



**re: Grading, Servicing and Landscape Plan Review**  
Proposed Commercial Building  
30 Auriga Drive - Ottawa, Ontario

**to:** 13799484 Canada Inc. – **Mr. Sébastien Brisebois** – sbrisebois@bousadainc.com

**date:** May 12, 2023

**file:** PG6513-MEMO.01

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Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to document our grading, servicing, and landscape plan reviews for the proposed commercial building to be constructed at the aforementioned site. This memo should be read in conjunction with the Geotechnical Investigation Report (Paterson Group Report PG6513-1 dated December 8, 2022).

This memo also acts as our response to Comment B8 provided by the City of Ottawa in the letter dated April 19, 2023 (File No. D07-12-23-0016).

Paterson reviewed the following drawings prepared by McIntosh Perry during the preparation of this memo:

- Site Grading, Drainage, Erosion & Sediment Control Plan – Proposed Warehouse – 30 Auriga Drive – Project No. CCO-23-0914 – Drawing No. C101 - Revision 2 dated May 17, 2023.
- Site Servicing Plan – Proposed Warehouse – 30 Auriga Drive – Project No. CCO-23-0914 – Drawing No. C102 - Revision 2 dated May 17, 2023.

Paterson also reviewed the following drawing prepared by Nvira for the aforementioned development:

- 24x36 Landscape – Auriga Entrepot – 30 Auriga Drive - Project No. 3562 – Sheet 1/1 - Revision 1 dated January 20, 2023.

## **Grading Plan Review**

Based on our review of the above-noted Site Grading, Drainage, Erosion & Sediment Control Plan, the proposed grading at the subject site is within the recommended permissible grade raise restriction of 1.2 m provided in the Geotechnical Investigation Report, referenced above. Therefore, the proposed grading is considered acceptable, from a geotechnical perspective, and no lightweight fill or other considerations are required to accommodate the proposed grading.





## Servicing Plan Review

In reviewing the Site Servicing Plan, referenced above, most of the proposed services have sufficient frost cover. However, insufficient frost protection has been provided to certain storm services, where highlighted on the attached plan. Insulation of the site servicing is recommended where insufficient frost cover has been provided. Our detailed frost protection recommendations are provided below and on the attached plan.

### Geotechnical Recommendations

Any portion of the proposed sewer services installed at a depth of 2.1 m below finished grade, or deeper, is considered to have sufficient soil cover for frost protection. However, based on our review, some of the proposed storm services and their subgrades are anticipated to be founded within the frost zone. Where insufficient soil cover is present above the obvert of the pipe, the following frost protection criteria should be followed:

Thermal Condition	Soil Cover Provided D (mm)	Insulation Dimensions (mm)	
		t (thickness)	L (extension)
Unheated	Less than 1,100	Not Recommended	
	1,100 to 1,400	75	Extend 900 mm horizontally beyond edge face of the sewer
	1,400 to 1,700	50	Extend 600 mm horizontally beyond edge face of the sewer
	1,700 to 2,000	25	Extend 300 mm horizontally beyond edge face of the sewer

Notes: All designs are based on a freezing index of 1000°C-days.

All rigid insulation should consist of either Dow Chemical High-Load 40 (HI-40), Styro Rail SR.P400, or equivalent approved by Paterson. The placement of all insulation within the service trenches must be reviewed and approved by Paterson personnel at the time of construction.

Provided these recommendations are followed, the Site Servicing Plan is considered acceptable, from a geotechnical perspective.



## Landscape Plan Review

In reviewing the available Landscape Plan, referenced above, no trees are proposed within 7.5 m of the proposed building. Some shrubs are located within 7.5 m, however, these have shallower root structures than trees, which will not extend to the depths of the proposed foundations. In summary, the proposed Landscape Plan is considered acceptable, from a geotechnical perspective.

We trust that this information satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Scott S. Dennis, P.Eng.



**Attachment:** -Site Servicing Plan mark-ups  
with recommended pipe insulation

# PG6513-MEMO.01

## Insulation for Site Services with Insufficient Soil Cover

STORM STRUCTURE TABLE					
STRUCTURE I.D.	TOP OF GRATE ELEVATION	INVERTS	STRUCTURE SIZE	STRUCTURE TYPE	FRAME & COVER
CB 2	89.11	SW. OUT = 87.70	600mm X 600mm	OPSD 705.010	CITY STD S19
CB 4	89.48	N. OUT = 87.97	600mm X 600mm	OPSD 705.010	CITY STD S19
CB 6	89.26	SE. OUT = 87.80	600mm X 600mm	OPSD 705.010	CITY STD S19
CBMH 3	88.82	W. IN = 87.03 NE. IN = 87.41 E. OUT = 86.95	1200 mmØ	OPSD 701.010	COVER CITY STD S28.1 FRAME CITY STD S25
OGS 1	88.39	N. IN = 86.76 W. IN = 86.80	1200 mmØ	STORMCEPTOR EF4 (OR EQUIVALENT)	OPSD 401.040/7A (OR MANUFACTURER EQUIVALENT)
STMH 1	88.25	W. IN = 86.84 S. IN = 86.64 E. OUT = 86.38	1200 mmØ	OPSD 701.010	COVER CITY STD S24.1 FRAME CITY STD S25
STMH 5	89.02	NW. IN = 87.51 E. OUT = 87.40	1200 mmØ	OPSD 701.010	COVER CITY STD S24.1 FRAME CITY STD S25

SANITARY STRUCTURE TABLE					
STRUCTURE I.D.	TOP OF GRATE ELEVATION	INVERTS	STRUCTURE SIZE	STRUCTURE TYPE	FRAME & COVER
MHSA1	89.28	S. IN = 87.25 W. IN = 87.25 N. OUT = 87.30	1200 mmØ	OPSD 701.010	COVER CITY STD S24 FRAME CITY STD S25
MHSA2	89.35	E. OUT = 87.37 W. IN = 87.50	1200 mmØ	OPSD 701.010	COVER CITY STD S24 FRAME CITY STD S25

### GENERAL NOTES

- THE ORIGINAL TOPOGRAPHY, GROUND ELEVATION AND SURVEY DATA SHOWN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY, AND ARE NOT A GUARANTEE OF ACCURACY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION SHOWN.
- THIS PLAN IS NOT A CADASTRAL SURVEY SHOWING LEGAL PROPERTY BOUNDARIES AND EASEMENTS. THE PROPERTY BOUNDARIES SHOWN HEREON HAVE BEEN DERIVED FROM INFORMATION SUPPLIED BY OR SHOWN ON ANNS, COUNCIL RECORDS, VOLUMES, RECORDS #2249-22 AND CANNOT BE RELIED UPON TO BE ACCURATE OR COMPLETE. THE PRECISE LOCATION OF THE CURRENT PROPERTY BOUNDARIES AND EASEMENTS CAN ONLY BE DETERMINED BY AN UP-TO-DATE LAND TITLE SEARCH AND A SUBSEQUENT CADASTRAL SURVEY PERFORMED AND CERTIFIED BY AN ONTARIO LAND SURVEYOR.
- THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY BEFORE COMMENCING CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT.
- THE CONTRACTOR IS TO DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- RESTORE ALL TRENCHES AND SURFACES OF PUBLIC ROAD ALLOWANCES TO CONDITION EQUAL OR BETTER THAN ORIGINAL CONDITION AND TO THE SATISFACTION OF THE CITY AUTHORITIES.
- EXCAVATE AND DISPOSE OF ALL EXCESS EXCAVATED MATERIAL SUCH AS ASPHALT, CURBING AND DEBRIS, OFF SITE AS DIRECTED BY THE ENGINEER AND THE CITY.
- TOPSOIL TO BE STRIPPED AND STOCKPILED FOR REHABILITATION. CLEAN FILL TO BE PLACED IN FILL AREAS AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING THE SUPPLY, INSTALLATION, AND REMOVAL OF ALL NECESSARY SIGNS, DIMENSIONAL MARKERS AND BARRIERS.
- DO NOT ALTER GRADING OF THE SITE WITHOUT PRIOR APPROVAL OF THE ENGINEER/CITY.
- ALL ROADWAY, PARKING LOT, AND GRADING WORKS TO BE UNDERTAKEN IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS. THE CONTRACTOR IS TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE BUILDING.
- CONTACT THE CITY FOR INSPECTION OF ROUGH GRADING OF PARKING LOTS, ROADWAYS AND LANDSCAPED AREAS PRIOR TO PLACEMENT OF ASPHALT AND TOPSOIL. ALL DEFICIENCIES NOTED SHALL BE RECTIFIED TO THE CITY'S SATISFACTION PRIOR TO PLACEMENT OF ANY ASPHALT, TOPSOIL, SEED & MULCH AND/OR SOD.
- ALL DIMENSIONS AND INVERTS MUST BE VERIFIED PRIOR TO CONSTRUCTION. IF THERE IS ANY DISCREPANCY THE CONTRACTOR IS TO NOTIFY THE ENGINEER PROMPTLY.
- ELECTRICAL, GAS, TELEPHONE AND TELEVISION SERVICE LOCATIONS ARE SUBJECT TO THE INDIVIDUAL AGENCY:
  - ELECTRICAL SERVICE - HYDRO ONE
  - GAS SERVICE - ENBRIDGE
  - TELEPHONE SERVICE - BELL CANADA
  - TELEVISION SERVICE - ROGERS
- INSTALLATION TO BE IN ACCORDANCE WITH CURRENT CODES AND STANDARDS OF APPROVAL AGENCIES HYDRO ONE, BELL AND THE CITY.
- CONTRACTOR TO ENSURE ALL APPLICABLE OPS SPECIFICATIONS ARE FOLLOWED DURING CONSTRUCTION.
- ALL PROPOSED CURB TO BE CONCRETE BARRIER CURB UNLESS OTHERWISE SPECIFIED.

### WATERMAIN NOTES

- CONSTRUCT ALL WATERMANS AND APPURTENANCES IN ACCORDANCE WITH OPSD STANDARDS AND SPECIFICATIONS, AS WELL AS CITY STANDARDS.
- WATERMANS AND/OR WATER SERVICES ARE TO HAVE A MINIMUM COVER OF 2.4m. OTHERWISE THERMAL INSULATION IS REQUIRED AS PER CITY STANDARDS (IF AVAILABLE) OR OPSD 1109.030.
- IF THE WATERMAIN MUST BE DEFLECTED TO MEET ALIGNMENT, ENSURE THAT THE AMOUNT OF DEFLECTION USED IS EQUAL TO OR LESS THAN THAT WHICH IS RECOMMENDED BY THE MANUFACTURER.
- THERMAL INSULATION OF WATERMANS AT OPEN STRUCTURES AS PER CITY STANDARDS (IF AVAILABLE) OR OPSD 1109.030.
- VALVES TO BE OPERATED BY CITY STAFF ONLY.
- NO CONNECTION TO EXISTING WATER NETWORK SHALL BE COMPLETED UNTIL A WATER PERMIT IS OBTAINED FROM THE CITY. CITY TO BE PRESENT FOR WATERMAIN CONNECTION, CONNECTION, EXCAVATION, BACKFILLING AND REINSTATEMENT TO BE COMPLETED BY CONTRACTOR.
- IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ANY WATERMAIN CONNECTIONS REQUIRED. THIS SHALL BE COMPLETED IN THE PRESENCE OF A DESIGNATED MUNICIPAL WATER OPERATOR AND THE SELECTED CONTRACTOR SHALL PROVIDE TO THE SATISFACTION OF THE CITY THAT THEY ARE COMPETENT TO PERFORM THE WORKS PRIOR TO INITIATING CONSTRUCTION.
- CONCRETE THRUST BLOCKS TO CONFORM TO OPSD 1103.010 AND OPSD 1103.020.
- ALL WATERMAIN TO BE CLASS 150 DR-18 OR APPROVED EQUIVALENT.
- ALL WATERMAIN TO BE EQUIPPED WITH TRACER WIRE.
- WATER SERVICES SHALL BE TO ASTM 888 TYPE "K" SOFT. PIPES SHALL BE SEAMLESS COPPER TUBING DRAWN TO SIZE AND FURNISHED WITH PROPER BENDING TEMPER. ALL PIPING TO BE COMPLETELY DEOXYGENATED COPPER, 99.9% PURE.

### SEWER NOTES:

- CONSTRUCT ALL SEWERS, CATCH BASINS, MANHOLES AND APPURTENANCES IN ACCORDANCE WITH OPSD STANDARDS AND SPECIFICATIONS, AS WELL AS CITY.
- SEWER TRENCHING AND BEDDING SHALL CONFORM TO OPSD 802.010 AND 802.013 UNLESS NOTED OTHERWISE.
  - BEDDING SHALL BE A MINIMUM 150mm OF GRANULAR "A" COMPACTED TO MINIMUM 95% STANDARD PROCTOR DRY DENSITY. CLEAR STONE BEDDING SHALL NOT BE PERMITTED.
  - SUB-BEDDING, IF REQUIRED SHALL CONSIST OF 450mm OF COMPACTED GRANULAR "B" TYPE 1.
  - BACKFILL TO AT LEAST 300mm ABOVE TOP OF PIPE WITH GRANULAR "A" OR GRANULAR "B" TYPE 1.
  - TO MINIMIZE DIFFERENTIAL FROST HEAVING, TRENCH BACKFILL (FROM PAVEMENT SUBGRADE TO 2.0 METRES BELOW FINISHED GRADE) SHALL MATCH EXISTING SOIL CONDITIONS.
- SANITARY SEWERS AND CONNECTIONS 150mmØ AND SMALLER TO BE PVC SDR-26.
- SEWERS AND CONNECTIONS 200mmØ AND LARGER TO BE PVC SDR-35. BEDDING TO BE TYPE "B" EXCEPT AT RISERS, UNLESS NOTED OTHERWISE.
- INSULATE ALL STORM AND SANITARY SEWERS/SERVICES THAT HAVE LESS THAN 2.0m OF COVER WITH THERMAL INSULATION AS PER OPSD 1109.030.
- SEWER CONNECTIONS ARE TO BE MADE ABOVE THE SPRINGLINE OF THE SEWERMAIN AS PER CITY OF OTTAWA STANDARD DRAWING S11, S11.1 & S11.2.
- SUPPLY AND INSTALL ALL PIPING AND APPURTENANCES AS SHOWN AND DETAIL TO WITHIN 1.0m OF BUILDING. ALL ENDS OF SERVICES TO BE PROPERLY CAPPED AND LOCATED WITH 2"x4" LONG MARKER.
- CONTRACTOR TO TELETYPE (CCTV) ALL PROPOSED SEWERS ON SITE, OUTLET CONNECTION TO THE MAIN AND PIPES 150mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.
- DYE TESTING IS TO BE COMPLETED ON SANITARY SERVICE TO CONFIRM PROPER CONNECTION TO SANITARY SEWER MAIN.

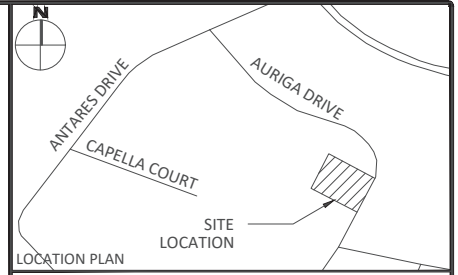
### CROSSING CONFLICT TABLE

LOCATION	DESCRIPTION	SEPARATION
1	EX. 300mmØ SAN SEWER INV 87.20 - 50mmØ WATER SERVICE TOP 86.67	0.53
2	EX. 1350mmØ STM TOP 86.80 - 50mmØ WATER SERVICE INV = 87.3	0.50
3	200mmØ STM INV 87.60 - 50mmØ WATER SERVICE TOP 86.85	0.75
4	200mmØ STM TOP 87.72 - 200mmØ STM SERVICE TOP 88.09	0.37
5	200mmØ STM TOP 87.11 - 150mmØ SAN SERVICE INV 87.62	0.51
6	375mmØ STM TOP 87.00 - 150mmØ SAN SERVICE INV 88.16	1.16

### WATER COVER TABLE

LOCATION	STATION	FINISHED GRADE	TOP OF PIPE	COVER
WATERMAIN CONNECTION	0+100.00	89.25	86.85	2.40
SANITARY CROSSING	0+101.75	89.27	86.67	2.60
STORM CROSSING	0+104.77	89.25	87.35	1.90
VALVE	0+114.39	89.30	86.90	2.40
BUILDING	0+163.72	89.50	87.10	2.40

\*NOTE: CONTRACTOR TO ENSURE A MINIMUM OF 0.3m OF VERTICAL SEPARATION BETWEEN EXISTING UTILITIES, SEWERS, AND PROPOSED SERVICES  
 \*\*NOTE: CONTRACTOR TO VERIFY ALL EXISTING SEWER AND UTILITY ELEVATIONS AND IMMEDIATELY ADVISE THE ENGINEER OF ANY DISCREPANCIES



### LEGEND

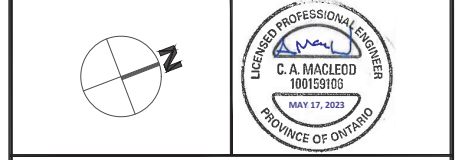
CONCRETE BARRIER CURB	LIMIT OF CONSTRUCTION
CONCRETE WALKWAY	DRAINAGE SWALE
PROPOSED ASPHALT	DRAINAGE DITCH
CSMBH T/G	LANDSCAPING CATCHBASIN
CBH T/G	CATCHBASIN
MHRA T/G	SANITARY SEWER MANHOLE
HYD B/F	FIRE HYDRANT
WATER VALVE	WATER VALVE
WATER METER	WATER METER
REMOTE WATER METER	REMOTE WATER METER
SEDIMENT CONTROL DEVICE	SEDIMENT CONTROL DEVICE
LIGHT DUTY ASPHALT	
HEAVY DUTY ASPHALT	

**FOR REVIEW ONLY**  
 NOT FOR CONSTRUCTION

No.	Revisions	Date
2	REVISED PER CITY COMMENTS	2023-05-17
1	ISSUED FOR SITE PLAN APPLICATION	2022-12-22

Check and verify all dimensions before proceeding with the work. Do not scale drawings.  
 SCALE 1:250  
 0 5 10 15 20 25 Metres

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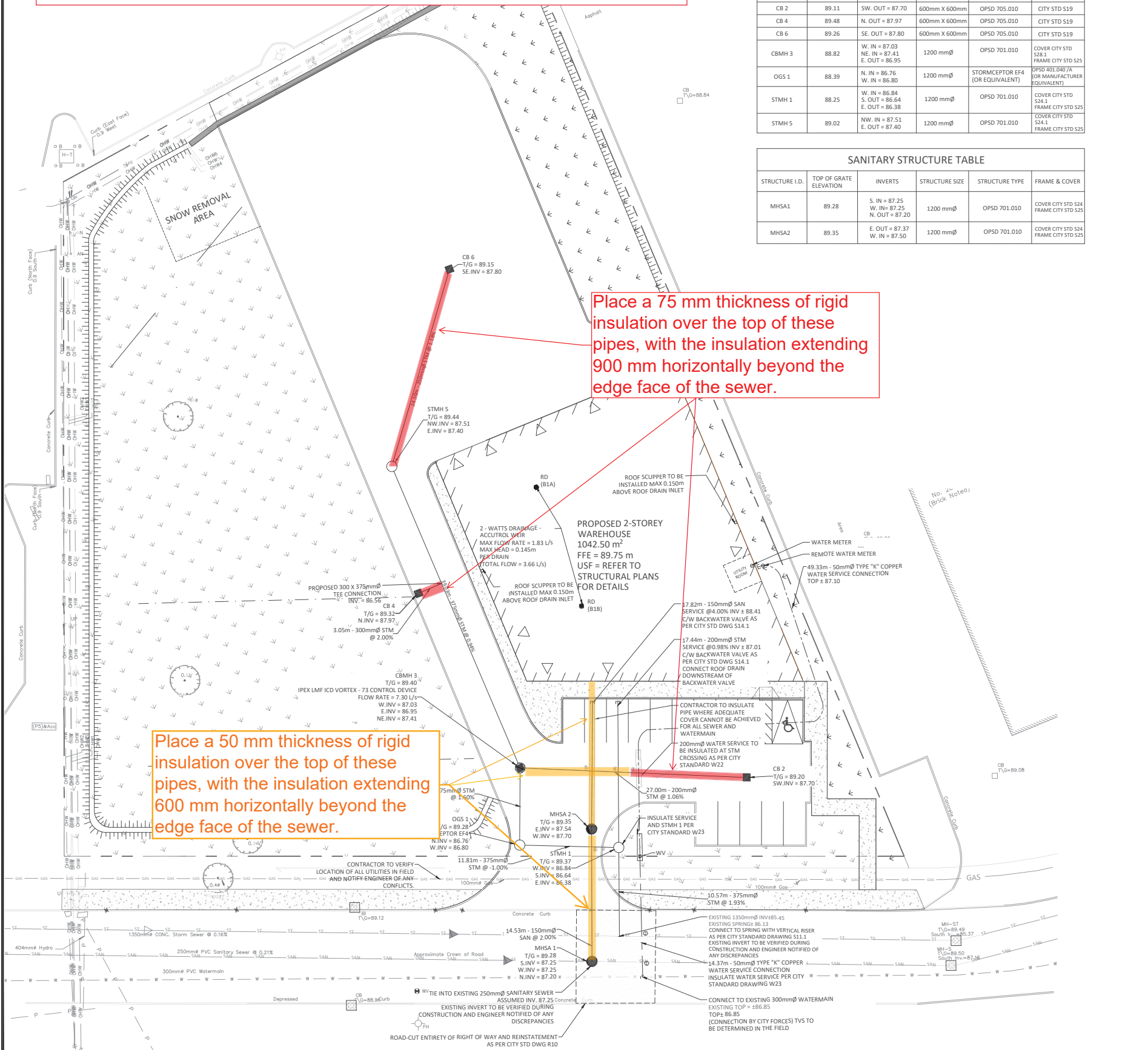
Project: **PROPOSED WAREHOUSE**  
 30 AURIGA DRIVE

Drawing Title: **SITE SERVICING PLAN**

Scale: 1:250	Project Number: CCO-23-0914
Drawn By: M.R.	Drawing Number: C102
Checked By: AM	
Designed By: CJM	

Place a 50 mm thickness of rigid insulation over the top of these pipes, with the insulation extending 600 mm horizontally beyond the edge face of the sewer.

Place a 75 mm thickness of rigid insulation over the top of these pipes, with the insulation extending 900 mm horizontally beyond the edge face of the sewer.



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D07-12-23-0022

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