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. ADHERE STRICTLY TO ALL REQUIREMENTS OF THE WORKERS' COMPENSATION BOARD OF BRITISH COLUMBIA. ALL TEMPORARY WORKS AND SHORING ETC. SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN BRITISH COLUMBIA.

3. ALL CODE REFERENCES ARE TO LATEST EDITIONS AS REFERENCED IN THE NATIONAL BUILDING CODE OF CANADA 2015.

4. REFER TO SPECIFICATIONS FOR ALL MATERIAL SPECIFICATIONS AND CODE REFERENCES.

FIELD REVIEW:

1. DEPARTMENTAL REPRESENTATIVE THROUGH CWMM CONSULTING ENGINEERS PROVIDES 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 PWGSC IN RECTIFYING THE WORK SHALL BE BORNE BY THE CONTRACTOR IN ACCORDANCE WITH THE CONTRACT.

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 INCOMPLETE WORK OR POORLY EXECUTED WORK, AS JUDGED BY THE DEPARTMENTAL REPRESENTATIVE, AS WELL AS ADDITIONAL DESIGN OR REMEDIAL WORK CAUSED BY DEVIATIONS FROM THESE DRAWINGS, MAY BE CHARGED TO THE CONTRACTOR.

4. A MINIMUM 24 HOURS NOTICE SHALL BE GIVEN TO THE DEPARTMENTAL REPRESENTATIVE BY THE CONTRACTOR FOR ANY INSPECTION TO BE CARRIED OUT.

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.
   - ARCHITECTURAL PRECAST CONCRETE AND ITS ATTACHMENTS.
   - ARCHITECTURAL GLASS BLOCKS AND THEIR ATTACHMENTS.
   - BRICK AND BLOCK VENEERS, THEIR REINFORCING IF ANY AND TIES
   - LANDSCAPING COMPONENTS SUCH AS BENCHES, LIGHT POSTS, PLANTERS, 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.
   - WINDOW WASHING EQUIPMENTS AND ITS ATTACHMENT.
   - ELEVATORS, ESCALATORS AND OTHER CONVEYING SYSTEMS, INCLUDING PROPRIETARY SUPPORT BEAMS AND THEIR ATTACHMENTS.
   - NON-STRUCTURAL MASONRY.

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.

DESIGN LOADS:

1. THIS STRUCTURE HAS BEEN DESIGNED FOR SNOW, WIND AND SEISMIC FORCES IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN THE NATIONAL BUILDING CODE OF CANADA 2015.
IMPORTANT CATEGORY = NORMAL

GROUND SNOW: Ss = 2.1 kPa
RAIN LOAD: Sr = 0.3 kPa

IMPORTANCE FACTORS FOR SNOW Is = 1.0 FOR STRENGTH
Is = 0.9 FOR SERVICEABILITY

WIND LOAD: PROBABILITY 1/50 = 0.63 kPa

IMPORTANCE FACTORS FOR WIND Iw = 1.0 FOR STRENGTH
Iw = 0.75 FOR SERVICEABILITY

EARTHQUAKE FACTORS:

Sa(0.2)	Sa(0.5)	Sa(1.0)	Sa(2.0)	Sa(5.0)	Sa(10.0)
1.3	1.16	0.676	0.399	0.125	0.044

PGA = 0.58
I_E = 1.0 FOR STRENGTH
I_E = 1.0 FOR SERVICEABILITY
(CLAUSE 4.1.8.13 FOR SERVICEABILITY)
F (0.2) = 0.69 F (0.5) = 0.57
R_d = 1.5 R_o = 1.3

SITE CLASS A

2. SPECIFIED UNIFORM SUPERIMPOSED DEAD LOADS ON ROOF AND FLOORS:

ROOF 0.75 kPa
MEZZANINE FLOOR 3.20 kPa
MAIN FLOOR 1.00 kPa

- UPPER FLOORS AND MAIN FLOOR LOADS INCLUDE GENERAL PARTITION LOAD OF 1.0kPa AND NON-STRUCTURAL CONCRETE TOPPING. FOR MASONRY PARTITIONS, ACTUAL WEIGHTS SHALL BE USED.
- THESE LOADS DO NOT INCLUDE SELFWEIGHT OF STRUCTURE, WEIGHT OF MASONRY PARTITIONS, WEIGHTS OF MECHANICAL EQUIPMENT AND CONCRETE EQUIPMENT PADS.

3. SPECIFIED UNIFORM LIVE LOADS ON FLOORS, U.N.O.:

MAIN FLOOR 4.8 kPa
MEZZANINE FLOOR 4.8 kPa
CATWALK 3.6 kPa

4. DESIGN SPECIFIED CONCENTRATED LIVE LOADS ON ROOF AND FLOORS, U.N.O.:

ROOF 1.3 kN
MAIN FLOOR 9.0 kN

5. WORST CASE OF UNIFORM OR CONCENTRATED LIVE LOADS WILL BE USED FOR DESIGN OF STRUCTURAL MEMBERS.

FOUNDATION AND SITE WORK

1. REFER TO GEOTECHNICAL REPORT PREPARED BY GOLDER ASSOCIATES DATED SEPTEMBER 05, 2017 AND ALL ITS SUPPLEMENT'S AND AMENDMENTS FOR EXCAVATION, BACKFILLING, FILL MATERIALS, COMPACTION, FROST PROTECTION AND OTHER SITE PREPARATION REQUIREMENTS NOTSHOWN ON THESE DRAWINGS.

2. DESIGN SOIL BEARING CAPACITIES:

STRIP FOOTINGS SLS =200 kPa ULS =300 kPa
SEISMIC ELEMENT FOOTING (UNDER FACTORED LOAD) 300 kPa

3. ANY FOOTING ELEVATIONS INDICATED ON THE DRAWINGS ARE GENERAL AND SHALL BE USED FOR ESTIMATING AND BIDDING PURPOSES. FOOTINGS MAY HAVE TO BE PLACED AT DIFFERENT ELEVATIONS AS A RESULT OF LOCAL SOILS CONDITIONS, UNDERGROUND SERVICES AND TO ACCOMMODATE OTHER MECHANICAL AND ELECTRICAL SERVICES. FOLLOW TYPICAL DETAILS SHOWN ON THESE DRAWINGS FOR FOOTING PLACEMENT RELATIVE TO ADJACENT FOOTINGS, SUMP AND OTHER EXCAVATED STRUCTURES AND LOCATE AS DIRECTED BY GEOTECHNICAL ENGINEER.

4. THE BASES OF FOUNDATIONS SHALL BE PROTECTED FROM RAIN, SNOW AND ANY WATER INFILTRATION.

5. NO FOUNDATIONS MAY BE POURED BEFORE THE BEARING MATERIAL HAS BEEN INSPECTED.

6. IMMEDIATELY AFTER INSPECTION AND APPROVAL BY THE DEPARTMENTAL REPRESENTATIVE, PROVIDE A MINIMUM 150mm THICK GRANULAR MATERIAL BELOW THE FOUNDATIONS AS PER GEOTECHNICAL REPORT.

7. COORDINATE CONSTRUCTION WITH UNDERSLAB SERVICES AS SHOWN ON MECHANICAL, ELECTRICAL, ARCHITECTURAL AND LANDSCAPING DRAWINGS.

8. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SITE DRAINAGE, GROUND ELEVATIONS AND DRAINAGE SLOPES.

9. CENTRE ALL FOOTINGS UNDER COLUMNS OR WALLS UNLESS NOTED OTHERWISE.

10. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR WATERPROOFING AND SEALING REQUIREMENTS.

CONCRETE REINFORCING:

1. REFER TO SPECIFICATIONS FOR CONCRETE STRENGTH, EXPOSURE CLASS & OTHER REQUIREMENTS.

2. REINFORCING BARS f_y=400 MPa. ALL DOWELS ANCHOR BOLTS AND INSERTS SHALL BE PLACED BEFORE THE CONCRETE IS POURED.

3. PROVIDE MINIMUM CONCRETE COVER TO REINFORCEMENT AS FOLLOWS:

CAST AGAINST EARTH 75mm
EXPOSED TO EARTH OR WEATHER: 50mm
ELSEWHERE: 40mm

4. MINIMUM EMBEDMENT LENGTHS FOR DOWELS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

BAR	EMBEDMENT LENGTH				
	20MPa	25MPa	30MPa	35MPa	40MPa
10M	350	300	300	300	300
15M	500	450	400	400	350
20M	650	600	550	500	450
25M	1000	900	850	800	750
30M	1200	1100	1000	950	850
35M	1400	1300	1150	1100	1000

* INCREASE LENGTHS BY 30% FOR BARS WITH DEPTH OF CONCRETE CAST BELOW GREATER THAN 300mm (TOP BARS).

5. MINIMUM SPLICE LENGTH SHALL BE CLASS B AS FOLLOWS, UNLESS NOTED OTHERWISE:

BAR	COMPRESSION SPLICE	TENSION SPLICE				
		20MPa	25MPa	30MPa	35MPa	40MPa
10M	350	450	450	400	400	400
15M	500	650	600	550	500	450
20M	600	850	750	700	650	600
25M	750	1300	1200	1100	1000	950
30M	900	1600	1400	1300	1200	1100
35M	1050	1850	1650	1500	1400	1300

* ALL SPLICES SHALL BE TENSION SPLICES.
* INCREASE LENGTHS BY 30% FOR BARS WITH DEPTH OF CONCRETE CAST BELOW GREATER THAN 300mm (TOP BARS).

STRUCTURAL STEEL

1. REFER TO SPECIFICATIONS FOR STEEL WORK, OPEN WEB STEEL JOISTS, STEEL DECK, DESIGN CODE REFERENCES AND OTHER REQUIREMENTS.

2. GRADES OF MATERIALS:

W SHAPES	350W
C SHAPES AND ANGLES	300W
HOLLOW STRUCTURAL STEEL (HSS)	350W, CLASS C
STRUCTURAL PIPE	ASTM A53, GRADE B
OTHER STRUCTURAL STEEL AND MISC. METAL	300W
BOLTS, NUTS AND WASHERS	ASTM A325
ANCHOR BOLTS	ASTM A307
STEEL DECKING	CSSBI 101M, GRADE A
STEEL STUD	CSA - W59, APP. H

3. DRAWINGS FROM ALL CONSULTANTS SHALL BE EXAMINED FOR EXACT LOCATIONS, DIMENSIONS AND ELEVATIONS.

4. STEEL FABRICATORS AND CONTRACTOR SHALL CONFIRM ALL LOCATIONS, DIMENSIONS AND ELEVATIONS WITH ACTUAL SITE MEASUREMENTS BEFORE FABRICATION.
THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY FABRICATION AND WORK DONE PRIOR TO REVIEW AND APPROVAL OF THE SHOP DRAWINGS.

5. CONCRETE TOPPED STEEL DECK:

STEEL DECKING SHALL BE DESIGNED BY THE MANUFACTURER FOR WEIGHT OF WET CONCRETE AND OTHER RELEVANT LOADS IN CONNECTION WITH THE CONCRETING OPERATIONS.

UNLESS NOTED OTHERWISE, CONCRETE TOPPING SHALL BE REINFORCED WITH WWM152x152xMW9.1/MW9.1 LOCATED 25mm FROM TOP OF SLAB AND SPLICED TWO CROSS WIRES PLUS 50mm.

6. DECK EDGE AND CHORD MEMBERS:

ALL EDGES OF STEEL DECKING SHALL BE SUPPORTED BY EDGE ANGLES FASTENED TO MAIN STRUCTURAL MEMBERS, UNLESS NOTED OTHERWISE, USE L100x100x6 AT FLOORS AND L75x75x6 AT ROOFS.

UNLESS NOTED OTHERWISE, ALL MEMBERS DESIGNATED AS DIAPHRAGM CHORD MEMBERS AND ALL PERIMETER EDGE ANGLES SHALL BE CONNECTED BY FULL STRENGTH GROOVE WELDS OR BY FULL STRENGTH SPLICE PLATES ON EACH LEG TO FORM CONTINUOUS COMPRESSION AND TENSION MEMBERS. WELD EDGE ANGLES AND CHORDS TO BEAMS, JOISTS AND SHEAR CONNECTORS AND WELD DECK TO ANGLE CHORDS AND STRUCTURAL MEMBERS AS SHOWN ON DRAWINGS OR AS DETAILED BY DECKING CONTRACTOR.

STRUCTURAL DRAWING LIST (STEEL OPTION)	
SS101	GENERAL NOTES
SS102	GENERAL NOTES & TYPICAL DETAILS
SS103	TYPICAL DETAILS
SS201	FOUNDATION AND GROUND FLOOR PLAN
SS202	MEZZANINE PLAN & ROOF PLAN
SS301	SECTIONS & DETAILS SHEET 1
SS302	SECTIONS & DETAILS SHEET 2
SS303	SECTIONS & DETAILS SHEET 3
SS304	BRACE ELEVATIONS & DETAILS
SS305	CRANE MAINTENANCE CATWALK PLAN & SECTIONS

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada
REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

CHERNOFF THOMPSON ARCHITECTS

CWMM CONSULTING ENGINEERS LTD.

PROVINCE OF BRITISH COLUMBIA
Y. W. P. LAM
PROFESSIONAL ENGINEER
14656
DESIGNATED STRUCTURAL ENGINEER
Mar 8, 2019

Revision/ Revision	Description/Description	Date/Date
5		
4		
3		
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1		
0	ISSUED FOR TENDER	MAR. 08 2019

Client/client

Project title/Titre du projet
5071 WEST SAANICH ROAD
VICTORIA, BC, CANADA

NRC HERZBERG ASTRONOMY AND ASTROPHYSICS ATP INTEGRATION FACILITY

Consultant Signature Only

Designed by/Concept par
PL / SZ

Drawn by/Dessine par
LH

PWGSC Project Manager/Administrateur de Projets TPSGC
PATRICK TRUONG

Regional Manager, Architectural and Engineering Services Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

GENERAL NOTES

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.077596.001	SS101 OF XX	0

12715
12357

PWGSC – A1 – 841X594

0 10 20 30 40 50 60 70 80 90 100mm

DM5XXXXXX

MASONRY

1. UNLESS NOTED OTHERWISE, REFER TO SPECIFICATION FOR MASONRY REQUIREMENT MATERIALS AND WORK SHALL CONFORM AS FOLLOWS:

   CONCRETE MASONRY: EXTERIOR LOAD-BEARING MASONRY CONFORMING TO CSA-A165, CLASSIFICATION H/15/A/M.

2. UNLESS NOTED OTHERWISE REINFORCE 200 MASONRY WALLS AS FOLLOWS:

   VERTICAL: 1-15M @ 800 CENTERED IN GROUTED CORE
   HORIZONTAL: 3.8mm DIA. LADDER JOINT REINF. @ 400
   2-15M IN CONTINUOUS BOND BEAMS AS SHOWN BELOW:
   H<2400: 1 BOND BEAM AT TOP OF WALL
   2400<H<4800: 1 BOND BEAM AT TOP OF WALL PLUS 1 BOND BEAM MIDHEIGHT (OVER WALL OPENINGS)
   (H = CLEAR HEIGHT OF WALL)
   ADDITIONAL: 1-15M VERT. AT UNSUPPORTED ENDS OF WALLS
   1-15M VERT. AT ALL CORNERS AND INTERSECTIONS
   1-15M VERT. AT EACH SIDE OF OPENINGS
   1-15M VERT. IN EACH CELL OF PIERS AND PILASTERS
   2-15M ABOVE AND BELOW ALL OPENINGS, 800 PAST EDGE.
   (MAY BE PART OF CONTINUOUS BOND BEAMS)

3. UNLESS NOTED OTHERWISE SPLICE REINFORCING AND EMBED DOWELS AS FOLLOWS:

   DOWEL EMBEDMENT (INCL. LENGTH OF HOOK): 25M BARS: 800; 20M BARS: 500; 15M BARS: 400; 10M BARS: 300
   SPLICES: 25M BARS: 1500; 20M BARS: 900; 15M BARS: 650; 10M BARS: 450; WIRE REINF: 300

4. ALL VERTICAL REINFORCING SHALL RUN CONTINUOUS THROUGH BOND BEAMS AND LINTELS OR BE SPLICED AS SPECIFIED.

5. STRAIGHT OR HOOKED DOWELS SHALL BE PROVIDED IN FOUNDATIONS OR GRADE BEAMS TO MATCH ALL VERTICAL REINFORCING BARS. SPLICE LENGTH AS SPECIFIED.

6. NOTIFY THE DEPARTMENTAL REPRESENTATIVE MINIMUM 24 HOURS PRIOR TO ANY GROUT POUR.

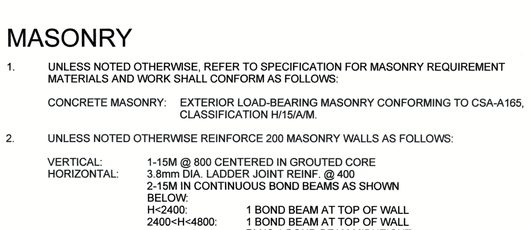
7. CELLS TO BE REINFORCED SHALL BE KEPT CLEAR OF MORTAR.

8. FILL CELLS CONTAINING REINFORCING STEEL OR ANCHOR BOLTS WITH 20MPa GROUT, 10mm AGGREGATE, 200-250 SLUMP. PUDDLE OR VIBRATE TO COMPLETELY FILL CELLS. REVIBRATE AFTER 10 TO 40 MINUTES, WHEN EXCESS WATER HAS BEEN ABSORBED BY MASONRY UNITS. TOP OFF FILLED CORES WITH FRESH GROUT AFTER REVIBRATION.

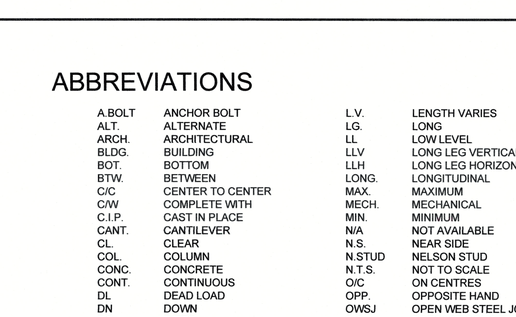
9. HEIGHT OF LIFTS SHALL COMPLY WITH CAN3-A371.

ABBREVIATIONS

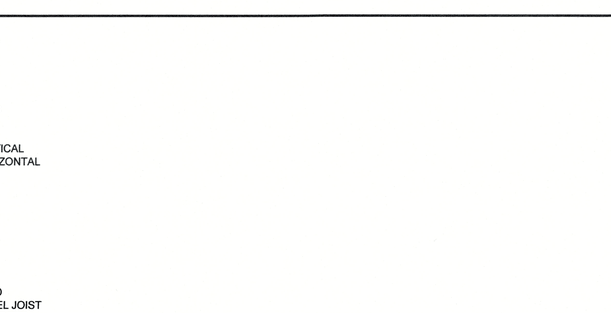
A.BOLT	ANCHOR BOLT	L.V.	LENGTH VARIES
ALT.	ALTERNATE	LG.	LONG
ARCH.	ARCHITECTURAL	LL	LOW LEVEL
BLDG.	BUILDING	LLV	LONG LEG VERTICAL
BOT.	BOTTOM	LLH	LONG LEG HORIZONTAL
BTW.	BETWEEN	LONG.	LONGITUDINAL
C/C	CENTER TO CENTER	MAX.	MAXIMUM
C/W	COMPLETE WITH	MECH.	MECHANICAL
C.I.P.	CAST IN PLACE	MIN.	MINIMUM
CANT.	CANTILEVER	N/A	NOT AVAILABLE
CL.	CLEAR	N.S.	NEAR SIDE
COL.	COLUMN	N.STUD	NELSON STUD
CONC.	CONCRETE	N.T.S.	NOT TO SCALE
CONT.	CONTINUOUS	O/C	ON CENTRES
DL	DEAD LOAD	OPP.	OPPOSITE HAND
DN	DOWN	OWSJ	OPEN WEB STEEL JOIST
DO.	DITTO	P.C.	PRECAST CONCRETE
DP.	DEEP	PL	PLATE
DWG.	DRAWING	PLY.	PLYWOOD
E.W.	EACH WAY	PROJ.	PROJECTION
E.F.	EACH FACE	R/W	REINFORCED WITH
ELEC.	ELECTRICAL	R/C	REINFORCED CONCRETE
ELEV.	ELEVATION	S.O.G.	SLAB ON GRADE
EXIST.	EXISTING	SIM.	SIMILAR
EXT.	EXTERIOR	STAGG.	STAGGERED
FL	FLOOR	T&B	TOP AND BOTTOM
F.S.	FOOTING STEP	T&G	TONGUED & GROOVED
FDN.	FOUNDATION	T.O.C/S	TOP OF CONCRETE/STEEL
FTG.	FOOTING	THK.	THICK
G.L.	GRID LINE	TJ	TIE JOIST
GALV.	GALVANIZED	TRAN.	TRANSVERSE
H1E	HOOK ONE END	TYP.	TYPICAL
H2E	HOOK TWO ENDS	U/S	UNDERSIDE
HL	HIGH LEVEL	U.N.O.	UNLESS NOTED OTHERWISE
HORIZ.	HORIZONTAL	VERT.	VERTICAL
INT.	INTERIOR		



RELATIVE ELEVATIONS OF ADJACENT FOOTING

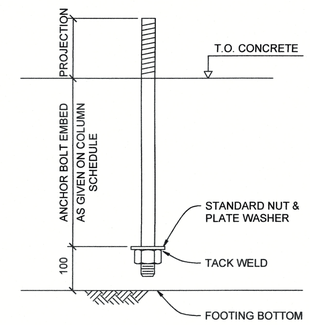


STEPPED STRIP FOOTING

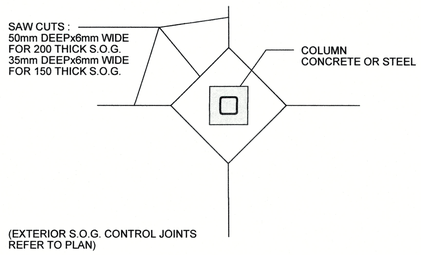


TYPICAL WALL INTERSECTION PLAN DETAILS

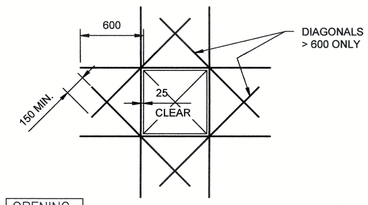
DETAILS FOR SINGLE AND DOUBLE CURTAINS ARE SIMILAR



TYPICAL ANCHOR BOLT DETAIL

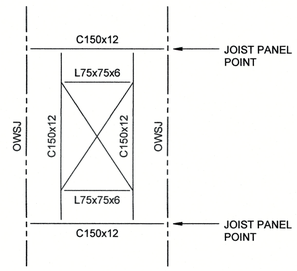


INTERIOR SLAB ON GRADE CONTROL JOINTS AT COLUMN



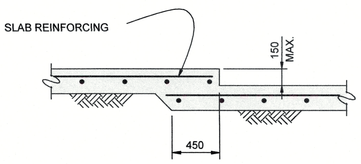
OPENING SIZE	
300 TO 450	1-15M EACH SIDE
450 TO 600	1-15M T & B EACH SIDE
> 600	1-20M T & B EACH SIDE, 1-15M DIAGONALS

CONCRETE WALL AND SLAB OPENINGS

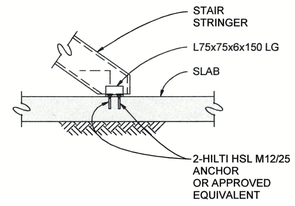


DECK OPENINGS > 450 SQUARE

SIZE OF OPENING TO BE CONFIRMED BY TRADE REQUIRING SAME PRIOR TO FABRICATION



CONCRETE DEPRESSION IN SLAB ON GRADE



BOTTOM STEEL STRINGER DETAIL

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

CHERNOFF THOMPSON ARCHITECTS

CWMM CONSULTING ENGINEERS LTD.

PROVINCE OF BRITISH COLUMBIA
Y. W. P. LAM
PROFESSIONAL ENGINEER
14686
DESIGNATED STRUCTURAL ENGINEER
MAR 8, 2019

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Revision/ Revision	Description/Description	Date/Date

Client/client

Project title/Titre du projet
5071 WEST SAANICH ROAD
VICTORIA, BC, CANADA

NRC HERZBERG
ASTRONOMY AND ASTROPHYSICS
ATP INTEGRATION FACILITY

Consultant Signature Only

Designed by/Concept par
PL / SZ

Drawn by/Dessine par
LH

PWGSC Project Manager/Administrateur de Projets TPSGC
PATRICK TRUONG

Regional Manager, Architectural and Engineering Services
Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin

GENERAL NOTES & TYPICAL DETAILS

12715
12357

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
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PWGSC – A1 – 841X594

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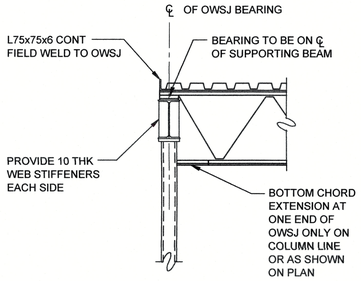
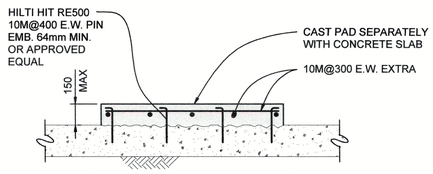


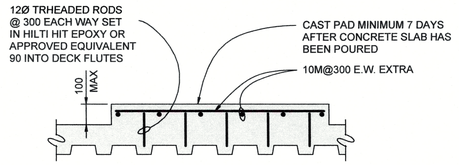
EXTERIOR JOIST/BEAM/COLUMN DETAIL

ALLOW NOMINAL 3" FOR OWSJ SEAT



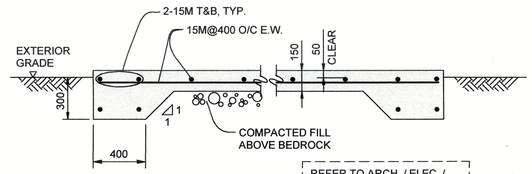
(FOR LOCATION AND SIZE OF PADS AND ANCHOR BOLTS FOR EQUIPMENT SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS)

TYPICAL EQUIPMENT PADS ON CONCRETE SLAB ON GRADE

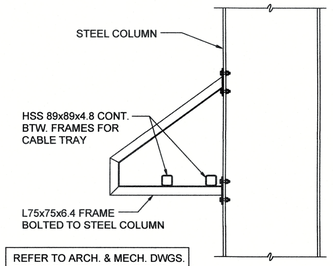


(FOR LOCATION AND SIZE OF PADS AND ANCHOR BOLTS FOR EQUIPMENT SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS)

TYPICAL EQUIPMENT PADS ON CONCRETED STEEL DECK

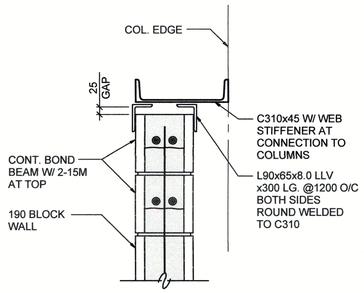


TYPICAL EXTERIOR CONCRETE PAD FOR EQUIPMENTS



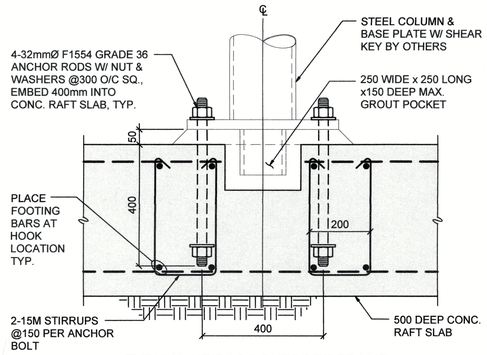
TYPICAL STEEL SUPPORT DETAIL FOR CABLE TRAY

1:25



TYPICAL FOR BLOCK WALL TOP RESTRAINT DETAIL

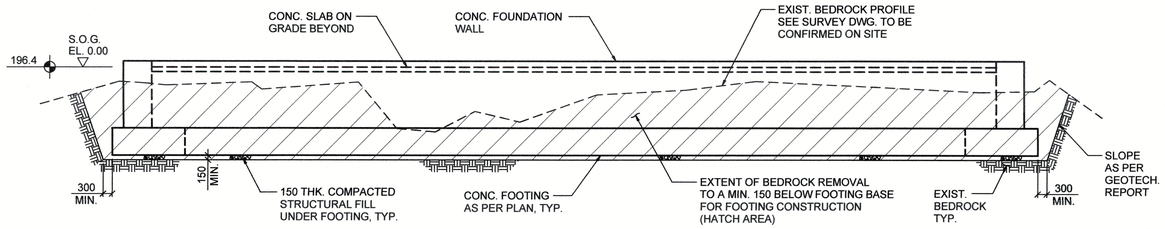
1:10



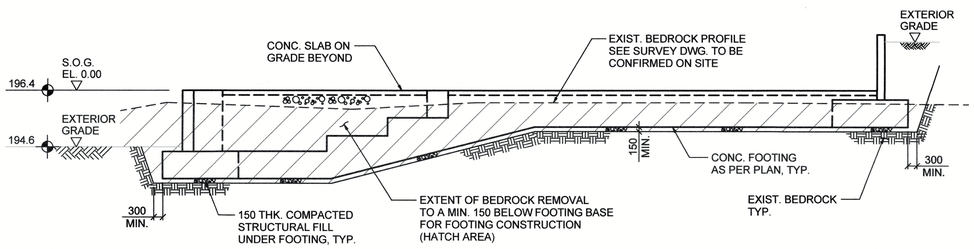
TYPICAL NFIRAOS SUPPORT FRAME COLUMN BASE ANCHOR BOLT DETAIL

1:10

TYPICAL FOR 6 COLUMNS

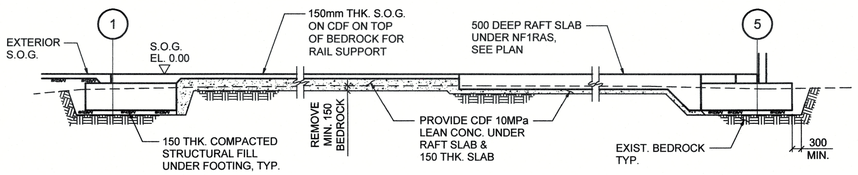


SOUTH SIDE FOOTING ALONG E - W DIRECTION (NORTH SIDE SIMILAR)



WEST SIDE FOOTING ALONG E - W DIRECTION (EAST SIDE SIMILAR)

TYPICAL DETAIL SHOWING BEDROCK REMOVAL FOR FOOTING CONSTRUCTION



TYPICAL BASE PREPARATION FOR RAFT SLAB UNDER NF1RAS & 150 THK. SLAB ON GRADE FOR RAIL SUPPORT.

PROVIDE SLEEVES TO UNDERGROUND PIPINGS INSIDE CDF AS REQUIRED

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PROFESSIONAL ENGINEER
14686
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MAR 8 2019

Revision/Revision	Description/Description	Date/Date
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3		
2		
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5071 WEST SAANICH ROAD
VICTORIA, BC, CANADA

NRC HERZBERG
ASTRONOMY AND ASTROPHYSICS
ATP INTEGRATION FACILITY

Consultant Signature Only

Designed by/Concept par
PL / SZ

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LH

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PREETIPAL PAUL

Drawing title/Titre du dessin

TYPICAL DETAILS

Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
R.077596.001	SS103 OF XX	0

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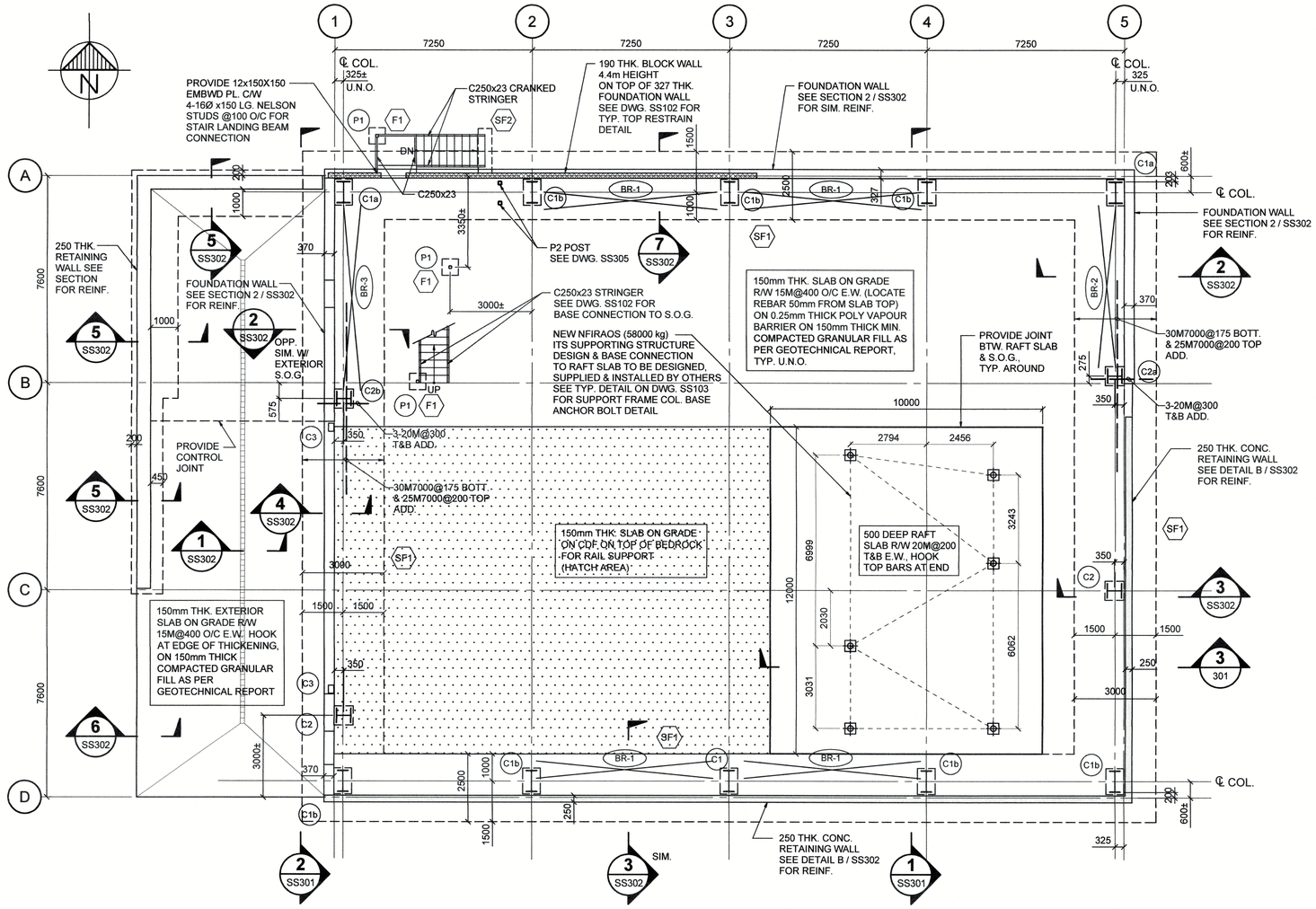

FOUNDATION & GROUND FLOOR PLAN

1:100

LEGEND:

- C1 — DENOTES STEEL COLUMN TYPE, SEE SCHEDULE ON THIS DWG.
- F1 — DENOTES CONC. FOOTING TYPE, SEE SCHEDULE ON THIS DWG.
- BR-1 — DENOTES STEEL CROSS BRACING TYPE SEE DWG. SS304 FOR ELEVATION
- BR-2 — DENOTES STEEL CROSS BRACING TYPE SEE DWG. SS304 FOR ELEVATION
- BR-3 — DENOTES STEEL CROSS BRACING SEE SECTION 2 ON DWG. SS301
- P1 — DENOTES HSS 102X102x6.4 POST C/W 16x300x300 BASE PL. C/W 4-16Ø ANCHOR BOLTS @200 O/C EMBED 150mm INTO CONC. PILASTER BELOW PROVIDE 300x300 CONC. PILASTER R/W 4-20M VERT. & 10M TIES @300
- DENOTES SLAB EXTENT FOR RAIL SUPPORT, DESIGN UNIFORM LIVE LOAD = 12 kPa CONCENTRARED LIVE LOAD = 87.5 kN (OVER 250x600mm) SEE TYP. DETAIL ON DWG. SS103 FOR BASE PREPARTION

NOTES:

1. REFER TO DWG. SS103 FOR TYP. DETAIL SHOWING BEDROCK REMOVAL FOR FOOTING CONSTRUCTION.
2. REFER TO DWG. SS103 FOR TYP. BASE PREPARATION FOR RAFT SLAB UNDER NF1RAS & 150 THK. SLAB ON GRADE FOR RAIL SUPPORT.
3. REFER TO DWG. SS102 FOR ANCHOR BOLT BASE DETAIL.

COLUMN SCHEDULE

TYPE	SIZE	PEDESTAL UNDER	BASE PLATE	REMARK
C1	WWF 800x253	650 x 950 CONC. PEDESTAL R/W 8-20M VERT. & 10M@300 TIES W/ 2-10M TIES AT TOP	25 x 400 x 800 PLATE C/W 6-25Ø ANCHOR BOLTS EMBED 300mm MIN. INTO CONC. PILASTER	
C1a	WWF 800x300	650 x 950 CONC. PEDESTAL R/W 8-25M VERT. & 10M@200 TIES W/ 2-10M TIES AT TOP	40 x 500 x 800 PLATE C/W 8-25Ø ASTM193 B7 ANCHORS EMBED TO BOTTOM OF CONC. FTG. PROVIDE 25mm THK. MIN.CONNECTION PLATE FOR BRACING LOCATIONS	CONNECTION PLATE WELDED TO BASE PLATE
C1b	WWF 800x253	650 x 950 CONC. PEDESTAL R/W 8-25M VERT. & 10M@200 TIES W/ 2-10M TIES AT TOP	30 x 500 x 800 PLATE C/W 8-25Ø ANCHORS EMBED TO BOTTOM OF CONC. FTG. PROVIDE 25mm THK. MIN.CONNECTION PLATE FOR BRACING LOCATIONS	CONNECTION PLATE WELDED TO BASE PLATE
C2	WWF 550x280	700 x 700 CONC. PEDESTAL R/W 8-20M VERT. & 10M@300 TIES W/ 2-10M TIES AT TOP	25 x 550 x 550 PLATE C/W 6-25Ø ANCHOR BOLTS EMBED 300mm MIN. INTO CONC. PILASTER	
C2a	WWF 550x280	700 x 700 CONC. PEDESTAL R/W 8-25M VERT. & 10M@200 TIES W/ 2-10M TIES AT TOP	40 x 550 x 550 PLATE C/W 8-25Ø ASTM193 B7 ANCHORS EMBED TO BOTTOM OF CONC. FTG. PROVIDE 25mm THK. MIN. CONNECTION PLATE FOR BRACING LOCATIONS	CONNECTION PLATE WELDED TO BASE PLATE
C2b	WWF 550x420	700 x 700 CONC. PEDESTAL R/W 8-25M VERT. & 10M@200 TIES W/ 2-10M TIES AT TOP	40 x 550 x 550 PLATE C/W 8-25Ø ASTM193 B7 ANCHORS EMBED TO BOTTOM OF CONC. FTG. PROVIDE 25mm THK. MIN. CONNECTION PLATE FOR BRACING LOCATIONS	CONNECTION PLATE WELDED TO BASE PLATE
C3	HSS305x203x13		20 x 350 x 450 PLATE C/W 4-20Ø ANCHOR BOLTS EMBED 300mm MIN. INTO CONC. BASE	

FOOTING SCHEDULE

TYPE	SIZE (mm) (LENGTH x WIDTH x DEPTH)	REINFORCING	REMARK
F1	600 x 600 x 250 DEEP	3-15M E.W. BOTTOM	
SF1	900 DP.	25M@200 T&B LONG (i.e. ALONG G.L. 1, 5, A & D) & C20M@300 T&B TRANS. (HOOK ALTERNATIVELY) + ADD. BARS SHOWN ON PLAN	SEE PLAN FOR FOOTING WIDTH
SF2	500 WIDE x 500 DEEP	3-15M T&B LONG.	

FOOTING & CONCRETE NOTES:

1. ALL FOOTING, RAFT SLAB & SLAB-ON-GRADE SHALL BE SUPPORTED ON 150mm MIN. THK. STRUCTURAL FILL PLACED OVER BEDROCK. CONTRACTOR SHALL EXCAVATE SOIL DOWN TO BED ROCK AS REQUIRED. REFER TO GEOTECHNICAL REPORT FOR BASE PREPARATION.
2. PROVIDE FOOTING STEPS AS REQUIRED FOR FOOTING ALONG G.L. 1 & 5 TO SUIT EXIST. GROUND & BEDROCK PROFILE. REFER TO TYP. DETAIL ON DWG. SS102 FOR STEPPED STRIP FOOTING DETAIL.
3. CONCRETE PROPERTIES:

MEMBER	MINIMUM 28-DAYS STRENGTH (MPa)	MAXIMUM AGGREGATE SIZE (mm)	EXPOSURE CLASS	AIR CONTENT CATEGORY
FOOTINGS & PILASTERS	25	25	F-2	2
INTERIOR SLAB ON GRADE	25	20	N	-
SLAB ON GRADE - EXTERIOR	32	20	C-2	1

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PROFESSIONAL ENGINEER
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MAR 8, 2019

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5071 WEST SAANICH ROAD
VICTORIA, BC, CANADA

NRC HERZBERG ASTRONOMY AND ASTROPHYSICS ATP INTEGRATION FACILITY

Consultant Signature Only

Designed by/Concept par: PL / SZ
Drawn by/Dessine par: LH
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Regional Manager, Architectural and Engineering Services Gestionnaire régionale, Services d'architectural et de génie, TPSGC: PREETIPAL PAUL

Drawing title/Titre du dessin

FOUNDATION & GROUND FLOOR PLAN

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R.077596.001	SS201 OF XX	0

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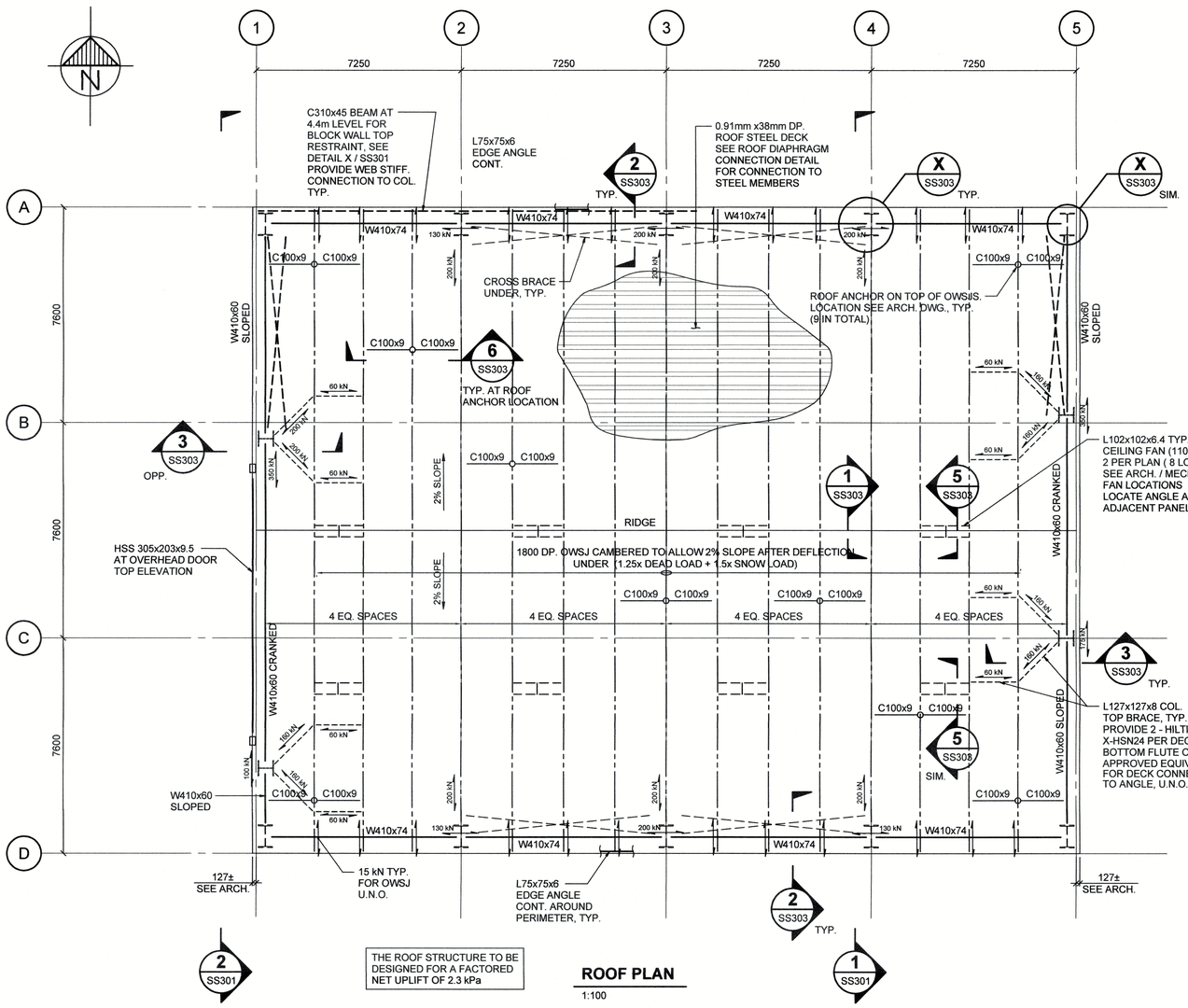


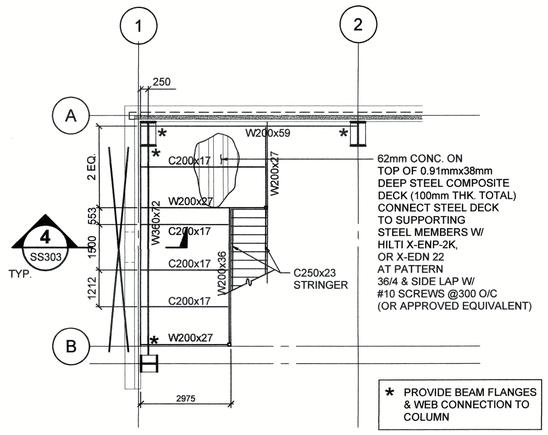
ROOF PLAN
1:100

THE ROOF STRUCTURE TO BE DESIGNED FOR A FACTORED NET UPLIFT OF 2.3 kPa

LEGEND:

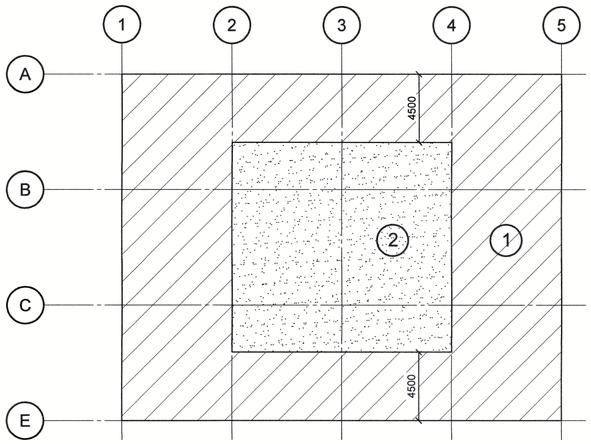
DENOTES CROSS BRACING UNDER

200 kN — DENOTES CONNECTION FORCE FOR DESIGN OF OWSJ MEMBER & ITS CONNECTION TO COLUMN / BEAM & STEEL CONNECTION DESIGN



MEZZANINE PLAN
1:100

1. U.N.O., PROVIDE C200x28 WIND GIRT @1200 O/C MAX. W/ 12Ø SAG ROD @1800 O/C MAX. + HSS 203x203x8.0 CONTINUOUS AT TOP, TYP. AROUND BUILDING PERIMETER.
2. EDGE BEAMS ALONG G.L. 1 & 5 TO BE SLOPED / CRANKED TO FOLLOW THE OWSJ CAMBER PROFILE / REQUIREMENTS.



KEY PLAN

ROOF DIAPHRAGM CONNECTION DETAIL
1:200

ROOF DIAPHRAGM CONNECTION TABLE

ZONE	DECK	DECK CONNECTION TO OWSJ & STEEL BEAM (USE HILTI PIN X-HSN24 OR APPROVED EQUIVALENT) CONNECTION PATTERN	SIDE LAP CONNECTION BTW. STEEL DECKS (USE HILTI PIN S-SLC01M HWH SIDE LAP CONNECTOR OR APPROVED EQUIVALENT) CONNECTION PATTERN	DIAPHRAGM SHEAR CAPACITY REQUIRED (kN/m)
1	0.91mm (20ga) x38 DP. DECK	36 / 9	150	28.8
2	0.91mm (20ga) x38 DP. DECK	36 / 4	250	14.2

NOTES:
1. THE PIN CONNECTIONS SHALL BE APPLIED TO ALL STEEL MEMBERS INCLUDING OWSJs., EDGE ANGLES, BEAMS, BRACES etc. AS SHOWN ON ON ROOF PLAN.
2. U.N.O. PROVIDE PIN CONNECTION @150 O/C TO EDGE ANGLES.

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VICTORIA, BC, CANADA

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ASTRONOMY AND ASTROPHYSICS
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Drawn by/Dessine par: LH
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Regional Manager, Architectural and Engineering Services / Gestionnaire régionale, Services d'architecturel et de génie, TPSGC: PREETIPAL PAUL
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MEZZANINE PLAN & ROOF PLAN

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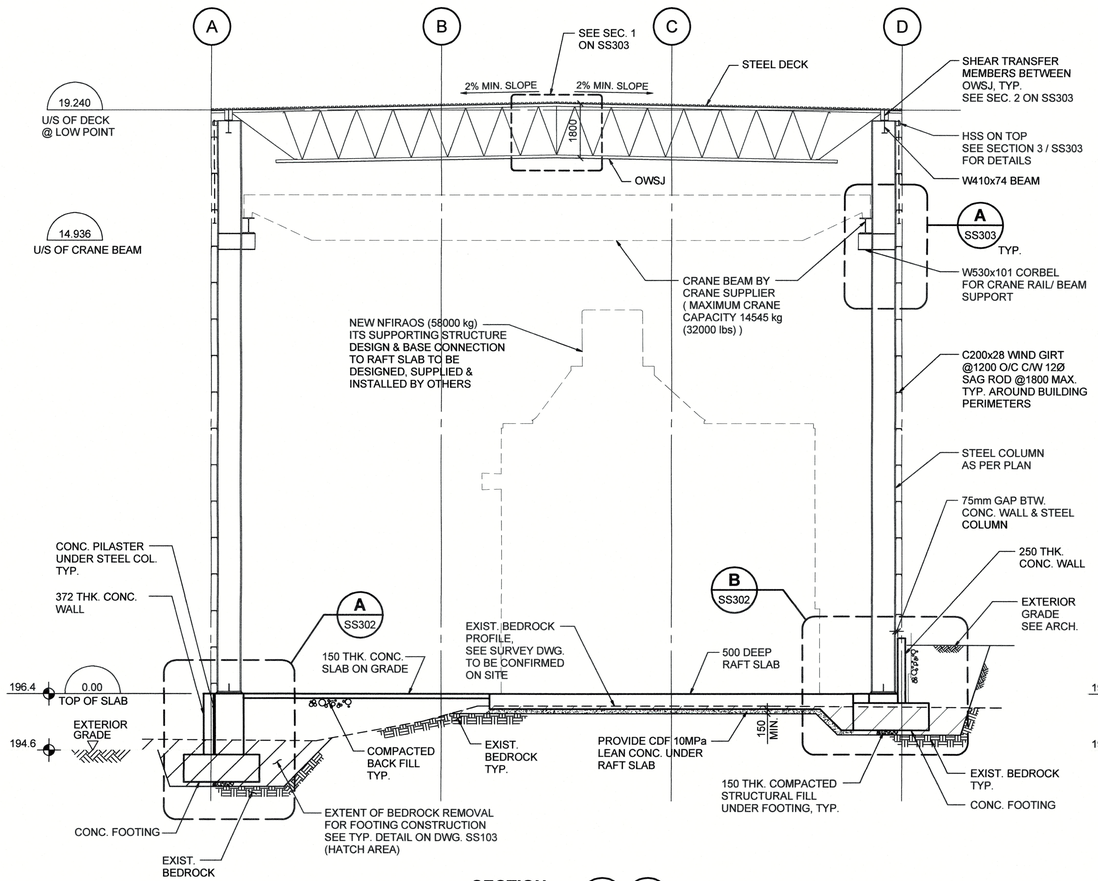
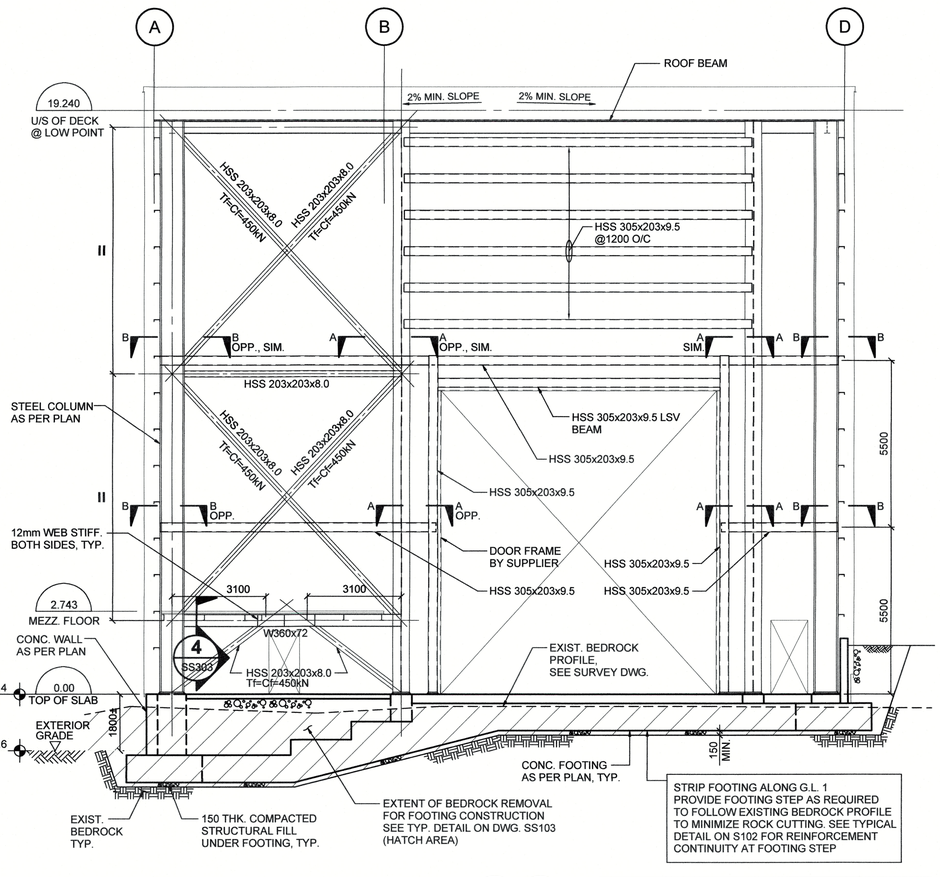


SECTION 1 / 1 (SS201 / SS202)
1:100

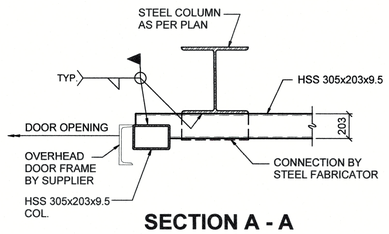


SECTION 2 / 2 (SS201 / SS202)
1:100

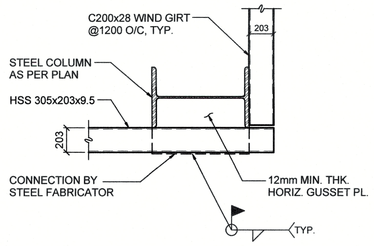
STRIP FOOTING ALONG G.L. 1
PROVIDE FOOTING STEP AS REQUIRED
TO FOLLOW EXISTING BEDROCK PROFILE
TO MINIMIZE ROCK CUTTING. SEE TYPICAL
DETAIL ON S102 FOR REINFORCEMENT
CONTINUITY AT FOOTING STEP

C200X28 WIND GIRT @12OO O/C & 12Ø SAG RODS
@1800 MAX. O/C FOR C200 GIRTS NOT SHOWN FOR CLARITY

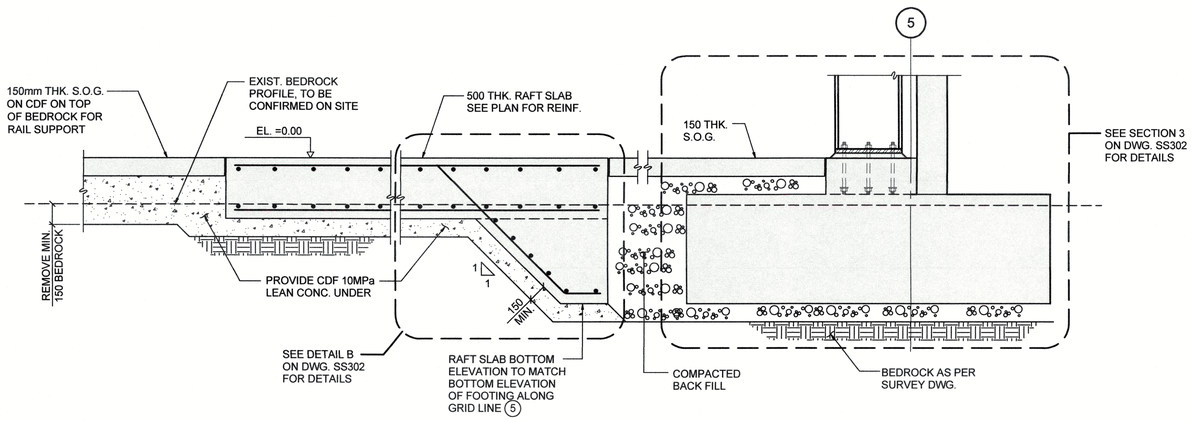
BRACES & BEAMS SHALL BE PLACED CONCENTRICALLY, i.e., CENTRE LINE OF BRACES & BEAMS IS FROM COLUMN CENTRE TO COLUMN CENTRE. THE ANGLE OF CONNECTION PLATES / MEMBERS TO BE ADJUSTED ACCORDINGLY



SECTION A - A
1:25



SECTION B - B
1:25



SECTION 3
1:25 SS201

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SECTIONS & DETAILS
SHEET 1

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
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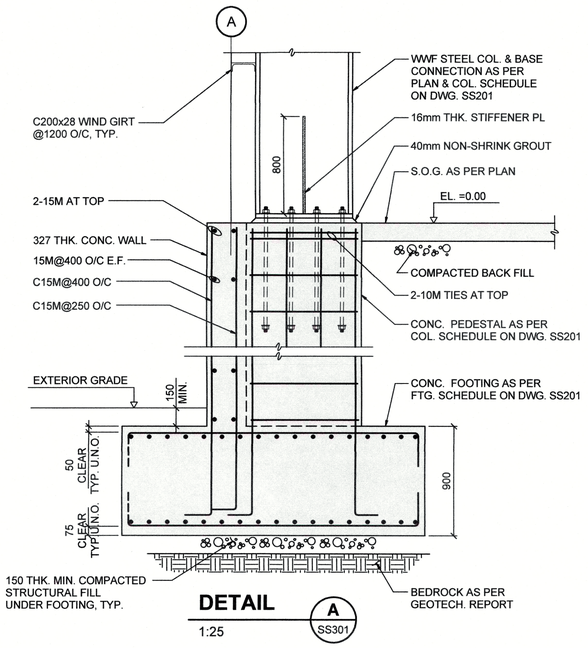
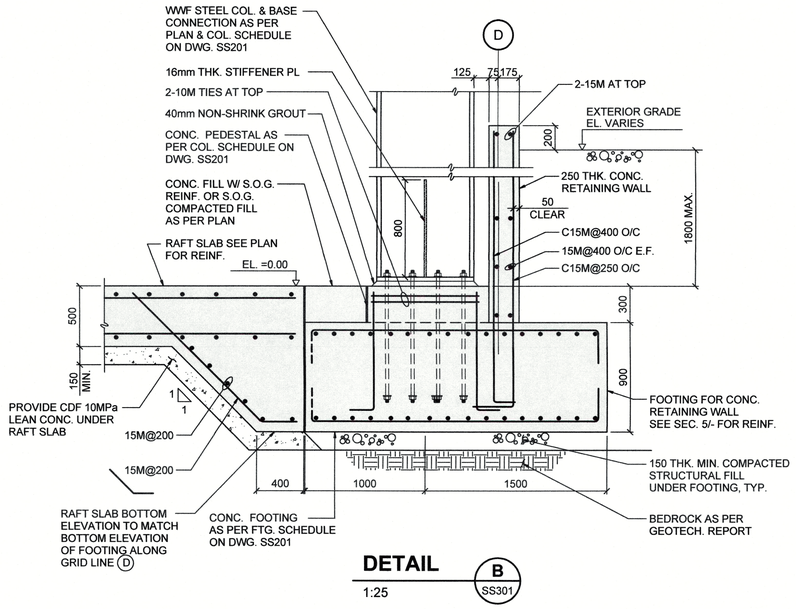
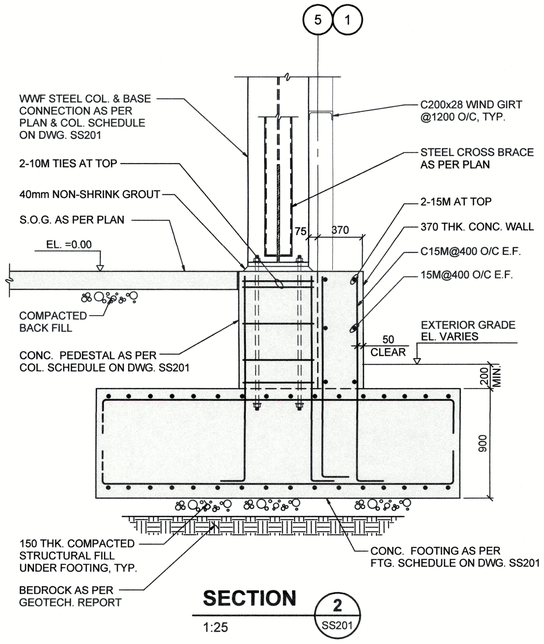


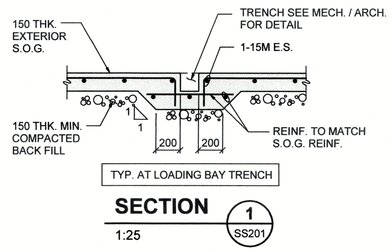
DETAIL A 1:25 — SS301



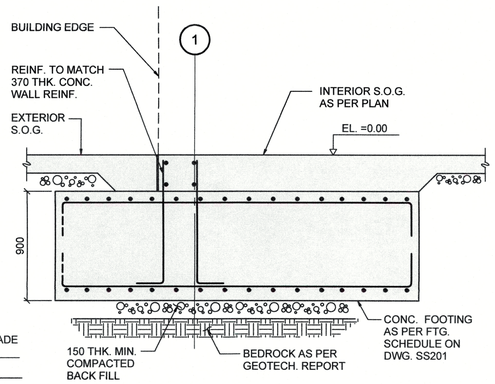
DETAIL B 1:25 — SS301



SECTION 2 1:25 — SS201

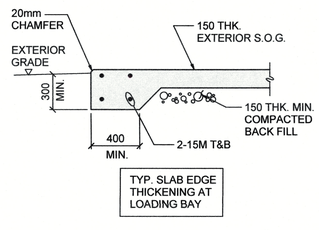


SECTION 1 1:25 — SS201



SECTION 4 1:25 — SS201

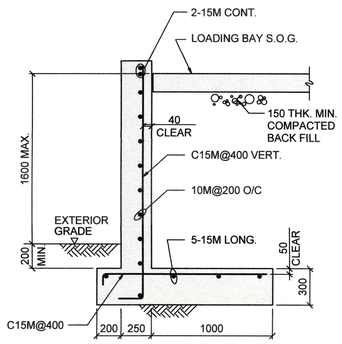
TYP. AT OVERHEAD DOOR ENTRANCE

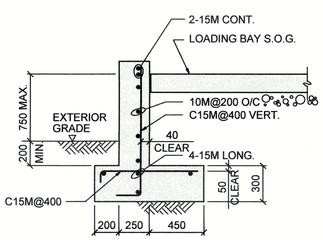


SECTION 6 1:25 — SS201

TYP. SLAB EDGE THICKENING AT LOADING BAY

SECTION 3 1:25 — SS201





SECTION 5 1:25 — SS201

TYP. RETAINING WALL DETAIL AROUND LOADING BAY, REFER TO MECH. / ARCH. DWG. FOR DRAINAGE AROUND RETAINING WALL

DETAIL 7 1:25 — SS201

REFER TO DWG. SS201 FOR FOOTING & SLAB-ON-GRADE BASE PREPARATION

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14686
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VICTORIA, BC, CANADA

NRC HERZBERG ASTRONOMY AND ASTROPHYSICS ATP INTEGRATION FACILITY

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PREETIPAL PAUL

Drawing title/Titre du dessin

SECTIONS & DETAILS
SHEET 2

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0 10 20 30 40 50 60 70 80 90 100mm

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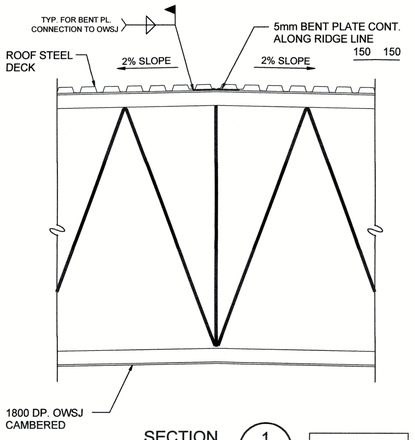
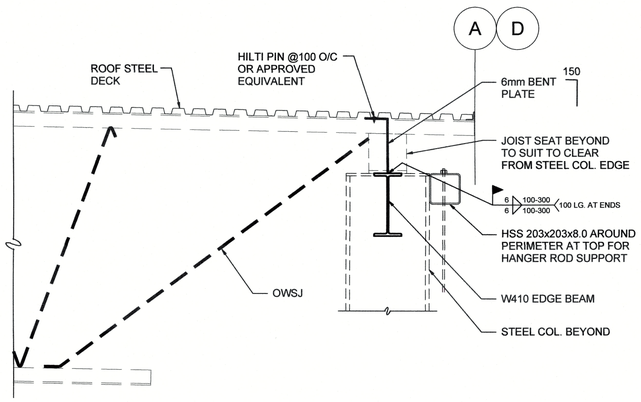


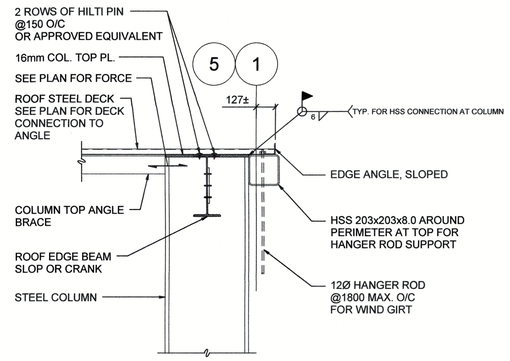
SECTION 1 / SS202
1:20

TYPICAL ALONG RIDGE LINE



SECTION 2 / SS202
1:20

TYPICAL ALONG GRID LINE A & D BETWEEN OWSJ



WIND GIRT C200 NOT SHOWN FOR CLARITY

SECTION 3 / SS202
1:20

TYPICAL AT COLUMN ALONG GRID LINE 1 & 5

SECTION 4 / SS202 / SS301
1:10

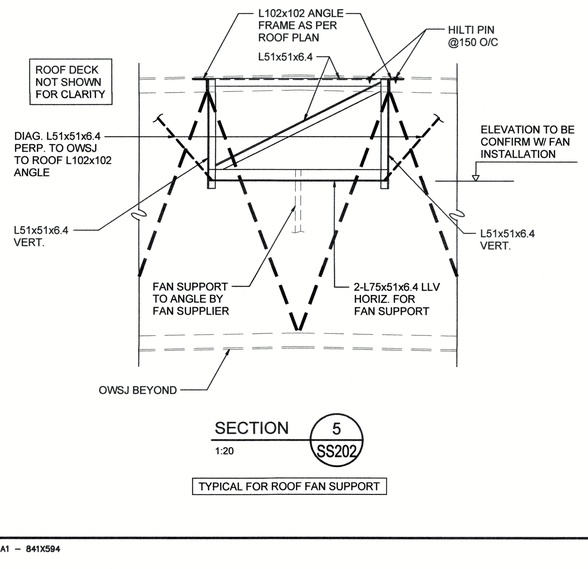
* ACTUAL DIMENSION TO BE CONFIRMED WITH CRANE SUPPLIER

DETAIL A / SS301
1:20

TYP. CORBEL DETAIL FOR CRANE BEAM/RAIL SUPPORT

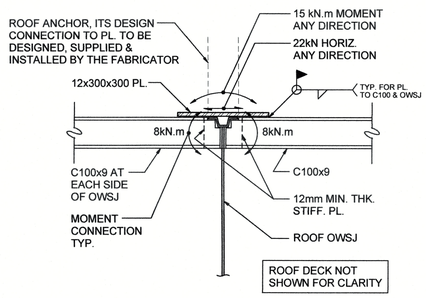
TYP. FOR ROOF BEAM TO COL. CONNECTION ALONG G.L. (A) & (D)

DETAIL X / SS202
1:20



SECTION 5 / SS202
1:20

TYPICAL FOR ROOF FAN SUPPORT



TYP. AT ROOF ANCHOR LOCATION (9 IN TOTAL)

SECTION 6 / SS202
1:10

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0 10 20 30 40 50 60 70 80 90 100mm

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PREETIPAL PAUL

Drawing title/Titre du dessin

SECTIONS & DETAILS
SHEET 3

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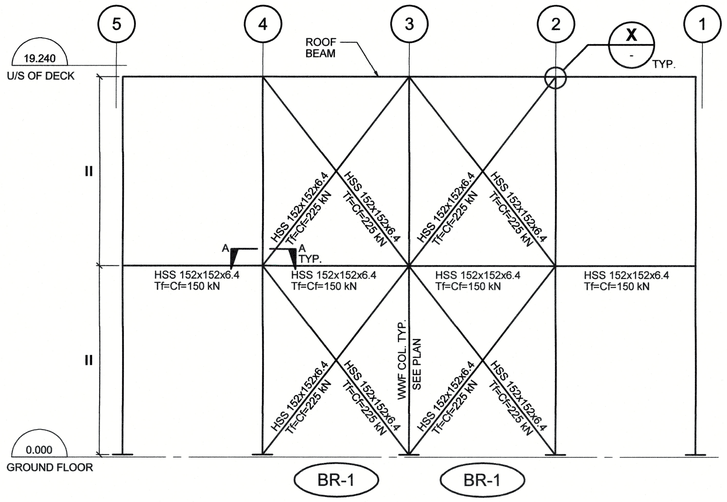
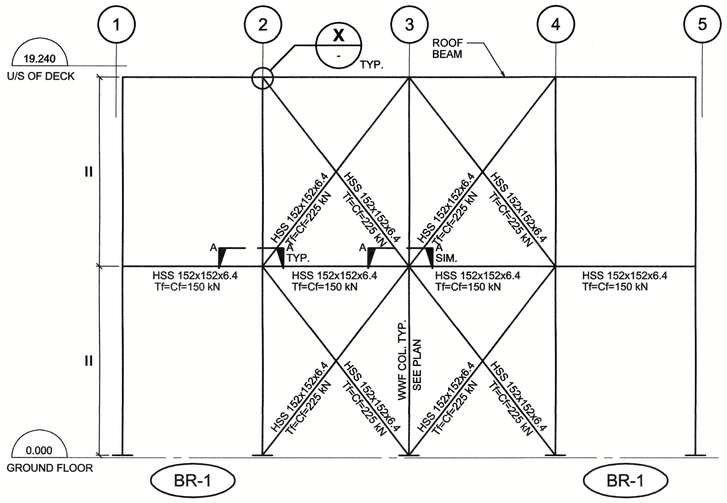


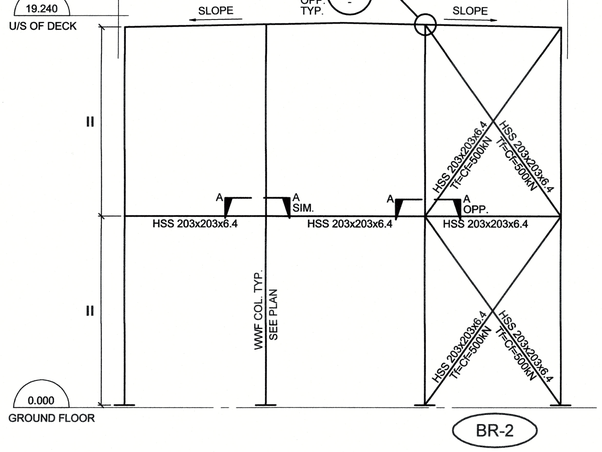
BRACE ELEVATION ALONG G.L. (A)

1:150



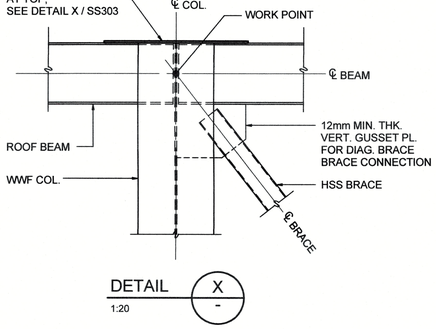
BRACE ELEVATION ALONG G.L. (D)

1:150



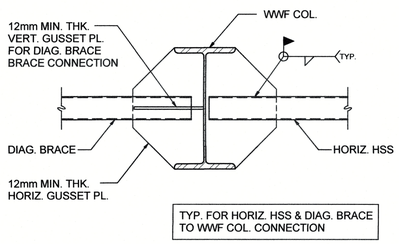
BRACE ELEVATION ALONG G.L. (5)

1:150



DETAIL X

1:20



TYP. FOR HORIZ. HSS & DIAG. BRACE TO WWF COL. CONNECTION

SECTION A - A

1:10

NOTE:

1. BRACES & BEAMS SHALL BE PLACED CONCENTRICALLY, i.e., CENTRE LINE OF BRACES & BEAMS IS FROM COLUMN CENTRE TO COLUMN CENTRE. THE ANGLE OF CONNECTION PLATES / MEMBERS TO BE ADJUSTED ACCORDINGLY
2. CONNECTIONS SHALL BE DESIGNED AND DETAILED SUCH THAT THE GOVERNING FAILURE MODE IS DUCTILE WHEN THE MEMBER GROSS STRENGTH DOES NOT CONTROL THE CONNECTION DESIGN LOADS.
3. INCREASE THE NOTED DESIGN BRACE FORCES BY 1.3.

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BRACE ELEVATIONS & DETAILS

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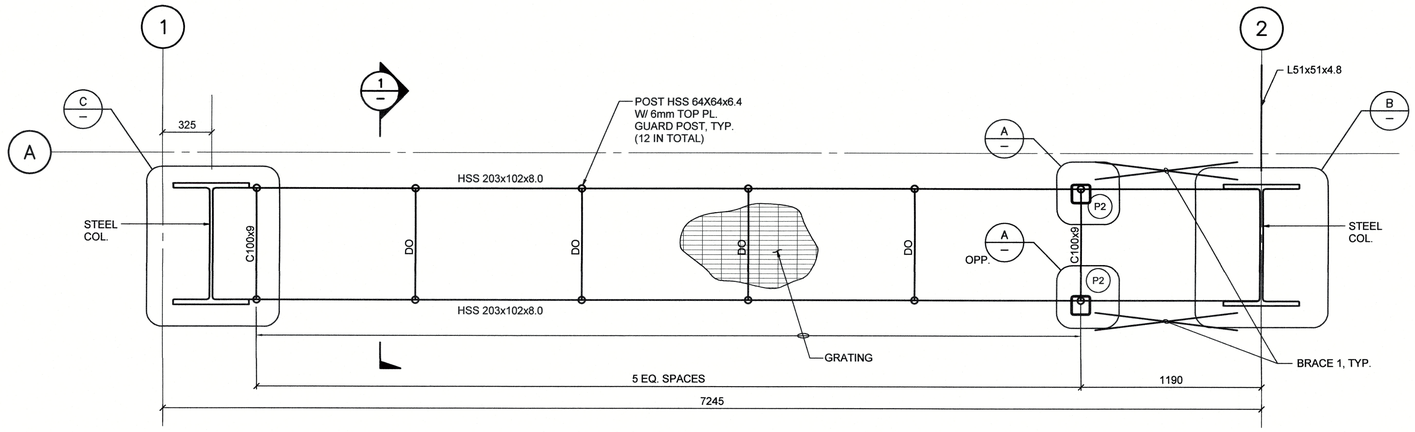


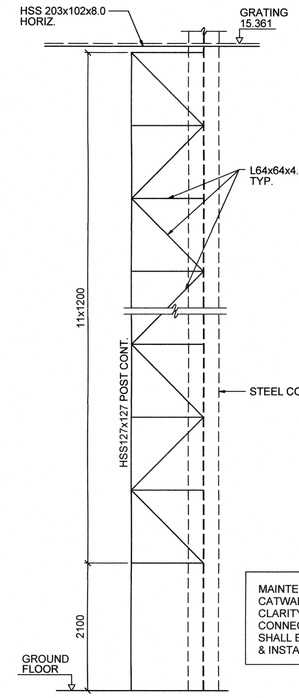
LEGEND:

(P2) - DENOTES HSS127x127x8
C/W 16x300x300 BASE PL.
4-12Ø A.BOLTS @220 O/C
DRILLED & ANCHORED
100 INTO S.O.G. W/ EPOXY

CRANE MAINTENANCE CATWALK PLAN

1:20

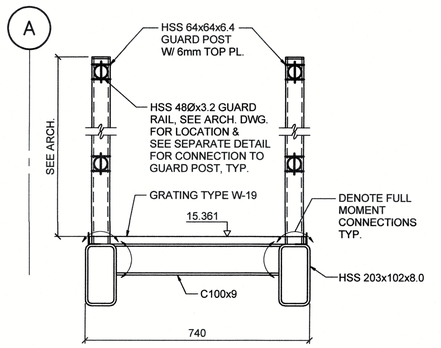
PROVIDE L102x76x6.4 LLV EDGE ANGLE WELDED ON TOP OF HSS 103x102 ALONG BOTH ENDS OF GRATING W/ STITCH WELDED TO HSS



MAINTENANCE LADDER TO CATWALK NOT SHOWN FOR CLARITY. THE LADDER & ITS CONNECTION TO STRUCTURE SHALL BE DESIGN, SUPPLIED & INSTALLED BY FABRICATOR

BRACE 1 ELEVATION

1:50

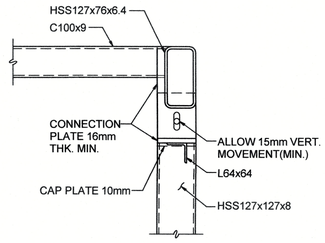


SECTION 1

1:10

DETAIL A

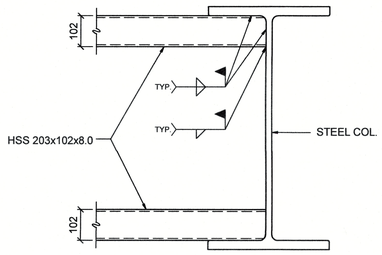
1:10



SECTION X - X

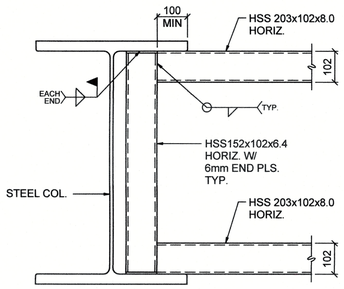
1:10

GRATING & GUARD POST ABOVE NOT SHOWN FOR CLARITY



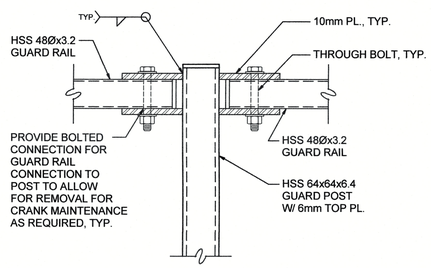
DETAIL B

1:10



DETAIL C

1:10



TYPICAL GUARD RAIL TO GUARD POST CONNECTION

1:5

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CRANE MAINTENANCE CATWALK PLAN & SECTIONS

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