

WIND DESIGN

ASCE 7 -16	
Risk Category	III
Exposure Category	C
Wind Speed (mph)	160 mph
Directionality (Kd)	0.85
Mean Roof Ht (h)	16.5
Parapet ht above grd	24
Enclosure Classif.	Enclosed Building
Internal pressure	0.18
a =	4.6 ft
Minimum parapet height at building perimeter =	3.50 ft
Roof Angle	1.2 deg

Type of roof MONOSLOPE

COMPONENTS & CLADDING

ULTIMATE LOADS:

Basic Wind speed		160.0 mph		(LRFD)	
Base pressure (qb) =		36.4 psf		(LRFD)	
Surface Pressure (psf) - LRFD Values					
Roof Area	10 sf	20 sf	50 sf	100 sf	200 sf
Negative Zone 1	-43.0 psf	-41.9 psf	-40.4 psf	-39.3 psf	-39.3 psf
Negative Zone 2	-72.1 psf	-64.4 psf	-54.9 psf	-46.6 psf	-46.6 psf
Negative Zone 3	-72.1 psf	-64.4 psf	-54.3 psf	-46.6 psf	-46.6 psf
Positive All Zones	17.5 psf	16.4 psf	16.0 psf	16.0 psf	16.0 psf
Overhang Zone 2	-61.9 psf	-60.8 psf	-59.4 psf	-58.3 psf	-50.4 psf
Overhang Zone 3	-61.9 psf	-60.8 psf	-59.4 psf	-58.3 psf	-50.4 psf

Surface Pressure (psf) - LRFD Values					
Walls Area	10 sf	20 sf	50 sf	100 sf	500 sf
Negative Zone 4	-42.6 psf	-40.9 psf	-38.6 psf	-36.8 psf	-32.8 psf
Negative Zone 5	-52.4 psf	-48.9 psf	-44.3 psf	-40.9 psf	-32.8 psf
Positive Zone 4 & 5	39.3 psf	37.6 psf	35.3 psf	33.5 psf	29.5 psf

NOTE: GCP REDUCED BY 10% DUE TO ROOF ANGLE <= 10 DEG.

Surface Pressure (psf) - LRFD Values					
Parapets Area	10 sf	50 sf	100 sf	500 sf	
Positive Interior (Zone 4)	106.4 psf	82.7 psf	72.5 psf	68.2 psf	
Positive Corner (Zone 5)	106.4 psf	82.7 psf	72.5 psf	68.2 psf	
Negative Interior (Zone 4)	-74.5 psf	-65.7 psf	-61.9 psf	-53.2 psf	
Negative Corner (Zone 5)	-85.1 psf	-72.0 psf	-66.3 psf	-53.2 psf	

SERVICE LOADS:

Basic Wind speed		107.7 mph		(ASD)	
Base pressure (qb) =		21.8 psf		(ASD)	
Surface Pressure (psf) - ASD Values					
Roof Area	10 sf	20 sf	50 sf	100 sf	200 sf
Negative Zone 1	-25.8 psf	-25.1 psf	-24.3 psf	-23.6 psf	-23.6 psf
Negative Zone 2	-43.3 psf	-38.7 psf	-32.6 psf	-28.0 psf	-28.0 psf
Negative Zone 3	-43.3 psf	-38.7 psf	-32.6 psf	-28.0 psf	-28.0 psf
Positive All Zones	10.5 psf	9.8 psf	9.6 psf	9.6 psf	9.6 psf
Overhang Zone 2	-37.1 psf	-36.5 psf	-35.6 psf	-35.0 psf	-30.3 psf
Overhang Zone 3	-37.1 psf	-36.5 psf	-35.6 psf	-35.0 psf	-30.3 psf

NOTE: GCP REDUCED BY 10% DUE TO ROOF ANGLE <= 10 DEG.

Surface Pressure (psf) - ASD Values					
Walls Area	10 sf	20 sf	50 sf	100 sf	500 sf
Negative Zone 4	-25.6 psf	-24.5 psf	-23.1 psf	-22.1 psf	-19.7 psf
Negative Zone 5	-31.5 psf	-29.4 psf	-26.9 psf	-24.5 psf	-19.7 psf
Positive Zone 4 & 5	23.6 psf	22.6 psf	21.2 psf	20.1 psf	17.7 psf

Surface Pressure (psf) - ASD Values					
Parapets Area	10 sf	50 sf	100 sf	500 sf	
Positive Interior (Zone 4)	63.8 psf	49.6 psf	43.5 psf	40.9 psf	
Positive Corner (Zone 5)	63.8 psf	49.6 psf	43.5 psf	40.9 psf	
Negative Interior (Zone 4)	-44.7 psf	-39.4 psf	-37.2 psf	-31.9 psf	
Negative Corner (Zone 5)	-51.1 psf	-43.2 psf	-39.8 psf	-31.9 psf	

Note: Pressures listed above are in both values, Ultimate (LRFD) & Service or Nominal (ASD) which have been obtained by multiplying Ultimate values by 0.6. Use service values (ASD) for Wind Resistance Testing Compliance per FBC 1609.1.5

NET UPLIFT PRESSURES

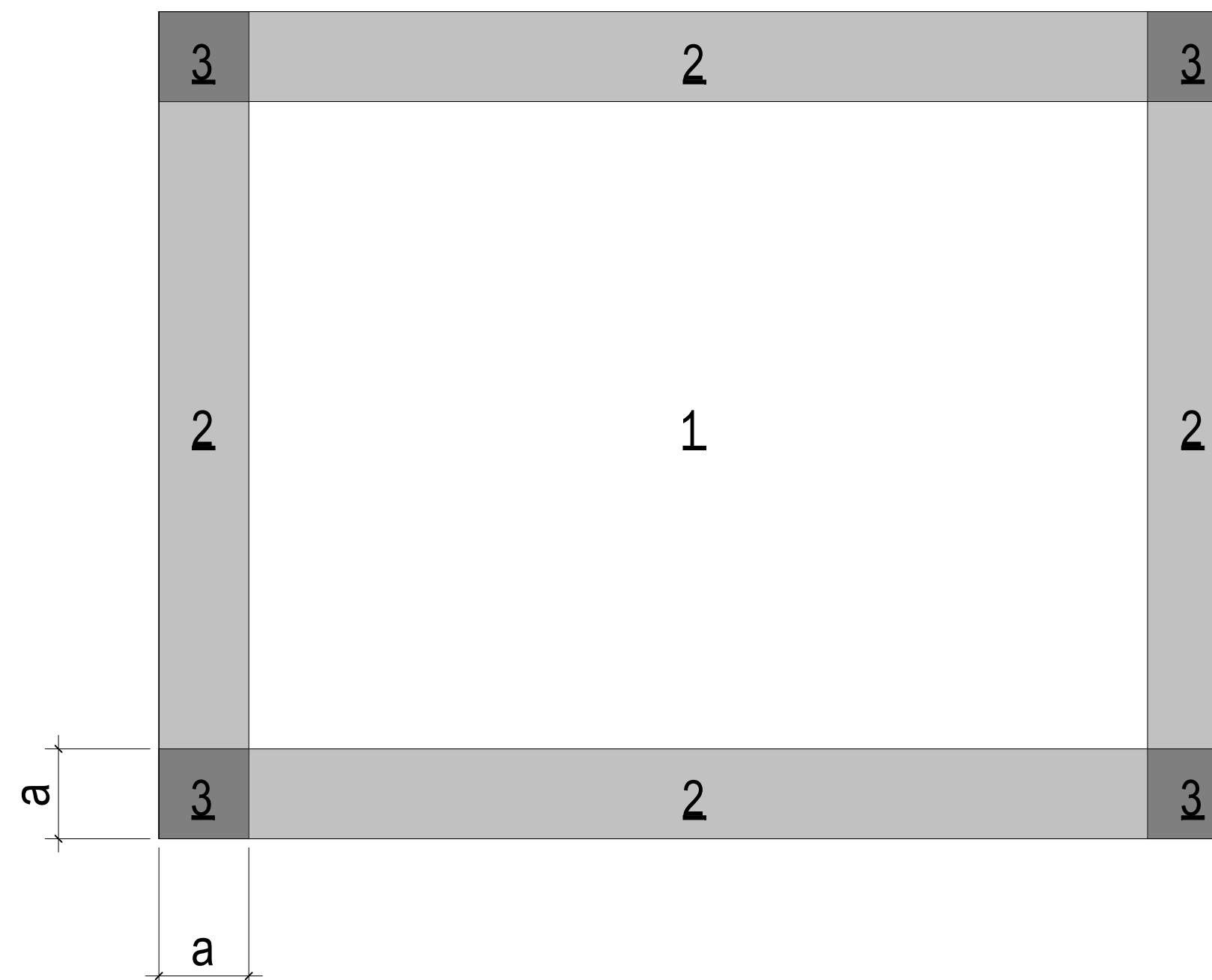
JOIST NET UPLIFT SURFACE PRESSURE (psf) - LRFD VALUES					
Area	10 sf	20 sf	50 sf	100 sf	200 sf
Negative Zone 1	-40.0 psf	-38.9 psf	-37.4 psf	-36.3 psf	-36.3 psf
Negative Zone 2	-69.1 psf	-61.4 psf	-51.3 psf	-43.6 psf	-43.6 psf
Negative Zone 3	-39.1 psf	-61.4 psf	-51.3 psf	-43.6 psf	-43.6 psf

GIRDER NET UPLIFT SURFACE PRESSURE (psf) - LRFD VALUES					
Area	10 sf	20 sf	50 sf	100 sf	500 sf
Negative Zone 1	-38.0 psf	-36.9 psf	-35.4 psf	-34.3 psf	-34.3 psf
Negative Zone 2	-67.1 psf	-59.4 psf	-49.3 psf	-41.6 psf	-41.6 psf
Negative Zone 3	-67.1 psf	-59.4 psf	-49.3 psf	-41.6 psf	-41.6 psf

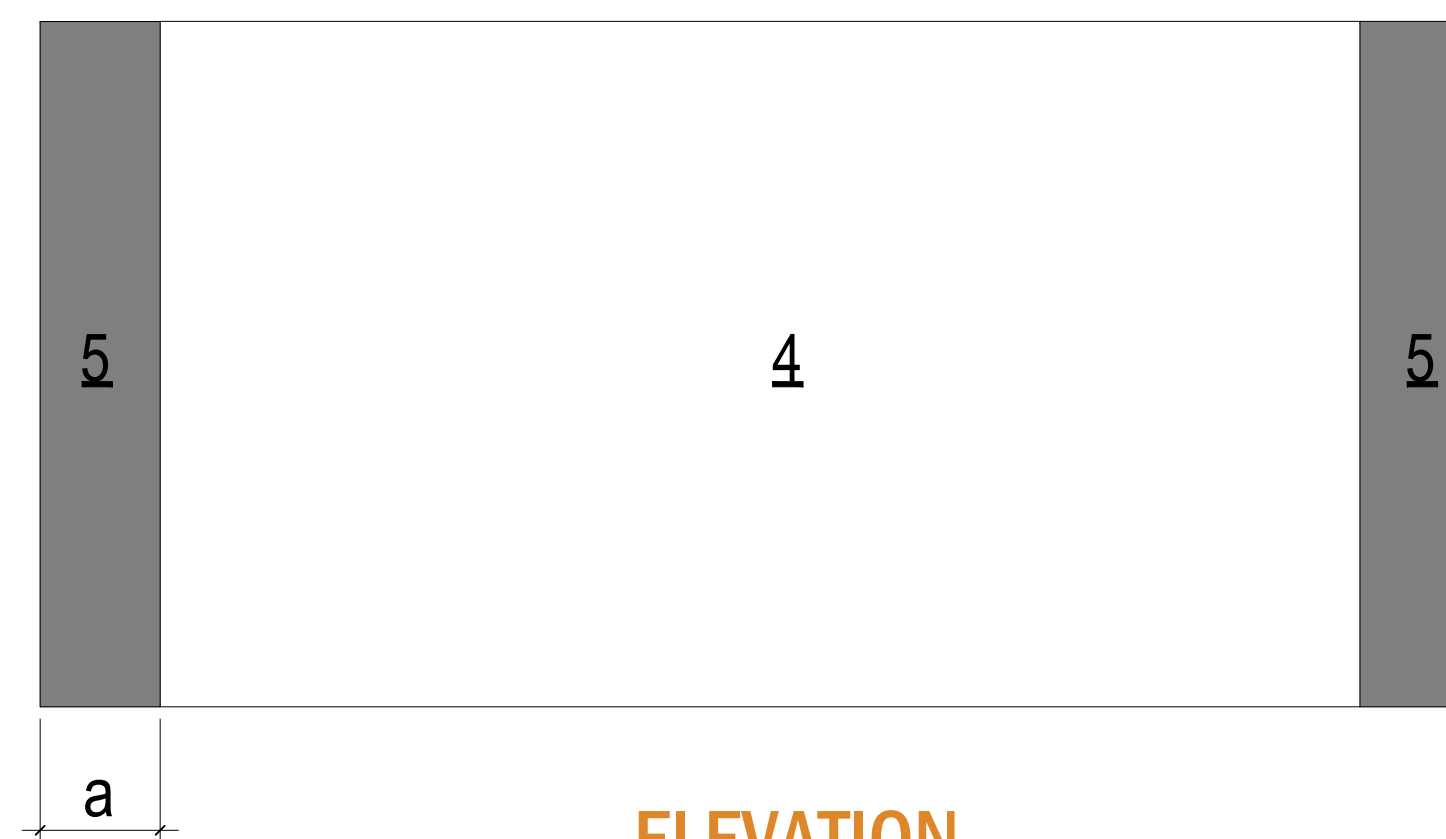
JOIST NET UPLIFT SURFACE PRESSURE (psf) - ASD VALUES					
Area	10 sf	20 sf	50 sf	100 sf	500 sf
Negative Zone 1	-23.8 psf	-23.1 psf	-22.3 psf	-21.6 psf	-21.6 psf
Negative Zone 2	-41.3 psf	-36.7 psf	-30.6 psf	-26.0 psf	-26.0 psf
Negative Zone 3	-41.3 psf	-36.7 psf	-30.6 psf	-26.0 psf	-26.0 psf

GIRDER NET UPLIFT SURFACE PRESSURE (psf) - ASD VALUES					
Area	10 sf	20 sf	50 sf	100 sf	500 sf
Negative Zone 1	-22.8 psf	-22.1 psf	-21.3 psf	-20.6 psf	-20.6 psf
Negative Zone 2	-40.3 psf	-35.7 psf	-29.6 psf	-25.0 psf	-25.0 psf
Negative Zone 3	-40.3 psf	-35.7 psf	-29.6 psf	-25.0 psf	-25.0 psf

COMPONENTS & CLADDING PRESSURES - MAIN BLDG.



PLAN



ELEVATION

COMPONENTS & CLADDING ZONES - PLAN VIEW & WALL ELEVATION



1900 MARKET STREET ©2023
PHILADELPHIA, PA 19103

2023.08.23

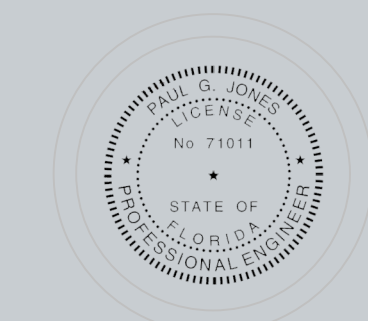
PROJECT:
**STRUCTURAL
DRAWINGS FOR ST.
KATHERINE'S CHURCH**

7100 AIRPORT-PULLING ROAD,
NAPLES, FL 34109

DATE: 08/23/2023
PROJECT NO.: 23-0044

REVISION DATE

NOTES:



PROFESSIONAL ENGINEER SEAL
STATE OF FLORIDA

WIND DESIGN CRITERIA

SCALE: AS NOTED

S-101

DRAWN BY: JM
CHECKED BY: PJ

SPECIFICATIONS

SECTION 013300 - SUBMITTAL PROCEDURES

1.1 DEFINITIONS

- A. **Action Submittals:** Written and graphic information and physical samples that require Engineer's and Construction Manager's responsive action. Action submittals are those submittals indicated in Individual Specification Sections as "action submittals."
- B. **Informational Submittals:** Written and graphic information and physical samples that do not require Engineer's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in Individual Specification Sections as "informational submittals."

1.2 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. **Coordination:** Coordinate preparation and processing of submittals with performance of construction activities.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
- a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. **Processing Time:** Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- C. **Distribution:** Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
- D. **Use for Construction:** Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's and Construction Manager's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. **General Submittal Procedure Requirements:** Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in Individual Specification Sections.
- B. **Product Data:** Collect information into a single submittal for each element of construction and type of product or equipment.
- C. **Shop Drawings:** Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
- D. **Welding Certificates:** Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- E. **Installer Certificates:** Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- F. **Manufacturer Certificates:** Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- G. **Product Certificates:** Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- H. **Material Certificates:** Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- I. **Material Test Reports:** Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- J. **Product Test Reports:** Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- K. **Field Test Reports:** Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

2.2 DELEGATED-DESIGN SERVICES

- A. **Performance and Design Criteria:** Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Engineer.
- B. **Delegated-Design Services Certification:** In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and permit required paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

- A. **Testing and inspecting services** are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1.1 DEFINITIONS

- A. **Quality-Assurance Services:** Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. **Quality-Control Services:** Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer or Construction Manager.
- C. **Preconstruction Testing:** Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. **Field Quality-Control Testing:** Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- E. **Testing Agency:** An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.2 CONFLICTING REQUIREMENTS

- A. **Referenced Standards:** If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. **Minimum Quantity or Quality Levels:** The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.3 REPORTS AND DOCUMENTS:

Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections.

1.4 QUALITY ASSURANCE

- A. **General:** Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
 1. Portland Cement: ASTM C 150/C 150M, Type I/II.
 2. Fly Ash: ASTM C 618, Class F or C.
 3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
 4. Blended Hydraulic Cement: ASTM C 595/C 595M.
- B. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. **Fabricator Qualifications:** A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. **Installer Qualifications:** A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. **Professional Engineer Qualifications:** A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. **Testing Agency Qualifications:** An independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- G. **Manufacturer's Technical Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. **Preconstruction Testing:** Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer, through Construction Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.5 QUALITY CONTROL

- A. **Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
- B. **Contractor Responsibilities:** Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
 1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. **Retesting/Reinspecting:** Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

- A. **Product Data:** For each type of product.
- B. **Design Mixtures:** For each concrete mixture.
- C. **Steel Reinforcement Shop Drawings:** Placing Drawings that detail fabrication, bending, and placement.

1.2 INFORMATIONAL SUBMITTALS:

Material certificates and test reports.

1.3 QUALITY ASSURANCE:

Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1.4 PRECONSTRUCTION TESTING:

Engage a qualified testing agency (according to ASTM C 1017 and ASTM E 329) to perform preconstruction testing on concrete试件.

1.5 FIELD CONDITIONS:

Cold-Weather Placement: Comply with ACI 306.1. Hot-Weather placement: Comply with ACI 301 (ACI 301M).

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL:

Comply with the following unless modified by requirements in the Contract Documents: ACI 301 (ACI 301M) and ACI 117 (ACI 117M).

2.2 STEEL REINFORCEMENT

- A. **Reinforcing Bars:** ASTM A 615, Grade 60, deformed.
 - B. **Plain-Steel Welded-Wire Reinforcement:** ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.
 - C. **Bar Supports:** Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."
- ##### 2.3 CONCRETE MATERIALS
- A. **Cementitious Materials:**
 1. Portland Cement: ASTM C 150/C 150M, Type I/II.
 2. Fly Ash: ASTM C 618, Class F or C.
 3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
 4. Blended Hydraulic Cement: ASTM C 595/C 595M.
 - B. **Normal-Weight Aggregates:** ASTM C 231/C 231M, graded.
 - C. **Air-Entraining Admixture:** ASTM C 260/C 260M.
 - D. **Chemical Admixtures:** Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - E. **Water:** ASTM C 94/C 94M.

2.4 FIBER REINFORCEMENT:

Synthetic Micro-Fiber: Micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III.

2.5 VAPOR RETARDERS:

Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils (0.25 mm) thick.

2.6 EXPANSION- AND ISOLATION-JOINT FILLER STRIPS:

ASTM D 1751, asphalt-saturated cellulose fiber or ASTM D 1752, cork or self-expanding cork.

2.7 CONCRETE MIXTURES, GENERAL

- A. **Prepare design mixtures** for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301 (ACI 301M).
- B. **Admixtures:** Use admixtures according to manufacturer's written instructions.

2.8 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. **Normal-Weight Concrete:**
 1. Minimum Compressive Strength, (f'_c): See General Notes.
- ##### 2.9 FABRICATING REINFORCEMENT
- A. **Fabricate steel reinforcement** according to CRSI's "Manual of Standard Practice."
- ##### 2.10 CONCRETE MIXING:

Comply with the following unless modified by requirements in the Contract Documents: ACI 301 (ACI 301M) and ACI 117 (ACI 117M).

PART 1 - EXECUTION

3.1 FORMWORK INSTALLATION

- A. **Design, erect, shore, brace, and maintain formwork**, according to ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. **Construct formwork** so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M).
- C. **2.2 EMBEDDED ITEM INSTALLATION:** Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.6 CONCRETE PLACEMENT:

Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

3.7 FINISHING FLOORS AND SLABS:

Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

3.8 CONCRETE PROTECTING AND CURING:

Cure concrete according to ACI 308. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 (ACI 301M) for hot-weather protection during curing.

3.9 FIELD QUALITY CONTROL:

Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 COORDINATION

- A. **Coordinate selection of shop primers** with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. **Coordinate installation of anchorage items** to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.2 ACTION SUBMITTALS

- A. **Product Data:** For each type of product.
 1. Shop Drawings: Show fabrication of structural-steel components.
 1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 2. Include embedment Drawings.
 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
 4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
- C. **Delegated-Design Submittal:** For structural-steel connections indicated to comply with design loads, include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 QUALITY ASSURANCE

- A. **Fabricator Qualifications:** A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD, or is accredited by the IAS Fabricator Inspection Program for Structural Steel (AC 172).
- B. **Installer Qualifications:** A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector.
- C. **Welding Qualifications:** Qualify procedures and personnel according to AWS D1.1/D1.1M/D1.8 (Seismic) "Structural Welding Code - Steel."
- D. **Comply with applicable provisions** of the following specifications and documents:
 1. AISC 303-05, "Code of Standard Practice for Steel Buildings & Bridges."
 2. AISC 360-05, "Specification for Structural Steel Buildings."
 3. AISC 341-05, "Seismic Provisions for Structural Steel Buildings."
 4. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. **Connections:** Provide details of connections required by the Contract Documents to be selected or completed by structural-steel fabricator.
- B. **Moment Connections:** Type FR, fully restrained.

2.2 STRUCTURAL-STEEL MATERIALS

- A. **WT-Shapes, Channels, Angles, Plate, and Bar:** ASTM A 36/A 36M Sections: ASTM A992 (50ksi) Pipe Sections: ASTM A53 Grade B (35 ksi) Tube Sections: ASTM A500 Grade B (46 ksi) HSS Sections: ASTM A1085
- B. **Welding Electrodes:** Comply with AWS requirements.

2.3 BOLTS, CONNECTORS, AND ANCHORS

- A. **High-Strength Bolts, Nuts, and Washers:** ASTM A 325 (ASTM A 325M), Type 1, heavyhex steel structural bolts; ASTM A 563, Grade C, (ASTM A 563M, Class BS) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers; with plain finish.
- B. **Anchor Rods:** ASTM F 1554, Grade 55, weldable.
 1. Configuration: Straight.
 2. Nuts: ASTM A 563 (ASTM A 563M) hex carbon steel.
 3. Plate Washers: ASTM A 36/A 36M carbon steel.
 4. Washers: ASTM F 436 (ASTM F 436M), Type 1, hardened carbon steel.
 5. Finish: Hot-dip zinc coating; ASTM A 153/A 153M, Class C.

2.4 PRIMER:

Fabricator's standard lead- and chromate-free, nonaphalitic, rust-inhibiting primer complying with MFH79 and compatible with topcoat.

2.5 GROUT:

Shrinkage-Resistant Grout: ASTM C 1107/C 1107M

2.6 FABRICATION:

Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.

2.7 GALVANIZING:

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.

2.8 SOURCE QUALITY CONTROL:

Engage a qualified testing agency to perform shop tests and inspections. Bolted Connections: inspect shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts." Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION:

Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION:

Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION

Set structural steel accurately in locations and at elevations indicated and according to AISC 303 and AISC 360.

B. Baseplates, Bearing Plates, and Leveling Plates:

Place concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

C. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

3.4 REPAIRS AND PROTECTION

- A. **Galvanized Surfaces:** Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780/A 780M.
- B. **Touchup Painting:** Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touchup up shop-painted surfaces.

SECTION 052100 - STEEL JOIST FRAMING

PART 1 - GENERAL

1.1 DEFINITIONS

- A. **SJI's "Specifications":** Steel Joist Institute's "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."
- B. **Special Joists:** Steel joists or joist girders requiring modification by manufacturer to support nonuniform, unequal, or special loading conditions that invalidate load tables in SJI's "Specifications."

1.2 ACTION SUBMITTALS

- A. **Product Data:** For each type of joist, accessory, and product.
 1. Shop Drawings:
 1. Include layout, designation, number, type, location, and spacing of joists.
 2. Include joining and anchorage details, bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.
 3. Indicate locations and details of bearing plates to be embedded in other construction.
- B. **Shop Drawings:**
 1. Include layout, designation, number, type, location, and spacing of joists.
 2. Include joining and anchorage details, bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.
 3. Indicate locations and details of bearing plates to be embedded in other construction.

1.3 INFORMATIONAL SUBMITTALS:

A. Comprehensive engineering analysis of special joists signed and sealed by the qualified professional engineer responsible for its preparation.

1.4 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** A manufacturer certified by SII to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications".
 1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.
- B. **Welding Qualifications:** Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.5 DELIVERY, STORAGE, AND HANDLING:

A. Deliver, store, and handle joists as recommended in SJI's "Specification

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. **Structural Performance:** Provide special joists and connections capable of withstanding design loads indicated.
 1. Use UFD.
 2. Design special joists to withstand design loads with live-load deflections no greater than span/360.

2.2 K-SERIES STEEL JOISTS

- A. **Manufacture steel joists** of type indicated according to "Standard Specifications for Open-Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottomchord members, underslag ends, and parallel top chord.
- B. **Steel Joist Substitutes:** Manufacture according to "Standard Specifications for Open-Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.
- C. **Top Chord Extensions:** Extend top chords of joists with SJI's Type S top-chord extensions where indicated, complying with SJI's "Specifications."
- D. **Extended Ends:** Extend bearing ends of joists with SJI's Type R extended ends where indicated, complying with SJI's "Specifications."
- E. **Equip bearing ends of joists** with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.3 LONG-SPAN STEEL JOISTS

- A. **Manufacture steel joists** according to "Standard Specifications for Longspan Steel Joists, LH-Series and Deep Longspan Steel Joists, DLH-Series" in SJI's "Specifications." LH- and DLH-series joists are available parallel, pitched one way, or pitched two ways. SJI's load tables are based on a standard pitch of 1/8 inch per 12 inches (1.96). Coordinate with roof-slope requirements.
- B. **Camber long-span steel joists** according to SJI's "Specifications" or as indicated on the framing plans.
- C. **Equip bearing ends of joists** with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.4 JOIST GIRDERS

- A. **Manufacture joist girders** according to "Standard Specifications for Joist Girders" in SJI's "Specifications".
- B. **Camber joist girders** according to SJI's "Specifications" or as indicated on the framing plans.
- C. **Equip bearing ends of joists** with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.5 PRIMERS:

Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.

2.6 JOIST ACCESSORIES

- A. **Bridging:** Schematically indicated. Detail and fabricate according to SJI's "Specifications". Furnish additional erection bracing if required for stability.
- B. **Fabricate steel bearing plates** from ASTM A 36/A 36M steel with integral anchorages of sizes and thicknesses indicated. Shop prime paint.
- C. **High-Strength Bolts, Nuts, and Washers:** ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
- D. **Welding Electrodes:** Comply with AWS standards.
- E. **Furnish miscellaneous accessories** including splice plates and bolts required by joist manufacturer to complete joist assembly.

PART 3 - EXECUTION

3.1 EXAMINATION:

Examine supporting substrates, embedded bearing plates, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

SPECIFICATIONS [continued]

SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Shop Drawings: Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.2 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of steel deck.
- B. Product Test Reports: power-actuated mechanical fasteners.

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

1.4 DELIVERY, STORAGE, AND HANDLING: A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

2.2 ROOF DECK

- A. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
 1. Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33
 2. Deck Profile: Type WR, wide rib.
 3. Profile Depth: 1-1/2 inches.
 4. Span Condition: Triple span or more.
 5. Side Laps: Overlapped.

PART 3 - EXECUTION

3.1 EXAMINATION: Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL: Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions.

3.3 ROOF DECK INSTALLATION

- A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches (38 mm) long, and as follows:
 1. Weld Diameter: 5/8 inch, nominal.
 2. Weld Spacing: as indicated on framing plans.
 3. Weld Washers: Install weld washers at each weld location.

- B. Side-Lap and Perimeter Edge Fastening: as indicated on framing plans.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches.

SECTION 054000 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

- A. Product Data: For each type of cold-formed steel framing product and accessory.

1.2 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each listed product, for tests performed by a qualified testing agency.
 1. Steel sheet.
 2. Expansion anchors.
 3. Powder-actuated anchors.
 4. Mechanical fasteners.
 5. Vertical deflection clips.
 6. Horizontal drift deflection clips.
 7. Miscellaneous structural clips and accessories.
- B. Research Reports: For non-standard cold-formed steel framing, from ICC-ES.

1.3 DELIVERY, STORAGE, AND HANDLING: A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

2.2 COLD-FORMED STEEL FRAMING, GENERAL: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight G60.

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
 1. Minimum Base-Metal Thickness: 18 GA, minimum or as indicated by Specialty Engineer.
 2. Minimum Flange Width: 1.5/8 inches.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:
 1. Minimum Base-Metal Thickness: Matching steel studs.
 2. Minimum Flange Width: 1-1/4 inches.

2.3 NON-LOAD-BEARING WALL FRAMING

- A. Vertical Deflection Clips: Manufacturer's standard clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.

- B. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure.

- C. Double Deflection Tracks: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; unpunched, with unstiffened flanges.

- D. Drift Clips: Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure through positive mechanical attachment to stud web and structure.

2.4 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated.

2.5 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon- steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC109 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488 conducted by a qualified testing agency.
- D. Powder-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES ACTO, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.
- E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
- F. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 2, ASTM A 780.
- B. Shims: Load bearing, high-density multimonomer plastic, and nonleaching; or of coldformed steel of same grade and coating as framing members supported by shims.
- C. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.7 FABRICATION

- A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, and manufacturer's written instructions.

- B. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 2. Squaresness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION: Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 PREPARATION

- A. Install load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.

3.3 INSTALLATION, GENERAL

- A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed steel framing according to AISI S200 and to manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
- D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.
- H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

PART 3 - EXECUTION - CONTINUED

3.4 WALL INSTALLATION - NON-LOAD BEARING

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:
 1. Stud Spacing: 16 inches or as indicated by Specialty Engineer.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
- E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Drawings but not more than 48 inches apart. Fasten at each stud intersection.
 1. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 12 inches of single deflection track. Install a combination of bridging and stud or studtrack solid blocking of width and thickness matching studs, secured to stud webs or flanges.
 2. Bridging: Combination of flat, bar, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 3. Optional Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.
- F. Install miscellaneous framing and connectors, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

SECTION 054400 - COLD-FORMED METAL TRUSSES

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel trusses; fabrication; and fastening and anchorage details, including mechanical fasteners.
 2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
- C. Delegated-Design Submittal: For cold-formed steel trusses.

1.2 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed steel trusses from corrosion, deformation, and other damage during delivery, storage, and handling.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer licensed in the project location to design cold-formed steel framing.
- B. Structural Performance: Provide cold-formed steel trusses capable of withstanding design loads within limits and under conditions indicated.
 1. Design Loads: As indicated.
 2. Deflection Limits: Design trusses to withstand design loads without deflections greater than the following:
 - a. Roof Trusses: Vertical deflection of 1/360 of the span.
 - b. Scissor Roof Trusses: Horizontal deflection of 1-1/4 inches at reactions.
 3. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F (67 deg C).

2.2 ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, structural grade, Type H, metallic coated, of same grade and coating weight used for truss members.
 - B. Provide accessories of manufacturer's standard thickness and configuration unless otherwise indicated.
- 2.3 ANCHORS, CLIPS, AND FASTENERS
 - A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
 - B. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, selftapping steel drill screws.
 - C. Welding Electrodes: Comply with AWS standards.
 - 2.4 MISCELLANEOUS MATERIALS
 - A. Galvanizing Repair Paint: SSPC-Paint 20, ASTM A 780.
 - B. Shims: Load bearing, of high-density multimonomer plastic, nonleaching; or of coldformed steel of same grade and coating as framing members supported by shims.

2.2 ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, structural grade, Type H, metallic coated, of same grade and coating weight used for truss members.
- B. Provide accessories of manufacturer's standard thickness and configuration unless otherwise indicated.

2.3 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- B. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, selftapping steel drill screws.
- C. Welding Electrodes: Comply with AWS standards.

2.4 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20, ASTM A 780.
- B. Shims: Load bearing, of high-density multimonomer plastic, nonleaching; or of coldformed steel of same grade and coating as framing members supported by shims.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates and abutting cold-formed steel trusses for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install, brace, and brace cold-formed steel trusses according to AISI S200, AISI S214, AISI's "Code of Standard Practice for Cold-Formed Steel Structural Framing," and manufacturer's written instructions unless more stringent requirements are indicated.
- B. Install cold-formed steel trusses and accessories plumb, square, and true to line, and with connections securely fastened.
 1. Fasten cold-formed steel trusses by welding or mechanical fasteners.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings; comply with requirements for spacing, edge distances, and screw penetration.
 - C. Install temporary bracing and supports. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
 - D. Do not alter, cut, or remove framing members or connections of trusses.
 - E. Erect trusses with plane of truss webs plumb and parallel to each other, align, and accurately position at spacings indicated.
 - F. Erect trusses without damaging framing members or connections.
 - G. Coordinate with wall framing to align webs of bottom chords and load-bearing studs or continuously reinforce track to transfer loads to structure. Anchor trusses securely at all bearing points.
 - H. Install continuous bridging and permanently brace trusses as indicated on Shop Drawings and designed according to CFSI's TechNote 551a, "Design Guide: Permanent Bracing of Cold-Formed Steel Trusses".
 - I. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 1. Space individual trusses no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.3 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, that ensure that cold-formed metal trusses are without damage or deterioration at time of Substantial Completion.



1900 MARKET STREET
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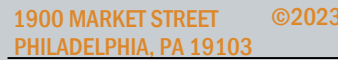
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**STRUCTURAL
DRAWINGS FOR ST.
KATHERINE'S CHURCH**

7100 AIRPORT-PULLING ROAD,
NAPLES, FL 34109

DATE: 08/23/2023
PROJECT NO.: 23-0044

REVISION DATE

NOTES:



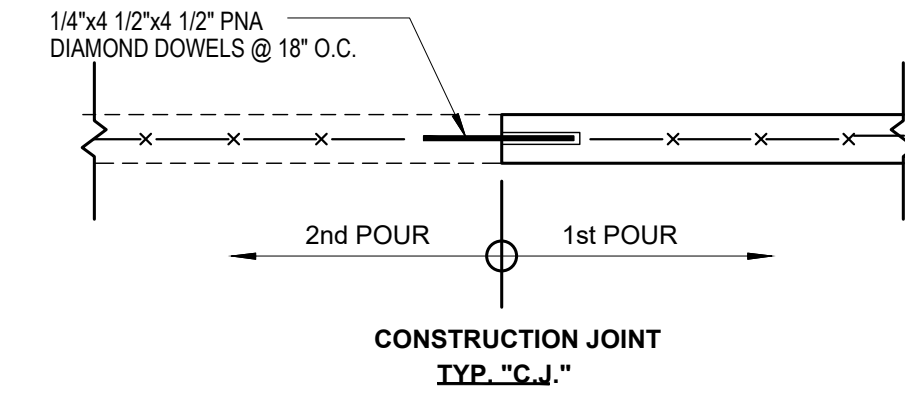
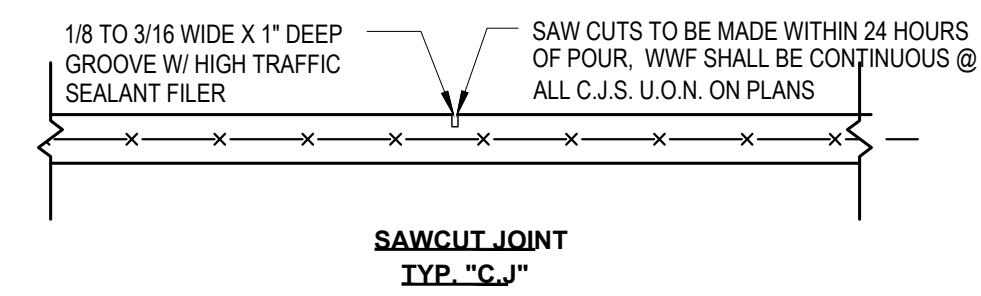
PROFESSIONAL ENGINEER SEAL
STATE OF FLORIDA

SPECIFICATIONS

SCALE: AS NOTED

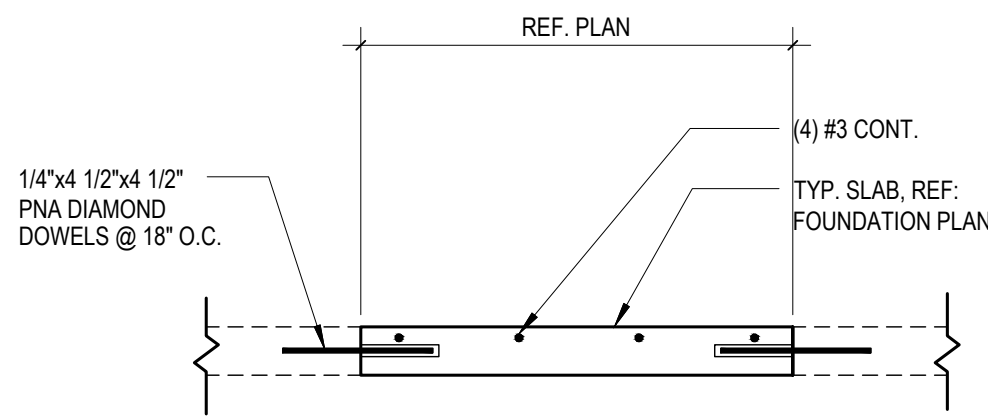
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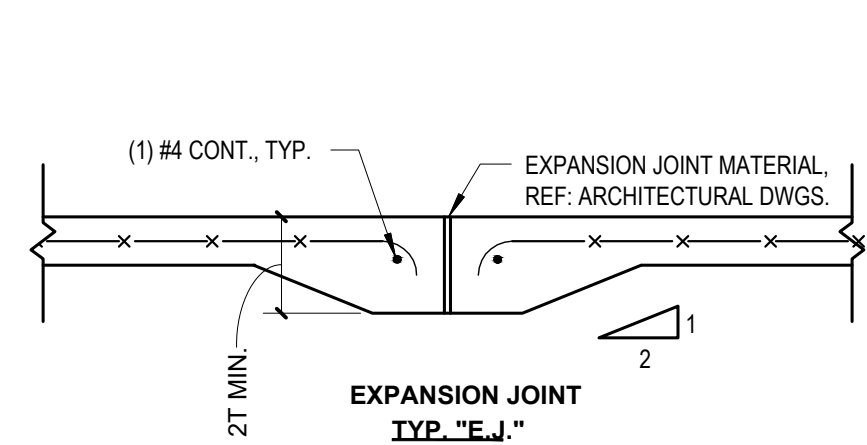


9 SAWCUT JOINT
 SCALE: 3/4" = 1'-0"

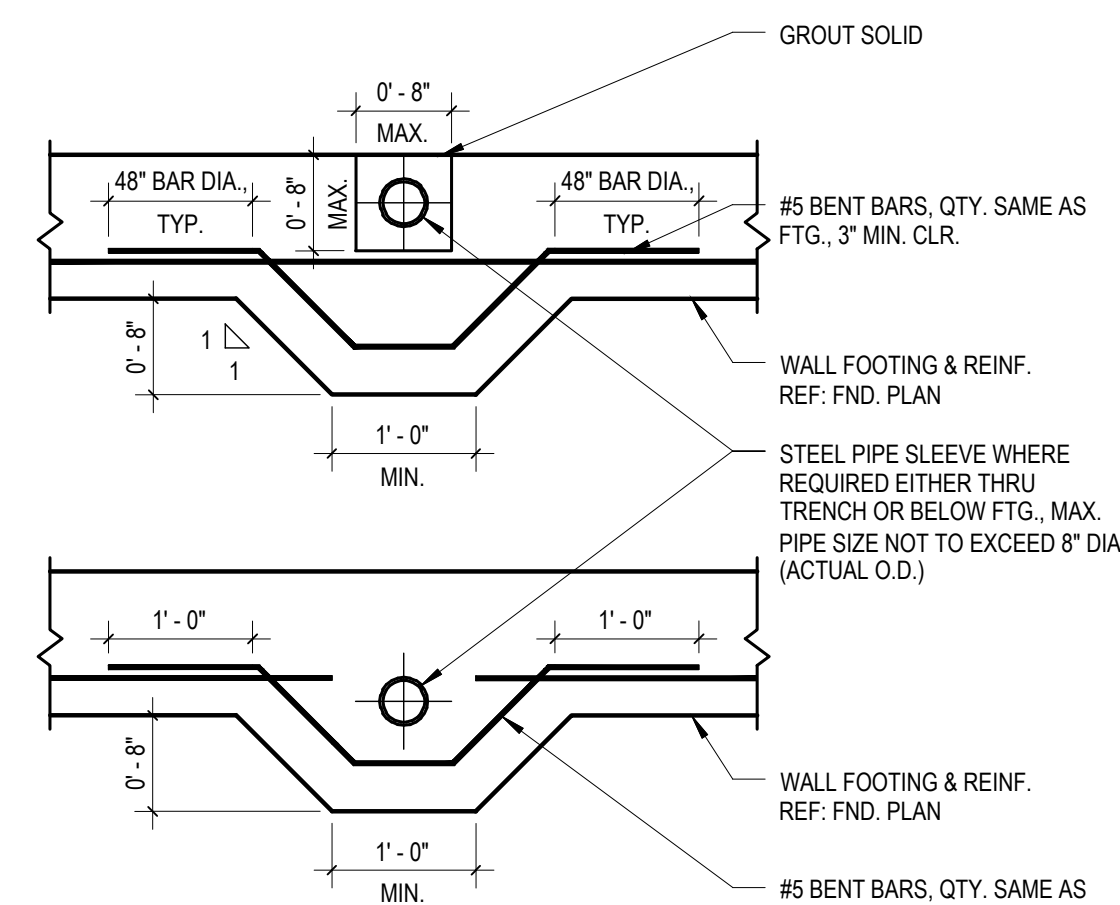
10 CONSTRUCTION JOINT
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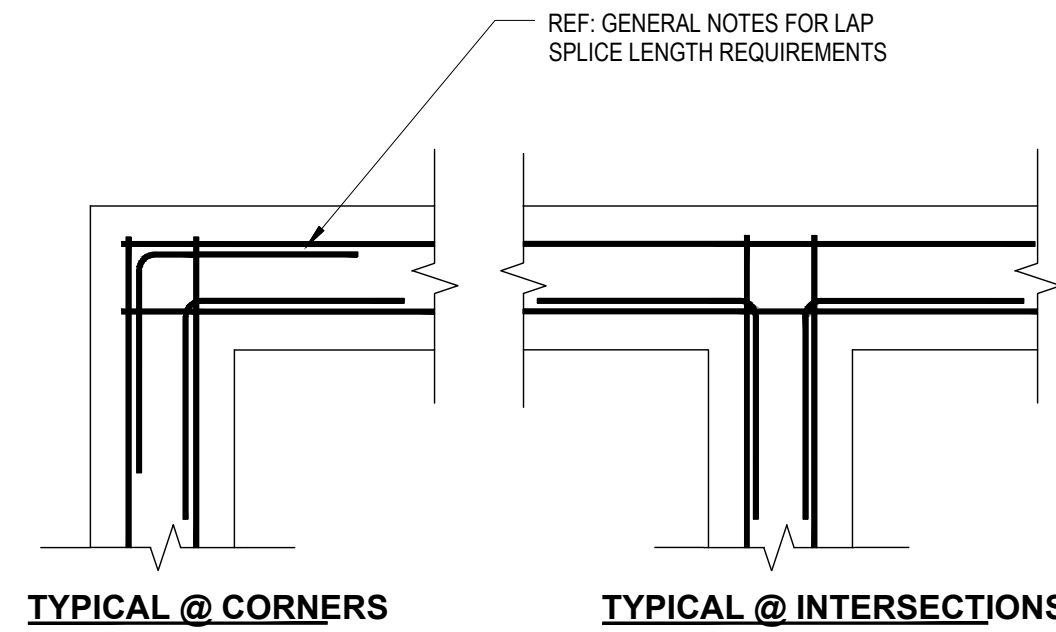
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 SCALE: 3/4" = 1'-0"



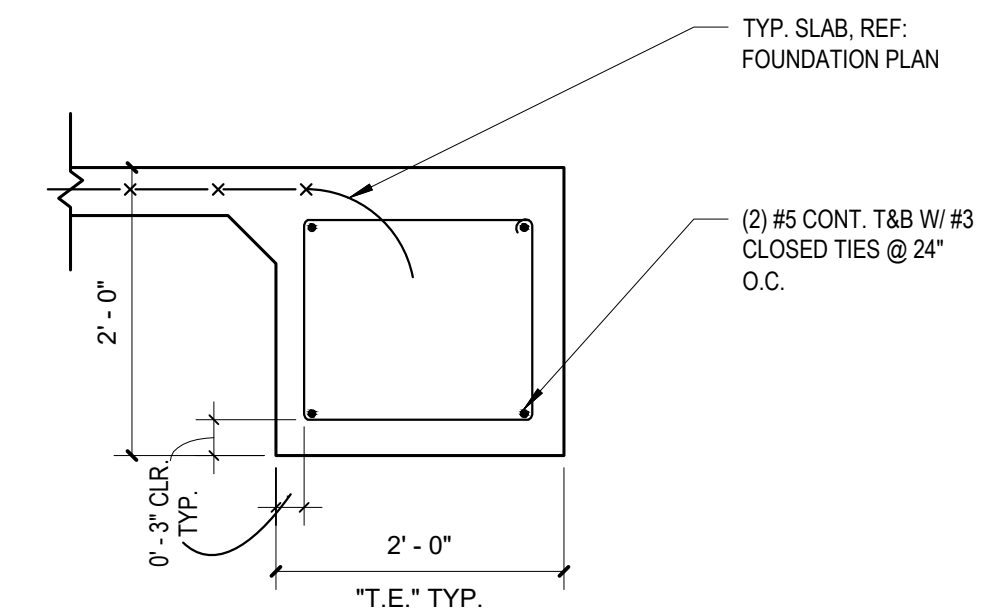
12 EXPANSION JOINT
 SCALE: 3/4" = 1'-0"



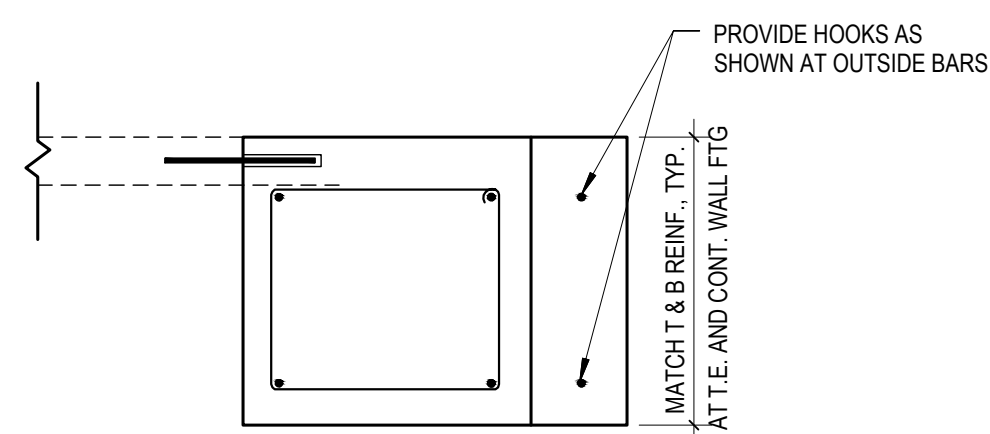
13 FOUNDATION DETAIL
 SCALE: 3/4" = 1'-0"



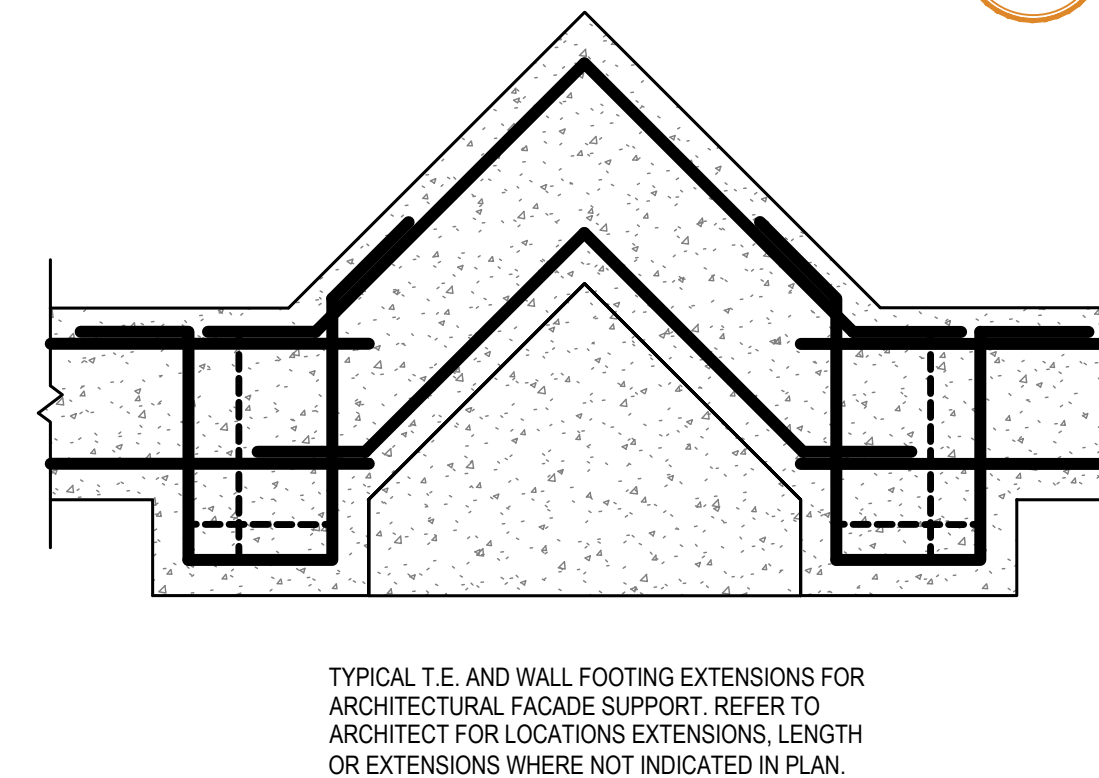
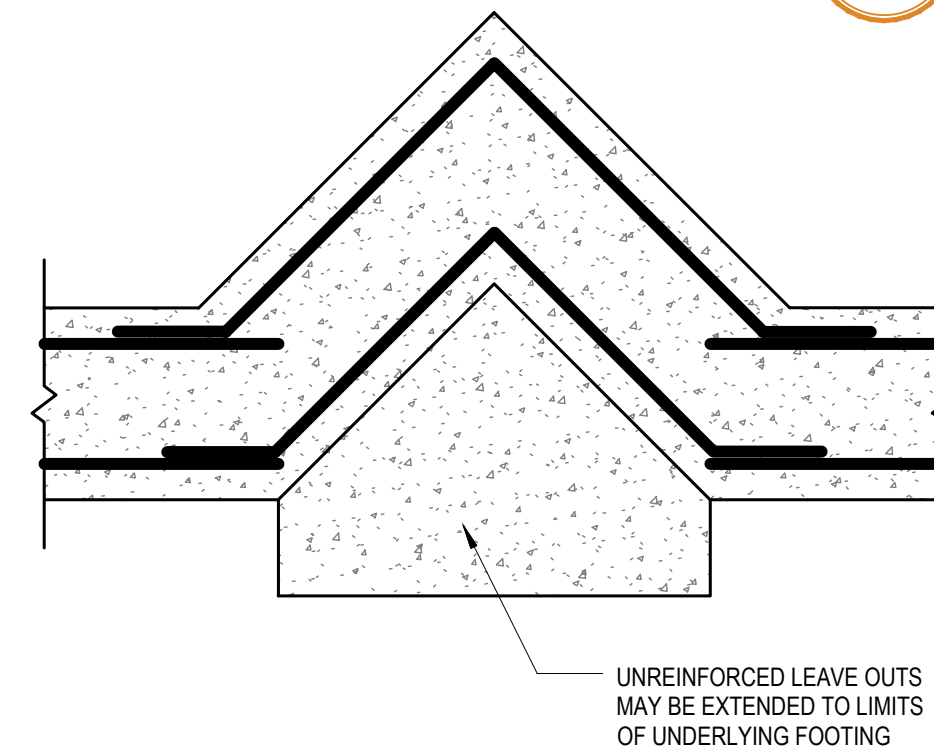
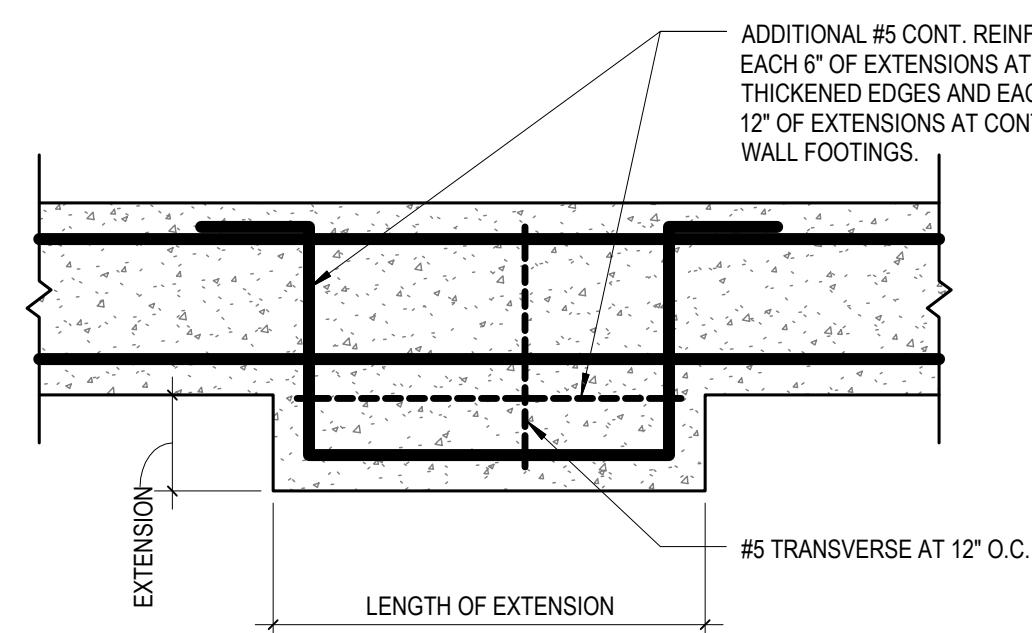
14 CONTINUITY CORNER, TYP.
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14 FOUNDATION DETAIL
 SCALE: 3/4" = 1'-0"



9 TYP. T.E. & WALL FTG EXTENSIONS
 SCALE: 3/4" = 1'-0"

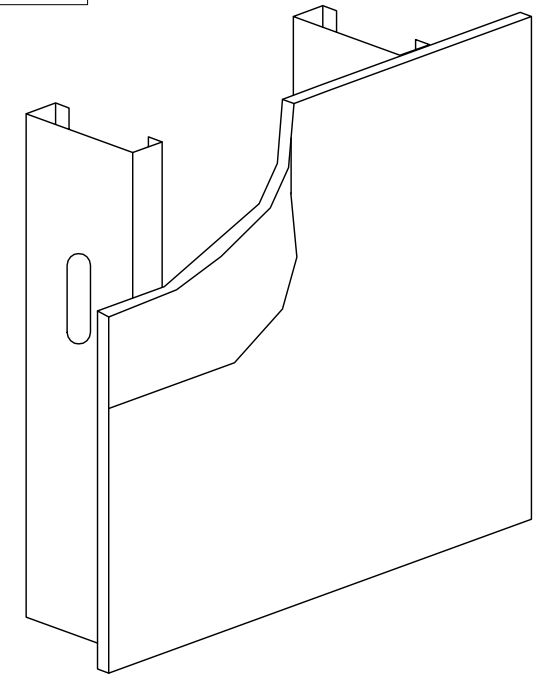




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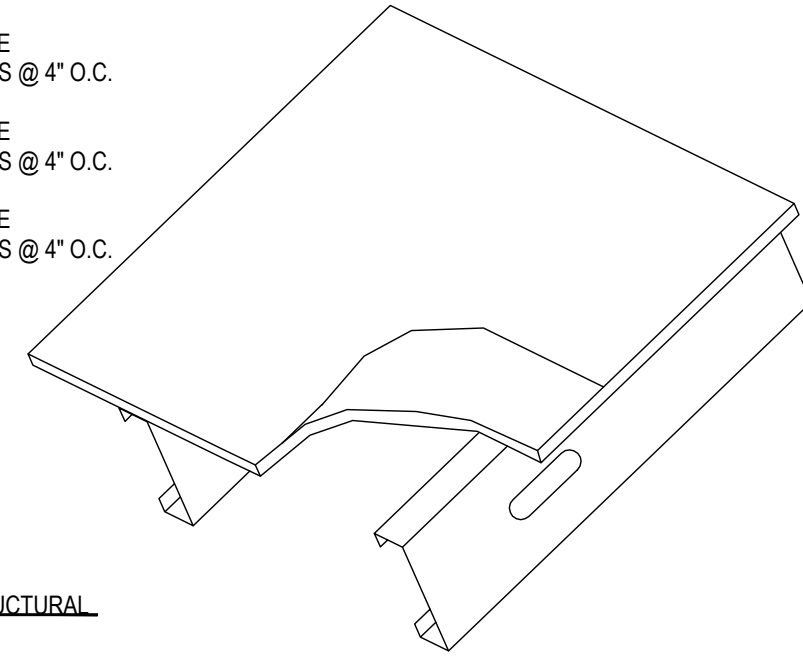
WALLS

STRUCTURAL PLYWOOD / CDX
5/8" MIN. THICKNESS
-ZONE 4 (REF. WIND PRESSURE ZONE DIAGRAMS) #10 BUGLEHEAD SCREWS @ 4" O.C. EDGES AND 6" FIELD
-ZONE 5 (REF. WIND PRESSURE ZONE DIAGRAMS) #10 BUGLEHEAD SCREWS @ 4" O.C. EDGES AND 4" FIELD
DENSGLASS
-ZONE 4 (REF. WIND PRESSURE ZONE DIAGRAMS) #10 MIN. WAFERHEAD SCREWS @ 6" O.C. EDGES AND 6" FIELD
-ZONE 5 (REF. WIND PRESSURE ZONE DIAGRAMS) #10 MIN. WAFERHEAD SCREWS @ 6" O.C. EDGES AND 4" FIELD



ROOFS

STRUCTURAL PLYWOOD / CDX
5/8" MIN. THICKNESS
-ZONE 1 (REF. WIND PRESSURE ZONE DIAGRAMS) #10 BUGLEHEAD SCREWS @ 4" O.C. EDGES AND 6" FIELD
-ZONE 2 (REF. WIND PRESSURE ZONE DIAGRAMS) #10 BUGLEHEAD SCREWS @ 4" O.C. EDGES AND 4" FIELD
-ZONE 3 (REF. WIND PRESSURE ZONE DIAGRAMS) #10 BUGLEHEAD SCREWS @ 4" O.C. EDGES AND 4" FIELD



2x OR PLYWOOD BLOCKING TO STRUCTURAL STEEL AT PARAPET LOCATIONS OR STOREFRONT WINDOW HEADERS
-HILTI X-U 52 PINS @ 12" O.C.

PLYWOOD OR DENSGLASS SHEATHING TO STRUCTURAL STEEL
-ZONE 4 (REF. WIND PRESSURE ZONE DIAGRAMS) HILTI X-U 32 P8 S15 PINS @ 6" O.C. EDGES AND 6" FIELD
-ZONE 5 (REF. WIND PRESSURE ZONE DIAGRAMS) HILTI X-U 32 P8 S15 PINS @ 6" O.C. EDGES AND 4" FIELD

1 SHEATHING FASTENER REQUIREMENTS

SCALE: 3/4" = 1'-0"

2023.08.23

PROJECT:

STRUCTURAL DRAWINGS FOR ST. KATHERINE'S CHURCH

7100 AIRPORT-PULLING ROAD, NAPLES, FL 34109

DATE: 08/23/2023
PROJECT NO.: 23-0044

REVISION DATE

Table with 2 columns: REVISION, DATE

NOTES:



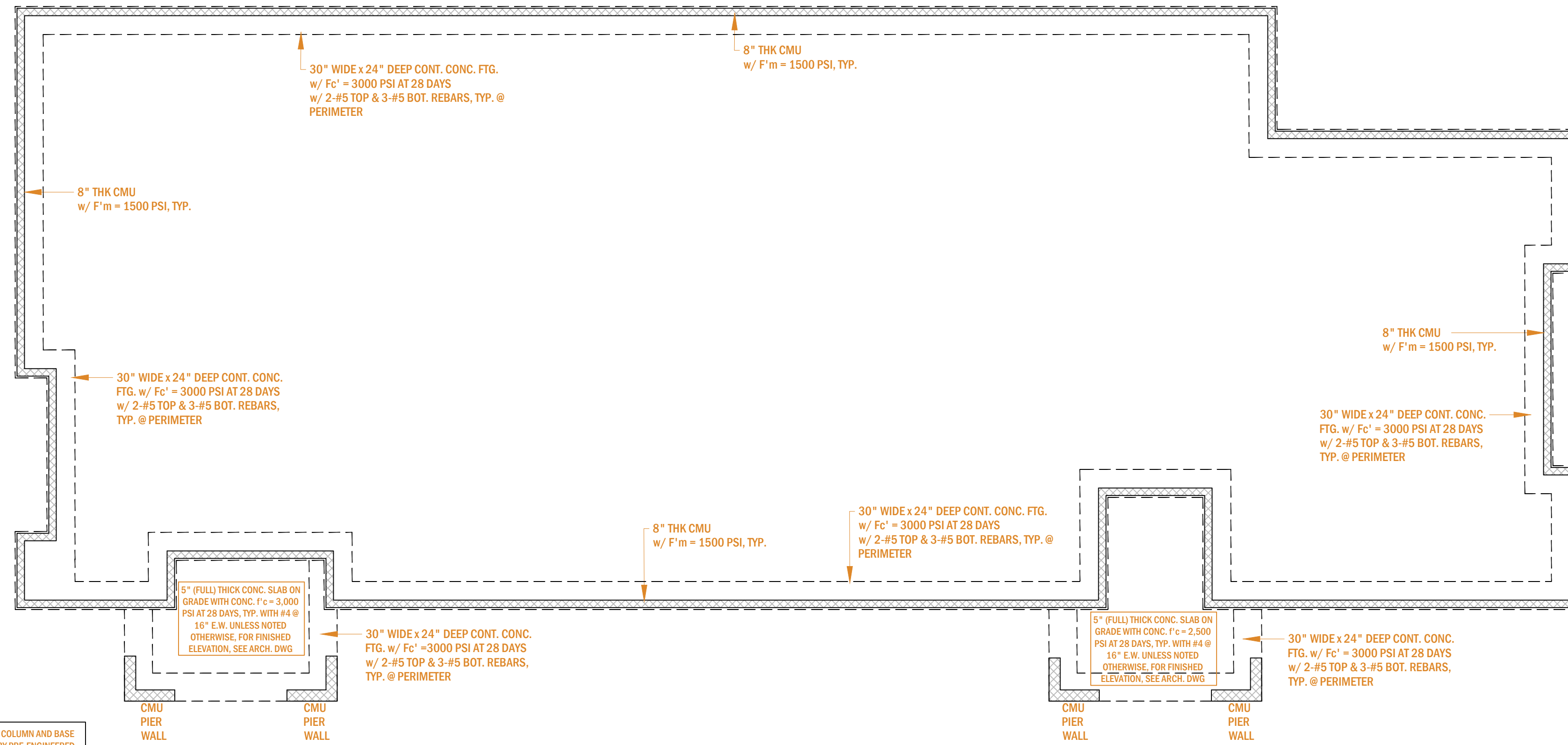
PROFESSIONAL ENGINEER SEAL
STATE OF FLORIDA

STANDARD FRAMING DETAILS

SCALE: AS NOTED

S-105

DRAWN BY: JM
CHECKED BY: PJ



* = INDICATES COLUMN AND BASE CONNECTION BY PRE-ENGINEERED FOOTING SUPPLIER. C.C. TO COORDINATE TOP OF FTG. ELEVATION WITH SUPPLIER.

1 FOUNDATION PLAN
SCALE: 1/8" = 1'-0"

2023.08.23

PROJECT:
STRUCTURAL DRAWINGS FOR ST. KATHERINE'S CHURCH
7100 AIRPORT-PULLING ROAD, NAPLES, FL 34109

DATE: 08/23/2023

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NOTES:

- GENERAL NOTES:**
- INTERIOR FOOTINGS HEREIN ARE RELATIVE TO FINISHED FLOOR ELEVATION OF 100'-0". THE TOP OF ALL INTERIOR FOOTINGS SHALL BE THUS: 97'-0", TYP. U.O.N.
 - EXTERIOR FOOTINGS HEREIN ARE RELATIVE TO FINISHED FLOOR ELEVATION OF 100'-0". THE TOP OF ALL EXTERIOR FOOTINGS SHALL BE THUS: 97'-0", TYP. U.O.N.
 - REFERENCE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND CONSTRUCTION OF NON-LOAD BEARING INTL. STUD WALLS, FIXTURES, AND OTHER ITEMS NOT PRESENTED HEREIN.
 - 4" CONCRETE SLAB W/ 3000 PSI CONC. W/ 6X6XW2.1XW2.1 W.W.F. OVER 10 MIL. MIN. VAPOR RETARDER ON TERMITED TREATED COMPACTED SOIL, TYP. U.O.N. (WWF NOT REQUIRED AT SLAB STRIPS WITH REBAR. ONLY REQUIRED AT RISER ROOM SLAB)
 - C.J. = CONTROL JOINT/ CONSTRUCTION JOINT. TO BE COORDINATED (REF. SUBMITTAL SECTION OF GENERAL NOTES). CONTROL JOINTS SHALL BE 1" DEEP SAW CUTS TO BE MADE WITHIN 24 HRS. OF POUR.
 - REF. ARCH./PLUMBING DRAWINGS FOR DRAIN SLOPES, ELEVATIONS AND SLAB RECESSES.
 - CONTROL JOINTS (C.J.) SHALL BE LOCATED AT 12'-0" O.C. MAX. U.O.N. WITH LENGTH TO WIDTH RATIO NOT TO EXCEED 1.5:1
 - OPENING/RE-ENTRANT CORNER, TYP. PROVIDE (2) #4 X 4'-0" LONG BARS @ MID-HEIGHT OF SLAB.
 - DIAGONAL OR K-BRACE MEMBER "UP"
 - DIAGONAL OR K-BRACE MEMBER "DOWN"



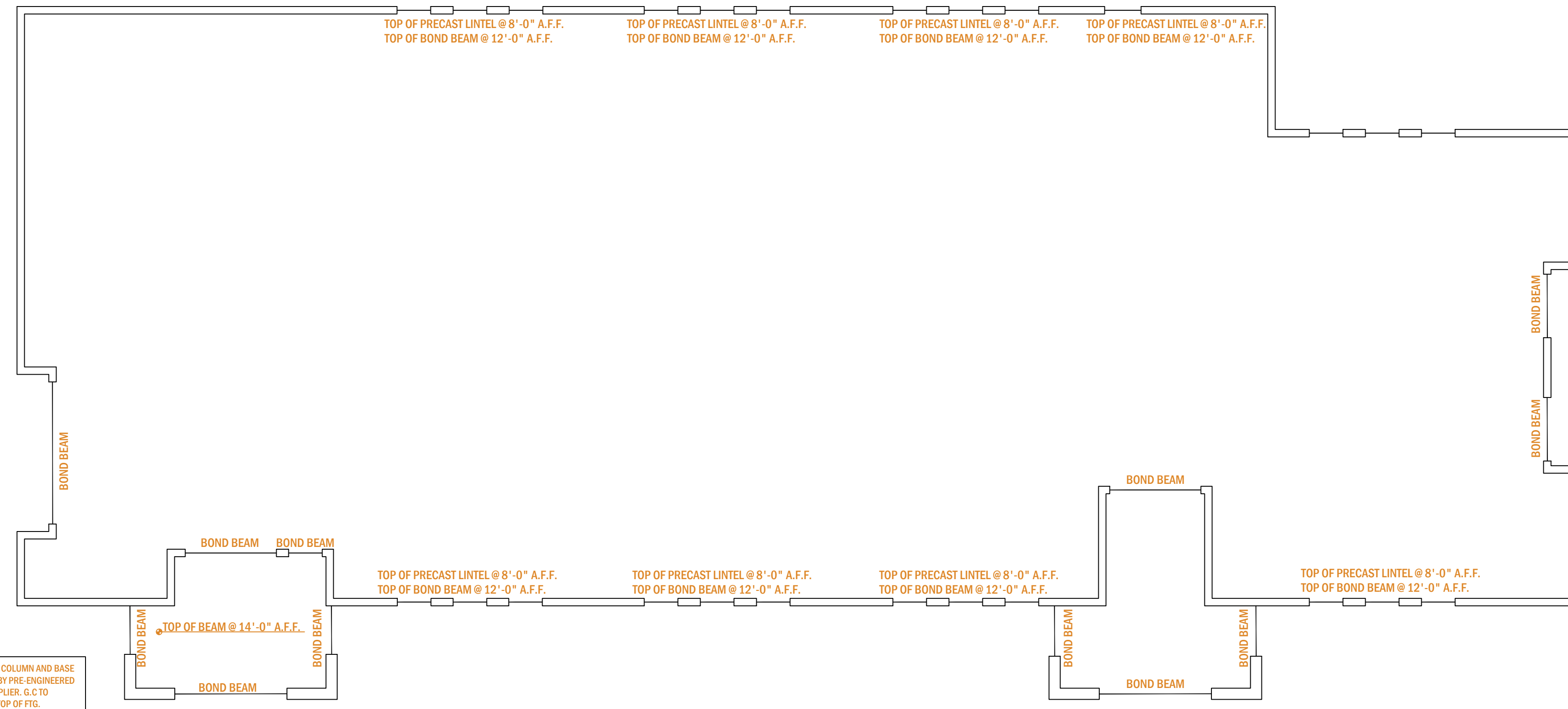
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FOUNDATION PLAN

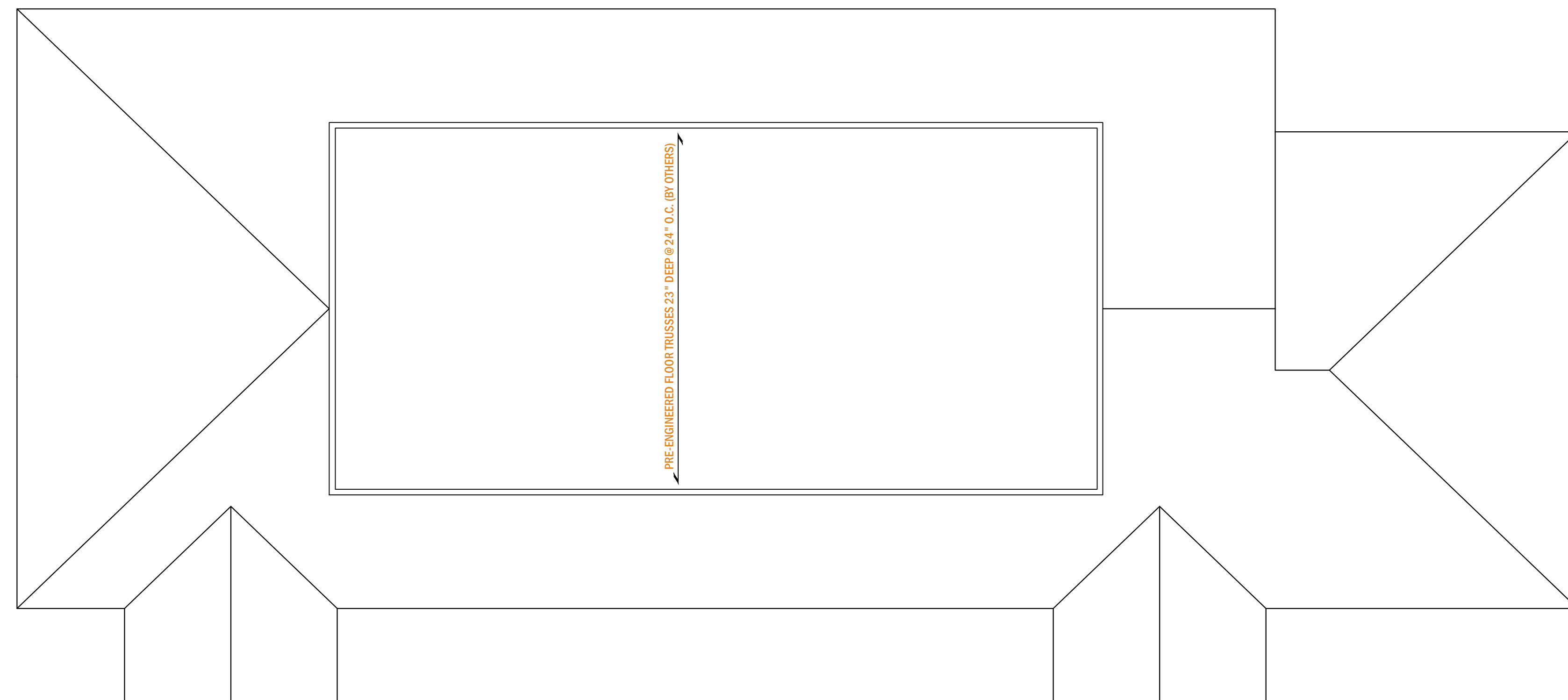
SCALE: AS NOTED

S-106

DRAWN BY: JM
CHECKED BY: PJ



1 **HEADER PLAN**
 SCALE: 1/8" = 1'-0"



2 **SECOND FLOOR FRAMING PLAN**
 SCALE: 1/8" = 1'-0"

GENERAL NOTES:

- ALL LOADS GIVEN ARE ASD
- IST. ENGINEER TO DESIGN FOR ADDITIONAL LOADS (INCLUDING RTU'S) PRESENTED HEREIN AT K & LH-SERIES IST.
- SPECIAL LOADING TAKEN INTO ACCOUNT IN KCS JOIST SELECTION
- REFERENCE SECTIONS / DETAILS AS REQUIRED FOR ADDED JOIST BRACING AND ADDITIONAL LOADING
- POSITION ALL RTUS ON SPECIALIST. AS SHOWN, BTW. BRIDGING & BRACING FOR REQ'D CLEARANCES
- JOIST SUPPLIER TO PROVIDE MIN. STD. BRIDGING AND BRACING PER SJL

- C = CAMBER IN INCHES

- DIAGONAL OR K-BRACE MEMBER "UP"

- DIAGONAL OR K-BRACE MEMBER "DOWN"

- MOMENT CONNECTION

- P = ADDITIONAL AXIAL LOAD (+/-)

METAL DECK INFORMATION:

PATTERN "A"

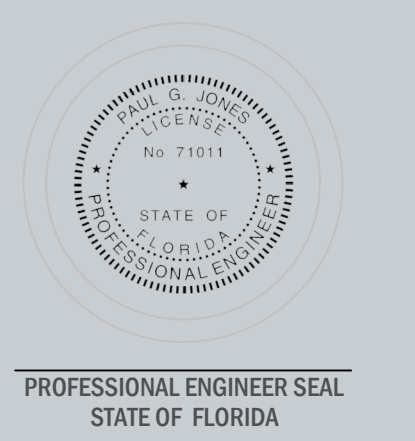
- 1 1/2" DEEP 22-GAGE (WR) PAINTED DECK.
- FASTEN USING (7) 5/8" PUDDLE WELDS @ EACH SUPPORT PER 36" WIDTH (36/7), (5) #10 TEK SCREWS @ MIDSPAN OF SIDELAPS, AND 5/8" PUDDLE WELDS @ 6" O.C. ALONG EDGES (PROVIDE (2) 5/8" PUDDLE WELDS AT EACH SUPPORT AND ALONG EDGES @ 6" O.C. FOR ALL DECK FASTENING IN ZONES 3, REF. IS101 FOR ZONES)

PATTERN "B"

- 1 1/2" DEEP 22-GAGE (WR) PAINTED DECK.
- FASTEN USING (7) 5/8" PUDDLE WELDS @ EACH SUPPORT PER 36" WIDTH (36/7), (9) #10 TEK SCREWS @ MIDSPAN OF SIDELAPS, AND 5/8" PUDDLE WELDS @ 6" O.C. ALONG EDGES (PROVIDE (2) 5/8" PUDDLE WELDS AT EACH SUPPORT AND ALONG EDGES @ 6" O.C. FOR ALL DECK FASTENING IN ZONES 3, REF. IS101 FOR ZONES)

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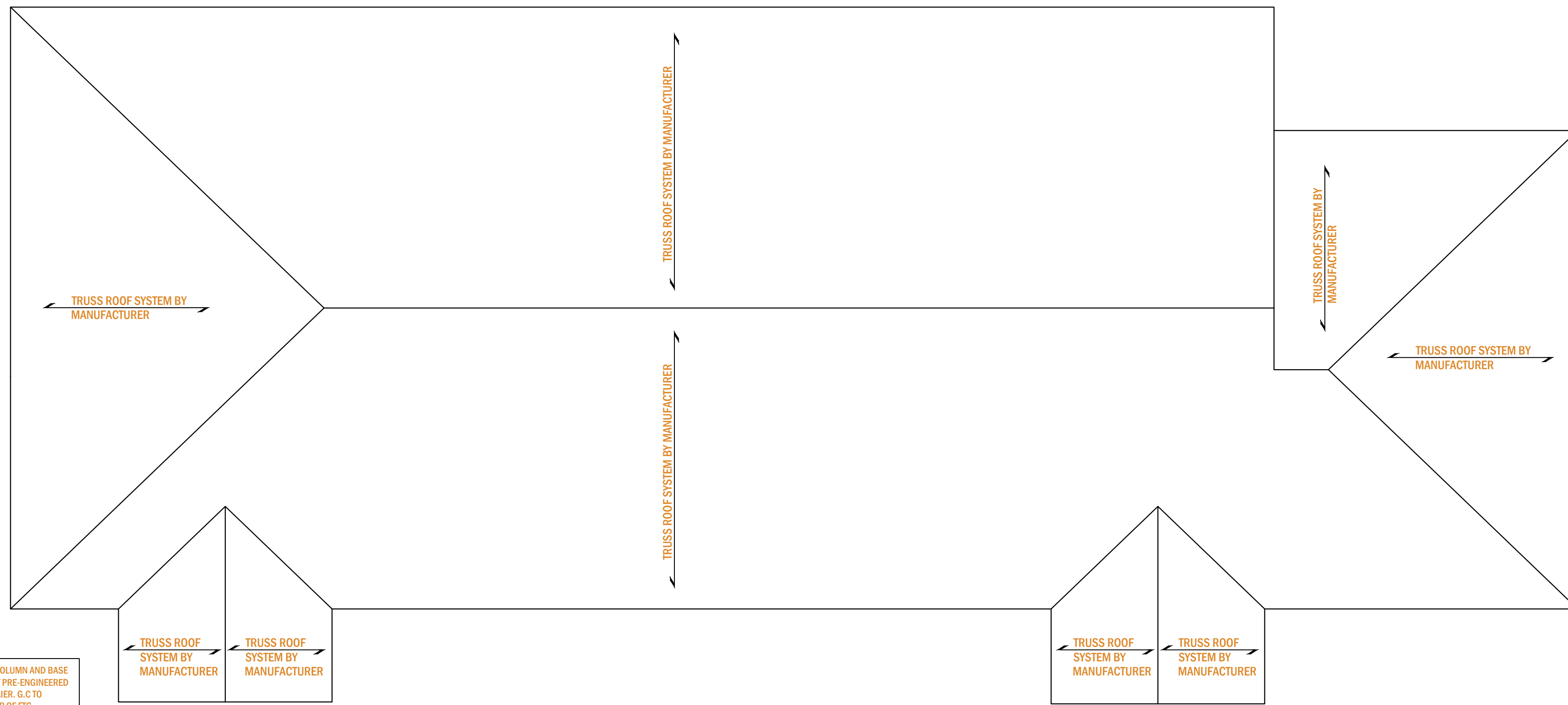


FRAMING PLANS

SCALE: AS NOTED

S-107

DRAWN BY: JM
 CHECKED BY: PJ



* - INDICATES COLUMN AND BASE CONNECTION BY PRE-ENGINEERED PERGOLA SUPPLIER. G.C TO COORDINATE TOP OF FTG. ELEVATION WITH SUPPLIER.

1 TOWER FRAMING PLAN
SCALE: 1/8" = 1'-0"

RAFTER SPAN TABLE		
MEMBER SIZE AND SPACING	MAXIMUM LENGTH	MEMBER CONNECTIONS*
2" X 4" @ 16" O.C.	7'-5"	(2) 16d TOENAILS
2" X 6" @ 16" O.C.	10'-8"	(2) 16d TOENAILS
2" X 8" @ 16" O.C.	13'-9"	(3) 16d TOENAILS
2" X 10" @ 16" O.C.	16'-5"	(1) SIMPSON HTS20 OR (3) 16d TOENAILS
2" X 12" @ 16" O.C.	19'-3"	(1) SIMPSON HTS20 OR (4) 16d TOENAILS
2" X 4" @ 24" O.C.	6'-1"	(2) 16d TOENAILS
2" X 6" @ 24" O.C.	8'-6"	(2) 16d TOENAILS
2" X 8" @ 24" O.C.	11'-0"	(2) 16d TOENAILS
2" X 10" @ 24" O.C.	13'-0"	(3) 16d TOENAILS
2" X 12" @ 24" O.C.	15'-4"	(1) SIMPSON HTS20 OR (3) 16d TOENAILS

* TOENAIL CONNECTIONS DESIGNED FOR SHEAR ONLY (i.e. RAFTER TO RIDGEBEAM).
** SOUTHERN YELLOW PINE, 55 PSF LOADING

TYPICAL SIMPSON LUS/HUS/HUC INSTALLATION

TYPICAL SIMPSON H10A INSTALLATION

NOTE: UPLIFT VALUE IS BASED ON S.P.F.
LOCATION OF SECOND H10A (WHEN REQUIRED)

SIMPSON H10A w/ (18) 10d x 1 1/2" NAILS
UPLIFT = 1015#

TYPICAL SIMPSON HETA20 / HETAL20 INSTALLATION

4" MIN. EMBEDMENT
SEE SCHEDULE FOR SIZE AND QUANTITY OF FASTENERS

TYPICAL SIMPSON MTS/HTS INSTALLATION

STRUCTURAL SOFFIT
SCALE: N.T.S.
REV. 02/21/2021
REFER TO SHEET SN FOR DESIGN PRESSURES*

NOTE: THE INTENT OF THIS DETAIL IS FOR CONVENTIONALLY FRAMED SOFFITS. IF THE CONTRACTOR IS TO USE A PRE-ENGINEERED/MANUFACTURED/TESTED ASSEMBLY, THE CONTRACTOR SHALL INSTALL THAT PRODUCT PER THE MANUFACTURER'S PL. PRODUCT APPROVAL'S SPECIFICATIONS. ANY SPECIFICATIONS PROVIDED BY THE MANUFACTURER SHALL SUPERCEDE THIS DETAIL.

2023.08.23

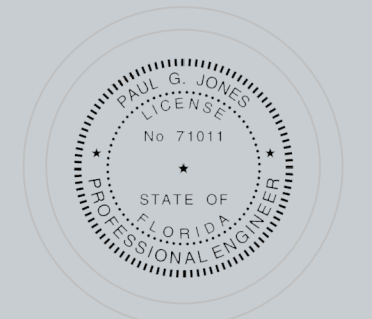
PROJECT:
STRUCTURAL DRAWINGS FOR ST. KATHERINE'S CHURCH

7100 AIRPORT-PULLING ROAD,
NAPLES, FL 34109

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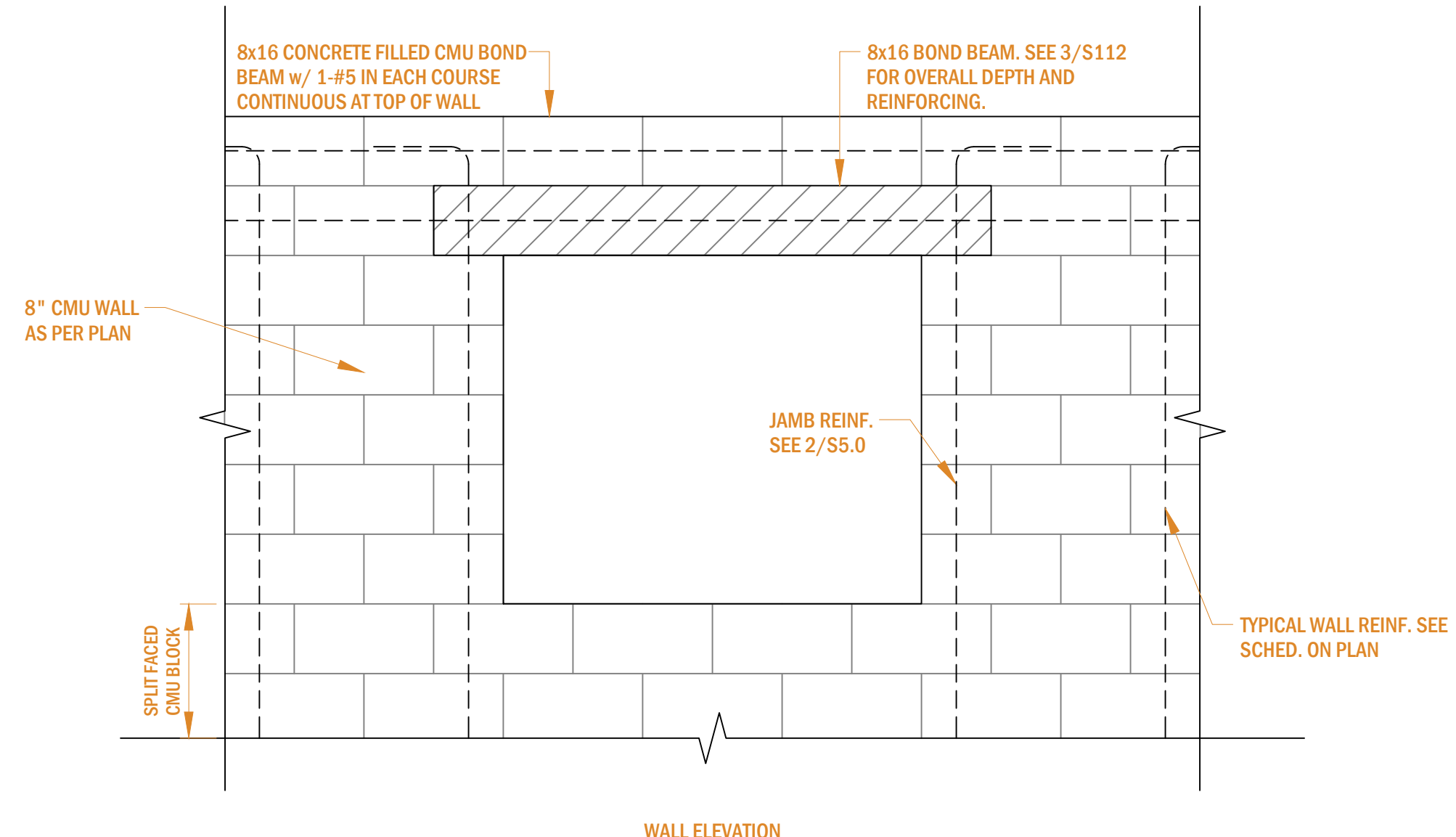
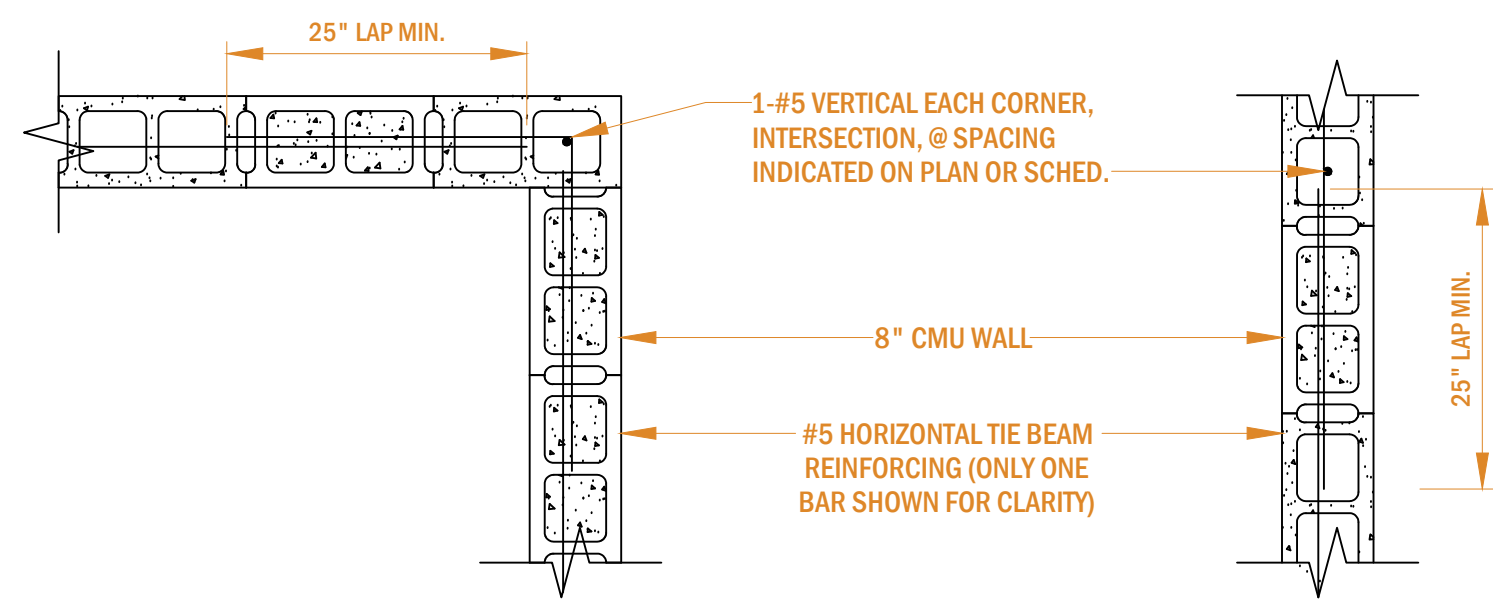
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ROOF FRAMING PLAN

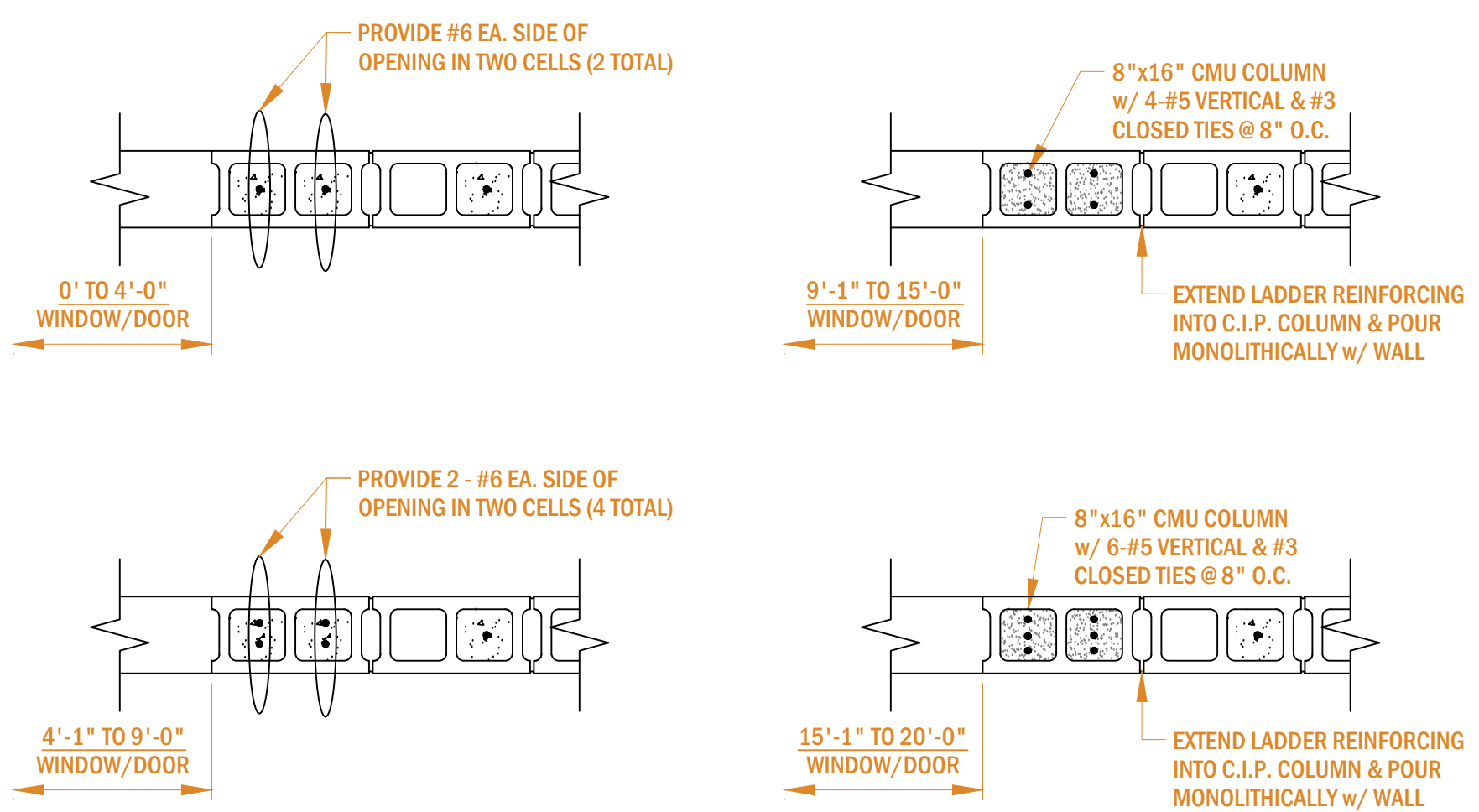
SCALE: AS NOTED

S-108

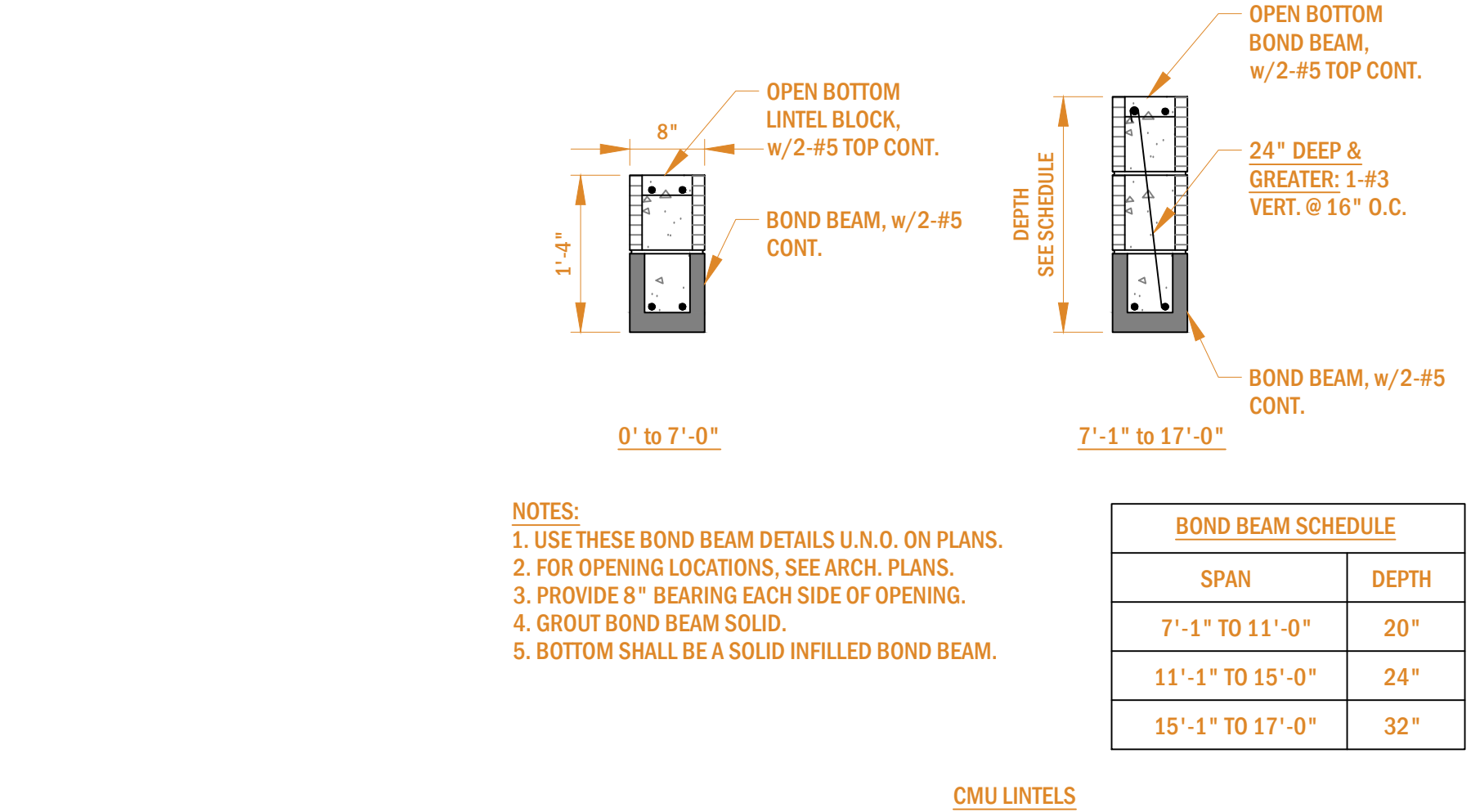
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CHECKED BY: PJ



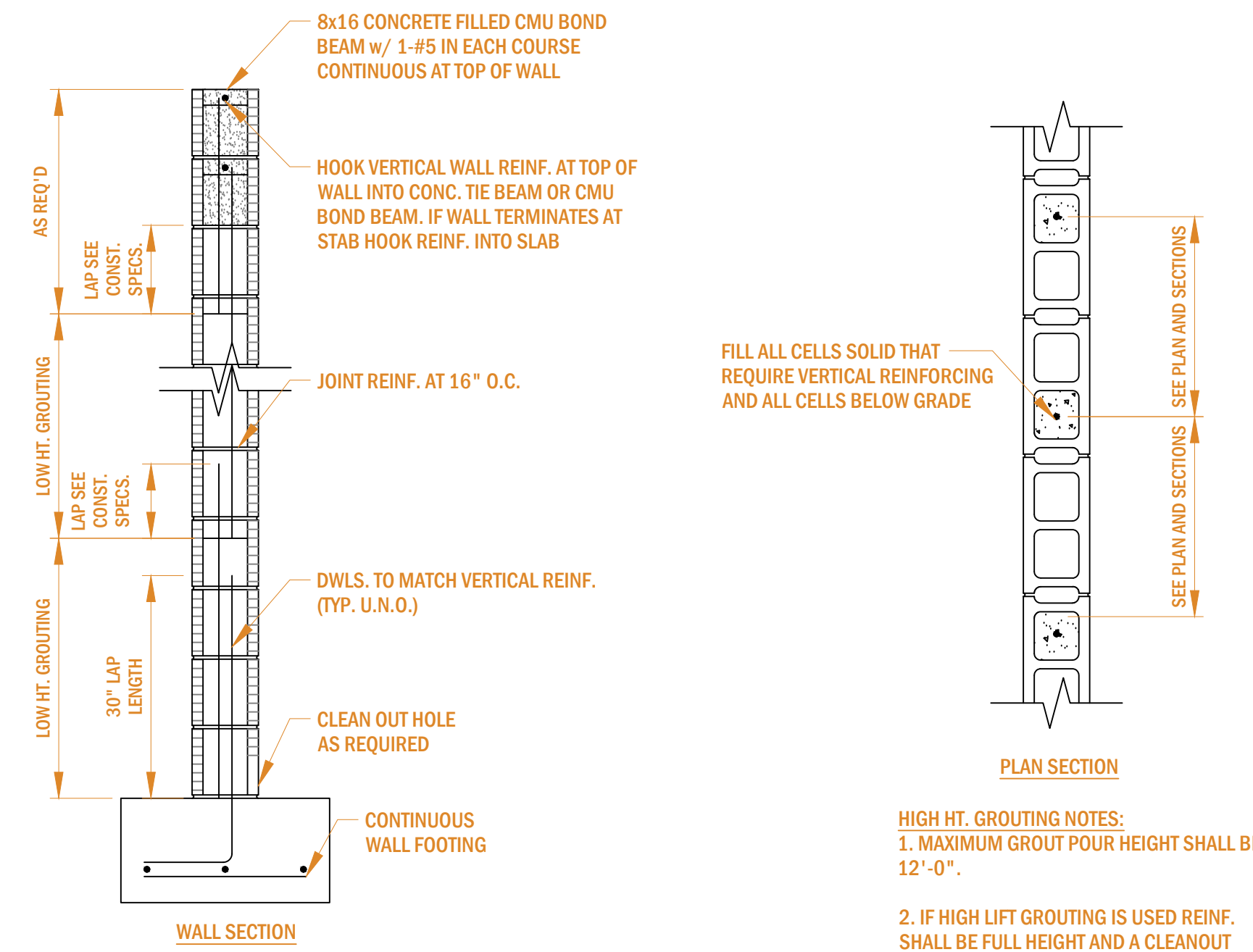
1 DETAIL
SCALE: 3/4" = 1'-0"



2 JAMB REINFORCING DETAILS
SCALE: 3/4" = 1'-0"

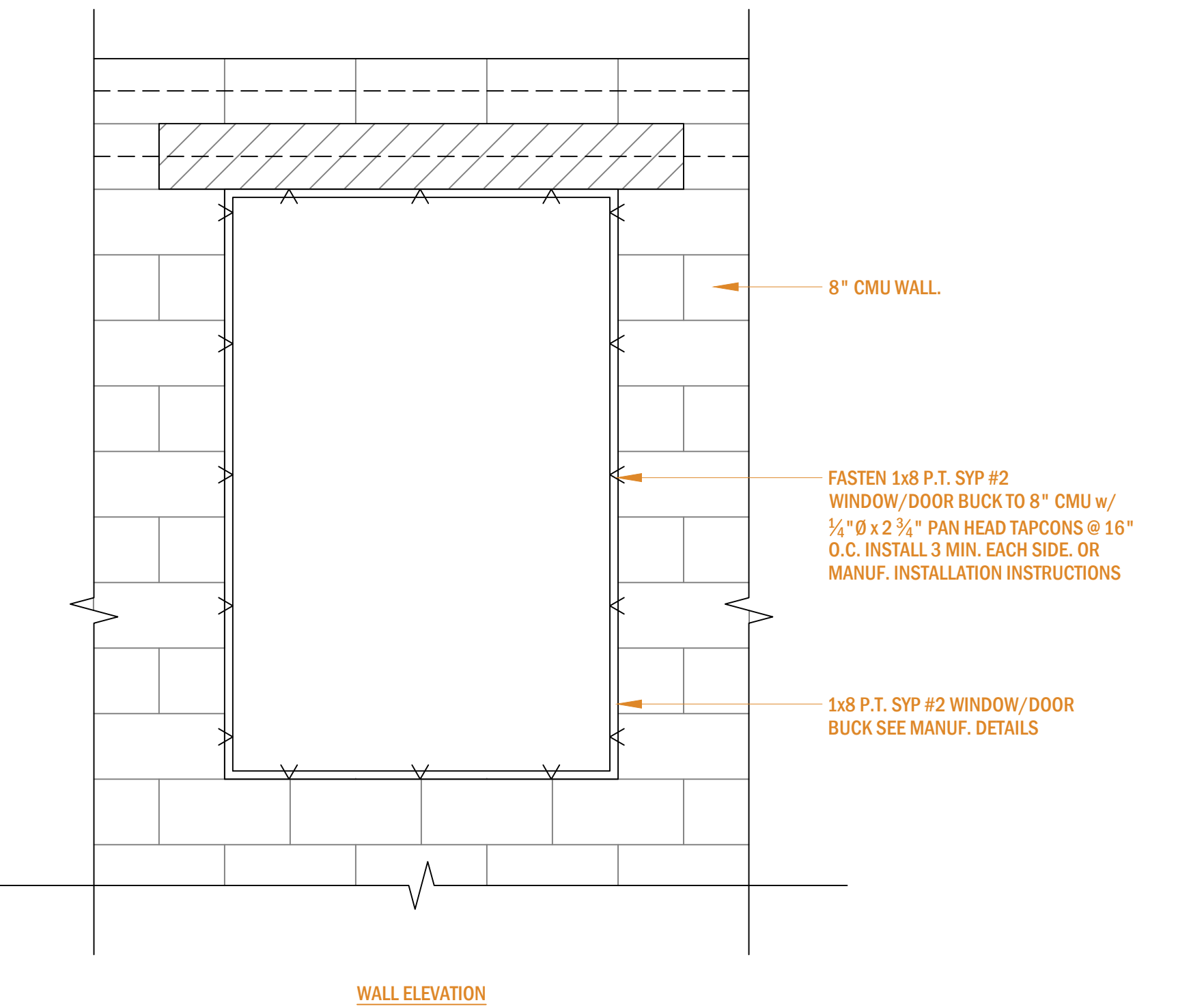


3 CMU BOND BEAM
SCALE: 3/4" = 1'-0"

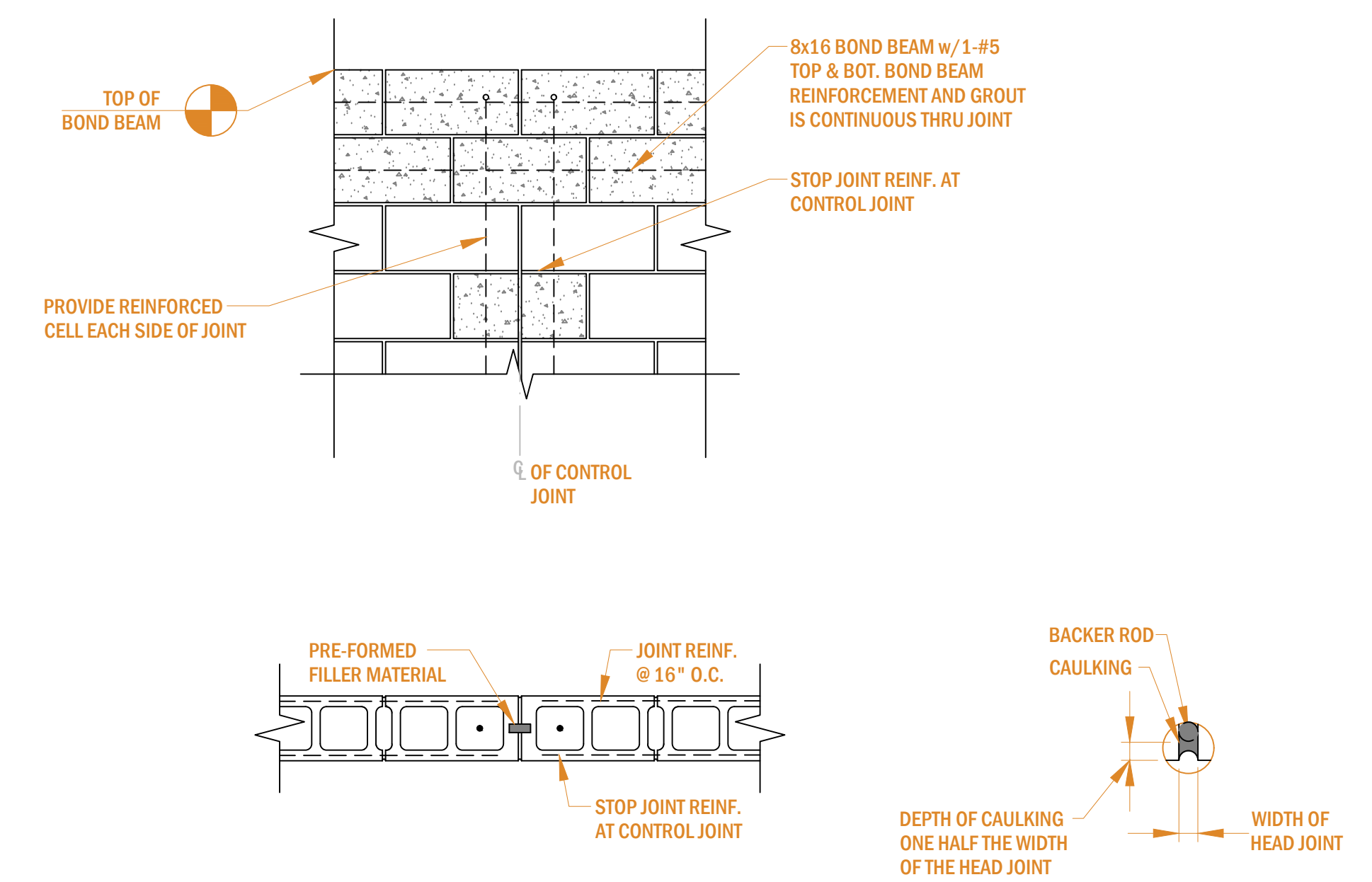


- LOW HT. GROUTING NOTES:**
1. USE 5'-0" GROUT POUR HEIGHT FOR BAR SIZES #3 THRU #5
 2. USE 5'-0" GROUT POUR HEIGHT FOR BAR SIZES #7 AND ABOVE
 3. SEE STRUCTURAL NOTES FOR GROUT TYPE AND GROUTED CELL SIZE.
- HIGH HT. GROUTING NOTES:**
1. MAXIMUM GROUT POUR HEIGHT SHALL BE 12'-0".
 2. IF HIGH LIFT GROUTING IS USED REINF. SHALL BE FULL HEIGHT AND A CLEANOUT HOLE IS REQ'D AT CELLS WITH REBAR.
 3. GROUT SHALL BE PLACED IN 5' LIFTS TO PREVENT BLOWOUTS.
 4. SEE STRUCTURAL NOTES FOR GROUT TYPE AND GROUTED CELL SIZE.

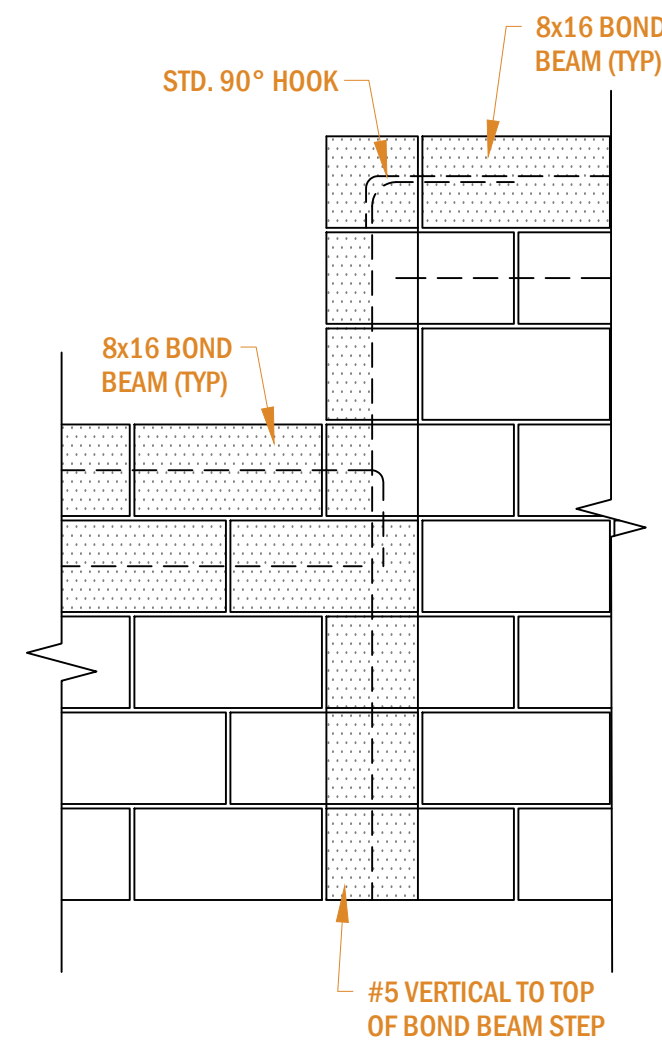
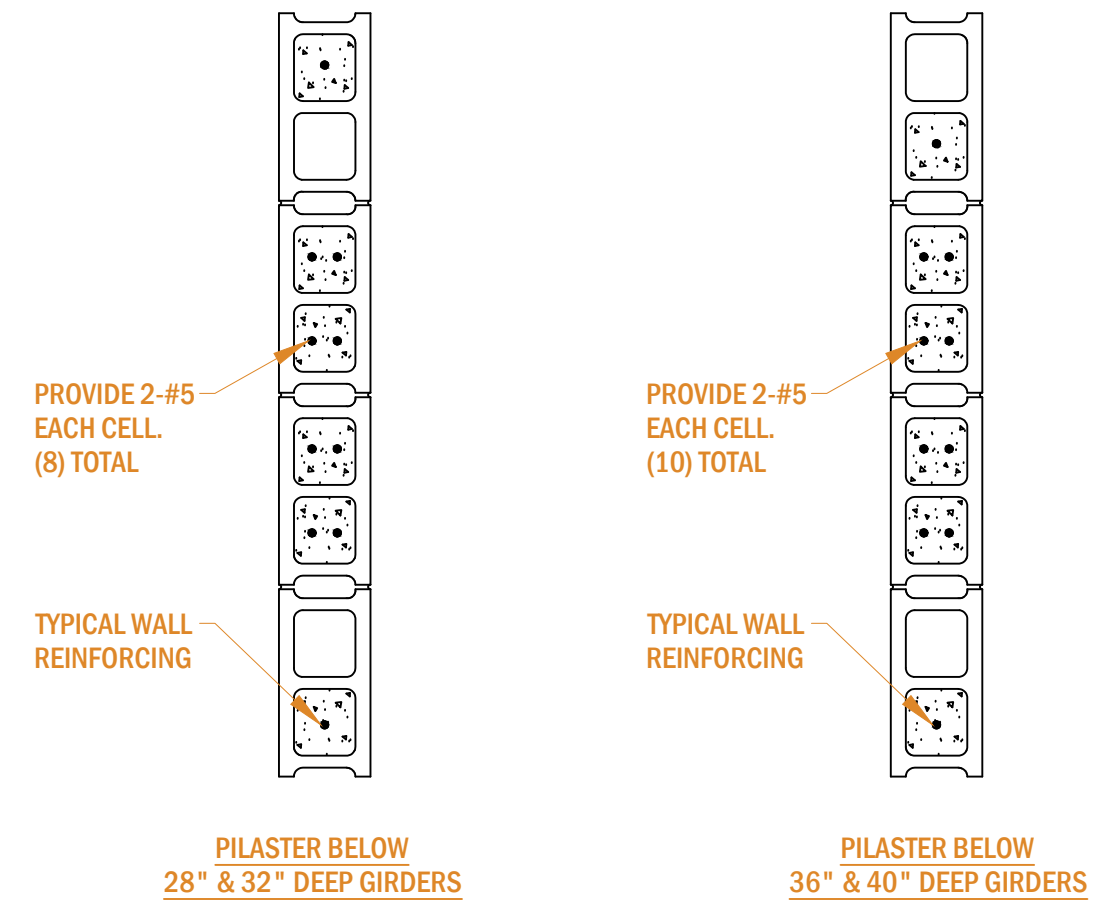
4 DETAIL
SCALE: 3/4" = 1'-0"



5 STRUCTURAL WINDOW/DOOR BUCK
SCALE: 3/4" = 1'-0"

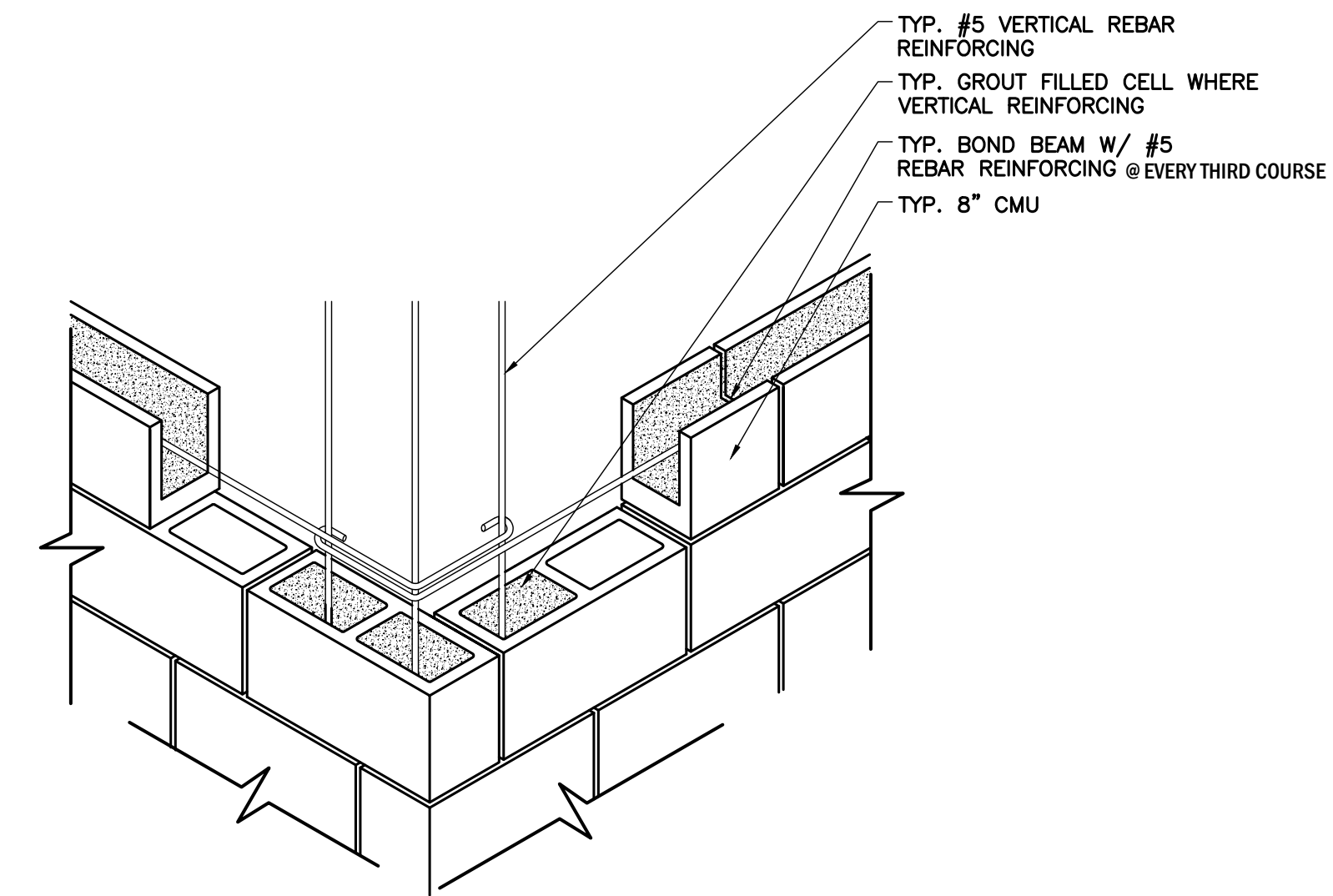


6 CMU CONTROL JOINT
SCALE: 3/4" = 1'-0"



1 CMU PILASTER AT ROOF GIRDERS
SCALE: 3/4" = 1'-0"

2 CMU WALL STEP
SCALE: 3/4" = 1'-0"



2 CMU CORNER DETAIL
SCALE: N.T.S.