

**Sanitary Sewer Servicing Study
for Lands Annexed from the
Town of Tecumseh**

**Addendum to Class Environmental
Assessment Study**



Prepared for:
Corporation of the City of Windsor

Prepared by:
Stantec Consulting Ltd.

December 9, 2014

Sign-off Sheet

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SANITARY SEWER SERVICING STUDY FOR LANDS ANNEXED FROM THE TOWN OF TECUMSEH

Executive Summary
December 9, 2014

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EXECUTIVE SUMMARY

GENERAL

The City has been requested by Royal Quality Homes to provide sanitary sewer servicing to two parcels located in the southeast corner of 7th Concession Road and Baseline Road that are proposed for development. It is identified in the Schedule 'B' Class Environmental Assessment (completed in June 2006) that wastewater from these two parcels is ultimately to be conveyed to the Lou Romano Water Reclamation Plant (LRWRP) via a future trunk sewer on 7th Concession Road. However, since the trunk sewer on 7th Concession Road cannot be constructed in the near future, the developer is requesting to allow the two parcels to outlet to the newly constructed Sandwich South Employment Lands (SSEL) Trunk Sewer along 8th Concession Road to Little River Pollution Control Plant (LRPCP). Two adjacent benefitting properties were also permitted the same opportunity due to their location and the economic benefit of servicing the properties using the same infrastructure that services the Royal Quality Homes properties.

In order to address the immediate need for development of the subject lands, the City intends to utilize the newly constructed SSEL Trunk Sewer along the 8th Concession to convey wastewater from the subject lands to the LRPCP for treatment. Changes to wastewater servicing strategies for the subject lands are therefore needed to address whether sufficient capacity is available in the SSEL Trunk Sewer along 8th Concession Road and downstream to accommodate the additional flow from the two parcels proposed for development.

This addendum is the documentation of changes to the Environmental Study Report (ESR) related to the sanitary sewer servicing for the Royal Quality Homes and benefitting properties. The addendum comprises Sections 1 to 4 and Appendices A to C inclusive. A brief description of each section follows.

SECTION 1 – INTRODUCTION

This section describes circumstances necessitating an ESR addendum for the Sanitary Sewer Servicing Study for Lands Annexed from the Town of Tecumseh. The addendum has been prepared in accordance with the Class EA process.

SECTION 2 – REVISIONS TO SANITARY SEWER SERVICING

This section describes the revisions required to the Schedule 'B' Class Environmental Assessment completed in 2006 and amendment made in 2010 in order to address the immediate need for the development of the subject lands.



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SECTION 3 – WASTEWATER FLOWS

This section outlines the existing and future projected wastewater flows based on the ESR, and the predicted wastewater flows from the four parcels proposed for development obtained from Haddad, Morgan and Associates Ltd. to establish design parameters.

SECTION 4 - ENVIRONMENTAL IMPACTS OF PROPOSED DESIGN

This section provides an overview of the potential impacts of the proposed design and proposed methods of mitigation.

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1.0 INTRODUCTION

1.1 BACKGROUND

The lands annexed from the Town of Tecumseh are located in the southeast corner of the City of Windsor as shown in **Figure 1.1**. These lands are generally bounded by Highway 401 to the south, the E.C. Row Expressway to the north, Walker Road to the west and a portion of Banwell Road to the east. The dominant land use in this region is rural agricultural, with small areas of residential and industrial development. Prior to any new development occurring within this area, sanitary sewer servicing is required. The proposed service areas of the annexed lands are depicted in **Figure 1.1** based on the ESR. The lands are now known as the Sandwich South Employment Lands (SSEL).

The City of Windsor completed Schedule 'B' Class Environmental Assessment for Sanitary Sewer Servicing for Lands Annexed from the Town of Tecumseh in June 2006, henceforth denoted as the ESR, and an amendment was made in 2010. The ESR was prepared in accordance with the Class EA process to implement the preferred solution which maximizes the use of the existing infrastructure and provides capacity for new growth in designated growth areas within the annexed lands. The completed ESR and amendments identify the preferred alternative to be the expansion of the Little River Pollution Control Plant (LRPCP) sanitary service area to include the SSEL as well as areas from the adjacent Town of Tecumseh and the Hamlet of Oldcastle. This alternative involves the multi-phase installation of a new trunk sanitary sewer from the LRPCP to the southern limits of the service area. **Figure 1.2** from the ESR and the addendum illustrates the recommended alternative and shows a route for the proposed trunk sewer, which has been newly constructed by the City of Windsor. The newly constructed trunk sewer is now known as the Sandwich South Employment Lands (SSEL) Trunk Sewer.

There are two parcels proposed for development by Royal Quality Homes and two additional potential benefitting properties, all of which are located in the southeast corner of 7th Concession Road and Baseline Road. **Figure 1.3** shows the locations of the four parcels. Prior to any new development occurring within the four parcels, sanitary sewer servicing is required.

It is identified in the ESR that wastewater from the Royal Quality Homes parcels and the adjacent benefitting properties is ultimately to be conveyed to the Lou Romano Water Reclamation Plant (LRWRP) via a future trunk sewer on the 7th Concession Road. **Figure 1.2** shows the sanitary drainage areas within the annexed lands as proposed in the ESR. However, since the trunk sewer on 7th Concession Road cannot be constructed in the near future, the four parcels cannot be serviced by the LRWRP as outlined in the ESR to accommodate the immediate need related to the development of the lands. Consequently, Royal Quality Homes is requesting that the City amend the ESR to allow their two parcels to outlet to the newly constructed SSEL Trunk Sewer along 8th Concession Road. The adjacent benefitting properties were included in the request due to the economic benefit of servicing the lands using the same infrastructure.



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To accommodate the sanitary sewer servicing component of these developments in the near future, changes to the sanitary sewer servicing for the Royal Quality Homes and the adjacent benefitting properties parcels are needed. Accordingly, this addendum addresses the changes to the ESR related to the sanitary sewer servicing for the four parcels. This addendum should be read in conjunction with the ESR and the addendum made in 2010.

1.2 CIRCUMSTANCES NECESSITATING THE ESR ADDENDUM

The ESR dated June 2006 has documented a Wastewater Servicing Strategy that will provide an ultimate servicing scheme to maximize the use of existing infrastructure and provide capacity for new development in the SSEL. As shown in **Figure 1.2**, the annexed land sanitary sewer servicing strategy includes the construction of one trunk sewer to the LRPCP.

The City of Windsor has recently constructed the SSEL Trunk Sewer serving the SSEL and a portion of Town of Tecumseh. The trunk sewer starts south of Highway 401 and ultimately connects to the existing sewer along Banwell Road near Windsor's western border with Tecumseh and south of the E.C. Row Expressway, as shown in **Figure 1.2**. From there, the sewer conveys sanitary sewage to the LRPCP for treatment.

Due to the proximity of the Royal Quality Homes and the adjacent benefitting properties parcels to the newly built SSEL Trunk Sewer, the City has indicated that changes to sanitary sewer servicing for the four parcels from the LRWRP service area to the LRPCP service area could be easily implemented to address the immediate need related to the development of the Royal Quality Homes and adjacent parcels, provided that there is enough capacity to support the change. The newly built trunk sewer could permit the immediate sanitary servicing of the four parcels and divert the flow to the LRPCP instead of the LRWRP, thereby addressing the development servicing requests.

After a thorough review of the alternatives, the City has decided to proceed in accordance with the Class EA process and prepare an Addendum to the ESR that documents the changes to the sanitary sewer servicing area.

1.3 ESR AMENDING PROCEDURE

The planning process outlined in the Municipal Class Environmental Assessment by the Municipal Engineers Association (MEA), October 2000, as amended in 2011, recognizes that a project may not proceed in the manner outlined in the Environmental Study Report (ESR) due to unforeseen circumstances. The ESR and the addendum made in 2010 were prepared in accordance with the Class EA process.

Section A.4.2.2 from the MEA Document (October 2000, as amended in 2011) - Revisions and Addenda to the ESR, under the heading "Change in Project or Environment", states:



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"Due to unforeseen circumstances, it may not be feasible to implement the project in the manner outlined in the ESR. Any significant modification to the project or change in the environmental setting for the project which occurs after the filing of the ESR shall be reviewed by the proponent and an addendum to the ESR shall be written. The addendum shall describe the circumstances necessitating the change, the environmental implications of the change, and what, if anything can and will be done to mitigate any negative environmental impacts. The addendum shall be filed with the ESR and Notice of Filing of Addendum shall be given immediately to all potentially affected members of the public and review agencies as well as those who were notified in the preparation of the original ESR.

A period of 30 calendar days following the issue of the Notice of Filing of Addendum shall be allowed for review and response by affected parties. The Notice shall include the public's right to request a Part II Order within the 30-day review period. If no request is received by the Minister, the proponent is free to proceed with the implementation and construction. During the 30-day addendum review period, no work shall be undertaken that will adversely affect the matter under review. Furthermore, where implementation of a project has already commenced, those portions of the project which are the subject of the addendum, or have the potential to be directly affected by the proposed change, shall cease and shall not be reactivated until the termination of the review period."

This Addendum to the ESR has been prepared in accordance with the above requirements.

2.0 REVISIONS TO SANITARY SEWER SERVICING AREA

Subsequent to the completion of the ESR and amendment made in 2010, the City of Windsor was able to secure Senior Government grants that enabled construction of a trunk sanitary sewer within the annexed lands as depicted on **Figure 1.3**, namely the SSEL Trunk Sewer. The trunk sewer provides direct conveyance for the future local wastewater collection system, which will consist of the sewers extending down to the service level for each user.

The subject parcels proposed for the development of Royal Quality Homes and the adjacent benefitting properties are situated in the southeast corner of 7th Concession Road and Baseline Road and covers approximately 50 hectares. The four parcels are proposed to be developed as residential properties. It is identified in the ESR that the Royal Quality Homes parcels and the adjacent benefitting properties parcels were initially to be serviced by the LRWRP in the City of Windsor. The annexed lands service area boundary proposed in the ESR dated June 2006 is shown on **Figure 1.2**. The boundaries of the sewage service areas are dictated by the capacity of the corresponding sanitary sewer system.

Wastewater from the four parcels is planned to be ultimately conveyed to the LRWRP via a future trunk sewer on 7th Concession Road. Wastewater flow from the subject parcels to the LRWRP as outlined in the ESR cannot be permitted until the construction of the trunk sewer on 7th Concession Road is completed. Currently, there are no plans to construct the trunk sanitary sewer on 7th Concession Road in the near future.

Royal Quality Homes is consequently requesting to allow their two parcels to outlet to the newly constructed SSEL Trunk Sewer along 8th Concession Road, to allow for development in the near future. The adjacent benefitting properties were included in the request due to the economic benefit of servicing the lands using the same infrastructure.

In order to address the immediate need for the development of the Royal Quality Homes lands, the City intends to utilize the newly constructed SSEL Trunk Sewer, allowing wastewater from the subject lands to be conveyed by the SSEL Trunk Sewer to the LRPCP for treatment. The service area boundary within the annexed lands for the LRPCP was revised as depicted on **Figure 1.3**.

3.0 WASTEWATER FLOWS

3.1 PREDICTED SANITARY FLOWS FROM THE FOUR PARCELS TO THE LRPCP

Municipal wastewater flows are made up of waste discharges from residential, commercial, industrial and institutional establishments plus extraneous non-waste flow components from sources such as groundwater and surface runoff.

Based on inputs received from the consulting engineer retained by the developer (Haddad, Morgan and Associates Ltd.), the two Royal Quality Homes parcels and the two adjacent benefitting properties will be developed as residential. Projected wastewater flow from the four parcels obtained from Haddad, Morgan and Associates Ltd. are shown in **Table 3-1**. The flows are estimated based on the assumption that all four properties will be developed as low to medium density residential.

Table 3-1: Projected Wastewater Flows from the Parcels to be Serviced by the LRPCP

Properties	Projected Flows
Royal Quality Homes	54.1 L/s (1.91 cfs)
Benefitting Properties	13.1 L/s (0.46 cfs)
Total Flow	67.2 L/s (2.37 cfs)

3.2 CAPACITY OF THE SSEL TRUNK SEWER

The recently constructed SSEL Trunk Sewer on 8th Concession Road from Highway 401 to the LRPCP ranges in size from 975 mm diameter to 2100 mm diameter and is between 7 metres and 11 metres in depth. The total length is approximately 14,560 metres. The trunk sewer is designed to accommodate a maximum flow of 2,456 L/s. A portion of the total maximum flow in the amount of 1308 L/s is dedicated to the Town of Tecumseh, which was determined based on an agreement between the City of Windsor and the Town of Tecumseh requiring the City to provide a trunk sanitary sewer to service adjacent Town of Tecumseh lands. From this allotted maximum flow, 983 L/s has been introduced at Banwell Road south of the EC ROW Expressway and 325 L/s will be introduced from the Oldcastle Hamlet Service Area located to the south of Highway 401.

A hydraulic analysis was performed to evaluate the capacity of the SSEL Trunk Sewer with the proposed additional flow of 67.2 L/s from the two Royal Quality Homes parcels and the two adjacent benefitting properties. The hydraulic analysis was performed using the PCSWMM 2012 Professional software version 5.1.1279. PCSWMM utilizes the U.S. EPA SWMM5 engine (currently version 5.0.022).



FIGURES

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The analysis results confirm that the additional flow of 67.2 L/s will result in a minimal rise in the hydraulic grade line, ranging from of 0.050 m for the 975 mm sewer section to 0.020 m for the 2100 mm sewer section. Moreover, the hydraulic grade line will remain below the obvert of the trunk sanitary sewer for its entire length. Refer to **Appendix B** for the hydraulic grade line profile. In summary, there is sufficient excess capacity in the SSEL Trunk Sewer to service the additional flow of 67.2 L/s from the four parcels.

3.3 CAPACITY OF THE SANITARY SEWER BETWEEN THE SSEL TRUNK SEWER AND LRPCP PLANT

For hydraulic modeling purposes, the SSEL trunk sanitary sewer outfall is set as the downstream end of said sewer, which is located at manhole 6S4041. The hydraulic analysis discussed in the above section assumes a free outfall condition based on the expectation that future expansion of the Little River Pollution Control Plant (LRPCP) will provide sufficient plant and inlet sewer capacity to handle future expected peak flows.

In the interim, it is important to note that the current sanitary sewer network shows several trunk sanitary sewers converging to two LRPCP inlet sewers; a 1500 mm dia. and a 900 mm dia. sewer. As-constructed drawings of these sewers suggest that a short length bottleneck may exist between manholes 6S552 and 6S4042 as well as between manholes 6S552 and 6S4041. In addition, the new 2100 mm dia. sewer is interconnected and runs parallel to the 1200 mm trunk sewer from the Canadian National Railway to the east side the LRPCP site, with interconnections at manholes 7S5673 and 6S4036. Refer to **Appendix C** for City of Windsor Sewer Atlas drawings and record drawings.

It is anticipated that the sanitary sewer between the SSEL Trunk Sewer and the LRPCP will be upgraded to accommodate peak flow conditions. The sewer upgrade schedule and phasing should be developed based on hydraulic analysis of the existing LRPCP inlet sewers and interconnecting trunk sewers under the ultimate peak flow condition. Moreover, a determination of the maximum capacity of the current sanitary sewer network, particularly the sanitary sewer between the SSEL Trunk Sewer and the LRPCP, should be made and provisions should be established to limit peak flows or upgrade the inlet sewer and plant capacities as necessary.

FIGURES

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4.0 ENVIRONMENTAL IMPACTS

The potential environmental impacts associated with the expansion of the Little River Pollution Control Plant and the proposed mitigation for those potential impacts was identified in the ESR. The provision of additional capacity in the sewage treatment facility to service the Royal Quality Homes parcels and adjacent benefitting properties does not change the potential impacts or proposed methods of mitigation.

FIGURES

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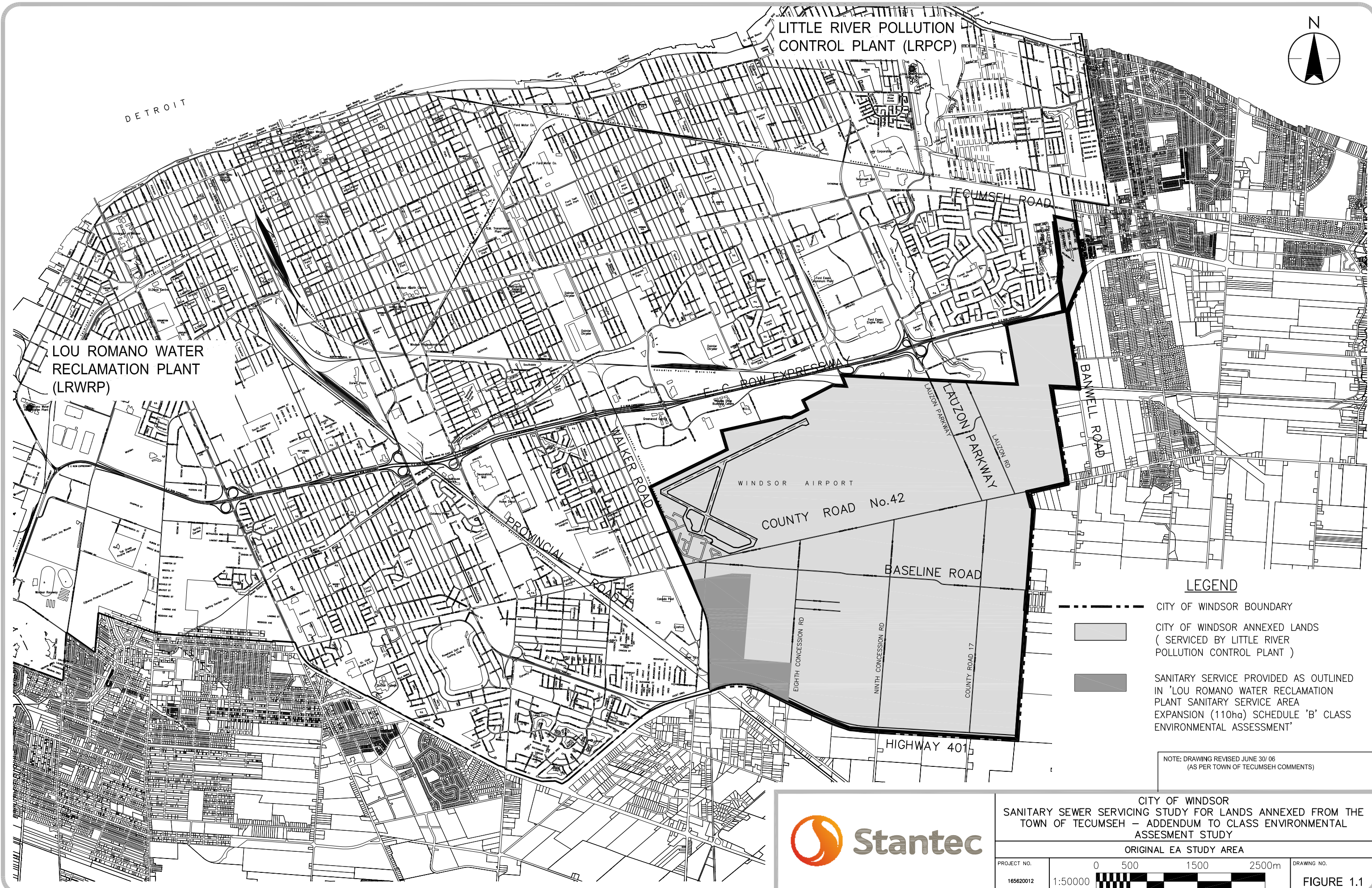
Appendix A FIGURES

A.1 FIGURE 1.1: ORIGINAL EA STUDY AREA

A.2 FIGURE 1.2: ORIGINAL SERVICE AREA BOUNDARY

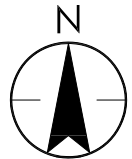
A.3 FIGURE 1.3: AMENDED SERVICE AREA BOUNDARY

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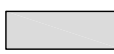



LOU ROMANO WATER RECLAMATION PLANT (LRWRP)

LITTLE RIVER POLLUTION CONTROL PLANT (LRPCP)



LEGEND

-  CITY OF WINDSOR BOUNDARY
-  CITY OF WINDSOR ANNEXED LANDS (SERVICED BY LITTLE RIVER POLLUTION CONTROL PLANT)
-  SANITARY SERVICE PROVIDED AS OUTLINED IN 'LOU ROMANO WATER RECLAMATION PLANT SANITARY SERVICE AREA EXPANSION (110ha) SCHEDULE 'B' CLASS ENVIRONMENTAL ASSESSMENT'

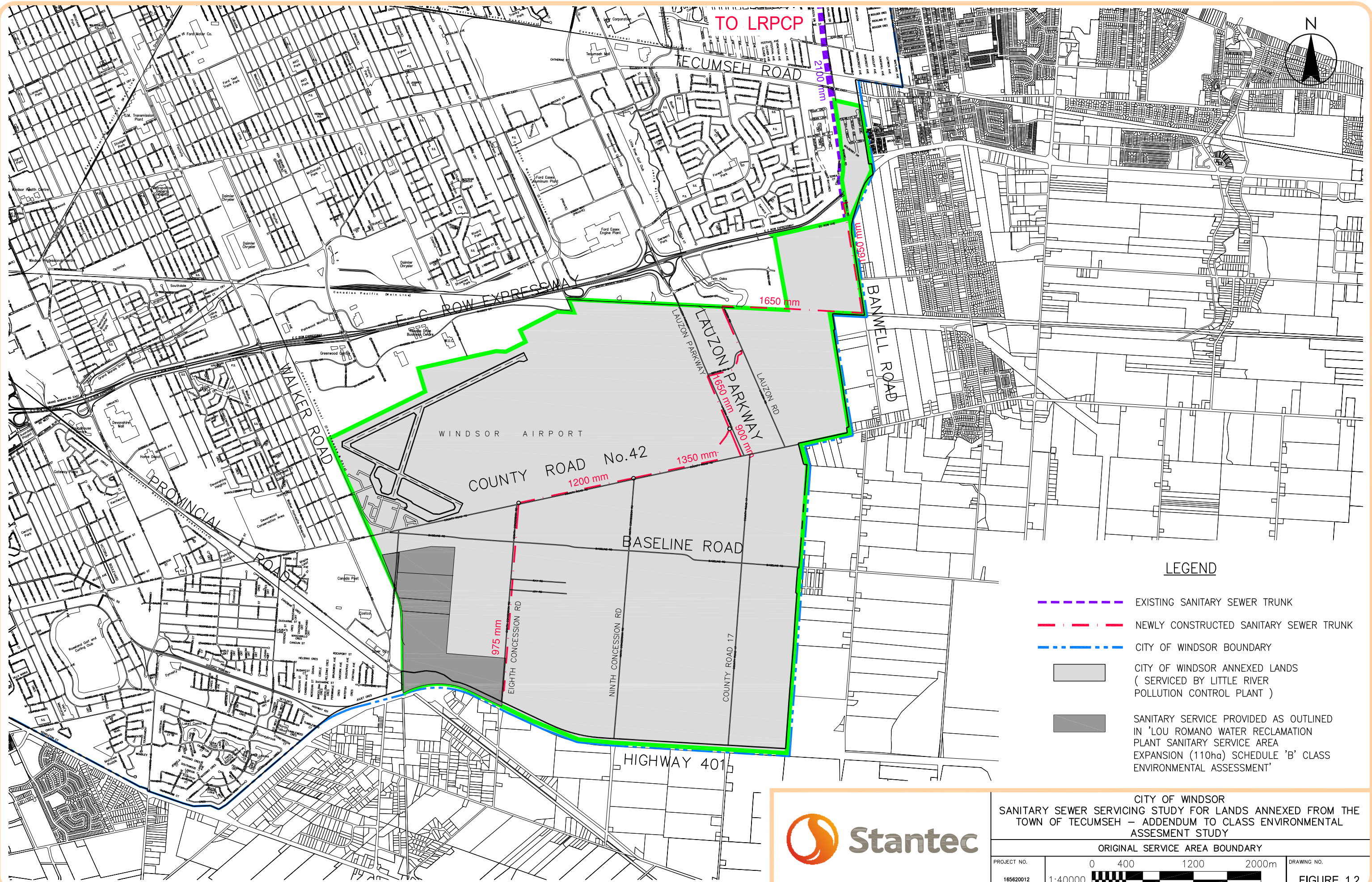
NOTE: DRAWING REVISED JUNE 30/ 06 (AS PER TOWN OF TECUMSEH COMMENTS)



CITY OF WINDSOR
SANITARY SEWER SERVICING STUDY FOR LANDS ANNEXED FROM THE TOWN OF TECUMSEH – ADDENDUM TO CLASS ENVIRONMENTAL ASSESMENT STUDY

PROJECT NO.	0 500 1500 2500m			DRAWING NO.
165620012	1:50000			FIGURE 1.1

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LEGEND

- EXISTING SANITARY SEWER TRUNK
- NEWLY CONSTRUCTED SANITARY SEWER TRUNK
- CITY OF WINDSOR BOUNDARY
- CITY OF WINDSOR ANNEXED LANDS
(SERVICED BY LITTLE RIVER POLLUTION CONTROL PLANT)
- SANITARY SERVICE PROVIDED AS OUTLINED
IN 'LOU ROMANO WATER RECLAMATION PLANT SANITARY SERVICE AREA
EXPANSION (110ha) SCHEDULE 'B' CLASS ENVIRONMENTAL ASSESSMENT'

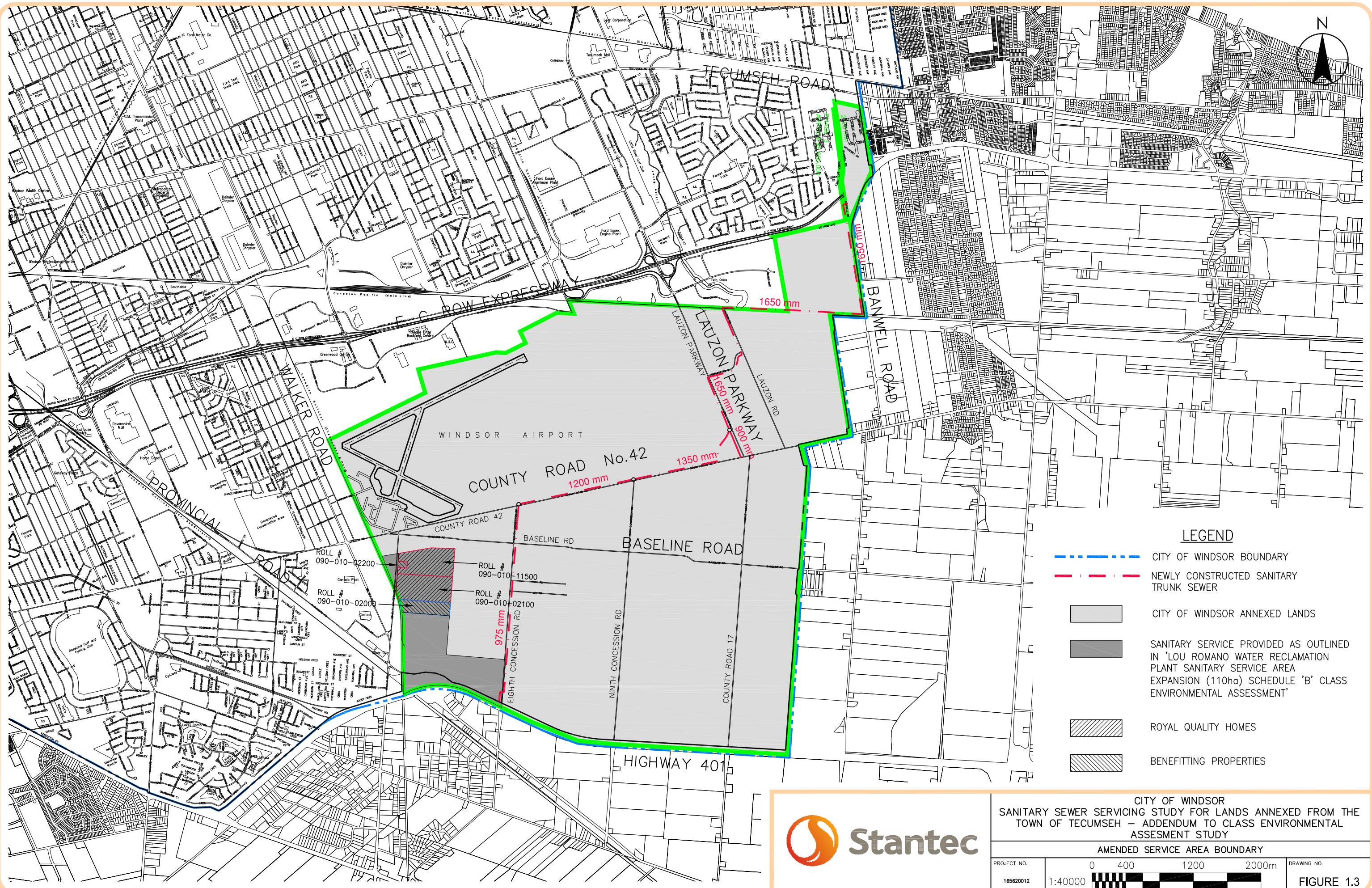


CITY OF WINDSOR
 SANITARY SEWER SERVICING STUDY FOR LANDS ANNEXED FROM THE
 TOWN OF TECUMSEH – ADDENDUM TO CLASS ENVIRONMENTAL
 ASSESMENT STUDY







ORIGINAL SERVICE AREA BOUNDARY

PROJECT NO.	0	400	1200	2000m	DRAWING NO.
16520012	1:40000				FIGURE 1.2

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LEGEND

-  CITY OF WINDSOR BOUNDARY
-  NEWLY CONSTRUCTED SANITARY TRUNK SEWER
-  CITY OF WINDSOR ANNEXED LANDS
-  SANITARY SERVICE PROVIDED AS OUTLINED IN 'LOU ROMANO WATER RECLAMATION PLANT SANITARY SERVICE AREA EXPANSION (110ha) SCHEDULE 'B' CLASS ENVIRONMENTAL ASSESSMENT'
-  ROYAL QUALITY HOMES
-  BENEFITTING PROPERTIES



CITY OF WINDSOR
 SANITARY SEWER SERVICING STUDY FOR LANDS ANNEXED FROM THE TOWN OF TECUMSEH – ADDENDUM TO CLASS ENVIRONMENTAL ASSESMENT STUDY

AMENDED SERVICE AREA BOUNDARY

PROJECT NO.	0	400	1200	2000m	DRAWING NO.
16520012	1:40000				FIGURE 1.3

SANITARY SEWER SERVICING STUDY FOR LANDS ANNEXED FROM THE TOWN OF TECUMSEH

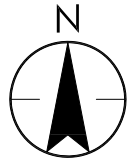
TRUNK SANITARY SEWER PLAN AND PROFILE
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Appendix B TRUNK SANITARY SEWER PLAN AND PROFILE

B.1 TRUNK SANITARY SEWER PLANS

B.2 TRUNK SANITARY SEWER PROFILE

PHASE	LOCATION			SEWER DESIGN		PROFILE							HGL ELEV. @ 'TO MH'		
	STREET OR EASEMENT	FROM MH	TO MH	SEWER LENGTH (m)	SEWER SLOPE (%)	Nom. DIAMETER (mm)	UPSTREAM ELEVATION INVERT (m)	UPSTREAM ELEVATION GROUND (m)	UPSTREAM ELEVATION DEPTH (m)	DOWNSTREAM ELEVATION INVERT (m)	DOWNSTREAM ELEVATION GROUND (m)	DOWNSTREAM ELEVATION COVER (m)	ORIGINAL DESIGN (m)	PROPOSED DESIGN (m)	ΔHGL (m)
6	8th Concession Road	Stub	9S1258	8.2	0.173%	900	183.398	190.4	7.0	182.0	189.5	7.5	182.52	182.57	0.05
		9S1258	9S1156	11.5	0.130%	975	181.978	189.5	7.5	181.963	190.4	8.4	182.49	182.54	0.05
		9S1156	9S1155	102.4	0.128%	975	181.898	190.4	8.5	181.767	189.7	7.9	182.37	182.42	0.05
		9S1155	9S1154	148.7	0.102%	975	181.752	189.7	7.9	181.601	189.5	7.9	182.19	182.25	0.06
		9S1154	9S1153	150.7	0.092%	975	181.566	189.5	7.9	181.428	189.3	7.9	182.02	182.08	0.06
		9S1153	9S1152	147.2	0.097%	975	181.407	189.3	7.9	181.264	189.0	7.7	181.85	181.90	0.05
		9S1152	9S1151	149.0	0.105%	975	181.244	189.0	7.7	181.087	188.6	7.5	181.67	181.72	0.05
		9S1151	9S1150	151.9	0.115%	975	181.077	188.6	7.5	180.902	188.4	7.5	181.47	181.52	0.05
		9S1150	9S1149	153.0	0.111%	975	180.887	188.4	7.5	180.717	188.2	7.4	181.22	181.27	0.05
		9S1149	9S1148	145.8	0.125%	975	180.641	188.2	7.5	180.459	187.9	7.4	181.04	181.09	0.05
		9S1148	9S1147	123.8	0.089%	975	180.414	187.9	7.5	180.304	187.8	7.5	180.89	180.94	0.05
		9S1147	9S1146	149.1	0.102%	975	180.284	187.8	7.5	180.132	187.4	7.2	180.68	180.73	0.05
		9S1146	9S1145	150.9	0.107%	975	180.097	187.4	7.3	179.936	187.1	7.1	180.41	180.45	0.04
		9S1145	9S1143	146.7	0.218%	975	179.921	187.1	7.2	179.601	187.1	7.5	180.18	180.23	0.05
		9S1143	9S1142	116.8	0.097%	975	179.571	187.1	7.5	179.458	187.1	7.6	180.03	180.07	0.04
9S1142	9S1141	112.7	0.097%	975	179.424	187.1	7.7	179.315	187.1	7.8	179.87	179.91	0.04		
9S1141	9S1140	116.5	0.100%	975	179.270	187.1	7.8	179.153	186.9	7.7	179.69	179.73	0.04		
9S1140	9S1121	115.0	0.104%	975	179.133	186.9	7.8	179.013	186.73	7.7	179.07	179.11	0.04		
5B	County Rd 42	9S1121	9S1122	148.0	0.091%	1200	178.357	186.73	8.4	178.222	186.94	8.7	178.90	178.94	0.04
		9S1122	9S1123	152.3	0.070%	1200	178.210	186.94	8.7	178.103	186.49	8.4	178.77	178.81	0.04
		9S1123	9S1124	152.4	0.092%	1200	178.090	186.49	8.4	177.950	186.18	8.2	178.64	178.68	0.04
		9S1124	9S1125	147.8	0.079%	1200	177.947	186.18	8.2	177.830	185.82	8.0	178.51	178.55	0.04
		9S1125	9S1126	152.4	0.080%	1200	177.825	185.82	8.0	177.703	185.37	7.7	178.38	178.43	0.05
		9S1126	9S1127	147.3	0.081%	1200	177.692	185.37	7.7	177.572	185.22	7.6	178.25	178.30	0.05
		9S1127	9S1128	152.5	0.090%	1200	177.556	185.22	7.7	177.418	184.94	7.5	178.13	178.17	0.04
		9S1128	9S1129	147.6	0.071%	1200	177.410	184.94	7.5	177.305	184.36	7.1	178.01	178.05	0.04
		9S1129	9S1130	147.8	0.074%	1200	177.286	184.36	7.1	177.177	184.21	7.0	177.89	177.93	0.04
9S1130	9S1131	73.7	0.087%	1200	177.173	184.21	7.0	177.109	184.27	7.2	177.83	177.86	0.03		
5A	County Rd 42	9S1131	9S1132	152.1	0.092%	1350	177.016	184.27	7.3	176.876	184.18	7.3	177.64	177.67	0.03
		9S1132	9S1133	147.5	0.101%	1350	176.874	184.18	7.3	176.725	184.02	7.3	177.50	177.53	0.03
		9S1133	9S1134	120.7	0.096%	1350	176.720	184.02	7.3	176.604	184.23	7.6	177.38	177.41	0.03
		9S1134	9S1135	155.5	0.101%	1350	176.567	184.23	7.7	176.410	183.47	7.1	177.23	177.26	0.03
		9S1135	9S1136	145.7	0.083%	1350	176.415	183.47	7.1	176.294	183.82	7.5	177.07	177.09	0.02
		9S1136	9S1137	147.9	0.087%	1350	176.293	183.82	7.5	176.164	183.73	7.6	176.87	176.89	0.02
9S1137	9S1138	142.1	0.083%	1350	176.144	183.73	7.6	176.026	183.31	7.3	176.33	176.37	0.04		
4D	North Bank of Little River	9S1138	9S1157	149.5	0.072%	1350	175.467	183.31	7.8	175.360	183.3	7.9	176.17	176.20	0.03
		9S1157	9S1158	90.2	0.073%	1350	175.359	183.3	7.9	175.293	183.2	7.9	176.09	176.12	0.03
		9S1158	9S1159	142.3	0.069%	1350	175.293	183.2	7.9	175.195	183.1	7.9	175.93	175.96	0.03
4D	Little River Crossing	9S1175	9S1174	158.5	0.137%	900	176.511	183.2	6.7	176.294	183.0	6.7	176.86	176.86	0.00
		9S1174	9S1173	151.1	0.146%	900	176.271	183.0	6.7	176.050	183.2	7.1	176.37	176.37	0.00
		9S1173	9S1159	59.6	0.923%	900	176.035	183.2	7.2	175.485	183.1	7.6	175.93	175.96	0.03
4D	Lauzon Parkway	9S1159	9S1160	110.3	0.053%	1650	174.900	183.1	8.2	174.841	183.0	8.2	175.83	175.86	0.03
		9S1160	9S1161	127.4	0.058%	1650	174.841	183.0	8.2	174.767	182.9	8.2	175.75	175.79	0.04
		9S1161	9S1162	147.2	0.059%	1650	174.767	182.9	8.2	174.680	182.9	8.2	175.67	175.70	0.03
		9S1162	9S1163	149.6	0.069%	1650	174.680	182.9	8.2	174.577	182.7	8.2	175.59	175.62	0.03
		9S1163	9S1164	149.5	0.060%	1650	174.577	182.7	8.2	174.487	182.7	8.2	175.50	175.53	0.03
		9S1164	9S1165	137.5	0.032%	1650	174.487	182.7	8.2	174.443	182.2	7.7	175.42	175.45	0.03
		9S1165	9S1166	151.8	0.052%	1650	174.443	182.2	7.7	174.364	182.4	8.1	175.33	175.36	0.03
		9S1166	9S1167	62.2	0.056%	1650	174.364	182.4	8.1	174.329	182.7	8.3	175.28	175.31	0.03
		9S1167	9S1168	139.1	0.048%	1650	174.329	182.7	8.3	174.262	182.4	8.2	175.19	175.22	0.03
		9S1168	9S1169	85.5	0.101%	1650	174.262	182.4	8.2	174.176	181.9	7.8	175.12	175.15	0.03
4D	Lauzon Rd	9S1169	9S1170	98.2	0.049%	1650	174.176	181.9	7.8	174.128	181.9	7.8	175.04	175.07	0.03
		9S1170	9S1171	149.9	0.050%	1650	174.128	181.9	7.8	174.053	181.9	7.8	174.90	174.92	0.02
		9S1171	9S1172	139.3	0.078%	1650	174.053	181.9	7.8	173.945	181.8	7.8	174.67	174.70	0.03
4C	Lauzon Rd Beneath CPR	9S1172	9S1200	183.0	0.072%	1650	173.845	181.8	8.0	173.713	181.58	7.9	174.50	174.54	0.04
4B	Adjacent to CPR	9S1200	9S1199	140.0	0.061%	1650	173.489	181.58	8.1	173.403	182.16	8.8	174.43	174.46	0.03
		9S1199	9S1198	108.0	0.048%	1650	173.403	182.16	8.8	173.351	181.80	8.4	174.37	174.41	0.04
		9S1198	9S1197	93.0	0.069%	1650	173.351	181.80	8.4	173.287	181.73	8.4	174.32	174.35	0.03
		9S1197	9S1196	103.0	0.057%	1650	173.287	181.73	8.4	173.228	181.65	8.4	174.27	174.30	0.03
		9S1196	9S1195	147.0	0.051%	1650	173.228	181.65	8.4	173.153	181.61	8.5	174.19	174.22	0.03
		9S1195	9S1194	150.0	0.051%	1650	173.153	181.61	8.5	173.076	181.85	8.8	174.12	174.15	0.03
		9S1194	9S1193	153.0	0.029%	1650	173.076	181.85	8.8	173.032	182.08	9.0	174.03	174.06	0.03
		9S1193	9S1192	147.0	0.050%	1650	173.032	182.08	9.0	172.958	182.27	9.3	173.94	173.97	0.03
		9S1192	9S1191	152.0	0.080%	1650	172.958	182.27	9.3	172.836	182.53	9.7	173.86	173.89	0.03
		9S1191	9S1190	147.0	0.044%	1650	172.836	182.53	9.7	172.772	182.73	10.0	173.78	173.81	0.03
9S1190	9S1189	152.0	0.027%	1650	172.772	182.73	10.0	172.731	182.69	10.0	173.68	173.71	0.03		
9S1189	9S1188	150.0	0.041%	1650	172.731	182.69	10.0	172.669	183.14	10.5	173.56	173.60	0.04		
4A	Barwell Rd	9S1213	9S1212	113.6	0.062%	1650	172.435	183.14	10.7	172.365	183.17	10.8	173.45	173.48	0.03
		9S1212	9S1211	132.0	0.061%	1650	172.365	183.17	10.8	172.285	183.07	10.8	173.38	173.41	0.03
		9S1211	9S1210	136.4	0.059%	1650	172.285	183.07	10.8	172.205	182.92	10.7	173.30	173.34	0.04
		9S1210	9S1209	121.5	0.060%	1650	172.205	182.92	10.7	172.132	182.55	10.4	173.24	173.27	0.03
		9S1209	9S1208	119.3	0.056%	1650	172.132	182.55	10.4	172.065	182.48	10.4	173.17	173.21	0.04
		9S1208	9S1207	126.8	0.055%										



PHASE	LOCATION			SEWER DESIGN			PROFILE					HGL ELEV. @ *TO MH*			
	STREET OR EASEMENT	FROM MH	TO MH	SEWER LENGTH (m)	SEWER SLOPE (%)	DIAMETER Nom. (mm)	UPSTREAM ELEVATION INVERT (m)	GROUND (m)	DEPTH (m)	DOWNSTREAM ELEVATION INVERT (m)	GROUND (m)	COVER (m)	ORIGINAL DESIGN (m)	PROPOSED DESIGN (m)	ΔHGL (m)
3 / 1A	Banwell Rd	9S1067	9S1066	94.0	0.023%	2100	171.328	182.8	11.5	171.306	182.1	10.8	172.87	172.90	0.03
		9S1066	9S1065	175.3	0.083%	2100	171.306	182.1	10.8	171.160	182.8	11.6	172.83	172.86	0.03
		9S1065	9S1064	137.4	0.005%	2100	171.160	182.8	11.6	171.153	182.8	11.6	172.79	172.82	0.03
		9S1064	9S1063	117.5	0.004%	2100	171.153	182.8	11.6	171.148	182.5	11.4	172.76	172.79	0.03
		9S1063	9S1062	117.3	0.000%	2100	171.148	182.5	11.4	171.148	182.3	11.2	172.72	172.76	0.04
		9S1062	9S1061	136.7	0.010%	2100	171.148	182.3	11.2	171.135	181.2	10.1	172.68	172.71	0.03
		9S1061	9S1060	146.6	0.002%	2100	171.135	181.2	10.1	171.132	180.4	9.3	172.64	172.67	0.03
3 / 1A	Banwell Rd Beneath CNR (Tunneled Phase 1A)	9S1060	9S1059	171.3	0.033%	2100	171.132	180.4	9.3	171.075	179.8	8.7	172.58	172.61	0.03
		9S1059	CONST. COLLAR	42.0	0.012%	2100	171.075	179.8	8.7	171.070	179.7	8.6	172.56	172.60	0.04
1B	North of CN Rail	7S3647	7S6354	108.6	0.125%	2100	170.966	179.1	8.1	170.830	179.6	8.8	172.38	172.41	0.03
		7S6354	7S6353	120.0	0.006%	2100	170.830	179.6	8.8	170.823	179.6	8.8	172.34	172.37	0.03
		7S6353	7S6352	132.6	0.124%	2100	170.823	179.6	8.8	170.659	179.7	9.0	172.31	172.34	0.03
		7S6352	7S6351	140.0	0.041%	2100	170.659	179.7	9.0	170.602	179.7	9.1	172.28	172.31	0.03
		7S6351	7S6350	152.5	0.000%	2100	170.602	179.7	9.1	170.602	179.7	9.1	172.24	172.27	0.03
		7S6350	7S6285-A	146.0	0.005%	2100	170.602	179.7	9.1	170.595	178.9	8.3	172.20	172.22	0.02
		7S6285-A	7S6285-B	20.3	-0.635%	2100	170.595	178.9	8.3	170.724	178.9	8.1	172.18	172.20	0.02
		7S6285-B	7S6284	127.8	0.034%	2100	170.724	178.9	8.1	170.680	177.3	6.6	172.13	172.16	0.03
		7S6284	7S6283	124.4	0.032%	2100	170.680	177.3	6.6	170.640	179.3	8.7	172.09	172.11	0.02
		7S6283	7S6282	87.8	0.046%	2100	170.640	179.3	8.7	170.600	179.6	9.0	172.06	172.08	0.02
2A / 2B	Misty Dawn Street	7S6282	7S6281	85.4	0.035%	2100	170.600	179.6	9.0	170.570	179.6	9.0	172.02	172.05	0.03
		7S6281	7S6280	81.7	0.024%	2100	170.570	179.6	9.0	170.550	179.8	9.3	171.99	172.02	0.03
		7S6280	7S6573	10.5	0.095%	2100	170.540	179.8	9.3	170.530	179.0	8.5	171.92	171.95	0.03
		7S6573	7S6574	173.0	0.036%	2100	170.530	179.0	8.5	170.467	177.4	6.9	171.79	171.82	0.03
		7S6574	7S6575	132.0	0.016%	2100	170.467	177.4	6.9	170.446	177.3	6.9	171.73	171.75	0.02
		7S6575	7S6576	38.0	0.042%	2100	170.446	177.3	6.9	170.430	177.3	6.9	171.70	171.72	0.02
		7S6576	7S6623	115.5	0.034%	2100	170.430	177.3	6.9	170.287	177.0	6.7	171.60	171.61	0.01
		7S6623	7S6624	138.5	0.004%	2100	170.287	177.0	6.7	170.281	177.2	6.9	171.50	171.52	0.02
		7S6624	7S6625	130.5	0.031%	2100	170.281	177.2	6.9	170.240	177.2	7.0	171.42	171.43	0.01
		7S6625	7S6626	130.0	0.022%	2100	170.240	177.2	7.0	170.211	177.8	7.6	171.31	171.33	0.02
2A / 2B	Cypress Avenue	7S6626	7S6627	132.7	0.026%	2100	170.211	177.8	7.6	170.176	177.0	8.8	171.16	171.17	0.01
		7S6627	7S6628	25.3	0.119%	2100	170.176	177.0	6.8	170.146	177.8	7.7	171.11	171.12	0.01
		7S6628	6S4036	82.0	0.072%	2100	170.033	177.8	7.8	169.974	178.0	8.0	171.00	171.02	0.02
		6S4036	6S4044	108.0	0.176%	2100	169.974	178.0	8.0	169.784	176.3	6.5	170.73	170.75	0.02
		6S4044	6S4037	113.1	0.119%	2100	169.784	176.3	6.5	169.649	176.1	6.5	170.57	170.58	0.01
		6S4037	6S4038	155.0	0.142%	2100	169.649	176.1	6.5	169.429	177.5	8.1	170.36	170.37	0.01
		6S4038	6S4039	147.6	0.136%	2100	169.429	177.5	8.1	169.229	176.0	6.8	170.15	170.16	0.01
		6S4039	6S4040	152.4	0.112%	2100	169.229	176.0	6.8	169.059	175.8	6.7	169.96	169.88	0.02
		6S4040	6S4041	85.3	0.117%	2100	169.059	175.8	6.7	168.959	176.0	7.0	169.86	169.88	0.02

LEGEND
 - - - - - SANITARY SEWER TRUNK
 ● 9S1200 M.H. NUMBERS



CITY OF WINDSOR
 SANDWICH SOUTH EMPLOYMENT LANDS
 SANITARY SEWER TRUNK

OVERALL RECORD PLAN – NORTH OF E.C. ROW EXPRESSWAY

PROJECT NO. 165620012
 DATE: JUNE 12, 2014
 1:20000
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 DRAWING NO. 2

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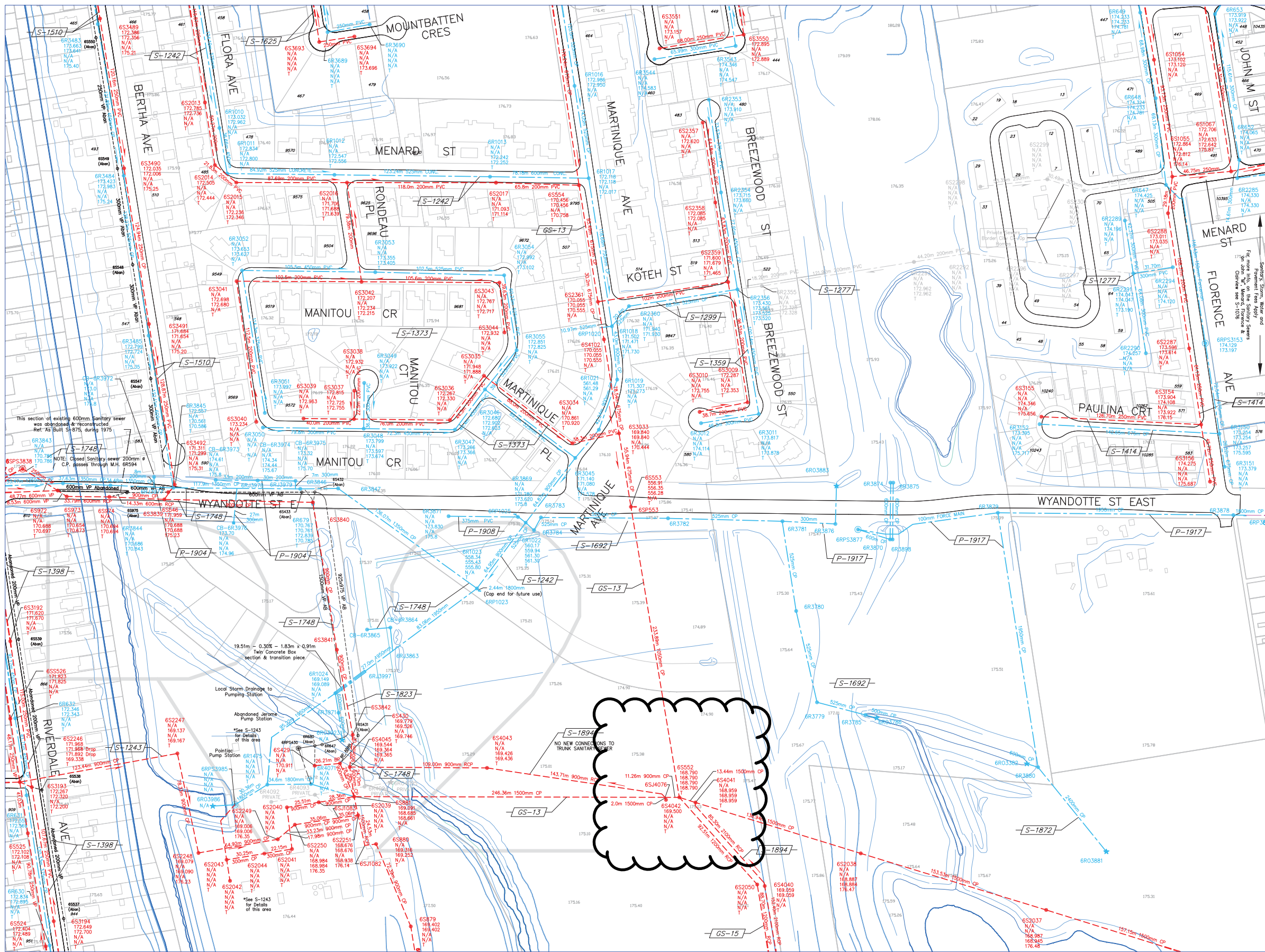
SANITARY SEWER SERVICING STUDY FOR LANDS ANNEXED FROM THE TOWN OF TECUMSEH

TRUNK SANITARY SEWER ATLAS AND RECORD DRAWINGS
December 9, 2014

Appendix C TRUNK SANITARY SEWER ATLAS AND RECORD DRAWINGS

C.1 TRUNK SANITARY SEWER ATLAS

C.2 RECORD DRAWINGS



NOTE:
THE INFORMATION ON THIS PLAN IS COMPILED FROM VARIOUS
SOURCES, AND SHOULD BE VERIFIED PRIOR TO USE.

Table of Revisions

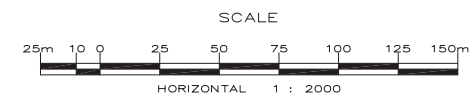
R2			
Number	Revision	Date	By
	Revised	June 2004	WR/JC
	Revised	June 2005	WR/JC
	Revised	June 2007	WR
	Revised to Show Edge of Pavement 2006	July 2007	WR
	Revised	Oct 2008	JM
	Added S-1894 Proposed	Apr 2010	MLR
	Revised Little River Treatment Plant Area	Nov 2010	MLR
	Added S-1894 As-built	Jan 2011	MLR



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SEWER ATLAS



Legend

- SANITARY SEWER (Red dashed line)
- STORM SEWER (Blue dashed line)
- COMBINED SEWER (Green dashed line)
- SANITARY PROPOSED OR AS BUILT INFO N/A (Red solid line)
- STORM (Blue solid line)
- ASSESSMENT LOT (Thin grey line)
- R.O.W. (Thin grey line)
- CONSTRUCTION DWG NUMBER (S-1000)

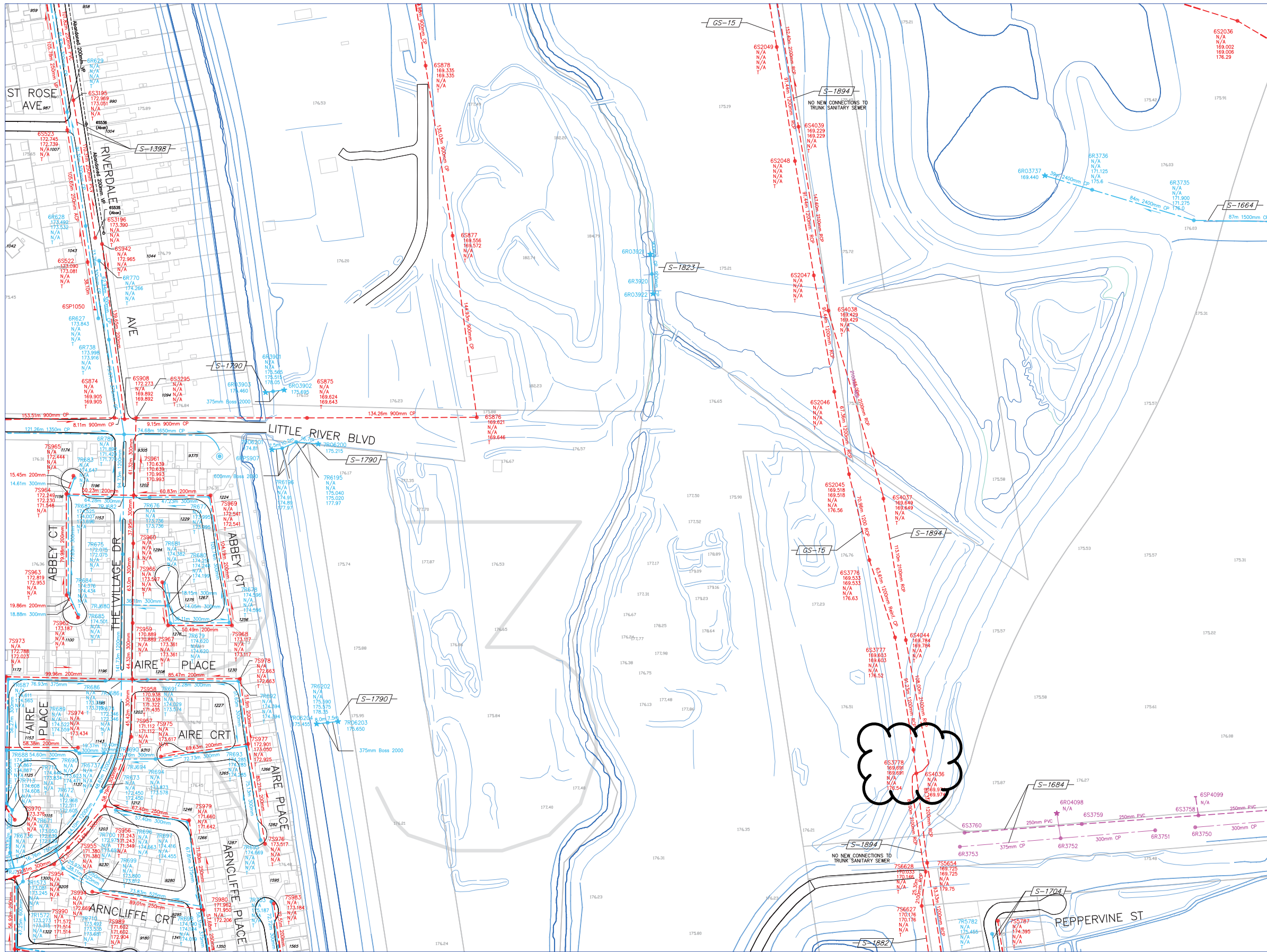
Manhole Information

- Manhole Number: 700000
- Manhole Location: N/A, 180.00, 190.00, 190.00
- Manhole Type: S-Sanitary, R-Storm, C-Combined
- Manhole Inverts: North Invert, South Invert, East Invert, West Invert
- Manhole Top Elevation: 190.00
- Manhole Storm/Sanitary: Storm, Sanitary

Pipe Information

- Pipe Length: 100.85m, 120.00m CP
- Pipe Size: 150mm CP, 300mm PVC
- Pipe Material: CP, PVC

Q1	R1	S1
Q2	R2	S2
Q3	R3	S3



NOTE:
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SOURCES, AND SHOULD BE VERIFIED PRIOR TO USE.

Table of Revisions

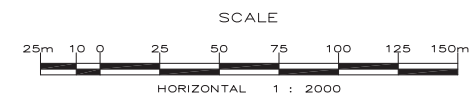
R3				
Number	Revision	Date	By	
	Revised	Oct. 2003	WR/JC	
	Revised	June 2004	WR/JC	
	Revised	June 2005	WR/JC	
	Revised	June 2007	WR	
	Revised to Show Edge of Pavement 2006	July 2007	WR	
	Added S-1882	Nov. 2009	MLR	
	Added S-1894 Proposed	Apr 2010	MLR	
	Added S-1882 & S-1894 As-builts	Jan 2011	MLR	



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SEWER ATLAS



Legend

- SANITARY SEWER (Red dashed line)
- STORM SEWER (Blue dashed line)
- COMBINED SEWER (Green dashed line)
- SANITARY PROPOSED OR AS BUILT INFO N/A (Red dashed line with dots)
- STORM PROPOSED OR AS BUILT INFO N/A (Blue dashed line with dots)
- ASSESSMENT LOT (Grey outline)
- R.O.W. (Red outline)
- CONSTRUCTION DWG NUMBER (e.g., S-1000)

Manhole Symbols

- Sanitary Manhole: Circle with 'S' and number (e.g., S-1000)
- Storm Manhole: Circle with 'R' and number (e.g., R-1000)
- Combined Manhole: Circle with 'C' and number (e.g., C-1000)
- Typical Dual Manhole: Circle with 'D' and number (e.g., D-1000)

Manhole Location

- North Invert: 190.00
- South Invert: 180.00
- East Invert: 190.00
- West Invert: 180.00
- Top Elevation: 190.00

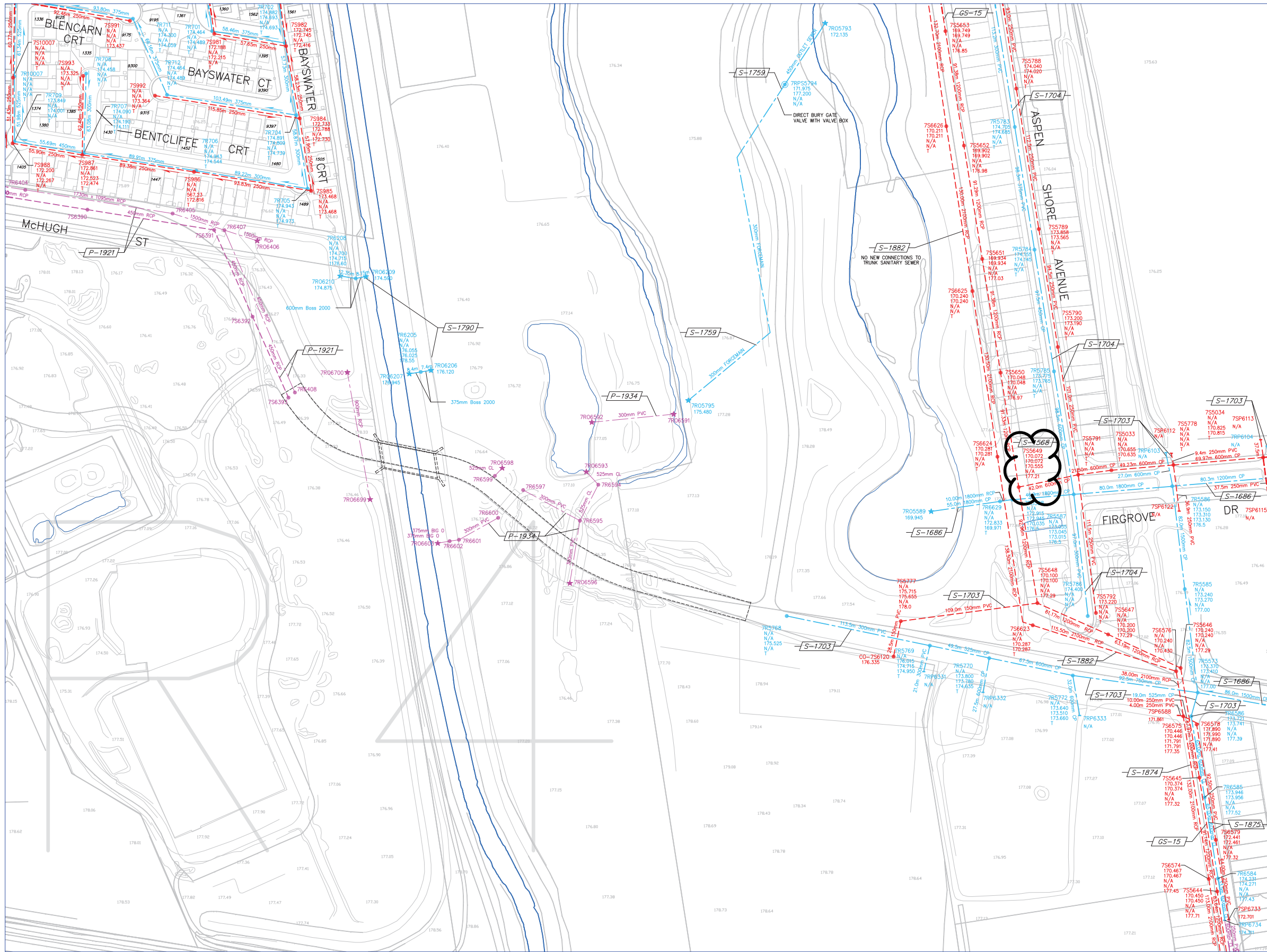
Manhole Location

- North Invert: N/A
- South Invert: N/A
- East Invert: 190.00
- West Invert: 180.00
- Top Elevation: 190.00

Other Symbols

- 700000 - Manhole Number
- 100.85m 1200mm CP (Pipe Length, Pipe Size, Pipe Material)

Q2	R2	S2
Q3	R3	S3
Q4	R4	S4



NOTE:
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Table of Revisions

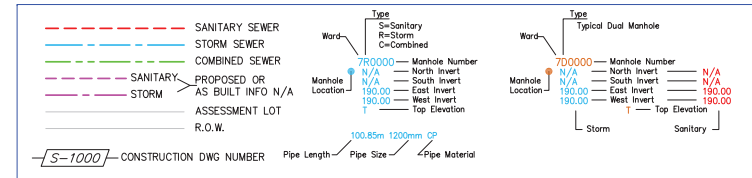
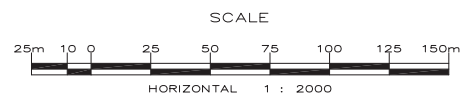
R4			
Number	Revision	Date	By
	Revised	June 2005	WR/JC
	Revised To Show Edge of Pavement 2006	July 2007	WR
	Added Proposed Sewer for McHugh Ext (P-1921)	May 2008	JC
	Added S-1874 & S-1875 Proposed	Sep 2009	MLR
	Added S-1882 Proposed	Nov 2009	MLR
	S-1874 As-built	June 2010	MLR
	Added S-1882 As-built	Jan 2011	MLR
	Added S-1759 As-built	May 2011	MLR



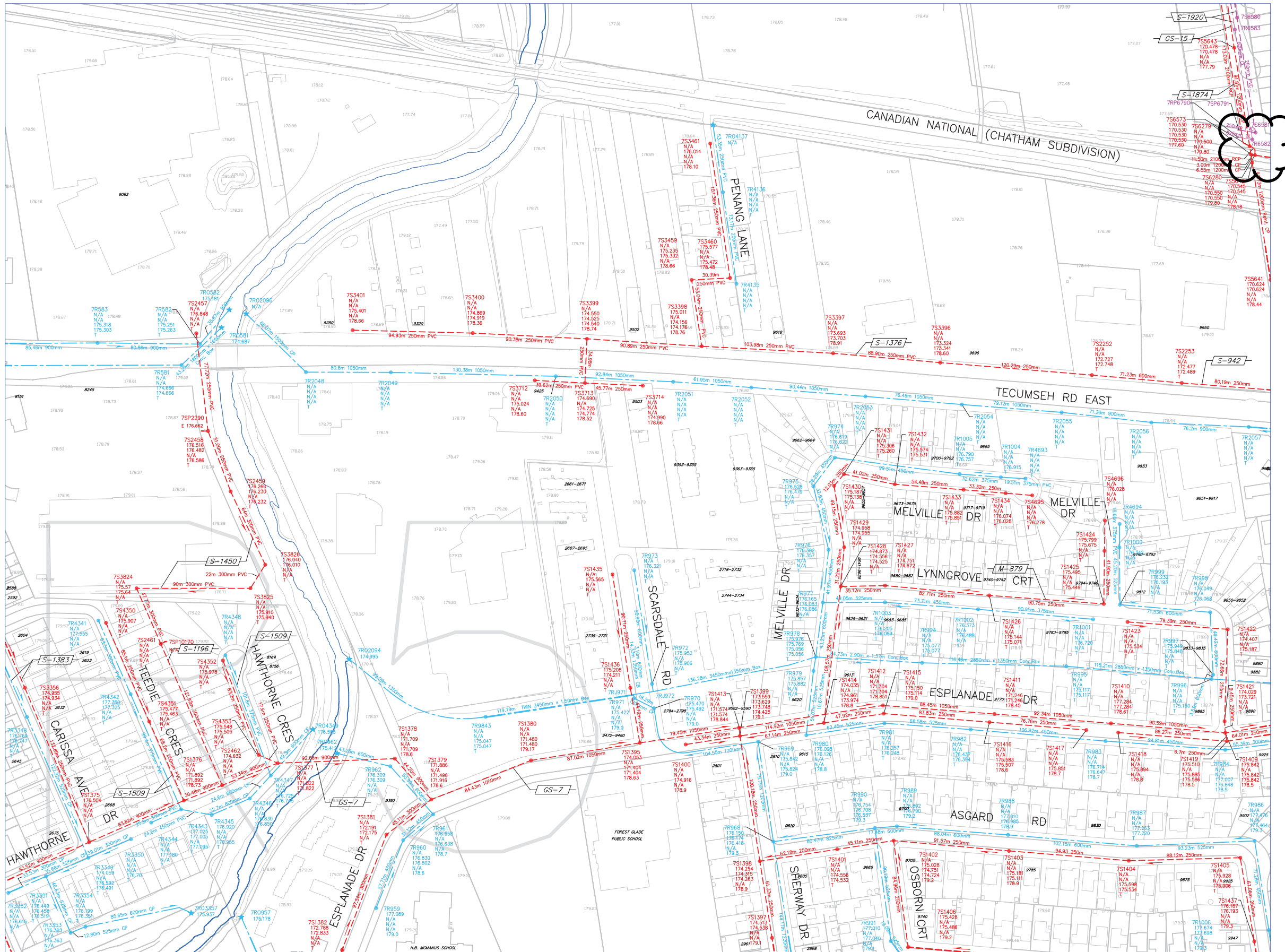
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SEWER ATLAS



Q3	R3	S3
Q4	R4	S4
Q5	R5	S5



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SOURCES, AND SHOULD BE VERIFIED PRIOR TO USE.

Table of Revisions

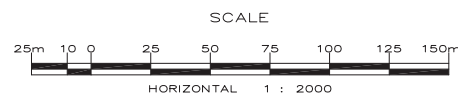
R5			
Number	Revision	Date	By
0.	Revised	Sept/2003	
	Revised	Oct. 2003	WR/JC
	Revised	June 2004	WR/JC
	Revised	June 2005	WR/JC
	Revised	June 2007	WR
	Added S-1874 & S-1875 Proposed	Sep 2009	MLR
	S-1874 As-Built	June 2010	MLR



The Corporation
of the
City of Windsor
Public Works, Engineering & Projects



SEWER ATLAS



Legend

- SANITARY SEWER (Red dashed line)
- STORM SEWER (Blue dashed line)
- COMBINED SEWER (Green dashed line)
- SANITARY PROPOSED OR AS BUILT INFO N/A (Red solid line)
- STORM PROPOSED OR AS BUILT INFO N/A (Blue solid line)
- ASSESSMENT LOT (Thin black line)
- R.O.W. (Thin black line)
- CONSTRUCTION DWG NUMBER (e.g., S-1000)

Manhole Symbols

- Word: 700000 - Manhole Number
- Type: S-Sanitary, R-Storm, C-Combined
- Manhole Location: 180.00m North Invert, 180.00m East Invert, 180.00m West Invert, 180.00m Top Elevation
- Sturm: Sanitary

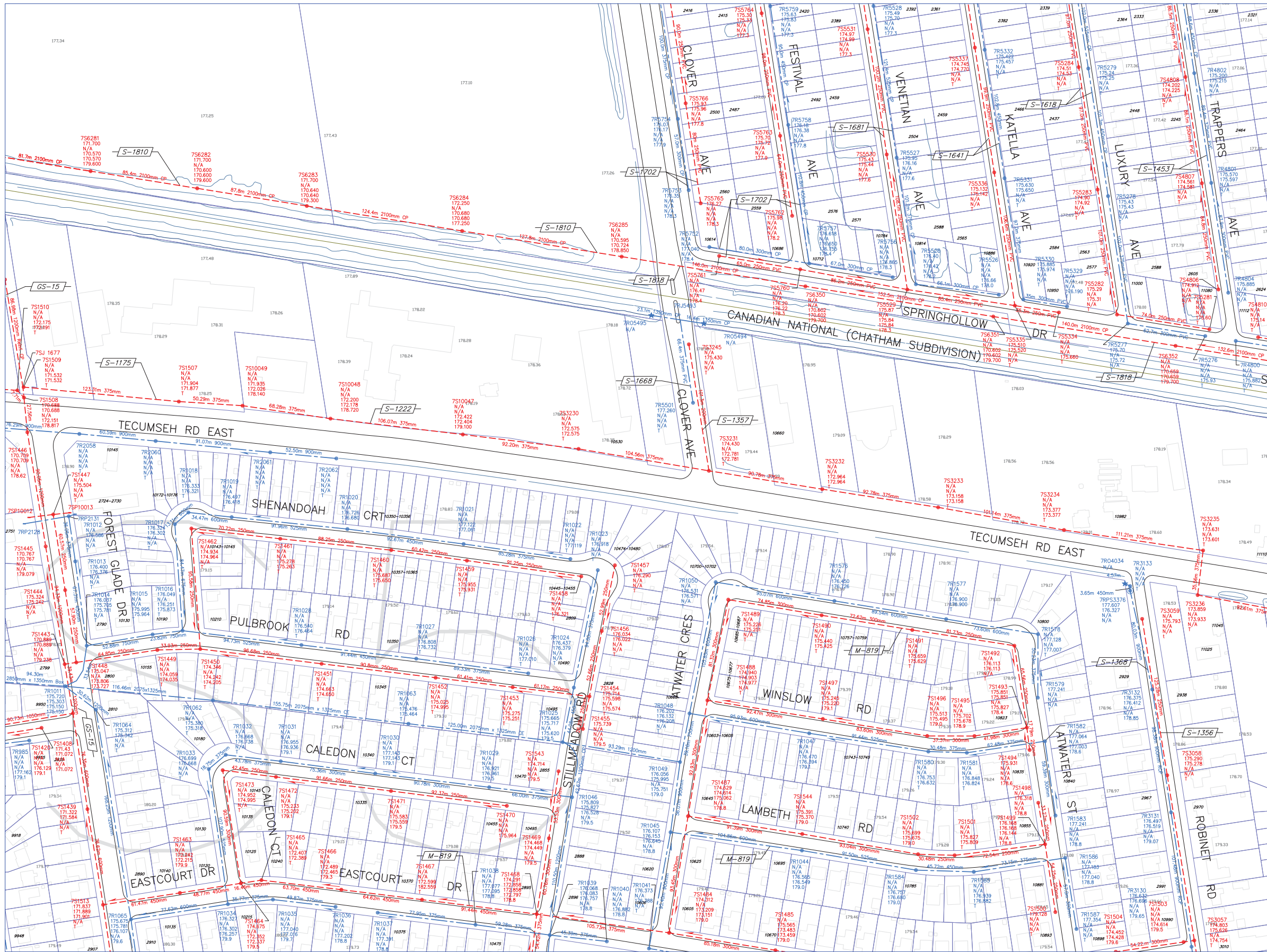
Line Symbols

- Word: 700000 - Manhole Number
- Type: S-Sanitary, R-Storm, C-Combined
- Manhole Location: 180.00m North Invert, 180.00m East Invert, 180.00m West Invert, 180.00m Top Elevation
- Sturm: Sanitary

Other Symbols

- 100.85m 1200mm CP (Pipe Length, Pipe Size, Pipe Material)

Q4	R4	S4
Q5	R5	S5
Q6	R6	S6



NOTE:
THE INFORMATION ON THIS PLAN IS COMPILED FROM VARIOUS
SOURCES, AND SHOULD BE VERIFIED PRIOR TO USE.

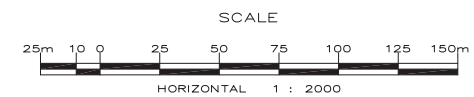
Table of Revisions

S5				
Number	Revision	Date	By	
0.	Revised	Sept/2003		
	Revised	Oct. 2003	WR/JC	
	Revised	June 2004	WR/JC	
	Revised	June 2005	WR/JC	
	Revised	July 2007	WR	
	Revised To Show Edge of Pavement 2006	July 2007	WR	
	Springhollow as-builts	Jan 2008	PUJ	
	Trunk Sanitary Sewer as-builts for Annexed Lands along CNR	Jan 2008	MLR	



The Corporation
of the
City of Windsor
Public Works, Engineering & Projects

SEWER ATLAS



Legend

- SANITARY SEWER (Red dashed line)
- STORM SEWER (Blue dashed line)
- COMBINED SEWER (Green dashed line)
- SANITARY PROPOSED OR AS BUILT INFO N/A (Red dashed line with 'N/A')
- STORM PROPOSED OR AS BUILT INFO N/A (Blue dashed line with 'N/A')
- ASSESSMENT LOT (Thin black line)
- R.O.W. (Right of Way) (Thin black line)
- CONSTRUCTION DWG NUMBER (e.g., S-1000) (Black line)

Manhole Symbols

- Sanitary Manhole: Circle with 'S' and number (e.g., S-1000)
- Storm Manhole: Circle with 'R' and number (e.g., R-1000)
- Combined Manhole: Circle with 'C' and number (e.g., C-1000)
- Typical Dual Manhole: Circle with 'S' and 'R' and number (e.g., S-R-1000)

Manhole Number Legend

- 700000 - Manhole Number
- N/A - North Invert
- N/A - South Invert
- 190.00 - East Invert
- 190.00 - West Invert
- 190.00 - Top Elevation

Line Legend

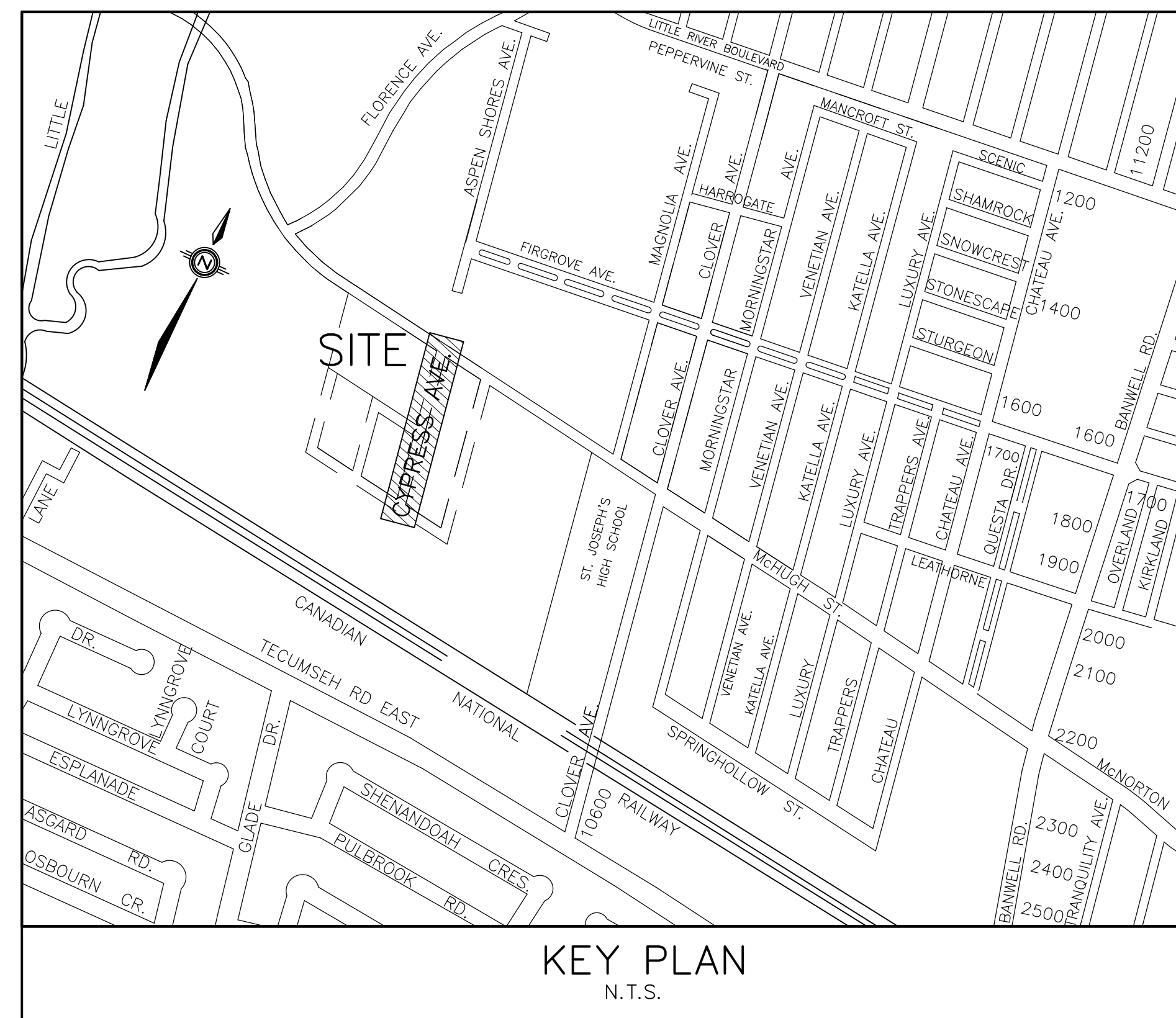
- 100.85m 1200mm CP (Construction Pipe)
- 100.85m 1200mm PVC (Construction Pipe)
- 100.85m 1200mm CP (Construction Pipe)
- 100.85m 1200mm PVC (Construction Pipe)

R4	S4	T4
R5	S5	T5
R6	S6	T6

CYPRESS AVENUE TRUNK SANITARY SEWER AS CONSTRUCTED

09-24

CYPRESS AVENUE TRUNK SANITARY SEWER
AS CONSTRUCTED



INDEX	
No.	DESCRIPTION
1.	INDEX, LEGEND, KEY PLAN & BENCH MARK
2.	PLAN AND PROFILE
3.	MISCELLANEOUS DETAILS

LEGEND			
DESCRIPTION	EXISTING	FUTURE (BY OTHERS)	NEW
STORM SEWER	--- Ex 375mm ST ---	--- 300mm# STM ---	--- 300mm# STM ---
SANITARY SEWER	--- Ex 250mm# SAN ---	--- 250mm# SAN ---	--- 250mm# SAN ---
WATER MAIN	--- Ex 200mm# W ---	--- 200mm# WAT ---	--- 200mm# WAT ---
GAS MAIN	--- G ---		
GAS MARKER	⊕ G.M.		
BELL, HYDRO, & CABLE TV	--- B H TV ---		
BELL, & CABLE TV PED.	⊕ B.C.P.		
WATER VALVE	⊕ W.V.	⊕ W.V.	⊕ W.V.
FIRE HYDRANT & WATER VALVE	⊕ F.H.	⊕ F.H. & W.V.	⊕ F.H. & W.V.
CURB AND GUTTER	====	====	====
CATCH BASIN	⊕ C.B.	⊕ C.B.	⊕ C.B.
MANHOLE	○ M.H.	● MH	● MH
LOT ELEVATION	183.35	183.35	183.35
ROAD ELEVATION	183.35	183.35	183.35
TRANSFORMER	⊕ W	⊕ W	
STREETLIGHT	⊕		
TRAFFIC SIGN	⊕ T.S.		
ROAD CROSSINGS		---	---
SIDEWALK/ DRIVEWAY		▨	▨

ELEVATIONS
ELEVATIONS SHOWN ON THIS PLAN ARE IN METRIC TO CANADIAN GEODETIC DATUM

SITE BENCH MARK #1 ELEVATION 179.636
T.O.N. FH LOCATED ON SOUTH SIDE OF McHUGH, EAST OF WEST ENTRANCE TO SOCCER FIELD PARKING LOT.

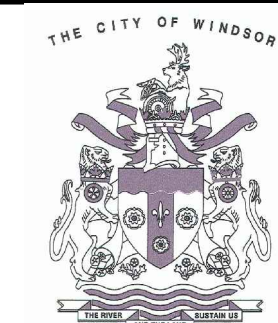
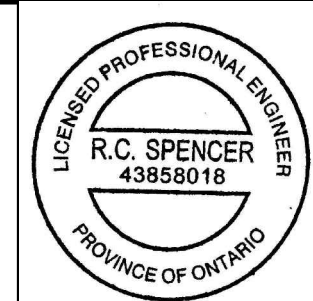
SITE BENCH MARK #2 ELEVATION 179.596
T.O.N. FH LOCATED AT NORTH WEST CORNER OF FLORENCE/McHUGH INTERSECTION.

8.	AS-BUILT -MH 756574 CONNECTION	4 JAN 2011	GR	RCS
7.	AS CONSTRUCTED	18 MAR 2010	GR	RCS
6.	ADDENDUM #1 - SHEETS 2 & 3	14 OCT 2009	AMC	RCS
5.	RE-ISSUED FOR TENDER	1 OCT 2009	AMC	RCS
4.	ISSUED FOR TENDER	28 SEP 2009	AMC	RCS
3.	RE-SUBMIT TO CITY/ SUBMIT TO MOE	22 SEP 2009	AMC	RCS
2.	RE-SUBMIT TO CITY	4 SEP 2009	AMC	RCS
1.	SUBMIT TO CITY	7 AUG 2009	AMC	RCS
NO.	REVISION	DATE	BY	APP.

DESIGN	R.C.S.
CHECKED	R.C.S.
DRAWN	G.S.
CHECKED	R.C.S.
DATE	JULY 2009
SCALE	NTS

CYPRESS AVENUE TRUNK SANITARY SEWER
INDEX, LEGEND, KEY PLAN & BENCHMARK

PROJECT NO.
09-24
SHEET NO.
1
OF
3



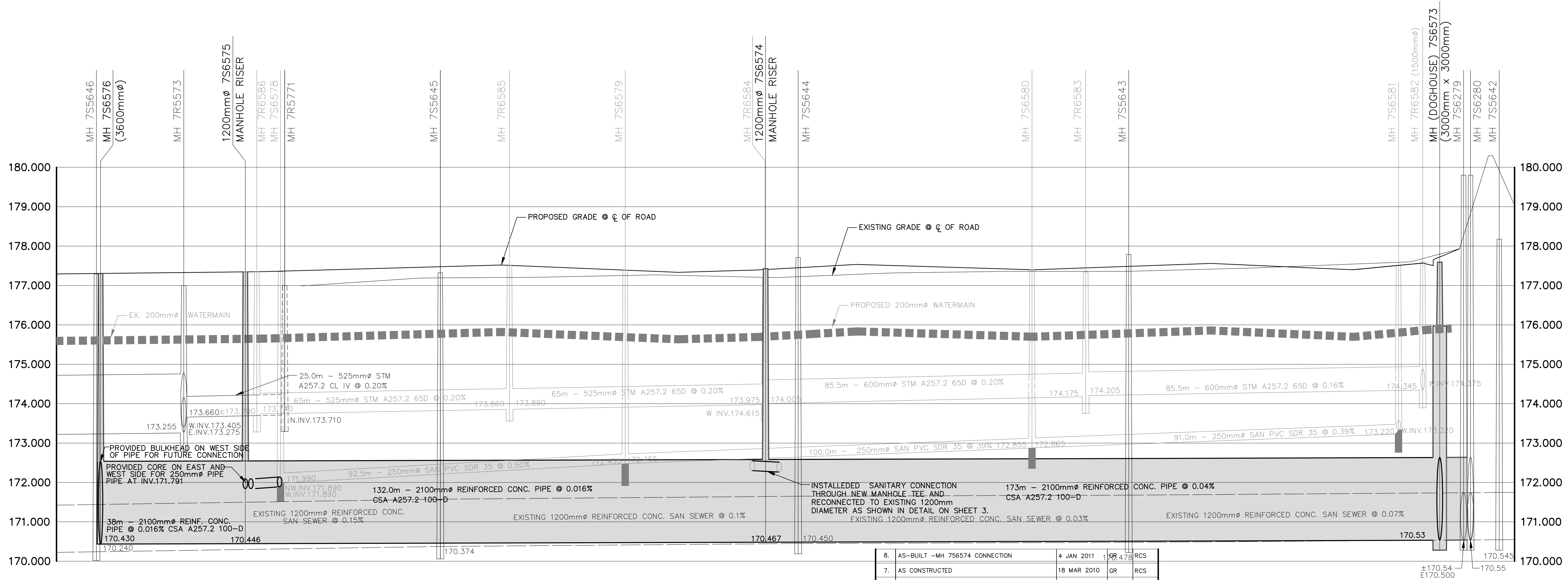
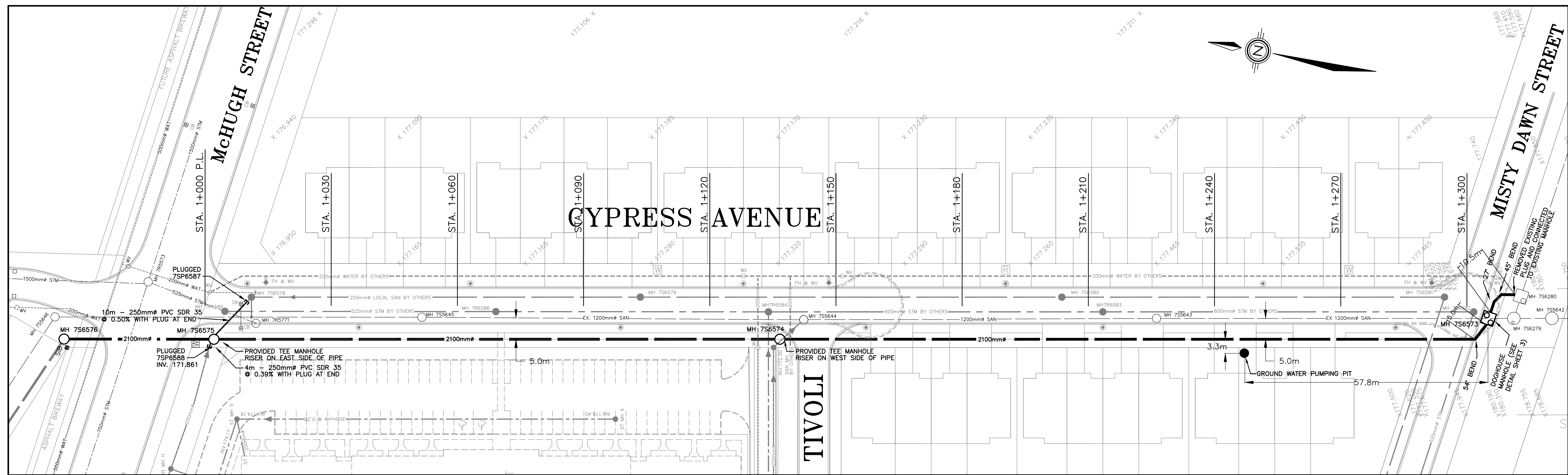
APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

CITY ENGINEER
WINDSOR, ONTARIO

RC SPENCER ASSOCIATES INC.
Consulting Engineers

3100 Temple Drive, Suite 100,
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Phone: (519) 944-3090
Fax: (519) 944-5636

Professional Engineers
Ontario

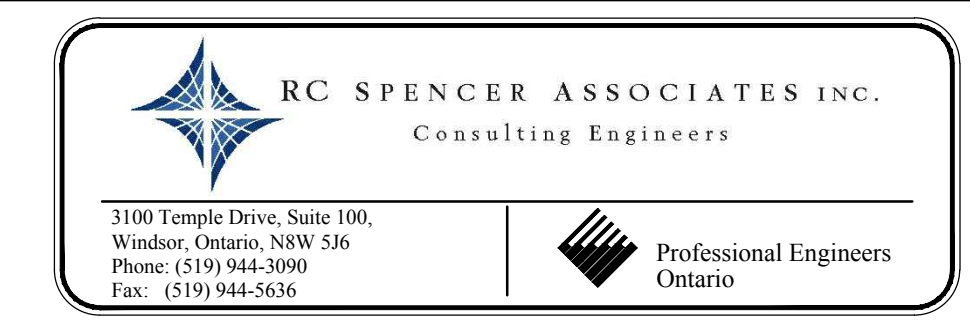
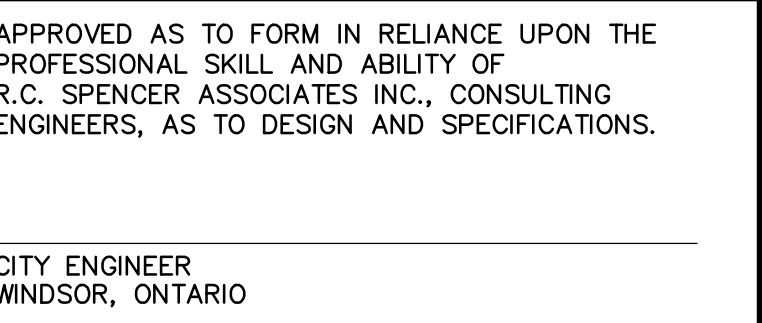


NO.	REVISION	DATE	BY	APP.
8.	AS-BUILT - MH 756574 CONNECTION	4 JAN 2011	10R 478	RCS
7.	AS CONSTRUCTED	18 MAR 2010	GR	RCS
6.	ADDENDUM #1 - SHEETS 2 & 3	14 OCT 2009	AMC	RCS
5.	RE-ISSUED FOR TENDER	1 OCT 2009	AMC	RCS
4.	ISSUED FOR TENDER	28 SEP 2009	AMC	RCS
3.	RE-SUBMIT TO CITY/ SUBMIT TO MOE	22 SEP 2009	AMC	RCS
2.	RE-SUBMIT TO CITY	4 SEP 2009	AMC	RCS
1.	SUBMIT TO CITY	7 AUG 2009	AMC	RCS



APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

CITY ENGINEER
WINDSOR, ONTARIO



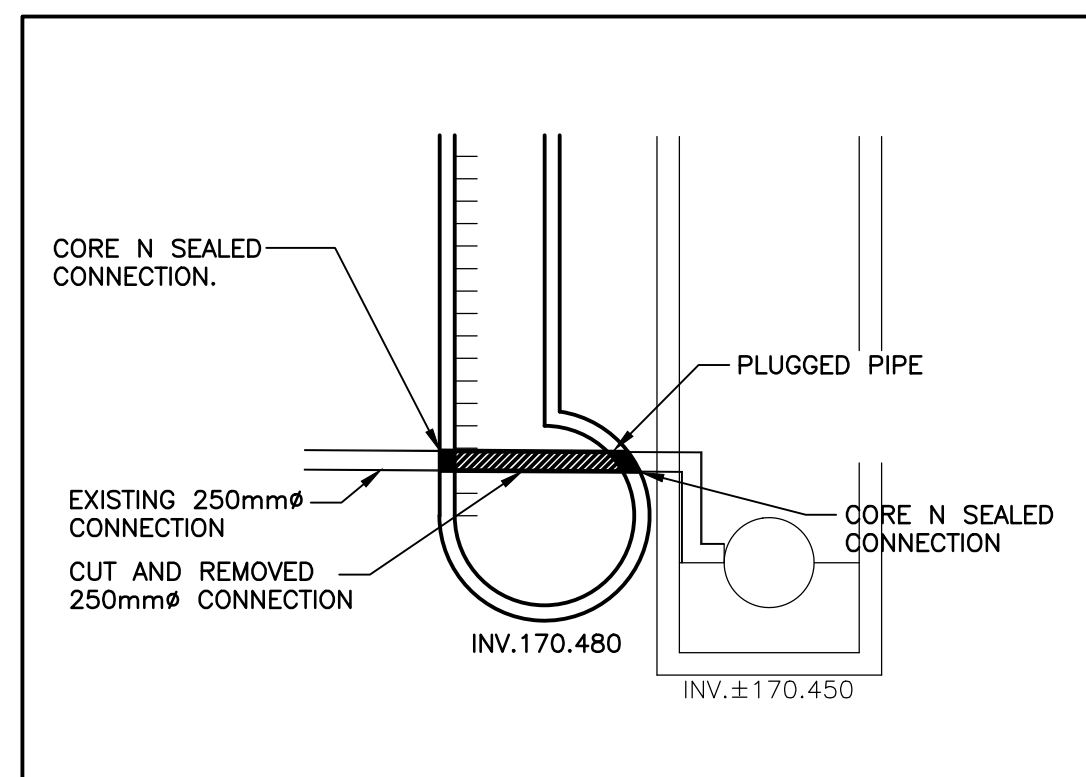
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CHECKED	R.C.S.
DRAWN	G.S.
CHECKED	R.C.S.
DATE	JULY 2009
SCALE	1:500H 1:50V

CYPRESS AVENUE TRUNK SANITARY SEWER

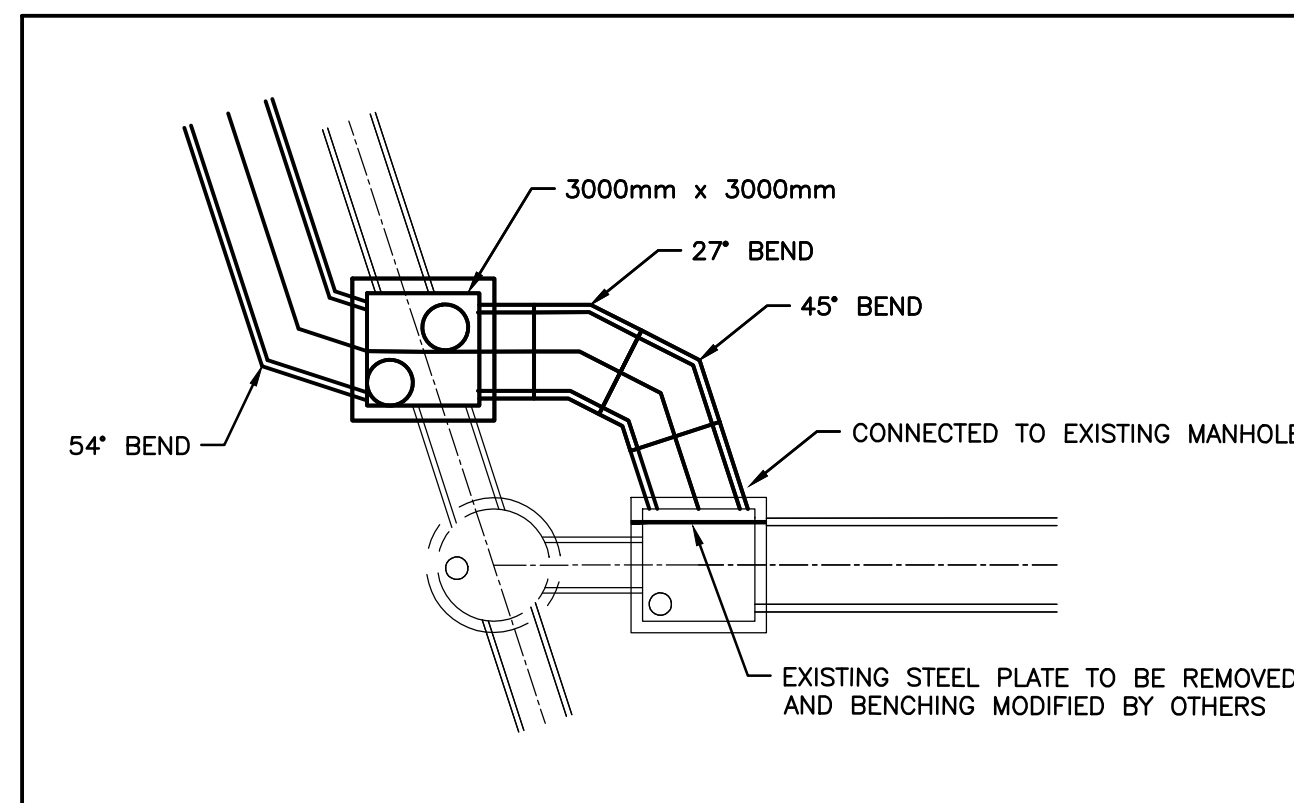
PLAN AND PROFILE
CYPRESS AVENUE

PROJECT NO. 09-24
SHEET NO. 2
OF 3

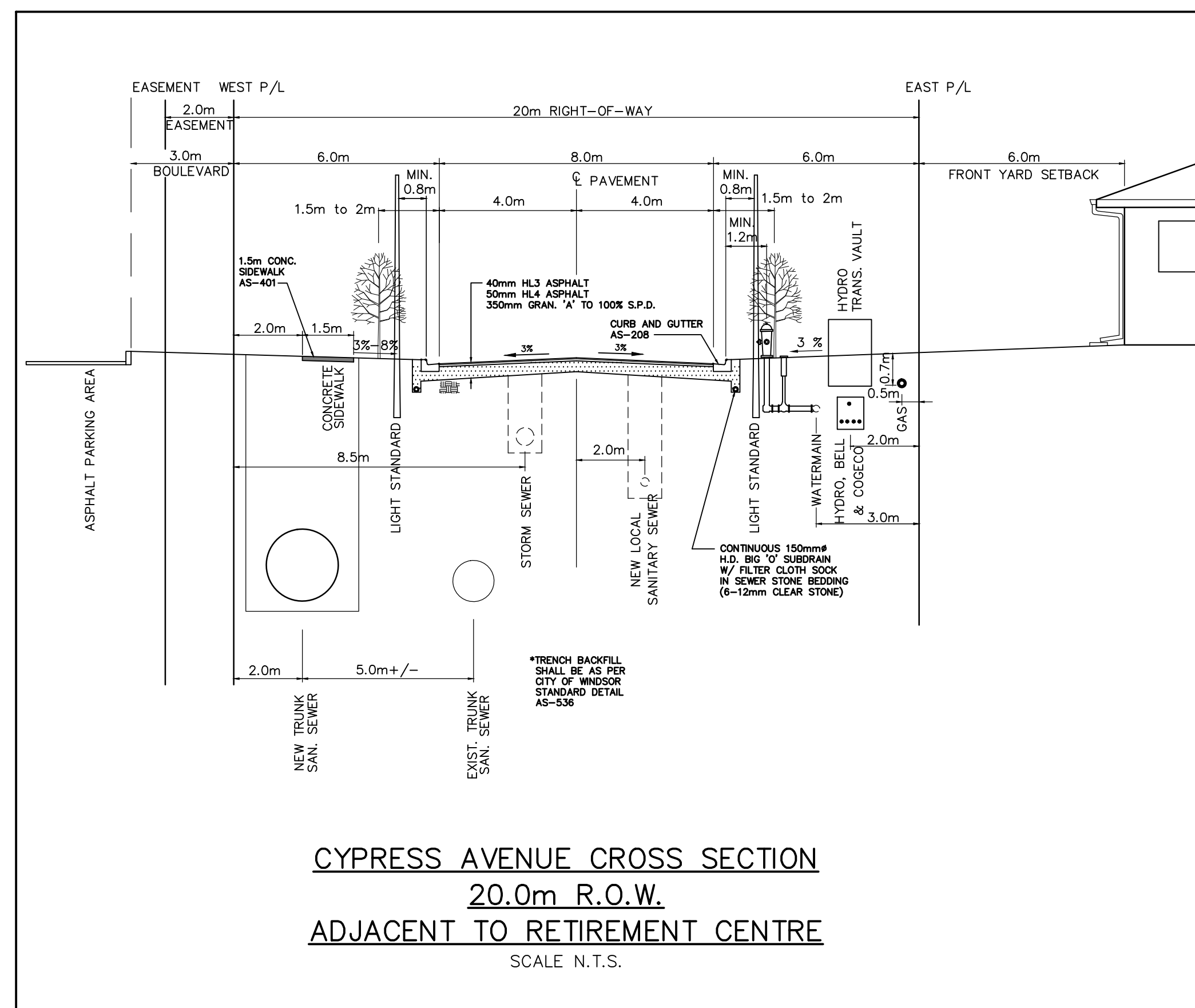
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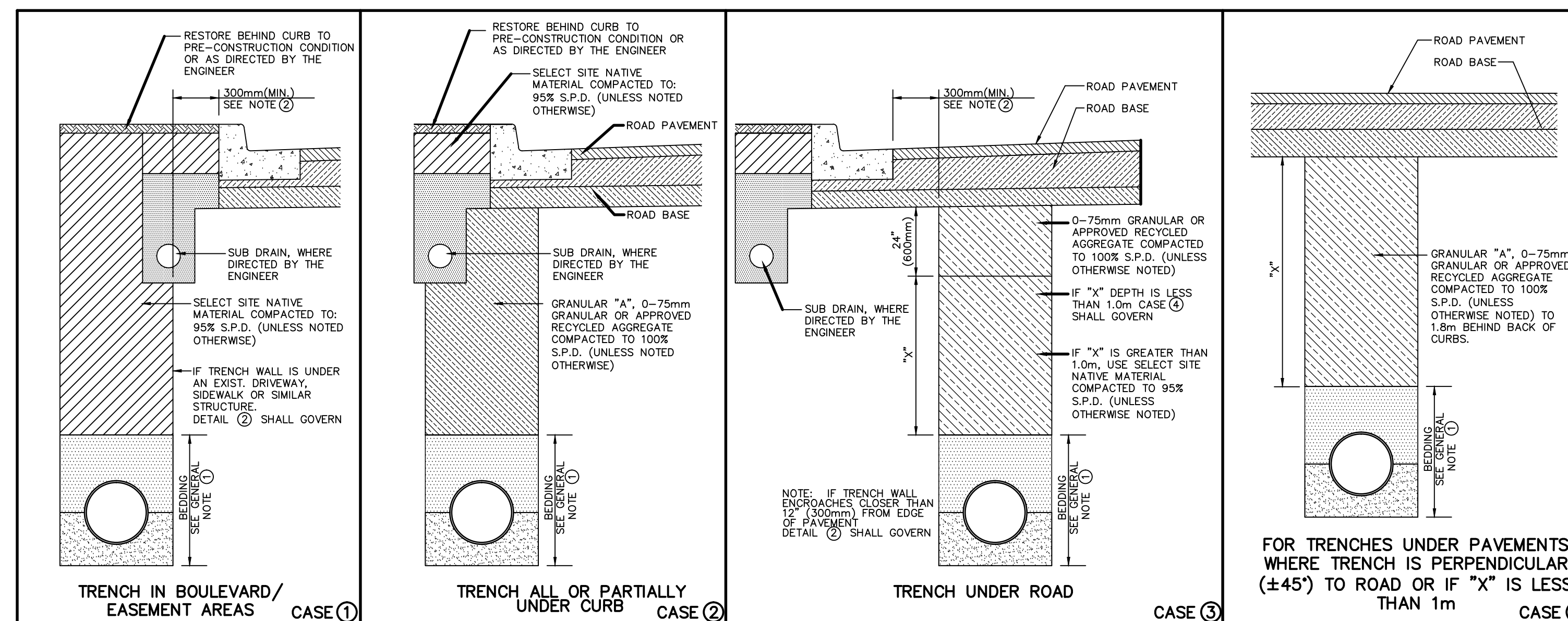
MH 7S6574 DETAIL
SCALE - 1:100



CONNECTION TO EXISTING MANHOLE DETAILS
SCALE - 1:200



CYPRESS AVENUE CROSS SECTION
20.0m R.O.W.
ADJACENT TO RETIREMENT CENTRE
SCALE N.T.S.

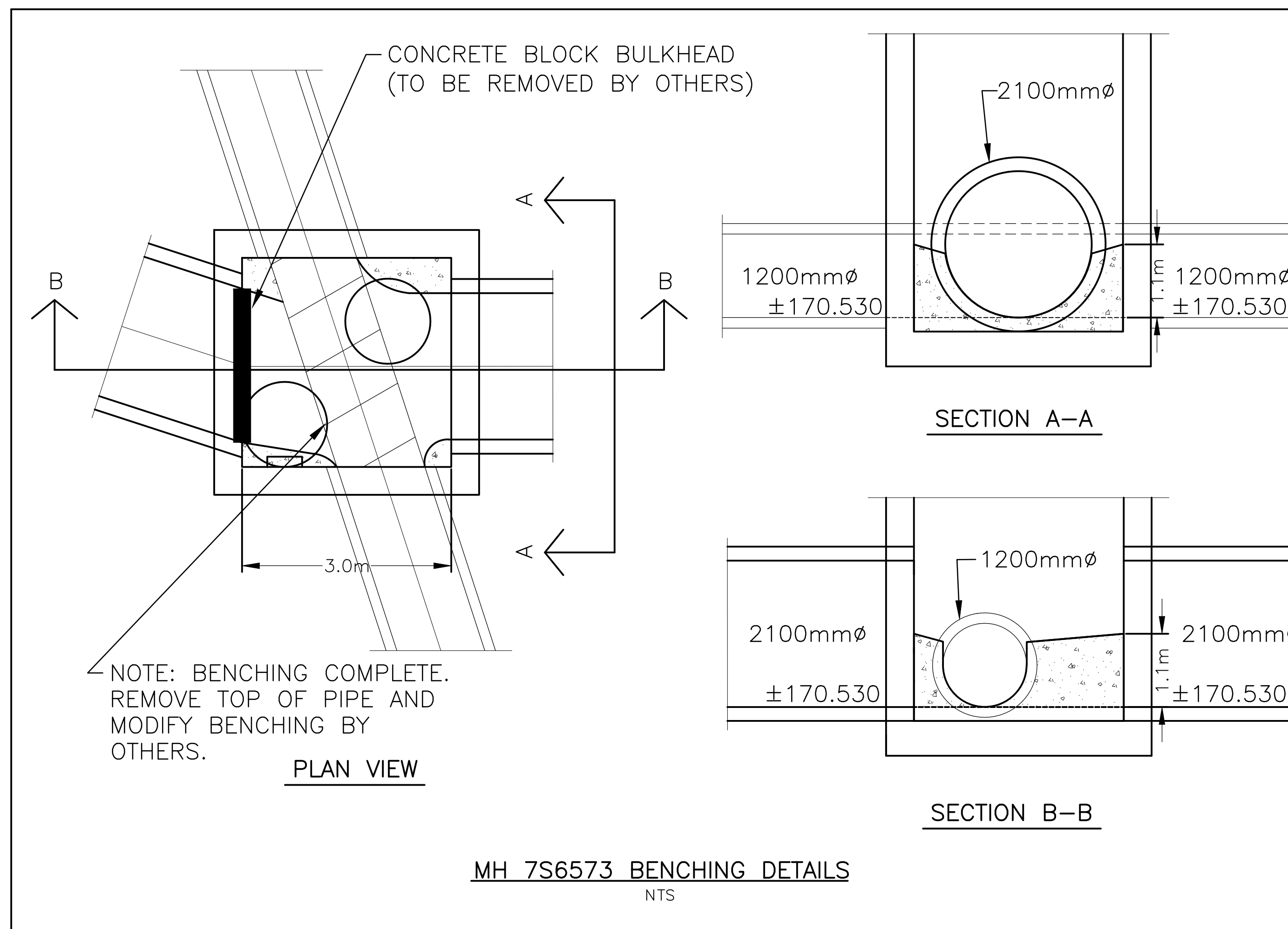


GENERAL NOTES

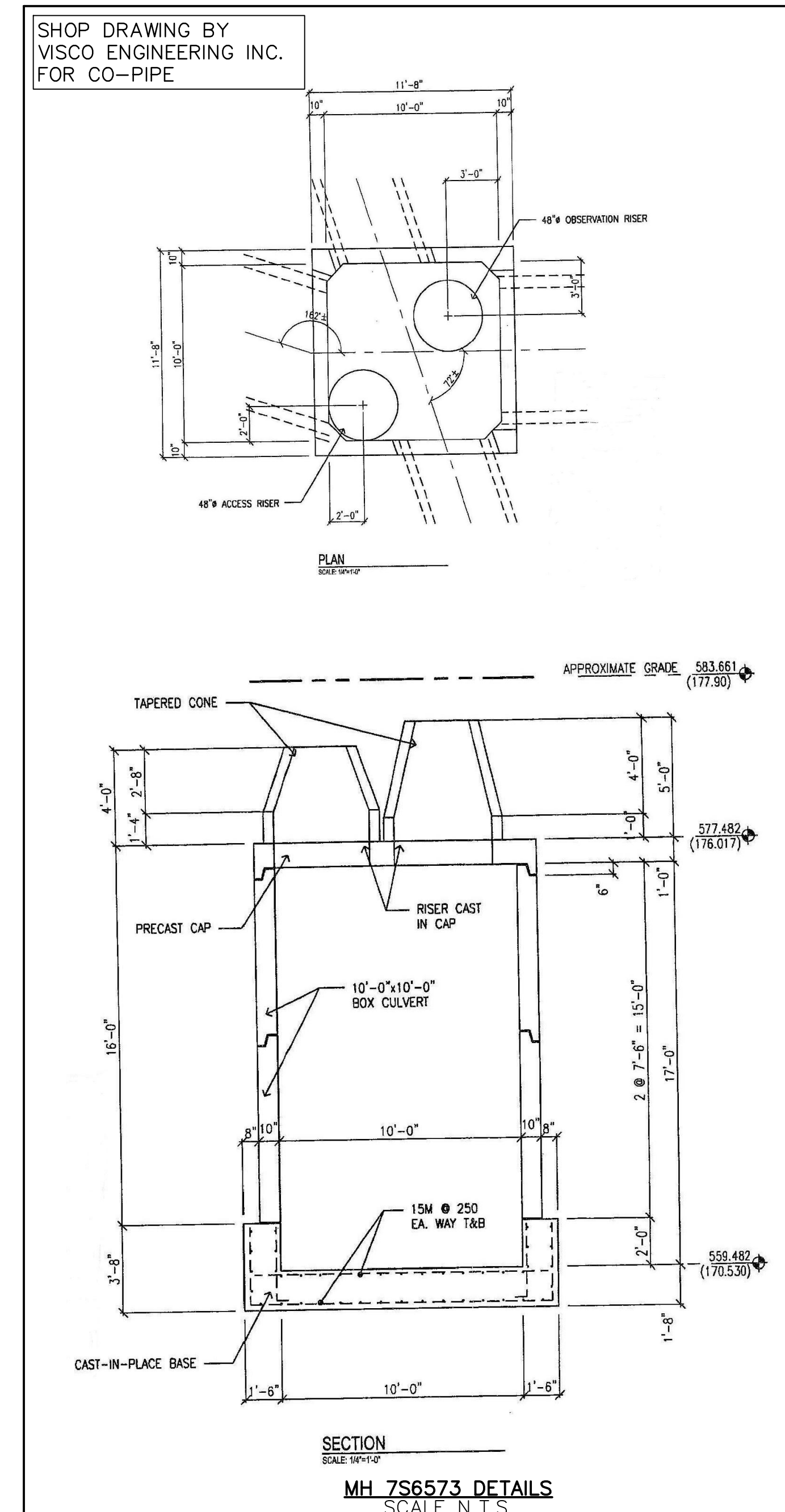
- ① FOR SEWER AND PRIVATE SEWER CONNECTION CONSTRUCTION, ALL WORK TO BE IN ACCORDANCE WITH THE CITY OF WINDSOR STANDARD SPECIFICATIONS S-1 APPLIED TO ALL CASES ①, ②, ③ & ④ OF THIS STANDARD DRAWING.
- ② FOR ALL CASES, IF TRENCH WALL IS CLOSER THAN 300mm FROM THE BACK OF CURB (FUTURE OR EXISTING), IN ANY DIRECTION, THEN CASE ② SHALL GOVERN.
- ③ FOR CASE ②, WHERE TRENCH CROSSES PERPENDICULAR TO ROADWAY (±45°) AND CROSSES UNDERNEATH AN EXISTING CURB, DRIVEWAY OR SIMILAR STRUCTURE, EXTEND GRANULAR BACKFILL TO 1.8m (MIN.) EITHER SIDE OF STRUCTURE.
- ④ THIS DETAIL ADDRESSES TRENCH BACKFILL ONLY. SURFACE RESTORATION SHALL BE AS OTHERWISE APPROVED BY THE COMMISSIONER OF WORKS.

CITY OF WINDSOR STANDARD DRAWING
AS-536

REVISED: OCTOBER, 2002



MH 7S6573 BENCHING DETAILS
NTS



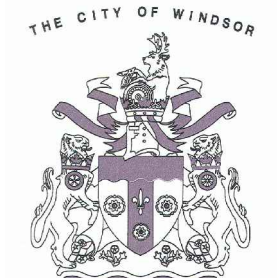
MH 7S6573 DETAILS
SCALE N.T.S.

GENERAL NOTES

- PERFORM ALL WORK TO CITY OF WINDSOR AND W.U.C. STANDARDS.
- RESTORE ALL DISTURBED AREAS WITHIN EXISTING R.O.W. LIMITS TO CITY OF WINDSOR STANDARDS.
- ALL EXCAVATIONS UNDER PAVEMENT AND WITHIN 300mm OF CURB TO BE BACKFILLED FULL WITH CITY OF WINDSOR 0mm TO 75mm CRUSHER RUN OR GRANULAR "A" AS PER CITY OF WINDSOR SPECIFICATIONS (100% S.P.D.).
- SEWER AND WATERMAIN TRENCHES IN BOULEVARD TO BE COMPACTED TO 95% STANDARD PROCTOR DRY DENSITY.
- SEWER BEDDING SHALL BE CLASS 'B' EXCEPT CLASS 'A' TO FIRST PIPE JOINT OUTSIDE MANHOLES.
- UTILITY SUPPORTS OR GRANULAR BACKFILL (C.O.W. 0mm TO 75mm CRUSHER RUN) SHALL BE USED WHERE STORM P.D.C.'S CROSS SANITARY SEWER TRENCH. (COMPACTED TO 100% SPD).
- CONTRACTOR TO ENSURE ALL MANHOLES AND MANHOLE OPENINGS ARE NOT CONSTRUCTED IN CONFLICT WITH CURB AND GUTTER.
- ALL MANHOLES TO BE 1200mm DIA. UNLESS OTHERWISE NOTED.
- CONNECTIONS TO CONCRETE PIPE: ALL PLANTS OR FIELD MANUFACTURED TEES SHALL CONSIST OF AN ASBESTOS CEMENT STOP COUPLER GROUTED IN PLACE WITH A NON-SHRINK GROUT. ALL GROUTED STOP COUPLERS SHALL BE ALLOWED TO CURE FOR A MINIMUM OF 12 HOURS BEFORE USE. ALL ASBESTOS CEMENT STOP COUPLERS ARE TO HAVE A 0.25" INTERNAL MONOLITHIC STOPPER AS WELL AS AN INTERNAL RUBBER GASKET WHICH IS TO BE PLUMBED IN PLACE. THE USE OF WINGED PVC SAND COATED BELL WILL NOT BE PERMITTED IN TAPPING CONCRETE PIPE.
- CONTRACTOR SHALL EXPOSE ALL SEWER TRENCHES BELOW PAVEMENT SUBGRADE FOR COMPACTION VERIFICATION
- TRENCH WIDTHS FOR SEWER WITH CLASS 'B' BEDDING SHALL NOT EXCEED 3.3m AT TOP OF PIPE

NO.	REVISION	DATE	BY	APP.
8.	AS-BUILT - MH 7S6574 CONNECTION	4 JAN 2011	GR	RCS
7.	AS CONSTRUCTED	18 MAR 2010	GR	RCS
6.	ADDENDUM #1 - SHEETS 2 & 3	14 OCT 2009	AMC	RCS
5.	RE-ISSUED FOR TENDER	1 OCT 2009	AMC	RCS
4.	ISSUED FOR TENDER	28 SEP 2009	AMC	RCS
3.	RE-SUBMIT TO CITY/ SUBMIT TO MOE	22 SEP 2009	AMC	RCS
2.	RE-SUBMIT TO CITY	4 SEP 2009	AMC	RCS
1.	SUBMIT TO CITY	7 AUG 2009	AMC	RCS

DESIGN	R.C.S.	PROJECT NO.
CHECKED	R.C.S.	CYPRESS AVENUE TRUNK SANITARY SEWER
DRAWN	G.S.	09-24
CHECKED	R.C.S.	SHEET NO.
DATE	JULY 2009	3
SCALE	AS SHOWN	OF 3



APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

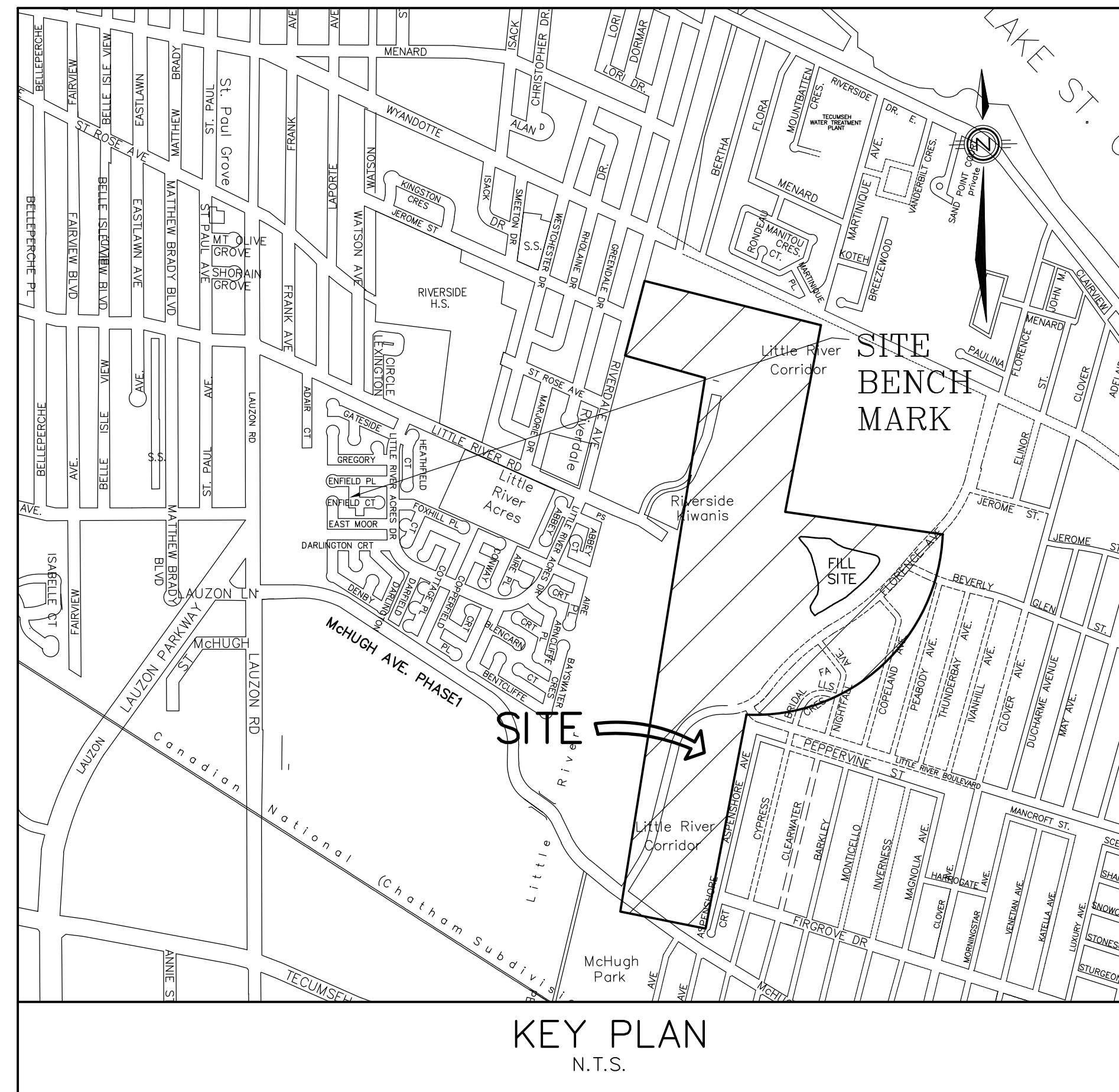
CITY ENGINEER
WINDSOR, ONTARIO



AS CONSTRUCTED

SANDWICH SOUTH EMPLOYMENT LANDS SANITARY TRUNK SEWER PHASE 2 STAGE 2A & 2B AS-CONSTRUCTED

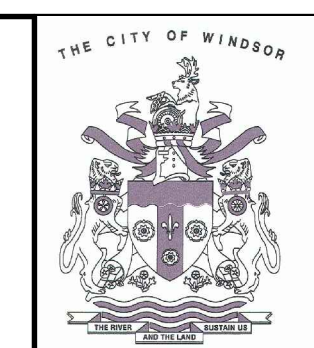
SANDWICH SOUTH EMPLOYMENT LANDS PHASE 2 STAGE 2A & 2B 09-25



INDEX	
No.	DESCRIPTION
1.	INDEX, LEGEND, KEY PLAN & BENCH MARK
2.	GENERAL PLAN
3.	PLAN AND PROFILE -- STA 2+267.3N TO STA 2+345NW STA 2+358W TO MH 6S881
4.	PLAN AND PROFILE -- STA 1+900N TO STA 2+267.3N
5.	PLAN AND PROFILE-- STA 1+500N TO STA 1+880N
6.	PLAN AND PROFILE-- STA 1+500N TO STA 0+880N
7.	PLAN AND PROFILE-- STA 0+880N TO STA 0+706.28N STA 0+721.36W TO STA 0+598.90W
8.	MISCELLANEOUS DETAILS

ELEVATIONS
ELEVATIONS SHOWN ON THIS PLAN ARE IN METRIC TO CANADIAN GEODETIC DATUM
SITE BENCH MARK--C.O.W BM#600 ELEVATION 177.064
ON THE SOUTH SIDE OF LITTLE RIVER ROAD, NEXT EAST OF RIVERDALE 275± FEET; THE PLATE IS LOCATED ON THE SOUTH WEST WALL 0.1 FEET SOUTH OF THE NORTH WALL (PRIMORD PUMPING STATION) AND 1.3 FEET ABOVE GRADE.

LEGEND		
DESCRIPTION	EXISTING	NEW
STORM SEWER	--- Ex. 375mm S ---	
SANITARY SEWER	--- Ex. 1200mm SAN ---	--- 2100mm SAN ---
WATER MAIN	--- Ex. 200mm W ---	
GAS MAIN	--- G ---	
GAS MARKER	□ G.M.	
BELL, HYDRO, & CABLE TV	--- B.H. TV ---	
BELL, & CABLE TV PED.	□ B.P.C.P.	
WATER VALVE	□ W.V.	
FIRE HYDRANT & WATER VALVE	□ F.H.	
CURB AND GUTTER	=====	
CATCH BASIN	□ C.B.	
MANHOLE	○ M.H.	● MH
LOT ELEVATION	183.81	
ROAD ELEVATION	183.81	
TRANSFORMER	□ W	
STREETLIGHT	● L/S	
TRAFFIC SIGN	□ T.S.	
SIDEWALK/ DRIVEWAY		▨
ASPHALT TRAIL TO BE REMOVED AND REPLACED	▨	
SILT FENCE (OPSD 219.130)		○ ○ ○ ○ ○
WORK ZONE		▨
SNOW FENCE		○ ○ ○ ○ ○



APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

MARIO SONEGO, P. Eng.
CITY ENGINEER

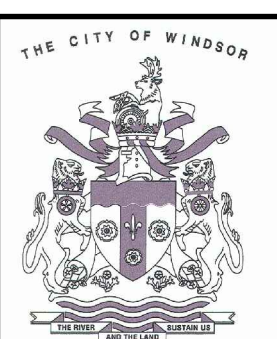
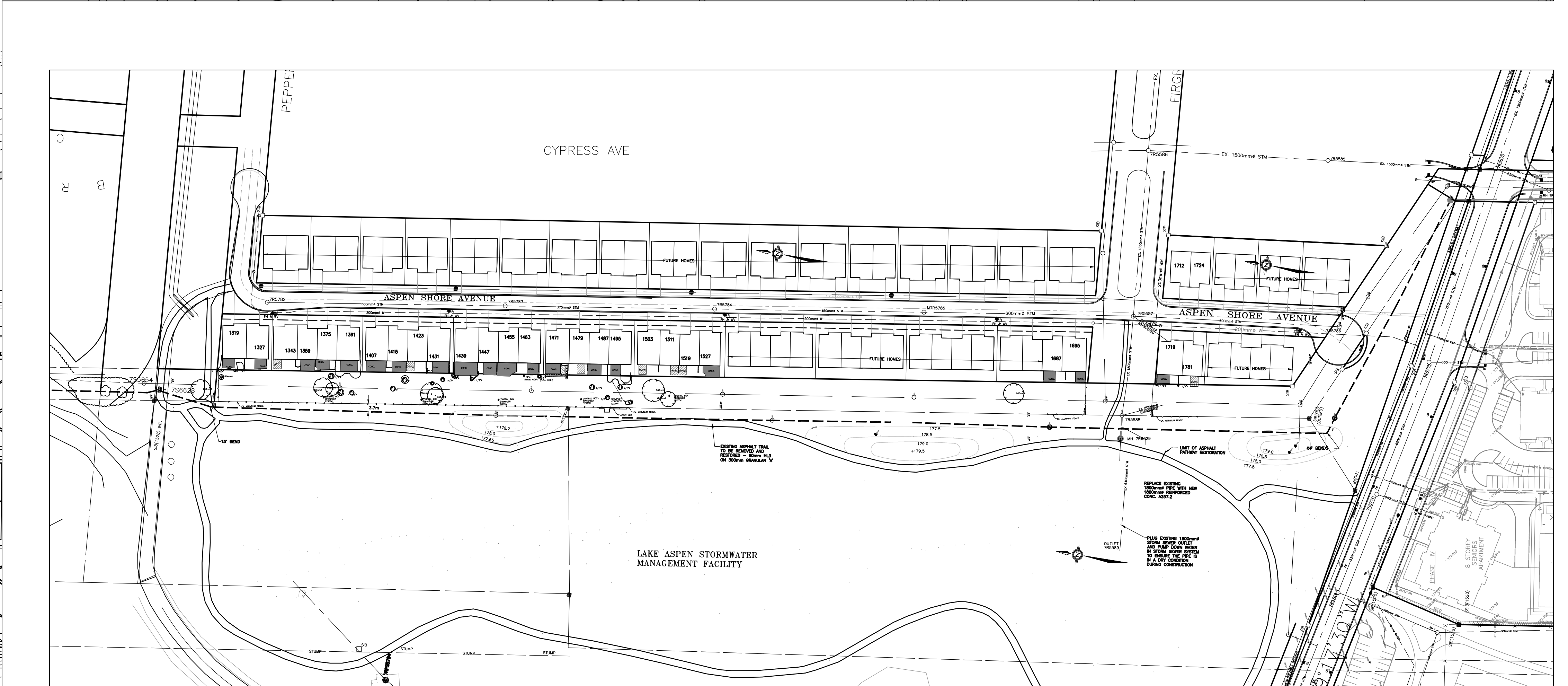
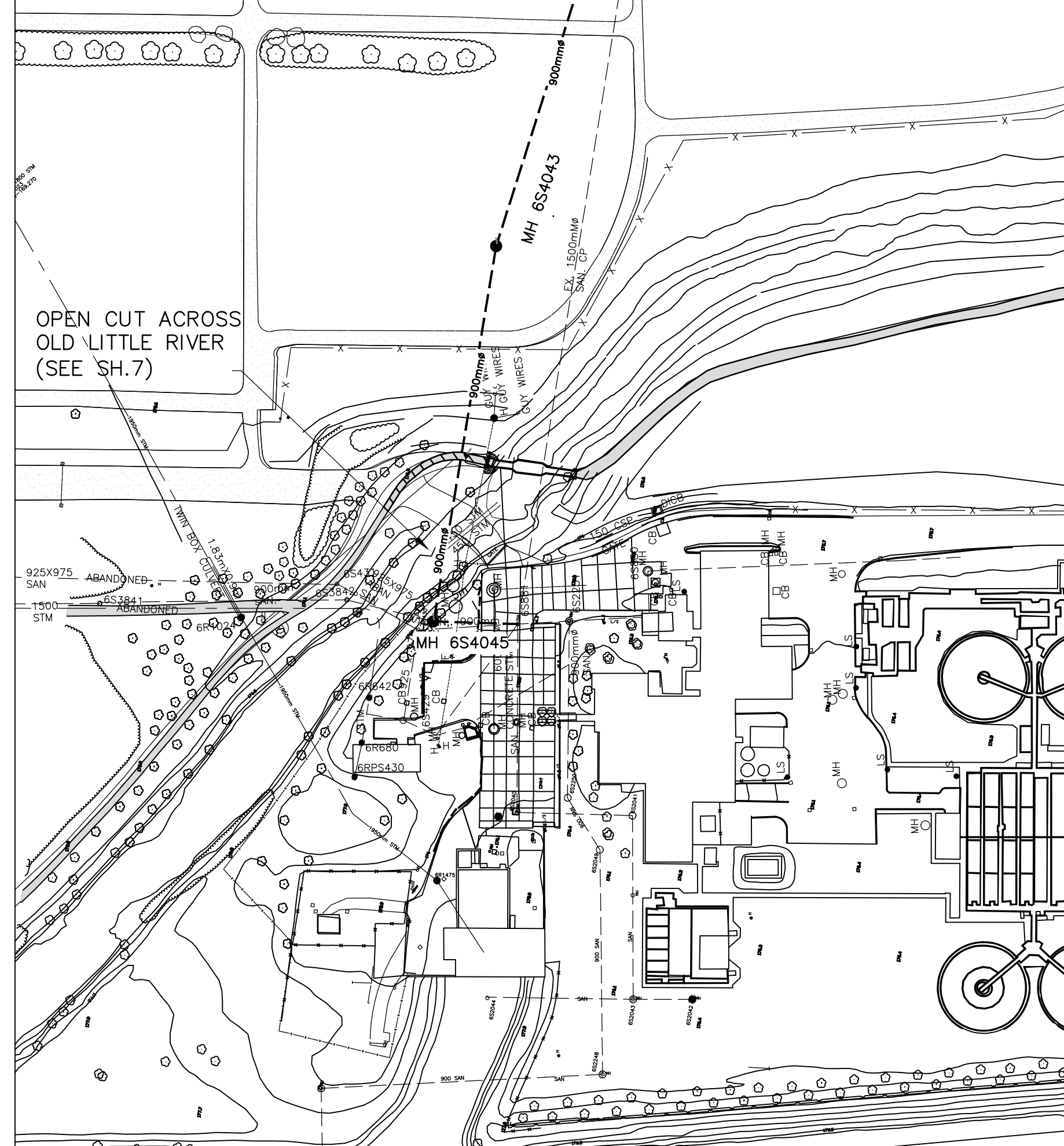
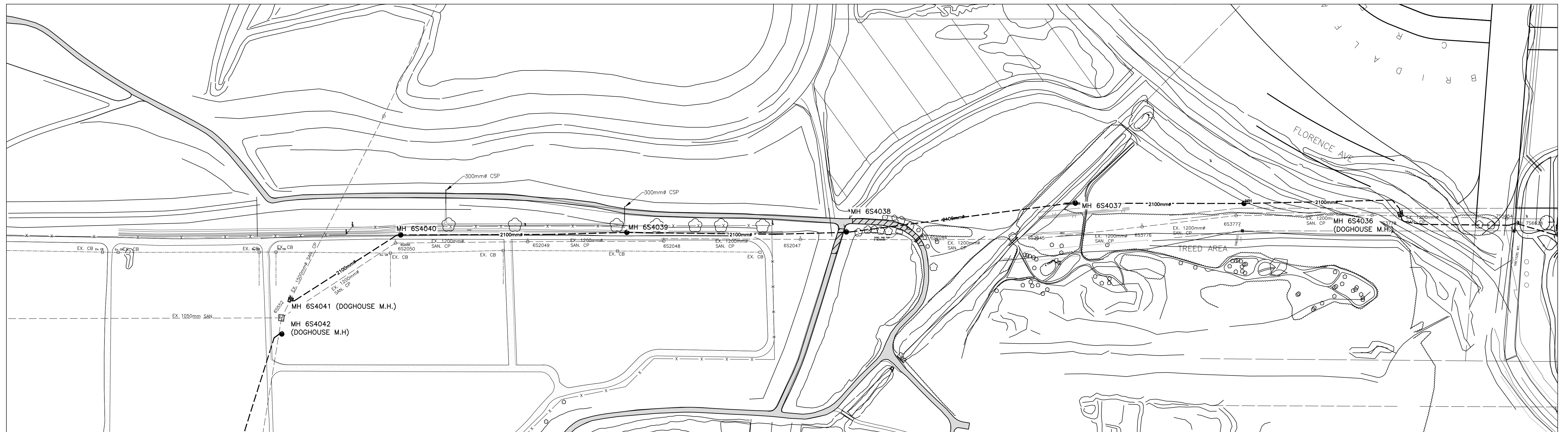
RC SPENCER ASSOCIATES INC.
Consulting Engineers
3100 Temple Drive, Suite 100,
Windsor, Ontario, N8W 5J6
Phone: (519) 944-3990
Fax: (519) 944-5636
Professional Engineers
Ontario

NO.	REVISION	DATE	BY	NO.	REVISION	DATE	BY	SCALE
				5.	ISSUED FOR TENDER	26 APR 2010	RCS	DESIGN A.M.C.
				4.	SUBMIT TO MOE	23 APR 2010	RCS	CHECKED R.C.S.
8.	AS-CONSTRUCTED	13 DEC 2010	RCS	3.	REVISED PER COMMENTS	22 APR 2010	RCS	DRAWN G.S.
7.	ISSUED FOR CONSTRUCTION-REVISED	16 JUNE 2010	RCS	2.	SUBMIT TO CITY	8 APR 2010	RCS	CHECKED R.C.S.
6.	ISSUED FOR CONSTRUCTION	27 MAY 2010	RCS	1.	SUBMIT TO CITY - REVIEW OF PRELIMINARY DESIGN	5 MAR 2010	RCS	DATE JANUARY 2010
								NTS

SANDWICH SOUTH EMPLOYMENT LANDS
PHASE 2 STAGE 2A & 2B

INDEX, LEGEND, KEY PLAN
AND BENCH MARK

PROJECT NO.
09-25
SHEET NO.
1
OF
8



APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

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Professional Engineers
Ontario

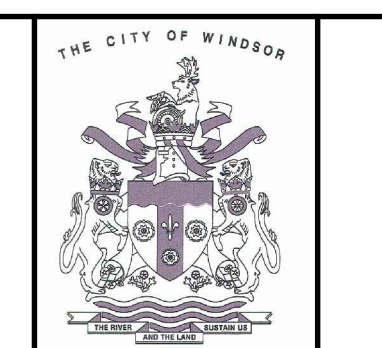
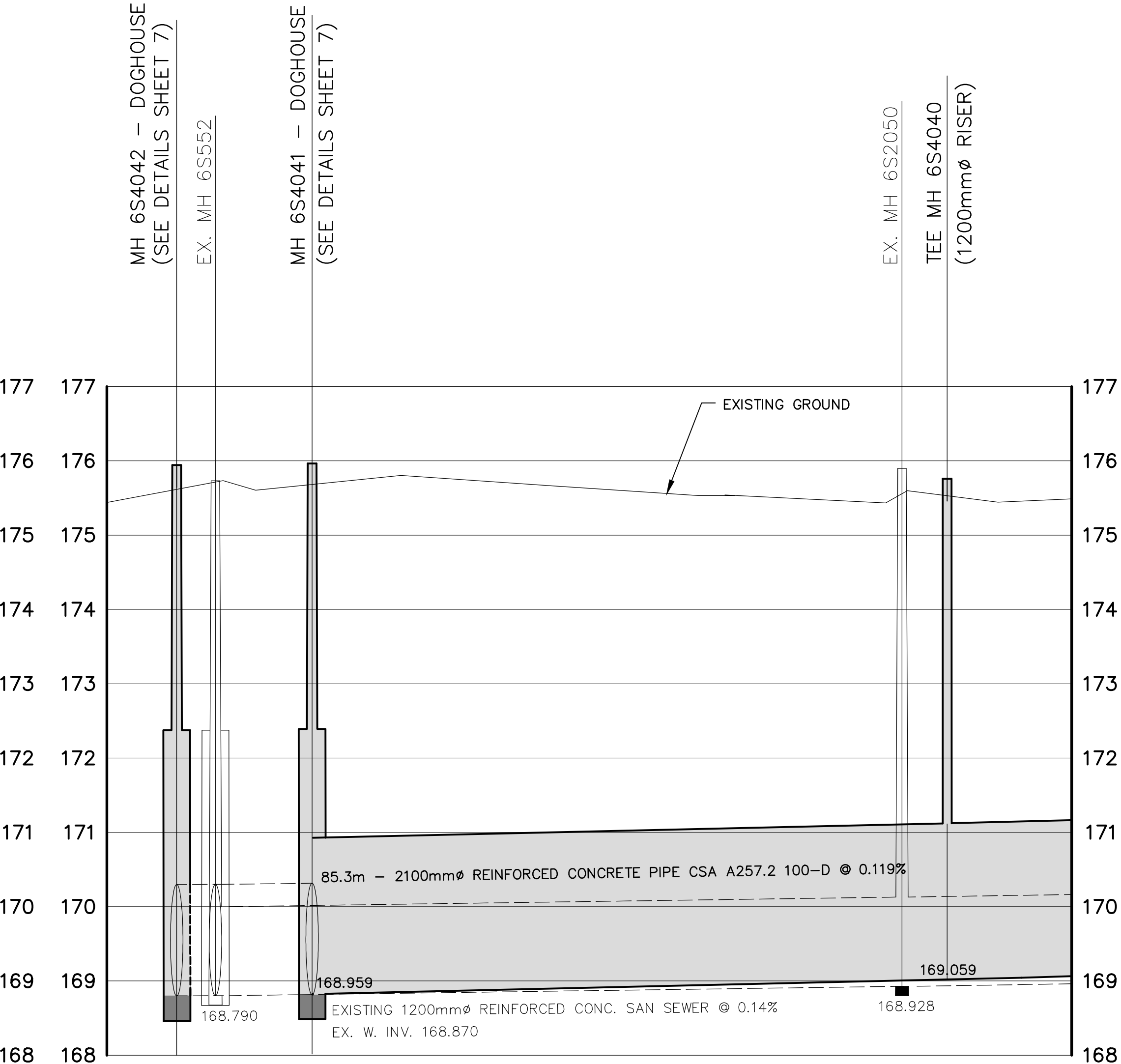
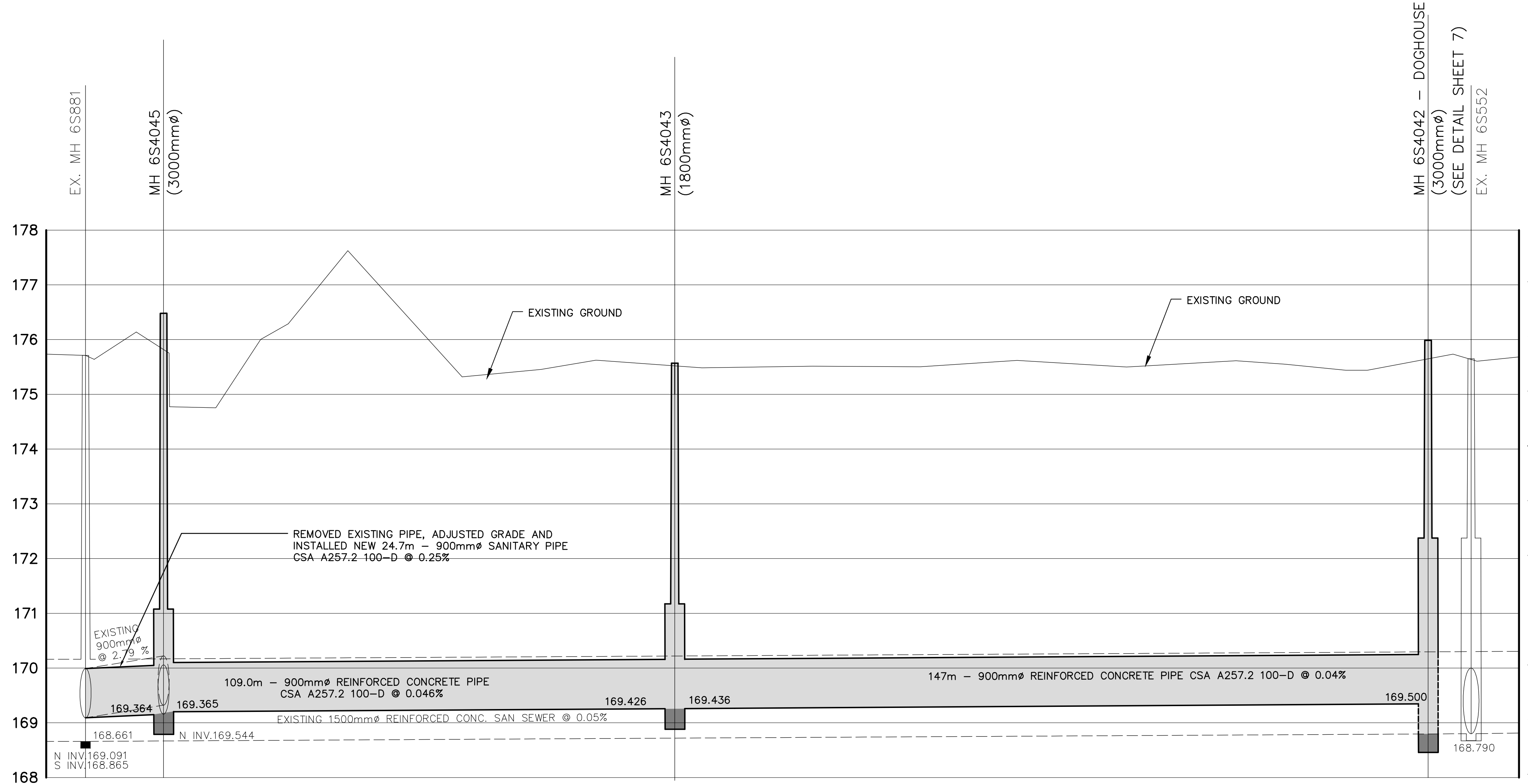
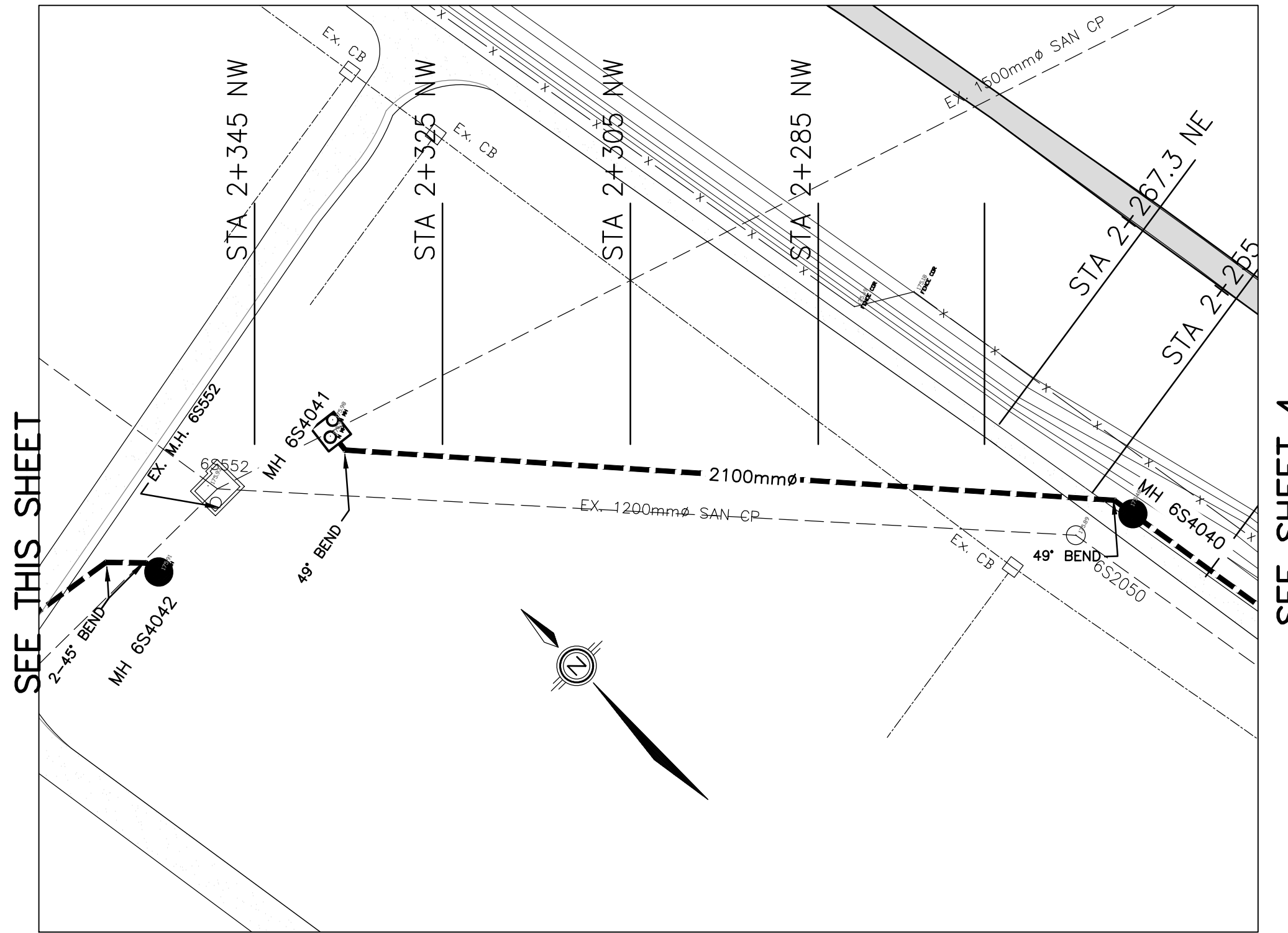
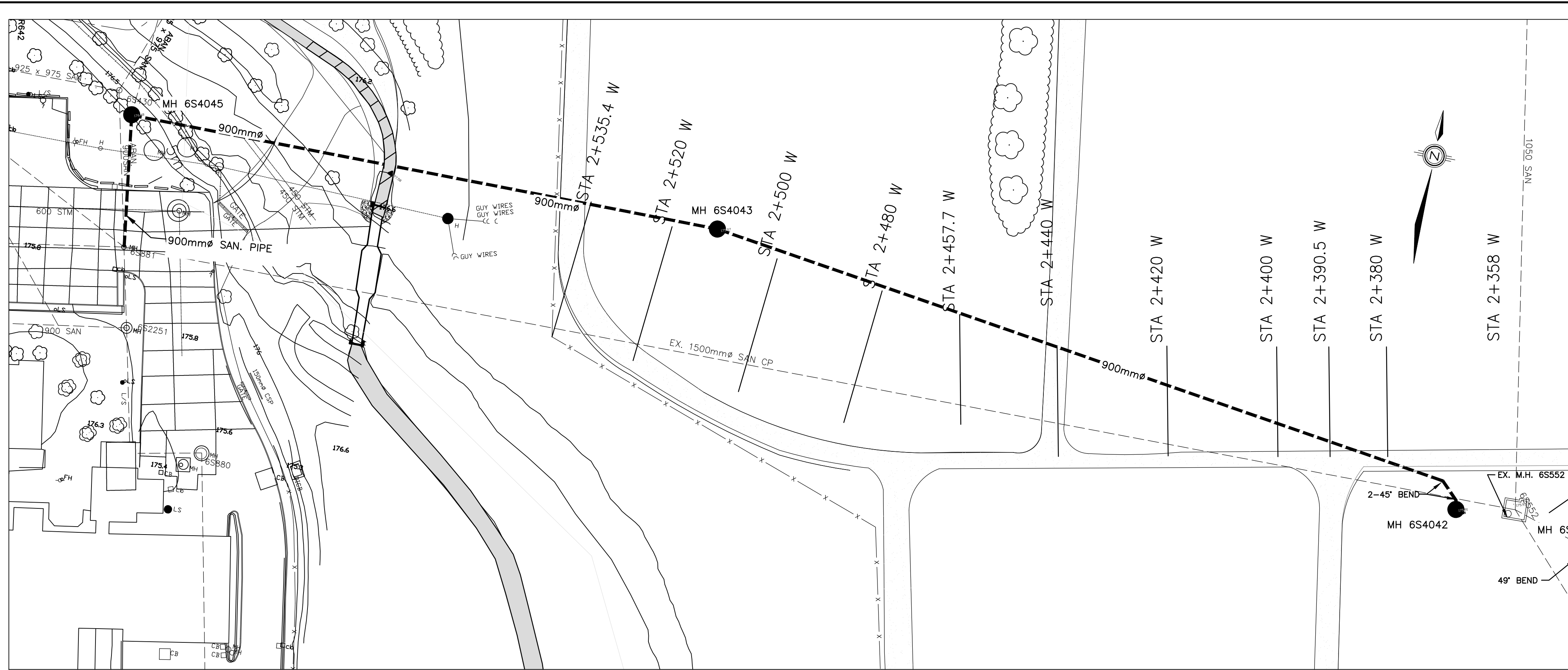
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7.	AS- CONSTRUCTED	13 DEC 2010	RCS	5.	ISSUED FOR TENDER	26 APR 2010	RCS	DESIGN A.M.C.
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6.	ISSUED FOR CONSTRUCTION	27 MAY 2010	RCS	3.	REVISED PER COMMENTS	22 APR 2010	RCS	DRAWN G.S.
				2.	SUBMIT TO CITY	8 APR 2010	RCS	CHECKED R.C.S.
				1.	SUBMIT TO CITY - REVIEW OF PRELIMINARY DESIGN	5 MAR 2010	RCS	DATE JANUARY 2010

SANDWICH SOUTH EMPLOYMENT LANDS
PHASE 2 STAGE 2A & 2B

GENERAL PLAN

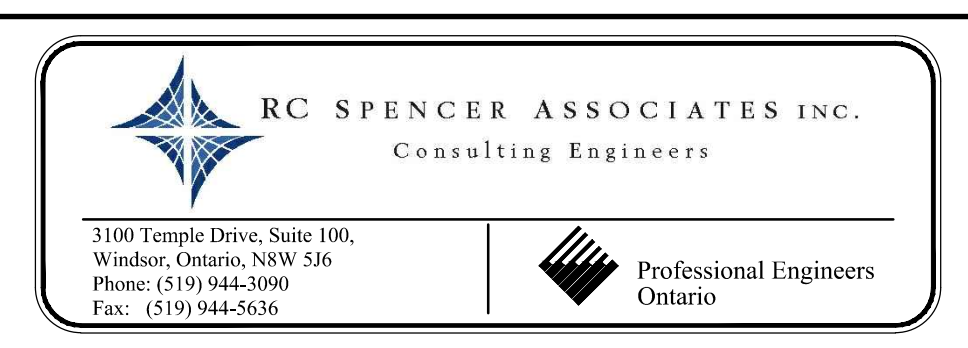
PROJECT NO. 09-25
SHEET NO. 2
OF 8

SCALE 1:1250



APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

MARIO SONEGO, P. Eng.
CITY ENGINEER



NO.	REVISION	DATE	BY	NO.	REVISION	DATE	BY
5.	ISSUED FOR TENDER	26 APR 2010	RCS	DESIGN	A.M.C.		
4.	SUBMIT TO MOE	23 APR 2010	RCS	CHECKED	R.C.S.		
3.	REVISED PER COMMENTS	22 APR 2010	RCS	DRAWN	G.S.		
2.	SUBMIT TO CITY	8 APR 2010	RCS	CHECKED	R.C.S.		
1.	SUBMIT TO CITY - REVIEW OF PRELIMINARY DESIGN	5 MAR 2010	RCS	DATE	JANUARY 2010		
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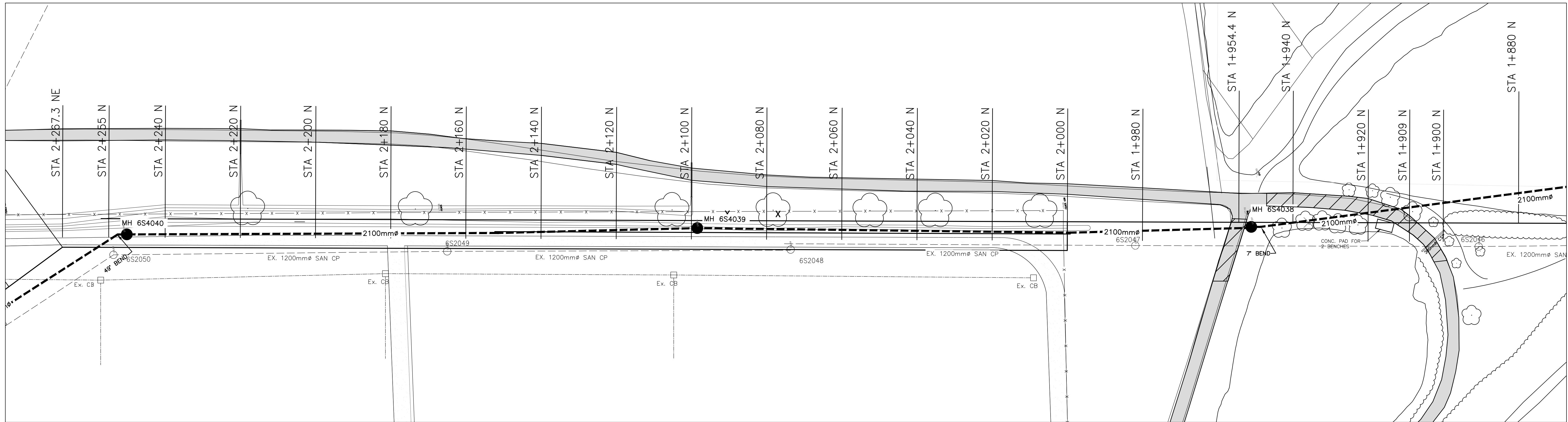
SANDWICH SOUTH EMPLOYMENT LANDS
PHASE 2 STAGE 2A & 2B

PROJECT NO. 09-25

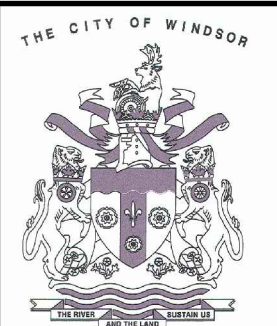
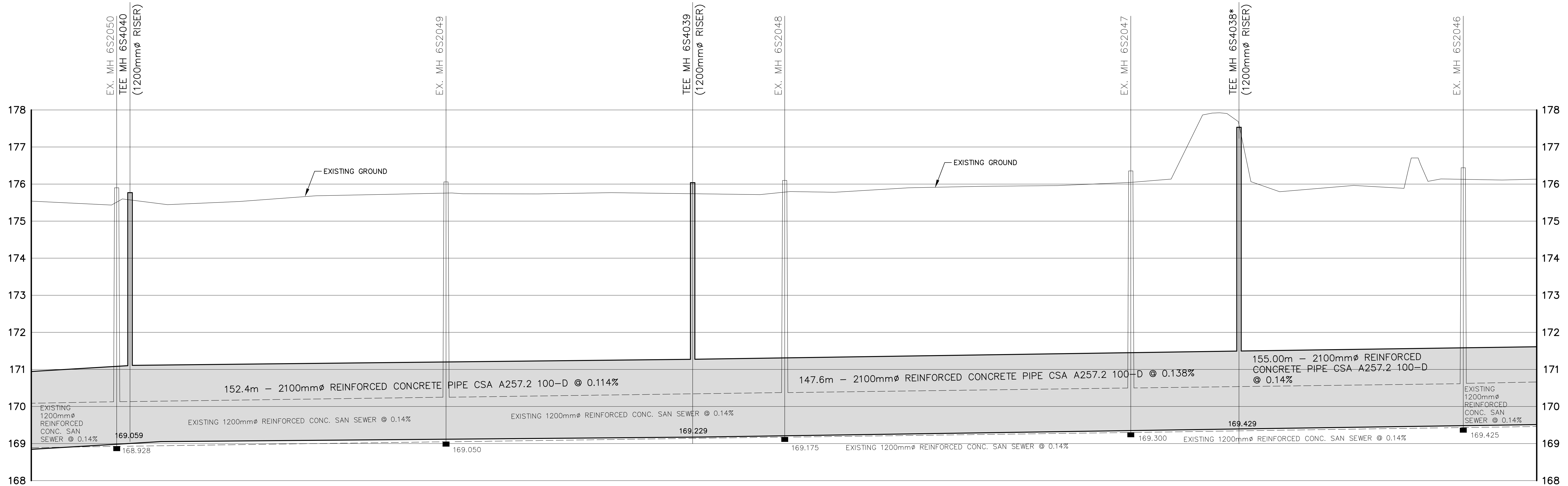
PLAN AND PROFILE
STA. 2+267.3N - STA. 2+345NW
STA. 2+358W - MH 6S881

SHEET NO. 3 OF 8

SEE SHEET 3



SEE SHEET 5



APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

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Fax: (519) 944-5636

Professional Engineers
Ontario

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3.	REVISED PER COMMENTS	22 APR 2010	RCS	DRAWN	G.S.		
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1.	SUBMIT TO CITY - REVIEW OF PRELIMINARY DESIGN	5 MAR 2010	RCS	DATE	JANUARY 2010		
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SANDWICH SOUTH EMPLOYMENT LANDS
PHASE 2 STAGE 2A & 2B

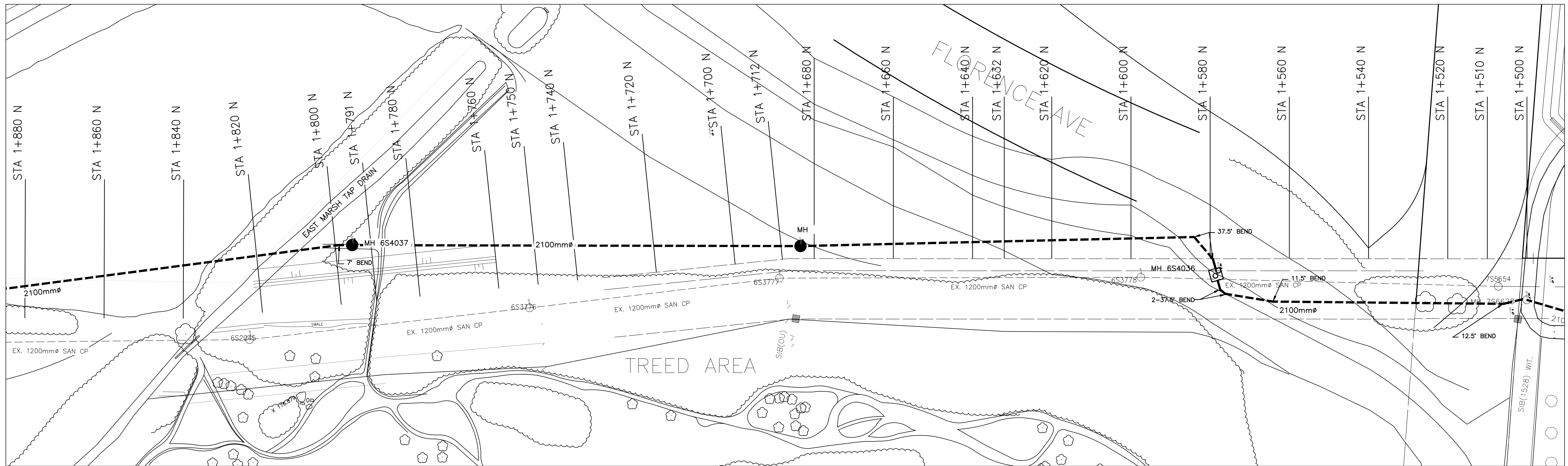
PLAN AND PROFILE
STA 1+900N TO STA 2+267.3N

PROJECT NO.
09-25

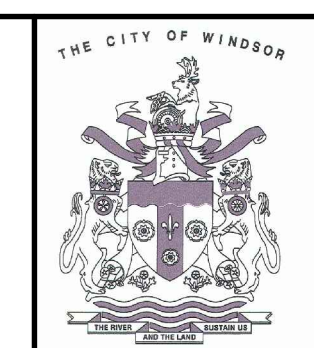
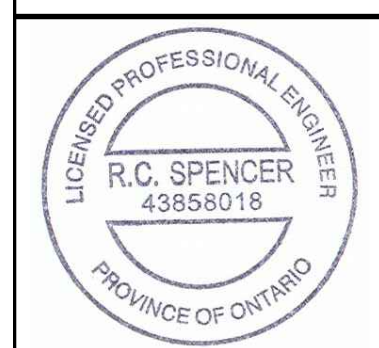
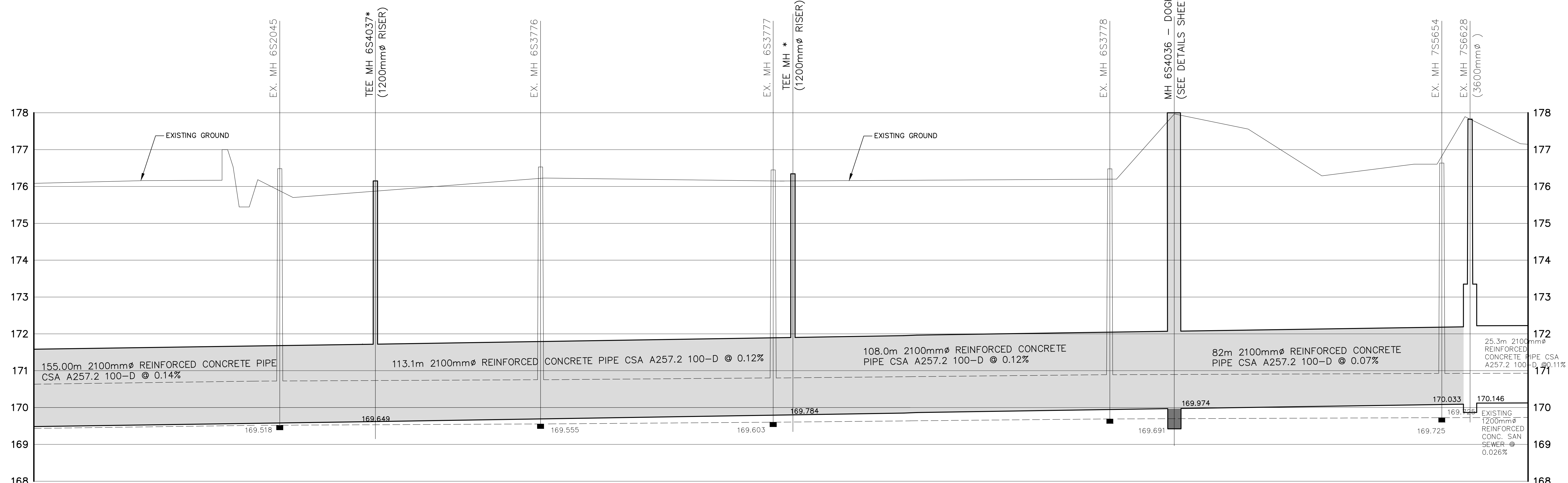
SHEET NO.
4

OF
8

SEE SHEET 4



*MH'S 6S4036, 6S4037 AND 6S4038 TO HAVE WATER TIGHT FRAME AND COVER.



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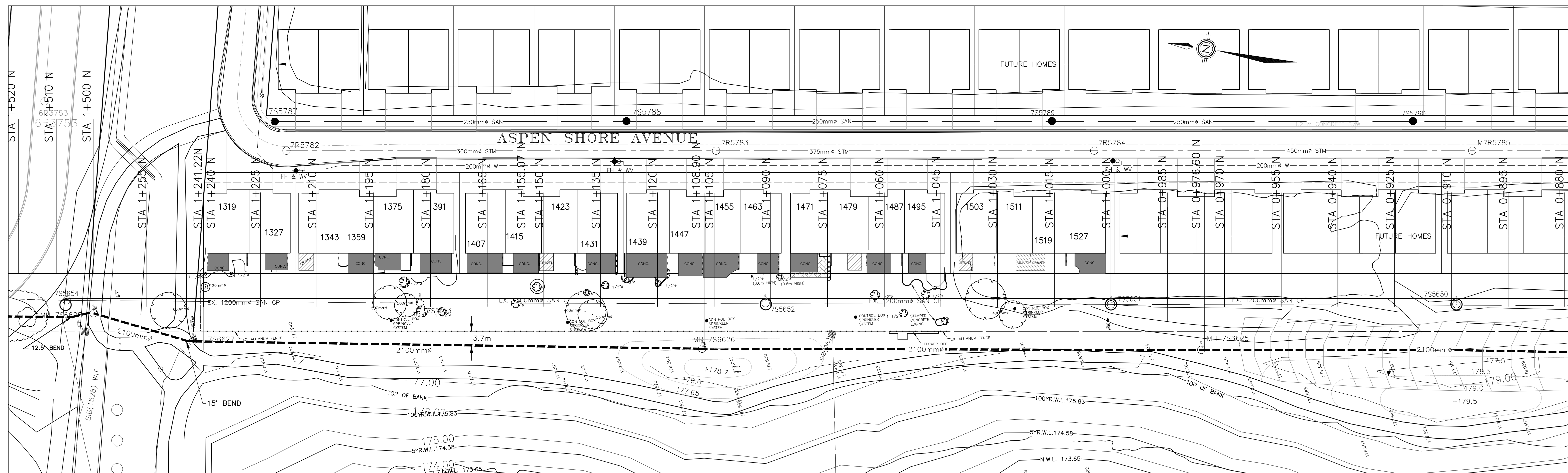
Professional Engineers
Ontario

NO.	REVISION	DATE	BY	NO.	REVISION	DATE	BY
5.	ISSUED FOR TENDER	26 APR 2010	RCS	DESIGN	A.M.C.		
4.	SUBMIT TO MOE	23 APR 2010	RCS	CHECKED	R.C.S.		
3.	REVISED PER COMMENTS	22 APR 2010	RCS	DRAWN	G.S.		
2.	SUBMIT TO CITY	8 APR 2010	RCS	CHECKED	R.C.S.		
1.	ISSUED FOR CONSTRUCTION	27 MAY 2010	RCS	DATE	JANUARY 2010		
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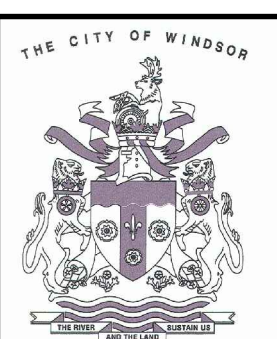
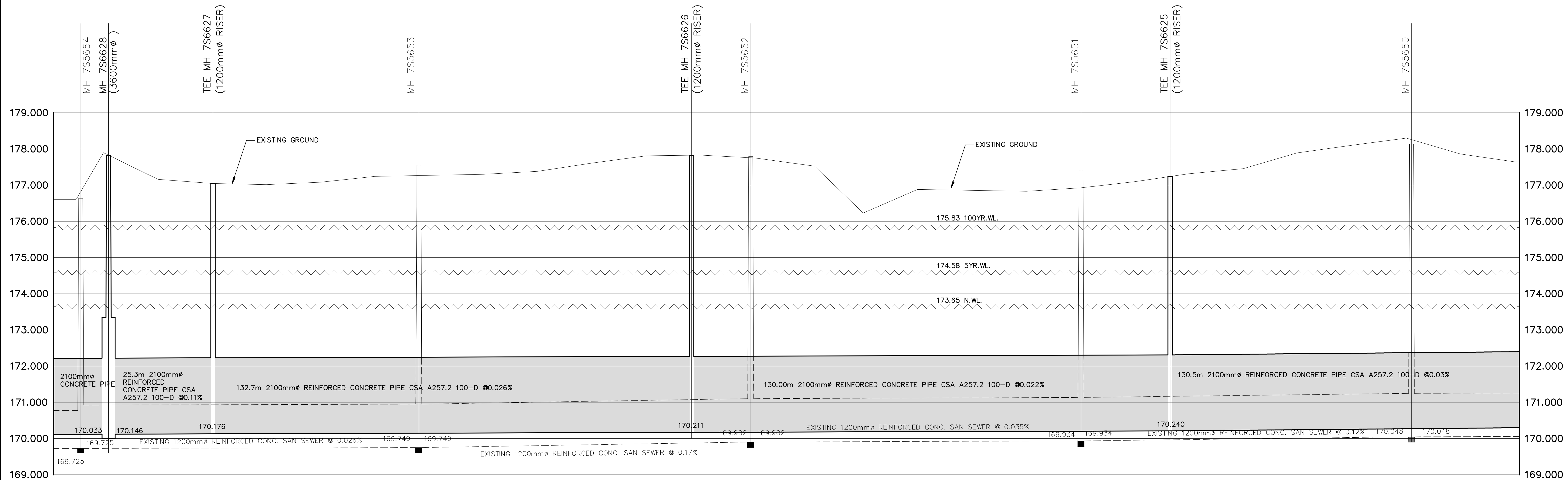
SANDWICH SOUTH EMPLOYMENT LANDS
PHASE 2 STAGE 2A & 2B

PLAN AND PROFILE
STA 1+500N TO STA 1+880N

PROJECT NO. 09-25
SHEET NO. 5
OF 8



SEE SHEET 7



APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

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Ontario

NO.	REVISION	DATE	BY	NO.	REVISION	DATE	BY
8.	AS-CONSTRUCTED	13 DEC 2010	RCS	5.	ISSUED FOR TENDER	26 APR 2010	RCS
7.	ISSUED FOR CONSTRUCTION-REVISED	16 JUNE 2010	RCS	4.	SUBMIT TO MOE	23 APR 2010	RCS
6.	ISSUED FOR CONSTRUCTION	27 MAY 2010	RCS	3.	REVISED PER COMMENTS	22 APR 2010	RCS
				2.	SUBMIT TO CITY	8 APR 2010	RCS
				1.	SUBMIT TO CITY - REVIEW OF PRELIMINARY DESIGN	5 MAR 2010	RCS

SANDWICH SOUTH EMPLOYMENT LANDS
PHASE 2 STAGE 2A & 2B

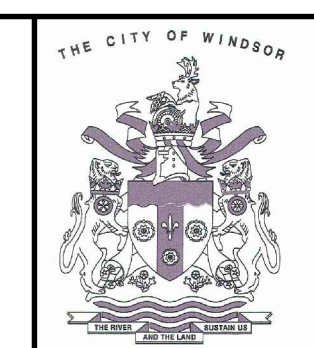
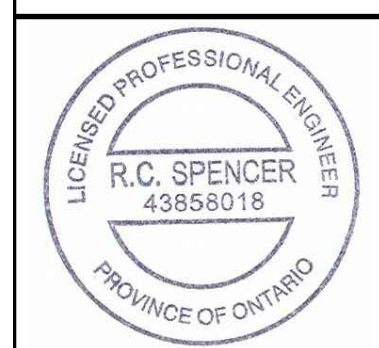
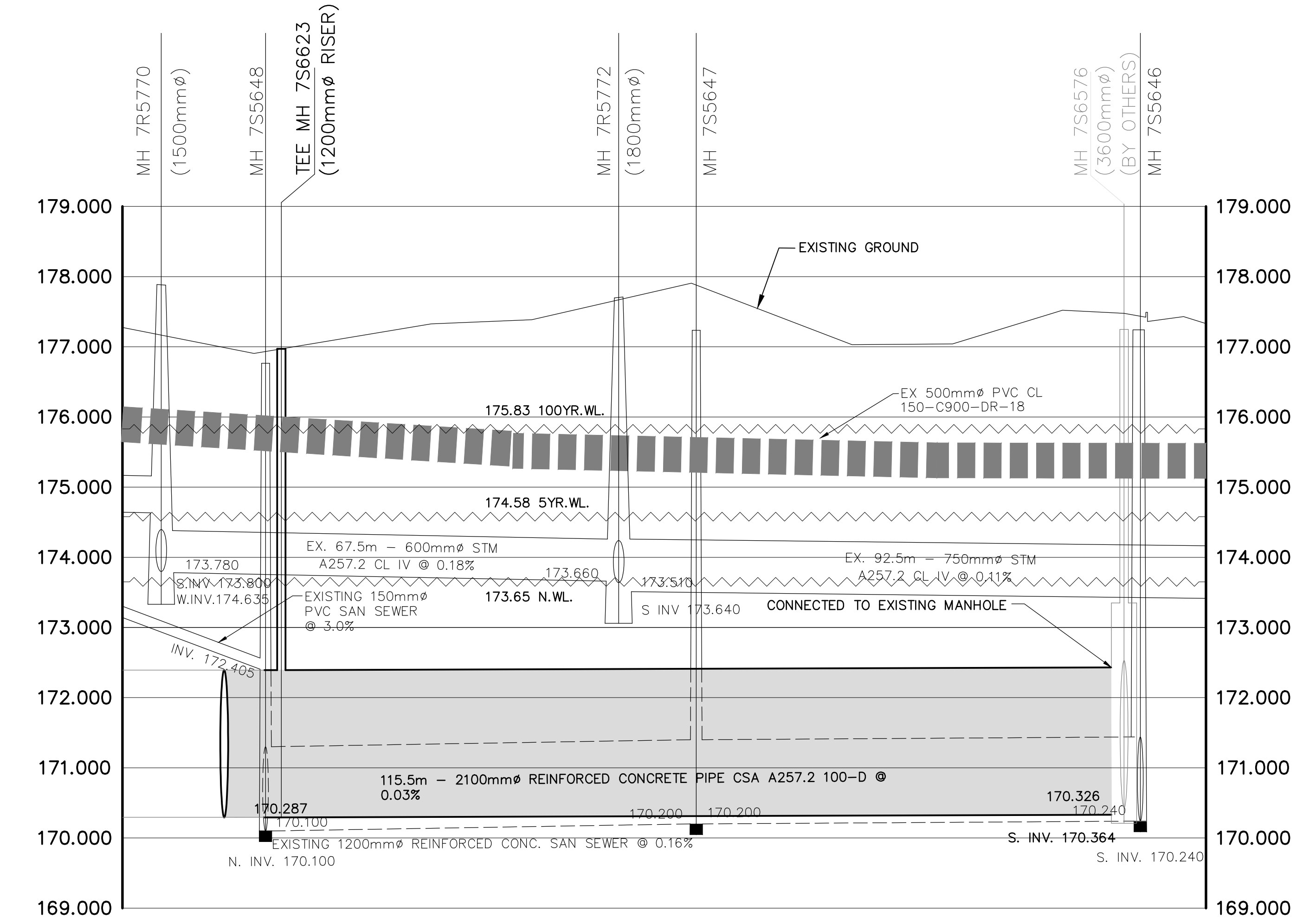
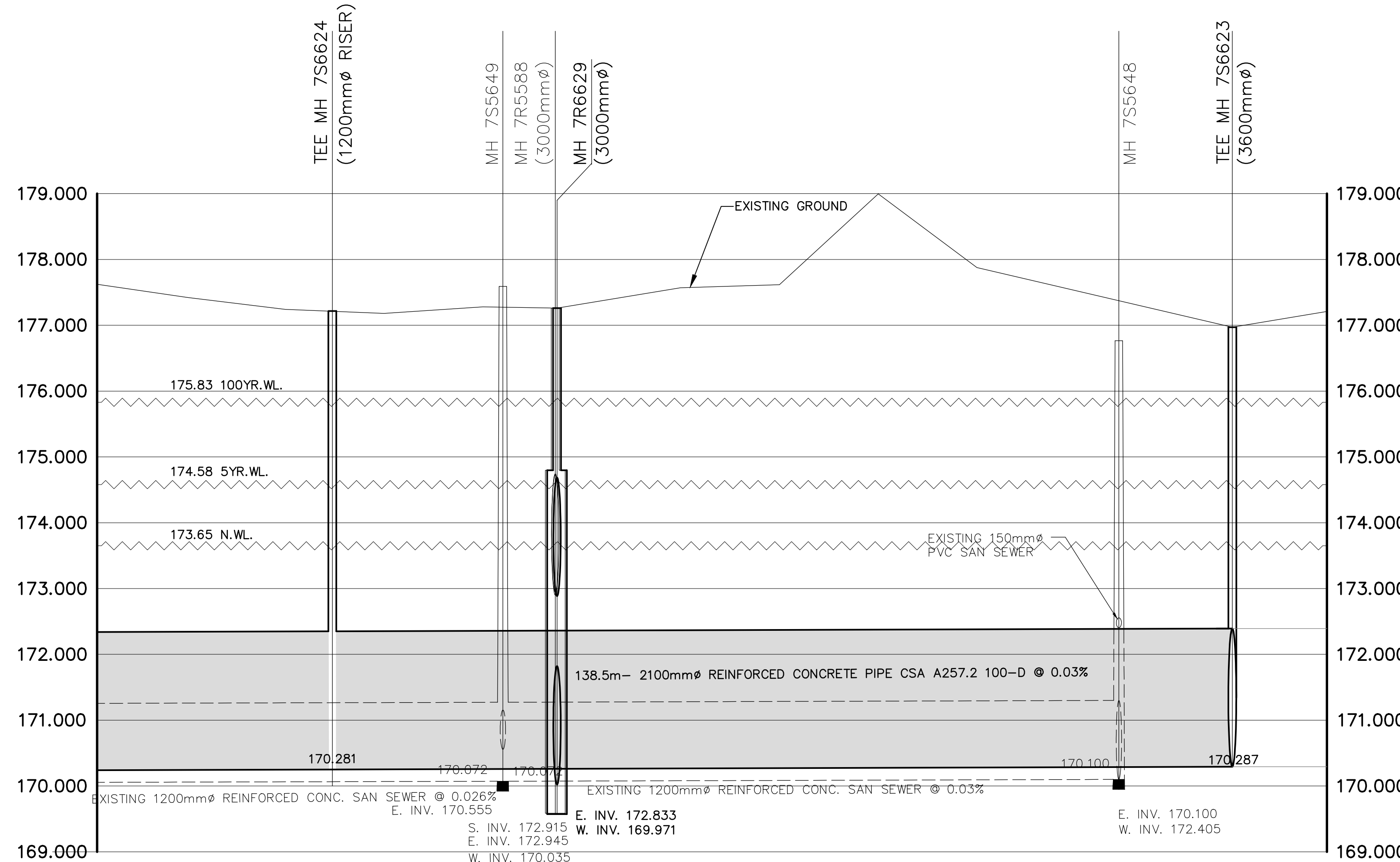
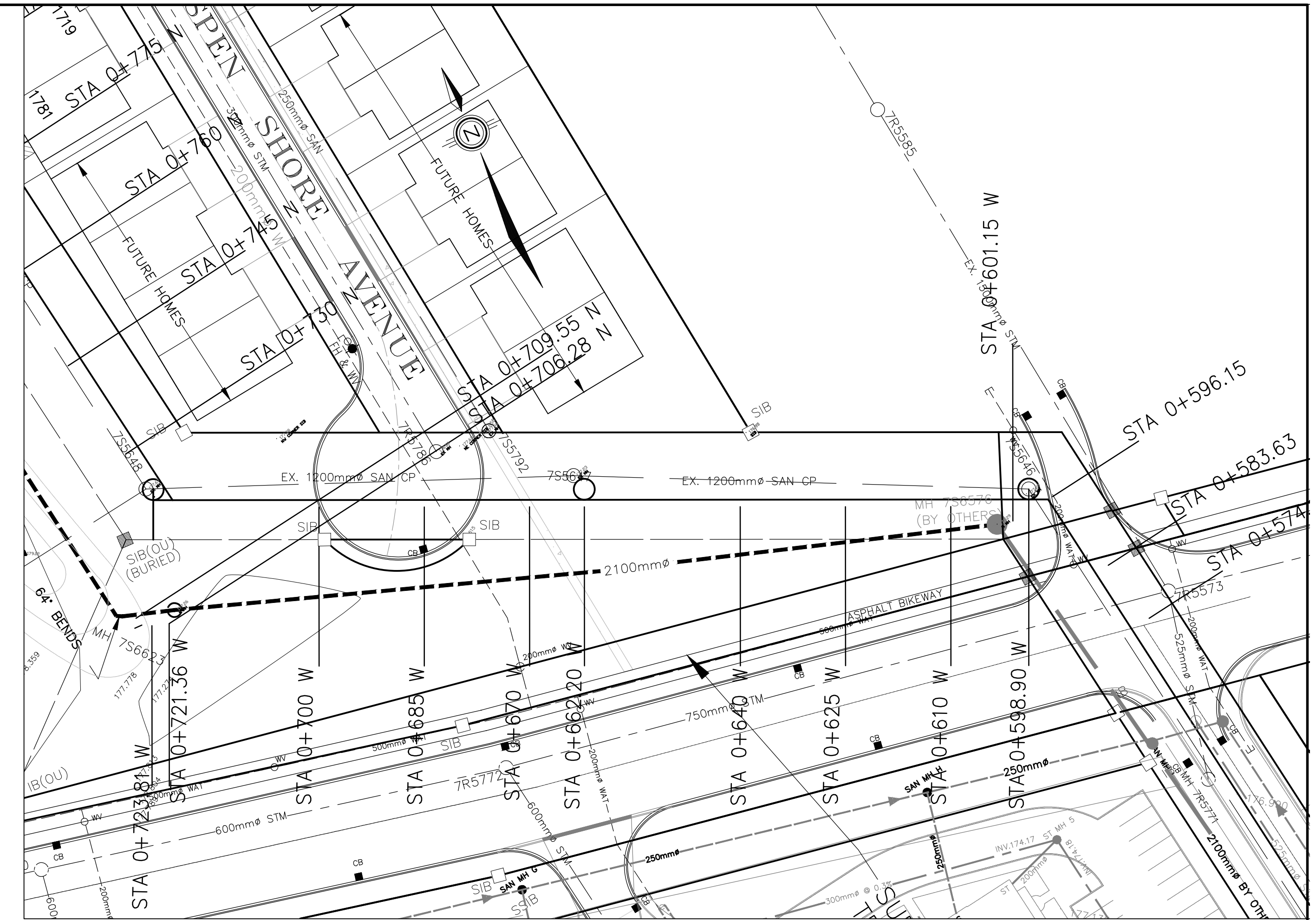
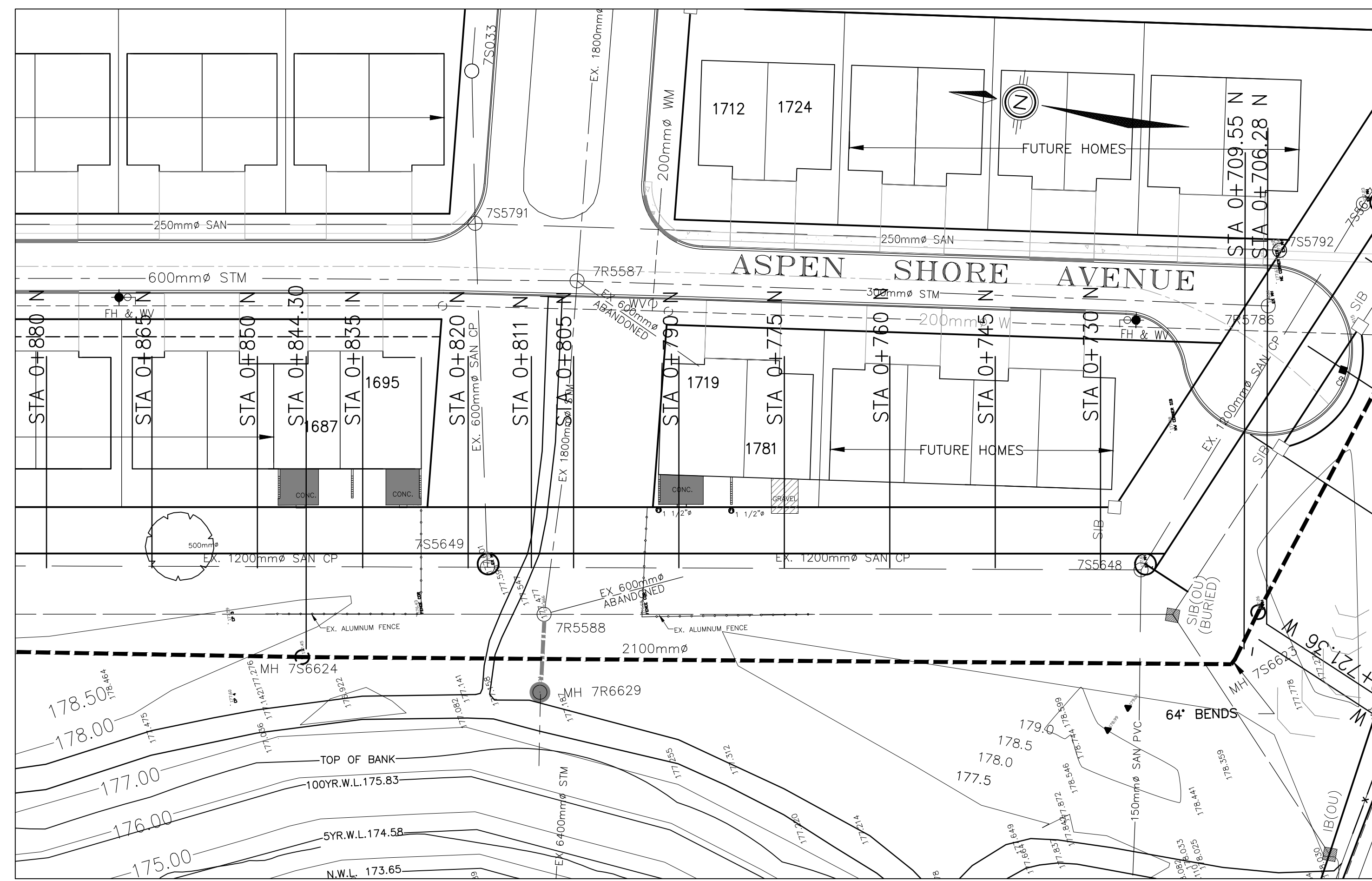
PLAN AND PROFILE
STA 1+500N TO STA 1+880N

PROJECT NO. 09-25
SHEET NO. 6
OF 8

SCALE: H - 1:500
V - 1:50

DESIGN: A.M.C.
CHECKED: R.C.S.
DRAWN: G.S.
CHECKED: R.C.S.
DATE: JANUARY 2010

SEE THIS SHEET 6



APPROVED AS TO FORM IN RELIANCE UPON THE PROFESSIONAL SKILL AND ABILITY OF R.C. SPENCER ASSOCIATES INC., CONSULTING ENGINEERS, AS TO DESIGN AND SPECIFICATIONS.

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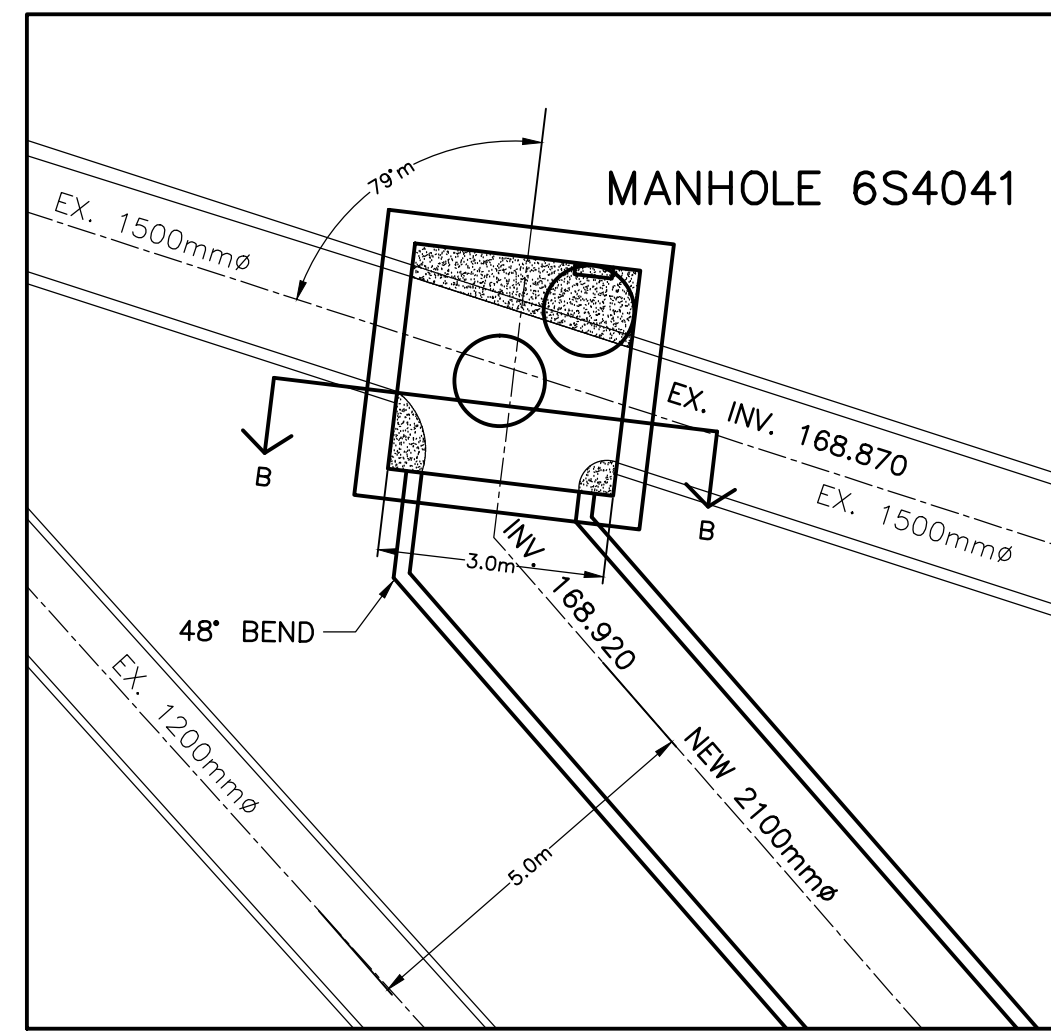
NO.	REVISION	DATE	BY	NO.	REVISION	DATE	BY	SCALE
8.	AS-CONSTRUCTED	13 DEC 2010	RCS	5.	ISSUED FOR TENDER	26 APR 2010	RCS	DESIGN A.M.C.
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SANDWICH SOUTH EMPLOYMENT LANDS
PHASE 2 STAGE 2A & 2B

PROJECT NO. 09-25

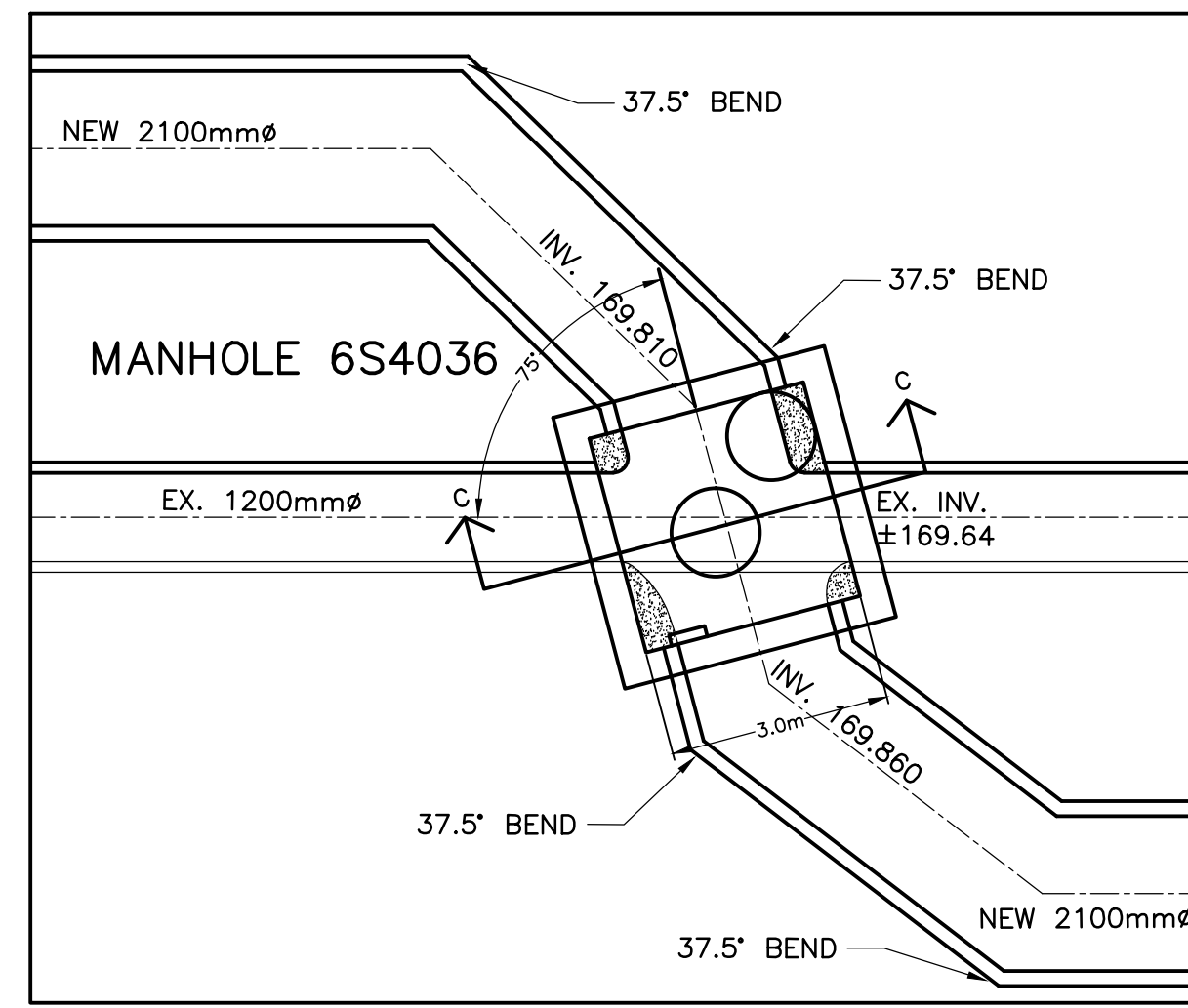
PLAN AND PROFILE
STA. 2+267.3N - STA. 2+345NW
STA. 2+358W - MH 6S881

SHEET NO. 7
OF 8



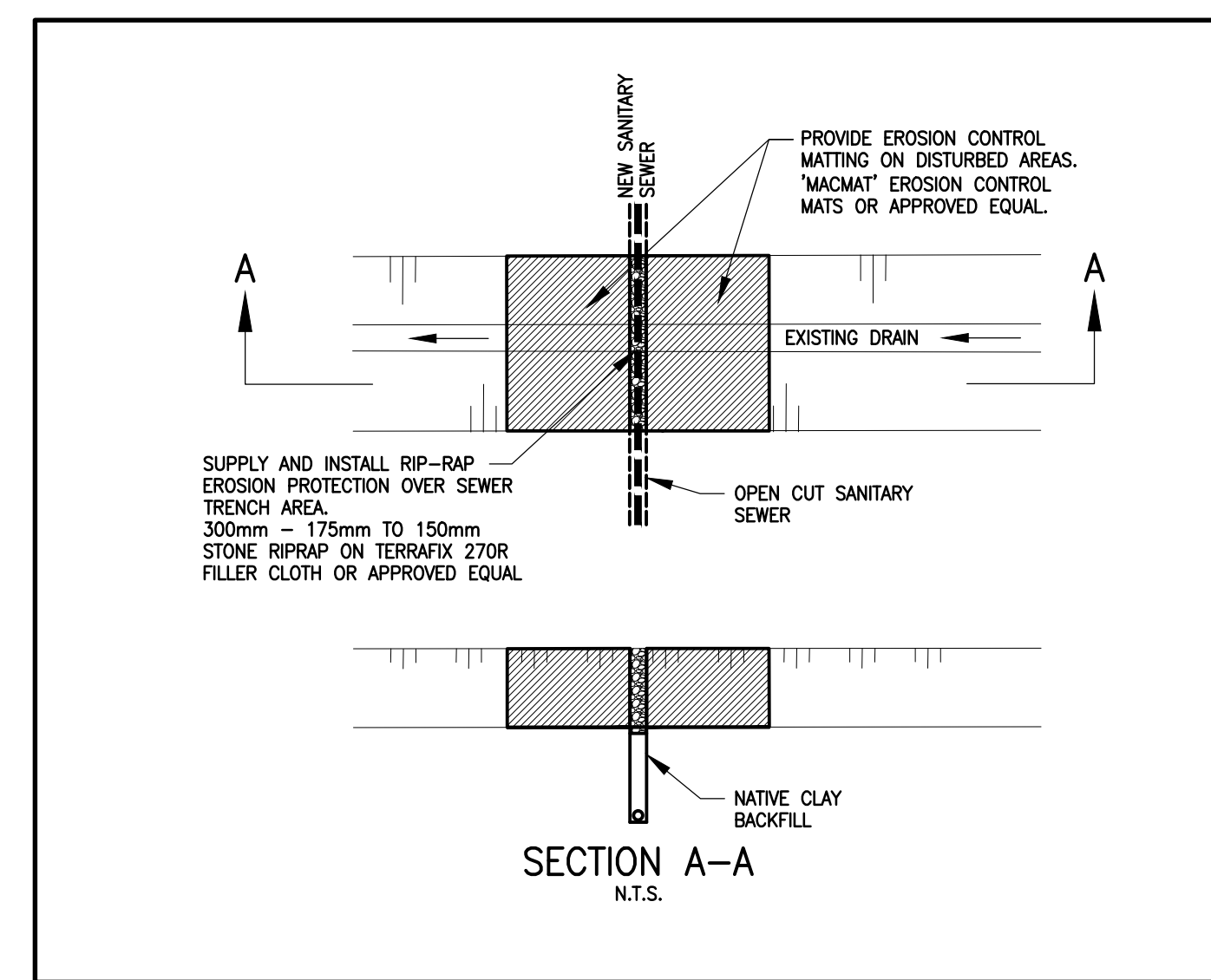
MANHOLE 6S4041 DETAILS

SCALE - 1:100

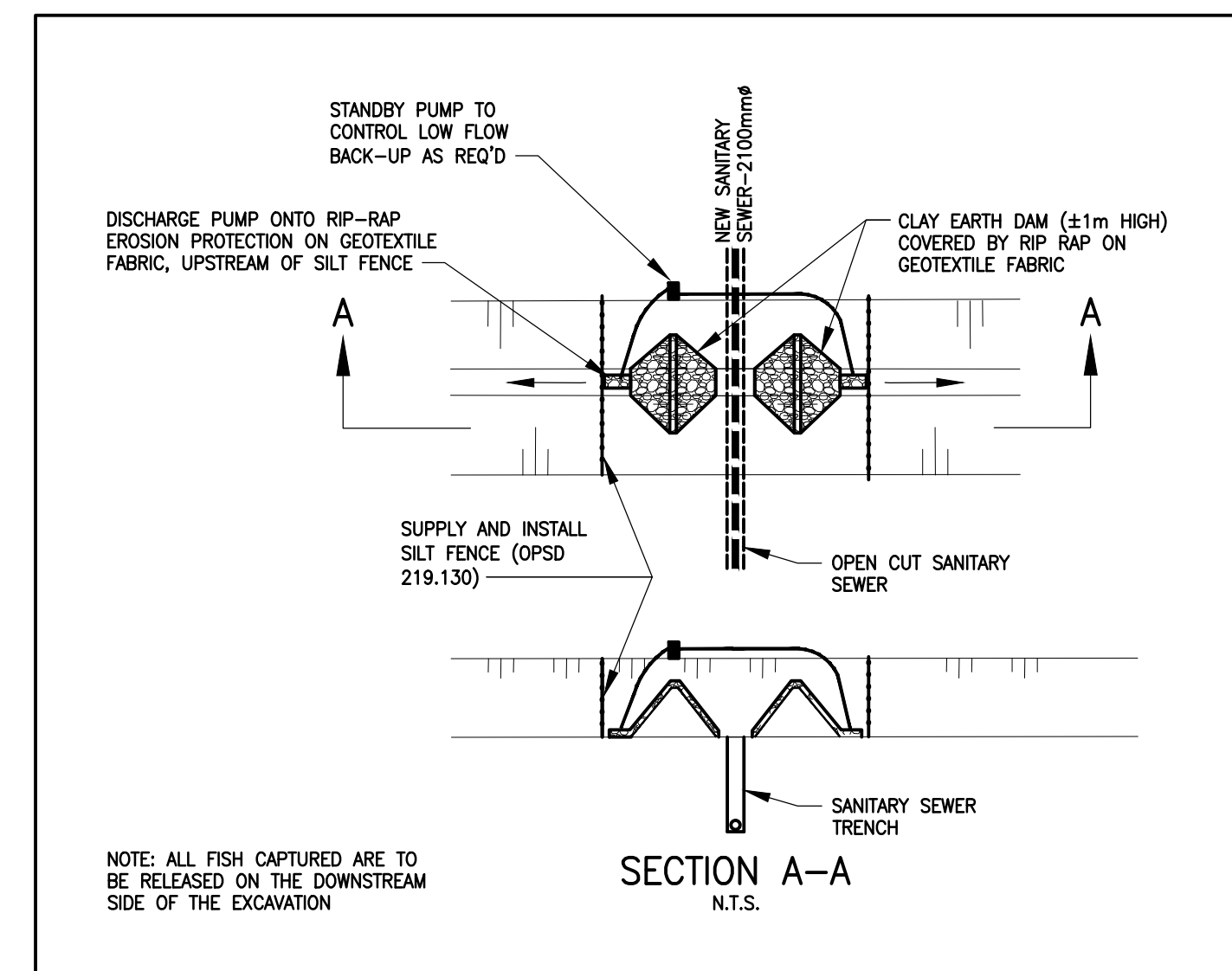
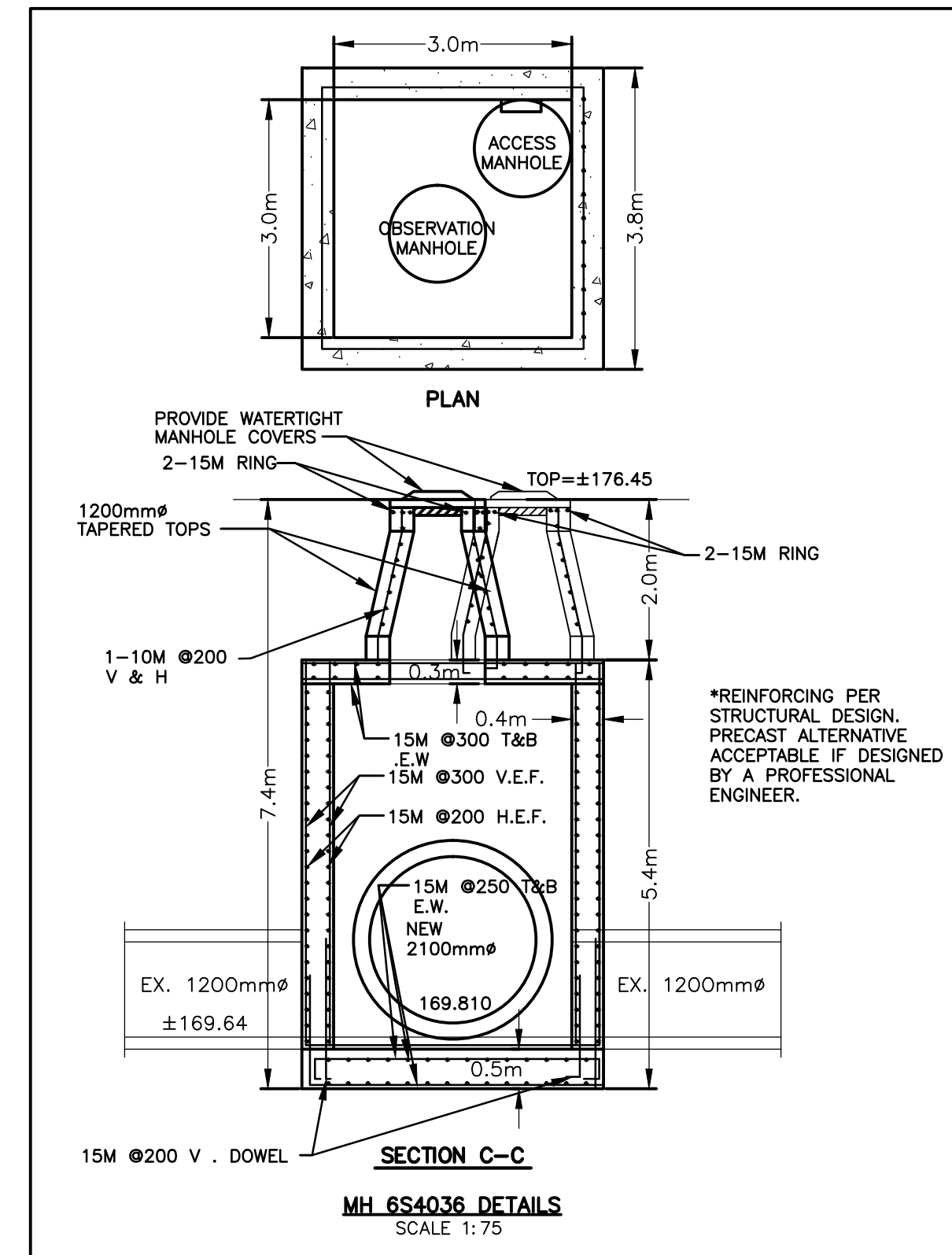
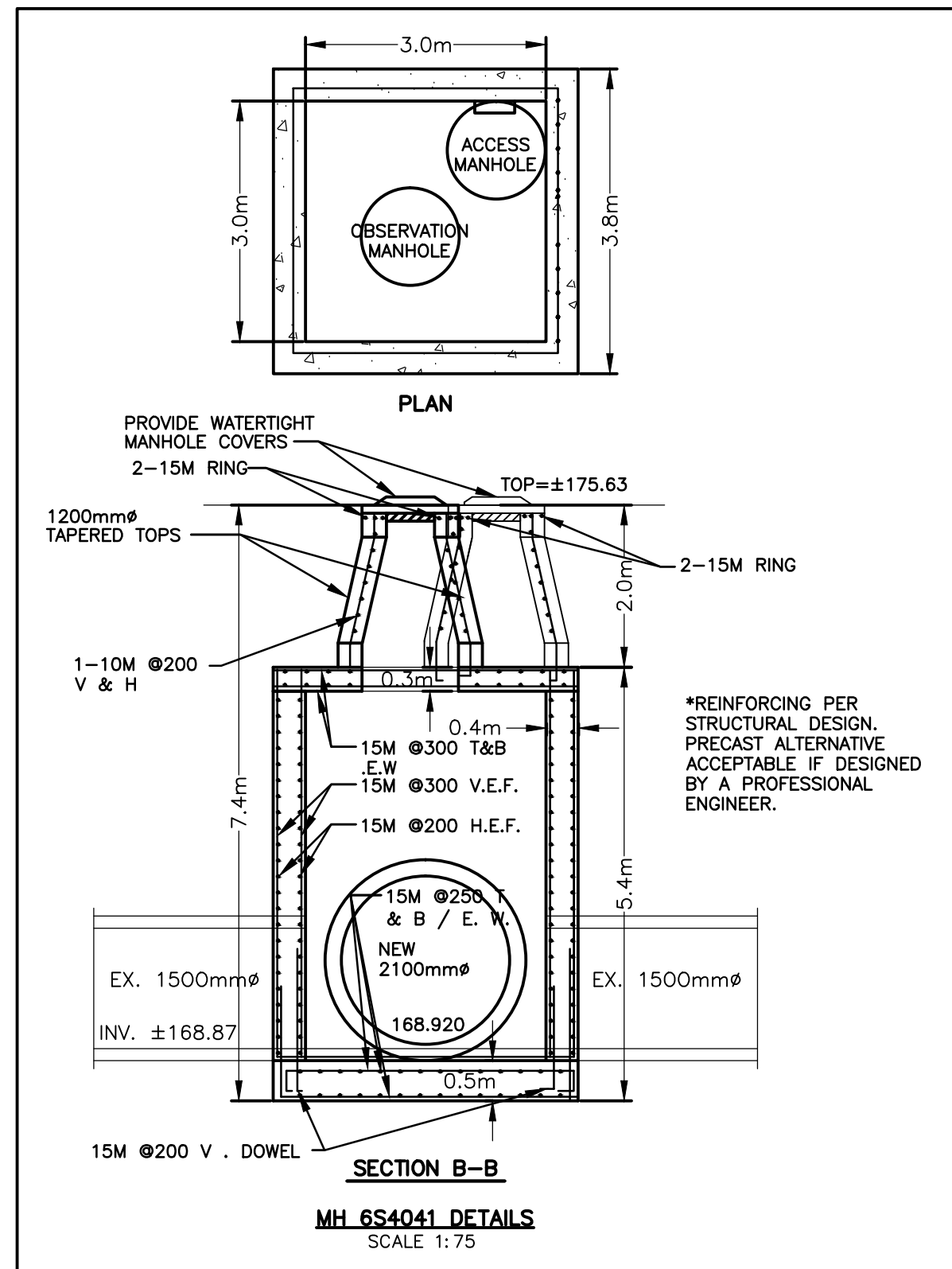
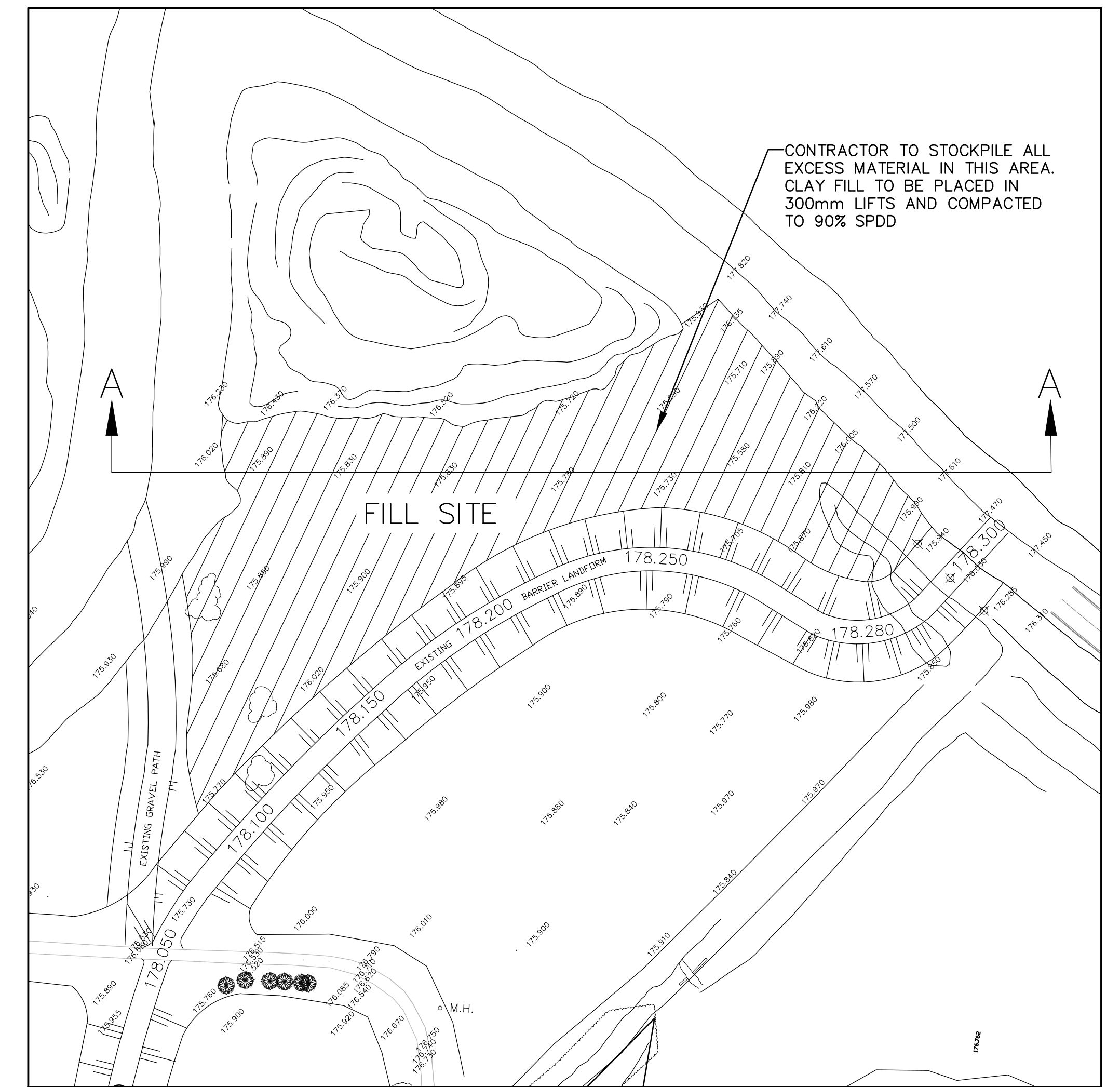


MANHOLE 6S4036 DETAILS

SCALE - 1:100

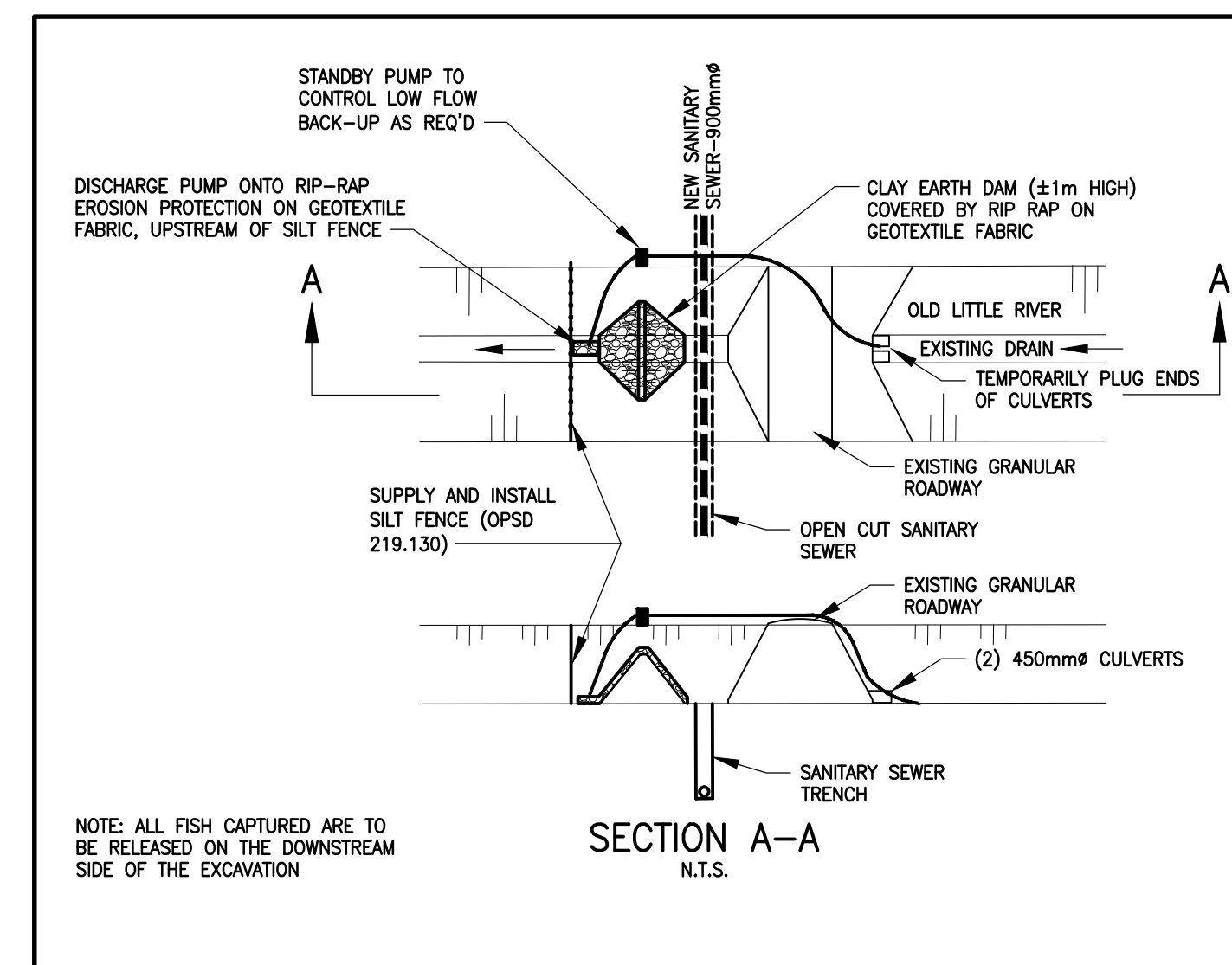
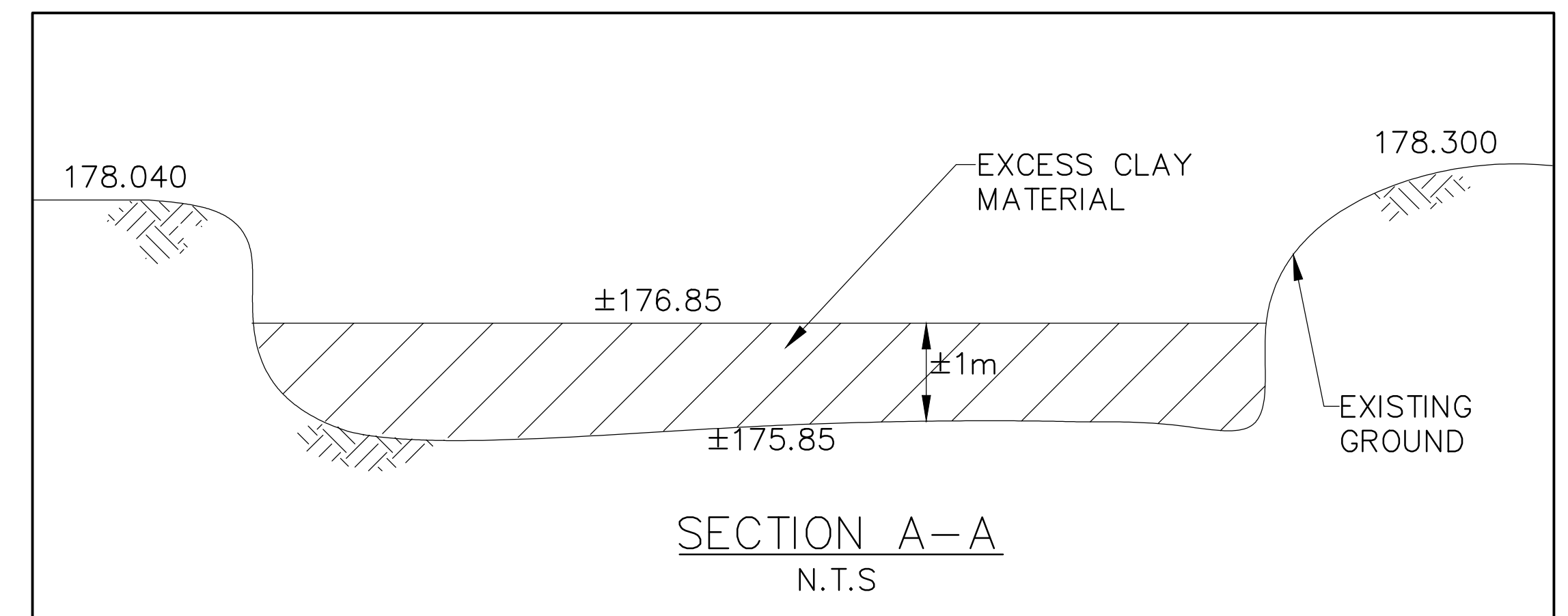


DETAIL 3: PROPOSED RESTORATION PLAN

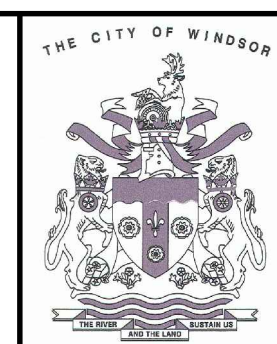
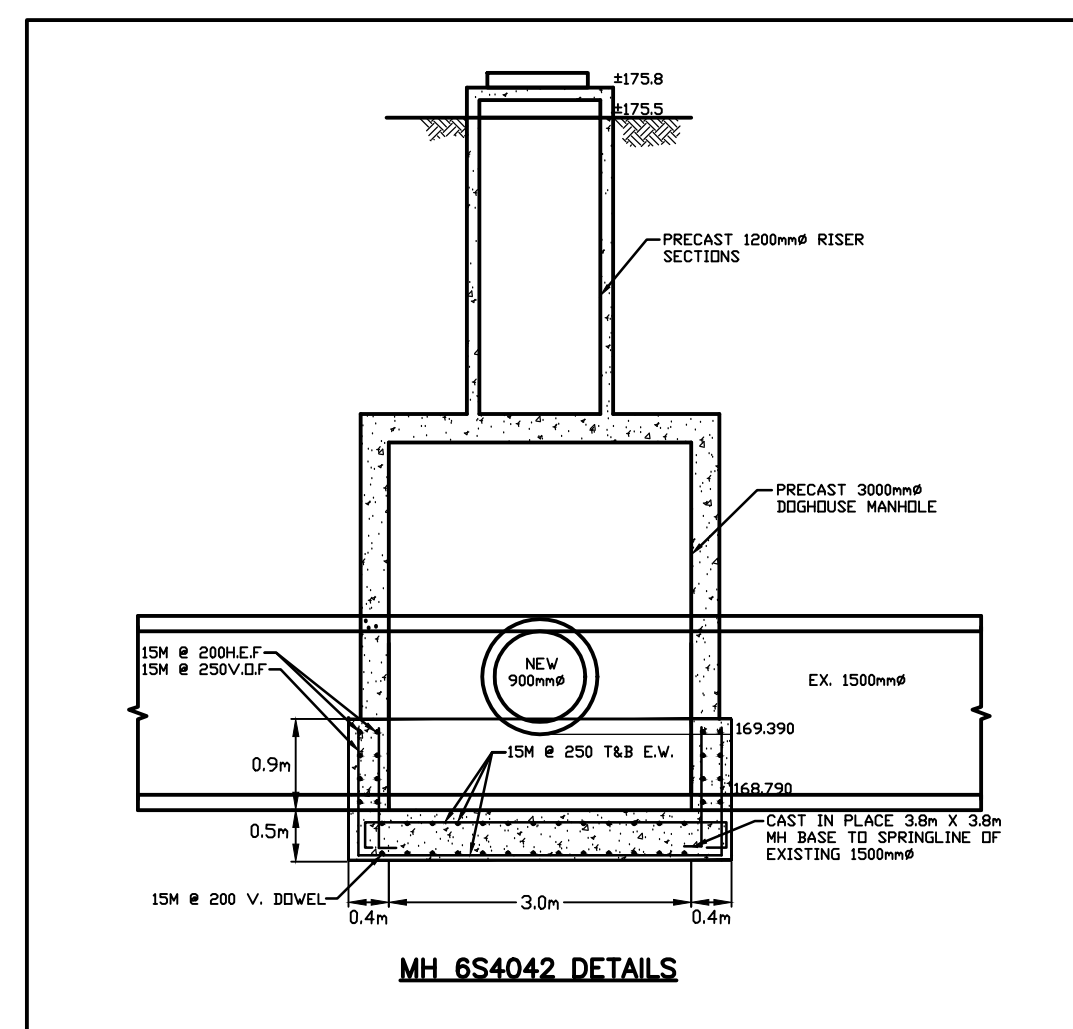


DETAIL 2: PROPOSED WATER CONTROL PLAN EAST MARSH TAP DRAIN CROSSING

*NOTE: NO IN-WATER WORK TO BE DONE BETWEEN MARCH 15 - JUNE 30.



DETAIL 1: PROPOSED WATER CONTROL PLAN OLD LITTLE RIVER CROSSING



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								AS SHOWN

SANDWICH SOUTH EMPLOYMENT LANDS
PHASE 2 STAGE 2A & 2B

MISCELLANEOUS DETAILS

PROJECT NO.
09-25
SHEET NO.
8
OF
8