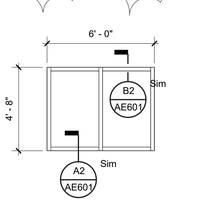
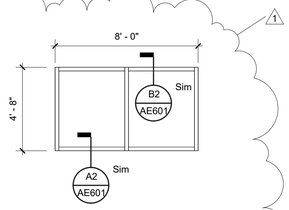
DOOR SCHEDULE

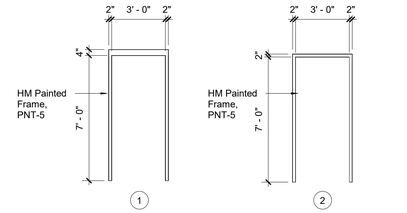
Door							Frame							
Number	Width	Height	Thickness	Type	Door Material	Door Finish	Frame Type	Frame Finish	Frame Material	Head	Jamb	Sill	Fire Rating	Hardware Set	Comments
106	3' - 0"	7' - 0"	1 3/4"	A	HM	PAINT	2	PAINT	HM	A3/A601	A3/A601	A3/A601	-	01	
106A	3' - 0"	7' - 0"	1 3/4"	A	HM	PAINT	2	PAINT	HM	A3/A601	A3/A601	A3/A601	-	04	
107A	3' - 0"	7' - 0"	1 3/4"	B	SOLID CORE WOOD	STAINED	-	-	-	-	-	-	-	02	
130	3' - 0"	7' - 0"	1 3/4"	A	HM	PAINT	1	PAINT	HM	A4/A601	A4/A601	A4/A601	-	03	
131	3' - 0"	7' - 0"	1 3/4"	A	HM	PAINT	1	PAINT	HM	A4/A601	A4/A601	A4/A601	-	03	



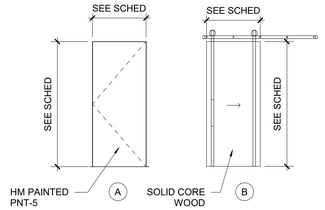
C2 SF02 Glazing Type
1/4" = 1'-0"



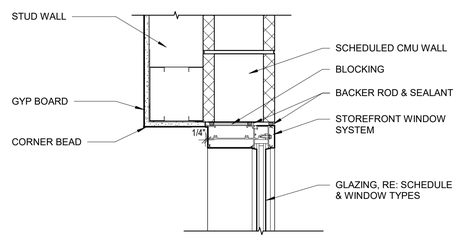
C3 SF01 Glazing Type
1/4" = 1'-0"



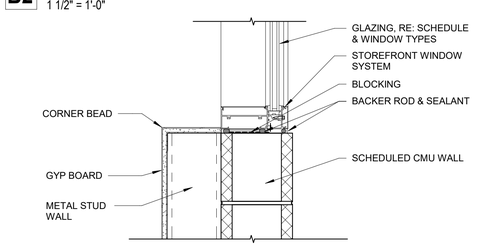
Frame Type
1/4" = 1'-0"



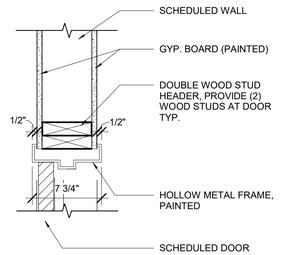
Door Type
1/4" = 1'-0"

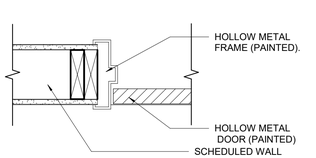


B2 Storefront Header Detail
1 1/2" = 1'-0"

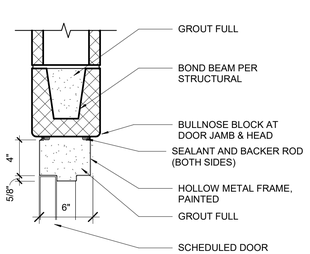


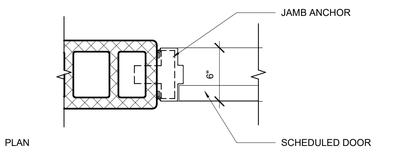
A2 Storefront Sill Detail
1 1/2" = 1'-0"





A3 Typical HM Interior Door
1 1/2" = 1'-0"





A4 Typical HM Door @ CMU
1 1/2" = 1'-0"

2-10-2020
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ARC-401582
LICENSED ARCHITECT

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consultant:

project:

LAS COLONIAS AMPHITHEATER - ADDITION

Grand Junction, CO

CITY OF Grand Junction COLORADO

project#: 19.0270
date: February 10, 2020

revisions :

1 Bid Addendum 01 4-7-20

title:

Door/Window Schedules & Types

sheet:

AE601

PERMIT SET

INTERIOR FINISH LEGEND

CODE	MATERIAL	MANUFACTURER	PRODUCT NAME / NUMBER	COLOR / FINISH	SIZE	COMMENTS
TILE						
FT-1	Ceramic Tile	Daltile	Paver Surface / 0Q78	Golden Brown / Quarry Paver	6" x 6"	
WT-1	Ceramic Tile	Daltile	Matte Group 1	Matte Almond X735	3" x 6"	Lay in Subway Tile brick pattern - Rittenhouse Collection
CEILING						
ACT-1	Suspended Acoustical Tile	USG	Frost 419 FLB Edge	Flat White 050	24" x 24"	On Centricitee DXT Grid. See Reflected Ceiling Plan for layout
GYP-1	5/8" gyp board			PNT-1		
CARPET						
CPT-1	Carpet	Tandus Centiva	Crosscut Collection	Aggregate, Storm Sash 28307	24" x 24"	
BASE						
RB-1	Rubber Base	Roppe	700 Series	123 Charcoal	4" H	
TB-1	Ceramic Tile	Daltile	Matte Group 1 / S3419T	Matte Almond X735	4 1/4" x 6"	
PAINT						
PNT-1	Paint	Sherwin Williams	Interior Paint- SemiGloss Sheen	SW 7627 White Heron		
PNT-2	Paint	Sherwin Williams	Interior Paint- Satin Sheen	SW 7627 White Heron		
PNT-3	NOT USED	NOT USED	NOT USED	NOT USED		
PNT-4	Paint	Sherwin Williams	Interior Paint- Satin Sheen	SW 7068 Grizzle Gray		
PNT-5	Paint	Sherwin Williams	Interior Paint- SemiGloss	SW 7068 Grizzle Gray		Epoxy Paint, applies to Exterior HM Doors/Frames
LAMINATE						
PL-1	Plastic Laminate	Formica	7264	Limestone		Bullnose Edge
PL-2	Plastic Laminate	Formica	8908-NG	Cascara Teakwood		Bullnose Edge
TRANSITION STRIPS						
TS-1	Tile to Concrete	Schluter	RENO-RAMP	Aluminum		Use appropriate size RENO-RAMP height based on adjacent materials

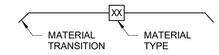
ROOM FINISH SCHEDULE

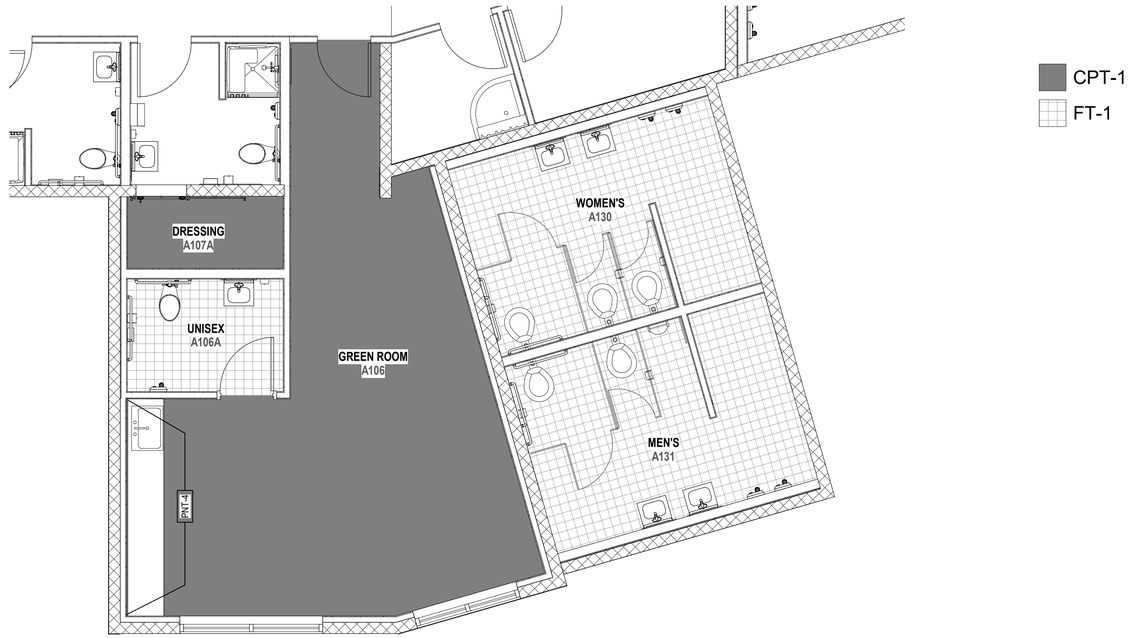
Number	Name	Finishes				Comments
		Floor	Wall	Base	Ceiling	
A106	GREEN ROOM	CPT-1	* PNT-2/PNT-4	RB-1	ACT-1	* SEE FINISH PLAN
A106A	UNISEX	FT-1	* WT-1/PNT-1	TB-1	ACT-1	* SEE ELEVATIONS
A107A	DRESSING	CPT-1	PNT-2	RB-1	ACT-1	
A130	WOMEN'S	FT-2	* WT-1/PNT-1	TB-1	GYP-1	* SEE ELEVATIONS
A131	MEN'S	FT-2	* WT-1/PNT-1	TB-1	GYP-1	* SEE ELEVATIONS

GENERAL NOTES - FINISH PLAN

1	SEE FLOOR PLANS FOR INTERIOR ELEVATIONS
2	PROVIDE DEFLECTION TRACKS AT ALL STUD WALLS, EXTENDING TO STRUCTURE
3	ALL MATERIALS TO BE INSTALLED PER SPECIFIC MANUFACTURER'S INSTALLATION RECOMMENDATIONS
4	ALL EXPOSED METAL TO BE INSTALLED PER SPECIFIC MANUFACTURER'S INSTALLATION RECOMMENDATIONS
5	FLOORING MATERIAL TRANSITIONS TO OCCUR AT CENTER LINE OF DOOR THRESHOLDS, U.N.O.
6	PREPARE FLOORS/WALLS TO RECIEVE FINISH MATERIAL. REFER TO MANUFACTURERS RECOMMENDATIONS FOR SURFACE PREPERATION. NOTIFY ARCHITECT IF CONDITIONS ARE INADEQUATE FOR REQURED INSTALLATION.
7	SEE GI004 FOR WALL TYPES
8	CONTRACTOR TO PROVIDE SOLID BLOCKING AT ALL CASE WORK, FIXED FURNISHINGS AND EQUIPMENT. COORDINATE WITH ELEVATIONS, SECTIONS AND FURNITURE AND FIXTURE SHEETS AND SPECIFICATIONS.

SYMBOL LEGEND:





A3 Finish Floor Plan
1/4" = 1'-0"

2-10-2020
STATE OF COLORADO
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ARC-401582
LICENSED ARCHITECT

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LAS COLONIAS AMPHITHEATER - ADDITION

Grand Junction, CO

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project#: 19.0270
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revisions :

title:

Finish Floor Plan

sheet:

AF100

PERMIT SET

GENERAL STRUCTURAL NOTES

GENERAL

1. The structural notes are intended to complement the project specifications. Specific notes and details in the drawings shall govern over the structural notes and typical details.
2. Typical details and sections shall apply where specific details are not shown.
3. The structural drawings are not all-inclusive and do not contain all dimensions, elevations, openings, mechanical shafts and penetrations needed to build the structure. The contractor shall coordinate these items with the Architectural, Mechanical and Electrical drawings.
4. The contractor shall verify all site conditions and dimensions. If actual conditions differ from those shown in the contract drawings, the contractor shall immediately notify the architect/engineer before proceeding with the fabrication or construction of any affected elements.
5. Omissions or conflicts between the contract drawings and/or specifications shall be brought to the attention of the architect/engineer before proceeding with any work involved. In case of conflict, follow the most stringent requirement as directed by the architect/engineer at no additional cost to the owner.
6. The contractor shall submit a written request to the architect/engineer before proceeding with any changes, substitutions or modifications. Any work done by the contractor before receiving written approval will be at the contractor's risk.
7. The contractor shall coordinate with all trades any items that are to be integrated into the structural system such as openings, penetrations, mechanical and electrical equipment, etc. Sizes and locations of mechanical and other equipment that differs from those shown on the contract drawings shall be reported to the architect/engineer.
8. The contractor shall provide adequate shoring and bracing as required for the chosen method of erection. Shoring and bracing shall remain in place until final connections for the permanent members are completed. The building shall not be considered stable until all connections are completed. Walls shall not be considered self-supporting and shall be braced until the roof system is completed.
9. The contractor shall not cut or core any holes in masonry or concrete walls without prior review by the architect/engineer.
10. Site observations by BHB Consulting Engineers, P.C.'s field representative shall not be construed as approval of construction procedures nor special inspection.
11. Detailing and shop drawing production for structural elements will require information (including dimensions) contained in the architectural, structural and/or other consultants' drawings. The structural drawings shall be used in conjunction with the architectural and other consultant's drawings. Some dimensions and elements such as elevations, depressions, slopes, mechanical housekeeping pads, etc. are not shown in the structural drawings. All dimensions shown on structural drawings shall be verified by contractor with architectural, mechanical and electrical drawings.
12. Review of shop drawing submittals by BHB Consulting Engineers, P.C. is for general compliance only and is not intended for approval. The shop drawing review shall not relieve the contractor from the responsibility of completing the project according to the contract documents.
13. Shop drawings made from reproductions of the contract drawings will be rejected unless the contractor signs a release agreement prior to the shop drawings being reviewed.
14. Only an authorized representative of BHB Consulting Engineers, P.C. may make changes to these contract drawings. BHB Consulting Engineers, P.C. shall not be held responsible or liable for any claims arising directly or indirectly from changes made without written authorization by an authorized representative of BHB Consulting Engineers, P.C.

BASIS OF DESIGN

1. Governing Code — International Building Code 2018
   a. Risk Category — II
2. Snow Loads
   a. Ground Snow Load — P_g = 30 psf
   b. Snow Importance Factor — I_s = 1.0
   c. Snow Exposure Coefficient — C_e = 1.0
   d. Thermal Exposure Coefficient — C_t = 1.0
   e. Roof Snow Load — $P_f = 0.7 * C_e * C_t * I_s * P_g$ = 21 psf plus Snow Drift
   f. Min Snow load used for design — Pf – 25 psf
3. Rain Loads
   a. Rain Intensity — i = 2.0 in/hr
4. Roof Live Load — 20 psf
5. Seismic Loads
   a. Seismic Importance Factor, I_e — 1.0
   b. Seismic Design Category — B
   c. Site Specific Ground Motion Hazard Analysis — Not Required
   d. Mapped Spectral Acceleration — S_s = 0.237g; S_1 = 0.065g
   e. Soil Site Class — D
   f. Soil Site Coefficients — F_a = 1.6; F_v = 2.4
   g. 5% Damped Design Spectral Response Acceleration — $S_{DS} = 2/3 * F_a * S_S$ = 0.253g; $S_{D1} = 2/3 * F_v * S_1$ = 0.104g
   h. Seismic-Force-Resisting System — Special Masonry Shear Wall
   i. Response Modification Coefficient — R = 5.0
   j. System Over-strength Factor — Ω_0 = 2.5
   k. Deflection Amplification Factor — C_d = 3.5
   l. Redundancy Factors — ρx = 1.0; ρy = 1.0
   m. Fundamental Building Period — T = 0.152 seconds
   n. Seismic Response Coefficient — $Cs = S_{DS} * I_e / R$; $Cs = S_{D1} * I_e / (R*T)$
   o. W — Dead Loads of Structure
   p. Base Shear — $Vx = C_S * W$ = 0.051 * W; $Vy = C_S * W$ = 0.051 * W
   q. Analysis Procedure — Equivalent Lateral Force (Static)
6. Wind Loads
   a. Basic Wind Velocity (3 Second Gust) — 105 mph
   b. Exposure Type — C
   c. Internal Pressure Coefficient, GCpi — +/-0.18
   d. Topographic Factor, Kzt — 1.0

FOUNDATION

1. Soils Report
   a. Author: — Huddleston-Berry
   b. Dated: — January 27, 2015
   c. Project No: — 00208-0057
2. Soil Bearing Pressure — 1500 psf, on Compacted Fill.
3. Frost Protection — 12" minimum to top of footing. Contractor shall field verify that the footing elevations and final grades indicated on the plans will provide the minimum frost protection. The contractor shall notify the architect/engineer if there are any locations where the minimum frost protection might not be achieved prior to placing concrete.
4. Lateral Soil Pressure Fluid Equivalent Density:
   a. Active — 35 pcf (retaining walls)
   b. At Rest — 55 pcf (rigid foundation walls)
   c. Passive — 300 pcf
5. Coefficient of Friction — 0.4

EARTHWORK

1. All footings shall bear on 2'-0" of compacted structural fill. See detail 10/S501.
2. Consult the project specifications and soils report for further earthwork requirements.

CONCRETE

1. Materials, unless noted otherwise:
   a. Normal weight aggregates — ASTM C 33
      i. Combined aggregate gradation for slabs on grade and other designated concrete shall be 8% - 18% for large top size aggregates (1.1/2") or 8% - 22% for smaller top size aggregates (1" or 3/4") retained on each sieve below the top size and above the No. 100. The range for the No. 30 and No.50 sieves shall be 8% - 15% retained in each. To avoid gap gradation the following shall occur:
         1. The percent retained on two adjacent sieves shall not fall below 5%.
         2. The percent retained on three adjacent sieves shall not fall below 8%.
         3. When the percent retained on two adjacent sieves is less than 8%, the total retained on either of these sieves and the adjacent outside sieve shall be at least 13%. See ACI 302 Section 5.4.3.3 for more information.
      ii. Maximum Aggregate Size shall not be larger than:
         1. 3.1/2" or 1/5 the narrowest dimension of the forms
         2. 1/3 the depth of the slab
         3. 3/4 the minimum clear spacing between bars
   b. Reinforcing Steel — ASTM 615 Grade 60 (Fy = 60 ksi) Use Grade 40 (Fy = 40 ksi) for field bent dowels with spacings indicated reduced by 1/3.
   c. Deformed Bar Anchors (DBA) — ASTM A496
   d. Headed Stud Anchors (HSA) — ASTM A108
      Anchor Rods — ASTM F1554, Grade 36, with ASTM A563 heavy hex nuts and hardened washers Grade A
   e. Admixtures:
      i. Air-entraining admixtures shall comply with ASTM C 260 (when used).
      ii. Calcium chloride shall not be added to the concrete mix.
      iii. Water-reducing admixture shall comply with ASTM C 494/C 494M, Type A (when used)
      iv. Retarding admixture shall comply with ASTM C 494/C 494M, Type B (when used).
      v. Water-reducing and retarding admixture shall comply with ASTM C 494/C 494M, Type D (when used).
      vi. High-range, water-reducing admixture shall comply with ASTM C 494/C 494M, Type F (when used).
      vii. High-range, water-reducing and retarding admixture shall comply with ASTM C 494/C 494M Type G (when used).
      viii. Admixture manufacturer shall have ISO 9001 Quality Certification. To ensure compatibility all admixtures shall be from the same manufacturer.
   f. Type I/II cement complying with ASTM C-150 shall be used for all concrete. Cement source shall remain the same for the entire job.
   g. The water/cementitious materials ratios shall meet the requirements of Table 19.3.2.1 of ACI 318-14.
   h. Fly Ash - ASTM C618, Class F – 25% maximum cementitious content.
   i. Provide air entraining as recommended by Table 19.3.3.1 of ACI 318-14. Concrete that extends above grade and is exposed to freezing and thawing while moist shall be air-entrained.
   j. Concrete shall have, at the point of delivery, a slump of 4". Determine the slump by ASTM C143. Slump tolerance shall meet the requirements of ACI 117. When use high-range, water-reducing admixture or plasticizing admixture conforming to ASTM C494, it is permitted to increase the slump of concrete 8" maximum with a verified slump of 2 to 4 in. before the admixture is added.
   k. No aluminum conduit or product containing aluminum or any other material injurious to concrete shall be embedded in concrete.
2. Compressive strengths of concrete at 28 days shall be as follows
   a. Interior Footings& Interior Foundation Walls — Strength: 3,000 psi; Classification: F0, S0, W0, C0
   b. Exterior Footings& Exterior Foundation Walls — Strength: 4,500 psi; Classification: F1, S0, W0, C0
   c. Interior Slabs on Grade — Strength: 3,000 psi; Classification: F0, S0, W0, C0
   d. All Site Concrete with Reinforcement — Strength: 5,000 psi; Classification: F3, S0, W1, C2
   e. All Site Concrete without Reinforcement — Strength: 4,500 psi; Classification: F3, S0, W1, C2
3. Reinforcement for concrete slabs on grade:
   a. 4" thick concrete slab on grade. Reinforce slab with #3 bars at 18" o.c. each way with 1.1/2" max cover below the top surface of the concrete.
      i. At contractor's option, macro-synthetic fiber or welded wire fabric may be used in lieu of reinforcing bars with the following requirements:
         1. 3 lbs minimum per cubic yard of macro-synthetic fiber reinforcing (ASTM C 1116 Type 3) with the following requirements:
            a. Length 1.1/2" – 2"
            b. Equivalent diameter of 0.016" to 0.05"
            c. Minimum aspect ratio (length to equivalent diameter) of 50 to 90.
            d. Provide a fiber dosage to achieve a minimum post-crack residual strength (f_{e3}) of 200 psi when tested according to ASTM C1609.
            e. Maximum concrete shrinkage shall be 0.04% when tested according to ASTM C157 or C157 modified.
            f. Fiber manufacturer shall provide the following:
            g. Fiber dosage
            h. Mix design
            i. Finishing practices
         2. 6" x 6" – W2.5/W2.5 welded wire fabric (ASTM A185 and A497) minimum, unless noted otherwise. Welded Wire Fabric with 1.1/2" of cover below the top surface of the concrete.
4. Only one grade or type of concrete shall be poured on the site at any given time.
5. The contractor shall be responsible for the design, detailing, care, placement and removal of all formwork and shores.
   a. Supporting forms and shoring shall not be removed until structural members have acquired sufficient strength to safely support their own weight and any construction load to which they may be subjected. In no case, however, shall forms and shoring be removed in less than 24 hours after concrete placement.
6. Reinforcement shall have the following concrete cover:

a. Cast-in-place Concrete	Clear Cover
i. Cast against and permanently exposed to earth	3"
ii. Formed concrete exposed to earth or weather:	
#6 thru #18 bars	2"
#5 and smaller bars	1.1/2"
iii. Concrete not exposed to weather or in contact with ground:	
Slabs, Walls, piers, Joists; #11 bars and smaller	3/4"
Beams, Columns: Primary Reinf., Ties, Stirrups, Spirals	1.1/2"

7. Detailing:
   a. Lap splice lengths shall be detailed to comply with the "Concrete Reinforcing Bar Lap Splice Schedule" on sheet S601. Splices may be made with mechanical splices capable of 125% tension capacity of the bar being spliced. Mechanical splices shall be the positive connecting type coupler and shall meet all International Building Code requirements and shall have a current ICC-ES report or IAPMO Certification. Use "Lenton" Standard Couplers (ICC ER-3967), "Bar-Lock" (ICC ESR-2495) or equal with internal protector. If mechanical splices are used, splices or couplers on adjacent bars shall be staggered a minimum of 24" apart along the longitudinal axis of the reinforcing bars.
   b. At joints, provide reinforcing dowels to match the member reinforcing, unless noted otherwise.
   c. At all discontinuous control or construction slab on grade joints, provide 2 - #4 x 48".
   d. Corner Bars: Provide corner bars at intersecting wall corners using the same bar size and spacing as the horizontal wall reinforcing. Corner bars shall lap the horizontal reinforcing with the required lap splice length. See detail 3/S501.
   e. All vertical reinforcing shall be doweled to footings, or to the structure below with the same size and spacing as the vertical reinforcing for the element above. Dowels extending into footings shall terminate with a 90-degree standard hook and shall extend to within 4" of the bottom of the footing. Footing dowels (#8 bars and smaller) with hooks need not extend more than 20" into footings.
   f. Horizontal wall reinforcing shall be continuous through construction and control joints.
   g. See detail 8/S501 for reinforcing around miscellaneous openings (8" to 36" wide). For openings wider than 36", contact the engineer. All recesses that interrupt reinforcing shall be reinforced the same as an opening.
8. Construction Joints, Control (Contraction) Joints:
   a. Construction joints in all horizontal and vertical construction joints including between top of footing and foundation walls shall be intentionally roughened to a full amplitude of approximately 1/4". The laitance on the concrete (thin, flaky layer of harden, weakened hydrated cement) shall be mechanically removed from the surface after the concrete has achieved final set. Construction joints in slabs on grade shall not exceed a distance of 125'-0" o.c. in any direction.
   b. Control joints shall be installed in slabs on grade so the length to width ratio of the slab is no more than 1.25:1. Control joints shall be completed as soon as final set is achieved and it is okay to operate the cutter on the slab. Final set is typically achieved within the first 4 to 12 hours after the slab has been finished in an area (depending on weather conditions and concrete hydration rate; 4 hours in hot weather to 12 hours in cold weather). For early entry saw cutting, joints should be cut within the first 1 to 4 hours (depending on weather conditions and concrete hydration rate; 1 hour for hot weather and 4 hours for cold weather). Where saw cut joints cannot be cut along the entire projected length of the joint, a 90 degree hand grinder or other tool shall be used to complete the joint. Control joints may be installed by:
      i. Saw cut a depth of 1/4 the thickness of the slab (1.1/4" ± for early entry saws) minimum.
      ii. Tooled joints a depth of 1/4 the thickness of the slab
   c. For interior concrete slabs-on-grade that are to receive **no** floor covering, install construction or control joints in slabs on grade at a spacing not to exceed 24 times the slab thickness in any direction, unless noted otherwise. For interior concrete slabs-on-grade that are to receive floor coverings the contractor has the option to increase the control joint spacing to 36 times the slab thickness in any direction.
   d. For architectural exposed concrete walls, including retaining walls, provide contraction joints at a uniform spacing of not more than 20 ft o/c by placing deep (1.5 times the maximum aggregate size), narrow rustication strips on both wall faces to induce cracking. Place contraction joints at any locations in which the wall changes thickness. At all contraction joints, reduce horizontal reinforcing crossing the joint by 1/2 of the horizontal reinforcement elsewhere in the wall. Coordinate location with the architectural drawings.
9. Construction
   a. Use chairs or other support devices recommended by the CRSI to support and tie reinforcement bars prior to placing concrete. Reinforcing steel for slabs on grade shall be adequately supported. Support reinforcing steel of slabs on grade with precast concrete units. Lifting the reinforcing off the grade during placement of concrete is not permitted.
   b. Concrete to be mechanically consolidated during placement per ACI standards.
   c. Contractor shall coordinate placement of all openings, curbs, dowels, sleeves, conduits, bolts, inserts and other embedded items prior to concrete placement.
   d. All embeds, anchors and dowels shall be securely tied to formwork or to adjacent reinforcing prior to the placement of concrete.
   e. No pipes, ducts, sleeves, etc shall be placed in structural concrete unless specifically detailed or approved by the structural engineer. Penetrations through walls when approved shall be built into the wall prior to concrete placement. Penetrations will not be allowed in footings or grade beams unless detailed. Piping shall be routed around footings and grade beams and unless detailed. Footings shall be stepped to avoid piping.
   f. Reinforcing Bars shall not be welded. Do not substitute reinforcing bars for DBAs or HSAs.

COLORADO REGISTERED CHRISTIAN A. HUDDLESTON 37436 PROFESSIONAL ENGINEER
02-10-2020

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project#: 190527
date: Feb. 10, 2020

revisions :

title:
GENERAL STRUCTURAL NOTES

sheet:
S001

PERMIT SET

GENERAL STRUCTURAL NOTES

POST-INSTALLED ANCHORS

1. General Post-Installed Anchor Notes
   a. Do not install adhesive anchors in concrete if less than 21 days old; do not install mechanical anchors, screw anchor or powder actuated anchors in concrete less than 7 days old. Contractor must obtain written approval from the engineer to install prior to these time periods. Do not apply full load to anchors until concrete has reached 28-day compression strength.
   b. Anchors or adhesives specified in details shall be provided; alternative anchors or adhesives may be used if the contractor provides calculations demonstrating that the alternative can achieve the performance values of the specified product. These calculations, along with an ICC-ES ESR or IAPMO-UES ER approval compliant with the specified codes herein, must be submitted to the structural engineer prior to use.
   c. Follow all the manufacturer's recommendations and certification testing reports for anchor installation. See specific anchors below for more information.
   d. No anchor shall be installed within 1.5 anchor rod diameters of an abandoned hole that has been filled with non-shrink grout; increase distance to 3 anchor rod diameters when the abandoned hole has not been filled.

2. Adhesive Anchors
   a. For anchors in concrete, the adhesives shall be divided into two groups: Standard Adhesives and High Strength Adhesives. Standard adhesives can be used in general applications when details reference the "Standard Adhesive Embedment Schedule" on sheet S601. High Strength adhesive groups will be specified for the particular application in the drawings and details. When a High Strength Adhesive is specified, the contractor has the option to use any of the adhesives in the High Strength group. When a Standard Adhesive is specified, the contractor has the option to use any of the adhesives in either group. See below for the acceptable adhesives in each group.
      i. Standard Adhesive Group for anchors in concrete includes the following adhesives:
         1. SET-XP (ICC-ES ESR-2508) by Simpson Strong-Tie
         2. Pure 50+ (ICC-ES ESR-3576) by Dewalt
         3. AC100+ Gold (ICC-ES ESR-2582) by Dewalt
         4. HIT-RE 100 (ICC-ES ESR-3829) by Hilti, Inc.
      ii. High Strength Adhesive Group for anchors in concrete includes the following adhesives:
         1. SET-3G (ICC-ES ESR-4057) by Simpson Strong-Tie
         2. Pure 110+ (ICC-ES ESR-3298) by Dewalt
         3. AC200+ (ICC-ES ESR-4027) by Dewalt
         4. HIT-RE 500-V3 (ICC-ES ESR-3814) by Hilti Inc.
         5. HIT-HY 200 (ICC-ES ESR-3187) by Hilti Inc.
   b. For anchors in grouted masonry, the adhesive shall be HIT-HY 70 (ICC-ES ESR-2682), HIT-HY-200 (ICC-ES ESR-3963) by Hilti Inc., SET-XP (IAPMO UES ER-265) by Simpson Strong-Tie Inc. or AT-XP (IAPMO UES ER-281) by Simpson Strong-Tie Inc., AC100+ (ICC-ES ESR-3200) by Powers Fasteners Inc. or CIA GEL (ICC-ES ESR-1702) by USP.
   c. For anchors in ungrouted masonry, the adhesive shall be HIT-HY 70 (ICC-ES ESR-2682) by Hilti Inc., or SET (ICC-ES ESR-1772) by Simpson Strong-Tie Inc. or AC100+ (ICC-ES ESR-3200) by Powers Fasteners Inc. Plastic mesh or stainless steel screen tubes shall be used.
   d. Adhesive shall be within the manufacturer's recommended life time and prior to expiration date. Do not use adhesive that has not been stored per manufacturer's recommendations or may have experienced freeze thaw cycles or extreme heat.
   e. Do not install adhesive anchor in wet or damp hole unless product is approved for such conditions without strength reduction. Do not install adhesive anchors if concrete temperature is below 50-degree F unless adhesive is approved for lower temperature without strength reduction. Refer to manufacturer's published installation instructions.
   f. Follow all the manufacturer's recommendations and certification testing reports regarding hole cleaning prior to epoxy installation. All holes shall be drilled with ANSI standard bits designed for concrete. Diamond core drilled holes are not allowed unless indicated in specific details or approved by the structural engineer prior to use.

3. Mechanical Anchors
   a. For concrete, the mechanical anchor shall be Kwik Bolt TZ (ICC-ES ESR-1917) by Hilti Inc., Strong-Bolt 2 (ICC-ES ESR-3037) by Simpson Strong-Tie Inc. or Power-Stud+ SD2 (ICC-ES ESR-2502) by Powers Fasteners Inc.
   b. For grouted masonry, the mechanical anchor shall be Kwik Bolt 3 (ICC-ES ESR-1385) by Hilti Inc., Wedge-All (ICC-ES ESR-1396) by Simpson Strong-Tie or Strong-Bolt 2 (IAPMO-UES ER-240) by Simpson Strong-Tie or Power-Stud+ SD1 (ICC-ES ESR-2966) by Powers Fasteners Inc.

4. Screw Anchors
   a. For concrete and grouted masonry, the screw anchors shall be Titen HD (ICC-ES ESR-2713 for concrete only and ICC-ES ESR-1056 for grouted masonry) by Simpson Strong-Tie, or Screw Bolt + (ICC-ER ESR-3889 for concrete only) by DeWalt, Wedge-Bolt + (ICC-ES ESR-1678 for grouted masonry) by Powers Fasteners Inc, or Kwik HUS-EZ (ICC-ES ESR-3027 for concrete only and ICC-ES ESR-3056 for grouted masonry) by Hilti Inc.

5. Powder Actuated Fasteners
   a. For fasteners driven into steel, the fastener shall be X-U P8 TH Universal Knurled Shank Fastener (ICC-ES ESR-2269) by Hilti Inc., PDPA (ICC-ES ESR-2138) by Simpson Strong-Tie Inc. or 8mm Head Spiral CSI Drive Pin (ICC-ES ESR-2024) by Powers Fasteners Inc.

MASONRY

1. Materials, unless noted otherwise:
   a. Concrete Masonry Units (CMU) ASTM C90: Lightweight Grade N (minimum net area unit strength of 2,000 psi). f'_m = 2,000 psi.
   b. Mortar Cement: Use Type "S"
   c. Masonry Grout ASTM C476: grout shall attain a minimum compressive strength of 2,500 psi at 28 days.
   d. Reinforcing Steel — ASTM 615 Grade 60 (Fy = 60 ksi)
   e. Deformed Bar Anchors (DBA) — ASTM A496
   f. Headed Stud Anchors (HSA) — ASTM A108
   g. Anchor Rods — ASTM F1554, Grade 36,with ASTM A563 heavy hex nuts and ASTM F436 hardened washers

2. Reinforcement shall have the following cover:
   a. Typical reinforcement shall have a minimum coverage of one bar diameter over all the bars, but not less than 3/4". When masonry is exposed to soil, minimum coverage shall be 1.1/2".

3. Detailing Requirement
   a. Lap all masonry reinforcing per "Masonry Reinforcing Lap Schedule" on sheet S601.
   b. All vertical reinforcing shall be doweled to the foundation wall, footing (structure below) and to the structure below with the same size dowel, spacing (and in the same core) as the vertical wall reinforcing above.
   c. Corner Bars: Provide corner bars at intersecting wall corners using the same bar size and spacing as the horizontal wall reinforcing. Corner bars shall lap the horizontal reinforcing with the required lap splice length. See detail 3/S501.
   d. Wall Openings: For unscheduled openings wider than 24", provide reinforcing on all sides per detail 7/S501. Also, for all scheduled openings, provide horizontal bar at bottom of opening per detail 7/S501. Vertical bars shall extend from floor level below to the floor, or roof level above. Horizontal bars for all openings shall extend a minimum of 48 bar diameters beyond the corners of the opening. Where a 48 bar diameter extension is not possible, extend bars as far beyond the opening as possible and terminate the bar(s) with a 90 degree standard ACI hook.
   e. Horizontal wall reinforcing shall be continuous through joining concrete walls, masonry walls, columns, and pilasters. Provide a key between the wall and the column or pilaster. Horizontal wall reinforcing shall be placed inside the column vertical reinforcing.
   f. Horizontal wall reinforcing shall terminate with a hook at edge of openings and at each side of control joints except at floor and roof levels, lintels, beams and at top of parapets. See details 4/S502 and 6/S502.
   g. All masonry column ties shall terminate with 135 degree hooks plus a 6 bar diameter extension (4" minimum).

4. Construction Requirements:
   a. Masonry coursing shall be coordinated with the architectural drawings.
   b. All units shall be laid with full mortar beds on the face shells. All head joints shall be filled solidly with mortar for a distance in from the face of the units not less than the thickness of the longitudinal face shells. Cells which are to be grouted shall have full head joints.
   c. Masonry walls, beams and columns shall be constructed with running bond, unless noted otherwise.
   d. All cells containing reinforcement, embeds, anchor bolts, etc. shall be filled solid with grout. Grout shall be placed by mechanical vibration during placing and re-vibrated after excess moisture has been absorbed but before workability is lost. Rodding of grout is not allowed.
   e. Where walls are not grouted solid, each grout pour shall terminate flush with the top of the uppermost unit except at cells with vertical reinforcing where the grout shall be 1.1/2" below top of unit to provide construction key.
   f. Grout pours shall be limited to 4'-0" unless written approval is obtained from the engineer of record.
   g. All walls below grade shall be grouted solid.
   h. Vertical cells to be filled with grout shall have vertical alignment sufficient to maintain a clear, unobstructed vertical cell measuring not less than 2" by 3". All steel reinforcement shall be secured against displacement prior to grouting by wire positioners or other suitable devices at intervals not exceeding 200 bar diameters or 10 ft maximum, or at bar splice locations. Vertical reinforcing shall be located at the center of the wall unless noted otherwise
   i. Reinforcing Bars shall not be welded. Do not substitute reinforcing bars for DBAs or HSAs.
   j. Control Joints: Spacing shall not exceed 30'-0". Control joints shall not be placed any closer than 4'-0" to edge of openings. Control joints shall not be placed in the middle of masonry piers. See architectural drawings for locations.
   k. Grout all beam and joist pockets solid after installation of beams and joists.
   l. Embed channels and plates shall be placed so as to create a flush surface with the face of the wall.
   m. Anchor bolts and headed stud anchors shall be set in a grouted cell. Anchor bolts and headed stud anchors shall have 1" grout surrounding the shank at its penetration. Grout shall be flush with the face or top of the masonry.

STRUCTURAL STEEL

1. Material:
   a. Wide Flanges Section — ASTM A992 (50 ksi)
   b. All Thread Rods, Other Shapes & Plates — ASTM A36 (36 ksi)
   c. Square or Rectangular HSS — ASTM A500 (50 ksi) Grade C or ASTM A1085 (50ksi)
   d. Deformed Bar Anchors (DBA) — ASTM A496
   e. Headed Stud Anchors (HSA) — ASTM A108
   f. Non-Metallic Shrinkage Resistant Grout — ASTM C 1107
   g. Anchor Rods — ASTM F1554, Grade 36, with ASTM A563 heavy hex nuts and ASTM F436 hardened washers Grade A
   h. Bolted Connections: — ASTM F3125 Grade A325 with ASTM A563 nuts and ASTM F436 hardened washers.

2. Fabrication and construction shall comply with the latest edition of the following Codes and Standards:
   a. American Institute of Steel Construction (AISC), "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings," with "Commentary".
   b. AISC "Code of Standard Practice" excluding the following: Section 3.2, Section 4.4, Section 4.4.1,
   c. AISC "Specification for Structural Joints Using High-Strength Bolts"
   d. American Welding Society (AWS), Structural Welding Code (specific items do not apply when they conflict with the AISC requirements).
   e. AISC "Seismic Provision for Structural Steel Buildings"- ANSI/AISC 341
   f. All exterior steel elements, including anchor rods and bolts shall be hot-dip galvanized in accordance with ASTM A123 and A153 where applicable.

3. Welding
   a. Field weld flags that have been put in these documents are for suggestion only. The contractor has the option to substitute shop welding for field welding or vice versa. The steel fabrication and steel erection drawings must clearly distinguish between shop welds and field welds prior to any work being performed.
   b. Steel fabricators shall indicate the shop welds that are excluded from their bids. Steel erectors shall indicate the field welds that are excluded from their bids. It is the responsibility of the contractor to coordinate shop welding and field welding with the appropriate subcontractors.
   c. All welding and cutting shall be performed by AWS certified welders.
   d. Use E-70 XX or as noted otherwise. E60 XX may be used for welding steel roof decks.
   e. All intersecting steel shapes which are not bolted shall be connected by a fillet weld all around, unless noted otherwise. Where fillet weld sizes are not shown they shall be 1/16" less than the thinnest of the connected parts for thicknesses 1/4" and larger. Fillet welds on plates less than 1/4" shall be of the same size as the thinnest of the connected part.
   f. Reinforcing Bars: Do not weld rebar. Do not substitute reinforcing bars for deformed bar anchors (DBAs), machine bolts, or headed stud anchors (HSAs).
   g. Do not weld anchor bolts, including "tack" welds.
   h. Headed Stud Anchors (HSAs) welding and deformed bar anchor welding shall conform to the manufacturer's specifications.

4. Bolted Connections:
   a. Use bolts for steel to steel connections, as noted herein or as noted on the drawings. Bolts shall be used in connections for simple span framing and beam (or girder) to bearing plate connections. Tighten bolts to a snug tight condition.
   b. Use hardened washers beneath the turned element of all bolts or nuts. Use hardened beveled washers, to compensate for the lack of parallelism, where the outer face of the bolted parts has a slope greater than one in twenty with respect to the plane normal to the bolt axis. At oversized holes hardened washers or plates shall conform with ASTM F-436 and shall completely cover the slot after installation.
   c. Where a steel to steel beam connection is not shown, provide a standard AISC framed connection for one half the total uniform load capacity of the beam for the span and steel specified.
   d. Bolts, nuts and washers shall not be reused.

5. Provide full-depth web-stiffener plates at each side of all beams at all bearing points. Stiffener plates shall be the thickness called out below unless noted otherwise and shall be welded both sides with fillet welds all around:

FLANGE WIDTH	STIFFENER THICKNESS	WELD SIZE
Less than 8.1/4"	1/4"	3/16"
8.1/4" to 12.1/4"	3/8"	1/4"
12 1/4" to 16.1/2"	1/2"	5/16"
16.1/2" to 20.3/4"	5/8"	3/8"

METAL DECKING

1. Steel deck shall comply with the latest requirements of the Steel Deck Institute.

2. All deck shall be 3-span continuous minimum. In areas where 3-span conditions are not possible, the contractor shall provide heavier gage deck as required to provide the equivalent loading of the deck under a three span condition.

3. Steel roof deck shall not be used to support loads from plumbing, HVAC ducts, light fixtures, architectural elements or equipment of any kind, unless specifically noted. Light weight suspended acoustical ceilings with a total weight of 50 lbs per attachment may be hung from roof deck. The hangers shall be staggered to distribute the loads over multiple deck flutes.

4. All deck supporting members shall be dry before welding.

5. Clinch seams before welding interlocking seams.

Steel Roof Deck

a. Steel roof deck shall be 1.1/2" deep X 20 gage minimum painted, type "B" wide rib deck with interlocking side seams with the following properties:

	20 Gage
Minimum S ($in^3/_{ft}$) =	0.237
Minimum I ($in^4/_{ft}$) =	0.231

b. Minimum allowable deck diaphragm shear values shall be 796 lbs/ft for a 7'-0" deck span.
c. Maximum diaphragm flexibility factor shall be 13.1 for a 7'-0" deck span.
d. Weld steel roof deck to supporting framing members with 3/4" diameter puddle welds at the following spacings (Closer spacing may be used to develop minimum shear requirements.):
   i. 6" o.c. to all supports perpendicular to deck corrugations (7 welds per 36" sheet).
   ii. 6" o.c. to all supports parallel to deck corrugations.
e. Hilti or Pneutek power driven fasteners are acceptable as an alternative to welds provided the connection meets the diaphragm shear capacity given above. For Hilti call 800-879-8000 extension 6337 for connection information comparison. For Pneutek, call 800-431-8665. If Hilti or Pneutek power driven fasteners are used, the contractor shall submit Hilti's / Pneutek calculations to the Architect/Engineer for review. Also if Hilti of Pneutek power driven fasteners are used, a Hilti / Pneutek representative shall be present before the decking is installed to make sure the installer is properly trained in using the equipment. The Hilti / Pneutek representative shall also make a site visit the day after deck has been started to be installed to verify the power driven fasteners are being installed correctly.
f. Attach interlocking seams with one of the following:
   i. 1 ½" long top seam welds at 24 o.c. maximum
   ii. Verco PunchLok II System at 24" o.c. maximum
   iii. ASC Delta Grip System at 36" o.c maximum
   iv. CSI Inter-Knek System at 36" o.c maximum
   Closer spacing may be used to develop minimum shear requirements. A standard button punch can **not** be used in place of Verco PunchLok, DeltaGrip or CSI Inter-Knek
g. Provide a 2" minimum bearing and a 4" lap at the splice points.

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CITY OF Grand Junction COLORADO

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GENERAL STRUCTURAL NOTES

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S002

PERMIT SET

REQUIREMENTS FOR SPECIAL INSPECTION, MATERIAL TESTING, AND STRUCTURAL OBSERVATION

LEGEND OF MARKS AND ABBREVIATIONS

AB	ANCHOR BOLT(S)	k	KIP(S) = 1000 POUNDS
ABV	ABOVE	KLF	KIPS PER LINEAL FOOT
ALT	ALTERNATE	KSF	KIPS PER SQUARE FOOT
APPROX	APPROXIMATE		
ARCH	ARCHITECT(URAL)	LBS	POUNDS
		LF	LINEAL FOOT
BLDG	BUILDING	LLH	LONG LEG HORIZONTAL
BLW	BELOW	LLV	LONG LEG VERTICAL
BM	BEAM	LSH	LONG SIDE HORIZONTAL
BOT	BOTTOM	LSV	LONG SIDE VERTICAL
BRG	BEARING		
BTWN	BETWEEN	MAS	MASONRY
		MAX	MAXIMUM
CC.	CENTER-TO CENTER	MCJ	MASONRY CONTROL JOINT
C.J.	CONST/CONTROL JOINT	MC-x	MASONRY COLUMN MARK
CJP	COMPLETE JOINT PENETRATION	MECH	MECHANICAL
	GROOVE WELD (FULL PEN WELD)	MFR	MANUFACTURER
CMU	CONCRETE MASONRY UNIT	MIN	MINIMUM
COL	COLUMN	MISC	MISCELLANEOUS
CONC	CONCRETE	ML-x	MASONRY LINTEL
CONST	CONSTRUCTION	MP-x	MASONRY PIER
CTR	CENTER	MW-x	MASONRY WALL
CW-x	CONCRETE WALL		
		NIC	NOT IN CONTRACT
DB	DECK BEARING	NTS	NOT TO SCALE
DBA	DEFORMED BAR ANCHOR		
DBE	DECK BEARING ELEVATION	O.C.	ON CENTER
DBL	DOUBLE	O.F.	OUTSIDE FACE
DET	DETAIL	OPNG	OPENING
DIA	DIAMETER	OPP	OPPOSITE
DIM	DIMENSION		
DN	DOWN	PAF	POWDER-ACTUATED FASTENER
DWG	DRAWING	PCF	POUNDS PER CUBIC FOOT
DWL	DOWEL	PL	PLATE
		PLF	POUNDS PER LINEAL FOOT
(E)	EXISTING	PSF	POUNDS PER SQUARE FOOT
EA	EACH	PSI	POUNDS PER SQUARE INCH
E.F.	EACH FACE	PT	POINT
E.J.	EXPANSION JOINT		
ELEC	ELECTRICAL	REINF	REINFORCING
ELEV	ELEVATION	REQD	REQUIRED
EQUIP	EQUIPMENT	R.D.	ROOF DRAIN
EQ	EQUAL	RTU	ROOF TOP UNITS
E.W.	EACH WAY		
EXST	EXISTING		
EXP	EXPANSION	SHT	SHEET
EXT	EXTERIOR	SI	SPECIAL INSPECTION
		SIM	SIMILAR
FC-x	CONTINUOUS FOOTING MARK	SMU	SUSPENDED MECHANICAL UNITS
F.D.	FLOOR DRAIN	SOG	SLAB-ON-GRADE
FDN	FOUNDATION	SQ	SQUARE
F.F.	FINISHED FLOOR	STAG	STAGGERED
FR-x	RECTANGULAR FOOTING	STD	STANDARD
FS-x	SQUARE FOOTING MARK	STL	STEEL
FT	FOOT	STR	STRUCTURAL
FTG	FOOTING	STS	SELF TAPPING SCREWS
FTS-x	THICKENED SLAB MARK		
		T&B	TOP AND BOTTOM
GA	GAUGE	TEMP	TEMPERATURE
GALV	GALVANIZED	THDS	THREADS
GSN	GENERAL STRUCTURAL NOTES	T.O.	TOP OF
		TOC	TOP OF CONCRETE
HORIZ	HORIZONTAL	TOD	TOP OF DECK
HSA	HEADED STUD ANCHOR	TOF	TOP OF FOOTING
HT	HEIGHT	TOW	TOP OF WALL
		TYP	TYPICAL
ICC	INTERNATIONAL CODE COUNCIL	UNO	UNLESS NOTED OTHERWISE
IBC	INTERNATIONAL BUILDING CODE		
I.F.	INSIDE FACE	VERT	VERTICAL
IN.	INCH		
INT	INTERIOR	W/	WITH
		WT	WALL THICKNESS
JT	JOINT	WWF	WELDED WIRE FABRIC
JST	JOIST	WWM	WELDED WIRE MESH

STATEMENT OF SPECIAL INSPECTION AND QUALITY ASSURANCE

Special inspection and quality assurance (including structural testing), as required by section 1704 and 1705 of the 2018 IBC, shall be provided by an independent agency employed by the owner for the items in this section and other areas of the approved construction documents, unless waived by the building official.	
The names and credentials of the Special Inspectors to be used shall be submitted to the Building Official for approval.	
Responsibilities of the Special Inspector	
	Special Inspector shall review all work listed in the special inspection schedules herein for conformance with the approved construction plans, specifications and 2018 IBC.
	Testing and inspection reports shall be sent on a weekly basis to the architect, engineer, building official and contractor for review. All items not in compliance shall be brought to the immediate attention of the contractor for correction, and if uncorrected, to the architect, engineer and building official.
	Once corrections have been made by the contractor, the special inspector shall submit a final signed report to the building official stating that the work requiring special inspection was, to the best of the special inspector's knowledge, in conformance with the approved construction plans, specifications and 2018 IBC.
Responsibilities of the Contractor	
	The contractor shall submit a written statement of responsibility to the owner and the building official prior to the commencement of work in accordance with 2018 IBC section 1704.4. This statement shall indicate that the contractor will coordinate and cooperate with the required inspections contained herein.
	The contractor shall notify the designated special inspector that work is ready for inspection at least 24 hours before said inspection is required.
	All work requiring special inspection shall remain open and accessible until it has been observed by the special inspector and deemed acceptable through inspection report.
	Special inspection during fabrication is not required if the fabricator is registered and approved by the authority having jurisdiction to perform such work without special inspection. Upon completion of fabrication, the approved fabricator shall submit a certificate of compliance for submittal to the building official.
	The contractor shall be responsible for their own quality control including materials, fabrication, erection, etc.

SOILS CONSTRUCTION INSPECTIONS

Soils (2018 IBC Section 1705.6)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Site Preparation	-	X	Verify that the site has been prepared in accordance with the soils report prior to placement of prepared fill.
Fill Material	X	-	Verify that the material being used, the maximum lift thickness and the in-place dry density of the compacted fill material comply with the soils report during placement and compaction of the fill material during placement and compaction.
Continuous Footing Backfill: at least one test for each 40 linear feet or less of wall length, but no fewer than 2 tests.	-	X	At each compacted backfill layer.
Spot Footing Backfill: Minimum of one compaction test for each lift for each spot footing.	-	X	At each compacted backfill layer.
See specifications for further requirements.	-	-	

CONCRETE CONSTRUCTION INSPECTIONS

Concrete (2018 IBC Section 1705.3, Table 1705.3, and Section 1705.12) The following concrete elements require special inspection:

All concrete footings, All concrete walls, including foundation walls, Interior concrete slab-on-grade.

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Protection of concrete during cold and hot weather	-	X	
Verify materials used including use of the required mix design	-	X	Verify mix design meets strength and exposure requirements listed on General Structural Notes
Formwork	-	X	Verify shape, location and member dimensions
Bolts installed in concrete	X	-	Inspection of anchors or embeds cast in concrete is required when allowable loads have been increased or where strength design is used. Prior to and during concrete placement.
Embeds and Inserts installed in concrete	X	-	Prior to and during concrete placement.
Concrete reinforcing steel placement	-	X	Verify that reinforcing is of specified type, grade and size; that it is free of oil, dirt and rust; that it is located and spaced properly; that hooks, bends, ties, stirrups and supplemental reinforcement are placed correctly; that lap lengths, stagger and offsets are provided; and that all mechanical connections are installed per the manufacturer's instructions and/or evaluation report.
Concrete placement and samples	X	-	Cylinders, slump, temperature and air-entrainment shall be done for every 150 cubic yards or each day's production if the day's production is less than 150 cubic yards nor less than once for each 5000 sq. ft of surface area for slabs and walls.

STEEL BOLTED CONSTRUCTION INSPECTIONS

Where special inspections are listed under "Random Basis", special inspection of elements and items shall be performed on a random basis. Operations need not be delayed pending these inspections. Where special inspection items are listed under "Every Element", special inspection shall be performed for each element, joint, or member, as applicable based on the task listed below.

High Strength bolted connections (2018 IBC section 1705.2.1, section 1705.12.1 and section 1705.13.1 and AISC 360-16 Chapter N and AISC 341-16 Chapter J)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION PLAN		COMMENTS
	Every Element	Random Basis	
Inspection Tasks Prior to Bolting			
Manufacturer's certifications available for fastener materials	X	-	
Fasteners	-	X	Marked in accordance with ASTM requirements
Proper fasteners selected for the joint detail	-	X	Including grade, type, bolt length if threads are to be excluded from shear plane.
Proper bolting procedure selected for joint detail	-	X	
Connecting elements	-	X	Including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	-	X	Not required if only snug-tight joints are specified per [Section N5.6(1) of AISC 360-16])
Proper storage	-	X	Storage provided for bolts, nuts, washers and other fastener components
Inspection Tasks During Bolting			
Fastener assemblies, of suitable condition	-	X	Verify that fasteners placed in all holes and washers (if required) are positioned as required.
Joint	-	X	Verify that joint brought to the snug-tight condition (min) unless noted otherwise.
Fastener component	-	X	Verify that fastener component not turned by the wrench prevented from rotating
Pretensioned Fasteners	-	X	Verify that pretensioned fasteners are pretensioned in accordance with the RCSC *Specification*, progressing systematically from the most rigid point toward the free edges (Not required if only snug-tight joints are specified per [Section N5.6(1) of AISC 360-16]; Not required for pretensioned joints using turn-of-the-nut method with match-marking, direct-tension-indicators or twist-off type tension control bolt methods)
Inspection Tasks After Bolting			
Document acceptance or rejection of each bolted connection	X	-	

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LAS COLONIAS AMPHITHEATER - ADDITION

Grand Junction, CO

CITY OF Grand Junction COLORADO

project#: 190527
date: Feb. 10, 2020

revisions :

title:

SPECIAL INSPECTIONS

sheet:

S003

PERMIT SET

REQUIREMENTS FOR SPECIAL INSPECTION, MATERIAL TESTING, AND STRUCTURAL OBSERVATION

STEEL WELDED CONSTRUCTION INSPECTIONS

Definition of Terms

Where special inspections are listed under "Random Basis", special inspection of elements and items shall be performed on a random basis. Operations need not be delayed pending these inspections. Where special inspection items are listed under "Every Element", special inspection shall be performed for each element, joint, or member, as applicable based on the task listed below.

Structural Welding (2018 IBC section 1705.2 and section 1705.12.1 and section 1705.13.1 and AISC 360-16 Chapter N and AISC 341-16 Chapter J)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION PLAN		COMMENTS
	Every Element	Random Basis	
Inspection Tasks Prior to Welding			
Welding procedures specifications and manufacturer certifications for welding consumables shall be available	X	-	Welding procedures shall be submitted to the Engineer of Record for review.
Material identification (type/grade)	-	X	
Welder identification system	-	X	Verify there is a system in place to identify the welder who has welded a joint or member.
Fit-up of groove welds		X	Including joint geometry, joint preparation, dimensions, cleanliness, tacking and backing type and fit.
Configuration and finish of access holes	-	X	
Fit-up of fillet welds		X	Including alignment, gaps at root, dimensions, cleanliness and tacking.
Check welding equipment	-	X	
Inspection Tasks During Welding			
Use of qualified welders	-	X	
Control and handling of welding consumables	-	X	Including packaging and exposure control
Cracked tack welds	-	X	Verify no welding over cracked tack welds.
Environmental conditions	-	X	Including wind speed within limits and precipitation and temperature
WPS followed	-	X	Including settings on welding equipment, travel speed, selected welding materials, shielding gas type/flow rate, preheat applied, interpass temperature (min./max.) maintained, proper position (F, V, H, OH)
Welding techniques	-	X	Including interpass and final cleaning, each pass within profile limitations, each pass meets quality requirements
Inspection Tasks After Welding			
Welds cleaned	-	X	
Size, length and location of welds	X	-	
Welds meet visual acceptance criteria	X	-	Including crack prohibition, weld/base-metal fusion, crater cross section, weld profiles, weld size, undercut and porosity.
Arc strikes, k-area, weld access holes for flanges greater than 2", backing removed and weld tabs removed (if required), repair activities	X	-	When welding of doubler plates, continuity plates, or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3" of the weld.
Ultrasonic testing (UT) for complete-joint-penetration (CJP) groove welds, partial penetration groove welds when used in column splices, and welds subject to fatigue	-	X	Perform UT on 10% of welds subject to transversely applied tension loading in butt, T- and corner joints, in material 5/16" thick or greater. For materials less than 5/16" thick, ultrasonic testing is not required. The UT rate must be increased to 100% if the rejection rate exceeds 5% of the welds tested. See Sections N5.5d and N5.5f for more information. (Engineers Note: Use this row and delete the next row if you are a Risk Category II building)
Document acceptance or rejection of each welded joint or member	X	-	

MISCELLANEOUS STEEL CONSTRUCTION INSPECTIONS

Metal Deck Construction (2018 IBC section 1705.2.2, AWS D1.3, and section 6.1 of SDI QA/QC-2011)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Material verification of metal deck(s)	-	X	Confirm that identification markings are provided that conform to applicable ASTM standards specified on construction documents
Placement and installation of metal deck	-	X	Confirm that the deck is installed per the approved construction documents, installation drawings, shop drawings and applicable reference standards.
Roof deck welding/fastening	-	X	Visual inspection is required to verify size and spacing of welds/fasteners for deck attachment to the supporting structure. Also verify spacing and size of side-seam attachments. Confirm that welds/fasteners meet acceptance criteria of applicable referenced standards and manufacturer's instructions. Where applicable, welder qualifications should be verified.

MASONRY CONSTRUCTION INSPECTIONS

Prior to Construction (2018 IBC section 1705.4 and TMS 602)

ITEM FOR VERIFICATION	COMMENTS
Verification of compliance of submittals	Verify that materials conform to the requirements of the approved submittals. Mix design, test results, material certificates, and construction procedures should be submitted for review.
Verification of f'm	Verify that materials conform to the requirements of the approved construction documents.
Verification of material certificates, mix designs, and test results	Mortar mix designs shall conform to ASTM C 270 while grout shall conform to ASTM C 476. Material certificates shall be provided for the following: reinforcement; anchors, ties, fasteners, and metal accessories; masonry units; mortar and grout materials. Construction procedures for cold-weather or hot-weather construction shall be reviewed.

As masonry construction begins (2018 IBC section 1705.4 and TMS 602 Table 4)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Proportions of site-prepared mortar, construction of mortar	-	X	
Grade, type and size of reinforcement, connector, and anchors	-	X	
Sample wall panel construction	-	X	Use materials and procedures accepted for the Work to create a minimum sample panel size of 4 ft by 4 ft. The acceptable standard for the Work is established by the accepted panel and retained at the project site until Work has been accepted.

Prior to grouting and during construction - Structural Masonry shall have Level B special inspection (2018 IBC section 1705.4 and TMS 602 Table 4)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Grout Space	-	X	Verify grout space is clean prior to grouting
Placement, grade, type and size of reinforcement, connectors and anchor bolts and anchorages	-	X	
Proportions of site-prepared grout	-	X	
Materials and procedures with the approved submittals	-	X	
Placement of masonry units and mortar joint construction	-	X	
Size and location of structural members	-	X	
Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction	-	X	
Protection of masonry during cold weather (below 40 deg F) and hot weather (above 90 deg F)	-	X	
Grout placement (including verification of Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site.)	X	-	
Observe preparation of grout specimens, mortar specimens and/or prisms	-	X	The contractor has the option of using the "Prism Test Method" per ACI 530.1/ASCE 6/TMS 602 in lieu of the "Unit Strength Method."

POST-INSTALLED ANCHOR INSPECTIONS

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Post Installed Anchors and Reinforcing Bars (2018 IBC Section 1705.1.1)			
Epoxy Anchors and Reinforcing Bars	X	-	Special inspection shall be performed per manufacturer's requirements and approved ICC-ES reports noted in POST-INSTALLED ANCHOR section of the General Structural Notes prior to installation of epoxy and anchor rod. If the anchor is not installed in a horizontal, upwardly inclined or overhead orientation meant to resist sustained tension loads, special inspection may be reduced to a periodic frequency.
Mechanical Anchors and Screw Anchors	-	X	Special inspection shall be provided per manufacturer's requirements and approved ICC-ES reports noted in POST-INSTALLED ANCHOR section of the General Structural Notes prior to installation of mechanical or screw anchor.

NON-STRUCTURAL COMPONENT CONSTRUCTION INSPECTIONS

Architectural Components located in Seismic Design Categories C, D, E and F (2018 IBC Sections 1705.12.5 and 1705.12.7)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Erection and fastening of interior and exterior nonbearing walls	-	X	Verify appropriate materials, fasteners and attachment at commencement of work and at completion. (Not required if <30 feet or for interior walls < 15 psf.)

Mechanical and Electrical Components located in Seismic Design Categories C, D, E and F (2018 IBC Sections 1705.12.4 and 1705.12.6)

ITEM FOR VERIFICATION & INSPECTION	INSPECTION FREQUENCY		COMMENTS
	CONTINUOUS	PERIODIC	
Designated seismic systems	-	X	Verify that manufacturer's certificate of compliance conforms to the requirements of Section 13.2 of ASCE 7-16. Verify that the label, anchorage or mounting conforms to the manufacturer's certificate of compliance.

STRUCTURAL OBSERVATION PROGRAM

If structural observations are required, they shall be done by the Engineer of Record or an approved subordinate at the stages of construction listed in the Construction Notification Phases section of these notes. At the conclusion of the project, the designated structural observer shall submit to the building official a written statement that the site visits have been made and identify any reported deficiencies that to the best of the structural observer's knowledge have not been resolved (See IBC 2018 1704.6).

STRUCTURAL OBSERVATION PROGRAM REQUIRED BY CODE:	YES	NO
		X

CONSTRUCTION MILESTONE SCHEDULE

CONTRACTOR TO NOTIFY ENGINEER AT THE FOLLOWING CONSTRUCTION PHASES:	
CONCRETE	
Footings, stem walls and piers	Prior to pouring concrete
STEEL	
Roof framing	After substantial portion of framing is erected
Roof deck	After welding/fastening and prior to roofing
MASONRY	
Masonry walls	Prior to pouring grout

DEFERRED SUBMITTALS

For the purposes of this section, deferred submittals are defined as per section 107.3.4.1 of the IBC 2018. Submittal documents for deferred submittal items shall be submitted to the engineer, architect and building official for their review for general conformance with the design of the building.

DEFERRED STRUCTURAL SUBMITTALS FOR THIS PROJECT ARE

None

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project:

LAS COLONIAS AMPHITHEATER - ADDITION

Grand Junction, CO

City of Grand Junction Colorado

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S004

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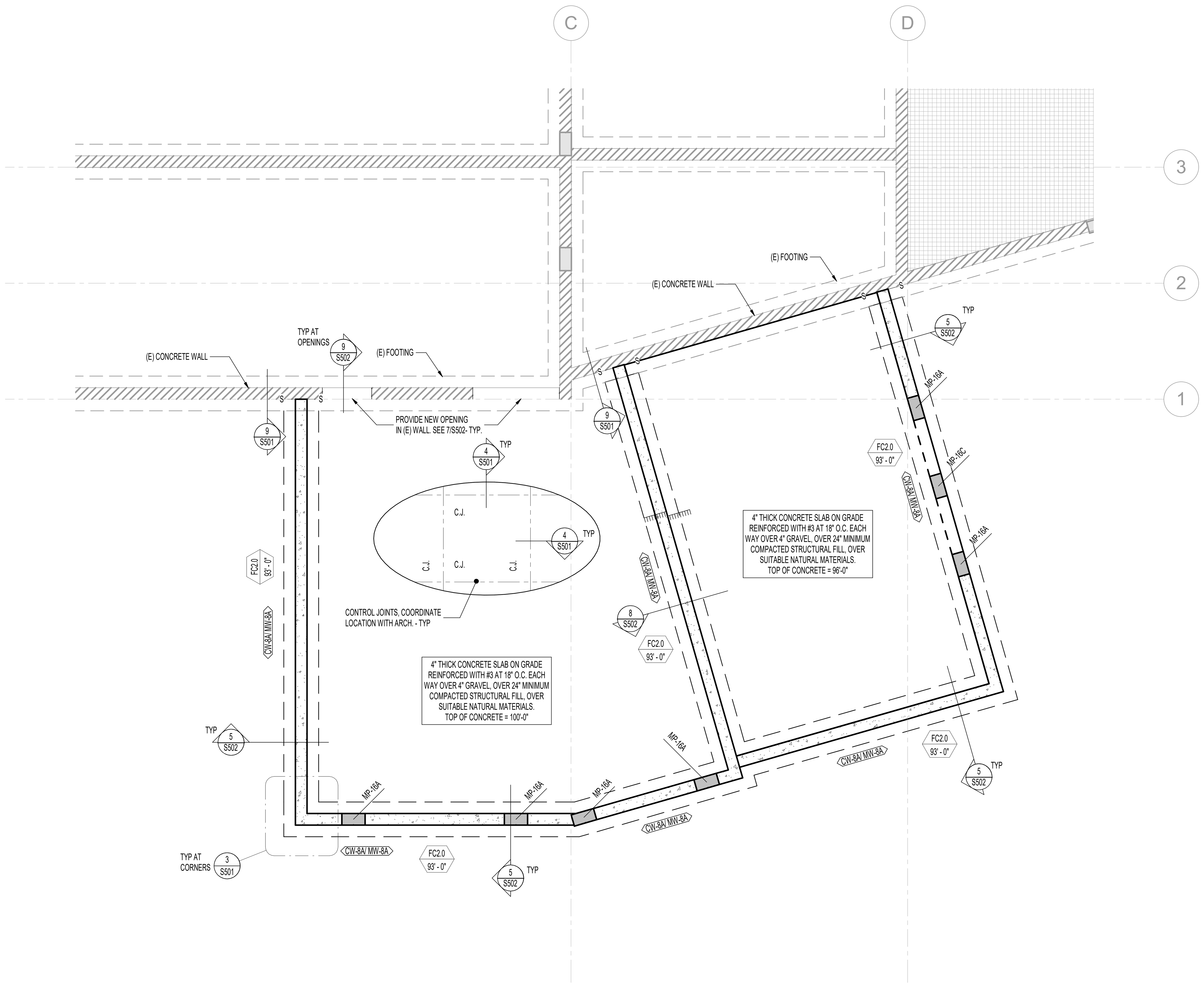

1 FOOTING AND FOUNDATION PLAN

1/4" = 1'-0"

MARKS AND SYMBOLS LEGEND

	SECTION MARK / SHEET NUMBER
	FOOTING DESIGNATION
	INDICATES CONCRETE WALL. DASHED WALLS STOP AT DECK
	INDICATES EXISTING WALL.
	DEPRESS FOUNDATION WALL AND POUR SLAB OVER. SEE DETAIL 5/S502
CW-x/MW-x	INDICATES MASONRY WALL (AND TYPE) OVER CONCRETE WALL (AND TYPE), SEE SCHEDULE ON SHEET S601
S —— S	INDICATES FOOTING STEP, SEE DETAIL 9/S501
	INDICATES FLOOR OFFSET, SEE DETAILS
MP-x	INDICATES MASONRY PIER TYPE. SEE SCHEDULE ON SHEET S601
FCx.x	INDICATES CONTINUOUS FOOTING. SEE SCHEDULE ON SHEET S601

FOOTING AND FOUNDATION PLAN NOTES

1. COORDINATE LOCATION OF DEPRESSED SLABS, SLOPED SLABS, AND FLOOR DRAINS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR EXTERIOR CONCRETE WORK AT DOORS, SIDEWALKS, ETC.
3. SEE ARCHITECTURAL DRAWINGS FOR CONTROL JOINT LOCATIONS.
4. SEE "EARTHWORK" NOTES ON SHEET S001 AND DETAIL 10/S501 FOR MINIMUM FILL REQUIRED BENEATH FOOTINGS.
5. SEE DETAILS 1/S502 AND 2/S502 FOR CONDITION WHERE BURIED PIPES RUN PARALLEL AND PERPENDICULAR TO FOOTINGS.
6. SEE DETAIL 4/S501 FOR TYPICAL CONTROL/CONSTRUCTION JOINTS IN CONCRETE SLAB ON GRADE.
7. SEE DETAIL 6/S501 FOR SLAB REINFORCING WHERE CONTROL JOINTS ARE DISCONTINUOUS.
8. SEE DETAIL 7/S501 FOR ADDITIONAL REINFORCING AT MISCELLANEOUS OPENINGS IN MASONRY WALLS.
9. SEE DETAIL 8/S501 FOR ADDITIONAL REINFORCING AT MISCELLANEOUS OPENINGS IN CONCRETE WALLS.
10. SEE DETAIL 3/S502 FOR CONDITION AT RECESSES IN MASONRY WALLS.
11. SEE DETAIL 4/S502 FOR TYPICAL CONTROL JOINTS IN MASONRY WALLS.
12. SEE DETAIL 6/S502 FOR TERMINATION OF HORIZONTAL REINFORCING IN MASONRY WALLS.

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S101

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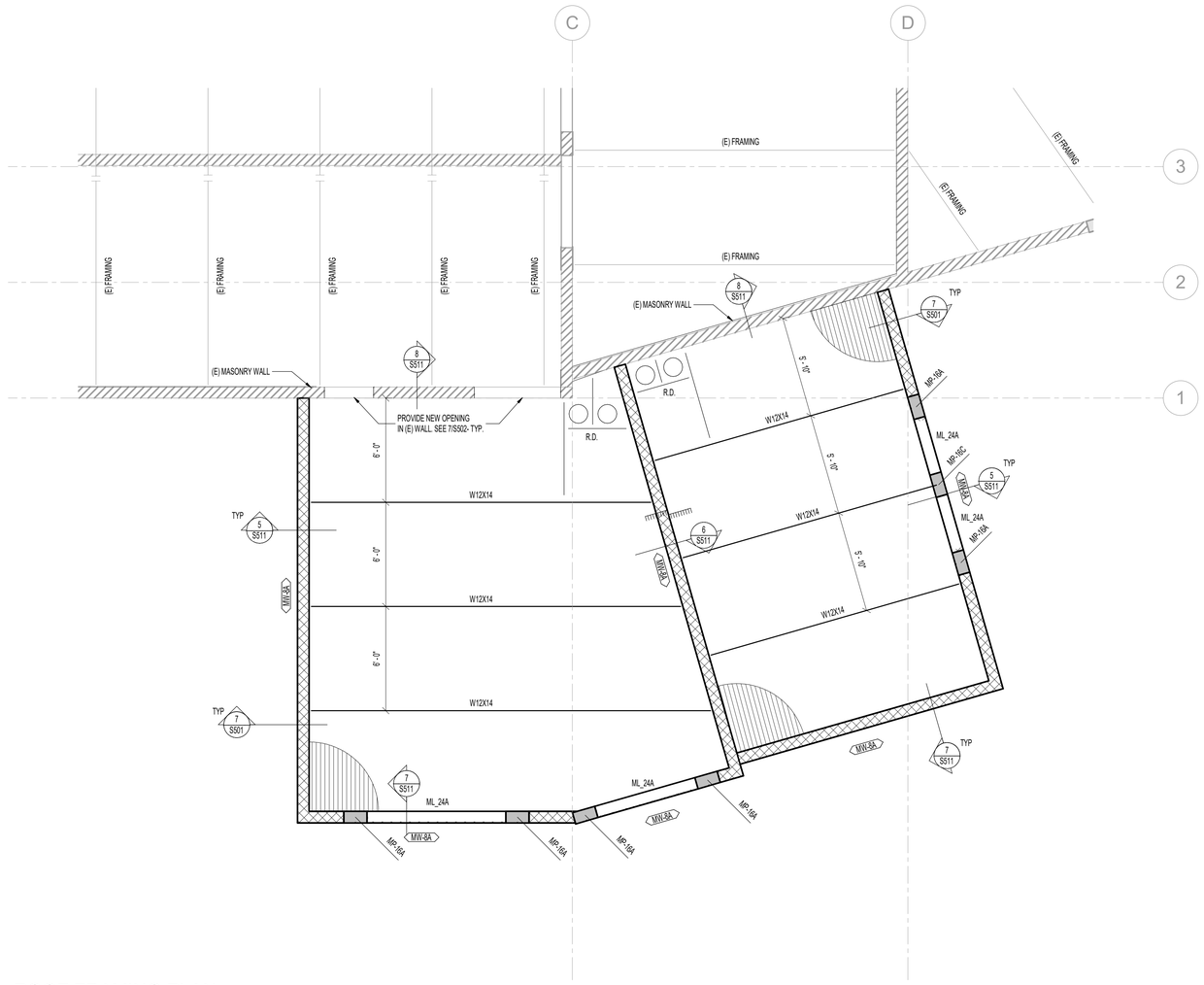

ROOF FRAMING PLAN

1/4" = 1'-0" 0" 2'-0" 4'-0" 8'-0"

MARKS AND SYMBOLS LEGEND

- SECTION MARK / SHEET NUMBER
- INDICATES MASONRY WALL. DASHED WALLS STOP AT DECK
- INDICATES EXISTING WALL
- MW-x — INDICATES MASONRY WALL TYPE, SEE SCHEDULE ON SHEET S601
- INDICATES METAL ROOF DECK. SEE GENERAL STRUCTURAL NOTES ON SHEET S001
- ML-x — INDICATES MASONRY LINTEL TYPE. SEE SCHEDULE ON SHEET S601
- MP-x — INDICATES MASONRY PIER TYPE. SEE SCHEDULE ON SHEET S601
- R.D. — INDICATES ROOF DRAIN, SEE DETAIL 2/SS11
- INDICATES FLOOR OFFSET, SEE DETAILS

ROOF FRAMING PLAN NOTES

1. VERIFY ALL ROOF OPENINGS FOR MECHANICAL SHAFTS, DRAINS, ETC. WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. ALL ROOF OPENINGS GREATER THAN, OR EQUAL TO, 12" x 12" SHALL BE FRAMED AS INDICATED IN DETAILS 1/SS11 AND 2/SS11. FOR OPENINGS WHICH CUT LESS THAN TWO DECK FLUTES, SEE DETAIL 3/SS11.
3. COORDINATE OPENINGS WITH MECHANICAL, ELECTRICAL, AND GENERAL CONTRACTORS.
4. LOCATE MISCELLANEOUS MECHANICAL OPENINGS BETWEEN JOISTS, NOT UNDERNEATH THEM.
5. SEE DETAIL 7/SS01 FOR ADDITIONAL REINFORCING AT MISCELLANEOUS OPENINGS IN MASONRY WALLS.
6. SEE DETAIL 3/SS02 FOR CONDITION AT RECESSES IN MASONRY WALLS.
7. SEE DETAIL 4/SS02 FOR TYPICAL CONTROL JOINTS IN MASONRY WALLS.
8. SEE DETAIL 6/SS02 FOR TERMINATION OF HORIZONTAL REINFORCING IN MASONRY WALLS.

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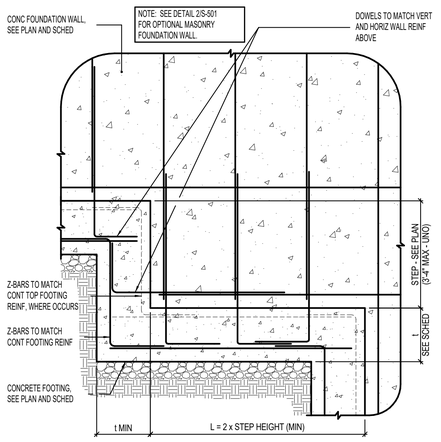
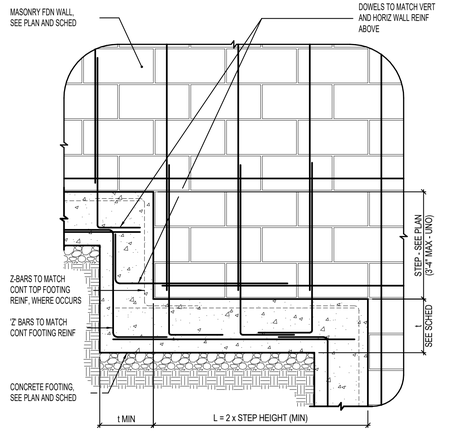
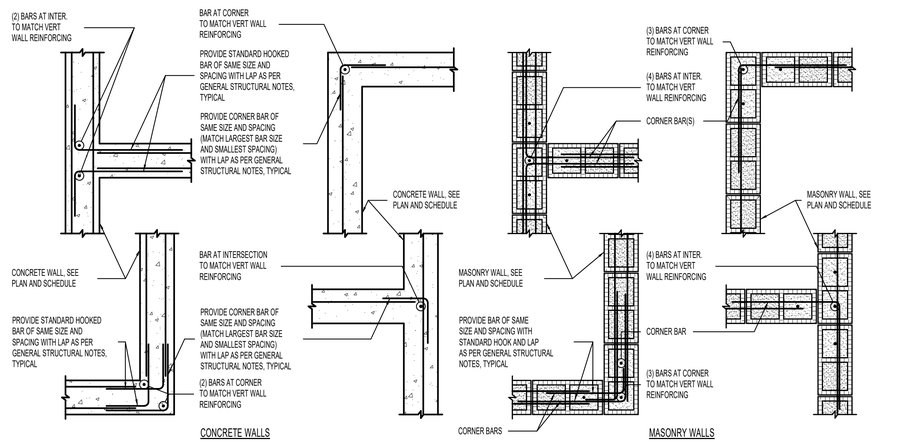


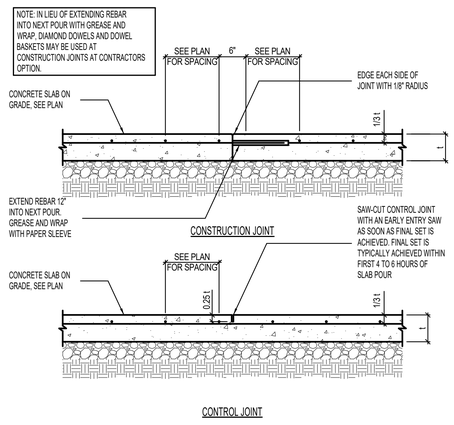
1 TYPICAL FOOTING STEP DETAIL — NO SCALE



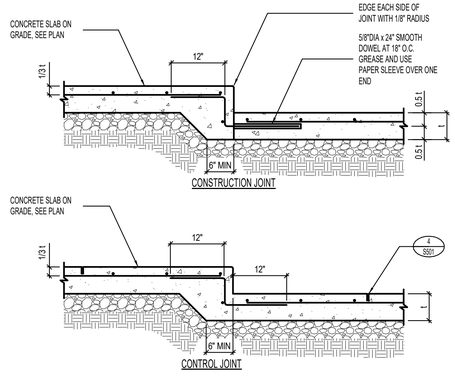
2 TYPICAL FOOTING STEP AT MASONRY FOUNDATION WALL [OPTIONAL] — NO SCALE



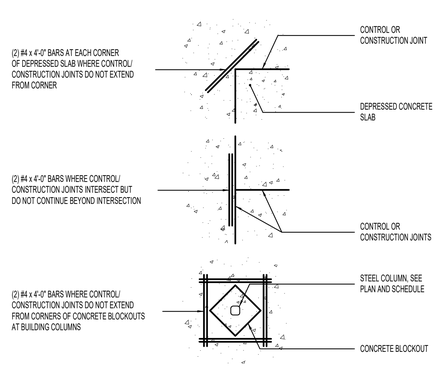
3 TYPICAL CORNER WALL REINFORCING [PLAN VIEW] — NO SCALE



4 TYPICAL SLAB ON GRADE JOINT DETAILS — NO SCALE



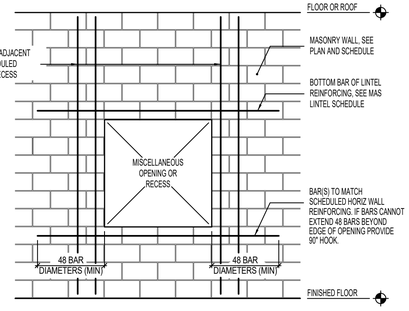
5 JOINT DETAILS AT SLAB DEPRESSIONS — NO SCALE



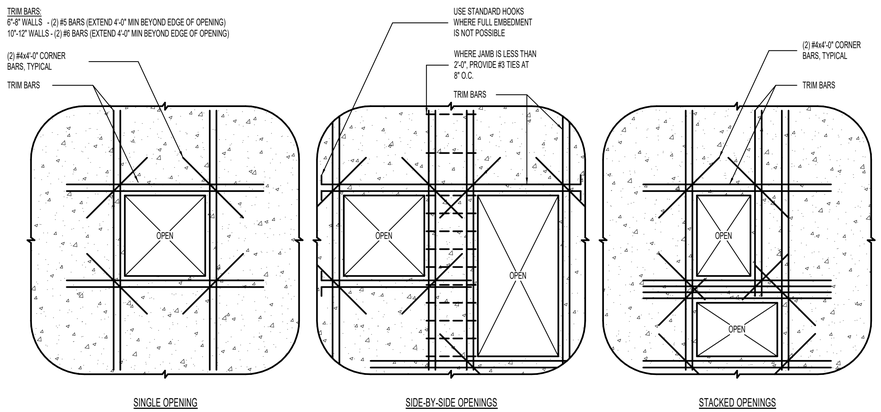
6 LOCATIONS REQUIRING ADDITIONAL SLAB REINFORCING [PLAN VIEW] — NO SCALE

NOTE: NO MISCELLANEOUS/UNSCHEDULED OPENINGS SHALL BE LOCATED WITHIN 24" OF A BEAM/JOIST BEARING PLATE

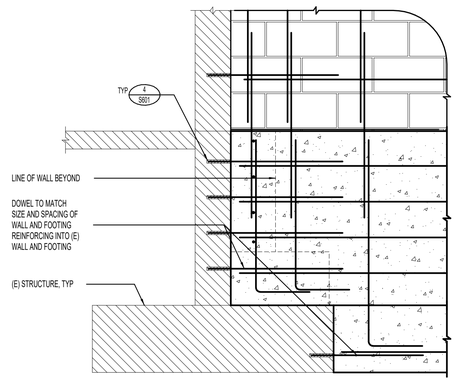
VERTICAL REINFORCING ADJACENT TO UNSCHEDULED OPENING OR RECESS
WHERE OPENING WIDTH IS LESS THAN OR EQUAL TO 3'-0": USE MP-16A
WHERE OPENING WIDTH IS GREATER THAN 3'-0" BUT LESS THAN OR EQUAL TO 6'-0": USE MP-16A
WHERE OPENING WIDTH IS GREATER THAN 6'-0" BUT LESS THAN OR EQUAL TO 10'-0": USE MP-24A
WHERE OPENING WIDTH IS GREATER THAN 10'-0" CONSULT STRUCTURAL ENGINEER.



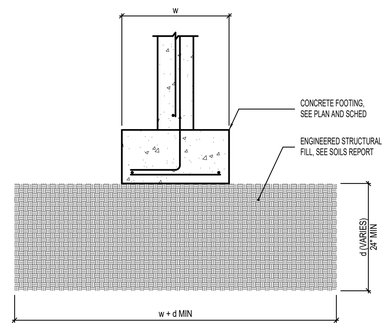
7 REINFORCING AT UNSCHEDULED MISCELLANEOUS OPENINGS OR RECESSES IN MASONRY WALLS — NO SCALE



8 TYPICAL REINFORCING FOR MISCELLANEOUS OPENINGS LESS THAN 3'-0" IN CONCRETE WALLS — NO SCALE
WHERE MISCELLANEOUS OPENING WIDTH IS GREATER THAN 3'-0" WIDE, CONTACT STRUCTURAL ENGINEER.



9 FOUNDATION WALL AT EXISTING STRUCTURE — NO SCALE



10 ENGINEERED STRUCTURAL FILL DETAIL — NO SCALE

COLORADO REGISTERED CHRISTIAN J. HOMENY 37436 PROFESSIONAL ENGINEER 02-10-2020

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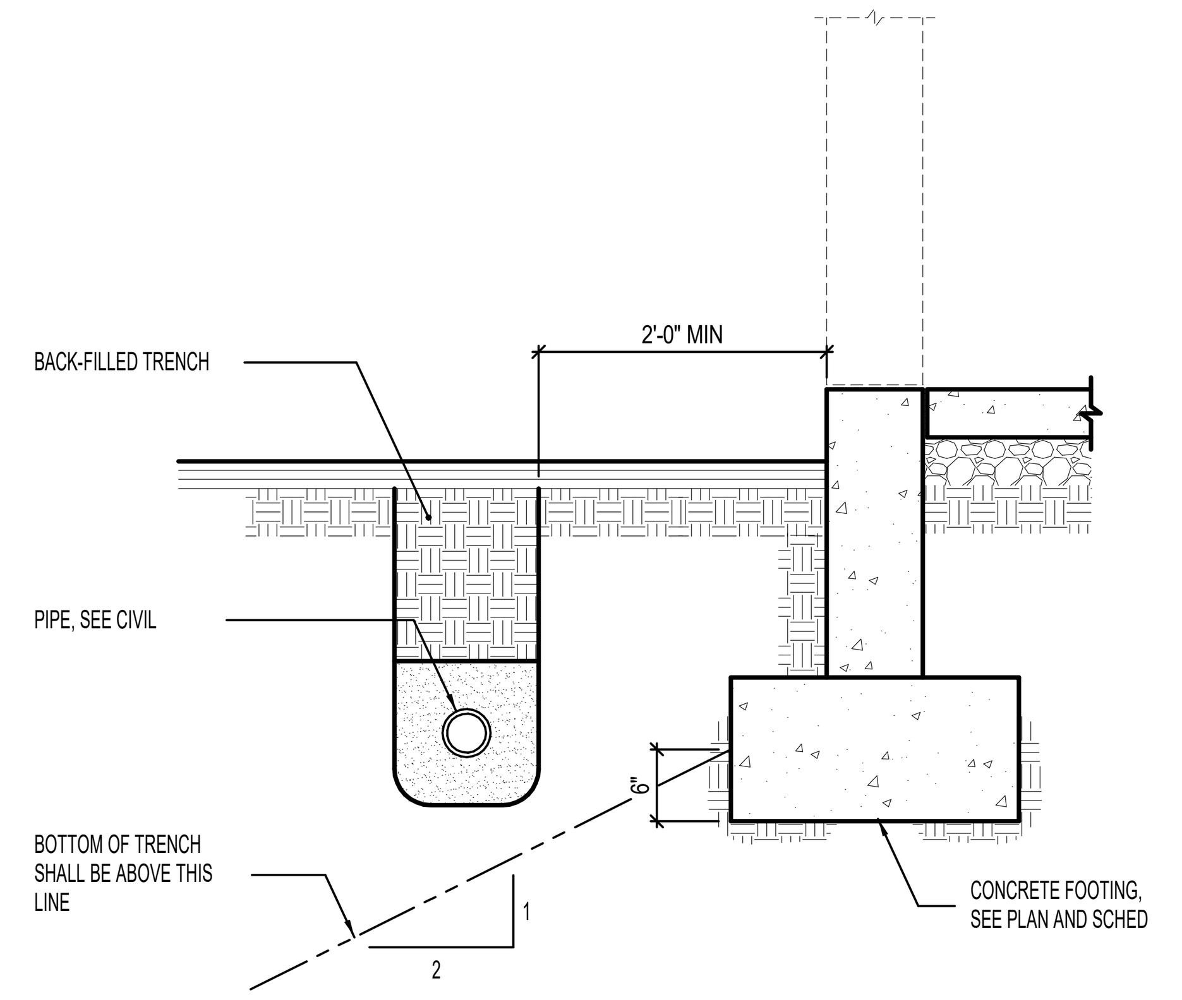
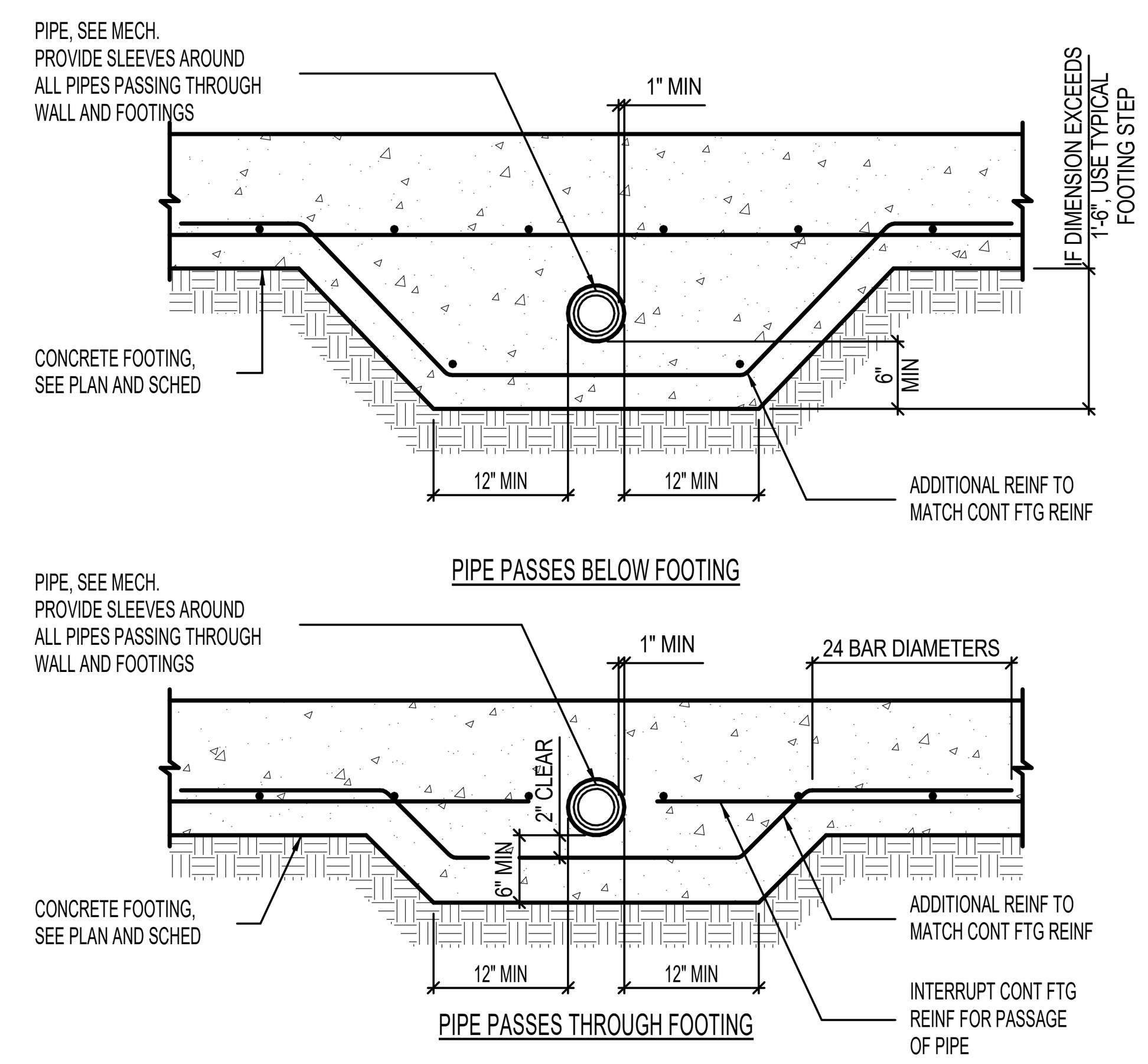


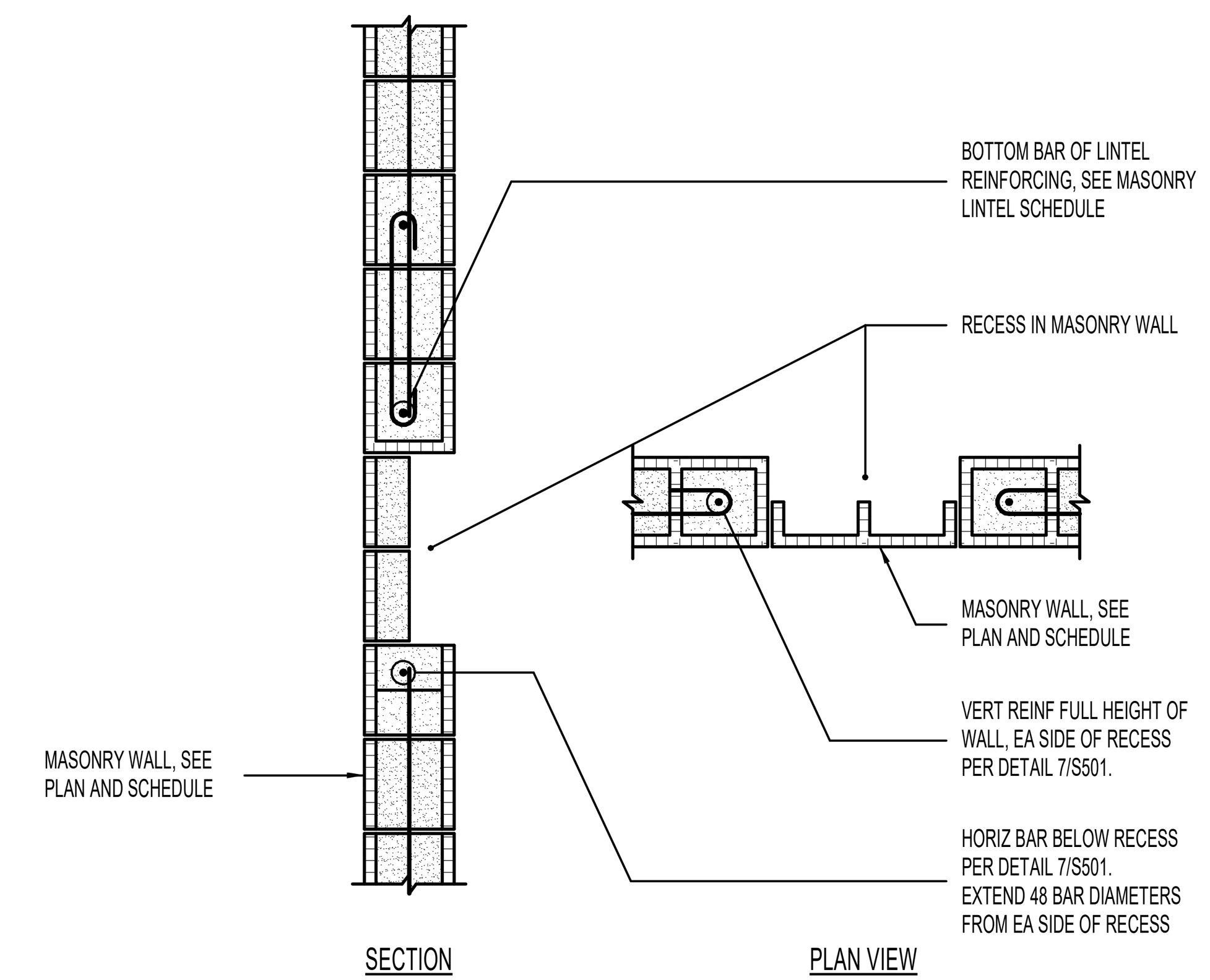
1 CONDITION AT PIPE PARALLEL TO CONCRETE FOOTING

NO SCALE



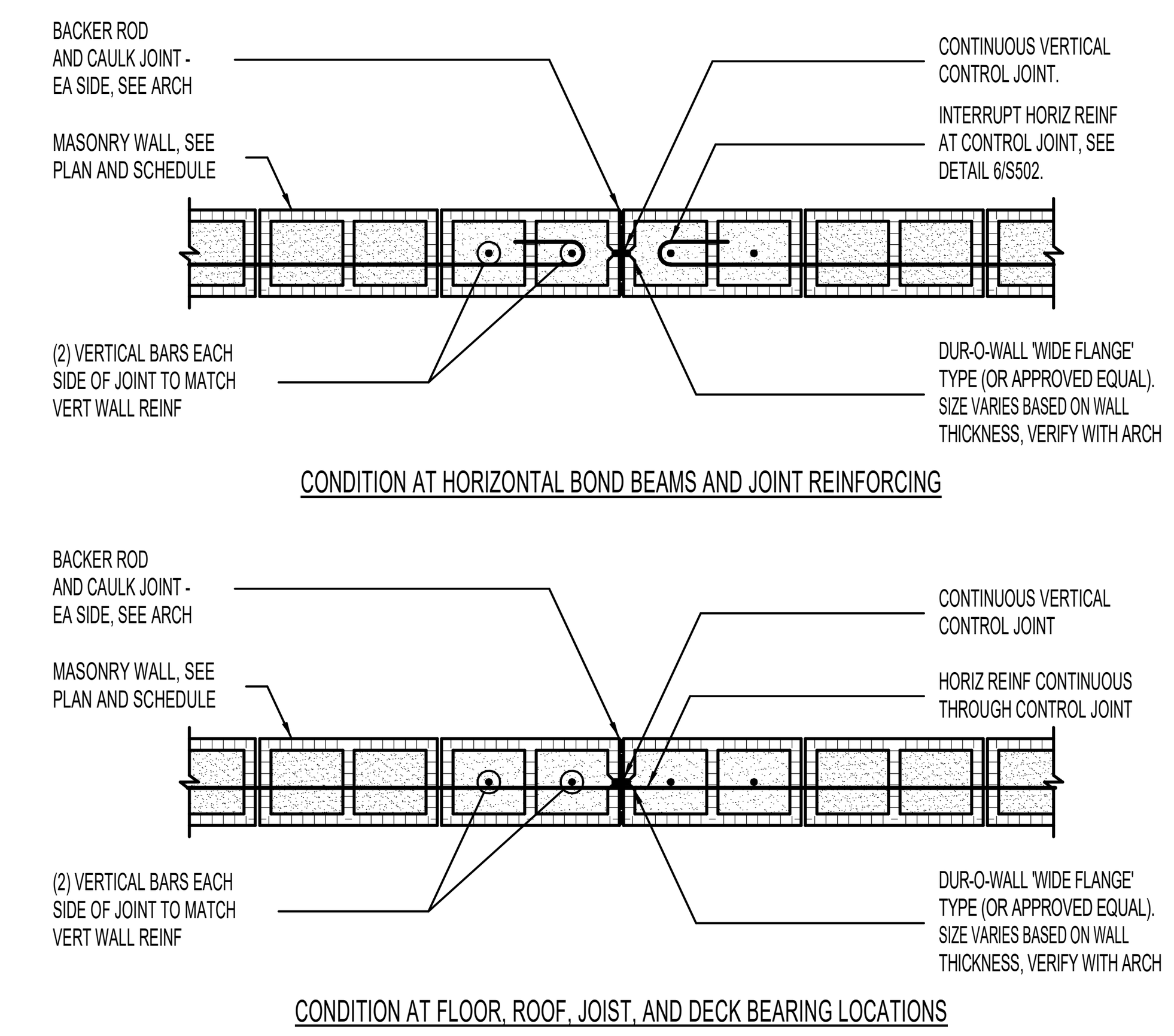
2 CONDITIONS AT PIPE PERPENDICULAR TO FOOTING

NO SCALE



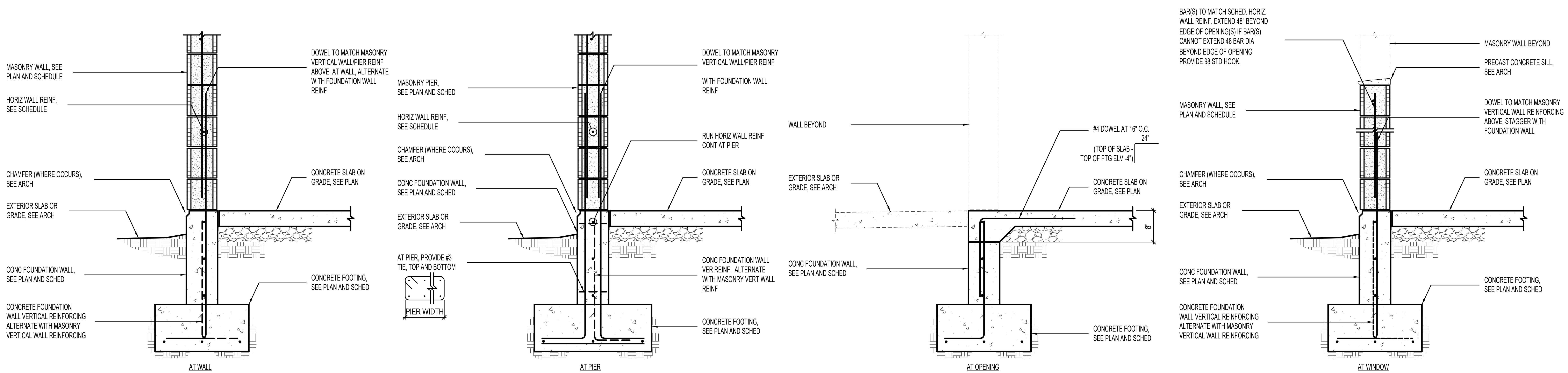
3 TYPICAL REINFORCING AT RECESS IN 8" OR 10" MASONRY WALLS

NO SCALE



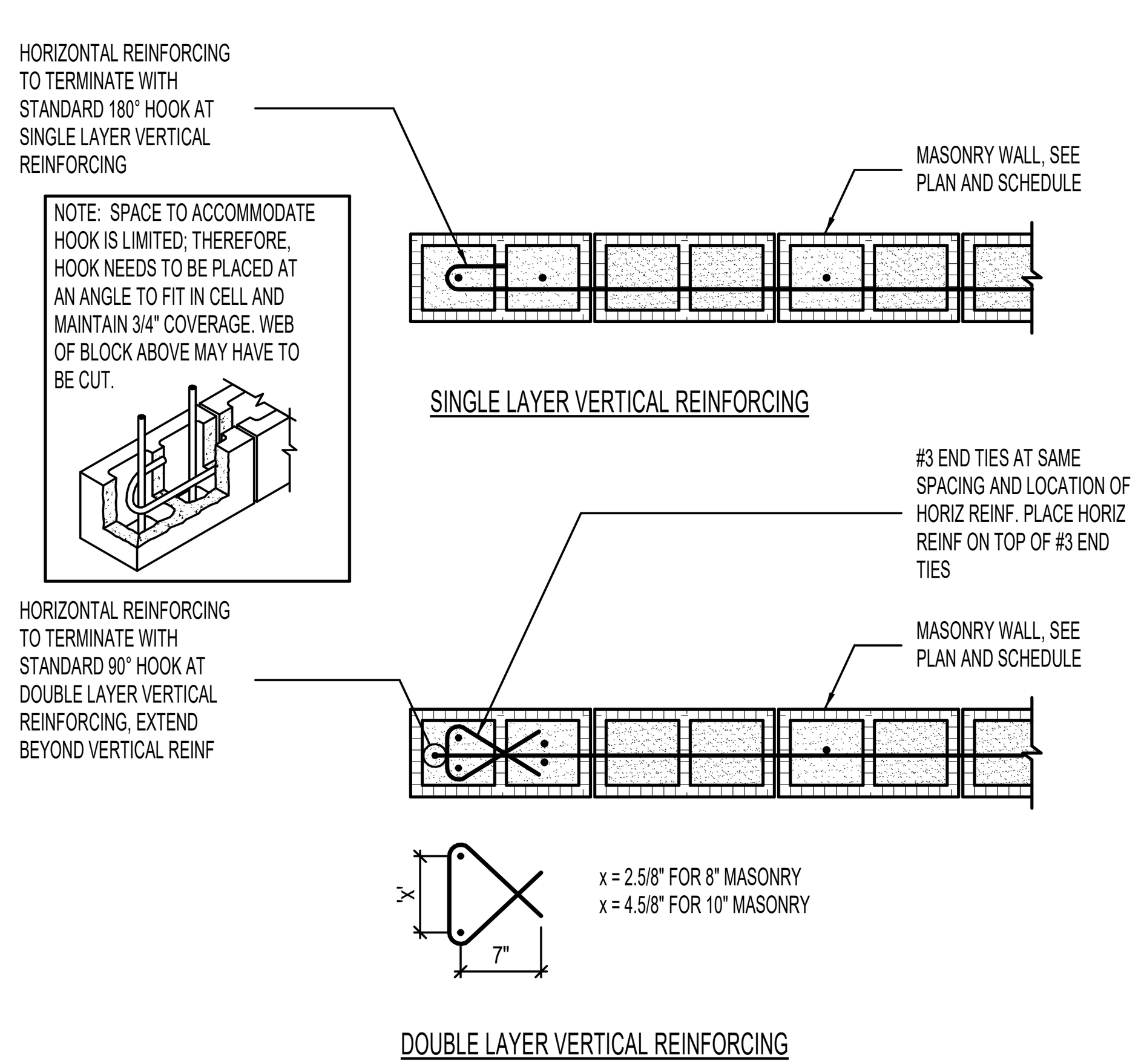
4 MASONRY CONTROL JOINT DETAIL AT 8" OR 10" MASONRY WALLS

NO SCALE



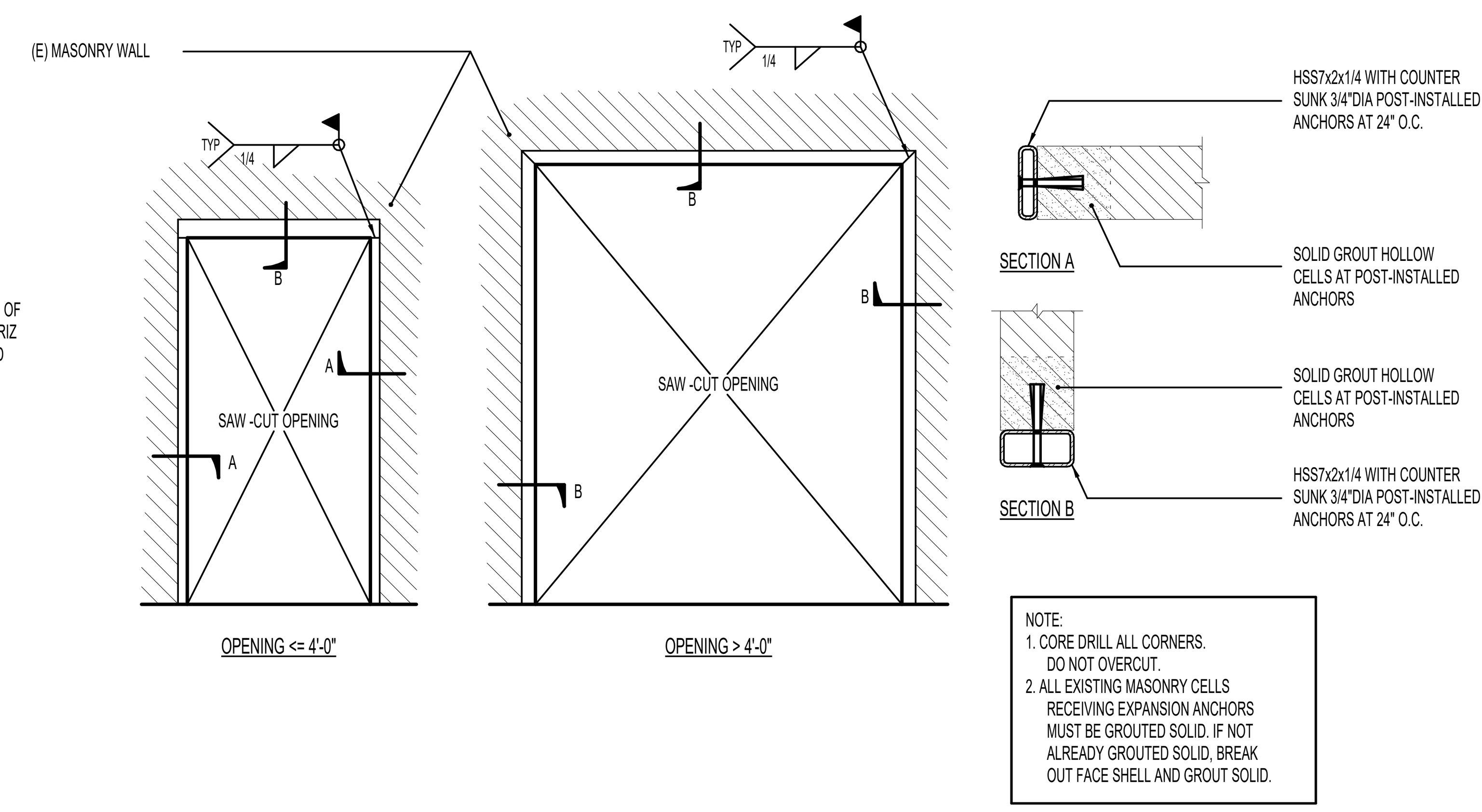
5 FOUNDATION WALL DETAIL AT 8" OR 10" MASONRY

NO SCALE



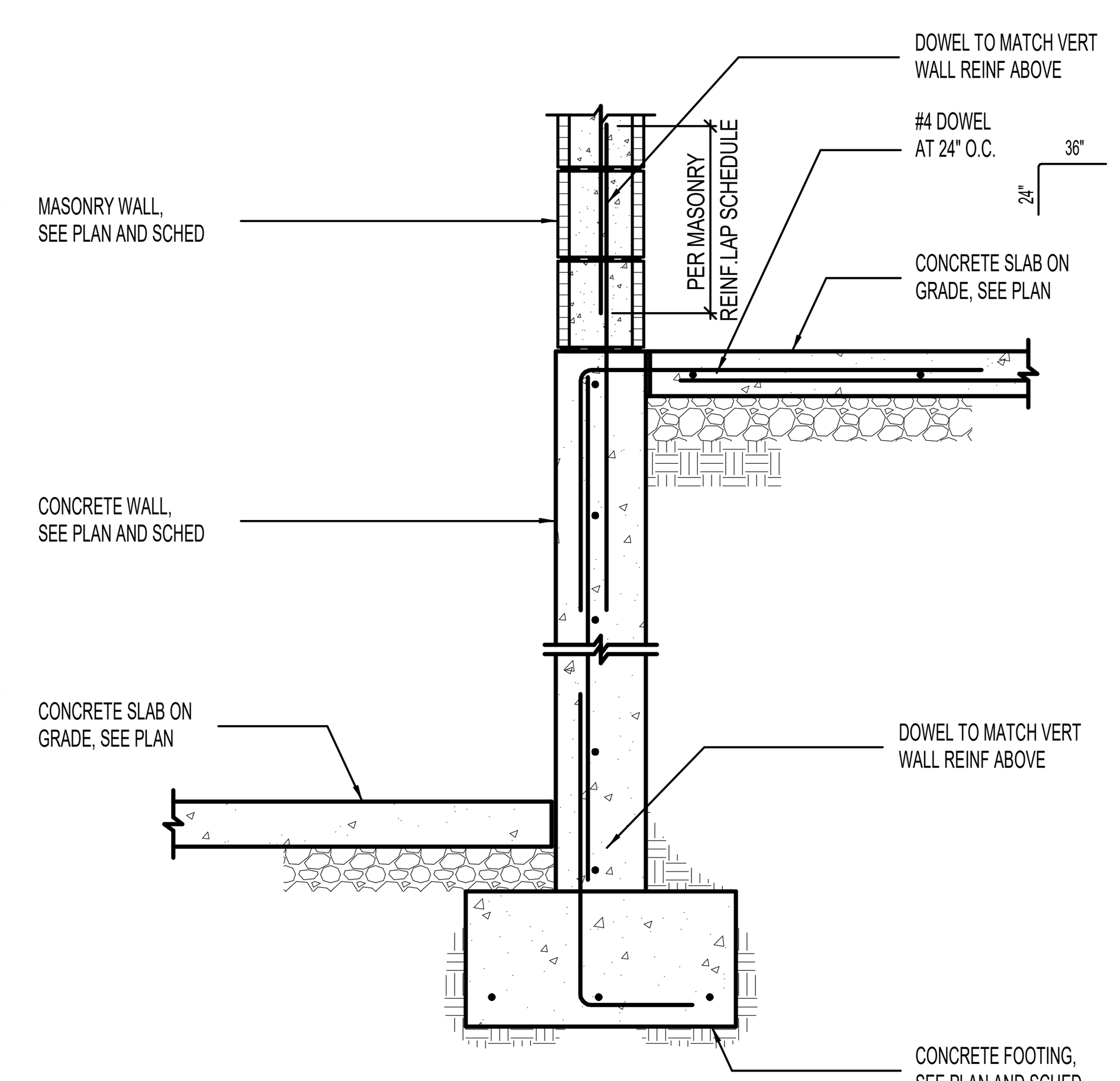
6 TERMINATION OF HORIZONTAL REINFORCING IN 8" OR 10" MASONRY WALL [PLAN VIEW]

NO SCALE



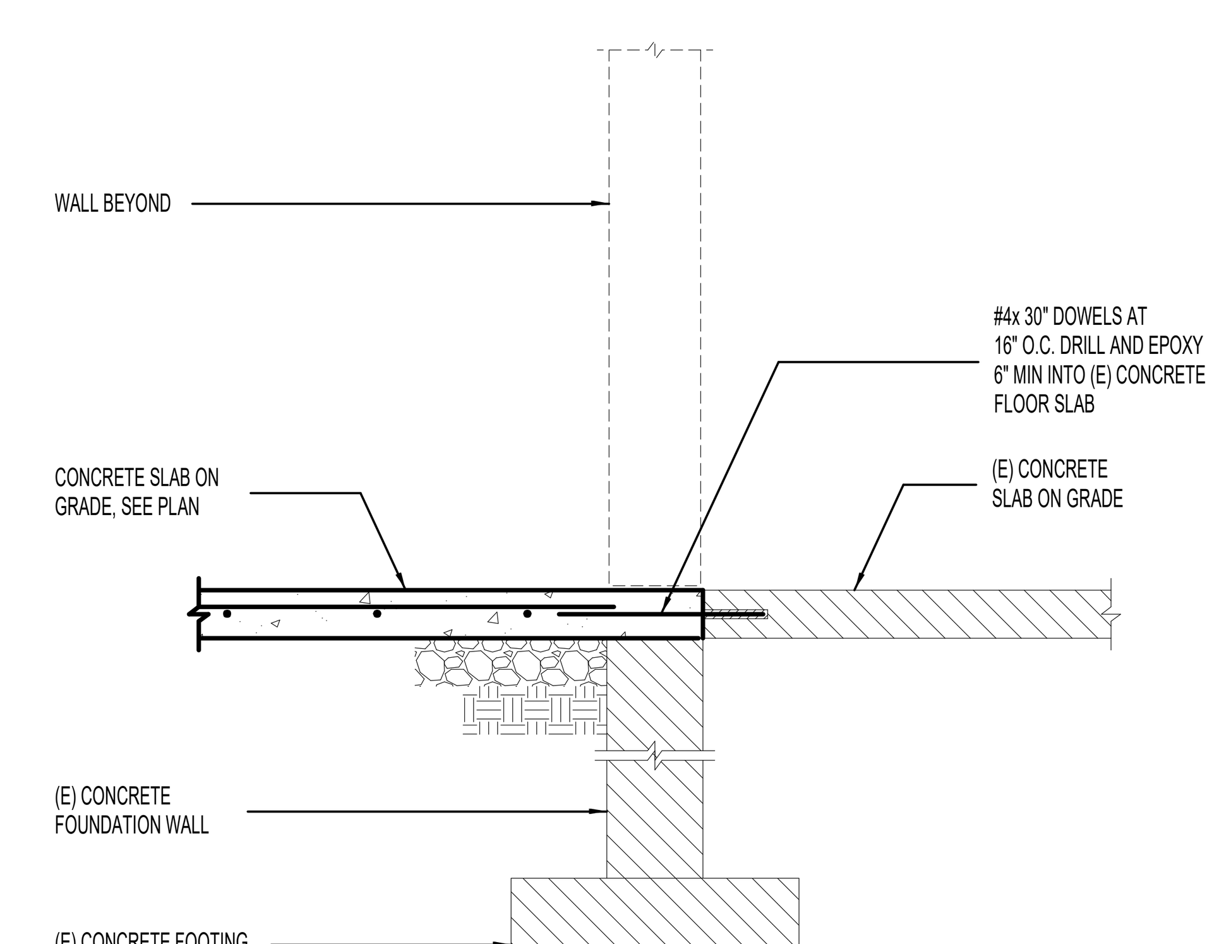
7 NEW OPENING THROUGH EXISTING MASONRY WALL

NO SCALE



8 OFFSET CONCRETE FOUNDATION WALL

NO SCALE



9 NEW SLAB AT OPENING IN EXISTING WALL

NO SCALE

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S502

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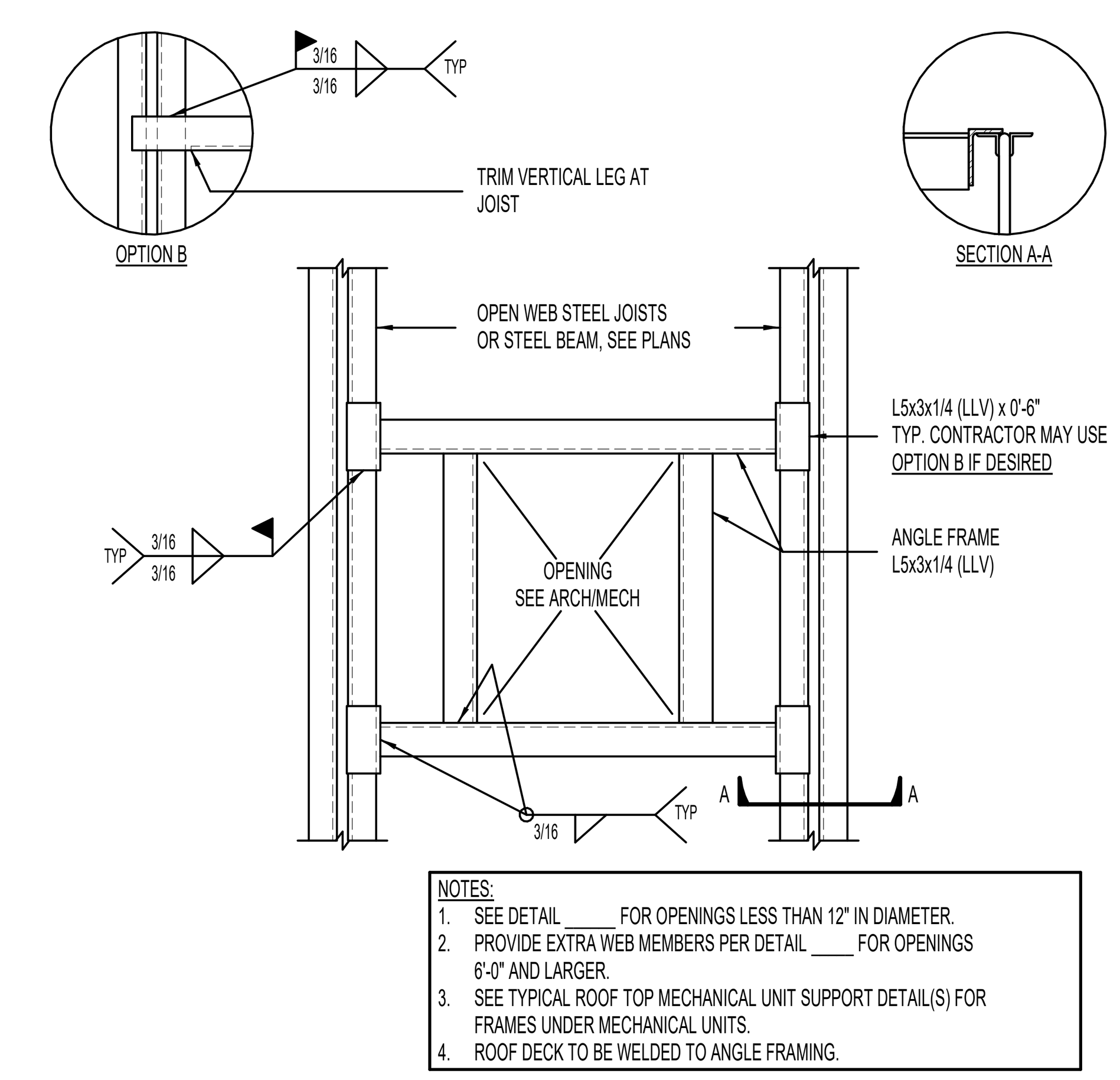
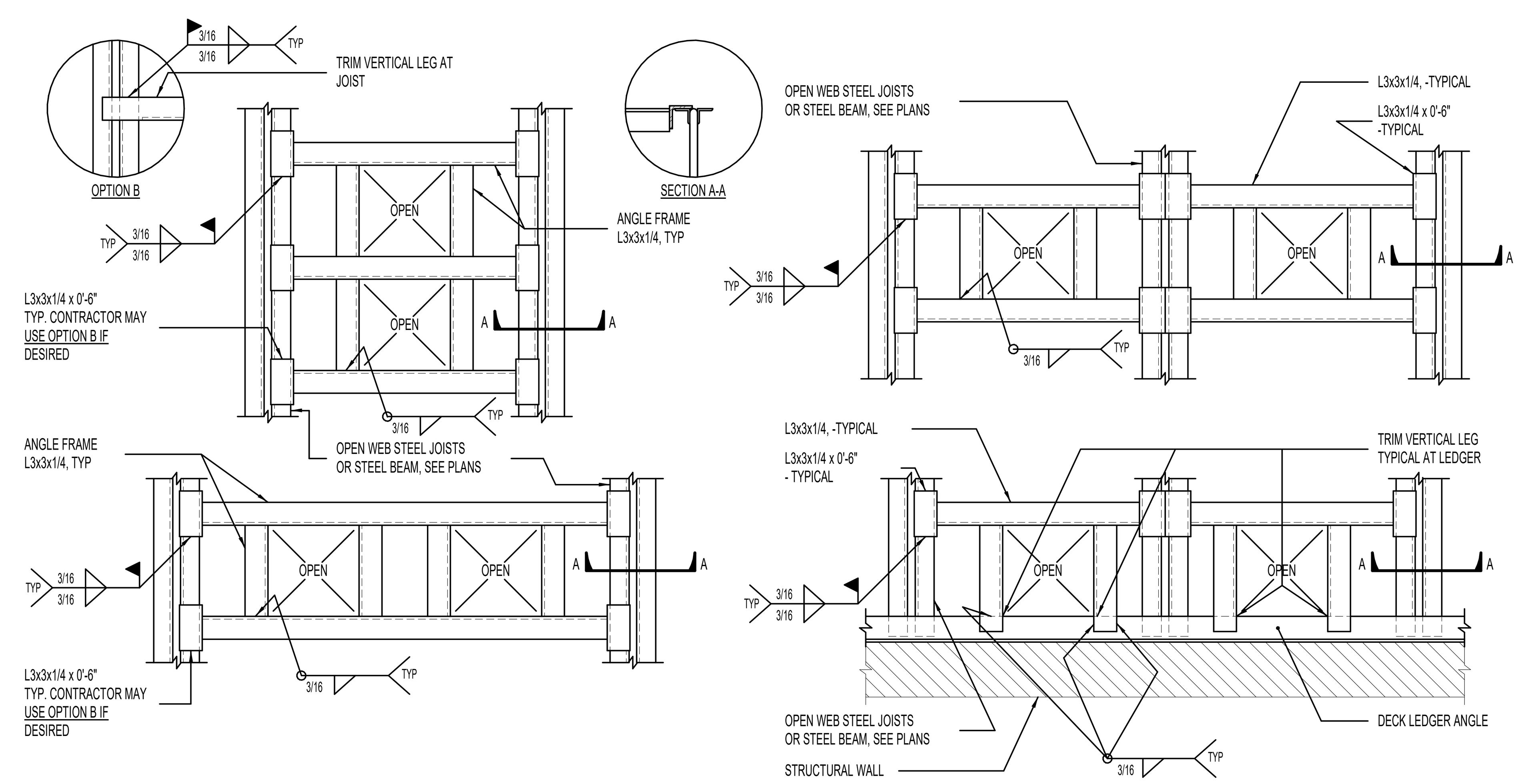
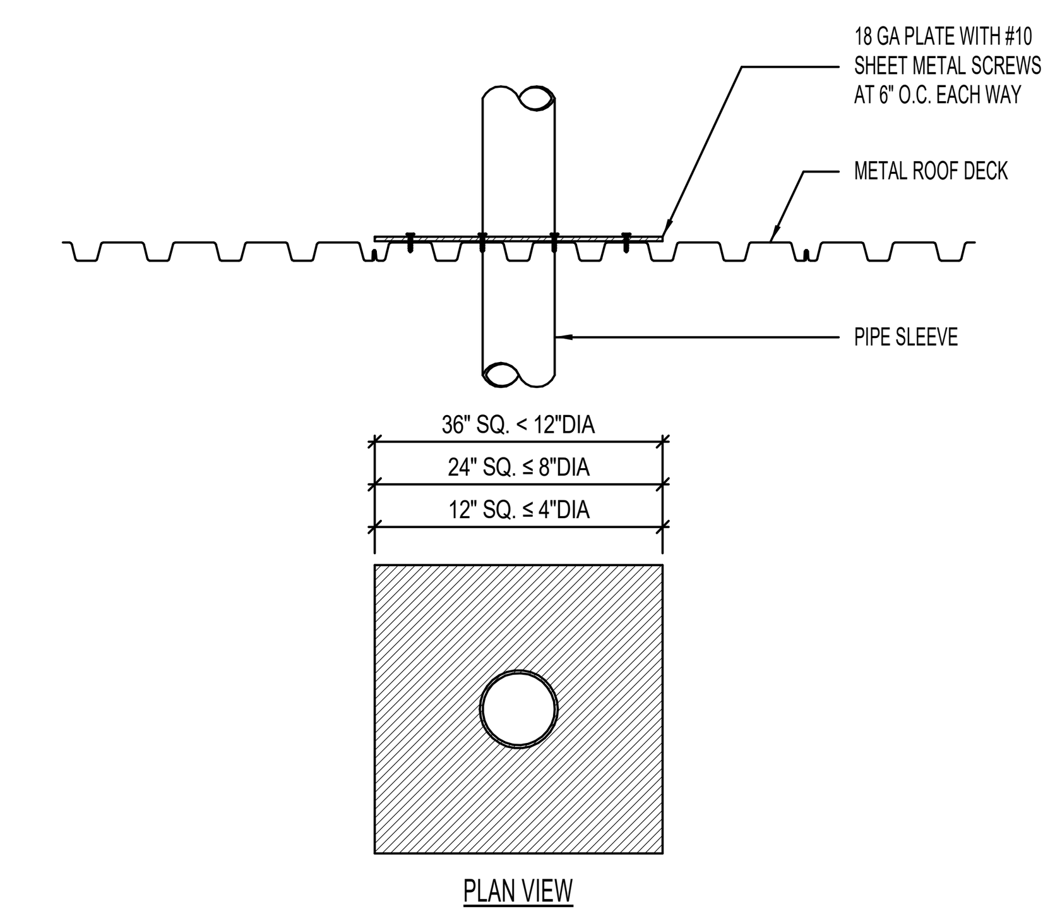


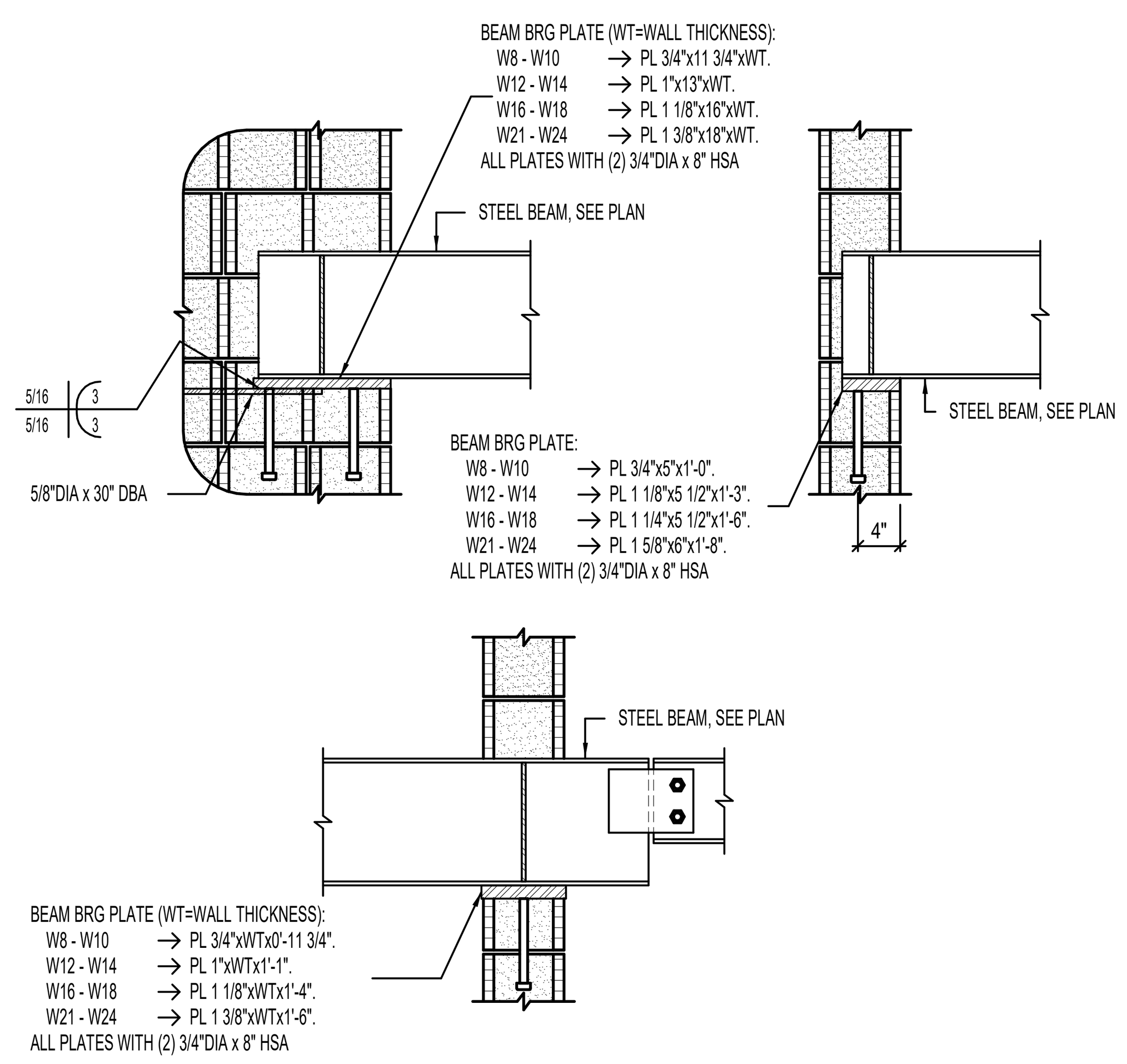
1 TYPICAL ROOF OPENING DETAIL
[PLAN VIEW]
NO SCALE



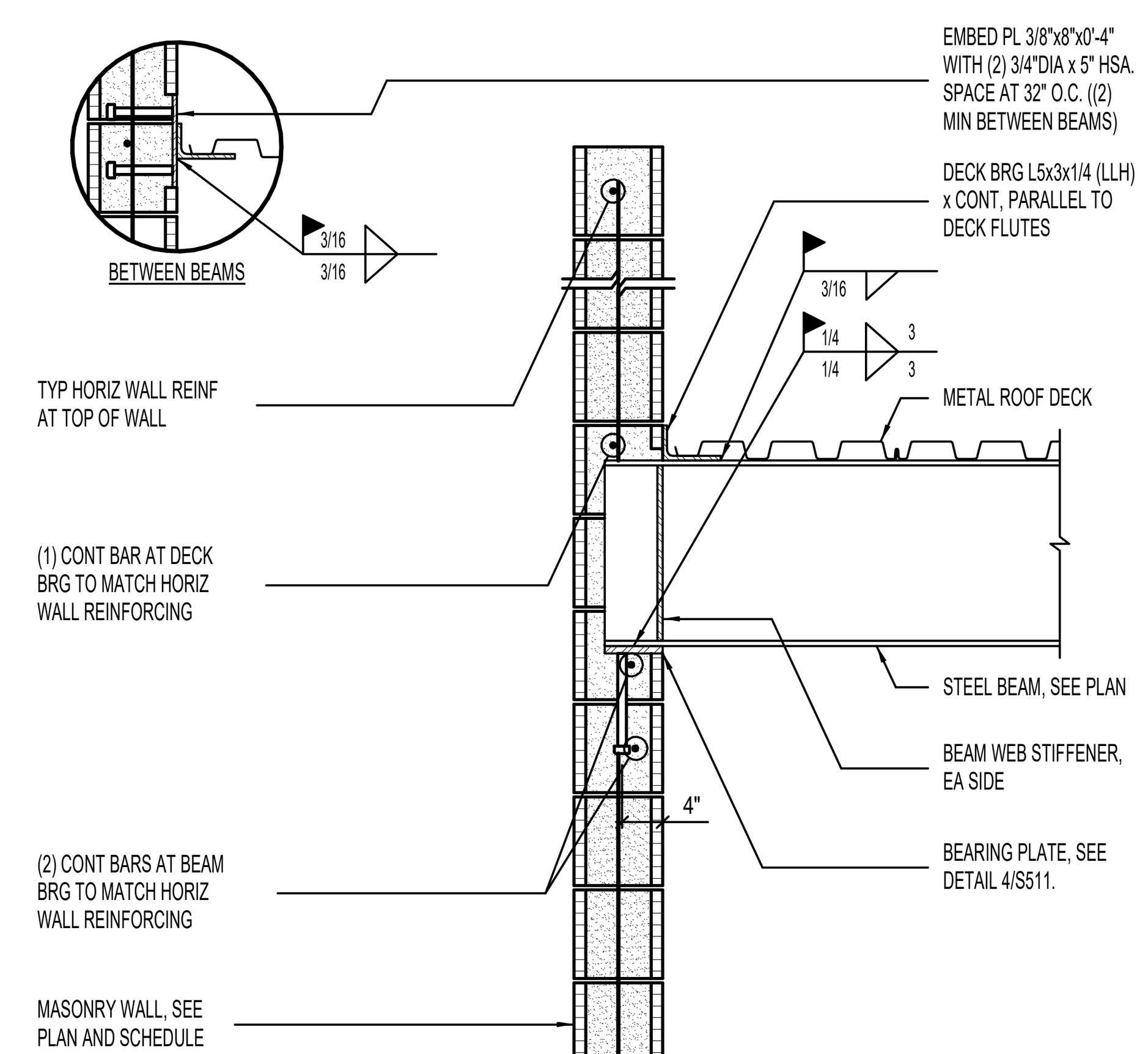
2 TYPICAL ROOF DRAIN SUPPORT DETAIL
[PLAN VIEW]
NO SCALE



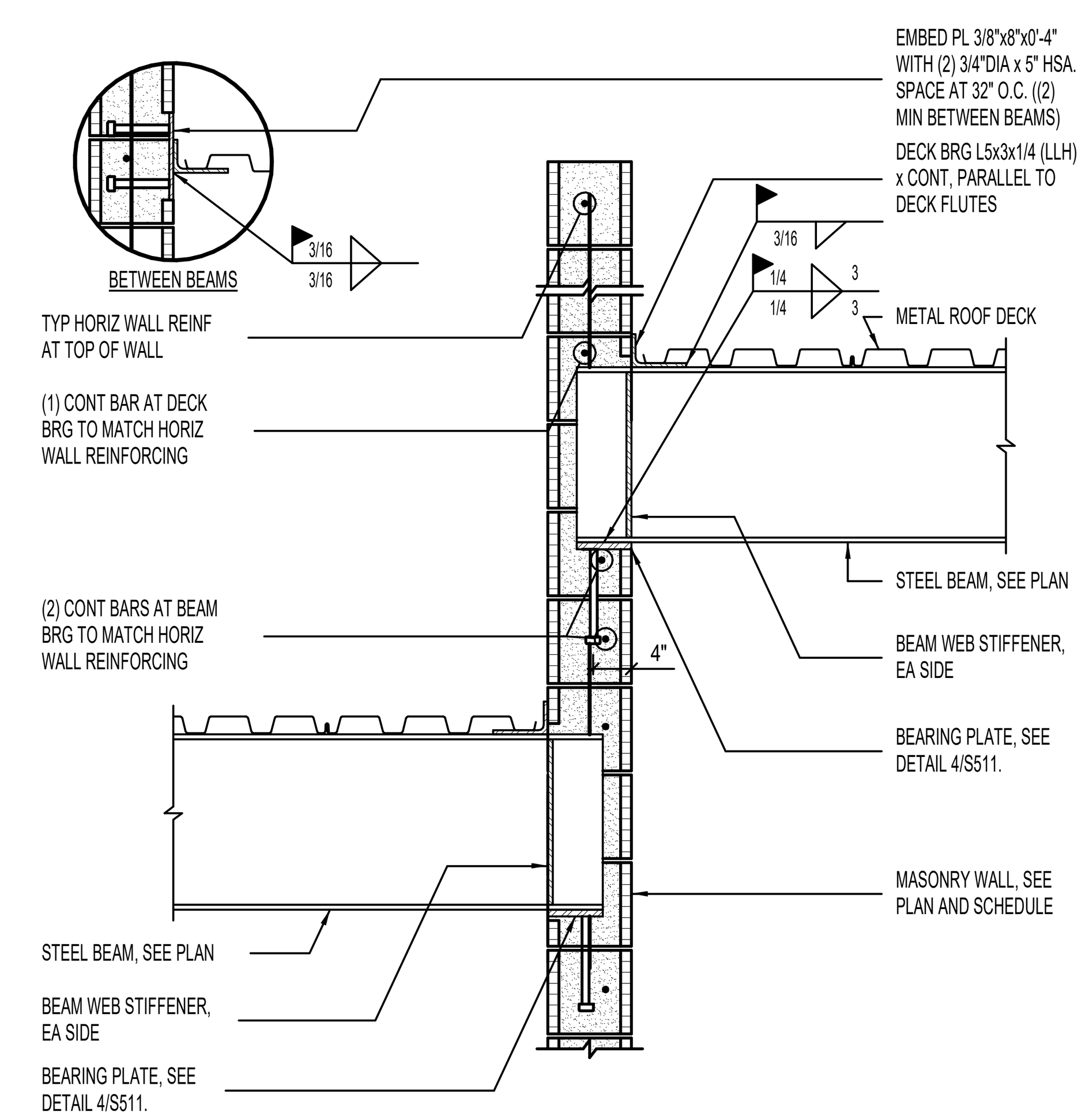
3 TYPICAL PIPE SLEEVE THROUGH ROOF DECK
NO SCALE



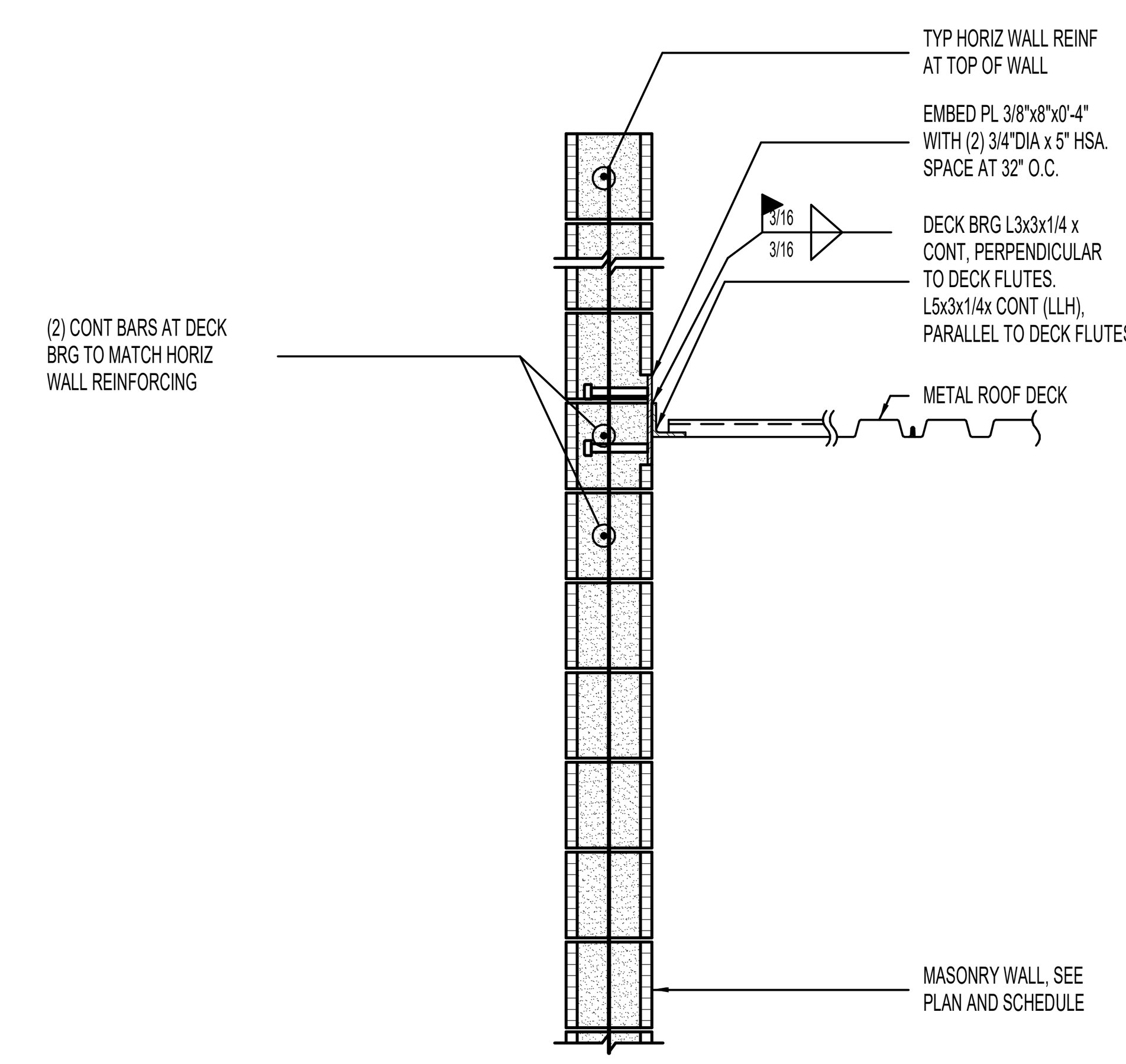
4 BEARING PLATE SCHEDULE FOR ROOF JOIST/BEAM BEARING
AT MASONRY WALLS
NO SCALE



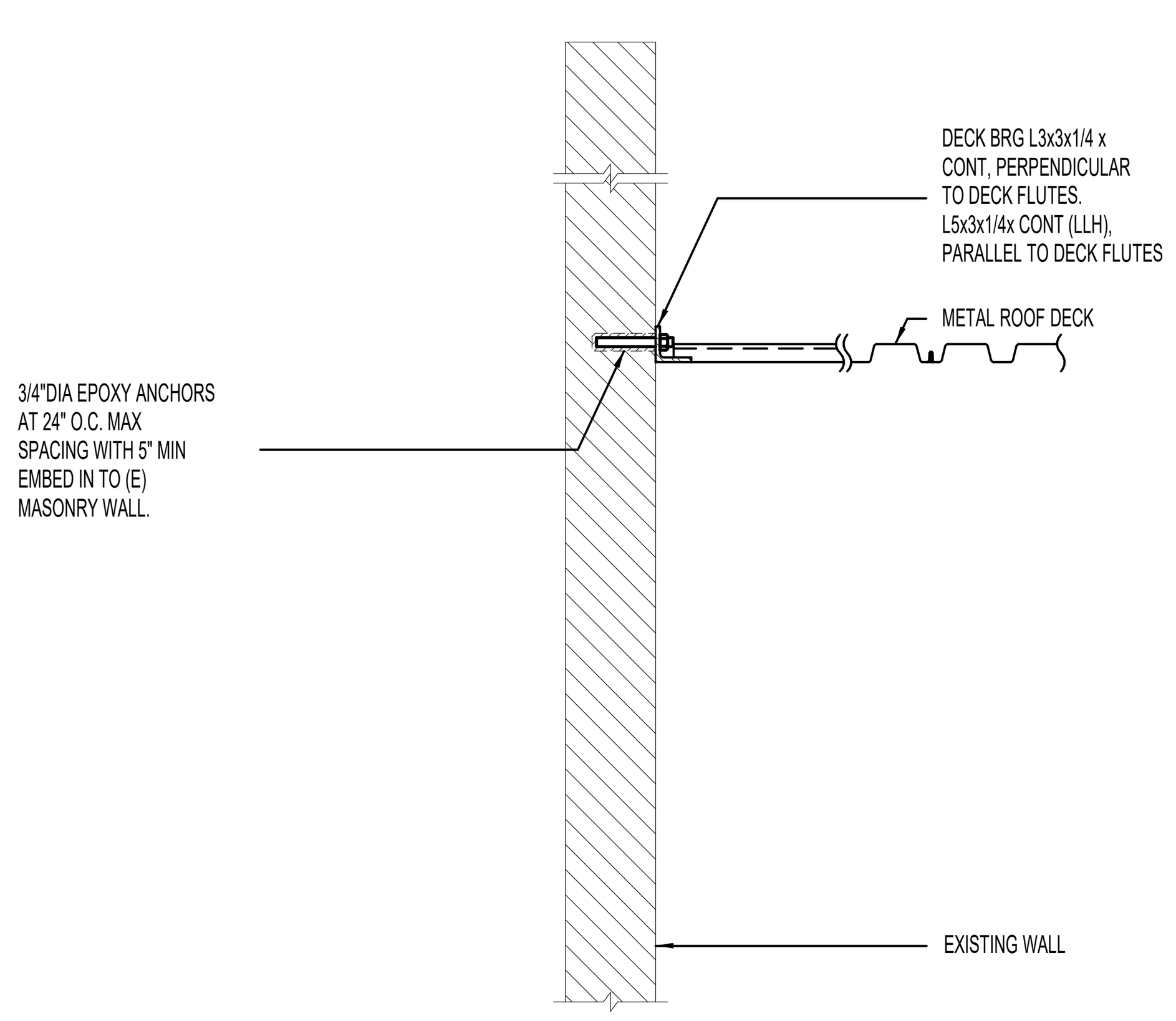
5 TYPICAL STEEL BEAM/DECK BEARING DETAIL
AT 8" MASONRY WALLS
NO SCALE



6 TYPICAL STEEL BEAM/DECK BEARING DETAIL
AT 8" MASONRY WALLS
NO SCALE



7 DECK BEARING AT MASONRY WALL
NO SCALE



8 DECK BEARING AT EXISTING WALL
NO SCALE

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LAS COLONIAS AMPHITHEATER - ADDITION

Grand Junction, CO

City of Grand Junction Colorado

project#: 190527
date: Feb. 10, 2020

revisions :

title:

DETAILS

sheet:

S511

PERMIT SET

CONCRETE FOOTING SCHEDULE

MARK	WIDTH	LENGTH	DEPTH	REINFORCING CROSSWISE				REINFORCING LENGTHWISE				COMMENTS
				No.	SIZE	LENGTH	SPACING	No.	SIZE	LENGTH	SPACING	
FC2.0	2'-0"	CONT	12"	-	#4	1'-6"	48"	3	#4	CONT	EQ	.

CONCRETE FOOTING NOTES:
1. PLACE ALL FOOTING REINFORCING IN THE BOTTOM OF THE FOOTING WITH 3" CLEAR CONCRETE COVER (UNO).
2. TOP REINFORCING, WHERE OCCURS, SHALL BE PLACED IN THE TOP OF THE FOOTING WITH 2" MINIMUM CONCRETE COVER.
3. IF FOOTINGS ARE EARTH-FORMED, FOOTINGS SHALL BE 6" LONGER AND WIDER THAN SCHEDULED.
4. RUN CONTINUOUS FOOTING REINFORCEMENT THROUGH SPOT FOOTINGS.
5. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.
6. SOME SCHEDULED FOOTINGS MAY NOT BE USED, SEE FOOTING AND FOUNDATION PLAN FOR FOOTING MARKS.

1 CONCRETE FOOTING SCHEDULE

NO SCALE

CONCRETE WALL SCHEDULE

MARK	THICKNESS	REINFORCING			WALL TYPE	COMMENTS
		VERTICAL	HORIZONTAL	TOP AND BOTTOM		
CW-8A	8"	#4 AT 18" O.C.	#4 AT 12" O.C.	(1) #4	A	.

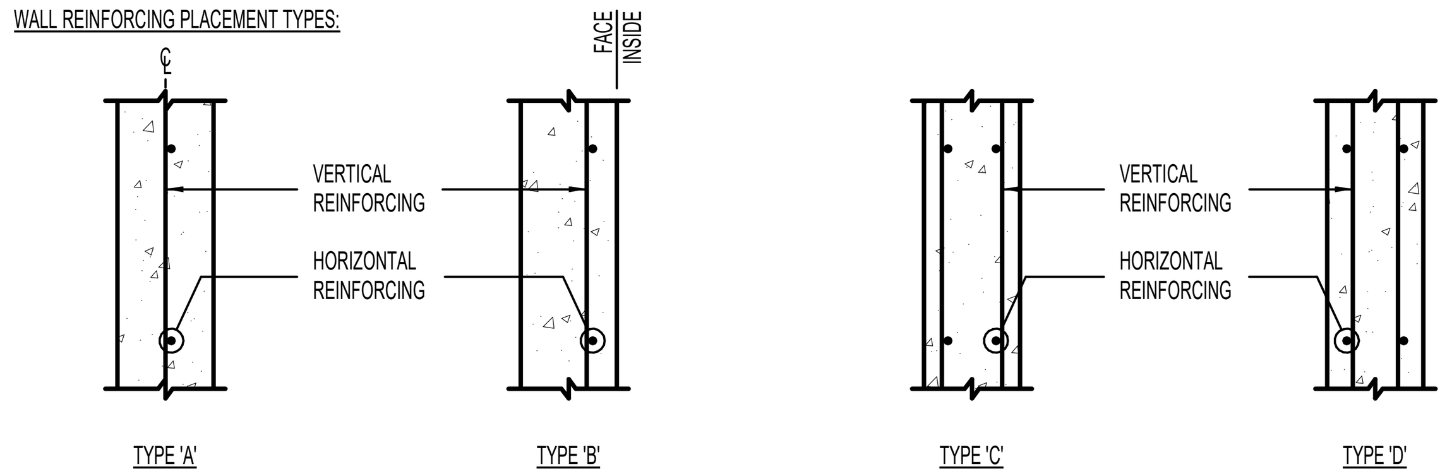
WALLS NOT DESIGNATED IN PLAN

THICKNESS	REINFORCING	
	VERTICAL	HORIZONTAL
6"	#4 AT 18" O.C.	#4 AT 16" O.C.
8"	#4 AT 18" O.C.	#4 AT 12" O.C.
10"	#4 AT 16" O.C.	#5 AT 15" O.C.
12"	#4 AT 18" O.C. E.F.	#4 AT 16" O.C. E.F.

ABBREVIATIONS:
E.F. EACH FACE
I.F. INSIDE FACE
O.F. OUTSIDE FACE

CONCRETE FOUNDATION WALL NOTES:
1. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.

WALL REINFORCING PLACEMENT TYPES:



2 CONCRETE WALL SCHEDULE

NO SCALE

CONCRETE REINFORCING BAR LAP SPLICE SCHEDULE

BAR SIZE	f'c = 3000psi & f'c = 3500 psi				f'c = 4000psi & f'c = 4500 psi				f'c = 5000psi				f'c = 6000psi			
	REGULAR CLASS		TOP CLASS		REGULAR CLASS		TOP CLASS		REGULAR CLASS		TOP CLASS		REGULAR CLASS		TOP CLASS	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
#3	17"	22"	22"	28"	15"	19"	19"	24"	13"	17"	17"	22"	12"	16"	15"	20"
#4	22"	29"	29"	37"	19"	25"	25"	32"	17"	22"	22"	29"	16"	20"	20"	27"
#5	28"	36"	36"	47"	24"	31"	31"	40"	22"	28"	28"	36"	20"	26"	26"	33"
#6	33"	43"	43"	56"	29"	37"	37"	48"	26"	33"	33"	43"	24"	31"	31"	40"
#7	48"	63"	63"	81"	42"	54"	54"	70"	37"	49"	49"	63"	34"	44"	44"	58"
#8	55"	72"	72"	93"	48"	62"	62"	80"	43"	56"	55"	72"	39"	51"	51"	66"
#9	62"	81"	81"	105"	54"	70"	70"	91"	48"	63"	63"	81"	44"	57"	57"	74"
#10	70"	91"	91"	118"	61"	79"	79"	102"	54"	70"	70"	91"	50"	64"	64"	83"
#11	78"	101"	101"	131"	67"	87"	87"	113"	60"	78"	78"	101"	55"	71"	71"	93"

TABULATED VALUES ARE FOR CASE 1 REINFORCEMENT, WHERE THE REQUIREMENTS OF TABLE BELOW ARE MET. WHERE THESE CONDITIONS ARE NOT MET, MULTIPLY THE LAP LENGTHS (ℓ_d) BY 1.5.

REQUIREMENT FOR CASE 1 LAP LENGTHS

BAR CLEAR SPACING	CLEAR COVER	STIRRUPS OR TIES
>=d_b	>=d_b	>=CODE FOR MINIMUM THROUGHOUT ℓ_d
>=2d_b	>=d_b	NO REQUIREMENT

d_b = BAR DIAMETER

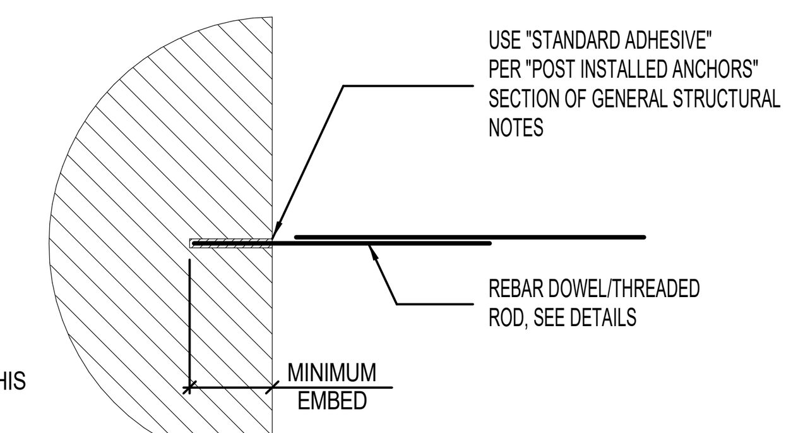
CONCRETE REINFORCING BAR LAP SPLICE NOTES:
1. THIS SCHEDULE SHALL BE USED FOR ALL BAR SPLICES IN CONCRETE WALLS, UNLESS NOTED OTHERWISE.
2. CLASS 'A' SPLICES MAY BE USED ONLY IN CASES WHERE 50% OR LESS OF THE BARS ARE SPLICED WITHIN THE LAP SPLICE LENGTH.
3. CLASS 'B' SPLICES SHALL BE USED FOR ALL SPLICES UNLESS THE REQUIREMENTS OF NOTE No. 2 ABOVE ARE MET.
4. TIES AND STIRRUPS SHALL NOT BE SPLICED.
5. DO NOT SPLICE VERTICAL BARS IN RETAINING WALLS UNLESS SPECIFICALLY SHOWN.
6. THE VALUES TABULATED IN SCHEDULE ARE FOR GRADE 60 REINFORCING BARS. FOR GRADE 75, MULTIPLY LAP LENGTHS BY 1.25 AND FOR GRADE 80, MULTIPLY BY 1.33.
7. THE VALUES TABULATED IN SCHEDULE ARE MINIMUM REQUIREMENTS. LONGER LENGTHS MAY BE USED FOR CONSTRUCTIBILITY.
8. TOP BARS ARE CLASSIFIED AS HORIZONTAL BARS WHERE 12", OR MORE, OF FRESH CONCRETE IS CAST BELOW THE REINFORCING BAR.
9. FOR EPOXY-COATED OR ZINC AND EPOXY DUAL-COATED BARS WITH CLEAR COVER < 3d_b OR CLEAR SPACING <6d_b, MULTIPLY LAP LENGTHS BY 1.5. FOR ALL OTHER CASES MULTIPLY BY 1.2
10. FOR LIGHT WEIGHT CONCRETE, MULTIPLY LAP LENGTHS BY 1.33 UNLESS THE AVERAGE SPLITTING TENSILE STRENGTH (F_{ct}) IS SPECIFIED. FOR LIGHT WEIGHT CONCRETE WHERE F_{ct} IS SPECIFIED, REFER TO ACI318-14 SECTION 19.2.4.3
11. SPLICES FOR BUNDLED BARS:
    a. FOR BUNDLED BARS OF THREE OR LESS, LAP SPLICE LENGTHS SHALL BE MULTIPLIED BY 1.2.
    b. FOR BUNDLED BARS OF FOUR OR MORE, LAP SPLICE LENGTHS SHALL BE MULTIPLIED BY 1.33.
    c. INDIVIDUAL BAR SPLICES WITHIN A BUNDLE SHALL NOT OVERLAP.
    d. ENTIRE BUNDLES SHALL NOT BE LAP SPLICED.
12. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.

3 CONCRETE REINFORCING BAR LAP SPLICE SCHEDULE

NO SCALE

STANDARD ADHESIVE EMBEDMENT SCHEDULE

REBAR DOWEL (THREADED ROD SIZE)	MINIMUM EMBEDMENT INTO CONCRETE OR GROUTED MASONRY	TENSION/SHEAR CAPACITIES (ALLOWABLE)
#3 (3/8")	3.3/8"	820lb
#4 (1/2")	4.1/2"	1255lb
#5 (5/8")	5.5/8"	1670lb
#6 (3/4")	6.3/4"	2145lb



STANDARD ADHESIVE EMBEDMENT NOTES:
1. SPECIFIC EMBEDMENTS, NOTES AND DETAILS IN DRAWINGS SHALL GOVERN OVER THIS SCHEDULE.
2. HOLE DIAMETER SHALL BE DOWEL/ROD DIAMETER PLUS 1/8". FOLLOW MANUFACTURER'S INSTRUCTIONS FOR HOLE PREPARATION.
3. PROVIDE A 3" MINIMUM EDGE DISTANCE TO CENTER OF HOLE.
4. CONTACT STRUCTURAL ENGINEER IF MINIMUM EMBEDMENTS INDICATED ABOVE ARE NOT ACHIEVABLE.
5. SEE "POST INSTALLED ANCHORS" SECTION OF GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.

4 STANDARD ADHESIVE EMBEDMENT SCHEDULE

NO SCALE

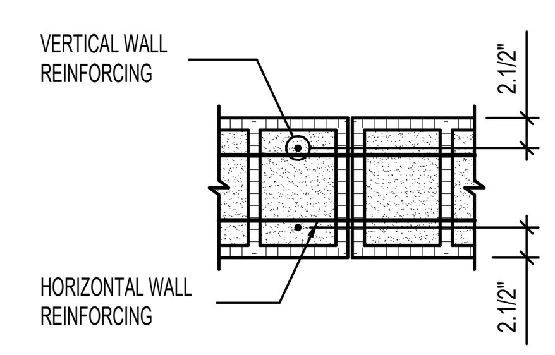
MASONRY WALL SCHEDULE

MARK	THICKNESS	MATERIAL	SOLID GROUT	REINFORCING			COMMENTS
				VERTICAL	HORIZONTAL	JOINTS	
MW-8A	8"	SEE ARCH	YES	#5 AT 32" O.C.	#4 AT 24" O.C.	NONE	SEE NOTE 10

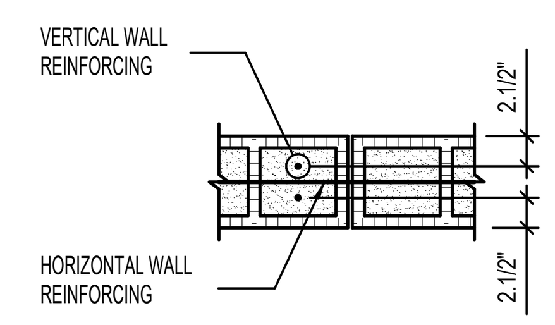
MASONRY WALLS NOT DESIGNATED IN PLAN

THICKNESS	REINFORCING		
	VERTICAL	HORIZONTAL (NOT SOLID GROUTED)	HORIZONTAL (SOLID GROUTED)
6"	#5 AT 32" O.C.	#4 AT 48" O.C.	#4 AT 24" O.C.
8"	#5 AT 32" O.C.	#5 AT 48" O.C.	#4 AT 24" O.C.
10"	#5 AT 24" O.C.	#6 AT 48" O.C.	#5 AT 24" O.C.
12"	#5 AT 24" O.C.	(2) #5 AT 48" O.C.	(2) #4 AT 24" O.C.

MASONRY WALL NOTES:
1. COORDINATE WALL FINISHES, MATERIALS, COURSING, ETC. WITH ARCHITECTURAL DRAWINGS.
2. DO NOT SOLID GROUT WALLS UNLESS REQUIRED BY SCHEDULE, NOTES, OR DETAILS.
3. SOLID GROUT ALL MASONRY COURSES BELOW GRADE.
4. SINGLE LAYER OF VERTICAL REINFORCING SHALL BE CENTERED IN WALL (UNO).
5. VERTICAL REINFORCING SHALL EXTEND INTO FOOTINGS AND TERMINATE WITH STANDARD HOOK. FOR CONCRETE FOUNDATION WALLS 4'-0" OR TALLER, VERTICAL WALL REINFORCING SHALL DOWEL 3'-0" MINIMUM INTO THE FOUNDATION WALL (UNO).
6. PROVIDE TWO VERTICAL BARS (MIN) AT ALL CORNERS AND END OF WALLS.
7. HORIZONTAL WALL REINFORCING SHALL BE PLACED BETWEEN A DOUBLE LAYER OF VERTICAL MASONRY REINFORCING.
8. HORIZONTAL WALL REINFORCING SHALL CONTINUE THROUGH MASONRY LINTELS. WHERE BOTH HORIZONTAL WALL REINFORCING AND LINTEL REINFORCING OCCUR IN THE SAME COURSE, USE THE LARGER REINFORCING.
9. SEE DETAILS 6/S502 FOR WHERE HORIZONTAL REINFORCING TERMINATES AT EDGE OF OPENINGS.
10. IN CONCRETE FOUNDATION WALL BELOW, ALTERNATE VERTICAL CONCRETE WALL REINFORCING WITH VERTICAL MASONRY REINFORCING.
11. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.



DOUBLE VERTICAL LAYER WALL REINFORCING AT 12" MASONRY



DOUBLE VERTICAL LAYER WALL REINFORCING AT 8" AND 10" MASONRY

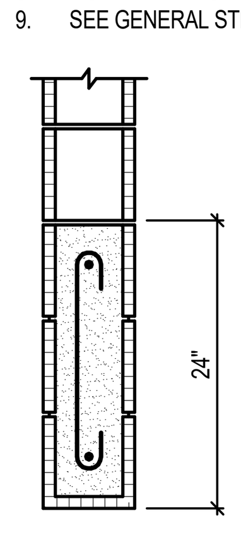
5 MASONRY WALL SCHEDULE

NO SCALE

MASONRY LINTEL SCHEDULE

MARK	DEPTH	MAXIMUM SPAN FOR UNSCHEDULED OPENINGS	REINFORCING		COMMENTS
			HORIZONTAL	STIRRUPS	
ML-24A	24"	8'-0"	(1) #6 x CONT TOP AND BOTTOM	#4 AT 8" O.C.	.

MASONRY LINTEL NOTES:
1. LINTEL WIDTH AND MATERIAL TYPE SHALL BE THE SAME AS THE WALL IN WHICH THE LINTEL IS CONSTRUCTED.
2. GROUT MASONRY LINTELS MONOLITHICALLY WITH THE SUPPORT WALL OR PIER AT EACH END.
3. MASONRY LINTELS ML-8A, ML-16A, ML-24A, AND ML-32A SHALL BE USED OVER OPENINGS IN MASONRY WALLS WHEN A SPECIFIC MASONRY LINTEL IS NOT OTHERWISE SPECIFIED. WHEN A LINTEL IS SPECIFIED ON THE PLANS, THE MAXIMUM SPAN AS NOTED IN THIS SCHEDULE SHALL NOT APPLY. CONSULT THE STRUCTURAL ENGINEER FOR LINTELS NOT SPECIFIED ON THE PLANS WHICH HAVE A SPAN GREATER THAN 10'-0".
4. MASONRY LINTELS ML-8A, ML-16A, ML-24A, AND ML-32A SHALL NOT BE LOCATED DIRECTLY BELOW FLOOR OR ROOF BEAMS OR GIRDERS UNLESS NOTED OTHERWISE ON THE PLANS. JOISTS SHALL NOT BEAR ON ANY LINTEL LESS THAN 16" DEEP. CONSULT THE STRUCTURAL ENGINEER FOR LINTELS NOT SHOWN ON THE PLANS WHICH ARE LOCATED DIRECTLY BELOW FLOOR OR ROOF BEAMS OR GIRDERS.
5. EXTEND ALL HORIZONTAL REINFORCING 48 BAR DIAMETERS MINIMUM BEYOND THE EDGE OF ALL OPENINGS. IF HORIZONTAL REINFORCING CANNOT EXTEND 48 BAR DIAMETERS BEYOND EDGE OF OPENING, PROVIDE 90° STANDARD HOOK.
6. SPLICE TOP BARS AT MIDSPAN OF LINTEL ONLY AND BOTTOM BARS OVER SUPPORTS ONLY.
7. HORIZONTAL WALL REINFORCING SHALL CONTINUE THROUGH MASONRY LINTELS. WHERE BOTH HORIZONTAL WALL REINFORCING AND LINTEL REINFORCING OCCUR IN THE SAME COURSE, USE THE LARGER REINFORCING.
8. DOWEL VERTICAL REINFORCING OF WALL ABOVE LINTEL INTO THE FULL DEPTH OF LINTEL OR 48 BAR DIAMETERS, WHICHEVER IS LESS.
9. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.



ML-24A

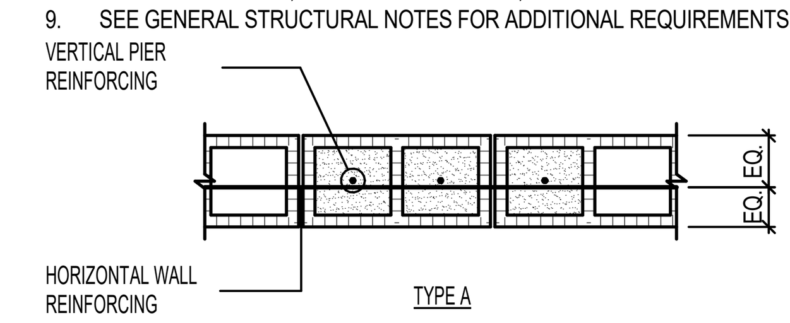
6 MASONRY LINTEL SCHEDULE

NO SCALE

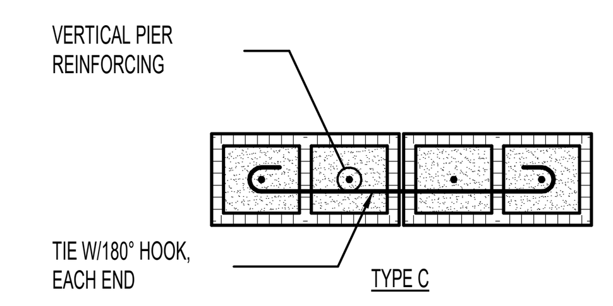
MASONRY PIER SCHEDULE

MARK	SIZE	REINFORCING		REINFORCING SCHEMATIC	COMMENTS
		VERTICAL	TIES		
MP-16A	WT x 16"	(2) #5	NONE		SEE NOTE No. 7
MP-16C	WT x 16"	(2) #5	#3 AT 8" O.C.		SEE NOTE No. 6

MASONRY PIER NOTES:
1. HORIZONTAL WALL REINFORCING SHALL BE LOCATED TO THE INSIDE OF THE VERTICAL BARS FOR DOUBLE LAYER MASONRY PIERS.
2. VERTICAL REINFORCING AND TIES SHALL EXTEND FULL HEIGHT OF WALL (UNO).
3. VERTICAL MASONRY PIER REINFORCING SHALL EXTEND INTO THE FOOTING AND TERMINATE WITH A STANDARD 90° HOOK. FOR CONCRETE FOUNDATION WALLS 4'-0" OR TALLER, VERTICAL PIER REINFORCING SHALL DOWEL 3'-0" MINIMUM INTO THE FOUNDATION WALL (UNO).
4. FOR MP TYPES B, D, AND E IN CONCRETE FOUNDATION WALLS, PROVIDE #3 TIE AT TOP AND BOTTOM OF FOUNDATION WALL. SEE DETAILS 5/S502 AND 6/S502.
5. HORIZONTAL REINFORCING OF ADJACENT WALLS SHALL RUN CONTINUOUS THROUGH MASONRY PIERS.
6. WHERE NOTED IN SCHEDULE, TIES EXTEND FROM BOTTOM TO TOP OF OPENING AND REPLACE HORIZONTAL WALL REINFORCING.
7. FOR TYPE 'A' PIERS, AT EDGE OF OPENING, TERMINATE HORIZONTAL REINFORCING WITH 180° HOOK. SEE DETAIL 6/S502.
8. FOR TYPE 'B' PIERS, AT EDGE OF OPENING, PROVIDE #3 END TIE AT SAME SPACING AS HORIZONTAL REINFORCING. SEE DETAIL 6/S502.
9. SEE GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.



TYPICAL SINGLE LAYER PIER CONFIGURATION SCHEMATIC



TYPICAL ISOLATED SINGLE LAYER PIER CONFIGURATION SCHEMATIC

7 MASONRY PIER SCHEDULE

NO SCALE

MASONRY REINFORCING LAP SCHEDULE

BAR SIZE	(1) BAR PER CELL	(2) BARS PER CELL
#3	13"	13"
#4	21"	21"
#5	34"	34"
#6	37"	USE MECH SPLICE COUPLER
#7	USE MECH SPLICE COUPLER	USE MECH SPLICE COUPLER
#8	USE MECH SPLICE COUPLER	USE MECH SPLICE COUPLER

2015 IBC

8 MASONRY REINFORCING LAP SCHEDULE (2000psi)

NO SCALE

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date: Feb. 10, 2020

revisions :

title:
SCHEDULES

sheet:
S601

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