**ADDENDUM NO. 01**
**October 24, 2022**

To Drawings and Specifications dated October 10, 2022.

**BALES INTERMEDIATE AND WESTWOOD ELEMENTARY RENOVATIONS ISSUE FOR PROPOSAL**
**FOR FRIENDSWOOD I.S.D.**

Prepared by: PBK
11 Greenway Plaza, 22nd Floor
Houston, TX 77046-1104
PBK Project No: 220083

Notice to Bidders

A. Receipt of this Addendum shall be acknowledged on the Bid Form.
B. This Addendum forms part of the Contract documents for the above referenced project and shall be incorporated integrally therewith.
C. Each bidder 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.

**RFI / CLARIFICATIONS**

**General**

Item No. 1 It looks like we are missing the following from the specs and plans for this project:
- A. Bales Intermediate School plans: A-323
  Sheet A-323 removed from the Bales Intermediate School Renovation Index.
- B. Westwood Elementary School plans: S-100A, S-300, S-301, S-302, S-303, S-304, S-305, S-306, S-400, S-401
  Sheets S-100A, S-300, S-301, S-302, S-303, S-304, S-305, S-306, S-400, and S-401 included in this addendum for Westwood Elementary School Renovation, reference attachments.
- C. Specs: 00 40 10, 02 41 00
  Specs 00 40 10 replaced in it's entirety and 02 41 00 included in this addendum, reference attachments.

**Specifications**

Item No. 2 **Section 00 11 00 Request for Competitive Sealed Proposals**
A. Replace Section in its entirety, refer to attachment.

Item No. 3 **Section 00 40 10 Alternate Proposal Form**
A. Section replaced in its entirety with correct footer for clarification, refer to attachment.

Item No. 4 **Section 02 41 00 Demolition**
A. Section added in its entirety, refer to attachment.

**Structural**

Item No. 5 **Westwood Elementary School Renovation: Sheets S-010, S-011, S-012, S-100, and S-500**
A. Replaced sheets in their entirety, refer to attachment.

Item No. 6 **Westwood Elementary School Renovation: Sheets S-101A, S-300, S-301, S-302, S-303, S-304, S-305, S-306, S-400, and S-401**

A. Added sheets in their entirety, refer to attachment.

**Architectural**

Item No. 7 **Bales Intermediate School Renovation: Sheet G-001**
A. Remove Sheet A-323 Building Envelope Details (Alt) from the index.

**MEP/TS**

Item No. 8 MEP Drawing Revisions – Refer to LEAF Narrative dated October 24,2022.

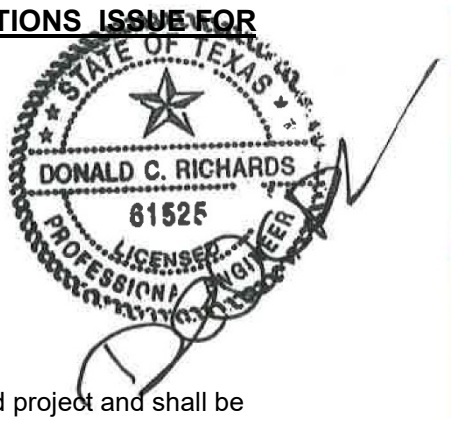
**Attachments include 53 additional sheets ending with P-601 Plumbing Details dated 10/24/2022.**

**ADDENDUM NO. 01**
**October 24, 2022**

**MEP/TS ITEMS**

To Drawings and Specifications dated October 10, 2022.

**BALES INTERMEDIATE AND WESTWOOD ELEMENTARY RENOVATIONS ISSUE FOR PROPOSAL**
**FOR FRIENDSWOOD I.S.D.**

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## DRAWINGS

### MECHANICAL

Item No. 01 **SHEET M-101A – 1ST LEVEL - MECHANICAL PLAN – AREA A (Bales)**

1. Added keyed note 4: "Provide new motorized damper in existing duct work. Interlock with associated exhaust fan."
2. Added motorized damper symbol and keyed note 4 to EF-14 & EF-1 in Mechanical Room UE1 and the Boy's Restroom next to Storage Room B8 respectively.

Item No. 02 **SHEET M-101B – 1ST LEVEL - MECHANICAL PLAN – AREA B (Bales)**

1. Added keyed note 10: "Provide new motorized damper in existing duct work. Interlock with associated exhaust fan."
2. Added equipment tag, motorized damper symbol and keyed note 10 to EF-3 & EF-2 in Boys Restroom next to Custodian Room UC1, and MDF Room C8 respectively.

Item No. 03 **SHEET M-101C – 1ST LEVEL - MECHANICAL PLAN – AREA C (Bales)**

1. Added keyed note 7: "Provide new motorized damper in existing duct work. Interlock with associated exhaust fan."
2. Added equipment tag, motorized damper symbol and keyed note 7 to EF-8 & EF-9 in Pull Out room A7, and Reception / Secretary Area ADM1 respectively.
3. Added one return air diffuser to Office Room ADM3B and OT Room ADM3.
4. Updated position of supply diffusers in Office Room ADM3B and OT Room ADM3 to align with ceiling plan.

Item No. 04 **SHEET M-101D – 1ST LEVEL - MECHANICAL PLAN – AREA D (Bales)**

1. Added keyed note 8: "Provide new motorized damper in existing duct work. Interlock with associated exhaust fan."

2. Added equipment tag, motorized damper symbol and keyed note 8 to EF-4 in the Boy's Restroom.
3. Deleted existing ductwork to remain, and new flex duct, and supply and return diffusers from room SRP MC4A. Add duct continuation to existing ductwork.
4. Moved dash lines indicating Alternate No. 3 to not include the T3 sensor in the Maker Space room MC2.
5. Deleted the dashed lines and keyed note 7 indicating Alternate No. 2 around GT Room ADM15.

Item No. 05 **SHEET M-101E – 1ST LEVEL - MECHANICAL PLAN – AREA E (Bales)**

1. Added keyed note 5: "Provide new motorized damper in existing duct work. Interlock with associated exhaust fan."
2. Added motorized damper symbol and keyed note 5 to EF-10, EF-11, EF-13, & EF-12 in the Locker Room K5, Kitchen Area K2, Kitchen Area K2, and Ware Wash Room K3 respectively.

Item No. 06 **SHEET M-101F – 1ST LEVEL - MECHANICAL PLAN – AREA F (Bales)**

1. Added keyed note 3: "Provide new motorized damper in existing duct work. Interlock with associated exhaust fan."
2. Added equipment tag, motorized damper symbol and keyed note 3 to EF-5, EF-6, & EF-7 in the Restrooms by the Office Room G2, Quest S1, and Kiln Room FA3 respectively.

Item No. 07 **SHEET M-201 – MECHANICAL ROOF PLAN (Bales)**

1. Revised keyed note 2 to: "Existing exhaust fan and associated damper in roof curb to be removed and replaced with new. Existing roof curb to remain and provide new curb adapter. Provide motorized damper, actuator, wiring, and integration to bas. Damper to mount within ductwork."
2. Revised keyed note 3 to: "Existing intake hood to remain. Provide motorized damper and actuator, and integration into bas. Damper to mount within ductwork."
3. Changed supply fans and intake hoods OASF-1, OASF-2, OASF-3, OASF-4, OASF-5, OAI-1, OAI-2, OAI-3, & SF-1 from the new layer to existing layer.

Item No. 08 **SHEET M-401 – MECHANICAL ENLARGED PLAN – MECH ROOMS (Bales)**

1. Reissue the sheet in its entirety.

Item No. 09 **SHEET M-402 – MECHANICAL ENLARGED PLAN – MECH ROOMS (Bales)**

1. Reissue the sheet in its entirety.

Item No. 09 **SHEET M-501 – MECHANICAL SCHEDULES (Bales)**

1. Delete the rows for OASF-1, OASF-2, OASF-3, OASF-5, & OASF-5 in the HVAC Fans Schedule.
2. Delete the HVAC Gravity Ventilators Schedule.

Item No. 10 **SHEET M-101A – 1ST FLOOR MECHANICAL PLAN – AREA A (Westwood)**

3. Reissue this sheet.

Item No. 11 **SHEET M-101B – 1ST FLOOR MECHANICAL PLAN – AREA B (Westwood)**

1. Added keyed note 15: "New ceiling mounted exhaust grille and ductwork up to exhaust fan. Remove existing lay in ceiling exhaust diffuser."
2. Added equipment tag and keyed note symbol 15 to exhaust fan EF-08 in RR 13B.
3. Added keyed note 11 to CHW and HW piping going to FCU-B1.
4. Revised keyed note 1 to: "Existing fan coil unit and associated temperature sensor to be replaced with new. Replace shutoff valves, control modules, sensors and wiring. Provide

integration to bas. Provide new control valves, actuators, and all the piping accessories up to the manual shutoff valve. Provide new piping insulation at new piping. Re-connect to existing ductwork. Provide new temperature sensor at same location as existing."

5. Updated alternate work box no. 8 to include the ductwork coming out of FCU-B3 & FCU-B4.
6. Changed keyed note symbol for FCU-B3, FCU-B4, FCU-B5 FCU-B6 FCU-B8 & FCU-B9 from 9 to 1.
7. Revised keyed note 9 to: "If respective alternate is accepted, all associated ductwork, return air openings, and air devices to be replaced with new."
8. Added unit FCU-B10 in main area next to OT/PT Motor Lab 17C and 1ST Grade room 16, equipment tag, and keyed note symbol 1, as well as associated CHW and HW piping to the unit.

Item No. 12 **SHEET M-101C – 1ST FLOOR MECHANICAL PLAN – AREA C (Westwood)**

1. Added keyed note 5 to condensate piping going to FCU-C6.
2. Revised keyed note 2 to: "Existing fan coil unit and associated temperature sensor to be replaced with new. Replace shutoff valves, control modules, sensors and wiring. Provide integration to bas. Provide new control valves, actuators, and all the piping accessories up to the manual shutoff valve. Provide new piping insulation at new piping. Re-connect to existing ductwork. Provide new temperature sensor at same location as existing."
3. Revised keyed note 1 to: "Existing air handling unit to remain. Provide control valves, actuator, wiring and integration into bas. Provide new chilled and hot water piping insulation after valve replacement."
4. Changed keyed note symbol for FCU-C8 from 6 to 2.
5. Revised keyed note 6 to: "Associated ductwork, air devices and temperature sensor to be replaced with new."
6. Added keyed note 6 to ductwork attached to FCU-C8.
7. Revised keyed note 1 to: "Existing air handling unit and associated controls to remain. Replace existing chilled water control valve with new and provide new actuator, wiring and integration to new controls system. Refer to existing air handling unit schedule for control valve size."
8. Added equipment tag and keyed note 1 to AHU-W1.

Item No. 13 **SHEET M-101D – 1ST FLOOR MECHANICAL PLAN – AREA D (Westwood)**

1. Added keyed note 7: "New ceiling mounted exhaust grill and ductwork up to exhaust fan."
2. Add equipment tags and keyed note 7 to EF-03, EF-04, EF-05 & EF-06.
3. Added new ceiling exhaust air diffusers for the four exhaust fans in the Serving Area 59.
4. Added keyed note 8: "Five new starters to be installed in this room. Provide connection to bas and programming as required."
5. Added keyed note symbol eight (8) to Mechanical Room 64.1

Item No. 14 **SHEET M-101E – 1ST FLOOR MECHANICAL PLAN – AREA E (Westwood)**

1. Added keyed note 4 to condensate piping going to FCU-F5.
2. Added keyed note 6 to CHW and HW Piping going to FCU-F5.
3. Revised keyed note 1 to: "Existing fan coil unit and associated temperature sensor to be replaced with new. Replace shutoff valves, control modules, sensors and wiring. Provide integration to bas. Provide new control valves, actuators, and all the piping accessories up to the manual shutoff valve. Provide new piping insulation at new piping. Re-connect to existing ductwork. Provide new temperature sensor at same location as existing."
4. Added FCU-E11 in main area next to Kindergarten room 47 and Kindergarten room 46, and keyed note 1 to the equipment tag, as well as CHW and HW piping to the unit. Add keyed note symbol 7 to piping going to unit.

Item No. 15 **SHEET M-101F – 1ST FLOOR MECHANICAL PLAN – AREA F (Westwood)**

1. Added keyed note 3 to condensate piping going to FCU-E1, FCU-E2, FCU-E3, FCU-E5, & FCU-E7.
2. Added keyed note 4 to piping going to FCU-E3 & FCU-E7.
3. Revised keyed note 1 to: "Existing fan coil unit and associated temperature sensor to be replaced with new. Replace shutoff valves, control modules, sensors and wiring. Provide integration to bas. Provide new control valves, actuators, and all the piping accessories upto the manual shutoff valve. Provide new piping insulation at new piping. Re-connect to existing ductwork. Provide new temperature sensor at same location as existing."

Item No. 16 **SHEET M-201 – MECHANICAL ROOF PLAN (Westwood)**

1. Added an exhaust fan with keyed note 3 on section D of the roof plan.
2. Added keyed note 5: "Existing kitchen hood exhaust fan to remain."
3. Revised keyed note 3 to: "Existing exhaust fan to be removed and replaced with new. Existing roof curb to remain; provide new curb adapter. Provide damper in ductwork with actuator and connection to BAS."
4. Changed EF-10 from existing to new construction. Changed the keyed note from two (2) to three (3).
5. Updated location of EF-06 to reflect correct location on roof.

Item No. 17 **SHEET M-501 – MECHANICAL SCHEDULE (Westwood)**

1. Added the following schedules: HVAC Fans Schedule, Existing Air Handling Unit Schedule, and Mini-Split System Air-Conditioning Schedule.
2. Revised note 9 in the Fan Coil Unit Schedule to: "Provide new 3-way chilled and heating water control valves. Verify existing line size prior to ordering."

Item No. 18 **SHEET M-601 – MECHANICAL DETAILS (Westwood)**

1. Reissue entire sheet in its entirety.

Item No. 19 **SHEET M-602 – MECHANICAL DETAILS (Westwood)**

1. Reissue entire sheet in its entirety.

Item No. 20 **SHEET M-603 – MECHANICAL DETAILS (Westwood)**

1. Reissue entire sheet in its entirety.

**ELECTRICAL**

Item No 01 **All Power Plans (Bales)**

1. Delete general note #1 addressing miscellaneous 120V circuits for equipment shown on architectural plans.

Item No 02 **Sheet – EP-101A – 1ST FLOOR POWER PLAN – AREA A (Bales)**

1. Delete circuit to BAS panel in room Mechanical #UE1.

Item No 03 **Sheet – EPD101D – 1ST FLOOR POWER DEMO PLAN – AREA D (Bales)**

1. Add the following to keyed note #5: "QUANTITY (8) FLOOR BOXES TO BE REMOVED - (5) AT DESK AND (3) IN FRONT OF DESK."

Item No 04 **Sheet – EPD101F – 1ST FLOOR POWER DEMO PLAN – AREA F (Bales)**

1. Add the following to keyed note #1: "DISCONNECT AND REMOVE EXISTING CIRCUITING TO EXISTING VARIABLE FREQUENCY DRIVE TO BE REMOVED AND REPLACED. DISCONNECT AND REMOVE EXISTING MOTOR STARTERS AS REQUIRED."

Item No 05 **Sheet – EP-101B – 1ST FLOOR POWER PLAN – AREA B (Bales)**

1. Delete circuit to BAS panel in room Mechanical #D9.

Item No 06 **Sheet – EP-101D – 1ST FLOOR POWER PLAN – AREA D (Bales)**

1. Add keyed note #4 “EXISTING RECEPTACLE TO BE RELOCATED ABOVE COUNTERTOP.” Designate note to receptacle at plan south wall of SRP #MC4.
2. Add keyed note #5 “DISCONNECT AND REMOVE EXISTING CIRCUITING TO EXISTING VARIABLE FREQUENCY DRIVE TO BE REMOVED AND REPLACED. DISCONNECT AND REMOVE EXISTING MOTOR STARTERS AS REQUIRED.” Designate note to VFD in room Mechanical #UM7.

Item No 07 **Sheet – EP-101F – 1ST FLOOR POWER PLAN – AREA F (Bales)**

1. Delete circuit homeruns to AHU-8 and AHU-9. Only VFDs to be replaced.
2. Modify keyed note #2 to the following: “DISCONNECT AND REMOVE EXISTING CIRCUITING TO EXISTING VARIABLE FREQUENCY DRIVE TO BE REMOVED AND REPLACED. DISCONNECT AND REMOVE EXISTING MOTOR STARTERS AS REQUIRED.”

Item No 08 **Sheet – EP-102 – ELECTRICAL ROOF PLAN (Bales)**

1. Delete disconnect and reconnect, and motor switches to all supply fans and intakes. Total quantity (9).
2. Delete MAPA pedestal mounting for disconnect serving ACCU-C8. Revise mounting to exterior wall directly plan south of the current disconnect location.

Item No 09 **All Power Plans (Westwood)**

1. Delete general note #1 addressing miscellaneous 120V circuits for equipment shown on architectural plans.

Item No 10 **All Demo Power Plans (Westwood)**

1. Delete general note #3 and #4.

Item No 11 **Sheet – EPD101A – 1ST FLOOR POWER DEMO PLAN – AREA A (Westwood)**

1. Modified keyed note #3 to the following: “EXISTING PROJECTOR SCREEN TO BE RELOCATED. CONTRACTOR TO REMOVE CONDUIT AND WIRE BACK TO NEAREST JUNCTION BOX TO BE RE-USED AT NEW LOCATION.”
2. Add keyed note #4 and designate at stage center plan west: “EXISTING FLOOR OUTLETS AT STAGE TO BE DEMOLISHED. REMOVE CONDUIT AND WIRE BACK TO NEAREST UPSTREAM PANELBOARD.”

Item No 12 **Sheet – EPD101B – 1ST FLOOR POWER DEMO PLAN – AREA B (Westwood)**

1. Clarification: No FCU located plan north of A/V storage room. Circuit replacement shown deleted.

Item No 13 **Sheet – EPD-101D – 1ST FLOOR POWER DEMO PLAN – AREA D (Westwood)**

1. See attached revised sheet EPD-101D for revisions to switchboard service, motor starters, and relocated transformers.

Item No 14 **Sheet – EPD-101E – 1ST FLOOR POWER DEMO PLAN – AREA E (Westwood)**

1. Delete drawing sheet in its entirety.

Item No 15 **Sheet – EP-101A – 1ST FLOOR POWER PLAN – AREA A (Westwood)**

1. Modified keyed notes to the following:
2. Keyed note #1: WIRE AND CONNECT DUPLEX OUTLETS TO NEW DEDICATED 120V 20A CIRCUIT VIA 2#12, 1#12G, 3/4" CONDUIT TO 120/208V PANELBOARD IN MAIN ELECTRICAL ROOM.
3. Keyed note #2: CONTRACTOR SHALL DISCONNECT AND RECONNECT CIRCUIT SERVING FAN COIL UNIT/ AIR HANDLING UNIT TO BE REPLACED. PROVIDE NEW DISCONNECTING MEANS AND EXTEND CONDUIT/WIRE AS REQUIRED.
4. Keyed note #3: NEW LOCATION OF PROJECTOR SCREEN. EXISTING CIRCUIT TO BE EXTENDED TO NEW LOCATION. Designate keyed note to projection screen located directly plan west of room Music #6.

Item No 16 **Sheet – EP-101B – 1ST FLOOR POWER PLAN – AREA B (Westwood)**

1. Modified keyed note #3 to the following: “WIRE AND CONNECT RECEPTACLES TO DEDICATED 20A 120V CIRCUIT TO 208/120V PANELBOARD VIA 2#12, 1#12G, 3/4"C.”
2. Office #14 – Modify receptacle at desk to quad. Add (2) duplex receptacles at plan north wall and connect to local 20A 120V circuit.
3. Add and designate keyed note #2 to FCU-B10.

Item No 17 **Sheet – EP-101C – 1ST FLOOR POWER PLAN – AREA C (Westwood)**

1. Delete power to BAS and all electrical scope at far plan east mechanical room. Delete keyed note #1.
2. Modified keyed note #3 to the following: “WIRE AND CONNECT RECEPTACLES TO DEDICATED 20A 120V CIRCUIT TO 208/120V PANELBOARD VIA 2#12, 1#12G, 3/4"C.”

Item No 18 **Sheet – EP-101D – 1ST FLOOR POWER PLAN – AREA D (Westwood)**

1. See attached revised sheet EP-101D for revisions to switchboard service, motor starters, and relocated transformers.

Item No 19 **Sheet – EP-101E – 1ST FLOOR POWER PLAN – AREA E (Westwood)**

1. Add and designate keyed note #1 to FCU-E11.

Item No 20 **Sheet – EP-102 – ELECTRICAL ROOF PLAN (Westwood)**

1. Add and designate keyed note #1 to EF-07 and EF-10.

Item No 21 **Sheet – EL-201A – 1ST FLOOR LIGHTING PLAN – AREA A (Westwood)**

1. Modify keyed note #1 to clarify lighting fixtures in room are new: “CONTRACTOR TO RECONNECT NEW LIGHTING FIXTURES IN THIS ROOM AS REQUIRED. CONNECT TO NEW OCCUPANCY SENSING CONTROLS AND SWITCH VIA 2#12, 1#12G, 3/4"C.”

Item No 22 **Sheet – E5.02 – ELECTRICAL RISER DIAGRAM (Westwood)**

1. See attached revised sheet E5.02 for revisions to switchboard electric service.

Item No 23 **Sheet – E7.01 – ELECTRICAL PANEL SCHEDULES (Westwood)**

1. Revise amperage of breakers MSA-1 and MSA-2 to 15A/3P.

**PLUMBING**

Item No 24 **Sheet – P- 000 – PLUMBING COVER SHEET (Bales)**

1. Deleted "Project General Notes" Item "A"
2. Edited "Project General Notes" Item "L" – “ALL WORK SHALL BE PROPERLY TESTED, BALANCED, CLEANED AND DISINFECTED. PROVIDE A ONE YEAR WARRANTY FROM DATE OF SUBSTANTIAL COMPLETION ON ALL PARTS AND LABOR.”
3. Removed "Plumbing Testing Notes"
4. Add Pump & Gas Water Heater Schedule. Pump shall be Bell & Gossett PR-AB (Bronze) and gas water heater shall be AO Smith BTH-500(A) with expansion tank, neutralizer kit, and reconnect existing vent to new gas water heater, as required.

Item No 25 **Sheet – PD-101 – 1ST FLOOR PLUMBING DEMO PLAN – COMPOSITE (Bales)**

1. Demo existing circulating pump and gas water heater at room UM2. Added Keynotes #6 & #7
2. Edited Keynote #2 and #5.

Item No 26 **Sheet – P-101 – 1ST FLOOR PLUMBING PLAN – COMPOSITE (Bales)**

1. Added back the replacement of existing circulating pump and gas water heater. Added Keynotes #3 & #4
2. Added Keynote #2.

Item No 27 **Sheet – P-601 – PLUMBING DETAILS (Bales)**

1. Added back the Gas Water Heater detail.

Item No 28 **Sheet – PD-101 – 1ST FLOOR PLUMBING DEMO PLAN – COMPOSITE (Westwood)**

1. Removed General Notes - Plumbing Plan for Item K to Item P
2. Edited Keynote#1 – “ALTERNATE #10. DEMO & REMOVE EXISTING FLOOR DRAIN PATCH SLAB AT THIS AREA (CAP AND SEAL AIRTIGHT). CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING ANY WORK”
3. Edited Keynote#2 – “ALTERNATE #10. DEMO & REMOVE EXISTING PLUMBING FIXTURE & ASSOCIATED PIPING, CAPPED TO THE NEAREST MAIN SOURCE. CAP AND SEAL AIRTIGHT PLUMBING STUB-UPS FROM SLAB, PATCH AND REPAIR SLAB TO MATCH EXISTING CONDITIONS. CAP DOMESTIC WATER AND VENT IN PLENUM. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING ANY WORK”
4. New Keynote#3 – “NO DEMO PLUMBING SCOPE” at Room#6, #7A, #10A, #10B, #14, #14A, #14C, #16, #17A, #17B, and #17C. Building is not Sprinklered.

Item No 29 **Sheet – P-101 – 1ST FLOOR PLUMBING PLAN – COMPOSITE (Westwood)**

1. Removed General Notes - Plumbing Plan for Item K to Item P
2. Removed Keynote #2

Item No 30 **Sheet – P-601 – PLUMBING DETAILS (Westwood)**

1. Removed the Fire water Sprinkler details. Details #2 to #5.

**Technology**

Item No 31 **Sheet – TF-201D - 1ST FLOOR FIRE ALARM PLAN – AREA A (Bales)**

1. Remove one (1) Fire alarm device in SRP room MC4.
2. Remove one (1) Fire alarm device in GT room ADM15.

Item No 32 **Sheet – TA-201A - 1ST FLOOR TECHNOLOGY PLAN – AREA A (Bales)**

1. Add one (1) “D1” data drop device in Mech room UM2.
2. Add one (1) “D1” data drop device in Mech room UM1.
3. Revise data drop in Multipurpose Pod B to “D2” in lieu of “D1”

Item No 33 **Sheet – TA-201B - 1ST FLOOR TECHNOLOGY PLAN – AREA B (Bales)**

1. Add one (1) “D1” data drop device in Mech room UM5.

Item No 34 **Sheet – TA-201C - 1ST FLOOR TECHNOLOGY PLAN – AREA C (Bales)**

1. Add one (1) “D1” data drop device in Mech room UM3.
2. Add one (1) “D1” data drop device in Mech room UM4.
3. Add one (1) “D2” data drop and one (1) intercom speaker connected to the local intercom circuit, provide one (1) volume control to plan northwest wall in Office AD2.
4. Add one (1) “D2” data drop and one (1) intercom speaker connected to the local intercom circuit, provide one (1) volume control to plan northwest wall in Office ADM3.
5. Remove one (1) existing “D2” plan east wall in office AD3.

Item No 35 **Sheet – TA-201D - 1ST FLOOR TECHNOLOGY PLAN – AREA D (Bales)**

1. Add one (1) “D1” data drop device in Mech room UM6.
2. Remove one (1) floor box and its cabling in library MC1 in its entirety.
3. Add one (1) “AVO” plan southeast corner in Maker Space room MC2.
4. Remove one (1) existing “D1” plan north wall in GT room AD15.
5. Remove keyed note #3 from GT room AD15.
6. Add one (1) “D2” data drop above counter to plan east wall in GT room AD15.
7. Remove one (1) existing “D1” plan south wall in GT room AD15.

Item No 36 **Sheet – TA-201E - 1ST FLOOR TECHNOLOGY PLAN – AREA E (Bales)**

1. Revise keyed note to MDF and provide new roof penetrations for antenna connect to power and building network. Coordinate with owner.

**End of MEP/TS Addendum**

## SECTION 00 11 00 - REQUEST FOR COMPETITIVE SEALED PROPOSALS

Competitive Sealed Proposals for the work identified below in accordance with Proposal Documents and addenda as may be issued prior to date of proposal opening will be received by the Board of Trustees, Friendswood Independent School District, until proposal closing date and time, as identified below. Proposals from Offerors will then be opened in public and read aloud.

**OWNER:**

Friendswood Independent School District
302 Laurel
Friendswood, Texas 77546
Phone: (281) 482-1267
Representative: Kim Dingell, Bond Manager

**PROJECT:**

Bales Intermediate and Westwood Elementary Renovations

Bales Intermediate:
211 Stadium Lane
Friendswood, Texas 77546

Westwood Elementary School:
506 W. Edgewood Dr.
Friendswood, Texas 77546

**EST. BUDGET:**

$3,500,000.00

**PRE-PROPOSAL CONFERENCE**

October 25, 2022 at **10:00 AM**

**LOCATION**:

Board Room
402 Laurel
Friendswood, Texas 77546
Representatives of the Architect, Owner will be present at this meeting. All proposers are encouraged to attend.

**PROPOSAL DUE DATE AND TIME:**

November 1, 2022 Bids due at 2:00 PM CST to
FISD Administration Building
302 Laurel Dr.
Friendswood, Texas 77546

Alternates due at 3:00 PM CST to
FISD Administration Building
302 Laurel Dr.
Friendswood, Texas 77546

**BID PROPOSAL OPENING:**

Bid and Alternate Opening at 3:30 PM CST at
FISD Annex Building, Board Room
402 Laurel Dr.
Friendswood, Texas 77546

**ARCHITECT:**

PBK Architects, Inc.
11 Greenway Plaza Boulevard, 22nd floor
Houston, Texas 77046
Phone: 713-965-0608 Fax: 713-961-4571

For questions or to obtain proposal documents, please email Blanca Soto blanca.soto@pbk.com with PBK Architects and copy Kim Dingell, Friendswood ISD Bond Manager kdingell@fisdk12.net .

Submit Proposals to the Owner no later than the date and time specified. Submit proposals in a sealed envelope in accordance with Document 00 20 00 Instructions to Offerors with the following information on the face of the envelope. The bids will be submitted to the FISD administration building at 302 Laurel Dr. and will be opened at the FISD admin annex at 402 Laurel Dr. in the Board Room.

Name of Offeror (General Contractor)
Bales Intermediate and Westwood Elementary Renovations – CSP 23-003
Friendswood Independent School District
Attn: Kim Dingell, Bond Manager

The Owner reserves the right to reject any and all proposals and to waive any irregularities in the Competitive Sealed Proposal process.

No proposal shall be withdrawn within 45 days after the proposal opening without the specific consent of the Owner.

**PROPOSAL BOND:** A Proposal Bond from a bonding company acceptable to the Owner or a certified check in an amount equal to 10% of the greatest amount proposal shall accompany each Offeror's proposal.

**PAYMENT BOND AND PERFORMANCE BOND:** A Payment Bond and Performance Bond, each in an amount equal to 100% of the Contract Sum conditioned upon the faithful performance of the Contract will be required. Please note that all bonding companies presented must be acceptable to the Owner.

The prevailing rates of wages are the minimums that must be paid in compliance with applicable laws of the State of Texas.

Offerors submitting a proposal are encouraged to visit the site. All Offerors submitting a proposal are encouraged to attend the proposal opening.

Subcontractors and Suppliers intending to submit proposals to General Construction Offerors are required to prepare proposals based on a complete set of proposal documents. ~~If after reviewing the complete set of proposal documents, Subcontractors and Supplier Offerors desiring to purchase individual drawings and specification sections for their proposal convenience, may do so by ordering the specific drawings and specifications directly from the reproduction company.~~

~~Subcontractors and Suppliers purchasing a partial set of proposal documents are responsible for determining the documents it requires and is responsible for costs associated with printing and delivery. Subcontractors and Suppliers exercising this option shall agree that 1) all documents shall be returned to the Architect, without refund, after submitting a proposal, 2) the documents shall not be used on other construction projects, and 3) that the subcontractor or supplier agrees that the Owner and the Architect have no responsibility for errors or interpretations resulting from the use of incomplete set of proposal documents.~~

~~Successful Subcontractors and Supplier Offerors may retain their Proposal Documents until completion of the construction.~~

**END OF DOCUMENT 00 11 00**

**DOCUMENT 00 40 10 - ALTERNATE PROPOSAL FORM**

## BALES INTERMEDIATE AND WESTWOOD ELEMENTARY RENOVATIONS
### FRIENDSWOOD INDEPENDENT SCHOOL DISTRICT

Submitted by: _____

Date: _____ Phone No.: _____

To: Board of Trustees
Friendswood ISD
302 Laurel
Friendswood, Texas 77546

Having examined Proposal and Contract Documents prepared by PBK, Inc., dated October 10, 2022 and having examined site conditions, the undersigned proposes to furnish all labor, equipment and materials and perform all work for the completion of the above-named project for the sum indicated below.

In submitting his Proposal, the undersigned agrees to the following:

1. Hold proposal open for acceptance 60 days.
2. Accept right of Owner to reject any or all proposals, to waive formalities and to accept proposal which Owner considers most advantageous.
3. Enter into and execute the contract, if awarded, for the Base Proposal and accepted Alternate Proposals.
4. Complete work in accordance with the Contract Documents within the stipulated contract time.
5. By signing, the undersigned affirms that, to the best of his knowledge, the Proposals have been arrived at independently and is submitted without collusion with anyone to obtain information or gain any favoritism that would in any way limit competition or give an unfair advantage over respondents in the award of this proposal.

**I. ALTERNATES**

If the Owner accepts any or all of the Alternates, the undersigned agrees to modify the Base Proposal as stipulated below:

**A. Alternate No. 1: Renovation for Professional Learning at Bales Intermediate**
ADD _____ Dollars $ _____
(Amount written in words governs) (Amount in figures)

**Alternate No.2: Renovation for GT at Bales Intermediate**
ADD _____ Dollars $ _____
(Amount written in words governs) (Amount in figures)

**Alternate No.3: Renovation for SRP and Maker Space at Bales Intermediate**
ADD _____ Dollars $ _____
(Amount written in words governs) (Amount in figures)

**Alternate No.4: Library Carpet Replacement at Bales Intermediate**
ADD _____ Dollars $ _____
(Amount written in words governs) (Amount in figures)

***NOTE: THIS DOCUMENT MUST BE SUBMITTED BY 3:00 PM ON NOVEMBER 1, 2022.***

**Alternate No.5: Renovation for Offices at Bales Intermediate**
ADD_____ Dollars $_____
(Amount written in words governs) (Amount in figures)

**Alternate No.6: Electrical Poles Demolition at Bales Intermediate**
ADD_____ Dollars $_____
(Amount written in words governs) (Amount in figures)

**Alternate No.7: Music Room Westwood Elementary**
ADD_____ Dollars $_____
(Amount written in words governs) (Amount in figures)

**Alternate No.8: Resource and Austin Units at Westwood Elementary**
ADD_____ Dollars $_____
(Amount written in words governs) (Amount in figures)

**Alternate No.9: Renovations for Speech, Office, and 1st Grade at Westwood Elementary**
ADD_____ Dollars $_____
(Amount written in words governs) (Amount in figures)

**Alternate No.10: Renovations for OT/PT Motor Lab, Interventionist, ESL, and 1st Grade At Westwood Elementary.**
ADD_____ Dollars $_____
(Amount written in words governs) (Amount in figures)

**Alternate No.11: Deductive Change to Adjust Base Bid Pricing**
DEDUCT_____ Dollars $_____
(Amount written in words governs) (Amount in figures)

It is understood that the right is reserved by the Owner to reject any or all proposals, or waive any informalities in the proposal process.

_____
Authorized Signature

_____
Printed Name

_____
Title

(Seal, if a Corporation) State whether Corporation, Partnership or Individual**)**

_____
Name of Contracting Firm

_____
Email Address

_____
Address

***NOTE: THIS DOCUMENT MUST BE SUBMITTED BY 3:00 PM ON NOVEMBER 1, 2022.***

_____
Telephone

_____
Date

**END OF DOCUMENT ~~00 40 00~~**
**00 40 10**

***NOTE: THIS DOCUMENT MUST BE SUBMITTED BY 3:00 PM ON NOVEMBER 1, 2022.***

5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

D. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces that could be construed as damage caused by demolition operations. Submit prior to commencement of the work.

E. Statement of Refrigerant Recovery: Submit statement signed by refrigerant recovery technician responsible for recovering refrigerant, stating that refrigerant present was recovered and recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

F. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

## 1.7 QUALITY ASSURANCE

A. Regulatory Requirements:
1. Demolition Standards: Comply with ASSE A10.6 and NFPA 241.
2. Comply with EPA regulations prior to commencement of the work. Comply with hauling and disposal regulations of authorities having jurisdiction.
3. Comply with applicable federal, state, and local codes for demolition work, dust and noise control, safety of structure, and debris removal.
4. Obtain required permits from authorities having jurisdiction.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA approved certification program.

## 1.8 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to Work area. Conduct Work so Owner's operations will not be disrupted. Provide minimum of 72 hours' notice to Owner of activities that will affect Owner's operations including but not limited to:
1. Interruption of power.
2. Interruption of utility services.
3. Excessive noise.

B. Condition of Structure: Conditions existing at time of inspection will be maintained by Owner as far as practical. Owner assumes no responsibility for actual condition of items or structures to be demolished.
1. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: It is not anticipated that hazardous materials will be encountered in the Work.
1. Hazardous materials will be removed by Owner before start of the Work.
2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

D. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by at least 12 inches (300 mm).

E. Storage or sale of removed items or materials on site is not permitted.

F. Traffic: Conduct operations and debris removal to ensure minimum interference with roads, streets, drives, fire lanes, walks, accessible paths, and adjacent occupied or used facilities.
   1. Do not close, block, or obstruct streets, drives, walks, or occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around obstructed traffic ways.

G. Explosives: Explosives are not permitted at the site.

H. Flame Cutting: Do not use cutting torches for removal until flammable materials are removed. At concealed spaces, verify conditions prior to flame cutting operations. Maintain portable fire suppression devices during flame cutting operations.

I. Environmental Controls: Use water sprinkling, temporary enclosures, or other acceptable methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection. Do not use water when it may create hazardous or objectionable conditions.

J. Utility Services: Maintain existing utilities and protect against damage during demolition operations.
   1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, acceptable to Owner and governing authorities.

K. Protections: Provide temporary barriers to protect Owner's personnel and public from injury from work.
   1. Take protective measures to provide free and safe passage to occupied portions of building.
   2. Provide protection to ensure safe passage of the Owner’s personnel and the public around demolition areas and to and from occupied portions of adjacent areas, buildings, and structures.
   3. Provide shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or work to remain.
   4. Protect existing work which becomes exposed during demolition operations.
      a. Protect existing improvements, appurtenances, and conditions to remain.
      b. Protect adjacent floors with coverings.
      c. Protect walls, openings, roofs, and adjacent exterior construction to remain and exposed to building demolition operations.
   5. Construct temporary insulated dustproof partitions to separate areas from noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks. Refer to Drawings for location of partitions to be provided.
   6. Provide temporary weather protection when exposing exterior conditions to prevent water leakage or damage to structure or interior areas of existing building.

L. Damages: Promptly repair damages caused to adjacent facilities by demolition work.

## 1.9 COORDINATION

A. Arrange selective demolition schedule to avoid interference with Owner's and the school’s operations.

## 1.10 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor prior to proceeding. Existing warranties to be provided by Owner prior to the start of construction.

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying existing system has been inspected and warranty remains in effect. Submit supporting documentation at closeout.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

### 2.2 MATERIALS

A. Repair Materials: Use repair materials identical to existing materials.
1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
2. Use materials whose installed performance equals or surpasses that of existing materials.

B. Comply with material and installation requirements specified in individual Specification Sections.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Verify that affected utilities have been disconnected and capped before commencing selective demolition operations.

B. Review Project Record Documents of existing construction or existing condition and hazardous material information provided by Owner. Owner does not warrant existing conditions are same as those indicated in Project Record Documents.

C. Steel Tendons: Locate tensioned steel tendons and include recommendations for detensioning.

D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

E. Survey of Existing Conditions: Record existing conditions with measured drawings or preconstruction photographs or video and templates.
1. Inventory and record the condition of items to be removed. Provide photographs or video of conditions that might be misconstrued as damage caused by operations.
2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final work, make permanent record of measurements, materials, and construction details required to make exact reproduction.
3. For any electrical or low-voltage work to be performed in the project (including fire alarm, PA, intercom, or data), test entire system for operation prior to initiation of work. Notify Owner of any non-working components. Test entire system at the end of construction to ensure all systems operate properly.

### 3.2 PREPARATION

A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

B. Pest Control: Employ certified, licensed exterminator to treat building and to control rodents and vermin before and during selective demolition operations.

C. Site Access and Temporary Controls: Conduct selective demolition and debris removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities. Comply with requirements for access and protection.

D. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling.

E. Furnishings and Equipment: Cover and protect furniture, equipment, and fixtures from spoilage or damage as necessary.

F. Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
1. Construct dustproof partitions of not less than nominal 4 inch (100mm) studs, 5/8 inch (16mm) gypsum wallboard with joints taped on occupied side, and 1/2 inch (13mm) fire retardant plywood on the demolition side.
2. Insulate partition to provide noise protection to occupied areas.
3. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
4. Protect air handling equipment.
5. Weatherstrip openings to prevent the spread of dust.

## 3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off utilities with utility companies.
3. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
4. Cut off pipe or conduit a minimum of 24 inches (610 mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.
5. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.
6. Disconnect, demolish, and remove fire suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

e. Equipment to Be Removed: Disconnect and cap services and remove equipment and deliver to Owner.
f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

## 3.4 POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations including, but not limited to SCAQMD Rule 403 (Fugitive Test).
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.

## 3.5 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.

B. Existing Utilities to Remain: Maintain utility services to remain and protect from damage during demolition operations.
1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.

C. Temporary Protection: Provide temporary barricades and protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
a. Erect temporary pathways and means of egress necessary for ongoing operations compliant with Code and accessibility regulations.
b. Provide temporary barricades and protection required to prevent injury and damage to adjacent buildings and facilities to remain.

2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
a. Protect existing work which becomes exposed during demolition operations.
b. Protect adjacent entrances from damage due to demolition activities.
c. Protect existing improvements, appurtenances, and conditions to remain.
d. Protect floors with covering.
e. Protect walls, openings, roofs, and adjacent exterior construction to remain and exposed to building demolition operations.

4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00.

a. Construct temporary insulated dustproof partitions to separate areas from noisy or extensive dirt or dust operations are performed. Equip partitions with dustproof doors and security locks.
b. Construct dustproof partitions of not less than nominal 4 inch (100mm) studs, 5/8 inch (16mm) gypsum wallboard with joints taped on occupied side, and 1/2 inch (13mm) fire retardant plywood on the demolition side.
c. Insulate partition to provide noise protection to occupied areas.
d. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
e. Protect air handling equipment.
f. Weatherstrip openings.

6. Damage: Promptly repair damages to adjacent components cause by demolition activities.

D. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.

E. Remove temporary barricades and protections where hazards no longer exist.

## 3.6 SELECTIVE DEMOLITION

A. Demolish and remove existing construction to the extent necessary for new work. Use methods required to complete the work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame cutting operations. Maintain portable fire suppression devices during flame cutting operations.
5. Maintain fire watch during and for at least 24 hours after flame cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin infested, and dangerous or unsuitable materials and promptly dispose of offsite.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials to avoid imposing excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly.

B. Site Access and Temporary Controls: Conduct selective demolition and debris removal operations to ensure minimum interference with roads, streets, walks, walkways, and adjacent occupied and used facilities.

C. Patching and Repair: Repair damage to adjacent construction caused by selective demolition operations promptly.

## 3.7 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power driven saw, cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power driven saw, and then remove masonry between saw cuts.

D. Concrete Slabs on Grade: Saw cut perimeter of area to be demolished, and then break up and remove.

E. Interior Slab on Grade: Use best practice removal methods to prevent cracking or structurally disturbing adjacent slabs or partitions. Use power saw where possible.

F. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI *Recommended Work Practices for the Removal of Resilient Floor Coverings*. Do not use methods requiring solvent-based adhesive strippers.

G. Below Grade Voids: Completely fill below grade areas and voids resulting from demolition work. Provide fill consisting of approved earth, gravel, or sand, free of trash and debris, stones over 6 (150mm) inches in diameter, roots, or other organic matter.

H. Partitions: Completely remove indicated interior partitions and interior finishes indicated. Leave adjacent work scheduled to remain sound and ready for patching or for new finishes.

I. Doors and Frames: Remove doors, frames, and hardware where indicated. Remove from site.
   1. Remove doors, frames, and hardware where indicated. Clean, store, and protect for reinstallation or return hardware to Owner as directed.

J. Cut existing masonry walls for new doors, windows, or openings indicated. Leave openings ready to receive new work or patching.

K. Windows: Remove existing windows where indicated. Remove associated anchors, shims, blocking, operating devices, sealant, and trim. Cut back interior finishes required for plumb surface for patching. Leave openings ready for installation of new materials and finishes.

L. Mechanical, Electrical, and Structural Elements: If unanticipated mechanical, electrical, or structural elements conflicting with intended function or design are encountered, investigate and measure both nature and extent of the conflict.
   1. Submit written report to Architect in accurate detail. Pending receipt of directive, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.
   2. HVAC Equipment: Remove air conditioning equipment without releasing refrigerants.

## 3.8 REMOVAL OF STRUCTURAL ELEMENTS

A. Foundation: Demolish foundation walls to a minimum depth of 12 inches (300mm) below existing ground surface. Demolish and remove below grade wood or metal construction. Break up below grade concrete slabs.

B. Pneumatic Operated Hammers: When possible, reduce use of pneumatic operated hammers. When necessary to use pneumatic tools, locate compressors as remote from occupied areas as possible.

1. To break large pieces of concrete, isolate concrete from floor slabs and building structure to prevent structure borne vibration.

C. Saw Cutting: Locate compressors as remote as possible from occupied areas of facility.
1. Use diamond tipped saw blades and related equipment.
2. Saw cut portions of walls and slabs. Angle saw blade at floors and corners to cut as closely as possible to desired location.
3. Control runoff water used with saw to prevent damage to existing materials.

## 3.9 DEMOLITION BY MECHANICAL MEANS

A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.

B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.

C. Below-Grade Construction: Abandon foundation walls and other below-grade construction. Cut below-grade construction flush with grade.

## 3.10 PATCHING AND REPAIRS

A. Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Repairs: When necessary to repair existing surfaces, patch to produce surfaces suitable for new materials.
1. Fill holes and depressions in existing masonry walls to remain with masonry patching material applied according to manufacturer's written recommendations.

C. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

D. Floors and Walls: Where walls or partitions are demolished, extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
2. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
3. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

E. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

## 3.11 DISPOSAL OF DEMOLISHED MATERIALS

A. Legally remove demolition waste materials from site and dispose in an EPA approved construction and demolition waste landfill acceptable to authorities having jurisdiction recycle or reuse components.
1. Do not allow demolished materials to accumulate on site.
2. Remove and transport debris to prevent spillage on adjacent surfaces and areas.

3. Remove debris from elevated portions of building by chute, hoist, or devices that convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

## 3.12 CLEANING

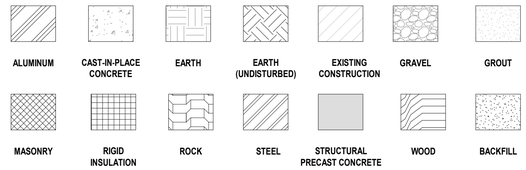
A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

**END OF SECTION 02 41 00**

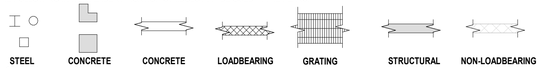
0"
1"

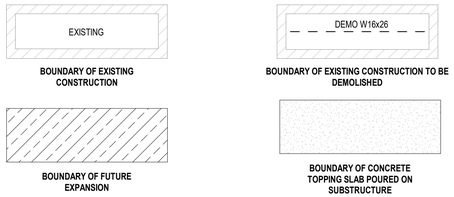
# MATERIAL IDENTIFICATION SYMBOLS

THE FOLLOWING MATERIAL IDENTIFICATION SYMBOLS MAY BE USED IN THE SECTIONS AND DETAILS:



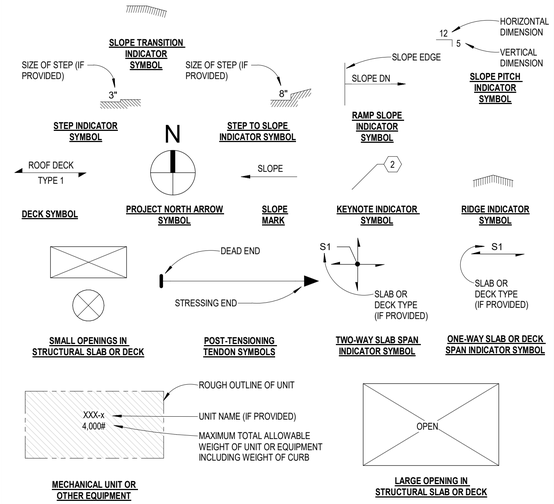

THE FOLLOWING MATERIAL IDENTIFICATION SYMBOLS MAY BE USED IN THE PLANS:



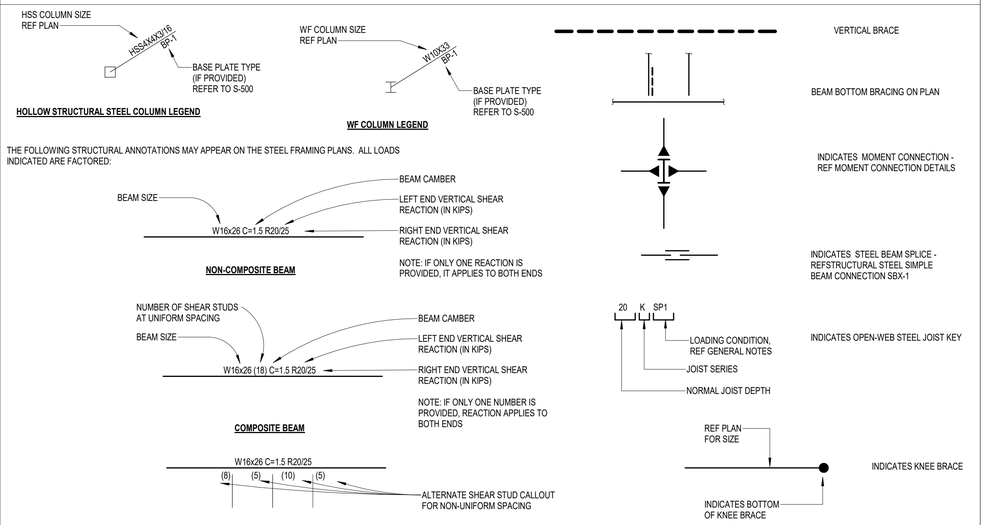




# PLAN SYMBOLS

THE FOLLOWING SYMBOLS MAY BE USED THROUGHOUT THE PLANS:

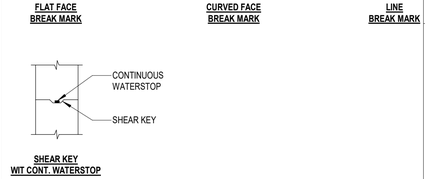


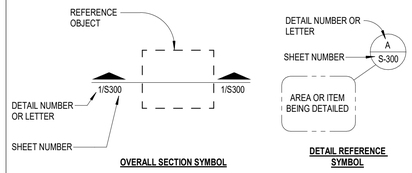

# STEEL ANNOTATION STYLES




# VIEW REFERENCE SYMBOLS

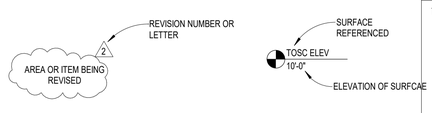
THESE FOLLOWING SYMBOLS MAY BE USED THROUGHOUT THE DRAWINGS TO REFER TO OTHER VIEWS:




# UNIVERSAL SYMBOLS

THESE FOLLOWING SYMBOLS MAY BE USED THROUGHOUT THE DRAWINGS:

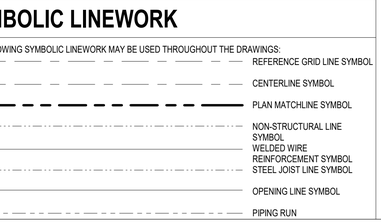






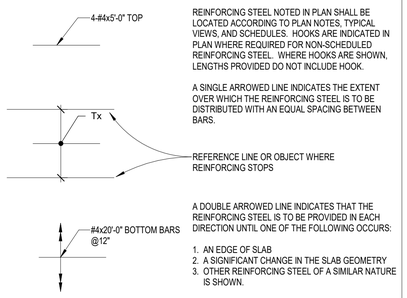
# FOUNDATION ANNOTATION STYLES

THE FOLLOWING STRUCTURAL ANNOTATIONS MAY APPEAR ON THE FOUNDATION PLANS:




# CONCRETE ANNOTATION STYLES

THE FOLLOWING STRUCTURAL ANNOTATIONS MAY APPEAR ON THE CONCRETE FRAMING PLANS:




# SYMBOLIC LINEWORK

THE FOLLOWING SYMBOLIC LINEWORK MAY BE USED THROUGHOUT THE DRAWINGS:




# TYPICAL STRUCTURAL ABBREVIATIONS

| | |
|---|---|
| **A** | |
| AB | ANCHOR BOLT |
| AFF | ABOVE FINISH FLOOR |
| ACI | AMERICAN CONCRETE INSTITUTE |
| ADD'L | ADDITIONAL |
| ADJ | ADJACENT |
| AFF | ABOVE FINISHED FLOOR |
| AFS | ARCH FINISH SURFACE |
| AGGR | AGGREGATE |
| AISC | AMERICAN INSTITUTE OF STEEL CONSTRUCTION |
| AISI | AMERICAN IRON AND STEEL INSTITUTE |
| ALT | ALTERNATE |
| ARCH | ARCHITECTURAL |
| ASCE | AMERICAN SOCIETY OF CIVIL ENGINEERS |
| ASTM | AMERICAN SOCIETY FOR TESTING AND MATERIALS |
| AWS | AMERICAN WELDING SOCIETY |
| **B** | |
| BF | BACK FACE |
| BFF | BELOW FINISH FLOOR |
| BL | BLOCK LINTEL |
| BLE | BRACKET LEDGE ELEVATION |
| BLK | BLOCK |
| BLKG | BLOCKING |
| BM | BEAM |
| BO | BOTTOM OF |
| BOS | BOTTOM OF STEEL |
| BOT | BOTTOM |
| BP | BASE PLATE |
| BRG | BEARING |
| BRKT | BRACKET |
| BLE | BRICK LEDGE ELEVATION |
| BTWN | BETWEEN |
| **C** | |
| C | CHANNEL |
| COMP | COMPRESSION |
| CANT | CANTILEVER |
| CGS | CENTROID OF TENDONS |
| CIP | CAST IN PLACE |
| CJ | CONTROL JOINT |
| CL | CENTER LINE |
| CJP | COMPLETE JOINT PENETRATION |
| CLR | CLEAR |
| CMU | CONCRETE MASONRY UNIT |
| COL | COLUMN |
| COMP | COMPRESSION |
| CONN | CONNECTION |
| CONC | CONCRETE |
| CONST | CONSTRUCTION |
| CONT | CONTINUOUS |
| CONTR | CONTRACTOR |
| COR | CORNER |
| CRSI | CONCRETE REINFORCING STEEL INSTITUTE |

| | |
|---|---|
| **D** | |
| DBA | DOWEL BAR ANCHOR |
| DBL | DOUBLE |
| DET | DETAIL |
| DIA | DIAMETER |
| DIAG | DIAGONAL |
| DIM(S) | DIMENSION(S) |
| DL | DEAD LOADS |
| DT | DOUBLE TEE |
| DS | DOWNSPOUT |
| DWG(S) | DRAWING(S) |
| DWL(S) | DOWEL(S) |
| **E** | |
| EA | EACH |
| EAO | EDGE ANGLE OFFSET |
| EDC | ELECTRICAL DISTRIBUTION CENTER |
| EF | EACH FACE |
| EIFS | EXTERIOR INSULATION AND FINISH SYSTEM |
| EJ | EXPANSION JOINT |
| EL | ELEVATION |
| ELEC | ELECTRICAL |
| ENGR | ENGINEER |
| EQ | EQUAL |
| EQUIV | EQUIVALENT |
| EW | EACH WAY |
| EXIST | EXISTING |
| EXP | EXPANSION |
| EXT | EXTERIOR |
| EX-STR | EXTRA STRONG |
| **F** | |
| FABR | FABRICATOR |
| FD | FLOOR DRAIN |
| FDN | FOUNDATION |
| FF | FINISHED FLOOR |
| FL | FLOOR |
| FLG | FLANGE |
| FM | FACTORY MUTUAL |
| FRP | FIBER REINFORCED PLASTIC |
| FS | FAR SIDE |
| FTG | FOOTING |
| FP | FIREPROOF(ING) |
| FV | FIELD VERIFY |
| **G** | |
| GA | GAUGE |
| GB | GRADE BEAM |
| GALV | GALVANIZED |
| GC | GENERAL CONTRACTOR |
| GR | GRADE |
| GYP BD | GYPSUM BOARD |

| | |
|---|---|
| **H** | |
| H | HEIGHT |
| HORIZ | HORIZONTAL |
| HSA | HEADED STUD ANCHOR |
| **I** | |
| IBC | INTERNATIONAL BUILDING CODE |
| INFO | INFORMATION |
| INT | INTERIOR |
| INTERM | INTERMEDIATE |
| ISO | ISOLATION |
| IT | INVERTED TEE |
| **J** | |
| JBE | JOIST BEARING ELEVATION |
| JST | JOIST |
| JT | JOINT |
| **K** | |
| KIP | 1000 POUNDS |
| KLF | KIP PER LINEAR FOOT |
| KSF | KIPS PER SQUARE FOOT |
| KSI | KIPS PER SQUARE INCH |
| **L** | |
| L | ANGLE OR LENGTH |
| LB | POUNDS |
| Ld | TENSION DEVELOPMENT LENGTH AS SHOWN IN REINFORCING LAP SCHEDULE |
| LL | LIVE LOAD |
| LLH | LONG LEG HORIZONTAL |
| LLV | LONG LEG VERTICAL |
| LOC | LOCATION |
| LONG | LONGITUDINAL |
| LSH | LONG SIDE HORIZONTAL |
| LSV | LONG SIDE VERTICAL |
| LWC | LIGHT WEIGHT CONCRETE |
| **M** | |
| MAX | MAXIMUM |
| MC | MOMENT CONNECTION |
| MECH | MECHANICAL |
| MEZZ | MEZZANINE |
| MFR | MANUFACTURER |
| MIN | MINIMUM |
| MISC | MISCELLANEOUS |
| MO | MASONRY OPENING |
| MTL | METAL |
| MTR | MATERIAL |
| **N** | |
| NIC | NOT IN CONTRACT |
| NO OR # | NUMBER |
| NOM | NOMINAL |
| NS | NEAR SIDE |
| NTS | NOT TO SCALE |
| NWC | NORMAL WEIGHT CONCRETE (150 PCF) |

| | |
|---|---|
| **O** | |
| OC | ON CENTER |
| OD | OUTSIDE DIAMETER |
| OF | OUTSIDE FACE |
| OH | OPPOSITE HAND |
| OPNG(S) | OPENING(S) |
| **P** | |
| PAF | POWDER ACTUATED FASTENER |
| PCC | PRECAST CONCRETE |
| PCF | POUNDS PER CUBIC FOOT |
| PCI | PRECAST AND PRESTRESSED CONCRETE INSTITUTE |
| PT | POST-TENSIONING INSTITUTE |
| PE | PROFESSIONAL ENGINEER |
| PEMB | PRE-ENGINEERED METAL BUILDING |
| PENTR | PENETRATION |
| PL | PLATE |
| PLAM | PLASTIC LAMINATE |
| PLF | POUNDS PER LINEAR FOOT |
| PP | PARTIAL PENETRATION |
| PREFAB | PREFABRICATED |
| PRELIM | PRELIMINARY |
| PSF | POUNDS PER SQUARE FOOT |
| PSI | POUNDS PER SQUARE INCH |
| PT | POST-TENSIONING |
| **Q** | |
| QTY | QUANTITY |
| **R** | |
| R | RADIUS |
| RAF | RAISED ACCESS FLOOR |
| RCP | REINFORCED CONCRETE PIPE |
| RD | ROOF DRAIN |
| REF | REFER TO |
| REINF | REINFORCING |
| REQD | REQUIRED |
| REV | REVERSE |
| RND | ROUND |
| RO | ROUGH OPENING |
| RTU | ROOF TOP UNIT |
| **S** | |
| SCHED | SCHEDULE(D) |
| SECT | SECTION |
| SF | SQUARE FOOT (FEET) |
| SHT | SHEET |
| SIM | SIMILAR |
| SPA | SPACE |
| SPECS | SPECIFICATIONS |
| SPEC'D | SPECIFIED |
| STIFF | STIFFNER |
| STIR | STIRRUPS |
| STL | STEEL |
| SUBCONTR | SUB-CONTRACTOR |
| SW | SIDEWALK |
| SYM | SYMMETRICAL |

| | |
|---|---|
| **T** | |
| TEMP | TEMERATURE |
| T | TENSION |
| TERR | TERRAZO |
| THK | THICK |
| T&B | TOP AND BOTTOM |
| TOB | TOP OF BEAM |
| TOF | TOP OF FOOTING |
| TOP | TOP OF PIER ELEVATION |
| TOS | TOP OF STEEL |
| TOSC | TOP OF STRUCTURAL CONCRETE |
| TOW | TOP OF WALL |
| TYP | TYPICAL |
| **U** | |
| UNO | UNLESS NOTED OTHERWISE |
| **V** | |
| V | SHEAR |
| VERT | VERTICAL |
| **W** | |
| WS | WATERSTOP |
| WPFG | WATERPROOFING |
| WWF | WELDED WIRE FABRIC |
| WB | WIND BRACE |
| WL | WIND LOAD |
| W/ | WITH |
| W/O | WITHOUT |
| WP | WORKING POINT |
| WD | WOOD |

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713-965-0606 P
713-961-4571 F
TX Firm: BR 1608
STRUCTURAL KUBALA ENGINEERS T 800 248 3674
MEP/T LEAF ENGINEERS T 713 940 3300

**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL




CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/24 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10/24/2022 |

1 ISSUE FOR PROPOSAL

**GENERAL NOTES**

**S-010**

File Path: C:\Users\BJeansonne\Documents\ST21_220083_Friendswood ISD_Westwood ES_Central_benjamin.jeansonne.rvt

**CHECKED BY:**
Checker
**DRAWN BY:**
Author
**Plot Stamp:**
10/24/2022 8:55:10 AM

FOR BLUEBEAM LABELING/OCR:

GENERAL NOTES

S-011

FOR BLUEBEAM LABELING/OCR:

0"

1"

# GENERAL:

**CODES, DRAWINGS AND SPECIFICATIONS:**

1. THE CONSTRUCTION DOCUMENTS ARE BASED ON THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE IBC 2018. 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 WETHER 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 THE VARIOUS 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 INDICATED ON 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. 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.
12. 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.
13. 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.

# WIND-BORNE DEBRIS REGION:

1. THE PROPOSED BUILDING IS LOCATED WITHIN ONE OF THE TEXAS DEPARTMENT OF INSURANCE DESIGNATED PER 2018 IBC / IRC CATASTROPHE ZONES. THE OWNER IS HEREBY INFORMED THAT THEY WILL NEED TO HIRE AN INDEPENDENT THIRD-PARTY SPECIAL INSPECTIONS COMPANY TO PROVIDE WINDSTORM CERTIFICATION (WPI-1 FORM, WPI-2 FORM, AND WPI-8 CERTIFICATE) FOR THE BUILDING / PROJECT. THE INDEPENDENT WINDSTORM INSPECTION COMPANY MUST HAVE A LICENSED ENGINEER CERTIFIED BY AND APPROVED BY THE STATE OF TEXAS TO PARTICIPATE IN THE TEXAS WINDSTORM INSURANCE ASSOCIATION'S WINDSTORM PROGRAM. THE APPLICATION FOR WINDSTORM BUILDING INSPECTION, FORM WPI-1, MUST BE SUBMITTED TO THE TEXAS DEPARTMENT OF INSURANCE PRIOR TO THE START OF CONSTRUCTION. PLEASE NOTE: THE WPI-1 FORM, THE WINDSTORM CERTIFICATION AND INSPECTION WORK, AND THE COMPLETION OF THE WPI-2 FORM HAVE NOT BEEN INCLUDED IN THE STRUCTURAL ENGINEER'S (EOR'S) SCOPE OF WORK FOR THIS PROJECT. AS NOTED ABOVE, THIS SERVICE SHALL BE PROVIDED BY AN ENGINEER APPOINTED BY THE COMMISSIONER OF INSURANCE TO INSPECT AND CERTIFY COMPLIANCE OF THE STRUCTURES AS ELIGIBLE FOR WINDSTORM, HAIL, AND ANY OTHER AVAILABLE COVERAGE THROUGH THE TEXAS WINDSTORM INSURANCE ASSOCIATION. ARRANGEMENTS FOR WINDSTORM INSPECTIONS SHALL BE COORDINATED BETWEEN THE OWNER, THE GENERAL CONTRACTOR, AND THE WINDSTORM INSPECTOR PRIOR TO THE START OF CONSTRUCTION. ALL PERTINENT SUBMITTALS RELATED TO THE EXTERIOR BUILDING ENVELOPE SHALL NOT BE CONSIDERED APPROVED UNTIL THE WINDSTORM CERTIFICATION COMPANY HAS REVIEW AND APPROVED THE SUBMITTAL. THE GC SHALL COORDINATE WITH THE WINDSTORM CERTIFICATION COMPANY TO DETERMINE ALL SUBMITTALS REQUIRED FOR REVIEW AND APPROVAL.

# GENERAL FOUNDATION NOTES:

1. THE FOUNDATION DESIGN AND SUBSURFACE INFORMATION IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT AS FOLLOWS:
   - GEOTECHNICAL CONSULTANT: PARADIGM CONSULTANTS, INC.
   - GEOTECHNICAL REPORT NUMBER: 22-1043
   - GEOTECHNICAL REPORT LOCATION: FRIENDSWOOD, TEXAS
   - DATE OF REPORT: JUNE 16, 2022
2. ALL RECOMMENDATIONS THEREIN THAT RELATE TO THE WORK SHOWN ON THESE DRAWINGS SHALL BE USED. FOR ANY CONFLICTS BETWEEN THE GEOTECHNICAL REPORT AND THESE DRAWINGS, THE GC SHALL ISSUE A REQUEST FOR INFORMATION/CLARIFICATION.
3. GEOTECHNICAL REPORT IS AVAILABLE TO THE GENERAL CONTRACTOR UPON REQUEST TO THE OWNER. THE INFORMATION INCLUDED THEREIN MAY BE USED BY THE GENERAL CONTRACTOR FOR HIS GENERAL INFORMATION ONLY. THE ARCHITECT AND ENGINEER WILL NOT BE RESPONSIBLE FOR THE ACCURACY OR APPLICABILITY OF SUCH DATA THEREIN.
4. PREPARED GRADE AREA UNDER ALL BUILDING SLABS AND GRADE BEAMS SHALL BE COVERED WITH A 15 MIL WATER VAPOR BARRIER MEETING THE REQUIREMENTS OF ASTM E 1745 (LATEST EDITION), CLASS A OR BETTER WITH MAXIMUM WATER PERMEANCE OF 0.01 PERMS WHEN TESTED IN ACCORDANCE WITH ASTM E96. THE RETARDER/BARRIER/MEMBRANE SHALL BE INSTALLED AND LAPPED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM E1643 (LATEST EDITION). PENETRATIONS SHALL BE SEALED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.
5. WHERE VOID FORMS ARE REQUIRED, THESE FORMS SHALL BE CAPABLE OF SUPPORTING THE WEIGHT OF THE WET CONCRETE AND REINFORCEMENT. AFTER PLACEMENT ON THE SUBGRADE, THE FORMS SHALL BE TAPED AT ALL JOINTS. 1/8" THICK HARDBOARD SHALL BE LAID OVER THE TOP OF THE VOID FORMS PRIOR TO PLACEMENT OF THE REINFORCEMENT, AT LARGE AREAS AS REQUIRED. VOID FORMS SHALL BE SECURED TO THE SUBGRADE PER MANUFACTURER'S RECOMMENDATIONS. VOID FORMS SHALL BE WAX COATED FOR MOISTURE PROTECTION, RECTANGULAR IN PROFILE, AND EQUAL TO THE WIDTH OF THE ADJACENT GRADE BEAM. SOIL RETAINERS ARE REQUIRED, GRADE BEAMS TO BE FORMED EACH SIDE.

# 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 + 25 PSF COLLATERAL |
| FLOOR | SELF WEIGHT + 25 PSF COLLATERAL |

**LIVE LOADS:**

1. DESIGN LIVE LOADING IS AS FOLLOWS:

| | |
|---|---|
| ROOF | 20 PSF, 300# CONCENTRATED LOAD (REDUCIBLE) |
| TYPICAL FLOORS | 100 PSF , 1000# CONCENTRATED LOAD (REDUCIBLE) |
| ALL SLABS-ON-GRADE | 100 PSF |
| MECHANICAL/ELECTRICAL ROOM (MIN.) | 150 PSF (UNREDUCIBLE) |
| ELEVATOR MACHINE ROOM | 150 PSF (UNREDUCIBLE) |
| HANDRAILS AND GUARDRAILS | 50 PLF OR 200# APPLIED AT TOP RAIL IN ANY DIRECTION |
| LIBRARY, COMPUTER ROOM | 150 PSF (UNREDUCIBLE) |
| LIGHT STORAGE | 125 PSF (UNREDUCIBLE) |
| STAGE | 125 PSF (UNREDUCIBLE) |
| STAIRWAYS AND EXITS | 100 PSF + 300# CONCENTRATED LOAD AT TREAD MIDSPAN |

**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 FRIENDSWOOD AMENDMENTS, THE TEXAS DEPARTMENT OF INSURANCE WINDSTORM ZONE, AND THE FOLLOWING CRITERIA:
   - A. WIND DESIGN DATA

| | | |
|---|---|---|
| 1. | BASIC WIND SPEED, V | 152 MPH (3-SECOND GUST) (ULTIMATE) |
| 2. | WIND OCCUPANCY CATEGORY | III |
| 3. | WIND IMPORTANCE FACTOR, I | 1.0 |
| 4. | WIND EXPOSURE CATEGORY | C |
| 5. | INTERNAL PRESSURE COEFFICIENT, GCpi | +/-0.18 |
| 6. | WIDTH OF END ZONE, (2a) | 38 FT |

   - B. DESIGN WIND PRESSURES
     1. MAIN WIND-FORCE RESISTING SYSTEM **(MWFRS)**
        - I. WALLS **(WW+LW)**

| | |
|---|---|
| 0'-15' | 50.2 PSF |
| 15'-20' | 52.0 PSF |
| 20'-25' | 53.5 PSF |
| 25'-30' | 54.8 PSF |
| 30'-31.5' | 55.1 PSF |
| 31.5'-39.2' | 56.7 PSF |

     2. COMPONENTS AND CLADDING
        - I. **WALLS (AREA = 75 SF)**

| | |
|---|---|
| INTERIOR ZONE | 51.4 PSF |
| END ZONE | 58.0 PSF |

        - II. **ROOF UPLIFT (GROSS) - ROOF ATTACHMENTS (AREA = 10 SF)**

| | |
|---|---|
| INTERIOR ZONE | 63.9 PSF |
| END ZONE | 88.8 PSF |
| CORNER ZONE | 138.7 PSF |

        - III. **ROOF UPLIFT (GROSS) - JOISTS (AREA = 300 SF)**

| | |
|---|---|
| INTERIOR ZONE | 63.9PSF |
| END ZONE | 83.8 PSF |
| CORNER ZONE | 88.8 PSF |

        - IV. **ROOF UPLIFT (GROSS) - GIRDERS (AREA > 700 SF)**

| | |
|---|---|
| 0' TO 31.5' | 47.1 PSF |
| 31.5' TO 63' | 30.2 PSF |
| >63' | 21.7 PSF |

**BUILDING MOVEMENT AND DEFLECTION:**

| | | |
|---|---|---|
| A. | ROOF MEMBERS | DEFLECTION LIMIT |
| 1. | LIVE LOAD MAXIMUM ALLOWABLE DEFLECTION | SPAN/360 |
| 2. | TOTAL LOAD MAXIMUM ALLOWABLE DEFLECTION | SPAN/240 |
| B. | FLOOR MEMBERS | |
| 1. | LIVE LOAD MAXIMUM ALLOWABLE DEFLECTION | SPAN/360 |
| 2. | TOTAL LOAD MAXIMUM ALLOWABLE DEFLECTION | SPAN/240 |
| C. | MEMBERS SUPPORTING MASONRY | |
| 1. | LIVE LOAD MAXIMUM ALLOWABLE DEFLECTION | SPAN/600 OR 3/8 INCH |
| D. | BUILDING FRAME | |
| 1. | MAXIMUM ALLOWABLE STORY DRIFT | HEIGHT/500 (TOTAL BUILDING HEIGHT) |

**SEISMIC LOADS:**

1. THE STRUCTURE AND COMPONENTS OF THE BUILDING HAVE BEEN DESIGNED IN ACCORDANCE WITH AFOREMENTIONED BUILDING CODE WITH THE FOLLOWING CRITERIA:

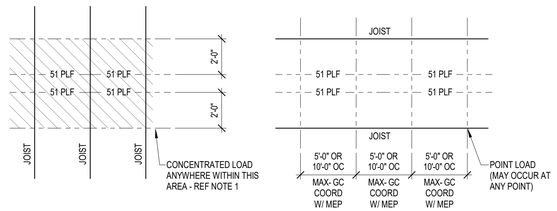
| | |
|---|---|
| RISK CATEGORY | III |
| IMPORTANCE FACTOR | 1.25 |
| MAPPED SPECTRAL RESPONSE COEFFICIENT: | Ss = 0.066g<br>S1 = 0.038g |
| SITE CLASS | D |
| DESIGN SPECTRAL RESPONSE COEFFICIENTS: | Sds = 0.070g<br>Sd1 = 0.061g |
| SEISMIC DESIGN CATEGORY | A |
| LATERAL SYSTEM | STRUCTURAL STEEL NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE |
| BASE SHEAR | V = 0.027W |
| SEISMIC RESPONSE COEFFICIENT | CS = 0.027 |
| RESPONSE MODIFICATION FACTOR, | R = 3.25 |
| ANALYSIS PROCEDURE | EQUIVALENT LATERAL FORCE PROCEDURE |

**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):

ADDITIONAL JOIST DEAD-LOAD FOR MECHANICAL 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 |




WHERE JOISTS ARE PERPENDICULAR — WHERE JOISTS ARE PARALLEL

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 WITHING THE HATCHED AREA.

2. ARCHITECTURAL BARRIER ACT STANDARD:

| ITEM | REQUIRED CAPACITY |
|---|---|
| GRAB BAR | 250 POUNDS ANY DIRECTION |
| TUB OR SHOWER SEAT | 250 POUNDS ANY DIRECTION |
| FASTENERS & MOUNTING DEVICES | 250 POUNDS ANY DIRECTION |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WESTWOOD ELEMENTARY SCHOOL RENOVATIONS

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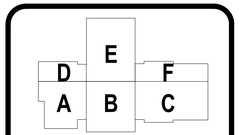
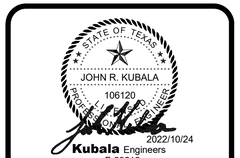



KEY PLAN

NORTH: PLAN TRUE

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S-011

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0"
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# STRUCTURAL SUBMITTALS ( NO LEEDS)

| SPECIFICATION SECTION | ITEM | SUBMITTAL |
|---|---|---|
| 03 10 00 | FORMWORK SHOP DRAWINGS | FOR INFORMATION ONLY/SIGNED AND SEALED |
| 03 10 00 | MANUFACTURER'S PRODUCT DATA | 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 CERITIFICATES | 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 31 23 | STEEL ROOF DECK SHOP DRAWINGS | FOR APPROVAL |
| 05 31 23 | PRODUCT CERTIFICATE | FOR INFORMATION ONLY |
| 05 31 23 | PRODUCT TEST REPORT | FOR INFORMATION ONLY |
| 05 40 00 | COLD FORMED METAL STUD SHOP DRAWINGS | FOR APPROVAL |
| 05 40 00 | COLD FORMED METAL STUD CALCULATIONS | FOR INFORMATION ONLY/SIGNED AND SEALED |
| 05 40 00 | PRODUCT TEST REPORT | FOR INFORMATION ONLY |
| 05 40 00 | RESEARCH REPORT | FOR INFORMATION ONLY |
| 05 40 00 | WELDING CERTIFICATE | FOR INFORMATION ONLY |
| 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 |

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'S 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.

# 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 2018 INTE^NATIONAL BUILDING CODE, INCLUDING ANY LOCAL AMENDMENTS, REQUIRES SPECIAL INSPECTION ON THE FOLLOWING ITEMS:

CONCRETE CONSTRUCTION (SECTION 1705.3)

STEEL (SECTION 1705.2)

MASONRY (SECTION 1705.4)

CAST-IN-PLACE DEEP FOUNDATIONS (SECTION1705.8)

FABRICATED ITEMS (SECTION 1705.10)

SPECIAL INSPECTIONS FOR WIND RESISTANCE (SECTION 1705.11)

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**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

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A B C

KEY PLAN

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STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
2022/10/24
Kubala Engineers
F-23612

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OVERALL SCOPE SHEET

S-100

FOR BLUEBEAM LABELING/OCR:

0"

1"

**WESTWOOD ELEMENTARY SCHOOL**
**STRUCTURAL SCOPE LIST**

SCOPE ITEM #1 (BASE BID):
NEW MEP ROOF EQUIPMENT ADDED TO EXISTING ROOF. GC COORDINATE LOCATIONS AND SIZE OF UNITS AND MECH OPENINGS WITH MEP.
REF 1/S-500, 2/S-500, 3/S-500, & 4/S-500.

SCOPE ITEM #2 (ALTERNATE #7):
INFILL EXISTING STAGE OPENING WITH NEW CMU WALL AND DEMOLISH EXISTING RAISED STAGE. REF S-101A AND PROVIDE $X

SCOPE ITEM #2

GYMNASIUM 50

KINDERGARTEN 54 | KINDERGARTEN 52 | KINDERGARTEN 51 | KINDERGARTEN 48 | KINDERGARTEN 47

KINDERGARTEN 55 | KINDERGARTEN 50 | KINDERGARTEN 49 | KINDERGARTEN 46

QUEST 42 | QUEST 41 | 2ND GRADE 35 | 2ND GRADE 34 | 2ND GRADE/SCIENCE 53

JANITOR 60 | BOYS | MECH | GIRLS | DRY STORAGE | OFFICE 59A | SERVING 59 | COOLER | MECHANICAL

STORAGE | SERVER / A/V STORAGE 45B | ART STUDIO 57 | LIBRARY 45 | GREEN ROOM 45A | PULL OUT 44 | CAFETERIA 58

ECSE 43 | PRE-K 40 | ECSE 39 | 2ND GRADE 36 | 2ND GRADE 37 | BOYS | GIRLS | DIAG. 31 | BOILER | MECHANICAL | LLSP 30 | MECH. 63 | GIRLS | 1ST GRADE 18 | 1ST GRADE 21 | 2ND GRADE 25 | 2ND GRADE 29 | COMPUTER / WORKROOM 28

PRINCIPAL 1 | ASSI. PRIN 2 | CONFERENCE 5 | BOY'S | GIRL'S | STORAGE 107A | STORAGE 105A

SRP 7 | SRP 10 | LITERACY LIBRARY 12

1ST GRADE 19 | 1ST GRADE 20 | 1ST GRADE 23 | 2ND GRADE 24 | 2ND GRADE 26 | 2ND GRADE 27

STORAGE | RR | OFFICE 4 | LOUNGE 3 | PRINCIPAL A110 | HOLDING A110A

CLINIC 9 | COUNSELOR 11A | WORKROOM 11 | WORK ROOM 13 | 1ST GRADE 15 | BOOKROOM 8 | CORRIDOR | TOILET | STORAGE 9A | EXAM 9B | EXAM 9C | VOLUNTEER WORKROOM 13A | RR

1 OVERALL SCOPE SHEET
1/16" = 1'-0"

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# WESTWOOD ELEMENTARY SCHOOL RENOVATIONS

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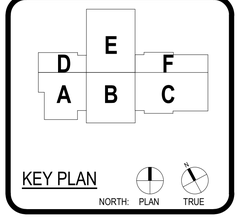
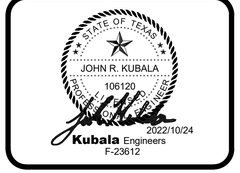



KEY PLAN
NORTH: PLAN TRUE

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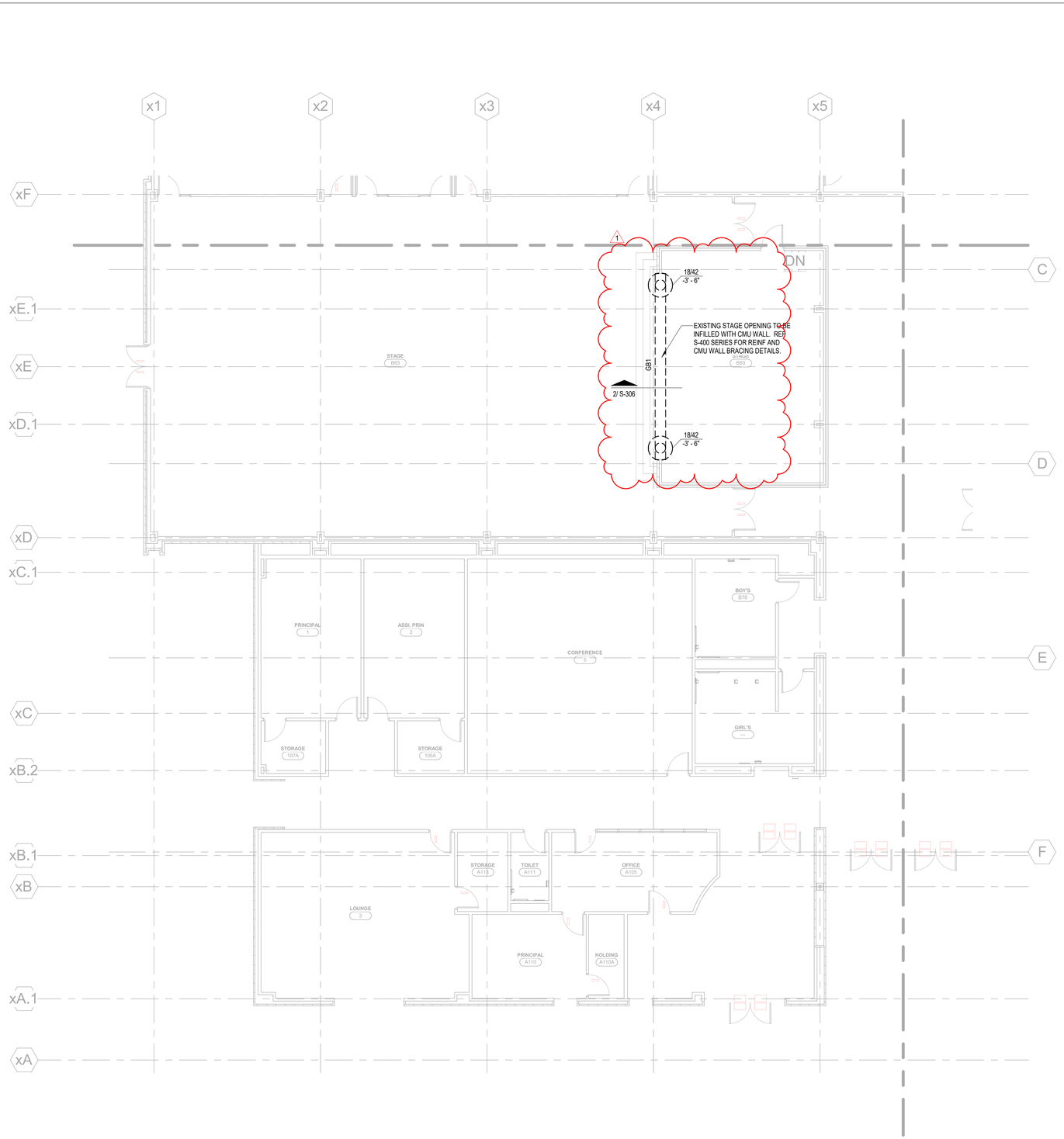
**OVERALL SCOPE SHEET**

**S-100**

0"
1"




1 FOUNDATION & LEVEL 1 PLAN - AREA A
1/8" = 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. 5" THICK CONCRETE SLAB ON GRADE REINFORCED WITH #3@10" OC EACH WAY OR #4@16" OC EACH WAY, ON 3 1/2" CHAIRS SPACED AT 36" OC EACH WAY. PLACE THE SLAB ON 15 MIL WATER VAPOR BARRIER OVER COMPACTED SELECT FILL (SOIL REPORT) FOR SLAB JOINT DETAILS REFER TO 6/S-300 AND 7/S-300.
3. TOP OF INTERIOR/ EXTERIOR PLINTH ELEVATION SHALL BE = -1'-0" UON.
   TOP OF INTERIOR PIER ELEVATION WITHOUT PLINTH SHALL BE = -1'-0" UON.
   TOP OF INTERIOR PIER ELEVATION WITH PLINTH SHALL BE = -3'-6" UON.
   TOP OF INTERIOR PIER ELEVATION WITH GRADE BEAM SHALL BE = -3'-6" UON.
   TOP OF EXTERIOR PIER ELEVATION SHALL BE = -3'-6" UON.
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 ALLTHE 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
11. REF S3.xx SERIES DRAWINGS FOR FOUNDATION AND SLAB-ON-GRADE DETAILS.
12. REF S4.xx SERIES DRAWINGS FOR CMU DETAILS.
13. REF S5.xx SERIES DRAWINGS FOR STEEL DETAILS.
14. REF S6.xx SERIES DRAWINGS FOR STEEL BRACE ELEVATIONS AND DETAILS.
15. REFER TO ARCH AND PLUMBING DWGS FOR THE SIZE, NUMBER AND LOCATION OF ALL THE TRENCHES, AND FLOOR DRAINS. REF 1/S-304 FOR TRENCH DETAIL AND REF 4/S-303 FOR FLOOR DRAIN DETAIL.
16. AT INTERIOR CMU WALL LOCATIONS, WHERE THE GRADE BEAM IS NOT SHOWN, PROVIDE SLAB TURNDOWN PER DETAIL 1/S-306 TYPICAL.
17. 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.
18. GC COORDINATE THE LOCATION OF ALL CANOPY COLUMNS WITH ARCH DRAWINGS.

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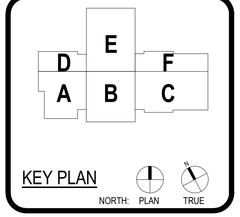


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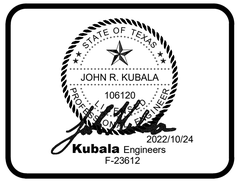


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FOUNDATION PLAN - AREA A

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# 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 CM5) | % AIR ENTRAINMENT |
| | 3000 | 3500 | 4000 | 4500 | | | | | | | |
| 1. PIERS | | | • | | 1 1/2 | 6-8 | 0.55 | 150 | I / II | 40 | - |
| 5. GRADE BEAMS AND PLINTHS ** | | | • | | 1 | 3-5 | 0.50 | 150 | I / II | 20 | - |
| 15. SLAB FOR EQUIPMENT PADS | | | • | | 1 | 3-5 | 0.45 | 150 | I / II | 20 | 5- 7 IF EXPOSED TO WEATHER |
| 17. NON-COMPOSITE TOPPING SLAB | | • | | | 1 | 5-7 | 0.45 | 150 | I / II | - | - |

**** - SPECIAL GC NOTE FOR CONCRETE WHICH IS PART OF A DEPRESSED AREA. SEE CONCRETE MIX NOTE 10.**

2. PORTLAND CEMENT SHALL BE TYPE I OR TYPE III (CONFORM TO ASTM C150), EXCEPT AS FOLLOWS:
   MASS CONCRETE: ONLY CEMENT TYPE II
   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 318-LATEST EDITION, CHAPTER 5, SECTION 5.3.
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.
10. **SPECIAL GC NOTE FOR CONCRETE WHICH IS PART OF A DEPRESSED AREA:**
    A. AT ALL DEPRESSIONS GREATER THAN OR EQUAL TO MINUS 6 INCHES FROM THE MAIN FINISH FLOOR THE GC SHALL PROVIDE XYPEX C-1000 ADMIXTURE (AT AN ASSUMED MINIMUM RATE OF 15 LBS/CU YD INTO ALL OF THE CONCRETE. THE ADMIXTURE SHALL BE PLACED INTO THE MIX AT THE TIME OF BATCHING AT THE PLANT, DO NOT ADD DRY BAG MIX TO THE WET CONCRETE TRUCK ON-SITE. THE GC SHALL STRICTLY FOLLOW ALL MANUFACTURER'S INSTRUCTIONS FOR ADDITION, USE, HANDLING, ETC. THE ADD MIXTURE SHALL BE ADDED TO ALL OF THE CONCRETE WHICH MAKES UP ANY DEPRESSION GREATER THAN OR EQUAL TO MINUS 6 INCHES FROM THE MAIN FINISH FLOOR. THIS INCLUDES BUT IS NOT LIMITED TO: DEPRESSED SLABS (FULL THICKNESS), ALL VERTICAL STEM WALLS (FULL THICKNESS) AND/OR ANY GRADE BEAMS (FULL DEPTH AND THICKNESS) WHICH FORM ANY PORTION OF THE VERTICAL DROP AND ALL HORIZONTAL SLAB FOR THE DEPRESSED AREA. THIS DOES NOT REDUCE OR REVISE ANY WATERPROOFING TREATMENTS, LAYERS OR SUBSTRATES THAT ARE CURRENTLY REQUIRED BY THE STRUCTURAL, ARCHITECTURAL, AND/OR OTHER CONSULTANT DRAWINGS, THIS IS IN ADDITION TO THOSE CURRENT MEASURES. THE COST FOR THIS ADD MIXTURE SHALL BE ACCOUNTED FOR WITHIN THE BASE BID AND SHALL INCLUDE, BUT IS NOT LIMITED TO ALL AREAS ARCHITECTURALLY LABELED AS FOLLOWS: ORCHESTRA PIT, ALL ELEVATOR PITS, AND THE BELOW GRADE FLY-LOFT RIGGING PIT. PLEASE NOTE: XYPEX C-1000 HAS BEEN CHOSEN AS A NEUTRAL MIX ADDITIVE THAT IS NOT INTENDED TO CHANGE THE CURRENTLY PLANNED CONCRETE SET TIME. IF FOR SOME REASON THE SET TIME IS DESIRED TO BE INCREASED OR DECREASED XYPEX DOES HAVE ALTERNATIVE FORMULATIONS WHICH MAY BE USED; HOWEVER, THE GC MUST GET WRITTEN APPROVAL FROM THE EOR PRIOR TO ANY CHANGE IN THE XYPEX C-1000 FORMULATION. THE XYPEX C-1000 IS AN ADDITIONAL MOISTURE INTRUSION MITIGATION MEASURE THAT IS REQUIRED IN ADDITION TO THE SPECIFIED WATERSTOPS NOTED IN THE OTHER GENERAL NOTES AND DETAILS RELATED TO CONCRETE COLD-JOISTS AND OTHER CONCRETE TRANSITIONS OF PLANE.

# CAST-IN-PLACE CONCRETE:

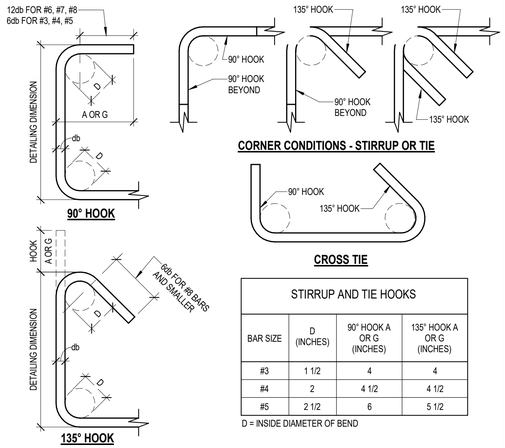
1. CONCRETE SUPPLIER SHALL BE AWARE OF CEMENTS THAT CAN CAUSE LATE ETTRINGITE FORMATION IN THE CEMENT PASTE AND BE PREPARED TO SHOW THAT THE CEMENTS USED WILL NOT CAUSE THIS PROBLEM.
2. ALL MIXING, TRANSPORTING, PLACING AND CURING OF CONCRETE SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE 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 DETAILS. 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 6.3, 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 RETARDER. 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 REINF. IN THE CONVERGENCE ZONE AND 3'-0" BEYOND. PLACE ALL LARGER LINES IN THE FILL BENEATH THE VAPOR RETARDER.
   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-1000 SHALL BE INCLUDED IN THE CONCRETE MIX. REFER TO CONCRETE MIX SCHEDULE FOR CONCRETE MIXES WHICH MAY REQUIRE XYPEX C-1000 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 #11 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 7.7, 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 45-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 | 2 IN TOP |
| SLAB BOTTOMS OVER VOID FORM | |
| COLUMNS NOT EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND (TYP INTERIOR CONDITIONS) | 1 5/8" |

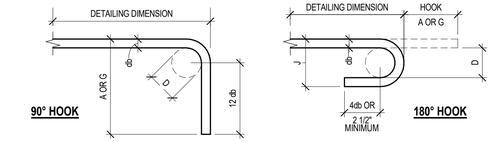
5. DETAILING OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL CONFORM TO ACI 315, LATEST EDITION. ALL HOOKED BARS SHOWN SHALL HAVE STANDARD HOOKS, U.N.O.
6. REINFORCING SHALL NOT BE WELDED WITHOUT APPROVAL FROM THE STRUCTURAL ENGINEER.
7. BOTTOM REINFORCING BARS SHALL BE SPLICED AT SUPPORTS AND CONTINUOUS TOP BARS SHALL BE SPLICED AT MID-SPAN.
8. ALL CONTINUOUS REINFORCEMENT SHALL BE LAPPED 56 BAR DIAMETERS AT SPLICE LOCATIONS.
9. WHERE BAR TYPES FROM THE BAR BENDING DIAGRAM ARE SPECIFIED, PROVIDE BARS ACCORDINGLY. OTHERWISE, DETAIL BARS IN BEAMS, COLUMNS, SLABS, AND WALLS AS FOLLOWS:
   A. RUN TOP AND BOTTOM BARS CONTINUOUS, WITH SPLICES AND HOOKS AS DESCRIBED BELOW.
   B. PROVIDE STANDARD 90 DEGREE HOOK ON TOP BARS AT CANTILEVER ENDS.
   C. SPLICE TOP AND INTERMEDIATE BARS AT THE CENTER LINE BETWEEN MEMBER SUPPORTS, UNLESS NOTED OTHERWISE.
   D. SPLICE BOTTOM BARS DIRECTLY OVER MEMBER SUPPORTS, UNLESS NOTED OTHERWISE.
   E. CENTER BARS NOTED AS "AT SUPT'S." OVER MEMBER SUPPORTS, AND CENTER BARS NOTED AS "BTWN. SUPT'S." BETWEEN SUPPORTS.
   F. 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.
   G. ALL BAR SPLICES IN BEAMS, AND SLABS SHALL BE 30 BAR DIAMETERS, EXCEPT THAT SPLICES IN HORIZONTAL WALL BARS AND INTERMEDIATE BEAM BARS SHALL BE 66 BAR DIAMETERS.
   H. 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.




| 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

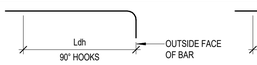
# 1 TYPICAL STIRRUP AND TIE HOOK TYPES
NO SCALE




| 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

# 4 TYPICAL END HOOK TYPE
NO SCALE




**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.

# 2 TYPICAL DEVELOPMENT LENGTHS OF STANDARD HOOKS IN TENSION
NO SCALE

| DEVELOPMENT LENGTHS OF STANDARD HOOKS IN TENSION<br>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 |

| SLAB TENSION DEVELOPMENT AND LAP SPLICE LENGTHS<br>GRADE 60 REINFORCEMENT, NORMALWEIGHT CONCRETE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BAR SIZE | LAP CLASS | f'c = 3000 PSI | | f'c = 4000 PSI | | f'c = 5000 PSI | | |
| | | BOTTOM BARS | OTHER BARS | BOTTOM BARS | OTHER BARS | BOTTOM BARS | OTHER BARS | |
| #3 | A | 12 | 13 | 12 | 12 | 12 | 12 | |
| | B | 16 | 17 | 16 | 16 | 16 | 16 | |
| #4 | A | 17 | 22 | 15 | 19 | 13 | 17 | |
| | B | 23 | 29 | 20 | 25 | 17 | 23 | |
| #5 | A | 25 | 32 | 21 | 28 | 19 | 25 | |
| | B | 33 | 42 | 28 | 37 | 25 | 33 | |
| #6 | A | 33 | 43 | 29 | 37 | 26 | 34 | |
| | B | 43 | 56 | 38 | 49 | 34 | 45 | |
| #7 | A | 53 | 69 | 46 | 60 | 42 | 54 | |
| | B | 69 | 90 | 60 | 78 | 55 | 71 | |
| #8 | A | 66 | 86 | 57 | 74 | 51 | 67 | |
| | B | 86 | 112 | 75 | 97 | 67 | 88 | |
| #9 | A | 80 | 104 | 69 | 90 | 62 | 81 | |
| | B | 104 | 136 | 90 | 117 | 81 | 106 | |

**NOTES:**

1. ALL SPLICE LENGTHS ARE IN INCHES.
2. THIS TABLE SHALL BE USED FOR SLABS ONLY. REFER TO OTHER DEVELOPMENT LENGTH TABLES FOR OTHER MEMBERS.
3. THE TENSION DEVELOPMENT LENGTH (Ld) IS EQUAL TO THE SCHEDULED "CLASS A" LAP SPLICE LENGTH.
4. A BOTTOM BAR IS DEFINED AS ANY BAR THAT DOES NOT HAVE MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR.
5. OTHER BARS INCLUDE TOP BARS AND ALL OTHER BARS THAT HAVE MORE THAN 12" OF FRESHCONCRETE BELOW THE BAR FOR TOP REINFORCEMENT IN SLABS THAT ARE 12" THICK OR LESS, TABULATED SPLICE LENGTHS FOR BOTTOM BARS SHALL BE USED.
6. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED SPLICE LENGTHS OF BOTTOM BARS BY 1.5 ANDTHE TABULATED SPLICE LENGTHS OF OTHER BARS BY 1.3.
7. WHEN LAP SPLICING BARS OF DIFFERENT SIZES, THE LAP LENGTH IS DETERMINED BY THE SMALLER BAR BUT MAY NOT BE LESS THAN THE "CLASS A" SPLICE LENGTH OF THE LARGER BAR.

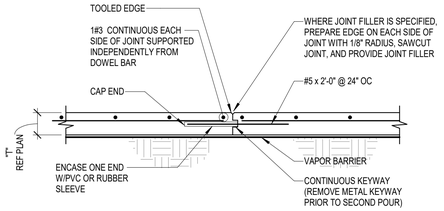
# 3 TYPICAL SLAB TENSION DEVELOPMENT AND LAP SPLICE LENGTHS
NO SCALE

| BEAM AND GIRDER TENSION DEVELOPMENT AND LAP SPLICE LENGTHS<br>GRADE 60 REINFORCEMENT, NORMALWEIGHT CONCRETE | | | | | | | |
|---|---|---|---|---|---|---|---|
| BAR SIZE | LAP CLASS | f'c = 3000 PSI | | f'c = 4000 PSI | | f'c = 5000 PSI | |
| | | BOTTOM BARS | OTHER BARS | BOTTOM BARS | OTHER BARS | BOTTOM BARS | OTHER BARS |
| #3 | A | 12 | 13 | 12 | 12 | 12 | 12 |
| | B | 16 | 17 | 16 | 16 | 16 | 16 |
| #4 | A | 16 | 20 | 14 | 18 | 12 | 16 |
| | B | 21 | 26 | 19 | 24 | 16 | 21 |
| #5 | A | 23 | 29 | 20 | 25 | 18 | 23 |
| | B | 30 | 38 | 26 | 33 | 24 | 30 |
| #6 | A | 31 | 40 | 27 | 35 | 24 | 31 |
| | B | 41 | 52 | 36 | 46 | 32 | 41 |
| #7 | A | 46 | 60 | 40 | 52 | 36 | 46 |
| | B | 60 | 78 | 52 | 68 | 47 | 60 |
| #8 | A | 60 | 78 | 52 | 67 | 46 | 60 |
| | B | 78 | 102 | 68 | 88 | 60 | 78 |
| #9 | A | 64 | 84 | 56 | 72 | 50 | 65 |
| | B | 84 | 110 | 73 | 94 | 65 | 85 |
| #10 | A | 72 | 93 | 62 | 81 | 56 | 72 |
| | B | 94 | 121 | 81 | 106 | 73 | 94 |
| #11 | A | 85 | 110 | 74 | 96 | 66 | 86 |
| | B | 111 | 143 | 97 | 125 | 86 | 112 |

**NOTES:**

1. ALL SPLICE LENGTHS ARE IN INCHES.
2. THIS TABLE SHALL BE USED FOR BEAMS AND GIRDERS ONLY. REFER TO OTHER DEVELOPMENT LENGTH TABLES FOR OTHER MEMBERS.
3. THE TENSION DEVELOPMENT LENGTH (Ld) IS EQUAL TO THE SCHEDULED "CLASS A" LAP SPLICE LENGTH.
4. A BOTTOM BAR IS DEFINED AS ANY BAR THAT DOES NOT HAVE MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR.
5. OTHER BARS INCLUDE TOP BARS, FACE BARS, AND ALL OTHER BARS THAT HAVE MORE THAN 12" OF FRESH CONCRETE BELOW THE BAR.
6. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED SPLICE LENGTHS OF BOTTOM BARS BY 1.5 AND THE TABULATED SPLICE LENGTHS OF OTHER BARS BY 1.3.
7. WHEN LAP SPLICING BARS OF DIFFERENT SIZES, THE LAP LENGTH IS DETERMINED BY THE SMALLER BAR BUT MAY NOT BE LESS THAN THE "CLASS A" SPLICE LENGTH OF THE LARGER BAR.
8. FOR CONCRETE STRENGTHS IN BETWEEN THOSE TABULATED HERE, USE DEVELOPMENT AND LAP SPLICE LENGTHS OF LOWER CONCRETE STRENGTH.

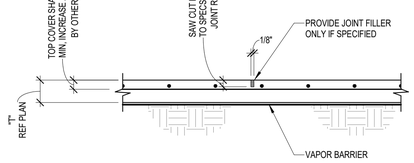
# 5 TYPICAL BEAM AND GIRDER TENSION DEVELOPMENT AND LAP SPLICE LENGTHS
NO SCALE




**NOTES:**

1. AT CONTRACTOR'S OPTION, CONTRACTION JOINT MAY BE USED IN PLACE OF CONSTRUCTION JOINT. LOCATIONS SHALL BE PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ARCHITECT.
2. CONTRACTION JOINT MAYBE BE SAW CUT TO 1/4 OF THE SLAB DEPTH WITHIN 6 HOURS AFTER SLAB PLACEMENT.

# 6 SLAB CONSTRUCTION JOINT
NO SCALE




**NOTES:**

1. PROVIDE JOINT AT EVERY COLUMN LINE AND IN BETWEEN THE COLUMN LINES AT A MAXIMUM SPACING OF 36 TIMES THE SLAB THICKNESS (NOT TO EXCEED 16 FEET); UNO.
2. GC SHALL SUBMIT JOINT LAYOUT TO THE ARCHITECT FOR APPROVAL.

# 7 CONTRACTION (CONTROL) JOINT
NO SCALE

PBK
ARCHITECT
PBK Architects, Inc.
HOUSTON
PBK.com
11 Greenway Plaza, 22nd Floor
Houston, TX 77046
713-965-0608 P
713-961-4571 F
TX Firm: BR 1608

STRUCTURAL
KUBALA ENGINEERS
T 800 248 3674

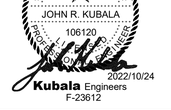
MEP/T
LEAF ENGINEERS
T 713 940 3300

**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL


KEY PLAN
NORTH: PLAN TRUE




CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/24 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10/24/2022 |
| 1 | ISSUE FOR PROPOSAL | |

**GENERAL CONCRETE AND STL REINF NOTES AND TYP DETAILS**

**S-300**

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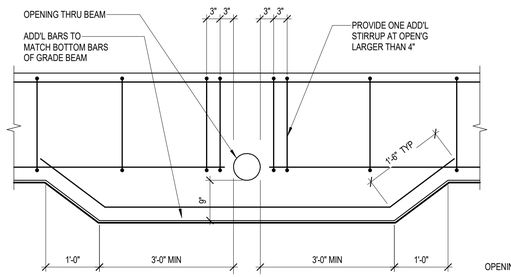
Plot Stamp: 10/24/2022 8:55:13 AM

0"
1"

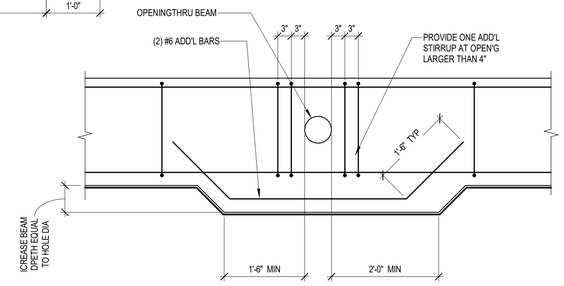
## GRADE BEAM:

1. GRADE BEAM DIMENSIONS AND/OR LOCATIONS SHALL NOT BE ALTERED WITHOUT APPROVAL OF THE ENGINEER OF RECORD. SIDES OF GRADE BEAMS SHALL BE FORMED. EARTH FORMING OF GRADE BEAMS IS NOT ALLOWED UNLESS GRADE BEAMS MAY BE EARTH FORMED SO LONG AS THE SIDES ARE PLUMB AND SOUND AND ANY PORTION OF THE BEAMS/SLAB THAT EXTENDS ABOVE GRADE/ EXPOSED IS BOARD FORMED. THE WALLS MUST NOT SLOUGH OFF MORE THAN ¾" OUT OF PLANE OF THE PLUMB LINE. WHERE THIS OCCURS A BOARD FORM MAY BE LAID IN THE EARTH TO SMOOTH THE SIDE LOCALLY AT THE IMPERFECTION TO MAINTAIN WALL FLATNESS TOLLERANCE.
2. GRADE BEAMS SHALL BE POURED MONOLITHICALLY AROUND CORNERS AND AT INTERSECTIONS. SEE TYPICAL GRADE BEAM CONSTRUCTION JOINT DETAIL FOR ACCEPTABLE CONSTRUCTION JOINT LOCATIONS.
3. GENERAL CONTRACTOR SHALL COORDINATE LOCATION, SIZE, AND ELEVATION AND INCLUDE IN HIS CONTRACT PRICE ALL REQUIRED HORIZONTAL PENETRATIONS THROUGH CONCRETE BEAMS WHETHER SHOWN ON STRUCTURAL DRAWINGS OR NOT. WHERE BEAM PENETRATIONS ARE REQUIRED BUT ARE NOT SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS, CONTRACTOR SHALL SUBMIT DRAWINGS SHOWIN DIMENSIONS AND LOCATIONS OF ALL REQUIRED PENETRATIONS FOR REVIEW AND APPROVAL.



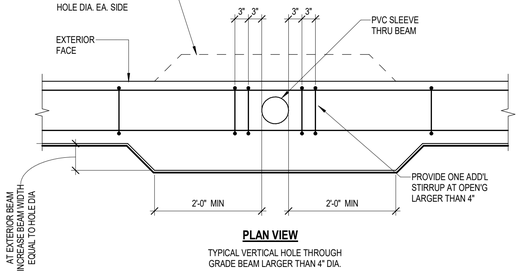

**ELEVATION VIEW**

TO BE USED WHERE OPENING CONFLICTS WITH BOTTOM BAR REINFORCMENT




**ELEVATION VIEW**

TYPICAL HORIZONTAL HOLE THROUGH GRADE BEAM LARGER THAN 4" DIA.



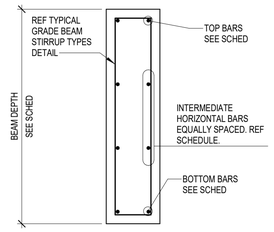

**PLAN VIEW**

TYPICAL VERTICAL HOLE THROUGH GRADE BEAM LARGER THAN 4" DIA.

## 3 TYPICAL GRADE BEAM PENETRATION DETAILS
NO SCALE

## GRADE BEAM SCHEDULE

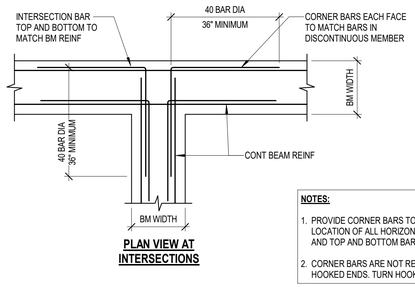
| MARK | SIZE | | REINFORCING | | | TIES | | REMARKS |
|---|---|---|---|---|---|---|---|---|
| | WIDTH | DEPTH | TOP | BOTTOM | MIDDLE | SIZE | SPACING | |
| GB1 | 1'-6" | 2'-6" | 3#9 | 3#9 | - | #4 | 1 @ 2", R @ 10", 1 @ 2", R @ 6" CANT | 2 LEGS TYPE S1 TIES |
| GB2 | 2'-8" | 2'-6" | 6#8 | 6#8 | - | #4 | 1 @ 2", R @ 10", 1 @ 2", R @ 6" CANT | 4 LEGS TYPE D1 TIES |
| GB3 | 2'-10" | 2'-6" | 6#8 | 6#8 | - | #4 | 1 @ 2", R @ 10", 1 @ 2", R @ 6" CANT | 4 LEGS TYPE D1 TIES |




## INTERMEDIATE BAR SCHEDULE

| BEAM DEPTH | NUMBER OF BARS EA FACE | SIZE OF BAR |
|---|---|---|
| > 36" - 48" | 5 | #3 |
| 49" - 54" | 5 | #4 |
| 55" - 60" | 5 | #5 |
| 61" - 66" | 6 | #5 |
| 67" - 78" | 7 | #5 |
| 79" AND ABOVE | AT 9" OC | #5 |

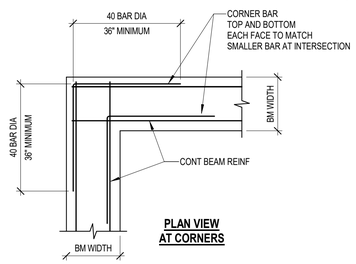
## 1 GRADE BEAM SCHEDULE
NO SCALE




**PLAN VIEW AT INTERSECTIONS**

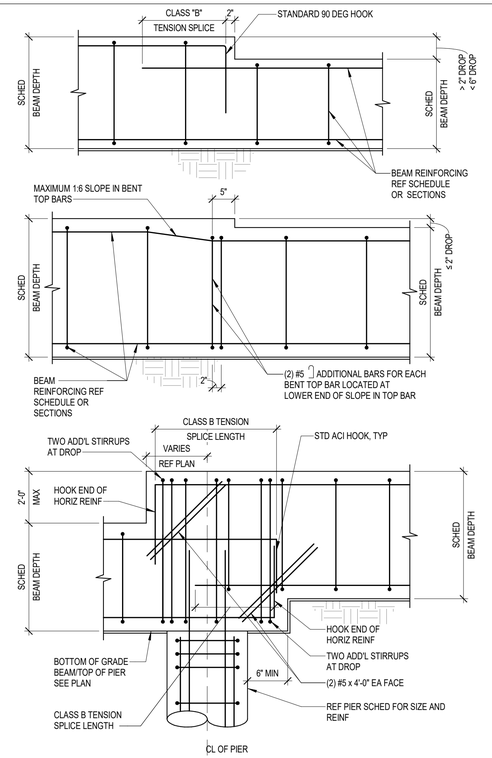
**NOTES:**

1. PROVIDE CORNER BARS TO MATCH SIZE AND LOCATION OF ALL HORIZONTAL GRADE BEAM AND TOP AND BOTTOM BARS.
2. CORNER BARS ARE NOT REQUIRED AT HOOKED ENDS. TURN HOOKS SIDEWAYS.

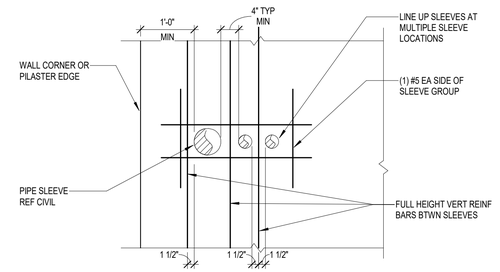



**PLAN VIEW AT CORNERS**

## 4 TYPICAL CORNER BAR DETAILS
NO SCALE



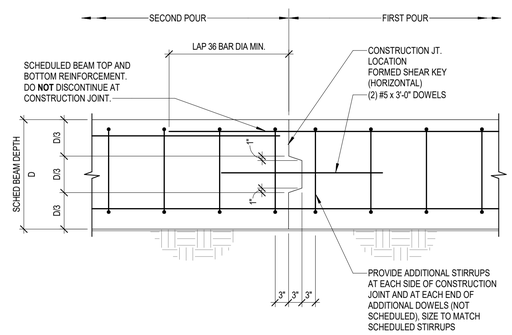

## 2 TYPICAL GRADE BEAM STEPDOWN DETAIL
NO SCALE




## 5 TYPICAL WALL PENETRATION DETAIL
NO SCALE

**NOTES:**

1. LOCATE JOINTS IN MIDDLE THIRD OF BEAM SPAN BETWEEN SUPPORTS.
2. ACCEPTABLE JOINT LOCATIONS ARE AS FOLLOWS:
   A. FOR BEAMS NOT SUPPORTING INTERSECTING BEAMS, PLACE JOINT WITHIN MIDDLE THIRD OF SPAN.
   B. FOR BEAMS SUPPORTING INTERSECTING BEAMS, CHECK WITH STRUCTURAL ENGINEER FOR JOINT LOCATIONS AND DOWEL REQUIREMENTS.
3. FOR JOINT LOCATIONS OTHER THAN WITHIN MIDDLE THIRD OF SPAN, CONTRACTOR SHALL COORDINATE REQUIRED ADDITIONAL REINFORCEMENT WITH THE ENGINEER ON THE SHOP DRAWINGS.
4. JOINTS MAY NOT OCCUR IN THE FIRST SPAN OF A BEAM LINE OR IN ANY SPAN WHICH IS LESS THAN 8 FEET.
5. GENERAL CONTRACTOR SHALL SUBMIT DESIRED CONSTRUCTION JOINT LAYOUT AS A SHOP DRAWING FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO POUR.

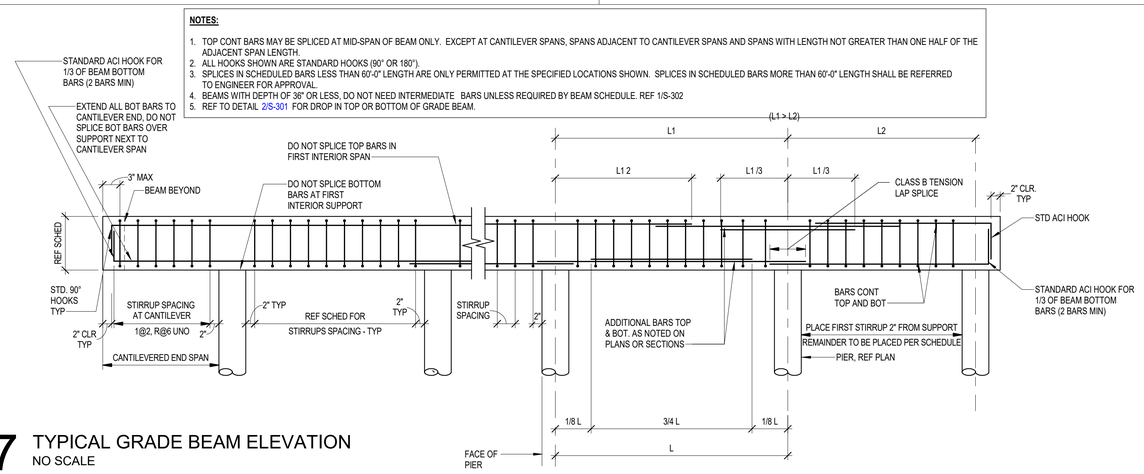



**ELEVATION VIEW**

## 6 TYPICAL GRADE BEAM CONSTRUCTION JOINT
NO SCALE

**NOTES:**

1. TOP CONT BARS MAY BE SPLICED AT MID-SPAN OF BEAM ONLY. EXCEPT AT CANTILEVER SPANS, SPANS ADJACENT TO CANTILEVER SPANS AND SPANS WITH LENGTH NOT GREATER THAN ONE HALF OF THE ADJACENT SPAN LENGTH.
2. ALL HOOKS SHOWN ARE STANDARD HOOKS (90° OR 180°).
3. SPLICES IN SCHEDULED BARS LESS THAN 60'-0" LENGTH ARE ONLY PERMITTED AT THE SPECIFIED LOCATIONS SHOWN. SPLICES IN SCHEDULED BARS MORE THAN 60'-0" LENGTH SHALL BE REFERRED TO ENGINEER FOR APPROVAL.
4. BEAMS WITH DEPTH OF 36" OR LESS, DO NOT NEED INTERMEDIATE BARS UNLESS REQUIRED BY BEAM SCHEDULE. REF 1/S-302
5. REF TO DETAIL 2/S-301 FOR DROP IN TOP OR BOTTOM OF GRADE BEAM.




## 7 TYPICAL GRADE BEAM ELEVATION
NO SCALE

PBK
ARCHITECT
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PBK.com
11 Greenway Plaza, 22nd Floor
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713-961-4571 F
TX Firm: BR 1608

STRUCTURAL
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T 800 248 3674

MEPT
LEAF ENGINEERS
T 713 940 3300

**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

D E F A B C

KEY PLAN
NORTH: PLAN TRUE

STATE OF TEXAS
JOHN R. KUBALA
106120
REGISTERED PROFESSIONAL ENGINEER
2022/10/24
Kubala Engineers
F-23612

CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/24 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10/24/2022 |

ISSUE FOR PROPOSAL

**GENERAL GRADE BEAM NOTES AND TYP DETAILS**

**S-301**

FOR BLUEBEAM LABELING/OCR:
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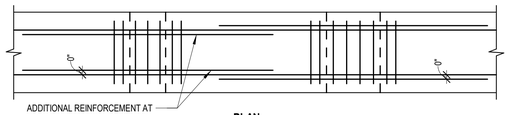
DRAWN BY: Author
Plot Stamp: 10/24/2022 8:55:14 AM

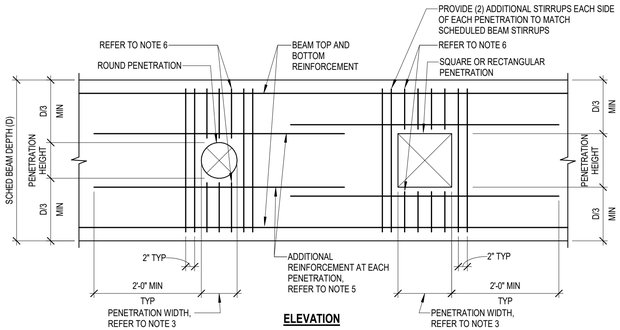
0"
1"

**NOTES:**

1. CLEAR SPACING BETWEEN PENETRATIONS SHALL BE 24" MINIMUM UNLESS NOTED OTHERWISE BY THE STRUCTURAL ENGINEER.
2. PENETRATIONS SHALL BE LOCATED ACCORDING TO THE FOLLOWING CRITERIA:
   A. FOR BEAMS NOT SUPPORTING INTERSECTING BEAMS LOCATE PENETRATIONS WITHIN TWO FEET EITHER SIDE OF BEAM MIDSPAN.
   B. FOR BEAMS SUPPORTING INTERSECTING BEAMS CHECK WITH STRUCTURAL ENGINEER.
3. PENETRATION WIDTH MUST NOT EXCEED PENETRATION HEIGHT, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS.
4. FOR LOCATIONS AND/OR SIZES OF PENETRATIONS NOT CONFORMING TO THE ABOVE CRITERIA AND NOT OTHERWISE DETAILED ON THE STRUCTURAL DRAWINGS, CONTRACTOR SHALL COORDINATE REQUIRED ADDITIONAL REINFORCEMENT WITH THE STRUCTURAL ENGINEER.
5. PROVIDE THE FOLLOWING REINFORCEMENT AT EACH SLEEVE, UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS:
   1-#5 TOP AND BOTTOM AT BEAMS WITH WIDTHS LESS THAN 9".
   2-#5 TOP AND BOTTOM AT BEAMS WITH 2-LEG STIRRUPS.
   4-#5 TOP AND BOTTOM AT BEAMS WITH 4-LEG STIRRUPS.
   "N"-#5 TOP AND BOTTOM AT BEAMS WITH "N"-LEG STIRRUPS.
6. PROVIDE ADDITIONAL STIRRUPS ABOVE AND BELOW PENETRATIONS AT SPACING NOT TO EXCEED ONE THIRD OF THE SCHEDULED STIRRUP SPACING, UNLESS DETAILED OTHERWISE ON THE STRUCTURAL DRAWINGS.
7. SCHEDULED BEAM STIRRUPS NOT SHOWN FOR CLARITY.




**PLAN**

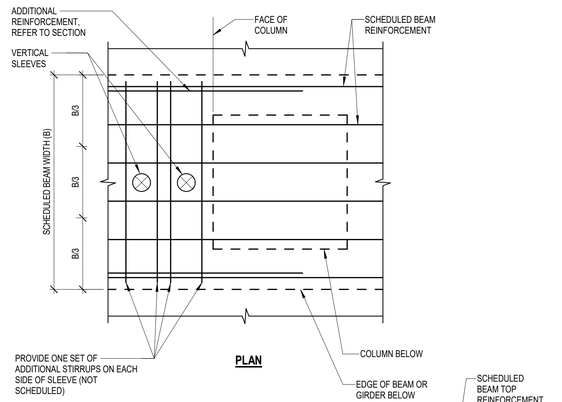



**ELEVATION**

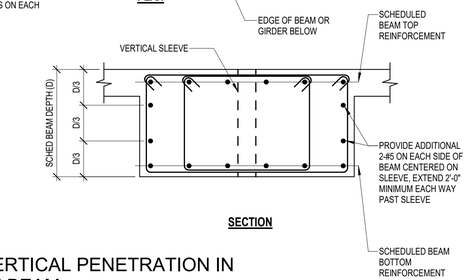
## 1 TYPICAL HORIZONTAL PENETRATION IN CONCRETE BEAM
NO SCALE

**NOTES:**

1. GENERAL CONTRACTOR SHALL COORDINATE REQUIRED BEAM SLEEVES WITH MECHANICAL, ELECTRICAL, AND PLUMBING CONTRACTORS. REQUIRED SLEEVES MAY OR MAY NOT BE SHOWN ON THE STRUCTURAL DRAWINGS. GENERAL CONTRACTOR SHALL SUBMIT PLAN SHOWING LAYOUT OF ALL SLEEVES WITH FORMWORK SHOP DRAWING SUBMITTAL.
2. SLEEVES SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF THE SCHEDULED BEAM WIDTH.
3. CONTINUOUS BEAM REINFORCEMENT MAY BE SLIGHTLY DISPLACED (3" MAXIMUM) OR ADJACENT BARS BUNDLED (2 BAR BUNDLES MAXIMUM) TO FACILITATE SLEEVE INSTALLATION. DO NOT CUT, OFFSET, OR BEND REINFORCEMENT.
4. SLEEVES OCCURRING ON OPPOSITE SIDES OF A COLUMN MUST BE IN LINE.
5. THE OUTSIDE DIAMETER OF A SLEEVE MAY NOT EXCEED 15% OF THE SCHEDULED WIDTH OF THE BEAM THROUGH WHICH IT MUST PASS.
6. THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD WHEN A SLEEVE SIZE OR LOCATION DOES NOT MEET THE ABOVE CONDITIONS.
7. SCHEDULED BEAM STIRRUPS NOT SHOWN FOR CLARITY.

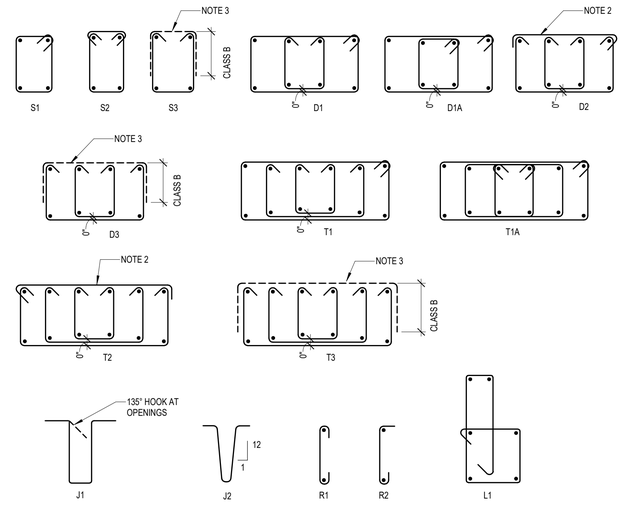



**PLAN**




**SECTION**

## 2 TYPICAL VERTICAL PENETRATION IN CONCRETE BEAM
NO SCALE




NOTES:
1. ALL HOOKS SHALL BE FABRICATED AS REQUIRED BY ACI. REFER TO "TYPICAL STIRRUP AND TIE HOOK TYPES."
2. THE TOP CAP FOR CLOSED STIRRUPS S15, S19, S24, AND S27 SHALL BE PLACED SUCH THAT THE 135° HOOK END IS NOT ON THE SIDE CONFINED BY THE SLAB.
3. PROVIDE TOP CAP FOR OPEN STIRRUPS S3, S21, S22, AND S29 TO MATCH SCHEDULED STIRRUP SIZE AT 48".

## 3 TYPICAL GRADE BEAM STIRRUP TYPES
3/4" = 1'-0"

PBK
ARCHITECT
PBK Architects, Inc.
HOUSTON
PBK.com
11 Greenway Plaza, 22nd Floor
Houston, TX 77046
713-965-0606 P
713-961-4571 F
TX Firm: BR 1608
STRUCTURAL
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T 800 248 3674
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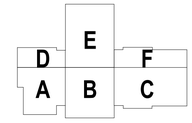
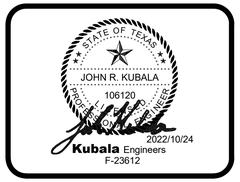
**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL


KEY PLAN
NORTH: PLAN TRUE




CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/24 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10/24/2022 |

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ISSUE FOR PROPOSAL

**GENERAL GRADE BEAM NOTES AND TYP DETAILS**

**S-302**

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0"
1"

# DRILLED PIERS:

1. PIER DESIGN IS BASED UPON THE FOLLOWING CRITERIA. REFER TO TYPICAL PIER DETAIL FOR PIER SCHEDULE AND REINFORCING.

   A. NET ALLOWABLE END BEARING PRESSURE (DEAD PLUS SUSTAINED LIVE) 2,750 PSF
   B. NET ALLOWABLE END BEARING PRESSURE (TOTAL LOAD) 4,000 PSF
   C. MINIMUM PENETRATION INTO BEARING STRATUM 13 FT
      (MEASURED BELOW THE EXISTING GRADE AT THE TIME OF BORINGS DRILLED)
   D. BEARING STRATUM LEAN CLAY (CL)

2. UNLESS NOTED OTHERWISE BY THE OWNER OR ARCHITECT, THE GENERAL CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER OR OTHER AUTHORIZED INSPECTOR DURING EARTHWORK OPERATIONS, AND KEEP A COMPETENT TRAINED TECHNICIAN ASSIGNED TO THE PROJECT ON SITE DURING OPERATIONS. SERVICES PROVIDED SHALL INCLUDE:

   A. OBSERVING THE BOTTOM OF SHAFT FOR CLEANLINESS.
   B. PROPER BEARING MATERIAL SHALL BE VERIFIED BEFORE CONCRETE POURING OCCURS. THE TOP ELEVATION OF PIERS IS SHOWN ON THE DRAWINGS. THE ACTUAL BEARING ELEVATION MAY VARY AS REQUIRED TO PROVIDE PROPER CAPACITY AS DETERMINED BY THE GEOTECHNICAL ENGINEER OF RECORD.
   C. CHECKING SHAFT FOR CONFORMANCE TO REQUIRED TOLERANCES. FOOTINGS SHALL BE WITHIN 3" OF THEIR REQUIRED LOCATIONS AND SHAFTS SHALL NOT BE OUT OF PLUMB BY MORE THAN 2 PERCENT OF THE SHAFT LENGTH. CHECK THAT THE BELL IS CONCENTRIC WITH THE SHAFT.

3. ENSURE THAT ALL SPOILS FROM THE DRILLED PIER EXCAVATIONS ARE REMOVED FROM THE BUILDING PAD AND THAT THE PAD IS MOISTURE CONDITIONED AND RECOMPACTED AS SPECIFIED.

4. ESTABLISH TOP OF FOOTINGS/PIERS AT ELEVATIONS SHOWN ON PLANS. IF FIELD CONDITIONS REQUIRE CHANGES TO REACH THE DESIRED STRATUM, ADJUSTMENTS TO CONTRACT ARE TO BE MADE ON A UNIT PRICE BASIS. CONTRACTOR SHALL PROVIDE UNIT PRICE ADD AND DEDUCT FOR EACH PIER SIZE ON THE PROJECT.

5. PIER CONSTRUCTION AND CONCRETING SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND AS PER THE LATEST VERSION OF ACI 336. DRILLED HOLES ARE TO BE EXCAVATED, CLEANED, REINFORCED, AND FILLED WITH CONCRETE DURING THE SAME DAY. NO HOLE IS TO BE LEFT OPEN OVERNIGHT. PUMP ANY ACCUMULATED WATER FROM THE PIER HOLES PRIOR TO CONCRETE PLACEMENT. REFER TO THE GEOTECHNICAL REPORT FOR CASING REQUIREMENTS.

6. REINFORCING CAGE SHALL BE HELD SECURELY AWAY FROM EARTH AT SIDES AND BOTTOM BY SETS OF 3 OR MORE SPACERS AT A MAXIMUM SPACING OF 5 FEET ALONG THE LENGTH OF THE CAGE AND 1 FOOT FROM THE BOTTOM.

7. THE CONTRACTOR SHALL VERIFY DEPTHS OF PIERS BEFORE PIER STEEL IS CUT. PIER STEEL MAY BE DELIVERED TO THE JOBSITE IN STANDARD LENGTHS OF 40 OR 60 FEET AND CUT AS REQUIRED. PROVIDE 64 BAR DIAMETER LAPS IN ALL VERTICAL PIER REINFORCING.

8. WHERE THE CLEAR DISTANCE BETWEEN TWO PIERS IS LESS THAN THE PIER DIAMETER OF THE LARGER PIER, WAIT AT LEAST 48 HOURS AFTER CASTING THE FIRST PIER BEFORE DRILLING THE SECOND PIER.

9. CONTRACTOR SHALL PROVIDE IN HIS BID A UNIT PRICE ADD AND UNIT PRICE DEDUCT FOR EACH PIER SIZE UTILIZED ON THE PROJECT.

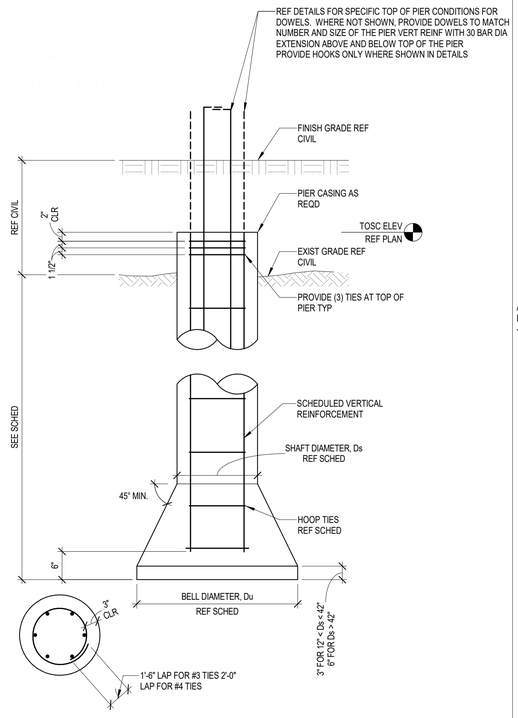
10. THE PRICE FOR CASING OF PIERS SHALL BE INCLUDED WITHIN THE BASE BID FOR ALL STRAIGHT SHAFT PIERS ON THE PROJECT. CONTRACTOR SHALL PROVIDE AN ALLOWANCE FOR 100% CASING OF DRILLED PIERS. CONTRACTOR SHALL ALSO PROVIDE UNIT PRICE FOR EACH SIZE OF CASING UTILIZED ON THE PROJECT. PAYMENT FOR CASING SHALL BE BASED UPON NET LENGTH OF CASING UTILIZED MULTIPLIED BY THE UNIT PRICE.

## BELLED PIER SCHEDULE

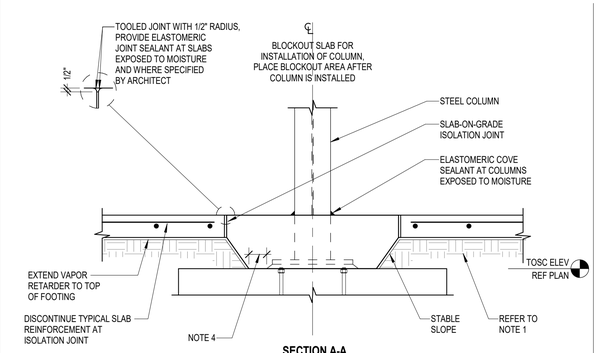
| TYPE | SHAFT DIAMETER | BELL DIAMETER | PENTR | VERT REINF | TIES |
|---|---|---|---|---|---|
| 18/42 | 1' - 6" | 3' - 6" | 13' - 0" | (4) #6 | #3 AT 12" OC |

**NOTES:**

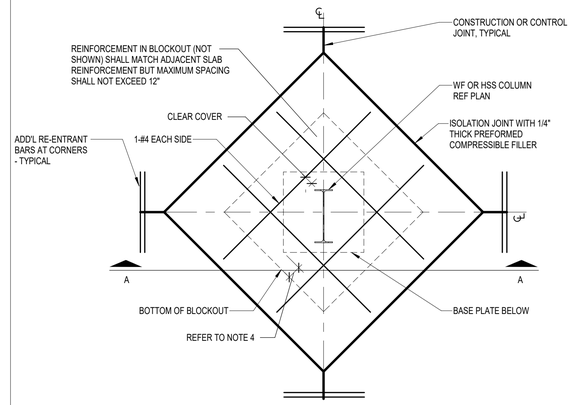
1. DEPTH OF PIER IS INDICATED FOR INFORMATION ONLY. ACTUAL DEPTH MAY VARY. REFER TO THE GEOTECHNICAL REPORT AND THE GRADING PLAN FOR DEPTH OF PIER BELOW FINISH FLOOR, AND ADJUST DEPTHS AS REQD BASED ON APPROPRIATE BEARING STRATUM. REFER TO THE GEOTECHNICAL REPORT FOR AREAS WHERE UNDERREAMS MAY COLLAPSE. APPROPRIATE ALLOWANCE SHALL BE MADE IN CASE SOIL COLLAPSE IS ENCOUNTERED.
2. SPLICE VERTICAL REINFORCING IN PIERS WITH CLASS B TENSION LAP SPLICE. NO MORE THAN 50% OF THE BARS SHALL BE LAP SPLICED AT ONE LOCATION.
3. FOR PIERS LOCATED WITHIN TWO BELL DIAMETERS CLEAR SPACING, THE SECOND PIER SHALL BE DRILLED A MIN OF 48 HOURS AFTER THE FIRST.
4. REFER TO GEOTECHNICAL REPORT FOR PIER CASING REQUIREMENTS. IF CASING IS REQUIRED, CASING SHALL BE SIZED TO MAINTAIN THE PIER SHAFT DIAMETER INDICATED IN THE SCHEDULE.
5. USE TYPE "A" PIER TIES, TYP, UNO. USE TYPE "B" TIES FOR PIERS ABOVE GRADE (INCLUDING PIERS ABOVE GRADE IN CRAWL SPACE), IN SEISMIC DESIGN CATEGORY D, E, & F AND WHERE SPECIFIED IN SCHEDULE.
6. AT LOCATIONS WHERE OVERALL PIER LENGTH IS INSUFFICIENT TO PROVIDE THE SHAFT AND BELL DIAMETERS AT THE SLOPES IDENTIFIED IN THE GEOTECHNICAL REPORT, A STRAIGHT SHAFT PIER OF DIAMETER EQUAL TO THE BELL DIAMETER SHALL BE PROVIDED. CONTACT EOR FOR PIER REINFORCING.
7. PIERS AT BRACED BAYS AND BACK-END OF CANTILEVERED GRADE BEAMS SHALL HAVE CLASS B MECHANICAL COUPLERS FOR ANY SPLICE IN THE VERTICAL (LONGITUDINAL) REINFORCING. (TYP.)




# 1 TYPICAL PIER REINFORCING DIAGRAM AND SCHEDULE
3/4" = 1'-0"




**SECTION A-A**

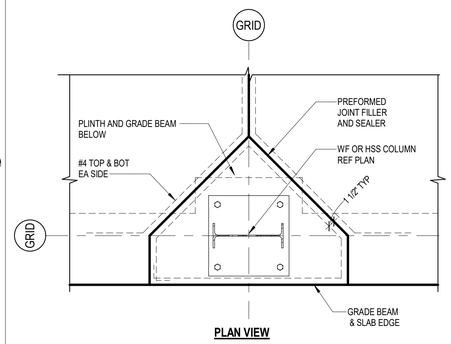



**PLAN**

**NOTES:**

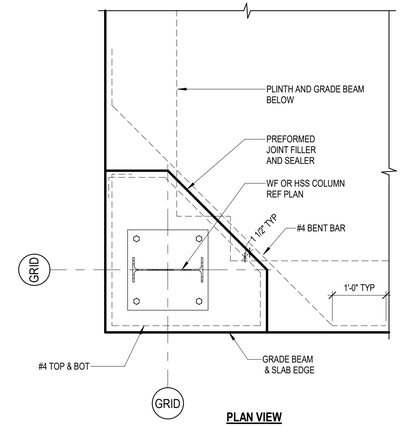
1. REFER TO "TYPICAL SLAB-ON-GRADE SUBGRADE PREPARATION" FOR SUBGRADE PREPARATION REQUIREMENTS INCLUDING LOCATION OF VAPOR RETARDER RELATIVE TO SLAB AND GRANULAR BASE AND WHETHER FINE-GRADE GRANULAR MATERIAL IS REQUIRED.
2. REFER TO "TYPICAL CONSTRUCTION AND CONTROL JOINTS - SLAB-ON-GRADE" FOR CONSTRUCTION AND CONTROL JOINT REQUIREMENTS.
3. CONTRACTOR TO COORDINATE REQUIRED SIZE OF BLOCKOUT FOR STRUCTURAL STEEL COLUMNS WITH STEEL ERECTOR. SUBMIT THE DESIRED BLOCKOUT SIZE TO ARCHITECT FOR APPROVAL.
4. BLOCKOUT SHALL BE SIZED TO PROVIDE 3" MINIMUM CONCRETE COVER ALL AROUND COLUMN AND BASE PLATE.
5. THE BLOCKOUT SAHLL BE KEYWAYED WITH RE-ENTRANT BARS.

# 2 TYPICAL SLAB-ON-GRADE INTERIOR BLOCKOUT DETAIL
NO SCALE



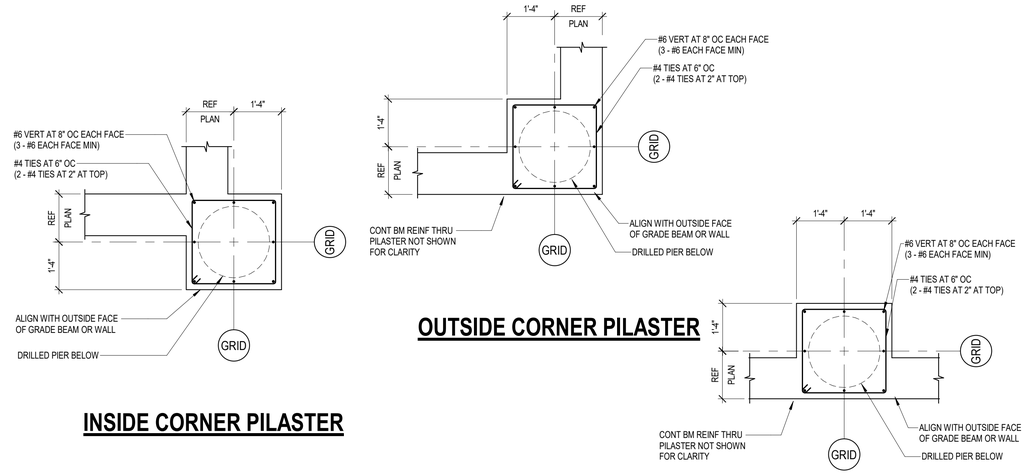

**PLAN VIEW**

# 3 TYPICAL SLAB-ON-GRADE PERIMETER BLOCKOUT DETAIL
NO SCALE




**PLAN VIEW**

# 4 TYPICAL SLAB-ON-GRADE CORNER BLOCKOUT DETAIL
NO SCALE




**INSIDE CORNER PILASTER**

**OUTSIDE CORNER PILASTER**

**INTERIOR PILASTER**

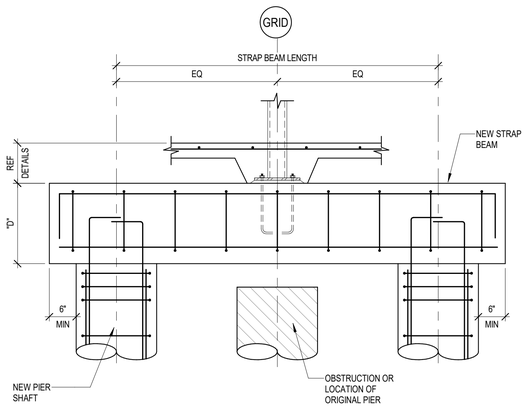
# 5 TYPICAL PILASTER DETAILS AT PIERS
NO SCALE

**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" |




# 6 STRAP BEAM DETAIL AT CONSTRUCTION
NO SCALE

PBK
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STRUCTURAL KUBALA ENGINEERS T 800 248 3674
MEP/T LEAF ENGINEERS T 713 940 3330

**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**

506 W EDGEWOOD DR.
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

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A B C

KEY PLAN
NORTH: PLAN TRUE

STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
2022/10/24
Kubala Engineers
F-23612

CLIENT
FRIENDSWOOD ISD
DATE 2022/10/24
PROJECT NUMBER 220083
DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
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1
ISSUE FOR PROPOSAL

**GENERAL FOUNDATION NOTES AND TYP DETAILS**

**S-303**

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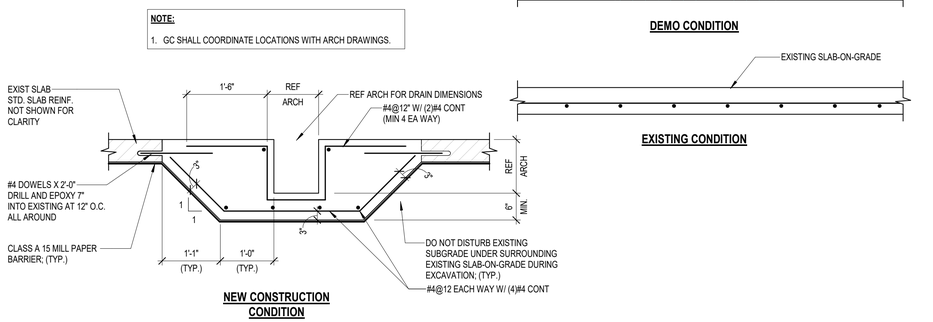
0"
1"

## EXISTING STRUCTURE AND CONDITIONS:

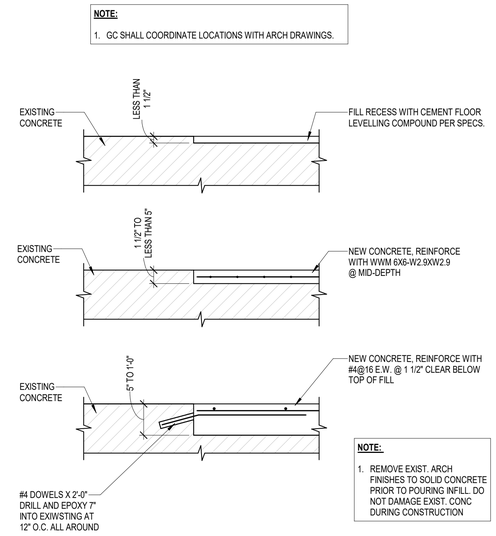
1. CONTRACTOR IS TO NOTIFY ENGINEER OF QUESTIONABLE EXISTING STRUCTURAL COMPONENTS (MASONRY WALLS, STEEL BEAMS AND LINTELS, EXPOSED FOUNDATIONS, ETC.) AND FRAMING CONNECTIONS WHEN ENCOUNTERED.
2. GRIDLINES ARE SHOWN ON THE STRUCTURAL DRAWINGS AND THESE REFLECT ASSUMED ARCHITECTURAL AND STRUCTURAL DIMENSIONS. IN MOST CASE, 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.

## DEMOLITION NOTES:

1. ALL EXISTING STRUCTURE SHOWN ON PLANS IS BASED ON EXISTING STRUCTURAL PLANS OR INFORMATION OBTAINED FROM SITE VISITS AND MAY NOT BE ENTIRELY ACCURATE 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. GC TO 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.
3. CARE SHOULD BE TAKEN DURING DEMOLITION TO AVOID DAMAGING ANY STRUCTURAL ELEMENTS THAT HAVE BEEN DESIGNATED TO REMAIN.
4. STRUCTURAL EOR IS NOT RESPONSIBLE FOR THE DESIGN OF ANY TEMPORARY SHORING OR BRACING REQUIRED BETWEEN DEMOLITION AND THE INSTALLATION OF THE NEW STRUCTURE.

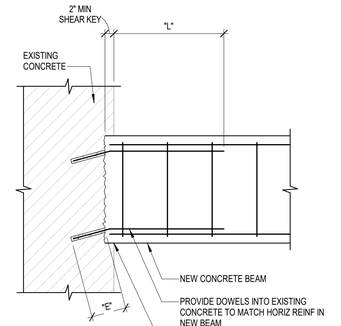



1 TYPICAL FLOOR TRENCH DRAIN
NO SCALE



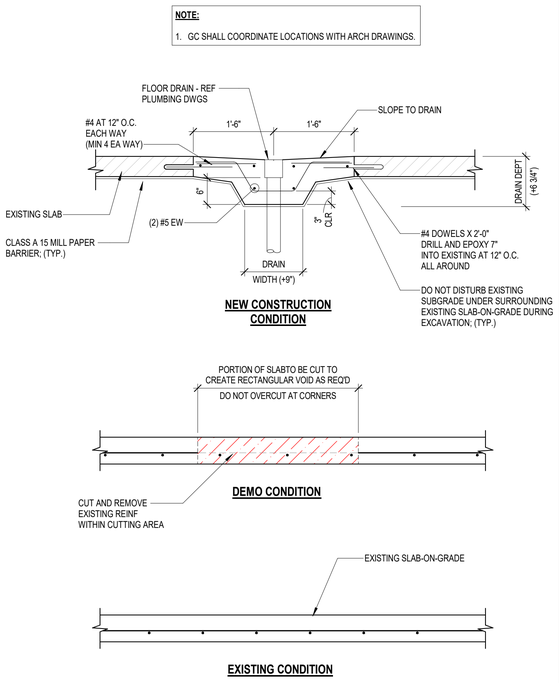

2 INFILL AT EXIST. FLOOR RECESS
NO SCALE

| BAR SIZE | E | L |
|---|---|---|
| #3 | 7" | 2'-0" |
| #4 | 8" | 2'-0" |
| #5 | 10" | 2'-7" |
| #6 | 14" | 3'-1" |
| #7 | 15" | 4'-6" |
| #8 | 16" | 5'-2" |
| #9 | 18" | 5'-10" |
| #10 | 20" | 6'-8" |
| #11 | 22" | 7'-4" |

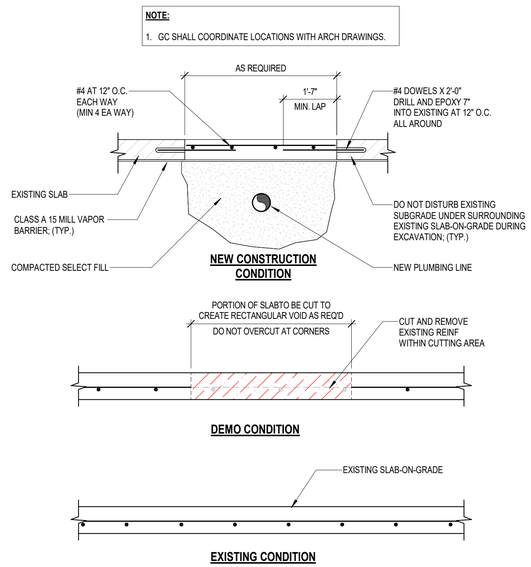



DOWELS SHALL BE ANCHORED WITH HILTI HIT HY 200 MAX ADHESIVE OR APPROVED EQUAL. INSTALL DOWELS IN ACCORDANCE WITH THE MFR REQUIREMENTS FOR THE PRODUCT. INSTALLATION TO BE OBSERVED BY THE OWNERS TESTING LAB

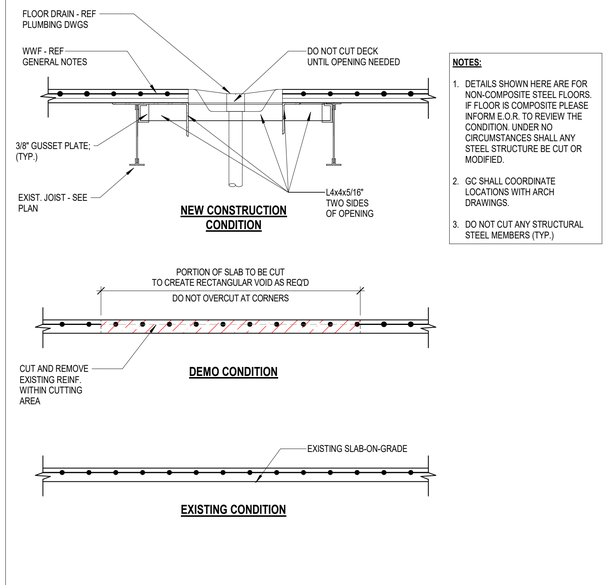
3 CONCRETE BEAM CONNECTION TO EXISTING CONCRETE
NO SCALE




4 FLOOR DRAIN DETAIL
NO SCALE




5 NEW PLUMBING TRENCH IN SLAB-ON GRADE
NO SCALE

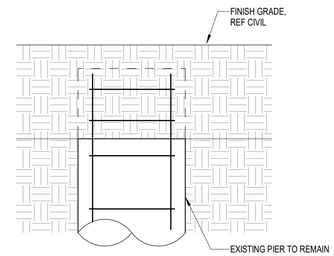



NOTES:
1. DETAILS SHOWN HERE ARE FOR NON-COMPOSITE STEEL FLOORS. IF FLOOR IS COMPOSITE PLEASE INFORM E.O.R. TO REVIEW THE CONDITION. UNDER NO CIRCUMSTANCES SHALL ANY STEEL STRUCTURE BE CUT OR MODIFIED.
2. GC SHALL COORDINATE LOCATIONS WITH ARCH DRAWINGS.
3. DO NOT CUT ANY STRUCTURAL STEEL MEMBERS (TYP.)

6 TYPICAL FLOOR DRAIN
NO SCALE

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 TWELVE (12) INCHES BELOW BOTTOM OF GRADE BEAM/SLAB.




7 TYPICAL EXISTING PIER DETAIL
NO SCALE

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T 713 940 3300

WESTWOOD ELEMENTARY SCHOOL RENOVATIONS
506 W EDGEWOOD DR, FRIENDSWOOD, TX 77546
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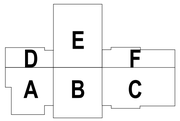


KEY PLAN
NORTH: PLAN TRUE


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FRIENDSWOOD ISD

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GENERAL EXISTING FOUNDATION NOTES AND TYP DETAILS

S-304

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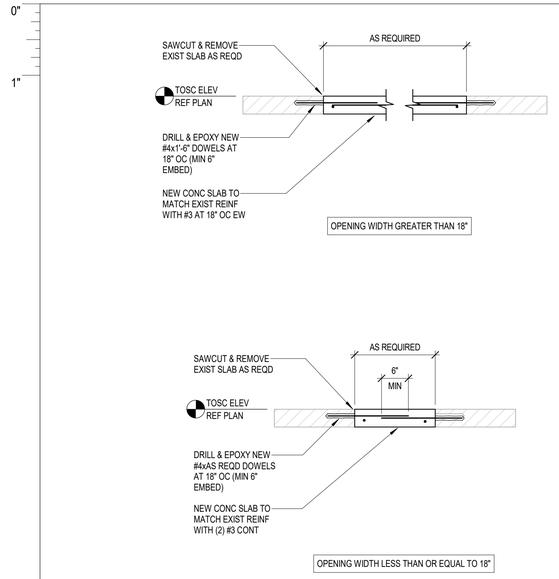
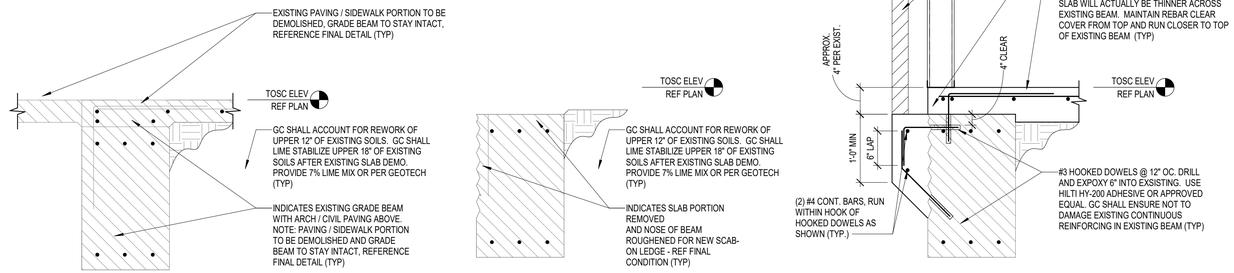
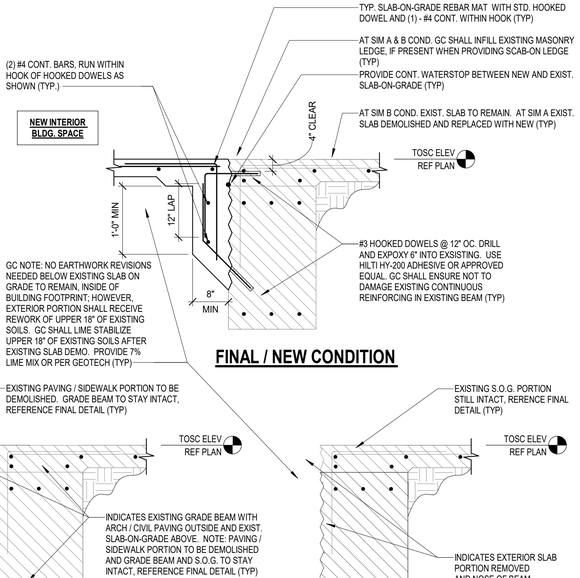



## 1 TYPICAL SLAB INFILL
NO SCALE



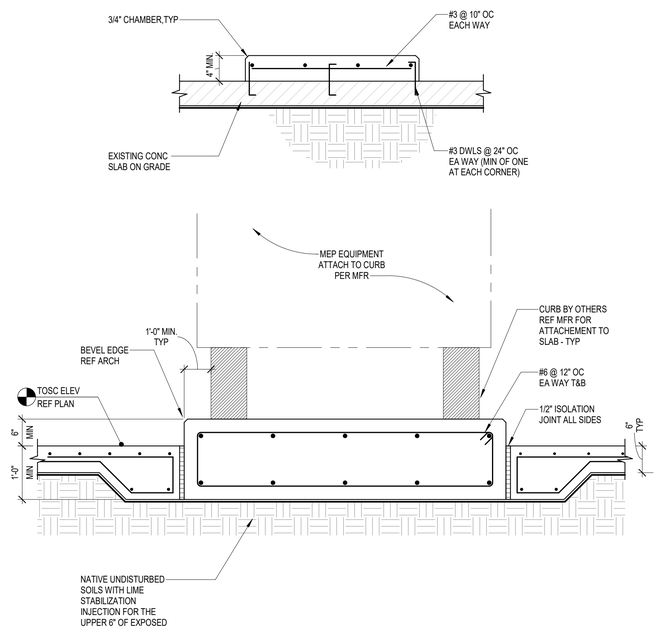

## 2 TYPICAL BRICK SCAB ON DETAIL
NO SCALE



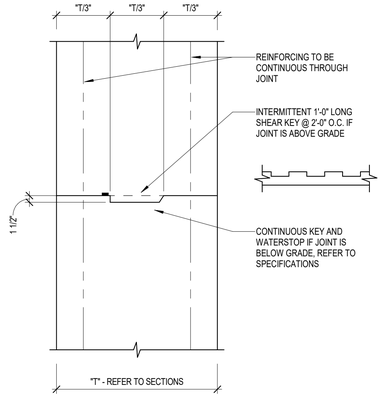

## 3 MODIFICATIONS AT EXIST. ENTRY
NO SCALE

**NOTES:**

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.




## 4 TYPICAL CONCRETE HOUSEKEEPING PAD DETAIL
NO SCALE




## 5 TYP HORIZONTAL CONSTRUCTION JOINT IN BEAMS AND WALLS OR VERTICAL CONSTRUCTION JOINT IN WALLS
NO SCALE

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# WESTWOOD ELEMENTARY SCHOOL RENOVATIONS

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

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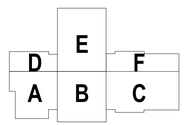
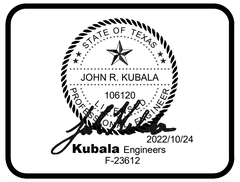



KEY PLAN
NORTH: PLAN TRUE

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1
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**GENERAL EXISTING FOUNDATION NOTES AND TYP DETAILS**

**S-305**

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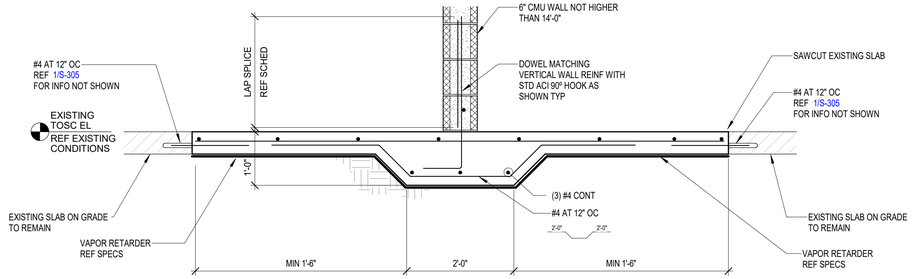
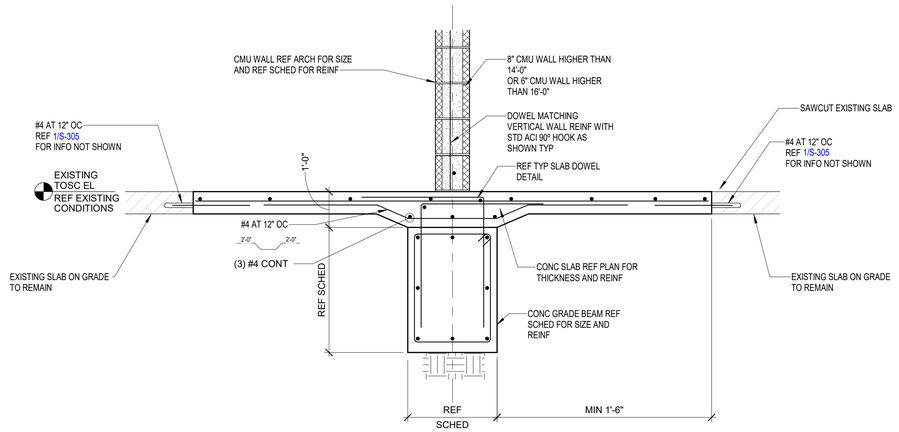



1 TYPICAL INTERIOR CMU WALL ON SLAB-ON-GRADE
3/4" = 1'-0"




**NEW CONSTRUCTION CONDITION A**

2 NEW FOUNDATION AND EXISTING FIRST FLOOR PLAN
3/4" = 1'-0"

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PBK.com
HOUSTON
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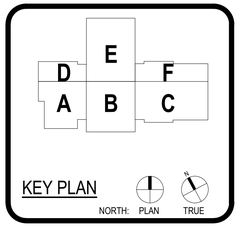
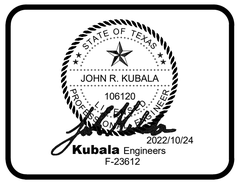
**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

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1 ISSUE FOR PROPOSAL

**TYPICAL EXISTING FOUNDATION DETAILS**

**S-306**

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0"
1"

# 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 LIGHTWEIGHT (LESS THAN 105 PCF, OVEN DRY UNIT WEIGHT).
3. ALL MASONRY UNITS SHALL HAVE A MAXIMUM LINEAR SHRINKAGE OF .06 OF 1% FROM THE SATURATED TO THE OVEN DRY CONDITION, WHEN TESTED IWITH 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:**

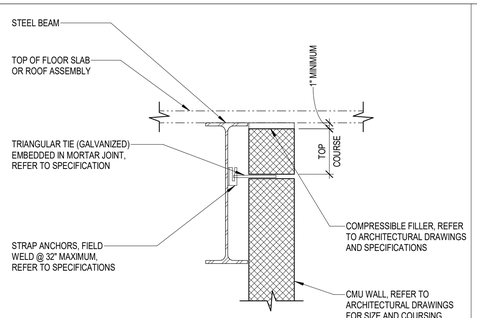
1. GROUT FOR POURING SHALL BE OF FLUID CONSISTENCY AND MIXED IN THE RATIO BY VOLUMES, 1 PART PORTLAND CEMENT, 2 1/4 PARTS MINIMUM TO 3 PARTS MAXIMUM DAMP LOOSE SAND, 1 PART MINIMUM TO 2 PARTS MAXIMUM PEA GRAVEL, AND 0 TO 1/10 PART MAXIMUM HYDRATED LIME. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH 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" O.C 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 BLOCKS SHALL 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 48 BAR DIAMETERS AT SPLICES, INTERSECTIONS AND CORNERS.

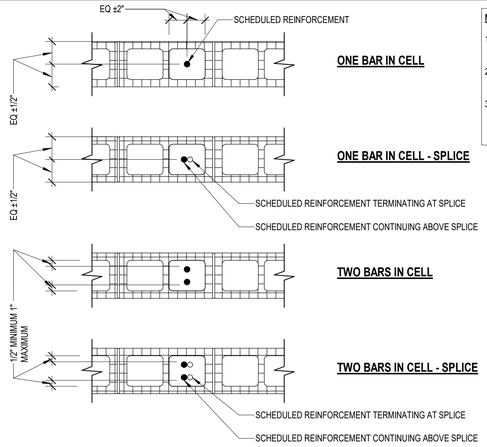
**MISCELLANEOUS:**

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.



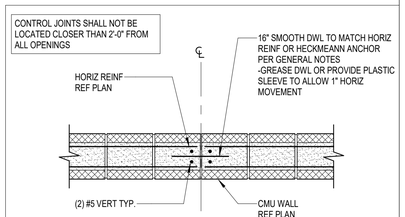

**NOTE:**
1. THIS DETAIL IS TO BE USED ONLY IF INTERSECTING SUPPORT WALLS EXCEED A SPACING OF 36 TIMES THE NOMINAL WALL THICKNESS. USE OF THIS DETAIL IS LIMITED TO WALL HEIGHTS UP TO 36 TIMES THE NOMINAL WALL THICKNESS.

## 1 TYPICAL INTERIOR NON-BEARING CMU WALL SIDE CONNECTION
NO SCALE



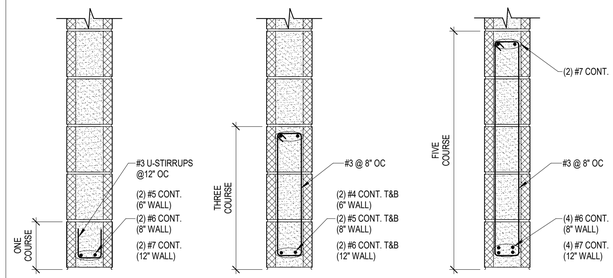

**NOTES:**
1. REINFORCEMENT MUST BE PLACED USING REINFORCING BAR POSITIONERS THAT LOCATE THE BAR AS SPECIFIED AND PREVENT MOVEMENT OF THE BAR DURING CONSTRUCTION.
2. SPLICED REINFORCEMENT MUST BE A CONTACT LAP SPLICE WITH SPLICED BARS ALIGNED PARALLEL TO THE WALL AS SHOWN.
3. THE ENGINEER MUST BE NOTIFIED 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



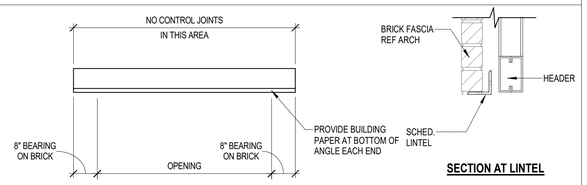

## 3 TYPICAL CONTROL JOINT DETAIL
NO SCALE

**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 CLEARSPAN 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.
4. AS AN ALTERNATIVE TO USING A FILLED CMU BLOCK LINTEL (PER THE SCHEDULE ABOVE) FOR OPENINGS 5'-0" AND LESS, CONTRACTOR MAY USE CAST CRETE LINTEL (8U8).




**OPENINGS LESS THAN 5'-0"** | **OPENINGS LESS THAN 8'-0"** | **OPENINGS LESS THAN 15'-0"**

## 4 MASONRY LINTEL SCHEDULE
NO SCALE

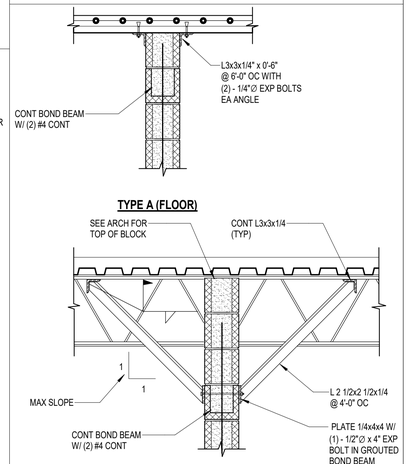



**SECTION AT LINTEL**

| CLEAR OPENING | MINIMUM ANGLE SIZE |
|---|---|
| 0 TO LESS THAN 6'-0" | L 3 1/2 x 3 1/2 x 5/16 |
| 6'-0" TO LESS THAN 7'-0" | L 5 x 3 1/2 x 5/16 (LLV) |
| 7'-0" TO LESS THAN 8'-0" | L 6 x 3 1/2 x 5/16 (LLV) |
| 8'-0" - 10'-0" | L 7 x 4 x 3/8 (LLV) |

**NOTES:**
1. REF ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATIONS OF OPENINGS.
2. PROVIDE 1" OF BEARING @ EACH JAMB FOR EACH FOOT OF CLEARSPAN BUT NOT LESS THAN 8".
3. WHERE MIN. BEARING CANNOT BE ACHIEVED, PROVIDE ADEQUATE CONNECTION TO STRUCTURAL MEMBERS OR PROVIDE VERTICAL SUPPORTS AS REQ'D. SUCH DETAILS SHALL BE APPROVED BY THE ENGINEER OF RECORD.

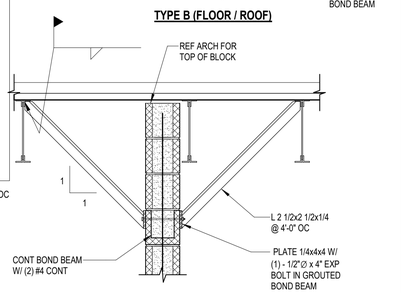
## 5 TYPICAL STEEL LOOSE LINTEL SCHEDULE
NO SCALE



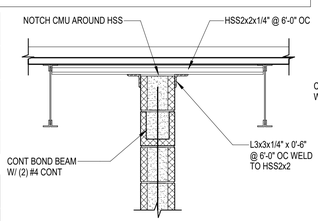

**TYPE A (FLOOR)**



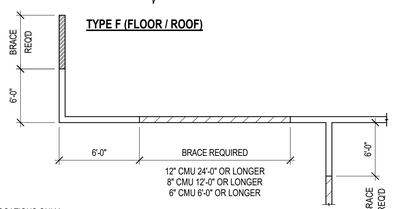

**TYPE B (FLOOR / ROOF)**




**TYPE C (FLOOR / ROOF)**




**TYPE F (FLOOR / ROOF)**

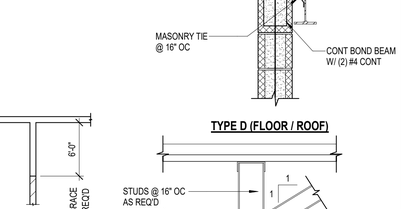



INTERIOR LOCATIONS ONLY

NON-LOAD BEARING MASONRY WALL BRACES. BRACING AT THE TOP OF MASONRY WALLS IS REQUIRED ON STRAIGHT RUNS OF WALL MORE THAN SIX FEET FROM A CORNER, INTERSECTING WALL, OR AS NOTED ABOVE.

WHEN THE MASONRY WALL TERMINATES AT THE BOTTOM OF THE DECK, A TYPE 'A' ATTACHMENT AT THE FLOOR DECK OR A TYPE 'B', 'C', 'D' OR 'F' ATTACHMENT AT EITHER THE FLOOR OR ROOF MAY BE USED. WHEN WALLS TERMINATE ABOVE THE CEILING A TYPE 'B', 'C' OR 'E' ATTACHMENT SHOULD BE USED.

**TYPICAL CMU WALL BRACING LOCATION PLAN**




**TYPE D (FLOOR / ROOF)**




**TYPE E (FLOOR / ROOF)**

| BRACE FRAMING (3 5/8" STUDS) | | | | |
|---|---|---|---|---|
| STUD TYPE | STUD PROPERTIES | SPACING | MAX LENGTH | MISCELLANEOUS |
| SJ 20 (40 KSI) | Ix = 0.541 IN^4<br>rx = 1.429 IN<br>A = 0.2136 IN^2<br>Sx = 0.273 IN^3 | 4'-0" OC | 14'-0" | BRACE @ MID-PT FOR LENGTHS OVER 14'-0" |

| VERTICAL FRAMING (3 5/8" STUDS) | | | | |
|---|---|---|---|---|
| STUD TYPE | STUD PROPERTIES | SPACING | MAX LENGTH | MISCELLANEOUS |
| ST 25 (33 KSI) | Ix = 0.239 IN^4<br>rx = 1.415 IN<br>A = 0.123 IN^2<br>Sx = 0.113 IN^3 | 1'-4" OC | 16'-9" | ONE LAYER SHEATHING (MIN) * |
| ST 20 (33 KSI) | Ix = 0.414 IN^4<br>rx = 1.407 IN<br>A = 0.210 IN^2<br>Sx = 0.213 IN^3 | 1'-4" OC | 22'-6" | ONE LAYER SHEATHING (MIN) * |

*OR PROVIDE 1 1/2x1 1/2x16 GA HORIZONTAL CHANNEL FASTENED TO STUDS WITH 1 1/2x1 1/2x14 GA CLIP AT 4'-0" OC VERTICALLY

| BRACE FRAMING (6" STUDS) | | | | |
|---|---|---|---|---|
| STUD TYPE | STUD PROPERTIES | SPACING | MAX LENGTH | MISCELLANEOUS |
| SJ 20 (40 KSI) | Ix = 1.787 IN^4<br>rx = 2.253 IN<br>A = 0.2148 IN^2<br>Sx = 0.539 IN^3 | 4'-0" OC | 20'-0" | BRACE @ MID-PT FOR LENGTHS OVER 20'-0" |

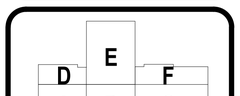
| VERTICAL FRAMING (6" STUDS) | | | | |
|---|---|---|---|---|
| STUD TYPE | STUD PROPERTIES | SPACING | MAX LENGTH | MISCELLANEOUS |
| ST 25 (33 KSI) | Ix = 0.773 IN^4<br>rx = 2.209 IN<br>A = 0.167 IN^2<br>Sx = 0.184 IN^3 | 1'-4" OC | 20'-0" | ONE LAYER SHEATHING (MIN) * |
| ST 20 (33 KSI) | Ix = 1.385 IN^4<br>rx = 2.199 IN<br>A = 0.288 IN^2<br>Sx = 0.437 IN^3 | 1'-4" OC | 32'-9" | ONE LAYER SHEATHING (MIN) * |

*OR PROVIDE 1 1/2x1 1/2x16 GA HORIZONTAL CHANNEL FASTENED TO STUDS WITH 1 1/2x1 1/2x14 GA CLIP AT 4'-0" OC VERTICALLY

## 6 TYPICAL CMU WALL BRACE CONNECTIONS
NO SCALE

PBK
ARCHITECT PBK Architects, Inc. PBK.com
HOUSTON
11 Greenway Plaza, 22nd Floor
Houston, TX 77046
713-965-0608 P
713-961-4571 F
TX Firm: BR 1608
STRUCTURAL KUBALA ENGINEERS 1 800 248 3674
MEP/T LEAF ENGINEERS T 713 940 3300

**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**
506 W EDGEWOOD DR, FRIENDSWOOD, TX 77546
ISSUE FOR PROPOSAL




KEY PLAN NORTH: PLAN TRUE


CLIENT
FRIENDSWOOD ISD
DATE 2022/10/24 PROJECT NUMBER 220083
DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10/24/2022 |

1 ISSUE FOR PROPOSAL

**GENERAL CMU NOTES AND TYP DETAILS**

**S-400**

File Path: C:\Users\BJeansonne\Documents\ST21_220083_Friendswood ISD_Westwood ES_Central_benjamin.jeansonne.rvt
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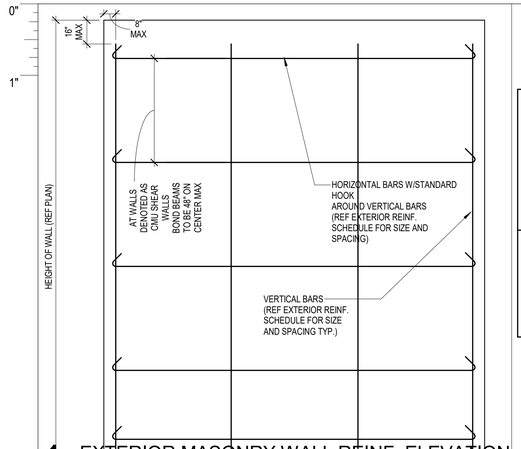
Plot Stamp: 10/24/2022 8:55:18 AM

GENERAL CMU NOTES AND TYP DETAILS

S-401

FOR BLUEBEAM LABELING/OCR:



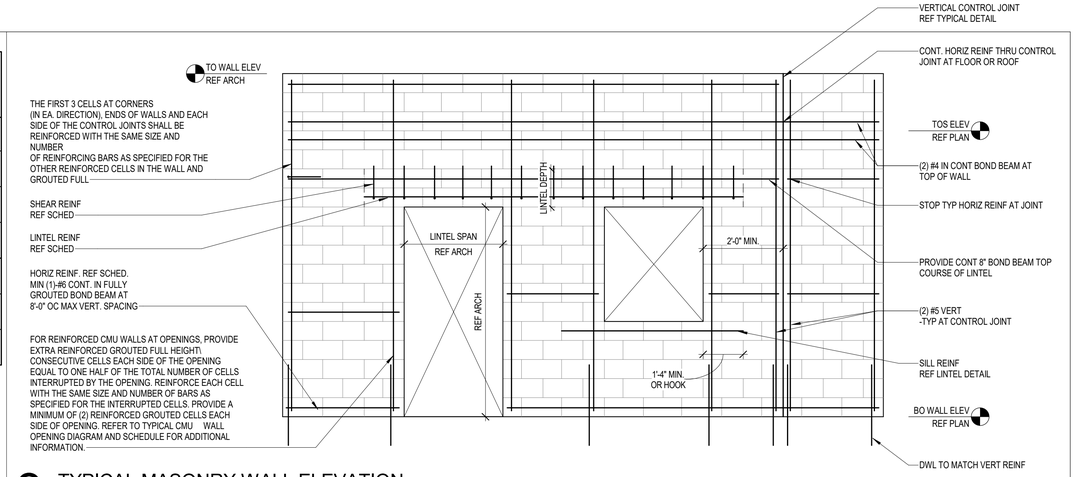

## 1 EXTERIOR MASONRY WALL REINF. ELEVATION
NO SCALE

| | 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) |
|---|---|---|---|---|
| EXTERIOR WALL | 8" | 16'-0" | #6 @ 24" OC | #6 @ 24" OC |
| | 8" | >16'-0" ..... 28'-0" | #6 @ 8" OC EF | #6 @ 8" OC EF |
| | 12" | 16'-0" | #6 @ 24" OC | #6 @ 24" OC |
| | 12" | >16'-0" ..... 28'-0" | #6 @ 16" OC EF | #6 @ 16" OC EF |
| INTERIOR WALL | 6" | 15'-0" | #5 @ 48" OC | #5 @ 48" OC |
| | 8" | 16'-0" | #6 @ 48" OC | #6 @ 48" OC |
| | 8" | >16'-0" ..... 28'-0" | #6 @ 40" OC | #6 @ 40" OC |

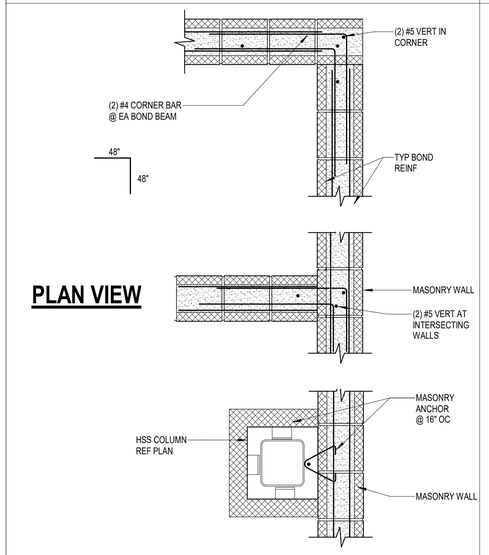
**NOTE:**

1. PROVIDE #4 @ 32" OC AT ALL INTERIOR CMU WALLS UNDER 15'-0". FOR ANY WALLS THAT DON'T MEET THE REQUIREMENTS OF THE SCHEDULE, GC TO CONTACT ENGINEER OF RECORD FOR PROPER REINFORCEMENT REQUIREMENTS.

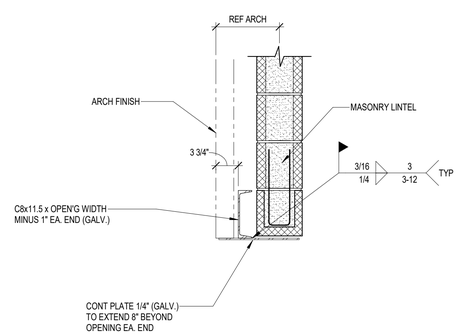
## 2 TYPICAL NON-STRUCTURAL MASONRY WALL REINF. SCHEDULE
NO SCALE



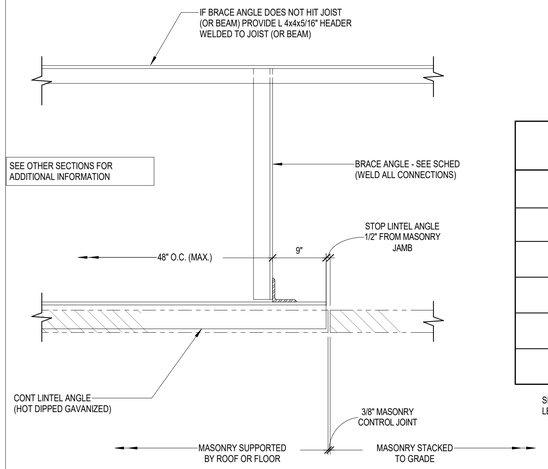

## 3 TYPICAL MASONRY WALL ELEVATION
NO SCALE




## 4 MASONRY WALL BRACING/REINF. DETAIL
NO SCALE




## 5 TYPICAL HEADER DETAIL AT OVERHEAD DOORS
NO SCALE




**NOTE:**

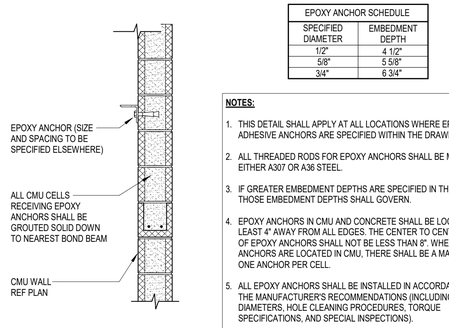
1. WHERE MASONRY IS SUPPORTED BY STEEL TUBES WITHOUT HANGERS AND BRACES, THE NOTES PERTAINING TO LINTEL ANGLES SHALL STILL APPLY.

## BRACE ANGLE SCHEDULE

| BRACE ANGLE SIZE | HEADER ANGLE SIZE | MAX LENGTH |
|---|---|---|
| L 3x3x1/4" | L 4x4x5/16" | 9'-6" |
| L 4x4x1/4" | L 5x5x5/16" | 13'-3" |
| L 5x5x5/16" | L 6x6x3/8" | 16'-6" |
| L 6X6x5/16" | L 6x6x3/8" | 20'-0" |
| CONSULT ENGINEER | CONSULT ENGINEER | OVER 20'-0" |

SIZE OF ALL BRACE ANGLES IN COMPRESSION SHALL BE DETERMINED BY STEEL FABRICATOR BASED ON THEIR UNBRACED LENGTHS AS SCHEDULED

## 6 HANGER BRACE SCHEDULE
NO SCALE

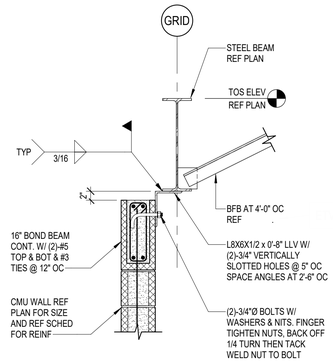



| EPOXY ANCHOR SCHEDULE | |
|---|---|
| SPECIFIED DIAMETER | EMBEDMENT DEPTH |
| 1/2" | 4 1/2" |
| 5/8" | 5 5/8" |
| 3/4" | 6 3/4" |

**NOTES:**

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 HIT-HY 70 ADHESIVE ANCHORING SYSTEM SHALL BE USED AT ALL ADHESIVE ANCHORS IN CMU.

## 7 TYPICAL EPOXY ANCHOR DETAIL
NO SCALE




## 8 TYPICAL WALL BRACING AT STEEL BEAM
3/4" = 1'-0"

PBK

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# WESTWOOD ELEMENTARY SCHOOL RENOVATIONS

506 W EDGEWOOD DR.
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

D E F
A B C

KEY PLAN
NORTH: PLAN TRUE

STATE OF TEXAS
JOHN R. KUBALA
106120
LICENSED PROFESSIONAL ENGINEER
2022/10/24
Kubala Engineers
F-23612

CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/24 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10/24/2022 |

ISSUE FOR PROPOSAL

# GENERAL CMU NOTES AND TYP DETAILS

# S-401

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S-500 GENERAL STEEL NOTES AND TYP DETAILS

FOR BLUEBEAM LABELING/OCR:

0"

1"

# STRUCTURAL STEEL:

**MATERIAL:**

1. STRUCTURAL STEEL IS TO CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS, AND IS TO BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC SPECIFICATIONS.
   - A. STEEL WIDE FLANGE AND WT SECTIONS..... ASTM A992 OR ASTM A572 - GRADE 50
   - B. MISCELLANEOUS STEEL SECTIONS (ANGLES, CHANNELS AND BARS)..... ASTM A36
   - C. HOLLOW STEEL SECTIONS..... ASTM A500, GRADE B
   - D. STEEL PIPE SECTIONS..... ASTM A53, GRADE B
   - E. BOLTS AND NUTS (HEAVY-HEX)..... ASTM A325
   - F. SHEAR-STUD CONNECTORS..... ASTM A108
   - G. ANCHOR RODS..... ASTM F1554, GRADE 36, GRADE 55 OR GRADE 105
   - H. PLATES..... ASTM A36 OR A572 GRADE 50
   - K. WASHERS..... ASTM F436
2. ALL STEEL SHALL BE DOMESTICALLY (INCLUDING CANADA) MILLED AND FABRICATED. FOREIGN STEEL SHALL NOT BE UTILIZED WITHOUT PRIOR APPROVAL FROM THE STRUCTURAL ENGINEER. THE APPROVAL PROCESS SHALL TAKE PLACE DURING BIDDING TIME. ANY REQUEST TO UTILIZE FOREIGN STEEL MADE AFTER BIDDING SHALL BE REJECTED.
3. STRUCTURAL STEEL, MISCELLANEOUS METAL, AND EMBEDS EXPOSED TO THE EXTERIOR ARE TO BE HOT DIP GALVANIZED AFTER FABRICATION, EXCEPT AS NOTED ON THE DRAWINGS. TUBE SHAPE MEMBERS EXPOSED TO THE EXTERIOR SHALL HAVE CAP PLATES SEAL WELDED, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
4. STRUCTURAL STEEL IS TO BE PREPARED AND PRIMED ACCORDING TO THE PROJECT SPECIFICATIONS. STRUCTURAL STEEL LOCATED IN CRAWL SPACES OR OTHERWISE INACCESSIBLE AREAS IS TO RECEIVE 2 COATS OF PRIMER.
5. CONTINUITY PLATES (FULL DEPTH COLUMN STIFFENERS ALIGNED WITH BEAM FLANGES, OR FULL DEPTH BEAM STIFFENERS ALIGNED WITH COLUMN FLANGES) SHALL MATCH THE STEEL GRADE OF THE BASE MEMBER.
6. IN ADDITION TO THE STEEL INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL INCLUDE THREE (3) PERCENT OF TOTAL TONNAGE OF FABRICATED STEEL (LABOR FOR ERECTION SHALL BE INCLUDED) DURING THE PROCESS OF WORK AS MAY BE DIRECTED BY THE ARCHITECT/ENGINEER OF RECORD. IF STEEL IS NOT USED DURING THE COURSE OF THE PROJECT, OWNER IS TO RECEIVE A CREDIT FOR THE PORTION NOT USED.

**CONNECTIONS:**

1. ALL STRUCTURAL STEEL DETAILS AND CONNECTIONS SHALL CONFORM TO STANDARDS OF THE AISC. DOUBLE CONNECTIONS THROUGH COLUMN WEBS, BEAM TO BEAM CONNECTIONS AND BEAMS THAT FRAME OVER THE TOP OF COLUMNS REQUIRE A BEAM ERECTION SEAT OR A STAGGERED CONNECTION WITH AT LEAST ONE INSTALLED BOLT REMAINING IN PLACE TO SUPPORT THE FIRST BEAM WHILE THE SECOND BEAM IS BEING ERECTED.
2. CONNECTIONS THAT ARE NOT DETAILED ON THE DRAWINGS SHALL BE SELECTED FROM THE TABLES IN PART 10 OF THE LATEST EDITION OF THE MANUAL OF STEEL CONSTRUCTION OF THE AICSC. TABLE 10-1 MAY BE USED FOR ALL-BOLTED DOUBLE ANGLE CONNECTIONS. TABLE 10-2 MAY BE USED FOR WELDED/BOLTED DOUBLE ANGLE CONNECTIONS. TABLE 10-3 MAY BE USED FOR ALL-WELDED DOUBLE ANGLE CONNECTIONS. BEAM REACTIONS SHALL BE ONE-HALF THE TOTAL ALLOWABLE UNIFORM LOAD GIVEN IN TABLE 3-6 THROUGH 3-9 IN PART 3 OF THE MANUALOF STEEL CONSTRUCTION OF AISC. CONNECTIONS FOR COMPOSITE BEAMS SHALL HAVE THE STANDARD AISC CAPACITY INCREASED BY 35 PERCENT.
3. PROVIDE ALL NECESSARY HOLES IN STRUCTURAL STEEL MEMBERS FOR ATTACHMENT OF ALL NON-STRUCTURAL ITEMS (IE: HOLES FOR WINDOW HEAD ANCHORS). SEE ARCHITECTURAL DRAWINGS FOR ANY REQUIREMENTS.
4. SPLICING OF STRUCTURAL STEEL MEMBERS MUST BE APPROVED BY THE STRUCTURAL ENGINEER, IF NOT ALREADY SHOWN ON THE DRAWINGS.
5. SHOP BOLTED CONNECTIONS ARE PERMISSIBLE IF SUFFICIENT BOLT CLEARANCE IS AVAILABLE FOR TIGHTENING OF HIGH STRENGTH BOLTS. CLEARANCES SHALL BE IN ACCORDANCE WITH TABLE 7-16 AND 7-17 OF THE LATEST EDITION OF THE MANUAL OF STEEL CONSTRUCTION OF THE AISC. ALL STEEL MEMBERSAND ASSEMBLIES SHALL BE SHOP FABRICATED TO THE GREATEST EXTENT POSSIBLE. TRUSSES SHALL BE FULLY SHOP ASSEMBLED. FIELD SPLICES FOR SHIPPING PURPOSES SHALL ONLY BE AS APPROVED BY THE ENGINEER OF RECORD. THE STEEL FABRICATOR AND THE STEEL ERECTOR SHALL COORDINATE THE SHOP FABRICATION, SHIPPING AND ERECTION OF ALL STRUCTURAL MEMBERS AND ASSEMBLIES.
6. ALL CONNECTION BOLTS FOR STRUCTURAL STEEL MEMBERS MUST CONFORM TO ASTM A325 OR A490 UNLESS NOTED OTHERWISE. MINIMUM SIZE SHALL BE 3/4 INCH DIAMETER. STRUCTURAL STEEL CONNECTIONS SHALL BE DESIGNED BY THE CONTRACTOR IN ACCORDANCE WITH THE MINIMUM REQUIREMENTS SPECIFIED ON S501. BOLTS SHALL BE DIRECT TENSION INDICATING BOLTS CONFORMING TO ASTM F1852 WITH HARDENED WASHERS UNDER THE NUT AND SACRIFICIAL SPLINES. HEX NUTS MUST CONFORM TO ASTM A563 AND WASHERS MUST CONFORM TO ASTM F436.
7. ALL MOMENT CONNECTIONS SHALL BE FULL WELDED CONNECTIONS DESIGNED TO DEVELOP THE FULL CROSS-SECTION OF THE MEMBER. STIFFENER PLATES, WHERE SHOWN, ARE MANDATORY AND MAY NOT BE OMITTED. MOMENT CONNECTIONS ARE INDICATED ON THE PLANS BY A TRIANGULAR BULB ON THE END OF THE BEAM, OR BY THE LETTERS "MC".
8. EMBED PLATES TO BE INSTALLED IN THE FOUNDATION AND/OR SLAB SHALL BE SUBMITTED FOR REVIEW WITH THE ANCHOR BOLTS.
9. BOLTS SHALL BE TIGHTENED BY THE AISC "SNUG TIGHT" METHOD UNLESS NOTED OTHERWISE
10. CANTILEVER BEAMS MOMENT CONNECTED TO THE FRAME SHALL BE THE SAME SIZE AS THE BACK-UP SPAN IF NO SIZE IS GIVEN.
11. SHELF ANGLES SHOWN AS CONTINUOUS IN THE SECTIONS SHALL BE INSTALLED IN 20'-0" MAXIMUM LENGTHS, LEAVING A 1/4" GAP BETWEEN ENDS AND AT CORNERS. LOCATE GAPS TO MATCH MASONRY CONTROL JOINTS. AT BUILDING EXPANSION JOINT, LEAVE A GAP TO MATCH EXPANSION JOINT WIDTH.
12. CONNECT MISCELLANEOUS STEEL MEMBERS USING FILLET WELDS SUFFICIENT TO DEVELOP THE TENSILE STRENGTH OF THE SMALLER MEMBER AT THE JOINT UNLESS SHOWN OTHERWISE.
13. STEEL MEMBERS SHOWN TO BE CURVED SHALL BE ROLLED IN A MANNER THAT WILL NOT CAUSE DISTORTION OR BUCKLING. SHOULD ALTERATIONS TO THE MEMBER SIZE, SUCH AS A THICKER FLANGE OR WEB, BE REQUIRED TO ENSURE THIS OUTCOME, THE ADDITIONAL STEEL SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE CONTRACT.

**WELDING:**

1. ALL WELDING MUST CONFORM TO THE AMERICAN WELDING SOCIETY ANSI/AWS D1.1 STANDARDS, AND SHALL CONFORM TO THE STANDARDS OF THE LATEST EDITION OF THE MANUAL OF STEEL CONSTRUCTION. ALL WELDERS MUST BE CERTIFIED IN ACCORDANCE WITH AWS D1.1. WELDING OF REINFORCING BARS SHALL COMPLY TO THE AMERICAN WELDING SOCIETY AWS D1.4. SHORT CIRCUIT TRANSFER FOR THE GAS METAL ARC WELDING PROCESS IS NOT PERMITTED.
2. ELECTRODES FOR ALL FIELD AND SHOP WELDING SHALL BE CLASS E70XX. ELECTRODES FOR MOMENT CONNECTIONS SHALL BE CLASS E7018 WITH A CHARPY TOUGHNESS OF AT LEAST 20 FT-LBS AT -20 DEGREES FAHRENHEIT.
3. ALL MISCELLANEOUS WELDS SHALL BE MINIMUM SIZE FILLET ALL AROUND AND MUST BE IN ACCORDANCE WITH AISC. WELDING OF CONTINUOUS MEMBERS SHALL BE A MINIMUM OF 2 INCHES OF 3/16 INCH FILLET STITCH WELDS AT 12 INCHES O.C., STAGGERED EACH SIDE, UNLESS SHOWN OTHERWISE ON THE DRAWINGS. COLUMN BASE PLATES, STIFFENER PLATES AND CAP PLATES SHALL BE WELDED ALL AROUND.
4. HEADED STUDS SHALL BE WELDED TO EMBED PLATES BY A METHOD IN WHICH THE CONNECTION CAN DEVELOP THE FULL TENSION AND SHEAR CAPACITY OF THE STUD.

# GENERAL INFO.:

1. FOR ANY STEEL BEAM OR COLUMN THAT DOES NOT MEET THE MINIMUM SIZE REQUIRED,DUE TO THE U.L. DESIGN NUMBER (SELECTED BY THE ARCHITECT), THE THICKNESS OF THE SPRAYED FIRE PROTECTION MATERIAL MUST BE INCREASED AS REQUIRED BY THE FORMULA SHOWN IN THE U.L. FIRE RESISTANCE DIRECTORY (LATEST EDITION).
2. AT BRICK SUPPORT ANGLES, DURING CONSTRUCTION, THE BRICK SHALL BE INSTALLED WITHOUT SHORING THE SUPPORT ANGLE. SHORING THE BRICK DURING CONSTRUCTION CAN CAUSE HORIZONTAL BED JOINT CRACKING WHEN THE SHORES ARE REMOVED.
3. HEADED ANCHORS/STUDS SHALL BE MANUFACTURED FROM COLD DRAWN MATERIALS PER ASTM A108. ANCHORS/STUDS SHALL BE OF GRADE 50 WITH SOLID FLUX FILLED HEADS. ANCHORS/STUDS STUDS SHALL BE AUTOMATICALLY END WELDED WITH IN ACCORDANCE WITH AWS D1.1. ANCHORS/STUDS FOR EMBEDDED PLATES AND OTHER ANCHORS SHALL BE SHOP WELDED. STUDS FOR COMPOSITE BEAMS MUST BE FIELD WELDED.
4. AT BUILDINGS, WHERE SPLICED COLUMNS ARE REQUIRED, THE STEEL COLUMNS MUST BE SPLICED AT A MINIMUM OF 4'-0" ABOVE THE FINISH FLOOR. COLUMNS SHALL BE SPLICED AT EVERY OTHER LEVEL. AT WIDE FLANGE COLUMNS, PROVIDE HOLES IN THE WEBS FOR 3/4" DIAMETER SAFETY CABLES. AT TUBE OR PIPE COLUMNS, PROVIDE PLATES WITH HOLES WELDED TO THE COLUMNS FOR SAFETY CABLE CONNECTIONS. A L3x3x1/4 DECK SUPPORT ANGLE SHALL BE PROVIDED ON ALL SIDES OF THE COLUMN.
5. ALL STRUCTURAL STEEL OUTSIDE OF THE BUILDING ENVELOPE SHALL BE HOT DIPPED GALVANIZED. WITH A MINIMUM ZINC COATING CLASS OF G90, MEETING THE REQUIREMENTS OF ASTM 123, AND SHALL BE APPLIED AFTER FABRICATION. ALL FIELD WELDS SHALL REQUIRED SHALL BE GROUND SMOOTH AND TOUCHED UP WITH A ZINC RICH PAINT.
6. THE GENERAL CONTRACTOR AND HIS SUBCONTRACTORS SHALL COMPLY TO OSHA 29 CFR 1926 SUBPART R, SAFETY STANDARDS FOR STEEL ERECTION.
7. THE DRAWINGS AND SPECIFICATIONS MAY NOT INDICATE OR DESCRIBE ALL OF THE WORK REQUIRED FOR THE PERFORMANCE AND COMPLETION OF THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FABRICATION AND INSTALLATION OF ALL MISCELLANEOUS METAL ITEMS INDICATED, DESCRIBED, OR IMPLIED ON THE STRUCTURAL AND/OR THE ARCHITECTURAL DRAWINGS. MISCELLANEOUS STEEL ITEMS, WITHIN AN ASSEMBLY AND NOT ATTACHED TO THE STRUCTURE, ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND HIS SUBCONTRACTORS, WHETHER OR NOT THEY ARE SHOWN ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS. SUCH ASSEMBLIES INCLUDE, BUT ARE NOT LIMITED TO, EXTERIOR AND INTERIOR WALL ASSEMBLIES, CEILING ASSEMBLIES, PARTITION ASSEMBLIES, SHELF AND CABINET ASSEMBLIES AND ALL OTHER SIMILAR ASSEMBLIES. ANY MISCELLANEOUS METAL ITEMS INDICATED ON THE ARCHITECTURAL DRAWINGS AND NOT SHOWN ON STRUCTURAL DRAWINGS SHALL BE A MINIMUM OF L4x4x1/2", C7x9.8, 3/8" PLATE OR HSS4x4x3/8" UNLESS OTHERWISE APPROVED BY THE STRUCTURAL ENGINEER.

# METAL ROOF DECKING:

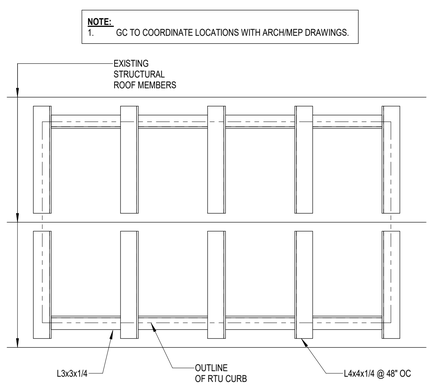
1. METAL ROOF DECK OF SIZE NOTED ON PLANS SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

**METAL DECK SCHEDULE**

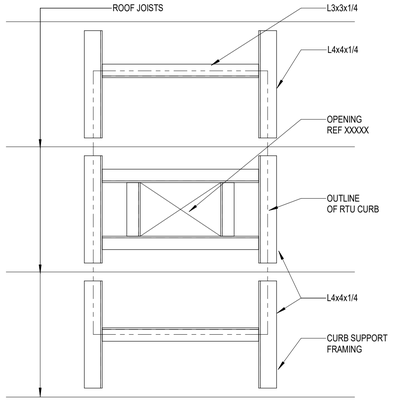
| DECK DESIGNATION ON PLAN | DECK DESIGNATION | DECK GAUGE | SDI DECK TYPE | DECK DEPTH (IN) | Ip (IN4) | In (IN4) | Sp (IN3) | Sn (IN3) | Fy (KSI) | METAL DECK CONNECTION SCHEDULE: FASTEN DECK TO SUPPORT MEMBERS ATTACHMENT PATTERN (W/N) | FASTEN DECK TO SUPPORT MEMBERS SUPPORT FASTENERS | SIDELAP FASTENERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TYPE 1 | 1.0 CSV | 22 | CONFORM | 1.0 | 0.073 | 0.073 | 0.130 | 0.134 | 60 | 33/4 | 5/8" PUDDLE WELD | 6#10 TEK SCREWS |
| TYPE 2 | 1.5 WR | 22 | WIDE RIB | 1.5 | 0.155 | 0.183 | 0.186 | 0.192 | 33 | 36/7 | 5/8" PUDDLE WELD | |

Ip: POSITIVE MOMENT OF INERTIA
In: NEGATIVE MOMENT OF INERTIA
Sp: POSITIVE SECTION MODULUS
Sn: NEGATIVE SECTION MODULUS
FY:YIELD STRENGTH
W/N: SHEET WIDTH / NUMBER OF CONNECTIONS EACH SHEET

2. SEE ROOF FRAMING PLAN FOR ROOF DECK SIZES.
3. THE METAL ROOF DECK ON THIS PROJECT IS REQUIRED TO PERFORM AS A STRUCTURAL DIAPHRAGM, ALL WELDS AND SCREWS ARE CRITICAL TO THE SUCCESSFUL PERFORMANCE OF THE DIAPHRAGM.
4. STEEL ROOF DECK (WITH RIGID INSULATION BOARD):
   - 4.1. ROOF DECK SHALL BE 1 1/2" DEEP, 22 GAGE, WIDE RIB, TYPE B DECK CONFORMING TO ASTM A611 OR A653-99 WITH Fy=33 KSI. DECK SHALL BE GALVANIZED, CONFORMING TO ASTM A924, WITH A MINIMUM ZINC COATING CLASS OF G90 PER ASTM A653-99. DECK SHALL HAVE A MINIMUM MOMENT OF INERTIA OF 0.155 INCH TO THE FOURTH PER FOOT OF WIDTH. FASTEN SIDELAPS WITH #10 TEK SCREWS; ONE AT MIDSPAN OR 3'-0" ON CENTER MAX. WELD DECK THROUGH 5/8" DIAMETER PUDDLE WELDS TO EACH STRUCTURAL SUPPORTING MEMBER AT 1'-0" ON CENTER AT END LAPS AND AT INTERMEDIATE SUPPORTS. AT SPANDREL BEAMS AND DECK SUPPORT ANGLES, AND FOR A 10'-0" SQUARE AREA AT ROOF CORNERS, THE DECK SHALL BE WELDED TO ALL SUPPORTS AT 6" ON CENTER.
4. STEEL ROOF DECK (WITH LIGHTWEIGHT INSULATION FILL):
   - 4.1. LIGHTWEIGHT INSULATION CONCRETE FILL USED OVER ROOF DECKING SHALL HAVE A MIX RATIO OF ONE SACK PORTLAND CEMENT TO SIX CUBIC FEET OF LIGHTWEIGHT CONCRETE AGGREGATE. PERLITE OR VERMICULITE AGGREGATE MUST CONFORM TO ASTM C332. PERLITE SHALL HAVE A MAXIMUM WET DENSITY OF 42 POUNDS PER CUBIC FOOT (PCF), AND VERMICULITE SHALL HAVE A MAXIMUM WET DENSITY OF 60 PCF AT THE POINT OF DICHARGE. BOTH SHALL HAVE A MAX DRY DENSITY OF 32 PCF, AND MUST HAVE A COMPRESSIVE STRENGTH (fc) OF 200 PSI IN 28 DAYS.
   - 4.2. ROOF DECK SHALL BE CORRUGATED DECK CONFORMING TO ASTM A611 OR A653-99 WITH Fy=60 KSI. DECK SHALL BE GALVANIZED, CONFORMING TO ASTM A924, WITH A MINIMUM ZINC COATING CLASS OF G90 PER ASTM A653-99. DECK SHALL BE 22 GAGE METAL FORMS, 1" DEEP WITH VENTING SLOTS IN VALLEY OF EACH CORRUGATION. DECK SHALL HAVE A MINIMUM SECTION MODULUS OF 0.130 INCHES CUBED PER FOOT OF WIDTH. FASTEN SIDELAPS WITH #10 TEK SCREWS. WELD DECK TO EACH STRUCTURAL SUPPORTING MEMBER AT EVERY OTHER CORRUGATION AT END LAPS AND AT INTERMEDIATE SUPPORTS. AT SPANDREL BEAMS AND DECK SUPPORT ANGLES, AND FOR A 20'-0" SQUARE AREA AT ROOF CORNERS, THE DECK SHALL BE WELDED TO ALL SUPPORTS AT EVERY CORRUGATION OR 6" ON CENTER MAXIMUM.
   - 4.3. THE THICKNESS OF THE LIGHTWEIGHT CONCRETE FILL SHALL BE AS SPECIFIED BY THE ARCHITECT. HOWEVER, THE THICKNESS SHALL NOT EXCEED 2.5 INCHES. ROOF SLOPES THAT ARE NOT REFLECTED IN THE SLOPE OF THE STRUCTURAL FRAMING, SUCH AS AT SMALL AREAS, CRICKET AND THE EDGES OF THE ROOF, SHALL BE IMPLEMENTED BY VARYING THE INSULATION THICKNESS IN LIEU OF VARYING THE THICKNESS OF THE LIGHTWEIGHT CONCRETE FILL. DO NOT EXCEED THE MAXIMUM SPECIFIED THICKNESS OF LIGHTWEIGHT CONCRETE FILL.
5. THE STEEL DECK SHALL ALWAYS BE INSTALLED WITH THE DIRECTION OF FLUTES PERPENDICULAR TO THE FRAMING MEMBERS. THE DECK SHALL BE CUT TO INSURE A MINIMUM OF THREE SPANS PER DECK WIDTH.
6. IN ADDITION TO THE DECK CONNECTIONS INDICATED IN THE CONNECTION SCHEDULE, THE DECK SHALL BE CONNECTED AT EACH FLUTE AT EACH SUPPORT WITHIN THE FIRST 10 FEET FROM THE BUILDING PERIMETER.
7. ROOF DECK SHALL BE CONTINUOUS OVER FOUR OR MORE SUPPORTS. AT LOCATIONS WHERE SINGLE OR DOUBLE SPAN CONDITIONS OCCUR, THE CONTRACTOR SHALL EITHER SHORE THE DECK, OR ADJUST THE GAGE THICKNESS OF THE DECK IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. DECK SHALL BE DESIGNED TO PROVIDE EQUIVALENT OR GREATER LOAD CAPACITY AS THE SPECIFIED DECK SUPPORT OVER FOUR SUPPORTS.
8. COORDINATE METAL DECK LENGTHS WITH THE FINAL JOIST AND BEAM LAYOUT. THE FINAL JOIST AND BEAM LAYOUT CAN BE DIFFERENT THAN THAT SHOWN IN THE CONTRACT DRAWINGS DEPENDING ON WHETHER THE JOIST BEARING SEATS ARE BUTTED OR LAPPED. THE JOIST LOCATIONS SHOWN IN THE CONTRACT DRAWINGS DO NOT ACCOUNT FOR THE SMALL DIFFERENCE IN JOIST LOCATION DUE TO THE VARIOUS JOIST BEARING CONDITIONS THAT COULD EXIST IN THE FIELD.
9. SUSPENDED CEILING, LIGHT FIXTURES, DUCTS OR OTHER UTILITIES SHALL NOT BE SUPPORTED BY THE STEEL DECK.
10. ACOUSTICAL "DOVETAIL" METAL ROOF DECK SHALL BE MANUFACTURED BY EPIC METALS CORPORATION (EPICORE) OR CSI METAL DECK GROUP (VERSA DECK). REFER TO THE ROOF FRAMING PLAN FOR DECK TYPE AND LOCATION.

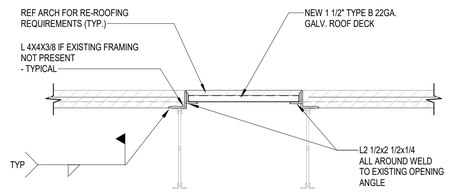



**ROOF TOP UNIT SUPPORT FRAMING**



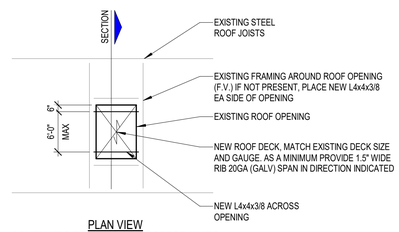

**ROOF TOP UNIT SUPPORT FRAMING PLAN**

1 ROOF TOP UNIT SUPPORT AT EXISTING ROOF
3/4" = 1'-0"




INFILL OF EXITING ROOF OPENING

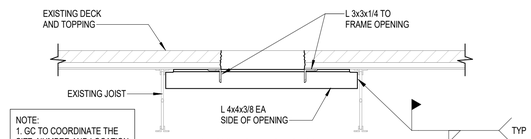
SECTION VIEW




PLAN VIEW

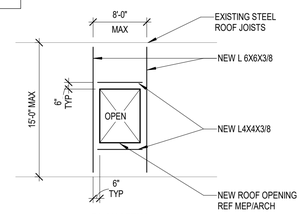
SCHEMATIC FRAMING AT ROOFTOP UNITS
GC TO COORDINATE THE SIZE AND LOCATION WITH MEP/ARCH DRAWINGS

2 TYPICAL INFILL DETAIL AT EXISTING MECH PENETRATION
3/4" = 1'-0"




NOTE:
1. GC TO COORDINATE THE SIZE, NUMBER AND LOCATION OF ALL OPENINGS WITH MEP AND ARCH DWGS.

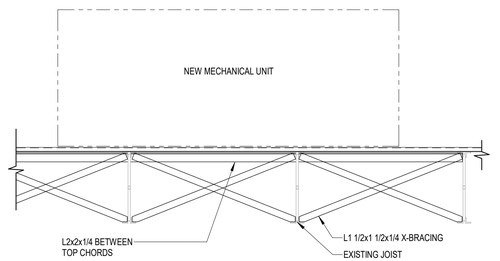
**NEW OPENING IN EXISTING ROOF**




**PLAN VIEW**

GC TO COORDINATE THE NUMBER, SIZE AND LOCATION WITH MEP/ARCH DRAWINGS

3 NEW ROOF PENETRATION / OPENING IN EXISTING
3/4" = 1'-0"




**NOTES:**

1. PROVIDE BETWEEN FIVE JOISTS MINIMUM.
2. PROVIDE TWO ROWS OF BRIDGING ONE AT EACH END OF UNIT.
3. PROVIDE AT THE RTU UNITS ON EXISTING ROOF COORDINATE WITH MECHANICAL DRAWINGS.

4 REINFORCING DETAIL AT NEW MECHANICAL UNITS
NO SCALE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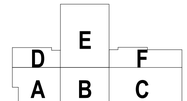
**WESTWOOD ELEMENTARY SCHOOL RENOVATIONS**

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

KEY PLAN




NORTH: PLAN TRUE


CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/24 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10/24/2022 |

1

ISSUE FOR PROPOSAL

**GENERAL STEEL NOTES AND TYP DETAILS**

**S-500**

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Author
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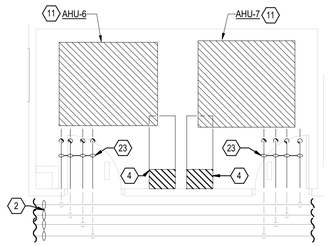
10/24/2022 8:55:19 AM

0"
1"

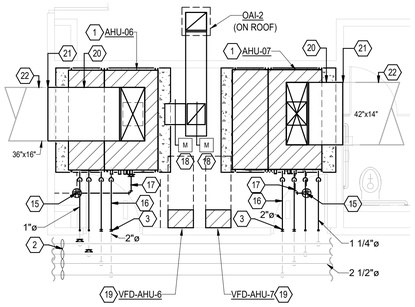
MECHANICAL ENLARGED PLAN - MECH ROOMS
M-401

FOR BLUEBEAM LABELING/OCR:



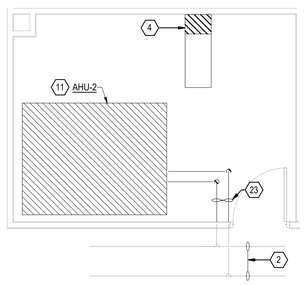

## 6 ENLARGED MECHANICAL ROOM DEMO PLAN - AREA C - ROOM UM4

1/4" = 1'-0"



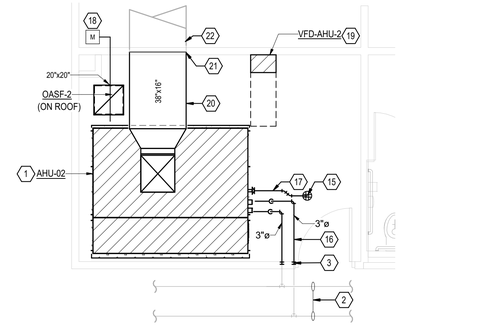

## 5 ENLARGED MECHANICAL ROOM PLAN - AREA C - ROOM UM4

1/4" = 1'-0"



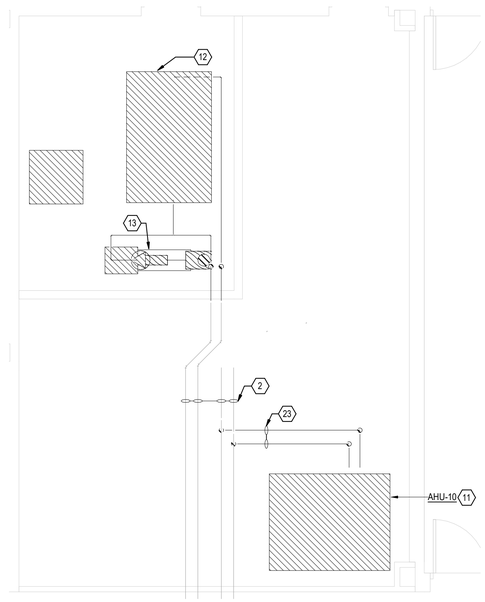

## 4 ENLARGED MECHANICAL ROOM DEMO PLAN - AREA B - ROOM UM5

1/4" = 1'-0"



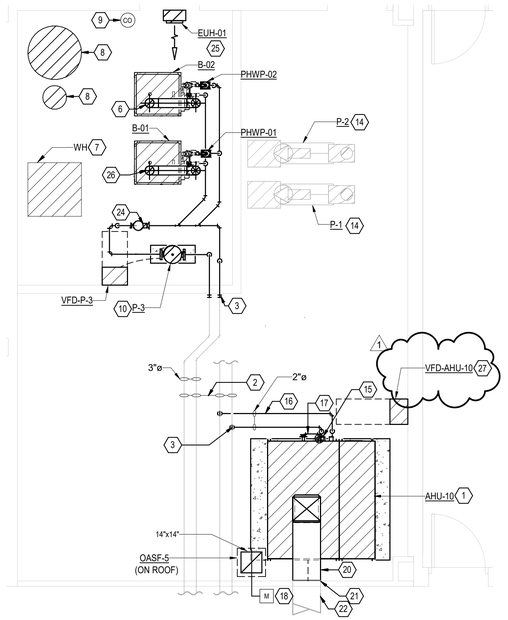

## 3 ENLARGED MECHANICAL ROOM PLAN - AREA B - ROOM UM5

1/4" = 1'-0"




## 2 ENLARGED MECHANICAL ROOM DEMO PLAN - AREA A - ROOM UM1 & UM2

1/4" = 1'-0"




## 1 ENLARGED MECHANICAL PLAN - AREA A - ROOM UM1 & UM2

1/4" = 1'-0"

## KEYED NOTES:

1. REPLACE EXISTING AIR HANDLING UNIT WITH NEW. PROVIDE NEW CONTROL VALVES, MODULES, DAMPERS, ACTUATORS, SENSORS, WIRING, AND INTEGRATION TO BAS. REUSE EXISTING EQUIPMENT CONCRETE PAD.
2. EXISTING PIPING TO REMAIN.
3. CONNECT NEW PIPING TO EXISTING.
4. EXISTING VFD TO BE REPLACED WITH NEW.
5. EXISTING BOILER TO BE REMOVED AND REPLACED WITH NEW. EXISTING PAD TO REMAIN.
6. ROUTE 6" BOILER FLUE UPTP ROOF OPENING WITH EXISTING ROOF OPENING
7. NEW WATER HEATER. REFER TO PLUMBING DRAWINGS.
8. NEW EXPANSION AND CHEMICAL FEEDER TANK. MODIFY EXISTING CONCRETE PAD IF REQUIRED.
9. CONTRACTOR SHALL PROVIDE A CARBON MONOXIDE DETECTOR AS SHOWN. DEVICES SHALL BE COMPATIBLE WITH EXISTING FIRE ALARM CONTROL PANEL. PROVIDE CABLING. TERMINATIONS AND SYSTEM CERTIFICATION AS REQ.
10. NEW IN-LINE WATER PUMP.
11. EXISTING UNIT TO BE REMOVED AND REPLACED WITH NEW. PIPING FROM EQUIPMENT TO WALL TO BE REMOVED AND REPLACED WITH NEW.
12. EXISTING BOILER AND ALL ASSOCIATED PIPING AND FLUE IN BOILER ROOM TO BE REMOVED. REFER TO MECHANICAL FLOOR PLAN. EXISTING PAD TO REMAIN.
13. EXISTING WATER PUMP AND ALL ASSOCIATED PIPING AND FLUE IN BOILER ROOM TO BE REMOVED. REFER TO MECHANICAL FLOOR PLAN. EXISTING PAD TO REMAIN.
14. EXISTING PUMP, ASSOCIATED VARIABLE FREQUENCY DRIVE AND DDC CONTROLS TO REMAIN; TIE INTO NEW FRONT END DDC SYSTEM.
15. EXISTING DRAIN TO REMAIN.
16. NEW PIPING.
17. ROUTE 1-1/4" DIAMETER CONDENSATE PIPING TO EXISTING FLOOR DRAIN.
18. REPLACE EXISTING MOTORIZED DAMPER WITH NEW INSIDE DUCTWORK. EXISTING DUCT WORK TO REMAIN.
19. NEW VARIABLE FREQUENCY DRIVE.
20. NEW DUCTWORK FROM UNIT TO WALL.
21. CONNECT NEW DUCT WORK TO EXISTING DUCTWORK.
22. EXISTING DUCTWORK TO REMAIN.
23. EXISTING PIPE TO BE DEMOED.
24. NEW DIRT AND AIR SEPARATOR.
25. NEW ELECTRIC UNIT HEATER SUSPENDED FROM STRUCTURE.
26. ROUTE NEW 6" BOILER FLUE UPTO ROOF. NEW ROOF PENETRATION.
27. EXISTING VARIABLE FREQUENCY DRIVE TO REMAIN.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# BALES INTERMEDIATE SCHOOL RENOVATION

211 STADIUM LN,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

| A | B |
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| C | D |
| E | F |

KEY PLAN

NORTH: PLAN TRUE

STATE OF TEXAS
MITALJ. PATEL
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LICENSED
PROFESSIONAL
ENGINEER

2022/10/10
LEAF ENGINEERS
F-18672

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FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/10 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 1 | 10/24/2022 |

ISSUE FOR PROPOSAL

# MECHANICAL ENLARGED PLAN - MECH ROOMS

# M-401

File Path: C:\Users\fsanchez\Documents\ME21_Friendswood ISD_Bales IS_Central_R21_fabian.sanchezBSTB3.rvt

CHECKED BY:
MP
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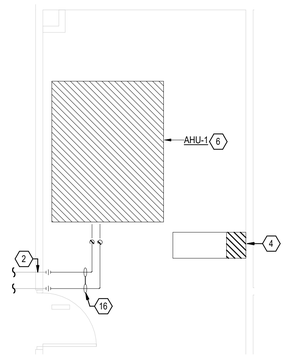
FS
Plot Stamp:
10/21/2022 11:41:55 AM

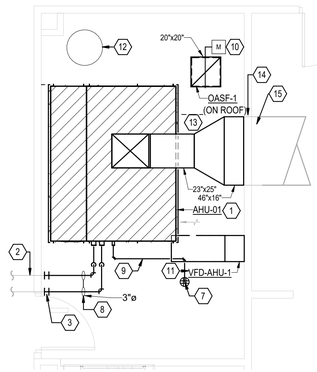
FOR BLUEBEAM LABELING/OCR:

MECHANICAL ENLARGED PLAN - MECH ROOMS

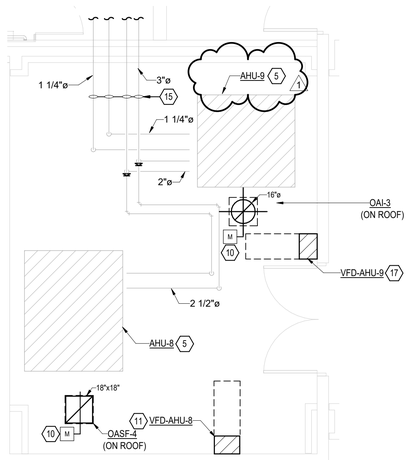
0"
1"



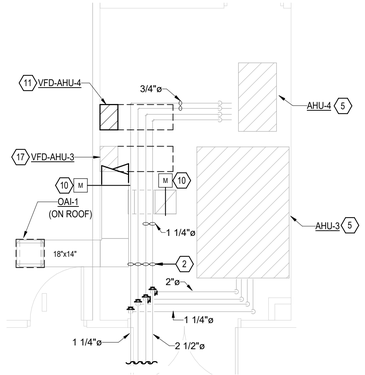

**6** ENLARGED MECHANICAL ROOM DEMO PLAN - AREA D - ROOM UM6
1/4" = 1'-0"



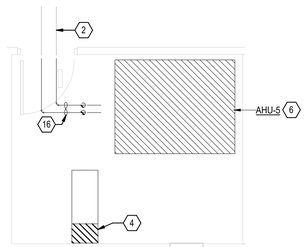

**5** ENLARGED MECHANICAL ROOM PLAN - AREA D - ROOM UM6
1/4" = 1'-0"



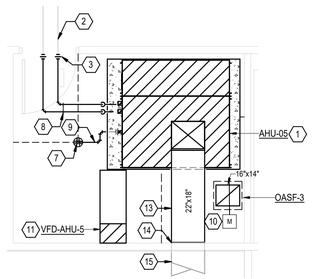

**4** ENLARGED MECHANICAL ROOM PLAN - AREA F - ROOM UM8
1/4" = 1'-0"




**3** ENLARGED MECHANICAL ROOM PLAN - AREA D - ROOM UM7
1/4" = 1'-0"




**2** ENLARGED MECHANICAL ROOM DEMO PLAN - AREA C - ROOM UM3
1/4" = 1'-0"




**1** ENLARGED MECHANICAL ROOM PLAN - AREA C - ROOM UM3
1/4" = 1'-0"

## KEYED NOTES:

1. REPLACE EXISTING AIR HANDLING UNIT WITH NEW. PROVIDE NEW CONTROL VALVES, MODULES, DAMPERS, ACTUATORS, SENSORS, WIRING, AND INTEGRATION TO BAS. REUSE EXISTING EQUIPMENT CONCRETE PAD.
2. EXISTING PIPING TO REMAIN.
3. CONNECT NEW PIPING TO EXISTING.
4. EXISTING VFD TO BE REPLACED WITH NEW.
5. EXISTING AIR HANDLING UNIT TO REMAIN. PROVIDE CONTROLS UPGRADE – PROVIDE CONTROL MODULE, CONTROL VALVES AND ACTUATORS, SENSORS, MOTORIZED DAMPERS AND ACTUATORS, WIRING AND INTEGRATION INTO BAS. PROVIDE NEW CHILLED AND HOT WATER PIPING INSULATION AFTER VALVE REPLACEMENT.
6. EXISTING UNIT TO BE REMOVED AND REPLACED WITH NEW. PIPING FROM EQUIPMENT TO WALL TO BE REMOVED AND REPLACED WITH NEW.
7. EXISTING FLOOR DRAIN TO REMAIN.
8. NEW PIPING.
9. ROUTE 1-1/4" DIAMETER CONDENSATE PIPING TO EXISTING FLOOR DRAIN.
10. REPLACE EXISTING MOTORIZED DAMPER WITH NEW INSIDE DUCTWORK. EXISTING DUCT WORK TO REMAIN.
11. NEW VARIABLE FREQUENCY DRIVE.
12. EXISTING WATER HEATER TO REMAIN.
13. NEW DUCTWORK FROM UNIT TO WALL.
14. CONNECT NEW DUCT WORK TO EXISTING DUCTWORK.
15. EXISTING DUCTWORK TO REMAIN.
16. EXISTING PIPE TO BE DEMOED.
17. VARIABLE FREQUENCY DRIVE TO REMAIN.

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# BALES INTERMEDIATE SCHOOL RENOVATION

211 STADIUM LN,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

| A | B |
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KEY PLAN
NORTH: PLAN TRUE

STATE OF TEXAS
MITAL J. PATEL
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LICENSED
PROFESSIONAL ENGINEER

2022/10/10
**LEAF ENGINEERS**
**F-18672**

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FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/10 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 1 | 10/24/2022 |

ISSUE FOR PROPOSAL

# MECHANICAL ENLARGED PLAN - MECH ROOMS

# M-402

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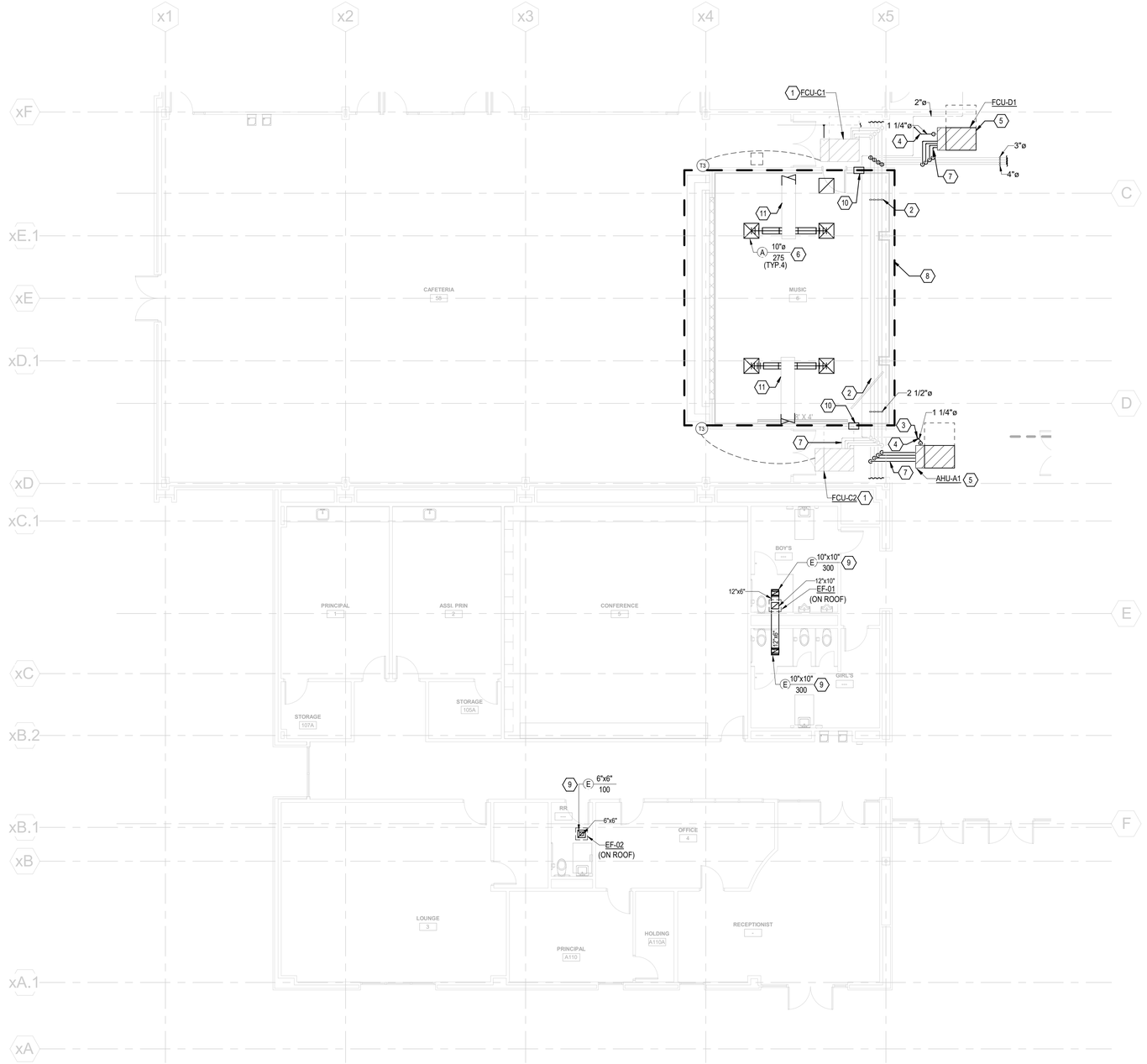
**Plot Stamp:** 10/21/2022 11:41:35 AM




## KEYED NOTES:

1. EXISTING SUSPENDED 4-PIPE FAN COIL UNIT TO REMAIN. PROVIDE NEW CONTROLS UPGRADE. PROVIDE NEW CONTROL MODULE, CONTROL VALVES AND ACTUATOR, SENSORS, WIRING AND INTEGRATION INTO BAS. PROVIDE PIPING INSULATION AFTER VALVE REPLACEMENT. MATCH EXISTING VALVE SIZE. CONTRACTOR TO FIELD VERIFY EXISTING VALVE SIZE PRIOR TO ORDERING. REPLACE ASSOCIATED TEMPERATURE SENSOR.
2. EXISTING PIPE TO REMAIN.
3. CONNECT EXISTING PIPING TO NEW.
4. NEW CONDENSATE PIPING.
5. EXISTING FAN COIL UNIT AND ASSOCIATED TEMPERATURE SENSOR TO BE REPLACED WITH NEW. REPLACE SHUTOFF VALVES, CONTROL MODULES, SENSORS AND WIRING. PROVIDE INTEGRATION TO BAS. PROVIDE NEW CONTROL VALVES, ACTUATORS, AND ALL THE PIPING ACCESSORIES UPTO THE MANUAL SHUTOFF VALVE. PROVIDE NEW PIPING INSULATION AT NEW PIPING. RE-CONNECT TO EXISTING DUCTWORK. PROVIDE NEW TEMPERATURE SENSOR AT SAME LOCATION AS EXISTING.
6. PROVIDE NEW DIFFUSERS AND CONNECT TO NEAREST FAN COIL.
7. NEW 3/4" HW AND 1" CHW PIPING TO NEW FCU.
8. ALL WORK WITHIN THE BOX SHALL BE PART OF ALTERNATE NO. 7
9. NEW CEILING MOUNTED EXHAUST GRILL AND DUCTWORK UPTO EXHAUST FAN.
10. NEW 16" x 16" RETURN AIR OPENING ABOVE CEILING.
11. EXISTING RECTANGULAR SUPPLY DUCT TO REMAIN. BLANK OFF EXISTING SUPPLY GRILLES. PROVIDE NEW FLEX DUCT AND AIR DIFFUSERS.

**1** 1ST FLOOR MECHANICAL PLAN - AREA A
1/8" = 1'-0"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# WESTWOOD ELEMENTARY SCHOOL RENOVATION

506 W EDGEWOOD DR,
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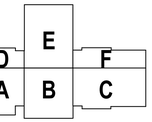
KEY PLAN




NORTH: PLAN TRUE

STATE OF TEXAS
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2022/10/10
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# 1ST FLOOR MECHANICAL PLAN - AREA A

# M-101A

1

M-101A
1ST FLOOR MECHANICAL PLAN - AREA A
FOR BLUEBEAM LABELING/OCR:

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CHECKED BY:
MP
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FS
Plot Stamp:
10/21/2022 11:39:02 AM

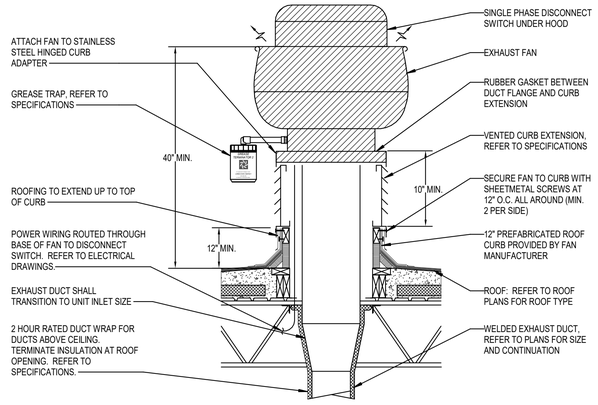
MECHANICAL DETAILS

M-601

FOR BLUEBEAM LABELING/OCR:

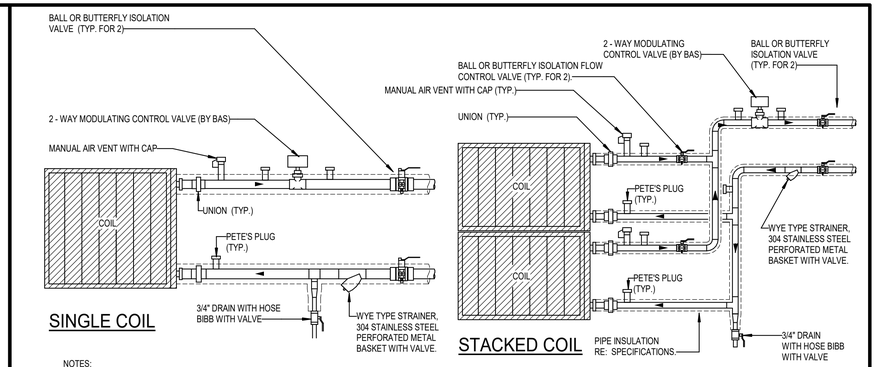
0"

1"



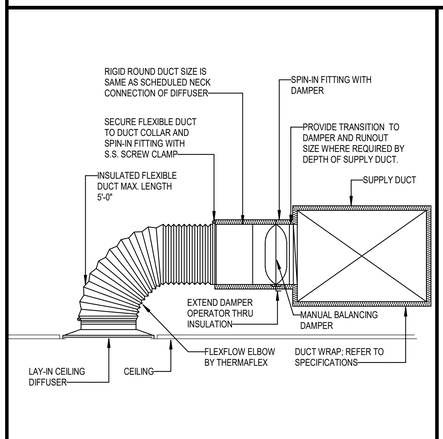

NOTES:
1. FOR THREE PHASE FANS, REFER TO THREE PHASE DISCONNECT SWITCH DETAIL.
2. REFER TO DIVISION 7 FOR ADDITIONAL ROOFING REQUIREMENTS.
3. ROOF CURB MUST BE COORDINATED WITH DIVISION 7 AND STRUCTURAL.

## UPBLAST ROOF MOUNTED KITCHEN HOOD EXHAUST FAN DETAIL — 10
NOT TO SCALE

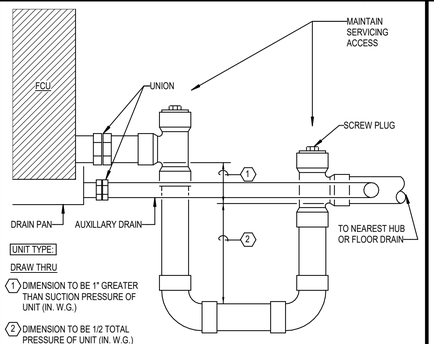



NOTES:
1. REFER TO CONDENSATE DRAIN DETAIL FOR DRAIN PAN TRAP REQUIREMENTS
2. PROVIDE PIPE REDUCERS FROM INLET/OUTLER OF CONTROL VALVES AS REQUIRED
3. ISOLATION AND FLOW CONTROL/BALANCING VALVES SHALL MATCH BRANCH PIPING SIZE. REFER TO MECHANICAL PIPING DIAGRAMS FOR BRANCH PIPE SIZES.
4. FOR ALL FLOW CONTROL BALANCING VALVES, ALL HANDLES AND PRESSURE/SENSOR PORTS SHALL HAVE EXENDED STEMS TO ACCOMODATE INSULATION.
5. MECHANICAL CONTRACTOR SHALL COORDINATE PIPE INSULATION THICKNESS WITH BALANCING VALVE PROVIDER.
6. ADDITIONAL ISOLATION VALVES SHALL BE PROVIDED ON SUPPLY AND RETURN LINES AS SHOWN TO COMPLETELY ISOLATE COIL AND AVOID DRAINING ENTIRE HYDRONIC LOOP.

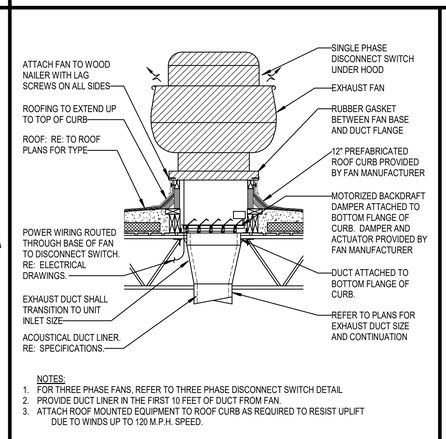
## COIL PIPING ACCESSORIES WITH 2-WAY CONTROL VALVE CONNECTION DETAIL — 09
NOT TO SCALE




## CEILING DIFFUSER CONNECTION DETAIL — 08
NOT TO SCALE

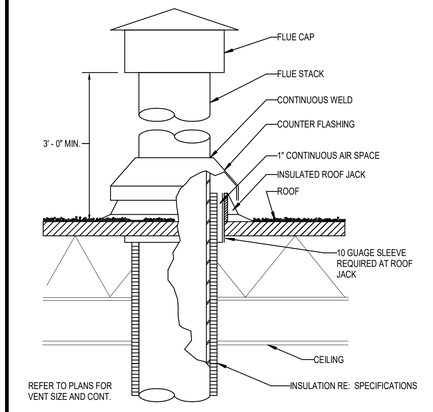



## FAN COIL CONDENSATE DRAIN DETAIL — 07
NOT TO SCALE

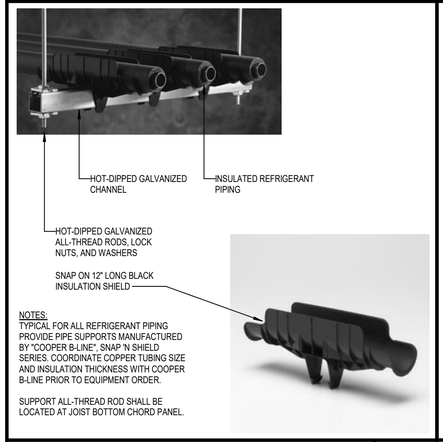



NOTES:
1. FOR THREE PHASE FANS, REFER TO THREE PHASE DISCONNECT SWITCH DETAIL
2. PROVIDE DUCT LINER IN THE FIRST 10 FEET OF DUCT FROM FAN.
3. ATTACH ROOF MOUNTED EQUIPMENT TO ROOF CURB AS REQUIRED TO RESIST UPLIFT DUE TO WINDS UP TO 120 M.P.H. SPEED.

## UPBLAST ROOF MOUNTED EXHAUST FAN DETAIL — 06
NOT TO SCALE



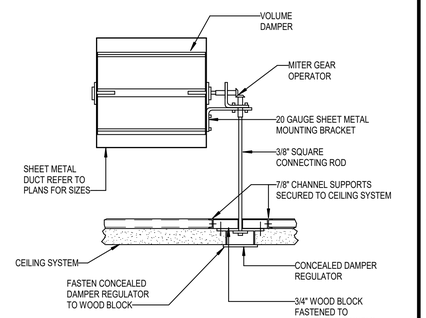

## WATER HEATER VENT STACK DETAIL — 05
NOT TO SCALE



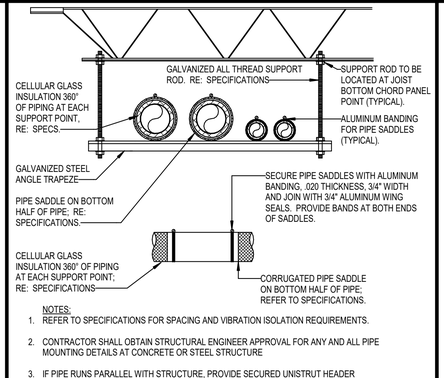

NOTES:
TYPICAL FOR ALL REFRIGERANT PIPING PROVIDE PIPE SUPPORTS MANUFACTURED BY "COOPER B-LINE", SNAP 'N SHIELD SERIES. COORDINATE COPPER TUBING SIZE AND INSULATION THICKNESS WITH COOPER B-LINE PRIOR TO EQUIPMENT ORDER.

SUPPORT ALL-THREAD ROD SHALL BE LOCATED AT JOIST BOTTOM CHORD PANEL.

## SNAP 'N SHIELD REFRIGERANT PIPING SUPPORT DETAIL — 04
NOT TO SCALE

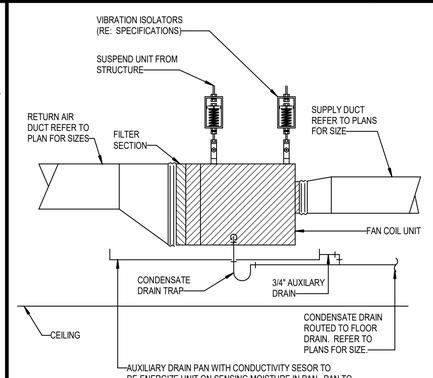



## DAMPER OPERATOR IN NON-ACCESSIBLE CEILINGS DETAIL — 03
NOT TO SCALE




NOTES:
1. REFER TO SPECIFICATIONS FOR SPACING AND VIBRATION ISOLATION REQUIREMENTS.
2. CONTRACTOR SHALL OBTAIN STRUCTURAL ENGINEER APPROVAL FOR ANY AND ALL PIPE MOUNTING DETAILS AT CONCRETE OR STEEL STRUCTURE
3. IF PIPE RUNS PARALLEL WITH STRUCTURE, PROVIDE SECURED UNISTRUT HEADER LAID ACROSS MULTIPLE JOISTS MOUNTED TO JOIST BOTTOM CHORD.
4. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL JOIST REINFORCEMENTS REQUIRED IF PIPE HANGER LOADS DO NOT OCCUR AT JOIST BOTTOM CHORD PANEL POINTS.

## PIPE HANGER TRAPEZE DETAIL — 02
NOT TO SCALE




## FAN COIL UNIT DETAIL — 01
NOT TO SCALE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# WESTWOOD ELEMENTARY SCHOOL RENOVATION

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

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KEY PLAN
NORTH: PLAN TRUE

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ISSUE FOR PROPOSAL

MECHANICAL DETAILS

M-601

1

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0"
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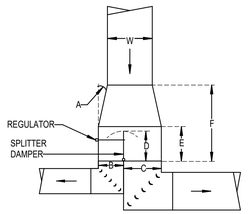
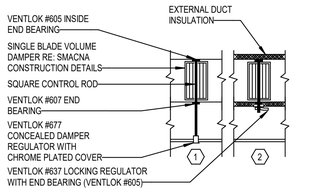
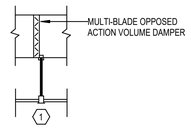
## SPLITTER



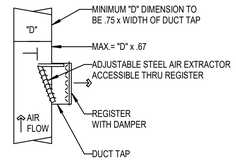

DIMENSIONS
1. ANGLE 'A' TO BE 15° OR LESS (BOTH SIDES)
2. SEE FLOOR PLANS FOR B, C, & W.
3. SPLITTER DAMPER LENGTH D = 1.5 x B
4. E = D + 3" MINIMUM
5. VERTICAL DIMENSION TO BE MAINTAINED THRU F.
6. CHANGE IN VERTICAL DIMENSION TO OCCUR AFTER TURNS.



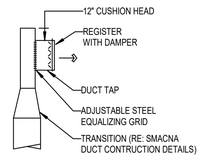

(1) DAMPER ABOVE INACCESSIBLE CEILING
(2) DAMPER ABOVE LAY-IN CEILING

## AIR EXTRACTOR AT SIDEWALL REGISTER

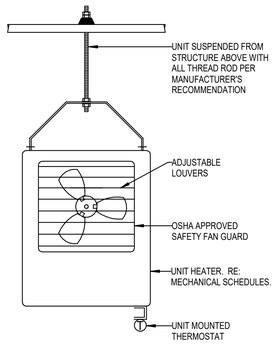



1. MAX. WIDTH OF DUCT TAP SHALL BE 48". PROVIDE BOTTOM BRACKET FOR SUPPORT WHERE EXTRACTOR EXCEEDS 16".
2. MAX. HEIGHT OF DUCT TAP SHALL BE 12" (MIN. = 4")

## SIDEWALL REGISTER AT END OF DUCT

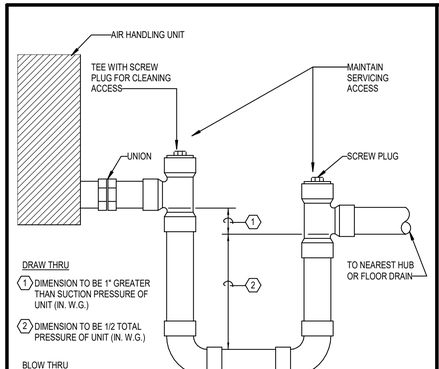



## DUCT CONSTRUCTION DETAIL
NOT TO SCALE — 03




NOTE:
1. UNIT TO BE INSTALLED A MINIMUM OF 7'-0" ABOVE FINISHED FLOOR.
2. DO NOT ROUTE CONDUIT OF WIREING ABOVE UNIT HEATER.
3. REFER TO SPECIFICATION SECTION 15060 FOR HANGERS AND SUPPORTS.
4. REFER TO SPECIFICATION SECTION 15070 FOR VIBRATION CONTROL.

## ELECTRIC UNIT HEATER DETAIL
NOT TO SCALE — 04

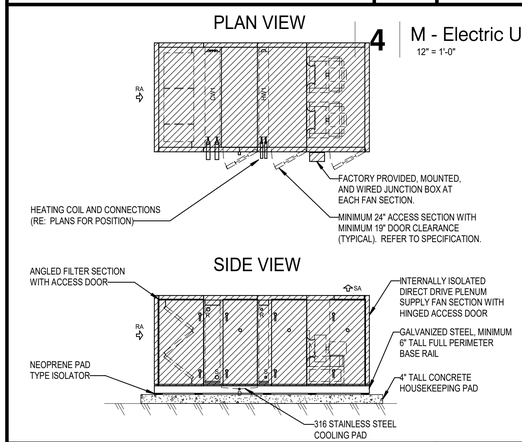



DRAW THRU
(1) DIMENSION TO BE 1" GREATER THAN SUCTION PRESSURE OF UNIT (IN. W.G.)
(2) DIMENSION TO BE 1/2 TOTAL PRESSURE OF UNIT (IN. W.G.)

BLOW THRU
(1) DIMENSION TO BE 1"
(2) DIMENSION TO BE EQUAL TO TOTAL PRESSURE OF UNIT (IN. W.G.)

## CONDENSATE TRAP PIPING DETAIL
NOT TO SCALE — 05

## TYPICAL MODULAR INDOOR CENTRAL - STATION AIR - HANDLING UNIT DETAIL
NOT TO SCALE — 02

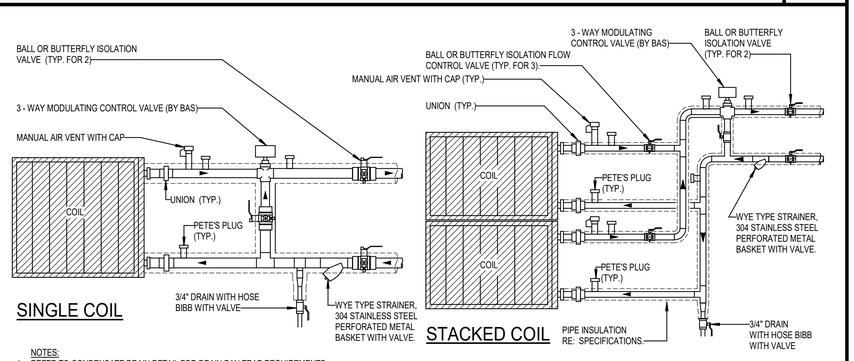



**4** M - Electric Unit Heater
12" = 1'-0"

SPECIFICATION SECTION 23 73 13 MODULAR INDOOR CENTRAL - STATION AIR - HANDLING UNITS FOR FURTHER REQUIRMENTS.

2. REFER TO MODULAR INDOOR CENTRAL - STATION AIR HANDLING UNIT EQUIPMENT SCHEDULE FOR PERFORMANCE, COOLING/HEATING COIL ARRANGEMENT, AND DIMENSIONAL DATA.
3. PROVIDE INTERNAL FLEXIBLE CONNECTION BETWEEN FAN AND AIR UNIT CASING. FLEXIBLE CONNECTION BETWEEN AIR UNIT CASING AND CONNECTING DUCT SHALL NOT BE PROVIDED WHEN FAN IS INTERNALY ISOLATED WITH FLEXIBLE CONNECTION TO CASING.
4. PROVIDE MOTOR SHAFT GROUNDING KIT FOR ALL AIR HANDLING UNIT MOTORS; KITS SHALL BE FACTORY PROVIDED AND INSTALLED PRIOR TO SHIPMENT.
5. FOR AIR HANDLING UNITS WITH MORE THAN ONE FAN AND TO ALLOW FOR A SINGLE CONNECTION TO A SINGLE VARIABLE FREQUENCY DRIVE, PROVIDE A FACTORY MOUNTED AND WIRED OVERLOAD PANEL.
6. CONTRACTOR SHALL PROVIDE TRAPPED CONDENSATE DRAIN LINE ROUTED TO NEAREST APPROVED FLOOR DRAIN AND MUST NOT POSE A TRIP HAZARD.
7. CONTRACTOR SHALL INSTALL PIPING WITH PIPING SPECIALTIES TO AIR HANDLING UNIT COILS IN A MANNER SUCH THAT ALL ACCESS DOORS SHALL BE ABLE TO FULLY SWING OPEN AND TO ALLOW SERVICE AND MAINTENANCE.
8. PROVIDE MINIMUM 24" ACCESS SECTION WITH MINIMUM 19" DOOR CLEARANCE: PROVIDE ACCESS SECTIONS BETWEEN PARALLEL COIL SECTIONS, UPSTREAM OF COIL SECTIONS, UPSTREAM AND DOWNSTREAM OF ENERGY RECOVERY WHEELS, IN FAN SECTIONS, FILTER SECTIONS AND MIXING BOXES. SECTIONS SHALL BE OF SAME CONSTRUCTION AS THE REST OF THE UNIT; DOUBLE WALL GALVANIZED STEEL CONSTRUCTION.

## COIL PIPING ACCESSORIES WITH 3-WAY CONTROL VALVE CONNECTION DETAIL
NOT TO SCALE — 01




NOTES:
1. REFER TO CONDENSATE DRAIN DETAIL FOR DRAIN PAN TRAP REQUIREMENTS
2. PROVIDE PIPE REDUCERS FROM INLET/OUTLER OF CONTROL VALVES AS REQUIRED
3. ISOLATION AND FLOW CONTROL/BALANCING VALVES SHALL MATCH BRANCH PIPING SIZE. REFER TO MECHANICAL PIPING DIAGRAMS FOR BRANCH PIPE SIZES.
4. FOR ALL FLOW CONTROL BALANCING VALVES, ALL HANDLES AND PRESSURE/SENSOR PORTS SHALL HAVE EXENDED STEMS TO ACCOMODATE INSULATION.
5. MECHANICAL CONTRACTOR SHALL COORDINATE PIPE INSULATION THICKNESS WITH BALANCING VALVE PROVIDER.
6. ADDITIONAL ISOLATION VALVES SHALL BE PROVIDED ON SUPPLY AND RETURN LINES AS SHOWN TO COMPLETELY ISOLATE COIL AND AVOID DRAINING ENTIRE HYDRONIC LOOP.

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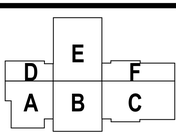
# WESTWOOD ELEMENTARY SCHOOL RENOVATION

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL


KEY PLAN
NORTH: PLAN TRUE


2022/10/10
**LEAF ENGINEERS**
**F-18672**

CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/10 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 1 | 10/24/2022 |

ISSUE FOR PROPOSAL

## MECHANICAL DETAILS

# M-602



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**FOR BLUEBEAM LABELING/OCR:**

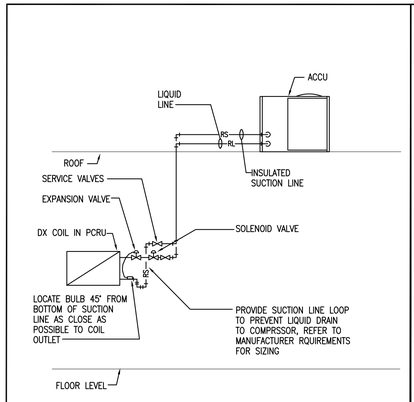
0"

1"

MECHANICAL DETAILS

M-603

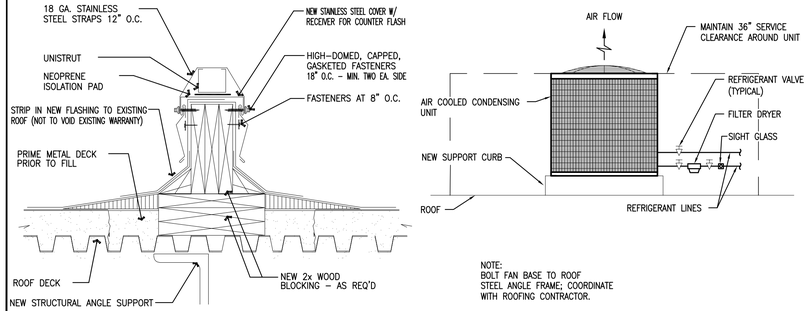
FOR BLUEBEAM LABELING/OCR:




## REFRIGERANT PIPING DETAIL

NOT TO SCALE

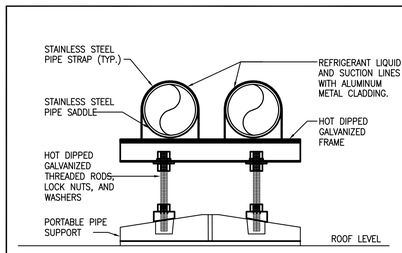
05




## ROOF MOUNTED AIR COOLED CONDENSING UNIT PIPING AND SUPPORT DETAIL

NOT TO SCALE

04



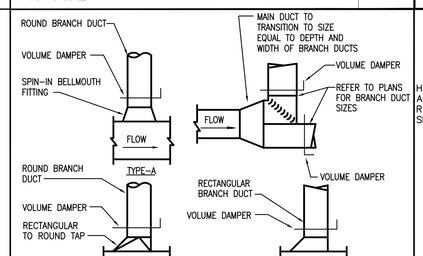

NOTES:

1. PORTABLE PIPE SUPPORTS SHALL BE MANUFACTURED BY ADVANCED SUPPORT PRODUCT, INC., MODEL SS1000A/SS2000-CB-ADJ (AS APPLICABLE) OR PRIOR APPROVED EQUAL.
2. ALL METALS MATERIALS SHALL BE HOT-DIPPED GALVANIZED.

## REFRIGERANT PIPE SUPPORT DETAIL

NOT TO SCALE

03



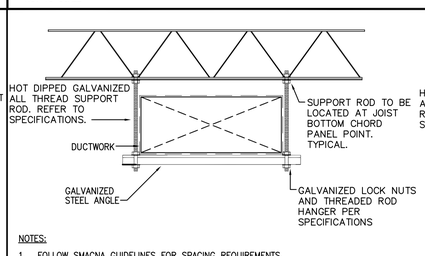

NOTES:

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 DIFFSUERS, THE ROUND DUCT RUN-OUT SIZE SHALL BE THE SAME SIZE AS THE NECK OF DIFFUSER, UNLESS OTHERWISE INDICATED.
6. PROVIDE VOLUME DAMPERS ON SUPPLY, OUTSIDE AIR, RETURN AND EXHAUST DUCT SYSTEMS AS SHOWN.

## BRANCH DUCT DETAILS

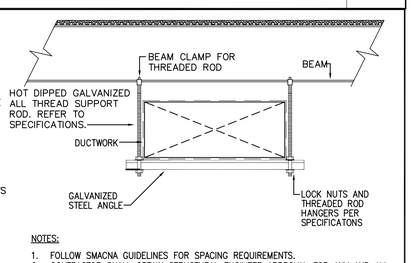
NOT TO SCALE

02




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 100# 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

NOT TO SCALE

01

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# WESTWOOD ELEMENTARY SCHOOL RENOVATION

506 W EDGEWOOD DR,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL


KEY PLAN

NORTH: PLAN TRUE


2022/10/10
LEAF ENGINEERS
F-18672

CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
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| 2022/10/10 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 1 | 10/24/2022 |

ISSUE FOR PROPOSAL

# MECHANICAL DETAILS

# M-603

0"
1"

1ST FLOOR POWER DEMO PLAN - AREA D

EPD101D

FOR BLUEBEAM LABELING/OCR:

ELECTRICAL DEMOLITION GENERAL NOTES

1. DISCONNECT AND REMOVE ALL EXISTING WIRING DEVICES, SWITCHES, ETC. ON WALLS TO BE DEMOLISHED AND ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE PANEL OR EXISTING OUTLET THAT REMAINS. CONTRACTOR IS RESPONSIBLE TO RE-WIRE CIRCUITS AS REQUIRED TO RETAIN POWER TO ALL DOWNSTREAM DEVICES.
2. DISCONNECT AND REMOVE ALL EXISTING LIGHTING FIXTURES, EXIT SIGNS, ETC. ON CEILINGS TO BE DEMOLISHED AND ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE PANEL OR EXISTING FIXTURE THAT REMAINS . CONTRACTOR IS RESPONSIBLE TO RE-WIRE CIRCUITS AS REQUIRED TO RETAIN POWER TO ALL DOWNSTREAM DEVICES.

ELECTRICAL DEMOLITION KEYED NOTES

1. EXISTING MAIN SWITCHGEAR "MSB" TO BE REMOVED AND REPLACED IN AN ADJACENT LOCATION. REFERENCE ELECTRICAL RISER DIAGRAM E5.02 FOR ADDITIONIAL INFORMATION.
2. EXISTING PANELBOARD TO BE REMOVED AND REPLACED. REFER TO POWER PLAN AREA D FOR ADDITIONAL INFORMATION.
3. EXISTING TRANSFORMER TO BE RELOCATED TO CREATE ROOM FOR NEW SWITCHBOARD. CONTRACTOR SHALL EXTEND EXISTING PRIMARY AND SECONDARY FEEDER, AND ELECTRODE GROUNDING FEEDERS TO NEW LOCATION OF TRANSFORMER. REFER TO NEW POWER PLANS FOR NEW LOCATION.
4. CONTRACTOR SHALL DEMOLISH EXISTING RECEPTACLES AND EXPOSED CONDUIT ON THIS WALL THAT WILL CONFLICT WITH NEW SWITCHBOARD INSTALLATION.


1 1ST FLOOR POWER DEMO PLAN - AREA D
1/8" = 1'-0"

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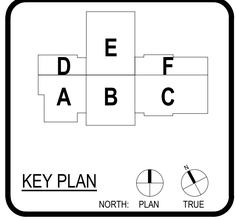
# WESTWOOD ELEMENTARY SCHOOL RENOVATION

211 STADIUM LN,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL





2022/10/10
**LEAF ENGINEERS**
**F-18672**

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1ST FLOOR POWER DEMO PLAN - AREA D

EPD101D

0"
1"

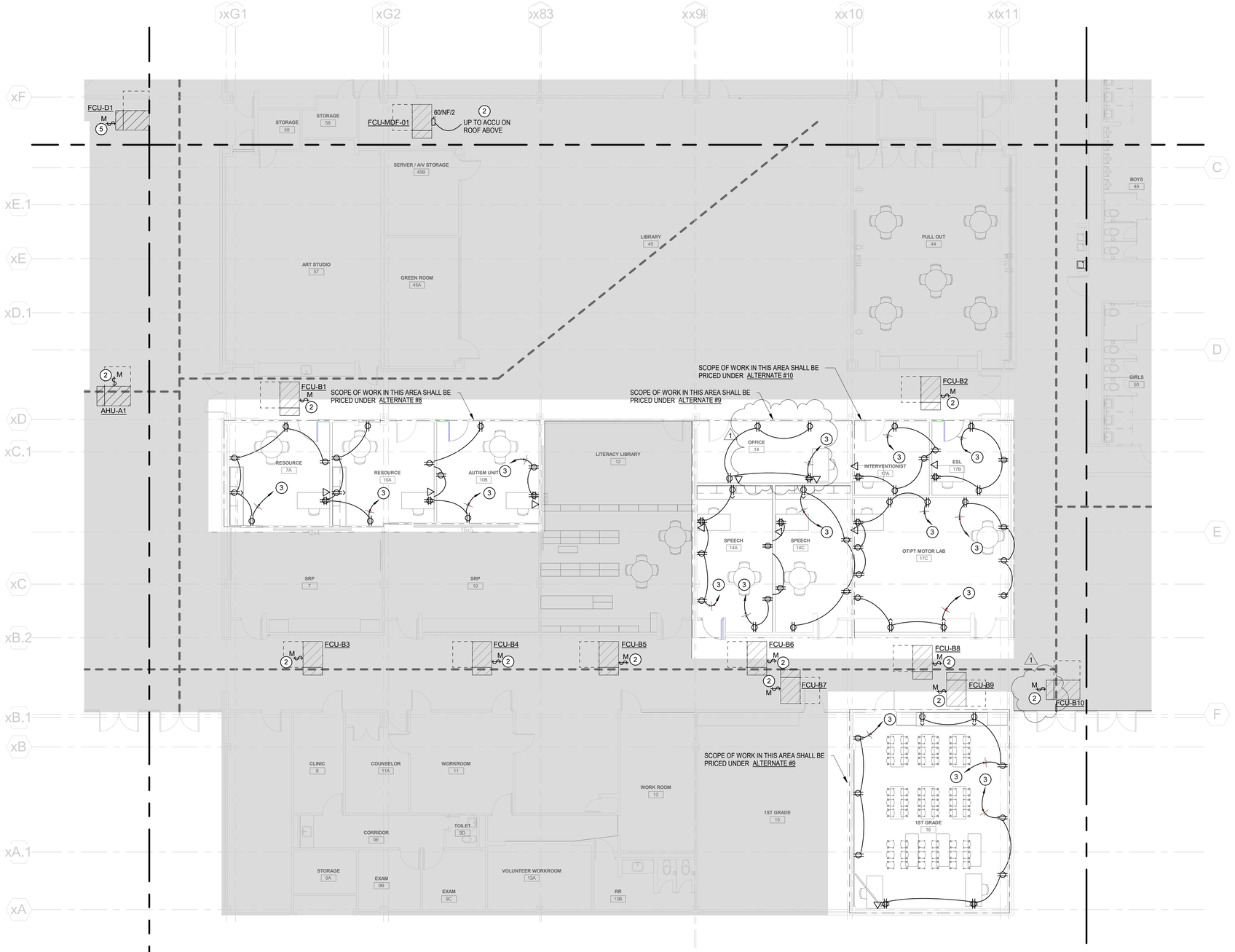
ALL 15- AND 20-AMP 120V AND 250-VOLT NONLOCKING-TYPE RECEPTACLES THAT ARE NOT LOCATED WITHIN DEDICATED APPLIANCE SPACE OR ARE LOCATED BELOW 66" ABOVE FINISHED FLOOR SHALL BE TAMPER-RESISTANT RECEPTACLE PER NEC 406.12. ANY RECEPTACLES NOTED TO BE RELOCATED IN THIS PROJECT SHALL BE REPLACED WITH TAMPER RESISTANT-TYPE RECEPTACLE.

## POWER PLAN GENERAL NOTES:

1. DATA/COMMUNICATION OUTLETS ARE SHOWN ON THIS DRAWING FOR COORDINATION PURPOSES ONLY. PROVIDE AND INSTALL ALL CONDUITS AND BACK BOXES REQUIRED BY LOW VOLTAGE SYSTEMS. COORDINATE WITH 'TS' DRAWINGS, DETAILS, ETC. AND ARCHITECTURAL DRAWINGS FOR EXACT QUANTITIES, LOCATIONS, AND REQUIREMENTS PRIOR TO ROUGH-IN.
2. CONTRACTOR TO PROVIDE CONNECTION FROM EXHAUST FANS TO ALL MOTORIZED BACKDRAFT DAMPERS AS REQUIRED, COORDINATE WITH MECHANICAL.

### POWER PLAN KEYED NOTES

1. PROVIDE NEW 208V 1-PHASE CIRCUIT TO FAN COIL UNIT AND ACCU ON ROOF ABOVE SERVING THIS ROOM. WIRE THRU DISCONNECT AND ROUTE CIRCUIT UP TO CONDENSING UNIT.
2. CONTRACTOR SHALL DISCONNECT AND RECONNECT CIRCUIT SERVING FAN COIL UNIT TO BE REPLACED.
3. WIRE AND CONNECT RECEPTACLES TO DEDICATED 20A 120V CIRCUIT TO 208/120V PANELBOARD VIA 2#12, 1#12G, 3/4"C.




**1** 1ST FLOOR POWER PLAN - AREA B
1/8" = 1'-0"

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**WESTWOOD ELEMENTARY SCHOOL RENOVATION**

211 STADIUM LN,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

KEY PLAN
NORTH: PLAN TRUE

STATE OF TEXAS
MATTHEW R. SICKOREZ
107736
LICENSED
PROFESSIONAL
ENGINEER
2022/10/10
LEAF ENGINEERS
F-18672

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**1ST FLOOR POWER PLAN - AREA B**

**EP-101B**

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Author
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0"
1"

1ST FLOOR POWER PLAN - AREA D

EP-101D

FOR BLUEBEAM LABELING/OCR:

ALL 15- AND 20-AMP 120V AND 250-VOLT NONLOCKING-TYPE RECEPTACLES THAT ARE NOT LOCATED WITHIN DEDICATED APPLIANCE SPACE OR ARE LOCATED BELOW 66" ABOVE FINISHED FLOOR SHALL BE TAMPER-RESISTANT RECEPTACLE PER NEC 406.12. ANY RECEPTACLES NOTED TO BE RELOCATED IN THIS PROJECT SHALL BE REPLACED WITH TAMPER RESISTANT-TYPE RECEPTACLE.

POWER PLAN GENERAL NOTES:

1. DATA/COMMUNICATION OUTLETS ARE SHOWN ON THIS DRAWING FOR COORDINATION PURPOSES ONLY. PROVIDE AND INSTALL ALL CONDUITS AND BACK BOXES REQUIRED BY LOW VOLTAGE SYSTEMS. COORDINATE WITH 'IS' DRAWINGS, DETAILS, ETC. AND ARCHITECTURAL DRAWINGS FOR EXACT QUANTITIES, LOCATIONS, AND REQUIREMENTS PRIOR TO ROUGH-IN.
2. CONTRACTOR TO PROVIDE CONNECTION FROM EXHAUST FANS TO ALL MOTORIZED BACKDRAFT DAMPERS AS REQUIRED, COORDINATE WITH MECHANICAL.

POWER PLAN KEYED NOTES

1. EXISTING BRANCH CIRCUITS AND FEEDERS PREVIOUSLY CONNECTED TO BOARD SHALL BE EXTENDED TO NEW REPLACEMENT BOARD AS REQUIRED. EXTEND EXISTING CONDUIT AND WIRE MATCHING SIZE AND RATING.
2. PROVIDE JUNCTION BOX FOR POWER TO BUILDING AUTOMATION SYSTEMS. CONFIRM EXACT LOCATION WITH CONTROLS CONTRACTOR PRIOR TO INSTALLATION. CONNECT TO NEAREST 208/120V PANELBOARD WITH CAPACITY VIA 2#12, 1 #12G, 3/4"C. PROVIDE 20A/1P BREAKER IN SPACE OF PANELBOARD.
3. PROVIDE NEW SWITCHBOARD. SWITCHBOARD SHALL MATCH BUS AMPERAGE RATING, AIC RATING, MAIN CIRCUIT BREAKER TRIP SIZE, AND BRANCH CIRCUIT BREAKER SIZES OF EXISTING SWITCHBOARD. CONTRACTOR SHALL CONTACT POWER UTILITY COMPANY AND OWNER FOR COORDINATION OF BUILDING POWER SHUTDOWN.
4. CONTRACTOR SHALL DISCONNECT AND RECONNECT CIRCUIT SERVING FAN COIL UNIT TO BE REPLACED. EXISTING BREAKER TO BE REPLACED WITH 15A/1P BREAKER.
5. APPROXIMATE NEW LOCATION OF EXISTING PANEL 'LC'. REFER TO DEMOLITION POWER PLAN AREA A FOR ORIGINAL LOCATION. CONTRACTOR SHALL RE-CONNECT MAIN VIA NEW FEEDER MATCHING EXISTING WIRE AND CONDUIT SIZE, AND RECONNECT ALL BRANCH CIRCUITS BACK TO THIS PANEL THAT ARE TO REMAIN.
6. PROVIDE FIVE (5) MOTOR STARTERS. MOTOR STARTERS SHALL INTERCEPT EXISTING CIRCUITS CONNECTED TO NEW SWITCHBOARD. PROVIDE CONNECTION TO BAS AND COORDINATE WITH DIVISION 23.
7. OVERHEAD EXTENSION OF EXISTING FEEDERS TO NEW SWITCHBOARD LOCATION. PROVIDE SPLICE ENCLOSURE AS REQUIRED.


1 1ST FLOOR POWER PLAN - AREA D
1/8" = 1'-0"

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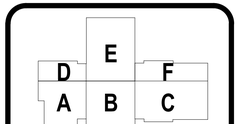
# WESTWOOD ELEMENTARY SCHOOL RENOVATION

211 STADIUM LN,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL




KEY PLAN NORTH: PLAN TRUE


2022/10/10
LEAF ENGINEERS
F-18672

CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/10 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | Addendum #1 | 10/21/2022 |

ISSUE FOR PROPOSAL

1ST FLOOR POWER PLAN - AREA D

EP-101D

0"
1"

1ST FLOOR POWER PLAN - AREA E
EP-101E
FOR BLUEBEAM LABELING/OCR:

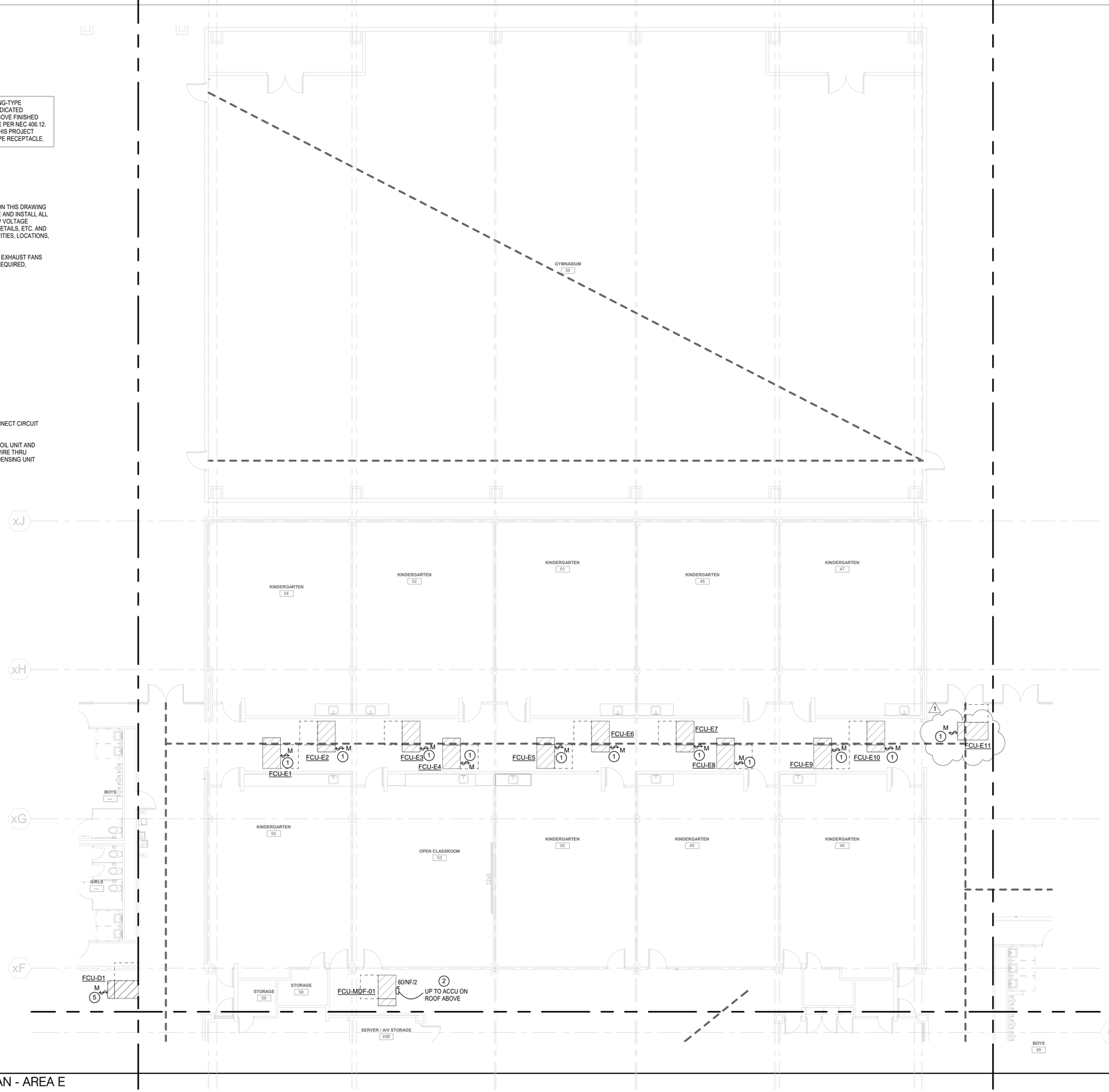
ALL 15- AND 20-AMP 120V AND 250-VOLT NONLOCKING-TYPE RECEPTACLES THAT ARE NOT LOCATED WITHIN DEDICATED APPLIANCE SPACE OR ARE LOCATED BELOW 66" ABOVE FINISHED FLOOR SHALL BE TAMPER-RESISTANT RECEPTACLE PER NEC 406.12. ANY RECEPTACLES NOTED TO BE RELOCATED IN THIS PROJECT SHALL BE REPLACED WITH TAMPER RESISTANT-TYPE RECEPTACLE.

## POWER PLAN GENERAL NOTES:

1. DATA/COMMUNICATION OUTLETS ARE SHOWN ON THIS DRAWING FOR COORDINATION PURPOSES ONLY. PROVIDE AND INSTALL ALL CONDUITS AND BACK BOXES REQUIRED BY LOW VOLTAGE SYSTEMS. COORDINATE WITH 'IS' DRAWINGS, DETAILS, ETC. AND ARCHITECTURAL DRAWINGS FOR EXACT QUANTITIES, LOCATIONS, AND REQUIREMENTS PRIOR TO ROUGH-IN.
2. CONTRACTOR TO PROVIDE CONNECTION FROM EXHAUST FANS TO ALL MOTORIZED BACKDRAFT DAMPERS AS REQUIRED, COORDINATE WITH MECHANICAL.

## POWER PLAN KEYED NOTES

1. CONTRACTOR SHALL DISCONNECT AND RECONNECT CIRCUIT SERVING FAN COIL UNIT TO BE REPLACED.
2. PROVIDE NEW 208V 1-PHASE CIRCUIT TO FAN COIL UNIT AND ACCU ON ROOF ABOVE SERVING THIS ROOM. WIRE THRU DISCONNECT AND ROUTE CIRCUIT UP TO CONDENSING UNIT ABOVE.




1 1ST FLOOR POWER PLAN - AREA E
1/8" = 1'-0"

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# WESTWOOD ELEMENTARY SCHOOL RENOVATION

211 STADIUM LN,
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KEY PLAN
NORTH: PLAN TRUE


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1ST FLOOR POWER PLAN - AREA E

EP-101E

ELECTRICAL ROOF PLAN

EP-102

**FOR BLUEBEAM LABELING/OCR:**

0"

1"

POWER PLAN KEYED NOTES:

1. EXISTING MECHANICAL EQUIPMENT TO BE REPLACED. CONTRACTOR SHALL DISCONNECT AND RECONNECT EXISTING CIRCUIT TO NEW REPLACEMENT UNIT. EXTEND EXISTING CONDUIT AND WIRE AS REQUIRED.
2. PROVIDE 208V 1-PHASE CIRCUIT TO ACCU FROM NEAREST 208/120V PANELBOARD WITH CAPACITY. PROVIDE 40A/2P BREAKER IN SPACE OF EXISTING BOARD AND WIRE VIA 3#8,1# 10G, 1"C.
3. PROVIDE MAPA PEDESTAL WITH RECEPTACLE. REFER TO DETAIL ON E6.01 FOR ADDITIONAL INFORMATION.


1 ELECTRICAL ROOF PLAN

1/16" = 1'-0"

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# WESTWOOD ELEMENTARY SCHOOL RENOVATION

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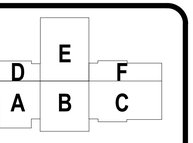
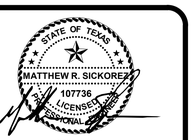



KEY PLAN

NORTH: PLAN TRUE

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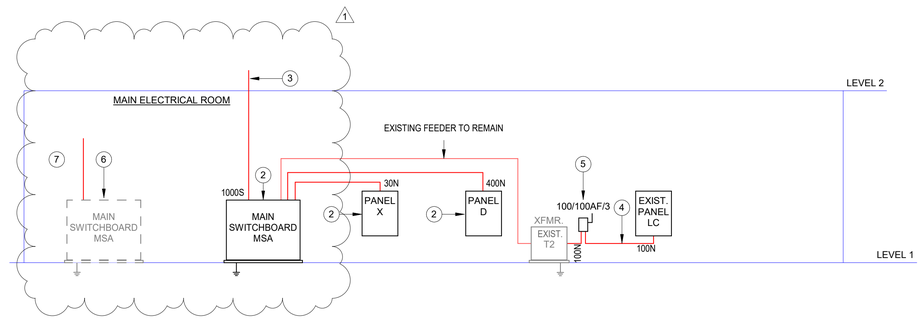
**ELECTRICAL ROOF PLAN**

# EP-102

0"
1"




ELECTRICAL ONE-LINE DIAGRAM NOTES:

#. INDICATES GENERAL NOTE.
(#) INDICATES KEYED NOTE.

1. EXISTING FEEDER TO BE REPLACED WITH NEW.
2. REFER TO 1ST FLOOR POWER PLAN AREA D AND ELECTRICAL PANEL SCHEDULES FOR REPLACEMENT INFORMATION.
3. PROVIDE NEW SERVICE CONDUIT AND CONDUCTORS FROM NEW SWITCHBOARD, THROUGH ROOF (NEW ROOF PENETRATION), TO NEW WEATHERHEADS AND RACK (RACK AS REQUIRED BY UTILITY). COORDINATE EXACT LOCATION AND SERVICE CONDUCTOR RELOCATION WITH UTILITY, AND OUTAGE WITH OWNER.
4. NEW OVERHEAD FEEDER TO RECONNECT EXISTING PANEL. RE: ELECTRICAL DEMOLITION PLAN AREA A AND NEW POWER PLAN AREA D.
5. NEW FUSED DISCONNECT.
6. EXISTING SWITCHBOARD TO BE DEMOLISHED. DEMOLITION SHALL BE PHASED SUCH THAT NEW BOARD IS INSTALLED AND CONDUIT RUN PRIOR TO DEMOLITION FOR TRANSFER OF ELECTRIC SERVICE. CONSULT BUILDING POWER SWITCHOVER WITH POWER UTILITY COMPANY AND OWNER PRIOR TO WORK COMMENCING.
7. EXISTING SERVICE CONDUIT AND WEATHERHEADS TO BE DEMOLISHED.

FEEDER SCHEDULE

| TAG NUMBER | CONDUCTOR QUANTITY AND SIZE | CONDUIT SIZE | SETS | COMMENTS |
|---|---|---|---|---|
| 30N | 4#10, 1#10G | 1" | 1 | |
| 50N | 4#6, 1#10G | 1" | 1 | |
| 60N | 4#6, 1#10G | 1" | 1 | |
| 100 | 3#1, 1#8G | 1 1/2" | 1 | |
| 100N | 4#1, 1#8G | 1 1/2" | 1 | |
| 125 | 3#1, 1#6G | 1 1/2" | 1 | |
| 125N | 4#1, 1#6G | 2" | 1 | |
| 150 | 3#1/0, 1#6G | 1 1/2" | 1 | |
| 150N | 4#1/0, 1#6G | 2" | 1 | |
| 175 | 3#2/0, 1#6G | 2" | 1 | |
| 175N | 4#2/0, 1#6G | 2" | 1 | |
| 200 | 3#3/0, 1#6G | 2" | 1 | |
| 200N | 4#3/0, 1#6G | 2" | 1 | |
| 225 | 3#4/0, 1#4G | 2" | 1 | |
| 225N | 4#4/0, 1#4G | 2 1/2" | 1 | |
| 250 | 3#250, 1#4G | 2 1/2" | 1 | |
| 250N | 4#250, 1#4G | 3" | 1 | |
| 300 | 3#350, 1#4G | 3" | 1 | |
| 300N | 4#350, 1#4G | 3" | 1 | |
| 400 | 3#3/0, 1#3G | 2" | 2 | |
| 400N | 4#3/0, 1#3G | 2" | 2 | |
| 400S | 4#500 | 3 1/2" | 1 | |
| 600 | 3#350, 1#1G | 3" | 2 | |
| 600N | 4#350, 1#1G | 3" | 2 | |
| 600S | 4#350 | 3" | 2 | |
| 800 | 3#500, 1#1/0G | 3" | 2 | |
| 800N | 4#500, 1#1/0G | 3 1/2" | 2 | |
| 800S | 4#500 | 3 1/2" | 2 | |
| 1000 | 3#400, 1#2/0G | 3" | 3 | |
| 1000N | 4#400, 1#2/0G | 3" | 3 | |
| 1000S | 4#400 | 3" | 3 | |
| 1200 | 3#350, 1#3/0G | 3" | 4 | |
| 1200N | 4#350, 1#3/0G | 3" | 4 | |
| 1200S | 4#350 | 3" | 4 | |
| 1600S | 4#400 | 3" | 5 | |
| 2000S | 4#400 | 3" | 6 | |
| 2500S | 4#500 | 3 1/2" | 7 | |
| 3000S | 4#500 | 3 1/2" | 8 | |
| 4000S | 4#500 | 3 1/2" | 11 | |

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WESTWOOD ELEMENTARY SCHOOL RENOVATION

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A B C

KEY PLAN
NORTH: PLAN TRUE

STATE OF TEXAS
MATTHEW R. SICKORE
107736
LICENSED
PROFESSIONAL
ENGINEER

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ELECTRICAL RISER DIAGRAM

E5.02

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0"
1"

P-000
PLUMBING COVER SHEET
FOR BLUEBEAM LABELING/OCR:

## WATER HAMMER ARRESTER SCHEDULE

| PIPE SIZE | CROSS FIXTURE UNITS | PDI STD. |
|---|---|---|
| 1/2" | 1-11 | "A" |
| 3/4" | 12-32 | "B" |
| 1" | 33-60 | "C" |
| 1-1/4" | 61-113 | "D" |
| 1-1/2" | 114-154 | "E" |
| 2" | 155-330 | "F" |

NOTES:

1. AIR CHAMBERS OR SHOCK ARRESTORS SHALL BE PROVIDED TO ALL FIXTURE RUNOUT AND SHALL BE SIZED ACCORDING TO LOCAL PLUMBING CODE (AHJ) & PDI. AIR CHAMBERS OR SHOCK ARRESTORS SHALL BE SIZED AND INSTALLED PER MANUFACTURER'S REQUIREMENTS. THE DEVICE SHALL HAVE LIFETIME WARRANTY AND BE INSTALLED WITHOUT REQUIRING ACCESS DOORS AND PANELS.

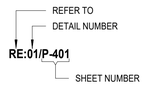
## PLUMBING PIPE MATERIAL SCHEDULE

| PIPING SYSTEM | BELOW GRADE | ABOVE GRADE |
|---|---|---|
| SANITARY WASTE | SCH 40 PVC | CAST IRON |
| DOMESTIC WATER | TYPE 'K' COPPER | TYPE 'L' COPPER |
| NATURAL GAS | PLYETHYLENE PIPE W/ SLEEVE UNDER SLAB | SCH 40 BLACK STEEL |
| FIRE PROTECTION | SCH 40 BLACK STEEL | SCH 40 BLACK STEEL |

## SLOPE OF HORIZONTAL DRAINAGE PIPE

| PIPE SIZE | MINIMUM SLOPE |
|---|---|
| 2-1/2" OR LESS | 1/4" PER FOOT |
| 3" TO 6" | 1/8" PER FOOT |
| 8" OR LARGER | 1/16" PER FOOT |

## DRAWING REFERENCE KEY




## PLUMBING ABBREVIATION SCHEDULE

| | | | |
|---|---|---|---|
| (A) | ITEM NOTED TO BE ABANDONED | KW | KILOWATTS |
| (D) | ITEM NOTED TO BE DEMOLISHED | L | LAVATORY |
| (E) | EXISTING ITEM | MAP | MASTER ALARM PANEL |
| (N) | NEW ITEM | MECH | MECHANICAL |
| (R) | ITEM NOTED TO BE RELOCATED | MH | MANHOLE |
| AAP | AREA ALARM PANEL | MS | MOP SINK |
| AAV | AUTOMATIC AIR VENT | NC | NORMALLY CLOSED |
| AFF | ABOVE FINISHED FLOOR | NIC | NOT IN CONTRACT |
| AP | ACCESS PANEL | NO | NORMALLY OPEN |
| BFF | BELOW FINISHED FLOOR | OF / CI | OWNER FURNISHED / CONTRACTOR INSTALLED |
| BFP | BACKFLOW PREVENTER | OF / OI | OWNER FURNISHED / OWNER INSTALLED |
| BOB | BOTTOM OF BEAM | OD | OVERFLOW DRAIN |
| BOP | BOTTOM OF PIPE | PIV | POST INDICATOR VALVE |
| BTUH | BRITISH THERMAL UNITS PER HOUR | PRV | PRESSURE REDUCING VALVE |
| C / C | CUT AND CAP | RD | ROOF DRAIN |
| CFH | CUBIC FEET PER HOUR | RE: | REFER TO |
| CFS | CUBIC FEET PER SECOND | RIC | ROUGH-IN AND CONNECT |
| CI | CAST IRON | RO | REVERSE OSMOSIS |
| CLG | CEILING | RP BFP | REDUCED PRESSURE BACKFLOW PREVENTER |
| CO | CLEANOUT | RPM | REVOLUTIONS PER MINUTE |
| CONN | CONNECTION | RVB | REFRIGERATOR VALVE BOX |
| CONT | CONTINUATION | SD | STORM DRAIN |
| DF | DRINKING FOUNTAIN | SF | SQUARE FEET |
| DPV | DRY PIPE VALVE | SIA | SERVICE SINK |
| DWG | DRAWING | SK | SINK |
| EA | EACH | TMV | THERMOSTATIC MIXING VALVE |
| EDF | ELECTRIC DRINKING FOUNTAIN | TOP | TOP OF PIPE |
| FCO | FLOOR CLEANOUT | TP | TRAP PRIMER |
| FD | FLOOR DRAIN | TYP | TYPICAL |
| FDV | FIRE DEPARTMENT VALVE | U | URINAL |
| FF | FINISHED FLOOR | U/F | UNDERFLOOR |
| FHC | FIRE HOSE CABINET | U/S | UNDERSLAB |
| FL | FLOW LINE | VB | VACUUM BREAKER |
| FS | FLOOR SINK | VCT | VITRIFIED CLAY TILE |
| FT | FEET | VTR | VENT THRU ROOF |
| FU | FIXTURE UNIT | WC | WATER CLOSET |
| GC | GENERAL CONTRACTOR | WCO | WALL CLEANOUT |
| GPH | GALLONS PER HOUR | WH | WALL HYDRANT |
| GPM | GALLONS PER MINUTE | WMB | WASHING MACHINE BOX |
| HB | HOSE BIBB | YH | YARD HYDRANT |
| HP | HORSEPOWER | ZV | ZONE VALVE |
| IE | INVERT ELEVATION | | |

NOTES:

1. NOT ALL ABBREVIATIONS MAY BE USED ON THESE DRAWINGS.

## PLUMBING FIXTURE CONNECTION SCHEDULE

| DESCRIPTION | WASTE | TRAP | VENT | DFU | BRANCH CONN | | FIXTURE CONN | | FIXTURE UNITS | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CW | HW | CW | HW | CW | HW | |
| WATER CLOSET (FV) | 4" | - | 2" | 4 | 1-1/4" | - | 1" | - | 10.00 | - | INTEGRAL TRAP |
| WATER CLOSET (FT) | 4" | - | 2" | 3 | 3/4" | - | 1/2" | - | 2.50 | - | INTEGRAL TRAP |
| LAVATORY | 2" | 1-1/4" | 2" | 1 | 3/4" | 3/4" | 1/2" | 1/2" | 0.75 | 0.75 | PROVIDE TMV |
| SHOWER | 2" | 2" | 2" | 2 | 3/4" | 3/4" | 1/2" | 1/2" | 1.50 | 1.50 | PROVIDE TMV |
| BATH TUB | 2" | 1-1/2" | 2" | 3 | 3/4" | 3/4" | 1/2" | 1/2" | 3.00 | 3.00 | PROVIDE TMV |
| KITCHEN SINK | 2" | 1-1/2" | 2" | 2 | 3/4" | 3/4" | 1/2" | 1/2" | 1.13 | 1.13 | PROVIDE TMV |
| WASHING MACHINE | 2" | 2" | 2" | 3 | 3/4" | 3/4" | 1/2" | 1/2" | 3.00 | 3.00 | - |
| LAUNDRY SINK | 2" | 1-1/2" | 2" | 3 | 3/4" | 3/4" | 1/2" | 1/2" | 1.50 | 1.50 | PROVIDE TMV |
| HOSE BIBB | - | - | - | - | 3/4" | - | 3/4" | - | 2.50 | - | - |
| FLOOR SINK | 2" | 2" | 2" | 2 | - | - | - | - | - | - | RE: DRAWINGS FOR SIZE |
| FLOOR DRAIN | 3" | 3" | 2" | 4 | - | - | - | - | - | - | RE: DRAWINGS FOR SIZE |
| ICE MACHINE | - | - | - | - | 3/4" | - | 1/2" | - | 1.00 | - | - |

NOTES:

1. ROUGH-IN SUPPLY WASTE AND VENT PIPE SIZES INDICATED ABOVE ARE MINIMUM SIZES SHOWN FOR ROUGH-IN ONLY.
2. COORDINATE WITH PLUMBING FIXTURE MANUFACTURER'S INSTALLATION DRAWINGS FOR PROPER AND CORRECT INSTALLATION OF ALL FIXTURES.
3. ALL PLUMBING FIXTURES SHALL BE COMPLETELY ROUGHED-IN BY THE PLUMBING CONTRACTOR AND SHALL MEET ALL CODES HAVING JURISDICTION.
4. ALL FIXTURES SHALL BE COMMERCIAL GRADE UNLESS OTHERWISE NOTED.
5. PROVIDE AND INSTALL A WATER HAMMER ARRESTOR IN PIPING TO ALL FIXTURES AND/OR FIXTURE BANKS.

## PLUMBING SYMBOLS LEGEND

| DRAWINGS | DETAILS | ABV. | DESCRIPTION |
|---|---|---|---|
| | AV | AV | ACID VENT |
| | AW | AW | ACID WASTE |
| | CA | CA | COMPRESSED AIR |
| | CW | CW | COLD WATER |
| | (D) | (D) | DEMOLISHED PIPING OR EQUIPMENT |
| | D | D | CONDENSATE |
| | DSP | DSP | DRY SPRINKLER |
| | (E) | (E) | EXISTING PIPING OR EQUIPMENT |
| | F | F | FIRE |
| | G | G | NATURAL GAS |
| | GW | GW | GREASE WASTE |
| | HW | HW | HOT WATER |
| | HWR | HWR | HOT WATER RETURN |
| | OD | OD | OVERFLOW DRAIN |
| | SD | SD | STORM DRAIN |
| | SP | SP | SPRINKLER |
| | SS | SS | SANITARY SEWER |
| | V | V | VENT |
| | | | DIRECTION OF FLOW |
| | | | DROP IN PIPE |
| | | | RISE IN PIPE |
| | | | GATE VALVE |
| | | | BALL VALVE |
| | | | CHECK VALVE |
| | | | SUPERVISED VALVE WITH FLOW SWITCH |
| | | | PLUG VALVE / GAS COCK |
| | | | BUTTERFLY VALVE |
| | | | HOT WATER BALANCING VALVE |
| | | | PIPE UNION |
| | | | PRESSURE CONTROL VALVE |
| | | | 3-WAY VALVE |
| | | | SOLENOID VALVE |
| | | | FLOW SWITCH |
| | | | PRESSURE GAUGE WITH GAUGE COCK |
| | | | THERMOMETER |
| | | RD / ORD | ROOF DRAIN / OVERFLOW DRAIN |
| | | FD | FLOOR DRAIN |
| | | FS | FLOOR SINK |
| | | | T & P RELIEF VALVE |
| | | | STRAINER |
| | | CO | END OF LINE CLEANOUT |
| | | FCO | FLOOR CLEANOUT |
| | | WCO | WALL CLEANOUT |
| | | | CAP |
| | | | FLEXIBLE CONNECTION |
| | | | NEW CONNECTION TO EXISTING PIPING |

NOTES:

1. NOT ALL SYMBOLS MAY BE USED ON THESE DRAWINGS.

## PROJECT GENERAL NOTES

A. NONE

B. THE PLUMBING WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE APPLICABLE CODES AS WELL AS ALL LOCAL REGULATIONS THAT MAY APPLY. IN CASE OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND A GOVERNING CODE OR ORDINANCE, THE MORE STRINGENT STANDARD SHALL APPLY.

C. ALL PLUMBING WORK SHALL BE COORDINATED WITH ALL OTHER TRADES BEFORE PROCEEDING WITH THE INSTALLATION.

D. INVERT ELEVATIONS AND EXACT LOCATIONS OF ALL EXISTING UTILITIES SHALL BE CHECKED BEFORE PROCEEDING WITH NEW WORK.

E. NO CHANGES ARE TO BE MADE IN PLUMBING LAYOUT WITHOUT WRITTEN PERMISSION BY THE ARCHITECT OR ENGINEER.

F. NO PIPING SHALL RUN EXPOSED IN FINISHED AREAS.

G. ROUGH-IN DIMENSIONS OF TOILET FIXTURES MUST BE COORDINATED WITH THE GENERAL CONTRACTOR.

H. PROVIDE SHUT-OFF VALVES FOR WATER HEATER BRANCH. PROVIDE DIELECTRIC FITTINGS OR COUPLINGS WHEREVER DISSIMILAR METALS ARE IN CONTACT.

I. PROVIDE SHUT-OFF VALVES AT EACH FIXTURE AND AT EACH FLOOR (IF FIXTURES ARE STACKED) ON HOT AND COLD WATER SUPPLY PIPES.

J. ALL ACCESS PANELS SHALL BE BY GENERAL CONTRACTOR. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR LOCATION.

K. INSTALL ALL REQUIRED CLEANOUTS TO CLEAR EQUIPMENT AND FIXTURES.

L. ALL WORK SHALL BE PROPERLY TESTED, BALANCED, CLEANED AND DISINFECTED. PROVIDE A ONE YEAR WARRANTY FROM DATE OF SUBSTANTIAL COMPLETION ON ALL PARTS AND LABOR.

M. PITCH ALL WASTE AND SOIL PIPING AT MAXIMUM SLOPE POSSIBLE, BUT NOT LESS THAN 1/4" PER FOOT FOR PIPING UNDER 3" AND NO LESS THAN 1/8" PER FOOT FOR PIPING 3" AND GREATER. 8" AND LARGER PIPING CAN BE SLOPED AT 1/16" PER FOOT.

N. PROVIDE ALL PIPE OPENINGS THROUGH PARTITIONS WITH PIPE SLEEVES. WHERE PENETRATING FIRE RATED PARTITIONS, THE SPACE BETWEEN THE PIPE AND THE SLEEVE SHALL BE SEALED WITH FIRE STOPPING MATERIAL.

O. PROVIDE CONDENSATE DRAIN FROM ROOF MOUNTED EQUIPMENT TO OPEN SITE DRAIN OR AS SHOWN ON DRAWINGS.

P. ALL PIPING MATERIAL SHALL BE OF DOMESTIC MANUFACTURE AND SHALL COMPLY WITH THE BUY AMERICAN ACT.

## GAS WATER HEATER SCHEDULE

| UNIT | MANUFACTURER AND MODEL NUMBER | LOCATION | CAPACITY (GAL) | RECOVERY (GPH) | TEMP RISE (°F) | INPUT (BTU) | REMARKS |
|---|---|---|---|---|---|---|---|
| GWH-1 | A.O. SMITH BTH-500(A) | MECH UM2 | 119 | 576 | 100 | 499,900 | • PROVIDE WITH THERM-X-TROL ST-30V-C EXPANSION TANK<br>• PROVIDE WITH CONDENSATE NEUTRALIZER KIT<br>• RECONNECT EXISTING VENT TO NEW GAS WATER HEATER, AS REQUIRED |

NOTES:

1. COORDINATE WITH WATER HEATER MANUFACTURER'S INSTALLATION DRAWINGS FOR PROPER AND CORRECT INSTALLATION OF ALL EQUIPMENT AND APPURTENANCES.

## PUMP SCHEDULE

| UNIT | MANUFACTURER AND MODEL NUMBER | LOCATION | TYPE | INLET PRESSURE (PSI) | OUTLET PRESSURE (PSI) | RPM | CAPACITY | | ELECTRICAL | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | GPM | Ψ (FT) | HP | V | Φ | Hz | |
| CP-1 | BELL & GOSSETT PR-AB (BRONZE) | MECH UM2 | INLINE CIRCULATOR | - | - | 1725 | - | - | 1/6 | 115 | 01 | 60 | - |

NOTES:

1. COORDINATE WITH PUMP MANUFACTURER'S INSTALLATION DRAWINGS FOR PROPER AND CORRECT INSTALLATION OF ALL EQUIPMENT AND APPURTENANCES.

1 Plumbing Cover Sheet
1/8" = 1'-0"

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# BALES INTERMEDIATE SCHOOL RENOVATION

211 STADIUM LN,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

FRIENDSWOOD INDEPENDENT SCHOOL DISTRICT

| | | |
|---|---|---|
| A | | B |
| C | | D |
| E | | F |

KEY PLAN
NORTH: PLAN TRUE

STATE OF TEXAS
DONALD C. RICHARDS
61525
LICENSED
PROFESSIONAL ENGINEER
2022/10/10
LEAF ENGINEERS
F-18672

CLIENT
FRIENDSWOOD ISD

| DATE | PROJECT NUMBER |
|---|---|
| 2022/10/10 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10-24-2022 |

ISSUE FOR PROPOSAL

PLUMBING COVER SHEET

P-000

0"
1"

PD-101

1ST FLOOR PLUMBING DEMO PLAN - COMPOSITE

FOR BLUEBEAM LABELING/OCR:


1 1ST LEVEL PLUMBING DEMO PLAN - COMPOSITE
1/16" = 1'-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 (DFCO) 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. ALL DOMESTIC COLD AND HOT WATER TAKE-OFFS SHALL HAVE AN ISOLATION SHUT-OFF VALVE.

K. FLOOR DRAINS AND FLOOR SINKS IN MECHANICAL ROOMS SHALL BE SET NOT LESS THAN 6" FROM HOUSEKEEPING PADS. RE: MECHANICAL DRAWINGS. DO NOT PLACE ON, OR IN, HOUSEKEEPING PAD, OR UNDERNEATH EQUIPMENT.

L. CONTRACTOR SHALL DEWATER ANY AREA AT OR BELOW GRADE PRIOR TO SETTING EQUIPMENT.

M. CONTRACTOR SHALL PROVIDE AND INSTALL A TRAP PRIMER, TP-1, AND A HOSE BIBB, HB-3, IN ALL MECHANICAL ROOMS.

N. CONTRACTOR SHALL PROVIDE AND INSTALL A HOSE BIBB WITH WHEEL HANDLE IN ALL MECHANICAL ROOMS, HB-3.

O. ANY AND ALL WATER PIPING EXPOSED TO OUTSIDE ELEMENTS SHALL BE INSULATED AND HEAT TRACED TO PREVENT FREEZING.

P. ALL SANITARY 3" OR ABOVE SHALL BE INSPECTED BY A CAMERA PRIOR TO SUBSTANTIAL COMPLETION.

## KEYNOTES - PLUMBING PLAN

1 ALTERNATE #3. DEMO & REMOVE EXISTING PLUMBING FIXTURE & ASSOCIATED PIPING, CAP SANITARY ABOVE SLAB, CAP WATER AND VENT WITHIN PLENUM. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING ANY WORK.

2 NO DEMO PLUMBING SCOPE. 1

3 ALTERNATE #1. REWORK EXISTING SPRINKLER HEADS TO MATCH NEW CONSTRUCTION LAYOUT AS REQUIRED PER NFPA 13.

4 ALTERNATE #3. REWORK EXISTING SPRINKLER HEADS TO MATCH NEW CONSTRUCTION LAYOUT AS REQUIRED PER NFPA 13.

5 ALTERNATE #5. REWORK EXISTING SPRINKLER HEADS TO MATCH NEW CONSTRUCTION LAYOUT AS REQUIRED PER NFPA 13.

6 DEMO AND REMOVE EXISTING GAS WATER HEATER, DISCONNECT AND DEMO EXISTING ASSOCIATED PIPING STARTING FROM EXISTING SHUT-OFF VALVE TOWARDS DEMO'D HEATER. REPLACE EXISTING SHUT-OFF VALVES. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING ANY WORK.

7 DEMO AND REMOVE EXISTING CIRCULATION PUMP, DISCONNECT AND DEMO EXISTING ASSOCIATED PIPING STARTING FROM EXISTING SHUT-OFF VALVE TOWARDS DEMO'D PUMP. REPLACE EXISTING SHUT-OFF VALVES. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING ANY WORK. 1


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# BALES INTERMEDIATE SCHOOL RENOVATION

211 STADIUM LN,
FRIENDSWOOD, TX 77546

ISSUE FOR PROPOSAL

FRIENDSWOOD INDEPENDENT SCHOOL DISTRICT

A B
C D
E F

KEY PLAN
NORTH: PLAN TRUE

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DONALD C. RICHARDS
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LICENSED PROFESSIONAL ENGINEER

2022/10/10
LEAF ENGINEERS
F-18672

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| 2022/10/10 | 220083 |

DRAWING HISTORY

| No. | Description | Date |
|---|---|---|
| 1 | ADDENDUM 01 | 10-24-2022 |

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1ST FLOOR PLUMBING DEMO PLAN - COMPOSITE

PD-101

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Author
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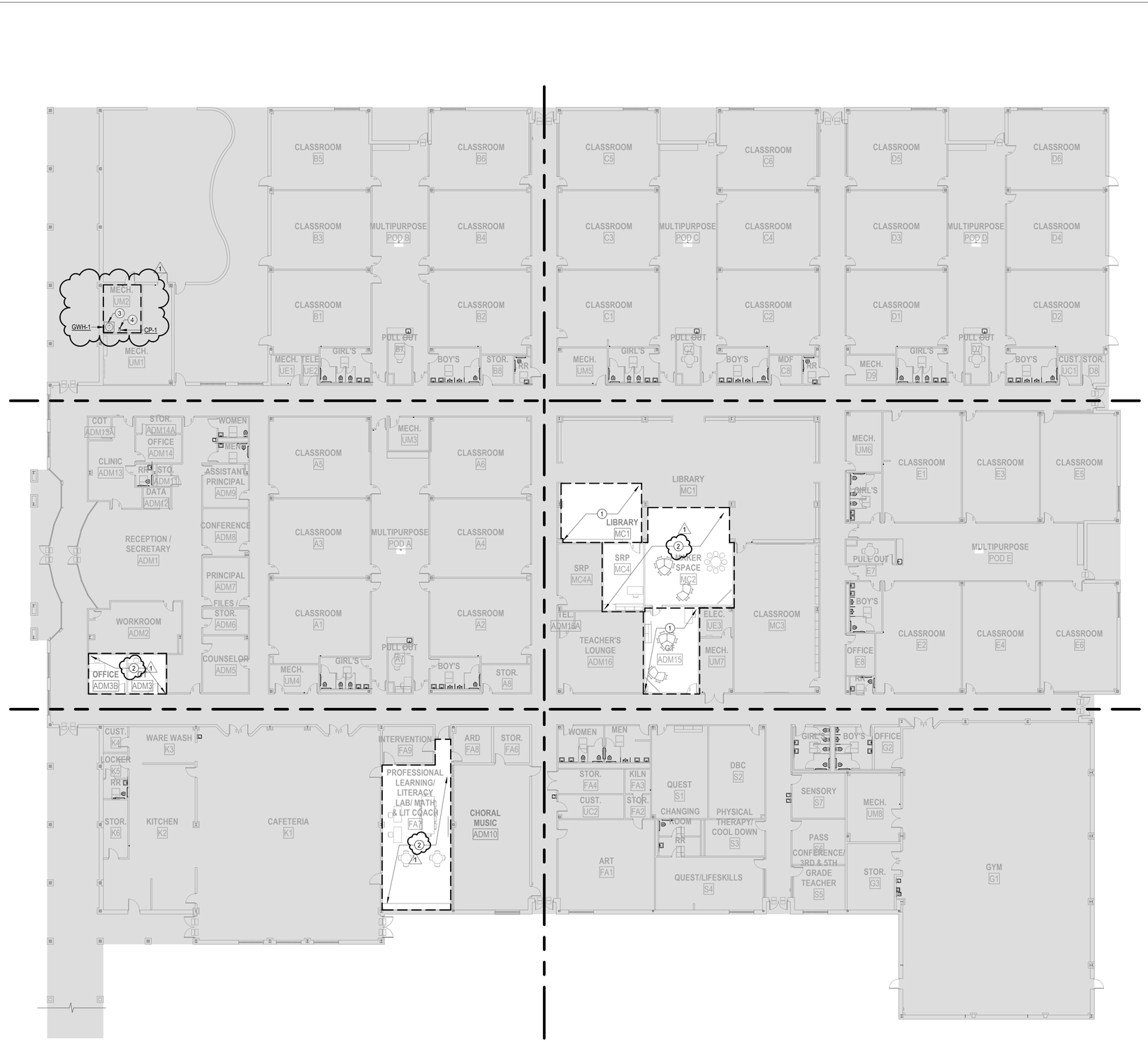
0"

1"

1ST FLOOR PLUMBING PLAN - COMPOSITE

P-101

**FOR BLUEBEAM LABELING/OCR:**




## 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 (DFCO) ON ALL SANITARY LINES EXITING THE BUILDING.

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## KEYNOTES - PLUMBING PLAN

1 NO NEW PLUMBING SCOPE.

2 ADJUST SPRINKLER HEADS, REFER TO DEMO PLAN.

3 PROVIDE AND INSTALL NEW GAS WATER HEATER AND RECONNECT ASSOCIATED PIPINGS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING ANY WORK.

4 PROVIDE AND INSTALL NEW CIRCULATING PUMP AND RECONNECT ASSOCIATED PIPINGS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING ANY WORK.

1 1ST LEVEL PLUMBING PLAN - COMPOSITE
1/16" = 1'-0"


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# BALES INTERMEDIATE SCHOOL RENOVATION

211 STADIUM LN,
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KEY PLAN

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LICENSED PROFESSIONAL ENGINEER
2022/10/10
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**1ST FLOOR PLUMBING PLAN - COMPOSITE**

**P-101**

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0"
1"

PLUMBING DETAILS
P-601
**FOR BLUEBEAM LABELING/OCR:**




**10** UNINSULATED PIPE WALL PENETRATION
N.T.S




**9** INSULATED PIPE WALL PENETRATION
N.T.S




NOTES:
ROUTE PIPING AS LOW AS POSSIBLE TO CEILING GRID FOR EASE OF ACCESSIBILITY

**8** SINGLE PIPE TYPE 1 CLEVIS HANGER
N.T.S

NOTES:
SIZE RODS, SPRING CUSHION, AND HORIZONTAL MEMBER APPROVED TO SATISFY LOAD REQUIREMENT W/ SAFETY FACTOR OF 5

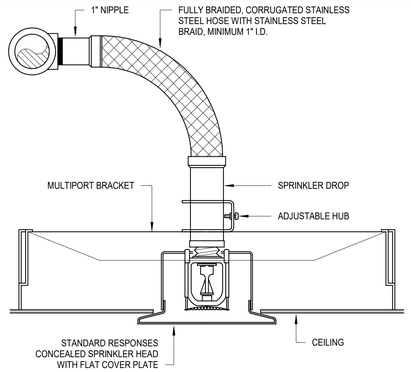



**7** PIPE SUPPORT - TRAPEZE TYPE
N.T.S

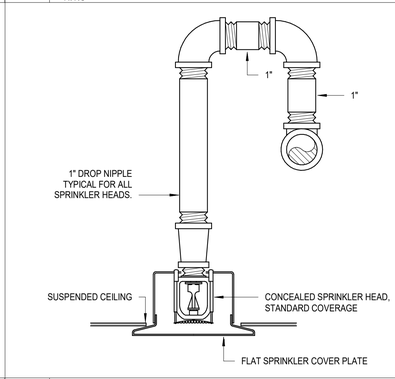
NOTES:
1. ALL STEEL HOT DIPPED GALV AFTER FABRICATION IF OUTDOORS; SANDBLAST AND SHOP PRIME ALL OTHERS
2. SECURE W/ APPROVED ANCHORS TO MATCH WALL CONSTRUCTION



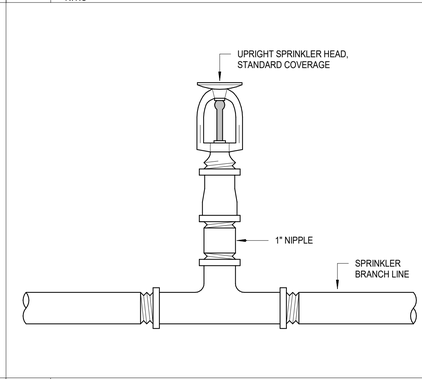

**6** PIPE WALL SUPPORT
N.T.S



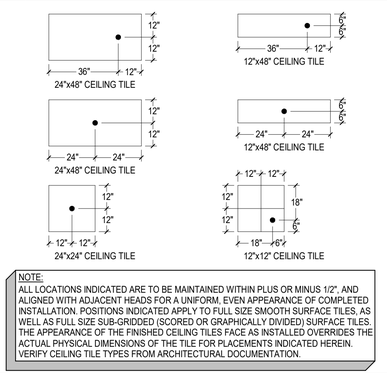

**5** FLEXIBLE SPRINKLER PIPING
N.T.S




**4** CONCEALED SPRINKLER HEAD
N.T.S

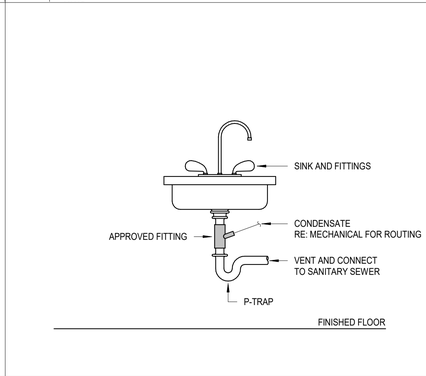



**3** UPRIGHT SPRINKLER HEAD
N.T.S

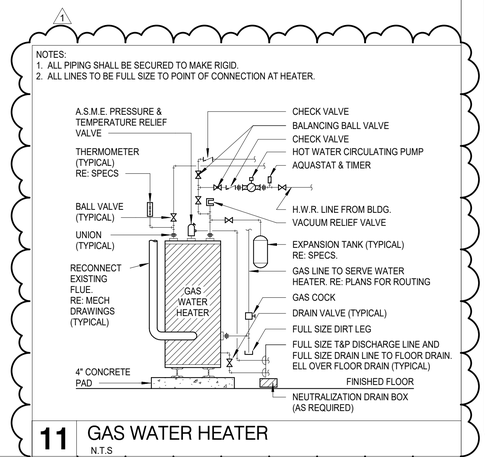



NOTE:
ALL LOCATIONS INDICATED ARE TO BE MAINTAINED WITHIN PLUS OR MINUS 1/2", AND ALIGNED WITH ADJACENT HEADS FOR A UNIFORM, EVEN APPEARANCE OF COMPLETED INSTALLATION. POSITIONS INDICATED APPLY TO FULL SIZE SMOOTH SURFACE TILES, AS WELL AS FULL SIZE SUB-GRIDDED (SCORED OR GRAPHICALLY DIVIDED) SURFACE TILES. THE APPEARANCE OF THE FINISHED CEILING TILES FACE AS INSTALLED OVERRIDES THE ACTUAL PHYSICAL DIMENSIONS OF THE TILE FOR PLACEMENTS INDICATED HEREIN. VERIFY CEILING TILE TYPES FROM ARCHITECTURAL DOCUMENTATION.

**2** SPRINKLER HEAD LOCATIONS
N.T.S




**1** CONDENSATE TO SINK TAILPIECE
N.T.S




**11** GAS WATER HEATER
N.T.S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## PLUMBING DETAILS

# P-601

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