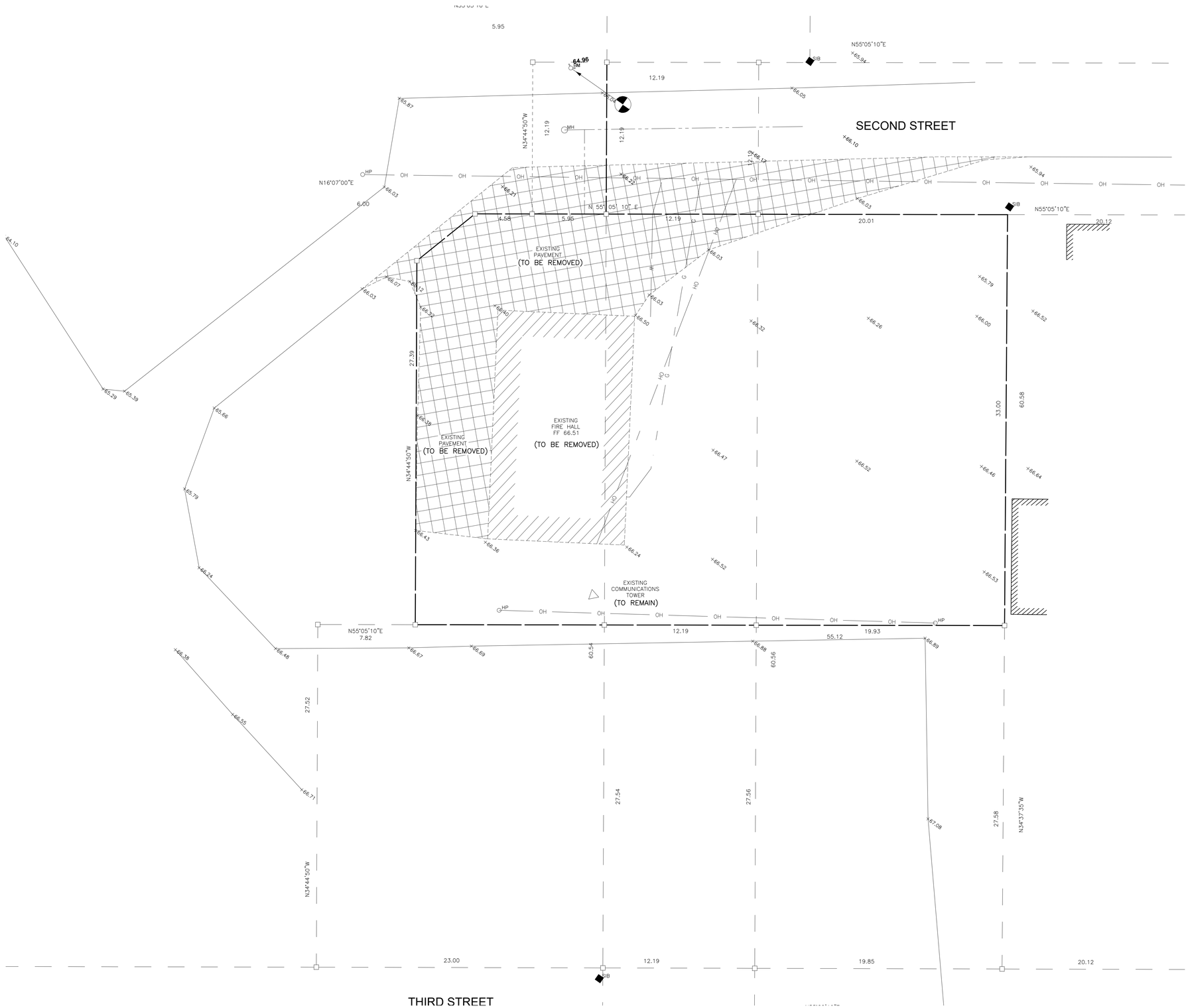

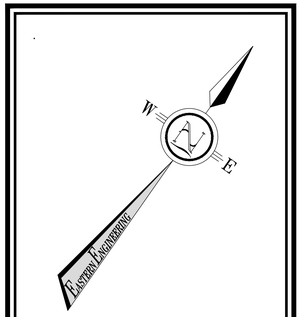

No.	By	Date	Revisions

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LICENSED PROFESSIONAL ENGINEER
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Brockville, Ont. K6V 5J9
Telephone: (613) 345-0400
Facsimile: (613) 345-0008
www.EastEng.com

Project Title:

CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

Drawing Title:

EXISTING AND REMOVALS PLAN

Design:	Checked:	Approved:	Project No.:
AJP	CAJ		9655
Drawn:	Checked:	Date:	Contract No.:
AJP	CAJ	8/23/2021	

Scale: 0 3.0 6.0
Horizontal: 150

Drawing No.: **C0**

File No. 9655 C.dwg

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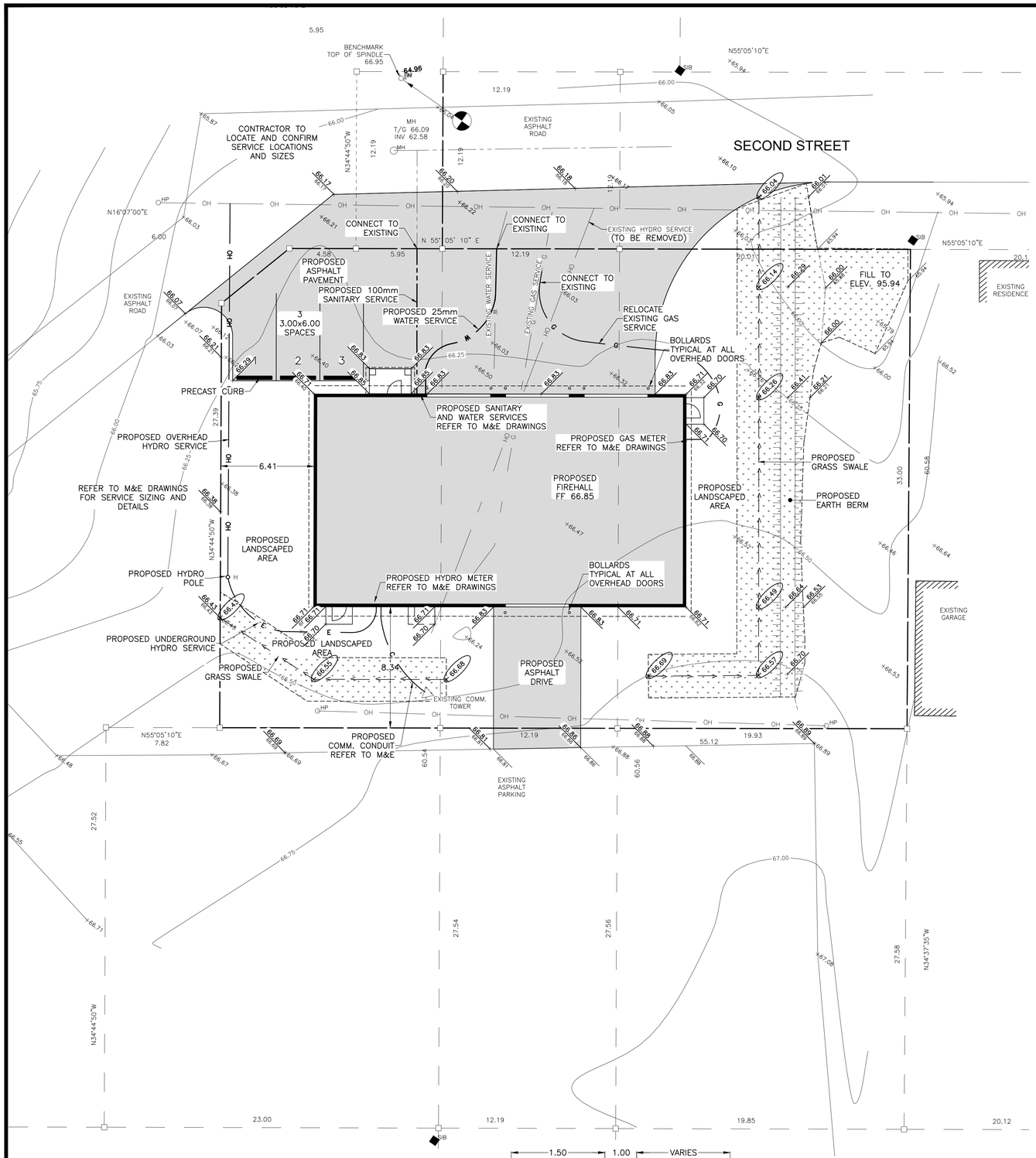
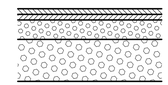


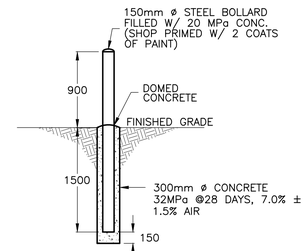
PAVEMENT MARKING NOTES

- ALL PARKING STALL LINES, TRAFFIC ARROWS AND HATCHED AREAS SHALL BE PAINTED YELLOW.
- ALL PARKING STALL LINES SHALL BE 100mm WIDE.
- PAINT MUST MEET "OPSS 1716 WATER-BORNE TRAFFIC PAINT" SPECIFICATIONS



ASPHALT DETAILS

N.T.S.



BOLLARD

N.T.S.

LEGEND

- ×92.30 EXISTING TOPO GRADE
- 92.90 PROPOSED GRADE
- 92.90 EXISTING GRADE
- STORM SEWER
- SANTITARY SEWER
- WATERMAIN
- BELL UNDERGROUND
- GAS UNDERGROUND
- CABLE UNDERGROUND
- ELECTRICAL UNDEROUND
- OVERHEAD UTILITIES
- BH B LS H UTILITY POLE
- AN UTILITY ANCOR
- UTILITY PEDISTAL
- PROPERTY BAR FOUND
- RS ROAD SIGN
- FENCE
- TREELINE
- TREE
- 11.58 N49°15'50"E PROPERTY BOUNDARY
- EXISTING BUILDING
- EXISTING BUILDING TO BE REMOVED
- PROPOSED BUILDING

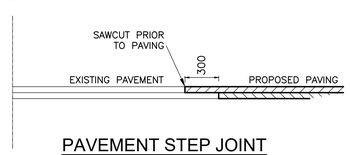
LAWN AREAS

SODDED AREAS:PREPARE SODDED AREAS WITH SCREENED TOPSOIL, 150MM COMPACTED DEPTH
INSTALL NO. 1 NURSERY SOD

SEEDED AREAS: PREPARE SEEDED AREAS WITH SCREENED TOPSOIL, 150MM COMPACTED DEPTH.
INSTALL THE FOLLOWING SEED BLEND
10% HERON HARD FESCUE
10% MINN FINE KENTUCKY BLUE GRASS
20% SANDPIPER CHEWINGS FESCUE
40% ARUBA CREEPING RED FESCUE
15% ELF PERENNIAL RYEGRASS
5% RED TOP
APPLICATION RATE: 7LBS/1,000S.F.

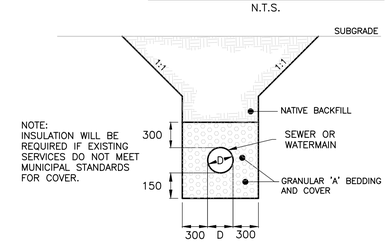
EXISTING INFRASTRUCTURE NOTES:

1. ALL EXISTING PLANT OR UNDERGROUND INFRASTRUCTURE SHALL BE PROTECTED.
2. THE LOCATION OF EXISTING UNDERGROUND INFRASTRUCTURE WITHIN THE SITE IS UNKNOWN.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL UNDERGROUND INFRASTRUCTURE WITHIN THE LIMITS OF THIS CONTRACT.
4. WHEN UNDERGROUND INFRASTRUCTURE IS ENCOUNTERED THAT HAS NOT BEEN SHOWN ON THE CONTRACT DRAWINGS THE CONTRACTOR WILL RECORD IT'S LOCATION, NOTIFY THE CONTRACT ADMINISTRATOR AND FURNISH A COPY OF THE LOCATION OF SAID INFRASTRUCTURE.
5. IF ANY UNDERGROUND INFRASTRUCTURE IS FOUND TO BE IN CONFLICT WITH ANY OF THE WORK OF THIS CONTRACT THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CONTRACT ADMINISTRATOR IN WRITING AND WHERE PRACTICABLE PROCEED WITH OTHER WORK THAT IS NOT AFFECTED BY THE CONFLICT.
6. IT WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PRESERVE AND PROTECT ALL EXISTING INFRASTRUCTURE WITHIN THE CONTRACT LIMITS. ALL DAMAGES TO THE INFRASTRUCTURE RESULTING FROM THE ACTIONS OF THE CONTRACTORS OPERATIONS SHALL BE REPAIRED TO A SAME OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER.



PAVEMENT STEP JOINT ALONG EXISTING STREETS

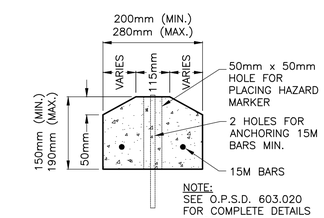
N.T.S.



NOTE:
INSULATION WILL BE REQUIRED IF EXISTING SERVICES DO NOT MEET MUNICIPAL STANDARDS FOR COVER.

TRENCH DETAIL

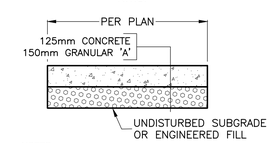
N.T.S.



NOTE:
SEE O.P.S.D. 603.020 FOR COMPLETE DETAILS
LENGTH = 2.4m

TYPICAL PRECAST CONCRETE CURB

N.T.S.

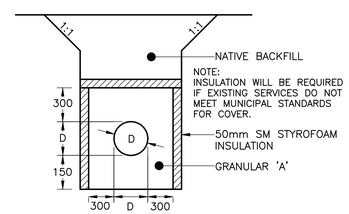


NOTES:

- WORK TO CONFORM TO O.P.S.S. 351
- CONCRETE TO BE 30MPa, 7.0% ± 1.5% AIR CONTENT, SLUMP 70mm ± 20mm
- GRANULARS TO BE COMPACTED TO 98% STANDARD PROCTOR DENSITY
- SUBGRADE TO BE EITHER UNDISTURBED NATIVE MATERIAL OR APPROVED GRANULARS COMPACTED TO 95% STANDARD PROCTOR DENSITY

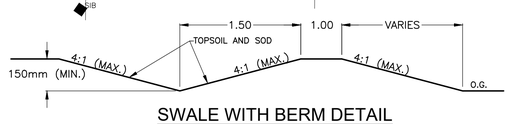
SIDEWALK CONCRETE

N.T.S.



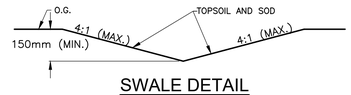
PIPE INSULATION DETAIL

N.T.S.



SWALE WITH BERM DETAIL

N.T.S.



SWALE DETAIL

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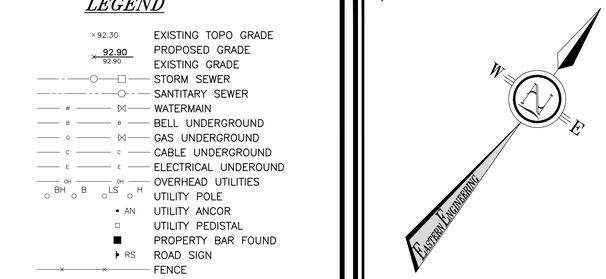

GENERAL NOTES

- ALL WORK ON CITY PROPERTY TO BE PERFORMED BY A CONTRACTOR APPROVED BY THE CITY.
- CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.
- CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS PRIOR TO START OF CONSTRUCTION.
- ALL DISTURBED LANDSCAPED AREAS TO BE REINSTATED TO ORIGINAL OR BETTER CONDITION PER LAWN RESTORATION NOTES.
- ALL DISTURBED ASPHALT AREAS TO REINSTATED TO ORIGINAL OR BETTER CONDITION PER PAVEMENT DETAIL.

No.	By	Date	Revisions

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Facsimile: (613) 345-0008
www.EastEng.com

Project Title:

CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

Drawing Title:

SITE, GRADING AND SERVICING PLAN

Design:	Checked:	Approved:	Project No.:
AJP	CAJ		9655
Drawn:	Checked:	Date:	Contract No.:
AJP	CAJ	8/23/2021	

Scale: 0 3.0 6.0
Horizontal: 150

Drawing No.: **C1**

File No. 9655 C.dwg

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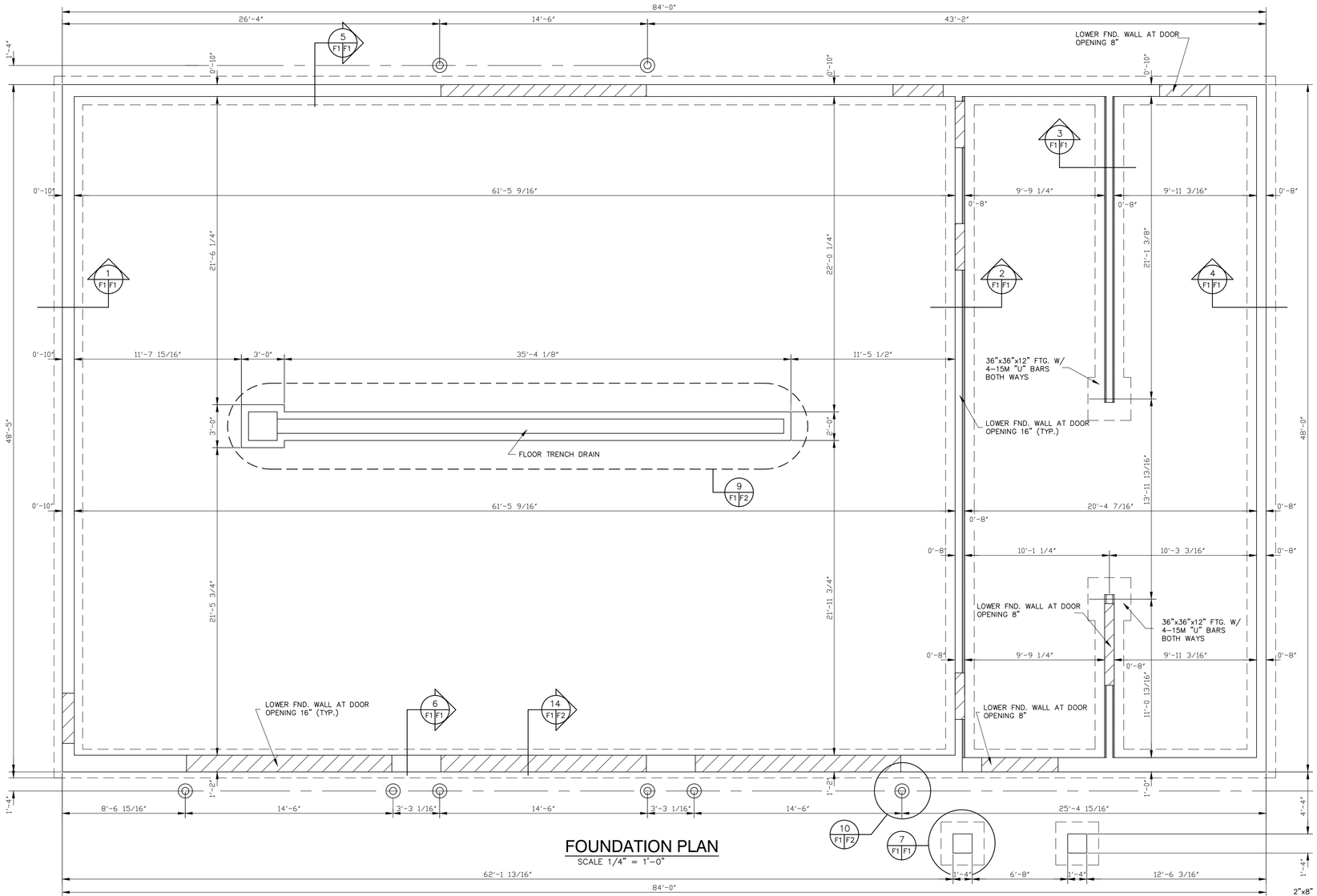
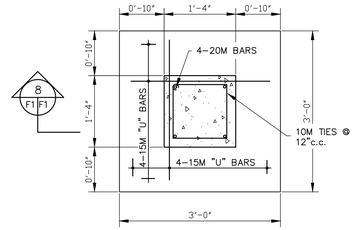
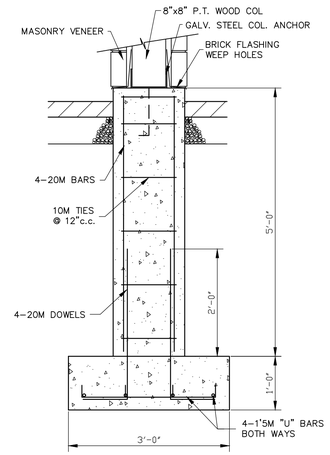


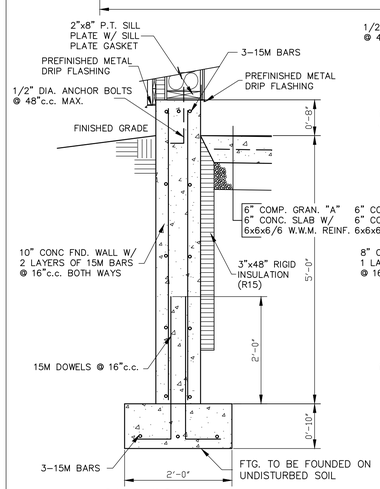
FOUNDATION PLAN
SCALE 1/4" = 1'-0"



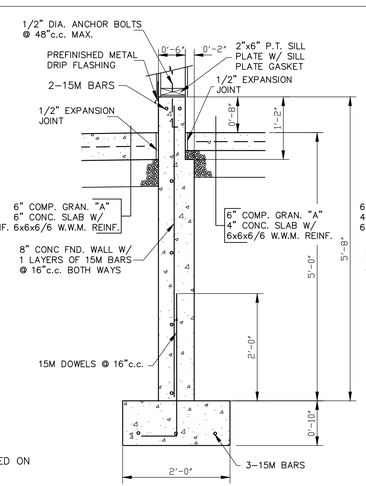
SECTION 7
SCALE 3/4" = 1'-0"



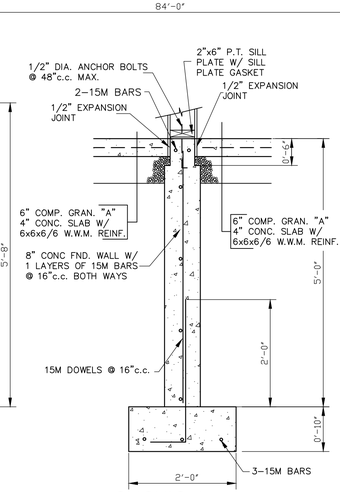
SECTION 8
SCALE 3/4" = 1'-0"



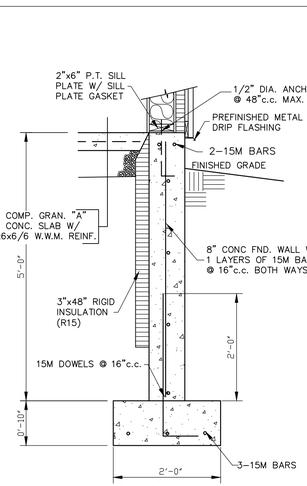
SECTION 1
SCALE 3/4" = 1'-0"



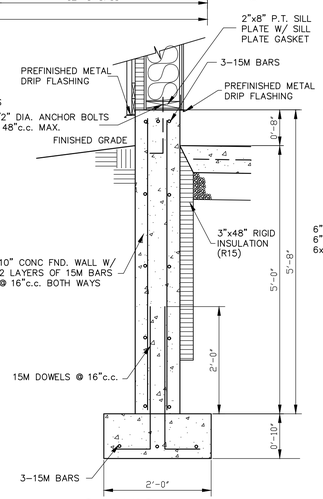
SECTION 2
SCALE 3/4" = 1'-0"



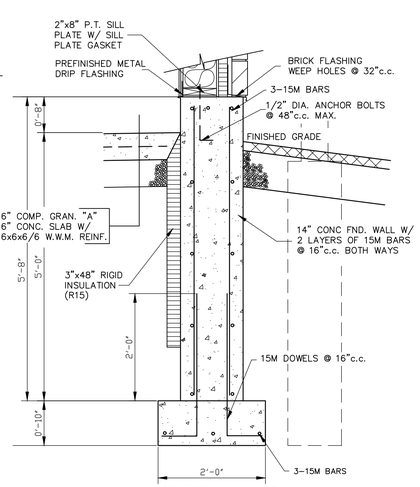
SECTION 3
SCALE 3/4" = 1'-0"



SECTION 4
SCALE 3/4" = 1'-0"



SECTION 5
SCALE 3/4" = 1'-0"



SECTION 6
SCALE 3/4" = 1'-0"

NOTE: SEE DWG No. SO FOR ALL GENERAL NOTES

No.	By	Date	Revisions
3	DGP	30/6/21	FOR TENDER
2	DGP	28/4/21	FOR PERMIT
1	DGP	12/4/21	PRELIMINARY REVIEW

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2021 04 28
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PROJECT NORTH

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19467
CLASSES OF REGISTRATION:

BUILDING SERVICES
BUILDING STRUCTURAL
HOUSE

LARGE BUILDINGS
ON SITE SEWAGE
SMALL BUILDINGS

Project Title:

CRYSLER FIREHALL TOWNSHIP OF NORTH STORMONT

Drawing Title:

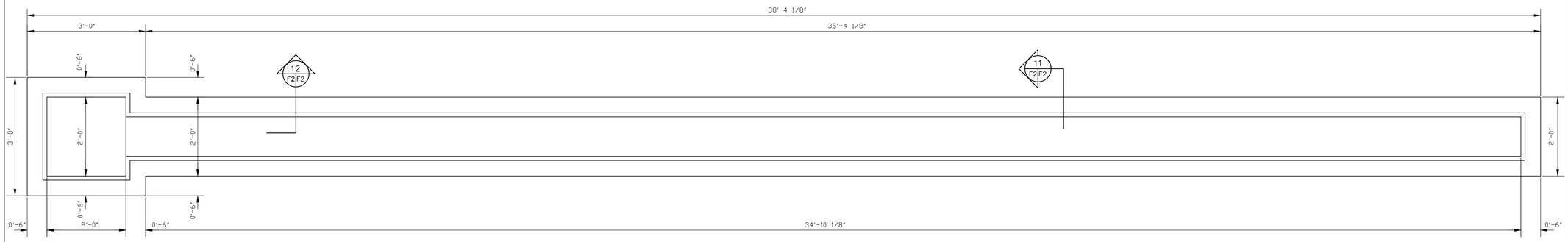
FOUNDATION PLAN FOUNDATION DETAILS

Design:	Checked:	Approved:	Project No.:
B.C.			9655
Drawn:	Checked:	Date:	Contract No.:
D.G.P.	B.C.	MAR 31, 2021	

Scale: AS SHOWN
Horizontal:
Vertical:

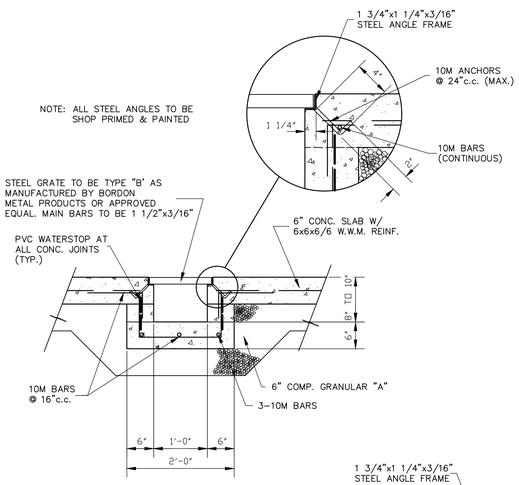
Drawing No.: F1

File No.: 9655-F1



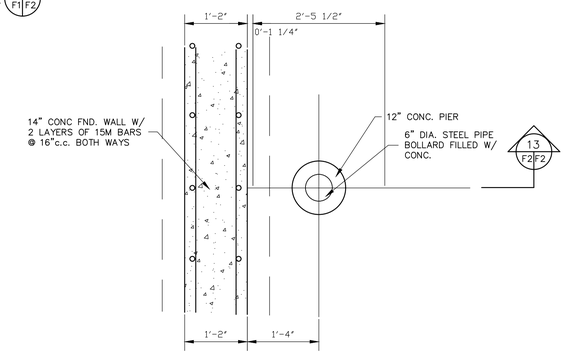
PLAN VIEW (9 F1 F2)

SCALE 3/4" = 1'-0"



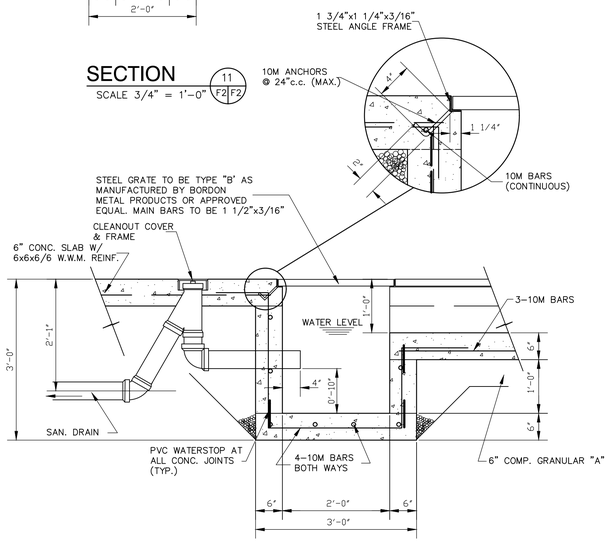
SECTION (11 F2 F2)

SCALE 3/4" = 1'-0"



SECTION (10 F1 F2)

SCALE 3/4" = 1'-0"



SECTION (12 F2 F2)

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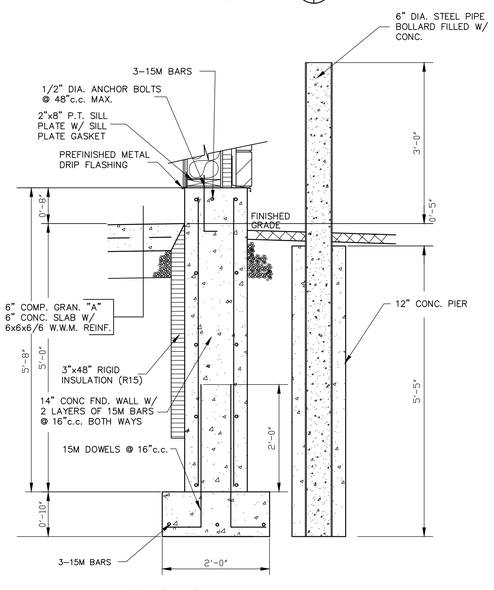

SECTION (13 F2 F2)

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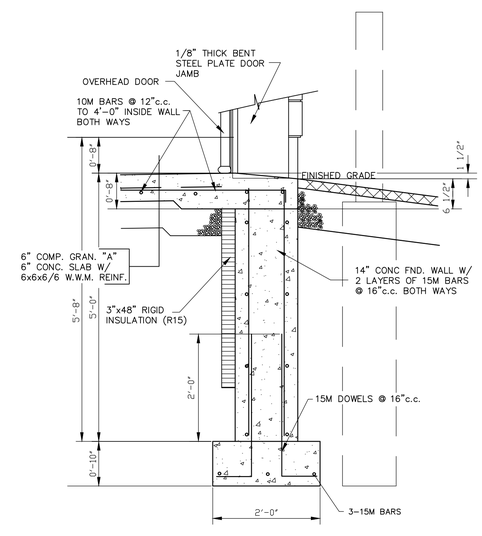

SECTION (14 F1 F2)

SCALE 3/4" = 1'-0"

NOTE: SEE DWG No. S0 FOR ALL GENERAL NOTES

No.	By	Date	Revisions
2	DGP	30/6/21	FOR TENDER
1	DGP	28/4/21	FOR PERMIT

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100172021
2021 04 28
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HOUSE
LARGE BUILDINGS
ON SITE SEWAGE
SMALL BUILDINGS

Project Title:

CRYSLER FIREHALL TOWNSHIP OF NORTH STORMONT

Drawing Title:

TRENCH DRAIN DETAILS FOUNDATION DETAILS

Design:	Checked:	Approved:	Project No.:
B.C.			9655
Drawn:	Checked:	Date:	Contract No.:
D.G.P.	B.C.	MAR 31, 2021	

Scale: 3/4" = 1'-0"

0 " Horizontal:

0 " Vertical:

Drawing No.: F2

File No.: 9655-F2

GENERAL NOTES

GOVERNING CODE - ONTARIO BUILDING CODE OF CANADA, 2012 EDITION:

1. DESIGN LOADS: **(UNFACTORED)**

GROUND SNOW LOAD: Ss = 2.4 kPa
Sr = 0.4 kPa
Is = 1.25

ROOF: DEAD LOAD = 16.0 PSF
SNOW LOAD = 57.1 PSF } REFER TO DRIFT LOADS

FLOOR LOADS:
DEAD LOAD = 80 PSF (MAIN FLOOR)
DEAD LOAD = 20 PSF (MEZZANINE)
LIVE LOAD = 125 PSF (GARAGE)
LIVE LOAD = 100 PSF (OFFICES/MEZZANINE)

WIND LOAD: q (1/50) = 0.40 kPa
Iw = 1.25

* SITE CLASS 'C'

SEISMIC: Sa (0.2)= 0.51 Sa (1.0)= 0.129 Sa (5.0) = 0.016 PGA= 0.328
Sa (0.5)= 0.266 Sa (2.0)= 0.060 Sa (10.0)= 0.0056 Ie = 1.5

DESIGN LIVE LOADS TO INCLUDE POINT LOAD REQUIREMENTS AS PER ARTICLE 4.1.6.10 OF THE 2012 ONTARIO BUILDING CODE. FACTORED LOADS SHOWN ON DRAWINGS USE LOAD FACTORS LL = 1.5 AND DL = 1.25 PER ONTARIO BUILDING CODE.

FOUNDATIONS - GENERAL:

1. THE FOUNDATION HAS BEEN DESIGNED FOR AN ASSUMED ALLOWABLE BEARING CAPACITY OF 150 kPa (3000 PSF) AS PRESCRIBED IN THE GEO-TECHNICAL REPORT PREPARED BY ST. LAWRENCE TESTING & INSPECTION CO LTD. GEO-TECHNCIAL ENGINEER TO REVIEW BEARING SOILS UPON EXCAVATION, SOME ADJUSTMENTS MAY BE REQUIRED.

2. FOOTINGS MAY NOT BE POURED INTO AN EARTH-FORMED TRENCH.

3. OPEN EXCAVATIONS SHALL BE DE-WATERED AS REQUIRED. MEASURES MAY BE REQUIRED TO PROTECT BEARING MATERIALS FROM DEGRADATION DUE TO EXTREME WEATHER AND CLIMATIC CONDITIONS.

4. BOTTOM OF EXTERIOR FOOTINGS SHALL BEAR ON NATIVE SOIL. FOOTING ELEVATIONS MAY NEED TO BE ADJUSTED.

5. THE ENGINEER SHALL INSPECT ALL REBAR AND FORMWORK PRIOR TO PLACING CONCRETE. FORMWORK SHALL BE COMPLETE AT THE TIME OF INSPECTION, REINFORCEMENT MUST BE MINIMUM 95% COMPLETE AT TIME OF INSPECTION. PROVIDE MINIMUM 24 HOUR NOTICE AT THE FOLLOWING SCHEDULED EVENTS:

5.1. FOOTING PLACEMENT
5.2. FOUNDATION WALL PLACEMENT
5.3. SLAB ON GRADE PLACEMENT

6. WHERE FOUNDATION WALLS ARE TO HAVE EARTH PLACED ON EACH SIDE, PLACE FILL SIMULTANEOUSLY SO AS TO MAINTAIN A COMMON ELEVATION ON EACH SIDE OF THE WALL. ALL FILL TO BE GRANULAR MATERIAL AS APPROVED BY ENGINEER.

7. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ADEQUATE BRACING AND SUPPORT OF FORMWORK TO ENSURE WALLS ARE PLUMB WITHIN ACCEPTABLE LIMITS (1:500).

8. GRANULAR FILL SHALL BE MINIMUM 6" GRANULAR "A" COMPACTED TO 98% S.P.D.D, ALL OTHER FILL ON SITE SHALL BE GRANULAR B TYPE II COMPACTED TO 98% S.P.D.D. U.N.O. GRANULAR FILL SHALL BE COMPACTED IN MAXIMUM 10" LIFTS. FILL NOT SPECIFIED ON THE DRAWINGS TO BE USED ON SITE MUST BE APPROVED BY THE DESIGNER PRIOR TO PLACEMENT.

CONCRETE:

1. DESIGN OF CONCRETE ELEMENTS SHALL CONFORM TO CSA-A23.3-14. PROVIDE CONCRETE AND PERFORM WORK TO CSA A23.3-04.

2. TEST CONCRETE IN ACCORDANCE WITH CSA-A23.3-14.

3. CONCRETE REQUIREMENTS:

LOCATION CONDITION	MIN. DESIGN STR. Mpa = TYPE (DAYS) C = COMPRESSION F= FLEXURAL	CEMENT	AIR (mm)	MAX AGG.	EXP.
INTERIOR SLAB	25C (28)	GU	< 3	20	N
FOOTINGS	20C (28)	GU	< 3	20	N
FOUNDATION WALLS	25C (28)	GU	4-7	20	F-2
EXTERIOR CONC & GARAGE SLAB	35C (28)	GU	4-7	20	C-1

- WHERE SPECIFIED STRENGTH EXCEED THOSE IMPLIED BY EXPOSURE CLASS, SPECIFIED STRENGTH GOVERNS.
- ALL CONCRETE TO BE NORMAL WEIGHT 2400 KG/CUBIC METER
- WATER CEMENT RATIOS FOR EXPOSURE CLASSES AS PER TABLES 7 - 9, CAN/CSA-A23.1-14.
- DO NOT USE ANY ADMIXTURE CONTAINING CHLORIDE FOR CONCRETE WITH S-2 EXPOSURE.
- NORMAL PORTLAND CEMENT TO BE USED FOR CONCRETE.

4. CONTROL JOINTS FOR SLAB ON GRADE: SAWCUT AT LOCATIONS SHOWN ON DRAWINGS BUT NOT EXCEEDING 4.572 m SPACING. UNLESS OTHERWISE NOTED.

5. NO COLUMN OR WALL FORMS SHALL BE REMOVED BEFORE CONCRETE HAS REACHED 10 Mpa FOR ARCHITECTURAL CONCRETE AND 8 Mpa FOR OTHER COLUMNS OR WALLS.

6. NO SLAB FORMS OR BEAM FORMS SHALL BE REMOVED BEFORE CONCRETE HAS REACHED 17 Mpa.

7. STRENGTH OF CONCRETE FOR STRIPPING TO BE DETERMINED BY FIELD-CURED CYLINDERS. ALTERNATE METHODS, IF ACCEPTABLE TO THE STRUCTURAL DESIGN ENGINEER, MAY BE USED.

8. RESHORING TO BE APPROVED BY THE ENGINEER PRIOR TO STRIPPING.

9. ALL SLABS, BEAMS, GIRDERS, ETC. TO BE SHORED UNTIL CONCRETE REACHES DESIGN STRENGTH.

10. BE RESPONSIBLE FOR THE MIX DESIGN. MIX DESIGN SHALL BE PROPORTIONED WITH DUE CONSIDERATION TO EXTREME TEMPERATURES - WINTER OR SUMMER AND CONSULT GENERAL CONTRACTOR TO DETERMINE REQUIREMENTS. ADMIXTURES AND ADDITIVES SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.

REINFORCING NOTES:

1. REINFORCING STEEL: NEW DEFORMED BARS TO CSA/G30.18-09 (R2014), "BILLET STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 400R, BARS TO BE WELDED CONFORM TO CAN/CSA G30.18-09, GRADE 400W. ANCHOR BOLTS TO ASTM A307. EPOXY COATED REBAR TO ASTM A775. PLACE REBAR TO CAN/CSA-A23.1-14.

2. PROVIDE CLEAR CONCRETE COVER OVER REBAR AS FOLLOWS:

A) SURFACE POURED AGAINST GROUND 75 mm
B) FORMED SURFACES EXPOSED TO GROUND OR WEATHER 40 mm
C) FORMED SURFACES NOT EXPOSED TO GROUND OR WEATHER:
BEAMS (TO STIRRUPS) 40 mm
COLUMNS (TO VERTICALS) 50 mm
SLABS, WALLS 20 mm
D) PARKING SURFACES AND EXTERIOR TOP OF SLAB: 40 mm

3. REINFORCING WORK TO BE INSPECTED BY THE ENGINEER. NOTIFY THE ENGINEER 24 HOURS IN ADVANCE. CONTRACTOR MUST ENSURE MINIMUM 95% STEEL ARE IN PLACE FOR THE INSPECTION.

4. REBAR LAP SPLICE LENGTHS (UNLESS NOTED ON DRAWINGS)

BAR SIZE	COMP. SPLICES (mm)	TENSION SPLICE "CLASS B" 25 Mpa	30 Mpa	FOR CONCRETE STRENGTHS (mm) 35 Mpa	40 Mpa
10M	330	430 (560)	380 (510)	360 (460)	330 (430)
15M	480	610 (790)	535 (790)	510 (660)	480 (610)
20M	580	740 (940)	660 (865)	610 (815)	580 (760)
25M	740	1170 (1525)	1065 (1400)	990 (1295)	940 (1220)

TOP BAR SPLICE LENGTHS ARE DENOTED IN BRACKETS AND SHOULD BE USED WHEN HORIZONTAL SPLICE BARS ARE PLACED SUCH THAT THERE IS MORE THAN 300mm OF CONCRETE POURED BELOW THE BAR.

REBAR EMBEDMENT LENGTHS (UNLESS NOTED ON DRAWINGS)

BAR SIZE	COMPRESSION EMBEDMENT FOR CONCRETE STRENGTH (mm) 20 Mpa	25 Mpa	30 Mpa	TENSION EMBEDMENT FOR CONCRETE STRENGTH (mm) 25 Mpa	30 Mpa	35 Mpa	40 Mpa
10M	250(330)	230 (280)	200 (250)	330 (430)	305 (380)	80 (360)	50 (330)
15M	360 (450)	300 (400)	275 (360)	460 (610)	430 (530)	80 (510)	360 (480)
20M	430 (535)	380 (485)	360 (450)	560 (735)	510 (660)	80 (610)	60 (585)
25M	535 (710)	485 (635)	450 (585)	915 (1170)	840 (1070)	760 (990)	10 (940)
30M	635 (840)	585 (740)	535 (685)	1070 (1400)	90 (1270)	15 (1170)	40 (1120)
35M	760 (990)	685 (900)	635 (810)	1295 (1675)	170 (1525)	090 (1420)	1015 (1320)

TOP BAR DEVELOPMENT LENGTHS ARE DENOTED IN BRACKETS AND SHOULD BE USED WHEN HORIZONTAL BARS ARE PLACED SUCH THAT THERE IS MORE THAN 300 mm OF CONCRETE POURED BELOW THE BAR.

5. MIN. REINFORCING AROUND OPENINGS LARGER THAN 300 mm: 2 - 15M EACH SIDE OF OPENING, EXTENDED 600 mm PAST CORNERS.

6. DOWELS SHALL BE PLACED BEFORE CONCRETE IS POURED. TEMPLATES SHALL BE USED TO ENSURE CORRECT PLACEMENT OF DOWELS. DOWELS TO MATCH VERTICAL BARS.

7. PROVIDE SUFFICIENT CHAIRS AND SUPPORT BARS TO MAINTAIN CONCRETE COVER AS SPECIFIED.

WOOD

1. ALL LUMBER TO BE MIN. NO. 2 SPF TO CSA 086-14 ENGINEERING DESIGN IN WOOD, UNO.

2. ROOF TRUSSES TO BE DESIGNED TO PART 4 OF THE ONTARIO BUILDING CODE TO THE LOADS SPECIFIED. TRUSS MANUFACTURER TO SUPPLY SHOP DRAWINGS AND LAYOUT DRAWING STAMPED BY PROFESSIONAL ENGINEER LICENSED IN PROVINCE OF ONTARIO. TRUSSES TO BE DESIGNED FOR BEARING SURFACES AS SHOWN ON DRAWINGS. ALL ROOF TO HAVE HURRICANE CLIPS TO RESIST UPLIFT LOADS.

3. NAILING TO ONTARIO BUILDING CODE UNLESS NOTED OTHERWISE. BOLTS FOR WOOD CONNECTIONS SHALL BE MIN GRADE A307.

4. WHERE FASTENERS ARE EXPOSED TO EXTERIOR CLIMATE ALL COMPONENTS, FASTENERS AND BRACKETS SHALL BE HOT DIP GALVANIZED.

5. PRE-MANUFACTURED COMPOINENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND INSTALLATION GUIDELINES. SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.

STRUCTURAL STEEL:

1. FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA S16.1-14. SUBMIT TWO SETS OF PRINTS OF SHOP DRAWINGS SHOWING ALL DETAILS AND MATERIAL SPECS. FOR REVIEW PRIOR TO FABRICATION.

2. PROVIDE STRUCTURAL STEEL TO CSA G40.21-13 WITH THE FOLLOWING GRADES;

WIDE FLANGE BEAMS & COLUMNS	350 W
CHANNELS	350 W
HSS SECTION (CLASS H)	350 W
ANGLES & BARS & PLATES	300 W
MISCELLANEOUS STEEL	300 W
PIPE COLUMNS (HSS)	350 W "CLASS C"

3. PROVIDE ERECTION BOLTS TO ASTM A325, MINIMUM M20. DESIGN BOLTED CONNECTIONS TO ASTM A325 ASSUMING THREADS IN THE SHEAR PLANE.

4. WELD TO CASA W59-13 BY FABRICATORS CERTIFIED TO CSA W47.1-09 WELDING OF REINFORCING BARS SHALL CONFORM TO CSA W186-M1990(R2012).

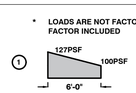
5. MINIMUM WELDS FOR CONNECTIONS SHALL BE 5mm FILLET WELDS AND WHERE EXPOSED IN FINISHED BUILDING WELDS SHALL BE GROUND SMOOTH.

6. TEMPORARY BRACING DURING CONSTRUCTION TO BE DESIGNED BY CONTRACTOR (WHOEVER IS RESPONSIBLE FOR ERECTION). CONTRACTOR IS RESPONSIBLE FOR SAFETY ON SITE.

7. NO BURNING OF HOLES SHALL BE ALLOWED IN STRUCTURAL STEEL ANYWHERE.

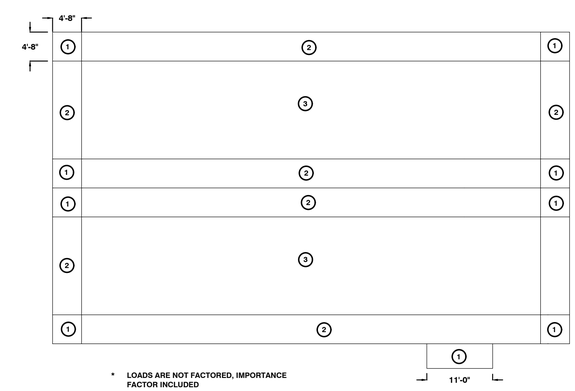
8. FOR MISC. STEEL SUCH AS RAILINGS, AWNINGS AND NON-STRUCTURAL ARCH. STEEL NOT DETAILED ON STRUCTURAL DRAWINGS, STRUCTURAL ENGINEER SHALL CHECK SHOP DRAWINGS AND COMMENT ON THE ABILITY OF THE SHOWN MEMBERS AND CONNECTIONS TO RESIST LOADS AND OTHER EFFECTS REQUIRED BY ONTARIO BUILDING CODE 2006. OVERALL DETAILING TO COMPLY WITH ARCHITECTURAL DRAWINGS AND ARE THE SUB-CONTRACTOR'S RESPONSIBILITY. ALL RAILINGS AND STAIR SHOP DRAWINGS TO BE STAMPED BY P.ENG. OF ONTARIO.

9. ALL VISUALLY EXPOSED SURFACES OR SURFACES EXPOSED TO WEATHER AND NOT REQUIRING FIREPROOFING SHALL BE PAINTED WITH ONE COAT OF PRIMER TO CISC/CPMA 1-73A (REFER TO ARCHITECTURAL DRAWINGS). ALL SITE WELD AND WELDING CONNECTIONS TO BE TOUCHED-UP WITH ANTI-RUST PAINT.



* LOADS ARE NOT FACTORED, IMPORTANCE FACTOR INCLUDED

SNOW DRIFT DIAGRAM



* LOADS ARE NOT FACTORED, IMPORTANCE FACTOR INCLUDED

1 50.0 PSF
2 30.0 PSF
3 11.6 PSF

WIND UPLIFT ROOF PLAN

No.	By	Date	Revisions
0	B.O'B	2021-04-28	FOR PERMIT

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DRAWINGS ARE NOT TO BE SCALED

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2021 04 28
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EASTERN ENGINEERING GROUP INC.

BUILDING SERVICES
BUILDING STRUCTURAL
DETECTION, LIGHTING & POWER
HOUSE
LARGE BUILDINGS
ON SITE SEWAGE
SMALL BUILDINGS

Project Title:

CRYSLER FIREHALL
TWP. OF NORTH STORMONT

CRYSLER, ONTARIO

Drawing Title:

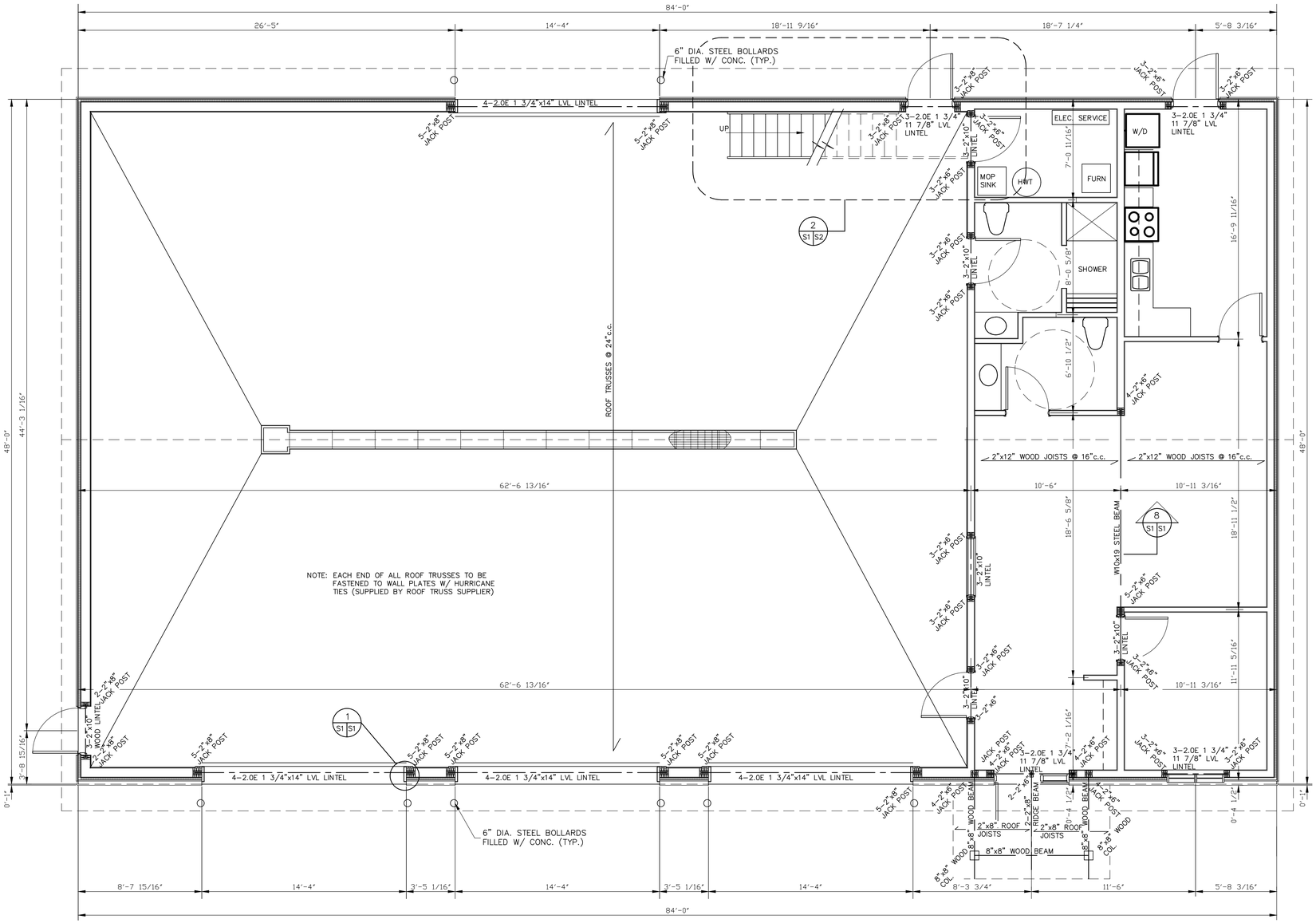
STRUCTURAL NOTES

Design:	Checked:	Approved:	Project No.:
B.D.C.	B.D.C	B.D.C	9655
Drawn: B.OB.	Checked: B.D.C.	Date: 2021 04 28	Contract No.:

Scale: 0 AS SHOWN
Horizontal:
0
Vertical:

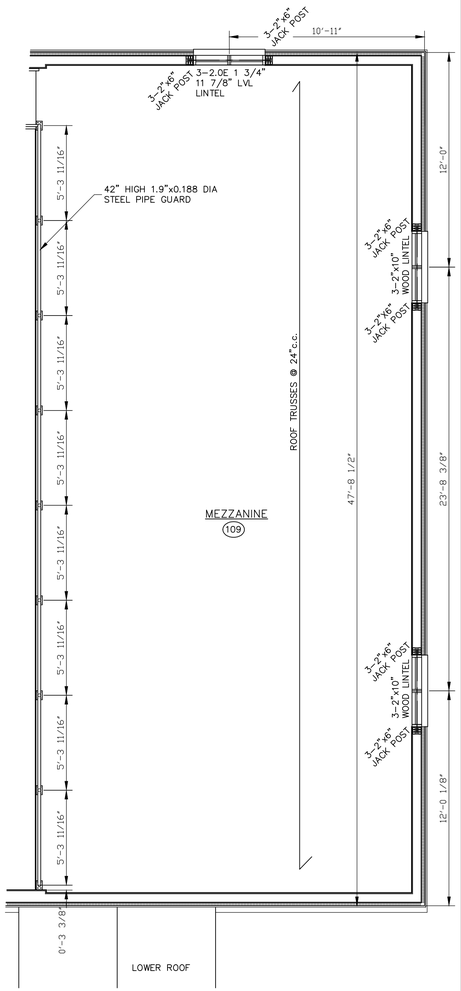
Drawing No.: **S0**

File No.: 9655-S0



STRUCTURAL FLOOR PLAN

SCALE 1/4" = 1'-0"



STRUCTURAL MEZZANINE FLOOR PLAN

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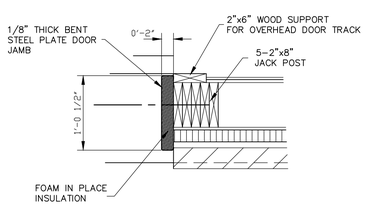
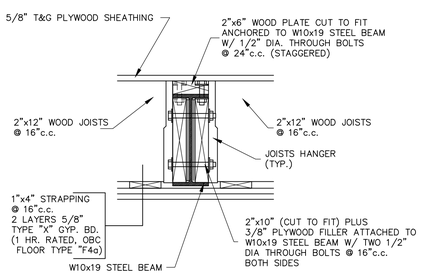


SECTION 1 (S1/S1)

SCALE 1" = 1'-0"



SECTION 8 (S1/S1)

SCALE 1 1/2" = 1'-0"

NOTE: SEE DWG No. S0 FOR ALL GENERAL NOTES

No.	By	Date	Revisions
3	DGP	30/6/21	FOR TENDER
2	DGP	28/4/21	FOR REVIEW
1	DGP	12/4/21	PRELIMINARY REVIEW

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LARGE BUILDINGS
ON SITE SEWAGE
SMALL BUILDINGS

Project Title:

CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

Drawing Title:

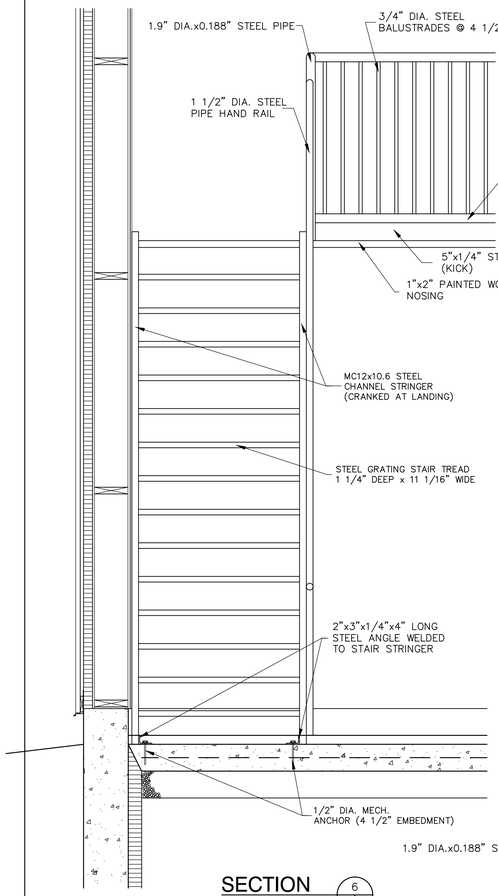
STRUCTURAL FLOOR PLAN

Design:	Checked:	Approved:	Project No.:
B.C.			9655
Drawn:	Checked:	Date:	Contract No.:
D.G.P.	B.C.	MAR 31, 2021	

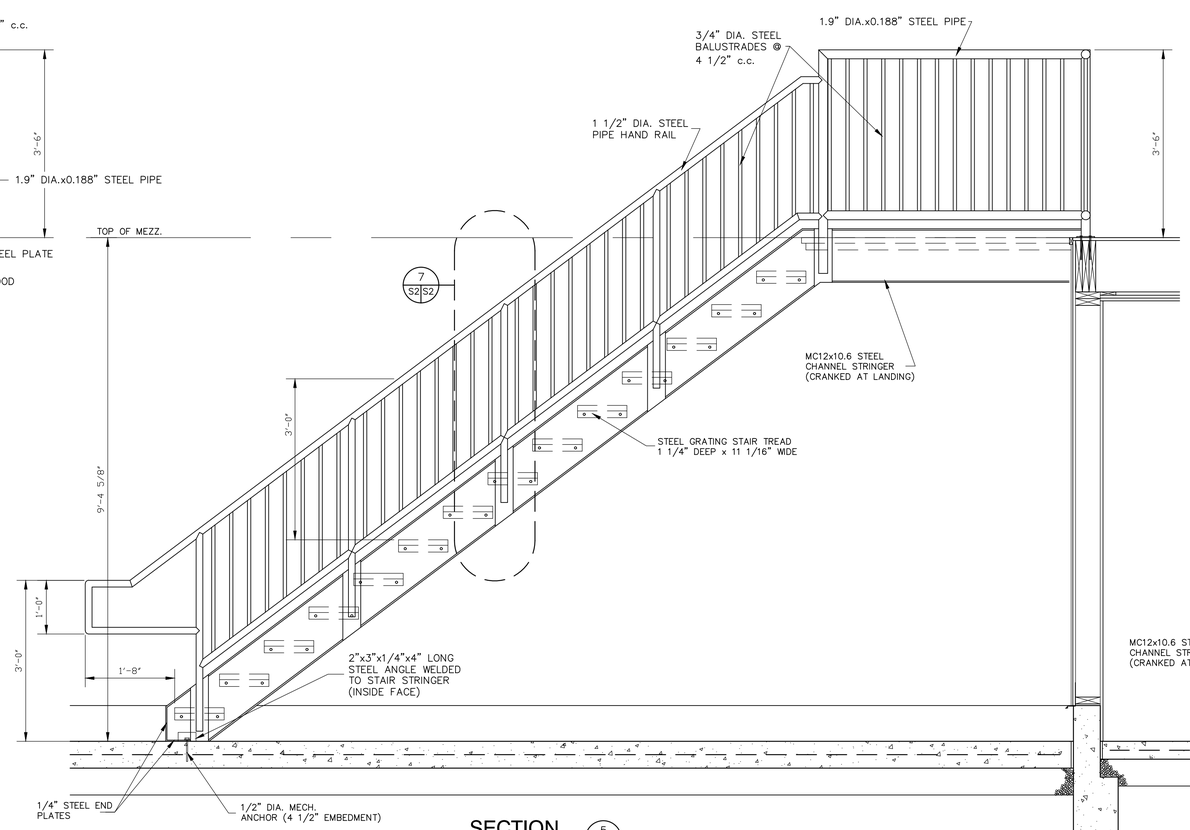
Scale: AS SHOWN
Horizontal:
Vertical:

Drawing No.: S1

File No.: 9655-S1



SECTION 6
SCALE 3/4" = 1'-0" S2 S2



SECTION 5
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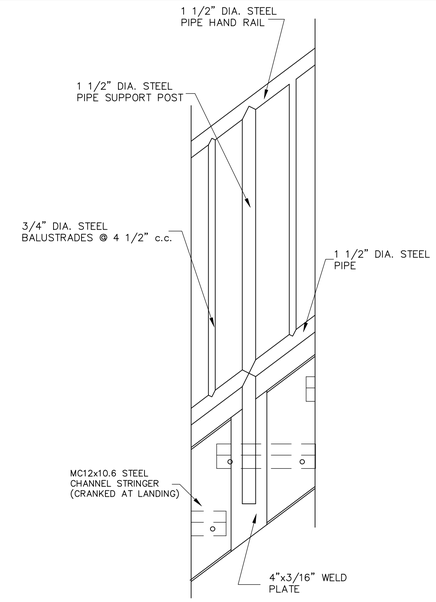

SECTION 7
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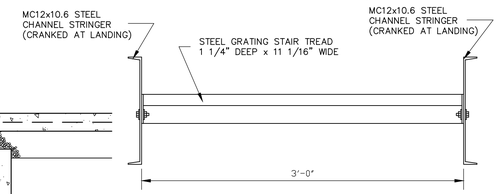

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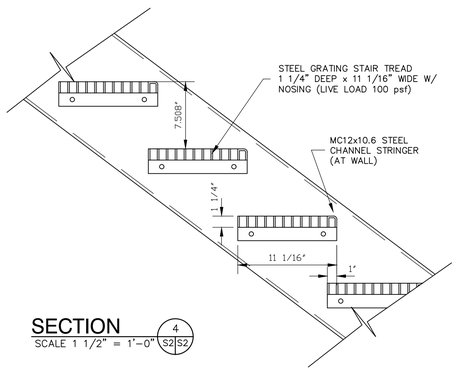

SECTION 4
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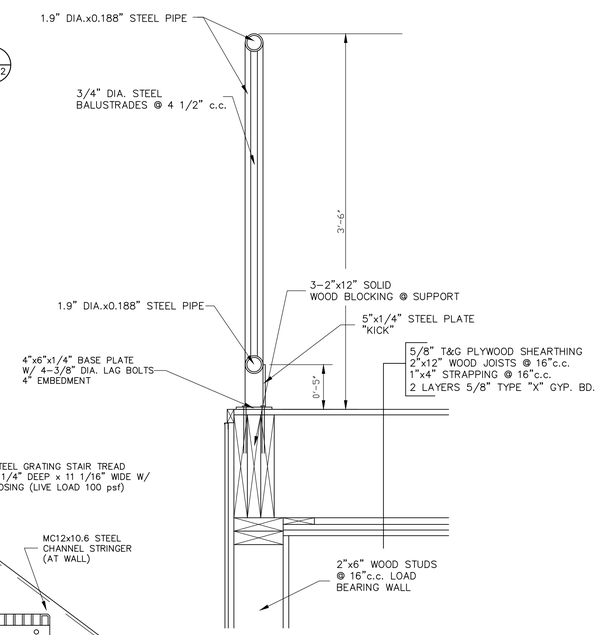
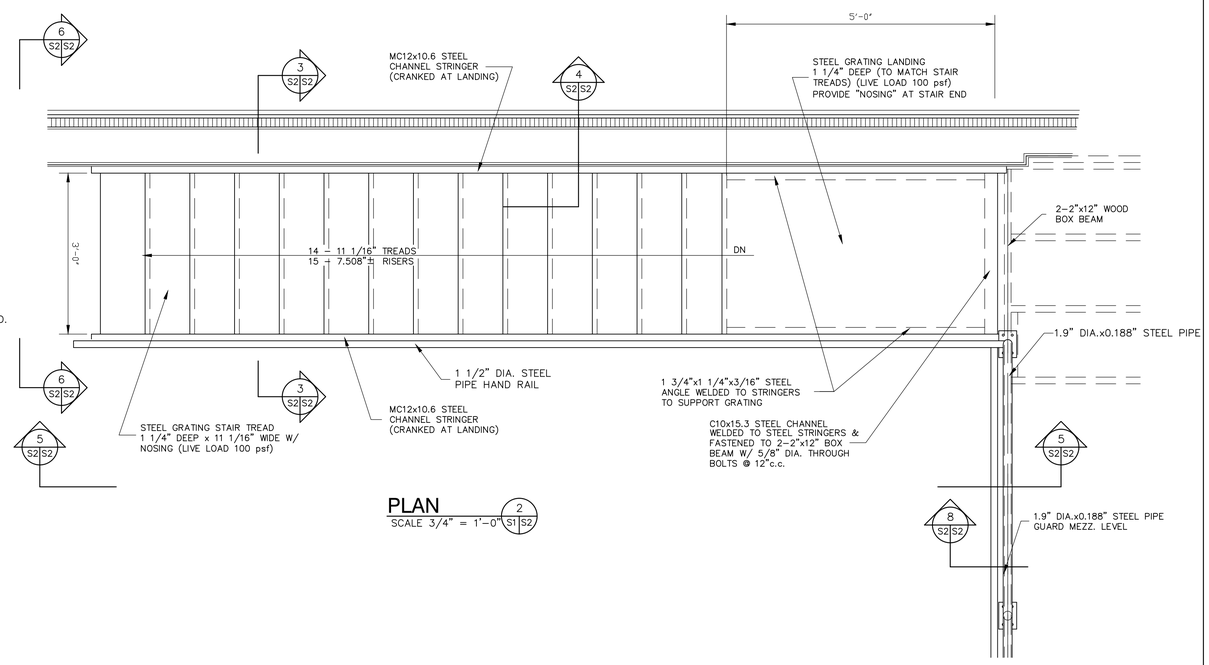


SECTION 8
SCALE 1 1/2" = 1'-0" S2 S2



PLAN 2
SCALE 3/4" = 1'-0" S1 S2

NOTE: SEE DWG No. S0 FOR ALL GENERAL NOTES

No.	By	Date	Revisions
2	DGP	30/6/21	FOR TENDER
1	DGP	28/4/21	FOR PERMIT

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SMALL BUILDINGS

Project Title:

CRYSLER FIREHALL TOWNSHIP OF NORTH STORMONT

Drawing Title:

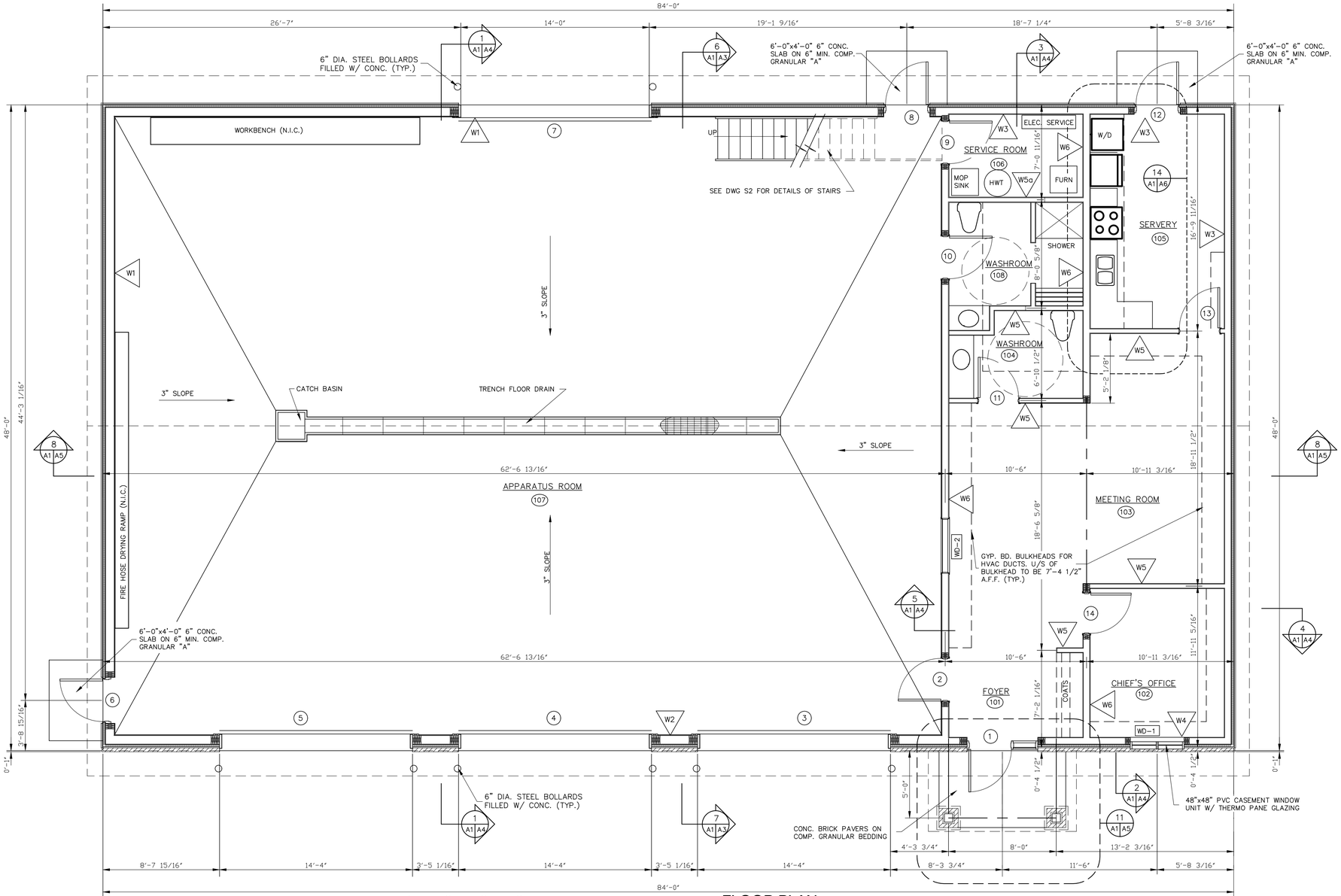
STAIR DETAILS

Design: B.C.	Checked:	Approved:	Project No.: 9655
Drawn: D.G.P.	Checked: B.C.	Date: MAR 31, 2021	Contract No.:

Scale: AS SHOWN
Horizontal:
Vertical:

Drawing No.: S2

File No.: 9655-S2



FLOOR PLAN

SCALE 1/4" = 1'-0"

WALL TYPE SCHEDULE

"W1"
28 GA. PREFINISHED METAL LINER "COLONIAL SIDING" BY IDEAL ROOFING OR EQUAL
1/2" PLYWOOD SHEATHING
6 MIL POLY V.B.
R28 INSULATION
2"x8" STUDS @ 12"c.c.
7/16" OSB SHEATHING
2" RIGID INSULATION (R10)
1"x4" WOOD STRAPPING @ 24"c.c. HORIZ.
28 GA PREFINISHED METAL SIDING "CANADIANA" BY IDEAL ROOFING OR EQUAL

"W2"
MASONRY VENEER
1" AIR SPACE
2" RIGID ISNULATION (R10)
7/16" OSB SHEATHING
R28 INSULATION
2"x8" STUDS @ 12"c.c.
6 MIL POLY V.B.
1/2" PLYWOOD SHEATHING
28 GA. PREFINISHED METAL LINER "COLONIAL SIDING" BY IDEAL ROOFING OR EQUAL

"W3"
1/2" GYP. BD.
6 MIL POLY V.B.
R20 INSULATION
2"x6" STUDS @ 16"c.c.
7/16" OSB SHEATHING
2" RIGID INSULATION (R10)
1"x4" WOOD STRAPPING @ 24"c.c. HORIZ.
28 GA PREFINISHED METAL SIDING "CANADIANA" BY IDEAL ROOFING OR EQUAL

"W4"
MASONRY VENEER
1" AIR SPACE
2" RIGID ISNULATION (R10)
7/16" OSB SHEATHING
R20 INSULATION
2"x6" STUDS @ 16"c.c.
6 MIL POLY V.B.
1/2" GYP. BD.

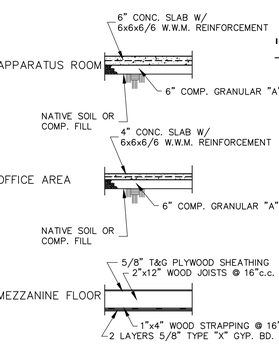
"W5"
1/2" GYP. BD.
2"x4" STUDS @ 16"c.c.
3 1/2" SOUND BATT INSULATION
1/2" GYP. BD.
USE 1/2" "WATERBOARD" GYP. BD. IN WASHROOM

"W5a"
5/8" TYPE "X" GYP. BD.
2"x4" STUDS @ 16"c.c.
3 1/2" SOUND BATT INSULATION
5/8" TYPE "X" GYP. BD.
USE "WATERBOARD" GYP. BD. IN WASHROOM
(OBC WALL TYPE "W1d", 1 HR. RATED)

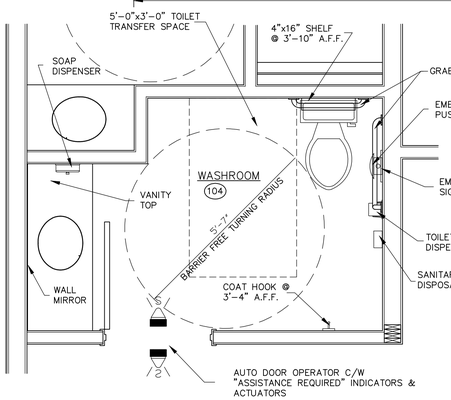
"W6"
28 GA. PREFINISHED METAL LINER "COLONIAL SIDING" BY IDEAL ROOFING OR EQUAL
5/8" TYPE "X" GYP. BD.
2"x6" STUDS @ 16"c.c.
5/8" TYPE "X" GYP. BD.
(OBC WALL TYPE "W1d", 1 HR. RATED)

"W7"
28 GA. PREFINISHED METAL LINER "COLONIAL SIDING" BY IDEAL ROOFING OR EQUAL
1/2" PLYWOOD SHEATHING
6 MIL POLY V.B.
R20 INSULATION
2"x6" STUDS @ 16"c.c.
7/16" OSB SHEATHING
2" RIGID INSULATION (R10)
1"x4" WOOD STRAPPING @ 24"c.c. HORIZ.
28 GA PREFINISHED METAL SIDING "CANADIANA" BY IDEAL ROOFING OR EQUAL

FLOOR TYPES

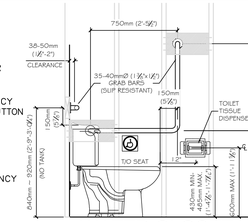


1 HR. FIRE RESISTANCE RATING
OBC FLOOR TYPE F4a

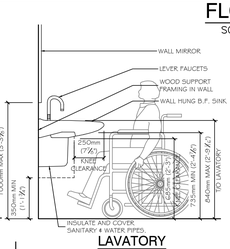


BARRIER FREE REQUIREMENTS

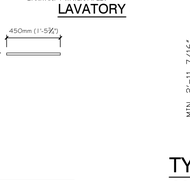
SCALE 1/2" = 1'-0"



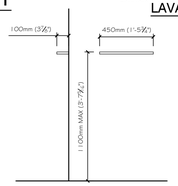
WATER CLOSET



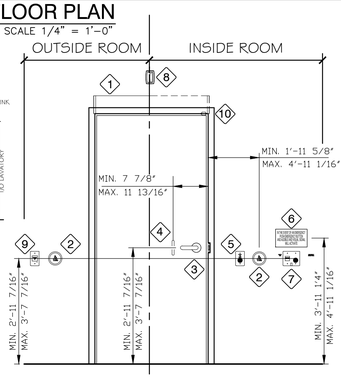
LAVATORY



SOAP DISPENSER



SHELF



1. AUTOMATIC DOOR OPERATOR
2. PUSH BUTTON BARRIER FREE ACTUATOR
3. GRASPABLE LATCH LEVER HANDLE
4. DOOR PULL
5. "PUSH TO LOCK" MUSHROOM PUSH BUTTON
6. EMERGENCY INSTRUCTION SIGN AS PER OBC 3.8.3.13 (2)(b)
7. "PRESS FOR EMERGENCY ASSISTANCE" MUSHROOM PUSHBUTTON
8. EMERGENCY AUDIBLE VISUAL DOME LIGHT
9. "OCCUPIED WHEN LT" ANNUNCIATOR
10. MAGNETIC DOOR CONTACT

TYPICAL UNIVERSAL WASHROOM DOOR HARDWARE AND EMERGENCY ASSISTANCE SYSTEM

FOR GENERAL NOTES SEE DWG. S0

BUILDING ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 6
TABLE SB 5.5-6-2017

ROOF – W/ ATTIC – R60 INSULATION
ABOVE GRADE WALLS – R13+R10ci
SLAB-ON-GRADE FLOOR – R15 FOR 48"
OPAQUE DOORS SWINGING – U-0.45
OPAQUE DOORS NONSWINGING – U-0.45
VERTICAL FENESTRATION – U-0.29

NOTE: EXTERIOR WALL DIMENSIONS ARE TAKEN FROM FACE OF 2" WALL INSULATION

No.	By	Date	Revisions
3	DGP	30/6/21	FOR TENDER
2	DGP	28/4/21	FOR PERMIT
1	DGP	20/4/21	REVISED WASHROOMS

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The contractor must check and verify all dimensions

Drawings are not to be scaled.

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19467
CLASSES OF REGISTRATION:

BUILDING SERVICES
BUILDING STRUCTURAL
HOUSE
LARGE BUILDINGS
ON SITE SEWAGE
SMALL BUILDINGS

Project Title:
CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

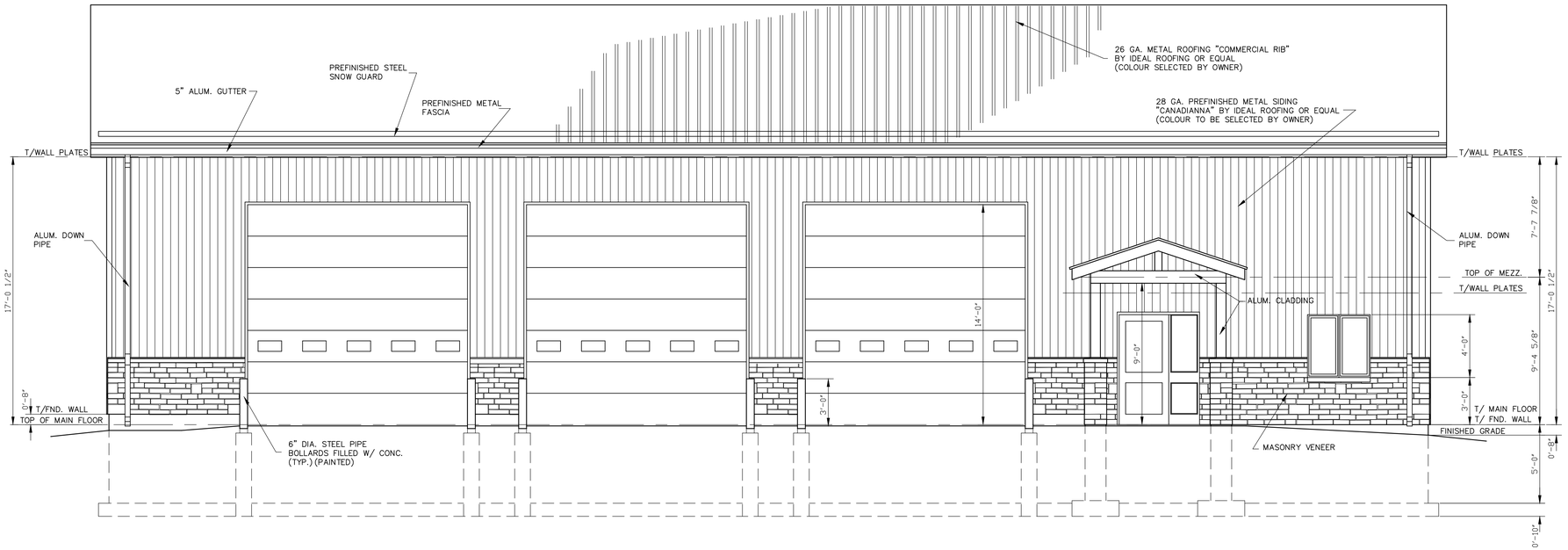
Drawing Title:
FLOOR PLAN
WALL TYPE SCHEDULE
FLOOR TYPES
BARRIER FREE REQUIREMENTS

Design:	Checked:	Approved:	Project No.:
D.G.P.	B.C.		9655
Drawn:	Checked:	Date:	Contract No.:
D.G.P.	B.C.	MAR 31, 2021	

Scale: AS SHOWN
Horizontal:
Vertical:

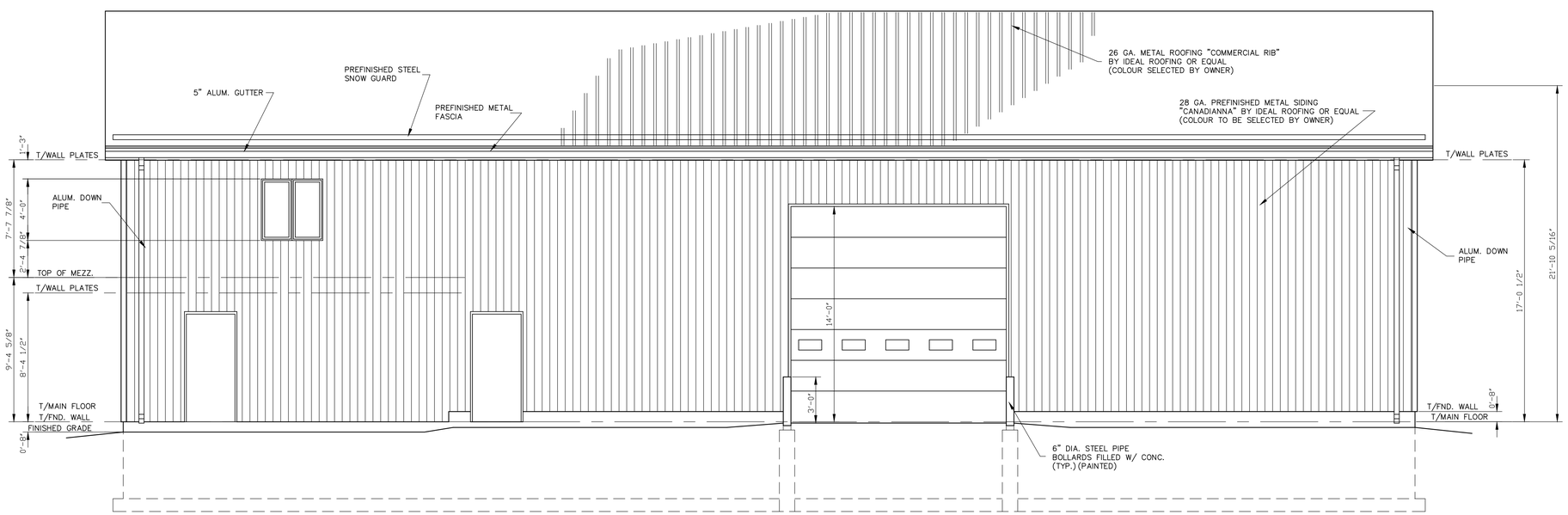
Drawing No.: A1

File No.: 9655-A1



NORTH ELEVATION

SCALE 1/4" = 1'-0"



SOUTH ELEVATION

SCALE 1/4" = 1'-0"

No.	By	Date	Revisions
3	DGP	30/6/21	FOR TENDER
2	DGP	28/4/21	FOR PERMIT
1	DGP	12/4/21	PRELIMINARY REVIEW

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LARGE BUILDINGS
ON SITE SEWAGE
SMALL BUILDINGS

Project Title:

CRYSLER FIREHALL TOWNSHIP OF NORTH STORMONT

Drawing Title:

ELEVATIONS

Design:	Checked:	Approved:	Project No.:
D.G.P.	B.C.		9655
Drawn:	Checked:	Date:	Contract No.:
D.G.P.	B.C.	MAR 31, 2021	

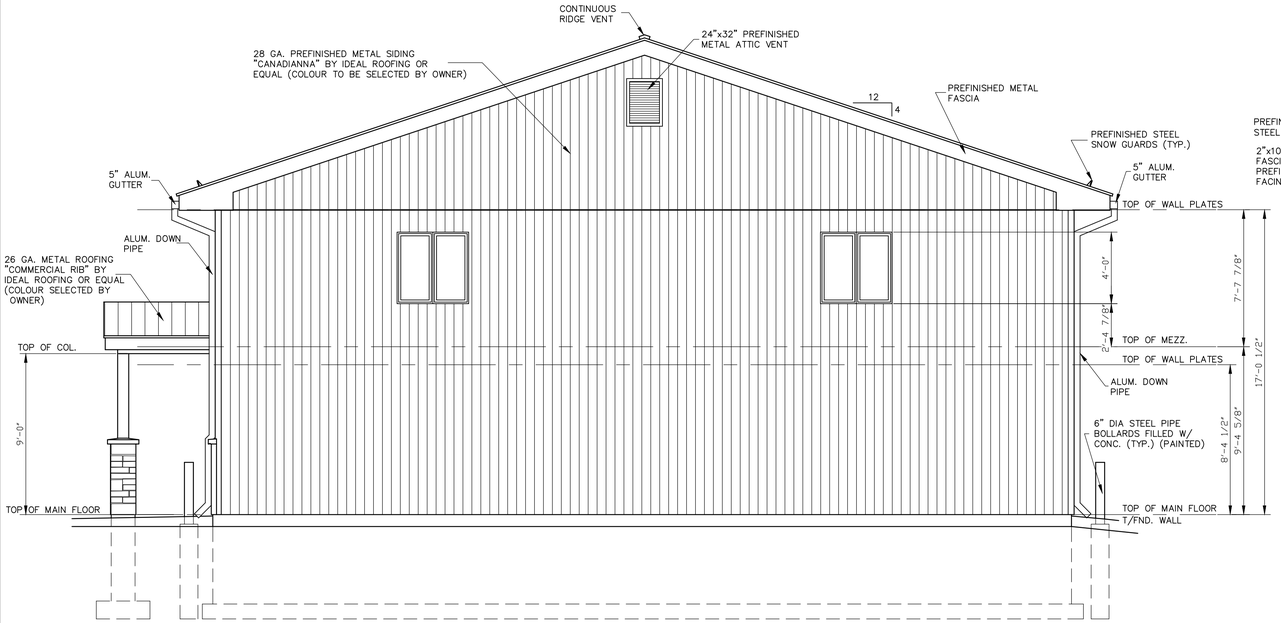
Scale: 1/4" = 1'-0"

0 ' Horizontal:

0 ' Vertical:

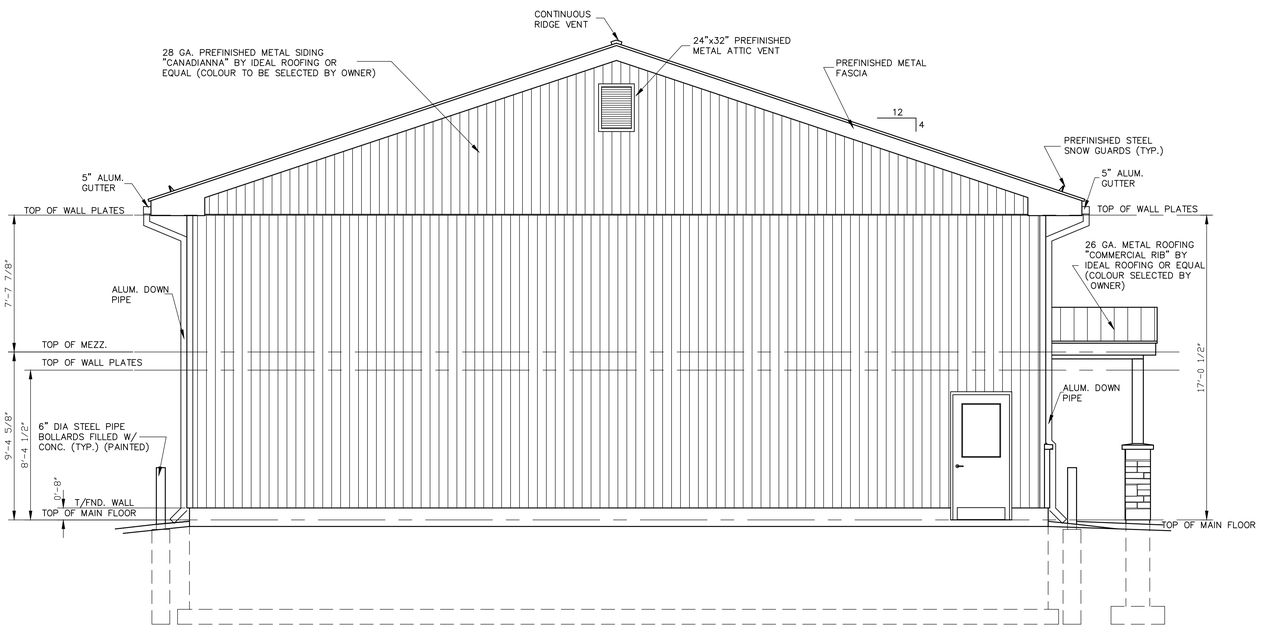
Drawing No.: A2

File No.: 9655-A2



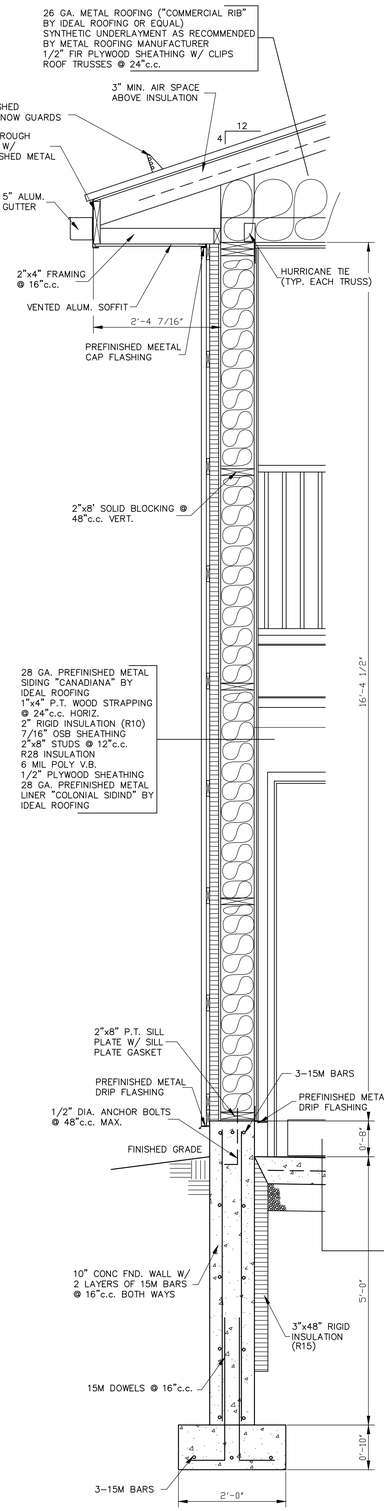
SIDE ELEVATION

SCALE 1/4" = 1'-0"



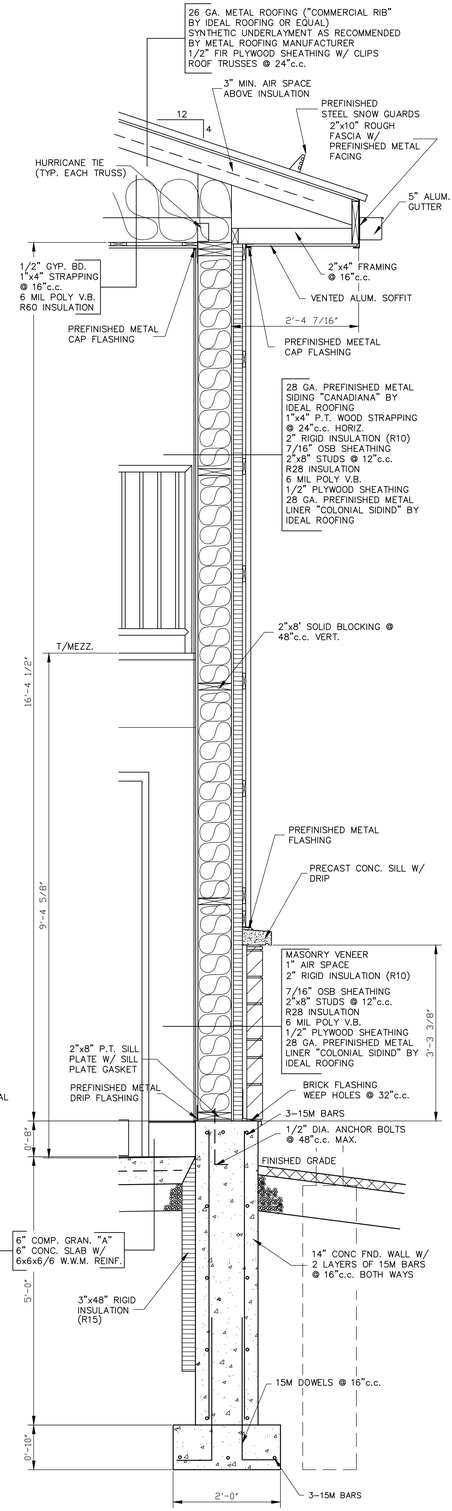
SIDE ELEVATION

SCALE 1/4" = 1'-0"



SECTION 6 (A1/A3)

SCALE 3/4" = 1'-0"



SECTION 7 (A1/A3)

SCALE 3/4" = 1'-0"

No.	By	Date	Revisions
3	DGP	30/6/21	FOR TENDER
2	DGP	28/4/21	FOR PERMIT
1	DGP	12/4/21	PRELIMINARY REVIEW

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ON SITE SEWAGE
SMALL BUILDINGS

Project Title:

CRYSLER FIREHALL TOWNSHIP OF NORTH STORMONT

Drawing Title:

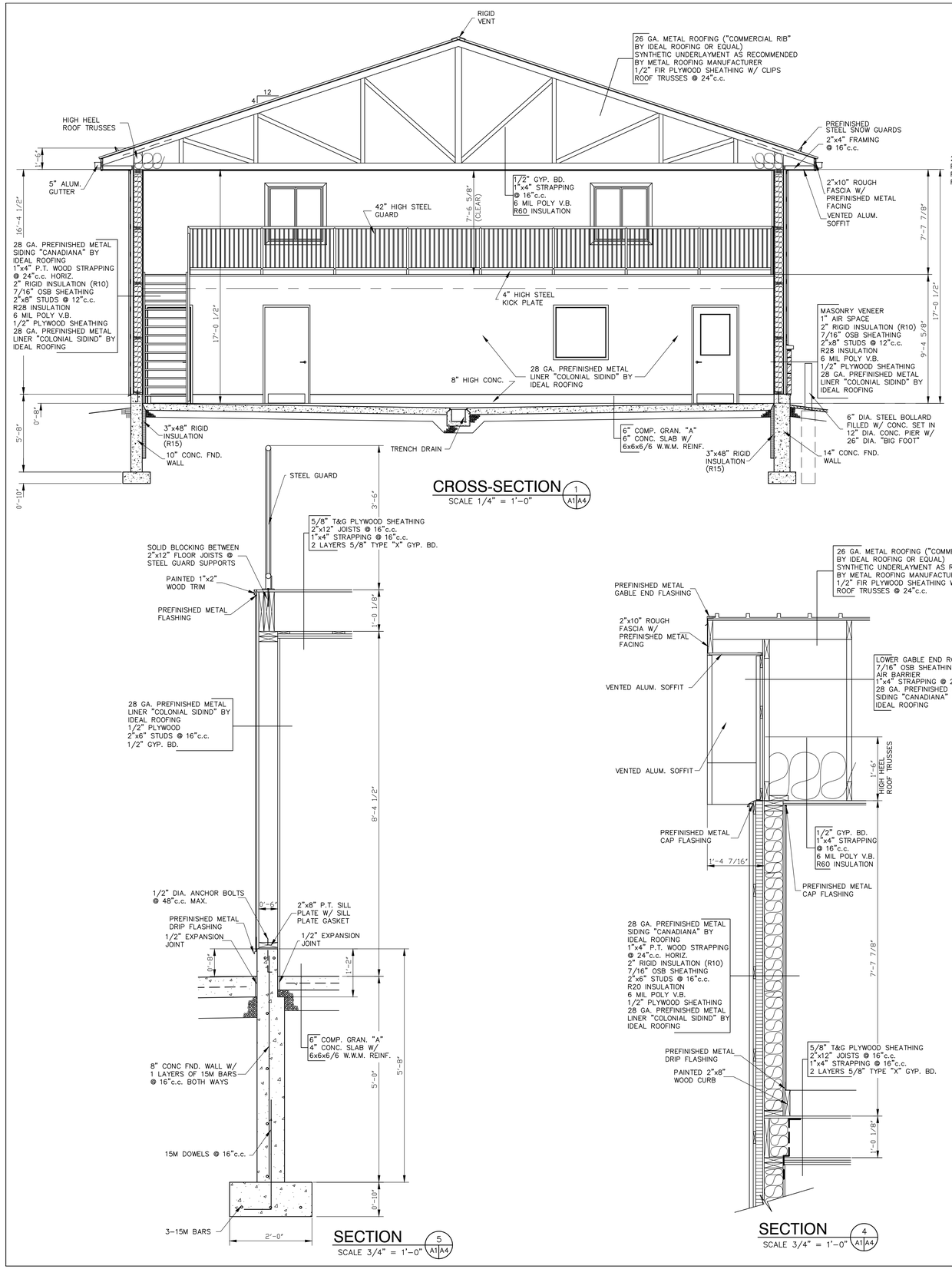
ELEVATIONS WALL SECTIONS

Design:	Checked:	Approved:	Project No.:
D.G.P.	B.C.		9655
Drawn:	Checked:	Date:	Contract No.:
D.G.P.	B.C.	MAR 31, 2021	

Scale: AS SHOWN
Horizontal:
Vertical:

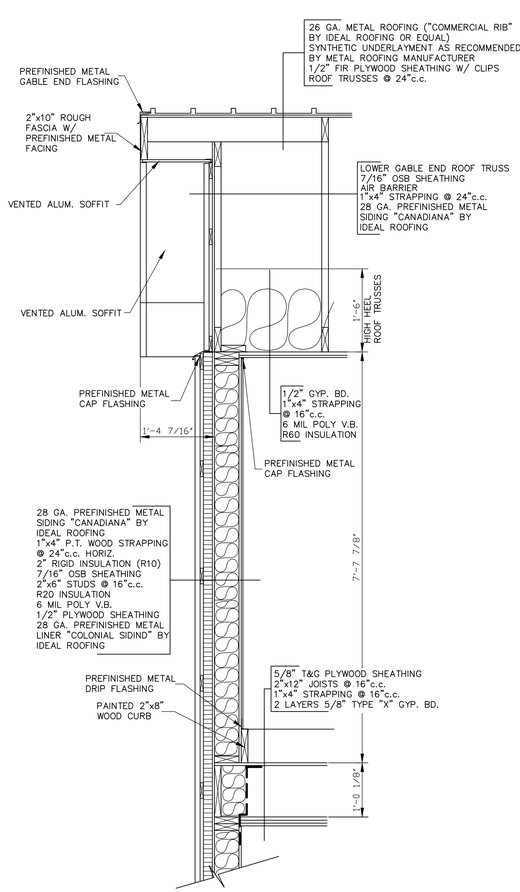
Drawing No.: A3

File No.: 9655-A3

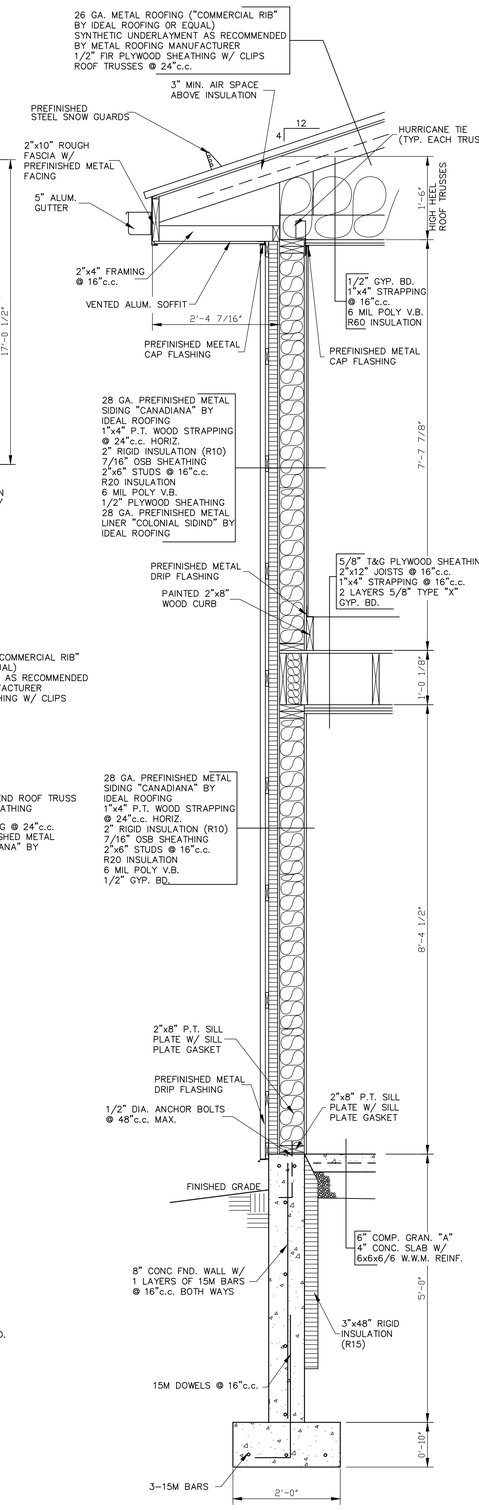


CROSS-SECTION 1 A1 A4
SCALE 1/4" = 1'-0"

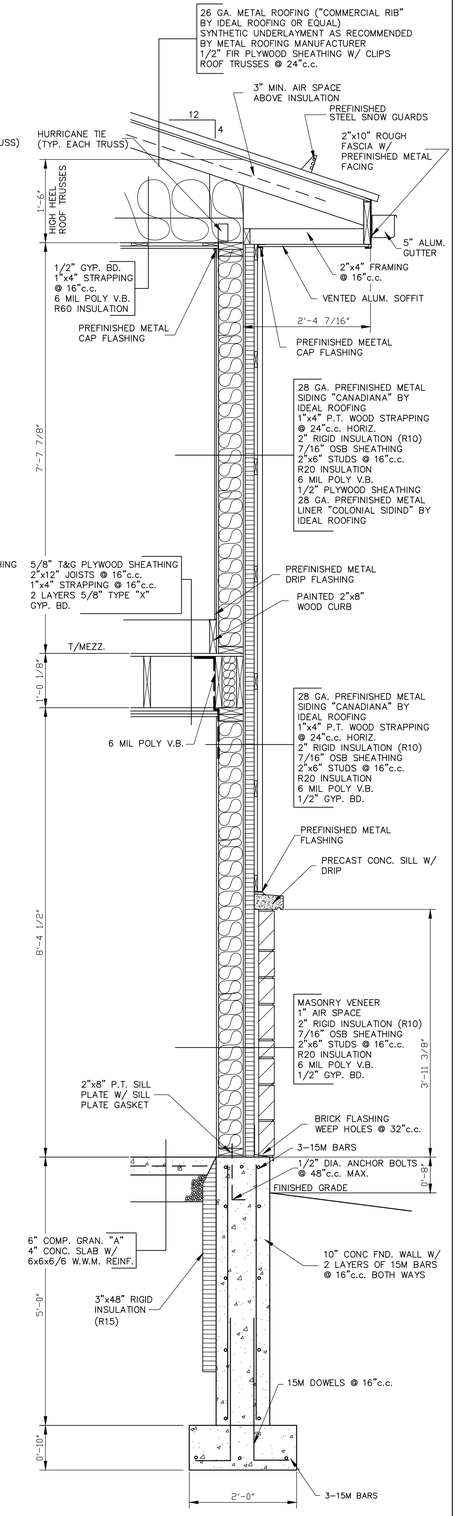
SECTION 5 A1 A4
SCALE 3/4" = 1'-0"



SECTION 4 A1 A4
SCALE 3/4" = 1'-0"



SECTION 3 A1 A4
SCALE 3/4" = 1'-0"



SECTION 2 A1 A4
SCALE 3/4" = 1'-0"

No.	By	Date	Revisions
3	DGP	30/6/21	FOR TENDER
2	DGP	28/4/21	FOR PERMIT
1	DGP	12/4/21	PRELIMINARY REVIEW

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SMALL BUILDINGS

Project Title:

CRYSLER FIREHALL TOWNSHIP OF NORTH STORMONT

Drawing Title:

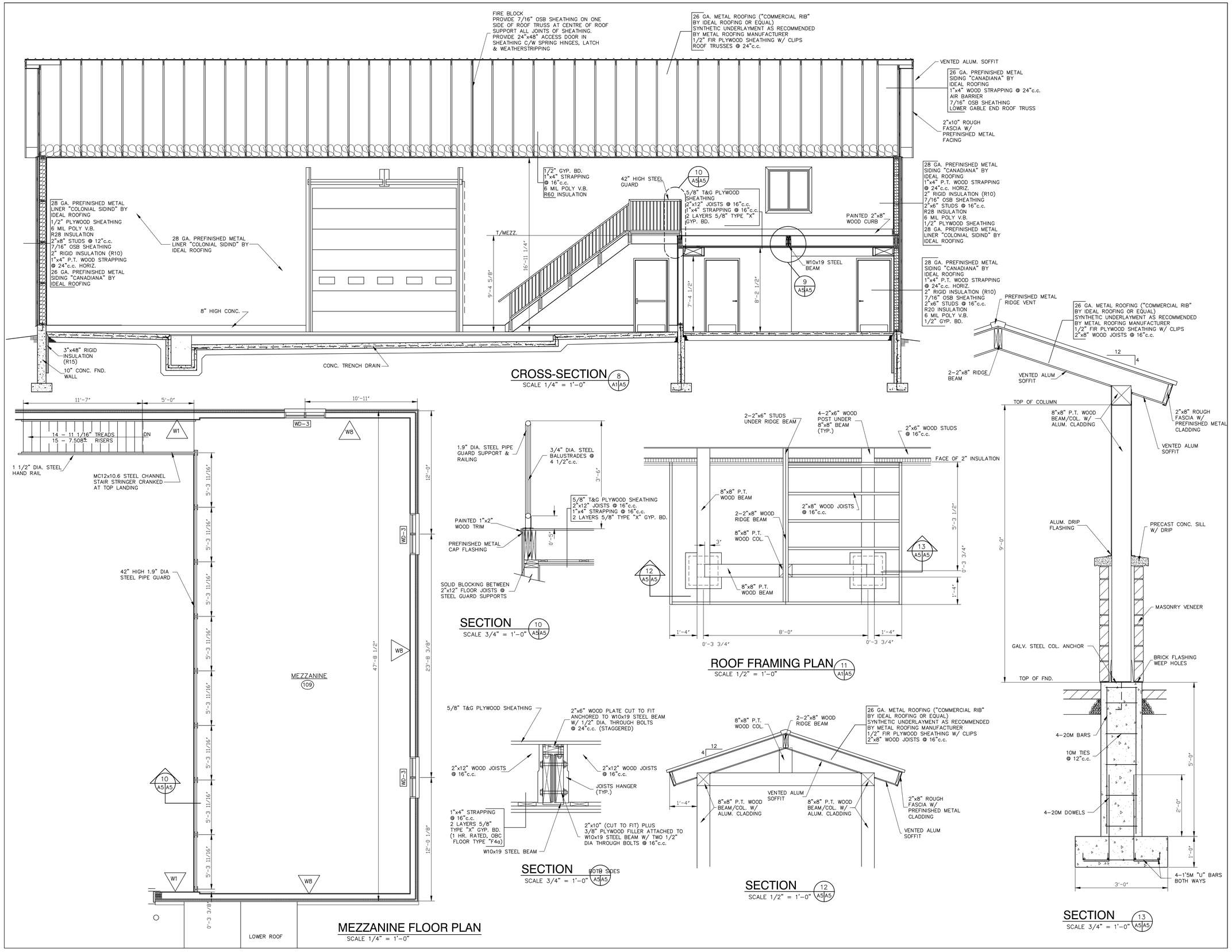
CROSS-SECTION WALL SECTIONS

Design: D.G.P.	Checked: B.C.	Approved:	Project No.: 9655
Drawn: D.G.P.	Checked: B.C.	Date: MAR 31, 2021	Contract No.:

Scale: AS SHOWN
Horizontal:
Vertical:

Drawing No.: A4

File No.: 9655-A4



No.	By	Date	Revisions
2	DGP	30/6/21	FOR TENDER
1	DGP	28/4/21	FOR PERMIT

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Project Title:

CRYLSER FIREHALL TOWNSHIP OF NORTH STORMONT

Drawing Title:

CROSS-SECTION MEZZ. FLOOR PLAN

Design:	Checked:	Approved:	Project No.:
D.G.P.	B.C.		9655
Drawn:	Checked:	Date:	Contract No.:
D.G.P.	B.C.	MAR 31, 2021	

Scale: AS SHOWN
Horizontal:
Vertical:

Drawing No.: A5

File No.: 9655-A5

ROOM FINISH SCHEDULE

RM No.	ROOM NAME	FLOOR FINISH	FLOOR MATERIAL	BASE FINISH	BASE MATERIAL	NORTH WALL FINISH	NORTH WALL MATERIAL	EAST WALL FINISH	EAST WALL MATERIAL	SOUTH WALL FINISH	SOUTH WALL MATERIAL	WEST WALL FINISH	WEST WALL MATERIAL	CEILING TYPE	CEILING FINISH	CEILING HEIGHT	CEILING FIRE RATING	REMARKS
GARAGE LEVEL																		
101	FOYER	WAX	V. TILE	-	RUBBER	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	GYP. BD.	PAINT	8'-3 1/4"	-	
102	CHIEFS OFFICE	WAX	V. TILE	-	RUBBER	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	GYP. BD.	PAINT	8'-3 1/4"	-	
103	MEETING ROOM	WAX	V. TILE	-	RUBBER	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	GYP. BD.	PAINT	8'-3 1/4"	-	
104	WASHROOM	-	C. TILE	-	C. TILE	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	GYP. BD.	PAINT	8'-3 1/4"	-	USE WATER BOARD GYP. BD.
105	SERVERY	WAX	V. TILE	-	RUBBER	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	GYP. BD.	PAINT	8'-3 1/4"	-	
106	SERVICE ROOM	WAX	V. TILE	-	RUBBER	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	GYP. BD.	PAINT	8'-3 1/4"	-	
107	APPARATUS ROOM	HARDENER/ SEALER	CONC.	-	CONC.	-	METAL LINER	-	METAL LINER	-	METAL LINER	-	METAL LINER	GYP. BD.	PAINT	16'-11 1/4"	-	
108	WASHROOM	-	C. TILE	-	C. TILE	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	PAINT	GYP. BD.	GYP. BD.	PAINT	8'-3 1/4"	-	USE WATER BOARD GYP. BD. CEILING HEIGHT IN SHOWER 7'-5 1/4"
109	MEZZANINE	PAINT	WOOD	PAINT	WOOD	-	METAL LINER	-	METAL LINER	-	METAL LINER	-	METAL LINER	GYP. BD.	PAINT	7'-5 1/4"	-	

NOTE:
CONCRETE FLOOR HARDENER SHALL BE TRAPROCK MINERAL SURFACE HARDENER BY SIKA, APPLIED AT 1.2 lbs PER SQ.FT. THE SEALER SHALL BE FLORTEC 14 ACRYLIC CURING AND SEALING COMPOUND BY SIKA

VINYL TILE TO BE 12"x12"x1/8" COLOUR THROUGH COMPOSITION BY ARMSTRONG OR EQUAL

RUBBER BASE TO BE COVE TYPE, 4" HIGH, 1/8" THICK BY JOHNSONITE OR EQUAL

CERAMIC FLOOR TILE TO BE 12"x12" BY OLYMPIA, COLOUR TO BE SELECTED BY OWNER FROM SAMPLES SUPPLIED BY CONTRACTOR

SERVERY MILLWORK TO BE PARTICLEBOARD CORE CONSTRUCTION COUNTER TOP TO HAVE LAMINATED PLASTIC W/ 4" HIGH BACKSPLASH ALL UPPERS & LOWERS INCLUDING DOORS TO HAVE MELAMINE FINISH. DOOR PULLS TO BE BRUSHED CHROME "D" TYPE, ALL HINGES TO BE FULLY CONCEALED 107 DEG. MODULAR OPENING, SELF CLOSING. DRAWER GLIDES TO BE BALL BEARING TYPE, FULL EXTENSION.

DOOR SCHEDULE

DOORS

DOOR No.	FROM ROOM	TO ROOM	DOOR SIZE	TYPE	MATERIAL	FINISH	GLAZING	FIRE RATING
PARKING LEVEL								
1	FOYER 101	EXTERIOR	3'-2"x7'-0"	2	INSUL. H.M.	PAINT	THERMAL	-
2	FOYER 101	APPARATUS ROOM 107	3'-2"x7'-0"	3	H.M.	PAINT	GWG	3/4 HR.
3	APPARATUS ROOM 107	EXTERIOR	14'-0"x14'-0"	4	INSUL. METAL	PREFINISHED	THERMAL	-
4	APPARATUS ROOM 107	EXTERIOR	14'-0"x14'-0"	4	INSUL. METAL	PREFINISHED	THERMAL	-
5	APPARATUS ROOM 107	EXTERIOR	14'-0"x14'-0"	4	INSUL. METAL	PREFINISHED	THERMAL	-
6	APPARATUS ROOM 107	EXTERIOR	3'-2"x7'-0"	1	INSUL. H.M.	PAINT	THERMAL	-
7	APPARATUS ROOM 107	EXTERIOR	14'-0"x14'-0"	4	INSUL. METAL	PREFINISHED	THERMAL	-
8	APPARATUS ROOM 107	EXTERIOR	3'-2"x7'-0"	2	INSUL. H.M.	PAINT	-	-
9	APPARATUS ROOM 107	SERVICE ROOM 105	3'-2"x7'-0"	2	H.M.	PAINT	-	3/4 HR.
10	APPARATUS ROOM	WASHROOM 108	3'-2"x7'-0"	2	H.M.	PAINT	-	3/4 HR.
11	MEETING ROOM 103	WASHROOM 104	3'-2"x7'-0"	2	H.M.	PAINT	-	-
12	SERVERY 105	EXTERIOR	3'-2"x7'-0"	2	INSUL. H.M.	PAINT	-	-
13	MEETING ROOM 103	SERVERY 105	3'-2"x7'-0"	3	H.M.	PAINT	TEMPERED	-
14	MEETING ROOM 103	CHIEFS OFFICE 102	3'-2"x7'-0"	3	H.M.	PAINT	TEMPERED	-

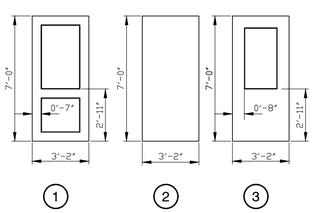
FRAMES

TYPE	MATERIAL	FINISH	SIDELITE GLAZING	THRESHOLD	PASS	PRIV	LOCK	PANIC	DEAD	FLUS	DP	DC	WS	FS	KP	BFH	CH	WSTR	V	TH	REMARKS
2C	H.M. THERMAL	PAINT	THERMAL	ALUM.				■				■			■			■		■	AUTO DOOR OPERATOR REQUIRED
1E	H.M.	PAINT	-	-				■				■			■						
-	STEEL	PAINT	-	-																	OVERHEAD DOOR HARDWARE ELECTRICALLY OPERATED
-	STEEL	PAINT	-	-																	OVERHEAD DOOR HARDWARE ELECTRICALLY OPERATED
-	STEEL	PAINT	-	-																	OVERHEAD DOOR HARDWARE ELECTRICALLY OPERATED
1D	H.M. THERMAL	PAINT	-	-				■				■			■			■		■	
-	STEEL	PAINT	-	-																	OVERHEAD DOOR HARDWARE ELECTRICALLY OPERATED
1D	H.M. THERMAL	PAINT	-	-				■				■			■			■		■	
1E	H.M.	PAINT	-	-	■							■	■		■						SIGN "SERVICE ROOM"
1E	H.M.	PAINT	-	-		■						■			■						
1A	H.M.	PAINT	-	-		■							■		■						AUTO DOOR OPERATOR REQUIRED BARRIER FREE WASHROOM HARDWARE
1D	H.M. THERMAL	PAINT	-	-				■				■			■			■		■	
1A	H.M.	PAINT	-	-	■								■		■						
1B	H.M.	PAINT	-	-		■							■		■						

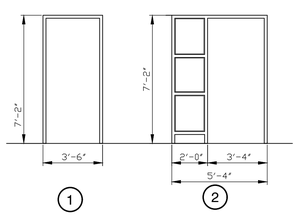
LEGEND

HARDWARE
PASS - PASSAGE SET
PRIV - PRIVATE SET
LOCK - LOCKSET
PANIC - PANIC SET
DP - DOOR PULL / PUSH PLATE
DC - DOOR CLOSER
WS - WALL STOP
FS - FLOOR STOP
CH - COAT HOOK
WSTR - WEATHER STRIP
V - VIEWER
TH - THRESHOLD
DEAD - DEADBOLT
FLUS - FLUSHBOLT
KP - KICK PLATE
BFH - BI-FOLD

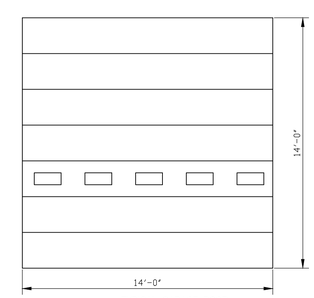
MATERAL
H.M. - HOLLOW METAL
P.FIN. - PRE-FINISHED
G.W. - GEORGIAN WIRE GLASS
S.C. - SOLID CORE WOOD



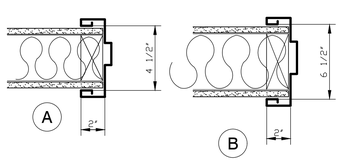
DOOR TYPES

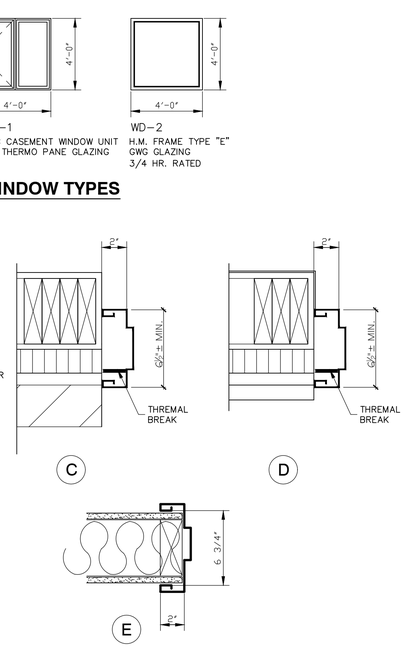


FRAME DETAILS

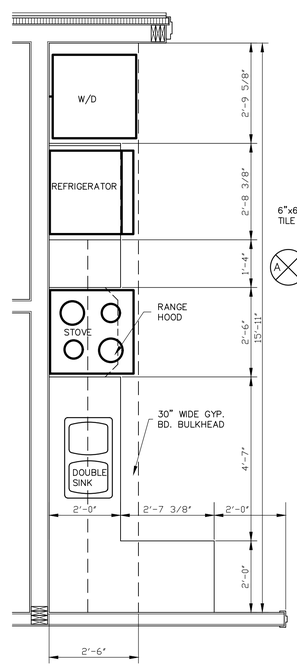


4 TYPICAL GARAGE DOOR
14'-0"x14'-0" THERMOSPAN 200 (TS-200) INSULATED SECTIONAL STEEL DOOR (26GA.) BY WAYNE DALTON C/W 4 SEALED GLASS WINDOWS PER DOOR & WEATHERSTRIPPING KIT. TRACK TO BE 3" STANDARD LIFT W/ 100,000 CYCLE SPRINGS. OPERATION TO BE BOTH CHAIN AND 1/2 HP 115V 15 AMP MOTOR ET DRAW BAR (TROLLEY TYPE). PROVIDE 1 REMOTE CONTROL PER DOOR.

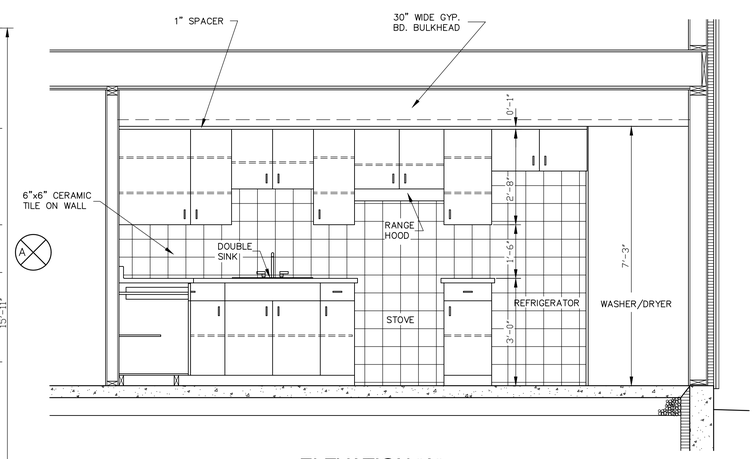




WINDOW TYPES



PLAN
SCALE 1/2" = 1'-0"
14 A1 A6



ELEVATION "A"
SCALE 1/2" = 1'-0"

No.	By	Date	Revisions
3	DGP	30/6/21	FOR TENDER
2	DGP	28/4/21	FOR PERMIT
1	DGP	12/4/21	PRELIMINARY REVIEW

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The contractor must check and verify all dimensions

Drawings are not to be scaled.

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19467
CLASSES OF REGISTRATION:

BUILDING SERVICES
BUILDING STRUCTURAL
HOUSE
LARGE BUILDINGS
ON SITE SEWAGE
SMALL BUILDINGS

Project Title:

CRYSLER
FIREHALL
TOWNSHIP OF
NORTH STORMONT

Drawing Title:

FLOOR PLAN
WALL TYPE SCHEDULE
SERVERY COUNTER

Design:	Checked:	Approved:	Project No.:
D.G.P.	B.C.		9655
Drawn:	Checked:	Date:	Contract No.:
D.G.P.	B.C.	MAR 31, 2021	

Scale: AS SHOWN
Horizontal:
Vertical:

Drawing No.: A6

File No.: 9655-A6

MECHANICAL NOTES

MECHANICAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS FOR THIS PROJECT.

1 GENERAL:
.1 CONFORM WITH APPLICABLE REQUIREMENTS OF THE MINISTRY OF LABOUR, AND THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
.2 DO COMPLETE INSTALLATION IN ACCORDANCE WITH THE FOLLOWING:
 .1 ONTARIO BUILDING CODE (OBC);
 .2 NATURAL GAS AND PROPANE INSTALLATION CODE (GAS CODE);
 .3 ASHRAE;
 .4 SMACNA;
 .5 NFPA;
 .6 ALL OTHER RELEVANT CODES AND STANDARDS, AS APPLICABLE.
.3 OBTAIN ALL PERMITS REQUIRED FOR THE INSTALLATION OF MECHANICAL TRADES WORK, ARRANGE FOR INSPECTIONS AND TESTS, AND PAY ALL FEES AND COSTS FOR THE PERMITS, INSPECTIONS AND FEES. OBTAIN PERMITS IMMEDIATELY AFTER NOTIFICATION OF AWARD OF CONTRACT.
.4 PROVIDE BINDER AND DIGITAL COPY OF COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS FOREQUIPMENT FURNISHED UNDER THIS CONTRACT. INCLUDE THE FOLLOWING:
 .1 SCHEMATIC DIAGRAM OF ELECTRICAL SYSTEMS.
 .2 CONTROL SHOP DRAWINGS AND OPERATING SEQUENCE INCLUDING WIRING OF COMPONENTS.
 .3 WIRING DIAGRAM OF CONTROL PANELS.
 .4 OPERATING INSTRUCTIONS, INCLUDING START-UP AND SHUT-DOWN PROCEDURE.
 .5 MAINTENANCE INSTRUCTIONS INCLUDING PREVENTIVE MAINTENANCE INSTRUCTIONS FOR COMPONENTS OF THE EQUIPMENT.
 .6 COMPLETE PARTS LIST OF ASSEMBLIES AND THEIR COMPONENT PARTS, SHOWING MANUFACTURER'S NAME, CATALOGUE NUMBER, AND NEAREST REPLACEMENT SOURCE.
 .7 LIST OF RECOMMENDED SPARE PARTS AND QUANTITY OF EACH ITEM TO BE STOCKED.
 .8 MANUFACTURERS' WARRANTIES AND GUARANTEES.
.5 CLEAN ALL MECHANICAL SYSTEMS AT PROJECT COMPLETION.
.6 COMPLETE AS-BUILT DRAWINGS SHOWING ALL CHANGES AS WORK PROGRESSES.

2 CONTRACTOR QUALIFICATIONS:
.1 ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE "TRADE QUALIFICATION AND APPRENTICESHIP ACT" AND REGULATIONS, BY PERSONS WHO HOLD THE FOLLOWING CERTIFICATES OF QUALIFICATION (AS APPLICABLE):
 .1 PLUMBER;
 .2 REFRIGERATION & AIR CONDITIONING SYSTEMS MECHANIC;
 .3 SHEET METAL WORKER.
.2 ALL FUELS-RELATED WORK TO BE CARRIED OUT IN ACCORDANCE WITH TSSA REQUIREMENTS AND ONTARIO REGULATION 215/01, "FUEL INDUSTRY CERTIFICATES" BY PERSONS WHO HOLD THE APPROPRIATE CERTIFICATES FOR THE WORK BEING PERFORMED.

3 EXISTING FACILITIES AND DEMOLITION:
.1 LOCATE AND PROTECT ALL EXISTING EXTERIOR SITE SERVICES.
.2 RETAIN AND PROTECT ALL EXISTING INTERIOR SERVICES AND BUILDING FABRIC. MAKE GOOD ANY AND ALL DAMAGE RESULTING FROM THIS WORK.
.3 CONNECTIONS TO EXISTING SERVICES SHALL BE COORDINATED WITH THE OWNER.
.4 EXECUTE WORK WITH LEAST POSSIBLE INTERFERENCE OR DISTURBANCE TO NORMAL USE OF THE EXISTING BUILDING.

4 FIXTURES AND EQUIPMENT:
.1 PROVIDE SHOP DRAWINGS AND PRODUCT DATA FOR ALL MECHANICAL FIXTURES AND EQUIPMENT FOR APPROVAL, PRIOR TO PROCUREMENT.
.2 INSTALL ALL MECHANICAL FIXTURES AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
.3 EQUIPMENT AND MATERIAL TO BE CANADIAN GAS ASSOCIATION (CGA) CERTIFIED. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT CGA CERTIFIED, OBTAIN TSSA FIELD APPROVAL.
.4 LOCATE ALL EQUIPMENT WITH CLEARANCES, AS REQUIRED BY THE MANUFACTURER, THE FUEL CODES, AND ALL OTHER CODES AND REGULATIONS, INCLUDING THE FOLLOWING CLEARANCES:
 .1 TO PERMIT PROPER EQUIPMENT OPERATION;
 .2 TO PERMIT SUFFICIENT AIRFLOW AROUND EQUIPMENT;
 .3 FOR EQUIPMENT SERVICE;
 .4 SUFFICIENT DISTANCE FROM COMBUSTIBLE MATERIAL;
 .5 WITH SUFFICIENT VENT CLEARANCES;
 .6 SUFFICIENT DISTANCE FROM ROOF EDGES OR OTHER HAZARDS;
 .7 SERVICE PLATFORMS FOR APPLIANCES INSTALLED 10 FT OR MORE ABOVE FLOOR.

5 EQUIPMENT SUPPLIED BY OTHERS:
.1 MAKE ALL MECHANICAL SERVICE CONNECTIONS TO EQUIPMENT SUPPLIED BY OTHERS.
.2 CONFIRM ALL SERVICE CONNECTIONS WITH MANUFACTURER AND SUPPLIER, PRIOR TO INSTALLATION. THIS SHALL INCLUDE ALL CONNECTION SIZES, LOCATIONS AND DETAILS, AND SHALL TAKE INTO ACCOUNT EQUIPMENT CLEARANCES AND INSTALLATION REQUIREMENTS.

6 PIPING AND ESCUTCHEONS:
.1 PROVIDE DIELECTRIC UNIONS AT ALL PIPING LOCATIONS WHERE DISSIMILAR METALS ARE JOINED.
.2 PROVIDE ESCUTCHEONS ON ALL PIPES PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS, CHROME, NICKEL PLATED BRASS OR TYPE 302 STAINLESS STEEL.

7 ACCESS DOORS:
.1 SUPPLY ACCESS DOORS, AS REQUIRED IN DUCTWORK AND WALL/CEILING ASSEMBLIES, TO ALL CONCEALED MECHANICAL EQUIPMENT AND OPERATING DEVICES. ACCESS DOORS IN WALL/CEILING ASSEMBLIES TO BE INSTALLED BY OTHER TRADES.
.2 ACCESS DOORS SHALL BE FIRE-RATED TYPE, WHERE USED IN FIRE-RATED ASSEMBLIES, AND SHALL MATCH THE RATING OF THE ASSEMBLY.

8 PIPE INSULATION:
.1 INSTALL IN ACCORDANCE WITH THERMAL INSULATION ASSOCIATION OF CANADA (TIAC) NATIONAL STANDARDS.
.2 MAX. FLAME SPREAD RATING: 25.
.3 MAX. SMOKE DEVELOPED RATING: 50.
.4 DOMESTIC COLD WATER (DCW):
 .1 1" RIGID MOULDED MINERAL FIBRE WITH VAPOUR RETARDER JACKET.
 .2 INSULATE ALL PIPING IN FLOORS, WALLS AND CEILINGS, TO POINT OF FIXTURE CONNECTIONS.
.5 DOMESTIC HOT WATER (DHW):
 .1 1" RIGID MOULDED MINERAL FIBRE FOR PIPING UP TO 1-1/4" SIZE.
 .2 INSULATE ALL PIPING IN FLOORS, WALLS AND CEILINGS, TO POINT OF FIXTURE CONNECTIONS.
.6 OUTER JACKET:
 .1 CONCEALED LOCATIONS: ALL SERVICE JACKET.
 .2 EXPOSED LOCATIONS: PVC JACKET.
 .3 MECHANICAL/SERVICE ROOMS: PVC JACKET.

9 WATER SERVICE AND WATER SUPPLY PIPING:
.1 COORDINATE WATER SERVICE INSTALLATION WITH SUPPLY AUTHORITY:
 .1 MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE WATER ENTRY INSTALLATION, FROM A POINT 1m BEYOND THE BUILDING EXTERIOR.
 .2 OBTAIN, SUPPLY AND INSTALL ALL WATER METER(S) IN ACCORDANCE WITH THE REQUIREMENTS OF THE MUNICIPALITY, INCLUDING REMOTE READING DEVICES AND WIRING.
 .3 SUPPLY AND INSTALL PREMISE ISOLATION BACKFLOW PREVENTER IN ACCORDANCE WITH OBC 7.6.2.6. AND CSA B64.10.
.2 ABOVE GROUND: COPPER TUBE, HARD DRAWN, TYPE L. CAN. OR US MANUFACTURE, INCLUDING FITTINGS. LEAD-FREE SOLDER.
.3 WATER SUPPLY PIPING IS SHOWN SCHEMATICALLY. ALL PIPING SHALL BE CONCEALED UNLESS OTHERWISE NOTED.
.4 INSTALL TUBING CLOSE TO BUILDING STRUCTURE TO MINIMIZE FURRING, CONSERVE HEADROOM AND SPACE. GROUP EXPOSED PIPING AND RUN PARALLEL TO WALLS.
.5 ISOLATE ALL EQUIPMENT, FIXTURES AND BRANCHES WITH VALVES.
.6 TEST WATER SYSTEM AT 1½ TIMES SYSTEM OPERATING PRESSURE OR MINIMUM 860 KPA, WHICHEVER IS GREATER. TEST PRESSURE AND TIMEFRAME SHALL BE AS REQUIRED BY OBC 7.3.7.2.
.7 FLUSH OUT, DISINFECT AND RINSE SYSTEM, PRIOR TO CONSTRUCTION COMPLETION.
.8 WATER HEATERS:
 .1 SHALL BE PIPED WITH HEAT TRAPS ON THE INLET AND OUTLET PIPING, AS CLOSE AS PRACTICAL TO THE TANK, IN ACCORDANCE WITH OBC 12.3.1.4.
 .2 TEMPERATURE AND PRESSURE RELIEF VALVES:
  .1 MAXIMUM TEMPERATURE SETTING OF 210F (99F);
  .2 MAXIMUM PRESSURE SETTING OF 150 PSI;
  .3 DISCHARGE PER OBC 7.6.1.12.:
   .1 TERMINATE WITH AN INDIRECT CONNECTION PIPED TO FLOOR DRAIN, SUMP OR OTHER SAFE LOCATION, WITH A 300mm AIR BREAK; OR
   .2 TERMINATE AT A DISTANCE NOT LESS THAN 150mm AND NOT MORE THAN 300mm FROM A FLOOR AND DISCHARGE VERTICALLY DOWN,
.9 TRAP SEAL PRIMERS AND ACCESS TO THEM, SHALL BE LOCATED IN THE WASHROOM OR AREA THAT THEY SERVE.
.10 SUPPLY AND INSTALL WATER HAMMER ARRESTORS AT THE MIDPOINT AND END OF RUNS OF WATER SUPPLY PIPING AS REQUIRED BY OBC 7.6.1.14.

10 DRAINAGE, WASTE AND VENT PIPING:
.1 COORDINATE SANITARY AND STORM SERVICE INSTALLATIONS WITH SUPPLY AUTHORITY.
.2 APPROXIMATE SUB-FLOOR PIPING ELEVATIONS HAVE BEEN INDICATED ON THE DRAWINGS. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING FINAL INVERTS BASED ON SITE CONDITIONS.
.3 BELOW GROUND/FLOOR:
 .1 CAST IRON.
 .2 PVC DWV, TYPE SDR26 SDR35.
.4 ABOVE GROUND:
 .1 CAST IRON, TYPE DWV.
 .2 COPPER, TYPE DWV.
 .3 PVC DWV SOLID WALL SCHEDULE 40, CERTIFIED TO CAN/CSA STANDARD B181.2, FOR NONCOMBUSTIBLE CONSTRUCTION (FLAME-SPREAD RATING NOT MORE THAN 25 PER CAN/ULC-S102.2).
 .4 PVC DWV SOLID WALL SCHEDULE 40, CERTIFIED TO CAN/CSA STANDARD B181.2, FOR NONCOMBUSTIBLE CONSTRUCTION (FLAME-SPREAD RATING NOT MORE THAN 25 AND SMOKE DEVELOPED CLASSIFICATION NOT MORE THAN 50 PER CAN/ULC-S102.2 - PLENUMS).
.5 PROVIDE CLEANOUTS AS REQUIRED BY THE ONTARIO BUILDING CODE.
.6 VENT COMPLETE PLUMBING SYSTEM IN ACCORDANCE WITH THE ONTARIO BUILDING CODE.

11 NATURAL GAS PIPING:
.1 COORDINATE NATURAL GAS SERVICE UPGRADE AND INSTALLATION, AS FOLLOWS:
 .1 MECHANICAL CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR COORDINATION OF NATURAL GAS SERVICE WITH THE SUPPLY AUTHORITY;
 .2 INCLUDE DETAILED REVIEW OF EXISTING NATURAL GAS LOADS FOR SUMMATION OF BUILDING TOTAL LOAD;
 .3 COORDINATE ALL SERVICE, METER AND EQUIPMENT PRESSURES AND REGULATORS.
.2 STEEL PIPE, SCHEDULE 40, SEAMLESS, SCREWED FITTINGS.
.3 SLOPE PIPING DOWN IN DIRECTION OF FLOW TO LOW POINTS.
.4 ALL NATURAL GAS PIPING AND FITTINGS SHALL BE:
 .1 CLEANED AFTER ASSEMBLY;
 .2 PAINTED WITH ONE BASE LAYER OF METAL PRIMER;
 .3 PAINTED WITH ONE TOP COAT OF EXTERIOR ENAMEL PAINT;
 .4 COLOUR ON EXTERIOR WALL - TO MATCH WALL
 .5 COLOUR ON INSIDE - YELLOW.
.5 TEST SYSTEM IN ACCORDANCE WITH NATURAL GAS AND PROPANE INSTALLATION CODE.

12 DUCTWORK:
.1 RECTANGULAR DUCT:
 .1 RIGID GALVANIZED STEEL, LOCK FORMING QUALITY TO ASTM A653/A653M
 .2 THICKNESS, FABRICATION, REINFORCEMENT AND SUPPORT/ATTACHMENT TO ASHRAE OR SMACNA.
.2 ROUND DUCT:
 .1 RIGID GALVANIZED STEEL, LOCK FORMING QUALITY TO ASTM A653/A653M
 .2 THICKNESS, FABRICATION, REINFORCEMENT AND SUPPORT/ATTACHMENT TO ASHRAE OR SMACNA.
 .3 FLEXIBLE BRANCH DUCT (PERMITTED WITHIN 2m/6ft FROM OUTLET):
  .1 ALL METAL TYPE: TRIPLE LOCK, ALUMINUM CORRUGATED DUCT, MANUFACTURED USING AN ALUMINUM STRIP, WHICH IS SPIRALLY WOUND AND MECHANICALLY JOINED TOGETHER FORMING AN AIR TIGHT AND LEAKPROOF SEAM.
.3 SEAL CLASSIFICATION:
 .1 CLASS A: LONGITUDINAL SEAMS, TRANSVERSE JOINTS, DUCT WALL PENETRATIONS AND CONNECTIONS MADE AIRTIGHT WITH SEALANT AND TAPE.
.4 FITTINGS
 .1 FABRICATION: TO SMACNA.
 .2 RADIUSED ELBOWS.
  .1 RECTANGULAR: STANDARD WITH CENTRELINE RADIUS 1.5 TIMES DUCT DIMENSION, WITH SINGLE THICKNESS TURNING VANES.
  .2 ROUND: FIVE PIECE WITH CENTRELINE RADIUS 1.5 TIMES DIAMETER.
 .3 MITRED ELBOWS, RECTANGULAR: WITH DOUBLE THICKNESS TURNING VANES.
.5 BRANCHES:
 .1 RECTANGULAR MAIN AND BRANCH: WITH RADIUS ON BRANCH 1.5 TIMES WIDTH OF DUCT 45 DEGREES ENTRY ON BRANCH.
 .2 ROUND MAIN AND BRANCH: ENTER MAIN DUCT AT 45 DEGREES WITH CONICAL CONNECTION.
 .3 PROVIDE VOLUME CONTROL DAMPER IN BRANCH DUCT NEAR CONNECTION TO MAIN DUCT.
 .4 MAIN DUCT BRANCHES: WITH SPLITTER DAMPER.
.6 TRANSITIONS:
 .1 DIVERGING: 20 DEGREES MAXIMUM INCLUDED ANGLE.
 .2 CONVERGING: 30 DEGREES MAXIMUM INCLUDED ANGLE.
.7 FIRE STOPPING
 .1 RETAINING ANGLES AROUND DUCT, ON BOTH SIDES OF FIRE SEPARATION IN ACCORDANCE WITH SECTION.
 .2 FIRE STOPPING MATERIAL AND INSTALLATION MUST NOT DISTORT DUCT.
.8 DAMPERS:
 .1 MANUFACTURE TO SMACNA STANDARDS.
 .2 SINGLE BLADE DAMPERS:
  .1 FABRICATE FROM SAME MATERIAL AS DUCT, BUT ONE SHEET METAL THICKNESS HEAVIER. V_GROOVE STIFFENED.
  .2 SIZE AND CONFIGURATION TO RECOMMENDATIONS OF SMACNA.
  .3 LOCKING QUADRANT (WITH SHAFT EXTENSION TO ACCOMMODATE INSULATION THICKNESS, IF REQUIRED).
  .4 INSIDE AND OUTSIDE NYLON END BEARINGS.
  .5 CHANNEL FRAME OF SAME MATERIAL AS ADJACENT DUCT, COMPLETE WITH ANGLE STOP.
 .3 MULTI_BLADED DAMPERS:
  .1 FACTORY MANUFACTURED OF MATERIAL COMPATIBLE WITH DUCT.
  .2 OPPOSED BLADE: CONFIGURATION, METAL THICKNESS AND CONSTRUCTION TO RECOMMENDATIONS OF SMACNA.
  .3 BEARINGS: PIN IN BRONZE BUSHINGS.
  .4 LINKAGE: SHAFT EXTENSION WITH LOCKING QUADRANT.
  .5 CHANNEL FRAME OF SAME MATERIAL AS ADJACENT DUCT, COMPLETE WITH ANGLE STOP.
.9 DUCT LEAKAGE: IN ACCORDANCE WITH SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL.
.10 ALL DUCT AND SEAL MATERIALS TO HAVE A FLAME SPREAD RATING OF LESS THAN 25 AND A SMOKE DEVELOPED CLASSIFICATION OF LESS THAN 50.
.11 PAINT VISIBLE INTERIOR SURFACES OF ALL PLENUM BOXES MATTE BLACK.
.12 PROVIDE FLEXIBLE CONNECTIONS AT ALL EQUIPMENT DUCT CONNECTION POINTS.
.13 SOUND CONTROL:
 .1 ALL SUPPLY AIR BRANCH DUCT LOCATIONS SHOWN ARE SCHEMATIC.
 .2 ALL SUPPLY AIR BRANCH DUCTS SHALL BE SEPARATED BY A MINIMUM HORIZONTAL DISTANCE OF 2X THE BRANCH DUCT DIAMETER TO MINIMIZE SOUND TRANSFER.
 .3 SUPPLY AND INSTALL ACOUSTICALLY-INSULATED RA DUCT BOXES ON ALL RETURN AIR GRILLES INTO CEILING RETURN AIR PLENUM PER DETAIL.

13 DUCT INSULATION:
.1 REFER TO DRAWING FOR DUCT THAT IS IDENTIFIED TO BE INSULATED.
.2 INSTALL IN ACCORDANCE WITH THERMAL INSULATION ASSOCIATION OF CANADA (TIAC) NATIONAL STANDARDS.
.3 MAX. FLAME SPREAD RATING: 25.
.4 MAX. SMOKE DEVELOPED RATING: 50.
.5 THERMAL INSULATION - RECTANGULAR DUCT:
 .1 1" (R4.3) RIGID MINERAL FIBRE BOARD WITH VAPOUR RETARDER JACKET.
 .2 ALUMINUM JACKET WITH MOISTURE BARRIER.
.6 THERMAL INSULATION - ROUND DUCT:
 .1 1" (R3.1) MINERAL FIBRE BLANKET WITH VAPOUR RETARDER JACKET.
 .2 ALUMINUM JACKET WITH MOISTURE BARRIER.

14 MECHANICAL FIRE PROTECTION:
.1 REFER TO ARCHITECTURAL DRAWINGS, TO VERIFY LOCATION OF ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.
.2 ALL PIPING SHALL BE TIGHTLY FITTED AND SEALED WITH FIRESTOPPING MATERIAL AT ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.
.3 FIRE DAMPERS:
 .1 FIRE DAMPERS SHALL BE CAN/ULC-S112 (STANDARD METHOD OF FIRE TEST OF FIRE DAMPER ASSEMBLIES) LISTED AND LABELLED.
 .2 FIRE DAMPERS SHALL BE NFPA 80 (STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES), NFPA 90A (STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS), AND NFPA 101 (LIFE SAFETY CODE) COMPLIANT.
 .3 DUCTWORK SHALL BE FITTED WITH FIRE DAMPERS AT ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.
 .4 SUPPLY AND INSTALL ACCESS DOORS IN ARCHITECTURAL FINISH (WALL, CEILING OR FLOOR) TO ACCESS DUCT, IN COMMON AREA WHERE POSSIBLE.
 .5 SUPPLY AND INSTALL TIGHTLY-FITTED ACCESS DOOR IN DUCT TO ACCESS, INSPECT AND RESET FIRE DAMPER.
 .6 TYPES: DYNAMIC - FOR USE IN AIR HANDLING SYSTEMS THAT DO NOT SHUTDOWN UPON FIRE ALARM.
 .7 RATING: 1-1/2 HR (30MIN TO 2HR FIRE RESISTANCE RATING).
.4 ALL MECHANICAL MATERIALS USED WITHIN CEILING RETURN AIR PLENUMS SHALL FLAME-SPREAD RATING NOT MORE THAN 25 AND SMOKE DEVELOPED CLASSIFICATION NOT MORE THAN 50 PER CAN/ULC-S102.2.
.5 MOCK-UPS:
 .1 PREPARE MOCK-UPS OF TYPICAL FIRESTOP INSTALLATION OF THE FOLLOWING, FOR REVIEW AND APPROVAL BY THE OWNER, ENGINEER AND MUNICIPAL BUILDING INSPECTOR:
  .1 SANITARY PIPING - WALL AND CEILING/FLOOR FIRE SEPARATION;
  .2 DCW AND DHW PIPING - WALL AND CEILING/FLOOR FIRE SEPARATION;
  .3 FIRE DAMPER INSTALLATION - WALL AND CEILING/FLOOR FIRE SEPARATION.
 .2 ALL FIRESTOP INSTALLATIONS SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROPRIATE PRODUCT INSTALLATION INSTRUCTIONS, AND THE REFERENCED UL/ULC LISTING AND/OR TEST STANDARD.
 .3 SUPPLY A COPY OF THE PRODUCT INSTALLATION INSTRUCTIONS WITH ULC LISTING AND/OR TEST STANDARD REFERENCE, FOR EACH INSTALLATION.
 .4 MOCK-UP MAY REMAIN AS PART OF WORK.

15 MECHANICAL IDENTIFICATION:
.1 IDENTIFY MECHANICAL EQUIPMENT WITH LAMICOID NAMEPLATES.
.2 LABEL ALL PIPING AT LEAST ONCE IN EVERY ROOM, AND AT NO MORE THAN 25 FT CENTERS.

16 EARTHQUAKE LOAD:
.1 ALL MECHANICAL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE EARTHQUAKE LOAD AND EFFECTS REQUIRED BY THE ONTARIO BUILDING CODE.
.2 MECHANICAL ELEMENTS AND COMPONENTS (EQUIPMENT, PIPES, DUCTS, ETC.), AND THEIR CONNECTIONS TO THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA/ANSI SEISMIC RESTRAINT MANUAL OR OTHER GUIDELINE REFERENCED IN THE ONTARIO BUILDING CODE.
.3 PROVIDE SHOP DRAWINGS FOR SUPPORT, CONNECTIONS AND SEISMIC RESTRAINT OF ALL MECHANICAL EQUIPMENT, PIPES AND DUCTS, INCLUDING, BUT NOT LIMITED TO:
 .1 FURNACE AND CONDENSING UNIT;
 .2 UNIT HEATERS;
 .3 WATER HEATER;
 .4 TYPICAL DUCT SUPPORTING SYSTEM;
 .5 TYPICAL SAN, DCW, DHW PIPE SUPPORTING SYSTEM;
 .6 TYPICAL NATURAL GAS PIPE SUPPORTING SYSTEM.
 THESE SHOP DRAWINGS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER IN THE PROVINCE OF ONTARIO, WITH EXPERIENCE IN SEISMIC ENGINEERING.
.4 FOLLOWING PROJECT COMPLETION, SEISMIC ENGINEER SHALL PROVIDE A LETTER OF FINAL SITE REVIEW.
.5 CONTRACTOR SHALL CARRY THE COST OF THE SEISMIC ENGINEERING, INCLUDING SITE REVIEWS, DESIGN AND SHOP DRAWING PREPARATION.

17 EQUIPMENT AND MATERIALS SUPPORT:
.1 ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND RELATED ITEMS SHALL BE SECURELY SUPPORTED, ATTACHED AND FASTENED TO BUILDING STRUCTURE.
.2 PIPE HANGERS AND SUPPORTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH MSS STANDARD SP-58, PIPE HANGERS AND SUPPORTS - MATERIALS, DESIGN, MANUFACTURE, SELECTION, APPLICATION, AND INSTALLATION.
.3 PLATFORMS SHALL BE FABRICATED FROM STRUCTURAL GRADE STEEL MEETING THE REQUIREMENTS OF THE ONTARIO BUILDING CODE, INCLUDING CSA STANDARD W59 WELDED STEEL CONSTRUCTION, AND THE REQUIREMENTS OF THE CANADIAN WELDING BUREAU.

18 COORDINATION:
.1 INFORMATION INVOLVING ACCURATE DIMENSIONING OF THE BUILDING SHALL BE TAKEN FROM SITE BY CONTRACTOR.
.2 DRAWINGS ARE IN DIAGRAMMATIC FORM, INTENDED TO CONVEY THE SCOPE OF WORK AND GENERAL ARRANGEMENT FOR EQUIPMENT. COORDINATE PHYSICAL LOCATION OF ALL EQUIPMENT WITH OTHER TRADES AND ALLOW FOR ANY ADDITIONAL PIPING, DUCTING, FITTINGS, SUPPORTS, ETC., IN ORDER TO AVOID INTERFERENCE AND FACILITATE THE WORK.
.3 CONTRACTOR TO MAKE ANY NECESSARY MODIFICATIONS OR ADDITIONS, WITHOUT CHARGE, TO ACCOMMODATE SITE CONDITIONS AND COORDINATION.
.4 COORDINATE ALL MECHANICAL EQUIPMENT WIRING, INCLUDING LOW VOLTAGE CONTROL WIRING, WITH ELECTRICAL TRADES.

19 START-UP, COMMISSIONING AND TRAINING:
.1 COMMISSIONING:
 .1 START-UP AND COMMISSION THE FOLLOWING SYSTEMS:
  .1 PLUMBING FIXTURES;
  .2 HVAC;
  .3 EXHAUST FAN AND GAS DETECTION SYSTEM.
 .2 PERFORM SYSTEMATIC TESTS, PROCEDURES AND CHECKS ON SYSTEMS, AS FOLLOWS:
  .1 TO VERIFY OPERATION IN ACCORDANCE WITH CONTRACT DOCUMENTS, DESIGN CRITERIA AND INTENT, AND MANUFACTURER'S REQUIREMENTS;
  .2 TO ENSURE APPROPRIATE DOCUMENTATION IS PROVIDED;
  .3 TO EFFECTIVELY TRAIN BUILDING OPERATIONAL STAFF.
 .3 SYSTEMS ARE TO BE OPERATED AT FULL CAPACITY, WITH CORRECTION OF ALL DEFICIENCIES AND ADJUSTMENTS TO MEET OPTIMUM PERFORMANCE.
 .4 PROVIDE WRITTEN REPORT AT END OF COMMISSIONING OUTLINING EQUIPMENT OPERATIONAL CONDITIONS AND PARAMETERS.
.2 TESTING, ADJUSTING AND BALANCING:
 .1 TEST, ADJUST AND BALANCE (TAB) ALL PLUMBING AND HVAC EQUIPMENT AND SYSTEMS; INCLUDING THE FOLLOWING:
  .1 FURNACE SYSTEM.
 .2 TAB PROCEDURE SHALL BE COMPLETED IN ACCORDANCE WITH ASHRAE STANDARD 111, MEASUREMENT, TESTING, ADJUSTING AND BALANCING OF BUILDING HVAC SYSTEMS.
 .3 PROVIDE DETAILED REPORT AT END OF TAB, IN ACCORDANCE WITH THE REPORTING PROCEDURES OF ASHRAE STANDARD 111.
.3 DEMONSTRATION AND TRAINING:
 .1 DEMONSTRATE OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS TO OWNER'S PERSONNEL ONE WEEK PRIOR TO DATE OF FINAL INSPECTION
 .2 PRIOR TO DEMONSTRATION AND TRAINING, ENSURE THAT EQUIPMENT HAS BEEN INSPECTED AND PUT INTO OPERATION, INCLUDING COMPLETION OF COMMISSIONING AND TESTING, ADJUSTING, AND BALANCING.
 .3 DEMONSTRATE START_UP, OPERATION, CONTROL, ADJUSTMENT, TROUBLE_SHOOTING, SERVICING, AND MAINTENANCE OF EACH ITEM OF EQUIPMENT.
 .4 INSTRUCT PERSONNEL IN PHASES OF OPERATION AND MAINTENANCE USING OPERATION AND MAINTENANCE MANUALS AS BASIS OF INSTRUCTION. REVIEW CONTENTS OF MANUAL IN DETAIL TO EXPLAIN ASPECTS OF OPERATION AND MAINTENANCE.
 .5 ENSURE SUFFICIENT AMOUNT OF TIME REQUIRED FOR INSTRUCTION OF EACH ITEM OF EQUIPMENT OR SYSTEM.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	SAN	SANITARY DRAIN ABOVE FLOOR/GRADE
	SAN	SANITARY DRAIN BELOW FLOOR/GRADE
	VENT	SANITARY VENT
	STM	STORM DRAIN ABOVE FLOOR/GRADE
	STM	STORM DRAIN BELOW FLOOR/GRADE
	WCO	WALL CLEANOUT
	FCO	FLOOR CLEANOUT
	LCO	LINE CLEANOUT
	GCO	GRADE CLEANOUT
	DCW	DOMESTIC COLD WATER
	DHW	DOMESTIC HOT WATER
	DHWR	DOMESTIC HOT WATER RETURN
	GAS	NATURAL GAS

HVAC LEGEND

SA	SUPPLY AIR
RA	RETURN AIR
12x8	DUCT SIZE, RECTANGULAR, FIRST FIGURE IS SIDE SHOWN
8"Ø	DUCT SIZE, ROUND
	DUCT SECTION, SUPPLY
	DUCT SECTION, RETURN OR EXHAUST
12x8	ACOUSTICAL INSULATION LINING
	ACOUSTICAL INSULATION LINING
	FLEXIBLE CONNECTION
	ELBOW, RECTANGULAR(r=1.5W)
	ELBOW, WITH VANES, RECTANGULAR(r=1.5W)
	ELBOW, WITH VANES, RECTANGULAR
	TRANSITIONS FOT - FLAT ON TOP, FOB - FLAT ON BOTTOM
	TEE, RECTANGULAR MAIN AND TAP
	TEE, RECTANGULAR MAIN AND TAP, WITH DAMPER
	TEE RECTANGULAR
	WYE, RECTANGULAR
VD	VOLUME DAMPER
FD	FIRE DAMPER
	WALL SUPPLY GRILLE OR REGISTER
	WALL EXHAUST/RETURN GRILLE OF REGISTER
	FLOOR OR CEILING SUPPLY GRILLE OR REGISTER
	FLOOR OR CEILING EXHAUST/RETURN GRILLE OR REGISTER
	CEILING SUPPLY DIFFUSER
	CEILING RETURN GRILLE
24"x24" 511100	CEILING OR REGISTER DESIGNATION SIZE CFM TYPE
T	THERMOSTAT

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Project Title:
CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

Drawing Title:
MECHANICAL
NOTES & LEGENDS

Design:	Checked:	Approved: MM	Project No.: 9655
Drawn: MP	Checked:	Date: 2021-05-18	Contract No.:

Scale:
Horizontal: AS SHOWN
Vertical: AS SHOWN

Drawing No.: M1

REV DATE: 7/6/2021

BACKFLOW PREVENTER SCHEDULE

TYPE	DESCRIPTION	ACCEPTABLE PRODUCT	NOTES
MODERATE HAZARD	DOUBLE CHECK VALVE ASSEMBLY BACK PRESSURE & BACK SIPHONAGE	WATTS #LF007QT (1/2" TO 2") OR APPROVED EQUAL	SIZE AS INDICATED IN DRAWING LEAD FREE

RANGE HOOD SCHEDULE

UNIT	DESCRIPTION	FAN				DUCT	ELECTRICAL				ACCEPTABLE PRODUCT	NOTES
		CFM	ESP	DRIVE	SONES	CONN (in)	VOLT	PHASE	POWER	MOCP		
RH-1	RANGE HOOD 30" STAINLESS STEEL	200	0.1	DIRECT	1.5-4.0	3.25x10 NON DUCTED	120	1	1.6A	15A	NUTONE #WS1 OR APPROVED EQUAL	2 SPEED ROCKER CONTROL 2 LEVEL LIGHT CONTROL 2 x 50W HALOGEN LAMPS

ENERGY RECOVERY VENTILATOR SCHEDULE

UNIT	DESCRIPTION	AIR FLOW		ENERGY PERF.		ELECTRICAL				ACCEPTABLE PRODUCT	NOTES
		SUPPLY (cfm)	ESP (in)	TEMP (deg.F)	EFF (%)	VOLT	PHASE	MCA	MOCP		
ERV-1	HEAT RECOVERY VENTILATOR HORIZONTAL	115	0.5	32	71	120	1	<12	15	LIFEBREATH #120ERV OR APPROVED EQUAL	FIVE SPEED PROGRAMMABLE CONTROL BUILT-IN INTERFACE TO FURNACE

WATER HEATER SCHEDULE

UNIT	DESCRIPTION	CAPACITY			CONNECTIONS		ELECTRICAL			ACCEPTABLE PRODUCT	NOTES
		VOLUME (L) (US Gal)	TEMP RISE (degC) (deg.F)	RECOVERY (Lph) (gph)	DCW IN (mm) (in)	DHW OUT (mm) (in)	VOLT	PHASE	MOCP (A)		
WH-1	WATER HEATER ELECTRIC, MODERATE USE	50	80	15-61	3/4	3/4	240	1	6 kW	RHEEM #ELD JOHN WOOD OR APPROVED EQUAL	

EXHAUST FAN & CONTROL SCHEDULE

DESCRIPTION	FAN				WALL	ELECTRICAL				ACCEPTABLE PRODUCT	NOTES
	CFM	ESP	DRIVE	SONES	OP'G (in)	VOLT	PHASE	RPM	HP		
EXHAUST FAN EF-1 CENTRIGUFAL WALL-MOUNTED	2000	0.25	BELT	12	16x16	240	1	1335	1/2	PENN #FX FUMEX GREENHECK #CWB OR APPROVED EQUAL	WALL SLEEVE, BACKDRAFT DAMPER HINGED SUBBASE, BIRD/INSECT SCREEN SAFETY DISCONNECT SWITCH & MOTOR STARTER SPARK RESISTANT CONSTRUCTION EXPLOSION PROOF MOTOR/ELEC
EXTERIOR LOUVRE										VENTEX #2420 OR APPROVED EQUAL	4" DEEP ALUMINUM, MILL FINISH FLANGE FRAME, INSECT SCREEN
INTERIOR DAMPER										RUSKIN OR APPROVED EQUAL	LOW LEAKAGE ALUMINUM, INSULATED GROOVE REINFORCED BLADES BLADE SEALS
DAMPER MOTOR										BELIMO #LF24 OR APPROVED EQUAL	
GAS DETECTION CONTROLLER										QEL #Q4C-x-R00 CONTROLLER	
GAS TRANSMITTER/SENSOR	CO NO2									QEL #Q5 QEL #Q5	

NOTES:
REFER TO ELECTRICAL DRAWINGS FOR SYSTEM SCHEMATIC DIAGRAM - MECHANICAL CONTRACTOR SHALL SUPPLY ALL EQUIPMENT (ABOVE) FOR WIRING AND CONNECTION BY ELECTRICAL CONTRACTOR.

CONDENSING UNIT SCHEDULE

UNIT	DESCRIPTION	COOLING			SEER	CONNECTIONS		ELECTRICAL				ACCEPTABLE PRODUCT	NOTES
		EWB (deg.F)	OAT (deg.F)	TC (Mbtuh)		SUCTION (in)	LIQUID (in)	VOLT	PHASE	MCA	MOCP		
CU-1	CONDENSING UNIT	67	95	36	17.0	AS REQ'D TO SUIT LINE LENGTH	AS REQ'D TO SUIT LINE LENGTH	240	1	19.8	35	CARRIER #24ACB7	TWO STAGE - LOW AMBIENT COOLING - LONG LINE APPLICATION - COMPRESSOR START ASSIST - CRANKCASE HEATER - EVAPORATOR FREEZE THERMOSTAT - LOW AMBIENT PRESSURE SWITCH - SUPPORT FEET - THERMOSTATIC EXPANSION VALVE - WINTER START CONTROL

NOTES:
1. CONTRACTOR TO VERIFY THAT CONDENSING UNIT SELECTED MATCHES FURNACE AND AIR HANDLING UNITS.

REGISTER, GRILLE & DIFFUSER SCHEDULE

UNIT	DESCRIPTION	CONSTRUCTION	CONFIGURATION			FRAME	FINISH	ACCEPTABLE PRODUCT	NOTES
			PATTERN	BLADE SPACING	DEFLECTION (deg)				
S1	LOUVRED SA GRILLE CEILING/WALL	STEEL	SINGLE DEFLECTION ADJUSTABLE	19mm, 3/4 in PARALLEL TO LONG DIM	ADJUSTABLE	STANDARD 32mm, 1.25in	WHITE	EH PRICE #510 STEEL SINGLE OR APPROVED EQUAL	WITH DAMPER
S2	LINEAR SA BAR GRILLE FLOOR	ALUMINUM	FIXED	1/4" SPACE 1/8" BARS		1-1/4" BORDER	ALUM	EH PRICE #LBP OR APPROVED EQUAL	WITH DAMPER
R1	LOUVRED RA GRILLE CEILING/WALL	STEEL	SINGLE DEFLECTION ADJUSTABLE	19mm, 3/4 in PARALLEL TO LONG DIM	ADJUSTABLE	STANDARD 32mm, 1.25in	WHITE	EH PRICE #530 STEEL SINGLE OR APPROVED EQUAL	WITH DAMPER

PLUMBING FIXTURE SCHEDULE

UNIT	DESCRIPTION	PIPE SIZE					ACCEPTABLE PRODUCT	NOTES
		TRAP (in) (mm)	WASTE (in) (mm)	VENT (in) (mm)	DCW (in) (mm)	DHW (in) (mm)		
MV-1	MIXING VALVE				3/4" 19	3/4" 19	WATTS #LF1170	80-120 deg.F. RANGE LEAD FREE
WC-1	WATER CLOSET - TANK	INT	3" 75	2" 50	1/2" 13	- -	WATERCLOSET - AMERICAN STANDARD #2462 (CADET) SEAT - CENTOCO #820STS OR APPROVED EQUAL	PRESSURE ASSISTED, ELONGATED WHITE HEAVY DUTY, OPEN FRONT SEAT (LESS COVER) SS HINGE MAX. WATER CONSUMPTION - 6.0 Lpf, 1.6 gpf DIM L x W x H - 768 x 521 x 743 mm, 30.25 x 20.5 x 29.25 in RIM HEIGHT - 381 mm, 15 in FLOOR FLANGE, FLANGE BOLTS & GASKET ISOLATING VALVE - BRASS W CHROME FINISH, WALL-MOUNTED, SCREWDRIVER STOP
WC-2	WATERCLOSET - TANK BARRIER FREE	INT	3" 75	2" 50	1/2" 13	- -	WATERCLOSET - AMERICAN STANDARD #2467 016 (CADET) SEAT - CENTOCO #820STS OR APPROVED EQUAL	PRESSURE ASSISTED, ELONGATED WHITE HEAVY DUTY, OPEN FRONT SEAT & COVER, SS HINGE MAX. WATER CONSUMPTION - 6.0 Lpf, 1.6 gpf DIM L x W x H - 768 x 521 x 781 mm, 30.25 x 20.5 x 30.75 in RIM HEIGHT - 419 mm, 16.5 in SEAT HEIGHT - 430 to 485 mm, 17 to 19 in (OBC 3.8.3.9) FLOOR FLANGE, FLANGE BOLTS & GASKET ISOLATING VALVE - BRASS W CHROME FINISH, WALL-MOUNTED, SCREWDRIVER STOP
LA-1	LAVATORY COUNTERTOP	1-1/2 38	1-1/2" 38	1-1/4" 32	1/2" 13	1/2" 13	AMERICAN STANDARD #9494 LAVATORY #7385 SINGLE LEVER FAUCET OR APPROVED EQUAL	WHITE, POP-UP DRAIN OVERALL DIM - W x FTB x D - 533 x 445 x 165mm, 21 x 17.5 x 6.5 in BOWL DIM - W x FTB x D - 441 x 279 x 133mm, 17.375 x 11 x 5.25 in MAX. WATER CONSUMPTION - 8.35 Lpm, 2.2 gpm
LA-2	LAVATORY COUNTERTOP BARRIER FREE	1-1/2 38	1-1/2" 38	1-1/4" 32	1/2" 13	1/2" 13	AMERICAN STANDARD #9494 LAVATORY #7385 SINGLE LEVER FAUCET OR APPROVED EQUAL	WHITE, POP-UP DRAIN OVERALL DIM - W x FTB x D - 533 x 445 x 165mm, 21 x 17.5 x 6.5 in BOWL DIM - W x FTB x D - 441 x 279 x 133mm, 17.375 x 11 x 5.25 in MAX. WATER CONSUMPTION - 8.35 Lpm, 2.2 gpm INSULATED KNEE GUARD
S-1	KITCHEN SINK SINGLE BOWL WITH LEDGE	1-1/2" 38	1-1/2" 38	1-1/4" 32	1/2" 13	1/2" 13	FRANKE KINDRED #LBS6407 SINK AMERICAN STANDARD #6270 FAUCET OR APPROVED EQUAL	STAINLESS STEEL, LEVER HANDLES OVERALL DIM - W x FTB x D - 410 x 520 x 178mm, 16.125 x 20.5 x 7 in BOWL DIM - W x FTB x D - 355 x 406 x 178mm, 14 x 16 x 7 in MAX. WATER CONSUMPTION - 8.35 Lpm, 2.2 gpm
SF-1	SERVICE FAUCET	-	-	-	1/2" 13	- -		3/4" HOSE THREAD SPOUT WALL MOUNT AND BRACE
SS-1	SERVICE SINK FLOOR MOUNTED	3" 75	3" 75	2" 50	1/2" 13	1/2" 13	FIAT #MSB-2424 SINK, #830-AA TRIM, #889-CC MOP BRACKET #E-77-AA BUMPER GUARDS #832-AA HOSE AND BRACKET OR APPROVED EQUAL	24"x24"x10" DP MOULDED STONE, WHITE MOP BRACKET VINYL BUMPER GUARDS HOSE AND BRACKET
SH-1	SHOWER	1-1/2" 38	1-1/2" 38	1-1/4" 32	1/2" 13	1/2" 13	AMERICAN STANDARD #T506.508 SHOWER TRIM ENCLOSURE BY ARCH TRADES	PRESSURE BALANCING VALVE
CW	CLOTHESWASHER	2" 50	2" 50	1-1/2" 38	1/2" 13	1/2" 13		PROVIDE RECESSED WALL BOX FOR SAN., DCW, DHW
HY-1	NON-FREEZE WALL HYDRANT	- -	- -	- -	1/2" 13	- -	WATTS #HY420	AUTOMATIC DRAINING BACKFLOW PREVENTER
FD-1	FLOOR DRAIN ROUND HEAVY DUTY	3" 75	3" 75	1-1/2" 38	1/2" 13	-	WATTS FD-100 ZURN MIFAB #MIR-500-NPB PRESSURE DROP TRAP SEAL PRIMER MIFAB #MI-GAP-NPB AIR GAP FITTING OR APPROVED EQUAL	SUIT FLOOR FINISH CAST IRON BODY NICKEL BRONZE STRAINER TRAP SEAL PRIMER INSTALLED IN WASHROOM WALL WITH ACCESS DOOR AUTOMATIC TRAP SEAL PRIMER
FCO	FLOOR CLEANOUT ROUND	-	SIZE PER PIPE	-	-	-	WATTS CO-200 ZURN OR APPROVED EQUAL	SUIT FLOOR FINISH CAST IRON BODY NICKEL BRONZE TOP, GASKET BRASS CLEANOUT PLUG, GASKET
WCO	WALL CLEANOUT ROUND	-	SIZE PER PIPE	-	-	-	WATTS CO-380 ZURN OR APPROVED EQUAL	SUIT WALL FINISH CAST IRON FERRULE BRASS PLUG STAINLESS STEEL COVER

FURNACE SCHEDULE

UNIT	DESCRIPTION	FAN			HEATING				ELECTRICAL				ACCEPTABLE PRODUCT	NOTES
		AIR FLOW (cfm)	ESP (in)	HP	INPUT (Mbtu/hr)	OUTPUT (Mbtu/hr)	EFF (%)	GAS (in)	VOLT (V)	PHASE (PH)	MCA (A)	MOCP (A)		
F-1	FURNACE GAS-FIRED, DIRECT VENT UPFLOW	1200		1/2	60	58	96.7%	1/2	120	1	7.6	15	CARRIER #59TP5A	- TWO STAGE HEATING - MATCHING EVAPORATOR COIL - CONCENTRIC VENT TERMINATION WALL/ROOF - RETURN AIR FILTER RACK - 7-DAY DIGITAL PROGRAMMABLE THERMOSTAT TO MEET ASHRAE 90.1: - 7 DAY SCHEDULE - 10 HR POWER LOSS - 2 HR MANUAL OVERRIDE - SETBACK TO 55F (13C) - SETUP TO 90F (32C)

UNIT HEATER SCHEDULE

UNIT	DESCRIPTION	FAN		HEATING			ELECTRICAL				VENT/COMB.		ACCEPTABLE PRODUCT	NOTES
		HP	CFM	INPUT (Mbtu/hr)	OUTPUT (Mbtu/hr)	GAS	VOLT	PHASE	MCA	MOCP	VENT (in)	COMB. (in)		
UH-1	GAS-FIRED UNIT HEATER SEPARATED COMBUSTION	1/4	1537	120	99.60	1/2"	120	1	5.1	15A	4	4	REZNOR #UDAS OR APPROVED EQUAL	PROGRAMMABLE WALL-MOUNTED THERMOSTAT

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Project Title:
CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

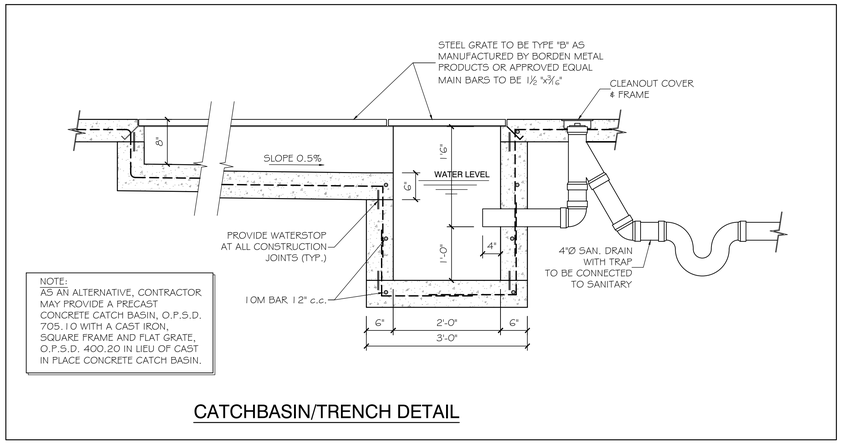
Drawing Title:
MECHANICAL SCHEDULES

Design:	Checked:	Approved: MM	Project No.: 9655
Drawn: MP	Checked:	Date: 2021-05-18	Contract No.:

Scale:
Horizontal: AS SHOWN
Vertical: AS SHOWN

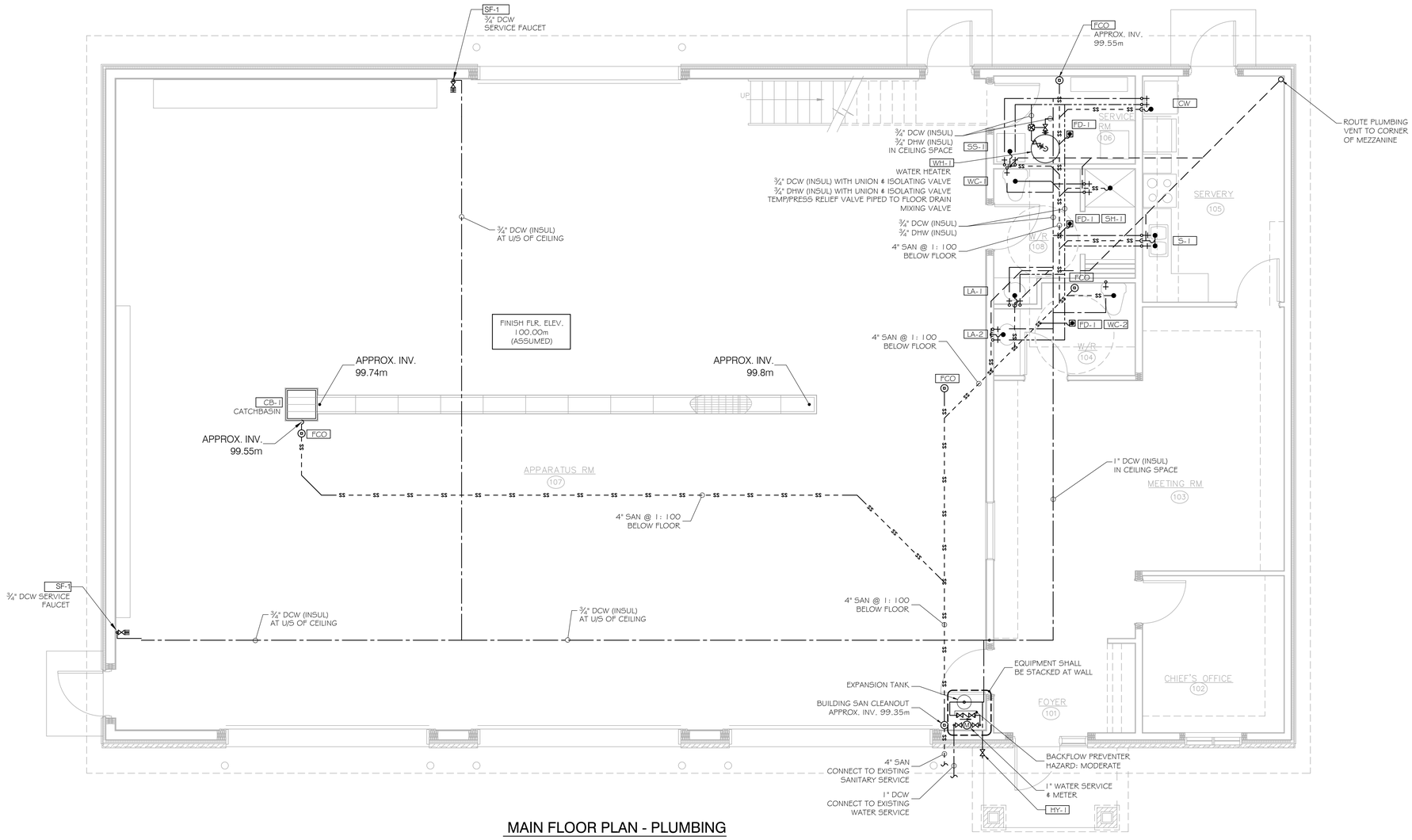
Drawing No.: M2

REV DATE: 7/6/2021



NOTE:
AS AN ALTERNATIVE, CONTRACTOR MAY PROVIDE A PRECAST CONCRETE CATCH BASIN, O.P.S.D. 705.10 WITH A CAST IRON, SQUARE FRAME AND FLAT GRATE, O.P.S.D. 400.20 IN LIEU OF CAST IN PLACE CONCRETE CATCH BASIN.

CATCHBASIN/TRENCH DETAIL



MAIN FLOOR PLAN - PLUMBING

SCALE: ¼" = 1'-0"

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NORTH
PROJECT

LICENSED PROFESSIONAL ENGINEER
2021-07-06
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Project Title:
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TOWNSHIP OF NORTH STORMONT

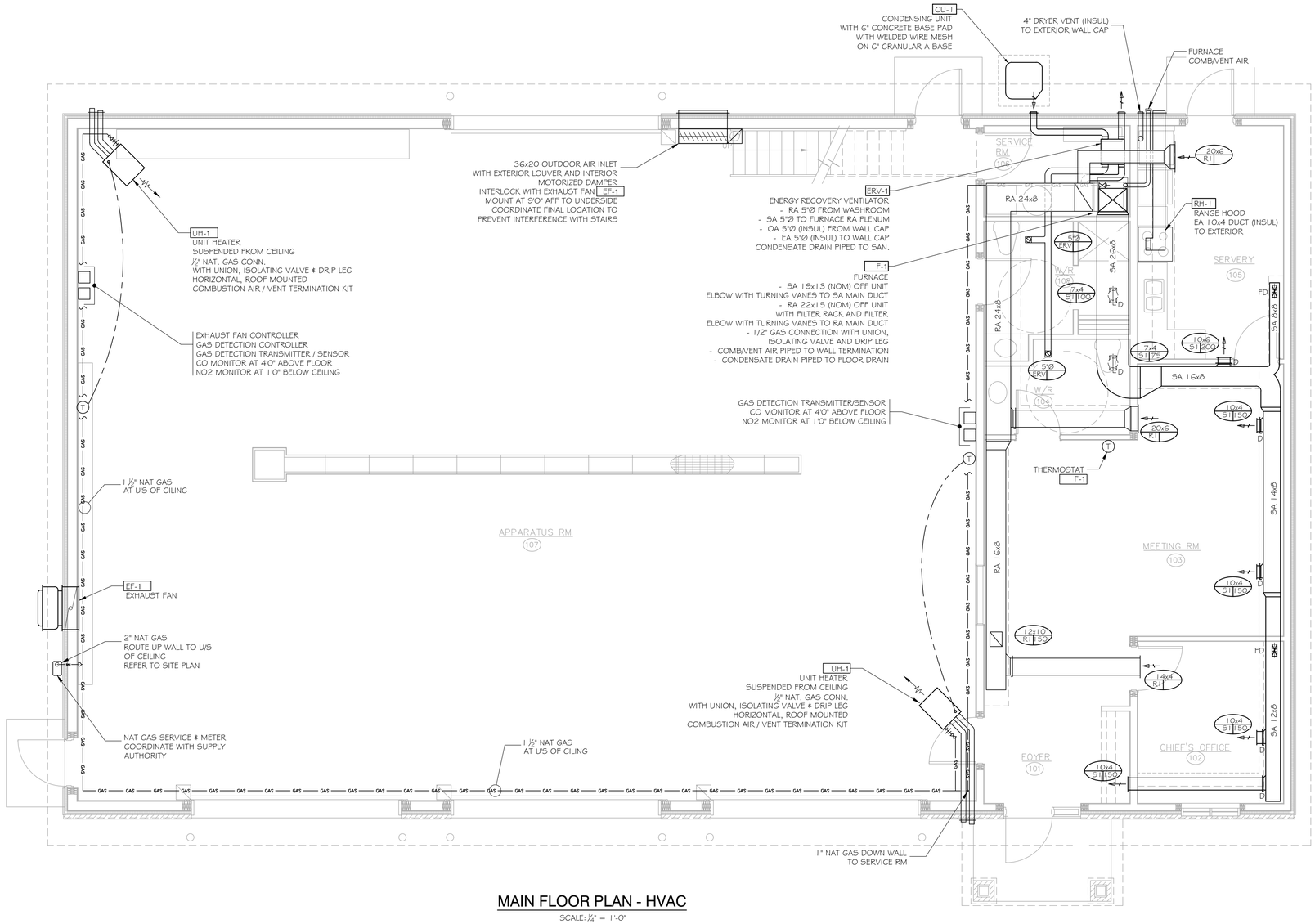
Drawing Title:
PLUMBING
MAIN FLOOR PLAN

Design:	Checked:	Approved: MM	Project No.: 9655
Drawn: MP	Checked:	Date: 2021-05-18	Contract No.:

Scale:
Horizontal: AS SHOWN
Vertical: AS SHOWN

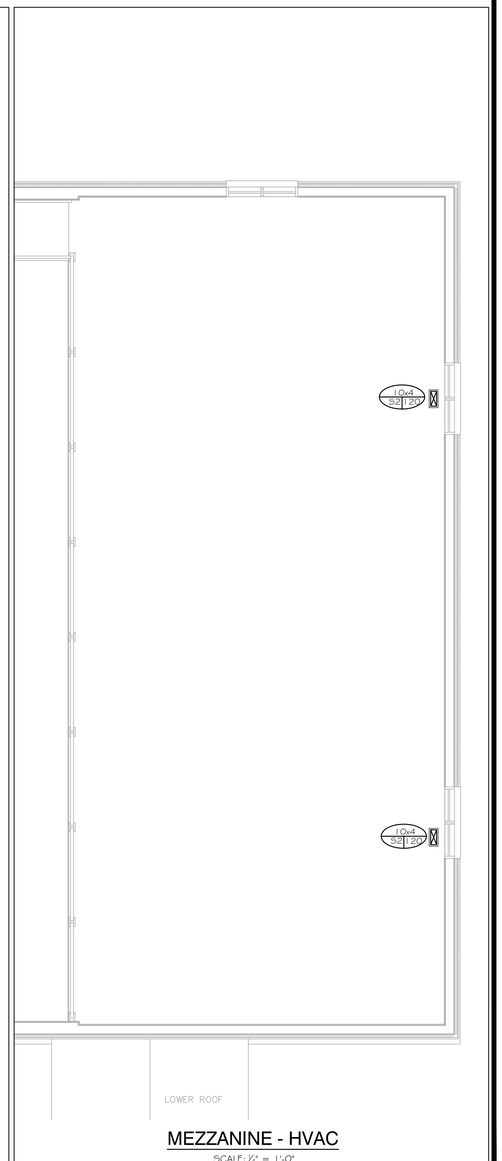
Drawing No.: M3

REV DATE: 7/6/2021



MAIN FLOOR PLAN - HVAC

SCALE: ¼" = 1'-0"



MEZZANINE - HVAC

SCALE: ¼" = 1'-0"

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PROJECT NORTH

LICENSED PROFESSIONAL ENGINEER
2021-07-06
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Project Title:

CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

Drawing Title:

HVAC
MAIN FLOOR PLAN
MEZZANINE

Design:	Checked:	Approved: MM	Project No.: 9655
Drawn: MP	Checked:	Date: 2021-05-18	Contract No.:

Scale:
Horizontal: AS SHOWN
Vertical: AS SHOWN

Drawing No.: M4

REV DATE: 7/6/2021

ELECTRICAL NOTES

ELECTRICAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS FOR THIS PROJECT.

1 GENERAL:
.1 CONFORM WITH APPLICABLE REQUIREMENTS OF THE MINISTRY OF LABOUR, AND THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
.2 DO COMPLETE INSTALLATION IN ACCORDANCE WITH THE FOLLOWING:
 .1 ONTARIO ELECTRICAL SAFETY CODE;
 .2 ELECTRICAL SAFETY AUTHORITY;
 .3 ELECTRICAL SUPPLY AUTHORITY.
.3 SUBMIT TO ELECTRICAL SAFETY AUTHORITY AND SUPPLY AUTHORITY NECESSARY NUMBER OF DRAWINGS AND SPECIFICATIONS FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK.
.4 COORDINATE AND OBTAIN ELECTRICAL SERVICE LAYOUT FROM THE SUPPLY AUTHORITY.
.5 PAY ALL ELECTRICAL PERMIT AND INSPECTION FEES.
.6 GROUND COMPLETE SYSTEM IN ACCORDANCE WITH THE ONTARIO ELECTRICAL SAFETY CODE AND ELECTRICAL SAFETY AUTHORITY.
.7 IDENTIFICATION AND LABELLING:
 .1 IDENTIFY ELECTRICAL EQUIPMENT WITH LAMICOID NAMEPLATES, INCLUDING AMPERAGE, VOLTAGE, PHASE AND POWER SOURCE.
 .2 PROVIDE TYPEWRITTEN PANEL DIRECTORIES.
 .3 PROVIDE ADHESIVE LABEL ON ALL SWITCH, RECEPTACLE AND DEVICE COVER PLATES INDICATING SUPPLY CIRCUIT DESIGNATION.
.8 PROVIDE BINDER AND DIGITAL COPY OF COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS FOR EQUIPMENT FURNISHED UNDER THIS CONTRACT. INCLUDE THE FOLLOWING:
 .1 SCHEMATIC DIAGRAM OF ELECTRICAL SYSTEMS.
 .2 CONTROL SHOP DRAWINGS AND OPERATING SEQUENCE INCLUDING WIRING OF COMPONENTS.
 .3 WIRING DIAGRAM OF CONTROL PANELS.
 .4 OPERATING INSTRUCTIONS, INCLUDING START-UP AND SHUT-DOWN PROCEDURE.
 .5 MAINTENANCE INSTRUCTIONS INCLUDING PREVENTIVE MAINTENANCE INSTRUCTIONS FOR COMPONENTS OF THE EQUIPMENT.
 .6 COMPLETE PARTS LIST OF ASSEMBLIES AND THEIR COMPONENT PARTS, SHOWING MANUFACTURER'S NAME, CATALOGUE NUMBER, AND NEAREST REPLACEMENT SOURCE.
 .7 LIST OF RECOMMENDED SPARE PARTS AND QUANTITY OF EACH ITEM TO BE STOCKED.
 .8 MANUFACTURERS' WARRANTIES AND GUARANTEES.
.9 CLEAN ALL ELECTRICAL SYSTEMS AT PROJECT COMPLETION.
.10 COMPLETE AS-BUILT DRAWINGS SHOWING ALL CHANGES AS WORK PROGRESSES.

2 CONTRACTOR QUALIFICATIONS:
.1 ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE "TRADES QUALIFICATION AND APPRENTICESHIP ACT" AND REGULATIONS, BY PERSONS WHO HOLD THE FOLLOWING CERTIFICATES OF QUALIFICATION (AS APPLICABLE):
 .1 ELECTRICIAN: CONSTRUCTION & MAINTENANCE.

3 EXISTING FACILITIES AND DEMOLITION:
.1 LOCATE AND PROTECT ALL EXISTING EXTERIOR SITE SERVICES.
.2 RETAIN AND PROTECT ALL EXISTING INTERIOR SERVICES AND BUILDING FABRIC. MAKE GOOD ANY AND ALL DAMAGE RESULTING FROM THIS WORK.
.3 CONNECTIONS TO EXISTING SERVICES SHALL BE COORDINATED WITH THE OWNER.
.4 EXECUTE WORK WITH LEAST POSSIBLE INTERFERENCE OR DISTURBANCE TO NORMAL USE OF THE EXISTING BUILDING.

4 FIXTURES AND EQUIPMENT:
.1 PROVIDE SHOP DRAWINGS AND PRODUCT DATA FOR ALL ELECTRICAL FIXTURES AND EQUIPMENT FOR APPROVAL, PRIOR TO PROCUREMENT.
.2 INSTALL ALL ELECTRICAL FIXTURES AND EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
.3 EQUIPMENT AND MATERIAL TO BE CSA CERTIFIED. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT CSA CERTIFIED, OBTAIN SPECIAL APPROVAL FROM ELECTRICAL SAFETY AUTHORITY.

5 EQUIPMENT SUPPLIED BY OTHERS:
.1 ELECTRICAL CONTRACTOR SHALL TAKE FULL REPONSIBILITY FOR MAKING ALL ELECTRICAL SERVICE CONNECTIONS TO EQUIPMENT SUPPLIED BY OTHERS, INCLUDING:
 .1 REVIEW OF ALL SHOP DRAWINGS FOR EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS.
 .2 VERIFY AND CONFIRM ALL SERVICE CONNECTIONS WITH MANUFACTURER, SUPPLIER AND OTHER TRADES, PRIOR TO PROCUREMENT OF ELECTRICAL PANELS, BREAKERS, WIRE/CABLE, DISCONNECT SWITCHES, MOTOR STARTERS, RECEPTACLES AND RELATED EQUIPMENT.
 .3 REVIEW OF EQUIPMENT SUPPLIED BY OTHERS, SHALL INCLUDE ALL CONNECTION SIZES, LOCATIONS AND DETAILS, AND SHALL TAKE INTO ACCOUNT EQUIPMENT CLEARANCES AND INSTALLATION REQUIREMENTS.

6 CONDUITS:
.1 RIGID GALVANIZED STEEL, WITH THREADED FITTINGS, WHERE SUBJECT TO MECHANICAL INJURY, IN SERVICE AREAS ONLY.
.2 ELECTRICAL METALLIC TUBING (EMT), HOT DIPPED GALVANIZED STEEL, WITH THREADED CONNECTORS AND COUPLINGS, WHERE NOT SUBJECT TO MECHANICAL INJURY, IN SERVICE AREAS ONLY.
.3 RIGID PVC CONDUIT BELOW FLOOR AND IN CORROSIVE AREAS.

7 WIRES AND CABLE:
.1 VOLTAGE DROP:
 .1 FEEDER CONDUCTORS SHALL BE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2% AT DESIGN LOAD.
 .2 BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3% AT DESIGN LOAD.
.2 BUILDING WIRES:
 .1 IN CONDUIT SYSTEMS TO BE STRANDED COPPER CONDUCTORS FOR 10 AWG AND LARGER, MINIMUM SIZE 12 AWG, TYPE RW90.
.3 BUILDING WIRES IN CONCEALED LOCATIONS TO BE COPPER, MINIMUM SIZE 12 AWG, TYPE AC90.
.4 ALL WIRING, CABINETS AND BOXES SHALL BE CONCEALED IN WALLS AND CEILINGS, UNLESS OTHERWISE NOTED OR APPROVED. SURFACE-MOUNTED WIRING IS NOT PERMITTED.

8 DATA AND TELEPHONE:
.1 SUPPLY AND INSTALL 2 RUNS, 4" CONDUIT FROM SITE TELEPHONE SERVICE LOCATION TO MAIN ELECTRICAL ROOMS.
.2 SUPPLY AND INSTALL TELEPHONE BACKBOARD.
.2 DATA/TELEPHONE:
 .1 DATA AND TELPHONE WIRES CAT 6.
 .2 DATA AND TELEPHONE OUTLETS SHALL BE PROVIDED IN SEPARATE OUTLET BOXES AND SEPARATE CONDUIT.
 .3 SUPPLY, INSTALL AND TERMINATE DATA AND TELEPHONE OUTLETS, AS FOLLOWS:
  .1 1 PORT WALL PLATE - PANDUIT #CFG1WH;
  .2 2 PORT WALL PLATE - PANDUIT #CFG2WH;
  .3 4 PORT WALL PLATE - PANDUIT #CFG4WH;
  .4 FACE PLATE JACK - PANDUIT #CJ5E88TG, 2 COLOURS, COLOURS SELECTED BY OWNER'S IT REPRESENTATIVE;
  .5 COVER PLATE - LEVITON #80401-W, 2 COLOURS, COLOURS SELECTED BY OWNER'S IT REPRESENTATIVE.
 .4 SUPPLY, INSTALL AND TERMINATE DATA AND TELEPHONE CABLES IN IT ROOM.
 .5 DATA AND TELEPHONE CABLES SHALL BE TERMINATED IN SEPARATE PATCH PANELS, AS FOLLOWS:
  .1 PATCH PANEL - PANDUIT #CP24BLY (SUPPLY SUFFICIENT QUANTITY TO SEPARATE DATA AND TELEPHONE, AND TO SUIT NUMBER OF OUTLETS);
  .2 PATCH PANEL JACK - PANDUIT #CJ5E88TG, 2 COLOURS, COLOURS SELECTED BY OWNER'S IT REPRESENTATIVE.
 .6 ALL TELEPHONE AND DATA CABLING AND TERMINATIONS SHALL BE TESTED IN ACCORDANCE WITH ANSI/EIA/TIA 568-C.2 CATEGORY 6A BALANCED TWISTED -PAIR TELECOMMUNICATIONS CABLING AND COMPONENTS STANDARD, BY A THIRD PARTY TESTING AGENCY

9 SERVICE EQUIPMENT:
.1 ELECTRICAL SERVICE EQUIPMENT, PANELBOARDS AND DISCONNECT SWITCHES SHALL BE PRODUCT OF ONE MANUFACTURER THROUGHOUT PROJECT - CUTLER-HAMMER, SIEMENS OR SQUARE D.
.2 CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE.
.3 WORKING SPACE ABOUT ELECTRICAL EQUIPMENT SHALL BE PROVIDED IN ACCORDANCE WITH THE ONTARIO ELECTRICAL SAFETY CODE, INCLUDING THE FOLLOWING:
 .1 WORKING SPACE OF 3'4" (1m) WITH SECURE FOOTING;
 .2 MINIMUM HEADROOM OF 7'3" (2.2m).

10 WIRING DEVICES:
.1 WIRING DEVICES OF ONE MANUFACTURER THROUGHOUT PROJECT - HUBBELL OR LEVITON.
.2 COMMERCIAL PROJECTS:
 .1 OUTLET BOXES:
  .1 GANG BOXES WHERE WIRING DEVICES ARE GROUPED.
  .2 BLANK COVER PLATES FOR BOXES WITHOUT WIRING DEVICES.
 .2 SWITCHES:
  .1 HEAVY DUTY, 20A/120V;
  .2 SINGLE POLE, AND THREE-WAY, AS APPLICABLE;
  .3 COLOUR: SELECTED BY OWNER/ARCHITECT.
 .3 DUPLEX RECEPTACLES:
  .1 EXTRA HARD USE, CSA TYPE 5-15 R, 15A/125V;
  .2 GFI (GROUND FAULT CIRCUIT INTERRUPTER) WITH DETECT AND TRIP ON GROUND FAULT, STATUS INDICATOR LIGHT AND TEST SWITCH;
  .3 TAMPER-RESISTANT WHERE REQUIRED BY CODE;
  .4 COLOUR: SELECTED BY OWNER/ARCHITECT.
 .4 COVER PLATES:
  .1 STAINLESS STEEL.

11 LIGHTING:
.1 GENERAL LIGHTING:
 .1 SUPPORT ALL LIGHTING IN ACCORDANCE WITH THE ONTARIO ELECTRICAL SAFETY CODE AND BULLETINS.
 .2 LIGHT FIXTURES SUPPORTED BY SUSPENDED CEILING SYSTEMS SHALL HAVE ADDITIONAL SUPPORT TO BUILDING STRUCTURE IN ACCORDANCE WITH ONTARIO ELECTRICAL SAFETY CODE BULLETIN #30-4-11.
.2 FUNCTIONAL TESTING OF LIGHTING CONTROL, IN ACCORDANCE WITH ASHRAE 90.1 (9.4.3):
 .1 LIGHTING CONTROL DEVICES AND CONTROL SYSTEMS SHALL BE TESTED TO ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED, AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
.3 EXIT AND EMERGENCY LIGHTING:
 .1 CONNECT DC CIRCUIT FROM EMERGENCY LIGHT BATTERY PACK TO ALL EXIT AND EMERGENCY LIGHTS.
 .2 SIZE EMERGENCY LIGHTING POWER PACK TO PROVIDE FULL LOAD POWER FOR 1 HR.
 .3 EMERGENCY LIGHT BATTERY PACKS (UNIT EQUIPMENT) SHALL BE INSTALLED IN SUCH A MANNER THAT IT WILL BE AUTOMATICALLY ACTUATED UPON FAILURE OF THE POWER SUPPLY TO THE NORMAL LIGHTING IN THE AREA COVERED BY THAT UNIT EQUIPMENT PER OESC 46-304(4).
.4 SITE LIGHTING:
 .1 CONTRACTOR SHALL PROVIDE A FULL PHOTOMETRIC LAYOUT FOR THE PROPOSED SITE LIGHTING FIXTURES.

12 FIRE PROTECTION:
.1 REFER TO ARCHITECTURAL DRAWINGS, TO VERIFY LOCATION OF ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.
.2 ALL CABLING AND CONDUIT SHALL BE TIGHTLY FITTED AND SEALED WITH FIRESTOPPING MATERIAL AT ALL FIRE SEPARATIONS AND FIRE-RATED MEMBRANES.
.3 THE FOLLOWING CONDUCTORS SHALL BE PROTECTED IN ACCORDANCE WITH OBC 3.2.7.10(2), AND SHALL CONFORM TO ULC-S139 "FIRE TEST EVALUATION OF INTEGRITY OF ELECTRICAL CABLES", TO PROVIDE A CIRCUIT INTEGRITY RATING OF NOT LESS THAN 1 HOUR (2 HOUR FOR TALL BUILDINGS OR CONTAINED USE AREAS OR INTERCONNECTED FLOOR SPACES):
 .1 ELECTRICAL FEEDER CONDUCTORS WHICH SERVE ELECTRICAL PANELS;
 .2 BRANCH CIRCUIT CONDUCTORS WHICH SERVE EXIT AND EMERGENCY LIGHTING.
.4 PLENUMS (OBC 3.6.4.3):
 .1 ALL MATERIALS WITHIN THE PLENUM SHALL A FLAME-SPREAD RATING NOT MORE THAN 25 AND A SMOKE DEVELOPED CLASSIFICATION NOT MORE THAN 50.
.5 MOCK-UPS:
 .1 PREPARE MOCK-UPS OF TYPICAL FIRESTOP INSTALLATION OF THE FOLLOWING, FOR REVIEW AND APPROVAL BY THE OWNER, ENGINEER AND MUNICIPAL BUILDING INSPECTOR:
  .1 CONDUIT AND CABLING - WALL AND CEILING/FLOOR FIRE SEPARATION.
 .2 ALL FIRESTOP INSTALLATIONS SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROPRIATE PRODUCT INSTALLATION INSTRUCTIONS, AND THE REFERENCED UL/ULC LISTING AND/OR TEST STANDARD.
 .3 SUPPLY A COPY OF THE PRODUCT INSTALLATION INSTRUCTIONS WITH ULC LISTING AND/OR TEST STANDARD REFERENCE, FOR EACH INSTALLATION.
 .4 MOCK-UP MAY REMAIN AS PART OF WORK.

13 EARTHQUAKE LOAD:
.1 ALL ELECTRICAL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE EARTHQUAKE LOAD AND EFFECTS REQUIRED BY THE ONTARIO BUILDING CODE.
.2 ELECTRICAL ELEMENTS AND COMPONENTS (FIXTURES, EQUIPMENT, CONDUIT, ETC.), AND THEIR CONNECTIONS TO THE BUILDING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA/ANSI SEISMIC RESTRAINT MANUAL OR OTHER GUIDELINE REFERENCED IN THE ONTARIO BUILDING CODE AND ONTARIO ELECTRICAL SAFETY CODE.
.3 PROVIDE SHOP DRAWINGS FOR SUPPORT, CONNECTIONS AND SEISMIC RESTRAINT OF ALL ELECTRICAL FIXTURES, EQUIPMENT, AND CONDUIT, INCLUDING, BUT NOT LIMITED TO:
 .1 SERVICE AND DISTRIBUTION EQUIPMENT;
 .2 LIGHT FIXTURES;
 .3 TYPICAL CONDUIT AND CABLE SUPPORTING SYSTEM.
 THESE SHOP DRAWINGS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER IN THE PROVINCE OF ONTARIO, WITH EXPERIENCE IN SEISMIC ENGINEERING.
.4 FOLLOWING PROJECT COMPLETION, SEISMIC ENGINEER SHALL PROVIDE A LETTER OF FINAL SITE REVIEW.
.5 CONTRACTOR SHALL CARRY THE COST OF THE SEISMIC ENGINEERING, INCLUDING SITE REVIEWS, DESIGN AND SHOP DRAWING PREPARATION.

14 LOAD BALANCE:
.1 MEASURE PHASE CURRENT TO PANELBOARDS WITH NORMAL LOADS (LIGHTING) OPERATING AT TIME OF ACCEPTANCE. ADJUST BRANCH CIRCUIT CONNECTIONS AS REQUIRED TO OBTAIN BEST BALANCE OF CURRENT BETWEEN PHASES AND RECORD CHANGES.
.2 SUBMIT, AT COMPLETION OF WORK, REPORT LISTING PHASE AND NEUTRAL CURRENTS ON PANELBOARDS, OPERATING UNDER NORMAL LOAD. STATE HOUR AND DATE ON WHICH EACH LOAD WAS MEASURED, AND VOLTAGE AT TIME OF TEST.

15 HAZARDOUS LOCATIONS AND OTHER SPECIAL CASES:
.1 THE APPARATUS BAY AREA, AND ADJACENT ROOMS, UP TO A LEVEL OF 50mm ABOVE THE FLOOR SHALL BE CONSIDERED A CLASS I (FLAMMABLE GASES OR VAPOURS) ZONE 2 LOCATION.
.2 ALL ELECTRICAL EQUIPMENT USED WITHIN THE AREA SHALL BE APPROVED FOR THE CLASSIFICATION.
.3 ALL WIRING PRACTISES SHALL BE DONE IN ACCORDANCE WITH THE ONTARIO ELECTRICAL SAFETY CODE FOR THE ABOVE CLASSIFICATION.

16 EQUIPMENT SUPPORT:
.1 ALL ELECTRICAL EQUIPMENT, CONDUIT, WIRING, LIGHTING, DEVICES, AND RELATED ITEMS SHALL BE SECURELY SUPPORTED, ATTACHED AND FASTENED TO BUILDING STRUCTURE.
.2 HANGERS AND SUPPORTS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH MSS STANDARD SP-58, PIPE HANGERS AND SUPPORTS - MATERIALS, DESIGN, MANUFACTURE, SELECTION, APPLICATION, AND INSTALLATION.
.3 PLATFORMS SHALL BE FABRICATED FROM STRUCTURAL GRADE STEEL MEETING THE REQUIREMENTS OF THE ONTARIO BUILDING CODE, INCLUDING CSA STANDARD W59 WELDED STEEL CONSTRUCTION, AND THE REQUIREMENTS OF THE CANADIAN WELDING BUREAU.
.4 SUPPLY AND INSTALL ALL EQUIPMENT MOUNTING SUPPORTS FOR ALL ELECTRICAL EQUIPMENT AND DEVICES. ALL SUPPORTS SHALL BE FABRICATED FROM GALVANIZED STRUCTURAL GRADE STEEL MEETING THE REQUIREMENTS OF CSA STANDARD W59 WELDED STEEL CONSTRUCTION AND THE REQUIREMENTS OF THE CANADIAN WELDING BUREAU. SHOP DRAWINGS FOR ALL EQUIPMENT MOUNTING SUPPORTS, INCLUDING ATTACHMENT DETAILS, SHALL BE SUBMITTED FOR REVIEW. THESE SHOP DRAWINGS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER IN THE PROVINCE OF ONTARIO.

17 COORDINATION:
.1 INFORMATION INVOLVING ACCURATE DIMENSIONING OF THE BUILDING SHALL BE TAKEN FROM SITE BY CONTRACTOR.
.2 DRAWINGS ARE IN DIAGRAMMATIC FORM, INTENDED TO CONVEY THE SCOPE OF WORK AND GENERAL ARRANGEMENT FOR EQUIPMENT. COORDINATE PHYSICAL LOCATION OF ALL EQUIPMENT WITH OTHER TRADES AND ALLOW FOR ANY ADDITIONAL CONDUIT, WIRING, FITTINGS, SUPPORTS, ETC., IN ORDER TO AVOID INTERFERENCE AND FACILITATE THE WORK.
.3 CONTRACTOR TO MAKE ANY NECESSARY MODIFICATIONS OR ADDITIONS, WITHOUT CHARGE, TO ACCOMMODATE SITE CONDITIONS AND COORDINATION.
.4 COORDINATE AND VERIFY ALL ELECTRICAL BRANCH CIRCUIT REQUIREMENTS FOR EQUIPMENT SUPPLIED BY OTHERS, PRIOR TO MATERIAL PROCUREMENT OR INSTALLATION.
.5 PROVIDE ALL WIRING TO ALL MECHANICAL EQUIPMENT, INCLUDING WIRING BELOW 50V. COORDINATE ALL MECHANICAL EQUIPMENT WIRING WITH MECHANICAL TRADES.
.6 ALL DEVICE AND OUTLET LOCATIONS SHALL BE CAREFULLY COORDINATED WITH THE GENERAL CONTRACTOR OR OWNER, TO ACCOMMODATE ALL FEATURES, INCLUDING PLUMBING FIXTURES, EQUIPMENT AND MILLWORK.

18 START-UP, COMMISSIONING AND TRAINING:
.1 START-UP AND COMMISSION THE FOLLOWING SYSTEMS:
 .1 MAIN ELECTRICAL SERVICE EQUIPMENT;
 .2 GENERAL LIGHTING;
 .3 EXIT AND EMERGENCY LIGHTING.
.2 PERFORM SYSTEMATIC TESTS, PROCEDURES AND CHECKS ON SYSTEMS, AS FOLLOWS:
 .1 TO VERIFY OPERATION IN ACCORDANCE WITH CONTRACT DOCUMENTS, DESIGN CRITERIA AND INTENT, AND MANUFACTURER'S REQUIREMENTS;
 .2 TO ENSURE APPROPRIATE DOCUMENTATION IS PROVIDED;
 .3 TO EFFECTIVELY TRAIN BUILDING OPERATIONAL STAFF.
.3 SYSTEMS ARE TO BE OPERATED AT FULL CAPACITY, WITH CORRECTION OF ALL DEFICIENCIES AND ADJUSTMENTS TO MEET OPTIMUM PERFORMANCE.
.4 PROVIDE WRITTEN REPORT AT END OF COMMISSIONING OUTLINING EQUIPMENT OPERATIONAL CONDITIONS AND PARAMETERS.

ELECTRICAL LEGEND

NOTE: HEIGHT IS FROM FINISHED FLOOR TOP TO LINE OF EQUIPMENT, UNLESS OTHERWISE NOTED — HEIGHT

DESIGNATIONS

GFCI	GROUND FAULT CIRCUIT INTERRUPTER
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AC	ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
WP	WEATHERPROOF

DISTRIBUTION

DISTRIBUTION PANEL	72"/1825mm (TOP)
SINGLE POLE TOGGLE SWITCH - 20A/120V	35.5" / 900mm
3-WAY TOGGLE SWITCH - 20A/120V	
MOTION SENSOR CONTROL - (SWITCH)	TO
MOTION SENSOR & DIMMER CONTROL - (SWITCH)	43.3 / 1100mm
MOTION SENSOR CONTROL - (CEILING)	
MOTION SENSOR & DAYLIGHT PHOTOCELL CONTROL - (CEILING)	
DUPLEX RECEPTACLE (WALL) - 15A/120V	12"/300mm
DUPLEX RECEPTACLE (SPLIT) - 15A/120V	12"/300mm
NON-STANDARD RECEPTACLE	AS NOTED
DIRECT EQUIPMENT CONNECTION	AS NOTED
NON-FUSED DISCONNECT SWITCH	54"/1370mm
FUSED DISCONNECT SWITCH	54"/1370mm
BRANCH CIRCUIT	
BRANCH CIRCUIT, SWITCHED	
BRANCH CIRCUIT, HOMERUNS TO PANEL	

LIGHTING

F FLUORESCENT LIGHT FIXTURE - RECESSED	
F FLUORESCENT LIGHT FIXTURE - SURFACE	
LIGHT FIXTURE F - FLUORESCENT H - HIGH INTENSITY DISCHARGE L - INCANDESCENT	

DATA COMMUNICATIONS

TELEPHONE OUTLET (WALL)	PROVIDE 3/4" CONDUIT FROM BACK BOX TO SUSPENDED CEILING SPACE ROUGH-IN ONLY	12"/300mm
TELEPHONE OUTLET (FLOOR)		
DATA OUTLET (WALL)		12"/300mm
DATA OUTLET (FLOOR)		
DATA & TELEPHONE OUTLET (WALL)		12"/300mm
TELEVISION OUTLET (WALL)		12"/300mm
TELEVISION OUTLET (FLOOR)		
SPEAKER (WALL / CEILING)		
WIRELESS TRANSMITTER / RECEVER		

EXIT & EMERGENCY LIGHTING

EXIT LIGHT, SURFACE MOUNTED, SINGLE FACE	90"/2300mm
EXIT LIGHT, END OR CEILING MOUNTED, SINGLE FACE	90"/2300mm
EXIT LIGHT, END OR CEILING MOUNTED, DOUBLE FACE	90"/2300mm
COMBINATION EXIT & EMERGENCY LIGHT	
EMERGENCY LIGHT, BATTERY PACK	90"/2300mm
EMERGENCY LIGHT, DOUBLE REMOTE	90"/2300mm
EMERGENCY LIGHT, SINGLE REMOTE	90"/2300mm

ELECTRICAL LOAD CALCULATION

OTHER TYPES OF OCCUPANCY (OESC 8-210)

BASIC LOAD			AREA (sq.ft.)	AREA (sq.m)	BASIC LOAD (W/sq.m.)		DEMAND FACTOR	LOAD (W)
OFFICE - FIRST 930 SQ.M.			1032	96	50		0.90	4315
MEZZANINE			1032	96	25		1.00	2397
APPARATUS ROOM			3000	279	10		1.00	2787
ADDITIONAL LOAD		**QTY**	**LOAD (W)**	**LOAD (Amp)**	**VOLTAGE (V)**	**PHASE FACTOR**	**DEMAND FACTOR**	**LOAD (W)**
RANGE		1	6000				1.00	6000
WATER HEATER		1	6000				1.00	6000
AIR CONDITIONING:								
- 3 ton		1		19.8	240	1.00	1.25	5940
OVERHEAD DOOR OPERATORS	3/4 HP	4		6.9	240	1.00	1.00	6624
EVSE (Electric Vehicle Supply Equipment)								
- Level 2	30A/240V	1		24	240	1.00	1.00	5760

TOTAL LOAD

TOTAL LOAD - 120/240 V, 1PH	**VOLTAGE (V)**	**PHASE FACTOR**	**(W)**	**39823**
AMPERAGE	**240**	**1.00**	**(A)**	**166**
MAIN SERVICE SIZE (DE-RATED TO 80%)			**(A)**	**207**

NOTES:
1. ELECTRICAL LOAD CALCULATION IS BASED ON THE CALCULATION PROCEDURES FOR MINIMUM CIRCUIT AMPACITY OF THE SERVICE, AS OUTLINED IN THE ONTARIO ELECTRICAL SAFETY CODE, SECTION 8, SERVICE AND FEEDERS.

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No.	By	Date	Revisions
1	MP	2021-07-06	FOR PERMIT
0	MP	2021-06-30	FOR REVIEW

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The contractor must check and verify all dimensions on the job prior to start of construction.

DRAWINGS ARE NOT TO BE SCALED

LICENSED PROFESSIONAL ENGINEER
2021-07-06
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PROVINCE OF ONTARIO

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Project Title:
CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

Drawing Title:
ELECTRICAL
NOTES & SCHEDULES

Design:	Checked:	Approved: MM	Project No.: 9655
Drawn: MP	Checked:	Date: 2021-05-18	Contract No.:

Scale:
Horizontal: AS SHOWN
Vertical: AS SHOWN

Drawing No.: E1

REV DATE: 7/6/2021

ELECTRICAL PANEL 'P-1'

Location:	SERVICE ROOM	Mounting:	SURFACE
Rated Amp:	225	Mains Amp:	225A BREAKER
Voltage:	120/240	Phase:	1

Load Watts	Load Description	Description	Breaker Amp	Breaker Pole	Breaker No.	Breaker No.	Breaker Pole	Breaker Amp	Description	Load Description	Load Watts
320	8F1	LIGHTS - 101,102,103	15	1	1	2	1	15	LIGHTS - 104,105,106,108	6F1,F3	250
320	8F2	LIGHTS - MEZZANINE	15	1	3	4	1	15	LIGHTS - APPARATUS RM	4F4	800
800	4F4	LIGHTS - APPARATUS RM	15	1	5	6	1	15	LIGHTS - APPARATUS RM	4F4	800
200	2CF	CEILING FANS - APPARATUS RM	15	1	7	8	1	15	LIGHTS - EXTERIOR LOW	3L1,L2	100
		SPARE	15	1	9	10	1	15	LIGHTS - EXTERIOR HIGH	6L3	420
200	REC	RECEP - PANEL	15	1	11	12	1	15	LIGHTS - EXTERIOR CONTROL		100
200	REC	RECEP - TELE/DATA	15	1	13	14	1	15	RECEP - 102	4REC	800
800	4REC	RECEP - 103	15	1	15	16	1	15	RECEP - 104,108	2REC GFI	400
800	4REC	RECEP - 103	15	1	17	18	1	15	RECEP - 105 WALL	2REC	400
400	REC	RECEP - 105 COUNTER	20	1	19	20	1	15	RECEP - 105 REFRIG	REC	250
400	REC GFI	RECEP - 105 COUNTER	20	1	21	22	1	15	RECEP - APPARATUS RM WALL	4REC GFI	800
400	REC GFI	RECEP - 105 COUNTER	20	1	23	24	1	15	RECEP - APPARATUS RM WALL	4REC GFI	800
400	2REC	RECEP - APPARATUS RM COUNTER	15	1	25	26	1	15	RECEP - APPARATUS RM COUNTER	2REC	400
600	3REC	RECEP - EXTERIOR	15	1	27	28					
					29	30					
					31	32					
					33	34					
					35	36					
					37	38					
					39	40					
1680	3/4 HP	OVERHEAD DOOR OPERATOR	15	2	41	42	2	15	OVERHEAD DOOR OPERATOR	3/4 HP	1680
					43	44					
1680	3/4 HP	OVERHEAD DOOR OPERATOR	15	2	45	46	2	15	OVERHEAD DOOR OPERATOR	3/4 HP	1680
					47	48					
500		CLOTHES WASHER			49	50	1	15	ENERGY RECOVERY VENTILATOR	ERV-1	250
4500	CD	CLOTHES DRYER	30	2	51	52	1	15	FURNACE	F-1	500
					53	54	2	35	CONDENSING UNIT	CU-1	4800
250	RH	RANGE HOOD	15	1	55	56					
6000	RA	RANGE	40	2	57	58	2	40	WATER HEATER	WH-1	6000
					59	60					
20.45	kW	CONNECTED LOAD							CONNECTED LOAD	kW	21.23
									TOTAL CONNECTED LOAD	kW	41.68

NOTES:

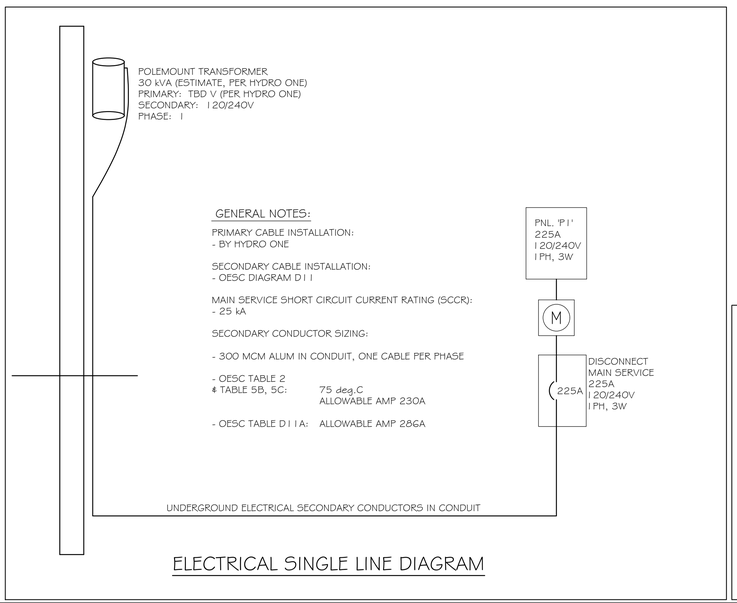
1. DEVICE QUANTITIES ARE APPROXIMATE
   DEVICES SHOWN ON FLOOR PLANS SHALL SUPERSEDE.
2. PROVIDE NEW PANEL LABEL AND TYPEWRITTEN CIRCUITING LEGEND.
3. EQUIPMENT SHALL BE SIEMENS, SQUARE D OR CUTLER-HAMMER.
4. PANEL SHALL BE COMPLETE WITH BOLT-ON BREAKERS, LOCKABLE DOOR, TRIM AND INTEGRAL TVSS.
5. ELECTRICAL REQUIREMENTS FOR EQUIPMENT SUPPLIED BY OTHERS ARE APPROXIMATE.
   COORDINATE ALL EQUIPMENT WIRING WITH OTHER TRADES.
6. PANELBOARD SHALL HAVE ISOLATED GROUND FEEDER, ISOLATED BUS BAR, AND
   AND ISOLATED GROUND TO ALL BRANCH CIRCUITS.
7. **CONTRACTOR SHALL VERIFY AND CONFIRM ALL CIRCUITING, AND SHALL PROVIDE A NEW CIRCUITING LEGEND FOR APPROVAL BY OWNER AND ENGINEER, PRIOR TO PROCEEDING WITH WIRING OF PANEL.. THIS CIRCUITING STUDY SHALL INCLUDE ALL EXISTING, ALTERED AND NEW CIRCUITS.**

NOTATIONS:

AFI	ARC FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT CIRCUIT INTERRUPTER
WP	WEATHERPROOF
TBD	TO BE DETERMINED AND CONFIRMED WITH OTHER TRADES

CEILING FAN SCHEDULE

UNIT	DESCRIPTION	FAN SIZE (in)	FAN VEL (fpm)	FAN FLOW (cfm)	ELECTRICAL VOLT (V)	ELECTRICAL PHASE	ELECTRICAL POWER (W)	ELECTRICAL MOCP (A)	ACCEPTABLE PRODUCT	NOTES
CF-1	CEILING FAN INDUSTRIAL	48	700	13000	120	1	86	0.8	CANARM #CP OR APPROVED EQUAL	WITH INFINITE INFINITE AND REVERSIBLE SPEED CONTROL



ELECTRICAL SINGLE LINE DIAGRAM

EXIT & EMERGENCY LIGHT FIXTURE SCHEDULE

UNIT	DESCRIPTION	LAMP	HOUSING	VOLTAGE	ACCEPTABLE PRODUCT	NOTES
E1	EXIT LIGHT SINGLE FACE SELF-POWERED	LED	ALUMINUM WHITE	120VAC 12 VDC	EMERGI-LITE #EA OR APPROVED EQUAL	EXTRUDED ALUMINUM HOUSING AND FACE PLATE GREEN PICTOGRAM DIRECTION ARROW (WHERE REQUIRED) END OR CEILING MOUNTED
E2	EXIT AND EMERGENCY LIGHT COMBINATION UNIT BATTERY PACK 2 LAMPHEADS SELF-POWERED (INDUSTRIAL)	2x25W PAR 36	OFF-WHITE STEEL	120VAC IN 12VDC OUT	EMERGI-LITE #ESC OR APPROVED EQUAL	LONG LIFE SEALED LEAD LED EXIT PUSH TO TEST SWITCH AC "ON" PILOT LIGHT GREEN PICTOGRAM EXIT SIGN DIRECTION ARROW (WHERE REQUIRED)
EL1	EMERGENCY LIGHT BATTERY PACK WITH WITH 2 LAMPHEADS	2x6W LED	OFF-WHITE STEEL	120VAC IN 12VDC OUT	EMERGI-LITE #ESL OR APPROVED EQUAL	LONG LIFE SEALED LEAD AC LINE CORD PUSH TO TEST SWITCH AC "ON" PILOT LIGHT
EL2	EMERGENCY LIGHT DOUBLE REMOTE HEAD	2x6W LED	OFF-WHITE	12VDC	EMERGI-LITE #EF9D OR APPROVED EQUAL	
EL3	EMERGENCY LIGHT SINGLE REMOTE HEAD	1x6W LED	OFF-WHITE	12VDC	EMERGI-LITE #EF9 OR APPROVED EQUAL	
EL4	EMERGENCY LIGHT BATTERY PACK WITH WITH 2 LAMPHEADS (INDUSTRIAL)	2x25W PAR 36	OFF-WHITE STEEL	120VAC IN 12VDC OUT	EMERGI-LITE #ESLPK OR APPROVED EQUAL	LONG LIFE SEALED LEAD AC LINE CORD PUSH TO TEST SWITCH AC "ON" PILOT LIGHT

NOTES:
1. CONNECT DC CIRCUIT FROM EMERGENCY BATTERY PACK TO ALL EXIT AND EMERGENCY LIGHTS.
2. SIZE EMERGENCY LIGHT BATTERY PACK TO SUIT 30 MINUTE FULL LOAD.

LIGHT FIXTURE SCHEDULE

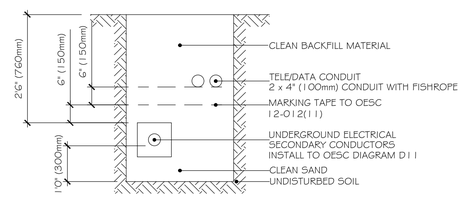
UNIT	DESCRIPTION	NOM. DIMN (in)	LAMP	COLOUR TEMP (K)	WATTS	MEAN LUMENS	VOLTAGE	ACCEPTABLE PRODUCT	NOTES
F1	LED LINEAR STRIP FIXTURE	W - 3.2 L - 45.6 (NOM 4FT)	LED	4000	36	4500	UNV 120	BJ TAKE #BLSP OR APPROVED EQUAL	DIMMABLE
F2	LED LINEAR STRIP FIXTURE	W - 3.2 L - 45.6 (NOM 4FT)	LED	4000	36	4500	UNV 120	BJ TAKE #BLSP OR APPROVED EQUAL	DIMMABLE WITH WIRE GUARD
F3	RECESSED POT LIGHT LED	12.5"x9"x5"H	LED	4000	10.5		120	JUNO #IC22LEDG3 OR APPROVED EQUAL	WET LOCATION GLASS LENS
F4	LED SURFACE	24" SQ	LED		187	24000	120	BJ TAKE #BLHP	DIMMABLE
L1	LED WALL PACK MANDOOR	H - 8.5 W - 5.8 D - 3.1	LED	DRIVER	20	2669	120	PREMISE #MD2 OR APPROVED EQUAL	WET LOCATION
L2	LED CANOPY	L - 8.5 W - 8.5 D - 3.3	LED	DRIVER	40	4760	120	PREMISE #CF4 OR APPROVED EQUAL	WET LOCATION
L3	LED WALL PACK ADJUSTABLE	H - 10.6 W - 4 D - ADJ	LED	DRIVER	70	7792	120	PREMISE #WP2 OR APPROVED EQUAL	WET LOCATION

LIGHTING CONTROL SCHEDULE

UNIT	DESCRIPTION	ELECTRICAL	ACCEPTABLE PRODUCT	NOTES
$M	WALL SWITCH MOTION SENSOR	120V	LEVITON #OSSMT-MAW	PASSIVE INFRARED (PIR) AND ULTRASONIC (U/S)
$D	WALL SWITCH MOTION SENSOR AND DIMMER	120V	LEVITON #AW SENSOR SWITCH #WSX-D OR APPROVED EQUAL	
M	MOTION SENSOR CEILING MOUNTED		LEVITON #OSC05-M0W (500 SF) #OSC10-M0W (1,000 SF) #OSC20-M0W (2,000 SF)	PASSIVE INFRARED (PIR) AND ULTRASONIC (U/S) 24 VDC INFRARED SENSITIVITY, ULTRASONIC SENSITIVITY AND TIME DELAY CONTROL POWER PACK AS REQUIRED

EXTERIOR LIGHTING CONTROL SCHEDULE

DESCRIPTION	ELECTRICAL	ACCEPTABLE PRODUCT	NOTES
TIMECLOCK	120V	INTERMATIC #ET1700 OR APPROVED EQUAL	7-DAY ELECTRONIC BATTERY BACK-UP
PHOTOCELL	120V	INTERMATIC #EK4236S OR APPROVED EQUAL	SIDE LENS SWIVEL ARM



TRENCH DETAIL - UNDERGROUND SECONDARY

MORRIS Engineering Ltd.
68 William St. Suite 200
Brockville, Ont.
Telephone: (613) 499-2077

No.	By	Date	Revisions
1	MP	2021-07-06	FOR PERMIT
0	MP	2021-06-30	FOR REVIEW

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LICENSED PROFESSIONAL ENGINEER
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Project Title:
CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

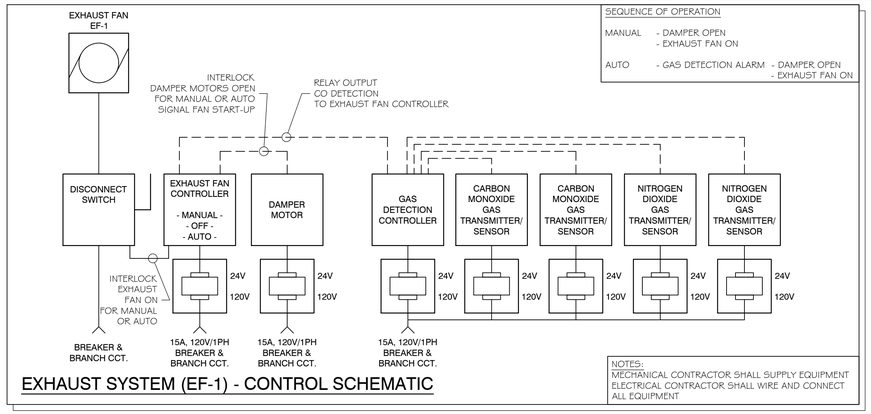
Drawing Title:
ELECTRICAL
SCHEDULES & DETAILS

Design:	Checked:	Approved: MM	Project No.: 9655
Drawn: MP	Checked:	Date: 2021-05-18	Contract No.:

Scale:
Horizontal: AS SHOWN
Vertical: AS SHOWN

Drawing No.: E2

REV DATE: 7/6/2021



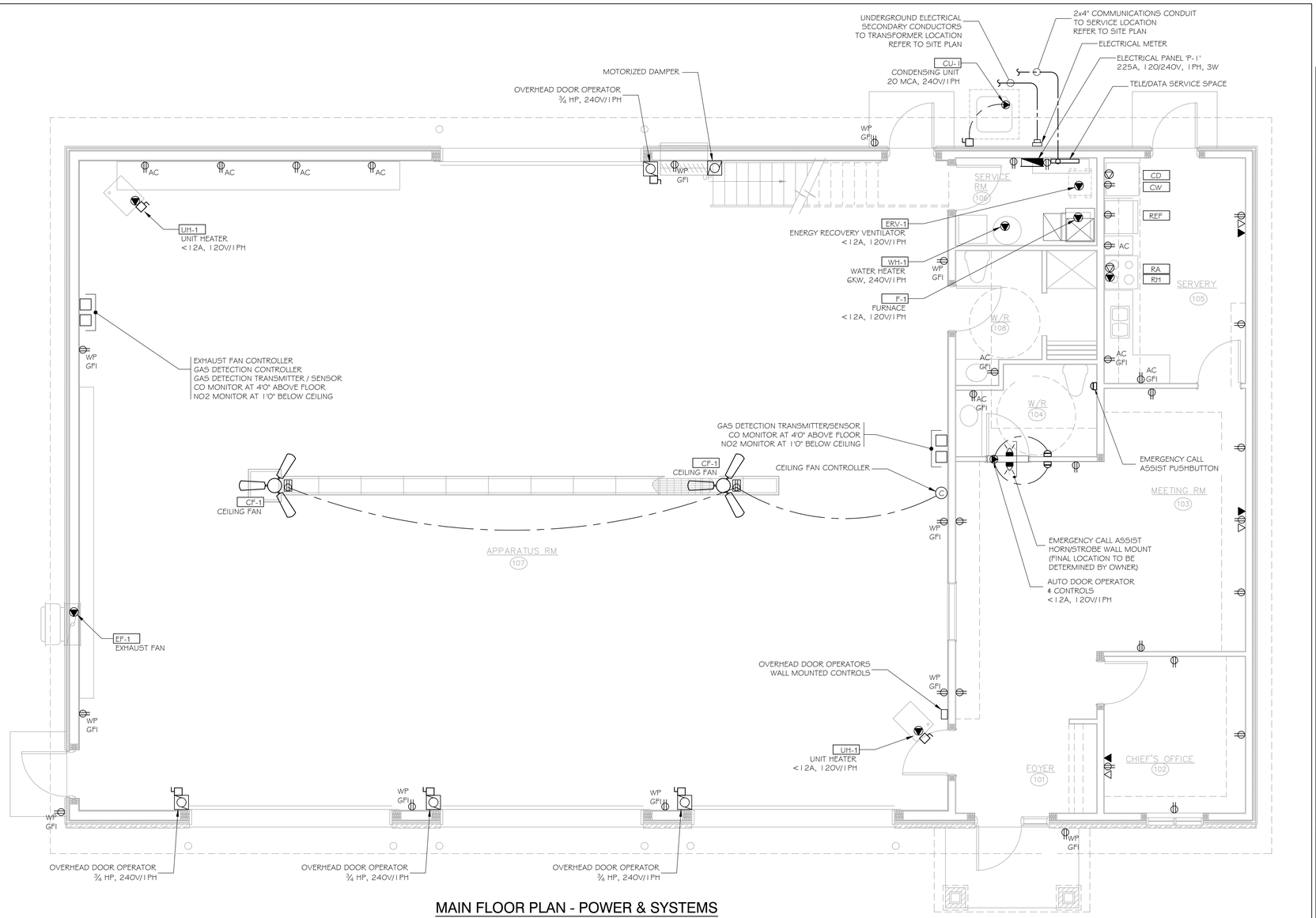
SEQUENCE OF OPERATION

MANUAL - DAMPER OPEN
- EXHAUST FAN ON

AUTO - GAS DETECTION ALARM - DAMPER OPEN
- EXHAUST FAN ON

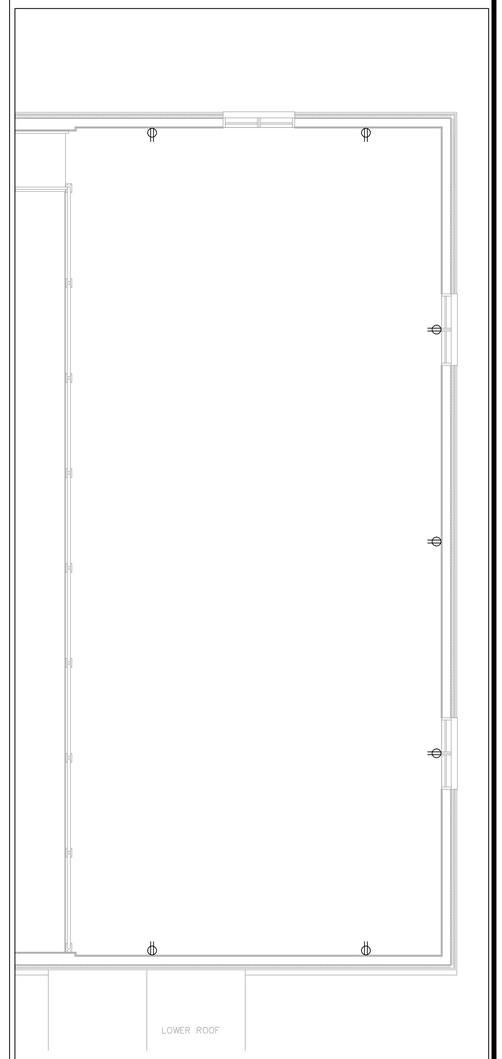
EXHAUST SYSTEM (EF-1) - CONTROL SCHEMATIC

NOTES:
MECHANICAL CONTRACTOR SHALL SUPPLY EQUIPMENT
ELECTRICAL CONTRACTOR SHALL WIRE AND CONNECT
ALL EQUIPMENT



MAIN FLOOR PLAN - POWER & SYSTEMS

SCALE: ¼" = 1'-0"



MEZZANINE - LIGHTING

SCALE: ¼" = 1'-0"

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NORTH
PROJECT

LICENSED PROFESSIONAL ENGINEER
2021-07-06
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Project Title:
CRYSLER FIREHALL
TOWNSHIP OF NORTH STORMONT

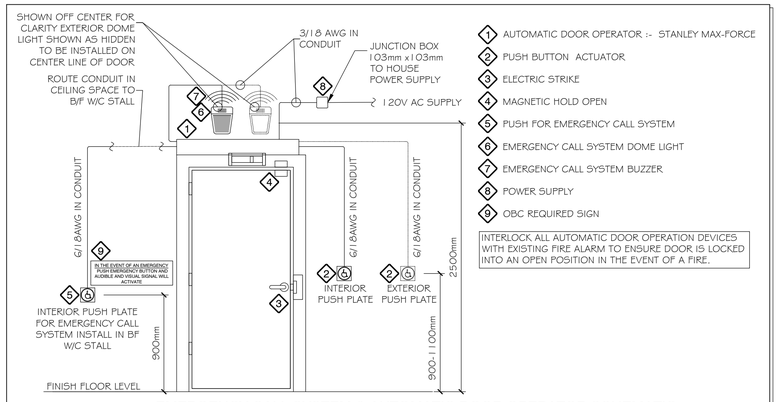
Drawing Title:
ELECTRICAL - POWER & SYSTEMS
MAIN FLOOR PLAN
MEZZANINE

Design:	Checked:	Approved: MM	Project No.: 9655
Drawn: MP	Checked:	Date: 2021-05-18	Contract No.:

Scale:
Horizontal: AS SHOWN
Vertical: AS SHOWN

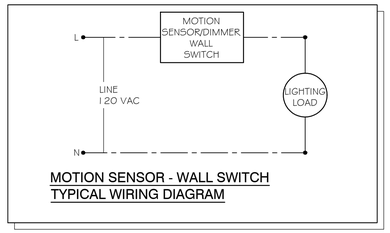
Drawing No.: E3

REV DATE: 7/6/2021

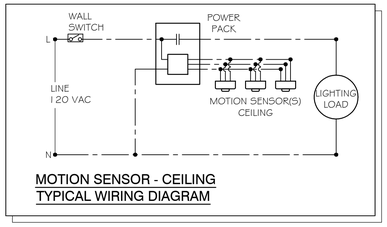


EMERGENCY CALL SYSTEM & AUTOMATIC DOOR OPERATOR SCHEMATIC

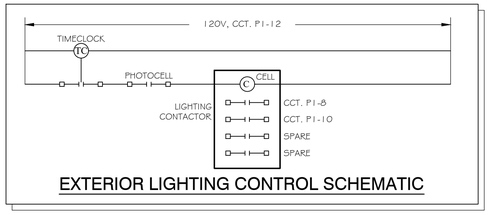
N.T.S.



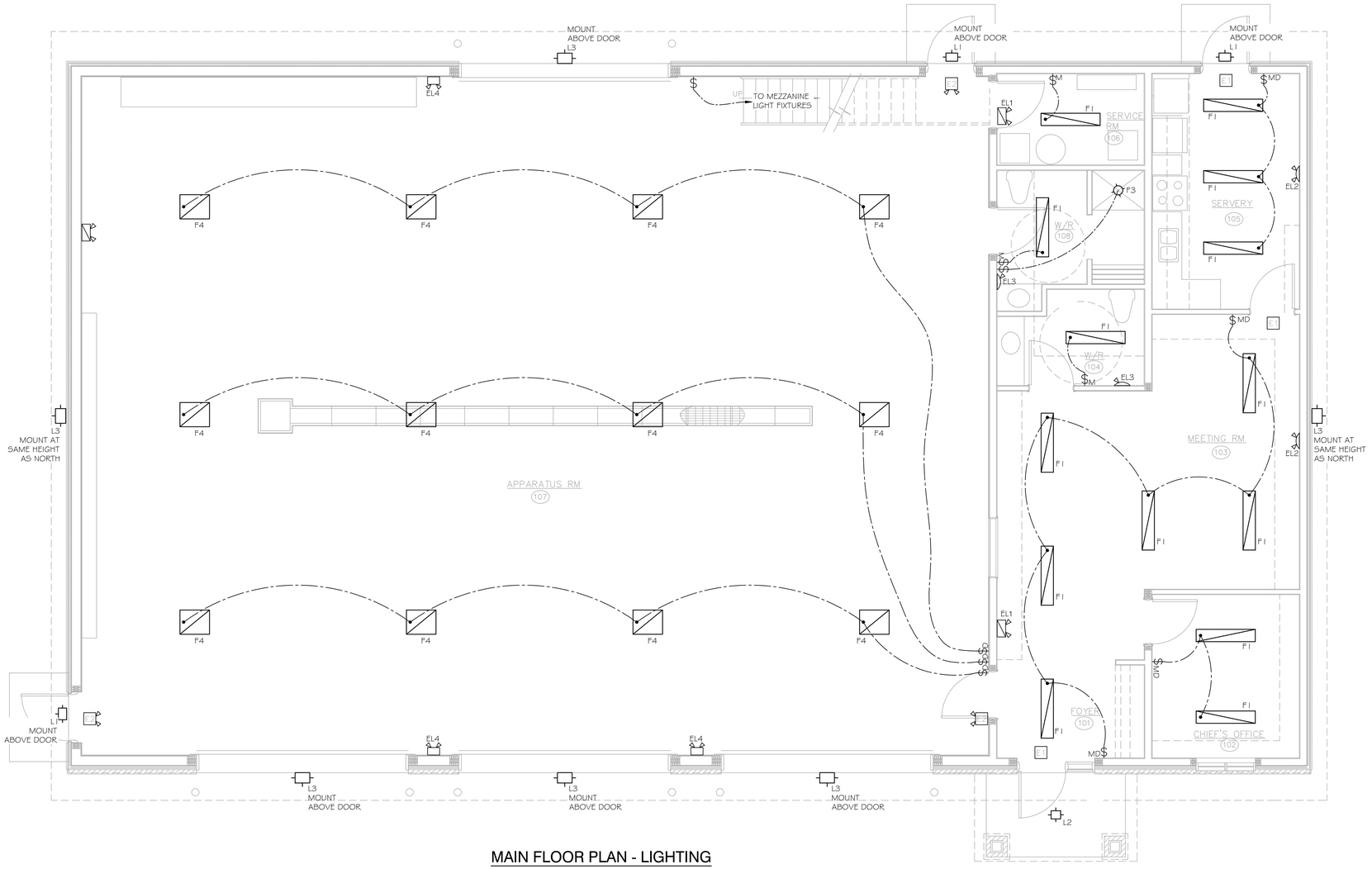
MOTION SENSOR - WALL SWITCH
TYPICAL WIRING DIAGRAM



MOTION SENSOR - CEILING
TYPICAL WIRING DIAGRAM

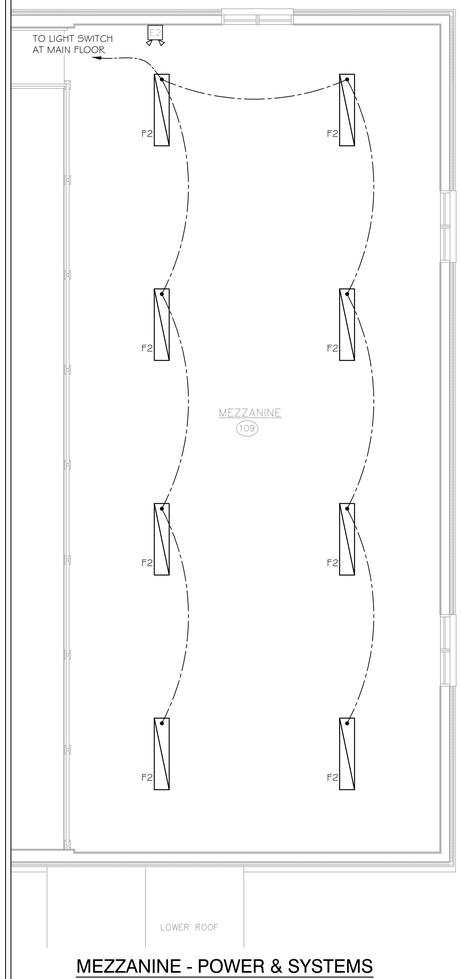


EXTERIOR LIGHTING CONTROL SCHEMATIC



MAIN FLOOR PLAN - LIGHTING

SCALE: 1/4" = 1'-0"



MEZZANINE - POWER & SYSTEMS

SCALE: 1/4" = 1'-0"

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PROJECT NORTH

LICENSED PROFESSIONAL ENGINEER 2021-07-06 M. A. MORRIS PROVINCE OF ONTARIO

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ELECTRICAL - LIGHTING
MAIN FLOOR PLAN
MEZZANINE

Design:	Checked:	Approved: MM	Project No.: 9655
Drawn: MP	Checked:	Date: 2021-05-18	Contract No.:

Scale: Horizontal: AS SHOWN; Vertical: AS SHOWN

Drawing No.: E4

REV DATE: 7/6/2021