

CONCRETE MIX SCHEDULE

| EXPOSURE | ELEMENT | MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (MP ¹) | EXPOSURE CLASSIFICATION | NOTES |
|---|---|--|-------------------------|-------------------------------------|
| GENERAL NON-EXPOSED CONCRETE (i.e. NOT EXPOSED TO CHLORIDES NOR FREEZE AND THAW) | FOOTINGS | 25 | N | |
| | COLUMNS | 25 | N | |
| | SHEAR WALLS | 25 | N | |
| | SLAB ON GRADE 2 | 25 | N | |
| | LEAN MIX | 5 | N | |
| | FLOATING SLABS | 25 | N | |
| | HOUSEKEEPING PADS | 25 | N | |
| | UNSHRINKABLE FILL | 0.4 MAX. | N | |
| EXTERIOR EXPOSED CONCRETE EXCLUDING PARKING (i.e. EXPOSED TO FREEZE AND THAW BUT NOT CHLORIDES) | FOUNDATION/RETAINING WALLS | 25 | F-2 | |
| | COLUMNS, PIERS | 25 | F-2 | |
| | SHEAR WALLS | 25 | F-2 | |
| | OTHER WALLS (NOT IDENTIFIED AS SHEAR WALLS) | 25 | F-2 | |
| | SUSPENDED SLABS AND BEAMS | 32 | F-2 | |
| | SLAB ON GRADE 2, SIDEWALKS | 32 | C-2 | |
| | FROST SLABS | 35 | C-1 | |
| | SLAB ON GRADE - APPARATUS BAYS | SUPERPLASTICIZED 32 | C-1 | NO AIR ENTRAINMENT |
| GROUT | APRON SLAB | 35 | N | |
| | MASONRY FILL/BOND BEAMS | 15 (FINE GROUT) | | |
| | | | | CONFORM TO REQUIREMENTS OF CSA A179 |
| 1) STRENGTH SPECIFIED AT 28 DAYS U.N.O IN DRAWINGS AND SCHEDULES. | | | | |
| 2) REINFORCED WITH SYNTHETIC FIBERS ADDED AT BATCHING PLANT - SEE SPECIFICATIONS | | | | |

DESIGN CRITERIA NOTES

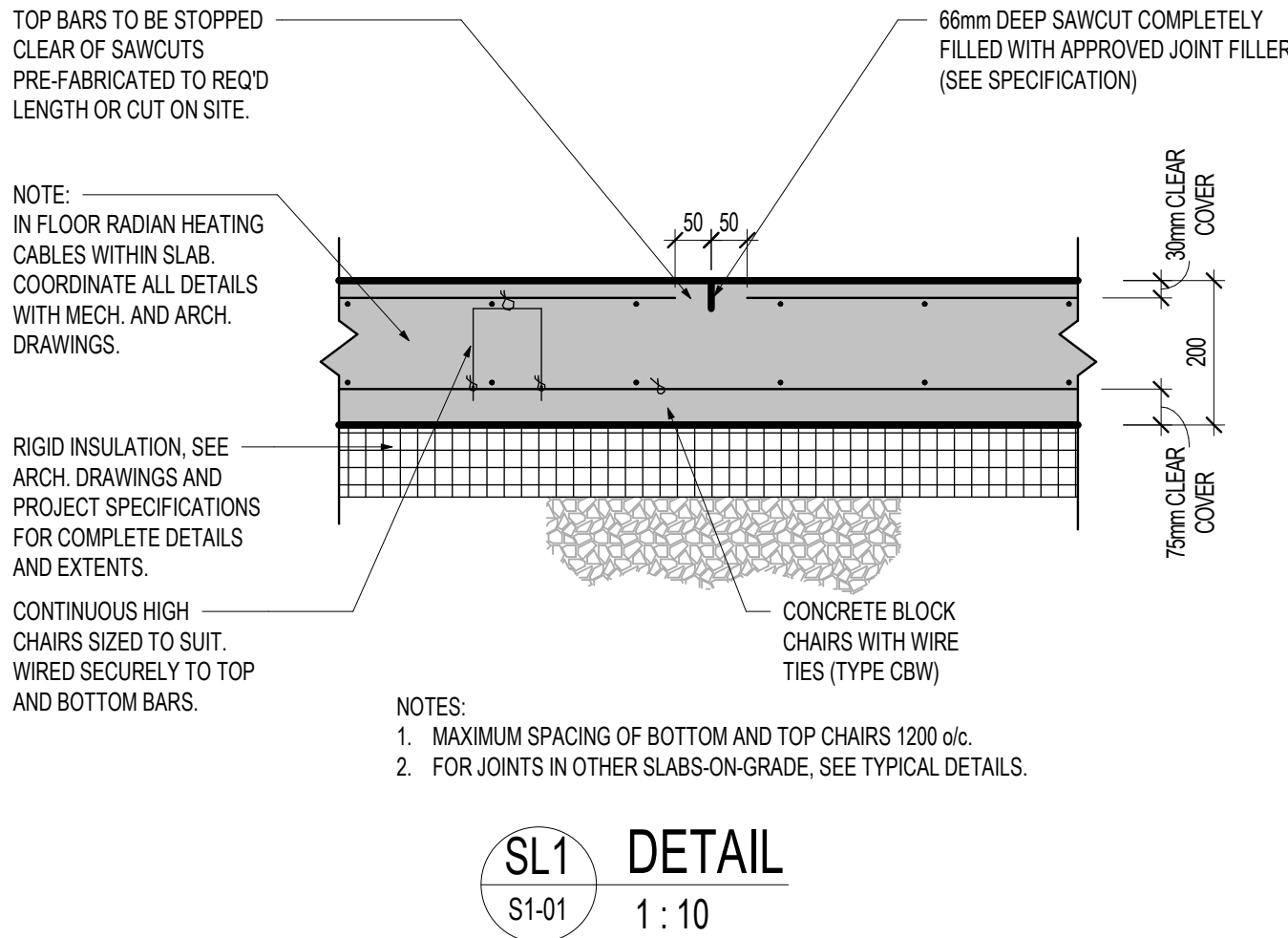
1. GENERAL
- 1.1. THE PROJECT HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2012 OBC (O. REG. 332/12 AS AMENDED) INCLUDING CLAUSES 4.1.6 (1), 4.1.6.4(3), 4.1.7 AND 4.1.8.
- 1.2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR WHO IS SUPPLYING AND INSTALLING EQUIPMENT, THAT ALL ELEMENTS OF STRUCTURES LISTED IN TABLE 4.1.8.18 OF THE OBC 2012 ARE DESIGNED IN ACCORDANCE WITH CLAUSE 4.1.8.18.
- 1.3. BUILDING IMPORTANCE CATEGORY (SNOW, WIND, AND EARTHQUAKE) IS POST DISASTER.
- 1.4. STIFF ELEMENTS NOT PART OF SFRS SHALL BE SEPARATED FROM THE STRUCTURE AS PER OBC CLAUSE 4.1.8.3 (6a). EXAMPLES INCLUDE, BUT NOT LIMITED TO MASONRY PARTITIONS, BRICK VENEER, PRECAST CLADDING ETC. IT IS THE RESPONSIBILITY OF THE SUBCONTRACTOR TO PROVIDE SHOP DRAWINGS, STAMPED, SIGNED AND DATED BY A PROFESSIONAL ENGINEER DEMONSTRATING COMPLIANCE. PROVIDE MINIMUM 25mm SEPARATION UNLESS NOTED OTHERWISE.
- 1.5. MISCELLANEOUS METAL, PRECAST AND STAIR FABRICATORS SHALL:
- 1.5.1. PROVIDE SHOP DRAWINGS TO THE ARCHITECT PRIOR TO FABRICATION; STAMPED, SIGNED AND DATED BY A PROFESSIONAL ENGINEER.
- 1.5.2. DESIGN ALL GUARDS TO MEET LATERAL LOADS DESCRIBED IN OBC 4.1.5.14.
- 1.5.3. DESIGN ALL HANDRAILS TO MEET LOADS DESCRIBED IN OBC 3.4.6.5(10).
- 1.5.4. DESIGN ALL STAIRS TO SUPPORT A MINIMUM LIVE LOAD OF 4.8kPa.
- 1.6. ARCHITECTURAL PRECAST FABRICATOR SHALL:
- 1.6.1. PROVIDE SHOP DRAWINGS TO THE ARCHITECT PRIOR TO FABRICATION, STAMPED, SIGNED AND DATED BY A PROFESSIONAL ENGINEER.
- 1.6.2. WHERE PRECAST IS USED AS A GUARD DESIGN THE PRECAST AND CONNECTIONS TO MEET LATERAL LOADS DESCRIBED IN OBC 4.1.5.14.
2. LATERAL LOADS ON STRUCTURE
- 2.1. WIND
- $q(150) = 0.44kPa$
- $C_e = (H/10)^{1/5}$ NOT LESS THAN 0.9.
- $C_g = 2.0$
- $C_p = AS PER FIGURE 4.1.7.6-A OF NBC 2015$
- 2.2. EARTHQUAKE
- $S_{a0.2} = 0.167$
- $S_{a0.5} = 0.096$
- $S_{a1.0} = 0.063$
- $S_{a2.0} = 0.0260$
- $P_GA = 0.105$
- $SITE CLASS = D$
- $R_d = 2.0$
- $R_o = 1.3$
- $F_a = 1.07$
- $F_v = 1.37$
- $I_e = 1.5$
- $I_e F_a S_{a0.2} = 0.268$
- MODERATELY DUCTILE MOMENT RESISTING FRAMES (GLULAM BASED)
- CLT BASED SHEAR WALLS
- METHOD OF ANALYSIS - DYNAMIC
3. FOUNDATION WALLS
- 3.1. WALLS RETAINING EARTH ARE DESIGNED TO SAFELY WITHSTAND HORIZONTAL EARTH PRESSURE
- $P = K (W_1 h + q)$
- $K = 0.50$
- $W_1 = 22kN/m^3$
- $q = 12kPa$
- $h = DEPTH IN METRES$
- 3.2. THE WALLS HAVE BEEN DESIGNED ASSUMING FREE DRAINING BACKFILL OR THE USE OF A DRAINAGE CORE TO PREVENT THE BUILD-UP OF HYDROSTATIC PRESSURE.

FOUNDATION PLAN NOTES

1. TOP OF SLAB - ON - GRADE TO BE 0.0 BELOW FINISHED FLOOR DATUM ELEVATION 225.70m EXCEPT AS NOTED. TOS = TOP OF SLAB.
2. FOOTINGS SHALL BEAR ON NATIVE SILTY SAND/SANDY SILT CAPABLE OF SUSTAINING A MINIMUM OF 375 kPa (U.S.), 250 kPa (SLS).
3. REFER TO THE SOIL REPORT No. 20210932 DATED MARCH 30, 2022 PREPARED BY eNGLOBE.
4. SOIL AT THE UNDERSIDE OF THE FOOTINGS IS TO BE INSPECTED AND APPROVED BY A REPRESENTATIVE OF A SOILS CONSULTANT BEFORE PLACING CONCRETE.
5. REFER ALSO TO SITE PREPARATION NOTES ON THIS DRAWING.
6. CO-ORDINATE ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS AND REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO PROCEEDING WITH ANY WORK.
7. UNDERSIDE OF WALL FOOTINGS TO BE AT ELEVATIONS AS NOTED ON PLAN.
8. SDF = STEP DOWN FOOTING.
9. UNLESS OTHERWISE SHOWN, ALL WALL FOOTINGS TO BE 300mm DEEP WITH 400mm PROJECTIONS EACH SIDE.
10. FILL REQUIRED ON BOTH SIDES OF FOUNDATION WALLS SHALL BE PLACED AND COMPACTED SIMULTANEOUSLY ON EACH SIDE TO EQUALIZE SOIL PRESSURE.
11. PROVIDE SLAB DEPRESSIONS AND SLOPES, OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS, AS REQUIRED BY THE ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS.
12. THE PROJECT SUPERINTENDENT MUST CONTACT THIS OFFICE 24 HOURS PRIOR TO PLACING STRUCTURAL CONCRETE INCLUDING STRIP FOOTINGS.
13. GENERAL SLAB - ON - GRADE IS 100mm THICK REINFORCED WITH SYNTHETIC FIBRES (REFER TO CONCRETE SPECIFICATION), EXCEPT AS NOTED.
14. CONCRETE STRENGTHS - SEE CONCRETE SCHEDULE.
15. SEE TYPICAL NOTES, TYPICAL DETAILS, AND ALL OTHER DRAWINGS.

SITE PREPARATION NOTES FOR SLAB-ON-GRADE (WITHIN BUILDING ENVELOPE)

1. THE AREA WITHIN THE BUILDING SHALL BE STRIPPED OF THE UPPER LAYER SOIL, FILL, ORGANICALLY CONTAMINATED MATERIAL AND RUBBLE AND TO A MINIMUM OF 1000mm (40") BELOW THE UNDERSIDE OF THE SLAB ON GRADE.
2. THE EXPOSED SUB-GRADE SHALL BE EXAMINED AND APPROVED BY THE SOIL CONSULTANT.
3. THE ENTIRE AREA SHALL BE PROOF ROLLED WITH A HEAVY COMPACTOR TO A MINIMUM OF **98%** STANDARD PROCTOR MAX. DRY DENSITY AND TO THE APPROVAL OF THE SOIL CONSULTANT.
4. ANY LOOSE OR SOFT SPOTS ENCOUNTERED SHALL BE SUB-EXCAVATED AND BACKFILLED WITH COMPACTED APPROVED MATERIAL.
5. FILL REQUIRED TO RAISE THE GRADES SHALL BE COMPRISED OF APPROVED **GRANULAR 19" TYPE 1 CONFORMING TO OPS5 1010**, PLACED IN SUCCESSIVE LOOSE 150mm (6") LAYERS EACH COMPACTED TO AT LEAST **98%** OF ITS STANDARD PROCTOR MAXIMUM DRY DENSITY.
6. THE LAYER IMMEDIATELY BELOW THE SLAB-ON-GRADE SHALL BE 200mm (8") OF **19mm CLEAR CRUSHED STONE** COMPACTED TO MIN. **98%** STANDARD PROCTOR MAX. DRY DENSITY.
7. ALL PROCEDURES, EQUIPMENT AND MATERIALS SHALL BE APPROVED BY THE SOIL CONSULTANT WHO SHALL CONDUCT SUFFICIENT TESTS TO ENSURE THAT THE SPECIFIED MATERIALS AND DENSITIES ARE ACHIEVED.
8. THE CONTRACTOR SHALL CO-ORDINATE WITH THE SOIL CONSULTANT AND ARRANGE A SUITABLE PROGRAM FOR SAMPLING AND INSPECTIONS, ETC. AND NOTIFY THE ARCHITECT ACCORDINGLY.
9. EXISTING ON-SITE MATERIAL **SHALL NOT** BE USED WITHIN THE BUILDING AREA FOR BACKFILLING IN TRENCHES AGAINST FOUNDATION WALLS OR UNDER SLABS-ON-GRADE.
10. REFER TO THE SPECIFICATION AND THE SOIL REPORT FOR PREPARATION OF AREAS OUTSIDE THE BUILDING ENVELOPE.



| WOOD COLUMN SCHEDULE | | | | | |
|---|--|----------|-------|---------|--------------------|
| MARK | SIZE (WxD) | MATERIAL | GRADE | REMARKS | FACTORED LOAD (kN) |
| OMITTED - C1 | SUPPLIER BASED ON PERFORMANCE SPECIFICATION AND LOADING DEFINED HEREIN | | | | |
| C2 | | SPF | 20-F | Ex | 200 |
| NOTE: CONCRETE S TO MATCH WOOD COLUMN SIZES | | | | | |

| BEAM SCHEDULE | | | | |
|---------------|--|----------|-------|---------------------|
| MARK | SIZE (WxD) | MATERIAL | GRADE | FACTORED SHEAR (kN) |
| B1 | SUPPLIER BASED ON PERFORMANCE SPECIFICATION AND LOADING DEFINED HEREIN | SPF | 20-F | 75 |
| B2 | | SPF | 20-F | 75 |

STEEL COLUMN AND POST LEGEND:

- ST1 -W310x79 COLUMN
-550x40x550 BASE PLATE
C/W (4)-AR2 ANCHOR RODS
- P1 -HSS 152x152x6.4 POST
@5000 o/c MAX. U/N
-350x25x175 BASE PLATE
C/W (2)-AR1 ANCHOR RODS

| WALL AND DECK (FLOOR / ROOF) PANEL SCHEDULE | | |
|--|------------------|--|
| MARK | SIZE (THICKNESS) | MATERIAL |
| CLT1 | 105 | CLT STRESS GRADE 1/2" WITH SPF No.2 MIN. FACE LAYERS |
| CLT2 | 175 | CLT STRESS GRADE 1/2" WITH SPF No.2 MIN. FACE LAYERS |
| CLT3 | 315 | CLT STRESS GRADE 1/2" WITH SPF No.2 MIN. FACE LAYERS |

| ROOF LINTEL SCHEDULE | | | |
|---|---------------------------------------|------|----------------------|
| REFER TO LINTEL NOTES A07 ON TYPICAL DETAIL DRAWINGS SEE ALSO SPECIFICATION | | | |
| MARK | MATERIAL | TYPE | REMARKS |
| RL1 | HSS 203x152x6.4 + 8mm BOTTOM PLATE | | PLATE LENGTH TO SUIT |
| RL2 | HSS 203x203x8.0 + 8mm BOTTOM PLATE | | PLATE LENGTH TO SUIT |
| RL2 | HSS 203x203x8.0 + 8mm TOP PLATE | | PLATE LENGTH TO SUIT |
| T1 = 10kN/M TORSION CONNECTION ALL EXTERIOR LINTELS SUPPORTING FACE BRICK TO BE GALVANIZED | | | |
| ** WELDED TO HSS EACH END. | | | |

| ROOF LOADING SCHEDULE | | |
|--|------------------------------|-----------------|
| LOADING | SUPERIMPOSED DEAD LOAD (kPa) | SNOW LOAD (kPa) |
| ROOF USE | | |
| GENERAL ROOF | ** 2.31 | 1.47 +ASL |
| MECHANICAL ROOF | ** 2.81 | 1.47 +ASL |
| IN ADDITION TO UNIFORM LOADING SHOWN, REFER TO ROOF PLAN FOR ADDITIONAL LOADING FOR ACCUMULATED SNOW LOADS (ASL) AS SHOWN, AND FOR POINT LOADS OF BRACING AND MECHANICAL EQUIPMENT. | | |
| IN ADDITION TO UNIFORM LOADING SHOWN, DESIGN GLULAM / CLT FOR ANY CONCENTRATED LOADS RESULTING FROM MECHANICAL PIPING OR AS A MINIMUM, DESIGN FOR POINT LOAD OF 2kN AT ANY LOCATION. | | |
| ** PV PANEL LOADS CONSIDERED FOR BALLASTED LOW ANGLE PANELS THAT WILL NOT RESULT IN ANY ADDITIONAL SNOW LOADS. | | |
| PV PANEL LOADING CONSIDERED TO BE 1.20 kPa | | |
| NOTE: ROOFING SINGLE PLY = 0.72 kPa HAS BEEN INCLUDED IN THE ABOVE TABLE | | |

| MECHANICAL ROOM LOADING SCHEDULE | | |
|----------------------------------|------------------------------|-----------------|
| LOADING | SUPERIMPOSED DEAD LOAD (kPa) | LIVE LOAD (kPa) |
| MECH. FLOOR | 3.6 | 6.0 |
| | | |

APPROVAL STAMP

THE CONTENTS OF THIS DRAWING AND SPECIFICATIONS
REMAIN THE COPYRIGHT PROPERTY OF
STEPHENSON ENGINEERING
AND MUST BE RETURNED UPON COMPLETION OF THE WORK.

ISSUE OR REVISION

| NO. | ISSUED FOR | DATE |
|-----|-------------------|------------|
| 1 | ISSUED FOR PERMIT | SEPT/18/23 |
| 2 | ISSUED FOR TENDER | DEC/01/23 |

PROJECT :

CITY OF VAUGHAN
FIRE STATION 7-12

9511 WESTON ROAD, VAUGHAN

CLIENT :



VAUGHAN

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES ARE TO BE REPORTED TO THE CONSULTANT.

Salas
O'Brien

2235 Sheppard Ave. E.
Toronto, ON M2J 5B5

Suite No. 1100
M2J 5B5

Stephenson Engineering, a company of Salas O'Brien

PROFESSIONAL SEAL

DWG TITLE

PLAN NOTES
SCEDULES AND
DETAILS

ORIENTATION

DATE DEC. 2023

SCALE As indicated

DRAWN BY

CHECKED BY MM

DWG STATUS:

TENDER ISSUE

PROJECT NO.

20210932

DRAWING NO.

S1-01

REVISION

2

2023-12-01 4:21:58 PM