

GENERAL

1. THE EXISTING BUILDING HAS BEEN (PARTIALLY) UPGRADED TO THE GENERAL INTENT OF THE VBBL 2014, INCLUDING SEISMIC FORCE REQUIREMENTS. UPGRADING DESIGN HAS BEEN DONE AS FAR AS PRACTICAL, GIVEN THE LIMITATIONS OF THE AVAILABLE EXISTING DRAWING INFORMATION AND LIMITED KNOWLEDGE OF THE ACTUAL CONSTRUCTION. MODIFICATION OF STRUCTURAL FRAMING AND/OR DETAILS MAY BE REQUIRED IF EXISTING CONDITIONS ARE DIFFERENT FROM THOSE SHOWN ON THE DRAWINGS. WHERE UPGRADE HAS BEEN PARTIAL, THE RESISTANCE OF THE BUILDING TO SEISMIC FORCES IS LIMITED AND SEISMIC PERFORMANCE WILL BE LESS THAN THAT EXPECTED OF A NEW BUILDING.

2. CONSTRUCT TO VBBL 2014 CODE REQUIREMENTS, ALL REFERENCE STANDARDS ARE TO THE EDITION LISTED IN DIVISION B PART ONE, UNLESS NOTED OTHERWISE.

DESIGN PARAMETERS:

IMPORTANCE CATEGORY = HIGH

WIND LOAD PARAMETERS:

$q_{1/50} = \text{REFER TO RWD1}$ lw (ULS) = 1.15
lw (SLS) = 0.75

INTERSTORY DRIFT LIMIT... 0.002 hs INTERNAL PRESSURE CATEGORY = 1/2/3

SNOW LOAD PARAMETERS:

$S_s = \text{REFER TO RWD1}$ ls (ULS) = 1.15
 $S_r = \text{REFER TO RWD1}$ ls (SLS) = 0.9

SEE DRAWINGS FOR SNOW BUILD-UP DIAGRAMS WHERE APPLICABLE

SEISMIC PARAMETERS:

SITE CLASSIFICATION... C

$S_a(0.2) = 0.94$ PGA... = 0.46
 $S_a(0.5) = 0.64$ IE... = 1.3
 $S_a(1.0) = 0.33$
 $S_a(2.0) = 0.17$ INTERSTORY DRIFT LIMIT = 0.02 hs

SFRS EAST - WEST = MRF Rd = 1.5 Ro = 1.3

SPECIFIED DESIGN LOADS (kPa).

DESCRIPTION	LIVE
EXTERIOR PLAZA	6.0 kPa

5. THESE DRAWINGS SHOW THE COMPLETED BUILDING/STRUCTURE ONLY AND DO NOT INCLUDE COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND ABOUT THE JOB SITE DURING CONSTRUCTION AND FOR THE DESIGN AND ERECTION OF ALL TEMPORARY STRUCTURES, FORMWORK, FALSEWORK, SHORING, ETC. NEEDED DURING CONSTRUCTION.

6. READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS. REFER TO AND COORDINATE STRUCTURAL WORK WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR GRADES, FLOOR AND ROOF ELEVATIONS AND SLOPES, AND FOR DIMENSIONS AND LOCATIONS OF OPENINGS, CURBS, RECESSES, SLEEVES, EQUIPMENT, SHAFTS, INSERTS, NAILERS, CHAMFERS, AND SIMILAR ITEMS. GRADES, ELEVATIONS AND SLOPES SHOWN ON STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY AND MUST BE CONFIRMED. REPORT CONFLICTS TO THE ENGINEER BEFORE COMMENCING WORK.

7. DO NOT INSTALL OPENINGS, SET INSERTS, PIPES, CONDUITS OR SLEEVES, DRILL, CORE, CUT OR ATTACH TO STRUCTURAL BUILDING COMPONENTS WITHOUT AUTHORIZATION FROM STRUCTURAL ENGINEER, EXCEPT AS NOTED ON DRAWINGS.

8. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR FIRE RESISTANCE REQUIREMENTS

9. SEE ARCHITECTURAL DRAWINGS FOR SPECIFICATIONS FOR WATERPROOFING, SEALERS, ETC.

10. CONTRACTOR TO VERIFY ALL DIMENSIONS, INCLUDING EXISTING STRUCTURAL COMPONENTS, AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCING WORK

11. THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS IN THE FIELD TO SUIT EXISTING CONDITIONS. HE SHALL SITE MEASURE AND CONTROL THE PRODUCTION OF WORK ON SITE AND ELSEWHERE TO FULFILL THE INTENT OF THE DRAWINGS. NOTIFY THE ENGINEER OF ANY DIMENSIONAL VARIATION FROM THE PLANS

12. CONFIRM HEADROOM CLEARANCES, OPENING WIDTH AND HEIGHT, FLOOR TO FLOOR AND OTHER DIMENSIONS WITH DRAWINGS PROVIDED BY OTHER CONSULTANTS AND REPORT ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION OF THE BUILDING ELEMENT.

13. CONTRACTOR(S) SHALL RECORD AND REPORT ANY VARIATIONS IN EXISTING CONDITIONS WHICH MAY AFFECT THE STRUCTURE (BUILDINGS, BUILDING COMPONENTS, PROPERTY LINES, SOIL CONDITIONS, ETC).

14. IN CASE OF INCONSISTENCY BETWEEN THE GENERAL NOTES, DRAWINGS AND SPECIFICATIONS, THE MOST STRINGENT SHALL GOVERN.

FIELD REVIEW

1. FIELD REVIEW IS AT THE PROFESSIONAL DISCRETION OF WSP AND IS TO ASCERTAIN GENERAL COMPLIANCE WITH THE STRUCTURAL PLANS AND SUPPORTING DOCUMENTS FOR THE INTEGRITY OF THE PRIMARY STRUCTURAL COMPONENTS OF THE BUILDING ONLY. FIELD REVIEW DOES NOT MAKE WSP GUARANTORS OF THE CONTRACTORS WORK. FIELD REVIEW IS NOT FOR THE BENEFIT OF THE CONTRACTOR AND MAY NOT FORM PART OF THE CONTRACTORS CONSTRUCTION QUALITY CONTROL WHICH SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR(S). WSP SHALL NOT BE RESPONSIBLE FOR ACTS OR OMISSIONS OF THE CONTRACTOR OR FOR THE CONTRACTORS FAILURE TO FULFILL THE INTENT OF THE DESIGN DRAWINGS.

2. FIELD REVIEW OF PROPRIETARY PRODUCTS, CONNECTIONS AND OTHER STRUCTURAL ELEMENTS THAT ARE PART OF THE PRIMARY STRUCTURE, AND WHICH HAVE BEEN DESIGN BY SPECIALTY STRUCTURAL ENGINEERS SHALL BE CARRIED OUT BY THE RESPECTIVE ENGINEERS. LETTERS OF ASSURANCE FOR THESE REVIEWS SHALL BE SUBMITTED TO WSP UPON COMPLETION OF THE WORK

3. THE CONTRACTOR(S) SHALL GIVE NOTICE THAT APPROPRIATE PORTIONS OF THE WORK ARE COMPLETE AND AVAILABLE FOR FIELD REVIEW. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE FIELD REVIEWS IN A TIMELY MANNER SUITABLE TO THE METHODS AND SCHEDULE OF CONSTRUCTION. WORK COVERED BY FINISHES WHICH HAS NOT RECEIVED PROPER FIELD REVIEW BY THE STRUCTURAL ENGINEER OR BY SPECIALTY ENGINEER MAY REQUIRE REMOVAL IN ORDER TO REVIEW THE WORK.

4. THE GENERAL CONTRACTOR SHALL CHECK AND CONFIRM THAT WORK IS COMPLETED IN ACCORDANCE WITH CONTRACT DOCUMENTS PRIOR TO FIELD REVIEW. WORK INCOMPLETE AT THE TIME OF THE REVIEW SHALL REMAIN UNCOVERED UNTIL THE NEXT SCHEDULED REVIEW.

5. NOTIFY THE STRUCTURAL ENGINEER (2448/72) HOURS IN ADVANCE FOR THE FIELD REVIEW OF THE FOLLOWING

- a) REINFORCING STEEL AND POUR CONDITIONS: BEFORE EACH CONCRETE POUR

6. FIELD REVIEWS SHALL BE CARRIED OUT DURING NORMAL BUSINESS HOURS. NO MORE THAN ONE REVIEW ON ANY DAY WILL BE UNDERTAKEN BY WSP UNLESS SPECIAL ARRANGEMENTS ARE MADE AND AGREED TO BY WSP

7. INSTRUCTIONS GIVEN AS A RESULT OF FIELD REVIEW SHALL NOT BE CAUSE OF EXTRA CHARGE TO THE CONTRACT

CONCRETE

1. GENERAL

- a) PROVIDE CONCRETE MATERIALS AND PERFORM WORK TO CSA STANDARD A23.1-09.

- b) DESIGN OF CONCRETE ELEMENTS SHALL CONFORM TO CSA-A23.3-04 (R2010).

- c) PARKING STRUCTURES CONCRETE SHALL CONFORM TO CSA-S413-07.

- d) SUBMIT PROPOSED CONCRETE MIX DESIGNS FOR REVIEW TO THE ENGINEER AND THE TESTING AGENCY RETAINED BY THE OWNER. EACH MIX DESIGN TO CONFORM TO REQUIREMENTS LISTED IN PRODUCT SECTION BELOW. MIX DESIGNS TO LIST AREA OF USE, STRENGTH, EXPOSURE CLASS, MAX W/C, _____% COARSE AGGREGATE, _____% FLYASH AND SLUMP RANGE AS NOTED.

- e) CONCRETE SUPPLIER TO CONFIRM THAT ALL AGGREGATE WILL CONFORM WITH CSA A23.1 - CLAUSE 4.2.3.5 ALKALI-REACTIVITY AND OTHER REACTIONS. MAINTAIN 20mm OR LARGER AGGREGATE SIZE UNLESS APPROVED BY OWNERS TESTING AGENCY AND CONSULTANT.

- f) CONCRETE QUALITY IS TO BE TESTED BY THE OWNER'S TESTING AGENCY ACCORDING TO CSA STANDARD A23.2-09 INCLUDING STRENGTH, AIR CONTENT AND SLUMP TESTS FOR EACH CONCRETE POUR, WITH REPORTS SUBMITTED TO THE CONTRACTOR AND THE ENGINEER. TEST SLUMP BEFORE AND AFTER SUPERPLASTICIZER ADDED.

- g) IF CONCRETE TEST RESULT INDICATE CONCRETE IS NOT TO THE SPECIFIED STRENGTH, THE OWNER SHALL HAVE ALL RIGHTS AS LISTED IN CSA-A23.1 CLAUSE 4.4.6.8.

- h) ALL CONCRETE IS TO BE MOIST OR WET CURED AT THE SPECIFIED TEMPERATURE RANGE FOR THE SPECIFIED EXPOSURE CLASS. FOR CURING TYPES 1 TO 3, SEE TABLE 20, (REPRODUCED ON THIS DRAWING), THE CONTRACTOR'S FORMWORK DESIGN PLAN TO DETERMINE WHETHER ADDITIONAL CURING IS REQUIRED TO ACHIEVE THEIR REQUIRED CONCRETE STRENGTH FOR FORM REMOVAL.

2. PRODUCTS

- a) HYDRAULIC CEMENT: TYPE GU (GUB) FOR GENERAL CONCRETE CONSTRUCTION OR TYPE MS (MsB) / HS (HsB) FOR MODERATE/HIGH "SULPHATE RESISTANCE / HIGH EARLY STRENGTH TYPE HE (HEB) AS REQUIRED BY CONTRACTOR. SUPPLEMENTARY CEMENTING MATERIALS TYPE 'F' FLYASH AS PER TABLE 2(i) BELOW OR TYPE SF (SILICA FUME) FOR CONCRETE SLABS BELOW WATERTABLE, ALL POOL WALLS AND POOL BOTTOM SLABS.

- b) REINFORCING STEEL: REFER TO REINFORCING STEEL NOTES...

- c) AGGREGATE: NORMAL DENSITY FINE AND COARSE AGGREGATE TO CLAUSE 4.2.3 INCLUDING CLAUSE 4.2.3.5 ON DELETERIOUS REACTIONS. COARSE AGGREGATE TO BE MORE THAN 60% OF TOTAL AGGREGATE FOR ALL CONCRETE FLATWORK INCLUDING SLAB ON GRADE, DECK TOPPING AND SUSPENDED SLABS INCLUDING MIXES PLACED BY PUMP.

- d) WATER: TO CLAUSE 4.2.2 AND TO TABLE 9 LIMITS FOR CHLORIDES AND ALKALIS.

- e) ADMIXTURES: AIR-ENTRAINING AND CHEMICAL ADMIXTURES TO CLAUSE 4.2.4, INCLUDING SUPERPLASTICIZERS FOR LOW SLUMP CONCRETE. ALL ADMIXTURES TO BE COMPATIBLE AND SUITABLE FOR FINISHING. USE OF CALCIUM CHLORIDE IS NOT PERMITTED.

- f) OTHER PRODUCTS: BASE PLATE GROUT - NON SHRINK, NON FERROUS MASTERFLOW 713 ANCHOR RODS AND NUTS - TO ASTM A307 / DWYDAG THREADBAR GRADE 517/690

- g) FORMWORK: TO CLAUSE 6.5 SMOOTH, SQUARE EDGED PLYWOOD PANELS FOR CONCRETE EXPOSED TO VIEW; SHIPLAB FOR CONCRETE NOT EXPOSED TO VIEW.

- h) NORMAL CONCRETE: STRUCTURAL AND DURABILITY REQUIREMENTS:

DESCRIPTION	MIN. COMP. STRENGTH 28days (MPa) UNLESS NOTED	EXPOSURE CLASS	MAX W/C RATIO	CURING TYPE TABLE 20	AIR CONTENT CATEGORIES AS PER TABLES 2 AND 4 IN A23.1 TYPICAL ALL MIXES
PADS, FOOTINGS, ENCASEMENTS	32	F-2	0.55	1	-

- i) ARCHITECTURAL CONCRETE: REFER TO CLAUSE 8.3 AND SPECIFICATIONS. ALL PRODUCTS SHALL CONFORM TO MATERIAL REQUIREMENTS FOR ARCH. CONCRETE IN CSA-A23.4 INCLUDING MIX PROPORTIONS, CONCRETE QUALITY, PRODUCTION OF CONCRETE AND PLACING. FORMWORK TO MEET REQUIREMENTS OF CLAUSE 8.3.4.

3. EXECUTION

- a) DESIGN AND CONSTRUCT FORMWORK: REFER TO CONCRETE FORMWORK NOTES

- b) MIX AND PLACE CONCRETE: IN A MANNER TO PREVENT SEGREGATION. VERTICAL DROP OF CONCRETE NOT TO EXCEED 1500mm. CONTROL SLUMP AND AIR CONTENT AS PER CLAUSE 5.2.4.3. DO NOT PLACE CONCRETE IF OVER 2 HOURS OLD (SINCE INITIAL MIXING).

- c) COMPACT AND CONSOLIDATE: CONCRETE WITH INTERNAL VIBRATORS TO SIZE, SPACING ETC. IN CLAUSE 7.2.5. WORK CONCRETE AROUND ALL EMBEDDED MATERIAL AND INTO PREVIOUSLY PLACED CONCRETE LIFT. VIBRATORS MAY BE SUPPLEMENTED BY EXTERNAL FORM VIBRATORS. SELF CONSOLIDATING CONCRETE TO BE USED IN HEAVILY REINF. AREAS, ETC. AS NOTED ON DRAWINGS.

- d) FINISH SLAB AND FLOOR SURFACES: TO CLAUSE 7.5 MEASURED WITHIN 72 HOURS OF PLACING, BY STRAIGHT EDGE OR F-NUMBER METHODS TO TOLERANCE LIMITS IN TABLE 22. FINAL FINISHING BY FLOATING AND TROWELLING AS PER CLAUSE 7.5.4 REFER TO SPECIFICATIONS FOR SPECIAL SURFACE FINISHES.

- e) FINISH FORMED SURFACES: AS SPECIFIED IN CLAUSE 7.7 UNLESS NOTED OTHERWISE IN SPECIFICATION. PROVIDE 20mm CHAMFER TO ALL EXPOSED CORNERS AND HAND TOOL SLAB EDGES AND CURBS.

- f) CURE CONCRETE: IMMEDIATELY FOLLOWING FINISHING AS PER CLAUSE 7.4. MOIST CURING REQUIREMENTS AS PER CURING TYPES SPECIFIED ABOVE (AND TABLE 20 IN A23.1), CURING IN EXTREME TEMPERATURES AS PER CLAUSE 7.4.1.8. ADDITIONAL CURING REQUIREMENTS FOR HVSCM CONCRETE AS PER CLAUSE 8.7.6.

- g) PROTECT CONCRETE FOR HOT WEATHER CONDITIONS: WHEN AIR TEMPERATURE IS 27°C OR HIGHER AS PER 7.4.1.4. PROTECT CONCRETE FOR COLD WEATHER CONDITIONS: WHEN AIR TEMPERATURE IS 5°C OR LOWER (OR LIKELY TO FALL BELOW 5°C WITHIN 24 HOURS OF PLACING) AS PER CLAUSE 7.4.1.5.

- h) REFER TO CLAUSE 8 FOR CONCRETE WITH SPECIAL PERFORMANCE OR MATERIAL REQUIREMENTS INCLUDING ARCHITECTURAL CONCRWTETE, HVSCM CONCRETE, HIGH STRENGTH CONCRETE, SELF-CONSOLIDATED CONCRETE AND HIGH-EARLY STRENGTH CONCRETE.

- j) EMBEDDED MATERIAL: SHALL BE FREE FROM GREASE, SCALE AND OTHER COATINGS. EMBEDDED MATERIAL PLACEMENT TO CONFORM TO CLAUSE 6.7 AND PLACEMENT TOLERANCE FOR A-BOLTS AND HARDWARE TO CLAUSE 6.7.3. SECURE WITH CLIPS OR WIRE NOT LESS THAN 1.5mm DIAMETER.

- k) CONSTRUCTION JOINTS: TO CLAUSE 7.3. ALL CONSTRUCTION JOINTS TO BE REVIEWED BY THE ENGINEER FOR LOCATION AND DETAIL PRIOR TO CONSTRUCTION UNLESS DETAILED ON DRAWINGS. REINFORCEMENT TO BE CONTINUED UNINTERRUPTED THROUGH ALL CONSTRUCTION JOINTS. KEYWAYS TO BE PROVIDED PERPENDICULAR TO THE DIRECTION OF LOAD IN ALL JOINTS. PROVIDE WATERSTOPS ACROSS JOINTS SPECIFIED AS WATERTIGHT CONSTRUCTION (ELEVATOR PITTS, TANKS, POOLS, ETC).

- m) SUPPORT WALLS, BEAMS AND SUSPENDED SLABS UNTIL CONCRETE HAS HARDENED SUFFICIENTLY TO CARRY LOADS.

- n) OPENINGS, PIPE SLEEVES, EMBEDDED CONDUITS, ETC. ARE NOT PERMITTED EXCEPT AS SPECIFICALLY APPROVED BY THE ENGINEER.

CONCRETE cont'd

- p) PLACE GROUT UNDER FULL BASEPLATE AREA IN ACCORDANCE WITH GROUT MANUFACTURERS' INSTRUCTIONS AFTER THOROUGH CLEANOUT. DRY PACKING OF BASEPLATES PERMITTED ONLY FOR PLATES LESS THAN 250mm IN WIDTH. POCKETED BASEPLATES ARE TO BE GROUTED BY FLOWABLE METHOD.

TABLE 20 ALLOWABLE CURING REGIMES (SEE CLAUSE 4.1.1.1.1, 7.4.1.1, 7.4.1.7.1 AND TABLE 2)		
CURING TYPE	NAME	DESCRIPTION
1	BASIC	3 DAYS AT =>10°C OR FOR A TIME NECESSARY TO ATTAIN 40% OF THE SPECIFIED...
2	ADDITIONAL	7 DAYS AT 10°C AND FOR A TIME NECESSARY TO ATTAIN 70% OF THE SPECIFIED STRENGTH. WHEN USING SILICA FUME CONCRETE, ADDITIONAL CURING PROCEDURES SHALL BE USED. SEE ANNEX 1, CLAUSE 1.3.13.
3	EXTENDED	A WET-CURING PERIOD OF 7 DAYS. THE CURING TYPES ALLOWED ARE PONDING, CONTINUOUS SPRINKLING, ABSORPTIVE MAT. OR FABRIC KEPT CONTINUOUSLY WET

CONCRETE REINFORCEMENT

1. CONFORM TO CSA A23.1 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION".
2. REINFORCEMENT - DEFORMED BAR REINFORCEMENT CONFORMING TO CSA G30.18 GRADE 400R. USE 400W ONLY WHERE NOTED ON DRAWINGS.
3. EPOXY-COATED BARS - CONFORM TO ASTM A775/A775M AND ASTM D3963/D3963M. PROVIDE EPOXY-COATED CHAIR-BARS AND BOLSTERS AND PLASTIC-COATED TIE WIRES FOR EPOXY-COATED REINFORCEMENT.
4. WELDED WIRE FABRIC - CONFORM TO ASTM A1064/A1064M, YIELD STRENGTH 450 MPa, SUPPLIED IN FLAT SHEETS ONLY.
5. LAP WELDED WIRE FABRIC SHEETS BY ONE SPACING OF CROSS WIRES + 50 (2"), MEASURED BETWEEN THE OUTERMOST CROSS WIRES IN EACH SHEET. IN SLABS, PLACE AT 1/3 SLAB THICKNESS BELOW TOP OF SLAB.
6. ACCESSORIES, BAR SUPPORTS, AND TIES TO CONFORM TO REINFORCING STEEL INSTITUTE OF CANADA (RSIC) MANUAL OF STANDARD PRACTICE AND CSA A23.1 / A23.2.
7. SUBMIT SHOP DRAWINGS FOR REINFORCEMENT DETAILED IN ACCORDANCE WITH THE RSIC MANUAL OF STANDARD PRACTICE. SUBMIT PLANS AND DETAILS NECESSARY TO FABRICATE, PLACE, AND REVIEW REINFORCEMENT.
8. ALL REBAR HOOKS TO BE STANDARD LENGTH 90° OR 180° HOOKS. REBAR LENGTHS LISTED ON DRAWINGS DO NOT INCLUDE THE HOOK LENGTH.
9. FIELD BENDING OF BARS IS NOT PERMITTED UNLESS INDICATED OR APPROVED BY WSP-S. APPROVED FIELD BENDING TO BE DONE WITHOUT THE USE OF HEAT, THROUGH APPLICATION OF SLOW AND STEADY PRESSURE. REPLACE BARS WITH CRACKS OR SPLITS.
10. ALL REINFORCING TO BE CLEAN, FREE OF LOOSE SCALE, OIL, DIRT, RUST, AND ANY OTHER FOREIGN COATING THAT AFFECT BONDING CAPACITY.
11. UNLESS OTHERWISE NOTED, LAP ALL HORIZONTAL GRADE BEAM REINFORCING WITH CLASS B LAPS. CARRY CONTINUOUSLY THROUGH PIERS AND PILE CAPS WHERE APPLICABLE.
12. WHERE CONCRETE IS CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH, MINIMUM CONCRETE COVER TO REINFORCING BARS CLOSEST TO THE CONCRETE SURFACE TO BE 75 (3").
13. FOR CLASS N CONCRETE, MINIMUM CONCRETE COVER TO REINFORCING BARS CLOSEST TO THE CONCRETE SURFACE TO BE 40 (1 1/2") FOR BEAMS AND COLUMNS AND 25 (1") FOR SLABS AND WALLS.
14. FOR CLASS C-1 CONCRETE, MINIMUM COVER TO BE 60 (2 1/2") EXCEPT FOR SLABS PROTECTED BY MEMBRANE WHERE THE COVER SHALL BE 40 (1 1/2") TO THE TOP BARS AND 30 (1 1/4") TO THE BOTTOM BARS.
15. FOR CLASS F-1 AND F-2 CONCRETE, MINIMUM COVER TO BE 40 (1 1/2").
16. INCREASE COVER WHERE REQUIRED TO MAINTAIN MINIMUM RATIO OF COVER TO NOMINAL BAR DIAMETER OF 1 FOR CLASS N, 1.5 FOR CLASSES F1 AND C1 (FOR MEMBRANE PROTECTED SLABS ONLY), AND 2 FOR CLASS C1 (ALL OTHER STRUCTURES).
17. ENSURE COVER TO REINFORCEMENT IS MAINTAINED DURING CONCRETE POUR.

SHOP DRAWINGS

1. SUBMIT 4 HARD COPIES OR PDF'S OF SHOP DRAWINGS FOR REVIEW BEFORE START OF WORK. PACKAGES TO BE SUBMITTED ARE NOTED IN THE RELEVANT SECTIONS BELOW.
2. REVIEW OF SHOP DRAWINGS BY WSP-S IS ON A SAMPLING BASIS. FOR GENERAL CONFORMITY WITH STRUCTURAL CONTRACT DOCUMENTS. IT IS NOT A DETAILED CHECK AND MUST NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF HIS RESPONSIBILITY TO MAKE THE WORK ACCURATE AND IN CONFORMITY WITH ALL THE CONTRACT DOCUMENTS, TO REVIEW SHOP DRAWINGS AND TO COORDINATE WORK OF INTERFACING TRADES AND MANUFACTURE OF INTERFACING PRODUCTS.
3. REVIEW OF SHOP DRAWINGS DOES NOT IMPLY ANY CHANGE IN ANY OTHER CONSULTANTS' OR PROFESSIONALS' RESPONSIBILITIES RELATED TO DESIGN OF SPECIFIC ITEMS AS OUTLINED BY THESE DRAWINGS.
4. ALLOW A MINIMUM OF 10 WORKING DAYS FOR REVIEW OF EACH SUBMISSION OF SHOP DRAWINGS IN THE STRUCTURAL CONSULTANTS OFFICE. ALLOW MORE TIME WHEN LARGE QUANTITIES OF SHOP DRAWINGS ARE SUBMITTED. SUBMIT IN GENERAL CONFORMITY WITH THE SEQUENCE OF CONSTRUCTION INTENDED.
5. AFTER REVIEW, SHOP DRAWINGS WILL BE STAMPED AND RETURNED. DO NOT COMMENCE FABRICATION UNTIL RETURNED SHOP DRAWINGS HAVE BEEN EXAMINED.
6. SHOP DRAWINGS MARKED "REVIEWED" CAN BE USED FOR FABRICATION.
7. SHOP DRAWINGS MARKED "REVIEWED AS NOTED" CAN BE USED FOR FABRICATION AFTER THE REVISIONS NOTED ARE IMPLEMENTED.
8. SHOP DRAWINGS MARKED "REVISE AND RESUBMIT" REQUIRE SUBSTANTIAL REVISIONS AND MUST BE RESUBMITTED FOR ADDITIONAL REVIEW PRIOR TO FABRICATION.
9. SHOP DRAWINGS MARKED "REVIEWED FOR IMPACT ON BASE STRUCTURE ONLY" SHOW WORKS WHICH ARE NOT WITHIN THE SCOPE OF STRUCTURAL CONSULTING SERVICES BUT AFFECT BEHAVIOUR OF THE BASE STRUCTURE. WSP-S WILL NOT REVIEW THESE WORKS AND ASSUMES THAT THE INDICATED WEIGHTS AND ALL OTHER LOADS IMPOSED ON THE BASE STRUCTURE ARE CORRECTLY IDENTIFIED BY THE DESIGNER / SUPPLIER OF THESE ELEMENTS.
10. DRAWINGS MARKED "NOT REVIEWED" SHOW WORKS WHICH ARE NOT WITHIN THE SCOPE OF STRUCTURAL CONSULTING SERVICES.

SHEET LIST	
SHEET No	SHEET NAME
S-001	GENERAL NOTES
S-002	GENERAL NOTES CONT.
S-003	GATE B PLAN
S-004	GATE H PLAN
S-005	ELEVATIONS, SECTIONS, AND DETAILS
S-006	ELECTRICAL KIOSK DETAIL

M:\171-09048-00 Expo Blvd Lighting\5 DOCUMENTS AND DRAWINGS\1 STRUCTURAL \2 CAD\IS-001.dwg, S-001, 2018-05-25 09:09 am rod.maf

ATTENTION
This drawing is prepared for the sole use of The City of Vancouver
No representations of any kind are made by WSP/MMM, its sub-consultants or its employees to any party with whom WSP/MMM does not have a contract.

WARNING
THE SIZE, DEPTH AND LOCATION OF THE EXISTING OVERHEAD AND UNDERGROUND UTILITIES AND RESPECTIVE STRUCTURES SHOWN ARE APPROXIMATE AND ARE FOR GUIDANCE ONLY. THE COMPLETENESS OR ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY THE LOCATION OF THE FACILITIES PRIOR TO COMMENCING WORK, AND TO ADVISE THE CONSULTANT OF ANY POTENTIAL CONFLICT.

SURVEY INFORMATION

Professional Seal

Professional Seal

#	Date	Issue / Revision	Appr.
E	2018-05-24	ISSUED FOR TENDER	AP
D	2018-04-11	ISSUED FOR 98% REVIEW	AP
C	2018-02-06	ISSUED FOR PRICING REVIEW	AP
B	2017-07-31	ISSUED FOR 90% REVIEW SUBMISSION	AP
A	2017-06-13	ISSUED FOR 50% REVIEW SUBMISSION	AP



Prime Consultant
DMD & Associates Ltd.
#12-17358 104A Avenue
Surrey, BC, Canada V4N 5M3
604-589-9010
604-589-9012
www.dmdeng.com
office@dmdeng.com

Sub-Consultant
wsp
BEHAVIOR, SURVEY, WSD
VANCOUVER BRITISH COLUMBIA CANADA V6Z 2G1
TEL: 604-763-5233 FAX: 604-763-1016 WWW.WSP.COM

Scale AS SHOWN

Drawn by	HW/RM	2018-04-11
Designed by	A. PATTERSON	2018-04-11
Checked by	A. PATTERSON	2018-04-11
Approved by	A. PATTERSON	2018-04-11

EXPO BOULEVARD TUNNEL LIGHTING
GENERAL NOTES
VANCOUVER, BC

Drawing Number 171-08048-00 - S-001 Revision E

STRUCTURAL STEEL

1. GENERAL

- FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA-S16-01 INCLUDING S16S1-05 SUPPLEMENT.
- STEEL IS TO BE SUPPLIED IN FULL LENGTHS, WITHOUT SHOP SPLICES BETWEEN FIELD CONNECTIONS, UNLESS SPECIFICALLY ACCEPTED IN WRITING BY THE ENGINEER. AS DIRECTED BY THE ENGINEER, THE FABRICATOR SHALL PAY FOR ANY COSTS TO INSPECT AND TEST ALL SPLICES AND SUBMIT RESULTS TO THE ENGINEER FOR ACCEPTANCE.
- WELD TO CSA W59 BY FABRICATORS QUALIFIED TO CSA W47.1 DIV. 1 OR DIV. 2.
- LOCATED AND MEASURE EXISTING FIELD CONDITIONS PRIOR TO SUBMITTING SHOP DRAWINGS.
- SUBMIT SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO FABRICATION. SHOP DRAWINGS TO SHOW ALL DETAILS AND MATERIAL SPECIFICATION AND TO BE SIGNED AND SEALED BY A BC PROFESSIONAL ENGINEER FOR CONNECTION DESIGN.
- FABRICATOR AND ERECTOR ARE TO COOPERATE WITH TESTING AGENCIES AND INSPECTORS RETAINED BY THE OWNER. REFER TO SPECIFICATION AND DRAWINGS FOR DETAILS ON VISUAL EXAM AND NON-DESTRUCTIVE TESTING.

2. PRODUCTS

- STRUCTURAL STEEL: TO CAN/CSA-G40-20/G40 21 WITH FOLLOWING GRADES:
W SHAPE BEAMS AND COLUMNS - 350W
CHANNELS AND ANGLES - 350W
HSS SECTIONS, CLASS C - 350W
BARS AND PLATES - 300W
PIPE COLUMNS: TO ASTM A53, GRADE B.
- ANCHOR RODS: TO ASTM A307/DYWIDAG THREADBAR GRADE S17 / 690 AT BRACED BAYS.
- HIGH STRENGTH BOLTS: TO ASTM A325, MIN. 19 DIA., CADMIUM PLATED IF EXPOSED TO WEATHER. WELDING ELECTRODES: LOW ALLOY STEEL SMAW TYPE E4918-X AS PER CLAUSE 27.1.5.3 FOR ALL MEMBERS AND CONNECTIONS.
- PRIMER: CISC/CPMA 1-73A FOR EXPOSED STEEL, U.N.O. ALL INTERIOR AND EXTERIOR STEEL TO BE FINISH PAINTED WITH A PRIMER COMPATIBLE WITH THE FINISH COAT. (MINIMUM PERFORMANCE TO CISC/CPMA STANDARD 2-75).

3. EXECUTION

- WELD OR HIGH STRENGTH BOLT SHOP CONNECTIONS.
- HIGH STRENGTH BOLT FIELD CONNECTIONS EXCEPT WHERE DETAILED OTHERWISE.
- CONNECT BEAM SHEAR SPLICES FOR CAPACITIES SHOWN ON STRUCTURAL DRAWINGS WHERE APPLICABLE. UNLESS NOTED OTHERWISE, DESIGN CONNECTIONS FOR THE MINIMUM VERTICAL BEAM SHEAR OF 60% OF TOTAL BEAM LOAD CAPACITY AS LISTED IN CISC MANUAL BEAM LOAD TABLES FOR THE GIVEN SPAN OF THE BEAM. DESIGN CONNECTION FOR SEISMIC DRAG FORCES AS PER STEEL BRACING NOTES AND/OR AS NOTED AS PART OF THE SEISMIC FORCE RESISTING SYSTEM (SFRS).
- CONNECT WIDE FLANGE BEAMS AND CHANNELS TO HSS COLUMNS WITH TEE-TYPE BEAM CONNECTIONS AS PER CISC MANUAL TABLE 3-42, UNLESS NOTED OTHERWISE. FOR LOADS AS IN 3(c) ABOVE. WHERE BEAMS CARRY AXIAL LOADS THROUGH COLUMN, CONNECT BOTH BEAMS WITH MIN. 12mm PLATE SLOTTED THROUGH COLUMN
- WHERE BEAMS ARE CONTINUOUS OVER COLUMNS, CONNECT BEAM-COLUMNS FOR THE REACTIONS SHOWN ON STRUCTURAL DRAWINGS, WHERE APPLICABLE. USE MINIMUM FOUR BOLTS THROUGH A MIN. 16mm COLUMN CAP PLATE. MINIMUM BEAM REACTION IS 100% OF THE TOTAL BEAM LOAD CAPACITY AS FOR THE GIVEN SPANS.
- FRAME METAL DECK OPENINGS LARGER THAN 450mm WITH L76x76x6.4 MINIMUM.
- PREPARE STEEL SURFACES FOR PRIMING WHERE APPLICABLE. PREPARE ALL INTERIOR AND EXTERIOR STEEL TO BE FINISH PAINTED TO SUIT PROJECT PAINT SPECIFICATIONS. (MINIMUM PERFORMANCE TO CISC/CPMA STANDARD 2-75).
- PAINT ALL STEEL WITH ONE COAT OF PRIMER EXCEPT ITEMS TO BE EMBEDDED IN CONCRETE AND U/S OF COLUMN BASE PLATES, AND UNLESS NOTED OTHERWISE IN 2(d) ABOVE. GALVANIZE WHERE NOTED ON DRAWINGS.
- HSS SECTIONS ARE TO HAVE NO OPEN ENDS TO ACCUMULATE WATER DURING CONSTRUCTION.
- THE B.C. PROFESSIONAL ENGINEER RESPONSIBLE FOR THE CONNECTION DESIGN OF ALL STRUCTURAL STEEL SHALL INSPECT THE CONNECTIONS AFTER ERECTION, PRIOR TO CLOSING IN, AND PROVIDE WRITTEN CONFIRMATION TO THE ARCHITECT THAT THEY HAVE BEEN ERECTED IN ACCORDANCE WITH CODE REQUIREMENTS AND ERECTION DRAWINGS.
- ALL NELSON STUD ANCHORS TO BE SHOP WELDED TO NELSON SPECIFICATIONS.

CUTTING AND CORING

- CARRY A PRICE TO RETAIN AN INDEPENDENT TESTING COMPANY TO LOCATE AND MARK EXISTING REINFORCEMENT AND CONDUIT IN THE AREAS OF PROPOSED OPENINGS USING A NON-DESTRUCTIVE METHOD. IF LOCATIONS ARE NOT ACCEPTABLE TO WSP-S, RELOCATE PROPOSED OPENINGS AND REPEAT PROCESS AT NO EXTRA COST TO THE CONTRACT.
- CORING: DO NOT CUT EXISTING REINFORCEMENT OR CONDUIT WHEN CORING EXISTING CONCRETE UNLESS APPROVED IN ADVANCE BY WSP-S. SAVE COMPLETE LENGTH OF ALL CORES AND LABEL WITH LOCATION TAKEN. MAKE ALL CORES AVAILABLE FOR REVIEW, DO NOT DISPOSE OF CORES WITHOUT WSP-S APPROVAL.
- CUTTING: DO NOT CUT EXISTING REINFORCEMENT AND CONDUIT UNLESS APPROVED IN ADVANCE BY WSP-S. DO NOT OVERCUT OPENINGS. CORE FOUR CORNERS AND ENDS OF INTERMEDIATE SAWCUTS OF ALL OPENINGS PRIOR TO CUTTING SIDES AND INTERMEDIATE LINES. CHIP CORNERS SQUARE AFTER SAWCUTTING IF NECESSARY. IF NEW REINFORCEMENT IS REQUIRED AT AN OPENING, INSTALL IT BEFORE CUTTING OR SHORE THE STRUCTURE UNTIL THE NEW REINFORCEMENT IS INSTALLED.

EXCAVATION, BACKFILL AND COMPACTION

- EXCAVATE TO THE LINES AND LEVELS NECESSARY TO PROPERLY COMPLETE THE WORK. MINIMUM SIDE SLOPES OF TEMPORARY EXCAVATIONS SHALL NOT EXCEED 1 TO 1, OR AS RECOMMENDED IN THE GEOTECHNICAL REPORT. CONTROL EXCAVATION TO ENSURE BOTTOM OF EXCAVATION DOES NOTE SOFTEN DUE TO EXCESS MOISTURE.
- ALL BACKFILL SHALL BE COMPACTED USING MECHANICAL EQUIPMENT.
- MAINTAIN OPTIMUM MOISTURE CONTENT TO PERMIT COMPACTION TO REACH SPECIFIED DENSITIES. PROTECT BACKFILLED GRADE FROM SOFTENING DUE TO EXCESS MOISTURE, BOTH DURING AND AFTER COMPLETION OF BACKFILLING OPERATION.
- BACKFILL TO GRADES INDICATED IN LIFTS NOT EXCEEDING 150mm.
- GRANULAR FILL TO BE NATURAL SAND AND GRAVEL, FREE FROM SILT, LOAM, FRIABLE OR VEGETABLE MATTER WITH MAXIMUM GRAIN SIZE 75mm OR LESS THAN 8% PASSING A 200 SIEVE.
- OTHER FILL TO BE PERVIOUS SOIL, FREE FROM ORGANIC MATTER, ROCKS LARGER THAN 75mm AND DEBRIS. MATERIALS TO BE APPROVED PRIOR TO USE.
- EXISTING NATIVE MATERIAL AS APPROVED BY GEOTECHNICAL ENGINEER.

LOCATION	FILL MATERIAL	COMPACTION
BENEATH SLAB ON GRADE	150mm CRUSHED ROCK OR PIT RUN GRAVEL	98%
BENEATH FOOTINGS DUE TO OVER EXCAVATION	FILL CONCRETE WITH 10 MPa COMPRESSIVE STRENGTH	N/A
UTILITY TRENCHES UNDER PAVING, CONCRETE SLABS OR SIDEWALKS	SAND, PIT RUN GRAVEL OR CRUSHED ROCK	98%
UTILITY TRENCHES UNDER LANDSCAPE AREAS	CLAY, SAND OR PIT RUN GRAVEL	95%

POST-INSTALLED ANCHORS AND DOWELS

- WHERE DRILLED CONCRETE ANCHORS (DCA) ARE NOTED ON DRAWINGS, PROVIDE HILTI KWIK BOLT - TZ EXPANSION ANCHORS. EFFECTIVE EMBEDMENT LENGTHS AS FOLLOWS:
12 (1/2") DIAMETER - 83 (3-1/4") EMBEDMENT
16 (5/8") DIAMETER - 102 (4") EMBEDMENT
19 (3/4") DIAMETER - 121 (4-3/4") EMBEDMENT
- WHERE ADHESIVE CONCRETE ANCHORS (ACA) ARE NOTED ON DRAWINGS, PROVIDE HILTI HIT-HY200 ADHESIVE ANCHORING SYSTEM WITH HILTI HIT-Z ANCHOR RODS. EFFECTIVE EMBEDMENT LENGTHS AS FOLLOWS:
12 (1/2") DIAMETER - 114 (4-1/2") EMBEDMENT
16 (5/8") DIAMETER - 143 (5-5/8") EMBEDMENT
19 (3/4") DIAMETER - 171 (6-3/4") EMBEDMENT
- WHERE REBAR DOWELS ARE NOTED ON DRAWINGS, PROVIDE HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM INSTALLED USING HILTI SAFESSET HOLLOW DRILL BIT TECHNOLOGY. SEE DRAWINGS FOR EMBEDMENT LENGTHS.
- ANCHORS LOCATED OUTSIDE THE BUILDING ENVELOPE'S VAPOUR BARRIER TO BE HOT DIP GALVANIZED OR THREAD ROD STAINLESS STEEL IF MANUFACTURED AND GALVANIZED IS NOT AVAILABLE.
- CONCRETE TO BE MINIMUM 28 DAYS OLD AT THE TIME OF ANCHOR INSTALLATION.
- USE DRILLING AND INSTALLATION TOOLS AND PROCEDURES PER MANUFACTURERS' RECOMMENDATIONS.
- DO NOT CUT REINFORCEMENT TO ACCOMMODATE DRILLED ANCHORS AND DOWELS.
- A WHEN OBSTRUCTIONS PREVENT DRILLING HOLES IN SPECIFIED LOCATIONS TO THE REQUIRED DEPTH, RELOCATE AT NO EXTRA COST TO THE CONTRACT. OBTAIN WSP-S APPROVAL OF NEW LOCATIONS BEFORE DRILLING HOLES. FILL ALL ABANDONED HOLES WITH MIN. 30MPa GROUT. DO NOT TIGHTEN ANCHORS UNTIL GROUT IN ADJACENT ABANDONED HOLES REACHES 75% fc'.
- FOR SOLID OR GROUTED MASONRY, WHERE DRILLED MASONRY ANCHORS (DMA) ARE NOTED ON DRAWINGS, PROVIDE HILTI KB TZ EXPANSION ANCHORS. LOCATE MIN. 76 (3") FROM ANY VERTICAL MORTAR JOINT. EFFECTIVE EMBEDMENT LENGTHS AS FOLLOWS:
12 (1/2") DIAMETER - 83 (3-1/4") EMBEDMENT
16 (5/8") DIAMETER - 102 (4") EMBEDMENT
19 (3/4") DIAMETER - 121 (4-3/4") EMBEDMENT
- FOR SOLID OR GROUTED MASONRY, WHERE ADHESIVE MASONRY ANCHORS (AMA) ARE NOTED ON DRAWINGS, PROVIDE HILTI HIT-HY 70 ADHESIVE ANCHORING SYSTEM WITH HAS-E THREADED RODS. EFFECTIVE EMBEDMENT LENGTHS AS FOLLOWS:
12 (1/2") DIAMETER - 114 (4-1/2") EMBEDMENT
16 (5/8") DIAMETER - 143 (5-5/8") EMBEDMENT
19 (3/4") DIAMETER - 171 (6-3/4") EMBEDMENT
- FOR HOLLOW CONCRETE MASONRY, PROVIDE HILTI HIT-HY 70 ADHESIVE ANCHORING SYSTEM WITH HIT-SC MESH SLEEVE AND HAS-E THREADED RODS. PROVIDE 12 (1/2") DIAMETER ANCHORS WITH 50 (2") EMBEDMENT.
- FOR HOLLOW BRICK MASONRY, PROVIDE HILTI HIT-HY 70 ADHESIVE ANCHORING SYSTEM WITH HIT-SC MESH SLEEVE AND HAS-E THREADED RODS. PROVIDE 12 (1/2") DIAMETER ANCHORS WITH 80 (3-1/8") EMBEDMENT.

INSPECTION AND TESTING

- PROVIDE INSPECTION REPORTS PREPARED BY AN INDEPENDENT INSPECTION AND TESTING AGENCY FOR THE SCOPES LISTED BELOW. THE COST OF THE INSPECTION WILL BE BORNE BY THE OWNER.
- MAKE ONE STANDARD TEST FOR EACH 50 CUBIC METRES OF CONCRETE, BUT NOT LESS THAN ONE TEST FOR CONCRETE CAST EACH DAY. PROVIDE A GROUP OF THREE CONCRETE CYLINDERS FOR EACH STANDARD CONCRETE TEST IN ACCORDANCE WITH CSA A23.1 AND 2.
- PROVIDE AT LEAST 3 CYLINDERS TO BE TESTED FOR EACH 20 CUBIC METRES OF MASONRY GROUT, IN ACCORDANCE WITH CSA A179. MAKE AT LEAST ONE SET OF CYLINDERS EACH DAY THE GROUT IS PLACED.
- STRUCTURAL STEEL INSPECTION REPORTS TO INCLUDE VERIFICATION OF SPECIFIED MEMBER SIZES AND TOLERANCES AND INSPECTION OF WELDING AND BOLTING. INSPECTOR TO REVIEW WELDERS' CWB CERTIFICATION.
- STEEL DECK INSPECTION REPORTS TO INCLUDE VERIFICATION OF MATERIAL GRADE, DECK PROFILE, DECK BEARING, AND CONNECTIONS.

REJECTED WORK

- DO NOT DELIVER MATERIALS WHICH ARE KNOWN NOT TO MEET THE REQUIREMENTS OF THE SPECIFICATIONS. IF REJECTED AFTER DELIVERY, REMOVE IMMEDIATELY FROM SITE.

M:\1717-1-09048-00 Expo Blvd Lighting\5 DOCUMENTS AND DRAWINGS\1-1 STRUCTURAL -02 CADIS-002.dwg, S-002, 2018-05-25 09:10 am rod.maf

ATTENTION
This drawing is prepared for the sole use of The City of Vancouver
No representations of any kind are made by WSP/IMM, its sub-consultants or its employees to any party with whom WSP/IMM does not have a contract.

WARNING
THE SIZE, DEPTH AND LOCATION OF THE EXISTING OVERHEAD AND UNDERGROUND UTILITIES AND RESPECTIVE STRUCTURES SHOWN ARE APPROXIMATE AND ARE FOR GUIDANCE ONLY. THE COMPLETENESS OR ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY THE LOCATION OF THE FACILITIES PRIOR TO COMMENCING WORK, AND TO ADVISE THE CONSULTANT OF ANY POTENTIAL CONFLICT.

SURVEY INFORMATION

Professional Seal

Professional Seal

#	Date	Issue / Revision	Appr.
E	2018-05-24	ISSUED FOR TENDER	AP
D	2018-04-11	ISSUED FOR 98% REVIEW	AP
C	2018-02-06	ISSUED FOR PRICING REVIEW	AP
B	2017-07-31	ISSUED FOR 90% REVIEW SUBMISSION	AP
A	2017-06-13	ISSUED FOR 50% REVIEW SUBMISSION	AP

Owner



Prime Consultant



Sub-Consultant

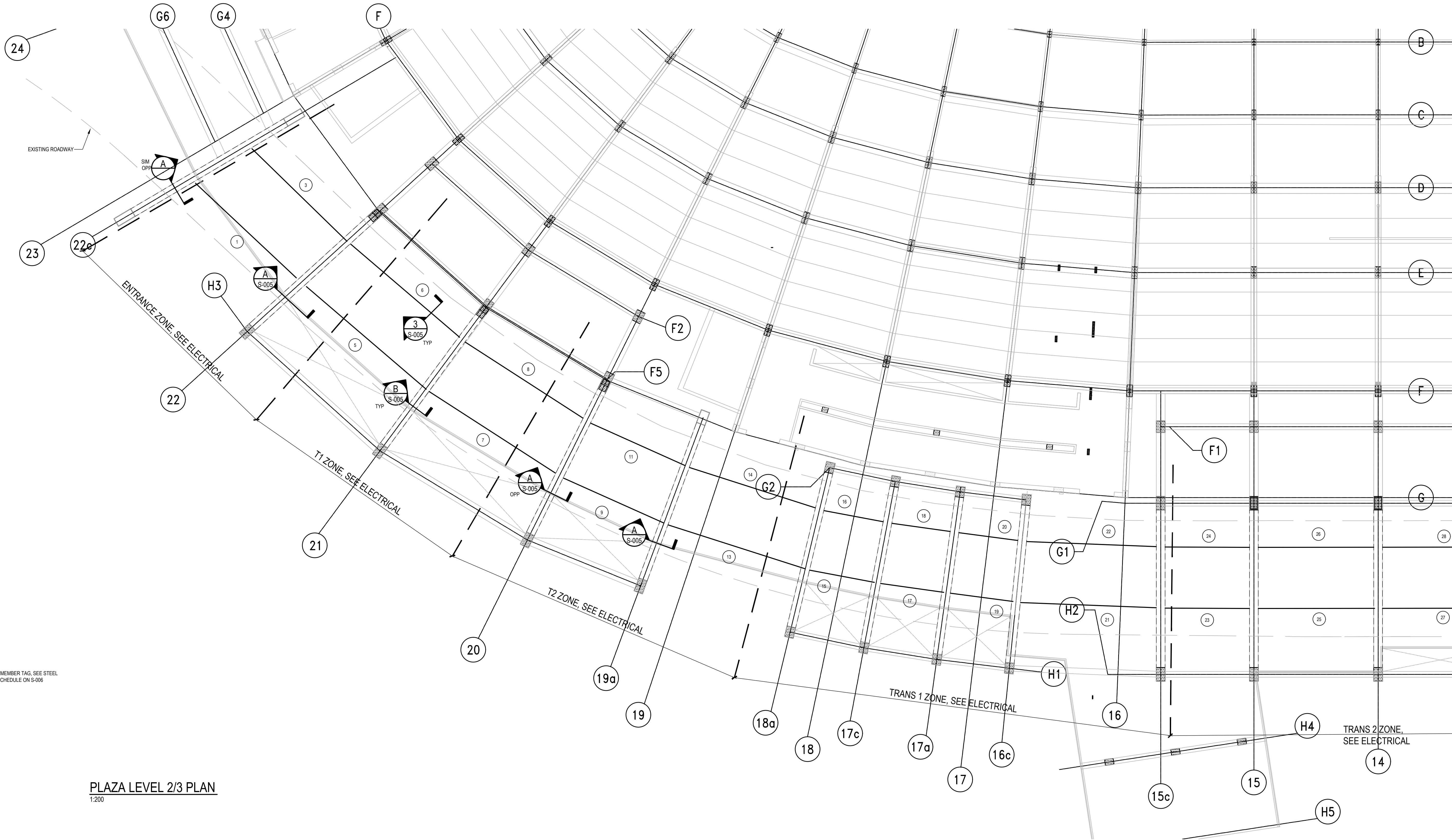
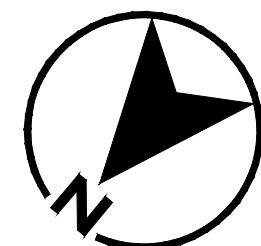
Scale		
AS SHOWN		
Drawn by	HW/RM	2018-04-11
Designed by	A. PATTERSON	2018-04-11
Checked by	A. PATTERSON	2018-04-11
Approved by	A. PATTERSON	2018-04-11

EXPO BOULEVARD TUNNEL LIGHTING GENERAL NOTES CONT.

VANCOUVER, BC

Drawing Number
171-08048-00 - S-002

Revision
E



LEGEND:
 XX INDICATES MEMBER TAG, SEE STEEL FRAMING SCHEDULE ON S-005

PLAZA LEVEL 2/3 PLAN
 1:200

M:\171-08048-00 Expo Blvd Lighting\5 DOCUMENTS AND DRAWINGS\1 STRUCTURAL\2 CAD\S-003-004.dwg, S-003, 2018-05-25 09:15 am rod.mar

ATTENTION
 This drawing is prepared for the sole use of The City of Vancouver. No representations of any kind are made by WSP|MM, its sub-consultants or its employees to any party with whom WSP|MM does not have a contract.

WARNING
 THE SIZE, DEPTH AND LOCATION OF THE EXISTING OVERHEAD AND UNDERGROUND UTILITIES AND RESPECTIVE STRUCTURES SHOWN ARE APPROXIMATE AND ARE FOR GUIDANCE ONLY. THE COMPLETENESS OR ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY THE LOCATION OF THE FACILITIES PRIOR TO COMMENCING WORK, AND TO ADVISE THE CONSULTANT OF ANY POTENTIAL CONFLICT.

SURVEY INFORMATION	

Professional Seal

Professional Seal

#	Date	Issue / Revision	Appr.
E	2018-05-24	ISSUED FOR TENDER	AP
D	2018-04-11	ISSUED FOR 98% REVIEW	AP
C	2018-02-06	ISSUED FOR PRICING REVIEW	AP
B	2017-07-31	ISSUED FOR 90% REVIEW SUBMISSION	AP
A	2017-06-13	ISSUED FOR 50% REVIEW SUBMISSION	AP



Prime Consultant

DMD & Associates Ltd.
 #12-17358 104A Avenue
 Surrey, BC, Canada V4N 5M3
 604-589-9010
 Fax 604-589-9012
 www.dmdeng.com
 office@dmdeng.com

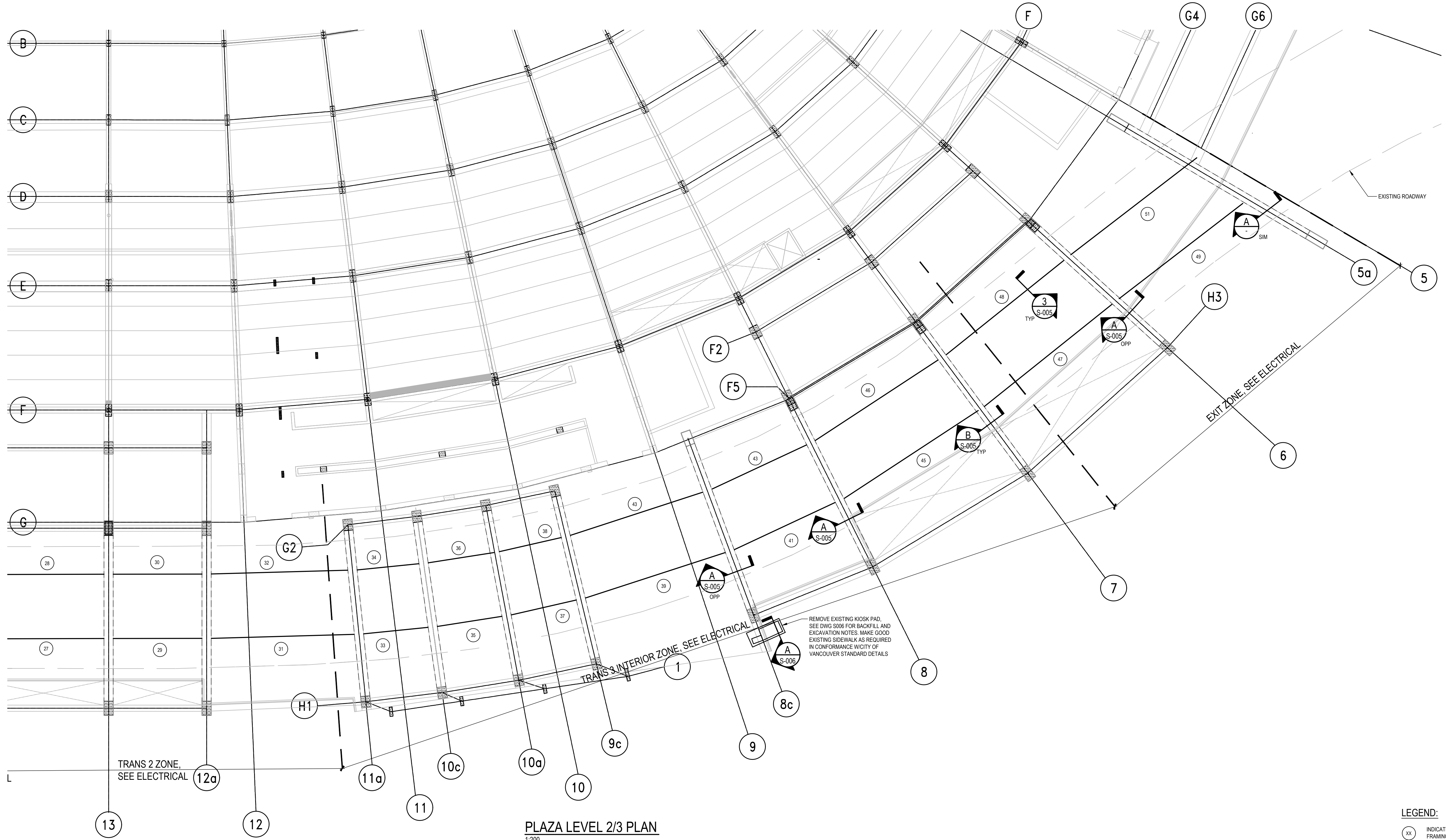
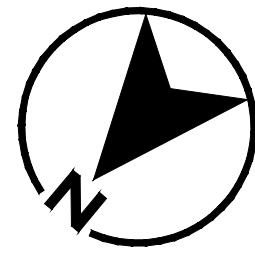
Sub-Consultant

Scale: AS SHOWN

Drawn by	HWIRM	2018-04-11
Designed by	A. PATTERSON	2018-04-11
Checked by	A. PATTERSON	2018-04-11
Approved by	A. PATTERSON	2018-04-11

EXPO BOULEVARD TUNNEL LIGHTING
GATE B PLAN
 VANCOUVER, BC

Drawing Number: 171-08048-00 - S-003
 Revision: D



PLAZA LEVEL 2/3 PLAN
1:200

LEGEND:
XX INDICATES MEMBER TAG, SEE STEEL FRAMING SCHEDULE ON S-005

M:\171-08048-00 Expo Blvd Lighting\5 DOCUMENTS AND DRAWINGS\1 STRUCTURAL\2 CAD\S-003-004.dwg, S-004, 2018-05-25 09:16 am rcd.mar

ATTENTION
This drawing is prepared for the sole use of The City of Vancouver.
No representations of any kind are made by WSP|MM, its sub-consultants or its employees to any party with whom WSP|MM does not have a contract.

WARNING
THE SIZE, DEPTH AND LOCATION OF THE EXISTING OVERHEAD AND UNDERGROUND UTILITIES AND RESPECTIVE STRUCTURES SHOWN ARE APPROXIMATE AND ARE FOR GUIDANCE ONLY. THE COMPLETENESS OR ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY THE LOCATION OF THE FACILITIES PRIOR TO COMMENCING WORK, AND TO ADVISE THE CONSULTANT OF ANY POTENTIAL CONFLICT.

SURVEY INFORMATION

Professional Seal

Professional Seal

#	Date	Issue / Revision	Appr.
E	2018-05-24	ISSUED FOR TENDER	AP
D	2018-04-11	ISSUED FOR 98% REVIEW	AP
C	2018-02-06	ISSUED FOR PRICING REVIEW	AP
B	2017-07-31	ISSUED FOR 90% REVIEW SUBMISSION	AP
A	2017-06-13	ISSUED FOR 50% REVIEW SUBMISSION	AP



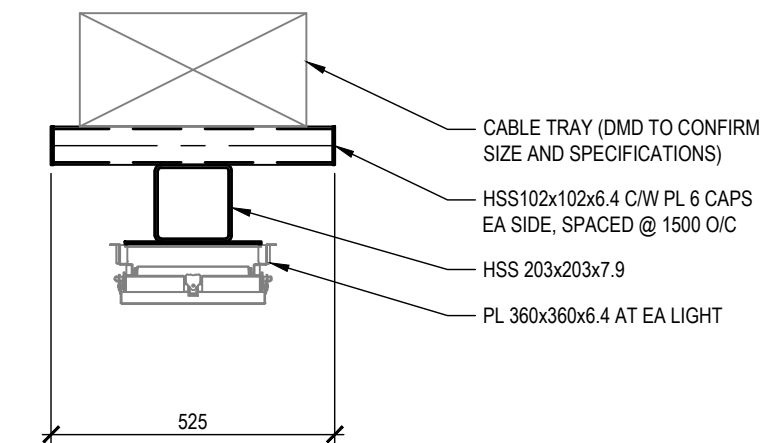
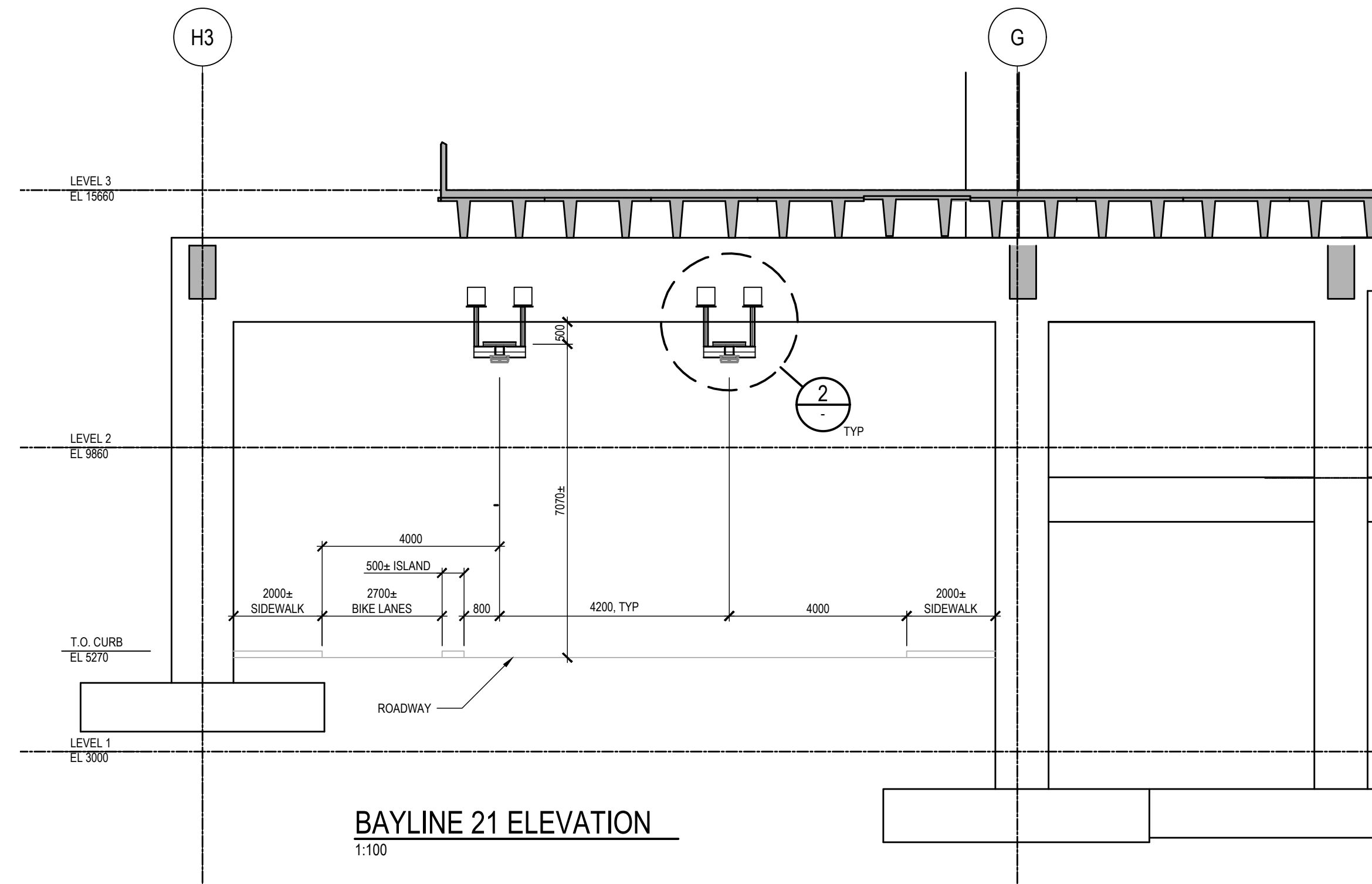
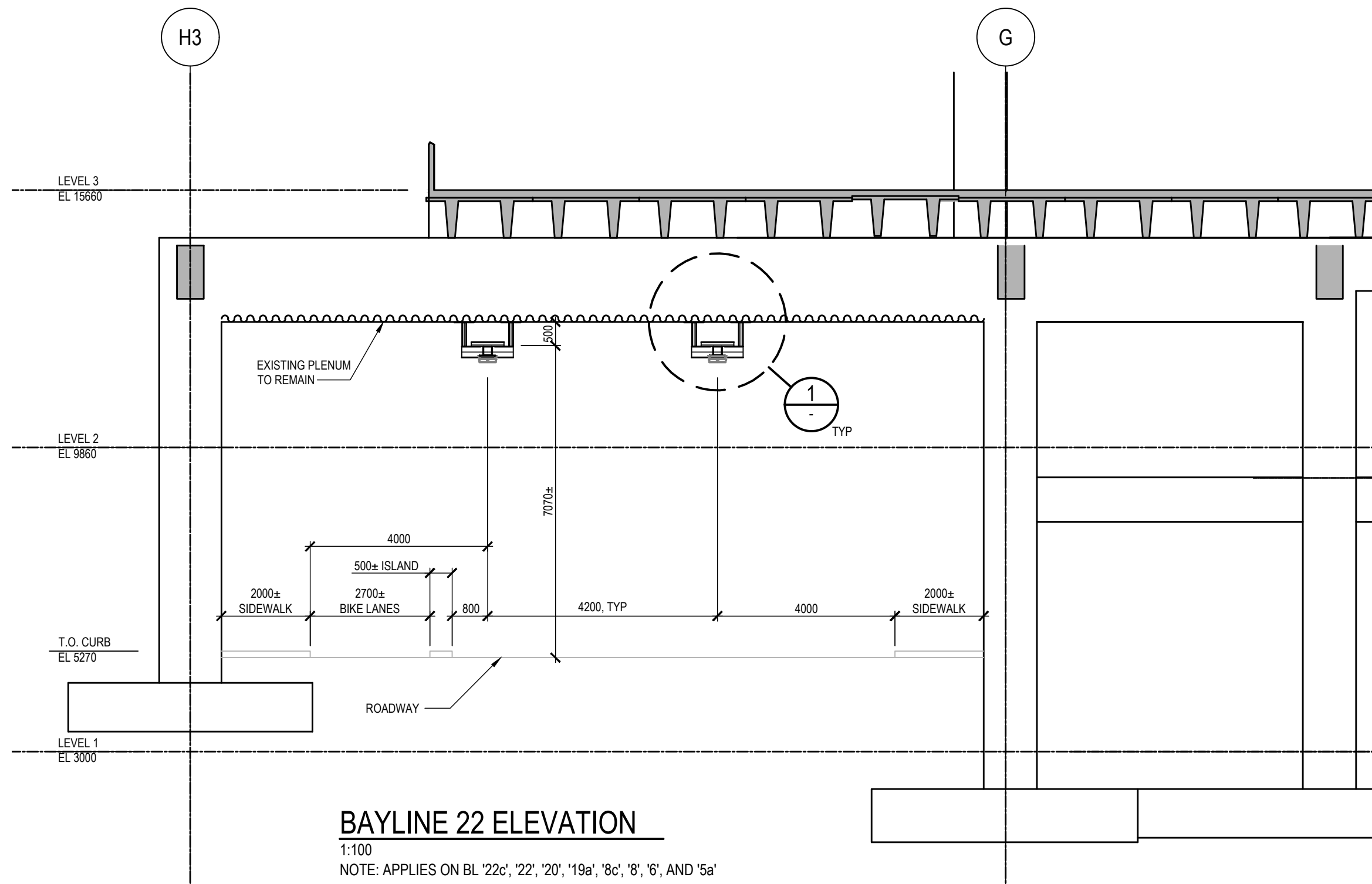
Prime Consultant
DMD & Associates Ltd.
#12-17358 104A Avenue
Surrey, BC, Canada V4N 5M3
www.dmdeng.com 604-589-9010
office@dmdeng.com Fax 604-589-9012

Sub-Consultant
wsp
Scale AS SHOWN
Drawn by HWIRM 2018-04-11
Designed by A. PATTERSON 2018-04-11
Checked by A. PATTERSON 2018-04-11
Approved by A. PATTERSON 2018-04-11

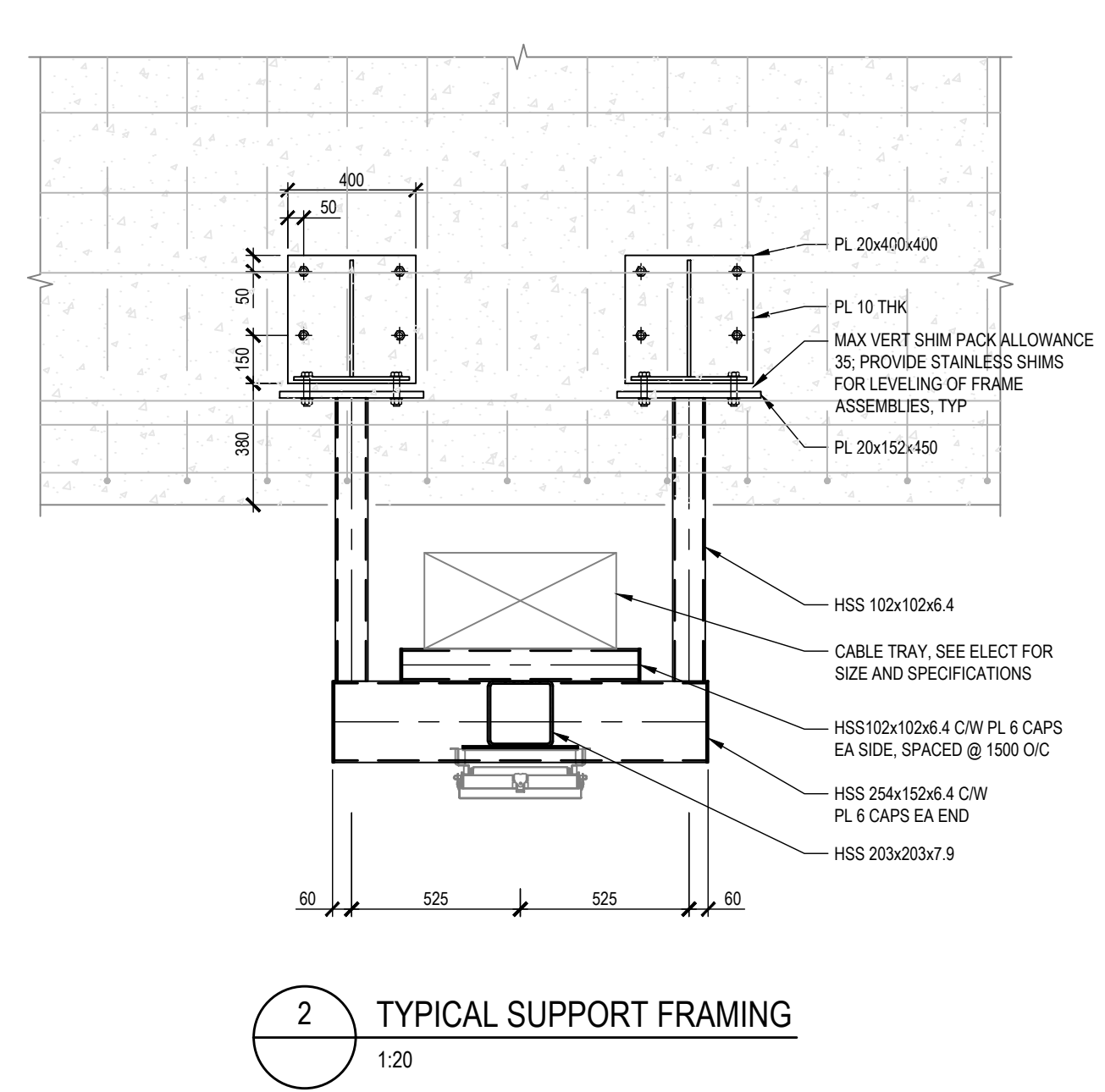
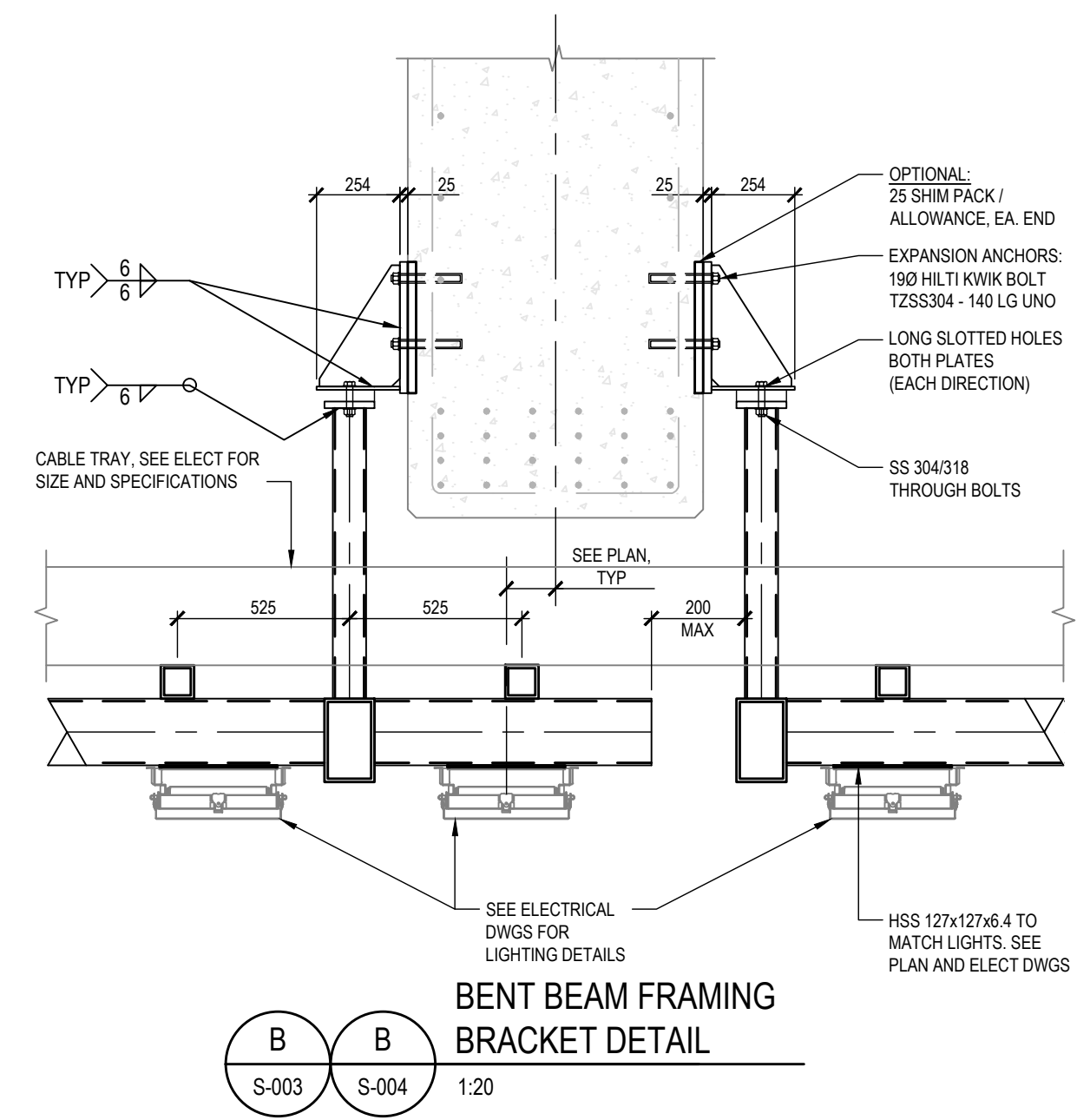
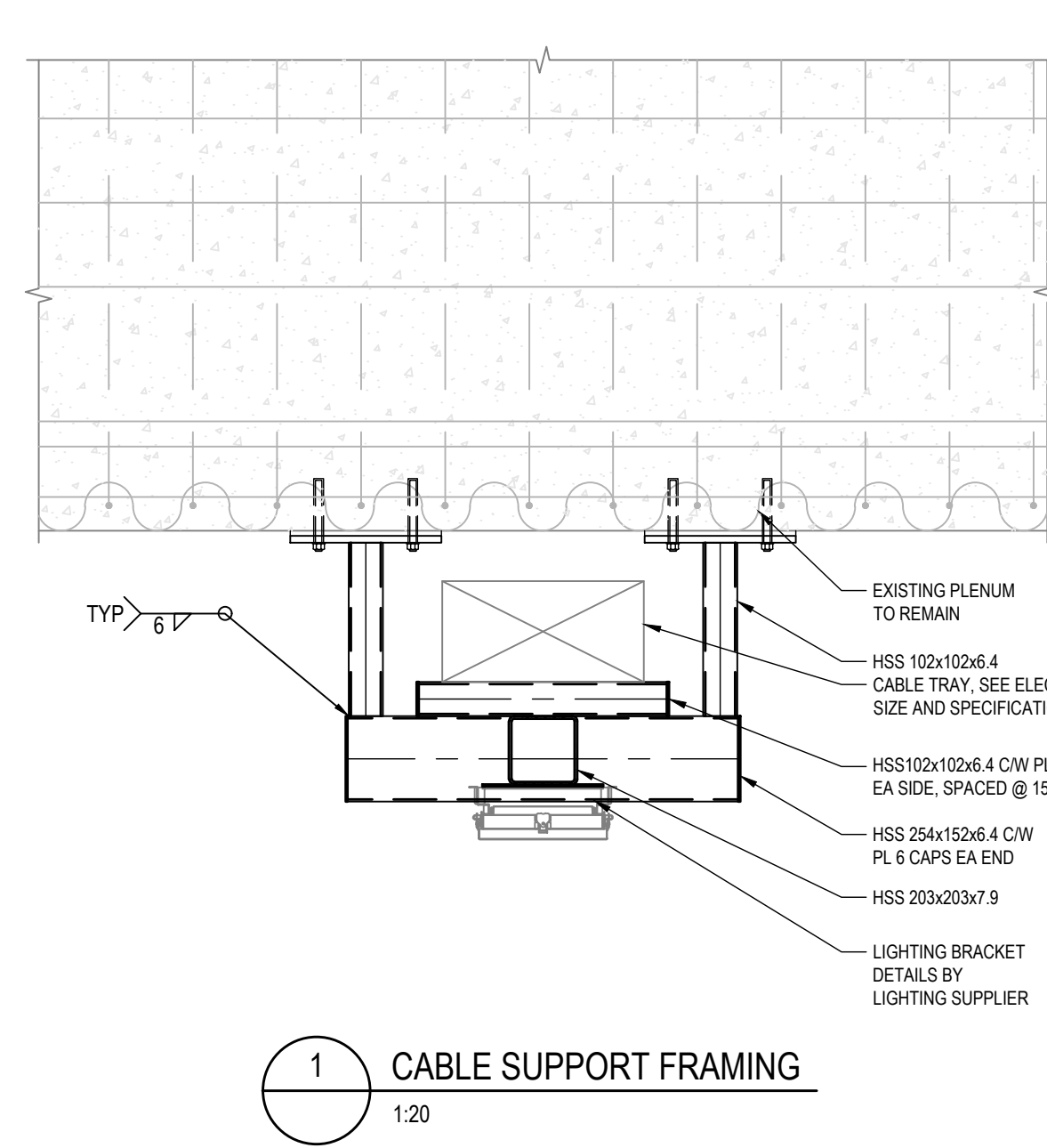
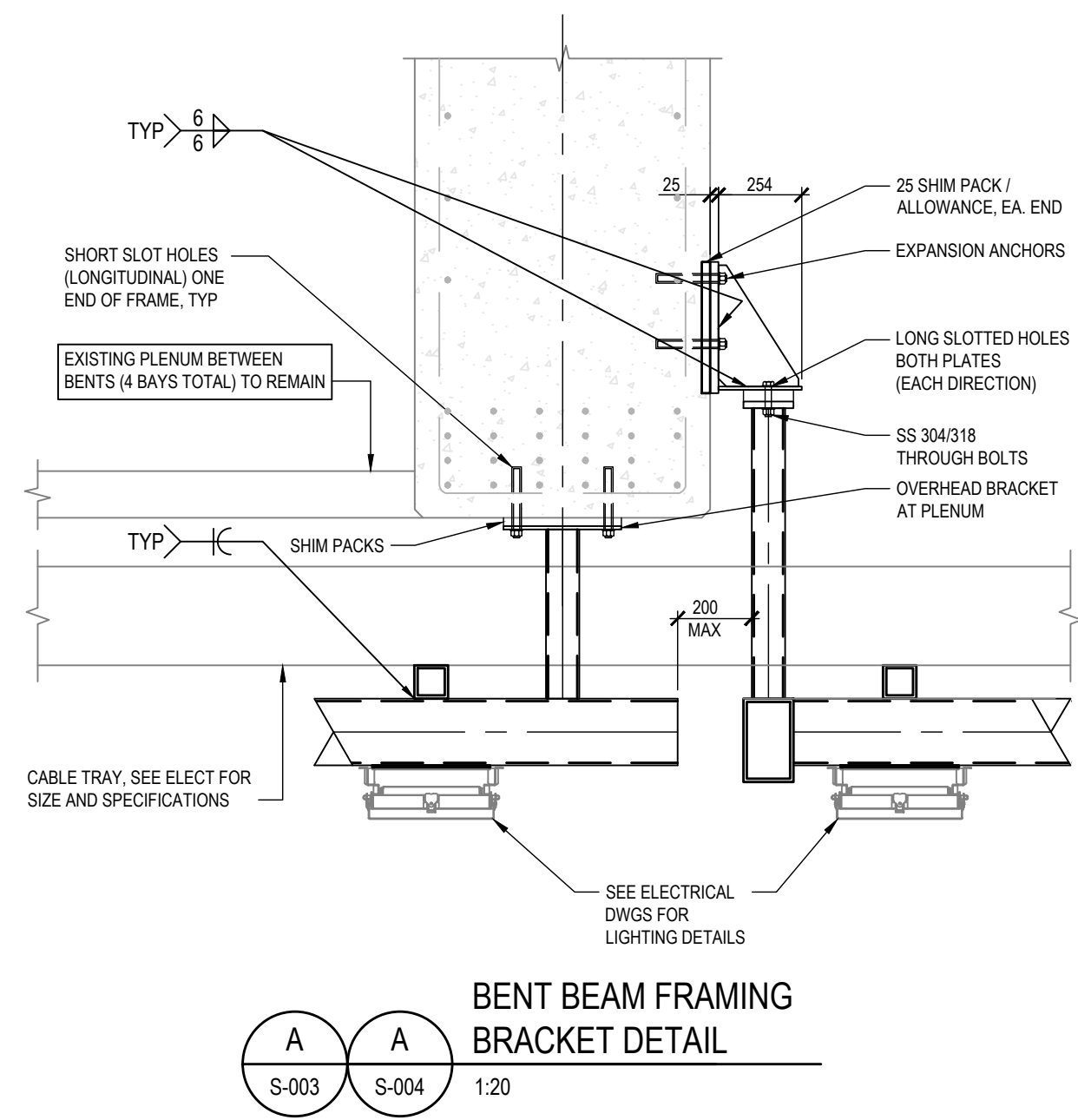
EXPO BOULEVARD TUNNEL LIGHTING
GATE H PLAN
VANCOUVER, BC
Drawing Number 171-08048-00 - S-004
Revision D

NOTES:

- CONTRACTOR TO SCAN BEAMS PRIOR TO FABRICATING PLATES (EXISTING CONCRETE).
- PRIOR TO DRILLING, CONTRACTOR TO PROVIDE SCANNING RESULTS/TEMPLATES TO THE ENGINEER FOR ANCHOR LAYOUT APPROVAL. DO NOT DRILL WITHOUT OBTAINING WRITTEN CONSENT OF THE ENGINEER.
- MATCH DRILL ALL MOUNTING PLATES TO SUIT THE LIGHT BRACKETS.
- THE CONTRACTOR SHALL PROVIDE ENGINEERED SHOP DRAWINGS FOR THE CABLE TRAY INSTALLATION AND SEISMIC RESTRAINT. SPACING OF HSS TRANSVERSE SUPPORT MEMBERS SHOWN ARE THE MAXIMUM SPACING AND THE CONTRACTOR ENGINEER SHOULD CONFIRM IF ADDITIONAL (TRANSVERSE) MEMBERS IS REQUIRED. IN ADDITION TO SEALED SHOP DRAWINGS, THE CONTRACTOR ENGINEER SHALL PROVIDE COV 2014 SCHEDULES B, C8 FOR CABLE TRAY INSTALL AND SEISMIC RESTRAINT.



3 TYPICAL LIGHTING SUPPORT
1:20



M:\171-08048-00 Expo Blvd Lighting\6 DOCUMENTS AND DRAWINGS\1 STRUCTURAL\2 CAD\S-005-2018-05-25 09:19 am.rvt.dwg

ATTENTION
This drawing is prepared for the sole use of The City of Vancouver. No representations of any kind are made by WSP|MM, its sub-consultants or its employees to any party with whom WSP|MM does not have a contract.

WARNING
THE SIZE, DEPTH AND LOCATION OF THE EXISTING OVERHEAD AND UNDERGROUND UTILITIES AND RESPECTIVE STRUCTURES SHOWN ARE APPROXIMATE AND ARE FOR GUIDANCE ONLY. THE COMPLETENESS OR ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY THE LOCATION OF THE FACILITIES PRIOR TO COMMENCING WORK, AND TO ADVISE THE CONSULTANT OF ANY POTENTIAL CONFLICT.

SURVEY INFORMATION

Professional Seal

Professional Seal

#	Date	Issue / Revision	Appr.
E	2018-05-24	ISSUED FOR TENDER	AP
D	2018-04-11	ISSUED FOR 98% REVIEW	AP
C	2018-02-06	ISSUED FOR PRICING REVIEW	AP
B	2017-07-31	ISSUED FOR 90% REVIEW SUBMISSION	AP
A	2017-06-13	ISSUED FOR 50% REVIEW SUBMISSION	AP



Prime Consultant
DMD & Associates Ltd.
#12-17358 104A Avenue
Surrey, BC, Canada V4N 5M3
www.dmdeng.com
office@dmdeng.com

Sub-Consultant
wsp
480 HOWE STREET, 1000
VANCOUVER, BC V6Z 2M6
TEL: 604-756-5551 FAX: 604-756-9351 WWW.WSP.COM

Scale: AS SHOWN

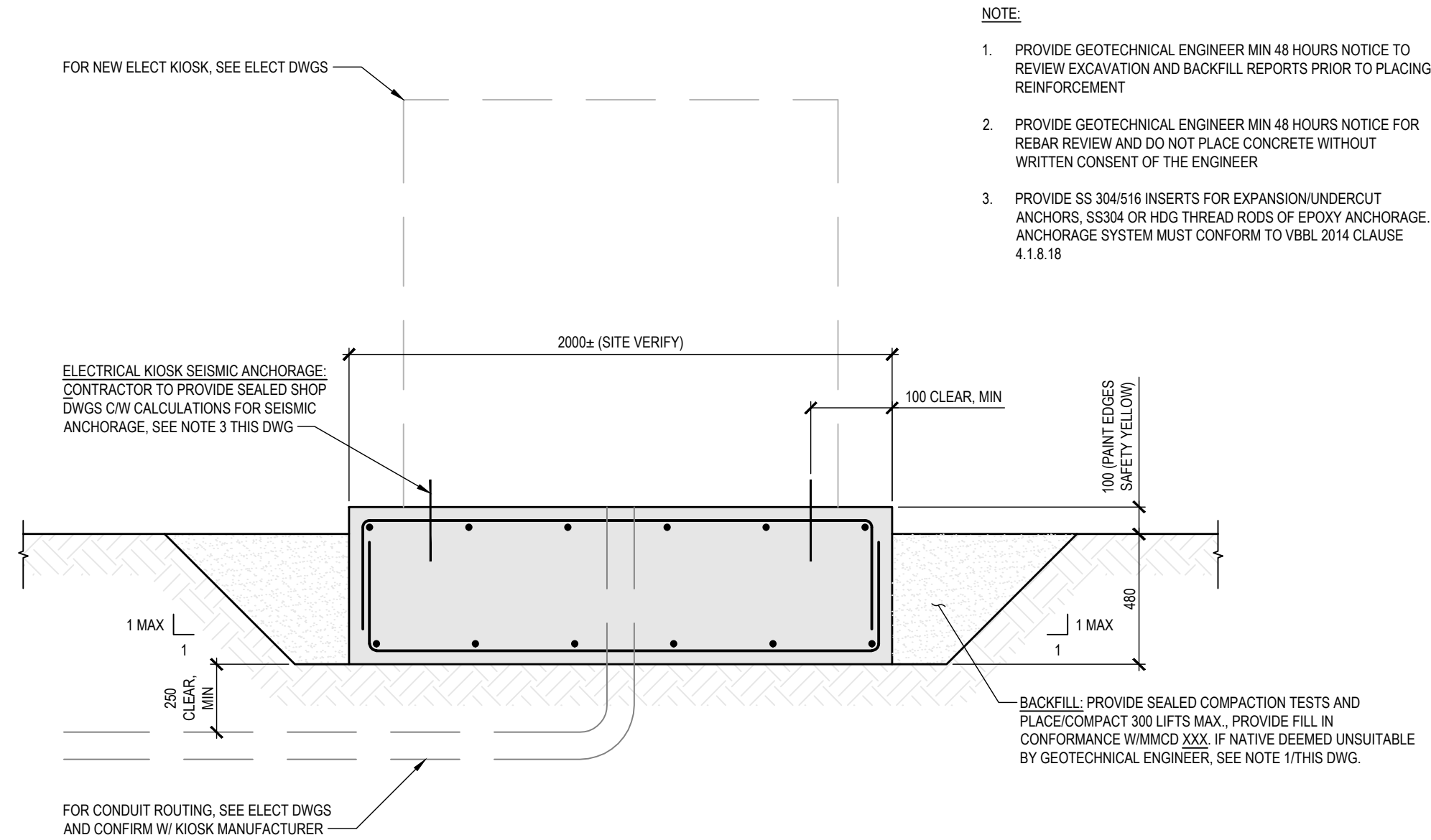
Drawn by	HWIRM	2018-04-11
Designed by	A. PATTERSON	2018-04-11
Checked by	A. PATTERSON	2018-04-11
Approved by	A. PATTERSON	2018-04-11

EXPO BOULEVARD TUNNEL LIGHTING ELEVATION, SECTION, AND DETAILS

VANCOUVER, BC

Drawing Number: 171-08048-00 - S-005
Revision: E

M:\1717-09048-00 Expo Blvd Lighting\5 DOCUMENTS AND DRAWINGS\1 STRUCTURAL\2 CAD\IS-005-006.dwg, S-006, 2018-05-25 09:19 am rod.mir



- NOTE:**
1. PROVIDE GEOTECHNICAL ENGINEER MIN 48 HOURS NOTICE TO REVIEW EXCAVATION AND BACKFILL REPORTS PRIOR TO PLACING REINFORCEMENT
 2. PROVIDE GEOTECHNICAL ENGINEER MIN 48 HOURS NOTICE FOR REBAR REVIEW AND DO NOT PLACE CONCRETE WITHOUT WRITTEN CONSENT OF THE ENGINEER
 3. PROVIDE SS 304/516 INSERTS FOR EXPANSION/UNDERCUT ANCHORS, SS304 OR HDG THREAD RODS OF EPOXY ANCHORAGE. ANCHORAGE SYSTEM MUST CONFORM TO VBBL 2014 CLAUSE 4.1.8.18

A ELECTRICAL KIOSK PAD FOOTING DETAIL
S-004 1:20

STEEL FRAMING SCHEDULE		
MARK	MEMBER	APPROXIMATE LENGTH (m)
1	HSS 203x203x7.9	14.255
2	N/A	N/A
3	HSS 203x203x7.9	13.667
4	N/A	N/A
5	HSS 203x203x7.9	16.259
6	HSS 203x203x7.9	14.768
7	HSS 203x203x7.9	15.492
8	HSS 203x203x7.9	14.427
9	HSS 203x203x7.9	11.339
10	N/A	N/A
11	HSS 203x203x7.9	10.666
12	N/A	N/A
13	HSS 203x203x7.9	14.825
14	HSS 203x203x7.9	13.609
15	HSS 203x203x7.9	6.784
16	HSS 203x203x7.9	6.207
17	HSS 203x203x7.9	6.565
18	HSS 203x203x7.9	6.055
19	HSS 203x203x7.9	6.508
20	HSS 203x203x7.9	6.120
21	HSS 203x203x7.9	13.984
22	HSS 203x203x7.9	13.349
23	HSS 203x203x7.9	8.700
24	HSS 203x203x7.9	8.700
25	HSS 203x203x7.9	11.985
26	HSS 203x203x7.9	11.902
27	HSS 203x203x7.9	11.902
28	HSS 203x203x7.9	11.893
29	HSS 203x203x7.9	8.700
30	HSS 203x203x7.9	8.700
31	HSS 203x203x7.9	13.996
32	HSS 203x203x7.9	13.360
33	HSS 203x203x7.9	6.343
34	HSS 203x203x7.9	6.081
35	HSS 203x203x7.9	6.402
36	HSS 203x203x7.9	6.504
37	HSS 203x203x7.9	6.535
38	HSS 203x203x7.9	6.220
39	HSS 203x203x7.9	14.388
40	HSS 203x203x7.9	13.633
41	HSS 203x203x7.9	10.909
42	N/A	N/A
43	HSS 203x203x7.9	10.236
44	N/A	N/A
45	HSS 203x203x7.9	15.698
46	HSS 203x203x7.9	14.370
47	HSS 203x203x7.9	16.014
48	HSS 203x203x7.9	14.766
49	HSS 203x203x7.9	15.293
50	N/A	N/A
51	HSS 203x203x7.9	15.581
52	N/A	N/A

NOTE:

1. SEE DWG S-005 FOR FRAME DETAILS/TRANSVERSE MEMBERS. THESE SCHEDULES ONLY DENOTES THE APPROXIMATE LENGTHS OF THE FRAMES.
2. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND DETAILS. IT IS INCUMBENT ON THE CONTRACTOR TO ENSURE FINAL CONNECTION PLATE SIZING FIELD FIT-UP (INCLUDING AVOIDING REBAR IN EXISTING SECTIONS).
3. THE LENGTHS SHOWN ON THIS TABLE INDICATE THE APPROXIMATE CLEAR SPANS BETWEEN THE BENT BEAMS. THE LONGITUDINAL MEMBERS PROJECT FURTHER AS DETAILED ON DWG S-005.

ATTENTION
This drawing is prepared for the sole use of The City of Vancouver. No representations of any kind are made by WSP/MMM, its sub-consultants or its employees to any party with whom WSP/MMM does not have a contract.

WARNING
THE SIZE, DEPTH AND LOCATION OF THE EXISTING OVERHEAD AND UNDERGROUND UTILITIES AND RESPECTIVE STRUCTURES SHOWN ARE APPROXIMATE AND ARE FOR GUIDANCE ONLY. THE COMPLETENESS OR ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY THE LOCATION OF THE FACILITIES PRIOR TO COMMENCING WORK, AND TO ADVISE THE CONSULTANT OF ANY POTENTIAL CONFLICT.

SURVEY INFORMATION

Professional Seal

Professional Seal

#	Date	Issue / Revision	Appr.
C	2018-05-24	ISSUED FOR TENDER	AP
B	2018-04-11	ISSUED FOR 98% REVIEW	AP
A	2018-02-06	ISSUED FOR PRICING REVIEW	AP



Prime Consultant

DMD & Associates Ltd.

#12-17358 104A Avenue
Surrey, BC, Canada V4N 5M3
604-589-9010
Fax 604-589-9012

www.dmdeng.com
office@dmdeng.com

Sub-Consultant

wsp

Scale: AS SHOWN

Drawn by	HW/RM	2018-04-11
Designed by	A. PATTERSON	2018-04-11
Checked by	A. PATTERSON	2018-04-11
Approved by	A. PATTERSON	2018-04-11

EXPO BOULEVARD TUNNEL LIGHTING ELECTRICAL KIOSK DETAIL

VANCOUVER, BC

Drawing Number: 171-08048-00 - S-006

Revision: C