ADDENDUM NO. 03

September 21, 2026

To Drawings and Specifications dated September 10, 2026.

TOMBALL HIGH SCHOOL ATHLETIC IMPROVEMENTS

Tomball Independent School District

Prepared by: DIG Engineers
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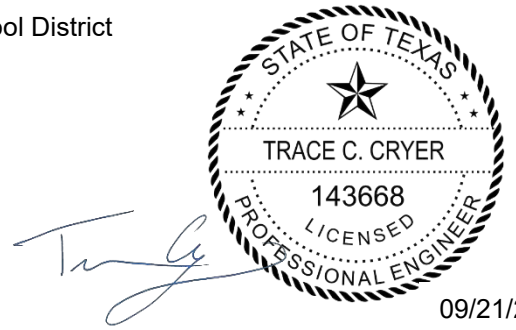
PBK Project Number: 250515



09/21/2026

Notice to Proposers:

A. Receipt of this Addendum shall be acknowledged on the Proposal Form.

B. This Addendum forms part of the Contract documents for the above-referenced project and shall be incorporated integrally therewith.

C. Each proposer shall make necessary adjustments and submit his proposal with full knowledge of all modifications, clarifications, and supplemental data included therein. Where provisions of the following supplemental data differ from those of the original Contract Documents, this Addendum shall govern.

Specifications:

Item No. 1 **06 11 00 – WOOD FRAMING**
Add this specification in its entirety. Please see the attached.

Item No. 2 **06 17 53 – PREFABRICATED METAL-PLATE-CONNECTED WOOD TRUSSES**
Add this specification in its entirety. Please see the attached.

Item No. 3 **31 63 29 – DRILLED CONCRETE PIERS AND SHAFTS**
Add this specification in its entirety. Please see the attached.

Item No. 4 **05 31 23 – STEEL ROOF DECKING**
Remove this specification in its entirety.

Item No. 5 **08 91 00 – Fixed Louvers**
Add this specification in its entirety.

Item No. 6 **11 68 53 – Outdoor Baseball & Softball Equipment**
Add this specification in its entirety.

Item No. 7 **22 11 16 – Domestic Water Piping**
Revise section 2.6 to indicate Nibco shall be only the approved manufacturer for valves as per Tomball ISD preferences.

Item No. 8 **22 30 00 – Plumbing Equipment**
Revise sections 2.5, 2.25, and 2.27 to reflect approved manufacturers per Tomball ISD preferences.

Item No. 9 **22 40 00 – Plumbing Fixtures**
Revise sections 2.1, 2.2, and 2.24 to reflect approved manufacturers per Tomball ISD preferences.

Item No. 10 **23 37 23 – HVAC GRAVITY VENTILATORS**
Add spec in its entirety.

Item No. 11 **27 05 00 – COMMON WORK RESULTS FOR COMMUNICATIONS**
Updated Spec Header. Update spec in its entirety.

Item No. 12 **27 10 00 – CATEGORY 6 STRUCTURED CABLING SYSTEM**
Update spec in its entirety.

Drawings:

Item No. 13 **G-003 Life Safety Plan**
Replace this sheet in its entirety. Please see the attached.

Item No. 14 **ASD 102 – Baseball & Softball Field Demo Site Plan**
Replace this sheet in its entirety. Please see the attached.

Item No. 15 **AS 102 Baseball & Softball Field Site Plan**
Replace this sheet in its entirety. Please see the attached

Item No. 16 **AS 601 – Entry Gate Details Alt #1**
Replace this sheet in its entirety. Please see the attached.

Item No. 17 **A 101A – Baseball Bleacher – Floor Plan**
Replace this sheet in its entirety. Please see the attached.

Item No. 18 **A 101B – Softball Bleacher – Floor Plan**
Replace this sheet in its entirety. Please see the attached.

Item No. 19 **A 101C – Restroom Expansion Floor Plan & Details ALT #4**
Replace this sheet in its entirety. Please see the attached.

Item No. 20 **CA 101 – Site Plan**
Replace this sheet in its entirety. Please see the attached.

Item No. 21 **CA 201 – Drainage & Utility Plan**
Replace this sheet in its entirety. Please see the attached.

Item No. 22 **CA301 – Paving & Grading Plan**
Replace this sheet in its entirety. Please see the attached.

Item No. 23 **M-101 Mechanical Plan – Restroom A101**
Revise sheet in its entirety.

Item No. 24 **M-201 Mechanical Roof Plan – Restroom A101**
Add sheet in its entirety.

Item No. 25 **M-601 Mechanical Schedule & Details**
Electric Unit Heater schedule updated.
HVAC Gravity Ventilators Schedule added to sheet.
Detail 3 changed to “Roof mounted relief hood detail” to accommodate change in restroom exhaust discharge location.

Item No. 26 **ES-104 – ELECTRICAL SITE PLAN - BASEBALL**
Added keynote #10.

Item No. 27 **ES-105 – ELECTRICAL SITE PLAN - SOFTBALL**
Added keynote #11.

Item No. 28 **ES-106 – ELECTRICAL SITE PLAN – SOFTBALL, BASEBALL PRESSBOX & CONCESSIONS**
Added power and associated electrical equipment for motorized overhead doors.
Revised power and disconnect size for revised EUH-01.
Added power and disconnect for added EUH-02.
Revised power for revised EF-01.

Item No. 29 **E-701 – ELECTRICAL PANEL SCHEDULES**
Revised circuits #21, #23, and #25 in existing panel ‘HA’.

Item No. 30 **E-702 – ELECTRICAL PANEL SCHEDULES**
Revised circuits #2, #30, and #31 in existing panel ‘LB’.

Item No. 31 **PS-101 – PLUMBING SITE PLAN**
Clarify that access panel location and size at water heater suspended above ceiling shall be dictated by the Architect. Refer to the Architecture drawings for access panel.

Item No. 32 **PS-101 – PLUMBING SITE PLAN**
Clarify that access panel location and size at water heater suspended above ceiling shall be dictated by the Architect. Refer to the Architecture drawings for access panel.

Item No. 33 **TS-102 - TECHNOLOGY SITE PLAN - BASEBALL**
Modified keyed notes 9 – 13.

Item No. 34 **TS-103 - TECHNOLOGY SITE PLAN -SOFTBALL**
Modified keyed notes 9 – 13.

END OF ADDENDUM NUMBER 03

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SECTION 06 11 00 – WOOD FRAMING

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes labor, materials, equipment, and services necessary for the complete installation of wood framing, including but not limited to:
   1. Dimension lumber framing.
   2. Engineered wood products, including LVL, PSL, LSL, and prefabricated headers.
   3. Wood trusses and joists.
   4. Blocking, bridging, nailers, and miscellaneous framing accessories.
   5. Shear walls and structural wood sheathing associated with framing.

B. Related Sections:
   1. 06 05 73 – Wood Treatment.
   2. 06 16 00 – Sheathing.
   3. 03 30 00 – Cast-in-Place Concrete (sill plates, anchorage).
   4. 09 22 16 – Non-Structural Metal Framing (interface coordination).
   5. 07 27 00 – Air Barriers (framing backup/support).

1.2 REFERENCES

A. ANSI A190.1 – Structural Glued Laminated Timber.

B. APA – The Engineered Wood Association, standards for plywood and OSB.

C. AWC – National Design Specification (NDS) for Wood Construction.

D. ASTM D1761 – Mechanical Fasteners in Wood.

E. PS 1 – Structural Plywood.

F. PS 2 – Performance Standard for Wood-Based Structural-Use Panels.

1.3 SUBMITTALS

A. Product Data:
   1. Engineered wood products.
   2. Pressure-treated lumber certification.
   3. Metal connectors and fasteners.

B. Shop Drawings:
   1. Framing layouts where not shown in structural drawings.
   2. Prefabricated truss shop drawings sealed by a licensed engineer.

C. Certificates:
   1. Moisture content certification for kiln-dried lumber.
   2. Treatment certificates for preservative-treated and fire-retardant-treated wood.

D. Quality Assurance Submittals:
1. Installer qualifications, if required.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable building code requirements

B. Grade Stamps: Lumber and engineered wood products shall bear identification of approved grading agencies.

C. Installer Qualifications: Minimum 3 years experience in comparable wood framing work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original packaging with identification labels intact.

B. Store lumber elevated above ground, protected from moisture, dirt, and deformation.

C. Protect engineered wood products from prolonged exposure to weather.

1.6 COORDINATION

A. Coordinate layout with mechanical, electrical, and plumbing systems.

B. Verify anchor bolt locations and foundation elevations prior to installation.

PART 2 – PRODUCTS

2.1 DIMENSION LUMBER

A. Framing Lumber**:**

1. Species/Grade: SPF, Douglas Fir–Larch, or Southern Pine; No. 2 or better unless noted otherwise.

2. Moisture Content:
   a. Interior framing: Maximum 19%.
   b. Pressure-treated lumber: Maximum 19% unless MC-15 specified.

B. Pressure-Treated Lumber:
1. Treatments: Alkaline copper quaternary (ACQ), MCA, or as noted.
2. Use at sill plates, contact with concrete, or as indicated.

2.2 ENGINEERED WOOD PRODUCTS

A. Laminated Veneer Lumber (LVL): In accordance with manufacturer's specifications and structural drawings.

B. Parallel Strand Lumber (PSL) and Laminated Strand Lumber (LSL): As required.

C. Prefabricated wood I-joists:
1. Web: OSB meeting PS 2.
2. Flange: Solid sawn lumber or LVL.

2.3 WOOD SHEATHING (STRUCTURAL)

A. Plywood: APA Rated Sheathing, Exposure 1, meeting PS 1.

B. Oriented Strand Board (OSB): APA Rated Sheathing, Exposure 1, meeting PS 2.

C. Thickness: As indicated on drawings.

2.4 ACCESSORIES

A. Fasteners:
1. Nails per ASTM F1667; hot-dipped galvanized where exposed or used with treated lumber.
2. Screws: Structural wood screws where noted.

B. Metal Connectors:
1. Simpson Strong-Tie, MiTek, or equivalent.
2. Finish: G90 galvanized or as required.

C. Adhesives:
1. APA AFG-01 or ASTM D3498 compliant.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify foundation dimensions, elevations, and anchor bolt locations prior to framing.

B. Do not begin work until unsatisfactory conditions are corrected.

3.2 INSTALLATION – GENERAL

A. Install wood framing in accordance with the NDS, manufacturer's recommendations, and approved shop drawings.

B. Set framing members true to line, level, plumb, and at correct spacing.

3.3 FRAMING INSTALLATION

A. Wall Framing:
1. Stud spacing as indicated, typically 16 in. or 24 in. o.c.
2. Provide double top plates; lap joints a minimum of 24 in.

B. Floor Framing:
1. Install joists with proper bearing and end nailing.
2. Provide bridging or blocking per design.

C. Roof Framing:
1. Install rafters, trusses, and ridge members as indicated.
2. Bracing per truss manufacturer and structural drawings.

3.4 SHEATHING INSTALLATION

A. Install panels with long dimension perpendicular to supports unless otherwise indicated.
B. Provide 1/8 in. gap at panel edges and ends unless manufacturer states otherwise.
C. Nail per code and structural drawings.

3.5 BLOCKING AND MISCELLANEOUS

A. Provide all blocking required for cabinetry, fixtures, railings, and hardware.

B. Install fire blocking and draft stopping as required by code.

3.6 PROTECTION

A. Protect installed framing from excessive moisture.

B. Remove and replace wood damaged by water, decay, or insects.

END OF SECTION

SECTION 06 17 53 - PREFABRICATED METAL-PLATE-CONNECTED WOOD TRUSSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF REQUIREMENTS

A. This section includes the following:
   1. Wood trusses with shapes and types as indicated on drawings.

B. Roof sheathing is specified in Division 6 Section "Rough Carpentry."

1.3 DEFINITIONS

A. Prefabricated metal-plate-connected wood trusses include planar structural units consisting of metal-plate-connected members that are fabricated from dimension lumber and that have been cut and assembled prior to delivery to the project site.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for lumber, metal connector plates, hardware, fabrication process, and fasteners.
   1. Material test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of fire-retardant-treated wood products with requirements indicated.

C. Shop drawings indicating species, species group, sizes, and stress grades of lumber to be used; pitch, span, camber, configuration, and spacing for each location of metal connector plates; and bearing details.
   1. To the extent engineering design considerations are indicated as fabricator's responsibility, include design analysis indicating loading, assumed allowable stress, stress diagrams and calculations, and other information needed for review that have been signed and sealed by a qualified professional engineer responsible for their preparation.
   2. Provide shop drawings that have been signed and stamped by a qualified professional engineer.
   3. Product certificate, signed by officer of fabricating firm, certifying that metal-plate-connected wood trusses supplied for Project comply with specified requirements.

D. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction evidencing compliance of fire-retardant-treated wood with specified requirements and building code in effect for Project.

1.5 QUALITY ASSURANCE

A. TPI Standards: Comply with applicable requirements and recommendations of the following Truss Plate Institute (TPI) publications:
   1. "Design Specification for Metal Plate Connected Wood Trusses."
   2. "Design Specification for Metal Plate Connected Parallel Chord Wood Trusses."
   3. "Commentary and Recommendations for Handling and Erecting Wood Trusses."

4. "Commentary and Recommendations for Bracing Wood Trusses."
5. "Quality Standard for Metal Plate Connected Wood Trusses."

B. Connector Plate Manufacturer's Qualifications: A manufacturer that is a member of TPI and that complies with TPI quality control procedures for manufacture of connector plates published in TPI "Quality Standard for Metal Connector Plate Manufacture."

C. Wood Structural Design Standard: Comply with applicable requirements of N.F.P.A. "National Design Specification for Wood Construction."

D. Single-Source Engineering Responsibility: Provide trusses engineered by the metal plate connector manufacturer to support superimposed dead and live loads indicated, with design approved and certified by a qualified professional engineer.

E. Engineer Qualifications: A professional engineer legally authorized to practice in jurisdiction where Project is located and experienced in providing engineering services of the kind indicated that have resulted in the installation of metal-plate-connected wood trusses similar to those of this Project and with a record of successful in-service performance.

F. Fabricator's Qualifications: A firm that complies with the following requirements for quality control and is experienced in prefabricating metal-plate-connected wood trusses similar to those of this Project that have a record of successful in-service performance.
1. Fabricator participates in a recognized quality assurance program that involves inspection by SPIB; Timber Products Inspection; Inc; Truss Plate Institute; or other independent inspection and testing agency acceptable to Architect and authorities having jurisdiction.

G. Single Source Responsibility for Connector Plates: Provide metal connector plates from a single manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

A. Handle and store trusses with care and comply with manufacturer's instructions and TPI recommendations to avoid damage from bending, overturning, or other cause which trusses are not designed to resist or endure.

1.7 SEQUENCING AND SCHEDULING

A. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying work of other trades whose work must follow erection of trusses.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Connector Plate Manufacturers
1. Manufacturers: Subject to compliance with requirements, provide metal connector plates by one of the following:
   a. Alpine Engineered Products, Inc.
   b. Bemax of Florida, Inc.
   c. Clary Corporation
   d. Computrus, Inc.
   e. Gang-Nail Systems, Inc.
   f. Hydro-Air Engineering, Inc.
   g. Inter-Lock Steel Co., Inc.
   h. Metal-Lock, Inc.

i. Robbins Manufacturing Co.
j. TEE-Lok Corp.
k. Truss Connectors of America
l. Truswal Systems Corporation

B. Lumber
1. Factory mark each piece of lumber with type, grade, mill, and grading agency.
2. Lumber Standard: Manufacture lumber to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
3. Inspection Agencies: Inspection agencies and the abbreviations used to reference them to lumber grades and species include the following:
a. SPIB - Southern Pine Inspection Bureau.

4. Nominal sizes are indicated, except as shown by detail dimensions.
5. Provide dressed lumber, S4S, manufactured to actual sizes required by PS 20 to comply with requirements indicated below:
a. Moisture Content: Seasoned, with 15 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.
b. Grade for Chord and Web Membrane #2.
c. Species: Southern Pine graded under SPIB rules.

C. Metal Connector Plates
1. Fabricate connector plates from metal complying with requirements indicated in this article.
2. Hot-Dip Galvanized Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A 446, Grade A; zinc coated by hot-dip process to comply with ASTM A 525, Designation G60; minimum coated metal thickness indicated but not less than 0.036 inch.
3. Electrolytic Zinc-Coated Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A 591, Coating Class C, and, for structural properties, with ASTM A 446, Grade A; zinc coated by electro-deposition; with minimum coated metal thickness indicated but not less than 0.047 inch.
4. Aluminum-Zinc Alloy-Coated Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A792, Coating Designation AZ 50, and, for structural properties, with ASTM A 446, Grade A; aluminum zinc alloy-coated by hot-dip process; with minimum coated metal thickness indicated but not less than 0.036 inch.
5. Stainless Steel Sheet: Chromium nickel steel sheet complying with ASTM A 167, Type 304, and, for structural properties, ASTM A 446, Grade A; with minimum metal thickness indicated but not less than 0.035 inch.
6. Any metal indicated above.

D. Fasteners
1. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
a. Where truss members are exposed to weather or to high relative humidities, provide fasteners with a hot-dip zinc coating per ASTM A 153 or AISI Type 304 stainless steel.

2. Nails, Wire, Brads, and Staples: FS FF-N-105.
3. Power Driven fasteners: National Evaluation Report NER-272.
4. Wood Screws: ANSI B18.6.1.
5. Lag Bolts: ANSI B18.2.1
6. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

E. Metal Framing Anchors
   1. General: Provide metal framing anchors of type, size, metal, and finish indicated that comply with requirements specified including the following:
      a. Current Evaluation/Research Reports: Provide products for which reports exist from a model code organization acceptable to authorities having jurisdiction that evidence compliance of metal framing anchors for application indicated with the building code in effect for this Project.
      b. Allowable Design Loads: Provide products for which manufacturer publishes allowable design loads that are determined form empirical data or by rational engineering analysis and that are demonstrated by comprehensive testing performed by a qualified independent testing laboratory.

   2. Galvanized Steel Sheet: Steel sheet zinc-coated by hot-dip process on continuous lines prior to fabrication to comply with ASTM A 525 for Coating Designation G60 and with ASTM A 446, Grade A (Structural quality); ASTM A 526 (Commercial quality); or ASTM A 527 (lock-forming quality); as standard with manufacturer for type of anchor indicated.

2.2 FABRICATION

A. Cut truss members to accurate lengths, angles, and sizes to produce closefitting joints with wood-to-wood bearing in assembled units.

B. Fabricate metal connector plate to size, configuration, thickness, and anchorage details required to withstand design loadings for types of joint designs indicated.

C. Assemble truss members in design configuration indicated using jigs closely fitted to comply with tolerances specified in TPI "Quality Standard for Metal Plate Connected Wood Trusses." Position members to produce design chamber indicated.

D. Connect truss members by means of metal connector plates accurately located and security fastened to each side of members by means indicated or approved.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Erect and brace trusses to comply with applicable requirements of referenced TPI standards.

B. Where trusses do not fit, return them to fabricator and replace with trusses of correct size; do not alter trusses in the field.

C. Erect trusses with plane of truss webs vertical (plumb) and parallel to each other, located accurately at design spacings indicated.

D. Hoist trusses in place by means of lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

E. Anchor trusses securely at all bearing points to comply with methods and details indicated.

F. Install permanent bracing and related components to enable trusses to maintain design spacing, withstand live and dead loads including lateral loads, and to comply with other indicated requirements.

G. Do not cut or remove truss members.

END OF SECTION 06 17 53

SECTION 31 63 29 - DRILLED CONCRETE PIERS AND SHAFTS

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. Dry-installed drilled piers.

1.3 UNIT PRICES

A. Unit prices are included in Section 01 22 00 "Unit Prices."

B. Drilled Piers: Actual net volume of drilled piers in place and approved. Actual length, shaft diameter, and bell diameter if applicable, may vary, to coincide with elevations where satisfactory bearing strata are encountered. These dimensions may also vary with actual bearing value of bearing strata determined by an independent testing and inspecting agency. Adjustments will be made on net variation of total quantities, based on design dimensions for shafts and bells.
   1. Base bids on indicated number of drilled piers and, for each pier, the design length from top elevation to bottom of shaft, extended through the bell, if applicable, and the diameter of shaft and bell.
   2. Unit prices include labor, materials, tools, equipment, and incidentals required for excavation, trimming, shoring, casings, dewatering, reinforcement, concrete fill, testing and inspecting, and other items for complete drilled-pier installation.

C. Trial Drilled Pier: Unit price as indicated for drilled pier, including backfilling.

1.4 SUBMITTALS

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

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
   1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Shop Drawings: For concrete reinforcement detailing fabricating, bending, supporting, and placing.

D. Material Certificates: For the following, from manufacturer:
   1. Cementitious materials.
   2. Admixtures.
   3. Steel reinforcement and accessories.

E. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

F. Field quality-control reports.

G. Other Informational Submittals:
   1. Record drawings.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in drilled-pier work.

B. Testing Agency Qualifications: Qualified according to ASTM C 1077, ASTM D 3740, and ASTM E 329 for testing indicated.

C. Drilled-Pier Standard: Comply with ACI 336.1 unless modified in this Section.

1.6 PROJECT CONDITIONS

A. Existing Utilities: Locate existing underground utilities before excavating drilled piers. If utilities are to remain in place, provide protection from damage during drilled-pier operations.
   1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, adapt drilling procedure if necessary to prevent damage to utilities. Cooperate with Owner and utility companies in keeping services and facilities in operation without interruption. Repair damaged utilities to satisfaction of utility owner.

B. Interruption of Existing Utilities: Do not interrupt any utility to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:
   1. Notify all affected parties including Owner no fewer than five (5) days in advance of proposed interruption of utility.
   2. Do not proceed with interruption of utility without Owner's written permission.

C. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Owner will not be responsible for interpretations or conclusions drawn from this data.
   1. Make additional test borings and conduct other exploratory operations necessary for drilled piers.
   2. The geotechnical report is referenced elsewhere in the Project Manual.

D. Survey Work: Engage a qualified land surveyor or professional engineer to perform surveys, layouts, and measurements for drilled piers. Before excavating, lay out each drilled pier to lines and levels required. Record actual measurements of each drilled pier's location, shaft diameter, bottom and top elevations, deviations from specified tolerances, and other specified data.
   1. Record and maintain information pertinent to each drilled pier and cooperate with Owner's testing and inspecting agency to provide data for required reports.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Refer Section 03 20 00.

2.2 CONCRETE MATERIALS

A. Refer Section 03 30 00 and Structural General Notes.

2.3 STEEL CASINGS

A. Steel Pipe Casings: ASTM A 283, Grade C, or ASTM A 36, carbon-steel plate, with joints full-penetration welded according to AWS D1.1.

B. Corrugated-Steel Pipe Casings: ASTM A 929, steel sheet, zinc coated.

2.4 CONCRETE MIXTURES

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement according to ACI 301 limits as if concrete were exposed to deicing chemicals.

C. Proportion normal-weight concrete mixture as follows:
   1. As indicated in Structural General Notes.

2.5 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.6 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, vibration, and other hazards created by drilled-pier operations.

3.2 EXCAVATION

A. Unclassified Excavation: Excavate to bearing elevations regardless of character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions.
   1. Obstructions: Unclassified excavation may include removal of unanticipated boulders, concrete, masonry, or other subsurface obstructions. No changes in the Contract Sum or the Contract Time will be authorized for removal of obstructions.
   2. Obstructions: Unclassified excavated materials may include removal of unanticipated boulders, concrete, masonry, or other subsurface obstructions. Payment for removing obstructions that cannot be removed by conventional augers fitted with soil or rock teeth, drilling buckets, or underreaming tools attached to drilling equipment of size, power, torque, and downthrust necessary for the Work will be according to Contract provisions for changes in the Work.

B. Prevent surface water from entering excavated shafts. Conduct water to site drainage facilities.

C. Excavate shafts for drilled piers to indicated elevations. Remove loose material from bottom of excavation.
   1. Excavate bottom of drilled piers to level plane within 1:12 tolerance.
   2. Remove water from excavated shafts before concreting.

D. Notify and allow testing and inspecting agency to test and inspect bottom of excavation. If unsuitable bearing stratum is encountered, make adjustments to drilled piers as determined by Architect.
   1. Do not excavate shafts deeper than elevations indicated unless approved by Architect.
   2. Payment for additional authorized excavation will be according to Contract provisions for changes in the Work.

E. Excavate shafts for closely spaced drilled piers and for drilled piers occurring in fragile or sand strata only after adjacent drilled piers are filled with concrete and allowed to set.

F. Temporary Casings: Install watertight steel casings of sufficient length and thickness to prevent water seepage into shaft; to withstand compressive, displacement, and withdrawal stresses; and to maintain stability of shaft walls.
   1. Remove temporary casings, maintained in plumb position, during concrete placement and before initial set of concrete.

G. Bells: Excavate bells for drilled piers to shape, base thickness, and slope angle indicated. Excavate bottom of bells to level plane and remove loose material before placing concrete.

H. Tolerances: Construct drilled piers to remain within ACI 336.1 tolerances.
   1. If location or out-of-plumb tolerances are exceeded, provide corrective construction. Submit design and construction proposals to Architect for review before proceeding.

3.3 STEEL REINFORCEMENT

A. Comply with recommendations in CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy bond with concrete.

C. Fabricate and install reinforcing cages symmetrically about axis of shafts in a single unit.

D. Accurately position, support, and secure reinforcement against displacement during concreting. Maintain minimum cover over reinforcement.

E. Use templates to set anchor bolts, leveling plates, and other accessories furnished in work of other Sections. Provide blocking and holding devices to maintain required position during final concrete placement.

F. Protect exposed ends of extended reinforcement, dowels, or anchor bolts from mechanical damage and exposure to weather.

3.4 CONCRETE PLACEMENT

A. Place concrete in continuous operation and without segregation immediately after inspection and approval of shaft by Owner's independent testing and inspecting agency.
   1. Construct a construction joint if concrete placement is delayed more than one hour. Level top surface of concrete. Before placing remainder of concrete, clean surface

laitance, roughen, and slush concrete with commercial bonding agent or with sand-cement grout mixed at ratio of 1:1.

B. Dry Method: Place concrete to fall vertically down the center of drilled pier without striking sides of shaft or steel reinforcement.
   1. Where concrete cannot be directed down shaft without striking reinforcement, place concrete with chutes, tremies, or pumps.
   2. Vibrate top 60 inches of concrete.

C. Coordinate withdrawal of temporary casings with concrete placement to maintain at least a 60-inch head of concrete above bottom of casing.
   1. Vibrate top 60 inches of concrete after withdrawal of temporary casing.

D. Screed concrete at cutoff elevation level and apply scoured, rough finish. Where cutoff elevation is above the ground elevation, form top section above grade and extend shaft to required elevation.

E. Protect concrete work, according to ACI 301, from frost, freezing, or low temperatures that could cause physical damage or reduced strength.
   1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   2. Do not use calcium chloride, salt, or other mineral-containing antifreeze agents or chemical accelerators.

F. If hot-weather conditions exist that would seriously impair quality and strength of concrete, place concrete according to ACI 301 to maintain delivered temperature of concrete at no more than 90 deg F.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
   1. Drilled piers.
   2. Excavation.
   3. Concrete.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

C. Drilled-Pier Tests and Inspections: For each drilled pier, before concrete placement.
   1. Soil Testing: Bottom elevations, bearing capacities, and lengths of drilled piers indicated have been estimated from available soil data. Actual elevations and drilled-pier lengths and bearing capacities will be determined by testing and inspecting agency. Final evaluations and approval of data will be determined by Architect.

D. Concrete Tests and Inspections: ASTM C 172 except modified for slump to comply with ASTM C 94.
   1. Slump: ASTM C 143; one test at point of placement for each compressive-strength test but no fewer than one test for each concrete load.
   2. Concrete Temperature: ASTM C 1064; 1 test hourly when air temperature is 40 deg F and below and 80 deg F and above, and 1 test for each set of compressive-strength specimens.
   3. Compression Test Specimens: ASTM C 31; one set of four standard 6-inch x 12-inch cylinders for each compressive-strength test unless otherwise indicated. Mold and store cylinders for laboratory-cured test specimens unless field-cured test specimens are required.

4. Compressive-Strength Tests: ASTM C 39; one set for each drilled pier but not more than one set for each truck load. One specimen will be tested at 7 days, 2 specimens will be tested at 28 days, and 1 specimen will be retained in reserve for later testing if required.
5. If frequency of testing will provide fewer than five strength tests for a given class of concrete, testing will be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
6. If strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
8. Report test results in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. List Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests in reports of compressive-strength tests.
9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
10. Additional Tests: Testing and inspecting agency will make additional tests of concrete if test results indicate that slump, compressive strengths, or other requirements have not been met, as directed by Architect.
    a. Continuous coring of drilled piers may be required, at Contractor's expense, if temporary casings have not been withdrawn within specified time limits or if observations of placement operations indicate deficient concrete quality, presence of voids, segregation, or other possible defects.
11. Perform additional testing and inspecting, at Contractor's expense, to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

E. An excavation, concrete, or a drilled pier will be considered defective if it does not pass tests and inspections.

F. Prepare test and inspection reports for each drilled pier as follows:
1. Actual top and bottom elevations.
2. Actual drilled-pier diameter at top, bottom, and bell.
3. Top of rock elevation.
4. Description of soil materials.
5. Description, location, and dimensions of obstructions.
6. Final top centerline location and deviations from requirements.
7. Variation of shaft from plumb.
8. Shaft excavating method.
9. Design and tested bearing capacity of bottom.
10. Levelness of bottom and adequacy of cleanout.
11. Ground-water conditions and water-infiltration rate, depth, and pumping.
12. Description, purpose, length, wall thickness, diameter, tip, and top and bottom elevations of temporary or permanent casings. Include anchorage and sealing methods used and condition and weather tightness of splices if any.
13. Description of soil or water movement, sidewall stability, loss of ground, and means of control.
14. Bell dimensions and variations from original design.
15. Date and time of starting and completing excavation.

16. Inspection report.
17. Condition of reinforcing steel and splices.
18. Position of reinforcing steel.
19. Concrete placing method, including elevation of consolidation and delays.
20. Elevation of concrete during removal of casings.
21. Locations of construction joints.
22. Concrete volume.
23. Concrete testing results.
24. Remarks, unusual conditions encountered, and deviations from requirements.

3.6 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 31 63 29

SECTION 08 91 00 - FIXED LOUVERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes: Requirements including but not limited to:
   1. Fixed, extruded aluminum and formed metal louvers.
   2. Accessories necessary for a complete installation.

1.3 DEFINITIONS

A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.

B. Horizontal Louver: Louver with horizontal blades (i.e., the axes of the blades are horizontal).

C. Vertical Louver: Louver with vertical blades (i.e., the axes of the blades are vertical).

D. Drainable Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

E. Wind Driven Rain Resistant Louver: Louver that provides specified wind driven rain performance determined by testing according to AMCA 500-L.

1.4 SUBMITTALS

A. Product Data: Technical data for each type of product indicated. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other Work. Show frame profiles and blade profiles, angles, and spacing.
   1. Show weep paths, gaskets, flashing, sealant, and other means of preventing water intrusion.
   2. Show mullion profiles and locations.
   3. Windstorm: Design loads as indicated on drawings.

C. Samples: Submit for units with factory applied color finishes.

1.5 QUALITY ASSURANCE

A. Delegated Design Submittal: For louvers indicated to comply with structural [**and seismic**] performance requirements, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

B. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing

agency, for each type of louver and showing compliance with performance requirements specified.

C. Windborne debris impact resistance test reports.

D. Regulatory Requirements:
1. SMACNA Standard: Comply with recommendations in SMACNA *Architectural Sheet Metal Manual* for fabrication, construction details, and installation procedures.
2. Welding: Qualify procedures and personnel according to the following:
a. AWS D1.2/D1.2M Structural Welding Code - Aluminum.

E. Source Limitations: Obtain louvers and vents from single source from a single manufacturer where indicated to be of same type, design, or factory applied color finish.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 WARRANTY

A. Warrant the work specified herein for 20 years against becoming unserviceable or causing an objectionable appearance resulting from either defective or nonconforming materials and workmanship.

B. Defects shall include, but not be limited to:
1. Fading, corrosion, or other finish deterioration.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), Alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. Galvanized Steel Sheet: ASTM A 653/A 653M, G90 (Z275) zinc coating, mill phosphatized.

D. Stainless Steel Sheet: ASTM A 240/A 240M, Type 304, No. 4 finish, with grain running parallel to length of blades and frame members..

E. Fasteners: Use types and sizes to suit unit installation conditions.
1. Use tamper resistant screws for exposed fasteners unless otherwise indicated.
2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.
3. For fastening galvanized steel, use hot dip galvanized steel or 300 series stainless steel fasteners.
4. For fastening stainless steel, use 300 series stainless-steel fasteners.
5. For color finished louvers, use fasteners with heads that match color of louvers.

F. Postinstalled Fasteners for Concrete and Masonry: Torque controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed for masonry, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

G. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.2 FIXED, EXTRUDED ALUMINUM LOUVERS

A. Horizontal Continuous Line, Drainable Blade Louver: 90 degree, flat face blades.
   1. Basis of Design: Model LE-F5 as manufactured by American Warming and Ventilating (AWV). Other manufacturers are subject to compliance with requirements, provide products of one of the following:
      a. Airolite Company, LLC (The).
      b. Arrow United Industries.
      c. Construction Specialties, Inc.
      d. Greenheck Fan Corporation.
      e. Ruskin Company; Tomkins PLC.

   2. Louver Blade: 0.060 inch thick, extruded aluminum, ASTM B 209, Alloy 6063-T5.
   3. Frame: 5 inch deep channel, 0.078 inch thick extruded aluminum, ASTM B209, Alloy 6063-T5.
   4. Screen: 1/2 inch removable expanded aluminum bird screen, located on interior.
   5. Panel Size: Refer to the Drawings.
   6. Blade Spacing: 2 inch.
   7. Blade Orientation: Horizontal.
   8. Pressure Drop: 0.0 in w.g. at 1250 fpm and 8850 scfm.
   9. Water Penetration: 1250 fpm.

2.3 FABRICATION

A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Vertical Assemblies: Where height of louver units exceeds fabrication and handling limitations, fabricate units to permit field bolted assembly with close fitting joints in jambs and mullions, reinforced with splice plates.
   1. Continuous Vertical Assemblies: Fabricate units without interrupting blade spacing pattern unless horizontal mullions are indicated.
   2. Horizontal Mullions: Provide horizontal mullions at joints unless continuous vertical assemblies are indicated.

C. Maintain equal louver blade spacing, including separation between blades and frames at head and sill to produce uniform appearance.

D. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.

E. Include supports, anchorages, and accessories required for complete assembly.

F. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or 72 inches (1830 mm) o.c., whichever is less.
   1. Fully Recessed Mullions: Where indicated, provide mullions fully recessed behind louver blades. Where length of louver exceeds fabrication and handling limitations, fabricate with close fitting blade splices designed to permit expansion and contraction.
   2. Semirecessed Mullions: Where indicated, provide mullions partly recessed behind louver blades so louver blades appear continuous. Where length of louver exceeds fabrication and handling limitations, fabricate with interlocking split mullions and close-fitting blade splices designed to permit expansion and contraction.

3. Exposed Mullions: Where indicated, provide units with exposed mullions of same width and depth as louver frame. Where length of louver exceeds fabrication and handling limitations, provide interlocking split mullions designed to permit expansion and contraction.
4. Exterior Corners: Prefabricated corner units with mitered blades with concealed close fitting splices and with fully recessed mullions at corners.

G. Provide subsills made of same material as louvers or extended sills for recessed louvers.

H. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.4 FINSHES

A. Comply with NAAMM *Metal Finishes Manual for Architectural and Metal Products* for recommendations for applying and designating finishes.

B. Aluminum Finishes:
1. Finish louvers after assembly.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Proceed with installation after correcting unsatisfactory conditions.

3.2 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

A. Locate and place louvers level, plumb, and at indicated alignment with adjacent Work.

B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective Work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

F. Protect unpainted galvanized and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

G. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 07 92 00 for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.

B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

C. Restore louvers damaged during installation and construction so no evidence remains of corrective Work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
   1. Touch up minor abrasions in finishes with air dried coating that matches color and gloss of, and is compatible with, factory applied finish coating.

END OF SECTION 08 91 00

SECTION 11 68 53 - OUTDOOR BASEBALL & SOFTBALL EQUIPMENT

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

CONDITIONS OF THE CONTRACT AND DIVISION 1, as applicable, apply to this Section.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Padding
B. Fence Guards

1.2 RELATED WORK

A. Section 03 30 00 - Cast-In-Place Concrete

B. Section 04 20 00 - Unit Masonry: Wall Support

1.3 SUBMITTALS

A. Product Data: Submit schedules, charts, literature, and illustrations to indicate the performance, fabrication procedures, product variations, and accessories.

B. Shop Drawings: Indicate size, material, and finish. Show locations and installation procedures. Include details of joints, attachments, and clearances.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in protective wrapping, store inside building protected from weather, moisture and soiling.

1.5 COORDINATION

A. Coordination by all contractors and equipment manufacturers/suppliers for the work of this section shall be performed without delays or damage to parts of any work.

1.6 WARRANTY

A. Unless otherwise noted, warrant the work specified for one (1) year against becoming unserviceable or causing an objectionable appearance resulting from either defective or nonconforming materials and workmanship.

B. Dugout Rail Padding: Warrant the work specified for three (3) years against becoming unserviceable or causing an objectionable appearance resulting from either defective or nonconforming materials and workmanship.

C. Defects shall include, but not be limited to, the following: Rough or difficult operation, noisy operation, loose or missing parts, noticeable deterioration of finish, etc.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials shall be approved and installed in accordance with University Interscholastic League (UIL), the National Federation of State High School Association (NFHS), and/or NCAA rules/regulations (latest edition).

2.2 APPROVED MANUFACTURERS

A. Specifications are based on named manufacturers. Except where stated as “No Substitutions”, manufacturers listed who produce equivalent products to those specified are approved for use on the Project. Other manufacturers must have a minimum of five (5) years’ experience manufacturing products equivalent to those specified and comply with Division 1 requirements regarding substitutions to be considered.
   1. Baseballracks.com, Evergreen Park, IL (708) 636-1047
   2. Aalco Mfg. Co., St. Louis, MO; (800) 537-1259
   3. Performance Sports Systems, Noblesville, IN; (800) 848-8034
   4. Porter Athletic Equipment Co., Broadview, IL; (800) 947-6783
   5. Promats Athletics, Salisbury, NC (800) 617-7125
   6. Sportsfield Specialties Inc., Delhi, NY; (888) 975-3343
   7. Pasadena Sporting Goods, Pasadena, TX; (713) 477-7151
   8. Tomark Sports, Dallas, TX; (951) 371-1844

2.3 BASEBALL/SOFTBALL EQUIPMENT

A. Padding:
   1. Wall Padding:
      a) Description: Panels shall be constructed of a 3-inch-thick high-density polyurethane padding attached to a 5/8-inch moisture resistant composite wood backer board and covered with an 18-ounce high UV extruded vinyl covering. For seasonal removal or repair, panels can be installed to walls with optional, extruded aluminum “Z” type clips. The “Z” clip attachment system provides a smooth and neat appearance and allows worn or vandalized pads to be removed for repair or replacement by simply lifting the panel upward.
      b) Size: The size of the individual pads shall be approved prior to manufacturing.
      c) Cover material shall have a tear strength of 100 P.S.I minimum, shall be mildew and rot resistant, and fortified with an infection combating fungicide. Cover material shall be a color selected by Owner from manufacturer’s standard colors and shall have a Class A flame resistance according to ASTM E-84.
      d) All cutouts for electrical, etc., if any, shall be made in the field to fit job conditions.
      e) Contractor shall be responsible for proper inspection and installation of panels.
      f) Approved Manufacturer: Buck Terrell Athletics, BaseZone by Promats Athletics, or approved equivalent.

   2. Dugout Rail Padding:
      a) Description: Rail padding shall be manufactured using 1-inch high impact foam cores to provide a low pad profile. Rail pads are to be covered with an 18 ounce, UV resistant extruded vinyl. Rail pads are to be attached with cable ties through grommets.
      b) Size: The Rail Pads shall be made to cover 1-1/2” to 2” diameter rails. The Rail Pads can either be rounded or square as noted on drawings. If not denoted, assume using rounded pads.
      c) Approved Manufacturer: Buck Terrell Athletics, Promats Athletics or approved equivalent.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install items in accordance with manufacturer's instructions, and in locations shown on drawings or as directed by Owner/Consultant.

B. Wall Padding: Verify walls to which wall padding panels are attached are perfectly plumb or slightly convex (bowed out) over the area to be covered. If found to be not perfectly plumb or concave (bowed in), install sufficient shims at midsection of panels to provide plumb or convex wall profile. Panels must be inspected before installed. Install products under manufacturer's supervision and/or in accordance with manufacturer's instructions. Attach backstops securely to structure in locations shown on drawings. Locate hoists as shown or required. Install wall padding panels in locations shown on drawings with minimum amount of wrinkles in fabric in accordance with ASTM F2440-04. Make final adjustment after installation and clean all backstop support piping of dirt and other substances which may affect final finish. Lubricate all moving parts. Touch-up primer paint where damaged. Clean wall padding panels of dirt, grease, and other substances detrimental to good appearance. Color to be selected by owner.

C. Dugout Rail Padding: Install on railing per manufacturers recommendation. Color to be selected by owner.

END OF SECTION 11 68 53

SECTION 22 11 16 - DOMESTIC WATER PIPING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

B. SECTION 22 05 00 – COMMON WORK RESULT FOR PLUMBING

C. SECTION 22 05 29 – PLUMBING PIPE HANGERS AND SUPPORTS

1.3 SUMMARY

A. Provide a complete domestic water piping system.

B. Provide pressure gauge with all materials, equipment, appurtenances, accessories, connections, labor, etc. required and/or necessary to completely install, clean, inspect, adjust, test, and leave in safe and proper operating condition all systems.

C. All soldering, materials, fixtures, and equipment for the potable water system shall meet the latest amendments, mandates, and laws for lead-free requirements as codified by the Reduction of Lead in Drinking Water Act (RLDWA) effective January 2014, and as codified by the Safe Drinking Water Act (SDWA) effective October 2020.

1.4 SUBMITTALS

A. Product Data:
   1. Piping: Submit data on pipe materials, fittings, and accessories.
   2. Valves: Submit manufacturers catalog information with valve data and ratings for each service.
   3. Gauge: Submit product description, model, dimensions, component sizes, rough-in requirements, service sizes, and manufacturer instruction.
   4. Domestic Water Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Contractor shall ensure the installer has demonstrated experience on projects of similar size and complexity and has been trained by GF Building Flow Solutions (Uponor) or an Uponor-approved trainer.
   1. If PEX-a or Corzan® CPVC is used as an approved alternate for applications where metallic piping is the basis of design the manufacturer shall submit shop drawings clearly indicating that the design has been analyzed and modified, as required, to maintain required pressure and flow. Any design resulting in reduced system pressure as a result of improper PEX-a or Corzan® CPVC sizing or design shall not be permitted.

B. Ensure materials in contact with the Corzan® CPVC piping system are compatible with Corzan® CPVC compounds per the Lubrizol “FBC System Compatibility Program” found at www.lubrizol.com/CPVC/FBC-System-Compatible-Program.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not install underground piping when bedding is wet or frozen.

1.8 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

1.9 EXTRA MATERIALS

A. Furnish two (2) packing kits for each size valve and two (2) loose keys for outside hydrants.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. Products and materials listed herein are for references of approved materials.

B. Unless noted otherwise, the contract documents (schedule sheet) will specify the products and materials that are to be used for this project.

2.2 WATER PIPING, BELOW GRADE

A. In-Building Riser: At incoming below grade domestic water service entry for pipe sizes 4” and larger, provide a 90-degree jointless ASTM A312 304 stainless steel in-building riser by Ames Fire & Waterworks Series IBR. Lead-free, NSF approved for potable water supply, UL Listed, FM Approved, NFPA 24, AWWA C900 inlet/DIP, AWWA C606 outlet. Provide concrete thrust block at 90-degree change of direction. Provide custom length as required where standard 6’-0” length does not extend past building perimeter wall.

B. Copper Tubing: ASTM B88, Type K.
   1. Fittings: ASME B16.22 wrought copper and bronze.
   2. Joints: AWS A5.8, BCuP silver braze.

2.3 WATER PIPING, ABOVE GRADE

A. Copper Tubing 6” and smaller: ASTM B88, Type L hard drawn.
   1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
   2. Joints:
      a. Solder, lead free, ASTM B32, 95-5TA (tin-antimony), or tin and silver, with melting range 430 to 535 degrees F. [Braze, AWS A5.8 BCuP silver/phosphorus/copper alloy with melting range 1190 to 1480 degrees F.]
      b. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

c. Appurtenances for Grooved-End Copper Tubing:
1) Manufacturers: Subject to compliance with requirements, provide products from the following or approved equal:
a) Victaulic
2) Bronze Fittings for Grooved-End, Copper Tubing: ASTM B 75 copper tube or ASTM B 584 bronze castings.
3) Mechanical Couplings for Grooved-End Copper Tubing:
a) Copper-tube dimensions and design similar to AWWA C606.
b) Ferrous housing sections.
c) EPDM-rubber gaskets suitable for hot and cold water.
d) Bolts and nuts.
e) Minimum Pressure Rating: 300 psig.

3. At the Contractor's option:
a. Viega ProPress Copper and Cast Copper Alloy Press-Connect Fittings:
1) Approved for use with copper tubing conforming to ASTM B88 or B75. When pressing onto B88 copper tube, types K, L, and M may be used. Tempers O60 and O50, known as "soft copper", are limited to nominal sizes 1/2" to 1-1/4". Temper H58, known as "hard copper", may be used with nominal sizes 1/2" to 4".
2) Shall conform to ASME B16.51, ASTM B1029 & F3226, ICC AC156, IAPMO PS-117, NSF 61, and NSF 372.
3) Copper alloy fittings:
a) Shall be zero lead silicon bronze alloy C87710 (cast) or C88700 (machined).
b) Shall not be bismuth bronze or yellow brass.
4) Peroxidically cured EPDM elastomeric sealing element rated to 300 psi with a temperature range of 0-250 degrees (F). Sealing element shall be uniform in size/thickness and shall be free from manufactured deformities or indentations.
5) 420 stainless steel grip & PBT separator rings for 2-1/2" to 4" sizes.
6) Press Connect fitting shall have the Viega Smart Connect feature integral to the fitting body to detect unpressed fittings during the testing process.
7) Color-coded markings on exterior of fitting for readily identifying/inspecting sealing element type.
8) Single source manufacturer. Technology and installation instructions vary between manufacturers.
9) Approved manufacturer: Viega LLC (no exceptions).
a) Warranty: 50 years from the date of installation.

2.4 FLANGES, UNIONS, AND COUPLINGS

A. Pipe Size two (2) inches and Smaller:
1. Ferrous pipe: Class 150 malleable iron threaded unions.
2. Copper tube and pipe: Class 150 bronze unions with soldered or press-connected joints.

B. Pipe Size 2-1/2 inches and Larger:
1. Ferrous pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets (Victaulic split ring flange is not allowed).
2. Copper tube and pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets or press-connected joints.

2.5 GALVANIC PROTECTION

A. Dissimilar piping material connections shall not be made without an approved dielectric union.

B. Dielectric Connections:
1. Two (2) inches and smaller union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier. Provide Watts Series LF3001A or an approved equal.
2. 2-1/2 inches and larger, forged steel flanges, screwed neck, 1/16 inch thick preformed neoprene gasket.
3. 1/2” to 4” Viega ProPress zero lead press-connect unions and flanges.

2.6 ▲ADD#3 VALVES

A. General
1. Valves shall be located to permit easy operation, replacement and repair. They shall be installed where shown on the Drawings, or as herein specified.
2. Control valves shall be provided for the domestic hot and cold water supply to all risers and specific areas such as restrooms, fixture groups, shock absorbers, equipment, hose bibbs and wall hydrants, food service areas and building separations. Valves shall be located in back-of-house or service areas with access panels or above lay-in ceilings. No access panels will be permitted in public spaces with gypsum ceilings.

B. Ball Valves:
1. Manufacturers:
a. NIBCO INC.
2. Two (3) inches and Smaller: Nibco S/T-585-80-LF, full-port, MSS SP 110, Class 150, 600 psi CWP, silicon bronze, two piece body, chrome plated silicon bronze ball, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder or threaded ends. No Lead.
3. Where piping is insulated, ball valves shall be equipped with two (2) inch extended handles of non-thermal conductive CPVC material that meets UL 2043 approved for inside air plenum. Also provide a protective sleeve that allows operation of the valve without breaking the vapor seal or disturbing the insulation. Memory stops, which are fully adjustable after insulation is applied, shall be included.
4. Ball valves installed outdoors or in-ground shall have stainless steel handle.
5. Provide stem extensions of a non-thermal conducting material for valves in insulated lines to allow unobstructed operation.
6. Provide memory stops on all ball valves installed in domestic hot water return lines. Memory stops shall be adjustable after pipe insulation is applied.

C. Shut-off Valves:
1. Manufacturers:
a. NIBCO INC.
2. Line Shut-Off Valves 4” and larger where system operating pressure will not exceed 300 p.s.i.g. shall be 300 WOG LEAD-FREE ductile iron body with non-rising stem, ductile iron wheel handle, bronze stem and flange ends. Acceptable valves are Nibco F-619-RWS
3. Provide stem extensions of a non-thermal conducting material for valves in insulated lines to allow unobstructed operation.

D. Swing Check Valves:
   1. Manufacturers:
      a. NIBCO INC.
   2. Two (2) inches and Smaller: Nibco S-413-LF Series, class 125, MSS SP 80, silicon bronze body, stainless steel and PTFE disc, and soldered ends. No Lead.
   3. 2-1/2 inches and Larger: NIBCO INC. F918-SS Series, MSS SP 71, cast iron body, stainless steel fitted, stainless steel disc, flanged ends. No Lead.

E. Balancing Valves (Hot Water Recirculation)
   1. Balancing valves shall be venturi orifice type, bronze or brass body with brass or chrome ball, a minimum of two differential pressure read-out ports, 300 psi maximum working pressure. A compatible positive shutoff ball valve with memory stop is to be provided if not included with the balancing valve assembly.
   2. Balancing valves shall be IMI Flow Design model UA Zero series (0.5 to 1.5 GPM venturi range) or approved equal by CircuitSolver, or Bell and Gossett CircuitSetter. When at the Contractor's option: Viega, LLC. Provide extended handle as required.
   3. Ball valves are not acceptable for balancing the hot water return system.

2.7 STRAINERS

A. Manufacturer: Nibco, Watts, Crane or approved equal.

B. Two (2) inches and Smaller: Threaded (lead free) cast copper silicon alloy for 400 PSI WOG, wye pattern with 1/32 inch stainless steel perforated screen. Watts Series LF777.

C. 2-1/2 and Larger: Class 125, flanged (lead free) cast iron strainer for 200 PSI WOG, wye pattern with 1/16-inch stainless steel perforated screen. Watts Series 77F-DI-125.

D. Lead Free.

2.8 GAGES AND TAPS

A. Manufacturers: For portable water system (Lead Free)
   1. Weiss
   2. Marsh
   3. Weksler
   4. Dwyer
   5. Trerice

B. Gage: ASME B40.1, UL 404 with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background.

   1. Case: Stainless steel.
   2. Bourdon Tube: Phosphor bronze.
   3. Dial Size: 4-1/2 diameter.
   4. Mid-Scale Accuracy: One (1) percent.
   5. Scale: Psi.

C. Needle Valve: Brass, 1/4 inch NPT for minimum 300 psi.

D. Ball Valve: Brass 1/4 inch NPT for 250 psi.

E. Pulsation Damper: Pressure snubber, brass with 1/4 inch NPT connections.

F. Siphon: Brass, 1/4 inch NPT angle or straight pattern.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify excavations are to required grade, dry, and not over-excavated.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

3.3 INSTALLATION - BURIED PIPING SYSTEMS

A. Verify connection size, location, and invert are as indicated on Drawings.

B. Establish elevations of buried piping with not less than two (2) feet of cover.

C. Establish minimum separation from other services piping in accordance with code.

D. Remove scale and dirt on inside of piping before assembly.

E. Install pipe on prepared bedding.

F. Route pipe in straight line.

G. Install pipe to allow for expansion and contraction without stressing pipe or joints.

H. Do not use lead bearing solder materials.

I. Pipe Cover and Backfilling:
   1. After hydrostatic test, evenly backfill entire trench width by hand placing backfill material and hand tamping in four (4) inches compacted layers to 12 inches minimum cover over top of jacket. Compact to 95 percent maximum density.
   2. Evenly and continuously backfill remaining trench depth in uniform layers with backfill material.
   3. Do not use wheeled or tracked vehicles for tamping.

J. Provide tracer wire for all piping routed below slab locate wire leads in accessible location for use in future line trouble shooting.

K. Trap primer lines shall be installed with no kinks, utilizing pipe benders as recommended in the Copper Development Association, Inc. “Copper Tube Handbook – Industry Standard Guide for the Design and Installation of Copper Piping Systems” handbook, Chapter 4, Bending. Hand bending of copper tube trap primers shall be prohibited.

3.4 INSTALLATION - ABOVE GROUND PIPING

A. Insulate all piping installed in exterior walls, above food service areas, and any area exposed to temperatures below 40 degrees Fahrenheit.

B. Install non-conducting dielectric connections wherever jointing dissimilar metals.

C. Insulate all domestic hot water supply and return lines.

D. Install piping to maintain headroom without interfering with use of space or taking more space than necessary.

E. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 22 05 16.

G. Provide expansion tank for each domestic water heater, install per manufacturer's recommendations.

H. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 22 05 29.

I. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors with Architect.

J. Establish elevations of buried piping outside the building to obtain not less than one (1) foot of cover.

K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

L. Install water piping in accordance with ASME B31.9.

M. Sleeve pipes passing through partitions, walls and floors.

N. Install unions downstream of valves and at equipment or apparatus connections.

O. Install valves with stems upright or horizontal, not inverted.

P. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

Q. Install ball valves for shut-off and to isolate equipment at branch to each fixture bank and at each plumbing appliance or water heater.

R. Provide check valves on discharge of all water circulating pumps.

S. Install potable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior and exterior hose bibs.

T. Pipe relief from valves, back-flow preventers and drains to nearest floor drain.

U. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to all equipment with solenoid valves.

V. Route all domestic water piping inside building in climate controlled space not subject to freezing.

W. Do not use lead bearing solder materials.

X. In natatorium, including equipment rooms, all exposed plumbing piping shall be insulated and protected by a complete aluminum jacketing system. Refer to Section 23 07 16 for specification on jacketing. Provide color coded, printed pipe label 10' on center identifying pipe service type (gas, domestic water, storm water, etc.).

Y. Provide chrome-plated floor and ceiling plates around pipes exposed to view when passing through walls, floors, partitions, or ceilings in finished areas. Size plates to fit pipe or insulation and lock in place.

Z. Comply with manufacturer's product data, including product technical bulletins, installation instructions and design drawings, including the following.

AA. Press-Connect Joints for Copper Tubing: Join copper tube and press-connect fittings with tools recommended by fitting manufacturer.
1. The manufacturer's installation instructions shall be strictly adhered to and shall follow ASTM B1029.
2. Installers shall attend a manufacturer's installation training class as having been trained and qualified to join piping with press-connect fittings. On-site training and credentialing by manufacturer's representative is acceptable.
3. All connections shall bear full insertion marks on the tubing.
4. Special attention shall be given to the required two step pressure test.
   a. Initial Smart Connect test for unpressed fitting detection per manufacturer's installation manual.
   b. Following a successful Smart Connect test, the system may be pressure tested up to 600 psi maximum hydrostatically (water) and 200 psi maximum pneumatically (air) if required by local code requirements.

BB. Lead Free.

CC. Trap primer lines shall be installed with no kinks, utilizing pipe benders as recommended in the Copper Development Association, Inc. "Copper Tube Handbook – Industry Standard Guide for the Design and Installation of Copper Piping Systems" handbook, Chapter 4, Bending. Hand bending of copper tube trap primers shall be prohibited.

3.5 INSTALLATION - SERVICE CONNECTIONS

A. At each incoming water service line provide approved reduced pressure back-flow preventer. Coordinate with division 23 to install gas flow meter provided by division 23 and install by this contractor.

B. Provide a cast iron sleeve around service main to six (6) inches above floor and six (6) inches minimum below grade beam. Size for minimum of two (2) inches of loose batt insulation stuffing.

C. Optionally, where building structural components permit, water service entrance may be composed of a single extended 90 degree fitting of fabricated 304 stainless steel tubing, maximum Working pressure of 175 psi with grooved-end connection on the outlet (building) side and a cast iron pipe size coupler on the underground (inlet) side.

3.6 INSTALLATION - BACKFLOW PREVENTERS

A. Provide at each make up connection to a hot water boiler, cooling tower, chilled water system, kitchen equipment, and at each piece of equipment requiring a make-up connection.

B. Provide at water supply to fire protection system.

C. Provide a floor drain within six (6) feet of each backflow preventer.

D. Backflow preventer shall be certified by Contractor.

E. Lead Free.

3.7 INSTALLATION – PRESSURE GAGES

A. Install pressure gages for each pump, locate taps before strainers and on suction and discharge of pump; pipe to gage.

B. Install gage taps in piping with isolation valves.

C. Install pressure gages at main water entry. Provide needle valve or ball valve to isolate each gage. Extend nipples to allow clearance from insulation.

D. Install gage in piping to each inlet and outlet of water heater.

E. Install gage in piping to each end of backflow preventer.

F. Install gage in piping to each end of double check valves.

G. Install gage in piping to each inlet and outlet of water softener.

H. Install gage in piping to each inlet of water filter.

I. Install gage in piping to each inlet of commercial dishwasher machine.

3.8 DOMESTIC HOT WATER SYSTEM BALANCING

A. The test and balance contractor shall provide testing, adjusting and balancing of the hot water system, once the system is fully installed and operational. Preliminary and final reports shall be prepared and issued to the General Contractor, Architect and Engineer.

B. Preparation of the hot water system for balancing:

1. Confirm outlet temperature of the system at water heaters and/or storage tanks.
2. Verify recirculation pump operation and rotation.
3. Confirm/adjust setpoint of each individual riser balancing valve to flow a minimum of 0.5 gpm or as otherwise noted on the documents.

C. The test and balance report shall indicate the following:

1. Pressure, temperature and flow in gpm at the discharge side of each balancing valve referencing the valve tag number.
2. Pressure, temperature and flow in gpm at the suction side of each recirculating pump.

D. Copies of the final approved balancing report are to be included in the O and M manuals as noted in “Permits” under Part 1 of Section 22 05 00.

3.9 FIELD QUALITY CONTROL

A. Pressure test all domestic water piping.

B. After installation and prior to backfill or cover-up, rinse piping system of particulate contaminants, cap and subject to static water pressure of 125 psig for four (4) hours.

C. Repair leaks and defects and re-test any portion of piping system that fails.

D. Provide written test report including date and time of test, pass or fail indication, summary of remedial work required and date and time of each re-test.

E. Cleaning of piping systems:
   1. General cleaning of piping systems: Purge pipe of construction debris and contamination before placing the systems in service. Provide and install temporary connections as required to clean, purge, and circulate.
   2. Install temporary strainers at the inlet of pumps and other equipment as necessary where permanent strainers are not indicated. Keep strainers in service until the equipment has been tested, then remove either entire strainer or straining element only.
   3. Phase One: Initial flushing of system.
      a. Remove loose dirt, mill scale, weld beads, rust and other deleterious substance without damage to system components. Open valves, drains, vents and strainers at all system levels during flushing procedures. Flush until “potable water clear” and particles larger than 5 microns are removed.
      b. Connect dead-end supply and return headers, even if not shown on the drawings, and provide terminal drains in bottom of pipe end caps or blind flanges.
   4. Phase Two: Cleaning of Piping Systems:
      a. Remove, without chemical or mechanical damage to any system component, adherent dirt (organic soil), oil, grease, (hydrocarbons), soldering flux, mill varnish, piping compounds, rust (iron oxide), and other deleterious substances not removed by initial flushing.
      b. Flush system and replace with clean water.
   5. Phase Three: Final flushing and rinsing:
      a. Flush and rinse until “potable water clear” and particles larger than 5 microns are removed. Operate valves to dislodge any debris in valve body. Dispose of water in approved manner.
   6. Submit status reports upon completion of each phase of work on each system.

F. Branch Connections:
   1. Pipe 2” and smaller. For threaded piping, use straight size reducing tee. When branch is small than header, a nipple and reducing coupling or swagged nipple may be used.

G. 2-1/2” through 36”. For welding piping, when branch size is the same as header size, use welding tee. Use Weld-o-let when branch is smaller than header. For threaded branch connections, use 3000 lb. full coupling or Thread-o-let welded to header.

H. See section 220500 for additional requirements.

END OF SECTION 22 11 16

SECTION 22 30 00 - PLUMBING EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. SECTION 22 05 00 – COMMON WORK RESULT FOR PLUMBING

C. SECTION 22 05 29 – PLUMBING PIPE HANGERS AND SUPPORTS

1.2 SUMMARY

A. Provide a complete installation for each equipment type listed in this section.

B. Section Includes:
1. COMMERCIAL ELECTRIC WATER HEATERS
2. VACUUM RELIEF VALVES
3. T & P RELIEF VALVES
4. DIAPHRAGM-TYPE EXPANSION TANKS
5. BACKFLOW PREVENTERS
6. WATER PRESSURE REGULATING VALVES
7. WATER HAMMER ARRESTORS
8. THERMOSTATIC MIXING VALVES
9. TEMPERATURE INSTRUMENTS

1.3 SUBMITTALS

A. Product Data: Submit complete manufacturer's specification pages for each piece of equipment. Submit dimensioned drawings of water heaters indicating components and connections to other equipment and piping. Indicate pump type, capacity and power requirements. Submit certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Submit electrical characteristics and connection locations.

B. Manufacturer's Installation Instructions: Submit mounting and support requirements.

C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Accept all equipment on site in original labeled cartons. Inspect for damage.

B. Protect heat exchangers and tanks with temporary inlet and outlet caps. Maintain caps in place until installation.

1.5 EXTRA MATERIALS

A. Furnish two pump seals.

PART 2 - PRODUCTS

2.5 ▲ADD#3 COMMERCIAL ELECTRIC WATER HEATERS (EWH-x)

A. Manufacturers:
   1. A.O. Smith.
   2. Rheem.
   3. All electric point-of-use storage tank type water heaters provided within this project shall be the product of one manufacturer.

B. Furnish and install a Factory-assembled and wired, electric, vertical storage domestic hot water heaters with dimensions, capacities and electrical characteristics as scheduled on the Contract Drawings and as outlined herein. This Specification describes minimum quality and performance requirements. Variations of system components by the individual referenced manufacturers are acceptable for installation in this project provided they meet or exceed all of the requirements indicated herein, are compatible with the electrical service provided and fit properly in the allocated space.

C. Water heater(s) shall have the UL seal of certification and be factory equipped with an ASME rated temperature and pressure relief valve. Water heater(s) shall be constructed in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section IV Part HLW. Tank(s) shall have a coating of high temperature porcelain enamel and furnished with two (2) magnesium anode rods rigidly supported. Water heater(s) shall meet or exceed the standby loss requirements of ASHRAE. Tank(s) shall have a working pressure of 160 psi and shall be completely assembled.

D. Tank: Shall be insulated with 2-1/2" of rigid polyurethane foam insulation or with minimum two (2) inches glass fiber polyurethane encased in corrosion-resistant steel jacket; baked-on enamel finish.

E. Controls: Equip with diagnostic panel utilizing light emitting diodes. Each LED will correspond to the number and location of the heating elements and monitor their on-off function. Automatic immersion water thermostat; externally adjustable temperature range from 60 to 180 degrees Fahrenheit, flanged or screw-in nichrome elements, high temperature limit thermostat. Water heater(s) shall be provided with internal power circuit fusing, control circuit fusing, magnetic contactors, 120-volt control circuit transformer and immersion thermostat(s) with manual reset high limit control.

F. Water heater(s) shall capable for remote monitoring, Controls, leak detection and fault alert.

G. The heater(s) shall meet or exceed current standard or ASHRAE/IESNA 90.1 for recovery efficiency and standby loss. The tank shall have a 3, 5, or 10-year warranty against failure as outlined in the written warranty. Professional start-up service shall be included.

H. Capacity:
   1. Storage capacity: as indicated.
   2. Heating element size: as indicated.
   3. Number of heating elements: as indicated.
   4. Minimum recovery rate: (as indicated) gph with 100 degrees Fahrenheit temperature rise.
   5. Maximum working pressure: 160 psig.

6. Provide integral heat traps.
7. Provide drain pan.

I. Accessories: Brass water connections and dip tube, drain valve, magnesium anode, and ASME rated temperature and pressure relief valve.

2.7 VACUUM RELIEF VALVES

A. Construction shall be bronze body with silicone disc having a dry guide which is located out of the water. Unit shall open at less than 1/2" vacuum and be suitable for use within a system having a maximum water pressure of 200 psi and a maximum temperature of 250°F. Vacuum relief valves shall be in compliance with the appropriate requirements of ANSI Z21.22.

B. Vacuum relief valves shall be manufactured by Watts Regulator, Wilkins or Conbraco.

2.8 T & P RELIEF VALVES

A. Manufacturers: Watts Industries or approved equal.

B. Temperature and Pressure Relief:
1. ANSI Z21.22 certified, bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 210 degrees Fahrenheit, capacity ASME Section IV certified and labeled.

C. Vacuum Relief Valves:
1. Watts N36 Lead Free Series.

2.10 DIAPHRAGM-TYPE EXPANSION TANKS

A. Manufacturers: Bell & Gosset PT Series or approved equal.

B. Construction: Welded steel, tested and stamped in accordance with ASME Section VIII; supplied with National Board Form U-1, rated for working pressure of 125 psig, with flexible EPDM diaphragm sealed into tank, and steel legs or saddles.

C. Accessories: Pressure gage and air-charging fitting, tank drain; pre-charge to 12 psig.

D. Provide separate support to structure for expansion tank

2.25 ▲ADD#3 BACKFLOW PREVENTERS

A. Reduced Pressure Backflow Preventers
1. Comply with ASSE 1013.
2. Bronze body, with bronze internal parts and stainless-steel springs.
3. Two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve opening under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.
4. Manufacturers:
   a. Watts Series LF909

B. Double Check Valve Assemblies:
1. Comply with ASSE 1012.

2. Bronze body with corrosion resistant internal parts and stainless-steel springs; two independently operating check valves with intermediate atmospheric vent.
3. Dual Check Valve with Atmospheric Vent shall be installed at referenced cross-connections. Valve shall feature stainless steel and rubber internals protected by an integral strainer. Primary check shall be rubber to rubber seated, backed by the secondary check with rubber to metal seating.
4. Manufacturers:
   a. Watts Series LF007

C. Dual Check Valves:
1. Comply with ANSI/NSF Standard 18, Manual Food and Beverage Dispensing Equipment. (ASSE 1022 Approved Dual Check Valve).
2. Body and adapters are of 316 stainless steel construction and all rubber components comply with FDA food additive regulations.
3. All materials in contact with the potable water are in compliance with the requirements of the Safe Drinking Water Act, Public Law 93-523, National Interim Primary Drinking Water Regulations.
4. Manufacturers:
   a. Watts Model LF SD-2/9BD

D. Lead Free

2.26 WATER PRESSURE REGULATING VALVES

A. Low to Moderate Flow Systems (Less Than 70 GPM) and Individual Equipment
1. Sizes 1/2" through 2"
2. All bronze body
3. 0.25% maximum weighted average lead content
4. Integral stainless-steel strainer screen
5. Built-in bypass check valve
6. FDA approved elastomers
7. Renewable seat
8. Union end connection
9. Rated for water temperature up to 180°F and minimum 300 psi inlet pressure. Provide model with inlet pressure rating, reduced pressure range and factory preset outlet pressure as scheduled on Contract Drawings.
10. Manufactured by Wilkins Series 600XL or approved equal by Watts

B. Large Demand Systems
1. Sizes 1-1/4” through 2 - ASTM B62 bronze body
2. Sizes 2-1/2” and larger - ASTM A536 ductile iron body
3. Pressure reducing pilot control
4. Stainless steel disc guide, seat and bearing cover
5. Stainless steel stem, nut and spring
6. FDA approved Nylon reinforced Buna-N rubber diaphragm
7. Provide model(s) with size, temperature range, inlet pressure rating, reduced pressure range, outlet pressure and options as scheduled on Contract Drawings.
8. Cla-Val Company Series 90 or approved equal by Watts

2.27 WATER HAMMER ARRESTORS

A. Manufacturers: Watts Series LF15M2 (NPT solid hex brass adapter) or approved equal.

B. ANSI A112.26.1; copper construction, lead-free, piston type sized in accordance with PDI WH-201.

C. Pre-charged suitable for operation in temperature range 33 to 180 degrees Fahrenheit and maximum 150 psi working pressure.

D. Access Panel: Acorn Model 8292 or approved equal.

2.28 ▲ADD#3 THERMOSTATIC MIXING VALVES:

A. Manufacturers:
1. Leonard
2. Symmons
3. Bradley

B. Certified to ASSE 1017 (at water heater), ASSE 1070 (at point-of-use), and meets the anti-scald requirements of ASSE 1016.

C. Capacity:
1. TMV-1: ASSE 1070. Flow capacity between 0.25 GPM (minimum) and 4 GPM (maximum), 5 PSI pressure drop, lead free, mounted in piping under lavatory/sink/etc.
(1) Model (basis of design): Leonard 170-LF-CP

2. TMV-2: ASSE 1017. Flow capacity up to 11 GPM (maximum), 5 PSI pressure drop, ¾" inlets and 1" outlet, lead free. Install and locate immediately at water heater hot water ¾" outlet.
(1) Model (basis of design): Leonard TM-420B-LF-DT-CP

D. Accessories:
1. Check valve on inlets.
2. Volume control shut-off valve on outlet.
3. Stem thermometer on outlet.
4. Strainer stop checks on inlets.
5. Wall supports as required.

E. Cabinet: 16 gage stainless steel, for recessed mounting with keyed lock.

F. Mechanical Rooms, Central Plants, Boiler Rooms: Omit cabinet, surface mount.

G. Lead Free.

2.29 TEMPERATURE INSTRUMENTS

A. Manufacturer: Trerice, Marsh, Weksler, Weiss, Dwyer.

B. Thermometer Wells.
1. Brass or type 300 stainless steel. Machined bar stock, 1-piece construction.
2. Where installed in insulated piping or vessels, provide with extension neck to match insulation thickness.
3. Provide metal-to-metal contact with bulb chamber for maximum sensitivity.
4. Wells shall be sized to extend a minimum of 50% into pipe

2.30 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Coordinate required voltage, wire size and over current device size with electrical drawings. Contractor shall provide all electrical connections per manufacturer's installation instructions.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install equipment on concrete housekeeping pad, minimum 4 inches high and six (6) inches larger than water heater base on each side. Refer to Section 03 30 00

B. Install water heater with the followings.

1. Maintain manufacturer's recommended clearances around and over water heaters.

2. Connect natural gas piping in accordance with NFPA 54.

3. Provide water heater pan beneath all water heaters with 3/4-inch drain to nearest floor sink.

4. Connect natural gas piping to water heater, full size of water heater gas train inlet. Arrange piping with clearances for burner removal and service.

5. Install the following piping accessories.

a. On supply:

(1) Thermometer well and thermometer.

(2) Strainer.

(3) Pressure gage.

(4) Shutoff valve.

(5) Diaphragm-type expansion tank

b. On return:

(1) Thermometer well and thermometer.

(2) Pressure gage.

(3) Shutoff valve.

6. Install the following piping accessories on natural gas piping connections.

a. Strainer.

b. Pressure gage.

c. Shutoff valve.

d. Pressure reducing valve.

7. Install discharge piping from relief valves and drain valves to nearest floor drain.

8. Install circulator and diaphragm expansion tank on water heater.

9. Install water heater trim and accessories furnished loose for field mounting.

10. Install electrical devices furnished loose for field mounting.

11. Install control wiring between water heater control panel and field mounted control devices.

12. On gas-fired equipment connect flue to water heater outlet, full size of outlet.

13. Provide factory start-up and demonstration, including operating instructions for all gas-fired water heaters. Schedule training sessions with Architect and Owner's representative. Provide certification letter from manufacturer indicating water heater is installed in accordance with manufacturer's instructions.

C. Backflow Preventers and Vacuum Breakers.

1. Isolate all non-potable water requirements from the building domestic water system with backflow prevention device manufactured and certified for the particular application.

2. Pipe relief from backflow preventer indirectly to drain of sufficient size to evacuate maximum flow discharge.

3. Backflow preventers shall be duplexed full-size where located within domestic water lines serving in-patient areas, critical research areas, and/or any area or equipment where un-interruptible (24 hour) water service is required.

4. Test ports shall not be located more than 72 inches above finished floor or permanent platform.

5. Do not install vacuum breakers or backflow preventers above equipment, above ceilings, concealed within walls, or areas where water leakage can cause damage.

6. Install a strainer immediately upstream of each vacuum breaker and backflow preventer.

D. Water Hammer Arrestors (Hydraulic Shock Absorbers).

1. Provide hydraulic shock absorbers in cold and hot water supply lines to each fixture branch, battery of fixtures and at each automatic, solenoid-operated or quick-closing valve serving equipment.

2. Locate and size hydraulic shock absorbers in accordance with PDI-WH-201 Standard and manufacturer’s published recommendations.

3. Install hydraulic shock absorbers with clearances to allow inspection, removal and replacement. Provide access panels where required.

E. Water Pressure Regulating Valves.

1. Provide isolation valve, strainer and pressure gauge immediately upstream of each pressure regulating valve.

2. Provide pressure gauge and isolation valve immediately downstream of each pressure regulating valve.

3. Installation shall allow sufficient access to and space around components for adjustments and servicing.

4. Provide services of a direct factory representative for start-up service, inspection and necessary adjustments for all large demand regulators

F. Install diaphragm-type expansion tank on cold water supply line.

END OF SECTION 22 30 00

SECTION 22 40 00 - PLUMBING FIXTURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

B. SECTION 22 05 00 – COMMON WORK RESULTS FOR PLUMBING

C. SECTION 22 05 29 – PLUMBING PIPE HANGERS AND SUPPORTS

1.2 SUMMARY

A. Provide a complete system of plumbing fixtures and trim.

B. All soldering, materials, fixtures, and equipment for the potable water system shall meet the latest amendments, mandates, and laws for lead-free requirements as codified by the Reduction of Lead in Drinking Water Act (RLDWA) effective January 2014, and as codified by the Safe Drinking Water Act (SDWA) effective October 2020.

1.3 SUBMITTALS

A. Product Data: Submit catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

B. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Accept fixtures on site in factory packaging. Inspect for damage.

B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.5 EXTRA MATERIALS

A. Furnish two sets of faucet washers flush valve service kits lavatory supply fittings shower heads toilet seats.

PART 2 - PRODUCTS

2.1 ▲ADD#3 FLUSH VALVE WATER CLOSETS

A. Fixture Manufacturers:
   1. American Standard.
   2. Sloan.

B. Fixture Trim Manufacturers:

1. American Standard.

2. Sloan.

C. WC-1: ASME A112.19.2M; wall hung, siphon jet vitreous china closet bowl, with elongated rim, 1-1/2 inch top back spud, china bolt caps. Provide as indicated on plumbing fixture schedule.
   1. Wall Mounted: American Standard 3351.101.020
   2. Or as indicated on schedules.
   3. Trim : (Type C)

D. WC-2: Same as WC-1, except mounted at ADA/TAS height for appropriate age group.
   1. Wall Mounted: American Standard 3351.101.020
   2. Or as indicated on schedules.
   3. Trim : (Type C)
   4. Provide flush valve stem offset as required.

E. Trim:
   1. Exposed Flush Valve (Type C): ASME A112.18.1; exposed chrome plated, diaphragm type with non-hold open handle, escutcheon, 2” offset flush connection, integral screwdriver stop and vacuum breaker; maximum 1.28 gallon. Sloan Royal 111 Series and ADA version where required.

F. Seat: White plastic, open front, extended back, self-sustaining hinge, stainless steel mounting hardware, brass bolts, with without cover. Manufacturer: Bemis, Beneke, Olsonite, and Church. Bemis 1655SSCT or provide as indicated on plumbing fixture schedule.

G. Wall Mounted Carrier: ASME A112.6.1; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers. Provide concealed flush valve support option. Jay R. Smith 200 series carriers, or equal by Zurn, Wade, Josam, Mifab.

2.2 ▲ADD#3 LAVATORIES

A. Fixture Manufacturers:
   1. American Standard.

   2. Sloan.

B. Fixture Trim Manufacturers:
   1. Chicago.

C. Supply Fittings Manufacturers:
   1. Chicago.

   2. McGuire.

   3. Brasscraft.

   4. Zurn.

D. All soldering, materials, fixtures, and equipment for the potable water system shall meet the latest amendments, mandates, and laws for lead-free requirements as codified by the Reduction of Lead in Drinking Water Act (RLDWA) effective January 2014, and as codified by the Safe Drinking Water Act (SDWA) effective October 2020.

E. L-1, Vitreous China Wall Hung Basin: ASME A112.19.2M; American Standard 0355.012 vitreous china wall hung lavatory 21 x 18 inch minimum, with four (4) inch high back, 3 deck holes, rectangular basin with splash lip, front overflow, and soap depression. Provide floor mounted carrier for correct lavatory type. Provide as indicated on plumbing fixture schedule.
   1. Trim : (Type A1)

F. L-2, Vitreous China Wall Hung Basin: ASME A112.19.2M; American Standard 0356.421 vitreous china wall hung lavatory 21 x 18 inch minimum, with four (4) inch high back, single deck hole, rectangular basin with splash lip, front overflow, and soap depression. Provide floor mounted carrier for correct lavatory type. Provide as indicated on plumbing fixture schedule.
   1. Trim : (Type A1)

G. Trims:
   1. Supply Fitting: ASME A112.18.1 (Type A1); chrome plated brass spout, metering valve cartridge, supply fitting with open grid strainer, water economy aerator with maximum 1.5 gpm flow, ADA compliant. Chicago Faucet 857-765PSHABCP.

H. Accessories:
   1. Chrome plated 17 gage brass P-trap with clean-out plug and arm with escutcheon.
   2. Chrome plated 17 gage open grid P. O. plug.
   3. Removable key stops.
   4. Flexible supplies.
   5. Trap and waste insulated and offset to meet ADA compliance.
   6. Tempering valve – Power LFe480 series, Acorn, or Leonard.

I. Floor Mounted Carrier: ASME A112.6.1; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, concealed arm supports, bearing plate and studs. Jay R. Smith 710 Series, or equal by Zurn, Wade, Josam, Mifab.

2.3 LAVATORY and SINK INSULATION KIT

A. Manufacturers:
   1. Truebro/IPS
   2. Plumberex
   3. Zurn

B. Product Description: Safety Covers conforming to ANSI A177.1 and consisting of insulation kit of molded closed cell vinyl construction, 3/16 inch thick, white color, for

insulating tailpiece, P-trap, valves, and supply piping. Furnish with weep hole and angle valve access covers.

2.4 ▲ADD#3 FLOOR DRAINS

A. Manufacturers:
1. Josam Mfg.,
2. Jay R. Smith Mfg.,
3. Wade Spec. Products
4. Zurn Industries
5. Mifab

B. Floor Drain (FD-1): ASME A112.21.1; Top round floor drain, lacquered cast iron two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer. Zurn ZN-415-BZ1 (Vandal-Proof Secured Top) or provide as indicated on plumbing fixture schedule.

2.5 TRAP SEAL PRIMERS

A. Manufacturers:
1. PPP Inc.
2. Jay R. Smith Mfg.
3. Siouxchief
4. Zurn Industries
5. Mifab
6. Watts

B. (TP-2)
1. Vacuum breaker trap primer attached to water closet flush valve, similar to Zurn model P6000-TPO.

2.6 CLEANOUTS

A. Cleanouts shall be provided where indicated on Drawings and elsewhere as required by code.
1. Cleanouts in pipelines shall consist of cast iron ferrule and heavy duty cleanout plug with square head as scheduled on the Drawings. Where piping is concealed in floors or walls cleanouts shall be installed in or near surface of floor or walls and have countersunk plugs with covers

B. Cleanouts shall be provided at the base of the stack on all sanitary, waste and drainage stacks. Base of stack cleanouts on piping located within walls or partitions shall be cast iron cleanout tee with countersunk plug and chromium-plated round access cover, J.R. Smith figure or approved equal.

C. Manufacturers:
   1. Josam Mfg.
   2. Jay R. Smith Mfg.
   3. Wade Spec. Products
   4. Zurn Industries
   5. Mifab
   6. Watts

D. Floor, Outdoors (DCOTG or COTG): Coated cast iron body with gasket seal ABS plug and round cast iron scoriated non-skid cover. Jay R. Smith, Model 4220-F-C-U.

E. Floor, Indoors (FCO): Coated cast iron body with gasket seal ABS plug, threaded top assembly with round nickel bronze scoriated cover in service areas. Jay R. Smith, Model 4025 – F-C-U.

F. Wall Cleanout (WCO): Line type with lacquered cast iron body with bronze taper thread plug and round stainless steel access cover secured with vandal proof screw. Jay R. Smith Model 4420-U.

2.7 WALL HYDRANTS

A. Manufacturers:
   1. Josam Mfg.
   2. Jay R. Smith Mfg.
   3. Woodford.
   4. Zurn Industries
   5. Mifab
   6. Watts

B. Exterior Wall Hydrant (WH-1):
   1. Woodford RB67 Series, with box enclosure, freezeless, or provide as indicated on plumbing fixture schedule.
   2. ASSE 1019; Chrome, freezeless, self-draining type with lockable recessed box hose thread spout, hand wheel locks shield and removable key, and integral vacuum breaker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 31 13 - Administrative Requirements: Coordination and project conditions.

B. Verify walls and floor finishes are prepared and ready for installation of fixtures.

C. Verify electric power is available and of correct characteristics.

D. Confirm millwork is constructed with adequate provision for installation of counter top lavatories and sinks.

3.2 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.3 INSTALLATION

A. Install each fixture with trap, easily removable for servicing and cleaning.

B. Provide chrome plated rigid or flexible supplies to fixtures with loose key or screwdriver stops, reducers, and escutcheons.

C. Install components level and plumb.

D. Install and secure fixtures in place with wall supports wall carriers and bolts.

E. Seal fixtures to wall and floor surfaces with sealant, color to match fixture.

F. For ADA accessible water closets, install flush valve with handle to wide side of stall.

G. Emergency Shower: Provide a floor drain at each shower installation. Jay R. Smith Model 2005-A07NB-P or provide as indicated on plumbing fixture schedule.

H. Ice maker: Provide floor sink and cold-water outlet RVB-1 to each location. Coordinate with Architecture Drawings prior to rough-in. Ensure drains are located at low point(s) of floor slope.

I. Water Heater: Provide floor drain to each location. Coordinate with Architecture Drawings prior to rough-in. Ensure drains are located at low point(s) of floor slope.

J. Janitor Closet: Provide floor drain to each location. Coordinate with Architecture Drawings prior to rough-in. Ensure drains are located at low point(s) of floor slope.

K. Commercial Washer: Provide floor drain to each location. Coordinate with Architecture Drawings prior to rough-in. Ensure drains are located at low point(s) of floor slope.

L. Washing Machine: Provide Hot and cold water outlet RVB-2 to each location. Coordinate with Architecture Drawings prior to rough-in.

M. Provide power wiring, including control power transformers as required for all sensor type fixtures.

N. Bolt carriers to the floor.

O. All sinks shall have an offset rear centered drain.

3.4 INTERFACE WITH OTHER PRODUCTS

A. Review millwork shop-drawings. Confirm location and size of fixtures and openings before rough in and installation.

3.5 ADJUSTING

A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

B. Hot water temperature outlet at each sink and lavatory shall be adjusted to 105 degree F maximum except for water supplying clothes washing machines and kitchen equipment which shall supply with 140 degree F.

3.6 CLEANING

A. Clean plumbing fixtures and equipment.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Do not permit use of fixtures before final acceptance.

END OF SECTION 22 40 00

SECTION 23 37 23 - HVAC GRAVITY VENTILATORS

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. Provide complete, fully operational fans where indicated on Drawings.

B. Section Includes:

1. Roof mounted relief hood

C. Related Sections:

1. Section 23 31 00 - HVAC Duct and Casings: Product requirements for hangers for placement by this section.

2. Section 23 33 00 - Air Duct Accessories: Product requirements for duct accessories for placement by this section.

3. Coordinate work in this Section with Division 7.

1.3 SUBMITTALS

A. Provide line-by-line specification review annotated to certify compliance or deviation.

B. Shop Drawings: Indicate size and configuration of fan assembly, mountings, weights, ductwork, and accessory connections.

C. Product Data: Submit data on each type of fan and include accessories, fan curves with specified operating point plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, electrical characteristics, and connection requirements.

D. Manufacturer's Installation Instructions: Submit fan manufacturer’s instructions.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.5 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210 and bear AMCA Certified Rating Seal.

B. Sound Ratings: AMCA 301, tested to AMCA 300, and bear AMCA Certified Sound Rating Seal.

C. UL Compliance: UL listed and labeled, designed, manufactured, and tested in accordance with UL 705 and UL 762 for kitchen exhaust.

D. Balance Quality: Conform to AMCA 204.

E. Energy Recovery Unit Wheel Energy Transfer Rating: Meet ARI 1060.

1.6 WARRANTY

A. Furnish one (1) year manufacturer's warranty. Warranty shall begin from date of Certificate of Substantial Completion. Warranty start date from shipment or start up will not be acceptable.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Ventilators shall be factory wrapped by the manufacturer prior to shipment to prevent damage due to weather and road debris during transportation and thereafter while in storage awaiting installation. Protection of the complete unit from rusting and water migration must be handled as best suits the circumstances. Store in a place protected from construction traffic and weather.

B. All equipment shall remain in manufacturer's protective shipping wrap during construction. Openings must remain protected and covered during construction. If protective wrap has been damaged, the contractor shall provide additional protective wrap as directed by engineer.

C. Contractor shall adequately protect equipment from damage after delivery to the project. Equipment shall be completely covered and secured with heavy tarpaulins, drop cloths or other protective coverings as required to protect from inclement weather, moisture, chemicals, construction traffic, plaster, paint, mortar and/or dirt. Do not cover with plastic materials and trap condensate and cause corrosion. Protective covering is in addition to the manufacturer's original factory packaging. Original factory packaging shall not be deemed as acceptable protection of equipment.

D. Do not deliver equipment to the project site until progress of construction has reached the stage where equipment is actually needed or until building is closed in enough to protect the equipment from weather. Equipment allowed to stand in the weather will be rejected, and the contractor is obligated to furnish new equipment of like kind at no additional cost to the Owner. Limit shipment of bulk and multi-use materials to quantities needed for immediate installation.

PART 2 - PRODUCTS.

2.1 ROOF MOUNTED RELIEF HOOD

A. Manufacturers: Subject to compliance with scheduled capacities and specification, provide products by the following manufacturers.

1. Greenheck
2. Cook
3. PennBarry
4. Twin City
5. ACME

B. Unit shall be an aluminum roof mounted relief hood.

C. Construction: The unit shall be of bolted and welded construction utilizing corrosion resistant fasteners. The aluminum hood shall be constructed of minimum 14-gauge marine alloy aluminum, bolted to a minimum 8-gauge aluminum support structure. The

aluminum base shall have sealed curb cap corners by continuous weld or application of butyl tape to inside of the curb cap for maximum leak protection. Bird screen constructed of 1/2" mesh shall be mounted across the intake opening. Unit shall bear an engraved aluminum nameplate and shall be shipped in ISTA certified transit tested packaging.

D. Roof Curb: 12-inch-high of 18-gauge galvanized steel construction with continuously welded seams, built-in cant strips, 1-1/2-inch insulation, damper tray, hinged curb adapter for access to dampers, and factory installed nailer strip. Coordinate installation with Division 7.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify roof curbs are installed, and dimensions are as shown on shop drawings.

3.2 INSTALLATION

A. Secure intake/relief hoods with cadmium plated steel lag screws to roof curb structure.

B. Install dampers in roof curb damper tray.

C. Provide hinged curb adapter to permit access to dampers and duct connection.

D. Install safety screen where inlet or outlet is exposed.

3.3 MANUFACTURER'S FIELD SERVICES

A. Furnish services of factory trained representative for minimum of one (1) day to start-up, calibrate controls, and instruct Owner on operation and maintenance.

3.4 CLEANING

A. Vacuum clean inside of fan cabinet.

3.5 DEMONSTRATION

A. Demonstrate fan operation and maintenance procedures.

3.6 PROTECTION OF FINISHED WORK

A. Do not operate until ductwork is clean, bearings are lubricated, and fan has been test run under observation.

END OF SECTION 23 37 23

SECTION 27 05 00 - COMMON WORK RESULTS FOR COMMUNICATIONS

PART 1 – GENERAL

1.01 RELATED WORK

A. The entire drawing and specification package apply to the work specified in the telecommunications sections of the specifications and shall be complied with in every respect. The Contract Documents are comprised of the drawings and specifications. The Contractor shall examine these Contract Documents, and coordinate required work indicated in each.

1.02 SCOPE OF WORK

A. The work covered by the specifications includes furnishing materials, labor, transportation, tools, permits, fees, utilities, and incidentals necessary for the complete installation of work required in the Contract Drawings.

B. It is the intent of the Contract Documents to provide an extension of the existing installed systems interfaced with new systems, complete in every respect.

C. The Contractor shall be responsible for coordination and proper relation of his work to the building structure and to the work of all trades. The Contractor shall visit the premises and thoroughly familiarize himself with the existing site conditions, details of the work and the working conditions, and verify dimensions in the field. The Contractor shall advise the Engineer of any discrepancy prior to bidding. The submission of bids shall be deemed evidence of the Contractor's site visit; coordination of existing conditions and include consideration for existing conditions.

D. Provide line-by-line specification review for each Division 27 section annotated to certify compliance or deviation.

1.03 DRAWINGS AND SPECIFICATIONS

A. The drawings and these specifications are complementary to each other, and what is required by one shall be as binding as if required by both.

B. If variations or departures from the drawings are deemed necessary by the Contractor, details of such departures and the reasons therefore shall be submitted to the Engineer for review. No departures shall be made without prior written acceptance of the Engineer.

C. Should the drawings or specifications disagree in themselves or with their counterpart, the better quality or greater quantity of work or materials shall be estimated upon, and unless otherwise directed by the Engineer in writing, shall be performed or furnished. In case the specifications should not fully agree with the Schedules, the latter shall govern. Figures indicated on drawings govern scale measurements and large scale details govern small scale drawings.

D. Items specifically mentioned in the specifications but not shown on the drawings and/or items shown on the drawings but not specifically mentioned in the specifications shall be installed by the Contractor under the appropriate section of work as if they were both specified and shown.

1.04 CODES AND STANDARDS

A. All work shall comply with the applicable articles of the National Electrical Code, the National Electrical Safety Code, the National Fire Codes (published by National Fire Protection Association), and City Codes and Ordinances, as well as any other authorities that may have lawful jurisdiction pertaining to the work specified. None of the terms or provisions of this specification shall be construed as waiving any of the rules, regulations, or requirements of these authorities.

B. Contractor is responsible for knowledge and application of current versions of all applicable standards and codes. In cases where listed standards and codes have been updated, Contractor shall adhere to the most recent revisions, including all relevant changes or addenda at the time of installation.

C. ANSI/TIA:
1. ANSI/TIA-526-7A:2015 (R2022) Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
2. TIA-526.2-A (July 2015) Effective Transmitter Output Power Coupled into Single-Mode Fiber Optic Cable - Adoption of IEC 61280-1-1 ed. 2 Part 1-1: Test Procedures for General Communication Subsystems – Transmitter Output Optical Power Measurement for Single-Mode Optical Fiber Cable
3. ANSI/TIA-4994 (March 2015) Standard for Sustainable Information Communications Technology
4. ANSI/TIA-526-14-C (April 2015) Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
5. ANSI/TIA-568.0-E (2020) Generic B (supersedes TIA-568-C.0 and TIA-568-C-1)
6. ANSI/TIA-568.1- E (2020) Commercial Building Telecommunications Infrastructure Standard (supersedes ANSI/TIA-C.1)
7. ANSI/TIA-568.2-E (October 2024) Balanced Twisted-Pair Telecommunications Cabling and Components Standard
8. ANSI/TIA-568.3-E (September 2022) Optical Fiber Cabling Components Standard
9. ANSI/TIA-568.4-E (July 2022) Broadband Coaxial Cabling Components Standard
10. ANSI/TIA-569-E Addendum 1 (2022) Telecommunications Pathways and Spaces
11. ANSI/TIA-598-D (July 2014) Optical Fiber Cable Color Coding, with Addenda 1 & 2.
12. ANSI/TIA-570-E (May 2024) Residential Telecommunications Infrastructure Standard
13. ANSI/TIA-606-D (October 2021) Administration Standard for Telecommunications Infrastructure
14. ANSI/TIA-607-E (May 2024) Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
15. ANSI/TIA-758-B (March 2012) Customer-Owned Outside Plant Telecommunication Infrastructure Standard
16. ANSI/TIA-862-D (June 2022) Structured Cabling Infrastructure Standard for Intelligent Building Systems
17. ANSI/TIA-942-C (May 2024) Telecommunications Infrastructure Standard for Data Centers
18. ANSI/TIA-1005-A (March 2020) Telecommunications Infrastructure Standard for Industrial Premises
19. ANSI/TIA-1005-A-1 (January 2015) Telecommunications Infrastructure Standard for Industrial Premises, Addendum 1- M12-8 X-Coding Connector - Addendum to TIA-1005-A
20. ANSI/TIA-1183-B (February 2023) Measurement Methods and Test Fixtures for Balun-Less Measurements of Balanced Components and Systems
21. ANSI/TIA-1183-1 (January 2016) Measurement Methods and Test Fixtures for Balun-Less Measurements of Balanced Components and Systems, Extending Frequency Capabilities to 2 GHz – Incorporated into TIA-1183-B
22. TIA-1152-A (June 2025) Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling
23. TIA-1179-B (June 2023) Healthcare Facility Telecommunications Infrastructure

Standard

24. ANSI/TIA-4966-A (February 2022) Telecommunications Infrastructure Standard for Educational Facilities. Addendum: TIA-4966-A-1, (March 2023), adds support for single-pair cabling
25. TIA-455-104-B (February 2016) FOTP 104- Fiber Optic Cable Cyclic Flexing Test (supersedes TIA-455-104-A)
26. TIA/EIA-455-25-D (February 2016) FOTP-25 Impact Testing of Optical Fiber Cables
27. TIA-604-18-A (April 2024) FOCIS 18 Fiber Optic Connector Intermateability Standard – Type MPO-16
28. TIA-604-5-F (March 2019) FOCIS 5 Fiber Optic Connector Intermateability Standard-Type MPO
29. TIA-5017 (March 2016) Telecommunications Physical Network Security Standard
30. TIA-TSB-155-A (Reaffirmed 10-6-2014) Guidelines for the Assessment and Mitigation of Installed Category 6 Cabling to Support 10GBASE-T
31. TSB-184-A (March 2017) Guidelines for Supporting Power Delivery Over Balanced Twisted-Pair Cabling
32. TSB-4979 (August 2013) Practical Considerations for Implementation of Multimode Launch Conditions in the Field
33. TSB-190-A (December 2023) Guidelines on Shared Pathways and Shared Sheaths
34. TIA-TSB-162-A (November 2013) Telecommunications Cabling Guidelines for Wireless Access Points
35. TSB-5018 (July 2016) Structured Cabling Infrastructure Guidelines to support Distributed Antenna Systems
36. TIA-492AAAE (June 2016) Detail Specification for 50-µm Core Diameter/125-µm Cladding Diameter Class 1a Graded-Index Multimode Optical Fibers with Laser-Optimized Bandwidth Characteristics Specified for Wavelength Division Multiplexing
37. TIA-492AAAB-A (November 2009) Detail specification for 50-µm core diameter/125-µm cladding diameter class Ia graded-index multimode optical fibers
38. TIA-455-243 (March 2010) FOTP-243 Polarization-mode Dispersion Measurement for Installed Single-mode Optical Fibers by Wavelength-scanning OTDR and States-of-Polarization Analysis
39. TSB-172-A (February 2013) Higher Data Rate Multimode Fiber Transmission Techniques

D. ISO/IEC:

1. ISO/IEC TR 11801-9911:2024 – Guidelines for balanced single-pair applications within 4-pair cabling
2. ISO/IEC TR 29106 AMD 1 Information technology -- Generic cabling -- Introduction to the MICE environmental classification
3. ISO/IEC 11801-5:2017 – Generic cabling for data centers
4. ISO/IEC 11801 series, including: 11801-1:2017 (General) 11801-2:2017 (Office premises)
5. ISO/IEC 11801-4:2017 – Generic cabling for homes
6. ISO/IEC 11801-3:2017 – Generic cabling for industrial premises
7. ISO/IEC 14763-2:2019 – Planning and installation
8. ISO/IEC 14763-2-1 Information technology – Implementation and operation of customer premises cabling – Part 2-1: Planning and installation – Identifiers within administration systems
9. ISO/IEC 14763-3:2024 – Testing of optical fiber cabling
10. ISO/IEC TR 24704 Information technology – Customer premises cabling for wireless access points
11. ISO/IEC TR 24750 Information technology – Assessment and mitigation of installed balanced cabling channels in order to support 10GBASE-T
12. ISO/IEC TR 29125 IT Telecommunications cabling requirements for remote powering of terminal equipment

E. BICSI – Building Industry Consultative Services International – Published Standards
1. ANSI/BICSI 001-2017 (R22) – ICT Systems Design for Educational Institutions
2. ANSI/BICSI 002-2024 – Data Center Design and Implementation Best Practices
3. ANSI/BICSI 003-2024 – BIM Practices for ICT Systems
4. ANSI/BICSI 004-2018 – ICT Design for Healthcare Facilities
5. ANSI/BICSI 007-2020 – ICT Design for Intelligent Buildings
6. ANSI/BICSI 006-2020 – DAS Design and Implementation Best Practices
7. ANSI/BICSI N1-2019 – ICT Installation Practices
8. NECA/BICSI 607-2011, Standard for Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings
9. BICSI – Building Industry Consultative Services International – Manuals
10. Telecommunications Distribution Methods Manual, TDMM 15th Edition (2024)
11. Information Transport Systems Installation Methods Manual, ITSIMM 8th Edition (2022)
12. Outside Plant Design Reference Manual, OSPDRM 6th Edition
13. BICSI's ICT Terminology Handbook, Version 1.0
14. Telecommunications Project Management Manual, TPMRM 2nd Edition
15. Telecommunications Project Management Reference Document (TPMRD), 2nd Edition
16. BICSI's Special ICT Design Considerations, Version 1.0
17. Essentials of Bonding and Grounding, Version 1.0

F. National Electric Codes
1. National Electrical Safety Code IEEE C2-2023 (NESC 2023 Edition)
2. NFPA 70-2023 (NEC 2023 Edition)
3. ANSI/ IEEE C2-2023, National Electrical Safety Code®
4. National Electrical Code (NEC) (NFPA 70-2023)
5. NFPA 72 National Fire Alarm and Signaling Code, NFPA 72-2025 Edition

G. ASHRAE
1. ANSI/ASHRAE Standard 90.4-2022, Energy Standard for Data Centers and Telecommunications Buildings

H. OSHA Standards and Regulations – all applicable

I. Local Codes and Standards – all applicable

J. Anywhere cabling standards conflict with one another or with electrical or safety codes, Contractor shall defer to the NEC and any applicable local codes or ordinances, or default to the most stringent requirements listed by either.

K. Knowledge and execution of applicable standards and codes is the sole responsibility of the Contractor.

L. Any violations of applicable standards or codes committed by the Contractor shall be remedied at the Contractor’s expense.

M. In any instance where these Specifications call for materials for construction of a better quality or larger size than required by the codes, the provisions of these Specifications shall take precedence. The codes shall govern in case of direct conflict between the Codes and the Drawings.

1.05 EXISTING UTILITIES

A. The Contract Documents reflect the general location and routing for all telecommunications services known to exist on this project.

1.06 BUILDING CONSTRUCTION AND LAYOUT OF WORK

A. General: It shall be the responsibility of the Contractor to consult the Engineering Drawings and Details so as to thoroughly familiarize himself with the type and quality of construction to be provided on this project.

B. The drawings are diagrammatic in nature and do not show every connection in detail or every line or conduit in its exact location. These details are subject to the requirements of all codes and ordinances as well as all structural and architectural conditions. The Contractor shall carefully investigate structural and finish conditions and shall coordinate the separate trades in order to avoid interference between the various phases of work. Work shall be laid out so that it will be concealed in furred chases unless specifically noted or indicated to be exposed. Work shall be installed to avoid crippling of structural members; therefore, inserts to accommodate conduit hangers shall be set before concrete is poured, and proper openings through floors, walls, beams, etc. shall be provided as hereinafter specified or as otherwise indicated or required before concrete is poured. All work shall be run parallel or perpendicular to the lines of the building unless otherwise noted.

C. The approximate location of equipment items is indicated on the drawings. Exact locations are to be determined by coordination of dimensions from approved equipment submittals and site-verified field measurements and will in all cases be subject to the approval of the Engineer. The Engineer reserves the right to make any reasonable changes in the indicated locations prior to installation for no additional cost.

D. In areas of existing special ceiling construction the removal and restoration must be carefully planned such that the existing condition of the ceilings is maintained. It may be necessary for the Contractor to procure a Subcontractor familiar with this work to achieve this requirement.

PART 2 – PRODUCTS

2.01 GENERAL MATERIALS AND EQUIPMENT REQUIREMENTS

A. Materials, in general, shall conform to the National Electrical Code requirements and shall be listed, inspected, and approved by the Underwriters Laboratories and shall bear the UL label where labeling service is available. The label or listing of the Underwriters Laboratories, Inc. will be accepted as evidence that the materials or equipment conform to the applicable standards of that agency. In lieu of this listing, the Contractor may submit a statement from a nationally recognized, adequately equipped testing agency, indicating that the items have been tested in accordance with required procedures, and that the materials and equipment comply with all Contract requirements.

2.02 STANDARD PRODUCTS

A. Materials and equipment shall be the standard catalog products of manufacturers regularly engaged in the manufacture of products conforming to these specifications, and shall essentially duplicate materials and equipment that have been in satisfactory use at least two (2) years prior to bid opening. Where custom or special items are required, these shall be fully described using drawings, material lists, etc., which fully describe in detail the item proposed for use on this project.

2.03 MANUFACTURER'S INSTRUCTIONS

A. The Contractor is responsible for furnishing the proper telecommunications equipment and/or material and for seeing it is installed as intended by the manufacturer. The Contractor shall, wherever necessary, request advice and supervisory assistance from equipment manufacturers as required for the proper installation, operation, or start-up. The Contractor shall notify the Engineer in writing of any conflict between the Contract Documents and the manufacturer's recommendations and shall obtain from the Engineer instructions/direction before proceeding with the work. The Contractor shall pay for all costs resulting from deficiencies created by installation not in accordance with the manufacturer's recommendations or the instructions of the Engineer.

2.04 RUST PREVENTION

A. Metallic materials shall be protected against corrosion. Exposed metallic parts of equipment exposed to the elements shall be given a rust inhibiting treatment and standard finish by the manufacturer. Components such as boxes, bodies, fittings, guards, and miscellaneous parts shall be protected in accordance with the ASTM A123 or A153, except where other equivalent protective treatment is specifically approved in writing.

2.05 STORAGE AT SITE

A. The Contractor shall not receive material or equipment at the job site until ready for installation or until there is suitable space provided to properly protect equipment from rust, weather, humidity, dust, or physical damage.

2.06 CONDITION OF MATERIALS

A. All materials required for the installation of the telecommunications systems shall be new and unused. Any material or equipment damaged in transit from the factory, during delivery to premises, while in storage on premises, while being erected and installed, or while being tested, until time of final acceptance, shall be replaced by this Contractor without extra cost to Owner.

2.07 NAMEPLATES

A. Factory assembled components and equipment shall be provided with embossed nameplates, securely attached to the equipment with rivets or screws. Nameplates will have information required to specifically identify the equipment in the future such as the manufacturer's name, address, catalog number, serial number, etc. All data on nameplates shall be legible at the time of final inspection.

PART 3 – EXECUTION

3.01 ACCEPTABLE MANUFACTURERS

A. The specifications contain the names of manufacturers which are considered acceptable based on the quality of the product.

B. Where acceptable manufacturers are listed, only products of those manufacturers may be provided. Additionally, the product must meet all the detailed requirements of the specifications.

C. If no manufacturer’s name is mentioned, the Contractor shall provide equipment and material

which meet the specifications.

D. The drawings represent the manufacturer's equipment scheduled. The listing of acceptable manufacturers in the specifications is not intended to imply that equipment of these other manufacturers will fit in the space provided or have the same electrical, structural or other requirements as the equipment scheduled. The Contractor must ensure that the equipment provided will meet all project requirements prior to submitting data on that equipment.

3.02 SPACE AND EQUIPMENT ARRANGEMENT

A. Equipment and components shall be installed in a manner to permit access to parts requiring service. Telecommunications equipment shall be installed in such a manner as to allow removal for service without disassembly of adjacent equipment.

B. Large equipment or apparatus which is to be installed in the building, and which is too large to permit access through stairways, doorways, or shafts shall be brought to the job and placed in the space before the enclosing structure is completed. Following placement in the space, such apparatus shall be thoroughly protected from damage.

C. Equipment shall have working clearances as required by applicable codes and standards.

3.03 SUBMITTAL AND REVIEW OF MATERIALS

A. After the Contract is awarded, but prior to proceeding with the Work, the Contractor shall obtain, check, certify, and submit complete Shop Drawings and Brochures from Manufacturers, Suppliers, Vendors, etc., for all materials and equipment specified herein. Submit Shop Drawings and Brochures in sufficient time so as not to impede the progress of work. Three weeks will be required for the processing of Shop Drawings and Brochures in the Engineer's office, exclusive of transmittal time. This time shall be considered by the Contractor when scheduling submittal data. After the Contract is awarded, the Contractor will advise the Engineer in writing of the schedule for submission of shop drawings and product data and the persons authorized to sign submittal data on behalf of the Company.

B. The Engineer's review of Shop Drawings and Brochures shall not relieve the Contractor of the responsibility for dimensions, errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the Engineer's noting some errors but overlooking others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the submittal data review.

C. Before submission of Shop Drawings and Brochures, the Contractor shall certify that each Shop Drawing and each item of material or equipment complies with the Contract Documents for this Project. Such certification shall be made by the Owner, a Partner, a Corporate Officer of the Contractor, or by a person duly authorized to sign for the Contractor. Unless so certified, Shop Drawings and/or Brochures will be returned for resubmittal. Certifications shall be in the form of rubber stamp impressions or typed letter which states:

I hereby certify that this Shop Drawing and/or brochure and the equipment and material shown on this Shop Drawing and/or Brochure complies in all aspects (except as noted*) with the requirements of the Contract Documents for this Project. I further certify that all data shown herein as to performance, dimensions, construction, materials, and other pertinent items are true and correct.

Name of Contractor_____

Signed_____

Position_____

Date_____

*Refer to exception requirements herein.

D. Each Shop Drawing shall indicate in the lower right hand corner and each Brochure shall indicate on the front cover the following: Title of the Sheet or Brochure; name and location of the building; names of the Engineer, Contractor, Manufacturer, Supplier, Vendor, etc., the date of submittal; and the date of each correction and revision. So far as is practical, each Shop Drawing and/or Brochure shall bear a cross-reference note to the sheet number or numbers of the Contract Drawings and Specifications showing the same work. Shop Drawings and Brochures shall be prepared as follows:

1. Shop Drawings: Drawings shall be newly prepared and not reproduced from the Contract Documents, drawn to a scale that can be easily read and shall contain sufficient plans, elevations, sections, and isometrics to describe clearly the items in question. Drawings shall be prepared by a draftsman skilled in this type of work. All equipment layouts and similar Shop Drawings shall be drawn to at least 1/4-inch = 1'-0" scale.

2. All Shop Drawings shall indicate the equipment actually purchased. The elevation, location, support points, load imposed on the structure at support and anchor points, shall be indicated. All beam penetrations and slab penetrations shall be indicated and sized and shall be coordinated. All Design Drawing space allocations shall be maintained, such as ceiling height, chase walls, equipment room size, etc., unless proper written authorization is required from the Engineer to change them. All associated equipment shall be coordinated and clearly shown on the Shop Drawings.

3. Brochures: Brochures submitted to the Engineer shall be published by the Manufacturers and shall contain complete and detailed engineering and dimensional information to show that the equipment will fit into the allotted space.

4. Brochures submitted shall contain only information which is relevant to the particular equipment or materials to be furnished. Do not submit catalogs that describe several different items other than those items to be used unless all irrelevant information is marked out or relevant information is clearly marked.

E. The submittal format shall follow the Specifications format with a submittal required for each required section. The submittal shall be contained in a three-ring hard back binder. Copies of each submittal shall be three-hole punched and arranged (or folded if required) for the Engineer’s filing convenience. Provide one copy of updated TABLE OF CONTENTS and progressive-tabbed index sheets also for the Engineer’s filing convenience.

F. Submittal data for each section must be complete. Partial submittals will not be reviewed. To the greatest extent possible all sections shall be submitted with the first submission. No more than three additional submissions will be allowed to complete the submittal package.

G. Unless a greater number is indicated within Division One of these specifications, submit six (6) copies of all Brochures for review. Submit one (1) reproducible and one (1) blueprint of shop drawings for review. Comments will be made on the reproducible to facilitate copying.

H. Any submittal that is disapproved must be resubmitted within two (2) weeks following notification of such disapproval. If no satisfactory material is submitted within the two-week period, the Engineer reserves the right to require the Contractor to furnish items exactly as described in the Contract Documents.

I. No allowances will be made for submittals which are not made in a timely fashion or which are turned down because they do not meet the specifications. Should delivery problems arise due to the above, affecting the completion time of the project, the Contractor will furnish and install acceptable alternates until the proper materials arrive and then replace the alternate materials with the approved materials, all at no cost to the Owner. If the Contractor is not able to furnish an acceptable alternate until the proper materials arrive, he will assume all costs for furnishing and installing all alternates as directed by the Engineer and/or will pay a suitable penalty for the inconvenience experienced by the Owner. This penalty will be set by the Owner based on the particular circumstances.

3.04 SUPERVISION

A. A competent certified foreman or superintendent, approved by the Engineer, shall be maintained at the project site to receive instructions and to act for the Contractor. Once this superintendent has been approved, no change shall be made without approval of the Owner or his authorized representative. The Owner and his authorized representative shall have the right to observe the work at any time. The Contractor shall have a representative present when his work is being observed, and he shall give assistance as required.

3.05 CUTTING AND PATCHING

A. Where it is necessary to cut through walls, floors, or ceilings to permit installation of work under this section of the Contract, or to repair any defects that may appear, up to the expiration of guarantee period, such cutting shall be done under the supervision of the Engineer. The Contractor shall not be permitted to cut or modify any structural members without the written permission of the Engineer.

B. Patching of all openings and repairing of any damage to the work of other trades occasioned by cutting operations, or occasioned by the failure of any part of work installed under this Contract, shall be performed by the trade whose work is involved, and shall be paid for by the Contractor.

C. Openings cut through exterior walls or roofs shall be provided with suitable covers to protect the property or materials involved. Openings cut through walls below grade shall be properly protected to prevent entrance of water or other foreign elements. Openings cut between fire zones or plenums shall be sealed to maintain the fire integrity of the wall or floor. Conduits and cable tray through plenum wall shall be sealed using materials complying with UL 1479, NEC 300-21, and NEC 800-3(C), and shall be UL classified.

3.06 HOISTING, SCAFFOLDING, AND TRANSPORTATION

A. Provide hoisting and scaffolding facilities as required to set materials and equipment in place.

3.07 CLEANING

A. The Contractor shall at all times keep the premises free from accumulations of waste material or rubbish. Debris shall be removed from the site and from any street or alley

adjacent to the site.

B. At completion of the project, the Contractor shall remove all tools, scaffolding, and surplus materials. Contractor shall leave the area "broom clean". Before final acceptance, vacuum all panels, cabinets, racks and other equipment enclosures. Wipe clean all fixture lenses and reflectors, all panelboard and switchboard interior and exterior surfaces, being careful to remove all stray paint, construction materials, dust, and particles. Touch-up all marred surfaces to restore existing conditions to those provided by the manufacturer.

3.08 CONDUIT SLEEVES

A. Where conduits pass through walls or floors not on fill, galvanized sheet metal sleeves shall be provided and shall be sealed to prevent air and noise transmission. In walls, they shall be flush with each finished surface. In pipe chases, they shall extend 1-1/2 inches above floor slab and be cemented in a water tight manner. Size of these sleeves shall be at least 1/2 inch greater than outside diameter of the conduit.

B. For conduits passing through outside walls, provide and install galvanized steel sleeves having an inside diameter at least 4 inches greater than the outside diameter of contained conduit. Where these occur in walls having a waterproof coating applied, the sleeves shall have welded flanges to build into waterproofing. When conduits are installed, the annular space between pipe and sleeve shall be effectively sealed, using shredded lead hammered in place or an approved mastic sealer.

C. Pipe and duct sleeves, pitch pockets, and flashings compatible with the roofing installation shall be provided for roof penetrations.

3.09 GROUNDING

A. Ground buses shall be provided in each Telecommunications room by Division 16 Contractor unless noted on Contract Drawings.

B. Telecommunications grounding system shall be a single point grounding from the building entrance electrical ground to each Telecommunications room. This Grounding system shall be provided by Division 16 Contractor unless notes on Contract Drawings.

C. All Conduit systems, cabinets' racks, cable trays, protector blocks, SCTP patch panels and/or miscellaneous equipment, etc. shall be grounded by being connected to the common telecommunications grounding system. The conductors shall be a # 6awg solid with a green jacket

3.10 RECEDENCE OF WORK

A. This Contract includes many different systems furnished and installed by different trades. All trades shall coordinate their work with that of all other trades so that it may be installed in the most direct and workmanlike manner without hindering or handicapping other trades.

3.11 RECORD DRAWINGS

A. The Contractor shall keep a set of Drawings on the job, noting daily all changes made in these Drawings in connection with the final installation, including exact dimensioned locations of all new and uncovered existing active and inactive utilities outside the building, and shall turn over a clean, neatly marked set of mylar reproducible Drawings showing "as-installed" work to the Engineer for delivery to the Owner. All underground utilities, services, and systems shall be accurately located by the Contractor and

dimensioned on the "as-installed" Drawings.

3.12 OPERATING AND MAINTENANCE MANUAL

A. The Contractor shall furnish indexed operating and maintenance manuals with complete technical data for each system, piece of equipment, and material installed under this Contract.

B. Two (2) copies of the manual, bound in hardback binders or an approved equivalent, shall be provided. One copy shall be completed and delivered to the Engineer prior to the time that system and equipment tests are performed. The second copy shall be delivered prior to final acceptance.
1. Provide one (1) operation and Maintenance manual for each building. Provide one (1) as-built floor plan and one CD for each building.

C. The manual shall include the following information
1. Manufacturer's installation instructions.
2. Manufacturer's local representative and/or distributor's name and address.
3. Manufacturer's operating and maintenance instructions.
4. Manufacturer's internal wiring diagrams.
5. Contractor's installation wiring diagrams.
6. Replacement part number listings and descriptions.
7. Framed operating instructions, when required, in individual Specification sections.
8. Warranties and guarantees.
9. Provide an approved submittal at the front of each section.

D. The manuals shall be identified on the cover as "Operating and Maintenance Manual" with additional cover display of the name and location of project, the Owner, the Engineers, the General Contractor, and the Subcontractors installing equipment represented in the brochure.

E. The manual shall have a Table of Contents and shall be grouped in sections according to the sections of Division 27. Each section shall have a copy of the pages of the Specifications covered within the section. Sections shall be organized as follows:
1. Each section in the manual shall identify the grouping of all literature required for the system or equipment included.
2. The contents of each section shall be arranged in the following sequence: First, the approved engineering submittals with complete performance and technical data; second, the manufacturer's installation brochure; third, the manufacturer's operating and maintenance brochure; fourth, the manufacturer's installation wiring diagram; fifth, the Contractor's field wiring diagram, if different; and sixth, the manufacturer's brochure listing replacement part numbers and description.
3. Provide a final section entitled, "Warranties and Guarantees", for all equipment, etc.

3.13 EXISTING FACILITIES

1. The Contractor shall be responsible for loss or damage to the existing facilities and shall be responsible for repairing or replacing such loss or damage. The Contractor shall send proper notices and receive written permission from the Owner to enter existing areas. Before beginning work in existing areas, the Contractor shall make necessary arrangements and perform other services required for the care, protection, and in-service maintenance of all electrical, communication, plumbing, heating, air condition, and ventilating services for new and existing facilities. The Contractor shall erect temporary barricades with necessary safety devices to protect personnel from injury, removing all such temporary protection upon completion of the work.

2. The Contractor shall provide temporary or new services to existing facilities as required to maintain their proper operation when normal services are disrupted as a result of the work being accomplished under this project.

3. Where existing construction is removed to provide working and extension access to existing utilities, the Contractor shall remove doors, piping, conduit, outlet boxes, wiring, light fixtures, air condition ductwork, and equipment, etc. to provide this access and shall reinstall same upon completion of work.

4. Where partitions, walls, floors, or ceilings of existing construction are indicated to be removed, the Contractor shall remove and reinstall in locations approved by the Engineer all devices required for the operation of the electrical systems installed in the existing construction. This is to include, but is not limited to, temperature control system devices, electrical switches, relays, fixtures, piping, conduit, etc.

3.14 DEMOLITION AND RELOCATION

1. The Contractor shall modify, remove, and relocate all materials and items so indicated on the drawings or required by the installation of new facilities. All removals and/or dismantling shall be conducted in a manner as to produce maximum salvage. Salvage materials shall remain as directed by the Owner. Materials and items scheduled for relocation and which are damaged during dismantling or reassembly operations shall be repaired and restored to the approval of the Owner. The Contractor may substitute new materials and items of like design and quality in lieu of materials and items to be relocated, if approved by the Owner.

2. All items scheduled for relocation and/or reuse shall be inspected by the Contractor and the Owner or his authorized representative. A written report of the condition of each item shall be made and provided to the Engineer. Where items scheduled for relocation and/or reuse are considered unsuitable for reuse, the Contractor shall so notify the Engineer and await reinstallation instructions before proceeding with removal. Items damaged in reinstallation shall be repaired or replaced by the Contractor as directed by the Owner at not additional cost to the Owner or the Engineer.

3. All items which are to be relocated shall be carefully removed in reverse to original assembly or placement and protected until relocated. The Contractor shall clean, repair, and provide all new materials, fittings, and appurtenances required to complete the relocation and to restore the items to good operative order. All relocations shall be performed by workmen skilled in the work ad in accordance with standard practice of the trades involved.

4. Service lines and wiring to items to be removed, salvaged, or relocated shall be removed to points as indicated on the drawings, specified, or acceptable to the Owner. Service lines and wiring not scheduled for reuse shall be removed to the points at which reuse is to be continued or service is to remain. Such services shall be sealed, capped, or otherwise tied off or connections into the existing facilities in such a manner as to result in minimum interruption of services to adjacent occupied areas. Services to existing areas or facilities which must remain in operation during the construction period shall not be interrupted without prior specific written approval of the Engineer.

3.15 OUTAGES

1. Outages of services as required by the project will be permitted, but only at a time approved by the Owner. The Contractor shall notify the Owner in writing two (2) weeks in advance of the requested outage in order to schedule required outages. No outages shall be taken unless written approval has first been received from the Owner. The time allowed for outages will not be during normal working hours unless otherwise approved by the Owner.

All costs of outages, including overtime charges, shall be included in the Contract amount.

END OF SECTION

SECTION 27 10 00 – CATEGORY 6 STRUCTURED CABLING SYSTEM (SCS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 RELATED WORK

A. 26 05 00 – Grounding and Bonding
B. 26 05 29 – Electrical Hangers and Supports
C. 26 05 33 – Raceway and Boxes

1.3 DESCRIPTION

A. Summary of Work:
   1. Provide a complete and tested Category 6/6A cable distribution system for data interconnections (Local Area Network). The data distribution system shall include fully terminated unshielded twisted pair cables, raceways, conduit, UTP termination devices, data communications outlets, patch panels, patch cables, network racks, and other incidental and miscellaneous premises wiring system hardware as required for a complete and usable system. The installation shall comply with all applicable codes and standards in effect at the job site and as indicated in the Drawings and Specifications.
   2. Provide and install building entrance terminals as required.

1.4 QUALITY ASSURANCE

A. Acceptable manufacturers:
   1. The equipment/products described herein, and furnished per these specifications shall be the product of one manufacturer. All references to model numbers and other detailed descriptive data is intended to establish standards of design performance, and quality, as required
   2. The approved installer shall provide a complete Category 6/6A solution with a 25-year extended product warranty and application assurance.
   3. Acceptable product connectivity and cable shall be Uniprise by CommScope. Only the manufacturers listed in this paragraph will be accepted.

B. Installer Qualifications:
   1. The Data Cable System Installer shall be licensed and shall meet all applicable regulations of the State of Texas and Department of Labor insofar as they apply to this type of system. The proposer shall be a firm normally employed in the low voltage and data cabling industry and shall provide a reference list of ten (10) similar size, Category 6 and/or Category 6A projects and contact names confirming successful premises wiring system installations.
   2. The SCS Installer shall be a certified CommScope Uniprise and in good standing in the Partner Program, local area, integrator and must be able to provide the manufacturer’s maximum available warranty on the entire SCS. The contractor’s certification must have been obtained and held within 75 miles of the project’s location.
   3. The installing contractor must have a full-time employed RCDD (Registered Communications Distribution Designer) on staff. Current RCDD certification shall be provided in the product submittals.
   4. All individuals installing the SCS must be employees of the certified installer and

at least 25% of the installing staff shall have undergone a training class given by the manufacturer. Current certification indicating the successful completion of the training course shall be available upon request at the project an

5. d submitted in the contractor's product submittals.
6. The proposing contractor and the installing contractor must be the same company. No subcontractor to the proposing SCS contractor will be allowed for any portion of the SCS scope of work.

C. Pre-Construction Meeting:
   1. The successful Contractor shall attend a mandatory pre-construction meeting with the project's consultant and individuals deemed necessary by the Owner's representative prior to the start of the work. No SCS work shall begin prior to this meeting.

D. Acceptance:
   1. The Owner's representative reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds.

E. Warranty:
   1. The selected system installer shall be a CommScope Uniprise, certified contractor and hold current certification. Contractor shall provide an end-to-end performance warranty of not less than twenty-five (25) years on all products installed. The proposer shall provide current certification documentation. The performance warranty shall be issued by the manufacturer and shall warrant that ALL Category 6 and Category 6A cable links have been tested bi-directionally (end to end) using a Level 2 tester, per TSB-67, and that all test results conform to the most current TIA/EIA-568-C and/or TSB-67 Link values.
   2. The warranty will also cover fiber optic cabling. Performance testing shall be conducted in accordance with ANSI/EIA/TIA-526-14 Standard, method B.
   3. The warranty will stipulate that all products used in this installation meet the prescribed mechanical and transmission specifications for such products as described in ISO/IEC 11801, ANSI/TIA/EIA-568-A, or EN 50173. Quality and workmanship evaluation shall be solely by the Owner/Designer and designated representatives.

1.5 REGULATORY REQUIREMENTS

A. Standards: All work shall be performed in accordance with the latest revisions of the following standards and codes:
   1. Latest Local Codes and Amendments
   2. 2023 National Electrical Code

B. Other References:
   1. TIA/EIA-568-C Commercial Building Telecommunications Wiring Standard
   2. EIA/TIA-569 Commercial Building Standard for Telecommunication Pathways and Spaces.
   3. TIA/EIA-606 The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
   4. TIA/EIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications.
   5. EIA/TIA 455-A Standard Test Procedure for Fiber Optic Fibers, Cables, Transducers, Sensors, Connecting and Terminating Devices and Other Fiber Optic Components.
   6. TIA/EIA TSB 67 Transmission Performance Specification for Field

		Testing of Unshielded Twisted-Pair Cabling Systems.
7.	TIA/EIA TSB 72	Centralized Optical Fiber Cabling Guidelines
8.	ISO/IEC 11801	Generic Cabling Standard
9.	EN 50173	Generic Cabling Standards for Customer Premises
10.	ANSI/EIA/TIA 526-14	Optical Power Loss Measurements of Installed Multimode Fiber Cable Plan.

C. Governing Codes and Conflicts: If the requirements of these specifications or the Project Drawings exceed those of the governing codes and regulations, then the requirements of these specifications and the Drawings shall govern. However, nothing in the Drawings or Specifications shall be construed to permit work not conforming to all governing codes, regulations, and manufacturer installation requirements.

1.6 ABBREVIATIONS

A. The following abbreviations are used in this document:

DC	Direct Current
IDF	Intermediate Distribution Frame
MDF	Main Distribution Frame
PBX	Private Branch Exchange
UTP	Unshielded Twisted Pair

1.7 SUBMITTALS

A. Project Initiation:

1. Within fourteen (14) days of Notice to Proceed, the data network system installer shall furnish the following in a single consolidated submittal:
   a. Permits: The Contractor shall obtain all required permits and provide copies to the Owner/Architect/Engineer.
   b. Product Literature: Complete manufacturer's product literature for all cable, patch panels, cross-connect blocks, cable supports, cable labels, outlet devices, and other products to be used in the installation. In addition, whenever substitutions for recommended products are made, samples (when requested by the Owner/Designer) and the manufacturer's supporting documentation demonstrating compatibility with other related products shall be included. The submittal shall have some type of distinguishing marker or pointer to indicated what specific product is to be provided
   c. Construction Schedule: A time-scaled Construction Schedule, using PERT/CPM, indicating general project deadlines and specific dates relating to the installation of the cable distribution system.
   d. Testing: Proposed Contractor Category 6 UTP cable test result forms, fiber optic cable test result forms and a list of instrumentation to be used for systems testing.
   e. Specification Compliance: A letter shall be provided stating, by section and subsection, that the SCS installer complies with the ENTIRE specification section. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. NO DEVIATIONS SHALL BE ACCEPTABLE UNTIL THEY HAVE BEEN ACCEPTED BY THE PROJECT'S TECHNOLOGY CONSULTANT.
   f. Certifications: The contractor shall submit all of the following certifications and the certifications must contain dates which are valid from the date of proposal and not expire any sooner than 12 months after substantial completion of the project.

1) BICSI RCDD Certification: This certification must be held by an on-staff, full-time employee of the SCS installer. The holder must be staffed out of the office that is located within 75 miles of the projected.
2) Proposed Manufacturer's Strategic Partner Certification: This certification have been obtained by the SCS installer's office that is located within 75 miles of the project and shall be a company certification, not and individual certification.
3) Proposed Manufacturer's Installer Certification: This certification must be held by at least 25% of the, on-site, staff and be made available at the site if requested by the owner, architect, and/or project's technology consultant.
4) Fiber Optic Technician Certification: This certification must be held by the on-staff/on-site individual that is supervising the fiber optic installation and performing the fiber optic terminations and testing.

B. Shop Drawings:
1. Submit the following items, for Owner review and approval, within twenty-eight (28) days of notice to proceed:
a. Proposed circuit routing and circuit grouping plan prepared by a BICSI certified RCDD (Registered Communications Distribution Designer). The RCDD certification must be current. Identifiable, separate routing shall be shown for both the station cabling and the MDF-to-IDF tie cabling.
b. In addition to the cable routing, the submitted drawings shall indicate the following, even if the following is expected to be provided by the project's electrical or general contractor:
1) Location of wall penetrations (all penetrations shall be sleeved and contain protective bushings at both ends)
2) Location of sleeved wall pass-thru
3) Size of sleeve at each location installed
4) Quantity of cable passing through each sleeve
5) Location of drops in each room (quantity or labeling of drops are not required in the submittal plans. Labeling shall be provided in the closeout plans and quantities shall be as per the contract documents, addendums, and issued changes. Each drop shall be labeled for the type of outlet that it is)
6) Conduit routing, size, quantity, and stub-up locations for all floor mounted outlets.
c. Drawing Compliance: A letter shall be provided stating that the SCS installer complies with the ENTIRE project drawing, including all general, keyed, and notes to contractor. If the installer intends to deviate from any portion of the specifications, a detailed explanation of reason in which the installer would like to deviate shall be provided in addition to the specification compliance letter. NO DEVIATIONS SHALL BE ACCEPTABLE UNTIL THEY HAVE BEEN ACCEPTED BY THE PROJECT'S TECHNOLOGY CONSULTANT.

C. Close-out Procedures:
1. Two (2) copies of the following documents shall be delivered to the building owner's representative at the time of system acceptance. The close out submittals shall include:
a. Inspection and Test Reports: During the course of the Project, the Contractor shall maintain an adequate inspection system to ensure that the materials supplied and the work performed, conform to contract requirements. The Contractor shall provide written documentation that

indicates that materials acceptance testing was conducted as specified. The Contractor shall also provide documentation, which indicates that all cable termination testing was completed and that all irregularities were corrected prior to job completion.

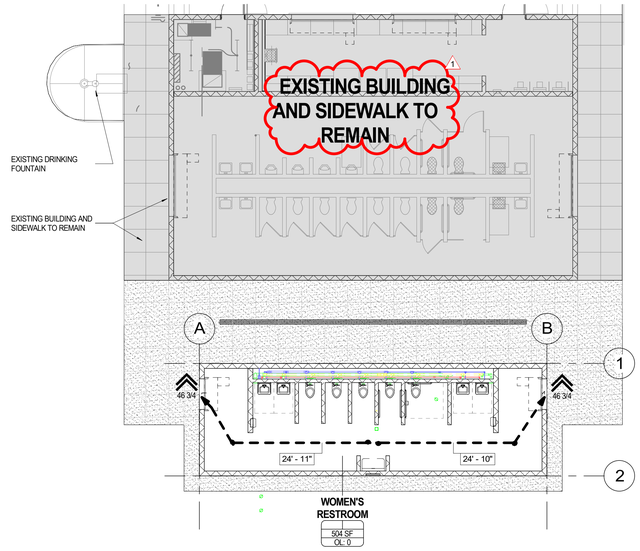
b. Provide complete test reports for all cabling and devices that comprise system as outlined in this document.
c. Include the Name, address and telephone of the authorized factory representative with a 24-hour emergency service number.
d. The manual shall also include Manufacturer's data sheets and installation manuals/instructions for all equipment installed, a list of recommended spare parts.
e. Generic or typical owner's instruction and operation manual shall not be acceptable to fulfill this requirement.
f. An up-to-date record ("as-built") set of approved shop drawing prints that have been revised to show each and every change made to the structure cabling system from the original approved shop drawings. Drawings shall consist of a scaled plan of each building showing the placement of each individual item of the technical cabling system equipment as well as raceway size and routing, junction boxes, and conductor size, quantity, and color in each raceway.
g. As-built Drawings shall include cable pathways, camera locations with correct labeling and MDF/IDF locations. The as-built drawings shall be prepared using AutoCad 2019 or later. Provide the Owner with electronic versions of the As-Builts on (2) 8GB thumb drives.
h. All drawings must reflect point to point wiring, device address and programmed characteristics as verified in the presence of the engineer and/or the end user unless device addressing is electronically generated, and automatically graphically self-documented by the system.
i. A copy of the manufacturer's warranty on the installed system.
j. Any keys to cabinets and/or equipment and special maintenance tools required to repair, maintain, or service the system.
k. Operating and Maintenance Instructions for all devices within the system. These instructions shall reflect any changes made during the course of construction, and shall be provided to the Owner, for their use, in a three-ring binder labeled with the project name and description. (4 copies)
l. Upon completion of the work and at a time designated by the Architect or owner, provide formal training sessions for the Owner's operating personnel to include location, operation, and maintenance of all included systems and equipment. Minimum amount of training time shall be at least 4 hours.
m. One (1) 30" x 42" laminated floor plan sheets illustrating technology drops and cable designation. Contractor shall provide one complete floor plan sheet for each telecommunications room (MDF and/or IDF)

PART 2 - PRODUCTS

2.1 GENERAL

A. Installation: The cabling shall be installed per requirements of the manufacturer and the Project Documents utilizing materials meeting all applicable TIA/EIA standards. The Contractor is responsible for providing all incidental and/or miscellaneous hardware not explicitly specified below as required for a complete and operational system.

B. Materials: Materials shall be as listed or shall be approved equivalent products of other manufacturers meeting the intent and quality level of the TIA/EIA specifications. All approved equivalent products will be published by addendum ten days prior to proposal



3 NEW RESTROOM BUILDING ADDITION - LIFE SAFETY EGRESS OCCUPANCY PLAN
1/8" = 1'-0"

FUNCTION OF SPACE

Building Occupancy Information:
occupancy: Type II-B (non-fire-rated throughout).
Use: Outdoor Sporting Facility Restroom
Building Use: Accessory to baseball/softball athletic facility

LIFE SAFETY LEGEND

EGRESS TRAVEL PATH

200' - 0" – TRAVEL DISTANCE LENGTH

OL - (OCCUPANT LOAD) = ###

TOL - (TOTAL OCCUPANT LOAD) = ###

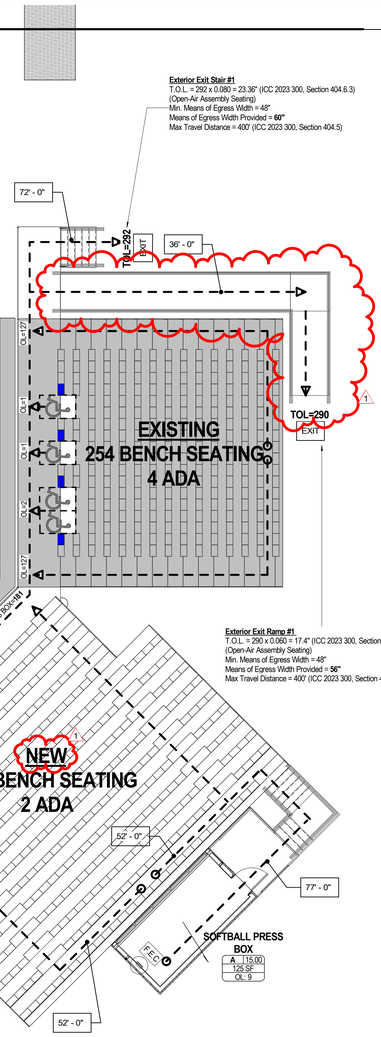
A 15.00 OCCUPANCY
63 SF OCCUPANCY FACTOR
OL: 2 NET SQUARE FOOTAGE
OCCUPANTS

STANDARD BENCH SEATING

ADA COMPANION SEATING

F.E.C. FIRE EXTINGUISHER CABINET

POINT OF *EXIT DISCHARGE*

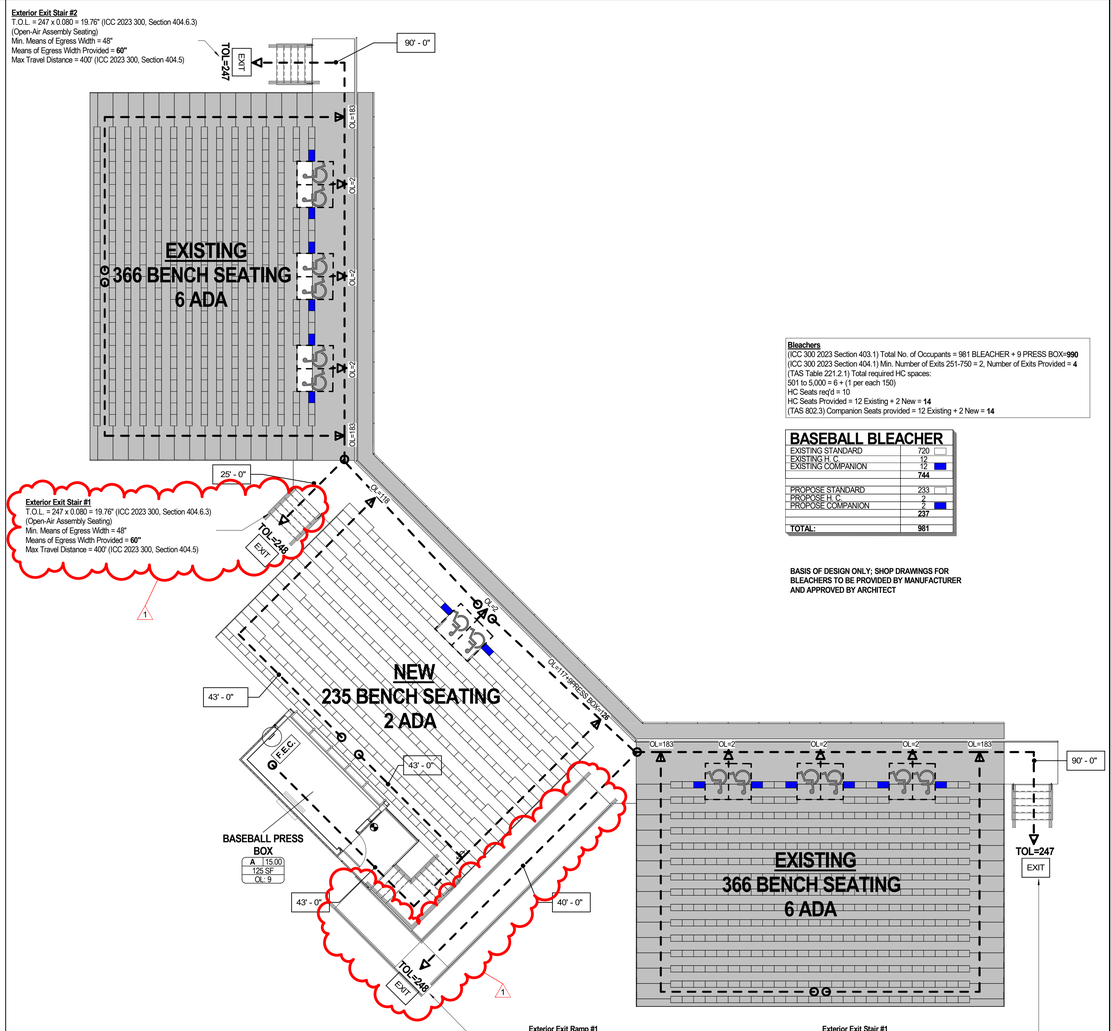


Bleachers
(ICC 300 2023 Section 403.1) Total No. of Occupants = 863 BLEACHER + 9 PRESS BOX=**872**
(ICC 300 2023 Section 404.1) Min. Number of Exits 251-750 = 2, Number of Exits Provided = **3**
(TAS Table 221.2.1) Total required HC spaces:
501 to 5,000 = 6 + (1 per each 150)
HC Seats req'd = 9
HC Seats Provided = 8 Existing + 2 New = **10**
(TAS 802.3) Companion Seats provided = 8 Existing + 2 New = **10**

SOFTBALL BLEACHER	
EXISTING STANDARD	500
EXISTING H.C.	8
EXISTING COMPANION	8
	516
PROPOSE STANDARD	343
PROPOSE H.C.	2
PROPOSE COMPANION	2
	347
TOTAL:	**863**

BASIS OF DESIGN ONLY; SHOP DRAWINGS FOR BLEACHERS TO BE PROVIDED BY MANUFACTURER AND APPROVED BY ARCHITECT

2 SOFTBALL BLEACHER - LIFE SAFETY EGRESS OCCUPANCY PLAN
1/8" = 1'-0"



Bleachers
(ICC 300 2023 Section 403.1) Total No. of Occupants = 981 BLEACHER + 9 PRESS BOX=**990**
(ICC 300 2023 Section 404.1) Min. Number of Exits 251-750 = 2, Number of Exits Provided = **4**
(TAS Table 221.2.1) Total required HC spaces:
501 to 5,000 = 6 + (1 per each 150)
HC Seats req'd = 10
HC Seats Provided = 12 Existing + 2 New = **14**
(TAS 802.3) Companion Seats provided = 12 Existing + 2 New = **14**

BASEBALL BLEACHER	
EXISTING STANDARD	720
EXISTING H.C.	12
EXISTING COMPANION	12
	744
PROPOSE STANDARD	233
PROPOSE H.C.	2
PROPOSE COMPANION	2
	237
TOTAL:	**981**

BASIS OF DESIGN ONLY; SHOP DRAWINGS FOR BLEACHERS TO BE PROVIDED BY MANUFACTURER AND APPROVED BY ARCHITECT

1 BASEBALL BLEACHER - LIFE SAFETY EGRESS OCCUPANCY PLAN
1/8" = 1'-0"

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD.
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

KEY PLAN

PLAN NORTH | TRUE NORTH

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

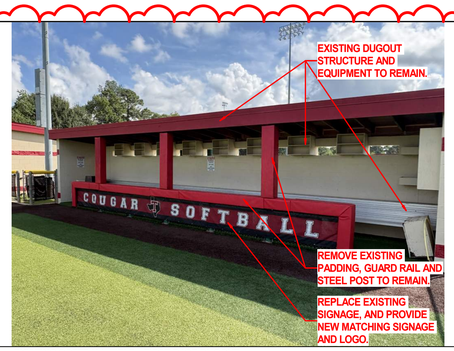
No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: Checker
DRAWN BY: Author

LIFE SAFETY EGRESS OCCUPANCY PLAN

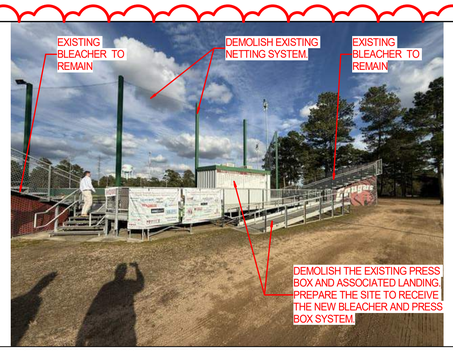
G-003

Plot Stamp:
9/21/2026 1:24:37 PM

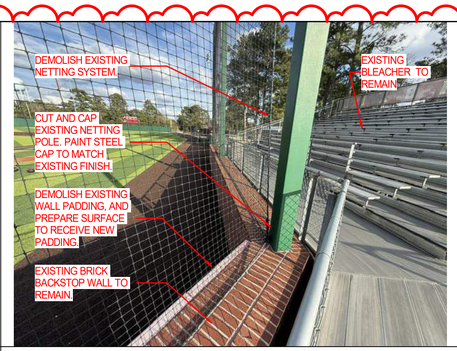


EXISTING SOFTBALL FIELD - FIRST BASE DUGOUT

EXISTING TICKET BOOTH AND GATE ENTRANCE

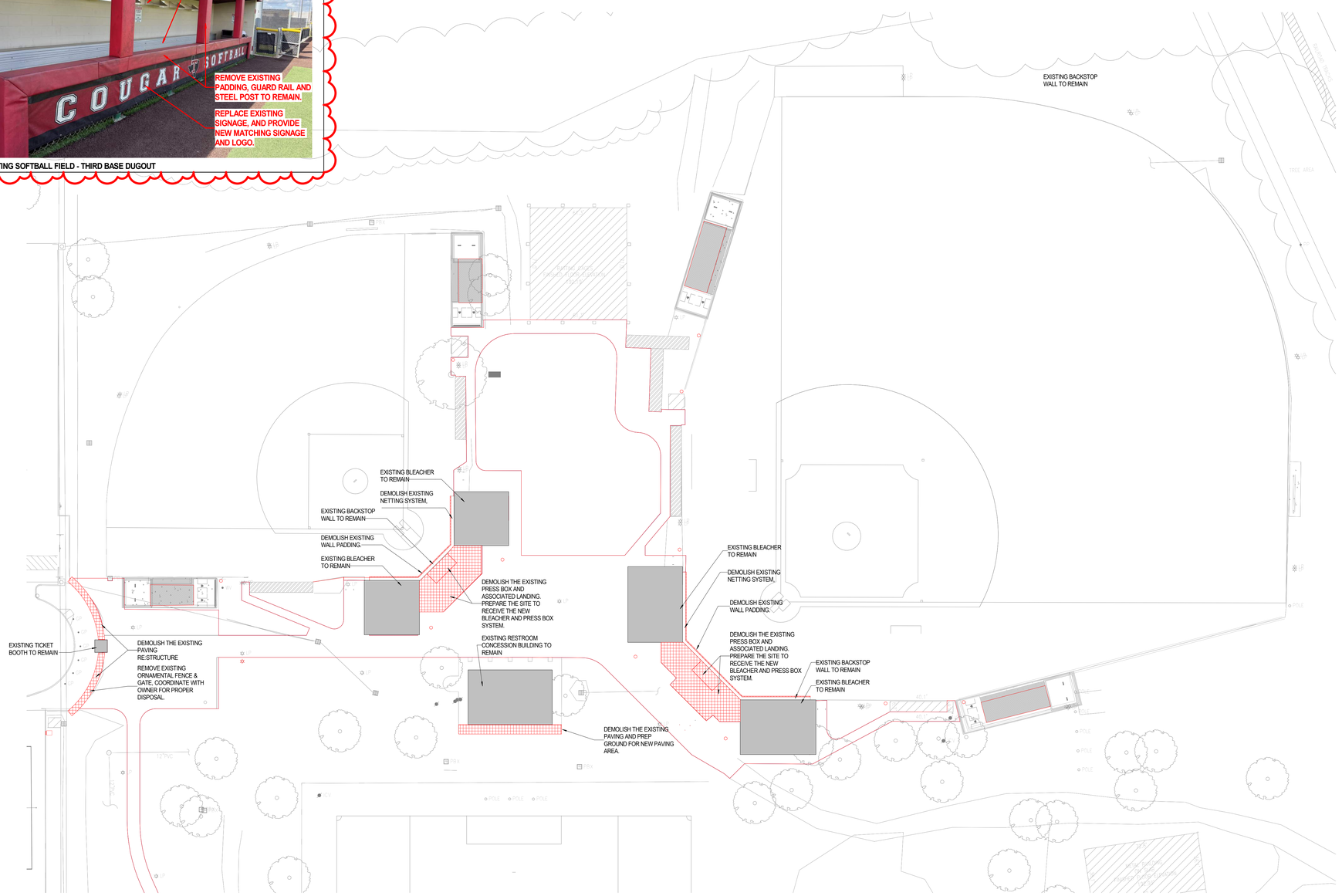


EXISTING BASEBALL & SOFTBALL FIELD - PRESS BOX



EXISTING BASEBALL & SOFTBALL FIELD - BACKSTOP WALL & NETTING SYSTEM

EXISTING SOFTBALL FIELD - THIRD BASE DUGOUT



2 BASEBALL & SOFTBALL FIELD - ENLARGED DEMOLITION SITE PLAN
1" = 30'-0"

GENERAL SITE DEMOLITION NOTES

1. DEMOLITION PLANS INDICATE SOME OF THE SCOPE-OF-WORK INVOLVED FOR THE DEMOLITION PHASE OF THIS PROJECT. CONTRACTOR SHALL REVIEW ALL SHEETS FOR ADDITIONAL DEMOLITION SCOPE.
2. CONTRACTOR SHALL VERIFY EXISTING SITE AND BUILDING CONDITIONS AND DIMENSIONS IN THE FIELD PRIOR TO DEMOLITION ACTIVITIES AND WORK.
3. CONTRACTOR SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES IN WRITING.
4. CONTRACTOR SHALL NOTIFY ARCHITECT AND OWNER OF ANY POSSIBLE ASBESTOS CONTAINING MATERIALS DISCOVERED BEFORE PROCEEDING WITH WORK; PROTECT INTERIOR CONSTRUCTION TO REMAIN DURING DEMOLITION AND CONSTRUCTION.
5. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS BEFORE COMMENCING WORK.
6. AFTER AWARD OF THE CONTRACT, CHANGE ORDER REQUESTS FOR ADDITIONAL MONEY WILL NOT BE APPROVED IF THE WORK COULD HAVE BEEN ANTICIPATED DURING A SITE VISIT BY THE CONTRACTOR.
7. CONTRACTOR SHALL NOT SCALE DRAWINGS.
8. CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY SHORING, TEMPORARY BRACING, AND OR TEMPORARY SUPPORTS AS REQUIRED TO MAINTAIN STRUCTURAL INTEGRITY OF EXISTING STRUCTURE TO REMAIN AND OR EXISTING BUILDING ELEMENTS TO REMAIN.
9. CONTRACTOR IS TO VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO DEMOLITION ACTIVITIES AND WORK.
10. CONTRACTOR SHALL REMOVE TRASH AND DEBRIS REGULARLY AS NECESSARY TO ELIMINATED INTERFERENCE WITH ROADS, STREET, WALKS, AND ALL OTHER ADJACENT FACILITIES.
11. CONTRACTOR SHALL REMOVE TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
12. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF TEMPORARY DUST AND OR SOUND PARTITION BETWEEN CONSTRUCTION AREA AND AREAS NOT IN SCOPE AS NECESSARY. DEMOLITION ACTIVITIES SHALL BE PERFORMED SO AS TO PRODUCE MINIMAL DISTURBANCE TO EXISTING FACILITY AND OCCUPANTS (I.E. MINIMIZE EXCESSIVE AND PROLONGED NOISE LEVELS AND DUST).
13. CONTRACTOR SHALL REPAIR, REPLACE, OR PATCH EXISTING BUILDINGS, DRIVEWAYS, SIDEWALKS, CANOPIES, AND OR PARKING AREAS DAMAGED, MODIFIED, AND OR DISTURBED BY DEMOLITION WORK AT NO COST TO THE OWNER.
14. ALL EXISTING EQUIPMENT THAT REMAINS SHALL BE PROTECTED DURING DEMOLITION AND OR CONSTRUCTION TO PREVENT DAMAGE. ANY DAMAGE TO REMAINING EXISTING EQUIPMENT SUSTAINED DURING DEMOLITION AND OR CONSTRUCTION SHALL BE EQUIVALENTLY REPLACED OR EQUIVALENTLY REPAIRED AT NO COST TO THE OWNER.
15. CONTRACTOR SHALL PROVIDE TRAFFIC HANDLING MEASURES TO PROTECT THE GENERAL PUBLIC AT ALL TIMES, AS NECESSARY AND AS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
16. DO NOT INTERRUPT EXISTING UTILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY AUTHORITIES HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING INTERRUPTIONS TO EXISTING UTILITIES, AS ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
17. WHEN UTILITY SERVICES ARE REQUIRED TO BE REMOVED, RELOCATED, OR ABANDONED, PROVIDE BYPASS CONNECTIONS TO MAINTAIN CONTINUITY OF SERVICE BEFORE PROCEEDING WITH DEMOLITION.
18. CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES INCLUDING BUT NOT LIMITED TO THE FOLLOWING: ELECTRIC, GAS, WATER, TELEPHONE, STORM SEWER, AND SANITARY SEWER FOR FIELD LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITY LINES. PRIOR TO COMMENCEMENT OF ANY DEMOLITION WORK, CONTRACTOR SHALL IDENTIFY ALL ELECTRICAL CIRCUITS SERVICING THE AREA INVOLVED WITH THIS DEMOLITION. THOSE CIRCUITS SHALL THEN BE LOCKED OUT AND TAGGED OUT IF THEY DO NOT SERVICE ANY OF THE REMAINING BUILDING. THOSE CIRCUITS WHICH ARE IDENTIFIED TO SERVICE BOTH THE AREA TO BE DEMOLISHED AND THE REMAINING BUILDING SHALL BE SPLIT SO AS TO KILL ALL ELECTRICAL POWER TO THE AREA TO BE DEMOLISHED WHILE MAINTAINING POWER TO THE REMAINDER OF THE BUILDING.
19. CONTRACTOR SHALL RELOCATE UTILITIES AND EQUIPMENT AS REQUIRED TO ACCOMMODATE NEW HVAC, ELECTRICAL, PLUMBING, AND TECHNOLOGY REQUIREMENTS FOR NEW WORK.
20. PROTECT EXISTING SITE ELEMENTS AND EXISTING LANDSCAPING TO REMAIN. PROTECTION SHALL INCLUDE BUT NOT BE LIMITED TO EXISTING TREES AND OTHER EXISTING VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING, OR SKINNING OF ROOTS, SKINNING OR BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIAL OR EXCAVATED MATERIAL WITHIN DRIP LINES.
21. CONTRACTOR SHALL REGRADE AND HYDROMULCH AREAS AFFECTED BY DEMOLITION.
22. OWNER HAS RIGHT OF FIRST REFUSAL OF ALL ITEMS REMOVED AS PART OF THE SCOPE OF WORK, WHETHER IDENTIFIED AS SALVAGE OR NOT.
23. NOTIFY THE BUILDING OWNER OF ANY MATERIALS, FIXTURES, ETC. TO BE REMOVED THAT ARE DEEMED SALVAGEABLE. TURN OVER ANY REQUESTED ITEMS TO THE BUILDING OWNER IN GOOD AND CLEAN CONDITION.
24. ALL FURNITURE WILL BE REMOVED OR RELOCATED BY THE OWNER AS NECESSARY PRIOR TO THE DEMOLITION WORK OF THIS PROJECT. CONTRACTOR SHALL COORDINATE WITH OWNER AS REQUIRED.

KEYNOTE LEGEND

NUMBER	DESCRIPTION

DEMOLITION PLAN LEGEND

- EXISTING BUILDING
- REMOVE FOUNDATION
- REMOVE FLOORING

SITE DEMOLITION PLAN LEGEND

- EXISTING BUILDING
- REMOVE ENTIRE FACILITY (FOUNDATION, STRUCTURE, WALLS, ROOFS)

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

KEY PLAN
PLAN NORTH
TRUE NORTH

EDMUND A. RAMIREZ, JR. 14378 REGISTERED ARCHITECT STATE OF TEXAS

CLIENT	
TOMBALL ISD	
DATE 9/10/2026	PROJECT NUMBER 250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

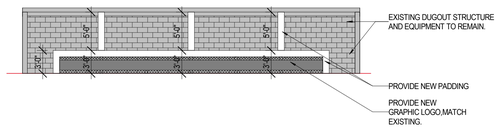
CHECKED BY: Checker
DRAWN BY: Author

BASEBALL & SOFTBALL FIELD DEMOLITION SITE PLAN

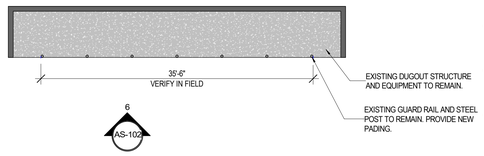
ASD-102

Plot Stamp:
9/21/2026 1:25:28 PM

7 EXISTING SOFTBALL 1ST BASE DUGOUT
1 1/2" = 1'-0"

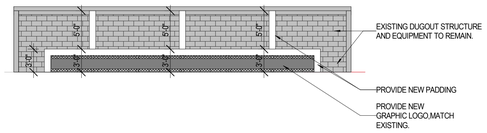


6 EXISTING SOFTBALL 1ST BASE DUGOUT ELEVATION - (FOR REFERENCE ONLY)
1/8" = 1'-0"

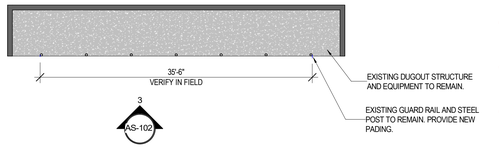


5 EXISTING SOFTBALL 1ST BASE DUGOUT - (FOR REFERENCE ONLY)
1/8" = 1'-0"

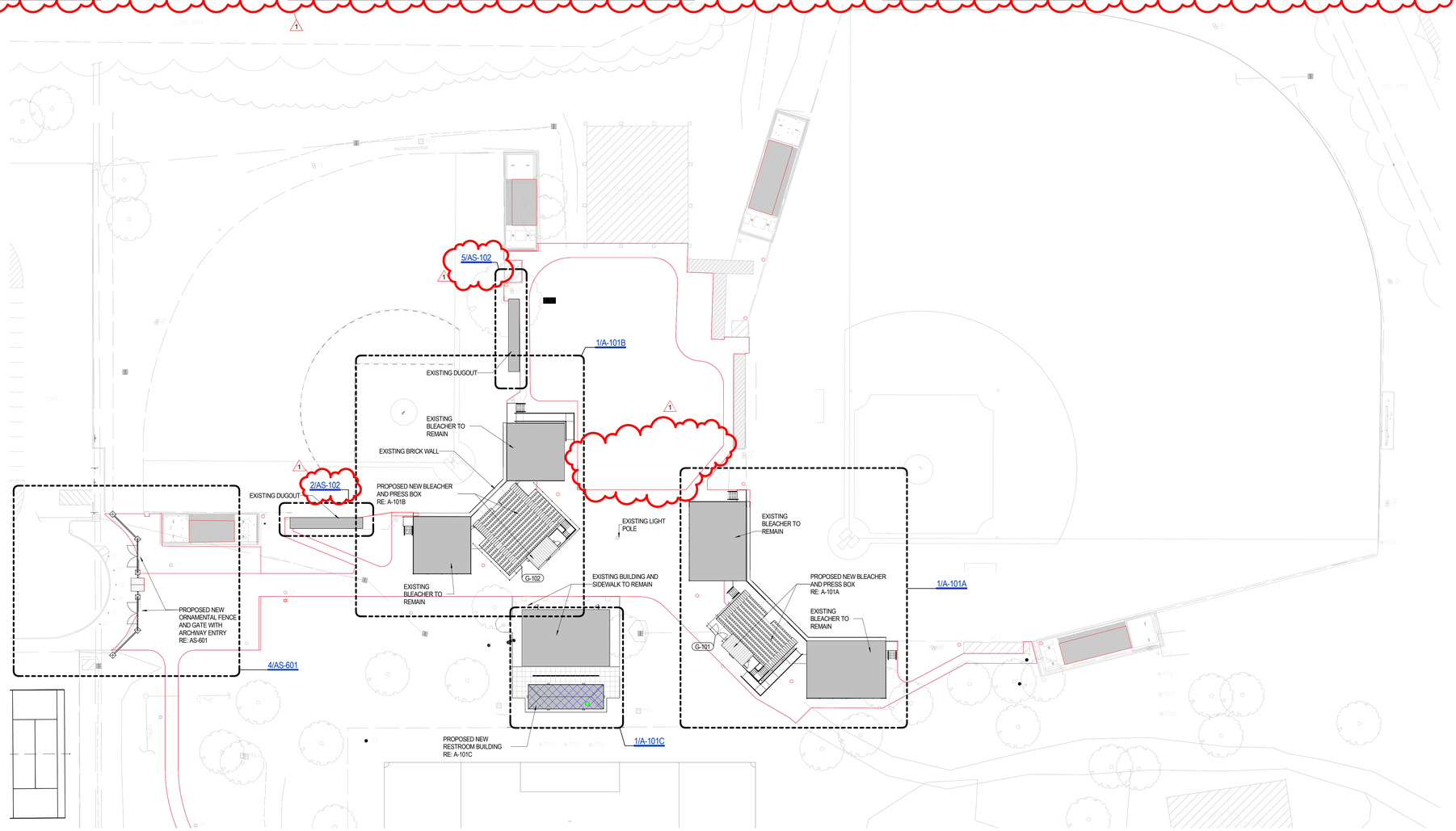
4 EXISTING SOFTBALL 3RD BASE DUGOUT
1 1/2" = 1'-0"



3 EXISTING SOFTBALL 3RD BASE DUGOUT ELEVATION - (FOR REFERENCE ONLY)
1/8" = 1'-0"



2 EXISTING SOFTBALL 3RD BASE DUGOUT - (FOR REFERENCE ONLY)
1/8" = 1'-0"



1 BASEBALL & SOFTBALL FIELD - ENLARGED SITE PLAN
1" = 30'-0"

GENERAL SITE PLAN NOTES

1. COORDINATE ALL SPOT ELEVATIONS AND DIMENSIONS WITH CIVIL, LANDSCAPE, AND OR STRUCTURAL DOCUMENTS.
2. PROVIDE POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS OF 1% MINIMUM, 2% MAXIMUM AT ALL EXTERIOR PAVED PEDESTRIAN AREAS, INCLUDING BUT NOT LIMITED TO SIDEWALKS, PATIOS, STAIRS, PAVING, U.N.O.
3. PROVIDE AND INSTALL POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS OF 5% FOR A HORIZONTAL DISTANCE OF 10 FEET AT ALL EXTERIOR NON-PAVED AREAS U.N.O.
4. REFER TO CIVIL DOCUMENTS FOR CONCRETE SIDEWALK EXPANSION JOINTS AND CONCRETE SIDEWALK CONTROL JOINTS.
5. VERIFY AND CONFIRM ALL JOINT LAYOUTS AT ALL CONCRETE SIDEWALKS WITH ARCHITECT PRIOR TO PLACING CONCRETE.
6. PROVIDE AND INSTALL CONCRETE SIDEWALK EXPANSION JOINTS AT AREAS NOT SPECIFICALLY INDICATED AT 50 FEET ON-CENTER MAX. U.N.O.
7. PROVIDE AND INSTALL CONCRETE SIDEWALK CONTROL JOINTS AT AREAS NOT SPECIFICALLY INDICATED AT DISTANCES EQUIVALENT TO SIDEWALK WIDTH, BUT NOT TO EXCEED 10 FEET ON-CENTER MAX.
8. VERIFY ALL SITE SIGNAGE LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION OF SITE SIGNAGE.

GATE SCHEDULE

MARK	SIZE W	SIZE H	MTL	HARDWARE SET	REMARKS
G-101	10'-0"	8'-0"	STEEL - PVC COATED	LOCK	RE:CIVIL
G-102	10'-0"	8'-0"	STEEL - PVC COATED	LOCK	RE:CIVIL

4 A-502

SECTOR SITE PLAN LEGEND

- EXISTING BUILDING
- NOT IN SCOPE
- PROPOSED BUILDING / ADDITION
- CONCRETE PAVING

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

KEY PLAN

TRUE NORTH

REGISTERED ARCHITECT EDMUND A. RAMIREZ 14374 STATE OF TEXAS

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: Checker

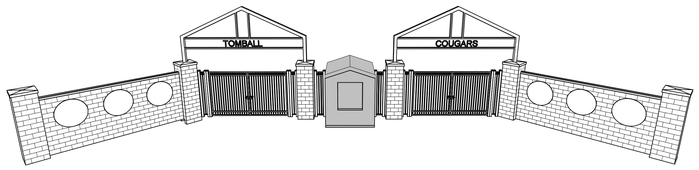
DRAWN BY: Author

BASEBALL & SOFTBALL FIELD SITE PLAN

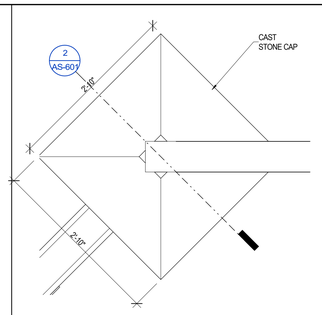
AS-102

Plot Stamp:
9/21/2026 1:26:40 PM

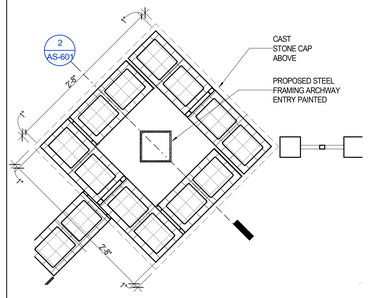
AS-601 - ENTRY GATE DETAILS ALTERNATE #1



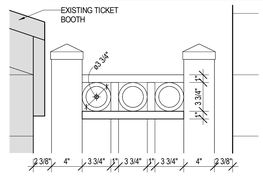
8 3D VIEW



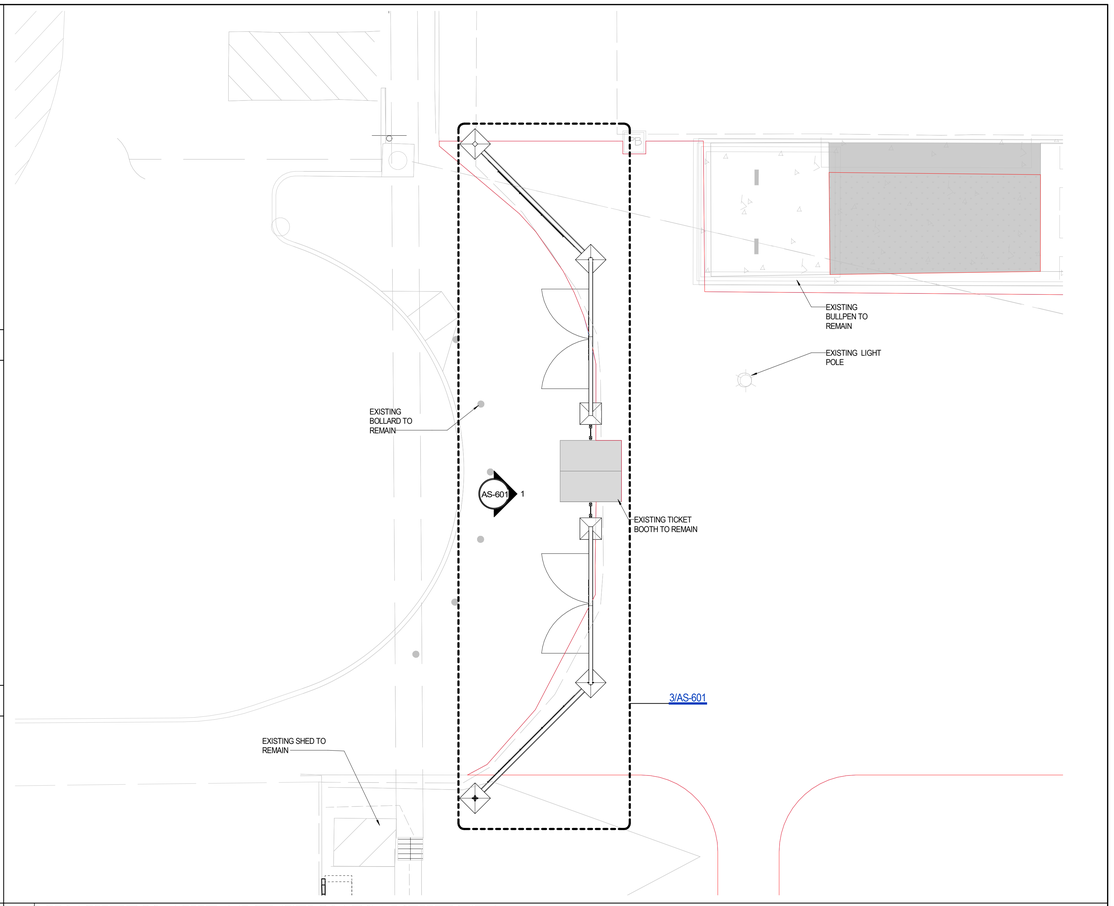
7 CAST STONE CAP PLAN DETAIL
1" = 1'-0"



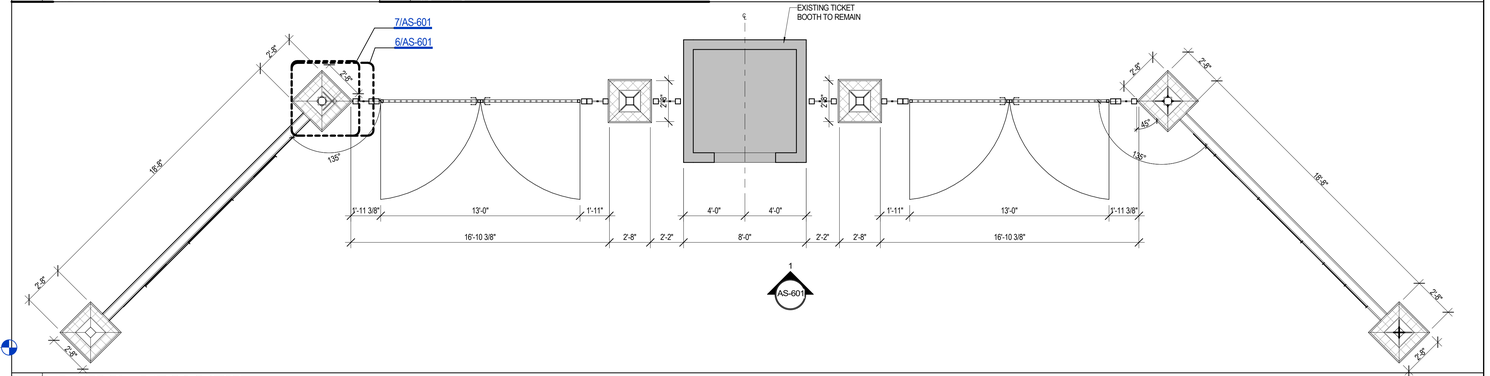
6 PILARTER ENLARGED DETAIL PLAN
1" = 1'-0"



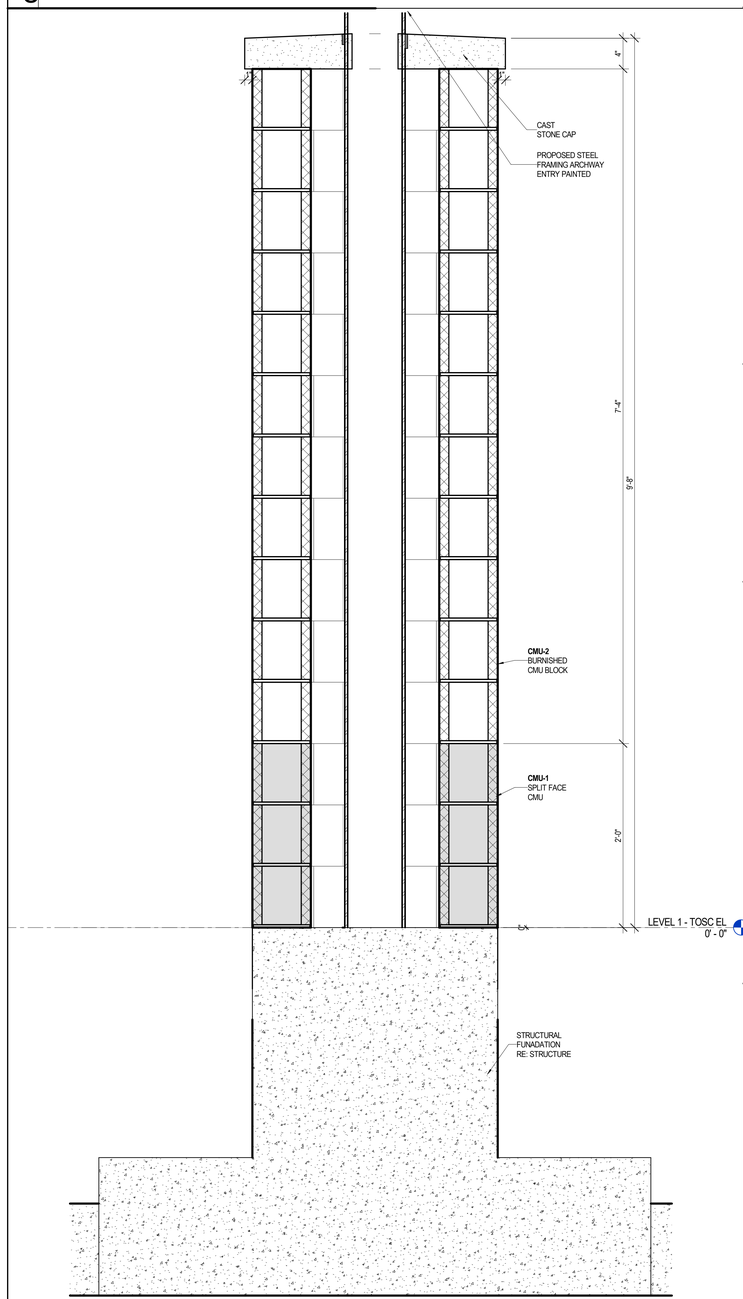
5 HORNAMENTAL FENCE - ELEVATION DETAIL
1 1/2" = 1'-0"



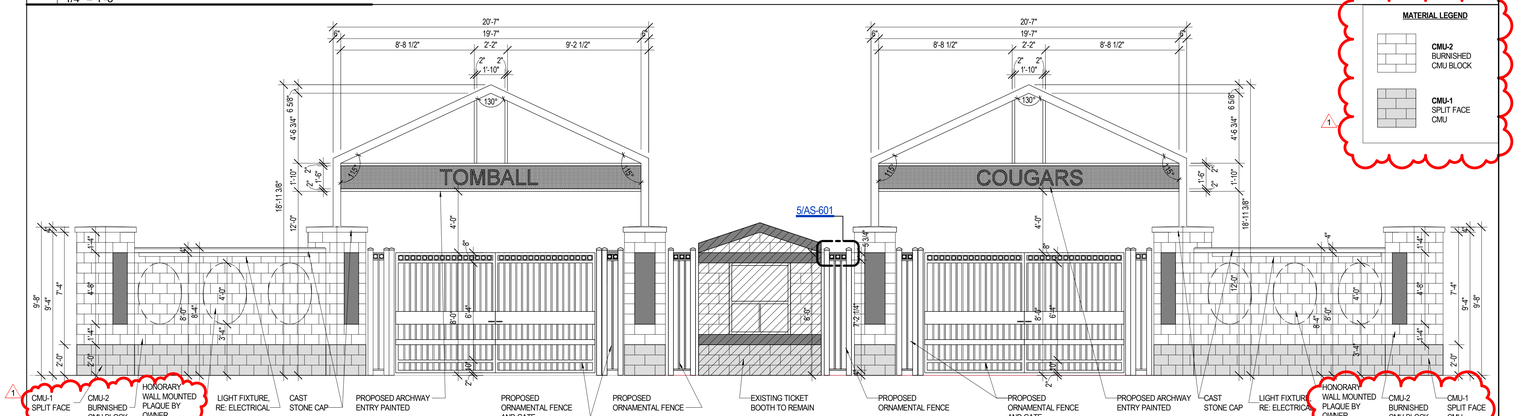
4 BASEBALL & SOFTBALL FIELD - ENLARGED SITE PLAN - Callout 1
1/8" = 1'-0"



3 ENTRY GATE FLOOR PLAN
1/4" = 1'-0"



2 PILASTER ENLARGED DETAIL SECTION
1 1/2" = 1'-0"



1 ENTRY GATE ELEVATION
1/4" = 1'-0"

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

REGISTERED ARCHITECT
EDMUND A. RAMIREZ
14378
STATE OF TEXAS

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: Edmund Ramirez

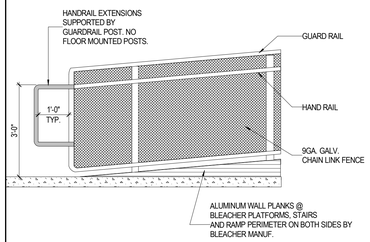
DRAWN BY: Liborio Lozano

ENTRY GATE DETAILS ALTERNATE #1

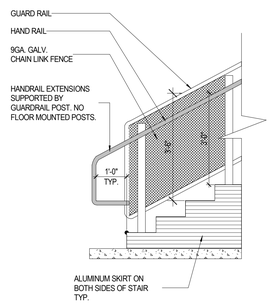
AS-601

Plot Stamp:
9/21/2026 1:27:42 PM

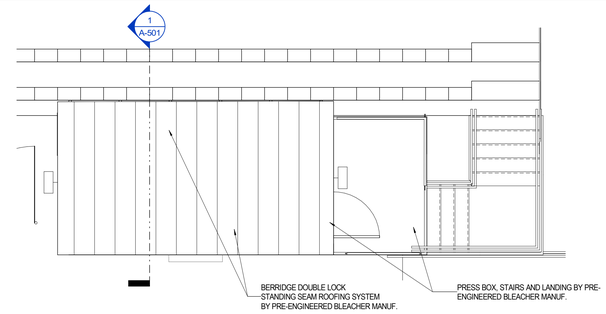
A-101A - BASEBALL BLEACHER - FLOOR PLAN



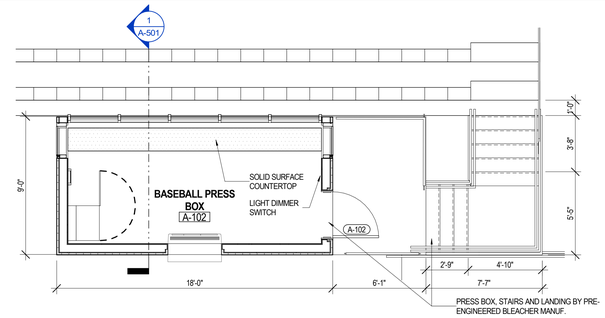
BLEACHER RAMP HANDRAIL EXTENSION TYP.
1/2" = 1'-0"



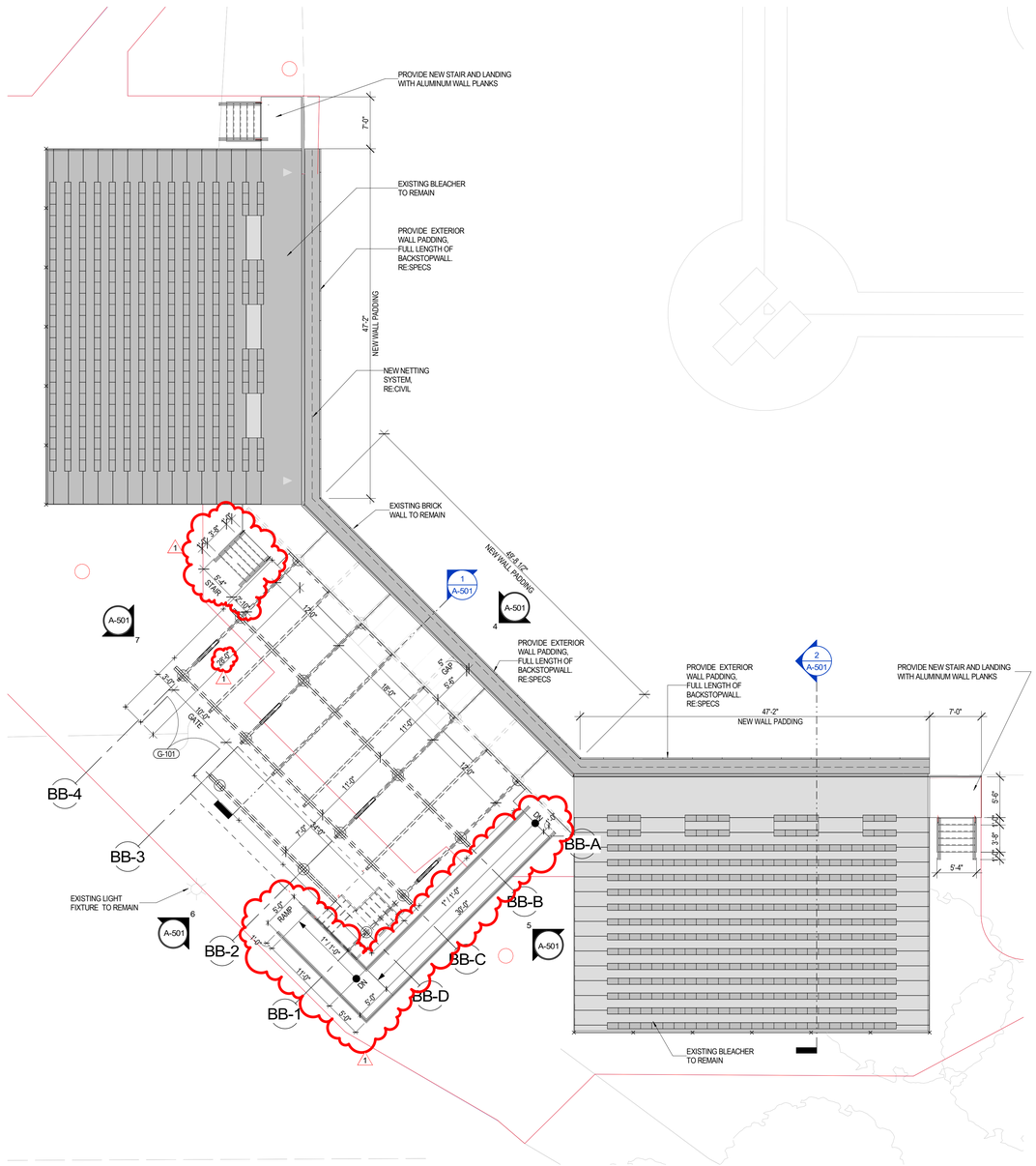
BLEACHER STAIR HANDRAIL EXTENSION TYP.
1/2" = 1'-0"



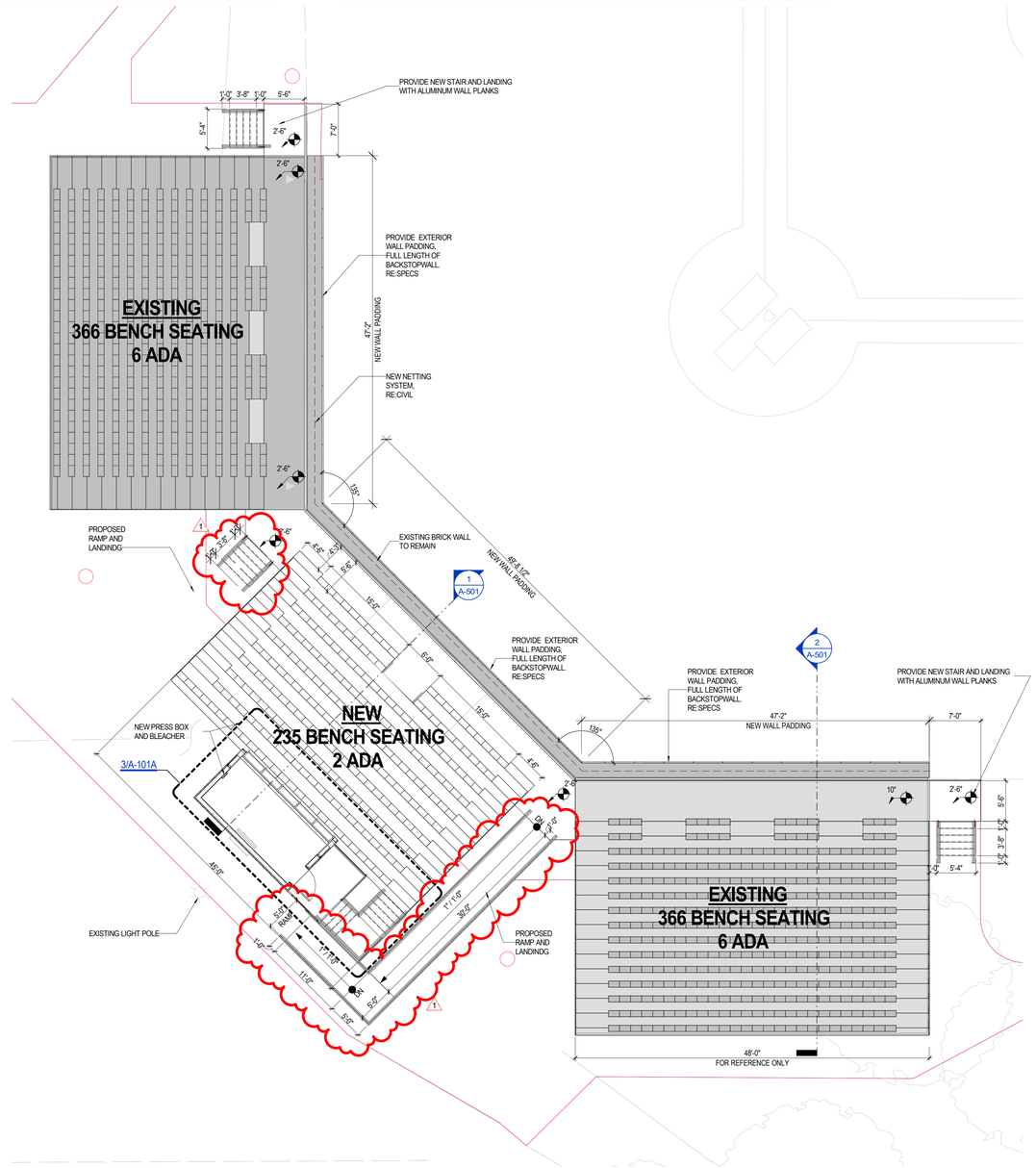
4 BASEBALL BLEACHER - PRESS BOX ROOF PLAN
1/4" = 1'-0"



3 BASEBALL BLEACHER - PRESS BOX FLOOR PLAN
1/4" = 1'-0"



2 BASEBALL FIELD - UNDER BLEACHER FLOOR PLAN
1/8" = 1'-0"



BASEBALL BLEACHER	
EXISTING STANDARD	720
EXISTING H. C.	12
EXISTING COMPANION	12
	744
PROPOSE STANDARD	233
PROPOSE H. C.	2
PROPOSE COMPANION	2
	237
TOTAL:	981

BASIS OF DESIGN ONLY; SHOP DRAWINGS FOR BLEACHERS TO BE PROVIDED BY MANUFACTURER AND APPROVED BY ARCHITECT

1 BASEBALL FIELD - OVERALL FLOOR PLAN
1/8" = 1'-0"

Plot Stamp:
9/21/2026 1:49:57 PM

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HOUSTON, TX
713-960-9595

TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD.
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

KEY PLAN

PLAN NORTH

TRUE NORTH

REGISTERED ARCHITECT EDMOND K. RUNEY 14374 STATE OF TEXAS

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

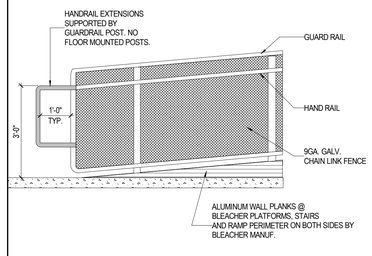
No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: Checker

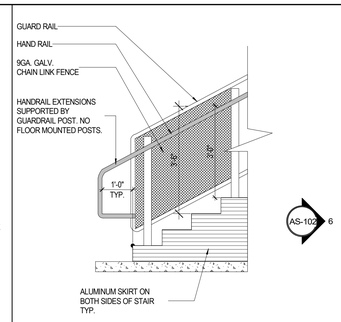
DRAWN BY: Author

BASEBALL BLEACHER - FLOOR PLAN

A-101A



BLEACHER RAMP HANDRAIL EXTENSION TYP.
1/2" = 1'-0"



BLEACHER STAIR HANDRAIL EXTENSION TYP.
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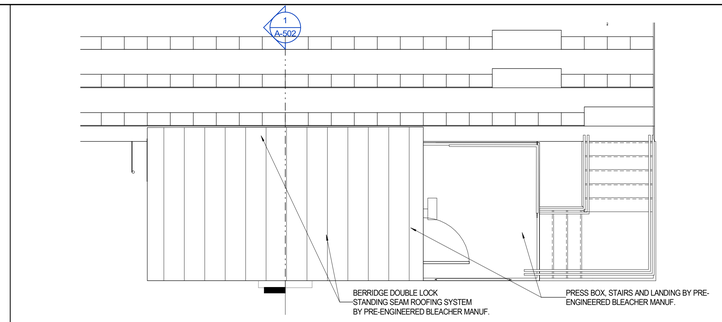
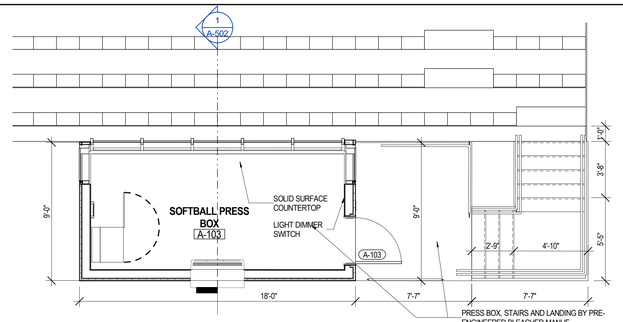
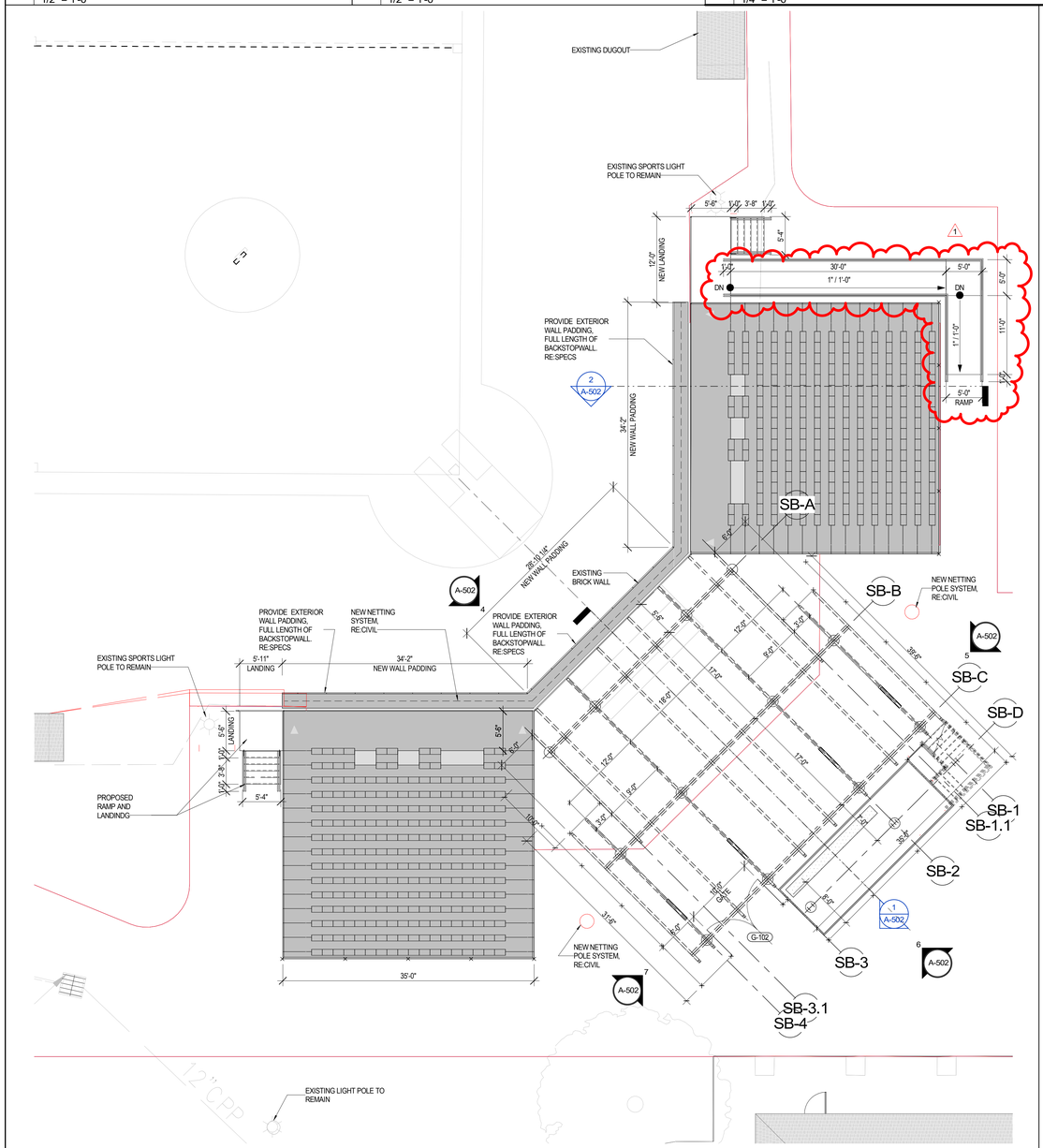


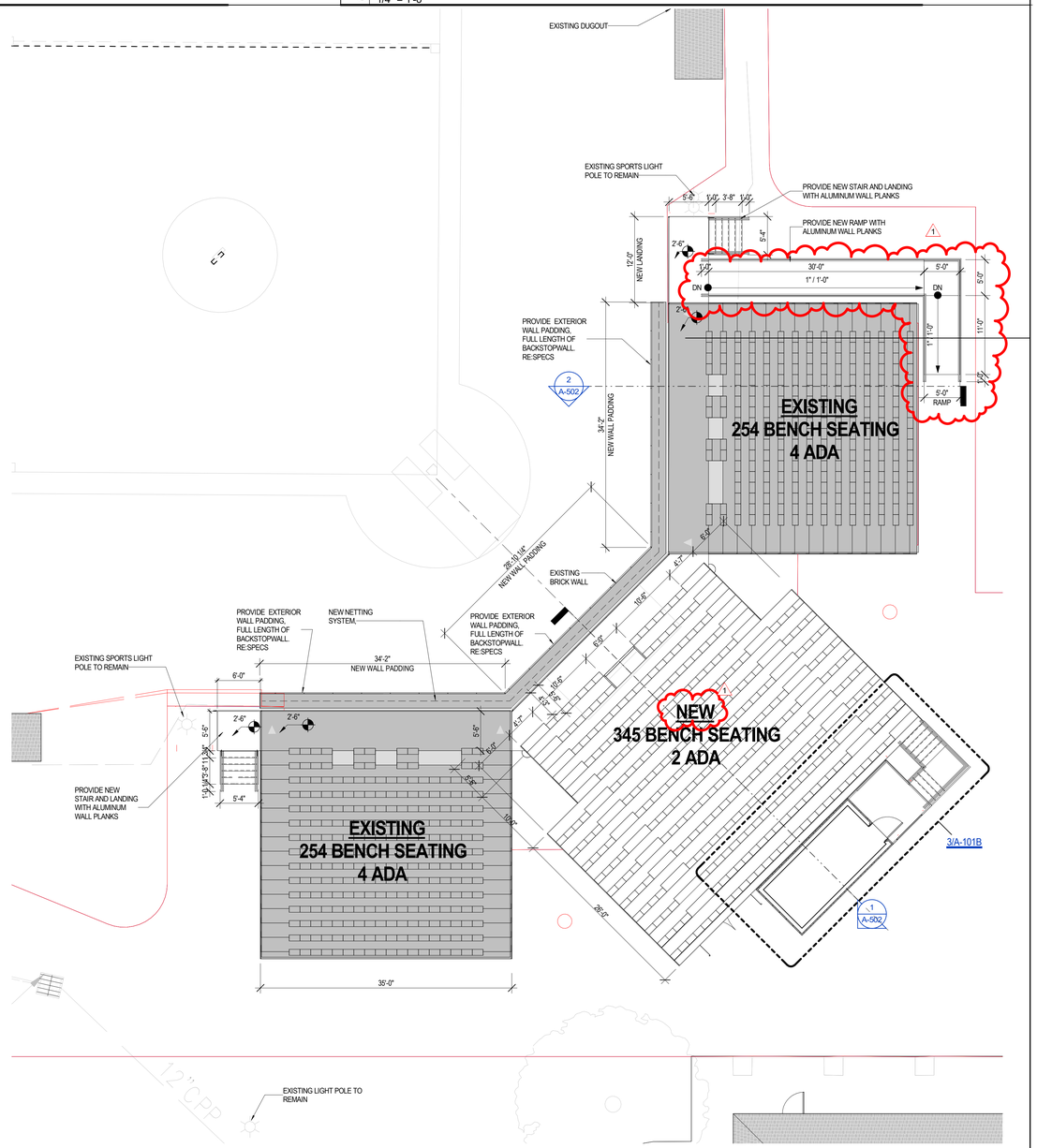
4 SOFTBALL BLEACHER - PRESS BOX ROOF PLAN
1/4" = 1'-0"



3 SOFTBALL BLEACHER - PRESS BOX FLOOR PLAN
1/4" = 1'-0"



2 SOFTBALL FIELD - UNDER BLEACHER FLOOR PLAN
1/8" = 1'-0"



1 SOFTBALL FIELD - OVERALL FLOOR PLAN
1/8" = 1'-0"

SOFTBALL BLEACHER	
EXISTING STANDARD	500
EXISTING H.C.	8
EXISTING COMPANION	8
	516
PROPOSE STANDARD	343
PROPOSE H.C.	2
PROPOSE COMPANION	2
	347
TOTAL:	863

BASIS OF DESIGN ONLY; SHOP DRAWINGS FOR BLEACHERS TO BE PROVIDED BY MANUFACTURER AND APPROVED BY ARCHITECT

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

KEY PLAN — EXISTING LIGHT POLE; PLAN NORTH; TRUE NORTH

REGISTERED ARCHITECT — EDWARD X. RAMEY — 14374 — STATE OF TEXAS

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: Checker

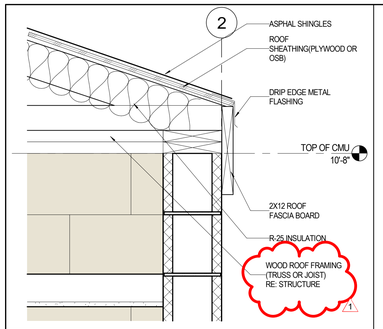
DRAWN BY: Author

SOFTBALL BLEACHER - FLOOR PLAN

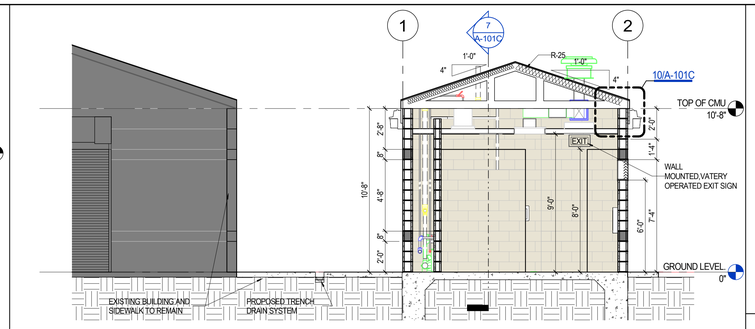
A-101B

Plot Stamp:
9/21/2026 1:51:06 PM

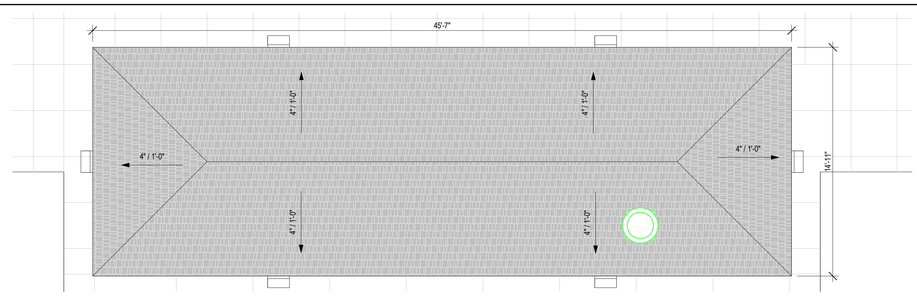
A-101C - RESTROOM EXPANSION - FLOOR PLAN, ELEVATIONS & DETAILS ALTERNATE #4



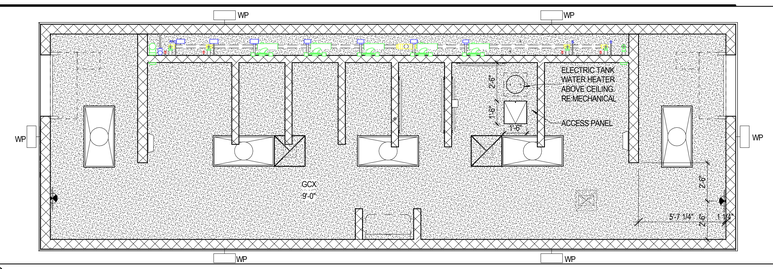
10 RESTROOM BUILDING SECTION B - Callout 1
1 1/2" = 1'-0"



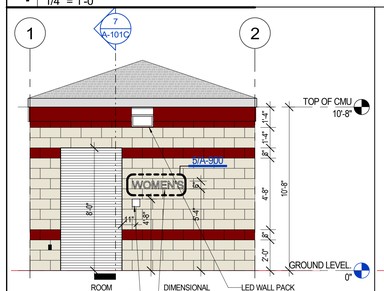
9 RESTROOM BUILDING SECTION B
1/4" = 1'-0"



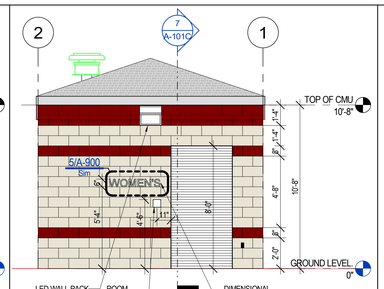
8 NEW RESTROOM BUILDING ADDITION - ROOF PLAN.
1/4" = 1'-0"

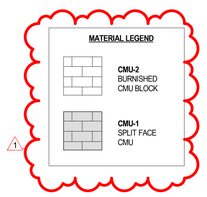


6 RESTROOM - RCP
1/4" = 1'-0"

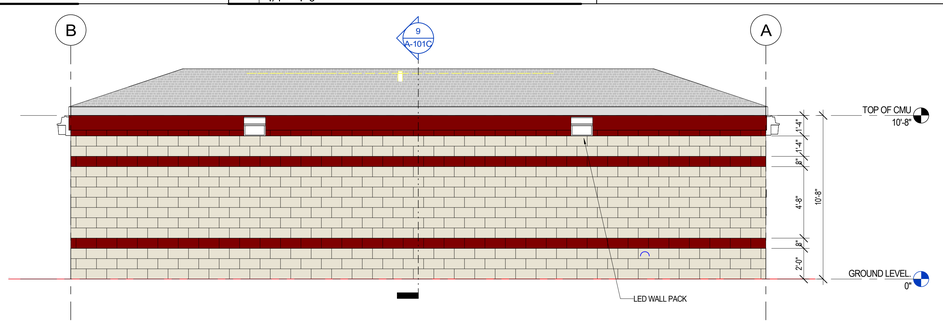


5 RESTROOM ELEVATION - WEST
1/4" = 1'-0"

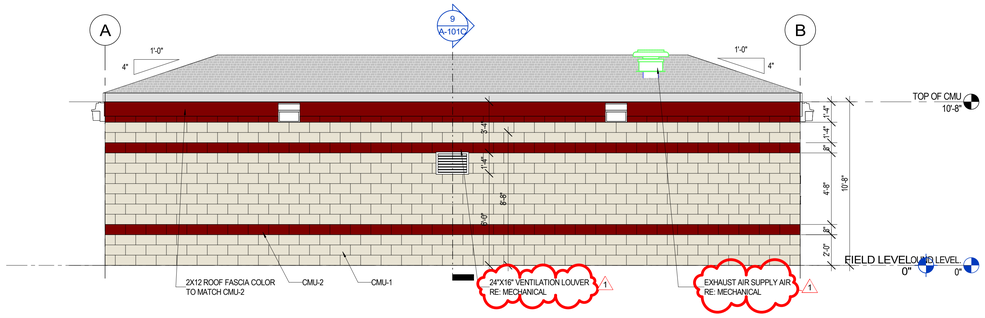




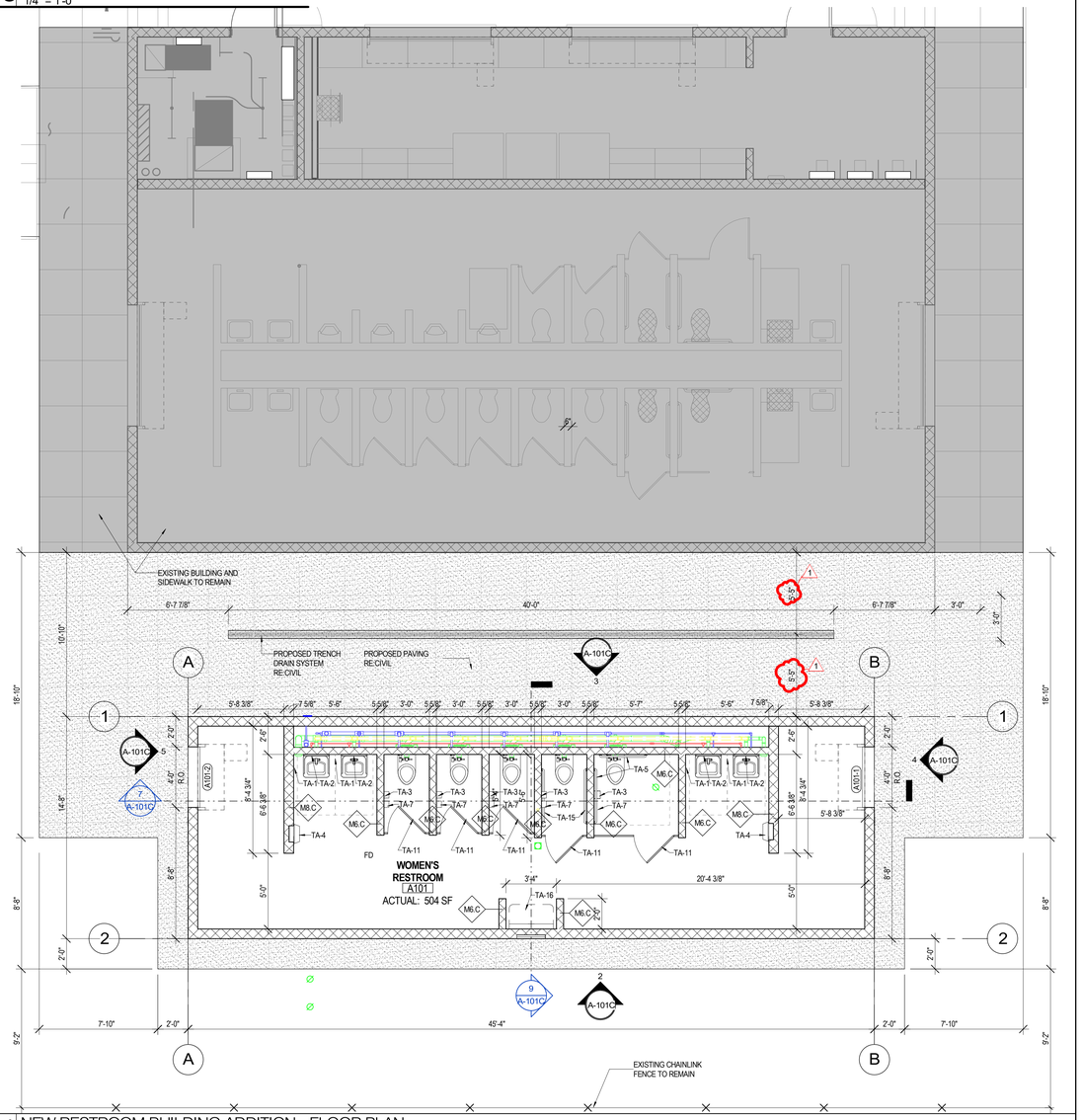
4 RESTROOM ELEVATION - EAST
1/4" = 1'-0"



3 RESTROOM ELEVATION - NORTH
1/4" = 1'-0"



2 RESTROOM ELEVATION - SOUTH
1/4" = 1'-0"



1 NEW RESTROOM BUILDING ADDITION - FLOOR PLAN
1/4" = 1'-0"

Plot Stamp:
9/21/2026 1:41:45 PM

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

KEY PLAN

PLAN NORTH | TRUE NORTH

REGISTERED ARCHITECT EDMUND X. RAMIREZ 74374 STATE OF TEXAS

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: Checker

DRAWN BY: Author

RESTROOM EXPANSION - FLOOR PLAN, ELEVATIONS & DETAILS ALTERNATE #4

A-101C

for Architect/Engineer to review.

C. Testing: All installed cabling shall be tested 100% good after installation by the Contractor. All final test results shall be delivered to owner at completion of project. Refer to closeout requirements listed under section 1.5.

D. Ratings: All products shall be new and brought to the job site in the original manufacturer's packaging. Electrical components (including innerduct) shall bear the Underwriter's Laboratories label. All communications cable shall bear flammability testing ratings as follows:
CM Communications Cable
CMP Plenum Rated Communications Cable
CMR Riser-Rated Communications Cable

E. Initial Cable Inspection: The Contractor shall inspect all cable prior to installation to verify that it is identified properly on the reel identification label, that it is of the proper gauge, containing the correct number of pairs, etc. Note any buckling of the jacket that would indicate possible problems. Damaged cable or any other components failing to meet specifications shall not be used in the installation.

F. Cable Lubricants: Lubricants specifically designed for installing communications cable may be used to reduce pulling tension as necessary when pulling cable into conduit.
1. Approved Products
a. Twisted-pair cable: Dyna-Blue
American Polywater

G. Fire Wall Sealant: Any penetration through firewalls (including those in sleeves) will be resealed with an Underwriter Laboratories (UL) approved sealant.
1. Approved Products
a. 3M or
b. Pre-approved equal

2.2 DATA CLOSET (MDF/IDF) CATEGORY 6 TERMINATION HARDWARE

A. Equipment Racks/Cabinets:

Provide and install equipment racks and/or cabinets in locations indicated on the attached drawings for the following areas.

For all IDF and MDF locations:

Contractor shall provide and install new Chatsworth floor mounted rack systems. Refer to floor plan and enlarged MDF/IDF room layouts for number or racks to provide at each location.

1. Approved Products
a. Floor mounted racks – Chatsworth 55053-703

For IDF rooms that are not dedicated spaces or have public access, provide
1. Wall mounted cabinet – Chatsworth part number 13492-772.

B. Distribution Rack/Cabinet Grounding

All Racks and/or Cabinets shall be grounded using stranded #6 AWG insulated copper conductor. Connect to service entrance grounding electrode. Provide all required bonding materials and hardware and bond to building grounding electrode subsystem at

building electrical service entrance.

1. Approved Products –Grounding Compression Lugs
   NSi #L6N-14
2. Approved Products – Wall Mount Bus Bar (one per MDF/IDF location) Hoffman #DGTB412

C. Fiber Optic Patch Panels

The enclosures used shall provide termination panels for LC type connectors and be of sufficient size and capacity to terminate 110% of the fiber count of the inside of outside fiber optic cables. Patch panels must be 19" rack mountable. Provide all termination accessories, fiber patch cords, enclosures and test for a complete fiber optic distribution system.

1. Approved Products (for MDF/IDF locations):

   a. CommScope 2U Fiber Shelf 760251045 EPX- 2U-PNL-ENC
   b. CommScope 4U Fiber Shelf 760251049 EPX- 4U-PNL-ENC
   c. CommScope 12 Fiber Inserts LC Single-Mode 760067165 | PNL-BK-012-SFA-LC02-BL-Shuttered
   d. CommScope Wall Mounted Single Sided Single Door Fiber Enclosure 769248905 | WB2-EMT-BK-2P-PNL
   e. Provide cable grommets AMP #559496-2, or equivalent cable grommet.

D. Category 6/6A Patch Panels: The Category 6/6A data station cable shall be terminated on Category 6/6A RJ45 patch panels with circuit board construction, T568B terminations. Patch panels shall be 19-inch rack mountable. Workstation patch panels shall terminate all workstation communications outlets. Furnish units that adhere to the performance requirements TIA/EIA-568 standards.

1. Approved Products:
   a. CommScope Category 6/6A Patch Panels 24 Port 760207274 | CPP-UDDM-M-1U-24
   b. CommScope Category 6/6A Patch Panels 48 Port 760207282 | CPP-UDDM-M-2U-48
   c. Provide cable support bars at the back of all patch panels to provide additional support at rear of rack and panels

E. Cable Management Panels
Provide cable management panels as required for horizontal and vertical cable management. Provide vertical wire management on ends and in between all racks on entire project. All vertical cable managers on the entire project shall be 10" wide management.

1. Approved Products

   Horizontal – Hoffman DCHD2 (Verify with district prior to ordering)

   Vertical – Hoffman DV10DF7
   Provide Velcro straps for cable dressing in MDF/IDF rooms.

F. Rack/Cabinet Electrical:

1. A power distribution strip shall be installed vertically at the back of each data rack and/or cabinet.

Approved Products
a. Chatsworth P-11D0A5 120V 20A
b. Provide a PDU offset bracket for each PDU installed.

- Provide the following electrical UPS equipment at each location indicated.

At MDF room: (Provide quantity of two (2) each of the following at the MDF)

Smart-UPS 3000VA USB & Serial RM 2U 120V
APC Product Number: DUA3000RM2U (black chasis)

UPS Network Management Card 2 with Environmental Monitoring
APC Product Number: AP9631

3 year extended warranty
APC Product Number: WBEXTWAR3YR-SP-04

At IDF Room: (Provide quantity of one (1) each of the following at each IDF)

Smart-UPS 3000VA USB & Serial RM 2U 120V

APC Product Number: DUA3000RM2U (black chasis)

UPS Network Management Card 2 with Environmental Monitoring
APC Product Number: AP9631

3 year extended warranty
APC Product Number: WBEXTWAR3YR-SP-04

G. Network Rack Patch Cables: Cabling Contractor shall provide district with (1) – 6' Category 6 patch cable for each data drop and (1) – 6' Category 6A for each WAP drop on entire project.. These cables will provide connectivity from the front of the network patch panels to the network equipment provided by district upon move-in. The patch cables are to be terminated properly with RJ-45 connections on each end with the proper pin-out assignments per project configuration.
1. Approved Products: CommScope 6' Category 6 Patch Cable
   a. Blue in color for all data drops on the entire project UC1BBB2-0ZF006
   b. Green in color for all IP Cameras drops on the entire project UC1BBB2-0MF006
2. Approved Products: CommScope 6' Category 6A Patch Cable
   a. Yellow in color for all Access Point drops on the entire project UC1AAA2-09F006

2.3 CABLE ROUTING/PATHWAY

A. Cable Tray: Metal cable tray shall be provided to affix to the top of all floor mount racks. Cable tray shall be used to brace racks to walls and to route cable from walls to racks in communication closets.
1. Approved Products:
   a. CommScope 760085647 | CR-SLR-10L12W (black)
   b. And all applicable installation accessories and those listed below:
      1. Cable Runway Elevation Kit (CPI) - #10506-706 (black) –one per rack
      2. 3" Channel Rack-to-Runway Mounting Plate CommScope 760084053 | CRR2RRMK (black) one per rack
      3. Cable Runway Radius Drop: CommScope 760083956 | CRDK-

12W (black).
4. Ladder Rack 90° Horizontal E-Bend Section: CommScope 760085530 | CR90FCB-12W (black). Provide as required.
5. Wall Angle Support Kit: CommScope 760084160 | CR12-C24WRSK (black). Provide as required per ladder tray and wall junction.
6. End Cap Kit: CommScope 760084012 | CRPECK (black). Provide as required per exposed end of ladder tray
7. Junction Splice Kit: CommScope 760084046 | CRTJSK (black). Provide as required per junction.
8. And all applicable installation accessories.

B. Cable Support System:

C. All low voltage cabling shall be installed and supported using a modular cable support system at 48” intervals unless installed in conduit. Do not exceed manufacture recommendation for the quantity of cables supported in an individual support.

D. All cable bundles shall be grouped together using plenum rated Velcro for the entire run above and below the ceilings.

E. Innerduct shall be provided for non-armored fiber cabling and shall be bright orange and labeled and shall be provided for fiber optic cables from fiber patch panel to conduit or plenum and conduit entrances. Innerduct installed in plenum rated ceilings shall be plenum rated.

1. Approved products
   a. Carlon
   b. Dura-line

2.4 FIBER OPTIC PRODUCTS

A. Fiber Optic Cable shall be UL listed type OFNP (unless noted otherwise):

1. Single-mode:
   a. Single-mode fibers, each with a color-coded PVC tight buffer (unless noted otherwise) shall have a maximum attenuation of 1.0 dB/km at 1310 nm and 1.0 dB/km at 1550 nm.
   b. Approved Products:
      i. 12-strand Single-mode, with plenum rated armored jacket shall connect each IDF with the MDF as specified on Technology Plans.
      i. CommScope Product #760127803 | P-012-DZ-8W-FSUYL
      ii. 12-strand Single-mode fiber with an indoor/outdoor plenum rated jacket, with no metallic elements, shall connect each IDF (that is not connected to the main buildings) with the MDF as specified on Technology Plans. 12-strand - CommScope Product #760037192 | P-012-OD-8W-FSUBK

3. Provide 4 qty. CommScope 3-meter patch cords for each backbone fiber installed on the entire project. Coordinate the required connector type, on the equipment end, with the owner prior to procuring the products.

4. No fusion or mechanical splices will be allowed at any point in the fiber optic runs.

B. Connectors

Optical Fiber Connectors shall be LC type connectors.

1. Approved Products:

   CommScope LC Single-Mode #760117895 | SFC-SLCF-09-8X Qwik II LC

2.5 STATION WIRING

A. Wireless Access Points shall be cabled with Category 6A unshielded twisted pair, four-pair, 24 AWG solid sopper conductor, meeting the intent and quality level of the TIA/EIA-568-A Commercial Building Wiring Standard. Refer to floor plan and data outlet legend for WAP Locations.
   1. Approved Products: For all WAPs:
      a. Plenum-Rated CommScope Category 6A (Yellow color for all Access points drops on entire project)
         1) CommScope Part # CS44P-YEL

B. Wire: The data and voice wire provided for all outlets shall be (Category 6) unshielded twisted pair, four-pair, 24 AWG solid copper conductor, meeting the intent and quality level of the TIA/EIA-568-A Commercial Building Wiring Standard. Refer to floor plan and data outlet legend for number of active data ports to specified faceplates.
   1. Approved Products: For all voice and data connections:
      1. Plenum-Rated CommScope Category 6 (blue color for all voice/data drops on entire project)
         2) CommScope Part #CS37P BLU
      b. Plenum-Rated CommScope Category 6 (green color for all IP Cameras drops on entire project)
         3) CommScope Part #CS37P GRN

C. Indoor/Outdoor Plenum Copper cable- For those locations where we will need to run short runs of copper cable from building to building or within a “wet environment” (in slab) provide the following cables:
   2. Approved Products: For all voice and data connections:
      a. CS34P-IO Indoor/Outdoor Category 6 U/UTP, Plenum, Outdoor Rated, Black Jacket, 4 Pair Count
      b. CS44P-IO Indoor/Outdoor Category 6A U/UTP, Plenum, Outdoor Rated, Black Jacket, 4 Pair Count

D. Testing: The Category 6 four-pair UTP cable must be UL Performance Level tested. Each 1000 foot spool must be individually tested with test results affixed to the spool. All cable must be provided on new 1000 foot spools. NO “SHORTS” WILL BE ALLOWED. IF SHORTS ARE DISCOVERED, THE CONTRACTOR WILL BE REQUIRED TO UNINSTALL ALL CABLE ON THE ENTIRE PROJECT AND INSTALL NEW CABLE AT NO ADDITIONAL COST TO THE OWNER.

E. Rating: Cable installed in conduit shall be non-plenum rated. Cable not installed in conduit shall be plenum rated if installed in plenum ceiling space, non plenum rated otherwise.

F. Provide 10 feet service loop at all headend locations properly supported above ceiling. Provide 10 foot service loop at each workstation outlet properly supported above ceiling. All workstation service loops shall be made in figure eight configurations, no exceptions.

G. All cable shall be bundled with Velcro from patch panel to outlet. Velcro shall be rated for plenum space.

2.6 STATION HARDWARE

A. Flush Mount Jacks: Flush mount jacks shall be high quality Category 6A RJ45 modular jacks with circuit board construction and IDC style or 110-style wire, T568B terminations. Jacks shall meet EIA/TIA TSB40 recommendations for Category 6 connecting hardware.
   1. Approved Products – WAP Jacks:
      a. Wireless: CommScope UNJ Series #760257323 UNJ10G-YL
      b. Wireless: CommScope USL series

B. Flush Mount Jacks: Flush mount jacks shall be high quality Category 6 RJ45 modular jacks with circuit board construction and IDS style or 110-style wire, T568B terminations. Jacks shall meet EIA/TIA TSB40 recommendations for Category 6 connecting hardware.
   1. Approved Products – Data and Voice Jacks:
      a. Data/Voice: CommScope UNJ Series # UNJ600T-BLU or USL Equivalent
      b. Security: CommScope, UNJ Series # UNJ600T-GR or USL Equivalent
   2. All blank inserts shall be Gray.

C. Faceplates: Faceplates shall be a 4-port, flush mounted, **stainless steel**, CommScope Semtron solution, for RJ45 outlets at all locations.
   1. Approved Products:
      a. M10L-262 (Single Gang with label)
      b. M14L-262 (Quad Gang with label)
      c. M10W4SP (Single Gang for wall mount phone)

D. Workstation Patch Cables: Cabling Contractor shall provide district with (1) – 10' Category 6 patch cable for each data drop on entire project. One 10' Category 6A patch cable for each WAP drop on entire project. Each cable will be terminated properly with RJ45 connections on each end with appropriate pin-out assignments per project configuration.

E. Approved Products: CommScope Uniprise 10' Cat 6 or Cat 6A Patch Cable
   1. Blue in color for all Access Point drops on the entire project UC1BBB2-0ZF010, CAT6.
   2. Green in color for all IP Cameras drops on the entire project UC1BBB2-0MF010. CAT6.
   3. Yellow in color for all Access Point drops on the entire project UC1AAA2-09F010, CAT6A.

PART 3 - EXECUTION

3.1 GENERAL

A. Fire Wall Penetrations: The contractor shall avoid penetration of fire-rated walls and floors wherever possible. Where penetrations are necessary, they shall be sleeved with metallic conduit and resealed with an Underwriter Laboratories (UL) approved sealant. Contractor shall also seal all floor, ceiling and wall penetrations in fire or smoke barriers and in the wiring closet.

B. Allowable Cable Bend Radius and Pull Tension: In general, communications cable cannot tolerate sharp bends or excessive pull tension during installation. Refer to the cable manufacturers allowable bend radius and pull tension data for the maximum allowable limits.

C. Cable Lubricants: After installation, exposed cable and other surfaces must be cleaned free of lubricant residue.

D. Pull Strings: Provide pull strings in all new conduits, including all conduits with cable installed as part of this contract. Pull test is not to exceed 200 pounds. Data and video cables can be pulled together with pull strings.

E. Conduit Fill: Conduit fill shall not exceed 40%.

F. Damage:
1. The Contractor shall replace or rework cables showing evidence of improper handling including stretches, kinks, short radius bends, over-tightened bindings, loosely twisted and over-twisted pairs at terminals and cable sheath removed too far (over 1-1/2 inches).
2. The Contractor shall replace any damaged ceiling tiles that are broken during cable installation.

G. Clean Up:
All clean up activity related to work performed will be the responsibility of the Contractor and must be completed daily before leaving the facility.

3.2 DOCUMENTATION

A. Labels

The Contractor will label all outlets using permanent/legible typed or machine engraved labels approved by the Owner (no handwritten labels permitted). Label patch panels in the wiring closet to match those on the corresponding data outlets. The font shall be at least on-eighth inch (1/8”) in height, block. All labels shall correspond to as-builts and to final test reports.

The following nomenclature should be used when labeling data/voice jacks:

a. All cables being served by MDF closet shall begin with ‘M’ all IDF served cables shall begin with I# (# designated IDF closet number).

b. Next identification letter shall refer to patch panel that is serving outlet (A,B,C…)

c. Next identification shall note what # data port on patch panel (1 thru 48).

Example:

a. Outlet from 23rd port of the third patch panel from top of rack located at IDF2-C23
b. Outlet from the 5th port of the second patch panel from the top of rack located at MDF M-B5

B. Floor Plan

A floor plan clearly labeled with all outlet jack numbers shall be included in the as-built plans.

C. Contractor shall label wiring on both ends of cable at workstation and headend locations with machine labels, no exceptions.

3.3 EQUIPMENT RACK CONFIGURATION

A. Equipment Racks: Equipment racks shall be assembled and mounted in locations shown

on the Drawings and as detailed. Each rack shall be securely mounted to the floor and braced to the wall with cable tray in accordance with the manufacturer's instructions and recommendations. Racks shall be mounted such that the side rails are plumb with vertical cable management panels. Racks to be located such that future expansion can occur without relocating existing racks. Racks shall be grounded in accordance with NEC requirements. Placement of racks must be approved prior to installation. **Racks installed without Owner's acceptance of location shall be relocated including all related work at no cost to the Owner.**

B. Wire Management Components: Horizontal cable management panels shall be installed directly above and below each patch panel, also 1 per patch panel should be left at site to accommodate the switch gear when they are installed. Vertical cable management panels shall be installed on each side of the rack. In instances where more than one rack is installed in a single location, vertical cable management shall be installed between the racks and on either side.

C. Cable Placement: Cable installation in the Wiring Closet must conform to the Project Drawings. All cabling shall be routed so as to avoid interference with any other service or system, operation, or maintenance location. Avoid crossing area horizontally just above or below any riser conduit. Lay and dress cables to allow other cables to enter the conduit/riser without difficulty at a later time by maintaining a working distance from these openings.

D. Cable Routing: Cable shall be routed as close as possible to the ceiling, floor or corners to ensure that adequate wall or backboard space is available for current and future equipment. All cable runs within the Wiring Closet shall be horizontal or vertical within the constraints of minimum cable bending radii. Minimum bend radius shall be observed. Cables shall not be tie-wrapped to electrical conduit or other equipment.

E. Installation: All incoming cables shall be routed on the cable tray and neatly dressed down to the patch panels.

F. Hardware: Provide rack and jack panel hardware as required for all data station wiring.

3.4 STATION WIRING INSTALLATION

A. General:
1. Cabling between wiring closet and workstation locations shall be made as individual home runs. No intermediate punch down blocks or splices may be installed or utilized between the wiring closet and the communications outlet at the workstation location.
2. All cable must be handled with care during installation so as not to change performance specifications. Factory twists of each individual pair must be maintained up to the connection points at both ends of the cable. There shall never be more than one and one-half inches of unsheathed enhanced Category 6 UTP cable at either the wiring closet or the workstation termination locations.

B. Exposed Cable:
1. All cabling shall be installed inside walls or ceiling spaces whenever possible. Exposed station cable will only be run where indicated on the Drawings.
2. Additional exposed cable runs will require Owner approval and will only be allowed when no other options exist.

C. Placement: All cabling and associated hardware shall be placed so as to make efficient use of available space. All cabling and associated hardware shall be placed so as not to impair the Owner's efficient use of their full capacity.

D. Cable Routes:
1. All cabling placed in ceiling areas must be in conduit, cable tray or J-Hooks. Cable supports shall be permanently anchored to building structure or substrates. Provide attachment hardware and anchors designed for the structure to which attached and that are suitably sized to carry the weight of the cables to be supported. Do not route cable through webbing of structural steel. Cabling must be supported in dedicated supports intended to support cabling as described in this section.
2. Attaching cable to pipes or other mechanical items is not permitted. Use J-Hooks for up to 15 cables (Chatsworth hooks with appropriate brackets). All runs of sixteen (16) or more cables, provide cable rings on 36-inch maximum centers to hang cable. Communications cable shall be rerouted so as to provide a minimum of 18 inches spacing from light fixtures, sources of heat, power feeder conduits and EMI sources. Cabling shall not be attached to ceiling. Grid support wires. Cable runs shall be parallel or perpendicular to building structure. Multiple cables to be bundled together every 6 feet.

3.5 STATION HARDWARE

A. Flush Mount Jacks: Flush mount jacks shall be mounted in a faceplate with backbox.

B. Placement: Where possible, the communications outlet shall be located so that its centerline is 18 inches above floor level or 12 inches above permanent bench surfaces. Outlets shall not be mounted on temporary, movable, or removable surfaces, doors, or access hatches.

C. RJ-45 Jack Pin Assignments:
1. Pin connections for data station cable outlets and patch panels shall match EIA/TIA 568 modular jack wiring recommendation T568B.
2. Pin connections at data jack panels shall match pin connections at outlets (straight through wiring).

3.6 CABLE TESTING REQUIREMENTS

A. Notification: The Owner and Engineer shall be notified one week prior to any testing so that the testing may be witnessed.

B. Inspection: Before requesting a final inspection, the Contractor shall perform a series of end-to-end installation performance tests. The Contractor shall submit for approval a proposal describing the test procedures, test result forms and timetable for all copper and fiber optic cabling.

C. Procedures: Trained personnel shall perform all testing. Acceptance of the test procedures discussed below is predicated on the Contractor’s use of the recommended products and adherence to the inspection requirements and practices set forth. Acceptance of the completed installation will be evaluated in the context of each of these factors.

D. Errors: When errors are found, the source of each shall be determined, corrected and the cable retested. All defective components shall be replaced and retested. Re-test results must be provided on Owner approved forms and witnessed by Owner.

E. Twisted Pair Cable Testing:
1. At a minimum, the Contractor shall test all station drop cable pairs from Data Closet termination patch panels to outlet device RJ45 jacks. Category 6

products shall be tested for compliance to ANSI/TIA/EIA 568A and ISO/IES 11801 for a Category 6 rated installation. Test equipment used shall meet TIA/EIA TSB-67, Level II accuracy. Further, the contractor shall have a copy of TSB-67 in their possession and be familiar with its contents.

2. Each wire/pair shall be tested at both ends for the following:
   a. Wire map (pin to pin connectivity)
   b. Length (in feet)
   c. Attenuation
   d. Near end cross talk (NEXT)
   e. Power Sum
3. Test equipment shall provide an electronic and printed record of these tests.
4. Test results for each Category 6 four-pair UTP cable must be submitted with identification to match labels on all patch panel ports and RJ45 jacks and must match as-builts associated with that cable.

F. Fiber Optic Cable Testing

1. Optical fiber cabling shall be tested and certified after installation as described below and as required for cable manufacturer's warranty. Fiber testing shall be performed on all fibers in completed end to end system. Testing shall consist of a bi-directional end to end test in accordance with applicable standards in 27 02 20.20, or a bi-directional end to end test performed by TIA-455-53A and all other applicable standards in 27 05 00. The system loss measurements shall be provided at 850 and 1300 nanometers for multimode type glass and 1310 and 1550 nanometers for single-mode type glass. These tests shall also include continuity checking of each fiber. For spans greater than 90 meters, each tested span must test to a value less than or equal to value determined by calculating a link loss budget. For horizontal spans less than or equal to 90 meters, each tested span must be less than or equal to 2.0 decibels. The insertion loss for each mated optical fiber connector pair shall not exceed 0.40 decibels.
2. Pre-installation testing: Test all optical fiber cable for all fibers prior to installation of cable.
3. Performance testing: Where links are combined to complete a circuit between devices, Contractor shall test each link from end to end to ensure performance of system. Only a basic link test is required. Contractor can optionally install patch cords to complete circuit and then test entire channel. The test method shall be same used for test described above. The values for calculating loss shall be those defined in applicable TIA standards in Appendix 1: Codes, Standards, and Informative References.
4. Attenuation testing: Attenuation testing shall be performed with a stable launch condition using two-meter jumpers to attach test equipment to cable plant. The light source shall be left in place after calibration and power meter moved to far end to take measurements.
5. Loss budget: All fiber cabling shall be tested at both wavelengths 850 nm and 1310 nm for multimode and 1300 nm and 1550 nm for single mode.
   a. The link attenuation shall be calculated using:
      1) The CommScope Fiber Performance Calculator for CommScope installations
      2) The following calculation for other installations:
         Link Attenuation Allowance (dB) = Cable Attenuation (dB) + Connector Loss (dB) + Splice Insertion Loss (dB)
         Where:
         Cable Attenuation (dB) + Cable attenuation (dB/km) X Length (km)

Connector loss (dB) = Number of Connector pairs X
Allowable connector loss (dB) Splice Insertion Loss (dB) =
Number of Splices X Allowable Splice Loss (dB)

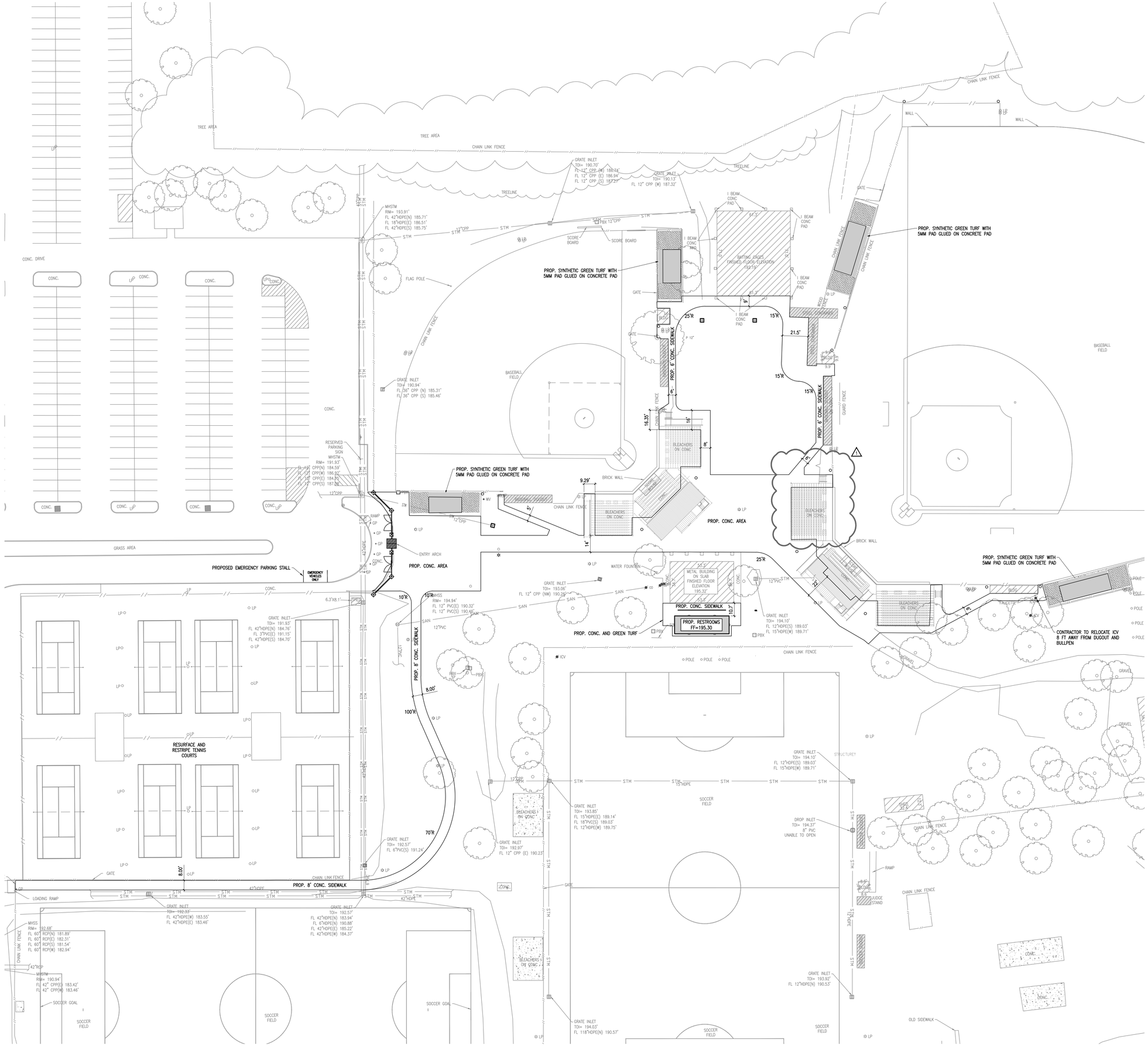
6. Link Loss: A mated connector to connector interface shall be considered a single connector. Loss numbers for installed link shall be calculated by taking sum of bi-directional measurements and dividing that sum by two. All links not meeting requirements of standard shall be brought into compliance by Contractor, at no additional cost to Owner.
7. Documentation: Following final documentation shall be submitted to the owner's representative prior to commissioning data system and final contract payment according to Submittals in this section.
8. Test results: Test results shall be automatically evaluated by equipment, using most up-to-date criteria from all applicable standards specified in 27 02 20.20 and result shown as pass/fail. Test results shall be printed directly from test unit or from a download file using an application from test equipment manufacturer. The printed test results shall include all tests performed, expected test result and actual test result achieved.
9. End to End Loss Data: final documentation shall be submitted to the owner's representative.
10. As Installed/ As Built Diagrams: Final documentation shall be submitted to the owner's representative.
11. Test Documentation shall be submitted in electronic format. Certification Test Reports shall be submitted in electronic format using the appropriate software supplied by the test equipment manufacturer. The data format should be that of the test report software (i.e. *.flw files for Fluke). The contractor shall provide any necessary software to view and evaluate the test data.

3.7 INSPECTION

A. Conformance to the installation practices covered above are to be verified when completed. In some cases, the Owner/Designer may inspect before acceptance.
   1. Written Test Report:
      a. Complete test results, including actual values associated with tests.
      b. Show all certifications for telecommunications wiring systems.
      c. Include cable maps showing each cable route and keyed to cable labels. Provide owner with complete floor plans identifying outlet location and cable routing drawing in AutoCad format. Provide electronic copy of drawings to owner in AutoCad version 14 or greater.
      d. Documentation of outlet, cable and rack labeling system.

B. After performing all tests, tabulate results and bind together in format acceptable to Owner. Installer shall provide written certification in the test report that telecommunications cable is properly installed and test results certify system to all specified standards.

END OF SECTION 27 10 00



TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

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TOMBALL ISD

STATE OF TEXAS
TRACE C. CRYER
143668
LICENSED
PROFESSIONAL ENGINEER
09/21/2026
TX Firm-3709

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM 3	09/21/2026

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SITE PLAN

CA 101

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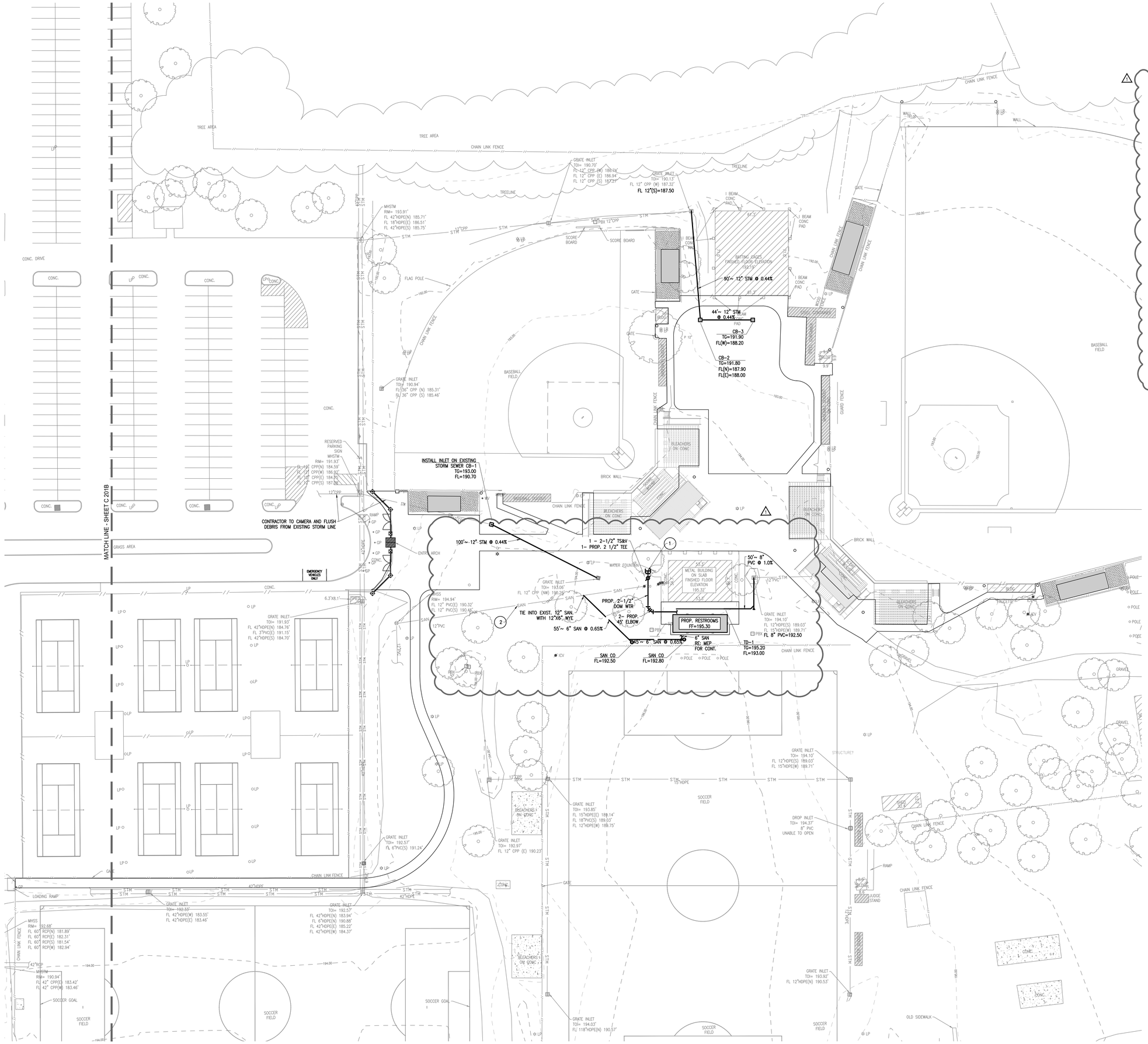

NOTES TO SHEET

1. CONTRACTOR TO FIELD VERIFY EXISTING WATER LINE FOR TIE-IN ACCESS PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO FIELD VERIFY EXISITING SANITARY LINE FOR TIE-IN ACCESS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS FOR ALL PIPE CONNECTIONS.
4. ALL SUBDRAIN PIPE CONNECTIONS SHALL BE MADE UTILIZING MANUFACTURER APPROVED FITTINGS.
5. WHERE PROPOSED UTILITIES ARE ROUTED UNDER EXISTING ASPHALT PAVEMENT, SAWCUT AND REMOVE PAVEMENT PRIOR TO INSTALLATION AND PATCH AND REPAIR PAVEMENT TO PRE-CONSTRUCTION CONDITION AFTER UTILITY INSTALLATION IS COMPLETE.
6. IN THE CASE THAT ALTERNATE # 3 IS TAKEN THE CONTRACTOR SHALL ENSURE THAT UTILITY FLOWLINES AT BUILDING CONNECTIONS MEET THE REQUIRED ELEVATIONS SHOWN ON THESE DRAWINGS.
7. THE PROPOSED 3" DOMESTIC WATER LINE IS TO BE ROUTED UNDERNEATH THE PROPOSED 6" SANITARY PIPES. MAINTAIN MINIMUM 24" CLEARANCE FROM O.D. TO O.D. OF PIPES.
8. PLACE 1 FULL SECTION (MIN. 18') OF 3" DUCTILE IRON WATER LINE CENTERED AT EACH SANITARY PIPE CROSSING. PROVIDE RESTRAINED MECHANICAL JOINTS ON THE WATER LINE, SPACED AT LEAST 9' HORIZONTALLY FROM CENTERLINE OF SANITARY.
9. DUCTILE IRON PIPE SHALL BE DESIGNED IN ACCORDANCE WITH ANSI STANDARD A21.50 (AWWA C-151), OR THE LATEST REVISION THEREOF. DUCTILE IRON PIPE SHALL BE PRESSURE RATED FOR 200 PSI MINIMUM.
10. PLACE 1 FULL SECTION (MIN. 18') OF 6" C-900 PVC SANITARY PIPE CENTERED AT EACH WATER LINE CROSSING. PROVIDE RESTRAINED MECHANICAL JOINTS ON THE PRESSURE-RATED SANITARY PIPE, SPACED AT LEAST 9' HORIZONTALLY FROM CENTERLINE OF WATER LINE.
11. PRESSURE-RATED SANITARY PIPE SHALL CONFORM TO ALL REQUIREMENTS OF ASTM C900 - DR 18, CLASS 150 PIPE. ALL FITTINGS SHALL BE CAST IRON OR DUCTILE IRON AND SHALL CONFORM TO THE LATEST EDITION OF AWWA SPECIFICATIONS. SEE ADDITIONAL FITTING REQUIREMENTS IN SPECIFICATION SECTION 33 11 00.
12. SANITARY-WATER CROSSINGS SHALL FULLY COMPLY WITH LATEST TCEQ AND TEXAS ADMINISTRATIVE CODE STANDARDS AND REQUIREMENTS.

LEGEND

TC	TOP OF CURB
FL	FLOW LINE
TP	TOP OF PAVEMENT
TSub	TOP OF SUBGRADE
TR	TOP OF RIM
TG	TOP OF GRATE
TN	TOP OF NAILER
A - X	AREA INLET
ID - X	INLINE DRAIN
CB - X	CATCH BASIN

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

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CLIENT PROJECT NUMBER: 250515

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STATE OF TEXAS
TRACE C. CRYER
143668
LICENSED
PROFESSIONAL ENGINEER
09/21/2026
TX Firm-3709

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09/10/2026	250515

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No.	Description	Date
1	ADDENDUM 3	09/21/2026

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DRAINAGE & UTILITY PLAN

CA 201

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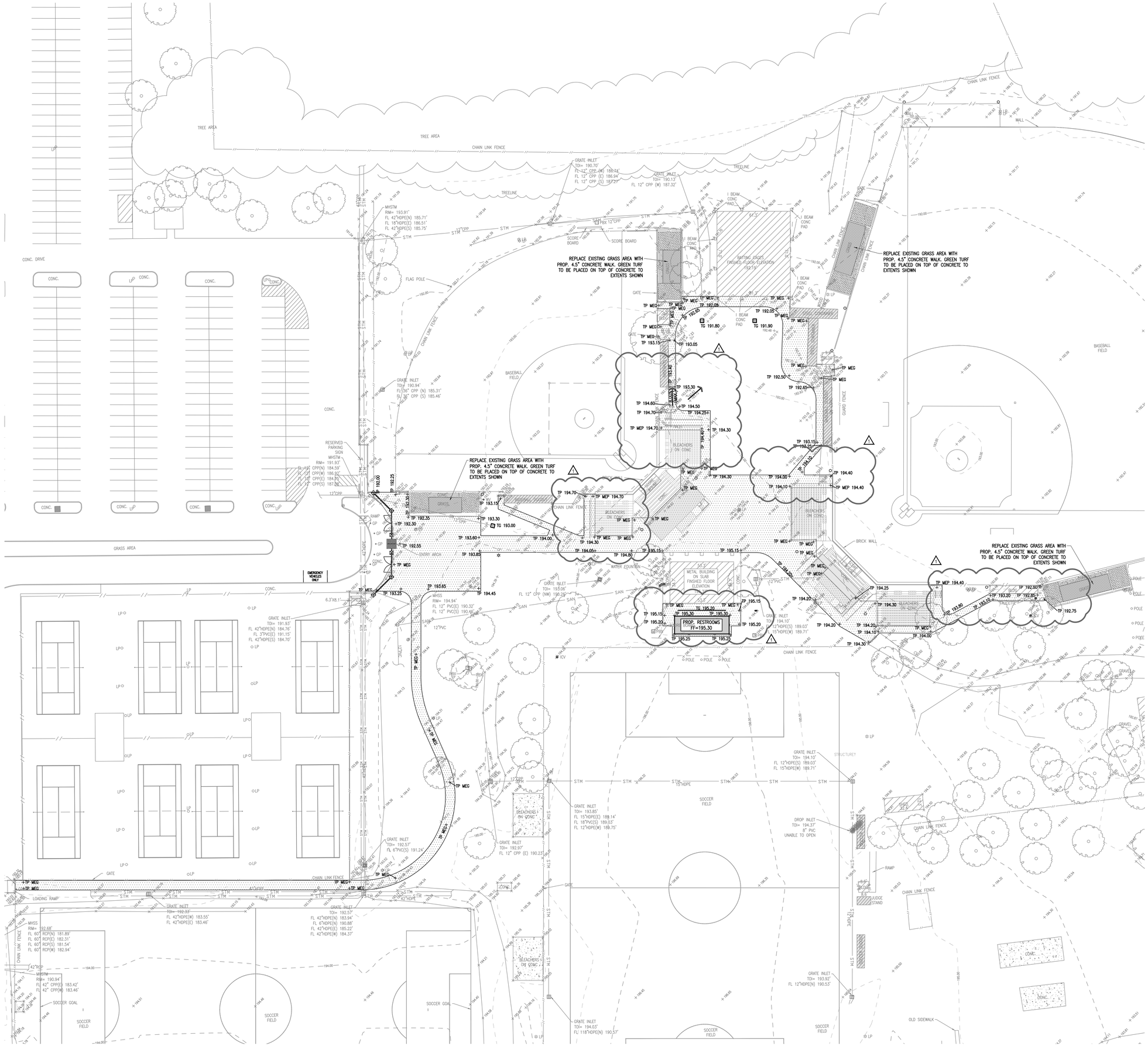

NORTH

15 30
30 0 60

LEGEND

TC	TOP OF CURB
FL	FLOW LINE
TP	TOP OF PAVEMENT
TSub	TOP OF SUBGRADE
TR	TOP OF RIM
TG	TOP OF GRATE
TN	TOP OF NAILER
A - X	AREA INLET
ID - X	INLINE DRAIN
CB - X	CATCH BASIN

4.5" CONCRETE SIDEWALK

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PAVING AND GRADING PLAN

CA 301

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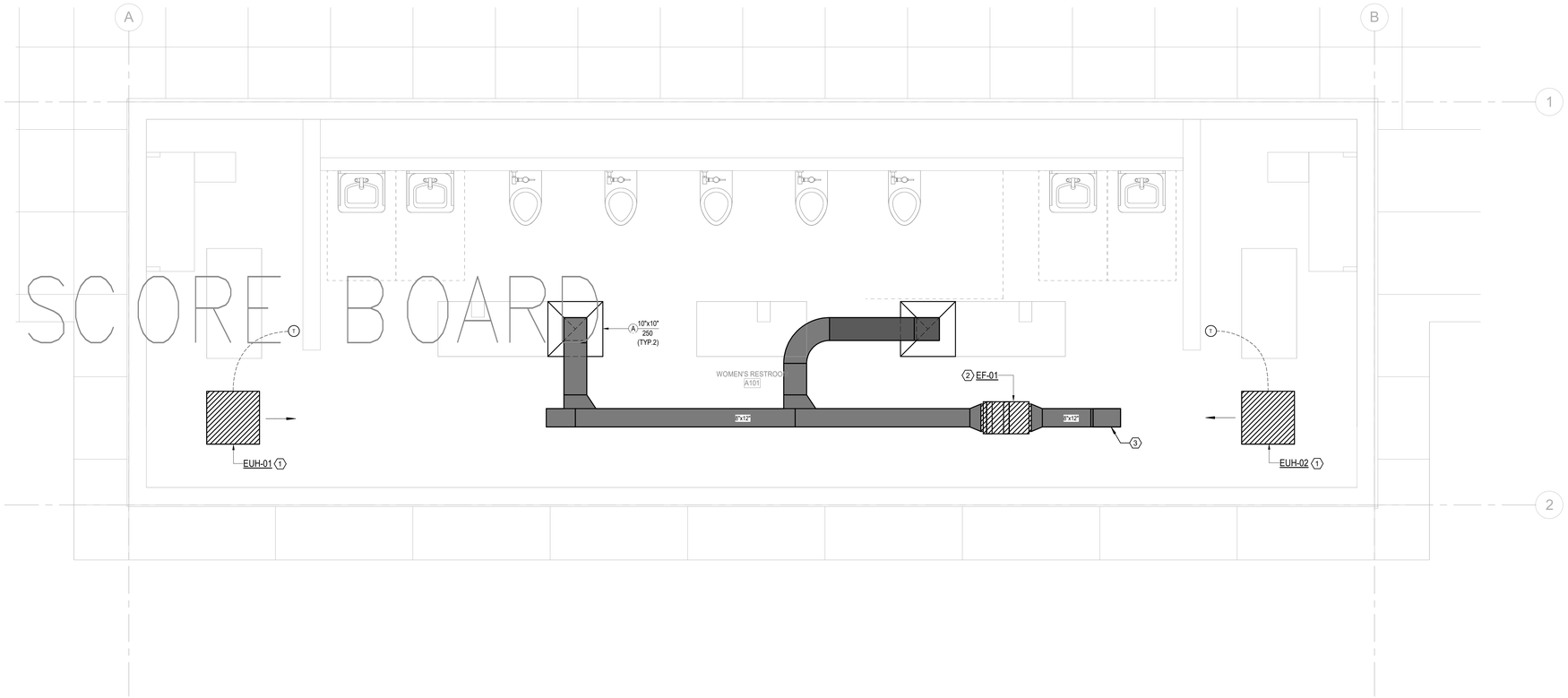
Friday, September 18, 2026 9:57:35 AM

KEYED NOTES:

1. CEILING MOUNTED ELECTRIC UNIT HEATER. ORIENT ADJUSTABLE LOUVERS TO FLOW TOWARDS THE CENTER OF THE ROOM. INTERLOCK HEATER WITH THERMOSTAT.
2. PLENUM MOUNTED INLINE FAN TO BE SUSPENDED FROM STRUCTURE. REFER TO DETAIL FOR ADDITIONAL INFORMATION.
3. 8"x12" EXHAUST AIR DUCT UP TO ROOF MOUNTED RELIEF HOOD, EH-01.



1 MECHANICAL PLAN - RESTROOM

SCALE: 1/2" = 1'-0"

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C	D
A	B

KEY PLAN — PLAN NORTH — TRUE NORTH

STATE OF TEXAS
MITAL J. PATEL
111622
LICENSED PROFESSIONAL ENGINEER

9/10/2026
LEAF ENGINEERS
F-18672

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

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No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: M.P.

DRAWN BY: H.V.

MECHANICAL PLAN - RESTROOM A101

M-101 (1)

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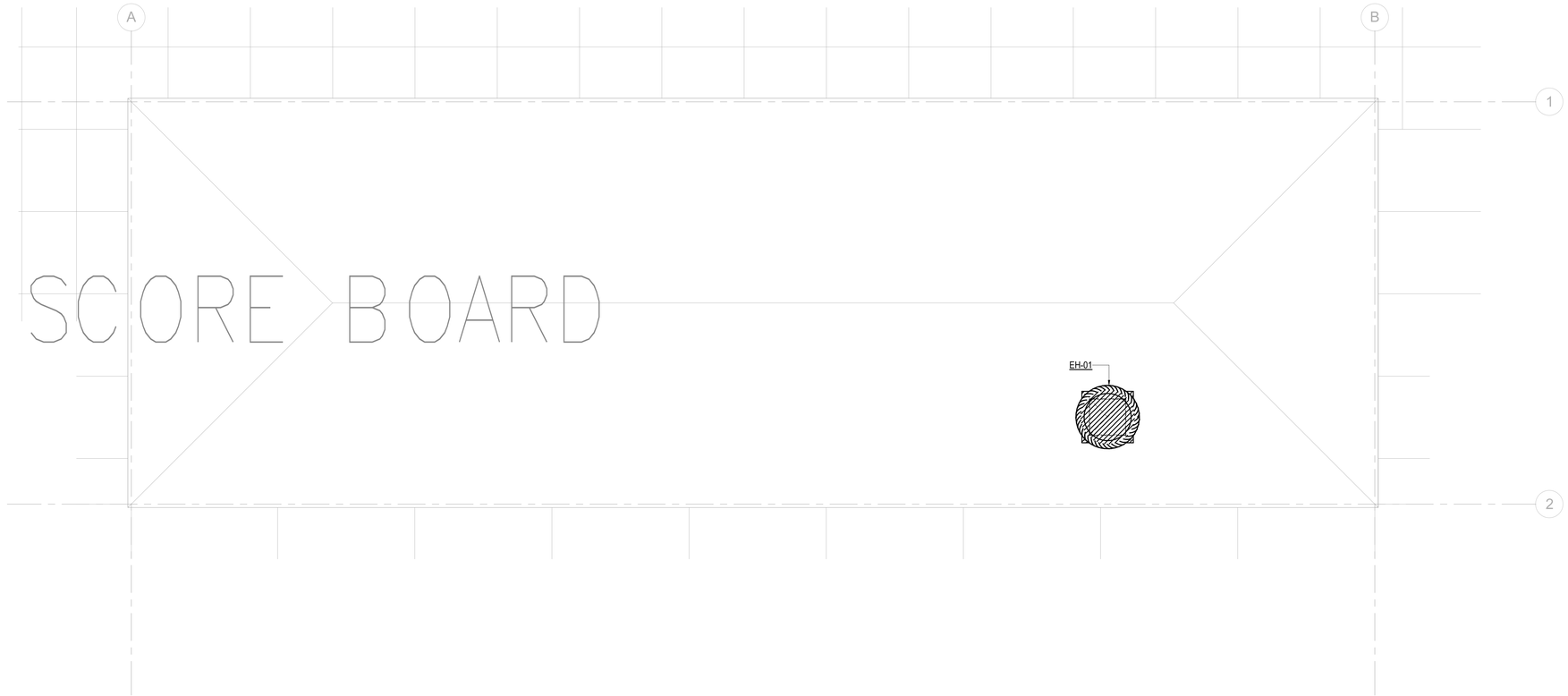

1 **MECHANICAL ROOF PLAN - RESTROOM A101**
SCALE: 1/2" = 1'-0"

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A	B

KEY PLAN

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TRUE NORTH

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No.	Description	Date
1	ADDENDUM #3	09/21/2026

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DRAWN BY: H.V.

MECHANICAL ROOF PLAN - RESTROOM A101

M-201

DIFFUSERS, REGISTERS & GRILLES SCHEDULE

DESIGNATION	MODEL NUMBER	NOISE CRITERIA (NC)	SERVICE	DESCRIPTION
A	TITUS PAR-AA	25	CEILING RETURN AIR	24x24 MODULE SIZE, LAY-IN BORDER TYPE, 22"x22" NECK SIZE UNLESS NOTED OTHERWISE. NO OPPOSED BLADE DAMPER, ALL ALUMINUM CONSTRUCTION. FOR SHEETROCK CEILING INSTALLATION, PROVIDE WITH TITUS TRM ALUMINUM RAPID MOUNT FRAME.

1. ALL DIFFUSER DESIGNATIONS MAY NOT BE USED ON PROJECT.
2. DIFFUSERS IN NATATORIUMS, SHOWER ROOMS, ADJACENT DRESSING ROOMS, DISHWASH ROOMS, AND THERAPY POOL ROOMS SHALL BE ALL ALUMINUM CONSTRUCTION.
3. PROVIDE ROTO-TWIST CABLE OPERATED DAMPERS AT IN GYP BOARD CEILINGS.

HVAC FANS SCHEDULE

DESIGNATION	LOCATION	SERVICE	MANUFACTURER	MODEL NUMBER	NOTES	WEIGHTS (LBS)	FAN DATA						
							TYPE	DRIVE	CFM	STATIC PRESSURE (" W.G.)	MOTOR HP. (MIN.)	RPM (MAX.)	VOLT / Ø / HZ
EF-01	PLENUM	WOMAN'S RESTROOM A101	COOK	SQN-D	1 - 6	100	INLINE	DIRECT	500	0.50	1/4	1,725	277 / 1 / 60

1. REFERENCE ELECTRICAL DRAWINGS FOR ELECTRICAL DATA.
2. FAN SHALL BE PROVIDED WITH ECM MOTOR. STARTER SHALL BE PROVIDED BY FAN MANUFACTURER. JUNCTION BOX AND TRANSFORMER SHALL BE FACTORY MOUNTED AND WIRED.
3. INTERLOCK EXHAUST FAN TO OCCUPANCY SENSOR WITH 15 MINUTE TIME DELAY. REFER TO ELECTRICAL DRAWINGS.

HVAC GRAVITY VENTILATORS SCHEDULE

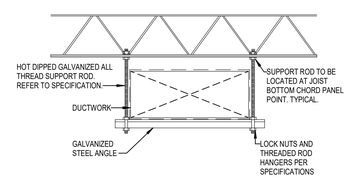
DESIGNATION	SERVICE	MANUFACTURER	MODEL	CFM	MAX. THROAT AREA (FT.²)/ THROAT SIZE (DIA./LxW)	P.D. (INCHES WG)	NOTES
EH-01	BUILDING EXHAUST - EF-01	COOK	12PR	500	0.85 / 16" x 16"	-	1 - 4

1. MAXIMUM THROAT VELOCITY SHALL NOT EXCEED 600 FPM
2. PROVIDE WITH ALUMINUM BIRD SCREEN AND 18" PREFABRICATED ROOF CURB.
3. PROVIDE ROOF HOOD DESIGNED TO WITHSTAND HIGH WIND SPEEDS UP TO 150 MPH.
4. UNIT AND ALL ACCESSORIES (DAMPER, BIRD SCREEN ETC.) SHALL BE EPOXY COATED.

ELECTRIC UNIT HEATER SCHEDULE

DESIGNATION	SERVICE	MANUFACTURER	MODEL	NOTES	BTUs	TEMP RISE	WEIGHT (LBS)	KW	AMPS	VOLT / Ø / HZ
EUH-01	WOMEN'S RESTROOM A101	MARKEL	G3482A1	1-5	6,826	15.0°	60	2.0	7.2	277 / 1 / 60
EUH-02	WOMEN'S RESTROOM A101	MARKEL	G3482A1	1-5	6,826	15.0°	60	2.0	7.2	277 / 1 / 60

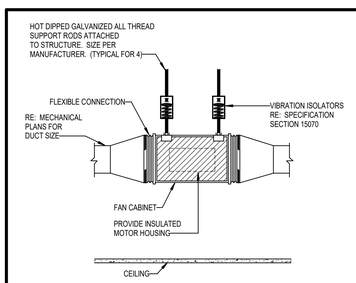
1. REFERENCE ELCTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS.
2. PROVIDE DIRECTIONAL LOUVER OUTLET.
3. PROVIDE ADJUSTABLE WALL MOUNTED THERMOSTAT AS INDICATED ON DRAWINGS.
4. UNIT HEATER SHALL BE FAN FORCED; RECESSED CEILING MOUNTED.
5. PROVIDE FACTORY POWDER COATED EPOXY FINISH FOR CORROSIVE ATMOSPHERES.
6. PROVIDE FACTORY MOUNTED BACKDRAFT DAMPER ON THE DISCHARGE OPENING.



NOTES:
1. FOLLOW SMACNA GUIDELINES FOR SPACING REQUIREMENTS.
2. CONTRACTOR SHALL OBTAIN STRUCTURAL ENGINEER APPROVAL FOR ANY AND ALL DUCTWORK MOUNTING DETAILS AT CONCRETE.
3. CONTRACTOR SHALL INSTALL DUCT HANGER ROD WITHIN 3" AT JOIST BOTTOM CHORD PANEL POINT. IF HANGER ROD DOES NOT OCCUR WITHIN 3" AT BOTTOM CHORD PANEL POINT THAN LOAD SHALL NOT EXCEED 100# CONCENTRATED LOAD AT EACH THREADED ROD HANGER LOCATION.
4. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL JOIST REINFORCEMENTS REQUIREMENTS IF DUCT HANGER RODS ARE MORE THAN 3" FROM JOIST BOTTOM CHORD PANEL POINT AND EXCEED 10# CONCENTRATED LOAD.
5. IF DUCT RUNS PARALLEL WITH STRUCTURE, PROVIDE SECURED UNISTRUT HEADER LAID ACROSS MULTIPLE JOISTS MOUNTED TO JOIST BOTTOM CHORD.
6. BEAM CLAMPS AND FLANGE CLIPS ARE NOT ACCEPTABLE FOR JOISTS.

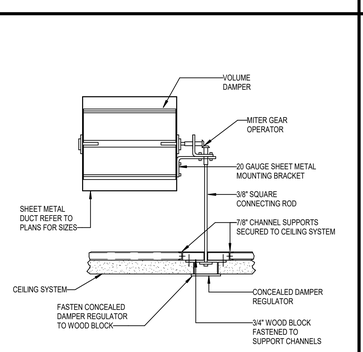
NOTES:
1. FOLLOW SMACNA GUIDELINES FOR SPACING REQUIREMENTS.
2. CONTRACTOR SHALL OBTAIN STRUCTURAL ENGINEER APPROVAL FOR ANY AND ALL DUCTWORK MOUNTING DETAILS AT CONCRETE.

DUCT HANGER TRAPEZE DETAIL — 07
NOT TO SCALE



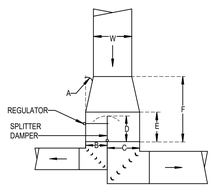
NOTES:
1. INSULATE FAN INTERIOR WITH 1" THICK 3.0 P.F.C. DENSITY ACOUSTICAL LINER WITH 100% ADHESIVE AND STICKPINS PER SMACNA. COAT AIR SIDE WITH FOSTER 40-20 ANTI-MICROBIAL COATING.
2. FAN SHALL INCLUDE (2) REMOVABLE ACCESS PANELS LOCATED PERPENDICULAR TO THE MOTOR MOUNTING PANEL. ACCESS PANELS MUST BE OF SUFFICIENT SIZE TO PERMIT EASY ACCESS TO ALL INTERIOR COMPONENTS.

IN-LINE EXHAUST FAN DETAIL — 06
NOT TO SCALE

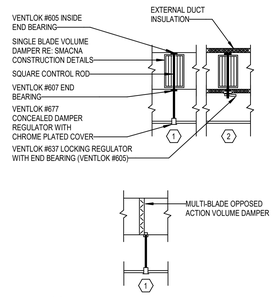


DAMPER OPERATOR IN NON - ACCESSIBLE CEILINGS DETAIL — 05
NOT TO SCALE

SPLITTER

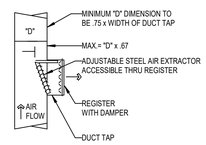


DIMENSIONS
1. ANGLE 'A' TO BE 15° OR LESS (BOTH SIDES)
2. SEE FLOOR PLANS FOR B, C, & W.
3. SPLITTER DAMPER LENGTH D = 1.5 x B
4. E = D + 3" MINIMUM
5. VERTICAL DIMENSION TO BE MAINTAINED THRU F.
6. CHANGE IN VERTICAL DIMENSION TO OCCUR AFTER TURNS.



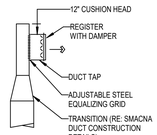
1 DAMPER ABOVE INACCESSIBLE CEILING
2 DAMPER ABOVE LAY-IN CEILING

AIR EXTRACTOR AT SIDEWALL REGISTER

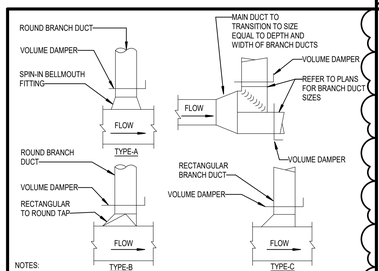


1. MAX. WIDTH OF DUCT TAP SHALL BE 48". PROVIDE BOTTOM BRACKET FOR SUPPORT WHERE EXTRACTOR EXCEEDS 16".
2. MAX. HEIGHT OF DUCT TAP SHALL BE 12" (MIN. = 4")

SIDEWALL REGISTER AT END OF DUCT

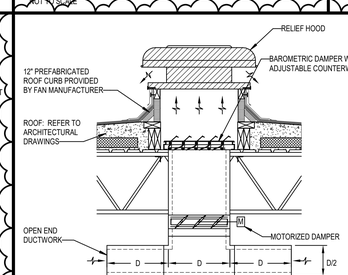


DUCT CONSTRUCTION DETAIL — 01
NOT TO SCALE



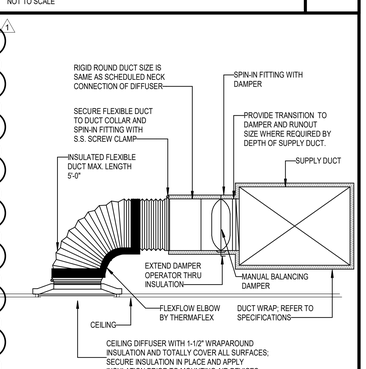
NOTES:
1. USE TYPE "A" CONNECTION ONLY FOR BRANCHES TO SINGLE DIFFUSERS, TERMINAL BOXES OR GRILLES FROM THE MAIN.
2. USE TYPE "B" OR "C" BRANCH WHERE BRANCH FLOW IS 20% OR LESS OF MAIN.
3. NO DAMPERS ARE REQ'D ON VAV SYSTEMS BETWEEN AIR HANDLING UNIT AND VAV TERMINAL BOXES.
4. USE TEE SPLIT WHERE BRANCH FLOW IS MORE THAN 20% OF MAIN.
5. FOR TYPE "A" CONNECTION TO DIFFUSERS, THE ROUND DUCT RUN-OUT SIZE SHALL BE THE SAME SIZE AS THE NECK OF DIFFUSER, UNLESS OTHERWISE INDICATED.
4. PROVIDE VOLUME DAMPERS ON SUPPLY, OUTSIDE AIR, RETURN AND EXHAUST DUCT SYSTEMS AS SHOWN.

BRANCH DUCT DETAILS — 04
NOT TO SCALE



NOTES:
1. UNDER NO CIRCUMSTANCES SHOULD EQUIPMENT OF ANY KIND BE MOUNTED TO THE SIDE OF THE ROOF CURB.
2. FAN MANUFACTURER TO PROVIDE BAROMETRIC DAMPER AND ROOF CURB.
3. CONTROLS CONTRACTOR TO PROVIDE AND INSTALL CONTROL DAMPER WITH MOTORIZED DAMPER OPERATOR MOUNTED TO THE EXTERIOR OF DUCT.
4. MINIMUM DIMENSION OF CURB TO BE 12"

ROOF MOUNTED RELIEF HOOD DETAIL — 03
NOT TO SCALE



CEILING DIFFUSER CONNECTION DETAIL — 02
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CLIENT PROJECT NUMBER: 250515

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KEY PLAN — PLAN NORTH — TRUE NORTH

LEAF ENGINEERS
F-18672

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

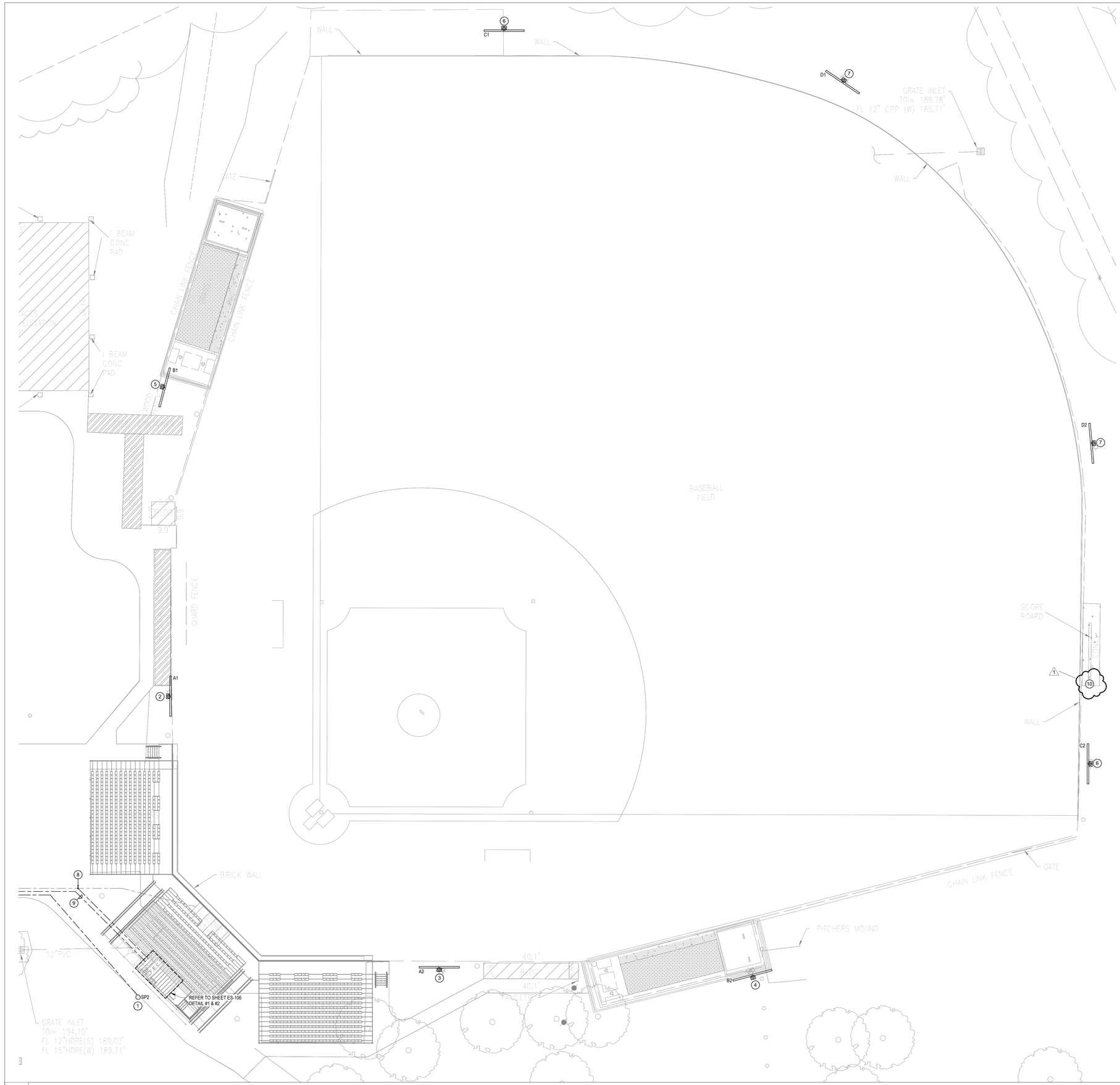
CHECKED BY: M.P.

DRAWN BY: H.V.

MECHANICAL SCHEDULES & DETAILS

M-601

Plot Stamp:
9/18/2026 9:28:26 AM



1 **ELECTRICAL SITE PLAN - BASEBALL**
SCALE: 1/16" = 1'-0"

SITE PLAN GENERAL NOTES:

1. COORDINATE ROUTING FOR ALL UNDERGROUND ELECTRICAL BRANCH CIRCUITS AND FEEDERS WITH OTHER DISCIPLINES PRIOR TO TRENCHING.
2. UNLESS NOTED OTHERWISE ALL UNDERGROUND CONDUIT SHOWN ON THIS PLAN TO BE MINIMUM 1" IN SIZE.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY INSTALLATION OF NEW WORK.

SITE PLAN KEYED NOTES:

1. CONTRACTOR SHALL REMOVE THE EXISTING PEDESTRIAN LIGHTING POLE, EXISTING BRANCH CIRCUITRY AND CONTROL WIRING CURRENTLY SERVING THE LIGHTING TO BE REMOVED BACK TO SOURCE PANEL. THIS WORK SHALL BE PRICED AS PART OF THE BASE BID. CONTRACTOR SHALL PROVIDE NEW PEDESTRIAN LIGHTING POLE AS INDICATED ON THE DRAWINGS. THIS WORK TO BE PRICED UNDER ALTERNATE #5. REFER TO SHEET ES-105 KEYED NOTE #9 FOR POWER AND CONTROLS.
2. EXISTING SPORTS LIGHTING SHALL BE REMOVED AND REPLACED WITH NEW MUSCO LED SORTS LIGHTING. CONTRACTOR SHALL UTILIZE THE EXISTING SPORTS LIGHTING POLE TO MOUNT NEW LED SPORTS LIGHTING FIXTURES. NEW SPORTS LIGHTING FIXTURES SHALL BE MUSCO LIGHTING (4) #TLC-LED-1200 WITH 5700K LED-75CRI, 1,170W, 150,000 LUMENS AND (1) #TLC-BT-575 WITH 5700K-75CRI, 575W, 52,000 LUMENS. REFER TO SPORTS LIGHTING MANUFACTURER FOR ADDITIONAL INFORMATION PRIOR TO INSTALLATION. CONTRACTOR SHALL PROVIDED NEW 3P-30A BREAKER IN EXISTING BREAKER LOCATION CURRENTLY SERVING THE BASEBALL FIELD LIGHTING. CONTRACTOR SHALL PROVIDE NEW WIRE IN EXITING CONDUIT. WIRING SHALL BE 2#10, 1#10G.
3. EXISTING SPORTS LIGHTING SHALL BE REMOVED AND REPLACED WITH NEW MUSCO LED SORTS LIGHTING. CONTRACTOR SHALL UTILIZE THE EXISTING SPORTS LIGHTING POLE TO MOUNT NEW LED SPORTS LIGHTING FIXTURES. NEW SPORTS LIGHTING FIXTURES SHALL BE MUSCO LIGHTING (4) #TLC-LED-1200 WITH 5700K LED-75CRI, 1,170W, 150,000 LUMENS AND (1) #TLC-BT-575 WITH 5700K-75CRI, 575W, 52,000 LUMENS. REFER TO SPORTS LIGHTING MANUFACTURER FOR ADDITIONAL INFORMATION PRIOR TO INSTALLATION. CONTRACTOR SHALL NOTE THAT THE EXISTING CONDUIT, BRANCH CIRCUITRY AND CONTROLS SHALL BE EXTENDED AND RECONNECTED AS NECESSARY FOR A COMPLETE INSTALLATION.
4. EXISTING SPORTS LIGHTING SHALL BE REMOVED AND REPLACED WITH NEW MUSCO LED SORTS LIGHTING. CONTRACTOR SHALL UTILIZE THE EXISTING SPORTS LIGHTING POLE TO MOUNT NEW LED SPORTS LIGHTING FIXTURES. NEW SPORTS LIGHTING FIXTURES SHALL BE MUSCO LIGHTING (6) #TLC-LED-1500 WITH 5700K LED-75CRI, 1,410W, 181,000 LUMENS AND (1) #TLC-BT-575 WITH 5700K-75CRI, 575W, 52,000 LUMENS. REFER TO SPORTS LIGHTING MANUFACTURER FOR ADDITIONAL INFORMATION PRIOR TO INSTALLATION. CONTRACTOR SHALL PROVIDED NEW 3P-30A BREAKER IN EXISTING BREAKER LOCATION CURRENTLY SERVING THE BASEBALL FIELD LIGHTING. CONTRACTOR SHALL PROVIDE NEW WIRE IN EXITING CONDUIT. WIRING SHALL BE 2#10, 1#10G.
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7. EXISTING SPORTS LIGHTING SHALL BE REMOVED AND REPLACED WITH NEW MUSCO LED SORTS LIGHTING. CONTRACTOR SHALL UTILIZE THE EXISTING SPORTS LIGHTING POLE TO MOUNT NEW LED SPORTS LIGHTING FIXTURES. NEW SPORTS LIGHTING FIXTURES SHALL BE MUSCO LIGHTING (3) #TLC-LED-1200 WITH 5700K LED-75CRI, 1,170W, 150,000 LUMENS AND (2) #TLC-BT-575 WITH 5700K-75CRI, 575W, 52,000 LUMENS. REFER TO SPORTS LIGHTING MANUFACTURER FOR ADDITIONAL INFORMATION PRIOR TO INSTALLATION. CONTRACTOR SHALL NOTE THAT THE EXISTING CONDUIT, BRANCH CIRCUITRY AND CONTROLS SHALL BE EXTENDED AND RECONNECTED AS NECESSARY FOR A COMPLETE INSTALLATION.
8. EXISTING FEEDER CURRENTLY SERVING THE EXISTING PRE-ENGINEERED PRESS BOX SHALL BE INTERCEPTED AT AN ACCESSIBLE LOCATION. CONTRACTOR SHALL EXTEND EXISTING CONDUIT AND CONDUCTORS AS REQUIRED TO SERVE THE NEW PRE-ENGINEERED PRESS BOX AS INDICATED. CONTRACTOR SHALL COORDINATE WITH THE PRESS BOX MANUFACTURER AND VERIFY ALL ELECTRICAL CONNECTION, TERMINATION, AND INSTALLATION REQUIREMENTS PRIOR TO INSTALLATION.
9. NEW FEEDER FOR NEW UNDER BLEACHER LIGHTING FIXTURES. REFER TO SHEET ES-105 KEYED NOTE #10 FOR POWER AND CONTROLS.
10. EXISTING SCOREBOARD: DISCONNECT EXISTING SCOREBOARD POWER AND ASSOCIATED ELECTRICAL CONNECTIONS SERVED FROM THE EXISTING PRESS BOX PANEL AS REQUIRED FOR DEMOLITION. EXTEND AND RECONNECT EXISTING SCOREBOARD POWER TO THE NEW PRESS BOX PANEL. PROVIDE ALL CONDUIT, CONDUCTORS, JUNCTION BOXES, CONNECTIONS, AND ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIONAL INSTALLATION. FIELD VERIFY EXISTING CONDITIONS, POWER REQUIREMENTS, AND CONNECTION POINTS PRIOR TO COMMENCING WORK. COORDINATE REQUIRED OUTAGES WITH OWNER.

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CLIENT PROJECT NUMBER: 250515

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KEY PLAN — PLAN NORTH, TRUE NORTH

STATE OF TEXAS
MATTHEW R. SICKORE
107736
LICENSED
PROFESSIONAL
ENGINEER

9/10/2026
LEAF ENGINEERS
F-18672

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DATE	PROJECT NUMBER
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DRAWING HISTORY

No.	Description	Date
1	ADDENDUM 03	09/21/2026

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ELECTRICAL SITE PLAN - BASEBALL

ES-104

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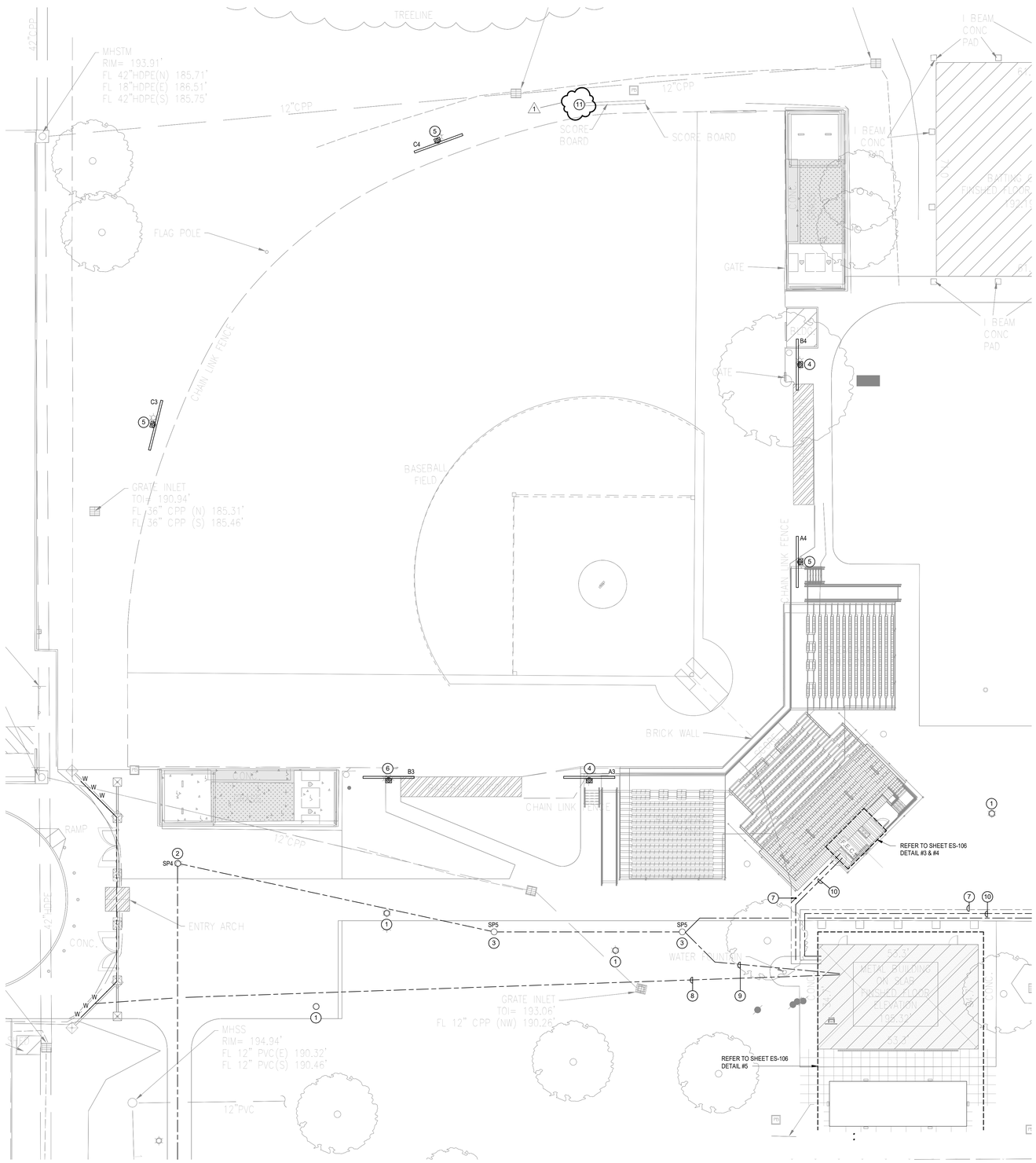

1 ELECTRICAL SITE PLAN - SOFTBALL
SCALE: 1/16" = 1'-0"

SITE PLAN GENERAL NOTES:

1. COORDINATE ROUTING FOR ALL UNDERGROUND ELECTRICAL BRANCH CIRCUITS AND FEEDERS WITH OTHER DISCIPLINES PRIOR TO TRENCHING.
2. UNLESS NOTED OTHERWISE ALL UNDERGROUND CONDUIT SHOWN ON THIS PLAN TO BE MINIMUM 1" IN SIZE.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY INSTALLATION OF NEW WORK.

SITE PLAN KEYED NOTES:

1. CONTRACTOR SHALL REMOVE THE EXISTING PEDESTRIAN LIGHTING POLE, EXISTING BRANCH CIRCUITRY AND CONTROL WIRING CURRENTLY SERVING THE LIGHTING TO BE REMOVED BACK TO SOURCE PANEL. THIS WORK SHALL BE PRICED AS PART OF THE BASE BID.
2. CONTRACTOR SHALL REMOVE THE EXISTING PEDESTRIAN LIGHTING POLE, EXISTING BRANCH CIRCUITRY AND CONTROL WIRING CURRENTLY SERVING THE LIGHTING TO BE REMOVED BACK TO SOURCE PANEL. THIS WORK SHALL BE PRICED AS PART OF THE BASE BID. CONTRACTOR SHALL PROVIDE NEW PEDESTRIAN LIGHTING POLE AS INDICATED ON THE DRAWINGS. THIS WORK TO BE PRICED UNDER ALTERNATE #05.
3. CONTRACTOR SHALL PROVIDE NEW PEDESTRIAN LIGHTING POLE AS INDICATED ON THE DRAWINGS. THIS WORK TO BE PRICED UNDER ALTERNATE #05.
4. EXISTING SPORTS LIGHTING SHALL BE REMOVED AND REPLACED WITH NEW MUSCO LED SORTS LIGHTING. CONTRACTOR SHALL UTILIZE THE EXISTING SPORTS LIGHTING POLE TO MOUNT NEW LED SPORTS LIGHTING FIXTURES. NEW SPORTS LIGHTING FIXTURES SHALL BE MUSCO LIGHTING (3) #TLC-LED-550 WITH 5700K LED-75CRI, 540W, 67,000 LUMENS AND (1) #TLC-BT-575 WITH 5700K-75CRI, 575W, 52,000 LUMENS. REFER TO SPORTS LIGHTING MANUFACTURER FOR ADDITIONAL INFORMATION PRIOR TO INSTALLATION. CONTRACTOR SHALL NOTE THAT THE EXISTING CONDUIT, BRANCH CIRCUITRY AND CONTROLS SHALL BE EXTENDED AND RECONNECTED AS NECESSARY FOR A COMPLETE INSTALLATION.
5. EXISTING SPORTS LIGHTING SHALL BE REMOVED AND REPLACED WITH NEW MUSCO LED SORTS LIGHTING. CONTRACTOR SHALL UTILIZE THE EXISTING SPORTS LIGHTING POLE TO MOUNT NEW LED SPORTS LIGHTING FIXTURES. NEW SPORTS LIGHTING FIXTURES SHALL BE MUSCO LIGHTING (3) #TLC-LED-550 WITH 5700K LED-75CRI, 540W, 67,000 LUMENS AND (1) #TLC-BT-575 WITH 5700K-75CRI, 575W, 52,000 LUMENS. REFER TO SPORTS LIGHTING MANUFACTURER FOR ADDITIONAL INFORMATION PRIOR TO INSTALLATION. CONTRACTOR SHALL NOTE THAT THE EXISTING CONDUIT, BRANCH CIRCUITRY AND CONTROLS SHALL BE EXTENDED AND RECONNECTED AS NECESSARY FOR A COMPLETE INSTALLATION.
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7. EXISTING FEEDER CURRENTLY SERVING THE EXISTING PRE-ENGINEERED PRESS BOX SHALL BE INTERCEPTED AT AN ACCESSIBLE LOCATION. CONTRACTOR SHALL EXTEND EXISTING CONDUIT AND CONDUCTORS AS REQUIRED TO SERVE THE NEW PRE-ENGINEERED PRESS BOX AS INDICATED. CONTRACTOR SHALL COORDINATE WITH THE PRESS BOX MANUFACTURER AND VERIFY ALL ELECTRICAL CONNECTION, TERMINATION, AND INSTALLATION REQUIREMENTS PRIOR TO INSTALLATION.
9. NEW FEEDER FOR NEW LIGHTING FIXTURES. POWER VIA NEW 1P-20A BREAKER IN SPACE OF EXISTING PANEL "HA" AT CIRCUIT NUMBER 13. WIRE VIA 2#10, 1#12G., 1"C. CONTROL VIA CONTACTOR C-2. THIS WORK TO BE PRICED UNDER ALTERNATE #1.
9. NEW FEEDER FOR NEW PEDESTRIAN LIGHTING POLES. POWER VIA NEW 1P-20A BREAKER IN SPACE OF EXISTING PANEL "HA" CIRCUIT NUMBER 15. WIRE VIA 2#10, 1#12G., 1"C. CONTROL VIA CONTACTOR C-1. THIS WORK TO BE PRICED UNDER ALTERNATE #5.
10. NEW FEEDER FOR NEW UNDER BLEACHER LIGHTING FIXTURES. WIRE VIA 2#10, 1#12G., 1"C.
11. EXISTING SCOREBOARD: DISCONNECT EXISTING SCOREBOARD POWER AND ASSOCIATED ELECTRICAL CONNECTIONS SERVED FROM THE EXISTING PRESS BOX PANEL AS REQUIRED FOR DEMOLITION. EXTEND AND RECONNECT EXISTING SCOREBOARD POWER TO THE NEW PRESS BOX PANEL. PROVIDE ALL CONDUIT, CONDUCTORS, JUNCTION BOXES, CONNECTIONS, AND ACCESSORIES REQUIRED FOR A COMPLETE AND OPERATIONAL INSTALLATION. FIELD VERIFY EXISTING CONDITIONS, POWER REQUIREMENTS, AND CONNECTION POINTS PRIOR TO COMMENCING WORK. COORDINATE REQUIRED OUTAGES WITH OWNER.

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STATE OF TEXAS
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9/10/2026
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F-18672

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DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM 03	09/21/2026

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DRAWN BY: TLG

ELECTRICAL SITE PLAN - SOFTBALL

ES-105

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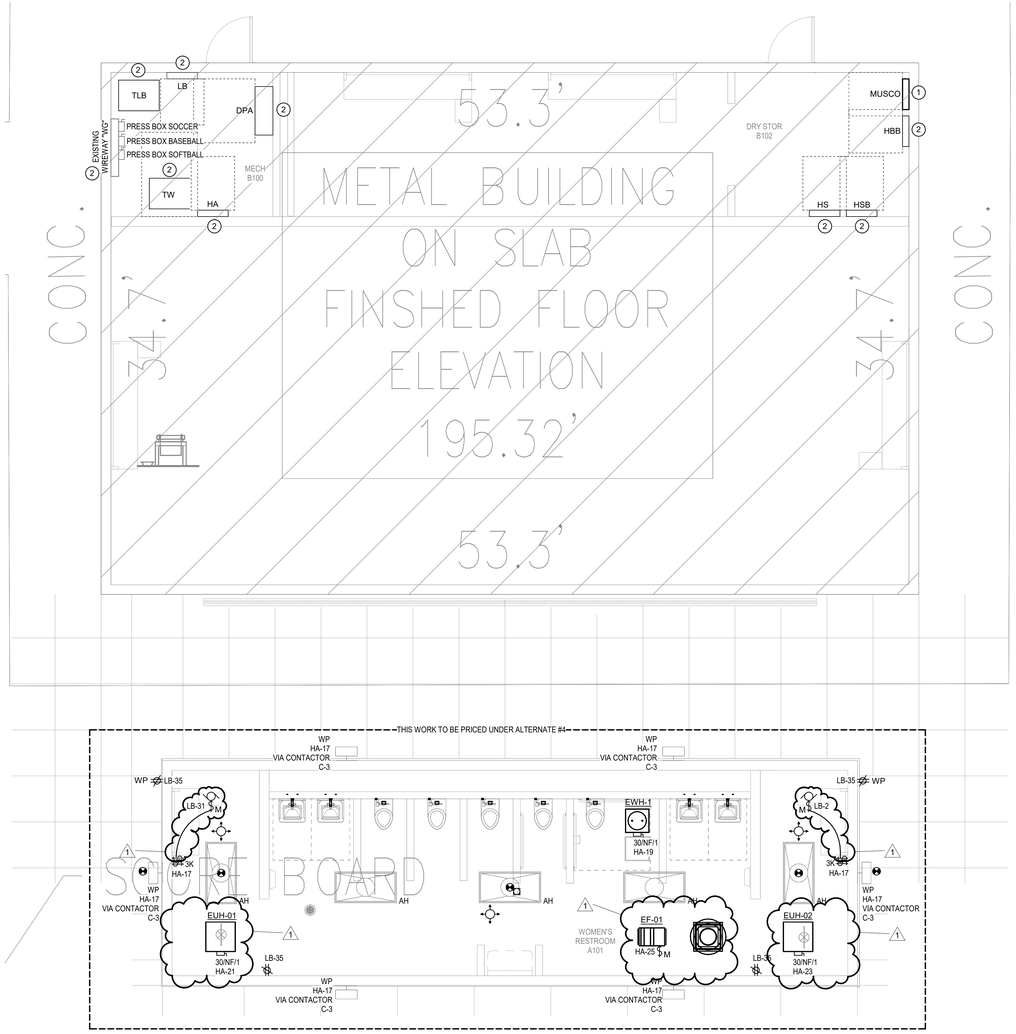
ELECTRICAL PLAN GENERAL NOTES:

1. COORDINATE ROUTING FOR ALL UNDERGROUND ELECTRICAL BRANCH CIRCUITS AND FEEDERS WITH OTHER DISCIPLINES PRIOR TO TRENCHING.
2. UNLESS NOTED OTHERWISE ALL UNDERGROUND CONDUIT SHOWN ON THIS PLAN TO BE MINIMUM 1" IN SIZE.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY INSTALLATION OF NEW WORK.
4. PROVIDE EMERGENCY BATTERY PACKS FOR ALL LIGHTING FIXTURES DESIGNATED TO BE ON EMERGENCY POWER AND EXIT SIGNS. PROVIDE UNSWITCHED HOT TO BATTERY SO THAT LIGHT FIXTURES CAN BE SWITCHED OFF AND ON WITHOUT DRAINING BATTERY. RE: DIVISION 26 SPECIFICATIONS FOR ADDITIONAL INFORMATION. PROVIDE 20A UNSWITCHED BRANCH CIRCUIT (2#12, 1#12G, 3/4"C) FROM LIGHTING PANEL TO ALL EXIT SIGNS IN THIS AREA.

ELECTRICAL PLAN KEYED NOTES:

1. REMOVE EXISTING MUSCO CONTROL AND MONITORING CABINET IN ITS ENTIRETY AND PROVIDE NEW MUSCO CONTROL AND MONITORING CABINET. REUSE EXISTING CONTROL WIRING/CIRCUITRY SERVING THE EXISTING CABINET FOR CONNECTION TO THE NEW CABINET. COORDINATE ALL INSTALLATION REQUIREMENTS WITH THE SPORTS LIGHTING MANUFACTURER PRIOR TO COMMENCING WORK.
2. EXISTING ELECTRICAL EQUIPMENT TO REMAIN.



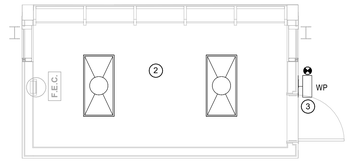
5 ELECTRICAL SITE PLAN - CONCESSIONS BUILDING
SCALE: 1/4" = 1'-0"

ELECTRICAL PLAN GENERAL NOTES:

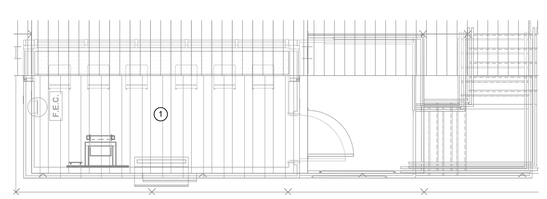
1. COORDINATE ROUTING FOR ALL UNDERGROUND ELECTRICAL BRANCH CIRCUITS AND FEEDERS WITH OTHER DISCIPLINES PRIOR TO TRENCHING.
2. UNLESS NOTED OTHERWISE ALL UNDERGROUND CONDUIT SHOWN ON THIS PLAN TO BE MINIMUM 1" IN SIZE.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY INSTALLATION OF NEW WORK.
4. PROVIDE EMERGENCY BATTERY PACKS FOR ALL LIGHTING FIXTURES DESIGNATED TO BE ON EMERGENCY POWER AND EXIT SIGNS. PROVIDE UNSWITCHED HOT TO BATTERY SO THAT LIGHT FIXTURES CAN BE SWITCHED OFF AND ON WITHOUT DRAINING BATTERY. RE: DIVISION 26 SPECIFICATIONS FOR ADDITIONAL INFORMATION. PROVIDE 20A UNSWITCHED BRANCH CIRCUIT (2#12, 1#12G, 3/4"C) FROM LIGHTING PANEL TO ALL EXIT SIGNS IN THIS AREA.

ELECTRICAL PLAN KEYED NOTES:

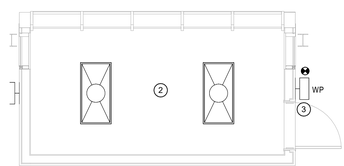
1. SINGLE POINT POWER CONNECTION TO PRESSBOX. REFER TO SITE PLAN FOR ADDITIONAL INFORMATION.
2. ALL INTERIOR LIGHTING FIXTURES TO PRESSBOX SHALL BE LED. ALL INTERIOR LIGHTING FIXTURES AND CONTROLS TO BE PROVIDED BY PRESSBOX MANUFACTURER.
3. PROVIDE POWER TO EXTERIOR LIGHTING FIXTURE FROM PRESSBOX PANEL. WIRE VIA 2#12,1#12G., 3/4"C. PROVIDE CONTACTOR FOR CONTROL.



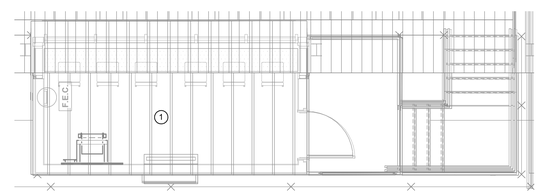
4 LIGHTING PLAN - SOFTBALL PRESSBOX
SCALE: 1/4" = 1'-0"



3 POWER PLAN - SOFTBALL PRESSBOX
SCALE: 1/4" = 1'-0"



2 LIGHTING PLAN - BASEBALL PRESSBOX
SCALE: 1/4" = 1'-0"



1 POWER PLAN - BASEBALL PRESSBOX
SCALE: 1/4" = 1'-0"

PBK

TX FIRM: BR 1608
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HOUSTON, TX
713-960-0666

LEAF ENGINEERS

TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

E	F
C	D
A	B

KEY PLAN

PLAN NORTH

TRUE NORTH

STATE OF TEXAS
MATTHEW R. SICKORE
107736
LICENSED
PROFESSIONAL
ENGINEER

9/10/2026
LEAF ENGINEERS
F-18672

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM 03	09/21/2026

CHECKED BY: Checker

DRAWN BY: TLG

ELECTRICAL SITE PLAN - SOFTBALL, BASEBALL PRESSBOX & CONCESSIONS

ES-106

Plot Stamp:
9/18/2026 8:21:08 AM

Job: Tomball High School Athletics... Job No. 250515

Mounting **SURFACE** Main Type **MCB (400A)** Neutral **100%**

Voltage: **480Y/277V-3PH 4W** Main Size: **400 AMPS**

AIC... **42000** Ground **Equipment Ground** Lugs **SINGLE**

PANEL: **NEW 1H**

ALL LOADS IN VA

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S
					8310		0.00	LEAVE ON	40/3	(1)	1	A	2	(1)	100/2	LEAVE ON				16800				0.00
					8310		0.00	-	-	-	3	B	4	-	-	-				16800				0.00
					8310		0.00	-	-	-	5	C	6	(1)	(2)	TRANSFORMER	0	8850	0	0	1800	3200	0	0.00
			16800				0.00	BATHROOM HEATER	100/2	(1)	7	A	8	-	-	-	0	8850	0	0	1800	3200	0	0.00
			16800				0.00	-	-	-	9	B	10	10	30/3	POLE WEST SOUTH	4613							0.00
					3840		0.00	EXISTING	(2)	(1)	11	C	12	-	-	-	4613							0.00
					3840		0.00	-	-	-	13	A	14	-	-	-	4613							0.00
4613							0.00	POLE WEST NORTH	30/3	10	15	B	16	(1)	30/3	SEC. PARKING LIGHTS	2300							0.00
4613							0.00	-	-	-	17	C	18	-	-	-	2300							0.00
4613							0.00	-	-	-	19	A	20	-	-	-	2300							0.00
							0.00	SPACE			21	B	22			SPACE								0.00
							0.00	SPACE			23	C	24			SPACE								0.00
1410							**0.00**	**NEW FIXTURE P11**	**20/3**	**10**	25	A	26			SPACE								0.00
1410							**0.00**	-	-	-	27	B	28			SPACE								0.00
1410							**0.00**	-	-	-	29	C	30			SPACE								0.00
18070	0	0	33600	0	32610	0	0.00	TOTALS								TOTALS	20740	17700	0	33600	3600	6400	0	0.00

LOAD SUMMARY

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
38.8	17.7	0.0	67.2	3.6	39.0	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors
48.5	13.9	0.0	67.2	0.0	39.0	0.0	0.0	Design KVA

Phase Load

Ph	KVA
A	72.5
B	54.8
C	38.9

Panel Remarks:
(1): EXISTING CONDUIT AND WIRE SHALL BE EXTENDED AS NECESSARY TO RECONNECT EXISTING LOAD FROM DEMOLISHED PANEL TO NEW PANEL IN THE SAME LOCATION. PROVIDE NEW BREAKER.

(2): CONTRACTOR SHALL VERIFY EXISTING BREAKER SIZE AND REPLACE WITH NEW.

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.
BOLD INDICATES NEW

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	166.3	200.1		168.6	202.8

PANEL: **NEW 1H**

Date: 9/18/2026 By: Designer 10/22/03

Job: Tomball High School Athletics Improvements Job No. 250515

Mounting **SURFACE** Main Type **MLO** Neutral **100%**

Voltage: **120/240V-1PH-3W** Main... **100 AMPS**

AIC... **10000** Ground **Equipment Ground** Lugs **SINGLE**

PANEL: **EXISTING 1L**

ALL...

Ltg.	Recept	Motor	Heat	Cool	Equip.	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Equip.	Kitchen	S/S
	500						0.00	EXISTING / EXISTING	20/1 & 20/1	(1)	1	A	2	(1)	20/1	EXISTING		500						0.00
	600						0.00	EXISTING / EXISTING	20/1 & 20/1	(1)	3	B	4	(1)	30/1 & 30/1	EXISTING / EXISTING		2000						0.00
	500						0.00	EXISTING / EXISTING	20/1 & 20/1	(1)	5	A	6	(1)	20/1	EXISTING		1000						0.00
					800		0.00	SAMSUNG FRIDGE	20/1	(1)	7	B	8	(1)	20/1	EXISTING		500						0.00
	1000						0.00	EXISTING / EXISTING	20/1 & 20/1	(1)	9	A	10	(1)	30/1 & 30/1	EXISTING / EXISTING		2000						0.00
	500						0.00	EXISTING	20/1	(1)	11	B	12	(1)	20/1 & 30/1	EXISTING / EXISTING		2000						0.00
	1000						0.00	EXISTING	20/1	(1)	13	A	14	(1)	30/1 & 20/1	EXISTING / EXISTING		2000						0.00
	600						0.00	EXISTING / EXISTING	20/1 & 20/1	(1)	15	B	16	(1)	40/2	A/C					1800			0.00
	500						0.00	EXISTING	20/1	(1)	17	A	18	-	-	-					1800			0.00
	2000						0.00	EXISTING / EXISTING	30/1 & 30/1	(1)	19	B	20	(1)	20/1 & 20/1	EXISTING / EXISTING		500						0.00
					2000		0.00	EXISTING	30/2	(1)	21	A	22	(1)	20/2	EXISTING						800		0.00
					2000		0.00	-	-	-	23	B	24	-	-							800		0.00
0	7200	0	0	0	4800	0	0.00	TOTALS								TOTALS	0	10500	0	0	3600	1600	0	0.00

LOAD SUMMARY (KVA)

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
0.0	17.7	0.0	0.0	3.6	6.4	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Div. Factor
0.0	13.9	0.0	0.0	3.6	6.4	0.0	0.0	Design KVA

Phase...

Phase		Phase
A		B
13.6		14.1

Panel Remarks:
(1): EXISTING TO REMAIN.

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	27.7	115.4		23.9	99.4

PANEL: **EXISTING 1L**

Date: 9/18/2026 By: Designer 05/01/15

Job: Tomball High School Athletics Improvements Job No. 250515

Mounting **RECESSED** Main Type **MLO** Neutral **100%**

Voltage: **480Y/277V-3PH 4W** Main Size: **400 AMPS**

AIC... **42000** Ground **Equipment Ground** Lugs **SINGLE**

PANEL: **EXISTING 2H**

ALL LOADS IN VA

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S
13296							0.00	CONCESSIONS &	60/3	(1)	1	A	2	(1)	70/2	EXISTING						13440		0.00
13296							0.00	BLEACHER LTG	-	-	3	B	4	-	-	-						13440		0.00
13296							0.00	-	-	-	5	C	6	(1)	50/2	TRANSFORMER	0	500	300	500	1800	4900	0	0.00
			3840				0.00	CEILING HEATER	40/2	(1)	7	A	8	-	-	-	0	500	300	500	1800	4900	0	0.00
			3840				0.00	-	-	-	9	B	10	(1)	30/3	SECURITY	6648							0.00
			3840				0.00	CEILING HEATER	40/2	(1)	11	C	12	-	-	-	6648							0.00
			3840				0.00	-	-	-	13	A	14	-	-	-	6648							0.00
5553							0.00	POLE EAST NORTH	30/3	10	15	B	16	10	30/3	POLE EAST SOUTH	6648							0.00
5553							0.00	-	-	-	17	C	18	-	-	-	6648							0.00
5553							0.00	-	-	-	19	A	20	-	-	-	6648							0.00
56548	0	0	15360	0	0	0	0.00	TOTALS								TOTALS	39888	1000	600	1000	3600	36680	0	0.00

LOAD SUMMARY

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
96.4	1.0	0.6	16.4	3.6	36.7	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors
120.5	1.0	0.6	16.4	0.0	36.7	0.0	0.0	Design KVA

Phase Load

Ph	KVA
A	61.3
B	49.4
C	44.0

Panel Remarks:
(1): EXISTING TO REMAIN.

BOLD INDICATES NEW

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	154.7	186.0		175.2	210.7

PANEL: **EXISTING 2H**

Date: 9/18/2026 By: Designer 10/22/03

Job: Tomball High School Athletics Improvements Job No. 250515

Mounting **SURFACE** Main Type **MLO** Neutral **100%**

Voltage: **120/240V-1PH-3W** Main... **100 AMPS**

AIC... **10000** Ground **Equipment Ground** Lugs **SINGLE**

PANEL: **EXISTING 2L**

ALL...

Ltg.	Recept	Motor	Heat	Cool	Equip.	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Equip.	Kitchen	S/S
					300		0.00	MUSCO CTRL	20/1	(1)	1	A	2	(1)	30/1 & 30/1	REC. CONCESSIONS / SPARE						2000		0.00
		600					0.00	EXHAUST FAN - RR	20/1	(1)	3	B	4	(1)	20/1	REC. CONCESSIONS						1000		0.00
					2000		0.00	REC. CONCESSIONS	30/1	(1)	5	A	6	(1)	20/1	REC. CONCESSIONS						1000		0.00
					2000		0.00	REC. CONCESSIONS	30/1	(1)	7	B	8	(1)	20/1	HOT WATER HEATER						1500		0.00
			1000				0.00	HEATER CONT CTRL	20/1	(1)	9	A	10	(1)	40/2	TICKET BOOTH					1800			0.00
	1000						0.00	EXISTING / EXISTING	20/1 & 20/1	(1)	11	B	12	-	-	-					1800			0.00
0	1000	600	1000	0	4300	0	0.00	TOTALS								TOTALS	0	0	0	0	3600	5500	0	0.00

LOAD SUMMARY (KVA)

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
0.0	1.0	0.6	1.0	3.6	9.8	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Div. Factor
0.0	1.0	0.6	0.0	3.6	9.8	0.0	0.0	Design KVA

Phase...

Phase		Phase
A		B
8.1		7.9

Panel Remarks:
(1): EXISTING TO REMAIN.

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	16.0	66.7		15.0	62.5

PANEL: **EXISTING 2L**

Date: 9/18/2026 By: Designer 05/01/15

Electrical Load Calculations

Job: Tomball High School Athletics Improvements

Job No.: 250515

AIC Rating: **65000**

Volts - Phase: **480Y/277V-3PH 4W**

DISTRIBUTI... **EXISTING...**

Served From: UTILITY CO TRANSFORMER

Connected Load (KVA)

Cir. No.	Load Served	Amp/Poles	Wire and Conduit Size	Lighting	Conv. Outlets	Motors	Heating	Cooling	Others	Elect. Cooking	Spare/ Spaces	Elevators	Residential	Total KVA	Total Amps
1	BAND PRATICE LIGHTING	40/3	EXISTING	26.6										26.6	32.0
2	TENNIS COURT LIGHTING	40/3	EXISTING	26.6										26.6	32.0
3	TENNIS COURT LIGHTING	40/3	EXISTING	26.6										26.6	32.0
4	PARKING LOT LIGHTING	30/3	EXISTING	19.9										19.9	24.0
5	PANEL HS - SOCCER FIELD	150/3	EXISTING	99.7	0.0	0.0	0.0	0.0	0.0	0.0				99.7	119.9
6	TRANSFORMER TLB	100/3	EXISTING	3.1	3.0	3.5	0.0	0.0	60.0	0.0				69.6	83.7
7	CONTROL CIRCUIT	20/1	EXISTING						4.4					4.4	5.3
8	SPACE	20/1												0.0	0.0
9	SPACE	20/1												0.0	0.0
10	PANEL HA	100/3	EXISTING	57.7	0.0	0.7	4.0	0.0	1.5	0.0				63.8	76.8
11	TRANSFORMER TW	125/3	EXISTING						75.0					75.0	90.2
12	PANEL HSB - SOFTBALL FIELD	200/3	EXISTING	17.5	0.0	0.0	0.0	0.0	26.6	0.0				44.1	53.0
13	PANEL HBB - BASEBALL FIELD	400/3	EXISTING	47.4	0.0	0.0	0.0	0.0	0.0	0.0				47.4	57.0
Total...				325.1	3.0	4.2	4.0	0.0	167.5	0.0	0.0	0.0	0.0	503.8	606.0
Demand...				-- 1.25	-- *	-- **	-- 1.0	-- 1.0	-- 1.00	-- 0.65	-- 0.5	-- ***	-- ****	-- --	-- --
Total...				406.4	3.0	4.2	4.0	0.0	167.5	0.0	0.0	0.0	0.0	585.1	703.8

* 100% of 1st 10 KVA, 50% of remaining.
** 125% of largest motor + 100% sum of remaining motors
*** Elevator Demand Factor based on T620-14.
**** Residential Demand Factor based on T220-32.

Largest Motor: ______ KVA

DISTRIBUTION PANEL: **EXISTING DPA**

MAINS	TYPE:	MAIN BREAKER
	SIZE:	1200 AMP
BUS SIZE	PHASE:	1200 AMP
	NEUTRAL:	1200 AMP
	GROUND:	PER NEC

Date: 9/18/2026 By: Designer

Job: Tomball High School Athletics... Job No. 250515

Mounting **SURFACE** Main Type **MLO** Neutral **100%**

Voltage: **480Y/277V-3PH 4W** Main Size: **100 AMPS**

AIC... **42000** Ground **Equipment Ground** Lugs **SINGLE**

PANEL: **EXISTING HA**

ALL LOADS IN VA

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S
4709							0.00	ROADWAY LIGHTING	30/3	(1)	1	A	2	(1)	30/3	ROADWAY LIGHTING	4709							0.00
4709							0.00	-	-	-	3	B	4	-	-	-	4709							0.00
4709							0.00	-	-	-	5	C	6	-	-	-	4709							0.00
4709							0.00	ROADWAY LIGHTING	30/3	(1)	7	A	8	(1)	30/3	ROADWAY LIGHTING	4709							0.00
4709							0.00	-	-	-	9	B	10	-	-	-	4709							0.00
4709							0.00	-	-	-	11	C	12	-	-	-	4709							0.00
216							**0.00**	**FRONT ENTRY LIGHT (3)**	**20/1**	**10**	13	A	14			SPACE								0.00
352							**0.00**	**PEDESTRIAN LIGHT (2)**	**20/1**	**10**	15	B	16			SPACE								0.00
605							**0.00**	**WOMEN'S RR (4)**	**20/1**	**10**	17	C	18			SPACE								0.00
					1500		**0.00**	**EWH-1 (4)**	**20/1**	**10**	19	A	20			SPACE								0.00
			1994				**0.00**	**EUH-01 (4)**	**15/1**	**12**	21	B	22			SPACE								0.00
			1994				**0.00**	**EUH-01 (4)**	**15/1**	**12**	23	C	24			SPACE								0.00
		665					**0.00**	**EF-01 (4)**	**15/1**	**12**	25	A	26			SPACE								0.00
							0.00	SPACE			27	B	28			SPACE								0.00
							0.00	SPACE			29	C	30			SPACE								0.00
29427	0	665	3989	0	1500	0	0.00	TOTALS								TOTALS	28254	0	0	0	0	0	0	0.00

1

LOAD SUMMARY

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
57.7	0.0	0.7	4.0	0.0	1.5	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors
72.1	0.0	0.7	4.0	0.0	1.5	0.0	0.0	Design KVA

Phase Load

Ph	KVA
A	21.2
B	21.2
C	21.4

Panel Remarks:
(1): EXISTING TO REMAIN.

(2):PRICE AS PART OF ALTERNATE #3

(3):PRICE AS PART OF ALTERNATE #1

(4): PRICE AS PART OF ALTERNATE #4

BOLD INDICATES NEW

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	63.8	76.8		78.3	94.1

PANEL: **EXISTING HA**

Date: 9/17/2026 By: Designer 10/22/03

PBK

TX FIRM: BR 1608
www.pbk.com

HOUSTON, TX
713-965-0608

LEAF ENGINEERS

TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

E	F
C	D
A	B

KEY PLAN

PLAN NORTH TRUE NORTH

STATE OF TEXAS
MATTHEW R. SICKOREZ
107736
LICENSED
PROFESSIONAL ENGINEER

9/10/2026
LEAF ENGINEERS
F-18672

CLIENT
TOMBALL ISD

DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM 03	09/21/2026

CHECKED BY: Checker
DRAWN BY: TLG

ELECTRICAL PANEL SCHEDULES

E-701

Plot Stamp:
9/18/2026 8:21:01 AM

Job: Tomball High School Athletics... Job No. 250515

Mounting: **SURFACE** | Main Type: **MCB (225A)** | Neutral: **200%**

Voltage: **208Y/120V-3PH 4W** | Main Size: **225 AMPS**

AIC... **10000** | Ground: **Equipment Ground** | Lugs: **FEED THRU**

PANEL: **EXISTING LB** (ALL LOADS IN VA)

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S
1200							0.00	ELEC RM LIGHTING	20/1	(1)	1	A	2	12	20/1	**OH DOOR (2)**			**1200**					0.00
	180						0.00	TENNIS COURT REC	20/1	(1)	3	B	4	(1)	20/1	TICKET BOOTH LIGHT	300							0.00
	180						0.00	TENNIS COURT REC	20/1	(1)	5	C	6	(1)	20/1	HAND DRYER						1500		0.00
					1500		0.00	HAND DRYER	20/1	(1)	7	A	8	(1)	20/1	TICKET BOOTH REC.		500						0.00
		560					0.00	ELEC RM EXHAUST FAN	20/1	(1)	9	B	10	(1)	20/1	CONCESSIONS STAND REC						1000		0.00
					1664		0.00	CONCESSIONS STAND REC	20/2	(1)	11	C	12	(1)	20/1	CONCESSIONS STAND REC						1000		0.00
					1664		0.00	-	-		13	A	14	(1)	20/1	CONCESSIONS STAND REC						1000		0.00
					1000		0.00	CONCESSIONS STAND REC	20/1	(1)	15	B	16	(1)	20/1	CONCESSIONS STAND REC						1000		0.00
					1000		0.00	CONCESSIONS STAND REC	30/1	(1)	17	C	18	(1)	40/2	INSTA HOT						3328		0.00
		560					0.00	RESTROOM EX FAN	20/1	(1)	19	A	20	-	-	-						3328		0.00
1000							0.00	CONCESSIONS LTG	20/1	(1)	21	B	22	(1)	20/1	IRRIGATION REC&LTG CTRL						600		0.00
	500						0.00	BAND TOWER	20/1	(1)	23	C	24	(1)	20/1	HAND DRYER						1500		0.00
					1500		0.00	HAND DRYER	20/1	(1)	25	A	26	(1)	20/2	SOCCER SCORE BOARD						1664		0.00
600							0.00	DUG-OUT H	20/1	(1)	27	B	28	-	-	-						1664		0.00
	180						0.00	DUG-OUT REC	20/1	(1)	29	C	30			SPACE								**0.00**
		1200					**0.00**	**OH DOOR (2)**	20/1	12	31	A	32	(1)	40/2	BASEBALL SCORE BOARD						1664		0.00
					1000		0.00	POP CORN MACHINE	20/1	(1)	33	B	34	-	-	-						1664		0.00
	1440						**0.00**	**RESTROOM REC (2)**	20/1	12	35	C	36			SPACE								0.00
					3328		0.00	INSTA HOT	40/2	(1)	37	A	38	(1)	100/3	PANEL LC						7200		0.00
					3328		0.00	-	-		39	B	40	-	-	-						7200		0.00
					1500		0.00	HAND DRYER	20/1	(1)	41	C	42	-	-	-						7200		0.00
2800	2480	2320	0	0	17484	0	0.00	**TOTALS**								**TOTALS**	300	500	1200	0	0	42512	0	0.00

1 (revision clouds)

LOAD SUMMARY

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
3.1	3.0	3.5	0.0	0.0	60.0	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors
3.9	3.0	3.5	0.0	0.0	60.0	0.0	0.0	Design KVA

Phase Load

Ph	KVA
A	27.5
B	21.1
C	21.0

Panel Remarks:
(1): EXISTING TO REMAIN.

(2): PRICE AS PART OF ALTERNATE #4

BOLD INDICATES NEW

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	69.6	193.2		70.4	195.3

PANEL: **EXISTING LB**

Date: 9/17/2026 By: Designer

Job: Tomball High School Athletics... Job No. 250515

Mounting: **SURFACE** | Main Type: **MLO** | Neutral: **100%**

Voltage: **480Y/277V-3PH 4W** | Main Size: **400 AMPS**

AIC... **42000** | Ground: **Equipment Ground** | Lugs: **SINGLE**

PANEL: **EXISTING HBB** (ALL LOADS IN VA)

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S
1752							0.00	FIXTURE TYPE A2	30/3	(1)	1	A	2	10	30/3	FIXTURE TYPE A1	1752							0.00
1752							0.00	-	-	-	3	B	4	-	-	-	1752							0.00
1752							0.00	-	-	-	5	C	6	-	-	-	1752							0.00
3012							0.00	FIXTURE TYPE B2	30/3	10	7	A	8	(1)	30/3	FIXTURE TYPE B1	3012							0.00
3012							0.00	-	-	-	9	B	10	-	-	-	3012							0.00
3012							0.00	-	-	-	11	C	12	-	-	-	3012							0.00
1362							0.00	FIXTURE TYPE C2	30/3	10	13	A	14	10	30/3	FIXTURE TYPE C1	1362							0.00
1362							0.00	-	-	-	15	B	16	-	-	-	1362							0.00
1362							0.00	-	-	-	17	C	18	-	-	-	1362							0.00
180							**0.00**	**FIXTURE TYPE A3 (2)**	30/3	10	19	A	20	(1)	30/3	FIXTURE TYPE D1	1553							0.00
180							**0.00**	**BACK LIGHT**	-	-	21	B	22	-	-	-	1553							0.00
180							**0.00**	-	-	-	23	C	24	-	-	-	1553							0.00
400							**0.00**	**UNDER BLEACHER LTS**	20/1	10	25	A	26	(1)	30/3	FIXTURE TYPE D2	1553							0.00
400							**0.00**	**UNDER BLEACHER LTS**	20/1	10	27	B	28	-	-	-	1553							0.00
							0.00	SPACE			29	C	30	-	-	-	1553							0.00
							0.00	SPACE			31	A	32			SPACE								0.00
							0.00	SPACE			33	B	34			SPACE								0.00
							0.00	SPACE			35	C	36			SPACE								0.00
							0.00	SPACE			37	A	38			SPACE								0.00
							0.00	SPACE			39	B	40			SPACE								0.00
							0.00	SPACE			41	C	42			SPACE								0.00
19715	0	0	0	0	0	0	0.00	**TOTALS**								**TOTALS**	27695	0	0	0	0	0	0	0.00

LOAD SUMMARY

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
47.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors
59.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Design KVA

Phase Load

Ph	KVA
A	15.9
B	15.9
C	15.5

Panel Remarks:
(1): EXISTING TO REMAIN.

(2): PRICE AS PART OF ALTERNATE #6

BOLD INDICATES NEW

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	47.4	57.0		59.3	71.3

PANEL: **EXISTING HBB**

Date: 9/18/2026 By: Designer

Job: Tomball High School Athletics... Job No. 250515

Mounting: **SURFACE** | Main Type: **MLO** | Neutral: **100%**

Voltage: **480Y/277V-3PH 4W** | Main Size: **225 AMPS**

AIC... **42000** | Ground: **Equipment Ground** | Lugs: **SINGLE**

PANEL: **EXISTING HSB** (ALL LOADS IN VA)

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S
912							0.00	FIXTURE TYPE A3	30/3	(1)	1	A	2	(1)	30/3	FIXTURE TYPE A4	732							0.00
912							0.00	-	-	-	3	B	4	-	-	-	732							0.00
912							0.00	-	-	-	5	C	6	-	-	-	732							0.00
1365							0.00	FIXTURE TYPE B3	30/3	(1)	7	A	8	(1)	30/3	FIXTURE TYPE B4	1365							0.00
1365							0.00	-	-	-	9	B	10	-	-	-	1365							0.00
1365							0.00	-	-	-	11	C	12	-	-	-	1365							0.00
732							0.00	FIXTURE TYPE C3	30/3	(1)	13	A	14	(1)	30/3	FIXTURE TYPE C4	732							0.00
732							0.00	-	-	-	15	B	16	-	-	-	732							0.00
732							0.00	-	-	-	17	C	18	-	-	-	732							0.00
					4432		0.00	WALK LITES	20/3	(1)	19	A	20	(1)	20/1	EXISTING						4432		0.00
					4432		0.00	-	-	-	21	B	22	(1)	20/1	EXISTING						4432		0.00
					4432		0.00	-	-	-	23	C	24	(1)	20/1	EXISTING						4432		0.00
9025	0	0	0	0	13296	0	0.00	**TOTALS**								**TOTALS**	8485	0	0	0	0	13296	0	0.00

LOAD SUMMARY

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
17.5	0.0	0.0	0.0	0.0	26.6	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors
21.9	0.0	0.0	0.0	0.0	26.6	0.0	0.0	Design KVA

Phase Load

Ph	KVA
A	14.7
B	14.7
C	14.7

Panel Remarks:
(1): EXISTING TO REMAIN.

BOLD INDICATES NEW

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	44.1	53.0		48.5	58.3

PANEL: **EXISTING HSB**

Date: 9/18/2026 By: Designer

REVISIONS TO PANEL TO BE PRICED AS PART OF ALTERNATE #2

Electrical Load Calculations

Job: Tomball High School Athletics Improvements

Job No.: 250515

AIC Rating: **65000**

Volts - Phase: **480Y/277V-3PH 4W**

DISTRIBUTI... **EXISTING...**

Served From: UTILITY CO TRANSFORMER

Connected Load (KVA)

Cir. No.	Load Served	Amp/Poles	Wire and Conduit Size	Lighting	Conv. Outlets	Motors	Heating	Cooling	Others	Elect. Cooking	Spare/ Spaces	Elevators	Residential	Total KVA	Total Amps
1	BAND PRATICE LIGHTING	40/3	EXISTING	26.6										26.6	32.0
2	**PANEL HTC (1)**	**100/3**	**SEE RISER**	**28.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**				**28.8**	**34.6**
3	**SPARE (1)**	40/3												**0.0**	**0.0**
4	PARKING LOT LIGHTING	30/3	EXISTING	19.9										19.9	24.0
5	PANEL HS - SOCCER FIELD	150/3	EXISTING	99.7	0.0	0.0	0.0	0.0	0.0	0.0				99.7	119.9
6	TRANSFORMER TLB	100/3	EXISTING	3.1	3.0	3.5	0.0	0.0	60.0	0.0				69.6	83.7
7	CONTROL CIRCUIT	20/1	EXISTING						4.4					4.4	5.3
8	SPACE	20/1												0.0	0.0
9	SPACE	20/1												0.0	0.0
10	PANEL HA	100/3	EXISTING	57.7	0.0	0.7	4.0	0.0	1.5	0.0				63.8	76.8
11	TRANSFORMER TW	125/3	EXISTING						75.0					75.0	90.2
12	PANEL HSB - SOFTBALL FIELD	200/3	EXISTING	17.5	0.0	0.0	0.0	0.0	26.6	0.0				44.1	53.0
13	PANEL HBB - BASEBALL FIELD	400/3	EXISTING	47.4	0.0	0.0	0.0	0.0	0.0	0.0				47.4	57.0
Total...				300.8	3.0	4.2	4.0	0.0	167.5	0.0	0.0	0.0	0.0	479.4	576.7
Demand...				-- 1.25	-- *	-- **	-- 1.0	-- 1.0	-- 1.00	-- 0.65	-- 0.5	-- ***	-- ****	-- --	-- --
Total...				375.9	3.0	4.2	4.0	0.0	167.5	0.0	0.0	0.0	0.0	554.6	667.1

* 100% of 1st 10 KVA, 50% of remaining.
** 125% of largest motor + 100% sum of remaining motors
*** Elevator Demand Factor based on T620-14.
**** Residential Demand Factor based on T220-32.
(1) THIS WORK SHALL ONLY BE PERFORMED IF ALTERNATE #2 IS ACCEPTED.

Largest Motor: ______ KVA

DISTRIBUTION PANEL: **EXISTING DPA**

MAINS	TYPE:	MAIN BREAKER
	SIZE:	1200 AMP
BUS SIZE	PHASE:	1200 AMP
	NEUTRAL:	1200 AMP
	GROUND:	PER NEC

Date: 9/18/2026 By: Designer

NEW PANEL TO BE PRICED AS PART OF ALTERNATE #2

Job: Tomball High School Athletics Improvements Job No. 250515

Mounting: **UNISTRUT** | Main Type: **MCB (100A)** | Neutral: **100%**

Voltage: **480Y/277V-3PH 4W** | Main Size: **100 AMPS**

AIC... **42000** | Ground: **Equipment Ground** | Lugs: **SINGLE**

PANEL: **HTC** (ALL LOADS IN VA)

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description	Amp/P	Wire	Cir. No.	Ph	Cir. No.	Wire	Amp/P	Description	Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S
227							0.00	FIXTURE TYPE P7	30/3	10	1	A	2	10	30/3	FIXTURE TYPE P1	587							0.00
227							0.00	-	-	-	3	B	4	-	-	-	587							0.00
227							0.00	-	-	-	5	C	6	-	-	-	587							0.00
813							0.00	FIXTURE TYPE P8	30/3	10	7	A	8	10	30/3	FIXTURE TYPE P2	1173							0.00
813							0.00	-	-	-	9	B	10	-	-	-	1173							0.00
813							0.00	-	-	-	11	C	12	-	-	-	1173							0.00
227							0.00	FIXTURE TYPE P5	30/3	10	13	A	14	10	30/3	FIXTURE TYPE P9	587							0.00
227							0.00	-	-	-	15	B	16	-	-	-	587							0.00
227							0.00	-	-	-	17	C	18	-	-	-	587							0.00
1367							0.00	FIXTURE TYPE P6	30/3	10	19	A	20	10	30/3	FIXTURE TYPE P10	1480							0.00
1367							0.00	-	-	-	21	B	22	-	-	-	1480							0.00
1367							0.00	-	-	-	23	C	24	-	-	-	1480							0.00
1660							0.00	FIXTURE TYPE P4	30/3	10	25	A	26	10	30/3	FIXTURE TYPE P3	1480							0.00
1660							0.00	-	-	-	27	B	28	-	-	-	1480							0.00
1660							0.00	-	-	-	29	C	30	-	-	-	1480							0.00
							0.00	SPACE			31	A	32			SPACE								0.00
							0.00	SPACE			33	B	34			SPACE								0.00
							0.00	SPACE			35	C	36			SPACE								0.00
							0.00	SPACE			37	A	38			SPACE								0.00
							0.00	SPACE			39	B	40			SPACE								0.00
							0.00	SPACE			41	C	42			SPACE								0.00
12880	0	0	0	0	0	0	0.00	**TOTALS**								**TOTALS**	15920	0	0	0	0	0	0	0.00

LOAD SUMMARY

Ltg.	Recept	Motor	Heat	Cool	Other	Kitchen	S/S	Description
28.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Connected KVA
1.25	**	1.00	1.00	1.00	1.00	0.65	0.50	*Design Factors
36.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Design KVA

Phase Load

Ph	KVA
A	9.6
B	9.6
C	9.6

Panel Remarks:
PANEL SHALL BE PROVIDED IN NEMA 3R ENCLOSURE.

PANEL SHALL ONLY BE PROVIDED IF ALTERNATE #2 IS ACCEPTED.

*Input div. factor per descriptions as required for calculations.
**100% of 1st 10 KVA, 50% of remaining.

	Con. KVA	Con. Amps		Des. KVA	Des. Amps
TOTAL	28.8	34.6		36.0	43.3

PANEL: **HTC**

Date: 9/18/2026 By: Designer

PBK

TX FIRM: BR 1608
www.pbk.com

HOUSTON, TX
713-965-0608

LEAF ENGINEERS

TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

E	F
C	D
A	B

KEY PLAN — PLAN NORTH — TRUE NORTH

STATE OF TEXAS — MATTHEW R. SICKORE — 107736 — LICENSED PROFESSIONAL ENGINEER

9/10/2026
LEAF ENGINEERS
F-18672

CLIENT: TOMBALL ISD
DATE: 9/10/2026 PROJECT NUMBER: 250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM 03	09/21/2026

CHECKED BY: Checker
DRAWN BY: TLG

ELECTRICAL PANEL SCHEDULES

E-702

Plot Stamp:
9/18/2026 8:21:02 AM

PLUMBING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE				REMARKS
		WASTE	VENT	CW	HW	
WC-1	WATER CLOSET, WALL-MOUNTED BOWL W/ 1-1/2" TOP SPUD, 1.28 GPF, ELONGATED RIM, PROVIDE OPEN FRONT SEATLESS COVER AND ADJUSTABLE CARRIER	4"	2"	1-1/2"	-	-
WC-2	WATER CLOSET, SAME AS WC-1 EXCEPT FLUSH VALVE SHALL BE ROUGHED-IN NO MORE THAN 44" AFF W/ CENTER LINE OF FIXTURE 18" FROM FINISHED WALL OR PARTITION, ADA	4"	2"	1-1/2"	-	-
L-1	LAVATORY, WALL-MOUNTED, 0.5 GPM W/ AERATOR FAUCET, ZURN Z-8746-CP OFFSET GRID DRAIN, ZURN Z-8802LR-CP ANGLE STOPS W/ Ø3/8" (OD) TUBING, DEARBORN 701-1 17 GA. P-TRAP, TRUEBRO 105W OFFSET INSULATION KIT (NOT REQUIRED IF CABINET APRON IS INSTALLED), ADA, LEAD-FREE	2"	2"	3/4"	3/4"	• PROVIDE ASSE 1070 TMV-1 SIMILAR TO LEONARD 170-LF-CP
L-2	LAVATORY, SAME AS L-1 EXCEPT RIM SHALL BE MOUNTED NO HIGHER THAN 34" AFF	2"	2"	3/4"	3/4"	• PROVIDE ASSE 1070 TMV-1 SIMILAR TO LEONARD 170-LF-CP
FD-1	FLOOR DRAIN, ROUND, ADJUSTABLE NICKEL-BRONZE STRAINER, LACQUERED CAST IRON BODY W/ DOUBLE DRAINAGE FLANGE, WEEP HOLES, REVERSIBLE CLAMPING COLLAR, PUSH ON GASKET OUTLET OR NO HUB OUTLET	SEE PLANS		-	-	• PROVIDE TRAP PRIMER TYPE TP-2
TP-2	TRAP PRIMER, FLUSH VALVE TYPE, VACUUM BREAKER TRAP PRIMER ATTACHED TO WATER CLOSET FLUSH VALVE, LEAD-FREE	-	-	-	-	-
WH-1	WALL HYDRANT, WALL-MOUNTED, ENCLOSED IN BOX FLUSH W/ WALL, ANTI-SIPHON WALL HYDRANT W/ INTEGRAL BACKFLOW PREVENTER, FREEZE-RESISTANT, LOCKABLE BOX AND LOOSE TEE KEY TO BE FURNISHED W/ WALL HYDRANT, LEAD-FREE	-	-	3/4"	-	-
TMV-1	THERMOSTATIC MIXING VALVE, POINT-OF-USE, FLOW CAPACITY BETWEEN 0.25 GPM MINIMUM AND 4 GPM MAXIMUM AT 5 PSI PRESSURE DROP, VOLUME CONTROL SHUT-OFF VALVE ON OUTLET, CHECK VALVE ON INLETS, LEAD-FREE	-	-	3/8"	3/8"	• ASSE 1070, MOUNTED IN PIPING UNDER LAVATORY/SINK/ETC.
TMV-2	THERMOSTATIC MIXING VALVE, HIGH / LOW USE, FLOW CAPACITY UP TO 11 GPM MAXIMUM AT 5 PSI PRESSURE DROP, VOLUME CONTROL SHUT-OFF VALVE ON OUTLET, CHECK VALVE ON INLETS, LEAD-FREE	-	-	3/4"	3/4"	• ASSE 1017, LOCATED AT WATER HEATER 3/4" OUTLET

NOTES:

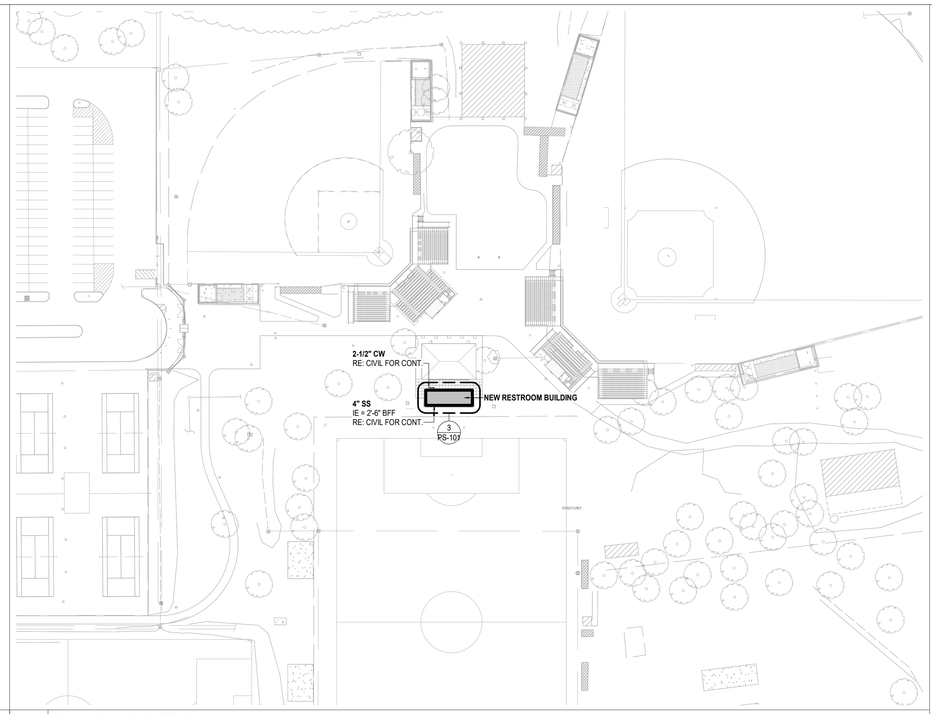
1. ROUGH-IN SUPPLY WASTE AND VENT PIPE SIZES INDICATED ARE MINIMUM SIZES SHOWN FOR ROUGH-IN PURPOSES ONLY.
2. COORDINATE WITH FIXTURE MANUFACTURER'S INSTALLATION DRAWINGS FOR PROPER AND CORRECT INSTALLATION OF ALL FIXTURES AND APPURTENANCES.
3. ALL PLUMBING FIXTURES SHALL BE COMPLETELY ROUGH-IN BY THE PLUMBING CONTRACTOR AND SHALL MEET ALL CODES HAVING JURISDICTION.
4. ALL FIXTURES TO BE COMMERCIAL GRADE UNLESS OTHERWISE NOTED.
5. PROVIDE A WATER HAMMER ARRESTER IN PIPING TO ALL FIXTURES AND / OR FIXTURE BANKS.

ELECTRIC WATER HEATER SCHEDULE

UNIT	MANUFACTURER AND MODEL NUMBER	LOCATION	CAPACITY (GAL)	RECOVERY (GPH)	TEMP RISE (°F)	ELECTRICAL				REMARKS
						kW	V	Φ	Hz	
EWH-1	AO SMITH DEL-6	NEW RESTROOM ADDITION	6	6	100	1.5	277	1	60	• PROVIDE WITH THERM-X-TROL ST-5-C EXPANSION TANK • TEMPERED WATER SUPPLIED TO FIXTURES • SUSPENDED ABOVE CEILING (DRAIN ROUTED TO EXTERIOR)

NOTES:

1. COORDINATE WITH WATER HEATER MANUFACTURER'S INSTALLATION DRAWINGS FOR PROPER AND CORRECT INSTALLATION OF ALL EQUIPMENT AND APPURTENANCES.



5 PLUMBING SITE PLAN
1" = 60'-0"

GENERAL NOTES - PLUMBING PLAN

A. THE CONTRACTOR SHALL COMPLY WITH ALL AUTHORITIES HAVING JURISDICTION.

B. ALL FINAL CONNECTIONS TO FIXTURES AND EQUIPMENT SHALL BE MADE BY THE PLUMBING CONTRACTOR.

C. ALL PLUMBING PIPING SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO ANY INSTALLATION OF ALL PLUMBING FIXTURES AND EQUIPMENT BY THE PLUMBING CONTRACTOR.

D. ALL FLOOR DRAINS AND FLOOR SINKS SHOWN ON THIS DRAWING SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION.

E. REFER TO ARCHITECTURAL DRAWING FOR EXACT LOCATIONS OF FIXTURES, EQUIPMENT, ETC. DO NOT SCALE FROM PLUMBING DRAWINGS.

F. ALL WALL CLEAN-OUTS SHALL BE ACCESSIBLE BY AN ACCESS PANEL.

G. PROVIDE AND INSTALL A DOUBLE EXTERIOR CLEAN-OUT (DCOTG) ON ALL SANITARY LINES EXITING THE BUILDING.

H. ALL FLOOR DRAINS AND FLOOR SINKS SHALL BE PROVIDED WITH A TRAP PRIMER AND INSTALLED BY THE PLUMBING CONTRACTOR.

I. FIXTURES DESIGNATED AS ADA ACCESSIBLE BY ARCHITECT SHALL BE INSTALLED AT ADA ACCESSIBLE HEIGHT PER ARCHITECTURAL DETAILS.

J. ANY AND ALL WATER PIPING EXPOSED TO OUTSIDE ELEMENTS SHALL BE INSULATED AND HEAT TRACED TO PREVENT FREEZING.

K. ALL SANITARY 3" OR ABOVE SHALL BE INSPECTED BY A CAMERA PRIOR TO SUBSTANTIAL COMPLETION.

KEYNOTES - PLUMBING PLAN

1 3/4" COLD WATER DOWN TO SERVE WALL HYDRANT.

2 INCOMING 2-1/2" COLD WATER ENTRY, RE: CIVIL DRAWING FOR SITE ROUTING.

3 4" WASTE DOWN.

4 3" VENT THRU ROOF (VTR).

5 RE: CIVIL DRAWING FOR CONTINUATION.

6 4" WASTE DOWN FROM DOUBLE CLEANOUT TO GRADE.

7 HORIZONTAL STRUCTURAL GRADE BEAM PENETRATION, THE PLUMBING CONTRACTOR SHALL COORDINATE WITH AND REFER TO THE STRUCTURAL DRAWINGS FOR DETAILS AND ADDITIONAL INFORMATION AS REQUIRED.

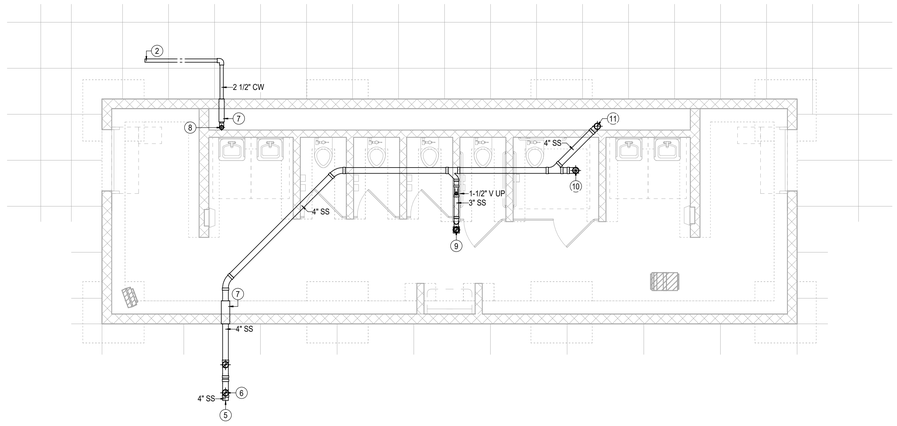
8 2-1/2" COLD WATER UP.

9 3" WASTE DOWN FROM FLOOR DRAIN, PROVIDE TRAP PRIMER.

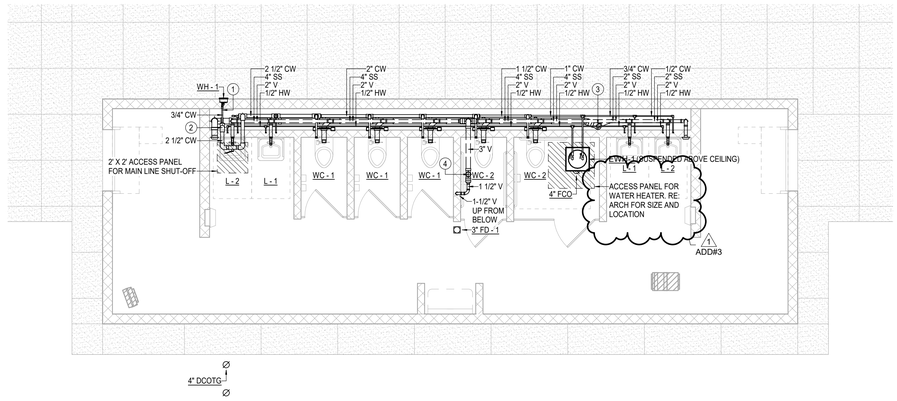
10 4" WASTE DOWN FROM FLOOR CLEANOUT.

11 4" WASTE DOWN FROM ABOVE.

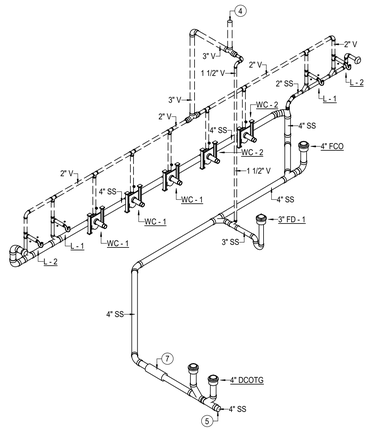
6 PLUMBING SCHEDULES
1/8" = 1'-0"



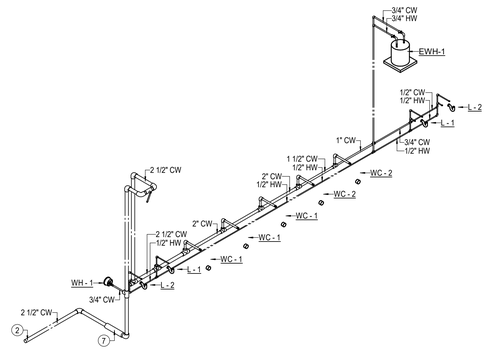
4 ENLARGED PLUMBING PLAN - RESTROOM BUILDINGS UNDERFLOOR
1/4" = 1'-0"



3 ENLARGED PLUMBING PLAN - RESTROOM BUILDINGS ABOVE FLOOR
1/4" = 1'-0"



2 RISER DIAGRAM - DRAINAGE WASTE AND VENT



1 RISER DIAGRAM - DOMESTIC WATER

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CLIENT PROJECT NUMBER: 250515

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MITAL J. PATEL
111622
LICENSED
PROFESSIONAL
ENGINEER

9/10/2026
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F-18672

CLIENT	
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DATE	PROJECT NUMBER
9/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: SC
DRAWN BY: SC

PLUMBING SITE PLAN

PS-101

Plot Stamp:
9/17/2026 3:39:57 PM

TECHNOLOGY SITE PLAN GENERAL NOTES

A. (BASE BID) SCOPE OF WORK:

B. (ALTERNATE 2) SCOPE OF WORK:

C. (ALTERNATE 3) SCOPE OF WORK: THE CONTRACTOR SHALL EXTEND THE EXISTING SCHOOL LOW VOLTAGE INFRASTRUCTURE, INCLUDING ACCESS CONTROL, INTRUSION DETECTION, FIRE ALARM, PUBLIC ADDRESS, AND STRUCTURED CABLING SYSTEMS, TO THE NEW MPAC SPORTS FACILITY BUILDING. ROUTE CABLING FROM THE EXISTING MDF THROUGH NEW EXTERIOR NEMA ENCLOSURES, THROUGH NEW UNDERGROUND CONDUIT PATHWAYS, AND TO THE NEW MPAC IDF ROOM. PROVIDE ALL REQUIRED INNERDUCTS, PULL STRINGS, FITTINGS, SUPPORTS, TERMINATIONS, TESTING, LABELING, AND ACCESSORIES FOR A COMPLETE AND OPERATIONAL SYSTEM.

D. ALL CONDUITS AND PULL BOXES SHALL BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.

E. CONDUIT PATHWAYS AND PULL BOX LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY PROPER PATHWAYS AND LOCATIONS PRIOR TO INSTALLATION.

F. COORDINATE ROUTING FOR ALL UNDERGROUND LOW VOLTAGE CONDUITS WITH OTHER DISCIPLINES PRIOR TO TRENCHING.

G. ALL IN GROUND PULL BOXES SHALL BE EQUIPPED WITH A 48" DEEP GRAVEL DRY WELL TO ALLOW FOR DRAINAGE. SEE CIVIL PLANS FOR DETAILS.

H. TECHNOLOGY CABLING CONTRACTOR SHALL SEAL ALL OPEN CONDUIT ENDS WITH A PERMAGUM SEALING COMPOUND / GUM AFTER CABLING IS INSTALLED.

I. CONTRACTOR SHALL VERIFY PROPER CONDUIT PATHWAY PRIOR TO INSTALLATION.

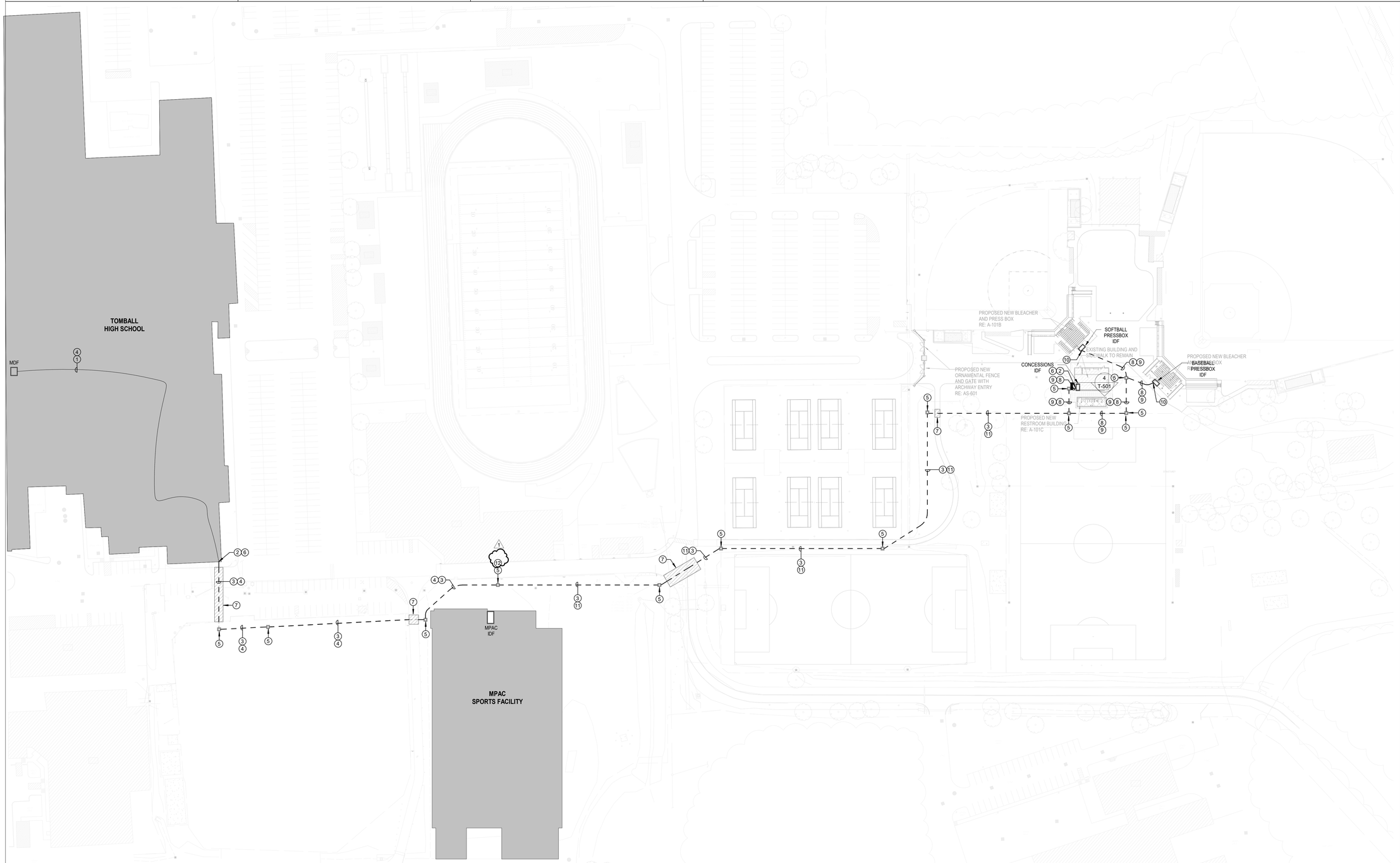
J. CONTRACTOR IS RESPONSIBLE FOR DAMAGE TO EXISTING UTILITIES INCURRED DURING CONSTRUCTION.

H. ALL SYSTEMS IN THE EXISTING MDF SHALL REMAIN FULLY OPERATIONAL THROUGHOUT CONSTRUCTION.

I. REFERENCE SPECIFICATIONS FOR MATERIALS AND METHODS ON ALL ITEMS LISTED BELOW.

(#) TECHNOLOGY SITE PLAN KEYED NOTES

1. FREE-WIRED CABLING SHALL BE ROUTED OVERHEAD THROUGH ACCESSIBLE CORRIDORS AND CEILING SPACES. COORDINATE EXACT ROUTING WITH FIELD CONDITIONS.
2. PROVIDE AND INSTALL A NEW 24" X 24" X 12" NEMA 4 ENCLOSURE FOR LOW VOLTAGE CABLING.
3. PROVIDE (2) 4" UNDERGROUND CONDUITS FROM NEMA 4 ENCLOSURE TO NEW PULL BOX, EACH WITH PULL STRINGS AND (2) 3-CELL MAXCELL INNERDUCTS.
4. PROVIDE (4) 12-STRAND SINGLE-MODE INDOOR/OUTDOOR-RATED FIBER OPTIC CABLES FROM THE HIGH SCHOOL MDF TO THE PULL BOX; TERMINATE AND TEST AT BOTH ENDS.
5. PROVIDE NEW 24" X 36" X 24" UNDERGROUND PULL BOX, INSTALLED FLUSH WITH GRADE, WITH COVER RATED FOR INSTALLATION LOCATION. PROVIDE AT CHANGES OF DIRECTION EXCEEDING 180 DEGREES AND AT INTERVALS NOT EXCEEDING 250 FEET. PROVIDE LONG SWEEP BENDS FOR ALL CONDUITS ENTERING, EXITING, AND ALONG THE ROUTE. DO NOT INSTALL PULL BOXES IN SIDEWALKS. COORDINATE EXACT LOCATION WITH FIELD CONDITIONS PRIOR TO INSTALLATION.
6. PROVIDE WEATHER-TIGHT BUILDING PENETRATION AT POINTS WHERE CABLING EXITS AND RE-ENTERS BUILDINGS. SEAL ALL OPENINGS AFTER CABLE INSTALLATION.
7. INDICATES CONCRETE PATHWAY. CONTRACTOR SHALL HORIZONTALLY BORE BENEATH CONCRETE PATHWAY TO INSTALL CABLING/CONDUIT BETWEEN EXISTING LANDSCAPED AREAS. NO SAWCUTTING OR REMOVAL OF CONCRETE SHALL BE PERMITTED UNLESS OTHERWISE APPROVED.
8. PROVIDE (2) 2" UNDERGROUND CONDUITS EACH WITH PULL STRINGS AND (2) 3-CELL MAXCELL INNERDUCTS.
9. PROVIDE (1) 12-STRAND SINGLE-MODE UNDERGROUND FIBER CABLE FROM PULL BOX TO DATA RACK; TERMINATE AND TEST AT BOTH ENDS.
10. ROUTE CONDUIT INTO PRESS BOX BOTTOM DIRECTLY BENEATH DATA RACK LOCATION. SEAL PENETRATION WEATHER-TIGHT.
11. PROVIDE (3) 12-STRAND SINGLE-MODE INDOOR/OUTDOOR-RATED FIBER OPTIC CABLES FROM THE HIGH SCHOOL MDF TO THE PULL BOX; TERMINATE AND TEST AT BOTH ENDS.
12. CONTRACTOR SHALL COIL ONE (1) OF THE FOUR (4) NEW FIBER RUNS AND STORE IT IN THE PULL BOX FOR FUTURE CONNECTION TO THE MPAC SPORTS FACILITY. PROVIDE SUFFICIENT SPACE WITHIN THE UNDERGROUND PULL BOX TO ACCOMMODATE ALL NEW CABLING, INCLUDING AN ADDITIONAL 150 FEET OF COILED FIBER OPTIC CABLE FOR FUTURE EXTENSION TO THE NEW MPAC IDF.



1 TECHNOLOGY SITE PLAN
SCALE: 1" = 60'-0"

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TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

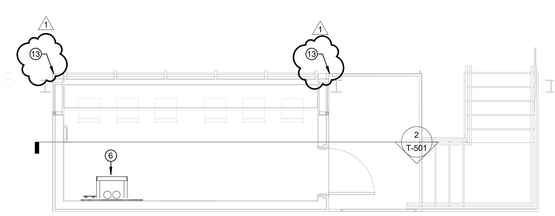
No.	Description	Date
1	ADDENDUM 03	09/21/2026

CHECKED BY: CL
DRAWN BY: MT

TECHNOLOGY SITE PLAN

TS-101

1 TECHNOLOGY PLAN - BASEBALL BLEACHER
SCALE: 1" = 10'-0"



2 TECHNOLOGY PLAN - BASEBALL PRESSBOX
SCALE: 1/4" = 1'-0"

TECHNOLOGY GENERAL NOTES

A. "BASE BID SCOPE OF WORK": PROVIDE PATHWAY INFRASTRUCTURE NECESSARY TO SUPPORT THE FUTURE EXTENSION OF CAMPUS NETWORK CONNECTIVITY TO THE MPAC FACILITY, BASEBALL PRESS BOX, AND CONCESSIONS BUILDING. REFER TO TECHNOLOGY FLOOR PLANS FOR ALL LOCATIONS.

B. "BASE BID SCOPE OF WORK": THE CONTRACTOR SHALL REMOVE THE EXISTING SPEAKERS, ASSOCIATED CABLING, AND MOUNTING HARDWARE AT BOTH PRESS BOX LOCATIONS AND STORE ALL REMOVED EQUIPMENT FOR FUTURE REUSE.

C. "ALTERNATE 3 SCOPE OF WORK": THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES REQUIRED TO SUPPORT THE EXPANSION OF CAMPUS NETWORK AND TECHNOLOGY SYSTEMS TO THE MPAC FACILITY, BASEBALL PRESS BOX, AND CONCESSIONS BUILDING. SYSTEMS SHALL INCLUDE NETWORK CONNECTIVITY, ACCESS CONTROL, INTERCOM, FIRE ALARM, SURVEILLANCE CAMERAS, AND WIRELESS SYSTEMS. THE INSTALLATION SHALL SUPPORT A COMPLETE AND FULLY OPERATIONAL TURNKEY SYSTEM AND INCLUDE ALL REQUIRED TESTING, LABELING, AND DOCUMENTATION.

D. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND AND ABOVEGROUND UTILITIES AND TECHNOLOGY INFRASTRUCTURE PRIOR TO COMMENCING WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER AND DESIGN CONSULTANT PRIOR TO PROCEEDING.

E. ANY REQUIRED INTERRUPTION OF EXISTING SERVICES SHALL BE COORDINATED WITH THE OWNER A MINIMUM OF SEVEN (5) DAYS IN ADVANCE. SERVICE OUTAGES SHALL BE SCHEDULED DURING OWNER-APPROVED TIMES AND SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE.

F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING TECHNOLOGY INFRASTRUCTURE DURING CONSTRUCTION. ANY DAMAGE TO EXISTING SYSTEMS, CABLING, EQUIPMENT, OR ASSOCIATED INFRASTRUCTURE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.

G. EXISTING CAMPUS SYSTEMS SHALL REMAIN FULLY OPERATIONAL THROUGHOUT CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE OWNER IN WRITING.

H. REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS USED.

(#) TECHNOLOGY KEYED NOTES

1. CONTRACTOR SHALL ROUTE THE INCOMING UNDERGROUND CONDUIT FROM THE PULL BOX DIRECTLY UP TO THE UNDERSIDE OF THE PRESS BOX AS INDICATED. PROVIDE A WEATHERTIGHT PENETRATION THROUGH THE PRESS BOX FLOOR AND SEAL ALL OPENINGS AFTER CABLE INSTALLATION. VERTICAL EXPOSED CONDUIT RISERS SHALL BE RIGID GALVANIZED STEEL (RGS) AND SHALL BE SECURELY FASTENED AND SUPPORTED IN ACCORDANCE WITH NEC REQUIREMENTS AND MANUFACTURER RECOMMENDATIONS. COORDINATE EXACT PENETRATION LOCATION WITH STRUCTURAL MEMBERS AND PRESS BOX FRAMING PRIOR TO INSTALLATION. REPAIR AND WEATHERPROOF ALL PENETRATED SURFACES TO MAINTAIN THE INTEGRITY OF THE STRUCTURE.
2. INDICATES THE UNDERGROUND CONDUIT PATHWAY FOR LOW VOLTAGE AND DATA CABLING.
3. INDICATES THE UNDERGROUND PULL BOX FOR LOW VOLTAGE AND DATA CABLING.
4. INDICATES A (CFCI) FIRE-RATED PLYWOOD BACKBOARD.
5. INDICATES A (CFCI) GROUND BUS-BAR.
6. INDICATES A (CFCI) WALL-MOUNTED DATA RACK.
7. INDICATES A (CFCI) 1RU FIBER ENCLOSURE.
8. INDICATES A (CFCI) 48 PORT PATCH PANEL.
9. REMOVE EXISTING SPEAKERS AND ASSOCIATED MOUNTING HARDWARE FROM THE NETTING POLES. DISCONNECT AND MAKE SAFE ALL EXISTING SPEAKER CABLING AND ASSOCIATED EQUIPMENT SERVING THE PRESS BOX SCHEDULED FOR DEMOLITION. PROTECT AND STORE EXISTING SPEAKERS FOR REUSE, AND REINSTALL THEM AT THE CORNERS OF THE NEW PRESS BOX. PROVIDE ALL REQUIRED CABLING, MOUNTING HARDWARE, CONNECTIONS, AND ACCESSORIES FOR A COMPLETE, FULLY OPERATIONAL SYSTEM.
10. EXISTING SCOREBOARD CONTROL CABLING AND ASSOCIATED CONNECTIONS SERVING THE PRESS BOX SHALL BE DISCONNECTED AS REQUIRED FOR DEMOLITION. EXTEND AND RECONNECT EXISTING SCOREBOARD CONTROL CABLING TO THE NEW PRESS BOX. PROVIDE ALL REQUIRED CABLING, PATHWAYS, TERMINATIONS, CONNECTIONS, AND ACCESSORIES FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK. COORDINATE REQUIRED OUTAGES WITH THE OWNER, AND TEST SCOREBOARD OPERATION FOLLOWING RECONNECTION.
11. INDICATES THE LOCATION OF THE EXISTING PRESS BOX. DISCONNECT AND MAKE SAFE EXISTING COMMUNICATIONS/DATA CABLING SERVING THE PRESS BOX. PROTECT AND PRESERVE EXISTING CABLING FOR REUSE AND EXTENSION TO THE NEW PRESS BOX. COORDINATE WITH THE OWNER PRIOR TO DISCONNECTION AND MAINTAIN EXISTING CABLING IN SERVICEABLE CONDITION FOR RECONNECTION.
12. INDICATES THE LOCATION OF THE NEW PRESS BOX.
13. REINSTALL EXISTING SALVAGED POLE-MOUNTED SPEAKERS AT THE CORNERS OF THE NEW PRESS BOX. RECONNECT EXISTING SPEAKER CABLING AND ASSOCIATED EQUIPMENT AS REQUIRED. PROVIDE ALL NECESSARY MOUNTING HARDWARE, CABLING, TERMINATIONS, CONNECTIONS, AND ACCESSORIES FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE FINAL SPEAKER LOCATIONS AND ORIENTATION WITH THE OWNER, AND TEST AND VERIFY PROPER SYSTEM OPERATION UPON COMPLETION.

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KEY PLAN

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PROFESSIONAL
09/10/2026
LEAF ENGINEERS
F-18872

CLIENT	
TOMBALL ISD	
DATE: 09/10/2026	PROJECT NUMBER: 250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM 03	09/21/2026

CHECKED BY: CL
DRAWN BY: MT

TECHNOLOGY SITE PLAN - BASEBALL

TS-102

Plot Stamp:
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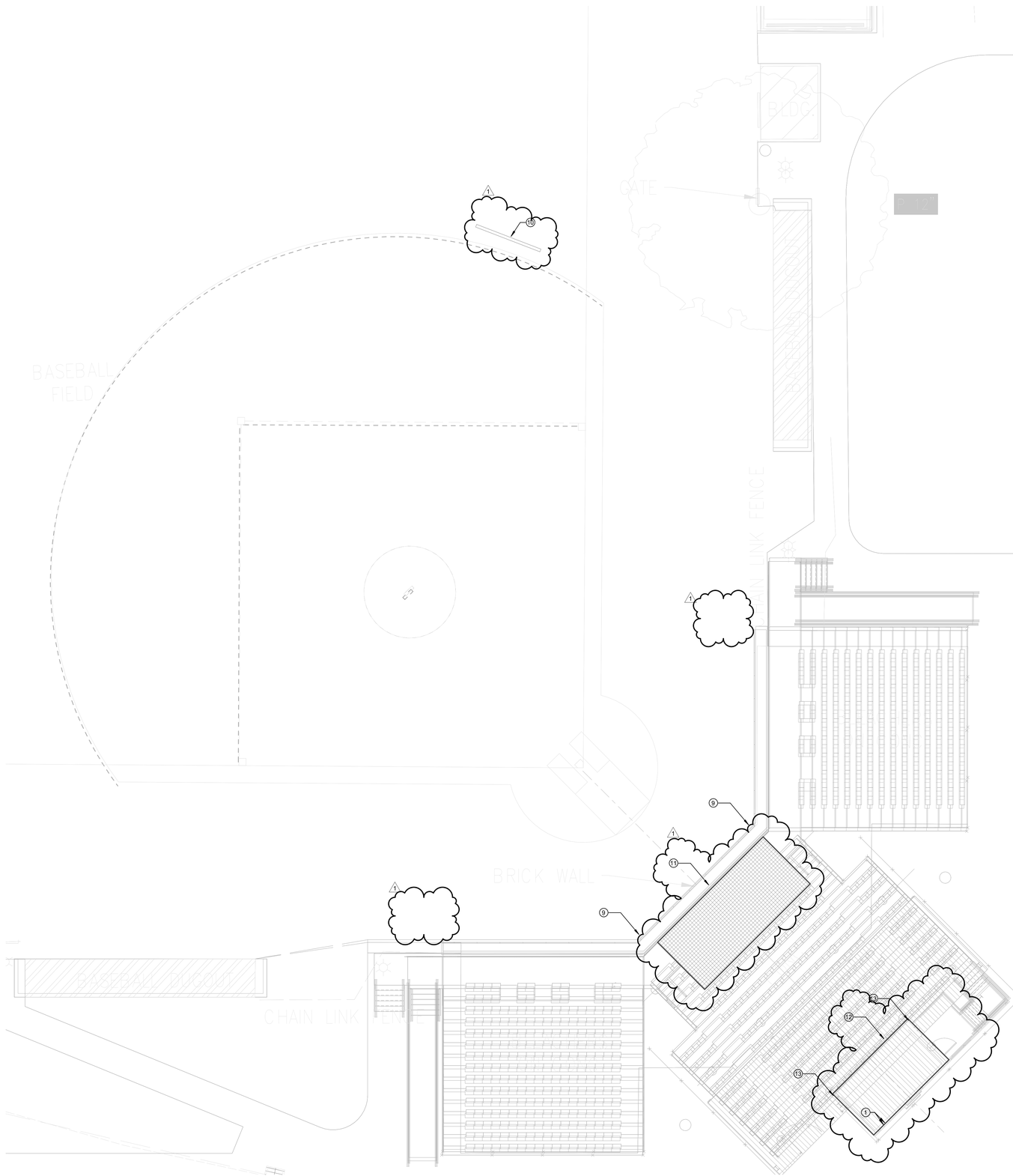
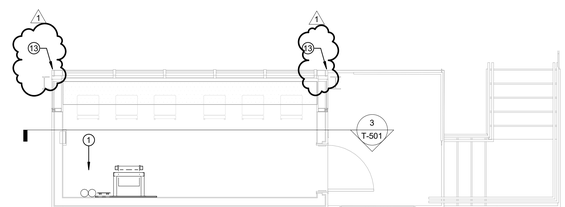


1 TECHNOLOGY PLAN - SOFTBALL BLEACHER
SCALE: 1/8" = 1'-0"



2 TECHNOLOGY PLAN - SOFTBALL PRESSBOX
SCALE: 1/4" = 1'-0"

TECHNOLOGY GENERAL NOTES

A. "BASE BID SCOPE OF WORK": PROVIDE PATHWAY INFRASTRUCTURE NECESSARY TO SUPPORT THE FUTURE EXTENSION OF CAMPUS NETWORK CONNECTIVITY TO THE MPAC FACILITY, BASEBALL PRESS BOX, AND CONCESSIONS BUILDING. REFER TO TECHNOLOGY FLOOR PLANS FOR ALL LOCATIONS.

B. "BASE BID SCOPE OF WORK": THE CONTRACTOR SHALL REMOVE THE EXISTING SPEAKERS, ASSOCIATED CABLING, AND MOUNTING HARDWARE AT BOTH PRESS BOX LOCATIONS AND STORE ALL REMOVED EQUIPMENT FOR FUTURE REUSE.

C. "ALTERNATE 3 SCOPE OF WORK": THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES REQUIRED TO SUPPORT THE EXPANSION OF CAMPUS NETWORK AND TECHNOLOGY SYSTEMS TO THE MPAC FACILITY, BASEBALL PRESS BOX, AND CONCESSIONS BUILDING. SYSTEMS SHALL INCLUDE NETWORK CONNECTIVITY, ACCESS CONTROL, INTERCOM, FIRE ALARM, SURVEILLANCE CAMERAS, AND WIRELESS SYSTEMS. THE INSTALLATION SHALL SUPPORT A COMPLETE AND FULLY OPERATIONAL TURNKEY SYSTEM AND INCLUDE ALL REQUIRED TESTING, LABELING, AND DOCUMENTATION.

D. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND AND ABOVEGROUND UTILITIES AND TECHNOLOGY INFRASTRUCTURE PRIOR TO COMMENCING WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER AND DESIGN CONSULTANT PRIOR TO PROCEEDING.

E. ANY REQUIRED INTERRUPTION OF EXISTING SERVICES SHALL BE COORDINATED WITH THE OWNER A MINIMUM OF SEVEN (5) DAYS IN ADVANCE. SERVICE OUTAGES SHALL BE SCHEDULED DURING OWNER-APPROVED TIMES AND SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE.

F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING TECHNOLOGY INFRASTRUCTURE DURING CONSTRUCTION. ANY DAMAGE TO EXISTING SYSTEMS, CABLING, EQUIPMENT, OR ASSOCIATED INFRASTRUCTURE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.

G. EXISTING CAMPUS SYSTEMS SHALL REMAIN FULLY OPERATIONAL THROUGHOUT CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE OWNER IN WRITING.

H. REFER TO SPECIFICATIONS FOR MATERIALS AND METHODS USED.

(#) TECHNOLOGY KEYED NOTES

1. CONTRACTOR SHALL ROUTE THE INCOMING UNDERGROUND CONDUIT FROM THE PULL BOX DIRECTLY UP TO THE UNDERSIDE OF THE PRESS BOX AS INDICATED. PROVIDE A WEATHERTIGHT PENETRATION THROUGH THE PRESS BOX FLOOR AND SEAL ALL OPENINGS AFTER CABLE INSTALLATION. VERTICAL EXPOSED CONDUIT RISERS SHALL BE RIGID GALVANIZED STEEL (RGS) AND SHALL BE SECURELY FASTENED AND SUPPORTED IN ACCORDANCE WITH NEC REQUIREMENTS AND MANUFACTURER RECOMMENDATIONS. COORDINATE EXACT PENETRATION LOCATION WITH STRUCTURAL MEMBERS AND PRESS BOX FRAMING PRIOR TO INSTALLATION. REPAIR AND WEATHERPROOF ALL PENETRATED SURFACES TO MAINTAIN THE INTEGRITY OF THE STRUCTURE.
2. INDICATES THE UNDERGROUND CONDUIT PATHWAY FOR LOW VOLTAGE AND DATA CABLING.
3. INDICATES THE UNDERGROUND PULL BOX FOR LOW VOLTAGE AND DATA CABLING.
4. INDICATES A (CFCI) FIRE-RATED PLYWOOD BACKBOARD.
5. INDICATES A (CFCI) GROUND BUS-BAR.
6. INDICATES A (CFCI) WALL-MOUNTED DATA RACK.
7. INDICATES A (CFCI) 1RU FIBER ENCLOSURE.
8. INDICATES A (CFCI) 48 PORT PATCH PANEL.
9. REMOVE EXISTING SPEAKERS AND ASSOCIATED MOUNTING HARDWARE FROM THE NETTING POLES. DISCONNECT AND MAKE SAFE ALL EXISTING SPEAKER CABLING AND ASSOCIATED EQUIPMENT SERVING THE PRESS BOX SCHEDULED FOR DEMOLITION. PROTECT AND STORE EXISTING SPEAKERS FOR REUSE, AND REINSTALL THEM AT THE CORNERS OF THE NEW PRESS BOX. PROVIDE ALL REQUIRED CABLING, MOUNTING HARDWARE, CONNECTIONS, AND ACCESSORIES FOR A COMPLETE, FULLY OPERATIONAL SYSTEM.
10. EXISTING SCOREBOARD CONTROL CABLING AND ASSOCIATED CONNECTIONS SERVING THE PRESS BOX SHALL BE DISCONNECTED AS REQUIRED FOR DEMOLITION. EXTEND AND RECONNECT EXISTING SCOREBOARD CONTROL CABLING TO THE NEW PRESS BOX. PROVIDE ALL REQUIRED CABLING, PATHWAYS, TERMINATIONS, CONNECTIONS, AND ACCESSORIES FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING WORK, COORDINATE REQUIRED OUTAGES WITH THE OWNER, AND TEST SCOREBOARD OPERATION FOLLOWING RECONNECTION.
11. INDICATES THE LOCATION OF THE EXISTING PRESS BOX. DISCONNECT AND MAKE SAFE EXISTING COMMUNICATIONS/DATA CABLING SERVING THE PRESS BOX. PROTECT AND PRESERVE EXISTING CABLING FOR REUSE AND EXTENSION TO THE NEW PRESS BOX. COORDINATE WITH THE OWNER PRIOR TO DISCONNECTION AND MAINTAIN EXISTING CABLING IN SERVICEABLE CONDITION FOR RECONNECTION.
12. INDICATES THE LOCATION OF THE NEW PRESS BOX.
13. REINSTALL EXISTING SALVAGED POLE-MOUNTED SPEAKERS AT THE CORNERS OF THE NEW PRESS BOX. RECONNECT EXISTING SPEAKER CABLING AND ASSOCIATED EQUIPMENT AS REQUIRED. PROVIDE ALL NECESSARY MOUNTING HARDWARE, CABLING, TERMINATIONS, CONNECTIONS, AND ACCESSORIES FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE FINAL SPEAKER LOCATIONS AND ORIENTATION WITH THE OWNER, AND TEST AND VERIFY PROPER SYSTEM OPERATION UPON COMPLETION.

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KEY PLAN — PLAN NORTH, TRUE NORTH

STATE OF TEXAS
MATTHEW R. SICKORE
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LICENSED
PROFESSIONAL ENGINEER

09/10/2026
LEAF ENGINEERS
F-18672

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM 03	09/21/2026

CHECKED BY: CL
DRAWN BY: MT

TECHNOLOGY SITE PLAN -SOFTBALL

TS-103

Plot Stamp:
9/21/2026 11:14:50 AM

S-011 - GENERAL NOTES

GENERAL:

CODES, DRAWINGS AND SPECIFICATIONS:

1. THE CONSTRUCTION DOCUMENTS ARE BASED ON THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE IBC 2021. ALL CODES AND SPECIFICATIONS LISTED ABOVE SHALL INCLUDE ALL AMENDMENTS AND ADDENDA IN FORCE AT THE DATE OF THE CONTRACT DOCUMENTS.

TYPICAL DETAILS:

1. TYPICAL DETAILS SHOWN ON THE DRAWINGS SHALL APPLY TO ALL SIMILAR LIKE CONDITIONS OCCURRING ON THE PROJECT WHETHER OR NOT THEY ARE KEYED IN AT EACH PARTICULAR LOCATION.

MISCELLANEOUS:

1. WHERE CONFLICTS EXIST BETWEEN THE VARIOUS PUBLICATIONS AS SPECIFIED HEREIN, THE STRICTER REQUIREMENTS SHALL GOVERN UNLESS NOTED OTHERWISE. WHERE CONFLICTS EXIST BETWEEN THEVARIOUS PARTS OF THE STRUCTURAL CONTRACT DOCUMENTS (STRUCTURAL DOCUMENTS, SPECIFICATIONS) AS SPECIFIED HEREIN, THE STRICTER REQUIREMENTS SHALL GOVERN.
2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN ALL CONTRACT DOCUMENTS AND LATEST ADDENDA AND TO SUBMIT SUCH DOCUMENTS TO ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS, FABRICATION OF ANY STRUCTURAL MEMBERS, AND ERECTION IN THE FIELD.
3. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND, EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCE.
4. SLEEVES AND BLOCKOUTS REQUIRED FOR PASSAGE OF DUCTWORK, PIPING, DRAINS, CONDUIT, ETC., AND ANCHORS REQUIRED FOR ANCHORING EQUIPMENT AND PIPING ARE NOT GENERALLY INDICATEDON THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL DETERMINE SUCH REQUIREMENTS FROM OTHER SERIES DRAWINGS, SUBCONTRACTORS, AND SUPPLIERS AND SHALL COORDINATE THE LOCATIONS AND DETAILS FOR THESE ITEMS PRIOR TO FABRICATION OR CONSTRUCTION OF THE STRUCTURE. ANY CONFLICTS BETWEEN THESE ITEMS AND THE BUILDING STRUCTURE SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR RESOLUTION.
5. VERIFY, OR ESTABLISH, LOCATIONS AND DIMENSIONS OF ALL FRAMED OPENINGS RELATED TO EQUIPMENT OR DUCTWORK, INCLUDING INSULATION, IF ANY. WHERE SUBSTANTIAL RELOCATION OR RECONFIGURATION IS REQUIRED, SUBMIT A DRAWING TO THE ARCHITECT FOR REVIEW.
6. MATERIALS OR PRODUCTS SUBMITTED FOR APPROVAL WHICH ARE NOT AS SPECIFIED IN THE DOCUMENTS SHALL BE ACCOMPANIED BY A CURRENT ES REPORT (BY ICC EVALUATION SERVICE, INC.) OR ICBO REPORT (BY INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS). MATERIALS OR PRODUCTS THAT DO NOT HAVE AN ES OR ICBO REPORT INDICATING THE SUBSTITUTED MATERIAL OR PRODUCT TO BE EQUAL TO THAT SPECIFIED, WILL NOT BE CONSIDERED.
7. IF CERTAIN FEATURES ARE NOT FULLY SHOWN OR SPECIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS SHOWN OR SPECIFIED IN SIMILAR CONDITIONS.
8. THE GENERAL CONTRACTOR SHALL COMPARE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS AND REPORT ANY DISCREPANCY BETWEEN EACH SET OF DRAWINGS AND WITHIN EACH SET OF DRAWINGS TO THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBERS.
9. ALL HEAVILY LOADED VEHICLES, CONCRETE TRUCKS AND CRANES SHALL NOT BE DRIVEN ACROSS GRADE BEAMS OR BUILDING SLABS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THE SLAB INDUCED FROM THIS TYPE OF EQUIPMENT.
10. ERECTION OF STRUCTURAL STEEL MAY NOT BEGIN UNTIL CONCRETE FOUNDATION HAS CURED FOR A MINIMUM OF THREE DAYS. STRUCTURAL STEEL OR OTHER HEAVY LOADS SHALL NOT BE STOCKPILED ON ANY SLAB UNTIL IT HAS CURED FOR A MINIMUM OF SEVEN DAYS.
11. ALL STRUCTURAL ELEMENTS OF THE PROJECT HAVE BEEN DESIGNED BY THE STRUCTURAL ENGINEER TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY. THE ABILITY OF THE STRUCTURAL FRAME TO RESIST THE REQUIRED CODE FORCES DERIVES FROM THE COMPLETE INSTALLATION OF THE LATERAL FORCE RESISTING SYSTEMS AND DIAPHRAGMS DESCRIBED BELOW. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL REQUIRED BRACING DURING CONSTRUCTION TO MAINTAIN THE STABILITY AND SAFETY OF ALL STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PROCESS UNTIL THE LATERAL-LOAD RESISTING OR STABILITY-PROVIDING SYSTEM IS COMPLETELY INSTALLED AND ALL DESIGNATED CONCRETE ELEMENTS (IF ANY) HAVE REACHED A MINIMUM OF 75% OF THEIR DESIGN STRENGTH.
12. THE STRUCTURE HAS BEEN DESIGNED FOR THE LOADS IDENTIFIED WITHIN THESE STRUCTURAL DRAWINGS THAT ARE ANTICIPATED TO BE APPLIED TO THE FINAL STRUCTURE ONCE COMPLETED AND OCCUPIED. THE CONTRACTOR SHALL NOT OVERLOAD THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING THE ADEQUACY OF THE STRUCTURE TO SUPPORT ANY APPLIED CONSTRUCTION LOADS, INCLUDING THOSE DUE TO CONSTRUCTION VEHICLES OR EQUIPMENT, MATERIAL HANDLING OR STORAGE, SHORING OR RESHORING, OR ANY OTHER CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL SUBMIT CALCULATIONS SIGNED AND SEALED BY AN ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED VERIFYING THE ADEQUACY OF THE STRUCTURE FOR ANY PROPOSED CONSTRUCTION LOADS THAT ARE IN EXCESS OF THE STATED DESIGN LOADS. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE TO DESIGN OR CHECK THE STRUCTURE FOR LOADS APPLIED TO THE STRUCTURE FOR ANY CONSTRUCTION ACTIVITY.
13. NOTE THAT THE GROUND FLOOR SLAB IS A GROUND SUPPORTED SLAB AT GRADE AS PER THE DESIGN RECOMMENDED IN THE SOIL REPORT. IT IS NOT A STRUCTURAL SLAB AND AS SUCH IT IS NOT DESIGNED FOR ANY EXTERNAL UPWARD OR DOWNWARD LOADS, IT IS INTENDED TO BE ENTIRELY SUPPORTED BY THE PREPARED GROUND UNDER THE SLAB. THE CONTRACTOR SHOULD NOTE THAT THE PERFORMANCE OF THE SLAB AS DESIGNED AND INTENDED BY THE SOIL ENGINEER IS HIGHLY DEPENDENT ON HOW WELL THE CONTRACTOR FOLLOWS THE SITE PREPARATION INSTRUCTION IN THE SOIL REPORT.

DESIGN CRITERIA:

DEAD LOADS:

1. DEAD LOADS INCLUDE THE WEIGHT OF THE STRUCTURAL COMPONENTS AND ALLOWANCES FOR PERMANENT PARTITIONS, PERMANENT FIXTURES, FINISHES, ROOFING, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION MATERIALS SHOWN OR SPECIFIED.
2. LOADINGS FOR MECHANICAL ROOMS ARE BASED ON THE WEIGHTS OF ASSUMED EQUIPMENT,AS INDICATED ON THE MECHANICAL DRAWINGS (INCLUDING THE WEIGHT OF CONCRETE PADS, WHERE INDICATED). ANY CHANGES IN TYPE, SIZE, LOCATION OR NUMBER OF PIECES OF EQUIPMENT SHOULD BE REPORTED TO THE ARCHITECT FOR VERIFICATION OF THE ADEQUACY OF SUPPORTING MEMBERS PRIOR TO THE PLACEMENT OF SUCH EQUIPMENT.
3. DESIGN DEAD LOADING IS AS FOLLOWS:

ROOF — SELF WEIGHT + 10 PSF COLLATERAL

LIVE LOADS:

1. DESIGN LIVE LOADING IS AS FOLLOWS:

ROOF	20 PSF	300 LBS CONCENTRATED	(REDUCIBLE)
FIRST FLOOR CORRIDORS	100 PSF	1,000 LBS CONCENTRATED	(REDUCIBLE)
STAIRS AND EXITWAYS	100 PSF	300 LBS CONCENTRATED	(REDUCIBLE)
HANDRAILS AND GUARDRAILS	50 PLF	200 LBS CONCENTRATED AT TOP RAIL IN ANY DIRECTION	

WIND LOADS:

1. WIND PRESSURES ARE BASED ON THE PROVISIONS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-16, CITY OF TOMBALL AMENDMENTS, AND THE FOLLOWING CRITERIA:

A. WIND DESIGN DATA (USED FOR PRESSURE DETERMINATION FOR THE DESIGN OF BUILDING)

I. WIND RISK CATEGORY		III
II. WIND IMPORTANCE FACTOR	I_w	1.0
III. WIND EXPOSURE CATEGORY		C
IV. BASIC WIND SPEED (ULTIMATE)	V	135 MPH (3-SECOND GUST)
V. INTERNAL PRESSURE COEFFICIENT	GC_{pi}	+/-0.18
VI. WIDTH OF END ZONE	2a	6.0 FT

B. WIND-BORNE DEBRIS DATA* (USED TO DETERMINE IF BUILDING IS LOCATED WITHIN A WIND-BORNE DEBRIS REGION)

I. WIND RISK CATEGORY		II
II. WIND-BORNE DEBRIS BASIC WIND SPEED TRIGGER (ULTIMATE)	V	140 MPH (3-SECOND GUST)
III. BASIC WIND SPEED (ULTIMATE)	V	125 MPH (3-SECOND GUST)
IV. WIND-BORNE DEBRIS PROTECTION REQUIRED?		NO

C. DESIGN WIND PRESSURES

I. MAIN WIND-FORCE RESISTING SYSTEM (MWFRS)

a. WALLS (WW+LW)
- 0'-15' — 32 PSF
- 15'-20' — 34 PSF

II. COMPONENTS AND CLADDING

a. WALLS (AREA = 75 SF)
- INTERIOR ZONE — 33 PSF
- END ZONE — 37 PSF

b. ROOF UPLIFT (GROSS) - ROOF ATTACHMENTS (AREA = 10 SF)
- INTERIOR ZONE 1 — 43 PSF
- END ZONE 2e — 58 PSF
- END ZONE 2r — 75 PSF
- CORNER ZONE 3 — 81 PSF

c. ROOF UPLIFT (GROSS) - JOISTS (AREA = 100 SF)
- INTERIOR ZONE 1 — 35 PSF
- END ZONE 2e — 42 PSF
- END ZONE 2r — 51 PSF
- CORNER ZONE 3 — 54 PSF

d. ROOF UPLIFT (GROSS) - GIRDERS (AREA > 700 SF)
- 0' TO h — 28 PSF
- h TO 2h — 18 PSF
- > 2h — 13 PSF

e. ROOF POSITIVE WIND PRESSURE (GROSS) - ALL ZONES
- C&C AREA = 10 SF — 26 PSF
- C&C AREA = 100 SF — 16 PSF
- C&C AREA > 700 SF — 16 PSF

* THE INFORMATION SHOWN IN WIND LOADS SECTION 1.B IS ONLY PROVIDED TO INDICATE IF THE BUILDING IS WITHIN A WIND-BORNE DEBRIS AREA. THIS SECTION DOES NOT APPLY TO ANY COMPONENTS THAT ARE LISTED AS DELEGATED DESIGN. ALL DELEGATED DESIGN COMPONENTS SHALL BE DESIGNED FOR THE WIND DESIGN DATA AND DESIGN WIND PRESSURES PROVIDED IN SECTION 1.A AND 1.C.

SEISMIC LOADS:

1. THE STRUCTURE AND COMPONENTS OF THE BUILDING HAVE BEEN DESIGNED IN ACCORDANCE WITH AFOREMENTIONED BUILDING CODE WITH THE FOLLOWING CRITERIA:

A. SEISMIC RISK CATEGORY		III
B. SEISMIC IMPORTANCE FACTOR	I_e	1.25
C. SOIL SITE CLASS (REFER TO GEOTECHNICAL REPORT)		D (DEFAULT)
D. MAPPED SPECTRAL RESPONSE COEFFICIENTS	S_S	0.069g
	S_1	0.040g
E. DESIGN SPECTRAL RESPONSE COEFFICIENTS	S_{DS}	0.073g
	S_{D1}	0.064g
F. SEISMIC DESIGN CATEGORY		A

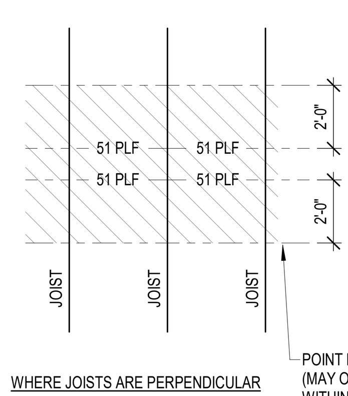
SNOW LOADS:

1. DESIGN SNOW LOADING IS AS FOLLOWS:

A. SNOW RISK CATEGORY		III
B. SNOW IMPORTANCE FACTOR	I_s	1.1
C. GROUND SNOW LOAD	p_g	5.0 PSF
D. THERMAL FACTOR	C_t	1.2
E. EXPOSURE FACTOR	C_e	1.0
F. FLAT ROOF SNOW LOAD	p_f	5.0 PSF
G. ROOF SLOPE FACTOR	C_s	1.0
H. SLOPED ROOF (BALANCED) SNOW LOAD	p_s	5.0 PSF

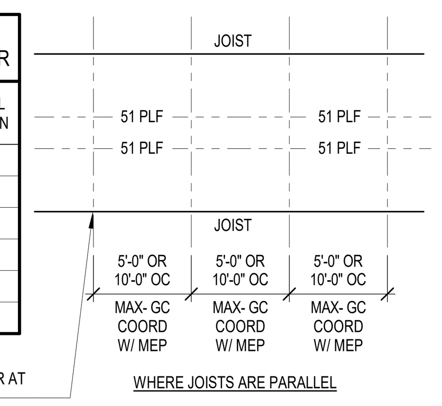
MISCELLANEOUS LOADS:

1. ALL JOISTS ALONG PIPE RUN SHALL BE DESIGNED FOR SUSPENDED PIPE WEIGHT. IT'S THE GENERAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE HOW OFTEN PIPES WILL BE HUNG (5'-0" OC OR 10'-0" OC) SO THAT PROPER LOADING MAY BE ACCOUNTED FOR. IT IS RECOMMENDED TO HANG FROM EACH JOIST (GC MUST COORDINATE WITH MEP CONTRACTOR TO ENSURE SAME HANGING PATTERN IS FOLLOWED):



ADD'L JOIST DEAD LOAD FOR MECH'L PIPE LOADS WITH WATER

PIPE SIZE (DIAMETER)	PERPENDICULAR CONDITION	PARALLEL CONDITION
3"	110 LBS AT 10'-0"	11 PLF
4"	170 LBS AT 10'-0"	17 PLF
5"	240 LBS AT 10'-0"	24 PLF
6"	320 LBS AT 10'-0"	32 PLF
8"	510 LBS AT 10'-0"	51 PLF
10"	750 LBS AT 10'-0"	75 PLF



PIPE RUN JOIST LOADING

NOTE:
WHERE PIPES RUN PERPENDICULAR TO JOISTS, JOISTS THAT ARE SUPPORTING PIPES SHALL BE DESIGNED FOR ADDITIONAL CONCENTRATED DEAD LOAD AT ANY POINT ALONG JOIST SPAN WITHIN THE HATCHED AREA.

2. ARCHITECTURAL BARRIER ACT STANDARD:

ITEM	REQUIRED CAPACITY
A. GRAB BAR	250 POUNDS ANY DIRECTION
B. TUB OR SHOWER SEAT	250 POUNDS ANY DIRECTION
C. FASTENERS & MOUNTING DEVICES	250 POUNDS ANY DIRECTION

BUILDING MOVEMENT AND DEFLECTION:

1. ROOF MEMBERS
   - A. LIVE LOAD MAXIMUM ALLOWABLE DEFLECTION — SPAN/360
   - B. TOTAL LOAD MAXIMUM ALLOWABLE DEFLECTION — SPAN/240
2. MEMBERS SUPPORTING MASONRY
   - A. LIVE LOAD MAXIMUM ALLOWABLE DEFLECTION — SPAN/600 OR 3/8"
3. BUILDING FRAME
   - A. MAXIMUM ALLOWABLE STORY DRIFT — HEIGHT/500 (TOTAL BUILDING HEIGHT)

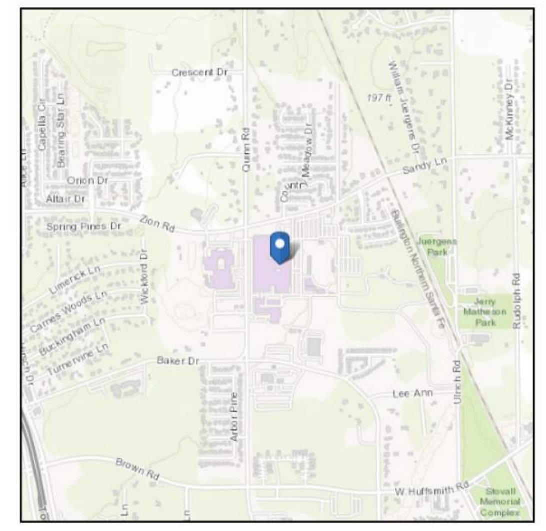
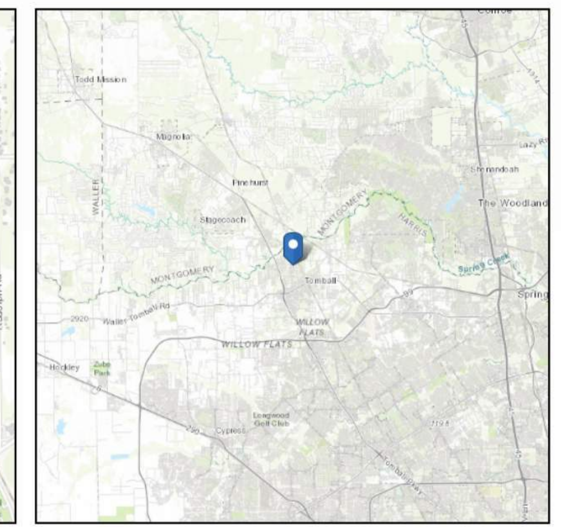
ASCE HAZARDS REPORT - WIND:

ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS

ASCE Hazards Report

Address:
30330 Quinn Rd
Tomball, Texas
77375

Standard: ASCE/SEI 7-16
Risk Category: III
Soil Class: D - Default (see Section 11.4.3)
Latitude: 30.111658
Longitude: -95.627575
Elevation: 209.77196150600963 ft (NAVD 88)

Wind

Results:

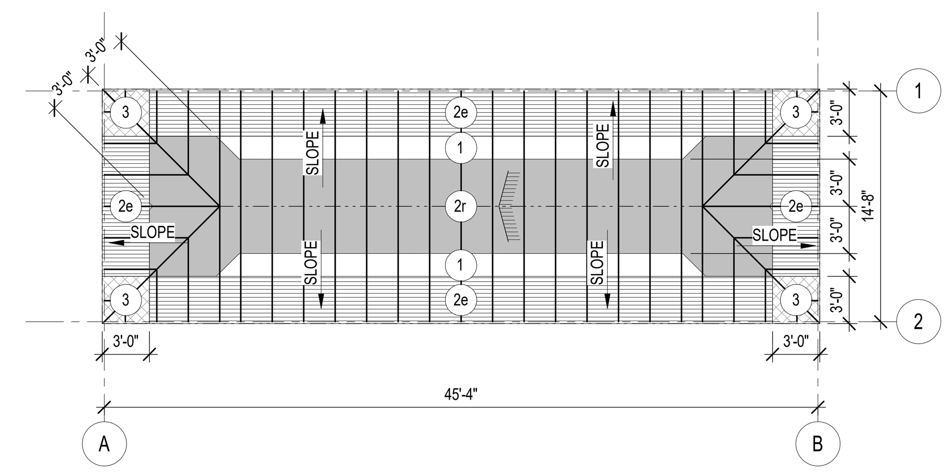
Wind Speed	135 Vmph
10-year MRI	75 Vmph
25-year MRI	86 Vmph
50-year MRI	96 Vmph
100-year MRI	104 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Wed Sep 09 2026

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

RESTROOM BUILDING - C&C ROOF UPLIFT DIAGRAM:



STRUCTURAL SUBMITTALS:

SPECIFICATION SECTION	ITEM	SUBMITTAL
02 41 19	PROPOSED PROTECTIVE MEASURES	FOR INFORMATION ONLY
02 41 19	SCHEDULE OF SELECTIVE DEMOLITION ACTIVITIES	FOR INFORMATION ONLY
02 41 19	INVENTORY OF REMOVED AND SALVAGED ITEMS	FOR INFORMATION ONLY
02 41 19	PRE-DEMOLITION PHOTOS & VIDEOS	FOR INFORMATION ONLY
02 41 19	DEMOLITION SUBCONTRACTOR(S) QUALIFICATIONS	FOR INFORMATION ONLY
02 41 19	DEMOLITION & TEMPORARY SHORING DELEGATED DESIGN ENGINEER LETTER FOR STATEMENT OF SCOPE UNDERSTANDING	FOR INFORMATION ONLY
02 41 19	TEMPORARY SHORING SYSTEMS	FOR INFORMATION ONLY/SIGNED AND SEALED
02 41 19	TEMPORARY SHORING AND DEMOLITION PLANS	FOR INFORMATION ONLY/SIGNED AND SEALED
02 41 19	PERIODIC DEMO & SHORING OBSERVATION REPORTS INCLUDING BASELINE MEASUREMENTS AND MILESTONE MEASUREMENTS	FOR INFORMATION ONLY/SIGNED AND SEALED
02 41 19	MINUTES OF PREINSTALLATION CONFERENCE	FOR INFORMATION ONLY
02 41 19	RECORD DRAWINGS	FOR INFORMATION ONLY
03 10 00	FORMWORK SHOP DRAWINGS	FOR INFORMATION ONLY/SIGNED AND SEALED
03 10 00	MANUFACTURER'S PRODUCT DATA FOR APPROVAL	FOR APPROVAL
03 10 00	CONSTRUCTION JOINT LAYOUT	FOR INFORMATION ONLY
03 20 00	STEEL REINFORCING SHOP DRAWINGS	FOR APPROVAL
03 20 00	EMBEDDED METAL ASSEMBLY SHOP DRAWINGS	FOR APPROVAL
03 20 00	MANUFACTURER'S PRODUCT INFORMATION FOR BAR SUPPORTS	FOR APPROVAL
03 20 00	MILL TEST CERTIFICATE OF STEEL REINFORCING	FOR INFORMATION ONLY
03 20 00	QUALIFICATION DATA	FOR INFORMATION ONLY
03 20 00	WELDING CERTIFICATES	FOR INFORMATION ONLY
03 30 00	CONCRETE MIX DESIGN	FOR APPROVAL
03 30 00	SLAB ON GRADE AND COMPOSITE SLAB CONSTRUCTION JOINT LAYOUT AND POUR SEQUENCE	FOR APPROVAL
03 30 00	MATERIAL CERTIFICATES FOR CONCRETE RELATED PRODUCTS	FOR APPROVAL
03 30 00	PRODUCT DATA	FOR INFORMATION ONLY
03 30 00	QUALIFICATION DATA	FOR INFORMATION ONLY
03 30 00	MATERIAL TEST REPORTS	FOR INFORMATION ONLY
03 30 00	FLOOR SURFACE FLATNESS	FOR INFORMATION ONLY
03 30 00	FIELD QUALITY CONTROL REPORTS	FOR INFORMATION ONLY
03 30 00	MINUTES OF PREINSTALLATION CONFERENCE	FOR INFORMATION ONLY
04 22 00	CMU WALL SHOP DRAWINGS	FOR APPROVAL
04 22 00	MIX DESIGN (MORTAR AND GROUT)	FOR APPROVAL
04 22 00	MASONRY COMPRESSIVE STRENGTH	FOR APPROVAL
04 22 00	SAMPLES FOR SELECTION AND VERIFICATION	FOR APPROVAL
04 22 00	MATERIAL CERTIFICATES	FOR INFORMATION ONLY
04 22 00	COLD/HOT WEATHER PROCEDURES	FOR INFORMATION ONLY
04 22 00	QUALIFICATION DATA	FOR INFORMATION ONLY
05 12 00	STRUCTURAL STEEL FRAMING SHOP DRAWINGS	FOR APPROVAL
05 12 00	STEEL CONNECTION CALCULATIONS	FOR INFORMATION ONLY/ SIGNED AND SEALED
05 12 00	WELDING PROCEDURE SPECIFICATION	FOR INFORMATION ONLY
05 12 00	WELDING CERTIFICATES	FOR INFORMATION ONLY
05 12 00	MILL TEST CERTIFICATE OF STRUCTURAL STEEL	FOR INFORMATION ONLY
05 12 00	PAINT COMPATIBILITY CERTIFICATE	FOR INFORMATION ONLY
05 12 00	QUALIFICATION DATA	FOR INFORMATION ONLY
05 50 00	METAL FABRICATION-LADDERS	FOR APPROVAL/ SIGNED AND SEALED
05 50 00	METAL FABRICATION-TOILET PARTITION SUPPORT	FOR APPROVAL/ SIGNED AND SEALED
05 50 00	METAL FABRICATION-MEDICAL EQUIPMENT SUPPORT	FOR APPROVAL/ SIGNED AND SEALED
06 10 00	PRODUCT DATA	FOR INFORMATION ONLY
06 10 00	FASTENER PATTERNS	FOR APPROVAL
06 10 00	MATERIAL CERTIFICATES	FOR INFORMATION ONLY
06 10 00	EVALUATION REPORTS	FOR INFORMATION ONLY
06 11 00	WOOD DECK PRODUCT DATA	FOR APPROVAL
06 11 00	WOOD DECK SHOP DRAWINGS	FOR APPROVAL
06 11 00	RESEARCH EVALUATION REPORTS	FOR INFORMATION ONLY
06 17 53	PRE-FAB METAL-PLATE-CONNECTED WOOD TRUSSES PRODUCT DATA	FOR INFORMATION ONLY
06 17 53	PRE-FAB METAL-PLATE-CONNECTED WOOD TRUSSES SHOP DRAWINGS	FOR APPROVAL/ SIGNED AND SEALED
06 17 53	PRE-FAB METAL-PLATE-CONNECTED WOOD TRUSSES CALCULATIONS	FOR APPROVAL/ SIGNED AND SEALED
31 50 00	EXCAVATION SUPPORT AND PROTECTION SYSTEM	FOR INFORMATION ONLY/SIGNED AND SEALED
31 50 00	PRE-EXCAVATION PHOTOS & VIDEOS	FOR INFORMATION ONLY
31 50 00	RECORD DRAWINGS	FOR INFORMATION ONLY
31 63 29	PIER REINFORCEMENT SHOP DRAWINGS	FOR APPROVAL
31 63 29	PIER CONCRETE MIX DESIGN	FOR APPROVAL
31 63 29	PIER DRILLING LOG	FOR INFORMATION ONLY

1 (revision)

DELEGATED STRUCTURAL DESIGN OF COMPONENTS:

1. A STRUCTURAL COMPONENT IS AN INDIVIDUAL STRUCTURAL MEMBER DESIGNED TO BE PART OF A STRUCTURAL SYSTEM. A LIST OF STRUCTURAL COMPONENTS THAT ARE TO BE DESIGNED BY THE COMPONENT SUPPLIERS ENGINEERS IS PROVIDED IN THESE PLANS AND SPECIFICATIONS.
2. A COMPONENT'S DELEGATED ENGINEER AND RESPONSIBLE CHARGE, SHALL BE A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED.
3. ALL DRAWINGS AND CALCULATIONS FOR COMPONENTS IN QUESTION, OR THEIR ASSEMBLY INTO STRUCTURAL SYSTEMS SHALL REQUIRE THE SEAL AND SIGNATURE OF THE DELEGATED ENGINEER WHO PREPARED THEM.
4. THE DESIGN OF PRE-ENGINEERED SYSTEMS SPECIFIED IN THE CONTRACT DOCUMENTS WHICH ARE DESIGNED/ENGINEERED BY THE SYSTEM SUPPLIER IS THE SOLE RESPONSIBILITY OF THE SUPPLIER AND ITS DESIGN ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED. SUBMITTALS OF SUCH SYSTEMS TO THE STRUCTURAL ENGINEER OF RECORD SHALL BE REVIEWED FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS WITH REGARD TO THE ARRANGEMENT AND/OR SIZES OF MEMBERS SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS AND THE SUPPLIERS INTERPRETATION OF THE DESIGN INFORMATION INCLUDED IN THE CONTRACT DOCUMENTS. SUCH REVIEW BY THE STRUCTURAL ENGINEER OF RECORD SHALL NOT IMPLY ANY RESPONSIBILITY FOR THE ACTUAL DESIGN OF SUCH SYSTEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DIMENSIONAL ACCURACY AND CONFORMANCE WITH THE INFORMATION CONTAINED IN CONTRACT DOCUMENTS.
5. SEE APPLICABLE SECTIONS OF GENERAL NOTES AND SPECIFICATIONS FOR THE APPROPRIATE DESIGN RESPONSIBILITIES OF THE SUPPLIER AND ITS LICENSED ENGINEER.

SHOP DRAWINGS:

1. SHOP DRAWINGS ARE AN AID FOR FIELD PLACEMENT AND ARE SUPERSEDED BY THE STRUCTURAL DRAWINGS. THE STRUCTURAL DRAWINGS ARE NOT TO BE VIEWED AS DETAILED SHOP OR ERECTION DRAWINGS. VARIOUS DIMENSIONS REQUIRED FOR PROPER FIT-UP OF THE COMPONENTS OF THE STRUCTURE SHALL BE DETERMINED FROM THE INFORMATION THAT IS PROVIDED ELSEWHERE IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL ESTABLISH, CALCULATE AND VERIFY THESE DIMENSIONS AS REQUIRED TO ACHIEVE PROPER FIT-UP OF MATERIALS AND TO ACHIEVE COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL MAKE CERTAIN THAT ALL CONSTRUCTION IS IN FULL AGREEMENT WITH THE LATEST STRUCTURAL DRAWINGS.
2. THE CONTRACTOR SHALL REVIEW ALL SUBMITTALS FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND SHALL CERTIFY THE REVIEW BY A STAMP NOTING THAT THE SUBMITTAL HAS BEEN "APPROVED" AND WHICH BEARS THE SIGNATURE OF AN AUTHORIZED REPRESENTATIVE OF THE CONTRACTOR AND THE DATE. SUBMITTALS WHICH DO NOT REFLECT THE CONTRACTOR'S APPROVAL, SIGNATURE AND DATE; OR DO NOT APPEAR TO HAVE BEEN REVIEWED BY THE CONTRACTOR, WILL BE RETURNED WITHOUT REVIEW.
3. THE REVIEW OF SUBMITTALS BY THE ENGINEER IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND THE INFORMATION GIVEN IN THE STRUCTURAL CONTRACT DOCUMENTS. CORRECTIONS OR COMMENTS MADE ON SUBMITTALS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE PLANS, GENERAL NOTES OR SPECIFICATIONS. APPROVAL OF A SPECIFIC ITEM SHALL NOT INCLUDE APPROVAL OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED AT THE JOBSITE; INFORMATION THAT PERTAINS SOLELY TO THE FABRICATION PROCESSES OR TO THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; COORDINATION OF THE WORK WITH THAT OF ALL OTHER TRADES AND PERFORMING ALL WORK IN A SAFE AND SATISFACTORY MANNER.
4. SIGNED AND SEALED CALCULATIONS FOR A PARTICULAR SYSTEM SUBMITTED AS PART OF A SHOP DRAWING ARE REVIEWED FOR LOAD CRITERIA AND GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS. CALCULATION REVIEW AND COMMENTS DO NOT INFER A DETAILED CHECK OF THE CALCULATIONS, NOR DO THEY RELIEVE THE SYSTEM ENGINEER OR THE CONTRACTOR OF RESPONSIBILITY.
5. THE USE OF REPRODUCTIONS OR ELECTRONIC FILES OF THE STRUCTURAL DRAWINGS FOR THE PREPARATION OF SHOP DRAWINGS IS NOT ACCEPTABLE WITHOUT PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER OF RECORD. ALTERATION OF A SEALED DOCUMENTS WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE OF THE ENGINEERING PRACTICE ACT.
   - A. IF SUCH AUTHORIZATION IS OBTAINED, DO NOT SUBMIT SHOP DRAWINGS WITH THE CONTRACT DOCUMENT TITLE BLOCK AND/OR THE SEAL OF THE REGISTERED ENGINEER OF RECORD AFFIXED.
   - B. COSTS FOR PREPARATION OF STRUCTURAL SHOP DRAWINGS SHALL BE INCLUDED IN THE BID PRICE ASSUMING THAT REPRODUCTIONS OR ELECTRONIC FILES OF THE STRUCTURAL DRAWINGS WILL NOT BE AVAILABLE.
6. OMISSION FROM THE SHOP DRAWINGS OF ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF COMPLYING WITH THE OMITTED REQUIREMENTS, EVEN IF THE SHOP DRAWINGS HAVE BEEN REVIEWED AND RETURNED.
7. THE ARCHITECT/ENGINEER SHALL NOT BE RESPONSIBLE FOR DELAYS CAUSED BY REJECTION OF INADEQUATE OR INCORRECT SHOP DRAWINGS, AND THIS RESPONSIBILITY SHALL LIE SOLELY WITH THE CONTRACTOR.
8. SHOP DRAWINGS THAT ARE NOT SPECIFICALLY REQUIRED BY THE GENERAL NOTES OR SPECIFICATIONS WILL NOT BE REVIEWED OR RETURNED.
9. COMPLY WITH THE SUBMITTAL PROCEDURES ESTABLISHED IN OTHER PARTS OF THE CONTRACT DOCUMENTS. AS A MINIMUM, PREPARE AND SUBMIT A STRUCTURAL SUBMITTAL SCHEDULE IN CHRONOLOGICAL ORDER OF SUBMITTALS PRIOR TO THE BEGINNING OF THE STRUCTURAL SUBMITTAL PROCESS.

SPECIAL INSPECTIONS:

SPECIAL INSPECTION WORK AND THE FINAL LETTER OF COMPLIANCE HAVE NOT BEEN INCLUDED IN THE STRUCTURAL ENGINEERS SCOPE OF SERVICES. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING THE SERVICES OF THE SPECIAL INSPECTOR AND THE TESTING LABORATORY. SPECIAL INSPECTIONS CAN BE PROVIDED BY AN INDEPENDENT SPECIAL INSPECTOR WHO IS APPROVED BY THE BUILDING AUTHORITY OR THE ENGINEER OF RECORD. THE SPECIAL INSPECTION WORK DOES NOT INCLUDE THE TESTING LABORATORY SERVICES AS CALLED FOR ON THE DRAWINGS. ARRANGEMENTS FOR SPECIAL INSPECTIONS SHOULD BE MADE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE OWNER IF SPECIAL INSPECTIONS ARE REQUIRED ON THE APPROVED PERMIT DRAWINGS AND FOR NOTIFYING THE TESTING LABORATORY AND SPECIAL INSPECTOR IN A TIMELY MANNER BEFORE CONSTRUCTION OPERATIONS CONTINUE. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK REQUIRING INSPECTIONS WITHOUT THE TESTING LABORATORY'S OR SPECIAL INSPECTOR'S PRESENCE. THE STRUCTURAL ENGINEER WILL NOT PROVIDE A FINAL LETTER OF COMPLIANCE AFTER THE WORK IS COMPLETE UNLESS HE HAS REVIEWED ALL SPECIAL INSPECTIONS/TESTING LABORATORY TEST RESULTS.

CHAPTER 17 OF THE 2021 INTERNATIONAL BUILDING CODE, INCLUDING ANY LOCAL AMENDMENTS, REQUIRES SPECIAL INSPECTION ON THE FOLLOWING ITEMS:

SPECIAL INSPECTIONS REQUIRED:	IBC SECTION REFERENCE:
GENERAL	1705.1
STEEL CONSTRUCTION	1705.2
CONCRETE CONSTRUCTION	1705.3
~~MASONRY CONSTRUCTION~~	~~1705.4~~
WOOD CONSTRUCTION	1705.5
~~SOILS~~	~~1705.6~~
FABRICATED ITEMS	1705.11
SPRAYED FIRE-RESISTANT MATERIALS	REF ARCH
MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS	REF ARCH
EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)	REF ARCH
FIRE-RESITANT PENETRATIONS AND JOINTS	REF ARCH
TESTING FOR SMOKE CONTROL	REF ARCH

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

PLAN NORTH — TRUE NORTH

STATE OF TEXAS
JOHN R. KUBALA
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LICENSED
PROFESSIONAL ENGINEER
09/10/2026
Kubala Engineers
F-23612

CLIENT	
TOMBALL ISD	
DATE 09/10/2026	PROJECT NUMBER 250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: ES
DRAWN BY: JD

GENERAL NOTES

S-011

Plot Stamp:
09/21/2026 10:27:23 AM

SD-101 - DEMO SCOPE PLAN

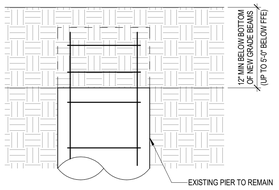
PREPARATION:

1. CHIP EXISTING CONCRETE PIER DOWN TO DEPTH SHOWN.
2. CUT PIER REINFORCEMENT FLUSH W/ TOP PIER.
3. PROVIDE EPOXY GROUT OVER EXPOSED REBAR.
4. BACKFILL/COMPACT OVER PIER AND ABANDON IN PLACE.

NOTE:

1. WHERE EXISTING PIER INTERFERES WITH NEW FOUNDATION/SLAB, CONTRACTOR SHALL REMOVE EXISTING TOP OF PIER TO AN ELEVATION 12 INCHES BELOW FUTURE GRADE BEAMS (UP TO 5'-0" BELOW FFE - REF GRADE BEAM SCHED).

2. IF DRILLED FOOTINGS ARE PLANNED TO BE EXCAVATED AND COMPLETELY REMOVED, THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED FOR ADDITIONAL RECOMMENDATIONS. COMPLETE REMOVAL OF DRILLED FOOTINGS WILL REQUIRE SIGNIFICANT EARTHWORK ACTIVITIES TO BACKFILL THE RESULTING EXCAVATIONS IN SUCH A MANNER AS TO MAKE THE SITE SUITABLE FOR NEW CONSTRUCTION.



2 TYP. EXIST PIER DEMO DTL (PDC 2 - EXIST. PIER DOES NOT OVERLAP W/ NEW PIER)
3/4" = 1'-0"

EXISTING STRUCTURE AND CONDITIONS:

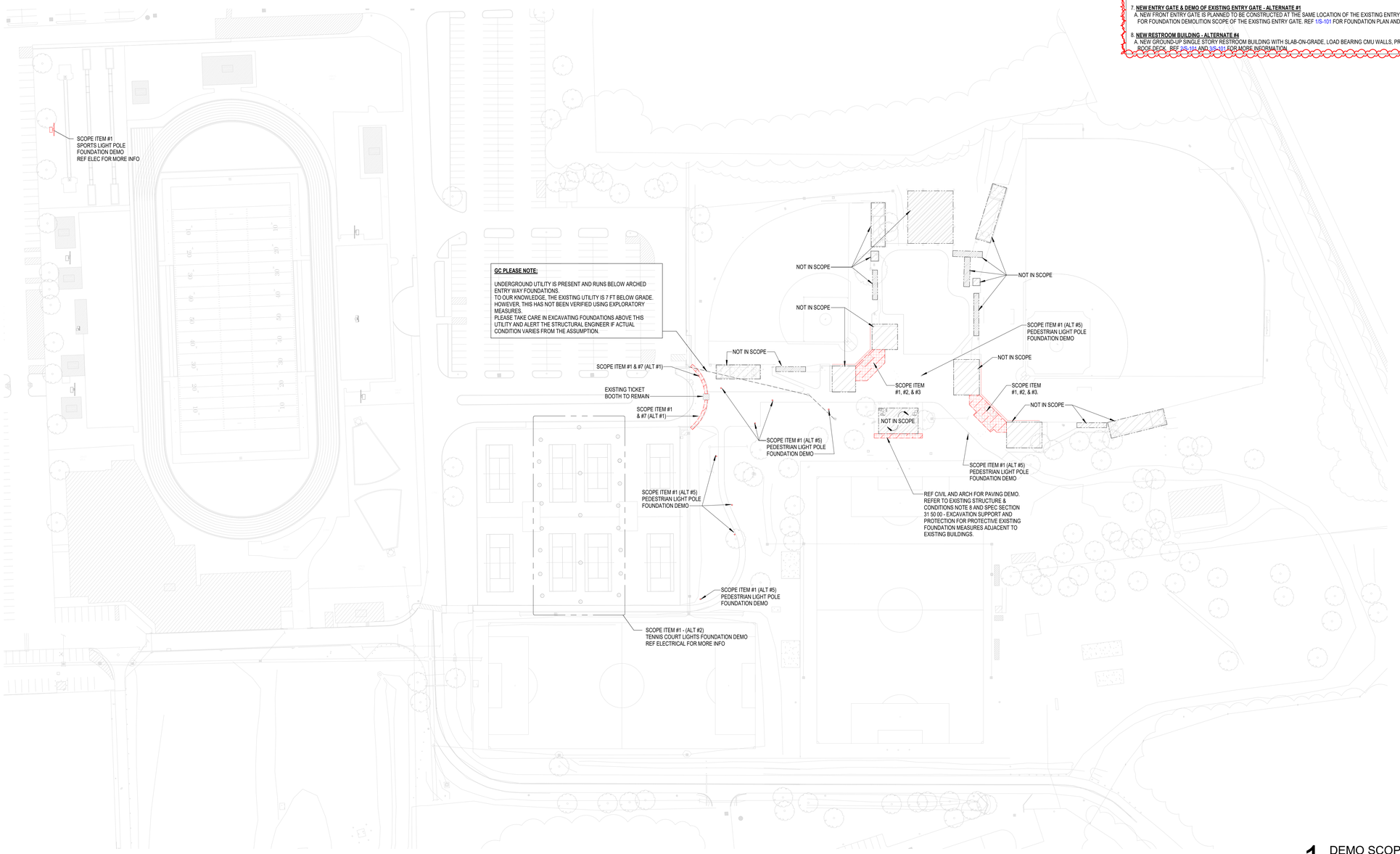
1. EXISTING DRAWINGS / AS-BUILTS OF THE EXISTING BUILDING WERE UNAVAILABLE. ALL EXISTING STRUCTURE SHOWN ON PLANS IS BASED ON SITE OBSERVATIONS AND ASSUMED FRAMING BASED ON THE FLOOR PLAN LAYOUT AND MAY NOT BE ENTIRELY ACCURATE, COMPLETE, OR REPRESENTATIVE OF EXISTING CONDITIONS. CONTRACTOR IS TO NOTIFY ENGINEER OF QUESTIONABLE EXISTING STRUCTURAL COMPONENTS (MASONRY WALLS, STEEL BEAMS AND LINTELS, EXPOSED FOUNDATIONS, ETC.) AND FRAMING CONNECTIONS WHEN ENCOUNTERED.
2. GRIDLINES ARE SHOWN ON THE STRUCTURAL DRAWINGS AND THESE REFLECT ASSUMED ARCHITECTURAL AND STRUCTURAL DIMENSIONS. IN MOST CASES, GRID LINES COINCIDE WITH EXISTING COLUMN AND PILASTER CENTERLINES. IF ACTUAL FIELD DIMENSIONS VARY, NOTIFY ARCHITECT OR ENGINEER.
3. CONTRACTOR TO VERIFY EXACT LOCATION OF ALL EXISTING STRUCTURAL COMPONENTS THAT WILL BE CONNECTED TO NEW FRAMING PRIOR TO STEEL FABRICATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING DIMENSIONS AND COORDINATE THESE DIMENSIONS WITH THE STEEL FABRICATOR PRIOR TO STEEL FABRICATION TO ENSURE ARCHITECTURAL AND STRUCTURAL DESIGN CONCEPT. CONTRACTOR SHALL NOTIFY ARCHITECT AND/OR ENGINEER OF DISCREPANCIES.
4. CONTRACTOR IS TO FURNISH ENGINEER A PROPOSED SEQUENCE OF EXISTING COMPONENT REMOVAL, METHODS OF SAW CUTTING, TEMPORARY SHORING AND OTHER PERTINENT TASKS RELATING TO EXISTING COMPONENT REMOVAL ARE TO BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW AND TO VERIFY THAT WORK IS IN GENERAL CONFORMANCE.
5. ANY MODIFICATIONS TO THE PLANS AND SPECIFICATIONS THAT ARE NECESSARY AS A RESULT OF FIELD VERIFICATIONS PERFORMED BY THE CONTRACTOR SHALL BE IMMEDIATELY SUBMITTED TO THE ENGINEER FOR APPROVAL. UPON APPROVAL, THE CONTRACTOR SHALL INCORPORATE THESE MODIFICATIONS INTO THE SHOP DRAWINGS PRIOR TO SUBMITTING THEM TO THE ENGINEER.
6. THE CONTRACTOR SHALL BUILD APPROPRIATE CONTINGENCIES INTO THE PROJECT'S BUDGET AND SCHEDULE TO ACCOUNT FOR MODIFICATIONS TO STRUCTURAL FRAMING THAT MAY BE NECESSARY TO ACCOMMODATE EXISTING CONDITIONS THAT ARE DISCOVERED TO BE DIFFERENT FROM THOSE INDICATED ON THESE PLANS.
7. REFER TO THE GEOTECHNICAL REPORT FOR ANY DEWATERING MEASURES NECESSARY FOR NEW CONSTRUCTION TO PROCEED IN DRY CONDITIONS.
8. WHERE EXCAVATION BELOW THE BOTTOM OF THE PERIMETER GRADE BEAM OF THE EXISTING BUILDING IS REQUIRED FOR NEW CONSTRUCTION ADJACENT TO SLAB-ON-GRADE AREAS OF THE EXISTING BUILDING, PROVIDE A POSITIVE METHOD, SUCH AS SHEET METAL PILING OR OTHER SOIL RETENTION METHOD, TO PREVENT SOIL FROM CAVING INTO THE NEW EXCAVATION AND UNDERMINING THE EXISTING SLAB-ON-GRADE.
   A. THE DESIGN OF THE RETENTION METHOD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
   B. SUBMIT RETENTION PLAN TO ARCHITECT FOR INFORMATION.
9. EXISTING CONSTRUCTION HAS NOT BEEN VERIFIED FOR CONFORMANCE WITH REQUIREMENTS OF APPLICABLE BUILDING CODE EXCEPT FOR AREAS DIRECTLY AFFECTED BY MODIFICATIONS INDICATED HERE-IN.
10. THE CONTRACTOR IS RESPONSIBLE FOR ALL ERECTION PROCEDURES AND SEQUENCES AND SHALL PROVIDE ADEQUATE SHORING AND TEMPORARY BRACING FOR EXISTING CONSTRUCTION.
11. DRILLING INTO EXISTING CONCRETE SHALL BE PERFORMED IN A MANNER WHICH AVOIDS DAMAGE TO EXISTING REINFORCEMENT. BAR DETECTION METHODS SHALL BE USED TO LOCATE REINFORCEMENT PRIOR TO DRILLING.
12. THE FACE OF ALL CONCRETE SURFACES CUT FROM EXISTING CONCRETE SHALL BE THOROUGHLY CLEANED. ALLOW SURFACE TO COMPLETELY DRY, COAT WITH AN APPROVED BONDING AGENT AND FINISH WITH AN APPROVED PATCHING COMPOUND. EXPOSED REINFORCEMENT SHALL BE CUT OFF, GROUND FLUSH TO THE NEW CONCRETE SURFACE AND FINISHED WITH AN EPOXY PAINT.
13. WHERE EXISTING CONCRETE REINFORCEMENT IS TO BE REUSED IN PLACE, THE CONCRETE SHALL BE REMOVED IN A MANNER WHICH MINIMIZES DAMAGE TO THE REINFORCEMENT. DAMAGED REINFORCEMENT SHALL BE REPLACED BY A METHOD APPROVED BY THE ARCHITECT.

DEMOLITION NOTES:

1. EXISTING DRAWINGS / AS-BUILTS OF THE EXISTING BUILDING WERE UNAVAILABLE. ALL EXISTING STRUCTURE SHOWN ON PLANS IS BASED ON SITE OBSERVATIONS AND ASSUMED FRAMING BASED ON THE FLOOR PLAN LAYOUT AND MAY NOT BE ENTIRELY ACCURATE, COMPLETE, OR REPRESENTATIVE OF EXISTING CONDITIONS. THE GENERAL CONTRACTOR SHALL VERIFY THE LOCATION AND SIZE OF ALL STRUCTURAL MEMBERS SHOWN ON THE PLANS PRIOR TO BEGINNING ANY DEMOLITION WORK.
2. **THE GC SHALL NOT DEMOLISH ANY WALLS, COLUMNS, FRAMING, OR OPENINGS THAT ARE NOT SHOWN AND NOTED TO BE DEMOLISHED ON THE STRUCTURAL DEMO PLANS, REGARDLESS IF THESE ITEMS ARE SHOWN TO BE DEMOLISHED ON THE ARCHITECTURAL DEMO PLANS, WITHOUT STRUCTURAL EOR REVIEW & APPROVAL.**
3. THE GC SHALL VERIFY THAT ANY WALL, MASONRY OR OTHERWISE, TO BE DEMOLISHED IS A NON-LOAD BEARING WALL PRIOR TO BEGINNING DEMOLITION. IF WALL IS FOUND TO BE LOAD BEARING GC IS TO CONTACT THE ARCHITECT AND THE ENGINEER BEFORE PROCEEDING.
4. THE GC SHALL SUBMIT PREDEMOLITION PHOTOGRAPHS OR VIDEOS SHOWING EXISTING CONDITIONS FOR ANY EXISTING WALLS OR NEW OPENINGS IN EXISTING WALLS FLOORS, AND/OR ROOFS SCHEDULED TO BE DEMOLISHED FOR THE STRUCTURAL EOR'S REVIEW AND APPROVAL PRIOR TO THE START OF DEMOLITION. PHOTOS MUST SHOW EXISTING CONDITIONS OF ADJOINING CONSTRUCTION AND SITE IMPROVEMENTS, INCLUDING FINISH SURFACES, THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY SALVAGE AND DEMOLITION OPERATIONS. THE LOCATIONSOF PRE-DEMOLITION PHOTOGRAPHS & VIDEOS SHALL BE IDENTIFIED ON AN ACCOMPANYING PLAN VIEW.
5. CARE SHOULD BE TAKEN DURING DEMOLITION TO AVOID DAMAGING ANY STRUCTURAL ELEMENTS THAT HAVE BEEN DESIGNATED TO REMAIN.
6. STRUCTURAL EOR IS NOT RESPONSIBLE FOR THE DESIGN OF ANY TEMPORARY SHORING OR BRACING REQUIRED BETWEEN DEMOLITION AND THE INSTALLATION OF THE NEW STRUCTURE.
7. THE GENERAL CONTRACTOR SHALL EMPLOY A DEMOLITION SUBCONTRACTOR WHO MEETS THE FOLLOWING REQUIREMENTS:
   A. A COMPANY WITH MINIMUM OF FIVE (5) YEARS OF SELECTIVE STRUCTURAL DEMOLITION EXPERIENCE OF SIMILAR SIZE, SCALE, AND COMPLEXITY OF THE DEMOLITION WORK INVOLVED IN THIS PROJECT. FURTHERMORE, THE SITE SUPERINTENDENT OR FOREMAN SHALL HAVE THE SAME REQUIRED EXPERIENCE.
   B. AT A MINIMUM, A DEMOLITION SUBCONTRACTOR SHALL HAVE A REPRESENTATIVE WHO HAS COMPLETED OSHA 30 TRAINING AND BE PRESENT ON SITE DURING ALL DEMOLITION ACTIVITIES.
   C. ANY DEMOLITION SUBCONTRACTORS WITH OSHA VIOLATIONS WITHIN THE PAST 5 YEARS OR ARE UNDER ACTIVE OSHA INVESTIGATIONS WILL NOT BE CONSIDERED QUALIFIED FOR STRUCTURAL DEMOLITION.
   D. IN CASES WHERE THE GENERAL CONTRACTOR WISHES TO EMPLOY MULTIPLE DEMOLITION SUBCONTRACTORS FOR VARIOUS DEMOLITION SCOPE, ALL DEMOLITION SUBCONTRACTORS SHALL MEET THE ABOVE QUALIFICATIONS.
8. THE STRUCTURAL EOR IS NOT RESPONSIBLE FOR THE DESIGN OF ANY TEMPORARY SHORING OR BRACING REQUIRED BETWEEN DEMOLITION AND THE INSTALLATION OF THE NEW STRUCTURE. THE GENERAL CONTRACTOR SHALL EMPLOY A DEMOLITION AND TEMPORARY SHORINGDELEGATED DESIGN ENGINEER WHO IS A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS AND SPECIALIZES IN DEMOLITION AND TEMPORARY STRUCTURES. THE DELEGATED DESIGN ENGINEER IS RESPONSIBLE FOR THE FOLLOWING:
   A. PROVIDE A LETTER STATING THAT THEY FULLY UNDERSTAND THE SCOPE OFWORK REQUIRED FROM ALL DISCIPLINES.
   B. SHORING PLANS AND DEMOLITION PLANS, WHICH INCLUDES THE SEQUENCE OF SHORING, SEQUENCE OF DEMOLITION, AND DURATION OF BOTH SIGNED AND SEALED BY THE QUALIFIED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR PREPARATION.
   C. EXCAVATION SUPPORT AND PROTECTION SYSTEM PLANS, WHICH INCLUDES THE SEQUENCE OF SUPPORT & PROTECTION SYSTEM, SEQUENCE OF DEMOLITION, AND DURATION OF BOTH SIGNED AND SEALED BY THE QUALIFIED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR PREPARATION.
   D. PERFORM PERIODIC SITE VISITS WHICH INCLUDE VARIOUS MILESTONES FOR THE DEMOLITION AND SHORING SUBCONTRACTORS AND SHALL PROVIDE OBSERVATION REPORT, PHOTOS, ETC. BASELINES SHALL BE SET PRIOR TO TEMPORARY SHORING AND SHORTLY AFTER TEMPORARY SHORING IS INSTALLED. MEASUREMENTS SHALL BE TAKEN AT MILESTONES.
9. AN ON-SITE PRECONSTRUCTION DEMOLITION MEETING IS REQUIRED PRIOR TO ANY DEMOLITION ACTIVITIES, WHICH MUST INCLUDE THE DELEGATED DESIGN ENGINEER, STRUCTURAL ENGINEER OF RECORD, ARCHITECT, OWNER, GENERAL CONTRACTOR, AND DEMOLITION SUBCONTRACTOR REPRESENTATIVES OVERSEEING DEMOLITION WORK PER NOTES 7& 8.
   A. THE PRECONSTRUCTION MEETING SHALL INCLUDE A SITE WALK TO GC SHALL HAVE REMOVED SUPERFICIAL/ARCHITECTURAL COVERINGS SO THAT STRUCTURE IS VISIBLE DURING SITE WALK.
10. THE GENERAL CONTRACTOR SHALL PROVIDE A "TWO-WEEK LOOK AHEAD" TO INDICATE UPCOMING AREAS WHERE DEMOLITION WORK IS SCHEDULED TO TAKE PLACE, SO ALL PARTIES ARE AWARE OF TIMELINE AND ANY COORDINATION WITH ARCHITECT AND CONSULTANTS CAN TAKE PLACE. THE HIGHLIGHTED PLAN SHOULD BE COMPLETED BY THE GENERAL CONTRACTOR (IN CONJUNCTION WITH THEIR DEMOLITION SUBCONTRACTOR) AND BE AVAILABLE FOR DISCUSSION AT THE WEEKLY OAC MEETING.

STRUCTURAL SCOPE LEGEND:

1. **EXISTING FOUNDATION DEMO**
   A. PORTIONS OF THE EXISTING BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS ARE SCHEDULED FOR DEMOLITION; AS NOTED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. THIS SCHEDULED DEMOLITION INCLUDES EXISTING BUILDING AND SITE COMPONENTS AS WELL AS THEIR ASSOCIATED EXISTING FOUNDATIONS WITHIN THE FOOTPRINT OF THE NEW BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS. IN AN EFFORT TO REDUCE THE DISTURBANCE OF SOILS IN THE FOUNDATION BEARING STRATUM AS MUCH AS POSSIBLE, THE FOLLOWING EXISTING FOUNDATION DEMOLITION SHALL BE AS FOLLOWS:
      a. PIER DEMO CONDITION 1:
         WHERE A NEW FOUNDATION OVERLAPS AN EXISTING FOUNDATION, EXCAVATE AND REMOVE THE EXISTING FOUNDATION AS REQUIRED. BACKFILL THE RESULTING EXCAVATION WITH CONTROLLED LOW-STRENGTH MATERIAL (CLSM) OR FLOWABLE FILL. CLSM / FLOWABLE FILL SHALL ACHIEVE THE REQUIRED STRENGTH PRIOR TO EXCAVATION FOR THE NEW FOUNDATION. IF AN EXISTING FOUNDATION IS TO BE COMPLETELY EXCAVATED AND REMOVED, CONTACT THE GEOTECHNICAL ENGINEER FOR ADDITIONAL RECOMMENDATIONS.
      b. PIER DEMO CONDITION 2:
         AT ANY LOCATION WHERE AN EXISTING FOOTING/PIER DOES NOT OVERLAP WITH A NEW PIER, THE PORTION OF THE EXISTING FOOTING/PIER WITHIN 5-FT OF THE BOTTOM OF THE FUTURE SLAB SHALL BE DEMOLISHED. THE AREA BETWEEN THE TOP OF THE EXISTING FOOTING/PIER AND THE BOTTOM OF THE FUTURE SLAB SHALL BE BACKFILLED WITH SELECT FILL. THE SELECT FILL SHOULD BE PLACED IN 8" THICK MAX LOOSE LIFTS, WITH EACH LIFT COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY STANDARD EFFORT (ASTM D 698). REF 2/SD-101 FOR MORE INFO.
   B. WHILE IT IS COMMON FOR THE TESTING AND INSPECTIONS LABORATORY TO BE INVOLVED AND ON-SITE DURING EARTHWORK PREP. AND OPERATIONS; (INCLUDING BUT NOT LIMITED TO: OBSERVING AND TESTING EARTHWORK PROPERTIES, SELECT FILL PROPERTIES, THICKNESSES, COMPACTION, MOISTURE CONTENT, ETC.) WE ALSO REQUIRE THE TESTING AND INSPECTIONS LABORATORY TO BE ON-SITE FOR THE INFILL OF ANY AND ALL DEMOLISHED FOUNDATION ITEMS, BOTH PARTIALLY AND FULLY DEMOLISHED. WE HAVE OBSERVED INSTANCED WHERE THE DEMO CONTRACTOR DID NOT PROPERLY/ADEQUATELY INFILL THE SUB-GRADE VOIDS AND/OR COMPACT THE INFILL FROM EXISTING DEMOLISHED FOUNDATIONS. WHEN THE NEW BUILDING WAS CONSTRUCTED, THE INADEQUATE FILL/COMPACTION LED TO WATER INTRUSION PROBLEMS AND QUESTIONABLE BEARING. WE REQUIRE THAT THE TESTING AND INSPECTIONS LABORATORY BE ON-SITE TO OBSERVE AND TEST THE INFILL OF THE EXISTING FOUNDATIONS TO REASONABLY ENSURE THAT THE BEARING VALUES RECOMMENDED IN THE GEOTECHNICAL REPORT CAN BE ACHIEVED. THE OWNER SHALL BE AWARE THAT THIS ADDITIONAL TESTING INSPECTION SCOPE WILL BE REQUIRED.
   C. THE GENERAL CONTRACTOR SHALL INFORM THE DEMOLITION CONTRACTOR(S) THAT THE INFILL OF THE DEMOLISHED FOUNDATIONS WILL BE REQUIRED TO MEET THE EARTHWORK REQUIREMENTS AND BE TESTING FOR COMPLIANCE AND ANY ADDITIONAL COST ASSOCIATED WITH ENSURING THE INFILL MEETS THESE PARAMETERS SHALL BE INCLUDED IN THEIR BASE BID (TYP.) THE GENERAL CONTRACTOR SHALL ALSO SUBMIT A UNIT PRICE FOR PIER DEMO CONDITION 1 & PIER DEMO CONDITION 2 THAT SHALL COVER THE ENTIRE UNIT COST INCLUDING OVERHEAD FOR THE ALL OF THE WORK DESCRIBED ABOVE FOR EACH PIER SIZE.
   D. TO WHOM IT MAY CONCERN: EXISTING DRAWINGS / AS-BUILTS OF THE EXISTING BUILDING WERE UNAVAILABLE FOR OUR USE IN PREPARATION OF THE PIER DEMO PLAN. WHILE WE DID MAKE MULTIPLE IN-PERSON DETAILED SITE VISITS, OUR OBSERVATIONS ARE LIMITED TO VISUAL OBSERVATIONS ONLY; NO DEMOLITION WAS PERFORMED TO VIEW ITEMS THAT CANNOT BE VIEWED WITHOUT SUCH DEMOLITION. THEREFORE, IT IS NOT POSSIBLE TO FULLY UNDERSTAND AND FULLY ACCOUNT FOR THE EXISTING PIER DEMOLITION. EXISTING PIER QUANTITIES PER DEMO CONDITION DESCRIBED IN THE GC NOTE ABOVE ARE BASED ON THE EXISTING BUILDING FOOTPRINT AND SQUARE FOOTAGE. FOR BIDDING PURPOSES, THE FOLLOWING QUANTITIES CAN BE ASSUMED:
      a. 77 EXISTING PIERS OVERLAP WITH NEW PIERS (PIER DEMO CONDITION 1)
      b. 33 EXISTING PIERS DO NOT OVERLAP WITH NEW PIERS (PIER DEMO CONDITION 2)
2. **NEW BLEACHERS (DELEGATED DESIGN)**
   A. NEW BLEACHERS FRAMING AND FOUNDATION TO BE DELEGATED DESIGN. RAMPS AND STAIRS ASSOCIATE WITH BLEACHERS ARE BY THE BLEACHER MANUFACTURER. REF ARCH DRAWING FOR MORE INFO AND S-104 AND S-105 FOR NEW BLEACHER SCHEMATIC PIER PLAN. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.
3. **NEW PRE-ENGINEERED PRESS BOX (DELEGATED DESIGN)**
   A. NEW PRE-ENGINEERED PRESS BOXES AT SOFTBALL AND BASEBALL FIELDS FRAMING AND FOUNDATIONS TO BE DELEGATED DESIGN. REF ARCH DRAWINGS FOR MORE INFORMATION. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.
4. **NEW NETTING POLES (DELEGATED DESIGN)**
   A. NEW NETTING POLES AND FOUNDATIONS TO BE DELEGATED DESIGN. REF ARCH DRAWINGS FOR QUANTITY AND LOCATIONS. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.
5. **NEW PEDESTRIAN LIGHT POLE - ALTERNATE #2 & ALTERNATE #5**
   A. INDICATES NEW PEDESTRIAN LIGHT POLE. REF 6/S-303 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.
6. **NEW SPORTS LIGHT POLE**
   A. INDICATES NEW SPORT LIGHT POLE. REF 1/S-304 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.
7. **NEW ENTRY GATE & DEMO OF EXISTING ENTRY GATE - ALTERNATE #1**
   A. NEW FRONT ENTRY GATE IS PLANNED TO BE CONSTRUCTED AT THE SAME LOCATION OF THE EXISTING ENTRY GATE. REFER TO STRUCTURAL SCOPE ITEM #1 FOR FOUNDATION DEMOLITION SCOPE OF THE EXISTING ENTRY GATE. REF 1/S-101 FOR FOUNDATION PLAN AND ARCH DRAWINGS FOR MORE INFORMATION.
8. **NEW RESTROOM BUILDING - ALTERNATE #4**
   A. NEW GROUND-UP SINGLE STORY RESTROOM BUILDING WITH SLAB-ON-GRADE, LOAD BEARING CMU WALLS, PRE-ENGINEERED WOOD JOISTS, AND PLYWOOD ROOF DECK. REF 6/S-101 AND 3/S-101 FOR MORE INFORMATION.



1 DEMO SCOPE PLAN
1" = 60'-0"

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

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CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: ES
DRAWN BY: JD

DEMO SCOPE PLAN

SD-101

Plot Stamp:
09/21/2026 10:27:23 AM

STRUCTURAL SCOPE LEGEND:

1. **EXISTING FOUNDATION DEMO**
   A. PORTIONS OF THE EXISTING BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS ARE SCHEDULED FOR DEMOLITION; AS NOTED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. THIS SCHEDULED DEMOLITION INCLUDES EXISTING BUILDING AND SITE COMPONENTS AS WELL AS THEIR ASSOCIATED EXISTING FOUNDATIONS WITHIN THE FOOTPRINT OF THE NEW BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS. IN AN EFFORT TO REDUCE THE DISTURBANCE OF SOILS IN THE FOUNDATION BEARING STRATUM AS MUCH AS POSSIBLE, THE FOLLOWING EXISTING FOUNDATION DEMOLITION SHALL BE AS FOLLOWS:
      a. PIER DEMO CONDITION 1:
         WHERE A NEW FOUNDATION OVERLAPS AN EXISTING FOUNDATION, EXCAVATE AND REMOVE THE EXISTING FOUNDATION AS REQUIRED. BACKFILL THE RESULTING EXCAVATION WITH CONTROLLED LOW-STRENGTH MATERIAL (CLSM) OR FLOWABLE FILL. CLSM / FLOWABLE FILL SHALL ACHIEVE THE REQUIRED STRENGTH PRIOR TO EXCAVATION FOR THE NEW FOUNDATION. IF AN EXISTING FOUNDATION IS TO BE COMPLETELY EXCAVATED AND REMOVED, CONTACT THE GEOTECHNICAL ENGINEER FOR ADDITIONAL RECOMMENDATIONS.
      b. PIER DEMO CONDITION 2:
         AT ANY LOCATION WHERE AN EXISTING FOOTING/PIER DOES NOT OVERLAP WITH A NEW PIER, THE PORTION OF THE EXISTING FOOTING/PIER WITHIN 5-FT OF THE BOTTOM OF THE FUTURE SLAB SHALL BE DEMOLISHED. THE AREA BETWEEN THE TOP OF THE EXISTING FOOTING/PIER AND THE BOTTOM OF THE FUTURE SLAB SHALL BE BACKFILLED WITH SELECT FILL. THE SELECT FILL SHOULD BE PLACED IN 8" THICK MAX LOOSE LIFTS. WITH EACH LIFT COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY STANDARD EFFORT (ASTM D 698). REF 2/SD-101 FOR MORE INFO.
   B. WHILE IT IS COMMON FOR THE TESTING AND INSPECTIONS LABORATORY TO BE INVOLVED AND ON-SITE DURING EARTHWORK PREP. AND OPERATIONS; (INCLUDING BUT NOT LIMITED TO: OBSERVING AND TESTING EARTHWORK PROPERTIES, SELECT FILL PROPERTIES, THICKNESSES, COMPACTION, MOISTURE CONTENT, ETC.) WE ALSO REQUIRE THE TESTING AND INSPECTIONS LABORATORY TO BE ON-SITE FOR THE INFILL OF ANY AND ALL DEMOLISHED FOUNDATION ITEMS, BOTH PARTIALLY AND FULLY DEMOLISHED. WE HAVE OBSERVED INSTANCED WHERE THE DEMO CONTRACTOR DID NOT PROPERLY/ADEQUATELY INFILL THE SUB-GRADE VOIDS AND/OR COMPACT THE INFILL FROM EXISTING DEMOLISHED FOUNDATIONS. WHEN THE NEW BUILDING WAS CONSTRUCTED, THE INADEQUATE FILL/COMPACTION LED TO WATER INTRUSION PROBLEMS AND QUESTIONABLE BEARING. WE REQUIRE THAT THE TESTING AND INSPECTIONS LABORATORY BE ON-SITE TO OBSERVE AND TEST THE INFILL OF THE EXISTING FOUNDATIONS TO REASONABLY ENSURE THAT THE BEARING VALUES RECOMMENDED IN THE GEOTECHNICAL REPORT CAN BE ACHIEVED. THE OWNER SHALL BE AWARE THAT THIS ADDITIONAL TESTING INSPECTION SCOPE WILL BE REQUIRED.
   C. THE GENERAL CONTRACTOR SHALL INFORM THE DEMOLITION CONTRACTOR(S) THAT THE INFILL OF THE DEMOLISHED FOUNDATIONS WILL BE REQUIRED TO MEET THE EARTHWORK REQUIREMENTS AND BE TESTING FOR COMPLIANCE AND ANY ADDITIONAL COST ASSOCIATED WITH ENSURING THE INFILL MEETS THESE PARAMETERS SHALL BE INCLUDED IN THEIR BASE BID (TYP.) THE GENERAL CONTRACTOR SHALL ALSO SUBMIT A UNIT PRICE FOR PIER DEMO CONDITION 1 & PIER DEMO CONDITION 2 THAT SHALL COVER THE ENTIRE UNIT COST INCLUDING OVERHEAD FOR THE ALL OF THE WORK DESCRIBED ABOVE FOR EACH PIER SIZE.
   D. TO WHOM IT MAY CONCERN: EXISTING DRAWINGS / AS-BUILTS OF THE EXISTING BUILDING WERE UNAVAILABLE FOR OUR USE IN PREPARATION OF THE PIER DEMO PLAN. WHILE WE DID MAKE MULTIPLE IN-PERSON DETAILED SITE VISITS, OUR OBSERVATIONS ARE LIMITED TO VISUAL OBSERVATIONS ONLY; NO DEMOLITION WAS PERFORMED TO VIEW ITEMS THAT CANNOT BE VIEWED WITHOUT SUCH DEMOLITION. THEREFORE, IT IS NOT POSSIBLE TO FULLY UNDERSTAND AND FULLY ACCOUNT FOR THE EXISTING PIER DEMOLITION. EXISTING PIER QUANTITIES PER DEMO CONDITION DESCRIBED IN THE GC NOTE ABOVE ARE BASED ON THE EXISTING BUILDING FOOTPRINT AND SQUARE FOOTAGE. FOR BIDDING PURPOSES, THE FOLLOWING QUANTITIES CAN BE ASSUMED:
      a. 77 EXISTING PIERS OVERLAP WITH NEW PIERS (PIER DEMO CONDITION 1)
      b. 33 EXISTING PIERS DO NOT OVERLAP WITH NEW PIERS (PIER DEMO CONDITION 2)

2. **NEW BLEACHERS (DELEGATED DESIGN)**
   A. NEW BLEACHERS FRAMING AND FOUNDATION TO BE DELEGATED DESIGN. RAMPS AND STAIRS ASSOCIATE WITH BLEACHERS ARE BY THE BLEACHER MANUFACTURER. REF ARCH DRAWING FOR MORE INFO AND S-104 AND S-105 FOR NEW BLEACHER SCHEMATIC PIER PLAN. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.

3. **NEW PRE-ENGINEERED PRESS BOX (DELEGATED DESIGN)**
   A. NEW PRE-ENGINEERED PRESS BOXES AT SOFTBALL AND BASEBALL FIELDS FRAMING AND FOUNDATIONS TO BE DELEGATED DESIGN. REF ARCH DRAWINGS FOR MORE INFORMATION. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.

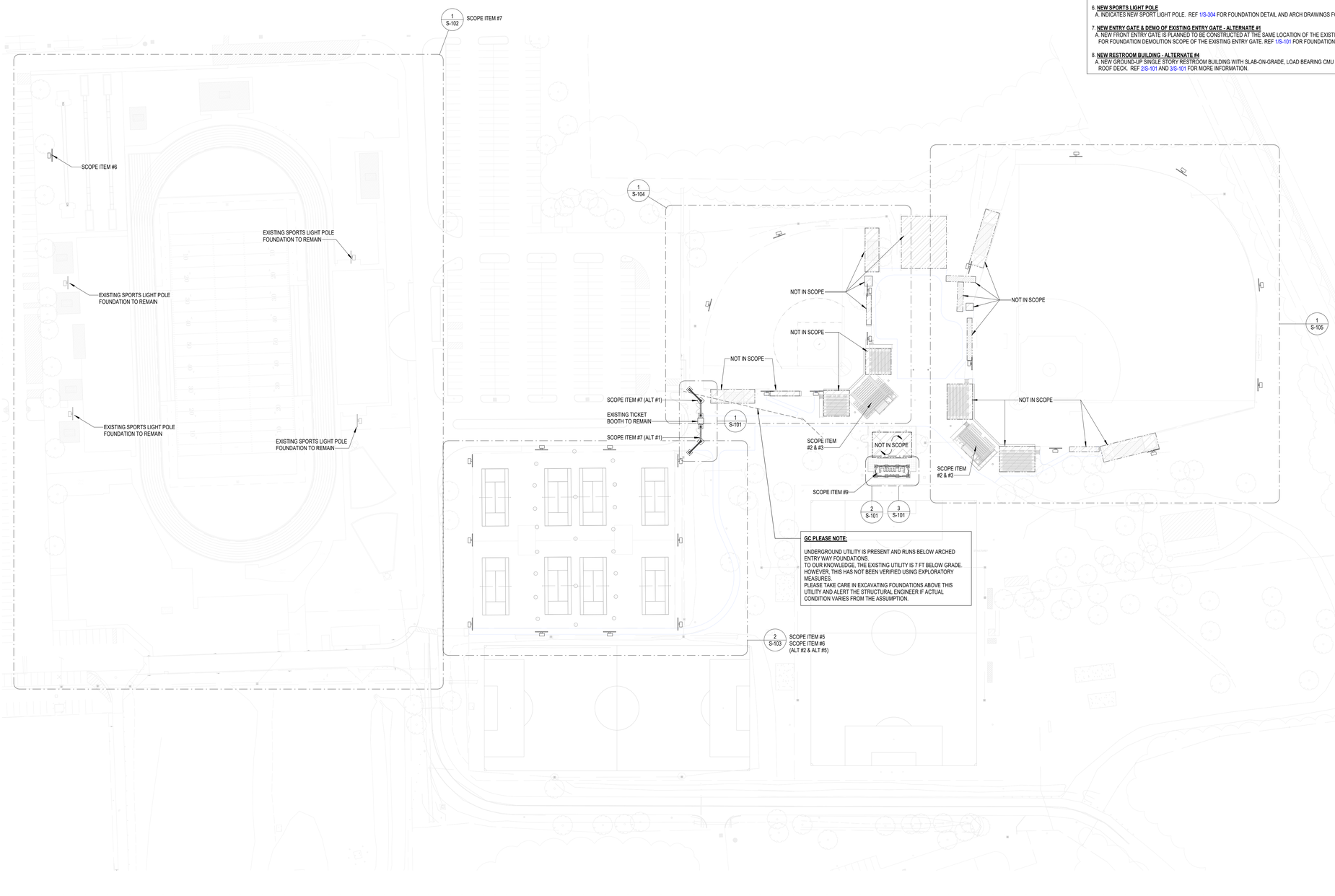
4. **NEW NETTING POLES (DELEGATED DESIGN)**
   A. NEW NETTING POLES AND FOUNDATIONS TO BE DELEGATED DESIGN. REF ARCH DRAWINGS FOR QUANTITY AND LOCATIONS. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.

5. **NEW PEDESTRIAN LIGHT POLE - ALTERNATE #2 & ALTERNATE #5**
   A. INDICATES NEW PEDESTRIAN LIGHT POLE. REF 6/S-303 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.

6. **NEW SPORTS LIGHT POLE**
   A. INDICATES NEW SPORT LIGHT POLE. REF 1/S-304 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.

7. **NEW ENTRY GATE & DEMO OF EXISTING ENTRY GATE - ALTERNATE #1**
   A. NEW FRONT ENTRY GATE IS PLANNED TO BE CONSTRUCTED AT THE SAME LOCATION OF THE EXISTING ENTRY GATE. REFER TO STRUCTURAL SCOPE ITEM #1 FOR FOUNDATION DEMOLITION SCOPE OF THE EXISTING ENTRY GATE. REF 1/S-101 FOR FOUNDATION PLAN AND ARCH DRAWINGS FOR MORE INFORMATION.

8. **NEW RESTROOM BUILDING - ALTERNATE #4**
   A. NEW GROUND-UP SINGLE STORY RESTROOM BUILDING WITH SLAB-ON-GRADE, LOAD BEARING CMU WALLS, PRE-ENGINEERED WOOD JOISTS, AND PLYWOOD ROOF DECK. REF 2/S-101 AND 3/S-101 FOR MORE INFORMATION.



1 SCOPE PLAN
1" = 60'-0"

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

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1

PLAN NORTH | TRUE NORTH

STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
09/10/2026
Kubala Engineers
F-23612

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: ES

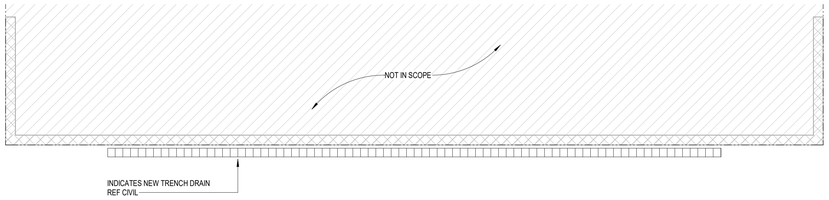
DRAWN BY: JD

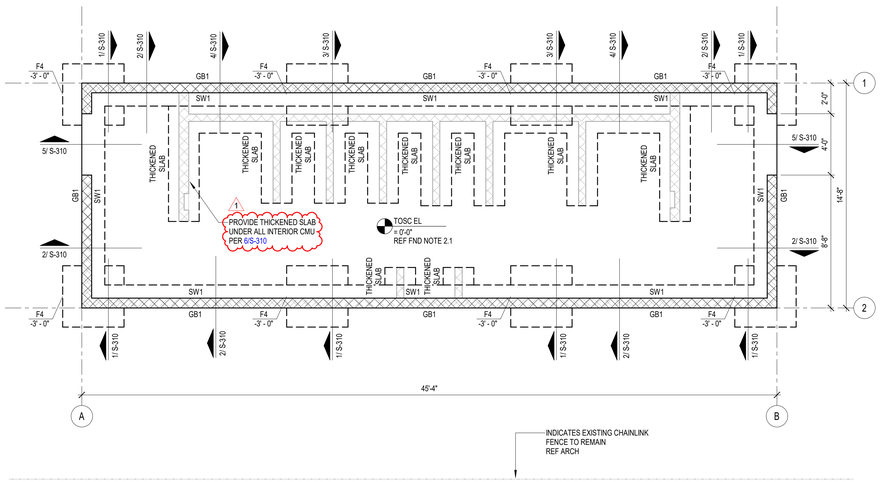
OVERALL SCOPE SHEET

S-100

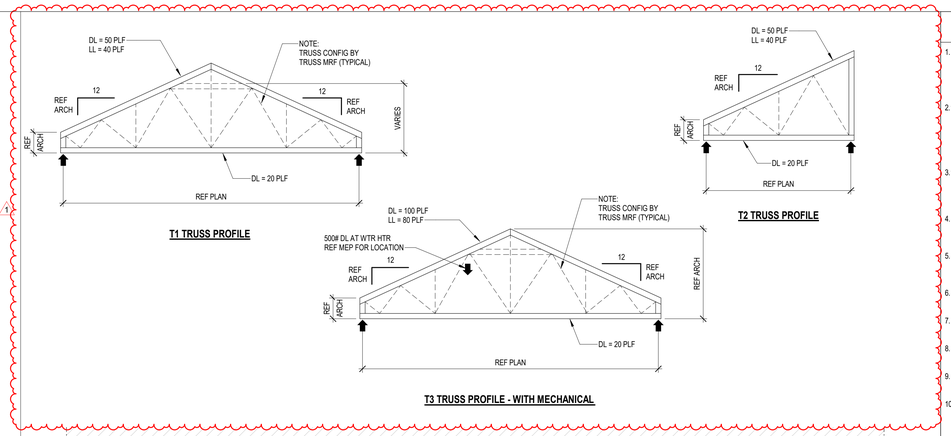
Plot Stamp:
09/21/2026 10:27:24 AM

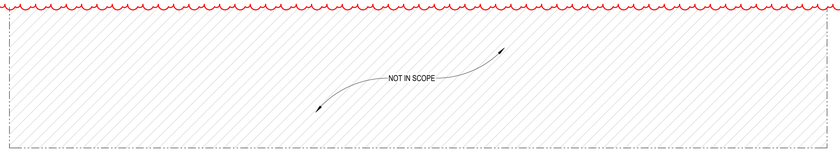
S-101 - FOUNDATION & ROOF FRAMING PLANS

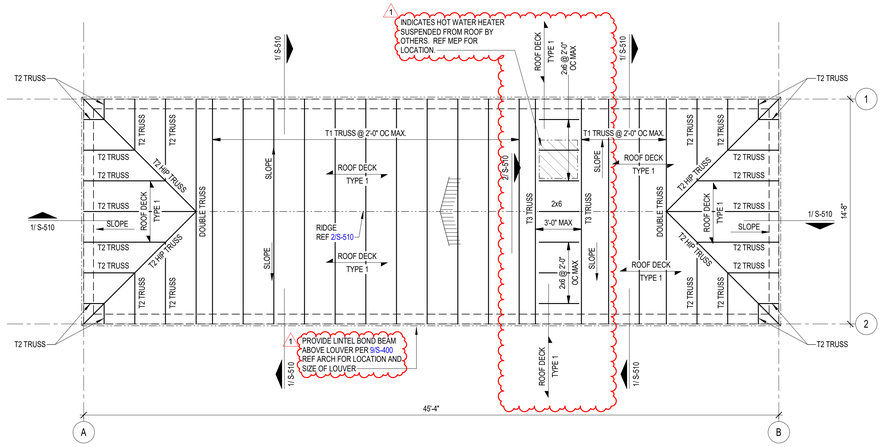




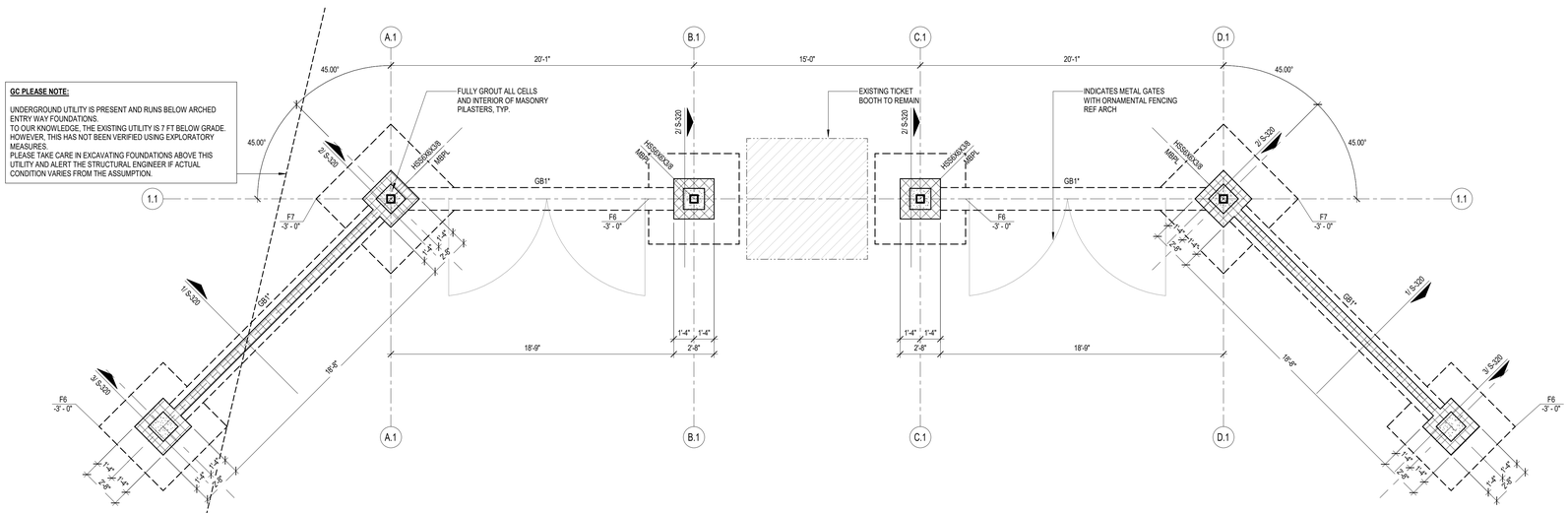
2 RESTROOM BUILDING FOUNDATION PLAN
1/4" = 1'-0"







3 RESTROOM BUILDING ROOF FRAMING PLAN
1/4" = 1'-0"



1 ENTRY GATE FOUNDATION PLAN
1/4" = 1'-0"

FOUNDATION PLAN NOTES

1. REFER TO PLAN FOR TOP OF STRUCTURAL CONCRETE ELEVATIONS (TOSC EL). ALL ELEVATIONS SHOWN ON THE PLAN ARE BASED ON A LEVEL ONE REFERENCE ELEVATION = 0'-0". THIS REFERENCE ELEVATION IS EQUIVALENT TO THE LEVEL ONE MEAN SEA LEVEL ELEVATION = REF CIVIL SHOWN IN THE CIVIL AND ARCHITECTURAL DRAWINGS AND IS NOT INTENDED TO ESTABLISH THE ACTUAL SEA LEVEL ELEVATION OF ANY PORTION OF THE STRUCTURE.

2.1. 5" THICK CONCRETE SLAB-ON-GRADE REINFORCED WITH EITHER:
#3 AT 10" OC EACH WAY, ON 2 3/4" CHAIRS SPACED AT 30" OC EACH WAY, OR,
#4 AT 16" OC EACH WAY, ON 2 1/2" CHAIRS SPACED AT 32" OC EACH WAY.
PLACE THE SLAB ON A 15 MIL WATER VAPOR BARRIER OVER COMPACTED SELECT FILL, REFER TO THE SOIL REPORT.
FOR SLAB JOINT DETAILS, REFER TO 1/S-301 AND 2/S-301.

3.1. TOP OF GRADE BEAM ELEVATION SHALL BE = -1'-0" U.N.O.
TOP OF FOOTING ELEVATION SHALL BE = -3'-0" U.N.O.
BOT OF GRADE BEAM ELEVATION SHALL BE = -4'-0" U.N.O.
BOT OF FOOTING ELEVATION SHALL BE = -4'-0" U.N.O.

4. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENTS AND DIMENSIONS OF RAISED OR DEPRESSED SLAB AREAS, SLOPES, CURBS, AND DRAINS. REFER TO TYPICAL DETAILS FOR REINFORCEMENT REQUIREMENTS.
5. GC COORDINATE ALL PENETRATIONS AND UNDERGROUND UTILITIES WITH MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS. REFER TO TYPICAL DETAILS FOR ADDITIONAL REINFORCEMENT REQUIREMENTS.
6. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT AND STRUCTURAL ENGINEER OF ANY DISCREPANCIES.
7. GC COORDINATE ALL SLAB EDGE DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.
8. PROVIDE (2) - #5 x 5'-0" LONG BAR IN SLAB AT RE-ENTRANT CORNERS, TYPICAL. INCLUDING RE-ENTRANT CORNERS AROUND THE PERIMETER OF THE BUILDINGS, FLOOR RECESSES AND OPENINGS.
9. GC COORDINATE ALL THE SIZE AND EXTENT OF ALL BRICK LEDGES SHOWN ON PLAN OR DETAILS WITH ARCHITECTURAL DRAWINGS.
10. REF S0.xx SERIES DRAWINGS FOR GENERAL NOTES AND TYP DETAILS
REF S3.xx SERIES DRAWINGS FOR FOUNDATION AND SLAB-ON-GRADE DETAILS.
REF S4.xx SERIES DRAWINGS FOR CMU DETAILS.
REF S5.xx SERIES DRAWINGS FOR STEEL AND TIMBER FRAMING DETAILS.
11. REFER TO ARCH AND PLUMBING DWGS FOR THE SIZE, NUMBER AND LOCATION OF ALL THE TRENCHES, AND FLOOR DRAINS. REF 5/S-301 FOR TRENCH DETAIL AND REF 3/S-301 FOR FLOOR DRAIN DETAIL.
12. AT INTERIOR CMU WALL LOCATIONS, WHERE THE GRADE BEAM IS NOT SHOWN, PROVIDE SLAB TURNDOWN PER DETAIL 6/S-310 TYPICAL. AT INTERIOR GLAZING LOCATIONS, WHERE THE GRADE BEAM IS NOT SHOWN, PROVIDE TURNDOWN SIMILAR TO DETAIL 6/S-310, TYPICAL.
13. PIERS/FOOTINGS WITHOUT CENTERLINES SHOWN ON PLANS, SECTIONS AND/OR DETAILS SHALL BE LOCATED AS FOLLOWS:
A. COLUMNS AND PILASTERS: CENTERLINE OF THE COLUMN.
B. GRADE BEAMS AND WALLS: CENTERLINE OF THE GRADE BEAM OR WALL.
C. ALONG THE LENGTH OF GRADE BEAMS AND WALLS: INTERMEDIATE PIERS/FOOTINGS SHALL BE SPACED EQUALLY BETWEEN PIERS/FOOTINGS THAT ARE DIMENSIONALLY SET ON PLAN OR AS NOTED ABOVE.
D. PIERS SUPPORTING SLABS ON CARTON FORMS: UNLESS NOTED OTHERWISE, PIERS NOT DIMENSIONED SHALL BE SPACED EQUALLY BETWEEN PIERS THAT ARE DIMENSIONALLY SET ON PLAN.
14. GC TO COORDINATE THE LOCATION OF ALL CONC CURBS WITH ARCH DWGS. REF 8/S-301 FOR DETAIL TYP
15. GC COORDINATE THE LOCATION OF ALL CANOPY COLUMNS WITH ARCH DRAWINGS.
16. INDICATES STRUCTURAL CMU THAT ARE PART OF THE STRUCTURAL LATERAL FORCE RESISTING SYSTEM AND SUPPORTS GRAVITY LOADS. REFER TO ARCH DWGS FOR THE LOCATION OF ALL NON-STRUCTURAL CMU. A 3/8" VERT CONTROL JOINT SHALL BE PROVIDED WHEREVER STRUCTURAL AND NON-STRUCTURAL CMU ABUT.
17. INDICATES NON-STRUCTURAL CMU THAT ARE NOT PART OF THE STRUCTURAL LATERAL FORCE RESISTING SYSTEM AND ARE NOT DESIGNED TO SUPPORTS GRAVITY LOADS. REFER TO ARCH DWGS FOR THE LOCATION OF ALL NON-STRUCTURAL CMU. A 3/8" VERT CONTROL JOINT SHALL BE PROVIDED WHEREVER STRUCTURAL AND NON-STRUCTURAL CMU ABUT.

ROOF PLAN NOTES

1. REF PLAN FOR TOP OF STEEL ELEVATIONS.
2. ALL ELEVATIONS ARE BASED ON TOSC EL = 0'-0".
3. TOP OF ROOF STRUCTURE IS SLOPED FOR DRAINAGE. REF ELEVATIONS NOTED ON PLAN. SLOPES SHALL BE UNIFORM BETWEEN COLUMN CENTERLINES UNLESS SHOWN OTHERWISE.
4. JOIST MFR NOTE:
BRIDGING NOT SHOWN ON PLAN. MANUFACTURER SHALL PROVIDE STANDARD BRIDGING COMPLYING WITH SJI SPECIFICATIONS OF LATEST ADOPTION. TYPICAL FOR GRAVITY AND UPLIFT LOADS SUPERIMPOSED ON ALL JOISTS. DIAGONAL BRIDGING SHALL BE PROVIDED BETWEEN ADJACENT JOISTS WHENEVER BOTTOM CHORD HORIZONTAL BRIDGING IS CONTINUOUS.
5. REFER TO THE ROOF DIAPHRAGM CONNECTION SCHEDULE FOR DECK ATTACHMENT TO ROOF FRAMING MEMBERS AND DECK FASTENER TYPE, SIZE AND SPACING.
6. REF ARCH FOR TOP OF WALL ELEVATIONS.
7. DETAILING OF ALL MEMBER CONNECTIONS TO THE SUPPORTS SHALL BE PERFORMED TO SATISFY LATEST OSHA ERECTION REQUIREMENTS.
8. TOS EL = BOTTOM OF DECK.
9. UNLESS SHOWN OTHERWISE, STEEL BEAMS OR JOISTS ARE CENTERED ON AND EQUALLY SPACED BETWEEN COLUMN CENTERLINES.
10. ALL STRUCTURAL STEEL THAT IS PERMANENTLY EXPOSED TO THE EXTERIOR OR IS PERMANENTLY IN UNCONDITIONED SPACE SHALL BE HOT-DIPPED GALVANIZED.
11. GC COORDINATE ALL PENETRATIONS WITH MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS. REFER TO TYPICAL DETAILS FOR ADDITIONAL REINFORCEMENT REQUIREMENTS.
12. CONTRACTOR TO VERIFY ALL ROOF EDGE DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.
13. INDICATES PIPING RUN, REF MEP DRAWINGS; GC SHALL COORDINATE GIVEN LOAD WITH JOIST MANUFACTURER. REF SHEET S-011.
14. REF S0.XX SERIES DRAWINGS FOR GENERAL NOTES AND TYP DETAILS
REF S4.XX SERIES DRAWINGS FOR CMU DETAILS.
REF S5.XX SERIES DRAWINGS FOR STEEL AND TIMBER FRAMING DETAILS.
15. PROVIDE MISC. STEEL PER 2/S-500 ABOVE AND BELOW ANY WINDOW THAT DOES NOT ALIGN WITH THE BACK-UP, UNO, TYP. LOOSE LINTELS REQUIRED BELOW WINDOW SHALL BE INVERTED (DOG LEG DOWN), TYP.

ROOF DECK LEGEND

ROOF DECK TYPE 1:
3/4" APA RATED PLYWOOD ROOF DECK W/ 48/24 SPAN RATING. REF TIMBER NOTES FOR MORE INFO.

NOTES:

1. PLYWOOD DECK SHALL BE PLACED WITH TWO-SPAN CONDITION MINIMUM. NO SINGLE SPANS ARE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER-OF-RECORD.
2. REF TIMBER NOTES ON SHEET S-510 FOR MORE INFORMATION REGARDING ROOF DECK REQUIREMENTS.

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

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TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

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PLAN NORTH
TRUE NORTH

STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
09/10/2026
Kubala Engineers
F-23612

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

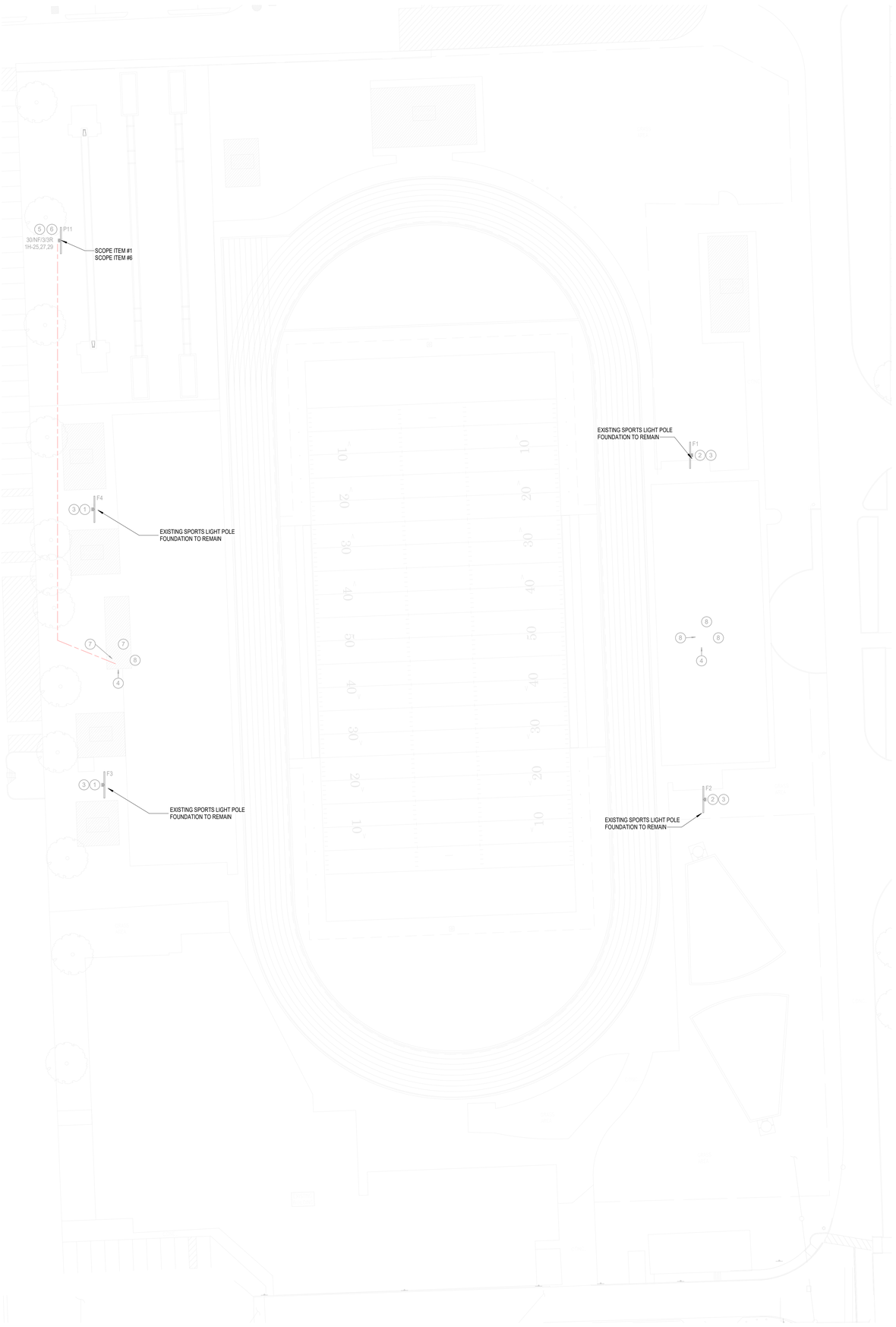
CHECKED BY: ES
DRAWN BY: JD

FOUNDATION & ROOF FRAMING PLANS

S-101

Plot Stamp:
09/21/2026 10:27:25 AM

S-102 - ENLARGED SCOPE PLANS - FOOTBALL



STRUCTURAL SCOPE LEGEND:

1. **EXISTING FOUNDATION DEMO**
   A. PORTIONS OF THE EXISTING BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS ARE SCHEDULED FOR DEMOLITION, AS NOTED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. THIS SCHEDULED DEMOLITION INCLUDES EXISTING BUILDING AND SITE COMPONENTS AS WELL AS THEIR ASSOCIATED EXISTING FOUNDATIONS WITHIN THE FOOTPRINT OF THE NEW BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS. IN AN EFFORT TO REDUCE THE DISTURBANCE OF SOILS IN THE FOUNDATION BEARING STRATUM AS MUCH AS POSSIBLE, THE FOLLOWING EXISTING FOUNDATION DEMOLITION SHALL BE AS FOLLOWS:
      a. PIER DEMO CONDITION 1:
         WHERE A NEW FOUNDATION OVERLAPS AN EXISTING FOUNDATION, EXCAVATE AND REMOVE THE EXISTING FOUNDATION AS REQUIRED. BACKFILL THE RESULTING EXCAVATION WITH CONTROLLED LOW-STRENGTH MATERIAL (CLSM) OR FLOWABLE FILL. CLSM / FLOWABLE FILL SHALL ACHIEVE THE REQUIRED STRENGTH PRIOR TO EXCAVATION FOR THE NEW FOUNDATION. IF AN EXISTING FOUNDATION IS TO BE COMPLETELY EXCAVATED AND REMOVED, CONTACT THE GEOTECHNICAL ENGINEER FOR ADDITIONAL RECOMMENDATIONS.
      b. PIER DEMO CONDITION 2:
         AT ANY LOCATION WHERE AN EXISTING FOOTING/PIER DOES NOT OVERLAP WITH A NEW PIER, THE PORTION OF THE EXISTING FOOTING/PIER WITHIN 5-FT OF THE BOTTOM OF THE FUTURE SLAB SHALL BE DEMOLISHED. THE AREA BETWEEN THE TOP OF THE EXISTING FOOTING/PIER AND THE BOTTOM OF THE FUTURE SLAB SHALL BE BACKFILLED WITH SELECT FILL. THE SELECT FILL SHOULD BE PLACED IN 8" THICK MAX LOOSE LIFTS, WITH EACH LIFT COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY STANDARD EFFORT (ASTM D 698). REF 2/SD-101 FOR MORE INFO.
   B. WHILE IT IS COMMON FOR THE TESTING AND INSPECTIONS LABORATORY TO BE INVOLVED AND ON-SITE DURING EARTHWORK PREP. AND OPERATIONS; (INCLUDING BUT NOT LIMITED TO: OBSERVING AND TESTING EARTHWORK PROPERTIES, SELECT FILL PROPERTIES, THICKNESSES, COMPACTION, MOISTURE CONTENT, ETC.) WE ALSO REQUIRE THE TESTING AND INSPECTIONS LABORATORY TO BE ON-SITE FOR THE INFILL OF ANY AND ALL DEMOLISHED FOUNDATION ITEMS, BOTH PARTIALLY AND FULLY DEMOLISHED. WE HAVE OBSERVED INSTANCED WHERE THE DEMO CONTRACTOR DID NOT PROPERLY/ADEQUATELY INFILL THE SUB-GRADE VOIDS AND/OR COMPACT THE INFILL FROM EXISTING DEMOLISHED FOUNDATIONS. WHEN THE NEW BUILDING WAS CONSTRUCTED, THE INADEQUATE FILL/COMPACTION LED TO WATER INTRUSION PROBLEMS AND QUESTIONABLE BEARING. WE REQUIRE THAT THE TESTING AND INSPECTIONS LABORATORY BE ON-SITE TO OBSERVE AND TEST THE INFILL OF THE EXISTING FOUNDATIONS TO REASONABLY ENSURE THAT THE BEARING VALUES RECOMMENDED IN THE GEOTECHNICAL REPORT CAN BE ACHIEVED. THE OWNER SHALL BE AWARE THAT THIS ADDITIONAL TESTING INSPECTION SCOPE WILL BE REQUIRED.
   C. THE GENERAL CONTRACTOR SHALL INFORM THE DEMOLITION CONTRACTOR(S) THAT THE INFILL OF THE DEMOLISHED FOUNDATIONS WILL BE REQUIRED TO MEET THE EARTHWORK REQUIREMENTS AND BE TESTING FOR COMPLIANCE AND ANY ADDITIONAL COST ASSOCIATED WITH ENSURING THE INFILL MEETS THESE PARAMETERS SHALL BE INCLUDED IN THEIR BASE BID (TYP.) THE GENERAL CONTRACTOR SHALL ALSO SUBMIT A UNIT PRICE FOR PIER DEMO CONDITION 1 & PIER DEMO CONDITION 2 THAT SHALL COVER THE ENTIRE UNIT COST INCLUDING OVERHEAD FOR THE ALL OF THE WORK DESCRIBED ABOVE FOR EACH PIER SIZE.
   D. TO WHOM IT MAY CONCERN: EXISTING DRAWINGS / AS-BUILTS OF THE EXISTING BUILDING WERE UNAVAILABLE FOR OUR USE IN PREPARATION OF THE PIER DEMO PLAN. WHILE WE DID MAKE MULTIPLE IN-PERSON DETAILED SITE VISITS, OUR OBSERVATIONS ARE LIMITED TO VISUAL OBSERVATIONS ONLY; NO DEMOLITION WAS PERFORMED TO VIEW ITEMS THAT CANNOT BE VIEWED WITHOUT SUCH DEMOLITION. THEREFORE, IT IS NOT POSSIBLE TO FULLY UNDERSTAND AND FULLY ACCOUNT FOR THE EXISTING PIER DEMOLITION. EXISTING PIER QUANTITIES PER DEMO CONDITION DESCRIBED IN THE GC NOTE ABOVE ARE BASED ON THE EXISTING BUILDING FOOTPRINT AND SQUARE FOOTAGE. FOR BIDDING PURPOSES, THE FOLLOWING QUANTITIES CAN BE ASSUMED:
      a. 77 EXISTING PIERS OVERLAP WITH NEW PIERS (PIER DEMO CONDITION 1)
      b. 33 EXISTING PIERS DO NOT OVERLAP WITH NEW PIERS (PIER DEMO CONDITION 2)

2. **NEW BLEACHERS (DELEGATED DESIGN)**
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3. **NEW PRE-ENGINEERED PRESS BOX (DELEGATED DESIGN)**
   A. NEW PRE-ENGINEERED PRESS BOXES AT SOFTBALL AND BASEBALL FIELDS FRAMING AND FOUNDATIONS TO BE DELEGATED DESIGN. REF ARCH DRAWINGS FOR MORE INFORMATION. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.

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5. **NEW PEDESTRIAN LIGHT POLE - ALTERNATE #2 & ALTERNATE #5**
   A. INDICATES NEW PEDESTRIAN LIGHT POLE. REF 6/S-303 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.

6. **NEW SPORTS LIGHT POLE**
   A. INDICATES NEW SPORT LIGHT POLE. REF 1/S-304 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.

7. **NEW ENTRY GATE & DEMO OF EXISTING ENTRY GATE - ALTERNATE #1**
   A. NEW FRONT ENTRY GATE IS PLANNED TO BE CONSTRUCTED AT THE SAME LOCATION OF THE EXISTING ENTRY GATE. REFER TO STRUCTURAL SCOPE ITEM #1 FOR FOUNDATION DEMOLITION SCOPE OF THE EXISTING ENTRY GATE. REF 1/S-101 FOR FOUNDATION PLAN AND ARCH DRAWINGS FOR MORE INFORMATION.

8. **NEW RESTROOM BUILDING - ALTERNATE #4**
   A. NEW GROUND-UP SINGLE STORY RESTROOM BUILDING WITH SLAB-ON-GRADE, LOAD BEARING CMU WALLS, PRE-ENGINEERED WOOD JOISTS, AND PLYWOOD ROOF DECK. REF 2/S-101 AND 3/S-101 FOR MORE INFORMATION.

1 ENLARGED SCOPE PLAN - FOOTBALL
1" = 30'-0"

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TX. REG. NO. F-23612

TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

PLAN NORTH
TRUE NORTH

STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
09/10/2026
Kubala Engineers
F-23612

CLIENT	
TOMBALL ISD	
DATE: 09/10/2026	PROJECT NUMBER: 250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

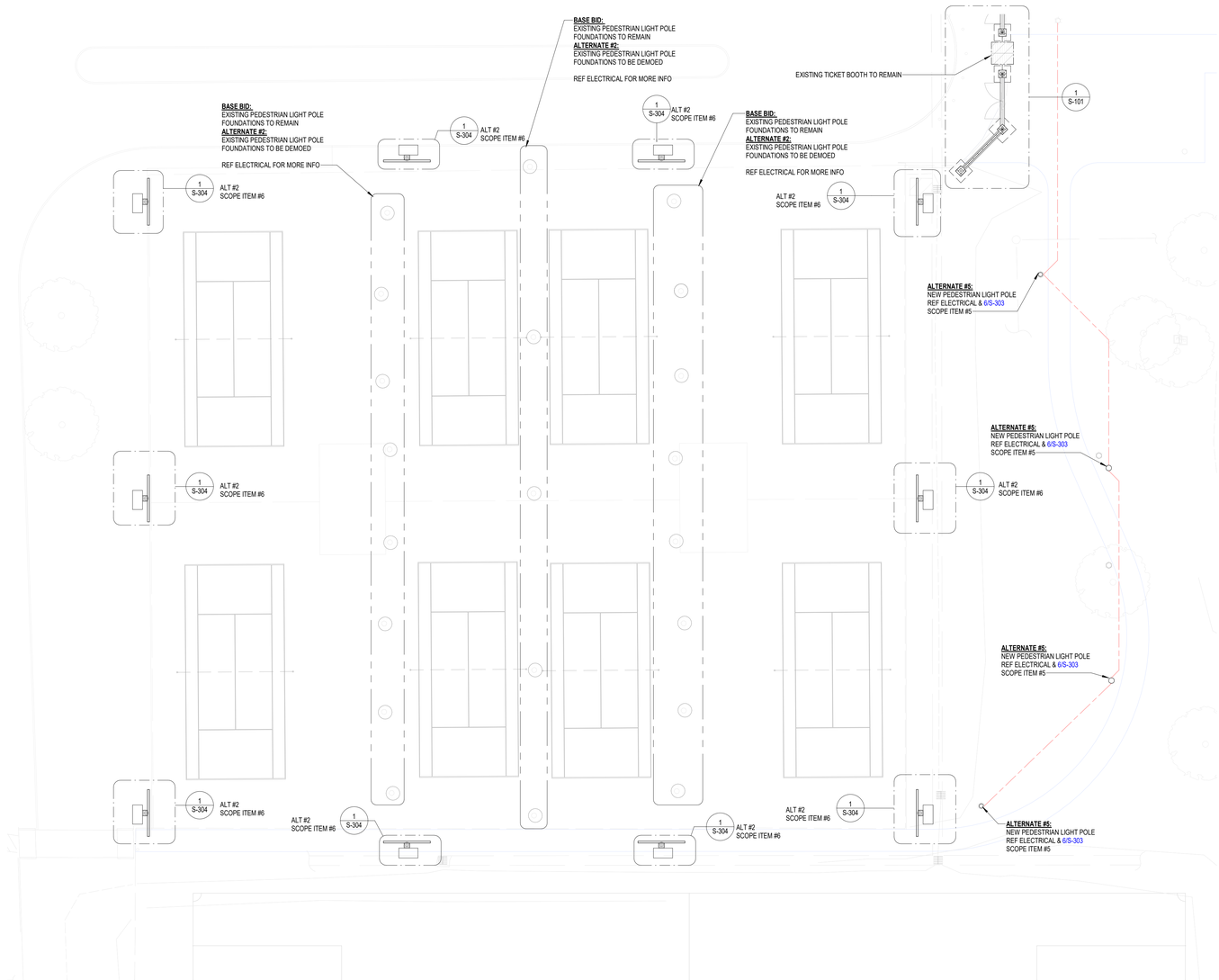
CHECKED BY: ES

DRAWN BY: JD

ENLARGED SCOPE PLANS - FOOTBALL

S-102 1

Plot Stamp:
09/21/2026 10:27:25 AM



2 ENLARGED SCOPE PLAN - TENNIS
1" = 20'-0"

STRUCTURAL SCOPE LEGEND:

1. **EXISTING FOUNDATION DEMO**
   A. PORTIONS OF THE EXISTING BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS ARE SCHEDULED FOR DEMOLITION, AS NOTED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. THIS SCHEDULED DEMOLITION INCLUDES EXISTING BUILDING AND SITE COMPONENTS AS WELL AS THEIR ASSOCIATED EXISTING FOUNDATIONS WITHIN THE FOOTPRINT OF THE NEW BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS. IN AN EFFORT TO REDUCE THE DISTURBANCE OF SOILS IN THE FOUNDATION BEARING STRATUM AS MUCH AS POSSIBLE, THE FOLLOWING EXISTING FOUNDATION DEMOLITION SHALL BE AS FOLLOWS:
   a. PIER DEMO CONDITION 1:
      WHERE A NEW FOUNDATION OVERLAPS AN EXISTING FOUNDATION, EXCAVATE AND REMOVE THE EXISTING FOUNDATION AS REQUIRED. BACKFILL THE RESULTING EXCAVATION WITH CONTROLLED LOW-STRENGTH MATERIAL (CLSM) OR FLOWABLE FILL. CLSM / FLOWABLE FILL SHALL ACHIEVE THE REQUIRED STRENGTH PRIOR TO EXCAVATION FOR THE NEW FOUNDATION. IF AN EXISTING FOUNDATION IS TO BE COMPLETELY EXCAVATED AND REMOVED, CONTACT THE GEOTECHNICAL ENGINEER FOR ADDITIONAL RECOMMENDATIONS.
   b. PIER DEMO CONDITION 2:
      AT ANY LOCATION WHERE AN EXISTING FOOTING/PIER DOES NOT OVERLAP WITH A NEW PIER, THE PORTION OF THE EXISTING FOOTING/PIER WITHIN 5-FT OF THE BOTTOM OF THE FUTURE SLAB SHALL BE DEMOLISHED. THE AREA BETWEEN THE TOP OF THE EXISTING FOOTING/PIER AND THE BOTTOM OF THE FUTURE SLAB SHALL BE BACKFILLED WITH SELECT FILL. THE SELECT FILL SHOULD BE PLACED IN 8" THICK MAX LOOSE LIFTS. WITH EACH LIFT COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY STANDARD EFFORT (ASTM D 698). REF 2/SD-101 FOR MORE INFO.
   B. WHILE IT IS COMMON FOR THE TESTING AND INSPECTIONS LABORATORY TO BE INVOLVED AND ON-SITE DURING EARTHWORK PREP. AND OPERATIONS; (INCLUDING BUT NOT LIMITED TO: OBSERVING AND TESTING EARTHWORK PROPERTIES, SELECT FILL PROPERTIES, THICKNESSES, COMPACTION, MOISTURE CONTENT, ETC.) WE ALSO REQUIRE THE TESTING AND INSPECTIONS LABORATORY TO BE ON-SITE FOR THE INFILL OF ANY AND ALL DEMOLISHED FOUNDATION ITEMS, BOTH PARTIALLY AND FULLY DEMOLISHED. WE HAVE OBSERVED INSTANCED WHERE THE DEMO CONTRACTOR DID NOT PROPERLY/ADEQUATELY INFILL THE SUB-GRADE VOIDS AND/OR COMPACT THE INFILL FROM EXISTING DEMOLISHED FOUNDATIONS. WHEN THE NEW BUILDING WAS CONSTRUCTED, THE INADEQUATE FILL/COMPACTION LED TO WATER INTRUSION PROBLEMS AND QUESTIONABLE BEARING. WE REQUIRE THAT THE TESTING AND INSPECTIONS LABORATORY BE ON-SITE TO OBSERVE AND TEST THE INFILL OF THE EXISTING FOUNDATIONS TO REASONABLY ENSURE THAT THE BEARING VALUES RECOMMENDED IN THE GEOTECHNICAL REPORT CAN BE ACHIEVED. THE OWNER SHALL BE AWARE THAT THIS ADDITIONAL TESTING INSPECTION SCOPE WILL BE REQUIRED.
   C. THE GENERAL CONTRACTOR SHALL INFORM THE DEMOLITION CONTRACTOR(S) THAT THE INFILL OF THE DEMOLISHED FOUNDATIONS WILL BE REQUIRED TO MEET THE EARTHWORK REQUIREMENTS AND BE TESTING FOR COMPLIANCE AND ANY ADDITIONAL COST ASSOCIATED WITH ENSURING THE INFILL MEETS THESE PARAMETERS SHALL BE INCLUDED IN THEIR BASE BID (TYP.) THE GENERAL CONTRACTOR SHALL ALSO SUBMIT A UNIT PRICE FOR PIER DEMO CONDITION 1 & PIER DEMO CONDITION 2 THAT SHALL COVER THE ENTIRE UNIT COST INCLUDING OVERHEAD FOR THE ALL OF THE WORK DESCRIBED ABOVE FOR EACH PIER SIZE.
   D. TO WHOM IT MAY CONCERN: EXISTING DRAWINGS / AS-BUILTS OF THE EXISTING BUILDING WERE UNAVAILABLE FOR OUR USE IN PREPARATION OF THE PIER DEMO PLAN. WHILE WE DID MAKE MULTIPLE IN-PERSON DETAILED SITE VISITS, OUR OBSERVATIONS ARE LIMITED TO VISUAL OBSERVATIONS ONLY; NO DEMOLITION WAS PERFORMED TO VIEW ITEMS THAT CANNOT BE VIEWED WITHOUT SUCH DEMOLITION. THEREFORE, IT IS NOT POSSIBLE TO FULLY UNDERSTAND AND FULLY ACCOUNT FOR THE EXISTING PIER DEMOLITION. EXISTING PIER QUANTITIES PER DEMO CONDITION DESCRIBED IN THE GC NOTE ABOVE ARE BASED ON THE EXISTING BUILDING FOOTPRINT AND SQUARE FOOTAGE. FOR BIDDING PURPOSES, THE FOLLOWING QUANTITIES CAN BE ASSUMED:
      a. 77 EXISTING PIERS OVERLAP WITH NEW PIERS (PIER DEMO CONDITION 1)
      b. 33 EXISTING PIERS DO NOT OVERLAP WITH NEW PIERS (PIER DEMO CONDITION 2)

2. **NEW BLEACHERS (DELEGATED DESIGN)**
   A. NEW BLEACHERS FRAMING AND FOUNDATION TO BE DELEGATED DESIGN. RAMPS AND STAIRS ASSOCIATE WITH BLEACHERS ARE BY THE BLEACHER MANUFACTURER. REF ARCH DRAWING FOR MORE INFO AND S-104 AND S-105 FOR NEW BLEACHER SCHEMATIC PIER PLAN. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.

3. **NEW PRE-ENGINEERED PRESS BOX (DELEGATED DESIGN)**
   A. NEW PRE-ENGINEERED PRESS BOXES AT SOFTBALL AND BASEBALL FIELDS FRAMING AND FOUNDATIONS TO BE DELEGATED DESIGN. REF ARCH DRAWINGS FOR MORE INFORMATION. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.

4. **NEW NETTING POLES (DELEGATED DESIGN)**
   A. NEW NETTING POLES AND FOUNDATIONS TO BE DELEGATED DESIGN. REF ARCH DRAWINGS FOR QUANTITY AND LOCATIONS. SIGNED AND SEALED DELEGATED DESIGN SUBMITTALS AND CALCULATIONS SHALL BE SENT TO THE SEOR FOR REVIEW AND APPROVAL.

5. **NEW PEDESTRIAN LIGHT POLE - ALTERNATE #2 & ALTERNATE #5**
   A. INDICATES NEW PEDESTRIAN LIGHT POLE. REF 6/S-303 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.

6. **NEW SPORTS LIGHT POLE**
   A. INDICATES NEW SPORT LIGHT POLE. REF 1/S-304 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.

7. **NEW ENTRY GATE & DEMO OF EXISTING ENTRY GATE - ALTERNATE #1**
   A. NEW FRONT ENTRY GATE IS PLANNED TO BE CONSTRUCTED AT THE SAME LOCATION OF THE EXISTING ENTRY GATE. REFER TO STRUCTURAL SCOPE ITEM #1 FOR FOUNDATION DEMOLITION SCOPE OF THE EXISTING ENTRY GATE. REF 1/S-101 FOR FOUNDATION PLAN AND ARCH DRAWINGS FOR MORE INFORMATION.

8. **NEW RESTROOM BUILDING - ALTERNATE #4**
   A. NEW GROUND-UP SINGLE STORY RESTROOM BUILDING WITH SLAB-ON-GRADE, LOAD BEARING CMU WALLS, PRE-ENGINEERED WOOD JOISTS, AND PLYWOOD ROOF DECK. REF 2/S-101 AND 3/S-101 FOR MORE INFORMATION.

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ENLARGED SCOPE PLANS -TENNIS

S-103 1

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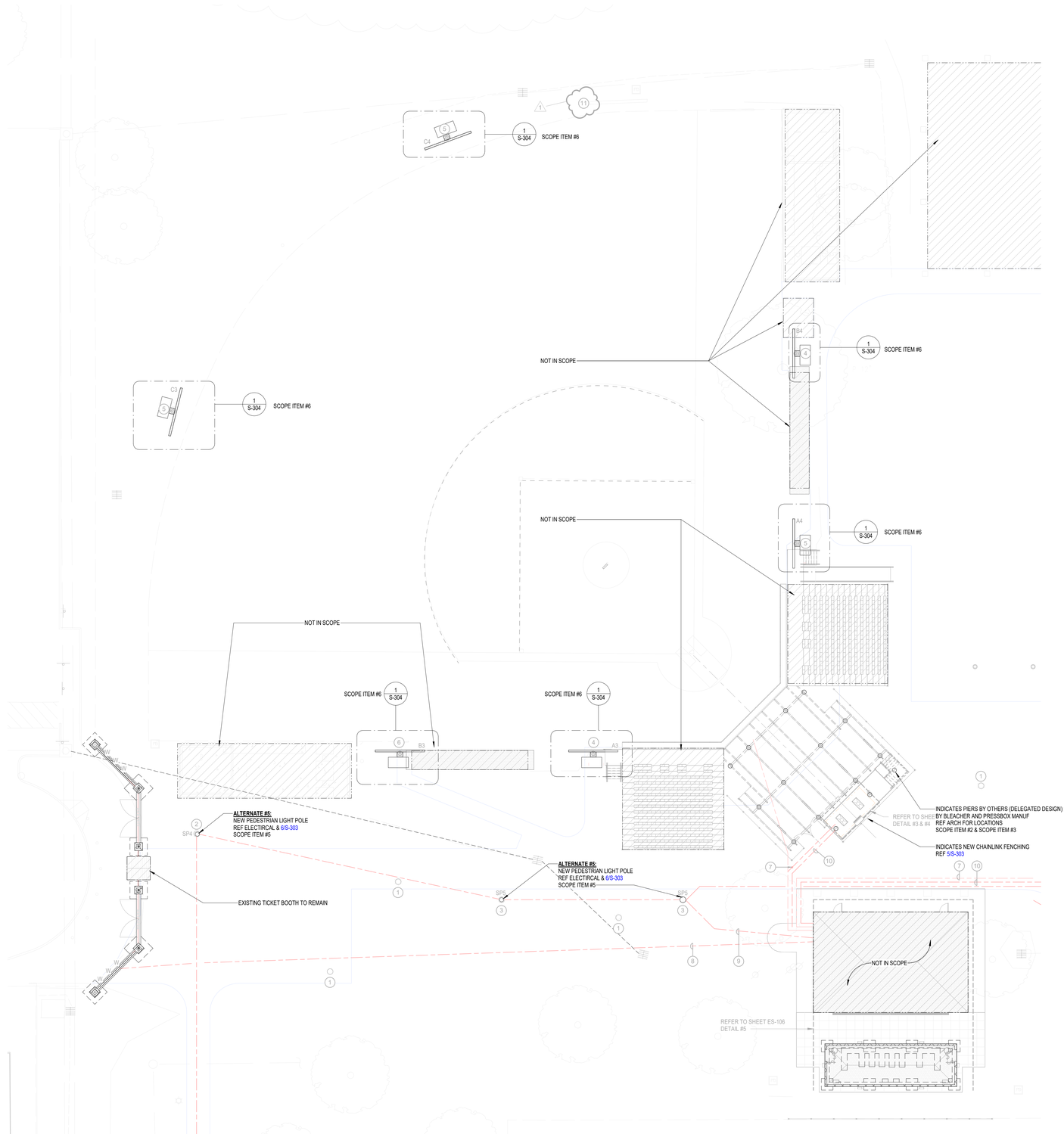

1 ENLARGED SCOPE PLAN - SOFTBALL
1/16" = 1'-0"

STRUCTURAL SCOPE LEGEND:

1. **EXISTING FOUNDATION DEMO**
   A. PORTIONS OF THE EXISTING BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS ARE SCHEDULED FOR DEMOLITION, AS NOTED IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS. THIS SCHEDULED DEMOLITION INCLUDES EXISTING BUILDING AND SITE COMPONENTS AS WELL AS THEIR ASSOCIATED EXISTING FOUNDATIONS WITHIN THE FOOTPRINT OF THE NEW BLEACHERS, PRESS BOXES, AND VARIOUS SITE ITEMS. IN AN EFFORT TO REDUCE THE DISTURBANCE OF SOILS IN THE FOUNDATION BEARING STRATUM AS MUCH AS POSSIBLE, THE FOLLOWING EXISTING FOUNDATION DEMOLITION SHALL BE AS FOLLOWS:
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8. **NEW RESTROOM BUILDING - ALTERNATE #4**
   A. NEW GROUND-UP SINGLE STORY RESTROOM BUILDING WITH SLAB-ON-GRADE, LOAD BEARING CMU WALLS, PRE-ENGINEERED WOOD JOISTS, AND PLYWOOD ROOF DECK. REF 2/S-101 AND 3/S-101 FOR MORE INFORMATION.

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CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

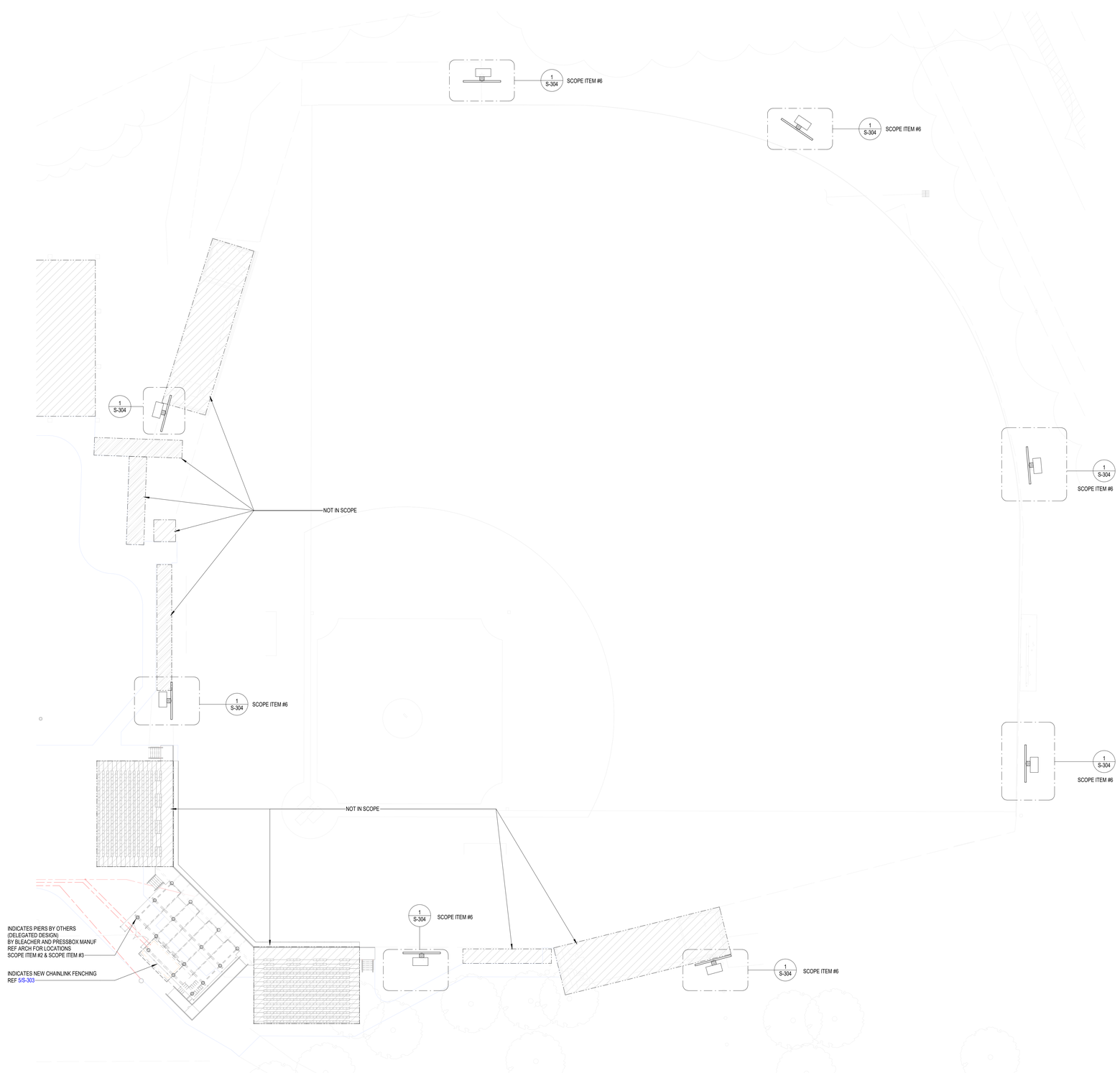
CHECKED BY: ES

DRAWN BY: JD

ENLARGED SCOPE PLANS - SOFTBALL

S-104 1

Plot Stamp:
09/21/2026 10:27:26 AM



1 ENLARGED SCOPE PLAN - BASEBALL
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STRUCTURAL SCOPE LEGEND:

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2. **NEW BLEACHERS (DELEGATED DESIGN)**
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   A. INDICATES NEW SPORT LIGHT POLE. REF 1/S-304 FOR FOUNDATION DETAIL AND ARCH DRAWINGS FOR LOCATIONS.

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8. **NEW RESTROOM BUILDING - ALTERNATE #4**
   A. NEW GROUND-UP SINGLE STORY RESTROOM BUILDING WITH SLAB-ON-GRADE, LOAD BEARING CMU WALLS, PRE-ENGINEERED WOOD JOISTS, AND PLYWOOD ROOF DECK. REF 2/S-101 AND 3/S-101 FOR MORE INFORMATION.

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1	ADDENDUM #3	09/21/2026

CHECKED BY: ES

DRAWN BY: JD

ENLARGED SCOPE PLANS - BASEBALL

S-105 1

Plot Stamp:
09/21/2026 10:27:27 AM

CONCRETE MIX:

1. CONCRETE SPECIFICATIONS SHALL BE AS FOLLOWS:

	USAGE	CONCRETE MIX DESIGN SCHEDULE										
		28 DAY STRENGTH (PSI)				MAX AGGREGATE SIZE (IN)	SLUMP (IN)	MAX W/C RATIO	MAX CURE DENSITY (PCF)	CEMENT TYPE	MAX ALLOWABLE % FLY ASH (REF CMS)	% AIR ENTRAINMENT
		3000	3500	4000	5000							
1	1. PIERS			•		1 1/2	6-8	0.55	150	I / II	40	-
	2. FOOTINGS			•		1	3-5	0.50	150	I / II	30	5
	3. SLAB-ON-GRADE			•		1	3-5	0.50	150	I / II	20	-
	4. GRADE BEAMS AND PLINTHS			•		1	3-5	0.50	150	I / II	20	-
	5. SLAB FOR EQUIPMENT PADS			•		1	3-5	0.45	150	I / II	20	5- 7 IF EXPOSED TO WEATHER

2. PORTLAND CEMENT SHALL CONFORM TO ASTM C150, OF TYPES NOTED IN SCHEDULE. NORMAL WEIGHT AGGREGATE SHALL CONFORM TO ASTM C33. LIGHT WEIGHT AGGREGATE SHALL CONFORM TO ASTM C330. ALL AGGREGATE SHALL BE FROM A SINGLE SOURCE.

3. FLY ASH WILL NOT BE PERMITTED IN ARCHITECTURALLY EXPOSED CONCRETE. FLY ASH MAY BE USED ELSEWHERE, WITHIN THE SPECIFIED PROPORTION LIMITS, BUT THE CONTRACTOR SHALL FIRST VERIFY COMPATIBILITY WITH CURING COMPOUNDS, SEALERS, BOND BREAKER, FLOORING ADHESIVES AND OTHER MATERIALS PROPOSED TO BE IN CONTACT WITH THE CONCRETE.

4. CONCRETE MIX DESIGNS SHALL BE SUBMITTED FOR REVIEW A MINIMUM OF 7 DAYS PRIOR TO THE START OF THE WORK FOR ENGINEER AND OWNERS TESTING LABORATORY APPROVAL, PRIOR TO THE PLACEMENT OF CONCRETE. MIX DESIGNS MUST INDICATE CONFORMANCE WITH ACI 301 SPECIFICATION, SECTION 4.2.3.

5. AT THE POINT OF DISCHARGE SLUMP TESTS, CONFORMING TO ASTM C143, SHALL BE TAKEN. SEE CONCRETE NOTE NO. 5 BELOW FOR RATE OF TESTS.

6. AIR CONTENT TESTS CONFORMING TO ASTM C173 (VOLUMETRIC METHOD FOR LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE; ASTM C231 PRESSURE METHOD FOR NORMAL WEIGHT CONCRETE) SHALL BE TAKEN FOR EACH DAY'S POUR FOR ALL TYPES OF AIR-ENTRAINED CONCRETE BEING USED.

7. CONCRETE TEMPERATURE SHALL BE TESTED HOURLY WHEN THE AIR TEMPERATURE IS 40 DEG F AND BELOW, 80 DEG F AND ABOVE AND EACH TIME A SET OF COMPRESSION TEST SPECIMENS ARE MADE.

8. ONE SET OF FOUR COMPRESSION TEST SPECIMENS CONFORMING TO ASTM C31 SHALL BE MOLDED AND STORED FOR LABORATORY-CURED SPECIMENS. COMPRESSIVE STRENGTH TESTS SHALL CONFORM TO ASTM C39 AND SHALL CONSIST OF ONE SET FOR EACH DAY'S POUR EXCEEDING 5 CU. YDS. PLUS ADDITIONAL SETS FOR EACH 50 CU. YDS. MORE THAN THE FIRST 25 CU. YDS OF EACH CONCRETE CLASS PLACED IN ANY ONE DAY. ONE SPECIMEN SHALL BE TESTED AT 7 DAYS, TWO SPECIMENS SHALL BE TESTED AT 28 DAYS, AND ONE SPECIMEN SHALL BE RETAINED FOR LATER TESTING AS REQUIRED.

9. VERIFY THAT POST INSTALLED ANCHORS ARE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

CAST-IN-PLACE CONCRETE:

1. CONCRETE SUPPLIER SHALL BE AWARE OF CEMENTS THAT CAN CAUSE LATE ETTRINGITE FORMATION IN THE CEMENT PASTE AND BE PREPARED TO SHOW THAT THE CEMENTS USED WILL NOT CAUSE THIS PROBLEM.

2. ALL MIXING, TRANSPORTING, PLACING AND CURING OF CONCRETE SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE; ACI 301 AND ACI 318, LATEST EDITIONS.

3. NO HORIZONTAL JOINTS WILL BE PERMITTED IN CONCRETE EXCEPT WHERE THEY NORMALLY OCCUR OR WHERE SHOWN ON THE DETALS. VERTICAL JOINTS SHALL OCCUR AT CENTER SPANS OR AT LOCATIONS APPROVED BY THE STRUCTURAL ENGINEER.

4. ALL MIXING, TRANSPORTING, PLACING AND CURING OF CONCRETE SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE; ACI 301 AND ACI 318, LATEST EDITIONS.

5. ALL BASE PLATES AND ANCHOR BOLTS SHALL BE PROTECTED WITH 3" (MIN.) OF CONCRETE. ANCHOR BOLTS SHALL BE FABRICATED FROM FULL BODIED ASTM F1554, GRADE 36 LOW CARBON STEEL RODS HAVING THE SAME DIAMETER AS THE BOLT DIAMETER AND USING CUT THREADS. ROLLED THREADS ARE NOT ACCEPTABLE. BOLTS SHALL BE SET USING RIGID TEMPLATES.

6. AT HORIZONTAL CONCRETE FRAMING, FORMS SHALL NOT BE REMOVED UNTIL THE CONCRETE HAS REACHED 70 PERCENT OF THE 28-DAY COMPRESSIVE STRENGTH INDICATED. FLOOR SLABS AND BEAMS SHALL REMAIN SHORED UNTIL THE UPPER MOST LEVEL OF CONCRETE HAS REACHED 70 PERCENT OF THE 28-DAY COMPRESSIVE STRENGTH. FOR BUILDINGS WITH MORE THAN THREE STORIES IN HEIGHT, SHORING SHALL BE MAINTAINED FOR THREE LEVELS BELOW, UNTIL THE UPPER MOST LEVEL HAS REACHED 70 PERCENT OF THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH.

7. ALL CONDUITS AND PIPES EMBEDDED IN CONCRETE SHALL COMPLY WITH ALL PROVISIONS SPECIFIED IN ACI 318,SECTION 26.8, WITH THE FOLLOWING SPECIFIC REQUIREMENTS:

   A. THE MAXIMUM OUTSIDE DIAMETER OF THE CONDUITS AND PIPES SHALL BE 1 1/2". NONE PERMITTED IN SLABS THINNER THAN 4 1/2".
   B. THE MINIMUM CLEAR DISTANCE BETWEEN CONDUITS AND PIPES SHALL BE 6".
   C. NONE PERMITTED IN SLABS-ON-GRADE WHICH WILL BE PERMANENTLY EXPOSED OR SCHEDULED TO RECEIVE THIN SET TILE. PLACE ALL PIPES AND CONDUITS IN THE FILL BENEATH THE VAPOR BARRIER. RE-COMPACT AS SPECIFIED.
   D. IN NON-EXPOSED SLABS-ON-GRADE, LIMIT SIZE TO 1" O.D. IN 5" SLAB SPACE 12" APART AND TIE TO UNDERSIDE OF REINFORCING MAT. WHERE LINES CONVERGE AT SOURCE, DOUBLE UP THE SLAB REINFORCING IN THE CONVERGENCE ZONE AND 3'-0" BEYOND. PLACE ALL LARGER LINES IN THE FILL BENEATH THE VAPOR BARRIER.
   E. NONE PERMITTED IN COLUMNS WITHOUT PRIOR APPROVAL.
   F. DO NOT DISPLACE REINFORCING STEEL FROM ITS PROPER POSITION.

8. PROVIDE SHEAR KEYS IN ALL CONSTRUCTION JOINTS IN BEAMS AND WALLS, IN ACCORDANCE WITH THE TYPICAL CONCRETE DETAILS.

9. PLACE WATERSTOPS IN ALL EXTERIOR CONSTRUCTION JOINTS BELOW GRADE AND ELSEWHERE AS CALLED FOR.

10. FLOORS ARE NOT DESIGNED TO SUPPORT FORMWORK AND WET CONCRETE WEIGHT OF NEXT LEVEL. CONTRACTOR SHALL DESIGN AND PROVIDE RE-SHORING TO PREVENT OVERSTRESSING THE STRUCTURE.

11. SET FORMS TO FOLLOW SLOPES AND GRADES DEFINED ON PLAN, KEEPING MEMBER DEPTHS CONSTANT AT DEPTHS DETAILED OR SCHEDULED, UNLESS NOTED OTHERWISE. SLOPE UNIFORMLY BETWEEN ELEVATIONS GIVEN. BUILD IN CAMBER WHERE SPECIFIED.

12. CONSTRUCTION JOINTS PERMITTED ONLY WHERE INDICATED ON DRAWINGS. WHERE NOT SPECIFICALLY INDICATED ON DRAWINGS, LOCATE THE JOINTS AS FOLLOWS:

   A. LOCATE JOINTS NOT INDICATED TO LEAST IMPAIR STRENGTH AND APPEARANCE OF STRUCTURE. LOCATE VERTICAL JOINTS IN MIDDLE THIRD OF SPANS OF NON-POST-TENSIONED SLABS, BEAMS OR GIRDERS, UNLESS A BEAM INTERSECTS A GIRDER AT MIDDLE LOCATION, IN WHICH CASE OFFSET JOINTS IN GIRDERS TWICE WIDTH OF BEAM. LOCATE VERTICAL JOINTS WITHIN THE END THIRD OF SPANS OF POST TENSIONED CONTINUOUS SLABS, BEAMS OR GIRDERS WHERE TENDON PROFILE IS AT OR NEAR THE CENTROID OF THE CONCRETE CROSS SECTION.
   B. LOCATE HORIZONTAL JOINTS IN WALLS AND COLUMNS AT UNDERSIDE OF SUPPORTED ELEMENTS AT THE TOP OF THE WALL OR COLUMN AND AT THE TOP OF FOOTINGS OR FLOOR SLABS AT THE BOTTOM OF THE WALL OR COLUMN. ROUGHEN SURFACE OF HORIZONTAL OR NEARLY HORIZONTAL CONSTRUCTION JOINTS SO THAT AGGREGATE SHALL BE EXPOSED UNIFORMLY, LEAVING NO LAITANCE, LOOSENED PARTICLES OR DAMAGED CONCRETE.
   C. REFER TO PLANS FOR JOINTS IN GRADE SUPPORTED SLABS.
   D. JOINTS ARE NOT ALLOWED BETWEEN PILASTERS AND BEAM/WALL THAT ARE MONOLITHIC.
   E. SUBMIT CONSTRUCTION JOINT LAYOUT PLANS FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION.

13. *****GC NOTE*****

   A. AT ALL CONCRETE COLD JOINTS OR TRANSITIONS BETWEEN PLANES: VERTICAL TO VERTICAL POURS, HORIZONTAL TO HORIZONTAL POURS, HORIZONTAL TO VERTICAL POURS, AND VERTICAL TO HORIZONTAL POURS, THE GC SHALL PROVIDE A CONTINUOUS WATER STOP WITHIN EACH JOINT. WATERSTOP MANUFACTURERS AND TYPES SHALL BE AS APPROVED IN THE SPECS AND THE GENERAL NOTES. ALL WATER STOPS MUST BE APPROPRIATE FOR THE CONDITION BASED ON THE MANUFACTURER'S DATA. THE GC SHALL BE IN STRICT COMPLIANCE WITH ALL MANUFACTURERS' USE, HANDLING, AND INSTALLATION INSTRUCTIONS. AT A MINIMUM, THE GC SHALL ASSUME A DUMBBELL-TYPE WATER STOP WITH WINGS THAT EXTEND TO EACH SIDE OF THE CONCRETE FOR EACH JOINT UNLESS OTHERWISE NOTED WITHIN THE CD'S TO BE AN ALTERNATE ACCEPTABLE WATER STOP TYPE.

   B. ADDITIONALLY, CONCRETE USED AT A SLAB DEPRESSION WITH A DEPTH GREATER THAN 6 INCHES, THE CONCRETE ADDITIVE XYPEX C-500 SHALL BE INCLUDED IN THE CONCRETE MIX. REFER TO CONCRETE MIX SCHEDULE FOR CONCRETE MIXES WHICH MAY REQUIRE XYPEX C-500 AND CONCRETE MIX NOTE 10 FOR ADDITIONAL INFORMATION.

CONCRETE REINFORCEMENT:

1. REINFORCING STEEL SHALL CONFORM TO ASTMA615. BARS SHALL BE NEW OR RECYCLED DOMESTIC BILLET STEEL OF A DOMESTIC MANUFACTURE. REINFORCING BARS SIZE #3 THROUGH #10 SHALL BE GRADE 60. REINFORCING BARS SIZE #11 THROUGH #18 SHALL BE GRADE 75.

2. DEFORMED BAR ANCHORS SHALL CONFORM TO ASTM A496, GRADE 70.

3. ALL WELDED WIRE FABRIC SHALL BE SMOOTH WIRE FABRIC CONFORMING TO ASTM A185, AND SHALL BE FURNISHED IN FLAT SHEETS.

4. CONCRETE COVERAGE AROUND REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 SECTION 20.6, LATEST EDITION, AND MEET REQUIREMENTS BELOW. THE REINFORCING STEEL DETAILER SHALL ADJUST REINFORCING STEEL CAGE SIZES AT INTERSECTING REINFORCING MEMBERS AS REQUIRED TO ALLOW CLEARANCE FOR INTERSECTING BARS. SLAB ON GRADE REINFORCEMENT SHALL BE \ SUPPORTED AT EVERY THIRD BAR, NOT TO EXCEED 48-INCH INTERVALS.

FOOTINGS/PIERS	3 IN
GRADE BEAMS	3 IN BOT; 2 IN SIDES (3" IF CAST AGAINST SOIL), 2 IN TOP
SLAB ON GRADE	1 1/2 IN TOP

5. DETAILING OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL CONFORM TO ACI 315, LATEST EDITION. ALL HOOKED BARS SHOWN SHALL HAVE STANDARD HOOKS, U.N.O.

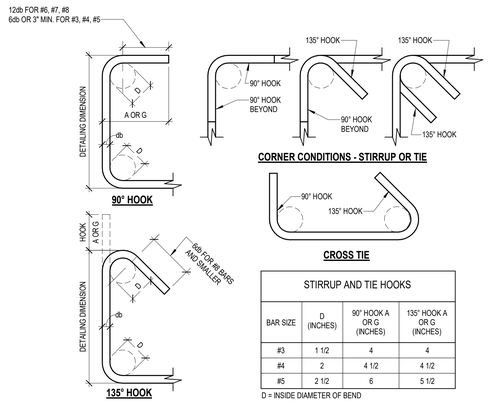
6. REINFORCING SHALL NOT BE WELDED WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.

7. BOTTOM REINFORCING BARS SHALL BE SPLICED AT SUPPORTS AND CONTINUOUS TOP BARS SHALL BE SPLICED AT MID-SPAN PER 8/S-302.

8. WHERE BAR TYPES FROM THE BAR BENDING DIAGRAM ARE SPECIFIED, PROVIDE BARS ACCORDINGLY. OTHERWISE, DETAIL BARS IN BEAMS, COLUMNS, SLABS, AND WALLS PER 8/S-302.

9. PLACE BARS NOTED AS "2ND LAYER" BELOW THE PRIMARY TOP BARS (OR ABOVE THE PRIMARY BOTTOM BARS) AND PROVIDE #11 SPACER BARS PLACED AT INTERVALS OF 4'-0" BETWEEN THE TWO LAYERS OF BARS.

10. PROVIDE CORNER BARS FOR EACH HORIZONTAL BAR AT THE INSIDE AND OUTSIDE FACES OF INTERSECTING BEAMS OR WALLS. REFER TO TYPICAL CORNER BAR DETAIL ON 5/S-302.



STIRRUP AND TIE HOOKS			
BAR SIZE	D (INCHES)	90° HOOK A OR G (INCHES)	135° HOOK A OR G (INCHES)
#3	1 1/2	4	4
#4	2	4 1/2	4 1/2
#5	2 1/2	6	5 1/2

D = INSIDE DIAMETER OF BEND

1 TYPICAL STIRRUP AND TIE HOOK TYPES
NO SCALE

END HOOK DIMENSIONS				
BAR SIZE	FINISHED BEND DIAMETER D, (INCHES)	180° HOOKS		90° HOOK
		A OR G, (INCHES)	J, (INCHES)	A OR G, (INCHES)
#3	2 1/4	5	3	6
#4	3	6	4	8
#5	3 3/4	7	5	10
#6	4 1/2	8	6	12
#7	5 1/4	10	7	14
#8	6	11	8	16
#9	9 1/2	15	11 3/4	19
#10	10 3/4	17	13 1/4	22
#11	12	19	14 3/4	24
#14	18 1/4	27	21 3/4	31
#18	24	36	28 1/2	41

D = INSIDE DIAMETER OF BEND

2 TYPICAL END HOOK TYPE
NO SCALE

DEVELOPMENT LENGTHS OF STANDARD HOOKS IN TENSION GRADE 60 REINFORCEMENT, NORMALWEIGHT CONCRETE							
BAR SIZE	f'c=3000 PSI		f'c=4000 PSI		f'c=5000 PSI		BAR SIZE
	Lhb	0.7 Lhb	Lhb	0.7 Lhb	Lhb	0.7 Lhb	
#3	9	7	8	6	7	6	#3
#4	11	8	10	7	9	7	#4
#5	14	10	12	9	11	8	#5
#6	17	12	15	11	13	10	#6
#7	20	14	17	12	15	11	#7
#8	22	16	19	14	17	12	#8
#9	25	18	22	16	20	14	#9
#10	28	20	25	18	22	16	#10
#11	31	22	27	19	24	17	#11
#14	38	-	33	-	29	-	#14
#18	50	-	43	-	39	-	#18

NOTES:

1. Ldh = DEVELOPMENT LENGTH OF STANDARD HOOKS IN TENSION (INCHES).
2. Ldh = Lhb UNLESS CONDITIONS OF NOTE 3 ARE SATISFIED.
3. Ldh = 0.7Lhb FOR #11 BARS AND SMALLER WHEN SIDE COVER (NORMAL TO PLANE OF HOOK) IS NOT LESS THAN 2 1/2 INCHES AND FOR 90° HOOKS COVER ON BAR EXTENSION BEYOND HOOK IS NOT LESS THAN 2 INCHES.
4. HOOKS ARE NOT CONSIDERED EFFECTIVE FOR DEVELOPING BARS IN COMPRESSION.
5. Ldh SHALL BE MULTIPLIED BY 1.2 FOR EPOXY-COATED HOOKED REINFORCING BARS.

3 TYPICAL DEVELOPMENT LENGTHS OF STANDARD HOOKS IN TENSION
NO SCALE

TENSION DEVELOPMENT AND LAP SPLICE LENGTHS (CLASS B) GRADE 60 REINFORCEMENT NORMAL WEIGHT CONCRETE						
BAR SIZE	f'c=3000 PSI		f'c=4000 PSI		f'c=5000 PSI	
	TYP. BARS	OTHER BARS	TYP. BARS	OTHER BARS	TYP. BARS	OTHER BARS
#3	28"	22"	24"	19"	22"	17"
#4	37"	29"	32"	25"	29"	22"
#5	47"	36"	40"	31"	36"	28"
#6	56"	43"	48"	37"	43"	33"
#7	81"	63"	70"	54"	63"	49"
#8	93"	72"	80"	62"	72"	55"
#9	105"	81"	91"	70"	81"	63"
#10	118"	91"	102"	79"	91"	70"
#11	131"	101"	113"	87"	101"	78"

NOTES:

1. THE CLASS B TENSION LAP SPLICE SCHEDULE SHOWN IS FOR NORMAL WEIGHT CONCRETE AND GRADE 60 NON-EPOXY-COATED REINFORCING.
2. TYPICAL BARS ARE FOR BEAM TOP AND INTERMEDIATE BARS. WALL TOP AND HORIZONTAL BARS, AND SLAB/FOOTING TOP BARS FOR SLAB/FOOTING THICKNESS GREATER THAN 13". OTHER BARS ARE FOR ANY BAR THAT DOES NOT HAVE MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR. ALL TYPICAL BARS SHALL HAVE MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR.
3. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED SPLICE LENGTHS OF TYPICAL BARS BY 1.3 AND THE TABULATED SPLICE LENGTHS OF OTHER BARS BY 1.5.
4. FOR LIGHTWEIGHT CONCRETE, MULTIPLY THE TABULATED SPLICE LENGTHS BY 1.33.
5. FOR GRADE 75 BARS, MULTIPLY THE TABULATED SPLICE LENGTHS BY 1.25.
6. FOR #7 TO #11 SLAB OR WALL REINFORCING WITH CLEAR COVER LESS THAN 1 BAR DIAMETER, MULTIPLY THE TABULATED SPLICE LENGTHS BY 1.5.
7. SPLICE LENGTH FOR BARS OF DIFFERENT SIZE SHALL BE THE GREATER OF SPLICE LENGTH/1.3 OF THE LARGER BAR AND SPLICE LENGTH OF THE SMALLER BAR.
8. FOR CONCRETE STRENGTH IN BETWEEN THOSE SHOWN IN THE SCHEDULE, USE SPLICE LENGTHS OF THE LOWER CONCRETE STRENGTH.
9. THE SCHEDULED LAP SPLICE LENGTH WITH THE APPLICABLE MODIFICATION FACTORS SHALL NOT BE LESS THAN 12".

4 TYPICAL DEVELOPMENT AND LAP SPLICE LENGTHS
NO SCALE

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STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
09/10/2026
Kubala Engineers
F-23612

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: ES

DRAWN BY: JD

GENERAL CONCRETE AND STL REINF NOTES AND TYP DETAILS

S-300

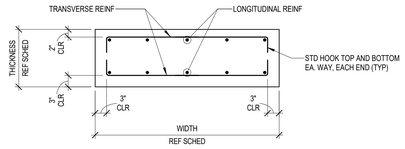
Plot Stamp:
09/21/2026 10:27:27 AM

FOOTINGS:

1. FOOTING DESIGN IS BASED UPON THE FOLLOWING CRITERIA. REFER TO TYPICAL FOOTING DETAIL FOR FOOTING SCHEDULE AND REINFORCING. DISTRIBUTION OF FOOTING TYPES AS INDICATED ON PLANS.

	RESTROOM BUILDING	ENTRY GATE
A. NET ALLOWABLE SOIL BEARING PRESSURE (ISOLATED)	3,100 PSF	3,100 PSF
B. NET ALLOWABLE SOIL BEARING PRESSURE (STRIP)	2,500 PSF	2,500 PSF
C. MINIMUM FOOTING BEARING DEPTH	4 FT BELOW FINAL GRADE	4 FT BELOW EXISTING GRADE
D. ALLOWABLE FRICTION RESISTANCE	250 PSF	250 PSF
E. ALLOWABLE PASSIVE EARTH PRESSURE FOR FOOTINGS	750 PSF	750 PSF
F. DEPTH OF SOIL WHERE PASSIVE EARTH PRESSURE SHALL BE NEGLECTED	UPPER 3 FT	UPPER 3 FT
G. BEARING STRATUM	PROPERLY PLACED AND COMPACTED SELECT FILL SOILS	NATIVE UNDISTURBED CLAY SOILS

2. FOOTINGS NOT SPECIFICALLY LOCATED ON THE PLAN SHALL BE LOCATED ON CENTERLINE OF THE COLUMN ABOVE, WHERE NO COLUMN OCCURS, LOCATE FOOTING ON CENTERLINE OF WALL OR BEAM.
3. PROVIDE DOWELS FROM FOOTINGS INTO CONCRETE ABOVE PER THE TYPICAL FOOTING DETAIL.
4. ELEVATION OF TOP OF FOOTING IS NOTED ON DRAWINGS.
5. REFERENCE PLANS AND FOOTING SCHEDULE FOR FOOTING SIZE, REINFORCING, AND DEPTH OF BEARING STRATUM.
6. ALL FOOTINGS SHALL BE INSPECTED BY A REPRESENTATIVE OF THE PROJECT'S GER IN ORDER TO ENSURE THAT THE BEARING STRATUM IS PROPER AND IN ACCORDANCE WITH THE RECOMMENDATIONS GIVEN IN THE GEOTECHNICAL REPORT.
7. USE TEMPLATES TO SET DOWELS AND ANCHOR BOLTS IN FOOTINGS. PROVIDE DETAILS OF THE TEMPLATES IN THE FOOTING SHOP DRAWINGS. REMOVE THE TEMPLATE COMPLETELY FROM THE TOP OF THE FOOTING PRIOR TO SUPERSTRUCTURE CONSTRUCTION.
8. UNLESS REQUIRED BY THE PROJECT'S GER TO BE FORM-SIDED, THE FOOTING EXCAVATIONS SHALL BE MADE TO NEAT LINES AND SHALL BE FREE OF LOOSE OR WET MATERIALS. CONCRETE CAN BE PLACED DIRECTLY AGAINST THE SOIL WITHOUT FORMING.
9. PLACE CONCRETE IN FOOTING EXCAVATION WITHIN 8 HOURS OF FINAL EXCAVATION OR AS SPECIFIED IN THE GEOTECHNICAL REPORT.
10. EXCAVATIONS FOR SHALLOW FOOTINGS SHOULD BE PERFORMED WITH EQUIPMENT CAPABLE OF PROVIDING A RELATIVELY CLEAN BEARING AREA. THE BOTTOM 6 INCHES OF THE FOUNDATION EXCAVATIONS SHOULD BE COMPLETED WITH A SMOOTH-MOUTHED BUCKET OR BY HAND LABOR. THE EXCAVATIONS SHOULD BE NEATLY EXCAVATED AND PROPERLY FORMED. DEBRIS IN THE BOTTOM OF THE EXCAVATION SHOULD BE REMOVED PRIOR TO STEEL PLACEMENT. BASED ON THE GROUNDWATER OBSERVATIONS OBTAINED DURING OUR FIELD PROGRAM (REFER TO GROUNDWATER CONDITIONS), SIGNIFICANT GROUNDWATER SEEPAGE IS NOT ANTICIPATED FOR SHALLOW FOOTINGS AT THE RECOMMENDED BEARING DEPTH. HOWEVER, WATER SHOULD NOT BE ALLOWED TO ACCUMULATE AT THE BOTTOM OF THE FOUNDATION EXCAVATIONS. TO REDUCE THE POTENTIAL FOR GROUNDWATER SEEPAGE INTO THE EXCAVATIONS AND TO MINIMIZE DISTURBANCE TO THE BEARING AREA, WE RECOMMEND THAT CONCRETE AND STEEL BE PLACED AS SOON AS POSSIBLE AFTER THE EXCAVATIONS ARE COMPLETED. EXCAVATIONS SHOULD NOT BE LEFT OPEN OVERNIGHT. THE BEARING SURFACE OF THE SHALLOW FOOTINGS SHOULD BE EVALUATED IMMEDIATELY PRIOR TO PLACING CONCRETE OR A SEAL SLAB.
11. A THIN SEAL SLAB OF LEAN CONCRETE (APPROXIMATELY 2 TO 4 INCHES THICK) SHOULD BE PLACED AT THE BOTTOM OF THE FOOTING EXCAVATION TO PROTECT THE BEARING SURFACE OF THE FOOTINGS FROM DISTURBANCE AND/OR INFILTRATION OF GROUND/SURFACE WATER IF THE FOOTING CANNOT BE POURED WITHIN THE SAME DAY OF EXCAVATION.



REINF DIAGRAM

SPREAD FOOTING SCHEDULE

MARK	WIDTH (FT-IN)	LENGTH (FT-IN)	THICKNESS (FT-IN)	LONGITUDINAL TOP REINF	LONGITUDINAL BOT REINF	TRANSVERSE TOP REINF	TRANSVERSE BOT REINF	REMARKS
F4	4' - 0"	4' - 0"	1' - 0"	(4) - #5	(4) - #5	(4) - #5	(4) - #5	REF NOTES 10 & 11
F6	6' - 0"	6' - 0"	1' - 0"	(6) - #6	(6) - #6	(6) - #6	(6) - #6	REF NOTES 10 & 11
F7	7' - 0"	7' - 0"	1' - 0"	(7) - #6	(7) - #6	(7) - #6	(7) - #6	REF NOTES 10 & 11

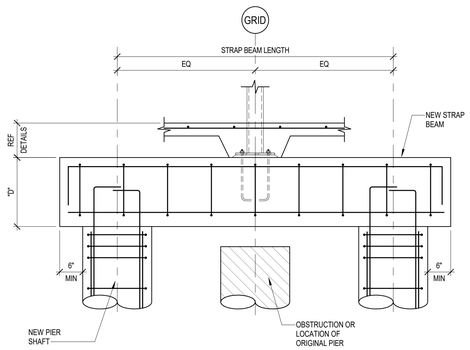
1 TYPICAL FOOTING REINF DIAGRAM AND SCHEDULE
NO SCALE

NOTE:

1. THIS DETAIL SHALL BE USED AT BUILDING SITES WHERE EXISTING UTILITIES, FOUNDATIONS OR OBSTRUCTIONS ARE ENCOUNTERED DURING THE PIER INSTALLATIONS. THE ORIGINAL SINGLE PIER SHALL BE REPLACED WITH TWO NEW PIERS AND A NEW STRAP BEAM SHALL BE ADDED AS SHOWN. ANY UTILITY LINES THAT ARE ENCOUNTERED SHALL BE COVERED WITH CONCRETE.

STRAP BEAM SCHEDULE

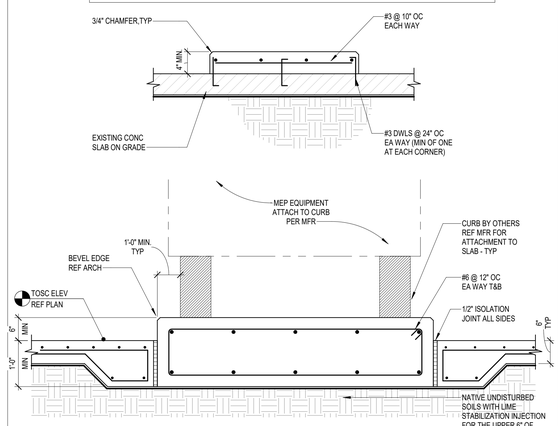
ORIGINAL BELL DIAM (IN)	DBL PIER BELL SIZE (IN)	DBL PIER SHAFT SIZE (IN)	STRAP BEAM LENGTH	STRAP BEAM (W X D)	STRAP BEAM REINFORCING
24, 36	30	16	5'-0"	14"x24"	(2)-#7 T&B #3 @ 10"
42, 48	36	18	6'-0"	14"x24"	(3)-#6 T&B #3 @ 10"
54, 60	48	24	8'-0"	16"x24"	(2)-#6 TOP (4)-#7 BOTT #3 @ 10"
66, 72	54	28	9'-0"	20"x24"	(3)-#7 TOP (5)-#8 BOTT #3 @ 9"
78, 84	60	30	10'-0"	24"x24"	(3)-#7 TOP (6)-#9 BOTT #4 @ 9"



2 STRAP BEAM DETAIL AT CONSTRUCTION
NO SCALE

NOTE(S):

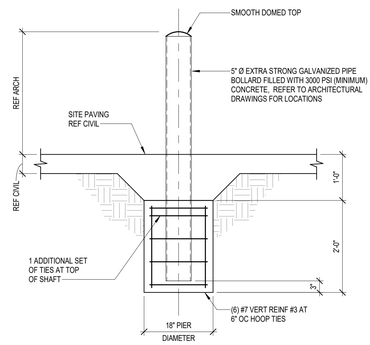
1. GENERAL CONTRACTOR TO COORDINATE WITH THE MECHANICAL DRAWINGS AND SPECIFICATIONS TO DETERMINE LOCATIONS OF HOUSEKEEPING PADS, AND TO PROVIDE WHERE REQUIRED, IF NONE ARE SHOWN ON THE STRUCTURAL DRAWINGS.
2. COORDINATE ALL PAD DIMENSIONS, AND VERIFY ADEQUACY WITH THE MECHANICAL ENGINEER AND THE EQUIPMENT REQUIREMENTS.
3. EQUIPMENT SKIDS/ATTACHMENT TO FOUNDATION SHALL BE DEFERRED SUBMITTAL SIGNED BY REGISTERED P.E. RESPONSIBLE FOR THEIR DESIGN.



3 TYPICAL CONCRETE HOUSEKEEPING PAD DETAIL
NO SCALE

NOTE:

1. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF BOLLARD LOCATIONS WITH THE ARCHITECTURAL DRAWINGS AND SHALL PROVIDE BOLLARDS WHERE REQUIRED WHETHER SHOWN ON THE STRUCTURAL DRAWINGS OR NOT.



4 BOLLARD DETAIL
NO SCALE

NOTES:

1. ANCHOR BOLTS TO BE A307 GALVANIZED BOLTS WITH GALVANIZED NUTS. CONCRETE TO HAVE A 28 DAY STRENGTH OF 3000 PSI.
2. CONTRACTOR SHALL PROVIDE AN ALLOWANCE FOR PIER CASINGS ON A PER LINEAR FOOT BASIS AS PER DIVISION 1 OF THE PROJECT SPECIFICATIONS. ALSO REFER TO THE GEOTECHNICAL REPORT FOR PIER CASING REQUIREMENTS.
3. REF MEP DRAWINGS FOR EMBEDDED CONDUIT, WIRES, ETC.
4. MIN PIER DIAMETER SHALL BE THE GREATER OF D PLUS 9" OR THE MIN PIER DIAMETER IN THE SCHEDULE.

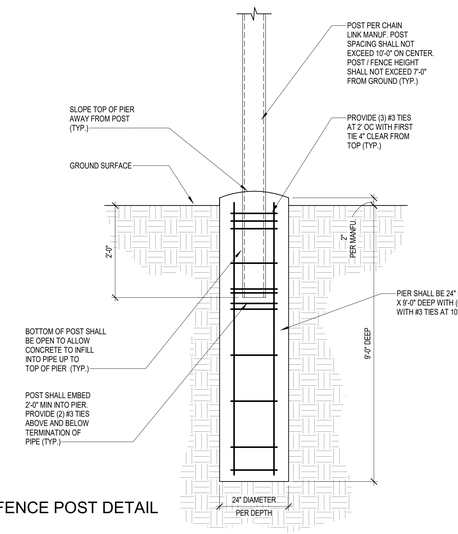
LIGHT POLE BASE SCHEDULE

MAX POLE HT	MIN PIER DIAMETER	MIN DEPTH	VERT REINF	HOOP TIES	NOTES
18'-0" TO 24'-0"	18"	12'-0"	(6) #6	#3 AT 12" OC	1,2
25'-0" TO 30'-0"	24"	12'-0"	(6) #6	#3 AT 12" OC	1,2

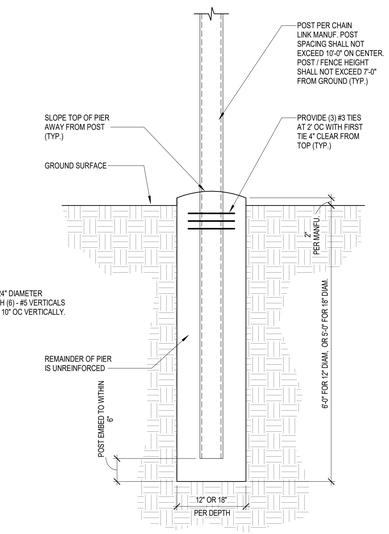
NOTE(S):

1. CONTRACTOR SHALL PROVIDE AN ALLOWANCE FOR PIER CASINGS ON A PER LINEAR FOOT BASIS AS PER DIVISION 1 OF THE PROJECT SPECIFICATIONS. ALSO REFER TO THE GEOTECHNICAL REPORT FOR PIER CASING REQUIREMENTS.
2. SPLICE VERTICAL REINFORCING IN PIERS WITH CLASS B TENSION LAP SPLICE.
3. OPTIONAL CONSTRUCTION JOINT IS ACCEPTABLE. DO NOT SPLICE VERTICAL REINFORCING ABOVE JOINT.
4. FOUNDATION DETAIL IS BASED ON A MAXIMUM FIXTURE EPA OF 1.2

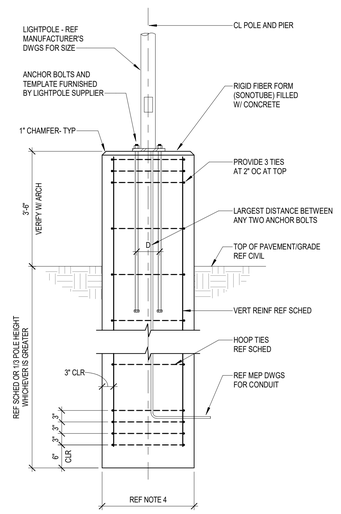
THIS DETAIL SHALL BE USED FOR SOLID FILL CHAIN LINK WITH WIND SCREEN OR OTHER SLATTED - TYPE INFILL. GC COORD LOCATION W/ ARCH



THIS DETAIL SHALL BE USED FOR OPEN CHAIN LINK WITH NO WINDSCREEN OR OTHER SLATTED - TYPE INFILL. GC COORD LOCATION W/ ARCH



5 CHAIN LINK FENCE POST DETAIL
NO SCALE



6 LIGHTPOLE FOOTING DETAIL
NO SCALE

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30330 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

PLAN NORTH | TRUE NORTH

STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
09/10/2026
Kubala Engineers
F-23612

CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: ES

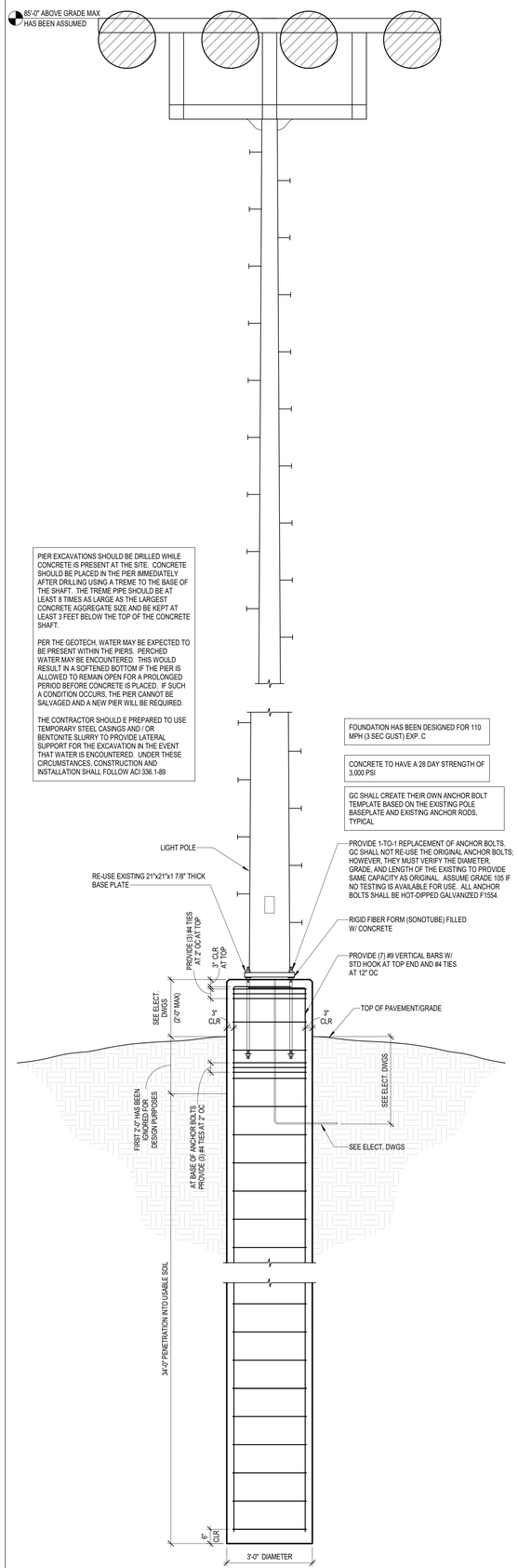
DRAWN BY: JD

GENERAL FOUNDATION NOTES AND TYP DETAILS

S-303

Plot Stamp:
09/21/2026 10:27:28 AM

S-304 - GENERAL FOUNDATION NOTES AND TYP DETAILS



1 SPORTS LIGHT POLE BASE FOOTING DETAIL
1/2" = 1'-0"

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PROFESSIONAL ENGINEER
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F-23612

CLIENT	
TOMBALL ISD	
DATE 09/10/2026	PROJECT NUMBER 250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: ES
DRAWN BY: JD

GENERAL FOUNDATION NOTES AND TYP DETAILS

S-304

Plot Stamp:
09/21/2026 10:27:28 AM

MASONRY:

1. MASONRY TESTING SHALL CONSIST OF A QUALIFIED TESTING LABORATORY PROVIDING THE FOLLOWING SERVICES:

   A. OBSERVE THE INSTALLATION OF MASONRY UNITS.

   B. VERIFY THE QUANTITY, SIZE AND THE SPACING OF THE REQUIRED REINFORCING THAT IS SHOWN ON THE DRAWINGS.

   C. INSPECT THE GROUT SPACE PRIOR TO THE CLOSING OF CLEANOUTS AND ALL GROUTING OPERATIONS. VERIFY THAT THE SPECIFIED CELLS ARE FULLY GROUTED AS NOTED.

   D. MONITOR THE PROPORTIONING, MIXING AND CONSISTENCY OF MORTAR AND GROUT. PROVIDE 28 DAY COMPRESSIVE STRENGTH TESTS ON EACH GROUT MIX IN ACCORDANCE WITH ASTM C1019. PROVIDE COMPRESSION TESTS ON MASONRY PRISMS FOR EACH TYPE OF WALL CONSTRUCTION. IN ACCORDANCE WITH ASTM C1314. CONTRACTOR SHALL PREPARE ONE SET FOR TESTING AT 28 DAYS. TESTS ARE TO BE CONDUCTED FOR EACH 2000 SQUARE FEET OF WALL INSTALLED, BUT NOT LESS THAN TWO TESTS.

MASONRY NOTES:

MATERIALS:

1. ALL CONCRETE MASONRY UNITS (CMU) SHALL SHALL CONFORM TO ASTM C90, TYPE 1, GRADE N, AND THE QUALITY CONTROL STANDARDS OF THE NATIONAL CONCRETE MASONRY ASSOCIATION.
2. ALL CONCRETE MASONRY UNITS SHALL BE MEDIUM WEIGHT (105 TO LESS THAN 125 PCF, OVEN DRY UNIT DENSITY).
3. ALL MASONRY UNITS SHALL HAVE A MAXIMUM LINEAR SHRINKAGE OF .06 OF 1% FROM THE SATURATED TO THE OVEN DRY CONDITION, WHEN TESTED WITH THE METHODS SET FORTH IN THE QUALITY CONTROL STANDARDS OF THE NATIONAL CONCRETE MASONRY ASSOCIATION.
4. MASONRY UNITS SHALL HAVE CURED FOR NOT LESS THAN 28 DAYS WHEN PLACED IN THE STRUCTURE.

COMPRESSIVE STRENGTHS:

1. THE MINIMUM COMPRESSIVE STRENGTH OF MASONRY (f'm) SHALL BE 2000 PSI AS DETERMINED BY THE UNIT STRENGTH METHOD OR BY THE PRISM TEST METHOD.
2. ALL MASONRY UNITS SHALL HAVE A MINIMUM NET COMPRESSIVE STRENGTH OF 2500 PSI AND A MINIMUM NET TENSILE STRENGTH OF 125 PSI, WHEN TESTED IN ACCORDANCE WITH THE METHODS SET FORTH IN THE QUALITY CONTROL STANDARDS OF THE NATIONAL CONCRETE MASONRY ASSOCIATION.

MORTAR:

1. UNLESS NOTED OTHERWISE, MORTAR SHALL CONFORM TO ASTM C270, TYPE 'S'. MORTAR SHALL BE FRESHLY PREPARED AND UNIFORMLY MIXED IN THE RATIO OF 1 PART PORTLAND CEMENT, 1/4 PART MINIMUM TO 1/2 PART MAXIMUM LIME PUTTY OR HYDRATED LIME, DAMP LOOSE SAND NOT LESS THAN 2-1/4 AND NOT MORE THAN 3 TIMES THE SUM OF THE VOLUMES OF THE CEMENT AND LIME USED.

GROUT:

1. GROUT FOR POURING SHALL BE OF FLUID CONSISTENCY AND MIXED IN THE RATIO BY VOLUMES, 1 PART PORTLAND CEMENT, 2 1/4 PARTS MINIMUM TO 3 PARTS MAXIMUM DAMP LOOSE SAND, 1 PART MINIMUM TO 2 PARTS MAXIMUM PEA GRAVEL, AND 0 TO 1/10 PART MAXIMUM HYDRATED LIME. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI, WHEN TESTED IN ACCORDANCE WITH ASTM C476.
2. GROUT FOR PUMPING SHALL BE OF FLUID CONSISTENCY AND SHALL HAVE NO LESS THAN 7 SACKS OF CEMENT IN EACH CUBIC YARD OF GROUT. SUBMIT THE MIX FOR APPROVAL.
3. ALL CELLS WITH REINFORCING BARS SHALL BE GROUTED SOLID.
4. ALL CELLS THAT WILL HAVE DRILLED EXPANSION ANCHORS, EMBEDDED HEADED STUDS OR OTHER EMBEDDED ANCHORS MUST BE GROUTED SOLID.

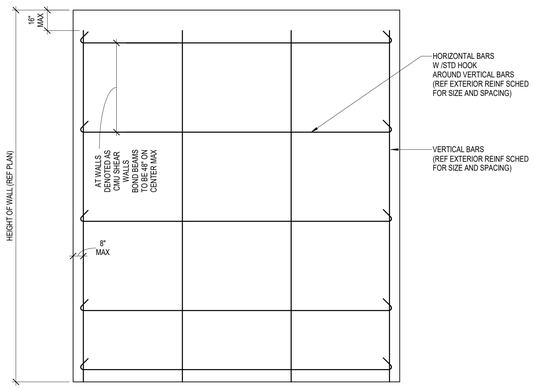
REINFORCEMENT:

1. PROVIDE HORIZONTAL JOINT REINFORCING (TRUSS OR LADDER TYPE, 9 GAGE) AT 16" OC VERTICALLY AT ALL CMU WALLS. PROVIDE PRE-FAB WIRE TIES AT ALL CORNERS AND INTERSECTIONS AT 16" O.C. REINFORCEMENT SHALL CONFORM TO ASTM A82 WITH A MINIMUM YIELD STRENGTH OF 60,000 PSI, AND SHALL BE HOT DIPPED GALVANIZED.
2. OPENINGS IN MASONRY WALLS SHALL HAVE EITHER MASONRY OR STEEL LINTELS AS SHOWN ON THE DRAWINGS. ALL HORIZONTAL REINFORCING IN BOND BEAMS AND LINTEL BLOCKSSHALL BE CONTINUOUS, AND GROUTED SOLID. WHEN NO LINTEL IS DETAILED, A MINIMUM OF (2) #4 BARS IN A LINTEL BLOCK SHALL BE INSTALLED. THE BARS SHALL EXTEND A MINIMUM OF EIGHT INCHES BEYOND THE EDGE OF THE OPENING, AND EACH JAMB SHALL BE GROUTED SOLID FOR A DISTANCE OF EIGHT INCHES WITH (2) #5 VERTICAL MINIMUM. STEEL LINTELS SHALL BEAR 8" MINIMUM AT EACH END. PROVIDE VERTICAL CONTROL JOINTS AT THE ENDS OF ANY STEEL LINTEL, UNLESS 15# FELT OR FLASHING IS PROVIDED AT THE TOP AND BOTTOM OF THE LINTEL ANGLE WHERE THE ANGLE BEARS ON BRICK.
3. LINTEL BLOCKS SHALL BE "U" SHAPED UNITS WITH SOLID BOTTOMS AND ARE TO BE USED OVER WINDOW AND DOOR OPENINGS. BOND BEAM BLOCKS SHALL BE OPEN BOTTOM UNITS AND ARE TO BE USED AT THE TOPS OF WALLS AND AT THE MID-HEIGHT, UNLESS THE WALL HEIGHT EXCEEDS 16 FEET, IN WHICH BOND BEAMS SHALL BE PROVIDED 8'-0" ON CENTER VERTICALLY MAXIMUM. UNLESS SHOWN OTHERWISE ON THE DRAWINGS. PROVIDE (2) #4 BARS IN A SOLID GROUTED BOND BEAM UNLESS NOTED OTHERWISE. LINTEL BLOCKS SHALL NOT BE USED IN PLACE OF BOND BEAM BLOCKS.
4. ALL MASONRY TIES TO BACKUP STRUCTURE SHALL BE HOT DIP GALVANIZED. UNLESS OTHERWISE NOTED ON THE DRAWINGS, PROVIDE HECKMANN NO. 315 ANCHOR WITH NO. 316 TRIANGULAR TIE ON COLUMNS AT 16" ON CENTER VERTICALLY AND A HECKMANN NO. 357 ANCHOR ON ALL BEAMS AT 16" ON CENTER HORIZONTALLY. MASONRY TIES TO WALL STUDS SHALL BE HECKMANN NO. 316 TRIANGULAR TIE WITH HECKMANN NO. 315-C SCREW ON ANCHOR STRAP SPACED 16" ON CENTER HORIZONTALLY VERTICALLY. AT WALL CORNERS, INTERSECTIONS AND OPENINGS, PROVIDE TWO VERTICAL ROWS OF ANCHORS SPACED 16" APART AND 16" ON CENTER VERTICALLY. TRIANGULAR TIES SHALL EXTEND 3/4" FROM FACE OF MASONRY. ANCHOR STRAPS SHALL BE ATTACHED TO METAL STUDS WITH TWO (2) #10-16x1 1/2" CADMIUM PLATED SHEET METAL SCREWS.
5. AT FREE VERTICAL EDGES OF WALLS, AND AT THE FIRST CELL EACH SIDE OF CONTROL JOINTS, PROVIDE (1) VERTICAL IN GROUT FILLED END CORES. THE VERTICAL REINFORCING SHALL MATCH TYPICAL VERTICAL WALL REINFORCING UNLESS NOTED OTHERWISE, AND SHALL EXTEND TO THE TOP OF THE WALL.
6. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, PROVIDE A MINIMUM OF #4 VERTICAL BARS AND DOWELS IN FULLY GROUTED CELLS AT 48" O.C.
7. ALL BAR REINFORCING SHALL BE LAPPED AS FOLLOWS:

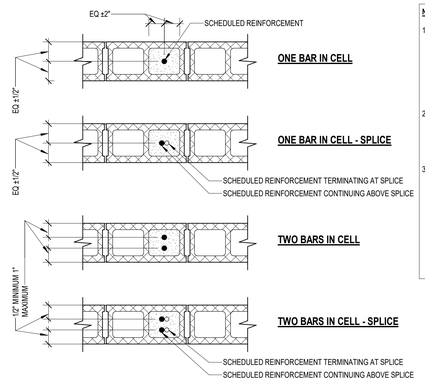
   #3 LAP SPLICE LENGTH = 19 INCHES
   #4 LAP SPLICE LENGTH = 34 INCHES
   #5 LAP SPLICE LENGTH = 45 INCHES
   #6 LAP SPLICE LENGTH = 54 INCHES
   #7 LAP SPLICE LENGTH = 63 INCHES
   #8 LAP SPLICE LENGTH = 72 INCHES
   #9 LAP SPLICE LENGTH = 82 INCHES
   INCREASE LAP SPLICE LENGTHS BY 50% FOR EPOXY COATED REINFORCING

MISCELLANEOUS:

1. ALL MASONRY DESIGN IS BASED ON CHAPTER 21 OF INTERNATIONAL BUILDING CODE, LATEST EDITION AND ACI 530, LATEST EDITION.
2. SEE TYPICAL DETAILS FOR INTERIOR WALL BRACING, AND REINFORCING REQUIREMENTS.
3. UNLESS NOTED OTHERWISE PER PLANS, SPECS OR DETAILS, MASONRY WALLS SHALL HAVE VERTICAL CONTROL JOINTS PER NCMA GUIDELINES TEK 10-2C AS FOLLOWS:
   - AT APPROXIMATELY SIXTEEN FEET ON CENTER
   - CORNERS-AT A MAXIMUM DISTANCE NOT TO EXCEED ONE-HALF THE REQUIRED MAXIMUM DISTANCE
   - BETWEEN MAIN AND INTERSECTING WALLS
   - CHANGES IN WALL HEIGHTS
   - ADJACENT TO LINTELS AND THROUGH OPENINGS IF NOT CROSSING VERTICAL REINFORCEMENT
   - AT PILASTERS AND CHANGES IN WALL THICKNESS
   - ALL JOINT LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECT.
4. UNLESS NOTED OTHERWISE PER PLANS, SPECS OR DETAILS, BRICK VENEER CONTROL JOINTS SHALL BE PER BIA GUIDELINES-TECHNICAL NOTE 18A.
   - WITHOUT OPENINGS, SPACE NO MORE THAN 25 FT
   - WITH MULTIPLE OPENINGS, SPACE NO MORE THAN 20 FT
   - AT OR NEAR CORNERS
   - AT OFFSETS AND SETBACKS
   - AT WALL INTERSECTIONS
   - AT CHANGES IN WALL HEIGHTS
   - AT WALL BACKING SYSTEM CHANGES (CMU TO DRYWALL)
   - AT SUPPORT CHANGES (CONCRETE TO STEEL)
   - AT WALL FUNCTION OR CLIMATIC EXPOSURE CHANGES (INTERIOR TO EXTERIOR)
5. GROUT LIFT LIMITS
   - GROUT POURS SHALL NOT EXCEED 5 FEET PER LIFT WHEN GROUTING THE CELLS OF REINFORCED CMU, UNLESS CLEANOUTS ARE PROVIDED IN THE BOTTOM COURSE OF EACH 5 FOOT SECTION.
   - GROUT POURS SHALL NOT EXCEED 24 FEET WHEN GROUTING THE CELLS OF HOLLOW CMU WHEN GROUTING THE SPACE BETWEEN MULTI-WYTHE WALLS, THE TOTAL POUR SHALL NOT EXCEED 24 FEET FOR 3" SPACES, 12 FEET FOR 2 1/2" SPACES, AND 5 FEET FOR 2" SPACES.
   - MECHANICALLY VIBRATE ALL LIFTS IN EXCESS OF 1 FOOT.
   - ALL GROUT MUST BE PLACED WITHIN 1 1/2 HOURS FROM INTRODUCING WATER INTO THE MIXTURE.
   - GROUT LIFTS SHALL NOT BE STOPPED WITHIN 1 1/2" OF BED JOINT.
   - ALL CMU WALLS LOCATED ADJACENT TO EARTH FILL MUST BE FULLY GROUTED DIRECTLY ADJACENT TO, AND AT EAST 8' ABOVE, ALL SOIL IN CONTACT WITH THE WALL.



1 EXTERIOR MASONRY WALL REINF. ELEVATION
NO SCALE

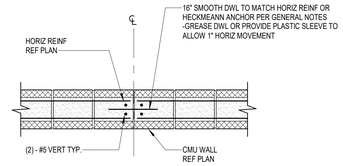


NOTE(S):

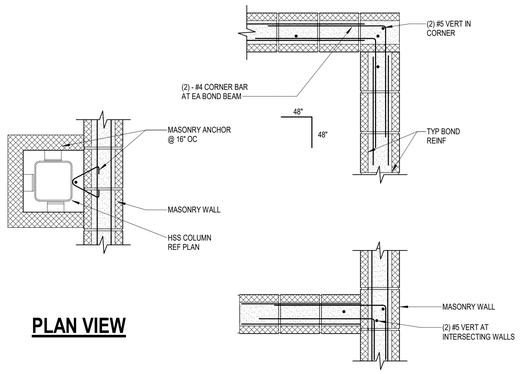
1. REINFORCEMENT MUST BE PLACED USING REINFORCING BAR POSITIONERS THAT LOCATE THE BAR AS SPECIFIED AND PREVENT MOVEMENT OF THE BAR DURING CONSTRUCTION.
2. SPLICED REINFORCEMENT MUST BE A CONTACT LAP SPLICE WITH SPLICED BARS ALIGNED PARALLEL TO THE WALL AS SHOWN.
3. THE ENGINEER MUST BE NOTIFIED PRIOR TO PLACEMENT OF REINFORCEMENT THAT IS REQUIRED TO BE PLACED OUTSIDE OF THE TOLERANCES OF THIS DETAIL SUCH AS TO AVOID INTERFERENCE WITH OTHER REINFORCEMENT, CONDUITS, OR EMBEDDED ITEMS.

2 TYPICAL CMU VERTICAL BAR PLACEMENT
NO SCALE

CONTROL JOINTS SHALL NOT BE LOCATED CLOSER THAN 2'-0" FROM ALL OPENINGS



3 TYPICAL CONTROL JOINT DETAIL
NO SCALE



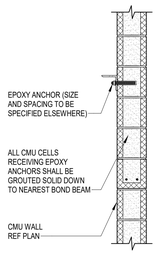
PLAN VIEW

4 MASONRY WALL BRACING/REINF. DETAIL
NO SCALE

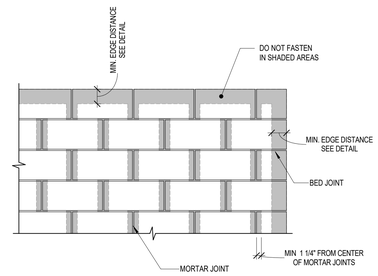
NOTE(S):

1. THIS DETAIL SHALL APPLY AT ALL LOCATIONS WHERE EPOXY OR ADHESIVE ANCHORS ARE SPECIFIED WITHIN THE DRAWINGS.
2. ALL THREADED RODS FOR EPOXY ANCHORS SHALL BE MADE FROM EITHER A307 OR A36 STEEL.
3. IF GREATER EMBEDMENT DEPTHS ARE SPECIFIED IN THE DRAWINGS, THOSE EMBEDMENT DEPTHS SHALL GOVERN.
4. EPOXY ANCHORS IN CMU AND CONCRETE SHALL BE LOCATED AT LEAST 4" AWAY FROM ALL EDGES. THE CENTER TO CENTER SPACING OF EPOXY ANCHORS SHALL NOT BE LESS THAN 8". WHERE EPOXY ANCHORS ARE LOCATED IN CMU, THERE SHALL BE A MAXIMUM OF ONE ANCHOR PER CELL.
5. ALL EPOXY ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS (INCLUDING HOLE DIAMETERS, HOLE CLEANING PROCEDURES, TORQUE SPECIFICATIONS, AND SPECIAL INSPECTIONS).
6. HILTI HY-200 V3 ADHESIVE ANCHORING SYSTEM SHALL BE USED AT ALL ADHESIVE ANCHORS IN CMU.

EPOXY ANCHOR SCHEDULE	
SPECIFIED DIAMETER	EMBEDMENT DEPTH
1/2"	4 1/2"
5/8"	5 5/8"
3/4"	6 3/4"



5 TYPICAL EPOXY ANCHOR DETAIL
NO SCALE



6 TYPICAL CMU ANCHORAGE PLACEMENT DETAIL
3/4" = 1'-0"

	CMU (SIZE)	MEAN ROOF HEIGHT (SIMPLE SPAN, NON-LOAD BEARING)	VERT REINF (IN FULLY GROUTED CELLS)	DOWELS (4'-0" LONG MIN OR AS NEEDED FOR REQ'D LAP/EMBED)
INTERIOR WALL	6"	15'-0"	#5 @ 48" OC	#5 @ 48" OC
	8"	16'-0"	#6 @ 48" OC	#6 @ 48" OC

NOTE(S):

1. FOR ANY WALLS THAT DONT MEET THE REQUIREMENTS OF THE SCHEDULE, GC TO CONTACT ENGINEER OF RECORD FOR PROPER REINFORCEMENT REQUIREMENTS.
2. THE FIRST (3) CELLS AT CORNERS (IN EA DIRECTION), ENDS OF WALLS AND EACH SIDE OF THE CONTROL JOINTS SHALL BE REINFORCED WITH THE SAME SIZE AND NUMBER OF REINFORCING BARS AS SPECIFIED FOR THE OTHER REINFORCED CELLS IN THE WALL AND GROUTED FULL.
3. AT OPENINGS, PROVIDE EXTRA REINFORCED GROUTED FULL HEIGHT CONSECUTIVE CELLS EACH SIDE OF THE OPENING EQUAL TO ONE HALF THE TOTAL NUMBER OF THE CELLS INTERRUPTED BY THE OPENING. REINFORCE EACH CELL WITH THE SAME SIZE AND NUMBER OF BARS AS SPECIFIED FOR THE INTERRUPTED CELLS. PROVIDE A MINIMUM OF (2) REINFORCED GROUTED CELLS EACH SIDE OF OPENING WITH (1) #3, (1) # 6 OR (2) # 6, 8" or 12" UNREINFORCED CMU WALL IN EACH GROUTED CELL RESPECTFULLY.
4. REFER TO 'TYPICAL CMU WALL OPENING DIAGRAM AND SCHEDULE FOR ADDITIONAL INFORMATION.
5. HOLD VERTICAL REINFORCING IN POSITION AT TOP AND BOTTOM AND AT 8'-0" OC MAXIMUM.
6. REFER TO GENERAL NOTES, SPECIFICATIONS AND SECTIONS/DETAILS FOR INFORMATION NOT SHOWN.
7. VERTICAL BARS MAY BE SPLICED IN 8'-0" (+ or -) LENGTHS. SPLICES LOCATED IN ADJACENT CELLS SHALL BE STAGGERED SUCH THAT NOT MORE THAN 50 PERCENT OF THE BARS ARE SPLICED AT THE SAME LOCATION.
8. PROVIDE VERTICAL CONTROL JOINTS AT 5'-0" TO 8'-0" OC FROM CORNERS AND AT 15'-0" MAX IN BETWEEN. REF MISCELLANEOUS NOTE 3 ON S-400 FOR MORE INFORMATION.
9. IF AN INTERIOR NON-STRUCTURAL CMU WALL IS TALLER THAN THE OPTIONS PROVIDED IN THIS CHART THE GC SHALL INFORM THE EOR TO REVIEW AND PROVIDE ANY ADJUSTMENTS TO CMU WALL THICKNESS OR REINFORCING THAT MAY BE NEEDED. FOR BIDDING PURPOSES, FOR ANY WALLS WHICH ARE INTERIOR NON-STRUCTURAL AND ARE TALLER THAN PROVIDED BY THIS CHART THE GC SHALL ASSUME #6 BARS AT 24"OC.

7 TYPICAL NON-STRUCTURAL MASONRY WALL REINF. SCHEDULE
NO SCALE

	SW TAG	CMU (SIZE)	MEAN ROOF HEIGHT (SIMPLE SPAN)	VERT REINF (IN FULLY GROUTED CELLS)	HORIZ REINF (IN FULLY GROUTED CELLS)	JAMB / JOINT REINF (IN FULLY GROUTED CELLS)
EXTERIOR WALL	SW1	8"	16'-0"	#6 @ 24" OC EF	#5 @ 48" OC	(2) - #6 PER CELL IN FIRST 3 CELLS

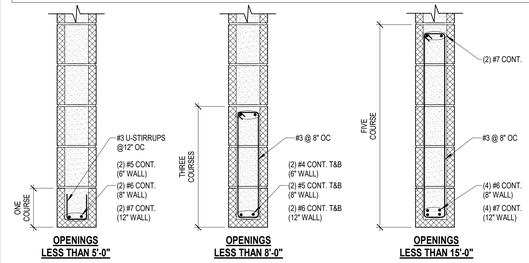
NOTE(S):

1. UNLESS NOTED OTHERWISE, REFER TO THE SCHEDULE ABOVE FOR VERTICAL WALL REINFORCING REQUIREMENTS AT ALL STRUCTURAL CMU WALLS.
2. THE STRUCTURAL MASONRY SHOWN ON THE PLANS IS PART OF THE LATERAL LOAD RESISTING SYSTEM OF THE BUILDING. THE STRUCTURAL DETAILS, INCLUDING CLIP ANGLES, DOWELS AND ADDITIONAL SECONDARY FRAMING MEMBERS, ETC., SHOWN ARE CRITICAL TO THE LATERAL PERFORMANCE OF THE BUILDING. THE TEMPORARY STEEL FRAME BRACING PROVIDED DURING CONSTRUCTION SHALL NOT BE REMOVED UNTIL ALL STRUCTURAL LATERAL BRACING SYSTEMS (INCLUDING STRUCTURAL MASONRY WALLS) HAVE BEEN INSTALLED AND CONNECTED TO THE STEEL FRAMING.
3. THE FIRST (3) CELLS AT CORNERS (IN EA DIRECTION), ENDS OF WALLS AND EACH SIDE OF THE CONTROL JOINTS SHALL BE REINFORCED WITH THE SAME SIZE AND NUMBER OF REINFORCING BARS AS SPECIFIED FOR THE OTHER REINFORCED CELLS IN THE WALL AND GROUTED FULL.
4. AT OPENINGS, PROVIDE EXTRA REINFORCED GROUTED FULL HEIGHT CONSECUTIVE CELLS EACH SIDE OF THE OPENING EQUAL TO ONE HALF THE TOTAL NUMBER OF THE CELLS INTERRUPTED BY THE OPENING. REINFORCE EACH CELL WITH THE SAME SIZE AND NUMBER OF BARS AS SPECIFIED FOR THE INTERRUPTED CELLS. PROVIDE A MINIMUM OF (3) REINFORCED GROUTED CELLS EACH SIDE OF OPENING. REFER TO 'TYPICAL CMU WALL OPENING DIAGRAM AND SCHEDULE FOR ADDITIONAL INFORMATION.
5. HOLD VERTICAL REINFORCING IN POSITION AT TOP AND BOTTOM AND AT 8'-0" OC MAXIMUM.
6. REFER TO GENERAL NOTES, SPECIFICATIONS AND SECTIONS/DETAILS FOR INFORMATION NOT SHOWN.
7. VERTICAL BARS MAY BE SPLICED IN 8'-0" (+ or -) LENGTHS. SPLICES LOCATED IN ADJACENT CELLS SHALL BE STAGGERED SUCH THAT NOT MORE THAN 50 PERCENT OF THE BARS ARE SPLICED AT THE SAME LOCATION.

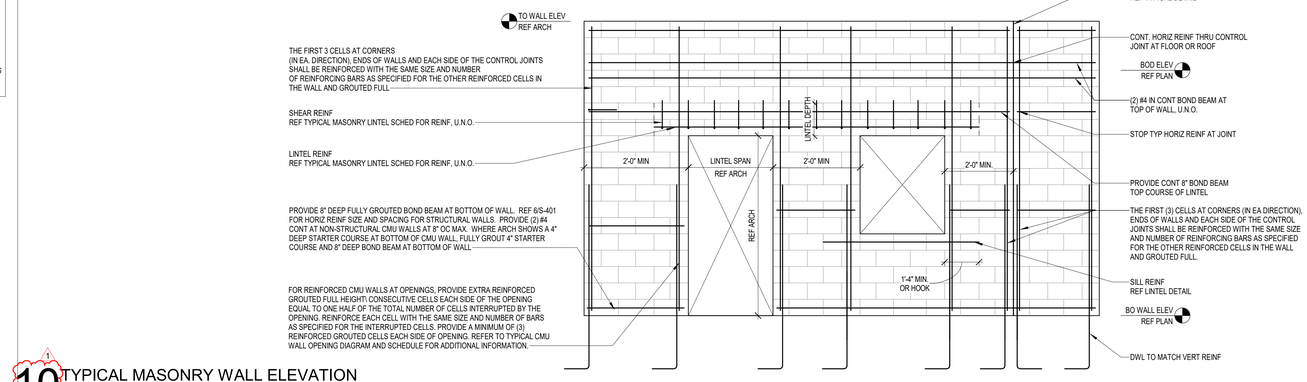
8 TYPICAL STRUCTURAL MASONRY SHEAR WALL REINF. SCHEDULE
NO SCALE

NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF OPENINGS. PROVIDE BLOCK LINTELS FOR ALL OPENINGS AT INTERIOR AND EXTERIOR WALLS FOR WHICH A STEEL LINTEL IS NOT SCHEDULED.
2. PROVIDE 1" OF BEARING @ EACH JAMB FOR EACH FOOT OF CLEAR SPAN BUT NOT LESS THAN 8". REINFORCING SHALL EXTEND A MINIMUM OF 6" ONTO THE BEARING.
3. FOR REINFORCED CMU WALLS AT OPENINGS, PROVIDE EXTRA REINFORCED GROUTED FULL HEIGHT, CONSECUTIVE CELLS EACH SIDE OF THE OPENING EQUAL TO ONE HALF OF THE TOTAL NUMBER OF CELLS INTERRUPTED BY THE OPENING. REINFORCE EACH CELL WITH THE SAME SIZE AND NUMBER OF BARS AS SPECIFIED FOR THE INTERRUPTED CELLS. PROVIDE A MINIMUM OF (2) REINFORCED GROUTED CELLS EACH SIDE OF OPENING. REFER TO TYPICAL CMU WALL OPENING DIAGRAM AND SCHEDULE FOR ADDITIONAL INFORMATION.



9 MASONRY LINTEL SCHEDULE
NO SCALE



10 TYPICAL MASONRY WALL ELEVATION
NO SCALE

NOTE(S):

1. REFER TO ARCH AND MECH DRAWINGS FOR SIZE AND LOCATION OF OPENINGS.
2. REFER TO SCHEDULES FOR LINTEL AND JAMB REINFORCING UNLESS DETAILED OTHERWISE.
3. SPLICES IN VERT REINF REF CMU WALL REINF DIAGRAM.
4. CMU WALL STARTS ABOVE FLOOR.
5. EXTEND GROUTED LINTEL A MINIMUM OF 2'-0" BEYOND FACE OF OPENING EACH SIDE FOR STRAIGHT LINTEL REINF AND 1'-0" FOR LINTEL REINF WITH STANDARD ACI HOOK.
6. USE LINTEL BLOCKS ONLY FOR BOTTOM COURSE OF LINTEL BEAMS OVER OPENING. LINTEL SHALL REMAIN SHORED UNTIL MASONRY CONSTRUCTION ABOVE HAS REACHED 100% OF THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH.
7. CONTINUE VERT WALL REINF OVER OPENING. ANCHOR VERT REINF INTO LINTEL BEAM WITH STANDARD ACI 90° HOOK.
8. ALL VERT BARS AT DOOR JAMBS TO BE FULL HEIGHT.
9. #5 SILL REINF. SOLID GROUT SILL.
10. WHERE HORIZONTAL REINF IS TERMINATED BY OPENING OR CONTROL JOINT PROVIDE STANDARD ACI HOOK WITH VERT WALL REINF IN THE END CELL.
11. CONTINUOUS BOND BEAM REF CMU WALL REINF DIAGRAM.

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TOMBALL HIGH SCHOOL ATHLETICS IMPROVEMENTS

30339 QUINN ROAD,
TOMBALL, TX 77375

CLIENT PROJECT NUMBER: 250515

ISSUE FOR PROPOSAL / PERMIT

TOMBALL ISD

PLAN NORTH
TRUE NORTH

STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
09/10/2026
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CLIENT	
TOMBALL ISD	
DATE	PROJECT NUMBER
09/10/2026	250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: ES
DRAWN BY: JD

GENERAL CMU NOTES AND TYP DETAILS

S-400

Plot Stamp:
09/21/2026 10:27:29 AM

S-501 - GENERAL STEEL NOTES AND TYP DETAILS

NOT USED

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DATE: 09/10/2026	PROJECT NUMBER: 250515

DRAWING HISTORY

No.	Description	Date
1	ADDENDUM #3	09/21/2026

CHECKED BY: ES

DRAWN BY: JD

GENERAL STEEL NOTES AND TYP DETAILS

S-501 1

Plot Stamp:
09/21/2026 10:27:29 AM

TIMBER NOTES:

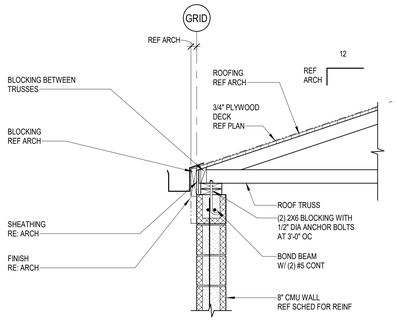
1. TIMBER SHALL CONFORM TO NATIONAL DESIGN SPECIFICATION FOR STRESS GRADE LUMBER AND ITS FASTENINGS, NATIONAL FOREST PRODUCTS ASSOCIATES LATEST EDITION.
2. MATERIALS FOR FRAMING LUMBER SUBJECT TO BENDING STRESSES SUCH AS BEAMS, JOISTS, RAFTERS, HEADERS, AND OTHER HORIZONTAL MEMBERS SHALL BE SOUTHERN PINE NO. 2 KD (MC 15) CONSTRUCTION MINIMUM, UNLESS A HIGHER GRADE IS SHOWN ON THE DRAWINGS.
3. MATERIALS FOR STUD WALLS AND COLUMNS SHALL BE SOUTHERN PINE NO. 2, CONSTRUCTION, OR STUD GRADE TIMBER OR EQUIVALENT DOUGLAS FIR-LARCH UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
4. MATERIALS MUST BE GRADE MARKED.
5. DECKING SHALL BE INSTALLED USING A RANDOM LAY UP PATTERN.
6. PLYWOOD ROOF DECKING SHALL BE APA RATED CD INTERIOR WITH EXTERIOR GLUE. THICKNESS AS SHOWN ON THE DRAWINGS. INSTALL PLYWOOD WITH FACE GRAIN ACROSS SUPPORTS. PROVIDE PLYWOOD SHEATHING CLIPS AT ALL FREE EDGES. PLYWOOD SPAN RATING SHALL BE 48/24. NAIL PLYWOOD TO FRAMING WITH 10d HOT-DIP GALVANIZED NAILS AS FOLLOWS:

ROOF ZONE:	FIRST 5' OF GABLED END	FIRST 4' FROM EDGE & RIDGE	OTHERS
PANEL EDGES	4" O.C.	6" O.C.	6" O.C.
PANEL FIELD	6" O.C.	6" O.C.	12" O.C.

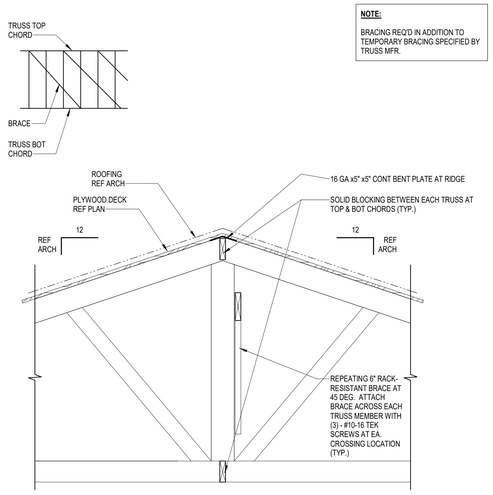
NAIL TO ALL SUPPORTS AT 4" O.C. FOR A 10'-0" SQUARE AREA AT CORNERS.

7. DOUBLE JOISTS UNDER ALL PARTITIONS PARALLEL WITH JOISTS. LAP JOISTS 4 INCHES MINIMUM OVER DROPPED BEAMS AND BEARING PARTITIONS.
8. BRIDGING BETWEEN JOISTS AND RAFTERS SHALL BE 1x4 WOOD OR 16 GAGE HOT-DIP GALVANIZED STEEL CROSS BRIDGING OR 2x SOLID BRIDGING AT ALL BEARING LOCATIONS AND AT 8 FOOT MAXIMUM INTERVALS.
9. BEAMS MADE UP OF MULTIPLE 2x PIECES SHALL NOT BE SPLICED EXCEPT OVER SUPPORTS. ALL MULTI PLY MEMBER BEAMS SHALL BE ATTACHED TOGETHER BY GLUEING AND NAILING WITH 10d NAILS AT 6" O.C. TOP AND BOTTOM FOR EACH PLY. FLITCH BEAMS WITH STEEL PLATES SHALL BE BOLTED TOGETHER WITH 1/2" DIAMETER HOT-DIP GALVANIZED A307 THRU BOLTS AT 1'-0" O.C. STAGGERED FROM TOP TO BOTTOM.
10. HOLES NO GREATER THAN 1/3 THE DEPTH OF THE JOIST MAY BE CUT HORIZONTALLY THRU JOISTS AND SHALL NOT BE WITHIN 2 INCHES OF THE TOP OR BOTTOM OF THE JOIST.
11. PREFABRICATED TIMBER TRUSSES SHALL BE FABRICATED BY A CERTIFIED TIMBER TRUSS MANUFACTURER.
12. TRUSSES SHALL BE FABRICATED WITH WOOD CHORDS AND WEBS IN ACCORDANCE WITH THE NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION, ANSI/TPI I, LATEST EDITION, BY THE TRUSS PLATE INSTITUTE.
13. CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY BRACING FOR TIMBER TRUSSES. BRACING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS FOR BRACING WOOD TRUSSES, PUBLICATION HIB, LATEST EDITION, BY THE TRUSS PLATE INSTITUTE.
14. TRUSS MANUFACTURER SHALL SUBMIT DRAWINGS FOR APPROVAL SHOWING ALL MEMBER FORCES, SIZES AND CONNECTORS. DRAWINGS SHALL BE SEALED BY A REGISTERED ENGINEER IN THE STATE WHERE THE PROJECT IS LOCATED. [SUBMIT SHOP DRAWINGS TO THE CITY OF HOUSTON.] CHANGES IN THE TRUSS LAYOUT SHOWN ON THE CONTRACT DRAWINGS BY THE TRUSS MANUFACTURER WILL REQUIRE CHANGES IN THE LOCATIONS AND QUANTITIES OF ROOF TRUSS AND ROOF GIRDER TRUSS UPLIFT ANCHORS AND HOLDOWNS AND SHEARWALL SIZES, LOCATIONS AND HOLDOWNS. GENERAL CONTRACTOR SHALL COORDINATE ANY CHANGES IN THE TRUSS LAYOUT WITH THE ENGINEER OF RECORD. ADDITIONAL DESIGN SERVICES DUE TO THESE CHANGES WILL BE CHARGED TO THE GENERAL CONTRACTOR.
15. TYPICAL TRUSS LOADING IS SHOWN ON THE DRAWINGS. THE MANUFACTURER SHALL EXAMINE THE DRAWINGS FOR SPECIAL CONDITIONS AND/OR LOADS NOT SHOWN AND PROVIDE FOR SUCH IN THE DESIGN.
16. AT BUILDING ENDS, SPECIAL GABLE-END TRUSSES SHALL BE USED. TRUSSES SHALL BE DESIGNED AND FABRICATED WITH VERTICAL STUDS NO MORE THAN 16 INCHES ON CENTER. [NARROW FACE OF STUD SHALL BE PARALLEL TO FACE OF EXTERIOR WALL OR NARROW FACE OF STUD MAY BE PERPENDICULAR TO EXTERIOR FACE OF BUILDING. STUDS SHALL BRACED AS REQUIRED FOR THE DESIGN WIND LOAD. AT GABLE END WALLS, STUDS SHALL BE BALLOON FRAMED TO THE BOTTOM OF THE TRUSS.
17. PLANS AND DETAILS FOR FRAMING ARE A SCHEMATIC REPRESENTATION OF THE FRAMING AT VARIOUS LOCATIONS AND CONDITIONS ON THIS PROJECT. THE CONTRACTOR SHALL NOT SCALE OR COUNT FRAMING MEMBERS SHOWN AS A SUBSTITUTE FOR SHOP DRAWINGS AND AN ACCURATE QUANTITY TAKEOFF. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL FRAMING NECESSARY TO COMPLETELY FRAME THE PROJECT AND PROVIDE FOR ALL CONDITIONS SHOWN ON THE ARCHITECTURAL DRAWINGS.
18. JOIST AND RAFTER HANGERS, TIES, HOLDDOWNS AND OTHER PRE-ENGINEERED CONNECTORS SHALL BE "SIMPSON STRONG-TIE" OR APPROVED EQUAL. SIZE AND USAGE SHALL BE AS SHOWN ON THE DRAWINGS, SPECIFIED IN THESE NOTES AND AS RECOMMENDED BY THE MANUFACTURER. ALL CONNECTORS SHALL BE POST HOT-DIP GALVANIZED COATED AFTER FABRICATION OR STAINLESS STEEL.
19. INSTALL A SIMPSON "H10" OR TWO (2) - "H2.5A" METAL TIES AT THE CONNECTION BETWEEN ALL RAFTERS OR TRUSS ENDS WHERE THEY BEAR ON A WOOD SUPPORT FOR 10'-0" IN ANY DIRECTION FROM BUILDING CORNERS. DOUBLED UP CLIPS SHALL BE INSTALLED DIAGONALLY ACROSS FROM EACH OTHER ON OPPOSITE SIDES OF THE TOP PLATE. INSTALL A SIMPSON "H2.5A" AT ALL OTHER TRUSS ENDS. METAL ANCHORS AT ROOF GIRDER TRUSS LOCATIONS SHALL BE PROVIDED IN ACCORDANCE WITH THE TABLE PROVIDED ON THE DRAWINGS. SIZE AND USAGE SHALL BE VERIFIED BY THE STRUCTURAL ENGINEER.
20. ALL TIMBER OUTSIDE THE BUILDING ENVELOPE SHALL BE PRESSURE TREATED. ALL CONNECTIONS OUTSIDE THE BUILDING ENVELOPE SHALL BE MADE WITH HOT-DIP GALVANIZED BOLTS OR NAILS.
21. STRUCTURAL WOOD LAMINATED TIMBERS SHALL MEET THE STRUCTURAL REQUIREMENTS AND LAMINATING SPECIFICATIONS OF AITC 117-84 "STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER" AND SHALL BE SUCH STRESS GRADE TO CONFORM TO SOUTHERN PINE CLASSIFICATION SYMBOL 24F [-V3 (Fv=200 PSI) OR -V5 (Fv=200 PSI Fb=2400 PSI)] COMPRESSION ZONE STRESSED IN TENSION. I.E. CANTILEVERS OR CONTINUOUS BEAMS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
22. SIZE OF LAMINATED TIMBERS SHALL BE AN ACTUAL SIZE AS SHOWN ON THE DRAWINGS USING 1 3/8 INCH LAMINATIONS.
23. LAMINATED STRUCTURAL LUMBER (LSL), OTHER THAN GLULAM MEMBERS, SHALL BE PARALLEL STRAND LUMBER HAVING THE FOLLOWING MINIMUM DESIGN PROPERTIES:

Fb= 2900 PSI
Fc= 2900 PSI
Fv= 290 PSI



1 TRUSS BEARING ON CMU WALL DETAIL
3/4" = 1'-0"



2 TYPICAL RIDGE BRACE
3/4" = 1'-0"

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1	ADDENDUM #3	09/21/2026

CHECKED BY: ES
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WOOD GENERAL NOTES & ROOF FRAMING DETAILS

S-510