

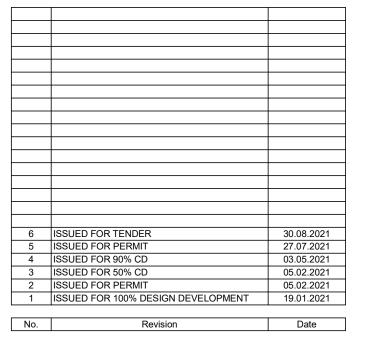
BFES Station 201 TOR.127511.0001

ISSUED FOR TENDER 27 Rutherford Rd. S., Brampton, ON. L6W 3J3

3D MODEL NOTE

STRUCTURAL ELEMENTS AND THEIR CONFIGURATION DETAILS ARE NOT PRESENTED IN THE 3D MODEL VIEW FOR TENDERING OR CONSTRUCTION PURPOSES AND ARE FOR INFORMATION ONLY.

- 1. All drawings, plans, models, designs, specifications and other documents prepared by Read Jones Christoffersen Ltd. ("RJC") and used in connection with this project are instruments of service for the work shown in them (the "Work") and as such are and remain the property of RJC whether the Work is executed or not, and RJC reserves the copyright in them and in the Work executed from them, and they shall not be used for any other work or project.
- 2. These drawings are "design drawings" only. They may not be suitable for use as shop drawings. Use of these drawings as base drawings for "shop drawings" is not permitted unless written permission containing certain conditions and limitations is obtained from RJC. The work "as constructed" may vary from what is shown on these drawings.
- 3. Use of these drawings is limited to that identified in the Revision column. Do not construct from these drawings unless marked "Issued for Construction" by RJC in the Revision column, and then only for the parts noted. The drawings shall not be used for "pricing", "costing", or "tender" unless so indicated in the Revision column. "Pricing" or "Costing" drawings are not complete and any prices based on such drawings must allow for this. Once drawings are "Issued for Tender", the drawings may be used for bidding.



Orientatio







Read Jones Christoffersen Ltd Engineers ric.ca

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Project Information

BFES Station 201

27 Rutherford Rd. S., Brampton, ON. L6W 3J3

For City of Brampton Fire & Emergency Services

Drawing Title

COVER

30.08.2021 Drawing No

30.08.2021 Dy NN S000 1:1

- DIFFERENTIAL VERTICAL MOVEMENTS BETWEEN ADJACENT COLUMNS AND BETWEEN ADJACENT COLUMNS AND WALLS = APPROXIMATELY 25 mm IN ACCORDANCE WITH GEOTECHNICAL REPORT
- VERTICAL DEFLECTION OF COLUMNS AND WALLS DUE TO SHRINKAGE AND CREEP = APPROXIMATELY 3.5 mm PER 3600 mm OF HEIGHT.
- VERTICAL FLOOR/ ROOF DEFLECTIONS HAVE BEEN DESIGNED TO MEET THE FOLLOWING CRITERIA.

TYPE OF MEMBER	DEFLECTION TO BE CONSIDERED	CALCULATED DEFLECTION LIMITATIONS
STRUCTURAL STEEL MEMBERS		
SIMPLE SPAN MEMBERS OF FLOORS AND ROOFS SUPPORTING CONSTRUCTION AND FINISHES NOT SUSCEPTIBLE TO CRACKING	LIVE LOAD	L/360
SIMPLE SPAN MEMBERS OF FLOORS AND ROOFS SUPPORTING CONSTRUCTION AND FINISHES SUSCEPTIBLE TO CRACKING	LIVE LOAD	L/360

- PERIMETER OR SPANDREL ELEMENTS (SUPPORTING CLADDING, PRECAST, MASONRY WALLS AND THE LIKE) HAVE BEEN DESIGNED FOR AN ALLOWABLE INCREMENTAL LONG TERM DEFLECTION OF L/360.
- THE STRUCTURE HAS BEEN DESIGNED ASSUMING THAT THE INSTALLATION OF NONSTRUCTURAL ELEMENTS SUCH AS CLADDING. MECHANICAL AND ELECTRICAL SERVICES AND THE LIKE, WILL NOT COMMENCE UNTIL AT LEAST ONE MONTH AFTER THE REINFORCED CONCRETE SLAB SUPPORTING THE NONSTRUCTURAL ELEMENTS HAS BEEN POURED AND THE RESHORING REMOVED.
- THE STRUCTURE HAS BEEN DESIGNED TO LIMIT THE MAXIMUM INTERSTOREY DRIFT UNDER SERVICEABILITY LIMIT STATE (SLS) AVERAGE HOURLY WIND PRESSURE TO H/400 WHERE H IS THE FLOOR TO FLOOR HEIGHT BETWEEN TO ADJACENT FLOORS. UNDER SEISMIC LOADS. THE INTERSTOREY DRIFT HAS BEEN LIMITED TO 0.025 Hs, WHERE Hs IS THE HEIGHT OF THE STOREY.
- NONSTRUCTURAL ELEMENTS SUCH AS CLADDING, MECHANICAL AND ELECTRICAL SERVICES AND SUPPORTS AND THE LIKE, MUST BE DESIGNED AND DETAILED TO ACCOMMODATE THE ANTICIPATED MOVEMENTS NOTED

ALL STRUCTURES ARE ALSO SUBJECT TO CONSTRUCTION TOLERANCES. THIS SHOULD BE ALLOWED FOR IN DETAILING NON-STRUCTURAL COMPONENTS IN ADDITION TO THE ABOVE MOVEMENTS.

SHOP DRAWING REVIEW RESPONSIBILITIES

- AS PART OF FIELD SERVICES, RJC WILL REVIEW SHOP DRAWINGS PERTAINING TO WORK SHOWN ON RJC'S DRAWINGS BY MEANS OF ACCURACY WITH WHICH THE CONTRACTOR PREPARED THE DRAWINGS. REVIEW OF SHOP DRAWINGS IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT AND IS NOT AN APPROVAL OF THE DETAIL DESIGN INHERENT IN THE SHOP DRAWINGS. RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR SUBMITTING THEM. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THE SHOP DRAWINGS OR FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INFORMATION PERTAINING TO THE FABRICATION PROCESS TECHNIQUES OF CONSTRUCTION AND INSTALLATION AND FOR CO-ORDINATION OF THE WORK OF ALL SUB-TRADES.
- ALL CONNECTIONS TO BE DESIGNED BY FABRICATOR UNLESS NOTED OTHERWISE. ALL BEAM CONNECTIONS TO BE STANDARD FRAME BEAM CONNECTIONS OR EQUIVALENT, UNLESS NOTED OTHERWISE. THE FABRICATOR SHALL SUBMIT SUMMARY DESIGN DRAWINGS FOR REVIEW SHOWING IN DETAIL THE "STANDARD" CONNECTIONS AND THEIR CAPACITIES THAT IS INTENDED FOR USE ON THE PROJECT. THESE DRAWINGS ARE IN ADDITION TO THE REGULAR SHOP DRAWINGS, AND SHALL PRECEDE THEM.
- A. SHOP DRAWINGS SHALL BE PREPARED UNDER THE DIRECTION OF A SPECIALTY STRUCTURAL ENGINEER. FOR THOSE CONNECTIONS AND COMPONENTS DESIGNED BY THE FABRICATOR. THIS ENGINEER OR THEIR REPRESENTATIVE SHALL VISIT THE SITE TO REVIEW IN PLACE THE CONNECTIONS AND COMPONENTS DESIGNED BY THIS ENGINEER TO SATISFY THEMSELVES THAT THESE CONNECTIONS AND COMPONENTS COMPLY WITH THEIR DESIGN ON THE SHOP DRAWINGS. THIS ENGINEER SHALL PROVIDE A LETTER TO RJC TO THIS EFFECT. THIS ENGINEER SHALL ALSO PROVIDE SEALED SKETCHES FOR ALL FIELD MODIFICATIONS MADE TO THEIR DESIGN.
- BEFORE THE SUBMISSION OF SHOP DRAWINGS NOTIFY RJC AS TO WHO THE ENGINEER WILL BE THAT WILL BE DESIGNING AND PROVIDING FIELD REVIEW FOR THE CONNECTIONS AND COMPONENTS DESIGNED BY THE CONTRACTOR.
- PRIOR TO SUBMITTING SHOP DRAWINGS THE CONTRACTOR SHALL NOTIFY RJC IN WRITING THAT THE FABRICATOR IS CERTIFIED TO A MINIMUM OF DIVISION 2 OF CSA W47.1.
- DRAWINGS OF COMPONENTS AND CONNECTIONS DESIGNED BY THE FABRICATOR'S SPECIALTY STRUCTURAL ENGINEER SHALL BE SIGNED AND SEALED BY THIS ENGINEER OR A LETTER SHALL BE SUBMITTED AT THE END OF SHOP DRAWING PRODUCTION SIGNED AND SEALED BY THIS ENGINEER, IDENTIFYING WHAT WAS DESIGNED AND LISTING THE FINAL DRAWINGS WITH DATES AND REVISION NUMBERS.
- REQUEST BY THE FABRICATOR MUST BE ACCEPTABLE TO RJC AND DETAILED ON THE SHOP DRAWINGS. TESTING OF THESE CONNECTIONS SHALL BE AT THE DISCRETION OF RJC AND TO THE CONTRACTORS ACCOUNT.
- SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO START OF STEEL FABRICATION.
- FABRICATION, ERECTION, STRUCTURAL DESIGN, AND DETAILING OF ALL STEEL SHALL BE IN ACCORDANCE WITH CAN/CSA-S16.

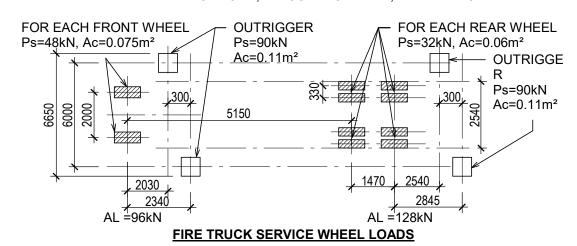
DESIGN LOADS

1. FLOOR PLAN LOADING IS SHOWN ON PLANS.

TRUCK LOADS:

AREAS ACCESSIBLE TO FIRE TRUCKS INDICATED ON THE PLANS. THESE AREAS HAVE BEEN DESIGNED FOR THE LOADING SHOWN BELOW, OR LL=12.0 kPa UNIFORM LOAD U.N.O.:

USE 1.3 FACTOR FOR IMPACT LOAD EFFECT. Ps=SERVICE LOAD, Ac=CONTACT AREA, AL=AXLE LOAD



SPECIFIED CONCENTRATED LOADS ARE AS FOLLOWS U.N.O. ON PLAN:

ROOFS ----FLOORS - PARKING -----LOADING DOCKS AND SUSPENDED PLAZAS WITH FIRE TRUCK ACCESS (TANDEM AXLE LOADS) ----- 256 kN

SEISMIC AND WIND DESIGN:

THE LATERAL SYSTEM FOR THIS PROJECT CONSISTS OF SHEAR WALLS AND IS DESIGNED FOR THE FOLLOWING EARTHQUAKE FACTORS:

4a. EARTHQUAKE DESIGN PARAMETERS

Sa(0.2) = 0.168SITE CLASSIFICATION: SITE CLASS C Sa(0.5) = 0.096le = 1.5 Fa = 1.0 Fv = 1.0Sa(1.0) = 0.052Rd = 2.0Sa(2.0) = 0.026Ro = 1.5Ta = 0.311Sa (0.2)Fale = 0.252

4b. WIND DESIGN PARAMETERS:

Ce, Cg, and Cp ARE BASED ON OBC CL. 4.1.7. q50 = .0.44 kPa, Iw = 1.25 ULS, 0.75 SLS

WIND UPLIFT LOADS ON STEEL OR WOOD ROOFS SHALL BE 1 kPa NET UNLESS NOTED OTHERWISE ON PLAN.

4c. FACTORED BASE FORCES.

MAXIMUM BASE SHEARS AND OVERTURNING MOMENT FOR THE STRUCTURE THROUGH STATIC ANALYSIS ARE

	WIND - NORTH/SOUTH DIRECTION -	SHEAR	MOMENT
	- EAST/WEST DIRECTION -	105 kN	590 kNm
		95 kN	635 kNm
	SEISMIC - NORTH/SOUTH DIRECTION -		
	- EAST/WEST DIRECTION -	350 kN	1900 kNm
		350 kN	1900 kNm
5.	LATERAL LOADS ON FOUNDATION WALLS.		

A. FOUNDATION WALLS RETAINING EARTH ARE DESIGNED TO RESIST A HORIZONTAL PRESSURE AT ANY DEPTH PER THE GEOTECHNICAL REPORT BASED ON FOLLOWING:

EARTHQUAKE SOIL PRESSURE::	PE = N/A
SOIL PRESSURE COEFFICIENT:	K = 0.56
DEPTH BELOW GROUND WATER LEVEL:	Hw = 0 (Free drainin
DRY UNIT WEIGHT OF SOIL:	q = 19.0 kN/m3
SURFACE SURCHARGE::	q = 12 kPa

B. DO NOT BACKFILL WALLS UNTIL LATERALLY SUPPORTED BY COMPLETED FLOOR AND/ OR ROOF STRUCTURE.

WATER TABLE: THIS BUILDING IS NOT DESIGNED AS A TANKED

LOADS TO EXISTING STRUCTURES:

A. FOUNDATION SURCHARGE B. SNOW DRIFTING

NON-STRUCTURAL ELEMENTS

- "NON-STRUCTURAL" OR "SECONDARY STRUCTURAL" ELEMENTS ARE NOT PART OF THE STRUCTURAL DESIGN SHOWN ON THESE DRAWINGS. SUCH ELEMENTS ARE DESIGNED, DETAILED AND REVIEWED IN THE FIELD BY OTHERS. THEY APPEAR ON DRAWINGS OTHER THAN THESE DRAWINGS OF READ JONES CHRISTOFFERSEN LTD., WHERE STRUCTURAL ENGINEERING RESPONSIBILITY IS REQUIRED FOR THESE ELEMENTS, THIS SHALL BE PROVIDED BY SPECIALTY STRUCTURAL ENGINEERS, WHO SHALL ALSO PROVIDE ANY LETTERS REQUIRED BY BUILDING PERMIT AUTHORITIES.
- EXAMPLES OF NON-STRUCTURAL ELEMENTS INCLUDE, BUT ARE NOT LIMITED TO:
- ARCHITECTURAL COMPONENTS SUCH AS GUARDRAILS, HANDRAILS,
- FLAG POSTS, CANOPIES, CEILINGS, MILLWORK, ETC. LANDSCAPE ELEMENTS SUCH AS BENCHES, LIGHT POSTS, PLANTERS,
- CLADDING, GLAZING, WINDOW MULLIONS, INTERIOR STUD WALLS AND EXTERIOR STUD WALLS.
- ARCHITECTURAL PRECAST, PRECAST CLADDING. SKYLIGHTS.
- MECHANICAL AND ELECTRICAL EQUIPMENT, COMPONENTS, AND THEIR ATTACHMENT DETAILS. WINDOW WASHING EQUIPMENT AND ITS ATTACHMENTS.
- ESCALATORS, ELEVATORS, AND CONVEYING SYSTEMS. GLASS BLOCK AND ITS ATTACHMENTS. BRICK OR BLOCK VENEERS AND THEIR ATTACHMENTS.
- NON-LOAD BEARING MASONRY. NON-STRUCTURAL CONCRETE TOPPINGS.
- 3. SHOP DRAWINGS FOR NON-STRUCTURAL ELEMENTS WHICH MAY AFFECT THE PRIMARY STRUCTURAL SYSTEM SHALL BE SUBMITTED TO READ JONES CHRISTOFFERSEN LTD. THESE DRAWINGS WILL BE REVIEWED ONLY FOR THE EFFECT OF THE ELEMENT ON THE PRIMARY STRUCTURAL SYSTEM.

11.	ABBRE\	<u>VIATIONS:</u>		
75]	MOMENT CONNECTION	L.L.B.B	LONG LEGS BACK TO
	_	PASS THROUGH FORCE [kN]		BACK
		ANCHOR BOLT	L.L.H	LONG LEG HORIZONTAL
A.E	E.S.S	ARCHITECTURALLY		LONG LEG VERTICAL
		EXPOSED STRUCTURAL		LONG SIDE HORIZONTAL
	_	STEEL		LONG SIDE VERTICAL
		ALTERNATE		LONG WAY
		ARCHITECTURAL		LOW POINT
B.C	J.E	BOTTOM CHORD	MAX	
DE	۱۸/	EXTENSION		MECHANICAL
		BOTTOM EACH WAY BOTTOM LOWER LAYER	IVIT	FACTORED BENDING
		BOTTOM LOWER LATER BOTTOM LONG WAY	N Afra	MOMENT STRONG AXIS BENDING
		BOTTOM CONG WAT	IVIIX	MOMENT
		BOTTOM	Mfv	WEAK AXIS BENDING
		BOTTOM UPPER LAYER	1VII y	MOMENT
		COLUMN ABOVE	MIN	
		CANTILEVER		FACTORED TORSION
		COLUMN BELOW		NOT IN CONTRACT
		COUPLING BEAM		NEAR SIDE
Cf -		FACTORED AXIAL FORCE		NOT TO SCALE
		COMPRESSION	O.C	ON CENTRE
		CAST IN PLACE	O/C	ON CENTRE
		CONTROL JOINT	OPP	
		CENTER LINE	O.W.S.J	OPEN WEB STEEL JOIST
	R			PARTIAL PENETRATION
		CONCRETE		POST-TENSIONING
		CONTINUOUS		ROOF DRAIN
C.F	٠	COMPLETE	RTN	
ОТ	DC	PENETRATION		REINFORCED WITH
_		CENTRES	S.D.L	SUPERIMPOSED DEAD
		COMPLETE WITH DIVIDER BEAM	0.0.5	LOAD
	T			STEP DOWN FOOTING
		DEAD LOAD	SIM	
		DO OVER - (DITTO)		SNOW LOAD SHORT LEGS BACK TO
		DEEP (I.E. DEPTH OF	3.L.D.D	BACK
D,		BEAM)	S O G	SLAB ON GRADE
D.T		DEPTH TO SUIT		SPECIFICATIONS
		DRAWING		· STUD RAIL
		DOWELS	ST	
		EACH END	STIR	
E.F	·	EACH FACE		SHORT WAY
		ELEVATION		SYMMETRICAL
ELI	EV	ELEVATION	TEW	TOP EACH WAY
		ELECTRICAL	Tf	FACTORED AXIAL
		EACH SIDE		TENSION FORCE
		EACH WAY	THK	
		EACH WAY	THRU	
		EXISTING		TOP LOWER LAYER
		EXTERIOR		TOP AND BOTTOM
		EXPANSION JOINT	T & C	TENSION AND
		FLOOR DRAIN	T 0 0	COMPRESSION
		FAR SIDE GALVANIZED		TONGUE AND GROOVE
		GRID LINE	T.J	
		HOOK ONE END	T.O	
		HOOK 2 ENDS		TOP OF CONCRETE TOP OF STRUCT. STEEL
		HORIZONTAL AND		TOP OF SLAB
110	^ v ======	VERTICAL AND		TOP UPPER LAYER
н	HOR	HORIZONTAL	TYP	
		HORIZONTALLY SLOTTED		UNLESS NOTED
	_	CONNECTION	J.14.O	OTHERWISE
Hf -		FACTORED HORIZONTAL	ULS	ULTIMATE LIMIT STATE
		SHEAR FORCE		SERVICEABILITY LIMIT
НО	RZ	HORIZONTAL		STATE
		HORIZONTAL	U/S	UNDERSIDE
		HIGH POINT	V., VERT	
INT	Γ	INTERIOR	\/f	EACTORED SHEAR

12. <u>DEFINITIONS</u>:

INT. ----- INTERIOR

L.L. ----- LIVE LOAD

JT. ----- JOINT

LG. ----- LONG

- A. RJC: READ JONES CHRISTOFFERSEN OR ITS REPRESENTATIVE.
- SPECIALTY STRUCTURAL ENGINEER: A STRUCTURAL ENGINEER REGISTERED AND LICENSED TO PRACTICE BY THE PROFESSIONAL ENGINEERING ASSOCIATION HAVING JURISDICTION IN THE AREA WHERE THE STRUCTURE IS TO BE BUILT AND WHO IS RESPONSIBLE FOR THE DESIGN AND FIELD REVIEW OF:
 - STRUCTURAL ELEMENTS DESIGNED BY THE CONTRACTOR OR SUBCONTRACTORS, SUCH AS OPEN WEB STEEL JOISTS. PRECAST DOUBLE TEES, PRECAST PLANKS, STRUCTURAL STEEL CONNECTIONS, LIGHT WOOD FRAME ROOF TRUSSES.

Vf ----- FACTORED SHEAR

VXB----- VERTICAL BRACING,

BRACING

VERTICAL CROSS

FORCE

W.P. ----- WORK POINT

- SECONDARY STRUCTURAL ELEMENTS AND NON-STRUCTURAL ELEMENTS. SEE ALSO "NON-STRUCTURAL ELEMENTS" GENERAL NOTES.
- CONTINUOUS: FULL TENSION SPLICE AND TENSION DEVELOPMENT
- EMBEDMENT: UNLESS NOTED OTHERWISE COMPRESSION EMBEDMENT MEANS A COMPRESSION DEVELOPMENT LENGTH AND TENSION EMBEDMENT MEANS A TENSION DEVELOPMENT LENGTH AS PER CAN/CSA-A23.3 AND AS SHOWN ON THESE GENERAL NOTES
- **GENERAL CONTRACTOR:** FOR THE PURPOSES OF THESE DRAWINGS, THE USE OF THE TERM "CONTRACTOR" OR "GENERAL CONTRACTOR" SHALL REFER TO THE PRIME PERSON OR COMPANY RESPONSIBLE FOR CONSTRUCTION OF THE PROJECT AND THE COORDINATION OF TRADES AND SUBCONTRACTORS. THIS MAY BE THE GENERAL CONTRACTOR, OR A CONSTRUCTION MANAGER.

DRAWINGS

- THE USE OF THESE DRAWINGS IS LIMITED TO THAT IDENTIFIED IN THE REVISIONS COLUMN. DO NOT CONSTRUCT FROM THESE DRAWINGS UNLESS MARKED "ISSUED FOR CONSTRUCTION" IN THE REVISIONS COLUMN, BY READ JONES CHRISTOFFERSEN LTD. THE DRAWINGS SHALL NOT BE USED FOR PRICING, COSTING, OR TENDER UNLESS SO INDICATED IN THE REVISION COLUMN. PRICING OR COSTING DRAWINGS ARE NOT COMPLETE AND ANY PRICES BASED ON PRICING OR COSTING DRAWINGS MUST INCLUDE ALLOWANCES FOR THIS.
- THE INFORMATION ON THESE DRAWINGS SHALL NOT BE USED FOR ANY OTHER PROJECT OR WORKS. THE INFORMATION ON THESE DRAWINGS APPLIES SOLELY TO THIS PROJECT.
- THE DRAWINGS DO NOT SHOW COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND ABOUT THE JOB SITE DURING CONSTRUCTION, AND THE DESIGN AND ERECTION OF ALL TEMPORARY STRUCTURES, FORMWORK, FALSE WORK, SHORING, ETC. REQUIRED TO COMPLETE THE WORK.

DESIGN CODE

THE COMPLETED BASE BUILDING STRUCTURE SHOWN ON THE STRUCTURAL DRAWINGS HAS BEEN DESIGNED IN SUBSTANTIAL ACCORDANCE WITH THE ONTARIO BUILDING CODE 2012 O.REG 88/19 WHICH IS BASED ON THE NATIONAL BUILDING CODE OF CANADA 2015

FIELD REVIEW BY **READ JONES CHRISTOFFERSEN (RJC)**

READ JONES CHRISTOFFERSEN PROVIDES FIELD REVIEW ONLY FOR THE WORK SHOWN ON THESE STRUCTURAL DRAWINGS. THIS REVIEW IS NOT A "FULL TIME" REVIEW BUT IS CONDUCTED WITH SUCH FREQUENCY AS RJC DEEMS APPROPRIATE TO OBSERVE VARIOUS STAGES OF THE WORK AND TO ASCERTAIN THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE PLANS AND SUPPORTING DOCUMENTS PREPARED BY READ JONES CHRISTOFFERSEN. FIELD REVIEW BY READ JONES CHRISTOFFERSEN IS NOT CARRIED OUT FOR THE CONTRACTOR'S BENEFIT, NOR DOES IT MAKE READ JONES CHRISTOFFERSEN GUARANTORS OF THE CONTRACTOR'S WORK IT REMAINS THE CONTRACTOR'S RESPONSIBILITY TO BUILD THE WORK IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. RJC SHALL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR. SUB-CONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

RJC WILL REVIEW SHOP DRAWINGS PERTAINING TO WORK SHOWN ON RJC'S DRAWINGS. THE EXTENT OF THIS REVIEW IS AT THE SOLE DISCRETION OF RJC'S ENGINEER AND IS FOR THE SOLE PURPOSE OF ASCERTAINING GENERAL CONFORMANCE WITH THE STRUCTURAL DESIGN CONCEPT THE REVIEW IS NOT AN APPROVAL OF THE DESIGN, DETAILS, AND DIMENSIONS INHERENT IN THE SHOP DRAWINGS. RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR OR SUBCONTRACTOR SUBMITTING THEM. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OR SUBCONTRACTOR OF HIS OR HER RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THE SHOP DRAWINGS OR FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS.

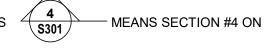
- PROVIDE 24 HOURS ADVANCE NOTICE OF EACH REQUIRED FIELD REVIEW. FIELD REVIEWS SHALL BE SCHEDULED TO BE CARRIED OUT DURING NORMAL BUSINESS HOURS UNLESS SPECIAL ARRANGEMENTS ARE MADE WITH RJC.
- THE WORK TO BE REVIEWED SHALL BE GENERALLY COMPLETE.

TEMPORARY WORKS

- THE CONTRACTOR SHALL DESIGN, PROVIDE, ERECT, MAINTAIN, REMOVE AND ASSUME FULL AND SOLE RESPONSIBILITY FOR ALL TEMPORARY WORKS REQUIRED FOR THE SAFE AND COMPLETE EXECUTION OF THE WORKS
- IN THE EXECUTION OF THE TEMPORARY WORKS AND FOR THE DURATION OF THE CONTRACT, THE CONTRACTOR SHALL MAKE ADEQUATE PROVISION FOR ALL LIKELY CONSTRUCTION LOADING AND PROVIDE SUFFICIENT BRACING AND PROPS TO KEEP THE WORKS IN PLUMB AND ALIGNMENT AND FREE FROM EXCESSIVE DEFLECTION.
- ACCESS OF HEAVY CONSTRUCTION EQUIPMENT AND ACCUMULATION OF CONSTRUCTION MATERIALS ON THE FLOORS ARE NOT PERMITTED, UNLESS SUCH HAVE BEEN CATERED FOR IN THE CONTRACTOR'S TEMPORARY WORK DESIGN TO THE SATISFACTION OF THE ARCHITECT & ENGINEER.
- COSTS OF ALL TEMPORARY WORKS ARE DEEMED TO HAVE BEEN INCLUDED IN THE CONTRACT PRICE.
- SUBMIT SHOP DRAWINGS FOR ALL TEMPORARY WORKS FOR REVIEW BEFORE FABRICATION COMMENCES. SHOP DRAWINGS SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED AND LICENSED TO PRACTICE BY THE PROFESSIONAL ENGINEERING ASSOCIATION HAVING JURISDICTION IN THE AREA WHERE THE STRUCTURE IS TO BE BUILT
- ANY CONSTRUCTION SEQUENCES SHOWN ON THE DRAWINGS SHALL BE PART OF TEMPORARY WORKS AND ARE FOR THE CONTRACTOR'S CONSIDERATION ONLY. THE CONTRACTOR IS AT LIBERTY TO USE ANY OTHER SEQUENCE AS HE DEEMS APPROPRIATE, BUT AT NO TIME SHALL THE SAFETY AND INTEGRITY OF THE WORKS AND THE STRUCTURE BE COMPROMISED. IF THE CONTRACTOR ADAPTS THE SUGGESTED SEQUENCE, SUCH SEQUENCE SHALL BE DEEMED AS THE CONTRACTOR'S OWN SELECTION OF METHOD, AND THE CONTRACTOR SHALL ASSUME FULL AND SOLE RESPONSIBILITY FOR IT, AS STATED IN (1) ABOVE. THE CONTRACTOR SHALL INFORM THE ARCHITECT IF HE WISHES TO DEVIATE FROM ANY SUGGESTED SEQUENCE.
- 7. SEE ALSO CONCRETE FORMWORK STRIPPING AND SHORING NOTES.

GENERAL

SECTION MARK SHOWN THUS DRAWING S301.



SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR SLEEVES, NAILERS, INSERTS, ETC., TO BE ENCASED IN CONCRETE.

SEE ARCHITECTURAL DRAWINGS FOR FLOOR AND ROOF ELEVATIONS,

- RECESSES, DRAINAGE SLOPES, ETC. THE GENERAL CONTRACTOR SHALL REVIEW ALL THE DRAWINGS AND
- CHECK DIMENSIONS BEFORE CONSTRUCTION. REPORT DISCREPANCIES BETWEEN STRUCTURAL AND OTHER DISCIPLINES DRAWINGS FOR CLARIFICATION.
- DESIGN FORCES INDICATED ON DRAWINGS FOR STRUCTURAL STEEL WORK ARE FACTORED FORCES UNLESS NOTED OTHERWISE. FORCES ARE VERTICAL SHEAR FORCES U.N.O.

MOMENTS -----LINE LOADS ---------- kN/m

SEE "GENERAL NOTES - LOADS" FOR DEFINITIONS AND VALUES OF LIVE LOAD, DEAD LOAD AND SUPERIMPOSED DEAD LOAD. SEE ALSO PLANS FOR OTHER LOAD/FORCE REQUIREMENTS.

DISTRIBUTED LOADS ----- kPa

SHALL CONFORM TO CAN/CSA-A23.1, CAN/CSA-A23.2, CAN/CSA-A23.3 AND REFERENCED DOCUMENTS.

STRUCTURAL STEEL WORK SHALL CONFORM TO CAN/CSA-S16 AND REFERENCED DOCUMENTS

FIRE RESISTANCE RATINGS SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PRECISE

DO NOT CUT OR DRILL ANY OPENINGS IN STRUCTURAL MEMBERS

LOCATION OF REQUIRED FIRE RESISTANCE RATINGS.

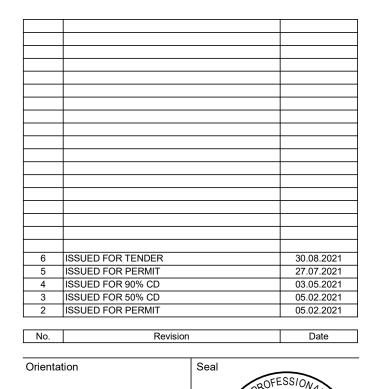
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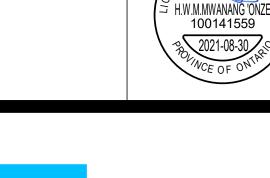
10. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND LANDSCAPE DRAWINGS FOR LOCATIONS, CONFIGURATIONS, EXTENT, AND SIZES OF ALL CURBS, UPSTANDS, DOWNTURNS; AND FOR OPENINGS THROUGH FLOORS AND WALLS FOR DUCTS, CONDUIT AND PIPING. PROVIDE FOR

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Project Information **BFES Station 201**

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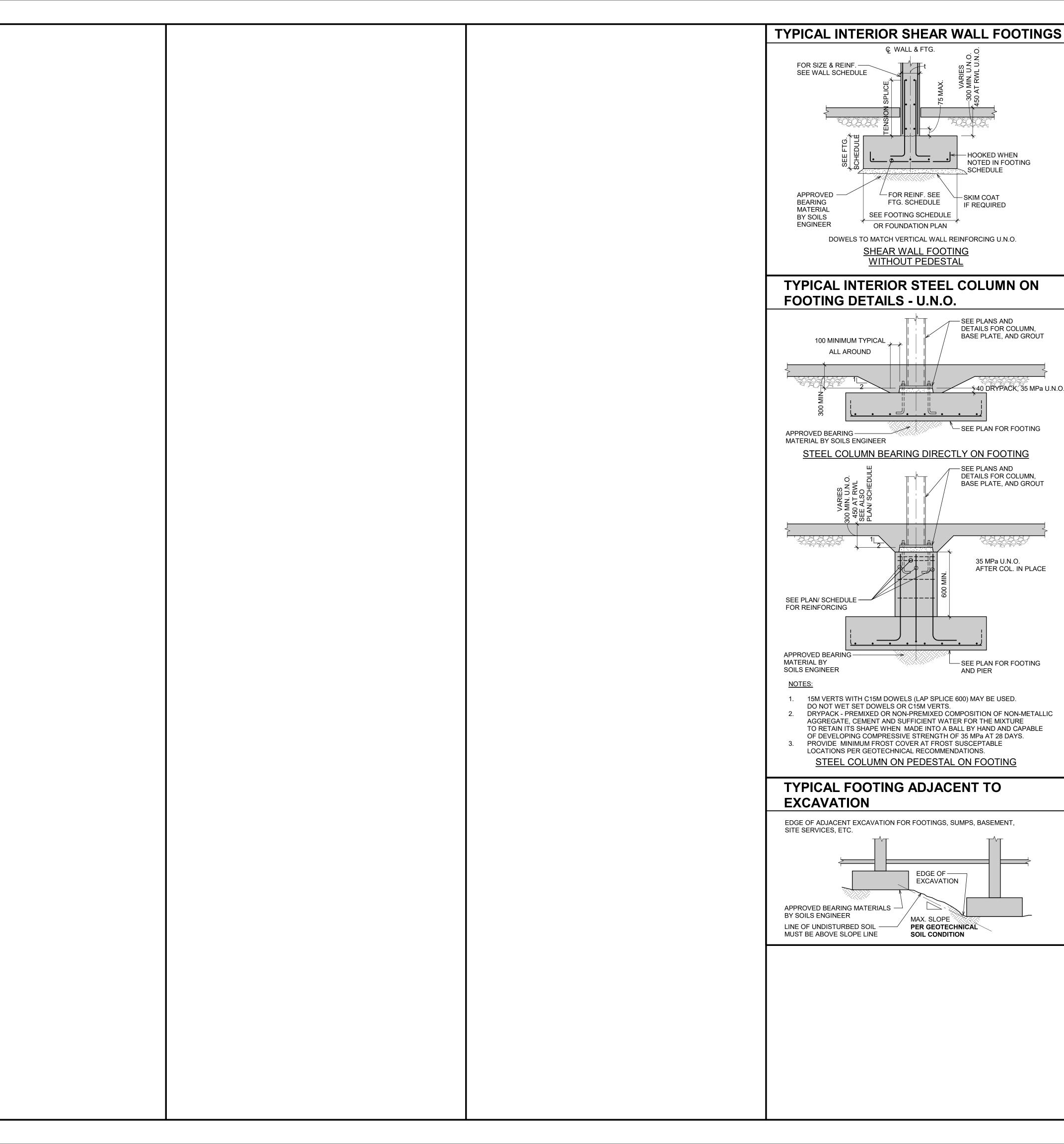
City of Brampton Fire & Emergency Services

GENERAL NOTES

Drawing No 30.08.2021

TOR.127511.0001

Drawn by Scale As indicated



EXCAVATIONS

Ç WALL & FTG.

- FOR REINF. SEE

FTG. SCHEDULE

SHEAR WALL FOOTING

WITHOUT PEDESTAL

SEE FOOTING SCHEDULE

OR FOUNDATION PLAN

NOTED IN FOOTING

SCHEDULE

SKIM COAT

-SEE PLANS AND

DETAILS FOR COLUMN,

SEE PLAN FOR FOOTING

DETAILS FOR COLUMN, BASE PLATE, AND GROUT

35 MPa U.N.O.

- SEE PLAN FOR FOOTING

AND PIER

EDGE OF -

MAX. SLOPE

PER GEOTECHNICAL

SOIL CONDITION

EXCAVATION

AFTER COL. IN PLACE

-SEE PLANS AND

BASE PLATE, AND GROUT

→ 40 DRYPACK, 35 MPa U.N.C

DESIGN AND FIELD REVIEW OF EXCAVATION, SHORING, AND BACKFILL IS NOT DONE BY READ JONES CHRISTOFFERSEN.

FOUNDATIONS

FOOTINGS HAVE BEEN DESIGNED FOR THE FOLLOWING BEARING RESISTANCES IN ACCORDANCE WITH THE SOILS REPORT. PREPARED BY: SNC-Lavalin Report No 671835. DATED: June 2020.

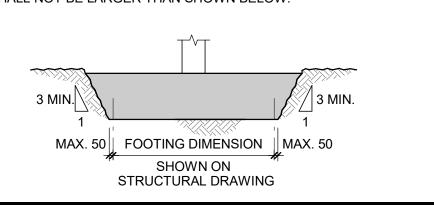
ULS: 300 kPa, SLS: 100 kPa

STRUCTURAL DRAWINGS.

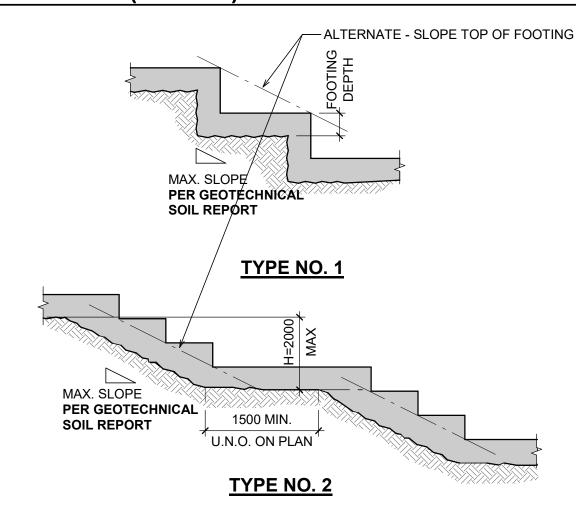
- BEARING SURFACES MUST BE APPROVED BY THE SOILS ENGINEER IMMEDIATELY BEFORE FOOTING CONCRETE IS PLACED. RJC IS NOT RESPONSIBLE FOR CONFIRMING BEARING CAPACITIES OF SOILS.
- REFER TO SOILS REPORT FOR OTHER SPECIFIC DESIGN REQUIREMENTS FOR FOOTINGS, SOIL SLOPES, FROST PROTECTION, MINIMUM COVER, ETC.
- UNLESS OTHERWISE SHOWN, CENTER FOOTINGS UNDER COLUMNS AND
- DOWELS SHALL BE PLACED BEFORE CONCRETE IS PLACED. TEMPLATES SHALL BE USED TO ENSURE CORRECT PLACEMENT OF DOWELS.
- PROVIDE 50 mm GROUND SEAL/ SKIM COAT, MUD SLAB UNDER FOOTINGS AS REQUIRED BY SOIL CONDITIONS.
- FOR GROUND ELEVATIONS AND DRAINAGE SLOPES, SEE ARCHITECT'S
- VARY FOOTING ELEVATIONS WHERE REQUIRED IN ACCORDANCE WITH DETAIL FOR "TYPICAL STEPPED FOOTING"(S.D.F.), SHOWN ON
- FOOTINGS MAY HAVE TO BE LOWERED TO ACCOMMODATE MECHANICAL OR ELECTRICAL SERVICES. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR ELEVATIONS OF SAME. FOOTINGS ARE NOT TO BE
- UNDERMINED BY EXCAVATIONS FOR SERVICES, PITS, ETC. 10. FOOTING ELEVATIONS, IF SHOWN, ARE FOR PRICE ESTIMATING PURPOSES ONLY, ARE NOT FINAL, AND MAY VARY ACCORDING TO SITE CONDITIONS OR AS REQUIRED BY SERVICES. ALL FOOTINGS MUST BE TAKEN TO A
- BEARING SURFACES MUST BE PROTECTED FROM FREEZING BEFORE AND AFTER FOOTINGS ARE POURED.
- 12. SUB-BASE DESIGN OF SOIL UNDER THE SLAB ON GRADE SHALL BE IN ACCORDANCE WITH THE SOIL REPORT.

BEARING LAYER APPROVED BY THE SOILS ENGINEER.

- 13. CONCRETE PLACED UNDER WATER SHALL CONFORM TO CAN/CSA-A23.1.
- FOOTINGS CAST DIRECTLY INTO EXCAVATIONS (WITHOUT SIDE FORMS) SHALL NOT BE LARGER THAN SHOWN BELOW:

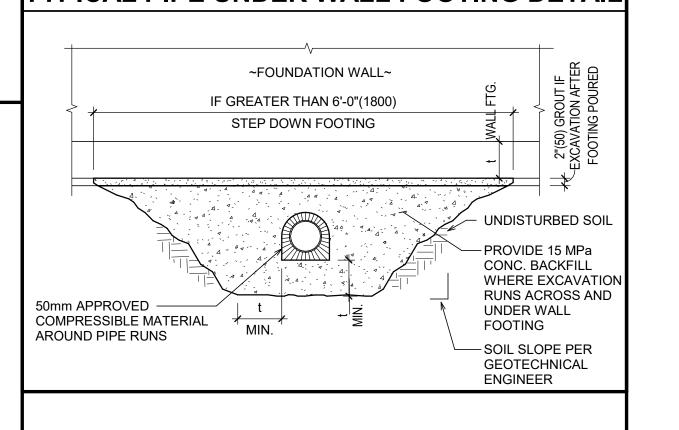


TYPICAL STEPPED FOOTINGS ON SOIL (WALLS)

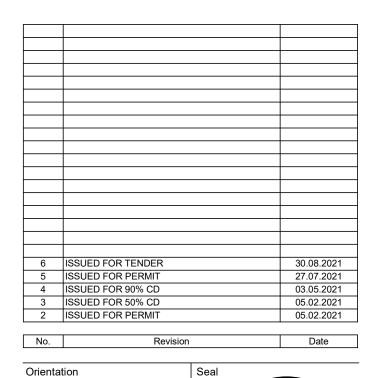


NOTE: IF TOTAL STEPPING 'H' EXCEEDED PROVIDE INTERMEDIATE FLAT HORIZONTAL SECTION BETWEEN SLOPED FOOTINGS U.N.O. ON PLAN

TYPICAL PIPE UNDER WALL FOOTING DETAIL



- 1. All drawings, plans, models, designs, specifications and other prepared by Read Jones Christoffersen Ltd. ("RJC") and used in connection with this project are instruments of service for the work shown in them (the "Work") and as such are and remain the property of RJC whether the Work is executed or not, and RJC reserves the copyright in them and in the Work executed from them, and they shall not be used for any other work or project.
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100141559





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City of Brampton Fire & Emergency Services

Drawing Title TYPICAL DETAILS

Drawing No 30.08.2021 Drawn by S103 As indicated

CONCRETE FORMWORK STRIPPING AND SHORING

- THE DESIGN AND FIELD REVIEW OF FORMWORK, SHORING AND RESHORING IS THE RESPONSIBILITY OF THE CONTRACTOR. RESHORING DRAWINGS SHALL BE SUBMITTED TO RJC FOR THE EFFECT ON THE BASE BUILDING STRUCTURE ONLY.
- NO COLUMN OR WALL FORMS SHALL BE REMOVED BEFORE CONCRETE HAS REACHED 10 MPa FOR ARCHITECTURAL CONCRETE OR 8 MPa FOR OTHER COLUMNS OR WALLS.
- NO SLABFORMS OR BEAMFORMS SHALL BE REMOVED BEFORE CONCRETE HAS REACHED 75% OF THE 28 DAY STRENGTH BEFORE STRIPPING /
- STRENGTH OF CONCRETE FOR STRIPPING TO BE DETERMINED USING CYLINDERS STORED ON SITE IN A PROTECTED ENCLOSURE THAT MAINTAINS A SIMILAR TEMPERATURE AND HUMIDITY AS THE STRUCTURAL ELEMENTS REPRESENTED. ALTERNATE METHODS. IF ACCEPTABLE TO RJC, MAY BE USED.
- NO CONCRETE MAY BE REMOVED WITH PERCUSSIVE METHODS SUCH AS CHIPPING OR JACK-HAMMERING WITHOUT PRIOR APPROVAL BY RJC.
- 6. A. LOADING APPLIES TO COMPONENTS OF THE BASE BUILDING STRUCTURE (SLABS, COLUMNS, ETC.) BY THE FORMWORK, SHORES. OR RESHORES SHALL NOT EXCEED THE DESIGN LOAD FOR THOSE BASE BUILDING COMPONENTS. WHEN THIS LOADING IS APPLIED BEFORE THE CONCRETE STRENGTH IN THE BASE BUILDING COMPONENTS HAS REACHED THE SPECIFIED COMPRESSIVE STRENGTH, PRORATE THE COMPONENT CAPACITY BY THE RATIO OF ACTUAL CONCRETE STRENGTH TO SPECIFIED CONCRETE
 - AT NO TIME SHALL THE FACTORED CONSTRUCTION LOAD EXCEED THE FACTORED DESIGN LOAD ON FLOORS.

CONCRETE REINFORCEMENT

REINFORCEMENT SHALL CONFORM TO THE FOLLOWING STANDARDS:

CAN/CSA-G30.18R -GRADE 400 MPa - 10M AND LARGER (U.N.O.) CSA STANDARD G30.5 -GRADE 400 MPa - WELDED WIRE REINFORCEMENT

> WILL BE WELDED OR IS PART OF THE SEISMIC RESISTING ELEMENTS: REINFORCING FOR SHEAR WALLS, HEADERS AND ZONES (INCLUDING ZONE TIES AND HEADER TIES/STIRRUPS) AND MOMENT FRAME COLUMNS AND BEAMS (INCLUDING COLUMN TIES AND BEAM

GRADE 400 MPa - ALL REINFORCING THAT

STIRRUPS). CSA STANDARD G279 PRESTRESSING STRANDS ASTM A775M AND ASTM D3963

(NOTE: G30.18W MAY BE SUBSTITUTED FOR G30.18R)

UNLESS OTHERWISE NOTED CONCRETE COVER TO REINFORCEMENT SHALL BE:

A. FOR FIRE RATINGS:

EPOXY REINFORCING -

GALVANIZED REBAR

C. CAN/CSA-G30.18W

GENERAL (AREAS NOT INCLUDING PARKING)					
EI EMENT		FIRE RATINGS			
ELEMENT		0-2 HOURS	3 HOURS	4 HOURS	
COLUMNS AND FORMED PILES (TO TIES)		40 mm	40 mm	55 mm	
RETAINING/FOUNDATION	INSIDE FACE	25 mm *1	N/A		
WALLS (F-2 EXPOSURE)	GROUND OR EARTH SIDE	40 mm *2	N/A	N/A	

*1 - SEE NOTE B FOR BAR DIA ≥ 30M *2 - SEE NOTE E FOR BAR DIA ≥ 30M

> UNLESS NOTED OTHERWISE IN NOTES C THROUGH E MINIMUM CONCRETE COVER---

C. CONCRETE CAST AGAINST EARTH OR GROUND ---CONCRETE WITH NO MEMBRANE (NON-PARKING) ------- 60 mm OR 2d

- EXPOSURE CLASS C-XL, C1 AND C3. IS GREATER) FORMED FINISHED CONCRETE EXPOSED TO ----- 40 mm OR 1.50 (WHICHEVER WEATHER. IS GREATER)

(WHICHEVER

NOTES:

LARGEST COVER REQUIRED GOVERNS.

AND EXPOSED TO CHLORIDES

- EXPOSURE CLASS F1, F2, S1 AND S2

SEE ARCHITECTURAL DRAWINGS AND STRUCTURAL DRAWINGS FOR AREAS WHICH MAY REQUIRE 3 HOUR RATINGS OR GREATER.

SEE STRUCTURAL DRAWINGS FOR AREAS CLASSIFIED AS (C) or (D) ABOVE FOR WEATHER EXPOSURE.

DESIGNATION OF REINFORCING BARS:

OR IN FAR FACE OF WALL

SLABS OR IN FAR FACE OF WALL —— IN TOP OF BEAMS OR SLABS BARS SHOWN THUS —

B. STRAIGHT BARS:

E.G. **6-10M4200** MEANS 6-10M BARS 4200 mm LONG.

E.G. **20M4000** @ **300 ST 600** MEANS 600 END OFFSET FOR EACH 20M4000 BAR SPACED AT 300mm c/c IF STAGGER NOT SHOWN SEE SLAB REINFORCING LAYOUT TYP. DETAILS.

E.G. 6-C15M4000 @300 MEANS 6-15M BARS 4000 mm LONG INCLUDING HOOK LENGTH H.1.E. 90° AND SPACED AT 300mm c/c

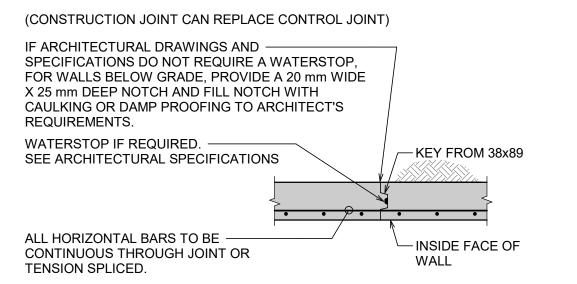
E.G. 6-A15M3000 @300 MEANS 6-15M BARS 3000 mm LONG INCLUDING HOOK LENGTH H.1.E. 180° AND SPACED AT 300mm E.G. 15M @300 H2E MEANS 15M BARS SPACED AT 300mm c/c WITH H.1.E. 90° AT EACH END.

- 4. DO NOT SUBSTITUTE DEFORMED WIRE FOR REINFORCING BARS WITHOUT PRIOR APPROVAL OF THE RJC.
- SUPPORT REINFORCING WITH CHAIRS, ACCESSORIES, OR REINFORCING BARS AS REQUIRED. BARS USED AS SUPPORT BARS SHALL BE CONSIDERED AS ACCESSORIES.
- PROVIDE SUFFICIENT SUPPORTS TO MAINTAIN CONCRETE COVER AS SPECIFIED. ALL SUPPORTS AND BARS MUST BE TIED TOGETHER TO MAINTAIN REINFORCING STEEL SECURELY IN PLACE DURING CONCRETE
- 7. TESTING OF REINFORCING STEEL SHALL CONFORM TO THE SPECIFICATIONS.

18. AT THE REQUEST OF THE OWNER, THE SUPPLIER WILL FURNISH TEST DATA RESULTS (LESS THAN 3 MONTHS OLD) FOR EACH PROPOSED MIX DESIGN DEMONSTRATING THAT THEY MEET THE STRENGTH, DURABILITY, AND SHRINKAGE REQUIREMENTS SPECIFIED.

- 19. FOR 56 DAY STRENGTH SPECIFICATIONS, THE SUPPLIER WILL FURNISH THE OWNER WITH ACCELERATED STRENGTH TEST DATA FOR EACH PROPOSED MIX DESIGN. OR OTHER DOCUMENTATION ACCEPTABLE TO THE OWNER, SUCH THAT THE ANTICIPATED 56 DAY STRENGTH OF THE MIX AS PLACED ON SITE CAN BE EVALUATED WITHIN 14 DAYS OF
- 20. CURING OF CONCRETE TO MEET THE REQUIREMENTS FOR THE EXPOSURE CLASS AS OUTLINED IN CSA A23.1. CURING COMPOUNDS ARE NOT PERMITTED FOR SUSPENDED PARKING SLABS OR EXPOSURE CLASS C-XL CONCRETE. PARKING SLABS AND REINFORCED SLAB ON GRADES IN PARKING AREAS ARE TO BE CURED FOR MINIMUM 7 DAYS.
- 21. CORROSION INHIBITORS ARE TO BE USED IN CONCRETE IN AREAS NOTED ON THE STRUCTURAL DRAWINGS, AS WELL AS IN STAIRS AND STAIR LANDINGS WITHIN PARKADES. USE 10 L/m³ OF "DCI S" BY GRACE CONSTRUCTION PRODUCTS OR "MASTERLIFE CI 30" BY BASF CONSTRUCTION CHEMICALS. ALTERNATIVELY, USE C-XL CONCRETE WITH CURING TYPE 3 (EXTENDED) PER CSA A23.1.
- 22. ALL BOTTOM EDGES OF EXPOSED SLABS AND BEAMS, AS WELL AS EDGES OF WALLS AND COLUMNS, TO BE CHAMFERED 20 mm X 20 mm. ALL TOP EDGES OF EXPOSED SLABS, BEAMS, UPSTANDS AND STAIRS TO BE TOOLED UNLESS NOTED OTHERWISE. SEE ALSO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR OTHER FINISH REQUIREMENTS.
- 23. NO CALCIUM CHLORIDE IS PERMITTED, IN ANY FORM, IN ANY CONCRETE MIX WITHOUT THE EXPRESS WRITTEN CONSENT OF READ JONES CHRISTOFFERSEN LTD.
- 24. CURING AND PROTECTION OF CONCRETE FOR HOT, COLD OR DRY WEATHER IS TO BE AS PER CSA A23.1 AS A MINIMUM. SEE ALSO "CONCRETE COLD WEATHER REQUIREMENTS" IN THE STRUCTURAL DRAWINGS.

WALL CONSTRUCTION JOINT

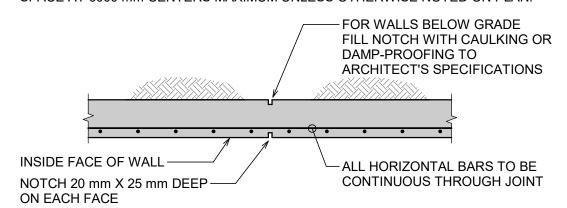


<u>PLAN</u>

WALL CONTROL JOINT

UNLESS NOTED OTHERWISE FOR EXTERIOR WALLS BELOW GRADE AND EXTERIOR WALLS EXPOSED TO WEATHER ABOVE GRADE.

SPACE AT 6000 mm CENTERS MAXIMUM UNLESS OTHERWISE NOTED ON PLAN.



<u>PLAN</u>

DEVELOPMENT OF STANDARD HOOKS IN TENSION

BASED ON CSA A23.3.

DEVELOPMENT LENGTH

CONCRETE	REBAR DESIGNATION (GRADE 400 LENGTHS)							
STRENGTH	10M	15M	20M	25M	30M	35M		
20 MPa	225	340	450	560	675	785		
25 MPa	200	300	400	500	600	700		
30 MPa	185	275	370	460	550	640		
35 MPa	170	255	340	425	510	595		
40 MPa	160	240	320	400	475	555		
45 MPa	150	225	300	375	450	525		
50 MPa	150	215	285	355	425	495		
55 MPa	150	205	270	340	405	475		
60 MPa	150	195	260	325	390	455		
65 MPa & GREATER	150	190	250	315	375	440		

- TABLE SHOWS DEVELOPMENT LENGTHS FOR GRADE 400 REINFORCEMENT. INCREASE TABLE LENGTHS BY 1.25 FOR GRADE 500 REINFORCEMENT.
- 2. INCREASE TABLE LENGTHS BY 1.2 FOR EPOXY COATED REINFORCEMENT

CONCRETE

CONCRETE PLACEMENT

- UNLESS NOTED OTHERWISE, ALL CONCRETE IS TO BE CAST-IN-PLACE.
- CONCRETE PLACEMENT BY THE WET-MIX SHOTCRETE METHOD IS PERMITTED FOR ELEMENTS LISTED IN THE "STRUCTURAL SHOTCRETE" NOTE ON DRAWING
- THE USE OF SHOTCRETE REQUIRES APPROVAL BY THE STRUCTURAL ENGINEER. ANY COSTS ASSOCIATED WITH REDESIGN, CHANGES TO THE CONTRACT DOCUMENTS AND ANY ADDITIONAL TESTING AND CONTRACT ADMINISTRATION COSTS TO ACCOMMODATE SHOTCRETE IS TO BE PAID FOR BY THE CONTRACTOR.

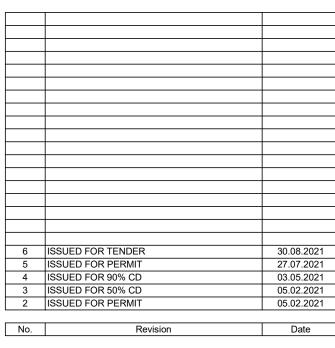
CONCRETE PROPERTIES

- CONCRETE IS SPECIFIED AS PER THE "PERFORMANCE" ALTERNATE AS **OUTLINED IN CSA A23.1.**
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR WORKING WITH THE CONCRETE SUPPLIER TO ENSURE THAT THE PLASTIC AND HARDENED MIX PROPERTIES MEET SITE REQUIREMENTS FOR PLACING, FINISHING, AND THE OWNERS' SPECIFIED PERFORMANCE REQUIREMENTS. THE GENERAL CONTRACTOR SHALL MEET THE DOCUMENTATION AND QUALITY CONTROL REQUIREMENTS OUTLINED UNDER THE "PERFORMANCE" ALTERNATE OF CSA A23.1.
- THE SUPPLIER SHALL MEET ALL CERTIFICATION AND DOCUMENTATION REQUIREMENTS AS OUTLINED UNDER THE "PERFORMANCE" ALTERNATE OF CSA A23.1.
- THE CONCRETE SUPPLIER SHALL BE CERTIFIED BY THE READY MIXED CONCRETE ASSOCIATION OF ONTARIO.
- CONCRETE PROPERTIES:

GENERAL						
ELEMENT	COMPRESSIVE STRENGTH (MPa) 28 DAY U.N.O.	EXPOSURE CLASS	COMMENTS			
FOOTINGS	30 MPa (56 DAY)	Ν				
SLAB ON GRADE (EXTERIOR)	32 MPa	C-2				
RETAINING WALLS / FOUNDATION WALLS	25 MPa	F-2				
MECHANICAL HOUSEKEEPING PADS	20 MPa	N	•			
SLAB ON GRADE AT APPARATUS BAY	35 MPa	C-1				

- 1. WHERE EXPOSURE CLASS LISTED AS N/F-1/F-2:
- A. USE N EXPOSURE FOR INTERIOR CONCRETE LOCATED WITHIN AN INSULATED BUILDING ENVELOPE (E.G. DRY AND NOT SUBJECTED TO FREEZING AND THAWING).
- B. USE F-1 EXPOSURE FOR HORIZONTAL AND SLOPED CONCRETE MEMBERS EXTERIOR TO THE BUILDING INSULATION AND NOT PROTECTED BY A MEMBRANE AND DRIP EDGE (E.G. WET AND SUBJECT TO FREEZING AND THAWING).
- C. USE F-2 EXPOSURE FOR HORIZONTAL AND SLOPED CONCRETE MEMBERS EXTERIOR TO THE BUILDING INSULATION AND PROTECTED BY A MEMBRANE AND DRIP EDGE (E.G. DRY AND SUBJECT TO FREEZING AND THAWING).
- D. USE F-2 FOR VERTICAL CONCRETE MEMBERS EXTERIOR TO THE BUILDING INSULATION.
- 2. CONCRETE STRENGTH AND EXPOSURE CLASS OF STAIRS AND RAMPS SHALL MEET THE MOST STRINGENT CRITERIA OF THE ADJOINING SLABS AND BEAMS UNLESS NOTED OTHERWISE.
- PORTLAND CEMENT SHALL BE TYPE GU UNLESS NOTED OTHERWISE.
- REQUESTS BY THE CONTRACTOR TO USE TYPE GUL CEMENT FOR ANY STRUCTURAL ELEMENTS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. THE SUBMISSION SHALL INCLUDE A SIGNED AND SEALED LETTER PREPARED BY A MATERIALS SPECIALTY ENGINEER TO ATTEST THAT THE CONCRETE PRODUCED WITH TYPE GUL CEMENT ACHIEVES SIMILAR OR HIGHER LEVEL OF PERFORMANCE THAN THE CONCRETE PRODUCED WITH TYPE GU CEMENT NOTED IN THE DRAWINGS AND SPECIFICATIONS, INCLUDING STRENGTH, EXPOSURE CLASS, ETC. AND THAT THE PROPOSED MIX IS SUITABLE FOR THE INTENDED LOCATION AND PLACEMENT METHOD. FOR CONCRETE WITH TYPE GUL CEMENT TO BE PLACED IN CONTACT WITH NATIVE SOIL OR FILL, ADDITIONAL SUBSURFACE SOIL INVESTIGATION SHALL BE COMPLETED UNDER THE DIRECTION OF THE MATERIALS SPECIALTY ENGINEER TO DETERMINE SOLUABLE SULPHATE LEVELS AND A COPY OF THE SEALED REPORT SHALL BE PROVIDED TO THE STRUCTURAL ENGINEER. ALL TESTING AND OTHER SERVICES BY THE MATERIALS SPECIALTY ENGINEER RELATED TO USE OF TYPE GUL CEMENT SHALL BE PAID FOR BY THE CONTRACTOR.
- CEMENT TYPE FOR EXPOSURE CLASSES S-1, S-2, AND S-3 SHALL BE AS **OUTLINED IN CSA A23.1.**
- 12. CONCRETE SHALL HAVE A UNIT WEIGHT OF 23±1 kN/m³ (145±5 PCF) UNLESS NOTED OTHERWISE.
- 13. THE CONCRETE PROPERTIES USED IN DESIGN ARE BASED ON A MAXIMUM COARSE AGGREGATE SIZE OF NOT LESS THAN 19 mm, UNLESS NOTED OTHERWISE. ALL LOCATIONS PROPOSED BY THE CONTRACTOR FOR USE OF CONCRETE MIX DESIGNS WITH A MAXIMUM COARSE AGGREGATE SIZE SMALLER THAN 19 mm SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. ANY INCREASE IN REQUIRED CONCRETE STRENGTH OR INCREASE IN QUANTITY OF REINFORCEMENT DUE TO PROPOSED USE OF CONCRETE MIX WITH MAXIMUM COARSE AGGREGATE SIZE SMALLER THAN 19 mm TO BE PAID FOR BY THE CONTRACTOR.
- RECYCLED AGGREGATE IS NOT TO BE USED WITHOUT WRITTEN APPROVAL BY THE ENGINEER.
- 15. SLUMP AND AGGREGATE SIZE TO BE DETERMINED BY THE GENERAL CONTRACTOR AND SUPPLIER TO MEET PLACEMENT, AND FINISHING REQUIREMENTS WITHOUT SEGREGATION WHILE MEETING ALL OWNER SPECIFICATIONS.
- MAXIMUM WATER/CEMENT RATIO AND AIR CONTENT TO MEET THE REQUIREMENTS FOR THE EXPOSURE CLASS AS OUTLINED IN CSA A23.1. REQUIRED AIR CONTENT FOR EXPOSURE CLASSES F-1. F-2. C-1. C-2. AND C-XL SHALL BE BASED ON CONCRETE EXPOSED TO FREEZE-THAW CYCLES UNLESS NOTED OTHERWISE.
- 17. CHLORIDE ION PENETRABILITY FOR EXPOSURE CLASS C-1 AND C-XL SHALL MEET THE REQUIREMENTS OF CSA A23.1.

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Orientation







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Project Information

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City of Brampton Fire & Emergency Services

Drawing Title TYPICAL DETAILS

Drawing No 30.08.2021 Drawn by

> As indicated TOR.127511.0001

(SEE ALSO CSA A23.1. EXCEPT THE FOLLOWING MINIMUM REQUIREMENTS MUST ALSO BE MET)

- FORECASTED AIR TEMPERATURE AT OR BELOW 5°C
- THE AGGREGATE OR MIXING WATER SHALL BE HEATED TO MAINTAIN A MINIMUM CONCRETE TEMPERATURE OF 10°C.
- CONCRETE SHALL NOT BE PLACED ON OR AGAINST ANY SURFACE WHICH IS AT A TEMPERATURE LESS THAN 5°C.
- CONTRACTOR SHALL BE PREPARED TO COVER SLABS IF UNEXPECTED DROP IN AIR TEMPERATURE SHOULD OCCUR.
- CONCRETE TEMPERATURE SHALL BE MAINTAINED ABOVE 10°C FOR AT LEAST 7 DAYS OR UNTIL THE CONCRETE REACHES 70% OF SPECIFIED STRENGTH.
- FORECASTED AIR TEMPERATURE BELOW 2°C BUT NOT BELOW -4°C

(NOTE - FOR THESE CONDITIONS STRUCTURAL CONCRETE TOPPINGS ON METAL DECK SHALL SATISFY THE REQUIREMENTS OF NOTE 3).

- A. FORMS AND STEEL SHALL BE FREE FROM ICE AND SNOW
- B. THE AGGREGATE OR MIXING WATER SHALL BE HEATED TO GIVE A MINIMUM CONCRETE TEMPERATURE OF 10°C AT POINT OF POUR.
- CONCRETE SHALL NOT BE PLACED ON OR AGAINST ANY SURFACE WHICH IS AT A TEMPERATURE OF LESS THAN 5°C.
- SLABS SHALL BE COVERED WITH CANVAS OR SIMILAR, KEPT A FEW INCHES CLEAR OF SURFACE.
- PROTECTION SHALL BE MAINTAINED FOR AT LEAST THE SPECIFIED CURING PERIOD
- CONCRETE TEMPERATURE SHALL BE MAINTAINED ABOVE 10°C FOR AT LEAST THE SPECIFIED CURING PERIOD.

FORECASTED AIR TEMPERATURE BELOW -4°C

A, B, C, D, AS UNDER NOTE 2.

- STOREY BELOW SHALL BE ENCLOSED AND ARTIFICIAL HEAT PROVIDED. HEATING TO BE STARTED AT LEAST ONE HOUR AHEAD OF POURING AND MAINTAINED FOR A MINIMUM OF THE SPECIFIED
- TEMPERATURE OF THE CONCRETE AT ALL SURFACES SHALL BE KEPT AT A MINIMUM OF 20°C FOR 3 DAYS, OR 10°C FOR 7 DAYS. CONCRETE SHALL BE KEPT ABOVE FREEZING TEMPERATURES UNTIL IT REACHES 70% OF ITS SPECIFIED STRENGTH.
- ENCLOSURE MUST BE CONSTRUCTED SO THAT AIR CAN CIRCULATE OUTSIDE THE OUTER EDGES AND MEMBERS.
- REINFORCING TO BE COVERED AND WARMED TO MAINTAIN ITS TEMPERATURE AT 0°C OR HIGHER AT THE TIME OF CONCRETE

CONCRETE CONSTRUCTION TOLERANCES

(TOLERANCES AS PER CSA A23.1, EXCEPT AS NOTED BELOW) CLOSER TOLERANCES SHALL BE MAINTAINED WHERE ARCHITECTURAL DETAILS OR OTHERS REQUIRE.

WHERE ANY DEVIATION OCCURS, AND IT IS ACCEPTABLE TO THE ENGINEER AND ARCHITECT, THE CONTRACTOR IS RESPONSIBLE FOR ADJUSTMENT OF OTHER BUILDING ELEMENTS TO ACCOMMODATE SUCH DEVIATION. COSTS FOR REMEDIAL WORK FOR DEVIATIONS NOT ACCEPTED SHALL BE BORNE BY THE CONTRACTOR.

1. VARIATION FROM THE PLUMB.

IN THE LINES AND SURFACES OF COLUMNS, PIERS, WALLS AND IN ARRISES: 0.25% OF HEIGHT (1 IN 400), MAXIMUM 40 mm OVER THE ENTIRE HEIGHT OF THE STRUCTURE.

ONLY ONE CURVATURE ALLOWED PER 3000 mm.

THE TOLERANCE GIVEN IS THE MAXIMUM VARIATION FROM A

ALL MEASUREMENTS SHALL BE TO THE SAME SIDE OF THE PLUMB LINE.

UNLESS SPECIFIED ELSEWHERE IN THE CONSTRUCTION DOCUMENTS - THE TOLERANCES FOR EXPOSED CORNER COLUMNS, CONTROL JOINT GROOVES, AND OTHER CONSPICUOUS LINES SHALL BE: (SEE ALSO ELEVATOR SHOP DRAWINGS, ETC.)

0.125% OF HEIGHT (1 IN 800), MAXIMUM 20 mm.

ONLY ONE CURVATURE ALLOWED PER 6000 mm.

MAXIMUM VARIATION IN WINDOW BAYS 0.2% OF OPENING. UNLESS SPECIFIED ELSEWHERE, FLOOR FINISHES SHALL BE CLASS A

"INSTITUTIONAL AND COMMERCIAL FLOOR" ± 8 mm PER 3000 mm.

ONLY ONE CURVATURE ALLOWED IN 3000 mm.

CLOSER TOLERANCES MAY BE REQUIRED TO GIVE THE QUALITY OF FINISH FLOOR SURFACES CALLED FOR ELSEWHERE IN THE CONTRACT DOCUMENTS.

- VARIATIONS OF STRUCTURAL CONCRETE ELEMENTS RELATED TO EACH OTHER AND RELATIVE TO A REFERENCED GRID SYSTEM FOR PLAN DIMENSIONS TO MEET CSA A23.1.
- VARIATION IN CROSS-SECTIONAL DIMENSIONS OF COLUMNS AND BEAMS AND IN THE THICKNESS OF SLABS AND WALLS: AS IN CSA A23.1.

ONLY ONE CURVATURE ALLOWED PER 3000 mm.

FOOTINGS:

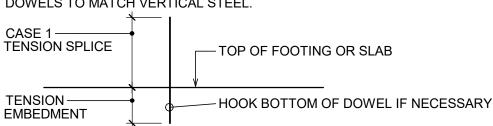
A. VARIATION IN DIMENSIONS IN PLAN: -- 50 mm

MISPLACEMENT OR ECCENTRICITY: TWO (2) PERCENT OF THE FOOTING WIDTH IN THE DIRECTION OF MISPLACEMENT BUT NOT MORE THAN ----- 50 mm

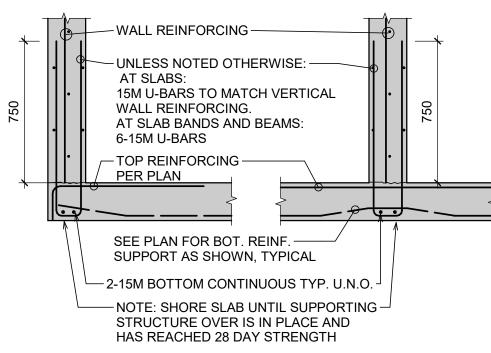
REDUCTION IN THICKNESS: --- 5% OF SPECIFIED THICKNESS

THE ABOVE REQUIREMENTS DO NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY OF MEETING MORE RIGID REQUIREMENTS SPECIFIED ELSEWHERE IN THE CONSTRUCTION DOCUMENTS OR AS REQUIRED BY EQUIPMENT SHOP DRAWINGS OR SPECIFICATIONS SUCH AS THOSE FOR ELEVATORS, ETC.

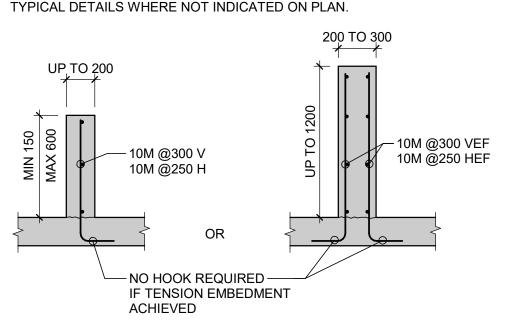
- ENDS OF ALL WALLS SHALL HAVE 2-15M VERTICAL LAPPED 625 UNLESS OTHERWISE NOTED ON DRAWINGS.
- ADD 2-15M PARALLEL TO ALL EDGES AND EXTENDING 625 BEYOND CORNERS AT OPENINGS IN WALLS.
- UNLESS NOTED OTHERWISE, PROVIDE DOWELS AT BOTTOM OF WALLS (I.E. AT FOOTINGS OR WHEREVER WALL BEGINS) AS SHOWN BELOW. DOWELS TO MATCH VERTICAL STEEL.



UNLESS NOTED OTHERWISE, PROVIDE U-BARS AS SHOWN WHERE FLOORS ARE SUPPORTED FROM THE BOTTOM OF WALLS.

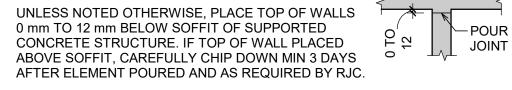


SEE ARCHITECTURAL DRAWINGS FOR EXTENT, THICKNESS AND LOCATION OF CONCRETE UPSTAND WALLS, PLANTER WALLS AND CURBS. BELOW ARE



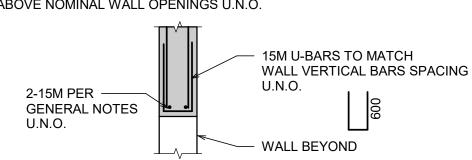
 UNLESS NOTED OTHERWISE, ALL RETAINING WALLS BELOW GRADE AND ALL EXTERIOR WALLS EXPOSED TO THE WEATHER ABOVE GRADE SHALL HAVE CONTROL JOINTS. SEE CONTROL JOINT DETAIL. CONSTRUCTION JOINT MAY REPLACE CONTROL JOINT WHERE REQUIRED. THE LOCATION OF CONTROL JOINTS IN EXPOSED CONCRETE WALLS SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW.

0 mm TO 12 mm BELOW SOFFIT OF SUPPORTED CONCRETE STRUCTURE. IF TOP OF WALL PLACED ABOVE SOFFIT, CAREFULLY CHIP DOWN MIN 3 DAYS



12. TOP OF WALL TRANSITION U.N.O. <u>∠</u> 90 HOOK WALL VERTICAL REINFORCING

13. ABOVE NOMINAL WALL OPENINGS U.N.O.



CASE 2 TENSION EMBEDMENT AND SPLICE CONDITIONS

TENSION EMBEDMENT AND SPLICE LENGTHS CONFORMING TO CSA A23.3 TABLE 12.1 (0.6 k₁k₂k₃k₄f_yd_b / √ f'_c) ARE TO BE AS PER THE FOLLOWING TABLE FOR MEMBERS NOT SATISFYING CASE 1 CONDITIONS AS SET OUT ABOVE. FOR EXAMPLE:

A. ONE WAY SLAB TOP BARS (SEE TOP BAR NOTE). B. SLAB BAND BOTTOM BARS.

C. BARS (EXCLUDING THE SPLICE) SPACED CLOSER TOGETHER THAN 2 BAR DIAMETERS IN SAME LAYER AND BETWEEN LAYERS.

D. STIRRUPS IN BEAMS AND GIRDERS. E. SEE ALSO NOTES ON TOP BARS AND EPOXY COATED REINFORCEMENT.

CONCRETE	EUNICTION	REBAR DESIGNATION (GRADE 400 LENGTHS)					
STRENGTH	FUNCTION	10M	15M	20M	25M	30M	35M
20 MPa	EMBEDMENT	430	645	860	1345	1610	1880
	(SPLICE)	(560)	(840)	(1120)	(1745)	(2095)	(2445)
25 MPa	EMBEDMENT	385	580	770	1200	1440	1680
	(SPLICE)	(500)	(750)	(1000)	(1560)	(1875)	(2185)
30 MPa	EMBEDMENT	355	530	705	1100	1315	1535
	(SPLICE)	(460)	(685)	(915)	(1425)	(1710)	(1995)
35 MPa	EMBEDMENT	325	490	650	1015	1220	1420
	(SPLICE)	(425)	(635)	(845)	(1320)	(1585)	(1850)
40 MPa	EMBEDMENT	305	460	610	950	1140	1330
	(SPLICE)	(395)	(595)	(790)	(1235)	(1480)	(1730)
45 MPa	EMBEDMENT	300	430	575	895	1075	1255
	(SPLICE)	(390)	(560)	(745)	(1165)	(1400)	(1630)
50 MPa	EMBEDMENT	300	410	545	850	1020	1190
	(SPLICE)	(390)	(530)	(710)	(1105)	(1325)	(1545)
55 MPa	EMBEDMENT	300	390	520	810	975	1135
	(SPLICE)	(390)	(505)	(675)	(1055)	(1265)	(1475)
60 MPa	EMBEDMENT	300	375	500	775	930	1085
	(SPLICE)	(390)	(485)	(645)	(1010)	(1210)	(1410)
65 MPa &	EMBEDMENT	300	360	480	750	900	1050
GREATER	(SPLICE)	(390)	(470)	(625)	(975)	(1170)	(1365)

1. "TOP BAR" VALUES ARE 1.3 TIMES THE ABOVE LENGTHS. "TOP BAR" APPLIES TO HORIZONTAL REINFORCEMENT CAST WITH 300 mm OR MORE OF CONCRETE BELOW THE BAR.

2. INCREASE THESE TABLE LENGTHS BY 1.5 TIMES FOR EPOXY COATED REINFORCEMENT. INCREASE THESE TABLE LENGTHS BY 1.7 TIMES FOR EPOXY COATED TOP REINFORCEMENT.

3. TABLE SHOWS LENGTHS FOR GRADE 400 REINFORCEMENT. MULTIPLY VALUES BY 1.25 FOR GRADE 500 REINFORCEMENT

4. INCREASE THESE TABLE LENGTHS BY 1.15 TIMES WHEN SPACING BETWEEN LAYERS OF REBAR IS 1.0db.

5. WHERE A TENSION SPLICE IS SPECIFIED BETWEEN TWO BARS OF DIFFERENT DIAMETERS. THE MINIMUM SPLICE LENGTH SHALL BE THE LESSER OF THE SPLICE LENGTH FOR THE SMALLER DIAMETER BAR AND THE EMBEDMENT LENGTH OF THE LARGER DIAMETER BAI

CONCRETE WALLS

1. THESE NOTES APPLY SPECIFICALLY TO CONCRETE WALLS NOT CLASSIFIED AS SHEAR WALLS. SEE ALSO CONC. SHEAR WALL NOTES.

UNLESS OTHERWISE NOTED, WALLS SHALL BE REINFORCED AS FOLLOWS:

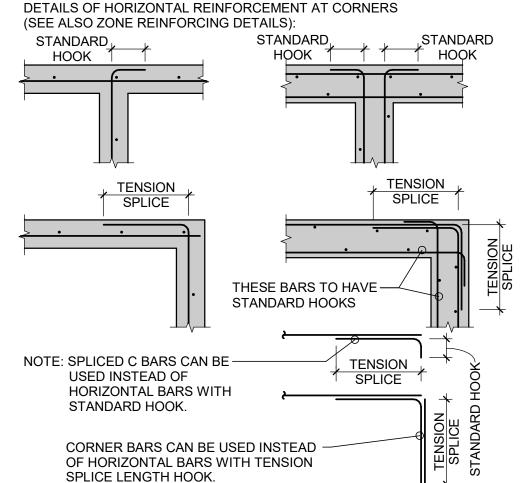
WALL THICKNESS	REINFORCING				
150mm	10M @450 V 10M @330 H				
200mm	10M @330 V	10M @250 H OR 15M @500 H			
200mm	10M @500 VEF	10M @500 HEF			
250mm	10M @500 VEF	10M @400 HEF			
300mm	10M @440 VEF	10M @330 HEF			
350mm	10M @380 VEF	10M @280 HEF			
400mm	10M @330 VEF	10M @250 HEF OR 15M @500 HEF			

FOR OTHER THICKNESSES, REINFORCEMENT TO BE PROPORTIONAL TO

15M @ 500 MAY BE SUBSTITUTED FOR 10M @ 330 ONLY WITH THE APPROVAL OF RJC. FOR WALLS WITH A SINGLE LAYER OF STEEL, THE WALL REINFORCING SHALL BE PLACED IN THE CENTRE OF THE WALL U.N.O.

- PLACE HORIZONTAL REINFORCEMENT IN OUTTER LAYERS OF THE CURTAINS AND VERTICALS AS 2ND INSIDE LAYER (BEHIND HORIZONTALS).
- ALL WALL REINFORCING SHALL BE CONTINUOUS, WITH HOOKS OR CORNER BARS USED AT ALL WALL JUNCTIONS. EXTEND HOOKS TO FAR FACE OF WALL. CORNER BARS TO BE LOCATED ON OUTSIDE FACE OR CENTRE OF WALL.
- HORIZONTAL AND VERTICAL SPLICES SHALL BE CASE 1 TENSION SPLICES. U.N.O. HORIZONTAL BARS NEED NOT BE CONSIDERED TOP BARS.

(SEE ALSO ZONE REINFORCING DETAILS):



EMBEDMENT / DEVELOPMENT LENGTHS AND SPLICE LENGTHS

- BASED ON CSA A23.3
- WHERE EMBEDMENT OR SPLICES ARE DIMENSIONED ON THE DRAWINGS, SUCH DIMENSION SHALL APPLY.
- WHERE THE DRAWINGS INDICATE A COMPRESSION EMBEDMENT, IT IS A COMPRESSION EMBEDMENT LENGTH AND IT SHALL BE AS NOTED BELOW.
- WHERE THE DRAWINGS INDICATE A TENSION EMBEDMENT, IT IS A TENSION EMBEDMENT LENGTH AND SHALL BE AS NOTED BELOW.
- WHERE NO EMBEDMENT OR EMBEDMENT TYPE IS CALLED FOR ON THESE DRAWINGS, IT SHALL BE A TENSION EMBEDMENT, EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION EMBEDMENT.
- WHERE NO SPLICE OR SPLICE TYPE IS CALLED FOR ON THESE DRAWINGS, IT SHALL BE A TENSION SPLICE, EXCEPT FOR COLUMNS WHICH SHALL BE A COMPRESSION SPLICE.
- IN TABLES BELOW, EMBEDMENT LENGTHS ARE SHOWN WITHOUT BRACKETS, AND SPLICE LENGTHS ARE SHOWN IN BRACKETS.
- ALL TENSION SPLICE LENGTHS ARE CLASS "B" (1.3 ld).
- WHERE MORE THAN ONE FACTOR APPLIES FOR INCREASING THE LENGTHS IN THESE TABLES, MULTIPLY ALL FACTORS TOGETHER.

COMPRESSION EMBEDMENT AND SPLICE LENGTHS

- 10. COMPRESSION EMBEDMENT REFERS TO THE LENGTH REQUIRED TO PROVIDE THE "COMPRESSION DEVELOPMENT LENGTH" AS DEFINED IN CSA A23.3 CLAUSE 12.3.2.
- 11. SPLICE LENGTH REFERS TO THE MINIMUM LAP LENGTH REQUIRED FOR A COMPRESSION SPLICE AS DEFINED IN CSA A23.3 CLAUSE 12.16.1.

CONCRETE	FUNCTION	REB/	AR DESIG	NATION	(GRADE	400 LENG	STHS)
STRENGTH	FUNCTION	10M	15M	20M	25M	30M	35M
20 MPa	EMBEDMENT	215	325	430	540	645	755
	(SPLICE)	(300)	(440)	(585)	(730)	(880)	(1025)
25 MPa	EMBEDMENT	200	290	385	480	580	675
	(SPLICE)	(300)	(440)	(585)	(730)	(880)	(1025)
30 MPa &	EMBEDMENT	200	265	355	440	530	620
GREATER	(SPLICE)	(300)	(440)	(585)	(730)	(880)	(1025)
NOTES:	NOTES: 1. TABLE SHOWS LENGTHS FOR GRADE 400 REINFORCEMENT.						

2. WHERE A COMPRESSION SPLICE IS SPECIFIED BETWEEN TWO BARS OF DIFFERENT DIAMETERS, THE MINIMUM SPLICE LENGTH SHALL BE THE LESSER OF THE SPLICE LENGTH FOR THE SMALLER DIAMETER BAR AND THE EMBEDMENT LENGTH

MULTIPLY VALUES BY 1.46 FOR GRADE 500 REINFORCEMENT.

TENSION EMBEDMENT AND SPLICE LENGTHS

OF THE LARGER DIAMETER BAR.

- TENSION EMBEDMENT REFERS TO THE LENGTH REQUIRED TO PROVIDE A TENSION DEVELOPMENT LENGTH" AS DEFINED IN CSA A23.3 CLAUSE 12.2.
- SPLICE LENGTH REFERS TO THE MINIMUM LAP LENGTH REQUIRED FOR A CLASS 'B' TENSION SPLICE (1.3ld) AS PER CSA A23.3 CLAUSE 12.15.

CASE 1 TENSION EMBEDMENT AND SPLICE CONDITIONS

- TENSION EMBEDMENT AND SPLICE LENGTHS CONFORMING TO CSA A23.3 TABLE 12.1 (0.45 $k_1k_2k_3k_4f_vd_b\sqrt{f'c}$) ARE TO BE AS PER THE FOLLOWING TABLE FOR:
- A. COLUMNS.
- B. BEAM AND GIRDER TOP AND BOTTOM BARS. C. SLAB BAND TOP BARS.
- D. TWO WAY SLAB TOP AND BOTTOM BARS. E. ONE WAY SLAB BOTTOM BARS.
- F. WALL HORIZONTAL AND VERTICAL DISTRIBUTED REINFORCING. G. SEE ALSO NOTES ON TOP BARS AND EPOXY COATED REINFORCEMENT H. MEMBERS WHICH DO NOT SATISFY THE ABOVE CONDITIONS SHALL HAVE

TENSION EMBEDMENTS AND SPLICES AS PER CASE 2 TABLE BELOW.

CONCRETE	FUNCTION	REBA	AR DESIG	NATION (GRADE 400 LENGTHS)			
STRENGTH	TONCTION	10M	15M	20M	25M	30M	35M
20 MPa	EMBEDMENT	325	485	645	1010	1210	1410
	(SPLICE)	(420)	(630)	(840)	(1310)	(1570)	(1835)
25 MPa	EMBEDMENT	300	435	580	900	1080	1260
	(SPLICE)	(390)	(565)	(750)	(1170)	(1405)	(1640)
30 MPa	EMBEDMENT	300	395	530	825	990	1155
	(SPLICE)	(390)	(515)	(685)	(1070)	(1285)	(1500)
35 MPa	EMBEDMENT	300	370	490	765	915	1065
	(SPLICE)	(390)	(475)	(635)	(990)	(1190)	(1385)
40 MPa	EMBEDMENT	300	345	460	715	855	1000
	(SPLICE)	(390)	(445)	(595)	(925)	(1110)	(1295)
45 MPa	EMBEDMENT	300	325	430	675	805	940
	(SPLICE)	(390)	(420)	(560)	(875)	(1050)	(1225)
50 MPa	EMBEDMENT	300	310	410	640	765	895
	(SPLICE)	(390)	(400)	(530)	(830)	(995)	(1160)
55 MPa	EMBEDMENT	300	300	390	610	730	850
	(SPLICE)	(390)	(390)	(505)	(790)	(950)	(1105)
60 MPa	EMBEDMENT	300	300	375	585	700	815
	(SPLICE)	(390)	(390)	(485)	(760)	(910)	(1060)
65 MPa &	EMBEDMENT	300	300	360	565	675	790
		_					

 "TOP BAR" VALUES ARE 1.3 TIMES THE ABOVE LENGTHS. "TOP BAR" APPLIES TO HORIZONTAL REINFORCEMENT CAST WITH 300 mm OR MORE OF CONCRETE BELOW THE BAR.

(SPLICE) | (390) | (390) | (470) | (735) | (880) | (1025)

- 2. "TOP BAR" FACTOR DOES NOT APPLY TO HORIZONTAL WALL
- REINFORCEMENT IN WALLS THAT ARE NOT VIBRATED. 3. INCREASE THESE TABLE LENGTHS BY 1.5 TIMES FOR EPOXY COATED REINFORCEMENT. INCREASE THESE TABLE LENGTHS
- 4. TABLE SHOWS LENGTHS FOR GRADE 400 REINFORCEMENT. MULTIPLY VALUES BY 1.25 FOR GRADE 500 REINFORCEMENT.

BY 1.7 TIMES FOR EPOXY COATED TOP REINFORCEMENT.

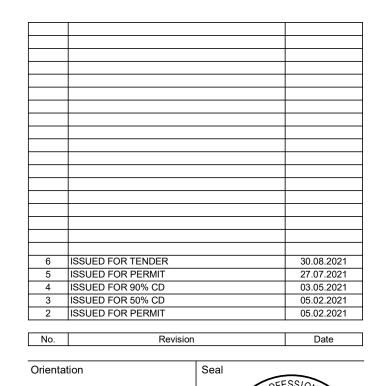
5. WHERE A TENSION SPLICE IS SPECIFIED BETWEEN TWO BARS OF DIFFERENT DIAMETERS, THE MINIMUM SPLICE LENGTH SHALL BE THE LESSER OF THE SPLICE LENGTH FOR THE SMALLER DIAMETER BAR AND THE EMBEDMENT LENGTH OF THE LARGER DIAMETER BAR.

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what is shown on these drawings.



100141559



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Project Information BFES Station 201

S.C.L.DION

100212603

2021-08-30

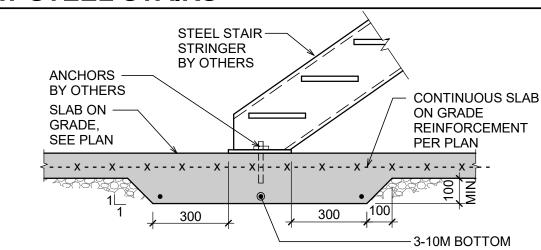
27 Rutherford Rd. S., Brampton, ON. L6W 3J3

City of Brampton Fire & Emergency Services

TYPICAL DETAILS

Drawing No 30.08.2021 Drawn by As indicated

THICKENING SLAB ON GRADE AT STEEL STAIRS



NON-STRUCTURAL CONCRETE TOPPING **ON CONCRETE SLABS**

- SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR EXTENT, THICKNESS, AND DETAILS.
- REINFORCE AS SHOWN ON STRUCTURAL OR ARCHITECTURAL PLANS AND SPECIFICATIONS, EXCEPT MINIMUM REINFORCING TO BE:

TOPPING THICKNESS	REINFORCING (TO BE PLACED AT MID-DEPTH)
UP TO 50 mm	1 SHEET OF WWR 152 X 152 - MW9.1 X MW9.1 LAP 300
75 mm	1 SHEET OF WWR 152 X 152 - MW13.3 X MW13.3 LAP 300 OR 2 SHEETS OF WWR 152 X 152 - MW9.1 X MW9.1 LAP 300
100 mm	2 SHEETS OF WWR 152 X 152 - MW9.1 X MW9.1 LAP 300 OR 10M @ 500 EACH WAY AT MID-DEPTH OF TOPPING
125 mm OR GREATER	TEMPERATURE REINFORCING EACH WAY, SEE "SLAB NOTES".

FOR OTHER THICKNESSES, REINFORCEMENT TO BE PROPORTIONAL TO

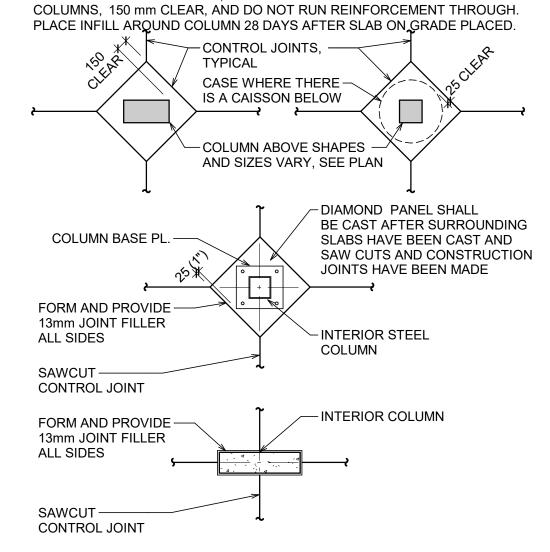
- SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR CONTROL JOINTS AND EXPANSION JOINTS, DETAILS, JOINT SPACING AND PATTERN. UNLESS NOTED OTHERWISE, PROVIDE 25 mm DEEP SAWCUTS OR TOOLED JOINTS. MINIMUM SPACING OF JOINTS IN EACH DIRECTION IS 3000 mm. IF SAWCUTS ARE USED, DO NOT CUT REINFORCING AND MAKE THE SAWCUTS WITHIN 12 HOURS OF POURING.
- PROVIDE 12 mm GAP (MIN.) AT EDGES TO ALLOW FOR EXPANSION. - CONCRETE SLAB SEE ALSO ARCHITECTURAL DETAILS OR CONCRETE AND REQUIREMENTS. TOPPING ON STEEL DECK
- SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR JOINT FILLERS AND SLIP SHEETS, IF REQUIRED.
- FIELD REVIEW OF ARCHITECTURAL TOPPING DETAILS SUCH AS REINFORCING, JOINTS, JOINT SPACING, JOINT FILLER, SLIP SHEETS ETC., BY OTHERS, NOT BY RJC. CALL ARCHITECT TO SCHEDULE FIELD REVIEW OF THOSE ELEMENTS.

SLAB ON GRADE REINFORCEMENT AND CONTROL JOINTS

- SLAB ON GRADE SHALL BE PLACED ON SOIL CAPABLE OF SUSTAINING 25.0 kPa MIN. WITHOUT SETTLEMENT RELATIVE TO THE BUILDINGS FOOTINGS. IN AREAS WHERE S.O.G. USED TO SUPPORT TEMPORARY SHORING LOADS, LARGER SUBGRADE CAPACITIES MAY BE REQUIRED PER LOADS SUPPLIED BY TEMPORARY WORKS ENGINEER.
- REINFORCE SLAB ON GRADE PER TABLE BELOW LOCATED 40mm FROM TOP OF SLAB WITH PROPER CHAIRS.

S.O.G. THICKNESS	MIN. REINFORCING U.N.O. ON PLAN
≤ 125mm	152x152 MW 18.7 x MW 18.7
126mm TO 175mm	10M @400 E.W.
>176mm	15M @400 E.W.

- UNLESS MORE RIGOROUS REQUIREMENTS ARE INDICATED ELSEWHERE ON THE STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS, SPACE CONTROL JOINTS AT 4500 mm O/C MAXIMUM.
- SAWCUT JOINTS 4mm WIDE AND 38 mm DEEP AS SOON AS PRACTICAL, BUT NO LATER THAN 12 HOURS AFTER PLACEMENT OF SLAB. USE EQUIPMENT THAT DOES NOT "RAVEL" THE EDGES OF THE CUT, SEAL AS REQUIRED.
- UNLESS NOTED OTHERWISE ON THE STRUCTURAL DRAWINGS, RUN ANY SLAB ON GRADE REINFORCEMENT THROUGH THE JOINTS.
- UNLESS NOTED OTHERWISE, SAWCUT DIAMOND PATTERN AROUND COLUMNS, 150 mm CLEAR OF COLUMNS.
- UNLESS NOTED OTHERWISE, FORM A DIAMOND SHAPE AROUND



- 8. APPROVAL OF ARCHITECT IS REQUIRED TO SUBSTITUTE "ZIP STRIPS" FOR SAWCUTS.
- REINFORCEMENT AS SPECIFIED IN NOTE #2 ABOVE TO CROSS AND LAP MIN 400mm AT COLD JOINTS. FOR UNREINFORCED SLAB ON GRADE PROVIDE 38x38mm DEEP CONTINUOUS SHEAR KEY IN S.O.G. FACE.

TYPICAL SLAB ON GRADE STEP DETAILS - U.N.O.

10M @400 MIN., BENT AS -

10M @400 MIN., BENT AS —

SHOWN U.N.O. ON PLAN

2-10M CONT. T.

10M @200 H. —

ADD C10M

1500@400-

SEE MECHANICAL ----DRAWINGS FOR GRATING

AND EDGE ANGLE

15M CONTINUOUS — ALL AROUND

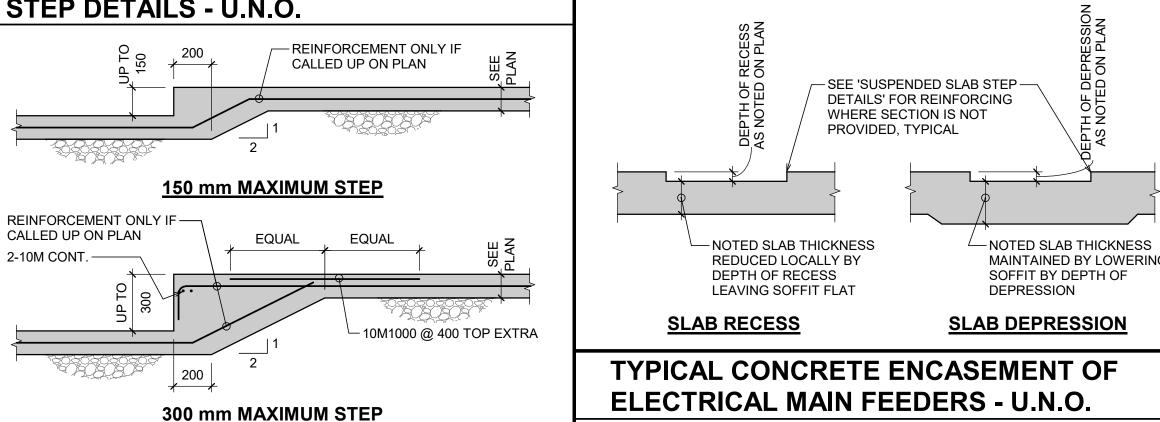
DETAILS

SLOPE TO-SUIT SOIL ည်ကြွ

SHOWN U.N.O. ON PLAN

2-10M CONT. T. -

10M @200 H.-



1200 MIN U.N.O.

125 MIN. OR NOT LESS

THAN SLAB THICKNESS

10M @ 400 EACH WAY AT MID-DEPTH

- 10M @250 EACH WAY OR SLAB REINFORCEMENT

<u>ALTERNATIVE</u>

IF SPECIFIED

SLOPE TO —

SUIT SOIL

1200 mm MAXIMUM STEP

-3-15M CONT.

1200 mm MAXIMUM - ALTERNATE

TYPICAL PIT OR TRENCH DETAIL-U.N.O.

-10M @250 EACH WAY -

OR 3-10M MINIMUM

EACH WAY

IN DEPTH DURING BACKFILLING

PROVIDE SHORING IN TRENCHES OVER 1200mm

NOTE: THE USE OF PRECAST TRENCHES

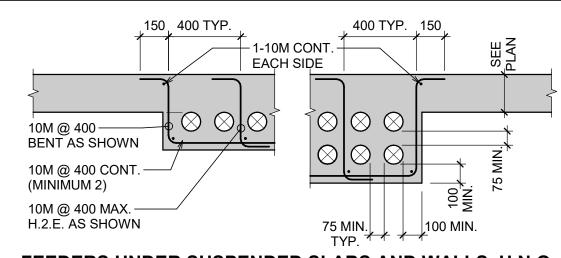
IS ACCEPTABLE PROVIDED THEY ARE SUPPLIED WITH A CONCRETE BASE.

- REINFORCEMENT ONLY IF-

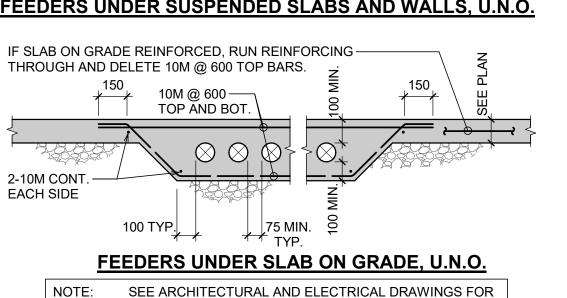
CALLED UP ON PLAN

ELECTRICAL MAIN FEEDERS - U.N.O.

SLAB DEPRESSION AND RECESS



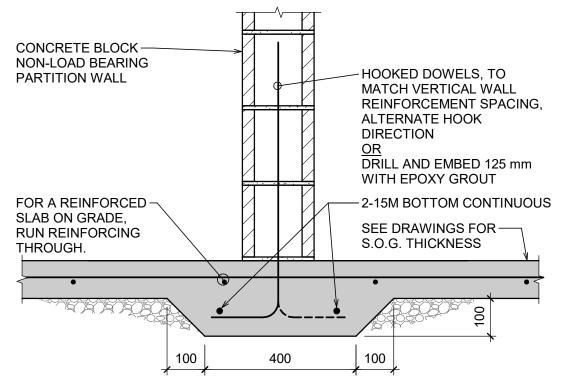
FEEDERS UNDER SUSPENDED SLABS AND WALLS, U.N.O.

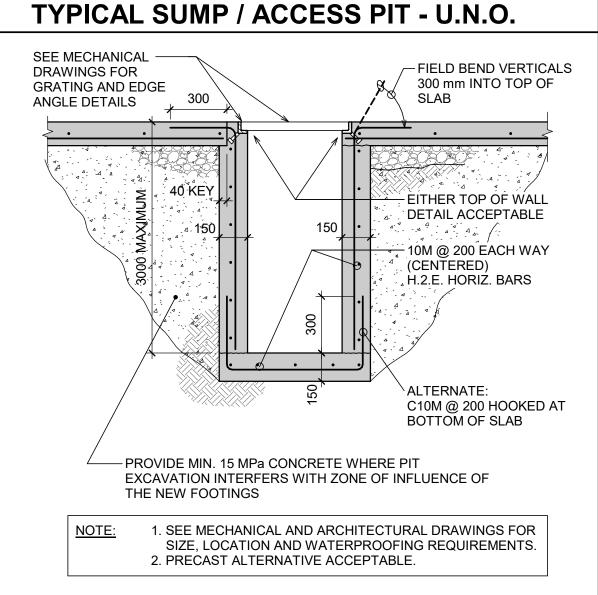


LOCATION, EXTENT AND NUMBER OF ELECTRICAL DUCTS.

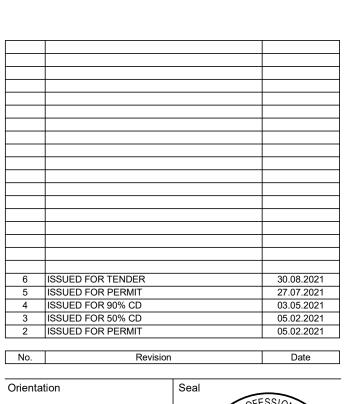
TYPICAL SLAB ON GRADE THICKENING **UNDER NON-LOAD BEARING BLOCK**

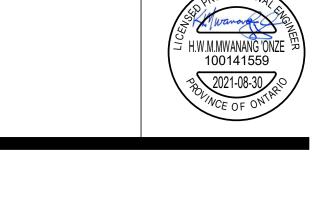
PARTITION - U.N.O.





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Project Information **BFES Station 201**

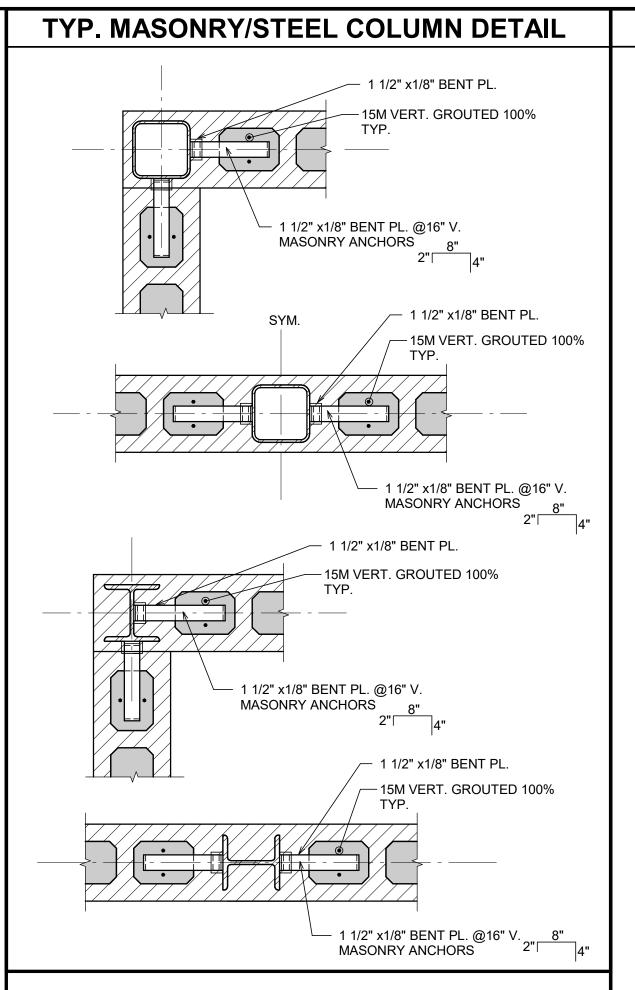
27 Rutherford Rd. S., Brampton, ON. L6W 3J3

City of Brampton Fire & Emergency Services

Drawing Title TYPICAL DETAILS

Project No

Drawing No 30.08.2021 Drawn by S106 Scale As indicated



LOAD BEARING MASONRY

- FOR ADDITIONAL REQUIREMENTS SEE MASONRY SPECIFICATION AND STRUCTURAL DRAWINGS.
- 2. MASONRY WORK SHALL CONFORM TO CSA S304.1 AND ITS REFERENCED DOCUMENTS, INCLUDING:
- A. CONCRETE BLOCK TO CAN/CSA-A165.1, TYPE H15/A, UNLESS NOTED

OTHERWISE ON SCHEDULE (BASED ON NET AREA).

- B. MORTAR TO CAN/CSA-A179, TYPE 'S' FOR ALL WALLS.C. GROUT TO CAN/CSA-A179.
- D. MASONRY WIRE REINFORCING TO CSA G30.5.

 E. REINFORCING BARS TO CAN/CSA-G30.18 400 MPa.

 WELDED BEINFORCING BARS TO CAN/CSA G30.18 400
- F. WELDED REINFORCING BARS TO CAN/CSA-G30.18 400 MPa.
 G. CONNECTIONS TO CAN/CSA-A370.
- H. PRACTICE TO CAN/CSA-A371.
- STRUCTURAL DRAWINGS INDICATE ONLY LOAD-BEARING WALLS. DESIGN IS BASED ON ENGINEERING ANALYSIS ACCORDING TO CSA S304.1.
- 4. FILL BLOCK CORES UNDER ALL CONCENTRATED LOADS WITH 12.5 MPa MIN. GROUT TO A DEPTH OF AT LEAST 400 mm MEASURED DOWN FROM THE BEARING UNLESS NOTED OTHERWISE.
- PROVIDE HEAVY DUTY LADDER TYPE OR TRUSS TYPE MASONRY REINFORCING (4.76 mm DIAMETER) IN HORIZONTAL JOINTS EVERY SECOND COURSE (400 mm) UNLESS NOTED OTHERWISE IN SCHEDULE.
- 6. PROVIDE LINTELS OVER ALL OPENINGS IN WALLS. SEE LINTEL SCHEDULE, UNLESS NOTED OTHERWISE ON PLAN. CONNECT BACK TO BACK ANGLES

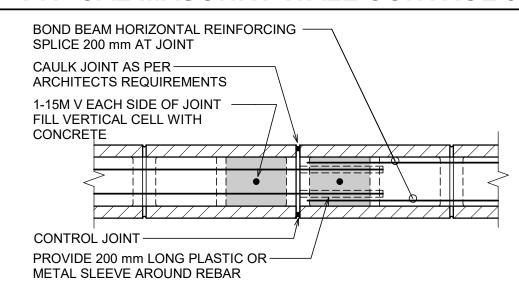
TOGETHER AT 500 mm O/C MAXIMUM. PROVIDE 150 mm MINIMUM END

- 7. PROVIDE 1-15M CONTINUOUS IN TOP COURSE OF WALL UNDER BEAM OR JOIST BEARING AND FILL CELLS SOLID WITH 12.5 MPa GROUT MIN.
- 8. LAPS: WIRE REINFORCEMENT ----- 200 mm 10M BARS ------ 400 mm 15M BARS ----- 700 mm 20M BARS ----- 1000 mm

BEARING FOR LINTELS.

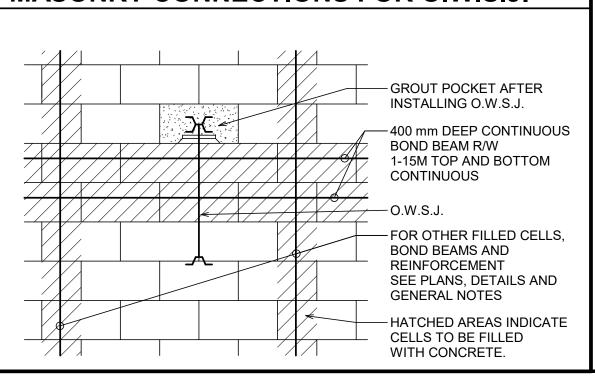
- O. UNLESS NOTED OTHERWISE, PROVIDE 2-15M VERTICAL BARS FULL HEIGHT AT:
- A. UNSUPPORTED ENDS OF WALLS.
- B. EACH CORNER AND AT INTERSECTIONS.C. EACH SIDE OF DOORS AND OTHER OPENINGS.
- 10. PROVIDE 1-15M IN EACH CELL OF ALL PIERS AND PILASTERS UNLESS OTHERWISE NOTED. ALL VERTICAL REINFORCING SHALL BE CONTINUED TO WITHIN 50 mm OF TOP OF THE WALL.
- 11. PROVIDE CLEANOUTS FOR ALL CELLS TO BE REINFORCED, REPEAT CLEANOUTS ABOVE BOND BEAMS.
- 12. FILL CELLS CONTAINING VERTICAL REINFORCING AND BOLTS WITH 12.5 MPa GROUT MIN. VIBRATE OR PUDDLE TO FILL CELLS COMPLETELY.
- 13. FILL CELLS IN 1200 mm LIFTS OR BETWEEN BOND BEAMS, WHICHEVER IS LESS
- 14. CONTROL JOINTS SHALL BE INSTALLED AT MAXIMUM SPACING OF 9000 mm, IF NOT OTHERWISE SHOWN ON DRAWINGS.
- 15. CONTROL JOINTS AND EXPANSION JOINTS SHALL BE CONTINUED THROUGH BOND BEAMS IF NOT OTHERWISE SHOWN.
- 16. OUTSIDE FACE OF EXTERIOR WALLS SHALL BE WATERPROOFED AS PER SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
- 17. NO MASONRY WORK SHALL BE PERMITTED WITH TEMPERATURE BELOW 5° CELSIUS, UNLESS PROVISIONS ARE MADE FOR HEATING THE MATERIALS AND PROTECTING THE WORK.
- 18. PROVIDE 15M @ 1200 mm O/C FULL HEIGHT FOR ALL LOAD BEARING MASONRY WALLS, UNLESS NOTED OTHERWISE ON SCHEDULE.
- 19. PROVIDE 1200 mm STARTER DOWELS TO MATCH ALL VERTICAL REINFORCING, UNLESS NOTED OTHERWISE.
- 20. LOAD BEARING MASONRY IS SHOWN THUS ______ ON PLAN/SCHEDULE/

TYPICAL MASONRY WALL CONTROL JOINT



- PLAN SECTION TAKEN THROUGH BOND BEAM.
- DISCONTINUE HORIZONTAL LADDER REINFORCEMENT EVERY SECOND LAYER.
- SPACE CONTROL JOINTS AT 9000 mm O/C MAXIMUM UNLESS NOTED OTHERWISE ON PLAN.
- COORDINATE LOCATIONS WITH ARCHITECT AND READ JONES
 COURSE OF THE PROPERTY OF THE PROP
- CHRISTOFFERSEN LTD.CONTROL JOINTS SHALL NOT BE LOCATED UNDER OWSJ OR STEEL
- BEAMS.

TYPICAL REINFORCING AT LOAD BEARING MASONRY CONNECTIONS FOR O.W.S.J.



NON LOAD BEARING MASONRY

- NON-LOAD BEARING MASONRY WALLS ARE THOSE THAT DO NOT SUPPORT FLOORS OR ROOFS, WHETHER THEY ARE INTERIOR OR EXTERIOR WALLS. NON- LOAD BEARING MASONRY IS NOT PART OF THE PRIMARY STRUCTURAL SYSTEM.
 - THE FOLLOWING NOTES FOR NON-LOAD BEARING MASONRY ARE PROVIDED ON THESE STRUCTURAL DRAWINGS ONLY FOR INITIAL PRICE ESTIMATING PURPOSES AND AS AN OUTLINE SPECIFICATION FOR TENDERING OF THE MASONRY PACKAGE. THESE NOTES SHALL NOT BE CONSIDERED PART OF THE CONSTRUCTION DOCUMENTS. UNDER AWARD OF THE MASONRY CONTRACT, THE SUCCESSFUL CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE ENGINEERING DESIGN OF NON-LOAD BEARING MASONRY AS DEPICTED ON THE ARCHITECTURAL DRAWINGS AND SHALL ALSO COORDINATE DESIGN OF THE MASONRY WITH MECHANICAL AND ELECTRICAL TRADES FOR WALL OPENINGS. THE SPECIALTY ENGINEER SHALL ALSO ENSURE QUALITY ASSURANCE OF THE WORK ON SITE BY PERFORMING FIELD REVIEW. FIELD REVIEW OF NON-LOAD BEARING MASONRY IS NOT PART OF RJC'S SCOPE AS REVIEWER OF THE PRIMARY STRUCTURAL SYSTEM.
 - 3. STRUCTURAL DRAWINGS INDICATE ONLY LOAD-BEARING WALLS. DESIGN IS BASED ON ENGINEERING ANALYSIS ACCORDING TO CSA S304.1.
- 4. FOR ADDITIONAL REQUIREMENTS SEE MASONRY SPECIFICATION.
- . MASONRY WORK SHALL CONFORM TO CSA S304.1 AND ITS REFERENCED DOCUMENTS, INCLUDING:
- A. CONCRETE BLOCK TO CAN/CSA-A165.1, TYPE H15/A, UNLESS NOTED OTHERWISE ON SCHEDULE (BASED ON NET AREA).
- B. MORTAR SHALL BE TYPE S PREPARED BY PROPORTION SPECIFICATION IN ACCORDANCE WITH CAN/CSA-A179.
- PORTLAND CEMENT-LIME MIX FORMULATION
 TYPE 10 PORTLAND CEMENT
- TYPE S HYDRATED LIME.
 GROUT PREPARED OFF SITE SHALL BE COURSE PREPARED BY
 PROPERTY SPECIFICATION IN ACCORDANCE WITH CAN/CSA-A179.
- MINIMUM 28 DAY COMPRESSIVE STRENGTH 12.5 MPa
 SLUMP 200 mm MINIMUM TO 250 mm MAXIMUM.
 GROUT SHALL BE FINE WHERE MAXIMUM GROUT SPACE IS
- LESS THAN 50 mm IN ANY DIRECTION.
 TESTING SHALL BE IN ACCORDANCE WITH CAN/CSA-A179
- AND ITS APPENDIX.
 GROUT PREPARED ON SITE SHALL BE PREPARED BY PROPORTION SPECIFICATION IN ACCORDANCE WITH CAN/CSA-A179.
- D. MASONRY WIRE REINFORCING TO CSA G30.5.
- E. REINFORCING BARS TO CAN/CSA-G30.18 400 MPa.
- F. WELDED REINFORCING BARS TO CAN/CSA-G30.18 400 MPa.G. CONNECTIONS TO CAN/CSA-A370.
- H. PRACTICE TO CAN/CSA-A371.
- 6. FILL BLOCK CORES UNDER ALL CONCENTRATED LOADS WITH 12.5 MPa MIN. GROUT TO A DEPTH OF AT LEAST 400 mm MEASURED DOWN FROM THE BEARING UNLESS NOTED OTHERWISE.
- PROVIDE HEAVY DUTY LADDER TYPE OR TRUSS TYPE MASONRY REINFORCING (4.76 mm DIAMETER) IN HORIZONTAL JOINTS EVERY SECOND COURSE (400 mm) UNLESS NOTED OTHERWISE IN SCHEDULE.
- 8. PROVIDE LINTELS OVER ALL OPENINGS IN WALLS. SEE LINTEL SCHEDULE, UNLESS NOTED OTHERWISE ON PLAN. CONNECT BACK TO BACK ANGLES TOGETHER AT 500 mm O/C MAXIMUM. PROVIDE 150 mm MINIMUM END BEARING FOR LINTELS.
- 9. LAPS: WIRE REINFORCEMENT ----- 200 mm 10M BARS ------ 400 mm 15M BARS ----- 700 mm 20M BARS ----- 1000 mm
- 10. UNLESS NOTED OTHERWISE, PROVIDE 1-15M VERTICAL BARS FULL
- A. UNSUPPORTED ENDS OF WALLS.

HEIGHT AT:

- B. EACH CORNER AND AT INTERSECTIONS.
 C. EACH SIDE OF DOORS AND OTHER OPENINGS.
- 11. PROVIDE 1-15M IN EACH CELL OF ALL PIERS AND PILASTERS UNLESS OTHERWISE NOTED. ALL VERTICAL REINFORCING SHALL BE CONTINUED TO WITHIN 50 mm OF TOP OF THE WALL.
- 12. PROVIDE CLEANOUTS FOR ALL CELLS TO BE REINFORCED, REPEAT CLEANOUTS ABOVE BOND BEAMS.
- 13. FILL CELLS CONTAINING VERTICAL REINFORCING AND BOLTS WITH 12.5 MPa GROUT MIN. VIBRATE OR PUDDLE TO FILL CELLS COMPLETELY.
- 14. FILL CELLS IN 1200 mm LIFTS OR BETWEEN BOND BEAMS, WHICHEVER IS LESS.
- 15. CONTROL JOINTS SHALL BE INSTALLED AT MAXIMUM SPACING OF 9000 mm, IF NOT OTHERWISE SHOWN ON DRAWINGS.
- 16. CONTROL JOINTS AND EXPANSION JOINTS SHALL BE CONTINUED THROUGH BOND BEAMS IF NOT OTHERWISE SHOWN.
 17. OUTSIDE FACE OF EXTERIOR WALLS SHALL BE WATERPROOFED AS PER
- SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.

 18. NO MASONRY WORK SHALL BE PERMITTED WITH TEMPERATURE BELOW
- 5° CELSIUS, UNLESS PROVISIONS ARE MADE FOR HEATING THE MATERIALS AND PROTECTING THE WORK.
- PROVIDE 15M STARTER DOWELS TO MATCH ALL VERTICAL REINFORCING, UNLESS NOTED OTHERWISE.
- 20. U.N.O. FOR TOP CONNECTION DETAILS, SEE STANDARD DETAILS ON STRUCTURAL DRAWINGS.
- 21. TIE MASONRY UNITS TO ADJACENT CONCRETE WALLS OR COLUMNS WITH DOVETAIL ANCHORS AND EMBEDDED SLOTS. ANCHORS TO BE "STANDARD" DOVETAIL t = 1.5 mm @ 600 O/C.
- 22. REINFORCING IN NON-LOAD BEARING WALL FOR PRICING ONLY. IN ADDITION TO THAT NOTED IN POINT 10.

	INTERIOR	EXTERIOR
WALL	(PARTITION WALL)	(WIND BEARING WALL)
THICKNESS	MAXIMUM HEIGHT	,
mm (Inches)	& MIN. REINFORCING	MAXIMUM HEIGHT
	REINFORCED	& MIN. REINFORCING
140	4200	4200
(6")	15M @800 V.	15M @600 V.
190	5600	5600
(8")	15M @1000 V.	15M @600 V.
240	7200	7200
(10")	15M @600 V.	20M @600 V.
290	8400	8400
(12")	20M @600 V.	20M @400 V.

TYPICAL MECHANICAL / ELECTRICAL HOUSEKEEPING PAD & FLOATING SLAB

1. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION, EXTENT,

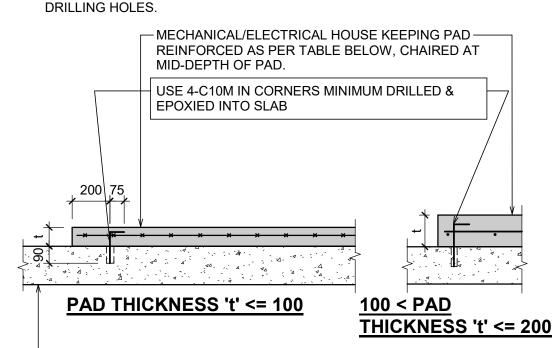
AND THICKNESS OF HOUSEKEEPING PADS.

2. THIS DETAIL PROVIDES RESISTANCE TO HORIZONTAL (SLIDING) FORCES ONLY FROM EARTHQUAKE LOADING ON PAD AND EQUIPMENT. ADDITIONAL CONNECTIONS FOR UPLIFT FORCES FROM EQUIPMENT TO BE DESIGNED AND DETAILED BY SPECIALTY ENGINEER AND WILL REQUIRE ANCHORING THROUGH THE PAD AND INTO OR THROUGH THE STRUCTURAL SLAB. IN POST-TENSIONED FLOORS, LOCATE TENDONS BEFORE

SEISMIC ANCHORAGE
BY OTHERS
(DETAILS MAY VARY)

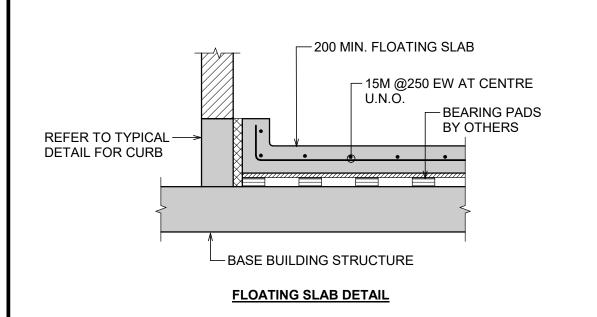
HOUSEKEEPING PAD

MAIN STRUCTURE

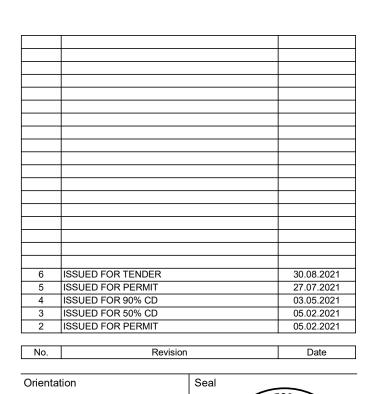


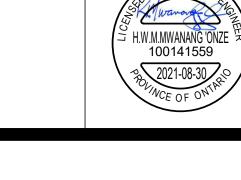
-STRUCTURAL SLAB OR COMPOSITE DECK. IF STEEL DECK AND TOPPING, REPLACE C10M WITH 10mm Ø HILTI HDI EMBEDDED 50mm INTO TOPPING C/W 10M HOOKED THREADED BAR.

PAD THICKNESS 't'	REINFORCEMENT
50	152x152MW18.7xMW18.7WWF 1 LAYER
100	152x152MW18.7xMW18.7WWF 1 LAYER
150	10M @300 EW AT CENTRE
200	10M @400 T&BEW



- 1. All drawings, plans, models, designs, specifications and other documents prepared by Read Jones Christoffersen Ltd. ("RJC") and used in connection with this project are instruments of service for the work shown in them (the "Work") and as such are and remain the property of RJC whether the Work is executed or not, and RJC reserves the copyright in them and in the Work executed from them, and they shall not be used for any other work or project.
- 2. These drawings are "design drawings" only. They may not be suitable for use as shop drawings. Use of these drawings as base drawings for "shop drawings" is not permitted unless written permission containing certain conditions and limitations is obtained from RJC. The work "as constructed" may vary from what is shown on these drawings.
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Project Information
BFES Station 201

27 Rutherford Rd. S., Brampton, ON. L6W 3J3

For
City of Brampton Fire & Emergency Services

Drawing Title

TYPICAL DETAILS

Project No

Date 30.08.2021

Drawn by BK

Scale As indicated

STRUCTURAL STEEL

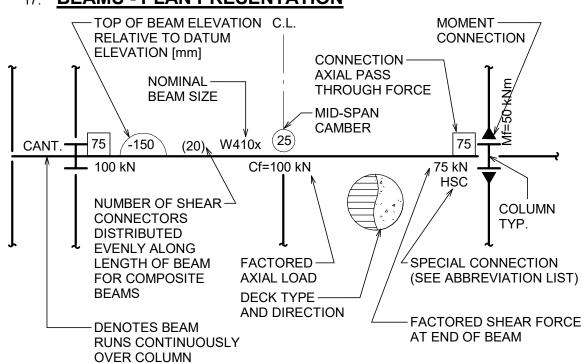
- STRUCTURAL STEEL SECTIONS SHALL BE NEW AND CONFORM TO THE
- A. FABRICATION, ERECTION, STRUCTURAL DESIGN, AND DETAILING OF ALL STEEL SHALL BE IN ACCORDANCE WITH ----- CAN/CSA-S16. WIDE FLANGE BEAMS AND WWF SECTIONS --- CSA G40.21 350W
- MISCELLANEOUS ROLLED SECTIONS - CSA G40.21 300W (EXCEPT WIDE FLANGES) ----
- HOLLOW STRUCTURAL SECTIONS -------- ASTM A500 GRADE C CSA G40.21 300W ROLLED PLATES --BOLTS (SEE PLANS AND DETAILS) ------- ASTM A325 OR
- STRUCTURAL STEEL ANCHOR RODS (U.N.O.) -- ASTM F1554 **GRADE 36 MINIMUM** H. REINFORCING BAR ANCHOR BOLTS ------CAN/CSA-G30.18R,

ASTM A490

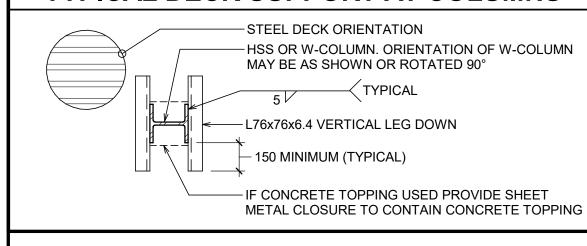
GRADE 400

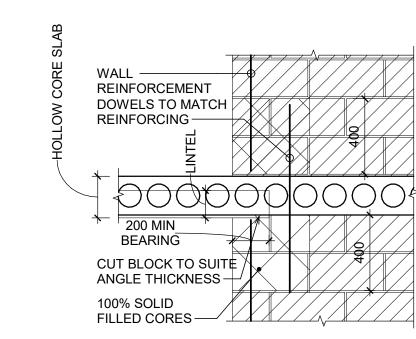
- FILLET WELDS SHALL BE 5 mm MINIMUM U.N.O.
- BOLTS SHALL BE A325 19 mm Ø MINIMUM U.N.O.
- BOLTED CONNECTIONS SHALL HAVE A MINIMUM OF TWO BOLTS IN EACH CONNECTED PIECE AND BE DESIGNED AS BEARING CONNECTIONS, U.N.O.
- ALL WELDED HEADED STUDS AND WELDED DEFORMED BAR ANCHORS SHALL BE INSTALLED AS PER THE MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS OR SHOP FILLET WELDED. ANY FIELD FILLET WELDED DEFORMED BARS OR STUDS WILL BE REJECTED. SEE PLANS, SECTIONS, DETAILS, AND SCHEDULES FOR LOCATIONS ETC., THE CONTRACTOR SHALL CO-ORDINATE THE DESIGN, SUPPLY, AND INSTALLATION OF ALL STUDS AND ANCHORS, INCLUDING, BUT NOT LIMITED TO STUDS AND DEFORMED BAR ANCHORS ON COMPOSITE BEAMS, DRAG STRUTS, EMBEDDED PLATES, ETC.
- STEEL IN THE SEISMIC ENERGY DISSIPATION SYSTEM SHALL SATISFY THE LIMITS OF Fv. Fu. AND CHARPY V-NOTCH IMPACT REQUIREMENTS AS NOTED IN CAN/CSA S16 CLAUSE 27.
- ALL WELDS AND WELD MATERIAL IN THE SEISMIC ENERGY DISSIPATION SYSTEM SHALL SATISFY THE CHARPY REQUIREMENTS AS NOTED IN CAN/CSA S16 CLAUSE 27.
- UNLESS NOTED OTHERWISE, COLUMN CAP PLATES SHALL BE 16 mm THICK AND COLUMN BASE PLATES SHALL BE 20 mm MINIMUM THICK.
- PROVIDE 6 mm CAP PLATES FOR ALL HSS MEMBERS U.N.O.
- CONNECTION DETAILS SHOWN ON THE STRUCTURAL DRAWINGS SHALL NOT BE ALTERED BY THE CONTRACTOR WITHOUT WRITTEN APPROVAL FROM READ JONES CHRISTOFFERSEN LTD.
- FRAME ALL ROOF AND FLOOR OPENINGS IN ACCORDANCE WITH THE DETAILS IN THE GENERAL NOTES UNLESS NOTED OTHERWISE ON THE
- 12. UNLESS NOTED OTHERWISE ON THE PLANS, REFER TO THE DETAILS IN THE GENERAL NOTES FOR FRAMING FOR SUPPORT OF ROOF TOP MECHANICAL EQUIPMENT.
- 13. STEEL SHALL BE PREPARED AND FINISHED IN ACCORDANCE WITH THE CSA STANDARD S16 AND THE ARCHITECTURAL DRAWINGS AND SPECIFICATION. MAY INCLUDE ADDITIONAL CLEANING AND PRIMING
- 14. ALL STRUCTURAL STEEL OUTSIDE OF THE BUILDING ENVELOPE TO BE HOT DIPPED GALVANIZED UNLESS NOTED OTHERWISE
- 15. DESIGN DRAWINGS INCLUDE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. SEE ALSO ARCHITECTURAL DRAWINGS FOR ROOF AND FLOOR ELEVATIONS, ROOF SLOPES, EDGE DETAILS, AND ADDITIONAL DIMENSIONS AND DETAILS. WHERE ELEVATIONS, ROOF SLOPES, ETC., ARE SHOWN ON THE STRUCTURAL DRAWINGS, THEY MUST BE CONFIRMED WITH THE ARCHITECTURAL DRAWINGS.
- 16. UNLESS NOTED OTHERWISE, DO NOT OVERSIZE HOLES IN STEEL TO FIT ANY ANCHOR LOCATIONS. FOR COLUMN BASE PLATE HOLES, UNLESS NOTED OTHERWISE ON DRAWINGS, FOLLOW STANDARD PRACTICE WHICH IS TO USE SLIGHTLY OVERSIZED HOLES. USE 6 mm OVERSIZED HOLE DIAMETER FOR COLUMN ANCHOR RODS UP TO AND INCLUDING 27 mm DIAMETER, AND 12 mm OVERSIZED HOLE DIAMETER FOR COLUMN ANCHOR RODS GREATER THAN 27 mm DIAMETER.
- 16. THIS SYMBOL: MEANS BEAM IS MOMENT CONNECTED THROUGH SUPPORTING BEAM OR COLUMN. PROVIDE FULL CAPACITY MOMENT CONNECTION U.N.O.

17. BEAMS - PLAN PRESENTATION



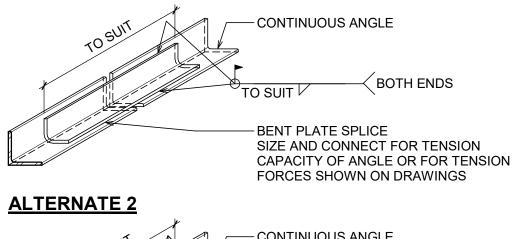
TYPICAL DECK SUPPORT AT COLUMNS

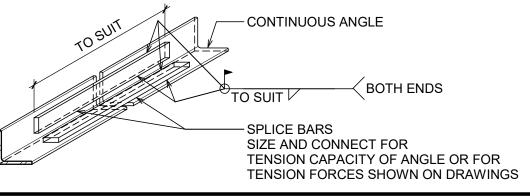




TYPICAL TENSION SPLICE FOR ANGLES

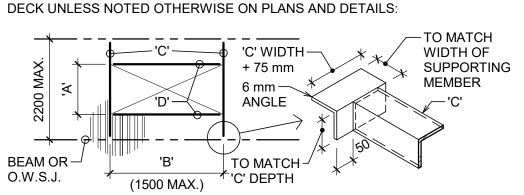
ALTERNATE 1





TYPICAL FRAMING AROUND OPENINGS IN STEEL DECK WITHOUT **CONCRETE TOPPING**

- SEE ALSO MECHANICAL. ELECTRICAL AND ARCHITECTURAL DRAWINGS FOR ALL OPENINGS IN DECK.
- U.N.O. REINFORCE OPENINGS WITHOUT MECHANICAL UNITS BETWEEN 150 mm TO 450 mm MAXIMUM DIMENSION WITH L76x76x4.8 X 1200 mm LONG. FASTEN TO EVERY FLUTE. MIN. 600 CLEAR BETWEEN OPENINGS. OPENINGS LESS THAN 150mm IF 300 CLEAR BETWEEN OPENINGS NEED NOT BE REINFORCED.
- TYPICAL DETAILS FOR SMALL MECHANICAL UNITS AND/OR OPENINGS IN



CONNECT ANGLES FOR MAXIMUM FACTORED VERTICAL LOAD OF 6 kN.

MECH. UNIT OR OPENING SIZE 'A' x 'B'	ANGLE 'C'	ANGLE 'D'	MECHANICAL UNIT WEIGHT (SPECIFIED)
150 X 150 TO 450 X 450	L76x76x6.4	L76x76x4.8	0.25 kN TO 1.0 kN
450 X 450 TO 1500 X 1500	L102x102x6.4	L76x76x4.8	NO UNIT
450 X 450 TO 1500 X 900	L102x102x6.4	L76x76x6.4	LESS THAN OR EQUAL TO 2 kN (1500 mm MAX. HIGH)
450 X 900 TO 1500 X 1500	L102x102x6.4	L102x102x6.4	LESS THAN OR EQUAL TO 2 kN (1500 mm MAX. HIGH)

WHERE AN OPENING IN DECK IS UNDER A MECHANICAL UNIT AND IS SMALLER THAN THE FRAMING REQUIRED TO SUPPORT THE MECHANICAL UNIT, REINFORCE THE OPENING WITH L76x76x4.8 ON ALL FOUR SIDES SPANNING BETWEEN THE MECHANICAL UNIT SUPPORT MEMBERS. SEE NOTE 3, PLANS AND DETAILS FOR MECHANICAL UNIT SUPPORT FRAMING.

LINTELS

OVER ALL OPENINGS IN MASONRY WALLS PROVIDE THE FOLLOWING LINTELS. UNLESS OTHERWISE SHOWN.

BLOCK WYTHES

STEEL LINTELS

CLEAR SPAN	140 WALL	190 WALL	240 WALL	290 WALL
UP TO 1200	2 - L64x64x6.4	2 - L89x89x7.9	L89x89x7.9 + L127x 89 x 7.9 LLV	3 - L89x89x7.9
1201 TO 1800	2 - L89x64x6.4 LLV	2 - L127x89x7.9 LLV	L127x89x7.9 LLV + L127x127x7.9	3 - L127x89x7.9 LLV
1801 TO 2400	2 - L89x64x7.9 LLV	2 - L127x89x9.5 LLV	L127x89x9.5 LLV + L127x127x9.5	3 - L127x89x9.5 LLV
2401 TO 3000	2 - L89x64x9.5 LLV	2 - L152x89x9.5 LLV	L152x89x9.5 LLV + L127x127x9.5	3 - L152x89x9.5 LLV

OR BLOCK LINTELS

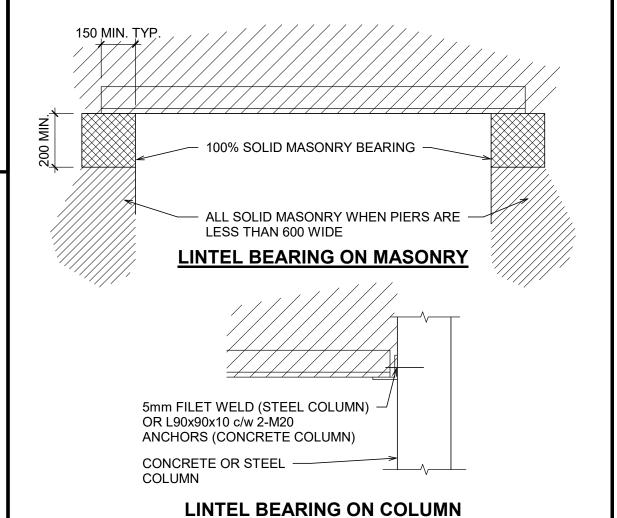
CLEAR SPAN	WALL THICKNESS	DEPTH	REINFORCING (TOP AND BOTTOM)
	140	200	1-10M
UP TO 1200	190	200	1-15M
	240	200	1-15M
	290	200	1-15M
	140	300	1-15M
4204 TO 4000	190	300	1-15M
1201 TO 1800	240	300	1-15M
	290	300	1-15M
1801 TO 2400	140	400	1-15M
	190	400	2-15M
1001 10 2400	240	400	2-15M
	290	300	2-15M
	140	600	1-20M
2401 TO 3000	190	600	2-15M
	240	400	2-15M
	290	400	2-15M

BRICK WYTHES

FOR EACH 100mm LENGTH OF WALL

TOR EAGIT 100	TOR EAGIT TOOMINI LENGTH OF WALL				
CLEAR SPAN mm	SIZE				
UP TO 1200	L 89 x 89 x 7.9				
1201 TO 1800	L 127 x 89 x 7.9 (LLV)				
1801 TO 2400	L 152 x 89 x 7.9 (LLV)				

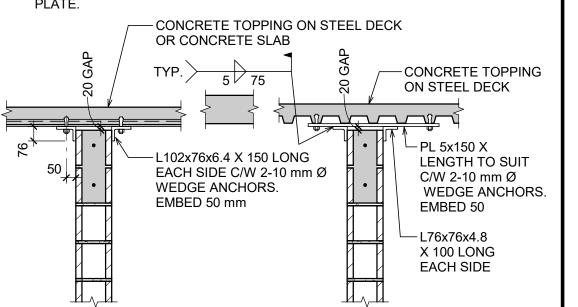
- WELD BACK TO BACK ANGLES TOGETHER TOP AND BOTTOM WITH 5mm FILLET 50mm LONG AT 450mm MAXIMUM CENTERS.
- MINIMUM BEARING FOR STEEL LINTELS SHALL BE 150mm AND BLOCK LINTELS SHALL BE 200mm.
- FOR WALLS OVER 300mm THICK ADD ONE ANGLE FOR EACH ADDITIONAL 100mm OF WALL THICKNESS OR PORTION THEREOF.
- FOR LINTELS ABUTTING STEEL COLUMNS, CONCRETE WALL OR COLUMNS PROVIDE L 90x90x10 SHELF ANGLE.
- FILL VOIDS OF LINTEL BLOCK WITH 12.5 MPa GROUT MIN.
- USE MASONRY LINTELS IN ALL FIRE RATED MASONRY WALLS SEE ARCHITECTURAL DRAWINGS FOR WALL RATINGS.
- FOR 140 BLOCK USE BLOCK LINTELS.
- ALL STEEL LINTELS AND SHELF ANGLES IN THE EXTERIOR MASONRY SHALL BE HOT DIP GALVANIZED.



SUPPORT DETAILS AT TOP OF NON-BEARING BLOCK WALLS

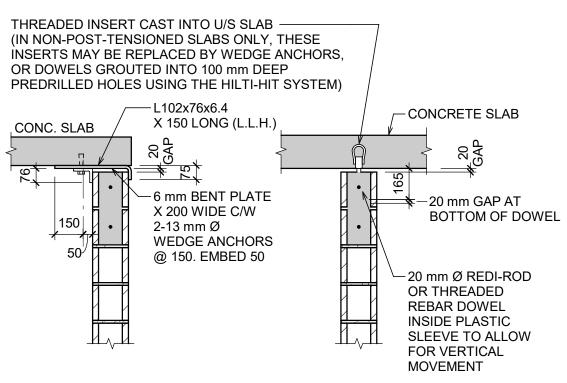
FOR CONCRETE SLABS AND CONCRETE TOPPING ON STEEL DECK

ALL CONNECTIONS AT 1200 c/c MAX. PROVIDE CONT. FULLY GROUTED 400 DP. R/W 2-10M TOP BOND BEAM TOP U.N.O. AT UNDERSIDE OF POST-TENSIONED SLAB PROVIDE EMBEDDED PLATE WITH NELSON STUDS INSTEAD OF WEDGE ANCHORS. FIELD WELD ANGLES TO EMBEDDED



ALTERNATE 1

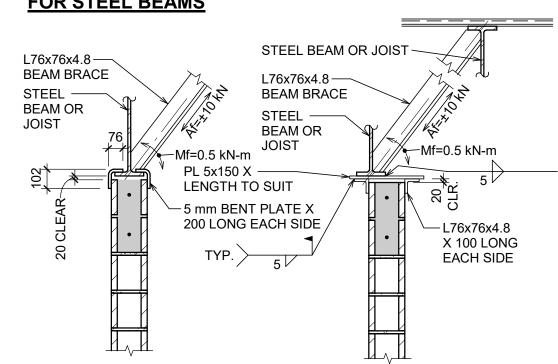
ALTERNATE 2



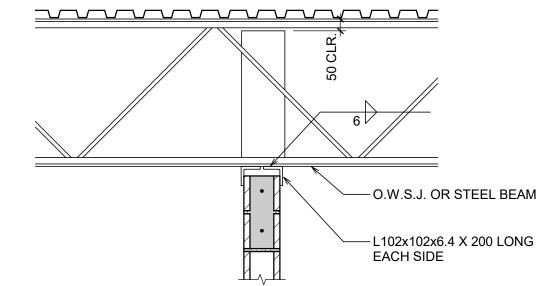
ALTERNATE 3 (AT EDGES OF SLABS

ALTERNATE 4

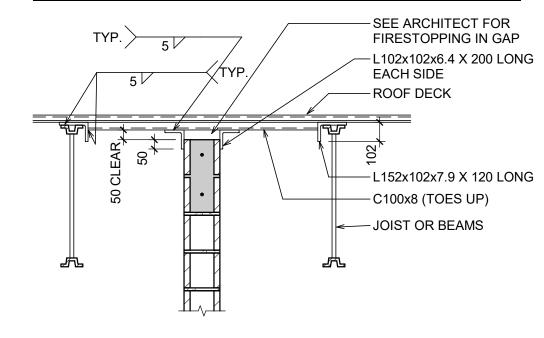
FOR STEEL BEAMS



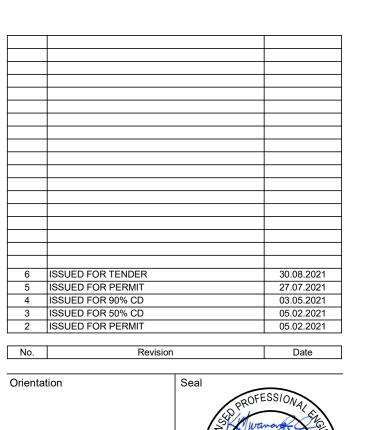
FOR O.W.S.J. OR STEEL BEAMS PERPENDICULAR TO WALL NOTE: ALL CONNECTIONS TO BE AT 1200 mm O/C MAXIMUM U.N.O.



FOR O.W.S.J. OR STEEL BEAMS PARALLEL TO WALL



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Read Jones Christoffersen Ltd. Engineers rjc.ca

H.W.M.MWANANG 'ONZ

100141559

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Project Information **BFES Station 201**

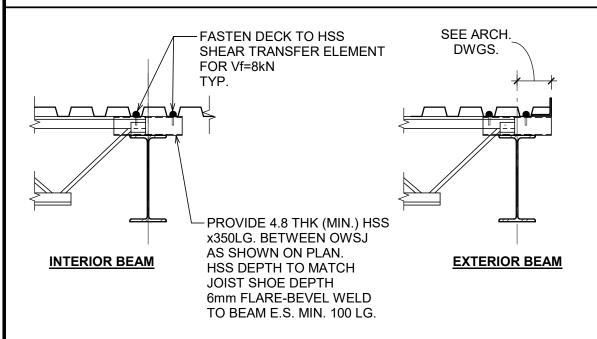
27 Rutherford Rd. S., Brampton, ON. L6W 3J3

City of Brampton Fire & Emergency Services

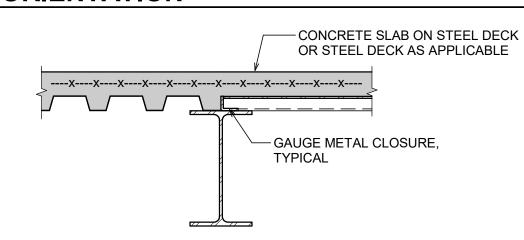
Drawing Title TYPICAL DETAILS

Date 30.08.2021	Drawing No
Drawn by BK	S108
Scale As indicated	
Project No	TOR 127511 0001

SHEAR TRANSFER DETAIL



TYPICAL CHANGE IN STEEL DECK **ORIENTATION**



STEEL DECK

- 1. STEEL DECKING SHALL CONFORM TO CAN/CSA-S136.
- STEEL DECKING SHALL CONFORM TO CSSBI SPECIFICATION 10M MINIMUM GRADE 230 ZINC COATED STRUCTURAL QUALITY STEEL FOR ROOF AND FLOOR DECK. BASE STEEL NOMINAL THICKNESSES INDICATED ON THE DRAWINGS ARE MINIMUM REQUIREMENTS ONLY.
- INTERIOR EXPOSURE DECK SHALL BE ZINC COATED WIPE COAT ZF075 FOR FLOORS AND FOR ROOFS. EXTERIOR EXPOSURE DECK SHALL BE Z275 ZINC COATED UNLESS NOTED OTHERWISE.
- FOR DECKS WITH CONCRETE TOPPING, SEE ALSO "STEEL DECK (WITH CONCRETE TOPPING)" NOTES.
- STEEL DECKING SHALL BE INSTALLED SUCH THAT SHEETS ARE SET FOR A MINIMUM OF THREE SPANS CONTINUOUS UNLESS NOTED OTHERWISE. LAPS OF DECKING SHALL BE LIMITED OR DETAILED TO PREVENT UNDUE VERTICAL DEFORMATIONS AT THE END OF THE DECK DUE TO END ROTATIONS.
- SEE DRAWINGS FOR DECK PROFILE AND THICKNESSES OR DESIGN LOADS. DECK THICKNESS INDICATED ON DRAWINGS ARE MINIMUM REQUIREMENTS
- WHERE DECK IS CALLED UP ON THE DRAWINGS, ALTERNATES MUST BE THE SAME DEPTH, BE EQUIVALENT FOR DEFLECTIONS, VERTICAL LOAD, AND SHEAR CAPACITY AND BE PRE-APPROVED.
- SUBMIT SHOP DRAWINGS INDICATING THE DECK SPANS, THICKNESSES. PROFILES, AND DETAILS. WHERE THE DECK THICKNESSES AND CONNECTIONS ARE NOT SHOWN ON THE DRAWINGS, THE FABRICATOR SHALL DESIGN THE DECK AND CONNECTIONS FOR THE VERTICAL LOADS AND THE SHEAR/DIAPHRAGM LOADS NOTED ON THE DRAWINGS AND HAVE THE SHOP DRAWINGS SEALED BY THE CONTRACTOR'S SPECIALTY STRUCTURAL ENGINEER.
- IF NOT SHOWN OTHERWISE, ALL EDGES OF STEEL DECKING SHALL BE SUPPORTED ON CONTINUOUS ANGLE L76x76x4.8.
- 10. SEE ALSO MECHANICAL, ELECTRICAL AND ARCHITECTURAL DRAWINGS FOR ALL OPENINGS IN DECK.
- 11. STEEL DECK TO BE DESIGNED FOR A MINIMUM DIAPHRAGM SHEAR OF 3.5 kN/m, U.N.O.
- 12. SEE PLAN FOR ADDITIONAL FASTENING REQUIREMENTS ALONG DRAG STRUTS AND SHEAR COLLECTORS. ALSO SEE "SHEAR TRANSFER DETAIL" NOTE ON DWG S109

DETAIL FOR DECK SUPPORT AT GIRDER

TYPICAL CHANGE IN STEEL DECK ORIENTATION

- CONCRETE SLAB ON STEEL DECK

-BEAM OR OWSJ

OR STEEL DECK AS APPLICABLE

----X---X----X----X

OR CUT FROM WT BETWEEN

WELDED TO TOP FLANGE OF

GIRDER. HSS DEPTH TO MATCH

OWSJ AS DECK SUPPORT

DEPTH OF JOIST SHOE

- PROVIDE CONTINUOUS

4.8mm THK (MIN.) HSS, T

SUPPORTING OWSJ

GAUGE METAL —

OPEN WEB

(OWSJ)

STEEL JOIST

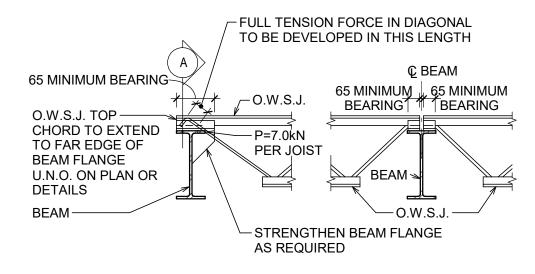
GIRDER

SECTION 1

<u>PLAN</u>

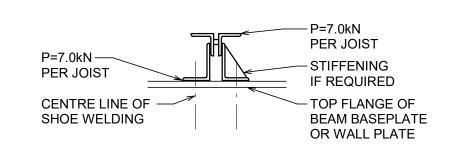
CLOSURE (TYP.)

TYPICAL O.W.S.J. BEARING ON BEAM **CONNECTION DETAIL**



O.W.S.J. ONE SIDE

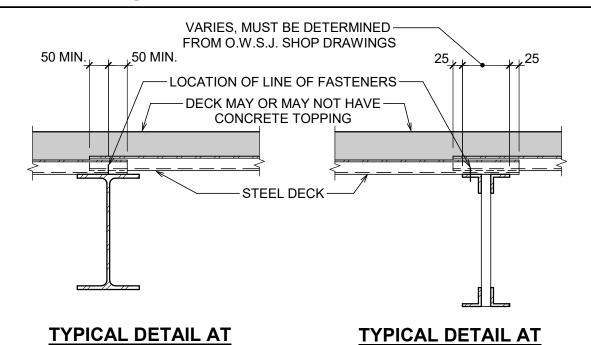
O.W.S.J. BOTH SIDES



DETAIL A

JOIST SHOE DETAILS CAN BE IN ACCORDANCE WITH JOIST MANUFACTURERS NORMAL PRACTICE PROVIDED THE INDICATED REQUIREMENTS FOR GEOMETRY AND LOADING ARE COMPLIED WITH.

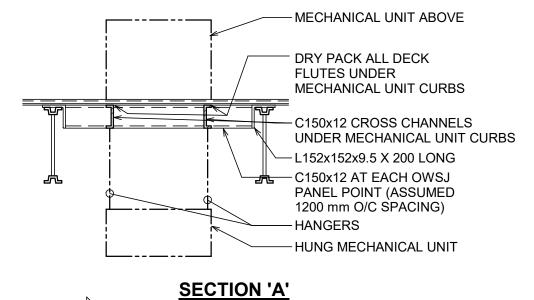
STEEL DECK LAP OVER SUPPORTING **MEMBERS**

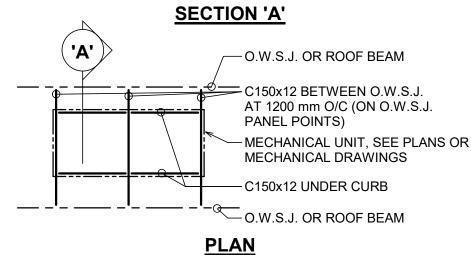


SUPPORTING MEMBER WITH **UNBROKEN TOP SURFACE**

MEMBER WITH INTERRUPTED TOP SURFACE

TYPICAL MECHANICAL ROOF TOP UNIT SUPPORT





NOTES:

- SEE MECHANICAL DRAWINGS FOR SEISMIC RESTRAINT OF MECHANICAL
- FOR MECHANICAL DUCT OPENINGS SEE "STEEL DECK WITHOUT CONCRETE TOPPING NOTES".

ARCHITECTURALLY EXPOSED STRUCTURAL STEEL NOTES

DRAWINGS

- WORK SHALL BE IN ACCORDANCE WITH THE "CISC GUIDE FOR SPECIFYING ARCHITECTURALLY EXPOSED STRUCTURAL STEEL".
- B. SEE ARCHITECTURAL AND STRUCTURAL PLANS, DETAILS, AND SPECIFICATIONS, FOR LOCATION AND CATEGORY OF ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS.)
- **FABRICATION**
 - A. SEE SPECIFICATIONS, TYPICAL

WELDING

- A. FOR WELDING CRITERIA SEE PLANS AND SPECIFICATIONS FOR CATEGORY AND LOCATION OF AESS. AND USE APPLICABLE LEVEL AS PER CISC GUIDE FOR A.E.SS AND SPECIFICATIONS.
- **PAINTING**
 - A. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS AND SPECIFICATIONS
- B. SURFACES WITHIN 50 mm OF ANY FIELD WELD LOCATION SHALL BE FREE OF MATERIALS THAT WOULD PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES WHILE WELDING IS BEING DONE. IF SHOP PAINTED, SURFACES TO BE WELDED SHALL BE WIRE BRUSHED IN THE FIELD BEFORE WELDING TO REDUCE THE PAINT FILM TO A MINIMUM. LEVEL OF WORKMANSHIP AND QUALITY CONTROL AS PER SPECIFICATION AND CISC GUIDE FOR AESS.

ERECTION

- THE ERECTOR SHALL USE SPECIAL CARE IN UNLOADING, HANDLING. AND ERECTING THE STEEL TO AVOID BENDING, TWISTING, OR OTHERWISE DISTORTING THE STEEL MEMBERS. THE ERECTOR SHALL HANDLE THE MATERIAL IN SUCH A WAY AS TO MINIMIZE THE DAMAGE TO SHOP COAT OF PAINT. LEVEL OF CARE AS OUTLINED IN CISC GUIDE FOR AESS. FOR SPECIFIED CATEGORY OF AESS.
- IF TEMPORARY BRACES OR ERECTION CLIPS ARE EMPLOYED. CARE SHALL BE TAKEN TO AVOID UNSIGHTLINESS UPON REMOVAL. TACK WELDS SHALL BE GROUND SMOOTH AND HOLES SHALL BE FILLED WITH WELD METAL OR BODY SOLDER AND SMOOTHED BY GRINDING OR FILING.
- PAINT ALL AREAS SCRATCHED, MARRED, OR LEFT UNPAINTED FOR **ERECTION PURPOSES.**

OPEN WEB STEEL JOISTS

- OPEN WEB STEEL JOISTS (O.W.S.J.) SHALL CONFORM TO CAN/CSA-S16.
- DESIGN OF O.W.S.J. SHALL CONFORM TO CLAUSE 16 OF CAN/CSA-S16 (LIMIT STATES DESIGN OF STEEL STRUCTURES) AND CAN/CSA-S136 (DESIGN OF LIGHT GAUGE STEEL STRUCTURAL MEMBERS), BASED ON THE LOADINGS INDICATED ON THE DRAWINGS AND LISTED BELOW.
- O.W.S.J. SHALL BE DESIGNED FOR THE LOADS SHOWN ON THE DRAWINGS.
- IN ADDITION TO THE POINT LOADS CALLED FOR ON THE DRAWINGS AND IN THE GOVERNING BUILDING CODE, DESIGN O.W.S.J. FOR A 1.8 kN FACTORED ADDITIONAL POINT LOAD AT ANY LOCATION ON TOP CHORD AND BOTTOM CHORD (INCLUDING THE EFFECTS OF LOCAL BENDING) CONCURRENT WITH OTHER DESIGN LOADS. OVER MECHANICAL AREAS THE ADDITIONAL POINT LOAD SHALL BE 4.5 kN FACTORED. THE ADDITIONAL POINT LOADS ON EACH CHORD NEED NOT BE APPLIED CONCURRENTLY WITH EACH OTHER.
- UNLESS NOTED OTHERWISE, SEE SPECIFICATIONS, PLAN NOTES FOR **DEFLECTION CRITERIA.**
- CAMBER ALL O.W.S.J. FOR DEAD LOAD PLUS 1/2 LIVE LOAD UNLESS OTHERWISE NOTED, PROVIDE A MINIMUM CAMBER OF 12 mm.
- DESIGN AND PROVIDE O.W.S.J. BRIDGING IN ACCORDANCE WITH CAN/CSA-S16 UNLESS OTHERWISE INDICATED ON THE DRAWINGS. REFER TO THE DRAWINGS FOR AREAS OF NON-TYPICAL O.W.S.J. BRIDGING AND BRACING.
- SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO START OF O.W.S.J. FABRICATION. SHOP DRAWINGS SHALL BEAR THE SEAL OF THE SPECIALTY STRUCTURAL ENGINEER WHO IS RESPONSIBLE FOR THE DESIGN OF THE O.W.S.J. REFER TO THE SPECIFICATIONS.
- ALL O.W.S.J. TO HAVE BUILDING SERVICES PASS THROUGH THEM. WEB MEMBERS OF ADJACENT O.W.S.J. TO LINE UP TO ACCOMMODATE CONTINUOUS PENETRATION OF SERVICES.
- 10. WELDING SHALL CONFORM TO CSA W59.
- O.W.S.J. TO BE PAINTED SHALL BE CLEANED AND SHALL RECEIVE ONE COAT OF SHOP PRIMER IN ACCORDANCE WITH CAN/CSA-S16.
- 12. O.W.S.J. TO BE EXPOSED IN FINISHED WORK SHALL BE PAINTED WITH SHOP PRIMER MEETING THE REQUIREMENTS OF CAN/CSA-S16. CLEANING, PREPARATION OF STEEL AND THE PAINT PRODUCT SHALL BE COMPATIBLE WITH REQUIREMENTS OF FINISHED PAINTING AS SPECIFIED IN ARCHITECTURAL FINISHES. REFER TO THE SPECIFICATIONS.
- BOTTOM CHORD EXTENSIONS (B.C.E.) ARE EXTENSIONS OF THE BOTTOM CHORD WHICH TRANSMIT AN AXIAL FORCE TO EITHER A COLUMN, BEAM BOTTOM FLANGE, JOIST GIRDER BOTTOM CHORD OR WALL. THE EXTENSION MAY BE EITHER FLAT OR SLOPED. SEE PLANS, SCHEDULES, AND DETAILS FOR AXIAL FORCES.

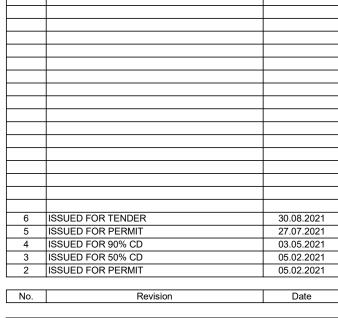
MINIMUM BEND RADIUS FOR STEEL PLATES

_		
	"T" (PLATE THICKNESS)	"R" (MINIMUM INSIDE RADIUS)
	0 mm TO 6 mm	3 x "T"
	6 mm TO 12 mm	4 x "T"

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Orientation







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100 University Avenue, North Tower, Suite 400 Toronto, ON M5J 2X4 Canada tel 416-977-5335 **fax** 416-977-1427

Project Information **BFES Station 201**

27 Rutherford Rd. S., Brampton, ON. L6W 3J3

City of Brampton Fire & Emergency Services

Project No

Drawing Title TYPICAL DETAILS

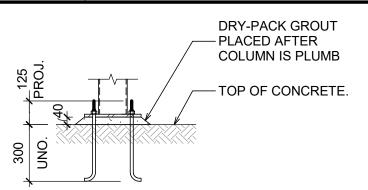
Date	30.08.2021	Drawing N	0
Drawn by	ВК		S109
Scale	As indicated		

1 CONDICTION CONLEDGE 1COLINIED						
MARK	WIDTH	LENGTH	DEPTH	REINFORCING	COMMENTS	
F1	1200	1200	300	6-15M B.E.W.	TYP., U.N.O.	
F2	1200	1900	300	6-15M BLW + 9-15M BSW		
F3	1900	1350	300	6-15M B.E.W.		

	FOUNDATION SCHEDULE - WALL						
MARK	MARK WIDTH DEPTH REINFORCING COMMENTS						
WF1	800	300	2-20M BOT.CONT.	TYP., U.N.O.			
WF2	600	250	2-20M BOT.CONT.				

PIER SCHEDULE			
MARK	SIZE	REINFORCING	COMMENTS
P1	600 x 600	8-20M V. +10M @320 TIES	TYP. U.N.O.
P2	600 x 1200	12-20M V. +10M @320 TIES	
P3	500 x 500	8-20M V. +10M @320 TIES	

STEEL COLUMN SCHEDULE			
MARK	SIZE	BASE PLATE	
SC1	HSS152x152x6.4	PL.300x20x300 C/W 4-19ø ANCHOR RODS	
SC2	HSS203x203x7.9	PL.350x20x350 C/W 4-19ø ANCHOR RODS	
SC3	HSS102X102X6 4	PL 610x20x190 C/W 4-19ø ANCHOR RODS SEE 1/S802	



TYPICAL COLUMN BASEPPLATE DETAIL

LOAD-BEARING CMU WALL SCHEDULE			
MARK	SIZE	REINFORCING	NOTES
MW1	190	20M@400 V + HEAVY DUTY LADDER HORZ. REINF. @ 400o/c	TYP., U.N.O.
MW2	290	20M@400 V + HEAVY DUTY LADDER HORZ. REINF. @ 400o/c	

- ASSUME ALL FOOTINGS FOUNDED AT 2300 BELOW GROUND FLOOR (B.O.F. 213.85)
- REFER TO ARCHITECTURAL DRAWINGS FOR TOP OF SLAB ELEVATIONS, SLOPES AND
- FOUNDATION ELEVATIONS AND BEARING STRATA TO BE VERIFIED BY GEOTECHNICAL ENGINEER ON SITE AND MAY HAVE TO BE ADJUSTED FURTHER TO GENERAL NOTES.
- CENTRE ALL CAPS, PILASTERS, AND FOOTINGS UNDER COLUMNS EXCEPT AS NOTED
- MAINTAIN SLAB-ON-GRADE THICKNESS SHOWN AT ALL LOCATIONS UNLESS NOTED AS
- SEE GENERAL NOTES FOR CONTROL JOINT REQUIREMENTS U.N.O. ON PLAN. CONTROL JOINTS MAY BE REPLACED WITH CONSTRUCTION JOINTS U.N.O.
- REFER TO THE FOLLOWING DRAWINGS: - GENERAL NOTES - S100 SERIES.
 - WALL ELEVATIONS S400 SERIES - FOUNDATION WALL SECTIONS - S700 SERIES



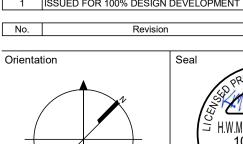
1. All drawings, plans, models, designs, specifications and other

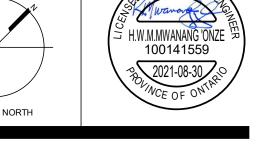
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190 CMU WALL ON

300 FDN WALL

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Project Information BFES Station 201

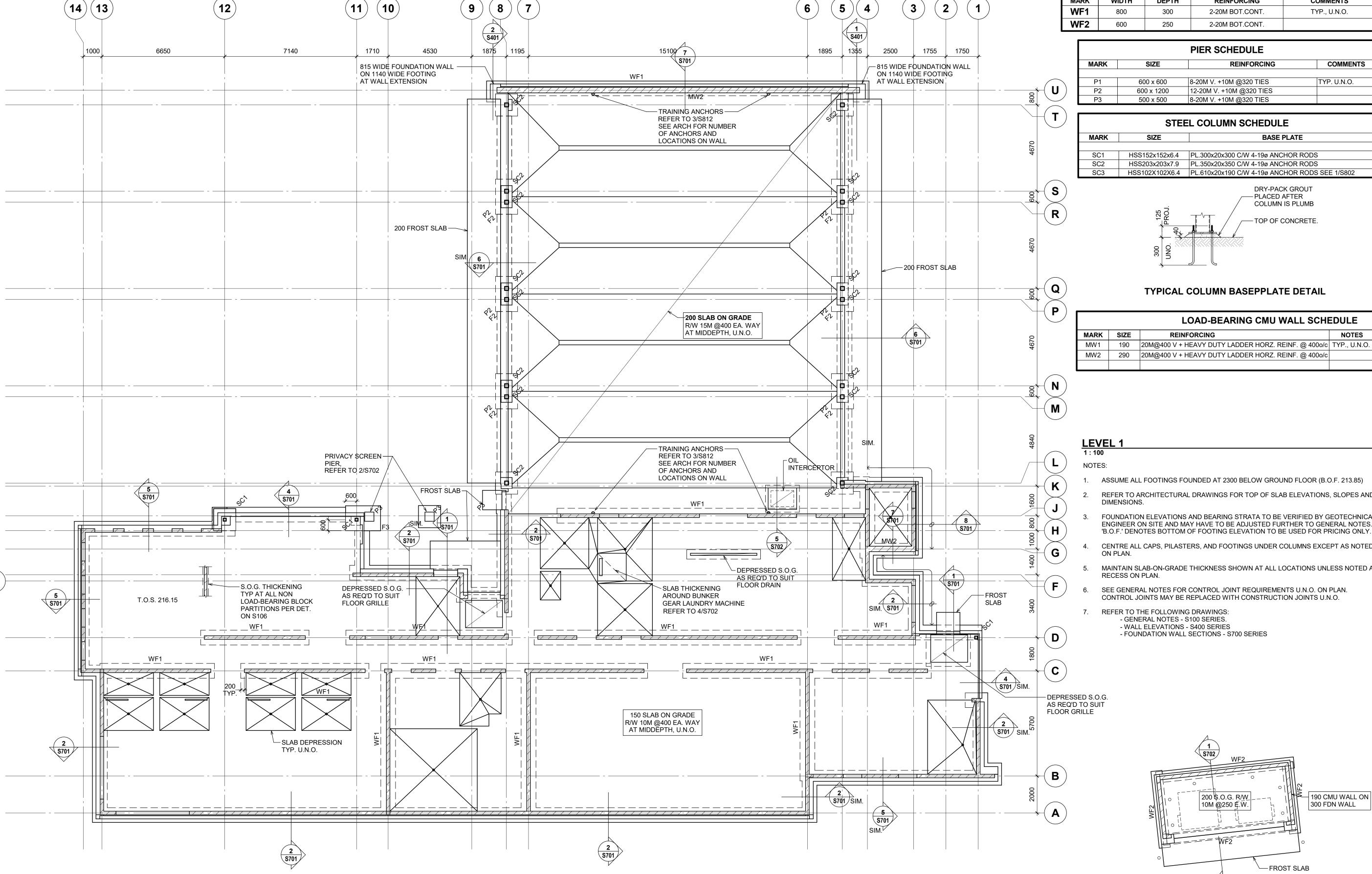
27 Rutherford Rd. S., Brampton, ON. L6W 3J3

City of Brampton Fire & Emergency Services

Drawing Title

LEVEL 1 / FOUNDATION PLAN

Date 30.08.2021	Drawing No
Drawn by NN	S201
Scale As indicated	
Project No	TOR.127511.0001

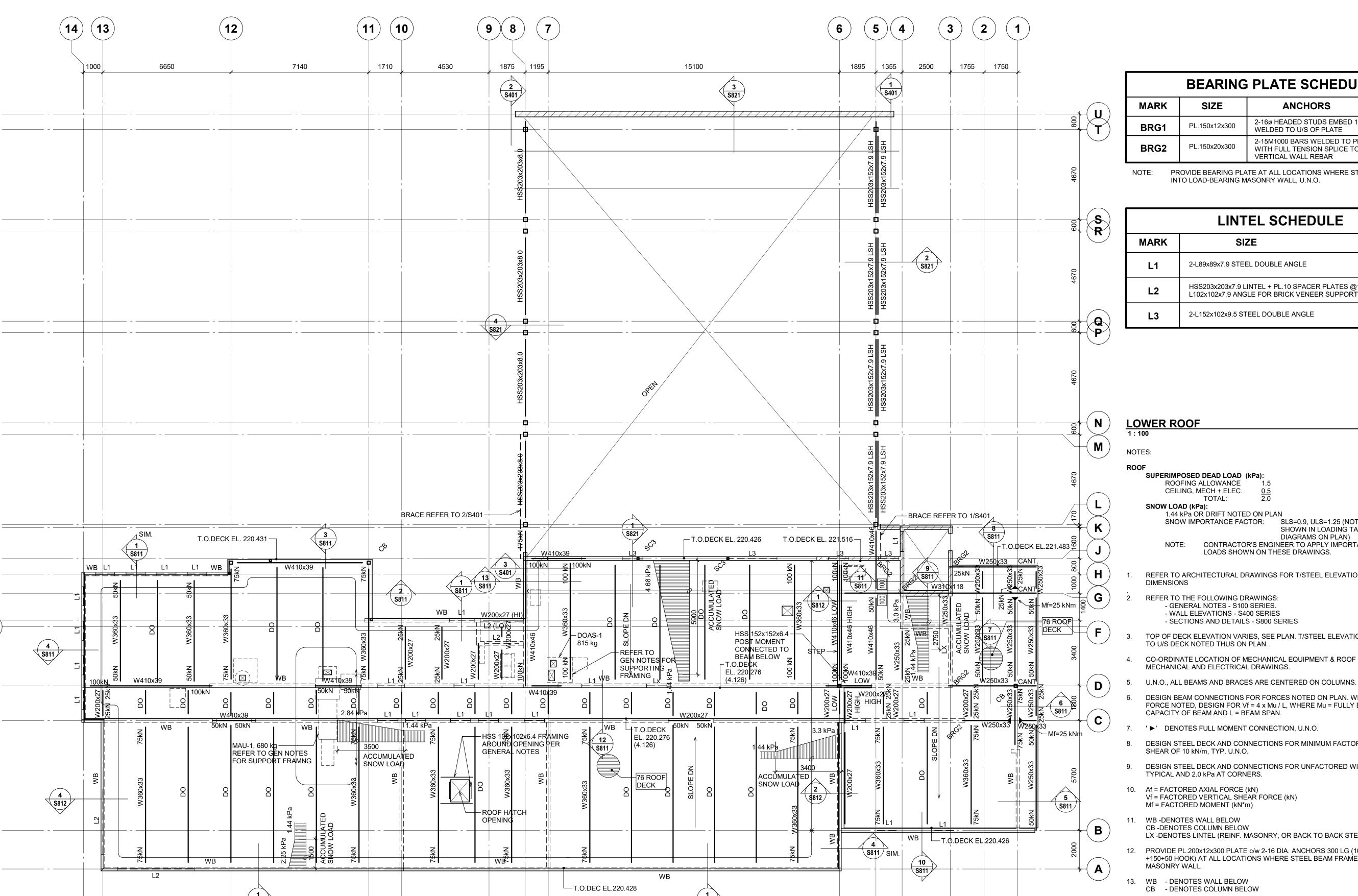


NOTE: ALL CONCRETE AT RELUSE ENCLOSURE TO BE 35 MPa, CLASS C-1 REFUSE ENCLOSURE

FROST SLAB

200 \$.O.G. R/W

10M @250 €.W.



BEARING PLATE SCHEDULE MARK NOTES SIZE **ANCHORS** 2-16ø HEADED STUDS EMBED 150 TYP., U.N.O. PL.150x12x300 BRG1 WELDED TO U/S OF PLATE 2-15M1000 BARS WELDED TO PLATE PL.150x20x300 BRG2 WITH FULL TENSION SPLICE TO

VERTICAL WALL REBAR

PROVIDE BEARING PLATE AT ALL LOCATIONS WHERE STEEL BEAM FRAMES INTO LOAD-BEARING MASONRY WALL, U.N.O.

LINTEL SCHEDULE		
MARK	SIZE	
L1	2-L89x89x7.9 STEEL DOUBLE ANGLE	
L2	HSS203x203x7.9 LINTEL + PL.10 SPACER PLATES @1200 c/c. + L102x102x7.9 ANGLE FOR BRICK VENEER SUPPORT	
L3	2-L152x102x9.5 STEEL DOUBLE ANGLE	

LOWER ROOF

SUPERIMPOSED DEAD LOAD (kPa):

CEILING, MECH + ELEC. TOTAL:

SNOW LOAD (kPa):

1.44 kPa OR DRIFT NOTED ON PLAN SNOW IMPORTANCE FACTOR: SLS=0.9, ULS=1.25 (NOT INCLUDED IN VALUE

SHOWN IN LOADING TABLE, NOR ON DRIFT DIAGRAMS ON PLAN) NOTE: CONTRACTOR'S ENGINEER TO APPLY IMPORTANCE FACTOR TO THE LOADS SHOWN ON THESE DRAWINGS.

REFER TO ARCHITECTURAL DRAWINGS FOR T/STEEL ELEVATIONS, SLOPES AND

REFER TO THE FOLLOWING DRAWINGS: - GENERAL NOTES - S100 SERIES. - WALL ELEVATIONS - S400 SERIES - SECTIONS AND DETAILS - S800 SERIES

TOP OF DECK ELEVATION VARIES, SEE PLAN. T/STEEL ELEVATION SHOWN RELATIVE TO U/S DECK NOTED THUS ON PLAN.

CO-ORDINATE LOCATION OF MECHANICAL EQUIPMENT & ROOF OPENINGS WITH MECHANICAL AND ELECTRICAL DRAWINGS.

DESIGN BEAM CONNECTIONS FOR FORCES NOTED ON PLAN. WHERE NO SHEAR FORCE NOTED, DESIGN FOR Vf = 4 x Mu / L, WHERE Mu = FULLY BRACED MOMENT CAPACITY OF BEAM AND L = BEAM SPAN.

' ▶' DENOTES FULL MOMENT CONNECTION, U.N.O.

DESIGN STEEL DECK AND CONNECTIONS FOR MINIMUM FACTORED DIAPHRAGM SHEAR OF 10 kN/m, TYP, U.N.O.

DESIGN STEEL DECK AND CONNECTIONS FOR UNFACTORED WIND UPLIFT OF 1.0 kPa TYPICAL AND 2.0 kPa AT CORNERS.

10. Af = FACTORED AXIAL FORCE (kN) Vf = FACTORED VERTICAL SHEAR FORCE (kN) Mf = FACTORED MOMENT (kN*m)

11. WB -DENOTES WALL BELOW CB -DENOTES COLUMN BELOW

LX -DENOTES LINTEL (REINF. MASONRY, OR BACK TO BACK STEEL ANGLES PROVIDE PL.200x12x300 PLATE c/w 2-16 DIA. ANCHORS 300 LG (100 PROJECTION +150+50 HOOK) AT ALL LOCATIONS WHERE STEEL BEAM FRAMES INTO LOAD-BRG

WB - DENOTES WALL BELOW CB - DENOTES COLUMN BELOW

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Orientation



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H.W.M.MWANANG 'ONZE

2021-08-30

100141559

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Project Information **BFES Station 201**

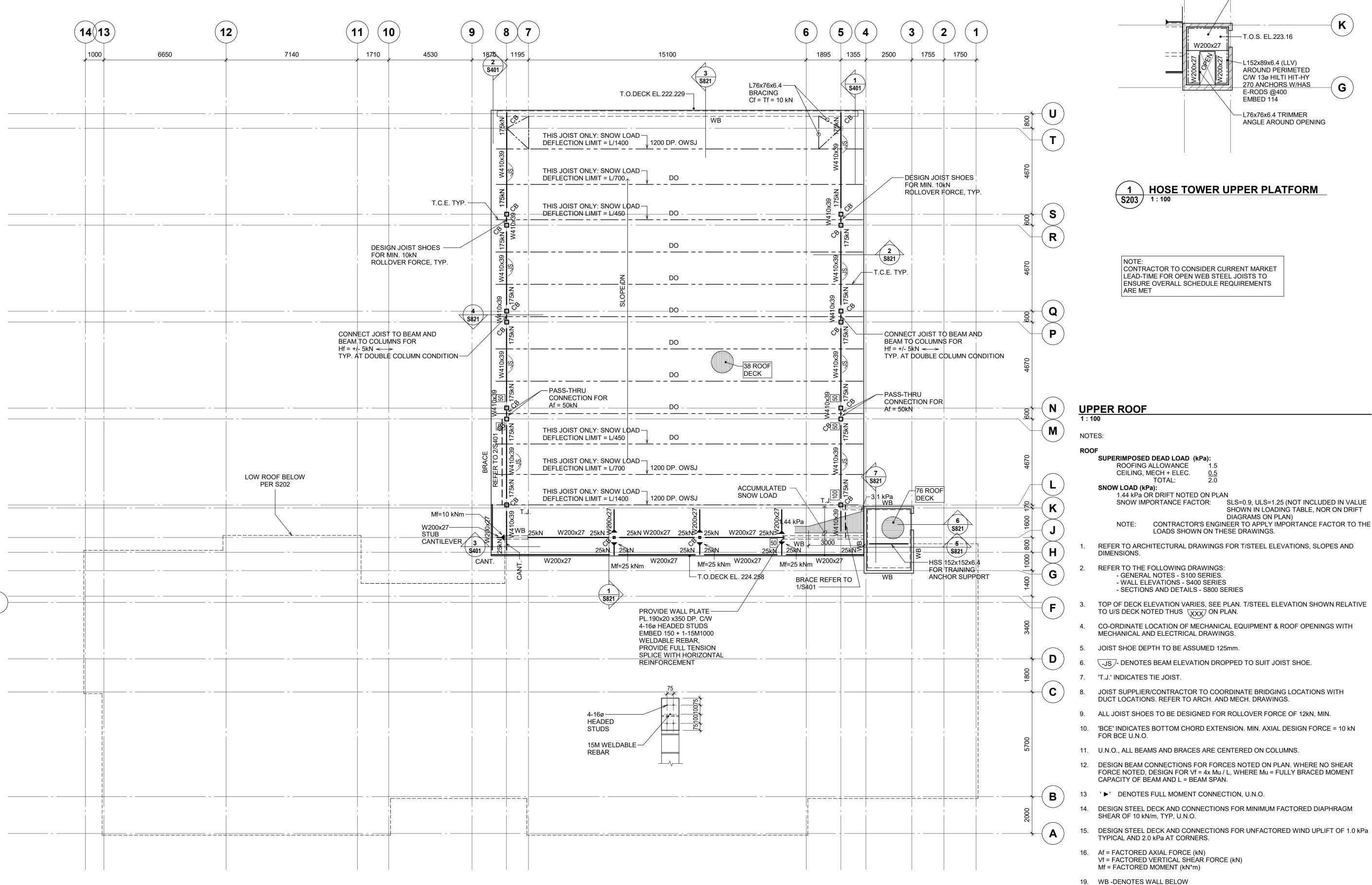
27 Rutherford Rd. S., Brampton, ON. L6W 3J3

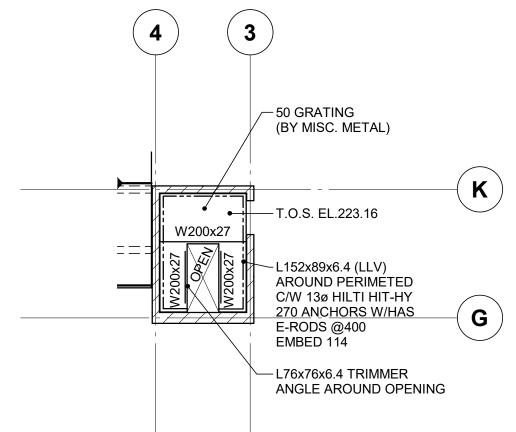
City of Brampton Fire & Emergency Services

Drawing Title

LOWER ROOF FRAMING PLAN

Drawing No 30.08.2021 Drawn by S202 Scale As indicated





HOSE TOWER UPPER PLATFORM

CONTRACTOR TO CONSIDER CURRENT MARKET LEAD-TIME FOR OPEN WEB STEEL JOISTS TO ENSURE OVERALL SCHEDULE REQUIREMENTS ARE MET

CEILING, MECH + ELEC.

TOTAL:

1.44 kPa OR DRIFT NOTED ON PLAN

- GENERAL NOTES - S100 SERIES.

CB -DENOTES COLUMN BELOW

- WALL ELEVATIONS - S400 SERIES

- SECTIONS AND DETAILS - S800 SERIES

SNOW IMPORTANCE FACTOR: SLS=0.9, ULS=1.25 (NOT INCLUDED IN VALUE

NOTE: CONTRACTOR'S ENGINEER TO APPLY IMPORTANCE FACTOR TO THE

LOADS SHOWN ON THESE DRAWINGS.

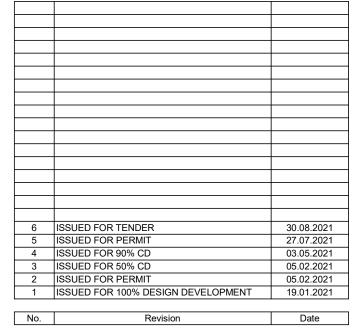
DIAGRAMS ON PLAN)

SHOWN IN LOADING TABLE, NOR ON DRIFT

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Orientation 100141559



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Project Information BFES Station 201

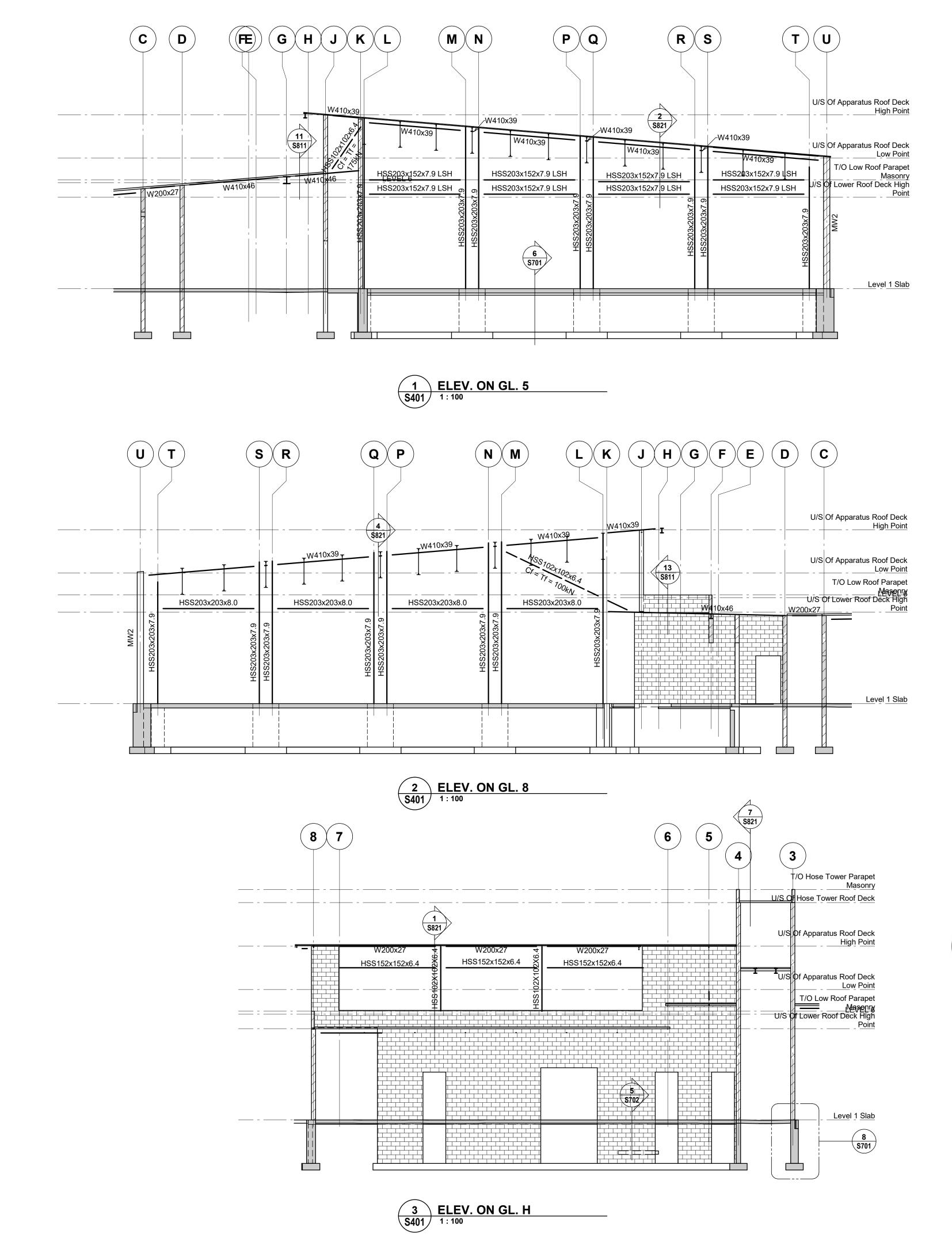
27 Rutherford Rd. S., Brampton, ON. L6W 3J3

City of Brampton Fire & Emergency Services

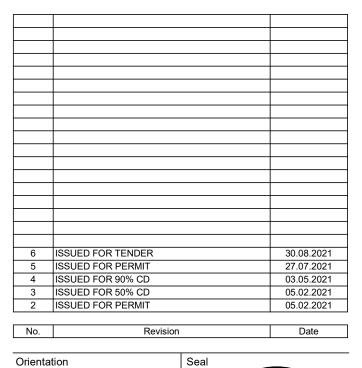
Drawing Title

UPPER ROOF FRAMING PLAN

Drawing No 30.08.2021 Drawn by S203 Scale 1:100 TOR.127511.0001



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Project Information
BFES Station 201

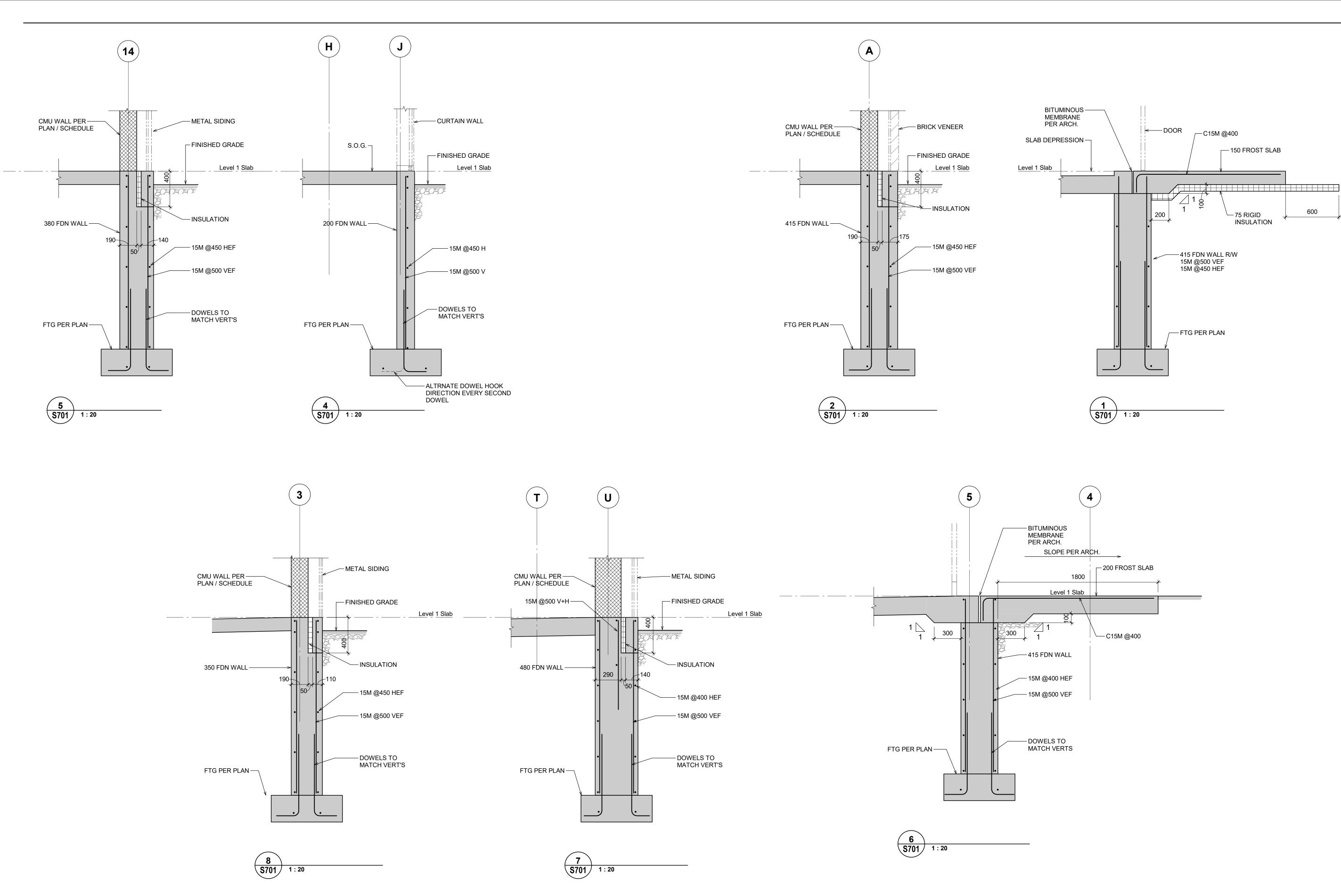
27 Rutherford Rd. S., Brampton, ON. L6W 3J3

For

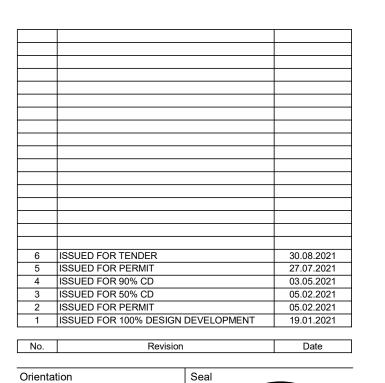
City of Brampton Fire & Emergency Services

Drawing Title
WALL ELEVATIONS

Date 30.08.2021	Drawing No
Drawn by NN	S401
Scale 1 : 100	
Project No	TOR.127511.0001



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H.W.M.MWANANG 'ONZE TO 100141559

2021-08-30

2021-08-30





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Project Information

BFES Station 201

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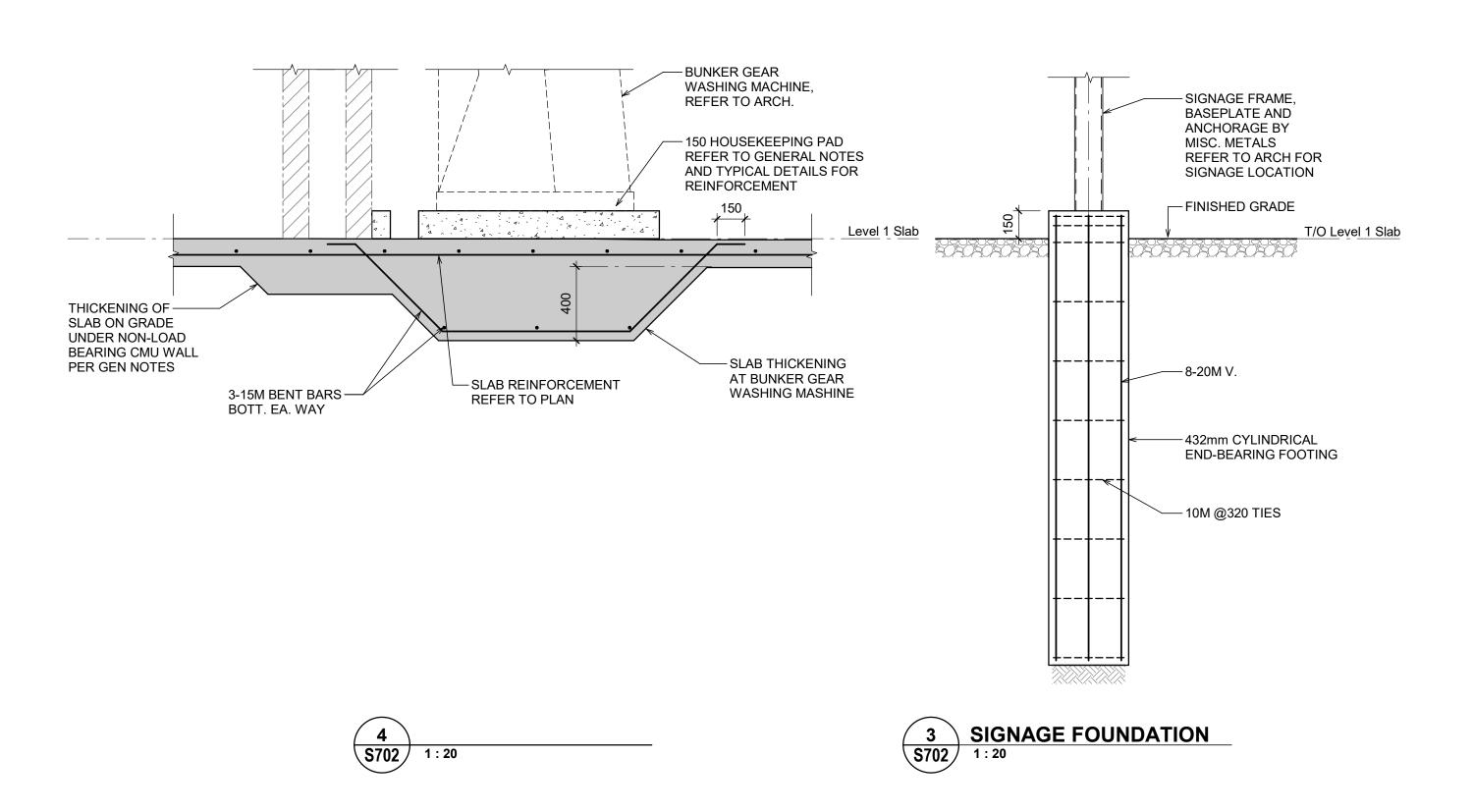
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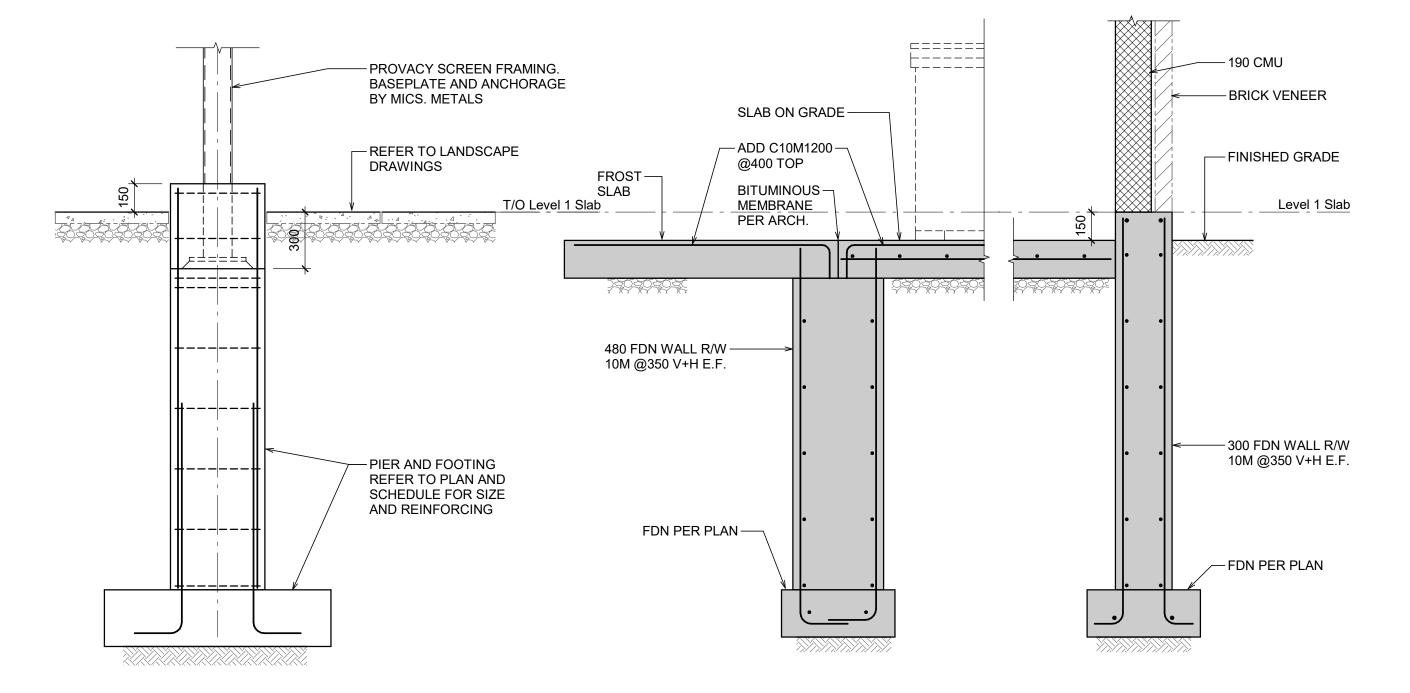
City of Brampton Fire & Emergency Services

Drawing Title

FDN WALLS SECTIONS

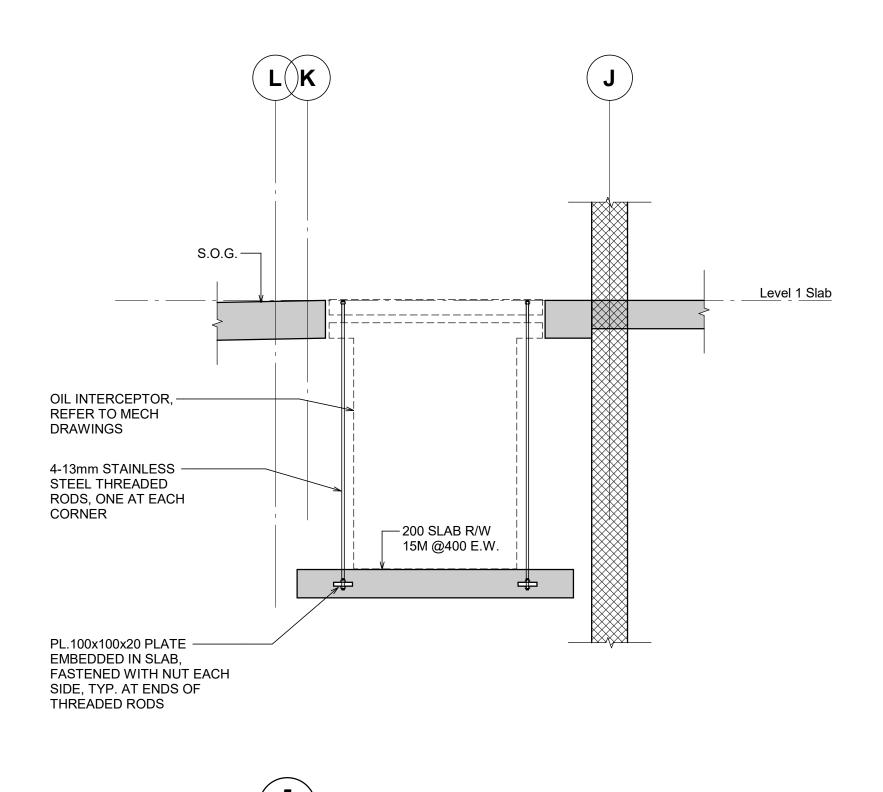
Date 30.08.2021	Drawing No
Drawn by NN	S701
Scale 1:20	
Project No	TOR.127511.0001





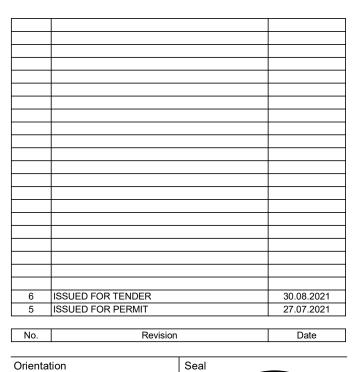
NOTE: ALL CONCRETE AT REFUSE ENCLOSURE 10 BE 35 MPa, CLASS C-1

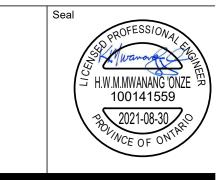
2 PRIVACY SCREEN FOUNDATION
1:20



S702 1:20

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Project Information

BFES Station 201

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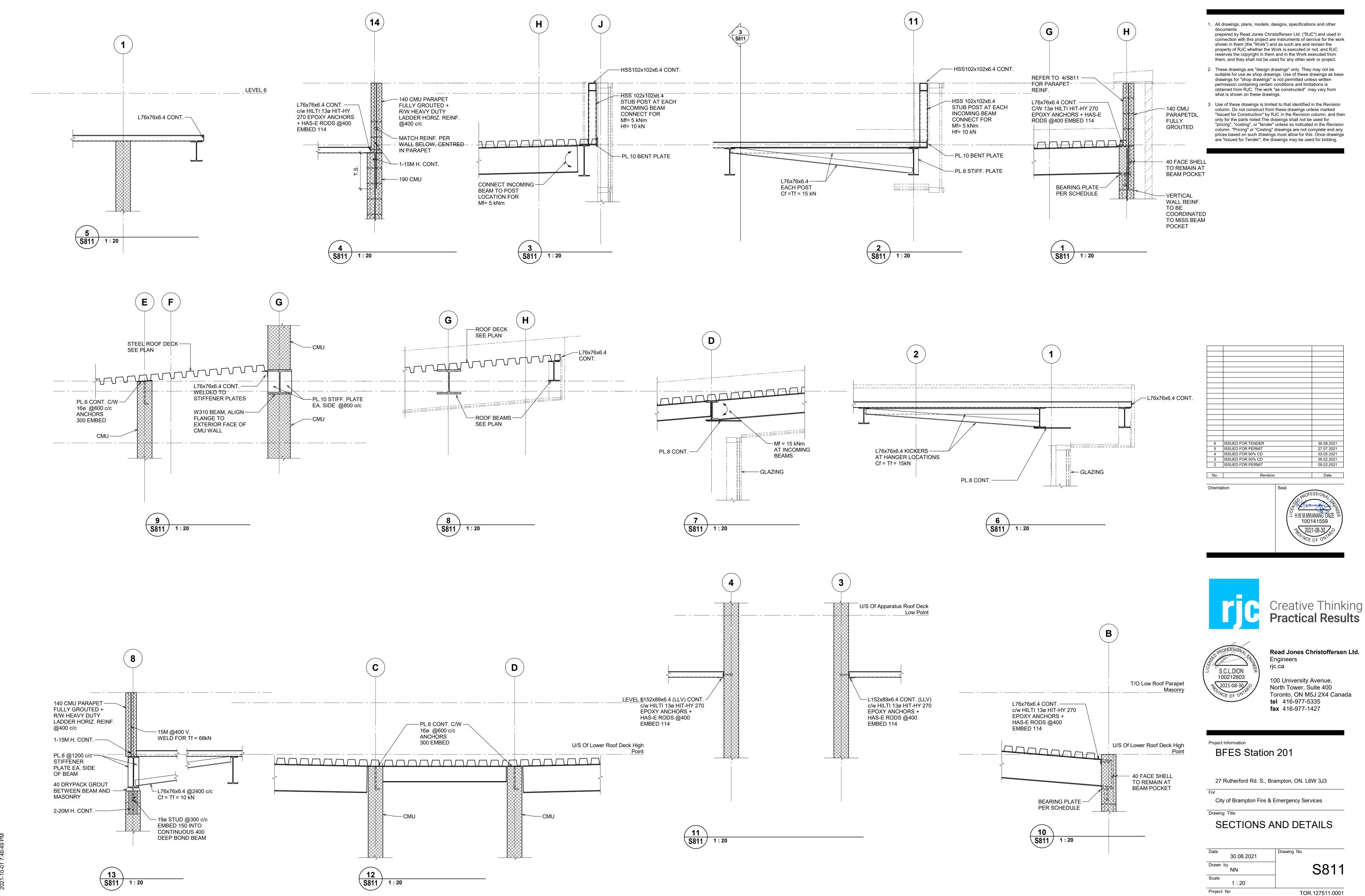
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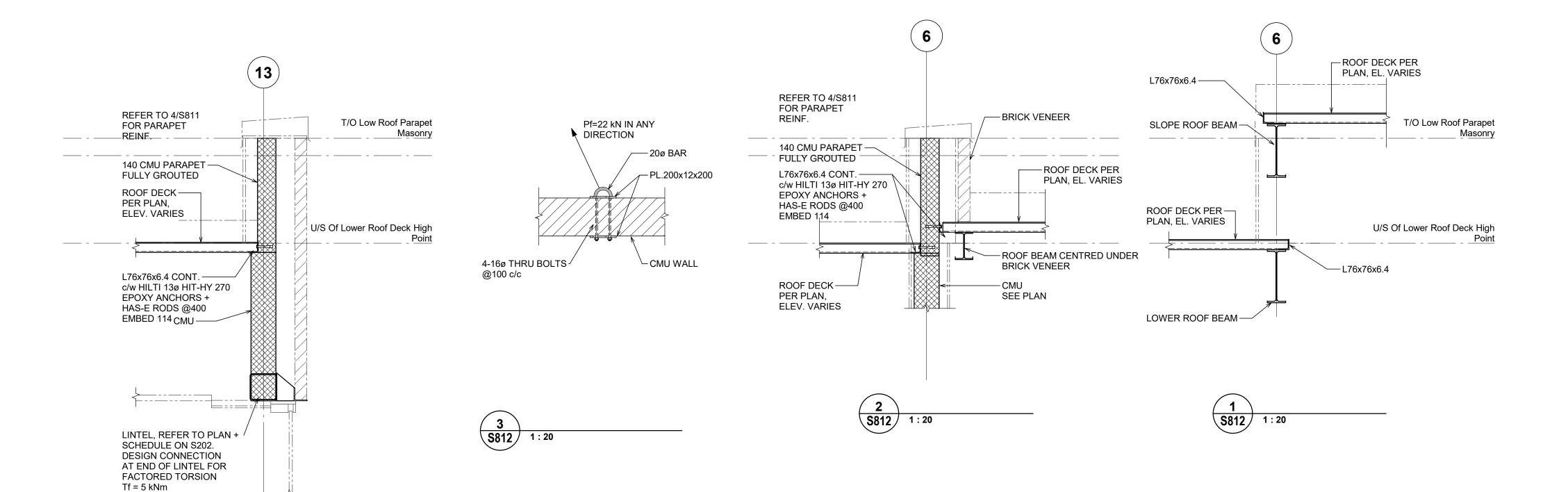
City of Brampton Fire & Emergency Services

Drawing Title

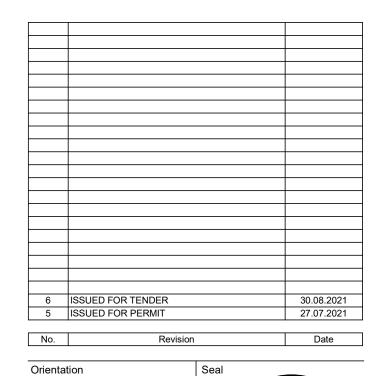
FDN WALLS SECTIONS

Date	Drawing No
30.08.2021	
Orawn by NN	S702
Scale 1 : 20	
Project No	TOR.127511.0001





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Seal (d





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Project Information
BFES Station 201

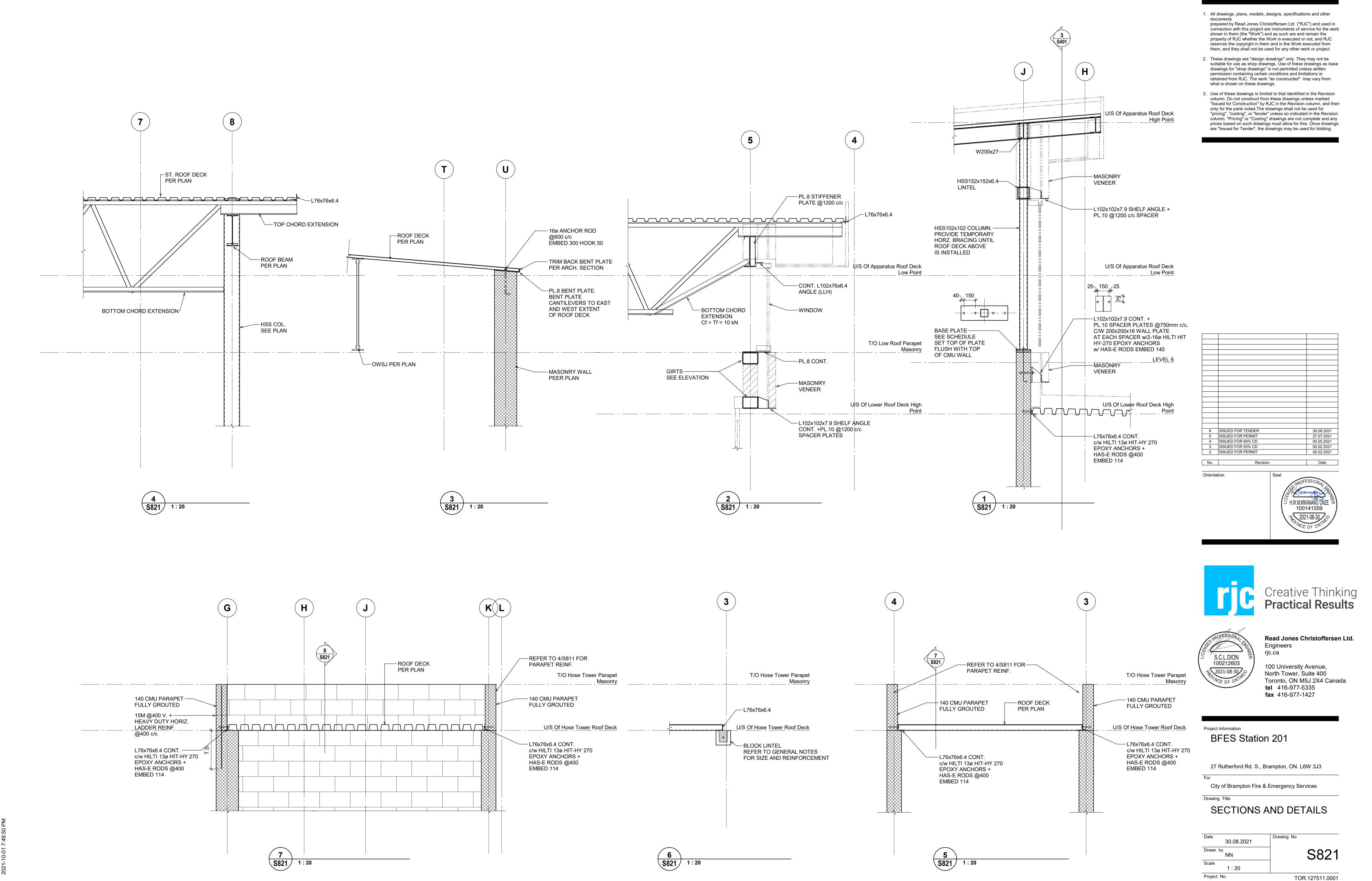
27 Rutherford Rd. S., Brampton, ON. L6W 3J3

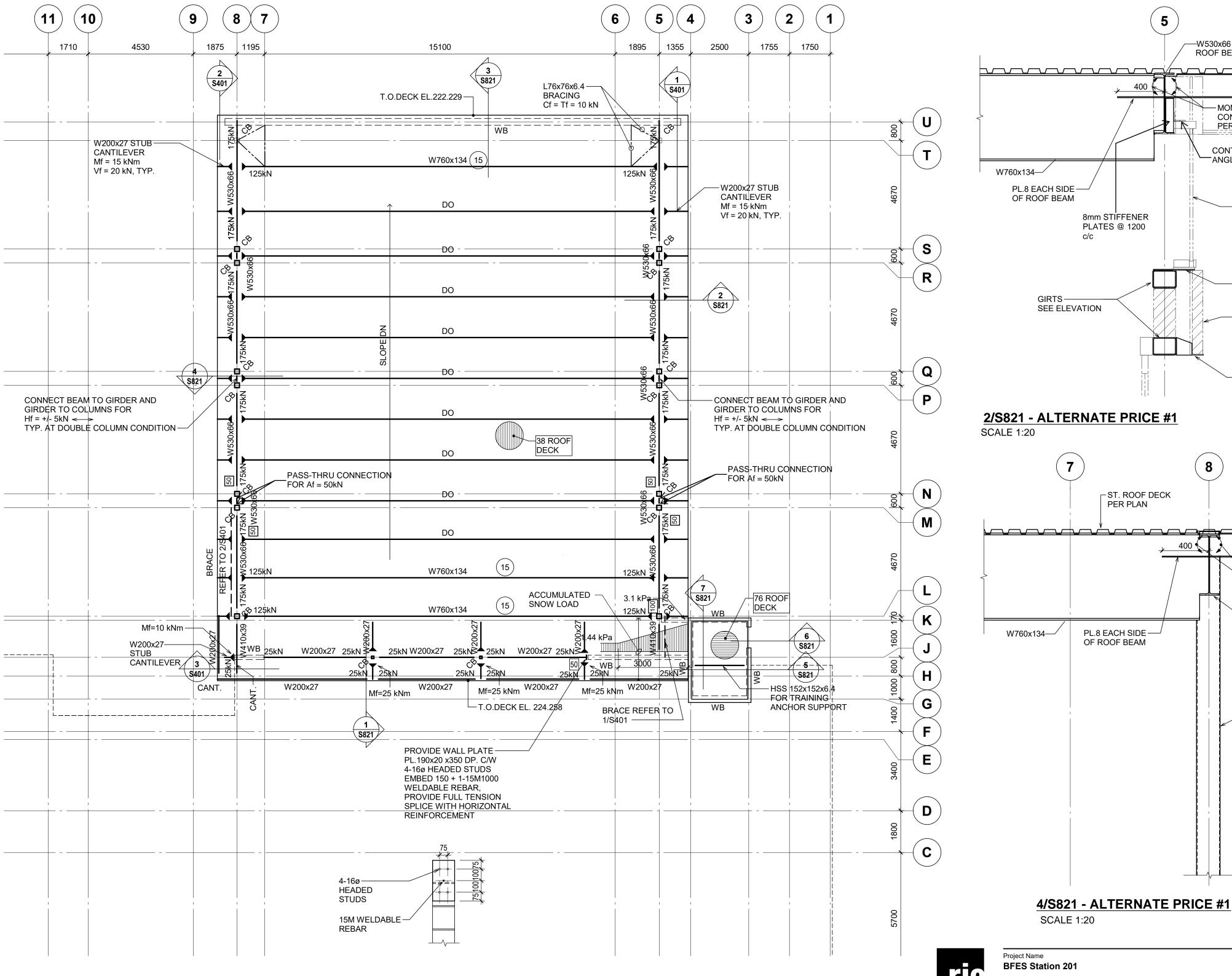
City of Brampton Fire & Emergency Services

Drawing Title

SECTIONS AND DETAILS

ate 30.08.2021	Drawing No
awn by Author	S812
ale 1 : 20	
oject No	TOR.127511.0001





Alternate Price 01 Roof Plan & Details

Dwg. Ref. **\$203, \$821** Scale **AS NOTED** Date 2021/08/26 Project No. TOR.127511.0001 Sketch Number

-W530x66

400 (

ROOF BEAM

MOMENT CONNECTION

PER PLAN

ANGLE (LLH)

CONT. L102x76x6.4

-WINDOW

PL.8 CONT.

-MASONRY VENEER

8

400 🖠

-L102x102x7.9 SHELF ANGLE

CONT. +PL.10 @1200 c/c SPACER PLATES

-W200x27

- MOMENT

PER PLAN

-ROOF BEAM

─ HSS COL. BEYOND

100141559

S.C.L.DION

100212603

2021-08-30

SEE PLAN

PER PLAN

CONNECTION

-L76x76x6.4

-W200x27

-L76x76x6.4

SK1