STRUCTURAL SPECIFICATION NOTES (ROOF AND FLOOR)

GENERAL
1. THE STRUCTURE IS DESIGNED TO BE SELF SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, ETC. THAT MAY BE NECESSARY. SUCH MATERIAL SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER COMPLETION OF THE PROJECT.

CAST IN PLACE CONCRETE (SUPPORTED FLOOR ON METAL DECK)
1. LIGHTWEIGHT CONCRETE FOR SUPPORTED FLOORS ON METAL DECK SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI 28 DAYS AFTER PLACING. SUBMIT MIX DESIGN FOR APPROVAL PRIOR TO START OF CONCRETE WORK.
2. REINFORCING BARS SHALL CONFORM TO ASTM A–615, GRADE 60.
3. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
4. DETAILING AND FABRICATION OF REINFORCING SHALL CONFORM TO THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED STRUCTURES" ACI–315.
5. CONCRETE WORK SHALL CONFORM TO ACI–318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI–301 "STANDARD SPECIFICATIONS FOR REINFORCED CONCRETE", AND ACI–304 "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE".
6. PLACING OF REINFORCING SHALL CONFORM TO THE CRSI RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS. ALTERATIONS TO REINFORCING BARS, SUCH AS FIELD BENDING, TACK WELDING, CUTTING, OR SUBSTITUTIONS (OTHER THAN SHOWN ON STRUCTURAL DRAWINGS) IS PROHIBITED WITHOUT WRITTEN APPROVAL BY THE ENGINEER.
7. MINIMUM LAP OF WELDED WIRE FABRIC SHALL BE 8".
8. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION OF REINFORCING STEEL. SHOP DRAWINGS SHALL INDICATE ALL LAYOUTS, SIZES, LENGTHS, QUANTITIES, BENDS, AND ALL ACCESSORIES REQUIRED.

STRUCTURAL STEEL
1. ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC SPECIFICATIONS.
2. STRUCTURAL STEEL WIDE FLANGE SHAPES: ASTM A992
3. STRUCTURAL STEEL ANGLES, BARS, AND PLATES: ASTM A36.
4. HOLLOW STRUCTURAL STEEL (HSS) SECTIONS: ASTM A500, GRADE B.
5. SHOP AND FIELD BOLTED CONNECTIONS SHALL BE MADE USING ⅞" DIAMETER ASTM A325–X BOLTS.
6. WELDED CONNECTIONS SHALL BE MADE USING 3/16" MINIMUM FILLET SHOP AND 1/4" MINIMUM FILLET FIELD WELDS, USING E–70XX ELECTRODES, IN ACCORDANCE WITH THE LATEST AWS SPECIFICATIONS.
7. USE FULL DEPTH CONNECTIONS ON ALL BEAM TO COLUMN OR GIRDER TO COLUMN CONNECTIONS.
8. STEEL FABRICATOR IS RESPONSIBLE FOR SURVEYING AND VERIFYING LOCATIONS, DIMENSIONS, AND ELEVATIONS OF EXISTING CONSTRUCTION, PERTAINING TO DETAILING AND FABRICATION OF STRUCTURAL STEEL. THIS WORK SHALL BE COMPLETED PRIOR TO SUBMISSION OF SHOP DRAWINGS.
9. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION, INCLUDING ERECTION PLANS, DETAILS, AND CONNECTIONS (INCLUDING ALL WELDS, BOTH SHOP AND FIELD).
10. WHERE EDGE BEAMS ARE NOT PERPENDICULAR TO ROOF DECK, PROVIDE A HSS 2 1/2 X 2 1/2 X 3/16 ON TOP OF EDGE BEAM TO SUPPORT ROOF DECK. FIT HSS BETWEEN JOIST ENDS.
11. ALL STRUCTURAL STEEL SHALL BE SHOP PRIMED, UNLESS NOTED OTHERWISE ON A/E DRAWINGS TO BE FIREPROOFED.
12. PROVIDE AND MAINTAIN TEMPORARY BRACING OF STEEL UNTIL BUILDING LATERAL RESTRAINT SYSTEM IS COMPLETED.
13. GROUTING BELOW BEAM BEARING PLATES AND COLUMN BASES SHALL BE PERFORMED USING HIGH STRENGTH, NON–SHRINK, NON–METALLIC GROUT CONFORMING TO THE CORPS OF ENGINEERS SPECIFICATION CRD–C621, AND ASTM C1107.
14. WORK THESE DRAWINGS WITH ARCHITECTURAL AND MEP DRAWINGS FOR BLOCKING REQUIREMENTS AND CLEARANCES. GENERAL CONTRACTOR SHALL VERIFY ALL STRUCTURAL BEAM LOCATIONS, MECHANICAL UNIT WEIGHTS AND OPENING SIZES AND LOCATIONS WITH MECHANICAL CONTRACTOR AND VENDOR'S DRAWINGS FOR ACTUAL MECHANICAL UNITS SUPPLIED.

15. THESE STRUCTURAL DRAWINGS DEPICT A STRUCTURAL FRAMING SYSTEM AND THE MAJOR COMPONENTS OF THAT SYSTEM. MINOR ITEMS SUCH AS POURSTOPS, DECK SUPPORT ANGLES AT COLUMNS, FRAMES AT FLOOR AND ROOF DECK OPENINGS, ETC SHALL BE SUPPLIED BY THE CONTRACTOR AS NEEDED TO PROVIDE A COMPLETE STRUCTURAL SYSTEM, WHETHER THOSE MINOR COMPONENTS ARE SHOWN ON THE STRUCTURAL DRAWINGS OR NOT.
16. STAIRS, HANDRAILS, AND GUARDRAILS SHALL BE DESIGNED BY SUPPLIER.

METAL DECK
1. COMPOSITE STEEL FLOOR DECK SHALL BE 2" DEEP, GALVANIZED, 20 GAUGE (THREE SPAN MINIMUM).
2. STEEL ROOF DECK SHALL BE PAINTED STEEL 1 1/2", 22 GAUGE, WIDE RIB (TYPE B), EXCEPT BELOW ROOFTOP MECHANICAL UNIT SLABS, WHICH SHALL BE 18 GAUGE (THREE SPAN MINIMUM).
3. CONNECTIONS TO STEEL SUPPORTS SHALL BE PUDDLE WELDS PERFORMED BY COMPETENT WELDERS WHO HAVE QUALIFIED BY TESTS AS PRESCRIBED BY THE AMERICAN WELDING SOCIETY TO PERFORM THE TYPE OF WORK REQUIRED. REFER TO SPECIFICATIONS FOR COMPLETE FASTENING INFORMATION.
4. DECK, ACCESSORIES, AND ATTACHMENTS SHALL CONFORM TO THE LATEST METAL DECK INSTITUTE SPECIFICATIONS.
5. NO MECHANICAL, ELECTRICAL, OR OTHER EQUIPMENT SHALL BE SUSPENDED FROM OR ATTACHED TO METAL DECK.

STEEL JOISTS
1. STEEL JOISTS, BRIDGING, ETC. SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST STEEL JOIST INSTITUTE SPECIFICATIONS.
2. EXTEND ALL BOTTOM CHORDS OF STEEL JOISTS AS INDICATED. ALL BRIDGING MUST BE AS INDICATED. EXTENSIONS AND BRIDGING SHALL BE PERMANENTLY INSTALLED BEFORE THE ROOF IS CONSTRUCTED.
3. ALL STEEL JOISTS SHALL RECEIVE ON STANDARD COAT OF RED OXIDE PAINT UNLESS SHOWN OTHERWISE ON DRAWINGS. THE STANDARD SHOP PAINT SHALL CONFORM TO STEEL STRUCTURES PAINTING COUNCIL SPECIFICATION TYPE 1.
4. STEEL JOISTS SHALL HAVE A MINIMUM OF 4" BEARING AT EACH ENDS TYPICAL, UNLESS NOTED OTHERWISE ON DRAWINGS.
5. STEEL JOISTS SHALL BE DESIGNED TO RESIST UPLIFT FORCES AS SPECIFIED BY FACTORY MUTUAL UNLESS NOTED OTHERWISE ON DRAWINGS.
6. ENDS OF EVERY JOISTS WHICH RESTS ON THE STEEL SUPPORTS OR BEARING PLATES SHALL BE WELDED WITH 2 WELDS, 1/8" FILLET WELDS ON 1" LONG EFFECTIVE FOR K–SERIES.
7. NO MECHANICAL, ELECTRICAL, OR OTHER EQUIPMENT SHALL BE SUSPENDED FROM OR ATTACHED TO ANY INTERIOR BRIDGING. HUNG EQUIPMENT SHALL BE SUSPENDED AT JOIST PANEL POINTS OR PROVIDE JOIST REINFORCEMENT AS SHOWN ON DETAILS.

STRUCTURAL COLD–FORMED METAL FRAMING
1. ALL STUDS AND/OR JOISTS AND ACCESSORIES SHALL BE OF THE TYPE, SIZE, STEEL THICKNESS, AND SPACING SHOWN ON THE PLANS. STUDS, RUNNERS (TRACK), BRACING AND BRIDGING SHALL BE MANUFACTURED PER ASTM C–955.
2. ALL GALVANIZED STUDS, JOISTS AND ACCESSORIES, 16 GAUGE OR HEAVIER, SHALL BE FORMED FROM STEEL THAT CONFORMS THE REQUIREMENTS OF ASTM A–446 WITH A YIELD OF 40 KSI AND AS SET FORTH IN SECTION A3.1 OF THE AISI "SPECIFICATION FOR THE DESIGN OF COLD–FORMED STEEL STRUCTURAL MANUAL," LATEST EDITION.
3. ALL GALVANIZED STUDS, JOISTS AND ACCESSORIES, 18 GAUGE, SHALL BE FORMED FROM STEEL THAT CONFORMS TO THE REQUIREMENTS OF ASTM A 446, WITH A YIELD OF 33 KSI AND AS SET FORTH IN SECTION A3.1 OF THE AISI "SPECIFICATION FOR THE DESIGN OF COLD–FORMED STEEL STRUCTURAL MANUAL," LATEST EDITION.
4. ALL GALVANIZED STUDS JOISTS AND ACCESSORIES SHALL HAVE A MINIMUM G–60 COATING.
5. PHYSICAL PROPERTIES AND ALLOWABLE LOAD CAPABILITIES OF MEMBERS SHALL BE DEVELOPED IN ACCORDANCE WITH AISI "SPECIFICATION FOR THE DESIGN OF COLD–FORMED STEEL STRUCTURAL MANUAL," LATEST EDITION.
6. THE FOLLOWING ITEMS SHALL BE FURNISHED BY THE CONTRACTOR FOR SUBMISSION FOR APPROVAL PRIOR TO FABRICATION OR DELIVERY TO THE SITE:
   a. SHOP DRAWINGS SHALL BE DOCUMENTS ILLUSTRATING MATERIALS, SHOP COATINGS, STEEL THICKNESSES, DETAILS OF FABRICATION, DETAILS OF ATTACHMENT TO ADJOINING WORK SIZE, LOCATION, AND SPACING FASTENERS FOR ATTACHING FRAMING TO ITSELF, DETAILS OF ATTACHMENT TO THE STRUCTURE, ACCESSORIES AND THEIR INSTALLATION, AND CRITICAL INSTALLATION PROCEDURES. DRAWINGS MAY INCLUDE PLANS, ELEVATIONS, SECTIONS AND DETAILS.
   b. CERTIFICATIONS SHALL BE STATEMENTS FROM THE MANUFACTURER CERTIFYING THAT THE MATERIALS CONFORM TO THE APPROPRIATE REQUIREMENTS AS OUTLINED IN THE CONTRACT DOCUMENTS.
   c. ENGINEERING CALCULATIONS OR DATA SHALL BE SUBMITTED VERIFYING THE FRAMING ASSEMBLY'S ABILITY TO MEET OR EXCEED DESIGN REQUIREMENTS AS REQUIRED BY LOCAL CODES AND AUTHORITIES. THESE CALCULATIONS SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING ITEMS:
      1. STEEL FRAMING USED TO SUPPORT MASONRY OR OTHER RIGID MATERIALS SHALL BE DESIGNED FOR AN ALLOWABLE DEFLECTION OF L/600 MINIMUM. STEEL FRAMING USED TO SUPPORT SEMI–RIGID MATERIALS SHALL BE DESIGNED FOR AN ALLOWABLE DEFLECTION OF L/360.
      2. ALL CONNECTIONS (MEMBER TO MEMBER, AND MEMBER TO STRUCTURE) SHALL BE THOROUGHLY EXAMINED AND DESIGNED.
7. DESIGN, SUPPLY AND INSTALL ANY HOT ROLLED OR COLD ROLLED SECTION NEEDED TO PROVIDE A COMPLETE CLADDING BACK–UP SYSTEM.

STRUCTURAL DESIGN CRITERIA (IBC 2003, ASCE 7–02)

GENERAL
* BUILDING CLASSIFICATION CATEGORY II
* BUILDING LOCATION: PORTLAND, MAINE

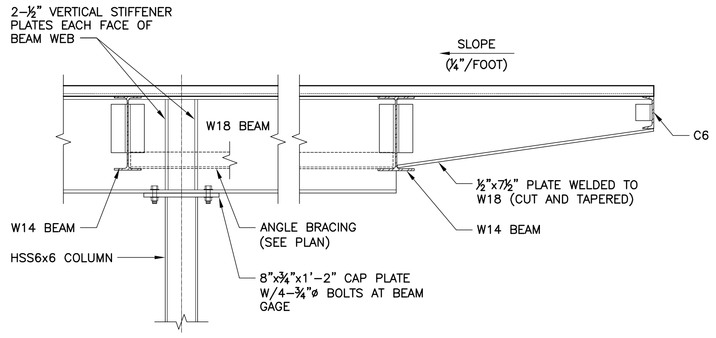
LIVE LOADS – ROOF
* GROUND SNOW LOAD (Pg): 50 PSF
* SNOW LOAD IMPORTANCE FACTOR = 1.0
* EXPOSURE FACTOR (Ce) = 1.0 (CATEGORY "C" – PARTIALLY EXPOSED)
* THERMAL FACTOR (Ct) = 1.0
* ROOF SNOW LOAD (Pf): 35 PSF
* APPLICABLE DRIFT LOADS AND CONCENTRATED LOADS FROM ROOFTOP EQUIPMENT INCLUDED

LIVE LOADS – FLOOR
* TENANT SPACE: 50 PSF PLUS 20 PSF PARTITIONS
* FIRST FLOOR CORRIDORS, ALL LOBBIES AND STAIRS: 100 PSF
* CORRIDORS ABOVE FIRST FLOOR: 80 PSF
* MECH./ ELEC. ROOMS (LOWER LEVEL): 150 PSF

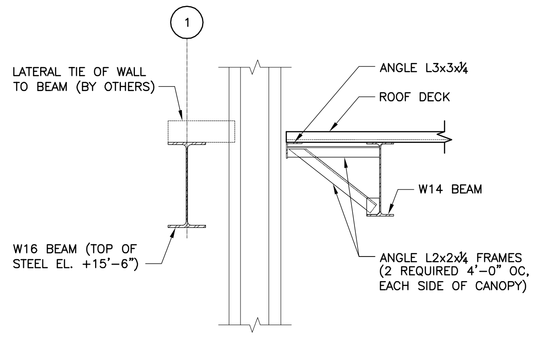
WIND DESIGN CRITERIA
* BASIC WIND SPEED (V) = 100 MPH
* WIND EXPOSURE CATEGORY "C"
* WIND IMPORTANCE FACTOR = 1.00
* ENCLOSURE CLASSIFICATION: ENCLOSED
* MEAN ROOF HEIGHT = 53 FT., ROOF ANGLE = 0 TO 5 DEGREES (FLAT)
* WIND PRESSURES: REFER TO IBC TABLE 1609.6.2.1 (SIMPLIFIED DESIGN WIND PRESSURES – MAIN WINDFORCE REINFORCING SYSTEM), ADJUSTMENT FACTOR = 1.55

SEISMIC DESIGN CRITERIA
* SEISMIC USE GROUP I
* SITE CLASS "E"
* SEISMIC IMPORTANCE FACTOR = 1.00
* SPECTRAL RESPONSE ACCELERATIONS: SHORT PERIOD (SDS) = .473
  1–SECOND PERIOD (SD1) = .198
* SEISMIC DESIGN CATEGORY "C" (SHORT AND 1 SECOND PERIODS)
* BASIC SEISMIC REINFORCING SYSTEM: STRUCTURAL STEEL SYSTEMS NOT SPECIFICALLY DESIGNED FOR SEISMIC RESISTANCE
* RESPONSE MODIFICATION FACTOR (R) = 3
* SEISMIC RESPONSE COEFFICIENT (CS) = .113
* ANALYSIS: EQUIVALENT LATERAL FORCE PROCEDURE

SOIL AND FOUNDATIONS
* PILE FOUNDATIONS: ALLOWABLE AXIAL COMPRESSIVE PILE CAPACITY (PER PILE) = 150 KIPS (HP 10 x 57)
* SLAB ON GRADE (NON–SUPPORTED), BASEMENT LEVEL SLAB AND TUNNEL: ALLOWABLE SOIL BEARING PRESSURE = 1000 PSF
* REFER TO S.W. COLE ENGINEERING'S GEOTECHNICAL REPORT NO. 06–0588, REV. 1, SEPTEMBER 7, 2006



1 S4.2 SECTION
SCALE: 3/4"=1'–0"



2 S4.2 SECTION
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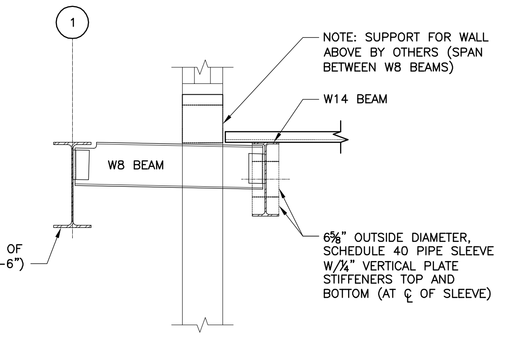
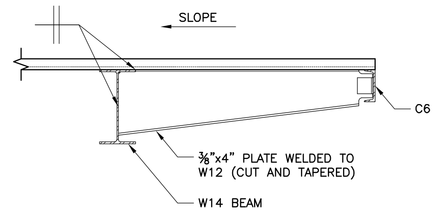
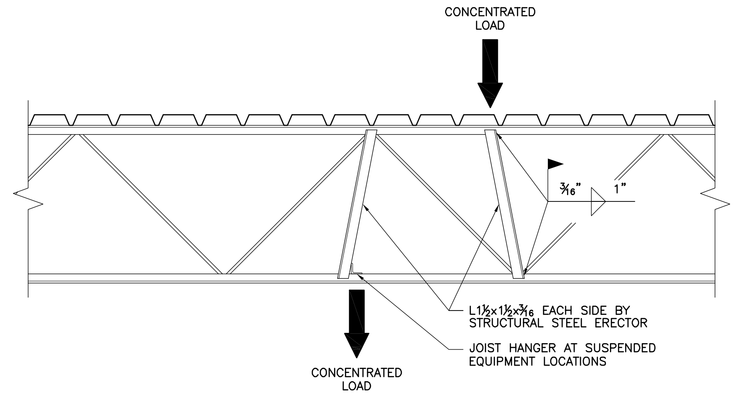


3 S4.2 SECTION
SCALE: 3/4"=1'–0"



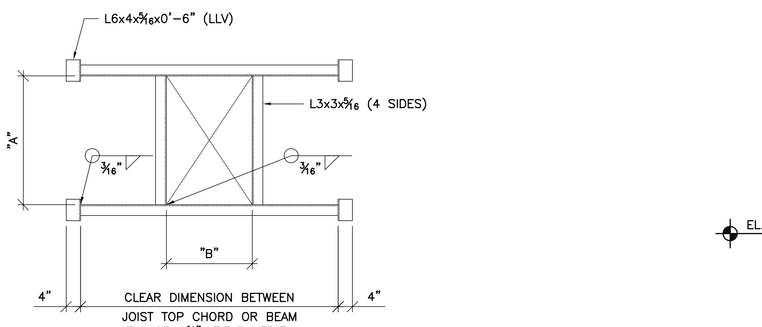
4 S4.2 SECTION
SCALE: 3/4"=1'–0"



– NO L BRACE REQUIRED IF LOAD OCCURS WITHIN 6" OF JOIST PANEL POINT CENTERLINE
– DETAIL APPLIES TO LOADS ABOVE OR HUNG BELOW JOISTS

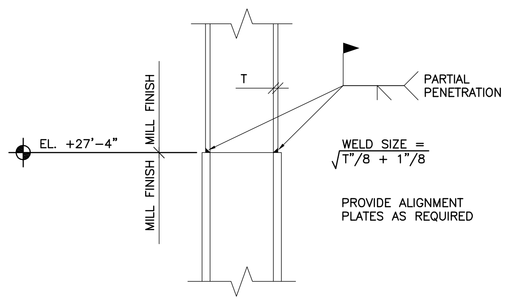
JOIST REINFORCING AT CONCENTRATED LOAD
NO SCALE

COLUMN BASE DETAIL
SCALE: 1"=1'–0"



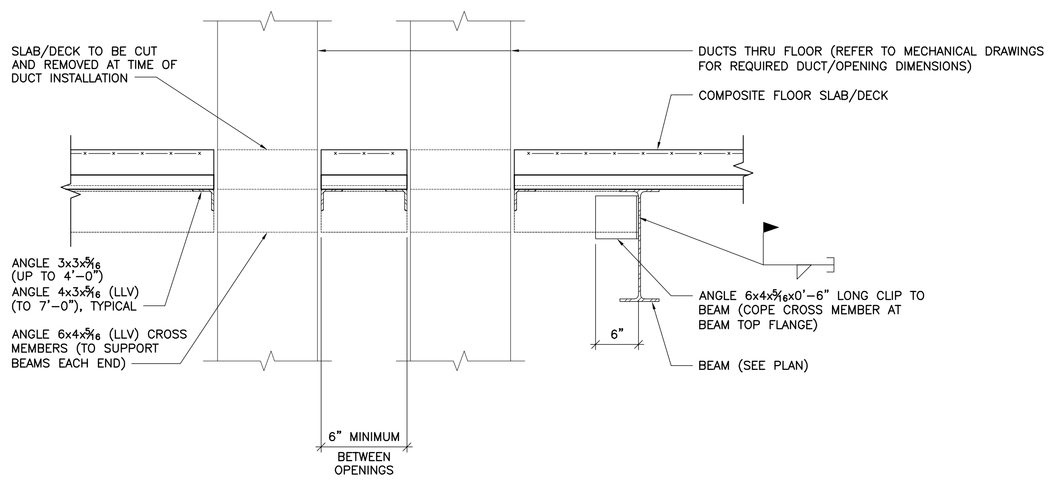
– DETAIL TYPICAL AT ALL OPENINGS GREATER THAN 12" PERPENDICULAR TO DECK
– SEE ARCHITECTURAL, HVAC, ETC. FOR LOCATION, SIZE AND QUANTITY REQUIRED
– CONTRACTOR TO COORDINATE DIMENSIONS "A" AND "B" WITH MECHANICAL CONTRACTOR, ARCHITECT, ETC.
– ATTACH EACH ANGLE TO BAR JOIST OR WF USING 2–3/16"x2" FILLET WELD
– 1½" METAL DECK

TYPICAL FRAME AT ROOF DECK OPENING
NO SCALE

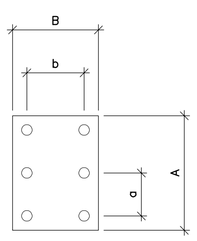


ALTERNATE:
PROVIDE BOLTED SPLICE DETAIL PER AISC DETAILING MANUAL, 2ND EDITION
SUBJECT TO APPROVAL OF ARCHITECT AND ENGINEER, LOCATE SPLICE 1'–0" ABOVE FINISHED THIRD FLOOR

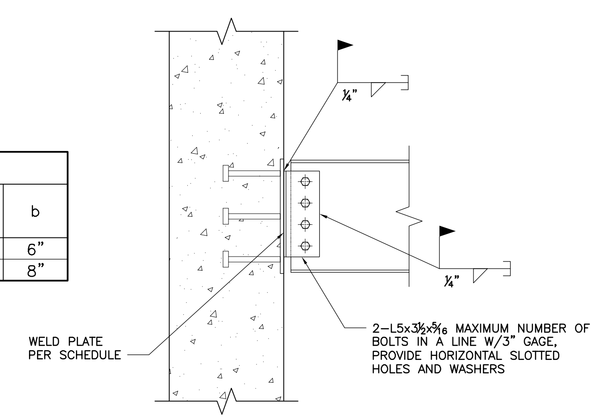
COLUMN SPLICE DETAIL
NO SCALE



TYPICAL FRAMED MECHANICAL OPENING IN FLOOR DETAIL
SCALE: 1"=1'–0"



WELD PLATE SCHEDULE				
BEAM DEPTH	PLATE SIZE A x B x t	STUDS	a	b
12"	12" x 10" x ⅜"	4 – ½" DIAMETER x 6"	8"	6"
16"	16" x 12" x ½"	6 – ¾" DIAMETER x 8"	6"	8"



TYPICAL DETAIL STEEL BEAM TO CONCRETE WALL
SCALE: 1"=1'–0"

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Revisions
11–20–06 CONSTRUCTION DOCUMENTS ISSUED

Sheet
STRUCTURAL SPECIFICATION NOTES, DESIGN CRITERIA, STEEL FRAMING AND TYPICAL DETAILS

Project Title
Landmark Healthcare Facilities LLC

Fore River Medical Pavillon
Portland, Maine

Date
NOVEMBER 20, 2006

Project Number
F06–5103

Drawing Number
S4.2