

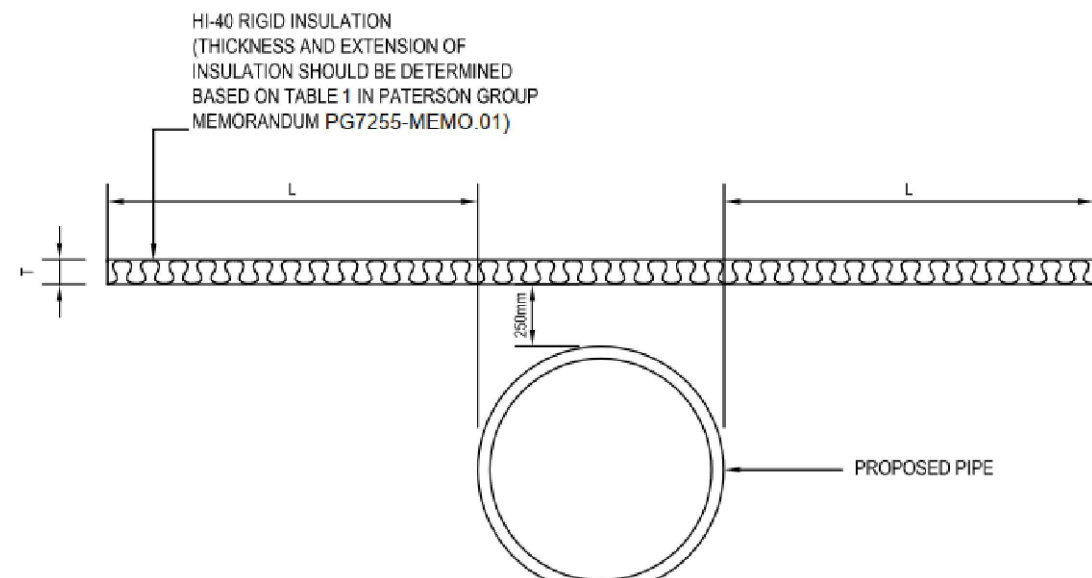
#### SEWER NOTES:

- 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 30R-28.
- SEWERS AND CONNECTIONS 200mmØ AND LARGER TO BE PVC 30R-35. BEDDING TO BE TYPE "B" EXCEPT AT RISERS, UNLESS NOTED OTHERWISE.
- SEWERS AND WATERMAINS LOCATED PARALLEL TO EACH OTHER SHOULD BE CONSTRUCTED IN SEPARATE TRENCHES. WHEN IT IS IMPOSSIBLE OR NOT PRACTICAL TO MAINTAIN VERTICAL AND/OR HORIZONTAL SEPARATION PER MCEP STANDARDS, ALL SEWERS SHOULD BE CONSTRUCTED OF WATERMAIN QUALITY PIPE. PIPELAIN QUALITY PIPE AT A PRESSURE OF 350 kPa (50 psi) WITHOUT LEAKAGE USING THE TESTING METHODOLOGY IN ONTARIO PROVINCIAL STANDARD SPECIFICATION 703 (OPSS 703) OF THE OPS.
- INSULATE ALL STORM AND SANITARY SEWERS/SERVICES THAT HAVE LESS THAN 2.0m OF COVER WITH THERMAL INSULATION AS PER CITY DETAIL S35, OPTION A.
- 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 DETAILED TO WITHIN 1.0m OF BUILDING. ALL ENDS OF SERVICES TO BE PROPERLY CAPPED AND LOCATED WITH 2"x4" LONG MARKER.
- CONTRACTOR TO TELEVIEW (CTV) 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.

#### WATERMAIN NOTES

- CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH CITY STANDARDS AND SPECIFICATIONS.
- WATERMAINS AND/OR WATER SERVICES ARE TO HAVE A MINIMUM COVER OF 2.4m. INSULATE ALL WATERMAINS AND SERVICES THAT HAVE LESS THAN 2.4m COVER WITH THERMAL INSULATION AS PER CITY DETAIL W22.
- 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 AND CITY OF OTTAWA STANDARDS W25 AND W25.2.
- THERMAL INSULATION OF WATERMAINS AT OPEN STRUCTURES AS PER CITY DETAIL W23.
- VALVES TO BE OPERATED BY CITY STAFF ONLY.
- NO WORK SHALL COMMENCE UNLESS A CITY WATER WORKS INSPECTOR IS ON SITE. NO CONNECTION TO EXISTING WATER NETWORK SHALL BE COMPLETED UNTIL A WATER PERMIT IS OBTAINED FROM THE CITY. CONNECTIONS TO BE COMPLETED BY CITY FORCES. EXCAVATION, BACKFILLING AND REINSTATEMENT TO BE COMPLETED BY SITE SERVICING CONTRACTOR.
- CONCRETE THRUST BLOCKS TO CONFORM TO CITY STANDARD W25.3.
- WATERMAIN 100-300mmØ TO BE CLASS 150 DR-18 PVC OR APPROVED EQUIVALENT.
- ALL PVC WATERMAIN SHALL BE INSTALLED WITH A 10 GAUGE STRANDED COPPER TWO OR RWU TRACER WIRE IN ACCORDANCE WITH CITY STANDARD W36.
- FIRE HYDRANTS SHALL CONFORM TO CITY STANDARDS W18, W19, AND W20.
- VALVE BOXES SHALL CONFORM TO CITY STANDARD W24.
- 300mmØ VALVES AND SMALLER TO BE INSTALLED WITH VALVE BOXES AS PER CITY STANDARD W24. 400mmØ VALVES AND LARGER TO BE INSTALLED WITH BUTTERFLY VALVES AND VALVE CHAMBERS AS PER CITY STANDARD W2.
- AS PER CITY GUIDELINE, THE MINIMUM VERTICAL CLEARANCE BETWEEN WATERMAIN AND SEWER/UTILITY IS 0.25m FOR CROSSING OVER THE SEWER, AS PER CITY DETAIL W25.2. FOR CROSSING UNDER SEWER, THE MINIMUM VERTICAL CLEARANCE IS 0.5m AS PER CITY DETAIL W25. FOR CROSSING UNDER SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS IS REQUIRED TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING. THE LENGTH OF WATER PIPE SHALL BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER.

Table 1 - Rigid Insulation Recommendations for Sanitary and Storm Sewer Pipes with Reduced Soil Cover			
Thermal Condition	Soil Cover Provided (mm)	Insulation Dimensions	
		Thickness (mm)	Extension (mm)
Unheated	1800 to 2100	25	Extend 300 mm horizontally beyond the outer edge of the pipe
	1500 to 1800	50	Extend 600 mm horizontally beyond the outer edge of the pipe
	1200 to 1500	75	Extend 900 mm horizontally beyond the outer edge of the pipe
	900 to 1200	100	Extend 1200 mm horizontally beyond the outer edge of the pipe
	600 to 900	125	Extend 1200 mm horizontally beyond the outer edge of the pipe
	300 to 600	150	Extend 1500 mm horizontally beyond the outer edge of the pipe
<b>Notes:</b> - All designs are based on a freezing index of 1000°C-days - The rigid insulation thicknesses and extensions provided herein are site specific and should not be used on other sites without consulting Paterson Group for the sufficiency of the provided recommendations.			



**FOR REVIEW ONLY**  
**NOT FOR CONSTRUCTION**

SAN STRUCTURE TABLE			
NAME	RIM ELEV.	INVERT IN	INVERT OUT
MH1A	92.86	SW90.380	NE87.642
COVER: CITY S24 FRAME: CITY S25 STR. OPSD 701.010 C/W EXTERNAL DROP STRUCTURE			

WATER COVER TABLE			
LOCATION	STATION	FINISHED GRADE	TOP OF PIPE
CONNECTION & REDUCER	0+000.00	92.31	89.850
BUILDING	0+012.16	93.00	90.600

STM STRUCTURE TABLE			
NAME	RIM ELEV.	INVERT IN	INVERT OUT
CB1	92.46		SW91.215
CB2	92.45		SW92.200
CB3	92.30		SW91.010
CBMH1	92.55	NE91.170	SE91.140
DICB1	91.72	NW90.720	
LSCB0	91.61	SE91.200	W91.195
LSCB1	91.78	SE91.290	NW91.286
LSCB2	91.94	SE91.370	NW91.368
LSCB3	92.11	SE91.461	NW91.460
LSCB4	92.29	SE91.552	NW91.550
LSCB5	92.47	SE91.640	NW91.640
LSCB6	92.65		SE91.730 NW91.730
LSCB7	92.47	NW91.550	S91.520
LSCB8	92.32	N91.340	SW91.335
LSCB9	92.20	NE91.260	SW91.255
MH1	91.60	NE90.921	S90.914
MH2	92.20	NW90.900 NE90.850	SW90.820
OGS1	92.20	NW90.913	SE91.000
OGS2	91.93	SE90.700	NW91.100
COVER: CITY S24 FRAME: CITY S25 STR. OPSD 701.010 C/W EXTERNAL DROP STRUCTURE			

**KEYPLAN**

**LEGEND**

- LEGAL BOUNDARY
- EXISTING FENCE
- EXISTING STORM STRUCTURE
- EXISTING CATCHBASIN
- EXISTING SANITARY STRUCTURE
- EXISTING FIRE HYDRANT
- EXISTING VALVE & VALVE BOX
- EXISTING HYDRO POLE
- EXISTING HYDRO
- EXISTING UTILITIES
- EXISTING ELEVATION
- EMERGENCY OVERLAND FLOW ROUTE
- PROPOSED STORM MANHOLE
- PROPOSED STORM CATCHBASIN MH
- PROPOSED SANITARY STRUCTURE
- PROPOSED WATER VALVE/HYDRANT/REDUCER/METER
- PROPOSED CURB OUTLET PER OPSD 604.010
- PROPOSED TOP OF CURB ELEVATION
- PROPOSED FINISHED GROUND ELEVATION
- PROPOSED TOP OF WALL ELEVATION
- PROPOSED BOTTOM OF WALL ELEVATION
- PROPOSED DITCH ELEVATION
- PROPOSED SWALE ELEVATION
- PROPOSED SLOPE
- PROPOSED TERRACING (3:1 MAX)
- PROPOSED BARRICAD CURB
- PROPOSED RETAINING WALL
- PROPOSED DRAINAGE SWALE
- PROPOSED CONCRETE SIDEWALK
- PROPOSED HEAVY-DUTY PAVEMENT
- PROPOSED PAVERS
- ENTRY/EXIT LOCATION, ELEVATION & LEVEL
- BF = BARRIER FREE
- 1R = ONE RISER, OH = OVERHEAD DOOR

**Scale** 1:500

**egis**

Stamp:

**Client:** CSV ARCHITECTS  
190 O'CONNOR ST, SUITE 100  
OTTAWA, ON

**Project:** GASTOPS LTD. HEADQUARTERS  
RIVERSIDE SOUTH BUSINESS PARK,  
OTTAWA, ON

**Drawing Title:** SITE SERVICING PLAN

**Scale:** 1:500

**Project Number:** CO-24-2748

**Drawn By:** RP

**Checked By:** JB

**Designed By:** RP

**Drawing Number:** C102