COUNTY PURCHASING AGENT

Fort Bend County, Texas

Jaime Kovar
County Purchasing Agent

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

April 16, 2024

TO: All Prospective Bidders

RE: Addendum No. 2 – Fort Bend County BID 24-052 – Construction of Fresno Community Center for Fort Bend County

Addendum 2:

Attached is addendum 2. Vendors are to utilize Addendum 2 document while preparing their solicitation response. Changes include revised specifications, drawing sheets, and Q&A#1 provided by architect.

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Immediately upon your receipt of this addendum, please fill out the following information and email this page to Brooke Lindemann at brooke.lindemann@fortbendcountytx.gov

_____

Company Name

_____

Signature of person receiving addendum Date

If you have any questions, please contact this office.

Sincerely,

Brooke Lindemann
Senior Buyer

ADDENDUM NO. #2

04/12/2024

DATE:	April 12, 2024
PROJECT:	Fresno Boys & Girls Club
LOCATION:	1031 W Sycamore Rd Fresno, Tx 77545
PROJECT NO.	N032023
DISTRIBUTION:	Ft Bend Procurement Department
DELIVERED VIA:	Email
NO. PAGES:	177 pages
PREPARED BY:	Smith & Company Architects, Inc

This addendum form is a part of the construction documents for Fort Bend County Precinct 2 for the Fresno Boys & Girls Club Bid documents posted on February 29, 2024, for the subject project and modifies/add to them as noted below.

QUESTIONS & ANSWERS

ADDITIONAL DOCUMENTS

1. Section 11660; Aluminum Tip & Roll Bleachers or Anchored Fixed Retractable Bleachers?

Response: Refer to ADDENDUM #2

2. Is this a Pre-Engineered Metal Building (division 13) or a component job (division 7)?

Response: This is a Pre-Engineered Metal Building (division 13).

3. Would you accept Carlisle 60 mil TPO as a TPO substitution?

Response: Carlisle is an approved equal.

4. Spec SECTIONS 041213, 221316, and 221319 are missing.

Response: Refer to ADDENDUM #2

5. Can you let me know what the actual length of the Back lit sign panel is?

Response: Refer to ADDENDUM #2

6. What font do you want to use and what information goes on the Back lit sign?

Response: Price as shown in Drawings.

7. County Logo size?

Response: Refer to ADDENDUM #2

8. There is a back lit panel box that goes on the seat wall but the dimension – length is wrong – it states 2' 9 3/16" – should it not be 8' 6"? The wall is 3'6" high x 10' 3" where the box goes.

Response: Price as shown in drawings.

9. Also, the holder dimensions for the County Logo are 1'5" x 1'5" but the logo etched plaque is 2'4" x 2'4"

Response: Refer to ADDENDUM #2

10. The copy going on the Seat Wall – is it Reverse Channel Letters or FCO's (Flat Cut Out) or Vinyl lettering?

Response: Price as Flat Cut Out

11. The State of Texas etched plaque dimensions are larger than the county logo indicated on the seat wall the Sign Panel, back lit sign with a measurement of 2' x 2' 9 3/16" which is essentially a square and not a rectangle – are these dimensions correct?

Response: Refer to ADDENDUM #2

12. Cast Dedication Plaque (Reference sheet 18|G1.11): Requesting more information on the specifications for finishes. Three (3) noted in the PLAQUES section 2.1 | 101416. Is this raised or recess image/border and contrasting infill copy/image color be black?

Response: Refer to ADDENDUM #2

13. Fort Bend County Etched Plaque (Reference Sheet 16|G1.11): Requesting more information on the specifications for desired stainless-steel finish. Is this raised or recessed image and will the contrasting infill copy/border color be black? (photo example attached or raised graphics seal).

Response: Refer to ADDENDUM #2

14. Seat Wall – Elevation S.S. Sign Panel: Requesting more detail information on the specifications for the letters backlite – are these acrylic push thru letters or routed and acrylic backed from behind? It appears the county seal flush mounted to the sign panel - is it too illuminated. How thick is the disc?

Response: Price as shown in drawings.

15. Need guidance on what to quote. A4.01 lettering and logo is for BOYS/GIRLS CLUB-well know organization that may not want us using their font and logo. The specs are generic. The plans do not give dimensions or invite quoting.

Response: Correct, the Boys & Girls Club will be the occupants of this building. Refer to ADDENDUM #2

16. Please provide detail (spec book)08 14 16 information

Response: No knowledge of this section.

17. Door schedule calls for wood doors to be PLAM. What is the PLAM color?

Response: Refer to Specification Section 081416

18. Are the wood doors to be particle board or structural composite lumber?

Response: Refer to ADDENDUM #2

19. Has a job duration been established?

Response: No

20. Since detention will be done by others, will the spoils be left on site for use in other areas?

Response: Due to the timing of the roadway project, we have added construction of the detention pond to this scope of work. Contractor shall be responsible for using any excess soil from all sitework, including the detention pond, as needed on site and shall haul off excess dirt spoils in a lawful manner.

21. Will the "by others" detention sub be performing the clearing and grubbing in the detention pond area or are we supposed to cover that in OUR clearing and grubbing price?

Response: Yes, include clearing and grubbing in price.

720 N Post Oak, Suite 124
Houston, Texas 77024
Phone: (713) 524-4202 Fax: (713) 524-4071

22. On A3.10 there is a callout for Sealed Concrete (SC-2) and Acid Stained Concrete (SC-3). I believe this is referencing to color by staining the concrete. The specs lead me to believe it will be stain only. I'm trying to verify that the integral colored concrete will not be required to achieve this. Please confirm if only stain will be required or if integral colored concrete will be required.

Response: Sealed Concrete is specified in section 099123 and SC-1 and SC-3 is specified in section 033543.

23. Sheet A0.02 Project Location & Code Compliance list building code as IBC 2021. Sheet S1.01 Foundation Plan notes code as IBC 2018. Please confirm the building code.

Response: Refer to ADDENDUM #2

24. Sheet A0.02 list wind speed as 110 mph. Sheet S1.01 list wind speed as 148 mph. We assume 148 mph is correct due to the ASCE Hazards Report also listing as 148 mph.

Response: Refer to ADDENDUM #2

25. Sheet A0.02 notes Exposure C whereas sheet S1.01 notes Exposure B. Please confirm exposure.

Response: Refer to ADDENDUM #2

26. 133419-7 states vertical deflection under Live Load 1/240 of the span and the very next line states vertical deflection under Total Load 1/240. Live Load and Total Load are unable to be the same deflection. Please confirm design loads.

Response: Deflection limit is 1/240 of span under any loads.

27. 133419-7 states drift maximum 1/400. Sheet S1.01 under Metal Building Notes drift shall not exceed H/500. Please confirm drift requirements.

Response: Refer to ADDENDUM #2

28. 133419-8 FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings. Fire/Windstorm Classification: Class 1A-[60] [75] [90] [105] [120] <Insert number>. Please confirm the classification we are to follow?

Response: Refer to ADDENDUM #2

29. As a note, this project has SSR over high temp metal roofing underlayment over 5" rigid board insulation over some type of unidentified deck. I think the A/E team might be specifying all of this additional roofing material to reach the FM requirements, but that's not necessary to achieve FM. We wouldn't be able to provide the underlayment and rigid, so that would need to be picked up by someone else if it's absolutely required. Can you confirm the requirement for all of this non-conventional PEMB roof materials?

Response: Price per Contract document

30. All cut details show roof deck setting on rafters without any purlins shown anywhere on any sections, but we will need to provide roof purlins. Please confirm this condition.

Response: Price per contract documents.

31. 13341-19 calls wall panel out as a concealed-fastener flush-profile 16-inch coverage 3-inch height. Plans call for MasterLine 16. Please confirm which panel we are to provide. We are unsure what panel the specification is describing.

Response: Refer to ADDENDUM #2

32. Plans call gutter and downspouts our as aluminum. Are standard galvalume substrate gutters and downspouts permitted?

Response: Bid as per Contract documents

33. Collateral load was not called out. Please confirm if specific collateral load should be provided or if metal building standard collateral load is permissible.

Response: Dead loads, including collateral loads, to be determined by building designer based on architectural drawings, MEP drawings and standard practices.

34. Roof is called out as Kynar finish but all of metal roofs are ¼:12 slope and will not ever be seen. Would we be permitted to provide a more economical Siliconized Polyester (signature 200) finish or even a Galvalume (no color) finish?

Response: Economical Siliconized Polyester (signature 200) finish is acceptable.

35. Section, 05400, Cold-Formed Framing, 2.1 A. "engage in a qualified professional engineer" to design the system. I can do this if I need to, should I include it?

Response: Coordinate through General Contractor

36. It's calling for 14 gage exterior studs @ 12" O.C. It calls for 16 gauge for the exterior soffit, but no information on the interior stud gage.

Response: Refer to ADDENDUM #2

37. What gauge studs should I figure for the interior walls? 12' to 16' will be used?

Response: Refer to ADDENDUM #2

38. We did not see a flagpole section in Division 10 for those, but they do show two on the architectural site plan drawing. Would you all please provide additional information or a specification for the flagpoles?

Response: Refer to ADDENDUM #2

39. Please provide clarification on the bleachers; the specifications call for telescoping bleachers, but the drawings call for tip-n-roll bleachers. Which one should it be? Would you be able to provide a model number or additional information so we can bid on it as per the owners' requirements?

Response: Refer to ADDENDUM #2

40. There are two enclosures on sheet A1.01 detail note 15. The is no information on what type of enclosures these are. Can you clarify what material is being used to enclose these HVAC?

Response: Refer to ADDENDUM #2

41. Based on the project windspeed, should protective (windstorm) glass & glazing systems be used?

Response: Refer to ADDENDUM #2

42. Will Oldcastle Building Envelope Solar Eclipse Sun Shade Systems, both Horizontal with Outriggers and Vertical Single-Blade Sun Shades be accepted?

Response: This is an acceptable product as long as the contract documents are met as designed.

43. Would you accept Omnisports Multi-Use as a Sheet Vinyl Flooring substitution?

Response: No substitution acceptable

44. Can you clarify which frames are to be HM, which ones are to be interior aluminum, and which ones are to be aluminum storefront? Head and Jamb details do not match the door types and I want to be sure I pick up everything you want me to.

Response: Refer to ADDENDUM #2

CHANGES TO PROJECT MANUAL

SPECIFICATIONS

1. Delete TABLE OF CONTENTS – dated February 29, 2024, and replace with attached TABLE OF CONTENTS – dated April 12, 2024.

2. Delete Specification Section 081416 dated February 29,2024, and replace with Specification Section 081416 – FLUSH WOOD DOORS dated April 12, 2024

3. Delete Specification Section 084113 – ALUMINUM – FRAMED ENTRANCES AND STOREFRONTS dated February 29, 2024, and replace with attached Specification Section 084113 – ALUMINUM – FRAMED ENTRANCES AND STOREFRONTS dated April 12, 2024.

4. Delete Specification Section 085113 – ALUMINUM WINDOWS dated February 29, 2024, and replace with attached Specification Section 085113 – ALUMINUM WINDOWS dated April 12, 2024.

5. Delete Specification Section 088000-GLAZING dated February 29, 2024, and replace with attached Specification Section 088000 – GLAZING dated April 12, 2024

6. Delete Specification Section 101416 – PLAQUES dated February 29, 2024, and replace with attached Specification Section 101416 – PLAQUES dated April 12, 2024.

7. Delete Specification Section 107516- Ground Set Flagpoles dated February 29,2024 Add Specification Section 107516– Ground-Set Flagpoles – dated April 12, 2024.

8. Delete Specification Section 126600 – TELESCOPING STANDS dated February 29, 2024, and replace with attached Specification Section 126613 – TELESCOPING SEATING dated April 12, 2024

9. Delete Specification Section 133419 – METAL BUILDING SYSTEMS dated February 29, 2024, and replace with attached Specification Section 133419 –METAL BUILDING SYSTEMS dated April 12, 2024.

10. Delete Specification Section 221319 – SANITARY WASTE PIPING SPECIALITIES dated February 29, 2024, and replace with attached Specification Section 221319 – SANITARY WASTE PIPING SPECIALITIES dated April 12, 2024.

11. Delete Specification Section 271600 – COMMUNICATIONS CONNECTING CORDS dated February 19, 2024, and replace with attached Specification Section 271600 – COMMUNICATIONS CONNECTING CORDS dated April 12, 2024.

12. Delete Specification Section 274100 – AUDIO VISUAL SYSTEMS dated February 19, 2024, and replace with attached Specification Section 274100 –AUDIO VISUAL SYSTEMS dated April 12, 2024.

13. Delete Specification Section 323113-CHAIN LINK FENCES AND GATES dated February 29,2024 and replace with attached Specification Section 323113 – CHAIN LINK FENCES AND GATES dated April 12, 2024

CHANGES TO DRAWINGS

DOCUMENTS

1. Delete Sheet A0.02 PROJECT LOCTION & CODE COMPLIANCE dated February 29, 2024, and replace with A0.02 PROJECT LOCATION & CODE COMPLIANCE revised April 12, 2024.

2. Delete Sheet C0.07 OVERALL LAYOUT dated February 29, 2024, and replace with C0.07 OVERALL LAYOUT revised April 12, 2024.

3. Delete Sheet C0.09 DRAINAGE AREA MAP dated February 29, 2024, and replace with C0.09 DRAINAGE AREA MAP revised April 12, 2024.

4. Delete Sheet C0.10 DRAINAGE CALCULATIONS dated February 29, 2024, and replace with C0.10 DRAINAGE CALCULATIONS revised April 12, 2024.

5. Delete Sheet C0.11 DETENTION POND LAYOUT dated February 29, 2024, and replace with C0.11 DETENTION POND LAYOUT dated April 12,2024

6. Delete Sheet C1.00 WATER AND SANITARY SEWER LAYOUT dated February 29, 2024, and replace with C1.00 WATER AND SANITARY SEWER LAYOUT revised April 12, 2024.

7. Delete Sheet C2.00 STORM SEWER LAYOUT dated February 29, 2024, and replace with C2.00 STORM SEWER LAYOUT revised April 12, 2024.

8. Delete Sheet C3.00 GRADING LAYOUT dated February 29, 2024, and replace with C3.00 GRADING LAYOUT revised April 12, 2024.

9. Delete Sheet C4.00 DIMENSION CONTROL LAYOUT dated February 29, 2024, and replace with C4.00 DIMENSION CONTROL LAYOUT revised April 12, 2024.

10. Delete Sheet C5.00 PAVING LAYOUT dated February 29, 2024, and replace with C5.00 PAVING LAYOUT revised April 12, 2024.

11. Delete Sheet C5.10 TEMPORARY TRAFFIC CONTROL dated February 29, 2024 and replace with C5.10 TEMPORARY TRAFFIC CONTROL PLAN dated April 12,2024

12. Delete Sheet C6.00 FIRE ACCESS LAYOUT dated February 29, 2024, and replace with C6.00 FIRE ACCESS LAYOUT revised April 12, 2024.

13. Delete Sheet C7.00 SWPPP LAYOUT dated February 29, 2024, and replace with C7.00 SWPPP LAYOUT revised April 12, 2024.

14. Delete Sheet C7.04 STORM SEWER DETAILS 1 OF 3 dated February 29, 2024, and replace with C7.04 STORM SEWER DETAILS 1 OF 3 revised April 12, 2024.

15. Delete Sheet C7.11 PAVING DETAILS 5 OF 5 dated February 29, 2024, and replace with C7.11 PAVING DETAILS 5 OF 5 revised April 12, 2024.

16. Delete Sheet L3.01 LANDSCAPE SITE DETAILS dated February 29, 2024, and replace with L3.01 LANDSCAPE SITE DETAILS dated April 12, 2024.

17. Delete Sheet A1.01 ENLARGED SITE PLAN dated February 29, 2024, and replace with A1.01 ENLARGED SITE PLAN dated April 12, 2024.

18. Delete Sheet A1.05 SITE DETAILS dated February 29, 2024, and replace with A1.05 SITE DETAILS dated April 12, 2024.

19. Delete Sheet A2.01 FLOOR PLAN dated February 29, 2024, and replace with A2.01 FLOOR PLAN dated April 12, 2024.

20. Delete Sheet A2.02 FLOOR PLAN – MEZZANINE dated February 29, 2024, and replace with A2.02 FLOOR PLAN - MEZZANINE dated April 12, 2024.

21. Delete Sheet A2.10 LOW ROOF PLAN dated February 29, 2024, and replace with A2.10 LOW ROOF PLAN dated April 12,2024.

22. Delete Sheet A2.11 HIGH ROOF PLAN dated February 29, 2024, and replace with A2.11 HIGH ROOF PLAN dated April 12, 2024.

23. Delete Sheet A3.20 DOOR TYPE, SCHEDULE & DETAILS dated February 29, 2024, and replace with A3.20 DOOR TYPE, SCHEDULE & DETAILS revised April 12, 2024.

24. Delete Sheet A3.30 WINDOW TYPES & DETAILS dated February 29, 2024, and replace with A3.30 WINDOW TYPES & DETAILS revised April 12, 2024.

25. Delete Sheet A4.01 EXTERIOR ELEVATIONS dated February 29,2024, and replace with A4.01 EXTERIOR ELEVATIONS dated April 12, 2024.

26. Delete Sheet A5.12 INTERIOR ELEVATIONS dated February 29, 2024, and replace with A5.12 INTERIOR ELEVATIONS revised April 12, 2024.

27. Delete Sheet A5.14 INTERIOR ELEVATIONS dated February 29, 2024, and replace with A5.14 INTERIOR ELEVATIONS revised April 12, 2024.

28. Delete Sheet A7.00 MILLWORK DETAILS dated February 29, 2024, and replace with A7.00 MILLWORK DETAILS revised April 12, 2024.

29. Delete Sheet A9.20 COURT LAYOUT PLAN dated February 29, 2024, and replace with A9.20 COURT LAYOUT PLAN revised April 12, 2024.

30. Delete Sheet S1.01 FOUNDATION PLAN dated February 29, 2024, and replace with S1.01 FOUNDATION PLAN revised April 12, 2024.

31. Delete Sheet E4.01 FIRE ALARM PLAN dated February 29, 2024, and replace with E4.01 FIRE ALARM PLAN revised April 12, 2024.

32. Delete Sheet G1.11 GRAPHIC DETAILS dated February 29, 2024, and replace with G1.11 GRAPHIC DETAILS revised April 12, 2024.

720 N Post Oak, Suite 124
Houston, Texas 77024
Phone: (713) 524-4202 Fax: (713) 524-4071

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SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Solid-core flush wood doors with plastic-laminate-faces.
2. Factory finishing flush wood doors and frames.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Door trim for openings.
5. Door frame construction.
6. Factory-machining criteria.
7. Factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.
3. Details of frame for each frame type, including dimensions and profile.
4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
5. Dimensions and locations of blocking for hardware attachment.
6. Dimensions and locations of mortises and holes for hardware.

7. Clearances and undercuts.

C. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish.
2. Plastic laminate, 6 inches (150 mm) square, for each color, texture, and pattern selected.
3. Polymer edging, in manufacturer's standard colors.
4. Corner sections of doors, approximately 8 by 10 inches (200 by 250 mm), with door faces and edges representing actual materials to be used.
5. Frames for light openings, 6 inches (150 mm) long, for each material, type, and finish required.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For door inspector.

1. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.

B. Field quality-control reports.

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Special warranties.

B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 QUALITY ASSURANCE

A. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies shall comply with qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

1. DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Delamination of veneer.
b. Warping (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.
c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 76.2-mm) span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with AWI/AWMAC/WI's "Architectural Woodwork Standards.".

1. Provide labels and certificates from AWI certification program indicating that doors[and frames] comply with requirements of grades specified.

a. Contractor shall register the Work under this Section with the AWI Quality Certification Program at www.awiqcp.org or by calling 855-345-0991.

2. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with the Contract Documents in addition to those of the referenced quality standard.

2.3 SOLID-CORE FLUSH WOOD DOORS WITH PLASTIC-LAMINATE FACES

A. Interior Doors:

1. Performance Grade: ANSI/WDMA I.S.: 1A Heavy Duty.

2. Architectural Woodwork Standards Grade: Premium.
3. Plastic-Laminate Faces: High-pressure decorative laminates complying with NEMA LD 3, Grade HGS.
4. Colors, Patterns, and Finishes: As selected by Architect from laminate manufacturer's full range of products.
5. Exposed Vertical Edges: Plastic laminate that matches faces, applied before faces or impact-resistant polymer edging, applied after faces.

6. Core for Non-Fire-Rated Doors:

    1) Provide doors with WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 087100 "Door Hardware."

    b. WDMA I.S. 10 structural composite lumber.

    1) Screw Withdrawal, Door Face: 550 lbf (2440 N).
    2) Screw Withdrawal, Vertical Door Edge: 550 lbf (2440 N).

7. Construction: Five plies, hot-pressed or cold-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before faces and crossbands are applied.

2.4 LIGHT FRAMES AND LOUVERS

A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.

1. Wood Species: Same species as door faces.
2. Profile: Manufacturer's standard shape.

2.5 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated.

1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

B. Factory machine doors for hardware that is not surface applied.

1. Locate hardware to comply with DHI-WDHS-3.
2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
5. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

C. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

2.6 FACTORY FINISHING

A. Comply with referenced quality standard for factory finishing.

1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
2. Finish faces, all four edges, edges of cutouts, and mortises.
3. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

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

3.2 INSTALLATION

A. Hardware: For installation, see Section 087100 "Door Hardware."

B. Install doors and frames to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

C. Install frames level, plumb, true, and straight.

1. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3.2 mm in 2400 mm).
2. Anchor frames to anchors or blocking built in or directly attached to substrates.

a. Secure with countersunk, concealed fasteners and blind nailing.
b. Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork.

1) For factory-finished items, use filler matching finish of items being installed.

D. Job-Fitted Doors:

1. Align and fit doors in frames with uniform clearances and bevels as indicated below.

a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.

2. Machine doors for hardware.
3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
4. Clearances:

a. Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors.
b. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
c. Where threshold is shown or scheduled, provide1/4 inch (6.4 mm) from bottom of door to top of threshold unless otherwise indicated.

5. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.

E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 FIELD QUALITY CONTROL

A. Inspection Agency: Owner will engage a qualified inspector to perform inspections and to furnish reports to Architect.

B. Inspections:

1. Provide inspection of installed Work through AWI's Quality Certification Program, certifying that wood doors and frames, including installation, comply with requirements of AWI/AWMCA/WI's "Architectural Woodwork Standards" for the specified grade.

2. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

3.4 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Aluminum-framed storefront systems.
2. Aluminum-framed entrance door systems.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
4. Include point-to-point wiring diagrams showing the following:

a. Power requirements for each electrically operated door hardware.
b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

D. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch (300-mm) lengths of full-size components and showing details of the following:

1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

F. Delegated-Design Submittal: For aluminum-framed entrances and storefronts including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Mockup Testing Submittals:

1. Testing Program: Developed specifically for Project.
2. Test Reports: Prepared by a qualified preconstruction testing agency for each mockup test.
3. Record Drawings: As-built drawings of preconstruction laboratory mockups showing changes made during preconstruction laboratory mockup testing.

B. Qualification Data:

1. For Installer and laboratory mockup testing agency.
2. For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.

C. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

D. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by manufacturer and witnessed by a qualified testing agency.

E. Quality-Control Program: Developed specifically for Project, including fabrication and installation, according to recommendations in ASTM C1401. Include periodic quality-control reports.

F. Source quality-control reports.

G. Field quality-control reports.

H. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer and that employs a qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors and that employs glazing technicians certified under the Architectural Glass and Metal Technician (AGMT) certification program.

B. Testing Agency Qualifications: Qualified according to ASTM E699 for testing indicated [and accredited by the International Accreditation Service or the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement as complying with ISO/IEC 17025] and acceptable to Owner and Architect.

C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.8 MOCKUPS

A. Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical wall area as shown on Drawings.

2. Testing shall be performed on mockups according to requirements in "Field Quality Control" Article.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on laboratory mockups.

1. Build preconstruction laboratory mockups at testing agency facility; use personnel, products, and methods of construction that will be used at Project site.
2. Size and Configuration: As indicated on Drawings.
3. Notify Architect seven days in advance of the dates and times when preconstruction laboratory mockups will be constructed and tested.

B. Preconstruction Laboratory Mockup Testing: Test preconstruction laboratory mockups according to requirements in "Performance Requirements" Article. Perform the following tests in the following order:

1. Structural, 50 percent: ASTM E330/E330M at 50 percent of positive test load.
2. Air Leakage: ASTM E283.
3. Water Penetration under Static Pressure: ASTM E331.
4. Water Penetration under Dynamic Pressure: AAMA 501.1.
5. Structural, 100 percent: ASTM E330/E330M at 100 percent of positive and negative test loads. Repeat the following:

    a. Air Leakage: ASTM E283.
    b. Water Penetration under Static Pressure: ASTM E331.

6. Thermal Cycling: According to AAMA 501.5. Repeat the following:

    a. Air Leakage: ASTM E283.
    b. Water Penetration under Static Pressure: ASTM E331.

7. Structural, 100 and 150 percent: ASTM E330/E330M at 100 and 150 percent of positive and negative test loads. Repeat the following:

    a. Air Leakage: ASTM E283.
    b. Water Penetration under Static Pressure: ASTM E331.

1.10 WARRANTY

A. Special Warranty:

B. Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: 10 years from date of Substantial Completion.

C. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrances and storefronts.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.
    e. Failure of operating units.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.

D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans greater than 13 feet 6 inches (4.1 m).
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch (3.2 mm).

E. Structural: Test according to ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test according to ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa).

G. Water Penetration under Dynamic Pressure: Test according to AAMA 501.1 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa).
2. Maximum Water Leakage: According to AAMA 501.1. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.

H. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested according to AAMA 501.6 at design displacement and 1.5 times the design displacement.

I. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Air Leakage:

a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa) when tested according to ASTM E283.
b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. (5.08 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

2. Condensation Resistance Factor (CRF):

a. Fixed Glazing and Framing Areas: CRF for the system of not less than 35 as determined according to AAMA 1503.
b. Entrance Doors: CRF of not less than 57 as determined according to AAMA 1503.

J. Noise Reduction: Test according to ASTM E90, with ratings determined by ASTM E1332, as follows.

1. Outdoor-Indoor Transmission Class: Minimum 26.

K. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 1 for basic protection.

1. Large-Missile Test: For glazing located within 30 feet (9.1 m) of grade.

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

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.

a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F (82 deg C).
b. Low Exterior Ambient-Air Temperature: 0 deg F (minus 18 deg C).
c. Interior Ambient-Air Temperature: 75 deg F (24 deg C).

2.3 STOREFRONT SYSTEMS

A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing Construction: Thermally broken.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: Front.
4. Finish: Clear anodic finish.
5. Fabrication Method: Field-fabricated stick system.
6. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
7. Steel Reinforcement: As required by manufacturer.

B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 ENTRANCE DOOR SYSTEMS

A. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch-(3.2-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.

a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

2. Door Design: As indicated.
3. Glazing Stops and Gaskets: Beveled snap-on, extruded-aluminum stops and preformed gaskets.

a. Provide nonremovable glazing stops on outside of door.

4. Finish: Match adjacent storefront framing finish.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware.".

B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
3. Opening-Force Requirements:

a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.

C. Designations: Requirements for design, grade, function, finish, quantity, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.
2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

D. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.

E. Manual Flush Bolts: BHMA A156.16, Grade 1.

F. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.

G. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.

H. Operating Trim: BHMA A156.6.

I. Concealed Overhead Holders and Stops: BHMA A156.8, Grade 1.

J. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.

K. Weather Stripping: Manufacturer's standard replaceable components.

1. Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC.
2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

L. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

2.6 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Comply with Section 088000 "Glazing."

C. Glazing Sealants: Comply with Section 088000 "Glazing."

D. Weatherseal Sealants: ASTM C920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and structural-sealant-glazed storefront manufacturers for this use.

1. Color: Match structural sealant.

2.7 MATERIALS

A. Sheet and Plate: ASTM B209 (ASTM B209M).

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.

2.8 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.
3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

E. Rigid PVC Filler.

2.9 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using shear-block system.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weather stripping at fixed stops.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.10 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF GLAZING

A. Install glazing as specified in Section 088000 "Glazing."

3.4 INSTALLATION OF WEATHERSEAL SEALANT

A. After structural sealant has completely cured, remove temporary retainers and insert backer rod between lites of glass as recommended by sealant manufacturer.

B. Install weatherseal sealant to completely fill cavity, according to sealant manufacturer's written instructions, to produce weatherproof joints.

3.5 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

A. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.6 ERECTION TOLERANCES

A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
3. Alignment:

    a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
    b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
    c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).

4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Field Quality-Control Testing: Perform the following test on representative areas of aluminum-framed entrances and storefronts.

1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.

a. Perform a minimum of two tests in areas as directed by Architect.
b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35, and 70 percent completion.

2. Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. (0.45 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

a. Perform a minimum of two tests in areas as directed by Architect.
b. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35, and 70 percent completion.

3. Water Penetration: ASTM E1105 at a minimum uniform and cyclic static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft. (300 Pa), and shall not evidence water penetration.

C. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.8 MAINTENANCE SERVICE

A. Entrance Door Hardware Maintenance:

1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.
2. Initial Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of entrance door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper entrance door hardware operation at rated speed and capacity. Use parts and supplies that are the same as those used in the manufacture and installation of original equipment.

END OF SECTION 084113

SECTION 085113 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes aluminum windows for exterior locations.

B. Related Requirements:

1. Section 084113 "Aluminum-Framed Entrances and Storefronts" for coordinating finish among aluminum fenestration units.

1.3 PREINSTALLATION MEETINGS

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

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review and discuss the finishing of aluminum windows that is required to be coordinated with the finishing of other aluminum work for color and finish matching.
3. Review, discuss, and coordinate the interrelationship of aluminum windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
4. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
5. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for aluminum windows.

B. Shop Drawings: For aluminum windows.

1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

C. Samples: For each exposed product and for each color specified, 2 by 4 inches (50 by 100 mm) in size.

D. Samples for Verification: For aluminum windows and components required, showing full range of color variations for finishes, and prepared on Samples of size indicated below:

1. Exposed Finishes: 2 by 4 inches (50 by 100 mm).
2. Exposed Hardware: Full-size units.

E. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Test Reports: For each type of aluminum window, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For manufacturer's warranties.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.

B. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project.

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

1. Build mockup of typical wall area as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to meet performance requirements.
b. Structural failures including excessive deflection, water leakage, condensation, and air infiltration.
c. Faulty operation of movable sash and hardware.
d. Deterioration of materials and finishes beyond normal weathering.
e. Failure of insulating glass.

2. Warranty Period:

a. Window: 10 years from date of Substantial Completion.
b. Glazing Units: 20 years from date of Substantial Completion.
c. Aluminum Finish: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain aluminum windows from single source from single manufacturer.

2.2 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Window Certification: AAMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: LC.
2. Minimum Performance Grade: 25.

C. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of 45.

D. Thermal Movements: Provide aluminum windows, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering

calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

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

E. Sound Transmission Class (STC): Rated for not less than 26 STC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E413.

F. Outside-Inside Transmission Class (OITC): Rated for not less than [22 OITC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E1332.

G. Windborne-Debris Impact Resistance: Passes ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 1 basic protection.

1. Large-Missile Test: For glazing located within 30 feet (9.1 m) of grade.
2. Small-Missile Test: For glazing located between 30 feet (9.1 m) and 60 feet (18.3 m) above grade.

2.3 ALUMINUM WINDOWS

A. Types: Provide the following types in locations indicated on Drawings:

1. Fixed.

B. Frames and Sashes: Aluminum extrusions complying with AAMA/WDMA/CSA 101/I.S.2/A440.

1. Thermally Improved Construction: Fabricate frames, sashes, and muntins with an integral, concealed, low-conductance thermal barrier located between exterior materials and window members exposed on interior side in a manner that eliminates direct metal-to-metal contact.

C. Glass: Clear annealed glass, ASTM C1036, Type 1, Class 1, q3.

1. Kind: Fully tempered where indicated on Drawings.

D. Windborne-Debris-Impact-Resistant Insulating-Glass Units: ASTM E2190 with two lites and complying with impact-resistance requirements in "Window Performance Requirements" Article.

1. Exterior Lite: ASTM C1036, Type 1, Class 1, q3.

a. Tint: Clear.
b. Kind: Heat strengthened.

2. Interior Lite: ASTM C1172 clear laminated glass with two plies of float glass.

a. Float Glass: As required by performance requirements indicated.

b. Interlayer Thickness: As required by performance requirements indicated.

3. Filling: Fill space between glass lites with air.
4. Low-E Coating: Pyrolytic on second surface.

E. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

1. Dual Glazing System:

a. Interior Lite: Glass.
b. Exterior Lite: Glass.

F. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

G. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 ACCESSORIES

A. Subsills: Thermally broken, extruded-aluminum subsills in configurations indicated on Drawings.

B. Interior Trim: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.

C. Panning Trim: Extruded-aluminum profiles in sizes and configurations indicated on Drawings.

D. Receptor System: Two-piece, snap-together, thermally broken, extruded-aluminum receptor system that anchors windows in place.

2.5 FABRICATION

A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

B. Glaze aluminum windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

E. Provide water-shed members above side-hinged sashes and similar lines of natural water penetration.

F. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.

G. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual" for recommendations for applying and designating finishes.

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

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

2.7 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.

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

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.

B. Testing Services: Testing and inspecting of installed windows shall take place as follows:

1. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502.
2. Air-Infiltration Testing:

    a. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.
    b. Allowable Air-Leakage Rate: 1.5 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.

3. Water-Resistance Testing:

    a. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
    b. Allowable Water Infiltration: No water penetration.

4. Testing Extent: Three windows of each type as selected by Architect and a qualified independent testing and inspecting agency. Windows shall be tested after perimeter sealants have cured.
5. Test Reports: Prepared according to AAMA 502.

C. Windows will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.4 ADJUSTING, CLEANING, AND PROTECTION

A. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

1. Keep protective films and coverings in place until final cleaning.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 085113

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Glass products.
2. Laminated glass.
3. Insulating glass.
4. Glazing sealants.
5. Glazing tapes.
6. Miscellaneous glazing materials.

1.3

1.4 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

C. IBC: International Building Code.

D. Interspace: Space between lites of an insulating-glass unit.

1.5 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.6 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

1.7 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of glass product other than clear monolithic vision glass;12 inches (300 mm) square.

1. Laminated glass.
2. Insulating glass.

C. Glazing Accessory Samples: For sealants and colored spacers, in 12-inch (300-mm) lengths.

D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

E. Delegated Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by qualified professional engineer responsible for their preparation.

1.8 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturers of fabricated glass units.

B. Product Certificates: For glass.

C. Product Test Reports: For fabricated glass and glazing sealants, for tests performed by a qualified testing agency.

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Sample Warranties: For special warranties.

1.9 QUALITY ASSURANCE

A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved by primary glass manufacturer.

B. Installer Qualifications: A qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

E. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Install glazing in mockups specified in Section 084113 "Aluminum-Framed Entrances and Storefronts" and Section 085113 "Aluminum Windows to match glazing systems required for Project, including glazing methods.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.

1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
2. Use ASTM C1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.12 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.13 WARRANTY

A. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Glass: Obtain tinted and coated glass from single source from single manufacturer.

B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to

defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design glazing.

C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Design Wind Pressures: As indicated on Drawings.

    a. Wind Design Data: As indicated on Drawings.
2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.
3. Thermal Loads: Design glazing to resist thermal stress breakage induced by differential temperature conditions and limited air circulation within individual glass lites and insulated glazing units.

D. Windborne-Debris-Impact Resistance: Exterior glazing shall pass ASTM E1886 missile-impact and cyclic-pressure tests in accordance with ASTM E1996 for Wind Zone 1 for basic protection.

1. Large-Missile Test: For glazing located within 30 feet (9.1 m) of grade.
2. Small-Missile Test: For glazing located between 30 feet (9.1 m) and 60 feet (18.3 m) above grade.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
4. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
5. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.
6. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

F. Acoustic Performance:

1. Exterior Glazing: 28 OITC.
2. Interior Glazing: 35 STC.

2.3 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. NGA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

1. Minimum Glass Thickness for Exterior Lites: 6 mm.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.

B. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

2.5 LAMINATED GLASS

A. Windborne-Debris-Impact-Resistant Laminated Glass: Comply with requirements specified above for laminated glass except laminate glass with one of the following to comply with interlayer manufacturer's written instructions:

1. Construction: Laminate glass with polyvinyl butyral interlayer reinforced with polyethylene terephthalate film or cast-in-place and cured-transparent-resin interlayer reinforced with polyethylene terephthalate film to comply with interlayer manufacturer's written instructions.

2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
3. Interlayer Color: Clear unless otherwise indicated.

2.6 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.7 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

B. Neutral-Curing Silicone Glazing Sealant, Class 100/50: Complying with ASTM C920, Type S, Grade NS, Use NT.

C. Neutral-Curing Silicone Glazing Sealant, Class 50: Complying with ASTM C920, Type S, Grade NS, Use NT.

D. Neutral-Curing Silicone Glazing Sealant, Class 25: Complying with ASTM C920, Type S, Grade NS, Use NT.

E. Acid-Curing Silicone Glazing Sealant, Class 25: Complying with ASTM C920, Type S, Grade NS, Use NT.

2.8 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without

spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.9 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks:

1. EPDM with Shore A durometer hardness of 85, plus or minus 5.
2. Type recommended in writing by sealant or glass manufacturer.

D. Spacers:

1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
2. Type recommended in writing by sealant or glass manufacturer.

E. Edge Blocks:

1. EPDM with Shore A durometer hardness per manufacturer's written instructions.
2. Type recommended in writing by sealant or glass manufacturer.

F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.10 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

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

B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.

C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Presence and functioning of weep systems.
3. Minimum required face and edge clearances.
4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
2. Provide 1/8-inch- (3-mm-) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.8 MONOLITHIC GLASS SCHEDULE

A. Clear Glass Type: Fully tempered float glass.

1. Minimum Thickness: 6 mm.
2. Safety glazing required.

3.9 INSULATING-LAMINATED-GLASS SCHEDULE

A. Clear Insulating, Laminated Glass Type:

1. Overall Unit Thickness: 1 inch (25 mm).
2. Minimum Thickness of Outdoor Lite: 6 mm.
3. Outdoor Lite: Clear fully tempered float glass.

4. Interspace Content: Air.
5. Indoor Lite: Clear laminated glass with two plies of fully tempered float glass.

    a. Minimum Thickness of Each Glass Ply: 6 mm.
6. Safety glazing required.

END OF SECTION 088000

SECTION 101416 - PLAQUES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes metal plaques.

B. Related Requirements:

1. Section 101423 "Panel Signage" and Section 101423.16 "Room-Identification Panel Signage" for plaques or signs similar to metal plaques, with or without frames, except that they are made of materials other than solid metal.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For plaques.

1. Include fabrication and installation details and attachments to other work.
2. Show plaque mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each plaque at least half size.

C. Samples for Verification: For each type of plaque showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Plaques: Half-size Sample.
2. Exposed Accessories: Half-size Sample of each accessory type.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For plaques to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer of products.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of plaques that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Deterioration of embedded graphic image.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PLAQUES

A. Cast Dedication Plaque: Cast-metal plaque with background texture, border, and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Plaque Material: Cast bronze.
2. Plaque Thickness: 0.50 inch (12.7 mm).
3. Finishes:

a. Integral Metal Finish: As selected by Architect from full range of industry finishes.

4. Background Texture: Smooth.
5. Integrally Cast Border Style: Square cut without border.
6. Mounting: Concealed studs.
7. Text and Typeface: Typeface as selected by Architect from manufacturer's full range. Finish raised characters to contrast with background color, and finish Braille to match background color.

B. Fort Bend County Plaque: Chemically etched or photochemically engraved metal sheet or plate with texture, border, and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Plaque Material: Sheet or plate stainless steel.

2. Plaque Thickness: 0.250 inch (6.35 mm).
3. Finishes:

    a. Integral Stainless-Steel Finish: As selected by Architect from full range of industry finishes.
    b. Overcoat: Manufacturer's standard baked-on clear coating.

4. Integral Edge Style: Plain bevel, brushed.
5. Applied Frame Material, Style, and Finish: As indicated on Drawings.
6. Mounting: Countersunk flathead through fasteners.
7. Text and Typeface: Typeface matching Architect's sample. Finish raised characters to contrast with background color, and finish Braille to match background color.

2.2 MATERIALS

A. Bronze Castings: ASTM B584, alloy recommended by manufacturer and finisher for finish indicated.

B. Stainless-Steel Sheet: ASTM A240/A240M or ASTM A666, Type 316, stretcher-leveled standard of flatness.

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of plaques, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish stainless-steel devices unless otherwise indicated.
3. Exposed Metal-Fastener Components, General:

    a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
    b. Fastener Heads: For nonstructural connections, use flathead or oval countersunk screws and bolts with tamper-resistant Allen-head, spanner-head or one-way-head slots unless otherwise indicated.

2.4 FABRICATION

A. General: Provide manufacturer's standard plaques according to requirements indicated.

1. Preassemble plaques in the shop to greatest extent possible. Disassemble plaques only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.

3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
5. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match plaque finish.
6. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

B. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted plaques to suit plaque construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.

1. Stainless-Steel Brackets: Factory finish brackets to match plaque background finish unless otherwise indicated.

2.5 GENERAL FINISH REQUIREMENTS

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

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

C. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.6 STAINLESS-STEEL FINISHES

A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

1. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
2. Directional Satin Finish: No. 4.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Verify that plaque-support surfaces are within tolerances to accommodate plaques without gaps or irregularities between backs of plaques and support surfaces unless otherwise indicated.

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

3.2 INSTALLATION

A. General: Install plaques using mounting methods indicated and according to manufacturer's written instructions.

1. Install plaques level, plumb, true to line, and at locations and heights indicated, with plaque surfaces free of distortion and other defects in appearance.
2. Install plaques so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that plaque surfaces are clean and free of materials or debris that would impair installation.
4. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:

1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of plaque. Remove loose debris from hole and substrate surface.

    a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place plaque in position and push until flush to surface, embedding studs in holes. Temporarily support plaque in position until adhesive fully sets.
    b. Thin or Hollow Surfaces: Place plaque in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

2. Through Fasteners: Drill holes in substrate using predrilled holes in plaque as template. Countersink holes in plaque if required. Place plaque in position and flush to surface. Install through fasteners and tighten.
3. Brackets: Remove loose debris from substrate surface and install bracket supports in position, so that plaque is correctly located and aligned.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed plaques and plaques that do not comply with specified requirements. Replace plaques with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as plaques are installed.

C. On completion of installation, clean exposed surfaces of plaques according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain plaques in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101416

SECTION 107300 - PROTECTIVE COVERS

PART 1 – GENERAL

1.1 WORK INCLUDED:

A. Provision, fabrication and installation of Extruded Aluminum Walkway Covers & Canopies, as shown on drawings and specified herein, and as needed for a complete and proper installation.

1.2 REFERENCE STANDARDS: (Specifications for)

1. The Aluminum Association – Aluminum Design Manual 2010
2. American Welding Society- AWS D1.2/D1.2M: 2008
3. ASTM B 209 Aluminum & Aluminum Alloy Sheet and Plate
4. ASTM B 221 Aluminum & Aluminum Ally Extruded Bars, Rods, Wire, Shapes, and Tubes

1.3 SAMPLES:

1. Product data: manufacturer's brochures, manuals and literature.
2. Shop Drawings:
   a. Includes the complete layout, sections, details, components, finishes, sizing, spacing, and fasteners specific to the project. The site-specific shop drawings shall show reactions at surface attachment points and bear the seal of a Registered Structural Engineer.
   b. General Contractor shall submit shop drawings for approval by the Architect prior to fabrication of any materials.
   c. General Contractor to verify all dimensions and elevations prior to submittal to Architect.
   d. Manufacturer shall field verify dimensions prior to fabrication.
3. Finishes: samples of canopy finishes.

1.4 QUALITY ASSURANCE:

1. Canopy shall be designed to comply with state and local building codes.
2. Canopy manufacturer shall have a minimum of 10 years' experience in designing and installing the specified system.
3. The installation of the canopy shall be performed by the manufacturer to assure single source responsibility.

1.5 MATERIALS:

1. Delivery, Storage, and Handling: protect components from one another during shipping, storage and handling. Exercise care when unloading, storing, and erecting to prevent damage.

1.6 WARRANTY:

1. Provide manufacturer's 1-year warranty against defects in material and workmanship.

PART 2 – PRODUCTS

2.1 MANUFACTURER QUALIFICATIONS:

1. Acceptable manufacturer for Extruded Aluminum Walkway Covers & Canopies: Subject to strict compliance with the specified requirements and the plans, the following manufacturer is acceptable:

2.2 MATERIALS:

1. Components: all components shall be 6063, 6061, or 6005 alloy extruded aluminum.
2. Design Criteria: all components shall be sized to comply with live load and wind load requirements of the project and shall not be less than the dimensions shown on the plan.

2.3 COMPONENTS:

1. Configuration: as shown on the drawings
2. Sizes: minimum sizing as shown on the drawings
3. Columns: all columns shall have radius corners
4. Beams: beams are open at top to drain canopy system internally into columns
5. Deck: deck thickness shall be at least .080” thick
6. Flashing: flashing thickness shall be at least .040” thick

2.4 FASTENERS, CONNECTIONS, AND FITTINGS:

1. Bolted Connections: All bolts, nuts, washers, and screws used in joining the members shall be stainless steel up to 3/8” diameter. Over 3/8” diameter may be Hot Dipped Galvanized.
2. General Contractor shall provide structural attachment points flush with the outside surface of the building.
3. Rafters shall be heliarc welded to wall mounting plates which are bolted to walls.
4. Beams are fastened to Rafters with Concealed Clips.
5. Blades are mechanically fastened to structure with Stainless Steel Screws, concealed where able.

2.5 FINISH:

1. Super Dynapon: AAMA 2604-21, Super-Polyester 1-Coat System / Color: Per Color Schedule - (5-year finish warranty).

PART 3 – EXECUTION

3.1 INSTALLATION:

1. The components and accessories are to be supplied and installed by the manufacturer.
2. Install canopy in strict accordance to manufacturer’s recommendations.
3. Erect canopy after concrete and masonry work in the vicinity is completed and washed down.

3.2 WORKMANSHIP:

1. Take extreme care to prevent damage or scratching. Replace damaged components prior to installation. All workmanship must be top quality with meat miters and fitted joints.

3.3 CLEANING:

1. Just prior to completion of project, strip protective coatings of covering from aluminum and clean all parts. Repair to new condition to replace any materials damaged during installation.

END OF SECTION 107300

SECTION 107516 - GROUND-SET FLAGPOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes ground-set flagpoles made from stainless steel.

B. Owner-Furnished Material: Flags.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.

1.4 CLOSEOUT SUBMITTALS

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

1.5 DELIVERY, STORAGE, AND HANDLING

A. Spiral wrap flagpoles with heavy paper and enclose in a hard fiber tube or other protective container.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain flagpoles as complete units, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

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

B. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand design loads indicated within limits and under conditions indicated.

1. Wind Loads: Determine according to NAAMM FP 1001. Basic wind speed for Project location is in drawings.
2. Base flagpole design on polyester flags of maximum standard size suitable for use with flagpole or flag size indicated, whichever is more stringent.

2.3 STAINLESS-STEEL FLAGPOLES

A. Stainless-Steel Flagpoles: Entasis-tapered flagpoles fabricated from pipe, tube, or plate complying with ASTM A312/A312M, ASTM A269, or ASTM A666, Type 304.

B. Exposed Height: 20 feet (6 m).

C. Construct flagpoles in one piece if possible. If more than one piece is necessary, comply with the following:

1. Fabricate shop and field joints without using fasteners, screw collars, or lead calking.
2. Provide flush hairline joints using self-aligning, snug-fitting, internal sleeves.

D. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, 0.060-inch (1.52-mm) wall thickness with 3/16-inch (4.8-mm) steel bottom plate and support plate; 3/4-inch- (19-mm-) diameter, steel ground spike; and steel centering wedges welded together. Galvanize foundation tube after assembly. Furnish loose hardwood wedges at top of foundation tube for plumbing pole.

1. Flashing Collar: Same material and finish as flagpole.

2.4 FITTINGS

A. Finial Ball: Flush-seam ball, sized as indicated or, if not indicated, to match flagpole-butt diameter.

1. 0.063-inch (1.6-mm) spun aluminum, finished to match flagpole.

B. Internal Halyard, Winch System: Manually operated winch with control stop device and removable handle, stainless-steel cable halyard, and concealed revolving truck assembly with plastic-coated counterweight and sling. Furnish flush access door secured with cylinder lock. Finish truck assembly to match flagpole.

1. Halyard Flag Snaps: Stainless-steel swivel snap hooks with neoprene or vinyl covers. Furnish two per halyard.

2.5 MISCELLANEOUS MATERIALS

A. Drainage Material: Crushed stone, or crushed or uncrushed gravel; coarse aggregate.

B. Sand: ASTM C33/C33M, fine aggregate.

C. Elastomeric Joint Sealant: Multicomponent nonsag urethane joint sealant complying with requirements in Section 079200 "Joint Sealants."

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.6 STAINLESS-STEEL FINISHES

A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

1. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
2. Directional Satin Finish: No. 4.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.

B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.

C. Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure and brace forms to prevent displacement during concreting.

D. Foundation Tube: Place foundation tube, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube and allow concrete to cure.

E. Place concrete, as specified in Section 033000 "Cast-in-Place Concrete." Compact concrete in place by using vibrators. Moist-cure exposed concrete for no fewer than seven days or use nonstaining curing compound.

F. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to perimeter of concrete base.

3.2 FLAGPOLE INSTALLATION

A. General: Install flagpoles where indicated and according to manufacturer's written instructions.

B. Foundation Tube: Place flagpole in tube, seated on bottom plate between steel centering wedges, and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch (50-mm) layer of elastomeric joint sealant and cover with flashing collar.

END OF SECTION 107516

SECTION 126613 – TELESCOPIC SEATING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Telescopic Gym Seating includes manually operated multiple-tiered seating rows comprising of seat, deck components, understructure that permits closing without requiring dismantling, into a nested configuration for storing or for moving purposes.

1. Portable, freestanding telescoping stands

1.2 REFERENCES

A. Aluminum Association (AA):

1. ADM 1- Aluminum Design Manual

B. American Institute of Steel Construction (AISC):

1. AISC 360- Steel Construction Manual.

C. American Iron & Steel Institute (AISI):

1. AISI S100 – Design of Cold Formed Steel Structural Members.

D. American Society for Testing Materials (ASTM):

1. ASTM - Standard Specifications for Properties of Materials.

E. American Wood Council (AWC):

1. ANSI/AWC NDS (National Design Specification for Wood Construction).

F. American Welding Society (AWS):

1. AWS D1.1 Structural Welding Code – Steel
2. AWS D1.3 Structural Welding Code - Sheet Steel

G. Canadian Welding Bureau: CWB Division 3 W47.1

H. U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.

I. National Institute of Standards and Technology (NIST)

1. PS 1: Structural Plywood.

J. Southern Pine Inspection Bureau (SPIB):

1. SPIB: Standard Grading Rules for Southern Pine.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Engineer, fabricate and install telescopic gym seating systems to the following structural loads without exceeding allowable design working stresses of materials involved, including anchors and connections. Apply each load to produce maximum stress in each respective component of each telescoping stand unit according to ICC 300.

B. Manufacturer's System Design Criteria:

1. Gymnasium seat assembly; Design to support and resist, in addition to its own weight, the following forces:
   a.) Live load of 120 lbs. per linear foot (1.75 kN/m) on seats and decking
   b.) Uniformly distributed live load of not less than 100 psf (4.79 kN/m^2) of gross horizontal projection.
   c.) Parallel sway load of 24 lbs. per linear foot (0.35 kN/m) of row combined with (b.) above
   d.) Perpendicular sway load of 10 lbs. per linear foot (0.15 kN/m) of row combined with uniformly distributed live load above.
   e.) Parallel and Perpendicular sway loads are not applied concurrently.
2. Hand Railings, Posts and Supports: Engineered to withstand the following forces applied separately:
   a.) Concentrated load of 200 lbs. (0.89 kN) applied at any point and in any direction.
   b.) Uniform load of 50 lbs. per foot (0.73 kN/m) applied in any direction.
3. Guard Railings, Post and Supports: Engineered to withstand the following forces applied separately:
   a.) Concentrated load of 200 lbs. (0.89 kN) applied at any point and in any direction along top rail.
   b.) Uniform load of 50 lbs. per foot (0.73 kN/m) applied in any direction at top rail
   c.) Uniform load of 50 lbs. (0.22 kN) applied on an area equal to 1 ft^2 (0.09 m^2) applied on all guardrail infill panels.

1.4 ACTION SUBMITTALS

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

B. Shop Drawings: For telescoping stands in both stacked and extended positions. Show seat heights, row spacing and rise, aisle widths and locations, assembly dimensions, anchorage to supporting structure, material types and finishes.

   1. Graphics Layout Drawings: Indicate pattern of contrasting or matching seat colors.

C. Samples: For units with factory-applied finishes.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified manufacturer and installer.

B. Welding certificates.

C. Product Test Reports: Load test to all loads, observed by a qualified independent testing laboratory, and certified by a registered professional structural engineer verifying the integrity of the manufacturer's design.

D. Warranty: Manufacturers standard warranty documents.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For telescopic bleacher to include video operations manual.

1.7 QUALITY ASSURANCE

A. Manufacturer's Qualifications: A minimum of 40 years of experience manufacturing telescoping stands and can demonstrate continual design enhancement and 25-year minimum product life-cycle support of telescopic seating.

B. Installer Qualifications: Factory certification by the manufacturer.

1. Project list: Ten projects of similar size, complexity and in service for at least five years.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

D. Seating Layout: Provide telescoping stands to comply with ICC 300 Standard for Bleachers, Folding and Telescopic Seating, and Grandstands, except where additional requirements are indicated or imposed by authorities having jurisdiction.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver telescoping stands in manufacturers packaging clearly labeled with manufacturer name and content.

B. Handle bleacher equipment in a manner to prevent damage.

C. Deliver the telescoping stands at a scheduled time for installation that will not interfere with other trades operating in the building when at all possible.

1.9 PROJECT CONDITIONS

A. Field Measurements: Coordinate actual dimensions of construction affecting telescoping stands installation by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid delay of Work.

1.10 WARRANTY

A. Manufacturer's Warranty: Includes the repair or replacement of the defective product; or defective component thereof, with a comparable product; or component thereof, or a refund of the purchase price prorated over the warranty period.

1. Includes: Labor, materials, and freight for replacement or repairs.
2. Structural Component parts of Understructure Warranty Period: 10 years from Date of Acceptance
3. Decking systems, seating collections, electrical, portable and integral dolly systems, end closure curtains, surface material finishes Warranty Period 5 years from Date of Acceptance.

PART 2 PRODUCTS

A. Wood:

1. Lumber: NIST PS 20, southern pine complying with SPIB's "Standard Grading Rules for Southern Pine Lumber" for B&B Finish (B and better) grade-of-finish requirements.
2. Plywood: NIST PS 1, APA-grade trademarked, A-C grade.

B. Steel:

1. Structural-Steel Shapes, Plates, and Bars: ASTM A36.
2. Galvanized-Steel Sheet: ASTM A653, coating designation G60.
3. Uncoated Steel Strip; Non-Structural Components: ASTM A1011, Commercial Quality, Type B, Hot-Rolled Strip.

4. Uncoated Steel Strip; Structural Components: ASTM A1011 Grade 33 (228 MPa), Grade 36 (249 MPa), Grade 40 (276 MPa), Grade 45 (311 MPa), or Grade 50 (345 MPa), Structural Quality, Hot-Rolled.
5. Galvanized Steel Strip: ASTM A653 Grade 40 (276 MPa), structural quality, coating designation G60.
6. Tubing: ASTM A500, cold formed; Grade B.

C. Polyethylene Plastic: High-density polyethylene; injection molded, color-pigmented, textured, impact-resistant, and dimensionally stable.

2.2 MANUFACTURERS

A. Manufacturer: Hussey Seating Company, U.S.A.

1. Address: North Berwick, Maine, 03906.
2. Telephone: (207) 676-2271; Fax: (207) 676-9690.
3. Product: MAXAM Telescopic Gym Seat System.

B. Substitutions: Permitted.

2.3 TELESCOPING STANDS

A. Portable, Freestanding Units Telescoping Stands: Forward-folding system with a portable transport system for relocation to alternate set-up locations or storage areas.

2.4 RAILS, PANELS AND STEPS

A. End Rails:

1. Removable
   a.) Provide vertical steel rails starting no higher than tier 2 42 inches (1066mm) high above seat, end rail with tubular supports and intermediate members designed with 4 inch (102mm) sphere passage requirements.
   b.) Must be removed in order to allow bleacher operation
2. Material and Finish: Semi-gloss powder coated steel.
3. Color: As selected by Architect from manufacturers 15 colors.

B. Skirt Panel: On 1st Row, provide galvanized steel front skirt panel to prevent players/objects from sliding underneath the first row.

C. Fixed Front Closure Panels: Panels extend vertically from underside of front row to within 1-1/2 inches (38 mm) of floor.

1. Material: Polydeck attached to a powder coated steel framework.
2. Color: Beige.

2.5 COMPONENTS

A. Decking

1. Plywood
   a.) 5/8 inch (16 mm) thick AC grade tongue and groove Southern Yellow Pine with clear urethane, high gloss finish.
2. Polydeck

a.) 5/8 inch (16 mm) thick BC grade polyethylene-top-coated tongue and groove Douglas Fir plywood.
b.) Polyethylene overlay bonded to substrate, 0.03 inch (0.8 mm) thickness.
c.) Color: Beige.

3. As selected by Architect from manufacturers standard colors.

B. Understructure:

1. Finish: Rust-inhibiting black finish.
2. Hardware finish: Zinc-plated, Rust inhibiting black finish.
3. Posi-locks and other surfaces: Powder coated black, Rust inhibiting black finish.
4. Nose beam and Rear Riser beam: Nose beam shall be continuously roll-formed closed tubular shape of ASTM A653 grade 40 (276 MPa). Riser beam shall be continuously roll-formed of ASTM A653 grade 40 (276 MPa). Nose and Riser beam shall be designed with no steel edges exposed to spectator after product assembly. Nose beam and riser beams are through-bolted fore/aft to deck stabilizers and frame cantilevers to create the deck structure.
5. Frame: The frames are welded assemblies (one left hand, one right hand per tier) comprised of the following components:
   a.) Lower Track subassembly: ASTM A1011 Grade 50: Continuous Positive Interglide System (casterhorn) interlocks each adjacent frame casterhorn using an integral, continuous, anti-drift feature and captive interlock with adjustable row spacing at front to prevent separation and misalignment.
   b.) Lower Track Wheels: 3 per frame Not less than 5 inches (127 mm) diameter by 1-1/4 inches (32 mm) with non-marring soft rubber face to protect wood and synthetic floor surfaces, with molded-in sintered iron oil-impregnated bushings to fit 3/8 inch (10 mm) diameter axles secured with E-type snap rings.
      1.) Option: up to 6 wheels per frame for load distribution
   c.) Slant Columns: A500 Grade B, tubular shape.
   d.) Cantilever Subassembly: Consists of ASTM A1011 Grade 50 nose connection plate, cantilever, and riser attachment plate welded together into a subassembly.
6. Lock system: Casterhorns at the end sections of powered banks (minimally), and manual sections, contain a Low Profile Posi-Lock LX to lock each row in open position and allow unlocking automatically. Provide adjustable stops to allow field adjustment of row spacings.
7. Sway Bracing: ASTM A653 grade 40 (276 MPa), tension members bolted to columns.
8. Deck Stabilizer: A1011 Grade 45, member through-bolted to nose and riser at three locations per section. Securely captures front and rear edge of decking at rear edge of nose beam and lower edge of riser beam for entire length of section. Interlocks with adjacent stabilizer on upper tier using low-friction nylon roller to prevent separation and misalignment.

C. Fasteners: Vibration proof, in manufacturer's standard size and material.

2.6 TRANSPORT SYSTEMS

A. Integral Mechanical Dolly: Provide one pair of machine-screw-jack dollies; per section, for transport of movable telescopic sections. Each dolly shall be fitted with 6 inch (152 mm), 360 degree swiveling kingpinless casters to insure ease of telescopic section movement. Wheel treads shall be molded polyurethane bonded to cast iron hubs with roller bearings. Dollies are integral to each section and shall be operated by a cordless drill through access holes in either the front or rear of the section. Dollies shall be designed to engage front and rear structural steel lift beams.

2.7 FABRICATION

A. Fabricate understructure from structural-steel members in size, spacing, and form required to support design loads specified in referenced safety standard.

B. Weld understructure to comply with applicable AWS standards.

C. Round corners and edges of components and exposed fasteners to reduce snagging and pinching hazards.

D. Form exposed sheet metal with flat, flush surfaces, level and true in line, and without cracking and grain separation.

PART 3

3.1 EXAMINATION

A. Examine areas where telescoping stands are to be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Tolerances:

1. Flooring and rear wall: Level and plumb within 1/8 inch (3 mm) in 8 feet (2438mm).
2. Maximum bleacher force on the floor of a 27 foot (8230 mm) section: Static point load of less than 300 psi (2068 kN/m^2).

B. Install telescoping stands to comply with referenced safety standard and manufacturer's written instructions.

3.3 ADJUSTING AND CLEANING

A. On completion of installation, lubricate, test, and adjust each telescoping stand unit so that it operates according to manufacturer's written operating instructions.

B. Clean installed telescoping stands on exposed surfaces. Touch up shop-applied finishes or replace components as required to restore damaged or soiled areas.

3.4 MAINTENANCE SERVICE

A. Service Capability: Show proof of full time service capability by factory certified technicians directly employed by the installer.

1. A four to eight-hour maximum on-site repair response is required during normal working hours, 8 a.m. to 5 p.m. weekdays (excluding holidays).
2. All Full Time Service Personnel shall be Factory Authorized and Trained.
3. Provide proof of Service Capability and a list of service parts regularly maintained in inventory.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain telescoping stands.

END OF SECTION 126613

SECTION 133419 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Metal roof panels.
3. Metal wall panels.
4. Accessories.

1.3 DEFINITIONS

A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of termsfor metal building system construction not otherwise defined in this Section or in standards referenced by this Section.

1.4 COORDINATION

A. Coordinate sizes and locations of concrete foundations and casting of anchor-rod inserts into foundation walls and footings. Anchor rod installation, concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete."

B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to metal building systems including, but not limited to, the following:

a. Condition of foundations and other preparatory work performed by other trades.
b. Structural load limitations.
c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
d. Required tests, inspections, and certifications.
e. Unfavorable weather and forecasted weather conditions and impact on construction schedule.

2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:

a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
b. Structural limitations of purlins and rafters during and after roofing.
c. Flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
d. Temporary protection requirements for metal roof panel assembly during and after installation.
e. Roof observation and repair after metal roof panel installation.

3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:

a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
b. Structural limitations of girts and columns during and after wall panel installation.
c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
d. Temporary protection requirements for metal wall panel assembly during and after installation.
e. Wall observation and repair after metal wall panel installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of metal building system component.

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

a. Metal roof panels.
b. Metal wall panels.

B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and the following:

1. Anchor-Rod Plans: Submit anchor-rod plans and templates before foundation work begins. Include location, diameter, and minimum required projection of anchor rods required to attach metal building to foundation. Indicate column reactions at each location.

2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.

   a. Show provisions for attaching canopies shown on design drawings.
   b. Show provisions for lateral support of masonry veneer walls.

3. Metal Roof and Wall Panel Layout Drawings: Show layouts of panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, clip spacing, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.

   a. Show roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, lighting fixtures, and items mounted on roof curbs.
   b. Show wall-mounted items including personnel doors, vehicular doors, windows, louvers, and lighting fixtures.

4. Accessory Drawings: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:8):

   a. Flashing and trim.

C. Samples for Initial Selection: For units with factory-applied finishes.

D. Samples for Verification: For the following products:

1. Panels: Nominal 12 inches (300 mm) long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
2. Flashing and Trim: Nominal 12 inches (300 mm) long. Include fasteners and other exposed accessories.
3. Accessories: Nominal 12-inch- (300-mm-) long Samples for each type of accessory.

E. Delegated-Design Submittal: For metal building systems.

1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Welding certificates.

C. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

1. Name and location of Project.
2. Order number.
3. Name of manufacturer.
4. Name of Contractor.
5. Building dimensions including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
7. Governing building code and year of edition.
8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
10. Building-Use Category: Indicate category of building use and its effect on load importance factors.

D. Erector Certificates: For qualified erector, from manufacturer.

E. Material Test Reports: For each of the following products:

1. Structural steel including chemical and physical properties.
2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shop primers.
5. Nonshrink grout.

F. Source quality-control reports.

G. Field quality-control reports.

H. Surveys: Show final elevations and locations of major members. Indicate discrepancies between actual installation and the Contract Documents. Have surveyor who performed surveys certify their accuracy.

I. Sample Warranties: For special warranties.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panel finishes to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

1. Accreditation: Manufacturer's facility accredited according to the International Accreditation Service's AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

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

1. Build mockup of typical wall area as shown on Drawings.
2. Build mockups for typical wall metal panel including accessories.

a. Size: 48 inches (1200 mm) long by 48 inches (1200 mm).

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with panel installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.

1.12 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 25 years from date of Substantial Completion.

B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

2.2 SYSTEM DESCRIPTION

A. Provide a complete, integrated set of mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.

B. Primary-Frame Type:

1. Rigid Clear Span: Solid-member, structural-framing system without interior columns.
2. Rigid Modular: Solid-member, structural-framing system with interior columns where shown on design plans.

C. End-Wall Framing: Manufacturer's standard, for buildings not required to be expandable, consisting of primary frame, capable of supporting one-half of a bay design load, and end-wall columns.

D. Secondary-Frame Type: Manufacturer's standard purlins and joists and flush-framed girts or studs.

E. Eave Height: Manufacturer's standard height, as indicated by nominal height on Drawings.

F. Bay Spacing: As indicated on Drawings.

G. Roof Slope: 1/4 inch per 12 inches (1:48).

H. Roof System: Manufacturer's standard standing-seam, trapezoidal-rib metal roof panels.

I. Exterior Wall System: Manufacturer's standard concealed-fastener, flush-profile, metal wall panels.

2.3 PERFORMANCE REQUIREMENTS

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

B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."

1. Design Loads: As indicated on Drawings and in accordance with ASCE/SEI 7.
2. Deflection and Drift Limits: Design metal building system assemblies to withstand serviceability design loads without exceeding deflections and drift limits recommended in AISC Steel Design Guide No. 3 "Serviceability Design Considerations for Steel Buildings."
3. Deflection and Drift Limits: No greater than the following:

    a. Elements supporting floors:
        1) Vertical deflection under Live loads: 1/360 of the span.
        2) Vertical deflection under Total loads: 1/240 of the span.
    b. Elements supporting roofs:
        1) Vertical deflection under Live loads: 1/240 of the span.
        2) Vertical deflection under Total loads: 1/240 of the span.
    c. Elements supporting masonry veneer:
        1) Horizontal deflection under Wind loads: 1/600 of the span.
    d. Elements supporting flexible siding:
        1) Horizontal deflection under Wind loads: 1/240 of the span.
    e. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
    f. Lateral Drift: Maximum of1/400 of the building height.

C. Seismic Performance: Metal building system shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F material surfaces.

E. Structural Performance for Metal Roof and Wall Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: Calculate in accordance with ASCE/SEI 7 with parameters indicated on Drawings.

F. Air Infiltration for Metal Roof Panels: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E1680 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft. (75 Pa).

G. Air Infiltration for Metal Wall Panels: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft. (75 Pa).

H. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E1646[or ASTM E331] at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft. (137 Pa).

I. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft. (137 Pa).

J. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating:UL 90.

K. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification: Class 1A-150.
2. Hail Resistance: MH.

L. Energy Performance: Provide roof panels according to one of the following when tested according to CRRC-1:

1. Three-year, aged, solar reflectance of not less than 0.55 and emissivity of not less than 0.75.
2. Three-year, aged, Solar Reflectance Index of not less than 64 when calculated according to ASTM E1980.

2.4 STRUCTURAL-STEEL FRAMING

A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."

B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.

    a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.

2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.
3. Rigid Modular Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Provide interior columns fabricated from round steel pipes or tubes, or shop-welded, built-up steel plates.
4. Frame Configuration: Varies, see architectural drawings.
5. Exterior Column: Uniform depth
6. Rafter: Uniform depth

E. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:

1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet.
2. End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; or I-shaped sections fabricated from shop-welded, built-up steel plates or structural-steel shapes.

F. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other

miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:

1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch- (64-mm-) wide flanges.

    a. Depth: needed to comply with system performance requirements.
2. Girts or Studs: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch- (64-mm-) wide flanges.

    a. Depth: As indicated on Drawings.

3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.
4. Flange Bracing: Minimum 2-by-2-by-1/8-inch (51-by-51-by-3-mm) structural-steel angles or 1-inch- (25-mm-) diameter, cold-formed structural tubing to stiffen primary-frame flanges.
5. Sag Bracing: Minimum 1-by-1-by-1/8-inch (25-by-25-by-3-mm) structural-steel angles.
6. Base or Sill Angles: Manufacturer's standard base angle, minimum 3-by-2-inch (76-by-51-mm), fabricated from zinc-coated (galvanized) steel sheet.
7. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
8. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
9. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.

G. Bracing: Provide adjustable wind bracing as follows:

1. Rods: ASTM A36/A36M; ASTM A572/A572M, Grade 50 (345); or ASTM A529/A529M, Grade 50 (345); minimum 1/2-inch- (13-mm-) diameter steel; threaded full length or threaded a minimum of 6 inches (152 mm) at each end.
2. Rigid Portal Frames: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
3. Diaphragm Action of Metal Panels: Design metal building to resist wind forces through diaphragm action of metal panels to rigid frames.

H. Materials:

1. W-Shapes: ASTM A992/A992M; ASTM A572/A572M, Grade 50 or 55 (345 or 380); or ASTM A529/A529M, Grade 50 or 55.
2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A36/A36M; ASTM A572/A572M, Grade 50 or 55; or ASTM A529/A529M, Grade 50 or 55.

3. Plate and Bar: ASTM A36/A36M; ASTM A572/A572M, Grade 50 or 55; or ASTM A529/A529M, Grade 50 or 55.
4. Steel Pipe: ASTM A53/A53M, Type E or S, Grade B.
5. Cold-Formed Hollow Structural Sections: ASTM A500, Grade B or C, structural tubing.
6. Structural-Steel Sheet: Hot-rolled, ASTM A1011/A1011M, Structural Steel (SS), Grades 30 through 55, or High-Strength Low-Alloy Steel (HSLAS) or High-Strength Low-Alloy Steel with Improved Formability (HSLAS-F), Grades 45 through 70; or cold-rolled, ASTM A1008/A1008M, Structural Steel (SS), Grades 25 through 80, or HSLAS, Grades 45 through 70.
7. Metallic-Coated Steel Sheet: ASTM A653/A653M, SS, Grades 33 through 80, or HSLAS or HSLAS-F, Grades 50 through 80; with G60 (Z180) coating designation; mill phosphatized.
8. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A755/A755M.

    a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, SS, Grades 33 through 80, or HSLAS or HSLAS-F, Grades 50 through 80; with G90 (Z275) coating designation.
    b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792/A792M, SS, Grade 50 or 80; with Class AZ50 (AZM150) coating.

9. Joist Girders: Manufactured according to "Standard Specifications for Joist Girders," in SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders"; with steel-angle, top- and bottom-chord members, and end- and top-chord arrangements as indicated on Drawings and required for primary framing.
10. Steel Joists: Manufactured according to "Standard Specifications for Open Web Steel Joists, K-Series," in SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders"; with steel-angle, top- and bottom-chord members, and end- and top-chord arrangements as indicated on Drawings and required for secondary framing.
11. Non-High-Strength Bolts, Nuts, and Washers: ASTM A307, Grade A, carbon-steel, hex-head bolts; ASTM A563 (ASTM A563M) carbon-steel hex nuts; and ASTM F844 plain (flat) steel washers.

    a. Finish: Hot-dip zinc coating, ASTM F2329, Class C.

12. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M,Grade A325 (Grade A325M), Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, (ASTM A563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.

    a. Finish: Hot-dip zinc coating, ASTM F2329, Class C.

13. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490 (Grade A490M), Type 1, heavy-hex steel structural bolts or Grade F2280 tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH, (ASTM A563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

14. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, (ASTM A563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1 hardened carbon-steel washers.

    a. Finish: Plain

15. Unheaded Anchor Rods: ASTM F1554, Grade 36 or 50.

    a. Configuration: Straight.
    b. Nuts: ASTM A563 (ASTM A563M) heavy-hex carbon steel.
    c. Plate Washers: ASTM A36/A36M carbon steel.
    d. Washers: ASTM F436 (ASTM F436M) hardened carbon steel.
    e. Finish: Hot-dip zinc coating, ASTM F2329, Class C.

16. Headed Anchor Rods: ASTM F1554, Grade 36 or 50.

    a. Configuration: Straight.
    b. Nuts: ASTM A563 (ASTM A563M) heavy-hex carbon steel.
    c. Plate Washers: ASTM A36/A36M carbon steel.
    d. Washers: ASTM F436 (ASTM F436M) hardened carbon steel.
    e. Finish: Hot-dip zinc coating, ASTM F2329, Class C.

17. Threaded Rods: ASTM A307, Grade A.

    a. Nuts: ASTM A563 (ASTM A563M) hex carbon steel.
    b. Washers: ASTM A36/A36M carbon steel.
    c. Finish: As required by exposure.

I. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.

1. Clean and prepare in accordance with SSPC-SP2.
2. Coat with manufacturer's standard primer. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil (0.025 mm).

    a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil (0.013 mm) on each side.

2.5 METAL ROOF PANELS

A. Standing-Seam, Trapezoidal-Rib, Metal Roof Panels: Formed with raised trapezoidal ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch (0.61-mm) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Exterior Finish: Two-coat fluoropolymer.
b. Color: As selected by Architect from manufacturer's full range.

2. Clips: One-piece fixed to accommodate thermal movement.
3. Joint Type: Panels snapped together.
4. Panel Coverage: 24 inches (610 mm).
5. Panel Height: 3 inches (76 mm).
6. Uplift Rating: UL 90.

B. Finishes:

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.6 METAL WALL PANELS

A. Concealed-Fastener, Flush-Profile, Metal Wall Panels: Formed with vertical panel edges and a single wide recess, centered between panel edges with flush joint between panels; with 1-inch-(25-mm-) wide flange for attaching interior finish; designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps.

1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch (0.61-mm) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Exterior Finish: Fluoropolymer.
b. Color: selected by Architect from manufacturer's full range.

2. Panel Coverage: 16 inches (406 mm).
3. Panel Height: 3 inches (76 mm).

B. Finishes:

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.7 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
2. Clips: Manufacturer's standard, formed from steel sheet, designed to withstand negative-load requirements.
3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from steel sheet.
4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-inch (25-mm) standoff; fabricated from extruded polystyrene.

C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure

strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

D. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.

1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
2. Opening Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.

DI. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

DII. Materials:

1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.

   a. Fasteners for Metal Roof Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless-steel cap or zinc-aluminum-alloy head and EPDM sealing washer.
   b. Fasteners for Metal Wall Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with EPDM sealing washers bearing on weather side of metal panels.
   c. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
   d. Blind Fasteners: High-strength aluminum or stainless-steel rivets.

2. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
4. Metal Panel Sealants:

   a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.
   b. Joint Sealant: ASTM C920; one part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and

remain weathertight; and as recommended by metal building system manufacturer.

2.8 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

1. Make shop connections by welding or by using high-strength bolts.
2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
4. Weld clips to frames for attaching secondary framing if applicable, or punch for bolts.
5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.

D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

1. Make shop connections by welding or by using non-high-strength bolts.
2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.9 SOURCE QUALITY CONTROL

A. Special Inspection: Owner will engage a qualified special inspector to perform source quality control inspections and to submit reports.

1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.

a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.

1. Engage land surveyor to perform surveying.

C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer's written instructions and drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.

    a. Joint Type: Snug tightened or pretensioned as required by manufacturer.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
2. Locate and space wall girts to suit openings such as doors and windows.
3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Steel Joists: Install joists, and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders," joist manufacturer's written instructions, and requirements in this Section.

1. Before installation, splice joists delivered to Project site in more than one piece.
2. Space, adjust, and align joists accurately in location before permanently fastening.

3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
4. Joist Installation: Bolt joists to supporting steel framework using carbon-steel bolts unless otherwise indicated.
5. Joist Installation: Bolt joists to supporting steel framework using high-strength structural bolts unless otherwise indicated. Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for high-strength structural bolt installation and tightening requirements.
6. Joist Installation: Weld joist seats to supporting steel framework.
7. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

I. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

J. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

K. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.

1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.

D. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.

    a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.

2. Install metal panels perpendicular to structural supports unless otherwise indicated.
3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Locate metal panel splices over structural supports with end laps in alignment.
6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

E. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.

1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.

F. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.

1. Install clips to supports with self-drilling or self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Rigidly fasten eave end of metal roof panels and allow ridge end free movement for thermal expansion and contraction. Predrill panels for fasteners.

C. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
2. Shim or otherwise plumb substrates receiving metal wall panels.
3. When two rows of metal panels are required, lap panels 4 inches (102 mm) minimum.
4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
5. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Predrill panels.
6. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
7. Install screw fasteners in predrilled holes.
8. Install flashing and trim as metal wall panel work proceeds.
9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

C. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m), noncumulative; level, plumb, and on location lines; and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.7 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

C. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.8 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform field quality control special inspections and to submit reports.

B. Product will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 CLEANING AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

B. Touchup Painting: Cleaning and touchup painting are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

C. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 133419

221319 - SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following sanitary drainage piping specialties:

1. Cleanouts.
2. Floor drains.
3. Trench drains.
4. Roof flashing assemblies.
5. Through-penetration fire-stop assemblies.
6. Miscellaneous sanitary drainage piping specialties.
7. Flashing materials.

B. Related Sections:

1. Section 013300 Submittals.
2. Section 01524 Construction Waste Management
3. Section 01352 LEED Requirements
4. Section 01611 Environmental Management
5. Section 01570 Pollution Prevention and Control

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. FOG: Fats, oils, and greases.

C. FRP: Fiberglass-reinforced plastic.

D. HDPE: High-density polyethylene plastic.

E. PE: Polyethylene plastic.

F. PP: Polypropylene plastic.

G. PVC: Polyvinyl chloride plastic.

1.4 SUBMITTALS

A. Shop Drawings: Show fabrication and installation details for frost-resistant vent terminals.

1. Show fabrication and installation details for frost-resistant vent terminals.

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

B. Field quality-control test reports.

C. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.

D. Product data. Unless otherwise indicated, submit the following for each type of product provided under work of this Section:

1. Recycled Content:
   a. Indicate recycled content; indicate percentage of pre-consumer and post-consumer recycled content per unit of product.

2. Local/Regional Materials:
   a. Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site.
   b. Indicate location of extraction, harvesting, and recovery; indicate distance between extraction, harvesting, and recovery and the project site.

3. VOC data:
   a. Submit manufacturer's product data for joint compounds. Indicate VOC and chemical component limits of the product. Submit MSDS highlighting VOC and chemical component limits. VOC contents and chemical component limits must be less than the limits of Green Seal’s Standard GS-11.
   b. Submit manufacturer’s certification that products comply with Green Seal’s Standard GS-11
   c. Submit environmental data in accordance with Table 1 of ASTM E2129 for products provided under work of this Section.

4. Submit the following according to Conditions of the Construction Contract.
   a. Product data. Unless otherwise indicated, submit the following for each type of product provided under work of this Section:

5. General: Submit additional LEED submittal requirements included in other sections of the Specifications.

6. LEED submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated LEED requirements.

1.5 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

1.6 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate size and location of roof penetrations.

PART 2 - PRODUCTS

2.1 ENVIRONMENTALLY PREFERABLE PRODUCTS

A. Provide environmentally preferable products to the greatest extent possible.

1. To the greatest extent possible, provide products and materials that promote stewardship of the earth's resources, promote good indoor environmental quality (IEQ), and promote efficiencies in operational performance.

B. Provide products listed on the EPA Comprehensive Procurement Guidelines to the greatest extent practicable.

C. Provide products listed on the USGBC Directory of Products and Services to the greatest extent possible.

2.2 RECYCLED CONTENT

A. Provide recycled content products to the greatest extent possible.

1. To the greatest extent possible, provide materials with recycled content such that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 10% of the total value of the materials in the project.

2.3 REGIONAL MATERIALS

A. Provide Regional materials and products to the greatest extent possible that are extracted and manufactured within the region.

1. Provide materials and products that use a minimum of 20 % of building products that are manufactured regionally within a radius of 500 miles from the project site.
   a. Manufacturing refers to the final assembly of components into the building product that is furnished and installed by the tradesman.

2. Of the regionally manufactured materials used and documented, use a minimum of 50% of building materials and products that are extracted, harvested or recovered (as well as manufactured) within 500 miles of the project site.

2.4 CLEANOUTS

A. Exposed Metal Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Josam Company; Josam Div.
   b. MIFAB, Inc.
   c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   d. Tyler Pipe; Wade Div.
   e. Watts Drainage Products Inc.
   f. Zurn Plumbing Products Group; Specification Drainage Operation.
   g.

2. Standard: ASME A112.36.2M for cast iron for cleanout test tee.

3. Size: Same as connected drainage piping

4. Body Material: Cast-iron soil pipe test tee as required to match connected piping.

5. Closure: Countersunk plug.

6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.

7. Closure: Stainless-steel plug with seal.

B. Metal Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Josam Company; Josam Div.
   b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   c. Tyler Pipe; Wade Div.
   d. Watts Drainage Products Inc.

e. Zurn Plumbing Products Group; Light Commercial Operation.

2. Standard: ASME A112.36.2M for adjustable housing cast-iron soil pipe with cast-iron ferrule heavy-duty, adjustable housing threaded, adjustable housing cleanout.

3. Size: Same as connected branch.

C. Cast-Iron Wall Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Josam Company; Josam Div.
   b. MIFAB, Inc.
   c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   d. Tyler Pipe; Wade Div.
   e. Watts Drainage Products Inc.
   f. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASME A112.36.2M. Include wall access.

3. Size: Same as connected drainage piping.

4. Body: Hub less, cast-iron soil pipe test tee as required to match connected piping.

5. Size: Same as connected branch.

6. Body: PVC.

7. Closure Plug: PVC.

8. Riser: Drainage pipe fitting and riser to cleanout of same material as drainage piping.

2.5 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Josam Company; Josam Div.
   b. MIFAB, Inc.
   c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   d. Tyler Pipe; Wade Div.
   e. Watts Drainage Products Inc.
   f. Zurn Plumbing Products Group; Light Commercial Operation.

2. Standard: ASME A112.6.3.

3. Pattern: Sanitary drain.

4. Body Material: Gray iron.

B. Wall Box:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Durgo, Inc.
   b. Oatey.
   c. RectorSeal.
   d. Studor, Inc.

2. Description: White plastic housing with white plastic grille, made for recessed installation. Include bottom pipe connection and space to contain one air-admittance valve.

3. Size: About 9 inches wide by 8 inches high by 4 inches deep.

2.6 ROOF FLASHING ASSEMBLIES

A. Roof Flashing Assemblies:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Acorn Engineering Company; Elmdor / Stoneman Div.
   b. Thaler Metal Industries Ltd.

B. Description: Manufactured assembly made of from pipe, with galvanized-steel boot reinforcement and counter flashing fitting.

1. Open-Top Vent Cap: Without cap.

2. Low-Silhouette Vent Cap: With vandal-proof vent cap.

3. Extended Vent Cap: With field-installed, vandal-proof vent cap.

2.7 THROUGH-PENETRATION FIRESTOP ASSEMBLIES

A. Through-Penetration Fires top Assemblies:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. ProSet Systems Inc.

2. Standard: UL 1479 assembly of sleeve and stack fitting with firestopping plug.

3. Size: Same as connected soil, waste, or vent stack.

4. Sleeve: Molded PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.

5. Stack Fitting: ASTM A 48/A 48M, gray-iron, hubless-pattern, wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.

6. Special Coating: Corrosion resistant on interior of fittings.

2.8 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Open Drains:

1. Description: Shop or field fabricate from ASTM A 74, Service class, hub-and-spigot, cast-iron, soil-pipe fittings. Include P-trap, hub-and-spigot riser section; and where required, increaser fitting joined with ASTM C 564, rubber gaskets.

2. Size: Same as connected waste piping.

B. Deep-Seal Traps:

1. Description: Cast-iron or bronze casting, with inlet and outlet matching connected piping and cleanout trap-seal primer valve connection.

2. Size: Same as connected waste piping.
   a. NPS 2: 4-inch- minimum water seal.
   b. NPS 2-1/2 and Larger: 5-inch- minimum water seal.

C. Floor-Drain, Trap-Seal Primer Fittings:

1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.

2. Size: Same as floor drain outlet with NPS 1/2 side inlet.

D. Air-Gap Fittings:

1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.

2. Body: Bronze or cast iron.

3. Inlet: Opening in top of body.

4. Outlet: Larger than inlet.

5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

E. Sleeve Flashing Device:

1. Description: Manufactured, cast-iron fitting, with clamping device, that forms sleeve for pipe floor penetrations of floor membrane. Include galvanized-steel pipe extension in top of fitting that will extend 2 inches above finished floor and galvanized-steel pipe extension in bottom of fitting that will extend through floor slab.

2. Size: As required for close fit to riser or stack piping.

F. Stack Flashing Fittings:

1. Description: Counter flashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with threaded or hub top for extending vent pipe.

2. Size: Same as connected stack vent or vent stack.

G. Vent Caps:

1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.

2. Size: Same as connected stack vent or vent stack.

H. Frost-Resistant Vent Terminals:

1. Description: Manufactured or shop-fabricated assembly constructed of copper, lead-coated copper, or galvanized steel.

2. Design: To provide 1-inch enclosed air space between outside of pipe and inside of flashing collar extension, with counter flashing.

I. Expansion Joints:

1. Standard: ASME A112.21.2M.

2. Body: Cast iron with bronze sleeve, packing, and gland.

3. End Connections: Matching connected piping.

4. Size: Same as connected soil, waste, or vent piping.

2.9 FLASHING MATERIALS

A. Copper Sheet: ASTM B 152/B 152M, of the following minimum weights and thicknesses, unless otherwise indicated:

1. General Applications: 12 oz/sq. ft.

2. Vent Pipe Flashing: 8 oz/sq. ft.

B. Zinc-Coated Steel Sheet: ASTM A 653/A 653M, with 0.20 percent copper content and 0.04-inch minimum thickness, unless otherwise indicated. Include G90 hot-dip galvanized, mill-phosphatized finish for painting if indicated.

C. Elastic Membrane Sheet: ASTM D 4068, flexible, chlorinated polyethylene, 40-mil minimum thickness.

D. Fasteners: Metal compatible with material and substrate being fastened.

E. Metal Accessories: Sheet metal strips, clamps, anchoring devices, and similar accessory units required for installation; matching or compatible with material being installed.

F. Solder: ASTM B 32, lead-free alloy.

G. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install backwater valves in building drain piping. For interior installation, provide cleanout deck plate flush with floor and centered over backwater valve cover, and of adequate size to remove valve cover for servicing.

B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.

2. Locate at each change in direction of piping greater than 45 degrees.

3. Locate at minimum intervals of 75 feet for piping NPS 4 and smaller and 100 feet for larger piping.

4. Locate at base of each vertical soil and waste stack.

C. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

D. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

E. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.

1. Position floor drains for easy access and maintenance.

2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
   a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.
   b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
   c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.

3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.

4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

F. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.

G. Install flashing fittings on sanitary stack vents and vent stacks that extend through roof.

H. Install through-penetration firestop assemblies in plastic stacks at floor penetrations.

I. Assemble open drain fittings and install with top of hub 2 inches above floor.

J. Install deep-seal traps on floor drains and other waste outlets, as required.

K. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.

1. Exception: Fitting may be omitted if trap has trap-seal primer connection.

2. Size: Same as floor drain inlet.

L. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

M. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.

N. Install vent caps on each vent pipe passing through roof.

O. Install frost-resistant vent terminals on each vent pipe passing through roof. Maintain 1-inch clearance between vent pipe and roof substrate.

P. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

Q. Install frost-proof vent caps on each vent pipe passing through roof. Maintain 1-inch clearance between vent pipe and roof substrate.

3.2 FLASHING INSTALLATION

A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:

1. Copper Sheets: Solder joints of copper sheets.

B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.

1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches, and skirt or flange extending at least 8 inches around pipe.

2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches around sleeve.

3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches around specialty.

C. Set flashing on floors and roofs in solid coating of bituminous cement.

D. Secure flashing into sleeve and specialty clamping ring or device.

E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Division 07 Section "Sheet Metal Flashing and Trim."

F. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.

G. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled Neutralization tanks and their installation, including piping and electrical connections, and to assist in testing.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.4 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221319

SECTION 271600 – COMMUNICATIONS CONNECTING CORDS

PART 1 - GENERAL

1.01 SCOPE

A. This section describes the products relating to high quality Category 6 voice and data patch cords.

B. In this section the term patch cords refers to the cords that connect Owner provided data network electronics to the horizontal cable infrastructure.

C. It is important that the horizontal cable system and the provided patch cords work as one complete system for guaranteed channel performance. Patch cords shall be manufactured by the same manufacturer as the jack and patch panels.

D. The Contractor shall provide and deliver all cords as listed in this section. The Owner will be responsible for installation of cords.

1.02 RELATED WORK

A. Section 270000 – General Technology Requirements

B. Section 270500 – Communications General Requirements

C. Section 270526 – Grounding and Bonding for Technology Systems

D. Section 270528 – Pathways for Technology Systems

E. Section 270537 – Firestopping for Technology Systems

F. Section 271100 – Communications Equipment Rooms

G. Section 271300 – Communications Backbone Cabling

H. Section 271500 – Communications Horizontal Cabling

I. Section 271800 – Communications Labeling and Identification

J. Section 274000 – AV/Multimedia General Requirements

K. Section 274100 – Audio Visual Systems

1.03 DEFINITIONS

A. Refer to Section 270000 for additional definitions.

1.04 REFERENCE STANDARDS AND CODES

A. Refer to Section 270000 for additional requirements.

1.05 QUALIFICATIONS

A. Refer to Section 270000 for additional requirements.

1.06 PRE-CONSTRUCTION SUBMITTALS

A. Refer to Section 270000 for additional requirements.

1.07 CONSTRUCTION PROGRESS SUBMITTALS

A. Refer to Section 270000 for additional requirements.

1.08 CLOSEOUT SUBMITTALS

A. Refer to Section 270000 for additional requirements.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 270000.

2.02 CATEGORY 6 PATCH CORDS

A. The Owner has the right to determine the final length of the patch cords after the contract is awarded.

B. All patch cords shall be round and consist of eight insulated 23 AWG (24 AWG for Cat 5e), stranded copper conductors, arranged in four color-coded twisted pairs within a flame retardant jacket and be backwards compatible with lower performing categories. Modular patch cords shall utilize ISO termination method that is designed to reduce and control near-end cross talk (NEXT) and far end cross talk (FEXT) without compromising signal impedance.

C. Both ends of the cord shall be equipped with modular 8-position (RJ45 style) plugs wired straight through with standards compliant wiring. All modular plugs shall exceed FCC CFR 47 part 68 subpart F and IEC 603.7 specifications, and have 50 micro inches of gold plating over nickel contacts. Cable shall be label-verifiable. Cable jacket shall be factory marked at regular intervals indicating verifying organization and performance level. Patch cords shall have color-coded insert molded strain relief boot with a latch guard to protect against snagging. Additional color-coding shall be available by the use of snap-in icons.

D. Patch cords shall be wired straight through. Pin numbers shall be identical at each end and shall be paired to match T568B patch panel jack wiring per ANSI/TIA/EIA-568-B. Patch cords shall be unkeyed.

E. The manufacturer of the cords shall be the same as the manufacturer for UTP termination hardware (jacks & patch panels). Cords shall be highest quality patch cords available by connectivity manufacturer.

F. The patch cords shall match the Category rating of the jack and cable it will be connecting to.

G. This Contractor shall provide the following patch cords:

Qty	Length	Notes
1	7 feet	Non-Plenum for each Category 6 cable on the MDF and IDF
1	10 feet	Non-Plenum on each device that connects to the category cable

2.03 FIBER OPTIC PATCH CORDS

A. The Owner has the right to determine the final length of the patch cords after the contract is awarded.

B. All MM fiber optic patch cords shall:

1. Be duplex 2-3mm tight buffer design with Aqua jacket.
2. Have LC-LC connectors with straight thru connectors (A-A Polarity).
3. Have 50-micron OM4 core.

C. This Contractor shall provide the following patch cords:

Qty	Length	Notes
1	3 meter	MM Non-Plenum for each pair in both sides The MDF and IDFs including the devices

PART 3 - EXECUTION

3.01 TESTING

A. Refer to Section 270000 for additional requirements.

3.02 TRAINING

A. Refer to Section 270000 for additional requirements.

3.03 WARRANTY

A. Refer to Section 270000 for additional requirements.

3.04 ORDERING AND DELIVERY

A. Prior to ordering patch cords the Contractor shall schedule meeting with Owner and Consultant to verify patch cord lengths, colors and quantities.

B. Contractor shall coordinate delivery of patch cords with Owner. Contractor shall have list of delivered cords and shall have Owner sign delivery sheet at time of delivery.

END OF SECTION

SECTION 274100 – AUDIO VISUAL SYSTEMS

PART 1 - GENERAL

1.01 SCOPE

A. Refer to Section 270000 for additional project scope information.

B. Provide audio visual systems as well as training and warranty services for those systems as described herein.

1.02 RELATED WORK

A. Section 270000 – General Technology Requirements

B. Section 270500 – Communications General Requirements

C. Section 270526 – Grounding and Bonding for Technology Systems

D. Section 270528 – Pathways for Technology Systems

E. Section 270537 – Firestopping for Technology Systems

F. Section 271500 – Communications Horizontal Cabling

G. Section 271600 – Communications Connecting Cords

H. Section 271800 – Communications Labeling and Identification

I. Section 274000 – AV/Multimedia General Requirements

1.03 REFERENCE

A. In addition to any requirements below, Contractor shall abide by requirements delineated in 270000 and 274000 including but not limited to:

1. General: Definitions, reference standards and codes, qualifications, pre-construction submittals, construction progress submittals, closeout submittals, and correction period.

2. Products: Substitutions, product specifications, miscellaneous material, cable, connectors, power devices, and interface panels.

3. Execution: Coordination, testing, training, warranty, and cable management.

1.04 CORRECTION PERIOD

A. General Information: Products shall be covered by Contractor correction period as required by Sections 270000 and 274000.

B. Correction Period: Contractor’s obligation for correction period shall not abrogate manufacturers’ warranty periods.

C. Commencement: Correction Period begins on Date of Acceptance.

1.05 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 270000.

1.06 OWNERSHIP

A. General: Upon completion of the project, all programming and configuration of control hardware, touch panels, and other devices shall be property of Owner.

B. Property Rights: Contractor assigns to Owner any and all intellectual property rights and applications made by Contractor, or its agents or employees in connection with the performance of this contract. Contractor also acknowledges and agrees that services rendered in connection with the performance of this contract shall be a “work made for hire” within the meaning of Section 201 inventions of the Copyright Law of 1976.

C. No Passwords: Contractor shall not use any passwords to prevent access to code files except as specified herein.

1.07 TURN-OVER CABLES

A. Contractor shall provide an end-user input cable for every wall plate connection or other end-user input location.

B. Turn-over cables shall match the quality and requirements of the main cable run for that signal type; refer to 274000.

C. Turn-over cables shall be 10-feet in length except where noted otherwise or where required for system functionality.

1.08 MANUFACTURER COORDINATION

A. Contractor shall contact the manufacturer(s) to obtain master quote information if available. Master quotes often contain additional products that may not explicitly appear in the specifications.

1.09 SYSTEM DESCRIPTIONS

A. General

1. This specification is intended to describe the general system types/locations and components, not every connection or room. The technology drawings more fully describe these systems and must be reviewed thoroughly in conjunction with the specification.

2. The technology floor plans indicate AV device locations, including input plates, speakers, projectors, flat panel displays, wall controllers, AV cabinets, etc.

3. The technology schematics (located on the “Technology Details” drawing sheets) indicate AV components in each system type and how they are connected. The components are described generally (ex: “AMPLIFIER”) with the specified model indicated below. Some device model numbers are not indicated in these written AV specifications and must be found on the technology drawing schematics located in the detail sheets. The schematics also indicate specific installation and functional requirements not shown elsewhere.
4. The loudspeaker schedule (located on the “Technology Details” drawing sheets) indicates speaker models and other requirements. It specifies which model speaker shall be provided at each location type by using numbered identifiers that appear on the symbols on the floorplans (ex: “S1” for speaker type 1).
5. The display schedule (located on the “Technology Details” drawing sheets) indicates the anticipated display size for a given location, as well as the intended use and a reference to the associated AV schematic drawing. For example, “FP1” will be defined here to tell you the purpose, size, height, and associated AV system detail that applies anywhere you see an “FP1” symbol on the floor plans. Be aware that a room’s name on the architectural floor plans may not match the system name for the space. Use the flat panel numbers to determine what system is required.
6. Each system description includes a list of anticipated equipment. This list generally describes the type and quantity of major components. For detailed specification requirements regarding these components, refer to Part 2 as well as the AV schematic line drawings. Interconnecting cables are generally not listed as “major components” but are required and assumed to be included.

PART 2 - PRODUCTS

2.01 ASSISTIVE LISTENING SYSTEMS

A. Assistive listening systems shall include stationary transmitter (and antenna distribution if needed) with receivers, earphones, neckloops, and signage.

B. Provide all components necessary to meet ADA / IBC and local code requirements for the space. Quantity of receivers, earphones, and neckloops shall be calculated to meet ADA / IBC formulas.

C. In addition to ADA-required components, provide locking carrying cases with charging bases and rechargeable batteries to match the number of receivers.

D. Technology:

1. IR – Provide infrared system in smaller spaces where information being shared is secret or confidential and in buildings where there are many such systems and not enough RF spectrum for the channel count.

2. RF – Provide radio frequency system (72 MHz or 216 MHz) in locations where a large coverage area is needed, and information being shared is not expected to be secret or confidential.

3. Wi-Fi – Provide a Wi-Fi/network system as a secondary solution in all spaces with assistive listening

4. Loop – Provide an underfloor hearing loop where required by local code and/or indicated in the system description or design details

E. Manufacturers: Listen Technologies, Williams Sound, or equal

2.02 AUDIO AMPLIFIERS

A. Amplifiers shall be sized to match the speaker manufacturer's recommended amplifier power plus 20% additional headroom

B. Large venue systems

1. Rack-mountable, 2 RU

2. Network capable with internal DSP

3. 2 ohm, 4 ohm, 8 ohm, and 70v operation

4. Manufacturers: Powersoft Quattrocanali, QSC CX-Q Series, or approved equal

C. Small systems

1. Rack-mountable, 1 RU half rack width

2. High-efficiency class D amplifier

3. ENERGY STAR qualified

4. 4 ohm, 8 ohm, and 70V operation

5. Minimum of 300 watts total, with option for single bridged output or 2-channel or 4-channel operation

6. Manufacturers:

a. Crestron AMP-X300

b. Extron XPA U 1004 SB or XPA U 2002 SB

c. QSC SPA4-100 or SPA2-200

D. Smaller systems with paging override

1. Plenum rated

2. 50 watts @ 4 ohms

3. Three mixable inputs
4. Stereo or mono bridgeable speaker outputs
5. P/A override with 25V-100V sensing
6. Green sleep mode
7. Manufacturers: Roemtech PMA-350H

2.03 AV NETWORK SWITCHES

A. Provide network switches for AV systems as necessary.

B. Switches shall be sized to match the number of connections and PoE/PoE+ load.

C. For AV systems where the AV manufacturer publishes a list of recommended or approved switches, the network switches must be on this list.

1. For AV systems where the AV manufacturer does not publish a list, the network switches must meet the minimum specifications required by the AV equipment and recommended by the manufacturers.

D. Provide Netgear M4250 or M4300 Series

2.04 BLUETOOTH EXTENDER PLATES

A. Single-gang, Decora style in-wall Bluetooth audio interface

B. One button pairing/connect with LED indicator

C. Serial control protocol for integration with control system

D. Defeatable pairing button for restricted use applications with control system

E. Balanced mono/stereo analog outputs

F. Compatible with smartphones, Apple iPads, and Android tablets

G. Manufacturer: QSC Atterotech unBT2A kit or approved equal

2.05 CABLE

A. Cable shall be provided and installed as detailed herein. Cable installed that does not conform to these standards or that has not been given prior approval by Consultant shall be removed by Contractor and replaced at Contractor’s sole expense.

B. Plenum: Plenum-rated cables shall be used where required by code or by best practices. All cables run beneath raised floor shall be plenum-rated.

C. High Definition Digital Video (HDMI)

1. Due to HDMI distance limitations, anywhere the cable distance exceeds 20 feet, an acceptable solution shall include some form of extension. Extension shall be via UTP/XTP extenders. Contractor shall provide extenders where cables exceed 20 feet regardless of whether they are explicitly shown or specified. At locations where the end-to-end cable distance is 20 feet or less, commercial-grade passive HDMI cables may be used. Provide a cable channel that is reliable and functions with all source devices the Owner may use.
2. Acceptable solution shall support HDMI 2.0a and 4K@60Hz 4:4:4
3. Acceptable solution shall be manufactured by a Pro AV manufacturer with 5+ years in the AV industry and an existing install base in the region.
4. Manufacturers:
    a. Atlona
    b. Broadata
    c. Crestron
    d. Extron
    e. Liberty AV

D. USB

1. Due to USB distance limitations, anywhere the cable is routed within the wall or above the ceiling, an acceptable solution shall include some form of extension. Extension shall be via UTP/XTP extenders. Contractor shall provide extenders where cables route through walls or ceilings regardless of whether they are explicitly shown or specified.
2. Acceptable solution shall support at a minimum USB 2.0 except where noted otherwise.
3. Acceptable solution shall be manufactured by a Pro AV manufacturer with 5+ years in the AV industry and an existing install base in the region.
4. Manufacturers:
    a. Atlona
    b. Broad Ata
    c. Crestron
    d. Extron
    e. Liberty AV
    f. QSC

E. Installed Line Level and Microphone (single line): Audio signal cable shall have twisted pair #22 stranded tinned copper conductors, polyethylene conductor insulation, aluminum-

polyester foil shield, #24 stranded tinned copper drain wire and chrome PVC jacket. Belden 8761, West Penn 291, Canare L-2T2S, Liberty 24-2P-STAR, or equal. Plenum cable, Belden 88761 or equal.

F. Portable Microphone, Enclosure and Breakout Line Level Audio: Cable shall have 4 conductors per channel arranged in star quad double-balanced pairing, #24 stranded conductors of at least 40 tinned annealed copper wires, 100% coverage wrap shield, tinned copper braid shield of approximately 50% coverage, uniformly round form and black PVC jacket. Canare L-4E6S, Belden 8723, WestPenn 355, or equal. Plenum Cable, Belden 88723, Liberty 24-4P-PLCSH-WHT, or equal.

G. Broadband Video Antenna Cable: For runs shorter than 15', RG-59. For runs 15'-50', RG-6.

H. Wireless Microphone Antenna Extension Cable: 50-Ohm coaxial cable, or as directed by microphone manufacturer.

I. Loudspeaker Wire: 12 AWG minimum.

J. Subwoofer Wire: 10 AWG minimum.

K. UTP Cable: Shall be consistent with specific recommendations by hardware manufacturer of transmission equipment. Where no clear recommendation is made, the cable shall at a minimum meet the Category 6 performance requirements outlined in 271500.

L. Control: Shall be as recommended by equipment manufacturer, with the appropriate number of conductors for the application.

M. Cable Construction: Contractor shall fabricate interconnecting cables using products defined in this section unless equipment manufacturer-provided cable is of a specialized or proprietary nature. Pre-manufactured cables are subject to prior approval by Consultant.

N. Labels: Labels shall include a white paper or vinyl slip with typed or machine printed designations, secured in place with a wider section of clear heat shrink tubing or integral clear adhesive-backed plastic.

O. Terminations: Provide specialized terminating hardware as required.

P. Schedule: Contractor shall submit schedule prior to installation for Consultant review indicating cable types that will be used on the project

2.06 CEILING ENCLOSURE BOX

A. Certain locations noted on plans shall receive a large flush-mount ceiling box that replaces a 2'x2' ceiling tile. This box shall function as a centralized location for display connectivity (data, power, AV) as well as a space to house any electronics feeding or controlling the display.

B. The ceiling box shall include knockouts where single-gang boxes can be attached on at least three sides.

C. Contractor shall be responsible for proposing an enclosure that accommodates all anticipated equipment and includes sufficient passive or active ventilation for the heat load generated.

D. Manufacturers: Chief, FSR, Legrand Wiremold, Premier Mounts, or approved equal

1. FSR CB-224S – provide at any location where a single component is greater than 1 RU or where the sum of the components is greater than 2 RU

2.07 CONFERENCING SYSTEM

A. All-in-one soundbar

1. Conferencing soundbar with speaker, camera, and microphone in a single enclosure and one USB connector.

2. Single USB 3.0 interface

3. Built-in 180-degree far field microphone array

4. Built-in intelligent 1080p video camera with digital autozoom and autoframing

5. High powered 2-way stereo speakers

6. Manufacturer: Crestron UC-SB1-CAM or approved equal

B. Conference room kit

1. Manufacturer: Logitech Rally & Rally Plus kit solutions

2.08 CONNECTORS

A. Connectors shall be provided and installed as detailed herein. Connectors installed that do not conform to these standards or that have not been given prior approval by Consultant shall be removed by Contractor and replaced at Contractor's sole expense.

B. HDMI (Video/Audio/Control): Cables to be factory-terminated with molded strain relief.

C. XLR: Strain relief shall be sized to fit the cable. Connector shell shall be isolated from all contacts. Neutrik CA-NC series or equal.

D. Mini-XLR: Strain relief shall be sized to fit the cable. Connector shell shall be isolated from all contacts. Switchcraft or equivalent.

E. Phono (RCA): Phono/RCA connectors shall have gold contact and solid center pin with metal strain relief. Canare F-10 or Canare F-09 or equal.

F. Phone (1/4 inch): Reinforced one-piece body shall have brass bar running length of handle. Canare F-15 (TS) or Canare F-16 (TRS) or equal.

G. Mini (1/8 inch): Shall be Canare F-11 (TS) or Canare F-12 (TRS) or equal.

H. RJ45: RJ45 jacks that are field-terminated shall be punch-down type. All flexible connectivity to AV devices shall be factory-molded patch cables. Where a field-terminated plug is required by manufacturer recommendations, Contractor shall use appropriate connector type to the type of cable used (solid vs. stranded).

I. Shielded cable to be terminated with shielded connectors or as required by manufacturer recommendations.

J. DM, DM8G+: Shall be Crestron shielded RJ-45 and fiber connectors, as recommended by manufacturer of DM or DM8G+ system.

K. Schedule: Contractor shall submit schedule prior to installation for Consultant review indicating connectors that will be used on the project.

2.09 CONTROL SYSTEMS

A. Control system processor with ability to control all major system components and functions within a given room, including items such as: flat panel displays, media players, projectors, projection screens, presentation switcher, digital mixer, digital signal processor, power sequencers, etc.

B. Control system may be built into a presentation switcher or standalone

C. Each control system shall include a control interface. In large venue or complex spaces, this shall be a touch panel controller – 7” or 10” minimum diagonal size depending on requirements. In smaller spaces and simpler systems, this could be a keypad or button panel.

D. Control systems shall be network manageable. Contractor shall set up manufacturer’s network interface for Owner to use.

E. Manufacturers: Crestron, Extron, QSC, or approved equal

2.10 DIGITAL SIGNAL PROCESSOR

A. Minimum 4 input, 4 output audio DSP. Provide larger model and/or additional expansion I/O modules as necessary to support the number of connections in a given system.

B. Supports Acoustic Echo Cancellation on microphone inputs

C. RS-232 and/or Ethernet control to interface with AV control system.

D. Dante support where applicable

E. Manufacturers: QSC or Approved equal

2.11 EQUIPMENT RACKS

A. Sized to fit all system equipment with space for airflow and future expansion

B. Casework/millwork locations

1. Sized to fit all system equipment with space for airflow and future expansion
2. Coordinated to fit inside of casework; refer to architectural plans
    a. Fan kit with thermostatic fan control
    b. Coordinate active cooling and ventilation with millwork contractor
    c. Ventilation shall include passive air intake at the bottom and exhaust at the top
3. Manufacturer: Middle Atlantic SRSR Series

C. Instructor lectern locations

1. Rack shall be built into the lectern.
2. All finishes shall be coordinated with Owner. An approved proof of concept is required prior to ordering.
3. AV Contractor shall coordinate with Architect and furniture provider to ensure the appropriate rack space and cable pathways are provided.

D. Fixed wall locations

1. Provide with:
    a. 1 RU vented blank panels between all major components (e.g. amplifiers) and equipment groupings (e.g. wireless receivers, media players, etc.)
    b. 4 RU rack drawer for housing microphones and cables
    c. Locking vented front door
    d. Quiet fan kit with thermostatic fan control
2. Manufacturers: Middle Atlantic SR-Series or equal

2.12 FLAT PANEL DISPLAYS

A. Displays

1. Flat panel displays shall be commercial grade. Any displays used in common spaces shall be rated for 24/7 operation. All other locations shall be rated for 16/7 operation.
2. Flat panel displays shall support all necessary connections, including – at a minimum – two HDMI inputs and RS-232 control.
3. Flat panel displays shall have a minimum of 3840x2160p resolution (Ultra High Definition) except where noted otherwise
4. Flat panel displays shall have built-in speakers, except where the display is connected to a separate sound system

5. Manufacturers:
    a. LG, NEC, Samsung, Viewsonic, or approved equal

B. Mounts
1. Commercial grade mounts shall be used for all flat panel displays
2. Mounts shall match the size and load of the display
3. All mounts shall have downward tilt
4. Total depth of mount and display off the wall shall not exceed ADA allowed distance for protruding objects
5. Manufacturer:
    a. Extending mounts – Chief Thinstall Dual Swing Arm Series or approved equal
    b. Fixed mounts – Chief Fusion Series or approved equal

C. In-Wall Equipment Box
1. Each display location shall receive a large flush-mount wall box. This box shall function as a centralized location for display connectivity (data, power, AV) as well as a space to house any electronics feeding or controlling the display.
2. The wall box shall include knockouts where single-gang boxes can be attached on at least three sides.
3. Manufacturer: Chief, FSR, Hoffmann, Legrand Wiremold, or approved equal

D. Storage
1. In rooms without a ceiling storage box or equipment rack, all AV equipment shall be mounted behind the flat panel display
2. Provide appropriate quantity and size of mounting accessories to securely mount all AV equipment components
3. Manufacturer: Chief component storage panels or approved equal

2.13 MEDIA PLAYER

A. Professional/commercial-grade rack-mount media player

B. If used in a system that has video and audio, media player should support Blu-Ray, DVD, and CD playback.

C. If used in a system that has only audio, media player should support CD playback, Bluetooth, USB, and aux audio

D. Supports RS-232 and/or IP controls

E. Balanced audio outputs

F. Manufacturer:

1. Denon DN-500BD (audio and video), DN-500CB (audio only)
2. Tascam
3. Or approved equal

2.14 MICROPHONES

A. Conferencing and Distance Learning Microphone Array

1. Manufacturer: Shure MXA910 with Intellimix and Shure Intellimix P300 audio conferencing processor

B. Wired Microphones

1. Manufacturer: Shure Beta 58A (vocal), Shure Beta 57A (instrument), Shure SM58S (vocal switchable)

C. Wireless Microphone Systems

1. 24-bit / 48 kHz digital audio
2. Single, dual, and quad receiver options; provide dual and quad receivers whenever wireless channels exceed two and four, respectively.
3. Networkable
4. Provide with rechargeable batteries (one per transmitter plus a spare for every three transmitters) and charging bays
5. Manufacturers:
   a. Wireless Transmitter & Receiver: Shure ULX-D Series
   b. Earset & Lavalier: Point Source Audio CR-8S and CR-8L

D. Push-to-talk Microphones

1. Gooseneck on solid base
2. Manufacturer: Shure MX412D/C

E. Microphone Stands

1. Manufacturer:
   a. Floor – Ultimate Support Pro Series or equal
   b. Desktop – Atlas DS7E or equal

F. Microphone Receptacles

1. One-gang stainless steel plate with female XLR mic receptacle
2. Provide one for each wired microphone
3. Manufacturer: Neutrik or Switchcraft

2.15 POWER SOLUTIONS

A. Large Systems

1. Rack mount main sequencer with additional modules as necessary. Provide power sequencers at all large venue AV racks or any rack with an audio amplifier greater than 50W. Does not apply to systems where the amplifier is intended to remain on; ex: Energy Star amplifiers in ceiling enclosures.
2. Power output shall match recommended input power for system equipment. Main sequencer shall have 120V/20A output. Additional modules with 120V/30A or 220V/20A output may be required for certain amplifiers.
3. Provide with surge protection and remote switch
4. Minimum of six rear outlets and three sequenced groups of outlets
5. RS-232 and/or Ethernet control to interface with AV control system
6. Manufacturers: Furman, Middle Atlantic, Surge-X

B. Small Systems

1. Provide a rack mount 1 RU horizontal power strip with surge suppression at each equipment rack
2. Manufacturers: Furman, Middle Atlantic, Surge-X

2.16 PRESENTATION SWITCHERS

A. Mixture of digital video extender inputs, digital video extender outputs, HDMI inputs, and HDMI outputs. Quantity of each based upon needs of space.

B. Supports signal resolutions up to 4K/60 with 4:4:4 color sampling

C. Audio de-embedding to route audio from HDMI sources into sound system

D. May include built-in control processor

E. Manufacturer: Crestron, Extron, or approved equal

2.17 PROJECTION SYSTEMS

A. Projectors

1. Laser light source
2. WUXGA (1920x1200) resolution minimum
3. Minimum of 100 fL (footLambert) image brightness on associated screen
4. Model with optional lenses for range of throw distances when necessary
5. Manufacturers: Epson, Panasonic, Sony

B. Projection Screens

1. Widescreen aspect ratio, 16:10
2. Recessed in ceiling whenever feasible
3. Screen surface shall match installation conditions. For front projection, provide HD-compatible screen with 0.9, 1.1, or 1.3 screen gain depending on ambient light. For rear projection, provide screen surface capable of both front and rear projection. Minimum of 0.9 gain and 65-degree half angle.
4. Screen sizes shall be sized to provide clear visibility to the furthest viewer. Follow AVIXA sizing requirements.
5. The screen size and black drop will be calculated so that the bottom of the image area is approximately 48” above finished floor, and never lower than 42” AFF.
6. Refer to technology drawings for screen sizes and types per location.
7. Contractor shall coordinate exact mounting details with Architect
8. Manufacturer: Da-Lite, Draper, or approved equal

C. Projector Mounts

1. Mounts should be appropriate for the projector size and installation conditions
2. Provide with protective cage when mounted in gymnasiums and other spaces where there may be projectiles or other potential damage.
3. Manufacturer: Chief
    a. 2x2 lay-in ceilings – Chief SYSAU Series
    b. Wall-mount long throw – Chief WMA2S dual stud wall mount
    c. Ultra-short throw – provide model recommended by projector manufacturer

2.18 SPEAKERS

A. Refer to technology drawings

2.19 USER CONNECTIVITY INTERFACES

A. Provide at furniture locations to allow users to connect to power, data, and AV inputs without having to reach down to floor boxes or wall outlets.

B. Applies to conference tables, lecterns, and other furniture where noted in the AV system descriptions or on the drawing set.

C. Confirm exact model, color, and components with Architect prior to ordering.

2.20 WALL PLATES

A. All faceplates and plate devices shall be coordinated with the architect to ensure that the finish is consistent with the aesthetic of the space

B. All device plates shall support the same signal transmission requirements as the interconnecting cables. Refer to the “Cables” sections for more information.

C. Passive HDMI plates shall include a pigtail on the back to facilitate appropriate bend radius and smooth transition into conduit.

D. Contractor shall provide custom plates where necessary to support the designed signal and/or connector types.

E. Manufacturers: RCI Custom or Liberty AV

2.21 WIRELESS PRESENTATION DEVICE

A. Wireless presentation connectivity, with support for Windows, macOS, Android, and iOS devices, with browser-based support for Chromebook and Linux

B. App-free sharing options including: AirPlay, Miracast, Browser sharing, Wired HDMI input

C. Support for touch and 4K UHD displays

D. Manufacturers:

1. Barco ClickShare

2. Or approved equal

PART 3 - EXECUTION

3.01 EQUIPMENT LOCATION

A. Coordination: Where device locations are not shown on rack/console elevations and project drawings, Contractor shall coordinate with Consultant to identify desired/optimal locations.

B. Contractor shall verify all wall-mounted monitor mounting heights on preconstruction submittals.

3.02 AESTHETIC REQUIREMENTS

A. Printing: Button labels shall be engraved where applicable, or machine-printed where no engraved button/bezel is available. Handwritten labels are not acceptable.

B. Graphics: Icons and graphic representations of equipment and functions shall be crisp, sharp, and easy to identify. Icons shall be used wherever possible.

C. Text: ICS screens shall not use uncommon abbreviations. Text shall be sans serif and shall be sized to be clearly readable.

3.03 EQUIPMENT CONFIGURATION

A. Labeling: Contractor shall configure all equipment for normal use, including setting of levels and presets. Small adhesive labels shall be affixed to equipment indicating nominal levels and settings.

B. EDID, E-EDID: Where devices allow for the customization of EDID information, Contractor shall configure EDID settings of all applicable devices such that the audiovisual system is optimized.

C. Software: Contractor shall utilize Manufacturers official current version of configuration software. Special exemption may be obtained from Consultant if current version contains known issues. In such event, the version immediately preceding shall be utilized.

D. IP Interface: Contractor shall configure/modify IP-based monitoring software to allow Owner to monitor all rooms installed as part of this work. Automatic timed system shutdown shall be configured as part of this software. Shutdown time(s) to be coordinated with Owner.

E. Control System: Contractor shall make adjustments to programming as required by Consultant up to issuance of substantial completion punch list at no additional charge, so long as changes relate to equipment in this bid package.

3.04 DIGITAL SIGNAL PROCESSOR

A. Processor power required of DSP shall not exceed 80% total processing capacity. If processing power required exceeds available processing power, Contractor shall immediately notify Consultant during pre-installation phase.

B. Functional Requirements

1. Functions: The DSP shall be configured to provide:

a. Pre-amplification

b. Filtering and Equalization

c. Dynamics processing

d. Gating

e. Mixing, Automatic mixing – gain sharing or gated

f. Zoning

g. Mix-minus

h. Delay

i. AEC

j. Volume control

k. Emergency/Alarm muting

l. Signal metering

m. Logic functions

2. Gain Structure: The DSP shall be configured to obtain and maintain unity gain structure from input pre-amplification stage to output stage or associated end-user volume control.

3. AEC: The DSP shall be configured to provide AEC for all microphones detecting echo in conferencing and specialty DSP applications. AEC shall be configured per DSP Manufacturer's recommendations and best practices.

4. AEC and Pre-AEC: Where microphones used for speech / sound reinforcement are part of a conferencing system requiring AEC processing, the "Pre-AEC" audio path shall be utilized for speech / sound reinforcement while a separate path processed for AEC shall be utilized for conferencing.

5. Organization: Referring to open-Architecture DSP platforms. Processing objects shall be clearly labeled and organized clearly to follow the intended signal path from left to right, top to bottom. Connection lines between objects shall be routed in an organized fashion.

6. Multiple DSP: Where designs include more than one DSP linked via virtual multi-channel audio buss or digital audio network, all signals shall be routed to a central processor for master routing and 3rd party control. All control points being controlled by ICS controls shall be located on a single DSP operating as the master unit.

7. Latency: Also known as propagation delay, Programmer shall utilize sufficient and efficient processing paths to achieve intended results whilst minimizing latency from input to output.

C. DSP Controls

1. Contractor shall coordinate work of ICS Programmer and DSP Programmer.

2. Volume controls shall be range limited within DSP to provide end-user with adequate adjustment range (typically +/-6dB for microphones and +/-10dB for presentation sources). Operation of DSP from end-user standpoint shall be seamless with ICS system operation.

3. Processing objects within Audio DSP configuration shall be clearly identified where controlled by ICS. Text objects or similar shall identify these objects.

3.05 IT COORDINATION

A. General: Where connection between components or control features are accomplished over the Owner's LAN, Contractor shall coordinate with Owner's IT department for IP addresses, firewall access, and other issues pertaining to successful integration.

B. Permission: It is Contractor's responsibility to obtain necessary information and permissions to implement their system. Any delays or problems with gathering information or coordinating access to the LAN or WAN shall be brought to Consultant immediately for resolution.

3.06 SYSTEM TESTING

A. Contractor shall check that all cables are properly labeled and secured prior to substantial completion inspection.

B. Contractor shall ensure that all work areas are clear of all debris, tools, empty boxes, and extra parts prior to substantial completion inspection.

C. Prior to the substantial completion inspection, Contractor shall notify the Consultant that all items listed below are complete:

1. Contractor shall ensure that all standard functions of equipment are functional.

2. Contractor shall verify all input and outputs of the system for signal quality.

3. Audio: Contractor shall verify all sources are free of destructive noise (excessive noise floor, hiss, grounding interference) and that speakers function properly. The audio system shall be consistent in terms of volume and tone and shall be optimized for the space(s) served by the audio system.

a. Control functionality, verification of presets, volume controls, mute controls, etc.

b. Stable operation, completely free of feedback and distortion throughout entire range of available ICS controls.

c. Correct routing of all signals to intended destinations.

d. Unity gain structure.

e. Output transducer (speaker) protection processing functionality.

f. AEC functionality.

g. Provide measurement test results per ANSI/InfoComm 1M-2009 ACU.

h. Outdoor sound system measurements shall be provided at a minimum of one measurement location per 50 seats. Measurements shall be performed using pink noise test signal at a volume congruent with nominal system operation. Measurements shall indicate:

i. Site plan map of seating areas and test locations.

ii. Frequency response from 80Hz-16kHz in 1/3 octave resolution.

iii. SPL (A weighted) of the test signal as measured from each location.

iv. Weather conditions at time of test; including temperature, humidity and average wind speeds.

4. Video: Contractor shall verify that all EDID and EDID-D information has been configured at each video transmission and processing device. Where signal processing is present, Contractor shall optimize the video system to native resolution of display devices.

D. Immediately prior to final inspection, in the presence of Consultant and/or Owner representative, Contractor shall load DSP program and integrated control system program from Closeout Submittal media and demonstrate full system functionality.

3.07 FIRMWARE

A. Firmware upgrades shall be dated the same as Date of Acceptance. Contractor shall upgrade firmware and software as necessary during project so that latest versions are installed as of Date of Acceptance.

3.08 TRAINING

A. General Information: As required by Sections 270000 and 274000.

B. Contractor shall provide one (1) 60-minute training session for each unique audiovisual room type. Training sessions shall comprise of one half of the time dedicated to instructor led training with the remainder of the session to be used for instructor supervised hands-on end user operation of the system(s):

1. Identification of input locations, source devices, control locations, displays, and other devices requiring end user interaction for successful system operation.

2. Use of control system.

3. Use of source devices and input locations.

4. Switching inputs for each display.

5. Training shall include operation of system in event of control system malfunction – all manual switching and use of remotes.

6. Basic troubleshooting for common user errors.

C. Scheduling: Training shall be scheduled with Owner at least ten (10) days in advance.

D. Quick-Reference Guides: Contractor shall compile quick-reference guide for system operation and basic troubleshooting. Quick-reference guide shall be provided at the training session, and training shall include walking through quick-reference guide steps.

END OF SECTION

SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Chain-link fences.
2. Swing gates.
3. Privacy slats.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

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

a. Fence and gate posts, rails, and fittings.
b. Chain-link fabric, reinforcements, and attachments.
c. Accessories: Privacy slats.
d. Gates and hardware.

B. Shop Drawings: For each type of fence and gate assembly.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include accessories, hardware, gate operation, and operational clearances.

C. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:

1. Polymer-Coated Components: In 6-inch (150-mm) lengths for components and on full-sized units for accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of chain-link fence,[operator,] and gate.

B. Sample Warranty: For special warranty.

1.5 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.6 WARRANTY

A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to comply with performance requirements.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:

1. Fabric Height: As indicated on Drawings.
2. Steel Wire for Fabric: Wire diameter of 0.192 inch (4.88 mm).

a. Mesh Size: 2-1/8 inches (54 mm).
b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. (366 g/sq. m) with zinc coating applied before weaving.

c. Coat selvage ends of metallic-coated fabric before the weaving process with manufacturer's standard clear protective coating.

3. Selvage: Knuckled at both selvages.

2.2 FENCE FRAMEWORK

A. Posts and Rails: ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:

1. Fence Height: As indicated on Drawings.

2. Heavy-Industrial-Strength Material: Group IA, round steel pipe, Schedule 40.

   a. Line Post: 2.375 inches (60 mm) in diameter.
   b. End, Corner, and Pull Posts: 2.375 inches (60 mm) in diameter.

3. Horizontal Framework Members: Intermediate, top, and bottom rails according to ASTM F 1043.

   a. Top Rail: 1.66 inches (42 mm) in diameter.

4. Brace Rails: ASTM F 1043.
5. Metallic Coating for Steel Framework:

   a. Type A: Not less than minimum 2.0-oz./sq. ft. (0.61-kg/sq. m) average zinc coating according to ASTM A 123/A 123M or 4.0-oz./sq. ft. (1.22-kg/sq. m) zinc coating according to ASTM A 653/A 653M.
   b. Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
   c. External, Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- (0.0076-mm-) thick, zinc-pigmented coating.
   d. Type C: Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. (0.55-kg/sq. m) coating.
   e. Coatings: Any coating above.

6. Polymer coating over metallic coating.

   a. Color: Match chain-link fabric according to ASTM F 934.

2.3 SWING GATES

A. General: ASTM F 900 for gate posts and single swing gate types.

1. Gate Leaf Width: As indicated.
2. Framework Member Sizes and Strength: Based on gate fabric height of 72 inches (1830 mm) or less.

B. Pipe and Tubing:

1. Zinc-Coated Steel: ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framework.
2. Gate Posts: Rectangular tubular steel.
3. Gate Frames and Bracing: Rectangular tubular steel.

C. Frame Corner Construction: Welded or assembled with corner fittings.

D. Hardware:

1. Hinges: 360-degree inward and outward swing.
2. Latch: Permitting operation from both sides of gate.
3. Lock: Manufacturer's standard device.
4. Padlock and Chain.

2.4 FITTINGS

A. Provide fittings according to ASTM F 626.

B. Post Caps: Provide for each post.

1. Provide line post caps with loop to receive tension wire or top rail.

C. Rail and Brace Ends: For each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:

1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches (152 mm) long.
2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails to posts.

E. Tension Bars: Steel length not less than 2 inches (50 mm) shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

F. Tie Wires, Clips, and Fasteners: According to ASTM F 626.

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:

a. Hot-Dip Galvanized Steel: 0.148-inch- (3.76-mm-) diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.

G. Finish:

1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. (366 g/sq. m) of zinc.

a. Polymer coating over metallic coating.

2.5 PRIVACY SLATS

A. Fiber-Glass-Reinforced Plastic Slats: UV-light-stabilized fiber-glass-reinforced plastic, not less than 0.06 inch (1.5 mm) thick, sized to fit mesh specified for direction indicated, with vandal-resistant fasteners and lock strips.

B. Color: As selected by Architect from manufacturer's full range.

2.6 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

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

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 CHAIN-LINK FENCE INSTALLATION

A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.

1. Install fencing on established boundary lines inside property line.

B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

a. Exposed Concrete: Extend 2 inches (50 mm) above grade; shape and smooth to shed water.
b. Concealed Concrete: Place top of concrete 2 inches (50 mm) below grade to allow covering with surface material.
c. Posts Set into Holes in Concrete: Form or core drill holes not less than 5 inches (127 mm) deep and 3/4 inch (20 mm) larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed according to anchoring material manufacturer's written instructions. Finish anchorage joint to slope away from post to drain water.

D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more For runs exceeding 500 feet (152 m), space pull posts an equal distance between corner or end posts.

E. Line Posts: Space line posts uniformly at 10 feet (3 m) o.c.

F. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

1. Locate horizontal braces at midheight of fabric 72 inches (1830 mm) or higher, on fences with top rail, and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Intermediate and Bottom Rails: Secure to posts with fittings.

I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1-inch (25-mm) bottom clearance between finish grade or surface and bottom selvage unless otherwise

indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches (380 mm) o.c.

K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches (300 mm) o.c. and to braces at 24 inches (610 mm) o.c.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side.

M. Privacy Slats: Install slats in direction indicated, securely locked in place.

1. Vertically, for privacy factor of 70 to 75.

3.4 GATE INSTALLATION

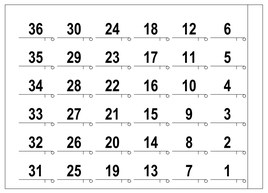
A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.5 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

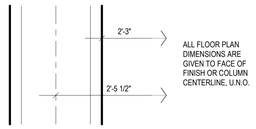
B. Lubricate hardware and other moving parts.

END OF SECTION 323113



THE NO'S 1 THRU 25 ARE AVAILABLE FOR EACH SHEET AND IF USED ALWAYS APPEAR IN THE LOCATIONS SHOWN. DETAILS MAY BE DRAWN ON ONE OR MULTIPLE MODULES

SHEET FORMAT | NO SCALE | 30



ALL FLOOR PLAN DIMENSIONS ARE GIVEN TO FACE OF FINISH OR COLUMN CENTERLINE, U.N.O.

DIMENSIONING | NO SCALE | 24

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL MATERIALS & WORKMANSHIP IN ACCORDANCE W/ ALL APPLICABLE LIFE SAFETY STANDARDS, ORDINANCES & BLDG. COVENANTS & OSHA STANDARDS FOR THIS PROJECT.
2. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT, PRIOR TO THE FINAL BID, OF ANY DISCREPANCIES FOUND IN THESE DOCUMENTS OR CONFLICTS FOUND WITH THE EXISTING SITE CONDITIONS.
3. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES IN FIELD CONDITIONS OR DIMENSIONS WHICH ARE NOT RESOLVED BY THESE CONTRACT DOCUMENTS PRIOR TO PROCEEDING W/ THE WORK.
4. THE CONTRACTOR SHALL FIRESTOP, AS REQUIRED BY CODE, ALL NEW PENETRATIONS & ALL ABANDONED PENETRATIONS AS MAY BE GENERATED BY THE WORK IN THIS CONTRACT.
5. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING WITHIN THE DETERMINED CRITICAL DIMENSIONS. THE CONTR. SHALL VERIFY THE DIMENSIONS OF OWNER PROVIDED ITEMS & ENSURE THESE ITEMS WILL FIT W/ ADEQUATE INSTALLATION & OPERATION CLEARANCES.
6. "ALIGN" AS USED IN THESE DOCUMENTS SHALL MEAN TO ACCURATELY LOCATE FINISHED FACES IN THE SAME PLANE. NEW CONSTRUCTION REQUIRED TO ALIGN W/ EXISTING CONSTRUCTION SHALL BE CONSTRUCTED WITHOUT VISIBLE JOINTS OR SURFACES IRREGULARITIES.
7. "TYP" AS USED IN THESE DOCUMENTS MEANS THAT THE CONDITION OR DIMENSION OR ITEM IS THE SAME OR REPRESENTATIVE FOR SIMILAR CONDITIONS THROUGHOUT, UNLESS NOTED OTHERWISE.
8. PROVIDE FIRE RETARDANT TREATED BLOCKING FOR SUPPORT OF WALL COMPONENTS AS REQUIRED.
9. PROVIDE & COORDINATE THE LOCATION, TYPE, QUANTITY & ARRANGEMENT OF FURRING, NAILERS, BLOCKING, GROUNDS, STUDS, STUD REINFORCEMENT & SIMILAR SUPPORTS SO THAT THE ATTACHED WORK WILL BE ADEQUATELY SUPPORTED & ROUGH CARPENTRY WILL BE PROPERLY LOCATED.
10. ALL WORK BY THE CONTRACTOR SHALL CONFORM TO THE OWNER/CONTRACTOR AGREEMENT. THE PROJECT MANUAL CONTAINS THE GENERAL & SUPPLEMENTARY CONDITIONS, SPECIFICATIONS, DRAWINGS, ADDENDA & SUPPLEMENTAL INSTRUCTIONS ISSUED BY THE ARCHITECT.
11. THE CONTRACTOR SHALL NOT PROCEED W/WORK FOR WHICH ADDITIONAL COMPENSATION IS EXPECTED BEYOND THE CONTRACT AMOUNT, WITHOUT WRITTEN AUTHORIZATION FROM THE OWNER. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE ANY SUCH CLAIM FOR EXTRA COMPENSATION.
12. THE CONTRACTOR IS ACCOUNTABLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES & COORDINATION OF THE WORK PERFORMED BY HIS SUBCONTRACTORS.
13. ALL WORK NOTED "BY OTHERS" OR "N.I.C." IS TO BE ACCOMPLISHED BY A CONTRACTOR OTHER THAN THE GENERAL CONTRACTOR & IS NOT TO BE A PART OF THE CONSTRUCTION AGREEMENT. THE CONTRACTOR IS TO COORDINATE W/ALL "OTHER" CONTRACTORS AS REQUIRED TO COMPLETE THE WORK.
14. THE CONTRACTOR SHALL BID THE ENTIRE SET OF DRAWINGS IN THEIR ENTIRETY. ALL MEP RELATED AND / OR TECHNOLOGY ITEMS MAY NOT BE SHOWN ON THE ARCHITECTURAL DRAWINGS SO COORDINATION BETWEEN CONSTRUCTION TRADES WILL BE REQUIRED.
15. THE ACCURACY OF ORNIGINAL DRAWINGS CAN BE GREATLY REDUCED WHEN COPIES ARE MADE SO THE CONTRACTOR SHALL NOT SCALE OR MEASURE THE DRAWINGS AT ANY TIME. IF A DIMENSION IS NEEDED BUT IS NOT SHOWN
16. THE CONTRACTOR SHALL REPLACE OR REPAIR TO LIKE-NEW CONDITION ALL ITEMS DAMAGED ON THE PREMISES CAUSED BY THE WORK IN THIS CONTRACT.

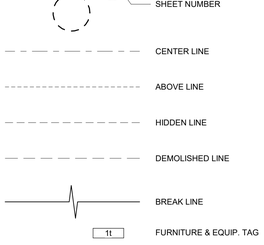
GENERAL NOTES | NO SCALE | 6

A 22,084 S.F. BOYS AND GIRLS CLUB FACILITY TO SERVE THE COMMUNITIES OF TEAL RUN AND ANDOVER FARMS, IN FRESNO TEXAS.

PROJECT DESCRIPTION | NO SCALE | 5

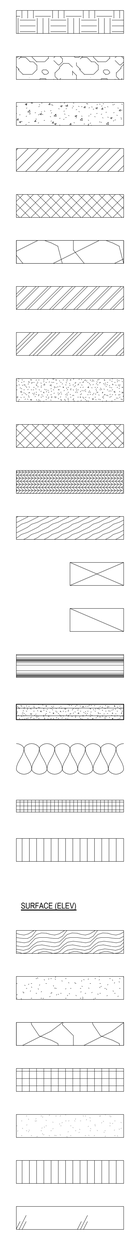
&	AND
L	ANGLE
[	CHANNEL
@	AT
℄	CENTER LINE
∅	DIAMETER OR ROUND
⊥	PERPENDICULAR
#	POUND OR NUMBER
(E)	EXISTING
A.B.S.	ACRYLONITRILE BUTADIENE STYRENE
ABV.	ABOVE
A/C	AIR CONDITIONING
ACOUS.	ACOUSTICAL
A.D.	AREA DRAIN
ADD.	ADDENDUM
A.F.F.	ABOVE FINISH FLOOR
AGG.	AGGREGATE
A.H.U.	AIR HANDLING UNIT
ALLOW.	ALLOWANCE
ALT.	ALTERNATE
ALUM.	ALUMINUM
ANOD.	ANODIZED
APX.	APPROXIMATE
ARCH.	ARCHITECT(URAL)
AUTO.	AUTOMATIC
AUX.	AUXILIARY
AVG.	AVERAGE
BD.	BOARD
BLDG.	BUILDING
BLK.	BLOCK
BLKG.	BLOCKING
BOT.	BOTTOM
CAB.	CABINET
C.B.	CATCH BASIN
CC.TV.	CLOSED-CIRCUIT TELEVISION
CER.	CERAMIC
C.G.	CORNER GUARD
C.H.	COAT HOOK
C.I.	CAST IRON
C.J.	CONTROL JOINT
CLG.	CEILING
CLO.	CLOSET
CLR.	CLEAR
C.M.U.	CONCRETE MASONRY UNIT
COL.	COLUMN
COMP.	COMPONENT
CONC.	CONCRETE
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
CPT.	CARPET
C.R.	CURTAIN ROD
C.S.	CAST STONE
C.T.	CERAMIC TILE
CU.FT.	CUBIC FEET (FOOT)
CU.IN.	CUBIC INCH
CU.YD.	CUBIC YARD
CX.	CONNECTION
DBL.	DOUBLE
DEPT.	DEPARTMENT
DET.	DETAIL
D.F.	DRINKING FOUNTAIN
D.H.	DOUBLE HUNG
DIAG.	DIAGONAL
DIA.	DIAMETER
DIM.	DIMENSION
DIV.	DIVISION
DN.	DOWN
D.O.	DOOR OPENING
DR.	DOOR
DWG.	DRAWING
DWR.	DRAWER
E.	EAST
EA.	EACH
E/A	EXHAUST AIR
E.D.F.	ELECTRICAL DRINKING FOUNTAIN
E.H.D.	ELECTRICAL HAND DRYER
E.J.	EXPANSION JOINT
EL.	ELEVATION
ELEC.	ELECTRIC
ELEV.	ELEVATOR
EMER.	EMERGENCY
ENCL.	ENCLOSURE
EQ.	EQUAL
EQPT.	EQUIPMENT
EXH.	EXHAUST
EXP.	EXPANSION
EXPO.	EXPOSED
EXIST'G	EXISTING
EXT.	EXTERIOR
EW	EACH WAY
EF	EACH FACE
F.A.	FIRE ALARM
F.D.	FLOOR DRAIN
F.D.C.	FIRE DEPARTMENT CONNECTION
F.D.C.C.	FIRE DEPARTMENT CONNECTION CABINET
FDN.	FOUNDATION
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER CABINET
FEM.	FEMALE
F.H.C.	FIRE HOSE CABINET
F.H.M.S.	FLAT HEAD MACHINE SCREW
F.H.R.	FIRE HOSE RACK
F.H.W.S.	FLAT HEAD WOOD SCREW
F.HY.	FIRE HYDRANT
FIN.	FINISH
FLASH.	FLASHING
FLEX.	FLEXIBLE
FLR.	FLOOR
FLUOR.	FLUORESCENT
F.MIR.	FRAMED MIRROR
F.MIR.SH.	FRAMED MIRROR AND SHELF
F.O.F.	FACE OF FINISH
F.O.S.	FACE OF STUDS
F.S.	FULL SIZE
FT.	FOOT (FEET)
FURR.	FURRED
FUT.	FUTURE
GA.	GAUGE
GALV.	GALVANIZED
G.B.	GRAB BAR
G.I.	GALVANIZED IRON
GL.	GLASS
GYP.	GYPSUM
H.	HIGH
H.B.	HOSE BIB
H.C.	HOLLOW CORE
HDWD.	HARDWOOD
HDWE.	HARDWARE
H.M.	HOLLOW METAL
HORIZ.	HORIZONTAL
H.PT.	HIGH POINT
HR.	HOUR
HT.	HEIGHT
I.D.	INSIDE DIAMETER
IN.	INCH
INCL.	INCLUDE
INSUL.	INSULATION
INT.	INTERIOR
INTM.	INTERMEDIATE
INV.	INVERT
JAN.	JANITOR
JT.	JOINT
KIT.	KITCHEN
K.O.	KNOCK OUT
LAB.	LABORATORY
LAM.	LAMINATE
LAV.	LAVATORY
LB.	POUND
LKR.	LOCKER
L.L.H.	LONG LEG HORIZONTAL
L.L.V.	LONG LEG VERTICAL
L.PT.	LOW POINT
LT.	LIGHT
LTL.	LINTEL
LVL.	LEVEL
LVR.	LOUVER
MAT'L	MATERIAL
MAX.	MAXIMUM
M.B.	MOP BASIN
M.B.H.	MOP-BROOM HOLDER
M.C.	MEDICINE CABINET
MECH.	MECHANICAL
MED.	MEDIUM
MEMB.	MEMBRANE
MET.	METAL
MEZZ.	MEZZANINE
MFR.	MANUFACTURE
MIN.	MINIMUM
MIR.	MIRROR
MISC.	MISCELLANEOUS
MLDG.	MOULDING
MTD.	MOUNTED
MTG.	MOUNTING
MULL.	MULLION
N.	NORTH
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
N.T.S.	NOT TO SCALE
O.A.	OVER ALL
O/A	OUTSIDE AIR
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
OFF.	OFFICE
OPNG	OPENING
OPP	OPPOSITE
OPP.H.	OPPOSITE HAND
OZ.	OUNCE
PBD.	PARTICLE BOARD
PL.	PLATE
P.LAM.	PLASTIC LAMINATE
PLAS.	PLASTER
PLYWD.	PLYWOOD
PNL.	PANEL(ING)
POL.	POLISH
PR.	PAIR
P.S.F.	POUNDS PER SQUARE FOOT
P.SH.	PURSE SHELF
PTD.	PAINTED
PT.	POINT
PTN.	PARTITION
Q.T.	QUARRY TILE
QTR.	QUARTER
R.	RISER
R/A	RETURN AIR
RAD.	RADIUS
REF.	REFERENCE
REFR.	REFRIGERATOR
REINF.	REINFORCED
REQ.	REQUIRE(D)
RESIL.	RESILIENT
REV.	REVISE
RM.	ROOM
R.O.	ROUGH OPENING
S.	SOUTH
S/A	SUPPLY AIR
SAM.	SANITARY
S.C.	SOLID CORE
SCHED.	SCHEDULE
S.D.	SOAP DISPENSER
SECT.	SECTION
SH.	SHELF
SHR.	SHOWER
SHT.	SHEET
SIM.	SIMILAR
S.M.D.	SANITARY NAPKIN DISPENSER
S.M.R.	SANITARY NAPKIN RECEPTACLE
S.M.R.	SANITARY NAPKIN-TAMPON DISPENSER
SPECS.	SPECIFICATIONS
SQ.	SQUARE
S.SK.	SERVICE SINK
S.ST.	STAINLESS STEEL
ST.	STEEL
STA.	STATION
STD.	STANDARD
STOR.	STORAGE
STR.	STRUCTURE
SUR.	SURFACE
SUSP.	SUSPENDED
SYM.	SYMMETRICAL
SYS.	SYSTEM
T.	TREAD
T.B.	TOWEL BAR
T.D.	TOWEL DISPENSER
T.D.R.	TOWEL DISPENSER-RECEPTACLE
TEL.	TELEPHONE
TEMP.	TEMPERED
TERR.	TERRAZZO
T&G	TONGUE AND GROOVE
THER.	THERMAL
THK.	THICK(NESS)
THRES.	THRESHOLD
T.T.D.	TOILET TISSUE DISPENSER
TV.	TELEVISION
T.W.	TOP OF WALL
TYP.	TYPICAL
UR.	URINAL
U.N.O.	UNLESS NOTED OTHERWISE
V.C.T.	VINYL COMPOSITION TILE
VERT.	VERTICAL
VEST.	VESTIBULE
V.I.F.	VERIFY IN FIELD
VNR.	VENEER
V.M.C.	VINYL WALL COVERING
W.	WEST
W/	WITH
W.A.U.	WALL ASH URN
W.C.	WALL COVERING
WD.	WOOD
WIN.	WINDOW
W/O	WITHOUT
WP.	WATERPROOF
W.R.	WASTE RECEPTACLE
W/R	WATER RESISTANT
WSCT.	WAINSCOT
WT.	WEIGHT

ABBREVIATIONS | NO SCALE | 25



GRAPHIC SYMBOLS | NO SCALE | 19

SECTION (PLAN)



MATERIALS LEGEND | NO SCALE | 13

SHEET INDEX | NO SCALE | 1

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TBPE FIRM REG.#F-4506

TECHNOLOGY CONSULTANT
TRUE NORTH CONSULTANT GROUP
3408 HILLCREST DR.
WACO, TX 76708

PROJECT #: N032023
DATE ISSUED: 02.29.2024
TDLR #: TABS2024011699

REVISIONS:

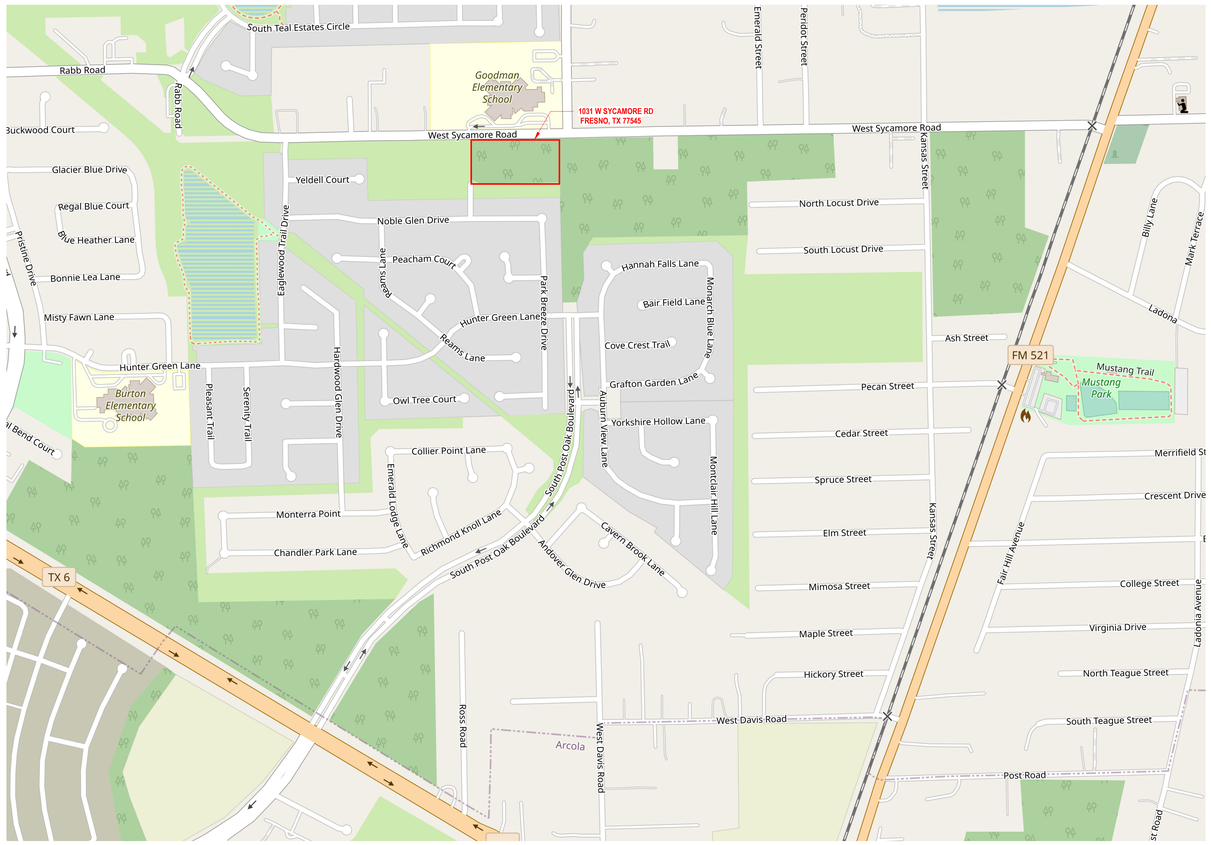
NO.	DATE	DESCRIPTION
2	04.12.2024	Addendum #2

FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
FRESNO, TX 77545

SYMBOLS, ABBREVIATIONS & GENERAL INFORMATION

100% Construction Document
02.29.2024

A0.01



PROJECT LOCATION | NO SCALE | 13

APPLICABLE CODES AND REGULATIONS

INTERNATIONAL BUILDING CODE (IBC):	2021 EDITION
INTERNATIONAL FIRE CODES (IFC):	2021 EDITION
UNIFORM MECHANICAL CODE:	2021 EDITION
UNIFORM PLUMBING CODE:	2021 EDITION
NATIONAL ELECTRIC CODE:	2020 EDITION
TEXAS ACCESSIBILITY STANDARDS:	2012 EDITION

APPLICABLE FORT BEND COUNTY AMENDMENTS

DESIGN CRITERIA

WINDSPEED CRITERIA: 148 MPH (2)
EXPOSURE: B
RISK CATEGORY: III

OCCUPANCY CLASSIFICATION: MIXED OCCUPANCY
A-3 PRIMARY OCCUPANCY
A-2 / B / E NON-SEPARATED

A-2: CAFE
A-3: GYM & GAME ROOM
B: ADMINISTRATION
E: CLASSROOMS

REQUIRED FIRE SEPARATION OF OCCUPANCIES: A/E/B NO SEPERATION
B ACCESORY LESS THAN 10% (TABLE 506.2)

CONSTRUCTION TYPE (TABLE 601): TYPE IIB, FULLY SPRINKLERED

ALLOWABLE AREA (TABLE 506) INCLUDING EQUATION 5-1: 38,000 SF

ALLOWABLE NO. OF STORIES (TABLE 503): 3

ALLOWABLE HEIGHT (TABLE 504.3) 75' - 0"

MAXIMUM TRAVELD DISTANCE (TABLE 1017.2): 250' - 0"

PROPOSED CONSTRUCTION

SCOPE: CONSTRUCTION OF A NEW BOYS & GIRLS CLUB FOR THE FORT BEND COUNTY

PROPOSED AREA: 22,084 SF

PROPOSED HEIGHT (TABLE 503): 25' - 0" TO TOP OF ROOF

PROPOSED MAXIMUM TRAVEL DISTANCE: 250' - 0"

FIRE RESISTANCE FOR CONSTRUCTION TYPE IIB (601)

BUILDING ELEMENT	REQUIRED RESISTANCE (HRS)
STRUCTURAL FRAME	0
BEARING WALLS	
EXTERIOR	0
INTERIOR	0
NONBEARING WALLS AND PARTITIONS	
EXTERIOR	0
INTERIOR	0
FLOOR CONSTRUCTION	0
ROOF CONSTRUCTION	0

OCCUPANT LOAD (PER TABLE 1004.1.2)

FUNCTION OF SPACE	OCCUP. LOAD FACTOR	OCC. COUNT	NON-SIMULTANIOUS SPACES
ASSEMBLY (CONCENTRATED) GYM	7 GROSS	958 PEOPLE	0 PEOPLE
BUSINESS (OFFICES) 4 OFFICES CONFERENCE ROOM WARMING KITCHEN	150 GROSS	8 PEOPLE	8 PEOPLE
ASSEMBLY (UNCONCENTRATED) GAME ROOM TEEN ROOM KID'S CAFE	15 NET	159 PEOPLE 71 PEOPLE 50 PEOPLE	159 PEOPLE 71 PEOPLE 0 PEOPLE
STORAGE/MECHANICAL LAUNDRY MECH./ELEC. EQUIPMENT STOR. GYM STOR. STOR. BACKPACK STOR. IT FIRE RISER ROOM MEZZANINE	300 GROSS	9 PEOPLE	0 PEOPLE
EDUCATIONAL (CLASSROOMS) COMPUTER ROOM ART & CRAFTS ROOM LEARNING CENTER LEARNING CENTER	20 NET	20 PEOPLE 35 PEOPLE 42 PEOPLE 39 PEOPLE	20 PEOPLE 35 PEOPLE 42 PEOPLE 39 PEOPLE

REDUCED OCCUPANT LOAD	
TOTAL OCCUPANCY:	TOTAL OCCUPANCY W/O NON-SIMULTANEOUS SPACES:
1,391	387

PLUMBING FIXTURE COUNT PER CHAPTER 29, TABLE 2902.1:

TOTAL OCCUPANTS 387

MALE 194
FEMALE 194

MINIMUM NUMBER OF REQUIRED FIXTURES PER MOST RESTRICTIVE OCCUPANCY CLASSIFICATION - E

REQUIRED FIXTURES	WATER CLOSETS		URINALS	LAVATORIES		DRINKING FOUNTAINS	SERVICE SINK	SHOWERS	OTHER (Health Clinc)	
	MALE	FEMALE		MALE	FEMALE			UNISEX	UNISEX LEV.	UNISEX WC
	3	4	1	4	4	4	1	-	-	-
PROVIDED FIXTURES	3	6	3	4	4	4	1	-	2	2

CODE COMPLIANCE | NO SCALE | 1

SMITH&COMPANY
ARCHITECTS

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TBPE FIRM REG.#F-4506

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TRUE NORTH CONSULTANT GROUP
3408 HILLCREST DR.
WACO, TX 76708

PROJECT #: N032023

DATE ISSUED: 02.29.2024

TDLR #: TABS2024011699

REVISIONS:

NO.	DATE	DESCRIPTION
2	04.12.2024	Addendum #2

FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
FRESNO, TX 77545

PROJECT LOCATION & CODE COMPLIANCE

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02.29.2024

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FORT BEND COUNTY MUNICIPAL UTILITY DISTRICT NO. 23
FORT BEND COUNTY, TEXAS

CONSTRUCTION PLANS FOR

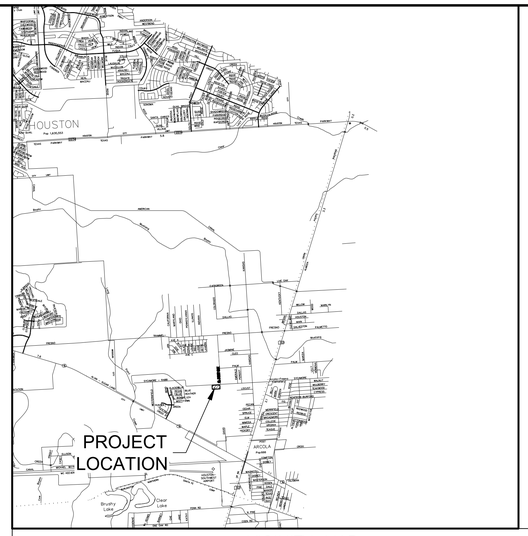
WATER, SANITARY SEWER AND DRAINAGE FACILITIES & PAVING AND APPURTENANCES

TO SERVE

FRESNO BOYS AND GIRLS CLUB
1031 W. SYCAMORE ROAD, FRESNO TX 77545

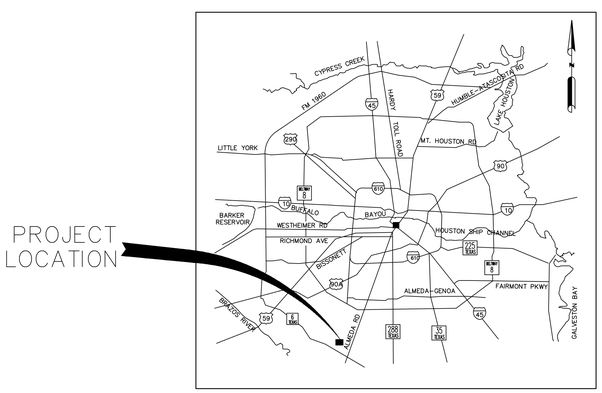
DATE: APRIL 2024

JOB NO. 3396-2301



VICINITY MAP
FT BEND COUNTY KEY MAP – 651C

SHEET INDEX



LOCATION MAP
N.T.S.

NOTES

1. THESE PLANS WERE PREPARED TO MEET OR EXCEED THE FORT BEND COUNTY SUBDIVISION RULES AND REGULATIONS (AS APPLICABLE) AS CURRENTLY AMENDED.
2. CONSTRUCTION WILL BE MONITORED BY A PROFESSIONAL ENGINEER TO INSURE COMPLIANCE WITH THE CONSTRUCTION PLANS AND SPECIFICATIONS.
3. CONTRACTOR SHALL NOTIFY THE FOLLOWING ENTITIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

FORT BEND COUNTY DRAINAGE DISTRICT	(281) 342-2863
FORT BEND COUNTY ENGINEER	CONSTRUCTION@FORT BEND COUNTY TX.GOV
TEXAS ONE CALL	1-800-245-4545

4. CONTRACTOR SHALL CONTACT ANY PERTINENT PIPELINE COMPANIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF EXCAVATION OR CONSTRUCTION IN THE VICINITY OF THEIR EASEMENTS AND/OR RIGHT-OF-WAYS.
5. CONTRACTOR MUST OBTAIN A PERMIT FROM THE FORT BEND COUNTY ENGINEERING DEPARTMENT, (281)-633-7500, PRIOR TO ANY WORK WITHIN THE FORT BEND COUNTY DRAINAGE DISTRICT'S RIGHT OF WAY
6. DETENTION FOR THIS PROJECT HAS BEEN INCLUDED OFF SITE BY SEPARATE PLAN SET TITLED _____.

ONE-CALL NOTIFICATION
SYSTEM
CALL BEFORE YOU DIG!!!
(713)223-4567 (IN HOUSTON)
(NEW STATEWIDE NUMBER OUTSIDE HOUSTON)
1-800-545-6005

FIRM
FLOOD INSURANCE MAP
PANEL 48157C0315L
DATE: 04/02/2014

FORT BEND COUNTY ENGINEERING DEPARTMENT

ENGINEER: _____
J. STACY SLAWINSKI, P.E.

DATE: _____

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEAR FROM DATE OF APPROVAL.

APPROVED: _____
DEVELOPMENT STAFF

DATE: _____

DEVELOPER:
FORT BEND COUNTY
301 JACKSON ST,
RICHMOND, TEXAS 77469

STATE OF TEXAS
AMANDA F. BARBIER
122357
LICENSED
PROFESSIONAL ENGINEER
2024-04-12

ENGINEER:
LJA Engineering, Inc.
1904 West Grand Parkway North
Suite 100
Katy, Texas 77449
Phone 713.953.5200
Fax 713.953.5026
FRN-F-1386

2 2024-04-12 ADDENDUM 2

SHEET No: C0.00 OF C7.12

FRESNO BOYS AND GIRLS CLUB – JOB NO. 3396-2301

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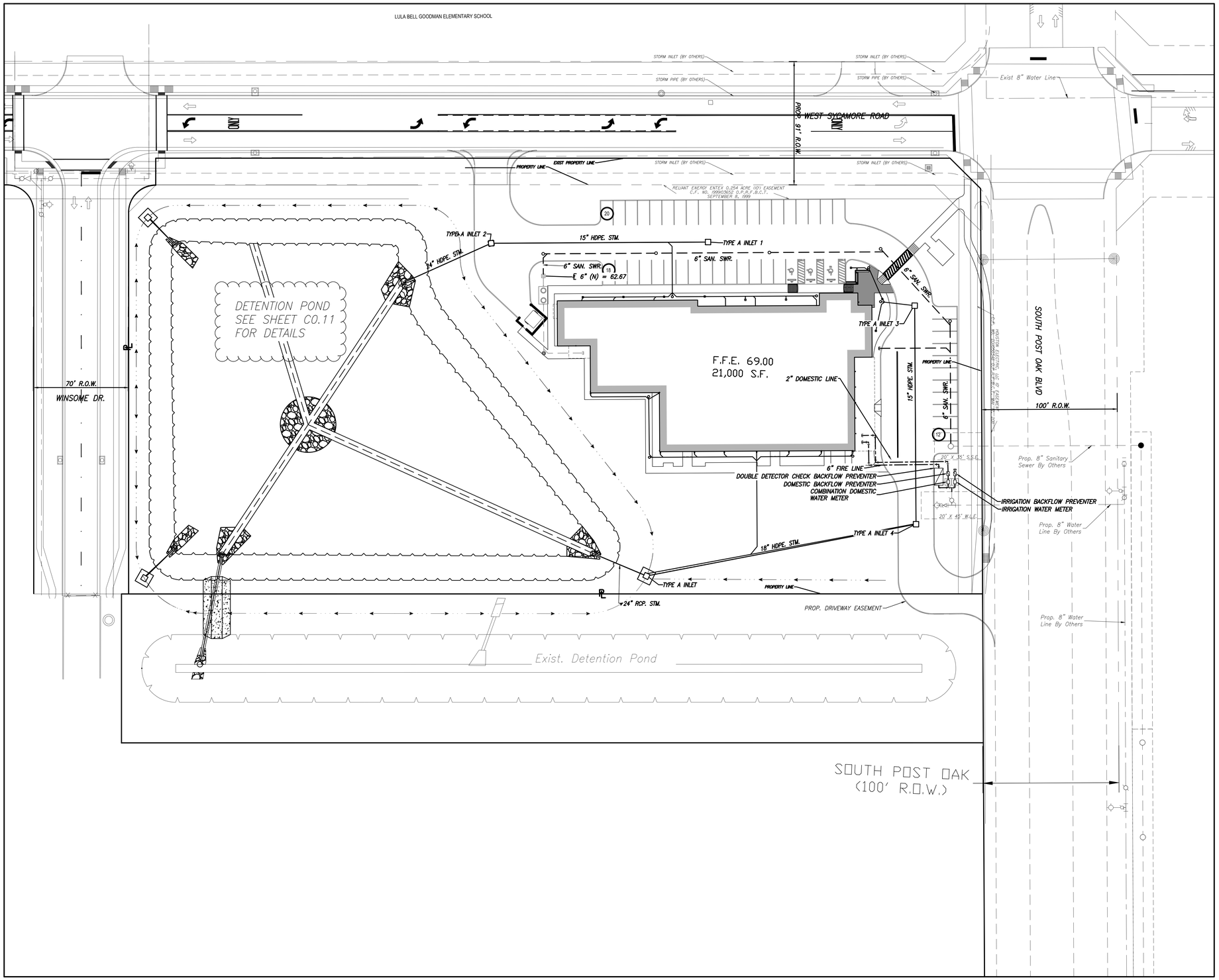

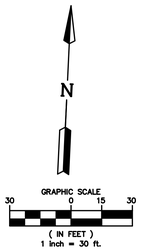

LEGEND

- PROPOSED WATER LINE AND GATE VALVE AND BOX
- PROPOSED WATER LINE W/BENDS
- PROPOSED WATER LINE W/TEE
- PROPOSED WATER LINE W/FLUSHING VALVE UNIT
  - A. LINE SIZE X 6" TEE
  - B. 6" GATE VALVE AND BOX
  - C. FLUSHING VALVE
- 2" BLOW-OFF ASSEMBLY W/PLUG AND CLAMP
- EXISTING WATER LINE SYSTEM
- PROPOSED SANITARY SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- PROPOSED STORM SEWER
- PUBLIC STORM SEWER
- 10 — INDICATES SHEET REFERENCE NUMBER
- W.L.E. — INDICATES WATER LINE EASEMENT
- STM.S.E. — INDICATES STORM SEWER EASEMENT
- S.S.E. — INDICATES SANITARY SEWER EASEMENT

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TBPE FIRM REG.#F-4506

TECHNOLOGY CONSULTANT
TRUE NORTH CONSULTANT GROUP
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WACO, TX 76708

PROJECT #: N032023
DATE ISSUED: 02.29.2024
TDLR #: TABS2024011699

REVISIONS:

NO.	DATE	DESCRIPTION
2	04.12.2024	Addendum #2

FRESNO BOYS & GIRLS CLUB
031 W SYCAMORE RD
FRESNO, TX 77545

OVERALL LAYOUT

100% Construction Document
02.29.2024

2024-04-12

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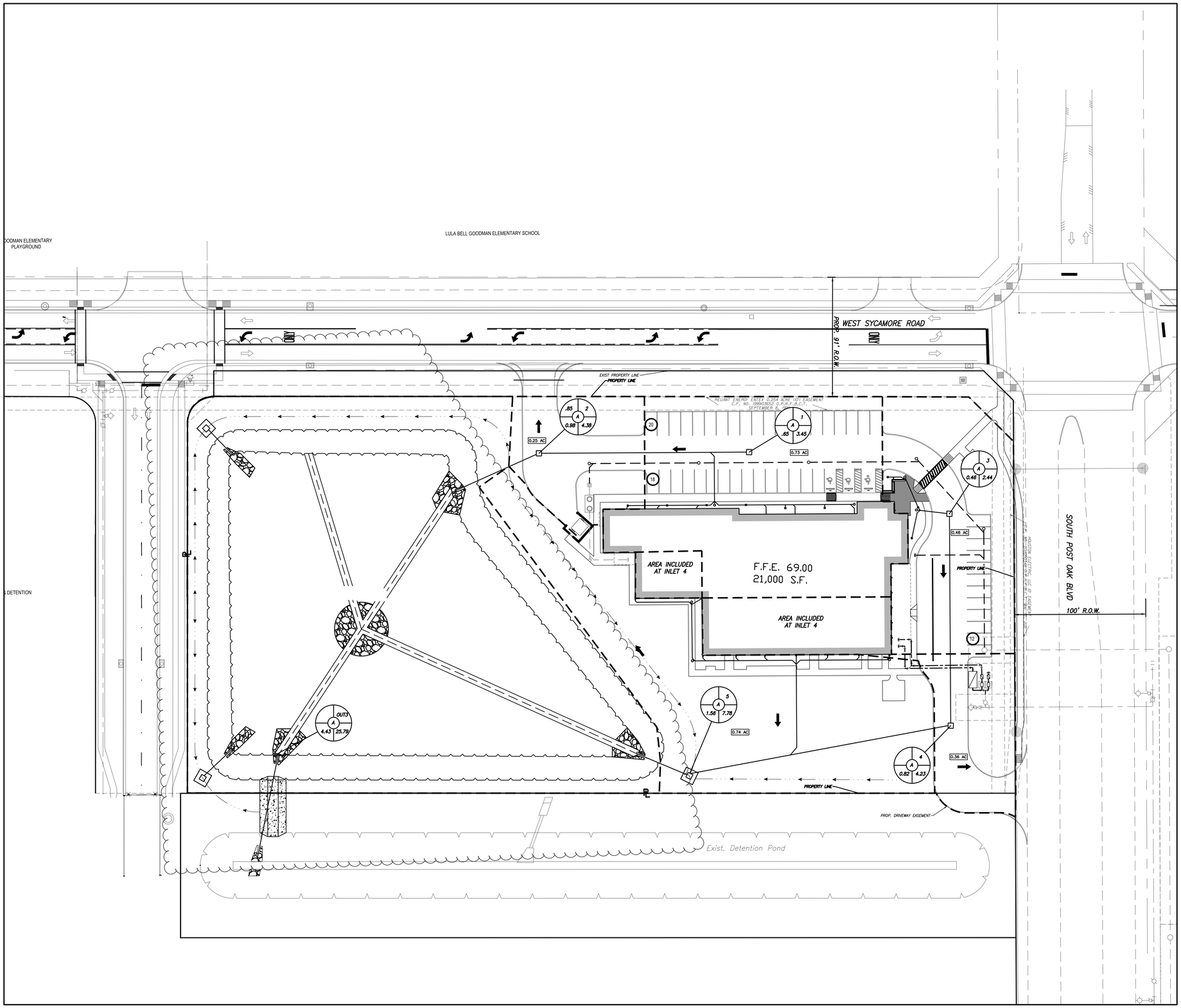

N

GRAPHIC SCALE
30 0 15 30
(IN FEET)
1 inch = 30 ft.

LEGEND

- EXIST MAJOR CONTOUR
- EXIST MINOR CONTOUR
- INDICATES MANHOLE NUMBER
- INDICATES DRAINAGE SYSTEM
- INDICATES CUMULATED C.F.S.
- INDICATES CUMULATED ACREAGE
- INDICATES DRAINAGE AREA DIVIDE DESIGNATION

STORM SEWER LEGEND

- PROPOSED STORM SEWER AND MANHOLE
- EXIST STORM SEWER AND MANHOLE
- PROP STORM SEWER, MANHOLE, AND INLETS
- INDICATES DRAINAGE EASEMENT (20' STM. S.E.)
- X.XX AC — ACREAGE
- EXTREME EVENT SHEET FLOW DIRECTION ARROW

SMITH&COMPANY
ARCHITECTS

ARCHITECT
SMITH & COMPANY ARCHITECTS
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STRUCTURAL ENGINEER
STANLEY SPURLING & HAMILTON INC.
3301 EDLOE ST.
HOUSTON, TX 77027

CIVIL ENGINEER
LJA ENGINEERING FRN F-1386
1904 W GRAND PARKWAY N, SUITE 100
KATY, TX 77449

LANDSCAPE ARCHITECT
STUDIO AVID
6046 FM 2920 RD., SUITE 200
SPRING, TX 77379

MEP ENGINEER
INFRASTRUCTURE
647 RICHMOND AVE., SUITE 220
HOUSTON, TX 77057
TBPE FIRM REG.#F-4506

TECHNOLOGY CONSULTANT
TRUE NORTH CONSULTANT GROUP
3408 HILLCREST DR.
WACO, TX 76708

PROJECT #: N032023
DATE ISSUED: 02.29.2024
TDLR #: TABS2024011699

REVISIONS:

NO.	DATE	DESCRIPTION
2	04.12.2024	Addendum #2

FRESNO BOYS & GIRLS CLUB
031 W SYCAMORE RD
FRESNO, TX 77545

DRAINAGE AREA MAP

100% Construction Document
02.29.2024

STATE OF TEXAS
AMANDA F. BARBER
122357
LICENSED
PROFESSIONAL ENGINEER
2024-04-12

C0.09

LJA Engineering, Inc.

Project: **FORT BEND BOYS AND GIRLS CLUB**
LJA Job No. 3396-2301
System:
By: AB Date: 4/11/2024
Checked by: Date:

Design Frequency: 3 years

E	0.7063
B	48.73
D	8.37

NOTE	INLET From	INLET To	BASIN AREA ac	TOTAL AREA ac	TC minute	Avg C	Freq Factor	Cf	i	Ci	CUM Q cfs	Manning's n	REACH ft	LINE SIZE in	LINE SLOPE %	DESIGN Q cfs	DESIGN V fps	FLOWLINE UP-STREAM	FLOWLINE DOWN-STREAM	ACT.V fps	SLOPE HYD. GRAD. (%)	delta H ft	ELEV. HYD. GRAD. UP-STREAM	ELEV. HYD. GRAD. DOWN-STREAM	TC @ INLET UPSTR	HG DIST BELOW TC ft
On-Site Private																										
Sys 1	1	2	0.65	0.65	10.00	0.85	1.00	0.85	6.24	5.30	3.45	0.011	161	15	0.33	4.40	3.58	63.45	62.91	2.80	0.202	0.326	64.49	64.16	67.15	2.66
	2	5	0.20	0.85	10.75	0.85	1.00	0.85	6.06	5.15	4.38	0.013	63	24	0.18	9.64	3.06	61.36	61.25	1.39	0.037	0.023	63.27	63.25	67.50	4.23
	3	4	0.46	0.46	10.00	0.85	1.00	0.85	6.24	5.30	2.44	0.011	161	15	0.33	4.40	3.58	64.06	63.53	1.98	0.101	0.163	64.94	64.78	67.25	2.31
	4	5	0.36	0.82	10.75	0.85	1.00	0.85	6.06	5.15	4.23	0.011	199	18	0.26	6.36	3.59	63.28	62.76	2.39	0.115	0.229	64.49	64.26	66.45	1.96
	5	OUT	0.74	1.56	11.67	0.85	1.00	0.85	5.86	4.98	7.78	0.013	39	24	0.18	9.64	3.06	61.37	61.30	2.47	0.117	0.046	63.71	63.67	66.45	2.74
																							0.00			
	OUT 3	OUT 3	2.02	4.43	11.88	0.85	1.25	1.00	5.82	5.82	25.79	0.013	83	30	0.13	14.85	3.02	60.95	60.84	5.25	0.392	0.325	63.67	63.34	66.45	2.78

Design Frequency: 100 years

B	42.99
D	1.08

NOTE	INLET From	INLET To	BASIN AREA ac	TOTAL AREA ac	TC minute	Avg C	Freq Factor	Cf	i	Ci	CUM Q cfs	Manning's n	REACH ft	LINE SIZE in	LINE SLOPE %	DESIGN Q cfs	DESIGN V fps	FLOWLINE UP-STREAM	FLOWLINE DOWN-STREAM	ACT.V fps	SLOPE HYD. GRAD. (%)	delta H ft	ELEV. HYD. GRAD. UP-STREAM	ELEV. HYD. GRAD. DOWN-STREAM	TC @ INLET UPSTR	HG DIST BELOW TC ft
On-Site Private																										
Sys 1	1	2	0.65	0.65	10.00	0.85	1.25	1.00	12.09	12.09	7.86	0.011	161	15	0.33	4.40	3.58	63.45	62.91	6.40	1.051	1.697	66.35	64.65	67.15	0.80
	2	OUT 1	0.20	0.85	10.75	0.85	1.25	1.00	11.68	11.68	9.93	0.013	63	24	0.18	9.64	3.06	61.36	61.25	3.16	0.191	0.120	64.65	64.53	67.50	2.85
	3	4	0.46	0.46	10.00	0.85	1.25	1.00	12.09	12.09	5.56	0.011	161	15	0.33	4.40	3.58	64.06	63.53	4.53	0.527	0.848	66.78	65.94	67.25	0.47
	4	5	0.36	0.82	10.75	0.85	1.25	1.00	11.68	11.68	9.58	0.011	199	18	0.26	6.36	3.59	63.28	62.76	5.41	0.591	1.175	65.94	64.76	66.45	0.51
	5	OUT 2	0.74	1.56	11.67	0.85	1.25	1.00	11.23	11.23	17.51	0.013	39	24	0.18	9.64	3.06	61.37	61.30	5.57	0.595	0.232	64.76	64.53	66.60	1.84
	OUT 3	OUT 3	2.02	4.43	11.88	0.85	1.25	1.00	11.13	11.13	49.31	0.013	83	30	0.13	14.85	3.02	60.95	60.84	10.03	1.433	1.190	64.53	63.34	66.30	1.77

SMITH&COMPANY ARCHITECTS

ARCHITECT
SMITH & COMPANY ARCHITECTS
720 N POST OAK, SUITE 124
HOUSTON, TX 77024

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STUDIO AVID
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INFRASTRUCTURE
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FRESNO BOYS & GIRLS CLUB
031 W SYCAMORE RD
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DRAINAGE CALCULATIONS

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02.29.2024

STATE OF TEXAS
AMANDA F. BARBIER
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2024-04-12

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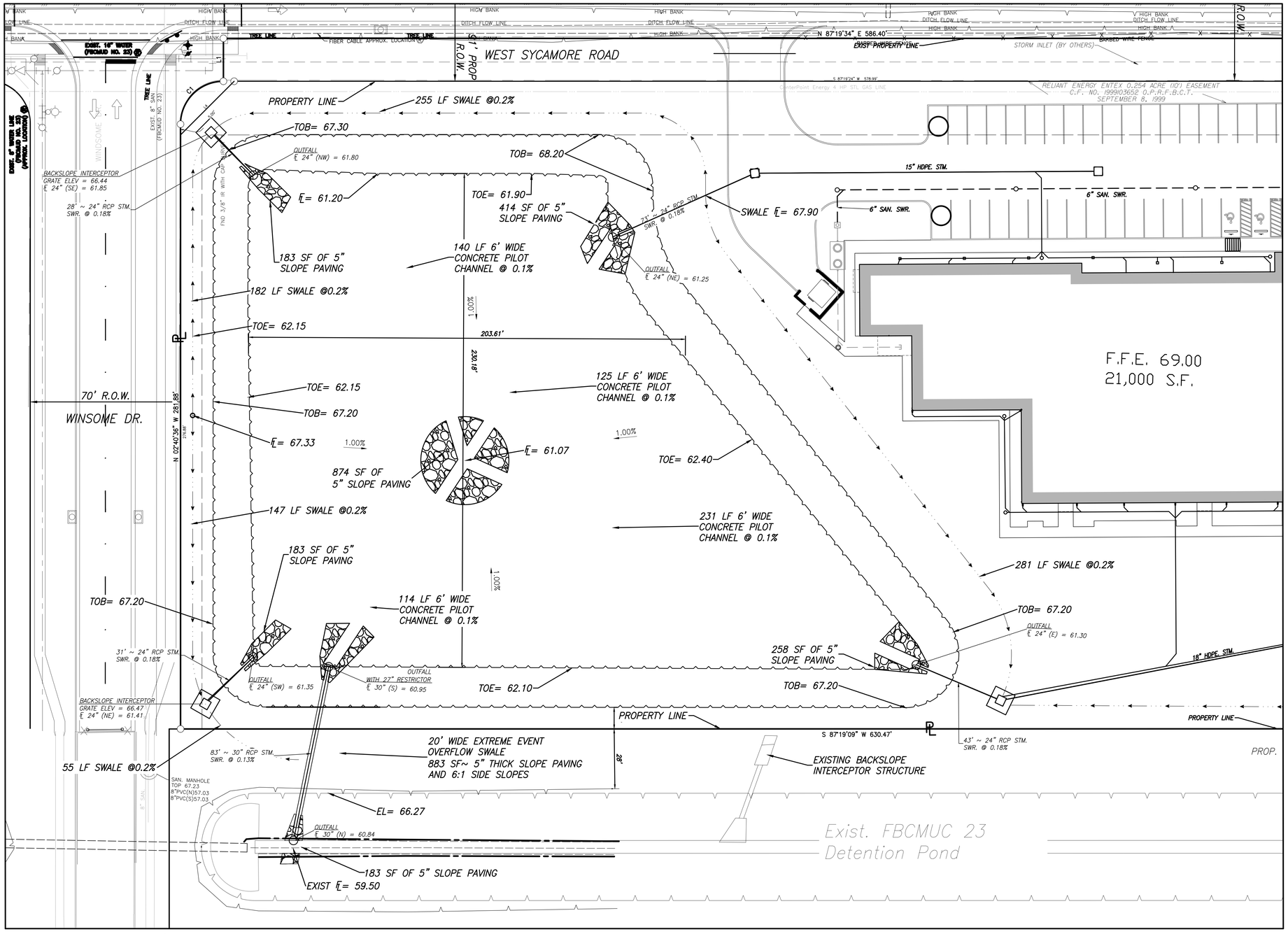
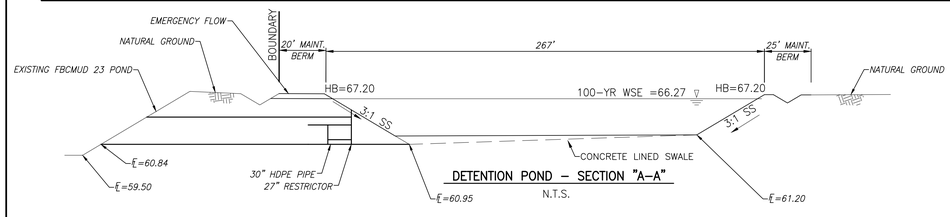
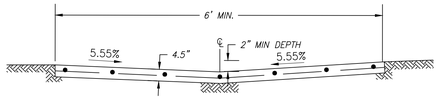




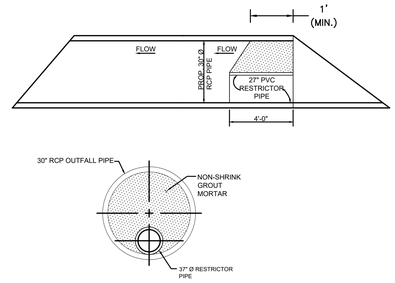
DETENTION POND – SECTION "A–A"
N.T.S.



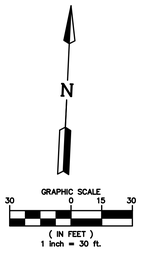
CONC. LINED SWALE NOTES:

1. THE DIMENSIONS SHOWN ARE THE MINIMUM REQUIRED.
2. THE PAVING THICKNESS AND REBAR PLACEMENT SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THIS DETAIL.
3. ALL CONCRETE MUST HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS. REINFORCEMENT SHALL BE 6X6 – W2.9XW2.9 WELDED WIRE FABRIC. CONCRETE SHALL BE PLACED ON A 3" COMPACTED SAND BED.
4. CONCRETE LINED SWALE SHALL BE AT LEAST 1 FOOT WIDER THAN THE DIAMETER OF ANY PIPE CONNECTED TO THE CONCRETE LINED SWALE.

CONCRETE LINED SWALE DETAIL
N.T.S.



STORM SEWER OUTFALL RESTRICTOR DETAIL
N.T.S.



LEGEND

- PROPOSED WATER LINE AND GATE VALVE AND BOX
- PROPOSED WATER LINE W/BENDS
- PROPOSED WATER LINE W/TEE
- PROPOSED WATER LINE W/FLUSHING VALVE UNIT
  A. LINE SIZE X 6" TEE
  B. 6" GATE VALVE AND BOX
  C. FLUSHING VALVE
- 2" BLOW-OFF ASSEMBLY W/PLUG AND CLAMP
- EXISTING WATER LINE SYSTEM
- PROPOSED SANITARY SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- PROPOSED STORM SEWER
- PUBLIC STORM SEWER
- 10 — INDICATES SHEET REFERENCE NUMBER
- W.L.E. — INDICATES WATER LINE EASEMENT
- STM.S.E. — INDICATES STORM SEWER EASEMENT
- S.S.E. — INDICATES SANITARY SEWER EASEMENT

MAX DETENTION WSE TO BE 66.27 FT PER DRAINAGE ANALYSIS TITLED "WEST SYCAMORE SEGEMENT 2, PROJECT NUMBER 17122X" BY HJ CONSULTING AND DATED DECEMBER 2023

27" RESTRICTOR SIZING PER ABOVE DIA

Impervous Cover	SQ-FT	AC
Building	21000	0.48
Pavement	29450	0.68
Sidewalk	7855	0.18
Plaza	456	0.01
Pond	71993	1.65
Total Site area	189463	4.35
B&G Tract Area	112312	2.58

% impervious W/ Pond 0.69

Detention Rate = 0.856 ac-ft/ac

Detention Needed AC-FT

FOR BOYS & GIRLS CLUB
0.856 AC-FT/AC * 2.58 AC = 2.21 AC-FT

FOR DETENTION POND
0.856 AC-FT/AC * 1.77 AC = 1.52 AC-FT

TOTAL VOLUME NEEDED
3.73 AC-FT

DETENTION POND STORAGE PROVIDED
6.55 AC-FT

EXCESS DETENTION VOLUME PROVIDED
2.827 AC-FT

TOTAL DIRT VOLUME TO BE EXCAVATED
8.08 AC-FT

NOTE:
CONTRACTOR SHALL HAUL OFF ANY EXCESS SOIL FROM DETENTION POND AND UTILITY SPOILS NOT NEEDED FOR SITE GRADING

SMITH&COMPANY
ARCHITECTS

ARCHITECT
SMITH & COMPANY ARCHITECTS
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LJA ENGINEERING FRN F-1386
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LANDSCAPE ARCHITECT
STUDIO AVID
6046 FM 2920 RD., SUITE 260
SPRING, TX 77379

MEP ENGINEER
INFRASTRUCTURE
647 RICHMOND AVE., SUITE 220
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TBPE FIRM REG.#F-4506

TECHNOLOGY CONSULTANT
TRUE NORTH CONSULTANT GROUP
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WACO, TX 76708

PROJECT #: N032023
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FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
FRESNO, TX 77545

DETENTION POND LAYOUT

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02.29.2024

STATE OF TEXAS
AMANDA F. BARBIER
122357
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ENGINEER
2024-04-12

C0.11

STORM INLET (BY OTHERS)
STORM PIPE (BY OTHERS)
STORM INLET (BY OTHERS)
STORM PIPE (BY OTHERS)
Exist 8" Water Line
PROP. 91' R.O.W.
WEST SYCAMORE ROAD
ONE
EXIST PROPERTY LINE
PROPERTY LINE
STORM INLET (BY OTHERS)
STORM INLET (BY OTHERS)
RELIANT ENERGY ENTEX 0.254 ACRE (IO') EASEMENT
C.F. NO. 1999103652 O.P.R.F.B.C.T.
SEPTEMBER 8, 1999
C.O.
℄ 6" (S) = 62.50
℄ 6" (E) = 62.50
251' ~ 6" SAN.
SWR. @ 1.00%
C.O.
℄ 6" (W) = 59.99
℄ 6" (SE) = 59.99
16' ~ 6" SAN.
SWR. @ 1.00%
SEE PLUMBING PLANS
FOR CONTINUATION
℄ 6" = 62.67
73' ~ 6" SAN.
SWR. @ 1.00%
C.O.
℄ 6" (NW) = 59.25
℄ 6" (S) = 59.25
54' ~ 6" SAN.
SWR. @ 1.00%
F.F.E. 69.00
21,000 S.F.
℄ = 63.66'
PROPERTY LINE
SAN. M.H. (BY OTHERS)
RIM ELEV = 68.43
℄ 6" (N) = 58.35
℄ 8" (E) = 57.31 (BY OTHERS)
90' ~ 6" SAN.
SWR. @ 1.00%
HOUSTON ELECTRIC, LLC (O' EASEMENT)
VOL. 20090248 O.P.R.F.B.C.T. MAP 1 - 2000
SOUTH POST OAK BLVD
100' R.O.W.
DETENTION POND SEE SHEET
C0.11 FOR DETAILS
PROVIDE 2" WATER STUB 5' FROM BUILDING
SEE MEP PLANS FOR CONTINUATION
PROVIDE 6" WATER STUB 5' FROM BUILDING
SEE MEP PLANS FOR CONTINUATION
90° BEND
2" DOMESTIC
WATER LINE
CONTRACTOR TO CONNECT SERVICE LEAD TO EXISTING MANHOLE. CONTRACTOR TO CORE M.H. CONTRACTOR TO REPAIR ANY COATING WITHIN M.H. THAT MAY HAVE BEEN DAMAGED BY INSTALLATION OF SERVICE LEAD.
Prop. 8" Sanitary Sewer
by Others
20' X 35' L.S.S.E.
90° BEND
6" FIRE LINE
2" PVB IRRIGATION
BACKFLOW PREVENTER
2" DOMESTIC REDUCED PRESSURE
BACKFLOW PREVENTER IN LOCKING ENCLOSURE
2" IRRIGATION
WATER METER
IN 5'X5' I.M.E.
6" DOUBLE DETECTOR CHECK
BACKFLOW PREVENTER W/ PIV AND FDC
90° BEND
CONTRACTOR TO CONNECT TO
EXISTING WATER LINE
2" DOMESTIC
WATER METER
IN 5'X5' W.M.E.
90° BEND
Prop 6" Water Line
by Others
20' X 45' W.L.E.
Prop 8" Water Line
by Others
PROPERTY LINE
PROP. DRIVEWAY EASEMENT
Prop 8" Water Line
by Others
Exist. Detention Pond

N

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

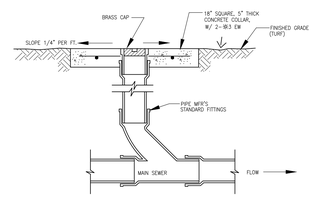
LEGEND

- PROPOSED WATER LINE AND GATE VALVE AND BOX
- PROPOSED WATER LINE W/BENDS
- PROPOSED WATER LINE W/TEE
- PROPOSED WATER LINE W/FLUSHING VALVE UNIT
  A. LINE SIZE X 6" TEE
  B. 6" GATE VALVE AND BOX
  C. FLUSHING VALVE
- EXISTING WATER LINE SYSTEM
- PROPOSED SANITARY SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- 10 — INDICATES SHEET REFERENCE NUMBER
- W.L.E. — INDICATES WATER LINE EASEMENT
- STM.S.E. — INDICATES STORM SEWER EASEMENT
- S.S.E. — INDICATES SANITARY SEWER EASEMENT

PIPING MATERIAL SCHEDULE	
WATER LINES (MIN. 4' COVER)	
PIPE DIAMETER	MATERIAL
2" AND SMALLER	SCHEDULE 40 PVC
4"–12"	AWWA C-900-07 PVC DR-18
SANITARY SEWER	
PIPE DIAMETER	MATERIAL
UP TO 6"	SCH 40 (ASTM D1765)
8" AND LARGER	SDR-26 (ASTM D3034)
STORM SEWER	
PIPE DIAMETER	MATERIAL
LESS THAN 10"	SDR 35 PVC OR ENGINEER APPROVED EQUAL
10" – 42"	HANCOR DUAL WALL (SOIL TIGHT-ST) HDPE OR ENGINEER APPROVED EQUAL

SEWER KEY NOTES:

1. CONTRACTOR TO INSTALL CLEANOUT TO GRADE. ALL CLEANOUTS IN PAVEMENT TO HAVE TRAFFIC DUTY CLEANOUT BOX.
2. STUB 5' FROM BUILDING. SEE PLUMBING PLANS FOR CONTINUATION. VERIFY EXACT LOCATION.
3. PROPOSED GREASE TRAP, SHOWN FOR LOCATION APPROVAL PURPOSES ONLY (SEE MEP PLANS FOR DETAIL)



INSTALL IN FLOW DIRECTION OR AS INDICATED ON THE PLANS. CLEANOUT IN PAVEMENT SIMILAR.

SANITARY SEWER CLEANOUT DETAIL

SMITH&COMPANY
ARCHITECTS

ARCHITECT
SMITH & COMPANY ARCHITECTS
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WATER AND SANITARY SEWER LAYOUT

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02.29.2024

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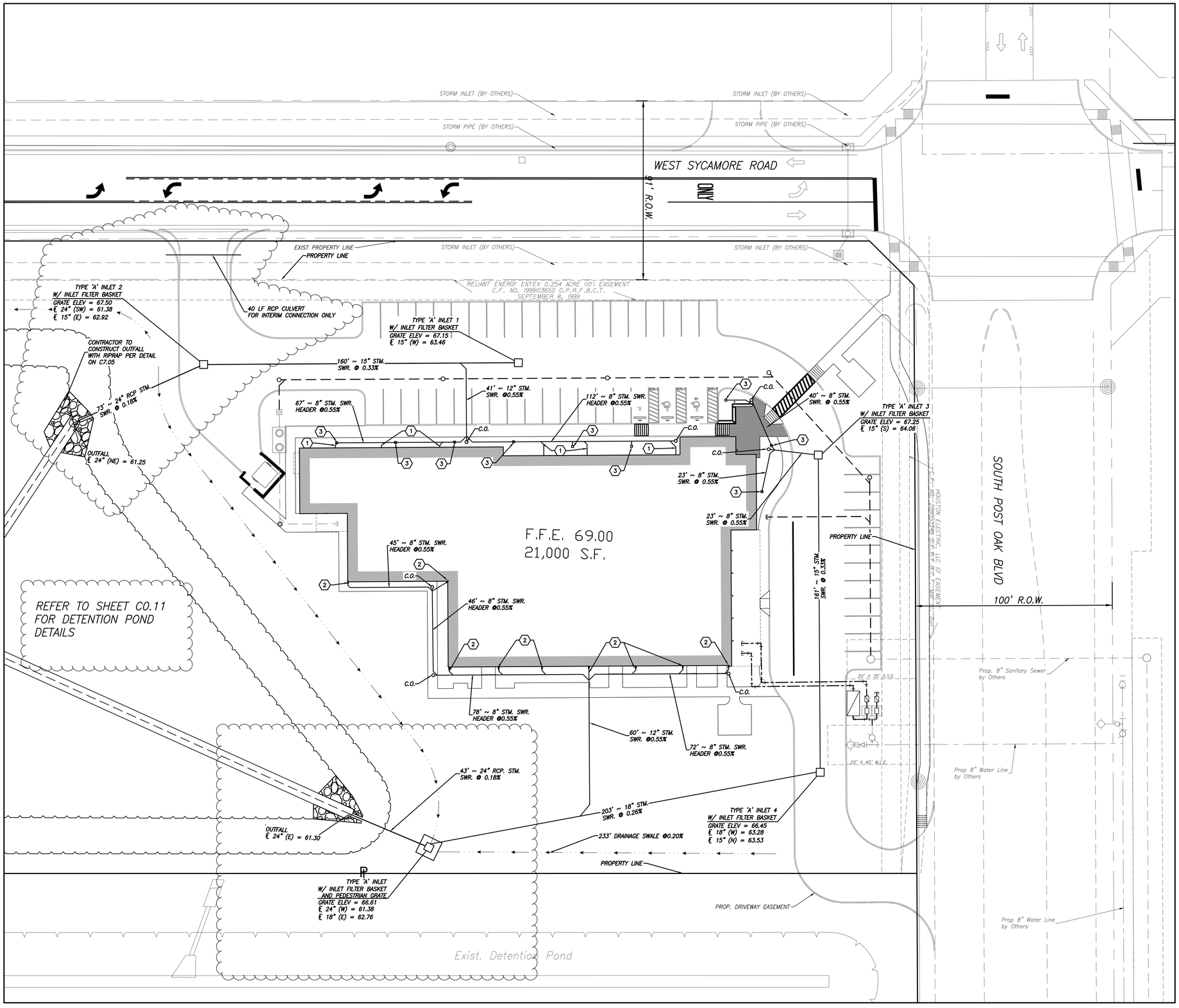

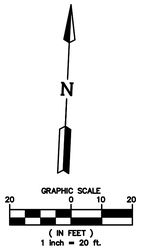

LEGEND

- PROP. LIGHT POLE (SEE ELECTRICAL PLANS)
- STORM SEWER W/ MANHOLE
- TYPE 'A' INLET
- TYPE 'E' INLET
- 'H-2' INLET
- JUNCTION BOX
- NYLOPLAST INLET
- PUBLIC STORM SEWER
- PUBLIC WATER
- PUBLIC SANITARY SEWER

PIPING MATERIAL SCHEDULE	
WATER LINES (MIN. 4' COVER)	
PIPE DIAMETER	MATERIAL
2" AND SMALLER	SCHEDULE 40 PVC
4"–12"	AWWA C-900-07 PVC DR-18
SANITARY SEWER	
PIPE DIAMETER	MATERIAL
UP TO 6"	SCH 40 (ASTM D1765)
8" AND LARGER	SDR-26 (ASTM D3034)
STORM SEWER	
PIPE DIAMETER	MATERIAL
LESS THAN 10"	SDR 35 PVC OR ENGINEER APPROVED EQUAL
10" – 42"	HANCOR DUAL WALL (SOIL TIGHT-ST) HDPE OR ENGINEER APPROVED EQUAL

STORM SEWER NOTES:

1. ALL TYPE A INLETS WILL BE INSTALLED WITH AN INLET FILTER BASKET

STORM SEWER KEY NOTES:

1. 8" STM. SWR. INTERNAL ROOF DRAIN LEAD
2. 8" STM. SWR. DOWNSPOUT LEAD
3. LANDSCAPE DRAINS

SMITH&COMPANY
ARCHITECTS

ARCHITECT
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STORM SEWER LAYOUT

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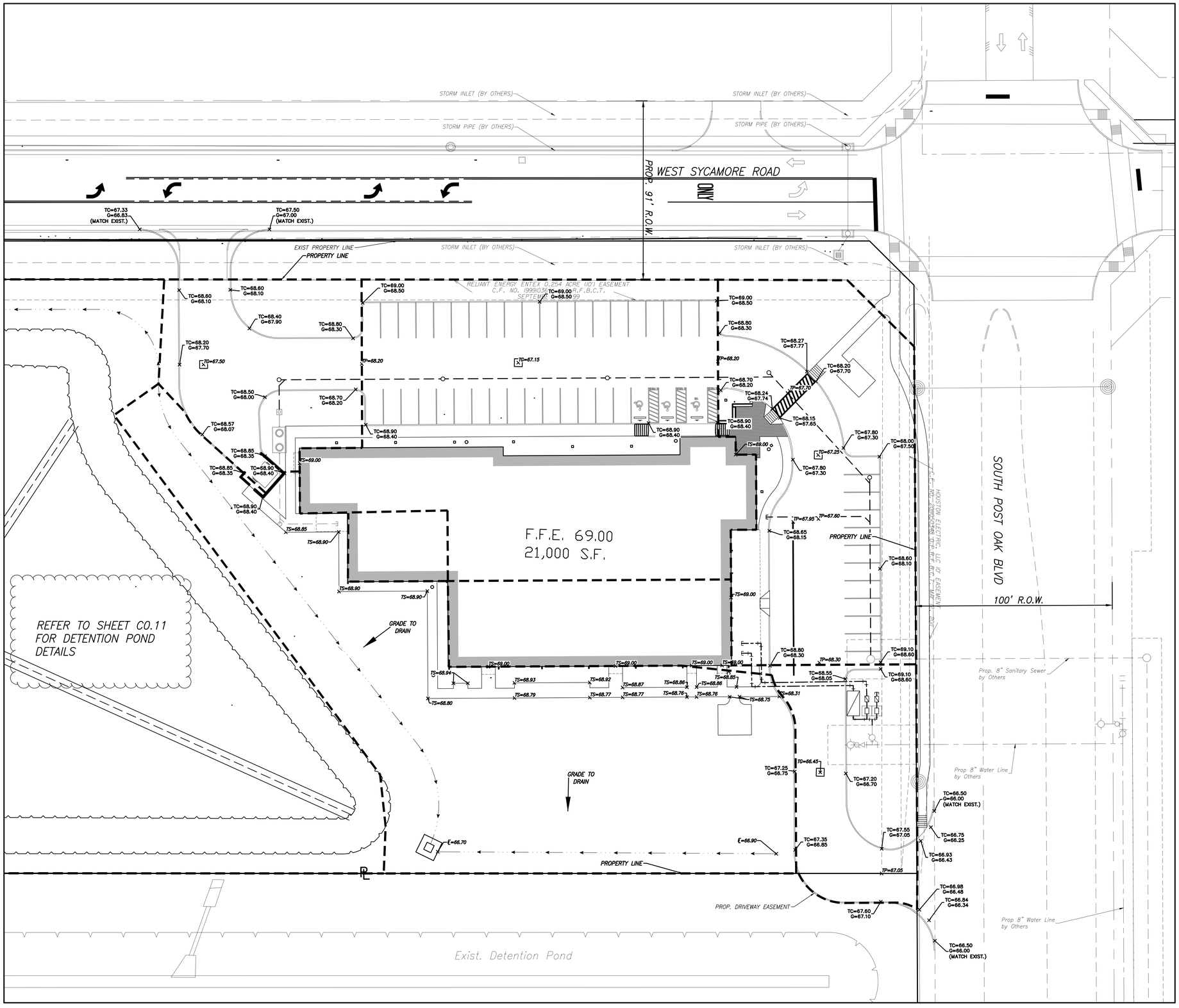
2024-04-12

C2.00



N

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

LEGEND

- EXIST MAJOR CONTOUR
- EXIST MINOR CONTOUR
- BLOCK NUMBER
- INDICATES PAVING SUMMIT
- PROPOSED ELEVATION
- DRAINAGE AREA DIVIDE

TC	TOP OF CURB
FG	FINISHED GRADE
G	GUTTER
TG	TOP OF GRATE
TS	TOP OF SIDEWALK
℄	FLOWLINE

SMITH&COMPANY
ARCHITECTS

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HOUSTON, TX 77057
TBPE FIRM REG.#F-4506

TECHNOLOGY CONSULTANT
TRUE NORTH CONSULTANT GROUP
3408 HILLCREST DR.
WACO, TX 76708

PROJECT #: N032023
DATE ISSUED: 02.29.2024
TDLR #: TABS2024011699

REVISIONS:

NO.	DATE	DESCRIPTION
2	04.12.2024	Addendum #2

FRESNO BOYS & GIRLS CLUB
031 W SYCAMORE RD
FRESNO, TX 77545

GRADING LAYOUT

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02.29.2024

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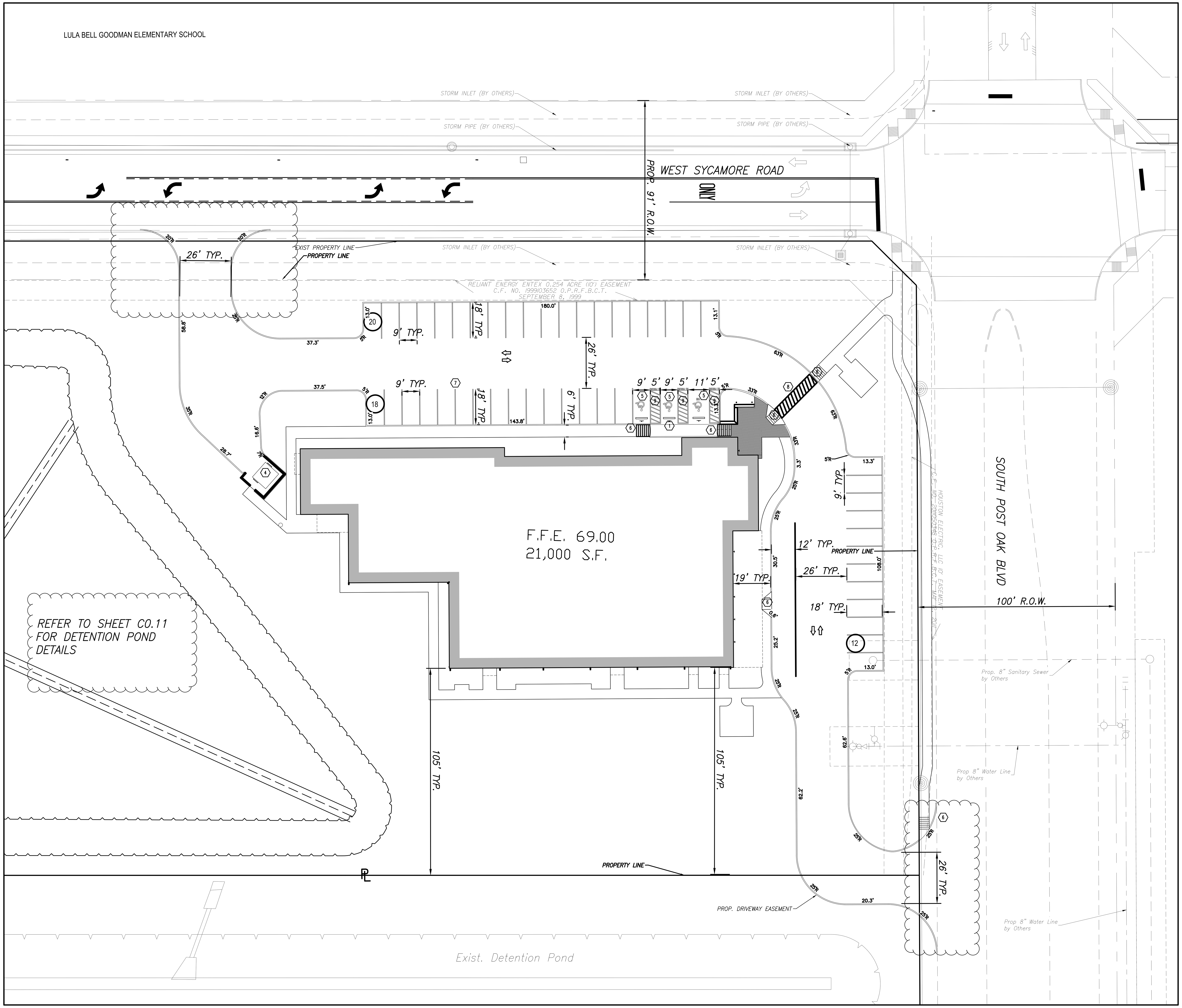
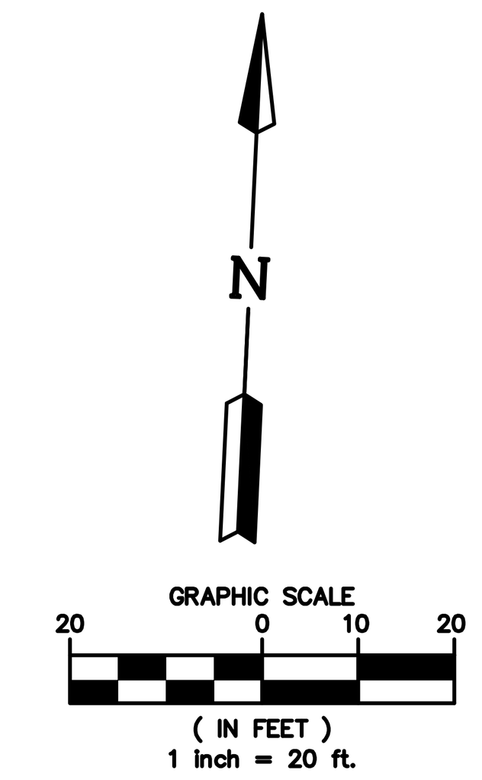
AMANDA F. BARBIER
122357
LICENSED
PROFESSIONAL ENGINEER
2024-04-12

C3.00





SITE DETAILS

Symbol	No.	Description
	1	ADA HANDICAP/VAN ACCESSIBLE SIGN SEE DETAIL SHEET C7.11
	2	R1-1 STOP SIGN
	3	PROPOSED TRAFFIC DIRECTION
	4	DUMPSTER ENCLOSURE RE: ARCHITECTURAL PLANS
	5	HANDICAP ACCESSIBLE PARKING SPOT, SEE DETAIL SHEET C7.11
	6	ADA ACCESS & PEDESTRIAN RAMP SEE DETAIL SHEET C7.10
	7	INSTALL 4" PARKING STRIPE. CONTRACTOR TO COORDINATE COLOR WITH ARCHITECTURAL PLANS.
	8	PEDESTRIAN CROSSWALK
	9	ADA STRIPING SEE DETAIL ON SHEET C7.11

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CIVIL ENGINEER
LJA ENGINEERING FRN F-1386
1904 W GRAND PARKWAY N, SUITE 100
KATY, TX 77449

LANDSCAPE ARCHITECT
STUDIO AVID
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MEP ENGINEER
INFRASTRUCTURE
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DIMENSION CONTROL LAYOUT

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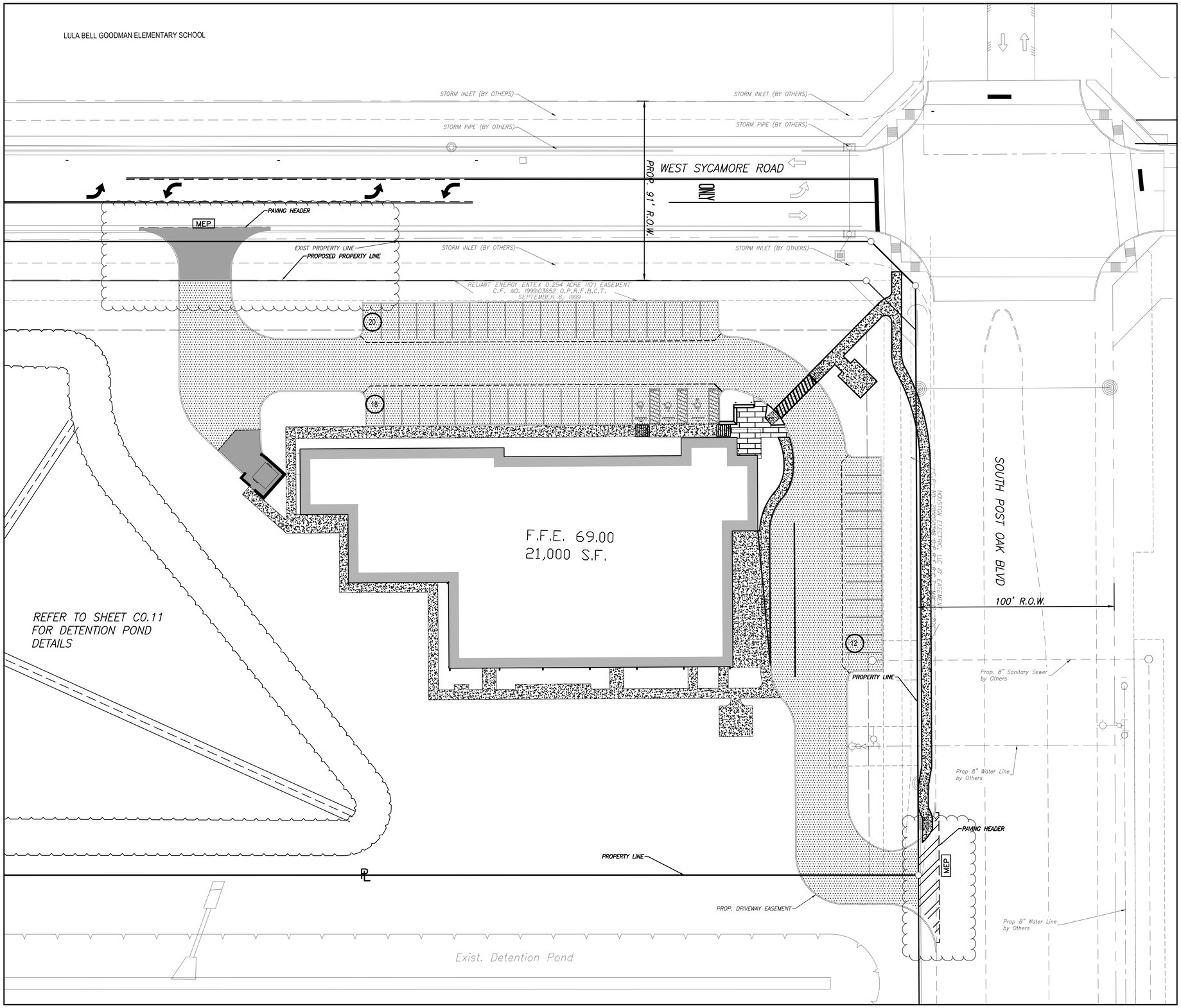

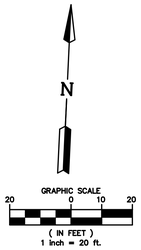

PAVEMENT LEGEND

- 6" CONCRETE PAVEMENT (DI-3)
- 7" CONCRETE PAVEMENT (DI-3)
- 8" CONCRETE PAVEMENT (DI-3)
- 4.5" SIDEWALK
- BRICK PAVER PATIO
- EXPANSION JOINT
- MEP — MATCH EXISTING PAVEMENT (SEE CONCRETE-TO CONCRETE TIE-IN DETAIL)

PAVING NOTES:
THE FOLLOWING PAVEMENT RECOMMENDATIONS ARE ADOPTED FROM THE GEOTECHINCAL ENGINEERING REPORT BY ASSOCIATED TESTING LABORATORIES ENTITLED GEOTECHNICAL GEOTECHNICAL INVESTIGATION, PROPSED FORT BEND COUNTY FRESNO COMMUNITY CENTER DATED JULY 18, 2023, PROJECT NUMBER G23-161. CONTRACTOR SHALL ADHERE TO ALL RECOMMENDATIONS OF THE GEOTECHNICAL REPORT. WHERE A RECOMMENDATION CONTAINED IN THIS DRAWING SET DIFFERS FROM THOSE OUTLINED IN THE GEOTECHNICAL REPORT, THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT SHALL GOVERN.

SUBGRADE:
THE PAVEMENT SUBGRADE SHOULD BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8-INCHES AND SHOULD BE UNIFORMLY COMPACTED TO A MINIMUM OF 95 PERCENT MAXIMUM DRY DENSITY (PER ASTM D-698) AND WITHIN +/-2 PERCENT OF THE OPTIMUM MOISTURE CONTENT. THE SUBGRADE SHALL BE SCARIFIED AND TREATED WITH 6 TO 8% LIME BY WEIGHT WITH AN APPLICATION DEPTH OF EIGHT (8) INCHES LIME STABILIZATION SHOULD BE PERFORMED IN ACCORDANCE WITH TXDOT STANDARD SPECIFICATIONS, ITEM 260, "LIME STABILIZED SUBGRADE" OR LOCAL EQUIVALENT.

PAVEMENT THICKNESS:
PAVEMENT THICKNESSES SHALL BE 6-INCHES OR 7-INCHES (SEE PLAN).

PAVEMENT:
THE PAVEMENT SHALL BE PORTLAND CEMENT CONCRETE PAVEMENT. THE MATERIALS AND PROPERTIES OF A PORTLAND CEMENT CONCRETE PAVEMENT SHALL MEET APPLICABLE REQUIREMENTS IN THE ACI MANUAL OF CONCRETE PRACTICE. THE PORTLAND CEMENT CONCRETE MIX SHOULD HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI.

REINFORCING STEEL:
GRADE 60 REINFORCING STEEL SHOULD BE UTILIZED IN THE TRANSVERSE AND LONGITUDINAL DIRECTIONS. THE FOLLOWING PAVEMENT REINFORCEMENTS ARE RECOMMENDED:
SIX-INCH (6") CONCRETE PAVEMENT SHALL BE REINFORCED USING #3 BARS SPACED AT 18 INCHES ON CENTER, EACH WAY.
SEVEN-INCH AND EIGHT-INCH (7" & 8") CONCRETE PAVEMENT SHALL BE REINFORCED USING #3 BARS SPACES AT 18 INCHES ON CENTER, EACH WAY.

JOINT SPACING:
CONTRACTION JOINTS SHOULD BE SPACED AT ABOUT 24 TIMES THE PAVEMENT THICKNESS UP TO A MAXIMUM OF 15 FEET IN ANY DIRECTION. SAW CUT CONTROL JOINTS SHOULD BE CUT WITHIN 6 TO 12 HOURS OF CONCRETE PLACEMENT.

EXPANSION JOINTS SHOULD BE SPACED A MAXIMUM OF 60-FEET APART IN ANY DIRECTION AND SHOULD BE PLACED WHERE THE PAVEMENT ABUTS ANY STRUCTURE. DOWELS SHOULD HAVE A DIAMETER EQUAL TO 1/8 THE SLAB THICKNESS, BE SPACED ON 12-INCH INTERVALS, AND BE EMBEDDED AT LEAST 9-INCHES. WHERE NOT SPECIFIED HEREIN, CONCRETE PAVEMENT SHOULD COMPLY WITH TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) STANDARD SPECIFICATIONS, ITEM 360, "CONCRETE PAVEMENT", OR LOCAL EQUIVALENT.

CONSTRUCTION JOINTS:
WHEN CONCRETE IS PLANNED TO BE PLACED AT DIFFERENT TIMES, CONTRACTOR SHALL USE A CONSTRUCTION JOINT BETWEEN PAVING AREAS. THE CONSTRUCTION JOINT SHOULD CONSIST OF A BUTT JOINT (NOT A KEYWAY JOINT).

DOWELS AT EXPANSION JOINTS:
THE DOWELS AT EXPANSION JOINTS SHOULD BE SPACED AT 12-INCH CENTERS AND CONSIST OF THE FOLLOWING:
5-INCH PAVEMENT: 5/8-INCH DIAMETER, 18 INCHES LONG WITH 9-INCH EMBEDMENT
6-INCH PAVEMENT: 3/4-INCH DIAMETER, 18 INCHES LONG WITH 9-INCH EMBEDMENT
7-INCH PAVEMENT: 7/8-INCH DIAMETER, 18 INCHES LONG WITH 9-INCH EMBEDMENT

JOINT SEALANT:
TRANSPORTATION (TXDOT) STANDARD SPECIFICATIONS, ITEM 360, "CONCRETE PAVEMENT", OR LOCAL EQUIVALENT. APPROPRIATE JOINT SEALANT IS RECOMMENDED TO KEEP WATER FROM SATURATING THE PAVEMENT SUBGRADE AND TO PREVENT THE INTRODUCTION OF INCOMPRESSIBLE MATERIAL INTO THE JOINTS. ROUTINE MONITORING AND MAINTENANCE OF JOINT SEALANTS ARE RECOMMENDED.

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MEP ENGINEER
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TECHNOLOGY CONSULTANT
TRUE NORTH CONSULTANT GROUP
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WACO, TX 76708

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FRESNO BOYS & GIRLS CLUB
031 W SYCAMORE RD
FRESNO, TX 77545

PAVING LAYOUT

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02.29.2024

STATE OF TEXAS
AMANDA F. BARBER
122357
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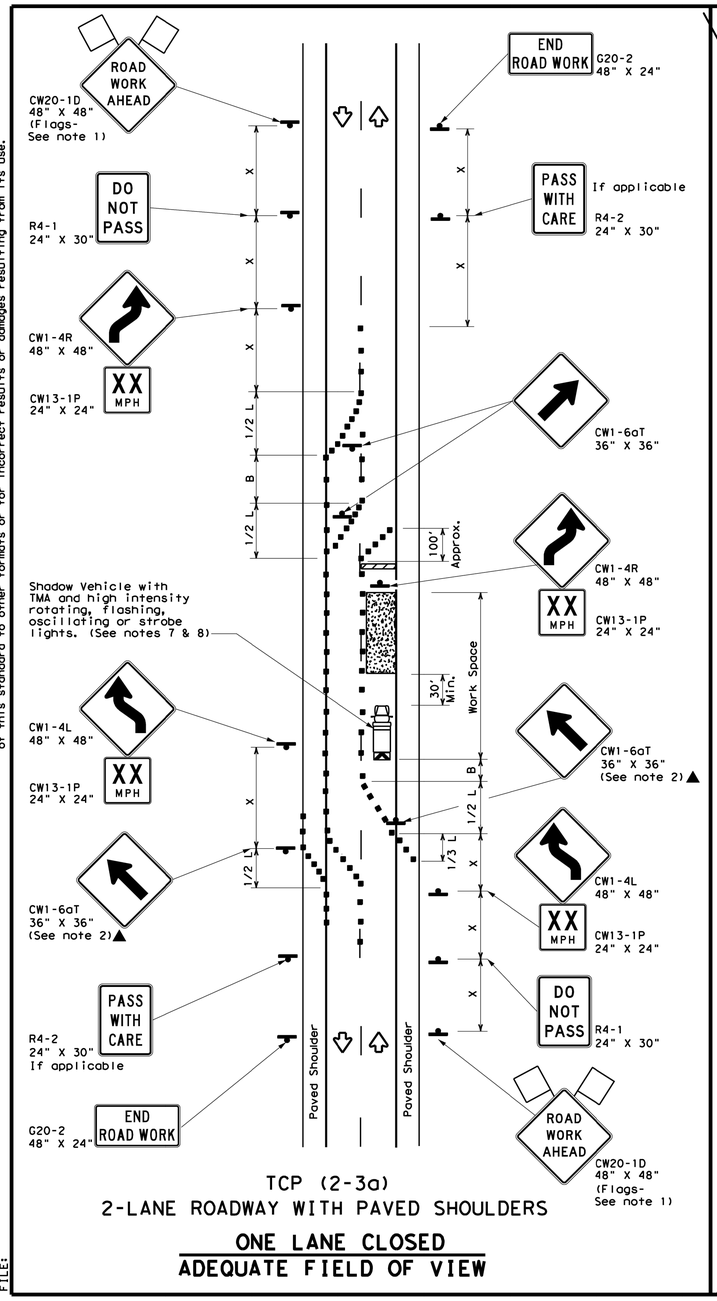
2024-04-12

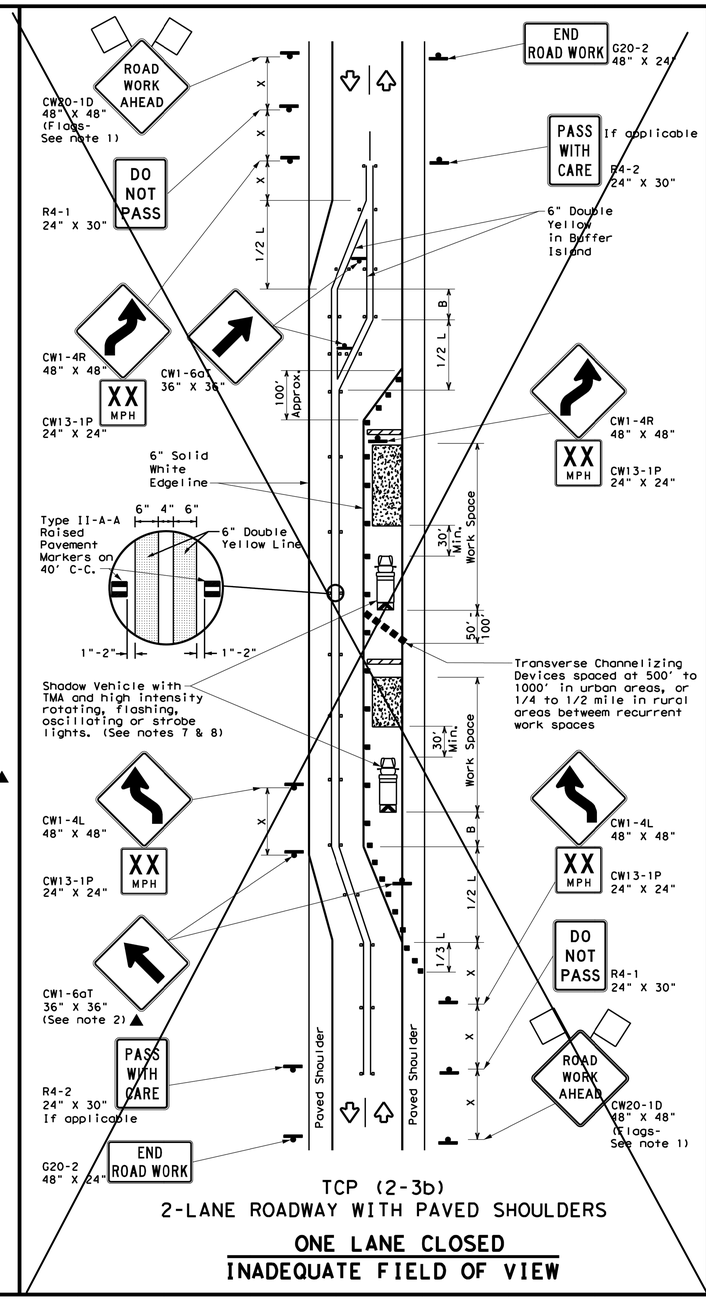
C5.00

DATE:
FILE:



TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

LEGEND

	Type 3 Barricade	■ ■	Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	• • • •	Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30		150'	165'	180'	30'	60'	120'	90'
35	$L=\frac{WS^2}{60}$	205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	L=WS	550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b)ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

9. Conflicting pavement markings shall be removed for long-term projects. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

Texas Department of Transportation — Traffic Safety Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-23

FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
©TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18 / 8-95 3-03 4-23 / 1-97 2-12	DIST	COUNTY		SHEET NO.

165

POSTED SPEED OF WEST SYCAMORE ROAD IS 30 MPH

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FRESNO BOYS & GIRLS CLUB
- 031 W SYCAMORE RD
FRESNO, TX 77545

TEMPORARY TRAFFIC CONTROL PLAN

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02.29.2024

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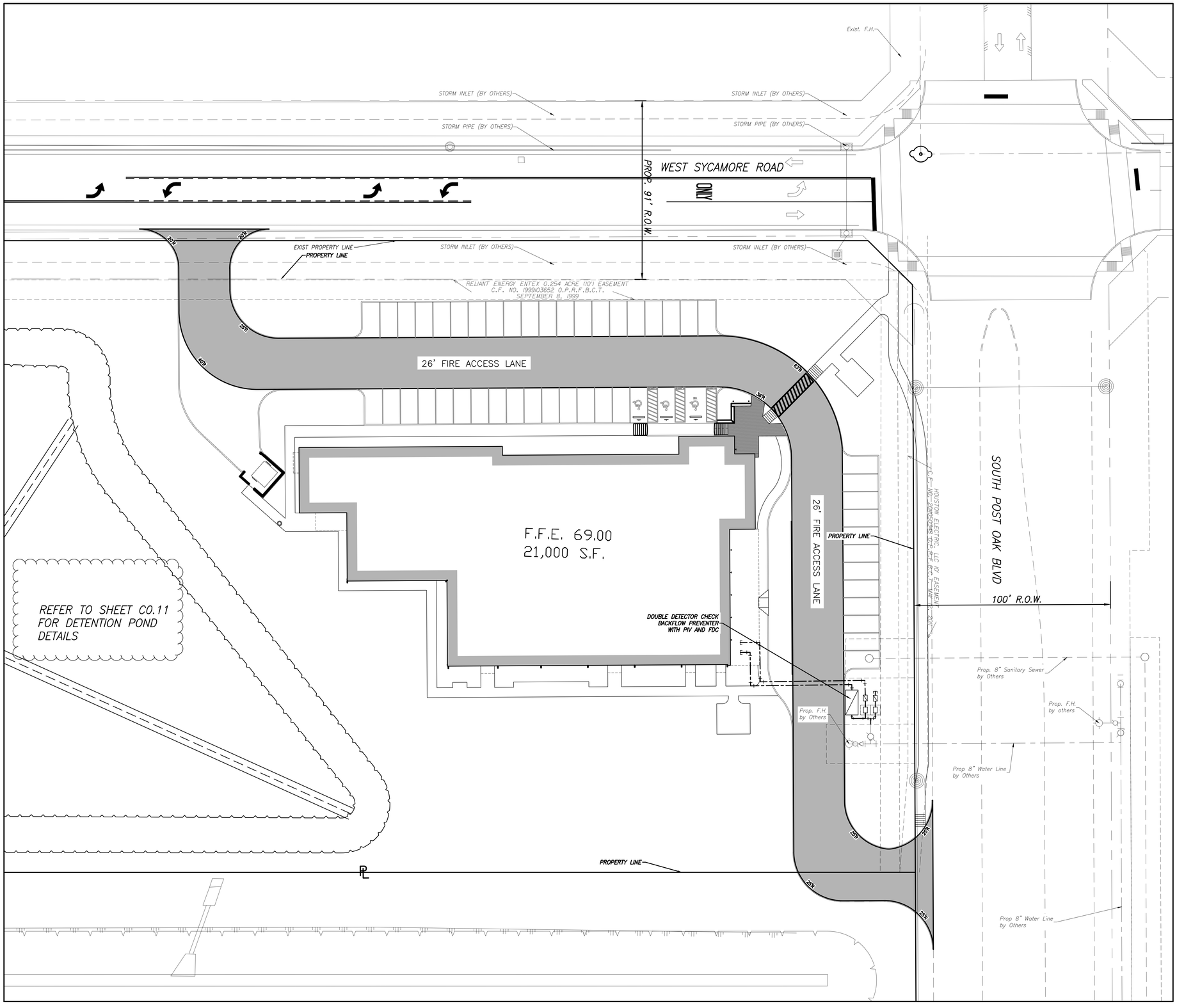
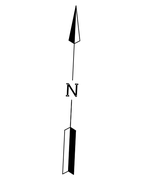
C5.10





LEGEND

- FIRE LANE
- FH — FIRE HYDRANT
- FIRE DEPARTMENT CONNECTION
- POST INDICATOR VALVE

FIRE CODE NOTES:

1. CURBS LOCATED ON EITHER SIDE OF A FIRE LANE SHALL BE PAINTED RED OR A RED STRIPE SHALL BE PLACED ALONG THE PAVEMENT WHERE THERE IS NO CURB.

2. WHERE A FIRE LANE PASSES BETWEEN HEAD-IN PARKING SPACES, THE RED STRIPE SHOULD BE PLACED ALONG THE REAR OF THESE SPACES CLEARLY DEFINING THE FIRE LANE.

3. BOTH SIDES OF THE FIRE APPARATUS ACCESS ROADS SHALL BE CONTINUOUSLY MARKED BY PAINTED LINES OF RED TRAFFIC PAINT SIX INCHES (6") IN WIDTH WITH WHITE LETTERING FOUR INCHES (4") HIGH AND AT LEAST ONE HALF-INCH (1/2") STROKE, STATING "NO PARKING FIRE LANE – TOW AWAY ZONE". WORDING MAY NOT BE SPACED MORE THAN TWENTY FIVE FEET (25') APART. FIRE LANES SHALL BE MARKED ON BOTH SIDES OF ACCESS ROADS SO AS TO ASSURE A MINIMUM 26' CLEAR WIDTH IN THE MIDDLE OF SAID ACCESS ROADS.

4. WHERE FIRE LANES ARE CLEARLY DEFINED BY CURB/PAVEMENT STRIPING, FIRE LANE SIGNS ARE NOT REQUIRED.

5. WHERE SIGNS ARE REQUIRED – SIGNS SHALL READ "NO PARKING FIRE LANE" OR "FIRE LANE NO PARKING" AND SHALL BE 12" WIDE AND 18" HIGH. SIGNS SHALL BE PAINTED ON A WHITE BACKGROUND WITH LETTERS AND BORDERS IN RED, USING NOT LESS THAN 2" LETTERING. SIGNS SHALL BE PERMANENTLY AFFIXED TO A STATIONARY POST AND THE BOTTOM OF THE SIGN SHALL BE SIX FEET, SIX INCHES (6'6") ABOVE GRADE. SIGNS SHALL BE SPACED NOT MORE THAN FIFTY FEET (50') APART ALONG BOTH SIDES OF THE FIRE LANE. SIGNS MAY BE INSTALLED ON PERMANENT BUILDINGS OR WALLS OR AS APPROVED BY THE FIRE MARSHAL.

5. FIRE LANES SHALL HAVE A TURNING RADIUS OF A MINIMUM TWENTY-FIVE (25) FEET FOR TURNS INSIDE THE PROPERTY.

6. FIRE LANES SHALL HAVE AN UNOBSTRUCTED VERTICAL CLEARANCE OF AT LEAST THIRTEEN AND ONE-HALF (13.5) FEET.

7. FIRE LANES SHALL BE AT LEAST TWENTY-SIX (26) FEET IN WIDTH IN THE IMMEDIATE VICINITY OF ANY BUILDING EXCEEDING THIRTY (30) FEET IN HEIGHT.

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FIRE ACCESS LAYOUT

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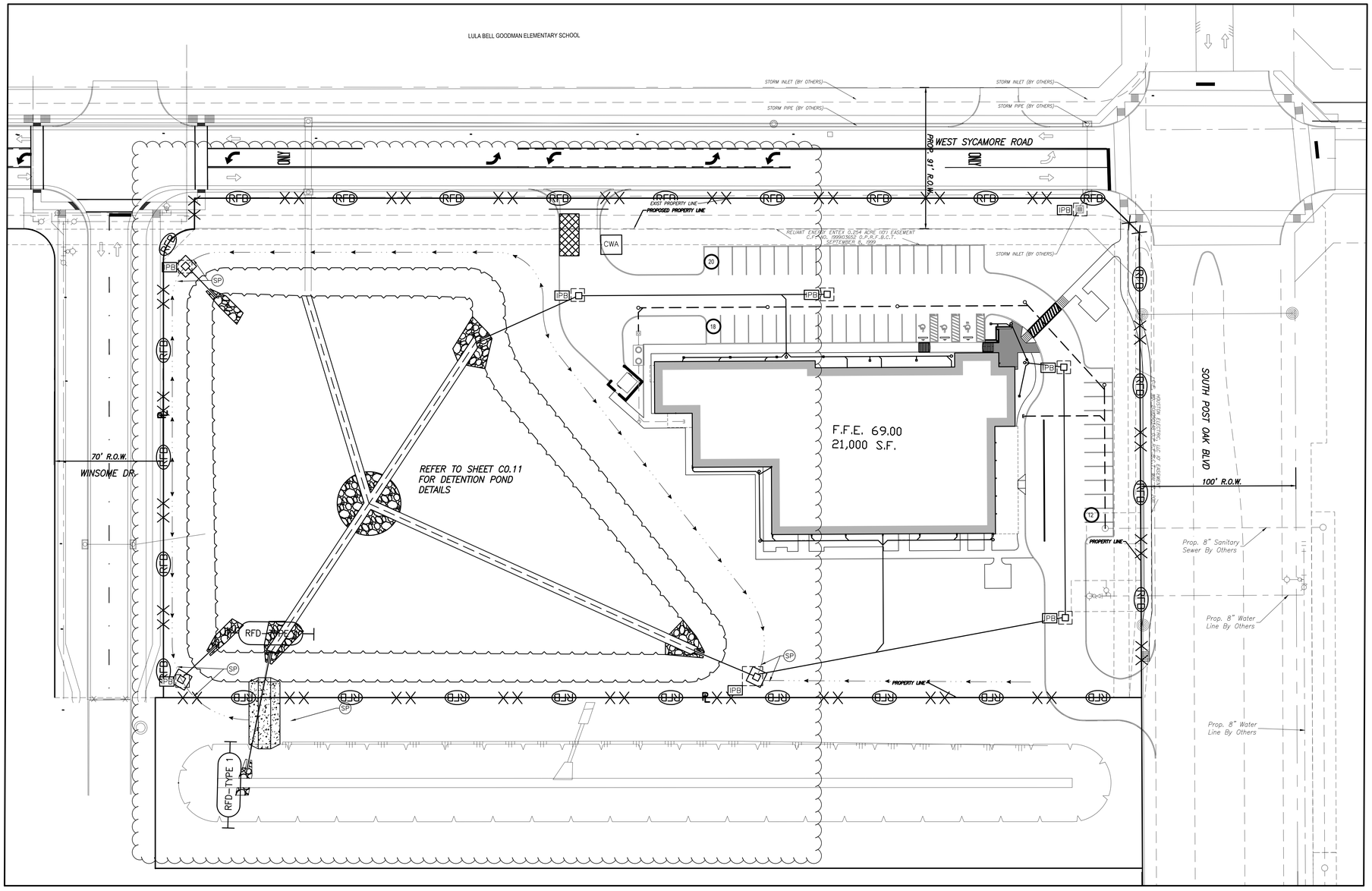

N

GRAPHIC SCALE
20 0 10 20
(IN FEET)
1 inch = 20 ft.

LEGEND

- TEMPORARY STONE CONSTRUCTION ENTRANCE EXIT (SEE DETAILS SHEET C9.9)
- RFD — XX — REINFORCED FILTER FABRIC SILT BARRIER FENCE MIN 2' FROM B.O.C. OR BACK OF DITCH SLOPE
- CWA — INDICATES CONCRETE WASH OUT AREA
- IPB — INLET PROTECTION BARRIER
- SP — REINFORCED FILTER FABRIC FENCE FOR V-BOTTOM DITCH
- FD-TYPE SYMBOL — ROCK FILTER DAM

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FRESNO BOYS & GIRLS CLUB
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SWPPP LAYOUT

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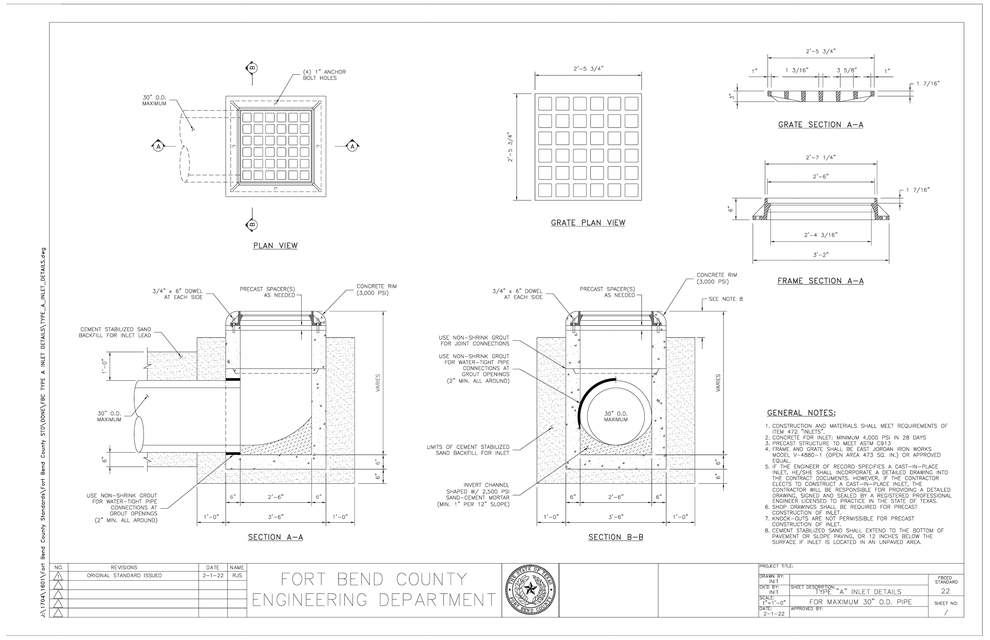


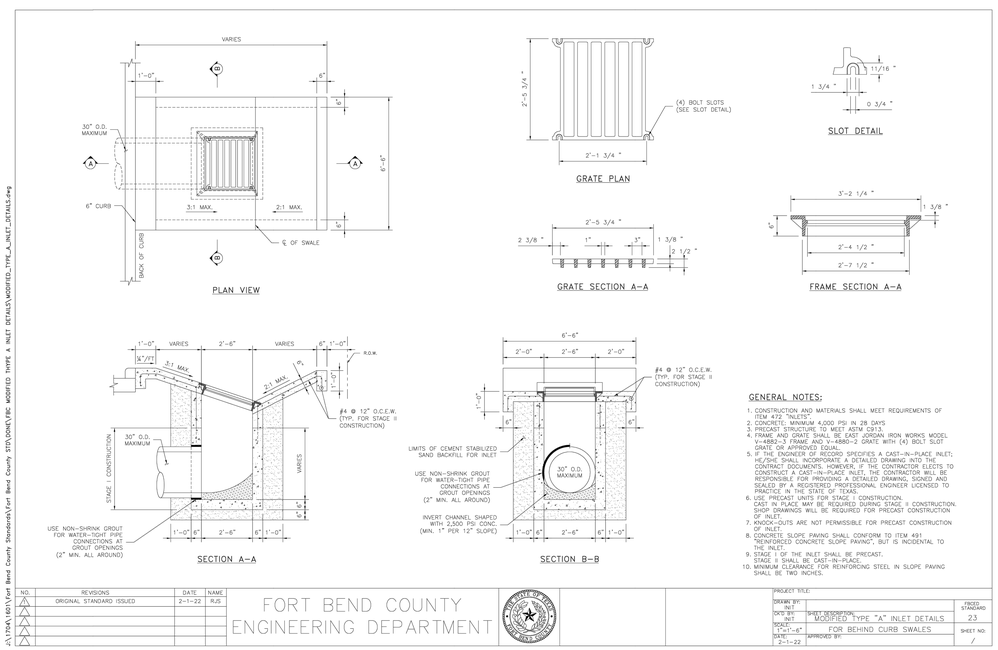
NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS

FORT BEND COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:

DRAWN BY: INT		FBCED STANDARD
DATE: INT	SHEET DESCRIPTION: TYPE "A" INLET DETAILS	22
SCALE: 1"=1'-0"	FOR MAXIMUM 30" O.D. PIPE	SHEET NO.
DATE: 2-1-22	APPROVED BY:	/

J:\1704\1601\Fort Bend County Standards\Fort Bend County STD\DWG\FBC TYPE A INLET DETAILS\TYPE_A_INLET_DETAILS.dwg



GENERAL NOTES:

1. CONSTRUCTION AND MATERIALS SHALL MEET REQUIREMENTS OF ITEM 472 "INLETS".
2. CONCRETE: MINIMUM 4,000 PSI IN 28 DAYS
3. PRECAST STRUCTURE TO MEET ASTM C913.
4. FRAME AND GRATE SHALL BE EAST JORDAN IRON WORKS MODEL V-4880-3 FRAME AND V-6880-2 GRATE WITH (4) BOLT SLOT GRATE OR APPROVED EQUAL.
5. IF THE ENGINEER OF RECORD SPECIFIES A CAST-IN-PLACE INLET; HE/SHE SHALL INCORPORATE A DETAILED DRAWING INTO THE CONTRACT DOCUMENTS. HOWEVER, IF THE CONTRACTOR ELECTS TO CONSTRUCT A CAST-IN-PLACE INLET, THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING A DETAILED DRAWING, SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS.
6. ONE PRECAST UNITS IS STANDARD CONSTRUCTION. CAST IN PLACE, MAY BE REQUIRED DURING STAGE II CONSTRUCTION. SHOP DRAWINGS WILL BE REQUIRED FOR PRECAST CONSTRUCTION OF INLET.
7. KNOCK-OUTS ARE NOT PERMISSIBLE FOR PRECAST CONSTRUCTION OF INLET.
8. CONCRETE SLOPE PAVING SHALL CONFORM TO ITEM 491 "REINFORCED CONCRETE SLOPE PAVING", BUT IS INCIDENTAL TO THE INLET.
9. THE TOP OF THE INLET SHALL BE PRECAST. STAGE II SHALL BE CAST-IN-PLACE.
10. MINIMUM CLEARANCE FOR REINFORCING STEEL IN SLOPE PAVING SHALL BE TWO INCHES.

NO.	REVISIONS	DATE	NAME
1	ORIGINAL STANDARD ISSUED	2-1-22	RJS

FORT BEND COUNTY ENGINEERING DEPARTMENT

PROJECT TITLE:

DRAWN BY: INT		FBCED STANDARD
DATE: INT	SHEET DESCRIPTION: MODIFIED TYPE "A" INLET DETAILS	23
SCALE: 1"=1'-0"	FOR BEHIND CURB SWALES	SHEET NO.
DATE: 2-1-22	APPROVED BY:	/

J:\1704\1601\Fort Bend County Standards\Fort Bend County STD\DWG\FBC MODIFIED TYPE A INLET DETAILS\MODIFIED_TYPE_A_INLET_DETAILS.dwg

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LJA ENGINEERING FRN F-1386
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KATY, TX 77449

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SPRING, TX 77379

MEP ENGINEER
INFRASTRUCTURE
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HOUSTON, TX 77057
TBPE FIRM REG.#F-4506

TECHNOLOGY CONSULTANT
TRUE NORTH CONSULTANT GROUP
3408 HILLCREST DR.
WACO, TX 76708

PROJECT #: N032023
DATE ISSUED: 02.29.2024
TDLR #: TABS2024011699

REVISIONS:

NO.	DATE	DESCRIPTION
2	04.12.2024	Addendum #2

FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
FRESNO, TX 77545

STORM SEWER DETAILS
1 OF 3

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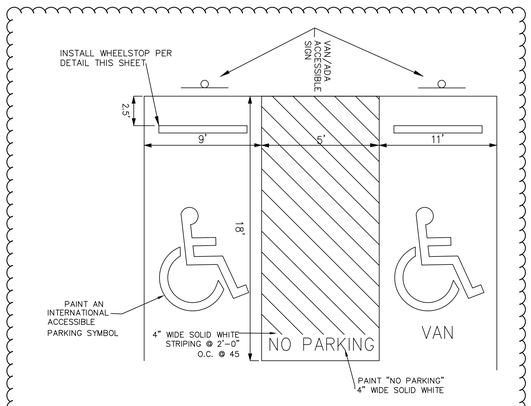
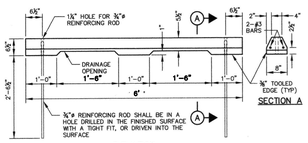
02.29.2024

STATE OF TEXAS
AMANDA F. BARBER
122357
LICENSED
PROFESSIONAL ENGINEER
2024-04-12

C7.04

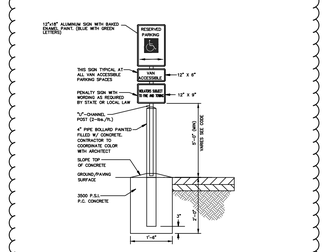


TYPICAL ADA/VAN ACCESSIBLE PARKING DETAIL



CONCRETE WHEEL STOP DETAIL

N.T.S.



ACCESSIBLE PARKING AND SIGN DETAIL

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FRESNO BOYS & GIRLS CLUB
5031 W SYCAMORE RD
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PAVING DETAILS 5 OF 5

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2024-03-29

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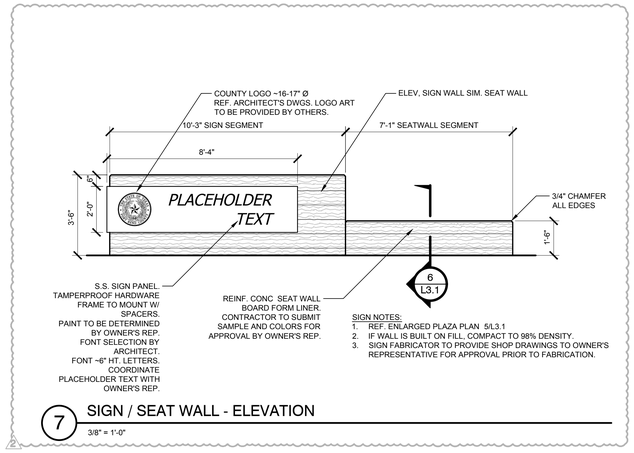
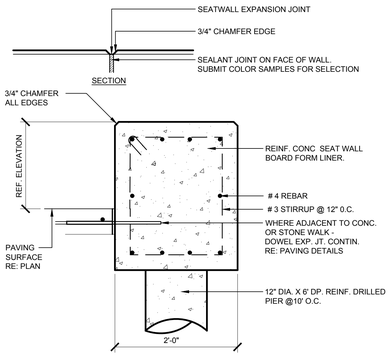


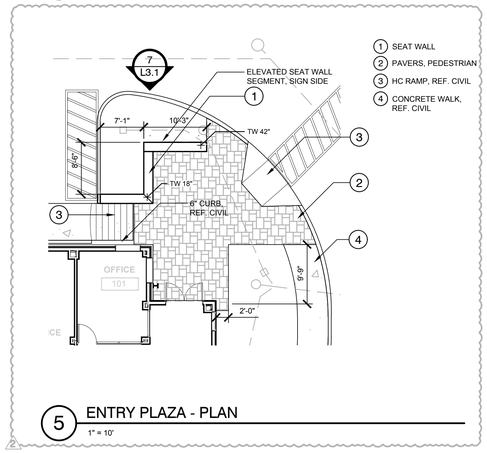
7 SIGN / SEAT WALL - ELEVATION

3/8" = 1'-0"



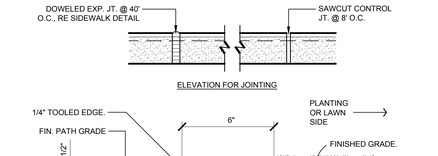
6 CONCRETE SEAT WALL

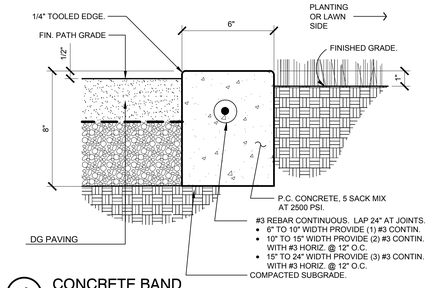
1" = 1'-0"



5 ENTRY PLAZA - PLAN

1" = 10'

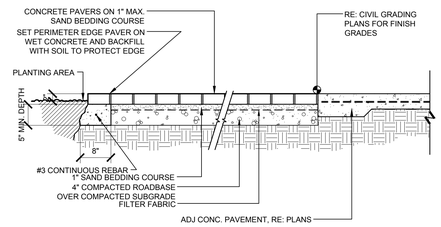




4 CONCRETE BAND

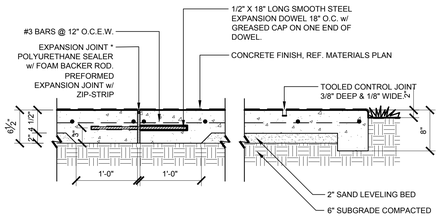
3" = 1'-0"

NOTE:
1. RE PLAN: FOR PATTERN
2. COLORS TO BE DETERMINED.
3. WHERE REQUIRED, CUT PAVERS TO FIT ACCURATELY, NEATLY AND WITHOUT DAMAGED EDGES.



3 PAVERS, PEDESTRIAN

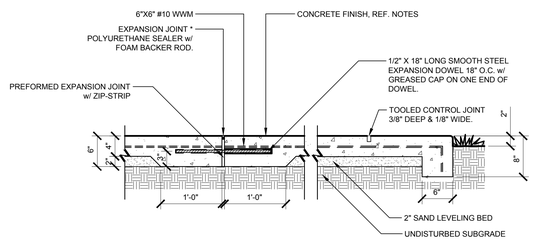
3/4" = 1'-0"



CONCRETE NOTES:
SUBGRADE COMPACTED TO 95% STD PROCTOR DENSITY @ ±2% OPTIMUM MOISTURE CONTENT. COORDINATE CONCRETE DESIGN AND REINFORCING WITH GEOTECH RECOMMENDATIONS.

2 CONCRETE WALK - REINF.

1" = 1'-0"



NOTES:
1. AT EXPANSION JOINT, INCREASE DEPTH OF SLAB 2" TO ACCOMMODATE DOWEL.
2. EXPANSION JOINT MAY BE FORMED WITH REDWOOD OR PRE-FORMED EXPANSION JOINT MATERIAL. INSTALL WITH "ZIP STRIP" OR 3/4" x 3/4" WOOD STRIP AT SURFACE TO LEAVE A VOID FOR BACKER ROD AND JOINT SEALER.
3. EXPANSION JOINTS ARE TO BE 24' ON CENTER UNLESS NOTED OTHERWISE ON PLAN. CONTROL JOINTS ARE TO BE 5' ON CENTER UNLESS NOTED OTHERWISE ON PLAN.
4. REFERENCE PLANS FOR SCORING PATTERN AND DIMENSIONS.
5. CONTRACTOR TO PROVIDE SAMPLE FOR APPROVAL USING ALL SPECIFIED MATERIALS. SAMPLE SECTION SHALL BE AT LEAST 5' X 5'. SAMPLE MAY BE PART OF FINISHED SURFACE AREA.

1 CONCRETE WALK - WWM

1" = 1'-0"

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PROJECT #: N032023 SA23434
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FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
FRESNO, TX 77545

LANDSCAPE SITE DETAILS

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02.29.2024

REGISTERED LANDSCAPE ARCHITECT
JOHN J. DAVISON
2190
STATE OF TEXAS

02.29.2024

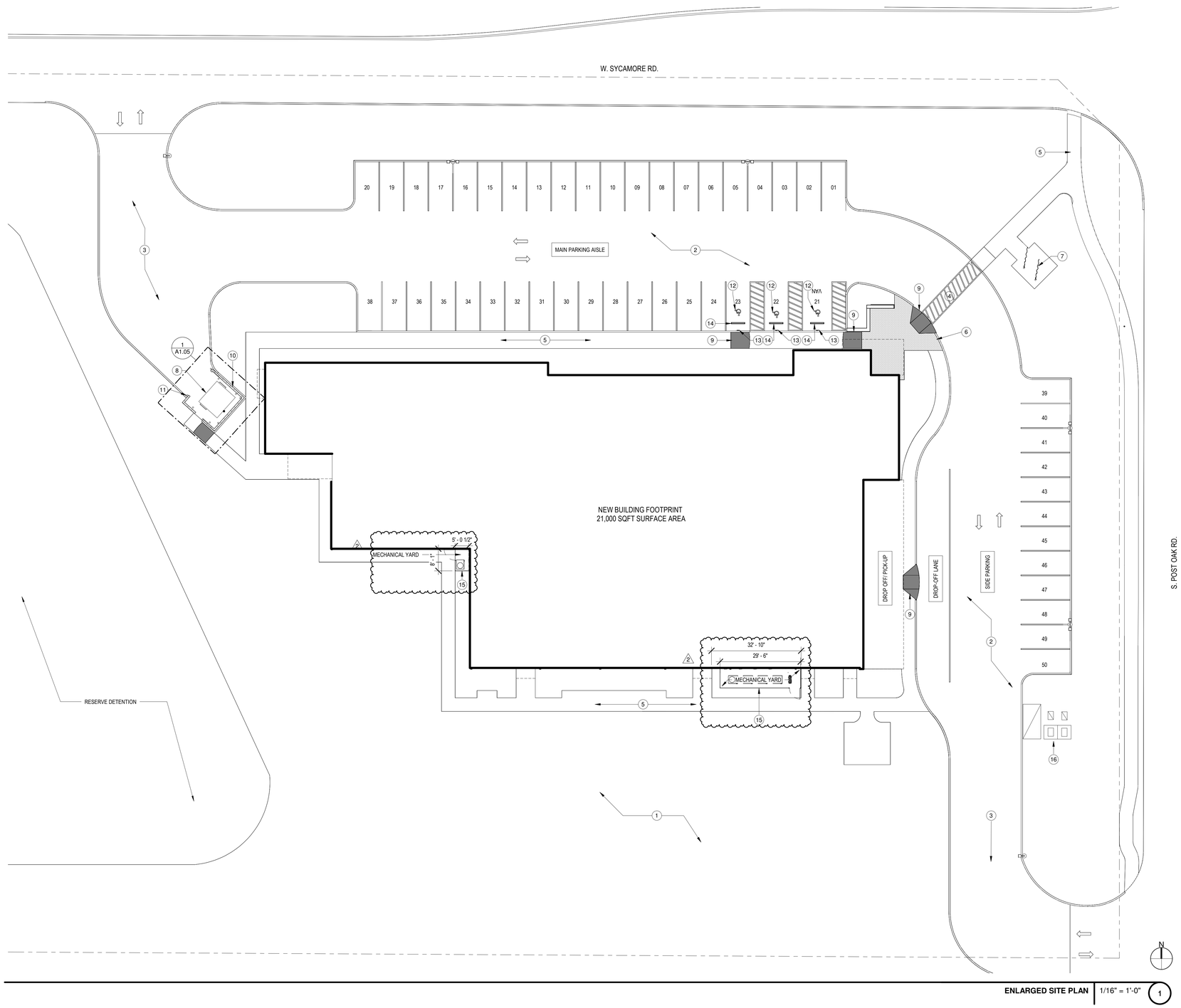
L3.01

1. PLAYING FIELD RE: CIVIL
2. PARKING LOT RE: CIVIL
3. CONCRETE DRIVE RE: CIVIL
4. STRIPED CROSSWALK RE: CIVIL
5. SIDEWALK RE: CIVIL
6. PLAZA RE: LANDSCAPE
7. FLAGPOLE (2)
8. DUMPSTER
9. ADA RAMP RE: CIVIL
10. MASONRY ENCLOSURE WALL RE: A1.01
11. PIPE BOLLARD RE: A1.01
12. ADA PARKING SYMBOL
13. ADA PARKING SIGNAGE RE: A1.01
14. WHEEL STOP
15. WROUGHT IRON FENCING W/ GATE RE: 19/A1.05
16. WATER METERS AND BACKFLOW PREVENTERS

ENLARGED SITE PLAN KEY NOTES | NO SCALE | 12

1. REFER CIVIL SHEETS FOR ADDITIONAL INFORMATION
2. REFER ELECTRICAL DRAWINGS FOR UNDERGROUND ELECTRICAL & LIGHTING REQUIREMENTS
3. REFER PLUMBING DRAWINGS FOR UNDERGROUND PLUMBING REQUIREMENTS
4. REFER LANDSCAPE DRAWINGS FOR PLANTING, IRRIGATION AND FENCING REQUIREMENTS

SITE PLAN GENERAL NOTES | NO SCALE | 6



ENLARGED SITE PLAN | 1/16" = 1'-0" | 1

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ENLARGED SITE PLAN

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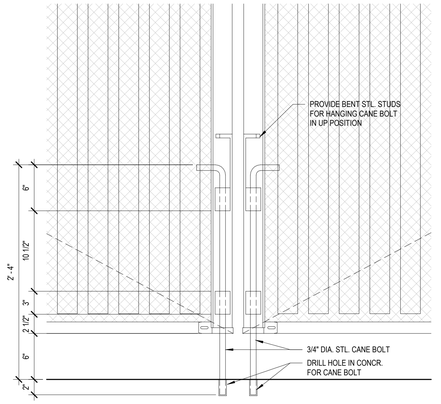
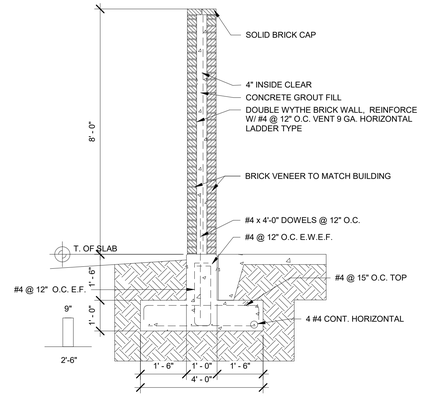
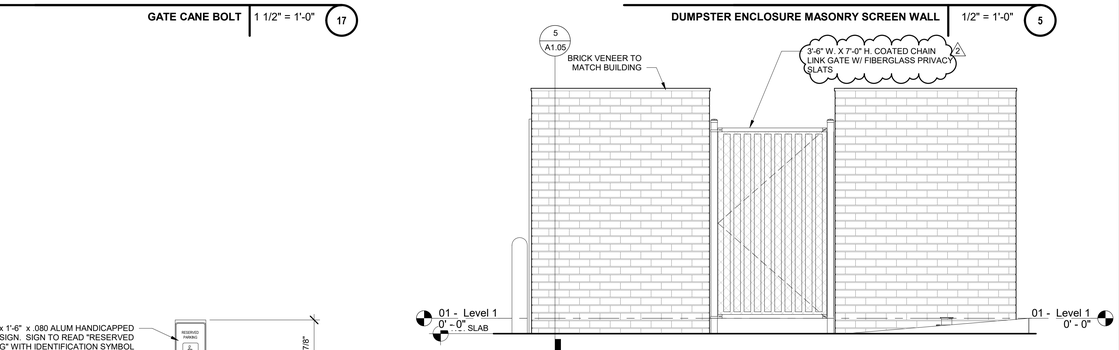


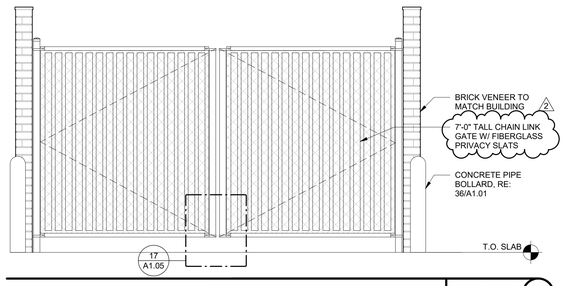
GATE CANE BOLT | 1 1/2" = 1'-0" | 17



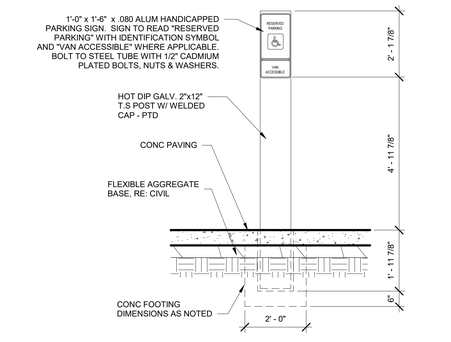
DUMPSTER ENCLOSURE MASONRY SCREEN WALL | 1/2" = 1'-0" | 5



DUMPSTER ENCLOSURE GATE ELEVATION | 1/2" = 1'-0" | 4

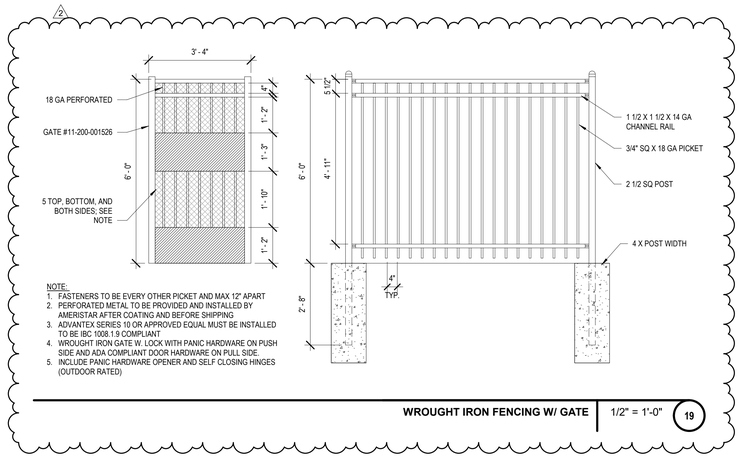


DUMPSTER ENCLOSURE GATE ELEVATION | 1/2" = 1'-0" | 3

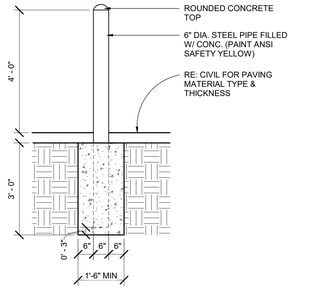


ADA SITE SIGNAGE | 1/2" = 1'-0" | 15

ENLARGED DUMPSTER PLAN | 1/4" = 1'-0" | 1



WROUGHT IRON FENCING W/ GATE | 1/2" = 1'-0" | 19



TYPICAL BOLLARD DETAIL | 1/2" = 1'-0" | 13

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FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
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SITE DETAILS

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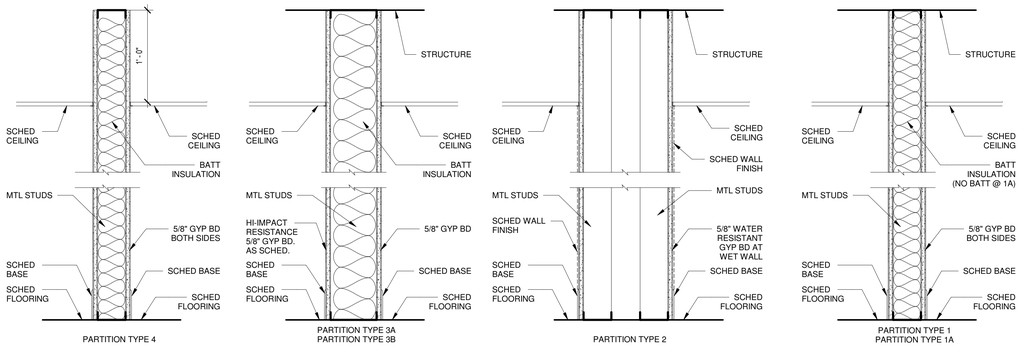


PARTITION TYPES | NO SCALE | 24

PARTITION SCHEDULE

TYPE	DETAIL REFERENCE	BASE DETAIL	STRUC. WIDTH	OVERALL DIMENSION	INSULATION THICKNESS	FIRE RATING	STC	NOTES
1	24/A2.01	AS SCHED.	3 5/8"	4 7/8"	3 1/2"	-	-	-
1A	24/A2.01	AS SCHED.	3 5/8"	4 7/8"	---	-	-	-
2	24/A2.01	AS SCHED.	3 5/8" (2)	SEE PLAN	---	-	-	-
3A	24/A2.01	AS SCHED.	6"	7 1/4"	5 1/2"	-	-	IMPACT RESISTANT GYP. BD. ON ALL GYM/ GAME ROOM WALLS
3B	24/A2.01	AS SCHED.	6"	7 1/4"	5 1/2"	-	-	-
4	24/A2.01	AS SCHED.	3 5/8"	4 7/8"	3 1/2"	-	-	-

NOTES

A. ALL METAL STUDS TO BE SPACED AT 1'-4" O.C., UNLESS NOTED OTHERWISE.

B. INSULATION COLUMN:
(1) --- INDICATES NO INSULATION TO BE PLACED IN PARTITION CAVITY.
(2) DIMENSION INDICATES THICKNESS OF SOUND ATTENUATION BLANKETS TO BE PLACED IN PARTITION CAVITY. ATTACH BLANKETS SECURELY IN WALL CAVITY TO PREVENT FALLING.

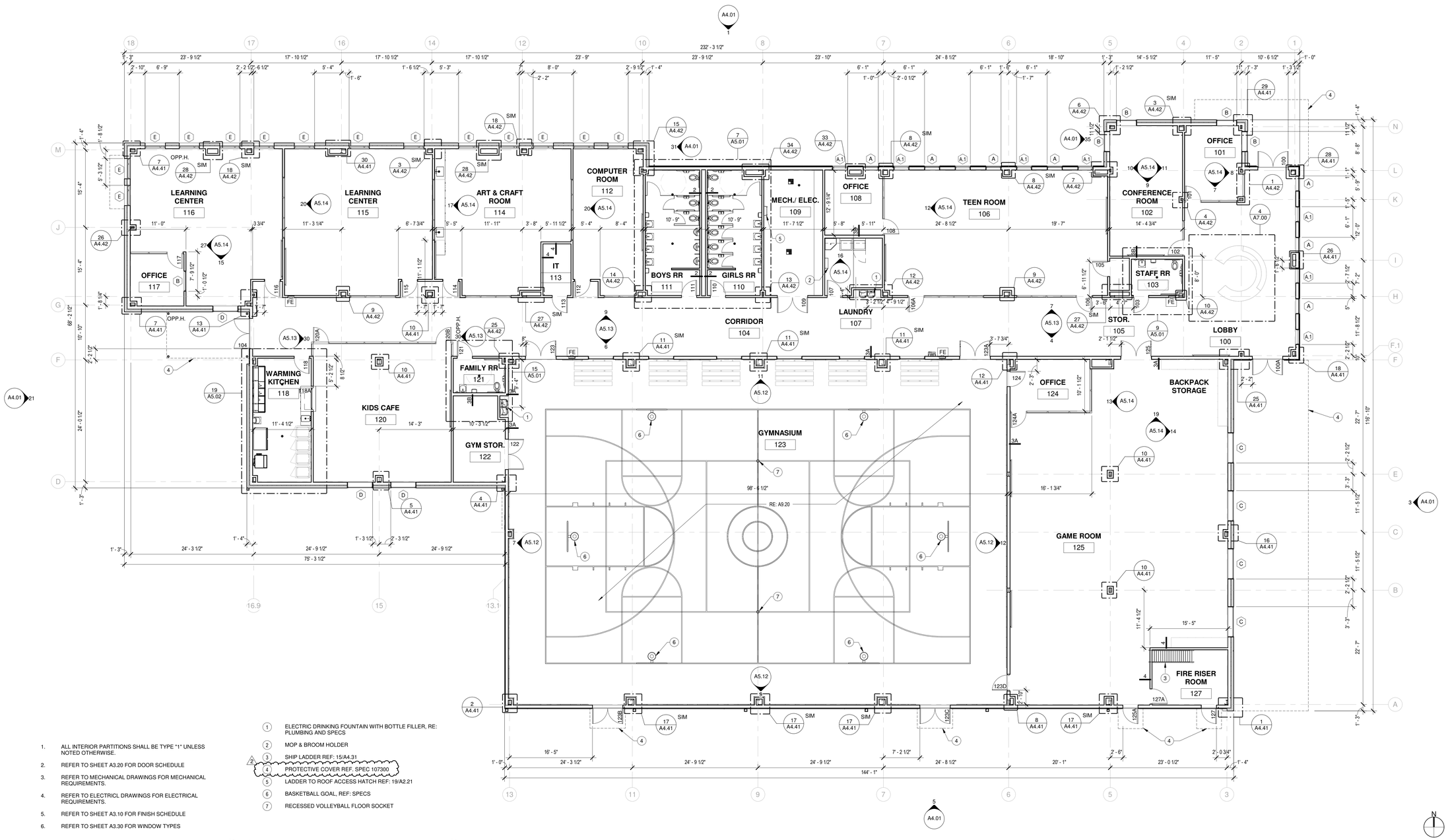
C. ALL GYPSUM BOARD TO BE 5/8" THICK, UNLESS NOTED OTHERWISE.

SPECIFIC NOTES

GENERAL NOTES

1. PARTITION TYPE DRAWINGS ARE NOT TO SCALE.
2. WALLS AND PARTITIONS ARE INTERIOR NON-BEARING SYSTEMS AND ARE NOT INTENDED TO RESIST WIND LOADS OR SUPPORT FLOOR LOADS (UNLESS OTHERWISE NOTED).
3. PARTITIONS ARE CONTINUOUS ACROSS DOORWAYS, OPENINGS AND ABUTTING PARTITIONS; A TAG SHOWN IN ONE SEGMENT OF A PARTITION APPLIES TO ALL UNMARKED SEGMENTS THAT ARE IN LINE WITH AND CONTINUOUS WITH THE TAGGED SEGMENT.
4. FOR WALL TILE APPLICATIONS, USE WATER RESISTANT GYP. BOARD.

PARTITION SCHEDULE & GENERAL NOTES | NO SCALE | 6



1. ALL INTERIOR PARTITIONS SHALL BE TYPE "1" UNLESS NOTED OTHERWISE.
2. REFER TO SHEET A3.20 FOR DOOR SCHEDULE
3. REFER TO MECHANICAL DRAWINGS FOR MECHANICAL REQUIREMENTS.
4. REFER TO ELECTRICL DRAWINGS FOR ELECTRICAL REQUIREMENTS.
5. REFER TO SHEET A3.10 FOR FINISH SCHEDULE
6. REFER TO SHEET A3.30 FOR WINDOW TYPES

FLOOR PLAN GENERAL NOTES | NO SCALE | 31

1. ELECTRIC DRINKING FOUNTAIN WITH BOTTLE FILLER, RE: PLUMBING AND SPECS
2. MOP & BROOM HOLDER
3. SHIP LADDER REF: 15/A4.31
4. PROTECTIVE COVER REF. SPEC 107300
5. LADDER TO ROOF ACCESS HATCH REF: 19/A2.21
6. BASKETBALL GOAL, REF: SPECS
7. RECESSED VOLLEYBALL FLOOR SOCKET

FLOOR PLAN KEY NOTES | NO SCALE | 25

FLOOR PLAN | 1/8" = 1'-0" | 1

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FLOOR PLAN

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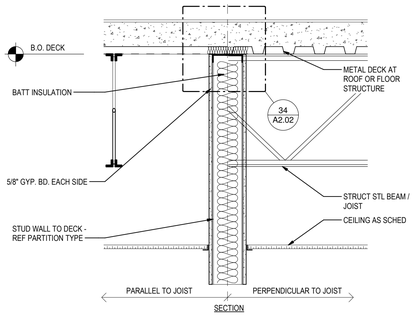
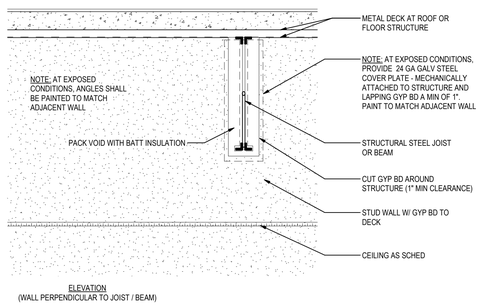
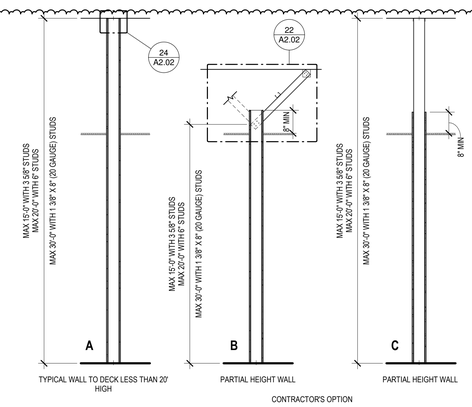
02.29.2024

A2.01





STEEL STUD WALL TO DECK - INTERSECTION AT JOIST/BEAM | 1" = 1'-0" | 24



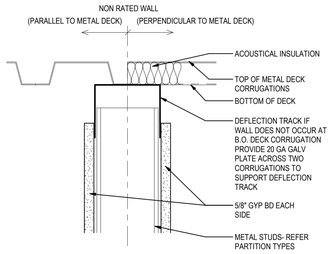
INTERIOR STUD WALLS | 3/8" = 1'-0" | 18

1. ELECTRIC DRINKING FOUNTAIN WITH BOTTLE FILLER, RE: PLUMBING AND SPECS
2. MOP & BROOM HOLDER
3. SHIP LADDER REF: 15/A4.31
4. PROTECTIVE COVER REF: SPEC 107300
5. LADDER TO ROOF ACCESS HATCH REF: 19/A2.21
6. BASKETBALL GOAL, REF: SPECS
7. RECESSED VOLLEYBALL FLOOR SOCKET

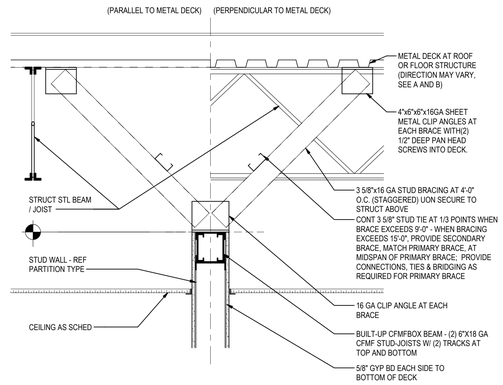
FLOOR PLAN KEY NOTES | NO SCALE | 25

1. ALL INTERIOR PARTITIONS SHALL BE TYPE "1" UNLESS NOTED OTHERWISE.
2. REFER TO SHEET A3.20 FOR DOOR SCHEDULE
3. REFER TO MECHANICAL DRAWINGS FOR MECHANICAL REQUIREMENTS.
4. REFER TO ELECTRICL DRAWINGS FOR ELECTRICAL REQUIREMENTS.
5. REFER TO SHEET A3.10 FOR FINISH SCHEDULE
6. REFER TO SHEET A3.30 FOR WINDOW TYPES

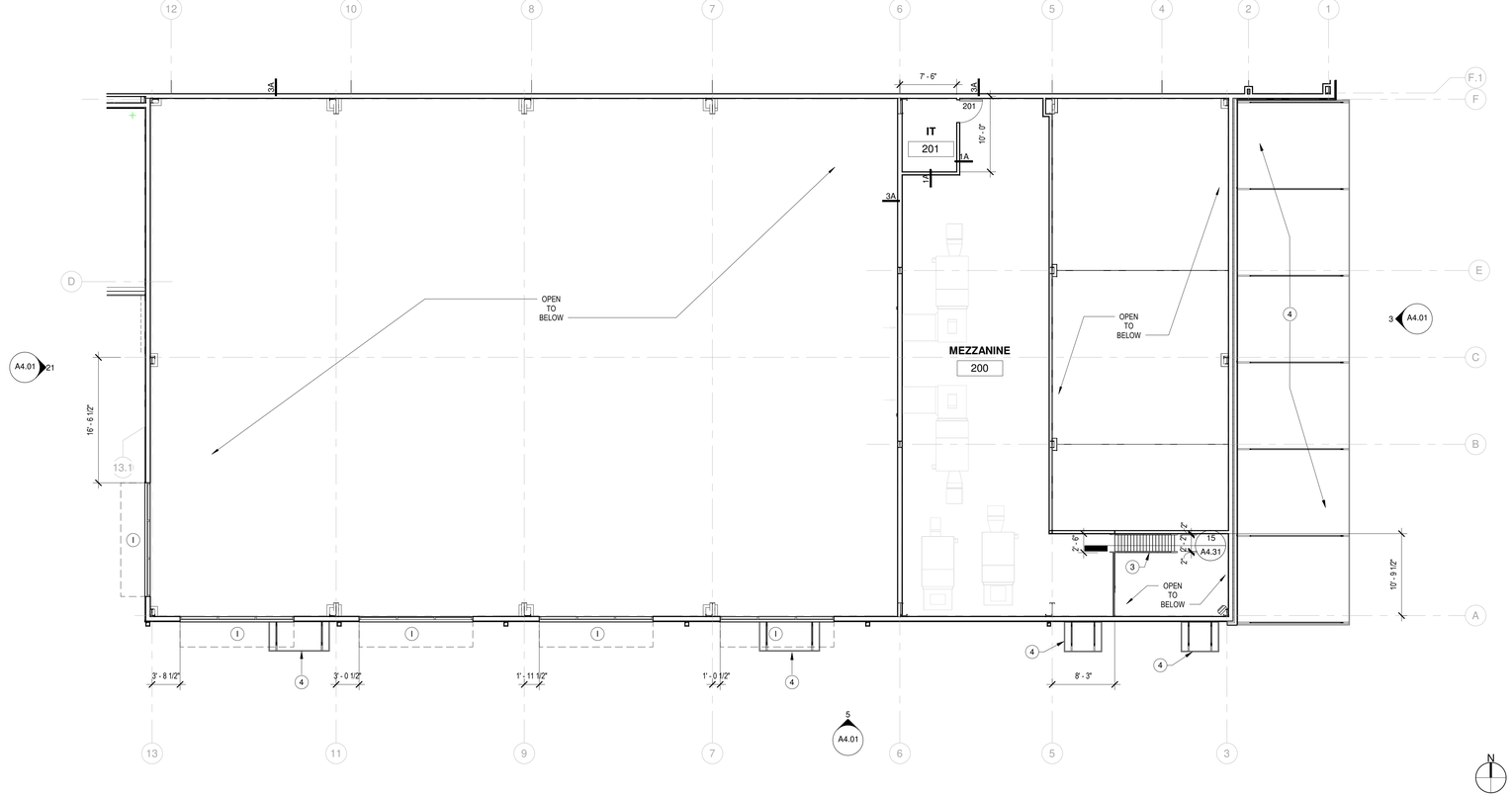
FLOOR PLAN GENERAL NOTES | NO SCALE | 31



DEFLECTION CONNECTION AT TOP OF WALL - STUD WALLS | 3" = 1'-0" | 34



WALL ABOVE CEILING - TYP. BRACING | 1" = 1'-0" | 22



MEZZANINE FLOOR PLAN | 1/8" = 1'-0" | 1

SMITH&COMPANY ARCHITECTS

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LANDSCAPE ARCHITECT
STUDIO AVID
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TBPE FIRM REG.#F-4506

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PROJECT #: N032023
DATE ISSUED: 02.29.2024
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2	04.12.2024	Addendum #2

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FLOOR PLAN – MEZZANINE

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A2.02

ROOF WALKING PADS

STANDING SEAM ROOF SYSTEM OVER HIGH TEMP. MTL. ROOFING UNDERLAYMENT OVER 5" RIGID BOARD INSULATION ; RE: SPECS

TPO ROOF SYSTEM OVER 1/2" PER FT TAPERED INSULATION BOARD RE: SPECS

ROOF PLAN LEGEND | NO SCALE | 18

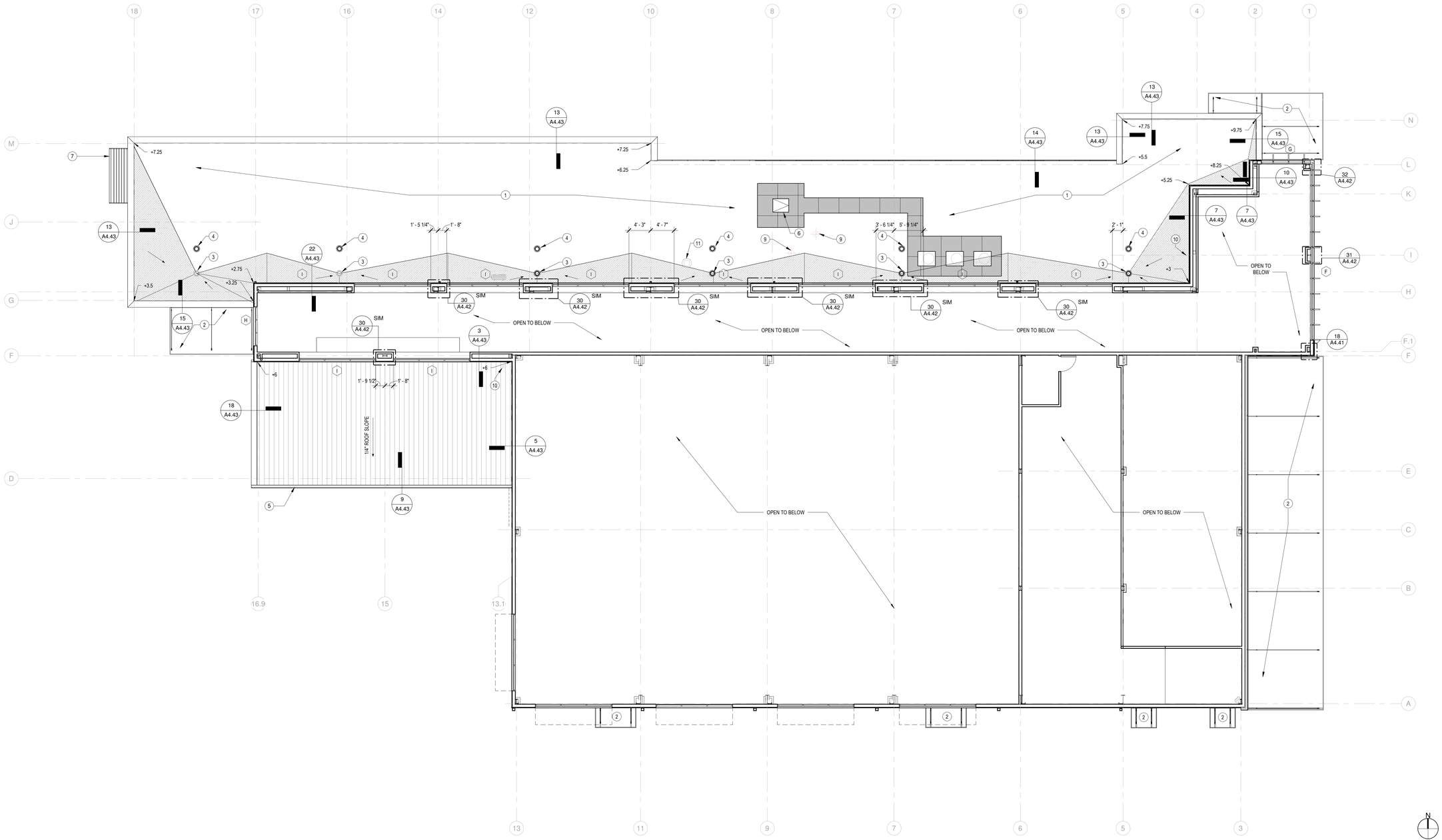
A

1. TPO ROOFING SYSTEM OVER 5" (R30) RIGID BOARD INSULATION
2. AVADEK CANOPY WITH STANDING SEAM METAL ROOF- ALL STEEL MEMBERS PAINTED. PROTECTIVE COVER REF. SPEC 107300
3. ROOF DRAIN, RE: 1/A8.51
4. ROOF OVERFLOW DRAIN, RE: 1/A8.51
5. GUTTER
6. ROOF ACCESS HATCH, RE: 35/A2.21
7. HORIZONTAL SUNSHADES
8. VERTICAL SUNSHADES
9. O/A INTAKE; REF: MECH.
10. EXHAUST DUCT; REF: MECH.
11. EXHAUST FAN; REF: MECH.

ROOF PLAN KEY NOTES | NO SCALE | 12

1. REFER SHEET A8.50 AND A8.51 FOR TYPICAL ROOFING DETAILS
2. MINIMUM TOTAL SOLAR REFLECTANCE OF 0.70 AS TESTED PERONE OF THE FOLLOWING: ASTM C1549, ASTM E903, ASTM E1175, OR ASTM E1918
3. MINIMUM THERMAL EMITTANCE OF 0.75 WHEN TESTED PER ONE OF THE FOLLOWING: ASTM C835, ASTM 1371, OR ASTM E408
4. COORDINATE ROOF PENETRATION LOCATIONS WITH MEP DRAWINGS. PENETRATIONS SHALL BE FLASHED TO MEET "SMACNA" DETAIL REQUIREMENTS.

ROOF PLAN GENERAL NOTES | NO SCALE | 6



LOW ROOF PLAN | 1/8" = 1'-0" | 1

N

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720 N POST OAK, SUITE 124
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LOW ROOF PLAN

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A2.10

ROOF WALKING PADS

STANDING SEAM ROOF SYSTEM OVER HIGH TEMP. MTL. ROOFING UNDERLAYMENT OVER 5" RIGID BOARD INSULATION ; RE: SPECS

TPO ROOF SYSTEM OVER 1/2" PER FT TAPERED INSULATION BOARD RE: SPECS

ROOF PLAN LEGEND | NO SCALE | 18

2

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2. AVADEK CANOPY WITH STANDING SEAM METAL ROOF- ALL STEEL MEMBERS PAINTED, PROTECTIVE COVER REF. SPEC 107300
3. ROOF DRAIN, RE: 1/A8.51
4. ROOF OVERFLOW DRAIN, RE: 1/A8.51
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6. ROOF ACCESS HATCH, RE: 35/A2.21
7. HORIZONTAL SUNSHADES
8. VERTICAL SUNSHADES
9. O/A INTAKE; REF: MECH.
10. EXHAUST DUCT; REF: MECH.
11. EXHAUST FAN; REF: MECH.

ROOF PLAN KEY NOTES | NO SCALE | 12

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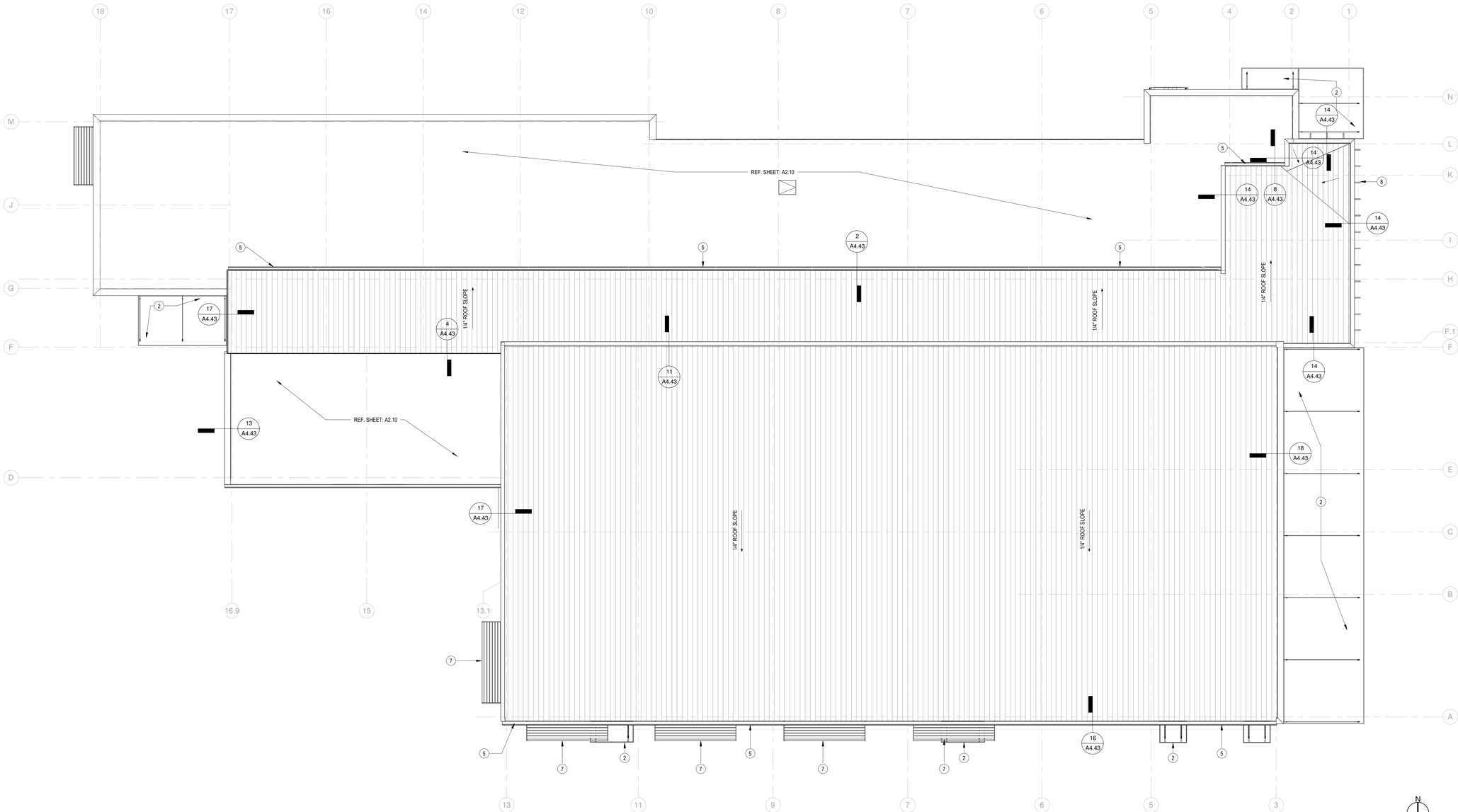
3. MINIMUM THERMAL EMITTANCE OF 0.75 WHEN TESTED PER ONE OF THE FOLLOWING: ASTM C835, ASTM 1371, OR ASTM E408
4. COORDINATE ROOF PENETRATION LOCATIONS WITH MEP DRAWINGS. PENETRATIONS SHALL BE FLASHED TO MEET "SMACNA" DETAIL REQUIREMENTS.

ROOF PLAN GENERAL NOTES | NO SCALE | 6



HIGH ROOF PLAN | 1/8" = 1'-0" | 1

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HIGH ROOF PLAN

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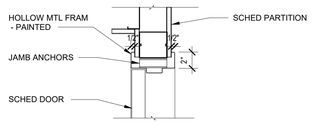
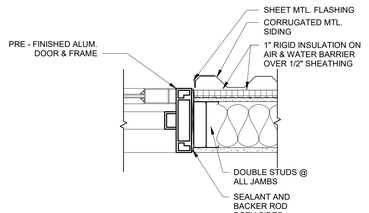
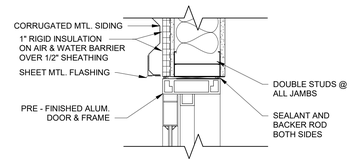


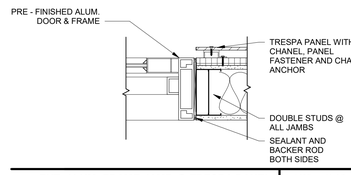
INTERIOR HM DOOR FRAME JAMB | 1 1/2" = 1'-0" | 30



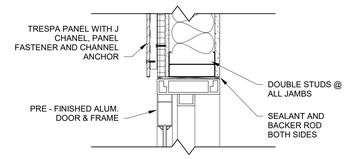
STOREFRONT DOOR JAMB @ METAL PANEL | 1 1/2" = 1'-0" | 24



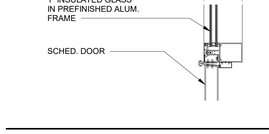
EXT. ALUM. FRAME HEADER @ MTL PANELS | 1 1/2" = 1'-0" | 18



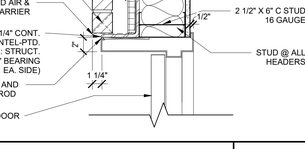
EXT. ALUM. FRAME JAMB @ TRESPA PANEL | 1 1/2" = 1'-0" | 12



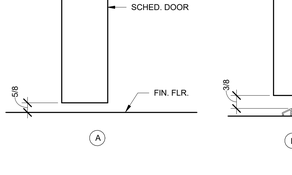
EXT. ALUM. FRAME HEADER @ TRESPA PANEL | 1 1/2" = 1'-0" | 6



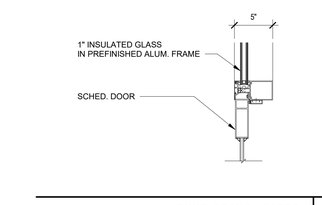
INTERIOR HM DOOR FRAME HEADER | 1 1/2" = 1'-0" | 29



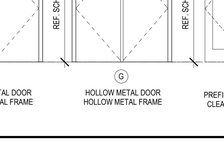
INTERIOR ALUM DOOR FRAME JAMB | 1 1/2" = 1'-0" | 23



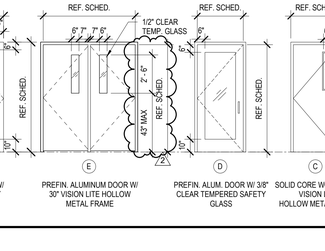
ROLLING OVERHEAD DOOR JAMB DETAIL | 1 1/2" = 1'-0" | 17



EXT HM DOOR FRAME JAMB @ METAL PANEL | 1 1/2" = 1'-0" | 28



INTERIOR ALUM DOOR FRAME HEADER | 1 1/2" = 1'-0" | 22

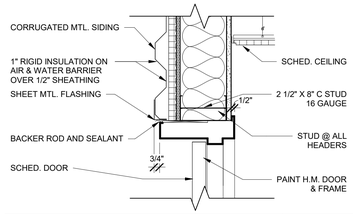


ROLLING OVERHEAD DOOR HEAD DETAIL | 1 1/2" = 1'-0" | 16

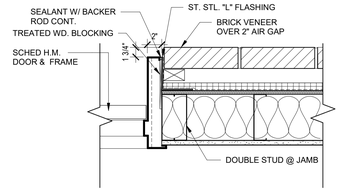
DOOR SCHEDULE

DOOR NUMBER	DOOR FINISH	FRAME FINISH	DOOR SIZE		DOOR THK.	DOOR/FRAME TYPE	HEAD	JAMB	SILL	HARDWARE	REMARKS
			WIDTH (W)	HEIGHT (H)							
100	AL/GL	CAA	3' - 0" (2)	7' - 0"	0' - 1 3/4"	F	6/A3.20	12/A3.20	C	R714AM	1
100A	AL/GL	CAA	3' - 0" (2)	7' - 0"	0' - 1 3/4"	F	6/A3.20	12/A3.20	C	R714AM	1
101	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	B	103A	
102	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	B	503A	
103	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	B	29/A3.20	30/A3.20	A	341	
104	AL/GL	CAA	3' - 0" (2)	7' - 0"	0' - 1 3/4"	F	6/A3.20	12/A3.20	C	714AM	
105	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	B	29/A3.20	30/A3.20	A	503	
106	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	A	751	
106A	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	A	751	
107	P	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	29/A3.20	30/A3.20	A	503	
108	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	E	103A	
109	P	P	3' - 0" (2)	7' - 0"	0' - 1 3/4"	H	29/A3.20	30/A3.20	A	210	
110	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	B	29/A3.20	30/A3.20	A	801L	
111	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	B	29/A3.20	30/A3.20	A	801L	
112	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	C	29/A3.20	30/A3.20	A	551H	
113	P	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	29/A3.20	30/A3.20	A	201C	
114	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	C	29/A3.20	30/A3.20	A	551H	
115	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	C	29/A3.20	30/A3.20	A	551H	
116	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	C	29/A3.20	30/A3.20	A	551H	
117	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	E	103A	
118	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	29/A3.20	30/A3.20	A	503AP	
118A	AL	SST	5' - 0"	6' - 0"	REF: SPECS	I	16/A3.20	17/A3.20	-	001	
120A	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	A	551AH	
120B	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	A	551AH	
121	PL	P	3' - 0"	7' - 0"	0' - 1 3/4"	B	29/A3.20	30/A3.20	A	341	
122	P	P	3' - 0" (2)	7' - 0"	0' - 1 3/4"	H	29/A3.20	30/A3.20	A	212S	
123	AL/GL	P	3' - 0" (2)	7' - 0"	0' - 1 3/4"	E	22/A3.20	23/A3.20	A	750M	
123A	AL/GL	P	3' - 0" (2)	7' - 0"	0' - 1 3/4"	E	22/A3.20	23/A3.20	A	750M	
123B	P	P	3' - 0" (2)	7' - 0"	0' - 1 3/4"	G	27/A3.20	28/A3.20	C	714M	
123C	P	P	3' - 0" (2)	7' - 0"	0' - 1 3/4"	G	27/A3.20	28/A3.20	C	714M	
123D	P	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	29/A3.20	30/A3.20	A	503	
124	P	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	29/A3.20	30/A3.20	A	103	
124A	AL/GL	CAA	3' - 0"	7' - 0"	0' - 1 3/4"	D	25/A3.20	26/A3.20	E	103A	
125	AL/GL	P	3' - 0" (2)	7' - 0"	0' - 1 3/4"	E	22/A3.20	23/A3.20	A	750M	
125A	P	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	27/A3.20	28/A3.20	C	715	
127	P	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	27/A3.20	28/A3.20	C	205	
127A	P	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	29/A3.20	30/A3.20	A	203	
201	P	P	3' - 0"	7' - 0"	0' - 1 3/4"	A	29/A3.20	30/A3.20	A	205	

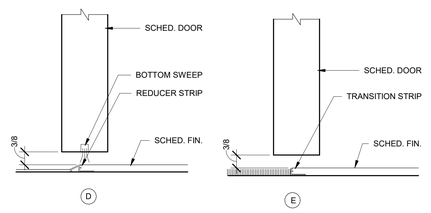
DOOR SCHEDULE | NO SCALE | 4



EXT HM DOOR FRAME HEADER @ METAL PANEL | 1 1/2" = 1'-0" | 27



EXT HM DOOR FRAME JAMB @ BRICK | 1 1/2" = 1'-0" | 21



THRESHOLD DETAILS | 3" = 1'-0" | 8

STOREFRONT DOOR FRAME JAMB | 1 1/2" = 1'-0" | 26

DOOR FRAME HEADER | 1 1/2" = 1'-0" | 25

EXT HM DOOR FRAME HEADER @ BRICK | 1 1/2" = 1'-0" | 20

DOOR TYPES | NO SCALE | 7

1. COORDINATE FOR ACCESS CONTROL

REMARKS | NO SCALE | 2

HM	HOLLOW METAL
AL	ALUMINUM
PL	PLASTIC LAMINATE
WV	WOOD VENEER
W1	SOLID WOOD TRIM
GL	GLASS
CAA	COLOR ANODIZED ALUMINUM
P	PAINT
SST	STAINLESS STEEL

RE: 17/A3.10 FOR MATERIALS LEGEND

ABBREVIATIONS | NO SCALE | 1

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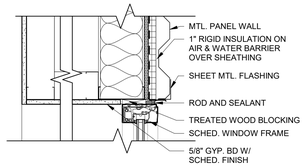
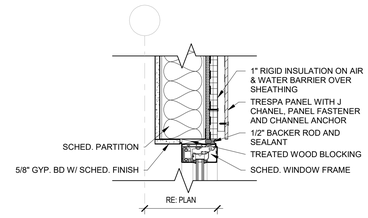
DOOR TYPE, SCHEDULE & DETAILS

100% Construction Document
02.29.2024

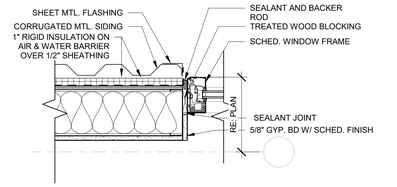
A3.20



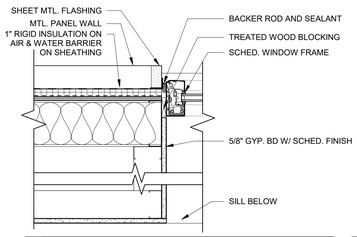
WINDOW HEAD DETAIL @ CLERESTORY | 1 1/2" = 1'-0" | 24



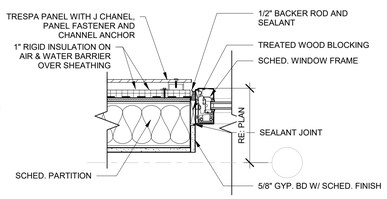
WINDOW HEAD DETAIL @ TRESPA PANEL | 1 1/2" = 1'-0" | 18



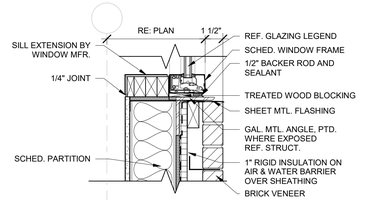
WINDOW JAMB DETAIL @ METAL PANEL | 1 1/2" = 1'-0" | 12



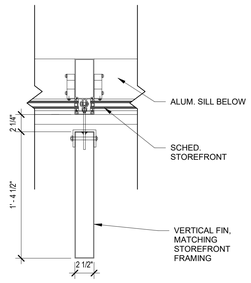
WINDOW JAMB DETAIL @ CLERESTORY | 1 1/2" = 1'-0" | 23



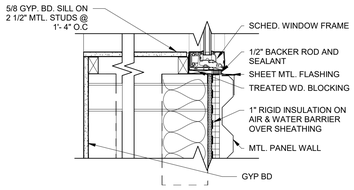
WINDOW JAMB DETAIL @ TRESPA PANEL | 1 1/2" = 1'-0" | 17



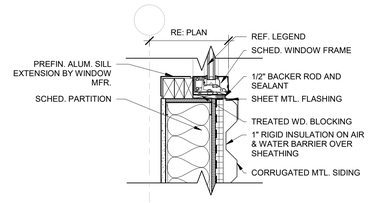
TYP. WINDOW SILL DETAIL @ BRICK | 1 1/2" = 1'-0" | 11



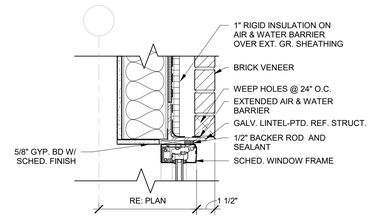
TYP. VERTICAL FIN DETAIL | 1 1/2" = 1'-0" | 28



WINDOW SILL DETAIL @ CLERESTORY | 1 1/2" = 1'-0" | 22



WINDOW SILL DETAIL @ METAL PANEL | 1 1/2" = 1'-0" | 16

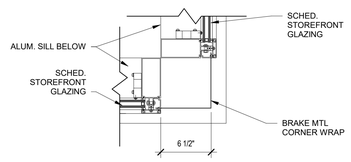


TYP. WINDOW HEAD DETAIL @ BRICK | 1 1/2" = 1'-0" | 10

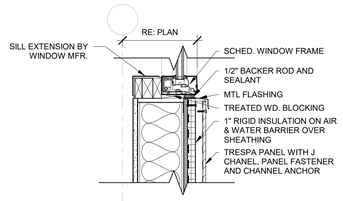
GL-01 : 1" INSULATED CLEAR GLAZING

GL-02 : 3/8" THICK CLEAR TEMPERED GLAZING

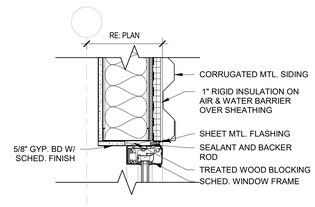
GLAZING LEGEND | NO SCALE | 4



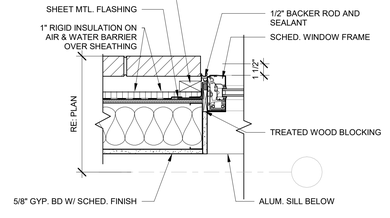
VERTICAL FINS CORNER DETAIL | 1 1/2" = 1'-0" | 27



WINDOW SILL DETAIL @ TRESPA PANEL | 1 1/2" = 1'-0" | 21



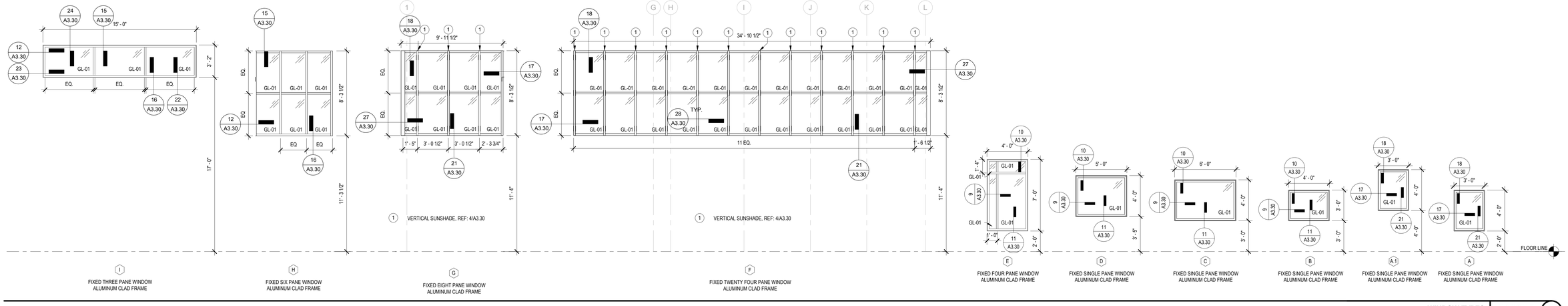
WINDOW HEAD DETAIL @ METAL PANEL | 1 1/2" = 1'-0" | 15



TYP. WINDOW JAMB DETAIL @ BRICK | 1 1/2" = 1'-0" | 9

1. ALL EXTERIOR AND INTERIOR WINDOWS TO BE PREFIN. ALUM. FRAMES, UNLESS NOTED OTHERWISE
2. PROVIDE TEMPERED GLASS WHERE REQUIRED BY THE INTERNATIONAL BUILDING CODE.
3. PROVIDE SILICONE SEALANT OVER BACKER ROD AROUND ALL FRAMES.
4. WINDOWS ARE OLD CASTLE SERIES 3000 THERMAL MULTIPLANE BACK SET OR EQUAL.
5. PROVIDE WINDOW COVERINGS FOR ALL PUNCHED WINDOWS, UNLESS OTHERWISE NOTED.
6. WINDOW SYSTEMS SHALL BE INSTALLED PRIOR TO THE BRICK VENEER.
7. ALL GLASS SHALL HAVE A MINIMUM U FACTOR OF 0.25 AND S.H.G.C OF 0.23
8. ALL EXTERIOR GLAZING SHALL BE IMPACT RESISTANT PER IBC 2021 SEC. 1609.2

WINDOW GENERAL NOTES | NO SCALE | 3



WINDOW TYPES | NO SCALE | 1

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HOUSTON, TX 77057
TBPE FIRM REG.#F-4506

TECHNOLOGY CONSULTANT
TRUE NORTH CONSULTANT GROUP
3408 HILLCREST DR.
WACO, TX 76708

PROJECT #: N032023

DATE ISSUED: 02.29.2024

TDLR #: TABS2024011699

REVISIONS:

NO.	DATE	DESCRIPTION
2	04.12.2024	Addendum #2

FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
FRESNO, TX 77545

WINDOW TYPES & DETAILS

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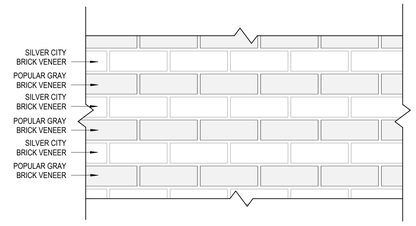
02.29.2024

A3.30



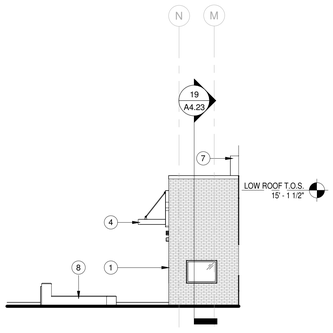
TYP. BRICK PATTERN | 1 1/2" = 1'-0" | 6

1. ALTERNATING BRICK VENEER; POPULAR GRAY AND SILVER CITY ACME BRICK COLORS WITH ROYAL UMBER MORTAR; REF: 6/A4.01
2. HIGH-PRESSURE LAMINATE PANELS: TRESPA METEON UNI COLORS; REF: 1/A4.02
3. SILVER METALLIC CORRUGATED METAL WALL PANELS: MBCI MASTERLINE 16
4. PROTECTIVE COVER REF. SPEC 107300
5. METAL SUNVISER: THEUT GLASS HORIZONTAL SUNSHADES B.O.D.
6. BRICK CONTROL JOINT
7. VERTICAL METAL SUNSHADES: THEUT GLASS CURTAIN WALL VERTICAL FINS B.O.D.
8. BOARD FORMED CONCRETE; REF: LANDSCAPE
9. ALUM. DOWNSPOUT
10. ALUM. GUTTER
11. ALUM LOUVERS; REF: MECH.
12. CAST DEDICATION PLAQUE; REF: 18/G1.11

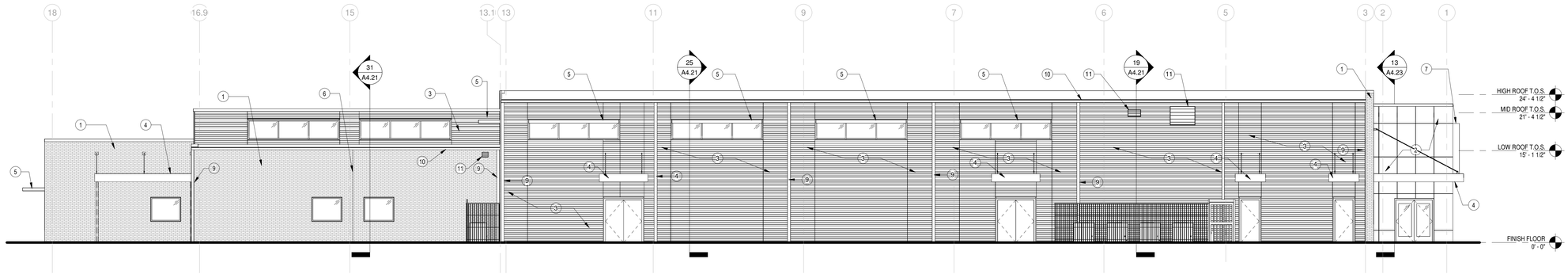
KEY NOTES | NO SCALE | 12

1. REFER TO A3.30 FOR WINDOW TYPES
2. REFER TO A1.00 FOR SITE PLAN NOTES

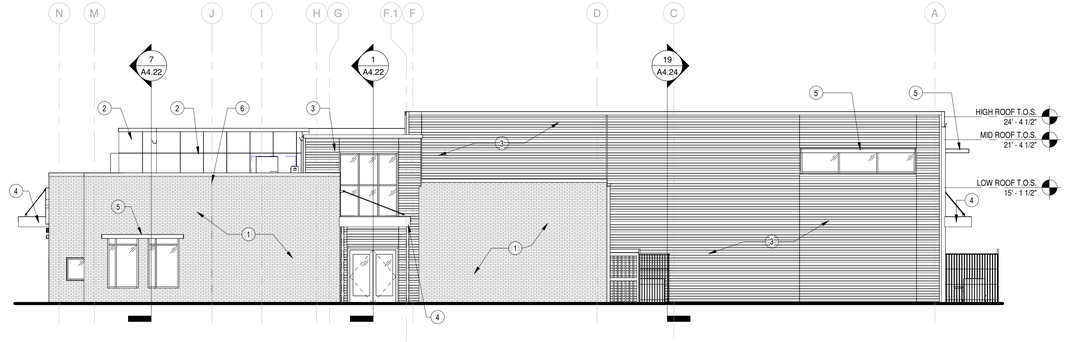
EXTERIOR ELEVATIONS GENERAL NOTES | NO SCALE | 6



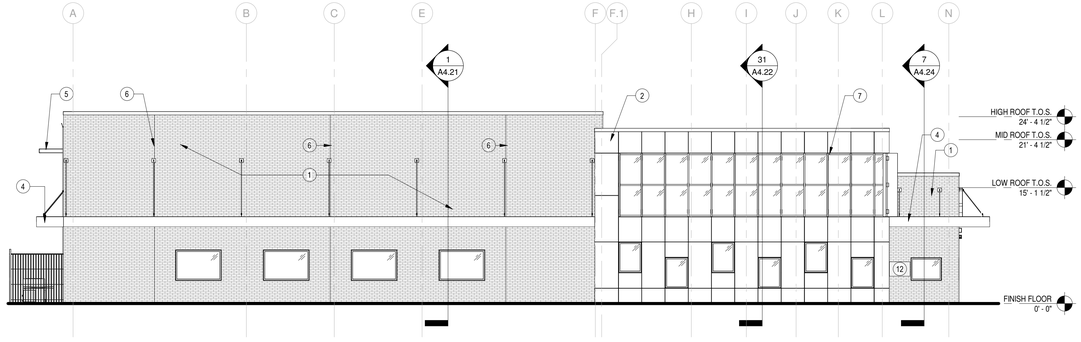
PARTIAL WEST ELEVATION | 1/8" = 1'-0" | 35



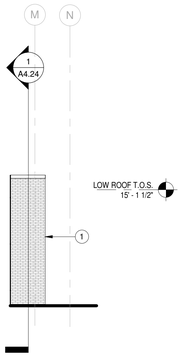
SOUTH ELEVATION | 1/8" = 1'-0" | 5



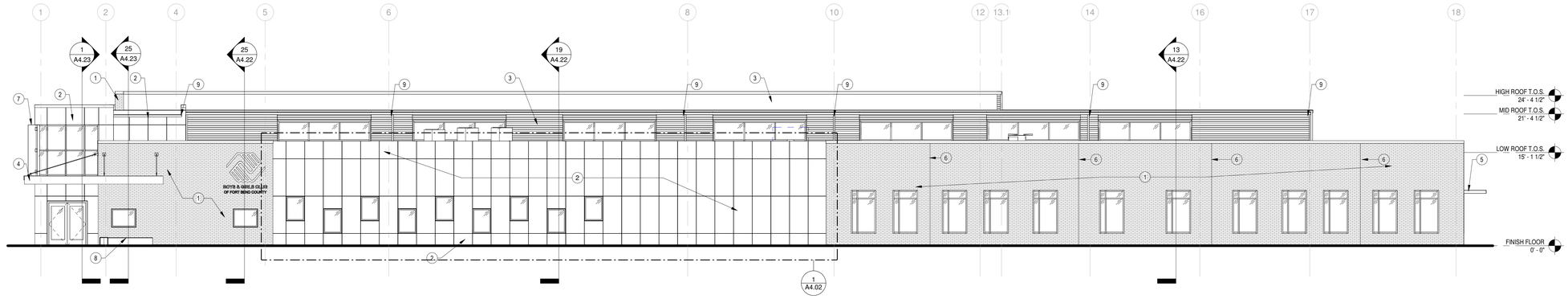
WEST ELEVATION | 1/8" = 1'-0" | 21



EAST ELEVATION | 1/8" = 1'-0" | 3



PARTIAL EAST ELEVATION | NO SCALE | 31



NORTH ELEVATION | 1/8" = 1'-0" | 1

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SPRING, TX 77379

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INFRASTRUCTURE ASSOCIATES
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TBPE FIRM REG.#F-4506

TECHNOLOGY CONSULTANT
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FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
FRESNO, TX 77545

EXTERIOR ELEVATIONS

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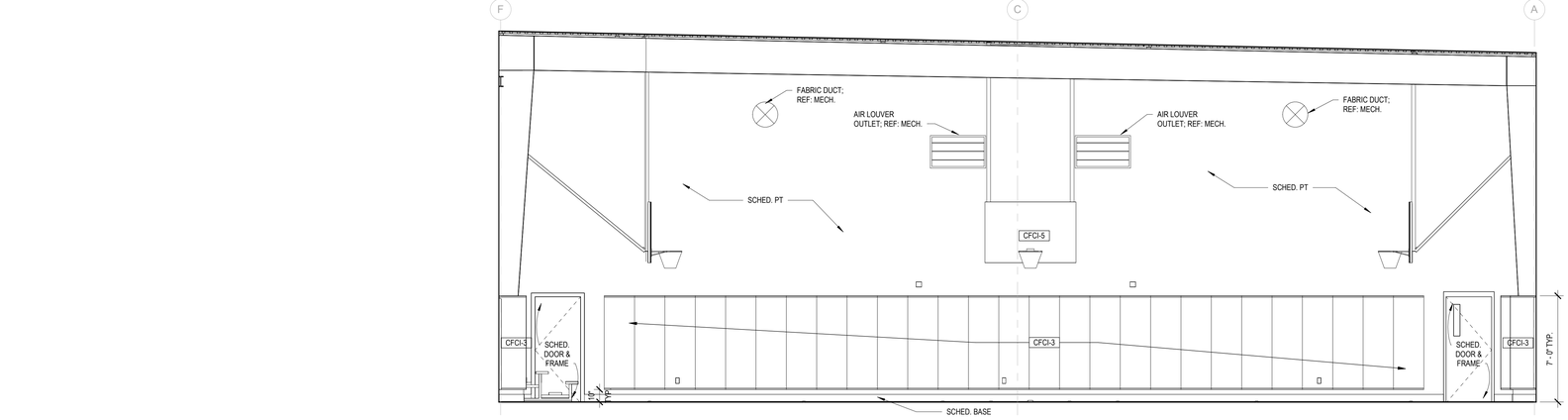
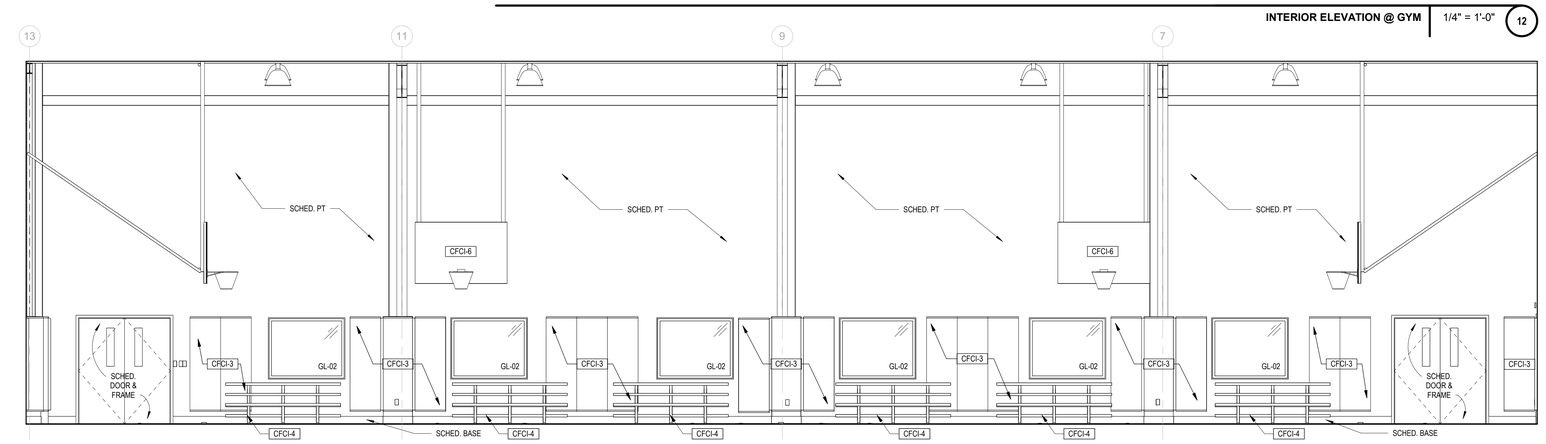
02.29.2024

A4.01



INTERIOR ELEVATION @ GYM | 1/4" = 1'-0" | 12

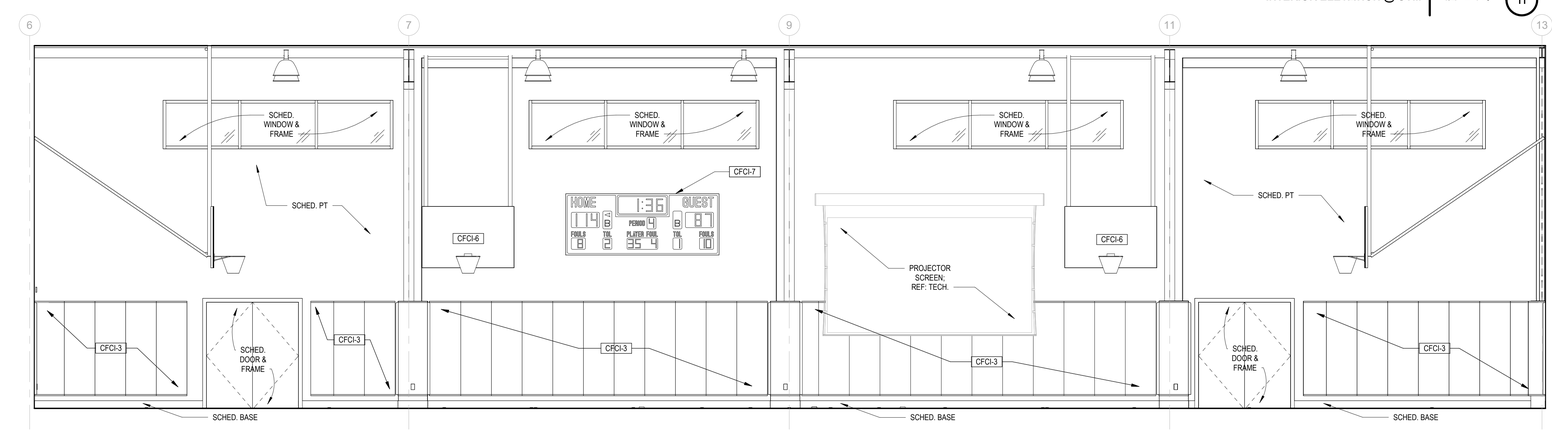


INTERIOR ELEVATION @ GYM | 1/4" = 1'-0" | 11

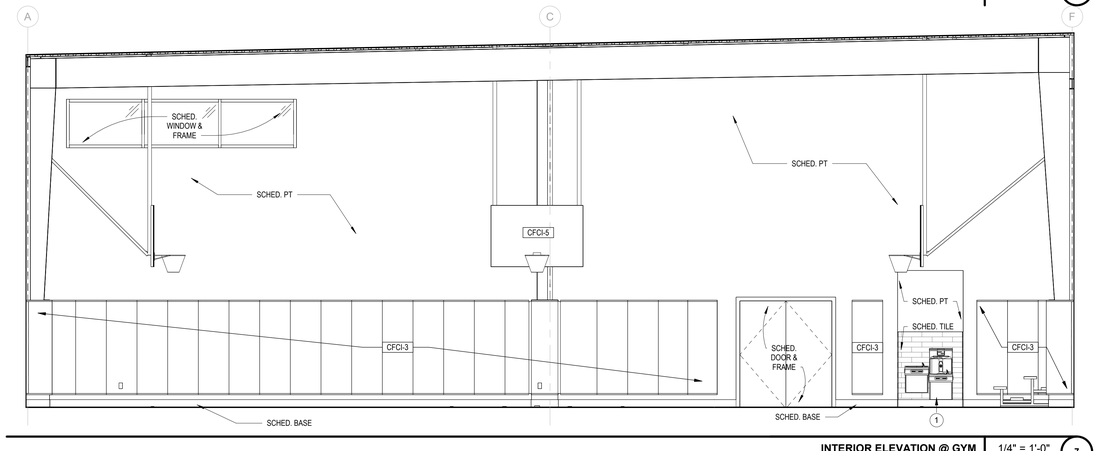
EQUIPMENT SCHEDULE

KEY	DESCRIPTION	BASIS OF DESIGN	MODEL #	QTY	SPECS	INSTALATION NOTES
CFCI-1	TOP LOAD WASHER	WHIRLPOOL	CAE2795FG	1	-	
CFCI-2	DRYER	WHIRLPOOL	WED4950HW	1	-	
CFCI-3	WALL PAD	DRAPER	ECOVISION WALL PAD, DARK ROYAL BLUE	135	116623	
CFCI-4	WIDTH 7' -6" TIP AND ROLL BLEACHERS	HUSSEYSEATING	MAXAM 1; 289 DARK BLUE/CLASSIC WOOD DECK, NO SEAT BACKS	6	126613	QUANITY OF 15 SEATING AREAS MIN. EACH UNIT
CFCI-5	KEVLR OPERABLE BASKETBALL GOAL	DRAPER	EZ FOLD TF-20S W/ 503285	2	116623	
CFCI-6	HAND CRANKED OPERABLE BASKETBALL GOAL	DRAPER	EZ FOLD TF-20S W/ 503286	4	116623	
CFCI-7	SCORE BOARD	SPECTRUM	524ZT	1	-	PROVIDE WD. BLOCKING FOR MOUNTING
CFCI-8	VOLLEYBALL NET	DRAPER	SVS -500021	1	116623	
CFCI-9	8' X 5' WHITEBOARD	CLARIDGE	ASP-58	1	101100	
CFCI-10	WALL MOUNTED TV	SONY	FW-100BZ40J	11	-	O.F.C.I., PROVIDE WD. BLOCKING FOR MOUNTING

EQUIPMENT SCHEDULE | NO SCALE | 5



INTERIOR ELEVATION @ GYM | 1/4" = 1'-0" | 9



INTERIOR ELEVATION @ GYM | 1/4" = 1'-0" | 7

1. ELECTRIC DRINKING FOUNTAIN WITH BOTTLE FILLER, RE: PLUMBING AND SPECS
2. FIRE EXTINGUISHER & CABINET
3. NON-ELECTRIC FOOD HOLDING & TRANSPORT CABINETS; NOT IN SCOPE
4. AED DEFIBRILLATOR; PHILIPS HEARTSTART ONSITE AED, B.O.D.

INTERIOR ELEVATION KEY NOTES | NO SCALE | 2

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FRESNO, TX 77545

INTERIOR ELEVATIONS

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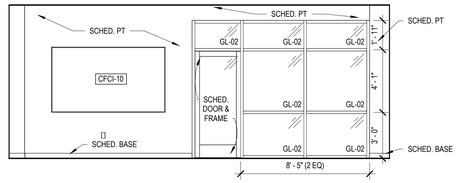
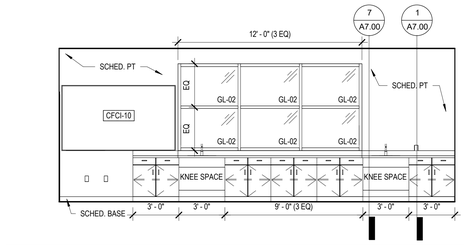
02.29.2024

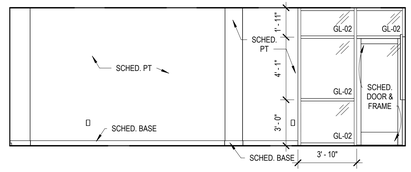
A5.12



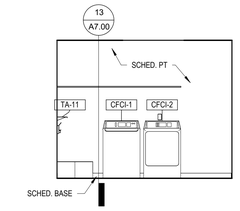
INT. ELEV. @ TEEN ROOM | 1/4" = 1'-0" | 12



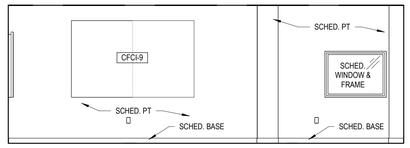
INT. ELEV. @ ARTS & CRAFTS | 1/4" = 1'-0" | 17



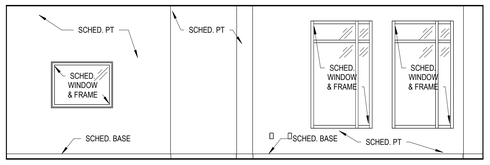
INT. ELEV. @ CONFERENCE ROOM | 1/4" = 1'-0" | 11



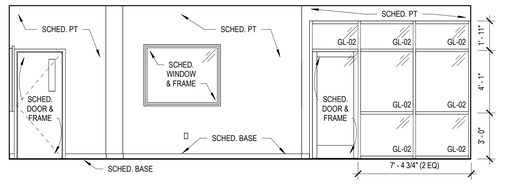
INT. ELEV. @ LAUNDRY | 1/4" = 1'-0" | 16



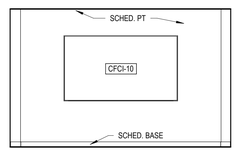
INT. ELEV. @ CONFERENCE ROOM | 1/4" = 1'-0" | 10



INT. ELEV. @ LEARNING CENTER | 1/4" = 1'-0" | 27



INT. ELEV. @ LEARNING CENTER | 1/4" = 1'-0" | 15



INT. ELEV. @ CONFERENCE ROOM | 1/4" = 1'-0" | 9

EQUIPMENT SCHEDULE

KEY	DESCRIPTION	BASIS OF DESIGN	MODEL #	QT.	SPECS	INSTALATION NOTES
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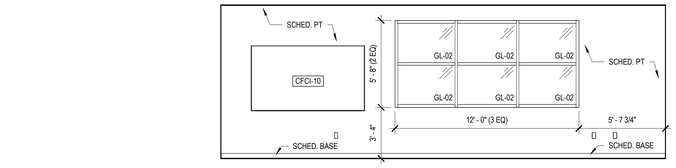
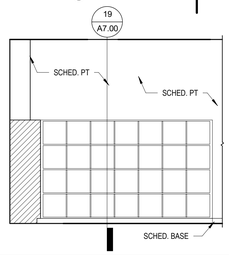
CFCI-2	DRYER	WHIRLPOOL	WED4950HW	1	-	
CFCI-3	WALL PAD	DRAPER	ECOVISION WALL PAD, DARK ROYAL BLUE	13	116623	
CFCI-4	WIDTH 7'-6" TIP AND ROLL BLEACHERS	HUSSEYSEATING	MAXAM 1; 289 DARK BLUE/CLASSIC WOOD DECK, NO SEAT BACKS	6	126613	QUANITY OF 15 SEATING AREAS MIN. EACH UNIT
CFCI-5	KEYED OPERABLE BASKETBALL GOAL	DRAPER	EZ FOLD TF-20S W/ 503285	1	116623	
CFCI-6	HAND CRANKED OPERABLE BASKETBALL GOAL	DRAPER	EZ FOLD TF-20S W/ 503286	4	116623	
CFCI-7	SCORE BOARD	SPECTRUM	5242T	1	-	PROVIDE WD. BLOCKING FOR MOUNTING
CFCI-8	VOLLEYBALL NET	DRAPER	SVS -500021	1	116623	
CFCI-9	8' X 5' WHITEBOARD	CLARIDGE	ASP-58	1	101100	
CFCI-10	WALL MOUNTED TV	SONY	FW-100BZ40J	1	-	O.F.C.I. PROVIDE WD. BLOCKING FOR MOUNTING

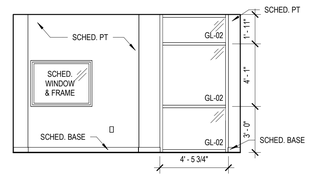
EQUIPMENT SCHEDULE | NO SCALE | 3



INT. ELEV. @ LEARNING CENTER | 1/4" = 1'-0" | 20



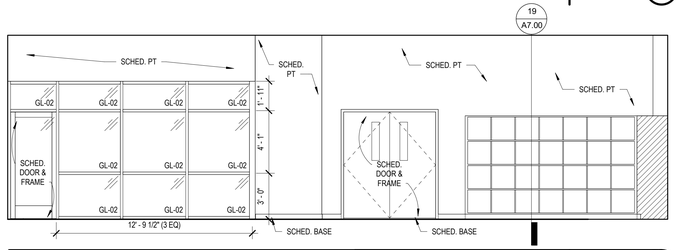
INT. ELEV. @ BACKPACK STORAGE | 1/4" = 1'-0" | 14



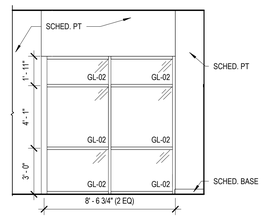
INT. ELEV. @ OFFICE | 1/4" = 1'-0" | 8

1. ELECTRIC DRINKING FOUNTAIN WITH BOTTLE FILLER, RE: PLUMBING AND SPECS
2. FIRE EXTINGUISHER & CABINET
3. NON-ELECTRIC FOOD HOLDING & TRANSPORT CABINETS; NOT IN SCOPE
4. AED DEFIBRILLATOR; PHILIPS HEARTSTART ONSITE AED, B.O.D.

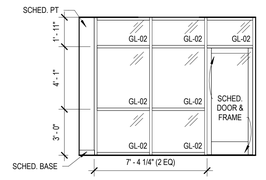
INTERIOR ELEVATION KEY NOTES | NO SCALE | 2



INT. ELEV. @ GRAME ROOM & BACKPACK STORAGE | 1/4" = 1'-0" | 19



INT. ELEV. @ GAME ROOM | 1/4" = 1'-0" | 13



INT. ELEV. @ OFFICE | 1/4" = 1'-0" | 7

1. REFER TO A3.10 FOR SCHEDULED MATERIALS & FINISHES
2. ALL SCHEDULED FLOOR FINISHES ARE TO BE INSTALLED BENEATH ALL SCHEDULED CASEWORK & EQUIPMENT, NO EXCEPTIONS.
3. FOR MOUNTING HEIGHTS AND DIMENSIONS REF: SHEET A0.11 & A0.12
4. REF: TO A3.20 FOR DOOR SCHEDULE & DOOR TYPES
5. REF: TO A3.30 FOR WINDOW TYPES

INTERIOR ELEVATION GENERAL NOTES | NO SCALE | 1

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INTERIOR ELEVATIONS

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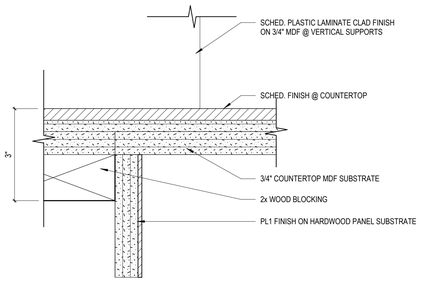
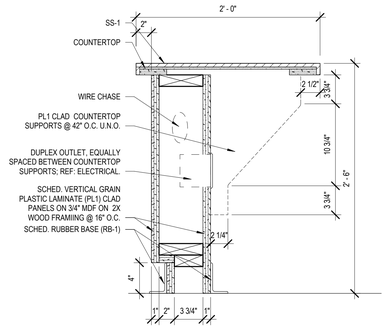
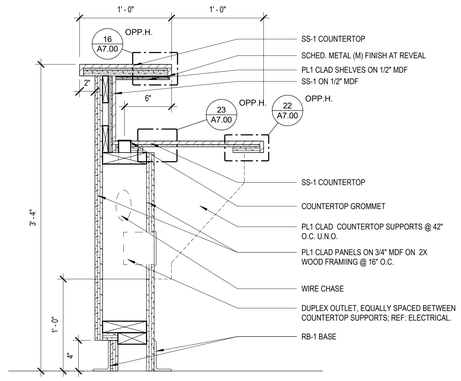


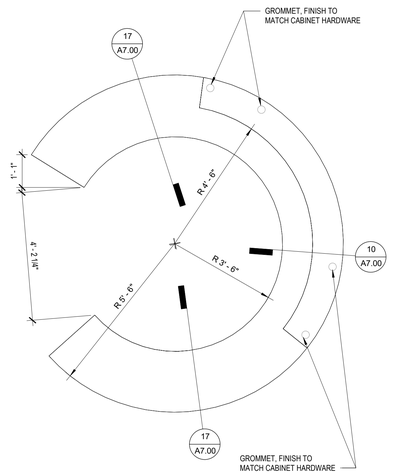
FRONT DESK COUNTER DETAIL | 6" = 1'-0" | 23



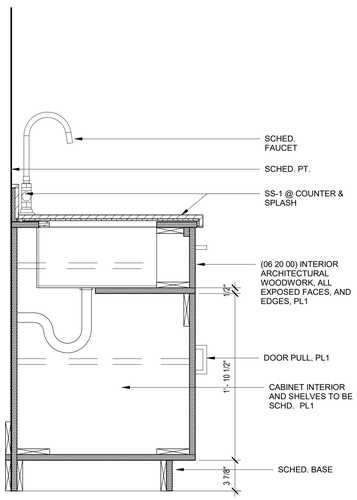
CASEWORK SECTION @ CIRCULATION DESK | 1 1/2" = 1'-0" | 17



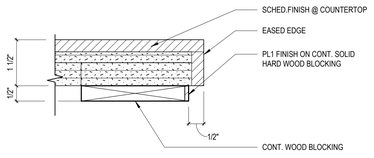
CASEWORK SECTION @ CIRCULATION DESK | 1 1/2" = 1'-0" | 10



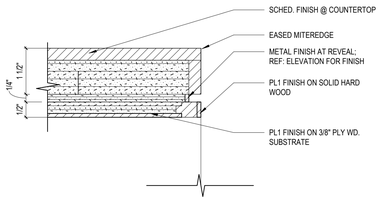
ENLARGED CIRCULATION DESK PLAN | 1/2" = 1'-0" | 4



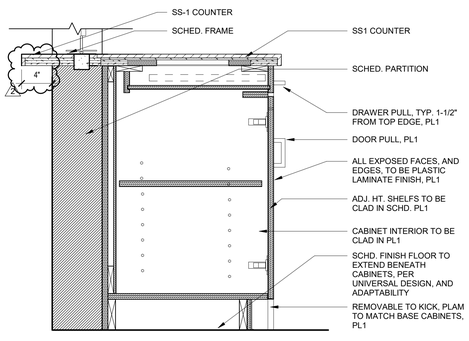
CASEWORK SECTION @ SINK | 1 1/2" = 1'-0" | 33



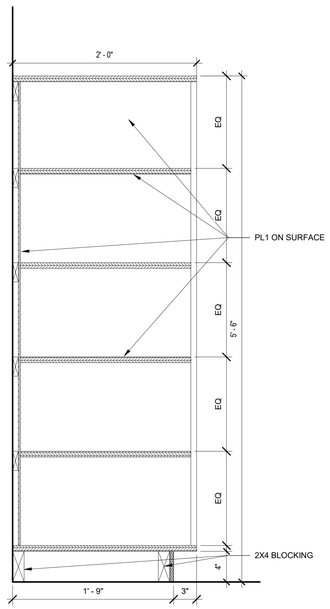
FRONT DESK COUNTER DETAIL | 6" = 1'-0" | 22



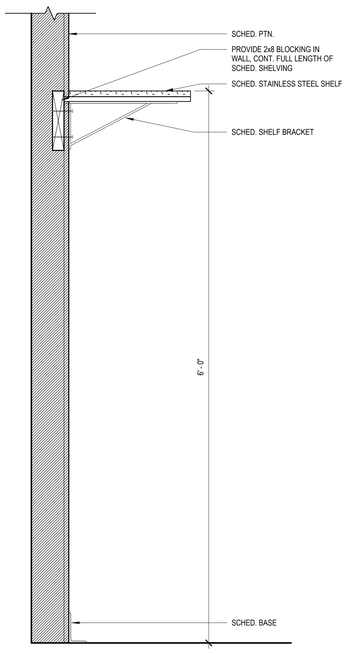
FRONT DESK COUNTER DETAIL | 6" = 1'-0" | 16



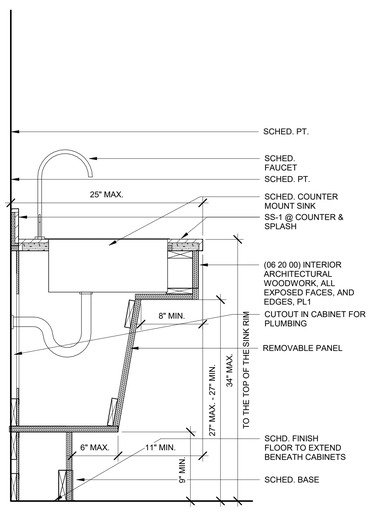
CASEWORK SECTION @ BASE CABINET @ WALL OPENING | 1 1/2" = 1'-0" | 31



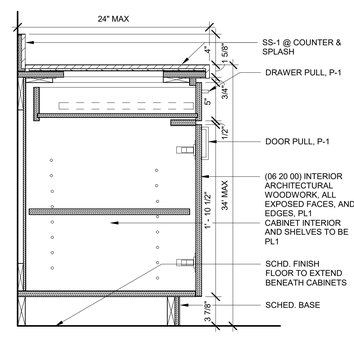
CASEWORK SECTION @ TALL SHELVES | 1 1/2" = 1'-0" | 19



CASEWORK SECTION @ SHELF | 1 1/2" = 1'-0" | 13



CASEWORK SECTION @ TYP. SINK CASEWORK | 1 1/2" = 1'-0" | 7



CASEWORK SECTION @ TYP. BASE CABINET | 1 1/2" = 1'-0" | 1

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MILLWORK DETAILS

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A7.00

EQUIPMENT SCHEDULE

KEY	DESCRIPTION	BASIS OF DESIGN	MODEL #	QTY.	SPECS	INSTALATION NOTES
CFCI-1	TOP LOAD WASHER	WHIRLPOOL	CAE2795FG	1	-	
CFCI-2	DRYER	WHIRLPOOL	WED4950HW	1	-	
CFCI-3	WALL PAD	DRAPER	ECOVISION WALL PAD; DARK ROYAL BLUE	135	116623	
CFCI-4	WIDTH 7'-6" TIP AND ROLL BLEACHERS	HUSSEYSEATING	MAXAM 1; 289 DARK BLUECLASSIC WOOD DECK, NO SEAT BACKS	6	126613	QUANITY OF 15 SEATING AREAS MIN. EACH UNIT
CFCI-5	KEYED OPERABLE BASKETBALL GOAL	DRAPER	EZ FOLD TF-20S W/ 503286	2	116623	
CFCI-6	HAND CRANKED OPERABLE BASKETBALL GOAL	DRAPER	EZ FOLD TF-20S W/ 503286	4	116623	
CFCI-7	SCORE BOARD	SPECTRUM	5242T	1	-	PROVIDE WD. BLOCKING FOR MOUNTING
CFCI-8	VOLLEYBALL NET	DRAPER	SVS -500021	1	116623	
CFCI-9	8' X 5' WHITEBOARD	CLARIDGE	ASP-58	1	101100	
CFCI-10	WALL MOUNTED TV	SONY	FW-100BZ40J	11	-	O.F.C.I. PROVIDE WD. BLOCKING FOR MOUNTING

EQUIPMENT SCHEDULE | NO SCALE | 24

(1) RECESSED FLOOR SOCKET FLOAT PLATE FOR VOLLEYBALL NET; DRAPER FLOOR COVER PLATES: B.O.D.

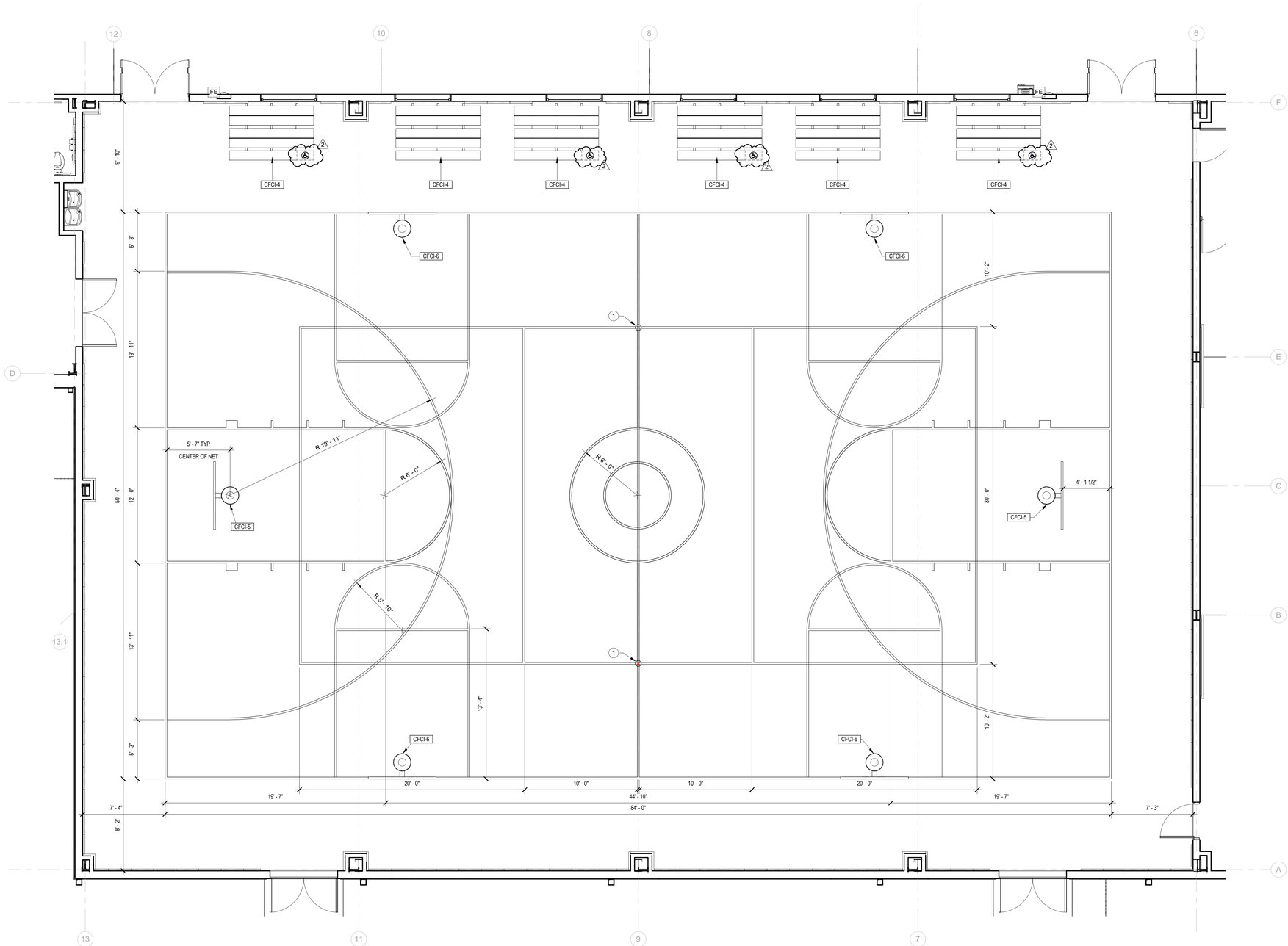
COURT LAYOUT KEY NOTES | NO SCALE | 18

DISCIPLINE	LINE PRIORITY	COLOR	LINE THICKNESS
REC BASKETBALL	1	DARK BLUE	2"
VOLLEYBALL	2	WHITE	2"

FLOOR STRIPING PLAN LEGEND | NO SCALE | 12

1. CONFIRM ALL DIMENSIONS AND STRIPING LAYOUT WITH OWNER PRIOR TO INSTALLATION
2. ALL DIMENSIONS ARE TO OUTSIDE OF LINE, U.N.O.
3. IF LINES OVERLAP, LINE SHALL BE BLACK.
4. INCLUDE BOYS & GIRLS CLUB LOGO IN CENTER COURT AS NOTED, FINAL DESIGN TO BE CONFIRMED BY OWNER

FLOOR STRIPING NOTES | NO SCALE | 6



COURT LAYOUT PLAN | 1/4" = 1'-0" | 1

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COURT LAYOUT PLAN

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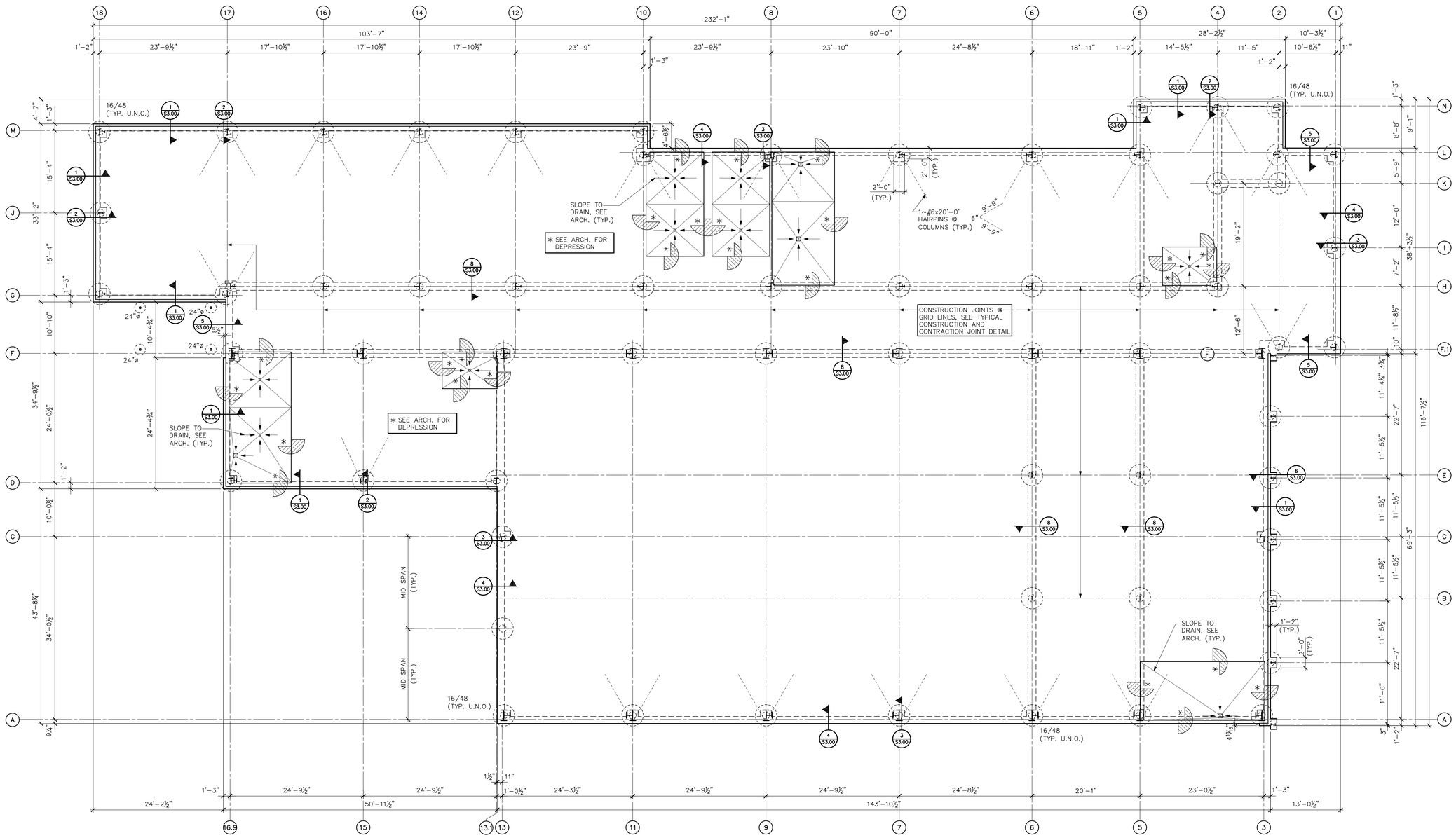
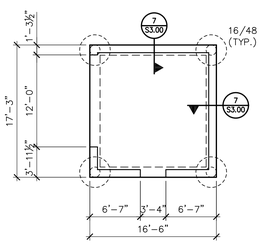


FOUNDATION PLAN
SCALE1: 1/8"=1'-0"



DUMPSTER FOUNDATION PLAN
SCALE1: 1/8"=1'-0"

DESIGN CRITERIA

ROOF LIVE LOAD:	20 PSF
MECH. ROOM LIVE LOAD:	40 PSF + WEIGHT OF EQUIPMENT
CLASSROOM LIVE LOAD:	40 PSF
CORRIDOR ASSEMBLY LIVE LOAD:	100 PSF
WIND LOAD:	148 MPH (ULTIMATE, 2021 IBC, ASCE 7-16)
EXPOSURE:	B
RISK CATEGORY:	III
SITE SOIL CLASS:	D
SEISMIC DESIGN CATEGORY:	A
S_S= 0.065	F_A = 1.6
S_1= 0.037	F_V = 2.4
S_{01} = 0.06	PGA_M = 0.051
T_L = 12	F_{PGA} = 1.6
S_{DS}=0.07	Ie = 1.25
	Cv = 0.7
ALLOWABLE BEARING CAPACITY:	4500 psf @ 12' BELOW EXIST GRADE (SEE ATL REPORT #G23-161)

STRUCTURAL SYSTEMS SUMMARY

GRAVITY:	PRE-ENGINEERED METAL FRAMES BY OTHERS.
LATERAL:	PRE-ENGINEERED METAL FRAMES BY OTHERS.
WIND-BEARING WALLS:	STEEL STUD CURTAIN WALLS BY OTHERS.
FOUNDATIONS:	GRADE BEAMS ON UNDERREAMED PIERS W/ SLAB ON GRADE.

SLAB NOTE

6" CONC. SLAB ON 10 MIL POLY FILM ON 2" MAX. SAND FILL. REINFORCE WITH #4 @ 18"c.c. IN CENTER OF SLAB. PREPARE BENEATH THE SLAB AT LEAST A 2-FOOT THICK BUFFER OF PROPERLY COMPACTED SELECT FILL. EXTEND BUFFER 5' BEYOND BUILDING PERIMETER. FOR SUBGRADE PREPARATION REFER TO GEOTECHNICAL INVESTIGATION BY ASSOCIATED TESTING LABORATORIES, REPORT #G23-161.

SLAB SIDEWALK SLAB NOTE

4" CONC. SLAB ON 2" MAX. SAND FILL. REINF. W/ #3 @ 18"c.c. IN CENTER OF SLAB.

FOOTING/COLUMN NOTE

FOOTINGS SHALL BE CENTERED UNDER COLS AND CENTERED UNDER GRADE BEAMS WHERE THERE ARE NO COLUMNS UNLESS NOTED OTHERWISE.

FIELD VERIFICATION NOTE

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO FABRICATION OR CONSTRUCTION.
2. CONTRACTOR SHALL VERIFY AND NOTIFY ENGINEER OF EXISTING CONDITIONS IN NEED OF REVIEW AND POSSIBLE MODIFICATION PRIOR TO FABRICATION.

GENERAL NOTES

1. ALL CONCRETE SHALL TEST 4000 PSI AT 28 DAYS.
2. ALL CONCRETE REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60.
3. DETAILING AND FABRICATION OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL BE IN ACCORDANCE WITH ACI-315 LATEST EDITION.
4. LAP ALL CONTINUOUS REINFORCING BARS 50 DIAMETERS AT SPLICES, TEES, AND CORNERS.
5. THE USE OF HEAT TO FACILITATE THE BENDING OF REINFORCING BARS WILL NOT BE PERMITTED.
6. NO ENGINEERING DRAWING MAY BE REPRODUCED FOR USE AS SHOP DRAWINGS.
7. CONTRACTOR SHALL COORDINATE ALL LOCATIONS OF ALL ANCHOR BOLTS AND OPENINGS FOR MECHANICAL, PIPING, AND ELECTRICAL EQUIPMENT WITH THE RESPECTIVE ENGINEERING AND VENDOR DRAWINGS.

2 NOTE:
APPROPRIATE LOAD COMBINATIONS PER 2021 IBC SHALL BE APPLIED IN DETERMINING LOADS.

METAL BUILDING NOTES

1. METAL BUILDING MANUFACTURER SHALL PROVIDE FOOTING REACTIONS TO ENGINEER FOR REVIEW.
2. ENGINEER WILL REVIEW FOOTING DESIGN AND REVISE IF REQUIRED BASED ON THE LOAD REACTIONS PROVIDED.
3. METAL BUILDING SHALL BE DESIGNED TO LATERALLY SUPPORT ITSELF. LATERAL BUILDING DRIFT SHALL NOT EXCEED H/400.
4. WIDTH OF COLUMN FLANGES IS LIMITED TO 8"

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FOUNDATION PLAN

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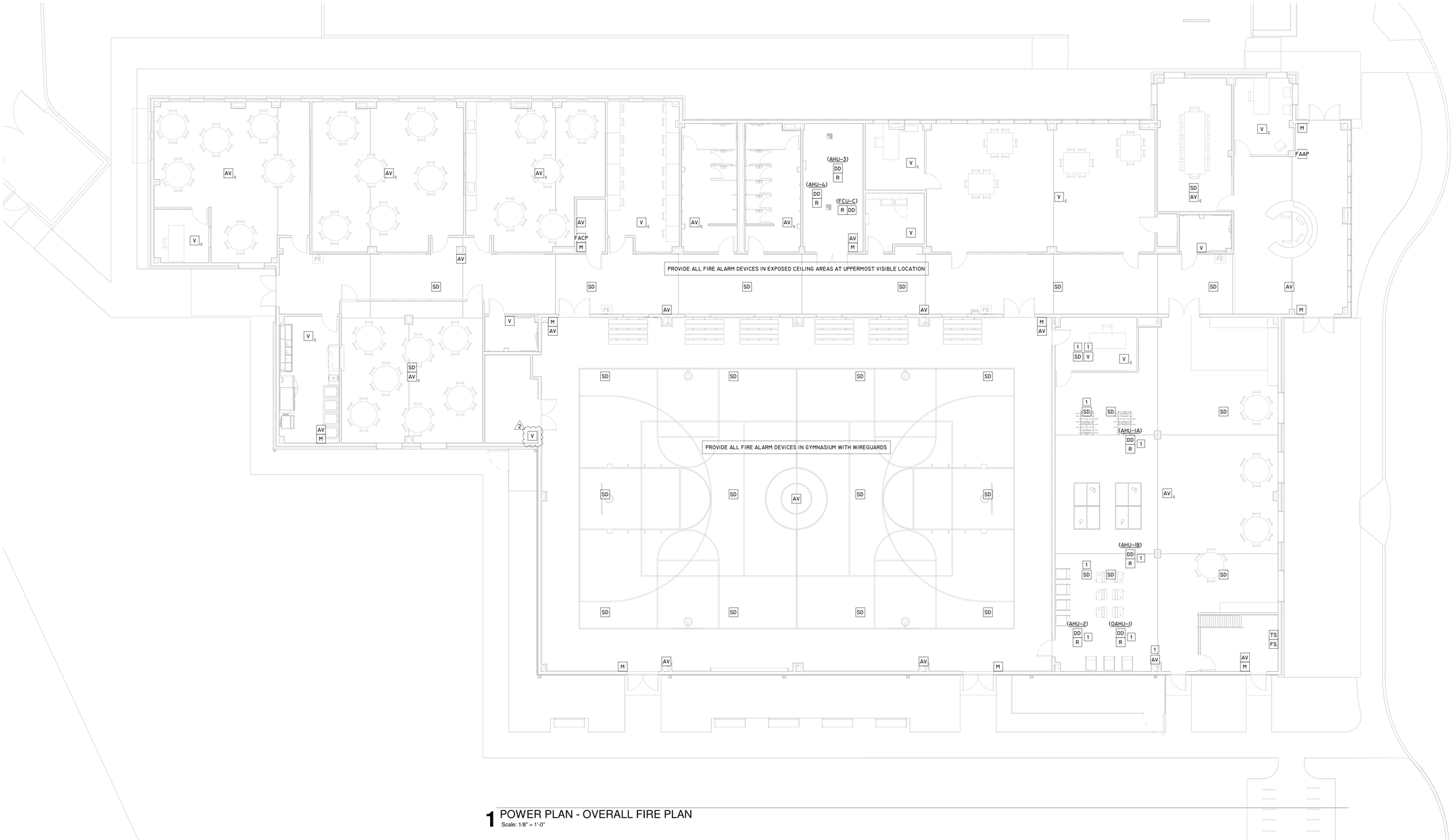
LOUIS A. HAMILTON 81477 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

Apr 03, 2024

S1.01

KEYED NOTE LEGEND

1	PROVIDE ADDITIONAL 1"C FROM THIS LOCATION TO GREASE TRAP WITH PULL STRING FOR SENSOR CABLING (DIVISION 21 FURNISHED, DIVISION 26 INSTALLED). COORDINATE WITH GREASE TRAP VENDOR FOR TERMINATION REQUIREMENTS.



1 POWER PLAN - OVERALL FIRE PLAN
Scale: 1/8" = 1'-0"

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FIRE ALARM PLAN

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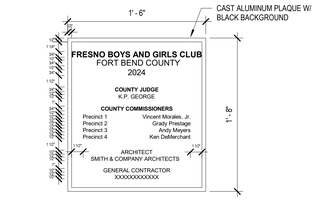
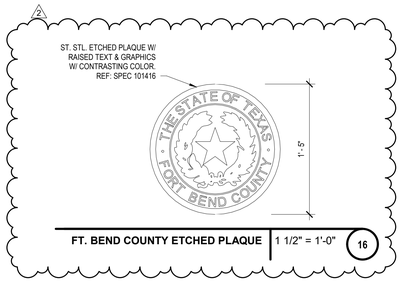
STATE OF TEXAS
SEVAK KALANTARIANS
97498
LICENSED
PROFESSIONAL ENGINEER
2024-02-29 #F-4506

E4.01

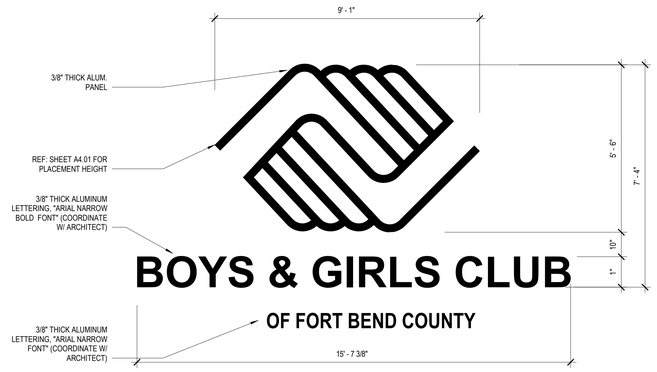
Infrastructure Associates



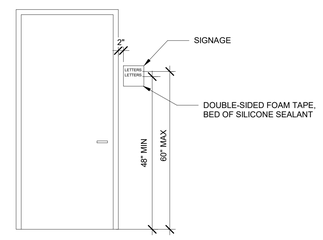
CAST DECICATION PLAQUE | 1 1/2" = 1'-0" | 18



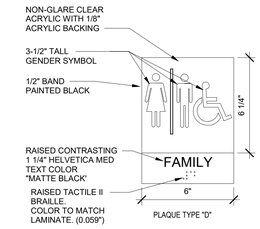
FT. BEND COUNTY ETCHED PLAQUE | 1 1/2" = 1'-0" | 16

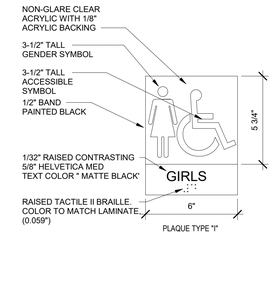


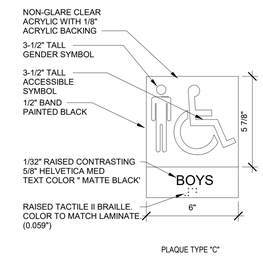
EXTERIOR GRAPHIC DETAILS | 1/4" = 1'-0" | 15

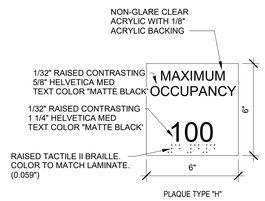


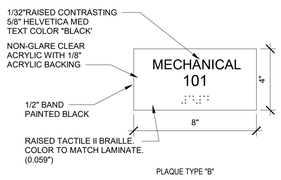
GRAPHIC MOUNTING DETAIL | 1/2" = 1'-0" | 13

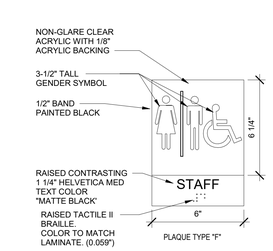


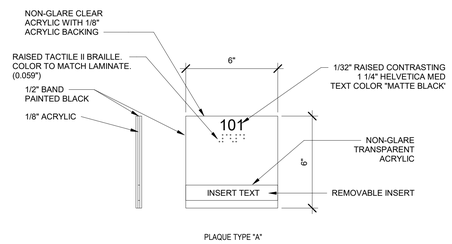












GRAPHIC DETAILS | 3" = 1'-0" | 1

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LJA ENGINEERING
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PROJECT #: N032023
DATE ISSUED: 02.29.2024
TDLR #: TABS2024011699

REVISIONS:

NO.	DATE	DESCRIPTION
2	04.12.2024	Addendum #2

FRESNO BOYS & GIRLS CLUB
1031 W SYCAMORE RD
FRESNO, TX 77545

GRAPHIC DETAILS

100% Construction Document
02.29.2024

G1.11