranty meeting requirements of Warranty Article.

B. Date valid Clean Air Certificate having the: SIP manufactures name, certificate number, manufacturing location, product description for the complete SIP component assembly, showing compliance to the CDPH Standard Method v1.2: Private Office and School Classrom.

C. Date valid Clean Air Certificate having the: SIP Sealant suppliers name, certificate number, supplier's location, product description for the SIP Sealant, showing compliance to the CDPH Standard Method v1.2: Private Office and School Classroom.

1.9 DELIVERY, STORAGE & HANDLING

A. Handling: Unload and move SIPs using forklift or other means that fully support SIPs. Do not handle SIPs by top facing only.

B. Support: SIPs and SIP Accessories to be stored a minimum of 3 inches above ground/surface. Support SIPs flat on minimum of 3 in. wide stickers with length equal to the width of the SIPs with stickers placed no further than four feet on center, or equivalent.

C. Protection: Protect SIPs and SIP Accessories from exposure to the elements when stored onsite. Cover stored SIPs and SIP Accessories with secured protective covering.

1.10 WARRANTY

A. SIP Manufacturer Warranty: Warranty against material failure of SIPs installed according to manufacturer's instructions by qualified installer under normal use.

1. Warranty Period: 20 years from date of Substantial Completion.

1.11 PRODUCT SUBSTITUTIONS

A. Substitutions: No substitutions permitted without fourteen (14) day prior approval.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design structural components.

B. Structural Performance: SIPs shall withstand the effects of design loads shown on approved SIP Manufacturer's shop drawings without exceeding allowable design working stresses.

1. Design Loads: As indicated on Structural Drawings.

2. Maximum Deflection under Design Loads: As indicated on Structural Drdawings.

C. Fire Resistant Assemblies:
1. 1-hour Fire Resistant Wall Assembly

2.2 MANUFACTURERS

A. Basis of Design Manufacturer: Provides SIPs products by:

1. Premier Building Systems, LLC 18504 Canyon Road East, Puyallup, WA 98375. www.premiersips.com info@premiersips.com (800) 275-7086

B. Manufacturers: Subject to requirements of the Contract Documents, provide SIPs by one of the following:

Premier Building Systems, 15 Arden Drive, Belgrade, MT 59714 www.premiersips.com info@premiersips.com

1. Extreme Panel Technologies, Inc, 475 E 4th St., Cottonwood, MN 56229. www.extremepanel.com info@extremepanel.com

2. Other manufacturers may be considered upon written approval by the architectl.

C. Limitations: Obtain SIPs from a single SIP manufacturer. Obtain SIP accessories from SIP manufacturer or as recommended by SIP manufacturer.

1. The SIP manufacturer shall furnish all engineered components required for a complete building envelope system, including (but not limited to): beams, posts, columns, fasteners, connectors, adhesives, sealants, and other necessary appurtenances.

2.3 STRUCTURAL INSULATED PANELS (SIPs)

A. SIPs shall consist of the following panel construction:

1. Termite Resistant Expanded polystyrene insulation core complying with ASTM C578 Type I and ICC-ES AC239.
2. Oriented strand board (OSB) facing in conformance with DOC PS 2 and complying with ANSI/APA PRS 610.1 Table 2.
3. Adhesive complying with the requirements of ASTM D7446 or ICC-ES AC05.

B. SIP Walls: Refer to the drawings.

C. SIP Roof: Refer to the drawings.

2.4 SIP ACCESSORIES

A. Splines: Block Splines and I-Beam Splines for joining SIPs in accordance with SIP manufacturer's shop drawings shall be supplied by SIP manufacturer.

B. Sealant: Sealant for sealing SIPs in accordance with SIP manufacturer’s instructions shall be supplied by SIP manufacturer.

C. SIP Screws: SIP manufacturer-provided screws for attachment of SIPs in accordance with SIP manufacturer’s instructions.

D. Nails: Nails for attachment of SIP connections in accordance with SIP manufacturer’s instructions shall be supplied by Installer.

E. SIP Tape: Tape for sealing SIP joints in accordance with SIP manufacturer’s instructions shall be supplied by SIPs manufacturer.

F. Lumber: Lumber required for installation of SIPs in accordance with SIP manufacturer’s instructions shall be supplied by [SIP manufacturer] [Installer].

1. Pressure-Treated Wood Sill Plate: Refer to Section 061000 "Rough Carpentry."
2. Other Lumber: Refer to Section 061000 "Rough Carpentry."

G. Capillary Break Material: Material required for installation of SIPs in accordance with the SIP manufacturer’s written instructions.

2.5 FABRICATION

A. Sizes: Fabricate SIPs in accordance with approved SIP manufacturer’s shop drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site Verification: Verify conditions of foundation/structural system/substrate and other conditions which affect installation of SIPs. Verify foundation is plumb and square. Verify bearing requirements and substrate tolerances meet SIP manufacturer's written requirements.

B. Report non-complying conditions in writing to the SIP manufacturer and the design professional. Proceed with installation once non-complying conditions are corrected.

3.2 INSTALLATION OF SIPS, GENERAL

A. Installation: Handle and install SIPs in accordance with approved SIP manufacturer’s shop drawings.

B. Splines: Install splines for joining SIPs in accordance with approved SIP manufacturer’s shop drawings.

C. Sealant: Apply joint sealant for sealing SIPs in accordance with SIP manufacturer’s written instructions.

D. Nails: Install nails for attachment of SIP connections in accordance with SIP manufacturer’s shop drawings and SIP manufacturer’s written instructions.

E. SIP Screws: Install SIP screws for attachment of SIPs in accordance with SIP manufacturer’s shop drawings and SIP manufacturer’s written instructions.

F. SIP Tape: Apply Tape for sealing SIP joints in accordance with SIP manufacturer’s instructions.

G. Lumber: Install accessory lumber in accordance with approved SIP manufacturer’s shop drawings and SIP manufacturer’s written instructions.

3.3 INSTALLATION OF SIPs IN WALL CONSTRUCTION

A. Installation of SIP Walls on Concrete or Masonry Foundations:

1. Capillary Break: Install capillary break material on concrete slabs prior to erection of wall SIPs.
2. Treated Sill Plate: Install preservative-treated wood sill plate on concrete and masonry substrates equal in width to SIP thickness in accordance with approved SIP manufacturer's shop drawings and SIP manufacturer's instructions.

B. SIP Installation: Refer to Section 3.2 for instructions

C. SIP Cap Plate: Install cap plate on top of wall SIPs in accordance with approved SIP manufacturer's shop drawings and SIP manufacturer's instructions.

D. Weather-Resistant Barrier: Apply a vapor permeable weather-resistant barrier immediately after SIPs installation is completed; refer to Division 07 weather-resistant barrier section. SIPs exposed to rain, frost or snow must be allowed to dry prior to application of weather-resistant barrier.

3.4 INSTALLATION OF SIPs IN ROOF CONSTRUCTION

A. Support: Confirm support structure provides adequate bearing for SIPs to meet SIP manufacturer's requirements.

B. SIP Installation: Refer to Section 3.2 for instructions.

C. Sloped Roofing : Use only vapor permeable underlayments having a minimum perm rating of 14. Vapor non-permeable underlayments, i.e., peel and stick membranes, fully coated asphalt sheets, plastic recover boards or membranes are not compatible with SIP roof decks and should never be applied over SIPs. Warranty will be voided. Apply roof underlayment immediately (per APA TT-111B) after SIPs installation is completed; refer to Division 07 roof underlayment section. SIPs exposed to rain, frost or snow must be allowed to dry prior to application of roof underlayment.

D. Low Slope Roofing: Vapor permeable underlayment sheets and/or roof recovery boards, i.e.: fire coated sheets, gypsum, cement, HD polyisocyanurate, must first be applied over the SIP roof deck, attached mechanically, or with water based or polyisocyanurate expanding foam adhesives. Mechanically attached and ventilated membranes are recommended for application over SIP roof decks. If adhesively adhered membranes are used, they must be applied over a vapor permeable roof recovery board using water based or polyisocyanjrate foam adhesives.

E. Special Note: Solvent based primers and/or adhesives should never be used within a roof cladding or roof membrane assembly, when applied over a SIP roof deck. Warranty will be voided.

3.5 INSTALLATION OF FLOOR SIPs

A. Support: Confirm support structure provides adequate bearing for SIPs to meet SIP manufacturer's requirements.

B. SIP Installation: Refer to Section 3.2 for instructions.

3.6 PROTECTION

A. Construction: Protect installed SIPs from damage during construction.

B. Protect SIPs from weather with temporary protection when rain, frost or snow is present or imminent. SIPs exposed to rain, frost or snow must be allowed to dry prior to covering.

END OF SECTION

PREMIER RECOMMENDATIONS FOR USE OF SIPS.
Also refer to publications of SIPA available at www.premiersips.com:

GENERAL APPLICATIONS:
SIPs create tight building envelopes. Proper HVAC design is critical to ensuring optimum building performance.

SIPs subjected to rain, frost or snow must have moisture condition of SIP facings & joints evaluated prior to covering.

Interior surfaces of SIPs must be covered with a minimum 15-minute thermal barrier, such as 1/2 in. gypsum wallboard or other approved materials. Apply code approved thermal barriers according to SIP manufacturer's recommendations.

For residential buildings, using a certified Home Energy Rater to determine HERS Index is recommended.

For commercial buildings, using the Energy Star Commercial Buildings Program to determine energy use is recommended.

FLOOR APPLICATIONS:
SIP floors may require additional OSB, plywood, or similar underlayment per flooring manufacturer or due to project structural requirements.

Application of fully adhered products to SIP floors is not recommended. A separation layer is recommended to facilitate future flooring replacement.

WALL APPLICATIONS:
SIP walls must be protected on exterior with code compliant weather resistive barrier and cladding. Installation of exterior coverings should occur as soon as possible. Reference "General Applications", above, for moisture conditions.

SIP facings must be fully supported. SIP bottom plate is held back 7/16 in. from edge of foundation to allow for full support of SIP.

Wall Cap plates are used when necessary to meet project structural requirements or provide spacing for SIP wall height.

ROOF APPLICATIONS:
SIP roofs must be protected with code compliant underlayment and roofing. Installation of underlayment and roofing should occur as soon as possible. Reference "General Applications", above, for moisture conditions.

Application of fully adhered roofing products directly to SIP facings is not recommended. A separation layer is recommended to facilitate future roofing replacement.

Special ventilation details are recommended when zinc or copper roof coverings are used. Consult SIP manufacturer's instructions.

Application of peel and stick, or low perm rated underlayment over entire area of SIP roofs is not recommended without special consideration.

SECTION 06 2000
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Wood door frames, glazed frames.

C. Wood casings and moldings.

1.02 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. BHMA A156.9 - Cabinet Hardware; 2020.

D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

1. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.

B. Protect from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

2.02 PLASTIC LAMINATE MATERIALS

A. Plastic Laminate: NEMA LD 3; color as selected by Architect; textured, low gloss finish.

2.03 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. Cap exposed plastic laminate finish edges with material of same finish and pattern.

C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

D. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

SECTION 06 4100
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Hardware.

1.02 RELATED REQUIREMENTS

A. Section 12 3600 - Countertops.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
   3. Include certification program label.

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.

E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
   2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.07 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Breakroom Cabinets: Plastic laminate faced, Custom grade.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.03 THERMALLY FUSED LAMINATE PANELS

A. Thermally Fused Laminate (TFL): Melamine- or polyester-resin-saturated decorative papers; for fusion to composite wood substrates under heat and pressure.

2.04 COUNTERTOPS

A. Countertops: See Section 12 3600.

2.05 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Plastic Edge Banding: Extruded PVC, convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness.

C. Fasteners: Size and type to suit application.

D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

E. Concealed Joint Fasteners: Threaded steel.

F. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

2.06 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Metal Z-Shaped Wall Cabinet Support Clips: Paired, cleated, structural anchorage components applied to back of cabinets and walls for wall cabinet mounting.

C. Adjustable Shelf Supports: Standard back-mounted system using surface mounted metal shelf standards and coordinated cantilevered shelf brackets, satin chrome finish, for nominal 1 inch spacing adjustments.

D. Fixed Americans with Disabilities Act (ADA) Compliant Vanity and Coutertop Brackets: Fixed, L-shaped, face-of-stud mounting.
   1. Materials: Steel; T-shape cross-section.
      a. Finish: Manufacturer's standard, factory-applied, primer.

E. Drawer and Door Pulls: Extruded aluminum pull, full width of drawer, polished finish.

F. Cabinet Locks: Keyed cyliner, two keys per lock, master keyed, steel with chrome finish.:

G. Drawer Slides:
   1. Type: Extension types as indicated.
   2. Static Load Capacity: Heavy Duty grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.

2.07 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
   1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
   2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

D. Mechanically fasten back splash to countertops as recommended by laminate manufacturer at 16 inches on center.

E. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

C. Use fixture attachments in concealed locations for wall mounted components.

3.03 ADJUSTING

A. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

SECTION 07 2100
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation and integral vapor retarder at cavity wall construction, perimeter foundation wall, underside of floor slabs, over roof deck, over roof sheathing, exterior wall behind exterior wall finish, and interior wall with facer providing exposed finish.

B. Batt insulation and vapor retarder in exterior wall, ceiling, and roof construction.

C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS

A. Section 07 2600 - Vapor Retarders: Separate vapor retarder materials.

B. Section 07 5400 - Thermoplastic Membrane Roofing: Installation requirements for board insulation over low slope roof deck.

1.03 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

E. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2023.

F. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2024.

G. ASTM E2357 - Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies; 2024.

H. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2025.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. As indicated in drawings.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS) Board Insulation: Comply with ASTM C578 with either natural skin or cut cell surfaces.
   1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
   2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.

4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per 1 inch thickness at 75 degrees F mean temperature.
5. Complies with fire resistance requirements indicated on drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
6. Board Edges: Square.
7. Type and Water Absorption: Type XII, 0.3 percent by volume, maximum, by total immersion.
8. Products:
    a. DuPont de Nemours, Inc; Styrofoam Brand _____: building.dupont.com/#sle.
    b. Kingspan Insulation LLC; GreenGuard GG25-LG XPS Insulation Board: www.kingspan.com/#sle.
    c. Owens Corning Corporation; FOAMULAR Type ___ Extruded Polystyrene (XPS) Insulation: www.ocbuildingspec.com/#sle.
    d. Substitutions: See Section 01 6000 - Product Requirements.

2.03 MINERAL FIBER BLANKET INSULATION MATERIALS

A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
4. Thermal Resistance: R-value of As indicated in drawings.

B. Mineral Wool Blanket Thermal Insulation: Flexible or semi-rigid preformed insulation, complying with ASTM C665.
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

A. Sheet Vapor Retarder: See Section 07 2600.

B. Self-Adhered Transition Flashing: Multipurpose, self-adhered flashing with modified butyl adhesive, polyester fiber top sheet, and polypropylene interlayer.
1. Application: Primerless adhesion for use as through-wall flashings and wall transitions to roof and below-grade systems.
2. Thickness: 45 mil, 0.045 inch, nominal.
3. Size: 6 inches wide, in rolls 75 feet long.

C. Rigid Insulation Pronged Attachment Washers: Solid plastic cap washer with prongs and flexible perimeter seal attached with screws to substrate for attachment of rigid insulation and to help seal against air and moisture penetration through weather barrier assembly.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT EXTERIOR WALLS

A. Install rigid insulation directly to steel studs or exterior grade sheathing at 16 inches on center with manufacturer recommended mechanical fasteners, and tape joints with manufacturer's minimum 4 inches wide sealant tape; comply with ASTM E2357.

B. Install boards horizontally on walls.
1. Place boards to maximize adhesive contact.

2. Install in running bond pattern.
3. Butt edges and ends tightly to adjacent boards and protrusions.

C. Extend boards over expansion joints, unbonded to wall on one side of joint.

D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

E. Place 6 inches wide polyethylene sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frames, and tape seal in place to ensure continuity of vapor retarder and air seal.

F. Tape insulation board joints.

3.03 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

A. Board Installation Over Roof Deck, General:
1. See applicable roofing specification section for specific board installation requirements.
2. Fasten insulation to deck in accordance with roofing manufacturer's written instructions and applicable Factory Mutual requirements.
3. Do not apply more insulation than can be covered with roofing on the same day.

3.04 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.05 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

SECTION 07 4113
METAL ROOF PANELS – BERRIDGE MANUFACTURING COMPANY, INC.

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural metal roof panel system.

B. Architectural metal roof panel system.

1.02 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference; 2005 (Reapproved 2017).

C. ASTM E1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference; 1995 (Reapproved 2018).

D. ASTM E1680 - Standard Test Method for Rate of Air Leakage through Exterior Metal Roof Panel Systems; 2016 (Reapproved 2022).

E. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
   1. Show work as field-fabricated or field-assembled.

1.04 QUALITY ASSURANCE

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Structural Metal Roof Panel Manufacturers:
   1. Berridge Manufacturing Company; _____: www.berridge.com/#sle.
   2. Substitutions: Not permitted.

B. Architectural Metal Roof Panel Manufacturers:
   1. Berridge Manufacturing Company; Cee-Lock Panel: www.berridge.com/#sle.
   2. Substitutions: Not permitted.

2.02 PERFORMANCE REQUIREMENTS

A. Metal Roof Panels: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:
   1. Structural Design Criteria: Provide panel assemblies designed to safely support design loads at support spacing indicated, with deflection not to exceed L/180 of span length (L) when tested in accordance with ASTM E1592.
      a. Dead Loads: Weight of roofing system.
      b. Live Loads: As required by ASCE 7.
   2. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
   3. Wind Uplift: Class 90 wind uplift resistance of UL 580.
   4. Air Infiltration: When tested according to ASTM E1680.

5. Water Penetration: No water penetration when tested in accordance with procedures and recommended test pressures of ASTM E1646; perform test immediately following air infiltration test.
6. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 120 degrees F.

2.03 STRUCTURAL METAL ROOF PANELS

A. General: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.

B. Structural Metal Panels: Provide panels, factory-formed or field-formed with manufacturer's standard roll former, with factory-applied finish.
1. Steel Panels:
   a. Steel Thickness: Minimum 24 gauge, 0.024 inch.
2. Profile: Standing seam; concealed fastener system for field-seaming with special tool.
   a. Cee-Lock Assembly: 1-1/2-inch minimum seam height.
3. Width: Maximum panel coverage.

C. Metal Soffit Panels:
1. Profile: Style as indicated on drawings, with available vented options.

2.04 ARCHITECTURAL METAL ROOF PANELS

A. Metal Roof Panels: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.

B. Metal Panels: Factory-formed panels with factory-applied finish.
1. Steel Panels:
   a. Steel Thickness: Minimum 24 gauge, 0.024 inch.
2. Texture: Smooth.
3. Width: Maximum panel coverage.

2.05 ATTACHMENT SYSTEM

A. Concealed System: Provide manufacturer's standard 0.029-inch stainless steel floating two-piece clips for aluminum Zee-Lock panels, engineered to meet performance requirements, including anticipated thermal movement.

2.06 FABRICATION

A. Panels: Provide factory- or field-fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.

2.07 FINISHES

2.08 ACCESSORIES

A. Miscellaneous Sheet Metal Items: Provide caps, closure strips, downspouts, flashings, gutters, moldings, and trim of same material, thickness, and finish as used for roofing panels.

B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion-resistant finish, combination steel and closed-cell foam, or _____.

C. Sealants:
1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.

B. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Overall: Install roofing system in accordance with approved shop drawings and metal roof panel manufacturer's instructions and recommendations, as applicable to specific project conditions; securely anchor components of roofing system in place allowing for thermal and structural movement.
   1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
   2. Minimize field cutting of panels. Where field cutting required, use methods that do not distort panel profiles. Use of torches for field cutting prohibited.

B. Accessories: Install necessary components required for complete roofing assembly, including caps, closure strips, downspouts, flashings, gutters, moldings, rib closures, ridge closures, similar roof accessory items, and trim.

C. Roof Panels: Install metal roof panels in accordance with manufacturer's installation instructions, minimizing transverse joints except at junction with penetrations.
   1. Form weathertight standing seams incorporating concealed clips using automatic mechanical seaming device approved by panel manufacturer.

3.03 CLEANING

A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to finish.

3.04 PROTECTION

A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.

B. Touch up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

SECTION 07 4213
METAL WALL PANELS – BERRIDGE MANUFACTURING COMPANY, INC.

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal wall panel system.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data - Wall System: Manufacturer's data sheets on each product used, including:
   1. Physical characteristics of components shown on shop drawings.
   2. Storage and handling requirements and recommendations.
   3. Installation instructions and recommendations.

C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, _____, and anchorage methods.

D. Manufacturer's instructions.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Executed warranty.

1.05 QUALITY ASSURANCE

1.06 FIELD CONDITIONS

A. Do not install wall panels when air temperature or relative humidity is outside manufacturer's limits.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Wall Panels - Concealed Fasteners:
   1. Berridge Manufacturing Company; _____: www.berridge.com/#sle.

2.02 METAL WALL PANEL SYSTEM

A. Wall Panel System: Factory-fabricated prefinished metal panel system; FW-12 Panel, site assembled.
   1. Provide exterior wall panels and interior liner panels.
   2. Size components to support assembly dead loads and withstand live loads caused by positive and negative wind pressure acting normally to plane of wall.
   3. Maximum Allowable Deflection of Panel: L/180 for length (L) of span.
   4. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling, dynamic loading and release of loads, and deflection of structural support framing.
   5. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
   6. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.

B. Exterior Wall Panels:

1. Profile: Vertical; style as indicated on drawings.
2. Side Seams: Interlocking.
3. Material: Precoated steel sheet, 24-gauge, 0.0239-inch minimum thickness.
4. Panel Width:

C. Interior Liner Panels:
1. Profile: Vertical; style as indicated on drawings.
2. Side Seams: Interlocking.
3. Material: Precoated steel sheet, 24-gauge, 0.0239-inch minimum thickness.
4. Panel Width:
5. Color: As indicated on drawings.

D. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop-cut to required angles.

E. Expansion Joints: Same material, thickness, and finish as exterior sheets; ___ gauge, ___ inch thick; manufacturer's standard brake-formed type, of profile to suit system.

F. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

G. Anchors: Galvanized steel.

2.03 FINISHES

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify building framing members ready to receive panels.

3.02 PREPARATION

3.03 INSTALLATION

A. Install panels on walls and soffits in accordance with manufacturer's instructions.

3.04 TOLERANCES

3.05 CLEANING

A. Remove site cuttings from finish surfaces.

B. Remove protective material from wall panel surfaces.

3.06 PROTECTION

A. Protect metal wall panels until completion of project.

B. Touch up, repair, or replace damaged wall panels or accessories before Date of Substantial Completion.

SECTION 07 8400
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 01 7000 - Execution and Closeout Requirements: Cutting and patching.

C. Section 07 0553 - Fire and Smoke Assembly Identification.

D. Section 07 8100 - Applied Fire Protection.

E. Section 09 2116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2023a.

C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015 (Reapproved 2019).

D. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems; 2020a.

E. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2020a.

F. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus; 2023b.

G. ITS (DIR) - Directory of Listed Products; Current Edition.

H. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Sustainable Design Submittal: Submit VOC content documentation for nonpreformed materials.

E. Manufacturer's qualification statement.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.

1.06 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Firestopping Manufacturers:
   1. 3M Fire Protection Products; _____: www.3m.com/firestop/#sle.
   2. HoldRite, a Brand of Reliance Worldwide Corporation; HydroFlame: www.holdrite.com/#sle.
   3. Tremco Commercial Sealants & Waterproofing; TREMstop Acrylic: www.tremcosealants.com/#sle.

2.02 MATERIALS

A. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.

B. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.

B. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.

2.04 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: See drawings for required systems and ratings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

3.04 FIELD QUALITY CONTROL

A. Independent Testing Agency: Inspection agency employed and paid by Owner, will examine penetration firestopping in accordance with ASTM E2174 and ASTM E2393.

B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.06 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Self-leveling pourable joint sealants.

B. Joint backings and accessories.

1.02 REFERENCE STANDARDS

A. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

C. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.

C. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

1.04 QUALITY ASSURANCE

A. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
   1. Adhesion Testing: In accordance with ASTM C794.
   2. Compatibility Testing: In accordance with ASTM C1087.
   3. Allow sufficient time for testing to avoid delaying the work.
   4. Deliver sufficient samples to manufacturer for testing.
   5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants:
   1. Adhesives Technology Corporation: www.atcepoxy.com/#sle.
   2. Bostik Inc: www.bostik-us.com/#sle.
   3. Dow Chemical Company: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
   4. Hilti, Inc: www.us.hilti.com/#sle.
   5. Master Builders Solutions by BASF: www.master-builders-solutions.basf.us/en-us/#sle.
   6. Pecora Corporation: www.pecora.com/#sle.
   7. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
   8. Sika Corporation: www.usa-sika.com/#sle.
   9. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   10. W.R. Meadows, Inc: www.wrmeadows.com/#sle.

11. Substitutions: See Section 01 6000 - Product Requirements.

B. Self-Leveling Sealants:
   1. Bostik Inc: www.bostik-us.com/#sle.
   2. Dow Chemical Company: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
   3. Master Builders Solutions by BASF: www.master-builders-solutions.basf.us/en-us/#sle.
   4. Pecora Corporation: www.pecora.com/#sle.
   5. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
   6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   7. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
   8. Substitutions: See Section 01 6000 - Product Requirements.

2.02 JOINT SEALANTS - GENERAL

A. Colors: As indicated on drawings.

2.03 SELF-LEVELING JOINT SEALANTS

A. Self-Leveling Silicone Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.

B. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
   1. Movement Capability: Plus and minus 25 percent, minimum.

C. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
   1. Movement Capability: Plus and minus 25 percent, minimum.

2.04 ACCESSORIES

A. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install bond breaker backing tape where backer rod cannot be used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

E. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

F. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

SECTION 08 0671
DOOR HARDWARE SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preliminary schedule of door hardware sets for swinging, sliding, folding, _____, and other door types as indicated on drawings.

1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware: Requirements to comply with in coordination with this section.

1.03 REFERENCE STANDARDS

A. BHMA A156.3 - Exit Devices; 2020.

B. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.

C. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2022.

D. BHMA A156.18 - Standard for Materials and Finishes; 2020.

E. DHI (H&S) - Sequence and Format for the Hardware Schedule; 2019.

1.04 PROJECT INFORMATION

A. Project Name: Pardes Campus.

B. Architect: Heights Venture Architects LLP.

C. Contractor: To Be Determined.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Only manufacturers listed in Door Hardware Schedule or Section 08 7100 are considered acceptable, unless noted otherwise.

B. Obtain each type of door hardware as indicated from a single manufacturer and single supplier.

C. Manufacturer's Abbreviations: Coordinate with manufacturers listed in Section 08 7100.

2.02 DESCRIPTION

A. Door hardware sets provided represent the design intent, they are only a guideline and should not be considered a detailed or complete hardware schedule.

1. Provide door hardware item(s) as required for similar purposes, even when item is not listed for a door in Door Hardware Schedule.
2. Door hardware supplier is responsible for providing proper size and hand of door for products required in accordance with Door Hardware Schedule and as indicated on drawings.
3. Quantities listed are for each Pair (PR) of doors, or for each Single (SGL) door, as indicated in hardware sets.

2.03 LOCK FUNCTION CODES

A. Function Codes for Cylindrical Locks: Complying with BHMA A156.5.

B. Function Codes for Mortise Locks: Complying with BHMA A156.13.

C. Function Codes for Exit Devices: Complying with BHMA A156.3.

2.04 FINISHES

A. Finishes: Complying with BHMA A156.18.

PART 3 EXECUTION

3.01 DOOR HARDWARE SCHEDULE

A. Organize listing of door hardware components within each hardware set in compliance with 10-Part scheduling sequence indicated in DHI (H&S), unless otherwise indicated.

SECTION 08 1113
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Thermally insulated hollow metal doors with frames.

1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

C. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023, with Editorial Revision.

F. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

H. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

B. Maintain at project site copies of reference standards relating to installation of products specified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:

1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with ICC A117.1 and ADA Standards.
3. Door Edge Profile: Manufacturers standard for application indicated.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.02 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

2.03 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Full profile/continuously welded type.
   1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
   2. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
   3. Weatherstripping: Separate, see Section 08 7100.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
   1. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
   2. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.

E. Mullions for Pairs of Doors: Fixed, except where removable is indicated, with profile similar to jambs.

2.04 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.05 ACCESSORIES

A. Astragals and Edges for Double Doors: Pairs of door astragals, and door edge sealing and protection devices.

B. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

C. Install door hardware as specified in Section 08 7100.

3.04 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

SECTION 08 1116
ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glazed aluminum doors.

B. Aluminum frames.

1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware: Hardware for aluminum doors.

B. Section 08 8000 - Glazing: Glazing materials for aluminum doors and frames.

1.03 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022, with Errata (2023).

B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's descriptive literature for each type of door; include information on fabrication methods.

C. Shop Drawings: Include elevations of each opening type.

D. Test Report: Certified test reports from qualified independent testing agency indicating doors comply with specified performance requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver aluminum components in manufacturer's standard protective packaging, palleted, crated, or banded together.

B. Inspect delivered components for damage and replace. Repaired components will not be accepted.

C. Store components in clean, dry, indoor area, under cover in manufacturer's packaging until installation.

D. Protect materials and finish from damage during handling and installation.

1.07 FIELD CONDITIONS

A. Do not begin installation of interior aluminum components until space has been enclosed and ambient thermal conditions are being maintained at levels consistent with final project requirements.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glazed Aluminum Doors:
   1. Andersen; Inswing Aluminum Pivot Door: www.andersenwindows.com/#sle.
   2. Avalon International Aluminum LLC; Eagle Universal System: www.avalonint.com/#sle.
   3. Manko Window Systems, Inc; _____: www.mankowindows.com/#sle.
   4. Terra Universal, Inc; Pre-Hung Manual Swing Doors, Aluminum: www.terrauniversal.com/#sle.
   5. Wilson Partitions; _____: www.wilsonpart.com/#sle.
   6. Substitutions: See Section 01 2500 Substitution Procedures.

2.02 DOORS AND FRAMES

A. Glazed Aluminum Doors: Extruded aluminum tube frame, full glazed, with middle rail; factory glazed.
   1. Finish: As indicated on architectural drawings..
   2. Seals: Manufacturer's standard.

B. Aluminum Frames for Doors, Sidelights, or Transoms: Extruded aluminum, non-thermally broken hollow or C-shaped sections; no steel components.
   1. Finish: Same as doors.

C. Dimensions and Shapes: As indicated on drawings; dimensions indicated are nominal.
   1. Provide the following clearances:
      a. Hinge and Lock Stiles: 1/8 inch.
      b. Between Meeting Stiles: 1/4 inch.
      c. At Top Rail and Bottom Rail: 1/8 inch.

2.03 COMPONENTS

A. Frames: Extruded aluminum shapes, not less than 0.062 inch thick, reinforced at hinge and strike locations.
   1. Corner Brackets: Extruded aluminum, fastened with stainless steel screws.
   2. Trim: Extruded aluminum, not less than 0.062 inch thick, removable snap-in type without exposed fasteners.

2.04 PERFORMANCE REQUIREMENTS

A. Provide door assemblies that have been designed and fabricated in compliance with specified performance requirements.

2.05 MATERIALS

A. Aluminum Sheet: ASTM B209/B209M, alloy 5005, temper H14, stretcher leveled.

B. Extruded Aluminum: ASTM B221 (ASTM B221M), alloy 6063, temper T5, or alloy 6463, temper T5.

2.06 FINISHES

A. Color: As indicated on drawings.

B. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.07 ACCESSORIES

A. Fasteners: Aluminum, non-magnetic stainless steel, or other material warranted by manufacturer as non-corrosive and compatible with aluminum components.

B. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible, otherwise, non-magnetic stainless steel or steel hot-dip galvanized in compliance with ASTM A123/A123M.

C. Bituminous Coating: Cold-applied asphaltic mastic, compounded for 30-mil thickness per coat.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces and openings are ready to receive frames and are within tolerances specified in manufacturer's instructions.

3.02 PREPARATION

A. Perform cutting, fitting, forming, drilling, and grinding of frames as required for project conditions.

B. Replace components with damage to exposed finishes.

C. Separate dissimilar metals to prevent electrolytic action between metals.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and approved shop drawings.

B. Set frames plumb, square, level, and aligned to receive doors. Anchor frames to adjacent construction in strict accordance with manufacturer's recommendations and within specified tolerances.

C. Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by painting dissimilar metal with heavy coating of bituminous paint.

D. Hang doors and adjust hardware to achieve specified clearances and proper door operation.

3.04 CLEANING

A. Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609 & 610.

B. Do not use abrasive, caustic, or acid cleaning agents.

3.05 PROTECTION

A. Protect products of this section from damage caused by subsequent construction until Date of Substantial Completion.

B. Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

SECTION 08 1416
FLUSH WOOD DOORS

PART 2 PRODUCTS

1.01 DOORS AND PANELS

A. Doors: See drawings for locations and additional requirements.

1.02 DOOR AND PANEL CORES

1.03 DOOR FACINGS

1.04 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

C. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

D. Provide edge clearances in accordance with the quality standard specified.

1.05 FINISHES - WOOD VENEER DOORS

SECTION 08 4313
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

B. Aluminum doors and frames.

C. Weatherstripping.

D. Door hardware.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

B. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.

C. Section 08 8000 - Glazing: Glass and glazing accessories.

D. Section 09 9123 - Interior Painting: Field painting of interior surface of infill panels.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

D. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

E. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.

1. Include design engineer's stamp or seal, on shop drawings, for system design, attachment, and anchors.

D. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

E. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum-Framed Storefronts:
   1. Kawneer North America; _____: www.kawneer.com/#sle.
   2. Manko Window Systems, Inc; _____: www.mankowindows.com/#sle.
   3. Oldcastle BuildingEnvelope; _____: www.oldcastlebe.com/#sle.
   4. Trulite Glass & Aluminum Solutions, LLC; _____: www.trulite.com/#sle.
   5. YKK AP America, Inc; _____: www.ykkap.com/commercial/#sle.
   6. Substitutions: See Section 01 2500 Substitution Procedures.

2.02 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Glazing Rabbet: For 1 inch insulating glazing.
   2. Glazing Position: Front-set.
   3. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
   4. Finish: See Drawings.
      a. Factory finish all surfaces that will be exposed in completed assemblies.
      b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
   5. Finish Color: See Drawings.
   6. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   7. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
   8. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   9. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.

10. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
11. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

B. Performance Requirements
1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
a. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.

2.03 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
1. Glazing Stops: Flush.

B. Glazing: See Section 08 8000.

C. Swing Doors: Glazed aluminum.
1. Thickness: 1-3/4 inches.
2. Top Rail: 4 inches wide.
3. Vertical Stiles: 4-1/2 inches wide.
4. Bottom Rail: 10 inches wide.
5. Glazing Stops: Square.
6. Finish: Same as storefront.

2.04 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Fasteners: Stainless steel.

C. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.05 FINISHES

A. Color: As indicated on drawings.

2.06 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.

B. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.

C. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

D. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.

E. Pivots: Center type; top and bottom.
1. Provide on doors as indicated.

F. Push/Pull Set: Standard configuration push/pull handles.
1. Provide on doors as indicated.

G. Exit Devices: Panic type.
1. Provide on doors as indicated.

H. Door Closers: Concealed overhead.
1. Provide on doors as indicated.

I. Locks: Dead latch with thumbturn inside ; keyed cylinder outside.
1. Provide on doors as indicated.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Set thresholds in bed of sealant and secure.

J. Install hardware using templates provided.

K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.02 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.03 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.04 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.

3.05 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

SECTION 08 7100
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood, aluminum, and hollow metal doors.

B. Hardware for fire-rated doors.

C. Thresholds.

D. Weatherstripping and gasketing.

1.02 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. BHMA A156.1 - Standard for Butts and Hinges; 2021.

C. BHMA A156.3 - Exit Devices; 2020.

D. BHMA A156.4 - Door Closers and Pivots; 2024.

E. BHMA A156.6 - Standard for Architectural Door Trim; 2021.

F. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.

G. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.

H. BHMA A156.21 - Thresholds; 2019.

I. BHMA A156.22 - Standard for Gasketing; 2021.

J. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

K. ITS (DIR) - Directory of Listed Products; Current Edition.

L. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
   1. Locksets and Cylinders: Three years, minimum.
   2. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   2. Accessibility: ADA Standards and ICC A117.1.

2.02 HINGES

A. Manufacturers:
   1. Basis of Design: See Door and Hardware Schedules in the Drawings.
   2. Substitutions: See Section 01 2500 Substitution Procedures.

B. Hinges: Comply with BHMA A156.1, Grade 1.
   1. Provide hinges on every swinging door.
   2. Provide following quantity of butt hinges for each door:
      a. Doors up to 60 inches High: Two hinges.
      b. Doors 90 inches High up to 120 inches High: Four hinges.

2.03 FLUSH BOLTS

A. Manufacturers:
   1. Basis of Design: See Door and Hardware Schedules in the Drawings.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Flush Bolts: Comply with BHMA A156.16, Grade 1.
   1. Flush Bolt Throw: 3/4 inch, minimum.

2.04 EXIT DEVICES

A. Manufacturers:
   1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. dormakaba; Architectural Hardware Series 8000: www.dormakaba.com/#sle.
   3. Hager Companies: www.hagerco.com/#sle.
   4. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
   5. Von Duprin, an Allegion brand: www.allegion.com/us/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

B. Exit Devices: Comply with BHMA A156.3, Grade 1.
   1. Lever design to match lockset trim.
   2. Provide cylinder with cylinder dogging or locking trim.
   3. Provide exit devices properly sized for door width and height.
   4. Provide strike as recommended by manufacturer for application indicated.
   5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.05 DOOR PULLS AND PUSH BARS

A. Manufacturers:
   1. Basis of Design: See Door and Hardware Schedules in the Drawings..

B. Door Pulls and Push Bars: Comply with BHMA A156.6.
   1. Bar Type: Bar set, unless otherwise indicated.
   2. Material: Aluminum, unless otherwise indicated.

2.06 COORDINATORS

A. Manufacturers:
   1. Basis of Design: See Door and Hardware Schedules in the Drawings..

B. Coordinators: Provide on doors having closers and self-latching or automatic flush bolts to ensure that inactive door leaf closes before active door leaf.
   1. Type: Bar, unless otherwise indicated.
   2. Material: Aluminum, unless otherwise indicated.
   3. Ensure that coordination of other door hardware affected by placement of coordinators and carry bar is applied properly for completely operable installation.

2.07 CLOSERS

A. Manufacturers; Surface Mounted:

1. Basis of Design: See Door and hardware Schedules in the Drawings..

B. Closers: Comply with BHMA A156.4, Grade 1.
   1. Type: Surface mounted to door.
   2. Provide door closer on each exterior door.

2.08 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:
   1. Basis of Design: See Door and Hardware Schedules in the Drawings..

B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
   1. Provide stop for every swinging door, unless otherwise indicated.

2.09 FLOOR STOPS

A. Manufacturers:
   1. Basis of Design: See Door and Hardware Schedules in the Drawings..

B. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Type: Manual hold-open, with pencil floor stop.
   2. Material: As indicated in Drawings housing with rubber insert.

2.10 WALL STOPS

A. Manufacturers:
   1. Basis of Design: See Door and Hardware Schedules in the Drawings..

B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Type: Bumper, concave, wall stop.
   2. Material: Aluminum housing with rubber insert.

2.11 THRESHOLDS

A. Manufacturers:
   1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Hager Companies: www.hagerco.com/#sle.
   3. National Guard Products, Inc: www.ngpinc.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Thresholds: Comply with BHMA A156.21.
   1. Provide threshold at each exterior door, unless otherwise indicated.
   2. Type: Flat surface.
   3. Material: Aluminum.
   4. Threshold Surface: Fluted horizontal grooves across full width.
   5. Field cut threshold to profile of frame and width of door sill for tight fit.
   6. Provide non-corroding fasteners at exterior locations.

2.12 WEATHERSTRIPPING AND GASKETING

A. Weatherstripping and Gasketing: Comply with BHMA A156.22.
   1. Head and Jamb Type: Adjustable.
   2. Door Sweep Type: Encased in retainer.
   3. Material: Aluminum, with brush weatherstripping.
   4. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
   5. Provide door bottom sweep on each exterior door, unless otherwise indicated.

2.13 FIRE DEPARTMENT LOCK BOX

A. Fire Department Lock Box:
   1. Capacity: Holds 10 keys.
   2. Finish: Manufacturer's standard dark bronze.

2.14 FINISHES

A. Finishes: Identified in Door Hardware Schedule in the Drawings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.

D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.02 ADJUSTING

A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.03 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.04 PROTECTION

A. Protect finished Work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

SECTION 08 8000
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealants for other than glazing purposes.

B. Section 08 4313 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASTM C1036 - Standard Specification for Flat Glass; 2021.

D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

F. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

G. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.

H. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

I. GANA (SM) - GANA Sealant Manual; 2008.

J. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

K. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

L. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data on Insulating Glass Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Insulating Glass Units: One of each glass size and each glass type.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.06 FIELD CONDITIONS

A. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:
   1. AGC Glass North America, Inc: www.agcglass.com/#sle.
   2. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
   3. Guardian Glass, LLC: www.guardianglass.com/#sle.
   4. Pilkington North America Inc: www.pilkington.com/na/#sle.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
   1. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
   2. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
   3. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
   1. In conjunction with weather barrier related materials described in other sections, as follows:

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
   1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.
   2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 7 computer program.
   3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
   1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
   2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
   3. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
   1. Glass: Any of the manufacturers specified for float glass.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. Insulating Glass Units: Types as indicated.
   1. Durability: Certified by an independent testing agency to comply with ASTM E2190.

2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Spacer Color: Black.
4. Edge Seal:
   a. Color: Black.
5. Purge interpane space with dry air, hermetically sealed.

C. Insulating Glass Units: Vision glass, double glazed.
1. Applications: Exterior glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
4. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
5. Total Thickness: 1 inch.
6. Thermal Transmittance (U-Value): See Drawings, nominal.
7. Visible Light Transmittance (VLT): See Drawings percent, nominal.
8. Solar Heat Gain Coefficient (SHGC): see drawings, nominal.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

C. Verify that sealing between joints of glass framing members has been completed effectively.

D. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, and paint.

3.04 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.05 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

SECTION 09 0561
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:

PART 2 PRODUCTS

PART 3 EXECUTION

SECTION 09 2116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal stud wall framing.

B. Metal channel ceiling framing.

C. Acoustic insulation.

D. Gypsum sheathing.

E. Gypsum wallboard.

F. Joint treatment and accessories.

G. Textured finish system.

1.02 REFERENCE STANDARDS

A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).

B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

C. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.

F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020.

G. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

H. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.

I. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

J. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.

K. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

L. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.

M. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

N. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2018.

O. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing; 2018 (Reapproved 2023).

P. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

Q. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2019, with Editorial Revision (2020).

R. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

S. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Member of Steel Stud Manufacturers Association (SSMA): www.ssma.com/#sle.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.

C. Store metal products to prevent corrosion.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Fire-Resistance-Rated Assemblies: Provide completed assemblies with the following characteristics:

2.02 METAL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.

B. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. SCAFCO Corporation; _____: www.scafco.com/#sle.
   2. Substitutions: See Section 01 6000 - Product Requirements.

C. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
   1. Studs: C-shaped with knurled or embossed faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C-shaped.
   4. Furring Members: Hat-shaped sections, minimum depth of 7/8 inch.
   5. Furring Members: U-shaped sections, minimum depth of 3/4 inch.
   6. Furring Members: Zee-shaped sections, minimum depth of 1 inch.

D. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
   2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.
   3. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
   4. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-resistance rating of the wall assembly.

E. Grid Suspension Systems: Steel grid system of main tees and support bars connected to structure using hanging wire.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company; ____: www.americangypsum.com/#sle.
   2. CertainTeed Corporation; ____: www.certainteed.com/#sle.
   3. Georgia-Pacific Gypsum; ____: www.gpgypsum.com/#sle.
   4. USG Corporation; ____: www.usg.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   4. Thickness:
   5. Glass Mat Faced Products:
      a. CertainTeed Corporation; 1/2" GlasRoc Interior: www.certainteed.com/#sle.
      b. CertainTeed Corporation; 5/8" GlasRoc Interior Type X: www.certainteed.com/#sle.
      c. Georgia-Pacific Gypsum; DensArmor Plus: www.gpgypsum.com/#sle.
      d. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Interior Extreme Fire-Shield Gypsum Panel: www.goldbondbuilding.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

C. Backing Board For Wet Areas: One of the following products:
   1. Application: Horizontal surfaces behind tile in wet areas including countertops and as indicated on drawings.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
      a. Regular Type: Thickness 1/2 inch.
      b. Fire-Resistance-Rated Type: Type X core, thickness 5/8 inch.
      c. Products:
         1) CertainTeed Corporation; 1/2" GlasRoc Tile Backer: www.certainteed.com/#sle.
         2) CertainTeed Corporation; 5/8" GlasRoc Tile Backer Type X: www.certainteed.com/#sle.
         3) Georgia-Pacific Gypsum; DensShield Tile Backer: www.gpgypsum.com/#sle.
         4) Substitutions: See Section 01 6000 - Product Requirements.

D. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
   1. Application: Exterior sheathing, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
   4. Edges: Square.
   5. Glass Mat Faced Products:
      a. Georgia-Pacific Gypsum; DensGlass Sheathing: www.gpgypsum.com/#sle.
      b. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Fire-Shield Sheathing: www.goldbondbuilding.com/#sle.

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; thickness as required for STC.

B. Water-Resistive Barrier: See Section 07 2500.

C. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
   1. Corner Beads: Low profile, for 90 degree outside corners.

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Joint Compound: Setting type, field-mixed.

E. Textured Finish Materials: Latex-based compound; plain.

F. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C1007AISI S220 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
   1. Level ceiling system to a tolerance of 1/1200.
   2. Laterally brace entire suspension system.
   3. Install bracing as required at exterior locations to resist wind uplift.

C. Studs: Space studs at 16 inches on center.
   1. Extend partition framing to structure where indicated and to ceiling in other locations.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
   3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

3.03 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

C. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
   1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.

3.04 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   3. Level 3: Walls to receive textured wall finish.

4. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
5. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.05 TEXTURE FINISH

A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

3.06 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

SECTION 09 2216
NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal partition, ceiling, and soffit framing.

1.02 REFERENCE STANDARDS

A. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:
   1. CEMCO: www.cemcosteel.com/#sle.
   2. ClarkDietrich: www.clarkdietrich.com/#sle.
   3. SCAFCO Corporation: www.scafco.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FRAMING MATERIALS

A. Non-Loadbearing Framing System Components: AISI S220; sheet steel, of size and properties necessary for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
   1. Studs: C-shaped with flat faces.
   2. Runners: U-shaped, sized to match studs.

2.03 FABRICATION

A. Fabricate assemblies of framed sections to sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

C. Fit and assemble in largest practical sections for delivery to site, ready for installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

3.02 INSTALLATION OF STUD FRAMING

A. Extend partition framing to structure where indicated and to ceiling in other locations.

B. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

C. Align and secure top and bottom runners at 24 inches on center.

D. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

E. Align stud web openings horizontally.

F. Secure studs to tracks using crimping method. Do not weld.

G. Fabricate corners using a minimum of three studs.

H. Install double studs at wall openings, door and window jambs, not more than 2 inches from each side of openings.

I. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.

3.03 CEILING AND SOFFIT FRAMING

A. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangers with other work.

B. Install furring independent of walls, columns, and above-ceiling work.

C. Securely anchor hangers to structural members or embed them in structural slab. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.

D. Space main carrying channels at maximum 72 inches on center, and not more than 6 inches from wall surfaces. Lap splice securely.

E. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.

F. Place furring channels perpendicular to carrying channels, not more than 2 inches from perimeter walls, and rigidly secure. Lap splices securely.

3.04 TOLERANCES

A. Maximum Variation From True Position: 1/8 inch in 10 feet.

B. Maximum Variation From Plumb: 1/8 inch in 10 feet.

SECTION 09 2400
CEMENT PLASTERING

PA)RT 1 GENERAL

1.01 SECTION INCLUDES

A. Cement plastering - Stucco

1.02 RELATED REQUIREMENTS

A. Section 07 2500 - Weather Barriers: Water-resistive barrier.

B. Section 09 2236 - Lath: Lath, furring, beads, screeds, and joint accessories for plaster base.

1.03 REFERENCE STANDARDS

A. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019.

B. ASTM A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process; 2022a.

C. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.

D. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

E. ASTM C206 - Standard Specification for Finishing Hydrated Lime; 2014 (Reapproved 2022).

F. ASTM C897 - Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters; 2015 (Reapproved 2020).

G. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster; 2023a.

H. ASTM C932 - Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering; 2006 (Reapproved 2019).

I. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster; 2023.

J. ASTM C933 - Standard Specification for Welded Wire Lath; 2023.

K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittals procedures.

B. Product Data: Provide data on plaster materials and trim accessories.

C. Samples:
   1. Submit two samples, 12 by 12 inch in size illustrating finish color and texture.
   2. Submit two samples of each type trim accessory.

D. Evaluation Service Reports: Show compliance with specified requirements.

E. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Exterior Plaster Work: Do not apply plaster when substrate or ambient air temperature is 40 degrees F or lower, or when temperature is expected to drop below 40 degrees F within 48 hours of application.

PART 2 PRODUCTS

2.01 CEMENT PLASTER APPLICATIONS

A. Lath Plaster Base: Metal lath.

1. Plaster Type: Factory prepared plaster mix.
2. Number of Coats: Three.
3. First Coat: Apply to a nominal thickness of 3/8 inch.
4. Second Coat: Apply to a nominal thickness of 3/8 inch.
5. Finish Coat: Apply to a nominal thickness of 1/8 inch.

2.02 FACTORY PREPARED CEMENT PLASTER

A. Exterior Portland cement plaster system made of scratch and brown base coat, leveling coat with reinforcing mesh, and acrylic finish coat; install in accordance with ASTM C926.
   1. Manufacturer - Basis of Design:
      a. Parex USA, Inc; Parex 47 Scratch & Brown with Armourwall 100 Krak-Shield: www.parexusa.com/#sle.
   2. Other Acceptable Manufacturers:
      a. Sto Corp; Sto Powerwall with Sto Crack Defense : www.stocorp.com/#sle.
      b. Facades XI; FacadesThree with FacadesOne FractureStop: https://facadesxi.com/facades-xi-stucco-system/.
      c. Substitutions: See Section 01 2500 Substitution Procedures.

B. Primer: Acrylic, as recommended by coating manufacturer and compatible with plaster base coat.

C. Premixed Finish Coating: Integrally colored, 100% acrylic resin based, dirt pick up resistant, factory mixed finish coating.
   1. Color: As indicated on drawings.
   2. Manufacturers:
      a. Same manufacturer as the stucco base coat..

2.03 JOBSITE MIXED CEMENT PLASTER

A. Materials:
   1. Sand: Clean, well graded, and complying with ASTM C897.
   2. Water: Clean, fresh, potable, and free of mineral or organic matter that could adversely affect plaster.
   3. Plaster Mix Reinforcement: Glass fibers, chopped to 1/2 inch nominal length, and alkali resistant.
   4. Admix: Required Acrylic Admix manufactured by the stucco base coat manufacturer

2.04 ACCESSORIES

A. Lath:
   1. Wire Size: 17 gauge, 0.453 inch.
   2. Galvanized: ASTM A641/A641M.
   3. Opening Size: 11/16 by 1-1/2 inches.
   4. Comply with ASTM C933.
   5. Products:
      a. Structa Wire; Megalath: www.structawire.com/#sle.

B. Finishing Accessories: ASTM C1063; extruded aluminum alloy (6063 T5), galvanized steel sheet ASTM A924/A924M G90, rolled zinc, or rigid plastic, unless noted otherwise.
   1. Types: As detailed or required for finished appearance.
   2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed plaster edges.
   3. Products:

C. Bonding Compound: Provide type recommended for bonding plaster to solid surfaces, complying with ASTM C932.
   1. Manufacturers:
      a. Larsen Products Corp; Weldcrete: www.larsenproducts.com/#sle.

D. Crack Resistant Layer

1. Reinforcing Mesh: 4.5 oz/sq yd alkali-resistant mesh.
2. Polymer Modified Base Coat: Dry Acrylic Base Coat or Acrylic Base Coat: Dry polymer containing portland cement mixed with water in the field or 100% acrylic base coat mixed with portland cement in the field.

E. Water-Resistive Barrier: See Section 07 2500.

F. Rainscreen Drainage Material with Drainage Mat:
1. Rainscreen Drainage Mat: Polyester or polypropylene mesh.
   a. Thickness: 1/4 inch.
   b. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less (Class A), when tested in accordance with ASTM E84.
   c. Seam Tape and Bug Screen: As recommended by rainscreen drainage mat manufacturer.
   d. Manufacturers:
      1) Keene Building Products; _____: www.keenebuilding.com/#sle.
      2) _____.
      3) Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify lath is flat, secured to substrate, and joint and surface perimeter accessories are properly in place.

3.02 PREPARATION

A. Roughen smooth concrete surfaces and apply bonding compound in accordance with manufacturer's written installation instructions.

B. Apply dash bond coat of plaster to solid bases and moist cure for at least 24 hours before applying first coat of jobsite mixed plaster.

3.03 INSTALLATION - WATER-RESISTIVE BARRIER

A. Where cement plaster is installed as part of a barrier wall system, install two layers of water-resistive barrier in accordance with water-resistive barrier manufacturer's instructions.

B. Integrate water-resistive barrier with flashing accessories, and adjacent doors, windows, penetrations, and cladding transitions.

C. Apply water-resistive barrier horizontally with upper layer lapped over lower layer at least 2 inches.

D. Lap water-resistive barrier at least 6 inches at vertical joints.

E. Lap water-resistive barrier at least 16 inches beyond vertical line of inside and outside corners in both directions.

3.04 INSTALLATION - RAINSCREEN DRAINAGE MATERIAL

A. Install rainscreen drainage material and metal lath with accessories over sheathing material and water-resistive barrier with fastening system in accordance with ASTM C1063 into wood or metal studs. Install drainage material with filter fabric mortar screen to exterior.

3.05 MIXING

A. Mix only as much plaster as can be used prior to initial set.

B. Mix materials dry, to uniform color and consistency, before adding water.

C. Protect mixtures from frost or freezing temperatures, contamination, and excessive evaporation.

3.06 APPLICATION

A. Apply plaster in accordance with manufacturer's written instructions and comply with ASTM C926.

B. Base Coats:
   1. Apply base coat(s) to fully embed lath and to specified thickness.
   2. Follow guidelines in ASTM C926 and manufacturer's written installation instructions for moist curing base coats and application of subsequent coats.

C. Leveling Coat:
   1. Apply leveling coat to specified thickness.
   2. Fully embed reinforcing mesh in leveling coat.

D. Finish Coats:
   1. Cement Plaster:
      a. Apply with sufficient material and pressure to ensure complete coverage of base to specified thickness.
      b. Apply desired surface texture while mix is still workable.
   2. Primer and Acrylic Coatings:
      a. Remove surface contaminants such as dust and dirt without damaging substrate.
      b. Apply primer in accordance with manufacturer's instructions.
      c. Apply finish coating in number of coats and to thickness recommended by manufacturer.

3.07 TOLERANCES

A. Maximum Variation from True Flatness: 1/4 inch in 10 feet.

3.08 REPAIR

A. Patching: Remove loose, damaged or defective plaster and replace with plaster of same composition; finish to match surrounding area.

SECTION 09 3000
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Tile for wall applications.

C. Cementitious backer board as tile substrate.

D. Coated glass mat backer board as tile substrate.

E. Stone thresholds.

F. Ceramic accessories.

G. Ceramic trim.

H. Non-ceramic trim.

1.02 REFERENCE STANDARDS

A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2023.

B. ANSI A108.1b - Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

C. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

D. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2023.

E. ANSI A108.5 - Setting of Ceramic Tile with Dry-Set Cement Mortar, Modified Dry-Set Cement Mortar, EGP (Exterior Glue Plywood) Modified Dry-Set Cement Mortar, or Improved Modified Dry-Set Cement Mortar; 2023.

F. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 2023.

G. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2024).

H. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 2023.

I. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).

J. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

K. ANSI A108.12 - Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2023.

L. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).

M. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.

N. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs; 2020.

O. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.

P. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.

Q. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2019.

R. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

S. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2023.

T. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2018.

U. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2024.

V. TCNA (HB-GP) - Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation; 2023.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

B. Installer Qualifications:
   1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.05 FIELD CONDITIONS

A. Do not install solvent-based products in an unventilated environment.

B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: As indicated in architectural drawings. .
   1. Substitutions: See Section 01 2500 Substitution Procedures.

2.02 TRIM AND ACCESSORIES

A. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
   1. Manufacturers: Same as for tile.

B. Non-Ceramic Trim: _____, style and dimensions to suit application, for setting using tile mortar or adhesive.
   1. Applications:
      a. Open edges of wall and floor tile.
      b. Inside and outside wall corners.
      c. Transition between floor finishes of different heights.

d. Floor and wall expansion and control joints.
e. Floor-to-wall joints.

2. Products:
   a. Schluter-Systems; Schiene: www.schluter.com/#sle.
   b. Substitutions: See Section 01 6000 - Product Requirements.

C. Thresholds: 2 inches wide by full width of wall or frame opening; beveled edge on both long edges; without holes, cracks, or open seams.
1. Thickness: 1/2 inch.
2. Material: Marble, honed finish.
3. Applications:
   a. At interior doorways where tile terminates.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same manufacturer.

B. Manufacturers:
1. ARDEX Engineered Cements; _____: www.ardexamericas.com/#sle.
2. LATICRETE International, Inc; _____: www.laticrete.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.

C. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
1. Products:
   a. ARDEX Engineered Cements; ARDEX X 5: www.ardexamericas.com/#sle.
   b. LATICRETE International, Inc; TRI-LITE: www.laticrete.com/#sle.
   c. Substitutions: See Section 01 6000 - Product Requirements.

2.04 GROUTS

A. Provide setting and grout materials from same manufacturer.

B. Manufacturers:
1. ARDEX Engineered Cements; _____: www.ardexamericas.com/#sle.
2. LATICRETE International, Inc; _____: www.laticrete.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.

C. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As selected by Architect from manufacturer's full line.
4. Products:
   a. ARDEX Engineered Cements; ARDEX FL: www.ardexamericas.com/#sle.
   b. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
   c. Substitutions: See Section 01 6000 - Product Requirements.

D. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
1. Applications: Where indicated.

2.05 MAINTENANCE MATERIALS

A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
1. Applications: Between tile and plumbing fixtures.
2. Color(s): As selected by Architect from manufacturer's full line.

B. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
1. Composition: Water-based colorless silicone.

2. Products:
    a. Merkrete, by Parex USA, Inc; Merkrete Revive: www.merkrete.com/#sle.
    b. Substitutions: See Section 01 6000 - Product Requirements.

2.06 ACCESSORY MATERIALS

A. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
    1. Fluid or Trowel Applied Type:
        a. Products:
            1) LATICRETE International, Inc; LATICRETE HYDRO BAN: www.laticrete.com/#sle.
            2) Substitutions: See Section 01 6000 - Product Requirements.

B. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 7/16 inch thick; 2 inch wide coated glass fiber tape for joints and corners.
    1. Products:
        a. Custom Building Products; WonderBoard Lite Backerboard: www.custombuildingproducts.com/#sle.
        b. Substitutions: See Section 01 6000 - Product Requirements.

C. Backer Board: Coated glass mat type complying with ASTM C1178/C1178M; inorganic fiberglass mat on both surfaces and integral acrylic coating vapor retarder.

D. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

3.03 INSTALLATION - GENERAL

A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) or TCNA (HB-GP) recommendations, as applicable.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install non-ceramic trim in accordance with manufacturer's instructions.

G. Install thresholds where indicated.

H. Sound tile after setting. Replace hollow sounding units.

I. Keep control and expansion joints free of mortar, grout, and adhesive.

J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

K. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout.

1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.
2. Where epoxy bond coat and grout are indicated, install in accordance with TCNA (HB) Method F131.
3. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCNA (HB) Method F115.

3.05 INSTALLATION - FLOORS - MORTAR BED METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F111, with cleavage membrane, unless otherwise indicated.

B. Cleavage Membrane: Lap edges and ends.

C. Mortar Bed Thickness: 5/8 inch, unless otherwise indicated.

3.06 CLEANING

A. Clean tile and grout surfaces.

3.07 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

SECTION 09 5100
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Samples: Submit two samples 6" by 6" inch in size illustrating material and finish of acoustical units.

1.04 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
   2. Rockfon; _____: www.rockfon.com/#sle.
   3. USG Corporation; ____: www.usg.com/ceilings/#sle.
   4. Substitutions: See Section 01 2500 Substitution Procedures.

2.02 ACOUSTICAL UNITS

A. Acoustical Panels, Type ____: Mineral fiber with scrubbable finish, with the following characteristics:
   1. Classification: ASTM E1264 Type IX.
   2. Size: 24 by 24 inches.
   3. Thickness: 3/4 inch.
   4. Panel Edge: Square.
   5. Suspension System Type _____: Exposed grid.
   6. Products:
      a. USG Corporation; Kitchen Lay-In Panels: www.usg.com/ceilings/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.

1. Materials:
    a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.

B. Exposed Suspension System, Type ____: Hot-dipped galvanized steel grid with steel cap.
1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
2. Profile: Tee; 15/16 inch face width.
3. Finish: Baked enamel.
4. Color: White.
5. Products:
    a. Armstrong.
    b. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

C. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

D. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

E. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

F. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

E. Cutting Acoustical Units:
1. Make field cut edges of same profile as factory edges.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.06 CLEANING

SECTION 09 6500
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Installation accessories.

1.02 REFERENCE STANDARDS

A. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2023.

B. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

D. Verification Samples: Submit two samples, 6 by 6 inch in size illustrating color and pattern for each resilient flooring product specified.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

PART 2 PRODUCTS

2.01 TILE FLOORING

A. Vinyl Composition Tile - Type ____: Homogeneous, with color extending throughout thickness.
   1. Manufacturers:
      a. Armstrong Flooring; Excelon SDT: www.armstrongflooring.com/#sle.
      b. Johnsonite, a Tarkett Company; _____: www.johnsonite.com/#sle.
      c. Substitutions: See Section 01 2500 Substitution Procedures.
   2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
   3. Size: 12 by 12 inch.
   4. Thickness: 0.125 inch.
   5. Color: To be selected by Architect from manufacturer's full range.

2.02 RESILIENT BASE

A. Resilient Base - Type ____: ASTM F1861, Type TS, rubber, vulcanized thermoset; style as scheduled.
   1. Manufacturers:
      a. Roppe Corporation; Contours Profiled Wall Base System: www.roppe.com/#sle.
      b. Substitutions: See Section 01 2500 Substitution Procedures.
   2. Height: 4 inches.
   3. Thickness: 0.125 inch.
   4. Finish: Satin.
   5. Color: As indicated on drawings.

6. Color: To be selected by Architect from manufacturer's full range.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is fully cured.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

3.04 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

SECTION 09 6813
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

B. Removal of existing carpet tile.

1.02 RELATED REQUIREMENTS

A. Section 09 0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:
   1. Interface, Inc; ____: www.interface.com/#sle.
   2. Mannington Commercial; _____: www.manningtoncommercial.com#sle.
   3. Milliken & Company; ____: www.milliken.com/#sle.
   4. Mohawk Group; ____: www.mohawkgroup.com/#sle.
   5. Substitutions: See Section 01 2500 Substitution Procedures.

2.02 MATERIALS

A. Tile Carpeting: Tufted, manufactured in one color dye lot.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Embossed aluminum, _____ color.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

3.02 PREPARATION

A. Remove existing carpet tile.

B. Prepare floor substrates for installation of flooring in accordance with Section 09 0561.

C. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Trim carpet tile neatly at walls and around interruptions.

G. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove excess adhesive without damage, from floor, base, and wall surfaces.

C. Clean and vacuum carpet surfaces.

SECTION 09 9113
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC V1 (PM1) - Good Painting Practice: Painting Manual Volume 1; 2016.

E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

F. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Paints:
   1. Base Manufacturer: As indicated in architectural drawings..

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each paint material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

D. Colors: AS indicated in Architectural Drawings.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, brick, fiber cement siding, primed wood, and primed metal.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Exterior Latex; MPI #10, 11, 15, 119, or 214.
      a. Products:
         1) As indicated on Architectural Drawings..
         2) Substitutions: See Section 01 6000 - Product Requirements

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

G. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

H. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

I. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.02 APPLICATION

A. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

SECTION 09 9123
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Glass.
   7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 09 9113 - Exterior Painting.

1.03 REFERENCE STANDARDS

A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.

1. If a single manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

B. Paints:
   1. Base Manufacturer: As indicated in architectural drawings.

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 2500 Substitution Procedures.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Supply each paint material in quantity required to complete entire project's work from a single production run.
   3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

2.03 PAINT SYSTEMS - INTERIOR

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

3.02 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

SECTION 10 2310
GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Frameless glazed interior wall and door assemblies.

B. Framed glazed interior wall and door assemblies.

1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware.

1.03 REFERENCE STANDARDS

A. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

E. ASTM C1036 - Standard Specification for Flat Glass; 2021.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

G. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

H. ASTM E413 - Classification for Rating Sound Insulation; 2022.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene at project site seven calendar days prior to scheduled beginning of construction activities of this section to review section requirements.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's descriptive literature for each component in partition assembly.

C. Shop Drawings: Drawings showing layout, dimensions, identification of components, and interface with adjacent construction.

D. Certificates: Contractor to certify that installer of partition assemblies meets specified qualifications.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum three years of experience designing, assembling, and installing partition assemblies similar to those specified in this section.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN - FRAMELESS GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

A. Basis of Design: DORMA USA, Inc; RS 120 - Sliding Door System: www.dorma.com/#sle.

B. Substitutions: See Section 01 6000 - Product Requirements.

1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.02 BASIS OF DESIGN - FRAMED GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

A. Basis of Design: DORMA USA, Inc; PURE Enclose - Pivoting Door System: www.dorma.com/#sle.

B. Substitutions: See Section 01 6000 - Product Requirements.
   1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.03 PERFORMANCE REQUIREMENTS

A. Acoustical Performance: Provide glass partitions and door assemblies tested by qualified testing agency, calculated in accordance with ASTM E413, tested in accordance with ASTM E90, and rated for not less than Sound Transmission Class (STC) indicated.
   1. Partition STC Rating: 35, minimum, for framed partition.
   2. Door STC Rating: 18, minimum, for sliding door.

2.04 FRAMELESS GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

A. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels fastened with U-channel fittings on top and bottom edge of glass wall.
   1. Configuration: As indicated on drawings.
   2. U-Channel Fittings: Extruded aluminum, satin anodized finish, dry glazed, and with matching end caps.
      a. Top channel is 1-1/2 inch high by 1 inch deep.
      b. Bottom channel is 1 inch high by 1 inch deep.
   3. Glass Thickness: 1/2 inch, tempered.
   4. Designed to withstand normal operation without damage, racking, sagging, or deflection.
   5. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
   6. Finished metal surfaces protected with strippable film.
   7. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

B. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels fastened with low profile sidelite aluminum rail fittings on top and bottom edge of glass wall.
   1. Configuration: As indicated on drawings.
   2. Full Length Top and Bottom Sidelite Rails: 2-5/16 inch high by 1-1/2 inch deep with end caps.
   3. Sidelite Fittings, Clad Finish: Satin anodized.
   4. Glass Thickness: 1/2 inch, tempered.
   5. Designed to withstand normal operation without damage, racking, sagging, or deflection.
   6. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
   7. Finished metal surfaces protected with strippable film.
   8. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

C. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels captured by U-channel integrated within supporting track and door roller assembly hidden inside, and surface mounted glazing channel at bottom of fixed glazing.
   1. Configuration: As indicated on drawings.
   2. Glass Thickness: 1/2 inch, tempered.
   3. Provide setting blocks and gaskets in glazing channel as required.
   4. Designed to withstand normal operation without damage, racking, sagging, or deflection.
   5. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
   6. Finished metal surfaces protected with strippable film.
   7. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

D. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels supported by track for sliding door with roller assembly inside, butt-glazed dry joint between glass panels, and glazing channel at bottom of fixed glazing.
   1. Configuration: As indicated on drawings.
   2. Glass Thickness: 1/2 inch, tempered.
   3. Provide setting blocks and gaskets in glazing channel as required.
   4. Designed to withstand normal operation without damage, racking, sagging, or deflection.
   5. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
   6. Finished metal surfaces protected with strippable film.
   7. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

E. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels top supported by U-channel anchored from track with exterior roller assembly and aluminum covers clipped onto track, and surface mounted glazing channel at bottom of fixed glazing.
   1. Configuration: As indicated on drawings.
   2. Glass Thickness: 1/2 inch, tempered.
   3. Provide setting blocks and gaskets in glazing channel as required.
   4. Designed to withstand normal operation without damage, racking, sagging, or deflection.
   5. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
   6. Finished metal surfaces protected with strippable film.
   7. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

F. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels supported by clamp-on rails with exterior clad top roller assembly rails and glass bottom rails.
   1. Configuration: As indicated on drawings.
   2. Cladding Finish: Clear anodized.
   3. Glass Thickness: 1/2 inch, tempered.
   4. Designed to withstand normal operation without damage, racking, sagging, or deflection.
   5. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
   6. Finished metal surfaces protected with strippable film.
   7. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

G. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels supported by single point stainless steel fittings and holes through glass.
   1. Configuration: As indicated on drawings.
   2. Stainless Steel: No. 4 - Brushed finish.
   3. Glass Panel Thickness: 1/2 inch, tempered glass.
   4. Designed to withstand normal operation without damage, racking, sagging, or deflection.
   5. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
   6. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

2.05 FRAMED GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

A. Framed Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of center-glazed rectilinear aluminum framing with screw spline or clip joinery.

1. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
2. Design system to withstand normal operation without damage, racking, sagging, or deflection.
3. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

B. Framed Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of center-glazed perimeter channel frames, butt-glazed dry joints and framed joints between panels.
1. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
2. Design system to withstand normal operation without damage, racking, sagging, or deflection.
3. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

C. Pivoting Glass Doors: Patch fittings at head and sill on pivot side and at lock and strike on swing side.
1. Door Configuration: As indicated on drawings.

2.06 MATERIALS

A. Glass: Flat glass meeting requirements of ASTM C1036, Type I - Transparent Flat Glass, Class 2 - Tinted, Quality Q3, fully tempered in accordance with ASTM C1048, Kind FT, and as follows:
1. Thickness: 1/4 inch.
2. Temper glass materials horizontally; visible tong marks or tong mark distortions are not permitted.

B. Aluminum Components: Complying with ASTM B221 (ASTM B221M), alloy 6063, T5 temper.

C. Stainless Steel Components: Complying with ASTM A666/A666M, Type 316L alloy.

D. Sealant: One-part silicone sealant, complying with ASTM C920, clear.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify floor flatness of 1/8 inch in 10 feet, non-cumulative.

B. Do not begin installation until supports and adjacent substrates have been properly prepared.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean substrates thoroughly prior to installation.

B. Prepare substrates using the methods recommended by the manufacturer for achieving acceptable result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with glazed interior wall and door assembly manufacturer's instructions.

B. Fit and align glazed interior wall and door assembly level and plumb.

SECTION 10 2800
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Under-lavatory pipe supply covers.

C. Electric hand/hair dryers.

D. Utility room accessories.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures; 2011 (Reaffirmed 2022).

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

D. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2022.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

F. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

G. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017 (Reapproved 2022).

H. ASTM C1822 - Standard Specification for Insulating Covers on Accessible Lavatory Piping; 2021.

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
   2. Bradley Corporation; _____: www.bradleycorp.com/#sle.
   3. Georgia-Pacific Professional; _____: www.gppro.com/#sle.
   4. Kimberly-Clark Corporation; Kimberly-Clark Professional ICON Collection: www.kcprofessional.com/#sle.
   5. Palmer Fixture; _____: www.palmerfixture.com/#sle.
   6. _____.

7. Substitutions: Section 01 6000 - Product Requirements.

B. Under-Lavatory Pipe Supply Covers:
   1. Plumberex Specialty Products, Inc; _____: www.plumberex.com/#sle.
   2. Substitutions: Section 01 6000 - Product Requirements.

C. Electric Hand/Hair Dryers:
   1. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
   2. Dyson Inc; Dyson Airblade 9kJ: www.dyson.com/#sle.
   3. Excel Dryer; _____: www.exceldryer.com/#sle.
   4. Frost Products Limited; _____: www.frostproductsltd.com/#sle.
   5. Mitsubishi Electric Trane HVAC US LLC; _____: www.mitsubishielectric.com/#sle.
   6. Saniflow Hand Dryer Corporation: www.saniflowcorp.com/#sle.
   7. Stelpro Design Inc; ELN - El-Nino Hand Dryer: www.stelpro.com/#sle.
   8. World Dryer Corporation; _____: www.worlddryer.com/#sle.
   9. Substitutions: Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

B. Stainless Steel Sheet: ASTM A666/A666M, Type 304.

C. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.

C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.

D. Powder-Coated Steel: Clean, degrease, and neutralize. Follow immediately with a phosphatizing treatment, prime coat, and two finish coats of powder coat enamel.

E. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.

2.04 COMMERCIAL TOILET ACCESSORIES

A. Toilet Paper Dispenser: Single roll, surface mounted bracket type, stainless steel, spindleless type for tension spring delivery designed to prevent theft of tissue roll.
   1. Attached Purse Shelf: 0.03 inch satin finished stainless steel, with rolled or formed edge at front.
   2. Products:
      a. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
      b. Substitutions: Section 01 6000 - Product Requirements.

B. Combination Toilet Paper/Seat Cover Dispenser with Napkin Disposal: Double roll; Recessed flush with wall, stainless steel; seamless wall flanges, continuous piano hinges.
   1. Minimum capacity: 1000 seat covers.
   2. Waste receptacle capacity: 1.3 gallons.
   3. Products:
      a. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
      b. Substitutions: Section 01 6000 - Product Requirements.

C. Paper Towel Dispenser: Folded paper type, thermoplastic polymer, surface-mounted, with viewing slots on sides as refill indicator and tumbler lock.
   1. Capacity: 500 multifold minimum.

2. Products:
    a. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
    b. Palmer Fixture; TD0189 – Premium Multi/C-Fold Towel Dispenser: www.palmerfixture.com/#sle.
    c. Substitutions: Section 01 6000 - Product Requirements.

2.05 UNDER-LAVATORY PIPE AND SUPPLY COVERS

A. Under-Lavatory Pipe and Supply Covers:
1. Insulate exposed drainage piping, including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
3. Construction: 1/8 inch flexible PVC.
    a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
    b. Comply with ASTM C1822, type indicated.
    c. Comply with ASME A112.18.9.
    d. Comply with ICC A117.1.
    e. Microbial and Fungal Resistance: Comply with ASTM G21.
4. Color: White.
5. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces.
6. Products:
    a. Plumberex Specialty Products, Inc; Plumberex Handy-Shield Maxx: www.plumberex.com/#sle.
    b. Plumberex Specialty Products, Inc; Plumberex Trap Gear: www.plumberex.com/#sle.
    c. Substitutions: See Section 01 6000 - Product Requirements.

2.06 ELECTRIC HAND/HAIR DRYERS

A. Electric Hand Dryers: Traditional fan-in-case type, with downward fixed nozzle.
1. Operation: Automatic, sensor-operated on and off.
2. Mounting: Wall-mounted - surface.
3. Cover: Plastic.
    a. Tamper-resistant screw attachment of cover to mounting plate.

2.07 UTILITY ROOM ACCESSORIES

A. Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, hat-shaped channel.
1. Holders: Three spring-loaded rubber cam holders.
2. Length: 36 inches.

B. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
1. Drying rod: Stainless steel, 1/4 inch diameter.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.

D. See Section _____ for installation of blocking, reinforcing plates, and concealed anchors in walls and ceilings.

3.02 PREPARATION

3.03 INSTALLATION

A. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
   1. Electric Hand Dryers: Measured from floor to bottom of nozzle:
      a. Men: 44 inches.
      b. Women: 42 inches.
      c. Teenager: 41 inches.
      d. Child: 32 inches.
      e. Handicap: 36 inches.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

SECTION 10 4400
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguisher cabinets.

1.02 REFERENCE STANDARDS

A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2023a.

B. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide extinguisher operational features.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Ansul, a Tyco Business: www.ansul.com/#sle.
   2. Kidde, a unit of United Technologies Corp: www.kidde.com/#sle.
   3. Nystrom, Inc: www.nystrom.com/#sle.
   4. Oval Brand Fire Products; Oval Dry Chemical Fire Extinguisher - Multipurpose ABC: www.ovalfireproducts.com/#sle.
   5. Pyro-Chem, a Tyco Business: www.pyrochem.com/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

2.03 FIRE EXTINGUISHER CABINETS

A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.

B. Fire Rated Cabinet Construction: One-hour fire rated.

C. Cabinet Configuration: Recessed type.
   1. Size to accommodate accessories.
   2. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.

D. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.

E. Door Glazing: Float glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure rigidly in place.

SECTION 12 3600
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

B. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

C. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.

D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

E. NSI (DSDM) - Dimensional Stone Design Manual, Version VIII; 2016.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.

C. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

D. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Natural Stone Institute (NSI) Accredited Natural Stone Fabricator; www.naturalstoneinstitute.org/#sle.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Solid Surfacing Wall Panels: Solid surfacing sheet or plastic resin casting over continuous substrate.
   1. Flat Sheet Thickness: 1/2 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
      a. Manufacturers:
         1) American Bath Group; _____: www.americanbathgroup.com/#sle.
         2) Meganite, Inc; _____: www.meganite.com/#sle.
         3) Hyundai L&C USA "Hanex" Solid Surfaces: www.hyundailncusa.com.
         4) Substitutions: See Section 01 6000 - Product Requirements.
      b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
      c. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
      d. Color and Pattern: As indicated on drawings.
   3. Fabricate in accordance with manufacturer's standard requirements.

B. Natural Stone Countertops: Stone slabs bonded to substrate; use as large pieces as possible with inconspicuous adhesive joints.

1. Stone: Granite without cracks, voids, or pin holes ; filling with matching epoxy resin is acceptable.
2. Color: As indicated on drawings.
3. Quarry Name: TBD; no substitutions.
4. Stone Thickness: ___ inch, minimum.
5. Surface Finish: As indicated on drawings.
6. Back and End Splashes: Same material, same thickness; for field attachment.

C. Natural Quartz and Resin Composite Countertops: Sheet or slab of natural quartz and plastic resin over continuous substrate.
1. Flat Sheet Thickness: 1-1/4 inch, minimum.
2. Natural Quartz and Resin Composite Sheets, Slabs and Castings: Complying with ISFA 3-01 and NEMA LD 3; orthophthalic polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard stone fabrication tools; no surface coating; color and pattern consistent throughout thickness.
   a. Manufacturers:
      1) Cambria Company LLC; ____: www.cambriausa.com/#sle.
      2) Dal-Tile Corporation; ONE Quartz Surfaces: www.daltile.com/#sle.
      3) Wilsonart; ____: www.wilsonart.com/#sle.
      4) Hyundai L&C USA "HanStone Quartz": www.hyundailncusa.com.
      5) Substitutions: See Section 01 2500 Substitution Procedures.
   b. Factory fabricate components to the greatest extent practical in sizes and shapes indicated; comply with NSI (DSDM).
   c. Finish on Exposed Surfaces: Polished.
   d. Color and Pattern: As indicated on drawings.
3. Other Components Thickness: 3/4 inch, minimum.
4. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

SECTION 316329 - DRILLED CONCRETE PIERS AND SHAFTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Dry-installed drilled piers.

1.2 UNIT PRICES

A. Drilled Piers: Actual net volume of drilled piers in place and approved. Actual length, shaft diameter, and bell diameter if applicable, may vary, to coincide with elevations where satisfactory bearing strata are encountered. These dimensions may also vary with actual bearing value of bearing strata determined by an independent testing and inspecting agency. Adjustments are made on net variation of total quantities, based on design dimensions for shafts and bells.

1. Base bids on indicated number of drilled piers and, for each pier, the design length from top elevation to bottom of shaft, extended through the bell, if applicable, and the diameter of shaft and bell.
2. Unit prices include labor, materials, tools, equipment, and incidentals required for excavation, trimming, shoring, casings, dewatering, reinforcement, concrete fill, testing and inspecting, and other items for complete drilled-pier installation.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture.

C. Shop Drawings: For concrete reinforcement.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Material certificates.

C. Material test reports.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

D. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Record drawings.

1.7 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.4/D1.4M, "Structural Welding Code - Reinforcing Steel."

1.8 FIELD CONDITIONS

A. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from this data.

1. Make additional test borings and conduct other exploratory operations necessary for drilled piers.
2. The geotechnical report is included elsewhere in the Project Manual.

B. Survey Work: Engage a qualified land surveyor or professional engineer to perform surveys, layouts, and measurements for drilled piers. Before excavating, lay out each drilled pier to lines and levels required. Record actual measurements of each drilled pier's location, shaft diameter, bottom and top elevations, deviations from specified tolerances, and other specified data.

1. Record and maintain information pertinent to each drilled pier and indicate on record Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Drilled-Pier Standard: ACI 336.1 except as modified in this Section.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

2.3 CONCRETE MATERIALS

A. Refer to section 033000 “Cast-in-Place Concrete”, mix type “A”.

2.4 CONCRETE MIXTURES AND MIXING

A. Refer to section 033000 “Cast-in-Place Concrete”, mix type “A”.

PART 3 - EXECUTION

3.1 EXCAVATION

A. Unclassified Excavation: Excavate to bearing elevations regardless of character of surface and subsurface conditions encountered.

1. Standard excavation includes excavation accomplished with conventional augers fitted with soil or rock teeth, drilling buckets, or underreaming tools attached to drilling equipment of size, power, torque, and downthrust necessary for the Work.
2. Special excavation includes excavation that requires special equipment or procedures where drilled-pier excavation equipment used in standard excavation, operating at maximum power, torque, and downthrust, cannot advance the shaft.
3. Obstructions: Payment for removing unanticipated boulders, concrete, masonry, or other subsurface obstructions that cannot be removed by conventional augers fitted with soil or rock teeth, drilling buckets, or underreaming tools attached to drilling equipment of size, power, torque, and downthrust necessary for the Work is according to Contract provisions for changes in the Work.

B. Excavate shafts for drilled piers to indicated elevations. Remove loose material from bottom of excavation.

C. Notify and allow testing and inspecting agency to test and inspect bottom of excavation. If unsuitable bearing stratum is encountered, make adjustments to drilled piers as determined by Architect.

1. Do not excavate shafts deeper than elevations indicated unless approved by Engineer.
2. Payment for additional authorized excavation is according to Contract provisions for changes in the Work.

D. Tolerances: Construct drilled piers to remain within ACI 336.1 tolerances.

3.2 INSTALLATION

A. Comply with recommendations in CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Place concrete in continuous operation and without segregation immediately after inspection and approval of shaft by a qualified Special Inspector.

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

C. Place concrete to fall vertically down the center of drilled pier without striking sides of shaft or steel reinforcement.

3.3 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Drilled piers.
2. Excavation.
3. Concrete.
4. Steel reinforcement welding.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

C. Drilled-Pier Tests and Inspections: For each drilled pier, before concrete placement.

1. Soil Testing: Bottom elevations, bearing capacities, and lengths of drilled piers indicated have been estimated from available soil data. Actual elevations and drilled-pier lengths and bearing capacities are determined by testing and inspecting agency. Final evaluations and approval of data are determined by Engineer.

D. Concrete Tests and Inspections: ACI 301.

3.4 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 316329

Copyright © 2023 by the American Institute of Architects. Warning: This AIA MasterSpec based document is protected by U.S. Copyright Law and International Treaties. A valid, current MasterSpec license is required for editing or use of this document.

SECTION 328400

IRRIGATION SYSTEM

PART ONE -- GENERAL

1.01 GENERAL CONDITIONS

The requirements of the "General Conditions of the Contract" and of Division 1, "General Requirements", shall apply to all work of this Section with the same force and effect as though repeated in full herein.

1.02 SCOPE OF WORK

A. Provide all labor, materials, transportation, and services necessary to furnish and install Irrigation Systems as shown on the drawings and described herein.

B. Related work in other sections:
   1. Turf and Grasses

1.03 QUALITY ASSURANCE & REQUIREMENTS

A. Permits and Fees: The Contractor shall obtain and pay for any and all permits and all observations as required.

B. Manufacturer's Directions: Manufacturer's directions and detailed drawings shall be followed in all cases where the manufacturers of articles used in this contract furnish directions covering points not shown in the drawings and specifications

C. Ordinances and Regulations: All local, municipal, and state laws, and rules and regulations governing or relating to any portion of this work are hereby incorporated into and make a part of these specifications, and their provisions shall be carried out by the Contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations or requirements of a better quality, higher standard, or larger size than is required by the above rules and regulations, the provisions of these specifications and drawings shall take precedence.

D. Explanation of Drawings:
   1. Due to the scale of drawings, it is not possible to indicate all offsets, fittings, sleeves, etc., which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of his work and plan his work accordingly, furnishing such fittings, etc., as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the work to be installed. The work shall be installed in such a manner as to avoid conflicts between irrigation systems, planting, and architectural features.
   2. All work called for on the drawings by notes or details shall be furnished and installed whether or not specifically mentioned in the specifications.
   3. The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been considered in engineering. Such obstructions or differences should be brought to the attention of the Licensed Irrigator immediately.

In the event this notification is not performed, the Irrigation Contractor shall assume full responsibility for any revision necessary.

1.04 SUBMITTALS

A. Material List:
   1. The Contractor shall furnish the articles, equipment, or processes specified by name in the drawings and specifications. No substitution will be allowed without prior written approval by the Licensed Irrigator.
   2. Complete material list shall be submitted prior to performing any work. Material list shall include the manufacturer, model number, and description of all materials and equipment to be used.
   3. Equipment or materials installed or furnished without prior approval of the Licensed Irrigator may be subject to rejection, and the Contractor required to remove such materials from the site at his own expense.
   4. Approval of any item, alternate, or substitute indicates only that the product or products apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted.
   5. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.

B. Record and As-Built Drawings:
   1. The Contractor shall provide and keep an up-to-date and complete "as-built" record set of blue line ozalid prints which shall be corrected daily and show every change from the original drawings and specifications, the exact "as-built" locations, sizes, and kinds of equipment. Prints for these purposes may be obtained from the Licensed Irrigator at cost. This set of drawings shall be kept on the site and shall be used only as a record set.
   2. These drawings shall also serve as work progress sheets and shall be the basis for measurement and payment for work completed. These drawings shall be available at all times for inspection and shall be kept in a location designated by the Licensed Irrigator. Should the record blue line as-built progress sheets not be available for review or not up-to-date at the time of any inspection (refer to Section 3.09 - Observation Schedule), it will be assumed no work has been completed and the Contractor will be assessed the cost of that site visit at the current billing rate of the Licensed Irrigator. No other observations shall take place prior to payment of that assessment.
   3. The Contractor shall make neat and legible notations on the as-built progress sheets daily as the work proceeds, showing the work as actually installed. For example, should a piece of equipment be installed in a location that does not match the plan, the Contractor must indicate that equipment has been relocated in a graphic manner so as to match the original symbols as indicated in the irrigation legend. The relocated equipment and dimensions will then be transferred to the original as-built plan at the proper time.
   4. Hand drawn: In lieu of electronically drawn, before the date of the final inspection, the Contractor shall transfer all information from the "as-built" prints to a sepia Mylar, or similar Mylar material, procured from the Licensed Irrigator. All work shall be in waterproof India ink and applied to the Mylar be a technical pen made expressly for use on Mylar material. Such pen shall be similar to those manufactured by Rapidograph, Kueffell & Esser, or Faber Castell. The dimensions shall be made so as to be easily readable, even on the final controller chart (see Section C). The original Mylar "as-built" plan shall be submitted to the Licensed Irrigator for approval prior to the making of the controller chart.
   5. Electronically drawn: In lieu of hand drawn, before the date of the final inspection, the Contractor shall transfer all information from the "as-built" prints to an AutoCAD electronic file procured from the Licensed Irrigator. All work shall be documented on a

unique and separate layer. The electronically drawn "as-built" plan shall be submitted to the Licensed Irrigator for approval prior to the making of the controller chart.

6. The Contractor shall dimension from two (2) permanent points of reference - building corners, sidewalks, road intersections, etc. - the location of the following items:
   a. Connection to existing water lines
   b. Connection to existing electrical power
   c. Gate valves
   d. Routing of irrigation pressure lines (dimension maximum 100' along routing).
   e. Irrigation control valves.
   f. Routing of control wiring.
   g. Quick coupling valves.
   h. Road and sidewalk borings
   I. Other related equipment as directed by the Licensed Irrigator
7. On or before the date of the final inspection, the Contractor shall deliver the corrected and completed sepias to the Licensed Irrigator. Delivery of the sepias will not relieve the Contractor of the responsibility of furnishing required information that maybe omitted from the prints.

C. Controller Charts:
   1. As-built drawings shall be approved by the Licensed Irrigator before controller charts are prepared.
   2. Provide on (1) controller chart for each controller supplied.
   3. The chart shall show the area controlled by the automatic controller and any area under a manual irrigation. The chart shall be the maximum size which the controller door will allow.
   4. The chart is to be a reduced drawing of the actual as-built system. However, in the event the controller sequence is not legible when the drawing(s) is reduced, it shall be enlarged to a size that will be readable when reduced.
   5. The chart shall be a black line print. A different color shall be used to indicate the area of coverage for each station.
   6. When completed and approved, the chart will be hermetically sealed between two (2) pieces of plastic, each piece being a minimum 10 mils thickness.
   7. These charts shall be completed and approved prior to final inspection of the irrigation system.

D. Operation and Maintenance Manuals:
   1. Prepare and deliver to the Licensed Irrigator within ten (10) calendar days prior to completion of construction, two (2) hard cover binders with three (3) rings containing the followings information:
      a. Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturer's representative
      b. Catalog and parts sheets on every material and equipment installed under this contract.
      c. Guarantee statement.
      d. Complete operating and maintenance instructions on all major equipment, i.e. the automatic controller(s).
   2. In addition to the above mentioned maintenance manuals, provide the Licensed Irrigator with instructions for major equipment and show evidence, in writing, to the Licensed Irrigator at the conclusion of the project that this service has been rendered.

E. Equipment to be Furnished:
   1. Supply as a part of this Contract the following tools:

a. Two (2) sets of special tools required for removing, disassembling and adjusting each type of irrigation head and valve supplied on this project.
b. Two (2) four foot valve keys for operation of the ball and remote control valves.
c. Two (2) keys for each automatic controller.
d. One (1) quick coupler key and matching hose swivel ell for every five (5), or fraction thereof, of each type of quick coupling valve installed.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Handling of PVC Pipe and Fittings: The Contractor is cautioned to exercise care in handling, loading, unloading, and storing of PVC pipe and fittings. All PVC pipe shall be transported in a vehicle which allows the length of pipe to lie flat so as not to subject it to undue bending or concentrated external load at any point. Any section of pipe that has been damaged will be discarded and, if installed, shall be replaced with new piping.

1.06 SUBSTITUTIONS

A. If the Contractor wishes to substitute any equipment or materials for those equipment or materials listed on the drawings and specifications, he may do so by providing the following information to the Licensed Irrigator for approval:
   1. Provide a statement indicating the reason for making the substitution. Use a separate sheet of paper for each item to be substituted.
   2. Provide descriptive catalog literature, performance charts, and flow charts for each item to be substituted.
   3. Provide the amount of cost savings if the substituted item is approved.

B. The Licensed Irrigator shall have the sole responsibility in accepting or rejecting any substituted item as an approved equal to those equipment and materials listed on the irrigation drawings and specifications

1.07 GUARANTEE

A. The guarantee for the planting irrigation system shall be made in accordance with the attached form. The general conditions and supplementary conditions of these specifications shall be filed with the Owner and the Licensed Irrigator prior to acceptance of the irrigation system.

B. A copy of the guarantee form shall be included in the operations and maintenance manual.

C. The guarantee form shall be re-typed onto the Contractor's letterhead and contain the following information:

GUARANTEE FOR PLANTING IRRIGATION SYSTEM

We hereby guarantee that the planting irrigation system we have furnished and installed is free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse, or neglect excepted. We agree to repair or replace any defects in material or workmanship which may develop to repair or replace any damage resulting from the repairing or replacing of such defects at no additional cost to the Owner. We shall make such repairs or replacements within a reasonable time, as determined by the Owner, after receipt of written notice. In the event of our failure to make such repairs or replacement within a reasonable time after receipt of written notice from the Owner, we authorize the Owner to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

PROJECT: _____

LOCATION: _____

_____

SIGNED: _____

COMPANY: _____

ADDRESS:_____

_____

_____

PHONE: (_____) _____ -- _____

DATE OF ACCEPTANCE: _____ / _____ / _____

PART 2 -- PRODUCTS

2.01 MATERIALS

A. General: Use only new materials of brands and types noted on drawings, specified herein, or approved equals.

B. PVC pressure main line pipe and fittings:
   1. Pressure main line piping for sizes 3" and larger shall be PVC Class 200 with o-ring gasket joints.
   2. Pressure main line piping for sizes 2 1/2" and smaller shall be PVC Class 200 with solvent welded joints.
   3. Pipe shall be make from NSF approved Type I, Grade II PVC compound conforming to ASTM resin specification D1784. All pipes must meet requirements as set forth in Federal Specification PS-22-70.
   4. PVC solvent-weld fittings shall be Schedule 40, 1-2, II-I NSF approved conforming to ASTM test procedure D2466.
   5. Solvent cement and primer for PVC solvent-weld pipe and fittings shall be of type and installation methods prescribed by the manufacturer.
   6. All PVC pipe must bear the following markings:
      a. Manufacturer's name
      b. Nominal pipe size
      c. Schedule or class
      d. Pressure rating in P.S.I.
      e. NSF (National Sanitation Foundation) approval
      f. Date of extrusion
   7. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable I.P.S. schedule and NSF seal of approval.

C. PVC Non-Pressure Lateral Line Piping:
   1. Non-pressure buried lateral line piping shall be PVC class 200 with solvent-weld joints.
   2. Pipe shall be made from NSF approved, Type I, Grade II PVC compound to ASTM resin specification D1784. All pipes must meet requirements set forth in Federal Specification PS-22-70 with an appropriate standard dimension ratio.
   3. Except as noted in paragraphs 1 and 2 of Section 2.01B, all requirements for non-pressure lateral line pipe and fittings shall be the same as for solvent-weld pressure main line pipe and fittings as set forth in Section 2.01B of these specifications.

D. Copper Piping and Fittings:
   1. Copper piping shall be type "K" hard-drawn with "sweat" type fittings.
   2. Pipe and fittings shall be assembled with 50/50 soft solder and non-erosive flux. Solder shall take up capillary action and joints shall be made tight without build-up head.
   3. Pipe ends shall be squared, reamed to remove burrs, and cleaned bright with fine sandpaper and steel wool.

E. Ball Valves:
   1. Ball valves shall be similar to those manufactured by Lasco, or approved equal, with threaded ends and equipped with a hand lever.
   2. All ball valves shall be installed per installation detail and the manufacturer's recommendations.

F. Gate Valves:

1. Gate valves shall be manufactured out of bronze, pressure rated to 125 psi WSP, 200 psi WOG nonshock. Valves shall be resistant to rust and moderate atmospheric corrosion. Valves shall be the same size as the mainline. Valve shall have threaded IPS bonnet and non-rising stem, with female threaded inlets and equipped with a "Sure Grip" type handle. Similar to those manufactured by Watts Regulator Company Series GV, or approved equal.
2. All gate valves shall be installed per the manufacturer's recommendations.

G. Quick Coupling Valves: Quick coupling valves shall have a brass two-piece body designed for working pressure of 150 p.s.i. operable with quick coupler. Key size and type shall be as shown on the plans.

H. Backflow Prevention Units:
1. Backflow prevention units shall be of size and type indicated on the drawings. Install backflow prevention units in accordance with irrigation construction details.
2. Wye strainers at backflow prevention units shall have a bronzed, screwed body with 60 mesh monel screen and shall be similar to Bailey #100B, or approved equal.

I. Automatic Drain Valves:
1. Automatic drain valves shall be plunger type, duty virgin PVC construction, with small thread inlet.
2. Drain valve shall be installed at an angle of 30 to 45 degrees horizontal, in a direction to facilitate pipe drainage.
3. Provide sump pit for drainage.

J. Control Wiring:
1. Connections between the automatic controllers and the electric control valves shall be made with direct burial copper wire, AWG-U.F. 600 volt.
2. Pilot wires shall be a different color wire for each automatic controller.
3. Common wires shall be white with a different color stripe for each automatic controller.
4. Install in accordance with valve manufacturer's specifications and wire chart. In no case shall the wire size be less than #14 gauge.
5. Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible.
6. Where more than one (1) wire in placed in a trench, the wiring shall be taped together at intervals of ten (10) feet.
7. An expansion curl shall be provided within three (3) feet of each wire connection. Expansion curl shall be of sufficient length at each splice connection at each electric remote control valve, so that in case of repair, the valve bonnet may be brought to the surface without disconnecting the control wires. Control wires shall be laid loosely in the trench without stress or stretching of control wire conductors.
8. All splices shall be made with Scotch-Lok #3576 Connector Sealing Packs, Rain Bird Snap-Tite wire connector, or approved equal. Use one (1) splice per connector sealing pack.
9. Field splices between the automatic controller and electrical control valves will not be allowed without prior approval of the Licensed Irrigator. All approved field splices shall be placed in a Control Valve Box and labeled appropriately.

K. Automatic Controllers:
1. Automatic controllers shall be of size and type shown on the plans.
2. Final location of the automatic controller shall be furnished by others.

3. Unless otherwise noted on the plans, the 120 volt electrical power to each automatic controller location shall be furnished by others. The final electrical hook-up shall be the responsibility of others.

L. Electrical Control Valves:
   1. All electric control valves shall be the same manufacture as the automatic controller.
   2. All electric control valves shall have a manual flow adjustment.
   3. Furnish and install one (1) control valve box for each electric control valve.

M. Control Valve Boxes:
   1. Use 10" round box for all field splices, Oldcastle Enclosure Solutions Model 910 with green cover, or approved equal. Extension sleeves shall be 6" PVC minimum size.
   2. Use 14" X 19" standard rectangular box for all gate valves and quick coupler valves, Oldcastle Enclosure Solutions Model 1419 with green, “Drop-N-Lock” lid cover, or approved equal. Extension sleeves shall be 6" PVC minimum size.
   3. Use 13" X 24" jumbo rectangular box for all electric control valves, Oldcastle Enclosure Solutions Model 1324 with green, “Drop-N-Lock” lid cover, or approved equal. Extension sleeves shall be 6" PVC minimum size.

N. Irrigation Heads:
   1. All irrigation heads shall be of the same size, type, and deliver the same rate of precipitation with the diameter (or radius) of throw, pressure, and discharge as shown on the drawings, or specified in these special provisions.
   2. Spray heads shall have a screw adjustment.
   3. Riser units shall be fabricated in accordance with the details shown on the plans.
   4. Riser nipples for all irrigation heads shall be the same size as the riser opening in the irrigation body.
   5. All irrigation heads of the same type shall be of the same manufacture.

PART 3 -- EXECUTION

3.01 INSPECTION

A. Site Conditions:
   1. All scaled dimensions are approximate. The Contractor shall check and verify all size dimensions and receive the Licensed Irrigator's approval prior to proceeding with work under this section.
   2. Exercise extreme care in excavating and working near existing utilities. The Contractor shall be responsible for damages to utilities which are caused by his operations or neglect. Check existing utilities drawings for existing utility locations.
   3. Coordinate installation of planting irrigation materials including pipe, so there shall be NO interference with utilities or other construction or difficulty in planting trees, shrubs, and ground covers.
   4. The Contractor shall carefully check all grades to satisfy himself that he may safely proceed before starting work on the planting irrigation system.

3.02 PREPARATION

A. Physical Layout:
   1. Prior to installation, the Contractor shall stake out all pressure supply lines, routing and location of irrigation heads.
2. All layout shall be approved by the Licensed Irrigator prior to installation.

B. Water Supply:
   1. Planting irrigation system shall be connected to water supply points of connection as indicated on the drawings.
   2. Connections shall be made at approximate locations as shown on the drawings. The Contractor is responsible for minor changes caused by actual site conditions.
   3. The point of connection shall be as shown on the drawings and shall be furnished by the Contractor, unless otherwise specified.

C. Electrical Supply:
   1. Electrical connections for the automatic controller shall be made to electrical points of connection as indicated on the drawings.
   2. Connections shall be made at approximate locations, as shown on the drawings. The Contractor is responsible for minor changes caused by actual site conditions.

3.03 INSTALLATION

A. Trenching:
   1. All trenches shall be installed prior to topsoil application.
   2. Dig trenches straight and support pipe continuously on bottom of trench. Lay pipe to an even grade. Trenching excavation shall follow layout indicated on the drawings, and as noted.
   3. Provide for a minimum of eighteen (18) inches cover for all pressure supply lines.
   4. Provide for a minimum cover of twelve (12) inches for all non-pressure lines.
   5. Provide for a minimum cover of eighteen (18) inches for all control wiring.

B. Backfilling:
   1. Trenches shall be backfilled with sand (a layer of six [6] inches below the pipe and three [3] inches above the pipe) and compacted in layers to 95% standard proctor, using manual or mechanical tamping devices.
   2. The trenches shall be backfilled a maximum of 50% with all joints exposed until all required tests are performed. Trenches shall be carefully backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand, or other approved materials, free from clods of earth or stones larger than one-half (1/2) inch. Backfill shall be mechanically compacted landscaped areas to a dry density equal to adjacent undisturbed soil in planting areas. Backfill will conform to adjacent grades without dips, sunken areas, humps, or other surface irregularities.
   3. A fine granular material backfill will be initially placed on all lines. No foreign matter larger than one-half (1/2) inch in size will be permitted in the initial backfill.
   4. Flooding of trenches will be permitted only with approval of the Licensed Irrigator.
   5. If settlement occurs and subsequent adjustments in pipe, valves, irrigation heads, lawn or planting, or other construction are necessary, the Contractor shall make all required adjustments without cost to the Owner.

C. Trenching and Backfill Under Paving:
   1. Trenches located under areas where paving, asphaltic concrete or concrete, will be installed shall be backfilled with sand (a layer of six [6] inches below the pipe and three [3] inches above the pipe) and compacted in layers to 95% standard proctor, using manual or mechanical tamping devices. Trenches for piping shall be compacted to equal the compaction of the existing adjacent undisturbed soil and shall be left in a firm, unyielding condition. All trenches shall be left flush with the adjoining grade. The Contractor shall set in place, cap, and pressure test all piping under paving prior to the paving work.
   2. Generally piping under existing walks is done by jacking, boring, or hydraulic driving, but where any cutting or breaking of sidewalks or concrete is necessary, it shall be done

and replaced by the Contractor as part of the contract cost, to the satisfaction of the Construction Manager. Permission to cut or break sidewalks or concrete shall be obtained from the Construction Manager. NO hydraulic driving will be permitted under concrete paving.

3. Provide for a minimum cover of eighteen (18) inches between the top of the pipe and the bottom of the aggregate base for all pressure and non-pressure piping installed under asphaltic concrete paving.

D. Assemblies:
   1. Routing of planting irrigation lines as indicated on the drawings is diagrammatic. Install lines (and various assemblies) in such a manner as to conform to the details per plans.
   2. Install NO multiple assemblies in plastic lines. Provide each assembly with its own outlet.
   3. Install all assemblies specified herein in accordance with the respective detail. In the absence of detail drawings or specifications pertaining to specific items required to complete the work, perform such work in accordance with the best standard practice, with the approval of the Licensed Irrigator.
   4. PVC pipe and fittings shall be thoroughly cleaned of dirt, dust, and moisture before the installation. Installation and solvent welding methods shall be as recommended by the pipe and fitting manufacturer.
   5. On PVC to metal connections, the Contractor shall work the metal connections first. Teflon tape, or approved equal, shall be used on all threaded PVC to PVC, and on all threaded PVC to metal joints. Light wrench pressure is all that is required. Where threaded PVC connections are required, use threaded PVC adapters into which the pipe may be welded.

E. Line Clearance: All lines shall have a minimum clearance of six (6) inches from each other and from lines of other trades. Parallel lines shall not be installed directly over one another.

F. Automatic Controller: Install the automatic controller(s) in accordance with the manufacturer's instructions. Remote control valves shall be connected to the controller in the numerical sequence as shown on the drawings.

G. High Voltage Wiring for Automatic Controller:
   1. 120 volt electrical service for the automatic controller shall be the responsibility of the Contractor. The Contractor shall be responsible for permitting and getting the electrical utility service company to install the appropriate electrical service and meter base necessary to operate each automatic controller. The final location of the electrical meter base shall be approved by the Licensed Irrigator.
   2. 120 volt electrical service connection to the automatic controller shall be provided by the Contractor.
   3. All electrical work shall conform to local codes, ordinances, and union authorities having jurisdiction.

H. Remote Control Valves: Install remote control valves where shown on the drawings and per the detail. When valves are grouped together, allow at least thirty-six (36) inches between valves. Install each remote control valve in a separate valve box. Each valve number (per the drawings) shall be stenciled on the valve box lid with exterior paint. Paint color shall be flat black. Stencil number size shall be 3" in height.

I. Gate Valves: Install gate valves where shown on the drawings. When valves are grouped together, allow at least thirty-six (36) inches between valves. Install each gate valve in a sepa-

rate valve box. Each gate valve shall have stenciled on the valve box lid, "GV" with exterior paint. Paint color shall be flat black. Stencil letter size shall be 3" in height.

J. Ball Valves: Install ball valves where shown on the drawings and per the detail. When valves are grouped together, allow at least thirty-six (36) inches between valves. Install each ball valve in a separate valve box. Each ball valve shall have stenciled on the valve box lid, "BV" with exterior paint. Paint color shall be flat black. Stencil letter size shall be 3" in height.

K. Quick Coupler Valves: Install where shown on the drawings and per the detail. Install each quick coupler valve in a separate valve box. Each quick coupler valve shall have stenciled on the valve box lid, "QC" with exterior paint. Paint color shall be flat black. Stencil letter size shall be 3" in height.

L. Flushing of the System:
1. After all new irrigation pipe lines and risers are in place and connected, all necessary diversion work has been completed, and prior to installation of the irrigation heads, the control valves shall be opened and full head of water used to flush out the system.
2. Irrigation heads shall be installed only after flushing of the system has been accomplished to the complete satisfaction of the Licensed Irrigator.

M. Irrigation Heads:
1. Install the irrigation heads as designated on the drawings. Irrigation heads to be installed in this work shall be equivalent in all respects to those itemized.
2. Spacing of heads shall not exceed the maximum indicated on the drawings. In NO case shall the spacing exceed the maximum recommended by the manufacturer.

N. Field Splices: Install field splices of control valve wiring in a valve box (see Section 2.01 L.1). Each field splice valve box lid shall have stenciled "Field Splice" on it with exterior paint. Paint color shall be flat black. Stencil letter shall be 3" in height.

3.04 TEMPORARY REPAIRS

The Owner reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operating condition. The exercise of this right by the Owner shall not relieve the Contractor of his responsibilities under the terms of the guarantee as herein specified.

3.05 FIELD QUALITY CONTROL

A. Adjustment of the System:
1. The Contractor shall flush and adjust all irrigation heads for optimum performance and to prevent overspray onto walks, roadways, and buildings as much as possible.
2. If it is determined by the Licensed Irrigator that adjustments in the irrigation equipment will provide proper and more adequate coverage, the Contractor shall make such adjustments prior to planting. Adjustments may also include changes in nozzle sizes and degrees of arc as required.
3. Lowering raised irrigation heads by the Contractor shall be accomplished within ten (10) calendar days after notification by the Licensed Irrigator.
4. All irrigation heads shall be set perpendicular to finished grades unless otherwise designated on the drawings.

B. Testing of Irrigation System:

1. The Contractor shall request the presence of the Licensed Irrigator, in writing, at least 24 hours in advance of the testing.
2. Test all pressure lines under hydrostatic pressure of 150 pounds per square inch, and prove watertight. Note that the testing of pressure main lines shall occur prior to installation of the electric remote control valves.
3. All piping under paved areas shall be tested under hydrostatic pressured of 150 pounds per square inch, and proved watertight, prior to paving.
4. Sustain pressure in lines for not less than four (4) hours. If leaks develop, replace joints and repeat the test until the entire system is proven watertight.
5. All hydrostatic tests shall be made only in the presence of the Licensed Irrigator. NO pipe shall be completely backfilled until it has been inspected, tested, and approved in writing.
6. Furnish necessary force pump and all other test equipment.
7. When the planting irrigation system is completed, perform a coverage test in the presence of the Licensed Irrigator, to determine if the water coverage for planting areas is complete and adequate. Furnish all materials and perform all work required to correct any inadequacies of coverage due to deviations from plans, or where the system has been willfully installed, as indicated on the drawings, when it is obviously inadequate, without bringing this to the attention of the Licensed Irrigator. This test shall be accomplished before any ground cover is planted.
8. Upon completion of each phase of work, the entire system shall be tested and adjusted to meet site requirements.

3.06 MAINTENANCE

A. The entire planting irrigation system shall be under full automatic operation for a period of seven (7) calendar days prior to any planting.
B. The Licensed Irrigator reserves the right to waive or shorten the operation period.

3.07 CLEAN-UP

Clean-up shall be made daily as each portion of the work progresses. Refuse and excess dirt shall be removed, all walks and paving shall be broomed or washed down, and any damage sustained on the work of others shall be repaired to the original condition.

3.08 FINAL OBSERVATION PRIOR TO ACCEPTANCE

A. The Contractor shall operate each system in its entirety for the Licensed Irrigator, at the time of the final observation. Any items deemed not acceptable by the Licensed Irrigator shall be re-worked to the complete satisfaction of the Licensed Irrigator.
B. The Contractor shall show evidence to the Licensed Irrigator that the Owner has received all accessories, charts, record drawings, and equipment as required before final inspection can occur.

3.09 OBSERVATION SCHEDULE

A. The Contractor shall be responsible for notifying the Licensed Irrigator, in advance, for the following observation meetings, according to the time indicated:
   1. Pre-Job Conference - 7 days.
   2. Pressure supply line installation & testing - 48 hours
   3. Automatic controller installation - 48 hours
   4. Control wire installation - 48 hours
   5. Lateral line and irrigation installation - 48 hours

6. Coverage test - 48 hours
7. Final inspection - 7 days

B. When observations have been conducted by other than the Licensed Irrigator, show evidence, in writing, of when and by whom these observations were made.

C. NO site observations will commence without as-built drawings. In the event the Contractor calls for a site visit without as-built drawings, without completing previously noted corrections, or without preparing the system for the said visit, he shall be responsible for reimbursing the Licensed Irrigator at his current billing rates per hour, portal to portal (plus transportation costs) for the inconvenience. NO further site visits will be scheduled until this charge has been paid and received.

END OF SECTION 328400

SECTION 329100

SOILS

PART 1 - GENERAL

1.01 SCOPE

A. This Section specifies all soil materials designated as "Planting Mix", on the drawings or in the Specifications.

1.02 REFERENCES

A. Related Work Specified elsewhere
   1. Section 329200 – Turf and Grasses

1.03 SUMMARY

A. Section Includes
   1. Improved Top Soil
   2. Turf Soil

1.04 DEFINITIONS

A. CFR: Code of Federal Regulations

B. Clopyralid: Herbicide used to control broadleaf weed.

C. Compost: a stable humus material created by combining organic wastes (e.g. yard trimmings, food wastes, manures) in proper ratios into piles, rows, or vessels; controlling temperature, moisture and oxygen to achieve accelerated decomposition; and adding bulking agents (e.g. wood chips), as necessary, to provide air space; allowing the finished material to fully stabilize and mature through a curing period.

D. pH: A measure of the soil acidity or Soil alkalinity. An acid solution has a pH value less than 7, while a basic solution always has a pH larger than 7. The pH can affect the availability of nutrients in the soil.

E. pH Balanced Compost: A combination of fully composted cotton burrs and local landscape trimmings such as grass, leaves and brush. Has a balanced pH between 5.5-6.5 and a Solvita® Compost Maturity Index Value of 7 or higher; and adds an average of 1.44 pounds of (N) Nitrogen, .22 pounds of (P) Phosphorus and .9 pounds of (K) Potassium.

F. Picloram: Herbicide used to control woody plant material such as trees and shrubs.

G. Professional Compost: A combination of fully composted landscape trimmings such as grass, leaves, brush, and wood chips. Has a Solvita® Compost Maturity Index Value of 7 or higher; and adds an average of 1.1 pounds of (N) Nitrogen, .13 pounds of (P) Phosphorus and .8 pounds of (K) Potassium.

H. Solvita® Maturity Test: A diagnostic test that measures the amount of Carbon Dioxide and Ammonia present in compost.

I. Screened Planting Soil: Very fine existing, native surface topsoil screened to keep soils open.

J. Screened Sharp Sand: Deep sand that is excavated from a minimum of 20 feet below ground level, minimizing the chances of nut sedge and traces of other noxious weed and grass seed, screened to keep sand open.

K. Topsoil: naturally produced and harvested soil from the A horizon or upper layers or the soil as further defined in this specification.

L. TCEQ: Texas Commission on Environmental Quality

M. Washed Concrete Sand: Coarse sand that has been washed clean of clay, silt, and weed seed, and has been screened for consistency.

1.05 SUBMITTALS

A. Submittal to be sent to Owner for approval 30 days before purchasing and delivery to site.

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

C. Product Certificates: Showing soil analysis from a qualified soil-testing laboratory.

D. Samples: To be submitted with the following conditions and items
   1. Representative samples of material shall be provided to the Owner from the supply source.
   2. 1 gallon of material to be provided in a clear, re-sealable, plastic bag.
   3. Product Certificate

1.06 QUALITY ASSURANCE

A. Soil Analysis: For each soil type, furnish soil analysis and a written report by a qualified soil test laboratory.
   1. The soil-testing laboratory shall oversee soil sampling
   2. Report suitability of tested soil for plant growth.
      a. Recommendations for nitrogen, phosphorus, and potassium and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
      b. Report presence of problem salts, minerals, or heavy metals; if present, provide additional recommendations for corrective actions.

B. Soil Testing Laboratory: Subject to compliance with requirements, Laboratories that may be incorporated into the work include, but are not limited to:
   1. New Earth Compost: Katy, Texas at (281) 574-0316

1.07 DELIVERY

A. Do not dump or store materials near structures, utilities, walkways and pavements, or on existing turf areas or plants

B. Provide erosion-control measures to prevent erosion or displacement of materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways

C. Accompany each delivery of material with appropriate certificates.

PART 2 – PRODUCTS

2.01 MANUFACTURES

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to:
   1. Soil Building Systems
   2. Living Earth Technology

2.02 IMPROVED TOP SOIL

A. A pre-mixed soil created as a low-level organic planting medium to provide maximum plant growing results, without significant settling over time.

B. pH: 7.5 – 8.7

C. Particle Sizes: 98.5% pass through a ½" screen. 99% will pass through a ¾" screen.

D. Color: Light to medium brown.

E. Weight: 2000 – 2200 lbs. per cubic yard

F. Free of: Contains no treated or used lumber, pine bark, man made chemicals, raw manure, or spent mushroom compost waste. Also, there are not trace elements of the herbicides Clopyralid or Picloram.

G. Composition Ratios: 25% Professional Compost, 25% Screened Planting Soil, and 25% Screened Sharp Sand

2.03 TURF SOIL

A. A very loose textured soil created to settle minimally over time with an exceptional percolation capacity, yet will retain enough moisture to adequately supply the vegetation.

B. pH: 7.4 – 8.3

C. Particle Sizes: 98.5% pass through a ½" screen. 99% will pass through a ¾" screen.

D. Color: Medium Tan.

E. Weight: 2000 – 2200 lbs. per cubic yard

F. Free of: Contains no treated or used lumber, pine bark, man made chemicals, raw manure, or spent mushroom compost waste.

G. Composition Ratios: 25% pH Balanced Compost, 75% Washed Concrete Sand.

2.04 ADDITONAL SOIL INFORMATION

A. Meet or exceed the time and temperature standards set in TCEQ., Chapter 332, Subchapter B, Part 23.

B. Meet federal Specifications under guidelines of 40 CFR, Part 503, Standards for Class A Bio-solids.

C. Have a high concentration of aerobic composted organic matter as determined by ASTM D-5268 at 824°F.

PART 3 – EXECUTION

3.01 GENERAL

A. This part shall include the placing of all specified soil at the locations and elevations as shown.

B. Soil mixes shall be mixed in proportions as specified for each soil mix. Thoroughly blend mix to a consistency relatively free of clods, at depth specified or as indicated on drawings.

C. Use an extensive aerobic composting process that includes
   1. Scheduled turns with a minimum of 5 turns.
   2. Completely composted for a minimum of 6 to 12 months

D. The work performed herewith, shall conform in every respect to the Contract Documents, the applicable local ordinances and sanitary codes, the regulations of the State Health Department, the regulations of the Occupational Safety and Hazardous Administration (OSHA) and the regulations of the Environmental Protection Agency (EPA). In the event that the contract documents do not adequately specify materials, methods of construction or workmanship of any potion of the proposed work, the Standards of the Trade shall govern.

3.02 CLEANING, REMOVAL, AND REPAIR

A. Promptly remove materials spilled on pavement adjacent to plant areas. Repair existing lawns damaged by operations under this contract. Repair shall include finish grading and seeding, or turf, as required to match existing grade and lawn, and maintenance of repaired areas.

B. Waste or excess material to placed or disposed of as directed by OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Soil for the work shown on the plans shall be measured by the square yard.

4.02 PAYMENT

A. The accepted quantities of Soil shall be paid for at the unit bid price per square yard of specified depth.

B. The unit bid price shall be full compensation for furnishing, hauling, and mixing soils; and for all equipment and incidentals necessary to complete work.

C. The preceding provisions for payment shall not be interpreted to provide payment for soil used for backfill operations or other soils needed to complete construction for which provision is otherwise made in the contract.

END OF SECTION 329100

SECTION 329200

TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Soil Preparation
   2. Sodding
   3. Seeding
   4. Maintenance

B. Related Sections include the following:
   1. Section 329100: “Soils”
   2. Section 329300: “Plants”

1.3 CONTRACT DOCUMENTS

A. Shall consist of specifications and general conditions and the construction drawings. The intent of these documents is to include all labor, materials, and services necessary for the proper execution of the work. The documents are to be considered as one. Whatever is called for by any parts shall be as binding as if called for in all parts.

1.4 VERIFICATION

A. All scaled dimensions on the drawings are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and quantities and shall immediately inform the Owner’s Representative of any discrepancies between the information on the drawings and the actual conditions, refraining from doing any work in said areas until given approval to do so by the Owner’s Representative.

B. In the case of a discrepancy in the plant quantities between the plan drawings and the plant call outs, list or plant schedule, the number of plants or square footage of the planting bed actually drawn on the plan drawings shall be deemed correct and prevail.

1.5 PROTECTION OF WORK, PROPERTY AND PERSON

A. The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damages or injury due to his/her actions.

1.6 CHANGES IN THE WORK

A. The Owner's Representative may order changes in the work, and the contract sum should be adjusted accordingly. All such orders and adjustments plus claims by the Contractor for extra compensation must be made and approved in writing before executing the work involved.

B. All changes in the work, notifications and contractor's request for information (RFI) shall conform to the contract general condition requirements.

1.7 DEFINITIONS

A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.

B. Finish Grade: Elevation of finished surface of planting soil.

C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils with stabilized organic soil amendments to produce topsoil or planting soil.

D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

G. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

H. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.

I. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.8 SUBMITTALS

A. See contract general conditions for policy and procedure related to submittals.

B. Product data: Submit manufacturer product data and literature describing all products required by this section to the Owner's Representative for approval. Provide submittal eight weeks before the installation of turf and grasses. Samples: Submit samples of each product and material where required by the specification to the Landscape Architect for approval.

Label samples to indicate product, characteristics, and locations in the work. Samples will be reviewed for appearance only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

C. Qualification Data: For Landscape Contractor. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

D. Certification of grass seed: From seed vendor for each grass-seed stating the botanical and common name and percentage by weight of each species and variety, and percentage of PLS (Pure Live Seed), germination, and weed seed. Include the year of production and date of packaging.
   1. Certification of each seed mixture for turfgrass and seed. Include identification of source and name and telephone number of supplier.

E. Product Certificates: For soil amendments from manufacturer. Qualification Data: For landscape Installer.

F. Material Test Reports: For standardized ASTM D 5268 topsoil, existing native surface topsoil, existing in-place surface soil, and imported or manufactured topsoil. Planting Schedule: Indicating anticipated planting dates for each type of planting.

G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of turf and grasses during a calendar year. Submit before expiration of required initial maintenance periods.

1.9 OBSERVATION OF THE WORK

A. The Landscape Architect may observe the work at any time. They may remove samples of materials for conformity to specifications. Rejected materials shall be immediately removed from the site and replaced at the Contractor's expense. The cost of testing materials not meeting specifications shall be paid by the Contractor.

B. The Landscape Architect shall be informed of the progress of the work so the work may be observed at the following key times in the construction process. The Landscape Architect shall be afforded sufficient time to schedule visit to the site. Failure of the Landscape Architect to make field observations shall not relieve the Contractor from meeting all the requirements of this specification.
   1. SITE CONDITIONS PRIOR TO THE START OF PLANTING: review the soil and drainage conditions.
   2. TURF AND SEED QUALITY: Review of turf and seed quality at the time of delivery and prior to installation/
   3. COMPLETION OF THE TURF AND SEEDING INSTALLATION: Review the completed installation.

1.10 QUALITY ASSURANCE

A. Contractor’s Quality Assurance Responsibilities: The Contractor is solely responsible for quality control of the work.

B. Installer Qualifications: The installer shall be a firm having at least 5 years of successful experience of a scope similar to that required for the work, including the handling and planting of large areas of turf and seeding in urban areas. The same firm shall install top soil and swale soil (where applicable).
   1. Installer Field Supervision: When any planting work is in progress, installer shall maintain, on site, a full-time supervisor who can communicate in English with the Owner's Representative.
   2. Installer's field supervisor shall have a minimum of five years experience as a field supervisor installing plants and trees of the quality and scale of the proposed project and can communicate in English with the Owner's Representative.
   3. The installer's crew shall have a minimum of 3 years experienced in the installation of Planting Soil, Plantings, and Irrigation (where applicable) and interpretation of soil plans, planting plans and irrigation plans.
   4. Submit references of past projects, employee training certifications that support that the Contractors meets all of the above installer qualifications and applicable licensures.

C. Soil-Testing Laboratory Qualifications: An independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

D. Soil Analysis: Furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of the soil.
   1. The soil-testing laboratory shall oversee soil sampling, with depth, location, and number of samples to be taken per instructions from Landscape Architect. A minimum of four (4) representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.
   2. Report suitability of tested soil for turf growth.
      a. Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. (92.9 sq. m) or volume per cu. yd. (0.76 cu. m)
      b. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.
   3. Notify Landscape Architect of sources of planting materials minimum seven (10) days in advance of delivery to site.

1.11 SITE CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion

B. It is the responsibility of the Contractor to be aware of all surface and sub-surface conditions, and to notify the Landscape Architect, in writing, of any circumstances that would negatively impact the health of plantings. Do not proceed with work until unsatisfactory conditions have been corrected.
   1. Should subsurface drainage or soil conditions be encountered which would be detrimental to growth or survival of plant material, the Contractor shall notify the

Landscape Architect in writing, stating the conditions and submit a proposal covering cost of corrections. If the Contractor fails to notify the Landscape Architect of such conditions, he/she shall remain responsible for plant material under the warranty clause of the specifications.

C. It is the responsibility of the Contractor to be familiar with the local growing conditions, and if any specified plants will be in conflict with these conditions. Report any potential conflicts, in writing, to the Landscape Architect.

D. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

E. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:
   1. Notify Construction Manager and Owner no fewer than three days in advance of proposed interruption of each service or utility.
   2. Do not proceed with interruption of services or utilities without Construction Manager's or Owner's written permission.

F. Planting Restrictions: Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

G. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

H. Coordination with planting of trees, shrubs and groundcover areas:

1.12 WARRANTY

A. Warrant turf and grasses and workmanship for the warranty period indicated, against defects, poor health, unsatisfactory growth, and death, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner or Owner’s Maintenance Contractor or incidents that are beyond Contractor’s control.
   1. Warranty period: Twelve (12) months from date of 90% germination.
   2. Include the following remedial actions as a minimum:
      a. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
      b. Provide extended warranty for period equal to original warranty period, for replaced plant material.

1.13 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver seed in original sealed, labeled, and undamaged containers showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.

B. Sod:

1. Digging Sod
    a. Do not dig sod at the nursery or other approved source until ready to transport sod to the project site or approved storage location.
    b. Before stripping, sod shall be mowed at a uniform height of 2".
    c. Cut sod to specified thickness and to standard width and length desired.
2. Transporting Sod
    a. Sod transported to the Project in open vehicles shall be covered with tarps or other suitable covers securely fastened to the body of the vehicle to prevent injury to the sod. Closed vehicles shall be adequately ventilated to prevent overheating of the sod. Evidence of inadequate protection against drying out in transit shall be cause for rejection.
    b. Sod shall be kept moist, fresh, and protected at all times. Such protection shall encompass the entire period during which the sod is in transit, being handled, or in temporary storage.
    c. Upon arrival at the temporary storage location or the site of the work, sod shall be inspected for proper shipping procedures. Should the roots be dried out, the Landscape Architect will reject the sod. When sod has been rejected, the Contractor shall remove it at once from the area of the work and replace it.
    d. Unless otherwise authorized by the Landscape Architect, the Contractor shall notify the Landscape Architect at least 48 hours in advance of the anticipated delivery date of sod. A legible copy of the invoice, showing species and variety of sod included for each shipment shall be submitted to the Landscape Architect. Certificate of Inspection when required must accompany each sod shipment.
2. Transporting Sod
    a. Sod transported to the Project in open vehicles shall be covered with tarps or other suitable covers securely fastened to the body of the vehicle to prevent injury to the sod. Closed vehicles shall be adequately ventilated to prevent overheating of the sod. Evidence of inadequate protection against drying out in transit shall be cause for rejection.
3. Handling and Storage of Sod
    a. No sod shall remain in temporary storage over 30 hours.
    b. Sod shall be kept moist and shall be stored in a compact group to prevent drying out or freezing.
    c. Contractor shall take extreme care in the handling of sod material to avoid breaking or tearing strips. Sod that has been damaged by poor handling may be rejected by the Landscape Architect.

1.14 SCHEDULING

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance until date of Substantial Completion.
    1. Spring Planting: between March 15 – May 1
    2. Fall Planting: between August 15 – November 1

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

1.15 MAINTENANCE

A. Initial Turf and Seed Grasses Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable grass is established but for not less than the following periods:

1. Seeded Turf: 60 days from date of Substantial Completion.
   a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
   b. Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable grasses is established, but for not less than 40 days after Substantial Completion.
2. Sodded Turf: 60 days from Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials shall be of standard, approved, and first-grade quality and shall be in prime condition when installed and accepted. Any commercially processed or packaged material shall be delivered to the site in the original, unopened container bearing the manufacturer's guaranteed analysis. The Contractor shall supply the Engineer with a sample of all supplied materials accompanied by analytical compliance or bearing the manufacturer's guaranteed analysis.

B. Sod Fertilizer:
Fertilizer shall consist of the following percentages by weight, unless otherwise noted in a project Soils Report, and shall be mixed by a commercial fertilizer supplier:

10% Nitrogen
20% Phosphoric Acid
10% Potash

C. Hydromulch Fertilizer:
Ammonium Phosphate which shall consist of the following percentages by weight, shall be mixed by a commercial fertilizer supplier, and shall be water soluble:

16% Nitrogen
8% Phosphoric Acid
8% Potash

D. Plant Material:

1. Plants shall be in accordance with the Texas State Department of Agriculture's Regulation for nursery inspections, rules, and ratings. Any plants rendered unsuitable for planting because of an inspection will be considered as samples and will be provided at the expense of the Contractor.
2. All plants not conforming to the requirements herein specified, shall be considered defective and such plants, whether in place or not, shall be marked as rejected and imme-

diately removed from the site of the work and replaced with new plants at the Contractor's expense. The plants shall be of the species, variety, size, and conditions specified herein. Under no conditions will there be any substitutions of plants or sizes listed on the accompanying plans, except with the expressed, written consent of the Engineer.

3. Plant material shall be true to botanical and common name and variety as specified in the "American Standard of Nursery Stock Editions" and "Standardized Plant Names".

4. Substitute plant material will not be permitted unless specifically approved, in writing, by the Engineer.

5. Sod:
   a. All sod used shall be true to the turf species specified herein and shall be accompanied with signed copies of a statement from the vendor certifying that sod is as specified, and is in accordance with any State of Texas Agricultural Code and is equal to or better than the requirements of these specifications.
   b. Turfgrass Species: Bermudagrass (Cynodon dactylon)& Bermuda 'Latitude 36' (Cynodon dactylon 'Latitude 36')
   c. Sod shall be certified and of species indicated on the plans. Turf grass shall be nursery grown on cultivated mineral agricultural soils. Sod shall have been mowed regularly and carefully, and otherwise maintained according to standard horticultural practices for the project locale from planting to harvest.
   d. Sod shall be weed-free, disease and pest-free, and solid.
   e. Sod shall have a minimum of three-quarters (3/4) of an inch of soil, containing the roots of the turf. Thickness of cut shall be to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be plus or minus 1/2" on width and plus or minus 5% on length. Broken strips and torn or uneven ends will not be accepted.
   f. Strength of Sod Strips: Sod strips shall be strong enough to support their own weight and retain their size and shape if suspended vertically when grasped in the upper 10% of the section.
   g. Moisture Content: Sod shall not be harvested or transplanted when moisture content (excessively wet or dry) may adversely affect its survival.
   h. Time Limitations: Sod shall be harvested, delivered, and transplanted within a 30 hour period unless a suitable preservation method is approved by the Landscape Architect prior to delivery. Sod not transplanted within this period shall be inspected and approved by the Landscape Architect prior to its installation.
   i. Thatch: Sod shall be relatively free of thatch. A maximum on 1/2" (uncompressed) thatch will be permitted.
   j. Diseases, Nematodes, and Insects: Sod shall be free of diseases, nematodes, and soil-borne insects.
   k. Weeds: Sod shall be free of objectionable grassy and broadleaf weeds.

6. Seed:
   a. Seed shall be from the previous year's crop, not more than 12 months old at delivery. Seed Species: State-certified seed of grass species.
   b. All seed used shall be labeled and shall be furnished in sealed standard containers with signed copies of a statement from the vendor certifying that each container of seed delivered is fully labeled in accordance with the Texas State Agricultural Code and is equal to or better than the requirements of these specifications.
   b. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be accepted.
   c. Seed Species:

1) All quantities are in PLS (pure live seed).
2) Each species shall not exceed 0.1 % weed seed.
3) Common Bermuda Grass: hybrid, high quality, extra fancy grade, hulled and treated, 98 percent purity and 85 percent germination.
4) Detention area HCFCD grass mix: comprised by weight of:
    a) KY-31 Tall Fescue (15%),
    b) Hulled Common Bermuda (30%),
    c) Unhulled Common Bermuda (20%),
    d) Gulf Annual Ryegrass (15%), and
    e) Crimson Clover and Inoculant (20%)

d. For establishing a permanent turfgrass during the period generally between June 15th and September 1st, seed shall be Bermuda, extra fancy, hulled, lawn type (*Cynodon dactylon*).

e. For establishing a temporary turfgrass during the period, generally between September 1st and June 15th, seed shall be Perennial Rye, lawn type (*Lolium perenne*).

D. Hydromulch Fiber Mulch:

1. "Hydromulch" as manufactured by Conwed Fibers, 1985 Tate Blvd., Suite 350, Hickory, NC 28601, (704) 327-6670, or approved equal.

2. The hydromulch shall be composed of virgin wood cellulose fibers and contain no germination or growth-inhibiting factors. It shall have a consistent texture which disperses evenly and remain suspended in agitated water. It shall have a temporary green dye and the following property analysis:

    Moisture Content - 9.0% + 3% O.D. Basis
    Organic Matter - 99.2% + 0.8 %
    Ash Content - 0.8% + 0.2 %
    pH - 4.8% + 0.5%
    Water Holding Capacity (grams of H2O per 100 grams of fiber) - 1150 minimum

E. Hydromulching Additive (Binder):

1. Ecology "Control-M-Binder" organic seeding additive, or approved equal.

F. Water: Source furnished by the Contractor, cost and transport of water, as required, by the Contractor.

G. Soil Saver Netting: Jute mesh netting as manufactured by Ludlow, or approved equal.

2.2 TOP SOILS

A. Reference Special Specification 329100 and Landscape Planting Notes on the drawings.

2.3 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:

1. Class: T, with a minimum of 99 percent passing through No. 8 (2.36-mm) sieve and a minimum of 75 percent passing through No. 60 (0.25-mm) sieve.

2. Class: O, with a minimum of 95 percent passing through No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through No. 60 (0.25-mm) sieve.

3. Provide lime in form of ground dolomitic limestone, calcitic limestone, or approved equal.

B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through No. 40 (0.425-mm) sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Aluminum Sulfate: Commercial grade, unadulterated. Perlite: Horticultural perlite, soil amendment grade.

E. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely g round with 90 percent passing through No. 50 (0.30-mm) sieve.

F. Sand: Clean, washed, natural or manufactured, and free of toxic materials.

G. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

H. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.4 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch (12.5-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; Carbon to Nitrogen ratio below 25:1, not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 60 percent of dry weight.

2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

B. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.

1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with ammonium nitrate at a minimum rate of 0.15 l b/cu. f t. (2.4 k g/cu. m) of loose sawdust or ground bark, or with ammonium sulfate at a minimum rate of 0.25 lb/cu. ft. (4 kg/cu. m) of loose sawdust or ground bark.

C. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.5 PLANTING ACCESSORIES

A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required f or Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective f or controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.6 FERTILIZER

Fertilizers should only be applied after the soil is tested and a deficiency that cannot be amended with compost is shown. This shall be approved by the Landscape Architect prior to installation. The contractor shall test soils prior to fertilizer application.

A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of **1** percent nitrogen and **10** percent phosphoric acid.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.7 MULCHES

A. Hardwood Shredded Mulch: stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 60 percent of dry weight.
2. Produced within 100 miles of the site.

B. Fiber Mulch: Biodegradable, cellulose-fiber mulch; nontoxic; free of plant-growth or germination inhibitors; with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

C. Nonasphaltic Tackifier: Colloidal tackifier recommended for slurry application; nontoxic and free of plant-growth or germination inhibitors. Liquid concentrate diluted with water forming transparent film-like crust permeable to water and air.

2.8 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

B. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Verify that final grades to within 0.025' have been established prior to commencing planting operations. Provide for inclusion of all amendments, settling, etc.
3. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
4. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
5. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

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

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil.

3.2 PRE-PLANT PREPARATION

A. Notify Landscape Architect at least 10 working days prior to start of seeding or sodding operations.

B. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations. Protect adjacent and adjoining areas from hydroseeding overspray. Perform seeding only after planting and other work affecting ground surface has been completed.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. Limit turf subgrade preparation to areas to be planted.

B. Initial establishment of permanent or temporary turfgrass:

1. Disposal of Excess Soil: Disposal of any unacceptable soil shall be at an off-site location. Disposal of excess soil, acceptable in condition to the Owner, shall be at an on-site location, approved by the Owner.
2. Immediately before seeding, scarify, loosen, float and drag the upper 1-2 inches of topsoil to bring it to the proper condition. Remove foreign matter larger than 1/2" in diameter.
3. Fine Grading: After tillage and cleaning, all areas to be planted shall be leveled, fine graded, and drug with a weighted spike harrow or float drag. The required result shall be the elimination of ruts or depressions that would cause water to stand or pond immediately after rainfall or operation of the lawn irrigation system, humps, and objectionable soil clods. This shall be the final soil preparation step to be completed before the commencement of fertilizing and planting.
4. If the prepared grade is eroded or compacted by rainfall prior to fertilizing, rework the surface to specified condition.
5. If slopes in work area are greater than 3:1, a Soil Saver Netting shall be used in conjunction with the hydromulch operation.

C. Second establishment for permanent turfgrass, if temporary turfgrass was installed:

1. Monitor overnight late spring to early summer temperatures. Once ten (10) consecutive days of 60° or warmer overnight low temperatures has been achieved, permanent turfgrass hydromulch operations can commence.
2. Cease all irrigation operation and apply a glyphosate to all temporary turfgrass and leave undisturbed for a minimum 24 hours. Schedule the glyphosate application during forecasted dry weather.
3. Scalp all temporary turfgrass as low as possible. Collect or rake all clippings and dead vegetation to expose soil surface.
4. Prepare hydromulch area per specification Section 3.02. A.
5. Install permanent turfgrass hydromulch per specification Section 3.03.
6. Provide supplemental watering as needed to germinate and establish the hydromulch
7. Maintain the hydromulched area per specification Section 3.07 and Section 3.08, if necessary.
8. Acceptance of work shall be per specification Section 3.09.

C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/4 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

D. Moisten prepared seed areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

E. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 FERTILIZING

A. Uniformly distribute fertilizer by mechanical means at the rate of 1-2 pounds of Nitrogen per 1,000 square feet.

B. If applying a fertilizer with a percentage by weight not as specified, apply at the rate of 2 pounds actual nitrogen per 1,000 square feet.

C. Work fertilizer into the soil after fine grading & not more than 2 days prior to grass planting. Cultivating equipment shall be set so the fertilizer will not penetrate into the soil more than 1 inch. Do not apply fertilizer when there is a possibility of rain before lawn areas can be sodded

3.5 SPREADING OF TOPSOIL

A. On-site stockpiled topsoil shall be used prior to importing of topsoil

B. Imported topsoil, if necessary to meet minimum depth of 3 inches in sodded areas, shall be blended with the on-site topsoil spread to the full depth of topsoil.

C. Topsoil and subgrade shall be damp and scarified when topsoil is spread.

D. Areas to be sodded shall be topsoiled to a minimum depth of 3 in., compacted measure. Provide additional topsoil depths as required to construct final grades indicated on the drawings. Topsoil shall be compacted to 85% completion, determined in accordance with ASTM: D 1557

3.6 PRE-PLANT WEED CONTROL

A. If live perennial weeds exist on site at the beginning of the work, spray with a non-selective, systemic contract herbicide, as recommended and applied by an approved, licensed landscape pest control applicator. Leave sprayed plants intact for at least fifteen (15) days to allow systemic kill.

B. Clear and remove these existing weeds by mowing or grubbing off all plant parts at least 1/4" below the surface of the soil over the entire area to be planted.

C. After the irrigation system is operational and approved by the Landscape Architect, apply water for five (5) to ten (10) calendar days, as needed to achieve weed germination. Apply contact herbicides and wait as needed before planting. Repeat, if required by the Landscape Architect.

D. Maintain the site weed-free until final acceptance by the Landscape Architect, utilizing mechanical and chemical treatment.

3.7 SODDING

A. Sod Preparations and Operations:

1. Refer Section 3.06 Pre-Plant Weed Control
2. All trees, shrubs, groundcover, and seasonal color/bulbs shall be installed prior to sodding in the area. The Contractor shall be responsible for coordination with other trades as required.
3. Install only sod that has been cut at the place of growth 24 hours prior to the time of installation.
4. Frequently water sod that is stored on-site, waiting installation. During hot weather conditions, all sod which has not been installed and has not been watered while awaiting installation shall be rejected and removed from the project and disposed of at the Contractor's expense.
5. Apply fertilizer to the finish grade and work into the top 1/2" of soil. Apply the fertilizer at a rate of two (2) pounds of nitrogen per 1000 square feet of area.
6. Lightly water the sod bed prior to sod installation with a fine mist spray.
7. The first row shall be laid in a straight line with subsequent rows parallel to the first row and tightly abutting each other. Install sod so that adjacent strips butt tightly together, with no gaps or spaces between the strips. Lay sod on all slopes perpendicular with the direction of surface drainage. Stagger all sod joints in a running-bond pattern. Sodded areas shall be flush with adjacent seeded or established turf areas.
8. Lateral sod joints shall be staggered. Care shall be exercised to insure that the sod is neither stretched nor overlapped. Joints must be butted tightly to prevent voids that could permit air to dry out roots.
9. After placement of sod, roll the sod thoroughly to establish soil contact and to remove slight grade undulations and air pockets.
10. Plastic mesh: All plastic mesh backing applied to the harvested sod at the growing facility shall be removed in its entirety during the installation of sod at the project. Dispose of plastic mesh off site.
11. Sod placed of a 3:1 slope, or steeper, shall be staked. Stakes shall be galvanized pins, wood pegs or other methods approved by the Landscape Architect, and a minimum of six (6) inch in length. A minimum of 2 stakes shall be installed for each strip of sod and a maximum of 18" spacing of stakes shall not be exceeded.
12. Immediately water sod thoroughly after installation.
13. Remove all sod, sod clumps, and soil immediately after the installation. Wash off all plant material and pavement.
14. Immediately after sodding operations have been completed, entire surface shall be compacted with a roller or other approved equipment. The completed area after sodding shall be uniformly even, firm, and true to finished grade lines.
15. Time Limit: All sod which has not been installed within eight (8) hours of delivery shall be rejected and removed from the project and disposed of at the Contractor's expense.

3.8 HYDROMULCH

A. General: Actual planting shall be performed during those periods when weather and soil conditions are suitable and in accordance with locally accepted practice, as approved by the Engineer.

B. Pre-Plant Weed Control:

1. If live perennial weeds exist on site at the beginning of the work, spray with a non-selective, systemic contract herbicide, as recommended and applied by an approved, licensed landscape pest control applicator. Leave sprayed plants intact for at least fifteen (15) days to allow systemic kill.
2. Clear and remove these existing weeds by mowing or grubbing off all plant parts at least 1/4" below the surface of the soil over the entire area to be planted.
3. After the irrigation system is operational and approved by the Engineer, apply water for five (5) to ten (10) calendar days, as needed to achieve weed germination. Apply contact herbicides and wait as needed before planting. Repeat, if required by the Engineer.
4. Maintain the site weed-free until final acceptance by the Engineer, utilizing mechanical and chemical treatment.
5. Refer Section 3.05 C., Hydromulching.

C. Hydro-Seeding Preparation and Operations:

1. Schedule work for periods of favorable weather.
2. Refer Section 3.03 B, Pre-Plant Weed Control
3. Protect all areas from excessive compaction when trucking plants or other material to the planting site. Existing vegetation identified by the Engineer to remain, shall be protected from trucking operations during the course of construction.
4. Hydromulching Operation:
   a. Mixes shall be:

Bermuda seed (hulled)	85 lbs./acre
OR	
Perennial Rye Grass	300 lbs./acre
OR	
HCFCD seed mix	100 lbs./acre
Hydromulch fiber mulch	2000 lbs./acre
Commercial fertilizer	400 lbs./acre
Seed additive binder	100 lbs./acre
Water	3600 gallons

   b. All hydromulched areas shall be installed by an approved hydromulch company.
   c. The hydromulch operations shall be applied in the form of a slurry consisting of cellulose fiber, seed, chemical additives, commercial fertilizer, and water. When hydraulically sprayed on the soil surface, the hydromulching shall form a blotter-like groundcover impregnated uniformly with seed and fertilizer and shall allow the absorption of moisture and rainfall to percolate to the underlying soil.
   d. Preparation: The slurry preparation shall take place at the site of work and shall begin by adding water to the tank when the engine is at half throttle. When the water level has reached the height of the agitator shaft, full re-circulation shall be es-

tablished and the seed added at that time. Fertilizer shall then be added, followed by the fiber mulch. The mulch shall be only added to the mixture after the seed and the tank is at least one-third (1/3) filled with water. All the mulch shall be added by the time the tank is two-thirds (2/3) to three-fourths (3/4) full. Spraying shall commence immediately when the tank if full.

e. Application: The operator shall spray with a uniform, visible coat of slurry by using the green color of the mulch as a guide. The slurry shall be applied in a sweeping motion, in an arched stream so as to fall like rain allowing the wood fibers to build on each other until a good coat is achieved and the material is spread at the required rate per acre.
f. Time Limit: All slurry mixtures which have not been applied within two hours after mixing shall be rejected and removed from the project and disposed of at the Contractor's expense.
g. Protection: Special care should be exercised by the Contractor in preventing any of the slurry being sprayed inside any reservoir basin or into drainage ditches and channels which may impede the free flow of rain or irrigation water. Any slurry spilled into restricted areas shall be immediately cleaned at the Contractor's expense, to the satisfaction of the Owner and Engineer.
h. Immediately following the application of hydromulch, the Contractor shall wash excess material from previously planted materials and architectural features. Care shall be exercised to avoid washing or eroding mulch materials from the area.
i. Equipment: Hydraulic equipment used for the application of the fertilizer, seed, and slurry of the prepared wood pulp shall have a built-in agitation system and operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing not less than 40 pounds of fiber mulch, plus a combined total of seven (7) pounds of fertilizer solids for each 100 gallons of water.
j. The slurry distribution lines shall be large enough to prevent stoppage and shall be equipped with a set of hydraulic spray nozzles which will provide a continuous, non-fluctuating discharge. The slurry tank shall have a minimum capacity of 1500 gallons and shall be mounted on a traveling unit, either self-propelled or drawn by a separate unit, which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded.
k. The hydraulic equipment used for pesticide applications shall consist of a clean 150-gallon minimum capacity fiberglass tank with complete mechanical agitation. The pump volume shall be ten (10) gallons per minute while operating at a pressure of 100 pounds per square inch (p.s.i.). Distribution lines shall be large enough to carry the volume of water necessary for even chemical distribution. The spray nozzle must cover a 15-foot-wide swath, with a minimum output of five (5) gallons per minute (g.p.m.) at 80 p.s.i.

D. Watering: Provide an adequate supply of water at the site prior to and during planting of turf. Saturate hydromulch with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below grade. Refer to Section 3.05 for additional specifications.

3.9 CLEAN-UP

A. After all planting operations have been completed, remove all trash, excess soil, empty plant containers, rubbish, and all debris associated with this Contract from the site. All scars, ruts, trench settlement, or other marks in the ground caused by this work shall be repaired and the

ground left in a neat and orderly condition throughout the site. The Contractor shall pick up all trash, including surplus subgrade material and stone and goriegn matter, resulting from this work no less frequently than each Friday before leaving the site, once a week, or the last working day of each week. All trash shall be removed completely from the site.

B. Paved areas over which hauling operations have been conducted shall be kept clean. Promptly remove materials spilled on pavement. The Contractor shall leave the site area broom-clean and shall wash down all paved areas within the Contract area, leaving the premises in a clean condition. All walks shall be left in a clean and safe condition.

C. Excess topsoil not required for lawns or planting shall be stockpiled on site for future use as directed by the Owner's representative.

D. Repair existing lawns damaged by operations under the contract. Repair shall include finish grading or sodding as required to match existing grade and lawn, and maintenance of repaired areas.

3.7 OBSERVATION SCHEDULE

A. The Contractor shall be responsible for notifying the Landscape Architect in advance for the following site visits, according to the time indicated:

1. Pre-job Conference - 7 days
2. Final grade review - 2 days
3. Soil Preparation and planting operations - 2 days
4. Pre-maintenance - 7 days
5. Final inspection - 7 days

B. When observations are conducted by someone other than the Landscape Architect, the Contractor shall show evidence, in writing, of when and by whom these observations were made.

C. NO site visits shall commence without all items noted in previous Observation Reports either completed or remedied unless such compliance has been waived by the Owner. Failure to accomplish punch list tasks or prepare adequately for desired inspections shall make the Contractor responsible for reimbursing the Landscape Architect at his current billing rates per hour, portal to portal (plus transportation costs) for the inconvenience. NO further inspections shall be scheduled until this charge has been paid and received.

3.8 GRASS MAINTENANCE

A. Maintain and establish grass by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable grass. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and irrigation to keep turf uniformly moist to a depth of 4 inches (100 mm).

1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
2. Water turf with fine spray at a minimum rate of 1 inch (25 mm) per week unless rainfall precipitation is adequate.
3. Irrigate according to the plant and seed mix requirements and avoid fixed schedules.
4. Water early in the mornings.

C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

1. Mow Bermuda turf to a height of 1 inch (25 mm).

D. Turf Post fertilization: Apply fertilizer after initial mowing and when grass is dry.

1. Use fertilizer only after soils has been tested and deficiencies are present. that will provide actual nitrogen of at least 1 l b/1000 s q. ft. (0.45 k g/92.9 s q. m) Bermuda grass area. No fertilizers should be used on roadway seed mix.

3.9 HYDROMULCHED AREA MAINTENANCE

A. Maintain the seeded areas until Date of Substantial Completion for entire project.

1. Water daily to maintain adequate surface soil moisture for proper seed germination. Continue daily watering for not less than 30 days. Thereafter, apply water twice weekly as required to promote proper growth until acceptance.
2. Repair, rework, and re-seed all areas that have washed out, are eroded, or do not catch.
3. Coordinate mowing of grass seed mix with Owner.

3.10 SATISFACTORY

A. Installation shall meet the following criteria as determined by Landscape Architect:

1. Satisfactory Seed: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m).

B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.11 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

C. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION 329200

Catalog # : _____ Project : _____ Type : _____

Prepared By : _____ Date : _____

Steel Poles

Square Straight



QUICK LINKS

Ordering Guide | Configurations | Dimensions | EPA

FEATURES & SPECIFICATIONS

Pole Shaft

- Straight poles are 4”, 5”, or 6” square.
- Pole shaft is electro-welded ASTM-A500 Grade C steel tubing with a minimum yield strength of 50,000 psi.
- On Tenon Mount steel poles, tenon is 2-3/8” O.D. high-strength pipe. Tenon is 4-3/4” in length.

Hand-Hole

- Standard hand-hole location is 12” above pole base.
- Poles 22’ and above have a 3x6 reinforced hand hole.

Base

- Pole base is ASTM-A36 hot-rolled steel plate with a minimum yield strength of 36,000 psi.
- Two-piece square base cover is optional.

Anchor Bolts

- Poles are furnished with anchor bolts featuring zinc-plated double nuts and washers. Galvanized anchor bolts are optional.
- Anchor Bolts conform to ASTM F 1554-07a Grade 55 with a minimum yield strength of 55,000 PSI.

Ground Lug

- Ground lug is standard.

Duplex Receptacle

- Weatherproof duplex receptacle is optional.

Ground Fault Circuit Interrupter

- Self-testing Ground fault circuit interrupter is optional.

Finishes

- Every pole is provided with the DuraGrip Protection System and a 5-year limited warranty:
- When the top-of-the line DuraGrip Plus Protection System is selected, in addition to the DuraGrip Protection System, a non-porous, automotive-grade corrosion coating is applied to the lower portion of the pole interior sealing and further protecting it from corrosion. This option extends the limited warranty to 7 years.

Determining The Luminaire/Pole Combination For Your Application:

- Select luminaire from luminaire ordering information.
- Select bracket configuration if required
- Determine EPA value from luminaire/ bracket EPA chart
- Select Pole Height
- Select MPH to match wind speed in the application area (See windspeed maps).
- Confirm pole EPA equal to or exceeding value of luminaire/bracket EPA
- Consult factory for special wind load requirements and banner brackets.

Pole Vibration Damper

- A pole vibration damper is recommended in open terrain areas of the country where low steady state winds are common.
- Non-tapered poles and lightly loaded poles are more susceptible to destructive vibration if a damper is not installed.

Listings

- UL Listed
- BAA/TAA Compliant

©LSI Industries Inc. All Rights Reserved. Specifications and dimensions subject to industry standard tolerances. Specifications subject to change without notice.

Steel Poles Square Straight

Type : _____

Have questions? Call us at (800) 436-7800

ORDERING GUIDE

Back to Quick Links

TYPICAL ORDER EXAMPLE: 4SQ B3 S11G 24 S PLP DGP

Pole Series	Mounting Method	Material	Height [2]	Mounting Configuration	Pole Finish	Options
4SQ - 4" x 4" Square Straight Pole (New Build) **5SQ** - 5" x 5" Square Straight Pole (New Build) **6SQ** - 6" x 6" Square Straight Pole (New Build) **4SQU** - 4" x 4" Square Straight Pole (Retrofit) **5SQU** - 5" x 5" Square Straight Pole (Retrofit) **6SQU** - 6" x 6" Square Straight Pole (Retrofit)	**Bolt-On Mount**[1] - See pole selection guide for patterns and fixture matches **B5** - 5" Traditional Drilling Pattern **B3** - 3" Reduced Pattern **B2** - 2" Low Profile Drilling Pattern **B2R** - Raised 2" Low Profile Drilling Pattern **(LAL4 ONLY)** **T** - Tenon Mount - See pole selection guide for tenon and fixture/bracket matches **I** - No Mounting Holes[1]	**S11G** – 11 Ga. Steel (4SQ/4SQU and 5SQ/5SQU Only) **S07G** – 07 Ga. Steel	**8'** **10'** **12'** **13'** **14'** **15'** **16'** **17'** **17'6"** **18'** **20'** **22'** **22'6"** **23'** **24'** **25'** **26'** **27'** **28'** **30'** **32'** **35'** **39'**	**S** – Single/Parallel **D180** – Double **D90** – Double **DN90** – Double **T90** – Triple **TN120** – Triple **Q90** – Quad **QN90** – Quad **N** – Tenon Mount (Standard Tenon size is 2-3/8" O.D.)[8] **(Blank)** - Use with I for Mounting Method	**BRZ** – Bronze **BLK** – Black **PLP** – Platinum Plus **WHT** – White **SVG** – Satin Verde Green **GPT** – Graphite **MSV** – Metallic Silver **BZA** – Alternate Bronze **GMG** - Gun Metal Gray	**GA** – Galvanized Anchor Bolts **SF** – Single Flood[3] **DF** – Double Flood[3] **DGP** – DuraGrip® Plus **LAB** – Less Anchor Bolts **CRXX** - Conduit Raceway[4]

Need more information?
Click here for our glossary

Have additional questions?
Call us at (800) 436-7800

ACCESSORY ORDERING INFORMATION

Part Number	Description
122559CLR	4BC – 4" Square Base Cover
122561CLR	5BC – 5" Square Base Cover
122563CLR	6BC – 6" Square Base Cover
132488CLR	5BC - 5' Square Universal Base Cover
131252CLR	6BC - 6' Square Universal Base Cover
122566CLR	ER2 – Weatherproof Duplex Receptacle
122567CLR	GFI – Ground Fault Circuit Interrupter
132336	MH5 - mounting Hole Plugs for use with 5" traditional drill pattern (3 set of 3 plugs)
681126	MH3 - mounting Hole Plugs for use with 3" reduced drill pattern (3 set of 3 plugs)
725841	MH2 - Mounting Hole Plugs for use with 2" reduced drill pattern (3 sets of 3 plugs)
172539	Vibration Damper - 4" Square Pole (bolt-on mount only)
172538	Vibration Damper - 5" Square Pole (bolt-on mount only)
178361	Vibration Damper - 6" Square Pole (bolt-on mount only)

ANCHOR BOLT KIT ORDERING INFORMATION

Part Number	Description
AB KIT 122584	4SQ S11G/S07G Anchor Bolts (Steel Plated)
AB KIT 122609	4SQ S11G/S07G Anchor Bolts (Galvanized)
AB KIT 1225850	5SQ S11G Anchor Bolts (Steel Plated)
AB KIT 122610	5SQ S11G Anchor Bolts (Galvanized)
AB KIT 122586	5SQ S07G Anchor Bolts (Steel Plated)
AB KIT 122611	5SQ S07G Anchor Bolts (Galvanized)
AB KIT 122612	6SQ S07G Anchor Bolts (Galvanized)

1 - See Area Light Brackets - 3" Reduced Drill Pattern and Area Light Brackets - 5" Traditional Drill Pattern Spec Sheets.
2 - Pole heights will have +/- 1/2" tolerance.
3 - See Flood Lighting Brackets section for choice of FBO brackets.
4 - CR selection must indicate required height and side of pole mounting location. Mounting template required at time of order.

©LSI Industries Inc. All Rights Reserved. Specifications and dimensions subject to industry standard tolerances. Specifications subject to change without notice.

Steel Poles Square Straight

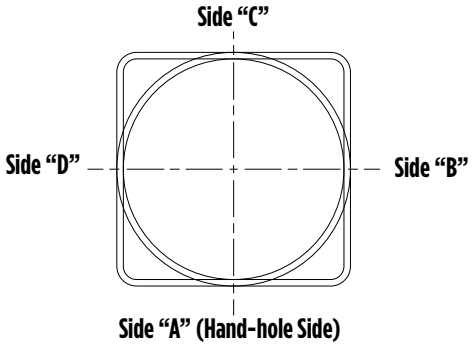
Type : _____

Have questions? Call us at (800) 436-7800

DRILLING LOCATIONS

Back to Quick Links

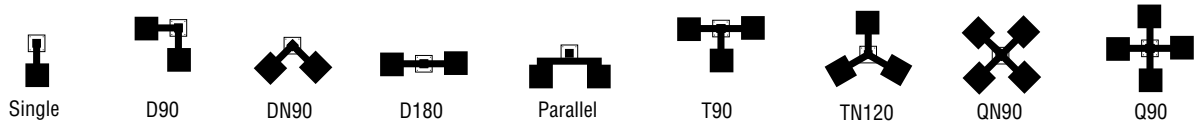
Sides	A	B	C	D
Hand-hole	X			
Single	X			
D180		X		X
D90	X			X
DN90[1]				
T90	X	X		X
TN120[2]				
Q90	X	X	X	X
QN90[3]				
Single FBO	X			
Double FBO		X		X



1 - Two locations will be 45° to the left and right of Side A.
2 - Other two locations will be 120° to the left and right of Side A.
3 - Two locations will be 45° to the left and right of Side A and two locations will be 135° to the left and right of Side A.

Consult factory for custom variations. Standard SF and DF pole preparations are located 3/4 of the height of the pole from the base, except on 20' poles. Maximum height for SF and DF pole preparations on 20' poles is 13' from the base.

FIXTURE CONFIGURATIONS

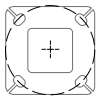


©LSI Industries Inc. All Rights Reserved. Specifications and dimensions subject to industry standard tolerances. Specifications subject to change without notice.

BOLT CIRCLE

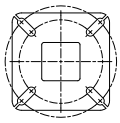
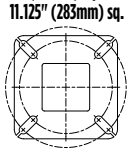
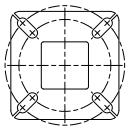
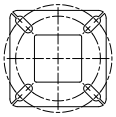
Back to Quick Links

STANDARD BASEPLATE

	4" (102mm) square 10-1/8" (257mm) sq.	5" (127mm) square 10-1/8" (257mm) sq.	5" (127mm) square 10-1/8" (257mm) sq.	6" (152mm) square 12" (305mm) sq.
				
	11" (279mm) Dia. Bolt Circle	11" (279mm) Dia. Bolt Circle	11" (279mm) Dia. Bolt Circle	12" (305mm) Dia. Bolt Circle
Bolt Circle Designator	**B**	**C**	**D**	**J**
Bolt Circle	Slotted 8"-11" (203mm-279mm)	Slotted 9"-11" (229mm-279mm)	Slotted 9"-11" (229mm-279mm)	Slotted 12" (305mm)
Anchor Bolt Size	3/4" x 24" (19mm x 609mm)	3/4" x 24" (19mm x 609mm)	1"x30" (25mm x 762mm)	1"x30" (25mm x 762mm)
Anchor Bolt Projection	3-1/4" (83mm)	3-1/4" (83mm)	4" (102mm)	4" (102mm)
Base Plate Opening for Wireway Entry	3-3/4" (92mm)	4-3/4" (121mm)	4-5/8" (117mm)	5-5/8" (143mm)
Base Plate Dimensions	10-1/8" sq. x 3/4" thk. (257mm x 19mm)	10-1/8" sq. x 3/4" thk. (257mm x 19mm)	10-1/8" sq. x 1" thk. (257mm x 25mm)	12" sq. x 1-1/8" thk. (305mm x 29mm)
Pole Gauge	11	11	7	7

Note: Base plate illustrations may change without notice. Do not use for setting anchor bolts. Consult factory for the appropriate anchor bolt template.

UNIVERSAL BASEPLATE

	4" (102mm) square 10.5" (267mm) sq.	5" (127mm) square 11.125" (283mm) sq.	5" (127mm) square 11.75" (298mm) sq.	6" (152mm) square 12-1/2" (318mm) sq.
				
	4SQ	5SQ	5SQ	14" (356mm) Dia. Bolt Circle
Bolt Circle Designator	**E**	**F**	**G**	**H**
Bolt Circle	Slotted 9"-12"	Slotted 10-13"	Slotted 10-13"	Slotted 11"-14" (279mm-356mm)
Anchor Bolt Size	3/4" x 24" (19mm x 609 mm)	3/4x 24" (19mm x 609 mm)	1"x30" (25mm x 762mm)	1"x30" (25mm x 762mm)
Anchor Bolt Projection	3-1/4" (83 mm)	3-1/4" (83 mm)	4" (102 mm)	4" (102mm)
Base Plate Opening for Wireway Entry	3-3/4" (92mm)	4-3/4" (121mm)	4-5/8" (130 mm)	5-5/8" (143mm)
Base Plate Dimensions	10-1/2" sq. x 3/4" thk. (267 mm x 19 mm)	11-1/8 sq. x 3/4" thk. (283 mm x 19 mm)	11-3/4" sq. x 1" thk. (298 mm x 25 mm)	12 1/2" sq. x 1 1/8" thk. (318mm x 29mm)
Pole Gauge	11	11	7	7

Note: Base plate illustrations may change without notice. Do not use for setting anchor bolts. Consult factory for the appropriate anchor bolt template.

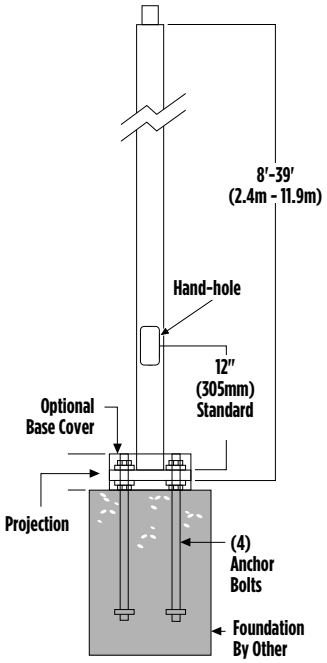
1 - Full Galvanized option is 1" x 30" straight headed anchor bolt. Contact factory for questions

©LSI Industries Inc. All Rights Reserved. Specifications and dimensions subject to industry standard tolerances. Specifications subject to change without notice.

PRODUCT DIMENSIONS

Back to Quick Links

SQT –
N= 2-3/8" (60mm) O.D. x 4-3/4" (121mm) Tenon

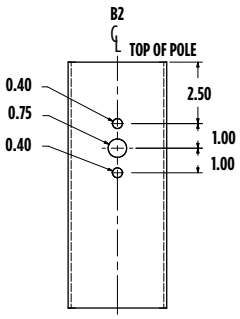


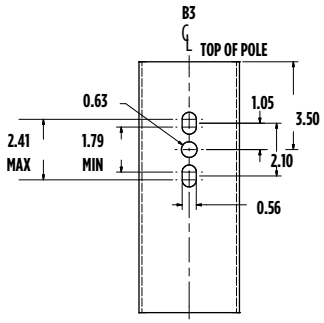
SF –
Single Flood
Pole Preparation

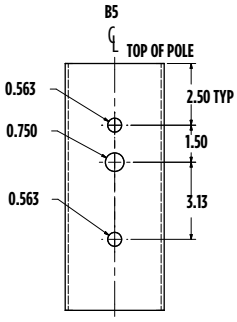


SHIPPING WEIGHTS	
4"(102mm) sq. 11 Ga. is approximately	7.50 lbs./ft.
4"(102mm) sq. 07 Ga. is approximately	10.00 lbs./ft.
5"(127mm) sq. 11 Ga. is approximately	9.00 lbs./ft.
5"(127mm) sq. 07 Ga. is approximately	12.50 lbs./ft.
6"(152mm) sq. 07 Ga. is approximately	15.40 lbs./ft.
Anchor Bolts (3/4" x 24")(19mm x 609mm)	15 lbs. (7kg)/set
Anchor Bolts (1" x 30") (25mm x 762mm)	30 lbs. (14kg)/set

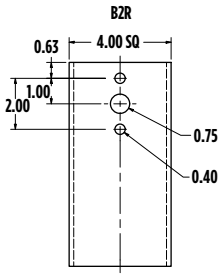
Bolt-On Mount 2-Bolt Pattern

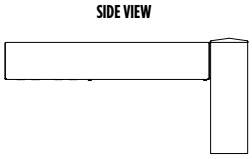






ONLY FOR USE WITH LAL4 PRODUCT
B2R- Raised 2" low profile drilling pattern







©LSI Industries Inc. All Rights Reserved. Specifications and dimensions subject to industry standard tolerances. Specifications subject to change without notice.

Steel Poles Square Straight

Type : _____

Have questions? Call us at (800) 436-7800

WIND SPEED

Back to Quick Links

EPA Information

All LSI Industries' poles are guaranteed to meet the EPA requirements listed. LSI Industries is not responsible if a pole order has a lower EPA rating than the indicated wind-loading zone where the pole will be located.

CAUTION: This guarantee does not apply if the pole/bracket/fixture combination is used to support any other items such as flags, pennants, or signs, which would add stress to the pole. LSI Industries cannot accept responsibility for harm or damage caused in these situations.

NOTE: Pole calculations include a 1.3 gust factor over steady wind velocity. Example: poles designed to withstand 80 MPH steady wind will withstand gusts to 104 MPH. EPAs are for locations 100 miles away from hurricane ocean lines. Consult LSI for other areas. Note: Hurricane ocean lines are the Atlantic and Gulf of Mexico coastal areas. For applications in Florida or Canada, consult factory.

POLE[1]	Mtg. Height Length (ft)	Wall Thick (ga)	BOLT CIRCLE			EPA								
			Designator	Dia. (in)	Anchor bolt Dia {in}	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH
4" x 11-ga x 12'	12	11	B	8" - 11"	0.75	13.9	12.5	11.3	9.2	7.6	6.3	5.2	4.3	3.6
4" x 11-ga x 14'	14	11	B	8" - 11"	0.75	10.7	9.5	8.5	6.8	5.4	4.4	3.5	2.7	2.1
4" x 11-ga x 16'	16	11	B	8" - 11"	0.75	8.2	7.2	6.4	4.9	3.8	2.9	2.1	1.5	1.0
4" x 11-ga x 18'	18	11	B	8" - 11"	0.75	6.3	5.4	4.7	3.4	2.4	1.6	1.0	0.4	n/a
4" x 11-ga x 20'	20	11	B	8" - 11"	0.75	4.6	3.9	3.2	2.1	1.2	0.6	n/a	n/a	n/a
4" x 11-ga x 22'	22	11	B	8" - 11"	0.75	7.6	6.6	5.7	4.2	3.0	2.0	1.2	0.5	n/a
4" x 11-ga x 24'	24	11	B	8" - 11"	0.75	6.0	5.1	4.3	2.9	1.8	0.9	n/a	n/a	n/a
4" x 11-ga x 26'	26	11	B	8" - 11"	0.75	4.6	3.7	3.0	1.7	0.7	n/a	n/a	n/a	n/a
4" x 7-ga x 14'	14	7	B	8" - 11"	0.75	18.3	16.4	14.9	12.2	10.2	8.5	7.1	5.9	5.0
4" x 7-ga x 16'	16	7	B	8" - 11"	0.75	14.7	13.2	11.8	9.6	7.8	6.3	5.2	4.2	3.4
4" x 7-ga x 18'	18	7	B	8" - 11"	0.75	11.9	10.5	9.3	7.4	5.9	4.6	3.6	2.8	2.1
4" x 7-ga x 20'	20	7	B	8" - 11"	0.75	9.6	8.4	7.4	5.7	4.3	3.2	2.3	1.6	0.9
4" x 7-ga x 22'	22	7	B	8" - 11"	0.75	7.7	6.6	5.7	4.2	3.0	2.0	1.2	0.5	n/a
4" x 7-ga x 24'	24	7	B	8" - 11"	0.75	6.0	5.1	4.3	2.9	1.8	0.9	n/a	n/a	n/a
4" x 7-ga x 26'	26	7	B	8" - 11"	0.75	4.6	3.7	3.0	1.7	0.7	n/a	n/a	n/a	n/a
4" x 7-ga x 28"[2]	28	7	B	8" - 11"	0.75	3.3	2.5	1.8	0.7	n/a	n/a	n/a	n/a	n/a
4" x 7-ga x 30"[2]	30	7	B	8" - 11"	0.75	2.2	1.4	0.8	n/a	n/a	n/a	n/a	n/a	n/a
5" x 11-ga x 14'	14	11	C	9" - 11"	0.75	17.4	15.7	14.1	11.5	9.3	7.7	6.3	5.2	4.2
5" x 11-ga x 16'	16	11	C	9" - 11"	0.75	13.8	12.3	10.9	8.7	6.9	5.5	4.3	3.3	2.5
5" x 11-ga x 18'	18	11	C	9" - 11"	0.75	10.8	9.6	8.4	6.5	4.9	3.7	2.6	1.8	1.1
5" x 11-ga x 20'	20	11	C	9" - 11"	0.75	8.5	7.3	6.3	4.6	3.2	2.1	1.2	0.5	n/a
5" x 11-ga x 22'	22	11	C	9" - 11"	0.75	10.9	9.5	8.3	6.2	4.5	3.2	2.1	1.2	0.5
5" x 11-ga x 24'	24	11	C	9" - 11"	0.75	8.8	7.5	6.4	4.5	3.0	1.8	0.8	n/a	n/a
5" x 11-ga x 26'	26	11	C	9" - 11"	0.75	6.8	5.7	4.6	3.0	1.6	0.6	n/a	n/a	n/a
5" x 11-ga x 28'	28	11	C	9" - 11"	0.75	5.2	4.1	3.2	1.6	0.4	n/a	n/a	n/a	n/a
5" x 11-ga x 30'	30	11	C	9" - 11"	0.75	3.6	2.7	1.8	0.4	n/a	n/a	n/a	n/a	n/a
5" x 7-ga x 20'	20	7	D	9" - 11"	1.00	21.6	19.3	17.3	14.0	11.3	9.2	7.4	6.0	4.8
5" x 7-ga x 22'	22	7	D	9" - 11"	1.00	20.7	18.6	16.6	13.3	10.7	8.5	6.8	5.4	4.2
5" x 7-ga x 24'	24	7	D	9" - 11"	1.00	17.7	15.6	13.8	10.8	8.5	6.6	5.0	3.7	2.6
5" x 7-ga x 26'	26	7	D	9" - 11"	1.00	14.9	13.1	11.4	8.8	6.6	4.9	3.5	2.3	1.3
5" x 7-ga x 28'	28	7	D	9" - 11"	1.00	12.5	10.9	9.4	6.9	4.9	3.4	2.1	1.0	n/a
5" x 7-ga x 30'	30	7	D	9" - 11"	1.00	10.3	8.9	7.5	5.2	3.4	2.0	0.8	n/a	n/a
5" x 7-ga x 35'	35	7	D	9" - 11"	1.00	6.0	4.8	3.6	1.8	n/a	n/a	n/a	n/a	n/a
6" x 7-ga x 24'	24	7	J	12"	1.00	18.6	16.4	14.3	11.2	8.6	6.5	4.8	3.4	2.2
6" x 7-ga x 26'	26	7	J	12"	1.00	15.6	13.4	11.7	8.8	6.5	4.6	3.0	1.8	0.7
6" x 7-ga x 28'	28	7	J	12"	1.00	12.9	10.9	9.3	6.7	4.6	2.8	1.5	n/a	n/a
6" x 7-ga x 30'	30	7	J	12"	1.00	10.4	8.8	7.3	4.8	2.9	1.3	n/a	n/a	n/a
6" x 7-ga x 32'	32	7	J	12"	1.00	8.3	6.8	5.5	3.1	1.3	n/a	n/a	n/a	n/a
6" x 7-ga x 34'	34	7	J	12"	1.00	6.5	5.0	3.7	1.6	n/a	n/a	n/a	n/a	n/a
6" x 7-ga x 35'	35	7	J	12"	1.00	5.5	4.2	2.9	0.9	n/a	n/a	n/a	n/a	n/a
6" x 7-ga x 39'	39	7	J	12"	1.00	2.3	1.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a

©LSI Industries Inc. All Rights Reserved. Specifications and dimensions subject to industry standard tolerances. Specifications subject to change without notice.

Steel Poles Square Straight

Type : _____

Have questions? Call us at (800) 436-7800

WIND SPEED

POLE[1]	Mtg. Height Length (ft)	Wall Thick (ga)	BOLT CIRCLE			EPA								
			Designator	Dia. (in)	Anchor Bolt Dia (in)	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH
5" x 11-ga x 14'	14	11	F	11"	0.75	17.6	15.8	14.2	11.5	9.4	7.7	6.3	5.2	4.3
5" x 11-ga x 14'	14	11	F	13"	0.75	17.6	15.8	14.2	11.5	9.4	7.7	6.3	5.2	4.3
5" x 11-ga x 16'	16	11	F	11"	0.75	13.9	12.2	11.0	8.8	7.0	5.5	4.3	3.4	2.5
5" x 11-ga x 16'	16	11	F	13"	0.75	13.9	12.2	11.0	8.8	7.0	5.5	4.3	3.4	2.5
5" x 11-ga x 18'	18	11	F	11"	0.75	11.0	9.6	8.4	6.5	5.0	3.7	2.7	1.8	1.1
5" x 11-ga x 18'	18	11	F	13"	0.75	11.0	9.6	8.4	6.5	5.0	3.7	2.7	1.8	1.1
5" x 11-ga x 20'	20	11	F	11"	0.75	8.6	7.4	6.4	4.6	3.3	2.2	1.3	0.5	-
5" x 11-ga x 20'	20	11	F	13"	0.75	8.6	7.4	6.4	4.6	3.3	2.2	1.3	0.5	-
5" x 11-ga x 22'	22	11	F	11"	0.75	12.7	11.1	9.6	7.4	5.6	4.1	3.0	2.0	1.1
5" x 11-ga x 22'	22	11	F	12"	0.75	10.3	8.9	7.7	5.7	4.1	2.8	1.8	0.9	-
5" x 11-ga x 22'	22	11	F	13"	0.75	8.6	7.4	6.4	4.6	3.1	2.0	1.1	-	-
5" x 11-ga x 24'	24	11	F	11"	0.75	10.2	8.9	7.6	5.6	4.0	2.6	1.6	0.7	-
5" x 11-ga x 24'	24	11	F	12"	0.75	8.0	6.9	5.8	4.0	2.6	1.5	0.5	-	-
5" x 11-ga x 24'	24	11	F	13"	0.75	6.7	5.5	4.6	3.0	1.7	0.7	-	-	-
5" x 11-ga x 26'	26	11	F	11"	0.75	8.1	6.9	5.8	4.0	2.5	1.3	-	-	-
5" x 11-ga x 26'	26	11	F	12"	0.75	6.2	5.1	4.1	2.6	1.3	-	-	-	-
5" x 11-ga x 26'	26	11	F	13"	0.75	5.0	4.0	3.1	1.6	0.5	-	-	-	-
5" x 11-ga x 28'	28	11	F	11"	0.75	6.3	5.2	4.3	2.5	1.1	-	-	-	-
5" x 11-ga x 28'	28	11	F	12"	0.75	4.6	3.6	2.7	1.2	-	-	-	-	-
5" x 11-ga x 28'	28	11	F	13"	0.75	3.4	2.5	1.7	-	-	-	-	-	-
5" x 11-ga x 30'	30	11	F	11"	0.75	4.7	3.7	2.8	1.2	-	-	-	-	-
5" x 11-ga x 30'	30	11	F	12"	0.75	3.1	2.2	1.4	-	-	-	-	-	-
5" x 11-ga x 30'	30	11	F	13"	0.75	2.0	1.2	0.5	-	-	-	-	-	-
5" x 7-ga x 20'	20	7	G	11"	0.75	19.0	17.0	15.0	12.2	9.7	7.8	6.2	5.0	3.8
5" x 7-ga x 20'	20	7	G	12"	0.75	21.4	19.1	17.1	13.8	11.2	9.1	7.3	5.9	4.7
5" x 7-ga x 20'	20	7	G	13"	0.75	21.4	19.2	17.2	13.9	11.3	9.2	7.4	6.0	4.8
5" x 7-ga x 20'	20	7	G	11"	1	21.7	19.4	17.4	14.0	11.4	9.3	7.5	6.0	4.8
5" x 7-ga x 20'	20	7	G	13"	1	21.7	19.4	17.4	14.0	11.4	9.3	7.5	6.0	4.8
5" x 7-ga x 22'	22	7	G	11"	0.75	16.0	14.1	12.5	9.8	7.6	5.9	4.4	3.3	2.3
5" x 7-ga x 22'	22	7	G	12"	0.75	17.7	15.9	14.2	11.2	8.7	7.0	5.4	4.1	3.0
5" x 7-ga x 22'	22	7	G	13"	0.75	19.9	17.3	15.6	12.6	10.0	8.0	6.3	5.0	3.8
5" x 7-ga x 22'	22	7	G	11"	1	21.0	18.7	16.7	13.4	10.6	8.5	6.8	5.4	4.2
5" x 7-ga x 22'	22	7	G	12"	1	23.4	20.6	18.4	15.0	12.2	9.9	8.0	6.4	5.1
5" x 7-ga x 22'	22	7	G	13"	1	21.3	18.8	17.0	13.7	11.0	8.8	7.0	5.6	4.3
5" x 7-ga x 24'	24	7	G	11"	0.75	13.3	11.6	10.0	7.7	5.7	4.2	2.9	1.9	1.0
5" x 7-ga x 24'	24	7	G	12"	0.75	15.0	13.0	11.6	8.9	6.8	5.1	3.8	2.6	1.7
5" x 7-ga x 24'	24	7	G	13"	0.75	16.6	14.6	12.9	10.2	8.0	6.1	4.6	3.3	2.3
5" x 7-ga x 24'	24	7	G	11"	1	17.5	15.7	13.9	10.9	8.6	6.7	5.0	3.7	2.7
5" x 7-ga x 24'	24	7	G	12"	1	20.0	17.4	15.4	12.3	9.9	7.8	6.0	4.7	3.5
5" x 7-ga x 24'	24	7	G	13"	1	18.1	16.0	14.2	11.0	8.7	6.7	5.3	3.9	2.8
5" x 7-ga x 26'	26	7	G	11"	0.75	10.9	9.3	8.0	5.9	4.1	2.7	1.6	0.6	-
5" x 7-ga x 26'	26	7	G	12"	0.75	12.4	10.9	9.5	7.0	5.1	3.6	2.3	1.3	-
5" x 7-ga x 26'	26	7	G	13"	0.75	14.0	12.3	10.7	8.1	6.0	4.4	3.1	2.0	1.0
5" x 7-ga x 26'	26	7	G	11"	1	15.0	13.2	11.5	8.8	6.7	4.9	3.5	2.3	1.3

©LSI Industries Inc. All Rights Reserved. Specifications and dimensions subject to industry standard tolerances. Specifications subject to change without notice.

Steel Poles Square Straight

Type : _____

Have questions? Call us at (800) 436-7800

WIND SPEED

POLE[1]	Mtg. Height Length (ft)	Wall Thick (ga)	BOLT CIRCLE			EPA								
			Designator	Dia. (in)	Anchor Bolt Dia (in)	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH
5" x 7-ga x 26'	26	7	G	12"	1	17.0	14.8	13.0	10.2	7.9	6.0	4.4	3.1	2.1
5" x 7-ga x 26'	26	7	G	13"	1	15.3	13.5	11.8	9.0	6.8	5.0	3.6	2.5	1.4
5" x 7-ga x 28'	28	7	G	11"	0.75	8.9	7.4	6.3	4.3	2.7	1.4	-	-	-
5" x 7-ga x 28'	28	7	G	12"	0.75	10.2	8.8	7.5	5.3	3.5	2.1	1.0	-	-
5" x 7-ga x 28'	28	7	G	13"	0.75	11.8	10.2	8.8	6.4	4.5	3.0	1.7	0.7	-
5" x 7-ga x 28'	28	7	G	11"	1	12.5	10.9	9.5	7.0	5.0	3.3	2.1	1.0	-
5" x 7-ga x 28'	28	7	G	12"	1	14.2	12.4	11.0	8.2	6.0	4.3	3.0	1.7	0.8
5" x 7-ga x 28'	28	7	G	13"	1	12.9	11.0	9.7	7.2	5.2	3.6	2.2	1.1	-
5" x 7-ga x 30'	30	7	G	11"	0.75	7.0	5.8	4.7	2.8	1.3	-	-	-	-
5" x 7-ga x 30'	30	7	G	12"	0.75	8.4	7.0	5.8	3.8	2.2	0.9	-	-	-
5" x 7-ga x 30'	30	7	G	13"	0.75	9.7	8.2	7.0	4.8	3.0	1.6	0.5	-	-
5" x 7-ga x 30'	30	7	G	11"	1	10.4	8.8	7.6	5.3	3.4	2.0	0.8	-	-
5" x 7-ga x 30'	30	7	G	12"	1	12.0	10.3	9.0	6.4	4.4	2.9	1.6	0.5	-
5" x 7-ga x 30'	30	7	G	13"	1	10.6	9.1	7.7	5.5	3.6	2.1	1.0	-	-
5" x 7-ga x 35'	35	7	G	11"	0.75	3.2	2.2	1.2	-	-	-	-	-	-
5" x 7-ga x 35'	35	7	G	12"	0.75	4.4	3.2	2.2	0.5	-	-	-	-	-
5" x 7-ga x 35'	35	7	G	13"	0.75	5.5	4.2	3.1	1.3	-	-	-	-	-
5" x 7-ga x 35'	35	7	G	11"	1	6.0	4.8	3.6	1.8	-	-	-	-	-
5" x 7-ga x 35'	35	7	G	12"	1	7.3	6.0	4.8	2.7	1.1	-	-	-	-
5" x 7-ga x 35'	35	7	G	13"	1	6.3	5.0	3.8	1.9	-	-	-	-	-
6" x 7-ga x 24'	24	7	H	11"	1	16.5	14.4	12.6	9.6	7.2	5.3	3.8	2.5	1.4
6" x 7-ga x 24'	24	7	H	12-1/2"	1	19.8	17.5	15.4	12.0	9.2	7.0	5.3	3.8	2.7
6" x 7-ga x 24'	24	7	H	14"	1	23.0	20.5	18.0	14.3	11.2	8.9	6.9	5.3	3.8
6" x 7-ga x 26'	26	7	H	11"	1	13.7	11.8	10.2	7.5	5.3	3.6	2.1	1.0	-
6" x 7-ga x 26'	26	7	H	12-1/2"	1	16.5	14.6	12.6	9.6	7.0	5.2	3.6	2.2	1.1
6" x 7-ga x 26'	26	7	H	14"	1	19.6	17.3	15.2	11.7	8.9	6.7	5.0	3.5	2.2
6" x 7-ga x 28'	28	7	H	11"	1	11.0	9.3	7.8	5.5	3.5	1.9	0.6	-	-
6" x 7-ga x 28'	28	7	H	12-1/2"	1	13.8	12.0	10.2	7.5	5.2	3.4	1.9	0.7	-
6" x 7-ga x 28'	28	7	H	14"	1	16.4	14.5	12.5	9.4	6.9	4.7	3.2	1.8	0.7
6" x 7-ga x 30'	30	7	H	11"	1	9.0	7.3	6.0	3.6	1.9	0.5	-	-	-
6" x 7-ga x 30'	30	7	H	12-1/2"	1	11.4	9.6	8.0	5.5	3.4	1.7	-	-	-
6" x 7-ga x 30'	30	7	H	14"	1	14.0	12.0	10.0	7.2	5.0	3.2	1.6	-	-
6" x 7-ga x 32'	32	7	H	11"	1	7.0	5.5	4.2	2.0	-	-	-	-	-
6" x 7-ga x 32'	32	7	H	12-1/2"	1	9.2	7.6	6.0	3.8	1.8	-	-	-	-
6" x 7-ga x 32'	32	7	H	14"	1	11.4	9.7	8.0	5.4	3.2	1.6	-	-	-
6" x 7-ga x 34'	34	7	H	11"	1	5.1	3.7	2.5	0.6	-	-	-	-	-
6" x 7-ga x 34'	34	7	H	12-1/2"	1	7.2	5.6	4.4	2.2	-	-	-	-	-
6" x 7-ga x 34'	34	7	H	14"	1	9.3	7.6	6.2	3.6	1.7	-	-	-	-
6" x 7-ga x 35'	35	7	H	11"	1	4.2	3.0	1.8	-	-	-	-	-	-
6" x 7-ga x 35'	35	7	H	12-1/2"	1	6.2	4.8	3.6	1.4	-	-	-	-	-
6" x 7-ga x 35'	35	7	H	14"	1	8.2	6.6	5.2	2.9	1.0	-	-	-	-
6" x 7-ga x 39'	39	7	H	11"	1	1.0	-	-	-	-	-	-	-	-
6" x 7-ga x 39'	39	7	H	12-1/2"	1	3.0	1.6	0.5	-	-	-	-	-	-
6" x 7-ga x 39'	39	7	H	14"	1	4.6	3.3	2.0	-	-	-	-	-	-

©LSI Industries Inc. All Rights Reserved. Specifications and dimensions subject to industry standard tolerances. Specifications subject to change without notice.

Catalog #: _____ Project: _____

Prepared By: _____ Date: _____ Type: _____

Flood Lighting Brackets

Tenon Brackets

MANUFACTURED IN THE USA

ORDERING GUIDE

TYPICAL ORDER EXAMPLE: BKS FBO 5 BLK

Bracket Designation	Bracket Type	Bracket Configuration	Bracket Finish
TENON MOUNT BKS - Bracket Steel	**PTB**[1]	**23** **3-30** **4** **12** **13-30** **14**	**BRZ** - Bronze **BLK** - Black **PLP** - Platinum Plus **WHT** - White **GPT** - Graphite **SVG** - Satin Verde Green **MSV** - Metallic Silver

Need more information?
Click here for our glossary

Have additional questions?
Call us at (800) 436-7800

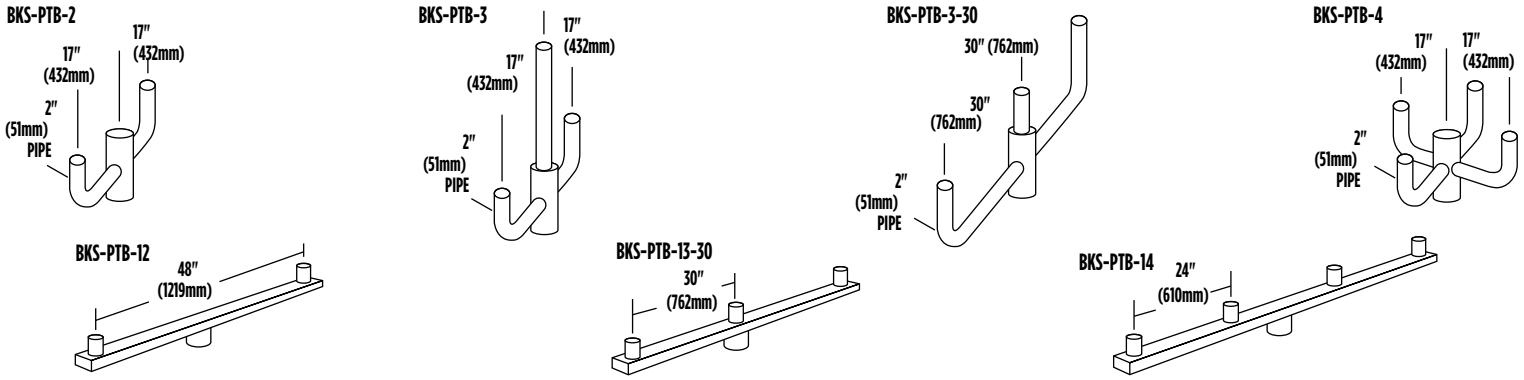
Note: Standard slip-fitter fits 2-3/8" O.D. tenon (2.0 pipe tenon)

SHIPPING WEIGHTS

Catalog Number	EPA Values[2]	Est. Weight (kg/lbs.)
BKS-PTB-2	1.6	11/24
BKS-PTB-3	2.1	15/32
BKS-PTB-3-30	2.4	13/29
BKS-PTB-4	2.3	18/40
BKS-PTB-12	1.8	9/28
BKS-PTB-13-30	2.1	15/38
BKS-PTB-14	2.5	17/37

PRODUCT DIMENSIONS

TENON BRACKETS



1 PTB brackets slipfit 2-3/8" O.D. tenon. Order N tenon mount on poles.
2 The bracket EPA should be added to the fixture EPA when selecting the proper pole.

BEACON
design . performance . technology

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

RATIO Flood

MEDIUM AND LARGE

RATIO

FEATURES

- Medium and Large LED flood with a variety of NEMA distributions for lighting applications such as area safety/security, accent, flag pole columns, or signs
- Part of the Ratio flood series, this luminaire was designed in cohesion with the site/area products to provide a sleek and timeless look
- Features a dense optical array, providing reduced pixelation and increased visual comfort without compromising performance
- Applications include safety/security, accent, flag pole, columns and signs



RFL4



RFL5

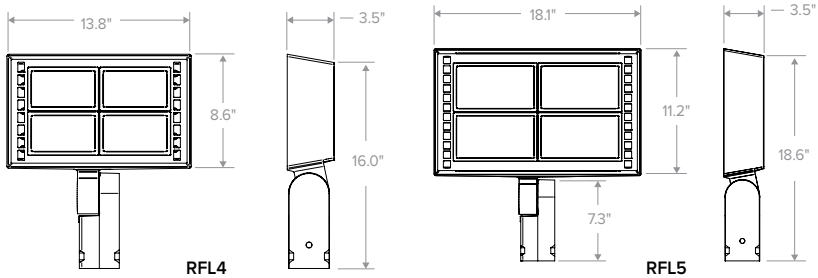
IP66 DLC LISTED DLC LISTED PREMIUM BAA TAA

CONTROL TECHNOLOGY

NX CONNECT NX WIRED NX WIRELESS

SERVICE PROGRAMS

STOCK



	Weight	EPA (Front/Side)
RFL4	16 lbs / 7.2 kg	1.24ft^2 / 0.43ft^2
RFL5	25.7 lbs / 11.66 kg	2.00ft^2 / 0.50ft^2

SPECIFICATIONS

CONSTRUCTION

- Corrosion resistant, rugged die-cast aluminum housing with powder coatpaint finish
- High impact UV stabilized acrylic outer lens protects LEDs and allows for cleaning and debris removal
- Internal venting fins create optimal heat dissipation and allow all water to drain from the face of the luminaire
- Visor and louver options
- Easy maintenance access to electrical components with removal of four screws from back of fixture housing
- Lens hardware is internal to the fixture allowing for uniform pressure on the gasket for an optimal water tight seal

OPTICS

- 176 or 360 midpower LEDs
- Stock Versions: 4000K and 5000K CCT
- Variety of NEMA distributions: - N (3x3), M (4x4), and W (6x6). Stock version Wide (6x6) only
- Entire optical aperture illuminates to create a larger luminous surface area resulting in a low glare appearance without sacrificing optical performance

CONTROLS

- Photo control, occupancy sensor and wireless available for complete on/off dimming control

CONTROLS (CONTINUED)

- 7-pin ANSI C136.41–2013 photocontrol receptacle option available for twist lock photocontrols or wireless control modules (control accessories sold separately)
- 0–10V dimming leads available for use with control devices (provided by others), must specify lead length
- 0–10V dimming driver standard, continuous dimming option to have leads pulled out for easy connection

INSTALLATION

- Interchangeable knuckle and trunnion mounting options
- Knuckle arm fitter option available for 2-⅜" OD tenon. 180 degrees of adjustability (with no options). 4 degree adjustable increments
- Trunnion option available for surface and crossarm mounting using (1) ¾" or (2) ½" size through bolts

ELECTRICAL

- 120–480V operation, 50/60Hz
- Driver IP66 and RoHS compliant driver
- Ambient operating temperature -40°C to 40°C. (265W configuration rated for 25°C)
- 7-pin module can limit backwards rotation of the luminaire
- Drivers have 90% power factor and less than 20% THD

ELECTRICAL (CONTINUED)

- LED drivers have output power over-voltage, over-current protection and short circuit protection with auto recovery
- 10kA surge protector optional

CERTIFICATIONS

- Fixture is IP66 rated
- Listed to UL1598 for use in wet locations
- DLC® (DesignLights Consortium Qualified), with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at www.designlights.org
- This product meets federal procurement law requirements under the Buy American Act (FAR 52.225-9) and Trade Agreements Act (FAR 52.225-11). See Buy America(n) Solutions (link to https://www.currentlighting.com/resources/america-solutions)

WARRANTY

- 5 year limited warranty

© 2023 HLI Solutions, Inc. All rights reserved. Information and specifications subject to change without notice. All values are design or typical values when measured under laboratory conditions.

BEACON
design . performance . technology

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

RATIO Flood

MEDIUM AND LARGE

STOCK ORDERING INFORMATION

Catalog Number	Mounting	Distribution	Wattage	Voltage	CCT	Lumens	LPW	Weight lbs. (KG)	Finish
RFL4–120–5K–K	Knuckle	Wide	124	120–277V	5000K	14746	122	16.0 (7.26)	Bronze
RFL4–120–4K–K	Knuckle	Wide	124	120–277V	4000K	15119	125	16.0 (7.26)	Bronze
RFL4–120–5K–T	Trunnion	Wide	124	120–277V	5000K	14746	122	16.0 (7.26)	Bronze
RFL4–120–4K–T	Trunnion	Wide	124	120–277V	4000K	15119	125	16.0 (7.26)	Bronze
RFL5–265–5K–K	Knuckle	Wide	266	120–277V	5000K	29362	116	25.7 (11.66)	Bronze
RFL5–265–4K–K	Knuckle	Wide	266	120–277V	4000K	30106	119	25.7 (11.66)	Bronze
RFL5–265–5K–T	Trunnion	Wide	266	120–277V	5000K	29362	116	25.7 (11.66)	Bronze
RFL5–265–4K–T	Trunnion	Wide	266	120–277V	4000K	30106	119	25.7 (11.66)	Bronze
RFL–TRN–XX[1]	Trunnion Accessory Kit								

1 Specify finish color to match fixture

ORDERING GUIDE

Gray Shading = Service Program Limit of 15 luminaires QS10

Example: RFL4–176L-95–3K7–M–UNV–K–BLT–PC–SP

CATALOG # _____

Model	
RFL4	Ratio Flood Size 4
RFL5	Ratio Flood Size 5

# LEDs Wattage	
176L–95	176 LEDs–12000lm
176L–120	176 LEDs–15000lm
360L–130	360 LEDs–18000lm
360L–190	360 LEDs–25000lm
360L–265	360 LEDs–30000lm

CCT/CRI	
3K7	3000K, 70 CRI
4K7	4000K, 70 CRI
5K7	5000K, 70 CRI

Distribution	
N	Narrow, 2x2
M	Medium Flood, 4x4
W	Wide Flood, 6x6

Voltage	
UNV	Universal 120–277
120	120V
208	208V
240	240V
277	277V
347	347V
480	480V

Mounting	
K	Knuckle
T	Trunnion

Color	
BLT	Black Matte Textured
BLS	Black Gloss Smooth
DBT	Dark Bronze Matte Textured
DBS	Dark Brone Gloss Smooth
GTT	Graphite Matte Textured
LGS	Light Grey Gloss Smooth
PSS	Platinum Silver Smooth
WHT	White Matte Textured
WHS	White Gloss Smooth
VGT	Verde Green Textured

Color Option	
CC	Custom Color

Control Options	
PC	Button style photocontrol
CD	Continuous dimmable

Options	
SP	Surge Protector
F	Fusing

Control Options	
NX Networked - Wireless	
NXWS16F[1,3]	NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming
NXWS40F[1,3]	NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming
NXW[1,3]	NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor
WIR[1,4]	LightGRID+ In-Fixture Module 2.4 GHz
WIRSC[1,4]	LightGRID+ Module 2.4 GHz and Occupancy Sensor
Third-Party Control Options	
SCP-_F[1]	Programmable occupancy sensor
7PR[1,2]	7-Pin twist lock receptacle
7PR-SC[1,2]	7-Pin receptacle with shorting cap
7PR-MD-F[1,2]	Low voltage sensor for 7PR
7PR-TL[1,2]	7-Pin PCR with photo control

1 Option available with kunckle mounting
2 Limits backwards rotation based on module height
3 Items with a grey background can be done as a custom order. Contact brand representative.
4 Networked Controls cannot be combined with other control options

© 2023 HLI Solutions, Inc. All rights reserved. Information and specifications subject to change without notice. All values are design or typical values when measured under laboratory conditions.

BEACON
design . performance . technology

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

RATIO Flood

MEDIUM AND LARGE

CONTROLS FUNCTIONALITY

OUTDOOR LIGHTING CONTROLS OPTIONS

LIGHTGRID+

	Control Option Ordering Logic & Description		Control Option Functionality									Control Option Components	
			Networkable	Grouping	Scheduling	Occupancy/ Motion	Daylight Harvesting	0-10V Dimming	On/Off Control	Bluetooth App Programming	Sensor Height		
NX Wireless	NXW	NX Networked Wireless Radio Module NXRM2 and Bluetooth Programming, without Sensor	✓	✓	✓	–	–	✓	✓	✓	–		NXRM2-H
	NXWS16F	NX Networked Wireless Enabled Integral NXSMP2-LMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming	✓	✓	✓	✓	✓	✓	✓	✓	16ft		NXSMP2-LMO
	NXWS40F	NX Networked Wireless Enabled Integral NXSMP2-HMO PIR Occupancy Sensor with Automatic Dimming Photocell and Bluetooth Programming	✓	✓	✓	✓	✓	✓	✓	✓	40ft		NXSMP2-HMO
LightGRID+	WIR	LightGRID+ In-Fixture Module	✓	–	✓	–	–	✓	✓	Gateway	–		WIR
	WIRSC	LightGRID+ Module and Occupancy Sensor	✓	✓	✓	✓	✓	✓	✓	Gateway	14ft - 40ft		BTMSP

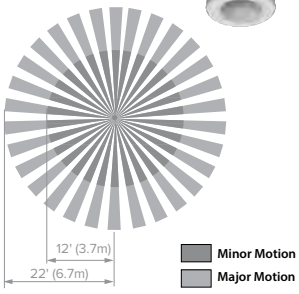
DEFAULT SETTINGS

NX Wireless	
Occupancy Sensor	Enabled
Occupancy Sensor Sensitivity	7
Occupancy Sensor Timeout	15 Minutes
Occupied Dim Level	100%
Unoccupied Dim Level	0%
Daylight Sensor	Disabled
Bluetooth	Enabled
2.4GHz Wireless Mesh	On
"Passcode Factory Passcode: HubbN3T!"	Enabled

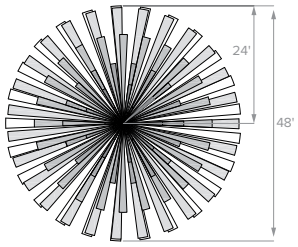
Stand Alone	
Occupancy Sensor	Enabled
Occupancy Sensor Sensitivity	7
Occupancy Sensor Timeout	8 Minutes
Occupied Dim Level	100%
Unoccupied Dim Level	50%
Daylight Sensor	Disabled

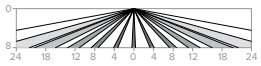
NX WIRELESS COVERAGE PATTERNS

NXSMP2-OMNI



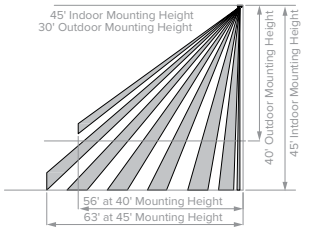
NXSMP2-LMO





Sensor Lens Coverage and Detection Patterns When Mounted at 8ft with Low Mount Lens

NXSMP2-HMO



Sensor Lens Coverage and Detection Patterns When Mounted at 40ft and 45ft with Standard Lens

NX LIGHTING CONTROLS FREE APP



The NX Lighting Controls App is free to use mobile application for programming both NX Lighting Controls System or Standalone Bluetooth Sensors. The mobile app allows you to configure devices, discover and setup wireless enable luminiares and program NX system settings.

Apple App: https://apps.apple.com/us/app/nx-lighting-controls/id962112904

Google Play: https://play.google.com/store/apps/details?id=io.cordova.NXBTR&hl=en_US&gl=US

Apple App

Google Play

CONTROLS TECH SUPPORT 800-888-8006 (7:00 AM - 7:00 PM)

© 2023 HLI Solutions, Inc. All rights reserved. Information and specifications subject to change without notice. All values are design or typical values when measured under laboratory conditions.

BEACON
design . performance . technology

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

RATIO Flood

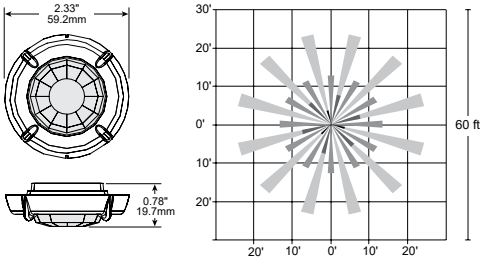
MEDIUM AND LARGE

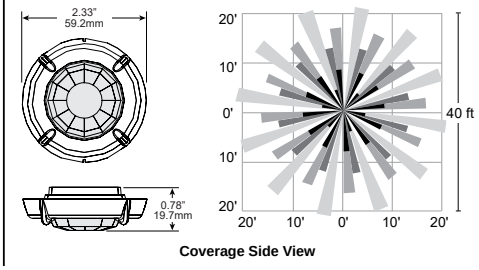
OUTDOOR LIGHTING CONTROLS OPTIONS

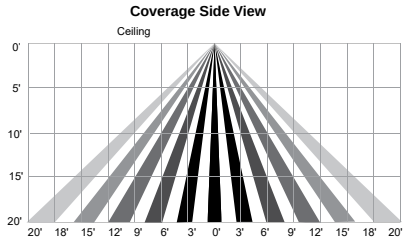
CONTROLS FUNCTIONALITY

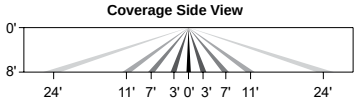
	Control Option Ordering Logic & Description		Control Option Functionality									Control Option Components
			Networkable	Grouping	Scheduling	Occupancy/ Motion	Daylight Harvesting	0-10V Dimming	On/Off Control	Bluetooth App Programming	Sensor Height	
Independent	SCP_F	Sensor Control Programmable, sensor range, reference product specification for height selections	–	–	–	✓	✓	✓	✓	–	8ft or 20ft	SCP_F
	7PR	7-Pin Receptacle	–	–	Paired with external control	–	Paired with external control	–	Paired with external control	–	–	7PR
	7PR-SC	7-Pin Receptacle with shorting cap	–	–	–	–	–	–	–	–	–	 7PR-SC
	7PR-TL	7-Pin with photocontrol	–	–	–	–	✓	–	✓	–	–	 7PR-TL

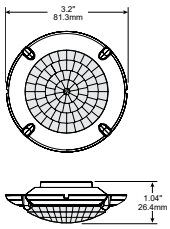
COVERAGE PATTERNS FOR SCP_F

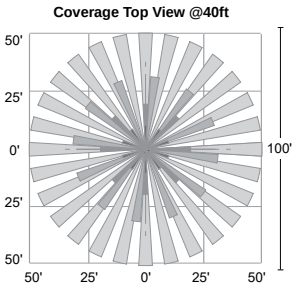


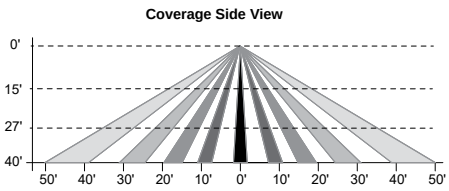












PROGRAMMED CONTROLS

ADD-AutoDim Timer Based Options

- Light delay options from 1-9 hours after the light is turned on to dim the light by 10-100%. To return the luminaire to its original light level there are dim return options from 1-9 hours after the light has been dimmed previously.

EX: ADD-6-5-R6

ADD Control Options	Configurations Choices	Example Choice Picked
Auto-Dim Options	1-9 Hours	6 - Delay 6 hours
Auto-Dim Brightness	10-100% Brightness	5 - Dim to 50% brightness
Auto-Dim Return	Delay 0-9 Hours	R6 - Return to full output after 6 hours

ADT-AutoDim Time of Day Based Option

- Light delay options from 1AM-9PM after the light is turned on to dim the light by 10-100%. To return the luminaire to its original light level there are dim return options from 1AM-9PM after the light has been dimmed previously.

EX: ADT-6-5-R6

ADD Control Options	Configurations Choices	Example Choice Picked
Auto-Dim Options	12-3 AM and 6-11 PM	6 - Dim at 6PM
Auto-Dim Brightness	10-100% Brightness	5 - Dim to 50%
Auto-Dim Return	12-6 AM and 9-11P	R6 - Return to full output at 6AM

© 2023 HLI Solutions, Inc. All rights reserved. Information and specifications subject to change without notice. All values are design or typical values when measured under laboratory conditions.

RATIO Flood

MEDIUM AND LARGE

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

ACCESSORIES AND REPLACEMENT PARTS (ORDERED SEPARATELY)

	Catalog Number	Description
☐	RFL4–TV–XX[1]	Top Visor - RFL4
☐	RFL4–FL–XX[1]	Louver - RFL4
☐	RFL5–TV–XX[1]	Top Visor - RFL5
☐	RFL5–FL–XX[1]	Louver - RFL5

1 Specify finish color to match fixture, e.g. DBT - Dark Bronze Matte

CONTROL ACCESSORIES

	Catalog Number	Description
☐	SCPREMOTE	Order at least one per project location to program and control
☐	WIR–RME–L	LightGRID+ 2.4 GHz external control node; use with 7PR
☐	NXOFM–1R1D–UNV	NX external control node; use with 7PR

PERFORMANCE DATA

					5K (5000K nominal, 70 CRI)			4K (4000K nominal, 70 CRI)			3K (3000K nominal, 70 CRI)		
Series	Nominal Watts	Dist. Type	NEMA	Field Angle H X V	Lumens	LPW[1]	Max Beam Candlepower	Lumens	LPW[1]	Max Beam Candlepower	Lumens	LPW[1]	Max Beam Candlepower
RFL4	95	N	2 x 2	20 x 20	12594	135	213259	12913	140	218652	12510	136	211825
		M	4 x 4	57 x 57	11894	128	28457	12196	131	29177	11816	127	82866
		W	6 x 6	105 x 105	12355	132	7037	12668	135	7215	12272	131	6990
	120	N	2 x 2	20 x 20	15031	127	254521	15411	130	260957	14931	126	252810
		M	4 x 4	57 x 57	14196	119	33912	14555	122	34770	14102	118	33684
		W	6 x 6	105 x 105	14746	122	8399	15119	125	8611	14647	121	8343
RFL5	130	N	2 x 2	20 x 20	19019	145	322063	19501	149	330208	18892	144	319898
		M	4 x 4	57 x 57	17963	136	44645	18419	140	45774	17843	135	44345
		W	6 x 6	105 x 105	18658	140	10628	19131	144	10897	18534	139	10557
	190	N	2 x 2	20 x 20	25278	134	428052	25918	139	438877	25110	133	425174
		M	4 x 4	57 x 57	23875	126	58831	24478	129	60319	23714	125	58436
		W	6 x 6	105 x 105	24799	129	14126	25427	133	14483	24634	128	14031
	265	N	2 x 2	20 x 20	29930	120	30685	30688	123	519638	29730	120	503414
		M	4 x 4	57 x 57	28268	113	68911	28983	119	70654	28078	112	68448
		W	6 x 6	105 x 105	29362	116	30106	30106	119	17148	29167	115	16612

1 Lumen values are from photometric tests performed in accordance with IESNA LM–79–08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

© 2023 HLI Solutions, Inc. All rights reserved. Information and specifications subject to change without notice. All values are design or typical values when measured under laboratory conditions.

DATE: LOCATION:

TYPE: PROJECT:

CATALOG #:

RATIO Flood

MEDIUM AND LARGE

ELECTRICAL DATA

# LEDS	Nominal Wattage	Input Voltage	Oper. Current (Amps)	System Power (W)
RFL4	95	120	0.78	93.5
		208	0.45	
		240	0.39	
		277	0.34	
	120	120	1.00	120.2
		208	0.58	
		240	0.50	
		277	0.43	
RFL5	130	120	1.11	132.6
		208	0.58	
		240	0.50	
		277	0.43	
	190	120	1.59	191
		208	0.92	
		240	0.80	
		277	0.69	
	265	120	2.10	252
		208	1.21	
		240	1.05	
		277	0.91	

PROJECTED LUMEN MAINTENANCE

Ambient Temperature	Operating Hours					
	0	25,000	50,000	TM–21–11 60,000[1]	100,000	Calculated L70 (Hours)
25°C / 77°C	1.00	0.96	0.94	0.91	0.83	> 191,000
40°C / 104°F	0.99	0.95	0.93	0.93	0.81	> 173,000

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

Ambient Temperature		Lumen Multiplier
0° C	32° F	1.03
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	0.99
40° C	104° F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0–40°C (32-122°F)

© 2023 HLI Solutions, Inc. All rights reserved. Information and specifications subject to change without notice. All values are design or typical values when measured under laboratory conditions.

BEACON
design . performance . technology

RATIO Flood

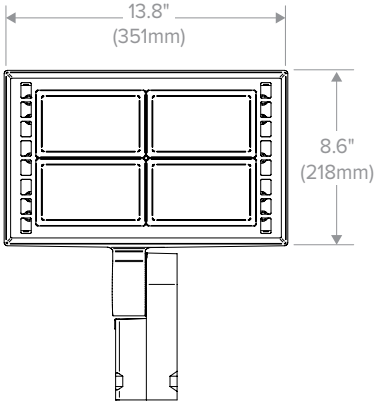
MEDIUM AND LARGE

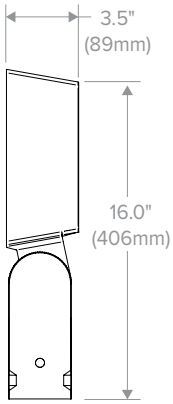
DATE: LOCATION:

TYPE: PROJECT:

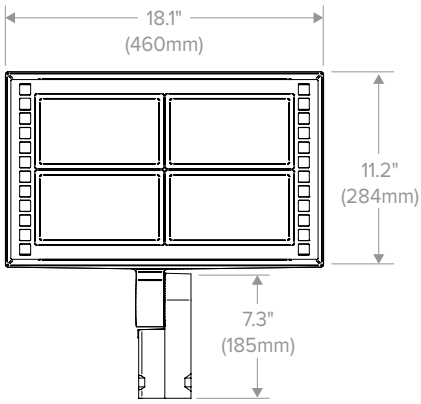
CATALOG #:

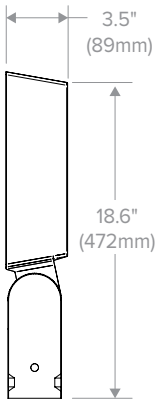
DIMENSIONS



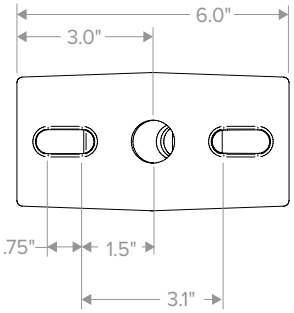


RFL4





RFL 5



Trunnion Mount

RFL4 EPA(Front/Side)	RFL5 EPA(Front/Side)
1.24ft^2 / 0.43ft^2	2.00ft^2 / 0.50ft^2

SHIPPING INFORMATION

Catalog Number	G.W (kg)/CTN	Carton Dimensions		
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)
RFL4	15lbs (6.8kg)	20.7 (52.7)	15.1 (38.4)	6.9 (17.6)
RFL5	19lbs (8.6kg)	25 (63.5)	15.1 (38.4)	6.9 (17.6)

ACCESSORIES



Visor



Louver

© 2023 HLI Solutions, Inc. All rights reserved. Information and specifications subject to change without notice. All values are design or typical values when measured under laboratory conditions.

RATIO Flood

MEDIUM AND LARGE

DATE: LOCATION:

TYPE: PROJECT:

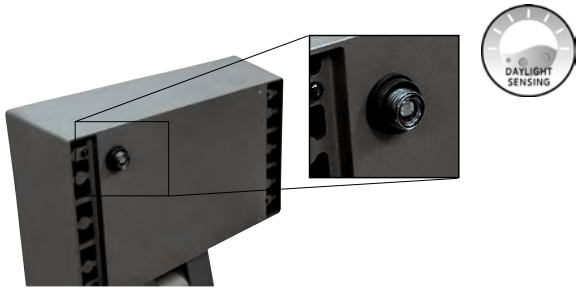
CATALOG #:

ADDITIONAL INFORMATION

CONTROL IMAGES



Occupancy Sensor



Photocontrol



NX Lighting Controls



7-Pin Receptacle

© 2023 HLI Solutions, Inc. All rights reserved. Information and specifications subject to change without notice. All values are design or typical values when measured under laboratory conditions.

PARD CAMPUS

8203 MILLENNIUM FOREST, THE WOODLANDS, TX 77381

A PROJECT FOR

THE WOODLANDS TOWNSHIP

GENERAL NOTES

1. STATEMENT OF COMPLIANCE: THE ATTACHED PLANS AND SPECIFICATIONS HAVE BEEN PREPARED, OR CAUSED TO BE PREPARED, UNDER THE ARCHITECT'S DIRECT SUPERVISION. TO THE BEST OF THE ARCHITECT'S KNOWLEDGE AND BELIEF, AND TO THE EXTENT OF CONTRACTUAL OBLIGATION, THEY ARE IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT INCLUDING STATE/LOCAL ACCESSIBILITY CODES, AS APPLICABLE.

2. THE DOCUMENTS ARE TO BE CONSIDERED A WHOLE PACKAGE AND SHALL NOT BE BROKEN OUT INTO PIECES — EITHER BY TRADE, ROOMS, OR EQUIPMENT. THE G.C. SHALL REFER TO ALL SHEETS FOR RELEVANT INFORMATION INCLUDING ADDITIONAL INFORMATION TO BE PROVIDED BY THE OWNER, SUCH AS BUT NOT LIMITED TO, SPECIAL FINISHING REQUIREMENTS, ANY CHANGES OR MODIFICATIONS, ETC.

3. ALL WORK UNDER THIS CONTRACT SHALL COMPLY WITH THE PROVISIONS OF THE SPECIFICATIONS AND DRAWINGS AND SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND NATIONAL CODES, ORDINANCES, AND REGULATIONS. SPECIFICALLY, CONFORM TO CURRENT CODES ALL AUTHORITIES HAVING JURISDICTION, INCLUDING BUT NOT LIMITED TO APPLICABLE ACCESSIBILITY CODES.

4. THE ARCHITECT WILL SUBMIT PLANS TO AUTHORITIES HAVING JURISDICTION AND RESOLVE COMPLIANCE ISSUES FOR PERMIT APPROVAL; ALL PERMITS NECESSARY FOR THE PROPER EXECUTION OF THE WORK SHALL BE SECURED AND PAID FOR BY THE CONTRACTOR U.N.O.

5. CONTRACTOR SHALL MAINTAIN AND SUBMIT TO OWNER / LANDLORD OR THEIR REPRESENTATIVE THE REQUIRED CERTIFICATES OF INSURANCE PRIOR TO COMMENCEMENT OF WORK.

6. CONTRACTOR SHALL BE FAMILIAR WITH JOB SITE CONDITIONS AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THEM OF ANY RESPONSIBILITY. CONTRACTOR SHALL THOROUGHLY ACQUAINT THEMSELVES WITH THE CONSTRUCTION DETAILS BEFORE SUBMITTING THEIR BID AS NO ALLOWANCES WILL BE MADE DUE OF THE CONTRACTOR'S UNFAMILIARITY WITH THE JOB SITE CONDITIONS.

7. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSIONS ON THE JOB SITE AND REPORT DISCREPANCIES AND/OR UNUSUAL CONDITIONS TO THE DESIGN TEAM PRIOR TO COMMENCEMENT OF CONSTRUCTION.

8. CONTRACTOR SHALL MAINTAIN THE PREMISES IN A CLEAR AND ORDERLY FASHION DURING THE ENTIRE CONSTRUCTION PERIOD. CONTRACTOR SHALL ENSURE THAT ALL TRASH AND WASTE ARE REMOVED DAILY FROM THE JOB SITE.

9. ALL CONSTRUCTION WORK PERFORMED BY THE CONTRACTOR SHALL BE EXECUTED SO AS TO CAUSE THE LEAST POSSIBLE INTERFERENCE WITH OTHER TENANTS AND THE OPERATION OF THE BUILDING. CONSTRUCTION EQUIPMENT AND MATERIALS SHALL BE LOCATED AND STORED IN SERVICE AREAS, AND ARE NOT TO BURDEN THE CONSTRUCTION OR OPERATION OF THE BUILDING.

10. CONTRACTOR SHALL PROVIDE PUBLIC PROTECTION AS NECESSARY AND AS REQUIRED BY THE CODES.

11. ALL WORK UNDER THIS CONTRACT SHALL BE PERFORMED BY COMPETENT TRADEWORKERS, AND EXECUTED IN A NEAT WORKMANLIKE MANNER. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A MINIMUM OF ONE YEAR AFTER THE DATE OF ACCEPTANCE OF THE STORE BY THE TENANT AND THE LANDLORD. ADDITIONAL WARRANTIES ON SOME EQUIPMENT MAY BE REQUIRED BY THE TENANT.

12. VERIFY PENETRATIONS THAT ARE MADE THROUGH EXTERIOR WALLS FOR CONDUIT OR DOOR OPENINGS ARE WEATHER SEALED AND THE WALL FINISH RESTORED.

13. AT THE CONCLUSION OF THE WORK, THE BUILDING AND EXTERIOR AREA SHALL BE CLEARED OF ALL CONSTRUCTION DEBRIS. ALL FOREIGN MATTER, MARKS, STAINS, FOREIGN PAINT, AND DIRT SHALL BE REMOVED FROM ALL SURFACES.

14. A COPY OF ALL MAINTENANCE AND OPERATING MANUALS SHALL BE GIVEN TO THE OWNERS REP FOR ANY EQUIPMENT INSTALLED IN THE LEASE SPACE (I.E. ROOFTOP UNITS, COOLERS, HOT WATER HEATER, ETC.) ALL MATERIAL SHALL BE BOUND IN ONE 3-RING BINDER ORGANIZED BY CSI DIVISIONS.

15. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS AND SAMPLES TO OWNER AND ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

16. IF NOT PROVIDED IN THE DRAWINGS AND SPECIFICATION MANUAL, ALL MEP DESIGN IS TO BE PROVIDED BY THE RELEVANT MECHANICAL, ELECTRICAL, OR PLUMBING SUB-CONTRACTORS, AND THEY SHALL BE RESPONSIBILITY FOR OBTAINING PERMIT(S) FOR SUCH DESIGNS.

17. CONTRACTOR AND SUBCONTRACTOR MUST FAMILIARIZE THEMSELVES WITH ANY EXHIBITS PROVIDED HEREIN. IF DISCREPANCIES EXIST, CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER AND ARCHITECT FOR CLARIFICATIONS PRIOR TO COMMENCING WORK IN QUESTION.

18. THE CONTRACTOR SHALL PROCURE ALL OF THE CERTIFICATES OF OCCUPANCY OR LOCAL EQUIVALENT.

19. THE WORK INCLUDES THE FURNISHING OF ALL LABOR, MATERIALS AND EQUIPMENT AND SERVICES NECESSARY FOR, AND REASONABLY INCIDENTAL TO THE COMPLETION, IN PLACE, OF ALL WORK ILLUSTRATED AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS.

20. CONDITIONS DEPICTED ON THESE DRAWINGS HAVE BEEN COMPILED FROM AVAILABLE INFORMATION AND MUST BE VERIFIED WITH ON-SITE CONDITIONS. CONTRACTOR(S) SHALL VERIFY, AND BE RESPONSIBLE FOR, ALL DIMENSIONS AND CONDITIONS AT THE BUILDING SITE AND SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK. ANY UNKNOWN DIMENSION SHALL BE REQUESTED FROM THE ARCHITECT. SCALING OF THE DRAWINGS IS PROHIBITED.

21. THE CONTRACTORS SHALL RECEIVE, HANDLE, STORE (WHEN NECESSARY) AND BE RESPONSIBLE FOR ALL MATERIALS PROVIDED BY OTHERS. ALL MATERIALS SHALL BE ACCOUNTED FOR UPON RECEIPT AND ANY MISSING OR DAMAGED PARTS SHALL BE REPORTED TO THE OWNER IMMEDIATELY.

22. ALL REQUESTS FOR SUBSTITUTION OF ANY ITEMS SPECIFIED SHALL BE SUBMITTED IN WRITING TO THE OWNER'S AND/OR TENANT'S REPRESENTATIVE AND WILL BE CONSIDERED ONLY IF BETTER SERVICE, MORE ADVANTAGEOUS DELIVERY DATE, OR CREDIT TO THE CONTRACT PRICE WILL BE PROVIDED WITHOUT SACRIFICE OF QUALITY, APPEARANCE, AND FUNCTION.

23. CONTRACTORS SHALL SUBMIT CONFIRMATIONS WITH DELIVERY DATES ON ORDERS OF MATERIALS AND EQUIPMENT WITH LONG LEAD TIMES.

24. CONTRACTORS SHALL VERIFY WITH THE OWNER ALL FIXTURES AND EQUIPMENT TO BE FURNISHED BY OTHERS.

25. GAPS BETWEEN DIFFERENT MATERIALS AND OR AT CORNERS SHALL BE THOROUGHLY SEALED.

26. ALL MEP SYSTEMS TO BE LOCATED ABOVE BOTTOM OF JOIST.

27. ALL OTHER WORK REQUIRED BUT NOT SPECIFIED IN THESE DOCUMENTS, SHALL BE PERFORMED BY CONTRACTORS TO MEET THE GENERAL PRACTICING STANDARDS, BUILDING CODES AND MANUFACTURE'S INSTRUCTIONS AND SPECIFICATIONS.

28. CONTRACTOR SHALL COMPLY WITH ALL CODES, LAWS, ORDINANCES, RULES AND REGULATIONS OF ALL PUBLIC AUTHORITIES (FEDERAL, STATE, OR LOCAL) GOVERNING THE WORK. THE MOST STRINGENT SHALL APPLY.

29. ALL MANUFACTURED ARTICLES, MATERIALS AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED PER MANUFACTURE'S INSTRUCTIONS. IN CASE OF DIFFERENCES BETWEEN THE MANUFACTURE'S INSTRUCTION AND THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT BEFORE PROCEEDING.

30. ENSURE SURFACES TO RECEIVE FINISHES ARE CLEAN, TRUE AND FREE OF IRREGULARITIES.

31. PRIOR TO EXECUTING CONSTRUCTION CONTRACT, GENERAL CONTRACTOR MAY BE REQUESTED TO REVISE THEIR BID TO REFLECT THE FINAL CONSTRUCTION SET THAT MAY CONTAIN BIDDING ADDENDAS, REGULATORY COMMENTS, CLIENT REVISIONS, DRAWING CLARIFICATIONS, OR VARIOUS OTHER MODIFICATIONS.

32. NO DOCUMENT SET OTHER THAN THE CONSTRUCTION SET SHALL BE USED FOR CONSTRUCTION, NOR ALLOWED AFTER CULMINATION OF THE BIDDING PHASE ON SITE OR DISTRIBUTED TO ANY SUB CONTRACTORS/VENDORS/TRADES WITHOUT CLIENT/ARCHITECT APPROVAL AND SPECIFIC NOTIFICATION TO THE RECIPIENT THAT THE DOCUMENTS BEING PROVIDED ARE NOT THE FINAL "CONSTRUCTION SET" AND SHALL NOT BE USED FOR CONSTRUCTION.

33. G.C. TO REVIEW ENERGY COMCHECK FORMS. ALL GLAZING AND BUILDING ROOF / WALL INSULATION TO MEET COMCHECK REQUIREMENTS.

34. THE CONTRACTOR IS TO ENSURE THAT PROPER SAFEGUARDS ARE MET DURING CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, PEDESTRIAN PROTECTION, FIRE EXTINGUISHER AVAILABILITY, MEANS OF EGRESS UPKEEP, STANDPIPE AVAILABILITY, SPRINKLER SYSTEM COMPLETION, AND FIRE PROTECTION WATER SUPPLY ACCESS

WEATHERPROOFING NOTES

WEATHERPROOF NOTES:
WHETHER SPECIFICALLY IDENTIFIED OR NOT THE FOLLOWING NOTES SHALL APPLY TO ALL RELEVANT DETAILS, CONDITIONS AND LOCATIONS FOR THE PROJECT IDENTIFIED HEREIN.

1. GENERAL NOTE:
THE BASE BID SHALL INCLUDE ALL NECESSARY AND REQUIRED FLASHING, COUNTER-FLASHING, WEATHERPROOFING, SEALANT, CAULKING, ETC., WHETHER SHOWN, DETAILED, NOTED OR NOT. THE INTENT OF THESE WEATHERPROOFING NOTES IS TO ENSURE THAT THE GENERAL CONTRACTOR IS AWARE OF THE NECESSITY FOR FULL WEATHERPROOFING OVER THE ENTIRE EXTERIOR OF THE BUILDING, BEHIND ALL EXTERIOR FINISHES AND BETWEEN ALL DISSIMILAR MATERIALS. INDUSTRY STANDARD DETAILS SHALL BE FOLLOWED IF IN DOUBT AT ALL LOCATIONS.
NOTE: NO CHANGE ORDER SHALL BE CONSIDERED FOR PROVIDING ADDITIONAL FLASHING, COUNTER-FLASHING, WEATHERPROOFING, SEALANT, CAULKING, ETC.

1.1. MATERIAL TRANSITIONS
1.1.1. ALL EXTERIOR JOINTS BETWEEN DISSIMILAR MATERIALS SHALL RECEIVE SEALANT; JOINTS EXCEEDING ½" IN DEPTH SHALL RECEIVE BACKER ROD AND SEALANT.

1.1.2. PROVIDE A CONTINUOUS SEALED WEATHER BARRIER OVER ALL EXTERIOR SHEATHING OR BACKER BOARD. WEATHER BARRIER SHALL BE EITHER LIQUID APPLIED OR SHEETING TYPE - REFER TO DRAWINGS, NOTES AND SPECIFICATIONS.

1.1.2.1. LIQUID APPLIED WEATHER BARRIER (LAWB) - ALL JOINTS TO FLASHING MATERIALS, SHEATHING JOINTS AND SUBSTITUTE JOINTS ARE TO BE TAPED AND REINFORCED WITH DETAIL MESH, FILLER, AND RECEIVE ANOTHER COAT OF LAWB PER MANUFACTURER RECOMMENDATIONS.

1.1.2.2. FLASHING INSTALLED OVER LAWB ARE TO BE COUNTER FLASHED AND MESH TAPED & RECOATED WITH LAWB PER MANUFACTURES RECOMMENDATIONS.

1.2. EXTERIOR WAINSCOTING
1.2.1. PROVIDE GALVANIZED METAL FLASHING SET IN CONTINUOUS BED OF SEALANT OVER FWBM AND SHEATHING. THE TOP OF METAL FLASHING SHALL BE COUNTER FLASHED.

1.2.2. CASING BEADS, SCREEDS, OR BASE METAL TRIMS MUST PROVIDE WEEPING ACTION. FINISH SHOULD BE HELD OFF OF FINISHED GRADE MIN. ½".

1.2.3. JOINT BETWEEN MASONRY MATERIALS & SIDEWALKS TO BE ¼" AND FILLED WITH GROUT AND PROVIDE 2" WIDE WEEPS TO ALLOW MOISTURE TO MIGRATE OUT OF SYSTEM.

1.3. PREPARE WINDOW / DOOR ROUGH OPENING PREPARATION:
1.3.1. ROUGH OPENINGS TO BE WRAPPED WITH EXTERIOR WEATHER BARRIER PER MANUFACTURER

1.3.2. DOUBLE WRAP SILL AND RETURN UP JAMB 4".

1.3.3. SEAL ALL SILL JAMB AND HEAD CORNERS.

1.4. SILL CONDITION
1.4.1. PROVIDE SILL PAN FLASHING WITH END DAMS AT ALL SILL OPENINGS. SET SILL PAN FLASHING IN CONTINUOUS BED OF NONSILICONE SEALANT.

1.5. JAMB CONDITION
1.5.1. COUNTER FLASH OVER END DAM JOINT AT JAMB/SILL CONNECTION TO DIRECT WATER TO EXTERIOR.

1.5.2. PROVIDE CONTINUOUS BACKER ROD AND SEALANT AT ALL VERTICAL JOINTS BETWEEN WINDOW/DOOR FRAME AND EXTERIOR FINISH.

1.6. HEAD CONDITION
1.6.1 PROVIDE GALVANIZED METAL DRIP FLASHING EXTENDING OVER WINDOW/DOOR FRAME. PROVIDE BACKER ROD AND SEALANT BETWEEN FLASHING AND WINDOW FRAME.

1.7. PARAPET CAP FLASHING
1.7.1. WRAP TERMINATION (TOP, FRONT AND BACKSIDES) OF PARAPET WALL WITH FLEXIBLE RUBBERIZED SELF-ADHESIVE, SELFSEALING, WATER BARRIER MEMBRANE (FWBM). APPLY FWBM OVER SHEATHING, CONTINUOUSLY OVER SUBSTRATE TO BACK OF PARAPET WALL SHEATHING. LAP FWBM OVER VERTICAL WEATHER BARRIER TO ENSURE PROPER FLASHING.

1.8 WATERPROOFING CONSULTANT
THE GENERAL CONTRACTOR MUST ENGAGE A SEPARATE REGISTERED WATERPROOFING CONSULTANT AS A PART OF THE CONSTRUCTION TEAM TO INSPECT ALL WATERPROOFING ASPECTS OF THE BUILDING PRIOR TO COVER-UP. THE WATERPROOFING CONSULTANT SHALL TEST, INSPECT AND VISUALLY DOCUMENT ALL UNIQUE DETAILS. THE G.C. SHALL FOLLOW RECOMMENDATIONS OF CONSULTANT.

PROJECT SUMMARY

1. OFFICE ADDITION AND REMODEL: ADDING APPROXIMATELY 4,563 SQ. FT. TO AN EXISTING 6,400 SQ. FT. OFFICE BUILDING "A", WHICH WILL INCLUDE INTERIOR DEMOLITION AND REMODELING.
2. INTERIOR REMODEL: REMODELING AN EXISTING 4,800 SQ. FT. BUILDING "B", INCLUDING INTERIOR DEMOLITON AND REMODELING.
3. PARKING LOT AND SITE IMPROVEMENTS: ENHANCEMENTS TO THE PARKING LOT AND ASSOCIATED SITE IMPROVEMENTS.
4. TEMPORARY TRAILER: INSTALLATION OF MOBILE UNITS WITH NECESSARY UTILITIES AND CONSTRUCTION OF ACCESS STAIRS, RAMPS, AND DECKS.

BUILDING DETAILS:

- INTERIOR REMODEL OF TWO METAL PANEL BUILDINGS SYSTEM.
- BUILDING ADDITION USING STRUCTURAL INSULATED PANEL SYSTEM (SIPS) FOR EXTERIOR WALLS AND ROOF ON A CONCRETE FOUNDATION.
- FINISH METAL ROOF SYSTEM ON SIPS.
- COMPREHENSIVE INTERIOR AND EXTERIOR FINISHES, INCLUDING WALLS, CEILINGS,
- LIGHTING, PLUMBING, ELECTRICAL, AND MECHANICAL ELEMENTS.

SITE DETAILS:
- PAVING, UTILITIES, SIDEWALKS, LANDSCAPING, IRRIGATION, AND SITE LIGHTING.

PROJECT DIRECTORY

OWNER:
PARKS AND RECREATION DEPARTMENT
THE WOODLANDS TOWNSHIP
8203 MILLENNIUM FOREST DR.
THE WOODLANDS, TX 77381
PH: (281) 210-3908
EMAIL: MHALL@THEWOODLANDSTOWNSHIP-TX.GOV
CONTACT: MITCH HALL

STRUCTURAL ENGINEER:
HALFF ASSOCIATES, INC
14800 ST. MARY'S LANE, SUITE 160
HOUSTON, TX 77079
PH: (713) 588-2457
EMAIL: JMILLER@HALFF.COM
CONTACT: JIM MILLER, PE

CIVIL ENGINEER:
HALFF ASSOCIATES, INC
14800 ST. MARY'S LANE, SUITE 160
HOUSTON, TX 77079
PH: (713) 588-2457
EMAIL: TEATON@HALFF.COM
CONTACT: TYLER EATON, PE

MEP ENGINEER:
CFI AFFILIATES, INC
10370 RICHMOND AVE., SUITE 1450
HOUSTON, TX 77042
PH: (346) 439-9851
EMAIL: SFAROOQUI@CFIAFFILIATES.COM
CONTACT: SHAZIA FAROOQUI

ARCHITECT:
HEIGHTS VENTURE ARCHITECTURE + DESIGN
1111 NORTH LOOP WEST, SUITE 800
HOUSTON, TX 77008
PH: (281) 854-6101
EMAIL: JERRY.TIPPS@HVA.CC
CONTACT: JERRY TIPPS

PERMIT EXPEDITER:
DRM SERVICES
255 CENTRAL PARKWAY #200
HOUSTON, TX 77092
CONTACT: DIANE MUNSON
DIANE.MUNSON@DRM-SERVICES.COM
281-435-5988

REGULATORY AGENCIES
THE WOODLANDS TOWNSHIP
8203 MILLENNIUM FOREST DR.
THE WOODLANDS, TX 77381

MONTGOMERY COUNTY FIRE MARSHAL'S OFFICE
501 N. THOMPSON, SUITE #102
CONROE, TEXAS 77031
936-538-8288
FIRE.CODES@MCTX.ORG

ASBESTOS SURVEY REQUIREMENT

1. GENERAL
PRIOR TO COMMENCEMENT OF ANY RENOVATION OR DEMOLITION ACTIVITIES, THE CONTRACTOR SHALL OBTAIN AND PROVIDE AN ASBESTOS SURVEY OF ALL AREAS AFFECTED BY THE WORK IN ACCORDANCE WITH:
* TEXAS OCCUPATION CODE 1954.259
* TEXAS ASBESTOS HEALTH PROTECTION RULES (25 TAC CHAPTER 296)
* EPA NESHAP (40 CFR PART 61, SUBPART M)

2. SCOPE
THE ASBESTOS SURVEY SHALL:
* BE PERFORMED BY A TEXAS DEPARTMENT OF STATE HEALTH SERVICES (DSHS) LICENSED ASBESTOS INSPECTOR OR CONSULTANT
* IDENTIFY ALL ASBESTOS-CONTAINING BUILDING MATERIALS (ACBM) WITHIN THE PROJECT SCOPE
* INCLUDE SAMPLING, LABORATORY ANALYSIS, AND A WRITTEN REPORT DOCUMENTING FINDINGS

3. SUBMITTAL
THE CONTRACTOR SHALL SUBMIT THE FOLLOWING PRIOR TO MOBILIZATION:
* A COPY OF THE ASBESTOS SURVEY REPORT SIGNED BY THE LICENSED INSPECTOR
* CERTIFICATION THAT THE SURVEY COMPLIES WITH TEXAS AND FEDERAL REGULATIONS
* IF ASBESTOS-CONTAINING MATERIALS ARE IDENTIFIED, PROVIDE AN ABATEMENT PLAN PREPARED BY A LICENSED ASBESTOS CONSULTANT

4. RESPONSIBILITY
COST ASSOCIATED WITH THE ASBESTOS SURVEY AND ANY REQUIRED ABATEMENT SHALL BE INCLUDED IN THE CONTRACTOR'S BID. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR COMPLIANCE WITH THESE REQUIREMENTS.

VICINITY MAP



NOTE:
CAD AND BIM FILES WILL NOT BE PROVIDED TO THE GC.

NOTE:
IF CONFLICTS EXIST, IN DRAWINGS AND/OR SPECIFICATIONS, THE GENERAL CONTRACTOR IS TO BID THE MOST EXPENSIVE OPTION TO RESOLVE THE CONFLICT UNLESS TOLD OTHERWISE VIA ADDENDUM.

NOTE:
ARCHITECTURAL DRAWINGS, CIVIL DRAWINGS, STRUCTURAL DRAWINGS, MEP DRAWINGS, AND SPECIFICATIONS ARE COMPLEMENTARY. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DRAWINGS AND SPECIFICATIONS WITH EACH TRADE.

DEFERRED PERMITS

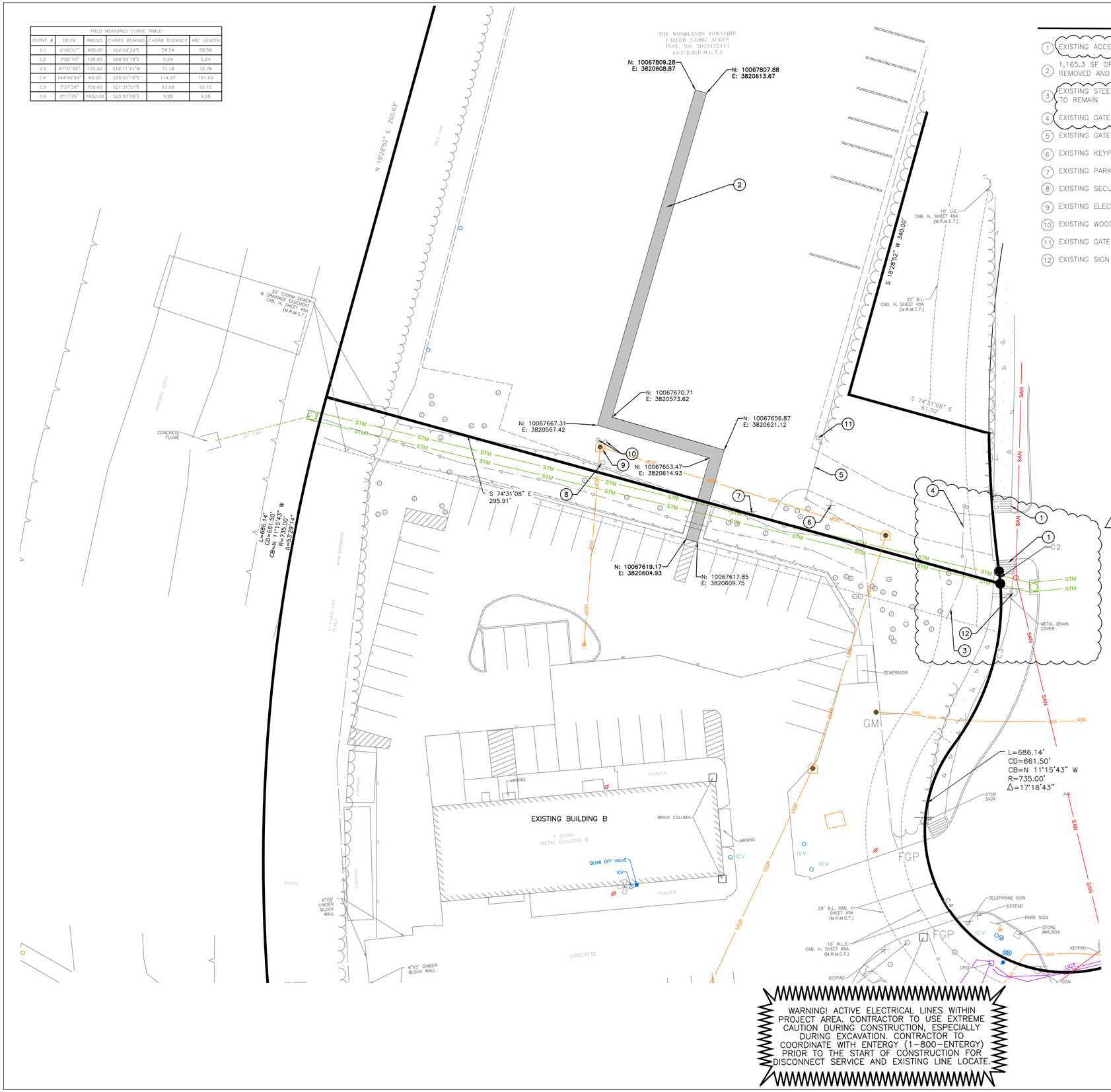
1. BUILDING ADDITION - STRUCTURAL INSULATED PANELS BY PREMIER SIPS.
2. FIRE AND SMOKE ALARM, IF REQUIRED BY THE CITY OF MONTGOMERY COUNTY, WILL BE DEFERRED PERMIT.
3. FIRE ALARM DESIGN PERMIT, AND INSTALLATION INCLUDED IN GENERAL CONTRACTORS SCOPE OF WORK, REFER TO SPEC SECTION 13851 FOR DESIGN REQUIREMENTS.

SHEET INDEX

No.	NAME	3/28/25 60% REVIEW SET	5/30/25 90% REVIEW SET	10/22/25 PERMIT_BID	12/03/2025 ADDENDUM #1
GENERAL					
G001	COVER SHEET	●	●	●	
G003	EXTERIOR ACCESSIBILITY	●	●	●	
G004	INTERIOR ACCESSIBILITY	●	●	●	
G005	INTERIOR ACCESSIBILITY	●	●	●	
G100	CODE ANALYSIS	●	●	●	
G101	BLDG A & C LIFE SAFETY	●		●	
G102	BLDG B LIFE SAFETY	●	●	●	
G103	BLDG A & BLDG C COMCHECK EXHIBIT	●	●	●	
G104	"BLDG A & BLDG C" COMCHECK ENVELOPE	●	●	●	
G105	"BLDG A & BLDG C" COMCHECK ENVELOPE	●	●	●	
G106	"BLDG B" COMCHECK EXHIBIT	●	●	●	
G107	"BLDG B" COMCHECK ENVELOPE	●	●	●	
G108	"BLDG B" COMCHECK ENVELOPE	●	●	●	
G109	MECHANICAL COMCHECK	●	●	●	
G110	MECHANICAL COMCHECK		●	●	
G111	LIGHTING COMCHECK	●	●	●	
G112	LIGHTING COMCHECK		●	●	
G201	PARTITION TYPES AND DETAILS		●	●	
CIVIL					
G0.01	GENERAL NOTES	●		●	
G0.02	GENERAL NOTES	●		●	
C1.00	OVERALL SITE PLAN	●		●	
C2.00	EROSION CONTROL PLAN	●		●	
C3.00	PHASE 1 DEMOLITION PLAN	●		●	●
C3.01	TEMPORARY TRAILER LAYOUT		●	●	
C4.00	PHASE 2 DEMOLITION PLAN	●		●	●
C5.00	OVERALL GRADING PLAN	●		●	
C5.01	GRADING PLAN	●		●	
C5.02	GRADING PLAN	●		●	
C6.00	DRAINAGE AREA MAP		●	●	
C6.01	UTILITIES AND DRAINAGE PLAN			●	
C6.02	UTILITIES AND DRAINAGE PLAN		●	●	
C7.01	PAVING AND DIMENSIONAL PLAN	●		●	
C7.02	PAVING AND DIMENSIONAL PLAN	●		●	
C7.03	FIRE LANE PLAN	●		●	
C8.00	DETAILS	●		●	
C8.01	DETAILS	●		●	●
C8.02	DETAILS	●		●	
C8.03	DETAILS	●		●	
C8.04	DETAILS	●		●	
C8.05	DETAILS	●		●	
ARCHITECTURAL					
A001	EXISTING/DEMO SITE PLAN	●	●	●	
A001A	EXISTING ENLD/DEMO SITE PLAN BLDG - A	●	●	●	
A001B	EXISTING ENLD/DEMO SITE PLAN BLDG - B	●	●	●	
A002	TEMPORARY TRAILERS PLAN	●	●	●	
A003	SITE PLAN	●	●	●	
A004	"BLDG A & C" ENLARGED SITE PLAN	●	●	●	
A005	"BLDG B" ENLARGED SITE PLAN	●	●	●	
A101	"BLDG A" DEMO FLOOR PLAN & RCP	●	●	●	●
A102	"BLDG A & C" FLOOR PLAN	●	●	●	
A102A	"BLDG A & C" DIMENSION FLOOR PLAN	●	●	●	
A102B	"BLDG A & C" POWER - FURNITURE PLAN	●	●	●	
A103	"BLDG A & C" FINISH PLAN	●	●	●	
A104	"BLDG A & C" RCP	●	●	●	
A105	"BLDG A" DEMO ROOF PLAN	●	●	●	
A106	"BLDG A & C" ROOF PLAN	●	●	●	
A107	"BLDG B" DEMO FLOOR PLAN & RCP	●	●	●	●
A107A	"BLDG B" FLOOR PLAN & DIMENSION FLOOR PLAN	●	●	●	
A107B	"BLDG B" FURNITURE & POWER PLAN	●	●	●	
A108	"BLDG B" RCP & FINISH FLOOR PLAN	●	●	●	
A109	"BLDG B" DEMO ROOF PLAN & ROOF PLAN	●	●	●	
A110	ENLARGED PLANS "BLDG A&C" EXTERIOR WOOD COLUMNS	●	●	●	
A201	"BLDG A" DEMO EXTERIOR ELEVATIONS	●	●	●	
A202	"BLDG A & C" EXTERIOR ELEVATIONS	●	●	●	
A203	"BLDG B" DEMO EXTERIOR ELEVATIONS	●	●	●	
A204	"BLDG B" EXTERIOR ELEVATIONS	●	●	●	
A301	"BLDG A & C" DEMO BUILDING SECTION	●	●	●	
A302	"BLDG A & C" BUILDING SECTION	●	●	●	
A303	"BLDG B" DEMO BUILDING SECTION	●	●	●	
A304	"BLDG B" BUILDING SECTION	●		●	
A401	"BLDG A & C" WALL SECTIONS	●	●	●	
A402	"BLDG A & C" WALL SECTION	●	●	●	
A403	"BLDG A & C" WALL SECTION		●	●	
A404	"BLDG B" WALL SECTION	●	●	●	
A405	"BLDG A & C" RESTROOMS & BREAKROOM ENLARGED PLANS		●	●	
A406	"BLDG B" RESTROOMS & BREAKROOM ENLARGED PLANS		●	●	
A501	"BLDG A & C" PLAN DETAILS	●	●	●	
A502	"BLDG A & C" PLAN DETAILS	●	●	●	
A503	"BLDG A & C" DETAILS		●	●	
A504	"BLDG A & C" DETAILS		●	●	
A505	"BLDG A & C" DETAILS		●	●	
A506	DETAILS		●	●	
A601	FINISH & ROOM SCHEDULES	●	●	●	

No.	NAME	3/28/25 60% REVIEW SET	5/30/25 90% REVIEW SET	10/22/25 PERMIT_BID	12/03/2025 ADDENDUM #1
A602	SCHEDULES & DIAGRAMS	●	●	●	
A603	STOREFRONT/ WINDOW SCHEDULE		●	●	
A604	STOREFRONT/ WINDOW/ DOOR SCHEDULE		●	●	
A701	"BLDG A & C" RESTROOMS ELEVATIONS	●	●	●	
A702	"BLDG A & C" RESTROOMS ELEVATIONS		●	●	
A703	"BLDG A & C" BREAKROOM ELEVATIONS		●	●	
A704	"BLDG B" RESTROOMS & BREAKROOM ELEVATIONS		●	●	
A705	"BLDG A & C" BREAKROOM MILLWORK		●	●	
A706	"BLDG A & C" CONFERENCE ELEVATIONS		●	●	
A901	"BLDG A & C" 3D EXTERIOR REPRESENTATION	●	●	●	
A902	"BLDG A & C" 3D INTERIOR REPRESENTATION		●	●	
STRUCTURAL					
S001	GENERAL NOTES, ABBREVIATIONS, AND SHEET INDEX	●		●	
S002	GENERAL NOTES AND SPECIAL INSPECTIONS	●		●	
S101	BUILDING EXPANSION FOUNDATION PLAN	●		●	●
S102	BUILDING D ENTRYWAY MODIFICATIONS	●		●	
S201	TYPICAL FOUNDATION DETAILS	●		●	
S202	TYPICAL FOUNDATION DETAILS			●	
MECHANICAL					
M0-01	MECHANICAL SYMBOLS, LEGENDS AND GENERAL NOTES	●	●	●	
M0-02	MECHANICAL SYMBOLS, LEGENDS AND NOTES	●	●	●	
M0-03	MECHANICAL SPECIFICATIONS	●	●	●	
M0-04	MECHANICAL SPECIFICATIONS	●	●	●	
M1-02A	MECHANICAL DEMO DUCTWORK PLAN - BLDG A	●	●	●	
M1-02B	MECHANICAL DEMO DUCTWORK PLAN - BLDG B	●	●	●	
M2-01AC	MECHANICAL DUCTWORK PLAN - BLDG A&C	●	●	●	●
M2-01B	MECHANICAL DUCTWORK PLAN - BLDG B	●	●	●	
M3-01	MECHANICAL PIPING PLAN - BLDG A&C		●	●	
M8-01	MECHANICAL SCHEDULES	●	●	●	●
M9-01	MECHANICAL DETAILS		●	●	
M9-02	MECHANICAL DETAILS			●	
ELECTRICAL					
E0-01	ELECTRICAL SYMBOLS, LEGENDS AND GENERAL NOTES	●	●	●	
E0-02	ELECTRICAL SPECIFICATIONS	●	●	●	
E1-01	ELECTRICAL SITE PLAN	●	●	●	●
E1-02A	ELECTRICAL DEMO POWER AND LIGHTING PLAN - BLDG A	●	●	●	●
E1-02B	ELECTRICAL DEMO POWER AND LIGHTING PLAN - BLDG B	●	●	●	●
E2-01AC	ELECTRICAL POWER PLAN - BLDG A&C	●	●	●	●
E2-01B	ELECTRICAL POWER AND LIGHTING PLAN - BLDG B	●	●	●	●
E3-01AC	ELECTRICAL LIGHTING PLAN - BLDG A&C	●	●	●	●
E4-01AC	ELECTRICAL EQUIPMENT PLAN - BLDG A&C				●
~~E4-01B~~	~~ELECTRICAL EQUIPMENT PLAN - BLDG B~~	~~●~~	~~●~~	~~●~~	
E7-01	ELECTRICAL RISER DIAGRAM	●	●	●	●
E8-01	ELECTRICAL SCHEDULES	●	●	●	●
E8-02	ELECTRICAL SCHEDULES	●	●	●	
E8-03	LIGHT FIXTURE SCHEDULE	●	●	●	
E9-01	ELECTRICAL DETAILS	●	●	●	
E9-02	ELECTRICAL DETAILS	●	●	●	
PLUMBING					
P0-01	PLUMBING SYMBOLS, LEGENDS AND GENERAL NOTES	●	●	●	
P0-02	PLUMBING SPECIFICATIONS	●	●	●	
P1-01	PLUMBING SITE PLAN	●	●	●	●
P1-02A	PLUMBING DEMO FLOOR PLAN - BLDG A	●	●	●	
P1-02B	PLUMBING DEMO FLOOR PLAN - BLDG B	●	●	●	
P2-00AC	PLUMBING UNDERFLOOR PLAN - BLDG A&C	●	●	●	●
P2-00B	PLUMBING UNDERFLOOR PLAN - BLDG B	●	●	●	
P2-01AC	PLUMBING FLOOR PLAN - BLDG A&C	●	●	●	●
P2-01B	PLUMBING FLOOR PL

FIELD MEASURED CURVE TABLE					
CURVE #	DELTA	RADIUS	CHORD BEARING	CHORD DISTANCE	ARC LENGTH
C1	6°59'31"	480.00	S04°09'36"E	58.54	58.58
C2	3°00'10"	100.00	S06°09'18"E	5.24	5.24
C3	41°41'50"	100.00	S16°11'41"W	71.18	72.78
C4	144°45'34"	60.00	S35°20'15"E	114.37	151.59
C5	7°37'28"	700.00	S21°31'51"E	93.08	93.15
C6	0°17'26"	1830.00	S25°07'08"E	9.28	9.28



KEYNOTES

1. EXISTING ACCESSIBLE RAMP TO REMAIN. (1)
2. 1,165.3 SF OF EXISTING GRAVEL TO BE REMOVED AND DISPOSED.
3. EXISTING STEEL CABLE WITH WOODEN POSTS TO REMAIN (1)
4. EXISTING GATE AND POSTS TO REMAIN
5. EXISTING GATE AND FENCE TO REMAIN.
6. EXISTING KEYPAD TO REMAIN.
7. EXISTING PARKING SIGN TO REMAIN.
8. EXISTING SECURITY CAMERA TO REMAIN.
9. EXISTING ELECTRICAL BOX TO REMAIN.
10. EXISTING WOODEN BOLLARDS TO REMAIN.
11. EXISTING GATE MOTOR TO REMAIN.
12. EXISTING SIGN TO REMAIN.

0 10 20 40
SCALE IN FEET

LEGEND

- EXISTING GRAVEL TO BE REMOVED AND DISPOSED. SEE KEYNOTE 2
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WATER VALVE
- ICV — EXISTING IRRIGATION CONTROL VALVE
- STM — EXISTING STORM LINE
- UGT — EXISTING UNDERGROUND TELECOM
- UGP — EXISTING UNDERGROUND POWER LINE
- GAS — EXISTING GAS LINE
- EXISTING LIGHT POLE
- GROUND LIGHT
- ELECTRIC BOX
- GAS METER
- SAN — EXISTING SANITARY SEWER LINE
- EXISTING SANITARY MANHOLE
- PROPERTY LINE
- PROPOSED FENCE DEMO LINE
- EXISTING STORM CURB INLET
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM GRATE INLET
- EXISTING DITCH CENTER LINE
- EXISTING TOP OF BANK
- EXISTING TOE OF BANK
- EXISTING EASEMENT LINE
- EXISTING TREE LINE

NOTES:

1. SEE SHEET G0.01–G0.02 FOR APPLICABLE NOTES.
2. SEE SHEET C8.00–C8.05 FOR ALL APPLICABLE STANDARD DETAILS.
3. DEMOLITION ASSOCIATED WITH TEMPORARY TRAILERS SHOWN ON THIS SHEET TO BE COMPLETED BY OWNER. NOT IN CONTRACT.

FLOODPLAIN STATEMENT

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) PANEL NO. 4804830510G WITH AN EFFECTIVE DATE OF AUGUST 18, 2014, THE PROPERTY IS LOCATED PARTIALLY IN ZONE "X" SHADED AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD AND PARTIALLY IN ZONE "AE" AREAS WITH A 1% ANNUAL CHANCE OF FLOODING, BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED.

BENCHMARK

ELEVATIONS REFERENCED HEREON WERE REFERENCED FROM NATIONAL GEODETIC SERVICE (NGS) MONUMENT AJ6405 (ELEV. 212.40) UTILIZING GEOID 18, NAVD88.

WARNING! ACTIVE ELECTRICAL LINES WITHIN PROJECT AREA. CONTRACTOR TO USE EXTREME CAUTION DURING CONSTRUCTION, ESPECIALLY DURING EXCAVATION. CONTRACTOR TO COORDINATE WITH ENTERGY (1–800–ENTERGY) PRIOR TO THE START OF CONSTRUCTION FOR DISCONNECT SERVICE AND EXISTING LINE LOCATE.

PARD
8203 MILLENNIUM FOREST DRIVE
SPRING, TX 77381

THE WOODLANDS TOWNSHIP
2801 TECHNOLOGY FOREST BLVD.
THE WOODLANDS, TX 77381

halff
14800 ST. MARY'S LN.
SUITE 150
HOUSTON, TX 77079
TEL: (713) 588-2450
TBPELS FIRM NO. F-312

REVISION NO.	DATE	DESCRIPTION
1	12/03/25	ADDENDUM #1

12/02/2025

STATE OF TEXAS
TYLER P. EATON
143886
LICENSED PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY:

TYLER EATON — 143886
NAME — P.E. LICENSE NO.
12/2/2025
DATE

THE RECORD COPY OF THIS DRAWING IS ON FILE AT THE OFFICES OF:

HALFF ASSOCIATES, INC.

TBPELS #F-312 — TX
FIRM OR BUSINESS NO. — STATE

PROJECT NO.:	52417.009
ISSUED:	12/2/2025
DRAWN BY:	PN
CHECKED BY:	TE
SCALE:	AS NOTED

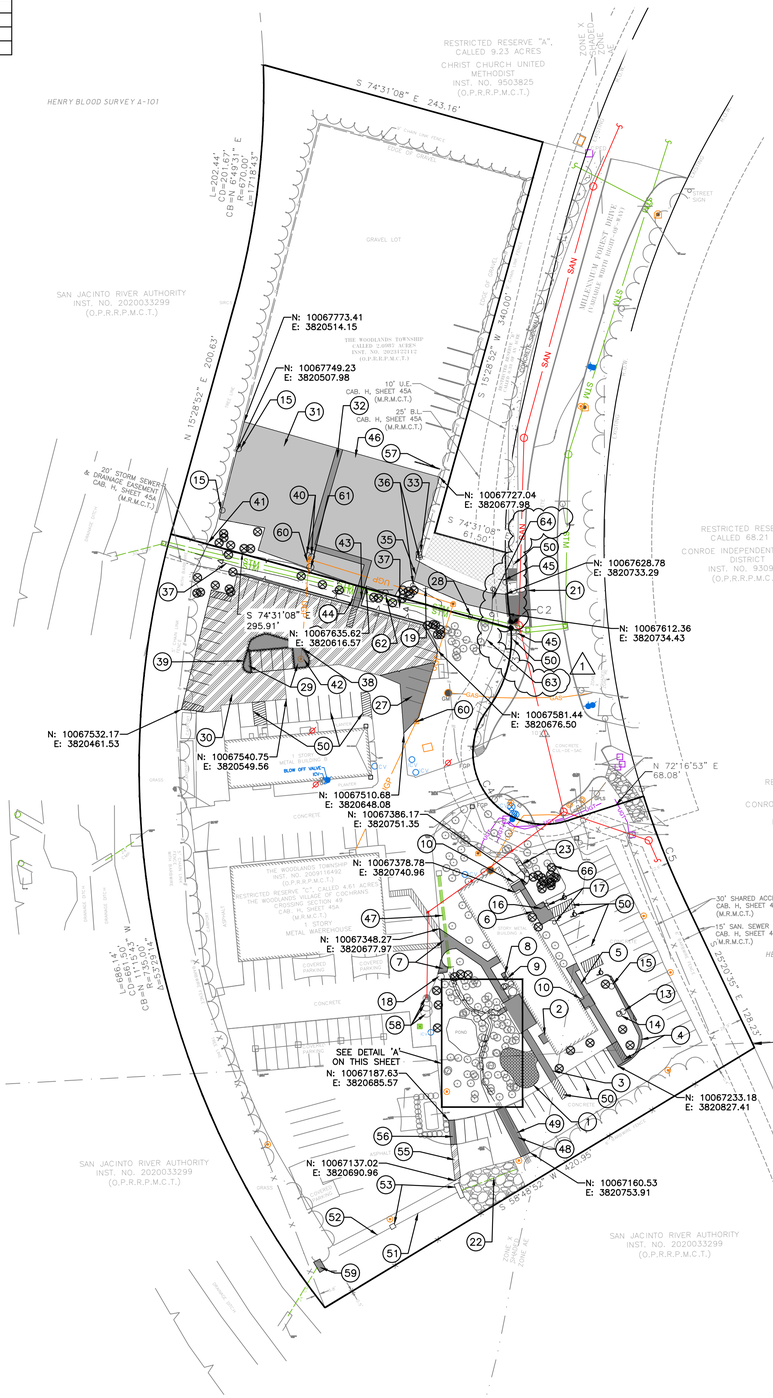
SHEET TITLE:

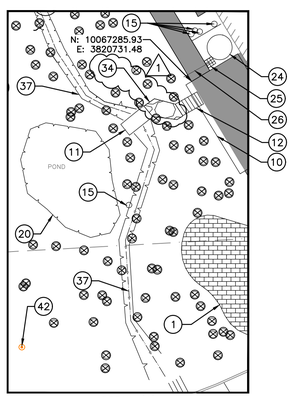
PHASE I
DEMOLITION PLAN

C3.00

FILE NAME: A:\52000s\52417\009\LD\CADD\Sheets\C-PLAN-DEMO-PH1-52417-009.dwg DATE: December 2, 2025, TIME: 4:39 PM, USER: ah4087

FIELD MEASURED CURVE TABLE					
CURVE #	DELTA	RADIUS	CHORD BEARING	CHORD DISTANCE	ARC LENGTH
C1	6°59'31"	480.00	S04°09'36"E	58.54	58.58
C2	3°00'10"	100.00	S06°09'18"E	5.24	5.24
C3	41°41'50"	100.00	S16°11'41"W	71.18	72.78
C4	144°45'34"	60.00	S35°20'15"E	114.37	151.59
C5	7°37'28"	700.00	S21°31'51"E	93.08	93.15
C6	0°17'26"	1830.00	S25°07'08"E	9.28	9.28





DETAIL 'A'
SCALE: 1" = 20'

KEYNOTES

1. 775.4 SF OF EXISTING BRICK PAVER TO BE REMOVED AND DISPOSED.
2. 37.3 SF OF EXISTING CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED. REFERENCE MEP PLANS FOR DEMO OF EXISTING CONDENSING UNITS.
3. 752.4 SF OF EXISTING CONCRETE SIDEWALK TO BE REMOVED AND DISPOSED.
4. 337.9 SF OF EXISTING CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED.
5. 433.4 SF OF EXISTING CONCRETE SIDEWALK TO BE REMOVED AND DISPOSED.
6. 344.1 SF OF EXISTING CONCRETE SIDEWALK TO BE REMOVED AND DISPOSED.
7. 672.5 SF OF EXISTING CONCRETE SIDEWALK TO BE REMOVED AND DISPOSED.
8. 10.5 SF OF EXISTING CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED. REFERENCE MEP PLANS FOR DEMO OF EXISTING CONDENSING UNITS.
9. 9.1 SF OF EXISTING CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED. REFERENCE MEP PLANS FOR DEMO OF EXISTING CONDENSING UNITS.
10. EXISTING AWNING TO BE REMOVED AND DISPOSED.
11. EXISTING WOODEN WALKING BRIDGE TO BE REMOVED AND DISPOSED.
12. EXISTING WOODEND STAIRS TO BE REMOVED AND DISPOSED.
13. EXISTING STONE PLAQUE TO BE REMOVED AND REPLACED. SEE SHEET C7.02 FOR GENERAL LOCATION. CONTRACTOR TO COORDINATE WITH OWNER FOR EXACT REPLACEMENT LOCATION.
14. EXISTING STEEL SCULPTURE TO BE REMOVED AND REPLACED. SEE SHEET C7.02 FOR GENERAL LOCATION. CONTRACTOR TO COORDINATE WITH OWNER FOR EXACT REPLACEMENT LOCATION.
15. EXISTING IRRIGATION CONTROL VALVE TO BE REMOVED AND DISPOSED.
16. EXISTING BIKE RACK TO BE REMOVED AND REPLACED.
17. EXISTING SIGN TO BE REMOVED AND RELOCATED. SEE SHEET C7.02 FOR PROPOSED LOCATION.
18. EXISTING TRASH CAN TO BE REMOVED AND PROVIDED TO THE WOODLANDS TOWNSHIP.
19. EXISTING KEYPAD TO BE REMOVED AND RELOCATED. CONTRACTOR TO COORDINATE WITH THE WOODLANDS TOWNSHIP ON PROPOSED LOCATION.
20. EXISTING POND TO BE DEWATERED AND DE-MUCKED PRIOR TO BACKFILLING.
21. 668.7 SF EXISTING CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED. (1)
22. EXISTING 15" CPP PIPE TO REMAIN.
23. 87.4 SF OF EXISTING DECOMPOSED GRANITE SIDEWALK TO BE REMOVED AND REPLACED.
24. EXISTING WATER TANK AND ASSOCIATED COLLECTION SYSTEM TO BE REMOVED AND PROVIDED TO THE WOODLANDS TOWNSHIP.
25. EXISTING 9" GRATE INLET TO BE REMOVED AND DISPOSED.
26. 8.4 LF OF EXISTING 3" PVC PIPE TO BE REMOVED AND DISPOSED.
27. 1095.0 SF OF EXISTING CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED.
28. EXISTING GATE LATCH TO BE REMOVED AND DISPOSED.
29. 696.1 SF OF EXISTING CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED.
30. 12,454.6 SF OF EXISTING ASPHALT PAVEMENT TO BE REMOVED AND DISPOSED.
31. 8382.6 SF OF EXISTING GRAVEL TO BE REMOVED AND DISPOSED.
32. 864 SF OF EXISTING CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED.
33. EXISTING GATE MOTOR TO BE REMOVED AND REPLACED. SEE SHEET C7.01 FOR NEW LOCATION OF GATE.

KEYNOTES

34. 40.2 SF OF EXISTING DECOMPOSED GRANITE SIDEWALK TO BE REMOVED AND DISPOSED. (1)
35. 72.8 LF OF EXISTING 10' CHAIN LINK FENCE AND GATE TO BE REMOVED AND REPLACED. REFERENCE SHEET C7.01 FOR NEW FENCE AND GATE ALIGNMENT.
36. EXISTING FENCE GATE POST TO BE REMOVED AND DISPOSED.
37. EXISTING SWALE TO BE DE-MUCKED PRIOR TO BACKFILLING.
38. 139.9 LF OF EXISTING CONCRETE CURB TO BE REMOVED AND DISPOSED.
39. 44.2 LF OF EXISTING CONCRETE CURB TO BE REMOVED AND DISPOSED.
40. EXISTING WOODEN BOLLARDS TO BE REMOVED AND DISPOSED.
41. 130.5 LF OF EXISTING 10' CHAIN LINK FENCE TO BE REMOVED AND REPLACED.
42. EXISTING LIGHT POLE TO BE REMOVED AND RELOCATED. EXISTING LIGHT POLE FOUNDATION TO BE REMOVED AND DISPOSED. SEE SHEET C7.01 FOR NEW LIGHT POLE LOCATIONS.
43. 10.0 LF OF EXISTING 18" CPP PIPE TO BE REMOVED AND DISPOSED.
44. 9.9 LF F EXISTING 18" CPP PIPE TO BE REMOVED AND DISPOSED.
45. EXISTING PEDESTRIAN STOP SIGN TO BE REMOVED AND REPLACED. SEE SHEET C7.01 FOR NEW LOCATION.
46. 9153.9 SF OF EXISTING GRAVEL TO BE REMOVED AND DISPOSED.
47. EXISTING STORM TO REMAIN.
48. 4 – 57.1 LF OF EXISTING 12" CPP PIPE TO BE REMOVED AND DISPOSED (229 LF TOTAL).
49. 357.1 SF EXISTING CONCRETE TO BE REMOVED AND REPLACED.
50. PAVEMENT MARKINGS TO BE REMOVED (TYP).
51. 50.0 LF OF EXISTING 15" CPP PIPE TO BE REMOVED AND DISPOSED.
52. 48.9 LF OF EXISTING 15" CPP PIPE TO BE REMOVED AND DISPOSED.
53. EXISTING 4' WOODEN FENCE AND PLASTIC HEADWALL TO BE REMOVED AND DISPOSED.
54. NOT USED
55. 146.1 SF EXISTING ASPHALT TO BE REMOVED AND REPLACED AT FULL DEPTH.
56. 102.8 SF EXISTING CONCRETE TO BE REMOVED AND REPLACED AT FULL DEPTH.
57. EXISTING CONCRETE TRAFFIC BARRIER TO BE REMOVED AND RELOCATED. CONTRACTOR TO COORDINATE WITH THE WOODLANDS TOWNSHIP FOR RELOCATION.
58. EXISTING SAMPLE WELL / GREASE PIT TO REMAIN.
59. 57.6 SF OF EXISTING CONCRETE TO BE REMOVED AND DISPOSED.
60. EXISTING ELECTRICAL BOX TO BE REMOVED AND RELOCATED. SEE MEP PLANS FOR NEW LOCATION.
61. EXISTING SECURITY CAMERA TO BE REMOVED AND REINSTALLED BY THE WOODLANDS TOWNSHIP.
62. EXISTING PARKING SIGN TO BE REMOVED AND PROVIDED TO THE WOODLANDS TOWNSHIP. (1)
63. 28 LF OF EXISTING STEEL CABLE WITH WOODEN POSTS TO BE REMOVED AND DISPOSED.
64. EXISTING GATE AND POSTS TO BE REMOVED AND DISPOSED.
65. NOT USED
66. EXISTING KEYPAD TO BE REMOVED AND DISPOSED.

WARNING! ACTIVE ELECTRICAL LINES WITHIN PROJECT AREA. CONTRACTOR TO USE EXTREME CAUTION DURING CONSTRUCTION, ESPECIALLY DURING EXCAVATION. CONTRACTOR TO COORDINATE WITH ENTERGY (1-800-ENTERGY) PRIOR TO THE START OF CONSTRUCTION FOR DISCONNECT SERVICE AND EXISTING LINE LOCATE.

0 30 60 120
SCALE IN FEET

LEGEND

- EXISTING CONCRETE PAVING AND CURB TO BE REMOVED AND DISPOSED
- EXISTING ASPHALT PAVING AND BASE TO BE REMOVED AND DISPOSED AT FULL DEPTH
- EXISTING GRAVEL TO BE REMOVED AND DISPOSED
- CLEARING AND GRUBBING OF EXISTING FORESTED AREA
- EXISTING TREE TO BE REMOVED AND DISPOSED
- XXXXXXXXXX EXISTING CONCRETE CURB TO BE REMOVED AND DISPOSED
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING WATER VALVE
- ICV EXISTING IRRIGATION CONTROL VALVE
- STM EXISTING STORM LINE
- UGT EXISTING UNDERGROUND TELECOM
- UGP EXISTING UNDERGROUND POWER LINE
- GAS EXISTING GAS LINE
- EXISTING LIGHT POLE
- GROUND LIGHT
- ELECTRIC BOX
- GAS METER
- SAN EXISTING SANITARY SEWER LINE
- EXISTING SANITARY MANHOLE
- EXISTING WATER LINE
- PROPERTY LINE
- PROPOSED FENCE DEMO LINE
- EXISTING STORM CURB INLET
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM GRATE INLET
- EXISTING DITCH CENTER LINE
- EXISTING TOP OF BANK
- EXISTING TOE OF BANK
- EXISTING EASEMENT LINE
- EXISTING TREE LINE

NOTES:

1. SEE SHEET G0.01–G0.02 FOR APPLICABLE NOTES.
2. SEE SHEET C8.00–C8.05 FOR ALL APPLICABLE STANDARD DETAILS.

FLOODPLAIN STATEMENT

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) PANEL NO. 48048C0510G WITH AN EFFECTIVE DATE OF AUGUST 18, 2014. THE PROPERTY IS LOCATED PARTIALLY IN ZONE "X" SHADED AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD AND PARTIALLY IN ZONE "AE" AREAS WITH A 1% ANNUAL CHANCE OF FLOODING, BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED.

BENCHMARK

ELEVATIONS REFERENCED HEREON WERE REFERENCED FROM NATIONAL GEODETIC SERVICE (NGS) MONUMENT AJ6405 (ELEV. 212.40) UTILIZING GEOID 18, NAVD88.

PARD
8203 MILLENNIUM FOREST DRIVE
SPRING, TX 77381

THE WOODLANDS TOWNSHIP
2801 TECHNOLOGY FOREST BLVD.
THE WOODLANDS, TX 77381

halff
14800 ST. MARY'S LN.
SUITE 150
HOUSTON, TX 77079
TEL: (713) 588-2450
TBPELS FIRM NO. F-312

REVISION			
NO	DATE	DESCRIPTION	
1	12/03/25	ADDENDUM #1	

12/03/2025

STATE OF TEXAS
TYLER P. EATON
143886
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY:

TYLER EATON 143886
NAME P.E. LICENSE NO.

12/3/2025
DATE

THE RECORD COPY OF THIS DRAWING IS ON FILE AT THE OFFICES OF:

HALFF ASSOCIATES, INC.

TBPELS #F-312 TX
FIRM OR BUSINESS NO. STATE

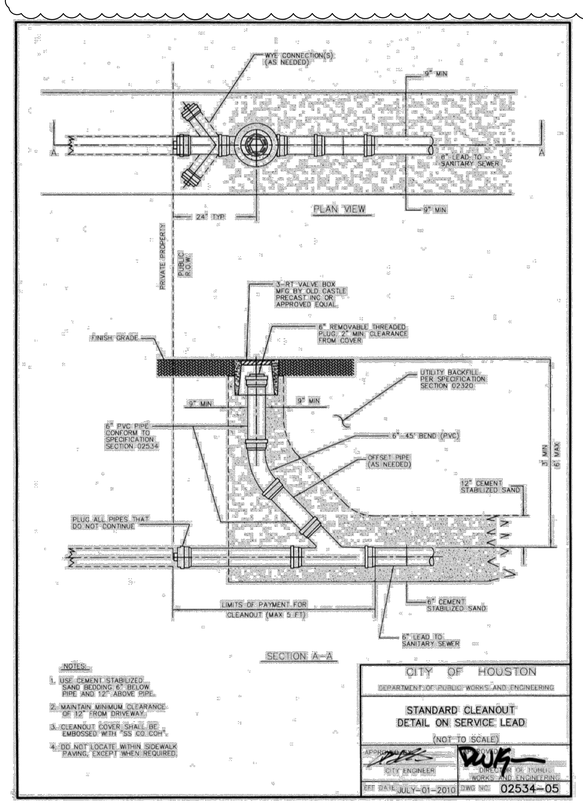
PROJECT NO.:	52417.009
ISSUED:	12/3/2025
DRAWN BY:	PN
CHECKED BY:	TE
SCALE:	AS NOTED

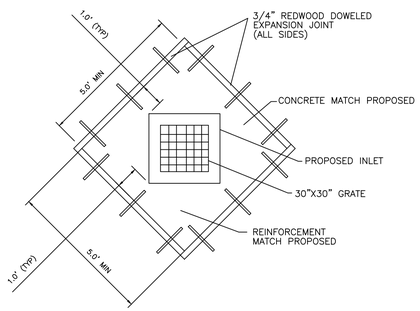
SHEET TITLE:

PHASE 2
DEMOLITION PLAN

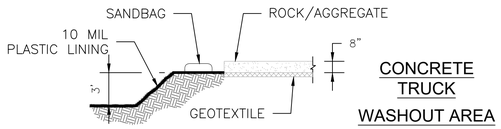
C4.00

FILE NAME: A:\52000s\52417\0090\LD\CADD\Sheets\C-PLAN-DEMO-52417-009.dwg DATE: December 3, 2025, TIME: 2:02 PM, USER: ah4231





BLOCKOUT AT INLET
SCALE: NONE

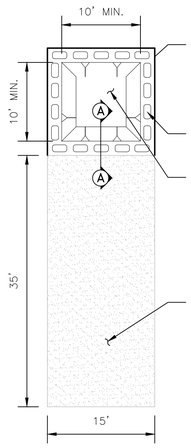


SECTION A-A

CONCRETE TRUCK WASHOUT AREA

CTW

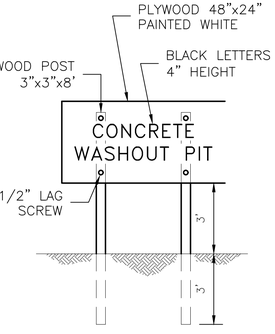
SYMBOL



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)

PARD
8203 MILLENNIUM FOREST DRIVE
SPRING, TX 77381

THE WOODLANDS TOWNSHIP
2801 TECHNOLOGY FOREST BLVD.
THE WOODLANDS, TX 77381

halff
14800 ST. MARY'S LN.
SUITE 150
HOUSTON, TX 77079
TEL: (713) 588-2450
TBPELS FIRM NO: F-312

REVISION NO.	DATE	DESCRIPTION
1	12/03/25	ADDENDUM #1

12/02/2025

STATE OF TEXAS
TYLER P. EATON
143886
LICENSED
PROFESSIONAL ENGINEER

Tyler P. Eaton

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY:

TYLER EATON — 143886
NAME — P.E. LICENSE NO.

12/2/2025
DATE

THE RECORD COPY OF THIS DRAWING IS ON FILE AT THE OFFICES OF:

HALFF ASSOCIATES, INC.

TBPELS #F-312 — TX
FIRM OR BUSINESS NO. — STATE

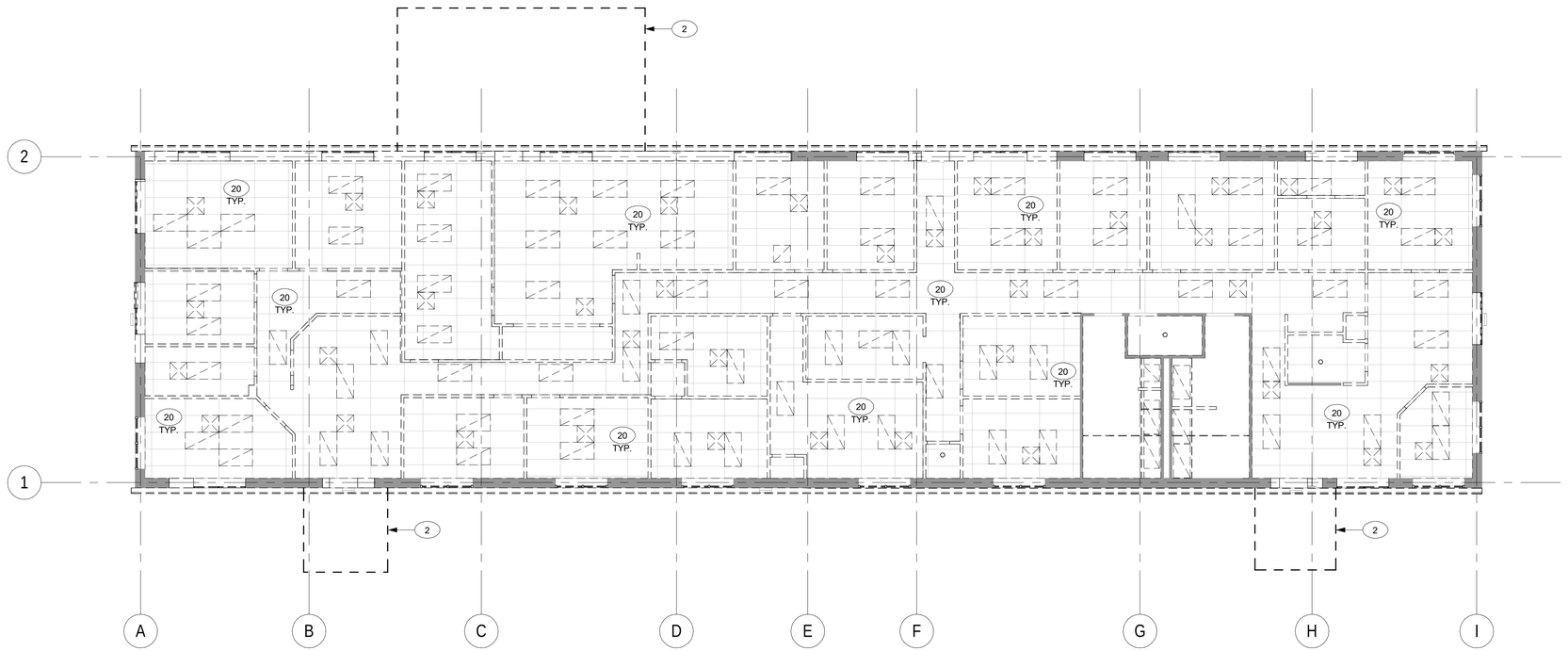
PROJECT NO.:	52417.009
ISSUED:	12/02/2025
DRAWN BY:	PN
CHECKED BY:	TE
SCALE:	N/A

SHEET TITLE:

DETAILS

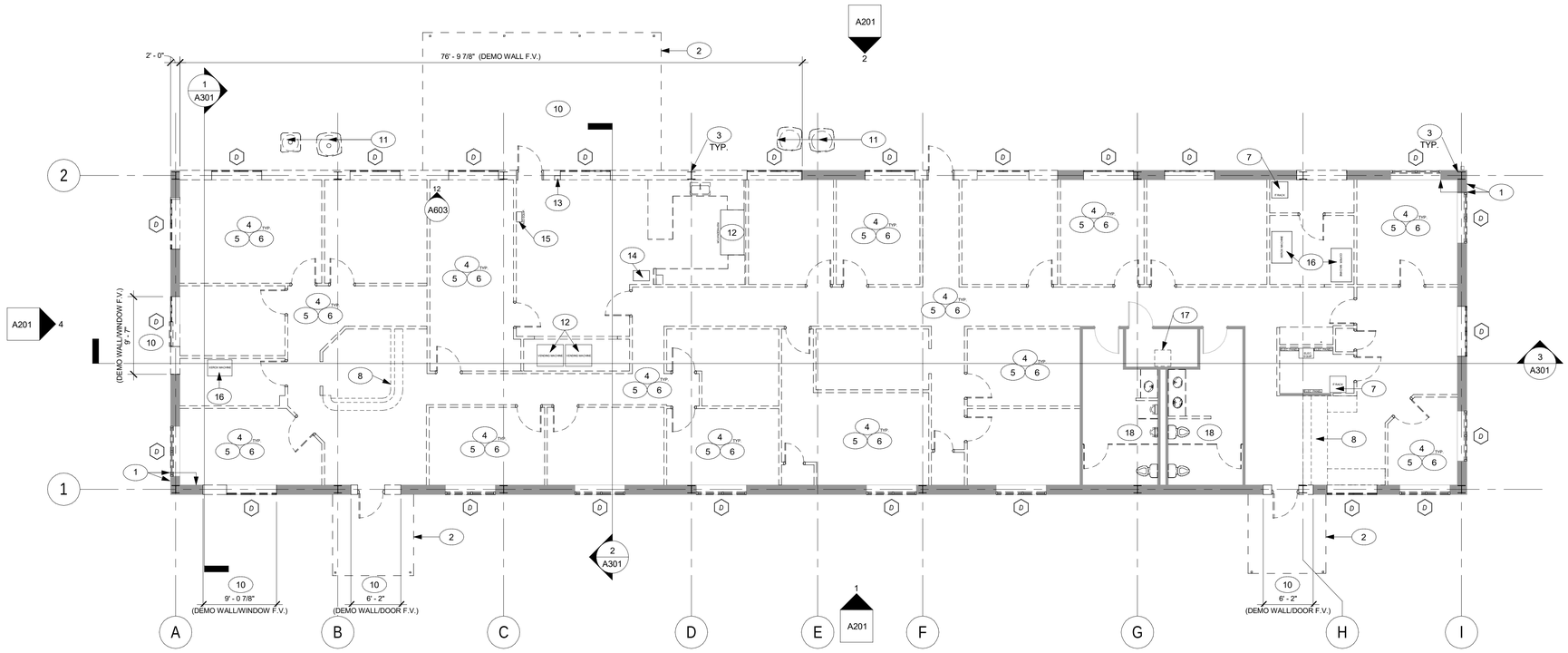
C8.01

FILE NAME: A:\52000s\52417\009\LD\CADD\Sheets\C-PLAN-DTLS-52417-009.dwg DATE: December 2, 2025, TIME: 4:10 PM, USER: ah4087



"BLDG A" DEMO RCP 2

1/8" = 1'-0"



"BLDG A" DEMO FLOOR PLAN 1

1/8" = 1'-0"

GENERAL NOTES

A. DEMOLITION CONTRACTOR SHALL NOT DO ANY CUTTING, AND REMOVAL OF ITEMS, WHETHER SPECIFICALLY INDICATED OR NOT, WHICH WOULD OBVIOUSLY INTERFERE WITH OR BE INCONGRUOUS TO THE PROPOSED CONSTRUCTION OR NEW FINISHES OR NEGATIVELY IMPACT OTHER SPACES OUTSIDE THE PROPOSED LIMITS OF CONSTRUCTION.

B. DEMOLITION CONTRACTOR SHALL PROVIDE AND PLACE ALL SHORING OR STRUCTURAL UNDERPINNING REQUIRED TO SUPPORT EXISTING CONSTRUCTION DURING ALL PHASES OF CONSTRUCTION.

C. DEMOLITION CONTRACTOR SHALL PROVIDE ALL MATERIALS NECESSARY TO SUITABLY SCREEN DEMOLITION WORK FROM PUBLIC VIEW AND PROTECT THE PUBLIC'S SAFETY, AS WELL AS COMPLY WITH ALL LOCAL CODES AND ORDINANCES FOR REMOVAL OF MATERIAL.

D. ALL ITEMS AND FINISHES WHICH ARE TO REMAIN SHALL BE PROTECTED AGAINST DAMAGE DURING DEMOLITION. ANY DAMAGE WHICH OCCURS DURING DEMOLITION SHALL BE CORRECTED BY THE DEMOLITION CONTRACTOR AT THE CONTRACTOR'S EXPENSE, UNDER THE SUPERVISION OF THE GENERAL CONTRACTOR.

E. ALL DEMOLISHED MATERIALS SHALL BE THE PROPERTY OF THE CONTRACTOR, UNLESS SPECIFICALLY NOTED OTHERWISE.

F. DEMOLITION CONTRACTOR SHALL PROVIDE ANY BARRICADES, SUPPORTS,RAILINGS, ETC. AS REQUIRED BY O.S.H.A., AS WELL AS TO PROVIDE SAFE WORKING CONDITIONS.

G. ANY ASBESTOS ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED OR ENCAPSULATED BY A LICENSED ASBESTOS CONTRACTOR IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL CODES AND ORDINANCES.

H. CONTRACTOR SHOULD USE EXTREME CARE AND CAUTION WHEN REMOVING REQUIRED STRUCTURE OR NON-STRUCTURAL ELEMENTS TO INSURE THAT STRUCTURAL MEMBERS ARE NOT DISTURBED DAMAGED OR ALTERED.

I. CONTRACTOR SHALL CONFORM WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES CONCERNING SITE SAFETY, DUST ABATEMENT AND CONTROL, AND DISPOSAL. REUSE EXISTING DOORS IF THEY CAN BE SALVAGED AND RESTORED TO LIKE NEW CONDITION, REPLACED IF NEEDED, VERIFY WITH OWNER. REPLACE EXISTING DOOR HARDWARE (LATCHSETS) WITH ADA COMPLIANT LEVER-HANDLED LATCHSETS REFER TO DOOR AND HARDWARE SCHEDULE FOR REFERENCE. VERIFY WITH OWNER FOR FINAL HARDWARE SELECTION.

J. INCORPORATE AND INTERPRET ALL INFORMATION AS A WHOLE.

K. PROTECT WALLS TO REMAIN DURING DEMOLITION AND CONSTRUCTION. REPAIR ANY DAMAGE TO "AS NEW" CONDITION.

DEMO KEYED NOTES (#)

1. EXISTING EXTERIOR WALL/WINDOW TO REMAIN. PROTECT WALL STRUCTURE FROM DEMOLITION AND CONSTRUCTION.
2. DEMOLISH EXISTING CANOPY. PATCH, REPAIR, AND/OR REPLACE EXTERIOR FINISH IF DAMAGE DURING DEMOLITION AND CONSTRUCTION.
3. EXISTING COLUMN TO REMAIN. PROTECT ALL EXISTING STRUCTURAL STEEL COLUMNS AS REQUIRED.
4. DEMOLISH EXISTING INTERIOR WALLS.
5. DEMOLISH EXISTING INTERIOR DOORS, DOOR FRAMES TO IT'S ENTIRETY.
6. DEMOLISH EXISTING FLOOR CARPET / FLOOR TILE AND/OR ANY FLOOR FINISH. PREP FLOOR TO RECEIVE NEW FLOOR FINISH.
7. EXISTING IT RACK AND EQUIPMENT TO BE REMOVED, STORED, AND REINSTALLED BY THE WOODLANDS TOWSHIP.
8. EXISTING MILLWORK TO BE DEMOLISHED/REMOVED.
9. EXISTING STOREFRONT OPENING TO BE REMOVED. PREP TO RECEIVE NEW CONFIGURATION.
10. DEMO EXISTING EXTERIOR FINISH ONLY. EXISTING PEMB COLUMN, AND SUPPORT MEMBERS TO REMAIN PROTECTED FROM DAMAGE. PREP AREA FOR NEW PROPOSED DESIGN.
11. EXISTING MECHANICAL SYSTEM TO BE RELOCATED. RE: MECH DWG'S.
12. EXISTING VENDING MACHINE REMOVAL AND REINSTALLATION TO BE COORDINATED BY THE WOODLANDS TOWNSHIP. NOT IN CONTRACTOR SCOPE.
    EXISTING REFRIGERATOR TO BE REMOVED AND STORED BY THE WOODLANDSTOWNSHIP. CONTRACTOR TO REINSTALL AT NEW LOCATION.
13. EXISTING FIRE EXTINGUISHER TO BE SALVAGED AND REUSED, STORE AND PROTECT FROM DAMAGE AS REQUIRED FOR REINSTALLATION TO NEW LOCATION.
14. EXISTING WATER/ICE MACHINE TO BE REMOVED AND STORED BY THE WOODLANDS TOWNSHIP. CONTRACTOR TO REINSTALL AT NEW LOCATION.
15. EXISTING AED EQUIPMENT TO BE REMOVED AND STORED BY THE WOODLANDS TOWNSHIP. CONTRACTOR TO REINSTALL AT NEW LOCATION.
16. EXISTING OFFICE EQUIPMENT TO BE REMOVED, STORED, AND REINSTALLED AT NEW LOCATION BY THE WOODLANDS TOWNSHIP.
17. DEMOLISH EXISTING MOP SINK.
18. DEMOLISH ALL RESTROOM FINISHES/FIXTURE/PARTITION AND PREP ALL AREA TO ACCEPT ALL NEW FINISHES, FIXTURES, AND ACCESSORIES.
19. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL EQUIPMENT TO BE DEMO AND/OR RELOCATED.
20. DEMOLISH EXISTING ACOUSTICAL CEILING TILE, LIGHT FIXTURES, MECHANICAL DIFFUSERS, ETC. CAP ANY EXISTING MEP TO BE ABANDONED ABOVE CEILING. RE: MEP DWG'S.

SYMBOL LEGEND PLAN

DEMO ITEMS

EXISTING WALLS TO REMAIN

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	03/28/25	60% REVIEW SET
	05/30/25	90% REVIEW SET
	10/22/25	100% PERMIT_BID
1	12/03/25	ADDENDUM #1

REGISTERED ARCHITECT JERRY TIPTS 19755 STATE OF TEXAS

12/03/2025

Heights Venture
ARCHITECTURE DESIGN

HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100

DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

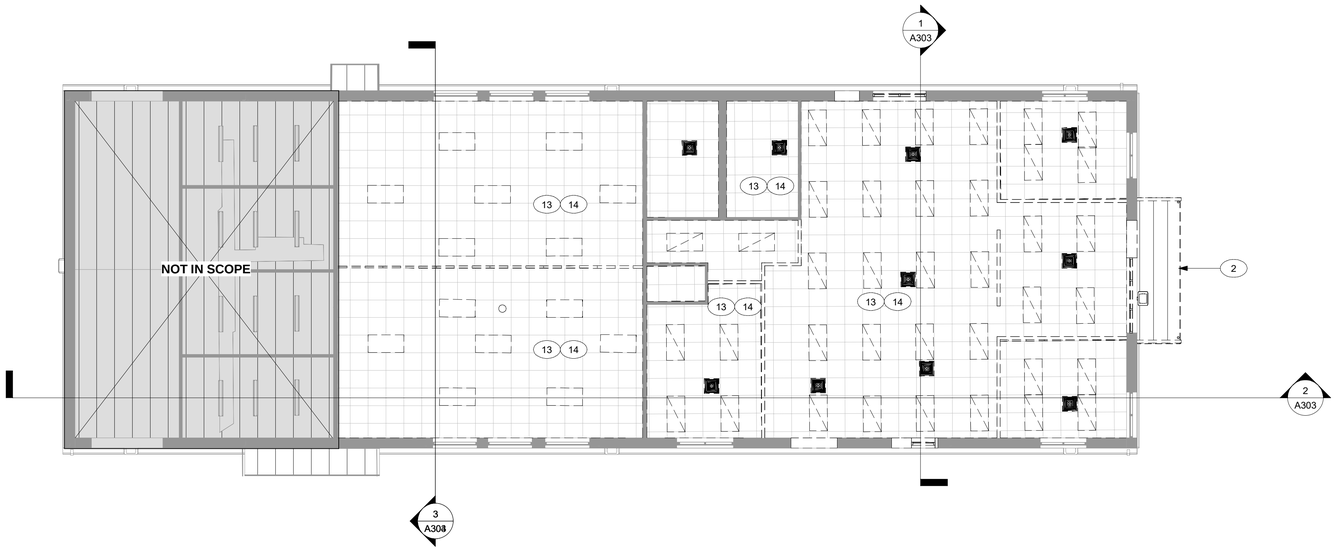
8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number: 24026
Sheet Size: 24 x 36
Date / Time Plotted: 12/2/2025 4:47:16 PM
Drawn By: RW/AV
Checked By: JT/RM
Project Phase: PERMIT ISSUE

"BLDG A" DEMO FLOOR PLAN & RCP

A101

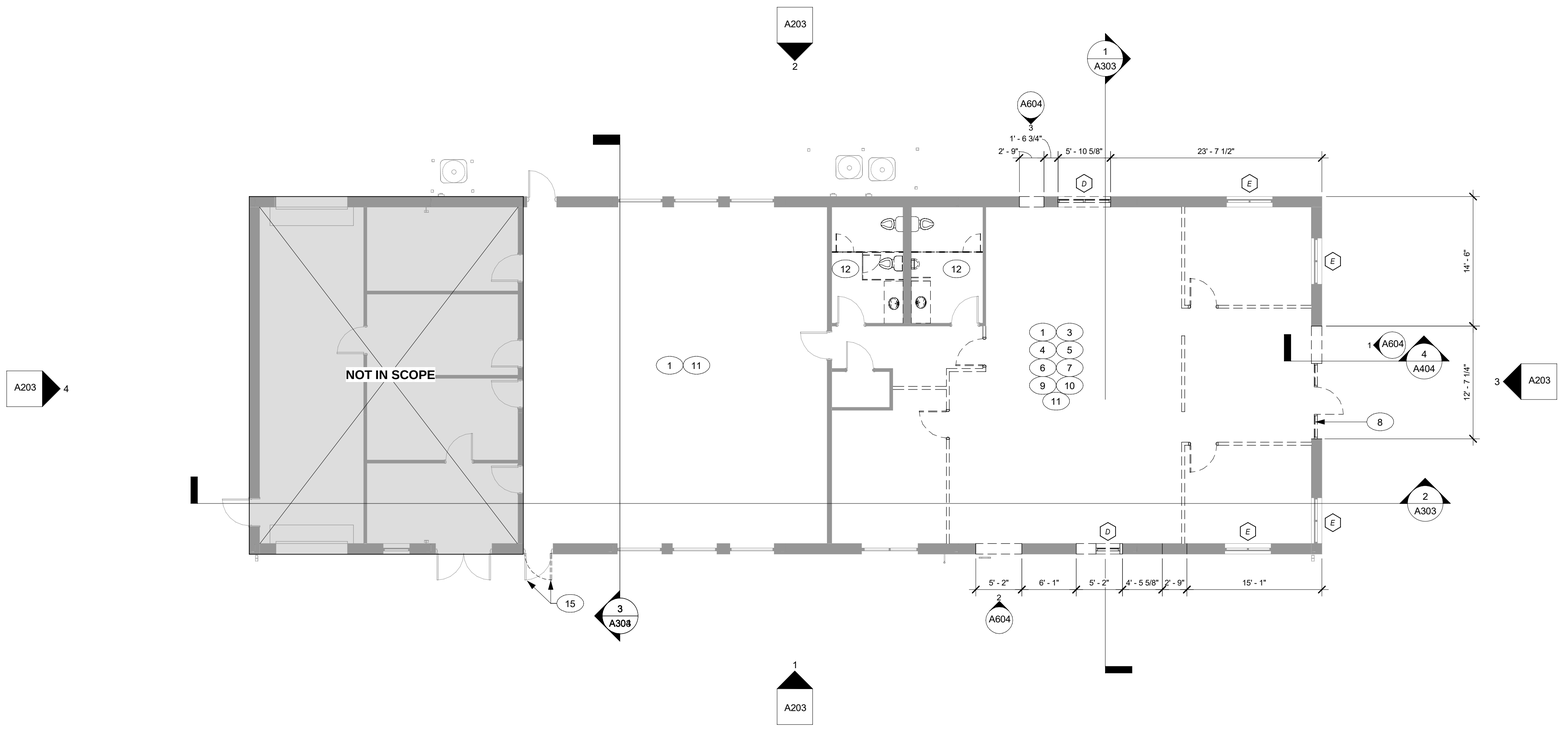
© COPYRIGHT 2025 HEIGHTS VENTURE



"BLDG B" DEMO RCP

1/8" = 1'-0"

2



"BLDG B" DEMO FLOOR PLAN

1/8" = 1'-0"

1

GENERAL NOTES

A. DEMOLITION CONTRACTOR SHALL NOT DO ANY CUTTING, AND REMOVAL OF ITEMS, WHETHER SPECIFICALLY INDICATED OR NOT, WHICH WOULD OBVIOUSLY INTERFERE WITH OR BE INCONGRUOUS TO THE PROPOSED CONSTRUCTION OR NEW FINISHES OR NEGATIVELY IMPACT OTHER SPACES OUTSIDE THE PROPOSED LIMITS OF CONSTRUCTION.

B. DEMOLITION CONTRACTOR SHALL PROVIDE AND PLACE ALL SHORING OR STRUCTURAL UNDERPINNING REQUIRED TO SUPPORT EXISTING CONSTRUCTION DURING ALL PHASES OF CONSTRUCTION.

C. DEMOLITION CONTRACTOR SHALL PROVIDE ALL MATERIALS NECESSARY TO SUITABLY SCREEN DEMOLITION WORK FROM PUBLIC VIEW AND PROTECT THE PUBLIC'S SAFETY, AS WELL AS COMPLY WITH ALL LOCAL CODES AND ORDINANCES FOR REMOVAL OF MATERIAL.

D. ALL ITEMS AND FINISHES WHICH ARE TO REMAIN SHALL BE PROTECTED AGAINST DAMAGE DURING DEMOLITION. ANY DAMAGE WHICH OCCURS DURING DEMOLITION SHALL BE CORRECTED BY THE DEMOLITION CONTRACTOR AT THE CONTRACTOR'S EXPENSE, UNDER THE SUPERVISION OF THE GENERAL CONTRACTOR.

E. ALL DEMOLISHED MATERIALS SHALL BE THE PROPERTY OF THE CONTRACTOR, UNLESS SPECIFICALLY NOTED OTHERWISE.

F. DEMOLITION CONTRACTOR SHALL PROVIDE ANY BARRICADES, SUPPORTS,RAILINGS, ETC. AS REQUIRED BY O.S.H.A., AS WELL AS TO PROVIDE SAFE WORKING CONDITIONS.

G. ANY ASBESTOS ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED OR ENCAPSULATED BY A LICENSED ASBESTOS CONTRACTOR IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL CODES AND ORDINANCES.

H. CONTRACTOR SHOULD USE EXTREME CARE AND CAUTION WHEN REMOVING REQUIRED STRUCTURE OR NON-STRUCTURAL ELEMENTS TO INSURE THAT STRUCTURAL MEMBERS ARE NOT DISTURBED DAMAGED OR ALTERED.

I. CONTRACTOR SHALL CONFORM WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES CONCERNING SITE SAFETY, DUST ABATEMENT AND CONTROL, AND DISPOSAL. REUSE EXISTING DOORS IF THEY CAN BE SALVAGED AND RESTORED TO LIKE NEW CONDITION, REPLACED IF NEEDED, VERIFY WITH OWNER. REPLACE EXISTING DOOR HARDWARE (LATCHSETS) WITH ADA COMPLIANT LEVER-HANDLED LATCHSETS REFER TO DOOR AND HARDWARE SCHEDULE FOR REFERENCE. VERIFY WITH OWNER FOR FINAL HARDWARE SELECTION.

J. INCORPORATE AND INTERPRET ALL INFORMATION AS A WHOLE.

K. PROTECT WALLS TO REMAIN DURING DEMOLITION AND CONSTRUCTION. REPAIR ANY DAMAGE TO "AS NEW" CONDITION.

DEMO KEYED NOTES (#)

1. EXISTING EXTERIOR WALL TO REMAIN. PROTECT WALL STRUCTURE FROM DEMOLITION AND CONSTRUCTION.
2. DEMOLISH EXISTING CANOPY. PATCH, REPAIR, AND/OR REPLACE EXTERIOR FINISH IF DAMAGE DURING DEMOLITION AND CONSTRUCTION.
3. EXISTING COLUMN TO REMAIN. PROTECT ALL EXISTING STRUCTURAL STEEL COLUMNS AS REQUIRED.
4. DEMOLISH EXISTING INTERIOR WALLS.
5. DEMOLISH EXISTING INTERIOR DOORS, DOOR FRAMES TO IT'S ENTIRETY.
6. DEMOLISH EXISTING FLOOR CARPET / FLOOR TILE AND/OR ANY FLOOR FINISH. PREP FLOOR TO RECEIVE NEW FLOOR FINISH.
7. EXISTING MILLWORK TO BE DEMOLISHED/REMOVED.
8. EXISTING STOREFRONT OPENING TO BE REMOVED. PREP TO RECEIVE NEW CONFIGURATION.
9. EXISTING FIRE EXTINGUISHER TO BE SALVAGED AND REUSED, STORE AND PROTECT FROM DAMAGE AS REQUIRED FOR REINSTALLATION TO NEW LOCATION.
10. EXISTING AED EQUIPMENT TO BE REMOVED AND STORED BY THE WOODLANDS TOWNSHIP. CONTRACTOR TO REINSTALL AT NEW LOCATION.
11. EXISTING OFFICE EQUIPMENT TO BE REMOVED, STORED AND REINSTALLED AT NEW LOCATION BY THE WOODLANDS TOWNSHIP.
12. DEMOLISH ALL RESTROOM FINISHES/FIXTURE/PARTITION AND PREP ALL AREA TO ACCEPT ALL NEW FINISHES, FIXTURES, AND ACCESSORIES.
13. REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL EQUIPMENT TO BE DEMO AND/OR RELOCATED.
14. DEMOLISH EXISTING ACOUSTICAL CEILING TILE, LIGHT FIXTURES, MECHANICAL DIFFUSERS, ETC. CAP ANY EXISTING MEP TO BE ABANDONED ABOVE CEILING. RE: MEP DWG'S
15. SWITCH THE EXISTING DOOR SWING FROM RIGHT TO LEFT AS SHOWED ON PLAN, REPOSITION HINGES, & PULL/LATCH/LOCK TO THE OTHER SIDE OF FRAME.

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	03/28/25	60% REVIEW SET
	05/30/25	90% REVIEW SET
	10/22/25	100% PERMIT_BID
1	12/03/25	ADDENDUM #1

REGISTERED ARCHITECT JERRY TIPPS 18786 STATE OF TEXAS

12/03/2025

Heights Venture ARCHITECTURE DESIGN

HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100

DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted: 12/2/2025 4:47:17 PM

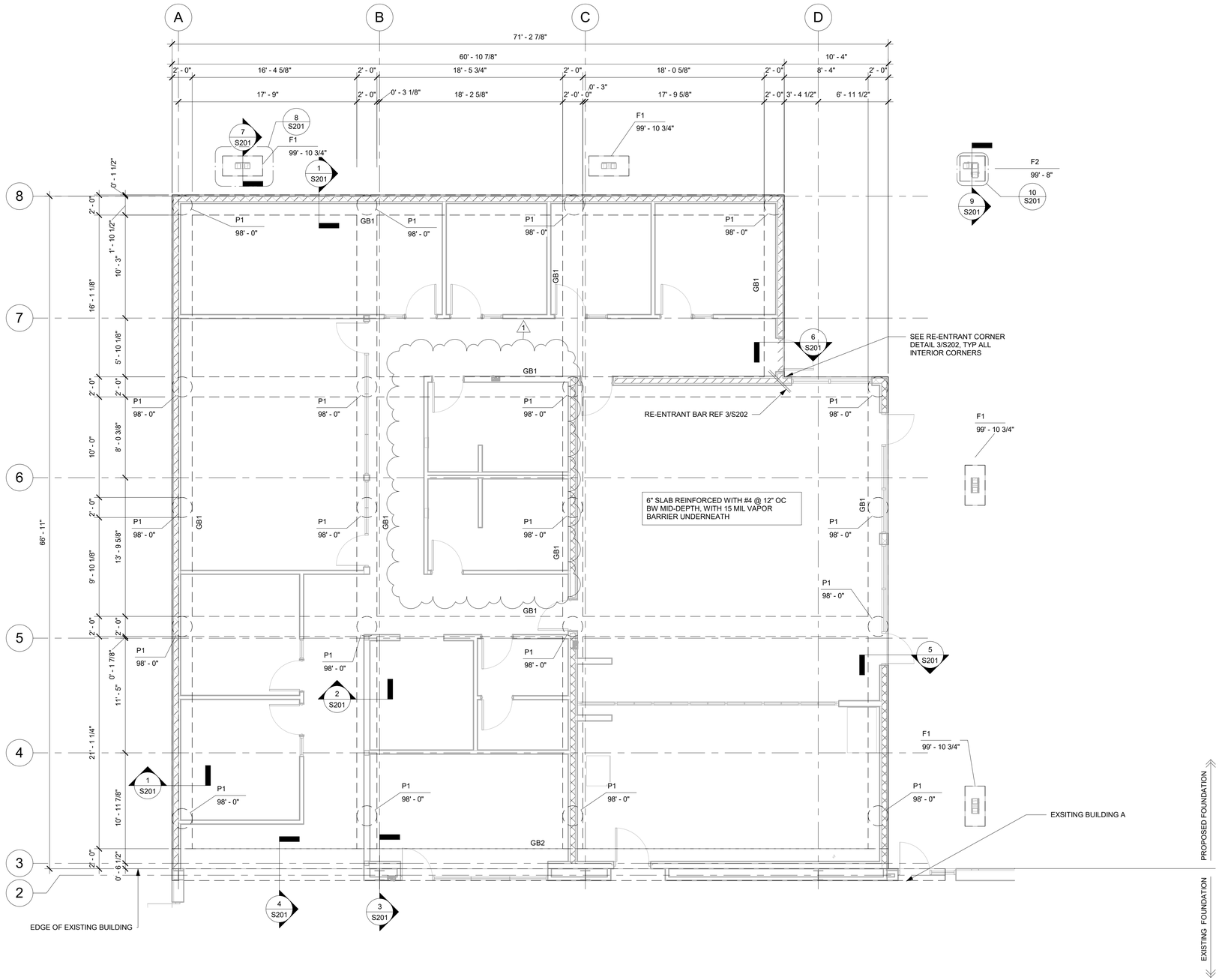
Drawn By:	Checked By:
RW/AV	JT/RM

Project Phase: PERMIT ISSUE

"BLDG B" DEMO FLOOR PLAN & RCP

A107

© COPYRIGHT 2025 HEIGHTS VENTURE



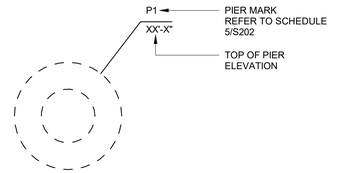
1 PARD BUILDING EXPANSION FOUNDATION PLAN

3/16" = 1'-0"

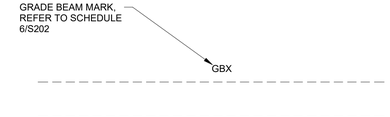
FOUNDATION PLAN NOTES

1. DATUM ELEVATION 100'-0" = ACTUAL 146.00' CONTRACTOR TO FIELD VERIFY.
2. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION AND DIMENSIONS OF SLAB DEPRESSIONS.
3. REFER TO GEOTECH REPORT FOR SUBGRADE PREPARATION BENEATH SLAB.
4. SLAB CONTROL JOINTS TO BE AT 20' MAX. SAW CUT OR TOOL 1" DEPTH. REFER TO 8/S202 FOR LAYOUT.
5. THE FOUNDATION SYSTEM IS PRELIMINARY AND SUBJECT TO REVISION WITH RECEIPT OF SEALED CONSTRUCTION DRAWINGS FROM THE BUILDING MANUFACTURER.

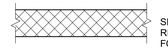
PIER LEGEND



GRADE BEAM LEGEND

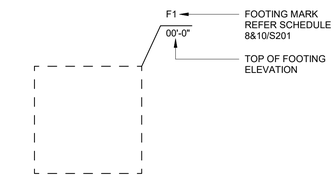


STRUCTURAL WALL LEGEND



SIPS BEARING WALL SYSTEM, DELEGATED DESIGN REFER TO SEALED CONSTRUCTION DOCUMENTS FOR WALL SYSTEM

FOOTING LEGEND



PARD CAMPUS EXPANSION
8203 MILLENIUM FOREST DRIVE
SPRING, TX 77381

THE WOODLANDS TOWNSHIP
2801 TECHNOLOGY FOREST BLVD. THE
WOODLANDS, TX 77381

halff
14800 ST. MARY'S LN.
SUITE 100
HOUSTON, TX 77079
281.423.0030
TBPELS FIRM NO. F-312

Revisions

No.	Date	Description
1	12/03/2025	Addendum 1

12/03/2025

IAN STEINER
148418
LICENSED
PROFESSIONAL
ENGINEER

Project No.:	52417.009
Issued:	12/3/2025
Drawn By:	IS
Checked By:	JPM
Scale:	As indicated

Sheet Title

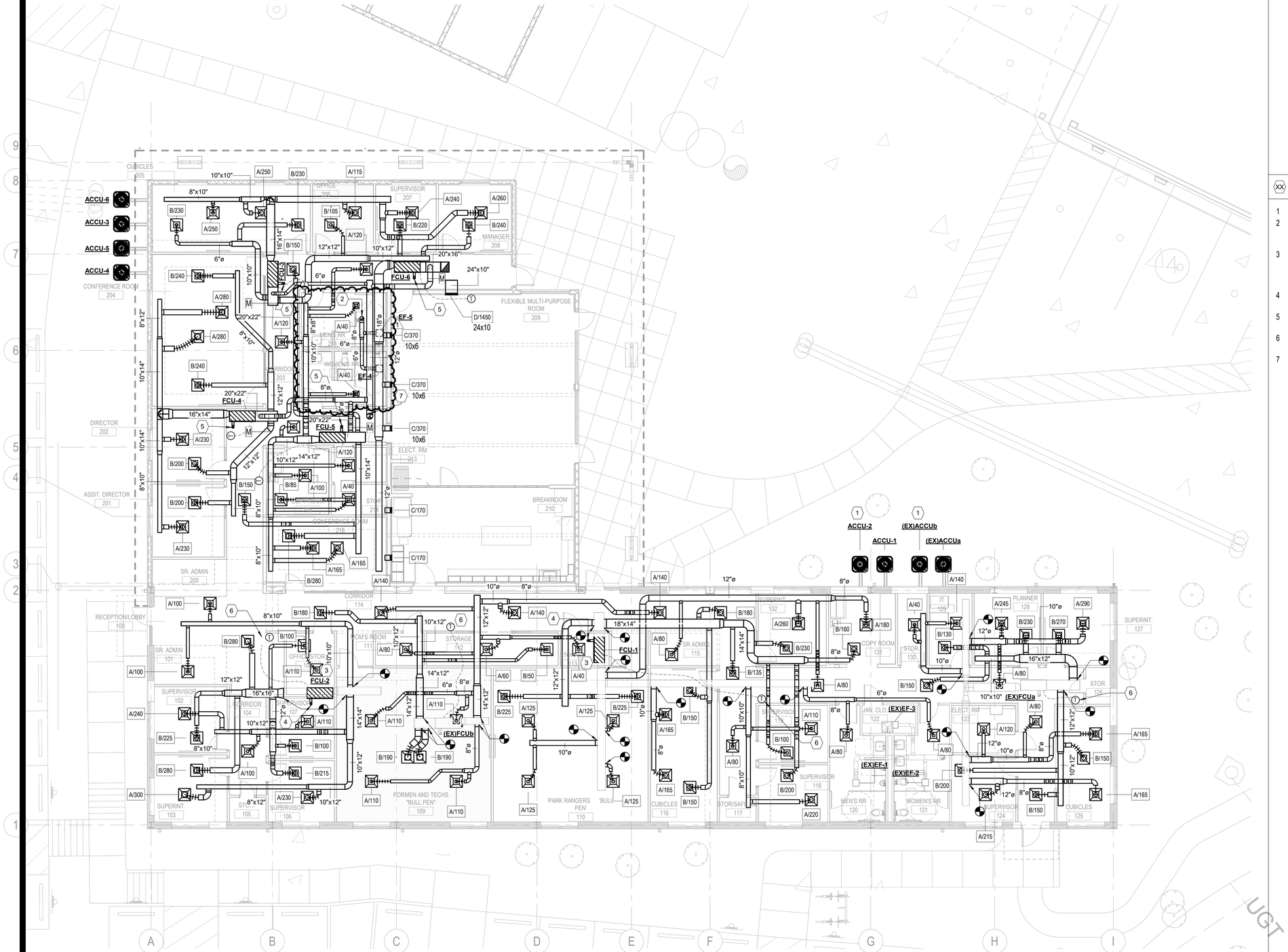
BUILDING EXPANSION FOUNDATION PLAN

S101

Sheet Number

12/2/2025 10:00:52 AM A:\52000s\52417\009\STRUCT\BIM\52417 PARDES Expansion.rvt

CITY STAMP APPROVAL



KEYED NOTES

XX INDICATES KEYED NOTE

1. NEW LOCATION OF EXISTING CONDENSING UNIT.
2. ROUTE 8" ROUND EXHAUST AIR DUCTWORK UP THROUGH ROOF TO GREENHECK GOOSENECK. REFER TO SHEET M9.01 DETAIL NUMBER 10.
3. CONNECT NEW FAN COIL UNIT TO EXISTING MAIN RETURN AIR DUCTWORK, MAIN SUPPLY AIR DUCTWORK, EXHAUST FLUE DUCTWORK, OUTSIDE AIR DUCTWORK AND CONDENSATE DRAIN LINE. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION.
4. PROVIDE NEW 4" ROUND FLUE EXHAUST DUCTWORK UP THROUGH ROOF TO FLUE CAP.
5. PROVIDE 4" ROUND FLUE EXHAUST DUCTWORK UP THROUGH ROOF TO FLUE CAP.
6. NEW LOCATION OF EXISTING THERMOSTAT. CONTRACTOR SHALL EXTEND CONTROL WIRING AS REQUIRED.
7. ROUTE 12" OUTSIDE AIR DUCT UP THROUGH ROOF TO GOOSENECK.

MECHANICAL DUCTWORK PLAN - BLDG A&C
1/8" = 1'-0"
1

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450
Tel: (281) 809-7532
Texas Reg. No.: F-26511
Houston, Texas 77042
www.cfiaffiliates.com
CFIA Project No.: 425007.00

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted:
12/3/2025 1:32:51 PM

Drawn By:	Checked By:
WG	TF

Project Phase:
PERMIT ISSUE

MECHANICAL DUCTWORK PLAN - BLDG A&C

M2.01AC

© COPYRIGHT 2025 HEIGHTS VENTURE

CITY STAMP APPROVAL

FAN SCHEDULE

GENERAL				PERFORMANCE DATA			MOTOR DATA						
MARK	LOCATION	FAN TYPE	SERVICE	AIRFLOW CFM	EXTERNAL SP (IN H20 W.G.)	FAN RPM	HP (WATTS)	MOTOR RPM	VOLT/PHASE/HZ	DRIVE TYPE	INTERLOCK	MANUFACTURER/ MODEL	REMARKS
EF-4	CEILING	UPBLAST	WOMENS RR 212	100 1	0.38	950	15	1725	120/1/60	DIRECT	SWITCH	GREENHECK: SP-A110	1-4
EF-5	CEILING	UPBLAST	MENS RR 211	100	0.38	950	15	1725	120/1/60	DIRECT	SWITCH	GREENHECK: SP-A110	1-4

NOTES:

1) PROVIDE WITH BACKDRAFT DAMPER.
2) PROVIDE WITH INTERNAL VARIABLE SPEED DRIVE OR ECM MOTOR.
3) PROVIDE DAMPER SAME VOLTAGE AS FAN.
4) PROVIDE WITH ALUMINUM GRILLE.

DX SPLIT SYSTEM

GENERAL									EVAPORATOR SECTION									HEATING				ELECTRICAL			CONDENSER SECTION							NOTES
UNIT TAG	SERVICE	MANUFACT.	FCU MODEL #	FURNACE MODEL #	ACCU MODEL #	UNIT CONFIGURATION	REFRIG.	UNIT SEER/EER	SA CFM	OA CFM	EXT. SP. WG 4	EA DB TEMP. (F)	EA WB TEMP. (F)	COIL LA DB TEMP. (F)	COIL LA WB TEMP. (F)	SENSIBLE LOAD (BTUH)	TOTAL LOAD (BTUH)	EA DB TEMP. (F)	LA DB TEMP. (F)	GAS BTUH INPUT	GAS BTUH OUTPUT	MCA	MOCP	VOLTAGE	WEIGHT LBS.	CONDENSER TAG	AMBIENT TEMPERTURE	MCA	MOCP	VOLTAGE	WEIGHT LBS.	
FCU-1	BLDG A	TRANE	5TXCD008AS3	S8X2C080M5PSC	5TTR4060A1	HORIZONTAL	R-454B	11.7 EER	1,960	200	1.5	76.1	62.9	54.9	53.6	42.5	53.8	66.0	90.0	93,120	77,600	14.1	15	115/1/60	139	ACCU-1	105	10.2	15	460/3/60	252	1-16
FCU-2	BLDG A	TRANE	5TXCB006AS3	S8X1B060M4PSC	5TTR3048A1	HORIZONTAL	R-454B	12.2 EER	1,430	100	1.5	75.3	61.9	55.0	53.6	28.2	34.6	67.5	90.0	69,840	58,200	10.3	15	115/1/60	122	ACCU-2	105	23	35	208/1/60	257	1-16
FCU-3	BLDG C	TRANE	5TXCB006AS3	S8X1B060M4PSC	5TTR4036A1	HORIZONTAL	R-454B	12.0 EER	1,110	80	1.5	75.3	61.9	55.0	52.9	24.6	29.0	67.6	90.0	69,840	58,200	10.3	15	115/1/60	122	ACCU-3	105	18	30	208/1/60	156	1-16
FCU-4	BLDG C	TRANE	5TXCB006AS3	S8X1B060M4PSC	5TTR4036A1	HORIZONTAL	R-454B	12.0 EER	1,020	130	1.5	76.8	63.6	53.9	52.8	23.0	32.1	64.7	90.0	69,840	58,200	10.3	15	115/1/60	122	ACCU-4	105	18	30	208/1/60	156	1-16
FCU-5	BLDG C	TRANE	5TXCB006AS3	S8X1B060M4PSC	5TTR4036A1	HORIZONTAL	R-454B	12.0 EER	950	140	1.5	77.3	64.7	55.0	53.4	22.4	31.6	63.5	90.0	69,840	58,200	10.3	15	115/1/60	122	ACCU-5	105	18	30	208/1/60	156	1-16
FCU-6	BLDG C	TRANE	5TXCD008AS3	S8X2C080M5PSC	5TTR4060A1	HORIZONTAL	R-454B	11.7 EER	1,450	250	1.5	78.7	65.0	55.0	52.2	37.5	53.5	52.7	90.0	93,120	77,600	14.1	15	115/1/60	139	ACCU-6	105	10.2	15	460/3/60	252	1-16

NOTES:

1 PROVIDE WITH UNIT MOUNTED DISCONNECT SWITCH.
2 PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT WITH INSULATED SUB-BASE, AUTO-CHANGE OVER, HUMIDITY SENSOR, DEHUMIDIFICATION CONTROL SEQUENCE, AND LOCKING THERMOSTAT COVER.
3 PROVIDE WITH 30% PRE-FILTER. ESP INCLUDES 0.5" FOR DIRTY FILTER.
4 SIZE AND ROUTE REFRIGERANT LINES ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
5 INTERLOCK OUTSIDE AIR DAMPER TO SUPPLY FAN.
6 PROVIDE THERMOSTATIC EXPANSION VALVE.
7 PROVIDE VIBRATION ISOLATION PACKAGE.
8 PROVIDE WITH MANUFACTURER INSTALLED FILTER DRYER.
9 INTERNAL COMPRESSOR HIGH/LOW PRESSURE AND TEMPERATURE PROTECTION.
10 CONDENSER TO BE MOUNTED ON GRADE OR SLAB PROVIDE 4"CONCRETE HOUSEKEEPING PAD WITH 145 MPH RATED TIE DOWNS.
11 PROVIDE LOW AMBIENT KIT FOR OPERATION TO 20 DEGREES F.
12 PROVIDE ANTI-SHORT CYCLE TIMER.
13 PROVIDE WITH FLOAT SWITCH IN DRAIN PAN TO DE-ENERGIZE UNIT IF PRIMARY DRAIN FAILS.
14 FOR UNITS IN UN-AIR CONDITIONED SPACES, PROVIDE WITH MINIMUM 1" INTERNAL INSULATION INCLUDING ON INTERNAL EQUIPMENT FRAMING.
15 PROVIDE RAWAL VALVE OR EQUAL FOR HOT GAS BY-PASS.
16 PROVIDE UNIT WITH GAS HEAT

AIR DEVICE SCHEDULE

MARK	TYPE	MANUFACTURER/MODEL	REMARKS
A	ARCHITECTURAL SQUARE PANEL SUPPLY AIR DEVICE	TITUS: OMNI-AA	24"X24" OR 12"X12" FACE AREA. AIR PATTERN SHALL BE 4-WAY THROW UNLESS OTHERWISE NOTED ON DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPE AND CONSTRUCTION DETAILS. FLEX SUPPLYING DIFFUSER TO BE SAME AS NECK SIZE.
B	PERFORATED PANEL RETURN/EXHAUST AIR DEVICE	TITUS: PAR-AA	24"X24" OR 12"X12" FACE AREA WITH 22"X22" AND 10"X10" NECK RESPECTIVELY FOR OPEN GRILLES. PROVIDE PER SCHEDULE FOR DUCTED GRILLES. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPE AND CONSTRUCTION DETAILS. FLEX SUPPLYING GRILLE TO BE SAME AS NECK SIZE.
C	SIDEWALL SUPPLY AIR DIFFUSER	TITUS: 272 FS	SUPPLY AIR DOUBLE-DEFLECTION RECTANGULAR SIDEWALL DIFFUSER, 3/4" SPACE BLADES. FRONT BLADES PARALLEL TO SHORT SECTION. REFER TO PLANS FOR SIZE (W"XH") AND AIR QUANTITY. PROVIDE WITH OPPOSED BLADE DAMPER.
D	SIDEWALL RETURN/EXHAUST GRILLE	TITUS: 350FL	SIDEWALL RETURN/EXHAUST GRILLE. 3/4" SPACE BLADES, 45 DEGREE DEFLECTION. BLADES PARALLEL TO LONG DIMENSION. REFER TO PLANS FOR SIZE (W"XH") AND AIR QUANTITY. PROVIDE WITH OPPOSED BLADE DAMPER.

NOTES:

1 CEILING DIFFUSERS ARE 4-WAY UNLESS INDICATED OTHERWISE IN THE DRAWINGS.
2 PROVIDE BLOW CLIPS TO DIRECT AIR FLOW AWAY FROM WALLS AND GLASS WHEN DEVICES ARE WITHIN 4' OF A WALL.
3 ALL VISIBLE SURFACES OF THE RETURN/EXHAUST PLENUM AND DUCT CONNECTION SHALL BE PAINTED FLAT BLACK.
4 AIR DEVICE FRAME AND STYLE SHALL MATCH CEILING TYPE. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
5 PROVIDE MANUFACTURER'S INSULATED BACKPAN FOR ALL SUPPLY AIR DEVICES.
6 ALL AIR DEVICES SHALL BE ALUMINUM CONSTRUCTION.
7 REFER TO ARCHITECT FOR FINISHES AND COLOR OF DEVICES.

AIR DEVICE CONNECTION SCHEDULE

AIR QUANTITY (CFM)	DEVICE NECK SIZE	BRANCH DUCT SIZE	
		ROUND DUCT	ALTERNATE RECTANGULAR DUCT
CEILING DIFFUSERS			
0-125	6"ø	6"ø	6X6
126-250	8"ø	8"ø	8X8
251-375	10"ø	10"ø	10X10
376-475	12"ø	12"ø	12X10
476-600	14"ø	14"ø	14X14
601-850	16"ø	16"ø	16X16
SIDEWALL GRILLES			
ALL CFM'S		REFER TO DRAWINGS	REFER TO DRAWINGS
SLOT DIFFUSERS			
0-125	6"ø	6"ø	REFER TO DRAWINGS
256-250	8"ø	8"ø	
276-375	10"ø	10"ø	

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450 Houston, Texas 77042
Tel: (281) 809-7532 www.cfiaffiliates.com
Texas Reg. No.: F-26511 CFIA Project No.: 425007.00

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

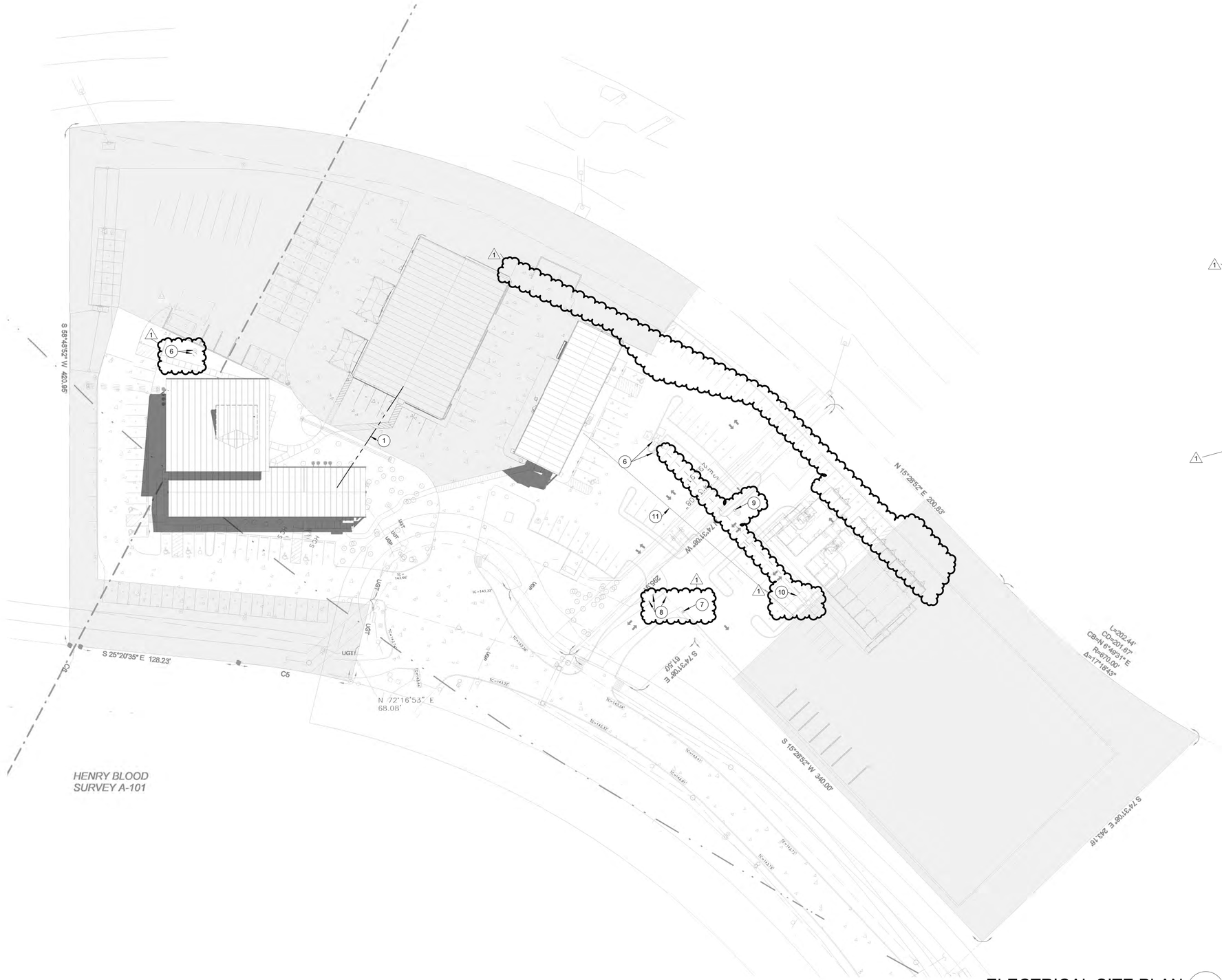
Project Number: 24026
Sheet Size: 24 x 36
Date / Time Plotted: 12/3/2025 1:32:52 PM
Drawn By: WG
Checked By: TF
Project Phase: PERMIT ISSUE

MECHANICAL SCHEDULES

M8.01

© COPYRIGHT 2025 HEIGHTS VENTURE

CITY STAMP APPROVAL



ELECTRICAL SITE PLAN 1
1" = 40'-0"

(XX) INDICATES KEYED NOTE

KEYED NOTES

1. ROUTE CONDUCTORS TO NEW BUILDING C PANEL FROM EXISTING WAREHOUSE ELECTRICAL ROOM. VERIFY EXACT RUN LENGTH. USE EXISTING UNDERGROUND CONUIT TO BLDG 'A' AS APPLICABLE. PROVIDE NEW OVERHEAD CONDUIT TO BUILDING 'C'.
2. NOT USED.
3. NOT USED.
4. NOT USED.
5. NOT USED.
6. EXISTING POLE AND FIXTURE TO BE RELOCATED TO HERE. REMOVE AND DISPOSE OF EXISTING LIGHT POLE FOUNDATION. EXTEND CIRCUITING AS REQUIRED TO REPOWER FIXTURE.
7. COORDINATE RELOCATION OF EXISTING GATE MOTOR. SEE CIVIL DWGS.
8. COORDINATE RELOCATION OF EXISTING KEYPAD AND EQUIPMENT. SEE CIVIL DWGS.
9. COORDINATE RELOCATION OF EXISTING SECURITY CAMERA WITH OWNER.
10. COORDINATE EXACT REQUIREMENTS FOR NEW LIGHT POLE. MATCH EXISTING POLE HEIGHTS AND FIXTURE AT SITE. EXTEND 2#10, 1#10G, 1"C TO EXISTING POWER POLE.
11. COORDINATE CONDUIT WITH CIVIL.

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450 Houston, Texas 77042
Tel: (281) 809-7532 www.cfiaffiliates.com
Texas Reg. No.: F-26511 CFIA Project No.: 425007.00

MICHAEL J. WEBB 80839 LICENSED PROFESSIONAL ENGINEER

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted: 12/3/2025 10:25:18 AM

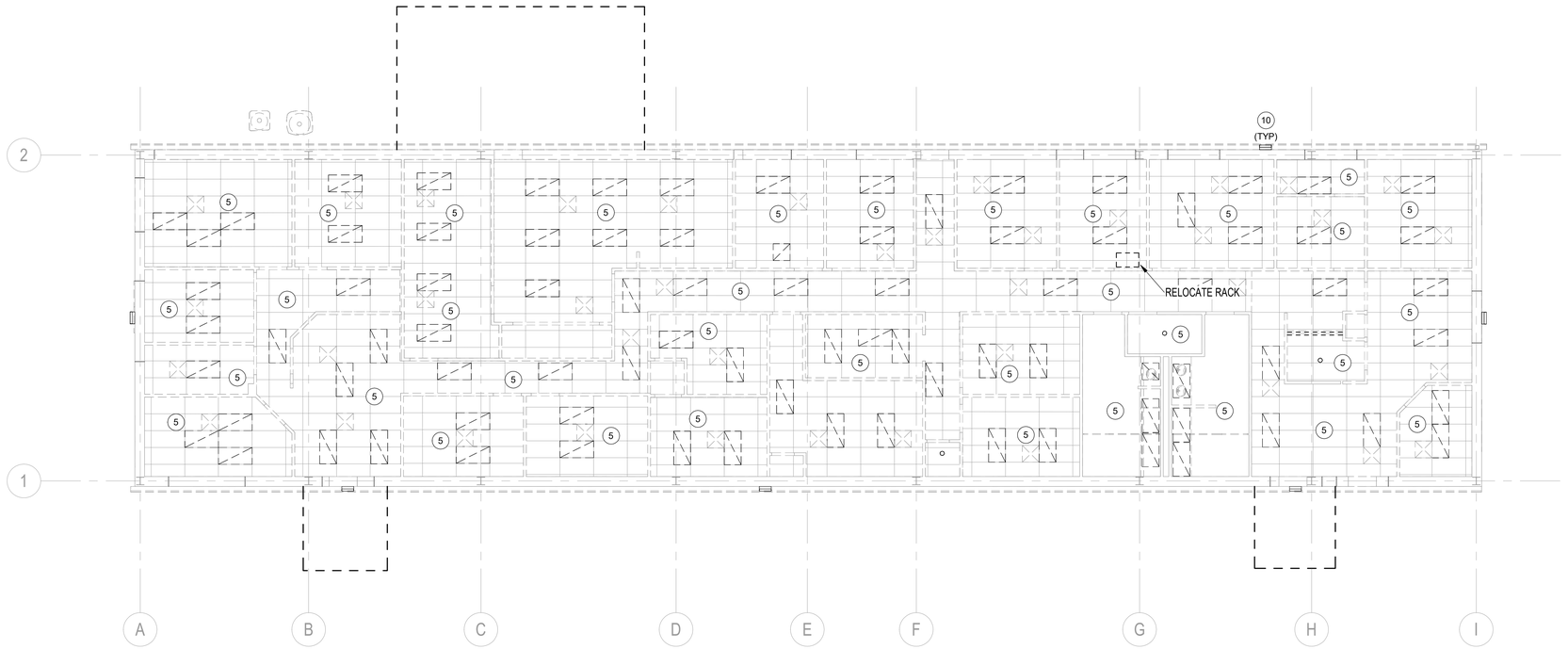
Drawn By:	Checked By:
KM	MW

Project Phase: PERMIT ISSUE

ELECTRICAL SITE PLAN

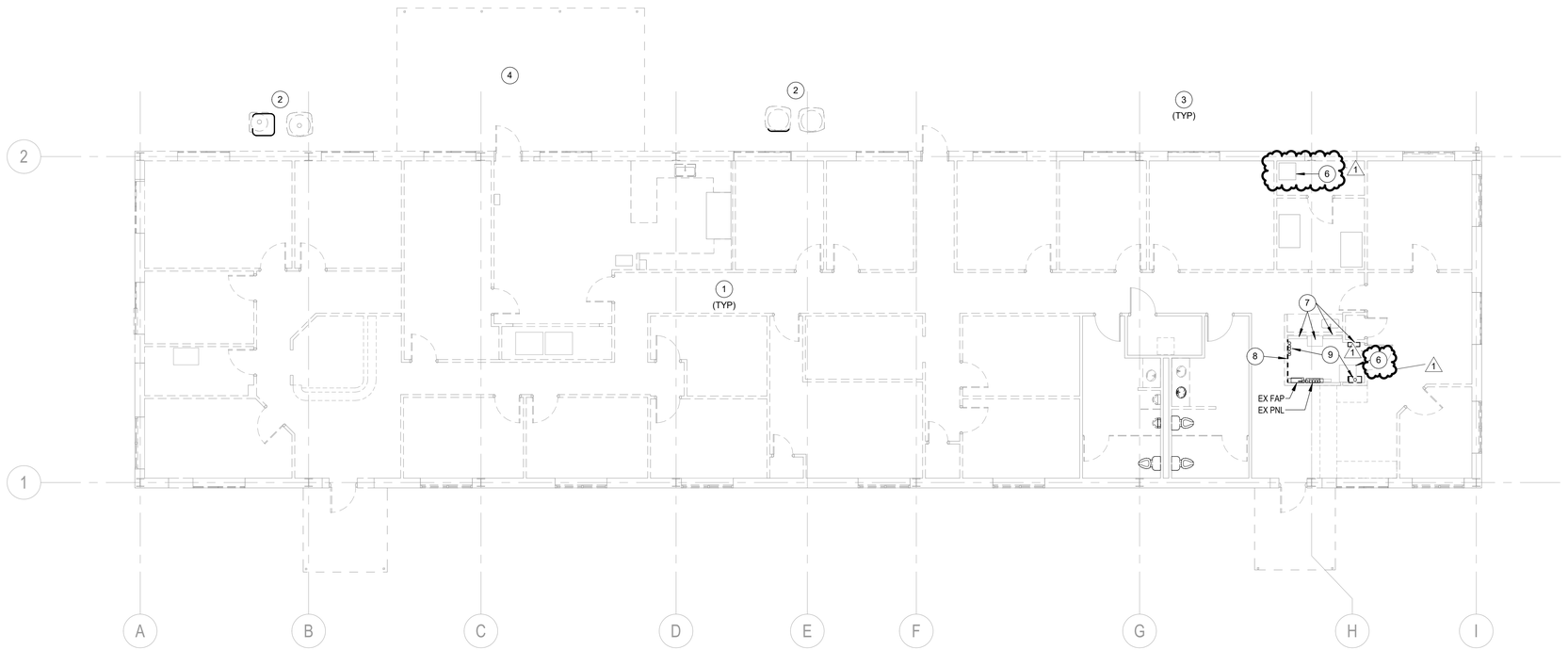
E1.01

© COPYRIGHT 2025 HEIGHTS VENTURE



ELECTRICAL DEMO LIGHTING PLAN - BLDG A 2

1/8" = 1'-0"



ELECTRICAL DEMO POWER PLAN - BLDG A 1

1/8" = 1'-0"

CITY STAMP APPROVAL

INDICATES KEYED NOTE (XX)

KEYED NOTES

1. DEMO ALL POWER, DATA, FIRE ALARM, AND ANY ASSOCIATED CONDUIT AND WIRES BACK TO SOURCE PANELS.
2. DISCONNECT POWER TO EXISTING UNITS.
3. POWER AT UNITS IS EXISTING TO REMAIN.
4. DEMO ALL POWER AND ASSOCIATED ELECTRICAL DEVICES BACK TO SOURCE PANEL.
5. DEMO ALL LIGHT FIXTURES, SWITCHES, FIRE ALARM DEVICES AND ASSOCIATED ELECTRICAL DEVICES BACK TO SOURCE PANEL.
6. EXISTING IT RACK AND EQUIPMENT TO BE REMOVED, STORED, AND REINSTALLED BY THE WOODLANDS TOWNSHIP. (1)
7. DEMO PANELS AND EQUIPMENT AND ANY ASSOCIATED ELECTRICAL ON THIS WALL.
8. RELOCATE EXISTING LOW VOLTAGE EQUIPMENT TO NEW I.T. ROOM. COORDINATE REQUIREMENTS WITH OWNERS REP.
9. CONDUITS AND ASSOCIATED WIRING TO BE RELOCATED. SEE NEW WORK FOR NEW CONDUIT LOCATION.
10. DEMO EXISTING EXTERIOR LIGHT FIXTURE.

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS

10370 Richmond Ave., Ste 1450
Tel: (281) 809-7532
Texas Reg. No.: F-26511

Houston, Texas 77042
www.cfiaffiliates.com
CFIA Project No.: 425007.00



Heights Venture
ARCHITECTURE DESIGN

HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100

DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted:
12/3/2025 10:25:20 AM

Drawn By:	Checked By:
KM	MW

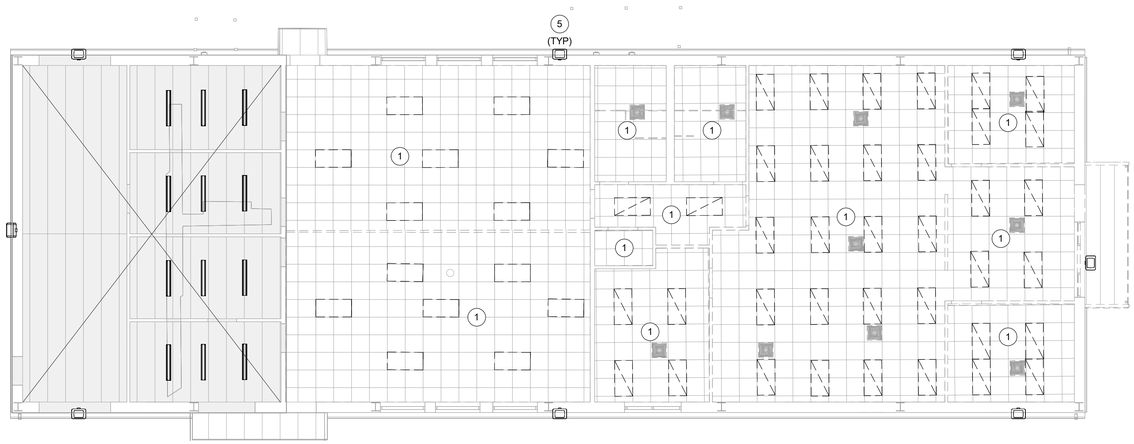
Project Phase:
PERMIT ISSUE

ELECTRICAL DEMO POWER AND LIGHTING PLAN - BLDG A

E1.02A

© COPYRIGHT 2025 HEIGHTS VENTURE

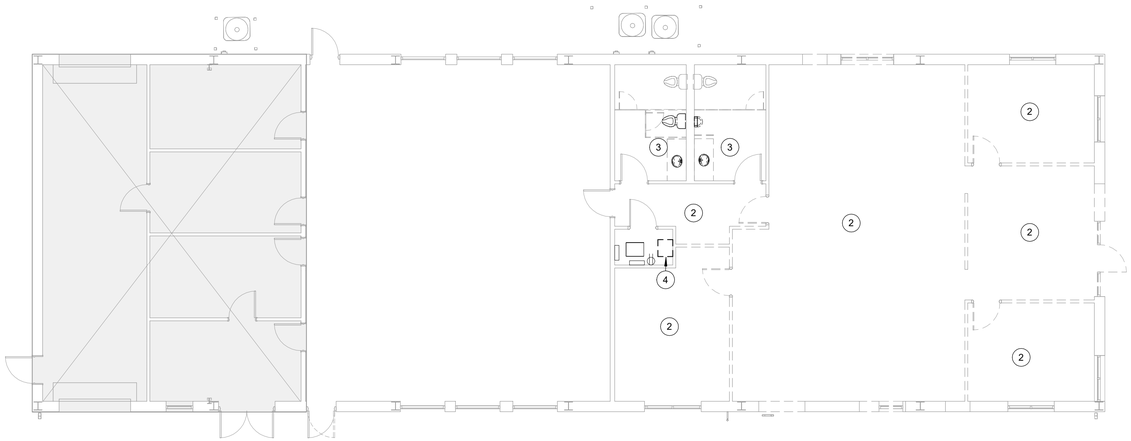
CITY STAMP APPROVAL



ELECTRICAL DEMO LIGHTING PLAN - BLDG B

1/8" = 1'-0"

2



ELECTRICAL DEMO POWER PLAN - BLDG B

1/8" = 1'-0"

1

XX INDICATES KEYED NOTE

KEYED NOTES

1. DEMO ALL LIGHT FIXTURES, SWITCHES, FIRE ALARM DEVICES AND ASSOCIATED ELECTRICAL DEVICES BACK TO SOURCE PANEL.
2. DEMO ALL POWER AND ASSOCIATED ELECTRICAL DEVICES BACK TO SOURCE PANEL.
3. DEMO EXISTING LIGHT SWITCHES AND ASSOCIATED SWITCHING WITHIN THIS ROOM.
4. EXISTING IT RACK AND EQUIPMENT TO BE REMOVED, STORED, AND REINSTALLED BY THE WOODLANDS TOWNSHIP.
5. DEMO EXISTING EXTERIOR LIGHT FIXTURE.

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS

10370 Richmond Ave., Ste 1450
Tel: (281) 809-7532
Texas Reg. No.: F-26511

Houston, Texas 77042
www.cfiaffiliates.com
CFIA Project No.: 425007.00



12/03/2025

Heights Venture
ARCHITECTURE DESIGN

HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100

DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted:
12/3/2025 10:25:21 AM

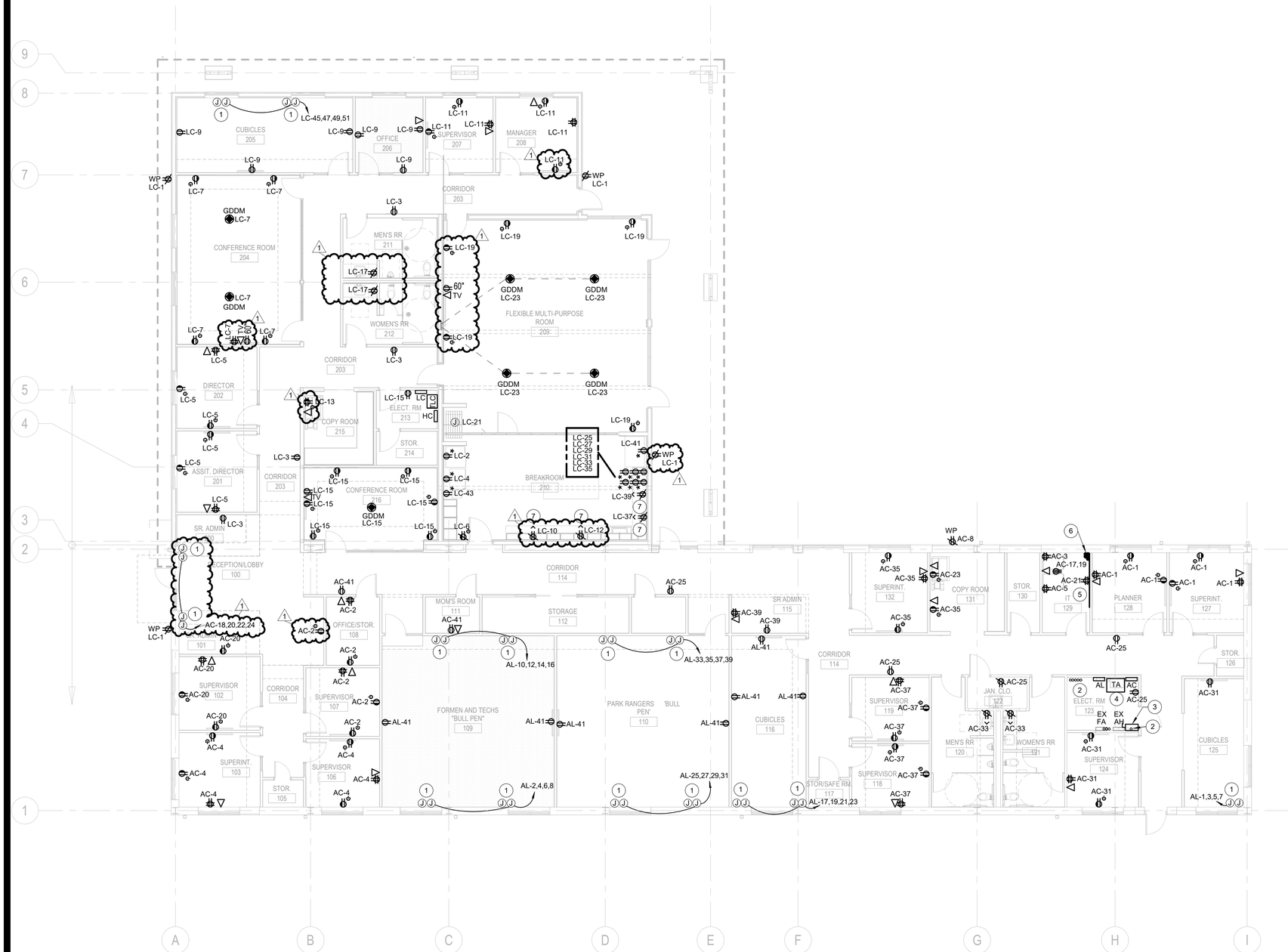
Drawn By:	Checked By:
KM	MW

Project Phase:
PERMIT ISSUE

ELECTRICAL DEMO POWER AND LIGHTING PLAN - BLDG B

E1.02B

© COPYRIGHT 2025 HEIGHTS VENTURE



ELECTRICAL POWER PLAN - BLDG A&C

1/8" = 1'-0"

1

CITY STAMP APPROVAL

(XX) INDICATES KEYED NOTE

KEYED NOTES

1. PROVIDE POWER AND DATA FOR CUBICLE CONNECTION. ONE NON COMPUTER CIRCUIT TO BE FULLY CONTROLLED.
2. SAW CUT SLAB AND RELOCATE CONDUIT STUBS TO HERE.
3. RELOCATE DISCONNECT TO HERE.
4. RELOCATE XFMR AND PANELS TO HERE.
5. PROVIDE 4' X 8' X 3/4" FIRE TREATED PLYWOOD FOR RELOCATION OF TELEPHONE FRONT END EQUIPMENT.
6. EXTEND CONDUITS OVERHEAD FROM ELECTRICAL TO IT ROOM.
7. RECEPTACLE TO BE HORIZONTAL.

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS

10370 Richmond Ave., Ste 1450
Tel: (281) 809-7532
Texas Reg. No.: F-26511

Houston, Texas 77042
www.cfiaffiliates.com
CFIA Project No.: 425007.00



12/03/2025

Heights Venture
ARCHITECTURE DESIGN

HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100

DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted:
12/3/2025 10:25:23 AM

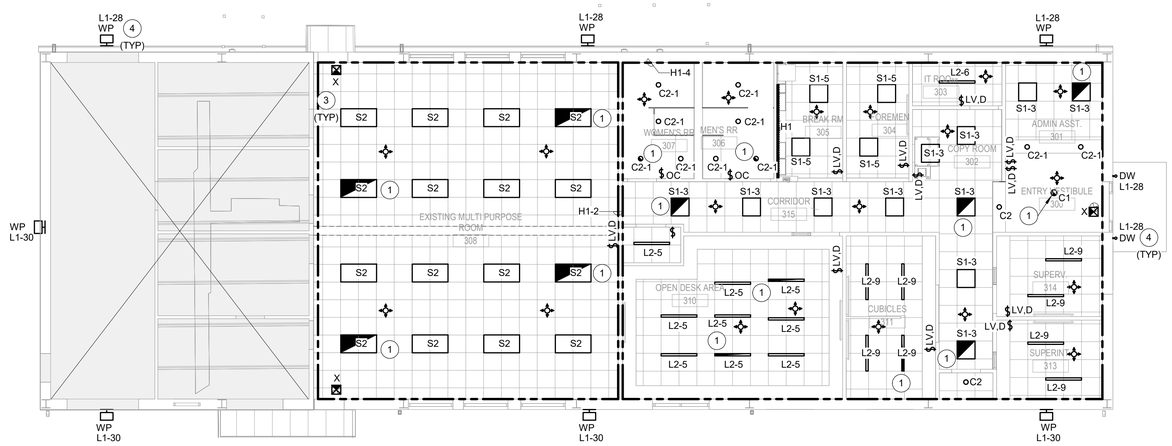
Drawn By:	Checked By:
KM	MW

Project Phase:
PERMIT ISSUE

ELECTRICAL POWER PLAN - BLDG A&C

E2.01AC

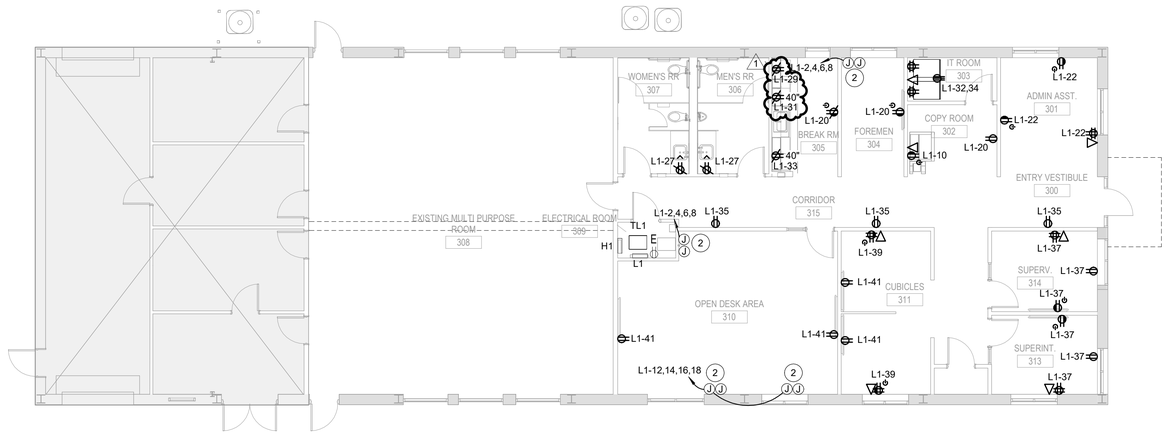
© COPYRIGHT 2025 HEIGHTS VENTURE



ELECTRICAL LIGHTING PLAN - BLDG B

1/8" = 1'-0"

2



ELECTRICAL POWER PLAN - BLDG B

1/8" = 1'-0"

1

CITY STAMP APPROVAL

XX INDICATES KEYED NOTE

KEYED NOTES

1. FIXTURE INDICATED TO BE PROVIDED WITH 90-MINUTE EMRGENCY BATTERY BAKCUP. TYPICAL FOR ALL FIXTURES SHOWN AS HATCHED OR OTHERWISE NOTED FOR EMERGENCY ON THIS DRAWING.
2. PROVIDE POWER AND DATA FOR CUBICLE CONNECTION. ONE NON COMPUTER CIRCUIT TO BE FULLY CONTROLLED.
3. EXTREND UNSWITCHED HOT LEG TO POWER EXIT SIGN.
4. WIRE EXTERIOR LIGHTS THRU TIME CLOCK.

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS

10370 Richmond Ave., Ste 1450
Tel: (281) 809-7532
Texas Reg. No.: F-26511

Houston, Texas 77042
www.cfiaffiliates.com
CFIA Project No.: 425007.00



12/03/2025

Heights Venture
ARCHITECTURE DESIGN

HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100

DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted:
12/3/2025 10:25:25 AM

Drawn By:	Checked By:
KM	MW

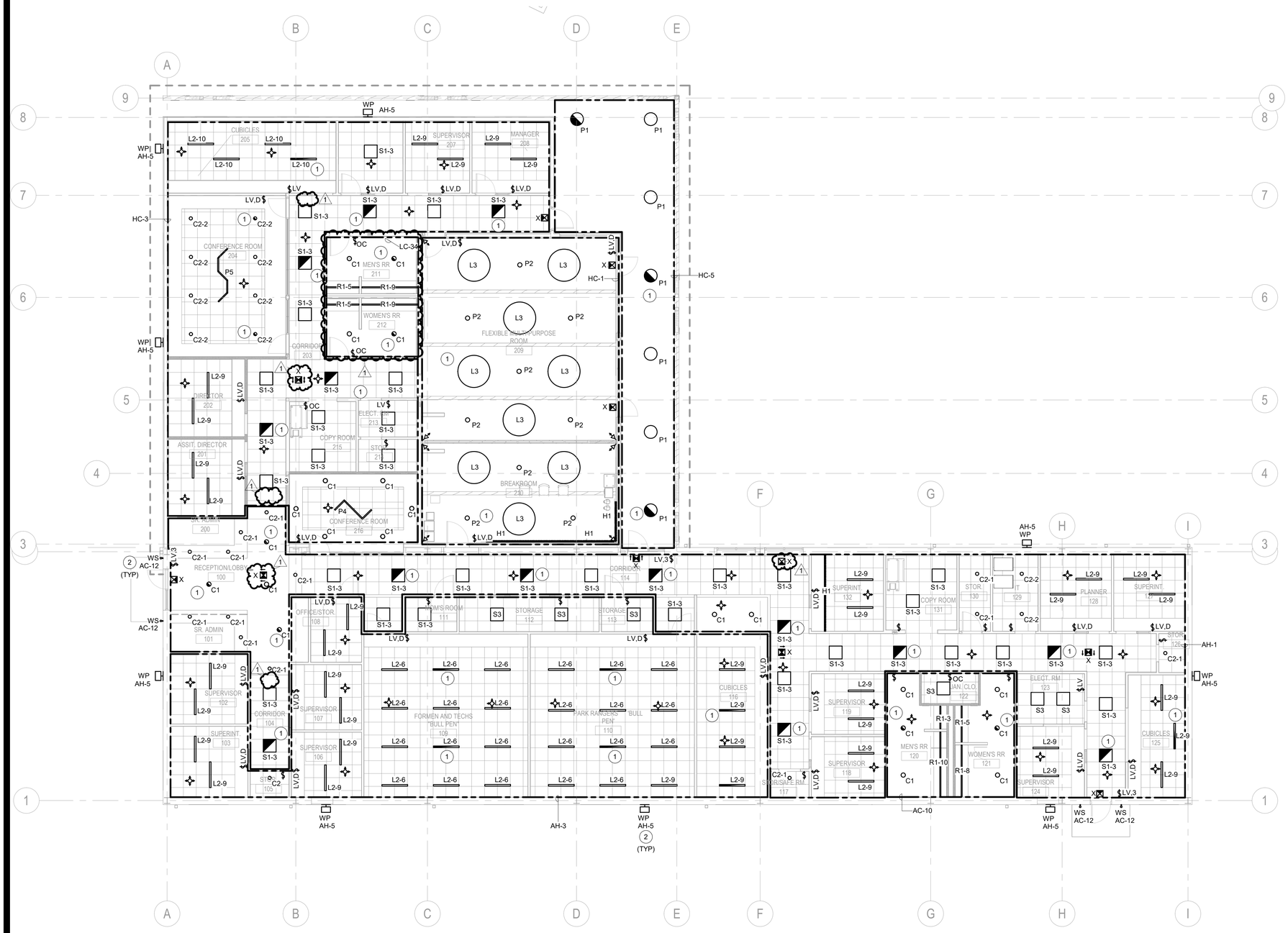
Project Phase:
PERMIT ISSUE

ELECTRICAL POWER AND LIGHTING PLAN - BLDG B

E2.01B

© COPYRIGHT 2025 HEIGHTS VENTURE

CITY STAMP APPROVAL



XX INDICATES KEYED NOTE

KEYED NOTES

1 FIXTURE INDICATED TO BE PROVIDED WITH 90-MINUTE EMRGENCY BATTERY BAKCUP. TYPICAL FOR ALL FIXTURES SHOWN AS HATCHED OR OTHERWISE NOTED FOR EMERGENCY ON THIS DRAWING.

2 WIRE EXTERIOR LIGHTS THRU TIME CLOCK.

ELECTRICAL LIGHTING PLAN - BLDG A&C
1/8" = 1'-0"

1

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450 Houston, Texas 77042
Tel: (281) 809-7532 www.cfiaffiliates.com
Texas Reg. No.: F-26511 CFIA Project No.: 425007.00

MICHAEL J. WEBB 89839 LICENSED PROFESSIONAL ENGINEER

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted:
12/3/2025 10:25:27 AM

Drawn By:	Checked By:
KM	MW

Project Phase:
PERMIT ISSUE

ELECTRICAL LIGHTING PLAN - BLDG A&C

E3.01AC

© COPYRIGHT 2025 HEIGHTS VENTURE



ELECTRICAL EQUIPMENT PLAN - BLDG A&C
1/8" = 1'-0"

1

CITY STAMP APPROVAL

XX INDICATES KEYED NOTE

KEYED NOTES

1 WIRE AND CONTROL EXHAUST FAN WITH RESTROOM LIGHTS.

2 WIRE RECONNECT MECHANICAL UNIT BACK TO ELECTRICAL PANEL AFTER SOURCE PANEL RELOCATION.

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450
Tel: (281) 809-7532
Texas Reg. No.: F-26511
Houston, Texas 77042
www.cfiaffiliates.com
CFIA Project No.: 425007.00

MICHAEL J. WEBB
89839
REGISTERED

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted:
12/3/2025 10:25:30 AM

Drawn By:	Checked By:
KM	MW

Project Phase:
PERMIT ISSUE

ELECTRICAL EQUIPMENT PLAN - BLDG A&C

E4.01AC

© COPYRIGHT 2025 HEIGHTS VENTURE

KEYED NOTES

XX INDICATES KEYED NOTE

1. EXTEND EXISTING CONDUIT TO NEW DISCONNECT.
2. EXISTING CONDUIT ROUTED BETWEEN BUILDINGS.
3. ROUTE CONDUCTORS TO NEW BUILDING C PANEL FROM EXISTING WAREHOUSE ELECTRICAL ROOM. VERIFY EXACT RUN LENGTH. USE EXISTING UNDERGROUND CONUIT TO BLDG 'A' AS APPLICABLE. PROVIDE NEW OVERHEAD CONDUIT TO BUILDING 'C'.
4. FIELD COORDINATE CONDUIT CONTINUATION TO NEW PANEL LOCATION. MATCH EXISTING CONDUIT.
5. NOT USED.

CITY STAMP APPROVAL

GENERAL NOTES

1. REFER TO ELECTRICAL PLANS FOR LOCATION OF ELECTRICAL EQUIPMENT.

SHORT CIRCUIT NOTES

1. CALCULATIONS WERE DONE USING THE POINT TO POINT METHOD, AND USING AN INFINITE SERVICE TRANSFORMER PRIMARY WITH A MAXIMUM TRANSFORMER SECONDARY S.C.A. AVAILABLE OF XX,XXXA.
2. PROVIDE A PERMANENTLY AFFIXED LABEL TO NEW DEVICE DISCONNECTS AND PANELBOARDS WITH THE FAULT CURRENT SHOWN ON THE LABEL. ALSO SHOW THE DATE OF CALCULATION. THE LABEL SHALL BE 2"X3" WITH BLUE LETTERING ON A CONTRASTING BACKGROUND.

BRANCH AND FEEDER SCHEDULE (CU)

AMPS	SYMBOL	CONDUCTORS	EMT	PVC 40	
200	200-4	4#3/0, 1#6G.	2-1/2"	2-1/2"	

NOTES:
1. COPPER CONDUCTOR AMPACITY SIZES BASED ON CURRENT NEC COPPER CONDUCTOR AMPACITY TABLE. CONDUCTORS LESS THAN 110 AMPS UTILIZE 60°C. CONDUCTORS GREATER THAN 110 AMPS UTILIZE 75°C.
2. CONDUIT SIZES ARE BASED ON CURRENT NEC TABLES FOR BOTH EMT AND PVC 40.
3. CONDUIT SIZES FOR OTHER INSULATION CHARACTERISTIC USE THE CURRENT NEC CONDUIT SIZE TABLE IN THE APPENDIX.

TRANSFORMER SCHEDULE (CU)

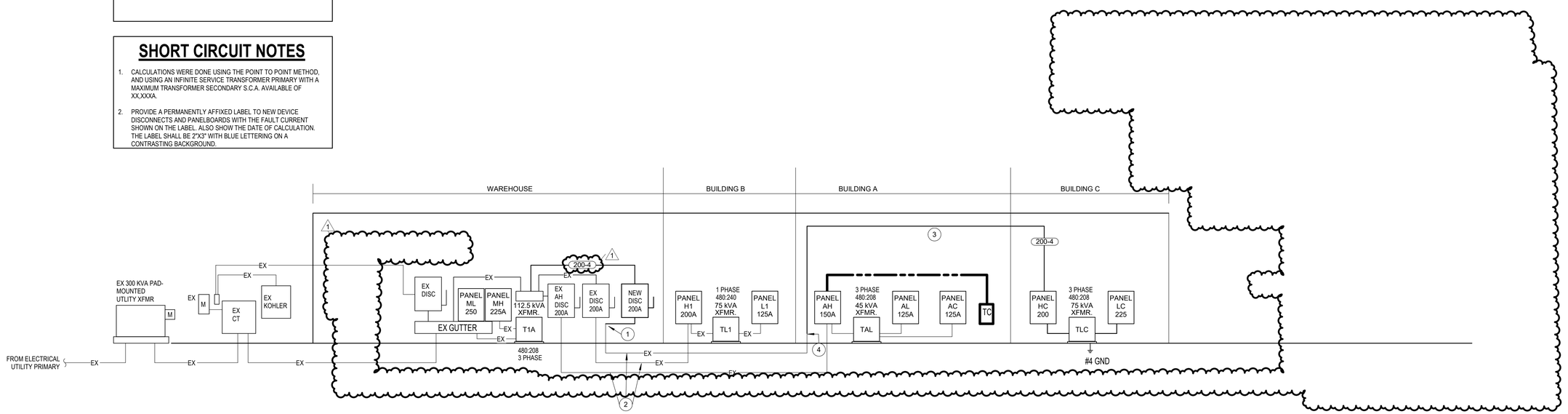
KVA	PRIMARY		SECONDARY		GROUNDING ELECTRODE
	OCP	CONDUCTORS / CONDUIT	OCP	CONDUCTORS / CONDUIT	
75	125A/3P	3#1, 1#6G, 1-1/4"C	225A/3P	4#4/0, 1#4G, 2-1/2"C	1#2G

NOTES:
1. COPPER CONDUCTOR AMPACITY SIZES BASED ON LATEST ADOPTED NEC TABLE 310.(B)(16). CONDUCTORS LESS THAN 110 AMPS UTILIZE 60°C. CONDUCTORS GREATER THAN 110 AMPS UTILIZE 75°C.
2. CONDUIT SIZES ARE BASED ON CURRENT NEC TABLE C.1 (EMT).
3. CONDUIT SIZES FOR OTHER INSULATION CHARACTERISTIC, USE THE 2017 NEC, ANNEX C TABLE.

Service Load Analysis

13,656SF

Load Description			Connected Load (kVA)		Demand Factor		Design Load (kVA)
Peak kVA			85.00	*	1.25	=	106.3
Lighting			27.31	*	1.25	=	34.1
Code	2 w/sf	27.312kVA					
Design		7.45kVA					
Receptacles		74.16kVA	74.16	*	100%/50%	=	42.1
General Equipment		142.85kVA	142.85	*	1.00	=	142.9
Mechanical		200kVA	200.00	*	1.00	=	200.0
RTU-1	Fan			*	1.00	=	0.0
RTU-1	Compressors			*	0.25	=	0.0
RTU-2	Fan			*	1.00	=	0.0
RTU-2	Compressors			*	0.25	=	0.0
VAV	Heat			*	1.00	=	0.0
Exhaust Fans				*	1.00	=	0.0
Humidifiers				*	1.00	=	0.0
EWH-1				*	1.00	=	0.0
Vacuum Pump				*	1.00	=	0.0
Trairlers		227.25kVA	227.25	*	1.00	=	227.3
Largest Motor			11.87	*	0.25	=	3.0
					Total Load kVA:		755.5
Voltage:	480V, 3-phase				Total Load Amps:		908.8



ELECTRICAL RISER DIAGRAM

NOT TO SCALE

1

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450 Houston, Texas 77042
Tel: (281) 809-7532 www.cfiaffiliates.com
Texas Reg. No.: F-26511 CFIA Project No.: 425007.00

Michael J Walker
89839
12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36
Date / Time Plotted:	
12/3/2025 10:25:31 AM	
Drawn By:	Checked By:
KM	MW
Project Phase:	
PERMIT ISSUE	

ELECTRICAL RISER DIAGRAM

E7.01

© COPYRIGHT 2025 HEIGHTS VENTURE

PANEL: AL

LOCATION: ELECT. RM 123
SUPPLY FROM:
MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FEED-THRU LUGS: YES

VOLTS: 208Y/120V WYE 3Ø-4W
NEUTRAL BUS: YES
GROUND BUS: YES

CALC. FCA:
A.I.C. RATING: 10000
MAINS TYPE: MCB
MAINS RATING: 225 A
MCB RATING: 125

Notes:

CKT	Wire Size	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	Wire Size	CKT
1		CUBICLES - 125	20 A	1	0.54	1.44					1	20 A	CUBICLES - 109		2
3		CUBICLES -125	20 A	1			0.54	1.44			1	20 A	CUBICLES - 109		4
5		CUBICLES -125	20 A	1					0.54	1.44	1	20 A	CUBICLES - 109		6
7		CUBICLES -125	20 A	1	0.54	1.44					1	20 A	CUBICLES - 109		8
9	--	A/C	30 A	2			2	1.44			1	20 A	CUBICLES - 109		10
11	--	--	--	--					2	1.44	1	20 A	CUBICLES - 109		12
13	--	A/C	30 A	2	2	1.44					1	20 A	CUBICLES - 109		14
15	--	--	--	--			2	1.44			1	20 A	CUBICLES - 109		16
17		CUBICLES - 116	20 A	1					1.08	0.2	1	20 A	EXHAUST FANS	--	18
19		CUBICLES - 116	20 A	1	1.08	1.69					1	20 A	FCU-1		20
21		CUBICLES - 116	20 A	1			1.08	1.24			1	20 A	FCU-2		22
23		CUBICLES - 116	20 A	1					1.08						24
25		CUBICLES - 110	20 A	1	1.44										26
27		CUBICLES - 110	20 A	1			1.44	0.5			1	20 A	FIRE ALARM	--	28
29		CUBICLES - 110	20 A	1					1.44						30
31		CUBICLES - 110	20 A	1	1.44										32
33		CUBICLES - 110	20 A	1			1.44								34
35		CUBICLES - 110	20 A	1					1.44						36
37		CUBICLES - 110	20 A	1	1.44										38
39		CUBICLES - 110	20 A	1			1.44								40
41		RECEPTACLE	20 A	1					1.26						42
				FEED THROUGH LOAD:	0 VA		0 VA		0 VA						
				TOTAL LOAD:	14492 VA		15996 VA		11920 VA						
				TOTAL AMPS:	124.06 A		137 A		99 A						

Legend:
ALL BRANCH CIRCUITS ARE 2#12, #12G THWN-2 CU, 1/2" MINIMUM UNLESS OTHERWISE NOTED

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	29700 VA	66.84%	19850 VA		
Motor	2928 VA	114.45%	3351 VA	**Total Conn. Load:**	42408 VA
Power	1080 VA	62.70%	677 VA	**Total Est. Demand:**	29333 VA
Spare	8700 VA	62.70%	5455 VA	**Total Est. Demand Current:**	81 A

Notes:

PANEL: AC

LOCATION: ELECT. RM 123
SUPPLY FROM: TA
MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FEED-THRU LUGS: YES

VOLTS: 208Y/120V WYE 3Ø-4W
NEUTRAL BUS: YES
GROUND BUS: YES

CALC. FCA:
A.I.C. RATING:
MAINS TYPE: MCB
MAINS RATING: 225 A
MCB RATING: 125

Notes:

CKT	Wire Size	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	Wire Size	CKT
1		RCPT - PLAN / SUPER	20 A	1	1.44	1.44					1	20 A	RECEPTACLE		2
3		QUAD I.T.	20 A	1			0.36	1.44			1	20 A	RECEPTACLE		4
5		QUAD I.T.	20 A	1					0.36	0	1	20 A	SPARE	--	6
7						0.18					1	20 A	GFCI RCPT		8
9	--	A/C	30 A	2			2	0.15			1	20 A	LIGHTING		10
11	--	--	--	--					2	0.07	1	20 A	LIGHTING		12
13	--	A/C	30 A	2	2	2.39					2	35 A	ACCU-2	2#8, 1#10G	14
15	--	--	--	--			2	2.39			--	--	--	--	16
17		SERVER - I.T.	20 A	2					0.75	0.36	1	20 A	CUBICLES		18
19	--	--	--	--	0.75	1.26					1	20 A	CUBICLES		20
21		QUAD I.T.	20 A	1			0.36	0.36			1	20 A	CUBICLES		22
23		COPIER	20 A	1					1	0.36	1	20 A	CUBICLES		24
25		RECEPTACLE	20 A	1	0.9	1.5					2	20 A	PUMP	--	26
27	--	GAS PUMP	20 A	2			1.5	1.5			--	--	--	--	28
29	--	--	--	--					1.5						30
31		RCPT - SUPER 124/CUB 125	20 A	1	0.9										32
33		RCPT - RESTROOM	20 A	1			0.36								34
35		RCPT - SUPER / COPY RM	20 A	1					0.9						36
37		RECEPTACLE - SUPER...	20 A	1	1.44										38
39		RECEPTACLE	20 A	1			0.54								40
41		RECEPTACLE	20 A	1					0.36						42
				FEED THROUGH LOAD:	0 VA		0 VA		0 VA						
				TOTAL LOAD:	14202 VA		12959 VA		7658 VA						
				TOTAL AMPS:	125.15 A		115 A		64 A						

Legend:
ALL BRANCH CIRCUITS ARE 2#12, #12G THWN-2 CU, 1/2" MINIMUM UNLESS OTHERWISE NOTED

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	14460 VA	84.58%	12230 VA		
Lighting	215 VA	125.00%	269 VA	**Total Conn. Load:**	34819 VA
Motor	4784 VA	125.00%	5980 VA	**Total Est. Demand:**	28483 VA
Other	1000 VA	100.00%	1000 VA	**Total Est. Demand Current:**	79 A
Power	360 VA	62.70%	226 VA		
Spare	14000 VA	62.70%	8778 VA		

Notes:

PANEL: AH

LOCATION: ELECT. RM 123
SUPPLY FROM: gutter
MOUNTING: SURFACE
ENCLOSURE: NEMA 1
FEED-THRU LUGS: YES

VOLTS: 480Y/277V WYE 3Ø-4W
NEUTRAL BUS: YES
GROUND BUS: YES

CALC. FCA:
A.I.C. RATING:
MAINS TYPE: MCB
MAINS RATING: 225 A
MCB RATING: 150 A

Notes:

CKT	Wire Size	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	Wire Size	CKT
1		LIGHTING	20 A	1	2.14	0					1	20 A	SPARE	--	2
3		LIGHTING	20 A	1			1.47	0			1	20 A	SPARE	--	4
5		EXTERIOR LIGHTING	20 A	1					0.44	0	1	20 A	SPARE	--	6
7						0					1	20 A	SPARE	--	8
9								0			1	20 A	SPARE	--	10
11										0	1	20 A	SPARE	--	12
13	--	POLE LIGHTS	20 A	1	2	1					1	20 A	EXTERIOR LIGHTS	--	14
15	--	SPARE	20 A	1			0	14.2			3	60 A	TA	3#4, 1#8G	16
17	--	SPARE	20 A	1					0	12.96	--	--	--	--	18
19	--	A/C	30 A	3	5	7.66					--	--	--	--	20
21	--	--	--	--			5	5			3	30 A	A/C	--	22
23	--	--	--	--					5	5	--	--	--	--	24
25	--	A/C	30 A	3	5	5					--	--	--	--	26
27	--	--	--	--			5	5			3	30 A	A/C	--	28
29	--	--	--	--					5	5	--	--	--	--	30
31						5					--	--	--	--	32
33															34
35															36
37															38
39															40
41															42
				FEED THROUGH LOAD:	0 VA		0 VA		0 VA						
				TOTAL LOAD:	32801 VA		35671 VA		33400 VA						
				TOTAL AMPS:	118.41 A		129 A		121 A						

Legend:
ALL BRANCH CIRCUITS ARE 2#12, #12G THWN-2 CU, 1/2" MINIMUM UNLESS OTHERWISE NOTED

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Receptacle	14460 VA	84.58%	12230 VA		
Lighting	4233 VA	125.00%	5291 VA	**Total Conn. Load:**	101872 VA
Motor	4784 VA	125.00%	5980 VA	**Total Est. Demand:**	73040 VA
Other	1035 VA	100.00%	1035 VA	**Total Est. Demand Current:**	88 A
Power	360 VA	62.70%	226 VA		
Spare	77000 VA	62.70%	48279 VA		

Notes:

CITY STAMP APPROVAL

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450 Houston, Texas 77042
Tel: (281) 809-7532 www.cfiaffiliates.com
Texas Reg. No.: F-26511 CFIA Project No.: 425007.00

Michael J. Walker 89839 REGISTERED
12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted: 12/3/2025 10:25:31 AM

Drawn By:	Checked By:
KM	MW

Project Phase: PERMIT ISSUE

ELECTRICAL SCHEDULES

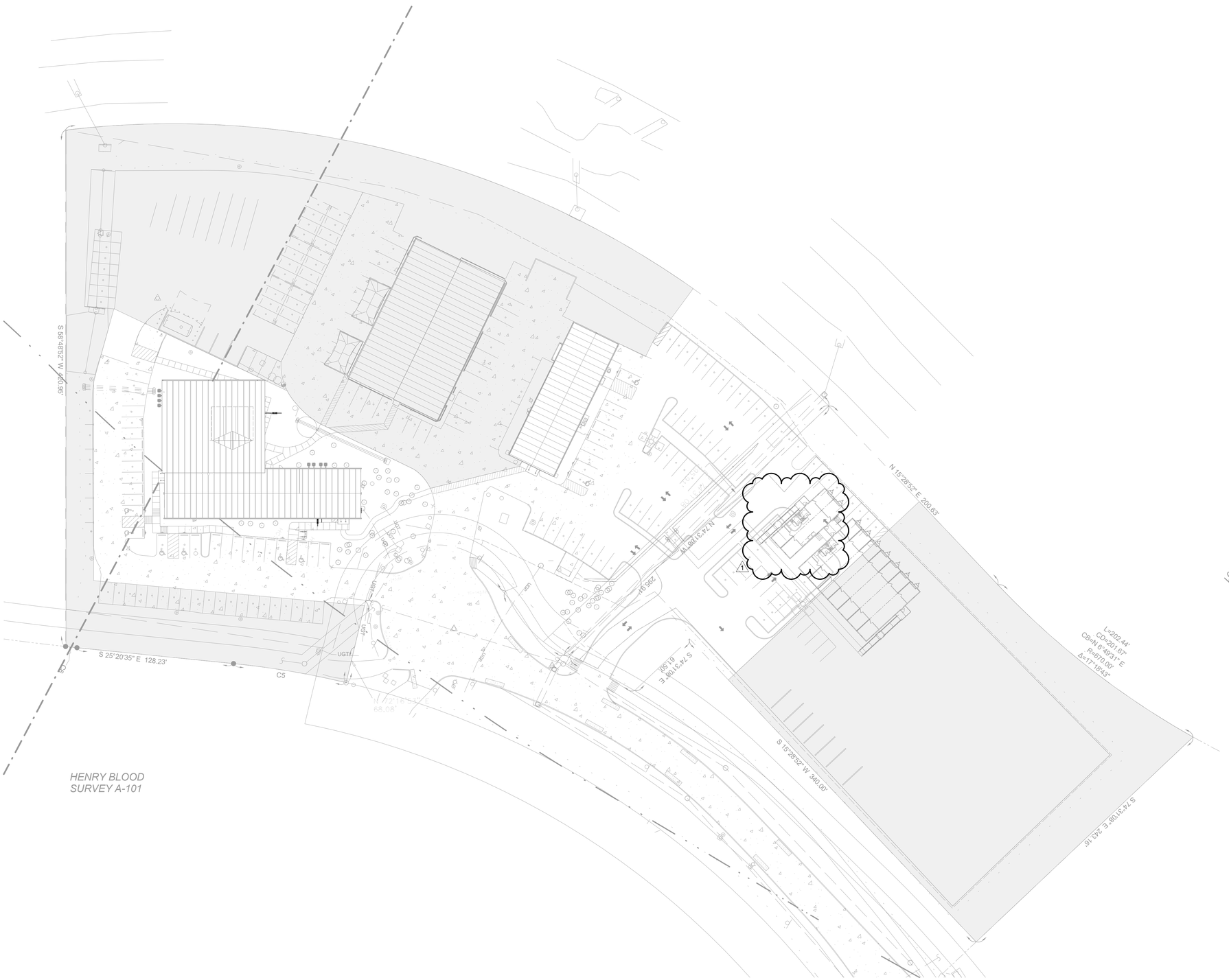
E8.01

© COPYRIGHT 2025 HEIGHTS VENTURE

CITY STAMP APPROVAL

XX INDICATES KEYED NOTE

KEYED NOTES



PLUMBING SITE PLAN
1" = 40'-0"

1

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450 Houston, Texas 77042
Tel: (281) 809-7532 www.cfiaffiliates.com
Texas Reg. No.: F-26511 CFIA Project No.: 425007.00

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted: 12/3/2025 8:12:45 AM

Drawn By:	Checked By:
Author	Checker

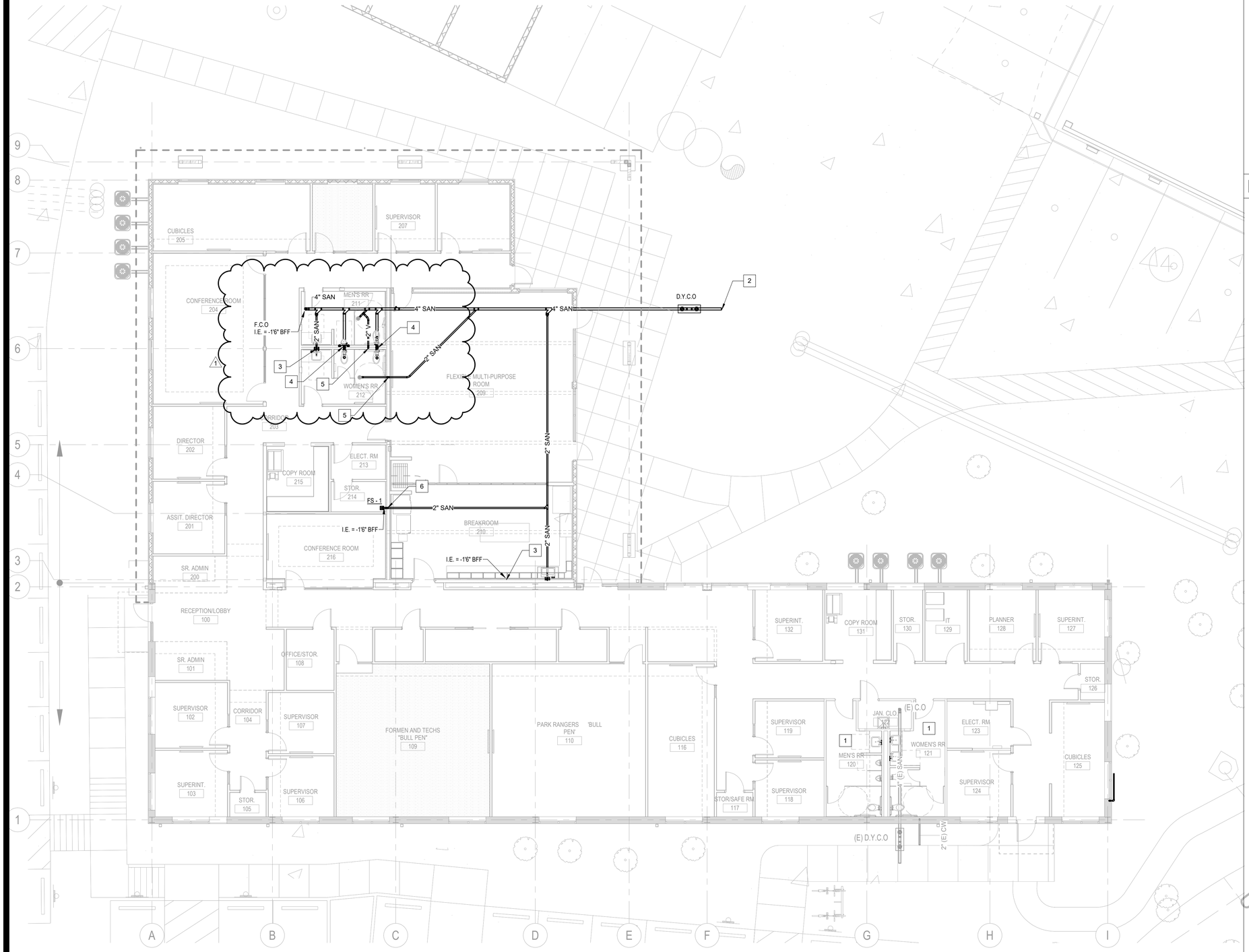
Project Phase: PERMIT ISSUE

PLUMBING SITE PLAN

P1.01

© COPYRIGHT 2025 HEIGHTS VENTURE

CITY STAMP APPROVAL



XX INDICATES KEYED NOTE

KEYED NOTES

1. ALL PLUMBING FIXTURES IN THIS ROOM TO BE REPLACED. ALL PLUMBING PIPING TO BE EXISTING TO REMAIN.
2. 4" SANITARY WASTE LINE. REFER TO CIVIL FOR CONTINUATION. I.E. = -2'6" BFF.
3. 2" SAN WASTE DOWN, AND 2" VENT UP TO SERVE FIXTURE.
4. 4" SAN WASTE DOWN, AND 2" VENT UP TO SERVE FIXTURE.
5. 2" VENT UP FROM FLOOR DRAIN
6. 2" VENT UP FROM FLOOR SINK

PLUMBING UNDERFLOOR PLAN - BLDG A&C
1/8" = 1'-0"

1

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450
Tel: (281) 809-7532
Texas Reg. No.: F-26511
Houston, Texas 77042
www.cfiaffiliates.com
CFIA Project No.: 425007.00

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted:
12/3/2025 8:12:55 AM

Drawn By:	Checked By:
Author	Checker

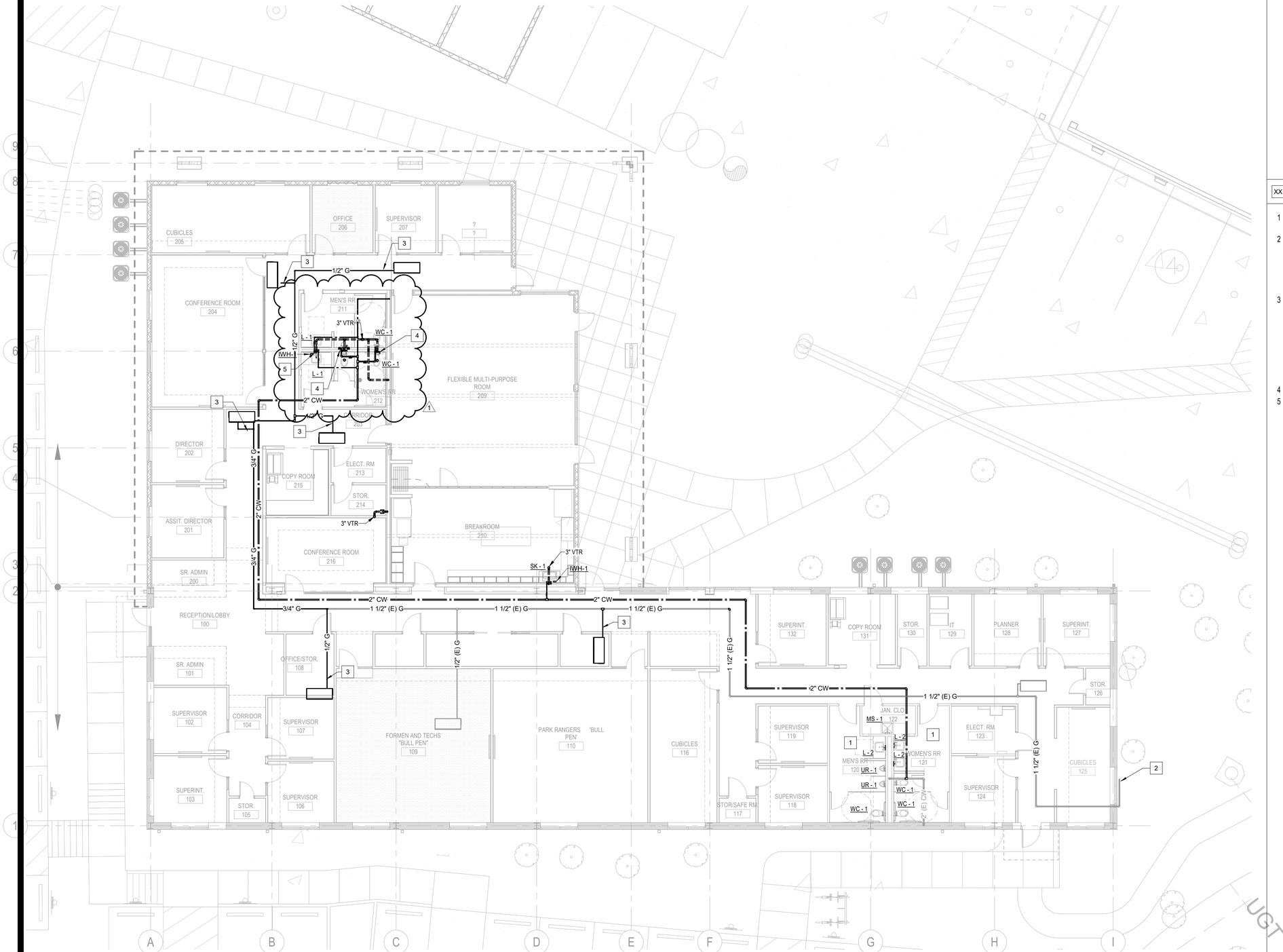
Project Phase:
PERMIT ISSUE

PLUMBING UNDERFLOOR PLAN - BLDG A&C

P2.00AC

© COPYRIGHT 2025 HEIGHTS VENTURE

CITY STAMP APPROVAL



XX INDICATES KEYED NOTE

KEYED NOTES

1 ALL PLUMBING FIXTURES IN THIS ROOM TO BE REPLACED. ALL PLUMBING PIPING TO BE EXISTING TO REMAIN.

2 EXISTING GAS METER LOCATION, CONTRACTOR SHALL VERIFY GAS METER SIZE, LOCATION, AND INLET PRESSURE PRIOR TO CONSTRUCTION. METER SHALL BE SIZED FOR 500 CFH, CONTRACTOR TO COORDINATE WITH GAS UTILITY TO PROVIDE METER IF REQUIRED. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES ASSOCIATED WITH THIS WORK.

3 1/2" NATURAL GAS SUPPLY PIPING; PROVIDE SHUT OFF VALVE AND ROUTE TO EQUIPMENT. ELBOW UP FROM GAS LINE TO APPLIANCE. PROVIDE, ISOLATION VALVE AND CONNECTORS (DORMONT SAFETY QUICK CONNECT SHUT OFF VALVE, SWIVEL MAX CONNECTOR ACCESSORY, BLUE HOSE CONNECTOR AND SNAP FAST QUICK CONNECT COUPLING OR EQUAL) PROVIDE GAS PRESSURE REGULATOR IF REQUIRED, CONTRACOTR TO COORDINATED WITH MANUFACTURER RECOMMENDATIONS FOR FINAL EQUIPMENT CONNECTION

4 1-1/4" COLD WATER AND 2" VENT DOWN TO SERVE WATERCLOSET

5 3/4" COLD WATER DOWN TO SERVE LAVATORY, AND IWH-1.

PLUMBING FLOOR PLAN - BLDG A&C
1/8" = 1'-0"

1

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450 Houston, Texas 77042
Tel: (281) 809-7532 www.cfiaffiliates.com
Texas Reg. No.: F-26511 CFIA Project No.: 425007.00

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted: 12/3/2025 8:13:05 AM

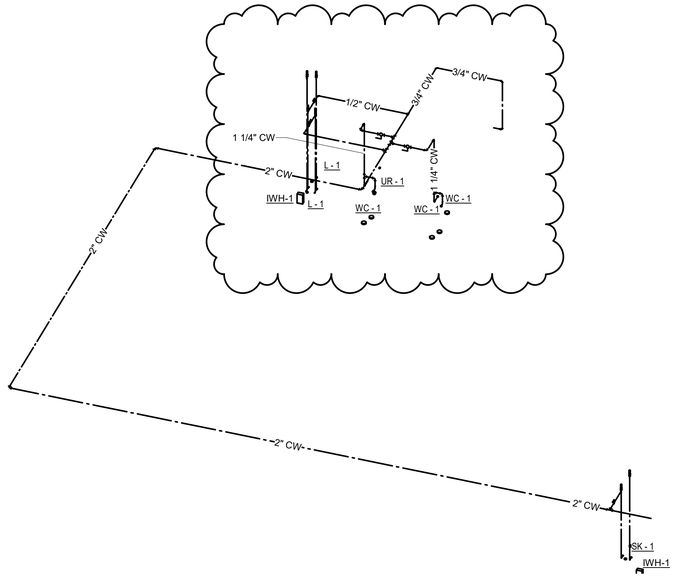
Drawn By:	Checked By:
Author	Checker

Project Phase: PERMIT ISSUE

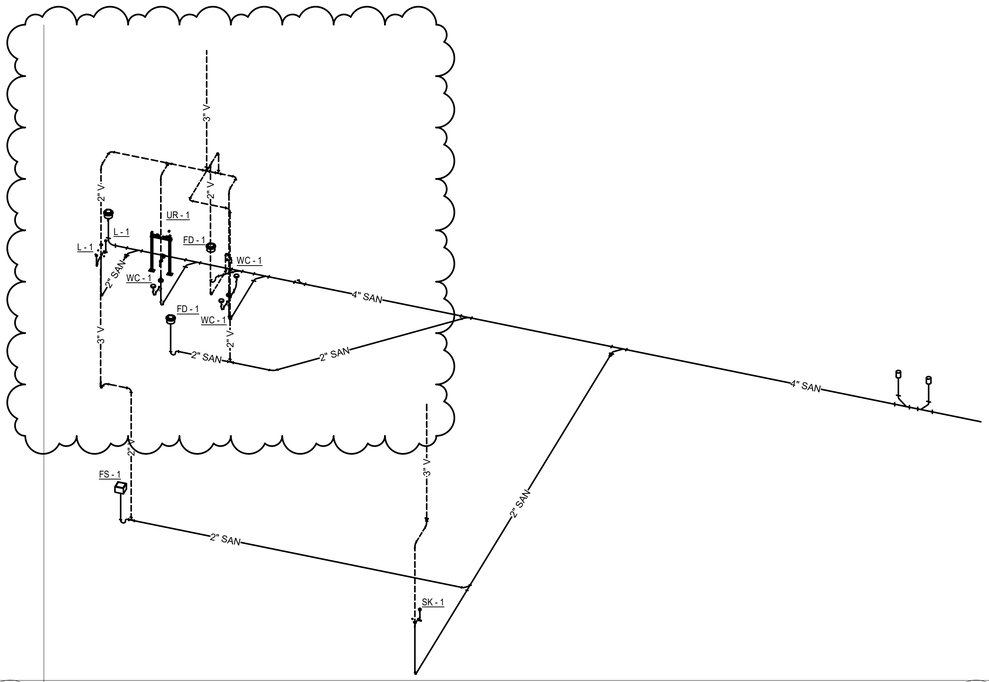
PLUMBING FLOOR PLAN - BLDG A&C

P2.01AC

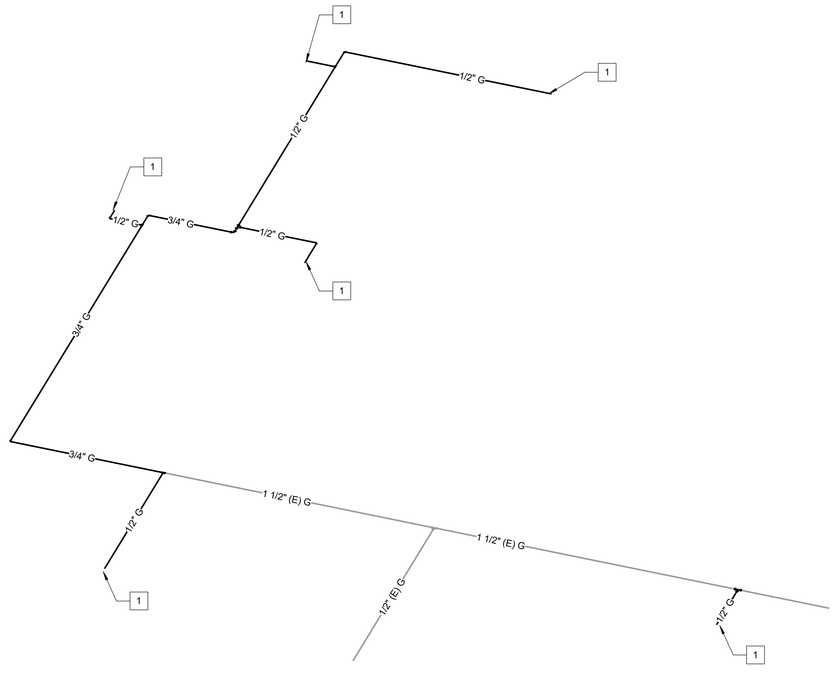
© COPYRIGHT 2025 HEIGHTS VENTURE



DOMESTIC WATER RISER 2



SANITARY RISERS 1



GAS RISER 3

CITY STAMP APPROVAL

1 1/2" NATURAL GAS SUPPLY PIPING; PROVIDE SHUT OFF VALVE AND ROUTE TO EQUIPMENT. ELBOW UP FROM GAS LINE TO APPLIANCE. PROVIDE, ISOLATION VALVE AND CONNECTORS (DORMONT SAFETY QUICK CONNECT SHUT OFF VALVE, SWIVEL MAX CONNECTOR ACCESSORY, BLUE HOSE CONNECTOR AND SNAP FAST QUICK CONNECT COUPLING OR EQUAL). PROVIDE GAS PRESSURE REGULATOR IF REQUIRED, CONTRACOTR TO COORDINATED WITH MANUFACTURER RECOMMENDATIONS FOR FINAL EQUIPMENT CONNECTION

THE WOODLANDS TOWNSHIP

Δ	DATE:	ISSUE:
	10/22/25	100% PERMIT ISSUE
1	12/03/25	ADDENDUM #1

CFI Affiliates
CONSULTING ENGINEERS
10370 Richmond Ave., Ste 1450
Tel: (281) 809-7532
Texas Reg. No.: F-26511
Houston, Texas 77042
www.cfiaffiliates.com
CFIA Project No.: 425007.00

12/03/2025

Heights Venture
ARCHITECTURE DESIGN
HOUSTON
1111 North Loop West, Suite 800
Houston, Texas 77008
281.854.6100
DALLAS
5741 Legacy Drive, Suite 320
Plano, Texas 75024
281.854.6100

PARD CAMPUS

8203 MILLENNIUM FOREST,
THE WOODLANDS, TX 77381

Project Number:	Sheet Size:
24026	24 x 36

Date / Time Plotted: 12/3/2025 8:13:06 AM

Drawn By:	Checked By:
Author	Checker

Project Phase: PERMIT ISSUE

PLUMBING RISER DIAGRAM

P7.01

© COPYRIGHT 2025 HEIGHTS VENTURE