

STRUCTURAL STEEL

1. THE CONTRACTOR SHALL FIELD CHECK AND VERIFY ALL CONDITIONS AND MEASUREMENTS AT THE SITE AND REPORT TO THE CONSULTANT ANY DISCREPANCIES OR UNSATISFACTORY CONDITIONS WHICH MAY ADVERSELY AFFECT THE PROPER COMPLETION OF THE WORK BEFORE PROCEEDING WITH THE WORK.
2. ALL SHOP CONNECTIONS SHALL BE WELDED. ALL FIELD CONNECTIONS SHALL BE WELDED OR BOLTED USING HIGH TENSILE BOLTS. BEARING TYPE CONNECTIONS SHALL BE C.I.S.C. DOUBLE ANGLE BEAM CONNECTIONS OR SHEAR PLATES USING A325 BOLTS AND E49XX FILLET WELDS, MINIMUM SIZE OF BOLTS – 20mm DIAMETER. THEY SHALL BE CAPABLE OF SUPPORTING 50% OF THE TOTAL UNIFORM LOAD CAPACITY CALCULATED USING UNIFORM LOAD CONSTANTS FOR BEAMS LATERALLY SUPPORTED EXCEPT WHERE SPECIFICALLY NOTED OR DETAILED.
3. ALL HSS SECTIONS MUST HAVE OPEN ENDS CAPPED OR WELDED SOLID ALL AROUND AT CONNECTION POINT.
4. ALL COLUMN ENDS SHALL BE SAW-CUT AND WELDED TO BASE PLATES.
5. ALL COLUMNS TO HAVE CLOSURE PLATES, TEES ANGLES OR OUTRIGGERS AT ROOF AND FLOOR LEVELS TO SUPPORT STEEL DECK WHERE REQUIRED AND TO PREVENT CONCRETE LOSS. (ELEVATED FLOORS)
6. PROVIDE AND TAKE RESPONSIBILITY FOR ALL TEMPORARY BRACING AND SHORING REQUIRED. DO NOT REMOVE THEM UNTIL COMPLETION OF CONSTRUCTION.
7. PROVIDE WELDED STIFFENER PLATES ON BOTH SIDES, UNLESS NOTED, OF THE WEB OF BEAMS AT POINTS OF CONCENTRATED LOAD INCLUDING BEAMS SUPPORTING COLUMNS OR RUNNING OVER TOP OF COLUMNS. MINIMUM STIFFENER PLATE THICKNESS SHALL BE 10mm OR FLANGE THICKNESS OF COLUMNS ABOVE OR BELOW, WHICHEVER IS GREATER. MINIMUM SIZE OF WELD SHALL BE 5mm DOUBLE FILLET WELD, OR SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE STIFFENER, WHICH EVER IS GREATER.
8. FOR LOCATIONS OF DOOR FRAMES, WALL OPENINGS, AND ROOF OPENINGS, ETC. AND RELATED DETAILS, SEE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.
9. PERIMETER ROOF ANGLES SHALL BE CONTINUOUS AND BUT WELDED TOGETHER AT JOINTS.
10. GIRTS SHALL HAVE END CONNECTIONS CAPABLE OF SUPPORTING 50% OF THE MEMBERS CAPACITY ABOUT THE MAJOR AXIS, CALCULATED IN THE SAME MANNER AS FOR BEAMS. EACH WEB OF BUILT-UP MEMBERS SHALL HAVE THEIR ENDS CONNECTED AS SPECIFIED ABOVE.
11. THE MINIMUM END CONNECTION OF ANY MEMBER SHALL BE MADE WITH TWO(2) A325 BOLTS OR EQUIVALENT WELD.
12. GUSSET PLATES FOR DIAGONAL BRACING SHALL BE CONNECTED TO ALL INTERSECTING MEMBERS UNLESS NOTE OTHERWISE, AND BE IN LINE WITH CENTERLINE OF MEMBERS.
13. IN ADDITION TO STRENGTH WELDS, STRUCTURAL STEEL EXPOSED TO WEATHER SHALL HAVE CONTINUOUS SEAL WELDS AT ALL JOINTS (INCLUDING ALL CONNECTION MATERIAL).
14. ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH CSA G40.21M GRADE 300W, UNLESS NOTED.
15. ALL STRUCTURAL STEEL `W` SHAPES SHALL CONFORM TO CSA G40.21M GRADE 350W.
16. ALL HOLLOW STRUCTURAL STEEL SECTIONS SHALL CONFORM TO CSA G40.21M GRADE 350W - CLASS H.
17. FABRICATION, ERECTION AND WORKMANSHIP SHALL CONFORM TO CAN/CSA S16-01.
18. ALL WELDING SHALL CONFORM TO CSA S16-01 AND THE LATEST VERSION OF W59 AND SHALL BE PERFORMED BY A WELDER QUALIFIED UNDER THE LATEST VERSION OF CSA W47.
19. WELDING ELECTRODES SHALL BE E49XX.
20. SURFACES TO BE WELDED SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER INCLUDING PAINT FILM.
21. ALL JOINTS SHALL BE WELDED USING E49XX ELECTRODES OR BEARING TYPE CONNECTIONS USING M20 ASTM A325M HIGH STRENGTH BOLTS, UNLESS NOTED.
22. PROVIDE FOR MASONRY CONVENTIONAL ANCHORS AT MAX. 4X WALL THICKNESS O.C. FOR ALL COLUMNS NEXT TO MASONRY WALLS, UNLESS NOTED. PROVIDE FOR MASONRY CONVENTIONAL ANCHORS FOR ALL STEEL BEAMS NEXT TO NEW CONVENTIONAL MASONRY WALLS AT MAX. 10X WALL THICKNESS O.C. UNLESS NOTED. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS.
23. SUBMIT SHOP DRAWINGS TO THE CONSULTANT FOR REVIEW AND APPROVAL. SHOP DRAWINGS SHALL BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF ONTARIO.
24. ALL EXTERIOR (PERMANENTLY EXPOSED) STRUCTURAL STEEL MUST BE HOT DIP GALVANIZED TO CONFORM TO CSA G164 AND TO HAVE A MINIMUM ZINC COATING OF 600 g/m2.
25. FOR PRIME PAINTING AND/OR PAINTING OF THE STRUCTURAL, STEEL REFER TO THE SPECIFICATIONS.

OPEN WEB STEEL JOISTS AND LONG SPAN JOISTS FOR THE VEHICLE GARAGE ROOF

1. ----DENOTES (IF SHOWN) SUGGESTED TOP AND BOTTOM CHORD BRIDGING LOCATIONS; RECOMMENDED MINIMUM LOCATIONS ONLY. FINAL DESIGN AND LOCATIONS BY OWSJ DESIGNER.
2. X DENOTES (IF SHOWN) SUGGESTED X-BRIDGING LOCATIONS; RECOMMENDED MINIMUM LOCATIONS ONLY. FINAL DESIGN AND LOCATIONS BY OWSJ DESIGNER.
3. MANUFACTURED OPEN WEB STEEL JOISTS SHALL CONFORM TO THE LATEST EDITIONS OF CAN/CSA-S16-01 AND CISC "RECOMMENDED PRACTISE".
4. REFER TO THE DRAWINGS FOR ALL LOADINGS AND DEFLECTION REQUIREMENTS.
5. PROVIDE DETAILED JOIST FABRICATION SHOP DRAWINGS AND CALCULATIONS. STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF ONTARIO. THE JOIST MANUFACTURER SHALL INDICATE DETAILS, MATERIALS, UNIFORM AND CONCENTRATED DESIGN LOADS, BRIDGING, AND ACCESSORIES.
6. DESIGN JOIST FOR THE LOADINGS SHOWN ON THE DRAWINGS, PLUS AN ADDITIONAL LIVE LOAD POINT LOAD APPLIED ANYWHERE ALONG THE BOTTOM CHORD AS FOLLOWS:
 - 2 kN FOR LONG SPAN JOISTS FOR THE VEHICLE GARAGE ROOF
 - 1 kN FOR ALL OTHER OWSJ'S
7. CONNECT JOISTS TO SUPPORTING MEMBERS BY WELDING ONLY. BEARING ENDS OF JOISTS SHALL HAVE THE FOLLOWING JOIST SHOE DEPTHS:
 - 125mm DEEP JOIST SHOE FOR LONG SPAN JOISTS FOR THE VEHICLE GARAGE ROOF
 - 100mm DEEP JOIST SHOE FOR ALL OTHER OWSJ'S
8. JOISTS TO BE WELDED CONSTRUCTION. NO HOLES ARE TO BE DRILLED FOR HANGERS.
9. EXTEND THE BOTTOM CHORD AT THE END OF JOISTS, WHEREVER THE JOISTS LINE UP WITH CENTER LINE OF A COLUMN, AND AT OTHER LOCATIONS INDICATED ON THE PLANS.
10. ALL JOISTS SHALL HAVE HOT ROLLED DOUBLE ANGLE TOP AND BOTTOM CHORDS.
11. EXTEND JOIST TOP CHORDS TO SUPPORT DECK AND SIDING WHERE REQUIRED.
12. CAMBER JOISTS FOR 0.002 OF THE SPAN (L/500).
13. ATTACHMENTS FOR MECHANICAL, ELECTRICAL, AND OTHER SERVICES SHALL BE MADE BY USING APPROVED CLAMPING DEVICES OR U-BOLT TYPE CONNECTIONS TO THE TOP CHORD ONLY. CONNECTIONS TO THE BOTTOM CHORD TO BE PERMITTED ONLY AT PANEL POINTS. OTHER CONNECTION POINTS ONLY IF APPROVED BY THE CONSULTANT.

METAL DECK

1. ALL METAL DECK TO BE NEW AND SHALL BE DESIGNED, FABRICATED AND INSTALLED TO CONFORM TO THE REQUIREMENTS OF CAN/CSA-S136 COLD FORMED STEEL STRUCTURAL MEMBERS AND THE REQUIREMENTS OF THE CANADIAN SHEET STEEL BUILDING INSTITUTE.
2. ALL ROOF AND FLOOR DECK INFORMATION IS SHOWN ON FRAMING PLANS AND DETAIL DRAWINGS.
3. SPAN DECK UNITS OVER THREE OR MORE SUPPORTS FOR INCREASED RIGIDITY.
4. PLACE DECK IN ACCORDANCE WITH MANUFACTURER'S SHOP DRAWINGS. END LAPS SHALL ALWAYS OCCUR OVER SUPPORTS. SIDE LAPS SHALL BE ON HALF CORRUGATION. MINIMUM ROOF DECK END LAP IS 50mm FOR ATTACHMENT.
5. FIELD CUTTING OF DECK UNITS SHALL BE DONE IN WORKMANLIKE MANNER. CUT OPENINGS AND REINFORCE EDGES AS REQUIRED FOR PIPES, DUCTS, ETC. THE MAXIMUM SIZE OF AN UNREINFORCED OPENING IS 200mm SQUARE OR IN DIAMETER. ROOF OPENING LARGER THE 450mm SHALL BE SUPPORTED BY STEEL FRAMING.
6. PIPING, DUCTWORK, SUSPENDED EQUIPMENT AND ANY SIMILAR INSTALLATION SHALL NOT BE SUPPORTED OR FASTENED DIRECTLY TO THE METAL DECK.
7. ROOF DECK: DESIGNED AS A DIAPHRAGM FOR THE LATERAL LOAD RESISTING SYSTEM. ROOF DECK SHALL BE GALVANIZED CORRESPONDING TO Z275, AND MINIMUM 3 SPANS CONTINUOUS. WELD DECK TO SUPPORTING STEEL WITH 20mm DIA. PLUG WELDS AT 300mm O/C MAXIMUM, SIDES BUTTON PUNCHES AT 600mm O/C MAXIMUM, MARGINAL WELDS AT 900mm MAXIMUM, OR EQUIVALENT ENGINEER APPROVED MECHANICAL FASTENING SYSTEM.
 - ROOF DECK SHALL BE 38mm (1.5") X 0.91mm (0.036"),
 - MINIMUM 3 SPANS CONTINUOUS.
8. SUBMIT DETAILED SHOP DRAWINGS INDICATING DECKING LAYOUT PLANS, TYPE OF DECK, GAUGES, SHEET LOCATION AND SIZES, CUTTING WORK, OPENING LOCATIONS, BEARING CONDITIONS, METHOD OF ATTACHMENT AND SPACING OF FASTENERS, COVER AND CLOSURE PLATES.

ANCHOR TYPES

1. ANCHOR BOLTS FOR THE COLUMN BASEPLATES SHALL CONFORM TO ASTM A307.
2. SET-IN-PLACE ANCHOR TYPES:

ANCHORS SHALL BE HILTI ANCHOR SYSTEM INSTALLED IN STRICT ACCORDANCE WITH THE HILTI SPECIFICATIONS, FOR THE LOAD INDICATED, OR ENGINEER APPROVED EQUAL.

ANCHOR TYPE 1: (TO CONCRETE)
HILTI KWIK BOLT 3 EXPANSION ANCHOR SYSTEM, USING 16mm DIAMETER ANCHORS WITH A 80mm EMBEDMENT, FOR AN ALLOWABLE (UNFACTORED) SHEAR LOAD OF 35 kN AND TENSION LOAD OF 15 kN PER ANCHOR.

ANCHOR TYPE 2: (TO CONCRETE)
HILTI HIT-HY 200 ADHESIVE ANCHOR SYSTEM, USING 19mm DIAMETER HAS-E RODS WITH A 170mm EMBEDMENT, FOR AN ALLOWABLE (UNFACTORED) SHEAR LOAD OF 35 kN AND TENSION LOAD OF 40 kN PER ANCHOR.

ANCHOR TYPE 3: (TO HOLLOW BLOCK)
HILTI HIT-HY70 ADHESIVE ANCHOR SYSTEM, USING 13mm DIAMETER THREADED RODS, BASED ON A HIT SHORT 51mm EMBEDMENT INTO THE CENTRE OF THE BLOCK FACE SHELL, FOR AN ALLOWABLE (UNFACTORED) SHEAR LOAD OF 3.0 kN PER ANCHOR.

ANCHOR TYPE 4: (TO FULLY GROUTED BLOCK)
HILTI HIT HY 150/HIT-ICE INJECTION ADHESIVE ANCHOR SYSTEM, USING 13mm DIAMETER HAS-E THREADED ROD ANCHOR, BASED ON A 108mm EMBEDMENT INTO THE FULLY GROUTED BLOCK, FOR AN ALLOWABLE (UNFACTORED) SHEAR LOAD OF 10 kN AND TENSION LOAD OF 8 kN PER ANCHOR.

ANCHOR TYPE 5: (TO FULLY GROUTED BLOCK)
HILTI HIT HY 150/HIT-ICE INJECTION ADHESIVE ANCHOR SYSTEM, USING 19mm DIAMETER HAS-E THREADED ROD ANCHOR, BASED ON AN 168mm EMBEDMENT INTO THE FULLY GROUTED MASONRY BLOCK, FOR AN ALLOWABLE (UNFACTORED) SHEAR LOAD OF 24 kN AND TENSION LOAD OF 16 kN PER ANCHOR.

DESIGN LOADS

1. ENVIRONMENTAL LOADS FOR PICKERING, ONTARIO:
2. BUILDING IMPORTANCE CATEGORY: POST-DISASTER.
- LIVE LOAD DUE TO SNOW (1/50):

Is = 1.25 FOR ULTIMATE LIMIT STATES (ULS)
Is = 0.90 FOR SERVICEABILITY LIMIT STATES (SLS)
Ss = 1.0 kPa, Sr = 0.4 kPa, NOMINAL ROOF SNOW; S = 1.20 kPa

SNOW ACCUMULATION TO BE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE 2012 (LATEST EDITION), AND THE NATIONAL BUILDING CODE 2015 STRUCTURAL COMMENTARIES (PART 4).
3. ONE DAY RAIN (1/50): 92mm
4. LIVE LOAD DUE TO WIND:

lw= 1.25 FOR ULTIMATE LIMIT STATES (ULS)
lw = 0.75 FOR SERVICEABILITY LIMIT STATES (SLS)
q(1/10) = 0.37 kPa, q(1/50) = 0.48 kPa, INTERNAL PRESSURE CATEGORY 2.

WIND PRESSURES ARE TO BE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE 2012 (LATEST EDITION), AND PRESSURE COEFFICIENTS FROM THE NATIONAL BUILDING CODE 2015 STRUCTURAL COMMENTARIES (PART 4).
5. LIVE LOAD DUE TO SEISMIC:

le = 1.5 FOR ULTIMATE LIMIT STATES (ULS)
Sa(0.2) = 0.219, Sa(0.5) = 0.117, Sa(1.0) = 0.060,
Sa(2.0) = 0.029, Sa(5.0) = 0.0074, Sp(2.0) = 0.0028, PGA = 0.140, PGV = 0.094

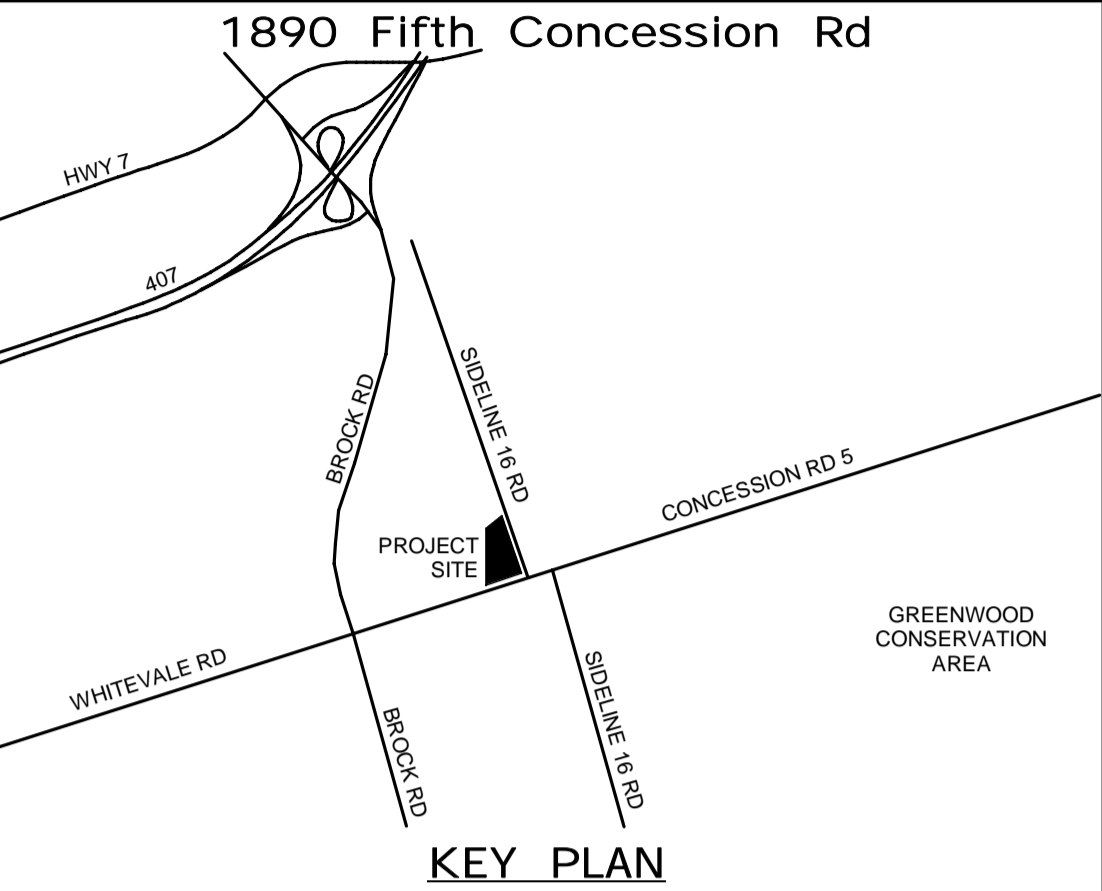
SOIL SITE CLASS 'C'
Fs = 1.00
leFsSa(0.2) = 0.329, leFsSa(2.0) = 0.044

SEISMIC FORCE MODIFICATION FACTORS:
CONVENTIONAL CONSTRUCTION OF
STEEL MOMENT-RESISTING FRAMES; Rd = 1.5, Ro = 1.3
STEEL BRACED FRAMES; Rd = 1.5, Ro = 1.3
6. EXTERIOR WALL COMPONENTS, INCLUDING OVERHEAD DOORS, DESIGNED FOR A MINIMUM UNFACTORED NET WIND PRESSURE OF ± 1.09 kPa.
7. ROOF DEAD LOAD:

ROOFING ASSEMBLY	0.86 kPa
STEEL DECK	0.15 kPa
ROOF STEEL	0.48 kPa
ELECT/MECH	0.24 kPa
SOLAR PANEL ALLOWANCE	0.48 kPa
TOTAL DL:	2.21 kPa
MAXIMUM LL DEFLECTION OF L/360	

8. LIVE LOAD VEHICLE GARAGE GROUND FLOOR = 12.0 kPa
9. LIVE LOAD ALL OFFICE AREAS (UNO) = 4.8 kPa
- 10.LIVE LOAD FOR OPERATIVE WALL SYSTEM
SUPERIMPOSED LIVE LOAD = 0.75 kPa
(LOAD BASED ON SURFACE AREA OF WALL. DESIGN SUPPORTS FOR LOAD DISTRIBUTION BASED ON SYSTEM STACKING AT DESIGNATED END)
- 11.MECHANICAL ROOF TOP UNIT ERV-1:
DIMENSIONS: 4318 mm LONG X 1829 mm WIDE X 1950 mm HIGH (INCLUDING CURB).
(170" L x 72" W x 77" H)
OPERATING WEIGHT: 20.3 kN (4553 lbs)
12. VEHICAL BAY CEILING CIRCULATING FAN WEIGHT: 1 kN

ALL MEASUREMENTS ARE TO BE VERIFIED BY THE CONTRACTOR ON SITE AND ANY DISCREPANCIES ARE TO BE REPORTED BEFORE PROCEEDING WITH THE WORK. THE REGION OF DURHAM ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING SERVICES AS INDICATED ON THIS DRAWING. DO NOT SCALE DRAWINGS.



CONSULTANT REVISIONS				
NO.	DATE.	NAME	REVISIONS	

PRIME CONSULTANT

AECOM Canada Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, Ontario, N2P 0A4
519 650 5313 tel 519 650 3424 fax
www.aecom.com

SUB CONSULTANT

DESIGN BY: D.S.	SCALE:
DRAWN BY: R.E.	DATE: 03/31/21
CHECKED BY: C.Y.	CONSULTANT PROJECT NO. 60611569
APPROVED BY: K.D.	CLIENT FILE No.: 811/20

CONTRACT REVISIONS				
NO	DATE	NAME	REVISIONS	
3	10/18/21		ADDENDUM #1	
2	10/18/21		RESPONSE TO CITY COMMENTS	
1	09/22/21		ISSUED FOR TENDER	

THE REGIONAL MUNICIPALITY
OF DURHAM

WORKS DEPARTMENT
DESIGN, CONSTRUCTION & ASSET MANAGEMENT

NEW PARAMEDICS STATION - SEATON

GENERAL NOTES AND LOADING - SHEET 2 OF 2

PROPERTY NO.	FACILITIES CODE	FACILITIES PROJECT NO. PO61- 18- 01
CONTRACT NO. T- 1160- 2021	DRAWING NO. S- 101	SHEET NO.