1. GENERAL NOTES

1. READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH SEPARATELY BOUND SPECIFICATIONS, TYPICAL DETAILS AND ALL OTHER CONTRACT DOCUMENTS. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY DOCUMENTS.

2. WHERE DOCUMENTS ARE REFERENCED IN THE GENERAL AND DESIGN NOTES, THEY SHALL BE THE LATEST EDITIONS, UNLESS OTHERWISE NOTED OR SHOWN.

3. BEFORE PROCEEDING WITH WORK, CHECK ALL THE DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS AGAINST ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AND EXISTING SITE CONDITIONS. REPORT INCONSISTENCIES TO CONSULTANT BEFORE PROCEEDING WITH THE WORK.

4. CHECK AND VERIFY IN THE FIELD ALL SIZES AND DIMENSIONS INVOLVING THE EXISTING STRUCTURE AND COORDINATE WITH NEW CONSTRUCTION.

5. DO NOT EXCEED DURING CONSTRUCTION, DESIGN LIVE LOADS SHOWN ON PLANS, REDUCED AS NECESSARY UNTIL MATERIALS REACH DESIGN STRENGTH.

6. DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ELEVATIONS ARE IN METRES UNLESS NOTED OTHERWISE.

7. SCALES NOTED ON DRAWINGS ARE FOR GENERAL INFORMATION ONLY. DO NOT SCALE DRAWINGS.

8. TYPICAL STRUCTURAL DETAILS SHOWN IN DRAWING SERIES S02 SHALL GOVERN THE WORK. IF DETAILS DIFFER ON OTHER DRAWINGS, THE MOST STRINGENT GOVERNS.

9. SEE ARCHITECTURAL DRAWINGS FOR THE FOLLOWING:
   a. SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS, EXCEPT AS NOTED. WHERE NOMINAL DIMENSIONS ARE SHOWN, MAKE NECESSARY PROVISIONS FOR ROUGH OPENINGS TO ALLOW PROPER INSTALLATION OF ALL BUILDING SYSTEMS.
   b. SIZE AND LOCATION OF ALL INTERIOR AND EXTERIOR NON-LOAD BEARING PARTITIONS. MAKE NECESSARY PROVISIONS TO ALLOW FOR DEFLECTION OF THE STRUCTURE WITHOUT LOADING ANY NON-LOAD BEARING PARTITIONS.
   c. SIZE AND LOCATION OF ALL CONCRETE CURBS, FLOOR DRAINS SLOPES, INSERTS, ETC. EXCEPT AS SHOWN.
   d. TRENCHES, PITS, AND SUMPS.
   e. ROOF, WALL AND FLOOR FINISHES.
   f. WATERPROOFING AND DAMP PROOFING.
   g. ELEVATIONS AND DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS. NOTE THAT STRUCTURAL DRAWINGS DO NOT INTEND TO DUPLICATE DIMENSIONS SHOWN ON OTHER CONTRACT DOCUMENTS.

10. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
    a. PIPE AND DUCT RUNS, SLEEVES, HANGERS, TRENCHES, WALL AND SLAB OPENINGS ETC. EXCEPT AS SHOWN OR NOTED.
    b. ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS IN WALLS AND SLABS.
    c. CONCRETE INSERTS FOR ELECTRICAL, MECHANICAL OR PLUMBING FIXTURES.
    d. SIZE AND LOCATION OF MACHINE OR EQUIPMENT BASES, ANCHOR BOLTS FOR MOTOR MOUNTS, EXCEPT AS SHOWN OR NOTED.

11. ALL ARCHITECTURAL, ELECTRICAL OR MECHANICAL LOADS IMPOSED ON THE STRUCTURE THAT EXCEED 50kg SHALL BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER PRIOR TO INSTALLATION UNLESS SPECIFICALLY DETAILED OR NOTED ON THE STRUCTURAL DRAWINGS.

12. DRAWINGS AND DETAILS ARE INTENDED TO SHOW THE END RESULT OF DESIGN. MODIFICATIONS TO THE DESIGN NECESSARY TO SUIT MEANS AND METHODS OF CONSTRUCTION, SITE DIMENSIONS OR CONDITIONS SHALL BE SUBMITTED TO CONSULTANT FOR APPROVAL BEFORE PROCEEDING.

13. IN THE CASE OF DISCREPANCIES BETWEEN THE GENERAL NOTES, SPECIFICATIONS, PLANS/DETAILS OR REFERENCE STANDARDS THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.

14. MISCELLANEOUS METAL, PRECAST AND STAIR FABRICATORS SHALL:
    a. PROVIDE SHOP DRAWINGS TO THE CONSULTANT PRIOR TO FABRICATION, STAMPED, SIGNED AND DATED BY A PROFESSIONAL ENGINEER.
    b. DESIGN ALL GUARDS TO MEET LATERAL LOADS DESCRIBED IN ABC 4.1.5.15 AND 4.1.5.16.
    c. DESIGN ALL HANDRAILS TO MEET LOADS DESCRIBED IN ABC 3.4.6.5.
    d. DESIGN ALL STAIRS TO SUPPORT A MINIMUM LIVE LOAD OF 4.8 kPa UNLESS NOTED OTHERWISE ON DRAWINGS.

15. REFERENCE SHALL BE MADE TO THE FOLLOWING EXISTING DRAWINGS:
    AS -BUILT DRAWINGS S-00 TO S-05 DATED MAY 2006 PREPARED BY PROTOSTATIX ENGINEERING CONSULTANTS INC. (PROJECT NUMBER 05-1867) AVAILABLE FROM THE DEPARTMENTAL REPRESENTATIVE. WHERE EXISTING CONDITIONS DIFFER FROM THOSE SHOWN ON DRAWING, ADVISE CONSULTANT PRIOR TO PROCEEDING WITH NEW WORK.

2. CONSTRUCTION

1. THE CONTRACTOR SHALL PROPOSE A FULL METHODOLOGY FOR EXECUTING THE WORK DETAILED IN THE CONTRACT DOCUMENTS.

2. UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, NO PROVISIONS HAVE BEEN MADE IN THE DESIGN FOR CONDITIONS OCCURRING DURING CONSTRUCTION.
   a. THE CONTRACTOR SHALL DEMONSTRATE THE STABILITY AND SAFETY OF ALL ELEMENTS OF THE BUILDING DURING EVERY STAGE OF CONSTRUCTION.
   b. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BRACING AND SHORING REQUIRED FOR ALL STRESSES AND INSTABILITY OCCURRING DURING CONSTRUCTION. THE CONTRACTOR SHALL ACCEPT FULL RESPONSIBILITY FOR ALL SUCH MEASURES.
   c. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BRACING, SHORING, SHEET PILING OR OTHER TEMPORARY SUPPORTS TO SAFEGUARD ALL EXISTING OR ADJACENCY AFFECTED BY THIS WORK.

3. THE CONTRACTOR SHALL LIAISE WITH OWNER AND ASSOCIATED UTILITIES AUTHORITIES REGARDING THE REMOVAL AND DISCONNECTION OF EXISTING UTILITIES IN THE BUILDING. NO UTILITIES SHALL BE REMOVED OR DISCONNECTED WITHOUT THE APPROVAL OF OWNER AND ASSOCIATED UTILITIES AUTHORITIES.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK. THE CONSULTANT HAS NO OVERALL SUPERVISION AUTHORITY AND/OR DIRECT RESPONSIBILITY FOR THE SPECIFIC WORKING CONDITIONS AT THE SITE AND/OR FOR ANY HAZARDS RESULTING FROM ACTIONS OF ANY TRADE CONTRACTOR. THE CONSULTANT HAS NO DUTY TO INSPECT, SUPERVISE, NOTE, CORRECT OR REPORT ANY HEALTH OR SAFETY DEFICIENCIES OF THE OWNER, CONTRACTORS, OR OTHER ENTITIES OR PERSONS ON THE PROJECT SITE.

5. THE CONTRACTOR SHALL DETERMINE THE LOCATIONS OF ALL ADJACENT UNDERGROUND UTILITIES PRIOR TO EARTHWORK, FOUNDATIONS SHORING AND EXCAVATION. ANY UTILITY INFORMATION SHOWN ON THE DRAWINGS AND DETAILS IS APPROXIMATE AND NOT NECESSARILY COMPLETE.

6. THE PROPOSED SCHEDULE OF WORK IS TO BE COORDINATED WITH ALL SUB-TRADES, THE CONSULTANT AND OWNER.

7. INSPECT THE EXISTING CONSTRUCTION AND BECOME THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS. DETAILS SHOWN ARE BASED ON INFORMATION AVAILABLE FROM EARLIER CONSTRUCTION PHASES.

3. SHOP DRAWINGS

1. FOR ALL STRUCTURAL COMPONENTS SHOWN ON THE STRUCTURAL DRAWINGS, SUBMIT COPIES OF SHOP DRAWINGS AS DIRECTED, FOR REVIEW BY THE CONSULTANT.

2. SHOP DRAWINGS SHALL SHOW COMPLETE INFORMATION FOR THE FABRICATION AND ERECTION OF THE STRUCTURAL COMPONENTS.

3. CONCRETE REINFORCEMENT SHOP DRAWINGS SHALL CLEARLY SHOW BAR LENGTHS, BENDS, LOCATIONS OF BARS, METHOD OF SUPPORT, DETAILS OF PLACEMENT, COORDINATION WITH FORMWORK, EMBEDMENT, AND CONCRETE VIBRATION. PROVIDE AT MINIMUM, WALL AND COLUMN ELEVATIONS, WALL AND BEAM SECTIONS, MATERIAL SCHEDULES, BAR LAP SCHEDULES AND LOCATIONS.

4. WOOD FRAME SHOP DRAWINGS (INCLUDING BUT NOT LIMITED TO, FLOOR FRAMING CONNECTIONS, ROOF FRAMING AND CONNECTIONS TO STRUCTURE BELOW, AND STAIRS) SHALL BE ACCOMPANIED BY DETAILED CALCULATIONS AND SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA.

5. REVIEW OF SHOP DRAWINGS BY THE STRUCTURAL CONSULTANT IS ON A SAMPLING BASIS AND SOLELY TO ASSESS THAT THE SUBMITTED SHOP DRAWINGS REFLECT THE INTENT OF THE STRUCTURAL DESIGN. INTENDED OR PROPOSED DEVIATIONS FROM THE DESIGN INTENT MUST NOT BE SUBMITTED ON SHOP DRAWINGS.

6. REVIEW BY THE CONSULTANT SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR SEEING THAT THE WORK IS COMPLETE, ACCURATE AND IN CONFORMITY WITH ALL CONTRACT DRAWINGS, AND SPECIFICATIONS.

7. SHOP DRAWINGS FOR STRUCTURAL COMPONENTS DESIGNED BY THE FABRICATOR/CONTRACTOR'S ENGINEER MUST BE SEALED, SIGNED AND DATED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA.

4. SOILS, BACKFILLING, AND COMPACTION

1. THE CONTRACTOR SHALL RETAIN AN EXPERIENCED GEOTECHNICAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA.

2. THE GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR SHALL INSPECT THE CONDITION AND ASSURE THE ADEQUACY OF ALL SUB-GRADES, FILLS, AND BACKFILLS BEFORE PLACEMENT OF PILES. AT THE COMPLETION OF THE PROJECT, THE GEOTECHNICAL ENGINEER SHALL ISSUE AN AUTHENTICATED LETTER OF ASSURANCE STATING THAT ALL FOOTINGS/.PILES HAVE BEEN INSTALLED AND MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

3. BACKFILL MATERIAL SHALL CONSIST OF CLEAN, WELL GRADED GRANULAR SOILS FREE OF ORGANIC MATERIAL, SILT AND CLAY AS SPECIFIED IN THE EARTH WORKS SPECIFICATION SECTION.

4. BACKFILLING SHALL BE CARRIED OUT IN A MAXIMUM LIFTS OF 200 mm OF LOOSE FILL, EACH COMPACTED THE STANDARD PROCTOR MAXIMUM DRY DENSITY INDICATED IN THE SPECIFICATIONS.

5. DO NOT PLACE BACKFILL AGAINST WALLS RETAINING EARTH (OTHER THAN CANTILEVER WALLS) UNTIL THE WALLS AND THE FLOOR CONSTRUCTIONS AT TOP AND BOTTOM OF THE WALLS HAVE BEEN CAST AND ATTAINED THEIR DESIGN STRENGTH.

6. WHERE BACKFILL IS PLACED ON EACH SIDE OF FOUNDATION WALLS, DO NOT EXCEED A GRADE DIFFERENCE OF 600 mm.

7. WHERE THE SLAB ON GRADE IS USED TO TIE THE TOP OF A WALL RETAINING EARTH, THAT WALL SHALL BE ADEQUATELY SHORED UNTIL THE SLAB HAS BEEN CAST AND ATTAINED ITS DESIGN STRENGTH.

8. USE LIGHT, HAND-OPERATED COMPACTING EQUIPMENT TO COMPACT BACKFILL ADJACENT TO FOUNDATION WALLS OR RETAINING WALLS.

9. EXCAVATED MATERIAL SHALL BE LEGALLY DISPOSED OF, STORED AT THE SITE, OR USED FOR BACKFILLING OPERATIONS AS REQUIRED IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEERS RECOMMENDATIONS AND PROJECT SPECIFICATIONS.

10. IT IS THE RESPONSIBILITY OF CONTRACTOR TO VERIFY THE GEOTECHNICAL INFORMATION AND TO OBTAIN HIS OWN DATA AND TO POINT DISCREPANCIES TO THE CONSULTANT WHERE THEY OCCUR.

5. CAST IN PLACE CONCRETE

1. CONCRETE: CONFORM WITH CAN-CSA A23.1 REQUIREMENTS AND THOSE SHOWN IN THE CONCRETE MIX SCHEDULE BELOW, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

CONCRETE MIX SCHEDULE

LOCATION			MIN. COMPRESSIVE STRENGTH AT 28 DAYS (MPa)	EXPOSURE CLASS	CONCRETE TYPE	AIR CONTENT (%)
CONCRETE EXPOSED TO DEICING CHEMICALS WITH OR WITHOUT FREEZING AND THAWING	SLABS AND BEAMS	STRUCTURAL BEAMS	35	C1		
		SLAB ON GRADE (NOT EXPOSED TO FREEZING AND THAWING)	25			
		SLAB ON GRADE (EXPOSED TO FREEZING AND THAWING)	32			
	OTHER ELEMENTS	SIDEWALKS, CURBS, PAVING SLABS	32			
		PILE CAPS	35	C1		
CONCRETE NOT EXPOSED TO DEICING CHEMICALS OR FREEZING AND THAWING	CAISSONS	SHAFT	35			
		CAP	35			
	SLAB/ BEAMS	STRUCTURAL BEAMS	35			
		SLAB ON GRADE	25			

2. DESIGN CONCRETE MIXES TO SUIT REINFORCEMENT DETAILS SHOWN ON THE PLACEMENT DRAWINGS. PROVIDE SMALLER AGGREGATES OR SELF CONSOLIDATING CONCRETE IN AREAS OF HIGHER REINFORCEMENT DENSITY.

3. SUBMIT MIX DESIGNS FOR EACH CLASS OF CONCRETE TO BE USED ON THE PROJECT.

4. ALL CONCRETE SHALL BE NORMAL DENSITY, UNLESS NOTED OTHERWISE.

5. ADMIXTURES THAT CONTAIN CHLORIDES SHALL NOT BE USED.

6. EXTERIOR CONCRETE AND INTERIOR CONCRETE SUBJECT TO FREEZE/THAW CYCLES, SALT, ETC, INCLUDING WALLS SHALL BE AIR ENTRAINED.

7. REFER TO CAN CSA A23.1&2 AND CONCRETE SPECIFICATIONS SECTION 03.30.00 FOR THE HOT AND COLD WEATHER CONCRETE PLACEMENT PROCEDURES.

8. REFER TO THE CONCRETE TYPICAL DETAILS FOR THE FOLLOWING INFORMATION:
   a. CONCRETE COVER TO REINFORCING.
   b. CONCRETE COVER FOR FIRE RATINGS.
   c. TENSION DEVELOPMENT LENGTH AND LAP SPLICES.
   d. COMPRESSION DEVELOPMENT LENGTH AND LAP SPLICES.

9. FOR ALL STRUCTURAL MEMBERS PROVIDE COVER FOR A MINIMUM 2 HOUR FIRE RATING (4 HOURS FOR FIREWALLS) UNLESS NOTED OTHERWISE IN ARCHITECTURAL DRAWINGS

10. DOWELS TO EXISTING CONCRETE SHALL USE THE HILTI HIT-RE500 DOWELING SYSTEM, UNLESS OTHERWISE APPROVED BY THE CONSULTANT. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. OBTAIN CONSULTANT'S APPROVAL PRIOR TO DRILLING/DOWELING ANY REINFORCEMENT.

11. THE CONTRACTOR SHALL MODIFY THE LAYOUT OF NEW THROUGH BOLTS, EXPANSION ANCHORS AND OTHER ANCHORING DEVICES TO AVOID EXISTING CONCRETE REINFORCEMENT.

12. CONSTRUCTION JOINTS SHALL BE DOWELED, KEYED AND THOROUGHLY CLEANED. ALL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TYPICAL CONSTRUCTION JOINT DETAILS AND ANY CORRESPONDING NOTES BELOW:
    a. HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE MADE IN BEAMS UNLESS SHOWN OR REVIEWED AND APPROVED BY THE CONSULTANT.
    b. VERTICAL CONSTRUCTION JOINTS MAY BE MADE ONLY AT MIDSPAN OF BEAMS OR SLABS UNLESS OTHERWISE NOTED OR SHOWN OR DIRECTED, AND THEIR LOCATION SHALL BE REVIEWED AND APPROVED BY THE CONSULTANT.
    c. WHERE THE SIZE OF KEY IS NOT SHOWN ON THE DRAWINGS, THE KEY SHALL BE 25% OF THE CROSS SECTION DIMENSION AND A MINIMUM OF 38 mm INTO THE FIRST POUR OF CONCRETE.
    d. REFER TO SPECIFICATIONS FOR POUR LENGTH LIMITATIONS.

17. CONTRACTOR TO SUBMIT PROPOSED LOCATIONS OF CONSTRUCTION JOINTS FOR APPROVAL PRIOR TO START OF WORK.

18. OPENINGS, SLEEVES, EMBEDDED DUCTS:
    a. COORDINATE AND INSTALL ALL REQUIRED EMBEDDED ITEMS, INSETS SLEEVES, POCKETS, ETC. AS REQUIRED PRIOR TO PLACEMENT OF CONCRETE.
    b. NO SLEEVES SHALL BE PLACED VERTICALLY OR HORIZONTALLY THROUGH BEAMS UNLESS REVIEWED AND APPROVED BY THE CONSULTANT.
    c. NO ALUMINUM CONDUIT OR OTHER SUCH PRODUCTS WITH MATERIAL DETRIMENTAL TO THE LONGEVITY OF THE CONCRETE SHALL BE EMBEDDED IN THE STRUCTURE.
    d. PROVIDE ADDITIONAL REINFORCING AT OPENINGS AS DETAILED IN THE TYPICAL DETAILS.
    e. OBTAIN CONSULTANT'S APPROVAL FOR ANY OPENINGS REQUIRED BUT NOT SHOWN ON STRUCTURAL DRAWINGS.

20. CONCRETE CAST ON SLOPED SURFACES SHALL BEGIN AT THE LOWEST ELEVATION AND CONTINUE MONOLITHICALLY TOWARD THE HIGHER ELEVATION UNTIL THE INTENDED CAST IS COMPLETED.

21. THE CONCRETE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POUR SEQUENCES AND CONSTRUCTION PROCEDURES FOR ALL CONCRETE WORK TO ACCOUNT FOR TEMPERATURE DIFFERENTIALS AND SHRINKAGE OCCURRING DURING THE CONSTRUCTION PHASE UNTIL THE BUILDING IS PERMANENTLY IN A MECHANICALLY CONTROLLED ENVIRONMENT.

22. THE USE OF CHLORIDES SUCH AS DEICING SALTS IS PROHIBITED FOR MELTING ICE PRIOR TO PLACEMENT OF CONCRETE.

23. SIZES OF CONCRETE PLACEMENTS SHALL NOT EXCEED THE FOLLOWING, UNLESS OTHERWISE INDICTED ON THE PLANS:
    a. SLABS ON GRADE: PLACE IN ALTERNATING STRIPS (APPROXIMATE WIDTH 10m & MAXIMUM LENGTH 60m)

33. MINIMUM ELAPSED TIME BETWEEN ADJACENT CONCRETE PLACEMENTS SHALL BE 48 HOURS.

34. JOINTS BETWEEN THE STRUCTURAL (AND ARCHITECTURAL) MEMBERS SHALL BE PROPERLY PREPARED AND FILLED WITH JOINT SEALANT UNLESS NOTED OTHERWISE. ALL JOINT EDGES, INCLUDING TOP AND BOTTOM SURFACES AND VERTICAL AND HORIZONTAL SURFACES SHALL BE FORMED OR TOOLED AS REQUIRED. JOINT SEALANT SHALL BE APPLIED ONLY TO THE TOP, VERTICAL, AND HORIZONTAL SURFACES UNLESS NOTED OTHERWISE ON THE DRAWINGS.

35. JOINTS TO BE PREPARED AND FILLED WITH JOINT SEALANT SHALL INCLUDE, BUT ARE NOT LIMITED TO, CONSTRUCTION JOINTS, CONTROL JOINTS, ISOLATION JOINTS, AND ALL INTERFACE JOINTS BETWEEN SIMILAR AND DISSIMILAR MEMBERS. SPECIFIC LOCATIONS MAY BE INDICATED ON THE DRAWINGS, OR MAY BE REQUIRED BY APPROVED SHOP DRAWINGS, OR MAY OCCUR DUE TO THE CONSTRUCTION SEQUENCE SELECTED BY THE CONTRACTOR.

36. PRIOR TO PLACING CONCRETE ADJACENT TO EXISTING CONCRETE WITHOUT A CONSTRUCTION JOINT THOROUGHLY CLEAN, DE-GREASE AND MECHANICALLY ROUGHEN EXISTING CONCRETE SURFACES. APPLY EPOXY BONDING AGENT PRIOR TO PLACING FRESH CONCRETE. FOLLOW ALL MANUFACTURER'S INSTRUCTIONS FOR SURFACE PREPARATION, MIXING AND APPLICATION.

37. WHERE NEW CONCRETE ELEMENTS ARE CAST AGAINST EXISTING CONCRETE ELEMENTS OR STRUCTURES, PROVIDE NECESSARY TEMPORARY SHORING TO RESIST FULL HYDROSTATIC PRESSURE OR OTHERWISE EMPLOY NECESSARY MEANS AND METHODS TO AVOID EXERTING ANY PRESSURE OR LOADING ON THE EXISTING STRUCTURE.

6. CONCRETE PILES

1. GENERAL: PILING TO BE CAST-IN-PLACE CONCRETE PILE TYPE. PROVIDE SHOP DRAWINGS SEALED AND SIGNED BY AN EXPERIENCED PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ALBERTA. BEFORE COMMENCING WORK, ESTABLISH LOCATION AND EXTENT OF UNDERGROUND UTILITY LINES IN AREAS OF PILING. VERIFY FINDINGS WITH ENGINEER IF UNUSUAL OR UNEXPECTED CONDITIONS OCCUR.

2. DESIGN: PILES ARE TO BE DESIGNED TO RESIST THE LOADS AND ACCOMMODATE THE TOLERANCES SHOWN ON THE DRAWINGS AND ARE TO BE MONITORED DURING INSTALLATION BY A PROFESSIONAL GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR. THE CONTRACTOR IS TO ISSUE, AT THE COMPLETION OF PILING, A CERTIFICATE BEARING THE SEAL AND SIGNATURE OF A QUALIFIED PROFESSIONAL GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ALBERTA, ATTESTING TO THE PROPER INSTALLATION OF THE PILES.

3. TOLERANCES: MAINTAIN THE FOLLOWING TOLERANCES FOR CONCRETE PIERS: OUT OF POSITION, +/- 75mm; OUT OF VERTICAL, +/- 2% TO MAXIMUM OF +/- 50mm.

4. RECORDS: MAINTAIN RECORDS OF PILE PLACEMENT AS FOLLOWS: ELEVATIONS OF TOP AND BOTTOM OF PILE; DATE AND TIME DRILLING COMPLETED AND SHAFT DIAMETER. SUBMIT COMPLETED PILING RECORDS TO THE ENGINEER UPON COMPLETION.

5. ACCEPTABILITY: ENGINEER WILL BE THE SOLE JUDGE OF ACCEPTABILITY OF EACH PILE. PILES SUSPECT OF BEING UNABLE TO SUPPORT THE LOADS SHOWN ON THE DRAWINGS MAY BE LOAD TESTED IN ACCORDANCE WITH ASTM D1143. THE COSTS OF TESTING PILES WHICH MEET OR EXCEED THE LOAD TEST REQUIREMENTS WILL BE PAID FOR BY THE OWNER. THE COSTS OF TESTING AND REMEDIAL ACTIONS REQUIRED TO ENSURE THE PILE CAPACITIES SHOWN ON THE DRAWINGS FOR PILES WHICH NOT SATISFY THE LOAD TEST REQUIREMENTS SHALL BE PAID FOR BY THE CONTRACTOR.

7. SLAB ON GRADE

1. UNDER SLAB FILL SHALL CONSIST OF A MINIMUM OF 200 mm OF COMPACTED GRANULAR MATERIAL AS STATED IN THE SPECIFICATIONS.

2. PLACE SLABS-ON-GRADE ON MATERIAL CAPABLE OF SUSTAINING 25 kPa SURCHARGE WITHOUT SETTLEMENT RELATIVE TO THE BUILDING FOUNDATIONS.

3. REFER TO GEOTECHNICAL FOR SPECIFIC GRADATION REQUIREMENTS FOR SUBGRADE MATERIAL WHEN UNDERSLAB GAS DEPRESSURIZATION SYSTEMS ARE REQUIRED BY THE BUILDING CODE.

8. REINFORCING STEEL

1. REINFORCING STEEL SHALL BE DEFORMED BAR CONFORMING TO CSA STANDARD G30.18-09 (R2014), GRADE 400R, UNLESS OTHERWISE NOTED. REINFORCING STAINLESS STEEL BARS SHALL BE GRADE 420. BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS. BAR MARKS WITH PREFIX 'C' DENOTED EPOXY-COATED STEEL BARS.

2. REFER TO TYPICAL DETAILS FOR MINIMUM COVER TO REINFORCEMENT.

3. REINFORCING BAR AREAS ARE 100, 200, 300, 500, 700, 1000, 1500 AND 2500 mm² FOR BAR DESIGNATIONS 10, 15, 20, 25, 30, 35, 45 AND 55, RESPECTIVELY.

4. WELDED WIRE FABRIC SHALL HAVE A MINIMUM YIELD STRENGTH OF 450 MPa AND SHALL CONFORM TO CSA STANDARD G30.5. SUPPLY IN FLAT SHEET ONLY.

5. REINFORCING STEEL IS TO BE DETAILED, BENT AND PLACED IN ACCORDANCE WITH R.S.I.C. REINFORCING STEEL MANUAL OF STANDARD PRACTICE SUBMIT SHOP DRAWINGS INDICATING ALL DETAILS OF REINFORCING STEEL PLACEMENT.

6. ALL REINFORCEMENT SHALL BE SECURELY HELD IN PROPER POSITION WHILE POURING CONCRETE. CONTRACTOR SHALL PROVIDE CHAIRS, SPACER BARS, SUPPORT BARS AND OTHER ACCESSORIES TO SUPPORT REINFORCING. ALL THE WIRE, CHAIRS AND BAR SUPPORTS FOR FOUNDATIONS AND FOR EXPOSED CONCRETE SHALL BE NON-METALLIC OR COATED.

7. CONTRACTOR SHALL NOT USE ANY OF THE STRUCTURAL REINFORCEMENT SHOWN ON PLANS AS ACCESSORY/SUPPORT BARS. SUPPORT BARS MUST BE PROVIDED TO MAINTAIN LOCATION OF STRUCTURAL REINFORCEMENT AS INDICATED ON PLANS.

8. TACK WELDING OF REINFORCEMENT IS NOT PERMITTED. WELDED SPLICES IN REINFORCING BARS WILL ONLY BE PERMITTED IF EXPLICITLY SHOWN ON THE STRUCTURAL DRAWINGS OR IF WRITTEN APPROVAL IS GIVEN BY THE CONSULTANT.

9. PROVIDE CLASS 'B' TENSION LAP SPLICES U.N.O. ALL SPLICE LOCATIONS SHALL BE TO THE APPROVAL OF THE CONSULTANT.

10. APPROVED REBAR COUPLERS MAY BE USED AT THE CONTRACTORS OPTION TO AID PLACEMENT OF DOWELS THROUGH FORMS. MECHANICAL SPLICES SHALL DEVELOP 125% OF THE TENSILE STRENGTH OF THE REBAR.

12. TIMBER CONSTRUCTION

1. ALL WOOD FRAMING SHALL CONFORM TO THE MINIMUM STANDARDS BELOW UNLESS NOTED OTHERWISE ON THE ENGINEERING DRAWINGS.

WOOD MEMBER MATERIAL GRADES

MEMBER	MATERIAL GRADE
JOISTS (2x8 AND SMALLER)	SPRUCE-PINE-FIR NO. 2 OR BETTER
BEAMS AND STRINGERS (2x10 AND LARGER)	SPRUCE-PINE-FIR NO. 2 OR BETTER
POSTS AND TIMBERS	SPRUCE-PINE-FIR NO. 2 OR BETTER
STUDS, PLATES & MISC. FRAMING	SPRUCE-PINE-FIR NO. 2 OR BETTER
TOP AND BOTTOM PLATES AT BEARING WALLS	SPRUCE-PINE-FIR NO. 2 OR BETTER
2x4 STUDS	SPRUCE-PINE-FIR NO. 2 OR BETTER
2x6 STUDS AND LARGER	SPRUCE-PINE-FIR NO. 2 OR BETTER
PLYWOOD SHEATHING	GRADE C-D
OSB SHEATHING	STRUCTURAL 1

2. THE USE OF STUD GRADE MATERIAL TO SUBSTITUTE ANY OF THE GRADES NOTED ABOVE MUST BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD PRIOR TO CONSTRUCTION.

3. STUD LOAD CARRYING CAPACITY HAS BEEN REDUCED IN ACCORDANCE WITH THE CORRESPONDING ULC FIRE RATING ASSEMBLY. REFER TO ARCHITECTURAL DRAWINGS AND WALL SCHEDULE FOR SPECIFIC DETAILS.

4. NAILS, SPIKES, AND STAPLES TO CONFORM TO CSA STANDARD B111.

5. ALL NAILS FOR STRUCTURAL WORK SHALL BE COMMON WIRE NAILS UNLESS NOTED OTHERWISE.

6. ALL STUD WALLS SHOWN AND NOT OTHERWISE NOTED SHALL BE 2x4 STUDS AT 400 mm o/c AT INTERIOR WALLS AND 2x6 AT 400 mm o/c AT EXTERIOR WALLS.

7. PROVIDE TWO STUDS MINIMUM AT THE END OF ALL WALLS AND ONE STUD AT EACH SIDE OF ALL OPENINGS.

8. PROVIDE ADDITIONAL STUDS UNDER TRUSSES SUPPORTED BY EXTERIOR WALLS IF THE BEARING LOCATION FALLS BETWEEN REGULARLY SPACED STUDS.

9. PROVIDE WOOD LINTEL HEADERS AT ALL OPENINGS AS SHOWN BELOW, UNLESS NOTED OTHERWISE ON PLAN:
   0 mm < SPAN < 1,000 mm: 2 - 38x184
   1,000 mm < SPAN < 1,800 mm: 2 - 38x235

10. BEAMS (EXCEPT LINTELS) SHALL HAVE A MINIMUM BEARING LENGTH OF NO LESS THAN 89 mm UNLESS OTHERWISE REQUIRED BY NBCC 2010 (REFER TO NOTES TO TABLES A-8 TO A-11). FLOOR JOISTS SHALL HAVE A MINIMUM BEARING LENGTH OF NO LESS THAN 38 mm UNLESS OTHERWISE NOTED.

11. PROVIDE SOLID BLOCKING FOR WOOD COLUMNS THROUGH FLOOR TO SUPPORTS BELOW.

12. WALLS SHALL HAVE DOUBLE BOTTOM PLATES AND DOUBLE TOP PLATES FOR ALL EXTERIOR BEARING WALLS. END NAIL THE TOP PLATE TO EACH STUD WITH TWO 75 NAILS AND TOENAIL OR END NAIL EACH STUD TO THE BOTTOM PLATE WITH TWO 75 NAILS.

13. ALL STUD WALLS SHALL HAVE THEIR LOWER WOOD PLATES ATTACHED TO:
    a. WOOD FRAMING BELOW WITH 75 NAILS AT 300 mm o/c
    b. CONCRETE WITH 16 mm DIAMETER ANCHOR BOLTS (150 mm MIN EMBED) AT 1200 mm o/c UNLESS NOTED OTHERWISE.

14. PROVIDE DOUBLE JOISTS AROUND ALL OPENINGS IN FLOOR OR ROOFS UNLESS NOTED OTHERWISE.

15. PLYWOOD ROOF AND FLOOR SHEATHING SHALL BE LAID UP WITH THE GRAIN PERPENDICULAR TO SUPPORTS AND NAILED WITH 75 NAILS AT 150 mm o/c TO FRAMED PANEL EDGES AND OVER STUD WALLS AS SHOWN ON PLANS AND AT 300 mm o/c TO INTERMEDIATE SUPPORTS UNLESS NOTED OTHERWISE.

16. ALL FLOOR SHEATHING EDGES SHALL HAVE APPROVED TONGUE-AND-GROOVE JOINTS OR SHALL BE SUPPORTED WITH SOLID BLOCKING. TOENAIL BLOCKING TO SUPPORTS WITH (NAILS) AT 300 mm o/c UNLESS NOTED OTHERWISE.

17. AT BLOCKED FLOOR AND ROOF DIAPHRAGMS PROVIDE FLAT 2x4 BLOCKING AT ALL UNFRAMED PLYWOOD PANEL EDGES AND NAIL WITH EDGE NAILING SPECIFIED.

18. LAY TIMBER PLANK DECKING IN A TWO-SPAN CONTINUOUS PATTERN.

19. PROVIDE MINIMUM BEARING OF 50 mm (2") FOR ALL TIMBER PLANK DECKING.

20. SAWN LUMBER SHALL NOT BE NOTCHED OR DRILLED IN THE FIELD WITHOUT THE PERMISSION OF THE CONSULTANT.

21. WOOD IS NOT PERMITTED TO BEAR DIRECTLY ON MASONRY OR CONCRETE WITHOUT PROTECTION. PROVIDE EITHER PRESSURE TREATED WOOD OR POLYETHYLENE SHEET BETWEEN THE WOOD AND MASONRY OR CONCRETE.

22. ALTERATIONS AND/OR CONNECTIONS TO EXISTING CONSTRUCTION ARE NOT PERMITTED UNLESS NOTED OTHERWISE.

23. OPENINGS AND HOLES:
    a. PREPARE LAYOUTS OF ALL NEW HOLES AND OPENINGS THROUGH EXISTING WORK FOR REVIEW BY THE CONSULTANT.
    b. CORE DRILL NEW HOLES FOR PIPES TO A DIAMETER NOT LARGER THAN THE OUTSIDE PIPE DIAMETER PLUS 25 mm (1").
    c. WHERE OPENINGS ARE TO BE CUT, ALWAYS PRE-DRILL THE CORNERS USING A 100 mm (4") DIAMETER CORE DRILL OR DRILL A SERIES OF HOLES TO PREVENT OVERCUTTING AT THE CORNERS.

24. PROVIDE WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD.

25. ALL FASTENERS (HANGERS, CLIPS, SCREWS, BOLTS, WASHERS, ETC.) IN CONTACT WITH PRESSURE TREATED OR FIRE TREATED WOOD TO BE STAINLESS STEEL OR HOT DIP GALVANIZED. DO NOT MIX STAINLESS STEEL AND HOT DIP GALVANIZED IN THE SAME CONNECTION.

26. ALL SHIMS SHALL BE SEASONED AND DRIED AND OF THE SAME GRADE (MINIMUM) AS THE MEMBERS CONNECTED.

27. 25 mm DIAMETER HOLES MAY BE DRILLED IN THE CENTER 1/3 OF JOISTS, BUT ALL OTHER HOLES MUST BE APPROVED PRIOR TO DRILLING.

28. DIAPHRAGMS:
    THE FLOOR/ROOF SHEATHING AND SUPPORTING MEMBERS HAVE BEEN DESIGNED AS A DIAPHRAGM. UNLESS OTHERWISE NOTED, DIAPHRAGM CONNECTION REQUIREMENTS FOR FLOR/ROOF SHEATHING ARE:
    A. UNBLOCKED DIAPHRAGMS:
       a. FASTENERS: 3.7 mm DIAMETER x 75 mm LONG COMMON NAILS.
       b. SPACING: 100 mm o/c AT DIAPHRAGM BOUNDARIES; 100 mm o/c AT SUPPORTED PANEL EDGES; 300 mm o/c ALONG INTERMEDIATE FRAMING MEMBERS.
    B. BLOCKED DIAPHRAGMS (BLOCKING MUST BE PROVIDED AT ALL PANEL EDGES):
       a. FASTENERS: 3.7 mm DIAMETER x 75 mm LONG COMMON NAILS.
       b. SPACING: 75 mm o/c AT DIAPHRAGM BOUNDARIES; 100 mm o/c AT CONTINUOUS PANEL EDGES PARALLEL TO LOAD; 150 mm o/c ALONG INTERMEDIATE FRAMING MEMBERS.
       c. ALL ROOF SHEATHING COMES WITH "H" CLIPS U.N.O. ABOVE.
    C. ALL PANEL EDGES SHALL BE BACKED BY BLOCKING AT ALL JOINTS THAT ARE PERPENDICULAR TO THE FLOOR JOISTS.

30. MANUFACTURED WOOD JOISTS, BEAMS AND TRUSSES:
    a. ALL MANUFACTURED WOOD JOISTS AND TRUSSES AND THEIR CONNECTIONS TO THE CORRESPONDING STRUCTURE BELOW SHALL BE DESIGNED BY SUPPLIER AND THE SHOP DRAWINGS TO BE PROVIDED TO THE STRUCTURAL CONSULTANT FOR REVIEW PRIOR TO FABRICATION, UNLESS NOTED OTHERWISE. SHOP DRAWINGS MUST HAVE A PROFESSIONAL ENGINEER'S SEAL ON ALL PAGES. THIS ENGINEER MUST BE LICENSED IN THE PROVINCE OF JURISDICTION, AND SHALL BE RESPONSIBLE FOR SUPERVISION OF JOISTS / TRUSSES FABRICATION AND INSTALLATION (COMPLETE FLOOR / ROOF SYSTEM INCLUDING JOISTS / TRUSSES, HANGERS, BRACING, ETC. TO BE DESIGNED BY SUPPLIER.)
    b. JOIST / TRUSS SUPPLIER SHALL BE RESPONSIBLE FOR ALL FRAMING FOR ADDITIONAL MECHANICAL LOADS AND OPENINGS AS REQUIRED. COORDINATE WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL FOR SIZE & LOCATIONS OF ALL OPENINGS.
    c. ACCESSORIES: ALL ACCESSORIES REQUIRED FOR ERECTION INCLUDING BRACING, BRIDGING, BLOCKING, METAL BEARING HARDWARE AND CROSS BRACING MUST BE DESIGNED AND SUPPLIED BY JOIST / TRUSS SUPPLIER.
    d. LIVE LOAD DEFLECTION L/480 FOR FLOOR JOISTS AND TRUSSES (IF APPLICABLE) TO A MAXIMUM OF 10 mm (3/8") AND L/360 FOR ROOF TRUSSES. CANTILEVER JOISTS LIVE LOAD DEFLECTION 2L/480.
    e. LUMBER: MACHINE STRESS RATED OR LAMINATED VENEER. MOISTURE CONTENT 19% AT TIME OF MANUFACTURE.
    f. JOIST / TRUSS SUPPLIER'S ENGINEER TO PROVIDE A CERTIFICATE INDICATING THAT THE FLOOR / ROOF SYSTEM IS FABRICATED AND INSTALLED IN ACCORDANCE WITH THE DESIGN.
    g. JOIST SUPPLIER SHALL BE RESPONSIBLE FOR THE DESIGN OF CONNECTIONS TO TIMBER WALLS AND OTHER MISCELLANEOUS DETAILS.
    h. ALL MANUFACTURED JOIST PRODUCTS SHALL BE DESIGNED TO VIBRATION CRITERIA 4.1.1.6 AND 9.23.4 OF THE NATIONAL BUILDING CODE OR DESIGNED TO LOCAL CODE REQUIREMENTS, WHICHEVER IS THE MORE STRINGENT. SPACING SHOWN ON FRAMING PLANS ARE SUGGESTED ONLY AND MUST BE DESIGNED TO MEET VIBRATION REQUIREMENTS.
    i. ALL MANUFACTURED JOIST PRODUCTS AND THEIR CONNECTIONS TO THE SUPPORTING STRUCTURE SHALL BE DESIGNED BY THE SUPPLIER TO RESIST WIND UPLIFT LOADS IN CONFORMANCE WITH THE NATIONAL BUILDING CODE OF CANADA AND ALBERTA BUILDING CODE, UNLESS MORE STRINGENT REQUIREMENTS ARE NOTED ON THE DRAWINGS.
    j. JOIST/TRUSS SUPPLIER'S ENGINEER IS TO ACCOUNT FOR ANY STRUCTURAL IMPLICATIONS ASSOCIATED WITH "NON LOAD BEARING" WALLS CONSTRUCTED TIGHT TO THE UNDERSIDE OF THE FLOOR JOIST AND TRUSSES.

31. SHEAR WALLS:
    a. ALL EXTERIOR WALLS AND INTERIOR PARTY WALLS ON THE DRAWING ARE TO BE CONSIDERED AS SHEAR WALLS.
    b. ALL EXTERIOR WALLS TO HAVE A MINIMUM 9.5 mm PLYWOOD OR OSB SHEATHING ON ONE SIDE. NAIL SHEATHING WITH 64 mm COMMON NAILS ALONG ALL PANEL EDGES AT 100 mm o/c FROM BASEMENT TO SECOND, 150 mm FROM SECOND TO ROOF AND NAIL AT 300 mm o/c ALONG ALL INTERMEDIATE FRAMING MEMBERS FROM MAIN TO ROOF.
    c. ALL PANEL EDGES SHALL BE BACKED BY BLOCKING HAVING THE SAME CROSS SECTIONAL AREA AS THE STUDS AT ALL JOINTS THAT ARE PERPENDICULAR TO THE STUDS FROM MAIN FLOOR TO ROOF.
    d. PROVIDE SOLID BLOCKING AT 1200 mm o/c MAXIMUM FOR ALL EXTERIOR WALL.
    e. NAIL SHEATHING BOARD TO STUDS, TOP AND BOTTOM PLATES AND BLOCKING. FASTENING OF GYPSUM BOARDS SHALL BE AS PER CODE.
    f. PROVIDE 12 mm DIAMETER ANCHOR BOLTS AT 600 mm o/c TYPICAL AT SHEAR WALLS'; PROVIDE 12 mm DIAMETER ANCHOR BOLTS AT 1200 mm o/c AT OTHER WALLS.

32. SAWN LUMBER SHALL NOT BE NOTCHED OR DRILLED IN THE FIELD WITHOUT THE PERMISSION OF THE CONSULTANT.

33. ALL LUMBER EXPOSED TO WEATHER OR IN CONTACT WITH MASONRY OR CONCRETE EXPOSED TO WEATHER SHALL BE PRESSURE TREATED UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS. INTERIOR MEMBERS BEARING ON EXTERIOR CONCRETE OR MASONRY WALLS EXPOSED TO WEATHER SHALL BE TREATED WITH 3 COATS OF WOOD PRESERVATIVE ALL AROUND. USE EITHER MICRONIZED OR SOLUBLE COPPER BASED WOOD PRESERVATIVE.

13. TESTING AND INSPECTION

THE CONTRACTOR SHALL ARRANGE FOR THE FOLLOWING ITEMS TO BE INSPECTED OR TESTED BY AN INDEPENDENT THIRD-PARTY INSPECTION/TESTING AGENCY ACCEPTABLE TO THE OWNER AND THE CONSULTANT. THE ITEMS TO BE TESTED SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING.

1. GEOTECHNICAL:
   PERFORM ALL TESTING AND INSPECTION (COMPACTION, BEARING CAPACITY PILE INSTALLATION, SUB GRADE PREPARATION ETC.) AS PER THE REQUIREMENTS OF THE DRAWINGS AND THE SOILS REPORT.

2. CONCRETE:
   CONCRETE TO BE TESTED ON ACCORDANCE WITH THE REQUIREMENTS OF CSA A23.1 AND A23.2, INCLUDING THE REQUIREMENTS FOR AIR, SLUMP AND AGE PRIOR TO BEING USED. CONTRACTOR TO MAINTAIN RECORDS OF POUR DATES, TESTING PERFORMED, CLASS OF CONCRETE USED AND TEST RESULTS FOR ALL ITEMS POURED. RESULTS OF CYLINDER STRENGTH TESTING TO BE SENT TO OWNER AND CONSULTANT. ALL MIX DESIGNS TO BE REVIEWED AND CERTIFIED BY TESTING AGENCY.

3. REINFORCING STEEL AND MASONRY:
   CONTRACTOR SHALL ADVISE CONSULTANT OF PLACEMENT OF ALL REINFORCING STEEL FOR REINFORCED MASONRY OR REINFORCED CONCRETE, AT LEAST 24 HOURS PRIOR TO PLANNED TIME OF GROUT OR CONCRETE PLACEMENT.

14. DEMOLITION

1. COMPLY WITH THE NATIONAL BUILDING CODE OF CANADA PART 8 CONSTRUCTION SAFETY MEASURES AT CONSTRUCTION AND DEMOLITION SITES, AND ALL APPLICABLE PROVINCIAL REQUIREMENTS.

2. PREVENT MOVEMENT, SETTLEMENT, OR OTHER DAMAGE TO ADJACENT STRUCTURES, UTILITIES, AND PARTS OF BUILDINGS TO REMAIN IN PLACE.

3. BEFORE PROCEEDING WITH DEMOLITION OPERATIONS, SUBMIT SHOP DRAWINGS PREPARED BY A LICENSED PROFESSIONAL ENGINEER, SHOWING PROPOSED METHOD OF DEMOLITION AND MEANS OF PROTECTING EXISTING CONSTRUCTION TO REMAIN.

4. DO NOT DEVIATE FROM OR FIELD-ALTER SHORING AND BRACING INDICATED ON REVIEWED SHOP DRAWINGS WITHOUT PRIOR WRITTEN APPROVAL OF ENGINEER RESPONSIBLE FOR SHORING DESIGN. NOTIFY CONSULTANT OF ANY DEVIATIONS.

5. DO NOT COMMENCE REMOVAL OF EXISTING STRUCTURAL ELEMENTS UNTIL ALL REQUIRED SHORING AND BRACING IS IN PLACE AND HAS BEEN INSPECTED BY THE ENGINEER RESPONSIBLE FOR SHORING DESIGN.

6. DO NOT REMOVE TEMPORARY SHORING OR BRACING UNTIL APPROVED BY SHORING CONSULTANT.

DRAWING LIST

SHEET NUMBER	DRAWING NAME	SHEET NUMBER	DRAWING NAME
S-01	GENERAL NOTES	S-06	PLANS AND SECTIONS
S-02	GENERAL NOTES		
S-03	TYPICAL DETAILS		
S-04	TYPICAL DETAILS		
S-05	TYPICAL DETAILS		

DATE	ISSUED FOR	REV
2018-02-07	ISSUED FOR 60% REVIEW	
2018-02-14	ISSUED FOR DP	
2018-03-02	ISSUED FOR 95% REVIEW	
2018-03-29	ISSUED FOR TENDER	

Project Component
LUNCHROOM EXPANSION

Keyplan

Consultants

Architectural: NORR Architects Engineers Planners
Structural: NORR Architects Engineers Planners
Mechanical: NORR Architects Engineers Planners
Electrical: NORR Architects Engineers Planners

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Project Manager	Drawn
D. HIDER	
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Client
RCMP

Project
INNISFAIL PDSTC
LUNCHROOM EXPANSION

Drawing Title
GENERAL NOTES

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No. NCCA17-0228

Drawing No. S-01

DESIGN NOTES

1. DESIGN

1. THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE:
   a. ALBERTA BUILDING CODE (2014)
   b. NATIONAL BUILDING CODE OF CANADA (2010)
   c. CSA - A438-00 "CONCRETE CONSTRUCTION FOR HOUSING AND SMALL BUILDINGS"

2. ALL REINFORCED CONCRETE ELEMENTS HAVE BEEN DESIGNED AND OR SHALL BE CONSTRUCTED IN ACCORDANCE WITH:
   a. CSA - A23.3-14 "DESIGN OF CONCRETE STRUCTURES"
   b. CSA - A23.1-14 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION"
   c. CSA - A23.2-14 "TEST METHODS AND STANDARD PRACTICES FOR CONCRETE"

3. ALL CONCRETE FORMWORK AND OR FALSEWORK SHALL CONFORM WITH:
   a. CSA - 269.1 "FALSEWORK FOR CONSTRUCTION PURPOSES"
   b. CSA - S269.2-M "ACCESS SCAFFOLDING FOR CONSTRUCTION PURPOSES"
   c. CSA - S269.3-M "CONCRETE FORMWORK"

5. ALL STRUCTURAL WOOD ELEMENTS HAVE BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH:
   a. CSA - O86-14 " ENGINEERING DESIGN IN WOOD"
   b. CSA - O325-07 (R2012) "CONSTRUCTION SHEATHING"
   c. CSA - O122-06 (R2015) "STRUCTURAL GLUED-LAMINATED TIMBER"
   d. CSA - O80.1-08 (R2012) "PRESERVATIVE TREATMENT OF WOOD"
   e. CSA - S406-14 "SPECIFICATION OF PERMANENT WOOD FOUNDATIONS FOR HOUSING AND SMALL BUILDINGS"

7. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS OF REQUIRED FIRE RESISTANCE AND RATINGS.

8. UNIT FLOOR AND ROOF LOADINGS, SOIL BEARING PRESSURES AND FOUNDATION LOADS GIVEN ON DRAWINGS ARE UNFACTORED. MEMBER FORCES GIVEN ON DRAWINGS ARE FACTORED.

2. LATERAL LOADS ON STRUCTURAL FRAME

THE STRUCTURE HAS BEEN DESIGNED TO RESIST THE EFFECTS OF THE WIND LOADS. THE DESIGN PARAMETERS FOR THIS LOADS ARE AS NOTED BELOW:

- LOCATION: INNISFAIL, AB
- DESIGN LIFESPAN: 50 YEARS

1. WIND LOADS:

WIND LOAD
Q = Iw [q (Ce x Cp x Cg)]

FACTORS
Iw = 1.25
q = 0.41
Ce = 0.9

	$C_p C_g$	ULS Q (kPa)	SLS Q (kPa)
1	0.7500	0.3625	0.2200
1E	1.1500	0.5625	0.3300
4	-0.5500	-0.2625	-0.1600
4E	-0.8000	-0.3875	-0.2300

2. SEISMIC DATA:

INNISFAIL, AB

S_a (0.2) = 0.10
S_a (0.5) = 0.06
S_a (1.0) = 0.03
S_a (2.0) = 0.02
PGA = 0.06

3. DEAD LOADS (SERVICE)

1. DEAD LOADS ARE LOADS GENERATED BY THE SELF-WEIGHT OF THE STRUCTURE.

2. SUPERIMPOSED DEAD LOADS ARE LOADS GENERATED BY THE WEIGHT OF MECHANICAL SYSTEMS, ELECTRICAL SYSTEMS, TOPPINGS, PARTITIONS, AND MISCELLANEOUS LOADINGS.

3. REFER TO NOTES ON PLANS FOR ALL LOADS APPLIED TO THE STRUCTURE.

4. **ROOF LIVE LOADS**

1. THE ROOF AREAS HAVE BEEN DESIGNED TO RESIST THE LEAST FAVOURABLE EFFECTS OF THE SNOW, RAIN, AND WIND LOADINGS. THE DESIGN PARAMETERS FOR THESE LOADS ARE NOTED BELOW.

2. SNOW LOAD:
   a. THE FOLLOWING SNOW LOAD HAS BEEN CONSIDERED IN THE DESIGN OF THE ROOF AREAS.

SNOW LOAD
S = Is [Ss (Cb x Cw x Cs x Ca) + Sr]

S = 1.825 kPa

FACTORS
Is = 1.25
Ss = 1.7 kPa
Sr = 0.1 kPa
Cb = 0.8
Cw = 1.0
Cs = 1.0
Ca = 1.0

   b. ADDITIONAL SNOW ACCUMULATION ADJACENT TO HIGHER WALLS, ROOFS, AND MECHANICAL UNITS IS INDICATED ON PLANS.

3. RAIN LOAD:
   a. THE DESIGN OF THE ROOF STRUCTURE IS BASED ON THE ASSUMPTION THAT THE FLOOR CONTROL ROOF DRAINS SATISFY ALL REQUIREMENTS OF THE NATIONAL PLUMBING CODE OF CANADA, 2010 EDITION.

   b. THE TOTAL RAIN LOAD APPLIED OVER THE HORIZONTAL PROJECTION OF THE SURFACE SHALL BE THE LESSER OF EITHER THE ONE-DAY RAINFALL OR A DEPTH OF RAINWATER EQUAL TO 30 mm ABOVE THE LEVEL OF THE SCUPPERS

      ONE-DAY RAINFALL = 95 mm ($\acute{0}_{50}$ yr)
      DESIGN RAIN LOAD = 95 mm

4. WIND UPLIFT ON ROOFS:

   a. ROOF ELEMENTS (TRUSSES, JOISTS, DECK, BEAMS, ETC) AND THEIR CONNECTIONS TO THE STRUCTURE ARE TO BE DESIGNED FOR THE UPWARD SUCTION OF 0.9 KPA DUE TO WIND.

5. LIVE AND OTHER LOADS:

   a. SEE NOTES ON FLOOR PLANS. ALL VALUES GIVEN ARE UNFACTORED LOADS UNLESS OTHERWISE SHOWN ON PLAN.

5. **GEOTECHNICAL INFORMATION**

1. A GEOTECHNICAL REPORT WAS NOT AVAILABLE AT THE TIME OF DESIGN. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A PROFESSIONAL GEOTECHNICAL ENGINEER WHO SHALL BE RESPONSIBLE FOR CONDUCTING ALL NECESSARY INVESTIGATION S AND DESIGN TO SUIT THE PROJECT REQUIREMENTS.

6. PROVISIONS FOR FUTURE EXTENSIONS

1. THE STRUCTURE HAS NOT BEEN DESIGNED FOR ANY FUTURE EXTENSIONS.

PLOT DATE: March 29, 2018 TIME: 9:09 AM FULL PATH AND FILENAME: P:\RCMP_PROJECTS\NCCA17-0228 - RCMP - DTF LUNCHROOM EXPANSION\500-DELIVS\TRU\20_FRAMING_PLANS\S-02.DWG PLOTSYLE TABLE: PM-STD-100.ctb

DATE	ISSUED FOR	REV
2018-02-07	ISSUED FOR 60% REVIEW	
2018-02-14	ISSUED FOR DP	
2018-03-02	ISSUED FOR 95% REVIEW	
2018-03-29	ISSUED FOR TENDER	

Project Component
LUNCHROOM EXPANSION

Keyplan

Consultants

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Structural: NORR Architects Engineers Planners
Mechanical: NORR Architects Engineers Planners
Electrical: NORR Architects Engineers Planners

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Client
RCMP

Project
INNISFAIL PDSTC
LUNCHROOM EXPANSION

Drawing Title
GENERAL NOTES

Check Scale (may be photo reduced)
0 1inch 0 10mm

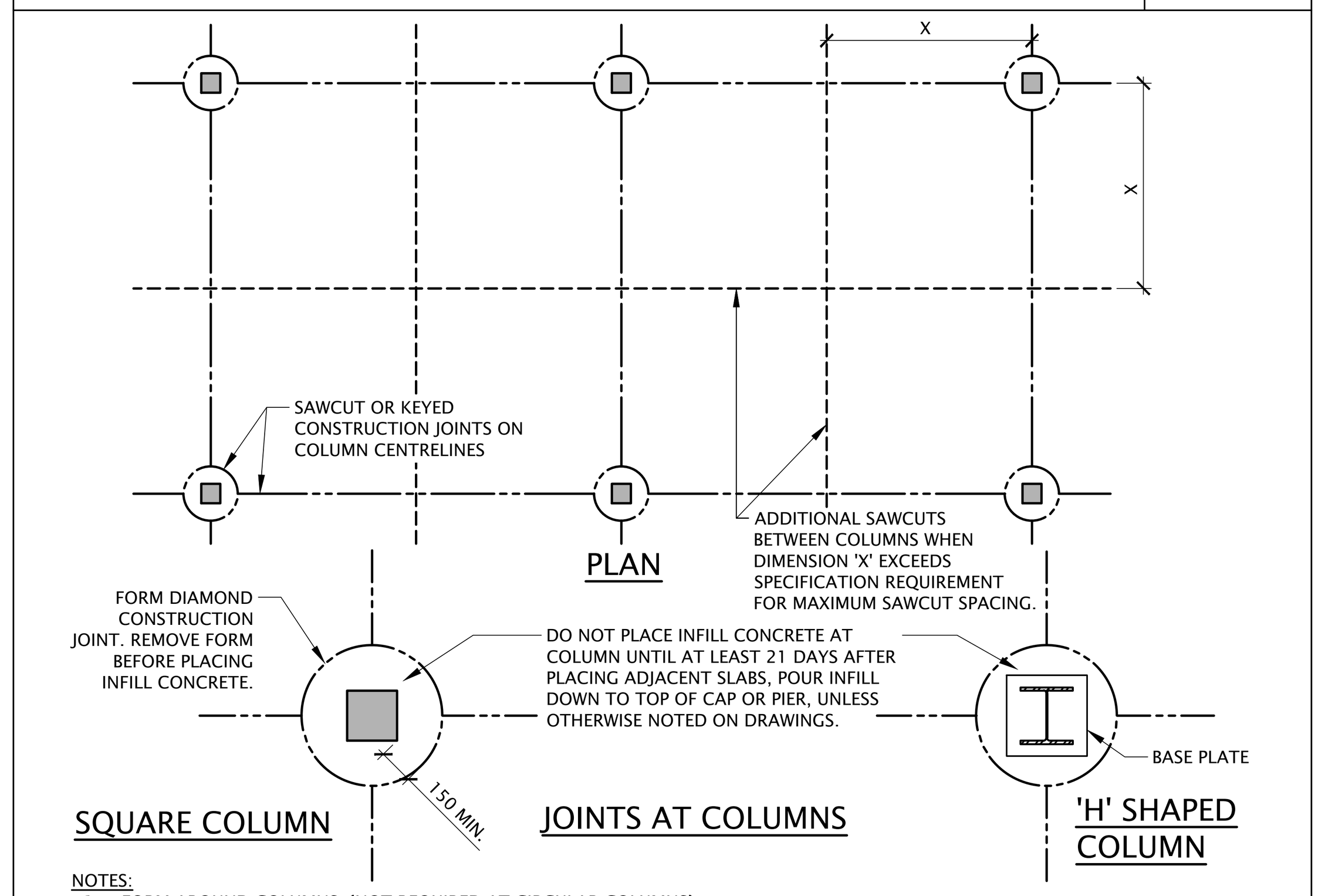
Project No. NCCA17-0228

Drawing No. S-02

STRUCTURAL ABBREVIATIONS — TD-1

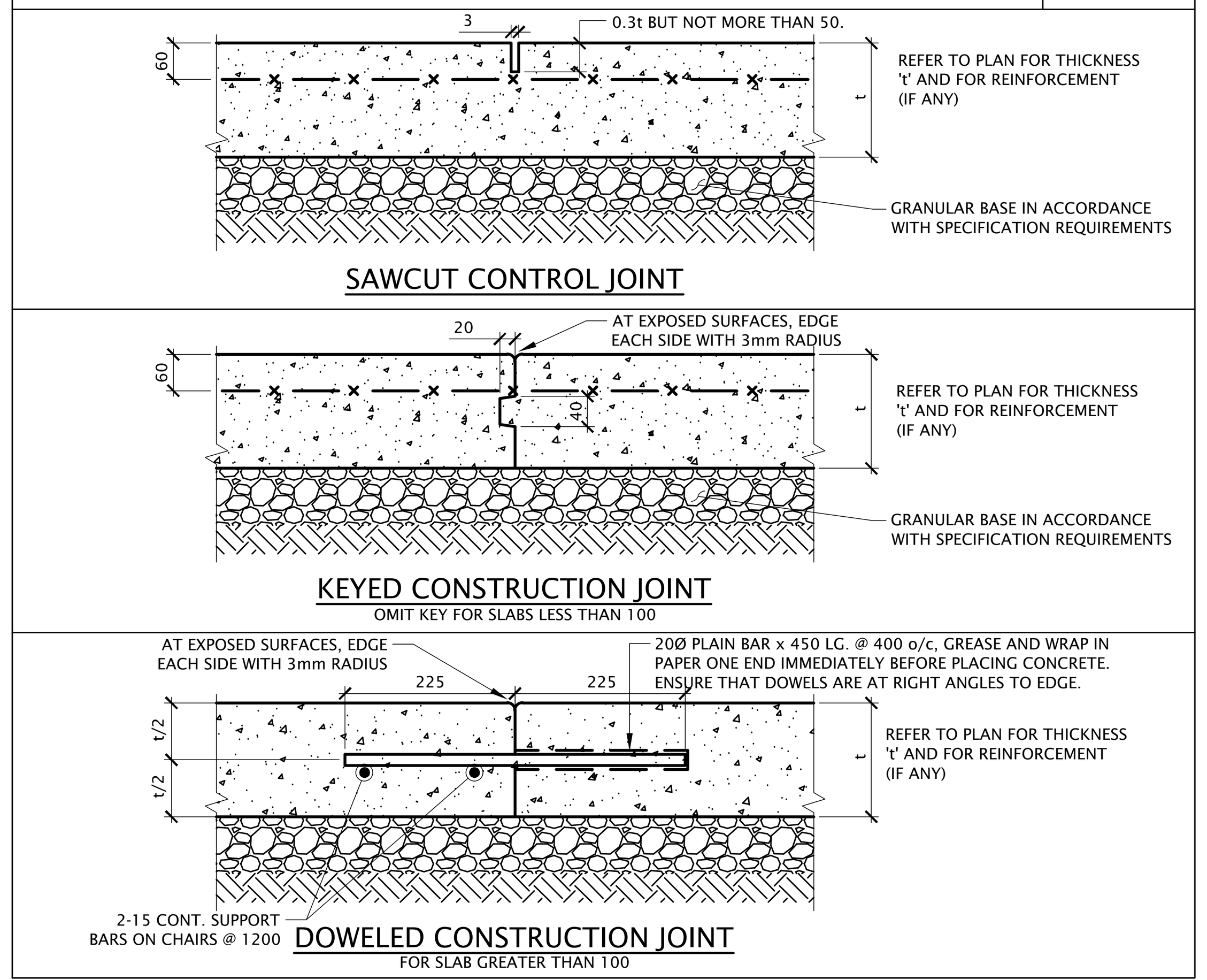
Abbreviation	Meaning	Abbreviation	Meaning
AB	ANCHOR BOLT		
ABC	ALBERTA BUILDING CODE	MAX	MAXIMUM
ADJ	ADJUSTABLE	MC	MOMENT CONNECTION
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL	MECH	MECHANICAL
		MEW	MIDDLE EACH WAY
ALT	ALTERNATE	MEZZ	MEZZANINE
ARCH	ARCHITECTURAL	MID	MIDDLE
AIFB	ASPHALT IMPREGNATED FIBREBOARD	MISC	MISCELLANEOUS
		MIN	MINIMUM
B, BOT	BOTTOM	ML	MIDDLE LAYER
BC	ELEV. BOT. OF CAISSON	m	METRE
BET	BETWEEN	mm	MILLIMETRE
BEW	BOTTOM EACH WAY	mm^2	SQUARE MILLIMETRE
BLDG	BUILDING	MPa	MEGAPASCAL
BLL	BOTTOM LOWER LAYER		
BM	BEAM	NBC	NATIONAL BUILDING CODE OF CANADA
BM	BENDING MOMENT BAR	NCB	NO COLUMN BELOW
BPL	BEARING/BASE PLATE	NF	NEAR FACE
BRG	BEARING	NIC	NOT IN CONTACT
BSMT	BASEMENT	NTS	NOT TO SCALE
BUL	BOTTOM UPPER LAYER		
		o/c	ON CENTRE
C	CHANNEL	o/o	OUT TO OUT
c/c	CENTRE TO CENTRE	OPNG	OPENING
c/w	COMPLETE/CONNECT WITH	OPP	OPPOSITE
CA	COLUMN ABOVE	OSB	ORIENTED STRAND BOARD
CB	COLUMN BELOW	OWSJ	OPEN WEB STEEL JOIST
CANT	CANTILEVER		
CF	CONCRETE FIREPROOFED	PC	PRECAST
CJ	CONTROL JOINT	Pf, Cf, Tf, Mf, Vf	FACTORED LOADS
CL	CLEAR	P, C, T, M, V	UNFACTORED LOADS
℄	CENTRE LINE	PL	PLATE
COMP	COMPOSITE	PROJ	PROJECTION
COL	COLUMN	P/T	POST TENSIONED, PRESSURE TREATED
CONC	CONCRETE	PVC	POLYVINYL CHLORIDE
CONST JT	CONSTRUCTION JOINT		
CONT	CONTINUOUS	R	REACTION, RADIUS
		REF	REFERENCE
DET	DETAIL	REM	REMAINDER
D.FIR	DOUGLAS FIR	REQ'D	REQUIRED
DIA, Ø	DIAMETER	REV	REVISION
DIM	DIMENSION	RE	RIGHT END
DIAG	DIAGONAL	REINF	REINFORCEMENT
DL	DEAD LOAD	R/W	REINFORCE WITH
DO, "	DITTO		
DP	DEEP	S	STANDARD BEAM
DWG	DRAWING	SS	SINGLE STIRRUP
DWL	DOWEL	SDF	STEP DOWN FOOTING
DN	DOWN	SECT	SECTION
DS	DOUBLE STIRRUPS	SF	SPRAY FIREPROOFED
		SIM	SIMILAR
EA	EACH	SLA	SNOW LOAD ACCUMULATION
EC	EPOXY COATED	SL	SLAB
EE	EACH END	SOG	SLAB ON GRADE
EF	EACH FACE	SP	SPADREL, SPRUCE
EJ, EXP JT	EXPANSION JOINT	SPEC	SPECIFICATION
EL, ELEV	ELEVATION	SPF	SPRUCE-PINE-FIR
ELEC, ELECT	ELECTRICAL	STD	STANDARD
EMBED	EMBEDMENT	STRUCT	STRUCTURAL
EQ	EQUAL	STIFF	STIFFENER
ES	EACH SIDE	SQ	SQUARE
EW	EACH WAY	ST	STRAIGHT
EX, EXIST	EXISTING	STIR	STIRRUP
EXT	EXTERIOR		
		t, THK	THICKNESS
FIN	FINISHED	T	TOP
FL	FLOOR	T&B	TOP AND BOTTOM
FTG	FOOTING	TC	ELEV TOP OF CAISSON
FMC	FULL MOMENT CONNECTION	TEMP	TEMPERATURE
fy	YIELD STRENGTH	TEW	TOP EACH WAY
f'c	COMPRESSIVE STRENGTH OF CONC	TJ	TIE JOIST
FF	FAR FACE	TLE	TOP LEFT END
		TLL	TOP LOWER LAYER
GALV	GALVANIZED	TRE	TOP RIGHT END
GA	GAUGE	TUL	TOP UPPER LAYER
GL	GRIDLINE	TYP	TYPICAL
		T/O	TOP OF
HE	HOOK EACH END	TOS	TOP OF SLAB
HH	HOOK - HOOK (HOOK EACH END)	TSB	TENSION SPLICE CLASS 'B'
HIF	HORIZONTAL INSIDE FACE		
HOF	HORIZONTAL OUTSIDE FACE	USF	UNDERSIDE OF FOOTING
HOR. HORIZ	HORIZONTAL	U/S	UNDERSIDE
HEF	HORIZONTAL EACH FACE	U/N	UNLESS NOTED
HSS	HOLLOW STRUCTURAL SECTION	UNO	UNLESS NOTED OTHERWISE
HP	HIGH POINT	UL	UPPER LAYER
		UPT	UPTURNED
INT	INTERIOR		
ID	INSIDE DIAMETER	VBF	VERTICAL BRACED FRAME
		VEF	VERTICAL EACH FACE
k	KILO	VERT	VERTICAL
kN	KILONEWTON	VOF	VERTICAL OUTSIDE FACE
kPa	KILOPASCAL	VIF	VERTICAL INSIDE FACE
		VSC	VERTICALLY SLOTTED CONNECTION
Ld	DEVELOPMENT LENGTH		
LE	LEFT END	W	WIDE FLANGE BEAM
LG	LONG/LENGTH	WP	WALL PLATE, WORKING POINT
LL	LIVE LOAD	WT	STRUCTURAL TEE
LLH	LONG LEG HORIZONTAL	WWF	WELDED WIRE FABRIC
LLV	LONG LEG VERTICAL	WWF	WELDED WIDE FLANGE
L	SINGLE ANGLE		
⅃L	DOUBLE ANGLE		
LP	LOW POINT		

SLAB ON GRADE - AREA PLACEMENT — TDC-1

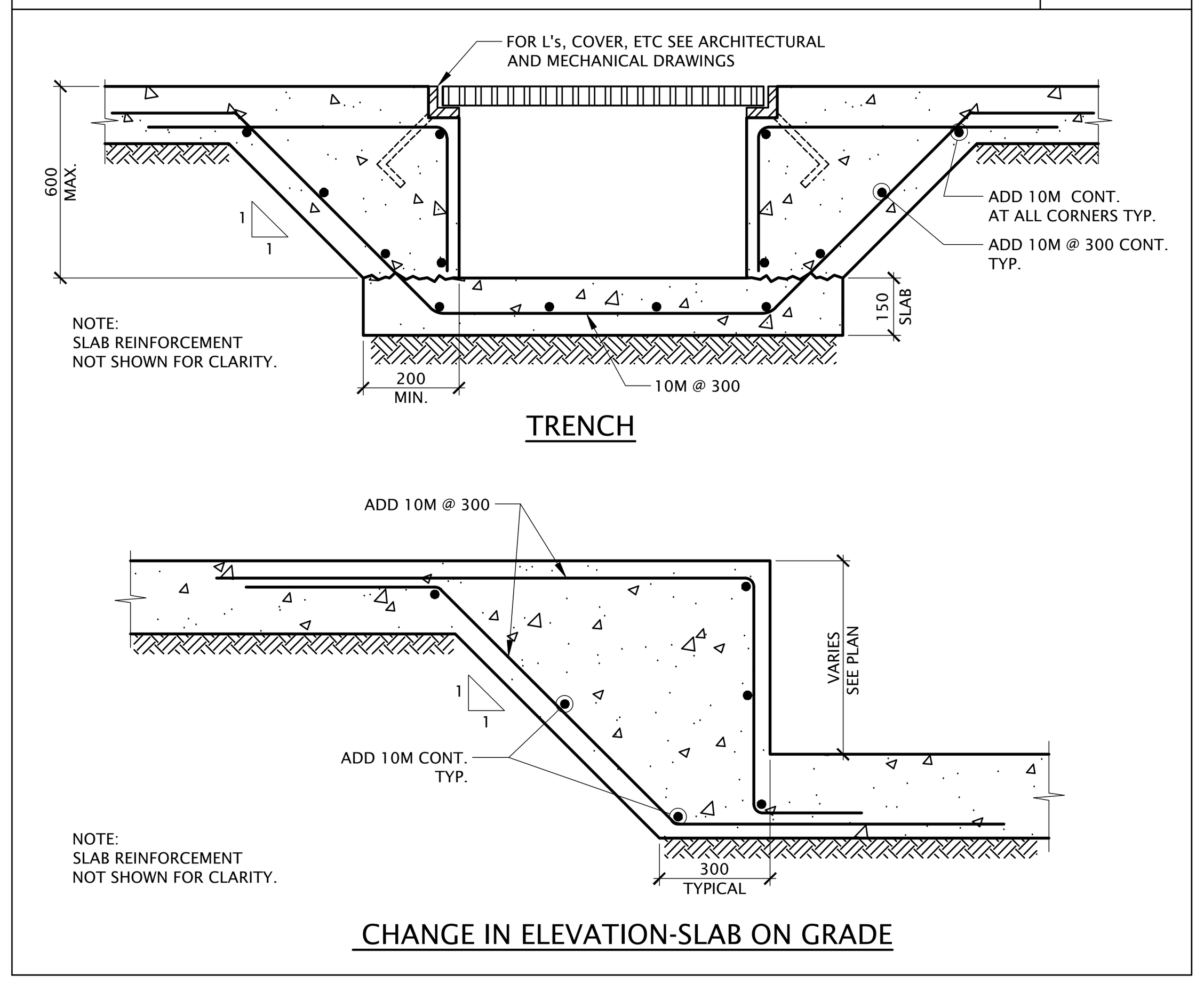


NOTES:
1. FORM AROUND COLUMNS. {NOT REQUIRED AT CIRCULAR COLUMNS}
2. "X" = 30 TIMES SLAB THICKNESS, EXCEPT WHERE CONCRETE IS PROPORTIONED FOR MAXIMUM BULK DENSITY IN ACCORDANCE WITH SPECIFICATION "X" = 40 TIMES SLAB THICKNESS UNLESS NOTED OTHERWISE.
3. PLACE SLAB AREA NO LARGER THAN WHAT CAN BE FINISHED IN ONE DAY.
4. SAWCUT CONTROL JOINTS IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS.
5. LIMIT RATIO OF LENGTH TO WIDTH OF ANY SAWCUT PANEL TO 1.5 MAXIMUM.
6. REFER TO TYPICAL SLAB ON GRADE JOINT DETAIL FOR REQUIRED DEPTH OF SLAB SAWCUT.
7. FILL SAWCUT JOINTS IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS.

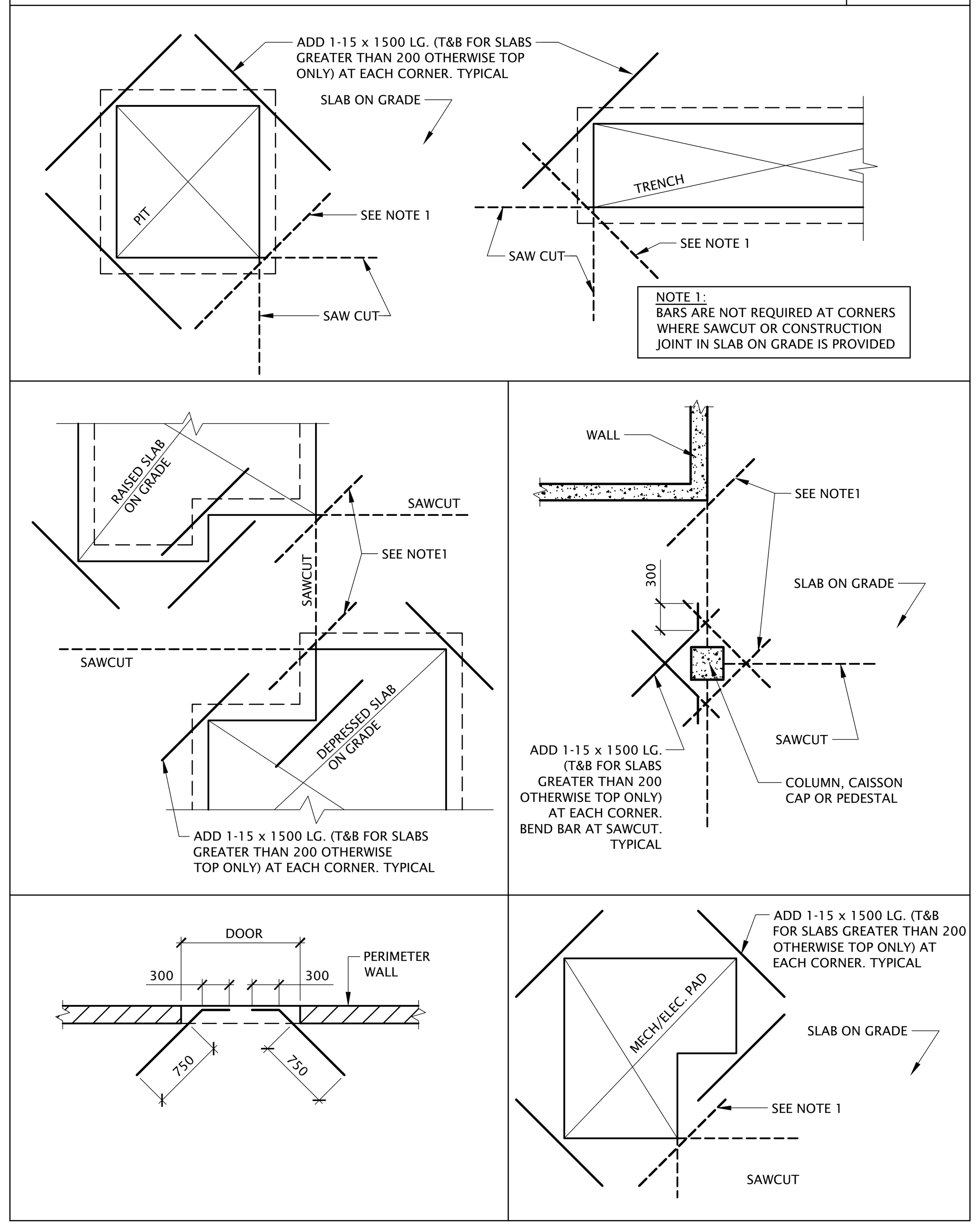
SLAB ON GRADE - JOINT DETAILS — TDC-3



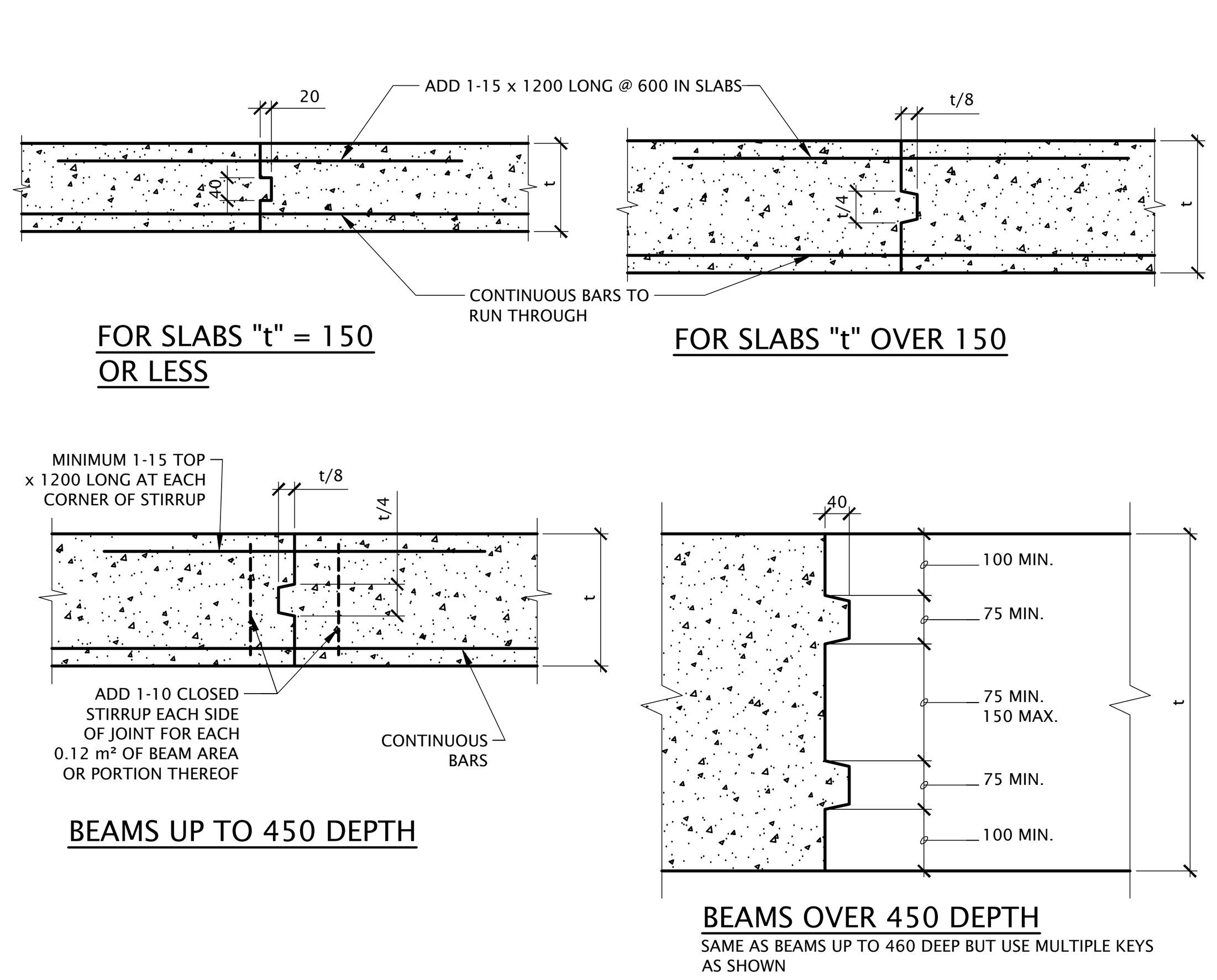
CHANGE IN ELEVATION OF S.O.G. AND TRENCH DETAILS — TDC-6



CRACK CONTROL REINFORCEMENT IN SLAB ON GRADE — TDC-4



BEAM AND SLAB CONSTRUCTION JOINT DETAILS — TDC-23



CONCRETE COVER TO REINFORCING STEEL — TDC-34

	MINIMUM COVER CSA-A23.1	MINIMUM COVER CSA-S413 (SEE NOTE #4)	MINIMUM COVER FOR FIRE-RESISTANCE RATING 1.5 h	2 h	3 h	4 h
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	75		75	75	75	75
CONCRETE CAST AGAINST FORMS, BUT EXPOSED TO EARTH OR WEATHER: 15 BARS, 16Ø WIRE, AND SMALLER, STIRRUPS, TIES, AND SPIRAL..........................	40		40	40	40	40
COLUMN PRINCIPAL REINFORCEMENT......	50		50	50	65	75
20 TO 55 BARS, AND ALL OTHER BARS......................	50		50	50	50	50
CONCRETE NOT EXPOSED TO WEATHER, OR NOT IN CONTACT WITH GROUND: 35 BARS AND SMALLER FOR SLABS AND WALLS SEE NOTE #3	20	TOP 40 BOT. 30	20	25	35	40
FOR JOISTS	20		25	25	40	50
BEAM PRINCIPAL REINFORCEMENT	40		40	40	40	50
COLUMN PRINCIPAL REINFORCEMENT......	40		50	50	65	75
STIRRUPS, TIES, SPIRALS, AND ALL OTHER BARS	40		40	40	40	40

NOTES:
1. FOR CAST-IN-PLACE (NON-PRESTRESSED) CONCRETE, PROVIDE MINIMUM CONCRETE COVER TO REINFORCEMENT ACCORDING TO CSA-A23.1 UNLESS OTHERWISE NOTED ON DRAWINGS.
2. WHERE THE FIRE-RESISTANCE RATING OF A COLUMN EXCEEDS 2 HOURS, ADD WELDED WIRE MESH, MINIMUM 102 x 102 - MW3.2 x MW3.2, MIDWAY IN CONCRETE COVER.
3. FOR SHORT WALLS WHERE INDICATED ON THE DRAWING, PROVIDE COVER SAME AS FOR COLUMNS.
4. FOR PARKING STRUCTURES PROVIDE MINIMUM CONCRETE COVER TO REINFORCEMENT ACCORDING TO CSA-S413. COVER TO BOTTOM REINFORCEMENT IN THE MAIN FLOOR SLAB EXPOSED TO DEICING MUST MEET REQUIREMENTS OF CSA-S413.

MINIMUM DEVELOPMENT AND LAP SPLICE LENGTHS IN COMPRESSION — TDC-35

BAR SIZE	Fy MPa	DEVELOPMENT LENGTHS (ℓdc) f'c = 20 MPa	f'c = 25 MPa	f'c = 30 MPa	LAP SPLICE f'c = 30 MPa
10	400	240	220	200	300
10	500	300	270	250	430
15	400	340	310	280	440
15	500	430	380	350	640
20	400	420	370	340	590
20	500	520	470	430	850
25	400	540	480	440	730
25	500	680	600	550	1070
30	400	640	570	530	880
30	500	800	720	660	1280
35	400	770	690	630	1030
35	500	960	860	790	1490
45	400	940	840	770	
45	500	1170	1050	960	
55	400	1210	1080	990	
55	500	1510	1350	1240	

NOTES:
1. VALUES GIVEN ARE FOR NORMAL WEIGHT CONCRETE AND DEFORMED BARS ONLY AND ARE TO BE MODIFIED ACCORDING TO THE FOLLOWING APPLICABLE FACTORS.
2. LAP SPLICES ARE NOT PERMITTED FOR BAR SIZES 45 AND 55.
3. 'ℓdc' DENOTES MINIMUM DEVELOPMENT LENGTH FOR EMBEDMENT OF DOWELS IN COMPRESSION.
4. INCREASE LAP SPLICE LENGTHS FOR f'c LESS THAN 20 MPa BY A FACTOR OF 1.33.
5. MINIMUM LAP SPLICE AND DEVELOPMENT LENGTHS MAY BE REDUCED UNDER THE FOLLOWING SPECIAL CONDITIONS BY THE FACTORS SHOWN:
   a) EXCESS AREA OF STEEL ....(AS REQUIRED/AS PROVIDED) USE 1.0 UNLESS NOTED OTHERWISE.
   b) BARS ENCLOSED WITH A SPIRAL WHICH HAS A MINIMUM WIRE DIA. OF 6 AND 100 MAXIMUM PITCH 0.75
6. AFTER APPLYING ALL APPLICABLE FACTORS OF NOTES 4 AND 5, THE LAP SPLICE LENGTHS SHALL NOT BE MADE LESS THAN 300 AND THE DEVELOPMENT LENGTHS SHALL NOT BE MADE LESS THAN 200.

TENSION DEVELOPMENT LENGTH AND TENSION LAP SPLICES (Fy = 400 MPa) — TDC-36

CONCRETE / SPLICE / BAR	25 MPa CLASS A, Ld	25 MPa CLASS B	30 MPa CLASS A, Ld	30 MPa CLASS B	35 MPa CLASS A, Ld	35 MPa CLASS B	40 MPa CLASS A, Ld	40 MPa CLASS B	45 MPa CLASS A, Ld	45 MPa CLASS B	50 MPa CLASS A, Ld	50 MPa CLASS B	CONCRETE / SPLICE / BAR
	TABLE 1: UNCOATED, OTHER THAN TOP BARS												
10	300	380	300	350	300	320	300	300	300	280	300	300	10
15	440	570	400	520	370	480	350	450	330	420	310	400	15
20	580	750	530	690	490	640	460	600	430	560	410	530	20
25	900	1170	830	1070	760	990	720	930	670	880	640	830	25
30	1080	1410	990	1290	920	1190	860	1110	810	1050	770	1000	30
35	1260	1640	1150	1500	1070	1390	1000	1300	940	1220	890	1160	35
	TABLE 2: UNCOATED, TOP BARS												
10	380	490	350	450	320	420	300	390	280	370	300	350	10
15	570	730	520	670	480	620	450	580	420	550	400	520	15
20	750	980	690	890	640	830	600	770	560	730	530	690	20
25	1170	1530	1070	1390	990	1290	930	1210	880	1140	830	1080	25
30	1410	1830	1290	1670	1190	1550	1110	1450	1050	1360	1000	1290	30
35	1640	2130	1500	1950	1390	1800	1300	1690	1220	1590	1160	1510	35
	TABLE 3: EPOXY-COATED BARS, OTHER THAN TOP BARS												
10	440	570	400	520	370	480	350	450	330	420	310	400	10
15	650	850	600	770	550	720	520	670	490	630	460	600	15
20	870	1130	790	1030	730	950	690	890	650	840	610	800	20
25	1350	1760	1240	1610	1140	1490	1070	1390	1010	1310	960	1240	25
30	1620	2110	1480	1930	1370	1780	1280	1670	1210	1570	1150	1490	30
35	1890	2460	1730	2250	1600	2080	1500	1950	1410	1840	1340	1740	35
	TABLE 4: EPOXY-COATED TOP BARS												
10	490	640	450	590	420	540	390	510	370	480	350	450	10
15	740	960	670	880	620	810	580	760	550	720	520	680	15
20	980	1280	900	1170	830	1080	780	1010	730	950	700	900	20
25	1530	1990	1400	1820	1300	1690	1210	1580	1140	1490	1090	1410	25
30	1840	2390	1680	2180	1560	2020	1460	1890	1370	1780	1300	1690	30
35	2150	2790	1960	2550	1810	2360	1700	2210	1600	2080	1520	1970	35

NOTES:
1. USE FOLLOWING TENSION LAP SPLICE LENGTHS UNLESS NOTED OTHERWISE ON DRAWINGS.
2. TENSION DEVELOPMENT LENGTHS, Ld, DENOTED AS TENSION LAP SPLICE CLASS A.
3. FOR COLUMNS, USE COLUMN TENSION SPLICE TYPICAL DETAIL.
4. TOP BARS ARE BARS WITH MORE THAN 300 OF CONCRETE CAST BELOW SPLICE.
5. CLEAR COVER NOT LESS THAN d_b, CLEAR SPACING NOT LESS THAN $2d_b$.
6. FOR STRUCTURAL LOW-DENSITY CONCRETE, INCREASE SPLICE LENGTHS BY 30%.
7. FOR STRUCTURAL SEMI-LOW-DENSITY CONCRETE, INCREASE SPLICE LENGTHS BY 20%.

DATE	ISSUED FOR	REV
2018-02-07	ISSUED FOR 60% REVIEW	
2018-02-14	ISSUED FOR DP	
2018-03-02	ISSUED FOR 95% REVIEW	
2018-03-29	ISSUED FOR TENDER	

Project Component
LUNCHROOM EXPANSION

Keyplan

Consultants

Architectural: NORR Architects Engineers Planners
Structural: NORR Architects Engineers Planners
Mechanical: NORR Architects Engineers Planners
Electrical: NORR Architects Engineers Planners

Seal(s)

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Drawn:
Project Leader: D. HIDER
Checked: A. TODEILA

Client
RCMP

Project
INNISFAIL PDSTC
LUNCHROOM EXPANSION

Drawing Title
TYPICAL DETAILS

Check Scale (may be photo reduced) 0 1inch 0 10mm

Project No. NCCA17-0228

Drawing No. S-03

PLOT DATE: March 29, 2018 TIME: 9:31 AM FULL PATH AND FILENAME: P:\RCMP_PROJECTS\NCCA17-0228 - RCMP - DTF LUNCHROOM EXPANSION\500-DELIV\STRU\20_FRAMING_PLANS\S-03.DWG PLOTSYLE TABLE: PMA-STD-100.ctb

MINIMUM EMBEDMENT LENGTHS FOR DEFORMED BARS (Fy = 460 MPa) — TDC-37

BAR SIZE	TENSION, Ld (CLASS A)										COMPRESSION			
	f'c=35MPa		f'c=40MPa		f'c=45MPa		f'c=50MPa		f'c=55MPa		f'c= 35MPa	f'c= 40MPa	f'c= 45MPa	f'c= 50MPa & 55MPa
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS				
T8	420	320	390	300	360	300	350	300	330	300	200	200	200	200
T10	530	410	490	380	460	350	430	330	410	310	200	200	200	200
T12	630	490	580	450	550	420	520	400	490	380	250	250	250	250
T16	840	650	780	600	730	560	690	530	650	500	330	320	320	320
T20	1050	810	970	750	910	700	860	660	820	630	410	400	400	400
T25	1640	1260	1520	1170	1420	1100	1340	1030	1270	980	510	500	500	500
T32	2100	1620	1950	1500	1820	1400	1720	1320	1630	1250	650	640	640	640
T40	2630	2020	2440	1870	2280	1750	2150	1650	2040	1570	810	800	800	800

NOTES:

1. TOP BARS ARE HORIZONTAL BARS LOCATED SUCH THAT MORE THAN 300mm OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR (EQ. TOP BARS OF BEAMS AND SLABS DEEPER THAN 300mm AND HORIZONTAL WALL REINFORCING).
2. UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, COMPRESSION EMBEDMENT SHALL BE PROVIDED FOR COLUMN BARS ONLY AND TENSION EMBEDMENT FOR ALL OTHER REINFORCEMENT.
3. BAR SPLICE (LAP) LENGTHS SHOWN ARE BASED ON ACI-318-02 CL.12.2.2 AND 12.3 RESPECTIVELY.

MINIMUM LAP LENGTHS FOR DEFORMED BARS (Fy = 400 MPa) — TDC-38

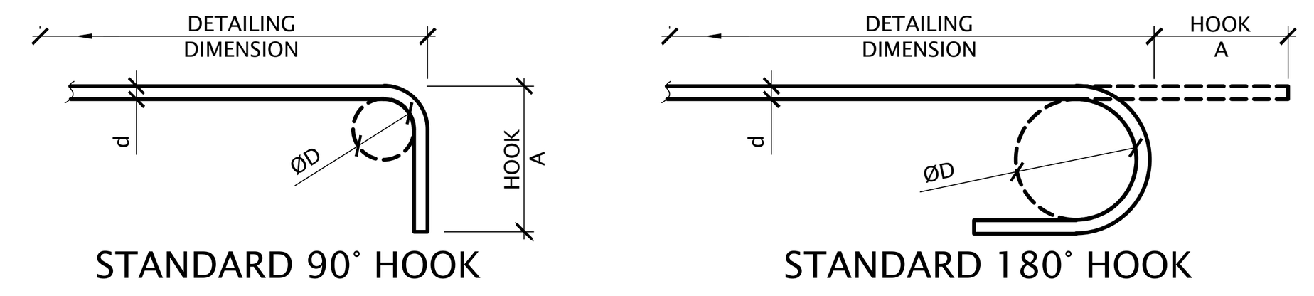
BAR SIZE	TENSION (CLASS B)										COMPRESSION		
	f'c=35MPa		f'c=40MPa		f'c=45MPa		f'c=50MPa		f'c=55MPa		f'c≥25MPa		
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	REGULAR LAPS	COLUMN W/TIES	COLUMN W/SPIRALS
T8	550	420	510	390	470	360	450	350	420	330	300	300	300
T10	680	530	630	490	590	460	560	430	530	410	370	300	300
T12	820	630	760	580	710	550	670	520	640	490	440	360	330
T16	1090	840	1010	780	950	730	890	690	850	650	580	480	440
T20	1370	1050	1270	970	1180	910	1120	860	1060	820	730	600	550
T25	2140	1640	1980	1520	1850	1420	1750	1340	1660	1270	910	750	680
T32	2740	2100	2530	1950	2370	1820	2230	1720	2120	1630	1160	960	870
T40	-	-	-	-	-	-	-	-	-	-	1450	1200	1090

NOTES:

1. TOP BARS ARE HORIZONTAL BARS LOCATED SUCH THAT MORE THAN 300 mm OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR (EQ. TOP BARS OF BEAMS AND SLABS DEEPER THAN 300 mm AND HORIZONTAL WALL REINFORCING).
2. UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, COMPRESSION EMBEDMENT SHALL BE PROVIDED FOR COLUMN BARS ONLY AND TENSION EMBEDMENT FOR ALL OTHER REINFORCEMENT.
3. BAR SPLICE (LAP) LENGTHS SHOWN ARE BASED ON ACI-318-02 CL.12.15 AND 12.16 RESPECTIVELY.

REINFORCING STEEL BAR AND STANDARD HOOK DIMENSIONS FOR DEFORMED BARS (Fy = 460 MPa) — TDC-39

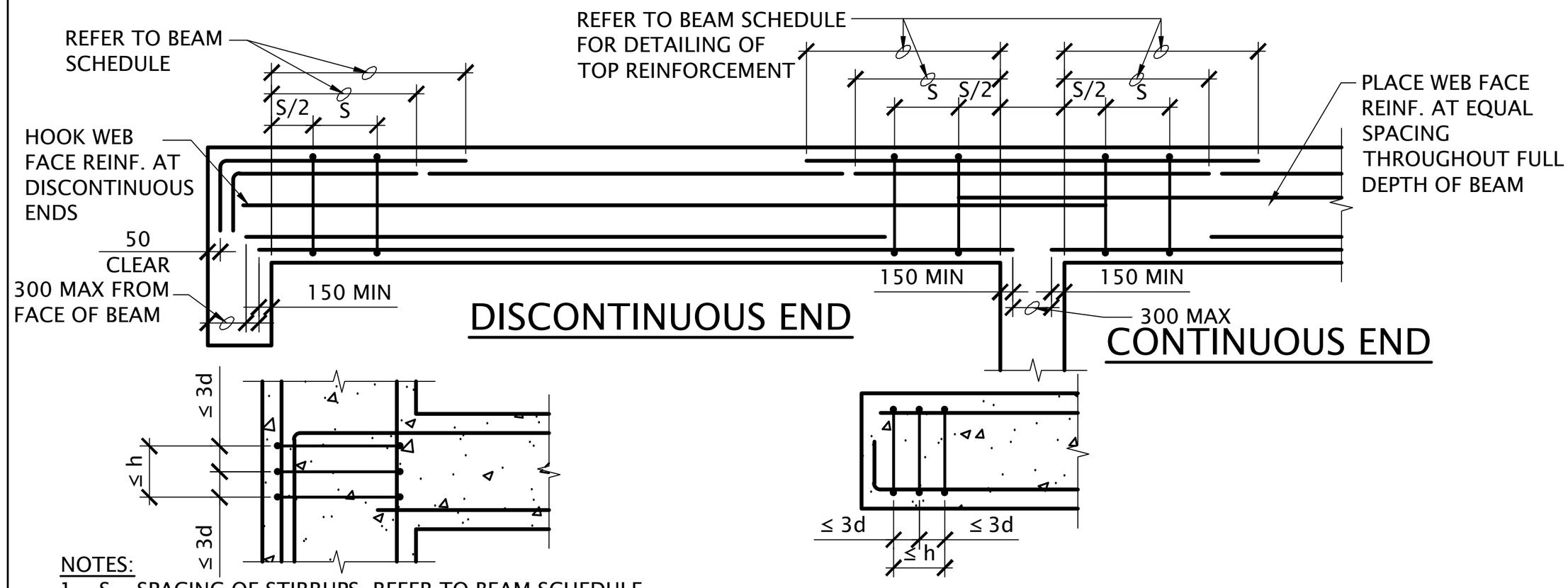
BAR SIZE	MASS kg/m	DIA. d	AREA mm2	STANDARD HOOK BEND D	STANDARD HOOK A 90˚	STANDARD HOOK A 180˚	STIRRUP AND TIE HOOKS (90˚) D	STIRRUP AND TIE HOOKS (90˚) A
T8	0.395	8	50	50	130	120	30	85
T10	0.617	10	79	60	160	130	40	90
T12	0.888	12	113	70	190	150	50	110
T16	1.580	16	201	95	260	180	65	145
T20	2.47	20	314	120	320	220		
T25	3.86	25	491	150	400	280		
T32	6.31	32	804	260	550	420		
T40	9.87	40	1257	400	720	640		



STANDARD 90˚ HOOK

STANDARD 180˚ HOOK

PLACEMENT OF REINFORCEMENT IN CONCRETE BEAMS — TDC-40



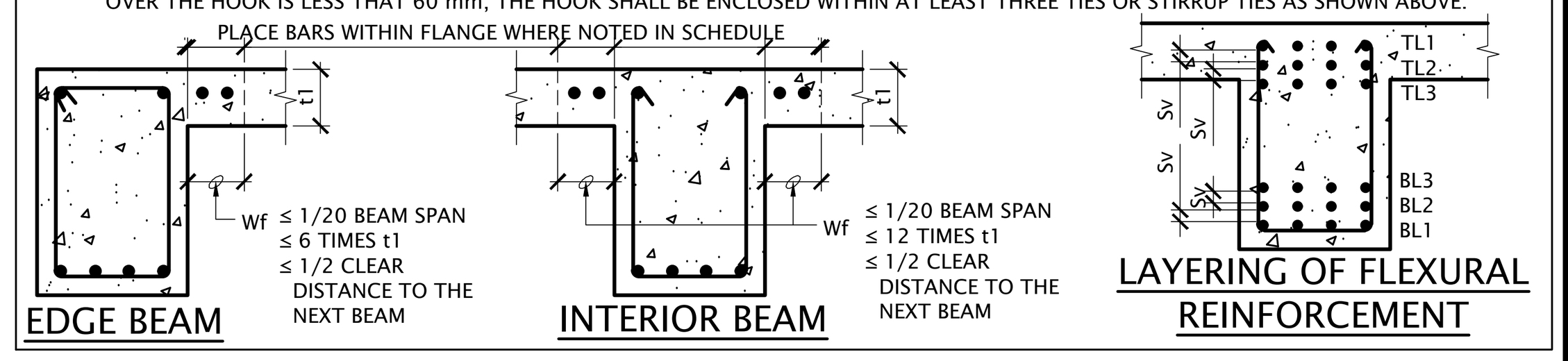
DISCONTINUOUS END

CONTINUOUS END

NOTES:

1. S = SPACING OF STIRRUPS, REFER TO BEAM SCHEDULE.
2. d = DIAMETER OF HOOKED BAR.
3. h = HOOK BEND DIAMETER.
4. Sv = CLEAR VERTICAL SPACING BETWEEN LAYERS OF FLEXURAL REINFORCEMENT.
5. LEFT AND RIGHT SUPPORT OF BEAM DETERMINED FROM THE ORIENTATION OF THE BEAM MARK ON PLAN.
6. BARS IN TOP FIRST LAYER NOTED TL1
   BARS IN TOP SECOND LAYER NOTED TL2
   BARS IN TOP THIRD LAYER NOTED TL3, ETC.
7. BARS IN BOTTOM FIRST LAYER NOTED BL1
   BARS IN BOTTOM SECOND LAYER NOTED BL2
   BARS IN BOTTOM THIRD LAYER NOTED BL3, ETC.
8. WHERE NOTED "BARS IN FLANGE" IN BEAM SCHEDULE, PLACE TOP REINFORCEMENT IN SLAB, OUTSIDE BEAM WIDTH, AS NOTED BELOW.
9. FOR BARS BEING DEVELOPED BY A STANDARD HOOK AT THE ENDS OF MEMBERS, WHERE BOTH SIDE COVER AND THE TOP (OR BOTTOM) COVER OVER THE HOOK IS LESS THAT 60 mm, THE HOOK SHALL BE ENCLOSED WITHIN AT LEAST THREE TIES OR STIRRUP TIES AS SHOWN ABOVE.

BAR SIZE	CLEAR SPACINGS, Sv(mm)
15	30
20	30
25	35
30	40
35	50



EDGE BEAM

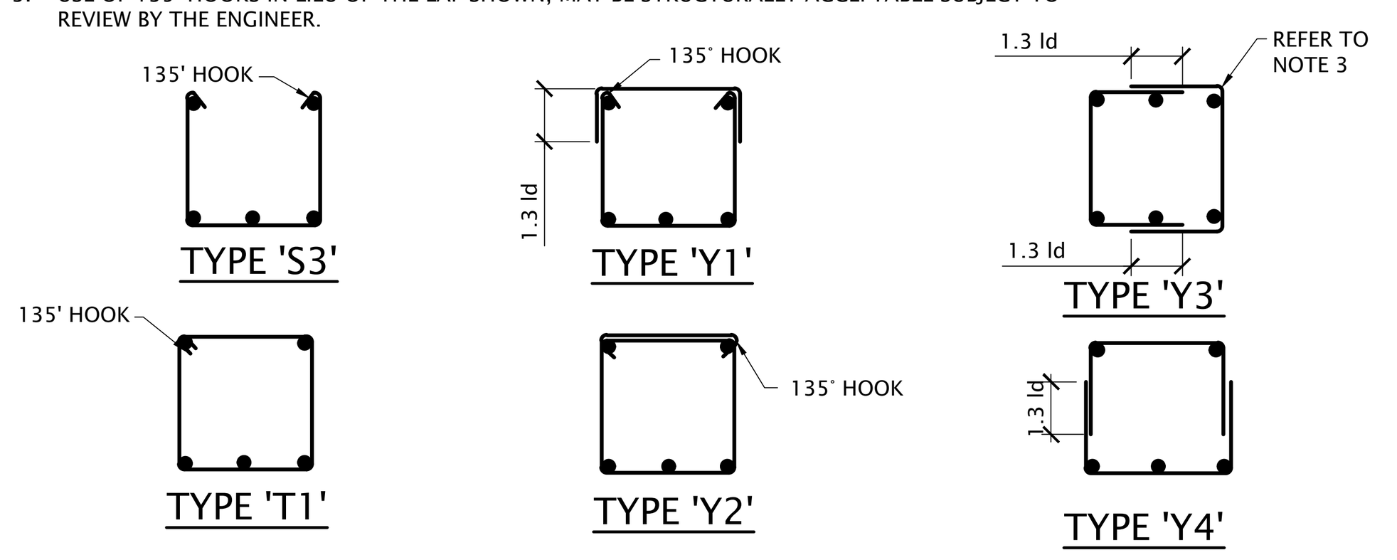
INTERIOR BEAM

LAYERING OF FLEXURAL REINFORCEMENT

SHEAR REINFORCEMENT IN CONCRETE BEAMS — TDC-41

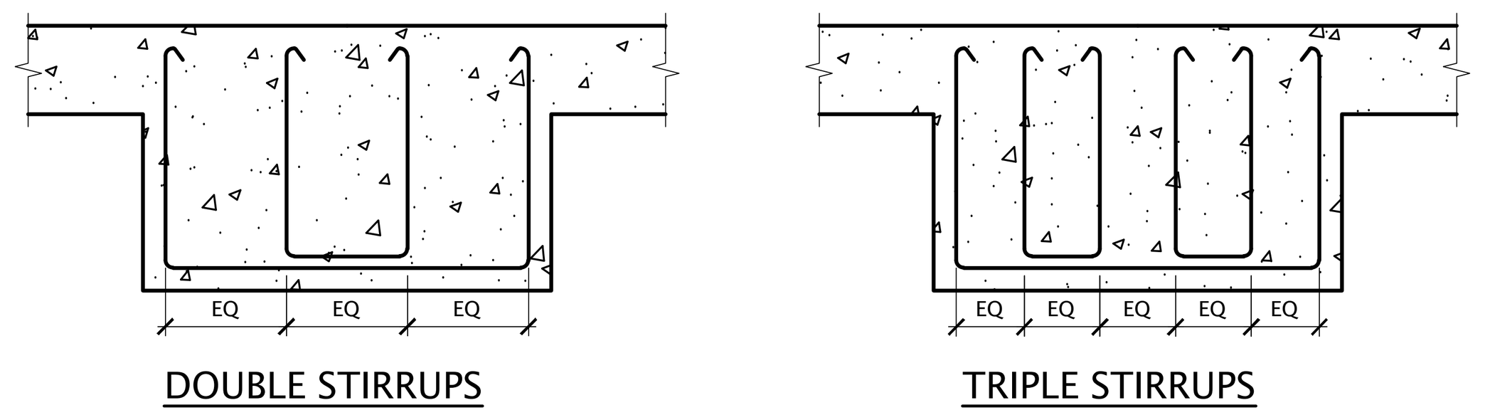
STANDARD STIRRUP TYPES

1. UNLESS NOTED OTHERWISE, DETAIL SHEAR REINFORCEMENT TYPES AS NOTED BELOW.
2. SUBSTITUTION OF 'Y1' TYPE STIRRUPS IN LIEU OF 'T1' TYPE STIRRUPS MAY BE STRUCTURALLY ACCEPTABLE, SUBJECT TO REVIEW BY THE ENGINEER.
3. USE OF 135˚ HOOKS IN LIEU OF THE LAP SHOWN, MAY BE STRUCTURALLY ACCEPTABLE SUBJECT TO REVIEW BY THE ENGINEER.



DETAILING OF MULTIPLE STIRRUPS

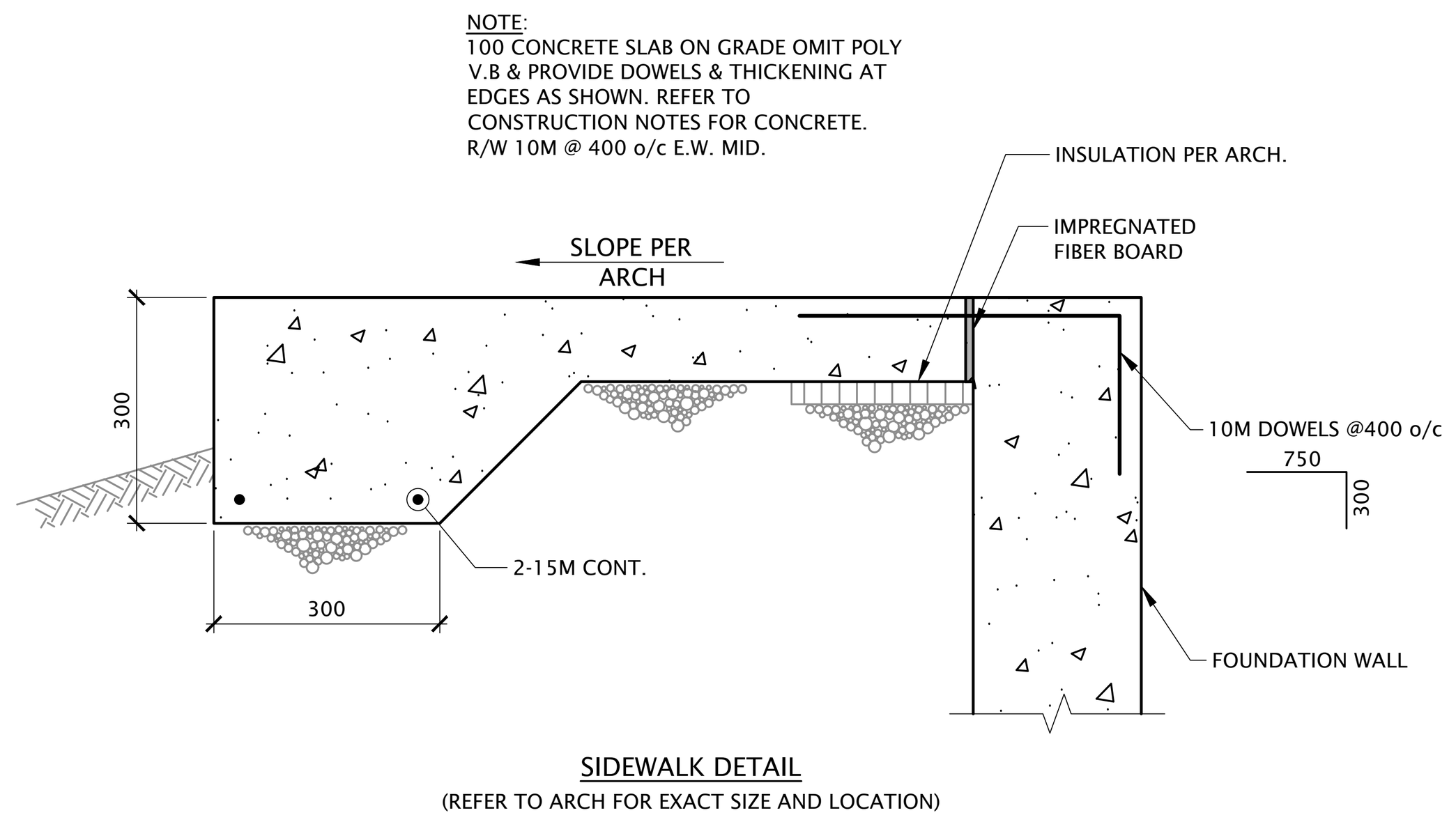
1. DOUBLE STIRRUPS, TRIPLE STIRRUPS AND THE LIKE ARE SHOWN AS '2 Y2'. '3 T1' ETC. IN THE BEAM SCHEDULE.
2. WHERE MULTIPLE STIRRUPS ARE NOTED, DETAIL THE WIDTH OF THE STIRRUPS AS SHOWN BELOW. NOTED, TYPE 'S3' STIRRUPS HAVE BEEN USED BELOW FOR ILLUSTRATION PURPOSES ONLY.



DOUBLE STIRRUPS

TRIPLE STIRRUPS

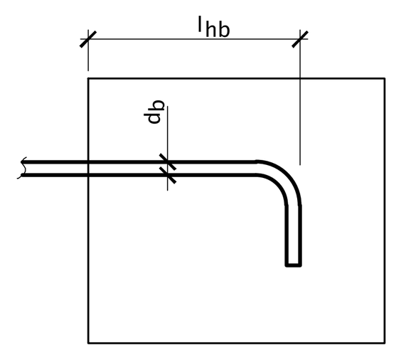
TYPICAL SIDEWALK — TDC-50



SIDEWALK DETAIL

(REFER TO ARCH FOR EXACT SIZE AND LOCATION)

HOOK DEVELOPMENT LENGTH — TDC-58

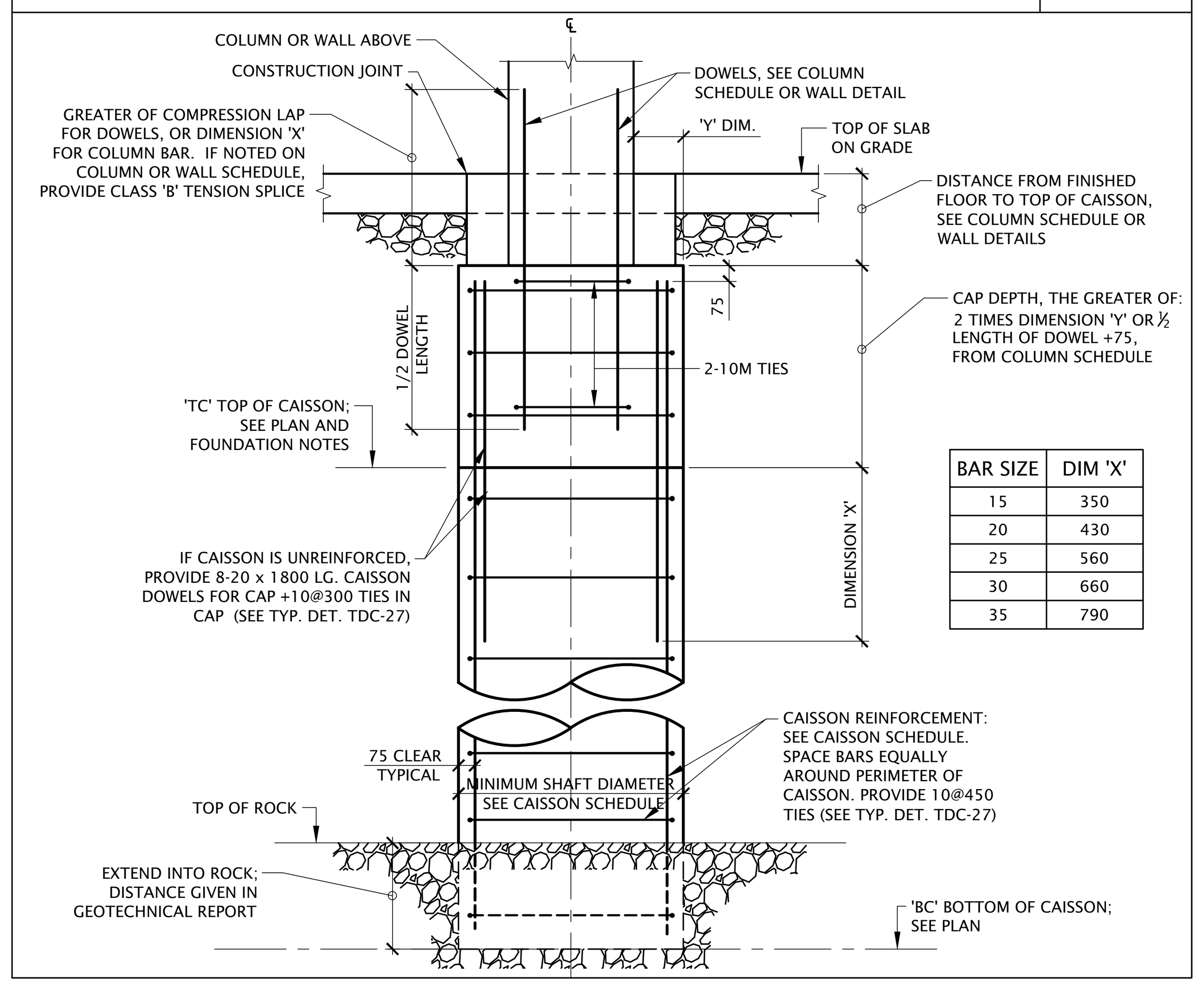


VALUES OF HOOK BASIC DEVELOPMENT LENGTH FOR GRADE 400 BARS

BAR NO.	x* (mm)	l_{hb} (mm) f'c (MPa) 20	25	30	35	40
10M	45	253	226	206	191	179
15M	65	358	320	292	270	253
20M	80	436	390	356	330	308
25M	100	563	504	460	426	398
30M	155	669	598	546	505	473
35M	185	798	714	652	603	565
45M	270	977	874	798	739	691
55M	355	1261	1128	1030	953	892

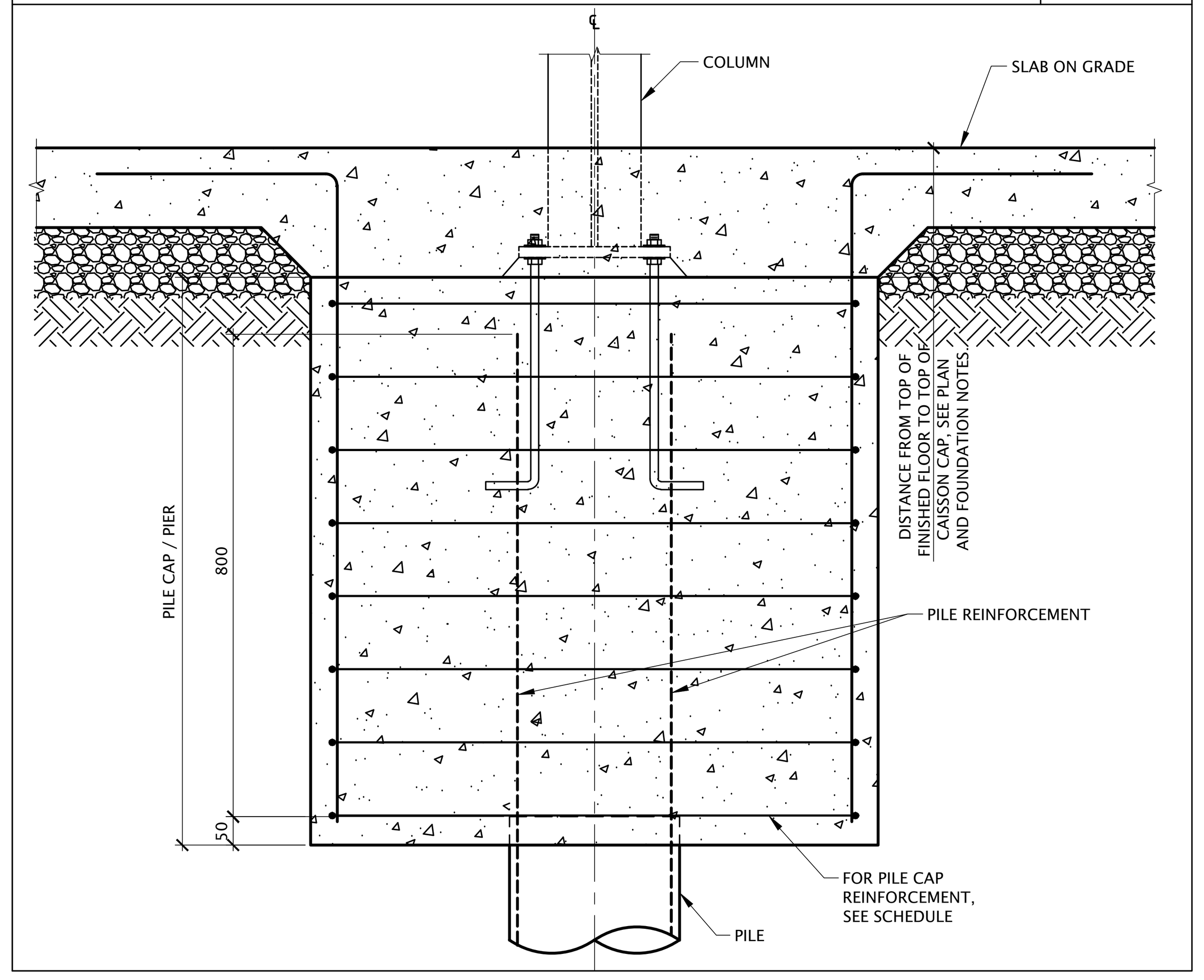
* X = BEND RADIUS + d_b , (VALUES GIVEN ARE FOR BEND RADII FOR GRADE 400 R STEEL)

CAISSON WITHOUT CAP — TDF-4

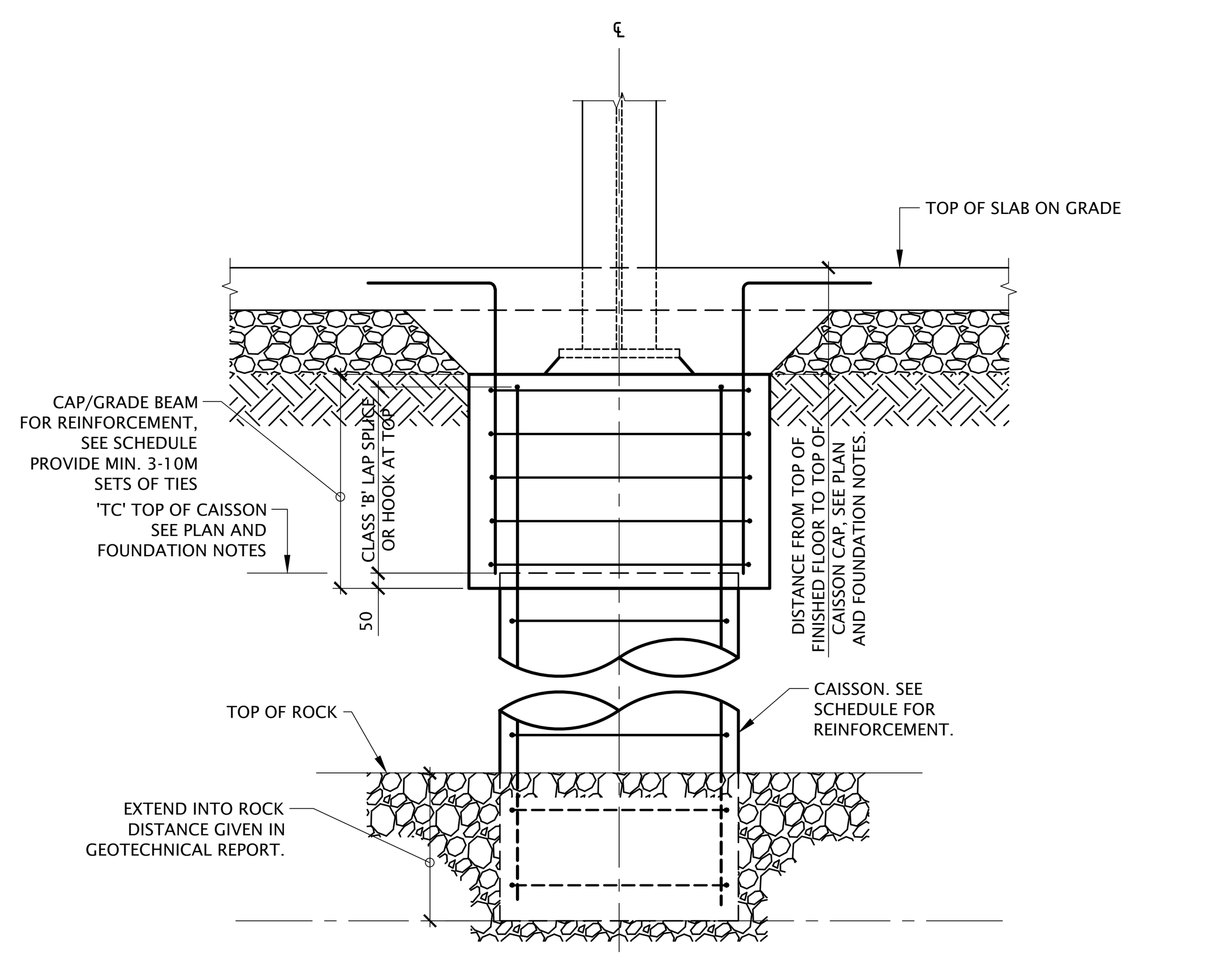


BAR SIZE	DIM 'X'
15	350
20	430
25	560
30	660
35	790

PILE TO CONCRETE CAP/PIER — TDF-5



CAISSON TO CONCRETE CAP/GRADE BEAM (ON ROCK) — TDF-6



DATE	ISSUED FOR	REV
2018-02-07	ISSUED FOR 60% REVIEW	
2018-02-14	ISSUED FOR DP	
2018-03-02	ISSUED FOR 95% REVIEW	
2018-03-29	ISSUED FOR TENDER	

Project Component
LUNCHROOM EXPANSION

Keyplan

Consultants

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Structural: NORR Architects Engineers Planners
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Seal(s)

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NORR ARCHITECTS ENGINEERS PLANNERS
A Partnership of Limited Companies

Project Manager: D. HIDER
Drawn:
Project Leader: D. HIDER
Checked: A. TODEILA

Client
RCMP

Project
INNISFAIL PDSTC
LUNCHROOM EXPANSION

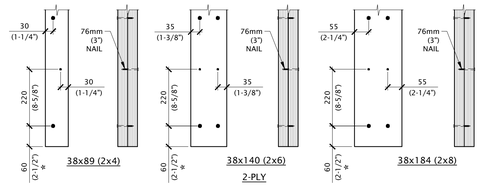
Drawing Title
TYPICAL DETAILS

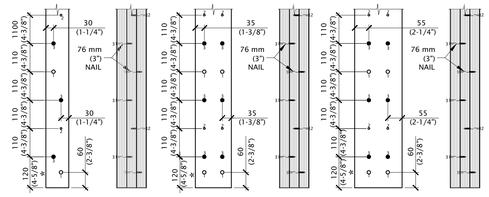
Check Scale (may be photo reduced) 0 1inch 0 10mm

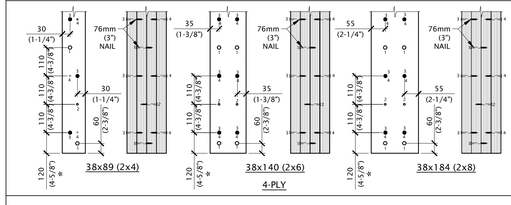
Project No. NCCA17-0228

Drawing No. S-04

NAILING FOR BUILT-UP COLUMNS — TDW-1R

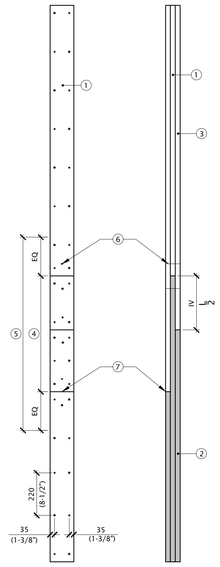






NOTE:
1. * ALL DISTANCE VALUES ARE SHOWN FOR S-P-F AND NORTHERN SPECIES. DISTANCES FOR OTHER SPECIES MUST BE CONFIRMED WITH THE ENGINEER.

SPLICED BUILT-UP COLUMNS — TDW-2



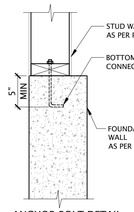
LEGEND:

1. 3#38 (3@1-1/2") THICK MEMBERS
   MINIMUM LAMINATION SIZE:
   38x140 (1-1/2"x5-1/2")
   MAXIMUM LAMINATION SIZE:
   38x184 (1-1/2"x7-1/4")
2. TREATED WOOD PORTION WHEN REQUIRED.
3. UNTREATED WOOD PORTION
4. SPLICE LENGTH, L= 1200mm (4'-0")
5. SPLICE REGION, R= 1.5 L
6. NAILS : 114mm (4-1/2") COMMON WIRENAIL; HOT-DIP GALVANIZED WHEN USED IN TREATED WOOD; 6 PER JOINT 220mm (8-1/2") o/c, 2 PER ROW DRIVEN FROM ALTERNATE SIDES.
7. BUTT JOINTS

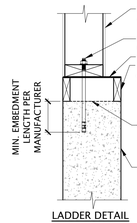
NOTE:

SPLICED COLUMN TO BE BRACED BY SHEATHING OR PURLINS SPACED AT 600mm (2'-0") c/c MAX IN DIRECTION PERPENDICULAR TO WIDE FACE OF LAMINATIONS.

BOTTOM PLATE TO FOUNDATION WALL/GRADE BEAM CONNECTION DETAIL — TDW-04



ANCHOR BOLT DETAIL
OPTION 1



LADDER DETAIL
OPTION 2

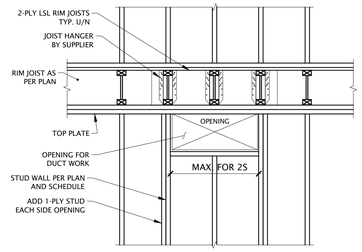
BOTTOM PLATE CONNECTOR (FOR SHEAR WALLS)(*)	
TYPE	SPACING
1/2"Ø ANCHOR BOLTS (**)	48" (1200mm) MAX.
3" CONCRETE NAILS	6" (150mm) MAX.

NOTE: (*) REFER TO PLAN AND SCHEDULE FOR LOCATION OF SHEAR WALL
(**) ANCHOR BOLTS MAYBE HILTI RE 500, TO BE CONFIRMED BY ENGINEER

BOTTOM PLATE CONNECTOR (FOR LOAD BEARING WALLS OTHER THAN SHEAR WALLS)	
TYPE	SPACING
1/2"Ø ANCHOR BOLTS (**)	72" MAX.(1800mm), MIN. 2 REQ'D
3" CONCRETE NAILS	12" (300mm) MAX.

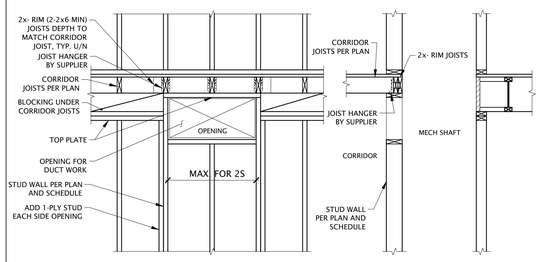
NOTE: (**) ANCHOR BOLTS MAYBE HILTI RE 500, TO BE CONFIRMED BY ENGINEER

DUCT THROUGH WOOD BEARING WALL DETAIL — TDW-16



S - STUD SPACE AS PER WALL SCHEDULE

DUCT THROUGH
INTERIOR BEARING WALL

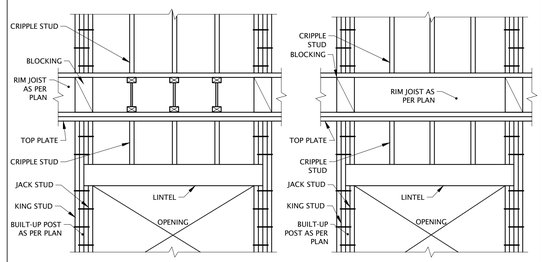


S - STUD SPACE AS PER WALL SCHEDULE

DUCT THROUGH
CORRIDOR BEARING WALL

SECTION A

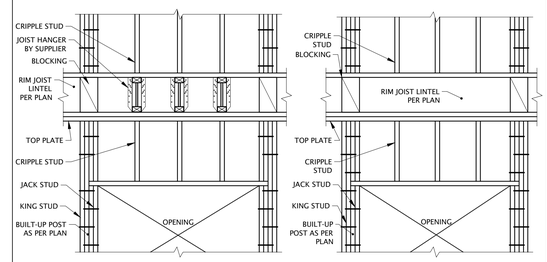
WOOD FRAME AT OPENING DETAILS (DROPPED LINTEL) — TDW-07



FLOOR JOISTS PERPENDICULAR
TO RIM JOIST

FLOOR JOISTS PARALLEL
TO RIM JOIST

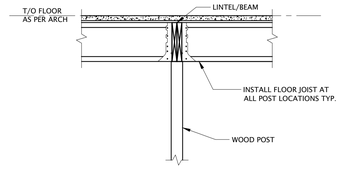
WOOD FRAME OPENING DETAILS (RIMBOARD LINTEL) — TDW-08



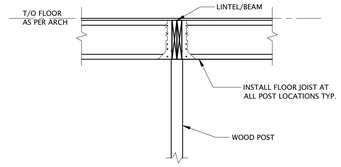
FLOOR JOISTS PERPENDICULAR
TO RIM JOIST

FLOOR JOISTS PARALLEL
TO RIM JOIST

WOOD POST LATERAL RESTRAINT DETAILS — TDW-10

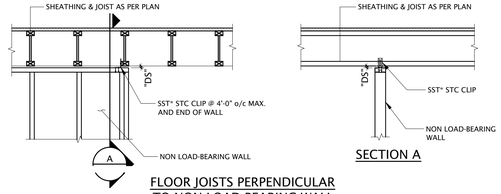


WITH TOPPING



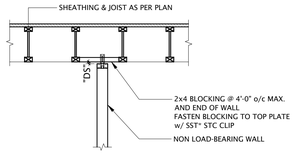
WITHOUT TOPPING

NON LOAD-BEARING WALL/JOIST CONNECTION DETAIL — TDW-11



FLOOR JOISTS PERPENDICULAR
TO NON LOAD-BEARING WALL

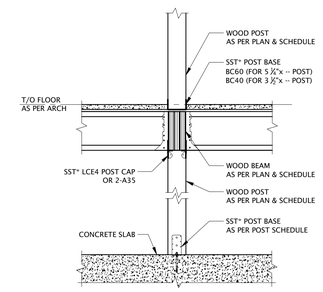
SECTION A



FLOOR JOISTS PARALLEL TO
NON LOAD-BEARING WALL

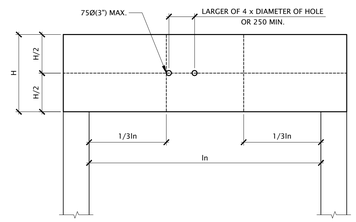
NOTES:
"DS" - DEFLECTION GAP AS DETERMINED BY JOIST DESIGNER
CONTRACTOR TO COORDINATE
SST* - SIMPSON STRONG-TIE

WOOD POST CONNECTION DETAIL — TDW-12



SST* - SIMPSON STRONG TIE

HOLES IN ENGINEERED WOOD BEAMS — TDW-14



NOTE:

ENGINEERED WOOD PRODUCT MANUFACTURER TO COORDINATED WITH MECH. AND MEET STRUCTURAL REQUIREMENTS

DATE	ISSUED FOR	REV
2018-02-07	ISSUED FOR 60% REVIEW	
2018-02-14	ISSUED FOR DP	
2018-03-02	ISSUED FOR 95% REVIEW	
2018-03-29	ISSUED FOR TENDER	

Project Component
LUNCHROOM EXPANSION

Keyplan

Consultants

Architectural: NORR Architects Engineers Planners
Structural: NORR Architects Engineers Planners
Mechanical: NORR Architects Engineers Planners
Electrical: NORR Architects Engineers Planners

Seal(s)

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NORR ARCHITECTS ENGINEERS PLANNERS
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Bruce G. McKenzie, Architect, AAA, M.Arch, MAIBC
A. Silvio Baldassarra, Architect, AAA, B.Arch, MAIBC
Adrian Todella, P.Eng., APEGA
Chris Pak, P.Eng., APEGA

Project Manager	Drawn
D. HIDER	
Project Leader	Checked
D. HIDER	A. TODEILA

Client
RCMP

Project
INNISFAIL PDSTC
LUNCHROOM EXPANSION

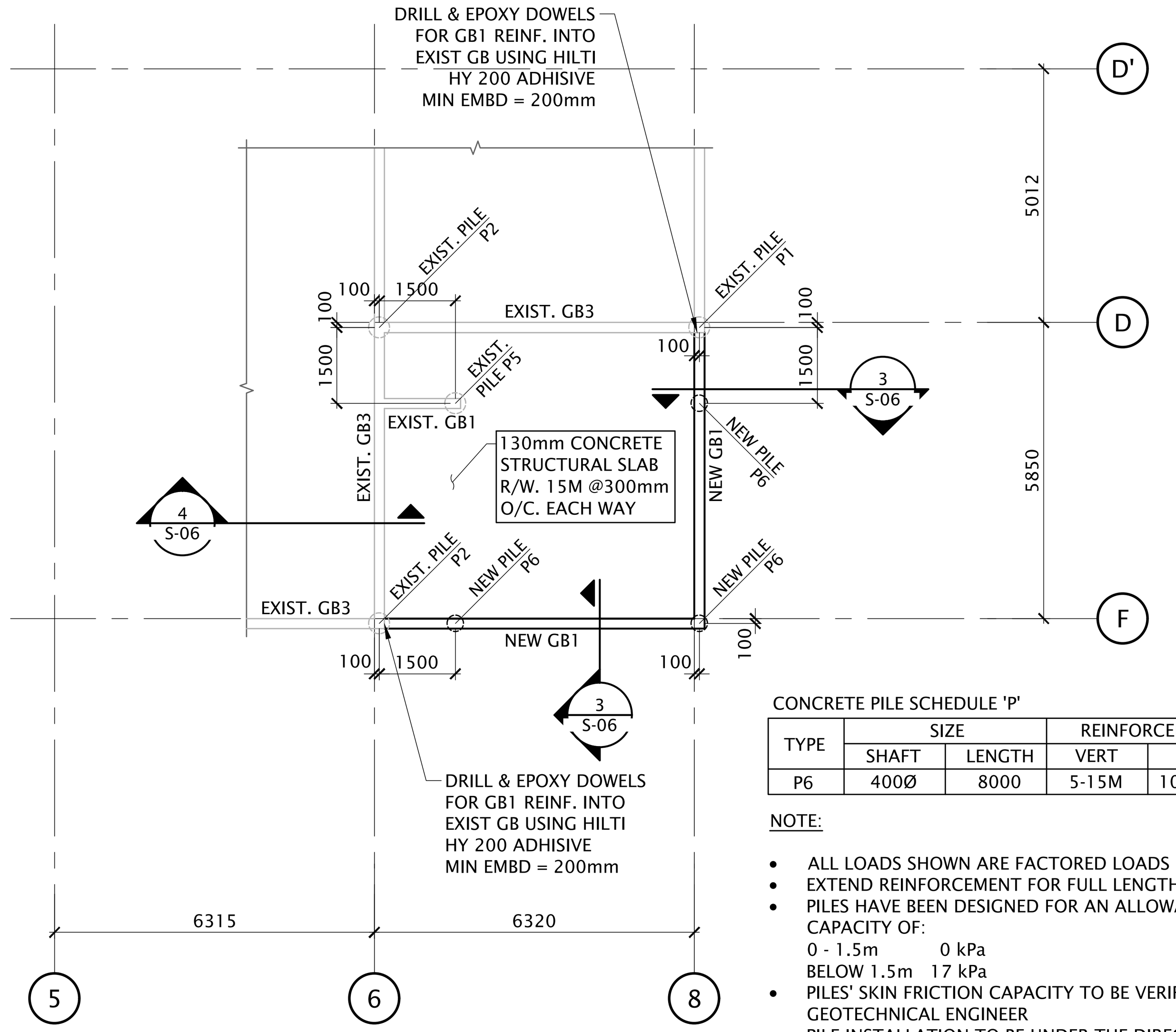
Drawing Title
TYPICAL DETAILS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No. NCCA17-0228

Drawing No. S-05

PLOT DATE: March 29, 2018 TIME: 9:36 AM FULL PATH AND FILENAME: P:\RCMP_PROJECTS\NCCA17-0228 - RCMP - DTF LUNCHROOM EXPANSION\500-DELIVS\TRU\20_FRAMING_PLANS\S-05.DWG PLOTSTYLE TABLE: PMA-STD-100.ctb



FOUNDATION PLAN

01 S-06 1:100

CONCRETE PILE SCHEDULE 'P'

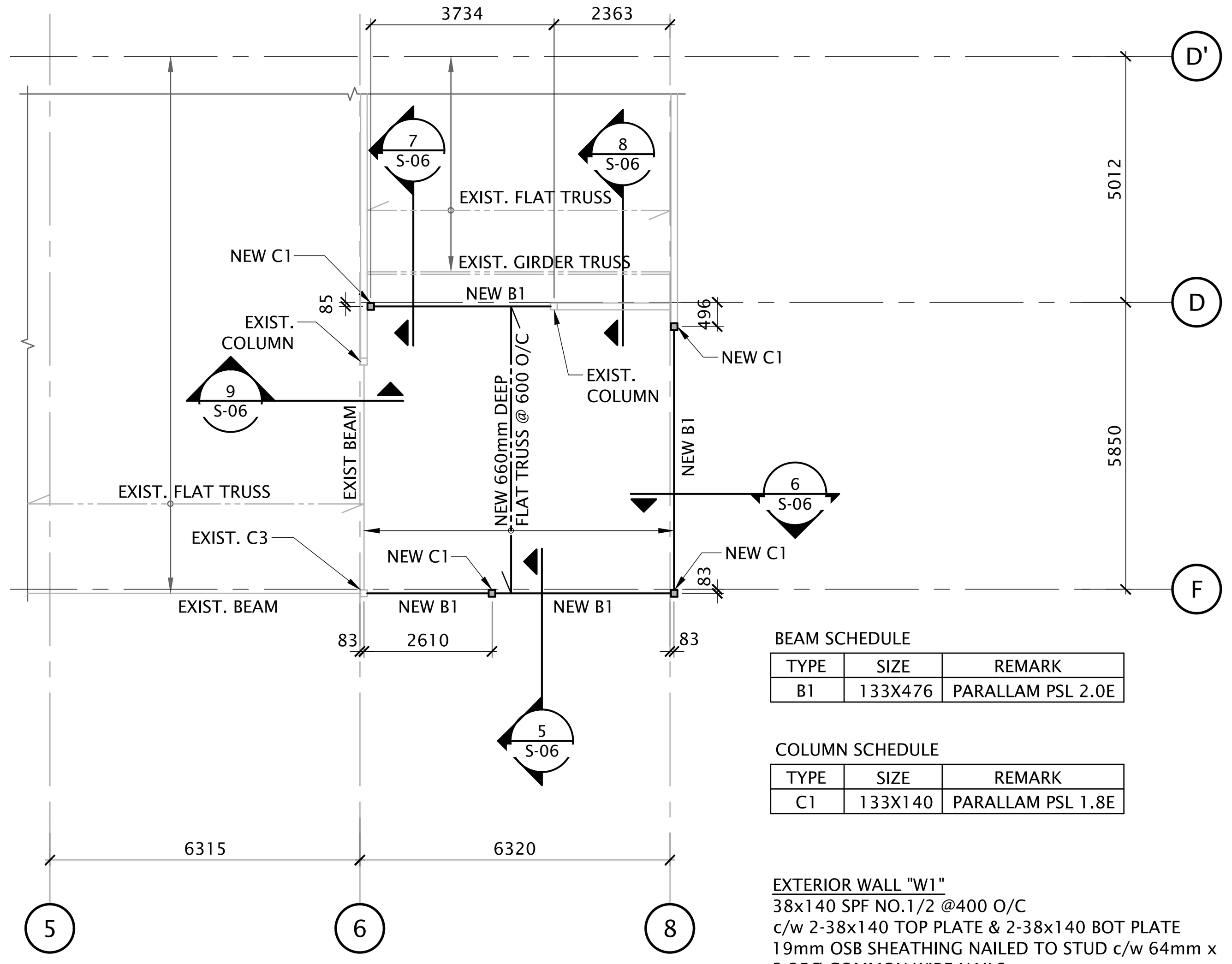
TYPE	SIZE		REINFORCEMENT		PILE LOADING	
	SHAFT	LENGTH	VERT	HORZ	VERT LOAD	HORZ LOAD
P6	400Ø	8000	5-15M	10M@200	100 kN	20 kN

NOTE:

- ALL LOADS SHOWN ARE FACTORED LOADS
- EXTEND REINFORCEMENT FOR FULL LENGTH OF PILE
- PILES HAVE BEEN DESIGNED FOR AN ALLOWABLE SKIN FRICTION CAPACITY OF:
  0 - 1.5m 0 kPa
  BELOW 1.5m 17 kPa
- PILES' SKIN FRICTION CAPACITY TO BE VERIFIED ON SITE BY A GEOTECHNICAL ENGINEER
- PILE INSTALLATION TO BE UNDER THE DIRECT SUPERVISION OF A GEOTECHNICAL ENGINEER
- CONCRETE PILE DESIGN PARAMETERS HAVE BEEN BASED ON INFORMATION SHOWN ON EXISTING DRAWINGS AVAILABLE FROM THE DEPARTMENTAL REPRESENTATIVE. THE CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER WHO SHALL BE RESPONSIBLE FOR THE FINAL DESIGN AND INSTALLATION OF PILES.

CONCRETE GRADE BEAM SCHEDULE 'GB'

TYPE	SIZE	REINFORCEMENT
GB1	200X600	2-20M T&B C/W 10M@200 STIRRUPS



ROOF FRAMING PLAN

02 S-06 1:100

LOADING

DEAD LOAD: 1.2 kPa (SELF WEIGHT)

SDL1: 0.5 kPa (E & M)
SDL2: 0.8 kPa (ROOFING & INSULATION)

SNOW LOAD: 1.825 kPa

BEAM SCHEDULE

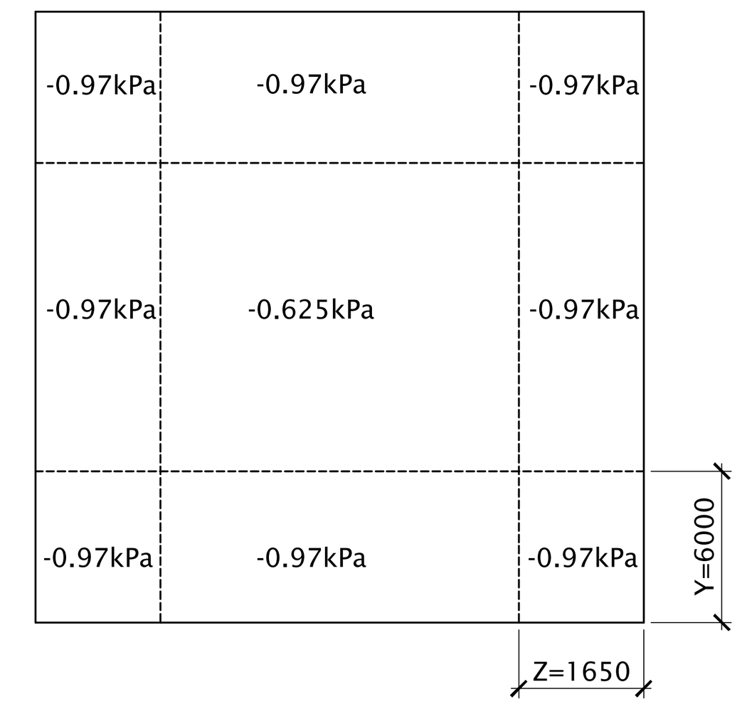
TYPE	SIZE	REMARK
B1	133X476	PARALLAM PSL 2.0E

COLUMN SCHEDULE

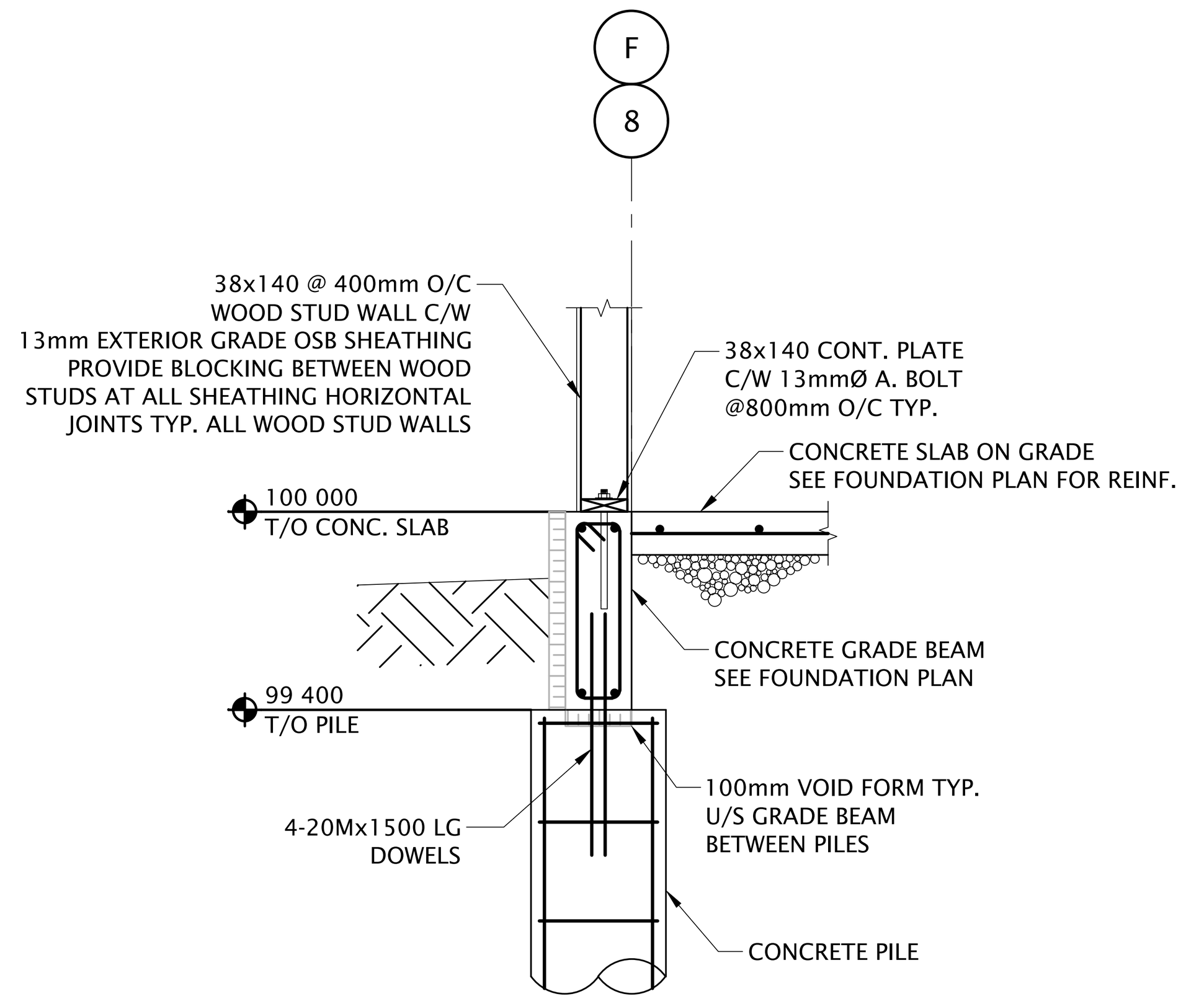
TYPE	SIZE	REMARK
C1	133X140	PARALLAM PSL 1.8E

EXTERIOR WALL "W1"
38x140 SPF NO.1/2 @400 O/C
c/w 2-38x140 TOP PLATE & 2-38x140 BOT PLATE
19mm OSB SHEATHING NAILED TO STUD c/w 64mm x 3.25Ø COMMON WIRE NAILS:
@100 ALONG ALL PANEL EDGES
@300 ALONG INTERMEDIATE SUPPORTS

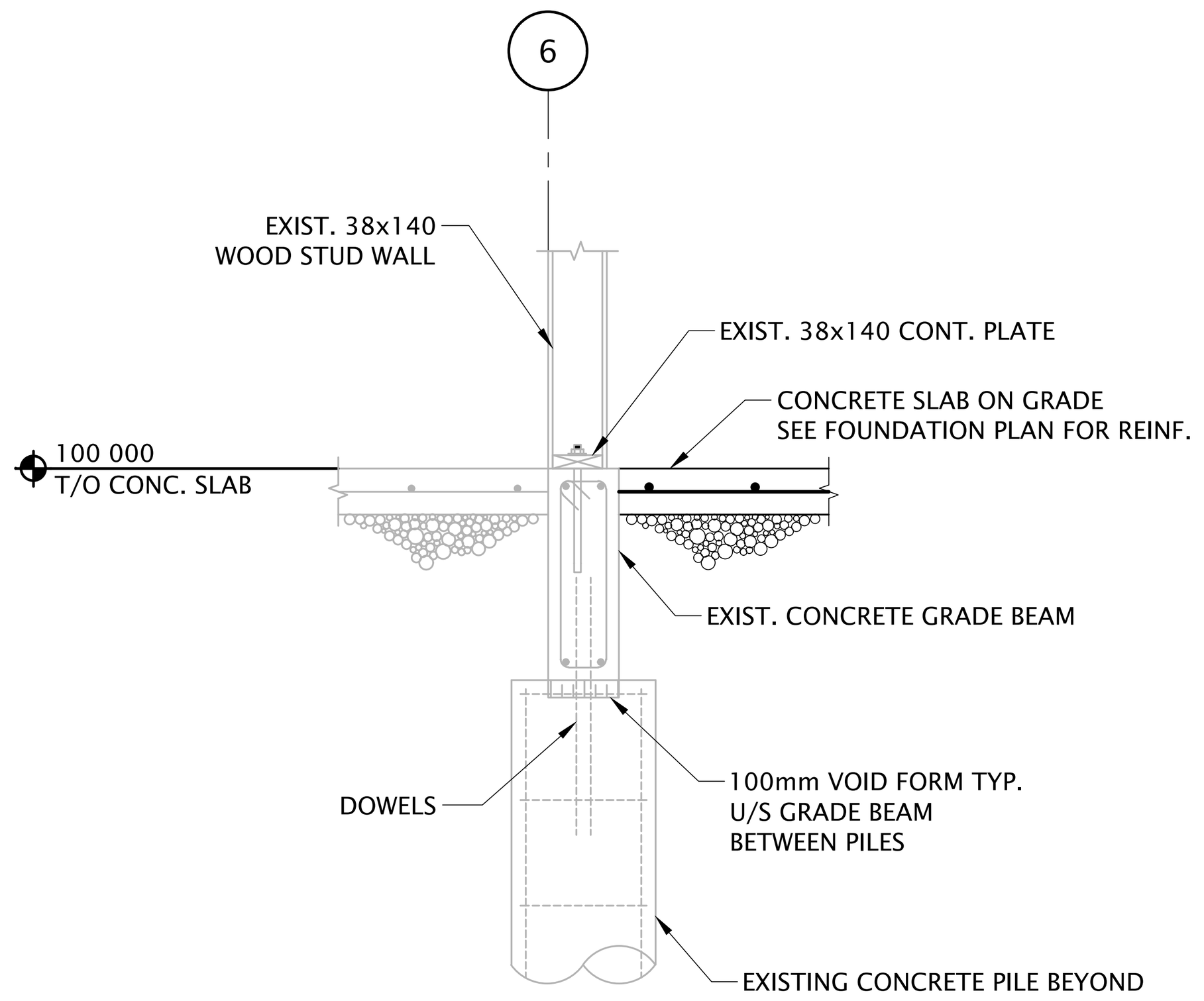
NOTE
PROVIDE ALL NECESSARY TEMPORARY SHORING TO ALLOW INSTALLATION OF NEW STRUCTURES.



ROOF UPLIFT DIAGRAM



03 S-06 1:20



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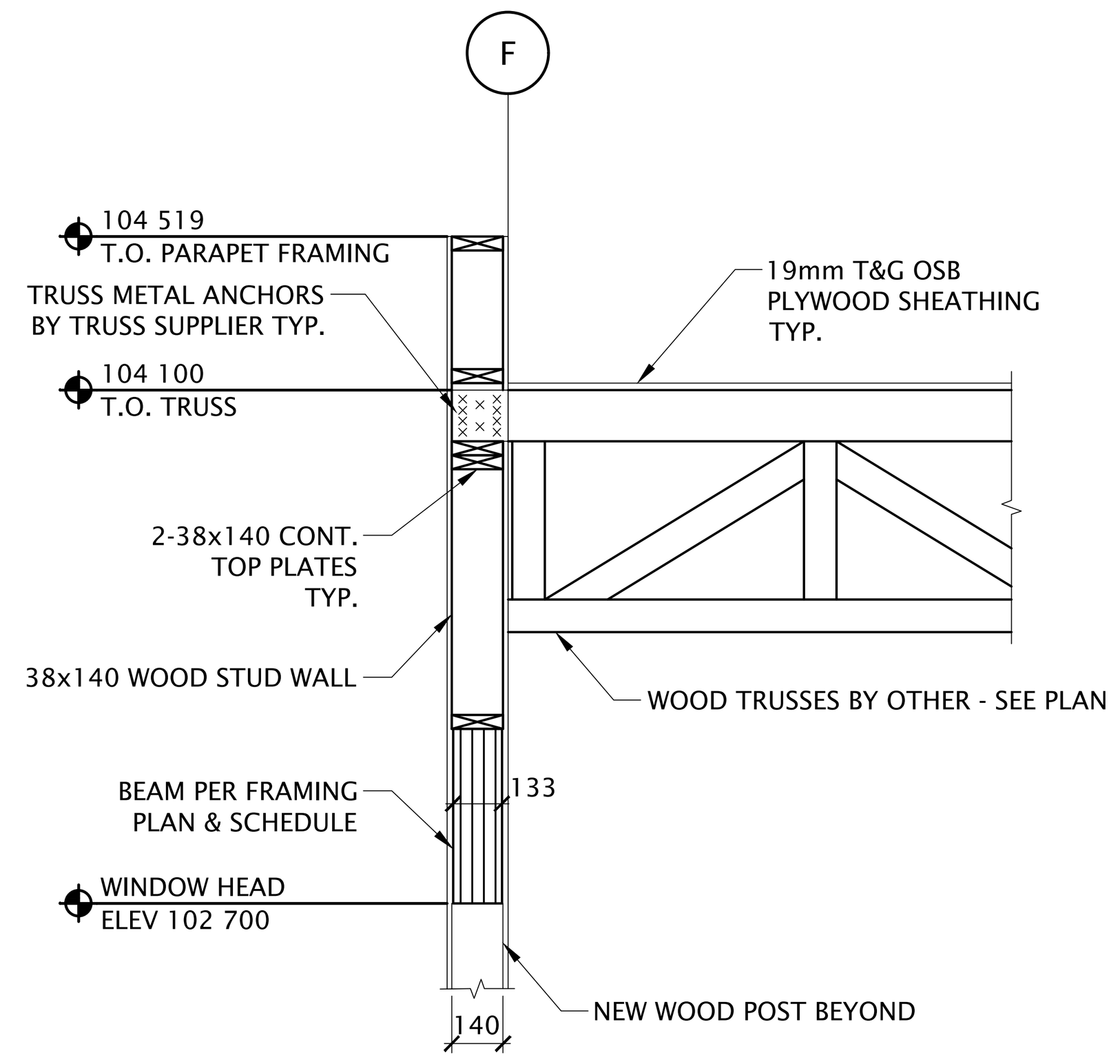

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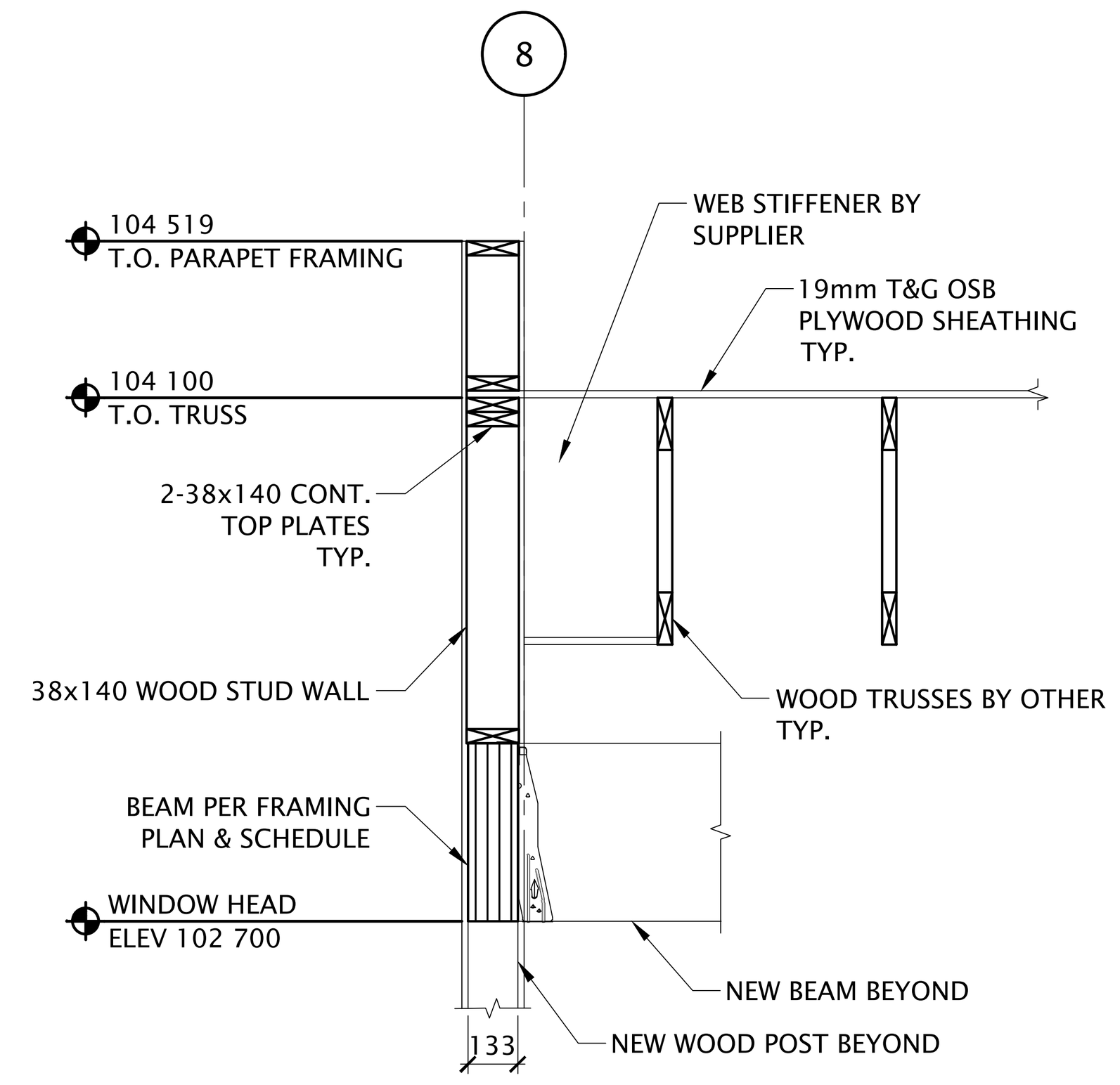

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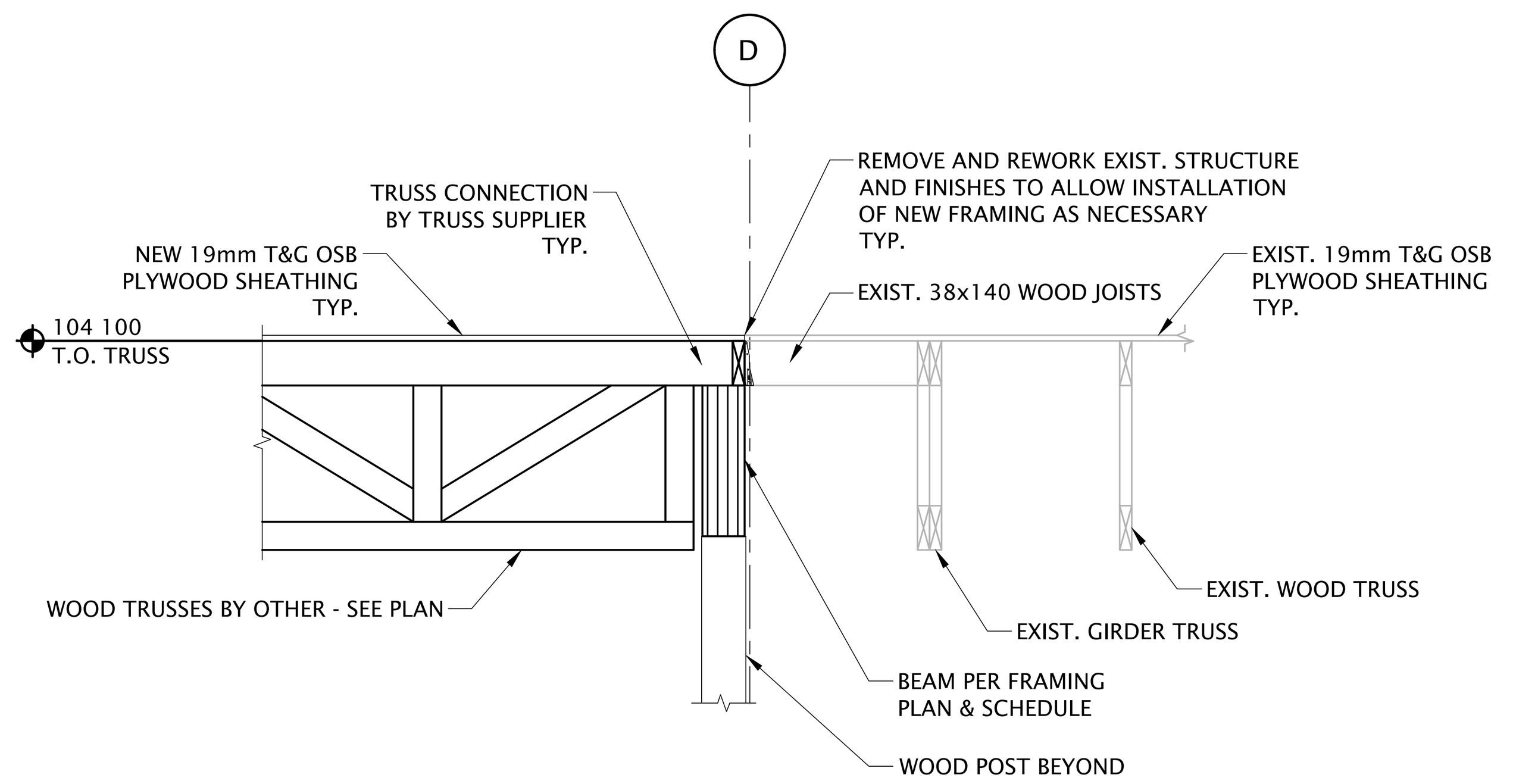

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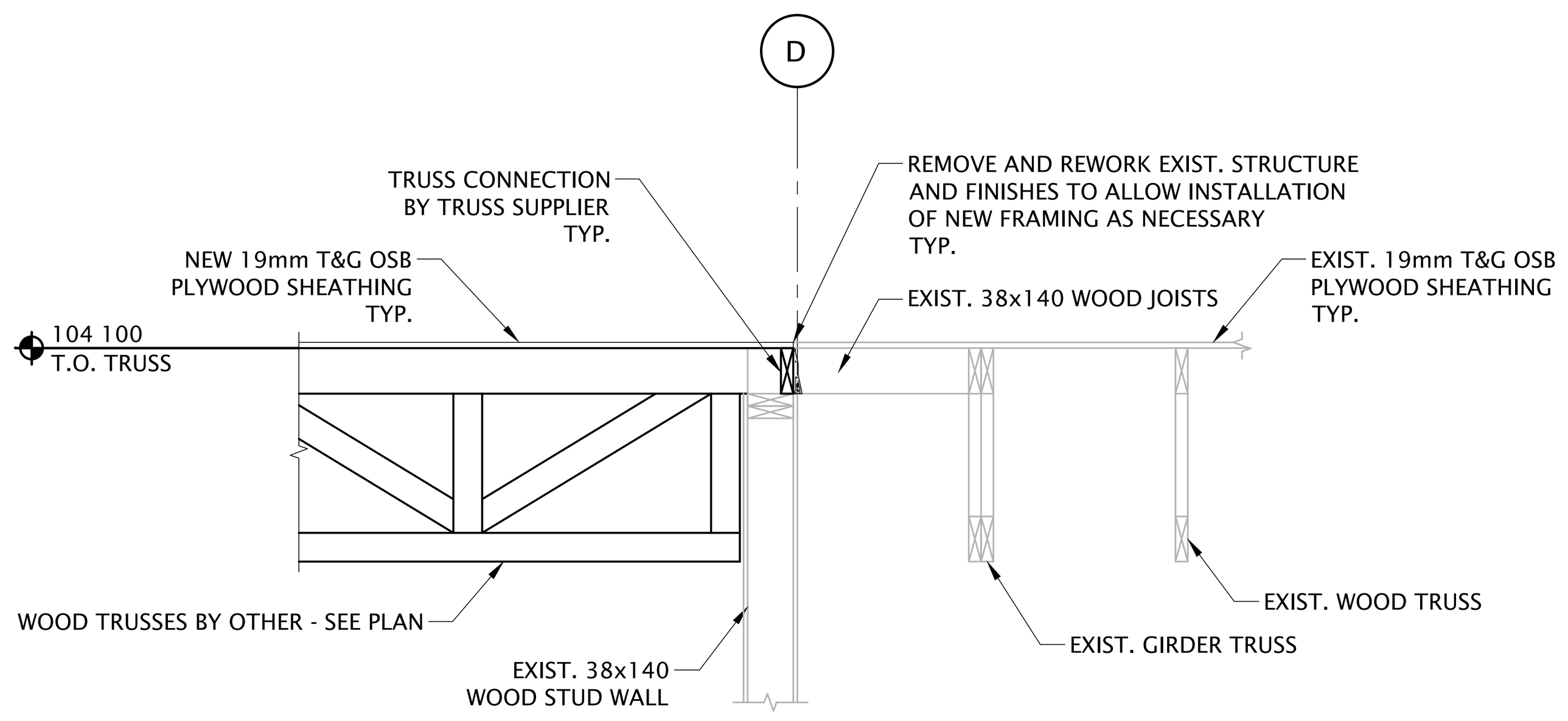

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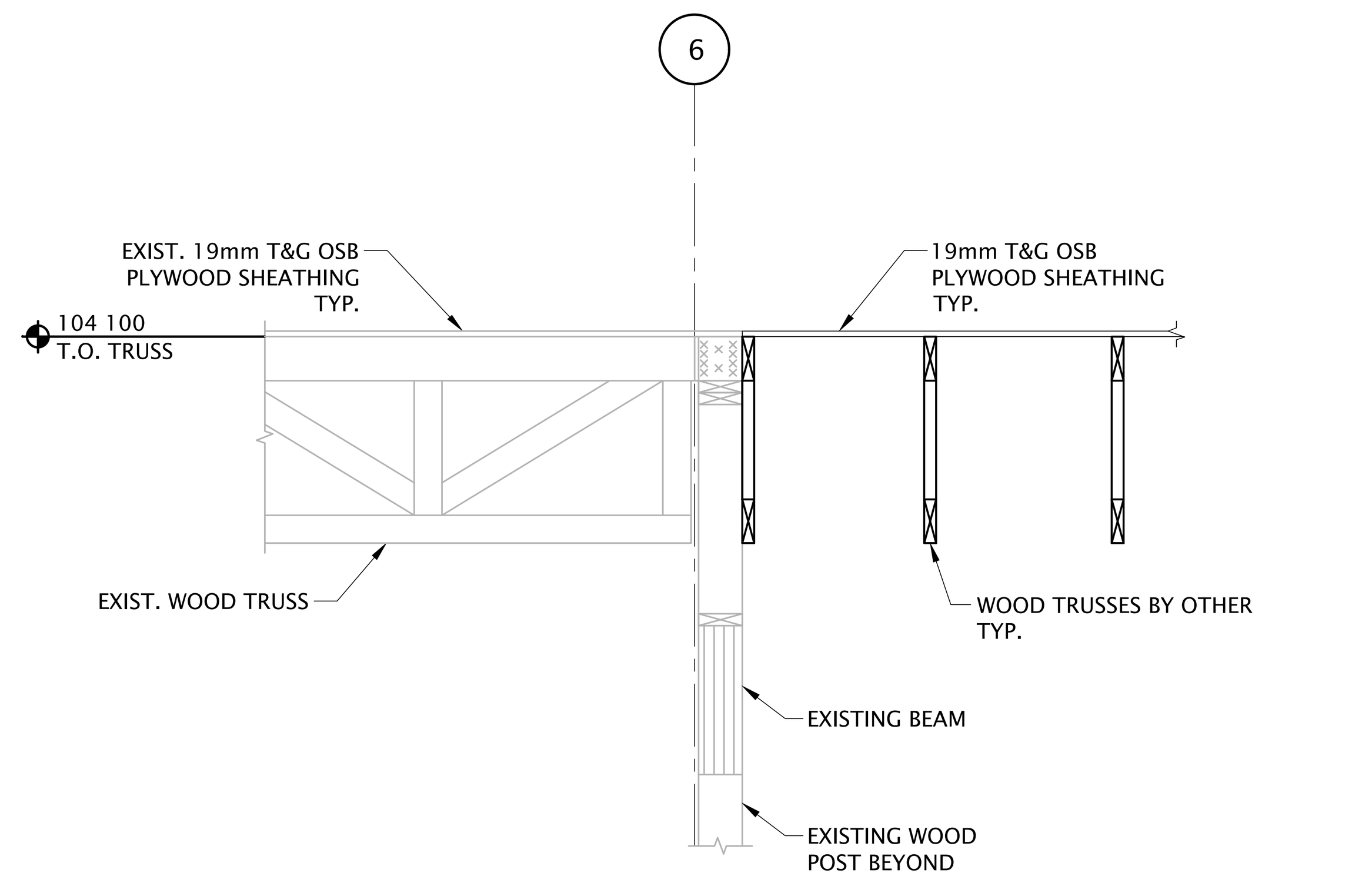

09 S-06 1:20

TRUE NORTH

DATE	ISSUED FOR	REV
2018-02-07	ISSUED FOR 60% REVIEW	
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2018-03-29	ISSUED FOR TENDER	

Project Component
LUNCHROOM EXPANSION

Keyplan

Consultants

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Structural: NORR Architects Engineers Planners
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Seal(s)

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NORR ARCHITECTS ENGINEERS PLANNERS
A Partnership of Limited Companies

Project Manager D. HIDER	Drawn
Project Leader D. HIDER	Checked A. TODEILA

Client
RCMP

Project
INNISFAIL PDSTC
LUNCHROOM EXPANSION

Drawing Title
PLANS AND SECTIONS
FOUNDATION PLAN,
FRAMING PLAN AND SECTIONS

Check Scale (may be photo reduced) 0 1inch 0 10mm

Project No. NCCA17-0228

Drawing No. S-06

PLOT DATE: March 29, 2018 TIME: 10:24 AM FULL PATH AND FILENAME: P:\RCMP_PROJECTS\NCCA17-0228 - RCMP - DTF LUNCHROOM EXPANSION\500-DELIV\STRU\20_FRAMING_PLANS\S-06.DWG PLOTSTYLE TABLE: PMA-STD-100.ctb