

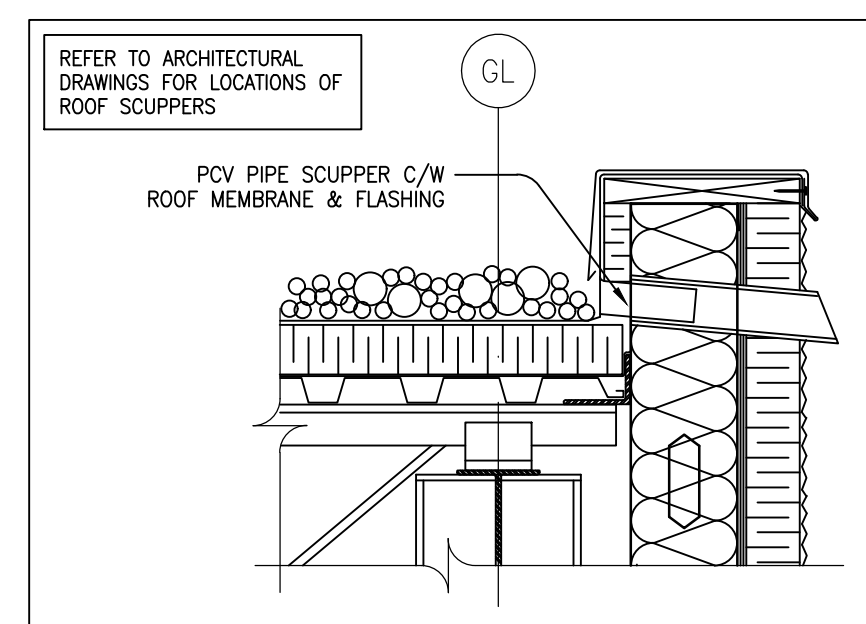
LEGEND	
HSS - HOLLOW STRUCTURAL SECTION	TYP. - TYPICAL
OWSJ - OPEN WEB STEEL JOIST	VF - VERTICAL FACTORED FORCE
P.C. - PRECAST CONCRETE	HF - HORIZONTAL FACTORED FORCE
R.W.L. - RAIN WATER LEADER	MH - TORQUE FACTORED MOMENT
TJ - TIE JOIST	U/N. - UNLESS NOTED
LLV - LONG LEG VERTICAL	VSC - VERTICALLY SLOTTED CONNECTION
FMC - FULL MOMENT CONNECTION	HSC - HORIZONTALLY SLOTTED CONNECTION
BCE - BOTTOM CHORD EXTENSION	W.P. - WORKING POINT
T.O.S. - TOP OF STEEL	B/B - BACK TO BACK

NOTE

ALL STRUCTURAL STEEL INCLUDING BEAMS, HSS, CHANNELS, ANGLES ETC., ARE TO BE LEFT UNPAINTED AND UNPRIMED IN AREAS THAT REQUIRE FIRE RATING. SEE ARCH. DRAWINGS FOR LOCATION.

DESIGN CRITERIA			
Roof Design Loads			
1. Specified Roof Dead Loads (D)			
Roof Area	'R'	'S'	'C'
Roofing, 2 Ply modified bitumen	0.15 kPa	0.15 kPa	0.15 kPa
Insulation	0.10	0.10	0.10
Metal deck	0.10	0.10	0.10
Framing - OWSJ	0.10	0.10	0.10
Framing - beams	0.14	0.14	0.14
Misc. Mechanical, electrical	0.14	0.14	0.14
Total specified design dead load D	0.83 kPa	0.83 kPa	0.83 kPa
Office Roof Area: Add misc 0.19 kPa as shown hatched on plan -			
Total specified design dead load D	1.02 kPa	1.02 kPa	1.02 kPa
2. Specified Roof Snow Loads (S)			
Snow Load importance Factor - Is = 1.00 (ULS) (Normal)			
0.90 (SLS)			
Design criteria for 1/50 year return period Ground snow load - Ss = 2.00 kPa			
Associated rain load - Sr = 0.40 kPa			
Specified SLS roof snow loads - Ss,sls = 1.80 kPa			
Specified ULS roof snow loads - Ss,uls = 2.00 kPa			
Refer to Roof framing plan for additional snow pileup diagrams, if applicable.			
3. Specified Roof Wind Loads (W)			
Building Category - 2			
Reference velocity pressure - q 1 in 50 years = 0.44 kPa			
Wind Load importance Factor - Iw = 1.00 (ULS) (Normal)			
0.75 (SLS)			
Specified Wind Loads for SLS			
Roof Area	'R'	'S'	'C'
Specified downward roof wind load - W	0.30 kPa	0.30 kPa	0.34 kPa
Specified uplift roof wind load - W	-0.79 kPa	-0.96 kPa	-1.65 kPa
Specified Wind Loads for ULS			
Roof Area	'R'	'S'	'C'
Specified downward roof wind load - W	0.40 kPa	0.40 kPa	0.45 kPa
Specified uplift roof wind load - W	-1.06 kPa	-1.28 kPa	-2.20 kPa
NOTE : - *			
C denotes roof areas within a distance Z from roof edges and within a distance Z from exterior corners			
S denotes roof areas within a distance Z from roof edges and at distances greater than Z from exterior corners			
R denotes all roof areas not otherwise designated as C or S			
Parameter Z for defining roof areas C and S: Z = 2103 mm			
4. SLS/ULS design note for OBC-2012			
Proprietary structures (open-web steel joists, roof deck, wall cladding, etc) that are not designed by Dorlan shall be designed in accordance with the requirements of OBC-2012 Section 4.1.3.2 using the above design ULS design loads with appropriate load factors as specified in OBC-2012 Tables 4.1.3.2.A and 4.1.3.2.B, and using the above SLS design loads in accordance with the requirements of OBC-2012 Sections 4.1.3.3 to 4.1.3.6, inclusive.			
5. Refer to Architectural drawings for locations of roof scuppers.			
6. JOISTS : WHSE LIVE LOAD DEFLECTION = SPAN / 300 MAXIMUM DEPTH = 550 mm SHOE DEPTH = 100 mm			
7. ALL STRUCTURAL STEEL IN OFFICE ROOF AREAS TO BE DESIGNED FOR SPECIFIC ROOF TOP EQUIPMENT AS NOTED ON PLANS OR A MINIMUM ALLOWANCE FOR FUTURE ROOF TOP UNIT AS PER LOADING DIAGRAM BELOW.			
NOTE: JOIST LOADING 'W' IS TOTAL DEAD LOAD AND LIVE LOAD ON JOIST AS SPECIFIED IN NOTE #1 AND #2			
NOTE: ALL LOADS ABOVE ARE UNFACTORED			

SEISMIC DESIGN PARAMETERS	
1. Seismic design parameters	3. Method of analysis - Equivalent static
Sa(0.2) = 0.160	Fa = 2.10
Sa(0.5) = 0.110	Fv = 2.10
Sa(1.0) = 0.065	I _E (ULS) = 1.00 (Normal)
Sa(2.0) = 0.021	N-S Direction E-W Direction
Horizontal peak ground acceleration (PGA) = 0.053	Rd = 1.50 Rd = 1.50
Seismic soil site class type = E	Ro = 1.30 Ro = 1.30
2. SFRS is based on conventional construction of Moment resisting frames or Braced frames - other occupancies	Ta = 0.35 sec Ta = 0.35 sec
	V = 132 kN N-S Direction
	V = 132 kN E-W Direction
	I _E x Fa x Sa(0.2) = 0.336



OVERFLOW SCUPPER DETAIL
SCALE: N.T.S.

GENERAL NOTES																																																						
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1. Design and construction shall comply with the Ontario Building Code 2012 edition.																																																						
2. All dimensions must be verified and confirmed on site by the Contractor before proceeding with the work.																																																						
3. Design live loads shall not be exceeded during construction.																																																						
4. These notes shall apply unless specifically noted otherwise on the construction documents.																																																						
5. Structural drawings shall be read in conjunction with the architectural drawings.																																																						
FIELD REVIEW BY DORLAN ENGINEERING CONSULTANTS INC.:																																																						
1. Dorlan Engineering Consultants Inc. provides review only for the work shown on these drawings. This review is not a "full time" review, but rather a periodic review to ascertain that the work is in general conformance with the plans and supporting documents prepared by Dorlan Engineering Consultants Inc. Field review by Dorlan Engineering Consultants Inc. does not make us guarantors of the contractor's work. It remains the contractor's responsibility to construct the work in conformance with the contract documents.																																																						
FOUNDATIONS:																																																						
1. Concrete compressive strength as per Chart #1 cast-in-place concrete material properties schedule																																																						
2. Concrete exposed to weathering shall have air entrainment as per Chart #1 cast-in-place concrete material properties schedule.																																																						
3. Concrete cover to reinforcement shall conform to CSA A23.1, latest edition.																																																						
4. Reinforcement shall be deformed bars and conform to CSA A23.3-04, latest edition.																																																						
5. Reinforcing bars shall be of grade 400 MPa.																																																						
6. All foundations shall be installed to bear on competent native soils in accordance with the procedures and geotechnical design parameters as defined in the Geotechnical Investigation Report No. E14-06027 by Structural Inspection Limited, dated July 16, 2014.																																																						
7. Foundations shall be cast on soils having a minimum SLS bearing capacity of 125 kPa as defined in the above Report, a minimum ULS bearing capacity of 375 kPa, and Seismic Response Site Class Type "E".																																																						
8. The above geotechnical design criteria shall be verified during construction by a geotechnical engineer before concrete is cast in the foundations.																																																						
9. All fill materials under floor slabs on grade shall be mechanically compacted in layers to 100 % of the Standard Proctor Maximum Dry Density (SPMDD).																																																						
10. Fill directly under floor slabs on grade shall be a minimum depth of 200 mm (8 in) of granular material unless noted otherwise.																																																						
11. Line of slope along stepped footings shall not exceed a rise of 7 in a run of 10.																																																						
12. Maximum step in footings shall be 600 mm (2 ft).																																																						
13. Footings exposed to frost action shall be covered with a minimum depth of 1200 mm (4 ft) of soil or the equivalent thereof.																																																						
SLAB ON GRADE:																																																						
1. 25 MPa at 28 days, unless noted on plan. Thickness of slab as indicated on plan.																																																						
2. Steel trowel finish.																																																						
3. Sawcut in panels as specified. Depth of cut-1/4 of slab thickness.																																																						
4. Membrane cure and seal as specified.																																																						
5. All reentrant corners to be reinforced with 15M bar 900 mm (3 ft) long placed diagonally and 38 mm (1-1/2 in) from top of slab.																																																						
STRUCTURAL STEEL:																																																						
1. Structural steel shall conform to G40.21 grade 300W (44W) with one shop coat and field touch-up of paint conforming to CSIS/CPMA Std 1-73a. HSS sections shall be G40.21 grade 350W (50W) class H, W and WW sections to be G40.21 grade 350W (50W). Design, fabrication and erection of steel members, connections, joists and bridging shall conform to CSA S16-09, with all Supplements.																																																						
2. Connections shall be designed for the loadings shown on drawings.																																																						
3. All bolts shall be ASTM A325 or better high strength bolts. Anchor bolts may be ASTM A307.																																																						
4. All beam-to-beam and beam-to-column connections shall be double angle connections unless noted otherwise.																																																						
5. All joists and beams are to be welded to supporting members or bearing plates.																																																						
6. All welds shall conform to CSA Std W59-03 (R2008).																																																						
7. Steel contractor shall supply loose finlets, bearing plates, 6 mm (1/4 in) leveling plates for columns, anchor bolts, sill angles, corner and edge angles, and masonry clips on columns located within masonry walls.																																																						
8. Steel contractor shall supply and install all masonry wall anchors and connections to steel members.																																																						
9. All beam and joist bearing plates shall have two 16 mm (5/8 in) dia. anchor rods, 400 mm (1'-4") long with 50 mm (2 in) bent hook welded thereto, unless noted otherwise.																																																						
10. All column base plates shall have four 19 mm (3/4 in) dia. anchor bolts, 500 mm (1'-8") long with 75 mm (3 in) bent hook, and set on 6 mm (1/4 in) leveling plate which is installed on 44 mm (1-3/4 in) of concrete grade. Leveling plates shall be provided for column base plates which do not exceed 300 mm (12 in) in either dimension.																																																						
11. Bearing plate dimension given first is parallel to the web of the supporting member unless noted otherwise.																																																						
12. Shop drawings are to be submitted for review before proceeding with fabrication. Drawings of components designed by the fabricator shall be signed and sealed by a Professional Engineer.																																																						
STEEL DECK:																																																						
1. Steel deck shall be formed from sheet steel metal conforming to CSSBI 10M-08 and CSSBI 10M-2008, Zinc Coated Structural Quality Sheet Steel for Roof and Floor Deck, minimum grade A, coating designation Z70TS for roof and floor deck, with a base steel nominal thickness of 0.76 mm (0.030 in) having a minimum of 3 continuous spans unless noted otherwise.																																																						
2. Steel deck shall be spot welded to structural steel by 19 mm (3/4 in) dia. fusion welds spaced at 300 mm (12 in) on centre, with a weld on each side of a side lapped joint, unless noted otherwise.																																																						
3. Side laps shall be crimped at 600 mm (24 in) on centre, unless noted otherwise.																																																						
4. Steel deck shall have adequate capacity to support the design loads as noted on the drawings.																																																						
5. Steel deck contractor shall reinforce deck for roof openings from 150 to 400 mm (6 to 16 in) square on site.																																																						
6. Shop drawings are to be submitted for review before proceeding with fabrication. Drawings of components designed by the fabricator shall be signed and sealed by a Professional Engineer.																																																						
COLD FORMED STEEL STRUCTURAL FRAMING:																																																						
1. Design, fabrication, and construction of cold formed steel structural framing shall conform to CSA Standard CAN/CSA-S136-07 and any later supplements.																																																						
2. Design end connections for the applied wind shear.																																																						
3. Steel properties shall meet CAN/CSA-S136-07 and ASTM A446. Coatings shall be Zinc, min. Z275 (090).																																																						
4. Steel grades shall be: Grade A, 33 ksi (228 MPa) minimum yield for 0.048" material and thinner. Grade B, 50 ksi (345 MPa) minimum yield for material thicker than 0.048".																																																						
5. Wind loads and design shall conform to the Ontario Building Code, with q 1 in 50 years as listed under Design Criteria on this drawing.																																																						
Max. Deflection $\frac{w}{240}$ (Ext. insulation + stucco) Max. Deflection $\frac{w}{120}$ (Ext. insulation + brick veneer)																																																						
6. Submit name of the manufacturer of steel studs. Submit tables of physical and structural properties for members to be used.																																																						
7. Shop drawings, erection drawings and design drawings bearing the seal of a qualified Professional Engineer, where applicable, shall be submitted to the Engineer for review prior to construction.																																																						
8. Bridging shall be provided at 4'-0" o.c.																																																						
9. Fastener Schedule: (minimum) track to stud; SMS#10-16 Self Tapping Tek Screw track to steel; HSI X-DK 19 S12 Nail at 24" o.c. track to track; SMS#10-16 Self Tapping Tek Screw at 24" o.c. track to concrete; Tapcon Screw 1/4"x2 1/2" long at 24" o.c.																																																						
CAST-IN-PLACE CONCRETE:																																																						
1. Materials and methods of cast-in-place concrete construction shall conform to the National Standard of Canada CSA A23.1-09 & A23.2-09 the latest edition thereof, and in accordance with Table 5 alternative 1.																																																						
2. Unless noted otherwise in the design documents, cast-in-place concrete shall conform to the following: (a) Cement type: General Use Hydraulic cement - Type GU (b) Compressive strength at 28 days: 20 MPa minimum, unless the exposure classification of concrete to be placed in specific structural elements is stated explicitly in design documents, then the concrete compressive strength shall conform to the requirements of Tables 2, 3, and 4 in CSA A23.1-09. (c) Density: normal fresh density between 2150 and 2500 kg/m ³ (d) Nominal maximum size of coarse aggregate: 20 mm (e) Slump: 80 mm for structural concrete and slab on grade on compacted granular sub-grade (f) Air entraining admixtures: none, unless exposure classifications are indicated in the design documents for concrete placed in specific structures, then the appropriate air content shall be obtained by air entraining admixtures in the concrete mix. Air content of hardened concrete shall conform to the durability requirements as defined in CSA A23.1-09 and the air content categories as defined in Table 4. The air content categories shall conform to the exposure classifications as defined in Tables 2, 3, and 4 in CSA A23.1-09. (g) Where concrete is to be placed in specific concrete structures that are identified explicitly with exposure classifications in the design documents, then the water/cementing materials ratio shall conform to the requirement as stated in Tables 2, 3, and 4 in CSA A23.1-09.																																																						
3. Conduits and pipes embedded in plain or reinforced concrete slabs shall conform to the requirements of A23.1-09, Section 6.7.5. Conduits and pipes are limited to 50 mm outside diameter (OD) without thickening the design depth of the slab. Individual conduits and pipes must be spaced not closer than 3 times the OD horizontally and individual conduits or pipes must be spaced not closer than 3 times the largest conduit or pipe OD and must be placed on chairs and wired in place to provide equal cover to the top and bottom surfaces of the slabs. In reinforced concrete structural slabs, conduits or pipes shall not be placed within areas at columns or supports that are supported by drop panels or within areas at columns or supports that are less than 1/6 of the span to all adjacent columns or supports measured centre-to-centre of such supports. Conduits or pipes greater than 50 mm OD shall require increasing the design thickness of the slab as shown on the design drawings in accordance to details as provided by Dorlan Engineering. Aluminum conduits or pipes are not permitted except as allowed in Section 6.7.5.5 of CSA A23.1-09																																																						
<table border="1"> <thead> <tr> <th colspan="5">Chart #1 Cast-In-Place Concrete Material Properties Schedule</th> </tr> <tr> <th>Structure</th> <th>Exposure Classification</th> <th>Minimum Compressive Strength at 28 days</th> <th>Maximum ratio of water/cementing materials</th> <th>Air content range</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>Footings</td> <td></td> <td>20 MPa</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Strip footings</td> <td></td> <td>20 MPa</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Foundation wall</td> <td>F-2</td> <td>25 MPa</td> <td>0.55</td> <td>4% to 7%</td> <td></td> </tr> <tr> <td>Piers</td> <td></td> <td>25 MPa</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Entrance slab</td> <td>C-1</td> <td>35 MPa</td> <td>0.40</td> <td>5% to 8%</td> <td><1500 coulombs within 56 d</td> </tr> <tr> <td>Sidewalks, curbs, gutter</td> <td>C-2</td> <td>32 MPa</td> <td>0.45</td> <td>5% to 8%</td> <td></td> </tr> <tr> <td>Interior floor slab on grade</td> <td></td> <td>25 MPa</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Chart #1 Cast-In-Place Concrete Material Properties Schedule					Structure	Exposure Classification	Minimum Compressive Strength at 28 days	Maximum ratio of water/cementing materials	Air content range	Remarks	Footings		20 MPa				Strip footings		20 MPa				Foundation wall	F-2	25 MPa	0.55	4% to 7%		Piers		25 MPa				Entrance slab	C-1	35 MPa	0.40	5% to 8%	<1500 coulombs within 56 d	Sidewalks, curbs, gutter	C-2	32 MPa	0.45	5% to 8%		Interior floor slab on grade		25 MPa			
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<p>** UNLESS NOTED OTHERWISE **</p> <p>Minimum compressive strength at 28 days: 20 MPa</p> <p>Cement type: GU</p> <p>Slump: Normal-fresh density between 2150 and 2500 kg/m³</p> <p>Nominal maximum size of coarse aggregate: 20 mm</p> <p>Slump: 80 mm</p> <p>Governing Standard for materials and methods of cast-in-place concrete construction: CSA A23.1, 23.2 latest editions</p>																																																						

REV	DESCRIPTION	DATE	BY
07.28.15	ISSUED FOR BUILDING PERMIT		ES

THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ALL ERRORS AND OMISSIONS TO THE ENGINEER. ALL DRAWINGS, SPECIFICATIONS AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF DORLAN ENGINEERING CONSULTANTS INC. AND MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION OF DORLAN ENGINEERING CONSULTANTS INC. DRAWINGS SHALL NOT BE SCALED AND THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS ISSUED FOR CONSTRUCTION AND SEALED BY DORLAN ENGINEERING CONSULTANTS INC.



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DRAWING CONTENT:	
LOADS AND NOTES	
DATE	JUNE, 2015
DRAWN BY	ES
CHECKED BY	DM
SCALE	1:1 U/N
PROJECT No.	D15067
DRAWING No.	S6.0