GENERAL REQUIREMENTS

1. GENERAL NOTES

.1 THE STRUCTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND SITE SERVICING DRAWINGS. CHECK ALL DIMENSIONS ON THESE DRAWINGS WITH ARCHITECTURAL DRAWINGS. REPORT ANY INCONSISTENCIES TO ARCHITECT OR ENGINEER BEFORE PROCEEDING WITH THE WORK. DO NOT SCALE THESE DRAWINGS.

.2 BUILDING FROM THESE DRAWINGS SHALL PROCEED ONLY WHEN MARKED "ISSUED FOR CONSTRUCTION".

.3 PROTECT ALL FOOTINGS, WALLS, SLABS ON GRADE AND ADJACENT SOIL AGAINST FROST ACTION AND FREEZING AT ALL TIMES DURING CONSTRUCTION.

.4 ALL EXTERIOR WALLS AND FOOTINGS SUBJECT TO FREEZING WHEN THE CONSTRUCTION IS COMPLETED SHALL BE FOUNDED AT STRATA SAFELY SUPPORTING THE DESIGN BEARING PRESSURE BUT NOT LESS THAN 1220mm (4' –0") (OR DEPTH OTHERWISE PRESCRIBED BY LOCAL AUTHORITIES) BELOW FINISHED GRADE OR AS OTHERWISE INDICATED ON PLANS OR SECTIONS. ALL OTHER FOOTINGS SHOULD BE FOUNDED ON SOIL AS DESCRIBED ABOVE BUT NOT LESS THAN 610mm (2'–0") BELOW THE ORIGINAL GRADE.

. 5 THE LINE OF SLOPE BETWEEN ADJACENT EXCAVATIONS FOR FOOTINGS OR ALONG STEPPED FOOTINGS OR TRENCHES SHALL NOT EXCEED A RISE OF 7 IN A RUN OF 10, MAXIMUM STEP TO BE 610mm (2'–0").

.6 KEEP EXCAVATIONS CONTINUOUSLY DRY BEFORE CONCRETE IS PLACED. REMOVE ANY LOOSE MATERIAL OR SOIL SOFTENED BY WATER PRIOR TO PLACING CONCRETE.

.7 CENTRE FOOTINGS AND PIERS UNDER CENTROID OF COLUMNS UNLESS OTHERWISE NOTED.

.8 DO NOT BACKFILL AGAINST WALLS RETAINING EARTH UNTIL ELEMENTS PROVIDING LATERAL SUPPORT ARE COMPLETE, PLACE BACKFILL SIMULTANEOUSLY ON BOTH SIDES OF OTHER WALLS BELOW GRADE.

.9 THESE DRAWINGS SHOW THE COMPLETED STRUCTURE. THE CONTRACTOR IS TO PROVIDE ALL NECESSARY BRACING AND SHORING REQUIRED DURING CONSTRUCTION. THE CONTRACTOR SHALL ALSO PROVIDE ALL NECESSARY BRACING, SHORING AND OTHER TEMPORARY SUPPORT TO PROTECT ALL EXISTING AND ADJACENT STRUCTURES AFFECTED BY THIS WORK. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL SUCH MEASURES.

. 10 PROVIDE CONTINUOUS GALVANIZED VERTICAL DOVETAIL ANCHOR SLOTS AT 610mm (2'–0") IN ALL CONCRETE SURFACES WITH VENEER AND ABUTIING CONCRETE BLOCK WALLS.

. 11 ALL BEAMS BEARING ON WALLS SHALL HAVE A MINIMUM BEARING OF 203mm (8") UNLESS OTHERWISE NOTED. CONCRETE SLABS SHALL HAVE A MINIMUM BEARING OF 102mm (4"). VOIDS IN MASONRY UNITS UNDER BEAMS AND JOISTS SHALL BE PREFILLED WITH 20MPa CONCRETE OR GROUT TO A MINIMUM DEPTH OF 203mm (8") AND A MINIMUM LENGTH OF 203mm (8") BEYOND THE BEARING SURFACE UNLESS OTHERWISE NOTED. LEAVE CHASES AND POCKETS IN WALLS FOR SEATING OF SLABS AND BEAMS.

. 12 BARS MARKED CONTINUOUS SHALL BE DEVELOPED BY A CLASS C TENSION LAP WHERE SPLICED.

. 13 T.D. SECTIONS REFER TO TYPICAL DETAILS. THEY SHOW STRUCTURAL INTENT RATHER THAN ACTUAL CONDITIONS FOR THIS PROJECT.

. 14 UNLESS OTHERWISE SHOWN ON THE DRAWINGS, PROVIDE LOOSE LINTELS OVER ALL OPENINGS IN NON–BEARING CONCRETE BLOCK WALLS OR VENEER AS FOLLOWS: FOR OPENINGS UP TO 1200mm (3'–11") WIDE, USE L89x89x6 (L3.5x3.5x1/4) FOR EACH 102mm (4") OF MASONRY. FOR OPENINGS BETWEEN 1200mm (3'–11") AND 1800mm (5'–11"), USE L102x89x8 (L4x3.5x5/16) LLV FOR EACH 102mm (4 ") OF MASONRY. FOR OPENINGS BETWEEN 1800mm (5' – 11 ") AND 2400mm (7'–10"), USE L127x89x8 (L5x3.5x5/16) LLV FOR EACH 102mm(4") OF MASONRY. AND FOR OPENINGS BETWEEN 2400mm (7'–10") AND 3000mm (9'–10") PROVIDE L152x102x10 (L6x4x3/8) LLV FOR EACH 102mm (4") OF MASONRY. PROVIDE MINIMUM OF 102mm (4 ") BEARING OF EACH END FOR OPENINGS UP TO 1200mm (3'–11"), 152mm (6") FOR OPENINGS BETWEEN 1200mm (3'–11") AND 1800mm (5'–11") AND 203mm (8") FOR OPENINGS BETWEEN 1800mm (5'– 11 ") AND 3000mm (9' –10"). LINTELS IN EXTERIOR MASONRY WALLS ARE TO BE HOT DIPPED GALVANIZED.

2 SHOP DRAWINGS INSPECTION AND TESTING

.1 FOR ALL STRUCTURAL COMPONENTS SHOWN ON THESE DRAWINGS SUBMIT COPIES OF SHOP DRAWINGS AS DIRECTED BY THE ENGINEER. SHOP DRAWINGS ARE TO SHOW COMPLETED INFORMATION FOR THE FABRICATION AND ERECTION OF THE STRUCTURAL COMPONENTS. THE SUBSEQUENT REVIEW BY THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR MAKING THE WORK ACCURATE AND IN CONFORMITY WITH THE CONTRACT DOCUMENTS.

.2 AN INDEPENDENT INSPECTION AND TESTING COMPANY OR A SOILS CONSULTANT ARE TO BE ENGAGED TO CARRY OUT THE FOLLOWING SERVICES:

a) SOIL: PREPARATION OF A SOIL REPORT BY THE SELECTED SOILS CONSULTANT AND INSPECTION OF BEARING SOILS PRIOR TO INSTALLATION OF FOUNDATIONS.

b) SUB–BASE FOR SLAB ON GRADE: INSPECTION FOR ADEQUACY OF COMPACTION AND QUALITY OF FILL USED.

c) STRUCTURAL STEEL, STEEL DECK AND OWSJ: ROUTINE SHOP AND FIELD INSPECTION AS DIRECTED BY CSA S16.

d) CAST IN PLACE AND PRECAST CONCRETE: ROUTINE INSPECTION OF MATERIALS, COMPRESSIVE STRENGTH, AIR ENTRAINMENT, SLUMP AND REINFORCING STEEL TEST WHEN REQUIRED AND AS DIRECTED BY CSA A23.1 AND CSA A23.2.

e) MASONRY: AS DIRECTED, CONCRETE BLOCKS AND BRICKS ARE TO BE TESTED BY APPROPRIATE STANDARDS (SEE ALSO MASONRY MATERIALS GUIDELINES). MORTAR AND GROUT IN ACCORDANCE WITH CSA A179.

.3 ALL INSPECTION AND TESTING SERVICES ARE TO BE PERFORMED BY COMPANIES CERTIFIED BY THE CANADIAN STANDARDS ASSOCIATION AND FOR WELDING, THE WELDING BUREAU.

3 MATERIAL DATA

.1 STRUCTURAL LUMBER TO BE GRADE MARKED TO CONFORM TO CSA 0141.

.2 CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS: 30MPa UNLESS NOTED. CONFORM TO CSA A23.1 AND CSA–A23.3, AND THE RSIO MANUAL OF STANDARD PRACTICE. (CONCRETE SHALL BE READY MIXED USING PORTLAND GU CEMENT (FORMERLY TYPE 10). AIR–ENTRAINING AGENTS AND CHEMICAL ADMIXTURES SHALL CONFORM TO CSA A23.1. ALL CONCRETE SHALL CONTAIN A WATER REDUCING AGENT. ALL CONCRETE EXPOSED TO THE EXTERIOR SHALL HAVE AN AIR CONTENT CONFORMING TO A23.1. USE VIBRATORS FOR THE PLACEMENT OF CONCRETE. DO NOT PLACE CONCRETE IN THE RAIN.

.3 REINFORCING STEEL: CSA G30.18, GRADE 400. USE PLASTIC OR CONCRETE BAR SUPPORTS IN EXPOSED LOCATIONS.

.4 STRUCTURAL STEEL: CSA G40.20/G40.21.

a) ROLLED SHAPES AND PLATES: GRADE 350W
b) HOLLOW STRUCTURAL SECTIONS: CLASS H GRADE 350W
c) ANGLES: GRADE 300W
d) WELDING ELECTRODES: E49XX
e) FASTENERS: A325/A325M
f) ANCHOR RODS: CSA G40.21 GRADE 300W

.5 MASONRY MATERIALS:

a) LOAD BEARING CONCRETE BLOCK: TO CSA A165 SERIES.
WEIGHT: NORMAL WEIGHT
HOLLOW: H/15/A/M
SOLID: S/15/A/M

b) LOAD BEARING BRICK: TO CSA–A82
c) BELOW GRADE MORTAR: TYPE S UNLESS NOTED.

4 CODES AND STANDARDS

.1 CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF THE BUILDING CODE OF THE GOVERNING PROVINCE AND THE OCCUPATIONAL HEALTH AND SAFE

.2 CONCRETE MATERIALS AND DESIGN: TO CSA A23.1 AND CSA A23.3 RESPECTIVELY.

.3 CONCRETE CONSTRUCTION: TO CSA A23.1.

.4 MASONRY DESIGN AND CONSTRUCTION: TO CSA S304 AND CSA A371 RESPECTIVELY.

.5 STRUCTURAL STEEL DESIGN, FABRICATION AND ERECTION: TO CSA S16.

.6 WELDING: TO CSA W59, CSA S16 AND CSA W47.1.

.7 PAINT AND PRIMER: TO CISC/CPMA STANDARDS 1–73A AND CISC/CPMA STANDARDS 2–75, RESPECTIVELY.

5 DESIGN DATA FOR AJAX

.1 ALL LOADS SHOWN ON DRAWINGS ARE UNFACTORED SERVICE LOADS IN kN (kips) AND kPa (psf) UNLESS OTHERWISE NOTED.

.2 THE IMPORTANCE CATEGORY OF THIS BUILDING IS NORMAL.

IMPORTANCE FACTORS

IMPORTANCE CATEGORY	WIND, Iw		SNOW, Is		EARTHQUAKE, Ie	
	ULS	SLS	ULS	SLS	ULS	SLS
NORMAL	1.0	0.75	1.0	0.9	1.0	REFER TO COMMENTARY J OF NBC 2020 USERS GUIDE

.3 FOR FACTORED SOIL BEARING CAPACITY FOR FOOTING DESIGN, SEE FOUNDATION PLAN.

.4 LATERAL LOADS ON STRUCTURAL FRAME
THE STRUCTURE HAS BEEN DESIGNED TO RESIST THE HORIZONTAL 1/50 AVERAGE HOURLY WIND PRESSURE AND THE LIVE LOADS DUE TO EARTHQUAKE IN ACCORDANCE WITH THE BUILDING CODE OF THE GOVERNING PROVINCE, WHICHEVER PRODUCES THE MORE UNFAVOURABLE EFFECT. THE DESIGN PARAMETERS FOR WIND AND EARTHQUAKE ARE AS NOTED BELOW:

a) WIND LOADS
q1/50 = 0.48kPa. Ce, Cg & Cp HAVE BEEN CALCULATED IN ACCORDANCE WITH THE STATIC PROCEDURE DESCRIBED IN THE USER'S GUIDE TO THE NBC 2020 STRUCTURAL COMMENTARIES.

b) EARTHQUAKE LOADS:
SITE CLASS: D
Sa(0.2)–0.28, Sa(0.5)–0.13, Sa(1.0)–0.064, Sa(2.0)–0.029, PGA–0.139.

.5 LATERAL LOADS ON FOUNDATION WALLS

a) WALLS RETAINING EARTH ARE DESIGNED TO SAFELY WITHSTAND A HORIZONTAL PRESSURE (P IN kPa) AT ANY DEPTH (H IN m) GIVEN BY THE EXPRESSION (VALUES AS NOTED UNLESS OTHERWISE STATED IN A SOILS REPORT):
P = Ka(yh+q)
WHERE THE SOIL PRESSURE COEFFICIENT, Ka – 0.33
UNIT FORCE OF SOIL, γ = 21.0kN/cu.m (133pcf)
SURCHARGE q – 5kPa (105psf) FOR NON VEHICULAR TRAFFIC AREAS.
q – 12kPa (250psf) FOR VEHICULAR TRAFFIC AREAS (INCLUDING CONSTRUCTION VEHICLES)

b) THE WALLS HAVE BEEN DESIGNED ASSUMING FREE DRAINING BACKFILL, WHICH DOES NOT PERMIT THE BUILD–UP OF HYDROSTATIC PRESSURE.

.6 LIVE LOADS ON ROOFS

a) THE ROOF AREAS HAVE BEEN DESIGNED TO RESIST SNOW, RAIN AND WIND LOADS IN ACCORDANCE WITH THE BUILDING CODE OF THE GOVERNING PROVINCE, WHICHEVER PRODUCES THE MORE UNFAVOURABLE EFFECT. THE DESIGN PARAMETERS FOR THESE LOADS ARE AS NOTED BELOW.

b) SNOW LOADS WITH A 1 IN 50 PROBABILITY OF EXCEEDANCE PER YEAR.
i) THE GROUND SNOW LOAD OF 1.0kPa AND THE ASSOCIATED RAIN LOAD OF 0.4kPa, MODIFIED AS REQUIRED OR PERMITTED BY CODE, HAVE BEEN CONSIDERED IN THE DESIGN OF THE ROOF AREAS.
ii) ADDITIONAL SNOW ACCUMULATION ADJACENT TO HIGHER WALLS, ROOFS AND MECHANICAL UNITS IS INDICATED ON THE PLANS.

c) RAIN LOADS WITH A 1 IN 50 PROBABILITY OF EXCEEDANCE PER YEAR.
i) THE TOTAL LOAD ASSOCIATED WITH THE 24–HOUR RAINFALL, IN ACCORDANCE WITH THE BUILDING CODE OF THE GOVERNING PROVINCE IS EQUIVALENT TO 113mm OF WATER OVER THE ENTIRE ROOF AREA.
ii) THE ACTUAL DISTRIBUTION OF THIS LOAD HAS BEEN ADJUSTED TO ACCOUNT FOR THE ACTUAL ROOF SLOPES AND PROFILE.

END OF SECTION

CAST–IN–PLACE CONCRETE

1. GENERAL

.1 CONFORM TO THE GENERAL REQUIREMENTS ON THE DRAWINGS.

.2 INCLUDE IN THE WORK OF THIS SECTION ALL CONCRETE INCORPORATED IN THE PROJECT.

.3 CONFORM TO CSA A23.1/A23.2 AND A23.3 AND THE RSIC MANUAL OF STANDARD PRACTICE

.4 INSTALL, OR SUPPLY AND INSTALL, ANCHORAGE, FASTENINGS AND BLOCKING AS REQUIRED, FOR WORK OF OTHER SECTIONS.

.5 MATERIALS SHOWN ON THE DRAWINGS OR IN THIS SPECIFICATION ARE TO ESTABLISH THE REQUIRED DEGREE OF QUALITY OR PERFORMANCE . SUBSTITUTION MAY BE PERMITTED UPON PROOF OF EQUIVALENCE. SUBMIT WRITING IN ADVANCE OF SHOP DRAWINGS. EACH ITEM SHALL BE CLEARLY IDENTIFIED. DO NOT PROCEED WITH PROPOSAL UNLESS IT IS ACCEPTED IN WRITING BY THE ENGINEER.

.6 TOLERANCES: CONFORM TO CSA A23.1.

.7 SUBMIT FOUR (4) WHITE PRINTS OF BAR LISTS AND PLACING DIAGRAMS TO ENGINEER TO REVIEW PRIOR TO FABRICATION OF REINFORCING STEEL. DRAW DL–\GRAMS TO A SCALE OF NOT LESS THAN 1 : 50 (1/4"=1'–0") . REVIEW OF SHOP DRAWINGS IS A PRECAUTION AGAINST OVERSIGHT OR ERROR. IT IS NOT A DETAILED CHECK AND SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF RESPONSIBILITY FOR MAKING THE WORK ACCURATE AND IN CONFORMITY WITH THE CONTRACT DOCUMENTS. MAINTAIN A SET OF REVIEWED DRAWINGS ON SITE.

2 PRODUCTS

.1 MATERIALS:

a) CEMENT: PORTLAND GU CEMENT (FORMERLY TYPE 10) TO CAN/CSA–A3000–08.
b) WATER, FINE AGGREGATES, COARSE AGGREGATES: TO A23.1.
c) AIR–ENTRAINING ADMIXTURE: TO ASTM C260/C260M–10a.
d) CHEMICAL ADMIXTURES: TO ASTM C494/C494M–13 .
e) CURING–SEALING COMPOUND: CLEAR LIQUID TO ASTM C309–11, TYPE 1 . USE SEALTIGHT CR–26 BY W.R. MEADOWS OF CANADA LTD.
f) WATERSTOP: DURAJOINT P.V.C. WATERSTOP, TYPE 3.
g) REINFORCING STEEL: NEW, DEFORMED, BILLET–STEEL BARS TO CAN/CSA–G30.18, GRADE 400.
h) WELDED WIRE REINFORCEMENT: TO ASTM A1064/A1064M–13, SIZE AS INDICATED. SUPPLY IN FLAT SHEETS ONLY.
n) FORMWORK: CAN/CSA–S269.3–M92 (R201 3)
j) PLYWOOD FOR FORMWORK: COFI EXTERIOR GRADE, TO CSA 0121–08 (R2013). DO NOT USE INSERT PATCHES ON CONTACT FACE.
k) SAW–CUT JOINT FILLER: USE CEMENT GROUT. USE GRAY POLYSULPHIDE CAULKING IN EXPOSED LOCATIONS.
l) PREMOULDED JOINT FILLER: USE 6mm (1/4") THICK "KONOBOARD" FROM GOODCO.
m) NON–METALLIC FLOOR SURFACE HARDENER: COLOURCRON BY MASTER BUILDERS' COMPANY LIMITED

.2 USE READY–MIXED CONCRETE TO GIVE 28 DAY COMPRESSIVE STRENGTH AS SPECIFIED IN "CONCRETE REQUIREMENTS" TABLE BELOW. MINIMUM CEMENT CONTENT FOR SLABS IS 285 kg/cu.m, EXCEPT FOR SIDEWALKS AND PARKING AREAS THE MINIMUM CEMENT CONTENT IS 320 kg/cu.m.

3 EXECUTION

.1 NOTIFY THE ARCHITECT AND THE ENGINEER 48 HOURS IN ADVANCE OF PLACING CONCRETE TO PERMIT VIEWING REINFORCEMENT AND PLACING OF CONCRETE. DO NOT CLOSE FORMS UNTIL THE REINFORCEMENT HAS BEEN REVIEWED.

.2 USE VIBRATORS FOR PLACEMENT OF CONCRETE. DO NOT PLACE CONCRETE IN THE RAIN.

.3 USE PLASTIC OR CONCRETE BAR SUPPORTS IN EXPOSED LOCATIONS AND PARKING AREAS.

.4 EXPOSED CONCRETE SHALL BE FREE FROM HONEYCOMBING, VOIDS, LOSS OF FINES, VISIBLE FLOW LINES AND COLD JOINTS, CHIPS AND SPALLS. EXPOSED CONCRETE SHALL BE RUBBED SMOOTH USING WATER AND CARBORUNDUM BRICK. PATCH DEFECTS AND TIE HOLES. REMOVE FINS.

.5 PROVIDE MINIMUM CONCRETE COVER FOR REINFORCING BARS AS INDICATED IN TABLE BELOW. IF FIRE RATING IS NOT AVAILABLE PROVIDE MIN. COVER FOR 2 HOURS UNLESS NOTED.

.6 ALL ADDITIVES REQUIRED IN THE CONCRETE MIX TO MEET THE FINISHING SPECIFICATION, SHOWN IN THE ARCHITECTURAL AND STRUCTURAL DRAWINGS AND THE TECHNICAL SPECIFICATIONS SHOWN IN THE TABLES BELOW ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

MIN CONCRETE COVER FOR REINFORCING

STRUCTURAL MEMBER/ LOCATION	EXPOSED TO WEATHER, EARTH, DEICING, CHEMICALS	NOT EXPOSED FIRE RATING (H)			
		0	1.5	2.0	3.0
MEMBERS CAST AGAINST EARTH (i.e. FOOTINGS, GRADE BEAMS, CAISSON CAPS – ALL BARS)	75	–	–	–	–
BEAMS, GIRDERS LONGITUDINAL BARS, < 35M ≥ 45M	50 60	40 45	40 45	40 45	40 45
COLUMNS, (LONGITUDINAL BARS) ≤ 35M ≥ 45M	50 60	40 45	40 45	50 50	50 50
SLABS AND WALLS ≤ 20M 25M 30M 35M 40M	30 40 45 55 60	20 25 30 35 45	20 25 30 35 45	25 25 30 35 45	35 35 35 35 45
TIES AND STIRRUPS	40	30	–	–	–

.7 PLACE 19mm (3/4") CHAMFER STRIPS AT ALL EXPOSED CORNERS.

.8 MAXIMUM DISTANCE BETWEEN CONSTRUCTION JOINTS ARE:

a) WALLS AND FRAMED SLABS: 9.0m (29'–6"), OR 18.0m (59'–0") ALTERNATING WITH CONTROL JOINTS AT SAME SPACING.
b) SLABS–ON–GRADE: 4.5m (15'–0"), OR 13.5m (44'–3") WITH 5mm x 19mm (3/16" x 3/4") SAW CUT JOINTS AT 4.5m (15'–0") CENTRES .
c) PROVIDE WATERSTOPS IN ALL CONSTRUCTION JOINTS IN WALLS BELOW GRADE, AND SLABS WHERE INDICATED.

.9 SURFACE FINISHING – PROVIDE FINAL FINISH IN ACCORDANCE WITH PROPOSED USE. REFER TO ROOM SCHEDULE:

a) SKIM COATS, PITS: SCREEDED AND BULL FLOATED.
b) BASE SLAB FOR TERRAZZO, TILE OR BONDED TOPPING: SCREEDED, BULL FLOATED AND SCORED WITH WIRE BRUSH.
c) FLOORS WHICH RECEIVE RESILIENT FLOOR OR CARPET, FUTURE FLOORS: POWERED STEEL TROWEL FINISH.
d) INTERIOR EXPOSED SLABS: POWERED STEEL TROWEL FINISH WITH NON–SLIP SWIRLS.
e) EXTERIOR EXPOSED SLABS: WOOD FLAT FINISH WITH BROO MING.

. 10 PROTECT FRESH CONCRETE FROM PREMATURE DRYING, SUNSHINE, EXCESSIVELY HOT OR COLD TEMPERATURES AND MECHANICAL INJURY. MAINTAIN AT A RELATIVELY CONSTANT TEMPERATURE FOR AS LONG AS IS REQUIRED FOR HYDRATION OF THE CEMENT AND CURING OF THE CONCRETE.

. 11 APPLY CURING–SEALING COMPOUND OR FLOOR SURFACE HARDENER AS PER MANUFACTURERS INSTRUCTIONS.

. 12 INDEPENDENT INSPECTION AND TESTING: THE GENERAL CONTRACTOR WILL APPOINT AN INDEPENDENT INSPECTION AND TESTING AGENCY TO UNDERTAKE CONCRETE STRENGTH TESTS. THE COST OF TESTING SHALL BE PAID BY THE OWNER. LABORATORY CURING AND TESTING OF SAMPLES WILL BE CARRIED OUT IN ACCORDANCE WITH CSA STANDARDS A23.1 AND A23.2 EXCEPT THAT STRENGTH TESTS, INCLUDING AIR ENTRAINMENT AND SLUMP TESTS, WILL BE REQUIRED FOR EACH 40 cu.m, BUT NOT LESS THAN ONE TEST, FOR EACH CLASS OF CONCRETE PLACED EACH DAY, PROVIDE A GROUP OF THREE CYLINDERS FOR EACH STANDARD STRENGTH TEST. ONE SPECIMEN WILL BE TESTED AT 7 DAYS AND TWO AT 28 DAYS. PROVIDE ONE ADDITIONAL FIELD CURED CYLINDER FOR TESTING AT 7 DAYS WHEN CONCRETE IS PLACED UNDER COLD WEATHER CONDITIONS. RESULTS WILL BE ON THE FORM APPROVED BY R.M.C.A.O. AND WILL BE REPORTED TO THE ARCHITECT WITH COPIES TO THE STRUCTURAL ENGINEER, THE CONTRACTOR AND THE MUNICIPAL AUTHORITIES.

END OF SECTION

MASONRY

1. GENERAL

.1 CONFORM TO CSA S304.1, DESIGN OF MASONRY STRUCTURES, CSA A370, CONNECTORS FOR MASONRY AND CSA A371, MASONRY CONSTRUCTION FOR BUILDINGS.

.2 THESE NOTES ARE BASED ON STRUCTURAL MASONARY REQUIREMENTS BASED ON EMPIRICAL REQUIREMENTS IF "ENGINEERED MASONRY" IS ALSO INDICATED REFER TO PLAN NOTES. SEE ALSO ARCHITECTURAL REQUIREMENTS.

2 PRODUCTS

.1 LOAD–BEARING CONCRETE BLOCK: NORMAL–WEIGHT, UNITS TO CSA A165.1. USE TYPE H/15/A/M FOR HOLLOW UNITS AND TYPE S/15/A/M FOR SOLID UNITS.

.2 LOAD–BEARING BRICK: TO CSA A82.

.3 MORTAR: TO CSA A179. USE TYPE S FOR CONCRETE BLOCKS. TYPE N FOR CLAY BRICKS UNLESS NOTIFIED.

.4 GROUT: TO CSA A179. USE 20MPa READY–MIXED CONCRETE WITH 9mm (3/8") COARSE AGGREGATE MAX. OR MIX 1:3:2 CEMENT:SAND:PEA GRAVEL BY VOLUME. PROVIDE 170mm (6 1/2") SLUMP.

.5 HORIZONTAL JOINT BLOCK REINFORCING: FOR REINFORCED OR GROUTED MASONRY WALLS, USE LADDER TYPE (GALVANIZED, 3/16" LONGITUDINAL WIRE AND 9 GA. CROSSWIRE). FOR UNREINFORCED, USE TRUSS TYPE (GALVANIZED, 3/1 6" LONGITUDINAL WIRE AND 9 GA. CROSSWIRE).

3 EXECUTION

.1 DAMPEN UNITS BEFORE LAYING TO PREVENT EXCESSIVE SUCTION ON MORTAR. DO NOT LAY MORE THAN 1600mm (5'–3") IN HEIGHT IN ONE

.2 INSTALL REINFORCING FOR REINFORCED MASONRY IN ACCORDANCE WITH CSA A371 AND S304.1.

.3 INSTALL GROUT IN HIGH LIFTS OR LOW LIFTS IN ACCORDANCE WITH CSA A371, AND AS SHOWN ON DRAWINGS.

.4 PROVIDE HORIZONTAL JOINT REINFORING IN EVERY THIRD COURSE OF SOLID MASONRY. PROVIDE HORIZONTAL JOINT REINFORCEMENT IN EVERY SECOND COURSE OF HOLLOW BLOCK MASONRY. PROVIDE HORIZONTAL JOINT REINFORCEMENT IN EVERY SECOND COURSE AND USE ADJUSTABLE TIES FOR CAVITY WALLS.

.5 PROVIDE CONTROL JOINTS IN MASONRY AT 7500mm (24'–6") CENTRES MAX. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF CONTROL JOINTS.

.6 MASONRY BEARING SHALL BE OF SOLID BLOCKS OR FULLY GROUTED HOLLOW BLOCKS. ALL JOINTS ARE TO BE FILLED WITH TYPE S MORTAR.

.7 NO MASONRY WORK SHALL BE PERMITTED WITH TEMPERATURE BELOW 5'C UNLESS PROVISIONS ARE MADE FOR HEATING THE MATERIALS AND PROTECTING THE WORK.

.8 WHEN REQUESTED, SAMPLING AND TESTING SHALL CONFORM TO CSA S304.1.

END OF SECTION

PRECAST CONCRETE

1. GENERAL

.1 GENERAL
a) CONFORM TO THE GENERAL REQUIREMENTS.

.2 CODES, REFERENCES
a) COMPLY WITH THE REQUIREMENTS OF THE GOVERNING PROVINCIAL BUILDING CODE, AND THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
b) PRECAST CONCRETE WORK TO BE IN ACCORDANCE WITH CSA A23.4–05 AND A23.1–04.
c) WELDING TO BE IN ACCORDANCE WITH CSA W59 FOR WELDING TO STEEL STRUCTURES AND CSA W186 FOR WELDING OF REINFORCEMENT.
d) ALL DOCUMENTS SHALL BE THE CURRENT EDITIONS AS AMENDED AT DATE OF ISSUE OF CONTRACT DOCUMENTS.

.3 DESIGN
a) DESIGN PRECAST CONCRETE ELEMENTS IN ACCORDANCE WITH CSA A23.3 TO CARRY HANDLING STRESSES AND INDICATED SERVICE LOADS.
b) DESIGN LOADS IN ACCORDANCE WITH THE GOVERNING PROVINCIAL CODE IN REGARDS TO LIVE, SNOW, WIND, TEMPERATURE AND EARTHQUAKE.
c) LIMIT LIVE LOAD DEFLECTION OF FLOORS TO 1/360 OF SPAN. LIMIT TOTAL LOAD DEFLECTION OF FLOORS TO 1 /240 OF SPAN.
d) PRECAST CONCRETE SLABS SHALL CONFORM TO A ULC LISTED ASSEMBLY HAVING A MINIMUM FIRE RESISTANCE RATING OF 1 HR.
e) PRECAST SLAB TO HAVE A MIN. 51mm (2") COMPOSITE CONCRETE TOPPING. REFER TO PLANS, FOR BONDING OF TOPPING, TOP OF PRECAST TO BE RAKED (ROUGHENED). PROVIDE FIBRE REINFORCING IN TOPPING TO REDUCE SHRINKAGE CRACKING.

.4 TOLERANCES
a) CONFORM TO CSA A23.4, EXCEPT THAT DIFFERENTIAL CAMBER BETWEEN ADJACENT SLABS SHALL NOT EXCEED 13mm (1/2").

.5 SHOP DRAWINGS
a) SUBMIT TO THE OWNER AND ENGINEER FOR REVIEW BEFORE THE START OF WORK, FOUR (4) SETS OF PLACING DIAGRAMS AND BAR LISTS. EACH RESUBMISSION SHALL ALSO INCLUDE FOUR (4) SETS. LEAVE SPACE ON PRINTS FOR THE STAMPS OF THE STRUCTURAL

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:
FIREARMS OUTLET CANADA

PROJECT:
725 WESTNEY RD. S., AJAX, ON L1S 7J7

DRAWING TITLE:
GENERAL NOTES AND DETAIL

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647–269–2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO
SEAL

SCALES:	NTS
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	20056–438
DRAWING No:	S0.1

ENGINEER. CHECK AND SIGN BEFORE SUBMISSION. PROVIDE 4 FINAL RECORD PRINTS WHEN ALL CORRECTIONS ARE MADE. MAINTAIN A SET OF REVIEWED DRAWINGS ON SITE.

b) SHOW CLEARLY ON DRAWINGS: MATERIAL SPECIFICATIONS, SETTING PLAN, UNIT SIZE, STEEL CONTENT, OPENINGS AND ADDITIONAL SLAB REINFORCING AT OPENINGS, ALL SUPPORT AND CONNECTION DETAILS, DESIGN LOADS AND ACCESSORIES. ALL DRAWINGS SHALL CARRY THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE GOVERNING PROVINCE, WHO SHALL BE RESPONSIBLE FOR THE DESIGN, FABRICATION AND ERECTION OF THE PRECAST CONCRETE.

c) REVIEW OF SHOP DRAWINGS BY THE ENGINEER IS A PRECAUTION AGAINST OVERSIGHIT OR ERROR. IT IS NOT A DETAILED CHECK AND MUST NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF RESPONSIBILITY FOR MAKING THE WORK ACCURATE AND IN CONFORMITY WITH THE CONTRACT DOCUMENTS. DESIGN OF ITEMS FOR WHICH THE CONTRACTOR IS RESPONSIBLE UNDER THE CONTRACT WILL NOT BE REVIEWED. WORK DONE PRIOR TO RECEIPT OF THE REVIEWED DRAWINGS WILL BE AT THE RISK OF THE CONTRACTOR. REVIEW COMMENTS ARE NOT AUTHORIZATION FOR CHANGES TO THE CONTRACT VALUE.

.6 SOURCE QUALITY CONTROL

a) PROVIDE ENGINEER WITH CERTIFIED COPIES OF QUALITY CONTROL TESTS RELATED TO THIS PROJECT AS SPECIFIED IN CSA A23.4.

.7 QUALIFICATIONS

a) STRUCTURAL PRECAST CONCRETE ELEMENTS SHALL BE FABRICATED BY A MANUFACTURING PLANT CERTIFIED BY THE CANADIAN STANDARDS ASSOCIATION IN THE APPROPRIATE CATEGORIES, ACCORDING TO CSA A23.4. THE MANUFACTURER SHALL BE CERTIFIED PRIOR TO SUBMITTING FOR TENDER, AND SHALL SPECIFICALLY VERIFY AS PART OF THEIR TENDER THAT THEIR PLANT IS CURRENTLY CERTIFIED IN THE APPROPRIATE CATEGORIES. MANUFACTURERS SHALL BE APPROVED BY CMAC.

b) FLOOR FINISHING SHALL BE UNDERTAKEN BY A CONTRACTOR WITH AT LEAST 5 YEARS OF SPECIALIZED EXPERIENCE IN THIS TYPE OF WORK. SUBMIT SUBSTANTIATING REFERENCES IF ASKED.

.8 SITE CONDITIONS

a) VISIT SITE TO DETERMINE AVAILABLE ACCESS, STORAGE ANO WORKING AREAS. DETERMINE ANY INTERFERENCE FROM EXISTING SERVICES.

2 PRODUCTS

.1 MATERIALS

a) CEMENT, AGGREGATES, WATER, ADMIXTURES: TO CSA A23.4 AND CSAA23.1.

b) PRESTRESS STRAND: UNCOATED 7 WIRE CABLE CONFORMING TO CSA A23.4 AND ASTM A416/A416M.

c) REINFORCING STEEL: TO CSA G30.18, GRADE 400.

d) ANCHORS AND SUPPORTS: TO CSA G40.21, GRADE 300W GALVANIZED AFTER FABRICATION.

e) HOT DIP GALVANIZING: TO CSA-GI 64-M92 WITH MIN. ZINC COATING OF 600g/m2

f) PRIMER PAINT:

ONE-COAT SYSTEM:

CISC/CPMA STANDARD 1-73a, 1975.

PRIME COAT FOR TOP COATS:

CISC/CPMA STANDARD 2- 75, 1975.

g) ZINC RICH SHOP PRIMER PAINT:

CAN/CGSB-1.181-99

h) GROUT BETWEEN UNITS: 20MPa (2.9ksi) AT 28 DAYS OR ONE PART PORTLAND GU TYPE CEMENT (FORMERLY TYPE 10) TO 2 1/2 PARTS SAND PLUS SUFFICIENT WATER FOR PLACEMENT AND HYDRATION. PROPERLY FILL SHEAR KEY BETWEEN UNITS.

i) PRE-MIXED GROUT: MINIMUM STRENGTH 45MPa (6.5ksi) AT 28 DAYS. USE ONE OF LISTED PRODUCTS. INSTALL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

MASTERFLOW 713 - MASTER BUILDERS CO. LTD.

IN-PAKT - C.C. CHEMICALS LTD.

V-3 GROUT - W.R. MEADOWS OF CANADA LTD.

j) BEARING PADS: 3mm (1/8") MASONITE BEARING PADS, SMOOTH ONE SIDE.

k) CONCRETE COMPRESSIVE STRENGTH: AS REQUIRED TO CARRY SPECIFIED LOADS, 41MPa (6.0ksi) MIN. DO NOT USE CALCIUM CHLORIDE.

.2 FABRICATION

a) MANUFACTURE UNITS IN ACCORDANCE WITH CSA-A23.4-04 (PLANT CASTING).

b) SELF-WEIGHIT OF PRECAST CONCRETE SLABS SHALL NOT EXCEED THOSE LISTED ON PLAN FRAMING NOTES.

c) REMOVE FINS AND FILL SURFACE BLEMISHES. REMOVE SHARP EDGES BY SANDING OR GRINDING. TOPSIDE OF PRECAST CONCRETE SLABS SHALL BE SUITABLE FOR APPLICATION OF ROOFING MEMBRANE OR CONCRETE TOPPING.

3 EXECUTION

.1 ERECTION

a) HANDLE AND ERECT UNITS IN A MANNER ENSURING PROPER SAFETY AND ALIGNMENT. PROVIDE ALL HOOKS, BRACKETS AND HANDING GEAR.

b) PROVIDE MASONITE BEARING PADS AT CONCRETE AND MASONRY BEARINGS, SMOOTH SIDE UP.

c) INSTALL BAR REINFORCEMENT IN JOINTS BETWEEN UNITS AND AT ANCHORAGE TO MASONRY, CONCRETE, AND STEEL. CUT OPENINGS IN UNITS WHERE REQUIRED TO PERMIT PENETRATION OF VERTICAL REINFORCEMENT IN WALLS, OR TO PERMIT INSTALLATION OF ANCHORS TO BEARING. WELD REINFORCING TO STEEL BEAMS AS DETAILED.

d) AT SIDE-BEARING OF PRECAST SLABS, PROVIDE NON-SHRINK GROUT IN GAP BETWEEN PRECAST SLAB AND SIDE-BEARING ELEMENT.

e) PROVIDE GROUT IN ALL JOINTS BETWEEN UNITS AND WHERE REQUIRED TO ANCHOR BARS IN CORES OF UNITS AND WHERE REQUIRED ON THE DRAWINGS. FEATHER CAMBER DIFFERENCES BETWEEN ADJACENT UNITS.

f) FASTEN PRECAST UNITS IN PLACE AS INDICATED ON APPROVED SHOP DRAWINGS.

g) AT OPENINGS, PROVIDE HEADER FRAMING AS REQUIRED TO SUPPORT UNITS. STRENGTHEN ADJACENT UNITS AS REQUIRED. OPENINGS LARGER THAN 152mm (6") IN ANY DIRECTION MUST BE APPROVED BY THE SLAB MANUFACTURER PRIOR TO CUTTING. CUT HOLES EXCEEDING 152mm (6") IN ANY DIMENSION WHERE REQUIRED BY OTHER TRADES. SUPERVISE CUTTING BY OTHER TRADES OF HOLES 152mm (6") OR LESS IN ANY DIMENSION. DO NOT CUT REINFORCING WITHOUT WRITTEN APPROVAL OF PRECAST SLAB MANUFACTURER.

h) PROVIDE 64mm (2 1/2") THICK INSULATION PLUGS IN CORES OF UNITS AT EXTERIOR BEARING.

h) PROVIDE 64mm (2 1/2") THICK INSULATION PLUGS IN CORES OF UNITS AT EXTERIOR BEARING.

i) PROVIDE 64mm (2 1/2") MINIMUM BEARING ON ALL STEEL BEAMS. PROVIDE 83mm (3 1/4") MINIMUM BEARING ON MASONRY AND CONCRETE.

j) ERECTION TOLERANCES IN ACCORDANCE WITH CSA-A23.4-05.

FINISH WITH ZINC-RICH PRIMER.

.2 INDEPENDENT INSPECTION AND TESTING

a) THE GENERAL CONTRACTOR WILL APPOINT AN INDEPENDENT INSPECTION AND TESTING AGENCY. NOTIFY THE OWNER TWO WEEKS IN ADVANCE OF THE DATE WHEN THE FIRST WORK WILL BE READY FOR INSPECTION. THE COST OF TESTING SHALL BE PAID BY THE CONTRACTOR.

END OF SECTION

STRUCTURAL STEEL AND STEEL JOISTS

1. GENERAL

.1 CONFORM TO THE GENERAL REQUIREMENTS AND SPECIAL CONDITIONS CONTAINED IN GENERAL REQUIREMENTS.

.2 SUPPLY AND DELIVER THE FOLLOWING TO OTHER TRADES TOGETHER WITH LAYOUT DRAWINGS: ANCHOR RODS, CONNECTION ASSEMBLES FOR SETTING IN CONCRETE, LOOSE LINTELS, SHELF ANGLES AND BEARING PLATES.

.3 CONFORM TO CSA S16, CSA S136 PACKAGE, CSA W47.1, CSA W48, CSA W55.3, CSA W59 AND CSA G40.20G/40.21.

.4 MATERIALS SHOWN ON THE DRAWINGS OR IN THIS SPECIFICATION ARE TO ESTABLISH THE REQUIRED DEGREE OF QUALITY OR PERFORMANCE. SUBSTITUTION MAY BE PERMITTED UPON PROOF OF EQUIVALENCE. SUBMIT ALL PROPOSALS FOR SUBSTITIUTION TO THE ENGINEER IN WRmNG IN ADVANCE OF SHOP DRAWINGS. EACH ITEM WILL BE CLEARLY IDENTIFIED. DO NOT PROCEED WITH PROPOSAL UNLESS IT IS ACCEPTED IN WRITING BY THE ENGINEER.

.5 TOLERANCES: FABRICATION ANO ERECTION TOLERANCES SHALL MEET THE REQUIREMENTS OF CSA S16.

.6 WORK SHALL BE CARRIED OUT BY A MEMBER OF THE CANADIAN INSTITIUTE OF STEEL CONSTRUCTION. WELDING SHALL BE PERFORMED BY FIRMS FULLY APPROVED BY THE CANADIAN WELDING BUREAU UNDER THE REQUIREMENTS OF CSA W47.1.

.7 DESIGN CONNECTIONS TO CONFORM TO CSA S16 AND THE CISC HANDBOOK OF STEEL CONSTRUCTION FOR A MINIMUM OF 50% OF THE BEAM SHEAR CAPACITY UNLESS A GREATER REACTION IS NOTED ON THE DRAWINGS. DESIGN ALL SPLICES AND CONNECTIONS OF TENSION OR COMPRESSION MEMBERS FOR THEIR FULL CAPACITY. ARRANGE AND PAY FOR NONDESTRUCTIVE TESTING OF ALL UNSPECIFIED SPLICES IN COLUMNS, BEAMS AND JOIST COMPONENTS. ALL CONNECTIONS AND DETAILS SHALL BE DESIGNED BY A SUITABLE QUALIFIED REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE GOVERNING PROVINCE, WHOSE STAMP AND SIGNATURE SHALL BE AFFXED TO THE SHOP DRAWINGS.

.8 DESIGN AND PROVIDE BEARING PLATES FOR A MAXIMUM PRESSURE OF 3.8MPa (550psi) ON MASONRY AND 7.7MPa (1100psi) ON CONCRETE.

.9 SUBMIT FOR REVIEW, PRIOR TO FABRICATION, SHOP DRAWINGS CONSISTING OF ERECTION DIAGRAMS AND SHOP DETAILS. REVIEW OF SHOP DRAWINGS IS A PRECAUTION AGAINST OVERSIGHT OR ERROR. IT IS NOT A DETAILED CHECK AND SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF RESPONSIBILITY FOR MAKING THE WORK ACCURATE ANO IN CONFORMITY WITH THE CONTRACT DOCUMENTS. MAINTAIN A SET OF REVIEWED DRAWINGS ON SITE.

.1 MATERIALS:

a) W, WWF AND C (CHANNELS): GRADE 350W

b) S SHAPES: TO ASTM A572 GR.50

c) L (ANGLES) AND PLATES: GRADE 300W

d) HSS SHAPES: GRADE 350W (CLASS H)

e) FASTENERS/BOLTS: ASTM 325M

f) ANCHOR ROOS: 300W OR ASTM 307

g) WELDING ELECTRODES: E49XX

h) PRIMER PAINT:

ONE-COAT SYSTEM: CISC/CPMA STANDARD 1-73a, 1975

PRIME COAT FOR TOP COATS: CISC/CPMA STANDARD 2- 75, 1975

i) ZINC-RICH SHOP PRIMER PAINT: CAN/CGSB-1.181-99

j) HOT DIP GALVANIZING: CAN/CSA-G164-M92(R2003)

.2 FABRICATION SHALL CONFORM TO CSA S16, CSA W59 AND CSA W55.3.

.3 SHELF ANGLES, HANGERS AND LINTELS IN EXTERIOR WALLS AND EXPOSED EXTERIOR STEEL MEMBERS SHALL BE CLEANED TO SP6 AND RECEIVE TWO COATS OF ZINC RICH PRIMER PAINT.

3 EXECUTION

.1 ERECTION SHALL BE CARRIED OUT BY FORCES OF THE STEEL FABRICATOR. PROVIDE ALL TEMPORARY BRACING TO KEEP THE STRUCTURE STABLE UNTIL THE ENTIRE STRUCTURE IS COMPLETE.

.2 PROVIDE CONTINUOUS WELDING AT EXPOSED JOINTS SUCH AS DOOR JAMBS AND HEADS, AND GRIND SMOOTH.

.3 INDEPENDENT INSPECTION AND TESTING: THE GENERAL CONTRACTOR WILL APPOINT AN INDEPENDENT INSPECTION AND TESTING AGENCY, CERTIFIED BY THE CANADIAN WELDING BUREAU TO CSA W178.1-08(R2013) AND W178.2-08(R2013). THE COST OF INSPECTION SHALL BE PAID BY THE OWNER. WORK WILL BE INSPECTED IN THE SHOP AND WHEN ERECTED TO DETERMINE CONFORMANCE TO THE DRAWINGS AND SPECIFICATIONS.

END OF SECTION

STEEL DECK

1. GENERAL

.1 RELATED WORK

a) SECTION STRUCTURAL STEEL AND STEEL JOISTS.

.2 REFERENCES

a) ASTM A653/A653M-06a SPECIFICATION FOR STEEL SHEET, ZINC-COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS.

b) CAN/CSA-S136-01, CAN/CSA-S13651-04, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS.

c) CSA W59-03, WELDED STEEL CONSTRUCTION (METAL ARC WELDING).

d) CSSBI 1 OM-OB, STANDARD FOR STEEL ROOF DECK.

e) CSSBI 12M-OB, STANDARD FOR COMPOSITE STEEL DECK.

f) CSSBI 101 M-84, ZINC COATED STRUCTURAL QUALITY STEEL SHEET FOR STEEL DECK.

g) CSA W47.1-03, CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL.

h) CSA W55.3-1965(R2002), RESISTANCE WELDING QUALIFICATION CODE FOR FABRICATORS OF STRUCTURAL MEMBERS USED IN BUILDINGS .

.3 DESIGN CRITERIA

a) DESIGN STEEL DECK USING LIMIT STATES DESIGN IN ACCORDANCE WITH CANADIAN SHEET STEEL BUILDING INSTITUTE CSSBI 1 OM AND CSSBI 12M.

b) STEEL DECK AND CONNECTIONS TO CARRY DEAD, LIVE, SNOW AND OTHER LOADS, DIAPHRAGM ACTION LATERAL LOADS, COMPOSITE DECK ACTION, AND UPLIFT AS INDICATED.

c) DESIGN DECK PROFILES FOR INDICATED LOADS. MINIMUM THICKNESS AND SECTION DEPTHS ARE SHOWN ON THE DRAWINGS. LIMIT ROOF DEFLECTION UNDER TOTAL LOAD OF 1/240TH OF SPAN AND UNDER LIVE LOAD TO 1 /360TH OF SPAN. MAKE SECTIONS CONTINUOUS OVER 3 SPANS OR INCREASE THICKNESS TO MATERIAL TO GIVE THE EQUIVALENT STIFFNESS AND STRENGTH OF A 3 SPAN DECK. DESIGN ANCHORAGE TO RESIST A GROSS UPLIFT OF 1.44kPa (30.0psf), 2.15kPa (45.0psf) FOR CANTILEVERS.

.4 SHOP DRAWINGS

a) STEEL DECK SHOP DRAWINGS SHALL CARRY THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE GOVERNING PROVINCE, WHO SHALL BE RESPONSIBLE FOR THE DESIGN, FABRICATION AND ERECTION OF THE METAL DECK.

b) SUBMIT FOUR (4) SETS OF ERECTION DIAGRAMS AND SHOP DETAILS FOR REVIEW PRIOR TO FABRICATION. REVIEW OF SHOP DRAWINGS IS A PRECAUTION AGAINST OVERSIGHT OR ERROR. IT IS NOT A DETAILED CHECK ANO MUST NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF RESPONSIBILITY FOR MAKING THE WORK ACCURATE AND IN CONFORMITY WITH THE CONTRACT DOCUMENTS.

c) INDICATE DECK PLAN, PROFILE, DIMENSIONS, BASE STEEL THICKNESS, METALLIC COATING DESIGNATION, CONNECTIONS TO SUPPORTS AND SPACINGS, PROJECTIONS, OPENINGS, REINFORCEMENT DETAILS AND ACCESSORIES .

d) INDICATE DETAILS OF TEMPORARY SHORING OF STEEL DECK IF REQUIRED.

2 PRODUCTS

.1 MATERIALS

a) MATERIALS: STEEL DECK SHALL BE FORMED FROM SHEET STEEL CONFORMING TO CSSBI 1DM ZINC COATED STRUCTURAL QUALITY STEEL SHEET FOR STEEL DECK MINIMUM GRADE A WITH A NOMINAL BASE STEEL THICKNESS NOT LESS THAN THAT NOTED ON THE DRAWINGS ANO A MINIMUM ZINC COATING DESIGNATION OF ZF075 (WIPED COAT). STEEL DECK SPECIFIED AS GALVANIZED TO HAVE A ZINC COATING AS PER DESIGNATION G90(2275). DECK TO CSSBI 1DM ZINC-RICH PAINT: TO CAN/CGSB-1.181-99. COAT THICKNESS ONE MIL. MINIMUM.

b) ACOUSTIC INSULATION: FIBROUS GLASS 17.5kg/cu.m DENSITY, PROFILED TO SUIT DECK FLUTES .

c) COVER PLATES, CELL CLOSURES AND FLASHINGS: STEEL SHEET WITH MINIMUM NOMINAL BASE STEEL THICKNESS OF 0. 76mm (0.030"). METALLIC COATING SAME AS DECK MATERIAL.

d) PRIMER: ZINC RICH, READY MIX TO CAN/CGSB-1.181-99.

.2 TYPES OF DECKING

a) STEEL DECK: 0. 76mm (0.030") MINIMUM NOMINAL BASE STEEL THICKNESS, 38mm (1 1/2") MAXIMUM DEEP PROFILE, CELLULAR, INTERLOCKING SIDE LAPS.

b) COMPOSITE STEEL DECK: 0.76mm (0.030") MINIMUM NOMINAL BASE STEEL THICKNESS, 38mm (1 1/2") DEEP PROFILE, CELLULAR EMBOSSED FLUTED PROFILE, INTERLOCKING SIDE LAPS.

3 EXECUTION

.1 GENERAL

a) ERECTION SHALL BE CARRIED OUT BY FORCES OF THE STEEL DECK FABRICATOR. CUT OPENINGS REQUIRED BY OTHER TRADES.

b) DESIGN, DETAIL, FABRICATE AND ERECT IN ACCORDANCE WITH CAN/CSA-5136 AND CSSBI 1DM AND CSSBI 12M.

c) DO WELDING IN ACCORDANCE WITH CSA W59, EXCEPT WHERE SPECIFIED OTHERWISE.

d) WELDING COMPANIES TO BE CERTIFIED UNDER DIVISION 1 OR 2.1 OF CSA W47.1 FOR FUSION WELDING OF STEEL DECKS AND/OR CSA W55.3 FOR RESISTANCE WELDING.

.2 ERECTION

a) ERECT STEEL DECK IN ACCORDANCE WITH CAN/CSA-5136 AND CSSBI 1 OM AND CSSBI 12M EXCEPT AS SPECIFIED OTHERWISE.

b) WELD DECK TO SUPPORTS AT ALL BEARING POINTS WITH 19mm (3/4") DIAMETER FUSION WELDS IN EACH FLUTE (36/7 PATTERN). STAGGER WELDS ALONG FLANGES OF SUPPORTING MEMBERS. PLACE ONE WELD IN EACH FLUTE WHERE SIDE LAP IS MADE. MAKE END LAPS OVER SUPPORTS NOT LESS THAN 50mm (2"). CONNECT MALE AND FEMALE SIDE LAPS BY WELDING OR MECHANICALLY INTERLOCKING AT NOT MORE THAN 305mm (12") CENTRES. PAINT WELDS WITH ZINC RICH PAINT. WELD DECK TO PERIMETER ANGLES WITH 19mm (3/4") DIAMETER FUSION WELDS AT 305mm (1'-0") ON CENTRE, WHERE ANGLES ARE PARALLEL TO THE VALLEYS IN THE DECK.

c) OPENINGS UP TO 152mm (6") WIDE NEED NOT BE REINFORCED. REINFORCE OPENINGS OVER 152mm (6") TO 305mm (12") WIDE ACROSS THE FLUTES WITH L51 x51x6.4 (L2x2x1/4) ANGLES FRAMING ACROSS EACH SIDE OF OPENINGS AND FASTENED TO AT LEAS FLUTES ON EACH SIDE OF OPENINGS. FOR OPENINGS OVER 305mm (12") REFER TO TYPICAL DETAILS.

d) INSPECT ALL SURFACES OF DECK AFTER ERECTION AND TOUCH UP WITH ZINC-RICH PAINT WHERE PROTECTIVE COATING HAS BEEN SCRATCHED OR DAMAGED.

e) PRIOR TO CONCRETE PLACEMENT, STEEL DECK TO BE FREE OF SOIL, DEBRIS, STANDING WATER, LOOSE MIL SCALE AND OTHER FOREIGN MATTER.

f) TEMPORARY SHORING, IF REQUIRED, TO BE DESIGNED TO SUPPORT CONSTRUCTION LOADS, WET CONCRETE AND OTHER CONSTRUCTION EQUIPMENT. DO NOT REMOVE TEMPORARY SHORING UNTIL CONCRETE FILL ATTAINS 75% OF ITS SPECIFIED 28 DAY COMPRESSION STRENGTH.

g) PLACE AND SUPPORT STEEL REINFORCEMENT TO MAINTAIN COVERS TO REINFORCEMENT AS INDICATED.

.3 CLOSURES

a) PROVIDE ALL REQUIRED CLOSURES, REINFORCING SHEET STEEL PLATES. REINFORCE EDGE OF FREE SPANNING DECK WITH 460mmx0.91mm (1'-6"x0.036") CNT PLATE BENT INTO A CHANNEL SHAPE AROUND IT. WELD TO DECK .

b) PROVIDE FITTED STEEL CLOSURES TO FILL HOLLOW SPACES BETWEEN WEBS IMMEDIATELY ABOVE BEAMS, PARTITIONS AND WALLS TRANSVERSE TO DECK (WHEN A CEILING IS NOT SPECIFIED). WHERE DECK IS CONTINUOUS OVER SUPPORT PROVIDE CLOSURES ON EACH SIDE AND PACK BETWEEN CLOSURES WITH GLASS FIBRE INSULATION. WHERE DECK SPAN IS PARALLEL TO WALLS ANO PARTITIONS, INSTALL STEEL FLASHING TO PROVIDE A NEAT JUNCTURE. PROVIDE BOTH INTERIOR AND EXTERIOR FITTED STEEL CLOSURES WHERE DECK CONTINUES OVER EXTERIOR WALLS OR BEAMS. PACK BETWEEN CLOSURES WITH

c) FOR DETAILS NOT INDICATED, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

d) AT COMPOSITE CONCRETE FLOORS PROVIDE A MINIMUM L 102x102x6.4 (L4x4x1/4) AT ALL SLAB EDGES, AND AT ROOF DECK PROVIDE L102x102x6.4 (L4X4X1/4) ANGLE AT EDGES OF DECK.

.5 INSPECTION

a) INDEPENDENT INSPECTION AND TESTING: THE GENERAL CONTRACTOR WILL APPOINT AN INDEPENDENT INSPECTION AND TESTING AGENCY. THE COST OF INSPECTION SHALL BE PAID AS OUTLINED IN THE CASH ALLOWANCE OF THE SPECIFICATIONS. WORK WILL BE INSPECTED WHEN ERECTED TO DETERMINE CONFORMANCE TO THE DRAWINGS AND SPECIFICATIONS.

END OF SECTION

LIGHTWEIGHT STEEL FRAMING

1. GENERAL

.1 DEFINITIONS

a) LIGHTWEIGHIT STEEL FRAMING CONSISTS OF WIND BEARING STUDS OR STUDS SUBJECTED TO BOTH LATERAL (WIND) AND VERTICAL (FLOOR, ROOF) LOADS.

b) THE STEEL STUD WALL INCLUDES WALL STUDS, STEEL BRIDGING, TOP AND BOTTOM TRACKS, CONNECTIONS OF STUDS, BRIDGING AND TRACKS, AND ALL CONNECTIONS TO MAIN STRUCTURE INCLUDING DETAILING.

.2 RELATED SECTIONS

a) SECTION 07196 - AIR BARRIERS.

b) SECTION 09250 - GYPSUM BOARD.

.3 REFERENCES

a) ASTM A653/A653M-06a STANDARD, SPECIFICATION FOR STEEL SHEET, ZINC-COATED (GALVANIZED), OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS.

b) CAN/CSA-S136-01, CAN/CSA S304.1-04 AND CAN/CSA-A370-04, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS.

c) CANADIAN SHEET STEEL BUILDING INSTITUTE CSSBI 51-06,

d) CONFORM TO THE REQUIREMENTS OF THE GOVERNING PROVINCIAL BUILDING CODE, NATIONAL BUILDING CODE AND THE CANADIAN STANDARDS ASSOCIATION CAN/CSA-5136-01, AND CAN/CSA-S13651-04, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS.

.4 SHOP DRAWINGS

a) DESIGN LIGHTWEIGHT STEEL FRAMING BASED UPON APPROPRIATE SNOW, LIVE, DEAD, AND WIND LOADS FROM THE NATIONAL BUILDING CODE. MAXIMUM LATERAL DEFLECTION UNDER SPECIFIED WIND LOADS SHALL CONFORM TO L/360. DESIGN BRIDGING TO PREVENT MEMBER ROTATION AND MEMBER TRANSLATION PERPENDICULAR TO THE MINOR AXIS. PROVIDE FOR ANY SECONDARY EFFECTS DUE TO TORSION. PROVIDE BRIDGING AT 1525mm (5'-0") MAXIMUM FOR WIND-BEARING STUDS W/0 MASONRY VENEER AND AT 1220mm (4'-0") MAXIMUM FOR WIND AND LOAD-BEARING STUDS OR WIND BEARING STUDS WITH MASONRY VENEER. DESIGN COMPONENTS OR ASSEMBLIES TO ACCOMMODATE ERECTION TOLERANCES OF THE STRUCTURE. THE EXTERIOR STUD WALL IS TO HAVE A MINIMUM THICKNESS OF 1.09mm (0.043") FOR WALLS SUPPORTING MASONRY VENEER, AND 0.84mm (0.033") FOR OTHER FINISHES AND IS TO HAVE A MAXIMUM SPACING OF 406mm (16") ON CENTRE.

b) WHERE ELEVATIONS OF FLOORS ON EITHER SIDE OF A LIGHTWEIGHIT STEEL FRAMED WALL DIFFER BY MORE THAN 600mm (23 1/2"), THE WALL IS TO BE DESIGNED AS A GUARD. WHERE LARGE EXTERIOR DOORS ARE PRESENT WHICH MAY ALLOW WIND GUSTS TO BE TRANSMITTED TO INTERIOR LIGHTWEIGHT STEEL FRAMED WALLS, THESE INTERIOR WALLS ARE TO BE DESIGNED WITH CONSIDERATION OF WINO GUST LOADING.

c) SUBMIT 4 COPIES OF SHOP DRAWINGS BEARING THE STAMP AND SIGNATURE OF A PROFESSIONAL ENGINEER REGISTERED IN THE GOVERNING PROVINCE. SHOP DRAWINGS SHALL INCLUDE ALL NECESSARY SHOP DETAILS AND ERECTION DIAGRAMS. INDICATE MEMBER SIZES, LOCATIONS, THICKNESSES EXCLUSIVE OF COATINGS, ANO COATINGS. INCLUDE CONNECTION DETAILS FOR ATTACHING FRAMING TO ITSELF AND FOR ATTACHMENT TO THE STRUCTURE. INDICATE DESIGN LOADS. SHOW TEMPORARY BRACING REQUIRED FOR ERECTION PURPOSES. REVIEW OF SHOP DRAWINGS IS A PRECAUTION AGAINST OVERSIGHT OR ERROR. IT IS NOT A DETAILED CHECK AND SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF RESPONSIBILITY FOR MAKING THE WORK ACCURATE AND IN CONFORMITY WITH THE CONTRACT DOCUMENTS. MAINTAIN A SET OF REVIEWED DRAWINGS ON SITE.

d) SUBMIT 4 COPIES OF ENGINEERING CALCULATIONS VERIFYING THE CAPACITY OF THE MEMBERS AND THE ABILITY OF THE MEMBERS TO MEET THE DESIGN REQUIREMENTS. DESIGN CALCULATION SHALL BEAR THE STAMP AND SIGNATURE OF A PROFESSIONAL ENGINEER REGISTERED IN THE GOVERNING PROVINCE.

.5 SAMPLES

a) IF REQUESTED, SUBMIT SAMPLES OF FRAMING COMPONENTS AND FASTENERS TO ENGINEER.

2 PRODUCTS

.1 MATERIALS

a) ACCEPTABLE MANUFACTURERS INCLUDE BAILEY METAL PRODUCTS OR APPROVED EQUIVALENT.

b) STEEL SHALL HAVE METALLIC COATINGS CONFORMING TO ASTM A653/A653M-06a STANDARD. GALVANIZED COATING IS TO HAVE A MINIMUM G90 (2275).

c) MINIMUM GRADES OF STEEL: GRADE A, 230MPa (33ksi) MINIMUM YIELD FOR 1.09mm (0.043") MATERIAL AND THINNER AND GRADED, 345MPa (50ksi) MINIMUM YIELD FOR 1.37mm (0.054") MATERIAL AND THICKER.

d) SHEET METAL SCREWS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.008mm OF ZINC OR CADMIUM.

e) ANCHORS: CONCRETE EXPANSION ANCHORS OR OTHER SUITABLE DRILLED TYPE FASTENERS. POWDER ACTUATED FASTENERS INTO STEEL OTHER SUITABLE FASTENER.

f) TOUCH UP PRIMER: ZINC RICH, TO CAN/CGSB-1. 181-99.

.2 METAL FRAMING

a) STEEL STUDS: TO CAN/CSA-S136-01, AND CAN/CSA-S13651-04, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS, FABRICATED FROM ZINC COATED STEEL, DEPTH AS INDICATED. MINIMUM STEEL THICKNESS OF 1.09mm (0.043") FOR WALLS SUPPORTING MASONRY VENEER, AND 0.84mm (0.033") FOR OTHER FINISHES.

b) TRACKS: FABRICATED FROM SAME MATERIAL AND FINISH AS STEEL STUDS, UNLESS NOTED, WITH DEPTH TO SUIT.

i) BOTTOM TRACK FOR WIND BEARING AND LOAD BEARING STUDS USE SINGLE PIECE.

ii) TOP TRACK FOR WIND BEARING STUDS, IWO PIECE TELESCOPING (NESTED TRACK ASSEMBLY), INNER TRACK TO HAVE SAME THICKNESS AS WALL STUDS. OUTER TRACK TO BE ONE "GAUGE" THICKER.

iii) TOP TRACK FOR LOAD BEARING STUDS, TO BE SINGLE PIECE HAVING THE SAME THICKNESS AS THE WALL STUDS.

iv) SEPARATOR: NEOPRENE, SIZED TO SUIT.

c) BRIDGING: FABRICATED FROM SAME MATERIAL AND FINISH AS STUDS, 38mmx13mmx1.09mm (1.5"x0.5"x0.043") MINIMUM SIZE.

d) ANGLE CUPS: FABRICATED FROM SAME MATERIAL AND FINISH AS STUDS, 38mm(1.5") x 38mm(1.5") x DEPTH OF STEEL STUD, 1.37mm (0.054") MINIMUM THICKNESS.

e) MATERIALS SHOWN ON THE DRAWINGS OR IN THIS SPECIFICATION ARE TO ESTABLISH THE REQUIRED DEGREE OF QUALITY OR PERFORMANCE. SUBSTITIUTION MAY BE PERMITTED UPON PROOF OF EQUIVALENCE . SUBMIT ALL PROPOSALS FOR SUBSTITUTION TO THE ENGINEER IN WRITING IN ADVANCE OF SHOP DRAWINGS. EACH ITEM WILL BE CLEARLY IDENTIFIED. DO NOT PROCEED WITH PROPOSAL UNLESS IT IS ACCEPTED IN WRITING BY THE ENGINEER.

.3 SOURCE QUALITY CONTROL

a) PRIOR TO COMMENCEMENT OF WORK, SUBMIT:

b) 2 CERTIFIED COPIES OF MILL REPORTS COVERING MATERIAL PROPERTIES.

3 EXECUTION

.1 GENERAL

a) DO WORK IN ACCORDANCE WITH CSSBI 51M-06.

.2 ERECTION

a) ERECT COMPONENTS TO REQUIREMENTS OF REVIEWED SHOP DRAWINGS.

b) ANCHOR TRACKS SECURELY TO STRUCTURE AT 610mm (2'-0") ON DRAWINGS.

c) ERECT STUDS PLUMB, ALIGNED AND SECURELY ATTACHED WITH 2 SCREWS MINIMUM, OR WELDED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

TRACKS FOR WIND BEARING STUDS. SEAT STUDS INTO BOTTOM TRACK AND TOP TRACK FOR LOAD BEARING STUDS.

e) TOP TRACK:

i) WIND BEARING STUDS: INSTALL OUTER TELESCOPING TRACK WITH 51mm (2") LEG AT TOP OF WALLS WHERE REQUIRED TO ACCOMMODATE VERTICAL DEFLECTION. NEST INNER TOP TRACK WITH 76mm (3") INTO DEFLECTION CHANNEL WITH A MINIMUM GAP BETWEEN WEBS OF 20mm (3/4") AND A MAXIMUM OF 25mm (1"). DO NOT FASTEN TRACKS TOGETHER. STAGGER JOINTS AND INSTALL NEOPRENE SEPARATOR.

ii) LOAD BEARING STUDS: INSTALL TOP TRACK WITH 51mm (2") LEG AT TOP OF WALLS WHERE REQUIRED. INSTALL STUDS WITH 0mm GAP BETWEEN STUD AND WEB OF TOP TRACK.

f) INSTALL STUDS AT NOT MORE THAN 51mm (2") FROM ABUTTING WALLS, OPENINGS, AND EACH SIDE OF CORNERS AND TERMINATIONS WITH DISSIMILAR MATERIALS.

g) BRACE STEEL STUDS WITH HORIZONTAL INTERNAL BRIDGING AT 1525mm (5' -0") ON CENTRE MAXIMUM FOR WIND BEARING STUDS AND 1220mm (4'-0") ON CENTRE FOR LOAD BEARING STUDS. FASTEN BRIDGING TO STEEL STUDS USING STEEL CUPS WITH SCREWS. FASTEN ENDS OF BRIDGING TO MAIN STRUCTURE USING STEEL CUPS AND FASTENERS AS REQUIRED.

h) FRAME OPENINGS IN STUD WALLS TO ADEQUATELY CARRY LOADS BY USE OF ADDITIONAL FRAMING MEMBERS AND BRACING AS DETAILED ON SHOP DRAWINGS.

i) TOUCH UP WELDS WITH COAT OF ZINC RICH PRIMER.

.3 ERECTION TOLERANCES

a) PLUMB: NOT TO EXCEED 1/500\h OF MEMBER LENGTH.

b) CAMBER: NOT TO EXCEED 1/1000\h OF MEMBER LENGTH.

c) SPACING: NOT MORE THAN 3mm (1/8") FROM DESIGN SPACING.

d) GAP BETWEEN END OF STUD AND TRACK WEB: NOT MORE THAN 4mm (5/32").

.4 CUTOUTS

a) LIMIT DISTANCE FROM CENTERLINE OF LAST UNREINFORCED CUTOUT TO END OF MEMBER TO LESS THAN 305mm (12").

.5 INSPECTIONS

INSPECTION IS TO BE CARRIED OUT BY THE ENGINEER WHOM PRODUCED AND STAMPED THE LIGHT GAUGE STEEL SHOP DRAWINGS. WORK WILL BE INSPECTED WHEN FULLY ERECTED (AND/OR AT VARIOUS STAGES OF ERECTION AS REQUIRED) TO DETERMINE CONFORMANCE TO THE DRAWINGS ANO SPECIFICATIONS AND A LETTER STAMPED BY THE ENGINEER IS TO BE PROVIDED INDICATING AS SUCH. THE COST OF INSPECTION SHALL BE PAID BY THE GENERAL CONTRACTOR.

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON L1S 7J7

DRAWING TITLE:

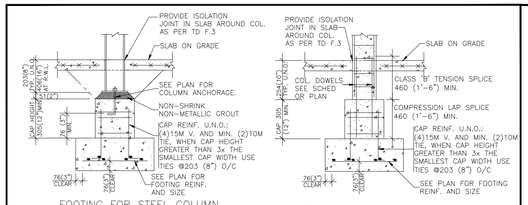
GENERAL NOTES AND DETAIL

HILAND
HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

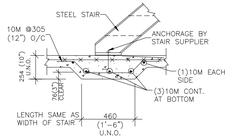
SEAL

SCALES:	NTS
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	20056-438
DRAWING No:	S0.2

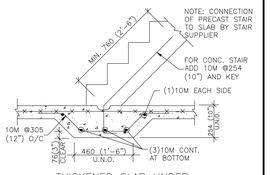


FOOTING FOR STEEL COLUMN

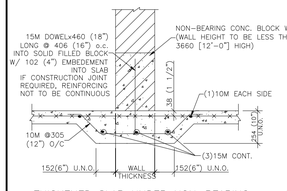
FOOTING FOR CONCRETE COLUMN



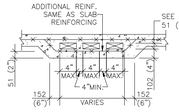
SLAB THICKENING UNDER STAIR STRINGER



THICKENED SLAB UNDER CONCRETE/PRECAST STAIR



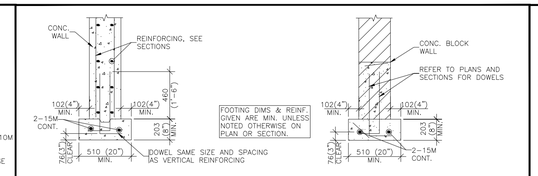
THICKENED SLAB UNDER NON-BEARING CONCRETE BLOCK WALL



UNDERFLOOR DUCTS & CONDUITS GREATER THAN 25mm (1")

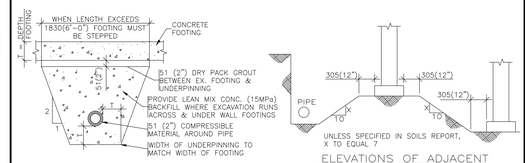
TYPICAL FOUNDATION DETAILS

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN | TD F.1



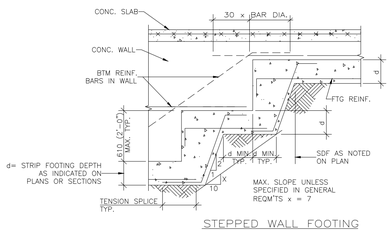
CONCRETE WALL FOOTING

CONC. BLOCK WALL FOOTING



SERVICE PIPE UNDER FOOTING

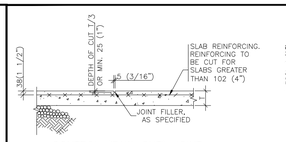
ELEVATIONS OF ADJACENT FOOTINGS & EXCAVATIONS



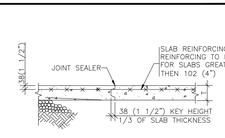
STEPPED WALL FOOTING

TYPICAL FOUNDATION DETAILS

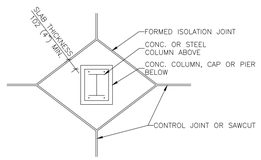
ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN | TD F.2



CONTROL (SAW-CUT) JOINT



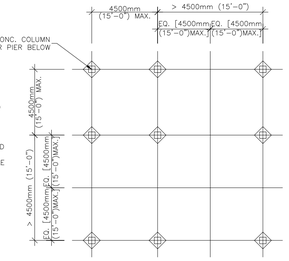
CONSTRUCTION JOINT



SLAB JOINT AT COLUMN

NOTES:

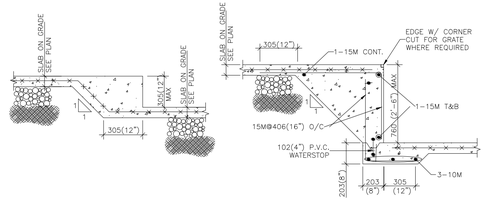
1. SAW CUTTING SHALL BE COMPLETED WITHIN 6 TO 18 HOURS OF PLACING CONCRETE.
2. AFTER THE SLAB IS A MINIMUM 60 DAYS OLD, REMOVE ALL DEBRIS FROM THE SAW CUTS AND FILL WITH MORTAR CONTAINING CEMENT, SAND AND LATEX BONDING AGENT, OR AS NOTED IN SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT CONSTRUCTION ACTIVITIES WILL NOT REDUCE QUALITY OR DURABILITY OF FILLED JOINTS.
3. MAXIMUM SPACING OF SAW CUTS IN SLAB ON GRADE SHALL NOT EXCEED 4500mm (15'-0") UNLESS NOTED OTHERWISE.

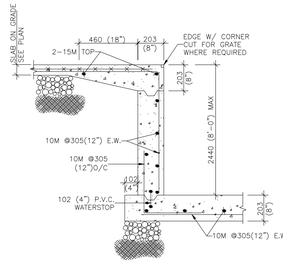


TYPICAL SAWCUT PATTERN IN SLAB ON GRADE

TYPICAL DETAILS FOR SLAB ON GRADE

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN | TD F.3

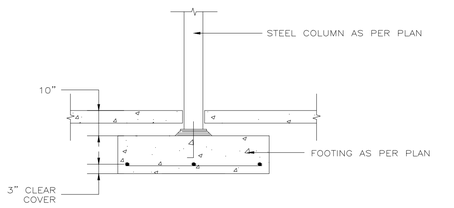




PIT DETAIL

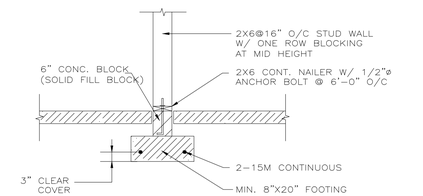
PIT DETAILS AND STEPS IN SLAB ON GRADE

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN | TD F.4



TYPICAL COLUMN FOOTING

SCALE 1/2" = 1'-0"



TYPICAL STRIP FOOTING

SCALE 1/2" = 1'-0"

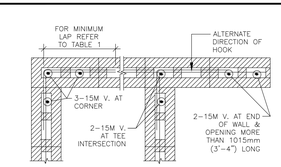
TYPICAL DETAILS OF STRIP AND COLUMNS FOOTING

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN | TD F.7

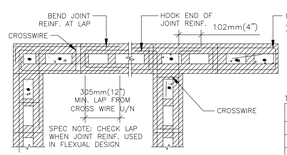
@	AT	H., HORZ.	HORIZONTAL	S.C.	SHEAR CONNECTION, SAWCUT
ø	DIAMETER	H.E.E.	HOOKED EACH END	S.O.G.	SLAB ON GRADE
		H.E.F.	HORIZONTAL EACH FACE	S.W.	SHORT WAY
A. BOLT	ANCHOR BOLT	H.I.F.	HORIZONTAL INSIDE FACE	S.D.F	STEP DOWN FOOTING
A. ROD	ANCHOR ROD	HK.	HOOK	S.I.P.	SUPERIMPOSED DEAD LOAD
ABV.	ABOVE	H.O.F.	HORIZONTAL OUTSIDE FACE	SEC., SECT.	SECTION
ADJ.	ADJUSTABLE	H.P.	HIGH POINT	SL.	SNOW LOAD
ALT.	ALTERNATE	H.S.C.	HORIZONTALLY SLOTTED CONNECTION	SIM.	SIMILAR
ARCH.	ARCHITECTURAL OR ARCHITECT	H.S.S.	HOLLOW STEEL SECTION	SPEC'S	SPECIFICATIONS
ASL	ACCUMULATED SNOW LOAD	HT.	HEIGHT	SQ.	SQUARE
				SST.	STAINLESS STEEL
B.PL.	BASE PLATE	I.D.	INSIDE DIAMETER	STD.	STANDARD
BR.PL.	BEARING PLATE	INT	INTERIOR	STIFF.	STIFFENER
B.C.E.	BOTTOM CHORD EXTENSION			STRUCT.	STRUCTURE OR STRUCUTRAL
B.L.L.	BOTTOM LOWER LAYER	J.T.	JACK TRUSS	SYMM.	SYMMETRICAL
B.U.L.	BOTTOM UPPER LAYER				
BLDG	BUILDING	kg	KILOGRAM	T.	TOP
BLW.	BELOW	kif	KIPS PER LINEAR FOOT	T.C.E.	TOP CHORD EXTENSION
BM.	BEAM	kN	KILONEWTON	T.B.C.	TO BE CONFIRMED
BOT., B.	BOTTOM	kN/m	KILONEWTON PER METRE	TF	FACTORED DESIGN FORCE (TENSION)
BSMT.	BASEMENT	kNm	KILONEWTON METRE		
		kPa	KILOPASCAL	T.J.	TIE JOIST OR TRIPLE JOIST
C. JT.	CONSTRUCTION JOINT	ksf	KIPS PER SQUARE FOOT	T.L.L.	TOP LOWER LAYER
C/C, O/C	CENTRE TO CENTRE			T.U.L.	TOP UPPER LAYER
C/W	COMPLETE WITH	lbs	POUNDS	THK., THKNS.	THICK OR THICKNESS
CANT., CANT'L	CANTILEVER	L.E.	LEFT END	THRU/OUT	THROUGH OUT
CF	FACTORED DESIGN FORCE (COMPRESSION)	L.P.	LOW POINT	T/O	TOP OF
		L.W.	LONG WAY	T.O.F.	TOP OF FOOTING
CL OR ℄	CENTERLINE	LL	LIVE LOAD	T.O.S.	TOP OF STEEL
CLR.	CLEAR	L.L.H.	LONG LEG HORIZONTAL	T.S.	TOP OF SLAB
COL.	COLUMN	L.L.V.	LONG LEG VERTICAL	TD	TYPICAL DETAIL
CONC.	CONCRETE	L.S.H.	LONG SIDE HORIZONTAL	TEMP.	TEMPERATURE
CONN.	CONNECT OR CONNECTION	L.S.V.	LONG SIDE VERTICAL	TYP.	TYPICAL
CONST.	CONSTRUCTION				
CONT.	CONTINUOUS	m	METRE	U.N.O., U/N	UNLESS NOTED OTHERWISE
		M.C.	MOMENT CONNECTION	U/S	UNDERSIDE
DET.,	DETAIL	MAX.	MAXIMUM	UNFAC.	UNFACTORED
DEMO.	DEMOLISH OR DEMOLISHED	MECH.	MECHANICAL		
DIA.	DIAMETER	MEZZ.	MEZZANINE	V.E.F.	VERTICAL EACH FACE
DIAG.	DIAGONAL	MF	FACTORED DESIGN MOMENT	V.I.F.	VERTICAL INSIDE FACE
DIM	DIMENSION	MIN.	MINIMUM	V.O.F.	VERTICAL OUTSIDE FACE
DL	DEAD LOAD	MISC.	MISCELLANEOUS	VA.	VARIES
DN	DOWN	M.L.	MIDDLE LAYER	VERT., V.	VERTICAL
DO	REPEAT	MLWF	MILLWORK	V.S.C.	VERTICALLY SLOTTED CONNECTION
DP.	DEEP	MOM.	MOMENT		
DWG.	DRAWING	MPa	MEGAPASCAL	W.PL.	WALL PLATE
DWL(S)	DOWEL(S)			W.P.	WORK POINT
D.J.	DOUBLE JOIST	N	NEWTON	W.W.F.	WELDED WIRE FABRIC
		N.I.C.	NOT IN CONTRACT	W/	WITH
EA.	EACH	N.S.	NEAR SIDE		
E.E.	EACH END	N.T.S.	NOT TO SCALE		
E.F.	EACH FACE	N.F.	NEAR FACE		
EL., ELEV.	ELEVATION OR ELEVATOR	No.	NUMBER		
ELECT.	ELECTRICAL				
E.O.S	EDGE OF SLAB	O.C., O/C	ON CENTRE		
EQ.	EQUAL	O.D.	OUTSIDE DIAMETER		
E.S.	EACH SIDE	OPNG.	OPENING		
E.W.	EACH WAY	OPP.	OPPOSITE		
EXIST., EX.	EXISTING	OWSJ	OPEN WEB STEEL JOIST		
EXP. JT.	EXPANSION JOINT				
EXT.	EXTERIOR	Pa	PASCAL		
		PL	PLATE		
ft	FOOT OR FEET	plf	POUNDS PER LINEAR FOOT		
FAC.	FACTORED	PROJ.	PROJECTION		
FDN.	FOUNDATION	psf	POUNDS PER SQUARE FOOT		
F.F.	FAR FACE				
F.F.E.	FINISHED FLOOR ELEVATION	R	REACTION OR RADIUS		
FIN.	FINISH OR FINISHED	R.C.	REINFORCED CONCRETE		
FLG.	FLANGE	R.D.	ROOF DRAIN		
FLR.	FLOOR	R.E.	RIGHT END		
FTG.	FOOTING	R/W	REINFORCE WITH		
F.S.	FAR SIDE	REF.	REFERENCE		
ft. KIPS	FOOT KIPS	REINF.	REINFORCING OR REINFORCE		
ft. lbs	FOOT POUNDS	REQ'D	REQUIRED		
Fy	YIELD STRESS	REV	REVISION OR REVISED		
		RTU	ROOF TOP UNIT		
GA.	GAUGE				
GALV.	GALVINIZED				
G.B.	GRADE BEAM				
G.T.	GIRDER TRUSS				
GR.	GRADE				

ABBREVIATIONS

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN | TD G.1



WALL REINF. LAYOUT (SINGLE LAYER)



JOINT REINF. LAYOUT

BAR SIZE	MINIMUM LAP
10M	457mm(1'-6")
15M	610mm(2'-0")
20M	915mm(3'-0")

TABLE 1 – MIMIMUM LAP

TABLE 2 – MINIMUM REINFORCEMENT FOR REINFORCED WALLS

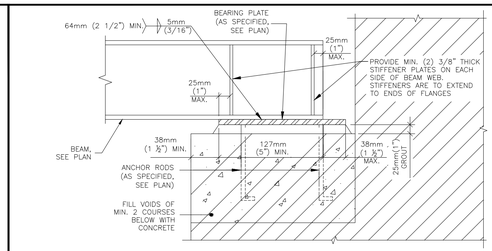
WALL THICKNESS	VERTICAL REINF.	HORIZONTAL REINF.
140mm (5 ½")	15M @ 813mm(2'-8")	STANDARD 9 GAUGE (3.6mm) JOINT REINF. @ 203mm(8")
190mm (7 ½")	15M @ 813mm(2'-8")	HEAVY DUTY (4.76mm SIDE WIRE) LADDER TYPE JOINT REINF. @ 203mm(8")
240mm (9 ½")	20M @ 1015mm(3'-4")	HEAVY DUTY (4.76mm SIDE WIRE) LADDER TYPE JOINT REINF. @ 203mm(8") AND 10M@1220mm(4'-0")
290mm (11 ½")	(2)15M @ 1015mm(3'-4") (ONE EACH FACE)	STANDARD 9 GAUGE (3.6mm) JOINT REINF. @ 406mm(16") & (2)15M IN BOND BEAM @2440mm(8'-0")

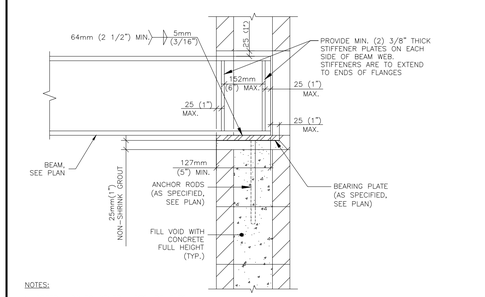
NOTES:

1. PROVIDE MINIMUM REINFORCING AS INDICATED, UNLESS SHOWN ON DRAWINGS.
2. REINFORCEMENT TO BE SUPPORTED TO PREVENT DISPLACEMENT DURING PLACEMENT OF GROUT OR MORTAR. AS A MINIMUM PROVIDE WIRE POSITIONERS OR SIMILAR DEVICE AT THE TOP, BOTTOM, ENDS AND AT INTERVALS NOT EXCEEDING 200 BAR DIAMETERS.
3. AT INTERSECTIONS, BOND WALLS TOGETHER BY INTERLOCKING ALTERNATIVE COURSES (RUNNING BOND), UNLESS NOTED OTHERWISE.

DETAILS OF REINFORCED MASONRY WALLS

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN | TD M.1





NOTES:

1. REFER ALSO TO GENERAL REQUIREMENTS.
2. REFER TO PLANS FOR SIZE OF BEARING PLATE & SIZE AND NUMBER OF ANCHOR RODS.

TYPICAL DETAILS OF STEEL BEAMS WITH STIFFENERS BEARING ON MASONRY WALLS

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN | TD M.2B

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON
L1S 7J7

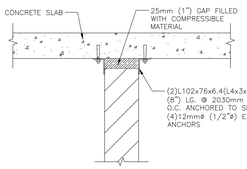
DRAWING TITLE:

GENERAL NOTES AND DETAIL

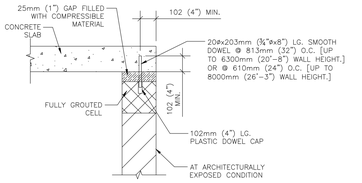
HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO
SEAL

SCALES:	NTS
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	20056-438
DRAWING No:	S0.3



AT MIDSPAN OF SLAB



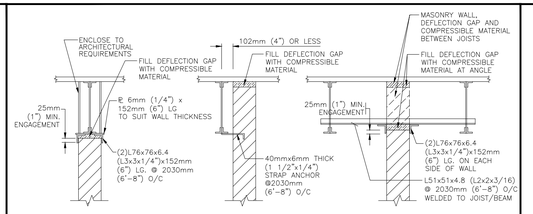
AT EDGE OF SLAB

NOTES:

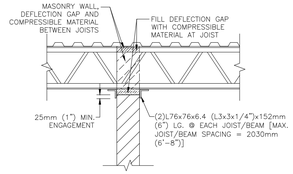
1. PROVIDE TOP LATERAL SUPPORT FOR ALL MASONRY WALLS.
2. IF MASONRY WALL WAS VERTICAL REINFORCING, SPACING & LOCATION OF LATERAL SUPPORT IS TO MATCH VERTICAL REINFORCEMENT IN THE WALL OR SPACING SHOWN ABOVE, WHICH EVER GOVERNS.

LATERAL SUPPORT AT TOP OF MASONRY PARTITIONS AT CONCRETE SLAB

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN — TD M.3



PARALLEL TO JOIST/BEAM



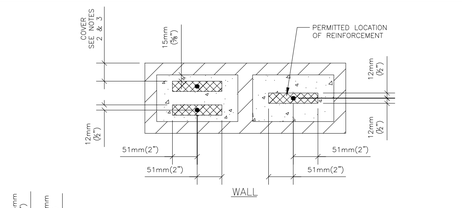
PERPENDICULAR TO JOIST/BEAM

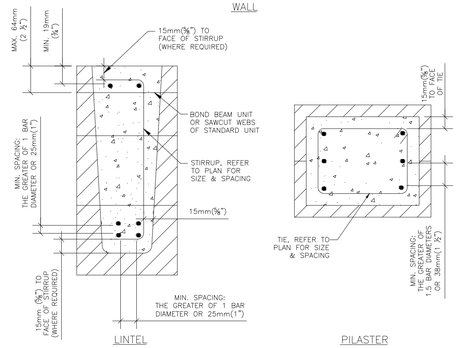
NOTES :

1. MAXIMUM PARTITION HEIGHT U/N 36 x WALL THICKNESS MAXIMUM 5490mm (18'-0").
2. DEFLECTION GAP TO BE GREATER OF 32mm (1 1/4") OR 1/360 x JOIST SPAN.
3. WHERE PARTITION IS NEITHER PARALLEL NOR PERPENDICULAR TO ROOF JOIST/BEAM, USE A COMBINATION OF ABOVE CONNECTION METHODS TO LIMIT SPACING OF CONNECTION TO 2030mm (6'-8").
4. FILL GAPS WITH COMPRESSIBLE MATERIAL AS REQUIRED FOR SOUND AND FIRE INSULATION.

LATERAL SUPPORT AT TOP OF MASONRY PARTITIONS AT STEEL JOISTS/BEAM

TD M.4



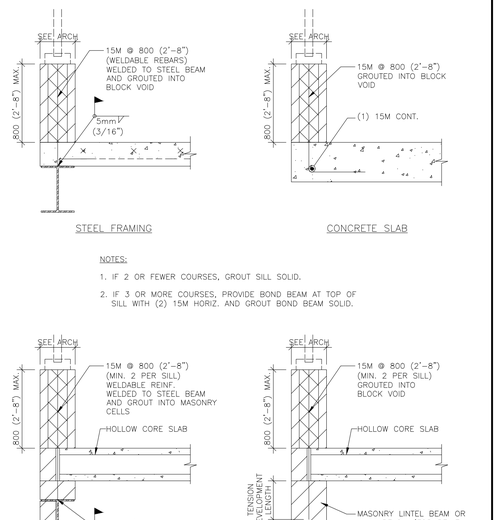


NOTES:

1. REINFORCEMENT TO BE SUPPORTED TO PREVENT DISPLACEMENT DURING PLACEMENT OF GROUT OR MORTAR. AS A MINIMUM, PROVIDE WIRE POSITIONERS OR SIMILAR DEVICE AT THE TOP AND BOTTOM, ENDS AND AT INTERVALS NOT EXCEEDING 200 BAR DIAMETERS.
2. FOR MASONRY EXPOSED TO WEATHER, COVER IS 51mm(2").
3. FOR MASONRY IN CONTACT WITH SOIL, COVER IS 76mm(3").

TYPICAL DETAIL OF REINFORCEMENT PLACEMENT

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN — TD M.5

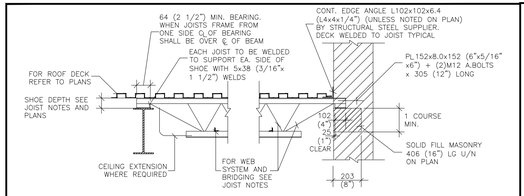


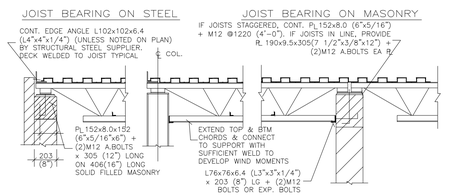
NOTES:

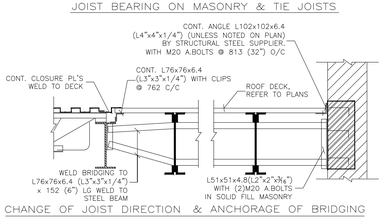
1. IF 2 OR FEWER COURSES, GROUT SILL SOLID.
2. IF 3 OR MORE COURSES, PROVIDE BOND BEAM AT TOP OF SILL WITH (2) 15M HORIZ. AND GROUT BOND BEAM SOLID.

TYPICAL DETAIL OF MASONRY SILL REINFORCEMENT

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN — TD M.8







TYPICAL DETAIL OF JOISTS/STEEL ROOF DECK

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN — TD S.1

SHOE DEPTH – Floor & Roof

JOIST SPAN	MIN. DEPTH OF SHOE IF NOT SHOWN ON STRUCTURAL DRAWINGS	
up to 15.2m (50'-0")	102mm(4")	DEPTH MIGHT HAVE TO BE INCREASED TO ENSURE THAT JOIST REACTION IS CENTERED ON BEARING AREA OR OVER CENTROID OF SUPPORTING BEAM
15.2m(50'-0") to 27.4m(90'-0")	127mm(5")	
27.4m(90'-0") and over	190mm(7 ½")	

STEEL BRIDGING – Unless otherwise shown on plans

For joists bearing on exterior support, provide bottom chord brace at first panel point, L38x38x3.2 (L1 ½"x1 ½"x⅜")minimum.

JOIST DEPTH	TYPE	
up to 457mm (18")	STRAIGHT TOP AND BOTTOM CHORD	
	up to 6.4m(21'-0") span:	2.13m(7'-0") max. spacing
	6.4m(21'-0") to 11.0m(36'-0") span:	2.44m(8'-0") max. spacing
	First line of bottom chord bridging of wall bearing joists to be placed 120r (of bottom chord) from wall.	
	Minimum size: L38x38x3.2 (L1 ½"x1 ½"x⅜") but l/r ≤ 300	
508mm(20") to 610mm(24")	STRAIGHT TOP AND BOTTOM CHORD ANCHORED TO STRUCTURE OR MASONRY AT EACH END OF EACH RUN PLUS ADDED X-BRACED PANELS AT 11.0m(36'-0") o/c MAX., BUT NOT LESS THAN 2 LOCATIONS IN EACH ROW. TOP CHORD BRIDGING SHALL BE CONNECTED AT JOIST PANEL POINTS.	
	up to 10.0m(33'-0") span:	2.44m(8'-0") max. spacing
	10.0m(33'-0") to 12.2m(40'-0") span:	3.05m(10'-0") max. spacing
	12.2m(40'-0") to 14.6m(48'-0") span:	3.66m(12'-0") max. spacing
	NOTE: Max. spacing is on both chords	
	Minimum size: L38x38x3.2 (L1 ½"x1 ½"x⅜") but l/r≤↓ 300	
Over 610mm(24")	X-BRIDGING ONLY, TERMINATING WITH V-BRIDGING WHEN ANCHORED TO A WALL OR BEAM. X-BRIDGING SHALL BE IN A VERTICAL PLANE AND CONSIST OF INTERSECTING L's CONNECTED TO JOISTS AT PANEL POINTS AND EACH OTHER.	
	up to 12.2m(40'-0") span:	3.05m(10'-0") max. spacing
	12.2m(40'-0") to 18.3m(60'-0") span:	3.66m(12'-0") max. spacing
	over 18.3m(60'-0") span:	4.57m(15'-0") max. spacing
	Minimum X-bridging: L38x38x3.2 (L1 ½"x1 ½"x⅜") but l/r ≤ 200	
	Minimum V-bridging: L51x51x4.8 (L2"x2"x⅜") but l/r ≤ 300	

TIE JOISTS

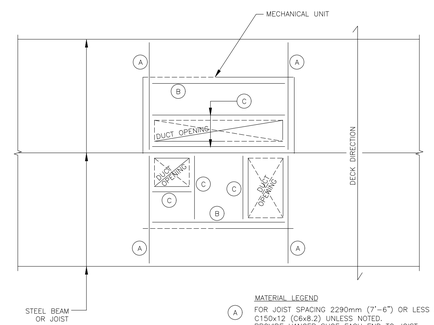
Tie joists, marked TJ on plan, serve to provide lateral support to the members to which they are connected. Top and bottom chords shall be constructed of angles or rolled sections and both chords shall be connected to the supports at each end. L/r of the bottom chord between it's end and the first interior connections shall not exceed 200. Both chords and their connections shall have a capacity of 22kN(5.0kips) min. axial compression in addition to the primary chord loads unless otherwise noted.

WEB SYSTEM

All joists over 610mm(24") deep shall have a web system of alternating vertical and diagonal members. Along all joist runs the web members shall line up sufficiently to permit mechanical services to be threaded through the joists transverse to their span.

STEEL JOIST NOTES

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN — TD S.2.1



MATERIAL LEGEND

(A) FOR JOIST SPACING 2290mm (7'-6") OR LESS USE: C150x12 (C6x8.2) UNLESS NOTED. PROVIDE HANGER SHOE EACH END TO JOIST. DESIGN JOIST FOR ADDED REACTION.

(B) USE C150x12 (C6x8.2) UP TO 2290mm (7'-6")

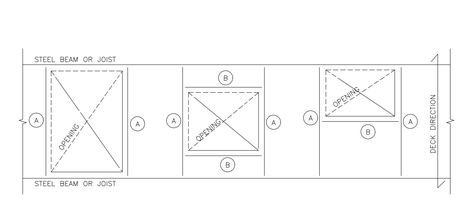
(C) FOR OPENING WITH BOTH DIMENSIONS LESS THAN 152mm (6"), NO ADDITIONAL FRAMING IS REQUIRED FOR OPENING BETWEEN 152mm(6") AND 305mm(1'-0"), USE L51x51x4.8 (L2x2x3/16) FOR OPENING BETWEEN 305mm(1'-0") AND 915mm (3'-0"), USE L76x76x6.4 (L3x3x1/4) FOR OPENING BETWEEN 915mm (3'-0") AND 1830mm (6'-0"), USE C130x10 (C5x6.7)

NOTES:

1. THE CONTRACTOR SHALL CONFIRM THE NUMBER, SIZE, WEIGHTS AND LOCATIONS OF ALL MECHANICAL UNITS AND OPENINGS AND ENSURE THAT THE STRUCTURAL STEEL ERECTION DRAWINGS SHOW THIS INFORMATION.
2. IN ADDITION TO THE BASIC SPECIFIED DESIGN LOADS SHOWN ON PLAN, THE STEEL JOISTS SHALL BE DESIGNED FOR ADDITIONAL LOADS FROM MECHANICAL EQUIPMENT. HEIGHT OF UNIT ABOVE THE ROOF DECK TO BE VERIFIED; ALLOW FOR SNOW ACCUMULATION IF REQUIRED.
3. IF ROOF TOP UNIT IS BEING ADDED ON EXISTING ROOF, THE EXISTING JOISTS OR BEAMS MAY BE REQUIRED TO BE REINFORCED.

FRAMING AT DECK OPENING/ROOF TOP UNITS

TD S.3



MATERIAL LEGEND

NOTE:
NO ADDITIONAL FRAMING IS REQUIRED IF BOTH DIMENSIONS OF OPENING ARE LESS THAN 152mm (6").

(A) –NOT REQUIRED FOR OPENINGS UP TO 305mm (12").
–FOR OPENINGS OVER 305mm (12"), PROVIDE C130x10 (C5x6.7) WITH HANGER SHOES AT EACH END BEARING ON JOISTS OR BEAMS. DESIGN JOISTS FOR REACTIONS.

(B) –FOR OPENING LENGTHS UP TO 305mm (12") USE L51x51x6.4 (L2x2x1/4") FASTENED TO TWO FLUTES ON EACH SIDE OF OPENING.
–FOR OPENINGS FROM 305mm (12") UP TO 915mm (3'-0") USE L76x76x6.4 (L3x3x1/4) FASTENED TO MEMBER 'A'.
–FOR OPENINGS FROM 915mm (3'-0") UP TO 1830mm (6'-0") USE C130x10 (C5x6.7) FASTENED TO MEMBER 'A'.

NOTES:

1. THE CONTRACTOR SHALL CONFIRM THE NUMBER, SIZE, WEIGHTS AND LOCATIONS OF ALL MECHANICAL UNITS AND OPENINGS AND ENSURE THAT THE STRUCTURAL STEEL ERECTION DRAWINGS SHOW THIS INFORMATION.
2. IN ADDITION TO BASIC SPECIFIED DESIGN LOADS SHOW ON PLANS, STEEL JOIST SHALL BE DESIGNED FOR ADDITIONAL LOADS FROM OPENINGS.
3. IF NEW OPENING IS BEING ADDED ON EXISTING FLOOR/ROOF, THE EXISTING JOISTS OR BEAMS MAY BE REQUIRED TO BE REINFORCED.

FRAMING AT DECK OPENING AT STEEL FLOOR/ROOF

TD S.4

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON
L1S 7J7

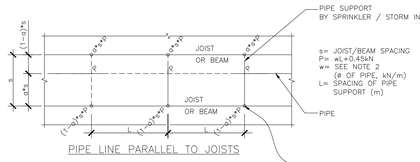
DRAWING TITLE:

GENERAL NOTES AND DETAIL

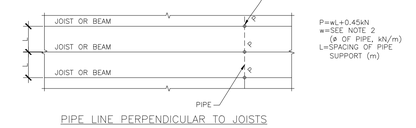
HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO
SEAL

SCALES:	NTS
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	20056-438
DRAWING No:	S0.4



PIPE LINE PARALLEL TO JOISTS



PIPE LINE PERPENDICULAR TO JOISTS

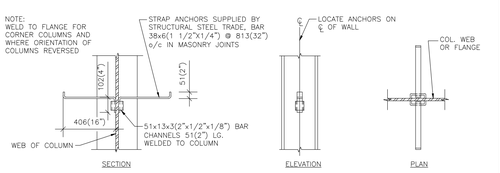
NOTES:

1. ALL PIPES MUST BE HUNG FROM TOP CHORD OF JOISTS. IF A LOAD (APPROVED BY THE STRUCTURAL ENGINEER) IS HUNG FROM A JOIST AT THE LOCATION OTHER THAN THE PANEL POINT, THEN A WEB DIAGONAL SHALL BE WELDED FROM THE HANGER LOCATION TO THE NEAREST PANEL POINT ON THE BOTTOM CHORD.
2. FOR SPRINKLER / STORM PIPE LINE LOCATIONS, SEE MECHANICAL DRAWINGS. DESIGN JOISTS FOR THE FOLLOWING LOADS:

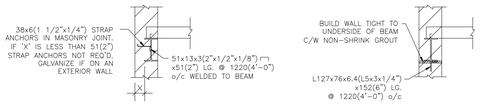
102mm (4")ø & SMALLER	w=0.00kN/m (0plf)	
127mm (5")ø	w=0.35kN/m (24plf)	PLUS 0.45kN (0.1 kips)
152mm (6")ø	w=0.47kN/m (32plf)	AT THE POINT OF HANGING
203mm (8")ø	w=0.75kN/m (52plf)	

3. ALL SUPPORTING ROOF/FLOOR JOISTS SHALL BE DESIGNED TO WITHSTAND WATER FILLED PIPE LOADS "w" AS SHOWN ABOVE IN ADDITION TO THE BASIC SPECIFIED DESIGN LOADS SHOW ON PLANS.

SUPPORT OF MECHANICAL SPRINKLER/STORM LINES — TD S.5



ANCHORAGE OF ABUTTING MASONRY WALLS TO STEEL COLUMNS

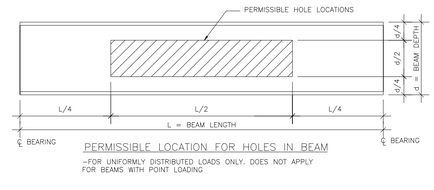


ANCHORAGE OF MASONRY WALLS TO STEEL BEAMS

ANCHORAGE OF EDGE MEMBERS IN CONCRETE SLAB

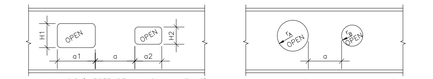
LATERAL SUPPORT FOR EDGE BEAMS

MISCELLANEOUS STRUCTURAL STEEL DETAILS — TD S.6

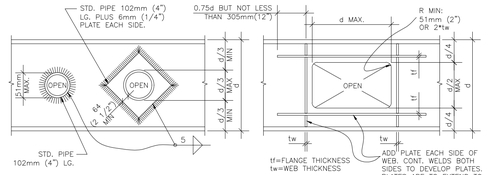


PERMISSIBLE LOCATION FOR HOLES IN BEAM

—FOR UNIFORMLY DISTRIBUTED LOADS ONLY. DOES NOT APPLY FOR BEAMS WITH POINT LOADING



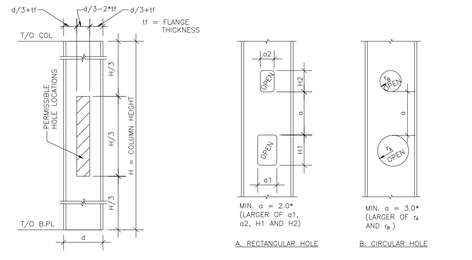
MINIMUM DISTANCE BETWEEN ADJACENT HOLES



REINFORCING FOR SMALL HOLE IN BEAM

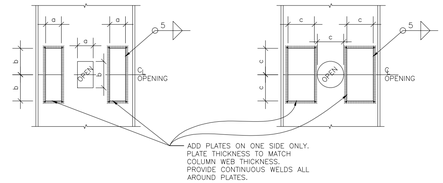
REINFORCING FOR LARGE HOLE IN BEAM

TYPICAL DETAIL FOR HOLES IN BEAMS — TD S.7



PERMISSIBLE LOCATION FOR HOLES IN COLUMN

MINIMUM DISTANCE BETWEEN ADJACENT HOLES



REINFORCING FOR RECTANGULAR HOLE IN COLUMN

REINFORCING FOR CIRCULAR HOLE IN COLUMN

TYPICAL DETAIL FOR HOLES IN COLUMNS — TD S.8

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

LOOSE LINTEL SCHEDULE FOR NON-BEARING MASONRY WALLS & VENEER

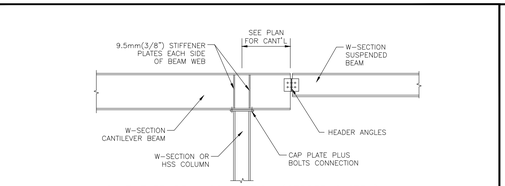
MARK	MAX. SPAN	MINIMUM END BEARING	WALL/VENEER THICKNESS	
			FOR EACH 102 (4") OF MASONRY OR VENEER	FOR EACH 152 (6") OF MASONRY OR VENEER
LL1	UP TO 1200 (3'-11")	102 (4")	L89x89x6.4 (L3½x3½x1/4)	L127x89x7.9 (L5x3½x5/16) L.L.H.
LL2	1200 TO 1800 (3'-11" TO 5'-11")	152 (6")	L102x89x7.9 (L4x3½x5/16) L.L.V.	L127x127x7.9 (L5x5x5/16)
LL3	1800 TO 2400 (5'-11" TO 7'-10")	203 (8")	L127x89x7.9 (L5x3½x5/16) L.L.V.	L127x127x7.9 (L5x5x5/16)
LL4	2400 TO 3000 (7'-10" TO 9'-10")	203 (8")	L152x102x9.5 (L6x4x3/8) L.L.V.	L127x127x13 (L5x5x1/2)

NOTES:

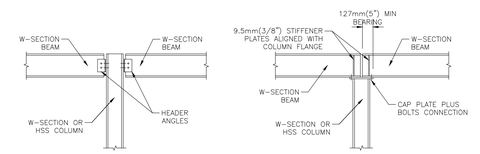
1. STRUCTURAL STEEL CONTRACTOR MUST CHECK ALL DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS REQUIRING LINTELS.
2. PROVIDE LINTELS OVER ALL OPENINGS IN MASONRY WALLS AS SHOWN ABOVE, UNLESS OTHERWISE NOTED ON PLAN OR WHERE OTHER LINTEL TYPE REQUIRED TO SUIT ARCHITECTURAL DRAWING.
3. L.L.V. DENOTES LONG LEG VERTICAL. L.L.H. DENOTES LONG LEG HORIZONTAL.
4. FOR WALLS/VENEER WIDTHS LARGER THAN 152 (6"), COMBINE LOOSE LINTELS AS REQUIRED TO SUIT WIDTH.
5. DOUBLE STEEL LINTELS OVER 1800 (5'-11") SHALL BE BOLTED OR WELDED TOGETHER.
6. SUPPLY STEEL PACKING PLATES TO ENSURE EVEN BEARING.
7. FOR LINTELS ABUTTING CONCRETE WALLS, CONCRETE COLUMNS OR STEEL COLUMNS, CAST IN (2) 3/4"ø x 305 LG. (12" LG.) A.BOLTS OR WELD TO WALL OR COLUMNS. TO BE SUPPLIED BY STRUCTURAL STEEL CONTRACTOR.
8. LOOSE LINTELS EXPOSED TO THE EXTERIOR ARE TO BE HOT DIPPED GALVANIZED.

LOOSE LINTEL SCHEDULE

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN — TD S.9

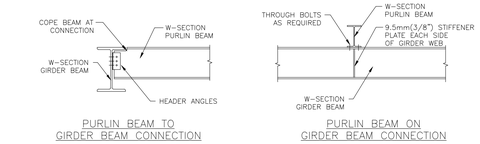


CANTILEVER BEAM CONNECTION (GERBER SYSTEM)



BEAM TO COLUMN CONNECTION

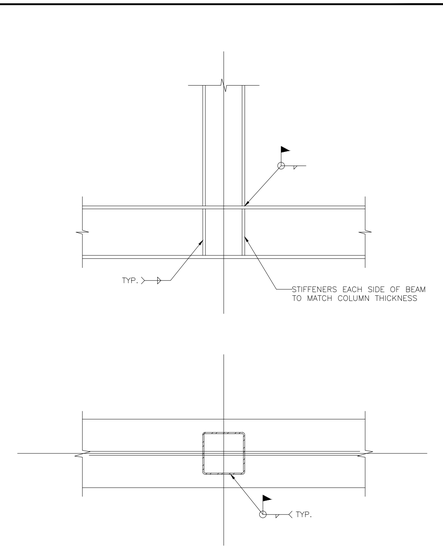
BEAM ON COLUMN CONNECTION



PURLIN BEAM TO GIRDER BEAM CONNECTION

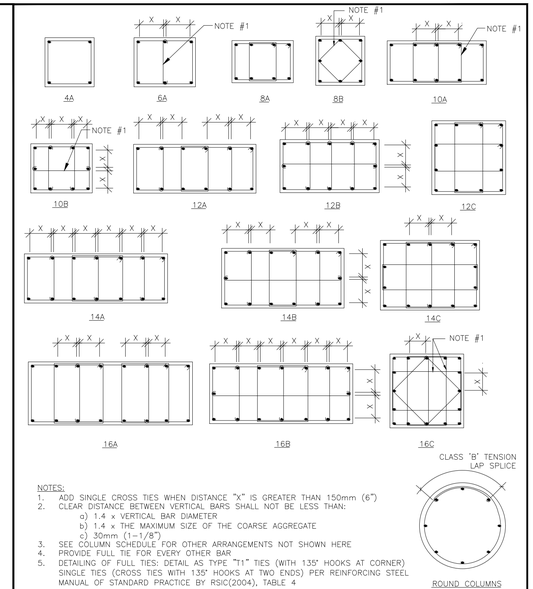
PURLIN BEAM ON GIRDER BEAM CONNECTION

TYPICAL STRUCTURAL STEEL TO STEEL DETAILS — TD S.10



HSS COLUMN SUPPORTED ON STEEL BEAM

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN — TD S.12



ARRANGEMENT OF VERTICALS AND TIES IN COLUMNS& PIERS

ALL TYPICAL DETAIL DIMENSIONS SHOWN ARE MIN. FOR USE WHEN PLAN OR SECTION DIMENSIONS ARE NOT GIVEN — TD C.29

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:

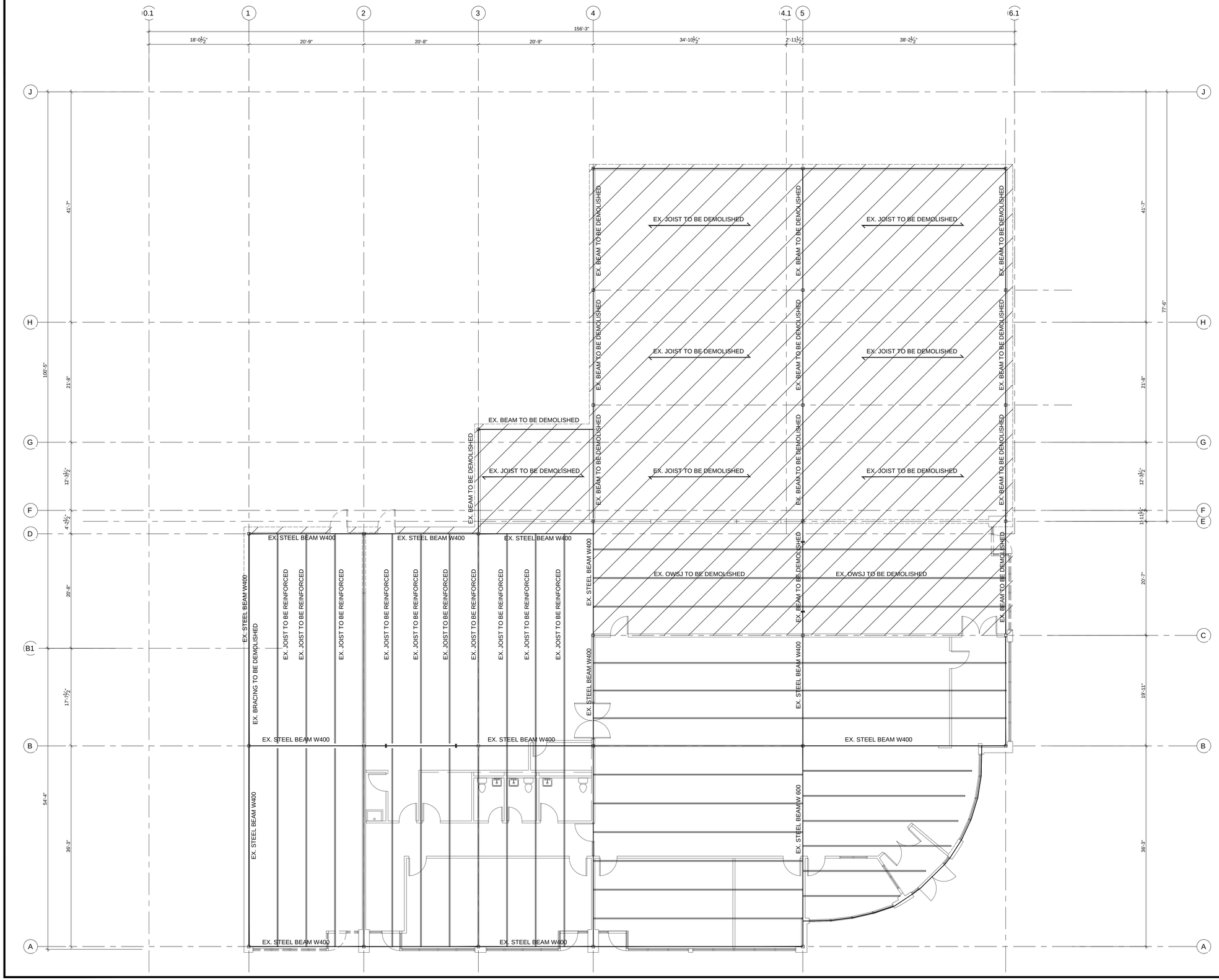
GENERAL NOTES AND DETAIL

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

SEAL

SCALES:	NTS
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	20056-438
DRAWING No:	S0.5



CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:

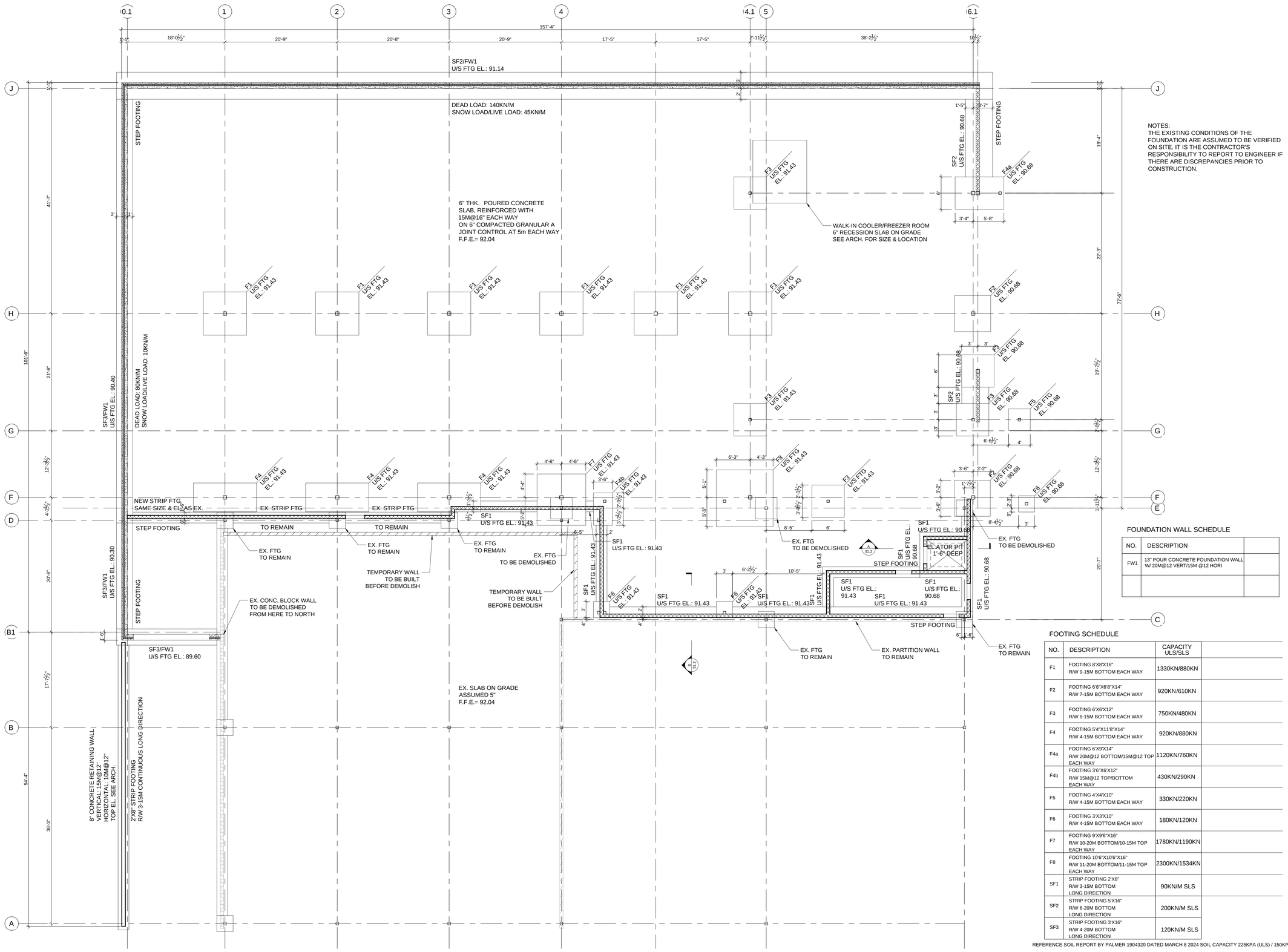
DEMOLITION PLAN

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.co

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

SEAL

SCALES:	1/8"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S0.6



NOTES:
THE EXISTING CONDITIONS OF THE FOUNDATION ARE ASSUMED TO BE VERIFIED ON SITE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPORT TO ENGINEER IF THERE ARE DISCREPANCIES PRIOR TO CONSTRUCTION.

FOUNDATION WALL SCHEDULE

NO.	DESCRIPTION	
FW1	13" POUR CONCRETE FOUNDATION WALL W/ 20M@12 VERT/15M @12 HORI	

FOOTING SCHEDULE

NO.	DESCRIPTION	CAPACITY ULS/SLS	
F1	FOOTING 8'X8'X16" R/W 9-15M BOTTOM EACH WAY	1330KN/880KN	
F2	FOOTING 6'8"X6'8"X14" R/W 7-15M BOTTOM EACH WAY	920KN/610KN	
F3	FOOTING 6'X6'X12" R/W 6-15M BOTTOM EACH WAY	750KN/480KN	
F4	FOOTING 5'4"X11'8"X14" R/W 4-15M BOTTOM EACH WAY	920KN/880KN	
F4a	FOOTING 6'X9'X14" R/W 20M@12 BOTTOM/15M@12 TOP EACH WAY	1120KN/760KN	
F4b	FOOTING 3'6"X6'X12" R/W 15M@12 TOP/BOTTOM EACH WAY	430KN/290KN	
F5	FOOTING 4'X4'X10" R/W 4-15M BOTTOM EACH WAY	330KN/220KN	
F6	FOOTING 3'X3'X10" R/W 4-15M BOTTOM EACH WAY	180KN/120KN	
F7	FOOTING 9'X9'6"X16" R/W 10-20M BOTTOM/10-15M TOP EACH WAY	1780KN/1190KN	
F8	FOOTING 10'6"X10'6"X16" R/W 11-20M BOTTOM/11-15M TOP EACH WAY	2300KN/1534KN	
SF1	STRIP FOOTING 2'X8" R/W 3-15M BOTTOM LONG DIRECTION	90KN/M SLS	
SF2	STRIP FOOTING 5'X16" R/W 6-20M BOTTOM LONG DIRECTION	200KN/M SLS	
SF3	STRIP FOOTING 3'X16" R/W 4-20M BOTTOM LONG DIRECTION	120KN/M SLS	

REFERENCE SOIL REPORT BY PALMER 1904320 DATED MARCH 8 2024 SOIL CAPACITY 225KPA (ULS) / 150KPA (SLS)

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:
FIREARMS OUTLET CANADA

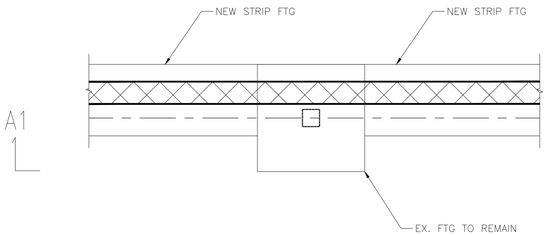
PROJECT:
725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:
FOUNDATION PLAN

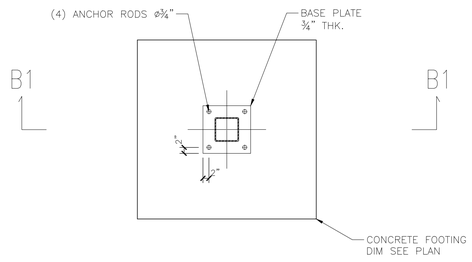
HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.co

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO
SEAL

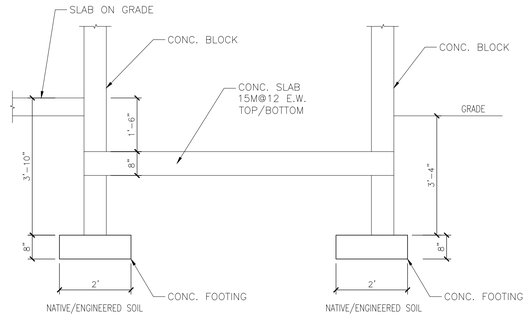
SCALES:	1/8"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S1.1



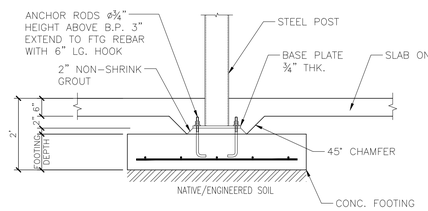
1 / S1.2 CONNECTION DETAIL BETWEEN NEW AND EX. FTG



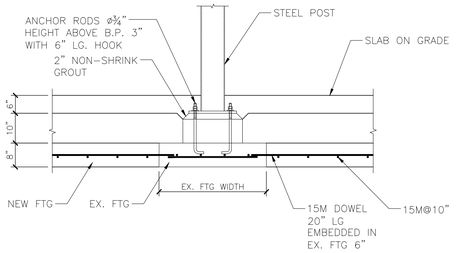
TYPICAL BASE PLATE



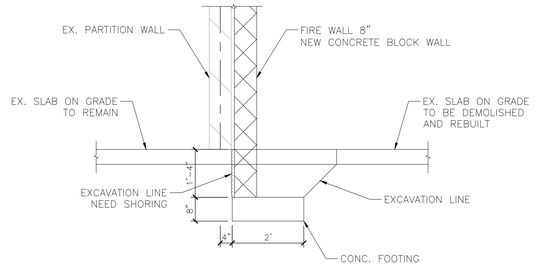
A / S1.2 A-A SECTION



B1-B1 SECTION



A1-A1



B / S1.2 B-B SECTION

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:
FIREARMS OUTLET CANADA

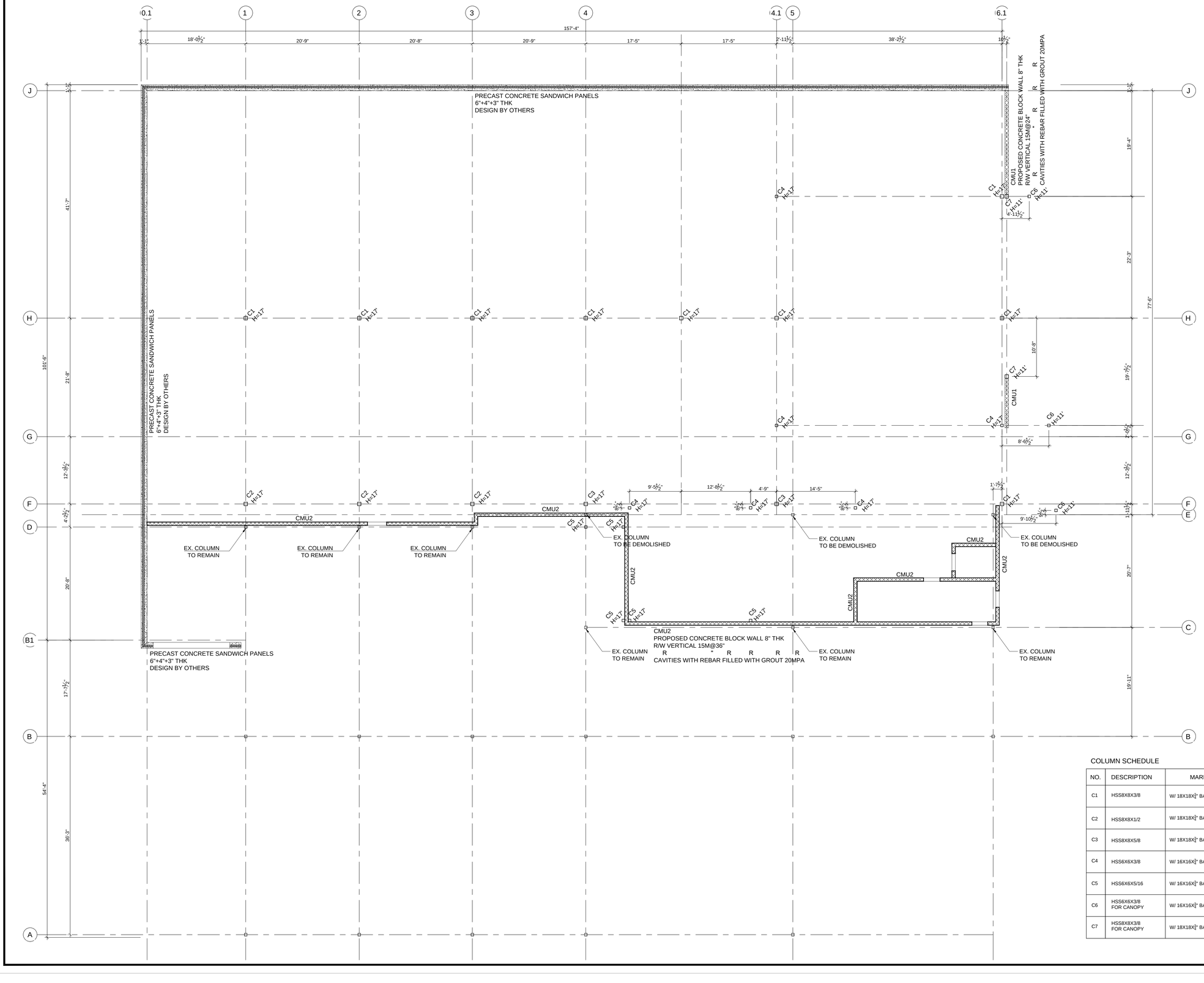
PROJECT:
725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:
FOUNDATION DETAILS

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO
SEAL

SCALES:	1/8"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S1.2



COLUMN SCHEDULE

NO.	DESCRIPTION	MARK
C1	HSS8X8X3/8	W/ 18X18X$\frac{3}{4}$" BASE PLATE
C2	HSS8X8X1/2	W/ 18X18X$\frac{3}{4}$" BASE PLATE
C3	HSS8X8X5/8	W/ 18X18X$\frac{3}{4}$" BASE PLATE
C4	HSS6X6X3/8	W/ 16X16X$\frac{3}{4}$" BASE PLATE
C5	HSS6X6X5/16	W/ 16X16X$\frac{3}{4}$" BASE PLATE
C6	HSS6X6X3/8 FOR CANOPY	W/ 16X16X$\frac{3}{4}$" BASE PLATE
C7	HSS8X8X3/8 FOR CANOPY	W/ 18X18X$\frac{3}{4}$" BASE PLATE

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:

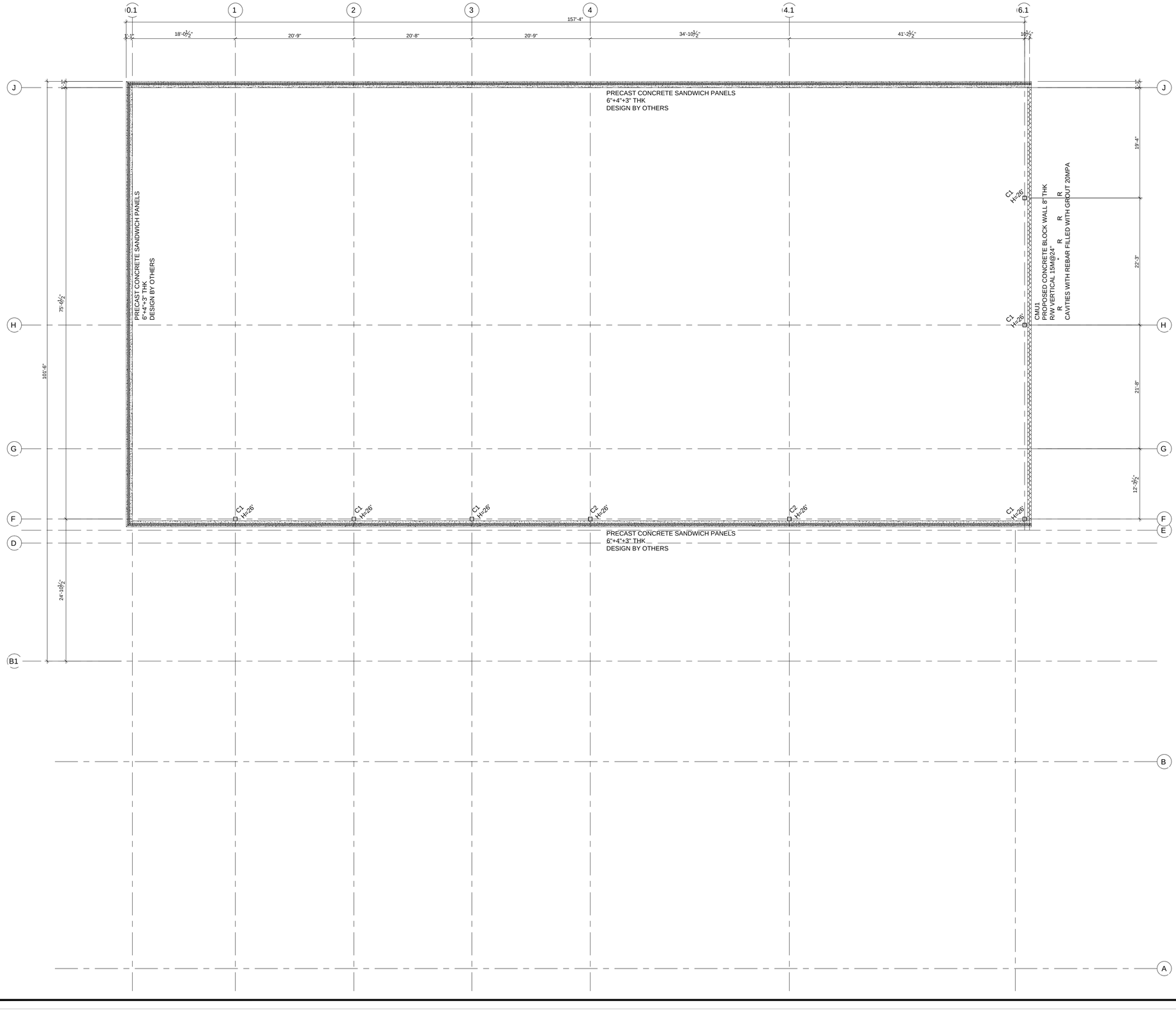
FIRST FLOOR COLUMN PLAN

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

SEAL

SCALES:	1/8"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S2.1



COLUMN SCHEDULE

NO.	DESCRIPTION	MARK
C1	HSS8X8X3/8	
C2	HSS8X8X1/2	
C4	HSS6X6X3/8	
C5	HSS6X6X5/16	

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:

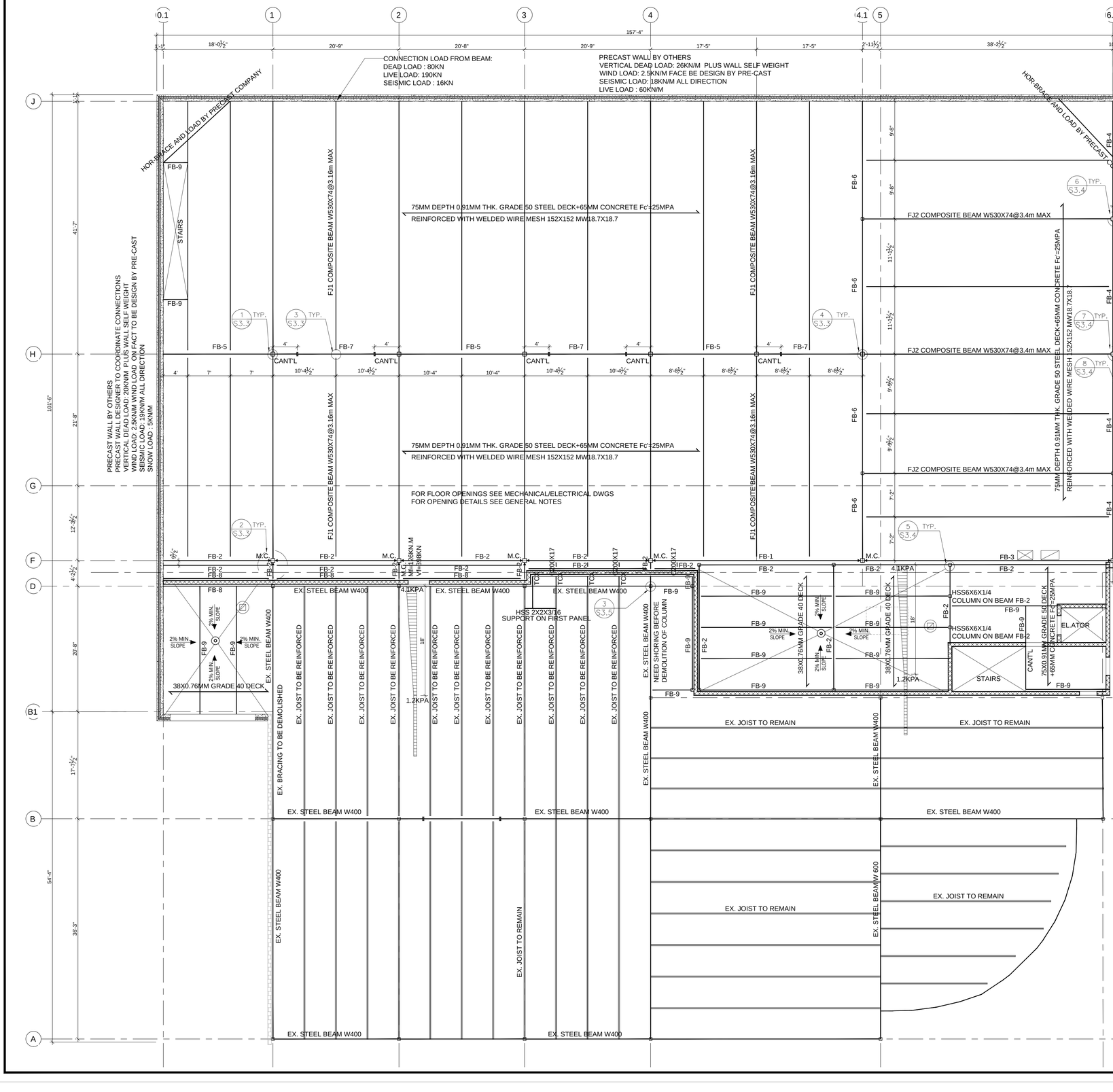
SECOND FLOOR COLUMN PLAN

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

SEAL

SCALES:	1/8"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S2.2



DESIGN LOADS:

SECOND FLOOR:
DEAD LOAD: 4.0KPA, INCLUDING
1) FINISH: 0.5KPA
2) CONCRETE(65MM, AVERAGE 100MM): 2.5KPA
3) METAL DECK(RIB HEIGHT 75MM, THK. 0.91MM): 0.2KPA
4) BEAM: 0.25KPA
5) MECHANICAL: 0.25KPA
6) CEILING(BULLET PROOF): 0.3KPA

LIVE LOAD: 2.4KPA

ROOF:
DEAD LOAD: 3.2KPA, INCLUDING
1) TPO ROOFING (INSULATION, MEMBRANE, ETC): 0.3KPA
2) METAL DECK+CONCRETE TOPPING: 2.0KPA(RIB HEIGHT 38MM DECK+CONCRETE TOPPING 62MM)
3) O.W.S.J: 0.3KPA
4) MECHANICAL: 0.3KPA
5) CEILING(BULLET PROOF): 0.3KPA

SNOW LOAD:
Ss=1.0KPA
Sr=0.4KPA
S=1.2KPA

WIND LOAD:
Q=0.48KPA(1 IN 50 YEAR)

SEISMIC LOAD:
SITE CLASS: D
SA(0.2)=0.28, SA(0.5)=0.13, SA(1.0)=0.064,
SA(2.0)=0.029,
PGA=0.139.

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

FLOOR BEAM SCHEDULE

TYPE	SIZE	CAPACITY	NOTES
FB-1	W610X82	Mr=686KN.M Mrc=932KN.M Vr=1170KN	
FB-2	W530X74	Mr=562KN.M Mrc=785KN.M Vr=1050KN	
FB-3	W530X74		
FB-4	W530X74		
FB-5	W530X74		
FB-6	W530X74		
FB-7	W460X52	Mr=338KN.M Mrc=536KN.M Vr=880KN	
FB-8	W410X39	Mr=227KN.M Mrc=321KN.M Vr=480KN	
FB-9	W310X28	Mr=110KN.M	

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:
FIREARMS OUTLET CANADA

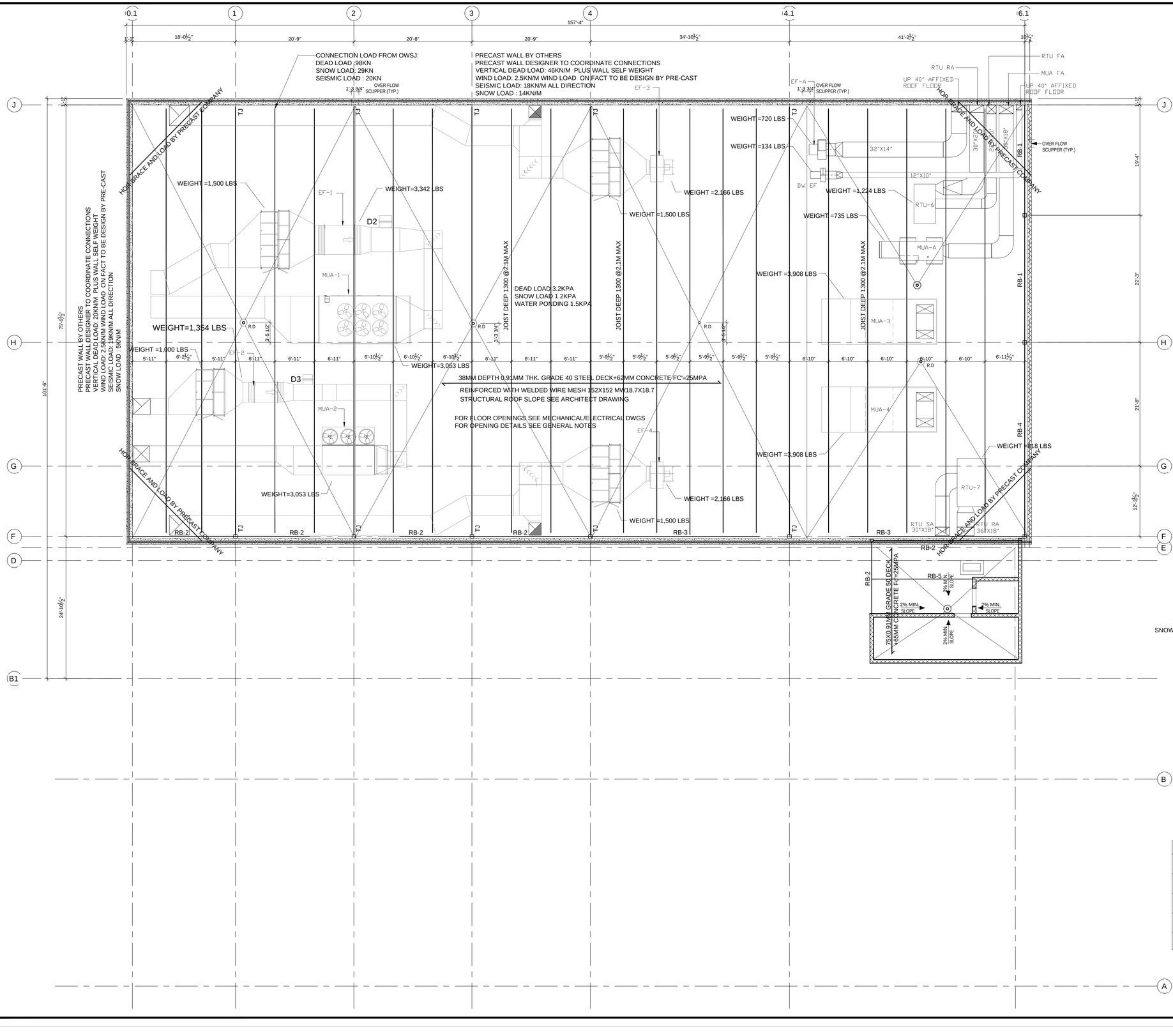
PROJECT:
725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:
SECOND FLOOR FRAMING PLAN

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO
SEAL:

SCALES:	1/8"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S3.1



DESIGN LOADS:

SECOND FLOOR:
DEAD LOAD: 4.0KPA, INCLUDING
1) FINISH: 0.5KPA
2) CONCRETE(65MM, AVERAGE 100MM): 2.5KPA
3) METAL DECK(RIB HEIGHT 75MM, THK. 0.91MM): 0.2KPA
4) BEAM: 0.25KPA
5) MECHANICAL: 0.25KPA
6) CEILING(BULLET PROOF): 0.3KPA

LIVE LOAD: 2.4KPA

ROOF:
DEAD LOAD: 3.2KPA, INCLUDING
1) TPO ROOFING (INSULATION, MEMBRANE, ETC): 0.3KPA
2) METAL DECK+CONCRETE TOPPING: 2.0KPA(RIB HEIGHT 38MM DECK+CONCRETE TOPPING 62MM)
3) O.W.S.J: 0.3KPA
4) MECHANICAL: 0.3KPA
5) CEILING(BULLET PROOF): 0.3KPA

SNOW LOAD:
Ss=1.0KPA
Sr=0.4KPA
S=1.2KPA

WIND LOAD:
Q=0.48KPA(1 IN 50 YEAR)

SEISMIC LOAD:
SITE CLASS: D
SA(0.2)=0.28, SA(0.5)=0.13, SA(1.0)=0.064,
SA(2.0)=0.029,
PGA=0.139.

ROOF BEAM SCHEDULE

TYPE	SIZE	NOTES
RB-1	W410X39	
RB-2	W460X52	
RB-3	W610X113	
RB-4	W410X39	
RB-5	W410X39	

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:
FIREARMS OUTLET CANADA

PROJECT:
725 WESTNEY RD. S., AJAX, ON
L1S 7J7

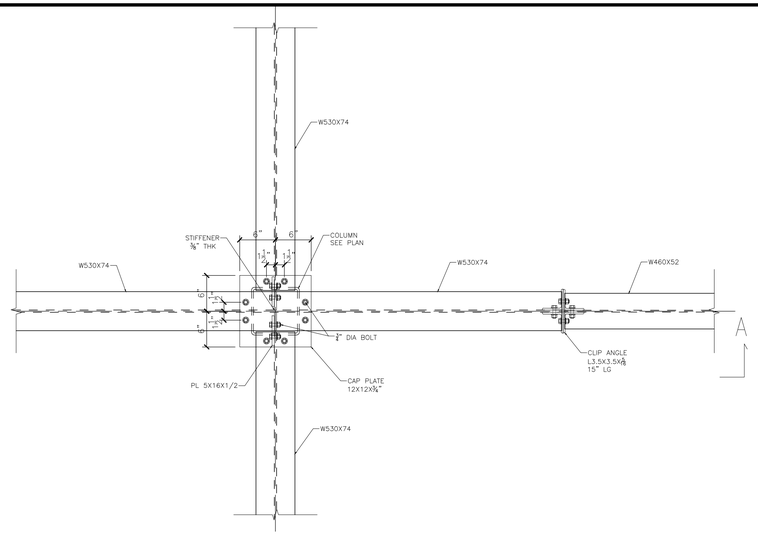
DRAWING TITLE:
ROOF FRAMING PLAN

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

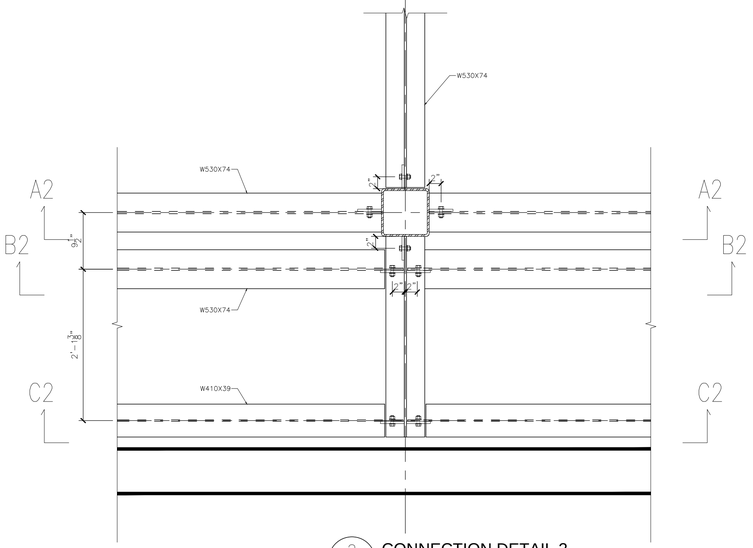
LICENSED PROFESSIONAL ENGINEER
X.F.ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

SEAL

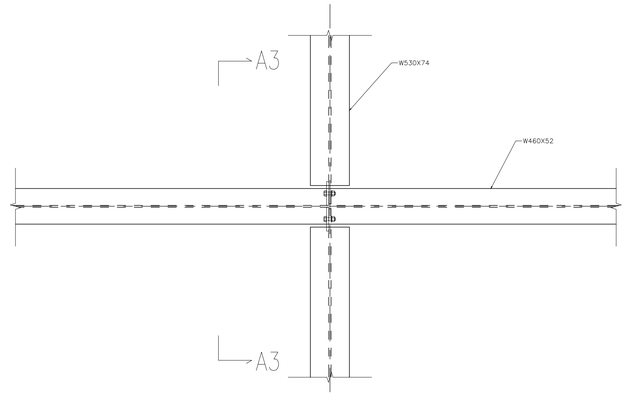
SCALES:	1/8"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S3.2



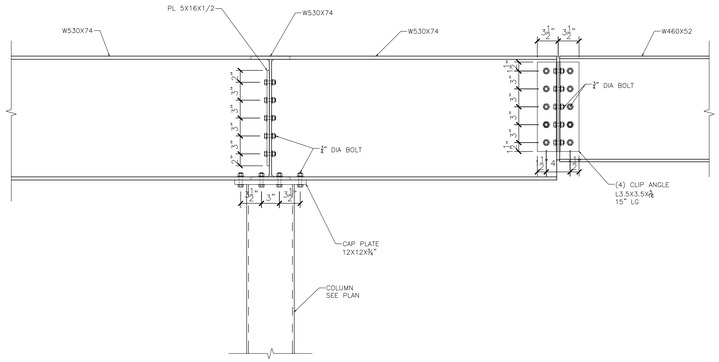
1 S3.3 CONNECTION DETAIL 1



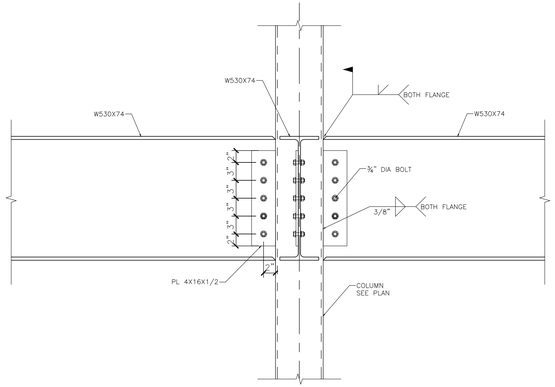
2 S3.3 CONNECTION DETAIL 2



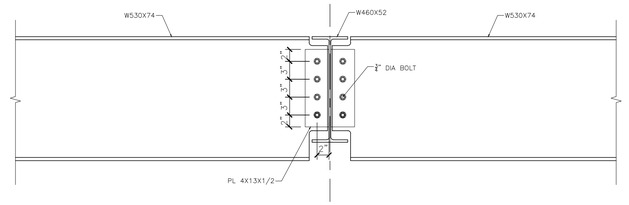
3 S3.3 CONNECTION DETAIL 3



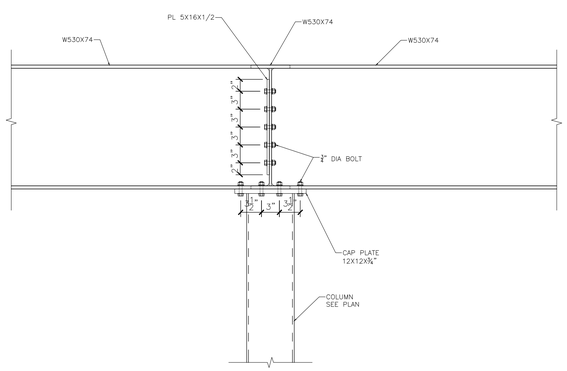
A1-A1



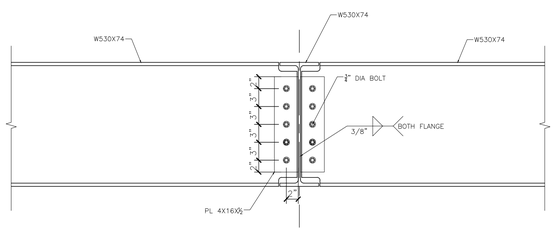
A2-A2



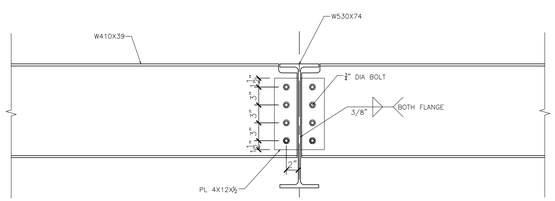
A3-A3



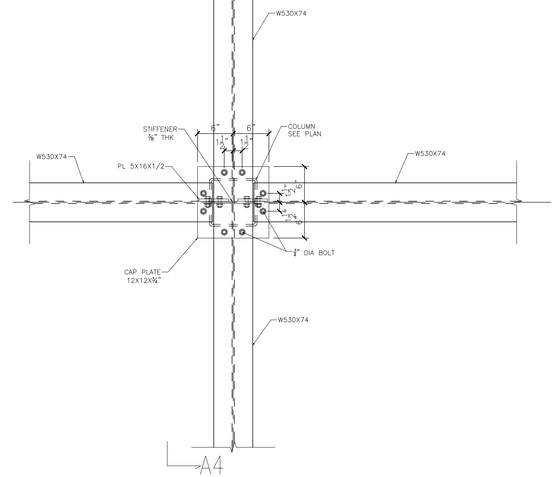
A4-A4



B2-B2



C2-C2



4 S3.3 CONNECTION DETAIL 4

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:

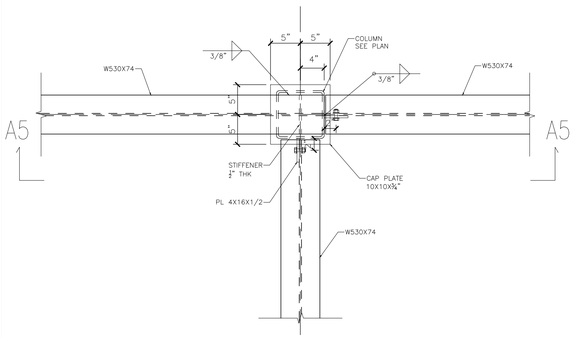
CONNECTION DETAILS

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

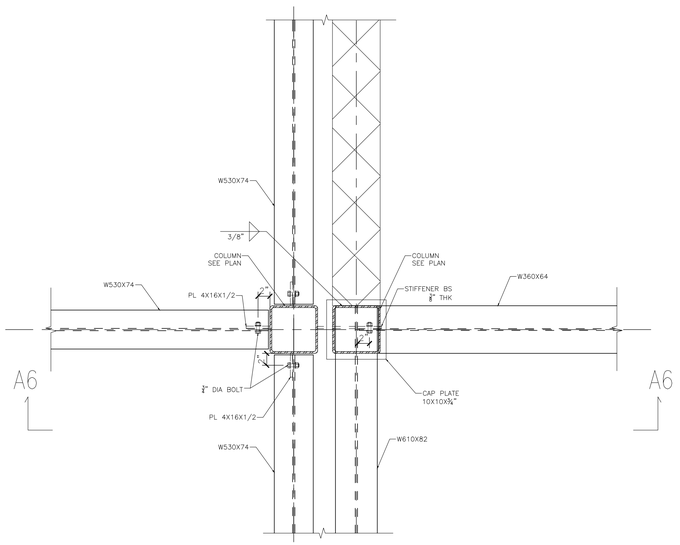
LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

SEAL

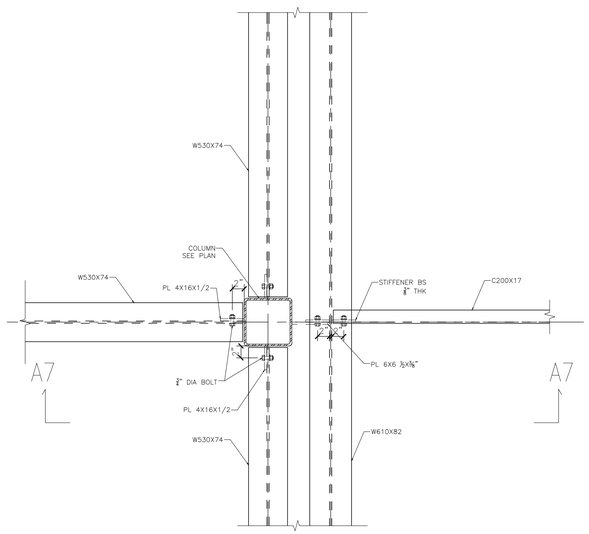
SCALES:	1"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S3.3



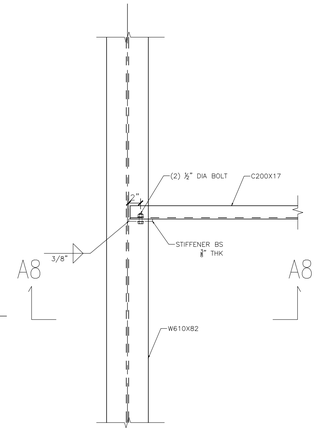
5 S3.4 CONNECTION DETAIL 5



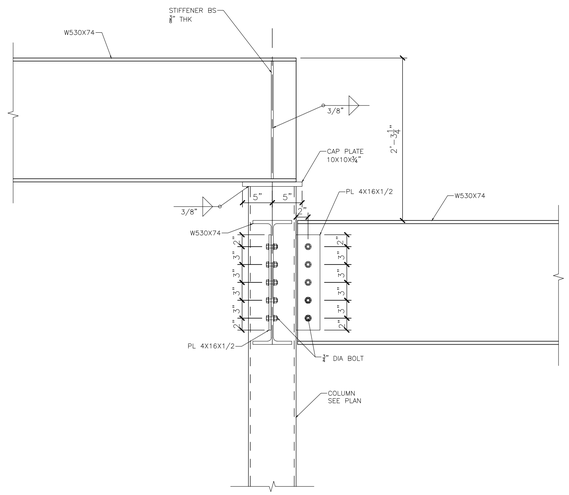
6 S3.4 CONNECTION DETAIL 6



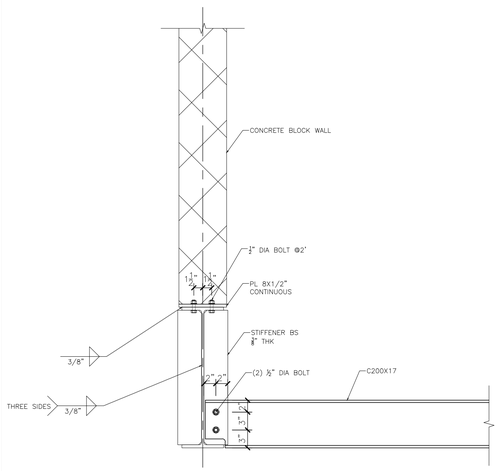
7 S3.4 CONNECTION DETAIL 7



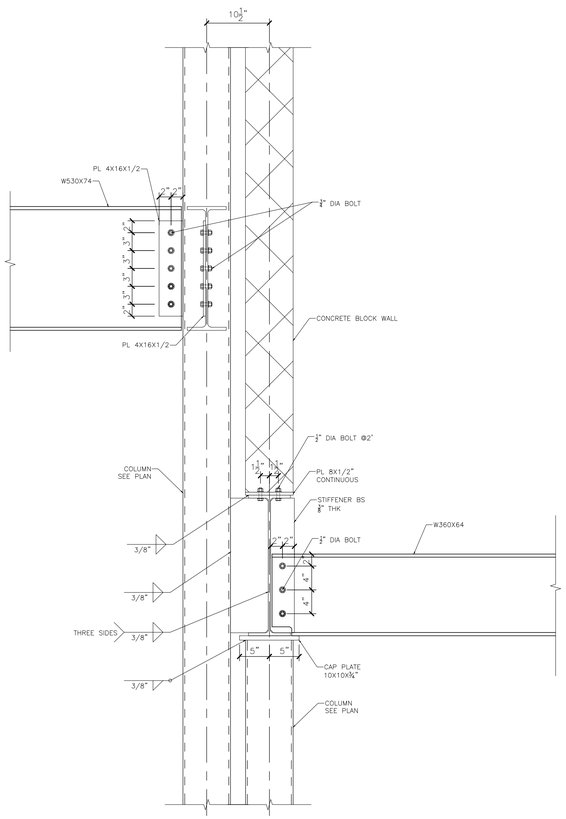
8 S3.4 CONNECTION DETAIL 8



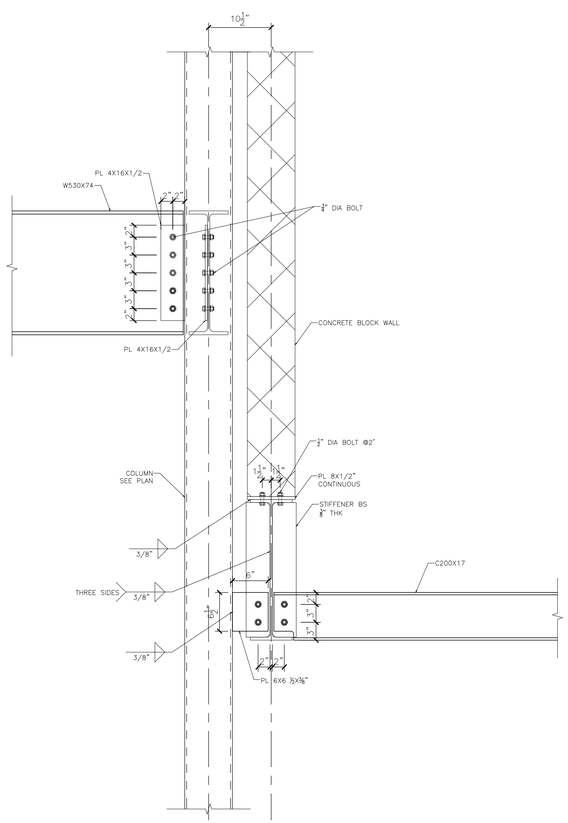
A5-A5



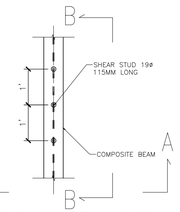
A8-A8



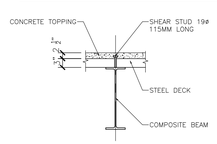
A6-A6



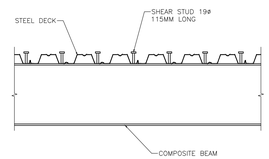
A7-A7



COMPOSITE BEAM DETAIL



SECTION A-A



SECTION B-B

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:
FIREARMS OUTLET CANADA

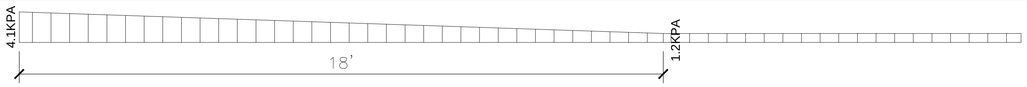
PROJECT:
725 WESTNEY RD. S., AJAX, ON
L1S 7J7

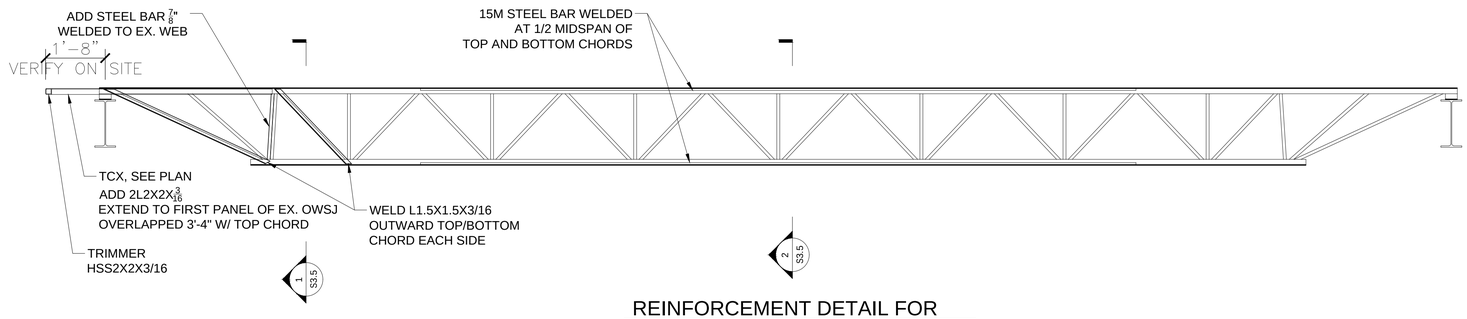
DRAWING TITLE:
CONNECTION DETAILS

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

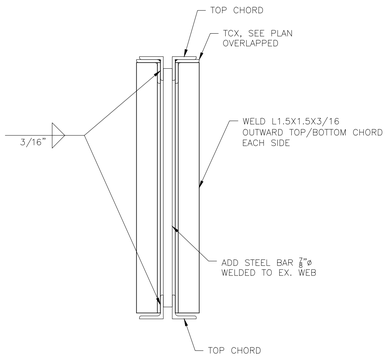
LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO
SEAL

SCALES:	1"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S3.4

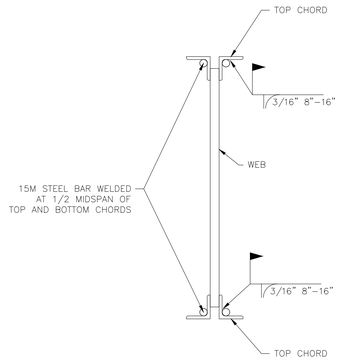




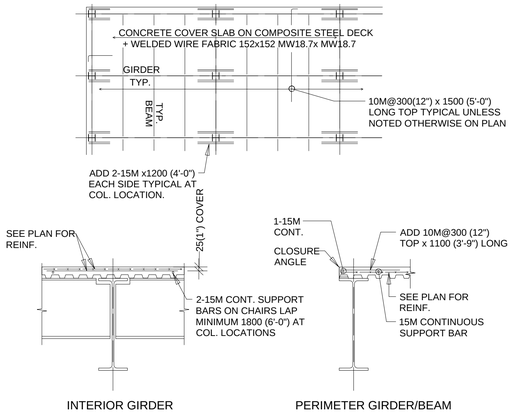
REINFORCEMENT DETAIL FOR EX. OWSJ NEAR UPPER ROOF



1 S3.5 DETAIL 1

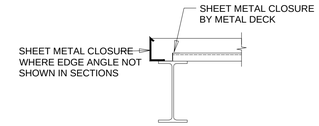


2 S3.5 DETAIL 2

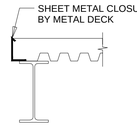


INTERIOR GIRDER

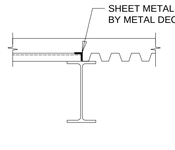
PERIMETER GIRDER/BEAM



METAL DECK PERPENDICULAR TO BEAM



METAL DECK PARALLEL TO BEAM



CHANGE IN DECK DIRECTION OVER BEAM

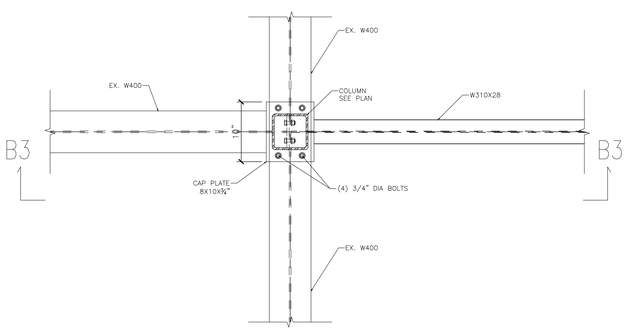
FLOOR FRAMING NOTES

1. STEEL FLOOR DECK SHALL BE:
   - A. COMPOSITE
   - B. FORMED FROM SHEET STEEL CONFORMING TO CBBSI 101-78, ZINC COATED STRUCTURAL QUALITY, MINIMUM GRADE 'A', WITH A BASE STEEL NOMINAL THICKNESS OF 0.76mm (0.3"), AND ZINC COATING DESIGNATION OF "WIPED COAT."
   - C. FORMED WITH INTEGRAL LOCKING LUGS TO SUPPORT A MECHANICAL LOCK BETWEEN CONCRETE AND STEEL.
   - D. MIN. 3 SPAN CONTINUOUS.
2. ALL STEEL FLOOR DECKS TO BE ATTACHED TO SUPPORTING STEEL WITH 19mm (3/4") FUSION WELDS AT 300mm (12") CENTRES, AND ALL INTERLOCKING SIDE JOINTS ARE TO BE MECHANICALLY CLINCHED TOGETHER AT 450mm (1'-6") MAX.
3. STEEL CONTRACTOR TO PROVIDE TRIMMERS AROUND OPENINGS IN STEEL DECK TO SUIT ELECTRICAL AND MECHANICAL WORK.
4. ALL OPENINGS 450mm (1'-6") AND SMALLER SHALL BE REINFORCED ADEQUATELY BY THE STEEL DECK CONTRACTOR.
5. FLOOR DECK CONTRACTOR SHALL FURNISH, INSTALL, AND WELD IN POSITION SHEET METAL FLASHING TO FORM EDGES OF CONCRETE SLAB AND TO CLOSE OFF BETWEEN FLOOR UNITS AND COLUMNS.
6. FLOOR DECK

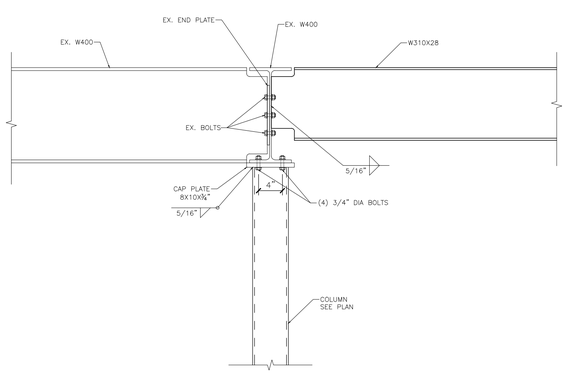
   PROVIDE AND INSTALL 2.5" CONCRETE ON STEEL FLOOR DECK (TOTAL THICKNESS = 2.5" + 3" = 5.5" REINFORCED WITH ONE LAYER OF 152x152-MW18.7XMV18.7 WELDED WIRE FABRIC PLACED AT 1" FROM THE TOP OF SLAB
7. COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 25 MPa AT 28 DAYS.
10. WHERE STEEL DECK CHANGES DIRECTION OF SPAN OR IS BEING CUT AT A SKEW, STRUCTURAL STEEL CONTRACTORS SHALL PROVIDE AND INSTALL STEEL ANGLES OF SUFFICIENT SIZE FOR THE SUPPORT OF THE DECK EDGE.
11. PIPES, DUCTWORKS, ELECTRICAL CABLES, ETC. SHALL NOT BE HUNG FROM THE FLOOR SLAB. ALL HANGERS SHALL BE HUNG FROM THE TOP CHORD OF JOISTS OR BEAMS.

DIMENSIONS ARE mm EXCEPT DIMENSIONS IN BRACKETS ARE INCHES

SLAB REINFORCEMENT FOR CONCRETE ON COMPOSITE STEEL DECK



3 S3.5 CONNECTION DETAIL 3



B3-B3

CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:
FIREARMS OUTLET CANADA

PROJECT:
725 WESTNEY RD. S., AJAX, ON
L1S 7J7

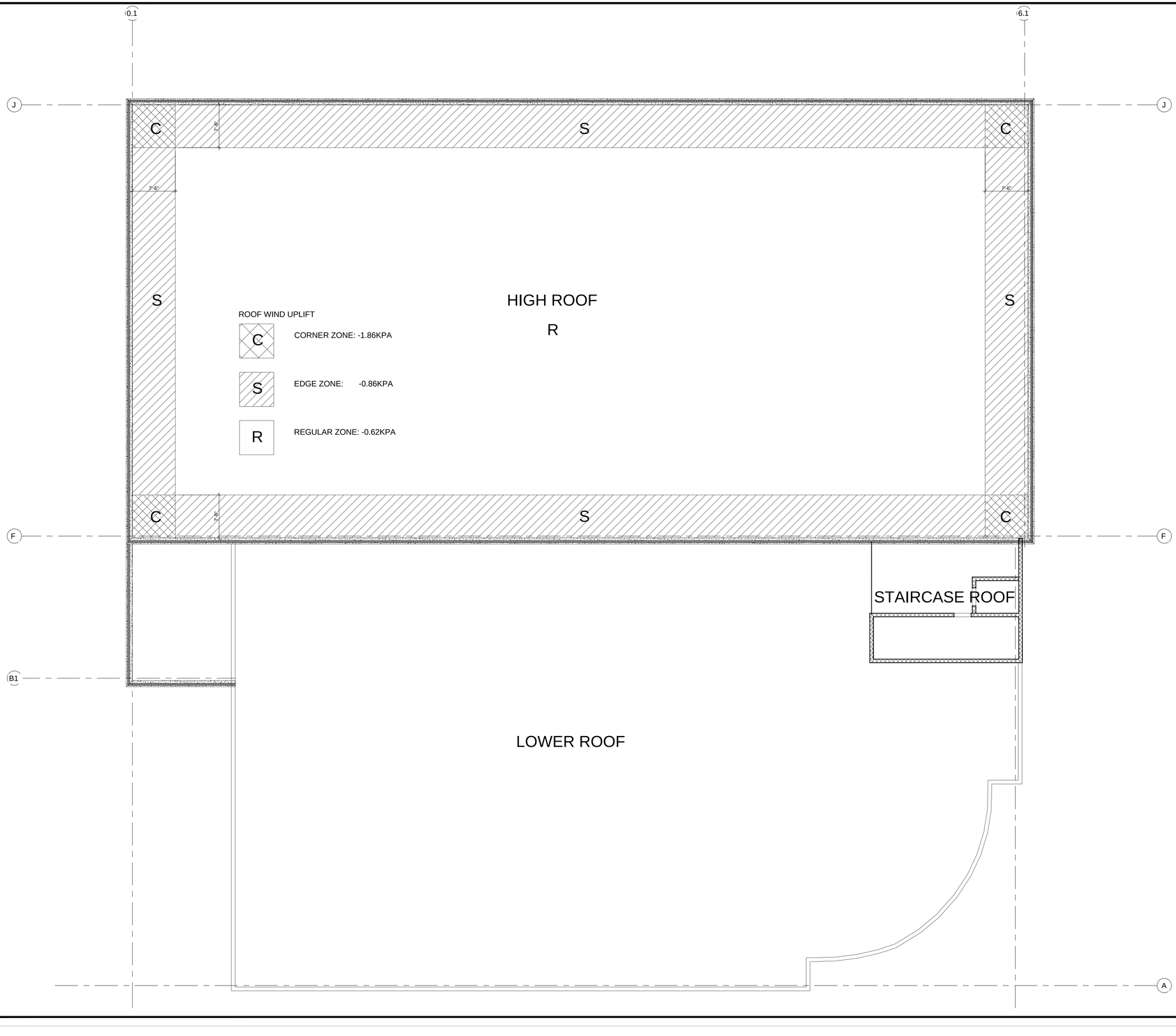
DRAWING TITLE:
CONNECTION DETAILS

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

SEAL:

SCALES:	1"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S3.5



CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS MUST BE CHECKED WITH THE LATEST ISSUE OF ARCHITECTURAL DRAWINGS. ALL DISCREPANCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK .

FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'ISSUED FOR CONSTRUCTION'.

DO NOT SCALE THE DRAWINGS.

NOTES:

NO	REVISION	DATE	BY
03	ISSUED FOR PERMIT	2025/05/28	RZ
02	ISSUED FOR TENDER	2025/05/16	RZ
01	ISSUED FOR REVIEW	2025/04/15	RZ

COOPERATOR:

OWNER/CLIENT:

FIREARMS OUTLET CANADA

PROJECT:

725 WESTNEY RD. S., AJAX, ON
L1S 7J7

DRAWING TITLE:

ROOF UPLIFT PLAN

HILAND ENGINEERING INC
3950 14TH AVE UNIT 602
MARKHAM ONTARIO
L3R 0A9
647-269-2918
info@hiland.ca

LICENSED PROFESSIONAL ENGINEER
X. F. ZHOU
100060049
2025/05/28
PROVINCE OF ONTARIO

SEAL

SCALES:	1/8"=1'
DRAWN BY:	DHZ
CHECKED BY:	RZ
DATE:	MAY 16, 2025
PROJECT No:	25029-438
DRAWING No:	S3.6