

General Structural Notes

1. Structural drawings should not be scaled. Printed dimensions have precedence over scaled drawings and large scale over small.
2. All drawings and specifications are considered to be a part of the contract documents. Structural drawings shall be used in conjunction with the civil, architectural, mechanical, electrical, and plumbing drawings for location of equipment, openings, floor depressions, curbs, etc. or indications on the structural drawings. The location and size of mechanical electrical, and plumbing openings, in slabs, walls and decks shall be coordinated by the contractor. Provide all additional framing or reinforcing to accommodate openings as required by the applicable standard details shown on the structural details or provided by the structural engineer.
3. No holes, notches, etc. are allowed in structural members unless detailed on the structural drawings or approved by the structural engineer.
4. Where dimensions are provided for openings, floor depressions, curbs etc. but may be affected by the equipment purchased, the contractor shall verify the information provided prior to construction.
5. Provide concrete equipment pads at bases for mechanical and electrical installations. Construct pads and bases in accordance with the typical details. See mechanical and electrical drawings for limits and locations.
6. Contractor shall provide and be responsible for the protection and repair of adjacent surfaces and areas which may be damaged by new work.
7. All columns and foundations, unless noted otherwise, shall be centered on gridlines in each direction. Beams shall be equally spaced between column centerlines, unless noted otherwise.
8. Typical details shall apply in general construction unless specifically detailed. Where no details are given, construction shall be as shown for similar work.
9. The contractor shall be responsible for adequate design and construction of all forms shoring, and temporary bracing. The contractor shall provide all measures necessary to protect the structure and safety of workmen during construction.
 - a. Do not place construction materials or other construction loads on the structure such that the loads placed exceed the capacity of the structure.
 - b. Take into consideration that full structural capacity of many structural members is not realized until structural assembly is complete; that is, until slabs, decks, diagonal bracing, and shear walls are installed.
 - c. Provide necessary temporary bracing and guying to provide stability and resist all loads to which the partially completed structure may be subjected, including erection equipment and its operation. Adequacy of temporary bracing and guying for this purpose is the sole responsibility of the contractor.

Structural Design Data

1. Load Combinations are in accordance with section 1605 of the IBC.
2. Retaining Wall Design Information:
 - a. Allowable Strip Footing Load = 1000 psf
 - b. Equivalent Fluid Weight, Active Condition = 60 pcf.
 - c. Base of wall restrained by concrete slab
3. New Flood Loading
 - a. Superimposed Dead Load = 25psf floor topping + 4 psf Mechanical
 - b. Live Loading = 100 psf

Materials of Construction

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|--|--------------------------------|
| 1. Shrinkage compensating concrete for infill floors | F'c = 4000 psi |
| 2. Exterior Concrete | F'c = 4000 psi, Air Entrained |
| 3. Reinforcing Steel - ASTM A615 - Grade 60 | Fy = 60ksi |
| 4. Reinforcing steel to be welded - ASTM A706 Grade 60 | Fy = 60ksi |
| 5. Welded wire fabric - ASTM A185 | Fy = 70ksi |
| 6. Structural Steel | |
| Wide Flange and Tee shapes - ASTM A992 | Fy = 50 ksi |
| Angles, Channels and Plate - ASTM A36 | Fy = 36 ksi |
| HSS Tubes and Pipes - ASTM A 500 | Fy = 42 ksi |
| Bolts | A325 Unless Noted Otherwise |
| Anchor Bolts - ASTM F 1554 Grade 36 | Fy = 36 ksi |
| Welding electrodes - E70XX | |
| Composite Metal Form Deck (Galvanized) | |
| ASTM A653 660 Zinc coating | Fy = 40ksi, Structural Quality |
| 7. Non-shrink Grout and Non-metallic Grout | |
| at base plates and bearing plates | F'c = 4000 psi at 7 Days |

Expansion Anchors

1. Expansion anchors shall be a single-end expansion shield anchor which complies with the descriptive part of federal specification A-A 1923A Type 4, for wedge anchors. Wedge anchors shall be Hilti KWik bolt. Shell anchors shall be Hilti HIDI. Anchors shall be by Hilti Fastening Systems of Tulsa, OK (ICC ESR Reports ESR-1917 for wedge anchors and ESR 2895 for shell anchors) or equal.
2. Anchors shall be zinc plated unless specifically noted as stainless steel on the plan details.
3. When details of sections indicate expansion anchors but no size, provide anchors with 3/4" diameter.
4. Provide the following embedment depths unless noted otherwise.

Anchor Diameter	Embedment Depth
3/8"	2 1/2"
1/2"	3 1/2"
5/8"	4"
3/4"	4 3/4"

5. When installing drilled-in-anchors, use care and caution to avoid cutting or damaging the existing reinforcing bars.

Structural Steel

1. Steel framing designations and symbols are defined in the structural steel symbol legend.
2. All field bolted shear connections shall be made with minimum $\frac{3}{4}$ " diameter A325 Bolts, unless noted otherwise. All bolts shall be fully pre-tensioned and inspected using tension control twist-off style bolts, or DT Washers. Unless specifically indicated as snug tight, all joints shall be designated as pre-tensioned. Routine observation to verify the spotted ends are properly severed during installation is required for all bolts.
3. Place non-shrink grout under all column base plates before placing any elevated slabs.
4. Where the work of other trades requires cuts or openings to be made in the structural steel members, approval shall be obtained from the engineer. Such openings shall be made in the shop and clearly indicated on the shop drawing.
5. E70XX electrodes shall be used for all welding. Properly qualified welders shall perform all welding, as prescribed under "standard qualification procedure" of the American Welding Society.
6. Weld lengths called for on the plans are the net effective length required. Where fillet weld symbol is given without indication of size, use minimum size welds as specified by AISC or $3/16"$ whichever is greater.
7. All groove welds indicated on plans and sections shall be complete joint penetration welds (CJP) unless specifically indicated to be partial penetration welds.

Concrete and Reinforcing

1. Location of Construction joints or pour joints shall be as indicated on approved shop drawings
2. All concrete shall be vibrated during placement.
3. Provide $\frac{1}{4}$ " chamfer on all exposed concrete corners.
4. Anchor Bolts, dowels, reinforcing steel, inserts, etc. shall be securely tied in place prior to pour used to support reinforcing off grade.
5. All reinforcement shall be detailed, fabricated, and placed in accordance with ACI 315.
6. Provide minimum concrete covering for reinforcement as follows:

Condition	Clear Cover
Concrete deposited against earth:	3 IN.
Formed surfaces exposed to weather or in contact with earth:	
Reinforcing Bars less than NO. 6	1.5 IN
Reinforcing Bars NO. 6 or Larger	2 IN

7. Provide dowels of same size and number from adjacent pour both vertically and horizontally to match typical reinforcing shown. Laps to be in accordance with the development length and lap splice schedule. Dowels shall be cleaned after pour.

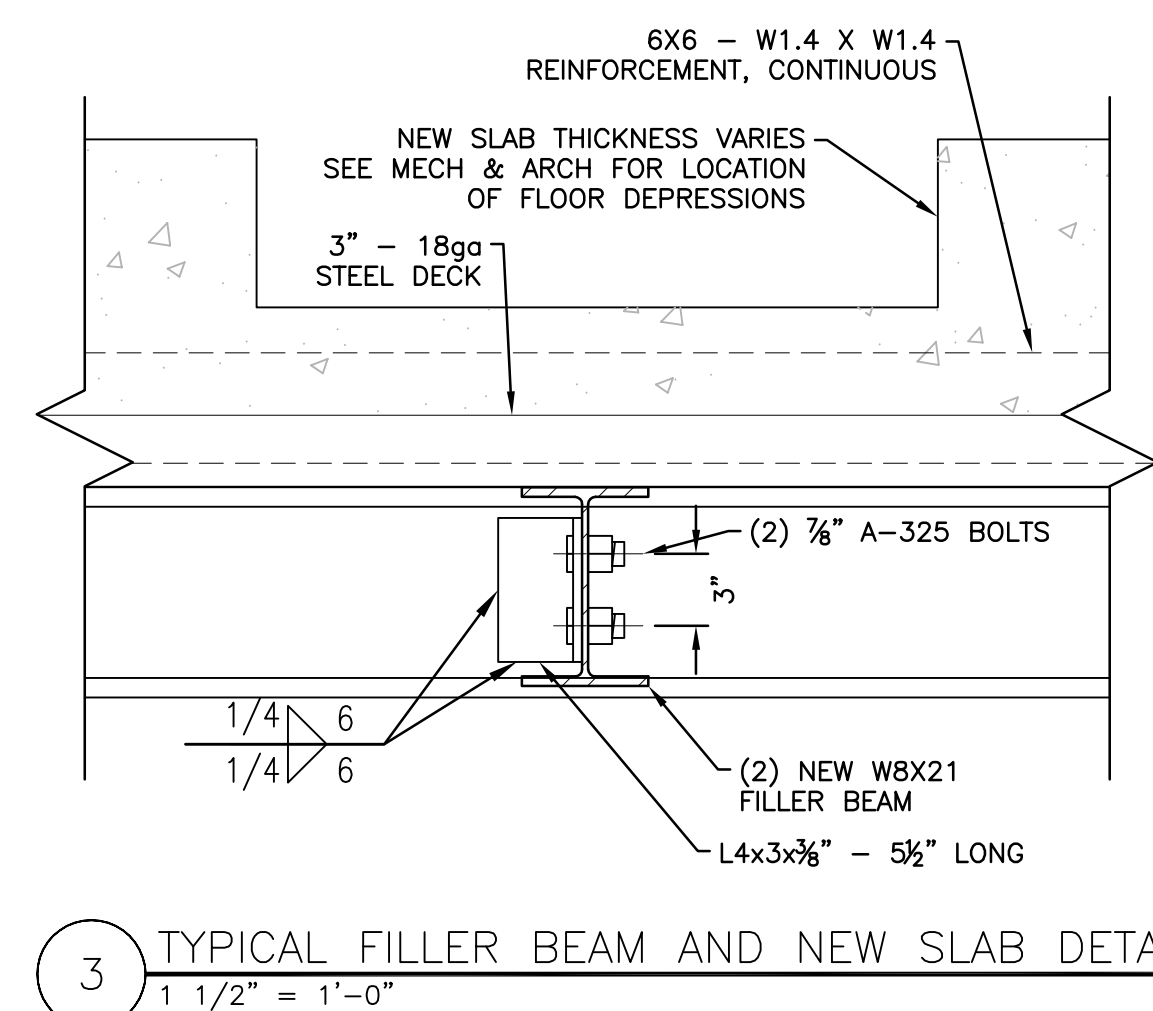
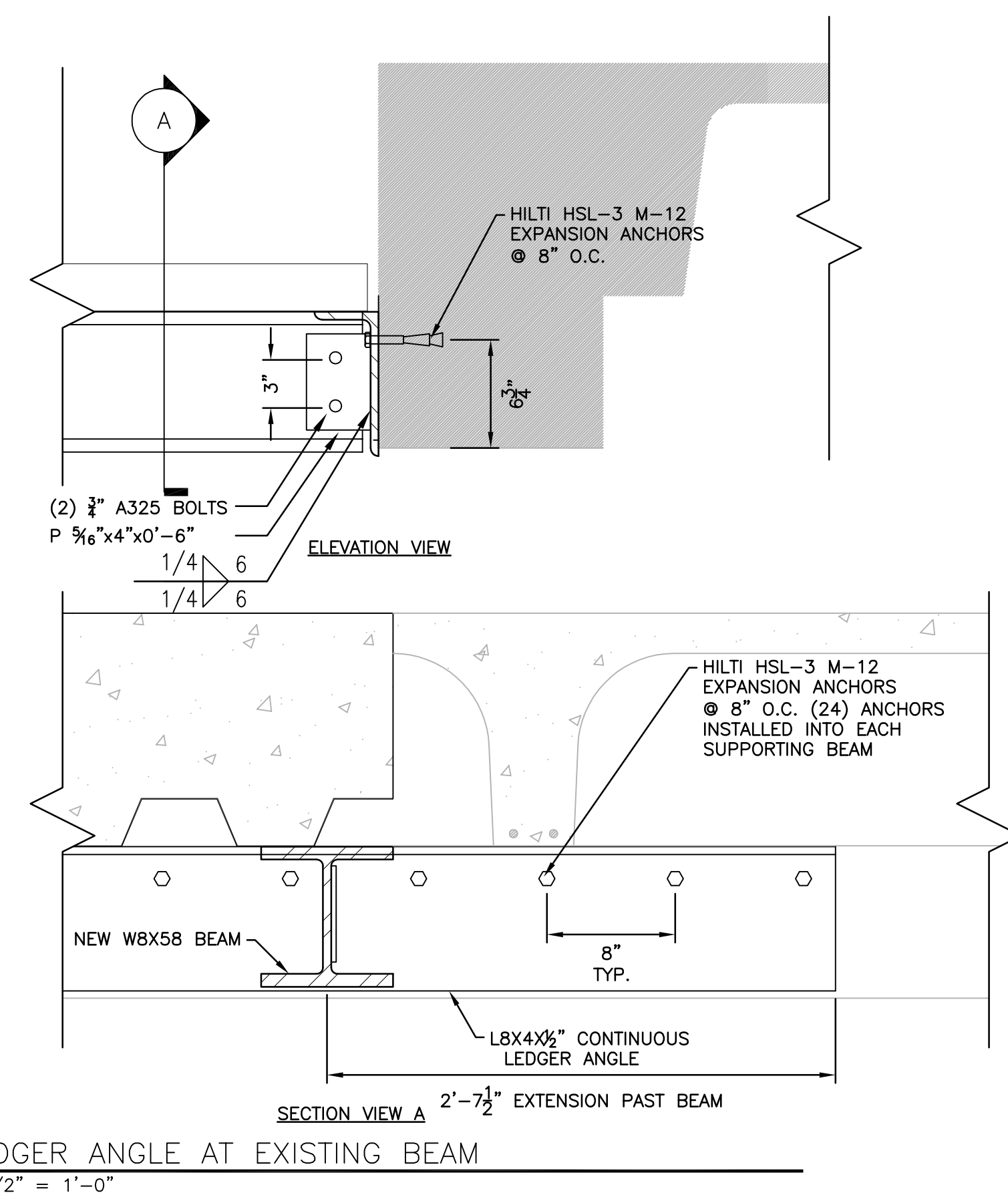
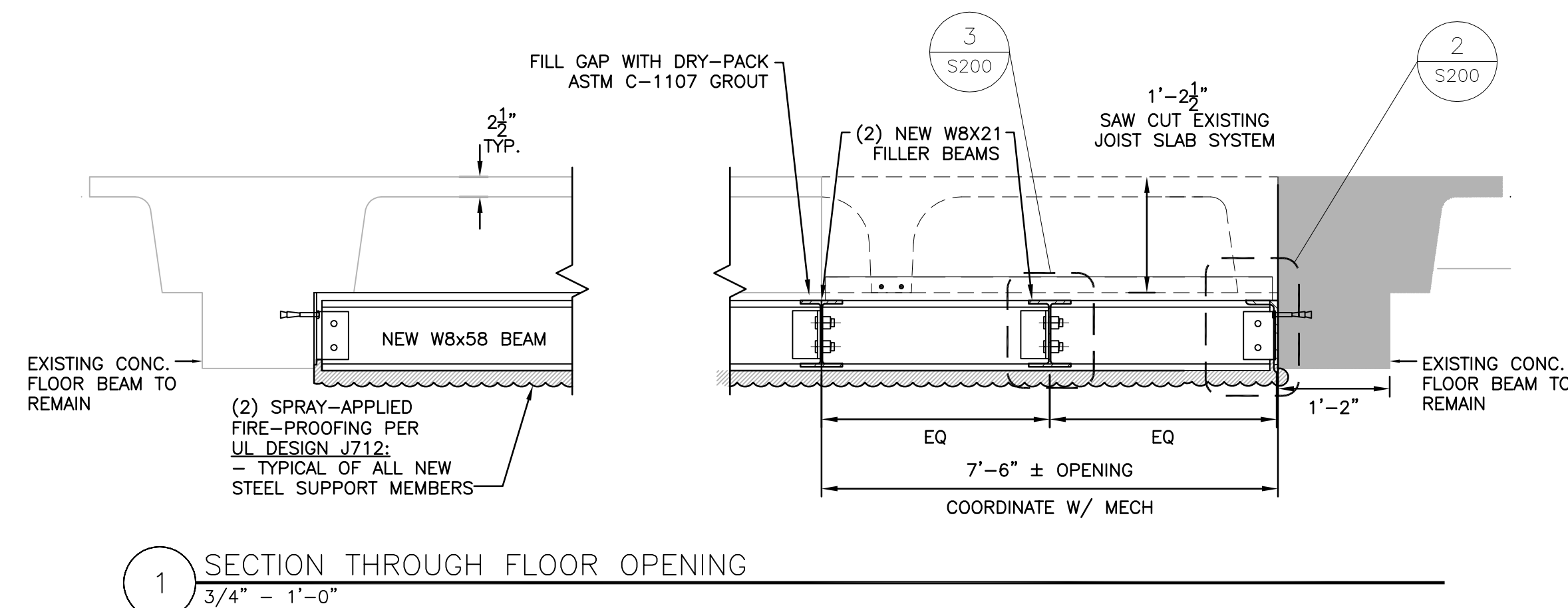
8. Field welding or bending of reinforcing is not permitted except as indicated on the drawings or as approved by the structural engineer. Use low hydrogen electrodes grade E70 or E90 as required.
9. Approved electrical conduit material cast within structural concrete members shall conform to the following:
 - a. Conduit in mat foundations:









Diameter of a single conduit or two or more vertically stacked conduits (including crossovers) shall not exceed 1/3 of the thickness of the slab.
 - b. Conduit in Elevated Slabs:

Do not install conduit in concrete slabs on metal deck without prior approval of structural engineer.
10. Continuous Reinforcement in Walls and Footings may be spliced as required provided that bars are of the longest practical length and all splices are shown on the reinforcing bar shop drawings. Splices are to be staggered when possible. Provide lap splices and development lengths in accordance with the development length and lap splice schedule.
11. Coring of slabs, beams and columns or shear walls is not permitted. Provide sleeves for all penetrations prior to placing concrete. Locations to be approved by structural engineer.

Foundations

1. Column anchors shall be installed with a template to hold bars in place during concrete placement.
2. All footings shall bear on undisturbed soil. Foundation grades shall be inspected and approved by a geotechnical engineer prior to concrete form placement.



		 Federal Health Care Center U.S. Department of Veterans Affairs U.S. Department of Defense				CONSULTANTS:  ARNOLD & O'SHERIDAN Consulting Engineers  MACKESEY AND ASSOCIATES, LLC		PROJECT LEADER:    11000 West Park Place • Milwaukee WI 53224 • Tel 414 359-3060 • Fax 414 359-3070 Intelligent Designs Inspired Results www.p r a r c h . c o m PRA Job No. 11017-01		Drawing Title STRUCTURAL DETAILS Approved: Project Director		Project Title AE SCIP for Building 6 FHCC Location North Chicago, IL Date December 14, 2012		Checked By: JLS Drawn By: BPH		Project Number 556-11-119 Building Number 6 Drawing Number S200		Office of Facilities Management  Department of Veterans Affairs	
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