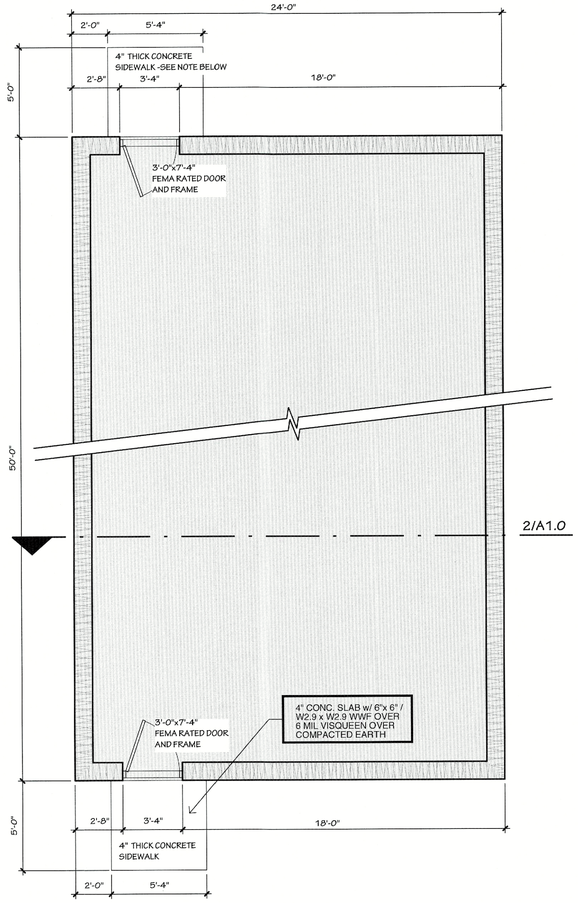
# Building Code Requirements

2012 International Building Code (IBC)

| | |
|---|---|
| **OCCUPANCY TYPES:** | TYPE E |
| **BUILDING CONSTRUCTION:** | |
| CONSTRUCTION: | TYPE IIB UNSPRINKLERED |
| **ALLOWABLE SQ FT:** | 14,500 SQ FT |
| **ACTUAL BUILDING SQ FT:** | 1200 SQ FT |
| NET AREA: | 1060 SQ FT |
| **ALLOWABLE HEIGHT:** | 2 STORIES, 55'-0" |
| **ACTUAL HEIGHT:** | 1 STORY, 14'-8" |
| **EGRESS:** | |
| TRAVEL DISTANCE: (UNSPRINKLERED) | 200 |
| ACTUAL DISTANCE: | 50 |
| **0.2 WIDTH REQUIRED PER OCCUPANT:** | 42.4" |
| **2- 3'-0" DOOR REQUIRED ACUAL WIDTH** | 68" |
| **FIRE EXTINGUISHERS REQUIRED:** | 2 |
| **OCCUPANTS ALLOWED:** | 5 PER NET SF |
| 1060 NET SF | 212 OCCUPANTS |

## DRAWING INDEX

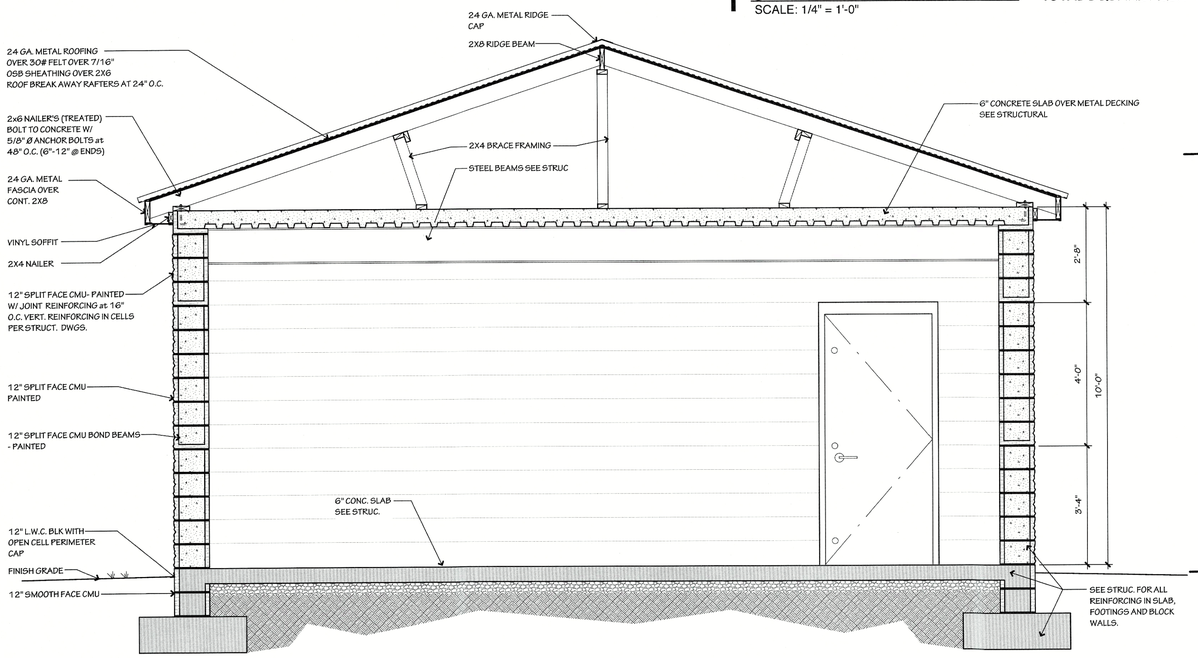





## 1 SHELTER FLOOR PLAN

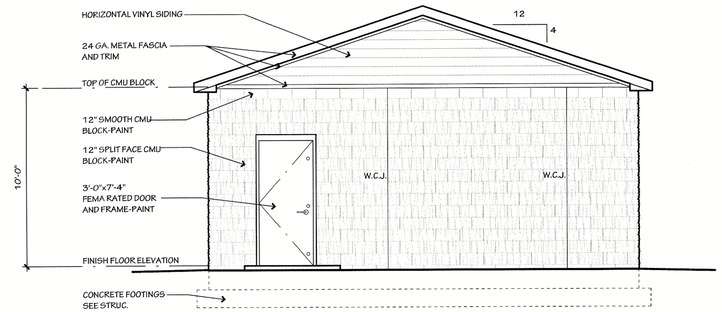
SCALE: 1/4" = 1'-0"

TOTAL SQUARE FEET: 1200 SF



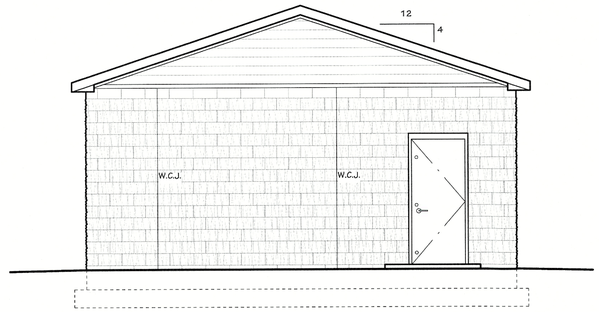

## 2 BUILDING SECTION

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




## 3 FRONT ELEVATION

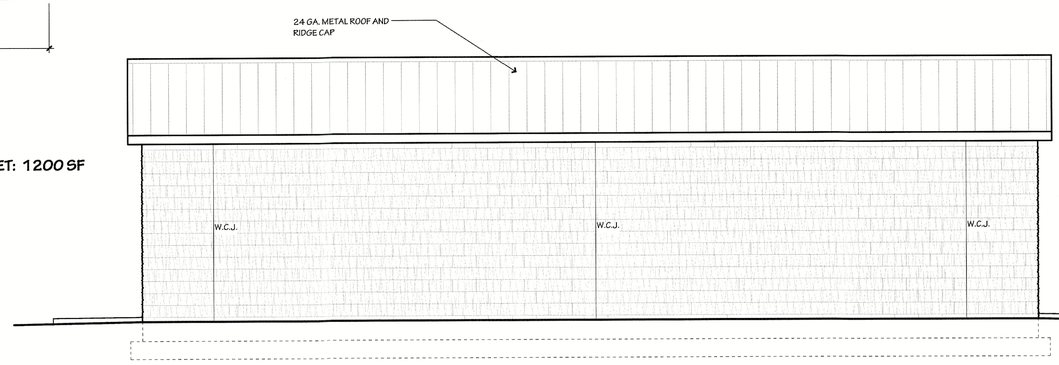
SCALE: 1/4" = 1'-0"




## 4 REAR ELEVATION

SCALE: 1/4" = 1'-0"

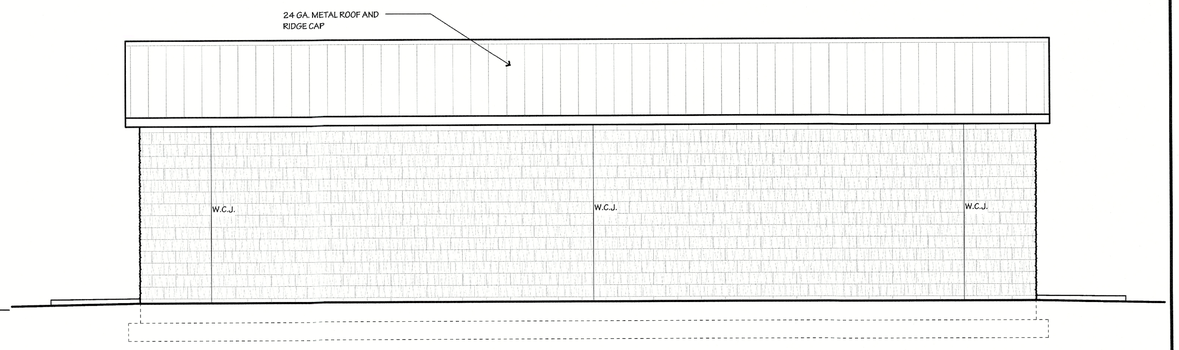
SEE NOTES ON ELEVATION #3




## 5 SIDE ELEVATIONS

SCALE: 1/4" = 1'-0"

SEE NOTES ON ELEVATION #3




## 6 SIDE ELEVATIONS

SCALE: 1/4" = 1'-0"

SEE NOTES ON ELEVATION #3


HUGHES ARCHITECTURAL DESIGNS
1202 N STATE LINE AVE
SUITE #102
TEXARKANA, AR 71854
501-627-2448
michaelhughes72s77@gmail.com


New Storm Shelter Facility for:
Arkansas Christian Academy
Bryant, Arkansas

Revisions:

Professional Stamps:

CERTIFICATE OF AUTHORIZATION
HUGHES ARCHITECTURAL DESIGNS
2/13/24
No. COA-01169
ARKANSAS - ARCHITECT

Sheet Title:
**Floor Plan, Exterior Elev's & Bldg Section**

Date: 02-13-2024

Sheet Number:
**A1.0**

# GENERAL NOTES

In case of conflict between the General Notes below and the Specifications, the more rigid requirement shall govern unless amended in writing by the Structural Engineer of Record.

## DESIGN DATA

1. Design Codes – (All latest editions unless noted otherwise.)
   - International Building Codes (IBC 2021)
   - Arkansas Fire Prevention Code 2007 Edition (IBC 2012) with Amendments.
   - American Society of Civil Engineers (ASCE 7–16) Minimum Design Loads for Buildings and Other Structures
   - American Concrete Institute (ACI)
   - American Institute of Steel Construction (AISC)
   - American Welding Society (AWS)
   - American Iron and Steel Institute Specifications for the Design of Cold Formed Steel Structural Members (AISI)
   - National Design Specification for Wood Construction (ANSI/AF&PA NDS–2018)
   - Steel Deck Institute (SDI)
   - Standard for the Design and Construction of Storm Shelters (2020 ICC 500)
   - Safe Rooms for Tornadoes and Hurricanes (2021 FEMA P–361)
2. Design Loads (IBC & ASCE7)
   - Dead Load Design Data
     - Roof 15 psf
     - Floor 65 psf
     - Exterior CMU Wall 127 psf of wall area
   - Live Load Design Data
     - Floor Distributed
       - Lobby (1st Floor) 100 psf (Not reducible)
     - Floor Concentrated
       - Office 2000 lbs
     - Partition Load 20 psf of wall area (Reducible per code)
     - Slab–On–Grade 100 psf
   - Live Roof Load Design Data
     - Roof (Sloped) 100 psf
     - Roof (Flat) 100 psf
   - Wind Design Data
     - Risk Category IV
     - Velocity 250mph
     - Wind Exposure Category C
     - Internal Pressure Coefficient, $GC_{pi}$ 0.55±
     - Wind Directional Factor, $K_d$ 1.0
     - Topograph Factor, $K_{zt}$ 1.0
   - Snow Design Data
     - Importance Factor for Snow, $I_s$ 1.2
     - Ground Snow Load, $P_g$ 10 psf
     - Exposure Coefficient $C_e$ 1.0
     - Thermal Factor $C_t$ 1.0
     - Roof Slope Factor, $C_s$ 1.0
     - Flat Roof Snow Load $P_f$ 9.1 psf (Use min 11 psf w/ Rain on Snow Surcharge)
   - Seismic Criteria
     - Risk Category IV
     - Seismic Importance Factor, $I_E$ 5.0
     - Site Soil Class D
     - Mapped Spectral Response Coefficients $S_s$ = 0.313 / $S_1$ = 0.133
       $S_{ds}$ = 0.323 / $S_{d1}$ = 0.207
     - Seismic Design Category D
     - Basic Seismic Force Resisting System A.7 Specially Reinforced Masonry Shear Walls
     - Design Base Shear 0.097W
     - Seismic Response Coefficient, $C_S$ 0.097
     - Response Modifications Factor, R 5.0
     - Analysis Procedure Equivalent Lateral Force
   - Flood Design Data
     - Flood Design Class 4
     - Flood Zone X
   - Deflection and Drift Limitations
   - Roof/Floor Members
     - L/360
     - L/240
   - Building Drift H/600
   - Max Wall Deflection L/600
   - Story Drift (Seismic) 0.025 $h_{sx}$

Material & Component Design Criteria

- Cast–In–Place Concrete
- Concrete Reinforcing – Bar (Typical) ASTM A615, GR 60
- Concrete Reinforcing – Bar (Weldable) ASTM A706, GR 60
- Concrete Reinforcing – Welded Wire Fabric ASTM A185, (Plain) ASTM A497, (Deformed)
- Cement ASTM C150
- Aggregate ASTM C33, ASTM C330

Concrete Mix Criteria

| Class Use | Category F | S | W | C | F'c, PSI | WT, PCF | AGG, IN | AE. % |
|---|---|---|---|---|---|---|---|---|
| I. FTG/FDN/PC | 0 | 0 | 0 | 0 | 3500 | 145 | ¾" | NA |
| II. Interior Slab | 0 | 0 | 0 | 0 | 4000 | 145 | ¾" | NA |
| III. Exterior Slab | 1 | 0 | 0 | 0 | 4000 | 145 | ¾" | 5+ 1 |
| V. All Other | 0 | 0 | 0 | 0 | 4000 | 145 | ¾" | NA |

Reference ACI 318 Chapter 4 For Additional Information Regarding Durability Category And Class Requirement

Concrete Mix Design Shall Be Submitted For Each Class In Accordence With The Procedure Outlined in ACI 301, Standard Specification For Structural Concrete. Documentation Submitted Shall Include The Mix Data. For Additional Submittal Requirements, Reference ACI 301. For Requirements On The Use Of Admixtures And Limits On The Water/Cementitious Materials Ratio For Durability, Reference The Project Manual/Specifications And ACI 318, Building Code Requirements For Structural Concrete.

Structural Masonry

- Design Compressive Strength (F'm= 2000 PSI)
- Concrete Masonry Units ASTM C90, NORMAL WT
- Reinforcing Steel (UNO):
  - Bar Reinforcing (Typical) ASTM A615, GR 60
  - Bar Reinforcing (Weldable) ASTM A706, GR 60
  - Joint Reinforcement ASTM A951
- Grout (F'c= 3000 PSI, 8"–11" Slump) ASTM C476 ASTM C1019
- Mortar, Type S ASTM C270 or ASTM C780
- Non–Shrink Grout Under Plates (F'c=8000 PSI) ASTM C1107, GR A

Structural Steel

Structural Shapes (UNO)

- Wide Flange ASTM A992 or ASTM A572
- Channels, Angles and Plates ASTM A36 or ASTM A572

Hollow Structural Sections

- HSS, (Fy = 46 KSI) ASTM A500, GR C
- Pipe, (Fy = 35 KSI) ASTM A53, GR C
- Bolts And Fasteners (UNO) ASTM A325
- Structural/Anchor Rods ASTM F1554, Grade 55 (Weldable)
- Headed Shear Studs ASTM A108, AWS D1.1, Type B

3. Design Soil Bearing Pressures
   - Footings on natural soils or compacted structural fill are designed for a minimum soil bearing pressure of 1,800 psf.
   - If the soil at the footing bearing elevations shown is of questionable bearing value, the Engineer or Architect shall be notified immediately.
   - After footing excavations are completed and before placing concrete, the excavated areas shall be inspected and approved by the Owner selected independent testing laboratory.

## ICC 500 106.2.1 STORM SHELTER DESIGN INFORMATION

| | | |
|---|---|---|
| 1. | Type of Storm Shelter: | Community; Tornado |
| 2. | Use of Community Storm Shelter: | Building Occupants |
| 3. | Design conforms to the provisions of ICC 500 Standard for the Design and Construction of Storm Shelters, 2020. | |
| 4. | The Storm Shelter design wind speed: | $V_t$, 250 mph |
| 5. | The wind exposure category: | C |
| 6. | The internal pressure coefficient, (GCpi) | ±0.55 |
| 7. | The topographic factor, ($K_{zt}$) | 1.0 |
| 8. | The directionality factor, ($K_d$) | 1.0 |
| 9. | Design wind pressures and their applicable zones with dimensions neded for the specification of the components and cladding of the storm shelter envelope, (psf). See S0.1 | |
| 10. | Where the storm shelter is subject to the requirements of Section 402.1, a statement that the storm shelter has or has not been constructed in accordance with Chapter 4. Storm Shelter has been constructed follow 402.1. | |
| 11. | Where storm shelter is subject to the requirements of Section 402.1: | Zone X n/a. Not located in a 500–year flood zone. |
| 12. | Documentation showing that components of the storm shelter envelope will meet the static and cyclic pressure and impact test requirements indentified in Chapters 3 and 8: Our design follows minimums placed by FEMA P–361 B8.2.3.3 and B8.2.3.4 to meet these requirements. | |
| 13. | A floor plan drawing or picture indicating location of storm shelter on a site or in a building; including a drawing or image indicating the entire facility. See S1.1. | |
| 14. | A storm shelter section or elevation indicating the height of the storm shelter. See S3.1. | |
| 15. | A storm shelter section or elevation indicating the height of the storm shelter. See S3.1. | |
| 16. | The lowest storm shelter floor elevation and corresponding datum. Reference Civil. | |
| 17. | The design occupant capacity: | 150 Occupants |
| 18. | Calculations for the usable floor area: | 22ft x 34ft= 748ft² |
| 19. | Calculations for venting area provided and the locations: | None |
| 20. | Calculations for the number of sanitations facilities: | None |
| 21. | Minimum foundation capacity requirements: | See Structural Documents. |
| 22. | Storm shelter installation requirements for all post installed anchors. | N/A |

## GENERAL INFORMATION

1. All columns shall be centered on grid lines unless noted otherwise.
2. All column footings shall be centered on columns unless noted otherwise.
3. All wall footings shall be centered on walls unless noted otherwise.
4. Unless otherwise noted or detailed, concrete pads for mechanical equipment shall be 4" thick (minimum) and reinforced with #3 @ 12" oc each way centered.
5. Substitution of expansion anchors for embedded anchors shall not be permitted.
6. Weights of mechanical equipment shown on the structural plans are for units specified by the Mechanical Engineer. Contractor shall verify weights and any substitutions that result in increased weight shall be approved by the Structural Engineer.
7. Backfill both sides of all foundation and retaining walls equally until low side is up to finish grade. Do not backfill any walls until concrete has reached its specified 28–day compressive strength.
8. Permanent stability of the building and components is not provided until the erection is completed as shown on the contract drawings. "Temporary supports, such as temporary guys, braces, falsework, cribbing or other elements required for the erection operation will be determined, furnished and installed by the erector."
9. The contractor shall insure that no construction load exceeds the design live loads indicated on the structural drawings and that these loads are not put on the structural members prior to the time that all framing members and their connections are in place.
10. The Contractor shall be responsible for Verifying all existing conditions. The Contractor shall be responsible for coordinating architectural., structural, mechanical, and electrical details and dimensions. Any Discrepancies between such details and dimensions shall be reported to the EOR prior to proceeding with the work.
11. The Contractor shall be responsible for erection procedure and sequence to insure the integrity of the building and it's component parts during construction.

## SUBMITTALS

1. Review of shop drawings and other submittals by the Structural Engineer does not relieve the Contractor of the responsibility to review and check shop drawings before submitting to the Structural Engineer. The Contractor remains solely responsible for errors and omissions associated with the preparation of shop drawings as they pertain to member sizes, details, and dimensions specified in the Contract Documents. All shop drawings must be stamped by the Contractor prior to submittal.
2. Shop Drawings: The Contractor shall submit for Structural Engineer review shop drawings for the following items. Items marked (*) shall have shop drawings sealed by a Professional Engineer registered in the state in which the project is located. Items marked (#) shall be submitted for Structural Engineer's record only.
   A. Structural Steel (*)
   B. Steel Deck
   C. Concrete Mix Designs
   D. CMU Reinforcing Steel

## FOUNDATIONS

1. All soil preparation shall be in accordance with the recommendations given in the referenced Geotechnical Report.
2. Strip area of all gravel, surface vegetation, topsoil, and any debris. Remove all existing structures, foundations, and below grade site features. After stripping and making required cuts, exposed subgrade should be compacted. Overexcavate and stabilize any soft or unstable areas discovered by proof rolling.
3. The Geotechnical Engineer shall be present during proof rolling and shall inspect the subgrade prior to any fill operations. All compacted fill shall be continuously inspected by the Owner's selected independent testing laboratory.
4. If the soil at the bearing elevations shown is of questionable bearing value, the Structural Engineer of Record or Architect shall be notified immediately.
5. All fill material under structure shall comply with requirements stated in Geotechnical Report unless specifically noted otherwise.
6. After footing excavations are completed and before placing concrete, the excavated areas shall be inspected and approved by the Owner's selected independent testing laboratory.

## CAST-IN-PLACE CONCRETE

1. Arrangement and bending of reinforcing steel shall be in accordance with ACI Detailing Manual, latest edition.
2. Reinforcing steel shall be new and all bars shall be deformed.
3. Reinforcing Bars: ASTM A615 Grade 60 and ASTM A706 Grade 60 for weldable reinforcing.
4. Unless noted otherwise, bar laps shall be Class B tension laps and shall be lapped with minimum lengths as shown in Typical Details, where splices are required in reinforcing. Shorter laps may be acceptable if specific locations of alternate laps are shown on the reinforcement placement drawings and calculations are submitted by a Registered Professional Engineer, licensed to practice in the state in which the project is located, justifying the alternate lap lengths.
5. Provide suitable wire spacers, chairs, ties, etc. for supporting reinforcing steel in the proper position while placing concrete. Do not "wet stick" dowels.
6. All Welded Wire Fabric (WWF): ASTM A185. Minimum lap and embedment to be the greater of one cross wire spacing plus 2" or 6".
7. Minimum concrete protective covering for reinforcement at surfaces not exposed directly to the ground shall be ¾" for slabs, joists, and walls and 1½" for beam stirrups, column ties, or spirals unless noted otherwise.
8. Before placing concrete, clean reinforcement for foreign particles or coatings. Place, support, and secure reinforcement against displacement. For cast–in–place concrete, provide cover as shown below, unless noted otherwise on drawings, and as specified in ACI 318, building code requirements for structural concrete.

| Application/condition | Required cover, Inches |
|---|---|
| Cast against and permanently exposed to earth | 3" |
| Exposed to earth or weather: | |
| No.6 through No. 19 bars | 2" |
| No.5 bar, W31 or D31 wire, and smaller | 1½" |
| Not exposed to weather or in contact with ground: | |
| Slab, walls, joints: | |
| No. 14 and No. 18 bars | 1½" |
| No. 11 bar and smaller | ¾" |
| Beam, columns: | |
| Primary reinforcements, ties, stirrups, spirals | 1½" |
| Shells, folded plate members: | |
| No.6 bar and larger | ¾" |
| No.5 bar, W31 or D31 wire, and smaller | ½" |

9. Locations and sizes of openings, sleeves, etc. required for other trades must be verified by these trades before placing concrete.
10. All slots, sleeves, trenches, and other embedded items shall be set and secured against movement before the concrete is placed. See Architectural, Electrical, Mechanical, Plumbing, and Vendor drawings for sizes and locations. Coordinate locations, spacings, and sizes with the Structural Engineer of Record prior to pouring concrete.
11. Conduits and pipes embedded in concrete slabs may be no larger than ⅓ of the slab thickness (based on the maximum outside diameter) and shall have a center–to–center spacing no less than three (3) conduit diameters. Regardless of diameter, the minimum clear spacing between conduits or reinforcing shall be one (1) inch.
12. No more than four conduits may be placed adjacent to each other without prior approval in writing from the Structural Engineer of Record.
13. No aluminum conduits, devices, or fixtures may be embedded into the concrete so that the aluminum is in direct contact with the concrete.
14. Corner bars shall be provided for all horizontal reinforcing bars at the intersections and corners of all strip footings, beams, and walls unless noted otherwise. Corner bars shall be of the same size and grade as the horizontal reinforcing they connect. Minimum lap lengths shall be as indicated with the Typical Details unless noted otherwise.
15. For slabs–on–grade, provide saw–cut control joints at intervals of 15'–0" oc max across the width of the slab. Refer to the Structural Drawings for typical control joint layout and details.
16. Saw–cuts shall be made as soon as the concrete can support the saw without damaging the surface (eight (8) hours max from the start of the concrete pour).
17. Reinforcing steel shown in sections and detail are a schematic indication that reinforcing exists. See schedules, section notes and General Notes for actual reinforcing required.
18. Detail reinforcement in accordance with ACI 315. Reinforcement shall not be welded unless noted or approved by the Structural Engineer.
19. Pedestal, Column and Wall Vertical Reinforcing: Dowel to foundation with hooked bars of same size and spacing as vertical reinforcing, terminate top of reinforcement with hooked bar of same size and spacing as vertical reinforcing.
20. Beam Horizontal Reinforcing: Terminate each end with standard.
21. Closed Tie and Stirrup Reinforcing: Terminate each end with standard hook.
22. Concrete design and detailing shall conform to the requirements of ACI 318 and ACI 301, latest editions.
23. Contractor shall provide reinforcing shop drawings which adequately depict the reinforcing bar sizes and placement. Written description of reinforcement without adequate sections, elevations and details is not acceptable.
24. Submit written reports of each proposed mix design for each class of concrete with concrete cylinder test results at least 15 days prior to start of work.
25. All concrete that will be exposed to the weather shall have air entrainment.
26. All structural concrete exposed to view to be smooth formed finished with ¾" chamfers at all exposed edges.

**ACI lap splice length (inches)**

| BAR SIZE | F'C = 3000 PSI TOP BARS CASE 1 | TOP BARS CASE 2 | OTHER BARS CASE 1 | OTHER BARS CASE 2 | F'C = 3500 PSI TOP BARS CASE 1 | TOP BARS CASE 2 | OTHER BARS CASE 1 | OTHER BARS CASE 2 | F'C = 4000 PSI TOP BARS CASE 1 | TOP BARS CASE 2 | OTHER BARS CASE 1 | OTHER BARS CASE 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #3 | 28 | 42 | 22 | 32 | 26 | 39 | 21 | 30 | 24 | 36 | 19 | 28 |
| #4 | 37 | 56 | 29 | 43 | 35 | 52 | 27 | 40 | 32 | 48 | 25 | 37 |
| #5 | 47 | 70 | 36 | 54 | 44 | 65 | 34 | 51 | 40 | 60 | 31 | 47 |
| #6 | 56 | 84 | 43 | 64 | 52 | 78 | 40 | 60 | 48 | 72 | 37 | 56 |
| #7 | 81 | 122 | 63 | 19 | 76 | 114 | 59 | 88 | 70 | 106 | 54 | 81 |
| #8 | 93 | 139 | 72 | 107 | 87 | 130 | 67 | 100 | 80 | 121 | 62 | 93 |
| #9 | 105 | 157 | 81 | 121 | 89 | 147 | 76 | 113 | 91 | 136 | 70 | 105 |
| #10 | 118 | 177 | 91 | 136 | 110 | 165 | 85 | 127 | 102 | 153 | 79 | 118 |
| #11 | 131 | 196 | 101 | 151 | 122 | 183 | 94 | 141 | 113 | 170 | 87 | 131 |

| BAR SIZE | F'C = 4500 PSI TOP BARS CASE 1 | TOP BARS CASE 2 | OTHER BARS CASE 1 | OTHER BARS CASE 2 | F'C = 5000 PSI TOP BARS CASE 1 | TOP BARS CASE 2 | OTHER BARS CASE 1 | OTHER BARS CASE 2 | F'C = 6000 PSI TOP BARS CASE 1 | TOP BARS CASE 2 | OTHER BARS CASE 1 | OTHER BARS CASE 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #3 | 23 | 35 | 18 | 27 | 22 | 33 | 17 | 25 | 20 | 30 | 16 | 23 |
| #4 | 31 | 46 | 24 | 35 | 29 | 43 | 22 | 33 | 26 | 40 | 20 | 31 |
| #5 | 38 | 57 | 30 | 45 | 36 | 54 | 28 | 42 | 33 | 49 | 25 | 38 |
| #6 | 46 | 69 | 35 | 53 | 43 | 64 | 33 | 50 | 40 | 59 | 31 | 46 |
| #7 | 67 | 100 | 52 | 77 | 63 | 94 | 49 | 73 | 58 | 86 | 44 | 66 |
| #8 | 76 | 115 | 59 | 88 | 72 | 108 | 55 | 83 | 66 | 98 | 51 | 76 |
| #9 | 86 | 129 | 67 | 100 | 81 | 122 | 63 | 94 | 74 | 111 | 57 | 85 |
| #10 | 97 | 145 | 75 | 112 | 91 | 137 | 70 | 105 | 83 | 125 | 64 | 96 |
| #11 | 107 | 161 | 83 | 124 | 101 | 152 | 78 | 117 | 93 | 139 | 71 | 107 |

## CAST-IN-PLACE CONCRETE CONT.

NOTES:

1. Tabulated values are based on grade 60 bars and normal weight concrete.
2. Cases 1 and 2, which depend on the type of structural element, concrete cover, and the center–to–center spacing of the bars, are defined as:
   Beams or columns:
   Case 1: Cover at lease 1.0 db and C.C. spacing of at least 2.0 db.
   Case 2: Cover less than 1.0 db and C.C. spacing less than 2.0 db.
   All others:
   Case 1: Cover at lease 1.0 db and C.C. spacing of at least 3.0 db.
   Case 2: Cover less than 1.0 db and C.C. spacing less than 3.0 db.
3. Top bars are horizontal beam and slab bars with more than 12" of concrete below the bars.
4. For lightweight aggregate concrete, multiply the tabulated values by 1.3.
5. For epoxy–coated bars, multiply the tabulated values by one of the following factors:

| Concrete cover and spacing | Top bars | Other bars |
|---|---|---|
| Cover < 3.0 DB or C.C. spacing < 7.0 DB | 1.7/1.3 = 1.31 | 1.50 |
| Cover > 3.0 DB or C.C. spacing > 7.0 DB | 1.20 | 1.20 |

6. Bar development length = lap spliced length/ 1.3.
7. Wire mesh lap
   Lap all wire mesh cross wires one cross wire spacing plus 2", typical.

## CONCRETE MASONRY

1. For product material specifications, reference the structural notes, material & component design criteria and the project specification.
2. Submit documentation demonstrating compliance with the specified strength of masonry, F'm, in accordance with the (prism test method or the unit strength method) as outlined in the TMS 402/602–16, Building Code Requirements for Masonry Structures, and the applicable building code. Submit product and test data as specified for level 1 quality assurance. This shall include verification of F'm both prior to construction and during as well as verification of materials and proportions for concrete masonry units, mortar and grout construction for every 5000 square feet of masonry placed.
3. Submit reinforcing shop drawings showing placement of all reinforcement and embedments and the reinforcing fabrication dimensions and details.
4. Place concrete units such that the vertical cells to be grouted are aligned and provided unobstructed openings for grout placement. Face shells of bed joints shall be fully mortared. webs shall be fully mortared in all courses of piers, columns and pilasters, in the starting course on foundations, when necessary to confine grout or loose–fill insulation and when otherwise noted. Head joints are to be mortared a minimum distance from each face equal to the face shell thickness of the unit. Unless otherwise required, solidly fill collar joints less than 3/4" wide with mortar as the work progresses.
5. Place reinforcement and embedments in accordance with the drawings. Maintain a clear distance between the reinforcing bars and any face of masonry unit or formed surface of not less than 1/2" unless noted otherwise. Where reinforcing bar are spliced, provide a minimum lap as shown in chart below or a mechanical splice that provides 125% of the bar capacity. Tolerances for placement of reinforcing bars shall be +/– 1/2 inch perpendicular to the face of the masonry unit and within 2–inches along the length of the wall unless note otherwise. Reinforcement shall be tied in place or otherwise supported to prevent displacement during grouting.
6. Place grout within 1 1/2 hours from introducing water in the mixture and prior to initial set. Grout pour height shall conform to the requirements as outlined in TMS 402/602–16, Specification for Masonry Structures, for grout type and grout space dimensions. In no case shall grout lift exceed 4 feet in height. Consolidate pours by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred.
7. Provide horizontal joint reinforcement in every bed joint (8–inch on center) for stack bond and every other joint (16–inch on center) for running bond masonry placement. Place such that longitudinal wires overlap 6–inches and are embedded in mortar with a minimum cover of 5/8".
8. As a minimum, control joints in masonry walls shall be provided within 4–feet of corners, at each change of wall height or thickness and at a maximum spacing of 25–feet unless noted otherwise on drawings.
9. Structural masonry shall be reinforced a specified on the drawings. All cells containing reinforcing shall be fully grouted. Provide dowels from the foundation to match the vertical reinforcing.
10. Provide a bond beam with 2–#5 continuous bars where shown on the drawings and, at a minimum, at the tops of all masonry walls and at all slab or beam bearing locations where the wall is not already grouted solid below the bearing. Extend the bond beam a minimum of 2–feet beyond the end of the bearing condition.
11. Provide jamb reinforcing for every masonry opening shown on drawings, as a minimum, for steel lintel beams provide 1–#5 vertical in first cell adjacent to the bearing location form the top of footing for the full height of the wall. For masonry lintels, provide 1–#5 vertical in the first cell adjacent to the opening, from the top of the footing for the full height of the wall.
12. At beam bearing locations, reinforce each cell below the bearing plate with typical vertical reinforcing to the top of the footing unless noted otherwise.
13. No High lift Grouting.

## CONCRETE MASONRY CONT.

13. At masonry control joints, reinforce the first cell either side of the joint with the typical wall reinforcing specified on the drawings. Also, at ends of walls, reinforce the last cell with the typical wall reinforcing specified. Horizontal joint reinforcing shall be discontinuous at control joints. Bond beam reinforcing shall be discontinuous at control joints. Bond beam reinforcing shall be discontinuous across control joints.
14. All cells containing reinforcing bars shall be fully grouted.
15. All expansion bolts placed in masonry are to be Hilti Kwik Bolt III or approved equal are to be installed in grouted cells in accordance with the manufacturer's recommendations and inspected by the special inspector. All post–installed anchors shall be installed in the presence of the special inspector.
16. All post installed dowels placed in masonry are to be set in Hilti HIT–HY 70 adhesive or approved equal are to bed installed in accordance with the manufacturer's recommendations and inspected by the special inspector. All post–installed anchors shall be installed in the presence of the special inspector.
17. All mechanical anchors shall be installed in accordance with the product manufacturer's recommendations and the installation shall be inspected by the special inspector. Individual products shall be submitted to the architect/engineer for approval prior to installation. All post–installed anchors shall be installed in the presence of the special inspector.
18. When the ambient temperature falls below 40F or the temperature of the masonry units is below 40F, comply with the provisions of TMS 602, Section 1.8C, Specification for Masonry Structures, for cold weather construction.
19. When the ambient temperature exceeds 90F, comply with the provisions of TMS 602, Section 1.8D, Specification for Masonry Structures, for hot weather construction.
20. Brick Ties: (for stud backup)

    There shall be a minimum of one brick tie for every 2.67 sq. ft. of wall area. These shall be spaced at a maximum of 18–inches on center. Ties shall be of a minimum 9 GA. corrosion resistant wire and shall be of an adjustable type such as DUR–O–WALL adjustable D/A 213 or equal. Corrugated galvanized sheet ties are not acceptable. All ties must be attached through the sheathing to the studs per manufacturer's recommendations.
21. Brick Ties: (for masonry backup)

    There shall be a minimum of one brick tie for every 2.67 sq. ft. of wall area. These shall be spaced at a maximum of 18–inches vertical. Ties shall be a minimum of 3/16" diameter corrosion resistant wire. Corrugated galvanized sheet ties are not acceptable.

CMU Lap Splice Lengths
Reinforcement Off–Centered
2 Bar Per Core

| MINIMUM LAP SPLICE LENGTH (INCHES) | | | | |
|---|---|---|---|---|
| BAR SIZE | 8" CMU | 10" CMU | 12" CMU | 16" CMU |
| #3 | 19 | 19 | 19 | 19 |
| #4 | 34 | 34 | 34 | 34 |
| #5 | 45 | 45 | 45 | 45 |
| #6 | 54 | 54 | 54 | 54 |
| #7 | 63 | 63 | 63 | 63 |
| #8 | N/P | 72 | 72 | 72 |
| #9 | N/P | N/P | 82 | 82 |

Note:
N/P= Not Permitted

## COMPOSITE BEAMS

1. Studs shall be end welded through the metal floor deck along centerline of beams.
2. Minimum distance from the base of the rib to the base of the stud shall be ½" in ribbed, formed steel deck unless noted otherwise.
3. The minimum center–to–center spacing of stud connectors shall be six times the stud diameter along the longitudinal axis of the beam and four times the stud diameter transverse to the longitudinal axis of the beam. In formed steel decks oriented perpendicular to the longitudinal axis of the beam, the minimum center–to–center spacing shall be four times the stud diameter in any direction.
4. Studs may not be installed on the flanges of beams that are less than 0.4 times the stud diameter unless they are directly over the web. Should deck layout and stud spacing cause a conflict with this requirement, contact the Structural Engineer of Record for a resolution prior to installation of the shear studs.

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.6813 JACQUES A. PIERINI

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SUITE #102
TEXARKANA, AR 71854
501-627-2448
mlchaelhughes72s77@gmail.com


New Storm Shelter Facility for:
**Arkansas Christian Academy**
Bryant, Arkansas

Revisions:

Professional stamp:
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.10449 PATRICK M. PLOURDE
01-22-2024

Sheet Title: General Notes

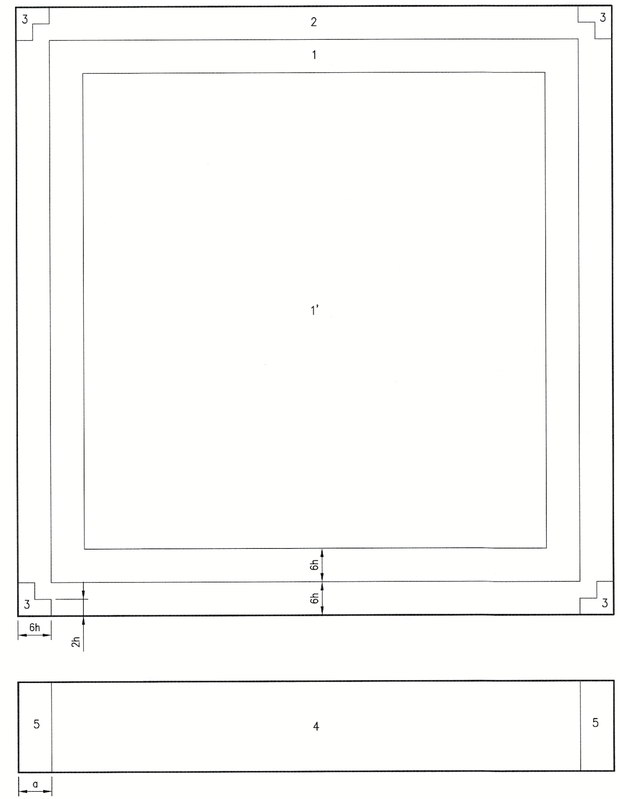
Date: 01/22/2024
Sheet Number: **S0.0**

## STEEL DECK

1. All deck shall be furnished and installed per the requirements of the Steel Deck Institute (SDI). The Contractor shall follow all recommended practices in the SDI manual.
2. Steel Deck, galvanized steel deck unless noted otherwise on the drawings.
3. Where steel deck is part of a rated assembly, supply all deck and components, which comply with requirements of Underwriters Laboratories (UL) for each type of assembly specified, reference plans and specifications. Where deck is to receive spray fireproofing, finishes shall be compatible with fireproofing material and comply with UL assembly requirements. Before the fireproofing material is applied, the deck surface to be treated shall be free of rust, scale, oil, or other contaminants or elements which will impair bond.
4. The deck shall be fastened to supporting steel as shown on the drawing.
5. Alternate fastening options using mechanical fasteners, powder-actuated, or screws may be considered, if submitted by the Contractor. Alternate systems and documentation certifying that the proposed system provides at least the same uplift and diaphragm shear resistance as the system and pattern specified must be submitted to the Engineer.
6. Provide a 2" minimum bearing and a 4" lap at the splice point of all pieces of deck.
7. Where possible, all decking shall be 3-span continuous, minimum. Decking specified on this project assumes a 3-span condition unless noted otherwise. The Contractor shall provide heavier gauge deck, as required, for one or two span conditions to meet equivalent load capacity of the specified deck under a 3-span condition.
8. Steel roof deck shall not be used to support load from plumbing HVAC ducts, light fixtures, architectural elements, or equipment of any kind unless specifically noted.
9. Hanging any loads directly from steel roof deck shall be avoided whenever possible. Nevertheless, normal suspended acoustical ceilings with a total weight per wire not exceeding 50 lbs may be hung from the steel roof deck in cases where hanging loads from the deck cannot be avoided. If possible, the attachment should be staggered to further distribute the load. If load is directly supported by the deck, tabs or other build-in devices should be provided for hanging referenced loads.
10. Where deck ribs are cut at penetrations, provide deck support angles or deck stiffeners as required.
11. Supply 8" wide, minimum, plates matching deck gauge or heavier for all ridge, valley, and change in deck direction locations, which do not fall over a supporting member at least 4" wide.

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| AB | – Anchor bolt(s) | LT WT | – Lightweight |
| ADDL | – Additional | MAS | – Masonry |
| AFF | – Above finish floor | MATL | – Material |
| ALT | – Alternate | MAX | – Maximum |
| ARCH | – Architect, Architectural | MECH | – Mechanical |
| B/ | – Back of | MFR | – Manufacturer |
| BLDG | – Building(s) | MIN | – Minimum |
| BLK | – Block(s) | MISC | – Miscellaneous |
| BM | – Beam(s) | MO | – Masonry opening |
| BOF | – Bottom of footing elevation | MPH | – Miles per hour |
| BOT | – Bottom | MTL | – Metal |
| BRDG | – Bridging | N | – North |
| BRNG | – Bearing | NIC | – Not-in-contract |
| BRK | – Brick(s) | NOM | – Nominal |
| BTWN | – Between | NS | – Near side |
| BUR | – Built-up roof | NSG | – Non-shrink grout |
| CJ | – Control joint, Contraction joint, Construction joint | NTS | – Not-to-scale |
| | | NUM | – Number |
| CL | – Centerline | OC | – On-center |
| CLG | – Ceiling | OD | – Outside diameter, Outside dimension |
| CLR | – Clear | | |
| CMU | – Concrete masonry unit(s) | OH | – Opposite hand, Overhead |
| COL | – Column(s) | OPNG | – Opening(s) |
| CONC | – Concrete | OPP | – Opposite |
| CONN | – Connection(s) | PAR | – Parallel |
| CONST | – Construction | PC | – Precast, Precast concrete |
| CONT | – Continue, Continuous | PDF | – Power driven fastener |
| CTRD | – Centered | PL | – Plate, Property line |
| DBA | – Dowel bar anchor, Deformed bar anchor | PLF | – Pounds per linear foot |
| | | PLYWD | – Plywood |
| DBL | – Double | PNL | – Panel |
| DIA | – Diameter | PROJ | – Project, Projection |
| DIAG | – Diagonal | PSF | – Pounds per square foot |
| DIM | – Dimension | PSI | – Pounds per square inch |
| DWG | – Drawing | PTD | – Painted |
| DWGS | – Drawings | PVMT | – Pavement |
| DWL | – Dowel(s) | QTY | – Quantity |
| E/ | – Edge of, End of | R | – Radius |
| EA | – Each | RAD | – Radius |
| EB | – Expansion bolt(s) | RD | – Roof drain |
| EBC | – Extended bottom chord | REBAR | – Reinforcing bar |
| EF | – Each face | REF | – Reference |
| EIFS | – Exterior insulated finish system | REINF | – Reinforce, Reinforcing, Reinforcement |
| EJ | – Expansion joint | | |
| EL | – Elevation | REQD | – Required |
| ELEC | – Electrical | REV | – Revise, Revision |
| ELEV | – Elevator | RH | – Right hand |
| ENG | – Engineer(ed) | RO | – Rough opening |
| EQ | – Equal | S | – South |
| EXP | – Expansion | SC | – Slotted connection, Slip connection |
| EQMT | – Equipment | | |
| EW | – Each way | SCH | – Schedule |
| EWJ | – Engineered wood I-joist | SECT | – Section |
| EXST | – Existing | SF | – Square feet |
| EXT | – Exterior | SHT | – Sheet |
| F/ | – Face of | SHTG | – Sheathing |
| FD | – Floor drain | SIM | – Similar |
| FDN | – Foundation | SJ | – Saw joint |
| FIN FLR | – Finish floor elevation | SK | – Shear key |
| FS | – Far side | SP | – Space(s), Southern Pine |
| FT | – Foot, Feet | SPECS | – Specifications |
| FTG | – Footing | SQ | – Square |
| GA | – Gage, Gauge | SS | – Stainless steel |
| GALV | – Galvanized | SSL | – Short slotted hole |
| GLB | – Glue-laminated beam | STD | – Standard |
| GR BM | – Grade beam | STF | – Stiffener |
| GR | – Grade | STL | – Steel |
| GYP BD | – Gypsum board | STR | – Straight |
| HD | – Headed, Heavy duty | STRUCT | – Structural |
| HDR | – Header | SYM | – Symmetrical |
| HI | – High | T&B | – Top & bottom |
| HK | – Hook | T&G | – Tongue & groove |
| HORIZ | – Horizontal | THK | – Thick, Thickness |
| HP | – High point | THRD | – Threaded |
| HR | – Handrail | THRU | – Through |
| HS | – Headed stud | TM | – Top-of-masonry elevation |
| HSS | – Hollow steel section | TOB | – Top-of-beam elevation |
| HVAC | – Heating, ventilation, & air conditioning | TOC | – Top-of-concrete elevation |
| | | TOF | – Top-of-footing elevation |
| ID | – Inside diameter | TOS | – Top-of-steel elevation |
| IN | – Inch, Inches | TP | – Top-of-parapet elevation |
| INSUL | – Insulate, Insulation | TW | – Top-of wall elevation |
| INT | – Interior | TYP | – Typical |
| INV | – Invert | UNO | – Unless noted otherwise |
| JBE | – Joist bearing elevation | VERT | – Vertical |
| JST | – Joist(s) | W/ | – With |
| JT | – Joint | W/O | – Without |
| K | – Kip(s) (1,000 pounds) | WB | – Wind bracing |
| LF | – Linear foot, Linear feet | WCJ | – CMU wall control joint |
| LG | – Light Gauge | WD | – Wood |
| LLH | – Long leg horizontal | WP | – Working point |
| LLO | – Long leg outstanding | WPR | – Waterproofing |
| LLV | – Long leg vertical | WS | – Waterstop |
| LO | – Low | WWF | – Welded wire fabric |
| LP | – Low point | | |
| LT | – Left, Light | | |




1 S001 SHELTER C & C PLAN
NTS

| ULT. ROOF WIND PRESSURE (PSF) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AREA | ZONE 1' | | ZONE 1 | | ZONE 2 | | ZONE 3 | |
| | + | – | + | – | + | – | + | – |
| 10SF | 115.6 | –197.2 | 115.6 | –306.0 | 115.6 | –387.6 | 115.6 | –510.0 |
| 20SF | 108.8 | –197.2 | 108.8 | –292.4 | 108.8 | –367.2 | 108.8 | –469.2 |
| 50SF | 103.4 | –197.2 | 103.4 | –265.2 | 103.4 | –340.0 | 103.4 | –414.8 |
| 100SF | 102.0 | –197.2 | 102.0 | –251.6 | 102.0 | –312.8 | 102.0 | –360.4 |
| 200SF | 102.0 | –176.8 | 102.0 | –238.0 | 102.0 | –292.4 | 102.0 | –319.6 |
| 500SF | 102.0 | –149.6 | 102.0 | –210.8 | 102.0 | –265.2 | 102.0 | –265.2 |
| 1000SF | – | – | – | – | – | – | – | – |

a= 5.6ft
0.2h= 3.33ft
0.6h= 10ft

| ULT. OVERHANG WIND PRESSURE (PSF) | | | | |
|---|---|---|---|---|
| AREA | ZONE 1' | ZONE 1 | ZONE 2 | ZONE 3 |
| | TOP & BOTTOM SURFACES COMBINED | | | |
| 10SF | –306.0 | –306.0 | –387.6 | –510.0 |
| 20SF | –302.0 | –302.0 | –360.4 | –462.4 |
| 50SF | –295.8 | –295.8 | –319.6 | –387.6 |
| 100SF | –292.4 | –292.4 | –292.4 | –340.0 |
| 200SF | –251.6 | –251.6 | –258.4 | –292.4 |
| 500SF | –210.8 | –210.8 | –224.4 | –224.4 |

| ULT. WALL WIND PRESSURE (PSF) | | | | | ULT. PARAPET WIND PRESSURE (PSF) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WIND AREA | ZONE 4 | | ZONE 5 | | ZONE 4&2e | | ZONE 4&2n | | ZONE 4&3r | | ZONE 5&3e | |
| | WIN | LEE | WIN | LEE | WIN | LEE | WIN | LEE | WIN | LEE | WIN | LEE |
| 10SF | 189.8 | –202.0 | 189.8 | –238.7 | 434.6 | –324.4 | 557.0 | –324.4 | 630.4 | –324.4 | 557.0 | –361.1 |
| 20SF | 183.6 | –195.9 | 183.6 | –225.3 | 428.4 | –310.9 | 498.2 | –310.9 | 557.0 | –310.9 | 498.2 | –341.5 |
| 50SF | 175.1 | –187.3 | 175.1 | –208.1 | 314.6 | –293.8 | 419.9 | –293.8 | 461.5 | –293.8 | 419.9 | –315.8 |
| 100SF | 167.7 | –180.0 | 167.7 | –195.9 | 228.9 | –281.6 | 359.9 | –281.6 | 388.0 | –281.6 | 359.9 | –296.2 |
| 200SF | 161.6 | –173.8 | 161.6 | –182.4 | 222.8 | –268.1 | 301.1 | –268.1 | 381.9 | –268.1 | 301.1 | –276.7 |
| 500SF | 153.0 | –165.3 | 153.0 | –165.3 | 214.2 | –250.9 | 275.4 | –250.9 | 275.4 | –250.9 | 275.4 | –251.0 |

FOR WALLS: WIN IS WINDWARD FACE
LEE IS LEEWARD FACE

FOR PARAPETS: WIN IS CASE A = p1+p2
LEE IS CASE B = p3+p4

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.6813 JACQUES A. PIERINI

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BIRMINGHAM, AL 35233
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michaelhughes72s77@gmail.com


New Storm Shelter Facility for:
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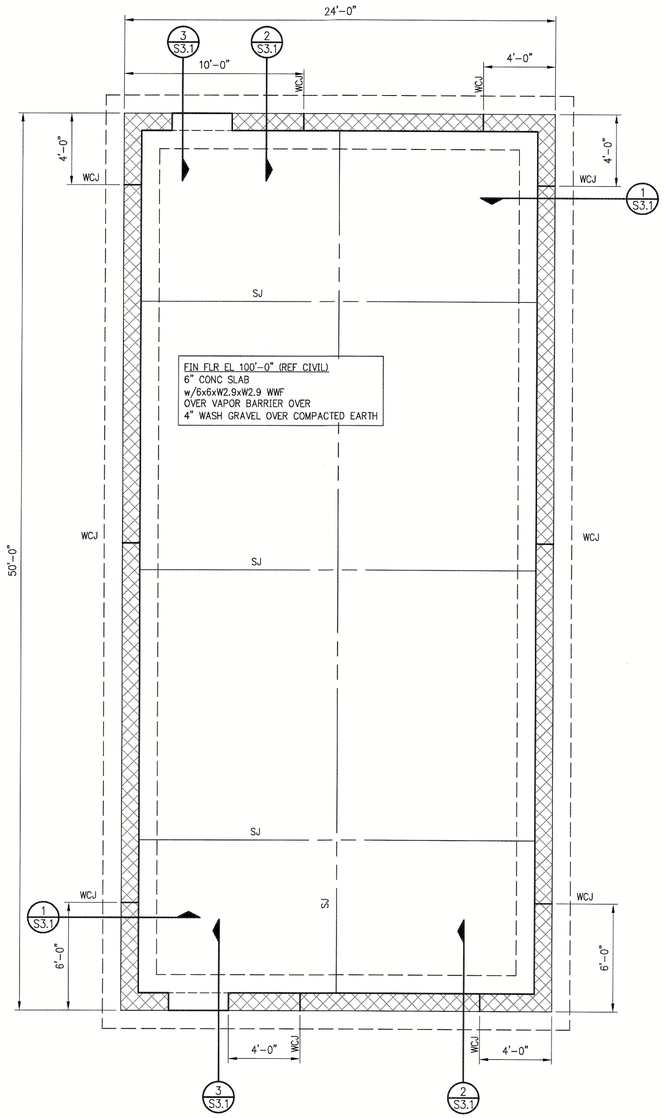
Bryant, Arkansas

Revisions:

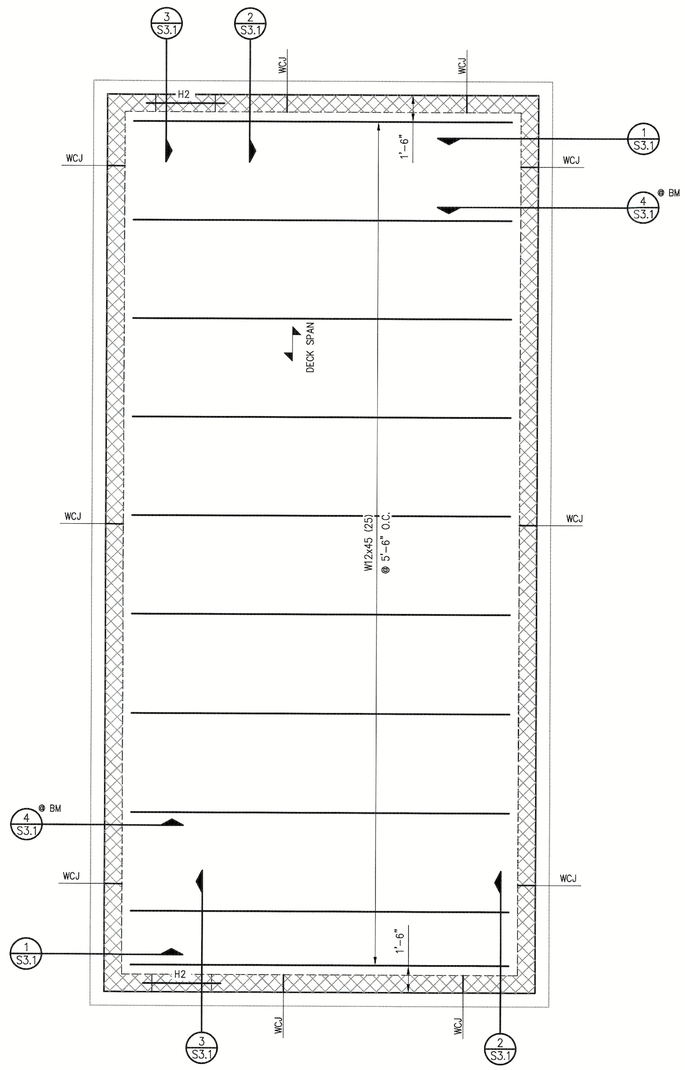
Professional stamp:
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.10449 PATRICK M. PLOURDE
01-22-2024

Sheet Title:
General Notes Continued

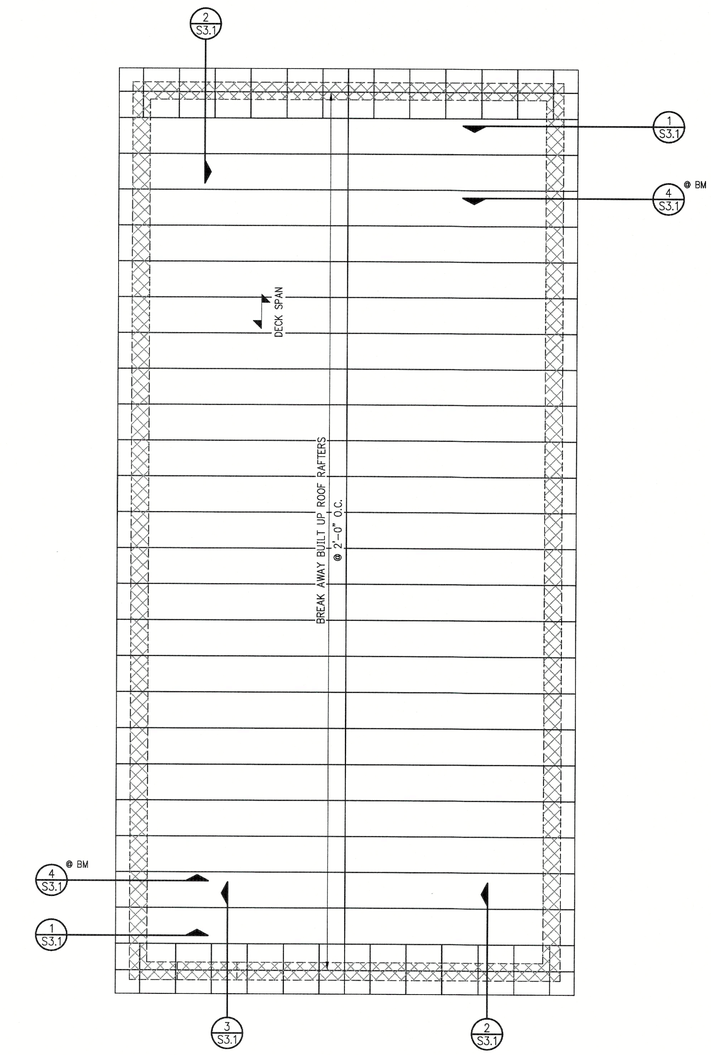
Date: 01/22/2024
Sheet Number:
**S0.1**




A S1.1 FOUNDATION PLAN
1/4"=1'-0"




B S1.1 CONC LID FRAMING PLAN
1/4"=1'-0"




C S1.1 ROOF FRAMING PLAN
1/4"=1'-0"

MASONRY WALL NOTES:

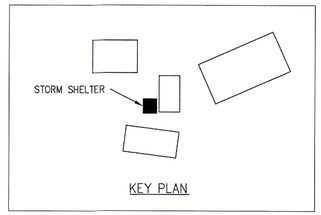
1. STRUCTURAL CONCRETE MASONRY WALLS TO BE NOMINALLY 12" THICK AND REINFORCED FROM FOOTING TO TOP OF WALL UNO. GROUT REINFORCED CELLS SOLID. REINFORCE AND GROUT SOLID CELLS AT CORNERS, OPENING, AND JAMBS AND END OF WALLS. SEE S2.2 FOR TYPICAL DETAILS.
2. DOWEL SPACING TO MATCH VERTICAL REINFORCEMENTS.
3. MASONRY CONTROL JOINT (WCJ) SHALL BE SPACED AT 24' O.C.
4. REINFORCEMENTS DISCONTINUOUS ACROSS CONTROL JOINTS.
5. FOR 12" WALL 2–#5 @ 16" O.C.
6. FOR 12" WALL CORNERS USE 2–#5 THREE CELLS.
7. FOR 12" WALL CONTROL JOINT USE 2–#5 ONE CELL EA SIDE.
8. PROVIDE CONT BOND BEAM AT 4'–0" VERTICAL ALL MASONRY WALL, BOND BEAMS TO BE REINFORCED WITH 2–#5 CONT.
9. PROVIDE STANDARD HOOK AT THE TOP OF ALL VERTICAL REINFORCEMENT BARS.
10. GROUT SOLID ALL MASONRY BELOW GRADE.

FOUNDATION PLAN NOTES:

1. ALL DIMENSIONS ARE TO BE VERIFIED WITH ARCHITECTURAL DRAWING BEFORE CONSTRUCTION IS TO BEGIN. SEE ARCHITECTURAL DRAWING FOR DIMENSIONS NOT SHOWN.
2. SEE 1/S2.1 FOR SLAB ON GRADE CONSTRUCTION JOINT (SJ), CONTROL JOINT, CONTROL JOINT PATTERN TO BE MAXIMUM 15'X15'.
3. PILASTER OR PIERS SHOWN WITHIN CMU WALLS ARE TO EXTEND FROM BEAM/GIRDER BEARING TO TOP OF FTG OR FOUNDATION WALL PILASTER.
4. GENERAL CONTRACTOR TO COORDINATE WITH (MEP) MECHANICAL, ELECTRICAL, AND PLUMBING CONTRACTORS FOR ANY AND ALL LOCATIONS OF SLEEVED OPENINGS IN FOUNDATION WALLS.
5. WHERE SLAB IS SAWCUT FOR INSTALLATION OF NEW PLUMBING/ELECTRICAL WORK PATCH PER DETAIL 4/S2.1.
6. DO NOT BEGIN DEMOLITION OR EXCAVATION WORK UNTIL EXISTING STRUCTURE HAS BEEN ADEQUATELY SHORED TO SUPPORT EVERY LEVEL. SHORING SHALL REMAIN IN PLACE UNTIL ALL NEW STRUCTURAL ELEMENTS SHOWN HAVE BEEN INSTALLED. REFER TO "EXISTING CONSTRUCTION" NOTES ON S0.0 FOR ADDITIONAL REQUIREMENTS.

T/CONC LID 10'–4" AFF
1.5VLI20 DECK w/4.5" CONCRETE (6" TOTAL)
¾"ø HD STUDx5½" QUANTITY AS SHOWN ON PLAN
REINFORCE WITH 6x6xW2.9xW2.9 WWF, FLAT SHEETS ONLY OVER
#4 @ 48"O.C. EW BARS PERPENDICULAR TO FLUTES BOTTOM

DECK FASTENING SHALL BE AS FOLLOWS: ATTACH TO SUPPORTING MEMBER USING HILTI X–ENP19 IN A 3⅜ PATTERN.
SIDE LAP SEAMS TO BE FASTENED WITH BUTTON PUNCHES AT 12" O.C.
PERIMETER SUPPORTS TO BE FASTENED TO STRUCTURE WITH HILTI X–ENP19 @ 12"O.C. ALONG THE FULL LENGTH OF PANEL AND AROUND PERIMETER OF OPENINGS UNLESS NOTED OTHERWISE.




KEY PLAN

NOTE:
1. ⅝"(⁹⁄₃₂") SHEATHING SPANS PERPENDICULAR TO SUPPORTS.
2. COORDINATE MECHANICAL OPENING SUPPORT WITH ARCHITECT/JOISTS SUPPLIER.
3. JOIST SUPPLIER SPECIFY ADDITIONAL BRACING/BRIDGING.
4. JOISTS MANUFACTURE SHALL DESIGN JOISTS FOR UPLIFT, SEE COMPONENT AND CLADDING S001.
5. DO NOT BEGIN DEMOLITION OR EXCAVATION WORK UNTIL EXISTING STRUCTURE HAS BEEN ADEQUATELY SHORED TO SUPPORT EVERY LEVEL. SHORING SHALL REMAIN IN PLACE UNTIL ALL NEW STRUCTURAL ELEMENTS SHOWN HAVE BEEN INSTALLED. REFER TO "EXISTING CONSTRUCTION" NOTES ON S0.0 FOR ADDITIONAL REQUIREMENTS.

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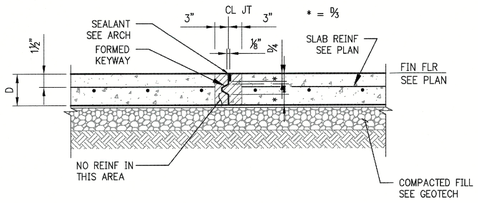
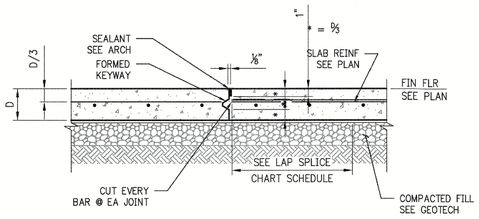
01-22-2024

Sheet Title:
Foundation & Framing Plans

Date: 01/22/2024
Sheet Number:
**S1.1**

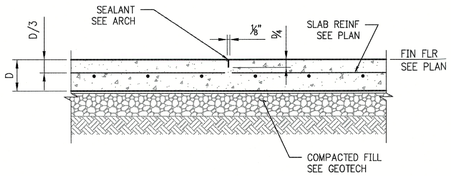



EXPANSION JOINT



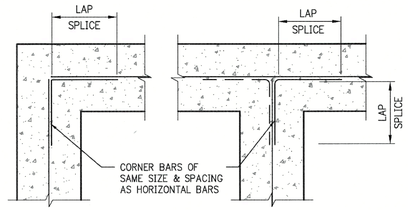

CONSTRUCTION JOINT

## 1 S2.1 DETAIL–TYP SLAB JOINTS
NTS

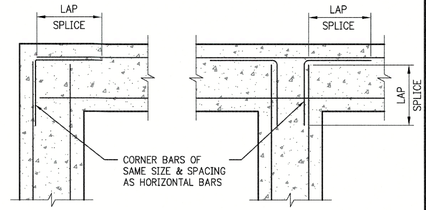



SAWCUT CONTROL JOINT

NOTES
1. SEE FOUNDATION PLAN(S) FOR SLAB THICKNESS AND REINF.
2. CUT EVERY BAR @ EA JOINT.
3. THE SAWCUTTING SHALL BE DONE WITHIN 8 HOURS OF PLACEMENT OR AS SOON AS THE CONCRETE HAS SUFFICIENTLY CURED TO PERMIT CUTTING WITHOUT CHIPPING, SPALLING OR TEARING.



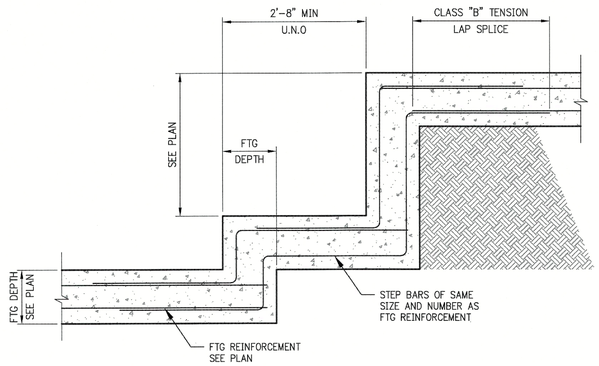

SINGLE LAYER REINFORCEMENT



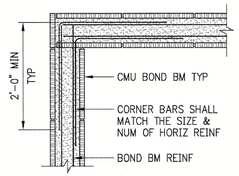

DOUBLE LAYER REINFORCEMENT

NOTE:
ALL LAP SPLICES CLASS "B" TENSION

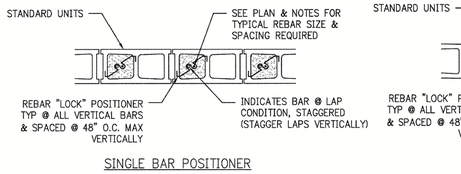
## 2 S2.1 DETAIL – REINFORCING AT CORNERS & INTERSECTIONS
NTS



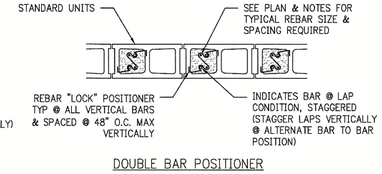

## 3 S2.1 DETAIL–STEPPED FOOTING
NTS




## 4 S2.1 DETAIL–TYP BOND BM CORNER REINF
NTS

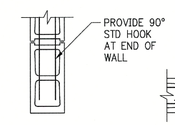



SINGLE BAR POSITIONER

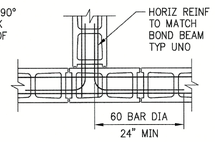



DOUBLE BAR POSITIONER

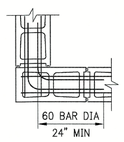
## 5 S2.1 DETAIL–TYP MASONRY WALL REINFORCEMENT POSITIONERS




END OF WALL

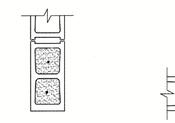



INTERSECTING WALLS

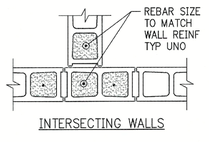



CORNER WALLS

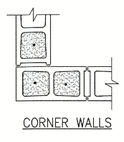
HORIZONTAL REINFORCEMENT



END OF WALL




INTERSECTING WALLS

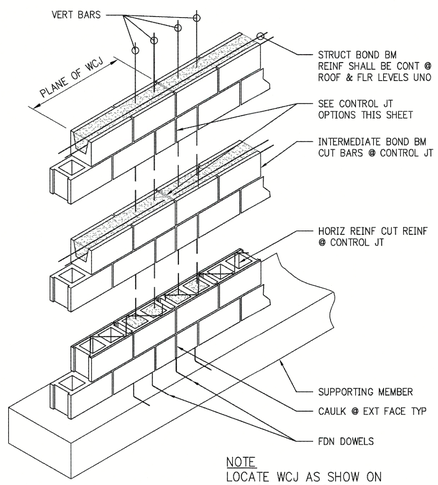


CORNER WALLS

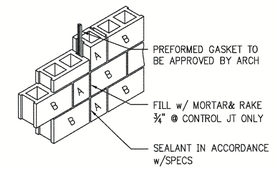
VERTICAL REINFORCEMENT

NOTES
1. REINFORCEMENT SHOWN IS IN ADDITION TO MINIMUM WALL REINFORCEMENT SHOWN IN FOUNDATION DETAILS.
2. REINFORCING TO BE CONTINUOUS FROM FOOTING TO TOP OF WALL. FILL CORES SOLID WITH GROUT AS NOTED IN THE SPECIFICATIONS OR GENERAL NOTES.

## 6 S2.1 DETAIL–TYP CMU WALL INTERSECTIONS
NTS



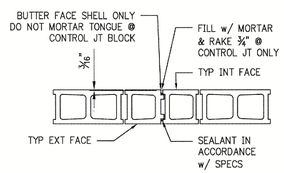

NOTE
LOCATE WCJ AS SHOW ON
FDN OR FRAMING PLAN
MAX 24'–0" SPACING UNO




LEGEND
A = 8" CMU LENGTH
B = 16" CMU LENGTH

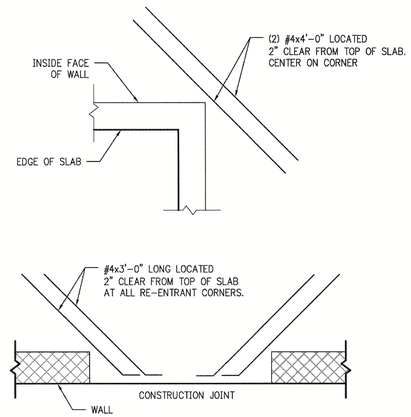
NOTE
USE CMU LENGTHS ABOVE @ INTERIOR PARTITIONS WHEN THEY WORK w/ BLDG DIMENSIONS

TYP WALL CONTROL JOINT–OPTION 1
2–HOUR




TYP WALL CONTROL JOINT–OPTION 2
4–HOUR

## 7 S2.1 DETAIL–TYP CMU WALL CONTROL JOINT (WCJ)
3/4"=1'–0"




## 8 S2.1 DETAIL–TYP RE–ENTRANT CORNER REINF
NTS

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Jacques A. Pierini, PE 2024.02.12 09:43:05 -06'00

CERTIFICATE OF AUTHORIZATION P. E., INC. No. 388 ARKANSAS - ENGINEER

STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.6813 JACQUES A. PIERINI

CERTIFICATE OF AUTHORIZATION LIVE OAK ENGINEERING, INC. No. 1672 ARKANSAS ENGINEER

LIVE OAK ENGINEERING
2509 7TH AVENUE SOUTH
BIRMINGHAM, AL 35233
205.637.3115
LOE# 258–1

HUGHES ARCHITECTURAL DESIGNS
1202 N STATE LINE AVE
SUITE #102
TEXARKANA, AR 71854
501-627-2448
michaelhughes72e77@gmail.com

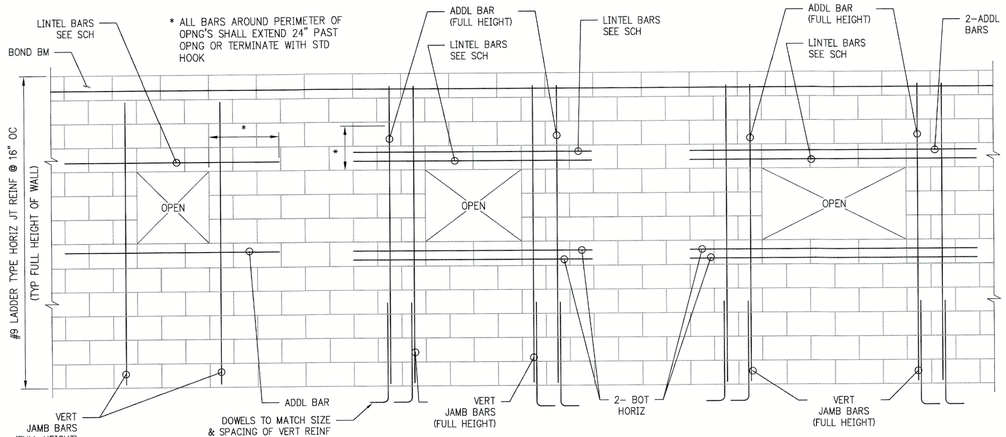
New Storm Shelter Facility for:
**Arkansas Christian Academy**
Bryant, Arkansas

Revisions:

Professional stamp:
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.10449 PATRICK M. PLOURDE
01-22-2024

Sheet Title:
Typical Details

Date: 01/22/2024
Sheet Number:
**S2.1**

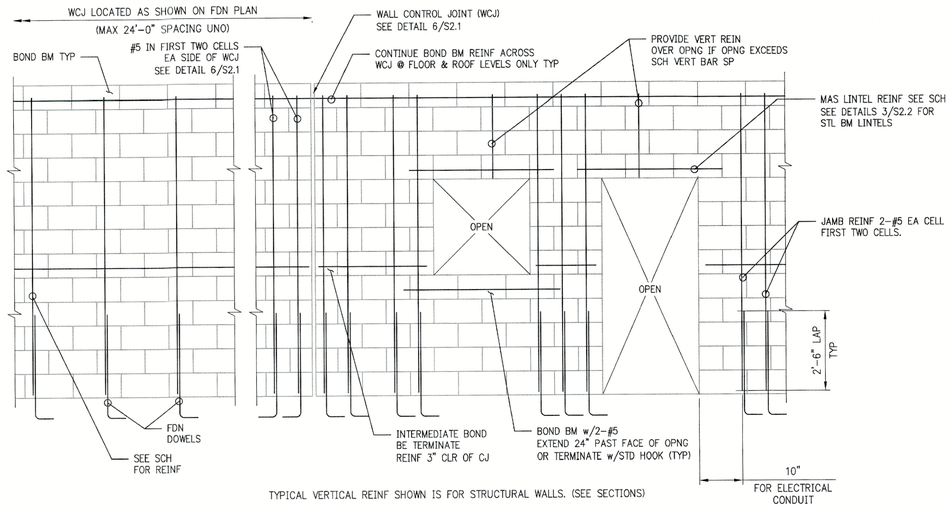



OPENINGS UP TO 3'-0"
FOR OPNGS UP TO 3'-0" OR LESS IN EITHER DIRECTION IN STRUCT PARTITIONS OR EXT WALLS

OPENINGS > 3'-0" BUT < 8'-0"
FOR OPNGS WHICH EXCEED 3'-0" BUT NOT MORE THAN 8'-0" IN EITHER DIRECTION THE ADDL VERT BARS SHALL BE FULL-HEIGHT & DOWELED TO FDN

OPENINGS > 8'-0"
FOR OPNG WHICH EXCEED 8'-0" IN EITHER DIRECTION THE ADDL VERT BARS SHALL BE FULL HEIGHT & DOWELED TO FDN

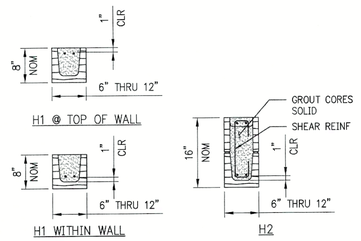
## 1/S2.2 DETAIL-TYP ADDL REINF AROUND WALL OPNGS
NTS




TYPICAL VERTICAL REINF SHOWN IS FOR STRUCTURAL WALLS. (SEE SECTIONS)

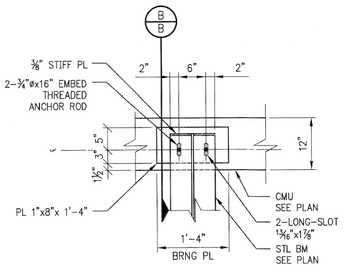
## 2/S2.2 DETAIL-TYP BOND BM, CONTROL JT & WALL REINF
NTS

| HEADER SCHEDULE | | | | |
|---|---|---|---|---|
| MARK | WALL | REINFORCEMENT | SHEAR REINFORCEMENT | REMARKS |
| H1 | 8" | 2-#5 CONT | N/A | - |
| | 12" | 2-#5 CONT | - | - |
| H2 | 8" | 2-#5 CONT T&B | - | - |
| | 12" | 2-#5 CONT T&B | - | - |

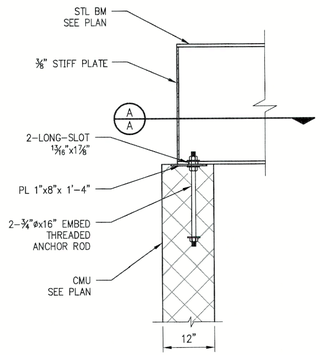



NOTE
1. SEE STRUCT DWGS FOR GENERAL LOCATION OF HEADERS - SEE ARCH FOR SPECIFIC LOCATION & CLEAR SPAN.
2. LINTELS SHALL SPAN CONT BTWN BRNGS EACH SIDE.
3. PROVIDE 8"(MIN) BRNG FOR CLEAR SPAN 8'-0" OR LESS, 16"(MIN) BRNG FOR CLEAR SPAN GREATER THAN 8'-0".
4. EXTEND BOT REINF TO END OF BRNG EACH SIDE - EXTEND TOP REINF WHERE POSSIBLE - BASIC DEVELOPMENT LENGTH - TERMINATE TOP REINF w/STD HOOK AT CONTROL JTS OR FREE EDGES.
5. PROVIDE SOLID GROUTED OF SOLID MAS JAMB UNDER LINTEL EA SIDE OF OPNG FOR CLEAR SPAN GREATER THAN 6'-0".

## 3/S2.2 DETAIL-MASONRY LINTELS
3/4"=1'-0"




A-A




B-B

## 4/S2.2 EXTERIOR CORRIDOR BEARING PLATE
3/4" = 1'-0"

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.6813 JACQUES A. PIERINI


HUGHES ARCHITECTURAL DESIGNS
1202 N STATE LINE AVE
SUITE #102
TEXARKANA, AR 71854
501-627-2448
michaelhughes72e77@gmail.com


New Storm Shelter Facility for:
**Arkansas Christian Academy**
Bryant, Arkansas

Revisions:

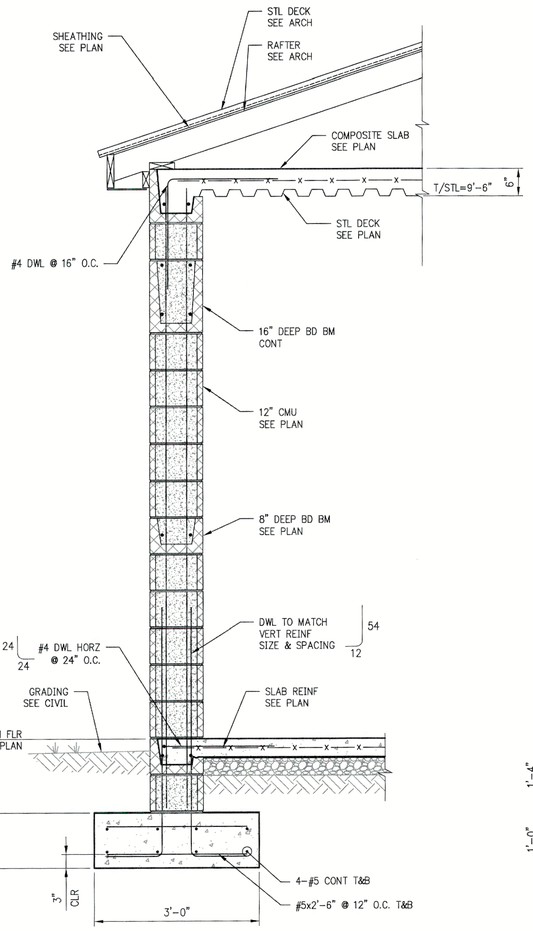
Professional stamp:
STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.10449 PATRICK M. PLOURDE
01-22-2024

Sheet Title:
Typical Details

Date: 01/22/2024
Sheet Number:
**S2.2**

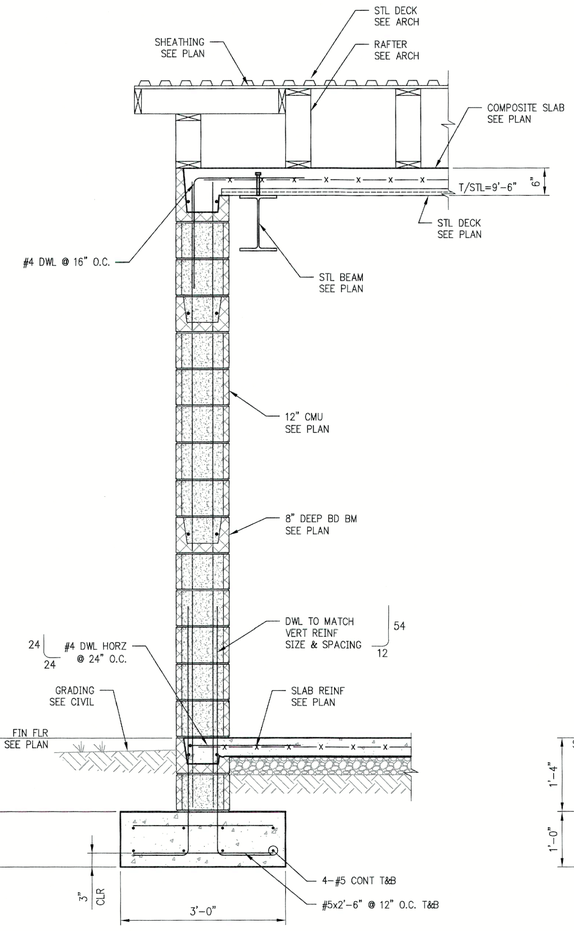

CERTIFICATE OF AUTHORIZATION LIVE OAK ENGINEERING, INC. No. 1672 ARKANSAS ENGINEER
LIVE OAK ENGINEERING
2509 7TH AVENUE SOUTH
BIRMINGHAM, AL 35233
205.637.3115
LOE# 258-1

NOTE:
WOOD TRUSS BY OTHERS.
WOOD TRUSS CONNECTION BY OTHERS.



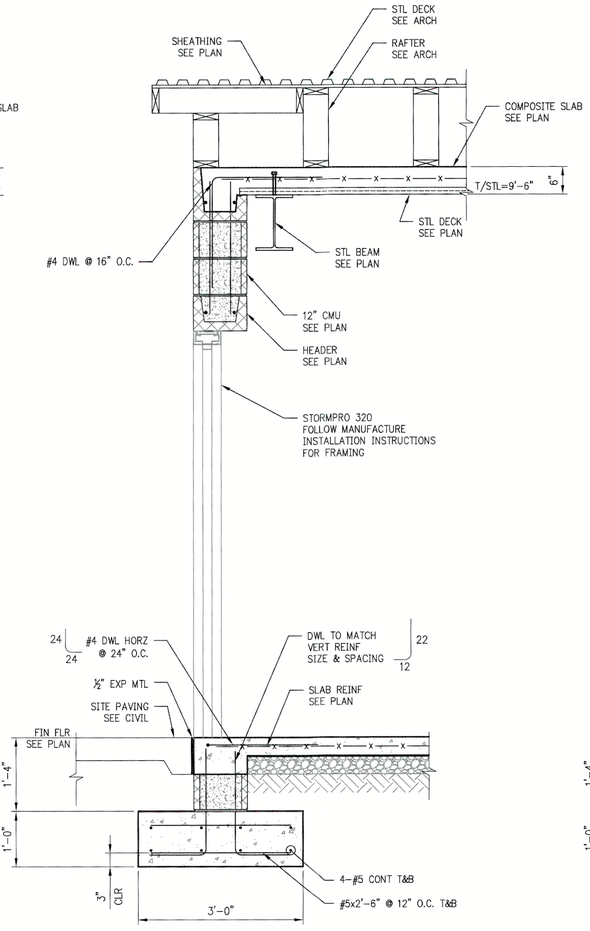

1 S3.1 SECTION
3/4"=1'-0"

NOTE:
WOOD TRUSS BY OTHERS.
WOOD TRUSS CONNECTION BY OTHERS.



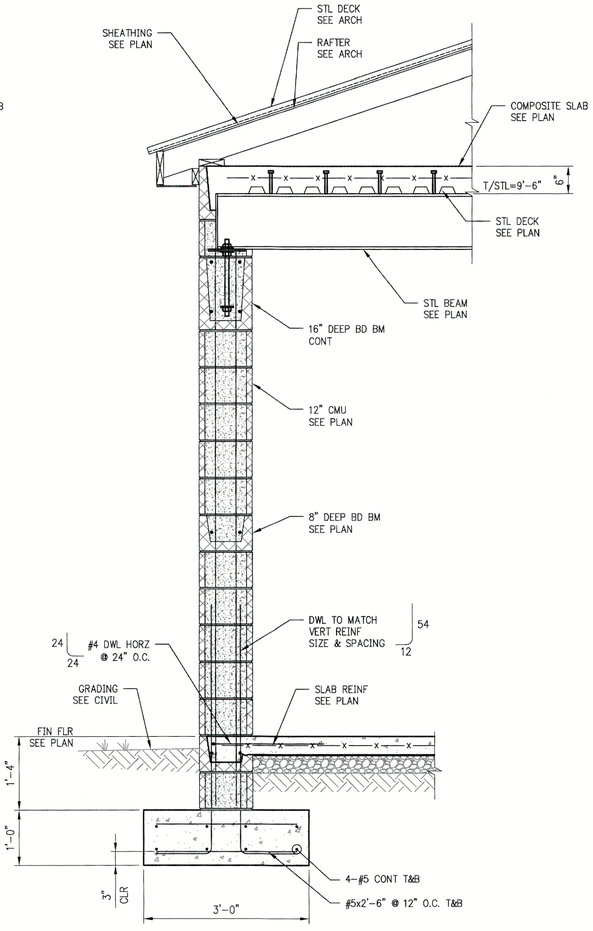

2 S3.1 SECTION
3/4"=1'-0"

NOTE:
WOOD TRUSS BY OTHERS.
WOOD TRUSS CONNECTION BY OTHERS.




3 S3.1 SECTION
3/4"=1'-0"

NOTE:
WOOD TRUSS BY OTHERS.
WOOD TRUSS CONNECTION BY OTHERS.




4 S3.1 SECTION
3/4"=1'-0"

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Jacques A. Pierini, PE 2024.02.12 09:51:12 -06'00

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STATE OF ARKANSAS REGISTERED PROFESSIONAL ENGINEER No.6813 JACQUES A. PIERINI

CERTIFICATE OF AUTHORIZATION LIVE OAK ENGINEERING, INC. No. 1672 ARKANSAS ENGINEER


HUGHES
ARCHITECTUR
DESIGN
1202 N STATE LINE A
SUITE #102
TEXARKANA, AR 71
501-627-2448
michaelhughes72s77@gmai


New Storm Shelter Facility for:
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01-22-2024

Sheet Title:
Framing Sections

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**S3.1**


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2509 7TH AVENUE SOUTH
BIRMINGHAM, AL 35233
205.637.3115
LOE# 256-1