



vallee

*Consulting Engineers,
Architects & Planners*

January 28, 2026

City of Brantford
Planning and Building Services
58 Dalhousie Street
Brantford, ON N3T 2J2

**Reference: Functional Servicing Brief – Revision 2
Gretzky Golf Course Maintenance Building – 320 Balmoral Drive
City of Brantford
Project No. 23-151**

Introduction

This Functional Servicing Brief (Revision 2) has been prepared in support of the site plan approval application for the replacement of the existing maintenance building at the Walter Gretzky Golf Course at 320 Balmoral Drive, Brantford. The proposed structure will be provided water service from the on-site watermain and sanitary service by gravity drainage to a packaged pump system replacement at the existing Pro Shop.

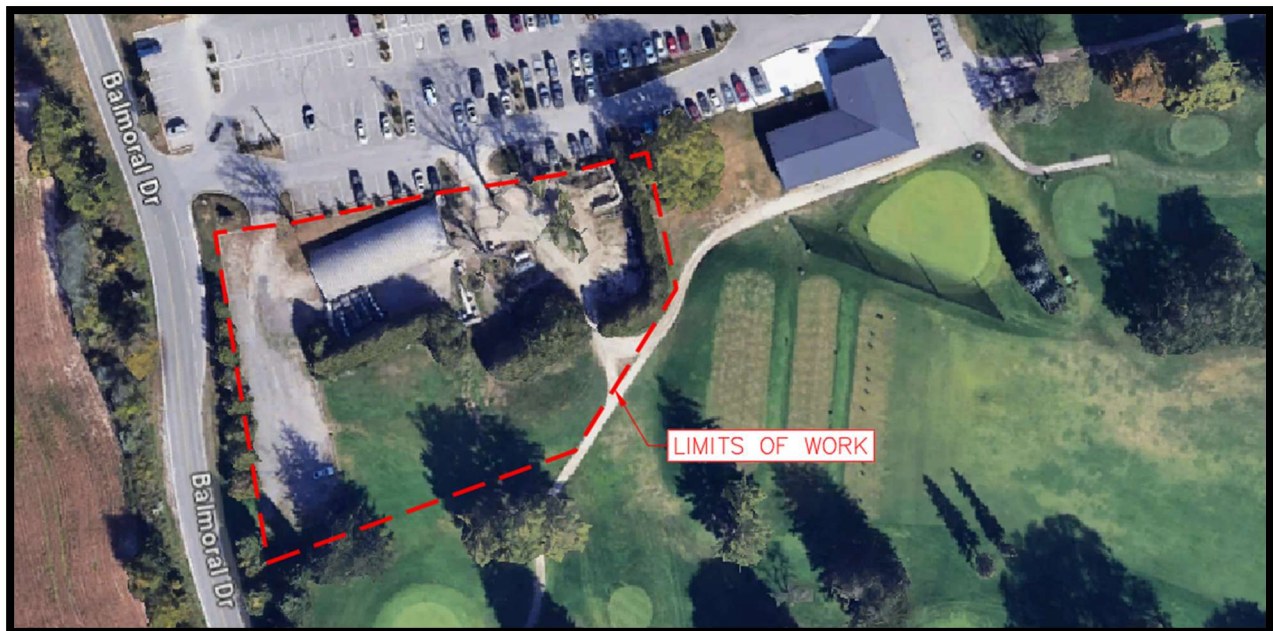


Figure 1 – Site Location

Water Servicing

The proposed building includes washrooms and a kitchenette. The maintenance building has 11 fixture units, which corresponds to an OBC calculated flow rate of less than 0.63 L/s (10.0 gpm). A 25mm service is proposed to tap off of the existing on-site 150mm $\varnothing$ watermain. The service size proposed is the minimum per City of Brantford Design Guidelines.

To determine the required fire flow for the building, analysis was done using the method outlined in Part II of the Water Supply for Public Fire Protection guide by Fire Underwriters Survey (FUS, 2020). Based on FUS 2020, the required fire flow for the proposed Maintenance Building is 116.7 L/s. Detailed calculations are enclosed in Appendix B. Although there is an existing hydrant on the property, it is located outside of accessible distance to the building. As such, a hydrant is proposed in the yard, to the east of the proposed building. Refer to plan C101, enclosed in Appendix A, for the exact location of the proposed hydrant.

Water modelling for the golf course property was conducted in 2019 for the Club House project, as reported in the Functional Servicing Report by IBI Group, dated August 2, 2019. The IBI report describes how the modelling result of 54 L/s of available fire flow did not meet the FUS requirements for fire protection but did meet OBC requirements.

Based on the reported modelling results that 54 L/s of fire flow is available at the site, it can be assumed that additional modelling or flow testing will reveal the same conclusion that the FUS flow requirement cannot be met.

The IBI FSR report states that upsizing the on-site watermain to 200mm $\varnothing$ would still not achieve the FUS fire protection requirement due to the inadequacy of pressure and flow at the existing 300mm $\varnothing$ watermain at Balmoral Drive which terminates approximately 300m south of the Site. Therefore, efforts to increase available fire flow at the Site would be impractical.

The proposed maintenance building is governed by Part 9 of the building code (small buildings). This section of the building code does not provide specific fire protection requirements. Therefore, the available fire flow at the site of 54 L/s is sufficient for the proposed maintenance building.

It is reasonable to conclude that the existing available fire flow to the site is sufficient to provide fire protection for the proposed maintenance building because the existing Club House does not meet the FUS protection requirement, Part 9 of the building code does not specify fire protection requirements for the proposed maintenance building, and efforts to increase available fire flow to the site are impractical.

Sanitary Servicing

Sanitary service is provided to the Club House and Pro Shop on the property by two pumping stations interconnected by forcemains. The Pro Shop is serviced by a Provore 380 Grinder Pump Packaged system, as shown on the Brantford Northridge Golf Clubhouse Mechanical Design Drawing M5.2 – Mechanical Notes & Details. The Pro Shop Pump (P2) is rated for 1.39 L/s (22 GPM) @ 10.67m (35') head. Sewage is pumped from the Pro Shop to the Club House sump pit. The Club House sump pit is equipped with a duplex grinder pump system rated for 3.97 L/s (63 GPM) @ 28.96m (95') head. The Club House pumps (P1) conveys sewage from the Pro Shop and Club House to the existing sanitary sewer at the intersection of Balmoral Drive and Smith's Lane.

It is understood that the City of Brantford intends to use the existing sewage pumps on site to service the proposed Maintenance Building. The packaged pump system (P2) at the Pro Shop does not have sufficient depth to allow for a gravity sanitary outlet for the proposed building. Therefore, P2 needs to be replaced with a 0.9mø Liberty Pumps Preassembled Duplex Grinder System (Model EPS117523 Rev B) or approved equivalent with pumps at or below the elevation of 233.71. This packaged pump system will be equipped with two (2) LSG202M grinder pumps with capacities up to 3.15 L/s (50 GPM) with total dynamic head up to 32.92m (108').

Sanitary service will be provided to the proposed Maintenance Building from a 150mmø gravity sanitary service with a slope of 1 to 2%, which outlets to the proposed packaged pump system replacement at the Pro Shop. The existing pro shop sanitary service is proposed to be disconnected from the existing pumping station and connected to the proposed sanitary sewer mainline to simplify connections to the proposed pumping station. Refer to the Servicing Plan for further details.

The proposed packaged pump system replacement at the Pro Shop has been sized to accommodate flows from the Pro Shop and Maintenance Building. It is assumed the Club House pumps (P1) have sufficient capacity to service the additional flows from the new pumping station at the Pro Shop. Club House pumps will need to be evaluated by a Mechanical Engineer prior to the building permit application for the proposed Maintenance Building.

Drainage fixtures for the proposed Maintenance Building are summarized in Table 1 below. As per OBC Table 7.4.10.5, the maximum probable drainage rate for 22 fixture units is 1.83 L/s (29 GPM). The design sewage flow of 1.83 L/s is 12% of the full flow capacity of a 150mmø service with a 1% slope.

Table 1 Fixture Units			
Fixture	Count	FU/Fixture OBC 7.4.9.3	Total Fixture Units
Sink	2	1.50	3.00
Shower	1	1.50	1.50
Lavatory	1	1.50	1.50
Flush Tank W.C.	1	4.00	4.00
Floor Drain	4	3.00	12.00
Total FU			22.00

Table 7.4.10.5.⁽¹⁾ Maximum Probable Drainage Rate, gal/min Forming Part of Sentence 7.4.10.5.(2)			
<i>Fixture Units in Service</i>	<i>Fixture Units</i> Col. 1	<i>Fixture Units</i> Col. 1 × 10	<i>Fixture Units</i> Col. 1 × 100
100	53	174	900
90	51	164	835
80	49	153	750
70	47	140	680
60	44	128	600
50	41	115	520
40	38	102	435
30	33	88	350
20	27	72	262
10	21	53	174

Stormwater Management

The storm water management objective for the development is to maintain post-development runoff below pre-development rates.

The pre-development area shown in Figure 2 includes 2437 m² of impervious area shown in blue. The post-development area shown in Figure 3 includes a reduction to 2252 m² of impervious area shown in green.

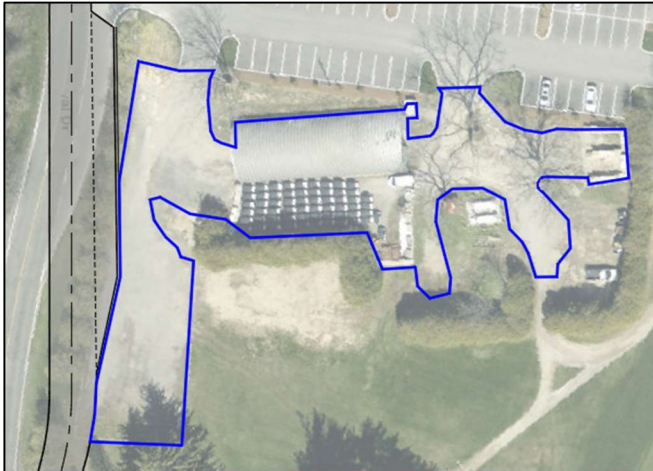


Figure 2 – Pre-Development Impervious Area

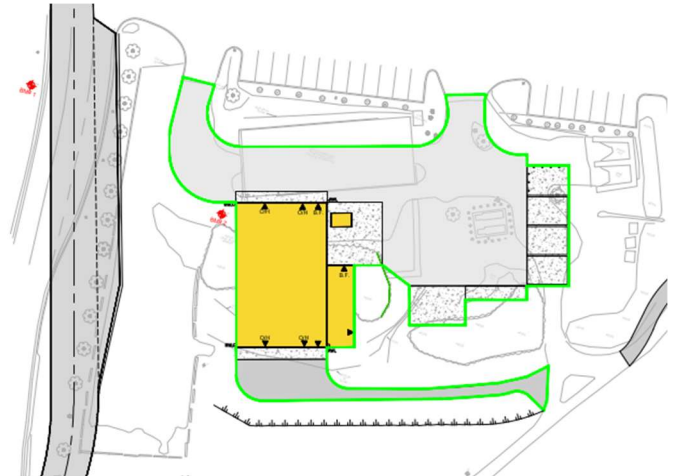


Figure 3 – Post Development Impervious Area

The reduction of impervious area by 185 m² will ensure that the stormwater runoff from this area will remain below current peak runoff rates. Additionally, there is essentially no change proposed in the runoff flow paths or outlet locations.

Conclusions and Recommendations

This Functional Servicing Report has been prepared in support of the construction of the proposed Maintenance Building at the Walter Gretzky Municipal Golf Course. Functional servicing for the proposed building and the impacts to existing on-site services can be summarized as follows:

- Water service will be provided to the proposed building by a 25mmØ service which connects to the existing on-site 150mmØ watermain.
- A new fire hydrant is required, as shown on the enclosed servicing plan, to provide fire protection for the proposed building.
- Available fire flow of 54 L/s, determined by modelling conducted in 2019 for the Club House project, is sufficient to provide fire protection for the proposed building.
- Sanitary service will be provided to the proposed building by a gravity sanitary service which connects to a new packaged pumping system located in front of the Pro Shop.
- The new packaged pumping system has been sized to provide sanitary service to the existing Pro Shop and proposed Maintenance Building.

- The additional flows from the proposed Maintenance Building will need to be evaluated by a Mechanical Engineer prior to a building permit application to verify the additional flows will not have an impact on the capacity of the downstream pumps located at the Club House sump pit.
- The proposed development reduces the impervious area on-site; therefore stormwater management measures are not required.

We trust that this information is complete and sufficient for submission. Should you have any questions or require further information please do not hesitate to contact us.

Respectfully submitted,



Cameron Cluett, P.Eng.
G. DOUGLAS VALLEE LIMITED
Consulting Engineers, Architects and Planners



H:\Projects\2023\23-151 Gretzky Golf Course Maintenance Building\Design\Civil\FSR\23-151 Functional Servicing Brief (2025).docx

Encl.

Appendix A

- Walter Gretzky Golf Course Maintenance Building
(G. Douglas Vallee Ltd. Rev 6, January 28, 2026)
C101 – Servicing Plan
C102 – Grading Plan
- Brantford Northridge Golf Clubhouse (IBI Group Rev 10, August 28, 2019)
C-3 – Site Servicing Plan
- Brantford Northridge Golf Clubhouse (Rombald Inc. Rev 8, August 19, 2019)
M5.2 – Mechanical Notes & Details

Appendix B

- Fire Flow Requirement Calculation

APPENDIX A

Walter Gretzky Golf Course Maintenance Building
(G. Douglas Vallee Ltd. Rev 6, January 28, 2026)

C101 Servicing Plan

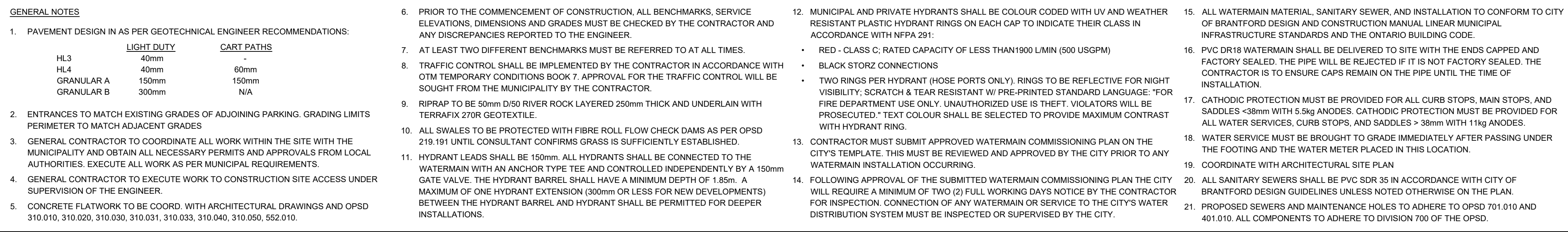
C102 Grading Plan

Brantford Northridge Golf Clubhouse (IBI Group, Rev 10, August 28, 2019)

C-3 Site Servicing Plan

Brantford Northridge Golf Clubhouse (Rombald Inc, Rev 8, August 19, 2019)

M5.2 Mechanical Notes & Details



NOTE:
THE CONTRACTOR IS CAUTIONED THAT ALL OF THE EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH AREA UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES INCLUDING THOSE NOT INDICATED ON THIS DRAWING. G. DOUGLAS VALLEE LTD. CANNOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE INDICATED ON THIS DRAWING.

ALL WORK, MATERIALS AND PROCESSES TO CONFORM TO CITY OF BRANTFORD STANDARDS AND SPECIFICATIONS

BENCHMARKS
ELEVATIONS ARE REFERRED TO CITY OF BRANTFORD
BENCHMARK #55 (MONUMENT 660361) - BRONZE TABLET SET IN
CONCRETE MONUMENT AT SOUTHEAST CORNER OF
INTERSECTION OF BALMORAL DRIVE AND POWERLINE ROAD.
ELEV. 234.056 (CGVD28)

SITE BENCHMARKS
CAUTION: SITE BENCHMARKS NOT ESTABLISHED BY G. DOUGLAS VALLEE LTD. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ANY BENCHMARK DISCREPANCIES TO BE REPORTED TO THE ENGINEER.

BM #1:	SPIKE 6.1m SOUTH OF CHEVRON SIGN ON WEST SIDE OF BALMORAL OPPOSITE THE WALTER GREZTZY GOLF COURSE ENTRANCE SIGN. ELEV. 237.506m
BM #2:	SPIKE 5.2m SOUTHWEST OF EXISTING QUONSET HUT BUILDING SOUTHWEST CORNER. ELEV. 237.097m
BM #3	SPIKE 19.2m SOUTHWEST OF PRO SHOP SOUTHWEST BUILDING CORNER. ELEV. 237.230m

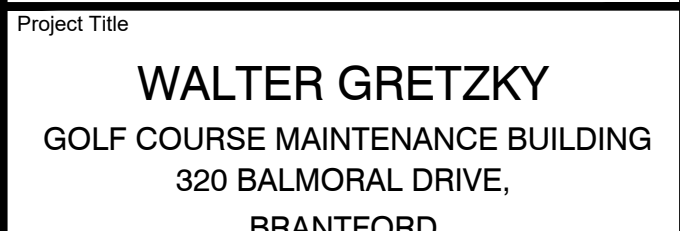
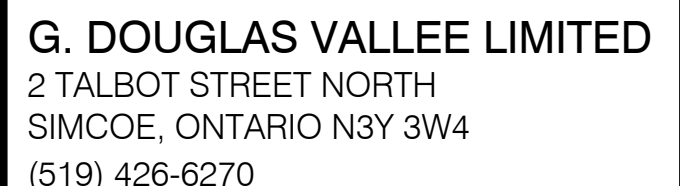
CIVIL DRAWING LIST
G. DOUGLAS VALLEE LIMITED DRAWINGS
23-151 C101 - SERVICING PLAN
23-151 C102 - GRADING PLAN
23-151 C103 - REMOVALS PLAN

SCALE:

A horizontal number line with tick marks at 0, 5, 10, and 15. The segment between 5 and 10 is shaded black.

DO NOT SCALE DRAWINGS, CALL FOR ANY
CLARIFICATIONS THAT ARE REQUIRED, FIELD
VERIFY AT ALL BUILT CONDITIONS

ALL DRAWINGS ARE TO BE READ IN COLOUR
ORIGINAL PAGE SIZE ARCH 'D' - 24" x 36"



1:250	C101
Project No. 23-151	

FUTURE BALMORAL ROAD
REALIGNMENT

GENERAL NOTES

1. PAVEMENT DESIGN IN AS PER GEOTECHNICAL ENGINEER RECOMMENDATIONS:

	LIGHT DUTY	CART PATHS
HL3	40mm	
HL4	40mm	60mm
GRANULAR A	150mm	150mm
GRANULAR B	300mm	N/A

- ENTRANCES TO MATCH EXISTING GRADES OF ADJOINING PARKING. GRADING LIMITS PERIMETER TO MATCH ADJACENT GRADES
- GENERAL CONTRACTOR TO COORDINATE ALL WORK WITHIN THE SITE WITH THE MUNICIPALITY AND OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM LOCAL AUTHORITIES. EXECUTE ALL WORK AS PER MUNICIPAL REQUIREMENTS.
- GENERAL CONTRACTOR TO EXECUTE WORK TO CONSTRUCTION SITE ACCESS UNDER SUPERVISION OF THE ENGINEER.
- CONCRETE FLATWORK TO BE COORD. WITH ARCHITECTURAL DRAWINGS AND OPSD 310.010, 310.020, 310.030, 310.031, 310.033, 310.040, 310.050, 552.010.

- PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL BENCHMARKS, SERVICE ELEVATIONS, DIMENSIONS AND GRADES MUST BE CHECKED BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE ENGINEER.
- AT LEAST TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO AT ALL TIMES.
- TRAFFIC CONTROL SHALL BE IMPLEMENTED BY THE CONTRACTOR IN ACCORDANCE WITH OTM TEMPORARY CONDITIONS BOOK 7. APPROVAL FOR THE TRAFFIC CONTROL WILL BE SOUGHT FROM THE MUNICIPALITY BY THE CONTRACTOR.
- RIPRAP TO BE 50mm D/50 RIVER ROCK LAYERED 250mm THICK AND UNDERLAIN WITH TERRAFIX 270R GEOTEXTILE.
- ALL SWALES TO BE PROTECTED WITH FIBRE ROLL FLOW CHECK DAMS AS PER OPSD 219.191 UNTIL CONSULTANT CONFIRMS GRASS IS SUFFICIENTLY ESTABLISHED.
- HYDRANT LEADS SHALL BE 150mm. ALL HYDRANTS SHALL BE CONNECTED TO THE WATERMAIN WITH AN ANCHOR TYPE TEE AND CONTROLLED INDEPENDENTLY BY A 150mm GATE VALVE. THE HYDRANT BARREL SHALL HAVE A MINIMUM DEPTH OF 1.85m. A MAXIMUM OF ONE HYDRANT EXTENSION (300mm OR LESS FOR NEW DEVELOPMENTS) BETWEEN THE HYDRANT BARREL AND HYDRANT SHALL BE PERMITTED FOR DEEPER INSTALLATIONS.

- MUNICIPAL AND PRIVATE HYDRANTS SHALL BE COLOUR CODED WITH UV AND WEATHER RESISTANT PLASTIC HYDRANT RINGS ON EACH CAP TO INDICATE THEIR CLASS IN ACCORDANCE WITH NFPA 291:
 - RED - CLASS C, RATED CAPACITY OF LESS THAN 1900 L/MIN (500 USGPM)
 - BLACK STORZ CONNECTIONS
 - TWO RINGS PER HYDRANT (HOSE PORTS ONLY). RINGS TO BE REFLECTIVE FOR NIGHT VISIBILITY; SCRATCH & TEAR RESISTANT W/ PRE-PRINTED STANDARD LANGUAGE: "FOR FIRE DEPARTMENT USE ONLY. UNAUTHORIZED USE IS THEFT. VIOLATORS WILL BE PROSECUTED." TEXT COLOUR SHALL BE SELECTED TO PROVIDE MAXIMUM CONTRAST WITH HYDRANT RINGS
- CONTRACTOR MUST SUBMIT APPROVED WATERMAIN COMMISSIONING PLAN ON THE CITY'S TEMPLATE. THIS MUST BE REVIEWED AND APPROVED BY THE CITY PRIOR TO ANY WATERMAIN INSTALLATION OCCURRING.
- FOLLOWING APPROVAL OF THE SUBMITTED WATERMAIN COMMISSIONING PLAN THE CITY WILL REQUIRE A MINIMUM OF TWO (2) FULL WORKING DAYS NOTICE BY THE CONTRACTOR FOR INSPECTION. CONNECTION OF ANY WATERMAIN OR SERVICE TO THE CITY'S WATER DISTRIBUTION SYSTEM MUST BE INSPECTED OR SUPERVISED BY THE CITY.

- ALL WATERMAIN MATERIAL, SANITARY SEWER, AND INSTALLATION TO CONFORM TO CITY OF BRANTFORD DESIGN AND CONSTRUCTION MANUAL LINEAR MUNICIPAL INFRASTRUCTURE STANDARDS AND THE ONTARIO BUILDING CODE.
- PVC DR18 WATERMAIN SHALL BE DELIVERED TO SITE WITH THE ENDS CAPPED AND FACTORY SEALED. THE PIPE WILL BE REJECTED IF IT IS NOT FACTORY SEALED. THE CONTRACTOR IS TO ENSURE CAPS REMAIN ON THE PIPE UNTIL THE TIME OF INSTALLATION.
- CATHODIC PROTECTION MUST BE PROVIDED FOR ALL CURB STOPS, MAIN STOPS, AND SADDLES <38mm WITH 5.9kg ANODES. CATHODIC PROTECTION MUST BE PROVIDED FOR ALL WATER SERVICES, CURB STOPS, AND SADDLES > 38mm WITH 11kg ANODES.
- WATER SERVICE MUST BE BROUGHT TO GRADE IMMEDIATELY AFTER PASSING UNDER THE FOOTING AND THE WATER METER PLACED IN THIS LOCATION.
- COORDINATE WITH ARCHITECTURAL SITE PLAN
- ALL SANITARY SEWERS SHALL BE PVC SDR 35 IN ACCORDANCE WITH CITY OF BRANTFORD DESIGN GUIDELINES UNLESS NOTED OTHERWISE ON THE PLAN.
- PROPOSED SEWERS AND MAINTENANCE HOLES TO ADHERE TO OPSD 701.010 AND 401.010. ALL COMPONENTS TO ADHERE TO DIVISION 700 OF THE OPSD.

TREE PROTECTION FENCING PER DETAIL ON DRAWING C103. CONTRACTOR TO RETAIN AN ARBORIST TO SUPERVISE EXCAVATION WITHIN THE CRITICAL ROOT ZONE. CONTRACTOR SHALL FOLLOW ARBORIST'S EXCAVATION TECHNIQUE RECOMMENDATIONS.

TREE PROTECTION FENCING LOCATION SHALL BE APPROVED BY THE CITY OF BRANTFORD FORESTRY DEPARTMENT PRIOR TO COMMENCEMENT OF ANY EARTHMOVING OR CONSTRUCTION.

10m CRITICAL ROOT ZONE. INSTALL TREE PROTECTION FENCING PER DETAIL ON DRAWING C103. CONTRACTOR TO RETAIN AN ARBORIST TO SUPERVISE EXCAVATION WITHIN THE CRITICAL ROOT ZONE. CONTRACTOR SHALL FOLLOW ARBORIST'S EXCAVATION TECHNIQUE RECOMMENDATIONS.

BARRIER CURB (OPSD 600.110) BOTTOM OF CURB ELEVATIONS SHOWN. TOP OF CURB 0.15m ABOVE PROPOSED GROUND SURFACE ON FRONT AND BACK SIDE. CURB C.W. HIGH-VISIBILITY YELLOW FINISH

10m CRITICAL ROOT ZONE. INSTALL TREE PROTECTION FENCING PER DETAIL ON DRAWING C103. CONTRACTOR TO RETAIN AN ARBORIST TO SUPERVISE EXCAVATION WITHIN THE CRITICAL ROOT ZONE. CONTRACTOR SHALL FOLLOW ARBORIST'S EXCAVATION TECHNIQUE RECOMMENDATIONS.

TREE PROTECTION FENCING LOCATION SHALL BE APPROVED BY THE CITY OF BRANTFORD FORESTRY DEPARTMENT PRIOR TO COMMENCEMENT OF ANY EARTHMOVING OR CONSTRUCTION.

RESTORE EX CURB (OPSD 600.110) TO ORIGINAL ELEVATIONS

PROPOSED PUMPING STATION T/G - 237.80

NOTE: THE CONTRACTOR IS CAUTIONED THAT ALL OF THE EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH AREA UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES INCLUDING THOSE NOT INDICATED ON THIS DRAWING. G. DOUGLAS VALLEE LTD. CANNOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE INDICATED ON THIS DRAWING.

ALL WORK, MATERIALS AND PROCESSES TO CONFORM TO CITY OF BRANTFORD STANDARDS AND SPECIFICATIONS
SURVEY INFORMATION
TOPOGRAPHIC SURVEY, COMPLETED BY CITY OF BRANTFORD ENGINEERING - DESIGN AND CONSTRUCTION SERVICES, DATED NOVEMBER 7, 2024. PROJECT # 23-151.

BENCHMARKS
ELEVATIONS ARE REFERRED TO CITY OF BRANTFORD BENCHMARK #65 (MONUMENT 660891) - BRONZE TABLET SET IN CONCRETE MONUMENT AT SOUTHEAST CORNER OF INTERSECTION OF BALMORAL DRIVE AND POWERLINE ROAD. ELEV. 234.056 (GVD2008)

SITE BENCHMARKS
CAUTION: SITE BENCHMARKS NOT ESTABLISHED BY G. DOUGLAS VALLEE LTD. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ANY BENCHMARK DISCREPANCIES TO BE REPORTED TO THE ENGINEER.

BM #1: SPIKE 6.1m SOUTH OF CHEVRON SIGN ON WEST SIDE OF BALMORAL, OPPOSITE THE WALTER GRETZKY GOLF COURSE ENTRANCE SIGN. ELEV. 237.506m
BM #2: SPIKE 5.2m SOUTHWEST OF EXISTING QUONSET HUT BUILDING SOUTHWEST CORNER. ELEV. 237.097m
BM #3: SPIKE 19.2m SOUTHWEST OF PRO SHOP SOUTHWEST CORNER. ELEV. 237.230m

CIVIL DRAWING LIST
G. DOUGLAS VALLEE LIMITED DRAWINGS

23-151 C101 - SERVING PLAN
23-151 C102 - GRADING PLAN
23-151 C103 - REMOVALS PLAN

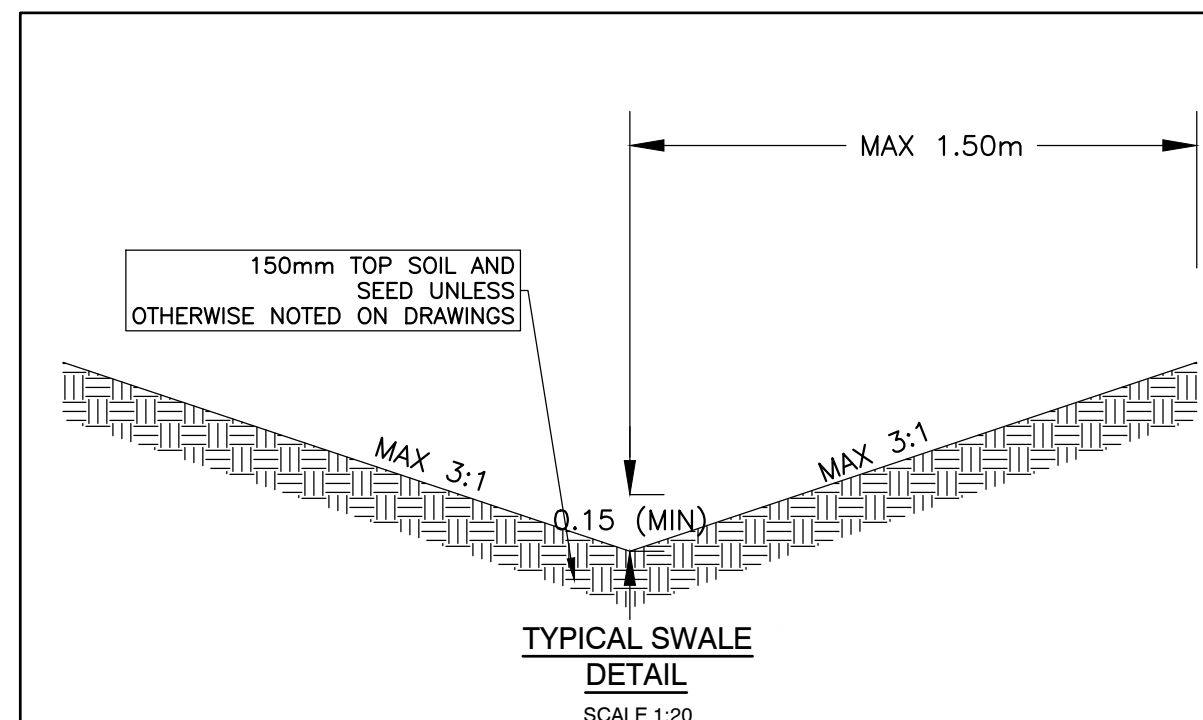
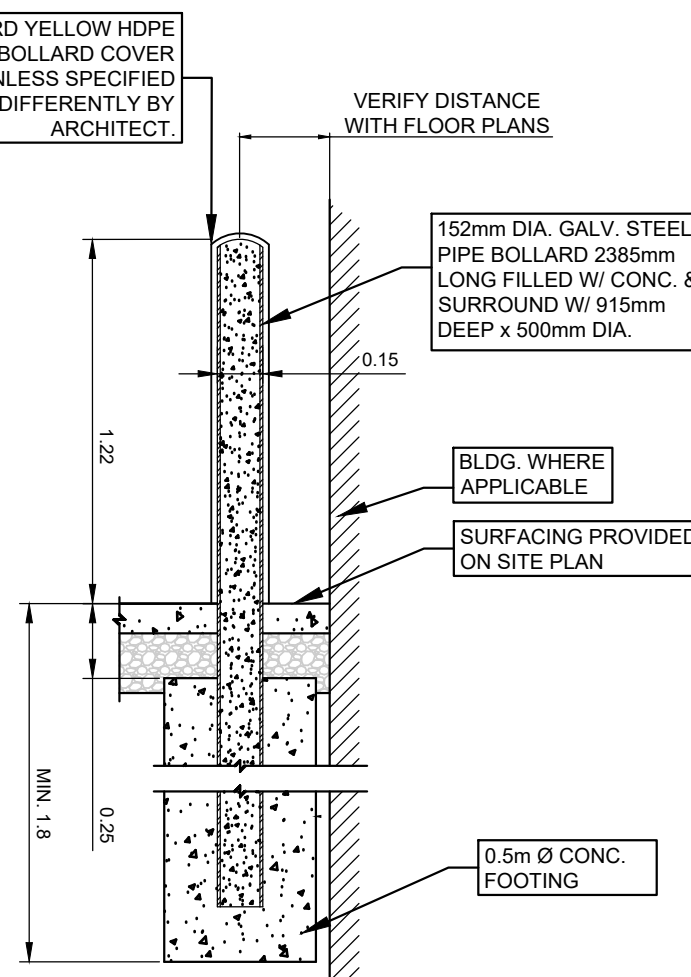
**SUBMISSION
DRAWING**
NOT TO BE USED FOR CONSTRUCTION

SCALE:
0 5 10 15

DO NOT SCALE DRAWINGS. CALL FOR ANY CLARIFICATIONS THAT ARE REQUIRED. FIELD VERIFY AT ALL BUILT CONDITIONS
ALL DRAWINGS ARE TO BE READ IN COLOUR
ORIGINAL PAGE SIZE ARCH 'D', 24" x 36"

LEGEND

- MAJOR OVERLAND FLOW
- MINOR OVERLAND FLOW
- DESIGN SPOT ELEVATION
- EXISTING ELEVATION (2024)
- ASSUMED FUTURE PROPERTY LINE
- SILT FENCE PER OPSD 219.110
- CENTERLINE OF SWALE
- BREAKLINE
- RAINWATER LEADER LOCATION C.W. CONCRETE SPLASH PAD
- PROPOSED OVERHEAD ENTRANCE
- PROPOSED MAINTENANCE ENTRANCE
- PROPOSED BUILDING
- PROPOSED RIPRAP
- PROPOSED ASPHALT SURFACE
- PROPOSED CONCRETE SURFACE
- PROPOSED SANITARY MANHOLE
- PROPOSED SANITARY CLEANOUT
- PROPOSED FIRE HYDRANT
- PROPOSED HYDRANT VALVE

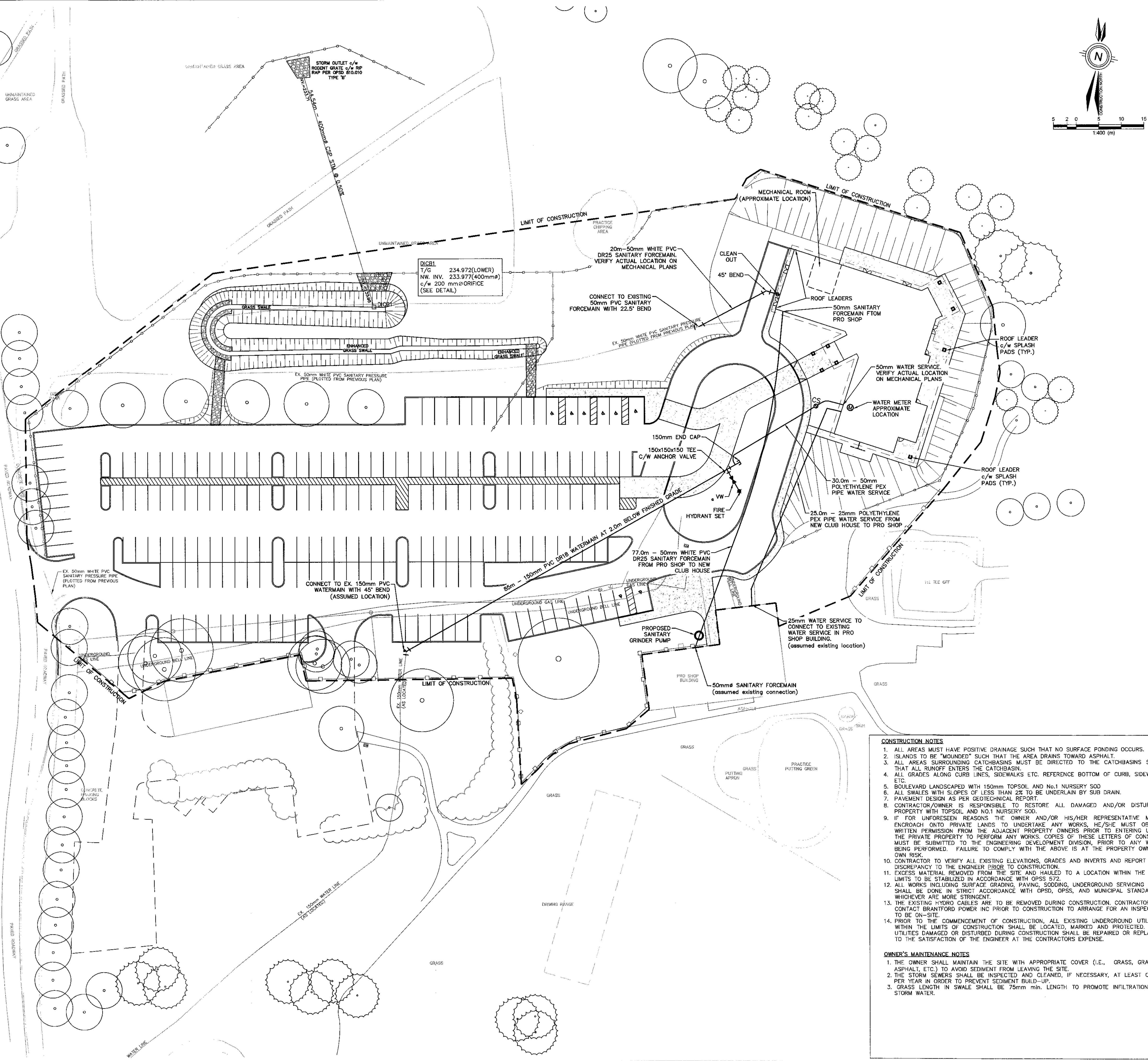


ORIFICE PLATE
N.T.S.

— O.D. +400mm MIN. —
— DISCHARGE PIPE —
— GALVANIZED STEEL PLATE OR EQUIVALENT —
— ORIFICE OPENING ORIFICE: 200mm# —

NOTES
1. WHEN PLATE IS TO BE PLACED INSIDE A MH, PLATE TO BE CURVED TO MATCH RADIUS OF MH. PLATE TO BE GALVANIZED BOLTS TO BE TACK WELDED TO PLATE.
2. ALL OPENINGS AROUND PERIMETER OF PLATE TO BE SEALED WITH NON-SHRINKABLE GROUT.

THE CITY OF BRANTFORD
APPROVED SITE PLAN(S)
DATE: August 29, 2019 FILE NO. SPC-22-2019
ALL CONSTRUCTION SHALL BE IN CONFORMITY WITH THE APPROVED DRAWINGS, STUDIES AND REPORTS. ANY VARIATION OR REVISION THEREOF SHALL BE SUBJECT TO WRITTEN APPROVAL OR AMENDMENT TO THIS APPROVAL BY THE DIRECTOR OF PLANNING.
SIGNATURE: *Lucy Hayes*
LUCY HAYES, MCP, RPP
DIRECTOR OF PLANNING



KEY MAP - N.T.S.

LEGEND

- PROPOSED SANITARY FORCEMAIN
- EXISTING SANITARY FORCEMAIN
- PROPOSED WATERMAIN
- PROPOSED WATER VALVE
- PROPOSED HYDRANT
- PROPOSED CURB STOP
- PROPOSED WATER METER
- SILT FENCE PHASE 1
- SILT FENCE PHASE 2

WATERMAIN NOTES

- PVC DR18 PIPE FOR WATERMAINS SHALL BE DELIVERED TO THE SITE WITH THE ENDS CAPPED AND FACTORY SEALED. THE CONTRACTOR IS TO ENSURE CAPS REMAIN ON THE PIPE UNTIL THE TIME OF INSTALLATION.
- WATERMAINS ARE TO BE PROVIDED WITH GRANULAR 'A' COVER AND BEDDING IN ACCORDANCE WITH OPSS 802.010 TYPE 2 TRENCH.
- WATERMAINS SHALL BE INSTALLED WITH A MINIMUM COVER OF 1.85 M BELOW FINISHED GRADE.
- ALL WATERMAIN DISINFECTION AND TESTING SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF "THE CITY OF BRANTFORD'S DESIGN AND CONSTRUCTION MANUAL: WATERMAINS".
- CATHODIC PROTECTION SHALL BE PROVIDED FOR ALL METALLIC WATERMAIN FITTINGS AND APPURTENANCES WITH 11 Kg ZINC ANODES AND ALL WATER SERVICE CONNECTIONS WITH 5.5 Kg ZINC ANODES.
- ALL BURIED METALLIC FITTINGS REQUIRE A COMPLETE PETROLATUM COATING SYSTEM IN ACCORDANCE WITH ALL APPLICABLE OPSS, AWWA AND CITY OF BRANTFORD STANDARDS.
- BENDING OF PVC WATERMAINS WILL NOT BE PERMITTED. THE MAXIMUM PERMITTED DEFLECTION SHALL BE ONE DEGREE PER JOINT. JOINTS SHALL BE DEFLECTED AN EQUAL AMOUNT.
- PRIVATE FIRE HYDRANTS MUST BE PAINTED RED WITH BLACK STORZ CONNECTION

NOT FOR CONSTRUCTION
ISSUED FOR TENDER

DATE	BY	DESCRIPTION
2019-08-26	RU	ISSUED FOR APPROVAL
2019-08-26	RU	REVISED PER CITY COMMENTS
2019-08-26	RU	ISSUED FOR ADDENDUM #1
2019-08-26	RU	REVISED PER CITY COMMENTS
2019-07-12	RU	ISSUED FOR TENDER - SERVING-ADDENDUM 2
2019-07-02	RU	ISSUED FOR TENDER
2019-06-26	RU	ISSUED FOR SUBMISSION FOR REVIEW
2019-06-07	RU	ISSUED FOR 95% SUBMISSION
2019-05-23	RU	ISSUED FOR SPA - FIRST SUBMISSION
2019-05-10	RU	ISSUED FOR CLIENT REVIEW

REVISIONS

DATE	BY	DESCRIPTION
2019-08-26	RU	ISSUED FOR APPROVAL

APPROVALS

IBI GROUP
101 - 410 Albert Street
Waterloo ON N2L 3V3 Canada
tel 519 585 2255 fax 519 585 2269
ibigroup.com

CITY OF BRANTFORD
320 BALMORAL DRIVE
BRANTFORD, ONTARIO

NORTHBRIDGE MUNICIPAL GOLF CLUBHOUSE

SITE SERVICING PLAN

DESIGNED BY: E. CERIC SCALE HORIZ: 1:400
DRAWN BY: C. GAUDET SCALE VERT: 1:400
CHECKED BY: R. LY FILE NUMBER: 119294
DATE: 2019-05-01 SHEET NUMBER: C-3

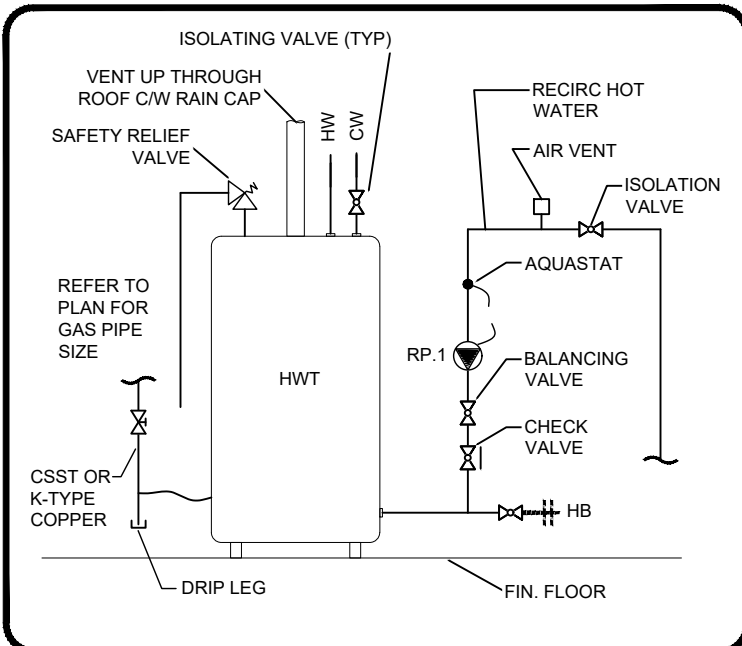
NEW MECHANICAL EQUIPMENT SCHEDULE				
SYMBOL	NAME	DESCRIPTION	ELECTRICAL	REMARKS
RTU.1	ROOFTOP HVAC UNIT	CARRIER 48HC08 NOMINAL COOLING CAPACITY: 7.5 TON NOMINAL HEATING CAPACITY: 224 MBH NOMINAL AIR FLOW: 3000 CFM, 10 IN W.C. WEIGHT: 825 LBS, DIMENSIONS: 49" x 59" x 88" (HxWxD)	570/380 14 MCA/15 MOCF	C/W 2 STAGE COOLING, 1 ST ROOF CURB, COMPRESSOR VIBRATION ISOLATORS, BOTTOM KNOCKOUTS, C/W 1 DAY PROGRAMMABLE THERMOSTAT HONEYWELL TH3020 OR RTH7500E1001 IN A VANDAL PROOF LOCKABLE BOX. FILL THE ROOF CURB WITH ROCKWOOL INSULATION. ADJUST ECONOMIZER TO MINIMUM 750 CFM DURING OCCUPIED PERIODS.
RTU.2	ROOFTOP HVAC UNIT	CARRIER 48HC07 NOMINAL COOLING CAPACITY: 6 TON NOMINAL HEATING CAPACITY: 150 MBH NOMINAL AIR FLOW: 2200 CFM WEIGHT: 765 LBS, DIMENSIONS: 47" x 59" x 88" (HxWxD)	575/390 16 MCA/20 MOCF	C/W 1 STAGE COOLING, 2 STAGE HEATING, 1 ST ROOF CURB, COMPRESSOR VIBRATION ISOLATORS, BOTTOM KNOCKOUTS, C/W 1 DAY PROGRAMMABLE THERMOSTAT HONEYWELL TH3020 OR RTH7500E1001 IN A VANDAL PROOF LOCKABLE BOX. FILL THE ROOF CURB WITH ROCKWOOL INSULATION. ADJUST ECONOMIZER TO MINIMUM 480 CFM DURING OCCUPIED PERIODS.
FU.1	FURNACE	LENNOX EL196UH10XED00C HEAT INPUT: 110,000 BTU/H NOMINAL AIR FLOW: 2200 CFM APPROX. DIMENSIONS: 69" x 21" x 28" (HxWxD) APPROX. WEIGHT: 170 LBS	120/160 MCA 10.9 MOCF 15 A	C/W OPTIONAL DX COIL CHS5-48B-2F, PROGRAMMABLE 1 DAY THERMOSTAT, CONDENSATE PUMP IF NEEDED SUITABLE FOR ACIDIC CONDENSATE, AIR FILTER AND RACK KIT 6663. PROVIDE VIBRATION ISOLATION.
CU.1	CONDENSING UNIT	LENNOX 13ACN60 COOLING CAPACITY: 5.0 TONS APPROX. WEIGHT: 210 LBS	230/180 MCA 34.6 A MOCF 60 A	C/W COMPRESSOR SOUND COVER 6903, DRAIN PIPING, REFRIGERANT CHARGE AS REQUIRED, ALL HARDWARE AND ACCESSORIES FOR A COMPLETE INSTALLATION. INTERLOCK WITH FU.1
FU.2	FURNACE	LENNOX EL196UH10XED00C HEAT INPUT: 86,000 BTU/H COOLING NOMINAL AIR FLOW: 1740 CFM APPROX. DIMENSIONS: 69" x 17.5" x 28" (HxWxD) APPROX. WEIGHT: 136 LBS	120/160 FLA 8.4 MOCF 15 A	C/W OPTIONAL DX COIL CHS5-48B-2F, PROGRAMMABLE THERMOSTAT, CONDENSATE PUMP IF NEEDED SUITABLE FOR ACIDIC CONDENSATE, AIR FILTER AND RACK KIT 6663. PROVIDE VIBRATION ISOLATION.
CU.2	CONDENSING UNIT	LENNOX 13AC-NX40-230-17 COOLING CAPACITY: 4.0 TONS APPROX. WEIGHT: 185 LBS	230/180 MCA 24.2A MOCF 50A	C/W COMPRESSOR SOUND COVER 6903, DRAIN PIPING, REFRIGERANT CHARGE AS REQUIRED, ALL HARDWARE AND ACCESSORIES FOR A COMPLETE INSTALLATION. INTERLOCK WITH FU.2
FU.3	FURNACE	LENNOX EL196UH10XED00C HEAT INPUT: 86,000 BTU/H COOLING NOMINAL AIR FLOW: 1740 CFM APPROX. DIMENSIONS: 69" x 17.5" x 28" (HxWxD) APPROX. WEIGHT: 136 LBS	120/160 FLA 8.4 MOCF 15 A	C/W OPTIONAL DX COIL CHS5-48B-2F, PROGRAMMABLE THERMOSTAT, CONDENSATE PUMP IF NEEDED SUITABLE FOR ACIDIC CONDENSATE, AIR FILTER AND RACK KIT 6663. PROVIDE VIBRATION ISOLATION.
CU.3	CONDENSING UNIT	LENNOX 13AC-NX40-230-17 COOLING CAPACITY: 3.5 TONS APPROX. WEIGHT: 185 LBS	230/180 MCA 24.2A MOCF 50A	C/W COMPRESSOR SOUND COVER 6903, DRAIN PIPING, REFRIGERANT CHARGE AS REQUIRED, ALL HARDWARE AND ACCESSORIES FOR A COMPLETE INSTALLATION. INTERLOCK WITH FU.3
HRV.1	HEAT RECOVERY VENTILATOR	ALDES H280-SRG AIRFLOW: 300 CFM @ 0" w.g. HEAT INPUT: 26,900 BTU/H COOLING NOMINAL AIR FLOW: 1740 CFM APPROX. DIMENSIONS: 22" x 17" x 31" (HxWxD) WEIGHT: 63 LBS	120-1-60 2.88A A 263W	#1 DUCT CONNECTIONS: PROVIDE TRANSITION, WALL MOUNTED CONTROLLER, SUSPENDED BY CHAINS WITH VIBRATION ISOLATION SPRINGS. COORDINATE AND CONFIRM EXACT HOOD DIMENSIONS ON SITE. WRAP GREASE DUCTS WITH FIRE WRAP. 3M FIRE BARRIER DUCT WRAP 615+ OR EQUAL. COORDINATE WITH STRUCTURAL.
HRV.2	HEAT RECOVERY VENTILATOR	ALDES H280-SRG AIRFLOW: 300 CFM @ 0" w.g. HEAT INPUT: 26,900 BTU/H COOLING NOMINAL AIR FLOW: 1740 CFM APPROX. DIMENSIONS: 22" x 17" x 31" (HxWxD) WEIGHT: 63 LBS	120-1-60 2.88A A 263W	#1 DUCT CONNECTIONS: PROVIDE TRANSITION, WALL MOUNTED CONTROLLER, SUSPENDED BY CHAINS WITH VIBRATION ISOLATION SPRINGS. COORDINATE AND CONFIRM EXACT HOOD DIMENSIONS ON SITE. WRAP GREASE DUCTS WITH FIRE WRAP. 3M FIRE BARRIER DUCT WRAP 615+ OR EQUAL. COORDINATE WITH STRUCTURAL.
KH	EXHAUST HOOD	SPRING AIR SYSTEMS MODEL FN-6-11 580.92 DESIGN EXHAUST AIR FLOW: 318 CFM @ 1.28" W.C. APPROXIMATE DIMENSIONS: 139"X47"X23" (LXWXH) WEIGHT: 521 LBS	LIGHT BULB: 100W, 120V	C/W FIRE PROTECTION SYSTEM ANSLU, WX-XAM (CONFIRM NUMBER OF REQUIRED FLOW POINTS WITH MANUFACTURER), COORDINATE AND CONFIRM EXACT HOOD DIMENSIONS ON SITE. WRAP GREASE DUCTS WITH FIRE WRAP. 3M FIRE BARRIER DUCT WRAP 615+ OR EQUAL. COORDINATE WITH STRUCTURAL.
KEF	HOOD EXHAUST FAN	SPRING AIR SYSTEMS XF-C150 CP6150 EXHAUST RATE: 318 CFM @ 1.28" W.C. APPROXIMATE DIMENSIONS: 307"X20"X12" (LXWXH) WEIGHT: 380 LBS	208/360 3 HP 8 FLA	COORDINATE WITH STRUCTURAL. INTERLOCK WITH MUA.1. GREASE TERMINATOR AND GREASE TROUGH SUITABLE FOR A GREASE HOOD EXHAUST FAN.
MUA.1	MAKE-UP AIR UNIT	SPRING AIR SYSTEMS SGA10-DFD SUPPLY AIRFLOW: 3034 CFM @ 0.25" W.C. INPUT: 240 MBH APPROXIMATE DIMENSIONS: 104"X32"X50" (LXWXH) WEIGHT: 525 LBS	208/360 1.5 HP MCA 10.2 A MOCF 20 A	C/W DOWN DISCHARGE, FILTER SECTION, CONTROL PANEL, AND VIBRATION ISOLATION. INTERLOCK WITH KEF. COORDINATE WITH STRUCTURAL.
P.1	SANITARY DUPLEX GRINDER PUMP	ZOELLER 71 SERIES MODEL J7111-HH DUPLEX GRINDER PUMP DISCHARGE: 1/2" NPT GPM @ 9'9" HEAD: 4500 GPM	200/360 5 HP	C/W ZOELLER PRE-PACKAGED DUPLEX BASIN SYSTEM 42"x14" (DWI) WORKING VOLUME 540 GALLONS 2" PUMP DISCHARGE PROVIDE HIGH LEVEL, AUDIBLE ALARM ON SANITARY PIT
P.2	PRO SHOP SANITARY DUPLEX GRINDER PUMP	LIBERTY PUMPS PROVIDORE 380 GRINDER PUMP PACKAGE P380GRD101 22 GPM @ 35' HEAD	115-1-60 1 HP	TANK AND PUMPS ARE A PACKAGED UNIT 41 GALLON SYSTEM, 24" DIAMETER, 34" HIGH 2" DISCHARGE PROVIDE CONTROL PANEL INSIDE PRO SHOP ELECTRONIC TRAP SEAL PRIMER PPP PT-1 WITH 24 HOUR TIMER
HWT.1	GAS HOT WATER HEATER	AO SMITH CYCLONE HE BTX POWER VENT BTX-80 CAPACITY: 50 USG HEATING INPUT: 78 MBH APPROX. EMPTY WEIGHT: 225 LBS APPROX. DIMENSIONS: 71" x 22" (HxD)	120/160 -5A	FLOOR MOUNTED, 3" INTAKE, 3" EXHAUST, 1" NPT WATER, 1/2" GAS CONNECTIONS
EF.1	WASHROOM EXHAUST FAN	GREENHECK SP-A70 70CFM @ 0.1 w.g. SP APPROX. WEIGHT: 1.1 LBS APPROX. DIMENSIONS: 9" x 14" x 11" (HxWxD)	120/160 0.27 A	C/W MESH FILTER, #10 EXHAUST DUCT, THERMAL INSULATION, BIRDSCREEN, BOD, ON A REVERSE ACTING THERMOSTAT
EF.2	EXHAUST FAN	FANTECH FR-300 100 CFM @ 0.342 w.g. SP APPROX. WEIGHT: 1.1 LBS APPROX. DIMENSIONS: 10" x 10" (WxD)	120/160 0.17 A	#10 EXHAUST DUCT, RUN CONTINUOUSLY DURING OCCUPIED PERIODS.
EF.3	INLINE EXHAUST FAN	GREENHECK SPB-A120 150CFM @ 0.25 w.g. SP APPROX. DIMENSIONS: 9" x 14" x 11" (HxWxD)	120/160 1.1 A	C/W MESH FILTER, #10 INLET, #10 OUTLET EXHAUST DUCT, THERMAL INSULATION, BIRDSCREEN, BOD, ON A REVERSE ACTING THERMOSTAT
TF.1	TRANSFER FAN	GREENHECK SP-A125 130CFM @ 0.1 w.g. SP APPROX. WEIGHT: 1.7 LBS APPROX. DIMENSIONS: 9" x 14" x 11" (HxWxD)	120/160 0.62 A	C/W MESH FILTER, #10 EXHAUST DUCT, THERMAL INSULATION, BIRDSCREEN, BOD, ON A REVERSE ACTING THERMOSTAT
UH.1	UNIT HEATER	REZNOR UDBP-30 INPUT CAPACITY: 30 MBH MAX. AIR FLOW: 500 CFM APPROX. WEIGHT: 72 LBS	115/160 3.7 FLA 15 MOCF	C/W CORD, TIMER, AQUASTAT WATER CONNECTIONS: 1/2" SWEAT SET TIMER TO RUN PUMP DURING BUILDING OCCUPIED PERIODS, BALANCE TO 2 USGPM.
RP.1	HOT WATER RECIRC PUMP	ARMSTRONG ASTRO 225805005-TA APPROX. WEIGHT: 7.0 LBS	115/160 MCA 0.04 A MOCF 15 A	C/W CORD, TIMER, AQUASTAT WATER CONNECTIONS: 1/2" SWEAT SET TIMER TO RUN PUMP DURING BUILDING OCCUPIED PERIODS, BALANCE TO 2 USGPM.

GREASE INTERCEPTOR CALCULATION	
TWO COMPARTMENT SINK - COMPARTMENT SIZE 24X20X12	
VOLUME = 2' x 24" x 20" x 12" DEEP	
= 11,520 cu.in.	
= 80 GALLONS	
DRAIN DOWN TIME = 2 MINUTES	
Q/FLOW RATE = 0.75 X VOLUME / DRAIN DOWN TIME	
= 0.75 X 80 / 2	
= 19 GPM	
TWO COMPARTMENT SINK - COMPARTMENT SIZE 24X20X12, 24X24X4	
VOLUME = 2' x 24" x 20" x 12" + 24"X24"X4"	
= 13,824 cu.in.	
= 80 GALLONS	
DRAIN DOWN TIME = 2 MINUTES	
Q/FLOW RATE = 0.75 X VOLUME / DRAIN DOWN TIME	
= 0.75 X 80 / 2	
= 22.5 GPM	
ONE COMPARTMENT SINK (2x4) - COMPARTMENT SIZE 15.25X17X13.375	
VOLUME = 15.25' x 17' x 13.375' DEEP	
= 3,487 cu.in.	
= 15 GALLONS	
DRAIN DOWN TIME = 2 MINUTES	
Q/FLOW RATE = 0.75 X VOLUME / DRAIN DOWN TIME	
= 0.75 X 15 / 2	
= 5.6 GPM	
TOTAL: 64GPM	

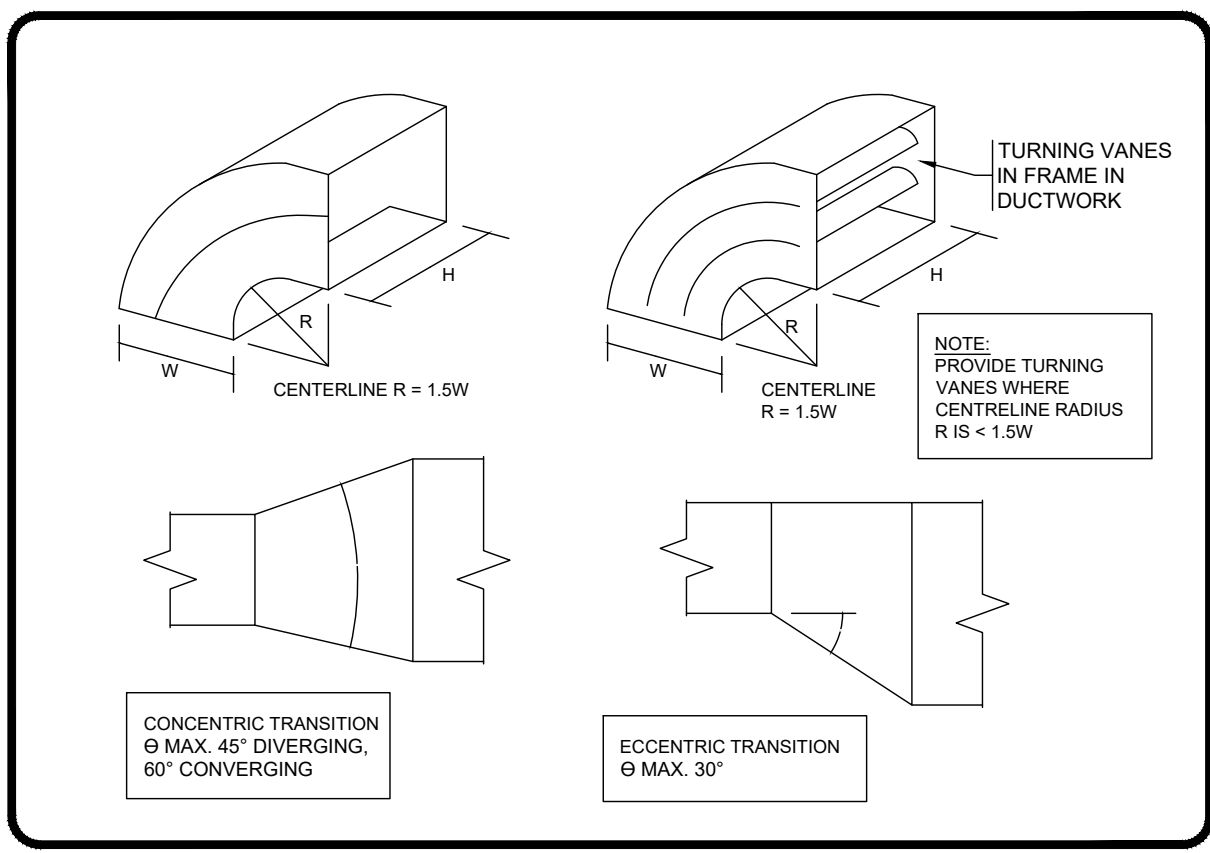
LOUVER SCHEDULE		
SYMBOL	DESCRIPTION	REMARKS
WB.1	REVERSOMATIC SINGLE WALL BOX SWB WITH EXTRUDED ALUMINUM GRILLE	FINISH TO BE SELECTED BY CLIENT/ARCHITECT. CLIENT/ARCHITECT. WALL BOXES TO BE SUPPLIED BY MECHANICAL CONTRACTOR AND CAST IN PLACE IN PRECAST CONCRETE WALLS.
DIFFUSER AND GRILLE SCHEDULE		
SYMBOL	DESCRIPTION	REMARKS
A	NAILOR 5010 SUPPLY, 3 SLOT LINEAR DIFFUSER, 1" SLOT WIDTH, 4 FOOT LENGTH.	FINISH TO BE SELECTED BY CLIENT/ARCHITECT.
B	NAILOR 5010R RETURN, 3 SLOT LINEAR DIFFUSER, 1" SLOT WIDTH, 4 FOOT LENGTH.	FINISH TO BE SELECTED BY CLIENT/ARCHITECT.
C	NAILOR RNS3 24"X24" SUPPLY AIR DIFFUSER.	FINISH TO BE SELECTED BY CLIENT/ARCHITECT.
D	EH PRICE 520D SUPPLY AIR GRILLE C/W STEEL BALANCING DAMPER, DOUBLE DEFLECTION, 3/4" SPACING, ALUMINUM BLADES PARALLEL TO LONG DIMENSION, C/W 1 1/4" FLAT BORDER & SCREWED FASTENING FOR SURFACE MOUNTING.	FINISH TO BE SELECTED BY CLIENT/ARCHITECT.
E, E1, E2,E3, E4	EH PRICE 80FA EXHAUST OR RETURN GRILLE (DUCTED), FRAME SUITABLE FOR CEILING.	FINISH TO BE SELECTED BY CLIENT/ARCHITECT.
F	NAILOR 61DDG-FR. SUITABLE FOR UP TO 1.5 HR FIRE RATING. IF 2 HR FIRE RATING IS REQUIRED PROVIDE A SUITABLE DOOR GRILLE FOR THE APPLICATION.	FINISH TO BE SELECTED BY CLIENT/ARCHITECT.
G	EH PRICE 22FLA SIDEWALL SUPPLY GRILLE C/W ALUMINUM DAMPER	FINISH TO BE SELECTED BY CLIENT/ARCHITECT.
H	NAILOR 61DDG DOOR GRILLE	
I	NAILOR 5010R RETURN, 4 SLOT LINEAR DIFFUSER, 1" SLOT WIDTH, 4 FOOT LENGTH.	FINISH TO BE SELECTED BY CLIENT/ARCHITECT.

MECHANICAL FIXTURE SCHEDULE						
SYMBOL	NAME	MANUFACTURER	CW	HW	DR	V
GI.1	GREASE INTERCEPTOR	WATTS WD-175 CAPACITY: 75GPM, 150lb. CAPACITY. DIMENSION: 36" x 24" x 24 1/2"			4"	1 1/2"
SH.1	SHOWER	SHOWER TRIM: MOEN 3696P SUPPLIED WITH STOPS.	1/2"	1/2"	2"	1 1/2"
S.1	COUNTER MOUNTED SINK	UNDERBAR BLENDER STATION SINK AND FAUCET BY OTHERS	1/2"	1/2"	2"	1 1/2"
S.2	COUNTER MOUNTED SINK	SINK AND FAUCET BY OTHERS	1/2"	1/2"	2"	1 1/2"
DS.1	KITCHEN DOUBLE SINK	SINK AND FAUCET BY OTHERS	1/2"	1/2"	1-1/2"	1-1/4"
WC.1	BARRIER FREE WATER CLOSET FLUSH VALVE	AMERICAN STANDARD MADERA 3461.001 VALVE, MANUAL, 1.6 GPF, 6047, 161.002	1"		3"	1-1/2"
WC.2	BARRIER FREE WATER CLOSET FLUSH TANK	AMERICAN STANDARD CADET 2467.016 SEAT, BENS 78507TG	1/2"		3"	1-1/2"
L.1	WALL HUNG B.F. LAV	AMERICAN STD. LUCERNE 0356-421 FAUCET MOEN 6172 LEVER HANDLES HIGH ARC	1/2"	1/2"	1-1/4"	1-1/4"
L.2	WALL HUNG LAV	AMERICAN STD. WHEELCHAIR 9141.011 FAUCET MOEN 6172 LEVER HANDLES HIGH ARC	1/2"	1/2"	1-1/4"	1-1/4"
L.3	COUNTER MOUNTED LAV	AMERICAN STANDARD BOULEVARD UNDERCOUNTER SINK 0610.300 FAUCET MOEN 6172 LEVER HANDLES HIGH ARC	1/2"	1/2"	1-1/4"	1-1/4"
HS.1	HANDS FREE SINK	SINK AND FAUCET BY OTHERS	1/2"	1/2"	2"	1 1/2"
MS.1	MOP SINK	FIAT MSB 2424 C/W FIAT 830-AA FAUCET	1/2"	1/2"	3"	1 1/2"
BV.1	BACKWATER VALVE	MAINLINE STRAIGHT-FIT BACKWATER VALVE VALVE MODEL ML-SF334A FOR ABS OR ML-SF334P FOR PVC				
NFHB	NON-FREEZE HOSE BIBB	ZURN Z-1300	3/4"			
BFP	BACKFLOW PREVENTOR	WATTS LF007 DOVA ASSEMBLY	3"			
FD	FLOOR DRAIN	ZURN ZKN-211-A-P FLOOR DRAIN			4" OR AS NOTED ON PLANS	1 1/2"
FFD	FUNNEL FLOOR DRAIN	ZURN ZKN-211-A C/W P-STRAINER, FUNNEL FLOOR DRAIN GATE, NB, T.P.T.			4" OR AS NOTED ON PLANS	1 1/2"
CO	CLEANOUT	ZURN ZKN-1612 CLEANOUT				
XT.1	EXPANSION TANK	ARMSTRONG AST-60 TANK VOLUME: 2x USG ACCEPTANCE TANK VOLUME: 17.5 USG APPROX. DIMENSIONS: 10" x 34" (DxH)	1"			
HD	HUB DRAIN	4"Ø PVC DWV OR XPR PIPE STUBBED 2" ABOVE FINISHED FLOOR			4"Ø UNLESS OTHERWISE NOTED	1 1/2"

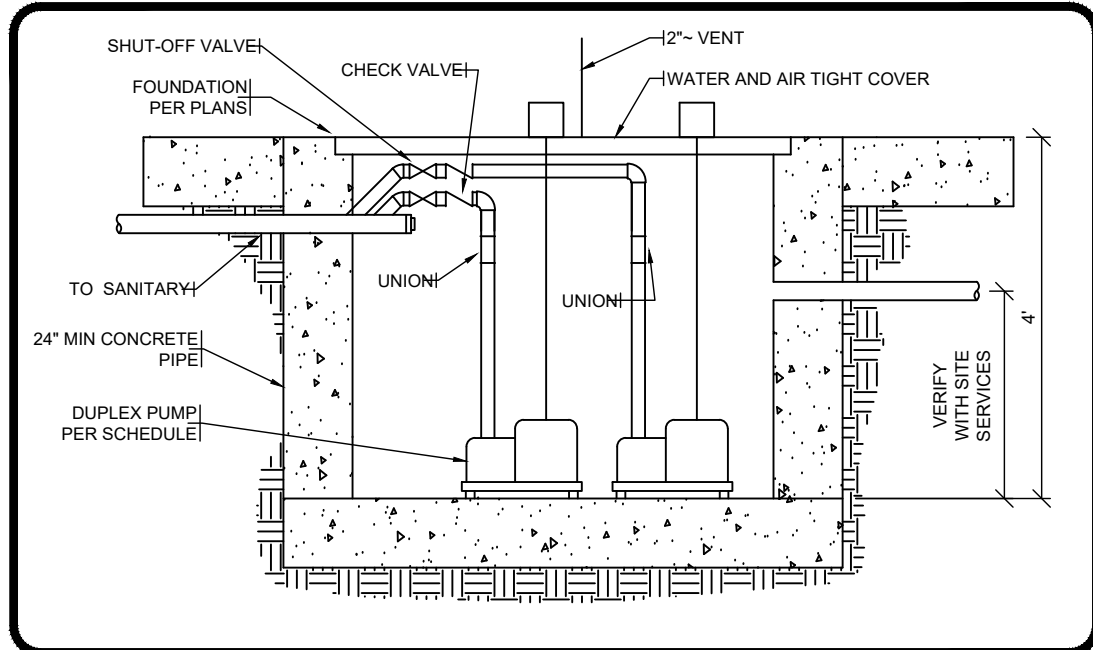
HVAC NOTES	
(H1)	CUT WALL PENETRATION AS REQUIRED. SEAL AND MAKE GOOD PENETRATION WITH BUTYL CAULKING OR EQUIVALENT AND PROVIDE FLASHINGS TO FINISH INSTALLATION. EXTEND VENT AS PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE CUTTING OF EXTERIOR FINISHES WITH PROJECT MANAGER AND GENERAL CONTRACTOR.
(H2)	ALL DUCTWORK PENETRATING FIRE WALLS AND SEPARATIONS SHALL BE PROPERLY SEALED AND FIRE RATED TO MAINTAIN FIRE RATING OF WALL OR SEPARATION. ALL CEILING PENETRATIONS NEED TO BE FIRE STOPPED.
(H3)	INSTALL NEW CONDENSING UNIT ON ROOF MOUNTED ROOF BLOCKS EQUAL TO CADDY PYRAMID FISH STRUT SUPPORT PSF-100. ENSURE ADEQUATE CLEARANCES ARE MAINTAINED AROUND UNIT AS PER MANUFACTURER'S RECOMMENDATIONS. COMPLETE WITH RUBBER VIBRATION ISOLATION.
(H4)	PROVIDE REFRIGERANT PIPING. SIZE REFRIGERANT LINES AS PER MANUFACTURER'S RECOMMENDATIONS. INSULATE BOTH LIQUID AND GAS REFRIGERANT LINES COMPLETE WITH APPROPRIATE INSULATION. APPLY ARMAFLEX WB FINISH TO OUTDOOR PORTION OF INSULATION.
(H5)	PROVIDE PENETRATION AND ON REQUIRED PATCHING WORK AS REQUIRED TO FACILITATE CONNECTION. REFRIGERANT PIPING AND ELECTRICAL TO SHARE SAME PENETRATION. MECHANICAL CONTRACTOR TO PROVIDE PENETRATION. COORDINATE LOCATION WITH ELECTRICAL CONTRACTOR. PROVIDE SUITABLE CAULKING TO CLOSE PENETRATION. PROVIDE ALL REPAIR, SEALING AND FIRE STOPPING OF PENETRATIONS, WALLS AND FINISHES AS REQUIRED TO MATCH ADJACENT SURFACES AND FOR A CLEAN AND PROFESSIONAL APPEARANCE. COORDINATE WORK WITH GENERAL CONTRACTOR. FIRE-RATED WALLS MUST BE SEALED WITH FIRESTOPPING, ULITI FS-ONE OR APPROVED EQUIVALENT.
(H6)	PROVIDE 1.5" THERMAL INSULATION FULL LENGTH OF EXHAUST DUCTWORK AND ALSO ALL OA DUCTS FROM EXTERIOR TERMINATION. SEE GENERAL HVAC NOTES FOR SPECS.
(H7)	3" SCHEDULE 40 INTAKE C/W PIPE AND 3" B-VENT EXHAUST. PROVIDE MIN. OF 1/4" SLOPE IN EXHAUST PIPE EVERY 12" OF RUN TOWARDS UNIT.
(H8)	RUN COMBUSTION INTAKE AND EXHAUST TO OUTSIDE OF BUILDING. DIRECT VENT APPLICATION WITH INTAKE ELBOW. PROVIDE REQUIRED PENETRATIONS AND ALL REQUIRED PATCHING/SEALING FOR A COMPLETE INSTALLATION.
(H9)	SUPPLY AND INSTALL GALVANIZED DRAIN PAN UNDERNEATH FURNACE AND COIL SECTION. CONNECT DRAIN PAN TO CONDENSATE PUMP. DRAIN PAN ALSO SERVES AS ROLL-OUT PROTECTION SHEET REQUIRED BY MANUFACTURER IN FRONT OF BURNER AREA. ENSURE DRAIN PAN IS LARGE ENOUGH AND IS POSITIONED CORRECTLY TO COVER ENTIRE AREA UNDERNEATH FURNACE, DX COIL SECTION, AND BURNER AREA.
(H10)	INSTALL NEW GAS FIRED FURNACE HORIZONTALLY, HANG FROM STRUCTURE USING 1/4" ATR WITH 1-5/8"X13/16" UNISTRUT UNDERNEATH, IN PROPER ORIENTATION AND PITCHED FORWARD AS RECOMMENDED BY MANUFACTURER FOR PROPER CONDENSATE DRAINAGE. ENSURE THAT FURNACE IS HUNG AT AN ELEVATION WHERE THERE IS ADEQUATE ROOM FOR ALL CONNECTIONS. SECURE FURNACE TO UNISTRUT KIT. RUBBER VIBRATION ISOLATION BETWEEN. ALTERNATIVELY, LENNOX SUSPENSION KIT MAY BE USED.
(H11)	PROVIDE ROOF TERMINATIONS FOR PLUMBING AND EQUIPMENT VENTINGS AS NEEDED. PROVIDE ADDITIONAL ROOF SUPPORTS AS REQUIRED.
(H12)	EXTEND VENT ABOVE ROOFING AS PER MANUFACTURER'S RECOMMENDATIONS.
(H13)	KEEP A SPACE OF APPROXIMATELY 1" BETWEEN FRESH AIR INTAKE AND EXHAUST OUTLETS ON OUTSIDE OF BUILDING.
(H14)	FILL THE ROOF CURB WITH ROCKWOOL INSULATION.
(H15)	MECHANICAL CONTRACTOR SHALL SIZE GAS LINES AS PER NATURAL GAS AND PROPANE INSTALLATION CODE AND SUPPLY PRESSURE. LINE SIZES INDICATED ARE FOR BIDDING PURPOSES ONLY. CONTRACTOR TO SIZE ALL GAS LINES AND PROVIDE ROUTING, DRIP LEGS AS REQUIRED.
(H16)	MECHANICAL CONTRACTOR SHALL SUPPLY AND INSTALL ROOF BLOCKS FOR GAS LINES AS REQUIRED. B-LINE-DURA-BLOCK OR APPROVED EQUIVALENT.
(H17)	GAS PIPING SHALL BE ASTM A53 THREADED PIPE AND FITTINGS. SHALL BE PAINTED YELLOW WITH TWO COATS OF PAINT SUITABLE FOR OUTDOOR USE. CONTRACTOR SHALL REVIEW AND PROVIDE GAS LINES AS PER NATURAL GAS AND PROPANE INSTALLATION CODE.
(H18)	PROVIDE STAINLESS STEEL SHROUD ABOVE HOOD TO CONCEAL SERVICES AND CONNECTIONS. CONFIRM EXACT HEIGHT REQUIRED WITH OWNER. COORDINATE WITH OTHER TRADES.
(H19)	PROVIDE WELDED CARBON STEEL EXHAUST DUCTWORK FROM KITCHEN HOOD AS PER NFPA REQUIREMENTS. PROVIDE FIRE WRAP TO 3" THICKNESS OF EXHAUST DUCT. 3M FIRE BARRIER DUCT WRAP 615+ OR APPROVED EQUAL. PROVIDE DUCT ACCESS DOORS (CLEAN OUTS) AS REQUIRED BY NFPA 96.
(H20)	PROVIDE ALL COMPONENTS, HARDWARE, AND ACCESSORIES REQUIRED FOR A COMPLETE AND FUNCTIONAL INSTALLATION. INSTALLATION TO BE PERFORMED IN ACCORDANCE WITH ALL REQUIREMENTS OF NFPA 96.
(H21)	COORDINATE CONNECTION OF ELECTRICAL WITH DIVISION 26 AND/OR WITH OWNER.
(H22)	EXHAUST CONNECTION ON HOOD TO BE CENTERED AS SHOWN.
(H23)	PROVIDE BALANCING DAMPERS AS REQUIRED.
(H24)	MECHANICAL CONTRACTOR SHALL PROVIDE POLYGLARD ALUMAGUARD FLEXIBLE WEATHER-PROOFING JACKETING FOR EXTERIOR DUCTWORK ON ROOF. PROVIDE DUCT SUPPORTS AS REQUIRED.



1
M5.2 NTS
TYPICAL RECIRCULATION PUMP DETAIL



2
M5.2 NTS
RADIUS ELBOW AND TRANSITION



3
M5.2 NTS
SECTION AT SUMP PIT (DUPLX PUMP)

CONSULTANT

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DWG# DRAWING TITLE

8	ISSUED FOR CONSTRUCTION	08/19/19
7	ISSUED FOR TENDER	07/02/19
6	ISSUED FOR FINAL REVIEW	06/28/19
5	100% TENDER SET SUBMISSION FOR REVIEW	06/24/19
4	ISSUED FOR PERMIT	06/19/19
3	ISSUED FOR COORDINATION	06/17/19
2	ISSUED FOR 95% REVIEW	06/07/19
1	ISSUED FOR REVIEW	05/24/2019
No.	REVISION	MM/DD/YR

Brantford Northridge
Golf Clubhouse
320 Balmoral Dr
Brantford, ON

CONSULTANT STAMP

PLOT DATE:	VERSION (MFILES)	DOCUMENT ID
08/19/2019	38	101036
LAST ACCESSED BY:	PAPER SIZE:	
RUZA MAKLENOV	----	

DATE	DRAWN
JUNE 2019	R.M.
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JOB NO.	

18-264

PROJECT
Brantford Northridge Golf Clubhouse
BRANTFORD, ONTARIO

DRAWING NO.
M5.2

APPENDIX B

Fire Flow Requirement Calculation

FUS FIRE FLOW REQUIREMENT

1) Fire Flow Requirement
 $F_1 = 220C(A^{1/2})$ (L/min)
 C= 1.5 Wood Frame Construction
 A= 486 Floor Area (m²) = Main floor area
 1 Total Storeys
 A= 486 Total Fire Area (m²) = Main floor area * total storeys
 F₁= 7275 L/min
F₁= 7000 L/min (Round to the nearest 1,000 l/min)

2) Occupancy
 Occupancy Type: Combustible Contents
 Reduction: 0%
 Surcharge: 0%
 $F_2 = F_1 - (F_1 * \text{Reduction}) + (F_1 * \text{Surcharge})$ (L/min)
F₂= 7000 L/min

3) Sprinkler System
 Sprinkler System: Not Applicable (assumed no sprinkler system in service)
 Reduction: 0%
 $F_3 = F_2 * \text{Reduction}$ (L/min)
F₃= 0 L/min

4) Separation

<u>Location</u>	<u>Direction</u>	<u>Distance</u> (m)	<u>Length- Height</u> factor	<u>Exposed Building Const.</u> Type	<u>Surcharge</u>
Side ¹	East	45+	n/a	n/a	0%
Front ²	North	45+	n/a	n/a	0%
Rear ³	South	45+	n/a	n/a	0%
Side ⁴	West	45+	n/a	n/a	0%
Total:					0%

$F_4 = (\text{TOTAL}) * F_2$ (L/min)
F₄= 0 L/min

Total Fire Flow

$$\begin{aligned}
 F &= F_2 + F_3 + F_4 &= & 7000 \text{ L/min} \\
 & &= & \boxed{7000 \text{ L/min}} \text{ (Round to the nearest 1,000 l/min)} \\
 & &= & \boxed{116.67 \text{ L/s}}
 \end{aligned}$$

Notes:

1) All calculations and factors from Part 2 "Water Supply for Public Fire Protection" by the Fire Underwriters Survey, 2020.