GENERAL STRUCTURAL NOTES

PART 1 – GENERAL REQUIREMENTS AND DESIGN CRITERIA

1.1 SPECIFICATIONS

A. Unless otherwise noted, details, sections and notes contained in the structural contract documents shall be considered typical for all similar conditions even if not explicitly referenced.
B. Deficient work and/or work not in conformance with the contract documents shall be repaired at the contractor's expense. The contractor shall compensate the client for services arising from deficient work, review of modifications/contractor substitution, or expediting of submittals.
C. Cost of investigation and/or redesign incurred by the Engineer of Record due to contractor errors will be at the contractor's expense.
D. The contractor shall submit a single dimensioned and coordinated drawing for each level showing the locations of all sleeves and openings required by all trades prior to initiating any work.
E. Loads imposed on the base building structure and temporary conditions intended to accommodate construction means and methods are not explicitly considered in this design. The contractor shall advise the Engineer of Record regarding construction loads and temporary conditions imposed on the building structure and shall compensate the Engineer of Record for reviewing these conditions.
F. Structure is designed to be stable in the final condition with all elements in place. Contractor and Contractor's Engineer shall verify strength and stability during construction, and provide temporary bracing as required.
G. Vehicular barrier required as shown in drawings.

1.2 ELEVATIONS & DIMENSIONS

A. All dimensions, elevations and conditions shall be verified in the field by the contractors and any discrepancies shall be brought to the attention of the engineer for clarification before proceeding with the affected part of the work. Dimensions and elevations noted in the contract documents as (+/–) and all field conditions shall be verified in the field (V.I.F.) by the contractors prior to the submissions of shop drawings. Upon receipt of shop drawings, the engineer has the right to assume that all field dimensions, elevations and conditions have been verified by the contractors and that the shop drawings accurately reflect such verifications unless stated otherwise on the shop drawings.

1.3 BUILDING CODE AND REFERENCED STANDARDS

A. Connecticut State Building Code (CTSBC), 2018 with Current Revisions
B. ASCE/SEI 7–10 Minimum Design Loads for Buildings and Other Structures

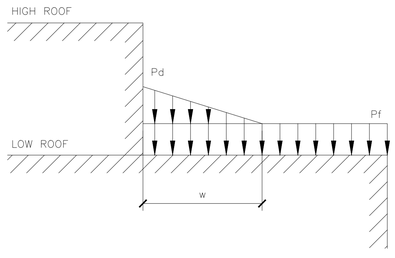
1.4 DESIGN LOADS

A. Dead Loads All permanent stationary construction.

B. Floor Live loads (See load maps)

C. Roof Snow Load Parameters
Where appropriate, drifting snow loads have been considered in accordance with Section 1608 of the Building Code

1. Ground Snow Load, Pg	35 psf
2. Flat Roof Snow Load, Pf	21 psf
3. Snow Exposure Factor, Ce	0.9
4. Snow Load Importance Factor, IS	1.0
5. Thermal Factor, Ct	1.0
6. Drift Surcharge, Pd	51 psf
7. Drift Width, w	7 ft



D. Wind Load Parameters

1. Basic Wind Speed (3 sec gust)	120 mph
2. Risk Category	II
3. Internal Pressure Coefficient	±0.18
4. East–West Direction, Wind Force Resisting System	
a. Wind Exposure Category	B
b. Design Base Shear, V	––– kips
5. North–South Direction, Wind Force Resisting System	
a. Wind Exposure Category	B
b. Design Base Shear, V	––– kips
6. Components & Cladding	(See load maps)

E. Seismic Load Parameters

1. Seismic Importance Factor, IE	1.0
2. Spectral Response Acceleration, Ss	0.197 g
3. Spectral Response Acceleration, S1	0.065 g
4. Site Class	––
5. Spectral Response Coefficient, SDS	_____ g
6. Spectral Response Coefficient, SD1	_____ g
7. Seismic Design Category	––
8. Analysis Procedure	
a. Equivalent Lateral Force	
9. East–West Direction, Seismic Force Resisting System	
a. Steel Ordinary Concentrically Braced Frames	
b. Design Base Shear, V	___ kips
c. Seismic Response Coefficient, CS	_____
d. Response Modification Factor, R	––
10. North–South Direction, Seismic Force Resisting System	
a. Steel Ordinary Concentrically Braced Frames	
b. Design Base Shear, V	___ kips
c. Seismic Response Coefficient, CS	_____
d. Response Modification Factor, R	––

1.5 LATERAL LOAD RESISTING SYSTEM

A. All lateral load resistance and stability of the building in the completed structure is provided by ordinary reinforced concrete shear walls in each orthogonal direction (see framing plans, S–100 series, for locations). See lateral system on S–XXX series for elevations and member forces. The proposed CIP concrete slab on metal deck and roof metal deck will serve as horizontal diaphragms that distribute the wind and seismic forces horizontally to the braces, which carry the applied lateral loads to the building foundation.

PART 2 – FOUNDATIONS

2.1 REFERENCE GEOTECHNICAL REPORT: Foundation design is in accordance with the recommendations provided in Report of Geotechnical Engineering, 2 Old Tophet Road, Roxbury, CT by _____ dated _____.

2.2 FOUNDATION DESIGN PARAMETERS

A. Soil capacity: _____ and _____ shall bear on soil with a minimum bearing capacity of:
1. IBC Class ____ to ____ ____ TSF

B. Refer to foundation schedules for reference bearing capacity implemented in the design of the foundation element.

2.3 EXCAVATION: All foundation excavation to be inspected by the Geotechnical Engineer. The elevations shown on the drawings are anticipated and actual elevations are to be established in the field by the Geotechnical Engineer, but in no case shall the bottom of the footing, mat foundation, or pile cap be located less than [3.5] feet below the lowest adjacent surface exposed to freezing.

2.4 BACKFILL UNDER SLAB ON GRADE: Backfill where required below slabs with approved granular soil placed in 6 in. layers and compacted to 95% density at optimum moisture content as defined by ASTM D–1557, Method D.

2.5 BACKFILL AGAINST WALLS: Do not backfill against walls until wall concrete is at full design strength and all permanent horizontal construction is in place and at full design strength

Backfill with approved material placed in 6 in. layers and compacted to 95% density at optimum moisture content as defined by ASTM D–1557, Method D.

2.6 FOUNDATION PLACEMENT & PROTECTION: Do not place foundation concrete in water or on frozen ground. Protect in–place foundations and slabs from frost penetration until the project is complete. Do not use salt or chloride compounds to de–ice the site.

2.7 UNDERPINNING
A. Where underpinning of the adjacent existing building foundation is required, use the "pit method." Contractor to provide engineering and means and methods for underpinning scheme. Underpinning shop drawings and calculations shall be signed and sealed by a Professional Engineer Licensed in the State of Connecticut and shall be submitted to the Engineer of Record for review. Contractor's Engineer to provide special inspections required by the CTSBC. Contractor's Engineer to be hired directly by Owner for special inspections.

2.8 TEMPORARY SHORING
A. Contractor to provide engineering and means and methods for temporary shoring and/or bracing. Temporary shoring shop drawings and calculations shall be signed and sealed by a Professional Engineer licensed in the State of Connecticut and shall be submitted to the Engineer of Record for review.

PART 3 – CONCRETE WORK

3.1 CONCRETE MIX PROPERTIES

A. Element (Normal Weight, UON)

	28 day strength	W/C	Air Content (Max.)
1. Footings/Mats	4,000 psi	0.40	6%+/– 1.5
2. Grade Beams	4,000 psi	0.40	6%+/– 1.5
3. Concrete Slab–on–Grade	4,000 psi	0.40	6%+/– 1.5
4. Concrete on Metal Deck	4,000 psi	0.45	less than 3%

B. Portland Cement:
8. ASTM C150, Type II
9. When concrete is in contact with soil, the type of of exposure shall determine the cement type:
9.1. High Sulfate Exposure: Type V plus pozzolan
9.2. Moderate Sulfate Exposure: Type II
10. The contractor shall determine the level of exposure by testing or other suitable means.

C. Density:
1. Lightweight = 115 pcf
2. Normal Weight = 150 pcf

D. Fly Ash:
1. ASTM C618, Class F
2. Shall not exceed a maximum of 25 percent the total cementitious material by mass.

E. Chloride Ion Content:
1. Maximum water–soluble ion content shall not exceed a maximum of 0.15 percent by weight of cement determined by ASTM C1218 at age between 28 and 42 days.

3.2 BASE PLATE GROUT: 10,000 psi 28–day compressive strength.

3.3 STEEL REINFORCEMENT

E. ASTM A615 Grade 60, deformed.
F. ASTM A497 welded wire reinforcement (Use flat sheets only).
G. Provide #6 chair bars, high chairs, ties, clips, slab bolsters and other accessories where not specified on the drawings in accordance with Manual of Standard Practice or Detailing Reinforcing Concrete Structures ACI 315 or CRSI–WRSI Manual of Standard Practice. Use plastic tips on all chairs placed on the sides of concrete formwork.
H. Do not tack or spot–weld crossing bars.
I. All steel elements exposed to weather should utilize epoxy coated or galvanized rebar.

3.4 REINFORCEMENT AT OPENINGS

A. U.O.N. provide 2 – #6 at each side of openings in walls and slabs
B. Extend 2'–6" beyond the opening or as detailed, except vertical bars at sides of openings in walls are to extend from floor to floor
C. Bars may be moved aside at openings or sleeves, but do not cut or omit.

3.5 SPLICING OF REINFORCEMENT:

A. As shown on drawings but not less than 65 bar diameters for walls.
B. Provide a lap of 8 in or 1 1/2 spaces, whichever is larger, for W.W.R.
C. Tie wires together at lap.

3.6 MINIMUM REINFORCEMENT

A. Reinforce wall with at least 0.0015 times the area of concrete and 0.0025 times the area of concrete in the longitudinal and horizontal directions, respectively. Reinforcement may be equally divided between layers at each face in the same direction, not exceed ⅔ of the total reinforcement for each direction at the exterior face.
B. In slabs, provide at least 0.0018 times the area of concrete in each direction.

3.7 REINFORCEMENT SHOP DRAWINGS

A. Shop drawings shall be submitted to the Structural Engineer for review and approval, no concrete work shall commence without approved shop drawings.
B. Location of all construction joints not shown in drawings shall be submitted to Structural Engineer for approval prior to detailing of reinforcing. All construction joints to be clearly shown in rebar shop drawings. Structural Engineer may require additional reinforcing at construction joints.
C. Conduit locations not indicated in the Structural Drawings must be submitted for approval to the Structural Engineer prior to placement.

3.8 MINIMUM CONCRETE CLEAR COVER

A. Concrete placed against earth:	3 in.
B. Slabs–on–grade bottom:	2 in.
C. Slabs–on–grade top:	2 in.
D. Pavement slabs top:	2 in.
E. Formed concrete exposed to earth, water, or weather:	2 in.
F. Formed slabs, top and bottom:	1 in.
G. Interior faces of walls:	1 in.
H. Columns or piers (main reinforcement):	2 in.

3.9 POST–INSTALLED ANCHORS

A. Expansion Anchors: Hilti HY–200.
1. Install per Hilti installation recommendations.
2. Provide standard depth of embedment as listed by Hilti, U.O.N.
3. Provide Stainless Steel anchors and hardware in all exterior applications.

3.10 STANDARD SPECIFICATIONS AND REFERENCE STANDARDS

A. ACI 318–14 Building Code Requirements for Structural Concrete
B. CRSI Manual of Standard Practice
C. Follow the latest recommendations and specifications of the American Concrete Institute:
1. ACI 302 Concrete Floor and Slab Construction
2. ACI 304 Measuring, Mixing, Transporting and Placing Concrete
3. ACI 305 Hot Weather Concreting
4. ACI 306 Cold Weather Concreting
5. ACI 315 Detailing Reinforcing Steel
6. ACI 318 General Design of Items Not Otherwise Specified
7. ACI 347 Formwork

3.11 HOUSEKEEPING PADS AND CURBS:

A. Pads and curbs may be shown on plan in certain instances for reference only.
See Architectural and Mechanical Drawings and Specifications and coordinate with equipment manufacturer's requirements and location.
B. Use same concrete as base slab U.O.N.
C. Maximum pad thickness is 6 inches.

DRAWING LIST

DATE 12/08/20 PROGRESS SD SET ISSUE

- ● ISSUED – NEW SHEET
- ⊖ ISSUED – REVISION MADE
- ○ ISSUED – NO REVISION MADE
- ⊗ SHEET REMOVED

	SHEET	DRAWING No.	DRAWING TITLE
●	1	S–001	GENERAL NOTES
●	2	S–002	GENERAL NOTES CONT'D
●	3	S–011	LOAD MAPS
●	4	S–012	LOAD MAPS
●	5	FO–101	FOUNDATION PLAN
●	6	FO–111	FOUNDATION TYPICAL DETAILS
●	7	FO–112	FOUNDATION TYPICAL DETAILS
●	8	FO–113	FOUNDATION TYPICAL DETAILS
●	9	FO–114	FOUNDATION TYPICAL DETAILS
●	10	S–101	BASEMENT LEVEL FRAMING PLANS
●	11	S–102	GROUND FLOOR FRAMING PLANS
●	12	S–103	2ND FLOOR FRAMING PLANS
●	13	S–104	ROOF FRAMING PLANS
●	14	S–201	BUILDING ELEVATIONS
●	15	S–301	TYPICAL CONCRETE COLUMN DETAILS
●	16	S–401	TYPICAL CONCRETE BEAM DETAILS
●	17	S–601	TYPICAL CONCRETE DETAILS
●	18	S–602	TYPICAL CONCRETE DETAILS
●	19	S–801	STEEL TYPICAL DETAILS
●	20	S–802	STEEL TYPICAL DETAILS
●	21	S–803	STEEL TYPICAL DETAILS
●	22	S–804	STEEL TYPICAL DETAILS
●	23	S–805	STEEL TYPICAL DETAILS
●	24	S–806	STEEL TYPICAL DETAILS

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PART 8 – STRUCTURAL STEEL

8.1 STRUCTURAL SHAPES

F.	Wide Flange Shapes	ASTM A992 (Fy = 50 ksi)
G.	Hollow Structural Sections	ASTM A500, Gr. C (Fy = 50 ksi)
H.	Angles	ASTM A36, U.O.N. (Fy = 36 ksi)
I.	Channels	ASTM A36, U.O.N. (Fy = 36 ksi)
J.	Plate:	ASTM A36, U.O.N. (Fy = 36 ksi)

8.2 STRUCTURAL PIPE

A. ASTM A53, Type E, Grade B or ASTM A501(Fy = 42 ksi)

8.3 BOLTED CONNECTIONS

A. ASTM A325 and A490.

8.4 ANCHOR RODS

A. ASTM F1554 Grade 55 bolts (U.O.N.) with Supplementary Requirement S1 (weldability).

8.5 WELDING ELECTRODES

A. Conform to AWS Specifications for electrodes based on welding process and the type and grade of steel. E70XX electrodes (MIN.) for fillet welds.

8.6 FABRICATION

A. Shop fabricate to greatest extent possible by welding including beam stiffeners, column caps and bases, holes and connections.
B. Submit complete shop drawings from field dimensions for the Architect's approval of all structural steel prior to fabrication.

8.7 ERECTION

A. Provide anchor rods, steel wedges, threaded screws or shims to support and plumb all columns.
B. Grout solid under base plates immediately after columns are plumb.
C. Provide bearing plates and wall anchors or anchor rods for all beams resting on concrete and all other necessary connecting hardware.
D. Set anchor rods using template.
E. Do not field cut or field modify any structural steel without prior written approval by architect for each specific case.

8.8 PAINT

A. Shop prime all steel not encased in concrete or not fireproofed.
B. See Architectural Drawings and Specifications for finish coat requirements.

8.9 FRAMING

A. Beams are equally spaced and installed with natural camber up, U.O.N.
B. Cantilever beams are same size as back span, U.O.N.
C. Connections shown are schematic only and are to be designed by the fabricator unless explicitly indicated otherwise.

8.10 STANDARD SPECIFICATIONS

A. AISC 2005 Specification for Structural Steel Buildings
B. AISC Code of Standard Practice for Steel Buildings and Bridges
1. AWS D1.1 Structural Welding Code – Steel

PART 9 – STEEL DECK AND SHEAR STUDS

9.1 STEEL DECK

A. Provide steel deck made from galvanized steel with minimum yield strength of 33 ksi.
B. See Drawings and Specifications for gauge and profile.
C. Provide sheet metal pour stops with thickness based on SDI criteria (SDI Publication #29); 14 gauge min. thickness.
D. All Steel Deck and supporting members are sized and spaced assuming at least a two span condition for the metal deck. The steel deck supplier, installer and general contractor shall coordinate installation and shoring requirements for single span deck.

9.2 SHEAR STUDS

A. Provide headed type studs which conform to ASTM A108 Grade 1015 or 1020 cold finished carbon steel.
B. Provide ¾ in. diameter by 5 in. long studs, U.O.N.
C. See the drawings for number and locations of studs.
D. Space studs uniformly along length of beam, U.O.N.
E. Provide a minimum of 1 in. from the edge of any stud and the face of concrete, a metal deck rib or similar discontinuity.

9.3 STANDARD SPECIFICATIONS

A. AISC Specifications per PART.
B. AISI Specification for the Design of Cold-Formed Steel Structural Members
C. SDI Code of Recommended Practice and Specifications for Composite Steel Floor Deck
D. AWS Structural Welding Code – Steel and Structural Steel Welding Code – Sheet Steel

PART 10 – SPECIAL INSPECTIONS

10.1 Structural Special Inspections per CTSBC:

Special Inspection	CTSBC Reference
Structural Steel – Details	--
Structural Steel – High Strength Bolting	--
Structural Steel – Welding	--
Structural Cold-Formed Steel	--
Concrete – Cast-In-Place	--
Masonry	--
Concrete Design Mix	--
Concrete Sampling and Testing	--
Subgrade Inspection	--
Subsurface Conditions – Fill Placement & In Place Density	--
Structural Stability – Existing Buildings	--
Excavations – Sheeting, Shoring, & Bracing	--
Underpinning	--
Post-Installed Anchors	--

10.2 Structural Progress Inspections per CTSBC:

Progress Inspection	CTSBC Reference
Footings and Foundations	--

BBREVIATIONS:

ABBREVIATION	WORD or PHRASE
ASD	Allowable Stress Design
Alt.	Alternate
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AB	Anchor Bolt
Arch.	Architect
@	At
Bal.	Balance
Bm	Beam
B or Bot.	Bottom
BEW	Bottom Each Way
CEP	Central Energy Plant
CIP	Cast-in-Place
CG	Center of Gravity
Ctrd.	Centered / Centerline
CO	Clean Out
Clr.	Clear
Col.	Column
Conc.	Concrete
CMU	Concrete Masonry Unit
CRSI	Concrete Reinforcing Steel Institute
Conn.	Connection
Const.	Construction
Const. Jt. or CJ	Construction Joint
Cont.	Continuous
Depr.	Depression
Det.	Detail
Dia. or ø	Diameter
Dim.	Dimension
Dir.	Direction
Do	Ditto
Dwls	Dowels
Dn	Down
Dwg	Drawing
(E)	Existing
Ea.	Each
EE	Each End
EF	Each Face
ES	Each Side
EW	Each Way
E	East
El.	Elevation
Elev.	Elevator
EOS	Edge of Slab
EOR	Engineer of Record
EP	Embed Plate
Eq.	Equal
Exp. Bolt	Expansion Bolt
Exp. Jt or EJ	Expansion Joint
Ext.	Exterior
FF	Far Face
Ft or '	Feet
Fin.	Finish
Fin. Fl.	Finish Floor
Fl.	Floor
FD	Floor Drain
Ftg.	Footing
Fnd	Foundation
FP	Full Penetration Weld
FS	Footing Steps
Galv.	Galvanized
Ga	Gauge
Genl	General
Gr.	Grade
GB	Grade Beam
HP	High Point
HS	High Strength
HSS	Hollow Structural Section
H or Horiz.	Horizontal
HEF	Horizontal Each Face
HIF	Horizontal Inside Face
HOF	Horizontal Outside Face
In. or "	Inch
Incl.	Inclusive or Including
Info.	Information
Jt	Joint
K	Kip (1000 pounds)
Ksf	Kips/Square Foot

ABBREVIATION	WORD or PHRASE
LE	Left End
LW	Lightweight
LWC	Lightweight Concrete
LRFD	Load & Resistance Factor Design
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
LP	Low Point
Mfr	Manufacturer
Matl	Material
Max.	Maximum
Mech.	Mechanical
MEP+T	Mechanical, Electrical, Plumbing and Technology
Min.	Minimum
(N)	New
NF	Near Face
NIC	Not In Contract
NWC	Normal Weight Concrete
N	North
NTS	Not to Scale
No. or #	Number
OC	On Center
OD	Outer Diameter
Opng	Opening
Pc	Piece
Pl. or ℄	Plate
PLF	Pounds/Linear Foot
PVC	Polyvinyl Chloride
Psf	Pounds/Square Foot
Psi	Pounds/Square Inch
P/C	Pre-cast
Ref.	Reference
Reinf.	Reinforce or Reinforcement
Rem.	Remainder
RE	Right End
RD	Roof Drain
Sect.	Section
SC	Shear Connector or Slip Critical Bolt
SCJ	Slab Control Joint
SH	Shear Head
Sht	Sheet
SLV	Short Leg Vertical
Sim.	Similar
SJI	Steel Joist Institute
Spa.	Spaces
SOG	Slab-on-Grade
S	South
Sq.	Square
SS	Stainless Steel
Std	Standard
Stl	Steel
SDI	Steel Deck Institute
Stiff.	Stiffener
Str.	Structural
SP	Sump Pit
Sup.	Support
Sym.	Symmetrical
T	Top
T&B	Top & Bottom
TOC	Top of Concrete
TOS	Top of Steel
TOW	Top of Wall
TOLG	Top of Light Gauge
Typ.	Typical
UON	Unless Otherwise Noted
V or Vert.	Vertical
VEF	Vertical Each Face
VIF	Vertical Inside Face
VIF	Verify in Field
VOF	Vertical Outside Face
WWR	Welded Wire Reinforcement
W	West
W/	With
WP	Working Point
A.	

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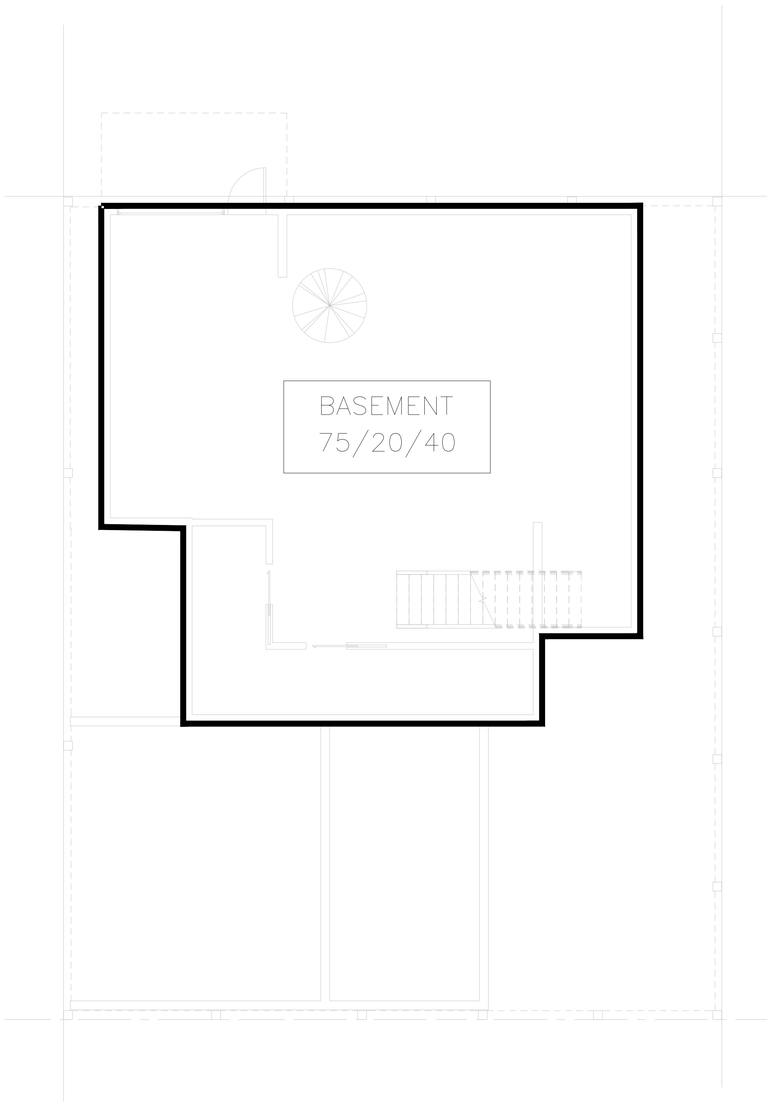
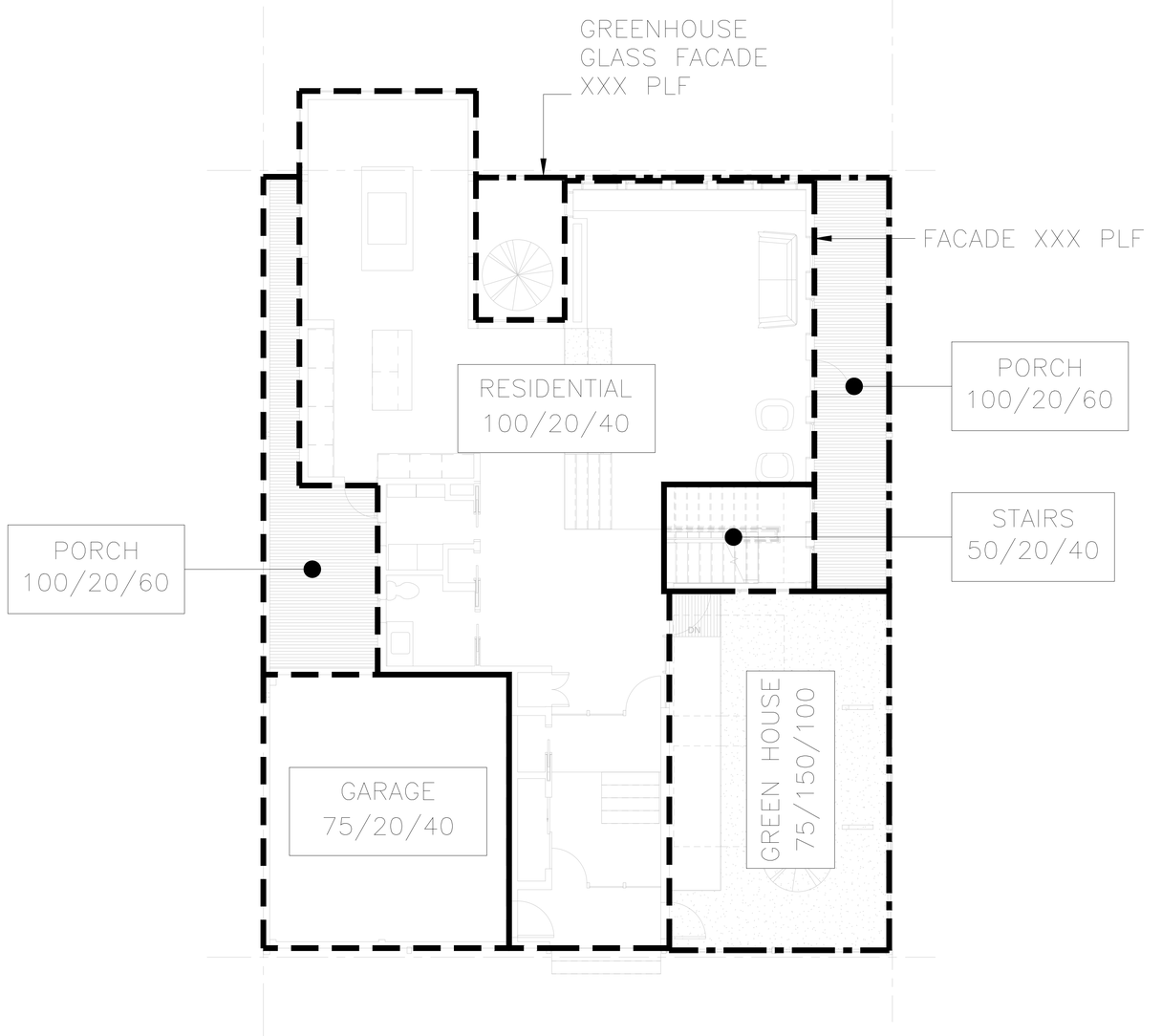


1 CELLAR FLOOR LOAD MAP
SCALE: NTS



2 FIRST FLOOR LOAD MAP
SCALE: NTS

LEGEND:

SUPERIMPOSED DEAD LOADS
WHICH INCLUDES M.E.P. LOADS
AS WELL AS LOADS FOR
THEMING ELEMENTS

CONSTRUCTION DEAD LOADS
EXCLUDES BEAM AND COLUMN
SELF-WEIGHT WHICH DOES NOT
OVERLAP WITH SLAB DEPTH

XX/YY/ZZ

TOTAL LIVE LOADS

INDICATES LOAD AREA LIMITS

INDICATES LINEAR LOAD IN PLF

INDICATES POINT LOAD IN KIPS

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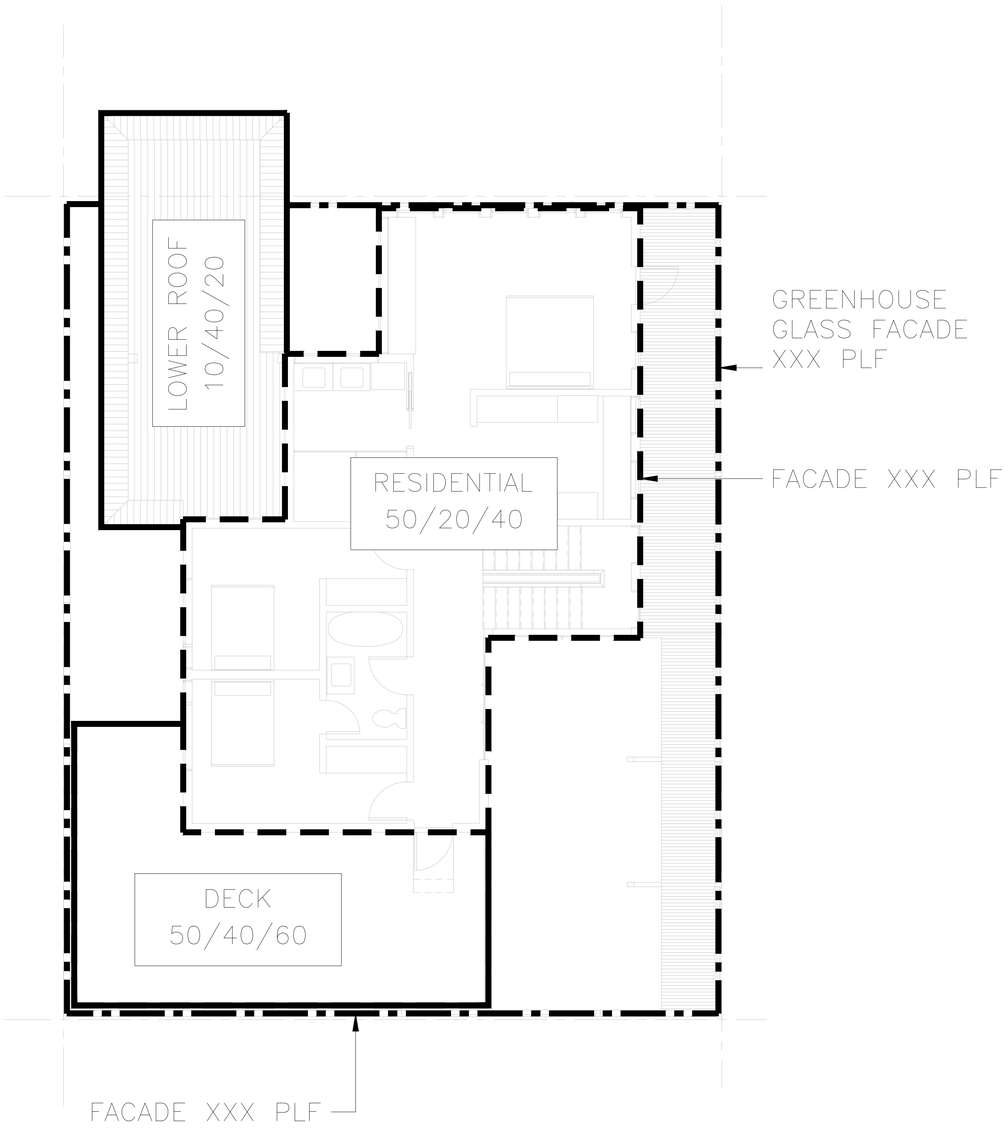
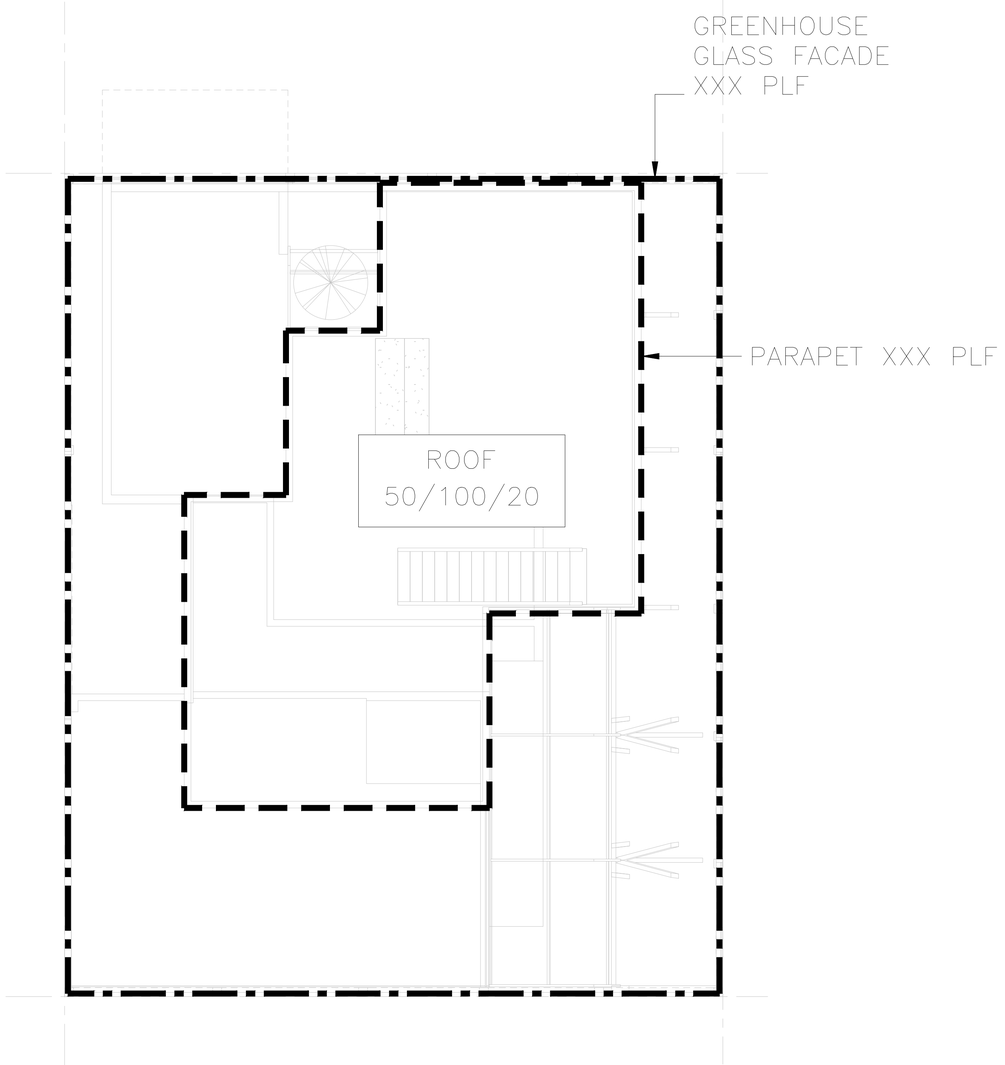


1 SECOND FLOOR LOAD MAP
SCALE: NTS



2 ROOF LOAD MAP
SCALE: NTS

LEGEND:

SUPERIMPOSED DEAD LOADS
WHICH INCLUDES M.E.P. LOADS
AS WELL AS LOADS FOR
THEMING ELEMENTS

CONSTRUCTION DEAD LOADS
EXCLUDES BEAM AND COLUMN
SELF-WEIGHT WHICH DOES NOT
OVERLAP WITH SLAB DEPTH

XX/YY/ZZ

TOTAL LIVE LOADS

INDICATES LOAD AREA LIMITS

INDICATES LINEAR LOAD IN PLF

INDICATES POINT LOAD IN KIPS

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KEY PLAN

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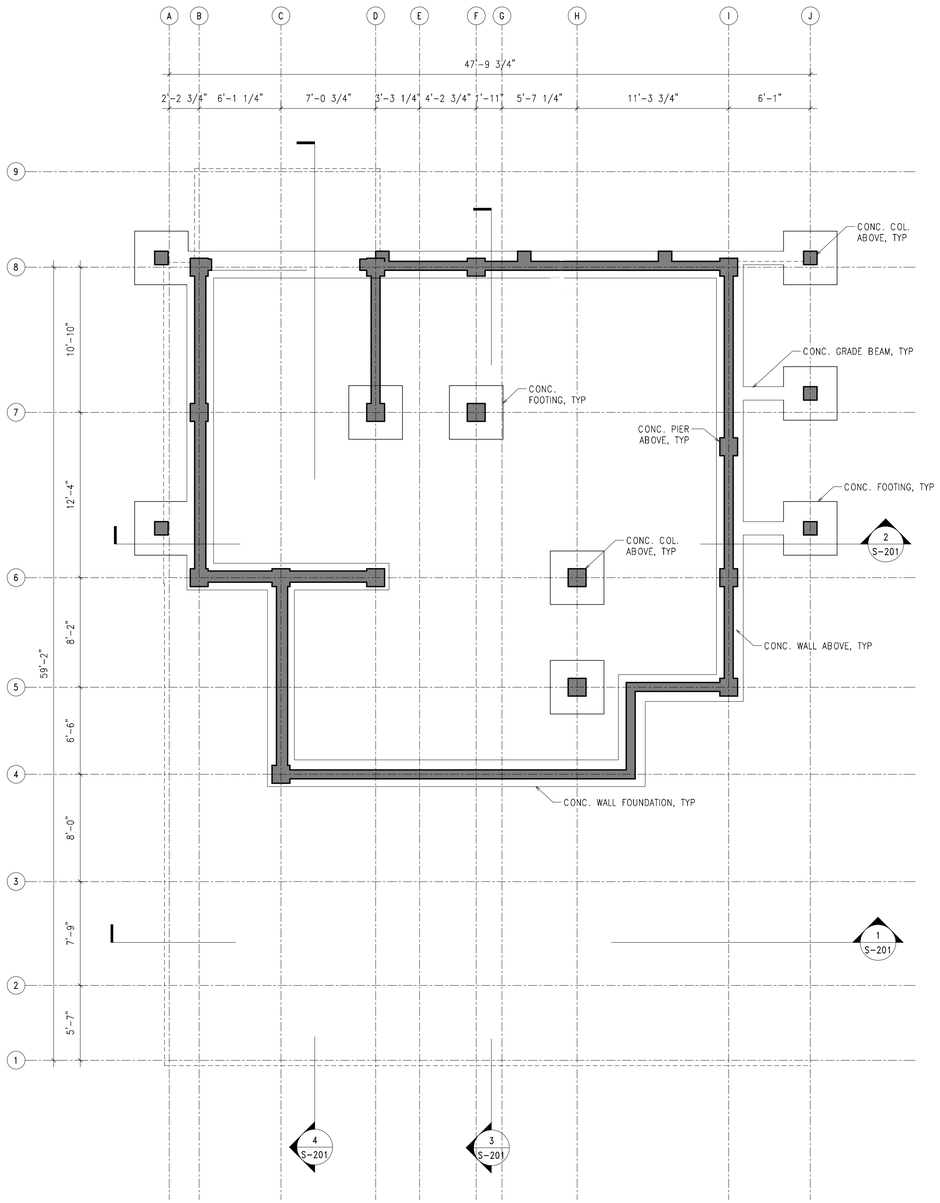

1 FOUNDATION PLAN

3/16" = 1'-0"

TOP OF SLAB ELEVATION U.O.N.:	AS NOTED
SLAB THICKNESS:	AS NOTED
SLAB CONCRETE STRENGTH:	f'c = --- PSI
SLAB BASIC BARS (E.W., U.O.N.):	----

PLAN NOTES:

1 ALL ELEVATIONS CALLED OUT ON PLAN REFERENCE [+XX'-XX"] (NAVD88).
2 TOP OF BASEMENT SLAB AND MAT SLAB EL. SHOWN ON PLAN.
3 PLACE HIGHEST TOP REINFORCEMENT AND LOWEST BOTTOM REINFORCEMENT OF BASEMENT SLAB IN XX-XX DIRECTION.
4 SEE PLAN FOR REINFORCEMENT IN ADDITION TO TYPICAL REINFORCEMENT. PLACE ADDITIONAL REINFORCEMENT BETWEEN LAYERS OF TYPICAL REINFORCEMENT U.O.N.
5 (T) DENOTES TOP SLAB REINFORCEMENT. (B) DENOTES BOTTOM SLAB REINFORCEMENT.
6 [X'-XX"] INDICATES DISTANCE TO BOTTOM OF CONCRETE FOR TAGGED ELEMENT RELATIVE TO THE REFERENCE ELEVATION STATED IN THE PLAN NOTES.
7 FOR COLUMN SCHEDULE, SEE DRAWING S-X00 SERIES DWGS.
8 ALL CONDUIT AND PIPING EMBEDDED IN MAT SHALL RUN BELOW TOP REINFORCEMENT. FOR ADDITIONAL REINFORCING AT FLOOR DRAINS OR CONDUIT BOXES THAT INTERRUPT TOP REINFORCING, SEE TYPICAL FOUNDATION DETAILS.
9 PROVIDE EPOXY COATED TOP BARS @ PARKING SLAB & MAT FND.
10 PROVIDE "DCI CORRISION INHIBITOR" ADMIXTURE FOR ALL PARKING SLABS
11 APPLY LIQUID DENSIFIER/SEALER
12 USE FLY ASH IN CONCRETE MIX DESIGN @ PARKING SLABS @ MAT FND.
13 TOPPING SLAB PITCH MAY NOT EXCEED 2% IN ANY DIRECTION AT ACCESSIBLE PARKING SPACES AND ACCESS ISLES.

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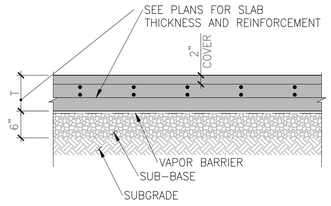
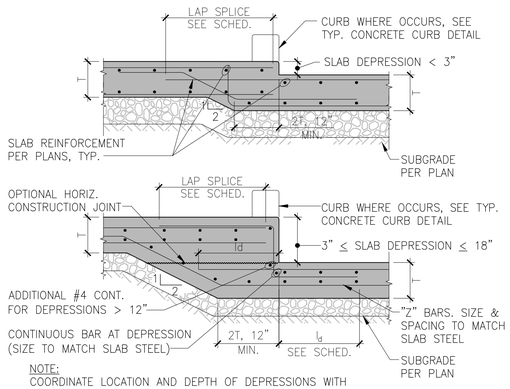


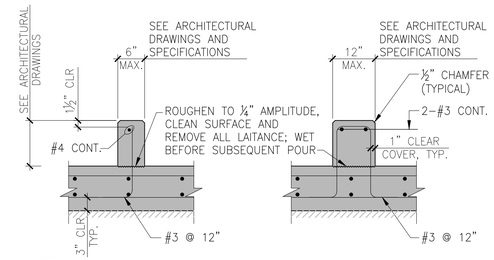
NOTES:
1. PROVIDE #4 SUPPORT BARS AT 4'-0" OC SUPPORTED OFF GRADE WITH PRECAST SUPPORTS AT 4'-0" OC.
2. SEE SPECIFICATIONS FOR VAPOR BARRIER.
3. SEE SPECIFICATIONS FOR SUB-BASE AND/OR SUBGRADE REQUIREMENTS.

1 TYPICAL SLAB ON GRADE
SCALE: NTS



NOTE:
COORDINATE LOCATION AND DEPTH OF DEPRESSIONS WITH ARCHITECTURAL & MECHANICAL DRAWINGS

2 TYPICAL SLAB ON GRADE AT DEPRESSIONS
SCALE: NTS



NOTES:
1. ADHESIVE DOWELS ARE AN ACCEPTABLE ALTERNATIVE. MATCH REINFORCEMENT BAR SIZE AND SPACING SHOWN. PROVIDE A MINIMUM EMBEDMENT OF 2½".
2. ▨ ON DETAIL INDICATES SUBGRADE. REFER TO TYPICAL SLAB-ON-GRADE DETAIL, GENERAL NOTES AND/OR SPECIFICATIONS.

3 CONCRETE CURB AT SLAB-ON-GRADE
SCALE: NTS

NOTES:
1. ADHESIVE DOWELS ARE AN ACCEPTABLE ALTERNATIVE. MATCH REINFORCEMENT BAR SIZE AND LOCATIONS SHOWN. PROVIDE A MINIMUM EMBEDMENT OF 2½".
2. PROVIDE 1" CHAMFER IF CONTINUOUS STEEL ANGLES ARE NOT REQUIRED.
3. ▨ ON DETAIL INDICATES SUBGRADE. REFER TO TYPICAL SLAB-ON-GRADE DETAIL, GENERAL NOTES AND/OR SPECIFICATIONS.

4 EQUIPMENT PAD AT SLAB-ON-GRADE
SCALE: NTS

NOTES
1. WHERE OPENING IS MORE THAN 16" FROM WALL, SEE "TYPICAL REINFORCEMENT FOR OPENINGS IN CONCRETE SLAB" DETAIL

5 TYPICAL REINFORCEMENT FOR OPENINGS NEAR WALL
SCALE: NTS

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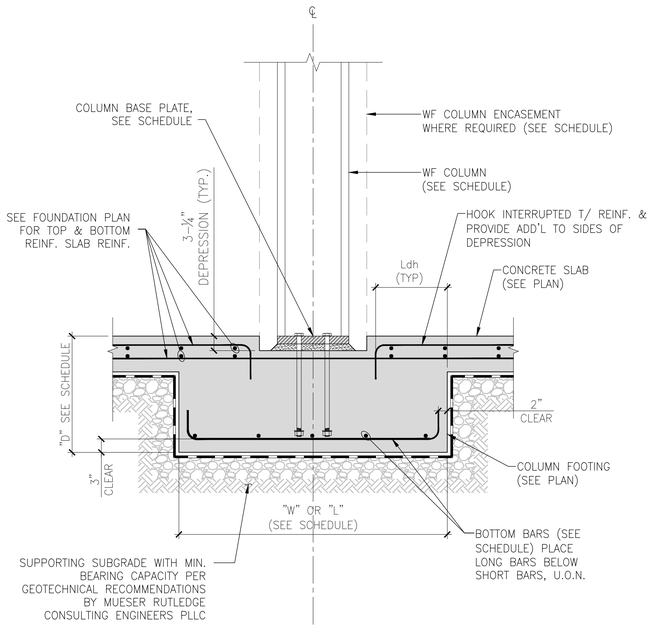
SCALE AS SHOWN
DRAWING NO. FO-111

FOOTING SCHEDULE								
MARK	SIZE			BOTTOM REINFORCEMENT		TOP REINFORCEMENT		REMARKS
	SHORT	LONG	THICKNESS	LONG BARS	SHORT BARS	LONG BARS	SHORT BARS	

NOTES:
1. MINIMUM DIMENSIONS SHOWN.
2. DIMENSIONS ON PLAN SUPERCEDE ALL TYPICAL DIMENSIONS, TYP.
3. SEE GENERAL NOTES FOR PILE DIAMETERS.
4. ALL FOOTING REINFORCEMENT SHALL BE BENT WITH A STD HOOK AT EA. END.
5. FOOTINGS ARE CENTERED ON THE COLUMNS ABOVE U.O.N. (SEE PLAN).

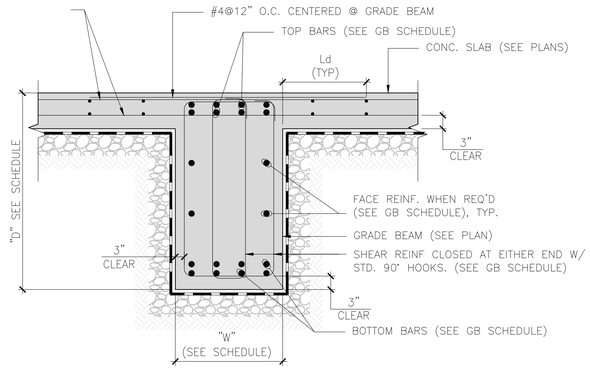


AT WF COLUMN

1 COLUMN FOOTING SCHEDULE & DETAIL
SCALE: NTS

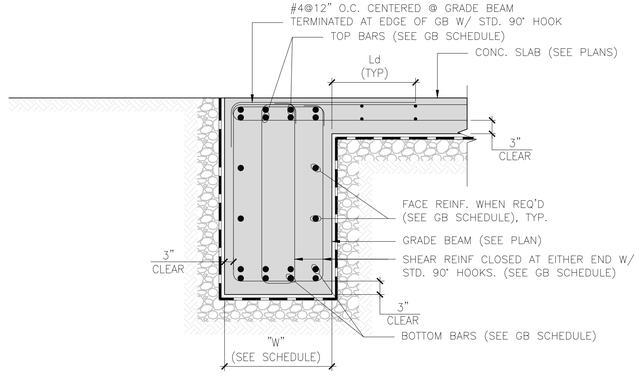
GRADE BEAM SCHEDULE						
MARK	WIDTH "W"	DEPTH "D"	TOP REINFORCING	BOTTOM REINFORCING	SHEAR REINFORCING	REMARKS

NOTES:
1. MINIMUM DIMENSIONS SHOWN.
2. DIMENSIONS ON PLAN SUPERCEDE ALL TYPICAL DIMENSIONS, TYP.



AT INTERIOR

NOTE:
1. GRADE BEAM TO BE POURED MONOLITHICALLY



AT EDGE

NOTE:
1. GRADE BEAM TO BE POURED MONOLITHICALLY

2 GRADE BEAM DETAIL & SCHEDULE
SCALE: NTS

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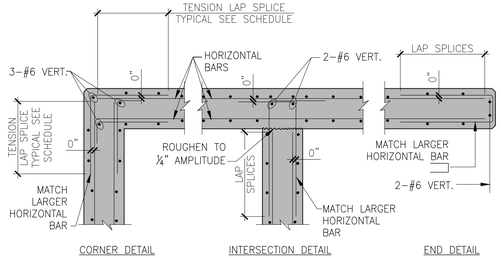
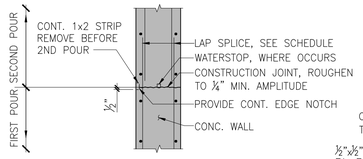
SCALE AS SHOWN
DRAWING NO. FO-112



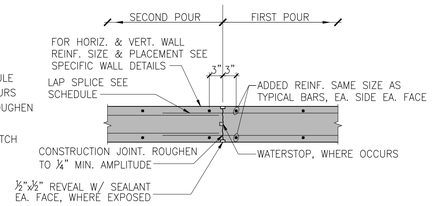
CORNER DETAIL INTERSECTION DETAIL END DETAIL

DOUBLE CURTAIN (>10" THICK)

1 TYPICAL HORIZONTAL WALL REINFORCEMENT DETAILS
SCALE: NTS



SECTION



PLAN

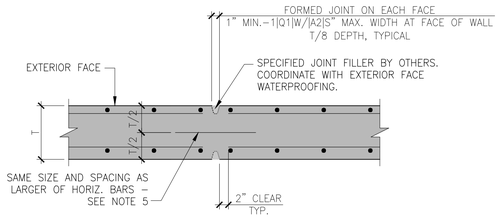
NOTES:
1. PROVIDE CONT. 1x2 ON BOTH FACES WHERE EXPOSED.
2. LOCATION AND DETAIL OF JOINTS SHALL BE APPROVED BY ARCHITECT/ENGINEER PRIOR TO CONSTRUCTING FORMS OR PLACING CONCRETE.
3. SEE ARCHITECTURAL DRAWINGS FOR REVEAL DETAILS & LOCATIONS.
4. SEE ARCHITECTURAL DRAWINGS FOR WATERPROOFING DETAILS.

HORIZONTAL CONSTRUCTION JOINT

NOTES:
1. PROVIDE CONSTRUCTION JOINTS AT 60'–0" MAXIMUM SPACING.
2. LOCATION AND DETAIL OF JOINTS SHALL BE APPROVED BY ARCHITECT/ENGINEER PRIOR TO CONSTRUCTING FORMS OR PLACING CONCRETE.
3. SEE ARCHITECTURAL DRAWINGS FOR REVEAL DETAILS AND LOCATIONS.
4. SEE ARCHITECTURAL DRAWINGS FOR WATERPROOFING DETAILS.

VERTICAL CONSTRUCTION JOINT

2 TYPICAL WALL CONSTRUCTION JOINTS
SCALE: NTS



NOTES:
1. T = WALL THICKNESS.
2. 60 FT. MAXIMUM SPACING BETWEEN CONTROL AND/OR CONSTRUCTION JOINTS.
3. PROVIDE JOINTS WITHIN 5 FT. OF ALL CORNERS AND/OR INTERSECTIONS.
4. PROVIDE JOINTS BEHIND AND/OR BELOW ALL VENEER CONTROL JOINTS.
5. BAR LENGTH TO BE TWICE THE BAR TENSION DEVELOPMENT LENGTH AND CENTERED ON JOINT.

3 TYPICAL WALL CONROL JOINTS
SCALE: NTS

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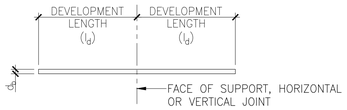
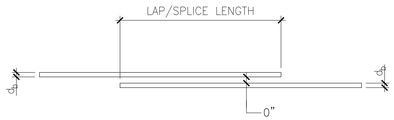
SCALE AS SHOWN
DRAWING NO. FO-113

BAR SIZE	TENSION DEVELOPMENT LENGTH INCHES (l_d)										TENSION LAP/SPLICE LENGTH INCHES (l_{st})									
	TOP BARS					OTHER BARS					TOP BARS					OTHER BARS				
	3000 PSI	4000 PSI	5000 PSI	6000 PSI	7000 PSI	3000 PSI	4000 PSI	5000 PSI	6000 PSI	7000 PSI	3000 PSI	4000 PSI	5000 PSI	6000 PSI	7000 PSI	3000 PSI	4000 PSI	5000 PSI	6000 PSI	7000 PSI
#3	22	19	17	16	15	17	15	13	131	12	29	25	23	21	19	23	20	17	17	16
#4	29	25	23	21	19	22	19	17	16	15	38	33	30	27	25	29	25	23	21	19
#5	36	31	28	26	24	28	24	22	20	19	47	41	37	26	31	37	32	29	27	25
#6	43	37	34	31	29	33	29	26	24	22	56	49	45	34	37	43	38	34	31	28
#7	63	54	49	45	42	48	42	38	34	32	82	71	64	58	54	63	55	50	45	42
#8	72	62	56	51	48	55	48	43	39	37	94	81	73	67	62	72	63	56	51	48
#9	81	70	63	58	54	62	54	48	44	41	106	91	82	75	70	81	71	63	58	54
#10	91	79	71	65	60	70	61	54	50	46	119	103	93	85	78	91	80	71	64	60
#11	101	87	78	72	67	78	67	60	56	52	132	114	102	94	87	102	88	78	73	67



DEVELOPMENT

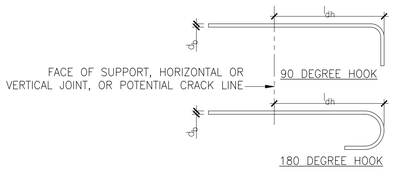


TENSION LAP/SPLICE

NOTES:
1. REFER TO HOOKED REINFORCEMENT TENSION DEVELOPMENT LENGTH SCHEDULE IN CONCRETE WHEN THE STRAIGHT DEVELOPMENT LENGTH IN TENSION CANNOT BE ACCOMMODATED IN THE CONCRETE SECTION.
2. TABULATED DEVELOPMENT LENGTHS ARE BASED ON REINFORCING STEEL YIELD STRENGTH F_y=60 KSI AND NORMAL WEIGHT CONCRETE. LAP SPLICE LENGTHS ARE CLASS B, UNLESS OTHERWISE NOTED IN DRAWINGS.
3. TOP BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST IN THE MEMBER BELOW, THE BARS TO BE DEVELOPED OR SPLICED. THE TOP BAR FACTOR SHALL BE APPLIED TO HORIZONTAL BARS IN WALLS.
4. WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED IN TENSION, SPLICE LENGTH SHALL BE THE LARGER OF l_d OF THE LARGER BAR AND TENSION LAP SPLICE LENGTH OF THE SMALLER BAR.
5. ALL TABULATED VALUES ARE MINIMUM LENGTHS, IN CASE OF CONFLICT WITH PLANS, SECTIONS, OR DETAILS, USE THE LONGER LENGTH.
6. d_b = BAR DIAMETER.
7. l_d = DEVELOPMENT LENGTH.
8. ADJUST TABULATED LENGTHS BY THE FOLLOWING MULTIPLICATION FACTORS WHERE APPLICABLE. NOTE THAT FACTORS ARE CUMULATIVE: (E.G. 1.30x1.50 = 1.95)
   - A. LIGHT WEIGHT CONCRETE: 1.33
   - B. 3 OR LESS BUNDLED BARS: 1.20
   - C. 4 OR MORE BUNDLED BARS: 1.33
   - D. CLEAR SPACING LESS THAN $2d_b$ AND CLEAR COVER LESS THAN d_b: 1.50
   - E. CLASS A LAP SPLICE: 0.77
   - F. EPOXY COATED BARS: 1.50
9. WELDED AND/OR MECHANICAL SPLICES MAY BE USED IF APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PROVIDED THAT THE SPLICE IS CAPABLE OF DEVELOPING AT LEAST 125% OF THE YIELD STRENGTH OF THE LARGER BAR IN TENSION. WHERE WELDED AND/OR MECHANICAL SPLICES ARE TO BE USED, THE GENERAL CONTRACTOR SHALL SUBMIT FULL DATA ON THE PROPOSED MATERIAL, PROCEDURES, AND INSTALLATION INSTRUCTIONS TO THE ENGINEER FOR REVIEW AS A SHOP DRAWING SUBMISSION.
10. USE MECHANICAL COUPLERS FOR #14 AND LARGER BARS.
11. FOR LAP SPLICES IN CONCRETE MASONRY, SEE MASONRY REINFORCEMENT DETAILS.

1 STRAIGHT REINFORCEMENT DEVELOPMENT AND SPLICE LENGTH SCHEDULE FOR CONCRETE
SCALE: NTS

BAR SIZE	TENSION DEVELOPMENT LENGTH FOR HOOKED BARS (l_{dh}) INCHES				
	3,000 PSI	4,000 PSI	5,000 PSI	6,000 PSI	7,000 PSI
#3	9	8	7	6	6
#4	11	10	9	8	8
#5	14	12	11	10	9
#6	17	15	13	12	11
#7	20	17	15	14	13
#8	22	19	17	16	15
#9	25	22	20	18	17
#10	28	24	22	20	18
#11	31	27	24	22	20

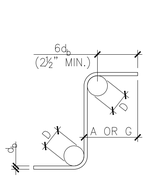


180 DEGREE HOOK

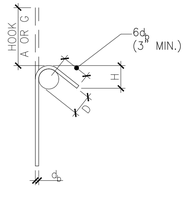
NOTES:
1. SEE TYPICAL REINFORCEMENT BEND DETAIL FOR ADDITIONAL INFORMATION.
2. TABULATED DEVELOPMENT LENGTHS ARE BASED ON REINFORCING STEEL YIELD STRENGTH (F_y = 60 KSI) AND NORMAL WEIGHT CONCRETE.
3. ALL TABULATED VALUES ARE MINIMUM LENGTHS. IN CASE OF CONFLICT WITH THE PLANS, SECTIONS, OR DETAILS, USE THE LONGER LENGTH.
4. d_b = BAR DIAMETER
5. l_{dh}= TENSION DEVELOPMENT LENGTH (HOOK BARS)
6. ADJUST TABULATED LENGTHS BY THE FOLLOWING MULTIPLICATION FACTORS WHERE APPLICABLE. NOTE THAT THE FACTORS ARE CUMULATIVE: (e.g. 1.33 x 1.20 = 1.60)
   - A. REINFORCING BAR STRENGTH OTHER THAN 60 KSI: (F_y/60,000)
   - B. LIGHT WEIGHT CONCRETE: 1.33
   - C. EPOXY COATED BARS: 1.20

2 HOOKED REINFORCEMENT TENSION DEVELOPMENT LENGTH SCHEDULE IN CONCRETE
SCALE: NTS

BAR SIZE	BEND DIAMETER (D) INCHES	90° HOOK	135° HOOKS	
		HOOK A OR G INCHES	HOOK A OR G INCHES	H (APPROX.) INCHES
#3	1½	4	4¼	3
#4	2	4½	4½	3
#5	2½	6	5½	3¾



90 DEGREE HOOK



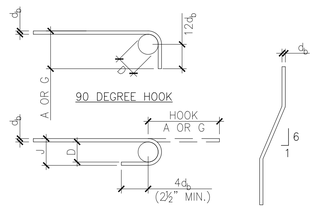
135 DEGREE HOOK

NOTES:
1. ALL BENDS SHALL BE MADE COLD AND SHALL BE MADE PRIOR TO PARTIAL EMBEDMENT IN CONCRETE.
2. d_b = BAR DIAMETER.
3. D = BEND DIAMETER, MEASURED ON THE INSIDE OF BAR.

4 TYPICAL TIE AND STIRRUP HOOKS IN CONCRETE AND MASONRY
SCALE: NTS

BAR SIZE	BEND DIAMETER (D) INCHES	180°HOOKS		90° HOOKS
		A OR G INCHES	J INCHES	A OR G INCHES
#3	2¼	5	3	6
#4	3	6	4	8
#5	3¾	7	5	10
#6	4½	8	6	12
#7	5¼	10	7	14
#8	6	11	8	16
#9	9½	15	11¾	19
#10	10¾	17	13¼	22
#11	12	19	14¾	24

NOTES:
1. ALL BENDS SHALL BE MADE COLD AND SHALL BE MADE PRIOR TO PARTIAL EMBEDMENT IN CONCRETE.
2. d_b = BAR DIAMETER.
3. D = BEND DIAMETER, MEASURED ON THE INSIDE OF BAR.



180 DEGREE HOOK

OFFSET BEND

3 TYPICAL REINFORCEMENT BENDS IN CONCRETE AND MASONRY
SCALE: NTS

MINIMUM CONCRETE WALL REINFORCEMENT SCHEDULE		
WALL THICKNESS	VERT. REINF.	HORIZ. REINF.
LESS THAN 10"	#4 @ 12" MID.	#5 @ 12" MID.
10" TO 12" INCL.	#4 @ 12" E.F.	#4 @ 12" E.F.
12" TO 20" INCL.	#5 @ 12" E.F.	#5 @ 12" E.F.

PROVIDE THE ABOVE MINIMUM REINFORCEMENT IN ALL CONCRETE WALLS WHERE REINFORCEMENT IS NOT INDICATED ON THE DRAWINGS

5 MINIMUM WALL REINFORCEMENT SCHEDULE
SCALE: NTS

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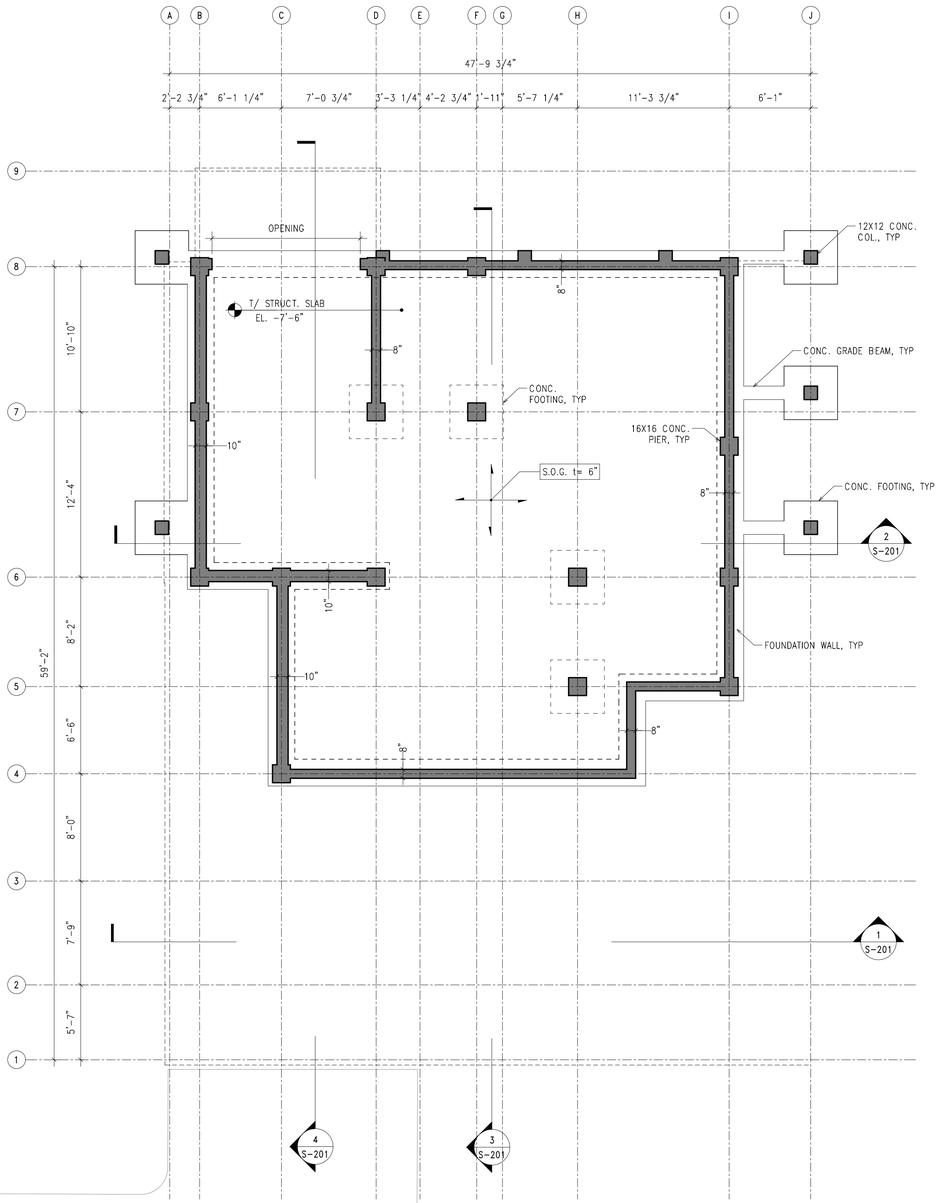
DATE 12.08.2020
BE PROJECT NUMBER 20041
TITLE FOUNDATION TYPICAL DETAILS
SCALE AS SHOWN
DRAWING NO. FO-114



1 BASEMENT LAYOUT PLAN

3/16" = 1'-0"

TOP OF SLAB ELEVATION U.O.N.: AS NOTED	PLAN NOTES: 1 ALL ELEVATIONS CALLED OUT ON PLAN REFERENCE [+XX'-XX"] (NAVD88). 2 TOP OF BASEMENT SLAB AND MAT SLAB EL. SHOWN ON PLAN. 3 PLACE HIGHEST TOP REINFORCEMENT AND LOWEST BOTTOM REINFORCEMENT OF BASEMENT SLAB IN XX-XX DIRECTION. 4 SEE PLAN FOR REINFORCEMENT IN ADDITION TO TYPICAL REINFORCEMENT. PLACE ADDITIONAL REINFORCEMENT BETWEEN LAYERS OF TYPICAL REINFORCEMENT U.O.N. 5 (T) DENOTES TOP SLAB REINFORCEMENT. (B) DENOTES BOTTOM SLAB REINFORCEMENT. 6 [X'-XX"] INDICATES DISTANCE TO BOTTOM OF CONCRETE FOR TAGGED ELEMENT RELATIVE TO THE REFERENCE ELEVATION STATED IN THE PLAN NOTES. 7 FOR COLUMN SCHEDULE, SEE DRAWING S-X00 SERIES DWGS. 8 ALL CONDUIT AND PIPING EMBEDDED IN MAT SHALL RUN BELOW TOP R EINFORCEMENT. FOR ADDITIONAL REINFORCING AT FLOOR DRAINS OR CONDUIT BOXES THAT INTERRUPT TOP REINFORCING, SEE TYPICAL FOUNDATION DETAILS. 9 PROVIDE EPOXY COATED TOP BARS @ PARKING SLAB & MAT FND. 10 PROVIDE "DCI CORRISION INHIBITOR" ADMIXTURE FOR ALL PARKING SLABS 11 APPLY LIQUID DENSIFIER/SEALER 12 USE FLY ASH IN CONCRETE MIX DESIGN @ PARKING SLABS @ MAT FND. 13 TOPPING SLAB PITCH MAY NOT EXCEED 2% IN ANY DIRECTION AT ACCESSIBLE PARKING SPACES AND ACCESS ISLES.
SLAB THICKNESS: AS NOTED	
SLAB CONCRETE STRENGTH: f'c = --- PSI	
SLAB BASIC BARS (E.W., U.O.N.): ----	

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KEY PLAN

CONTRACTOR MUST VERIFY ALL MEASUREMENTS & CONDITIONS BEFORE ANY WORK & FABRICATION ARE BEGUN & ANY MATERIALS & EQUIPMENT ARE ORDERED. REPORT ALL DISCREPANCIES TO THE ARCHITECT. SHOP DETAILS MUST BE SUBMITTED. PLANS ARE SUBJECT TO APPROVAL BY ALL AGENCIES HAVING JURISDICTION & MUST ADHERE TO THEIR CODES.

PRINTING	DATE

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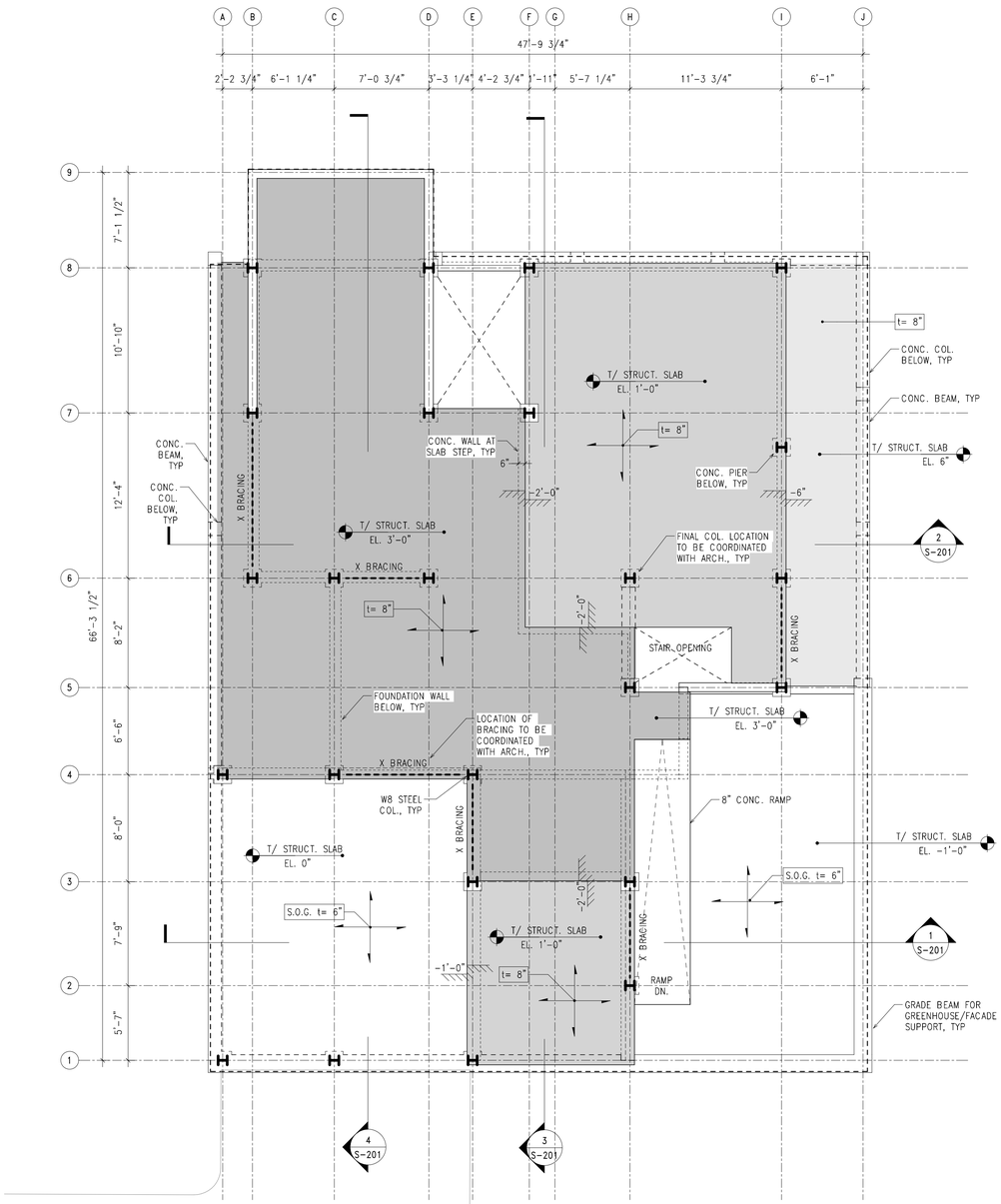
B-SCAN STICKER

DRAWN BY ADP
DATE 12.08.2020
BE PROJECT NUMBER 20041
TITLE BASEMENT FRAMING PLAN
SCALE 3/16" = 1'-0"
DRAWING NO. S-101



1 1ST FLOOR LAYOUT PLAN

3/16" = 1'-0"

TOP OF SLAB ELEVATION U.O.N.:	AS NOTED
SLAB THICKNESS:	AS NOTED
SLAB CONCRETE STRENGTH:	f'c = --- PSI
SLAB BASIC BARS (E.W., U.O.N.):	---

PLAN NOTES:

1. ALL ELEVATIONS CALLED OUT ON PLAN REFERENCE [+XX'-XX"] (NAVD88).
2. TOP OF BASEMENT SLAB AND MAT SLAB EL. SHOWN ON PLAN.
3. PLACE HIGHEST TOP REINFORCEMENT AND LOWEST BOTTOM REINFORCEMENT OF BASEMENT SLAB IN XX-XX DIRECTION.
4. SEE PLAN FOR REINFORCEMENT IN ADDITION TO TYPICAL REINFORCEMENT. PLACE ADDITIONAL REINFORCEMENT BETWEEN LAYERS OF TYPICAL REINFORCEMENT U.O.N.
5. (T) DENOTES TOP SLAB REINFORCEMENT. (B) DENOTES BOTTOM SLAB REINFORCEMENT.
6. [X'-XX"] INDICATES DISTANCE TO BOTTOM OF CONCRETE FOR TAGGED ELEMENT RELATIVE TO THE REFERENCE ELEVATION STATED IN THE PLAN NOTES.
7. FOR COLUMN SCHEDULE, SEE DRAWING S-X00 SERIES DWGS.
8. ALL CONDUIT AND PIPING EMBEDDED IN MAT SHALL RUN BELOW TOP REINFORCEMENT. FOR ADDITIONAL REINFORCING AT FLOOR DRAINS OR CONDUIT BOXES THAT INTERRUPT TOP REINFORCING, SEE TYPICAL FOUNDATION DETAILS.
9. PROVIDE EPOXY COATED TOP BARS @ PARKING SLAB & MAT FND.
10. PROVIDE "DCI CORRISION INHIBITOR" ADMIXTURE FOR ALL PARKING SLABS
11. APPLY LIQUID DENSIFIER/SEALER
12. USE FLY ASH IN CONCRETE MIX DESIGN @ PARKING SLABS @ MAT FND.
13. TOPPING SLAB PITCH MAY NOT EXCEED 2% IN ANY DIRECTION AT ACCESSIBLE PARKING SPACES AND ACCESS ISLES.

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KEY PLAN

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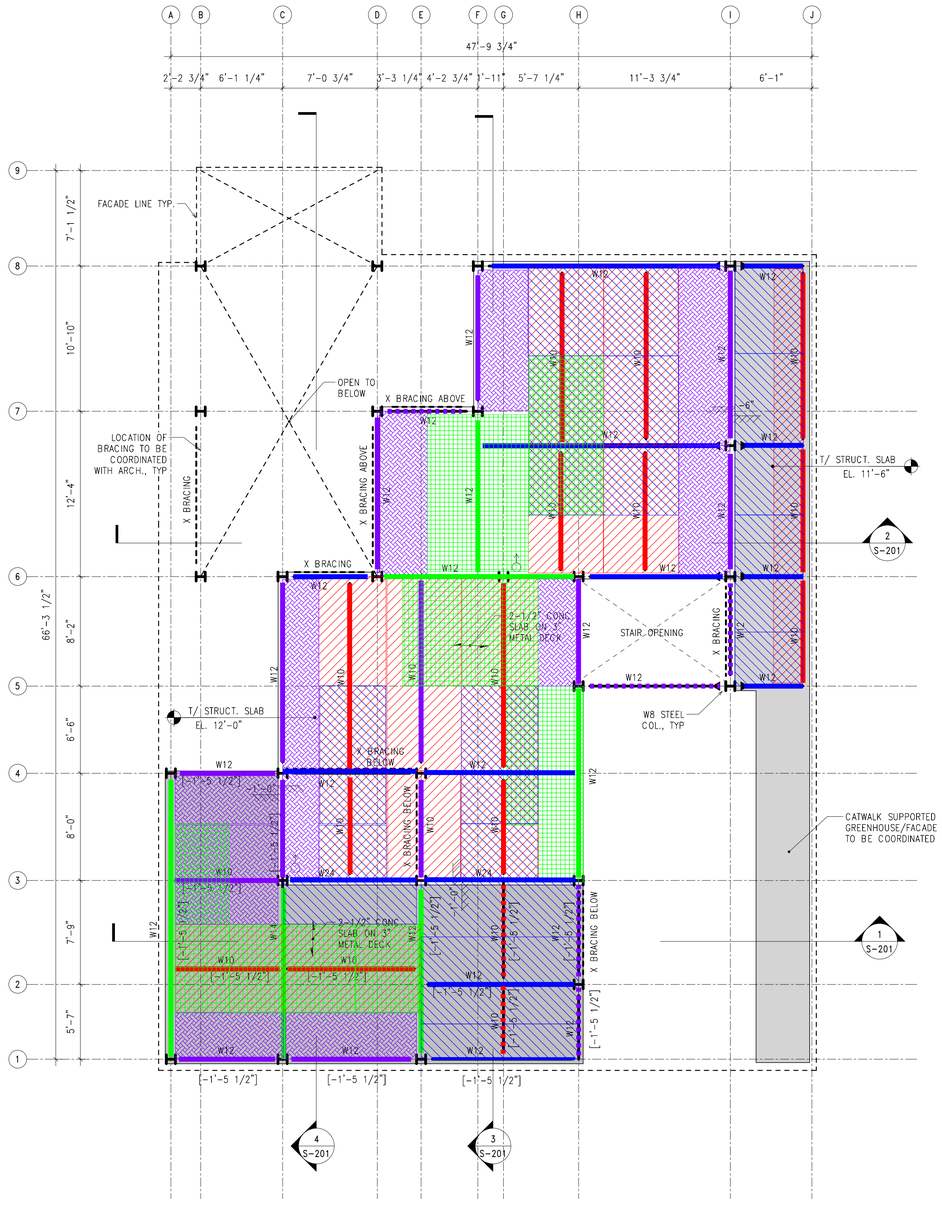
B-SCAN STICKER

DRAWN BY ADP
DATE 12.08.2020

BE PROJECT NUMBER
20041

TITLE
GROUND FL FRAMING PLAN

DRAWING NO.
S-102



1 2ND FLOOR FRAMING PLAN

3/16" = 1'-0"

How do you define framing into vs being framed into?
- End Points

For one way systems...

Girder: Connected to Column
- Has girders framing into it — Parallel to Span (Joists / Deck); Perpendicular to Span (Joists / Deck)
- Has joists framing into it — Parallel to Span (Joists / Deck); Perpendicular to Span (Joists / Deck)
- Has no members framing into it — Parallel to Span (Joists / Deck); Perpendicular to Span (Joists / Deck)

Joists: Not connected to Column
- Has girders framing into it
- Has joists framing into it
- Has no members framing into it

TOP OF SLAB ELEVATION U.O.N.:	AS NOTED
SLAB THICKNESS:	AS NOTED
SLAB CONCRETE STRENGTH:	f'c = --- PSI
SLAB BASIC BARS (E.W., U.O.N.):	----

PLAN NOTES:
1. ALL ELEVATIONS CALLED OUT ON PLAN REFERENCE [+XX'-XX"] (NAVD88).
2. TOP OF BASEMENT SLAB AND MAT SLAB EL. SHOWN ON PLAN.
3. PLACE HIGHEST TOP REINFORCEMENT AND LOWEST BOTTOM REINFORCEMENT OF BASEMENT SLAB IN XX-XX DIRECTION.
4. SEE PLAN FOR REINFORCEMENT IN ADDITION TO TYPICAL REINFORCEMENT. PLACE ADDITIONAL REINFORCEMENT BETWEEN LAYERS OF TYPICAL REINFORCEMENT U.O.N.
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6. [X'-XX"] INDICATES DISTANCE TO BOTTOM OF CONCRETE FOR TAGGED ELEMENT RELATIVE TO THE REFERENCE ELEVATION STATED IN THE PLAN NOTES.
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8. ALL CONDUIT AND PIPING EMBEDDED IN MAT SHALL RUN BELOW TOP REINFORCEMENT. FOR ADDITIONAL REINFORCING AT FLOOR DRAINS OR CONDUIT BOXES THAT INTERRUPT TOP REINFORCING, SEE TYPICAL FOUNDATION DETAILS.
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10. PROVIDE "DCI CORRISION INHIBITOR" ADMIXTURE FOR ALL PARKING SLABS
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12. USE FLY ASH IN CONCRETE MIX DESIGN @ PARKING SLABS @ MAT FND.
13. TOPPING SLAB PITCH MAY NOT EXCEED 2% IN ANY DIRECTION AT ACCESSIBLE PARKING SPACES AND ACCESS ISLES.

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B-SCAN STICKER

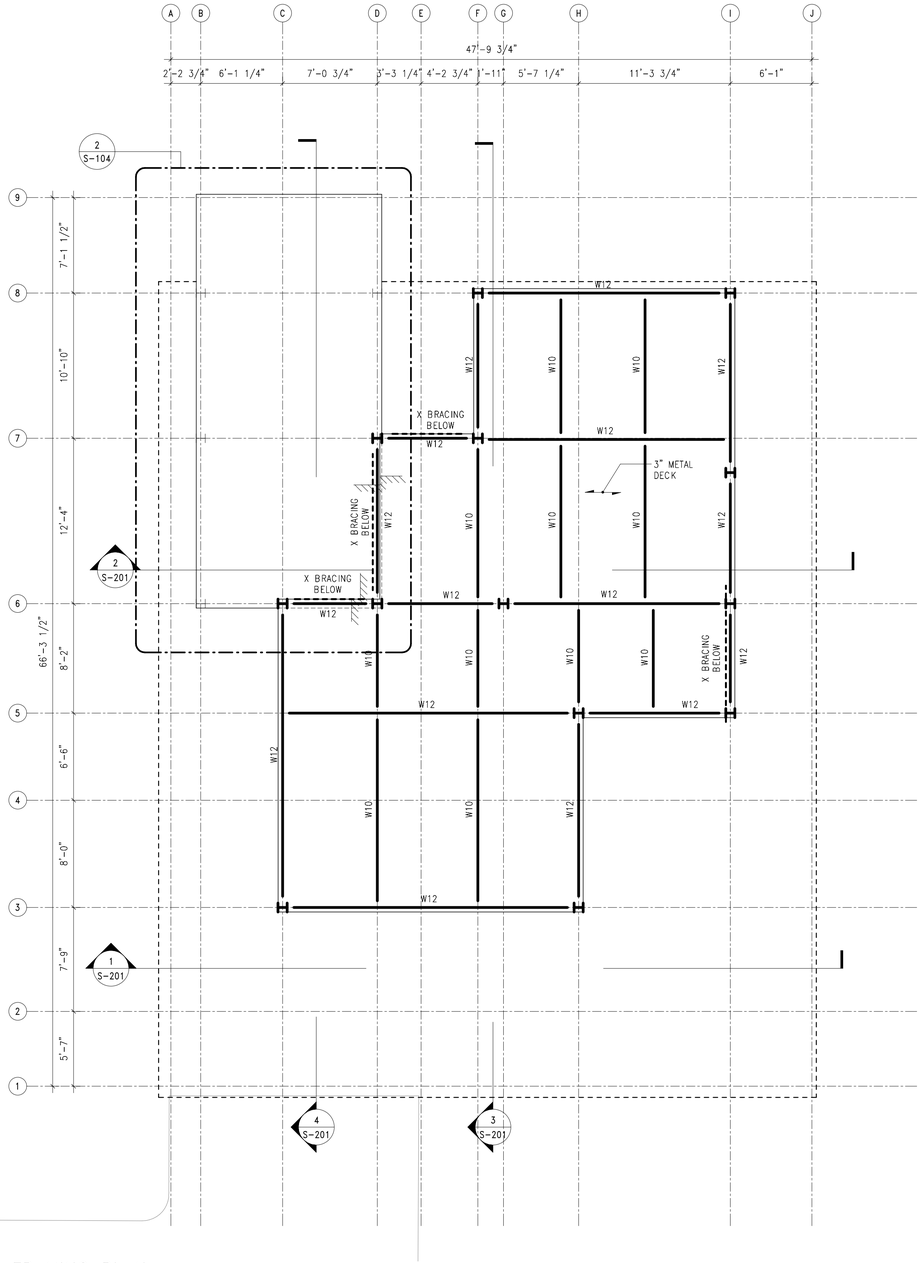
DRAWN BY ADP **DATE** 12.08.2020

BE PROJECT NUMBER 20041

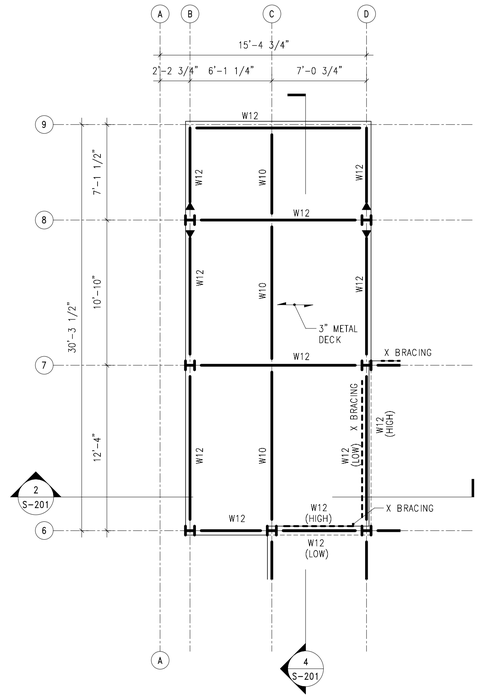
TITLE 2ND FL FRAMING PLAN

SCALE 3/16" = 1'-0"

DRAWING NO. S-103



1 ROOF FRAMING PLAN
3/16" = 1'-0"



2 LOWER ROOF PARTIAL FRAMING PLAN
3/16" = 1'-0"

TOP OF SLAB ELEVATION U.O.N.:	AS NOTED
SLAB THICKNESS:	AS NOTED
SLAB CONCRETE STRENGTH:	f'c = 5,000 PSI
SLAB BASIC BARS (E.W., U.O.N.): t= 5"	WWF 6X6-W2.1XW2.1 O.C.

PLAN NOTES:
1. ALL ELEVATIONS CALLED OUT ON PLAN REFERENCE [+XX'-XX"] (NAVD88).
2. TOP OF BASEMENT SLAB AND MAT SLAB EL. SHOWN ON PLAN.
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13. TOPPING SLAB PITCH MAY NOT EXCEED 2% IN ANY DIRECTION AT ACCESSIBLE PARKING SPACES AND ACCESS ISLES.

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KEY PLAN

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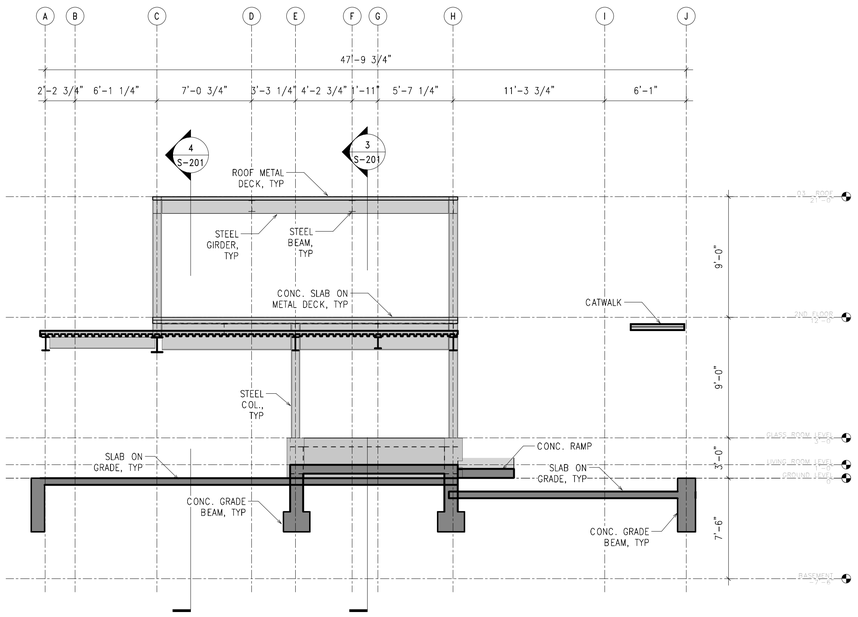
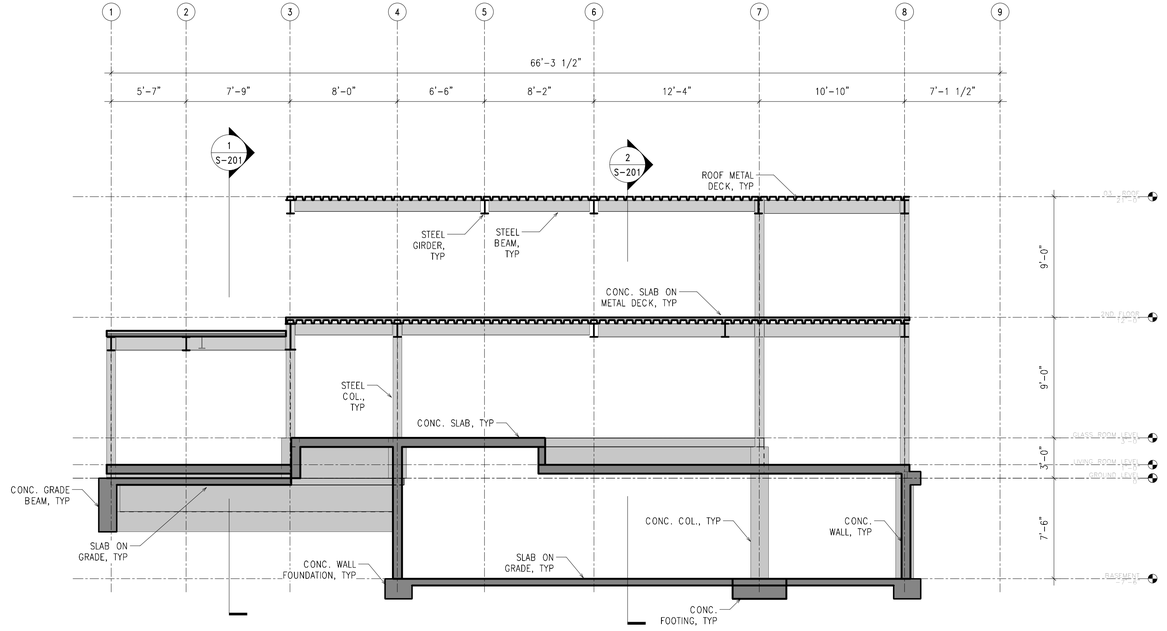
B-SCAN STICKER

DRAWN BY ADP
DATE 12.08.2020
BE PROJECT NUMBER 20041
TITLE
ROOF FRAMING PLAN
SCALE 3/16" = 1'-0"
DRAWING NO.
S-104



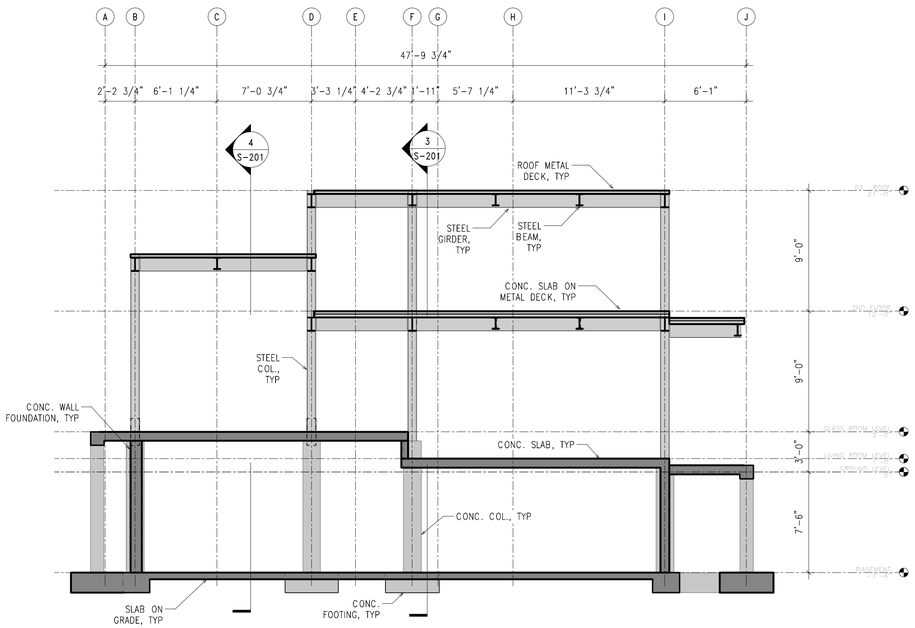
1 BUILDING SECTION I

3/16" = 1'-0"



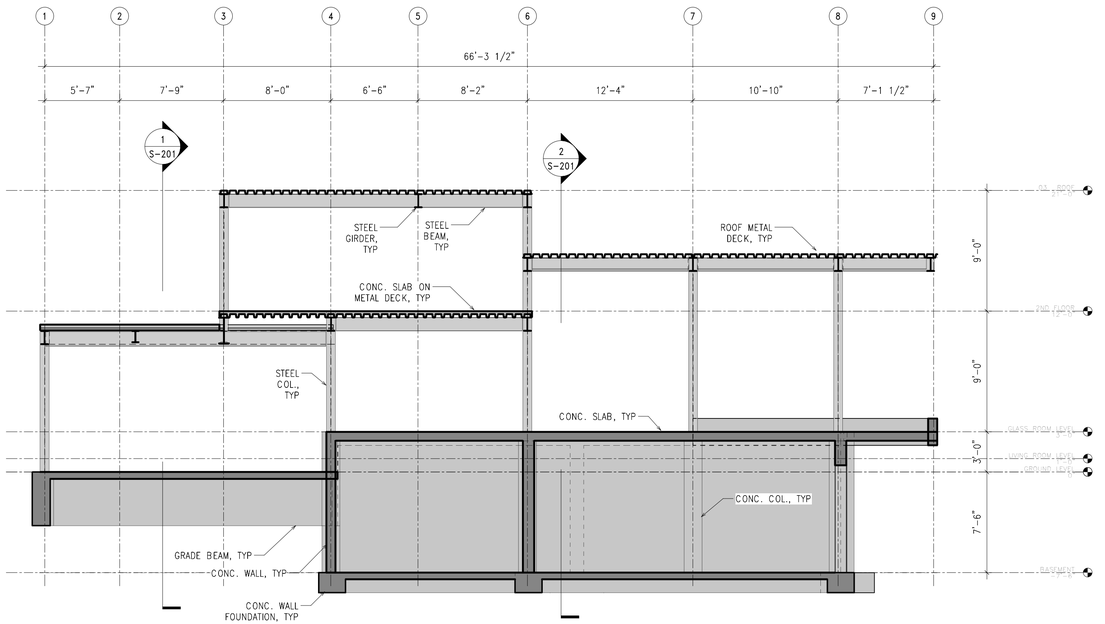
3 BUILDING SECTION III

3/16" = 1'-0"



2 BUILDING SECTION II

3/16" = 1'-0"



4 BUILDING SECTION IV

3/16" = 1'-0"

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KEY PLAN

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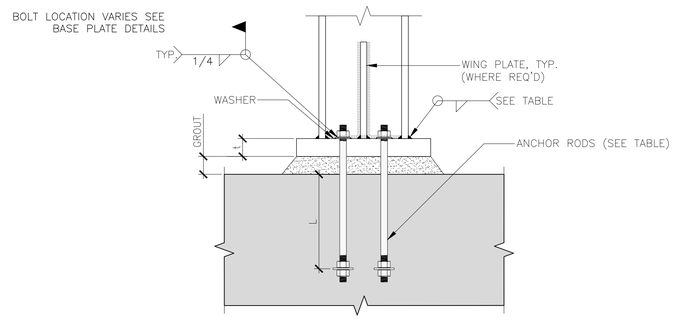
B-SCAN STICKER

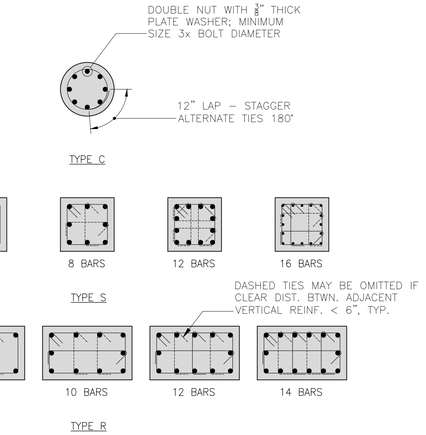
DRAWN BY ADP
DATE 12.08.2020
BE PROJECT NUMBER 20041
TITLE SECTIONS
SCALE 3/16" = 1'-0"
DRAWING NO. S-201



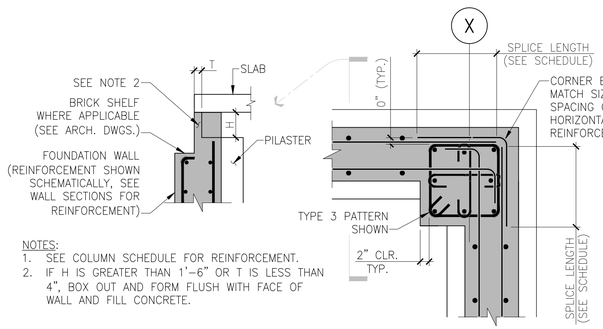
NOTES:
1. PROVIDE LEVELING NUTS AND SHIM PACKS AS REQUIRED TO MAINTAIN COLUMN LEVELNESS.
2. WASHER PLATES ASTM A36
3. MATCH SURFACE PREPARATION AND FINISH OF BEARING PLATE, ANCHOR RODS, WASHERS, AND WASHER PLATES TO THAT OF COLUMNS.
4. ALL ANCHOR BOLT HOLES TO BE 1-5/16" DIA. TO ALLOW FOR HORIZONTAL SETTING TOLERANCES
5. GROUTING TO BE PERFORMED BY THE CONCRETE CONTRACTOR UPON NOTIFICATION BY THE STEEL ERECTOR THAT THE COLUMN IS IN ITS FINAL LOCATION.
6. BASIS OF ACCEPTANCE OF ANCHORS RODS PLACEMENT SHALL BE IN ACCORDANCE TO AISC CODE OF STANDARD PRACTICE.

BASE PLATE TYPE	PLATE THICKNESS, t	ANCHOR ROD		ROD MATERIAL	NUT MATERIAL	WELD	GROUT THICKNESS	NOTES
		DIAMETER	LENGTH, L					

1 BASE PLATE AND ANCHOR ROD SCHEDULE
SCALE: NTS

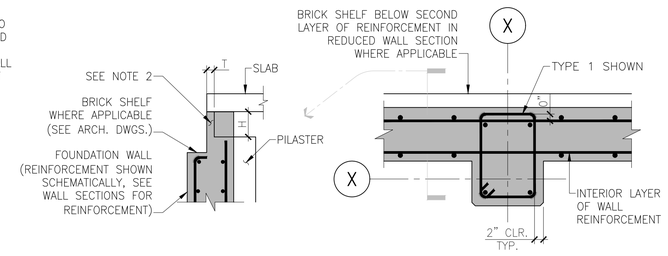


2 TYPICAL COLUMN SECTIONS DETAIL
SCALE: NTS



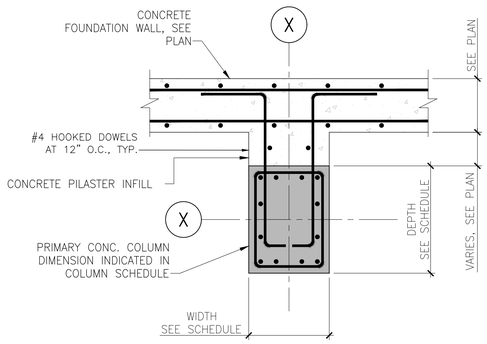
NOTES:
1. SEE COLUMN SCHEDULE FOR REINFORCEMENT.
2. IF H IS GREATER THAN 1'-6" OR T IS LESS THAN 4", BOX OUT AND FORM FLUSH WITH FACE OF WALL AND FILL CONCRETE.

TYPICAL CORNER PILASTER



TYPICAL EDGE PILASTER

3 TYPICAL PILASTER DETAIL
SCALE: NTS



4 TYPICAL PILASTER DIMENSIONS
SCALE: NTS

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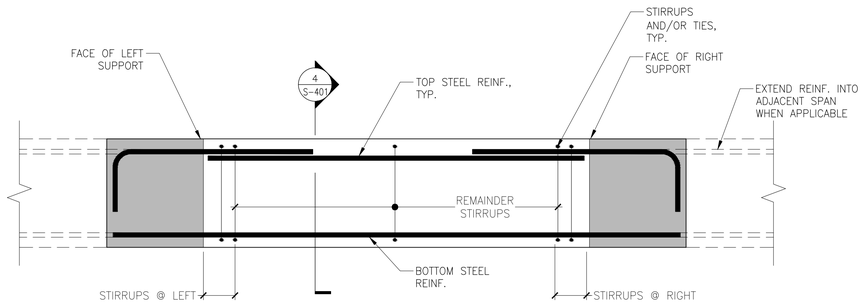
B-SCAN STICKER

DRAWN BY BSA
DATE 12.08.2020
BE PROJECT NUMBER 20041
TITLE TYPICAL CONCRETE COLUMN DETAILS
SCALE AS SHOWN
DRAWING NO. S-301

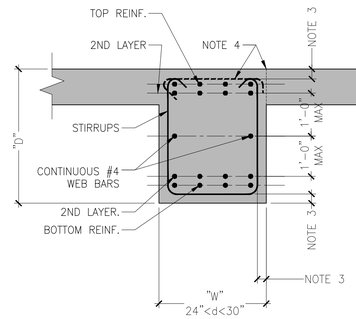
CONCRETE BEAM SCHEDULE													
DESIGN ID	SIZE		TOP REINFORCEMENT		BOTTOM REINFORCEMENT		SIDE REINFORCEMENT		SHEAR REINFORCEMENT			REMAINDER	REMARKS
	B (IN)	D (IN)	# BARS AND BAR NO. LEFT END	# BARS AND BAR NO. RIGHT END	# BARS	BAR NO.	# BARS	BAR NO.	LEGS	BAR NO.	SPACING		

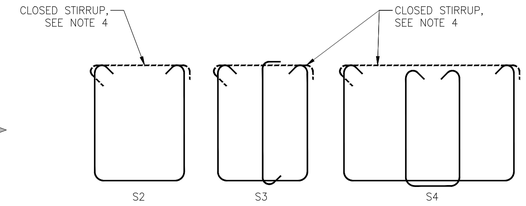
NOTES:
1. B = MINIMUM BEAM WIDTH
2. D = MINIMUM BEAM DEPTH (MEASURED BELOW THE SLAB WHERE MONOLITHIC)
3. R = RIGHT
4. L = LEFT
5. STIRRUP ENDS ARE DEFINED BY ORIENTATION OF LABEL IN PLAN AS FOLLOWS: (LEFT END) CB-# (RIGHT END)
6. REFER TO TYPICAL CONCRETE BEAM DETAIL FOR ADDITIONAL INFORMATION.

1 CONCRETE BEAM SCHEDULE
SCALE: NTS



2 TYPICAL CONCRETE BEAM LAYOUT
SCALE: NTS





STIRRUP TIES

NOTES:
1. SEE SCHEDULES FOR DIMENSIONS AND REINFORCING.
2. PROVIDE WEB BARS EACH FACE FOR BEAMS DEEPER THAN 24".
3. SEE GENERAL NOTES FOR CONCRETE COVER.
4. PROVIDE CLOSED STIRRUP AT ALL EDGE CONDITIONS. (NO SLAB ON ONE OR BOTH SIDES OF BEAM).
5. FOR d>46", SEE ACI 318 CODE FOR QUANTITY OF SPACING OF WEB REINFORCEMENT.

3 TYPICAL BEAM REINFORCEMENT
SCALE: NTS

ARCHITECT:

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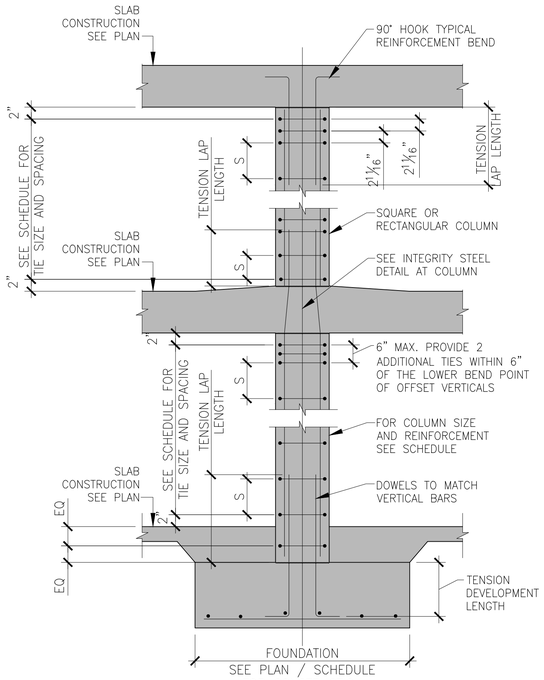
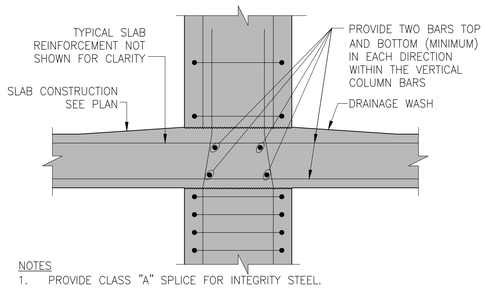
B-SCAN STICKER

DRAWN BY BSA
DATE 12.08.2020
BE PROJECT NUMBER 20041
TITLE TYPICAL CONCRETE BEAM DETAILS
SCALE AS SHOWN
DRAWING NO. S-401

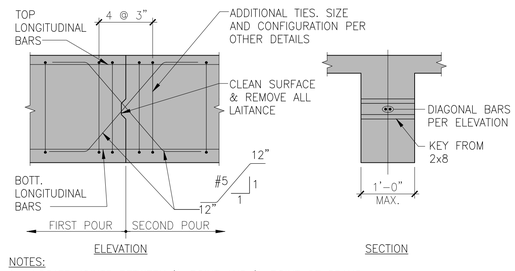


1 TYPICAL RECTANGULAR COLUMN ELEVATION
SCALE: NTS



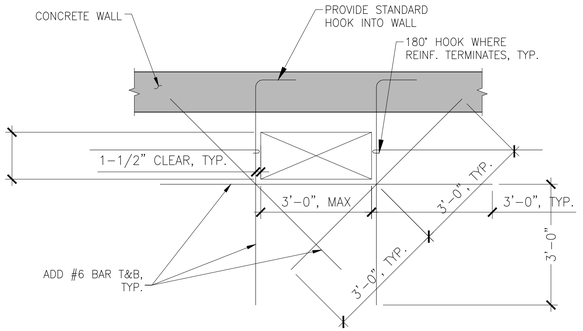
NOTES
1. PROVIDE CLASS "A" SPLICE FOR INTEGRITY STEEL.
2. ADDITIONAL BARS TO MATCH TYPICAL SLAB REINFORCEMENT AT COLUMN, UON.
3. PROVIDE INTEGRITY STEEL AT EACH COLUMN.
4. ADD ADDITIONAL BARS IF TYPICAL SPACING DOES NOT PROVIDE FOR TWO BARS.

2 TYPICAL INTEGRITY STEEL AT COLUMNS
SCALE: NTS



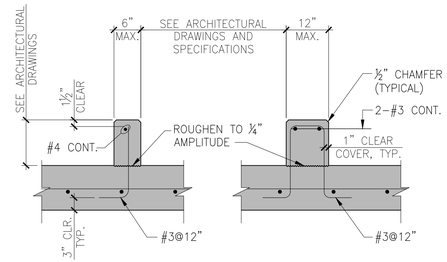
NOTES:
1. LOCATE JOINTS BETWEEN ¼-POINT AND ⅓-POINT OF SPANS.
2. LOCATION OF JOINTS SHALL BE SHOWN ON SHOP DRAWINGS AND APPROVED BY THE ARCHITECT/ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
3. FOR BEAMS WIDER THAN 1'-0", PROVIDE DIAGONAL BAR PAIRS @ 8" O.C.
4. FOR BEAMS SHALLOWER THAN 2'-0", REDUCE KEY SIZE PROPORTIONALLY

4 TYPICAL CONSTRUCTION JOINT FOR C.I.P. BEAM
SCALE: NTS



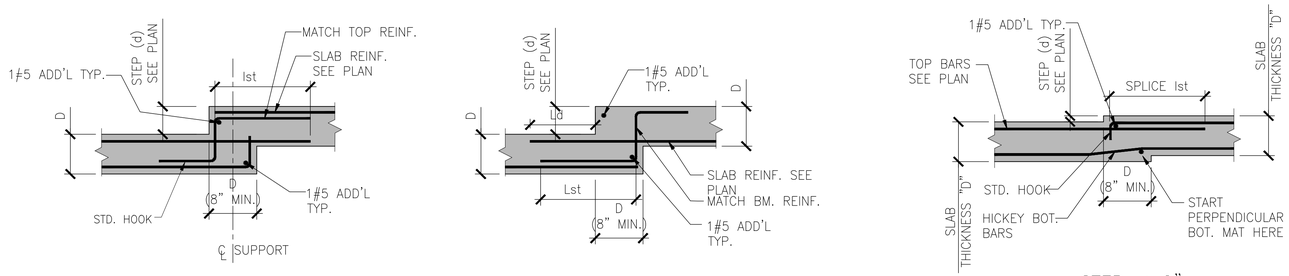
NOTES
1. WHERE OPENING IS MORE THAN 16" FROM WALL, SEE "TYPICAL REINFORCEMENT FOR OPENINGS IN CONCRETE SLAB" DETAIL

3 TYPICAL REINFORCEMENT FOR OPENINGS NEAR WALL
SCALE: NTS



NOTES:
1. ADHESIVE DOWELS ARE AN ACCEPTABLE ALTERNATIVE. MATCH REINFORCING BAR SIZE AND SPACING SHOWN. PROVIDE A MINIMUM EMBEDMENT OF 2½".

5 TYPICAL CONCRETE CURB DETAIL
SCALE: NTS



STEP (d) IS < D-3"
(AT SUPPORT, TOP BARS REQ'D)

STEP (d) IS < D-3"
(BETWEEN SUPPORT, TOP BARS NOT REQ'D)

STEP ≤ 2"

NOTE: ALL SPLICE LENGTHS TO BE TENSION SPLICES PER ACI-318.

6 TYPICAL DETAILS OF STEP IN ELEVATED SLAB
SCALE: NTS

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B-SCAN STICKER

DRAWN BY BSA
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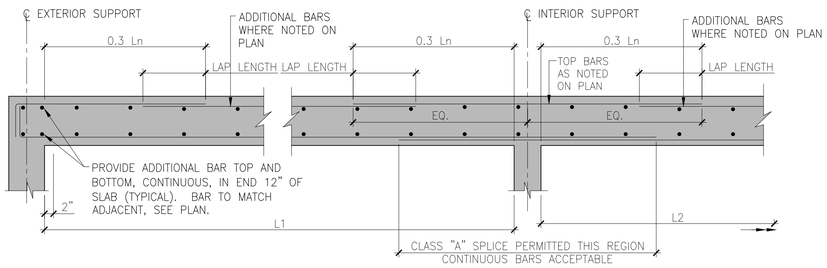
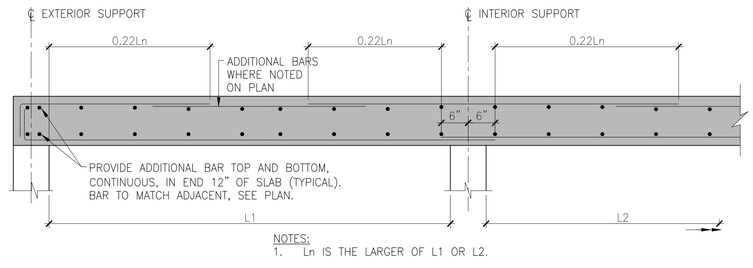
BE PROJECT NUMBER 20041
TITLE TYPICAL CONCRETE DETAILS
SCALE AS SHOWN
DRAWING NO. S-601



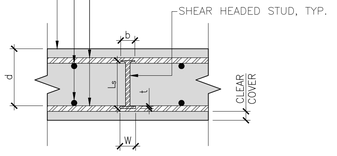
NOTES:
1. Ln IS THE LARGER OF L1 OR L2.

1 COLUMN STRIP REINFORCEMENT DETAIL
SCALE: NTS

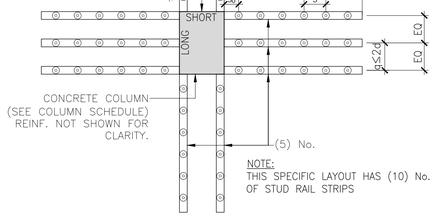


NOTES:
1. Ln IS THE LARGER OF L1 OR L2.

2 MIDDLE STRIP REINFORCEMENT DETAIL
SCALE: NTS



SLAB SECTION

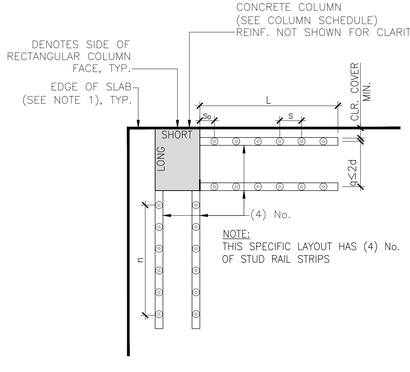


NOTE:
THIS SPECIFIC LAYOUT HAS (10) No. OF STUD RAIL STRIPS

INTERIOR SHEAR STUD LAYOUT

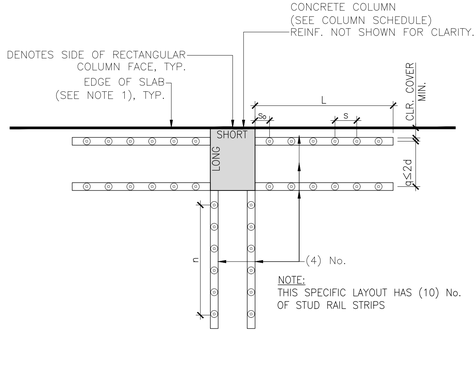
SHEAR STUD PARAMETER												
TYPE	d (in)	TOTAL No. RAILS	No. OF RAILS AT FACE		L (in)	So (IN)	S (in)	n	d_s (in)	b (in)	L_s (in)	t x w (in)
			SHORT	LONG								

NOTES:
1. ELIMINATE SHEAR STUD REINFORCING STRIPS AT EXTERIOR FACES FOR EDGE AND CORNER COLUMNS.
2. ADJUST STRIP SPACING AT EDGE AND CORNER COLUMNS TO MAINTAIN MINIMUM CONCRETE COVER AT EDGES OF SLAB.
3. MAINTAIN 2" TOP AND 1" BOTTOM CLEAR COVER TO STUD RAIL.
4. F_y (RAIL) = 51,000 PSI (MIN.)
5. d=EFFECTIVE SLAB DEPTH.
   b=DIAMETER OF SHEAR STUD HEAD.
   d_s=DIAMETER OF SHEAR STUD.
   L=LENGTH OF SHEAR STUD REINFORCING STRIP.
   L_s=LENGTH OF SHEAR STUD.
   n=NUMBER OF SHEAR STUDS PER STRIP.
   No.=NUMBER OF SHEAR STUDS PER FACE.
   s=SPACING OF SHEAR STUD.
   S_o=DISTANCE FROM FACE OF COLUMN TO 1ST ROW OF SHEAR STUD.
   t=THICKNESS OF SHEAR STUD REINFORCING STRIP.
   w=WIDTH OF SHEAR STUD REINFORCING STRIP



NOTE:
THIS SPECIFIC LAYOUT HAS (4) No. OF STUD RAIL STRIPS

CORNER SHEAR STUD LAYOUT



NOTE:
THIS SPECIFIC LAYOUT HAS (10) No. OF STUD RAIL STRIPS

EDGE SHEAR STUD LAYOUT

3 SHEAR STUD REINFORCEMENT LAYOUT & STUD RAIL SCHEDULES
SCALE: NTS

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CONTRACTOR MUST VERIFY ALL MEASUREMENTS & CONDITIONS BEFORE ANY WORK & FABRICATION ARE BEGUN & ANY MATERIALS & EQUIPMENT ARE ORDERED. REPORT ALL DISCREPANCIES TO THE ARCHITECT. SHOP DETAILS MUST BE SUBMITTED. PLANS ARE SUBJECT TO APPROVAL BY ALL AGENCIES HAVING JURISDICTION & MUST ADHERE TO THEIR CODES.

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B-SCAN STICKER

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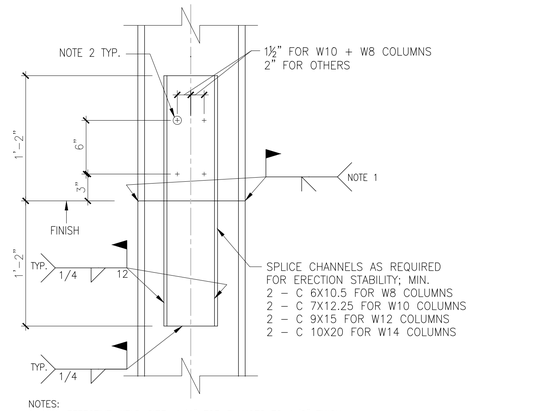
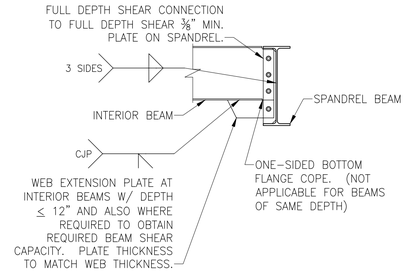
TITLE TYPICAL CONCRETE DETAILS
SCALE AS SHOWN
DRAWING NO. S-602



NOTES:
1. MIN. EFFECTIVE WELD SIZE: 1/4" FOR FLANGES TO 1/2" THICK; 3/8" FOR FLANGES TO 3/4" THICK; 1/2" FOR FLANGES TO 1 1/2" THICK; 5/8" FOR THICKER FLANGES.
2. MIN. 3/4"ø A325 BOLTS, SNUG TIGHT.
3. CHANNELS BOLTED BELOW SPLICE ACCEPTABLE ALTERNATE.

1 TYPICAL GRAVITY COLUMN SPLICE
SCALE: NTS

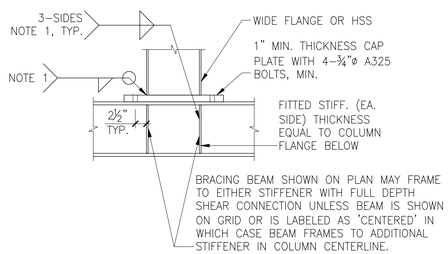


2 TYPICAL BEAM FRAMING TO SPANDREL BEAM CONNECTION
SCALE: NTS

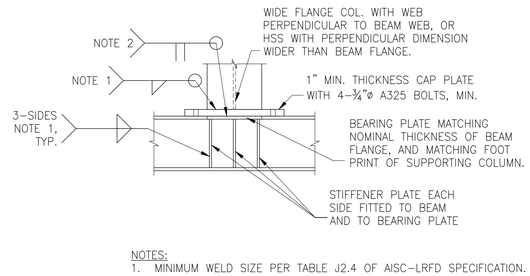
BEAM SHEAR REACTION TABLE		
BEAM SIZE	REACTION (KIPS)	MINIMUM NUMBER OF BOLT ROWS
W8	10	2
W10	15	2
W12	20	3
W14	25	3
W16	35	3
W18	45	4
W21	60	4
W24	60	5
W36	100	7
HSS 6x6	10	2
HSS 8x8	10	2
HSS 10x10	10	2

NOTES:
1. SHEAR VALUES ON PLAN SUPERSEDE TALE VALUES.
2. SHEAR VALUES ARE SERVICE ULTIMATE LOADS. USE 1.3 LOAD FACTOR FOR ASD CONVERSIONS.
3. SEE PLANS FOR BEAMS WITH AXIAL FORCES.
4. SEE DETAILS AND SECTIONS FOR BEAMS REQUIRING FULL DEPTH SHEAR CONNECTIONS.
5. MINIMUM BOLT DIAMETER: ¾"

3 TYPICAL BEAM SHEAR REACTION TABLE
SCALE: NTS

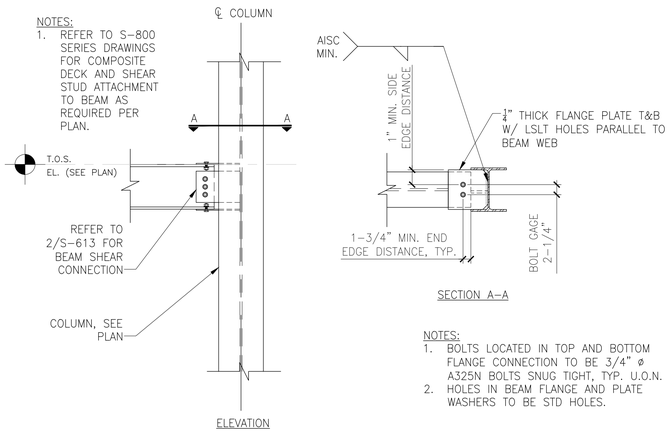


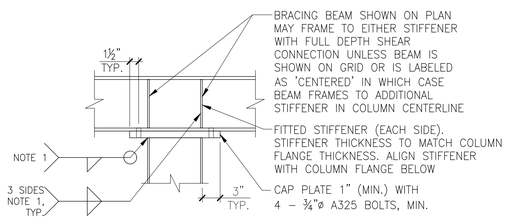
4 TYPICAL COLUMN OVER BEAM DETAIL
SCALE: NTS



NOTES:
1. MINIMUM WELD SIZE PER TABLE J2.4 OF AISC–LRFD SPECIFICATION.
2. CJP BETWEEN BEARING PLATE AND SUPPORTING BEAM.
3. FULLY TENSION ALL BOLTS.

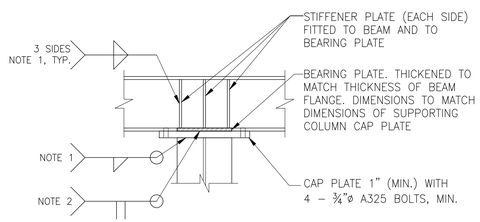
5 TYPICAL BEAM TO COLUMN TORSION CONNECTION
SCALE: NTS





WIDE FLANGE COLUMN WITH WEB PARALLEL TO BEAM WEB
(OR HSS COLUMN)

NOTES:
1. MINIMUM WELD SIZE PER MINIMUM SIZE OF FILLET WELD DETAIL.
2. CJP BETWEEN BEARING PLATE AND SUPPORTING BEAM.
3. FULLY TENSION ALL BOLTS.
4. SLAB CONSTRUCTION NOT SHOWN FOR CLARITY, SEE PLANS.



WIDE FLANGE COLUMN WITH WEB PERPENDICULAR TO BEAM WEB
(OR HSS COLUMN WITH PERPENDICULAR DIMENSION WIDER THAN BEAM FLANGE)

6 TYPICAL BEAM OVER COLUMN DETAIL
SCALE: NTS

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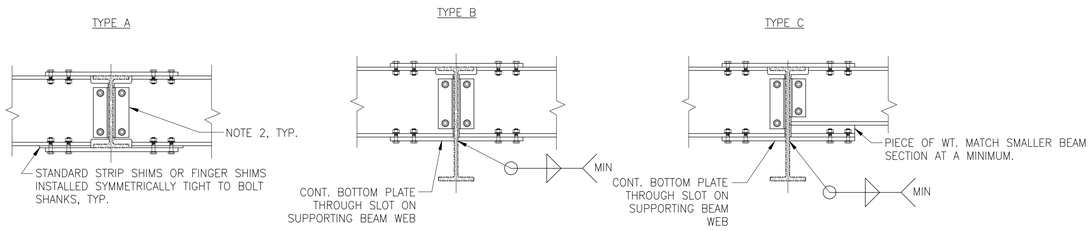
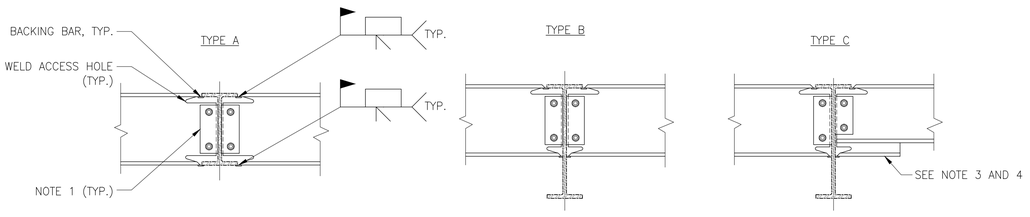


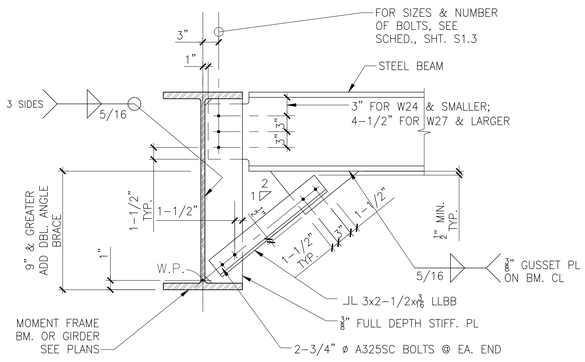
NOTES:
1. DESIGN FLANGE PLATES FOR 0.8 x $\phi_b M_p$ OF THE SMALLER BEAM.
2. UON ON PLAN, DESIGN SHEAR CONNECTION FOR 80% OF THE SHEAR STRENGTH OF THE COPED BEAM. REINFORCE WEB AS REQUIRED BY REACTIONS SHOWN ON PLAN. DOUBLE ANGLE, SINGLE PLATE, AND END PLATE CONNECTIONS ACCEPTABLE.
3. ALL BOLTS ARE SLIP CRITICAL.
4. FIELD WELDED FLANGE PLATE ALTERNATES ACCEPTABLE.
5. DETAIL SHIMS AND/OR FILLERS PER AISC LRFD SPECIFICATION SECTION J6.
6. PROVIDE DECK SUPPORT AS REQUIRED. DECK SUPPORT BY OVERSIZE TOP FLANGE FILLER PLATE IS ACCEPTABLE IF IT HAS A 1/4" MIN. THICKNESS AND IT EXTENDS A MINIMUM OF 3" BEYOND THE BEAM FLANGES.

1 TYPICAL BOLTED BEAM TO BEAM MOMENT CONNECTION
SCALE: NTS



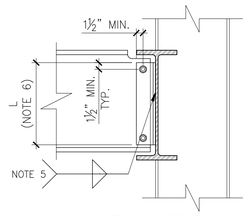
NOTES:
1. U.O.N. ON PLAN, DESIGN SHEAR CONNECTION TO DEVELOP 80% OF THE SHEAR STRENGTH OF THE COPED BEAM. REINFORCE WEB AS REQUIRED FOR REACTION SHOWN ON PLAN.
2. BOLTS ARE TO BE SLIP CRITICAL. INSTALL BOLT FINGER TIGHT PRIOR TO WELDING. TENSION BOLTS FULLY AFTER WELDING.
3. PROVIDE WT WITH FLANGE WIDTH AND THICKNESS TO MATCH BEAM. CUT WEB AS REQUIRED TO ALIGN BOTTOM FLANGES ON EACH SIDE OF THROUGH BEAM.
4. PROVIDE WELD OF WT TO BEAM FLANGE AND LENGTH OF WT TO DEVELOP STRENGTH OF BEAM FLANGE.

2 TYPICAL WELDED BEAM TO BEAM MOMENT CONNECTION
SCALE: NTS



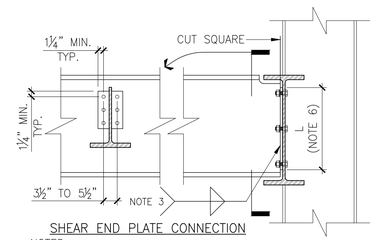
NOTE: PROVIDE & BRACE TO BOTTOM FLANGE OF MOMENT FRAME BM. OR GIRDER ONLY WHERE DIFFERENCE IN NOMINAL DEPTHS IS 9" OR GREATER

4 TYPICAL FRAME GIRDER FLANGE BRACE CONNECTION
SCALE: NTS



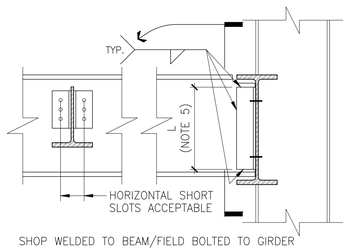
SINGLE PLATE CONNECTION

NOTES:
1. DESIGN MODEL : AISC LRFD 2ND EDITION MANUAL, SECTION 9.
2. TREAT COLUMN FLANGES AND GIRDERS WITH SINGLE PLATE CONNECTIONS ON OPPOSITE SIDES WITHIN 6" AS RIGID ELEMENTS.
3. TREAT ALL OTHER GIRDER WEBS AS FLEXIBLE ELEMENTS.
4. PLATE MATERIAL : ASTM A36 STEEL.
5. MINIMUM WELD SIZE = 3/4 x PLATE THICKNESS WITH E70XX ELECTRODES.
6. L = GREATER THAN 0.5 x BEAM "T" DIMENSION.
7. MAXIMUM PLATE THICKNESS = BOLT ø/2 + 1/16".
8. DO NOT USE AT COLUMN WEBS.

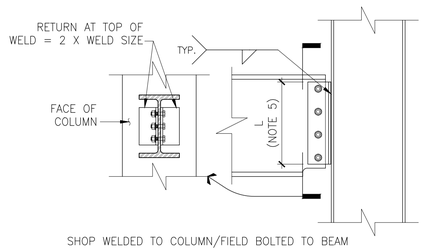


SHEAR END PLATE CONNECTION

NOTES:
1. DETAIL SIMILAR AT COLUMN FLANGE OR COLUMN WEB.
2. END PLATE THICKNESS RANGE: FROM ¼" TO ⅜" INCLUSIVE.
3. DO NOT RETURN WELD ACROSS THICKNESS OF BEAM WEB.
4. END PLATE MATERIAL: ASTM A36
5. DO NOT USE ON CAMBERED BEAMS.
6. L = GREATER THAN 0.5 x BEAM "T" DIMENSION.



SHOP WELDED TO BEAM/FIELD BOLTED TO GIRDER



SHOP WELDED TO COLUMN/FIELD BOLTED TO BEAM

DOUBLE ANGLE CONNECTION TO BEAM OR COLUMN

NOTES:
1. DETAIL SIMILAR AT CONNECTION TO COLUMN FLANGE OR COLUMN WEB.
2. BOLTED – BOLTED ALTERNATES ACCEPTABLE.
3. MAXIMUM ANGLE THICKNESS : 5/8".
4. NEGLECT WELD RETURNS AT TOP OF ANGLES IN STRENGTH CALCULATIONS.
5. L = GREATER THAN 0.5 X BEAM "T" DIMENSION.

GENERAL NOTES:
1. DESIGN CONNECTIONS FOR THE FORCES SHOWN ON THE BEAM SHEAR REACTION TABLE, UNLESS SUPERSEDED IN PLAN.
2. MINIMUM BOLT SIZE IS 3/4"ø A325, UON.
3. PRETENSION BOLTS CONNECTING TO COLUMNS, SNUG TIGHTEN ALL OTHER BOLTS.
4. REINFORCE WEBS AS REQUIRED BY COPES, WEB CUTS, ETC.
5. ALTERNATE CONNECTION TYPES, SUCH AS SINGLE ANGLE, TEE, SEATED CONNECTIONS, ETC. MAY BE ACCEPTABLE UNDER CERTAIN CIRCUMSTANCES. REVIEW WITH ENGINEER.
6. SEE DETAILS & SECTIONS FOR BEAMS REQUIRING FULL DEPTH SHEAR CONNECTIONS.
7. DETAIL CONNECTIONS IN CONFORMANCE WITH THE REQUIREMENTS OF "29 CFR PART 1926, SUBPART R – STEEL ERECTION".
8. GRIND COPES FOR GROUP 4 AND 5 SECTIONS PER THE AISC LRFD SPECIFICATION SECTION J1.6.

3 STANDARD WIDE FLANGE AND CHANNEL BEAM SHEAR CONNECTIONS
SCALE: NTS

MINIMUM SIZE OF FILLET WELDS	
MATERIAL THICKNESS OF THINNER PART JOINED (IN)	MINIMUM SIZE OF FILLET WELD|Q1|W (IN)
TO ¼ INCLUSIVE	⅛
OVER ¼ TO ½	3/16
OVER ½ TO ¾	¼
OVER ¾	5/16

NOTES:
1. LEG DIMENSION OF FILLET WELDS. SINGLE-PASS WELDS MUST BE USED.
2. MINIMUM LENGTH OF A FILLET WELD SHALL NOT BE LESS THAN 4 TIMES IT SIZE.
3. WHERE FILLET WELDS ARE INDICATED IN THE STRUCTURAL DRAWINGS AND THE SIZE IS NOT EXPLICITLY INDICATED, PROVIDE THE MINIMUM SIZE AS INDICATED IN THE TABLE ABOVE.

4 TYPICAL FRAME GIRDER FLANGE BRACE CONNECTION
SCALE: NTS

5 MINIMUM SIZE OF FILLET WELDS
SCALE: NTS

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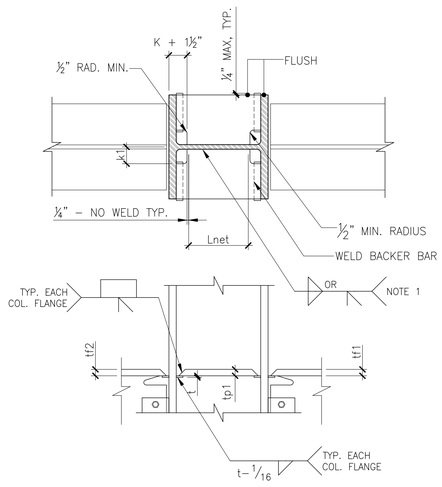
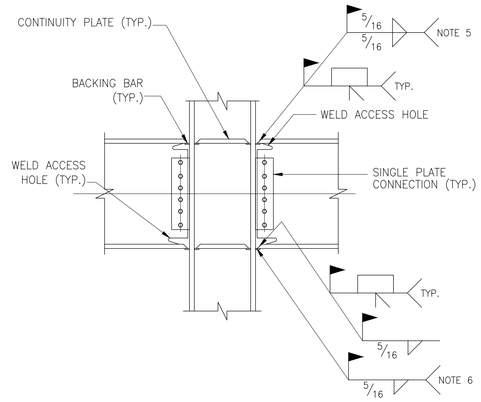


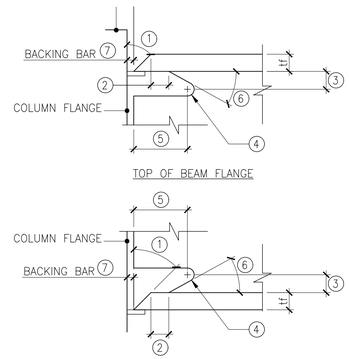
CONTINUITY PLATE NOTES:
1. REQUIRED TOTAL STRENGTH= 0.6(tp1)(Lnet)Fypl.
2. tp1= GREATER OF tf1 OR tf2.
3. t= THICKNESS OF BACKING BAR.

1 TYPICAL SEISMIC MOMENT FRAME CONNECTION – 1
SCALE: NTS



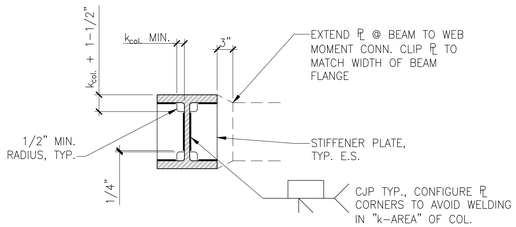
MOMENT CONNECTION GENERAL NOTES:
1. MOMENT CONNECTION TO DEVELOP THE FULL CAPACITY OF THE BEAM.
2. SHEAR CONNECTION TO DEVELOP THE LESSER OF 30 KIPS (FACTORED) + 2.4(M|AP|S/SPAN), OR 80% OF THE UNREDUCED SHEAR STRENGTH OF THE COPED WEB. BOLTS ARE TO BE SLIP CRITICAL.
3. INSTALL ALL BOLTS SNUG TIGHT PRIOR TO FIRST TORQUING. TENSION BOLTS FULLY PRIOR TO WELDING.
4. EDGE PREPARATION OF CONTINUITY PLATES AT FABRICATORS DISCRETION. BACK GOUGE ROOT PASS OF DOUBLE BEVEL GROOVE WELDS.
5. WELD TOP FLANGE BACKING BAR CONTINUOUSLY TO COLUMN FLANGE OR CONTINUITY PLATE.
6. REMOVE BOTTOM FLANGE BACKING BAR, BACK GOUGE, AND INSTALL REINFORCING 5/16" FILLET ON TOP AND BOTTOM OF BOTTOM FLANGE WELD.

2 TYPICAL SEISMIC MOMENT FRAME CONNECTION – 2
SCALE: NTS



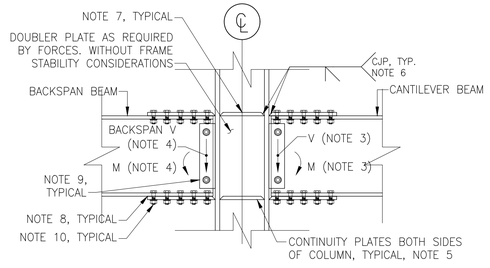
WELD ACCESS HOLE NOTES:
1. BEVEL AS REQUIRED BY AWS D1.1 FOR SELECTED GROOVE WELD PROCEDURE.
2. LARGER OF tf OR ½" (TOLERANCE: PLUS ½ tf , OR MINUS ¼ tf).
3. (¾ x tf) TO tf; ¾" MINIMUM (TOLERANCE: ±¼")
4. ⅜" MINIMUM RADIUS (TOLERANCE: PLUS NOT LIMITED, OR MINUS 0).
5. 3 tf (TOLERANCE: ±½").
6. 25° MAXIMUM AS–BUILT ANGLE AFTER TOLERANCES.
7. ROOT OPENING AS REQUIRED BY AWS D1.1 FOR SPECIFIED WELDS.
8. ALL CUT/DRILLED SURFACES SHALL BE FINISHED OF 500 MICROINCHES OR BETTER. ANY GOUGES IN EXCESS OF 500 MICROINCHES SHALL BE REPAIRED IN ACCORDANCE WITH AWS D1.1 5.15.4.4
9. EXTEND TOP OF COLUMN ⅜" ABOVE FRAME BEAM TOP FLANGE TO ACCOMODATE 5/16" REINFORCING WELD.

3 TYPICAL SEISMIC MOMENT FRAME CONNECTION – 3
SCALE: NTS



NOTE: ALL STIFFENER PLATES SHALL BE ¾" THICK

4 STIFFENER PLATES MOMENT FRAME CONNECTION
SCALE: NTS



NOTES:
1. DETAIL IS SIMILAR FOR COLUMN ON WEAK AXIS.
2. CONNECTION FORCES ARE THE GREATER OF THOSE SHOWN ON PLAN AND ON NOTES 3 & 4.
3. CANTILEVER CONNECTION FORCES:
   M = 65% OF FLEXURAL STRENGTH OF THE CANTILEVER BEAM DEFINED AS F|AY|S TIMES THE PLASTIC MODULES OF THE SECTION
   V = 50% OF THE SHEAR STRENGTH OF THE CANTILEVER BEAM DEFINED AS F|AY|S x D x T|AW|S
4. BACKSPAN CONNECTION FORCES:
   M = SAME AS CANTILEVER SPAN
   V = PER "BEAM SHEAR REACTION TABLE AND CONNECTION NOTES"
5. MATCH CONTINUITY PLATE WIDTH AND THICKNESS WITH CONTACT AREA OF CONNECTION FLANGE PLATES. SLOPE BOTTOM PLATES FOR UP TO 4" DIFFERENCE IN BEAM NOMINAL DEPTHS, USE TWO BOTTOM CONTINUITY PLATES FOR GREATER DIFFERENCE IN DEPTH.
6. CONNECTION SHOWN AS A SINGLE BEVEL EDGE PREPARATION, DOUBLE BEVEL EDGE PREPARATION AT FABRICATOR'S DISCRETION.
7. PJP OR FILLET WELD AS REQUIRED TO TRANSFER FLANGE PLATE FORCES TO COLUMN WEB.
8. FULL CONTACT FILLER PLATES AS REQUIRED.
9. SHEAR CONNECTION ON FULL DEPTH SINGLE PLATE AT CANTILEVER END AND ON CONNECTION DESIGNED PER THE STANDARD WIDE FLANGE BEAM SHEAR CONNECTIONS TYPICAL DETAIL AT THE BACKSPAN END.
10. BOLTED MOMENT CONNECTION AT CANTILEVER AND BACKSPAN EXCEPT WHERE BACKSPAN IS MOMENT CONNECTED AT BOTH ENDS AS PART OF A MOMENT FRAME.
11. ALL BOLTS DESIGNED AS PRETENSIONED, 7/8"ø A325 MINIMUM BOLTS.

5 TYPICAL CANTILEVER WIDE FLANGE BEAM CONNECTION
SCALE: NTS

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B-SCAN STICKER

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BE PROJECT NUMBER 20041
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STEEL TYPICAL DETAILS
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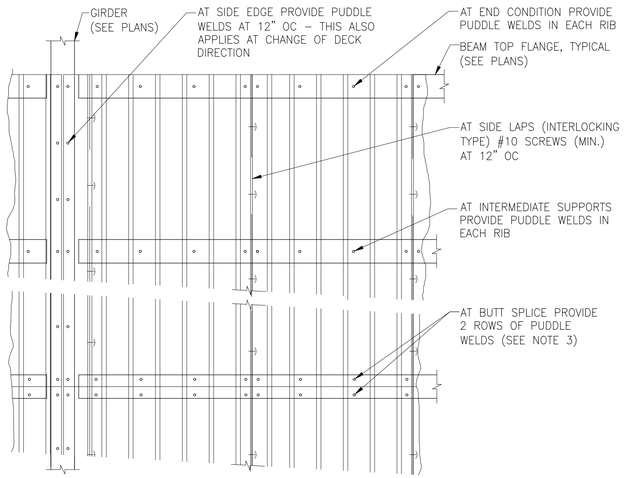
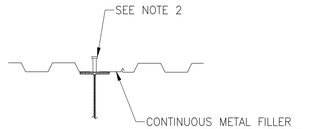
S-803

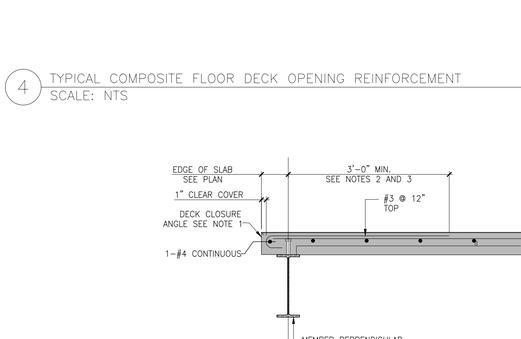




METAL DECK WELDING SCHEDULE					
LEVEL	DECK TYPE	ICBO DIAPHRAHM CAPACITY	WELDS TO SUPPORTS	MARGINAL WELDS	SEAM ATTACHMENT
SECOND					
ROOF					

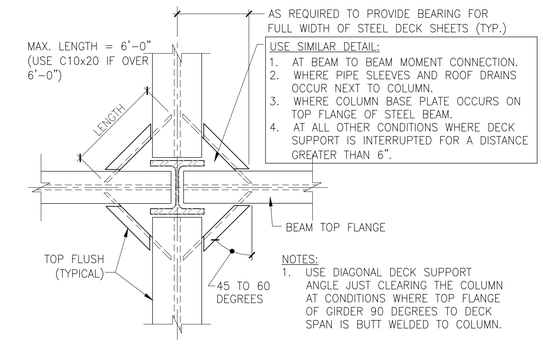
NOTES:
1. PUDDLE WELDS TO BE $\frac{5}{8}$"ø (MIN.)
2. WELDED HEADED STUDS MAY REPLACE PUDDLE WELDS.
3. DECK ENDS ARE TO BE BUTT SPLICED. LAPPED DECK ENDS ARE PROHIBITED.
4. FILL FOR THE HIGH RIB OF DECKING WILL ALSO BE REQUIRED AS A POUR STOP.
5. B.P. = BUTTON PUNCH
   S.S.W = 1 $\frac{1}{2}$" LONG SIDE SEAM FILLET WELD
   T.S.W = 1 $\frac{1}{2}$" LONG TOP SEAM FILLET WELD
   P.W. = PUDDLE WELD

1 TYPICAL FASTENING PATTERN FOR COMPOSITE STEEL DECK
SCALE: NTS



NOTES:
1. POUR STOPS, CONTINUOUS ALONG SLAB EDGE, NOT SHOWN FOR CLARITY.

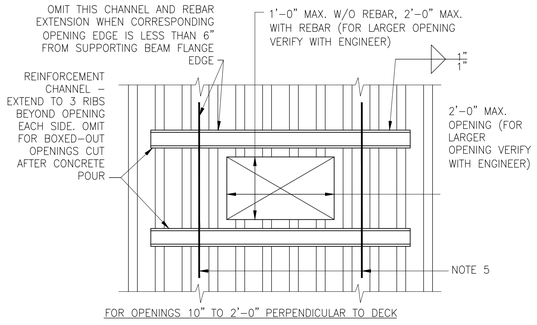
2 TYPICAL DECK SUPPORT AT PERIMETER COLUMNS
SCALE: NTS



USE SIMILAR DETAIL:
1. AT BEAM TO BEAM MOMENT CONNECTION.
2. WHERE PIPE SLEEVES AND ROOF DRAINS OCCUR NEXT TO COLUMN.
3. WHERE COLUMN BASE PLATE OCCURS ON TOP FLANGE OF STEEL BEAM.
4. AT ALL OTHER CONDITIONS WHERE DECK SUPPORT IS INTERRUPTED FOR A DISTANCE GREATER THAN 6".

NOTES:
1. USE DIAGONAL DECK SUPPORT ANGLE JUST CLEARING THE COLUMN AT CONDITIONS WHERE TOP FLANGE OF GIRDER 90 DEGREES TO DECK SPAN IS BUTT WELDED TO COLUMN.

3 TYPICAL DECK SUPPORT AT COLUMNS AND OBSTRUCTIONS
SCALE: NTS



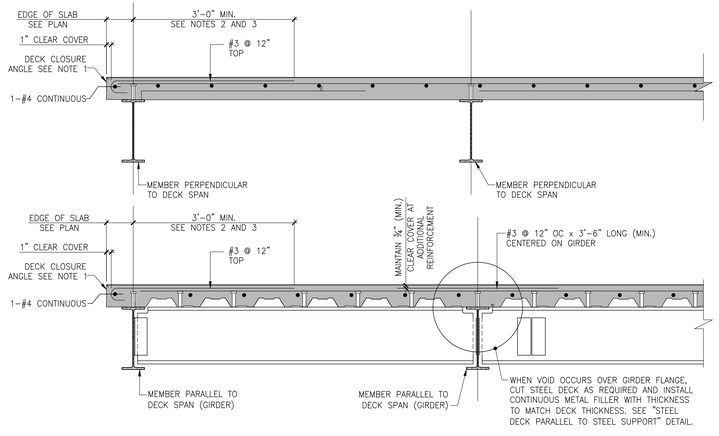
PARAMETERS FOR DECK CUT BEFORE CONCRETE POUR			
DEPTH OF DECK	DECK GAUGE	MAX. SPAN WITHOUT SUBFRAMING	REINFORCING CHANNEL
1½"	20	6'–0"	C4x5.4
	18	7'–0"	C4x5.4
	16	8'–0"	C4x7.25

NOTES:
1. NO REINFORCEMENT REQUIRED FOR OPENINGS 10" OR LESS IN DIRECTION PERPENDICULAR TO DECK.
2. DETAIL APPLIES TO OPENINGS SHOWN ON PLAN WITHOUT SUBFRAMING AND TO FIELD COORDINATED OPENINGS NOT SHOWN ON PLAN. DETAIL APPLIES TO OPENINGS SPACED NO CLOSER THAN 8'–0" CLEAR IN DIRECTION TRANSVERSE TO DECK RIBS AND NO CLOSER THAN 10'–0" CLEAR IN DIRECTION PARALLEL TO RIBS.
3. REVIEW WITH ENGINEER SPECIFIC CONDITIONS THAT MIGHT ALLOW MODIFICATIONS TO THE SPECIFIED PARAMETERS OF THE DETAIL.
4. #5 @ BOTTOM OF RIB FOR TOTAL SLAB THICKNESS OF UP TO 6", #7 @ BOTTOM OF RIB FOR TOTAL SLAB THICKNESS GREATER THAN 6". EXTEND BARS BEYOND OPENING THE LESSER OF 2'–6" OR THE DISTANCE TO NEAREST SUPPORTING STEEL.
5. SHORING OF DECK IS ACCEPTABLE ALTERNATE TO REINFORCEMENT CHANNELS SHOWN FOR DECK CUT BEFORE CONCRETE POUR.
6. DETAIL DOES NOT APPLY FOR SINGLE SPAN CONDITIONS. FOR THESE CONDITIONS, ADD SUBFRAMING, INCREASE GAUGE OF DECK, OR SHORE DECK. SUBMIT PREFERRED SCHEME TO ENGINEER FOR REVIEW AND APPROVAL.

4 TYPICAL COMPOSITE FLOOR DECK OPENING REINFORCEMENT
SCALE: NTS

NOTES:
1. SUBMIT CONSTRUCTION JOINT LAYOUT FOR APPROVAL BY ENGINEER. CONSULT WITH ENGINEER IN CASES OF IRREGULAR FRAMING PATTERNS. EXTEND SLAB REINFORCEMENT 40 BAR DIAMETERS BEYOND JOINT FORMS. LAP SPLICE WITH REINFORCEMENT OF
3. SUBSEQUENT POUR. DO NOT PLACE SUBSEQUENT
4. POUR LESS THAN 72 HOURS AFTER THE FIRST POUR. PRIOR TO SECOND POUR WET FACE OF JOINT WITH WATER MIST. REMOVE ANY STANDING WATER FROM DECK.

5 TYPICAL CONSTRUCTION JOINT LAYOUT FOR COMPOSITE SLABS
SCALE: NTS



NOTES:
1. COORDINATE EDGE CONDITION WITH TYPICAL SLAB EDGE SUPPORT DETAIL AND BUILDING SECTIONS.
2. #3 BAR SIZE AND LAP LENGTH SHOWN ARE A MINIMUM. INCREASE BAR SIZE TO MATCH REINFORCEMENT ON PLAN AND ADJUST LAP LENGTH PER TYPICAL DETAILS.
3. TYPICAL SLAB BARS MAY BE HOOKED. IN THIS CASE ADDITIONAL #3 AT EDGE OF SLAB ARE NOT REQUIRED.
4. GIRDERS ARE DEFINED AS BEAMS FRAMING TO COLUMNS AND/OR SUPPORTING BEAMS LARGER THAN W8.

6 TYPICAL COMPOSITE SLAB REINFORCEMENT AND EDGE CONDITION DETAIL
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STEEL TYPICAL DETAILS
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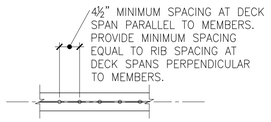
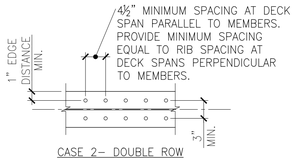
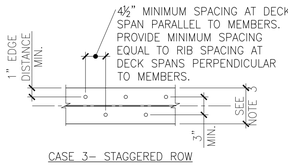
S-804



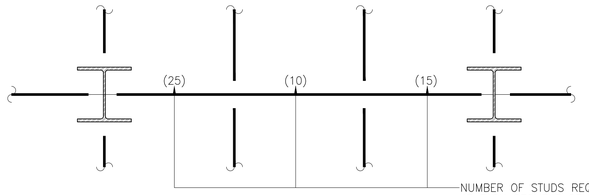
CASE 1– SINGLE ROW

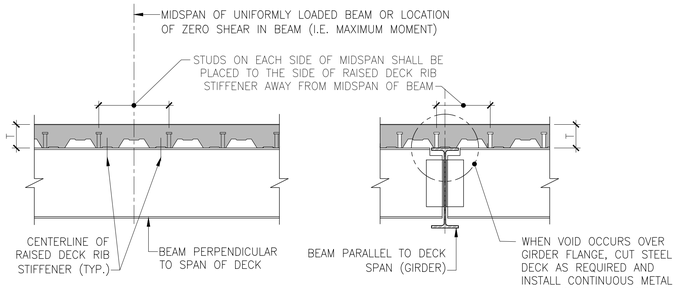


CASE 2– DOUBLE ROW



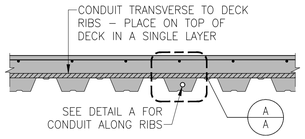
CASE 3– STAGGERED ROW



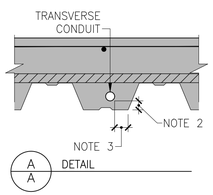


NOTES:
1. THE NUMBER OF HEADED STUDS SHOWN ON THE PLANS FOR EACH COMPOSITE BEAM/GIRDER SHALL BE CONSIDERED A MINIMUM AND SHALL BE INCREASED AS REQUIRED TO SATISFY THIS DETAIL AND AISC'S SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (AISC 360–05), CHAPTER I.
2. THE MAXIMUM STUD SPACING IS 36 INCHES OR 8T.
3. DISTRIBUTE HEADED STUDS UNIFORMLY ALONG MEMBER UNLESS SPECIFIC LAYOUT IS INDICATED AS SHOWN ABOVE.
4. DISTRIBUTE HEADED STUDS UNIFORMLY BETWEEN PERPENDICULAR MEMBERS FOR SPECIFIC LAYOUT.
5. USE DOUBLE ROWS OF HEADED STUDS ONLY AT BEAMS/GIRDERS WITH A MINIMUM FLANGE WIDTH OF 5". GENERAL CONTRACTOR TO COORDINATE.
6. PROVIDE HEADED STUDS AT 12" OC WHERE NONE ARE SHOWN ON PLAN.
7. T = TOTAL THICKNESS OF THE SLAB AS DEFINED ON PLAN.

1 COMPOSITE BEAM / GIRDER HEADED STUD DETAIL
SCALE: NTS

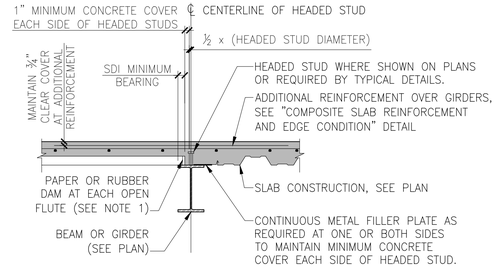


GENERAL NOTES:
1. CONDUIT SIZE: 1¼" MAX. ACTUAL OUTER DIAMETER.
2. DO NOT USE ALUMINUM CONDUIT.
3. DO NOT SPACE HORIZONTALLY CLOSER THAN 3 DIAMETERS ON CENTER.
4. SUBMIT LAYOUT OF CONDUIT WHERE CONVERGENCE OF LINES DOES NOT ALLOW FOR MINIMUM SPACING ON NOTE 3.
5. DO NOT PLACE CONDUIT WITHIN 2'–0" OF AN INTERIOR SLAB OPENING.
6. DO NOT PLACE CONDUIT WITHIN 6" OF A SHEAR STUD.

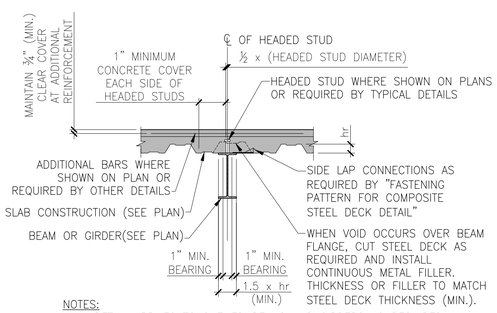


DETAIL A NOTES:
1. DIMENSION TO BOTTOM OF DECK, 1" MIN.; 2" MAX.
2. DIMENSION TO DECK RIB WALL: 1½" MIN.; 2" MAX.
3. PROVIDE CHAIRS OR BOLSTERS OR TIE TO TRANSVERSE CONDUIT.
4. MAXIMUM OF ONE CONDUIT PER RIB FOR CONDUIT LARGER THAN ¾" MAXIMUM ACTUAL DIAMETER TRANSVERSE CONDUIT.
5. MAXIMUM OF TWO CONDUITS PER RIB FOR ¾"ø OR SMALLER; SPACE AT NO LESS THAN 3 DIAMETERS OC.
6. 2'–0" MIN. SPACING BETWEEN CONDUIT WITHIN RIBS (I.E. CONDUIT AT EVERY OTHER RIB AT MAXIMUM DENSITY).

4 CONDUIT PLACEMENT IN COMPOSITE SLABS
SCALE: NTS

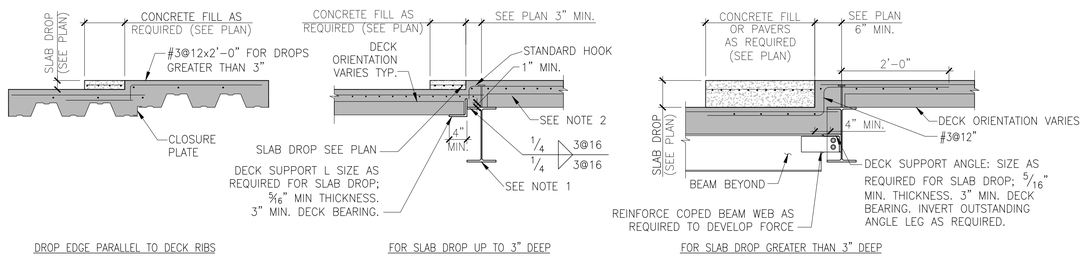


NOTES:
1. CONTINUOUS METAL CLOSURE MAY BE USED INSTEAD OF PAPER DAM ONLY WHEN SDI MINIMUM BEARING AND 1" MINIMUM COVER TO SIDE OF STUD CAN BE MAINTAINED.



NOTES:
1. DETAIL APPLIES TO SKEWED BEAMS AND GIRDERS AS REQUIRED FOR STUD PLACEMENT PARAMETERS.
2. hr = METAL DECK HEIGHT.

2 CONDITION AT DECK SPAN
SCALE: NTS

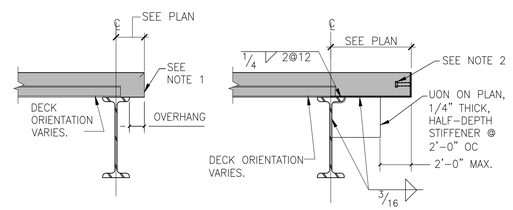


DROP EDGE PARALLEL TO DECK RIBS — FOR SLAB DROP UP TO 3" DEEP — FOR SLAB DROP GREATER THAN 3" DEEP

NOTES:
1. CLIP ANGLE OR PLATE (MIN. 3" LONG, 5/16" THICK @ 1'–6" MAX SPACING) ACCEPTABLE ALTERNATIVE FOR LOWER FILLET WELD.
2. EXTEND LOW SLAB REINFORCEMENT 3'–0" INTO HIGH DECK RIBS. OMIT FOR DECK RIBS PARALLEL TO THE BEAM.

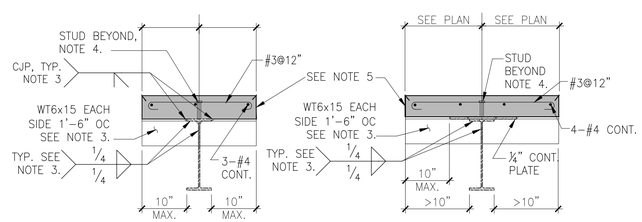
NOTES:
1. PROVIDE WEB REINFORCEMENT AS REQUIRED

3 STEEL DECK AT CHANGES IN SLAB ELEVATION OR THICKNESS
SCALE: NTS



OVERHANG LESS THAN 0'–10" — OVERHANG GREATER THAN 0'–10" AND LESS THAN 4'–0"

NOTES:
1. UON PLACE GALVANIZED SHEET METAL POUR STOPS. USE SDI CRITERIA (SDI PUBLICATION #31) FOR THICKNESS, USE 14 GA. MIN.
2. UNLESS OTHERWISE NOTED, PLACE 1/4" THICK CONTINUOUS BENT PLATES AS POUR STOP W/ 3/4"ø X 4" HEADED STUD @ 16" OC MITER PLATE AT CORNERS. EXTEND TO COVER COLUMNS.
3. AROUND ELEVATOR HOISTWAY PLACE ¼" THICK CONTINUOUS BENT PLATE AS POUR STOP.



NOTES:
1. DETAIL DOES NOT APPLY FOR ECCENTRIC MASONRY LOADS ON SLAB OR MEP ATTACHMENTS TO EDGE OF SLAB.
2. DEVELOP LONGITUDINAL BARS INTO SLAB BEYOND SLAB EDGE WITH EXTENSION OR STANDARD HOOK IF SPACE DOES NOT ALLOW FOR EXTENSION.
3. APPLIES ONLY WHERE "ALTERNATE DETAIL" IS INDICATED IN PLAN.
4. PLACE STUDS AS SHOWN ON PLAN, BUT NOT LESS THAN 1 STUD AT 12" OC
5. SHEET METAL POURSTOP BY DECK SUPPLIER. USE SDI CRITERIA (SDI PUBLICATION #29) FOR THICKNESS, 14 GA. MINIMUM.

5 TYPICAL SLAB EDGE SUPPORT DETAIL
SCALE: NTS

6 TYPICAL FLOOR OPENING ON BOTH SIDES OF BEAM
SCALE: NTS

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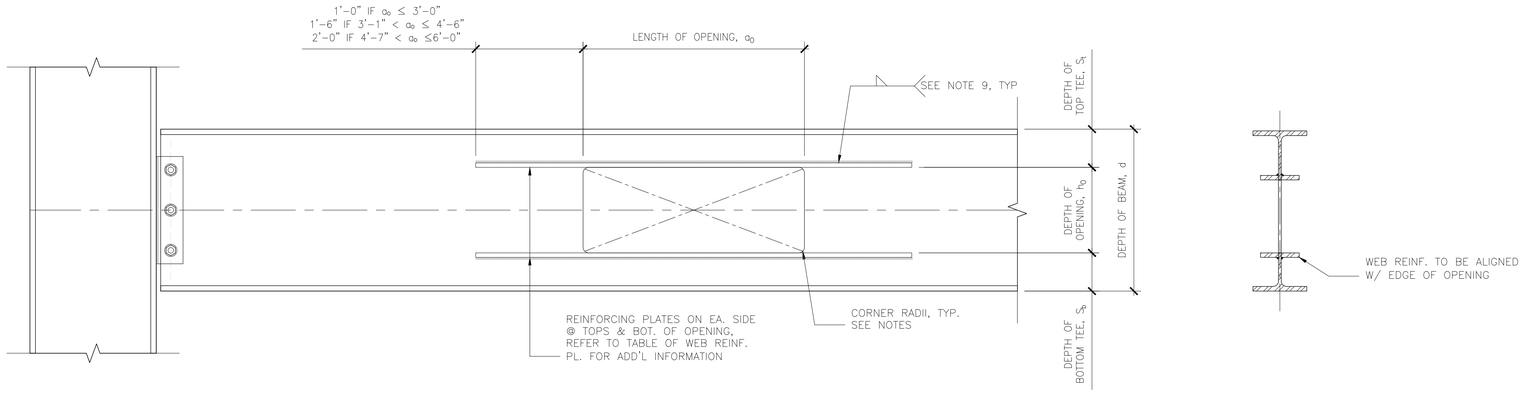
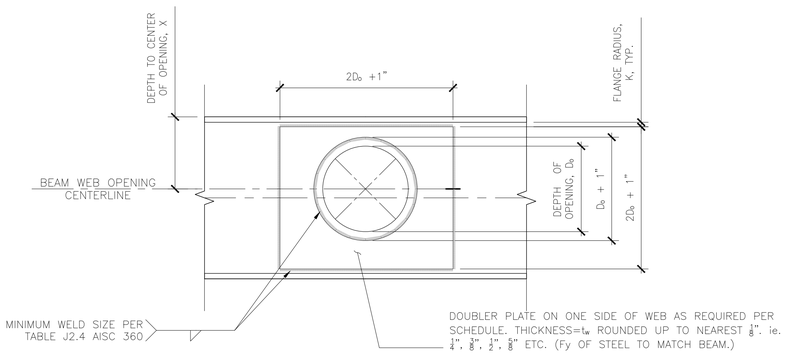
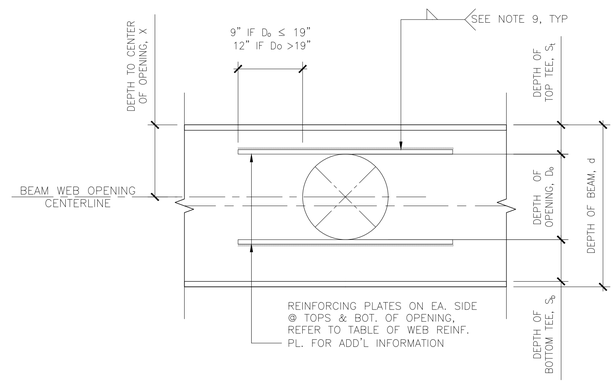


BEAM WEB OPENINGS

SECTION A–A



WEB OPENING DOUBLER PLATE DETAIL



WEB OPENING DOUBLER PLATE DETAIL

TYPICAL BEAM WEB OPENING NOTES:

1. THE GRADE OF STEEL (Fy) OF ALL REINFORCING PLATES AND WEB DOUBLERS SHALL BE EQUAL TO THE GRADE OF STEEL (Fy) OF THE BEAM BEING REINFORCED.
2. USE THESE DETAILS TO REINFORCE ALL WEB OPENINGS UNLESS OTHER SPECIFIC REINFORCING PLATES ARE CALLED FOR ON THE DRAWINGS.
3. SOME SMALL WEB PENETRATIONS MAY NOT REQUIRE WEB REINFORCING. REINFORCING MAY BE OMITTED ONLY WHEN SPECIFIC DIRECTION IS GIVEN ON THE FRAMING PLAN THAT WEB REINFORCING IS NOT REQUIRED.
4. MAXIMUM h=0.6D_o. FOR W18 AND DEEPER
   =0.563d_o FOR W16(9" OPENING)
   =0.5d_o FOR W12 AND W14
5. MINIMUM S_t OR S_b = 0.20do FOR W16 AND DEEPER
   = 3.5" FOR W16
   = 0.25do FOR W12 AND W146
6. THE MAX. AND MIN. DIMENSIONS GIVEN IN NOTES 4 AND 5 DO NOT HAVE TO OCCUR SIMULTANEOUSLY – A SHALLOWER DEPTH OPENING MAY BE SHIFTED UP OR DOWN FROM MID–DEPTH RESULTING IN A MIN. S_t OR S_b.
7. MAX. LENGTH OF OPENING (a) IS DEPENDENT ON St OR Sb ...., WHICHEVER IS SMALLER, MAX. LENGTH OF OPENING SHALL NOT EXCEED 6'–0" REGARDLESS OF BEAM SIZE AND/OR OPENING DEPTH.
8. THE WELD WITH IN THE LENGTH OF THE OPENING SHALL RESIST TWICE THE YIELDING STRENGTH ΦFrAy OF THE WEB REINFORCING PLATE, UNLESS OTHERWISE NOTED.
9. THE WELD IN EACH EXTENSION OF THE WEB REINFORCING PLATE BEYOND THE ENDS OF THE OPENING SHALL DEVELOP THE YIELDING STRENGTH OF THE WEB REINFORCING PLATE. MINIMUM WELD SIZE PER TABLE J2.4 AISC SPECIFICATIONS
10. CORNER RADII SHALL NOT BE LESS THAN THE MINIMUM OF TWICE THE THICKNESS OF THE BEAM WEB, 2t_w OR $\frac{5}{8}$".
11. THE NEAREST EDGE OF ANY WEB OPENING SHALL BE AT LEAST A DISTANCE d_o FROM A BEAM SUPPORT.
12. TWO ADJACENT WEB OPENINGS SHALL BE SEPARATED BY A MINIMUM DISTANCE BETWEEN EDGE OF OPENINGS EQUAL TO THE LARGER OF THE TWO WEB OPENING LENGTHS.
13. NO CONCENTRATED LOAD SHALL BE LOCATED WITHIN THE LENGTH OF THE WEB OPENING.
14. NO BEAM SHALL BE FRAMED INTO THE BEAM CONTAINING THE WEB OPENING WITH IN A DISTANCE OF db/2 FROM THE EDGE OF THE OPENING. ANY BEAM LOCATED BETWEEN A DISTANCE OF db/2 AND d0 FROM THE EDGE OF AN OPENING SHALL BE FRAMED TO FULL DEPTH STIFFENERS ON EACH SIDE OF THE WEB.
15. NO BEAM PENETRATIONS WILL BE ALLOWED UNLESS SIZE AND LOCATION ARE SHOWN ON PLAN.

TABLE OF MINIMUM WEB REINFORCING PLATES

WF TYPE BY WEIGHT	PLATE SIZE ON EA. SIDE OF WEB	TOTAL A_r PROVIDED
PLF	t x w	IN^2
UP TO 22	$\frac{3}{8}$"X1$\frac{1}{2}$"	1.13
23 – 30	$\frac{3}{8}$"X2"	1.50
31–40	$\frac{1}{2}$"X2"	2.00
41–50	$\frac{1}{2}$"X2$\frac{1}{2}$"	2.50
51–60	$\frac{1}{2}$"X3"	3.00
61–75	$\frac{5}{8}$"X3"	3.75
76–90	$\frac{3}{4}$"X3"	4.50
91–105	$\frac{7}{8}$"X3"	5.25
106–120	1"X3"	6.00
121–140	1"X3$\frac{1}{2}$" *	7.00
141–160	1"X4" *	8.00
OVER 160	**	**

* PLATE EXTENSIONS BEYOND WEB OPENING SHALL BE INCREASED BY 33% OVER THOSE SHOWN ON TYPICAL DETAILS

** PROVIDE SUITABLE PLATE SIZES SUCH THAT COMBINED AREA OF TWO PLATES IS EQUAL IN AREA TO AT LAST 50% OF FLANGE AREA OF BEAM BEING REINFORCED, UNLESS SPECIFIC REINFORCING PLATES DETAILS ARE SHOWN ON THE DRAWINGS. PLATE EXTENSION BEYOND WEB OPENING SHALL BE INCREASED BY 33% OVER THOSE SHOWN ON TYPICAL DETAIL

TABLE OF MAXIMUM DIAMETERS OF UNREINFORCED AND REINFORCED BEAM PENETRATIONS

BEAM SIZE	MAX. PEN. DIAMETER UNREINFORCED	MAX. PEN. DIAMETER WEB DOUBLER	MAX. PEN. DIAMETER HORIZ. WEB PLATES
	IN	IN	IN
W12 (X40 & UP)	3	4$\frac{1}{2}$"	6"
W12 (X35 & LESS)	3	4$\frac{3}{4}$"	6"
W14 (X43 & UP)	3$\frac{1}{2}$"	5"	7"
W14 (X38 & LESS)	3$\frac{1}{2}$"	5$\frac{1}{2}$"	7"
W16	4"	6$\frac{1}{4}$"	9"
W18	4$\frac{1}{2}$"	7$\frac{1}{4}$"	11"
W21	5"	8$\frac{1}{2}$"	12$\frac{1}{2}$"
W24	6"	10"	14$\frac{1}{2}$"
W27	6$\frac{1}{2}$"	11"	15"
W30	7$\frac{1}{2}$"	13"	18"
W33	8"	14$\frac{1}{2}$"	20"
W35	9"	15$\frac{1}{2}$"	21$\frac{1}{2}$"
W40	10"	16$\frac{1}{2}$"	24"
W44	11"	18$\frac{1}{2}$"	26"

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KEY PLAN

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B-SCAN STICKER

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TITLE
STEEL TYPICAL DETAILS

SCALE
AS SHOWN

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