DESIGN NOTES

GENERAL

1. ALL CODES REFERENCED ARE TO BE THE LATEST VERSION AT THE DATE OF ISSUE.
2. DESIGN IS BASED ON THE NATIONAL BUILDING CODE 2010.
3. READ THESE DESIGN NOTES IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS.
4. OBTAIN ENGINEER'S APPROVAL BEFORE CUTTING, BORING, OR SLEEVING LOAD-BEARING MEMBERS UNLESS NOTED OTHERWISE.
5. THE STRUCTURAL DRAWINGS ARE FOR THE COMPLETED PROJECT. STABILITY OF THE NEW STRUCTURE DURING CONSTRUCTION REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.
6. REFER TO ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR SMALL OPENINGS, SLEEVES, RECESSES, DEPRESSIONS, SUMPS, TRENCHES, CURBS, HOUSEKEEPING PADS, EQUIPMENT BASES, AND SLOPES NOT INDICATED ON THE STRUCTURAL DRAWINGS.
7. OPENINGS AND SLEEVES INDICATED ON THE STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY. COORDINATE ALL OPENING LOCATIONS AND DIMENSIONS WITH THE APPROPRIATE CONSULTANT AND THE SUB-CONTRACTOR PRIOR TO CONSTRUCTION.
8. REVIEW ALL DRAWINGS AND CHECK DIMENSIONS PRIOR TO IMPLEMENTING THE WORK. REPORT ANY DISCREPANCIES TO THE CONSULTANT FOR CLARIFICATION BEFORE PROCEEDING.
9. COORDINATE PLACEMENT AND LOCATION OF ITEMS BY SUBSEQUENT TRADES. RELEVANT TRADES SHALL REVIEW PRIOR TO ERECTION AND/OR INSTALLATION.
10. NOTIFY THE ENGINEER A MINIMUM OF 48 HOURS PRIOR TO ANY REQUIRED SITE REVIEWS.

DESIGN LOADS

1. UNLESS NOTED OTHERWISE, THE LOADS NOTED IN TABLES AND ON DRAWINGS ARE UNFACTORED.
2. CLIMATIC INFORMATION — REFER TO CLIMATIC INFORMATION TABLE
3. SITE INFORMATION — REFER TO SITE INFORMATION TABLE
4. DESIGN LOADS — REFER TO DESIGN LOADS TABLE
5. LATERAL LOADS
   - 5.1 LATERAL LOADS FROM WIND AND SEISMIC LOADS ARE RESISTED BY THE FOLLOWING COMBINATION OF ELEMENTS: STEEL CROSS-BRACING AND MASONRY SHEAR WALLS.
   - 5.2 SEE FORCE MODIFICATION FACTORS TABLE.
6. CONSTRUCTION LOADS SHALL NOT EXCEED THE LOADS NOTED ON THE DRAWINGS.
7. RAIN PONDING LOADS HAVE BEEN CALCULATED BASED ON ROOF SLOPES, PARAPETS, AND SCUPPERS ASSUMING THAT DRAINS ARE ACCIDENTALLY PLUGGED FOR A PERIOD OF 24 HOURS.
8. WHERE PERMISSIBLE, LIVE LOADS HAVE BEEN REDUCED IN ACCORDANCE WITH NATIONAL BUILDING CODE 2010.

DELEGATED DESIGN

1. PORTIONS OF THE DETAILED DESIGN ARE DELEGATED TO THE CONTRACTOR. RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF ALBERTA TO COMPLETE THE DESIGN.
2. SUBMIT SHOP DRAWINGS FOR COMPONENTS REQUIRING DELEGATED DESIGN UNDER THE SEAL AND SIGNATURE OF THE ENGINEER RESPONSIBLE FOR THE DESIGN.
3. THE FOLLOWING COMPONENTS REQUIRE DELEGATED DESIGN:
   - 3.1 MORTAR, GROUT, AND CONCRETE MIX DESIGNS
   - 3.2 STRUCTURAL STEEL CONNECTIONS
   - 3.3 OPEN WEB STEEL JOISTS
   - 3.4 STEEL DECK
   - 3.5 LIGHTWEIGHT STRUCTURAL STEEL FRAMING
4. THE ENGINEER RESPONSIBLE FOR THE DESIGN IS ALSO RESPONSIBLE FOR REVIEW OF FABRICATION AND INSTALLATION OF THE COMPONENTS. UPON COMPLETION OF THE WORK, CERTIFY IN WRITING TO THE CONSULTANT THAT SUCH REVIEW HAS BEEN COMPLETED.
5. REFER TO SPECIFICATIONS FOR FURTHER REQUIREMENTS.

FOUNDATION AND GEOTECHNICAL NOTES

1. FOUNDATION DESIGN IS BASED ON THE FOUNDATION INVESTIGATION SOILS REPORT NUMBER 16-4-174 PREPARED BY THURBER ENGINEERING LTD, TITLED *LOT 3, BLOCK 1, PLAN 112252 RAILWAY AVENUE AND 54th STREET ELK POINT, ALBERTA DESKTOP STUDY AND GEOTECHNICAL ASSESSMENT* AND DATED APRIL 9, 2015. ENSURE THAT THE REQUIREMENTS OUTLINED IN THE REPORT ARE READ AND UNDERSTOOD PRIOR TO COMMENCING WITH FOUNDATION WORK.
2. REMOVE ALL ORGANIC MATERIAL FROM THE BUILDING AREA AS OUTLINED IN THE GEOTECHNICAL REPORT.
3. CAST-IN-PLACE FRICTION PILES HAVE BEEN DESIGNED BASED ON A FACTORED SKIN RESISTANCE OF 12 kPa AT A DEPTH BELOW 1.5m FROM THE GROUND SURFACE.
4. FOUND FRICTION PILES 7m BELOW EXISTING GRADE OR 7m BELOW FINAL GRADE, WHICHEVER IS DEEPEST. MINIMUM SHAFT DIAMETER TO BE 400mm.
5. CAST-IN-PLACE CONCRETE END-BEARING BELLED PILES HAVE BEEN DESIGNED BASED ON A FACTORED BEARING RESISTANCE OF 240 kPa.
6. FOUND END-BEARING PILES 4m BELOW EXISTING GRADE OR 4m BELOW FINAL GRADE, WHICHEVER IS DEEPEST. MINIMUM SOIL COVER FOR END-BEARING BELLED PILES SHALL BE 2.5 TIMES THE BELL DIAMETER.
7. BELLED PILE DIAMETER TO SHAFT DIAMETER RATIO SHALL OT EXCEED 3:1, AND THE BELL SHOULD NOT BE SLOPED MORE THAN 30 DEGREES TO THE VERTICAL.
8. BEARING SURFACES TO BE INSPECTED IN THE FIELD BY A PROFESSIONAL GEOTECHNICAL ENGINEER REGISTERED IN THE PROVINCE OF ALBERTA PRIOR TO PLACING CONCRETE. IMPROVE SUBGRADE AS DIRECTED IN WRITING BY A PROFESSIONAL GEOTECHNICAL ENGINEER REGISTERED IN THE PROVINCE OF ALBERTA.
9. GEOTECHNICAL TESTING AGENCY TO BE APPROVED BY AND RESPONSIBLE TO THE ENGINEER AND PAID FOR BY THE CONTRACTOR.
10. UNLESS OTHERWISE SHOWN ON PLAN, FOUNDATION ELEMENTS ARE TO BE CENTERED UNDER WALLS, GRADE BEAMS, AND COLUMNS.
11. PROVIDE DOWELS FROM GRADE BEAMS, PILES, PILE CAPS TO MATCH ALL VERTICAL COLUMN AND WALL REINFORCEMENT OR AS NOTED ON THE DRAWINGS.
12. RETAINING WALLS HAVE BEEN DESIGNED BASED ON THE FOLLOWING SOIL DATA:
    - 0 TO 2 m BELOW GRADE — γ = 20 kN/m3, Ko = 0.5
13. FOUNDATION AND RETAINING WALLS HAVE BEEN DESIGNED BASED ON A SURFACE SURCHARGE LOAD OF 12 kPa.
14. FOUNDATION AND RETAINING WALLS HAVE BEEN DESIGNED ASSUMING AN EFFECTIVE DRAINAGE SYSTEM IS PROVIDED BEHIND THE WALLS.
15. BACKFILL MATERIAL TO CONSIST OF LOW TO MEDIUM PLASTIC CLAY OR IMPORTED GRANULAR FILL AND BE COMPACTED TO 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY IN MAXIMUM LIFTS OF 150mm.
16. GRANULAR BACKFILL MATERIAL – REFER TO GEOTECHNICAL REPORT

CAST-IN-PLACE REINFORCED CONCRETE

1. CONCRETE MATERIALS, QUALITY, MIXING, PLACING, FORMWORK AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-A23.1.
2. SUPPLY CONTROLLED CONCRETE IN ACCORDANCE WITH CSA-A23.1 WITH PROPERTIES NOTED IN CONTROLLED CONCRETE TABLE.
3. USE TYPE GU CEMENT FOR ALL CONCRETE UNLESS NOTED OTHERWISE IN CONTROLLED CONCRETE TABLE.
4. MAXIMUM FLY ASH CONTENT NOT TO EXCEED 25% OF THE TOTAL CEMENTITIOUS MATERIAL EXCEPT AS FOLLOWS:
   - 4.1 CONCRETE FOR FOOTINGS, PILES, COLUMNS, WALLS, GRADE BEAMS: MAXIMUM 40%.
   - 4.2 CONCRETE WITH EXPOSURE CLASSES C-XL, C-1 and C-2: MAXIMUM 15%.
5. NOTIFY CONSULTANT 48 HOURS PRIOR TO CONCRETE POURS TO ALLOW FOR REVIEW OF REINFORCEMENT.
6. DO NOT USE ADMIXTURES CONTAINING CALCIUM CHLORIDE.
7. FOR FLOOR SLABS, DESIGN THE CONCRETE MIX WITH AGGREGATE GRADING AND WATER TO CEMENTING MATERIALS RATIO TO MINIMIZE SHRINKAGE.
8. CONSTRUCTION JOINTS
   - 8.1 VERTICAL CONSTRUCTION JOINTS IN WALLS SHALL BE AT MID-SPAN EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS OR WHERE AUTHORIZED BY THE CONSULTANT.
   - 8.2. VERTICAL CONSTRUCTION JOINTS IN BEAMS AND SLABS SHALL BE AT 1/3 OF THE SPAN EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS OR WHERE AUTHORIZED BY THE CONSULTANT.
   - 8.3. HORIZONTAL CONSTRUCTION JOINTS IN BEAMS AND WALLS ARE NOT PERMITTED EXCEPT WHERE SHOWN ON THE DRAWINGS OR WHERE AUTHORIZED BY THE CONSULTANT.
9. FIELD AND LABORATORY TESTING OF CONCRETE TO BE COMPLETED BY A THIRD PARTY TESTING AND INSPECTION AGENCY APPROVED BY AND RESPONSIBLE TO THE ENGINEER. TESTING AGENCY SHALL BE CERTIFIED TO CSA-A283 AND TESTING TO BE COMPLETED IN ACCORDANCE WITH CSA-A23.2. TESTING PAID FOR BY CONTRACTOR.

CONCRETE REINFORCEMENT

1. REINFORCEMENT STEEL TO CONFORM TO CSA-G30.18 GRADE 400.
2. DO NOT WELD REINFORCEMENT UNLESS APPROVED IN WRITING BY THE ENGINEER. REINFORCEMENT TO BE WELDED TO CONFORM TO CSA-G30.18, GRADE 400W. WELDING ONLY PERMITTED BY AN ORGANIZATION CERTIFIED TO CSA-W186.
3. NOTIFY THE ENGINEER PRIOR TO CONCRETE PLACEMENT TO ALLOW FOR REVIEW OF REINFORCEMENT.
4. SUBMIT SHOP DRAWINGS AND DETAILS FOR ALL REINFORCEMENT FOR REVIEW PRIOR TO FABRICATION.
5. CLEAR CONCRETE COVER TO REINFORCEMENT – REFER TO CLEAR CONCRETE COVER TO REINFORCEMENT TABLE.
6. STANDARD END HOOK LENGTHS FOR REINFORCEMENT – REFER TO STANDARD END HOOKS TABLE.
7. REINFORCEMENT SPLICES – REFER TO REINFORCEMENT SPLICES TABLE.
   - 7.1 WHERE SPLICES ARE INDICATED ON THE DRAWINGS, SUCH DIMENSIONS SHALL APPLY.
   - 7.2 WHERE THE DRAWINGS INDICATE TENSION OR COMPRESSION SPLICES, IT SHALL BE AS INDICATED IN REINFORCEMENT SPLICES TABLE.
   - 7.3 WHERE NO SPLICE OR SPLICE TYPE IS INDICATED ON THESE DRAWINGS, IT SHALL BE A TENSION SPLICE EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION SPLICE.
8. EMBEDMENT OF DOWELS – REFER TO REINFORCEMENT SPLICES TABLE
   - 8.1 WHERE EMBEDMENT IS DIMENSIONED ON THE DRAWINGS, SUCH DIMENSIONS SHALL APPLY.
   - 8.2 WHERE THE DRAWINGS INDICATE TENSION OR COMPRESSION EMBEDMENT, IT SHALL BE AS NOTED IN THE REINFORCEMENT SPLICES TABLE.
   - 8.3 WHERE NO EMBEDMENT OR EMBEDMENT TYPE IS INDICATED ON THESE DRAWINGS, IT SHALL BE A TENSION EMBEDMENT EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION EMBEDMENT.
9. WELDED WIRE MESH TO CONFORM TO ASTM A497/A497M.
10. REINFORCE ALL INTERIOR AND EXTERIOR SLABS ON GRADE WITH 10M AT 400mm ON CENTRE UNLESS NOTED OTHERWISE. SIDEWALKS AND SMALL SLABS TO BE REINFORCED WITH 10M AT 300mm ON CENTRE UNLESS NOTED OTHERWISE.
11. OPENINGS IN SLABS – PROVIDE TWO 20M BARS EACH SIDE, ONE EACH FACE, EXTENDING 900mm PAST THE OPENINGS, PLUS TWO 15M DIAGONAL BARS 1.5 TIMES THE LENGTH OF SHORTEST SIDE OF OPENING OR MINIMUM 500mm AND MAXIMUM 1500mm IN LENGTH AT EACH CORNER.
12. DO NOT CUT REINFORCEMENT AT OPENINGS WHERE IT CAN BE SPREAD CONTINUOUS AROUND OPENING.
13. TYPICAL BEAM REINFORCEMENT UNLESS OTHERWISE NOTED – TOP REINFORCEMENT TO BE CONTINUOUS OVER SUPPORTS; SPLICE 450mm AT MIDSPAN. BOTTOM REINFORCEMENT TO BE CONTINUOUS BETWEEN SUPPORTS; SPLICE 450mm AT SUPPORTS.
14. ALL REINFORCEMENT TO BE SUPPORTED AT 900mm MAXIMUM SPACING.

CONCRETE FORMWORK

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CAN/CSA-S269.3.
2. PROVIDE VOID FORM BELOW ALL STRUCTURAL SLABS AT GRADE, WALLS, GRADE BEAMS, PILE CAP, AND WHERE SHOWN ON THE DRAWINGS PRIOR TO INSTALLATION OF REINFORCEMENT.
   - 2.1 STRUCTURAL SLABS AT GRADE – PLYWOOD OVER BIODEGRADABLE WAX MAT CARDBOARD, COMPLETE WITH MOISTURE RESISTANT TREATED PAPER FACES, WITH SUFFICIENT STRENGTH TO SUPPORT THE WEIGHT OF WET CONCRETE UNTIL INITIAL SET. PROVIDE 12mm THICK PRESSURE TREATED PLYWOOD AROUND PERIMETER OF SLAB TO PROTECT VOID SPACE.
   - 2.2 OTHER LOCATIONS – EXPANDED POLYSTYRENE CRUSHABLE FILL MATERIAL.
3. LEAVE FORMS IN PLACE OR PROVIDE SHORING FOR ALL SLABS, BEAMS, AND GIRDERS UNTIL CONCRETE HAS REACHED SPECIFIED 28-DAY COMPRESSIVE STRENGTH.
4. REFER TO SPECIFICATIONS AND ARCHITECTURAL DRAWINGS FOR CHAMFERS ON CORNERS FOR BEAMS, COLUMNS, AND WALLS.

STRUCTURAL STEEL

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-S16 AND THE CISC CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL.
2. STEEL TO BE FABRICATED AND ERECTED BY A SHOP CERTIFIED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA-W47.1, DIVISION 1 OR 2.1 ONLY.
3. SUBMIT SHOP DRAWINGS SHOWING ALL STRUCTURAL STEEL MEMBERS FOR REVIEW PRIOR TO FABRICATION. WELDING TO CONFORM TO CSA-W59.
4. WELDING TO REINFORCEMENT STEEL ONLY BY A SHOP CERTIFIED TO CSA-W186 WITH REINFORCEMENT CONFORMING TO CSA-G30.18, GRADE 400W.
5. SHOP GALVANIZING TO CONFORM TO CAN/CSA-G164.
6. ALL EXPOSED WELDS TO BE CONTINUOUS. GRIND ALL EXPOSED WELDS SMOOTH, INCLUDING PAINTED STEEL.
7. SUPPLY STEEL WITH PROPERTIES NOTED IN STEEL GRADES TABLE.
8. SHEAR STUD CONNECTORS TO CONFORM TO ASTM-A108 AND SHALL BE APPLIED BY ELECTRICAL RESISTANCE WELDING ONLY.
9. CONNECTIONS NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED AND DETAILED BY A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE PROVINCE OF ALBERTA AT THE STEEL FABRICATOR'S EXPENSE.
10. UNLESS NOTED OTHERWISE, DESIGN CONNECTIONS FOR NON-COMPOSITE BEAMS FOR A FACTORED SHEAR FORCE EQUAL TO 50% OF THE TOTAL BEAM LOAD TABULATED IN THE CISC HANDBOOK OF STEEL CONSTRUCTION.
11. UNLESS NOTED OTHERWISE, DESIGN MOMENT CONNECTIONS FOR NON-COMPOSITE BEAMS FOR A FACTORED MOMENT EQUAL TO THE FULL MOMENT CAPACITY OF THE SMALLER MEMBER JOINED.
12. DESIGN BRACE CONNECTIONS FOR THE LOADS SHOWN ON THE DRAWINGS.
13. PROVIDED A MINIMUM OF 2 BOLTS IN BOLTED CONNECTIONS.
14. ALL BOLTED CONNECTIONS TO USE SNUG-TIGHTENED HIGH-STRENGTH BOLTS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
15. PROVIDE 10mm PLATE STIFFENERS EACH SIDE OF BEAM WHERE AT ALL BEARING CONNECTIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
16. DO NOT SPLICE MATERIAL WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. WHERE GRANTED, A COMPLETE NON-DESTRUCTIVE EXAMINATION WILL BE MANDATORY AND PAID FOR BY THE SUB-CONTRACTOR.
17. PROVIDE 10mm WEEP HOLES AT TOP AND BOTTOM OF ALL HSS COLUMNS.
18. PROVIDE CAP PLATES FOR ALL HSS COLUMNS.
19. ALL GROUT UNDER BEARING PLATES AND BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK TYPE WITH MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 50 MPa, INSTALLED IN ACCORDANCE WITH THE SPECIFICATION AND MANUFACTURER'S RECOMMENDATIONS. PROVIDE GROUT WEEP HOLES IN COLUMN BASE PLATES WHERE SHOWN.
20. SQUARE CUT OR FULL STRENGTH WELD ALL COLUMNS AT BASE PLATES AND AT TOP WHERE BEARING UNDER CONTINUOUS BEAMS.
21. REFER TO SPECIFICATION FOR FINISHING.
22. SHOP AND FIELD INSPECTION OF STEEL FABRICATION AND ERECTION TO BE COMPLETED BY A THIRD PARTY TESTING AND INSPECTION AGENCY APPROVED BY AND RESPONSIBLE TO THE ENGINEER. TESTING AGENCY SHALL BE CERTIFIED TO CSA-W178. TESTING PAID FOR BY OWNER.

OPEN WEB STEEL JOISTS

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-S16 AND CAN/CSA-S136.
2. JOISTS TO BE FABRICATED AND ERECTED BY A SHOP CERTIFIED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA-W47.1, DIVISION 1 OR 2.1 ONLY.
3. WELDING TO CONFORM TO CSA-W59.
4. DO NOT SPLICE MATERIAL WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. WHERE GRANTED, A COMPLETE NON-DESTRUCTIVE EXAMINATION WILL BE MANDATORY AND PAID FOR BY THE CONTRACTOR.
5. UNLESS NOTED OTHERWISE, LIMIT DEFLECTION FOR ROOF JOISTS TO THE FOLLOWING:
   - LIVE LOAD - SPAN/300
   - TOTAL LOAD - SPAN/240
6. WHERE POINT LOADS ON JOISTS DO NOT OCCUR AT PANEL POINTS, STRENGTHEN CHORDS AS REQUIRED. INDICATE ALL POINT LOADS ON SHOP DRAWINGS.
7. TO ACCOMMODATE MISCELLANEOUS SUSPENDED ITEMS, DESIGN JOISTS TO SUPPORT AN ADDITIONAL SPECIFIED LIVE LOAD OF 1.3kN FROM THE TOP OR BOTTOM CHORD AT ANY POINT ALONG THE SPAN.
8. CAMBER ALL JOISTS FOR SPECIFIED DEAD LOAD PLUS HALF OF SPECIFIED LIVE LOAD (MINIMUM 12mm) ACCORDING TO CSA-S16 UNLESS NOTED OTHERWISE.
9. PROVIDE BRIDGING IN ACCORDANCE WITH CSA-S16.
10. DO NOT SPLICE MATERIAL WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANT. WHERE GRANTED, A COMPLETE NON-DESTRUCTIVE EXAMINATION WILL BE MANDATORY AND PAID FOR BY THE CONTRACTOR.
11. ELEVATIONS SHOWN ON PLAN ARE BASED ON A JOIST SEAT DEPTH OF 102mm UNLESS NOTED OTHERWISE.
12. REFER TO SPECIFICATION FOR FINISHING.

STEEL DECK

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CAN/CSA-S136.
2. WELDING TO CONFORM TO CSA-W59. PLATE WASHERS MAY BE ELIMINATED ONLY IF WELDERS OR WELDING OPERATORS HAVE BEEN CERTIFIED BY THE CANADIAN WELDING BUREAU WITH QUALIFIED PROCEDURES FOR WELDING METAL DECK.
3. SHEET STEEL TO CONFORM TO ASTM A653/A653M, GRADE A STRUCTURAL QUALITY GRADE 230.
4. STEEL ROOF DECK – UNLESS NOTED OTHERWISE ON DRAWINGS, 38mm DEEP PREFORMED ZINC-COATED STEEL IN ACCORDANCE WITH CSSBI 10M. FLUTES SPACED AT 150mm MAXIMUM ON CENTRE. MINIMUM THICKNESS BEFORE GALVANIZING TO BE 0.76mm. GALVANIZED WITH ZINC COATING OF ZF75 AS DESIGNATED BY ASTM A653/A653M.
5. UNLESS NOTED OTHERWISE, LIMIT ALLOWABLE DEFLECTION FOR STEEL ROOF DECK TO THE FOLLOWING:
   - LIVE LOAD - SPAN/300
   - TOTAL LOAD - SPAN/240
6. THE STEEL ROOF DECK ACTS AS A DIAPHRAGM FOR THE DISTRIBUTION OF WIND AND SEISMIC FORCES TO THE LATERAL LOAD RESISTING ELEMENTS.
7. BASE METAL THICKNESS OF DECK INDICATED ABOVE AND ON DRAWINGS IS MINIMUM TO SATISFY DIAPHRAGM REQUIREMENTS. INCREASE THICKNESS AS REQUIRED TO SUPPORT GRAVITY LOADS AND TO SATISFY DEFLECTION LIMITS ABOVE.
8. UNLESS NOTED OTHERWISE, FASTEN STEEL ROOF DECK TO SUPPORTING ELEMENTS AS FOLLOWS:
   - 20mm DIAMETER FUSION WELDS OR HILTI FASTENERS IN EVERY VALLEY FOR MEMBERS PERPENDICULAR TO THE DECK SPAN.
   - 20mm DIAMETER FUSION WELDS OR HILTI FASTENERS AT 300mm AND AT THE EACH END OF EACH SECTION FOR MEMBERS PARALLEL TO THE DECK SPAN.
   - SCREWED SIDE LAPS AT 300mm
   - FOR HILTI FASTENERS ON OPEN WEB STEEL JOISTS WITH STEEL TOP FLANGE BETWEEN 3 – 6 mm (1/8" – 1/4") THICK, USE HILTI X-EDNK22 THQ12 FSTENERS. FOR OPEN WEB STEEL JOISTS WITH STEEL TOP FLANGE BETWEEN 5 – 10mm (3/16" – 3/8"), USE HILTI X-EDN19 THQ12 FASTENERS.
9. DECK UNITS TO BE CONTINUOUS OVER AT LEAST THREE SUPPORTS WHERE STRUCTURAL FRAMING PERMITS.
10. PROVIDE L 64x64x6.4 ANGLE TO SUPPORT ALL EDGES OF DECK. PROVIDE CLOSURE STRIPS AS REQUIRED FOR UNSUPPORTED FLUTE EDGES.
11. PROVIDE L 76x76x6.4 ANGLE TO SUPPORT DECK EDGES AT ALL OPENINGS UP TO 400mm IN SIZE. FOR LARGER OPENINGS, REFER TO TYPICAL DETAILS.

LIGHTWEIGHT STRUCTURAL STEEL FRAMING

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CAN/CSA-S136.
2. WELDING TO CONFORM TO CSA-W59.
3. SHEET STEEL TO CONFORM TO ASTM A653/A653M, GRADE A STRUCTURAL QUALITY GRADE 230. GALVANIZED WITH ZINC COATING OF ZF75 AS DESIGNATED BY ASTM A653/A653M.

MASONRY

1. DESIGN, FABRICATION, ERECTION, AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-S304.1 AND CAN/CSA-A371.
2. CONCRETE BLOCK TO CONFORM TO CAN/CSA-A165 WITH A MINIMUM COMPRESSIVE STRENGTH OF 15 MPa BASED ON THE NET CROSS-SECTIONAL AREA OF THE UNITS WITH VOIDS.
3. FILL CELLS CONTAINING VERTICAL REINFORCEMENT WITH CONCRETE DESIGNATED AS MASONRY COREFILL TABLE. SITE MIXING OF CONCRETE NOT PERMITTED FOR EXTERIOR OR LOAD-BEARING WALLS.
4. PUDDLE OR VIBRATE MASONRY COREFILL IN LIFTS NOT EXCEEDING 1200mm.
5. FORM HORIZONTAL JOINTS BY STOPPING POUR 40mm BELOW THE TOP OF UNIT.
6. USE ONLY TYPE S MORTAR CONFORMING TO CSA-A179. DO NOT USE MASONRY CEMENT. USE PORTLAND CEMENT AND LIME ONLY.
7. PROVIDE CLEAN-OUT OPENINGS AT THE BOTTOM OF EACH LIFT FOR ALL CELLS BEING FILLED. THE INSIDE OF THE CELL IS TO BE FREE FROM DEBRIS AND OBSTRUCTION.
8. HORIZONTAL JOINT REINFORCEMENT TO CONFORM TO ASTM A185/A185M. PROVIDE CONTINUOUS REINFORCEMENT CONSISTING OF 2 - 9 GAUGE DIAMETER WIRE LADDER TYPE REINFORCEMENT WITH WELDED CROSS-TIES AT A VERTICAL SPACING OF 400mm FOR RUNNING BOND.
9. ALTERNATE HORIZONTAL JOINT REINFORCING TO BOND ADJOINING WALLS.
10. MASONRY WALLS TO BE RUNNING BOND UNLESS NOTED OTHERWISE.
11. EXTEND VERTICAL REINFORCEMENT TO WITHIN 50mm OF TOP OF WALLS.
12. PROVIDE VERTICAL DOWELS INTO SUPPORTING CONCRETE TO MATCH BLOCK WALL REINFORCEMENT.
13. PROVIDE 400mm DEEP BOND BEAMS REINFORCED WITH 2-15M TOP AND BOTTOM AT THE TOPS OF ALL WALLS AND AT THE BOTTOM OF INTERIOR PARTITION WALLS AND AT 2400mm VERTICAL SPACING. USE SPECIAL BOND BEAM UNITS TO PROVIDE CONTINUITY OF HORIZONTAL REINFORCEMENT. LAP SPLICE 800mm MINIMUM. PROVIDE CORNER BARS AT WALL INTERSECTIONS.
14. PROVIDE VERTICAL REINFORCEMENT AS NOTED IN MASONRY WALL REINFORCEMENT TABLE UNLESS NOTED OTHERWISE ON DRAWINGS. PROVIDE ADDITIONAL COREFILLS WITH DESIGNATED REINFORCEMENT AT ENDS OF WALLS, WALL INTERSECTIONS, CORNERS, AND EACH SIDE OF WINDOW OPENINGS, DOOR OPENINGS, CONTROL JOINTS, AND UNDER ALL LOAD BEARING ELEMENTS.
15. PROVIDE MASONRY LINTELS ABOVE OPENINGS AS NOTED IN MASONRY LINTEL REINFORCEMENT TABLE. USE 400mm DEEP LINTEL BLOCKS FOR 2 COURSE LINTELS. USE A 400mm DEEP LINTEL BLOCK WITH AN UPSIDE DOWN BOND BEAM BLOCK ON TOP FOR 3 COURSE LINTELS. LINTELS TO CONTINUE MINIMUM 400mm PAST EACH SIDE OF OPENINGS. BLOCK VOIDS BELOW BEARING ENDS TO BE CORE FILLED AND REINFORCED WITH 2–15M BARS VERTICALLY EXTENDING INTO LINTELS UNLESS NOTED OTHERWISE.
16. REINFORCEMENT SPLICES – REFER TO MASONRY LAP SPLICES TABLE.
17. INSTALL VERTICAL CONTROL JOINTS AT 9000mm MAX. LOCATE JOINTS AT LATERAL SUPPORTS PROVIDED BY COLUMNS, PILASTERS, CORNERS, AND INTERSECTING WALLS.

STANDARD STRUCTURAL DRAWING ABBREVIATIONS

A.B. or A.BOLT	ANCHOR BOLT	INSUL	INSULATION
A.I.F.	ASPHALT IMPREGNATED FIBRE BOARD	INT	INTERIOR
ABT	ABOUT	LG	LONG
ABUT	ABUTMENT	LOC	LOCATION
ADDL	ADDITIONAL	LONGIT	LONGITUDINAL
ALUM	ALUMINIUM	M.H	MANHOLE
APPROX or	APPROXIMATELY	M.S	MILD STEEL
ARCH	ARCHITECT	MAX	MAXIMUM
ARND	AROUND	MECH	MECHANICAL
B or BOT	BOTTOM	MEZZ	MEZZANINE
B.U.	BUILT UP	MIN	MINIMUM
BLK	BLOCK	MISC	MISCELLANEOUS
BLL	BOTTOM LOWER LAYER	N.D. BARS	NELSON DEFORMED BARS
BM	BEAM	N.I.C.	NOT IN CONTRACT
BRG	BEARING	N.S	NEAR SIDE or NELSON STUD
BTWN	BETWEEN	N.T.S.	NOT TO SCALE
BUL	BOTTOM UPPER LAYER	NO or #	NUMBER
C.B.	CATCH BASIN	O.D.	OUTSIDE DIAMETER
C.I.P.	CAST IN PLACE	O.F.	OUTSIDE FACE
C.J.	CONSTRUCTION JOINT	OPNG	OPENING
C.L. or ℄	CENTRE LINE	OPP	OPPOSITE
C/C	CENTRE TO CENTRE	OWSJ	OPEN WEB STEEL JOIST
C/W	COMPLETE WITH	P.L.	PROPERTY LINE
COL	COLUMN	P/C	PRECAST
CONC	CONCRETE	P/T	POST TENSIONED
CONN	CONNECTION	PERIM	PERIMETER
CONT	CONTINUOUS	PERP	PERPENDICULAR
D or DP	DEPTH	PKG	PACKAGE
DIA or Ø	DIAMETER	PL.	PLATE
DIAG	DIAGONAL	PLY	PLYWOOD
DO or do	DITTO	PROJ	PROJECT
DWG	DRAWING	PTD	PAINTED
DWL	DOWEL	R or RAD	RADIUS
E.E.	EACH END	R.D.	ROOF DRAIN
E.F.	EACH FACE	R/W	REINFORCED WITH
E.J.	EXPANSION JOINT	REINF	REINFORCING
E.S.	EACH SIDE	REM	REMAINDER
E.W.	EACH WAY	REQ'D	REQUIRED
EL or ELEV	ELEVATION	S.J	SAWCUT JOINT
ELECT	ELECTRICAL	S.O.G	SLAB ON GRAGE
EQ	EQUAL	S.SL	STAINLESS STEEL
EQ. SPCS.	EQUAL SPACES	SIM	SIMILAR
EXIST	EXISTING	SPMDD	STANDARD PROCTOR MAXIMUM DRY DENSITY
EXT	EXTERIOR	SQ	SQUARE
F.S.	FAR SIDE	SST	SIMPSON STRONG TIE
F.T.S.	FULL TENSION SPLICE	STIFF	STIFFENER
FDN	FOUNDATION	STIR	STIRRUP
FL.	FLAT PLATE	SYM	SYMETRICAL
FTG	FOOTING	T	TOP
GA	GAUGE	T & B	TOP & BOTTOM
GALV	GALVANIVED	T.O.	TOP OF
GR BM	GRADE BEAM	T/F EL.	TOP OF FOOTING ELEVATION
H1E	HOOK ONE END	THK	THICK
H2E	HOOK TWO ENDS	TLL	TOP LOWER LAYER
H or HT	HIGH OR HEIGHT	TUL	TOP UPPER LAYER
H.D. GALV	HOT DIPPED GALVANIZED	TYP	TYPICAL
H.R.	HANDRAIL	U/N	UNLESS NOTER OTHERWISE
HOR	HORIZONTA;L	U/S	UNDERSIDE
I.C	IN CENTRE	VERT	VERTICAL
I.D.	INSIDE DIAMETER	W	WIDE or WIDTH or WITH
I.F.	INSIDE FACE	W.P.	WORKING POINT
INCL	INCLUDING	WWM	WELDED WIRE MESH

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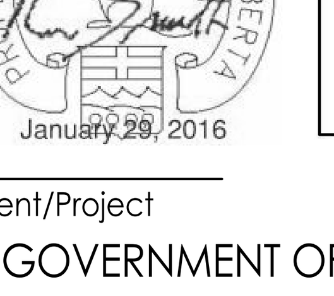

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Client/Project

GOVERNMENT OF CANADA
ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

Title

DESIGN NOTES

Project No. 144202690

Scale 1 : 1

Revision

Drawing No. **S001**

Sheet 1 of 12

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ORIGINAL SHEET - ARCH D (24"x36")

CLEAR CONCRETE COVER TO REINFORCEMENT

READ IN CONJUNCTION WITH THE CONCRETE REINFORCEMENT SECTION OF THE DESIGN NOTES

EXPOSURE CONDITION	EXPOSURE CLASS		
	N	F-1, F-2, S-1, S-2, S-3	C-XL, C-1, C-2, C-3, A-1, A-2, A-3
CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	-	75mm	75mm
BEAMS, GIRDERS, COLUMNS AND PILES TO TIES, STIRRUPS (EXCEPT AS NOTED BELOW)	30mm	40mm	60mm
SLABS, WALLS, JOISTS, SHELLS, AND FOLDED PLATES (EXCEPT AS NOTED BELOW)	20mm	40mm	60mm
RATIO OF COVER TO NOMINAL BAR DIAMETER	1.0	1.5	2.0
RATIO OF COVER TO NOMINAL MAXIMUM AGGREGATE SIZE	1.0	1.5	2.0

NOTE: THE LARGEST COVER REQUIRED FOR ANY ELEMENT SHALL GOVERN

STANDARD END HOOKS (FOR GRADE 400 REINF)

READ IN CONJUNCTION WITH THE CONCRETE REINFORCEMENT SECTION IN THE DESIGN NOTES

BAR SIZE	10M	15M	20M	25M
90° HOOK LENGTH	180	260	310	400
180° HOOK LENGTH	140	180	210	280

TYPICAL U/N OTHERWISE ON DRAWINGS

REINFORCEMENT SPLICES

READ IN CONJUNCTION WITH THE CONCRETE REINFORCEMENT SECTION IN THE DESIGN NOTES

BAR SIZE	COMPRESSION SPLICE (mm)	TENSION SPLICE (mm)	
		VERTICAL OR BOTTOM HORIZONTAL BARS	TOP HORIZONTAL BARS *
		UNCOATED BARS	UNCOATED BARS
10M	350	425	550
15M	475	600	775
20M	575	750	950
25M	750	1200	1550

NOTE 1 THIS TABLE IS BASED ON NORMAL WEIGHT CONCRETE f'c = 35 MPa AND ON REINFORCING STEEL fy = 400 MPa

NOTE 2 * TOP BARS ARE DEFINED AS HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 300mm OF CONCRETE IS CAST IN THE MEMBER BELOW THE REINFORCEMENT.

NOTE 3 FOR STANDARD EMBEDMENT DEPTH INTO CONCRETE, DIVIDE BASIC TENSION LAP SPLICE NUMBER BY 1.3.

STEEL GRADES

READ IN CONJUNCTION WITH THE STRUCTURAL STEEL SECTION IN THE DESIGN NOTES

MEMBER TYPE	GRADE
ROLLED W-SHAPES, TEES	CAN/CSA G40.21 350W OR ASTM A992 GRADE 50
WELDED WIDE FLANGE	CAN/CSA G40.21 350W
HOLLOW STRUCTURAL SECTIONS	CAN/CSA G40.21 350W CLASS C
OTHER STRUCTURAL SECTIONS AND PLATES	CAN/CSA G40.21 300W
BOLTS	ASTM A325
ANCHOR RODS	ASTM F1554 GRADE 36
HEADED STUD ANCHORS	ASTM A108
THREADED ROD	ASTM A36

MASONRY LINTEL REINFORCEMENT IN LOADING BEARING BLOCK WALLS

READ IN CONJUNCTION WITH THE MASONRY SECTION IN THE DESIGN NOTES

SPAN (mm)	DEPTH (NUMBER OF COURSES)	REINFORCEMENT
< 1200	400mm (2)	1 - 15M
< 2400	600mm (3)	1 - 20M
< 3000	800mm (4)	1 - 20M BOT, 1 - 15M MID

MASONRY REINFORCEMENT LAP SPLICES

READ IN CONJUNCTION WITH THE MASONRY SECTION IN THE DESIGN NOTES

BAR SIZE	LAP SPLICES (mm)
10M	450
15M	600
20M	900

CLIMATIC INFORMATION

READ IN CONJUNCTION WITH THE DESIGN NOTES SECTION IN THE DESIGN NOTES

SNOW LOAD (1/50) Ss	1.9 kPa
SNOW LOAD (1/50) Sr	0.1 kPa
ONE DAY RAIN (1/50)	75mm
HOURLY WIND PRESSURE (1/10)	0.25 kPa
HOURLY WIND PRESSURE (1/50)	0.33 kPa
SEISMIC RESPONSE, Sa (0.2)	0.12
SEISMIC RESPONSE, Sa (0.5)	0.06
SEISMIC RESPONSE, Sa (1.0)	0.02
SEISMIC RESPONSE, Sa (2.0)	0.01
SEISMIC RESPONSE, PGA	0.06

SITE INFORMATION

READ IN CONJUNCTION WITH THE DESIGN LOADS SECTION IN THE DESIGN NOTES

IMPORTANCE CATEGORY	POST-DISASTER
WIND EXPOSERE TYPE	OPEN TERRAIN
INTERNAL PRESSURE CATEGORY	3
FOUNDATION SITE CLASS	D

DESIGN LOADS

READ IN CONJUNCTION WITH THE DESIGN LOADS SECTION IN THE DESIGN NOTES

FIRST FLOOR	
LIVE LOAD	4.8 kPa
LIVE LOAD - STORAGE AREAS	7.2 kPa
SUPERIMPOSED DEAD LOAD	0.5 kPa
ROOFS	
BASIC SNOW LOAD	1.62 kPa
SUPERIMPOSED DEAD LOAD	1.2 kPa
ACCUMULATED SNOW LOAD	SEE ROOF PLAN
RAIN PONDING LOAD	
NET FACTORED WIND UPLIFT LOAD	1.0 kPa
WALL CLADDING DEAD LOADS	
BRICK OR STONE	2.3 kPa
GLASS CURTAIN WALL	1.0 kPa
METAL PANEL	0.75 kPa
OTHER WALLS	1.0 kPa

FORCE MODIFICATION FACTORS

READ IN CONJUNCTION WITH THE FOUNDATIONS SECTION IN THE DESIGN NOTES

LATERAL LOAD RESISTANCE SYSTEM	MODIFICATION FACTOR	
	DUCTILITY RELATED R_D	OVERSTRENGTH RELATED R_O
STEEL CROSS BRACING	3.0	1.3
MASONRY SHEAR WALLS	2.0	1.5

CONTROLLED CONCRETE

READ IN CONJUNCTION WITH THE CAST IN PLACE CONCRETE SECTION OF THE DESIGN NOTES

CONCRETE ELEMENT	CLASS OF EXPOSURE	MIN COMPRESSIVE STRENGTH AT 28 DAYS - MPa	MAX AGGREGATE SIZE - mm	AIR CONTENT CATEGORY	MAXIMUM W/C RATIO	CEMENT TYPE
EXTERIOR CONCRETE						
PILES	N	25	20	-	-	GU
PILE CAPS	N	25	20	-	0.50	GU
RETAINING WALLS	C-1	35	20	1	0.40	GU
FOUNDATION WALLS	N	25	20	-	-	GU
GRADE BEAMS	N	25	20	-	-	GU
SLABS ON GRADE	C-2	32	20	1	0.45	GU
SITE CONCRETE (NON STRUCTURAL)	C-2	32	20	2	0.45	GU
INTERIOR CONCRETE						
STRUCTURAL SLABS AND BEAMS	N	25	20	-	0.55	GU
MASONRY COREFILL	N	15	12	-	0.55	GU
HOUSEKEEPING PADS	N	20	20	-	-	GU

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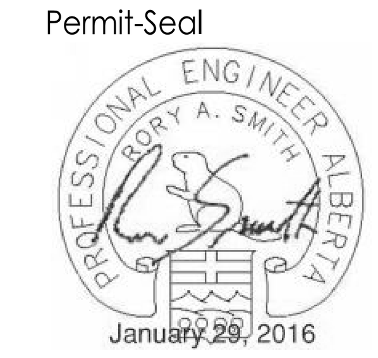

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ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

Title

DESIGN TABLES

Project No. 144202690

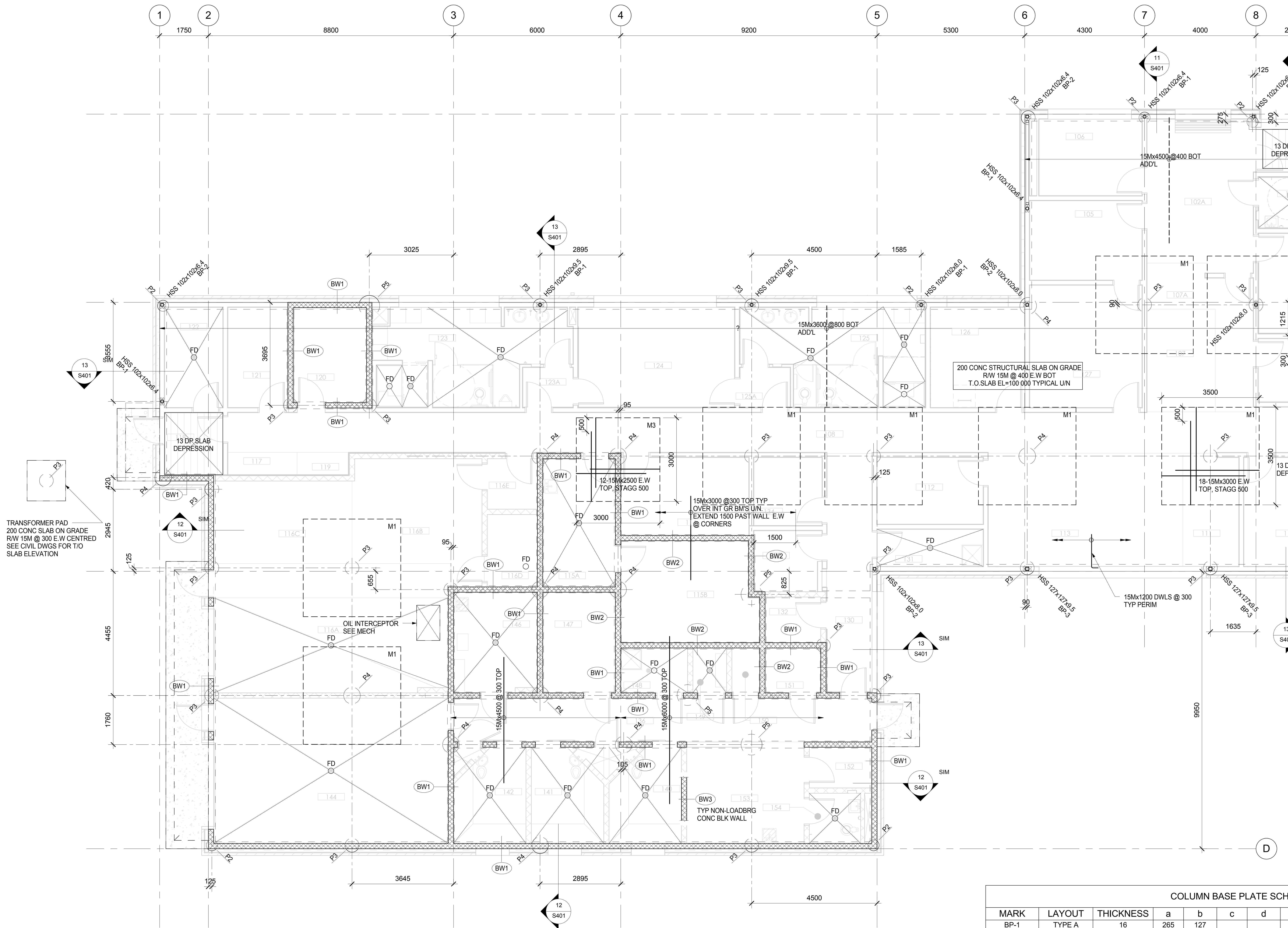
Scale 1 : 1

Revision

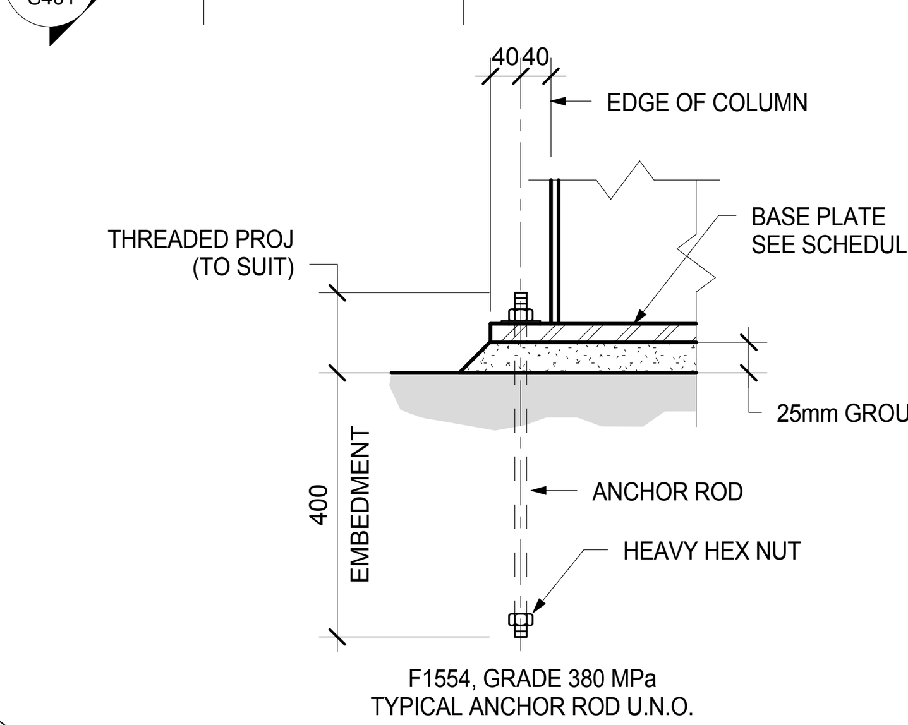
Drawing No. **S002**

CONCRETE BLOCK WALL SCHEDULE			
MARK	WIDTH	COREFILL REINFORCEMENT	REMARKS
BW1	190	1-15M @ 1200	
BW2	190	1-10M @ 200	100% COREFILLED
BW3	190	1-15M @ 1200	NON-LOADBEARING
BW4	240	1-20M @ 600	

PILE SCHEDULE					
MARK	SHAFT DIAMETER	BELL DIAMETER	LENGTH	VERTICAL REINFORCEMENT	TIE REINFORCEMENT
P1	400	800	4 000	4-20M	10M @ 300
P2	400	1 200	4 000	4-20M	10M @ 300
P3	500	1 500	4 000	5-20M	10M @ 300
P4	600	1 800	4 000	7-20M	10M @ 300
P5	750	2 250	4 000	8-20M	10M @ 300

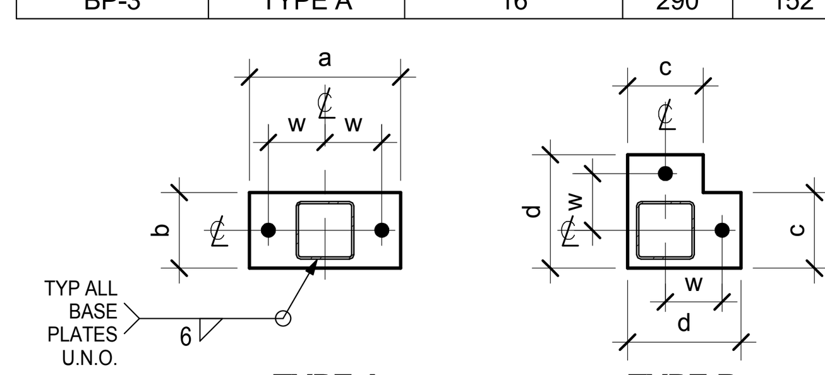


1 — FOUNDATION AND MAIN FLOOR PLAN
S101 — 1 : 75



2 — TYPICAL ANCHOR BOLT DETAILS
S101 — 1 : 10

COLUMN BASE PLATE SCHEDULE									
MARK	LAYOUT	THICKNESS	a	b	c	d	w	ANCHOR ROD TYPE	REMARKS
BP-1	TYPE A	16	265	127			90	19 DIA F1554	
BP-2	TYPE B	16			127	195	90	19 DIA F1554	
BP-3	TYPE A	16	290	152			105	19 DIA F1554	



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2. REFERENCE ELEVATION 100 000 = GEODETIC ELEVATION 594.700.
3. SEE DRAWINGS S501 TO S504 FOR TYPICAL SECTIONS & DETAILS.
4. UNDERGROUND SERVICES ARE TO BE HUNG FROM THE STRUCTURAL ` SLAB.
5. SEE 3/S402 FOR THE GARBAGE ENCLOSURE.

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ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
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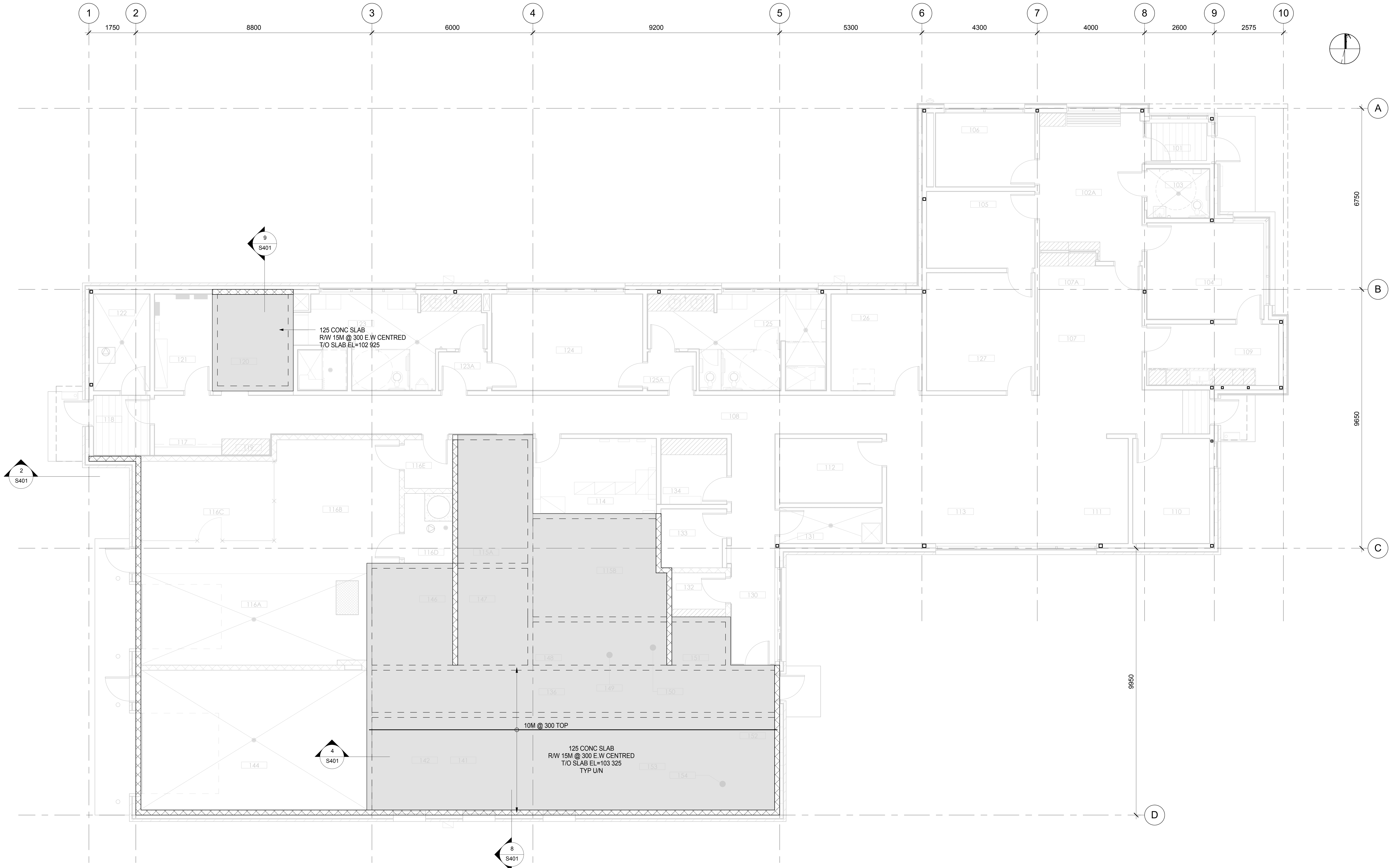
FOUNDATION AND MAIN FLOOR PLAN

Project No. 144202690
Scale As indicated
Revision
Drawing No. **S101**

ORIGINAL SHEET - ARCH D (24"x36")



1 S102 CONCRETE SLAB PLANS
1 : 75

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ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

Title

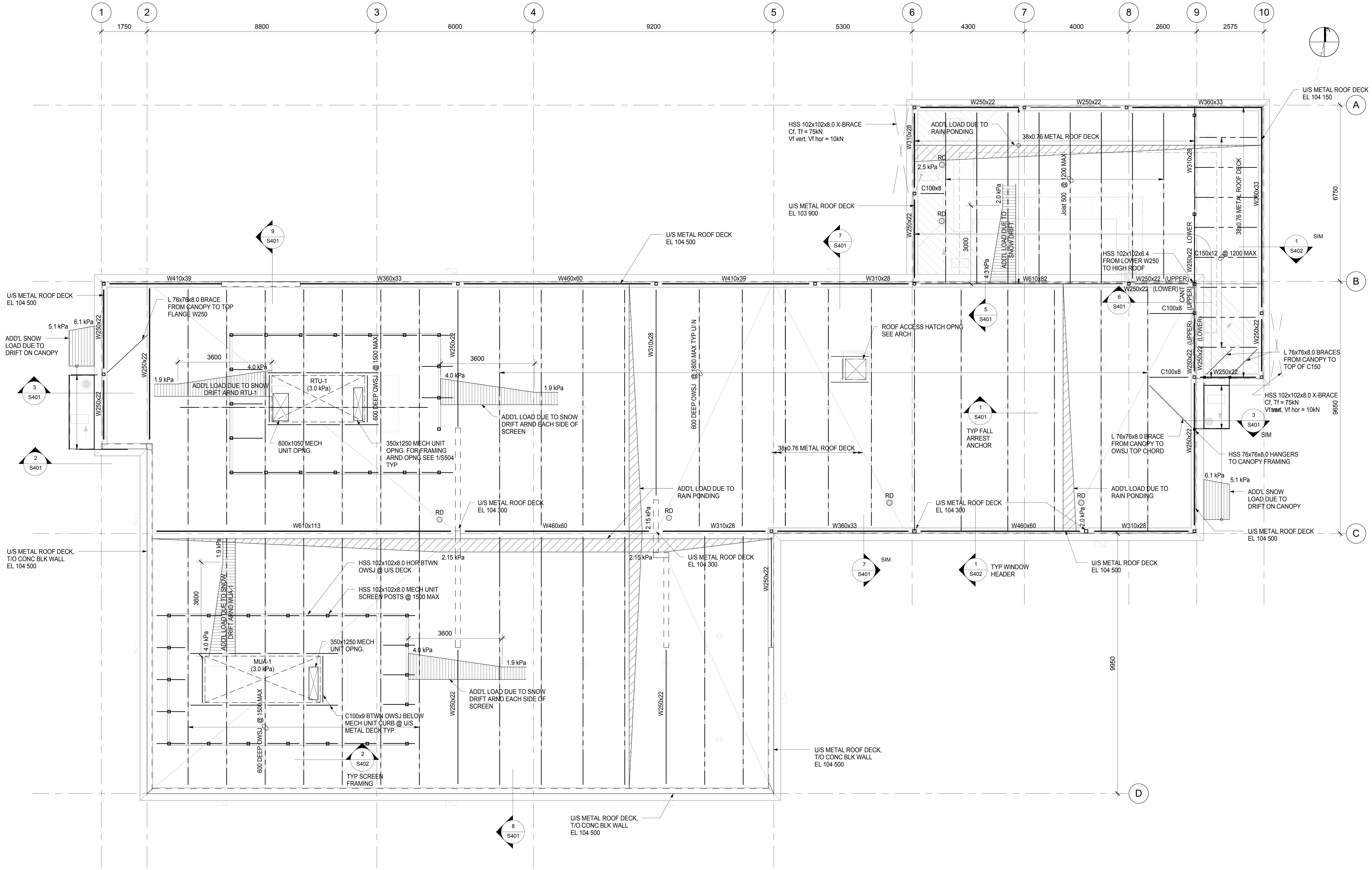
CONCRETE SLAB PLANS

Project No. 144202690

Scale 1 : 75

Revision

Drawing No. S102



1 ROOF FRAMING PLAN
S103 1 : 75

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54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

Title

ROOF FRAMING PLAN

Project No.	Scale
144202690	1 : 75

Revision

Drawing No.

S103

Sheet 5 of 12

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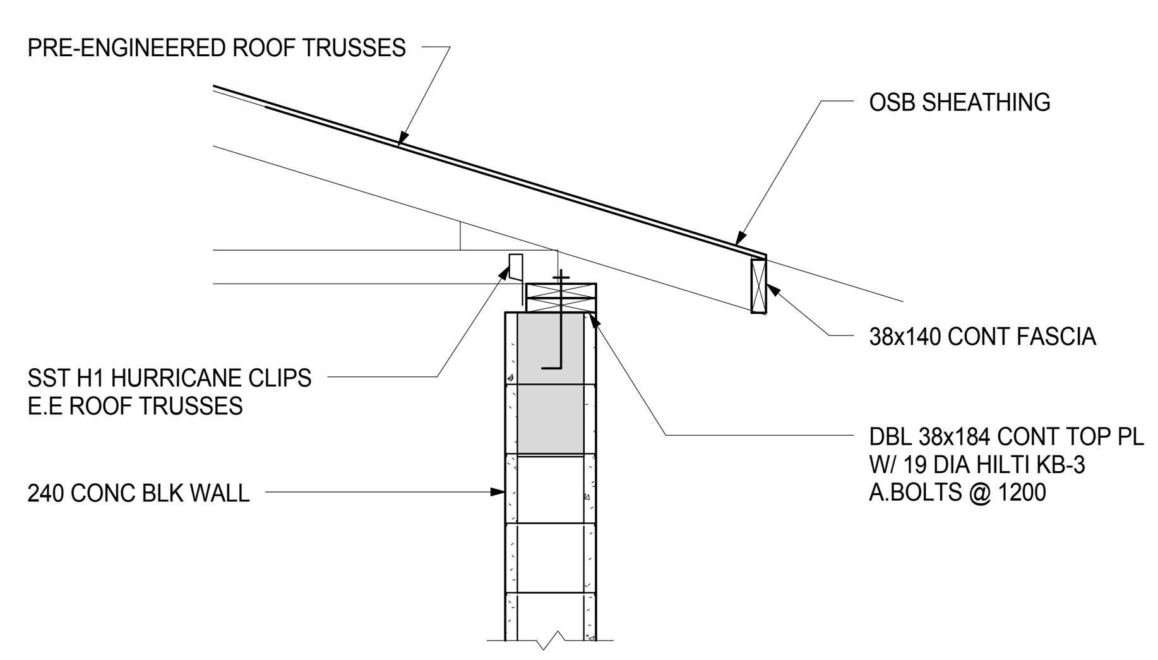
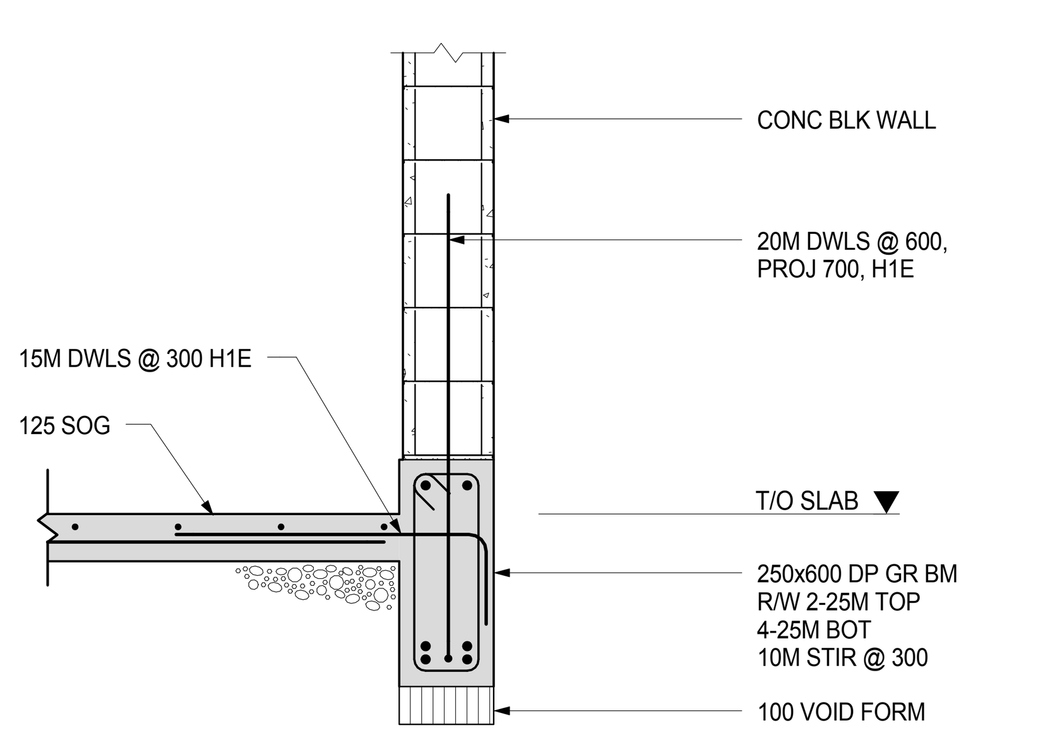


1 S104 GARAGE SECTION
1 : 20



2 S104 GARAGE SECTION
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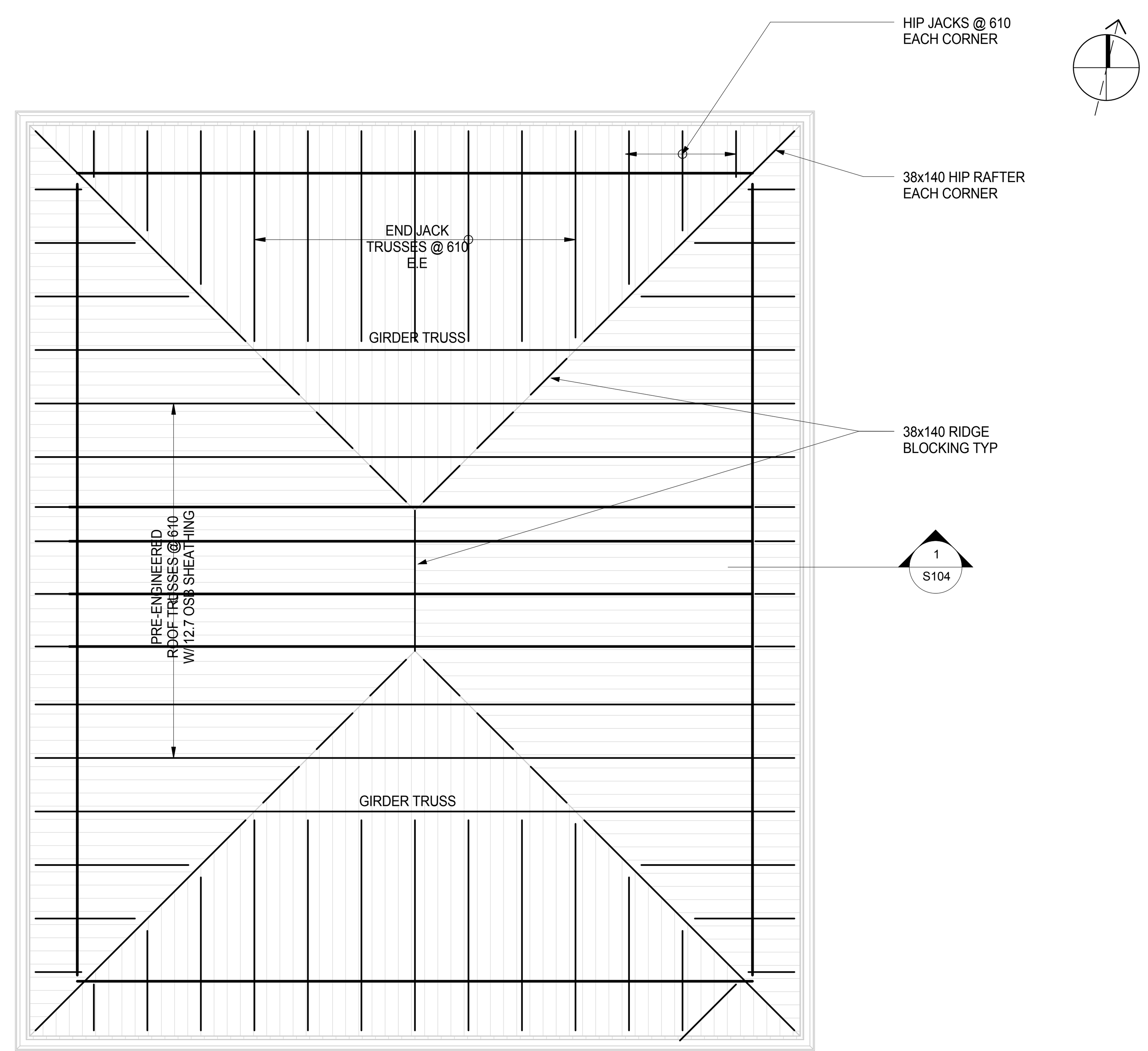
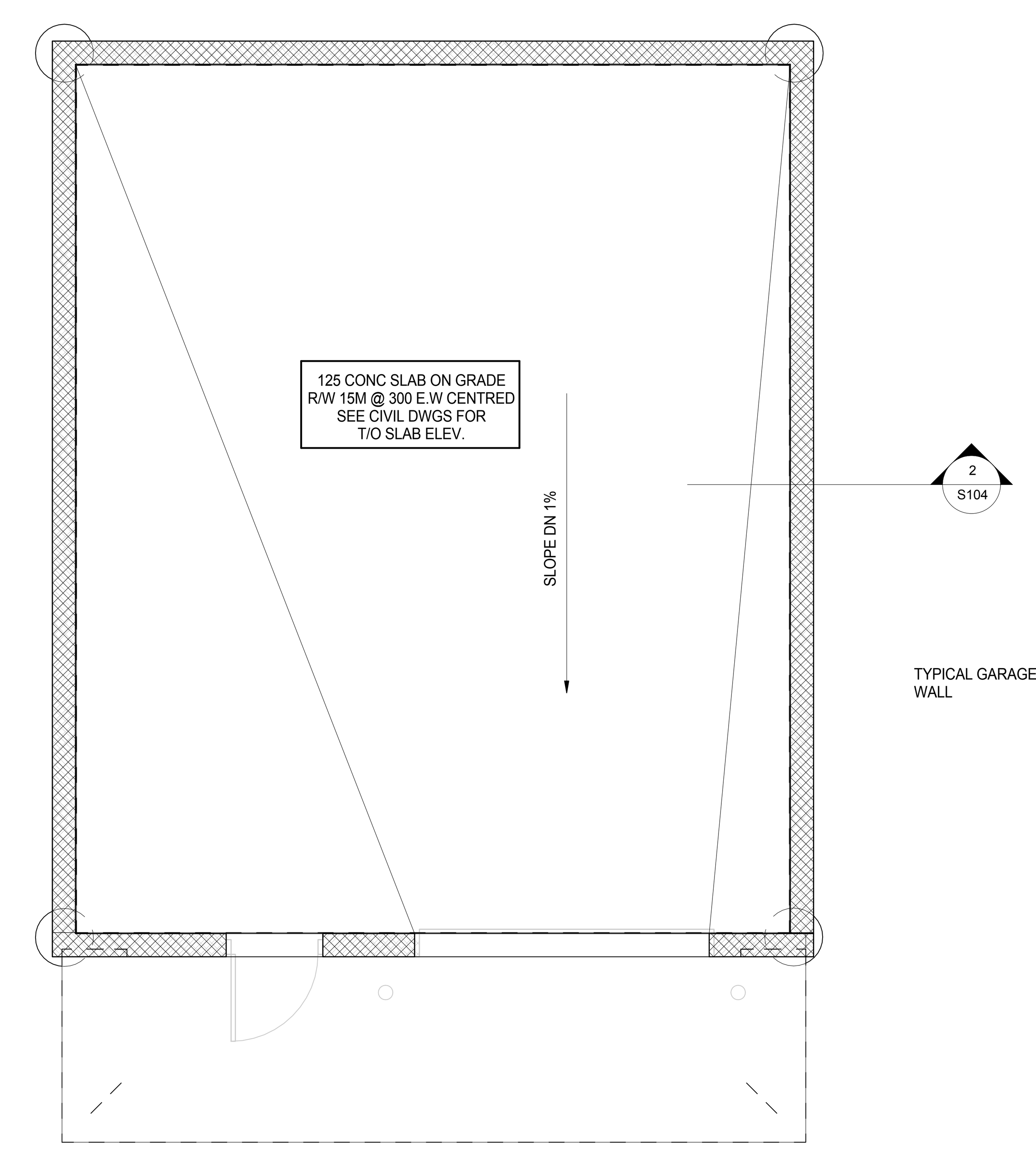


3 S104 GARAGE ROOF FRAMING PLAN
1 : 50



4 S104 GARAGE FLOOR PLAN
1 : 50

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ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

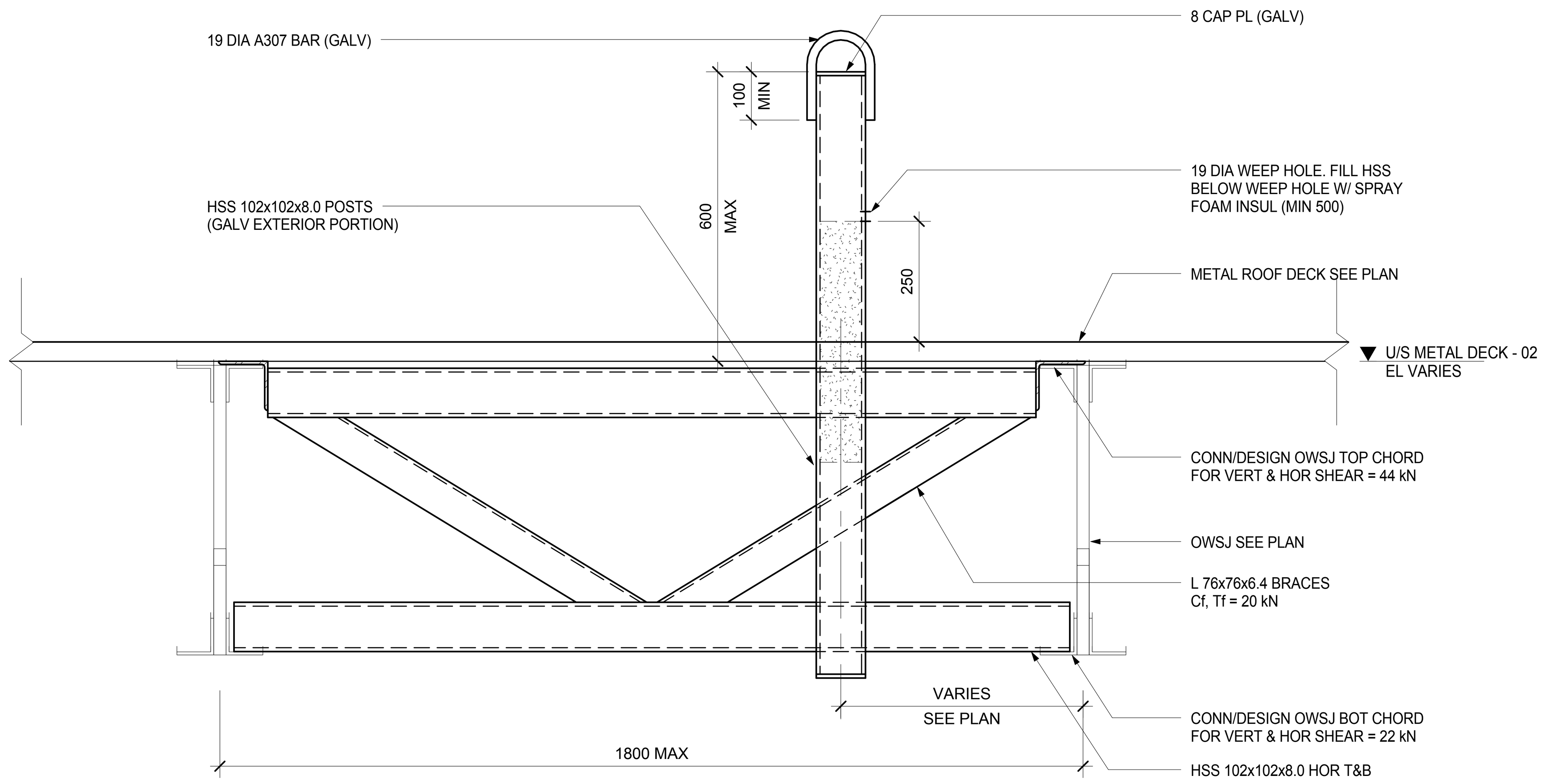
Title

GARAGE PLANS, SECTIONS, AND DETAILS

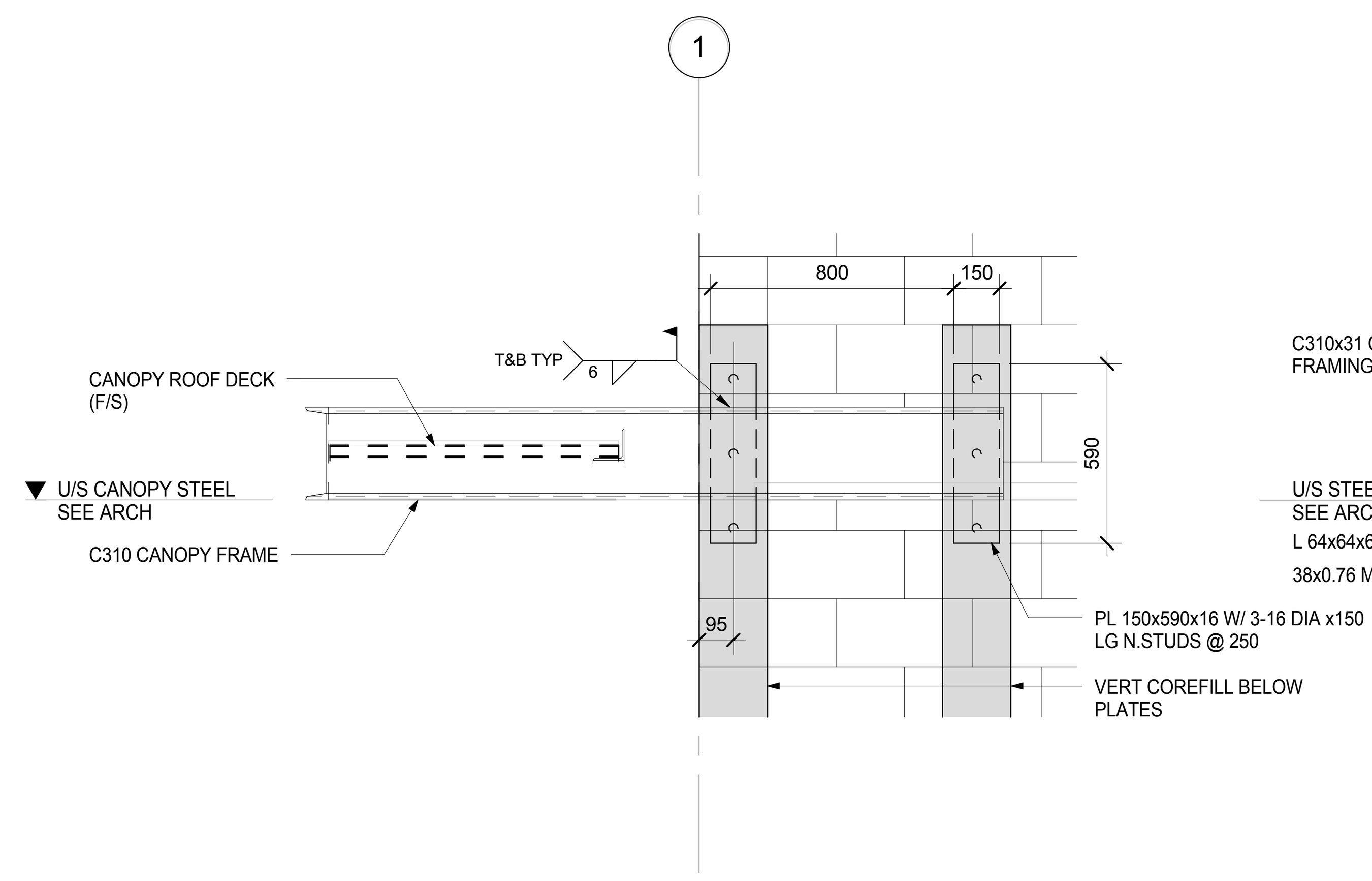
Project No. 144202690
Scale As indicated
Revision
Drawing No. S104

Sheet 6 of 12

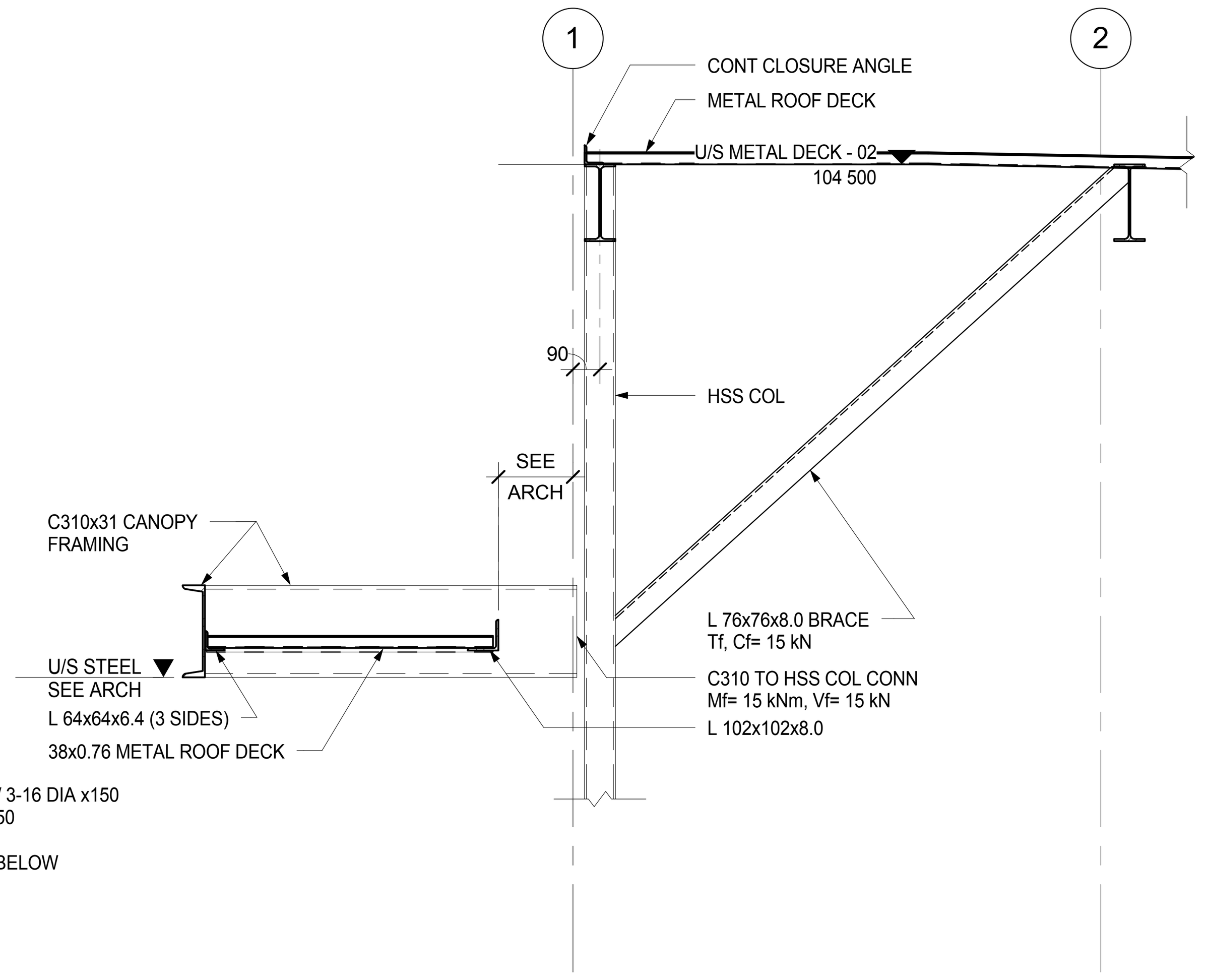
ORIGINAL SHEET - ARCH D (24"x36")


19 DIA A307 BAR (GALV)
8 CAP PL (GALV)
100 MIN
600 MAX
19 DIA WEEP HOLE. FILL HSS BELOW WEEP HOLE W/ SPRAY FOAM INSUL (MIN 500)
HSS 102x102x8.0 POSTS (GALV EXTERIOR PORTION)
250
METAL ROOF DECK SEE PLAN
U/S METAL DECK - 02
EL VARIES
CONN/DESIGN OWSJ TOP CHORD FOR VERT & HOR SHEAR = 44 kN
OWSJ SEE PLAN
L 76x76x6.4 BRACES
Cf, Tf = 20 kN
VARIES
SEE PLAN
CONN/DESIGN OWSJ BOT CHORD FOR VERT & HOR SHEAR = 22 kN
1800 MAX
HSS 102x102x8.0 HOR T&B

1 SECTION
S401 1 : 10



2 SECTION
S401 1 : 20



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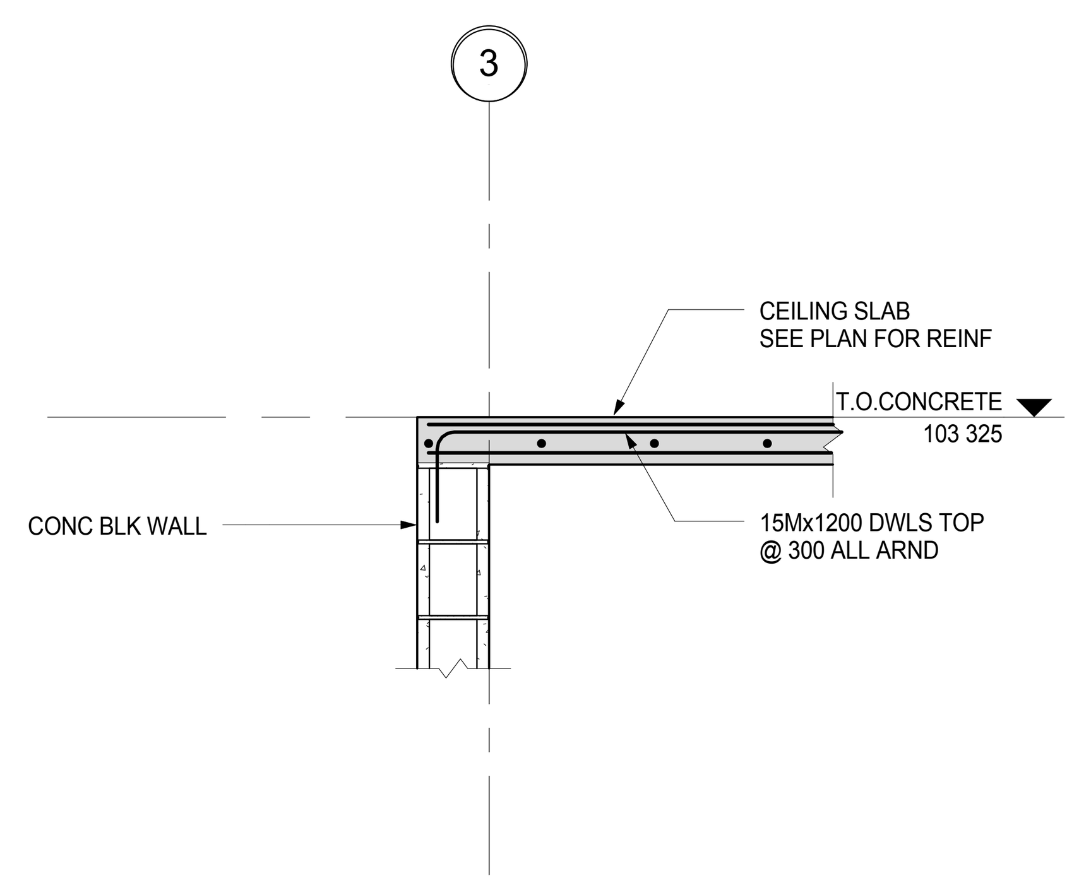

4 SECTION
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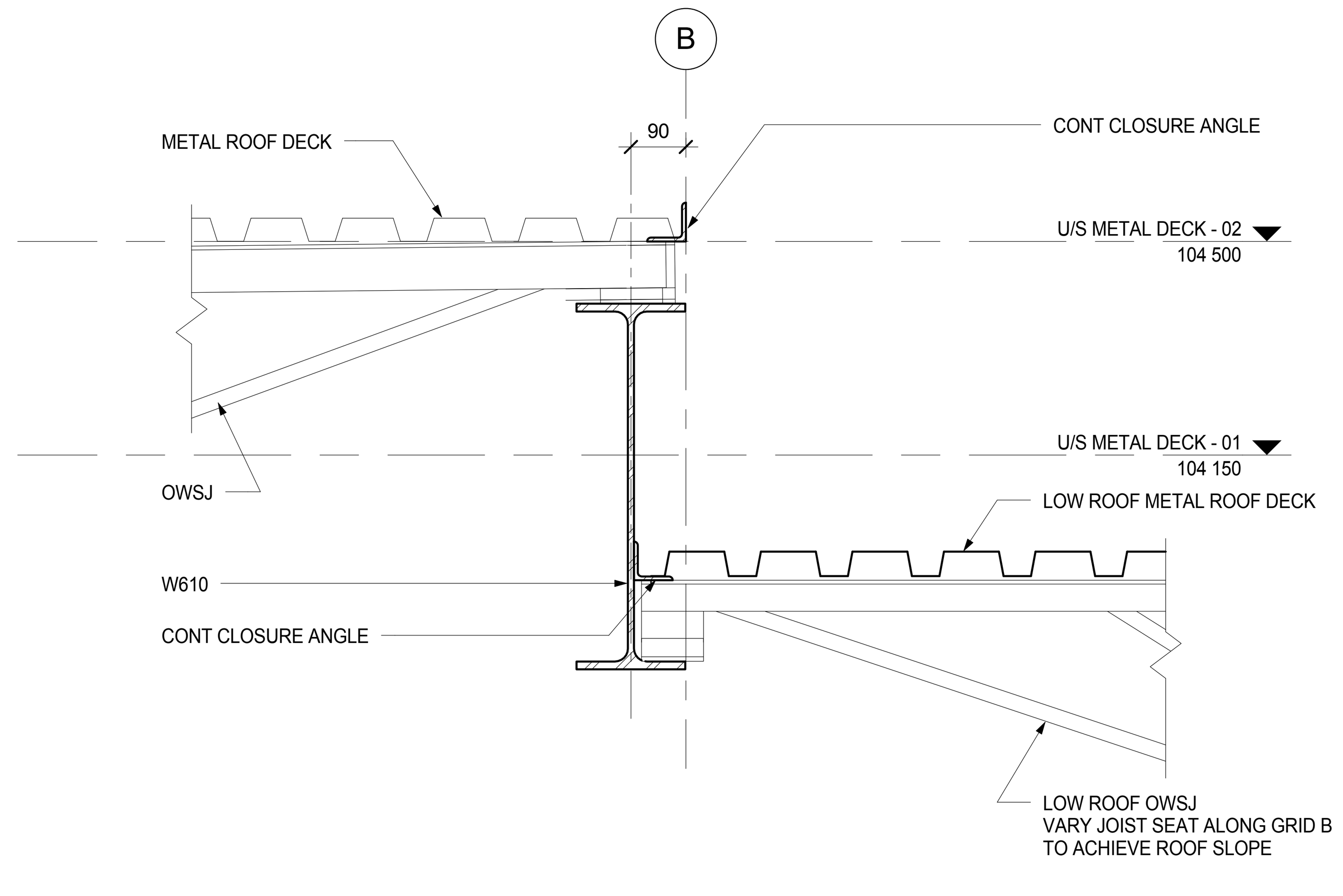

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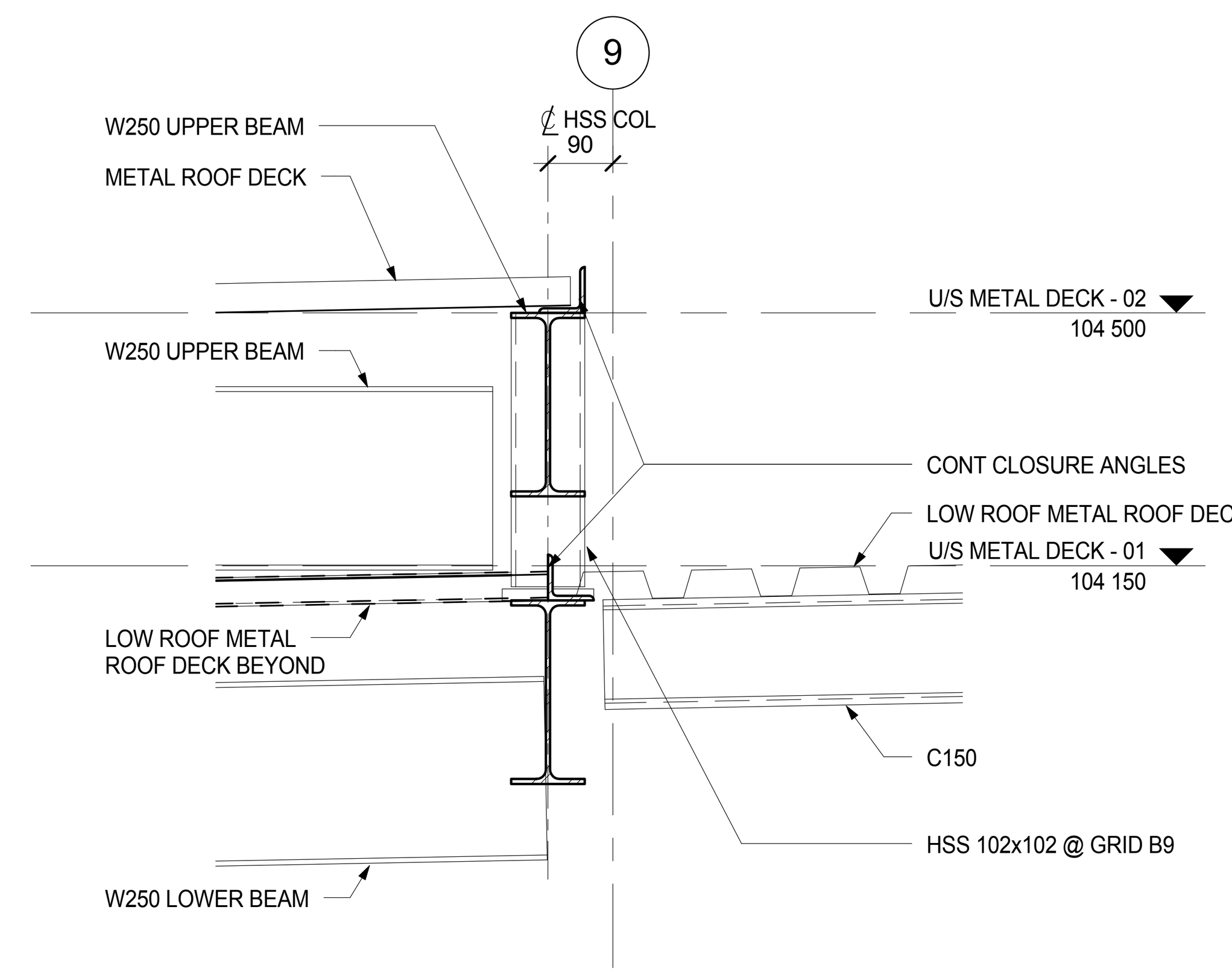
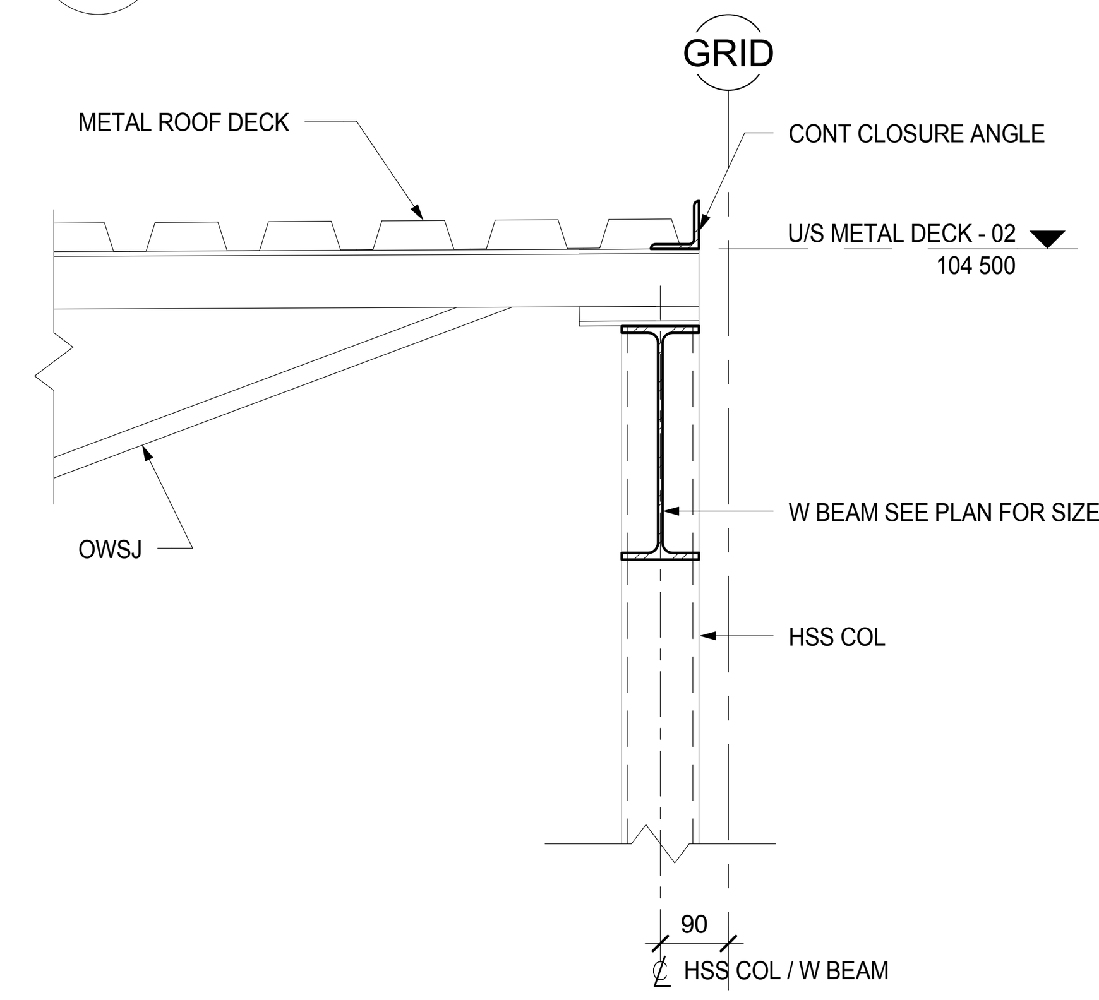


6 SECTION
S401 1 : 10



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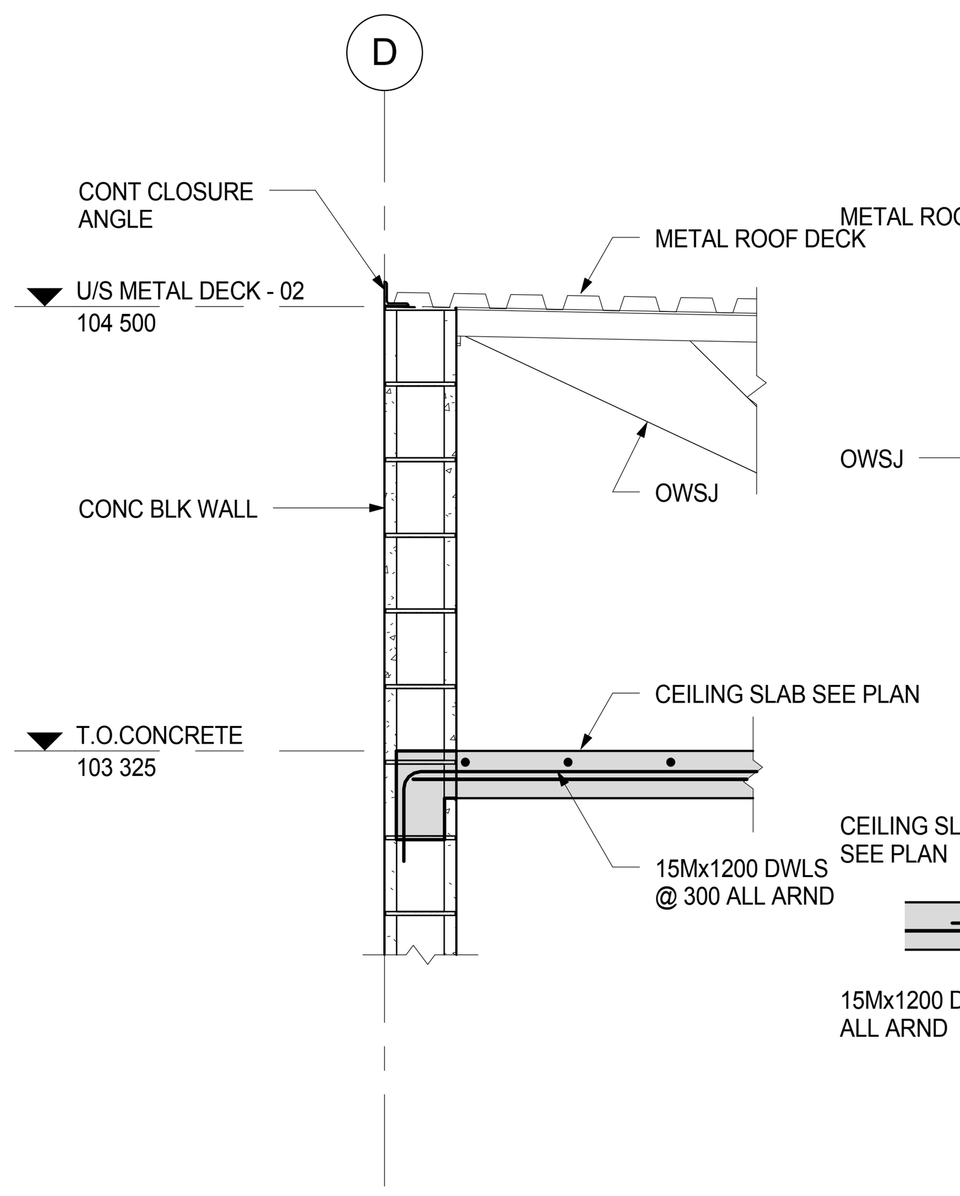
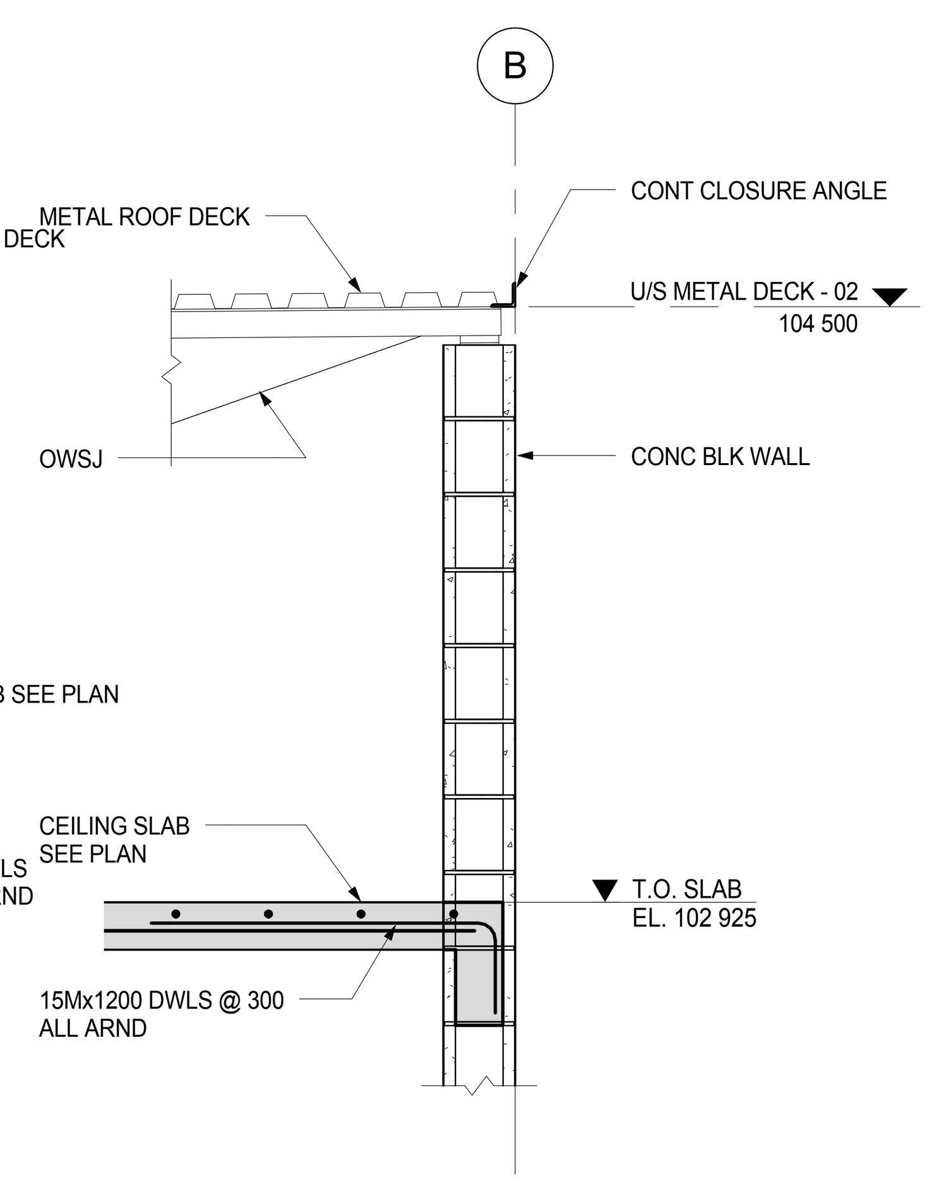
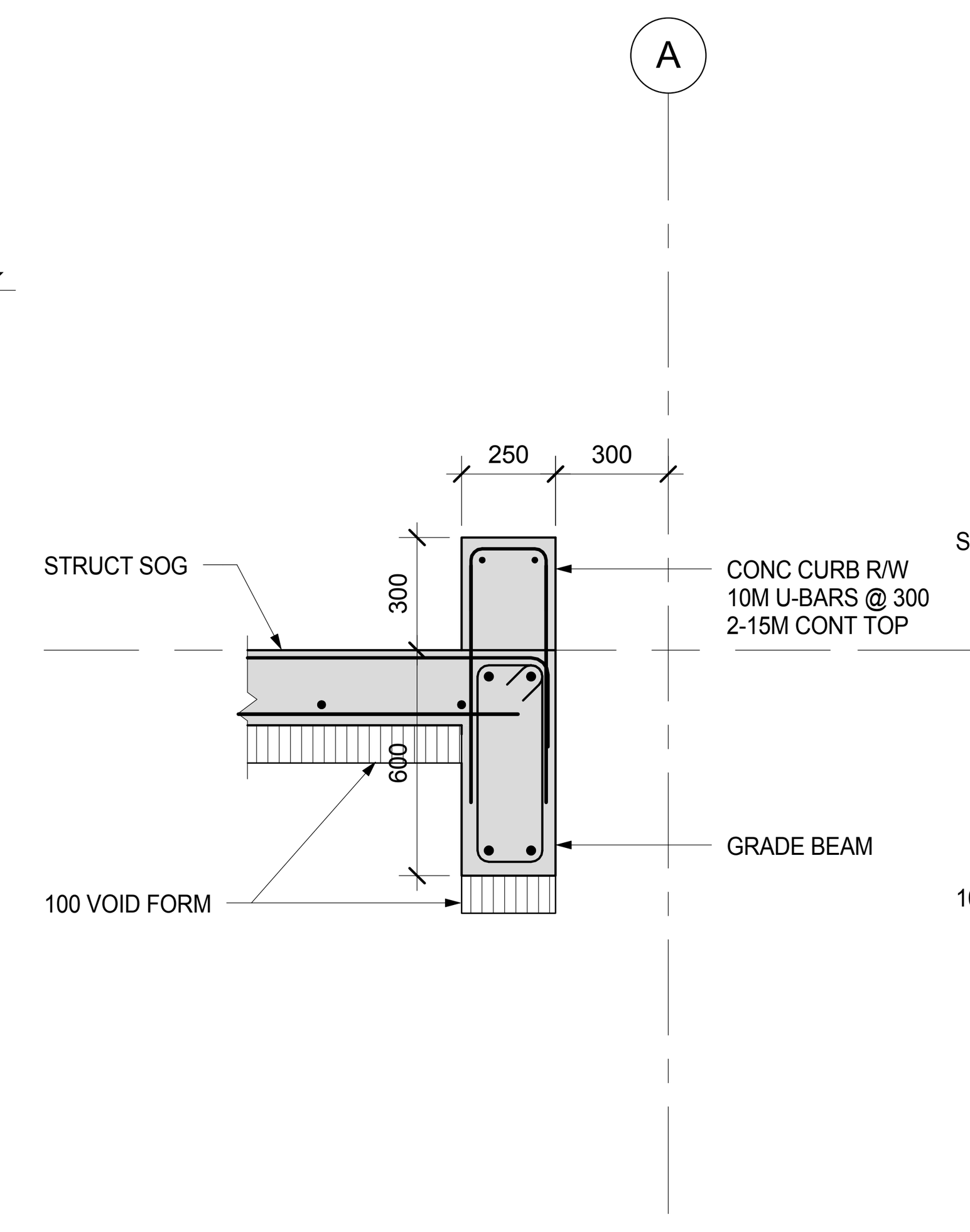
S401 1 : 10



8 SECTION
S401 1 : 20



9 SECTION
S401 1 : 20



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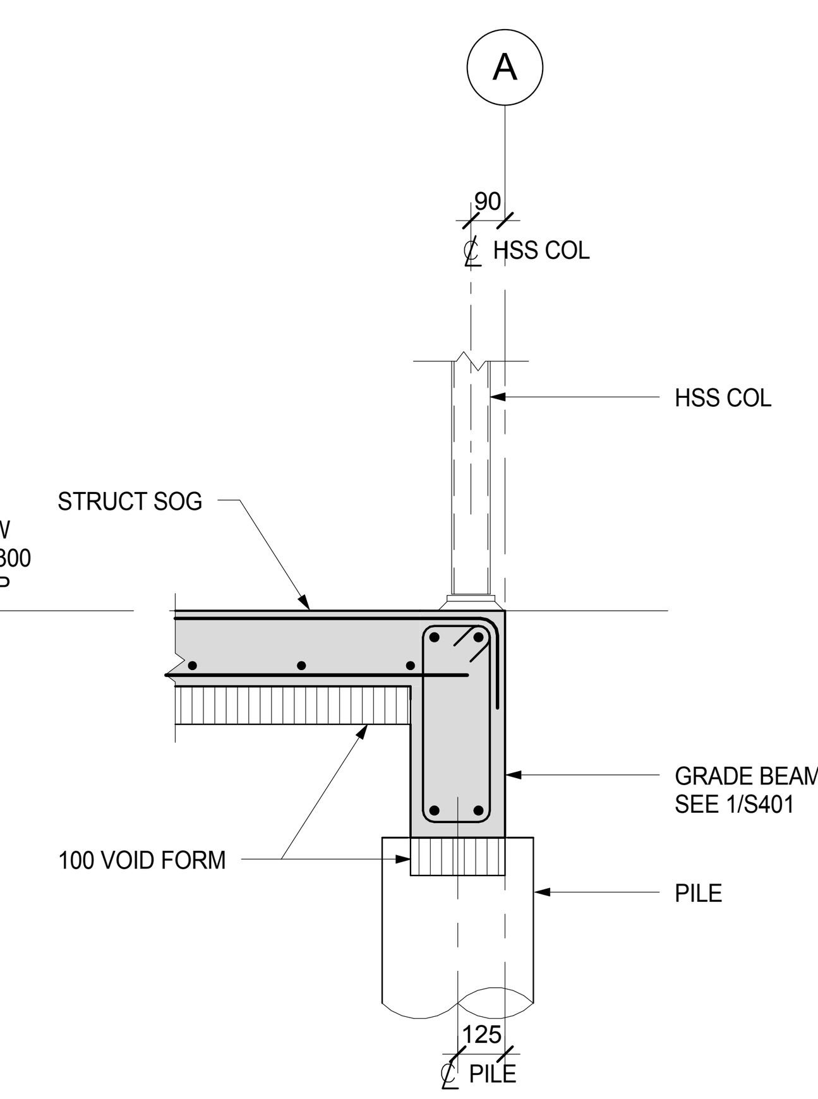

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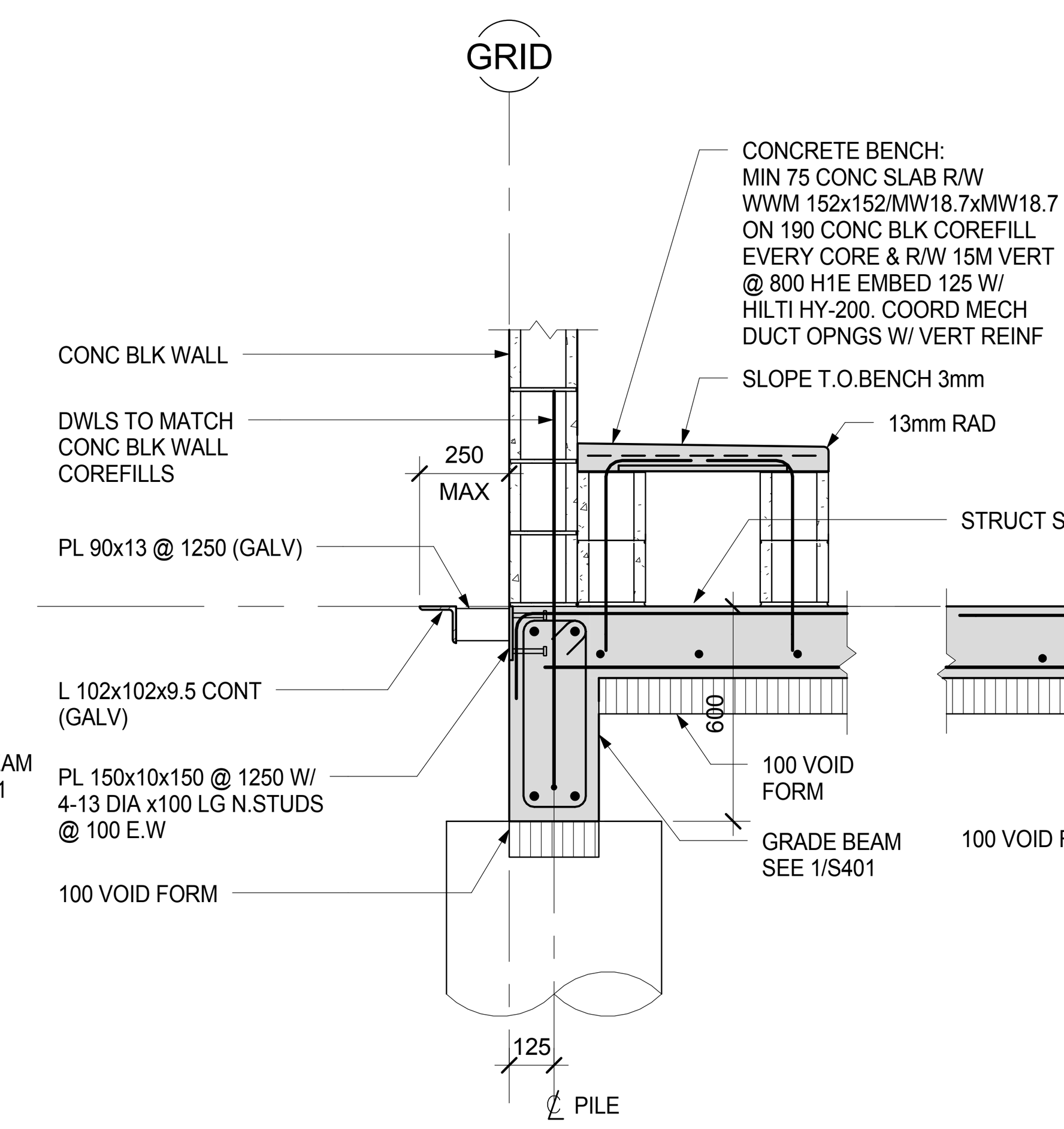
S401 1 : 20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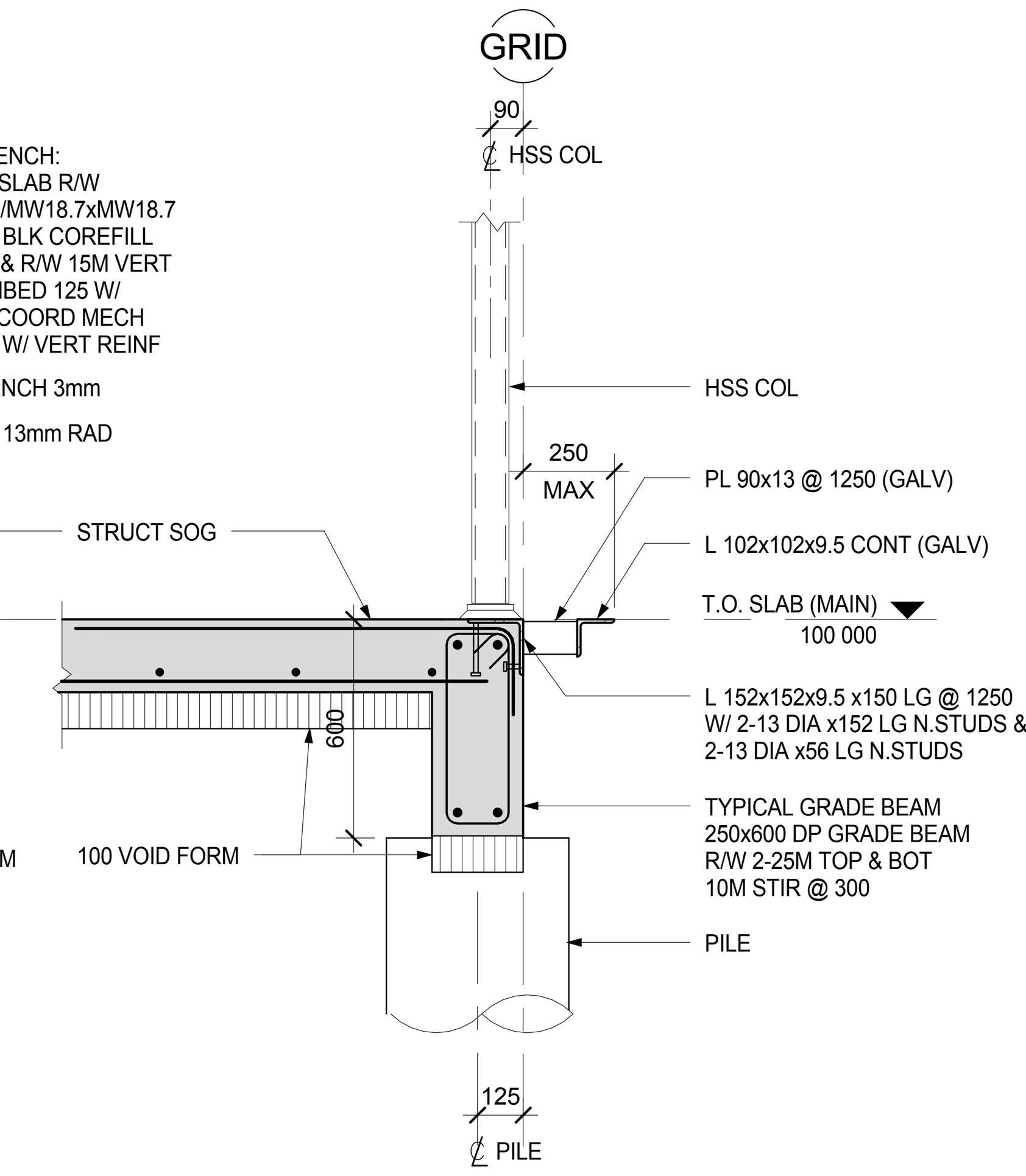
CONCRETE BENCH:
MIN 75 CONC SLAB R/W
WWM 152x152/MW18.7xMW18.7
ON 190 CONC BLK COREFILL
EVERY CORE & R/W 15M VERT
@ 800 H1E EMBED 125 W/
HILTI HY-200. COORD MECH
DUCT OPNGS W/ VERT REINF
CONC BLK WALL
SLOPE T.O.BENCH 3mm
13mm RAD
DWLS TO MATCH
CONC BLK WALL
COREFILLS
250
MAX
PL 90x13 @ 1250 (GALV)
L 102x102x9.5 CONT
(GALV)
600
100 VOID
FORM
PL 150x10x150 @ 1250 W/
4-13 DIA x100 LG N.STUDS
@ 100 E.W
GRADE BEAM
SEE 1/S401
100 VOID FORM
125
PILE

12 SECTION
S401 1 : 20


GRID
90
HSS COL
HSS COL
250
MAX
PL 90x13 @ 1250 (GALV)
STRUCT SOG
L 102x102x9.5 CONT (GALV)
T.O. SLAB (MAIN)
100 000
L 152x152x9.5 x150 LG @ 1250
W/ 2-13 DIA x152 LG N.STUDS &
2-13 DIA x56 LG N.STUDS
600
TYPICAL GRADE BEAM
250x600 DP GRADE BEAM
R/W 2-25M TOP & BOT
10M STIR @ 300
100 VOID FORM
PILE
125
PILE

13 SECTION
S401 1 : 20

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PROFESSIONAL ENGINEER
RORY A. SMITH
ALBERTA
January 29, 2016

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Date 29-Jan-2016
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The Association of Professional Engineers and Geoscientists of Alberta

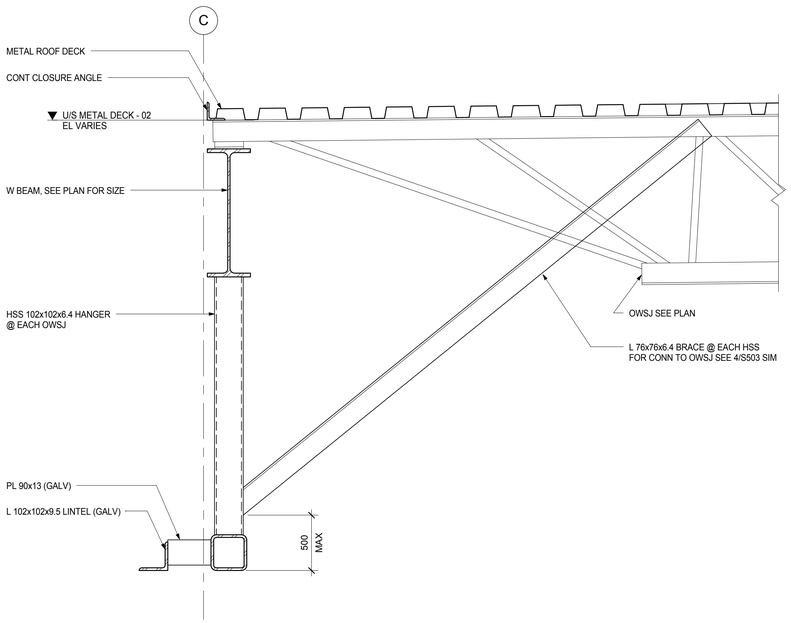
Client/Project
GOVERNMENT OF CANADA
ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

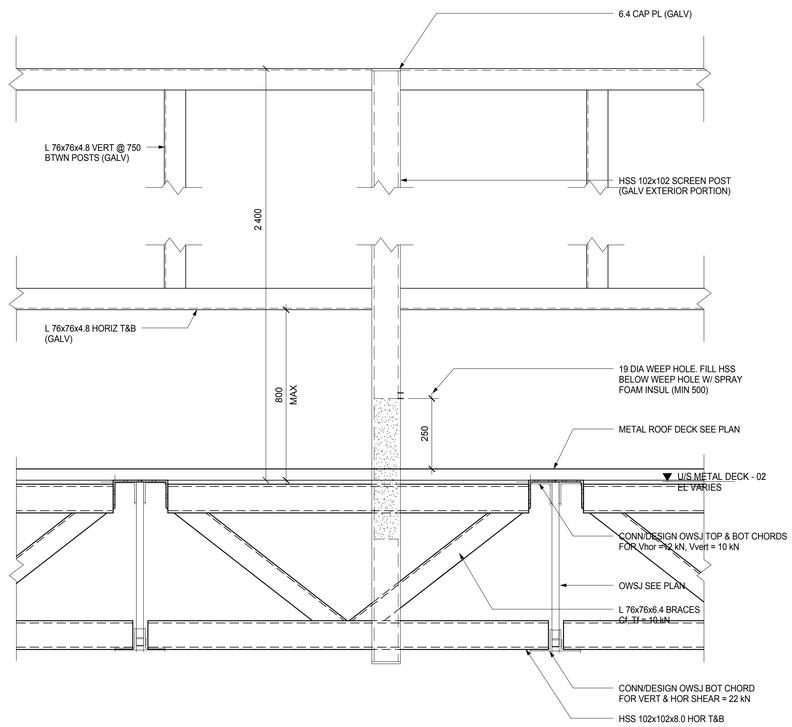
Title
SECTIONS AND DETAILS

Project No. 144202690
Scale As indicated
Revision
Drawing No. S401

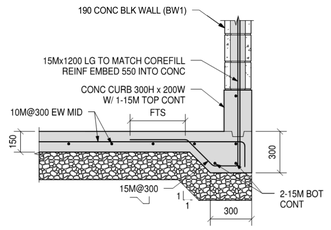
Sheet 7 of 12



1 / S402 SECTION
1 : 10



2 / S402 SECTION
1 : 10



3 / S402 GARBAGE ENCLOSURE SECTION
1 : 20

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GOVERNMENT OF CANADA
ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

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SECTIONS AND DETAILS

Project No. 144202690
Scale As indicated
Revision
Drawing No. **S402**
Sheet 8 of 12

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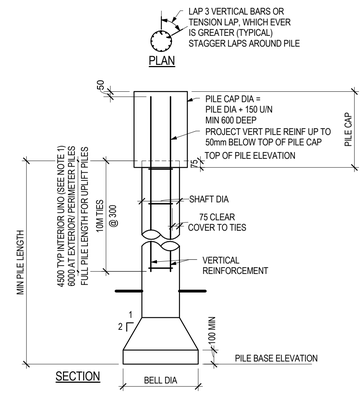
ORIGINAL SHEET - ARCH D (24"x36")

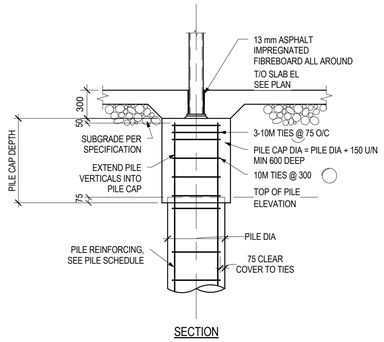
TYPICAL BELLED PILE DETAIL — 1



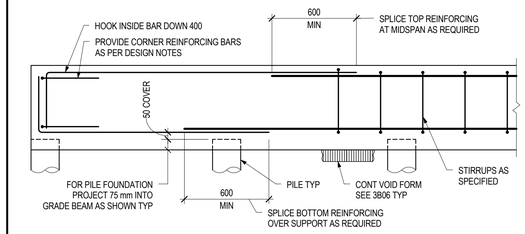
NOTES:

1. WHERE WINTER CONSTRUCTION IS EXPERIENCED, THE CONTRACTOR IS TO PROVIDE ADEQUATE PROTECTION, THROUGHOUT THE CONSTRUCTION PERIOD, PREVENTING FROST PENETRATION DEPTHS GREATER THAN 1000mm OR EXTEND THE REINFORCEMENT CAGE TO 6000mm BELOW GRADE.
2. PILE BASE ELEVATIONS ARE APPROXIMATE FOR BELLED PILES. THEY ARE TO BE BASED ON A MINIMUM OF 1500mm AND 1000mm INTO CLAY TILL AND CLAY SHALE RESPECTIVELY.

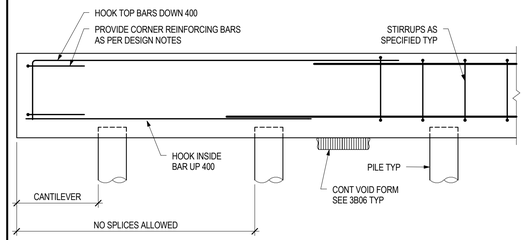
TYPICAL INTERIOR PILE CAP DETAIL — 2



TYPICAL GRADE BEAM DETAILS — 3

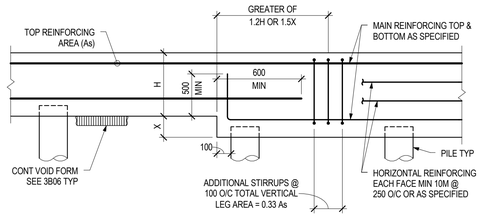


TYPICAL GRADE BEAM

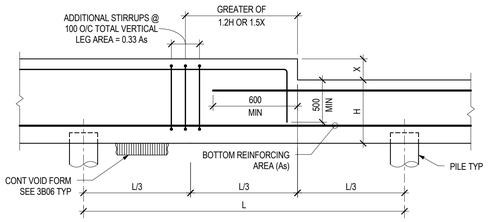


TYPICAL CANTILEVERED GRADE BEAM

TYPICAL STEPPED GRADE BEAM DETAILS — 4

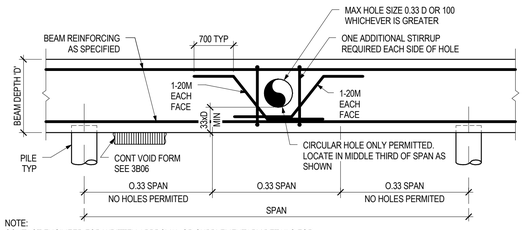


TYPICAL GRADE BEAM - BOTTOM STEPPING DOWN
(AT SUPPORT)



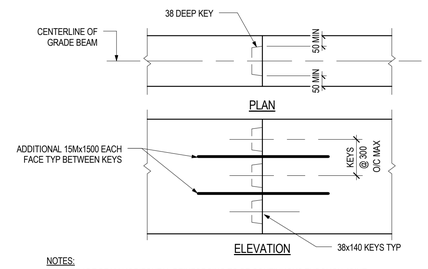
TYPICAL GRADE BEAM - TOP STEPPING DOWN
(IN MIDDLE THIRD OF SPAN)

TYPICAL REINFORCEMENT REQUIRED FOR HOLES THROUGH GRADE BEAMS — 5



NOTE:
CONTACT ENGINEER FOR WRITTEN APPROVAL OR SUPPLEMENTARY DETAILS FOR HOLES IN ALTERNATE LOCATIONS.

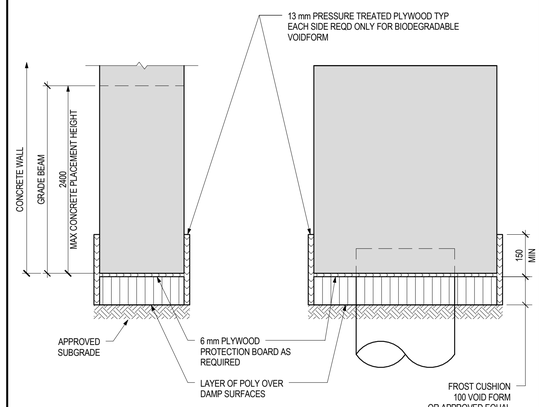
TYPICAL CONSTRUCTION JOINT IN GRADE BEAM — 6



NOTES:

1. ALL GRADE BEAM HORIZONTAL REINFORCING TO BE CONTINUOUS THROUGH JOINT.
2. LOCATE JOINT AT MIDSPAN & AT 20 m MAX.

TYPICAL VOID FORM DETAILS — 7



NOTE:
REQUIRED UNDER ALL EXTERIOR GRADE BEAMS, WALLS, AND PILE CAPS

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Client/Project

GOVERNMENT OF CANADA
ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

Title

TYPICAL DETAILS

Project No. 144202690
Scale As indicated
Revision
Drawing No.

Sheet 9 of 12

S501

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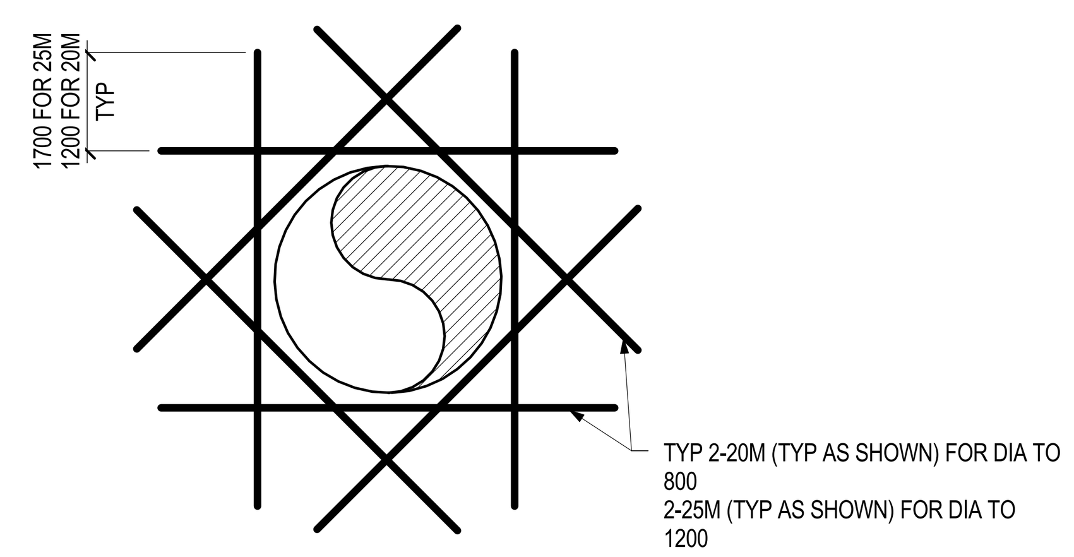
ORIGINAL SHEET - ARCH D (24"x36")

TYPICAL ADDITIONAL REINFORCING AROUND PIPES IN CONCRETE SLABS AND WALLS — 1

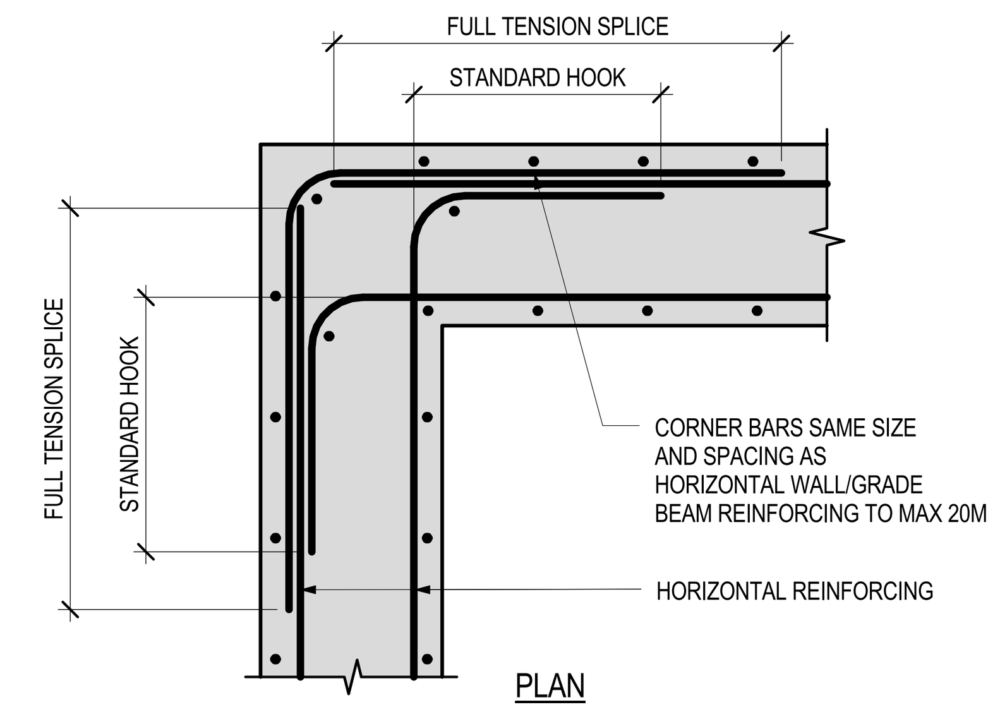


PIPE DIA 300 TO 1200

NOTES:

1. NUMBER OF REINFORCING BARS TO BE CUT AT OPENING TO BE KEPT TO A MINIMUM.
2. REINFORCING BARS TO BE KEPT 75 mm CLEAR OF OPENING.
3. PROVIDE STANDARD HOOKS ON ADDITIONAL REINFORCING WHERE IT IS NOT POSSIBLE TO INSTALL REINFORCING WITH REQUIRED LENGTH.

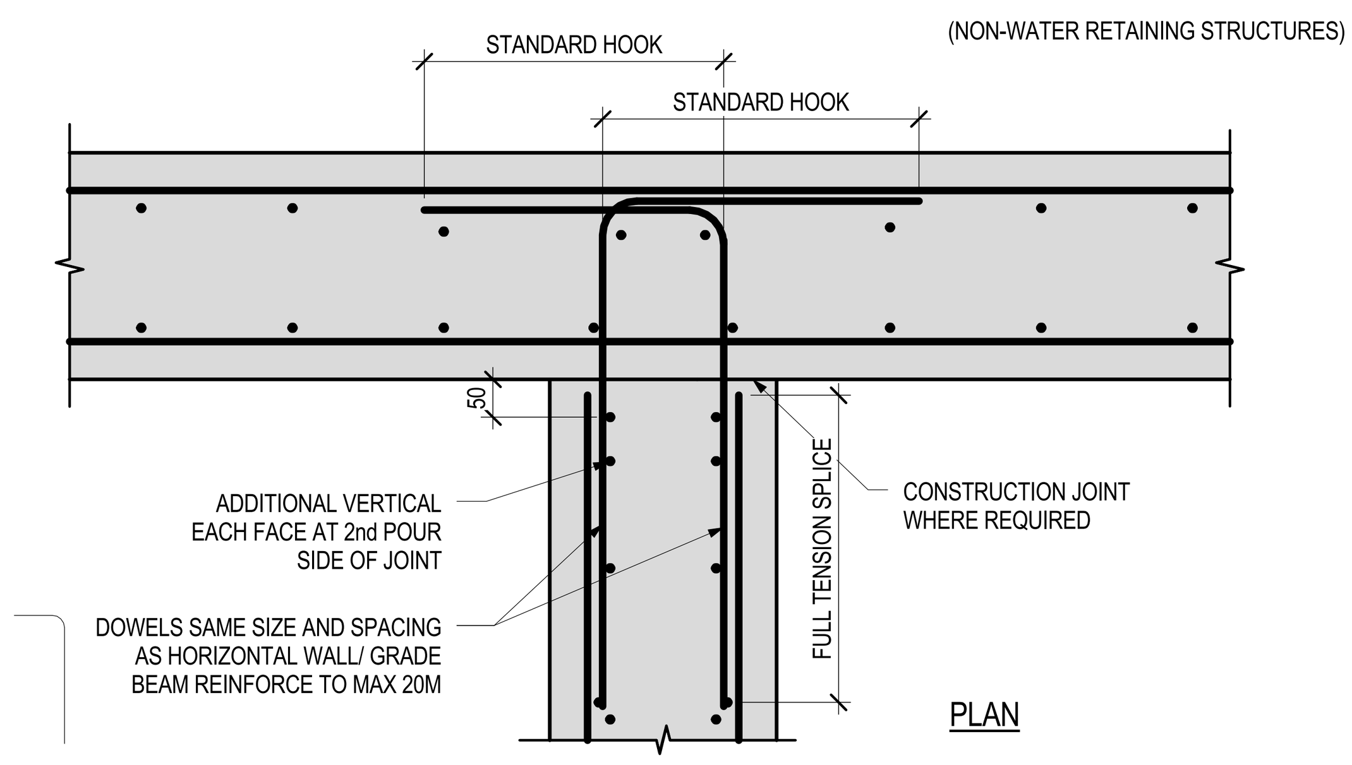
TYPICAL REINFORCEMENT AT CORNER WALL/ GRADE BEAM INTERSECTION — 2



PLAN

TYPICAL REINFORCEMENT AT WALL/ GRADE BEAM INTERSECTION — 3

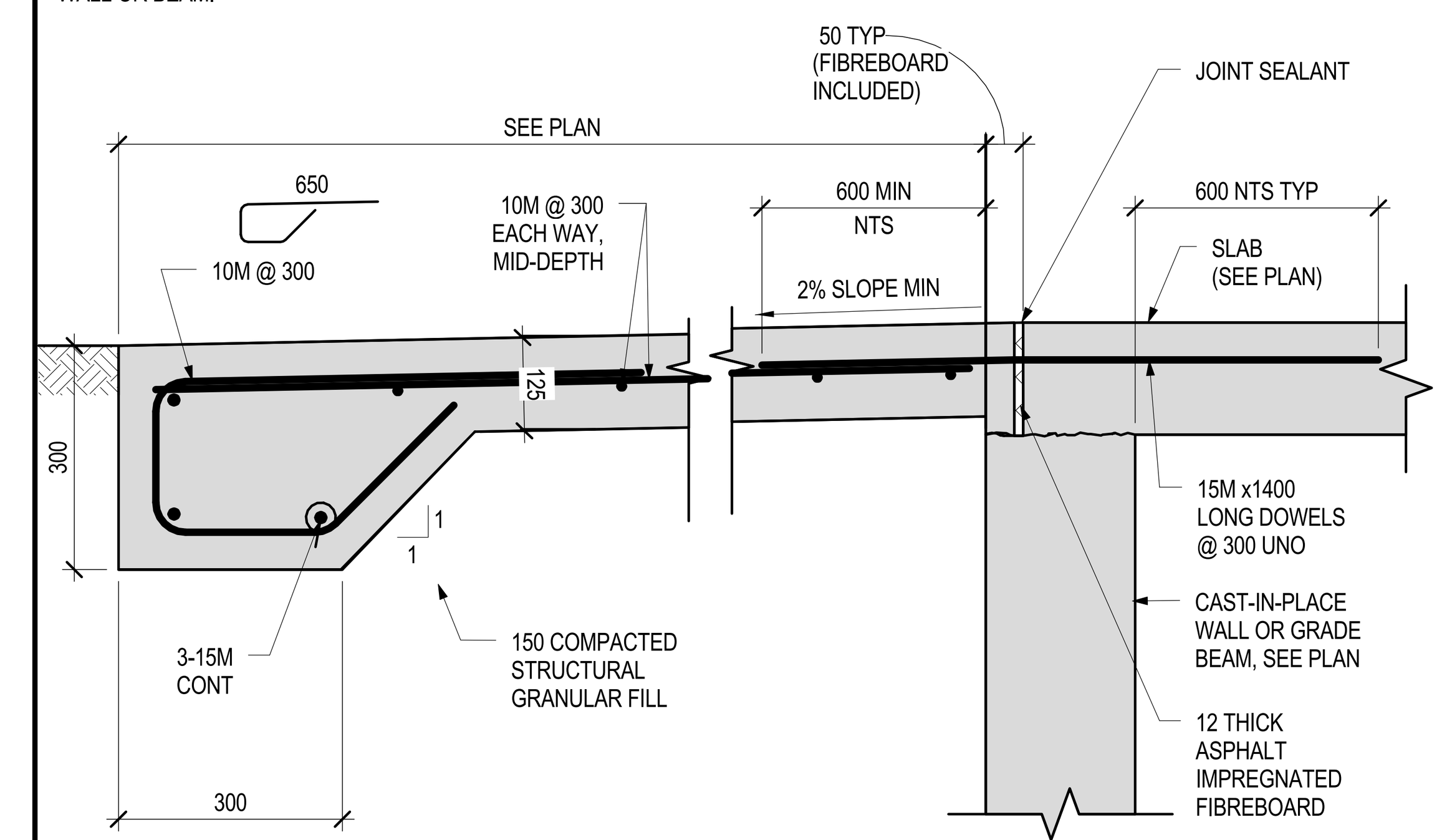
(NON-WATER RETAINING STRUCTURES)



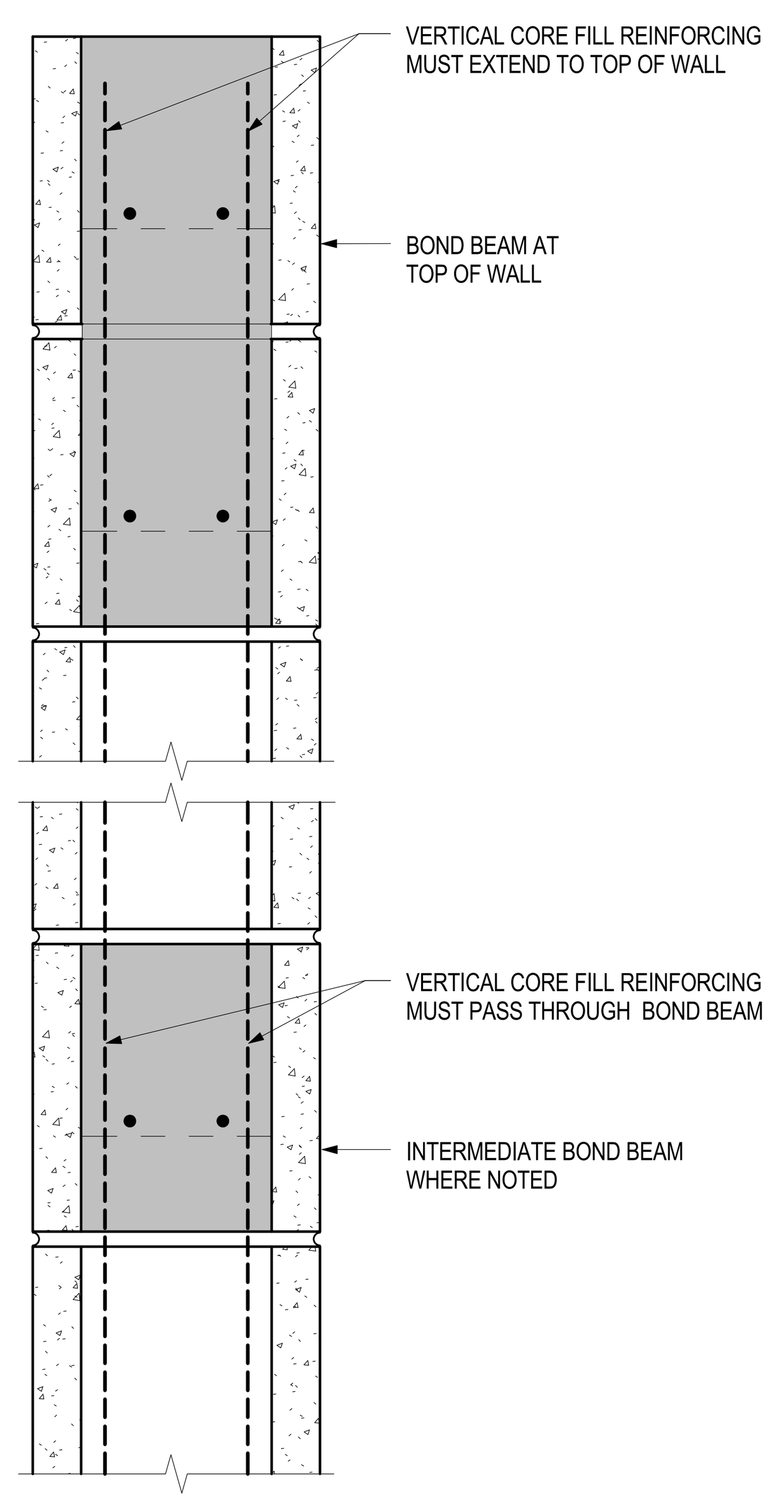
PLAN

TYPICAL APRON SLAB AT MANDOOR DETAIL — 4

NOTE:
APRON TO BEAR ON BEAM OR WALL IN A RECESS WHICH EXTENDS THE WIDTH OF THE DOOR ONLY. WHERE APRON EXTENDS PAST DOOR JAMBS, INSTALL ISOLATION JOINT AT OUTSIDE FACE OF WALL OR BEAM.

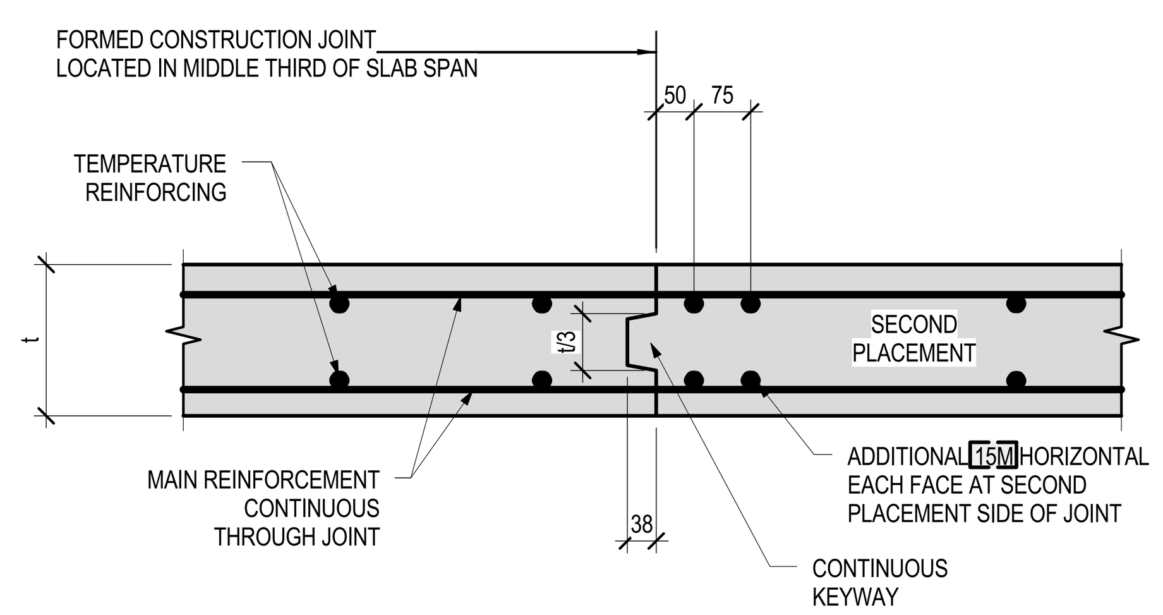


TYPICAL HORIZONTAL BOND BEAMS IN CONCRETE BLOCK WALL — 5



SECTION

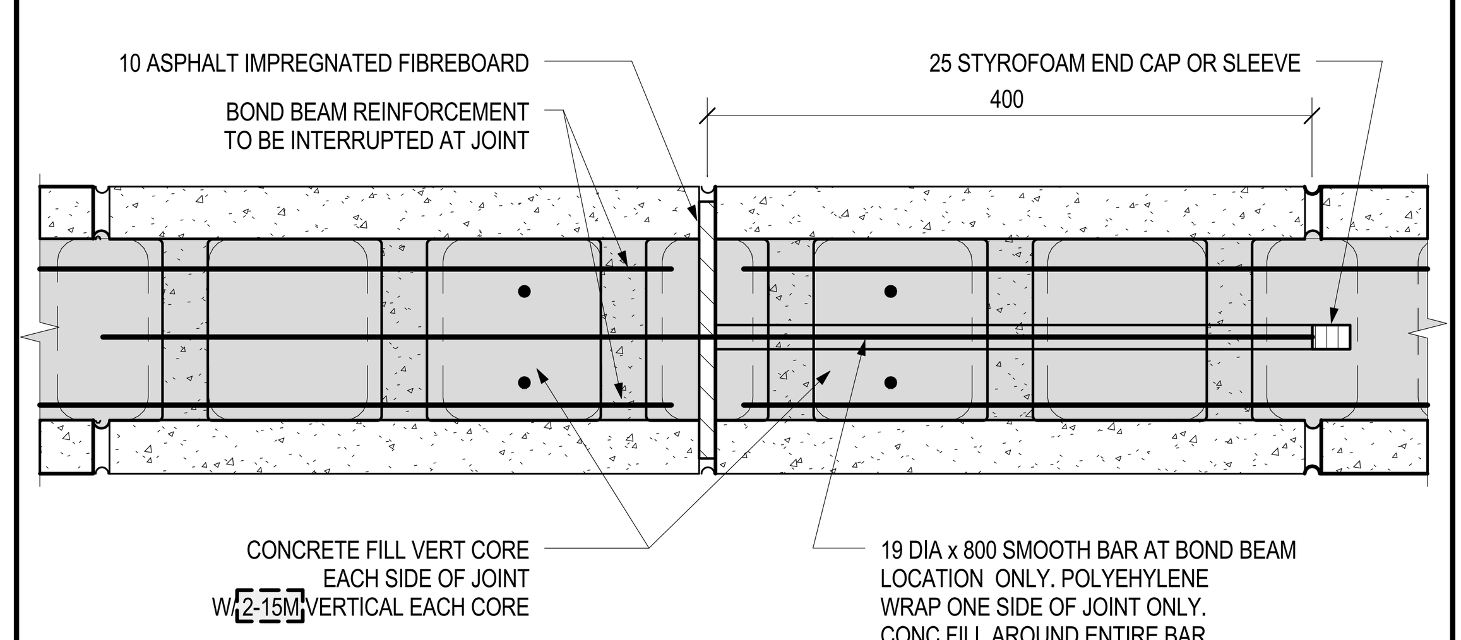
TYPICAL CONSTRUCTION JOINT IN STRUCTURAL SLAB — 6



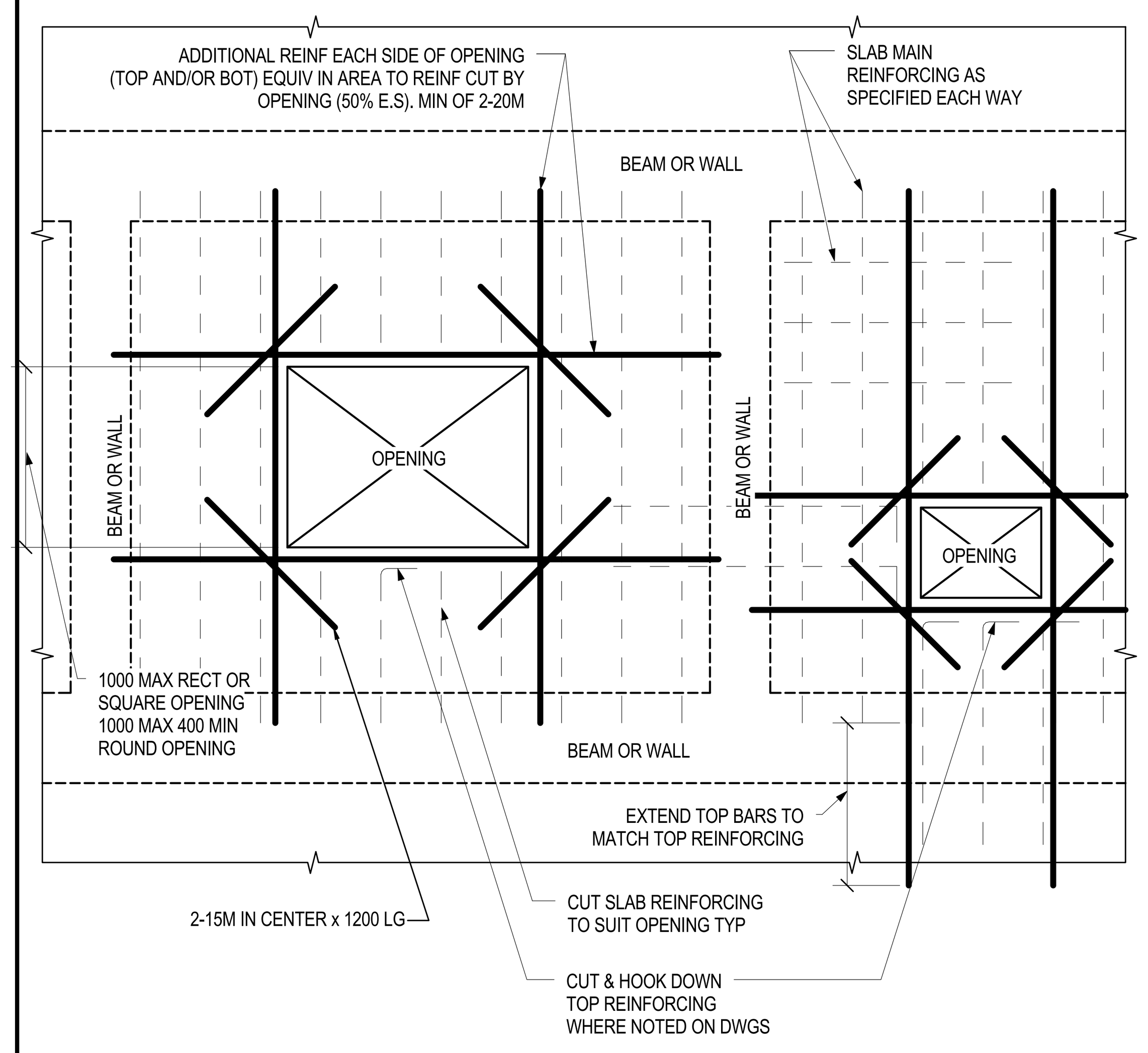
NOTES:

1. DO NOT SPLICE REINFORCING STEEL THROUGH JOINT
2. ALL PROPOSED LOCATIONS TO BE APPROVED BY ENGINEER

TYPICAL CONTROL JOINT IN CONCRETE BLOCK WALL — 7



TYPICAL ADDITIONAL REINFORCING REQUIRED FOR OPENINGS THROUGH TWO WAY CONCRETE SLABS — 8



NOTES

1) FOR OPENINGS LARGER THAN INDICATED, OR NOT SPECIFICALLY DETAILED ELSEWHERE REINFORCING MUST BE APPROVED IN WRITING BY THE ENGINEER.
2) REFER TO ARCHITECTURAL & MECHANICAL DRAWINGS FOR DIMENSIONS & LOCATIONS FOR ALL OPENINGS NOT SPECIFICALLY DETAILED ON STRUCTURAL DRAWINGS.

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Client/Project

GOVERNMENT OF CANADA
ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

Title

TYPICAL DETAILS

Project No.	Scale
144202690	1 : 10

Revision — Drawing No.

S502

Sheet 10 of 12

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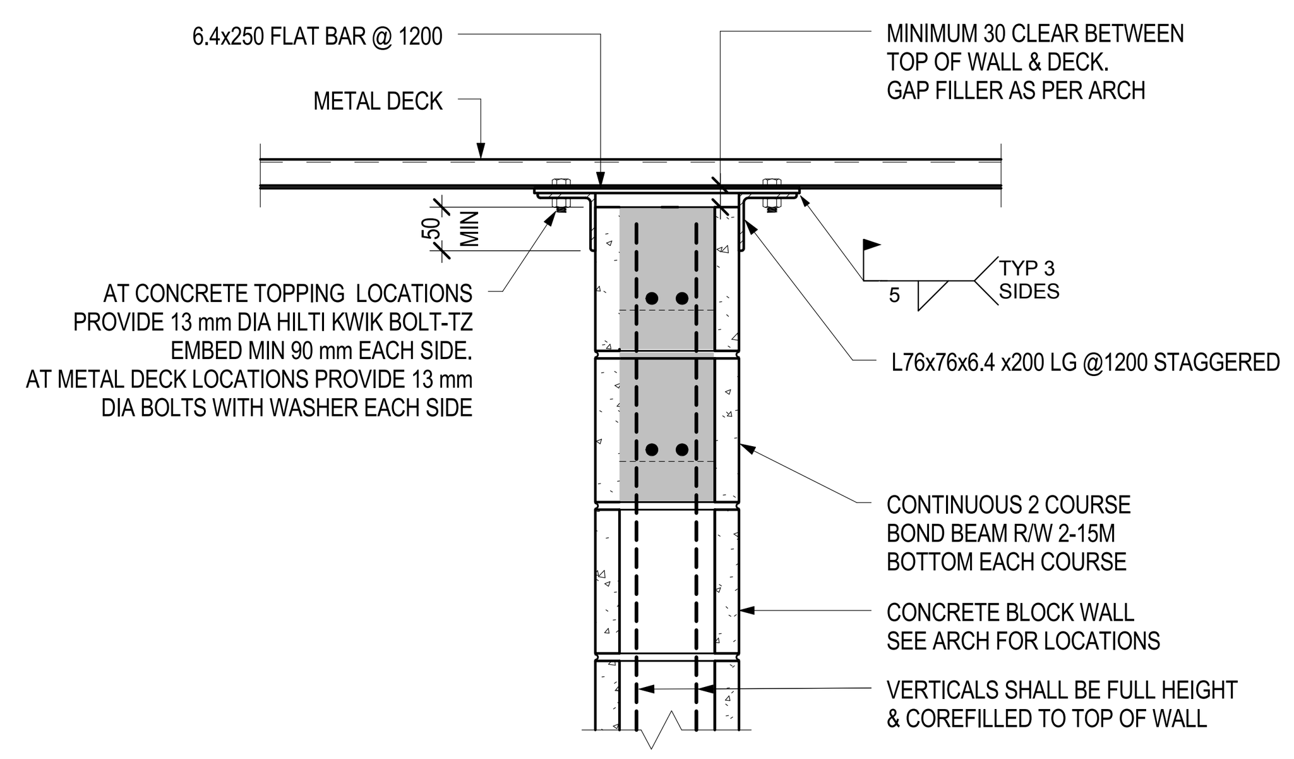
ORIGINAL SHEET - ARCH D (24"x36")

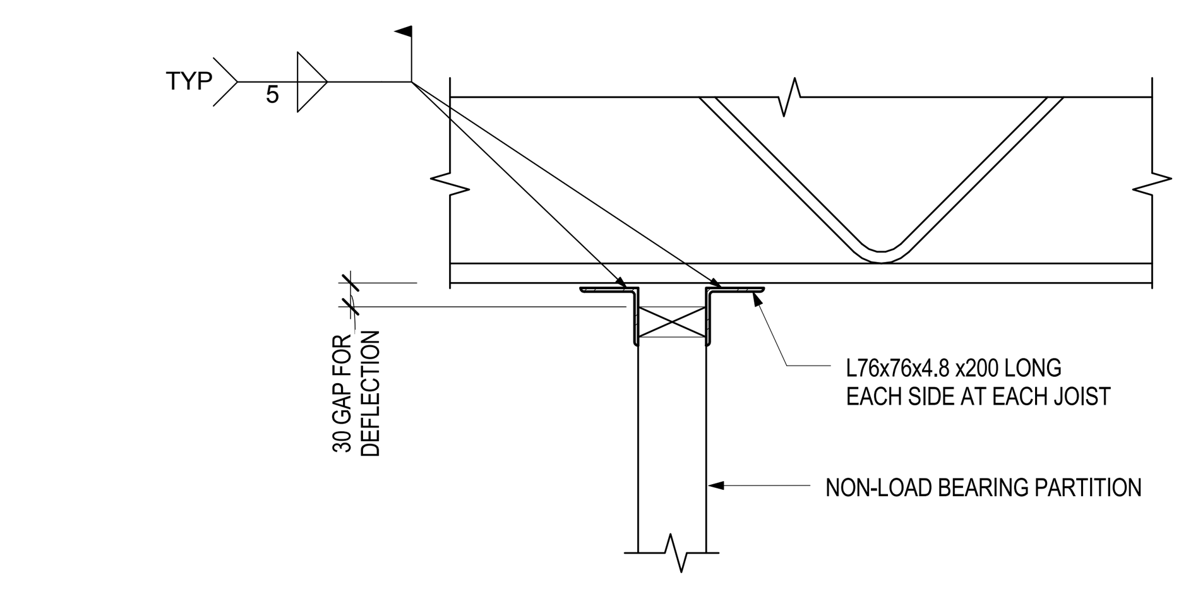
TYPICAL LATERAL SUPPORT FOR NON LOAD BEARING CONCRETE BLOCK WALL TO DECK — 1



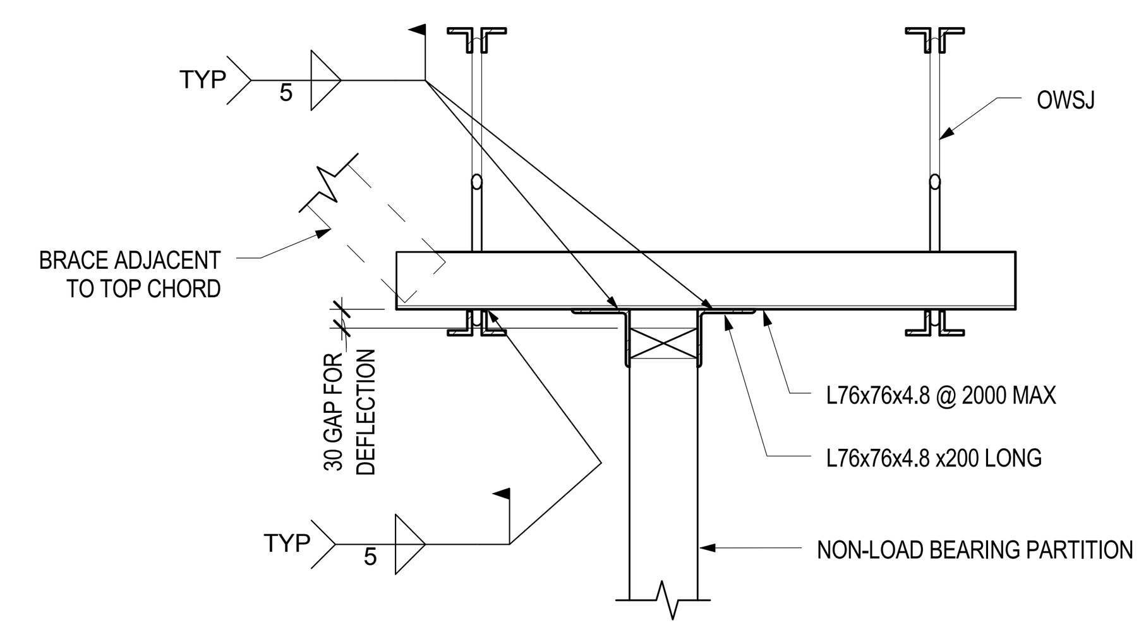
6.4x250 FLAT BAR @ 1200
METAL DECK
MINIMUM 30 CLEAR BETWEEN TOP OF WALL & DECK. GAP FILLER AS PER ARCH
50 MIN
5
TYP 3 SIDES
AT CONCRETE TOPPING LOCATIONS PROVIDE 13 mm DIA HILTI KWIK BOLT-TZ EMBED MIN 90 mm EACH SIDE. AT METAL DECK LOCATIONS PROVIDE 13 mm DIA BOLTS WITH WASHER EACH SIDE
L76x76x6.4 x200 LG @1200 STAGGERED
CONTINUOUS 2 COURSE BOND BEAM R/W 2-15M BOTTOM EACH COURSE
CONCRETE BLOCK WALL SEE ARCH FOR LOCATIONS
VERTICALS SHALL BE FULL HEIGHT & COREFILLED TO TOP OF WALL

SECTION

TYPICAL LATERAL SUPPORT FOR NON-LOAD BEARING PARTITIONS — 2

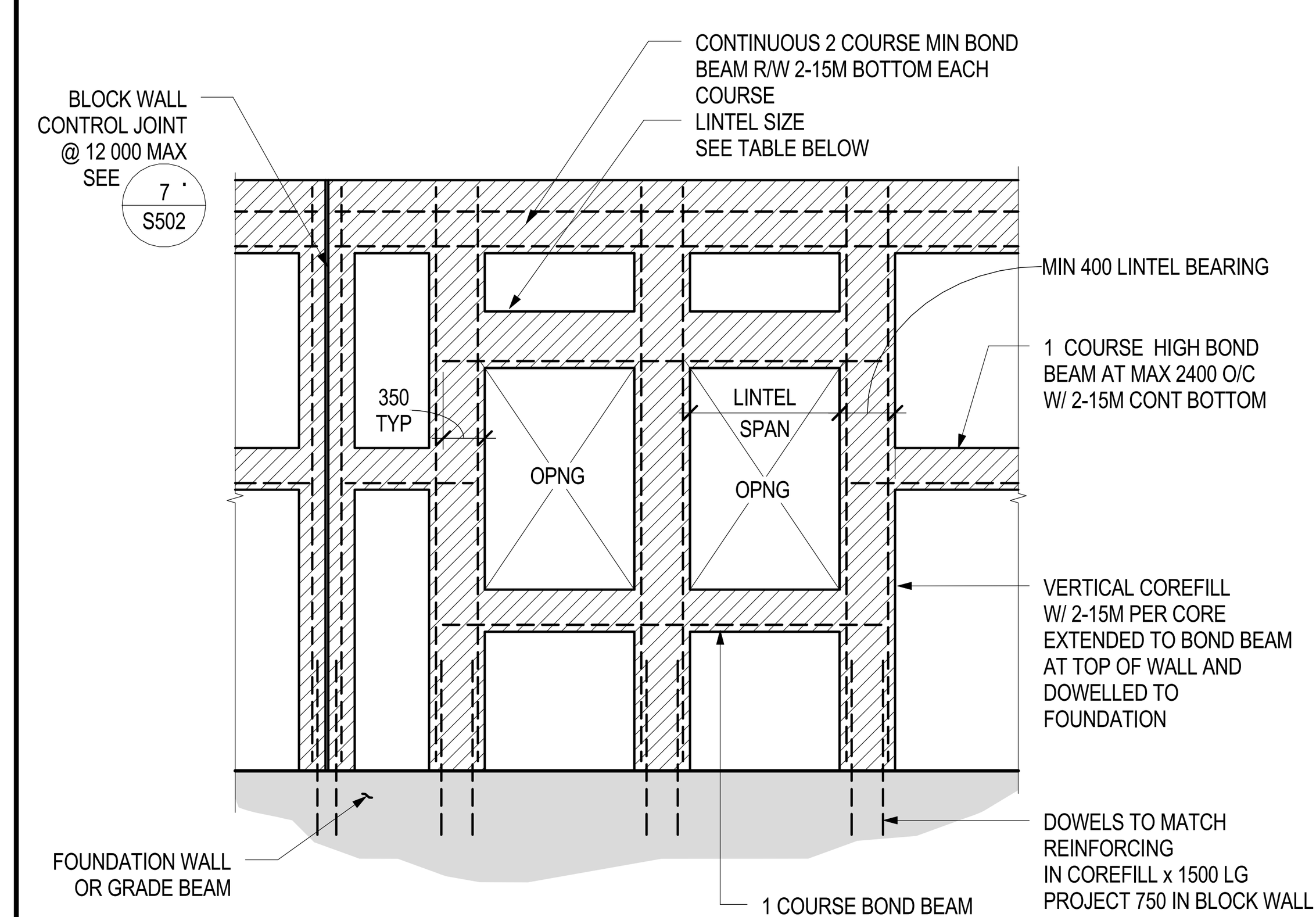


NON-LOAD BEARING WALL PERPENDICULAR TO OWSJ



NON-LOAD BEARING WALL PARALLEL TO OWSJ

TYPICAL LOAD BEARING CONCRETE BLOCK WALL REINFORCING — 3



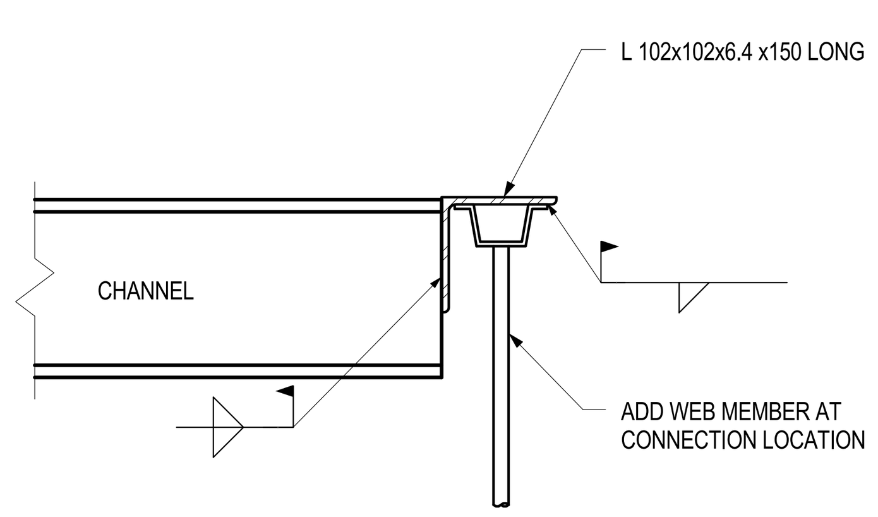
BLOCK WALL CONTROL JOINT @ 12 000 MAX SEE 7 S502
CONTINUOUS 2 COURSE MIN BOND BEAM R/W 2-15M BOTTOM EACH COURSE
LINTEL SIZE SEE TABLE BELOW
MIN 400 LINTEL BEARING
1 COURSE HIGH BOND BEAM AT MAX 2400 O/C W/ 2-15M CONT BOTTOM
350 TYP
OPNG
LINTEL SPAN
OPNG
VERTICAL COREFILL W/ 2-15M PER CORE EXTENDED TO BOND BEAM AT TOP OF WALL AND DOWELLED TO FOUNDATION
FOUNDATION WALL OR GRADE BEAM
DOWELS TO MATCH REINFORCING IN COREFILL x 1500 LG PROJECT 750 IN BLOCK WALL
1 COURSE BOND BEAM W/ 2-15M BOTTOM

ELEVATION

LINTEL SCHEDULE (TYPICAL UNO) *		
SPAN	LINTEL SIZE	REINFORCEMENT
UP TO 1200	400 DEEP	1-15M BOT
1201 TO 2400	600 DEEP	1-20M BOT
2401 TO 3600	800 DEEP	1-20M BOT, 1-15M MID
3601 TO 4500	800 DEEP	1-20M TOP & BOT, 1-15M MID, 10M HAIRPINS @ 300

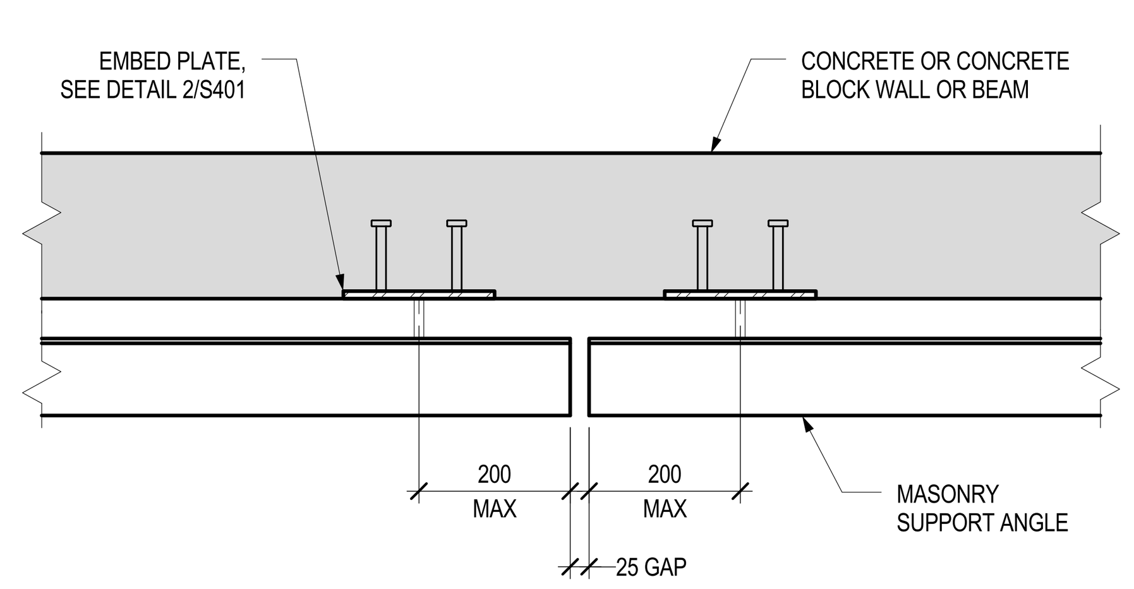
* NOTE: NO CONCENTRATED LOADS ALLOWED

TYPICAL FRAMING CHANNEL CONNECTION TO OPEN WEB STEEL JOIST — 4



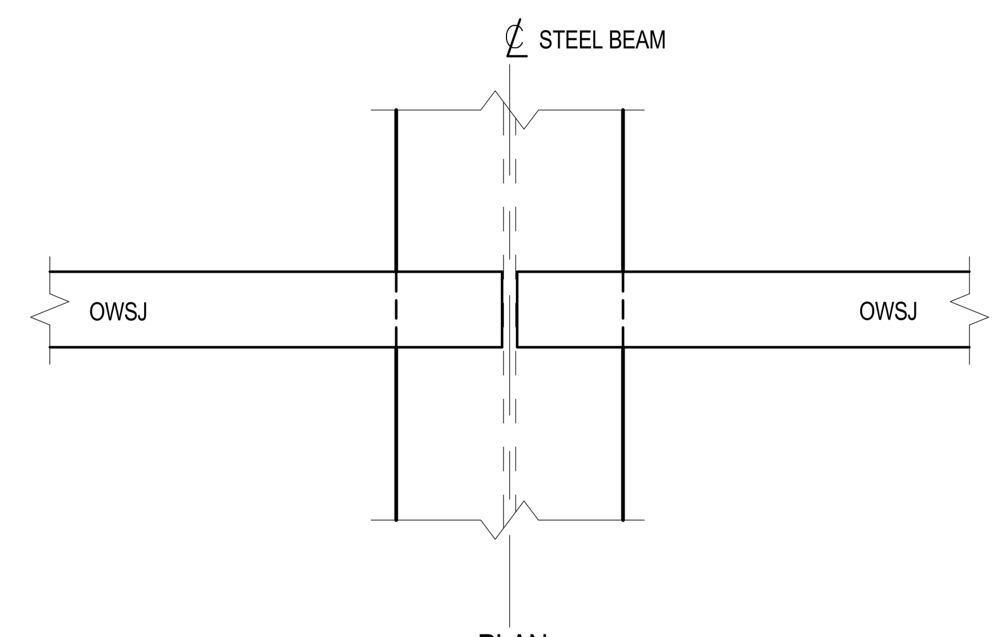
SECTION

TYPICAL PLAN OF LEDGER ANGLE AT MASONRY CONTROL JOINTS & BUILDING EXPANSION JOINTS — 5

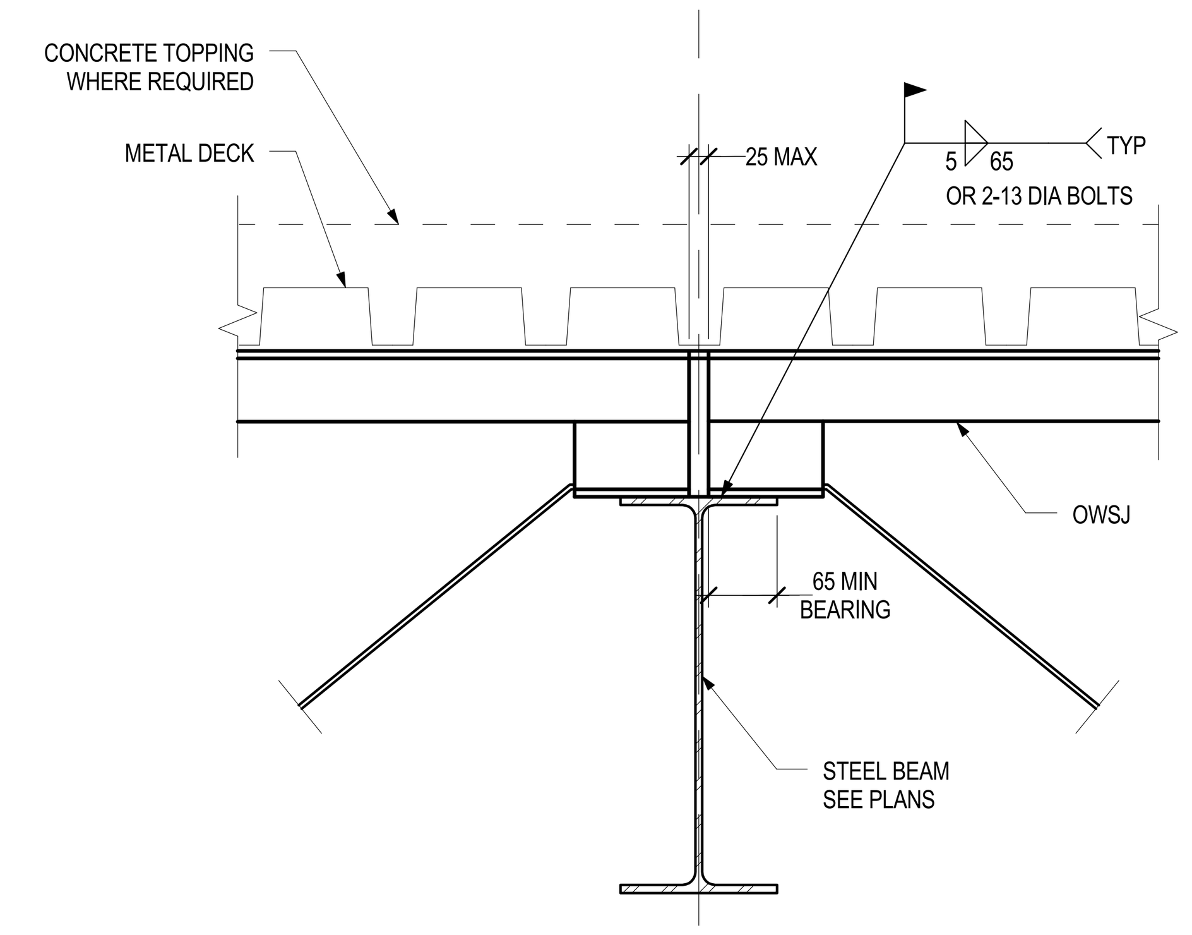


PLAN

TYPICAL OPEN WEB STEEL JOIST BEARING ON STEEL BEAM (155 MIN TO 210 MAX WIDE FLANGE) — 6

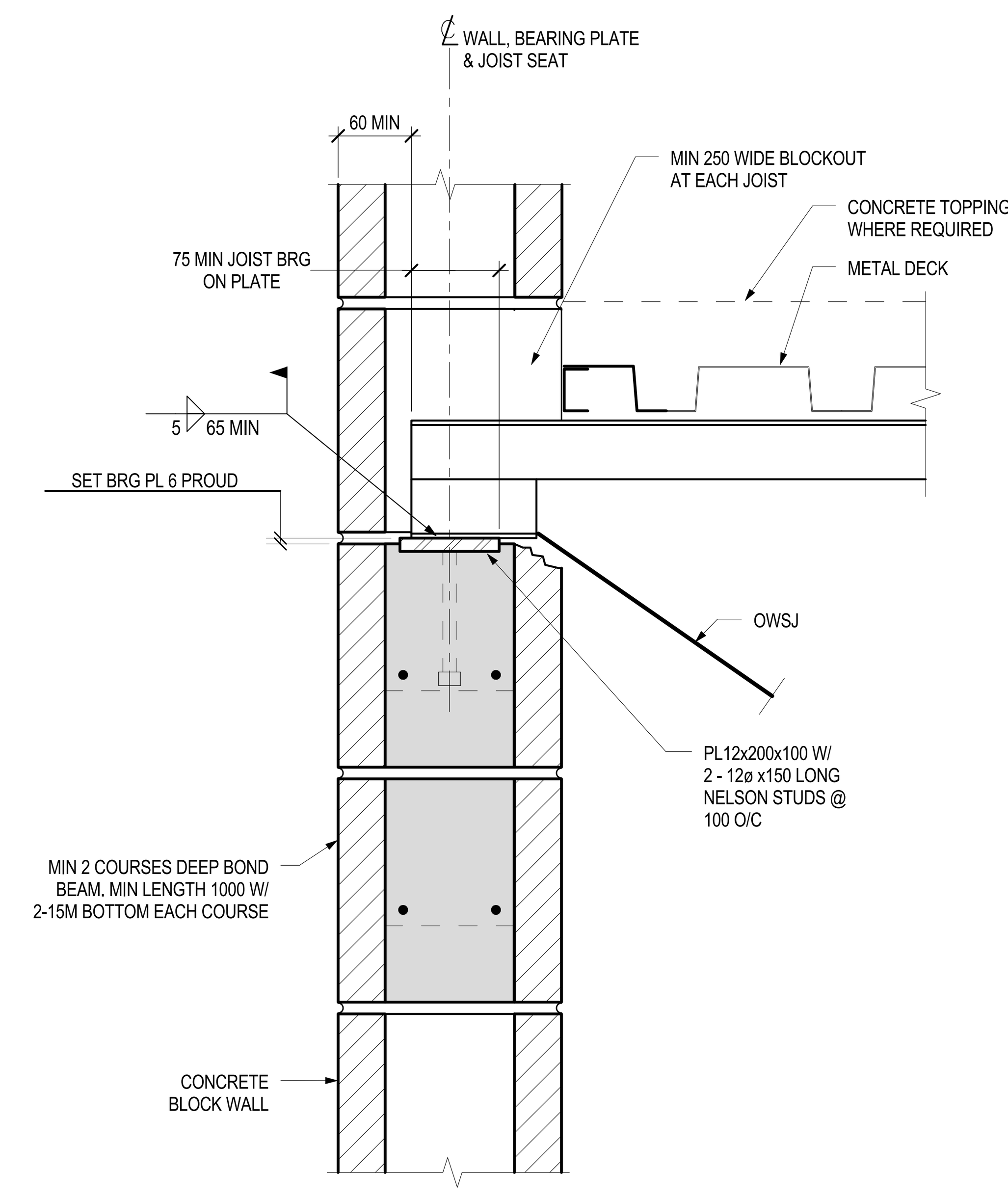


PLAN



SECTION

TYPICAL OPEN WEB STEEL JOIST BEARING INTO SIDE OF CONCRETE BLOCK WALL — 7



WALL, BEARING PLATE & JOIST SEAT
60 MIN
MIN 250 WIDE BLOCKOUT AT EACH JOIST
CONCRETE TOPPING WHERE REQUIRED
METAL DECK
75 MIN JOIST BRG ON PLATE
5 65 MIN
SET BRG PL 6 PROUD
OWSJ
PL12x200x100 W/ 2 - 12ø x150 LONG NELSON STUDS @ 100 O/C
MIN 2 COURSES DEEP BOND BEAM. MIN LENGTH 1000 W/ 2-15M BOTTOM EACH COURSE
CONCRETE BLOCK WALL

SECTION

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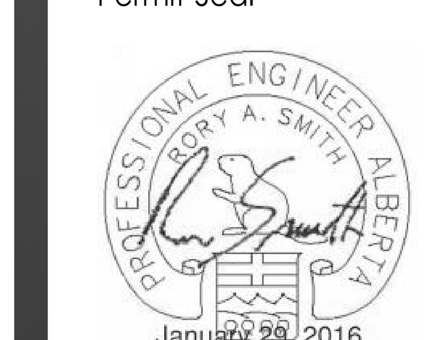

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ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
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Title

TYPICAL DETAILS

Project No. 144202690

Scale 1 : 10

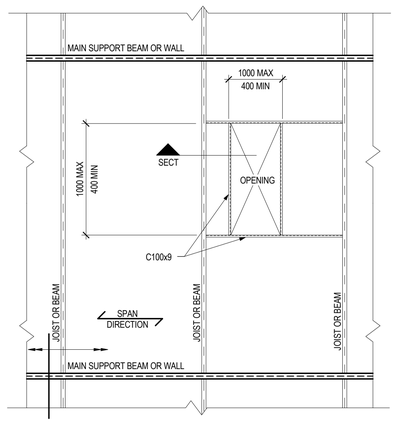
Revision

Drawing No.

S503

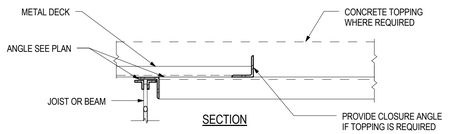
TYPICAL OPENING THROUGH METAL DECK (400x400 MIN / 1000x1000 MAX)

1



PLAN

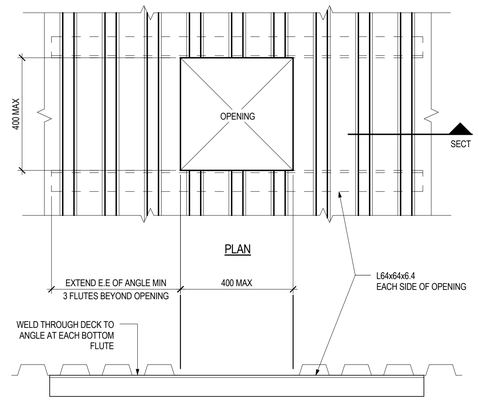
NOTE:
1. MAX EQUIPMENT LOAD [ ] kN



SECTION

TYPICAL OPENING THROUGH METAL DECK (400x400 MAX)

2



PLAN

SECTION

Stantec

STANTEC CONSULTING LTD.
325-25 ST SE
CALGARY, AB T2A 7H8
Tel: (403) 716.8000 / Fax: (403) 716.8019

Consultants

Stantec Consulting Ltd.

Legend

Notes

Revision	By	Appd	YYYY.MM.DD
ISSUED FOR TENDER	L.D.H	R.A.S	2016.01.29
Issued	By	Appd	YYYY.MM.DD

Permit-Seal

PROFESSIONAL ENGINEER JERRY A. SMITH ALBERTA
January 29, 2016

PERMIT TO PRACTICE
STANTEC CONSULTING LTD.
Signature
Date 29-Jan-2016
PERMIT NUMBER: P 0258
The Association of Professional Engineers and Geoscientists of Alberta

Client/Project

GOVERNMENT OF CANADA
ELK POINT - NEW BUILDING

54 STREET AND RAILWAY AVENUE
ELK POINT, ALBERTA

Title

TYPICAL DETAILS

Project No.	Scale
144202690	1 : 10
Revision	Drawing No.
	S504

Sheet 12 of 12

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1/28/2016 3:37:56 PM

ORIGINAL SHEET - ARCH D (24"x36")