GENERAL

1. THIS SET OF DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE STRUCTURAL SPECIFICATIONS AND WITH THE DRAWINGS AND SPECIFICATIONS FROM ALL OTHER CONSULTANTS. ANY DISCREPANCIES NOTED SHALL BE REPORTED IMMEDIATELY FOR CLARIFICATION.
2. THIS SET OF DRAWINGS SHOWS THE COMPLETED STRUCTURE AND DOES NOT SHOW WORK WHICH MAY BE REQUIRED FOR SAFETY DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR GENERAL SAFETY ON AND ABOUT THE JOB SITE DURING THE CONSTRUCTION PERIOD AND FOR DESIGN AND ERECTION OF ALL FALSEWORK, SHORING, BRACING ETC. TO ENSURE THE SAFETY OF ALL CONSTRUCTION TEMPORARY LOADS AND TO COMPLETE THE WORK. ALL TEMPORARY WORKS AND SHORING ETC. SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN BRITISH COLUMBIA. ADHERE STRICTLY TO ALL REQUIREMENTS OF THE WORKSAFE BRITISH COLUMBIA.
3. ALL CODE REFERENCES ARE TO LATEST EDITIONS REFERENCED IN THE BC BUILDING CODE 2018

FIELD REVIEW:

1. CWMM CONSULTING ENGINEERS LTD. PROVIDES FIELD REVIEW FOR THE WORK SHOWN ON THE STRUCTURAL DRAWINGS PREPARED BY CWMM CONSULTING ENGINEERS LTD. THIS REVIEW IS A PERIODIC REVIEW AT THE PROFESSIONAL JUDGMENT OF CWMM CONSULTING ENGINEERS LTD. THE PURPOSE IS TO ASCERTAIN THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE PLANS AND SUPPORTING DOCUMENTS PREPARED BY CWMM CONSULTING ENGINEERS LTD. AND TO FULFILL THE REQUIREMENTS FOR THE COMPLETION OF LETTERS OF ASSURANCE REQUIRED BY THE APPLICABLE BUILDING CODE.
2. ALL NON-CONFORMING WORKS THAT REQUIRE REMEDIAL ACTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY EXTRA TIME OR COST INCURRED TO CWMM CONSULTING ENGINEERS LTD. TO ASSIST OR ADVISE THE CONTRACTOR IN RECTIFYING THE WORK SHALL BE BORNE BY THE CONTRACTOR.
3. ENSURE THAT WORK TO BE INSPECTED IS COMPLETE AT THE TIME OF INSPECTION AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ADDITIONAL INSPECTIONS REQUIRED DUE TO THE INCOMPLETE WORK OR POORLY EXECUTED WORK, AS JUDGED BY CWMM CONSULTING ENGINEERS LTD., AS WELL AS ADDITIONAL DESIGN OR REMEDIAL WORK CAUSED BY DEVIATIONS FROM THESE DRAWINGS MAY BE CHARGED TO THE GENERAL CONTRACTOR AT THE DISCRETION OF CWMM CONSULTING ENGINEERS LTD.
4. A MINIMUM 48 HOURS NOTICE SHALL BE GIVEN BY THE CONTRACTOR FOR ANY INSPECTION TO BE CARRIED OUT BY CWMM CONSULTING ENGINEERS LTD.

SHOP DRAWINGS:

1. DESIGNERS & MANUFACTURERS OF ALL STRUCTURAL ELEMENTS/COMPONENTS/CONNECTIONS SHALL SUBMIT COMPLETE SHOP DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA TO THE ARCHITECT AND CWMM CONSULTING ENGINEERS LTD. FOR REVIEW PRIOR TO FABRICATION.
SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH SPECIFICATIONS AND TO ALLOW MINIMUM TWO WEEKS FOR REVIEW. THIS SUBMISSION OR ITS REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR PROVIDING PROPER ENGINEERING DESIGN, METHODS, EQUIPMENT, WORKMANSHIP, SAFETY PRECAUTION AND PRIOR REVIEW OF THESE ELEMENTS. THE PROFESSIONAL ENGINEER RESPONSIBLE FOR THE SHOP DRAWINGS SHALL PROVIDE TO THE CONSULTANT A COMPLETED SCHEDULE S-B: "ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW BY SUPPORTING REGISTERED PROFESSIONAL" AT THE TIME OF SUBMISSION OF SHOP DRAWINGS. THE SAME ENGINEER SHALL ALSO BE RESPONSIBLE FOR INSPECTING THE INSTALLATION OF THE WORK FOR CONFORMANCE WITH THE DESIGN AND THE SHOP DRAWINGS, AND SHALL, UPON COMPLETION OF THE WORK, PROVIDE TO THE CONSULTANT A COMPLETED SCHEDULE S-C: "ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE BY SUPPORTING REGISTERED PROFESSIONAL".
2. THE CONTRACTOR AND ITS SUBCONTRACTORS SHALL CONFIRM AND COORDINATE DIMENSIONS, LOCATIONS AND NUMBER OF THE STRUCTURAL ELEMENTS FOR WHICH SHOP DRAWINGS ARE TO BE PRODUCED.

NON-STRUCTURAL COMPONENTS:

1. NON-STRUCTURAL COMPONENTS ARE NOT THE RESPONSIBILITY OF CWMM CONSULTING ENGINEERS LTD. SUCH COMPONENTS OF THE PROJECT ARE DESIGNED, DETAILED, SPECIFIED AND REVIEWED IN THE FIELD BY OTHERS. LETTERS OF CERTIFICATION OF ADEQUACY, INSTALLATION ETC. OF SUCH COMPONENTS ARE BY OTHERS.
2. MANUFACTURERS OF NON-STRUCTURAL COMPONENTS WHICH AFFECT THE STRUCTURAL FRAMING SHALL SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND CWMM CONSULTING ENGINEERS LTD. FOR REVIEW. THE SHOP DRAWINGS SHALL CLEARLY INDICATE LOADS IMPOSED ON THE STRUCTURE. REVIEW WILL BE LIMITED TO THE EFFECT OF THE COMPONENTS ON THE STRUCTURAL FRAMING.
3. EXAMPLES OF NON-STRUCTURAL COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO:
   - ARCHITECTURAL COMPONENTS SUCH AS HANDRAILS, GUARDRAILS, RAILINGS, FLAG POST, REMOVABLE CANOPIES, CEILINGS, VEHICLE PROTECTION SYSTEMS, ORNAMENTAL COMPONENTS, ETC.
   - CURTAIN WALL SYSTEMS, CLADDING, SKYLIGHT, WINDOW MULLIONS, ETC.
   - INTERIOR AND EXTERIOR NON-LOAD BEARING STEEL STUD WALLS.
   - SUPPORT AND BRACING OF MECHANICAL AND ELECTRICAL SYSTEMS AND EQUIPMENTS FOR NON-GRAVITY AND SEISMIC LOADS.
   - ELEVATORS, ESCALATORS AND OTHER CONVEYING SYSTEMS, INCLUDING PROPRIETARY SUPPORT BEAMS AND THEIR ATTACHMENTS.
4. NON-STRUCTURAL STEEL STUD FRAMING
   - INTERIOR AND EXTERIOR STEEL STUD WALLS AND OTHER ARCHITECTURAL FRAMING SHALL BE DESIGNED BY THE FABRICATOR. DESIGN SHALL BE BY A STRUCTURAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA AND SHALL BE IN ACCORDANCE WITH PART 4 OF THE GOVERNING BUILDING CODE USING THE DESIGN LOADS REFERENCED ELSEWHERE ON THIS DRAWING. SEE ALSO ITEMS 1 AND 2 ABOVE.
   - UNLESS NOTED OTHERWISE, EXTERIOR STEEL STUDS FRAMING TO THE UNDERSIDE OF STRUCTURAL STEEL BEAMS OR TO STEEL BRACING MEMBERS SHALL BE DETAILED AND DESIGNED SO AS NOT TO IMPART LATERAL WIND AND SEISMIC LOADS TO THESE MEMBERS. WHERE WIND BEARING STUDS ATTACH TO STEEL BEAM BOTTOM FLANGES PROVIDE STEEL STUD BRACING IN GENERAL CONFORMANCE WITH CWMM'S TYPICAL DETAILS. DETAIL TOP TRACK TO ALLOW FOR ROOF/FLOOR DEFLECTIONS DUE TO GRAVITY LOADS.

EXISTING STRUCTURES:

1. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY ALL RELEVANT DIMENSIONS TO AND OF EXISTING STRUCTURES. NOTIFY CWMM CONSULTING ENGINEERS LTD. IMMEDIATELY IF DISCREPANCIES ARE NOTED.
2. THE CONTRACTOR SHALL AT HIS OWN EXPENSE REPAIR AND MAKE GOOD ANY DAMAGE TO THE EXISTING STRUCTURE, EQUIPMENT AND FINISHES CAUSED BY THE CONSTRUCTION ACTIVITIES. REPAIRS SHALL BE TO THE SATISFACTION OF THE ARCHITECT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY SUPPORT OF ANY ADJACENT EXISTING STRUCTURES DURING CONSTRUCTION. UNDERPINNING OR BRACING SHALL BE DESIGNED BY A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA. SUMIT SIGNED AND SEALED DESIGN DRAWINGS TO THE ARCHITECT AND CWMM CONSULTING ENGINEERS LTD. FOR REVIEW OF CONFORMANCE WITH GENERAL DESIGN CRITERIA.

SITE WORK

1. ALL EXCAVATION, BACKFILLING, FILL MATERIAL, COMPACTION, FROST PROTECTION, SOIL BEARING CAPACITIES AND OTHER SITE PREPARATION REQUIREMENTS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER.
2. COORDINATE CONSTRUCTION WITH UNDERSLAB SERVICES AS SHOWN ON MECHANICAL, ELECTRICAL AND ARCHITECTURAL DRAWINGS.
3. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SITE DRAINAGE, GROUND ELEVATIONS AND DRAINAGE SLOPES.
4. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR WATERPROOFING AND SEALING REQUIREMENTS.

REINFORCED CONCRETE

CONCRETE:

1. CODE CONFORMANCE:

- CEMENT:	TYPE GU OR GUb - NORMAL USE	CSA-A3001
	TYPE HE OR HEb - HIGH EARLY STRENGTH	CSA-A3001
	TYPE MS OR MSb - MODERATE SULPHATE RESISTANT	CSA-A3001
	TYPE HS - HIGH SULPHATE RESISTANCE	CSA-A3001
- CONCRETE PROPORTIONING AND WORK		CSA-A23.1 & CSA-A23.2
- TESTING OF CONCRETE AND MATERIALS		CSA-A23.2
- AIR ENTRAINING ADMIXTURE		ASTM C260
- CHEMICAL ADMIXTURE (NON-CHLORIDE BASED)		ASTM C494
- CURING COMPOUNDS		ASTM C309

2. CONCRETE PROPERTIES:
   - SPECIFYING METHOD AS PER ALTERNATE 1 IN TABLE 5 IN CSA-A23.1.
   - NORMAL DENSITY CONCRETE.
   - AIR CONTENT TO CSA-A23.1 TABLES 2 & 4 TO SUIT APPROPRIATE EXPOSURE CLASS.
   - SLUMP TO CSA-A23.1 CLAUSE 4.3.2.3. WHEN SUPERPLASTICIZERS ARE USED, THE SLUMP MAY BE INCREASED BUT SHALL KEPT BELOW THE POINT WHERE SEGREGATION WILL OCCUR. THE COST OF SUPERPLASTICIZERS SHALL BE INCLUDED IN THE COST OF THE CONCRETE. SMALLER AGGREGATE SIZE MAY BE USED WHERE NECESSARY TO INCREASE SLUMP.

MEMBER	MINIMUM 28-DAYS STRENGTH	MAXIMUM AGGREGATE SIZE	EXPOSURE CLASS	AIR CONTENT CATEGORY
INTERIOR SLAB ON GRADE	25 MPa	19	N	-

3. ADHERE STRICTLY TO CSA-A23.1 FOR PROPER PREPARATION FOR COLD WEATHER CONCRETE WORK.
4. CONCRETE MIX DESIGNS SHALL BE SUBMITTED TO A MATERIALS CONSULTANT FOR APPROVAL AND TO CWMM CONSULTING ENGINEERS LTD. FOR REVIEW PRIOR TO ANY CONCRETE WORK.
5. CONCRETE AND MATERIALS TESTING AGENCY MUST BE CSA CERTIFIED. SUBMIT ALL CONCRETE TEST RESULTS TO CWMM CONSULTING ENGINEERS LTD. THE COSTS OF CONCRETE TESTING SHALL BE BORNE BY THE CONTRACTOR.
6. DESIGNATION OF REINFORCING BARS:

3-10M600	MEANS THREE 10M BARS 600 LONG
2-C10M1800	MEANS TWO 10M BARS, EACH WITH A 90° STANDARD HOOK ONE END AND A TOTAL LENGTH OF 1800
— — — — —	DENOTES BOTTOM BARS
————	DENOTES TOP BARS

EXISTING CONCRETE SURFACE PREPARATION:

1. ALONG ALL INTERFACES BETWEEN EXISTING CONCRETE AND NEW CONCRETE, PROPERLY CLEAN & ROUGHEN EXISTING SURFACE PRIOR TO POURING NEW CONCRETE. INTERFACE SHALL BE CLEAN AND FREE OF LAITANCE AND ROUGHENED TO A FULL AMPLITUDE OF MINIMUM 6mm. CONTRACTOR SHALL USE PROPER CONCRETE REMOVAL AND SURFACE PREPARATION METHODS TO ACHIEVE CONCRETE PROFILES (CSPs) TO BE CSPs 6 THROUGH 9 AS PER ICRI (INTERNATIONAL CONCRETE REPAIR INSTITUTE) TECHNICAL GUIDELINE NO. 310.2-1997.

ANCHORS / REBAR DOWELS TO EXISTING STRUCTURE:

1. INSTALL ANCHOR DOWELS PER MANUFACTURER'S INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING.
2. DRILL HOLES USING TOOL WITH BUILT-IN VACUUM FOR PROPER HOLE CLEANING.
3. FOLLOW MANUFACTURE'S INSTALLATION RECOMMENDATIONS.
4. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE CONSULTANTS MAY REQUEST DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF ANCHOR INSTALLATION.
5. INSTALL ANCHORS / DOWELS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCE INDICATED ON THE DRAWINGS.
6. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC DOWEL LOCATIONS. THE CONTRACTOR SHALL UNDERTAKE TO LOCATE THE POSITION OF THE REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS, BY GPR, OR OTHER NON-DESTRUCTIVE MEANS. LOCALLY ADJUST ANCHOR DOWEL LOCATIONS TO AVOID CUTTING EXISTING REINFORCING BARS.
7. MINIMUM 1% OF ANCHORS AND REBAR DOWELS (2 MINIMUM PER REBAR DIAMETERS AND PER ANCHOR DIAMETER) SHALL BE SELECTED BY CONSULTANTS FOR LOAD TESTS TO THE MANUFACTURE'S RECOMMENDATIONS. THE COSTS OF TEST SHALL BE BORNE BY THE CONTRACTOR.

FORMING:

1. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL FORMWORK AND SHORING AND FOR COMPLYING WITH ALL WORKERS' COMPENSATION BOARD REGULATIONS PERTAINING TO FORMWORK CONSTRUCTION, DESIGN AND INSPECTION. FORMWORK AND SHORING SHALL BE DESIGNED BY A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA.
2. LOCATIONS OF CONSTRUCTION JOINTS SHALL BE SUBMITTED TO CWMM CONSULTING ENGINEERS LTD. FOR REVIEW IN ADVANCE AND PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. TOLERANCES CLOSER THAN THOSE SPECIFIED IN CSA-A23.1 MAY BE REQUIRED AT CERTAIN LOCATIONS FOR STRUCTURAL, ARCHITECTURAL AND CONSTRUCTION REQUIREMENTS.
4. ALL CAST-IN-PLACE DOWELS, ANCHOR BOLTS AND OTHER INSERTS SHALL BE PLACED BEFORE THE CONCRETE IS POURED.
5. SLAB ON GRADE JOINTS SHALL HAVE 1 1/2" DEEP SAWCUTS SPACED MAXIMUM 15'-0" APART, LAYOUT OF JOINTS SHALL BE APPROVED BY THE ARCHITECT, SEAL WITH FLEXIBLE JOINT SEALER TO PREVENT INGRESS OF WATER.
6. REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS AND SIZES OF CURBS AND EQUIPMENT PADS.

CONCRETE REINFORCING:

1. CODE CONFORMANCE:

ALL REBARS EXCEPT AS NOTED BELOW	CSA-G30.18	GRADE 400R
REBARS TO BE WELDED	CSA-G30.18	GRADE 400W
WELDED WIRE MESH	CSA-G30.5	

2. TYPICAL DESIGNATION OF REINFORCING BARS:

3-20M2400 OR 3-20M8'-0"	MEANS THREE 20M BARS 2400mm (8'-0") LONG EACH
2-C15M1500 OR 2-C15M5'-0"	MEANS TWO 15M BARS EACH WITH A 90 DEGREE STANDARD HOOK AT ONE END AND A TOTAL LENGTH OF 1500mm (5'-0") INCLUDING HOOK.
A15M2000 @300 OR A15M6'-6" @12"	MEANS 15M BARS WITH A 180 DEGREE STANDARD HOOK AT ONE END AND A TOTAL LENGTH OF 2000mm (6'-6") INCLUDING HOOK, AT 300mm (12") ON CENTRES.

* ALL STANDARD HOOK LENGTHS TO FOLLOW CSA-A23.1.

3. MINIMUM EMBEDMENT LENGTHS FOR DOWELS AND MINIMUM SPLICE LENGTH SHALL BE AS FOLLOW, UNLESS NOTED OTHERWISE:

BAR	EMBEDMENT LENGTH 25MPa	EMBEDMENT LENGTH 30MPa	COMPRESSION SPLICE	TENSION SPLICE 25MPa	TENSION SPLICE 30MPa
10M	300	300	350	450	400
15M	450	400	500	600	550
20M	600	550	600	750	700

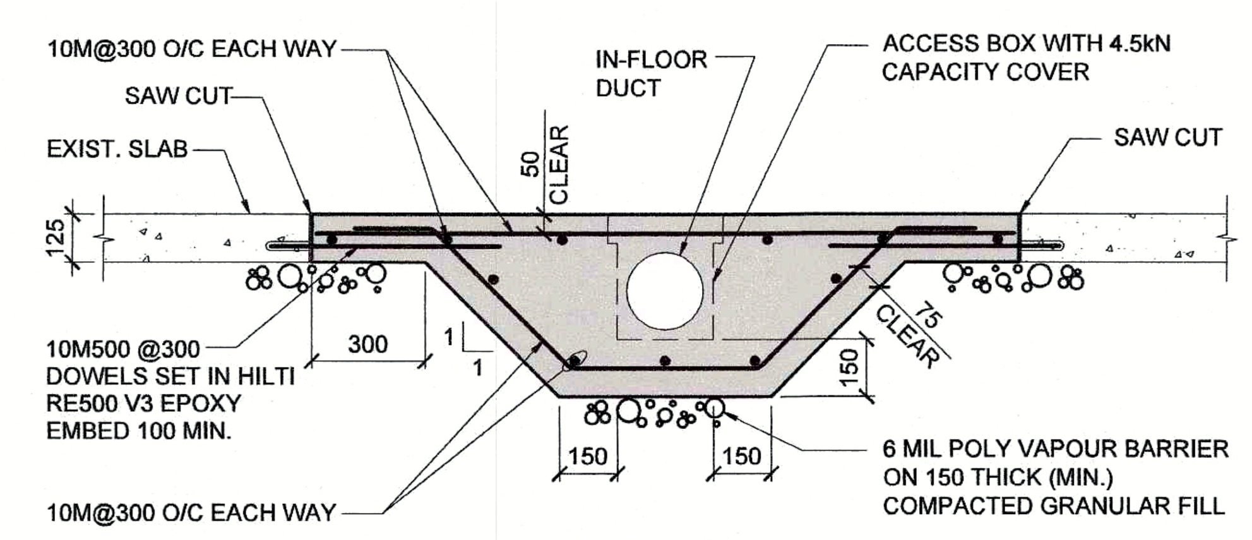
* ALL SPLICES SHALL BE TENSION SPLICES

4. MINIMUM CLEAR COVER FOR REINFORCING BARS SHALL BE AS FOLLOW, UNLESS NOTED OTHERWISE.

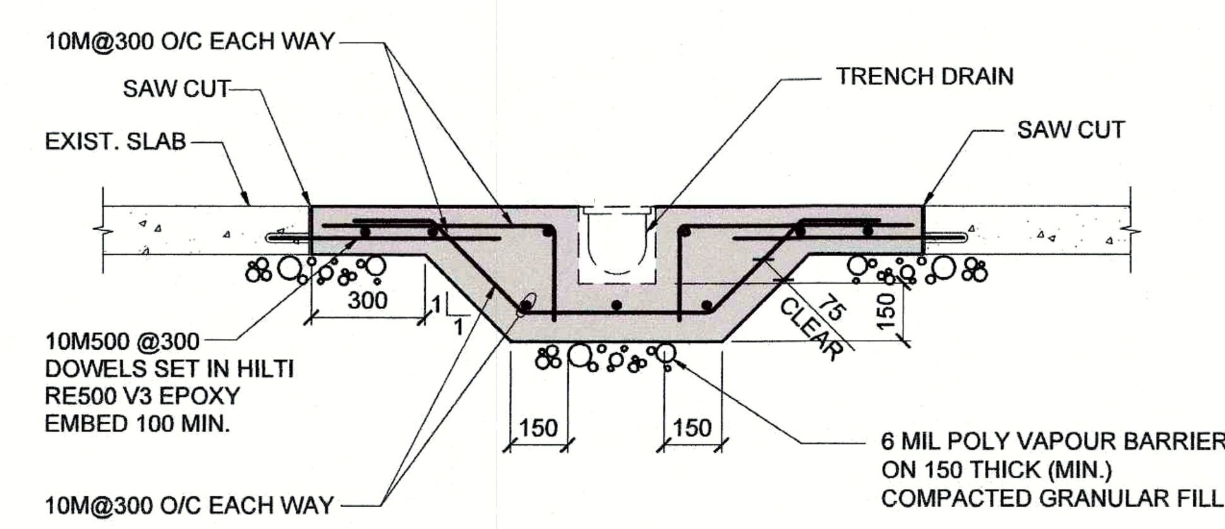
	EXPOSURE CONDITION		
	N	EARTH OR WEATHER F1, F2	CHLORIDE C-1, C-3
CAST AGAINST EARTH	-	75	75

* THE RATIO OF THE COVER TO THE MAXIMUM AGGREGATE SIZE AND THE RATIO OF COVER TO NOMINAL BAR DIAMETER SHALL BE AT LEAST 1.0 FOR N CLASS EXPOSURE, 1.5 FOR EXPOSED SURFACES F-1, F-2 CLASSES AND 2.0 FOR C-1, C-3 CLASSES

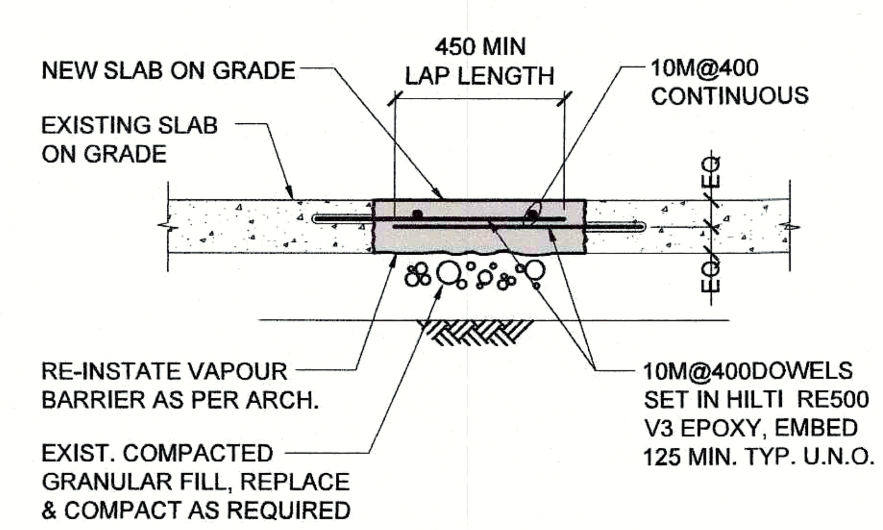
5. USE ONLY NON-CORRODING BAR SUPPORTS WHERE CONCRETE SURFACES ARE TO BE EXPOSED TO WEATHER, EARTH, SEA WATER, DE-ICING SALTS, OR CORROSIVE CHEMICALS AND FOR ALL CONCRETE SLABS AND BEAMS IN THE PARKING AREA.
6. NO WELDING OF REBAR SHALL BE PERMITTED UNLESS NOTED OTHERWISE OR APPROVED IN WRITING BY THE ENGINEER. THE WELDING PROCEDURE SHALL CONFORM TO CSA W186.
7. USE ONLY NON-CORRODING CHAIRS FOR REINFORCING IN ALL EXPOSED CONCRETE WORK AND FOR ALL CONCRETE SLABS.



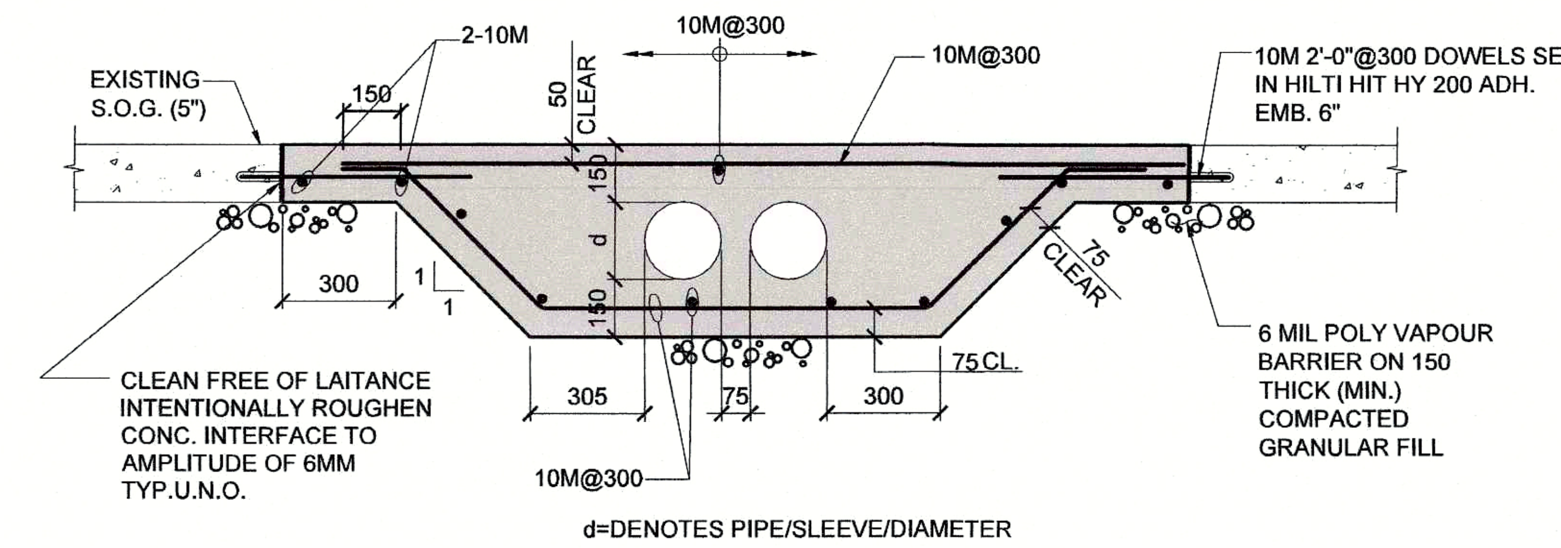
TYPICAL NEW IN-FLOOR DUCT
1:20 (SEE MECH. & ELEC. FOR LOCATIONS)



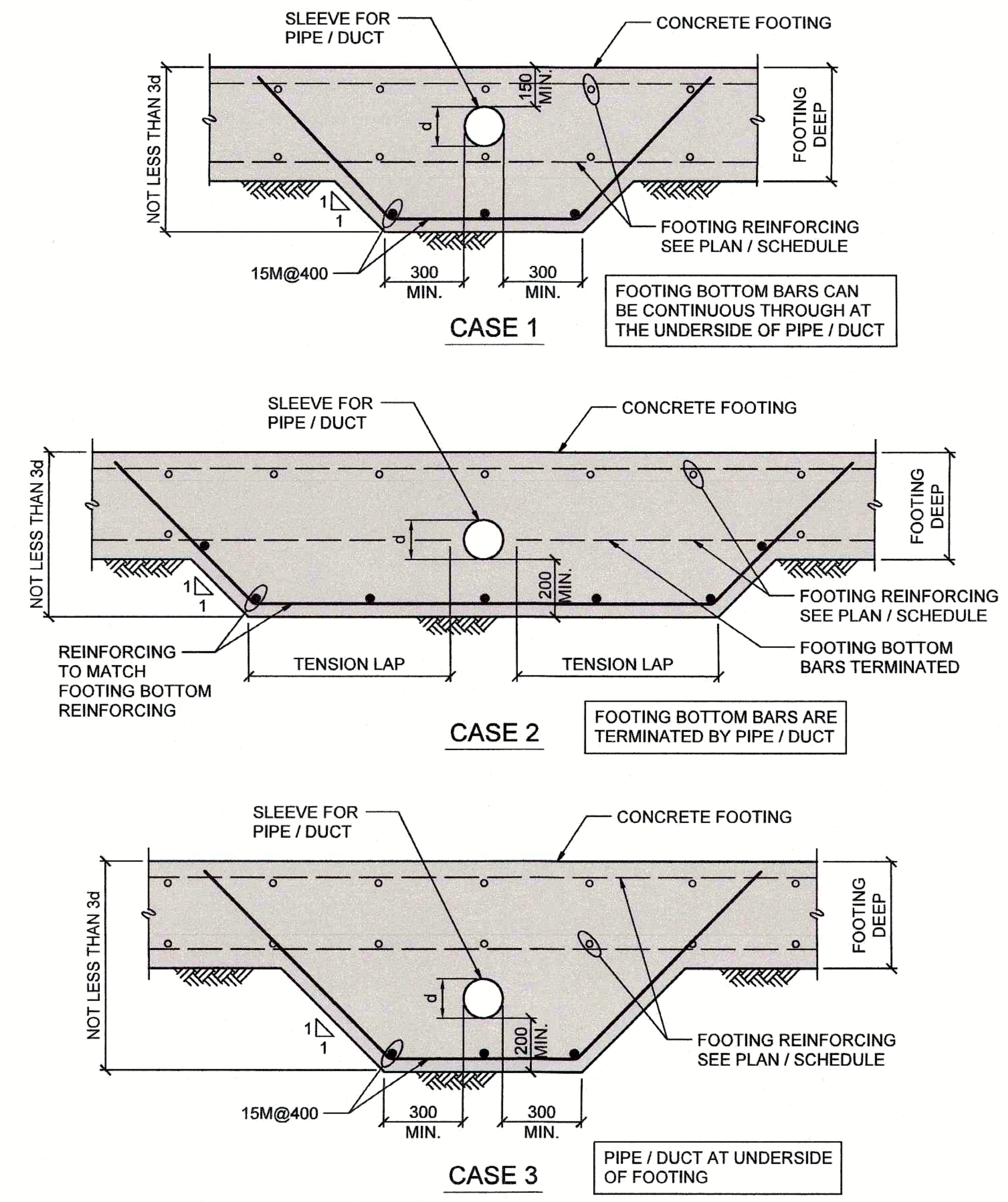
TYPICAL NEW TRENCH DRAIN
1:20 (SEE ARCH DWGS FOR LOCATION)



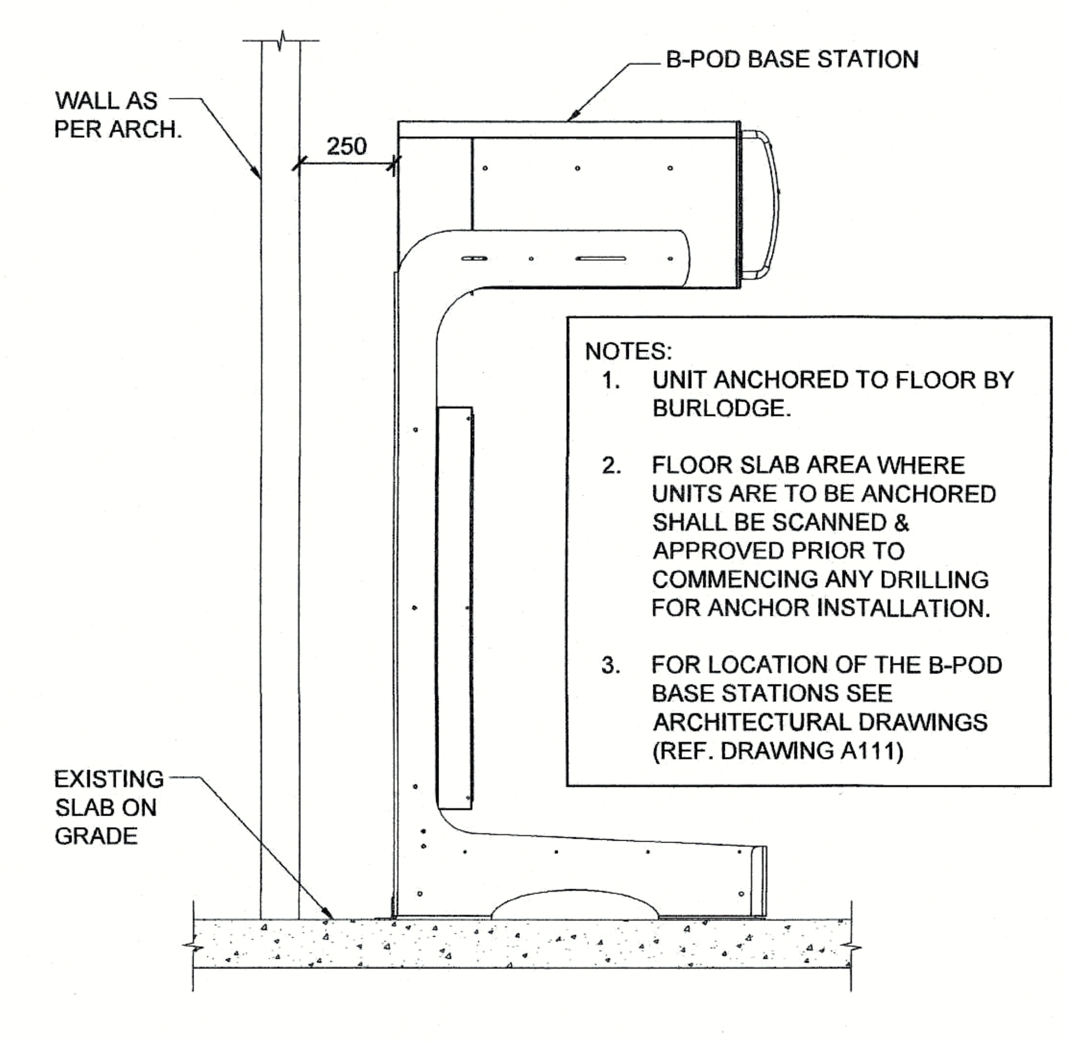
TYPICAL TRENCH DETAIL
1:20 (SEE ARCH DWGS FOR LOCATION)



TYPICAL SLAB ON GRADE THICKENING DETAIL WHERE MECHANICAL PIPE/DUCT CROSS THROUGH
1:20



TYPICAL FOOTING THICKENING DETAILS WHERE FOOTING MECHANICAL PIPE / DUCT CROSS THROUGH
1:20



B-POD BASE STATION DETAIL
1:20

Thinkspace, a partnership of:
David Lee Blanchard, Architect AIBC, AAA
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Henk Kampman, Architect AIBC, AAA
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GLOBAL REVISIONS LIST*

NO.	DATE	DESCRIPTION

*Sheet changes clouded and tagged respectively.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. PERVAN
March 14, 2023
EGBC PTP #1000918

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NOTE1
NOTE2

Project Number: 13252
Drawing: GENERAL NOTES & DETAILS
Sheet Number: S1

13252