6th Line Municipal Class Environmental Assessment

County Road 27 to St John's Road Town of Innisfil, ON

September 6, 2016

APPENDIX J: CULVERT INSPECTION REPORT

Culvert Inspection Report

6th Line Municipal Class Environmental Assessment

County Road 27 to St. John s Road *Town of Innisfil, ON* October 3, 2015

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- A. Culvert Location Plan
- B. Centerline Culvert Photographic Inventory Data Sheets

1. INTRODUCTION

1.1 Background and Scope of Work

The Town of Innisfil has retained HDR Corporation (HDR) to conduct a Schedule 'C' Municipal Class Environmental Assessment Study to identify the need for transportation improvements to 6th Line from County Road 27 to St. John's Road. As part of the Municipal Class Environmental Assessment, HDR performed a limited condition survey for all culverts (Major and Minor) within the Town of Innisfils Right-of-Way of the project area.

The scope of work consisted of:

• Visual and surface deterioration survey of all culverts along the roadway (within the Right-of-Way) within the project limits.

The Filed Investigation portion of the assignment was started on April 2, 2015. The study was completed June 19, 2015.

The study area is located just west of the Town of Innisfil and is illustrated in **Figure 1-1** below.

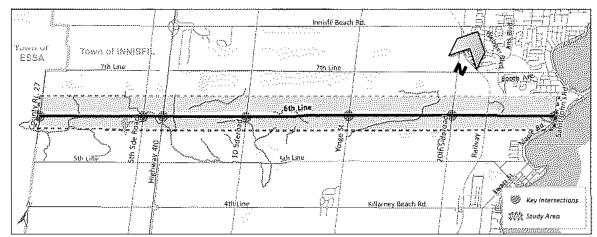


Figure 1-1: Key Plan of the Study Area

2. CULVERT INSPECTION

2.1 <u>Methodology</u>

Field reviews of the existing centreline culverts, entrance culverts and side road culverts within the Towns Right-of-Way along 6th Line Project Limits were undertaken on April 2nd, 2015 and June 19th, 2015 to assess the physical conditions of the culverts.

During the field investigations, culverts were assigned identification numbers. **Appendix A** summarizes each culvert inspected to describe their existing conditions and their corresponding ID number. A **Culvert Location Plan** of the project limits illustrating existing culvert locations as well as assigned identification numbers is provided in **Appendix B**.

For pipes crossing the mainline, data sheets and recommendations will be developed and incorporated into the design. Photos were taken of all culverts during the inspection, and provided to the Town of Innisfil electronically with the final report.

2.2 Inspection Results

There are one hundred and eleven (111) culverts on 6th Line between County Road 27 and St. John's Road:

- Twenty-four (24) centreline culverts:
 - Twenty-three (23) CSP sized 300mm to 1800mm;
 - One (1) Concrete Box sized 1200mm by 800mm;
- Eighty-four (84) entrance culverts:
 - Eighty-one (81) Corrugated Steel Pipe (CSP) culverts sized 200mm to 1200mm;
 - Three (3) High Density Polyethylene culverts sized 400mm.
- Three (3) side road culverts:
 - Three (3) CSP sized 400mm to 1500mm;

Exhibit 2-1: Centreline Culvert ID Key Plan

Exhibit 2-1 is an abbreviated Key Plan. A more detailed map can be found in Appendix B.

To support the design process, Data Sheets for Mainline culverts summarizing the findings and recommendations from the field investigations and photo inventories were developed and are provided in **Appendix C**. Pipes on the approach roads are assumed to be replaced as a result of the roadway platform widening and Data Sheets were not developed. However, pipes were inspected and photo documented, and included in the overall evaluation completed for the corridor.

The physical characteristics, observations, and recommendations for the centreline and entrance culverts are summarized in **Exhibit 2-2 Culvert Summary Table**.

Exhibit 2-2: Culvert Summary Table

Existing	Culvert	Character	istics -	6th Liı	ne Road,	County	Road 27 to S	St. John's R	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_01-01	1	Road CL	CSP	Circle	600	0.8	Minor Sediments	Fair	Fair	Bent - ok	Maintain existing culvert and replace the end sections. Flush to clean the culvert. Extend the culvert to match proposed ditch alignment.
CUL_01-02	2	Road CL	CSP	Circle	500	0.5	None	Rusted	Good	10% buried	Replace existing culvert
CUL_02-01	3	Entrance-L	CSP	Circle	400	0.3	Large rock and some Sediments	Good	Good	Bent - 20% Buried	The road profile is being raised. Replace culvert to match new ditch elevations.
CUL_02-02	4	Entrance-L	CSP	Circle	400	0.3	None	Good	20% Buried	20% Buried	The road profile is being lowered. Replace culvert to match new ditch elevations.
CUL_02-03	5	Entrance-L	CSP	Circle	400	0.6	None	Good	Bent - 30% Buried	Bent - 40% buried	The road profile is being raised. Replace culvert to match new ditch elevations.
CUL_01_03	6	Road CL	CSP	Circle	1100	1.0	None	Good	Good	Good	Maintain existing culvert and provide culvert extension to new ditch alignments.
CUL_02-04	7	Entrance-R	CSP	Circle	500	0.8	None	Good	OK - 10% Buried	Buried	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_01-04	8	Road CL	CSP	Circle	1800	0.7	90% Full Water	Poor	Poor	Poor	This culvert is 90% submerged without any positive flow. Remove and replace the culvert providing adequate slope to provide positive drainage.

Existing	Culvert	Character	istics -	6th Li	ne Road,	County	Road 27 to S	St. John's R	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_02-05	9	Entrance-L	CSP	Circle	400	1.0	Ok - Some Garbage	Some Rust - Lower Half	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-06	10	Entrance-L	CSP	Circle	500	1.0	None	Poor	Fair	Fair	Replace the culvert due to its poor condition. It also needs to match the new ditch alignment.
CUL_02-07	11	Entrance-R	CSP	Circle	200	0.3	Minor Sediments	Good	20% Buried	40% Buried	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-08	12	Entrance-R	CSP	Circle	400	0.5	Minor Sediments	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-09	13	Entrance-R	CSP	Circle	400	0.4	40% Sediments	Good	60% Buried	50% Buried	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-10	14	Entrance-L	CSP	Circle	400	0.5	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-11	15	Entrance-L	CSP	Circle	400	0.2	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.

Existing Culvert Characteristics - 6th Line Road, County Road 27 to St. John's Road												
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)	
CUL_02-12	16	Entrance-L	CSP	Circle	400	0.5	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.	
CUL_01-05	17	Road CL	CSP	Circle	300	1.1	None	Rusted	Fair	Poor Bent/Rusted	Replace culvert due to its substandard size. Upsize to 500mm diameter.	
CUL_02-13	18	Entrance-R	CSP	Circle	400	0.4	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.	
CUL_03-01	19	Sideroad-L	CSP	Circle	1500	0.6	Minor Sediments	Good	Good	Good	Remove sediment. Extend the culvert to match the new ditch alignment.	
CUL_03-02	20	Sideroad-R	CSP	Circle	500	0.5	15% Sediment	Poor	Poor	Fair	Replace culvert due to its poor condition.	
CUL_01-06	21	Road CL	CSP	Circle	800	2.0	90% Water	Poor	Poor	Poor	End of the culvert are plugged. Due to road widening the culvert needs to be extended. Remove and replace the end sections prior to extension. Culvert CUL_01-07 is only few meters away from this culvert. If hydraulic analysis reveals that Culvert CUL_01- 07 has adequate capacity to carry the follow in this area, this culvert can be removed.	

Existing (Culvert	Character	istics -	6th Li	ne Road,	County	Road 27 to S	St. John's Ro	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_01-07	22	Road CL	Conc. Box	Rect.	1200x800	1.0	Garbage Bags	Good	Good	Good	Extend the culvert to match new ditch lines. Flush and clean the culvert.
CUL_02-14	23	Entrance-L	CSP	Circle	400	0.4	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_01-08	24	Road CL	CSP	Circle	1800	2.5	None	Minor Rusting	Good	Good	Extend the culvert at both ends. Replace any damaged end sections.
CUL_02-15	25	Entrance-L	CSP	Circle	800	0.5	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-16	26	Entrance-R	CSP	Circle	350	0.6	Some Garbage	Minor Rusting	Bent / 30% Buried	Bent / 30% Buried	The road profile is being lowered and cover over the culvert will be reduced. Remove and replace the culvert.
CUL_01-09	27	Road CL	CSP	Circle	500	0.7	None	Fair - Rusting	Fair	Fair	Replace existing culvert
CUL_02-17	28	Entrance-L	CSP	Circle	500	0.5	None	Rusting	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-18	29	Entrance-R	CSP	Circle	400	0.6	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.

Existing	Culvert	Character	istics -	6th Li	ne Road,	County	Road 27 to S	St. John's R	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_02-19	30	Entrance-L	CSP	Circle	400	0.6	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-20	31	Entrance-R	CSP	Circle	300	0.3	None	Good	Metal Sheet Covering	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-21	32	Entrance-R	CSP	Circle	500	0.4	20% Sediments	Rusting	Bent / 50% Buried	Bent / 70% Buried	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment
CUL_02-22	33	Entrance-L	CSP	Circle	400	0.3	10% Sediment	Poorr	Poor - 60% Buried	Poor - 60% Buried	Replace culvert
CUL_02-23	34	Entrance-R	CSP	Circle	400	0.4	95% Water	Submerged	Poor - Bent / Buried	Poor - Bent / Buried	Replace culvert
CUL_02-24	35	Entrance-L	CSP	Circle	400	0.5	None	Minor Rusting	Good - Covered with Vegetation	Good - Covered with Vegetation	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment
CUL_01-10	36	Road CL	CSP	Circle	400	0.5	None	Poor	80% Buried	70% Buried	Replace culvert due to its poor condition and substandard size
CUL_03-03	37	Sideroad-L	CSP	Circle	400	0.7	60%	Poor	Buried	Buried	Replace culvert due to its poor condition and substandard size
CUL_02-25	38	Entrance-L	CSP	Circle	500	0.7	None	Good	Good	Good	Culvert will be located within proposed shoulder. Remove and replace culvert.

Existing	Culvert	Character	istics -	6th Li	ne Road,	County	Road 27 to S	St. John's Ro	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_01-11	39	Road CL	CSP	Circle	400	0.5	None	Poor - Rusted Through	Poor - Bent	Poor - Bent	Replace culvert due to its poor condition and substandard size.
CUL_02-26	40	Entrance-L	CSP	Circle	300	0.2	None	Good	Good	Good	Culvert will be located within proposed shoulder. Remove and replace culvert.
CUL_02-27	41	Entrance-L	CSP	Circle	400	0.7	None	Poor - Rusted	Ok	Ok - 30% Buried	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_01-12	42	Road CL	CSP	Circle	1200	1.0	None	Bottom Half Rusted	Poor	Poor	Replace the culvert due to its poor condition.
CUL_02-28	43	Entrance-R	CSP	Circle	400	0.4	None	Good	Good	Good	Culvert will be located within proposed shoulder. Remove and replace culvert.
CUL_02-29	44	Entrance-L	CSP	Circle	300	0.4	Buried	Buried	Buried	Buried	Replace culvert.
CUL_02-30	45	Entrance-R	CSP	Circle	400	0.3	Some Brush	Good	Good	Good	Culvert will be located within proposed shoulder. Remove and replace culvert.
CUL_01-13	46	Road CL	CSP	Circle	800	1.0	90% Blocked	Fair	Fair	Fair	There is no positive flow, most likely the bottom of the culvert is rusted due to stagnant water. Replace culvert.
CUL_02-31	47	Entrance-L	CSP	Circle	400	0.3	None	Bottom Half Rusted	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.

Existing	Culvert	Character	istics -	6th Li	ne Road,	County	Road 27 to S	St. John's R	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_02-32	48	Entrance-R	CSP	Circle	400	0.6	None	Good	Good	Good	Culvert will be located within proposed shoulder. Remove and replace culvert.
CUL_02-33	49	Entrance-R	HDPE	Circle	400	0.6	None	Good	Good	Good	Road is being raised and it will be in fill area. Replace the culvert to the new ditch alignment.
CUL_02-34	50	Entrance-L	CSP	Circle	400	0.5	Some Brush	Good	Good	Good	Road is being raised and it will be in fill area. Replace the culvert to the new ditch alignment.
CUL_02-35	51	Entrance-R	HDPE	Circle	400	0.4	None	Ok	50% Buried	50% Buried	Road is being raised and it will be in fill area. Replace the culvert to the new ditch alignment.
CUL_01-14	52	Road CL	CSP	Circle	600	1.5	None	Fair	20% Buried - Bent	90% Buried	Most likely the bottom is rusted due to blockage. Replace culvert.
CUL_02-36	53	Entrance-L	CSP	Circle	400	0.4	None	Good	Good	Good	The road is being lowered, it will not have sufficient cover. Replace culvert to the new ditch alignment.
CUL_02-37	54	Entrance-L	CSP	Circle	400	0.4	Buried	Rusting	60% Buried	Buried	Replace culvert due to its poor condition.
CUL_02-38	55	Entrance-L	CSP	Circle	500	0.4	None	Good	Good	Bent	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-39	56	Entrance-L	CSP	Circle	400	0.3	Buried	Poor	Buried	90% Buried	Replace culvert due to its poor condition.

Existing (Culvert	Character	istics -	6th Lir	ne Road,	County	Road 27 to S	St. John's R	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_02-40	57	Entrance-L	CSP	Circle	500	0.3	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-41	58	Entrance-L	CSP	Circle	500	0.3	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-42	59	Entrance-R	CSP	Circle	300	0.3	Culvert Crushed	Poor	90% Buried	90% Buried	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-43	60	Entrance-R	CSP	Circle	300	0.2	Some Sediments	Ok - Rusting	80% Buried	80% Buried	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-44	61	Entrance-L	CSP	Circle	500	0.4	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_02-45	62	Entrance-L	CSP	Circle	400	0.7	Some Sediments	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.

Existing (Existing Culvert Characteristics - 6th Line Road, County Road 27 to St. John's Road												
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)		
CUL_02-46	63	Entrance-R	CSP	Circle	400	0.4	None	Ok	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.		
CUL_02-47	64	Entrance-R	CSP	Circle	400	0.5	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.		
CUL_02-48	65	Entrance-L	CSP	Circle	400	0.8	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.		
CUL_01-15	66	Road CL	CSP	Circle	400	1.0	None	Good	Good	Good	Replace the culvert due to its substandard size.		
CUL_02-49	67	Entrance-L	CSP	Circle	400	0.7	None	Poor - Rusted	Poor - Bent	Poor - Bent	Replace the culvert due to its poor condition.		
CUL_01-16	68	Road CL	CSP	Circle	600	1.2	lce	Good	Fair	Good	Extend the culvert and replace any damaged end sections.		
CUL_02-50	69	Entrance-R	CSP	Circle	400	0.7	None	Good	Fair	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.		
CUL_02-51	70	Entrance-R	CSP	Circle	400	1.0	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.		

Existing	Existing Culvert Characteristics - 6th Line Road, County Road 27 to St. John's Road											
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)	
CUL_02-52	71	Entrance-L	CSP	Circle	400	1.0	10% Sediment	Good	Good	Poor	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.	
CUL_01-17	72	Road CL	CSP	Circle	600	0.7	Water 50%	Good	Fair	Fair	Clean the culvert, extend the culvert to new ditch alignment.	
CUL_02-53	73	Entrance-R	CSP	Circle	500	1.5	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.	
CUL_02-54	74	Entrance-R	CSP	Circle	400	1.2	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.	
CUL_02-55	75	Entrance-R	CSP	Circle	400	0.7	None	Good	60% Buried	60% Buried	Replace culvert due to its poor condition.	
CUL_02-56	76	Entrance-L	CSP	Circle	400	0.4	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.	
CUL_02-57	77	Entrance-R	CSP	Circle	400	0.4	Buried	Ok	Buried	Buried	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.	

Existing	Culvert	Character	istics -	6th Li	ne Road,	County	Road 27 to S	St. John's R	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_02-58	78	Entrance-L	CSP	Circle	400	0.5	None	Good	Good	Good	Due to road widening ditches are being realigned further back. Need to remove and replace the culvert to match the new ditch alignment.
CUL_01-18	79	Road CL	CSP	Circle	700	0.6	10% Sediment	Poor	Poor - Deformed	Fair - 10% Sediment	Deformed inlet. Replace culvert due to its poor condition.
CUL_01-19	80	Road CL	CSP	Circle	700	0.6	20% Sed./Debris	Fair	Fair	Buried in Veg.	Clean the culvert, remove end sections and extend to the new ditch alignment.
CUL_02-59	81	Entrance-R	HDPE	Circle	400	0.3	Veg.	Good	W-Veg.	E-Veg.	Remove the culvert since this area is being urbanized.
CUL_02-60	82	Entrance-R	CSP	Circle	400	0.1	Sed/Veg/Debri	Ok	W-Veg.	E-Poor	Remove the culvert since this area is being urbanized.
CUL_02-61	83	Entrance-R	CSP	Circle	350	0.1	Sediment	Good	W-Good	E-Poor	Remove the culvert since this area is being urbanized.
CUL_02-62	84	Entrance-L	CSP	Circle	400	0.3	Severe Veg.	Ok	W-Poor	E-Veg.	Remove the culvert since this area is being urbanized.
CUL_02-63	85	Entrance-L	CSP	Circle	400	0.3	Severe Veg.	Good	W-Poor	E-Veg.	Remove the culvert since this area is being urbanized.
CUL_02-64	86	Entrance-R	CSP	Circle	400	0.1	Severe Veg.	Poor	E-Poor	W-Poor	Remove the culvert since this area is being urbanized.
CUL_02-65	87	Entrance-L	CSP	Circle	300	0.5	50%	Ok	E-Veg.	W-Poor	Remove the culvert since this area is being urbanized.
CUL_02-66	88	Entrance-R	CSP	Circle	500	1.0	60%	Good	W-Poor	E-Poor	Remove the culvert since this area is being urbanized.

Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_02-67	89	Entrance-R	CSP	Circle	900	(m) 0.5	40%	Good	E-Poor	W-Poor	Remove the culvert since this area is being urbanized.
CUL_02-68	90	Entrance-L	CSP	Circle	400	0.6	Veg./Mud	Poor	W-Buried	E-Buried	Remove the culvert since this area is being urbanized.
CUL_02-69	91	Entrance-R	CSP	Circle	400	0.6	Severe Veg.	Poor	W-Buried.	E-Buried	Remove the culvert since this area is being urbanized.
CUL_02-70	92	Entrance-R	CSP	Circle	400	0.3	Veg./Debris	Ok	W-Poor	E-Ok	Remove the culvert since this area is being urbanized.
CUL_01-20	93	Road CL	CSP	Circle	500	1.0	5%	Good	Good	S-Veg	Clean the culvert, remove en sections and extend to the new ditch alignment.
CUL_02-71	94	Entrance-R	CSP	Circle	600	0.3	10%	Ok	E-Ok	W-Good	Remove the culvert since this area is being urbanized.
CUL_01-21	95	Road CL	CSP	Circle	650	0.3	Mild Debris	Good	Good	Fair – Moderate Deformation	Clean the culvert, remove en sections and extend to the new ditch alignment.
CUL_02-72	96	Entrance-L	CSP	Circle	400		Completely Bur	ied By Stones fo	r construction drivew	ay	Remove the culvert since this area is being urbanized.
CUL_02-73	97	Entrance-L	CSP	Circle	600	0.2	10% Sed.	Good	W-Good	E-Good	Remove the culvert since this area is being urbanized.
CUL_01-22	98	Road CL	CSP	Circle	400	1.5	65% Water/Sed	Poor-Rust	Poor – 60% Blocked	Poor – 60% Blocked	Replace the culvert.
CUL_02-74	99	Entrance-R	CSP	Circle	1200	0.7	50%Water/Sed	Poor-Rust	W-Poor	E-Poor	Remove the culvert since the area is being urbanized.
CUL_01-23	100	Road CL	CSP	Circle	800	0.1	40% Water	Good	Fair-10% Water	Fair-40% Water	Clean the culvert, remove en sections and extend to the new ditch alignment.

Existing	Culvert	Character	istics -	6th Li	ne Road,	County	Road 27 to S	St. John's R	oad		
Culvert ID	Culvert #	Crossing Type	Туре	Shape	Size (mm)	Fill Over Culvert (m)	Blockage in Culvert	Culvert Condition	Inlet Condition	Outlet Condition	Recommendation(s)
CUL_02-75	101	Entrance-R	CSP	Circle	400	0.1	50% Sed.	Poor	W-Poor	E-Poor	Remove the culvert since this area is being urbanized.
CUL_02-76	102	Entrance-R	CSP	Circle	400	0.2	100%	Poor	W-Poor	E-Poor	Remove the culvert since this area is being urbanized.
CUL_02-77	103	Entrance-L	CSP	Circle	400	0.2	50% Water	Poor	W-Poor	E-Good	Remove the culvert since this area is being urbanized.
CUL_02-78	104	Entrance-R	CSP	Circle	300	0.2	None	Good	W-Good	E-Ok	Remove the culvert since this area is being urbanized.
CUL_02-79	105	Entrance-R	CSP	Circle	300	0.1	15%	Poor	W-Poor	E-Good	Remove the culvert since this area is being urbanized.
CUL_02-80	106	Entrance-R	CSP	Circle	300	0.1	100%	Poor	W-Poor	E-Poor	Remove the culvert since this area is being urbanized.
CUL_02-81	107	Entrance-L	CSP	Circle	400	0.1	10%	Good	W-Good	E-Good	Remove the culvert since this area is being urbanized.
CUL_02-82	108	Entrance-R	CSP	Circle	400	0.3	80%	Poor	W-Poor	E-Poor	Remove the culvert since this area is being urbanized.
CUL_02-83	109	Entrance-R	CSP	Circle	300	0.3	20%	Good	W-Good	E-Ok	Remove the culvert since this area is being urbanized.
CUL_02-84	110	Entrance-R	CSP	Circle	300	0.3	20%	Good	W-Good	E-Good	Remove the culvert since this area is being urbanized.
CUL_01-24	111	Road CL	CSP	Circle	500	0.3	10%	Fair	Poor- Rust/Deformation	Fair	Replace the culvert due to its poor condition.

3. SUMMARY AND RECOMMENDATIONS

The centreline culverts in this corridor range from being in poor condition to good condition. The majority require maintenance or replacement based on current physical conditions and planned roadway improvements.

Extensive sediment accumulation was observed in Culverts 1-01, 1-04, 1-05, 1-06, 1-10, 1-11, 01-13, 1-14, 1-17, 1-18, 1-19, 1-20, 1-221-23 and 1-24. To maintain the functionality of this system it is recommended that all culverts be flushed and cleaned out if the pipe is intended to be left in place and extended.

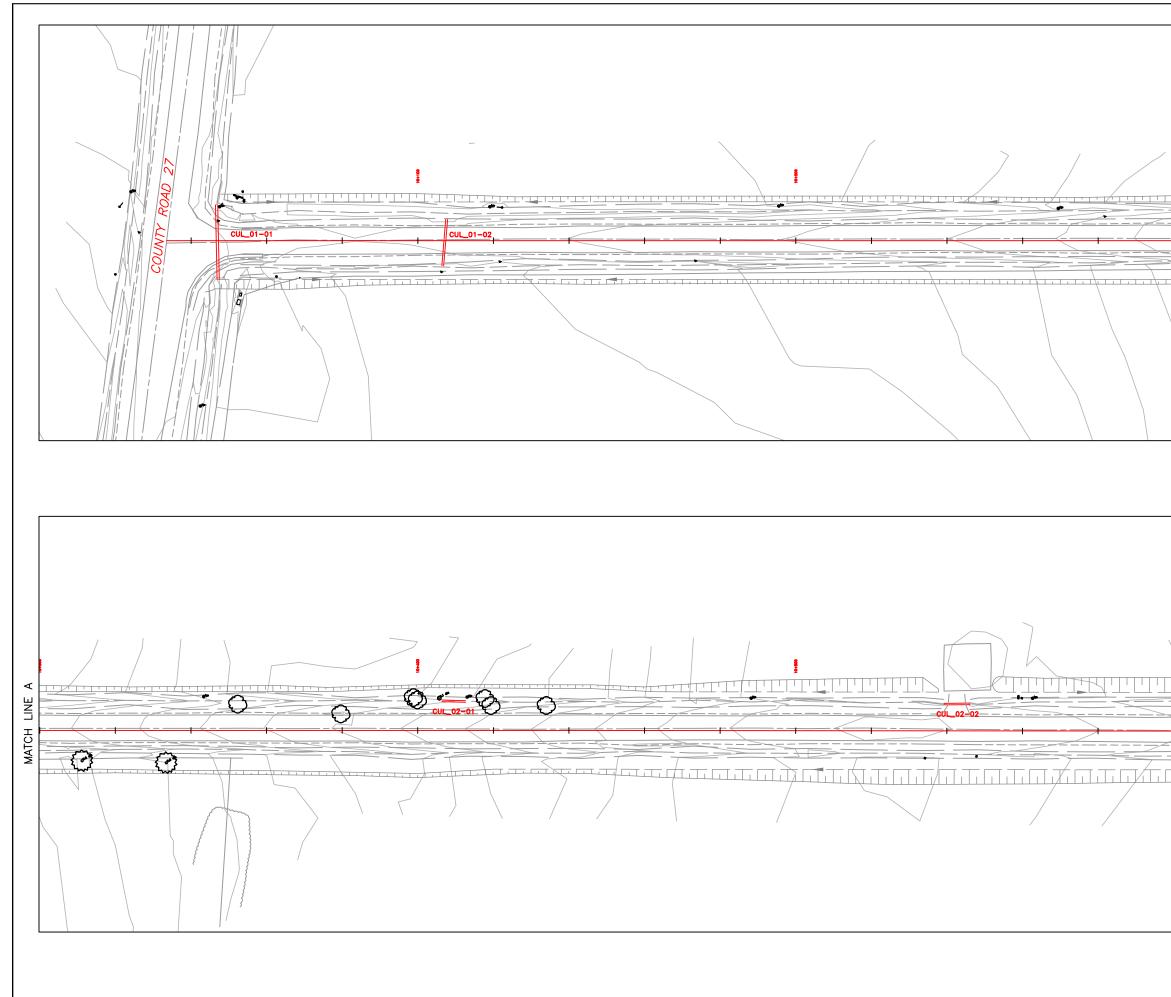
Due to the sediment it was difficult to assess the corrosion of some culverts but significant rusting was still visible for 1-02, 1-05, 1-08, 1-09, 1-11, 1-12, 1-22 and 1-24. These pipes are recommended for replacement.

Severe deformation of culverts 1-05, 1-11, 1-18, 1-21, 1-22 and 1-24 were observed. Replacements of these culverts are recommended.

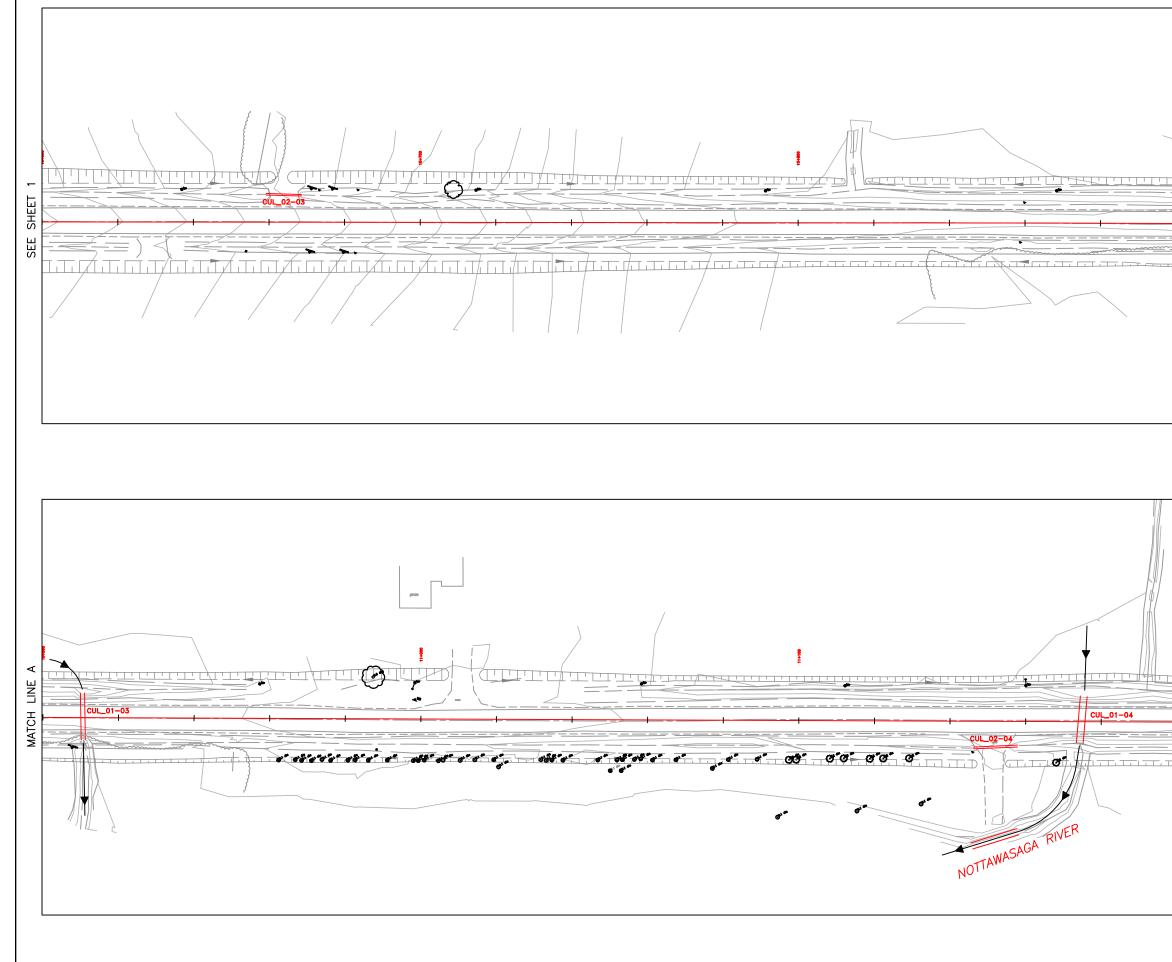
Culverts 1-10, 1-17, 1-19 and 1-23 were not accessed during the site visit (due to limited accessibility on private lands). Additional investigations are required during detailed design.

Culverts on approach and sideroads should be replaced as needed to support the roadway platform expansion.

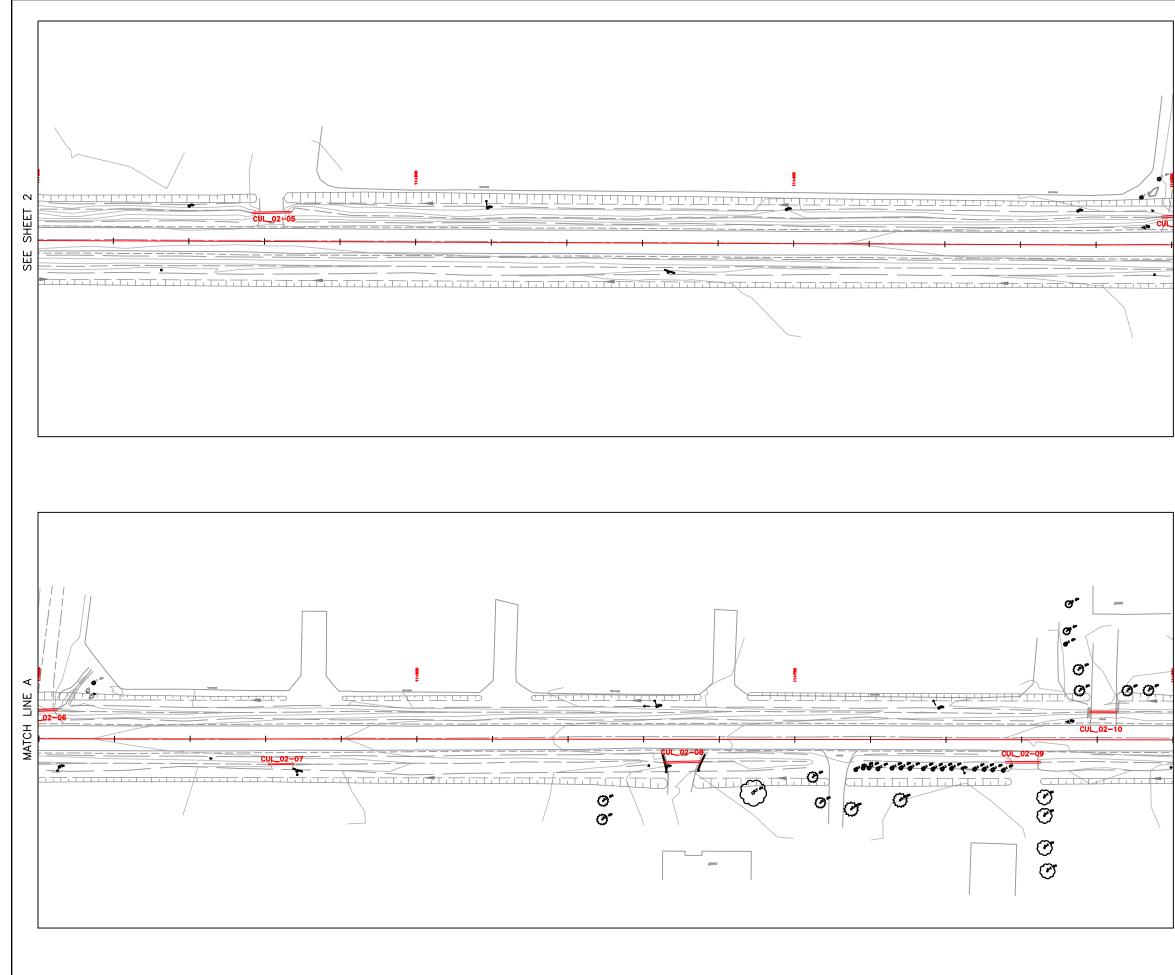
Appendix A Culvert Location Map



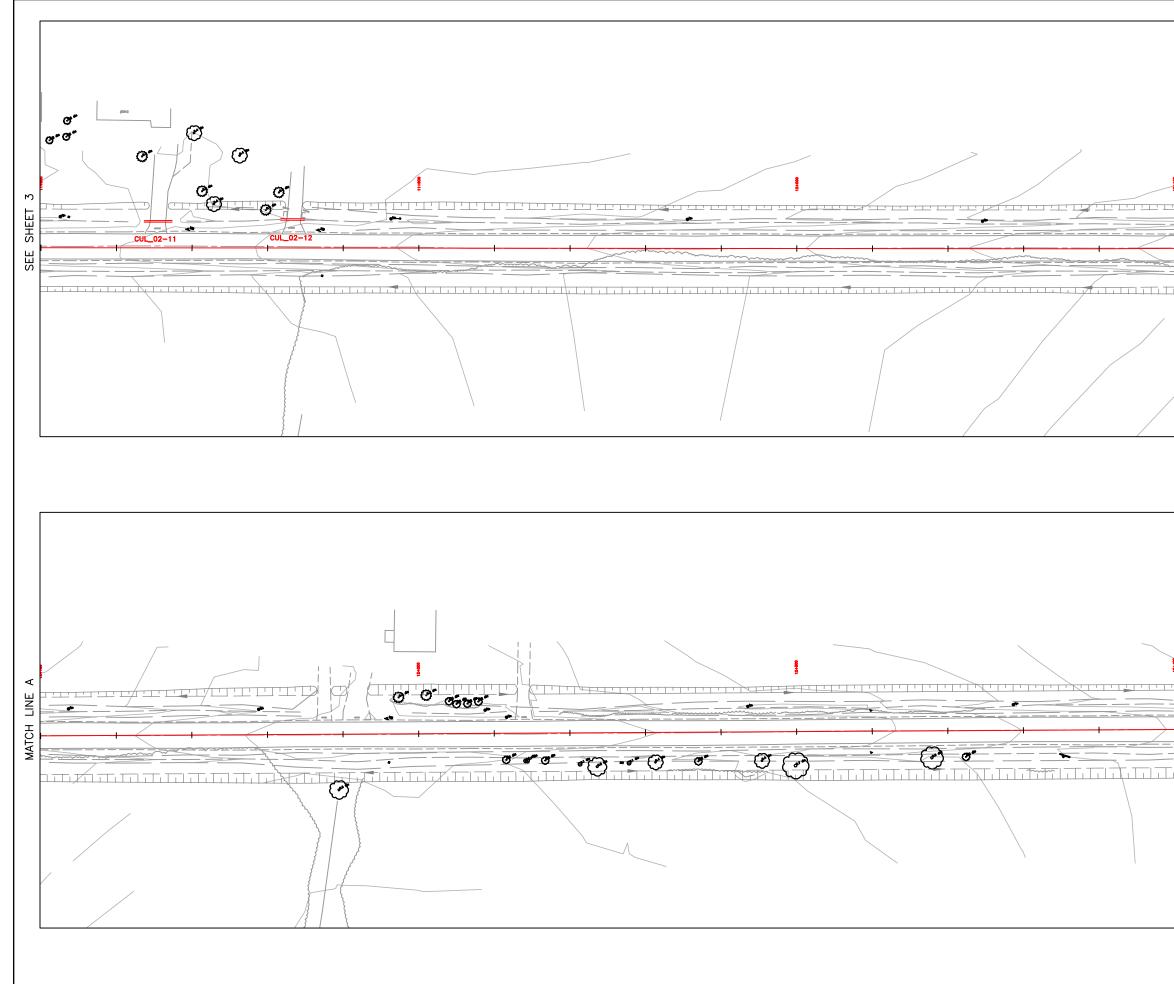
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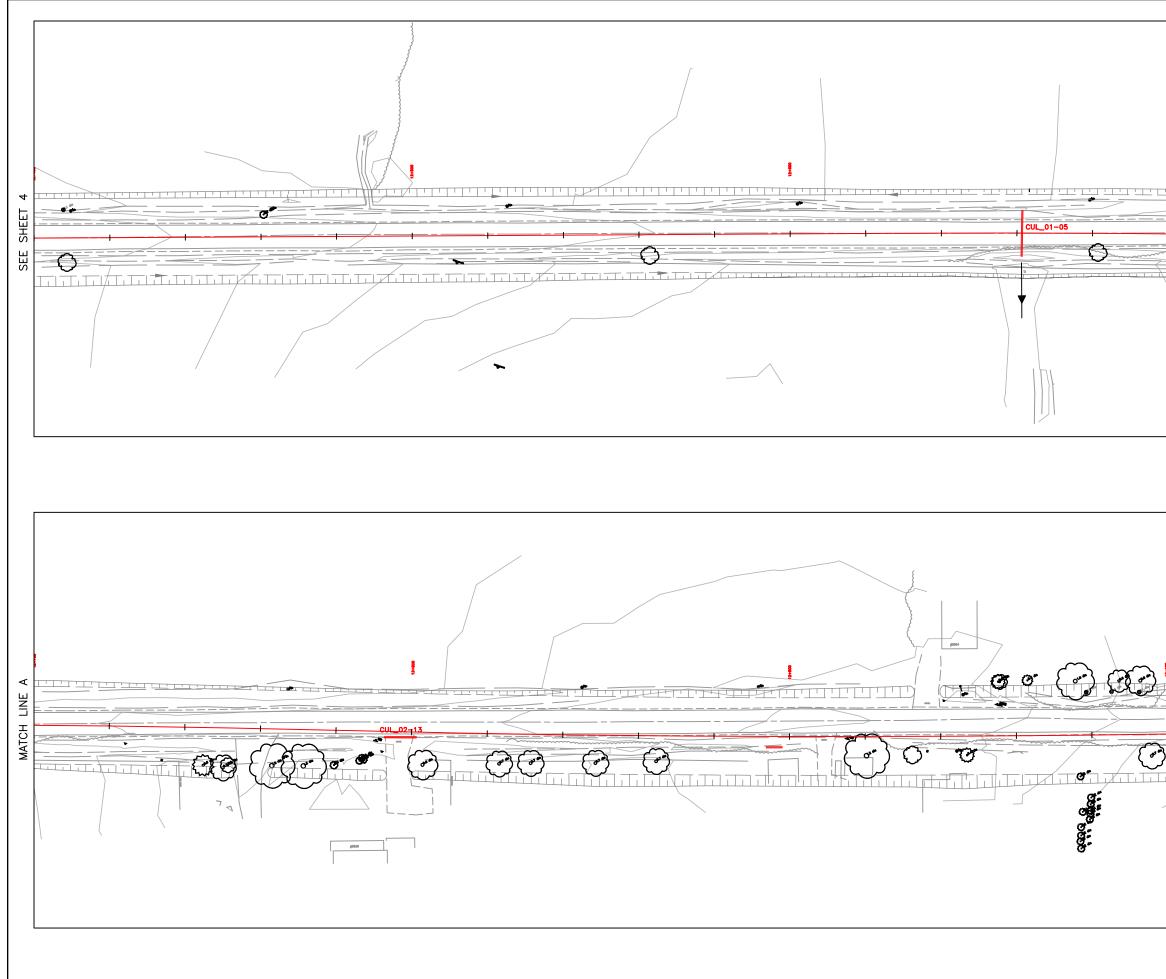
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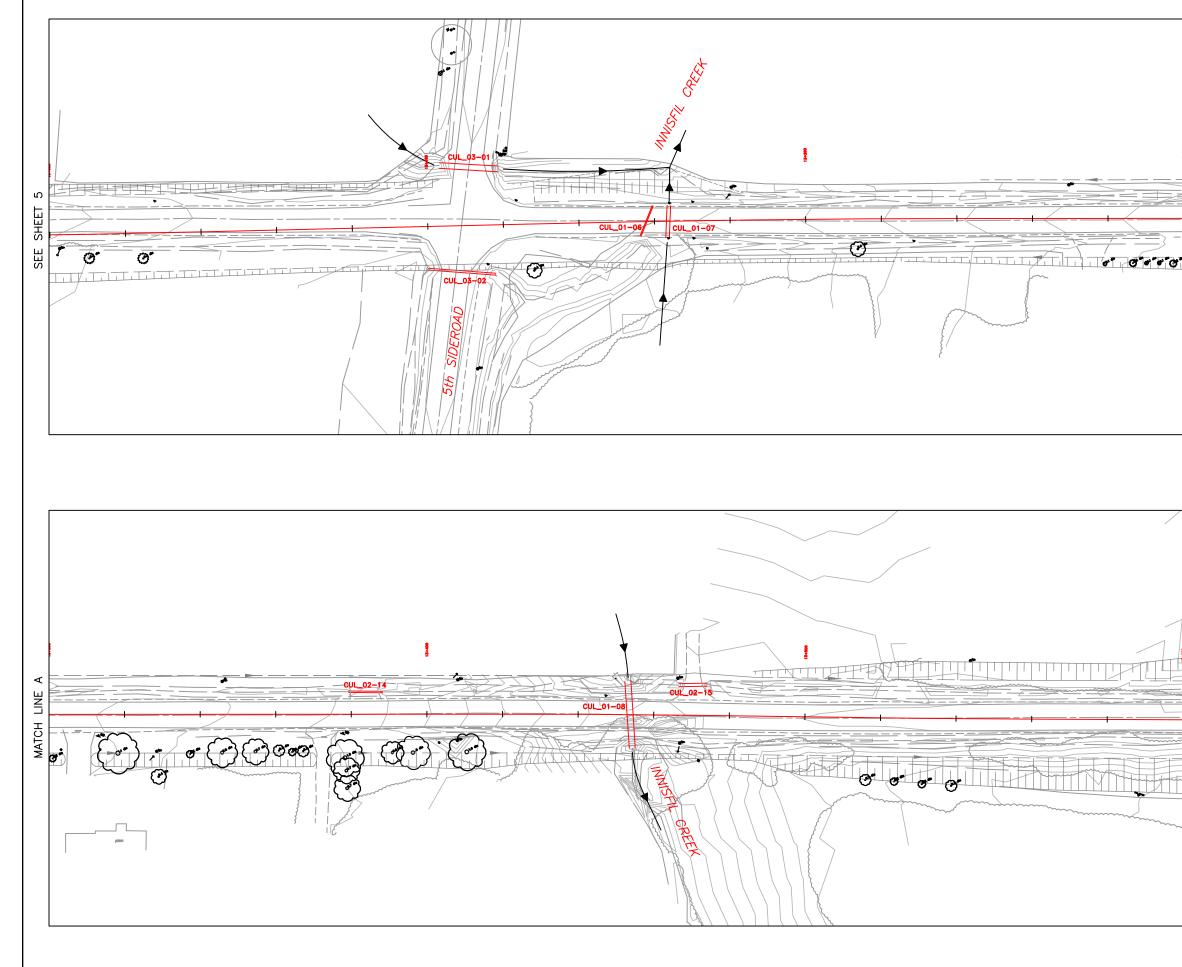
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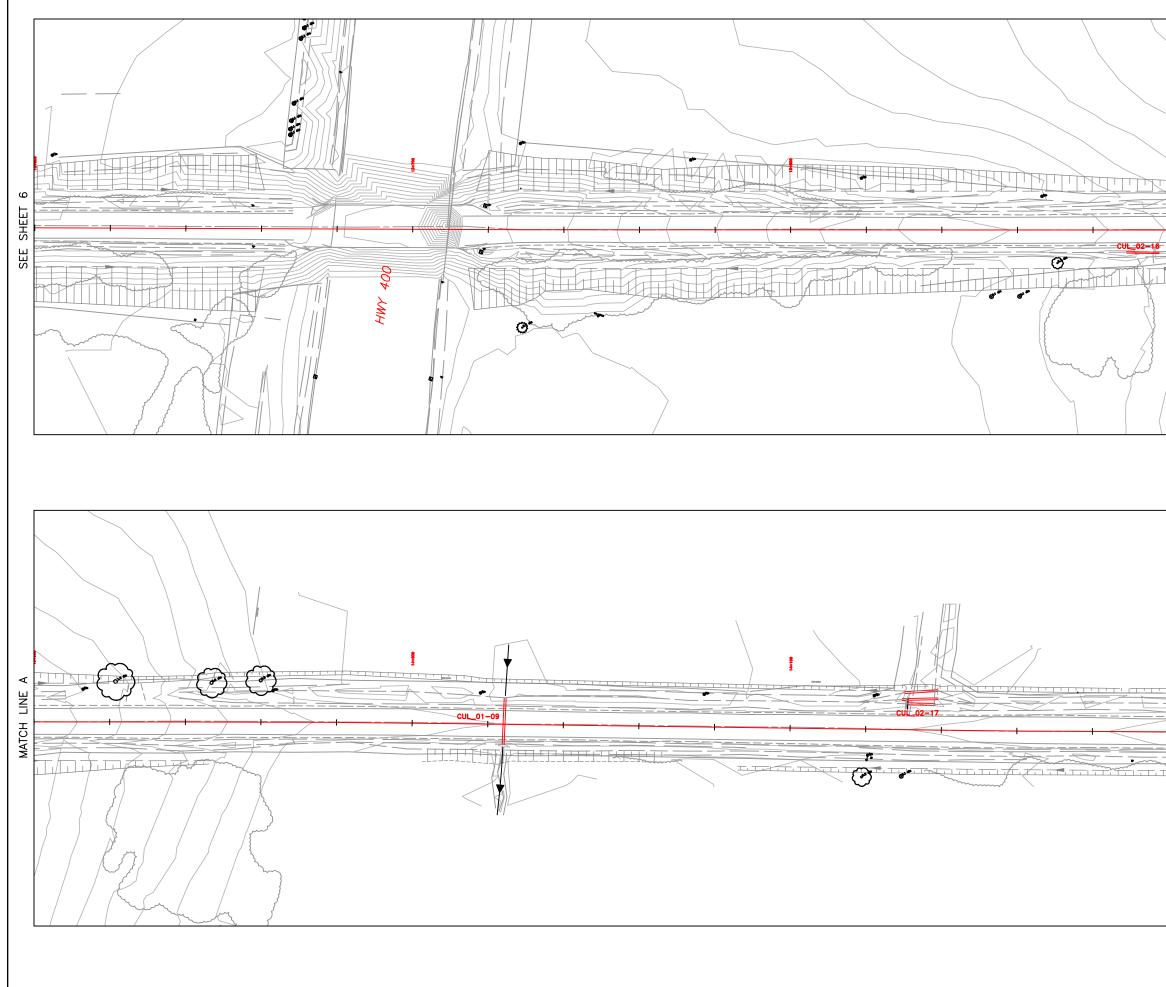
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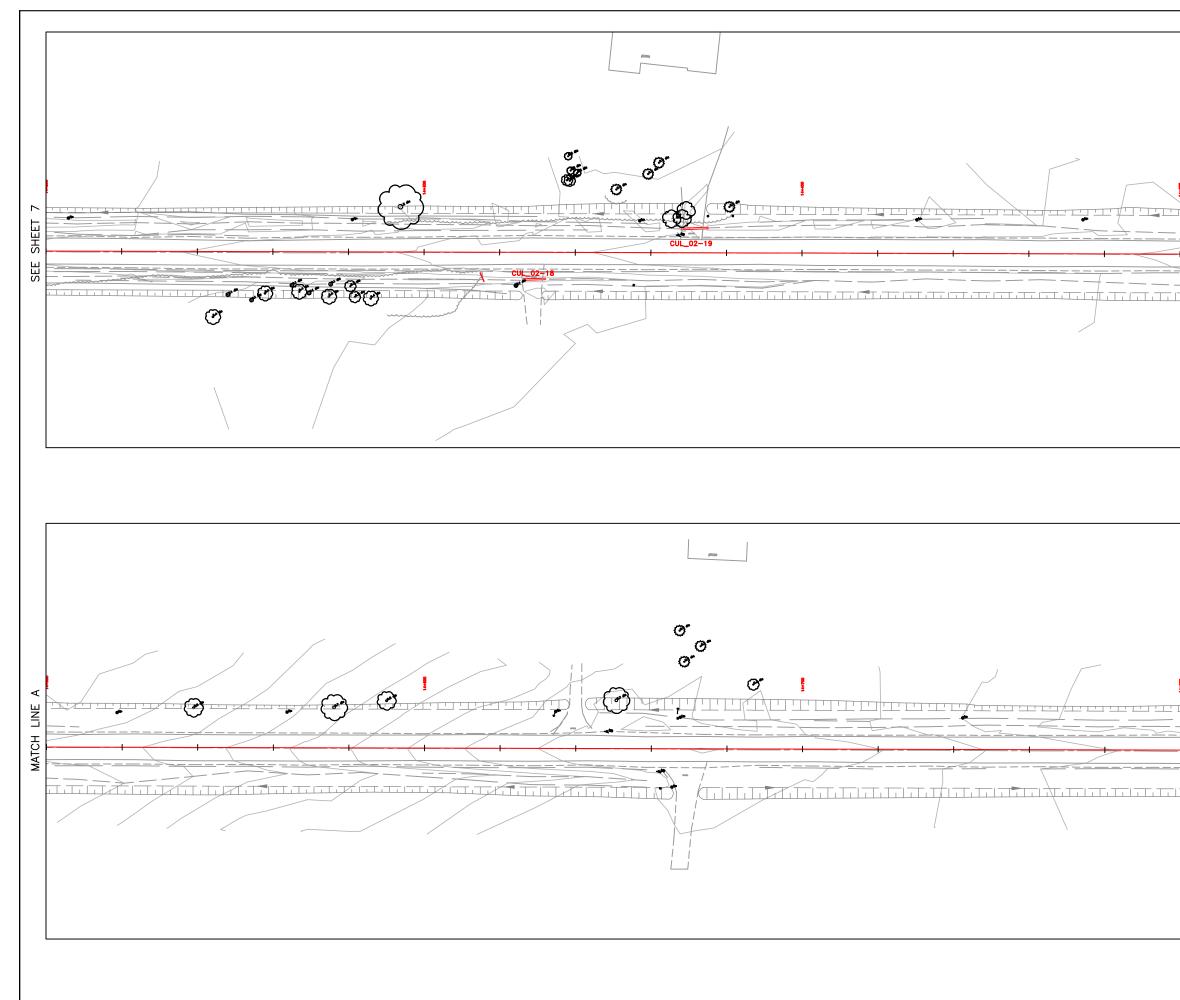
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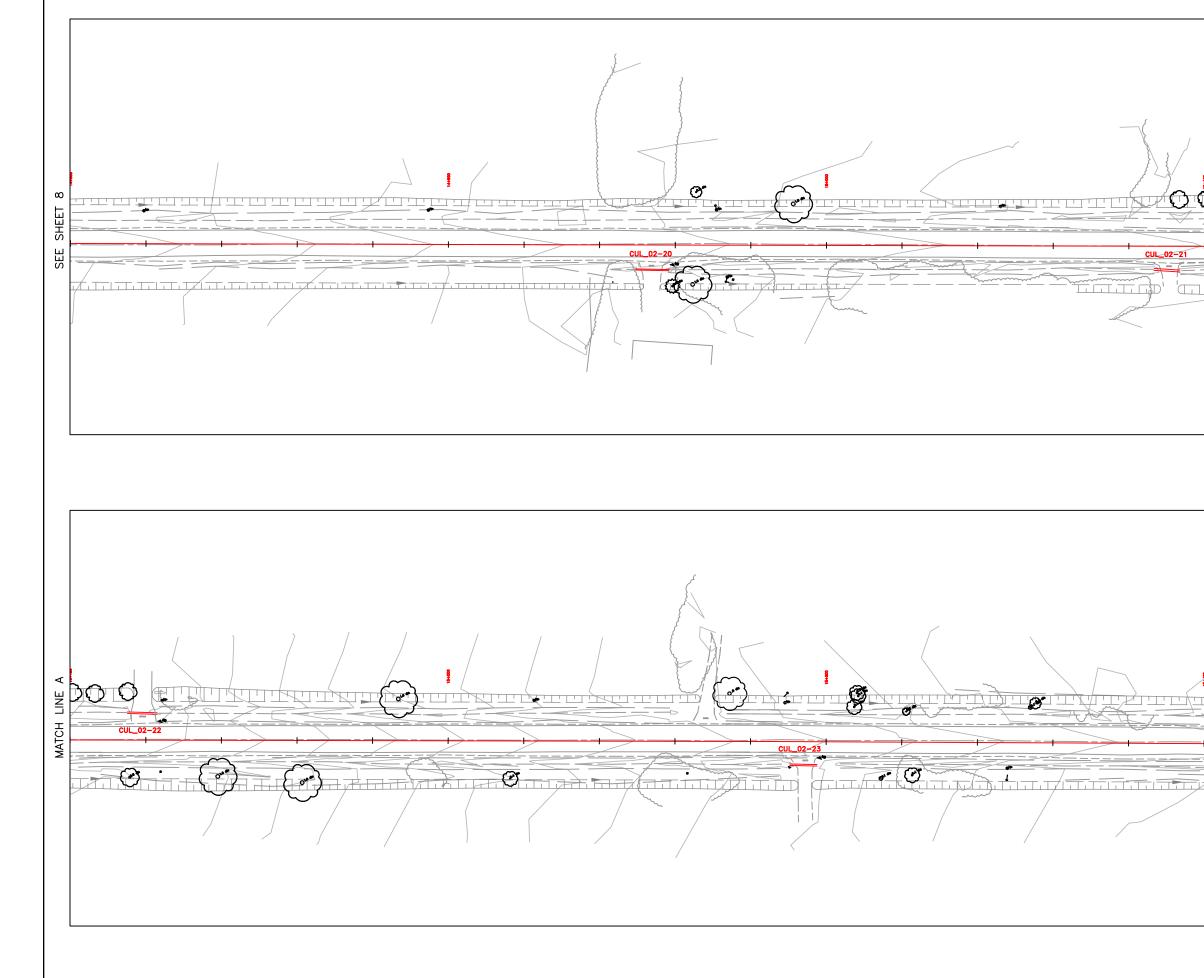
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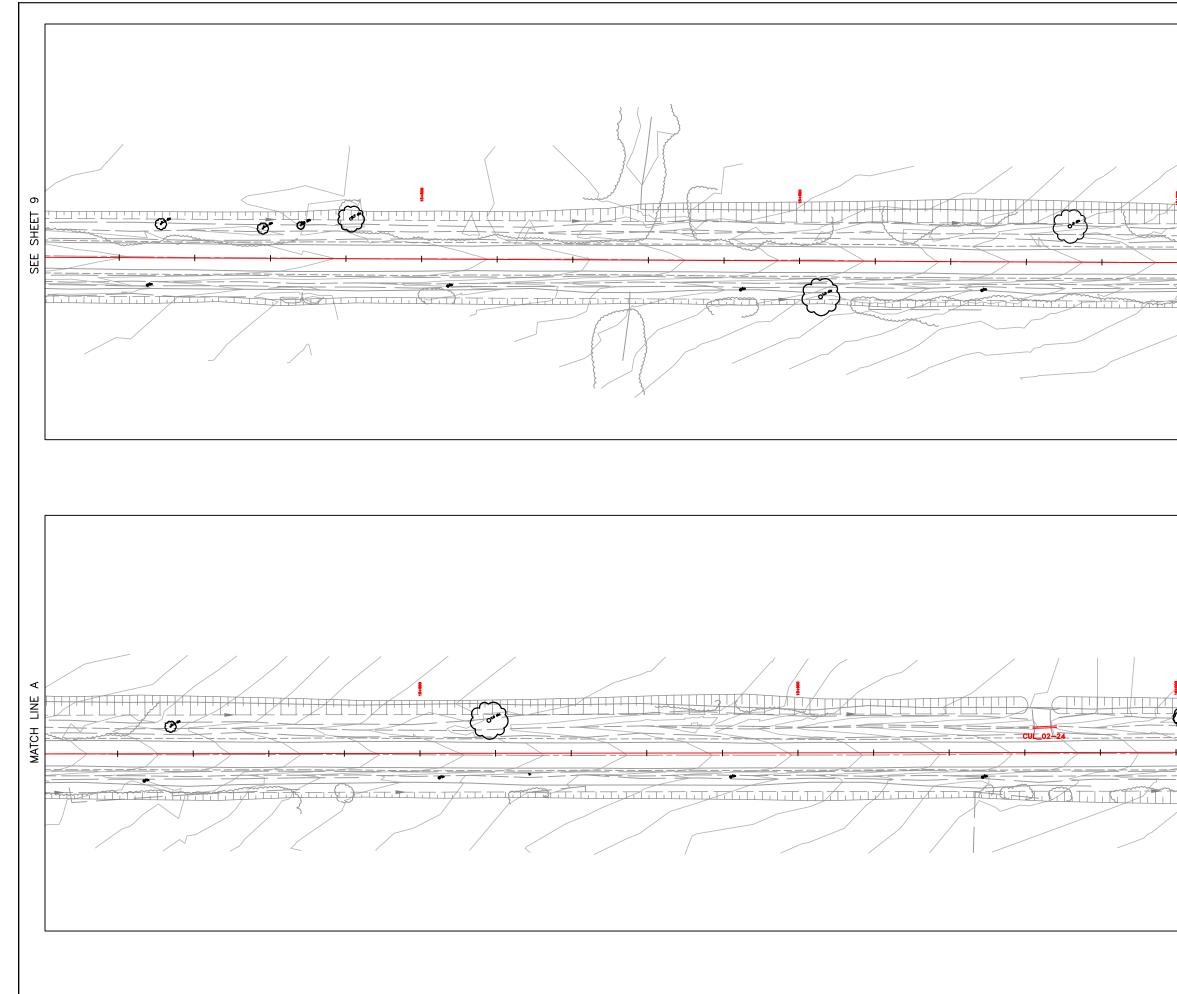
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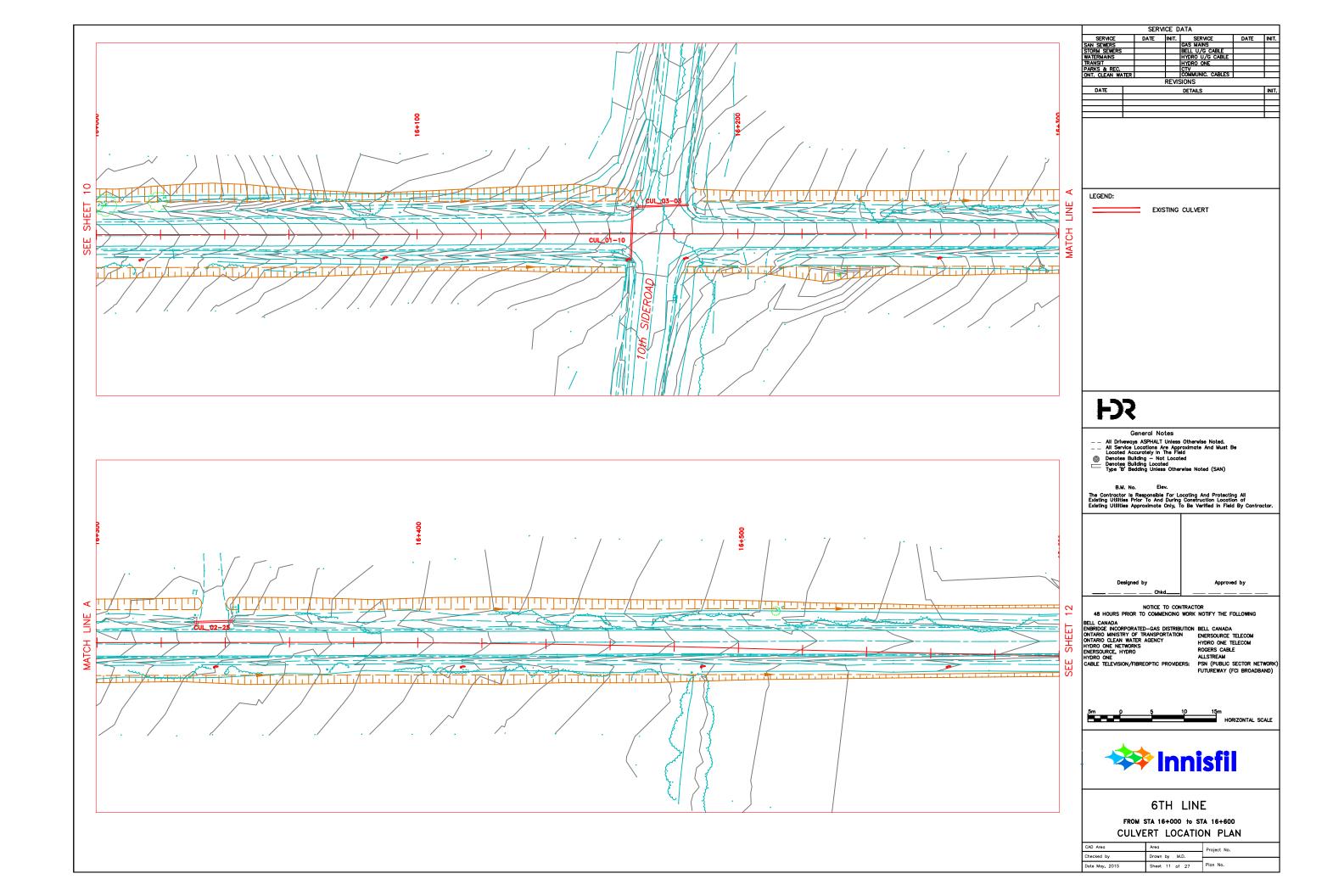
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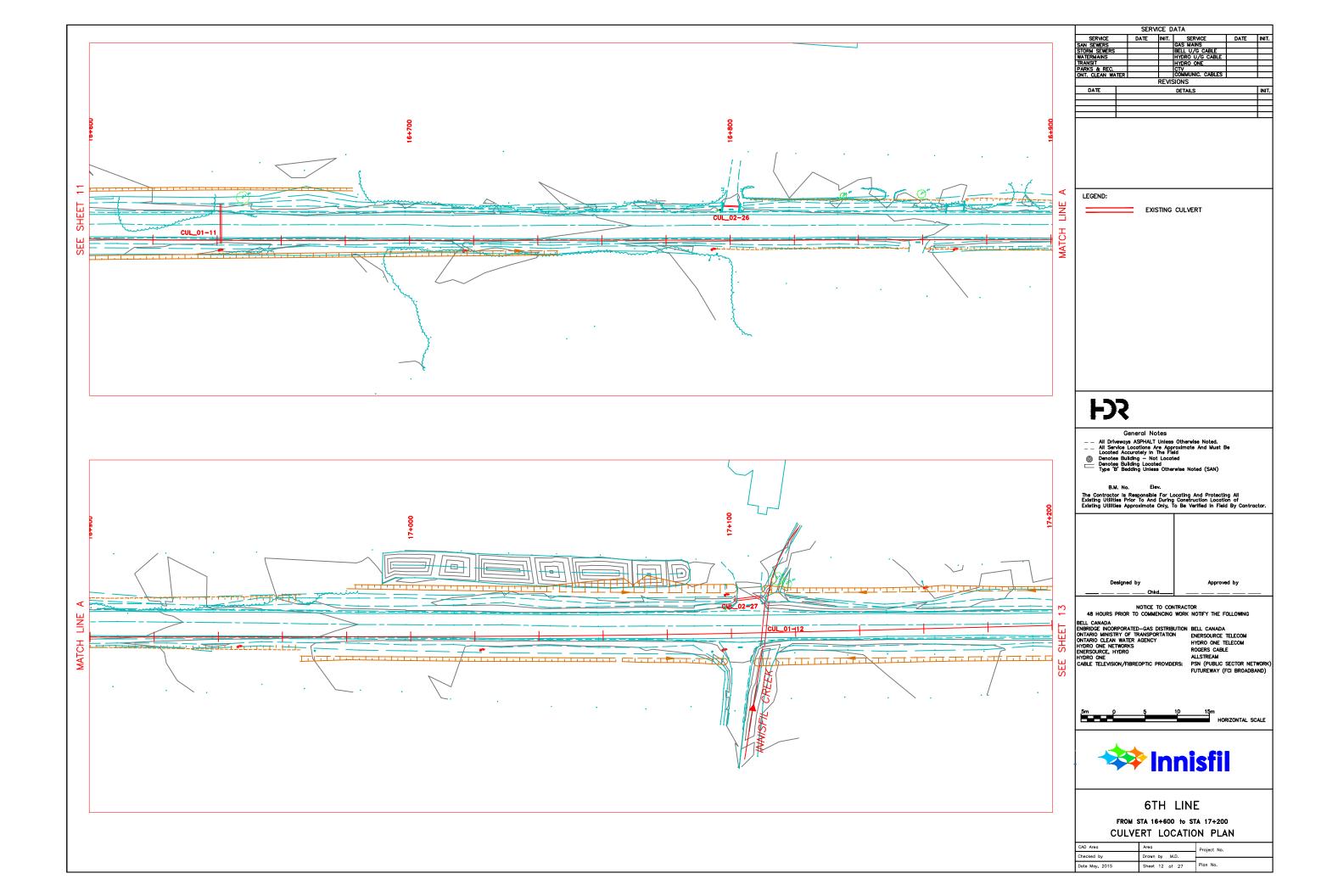


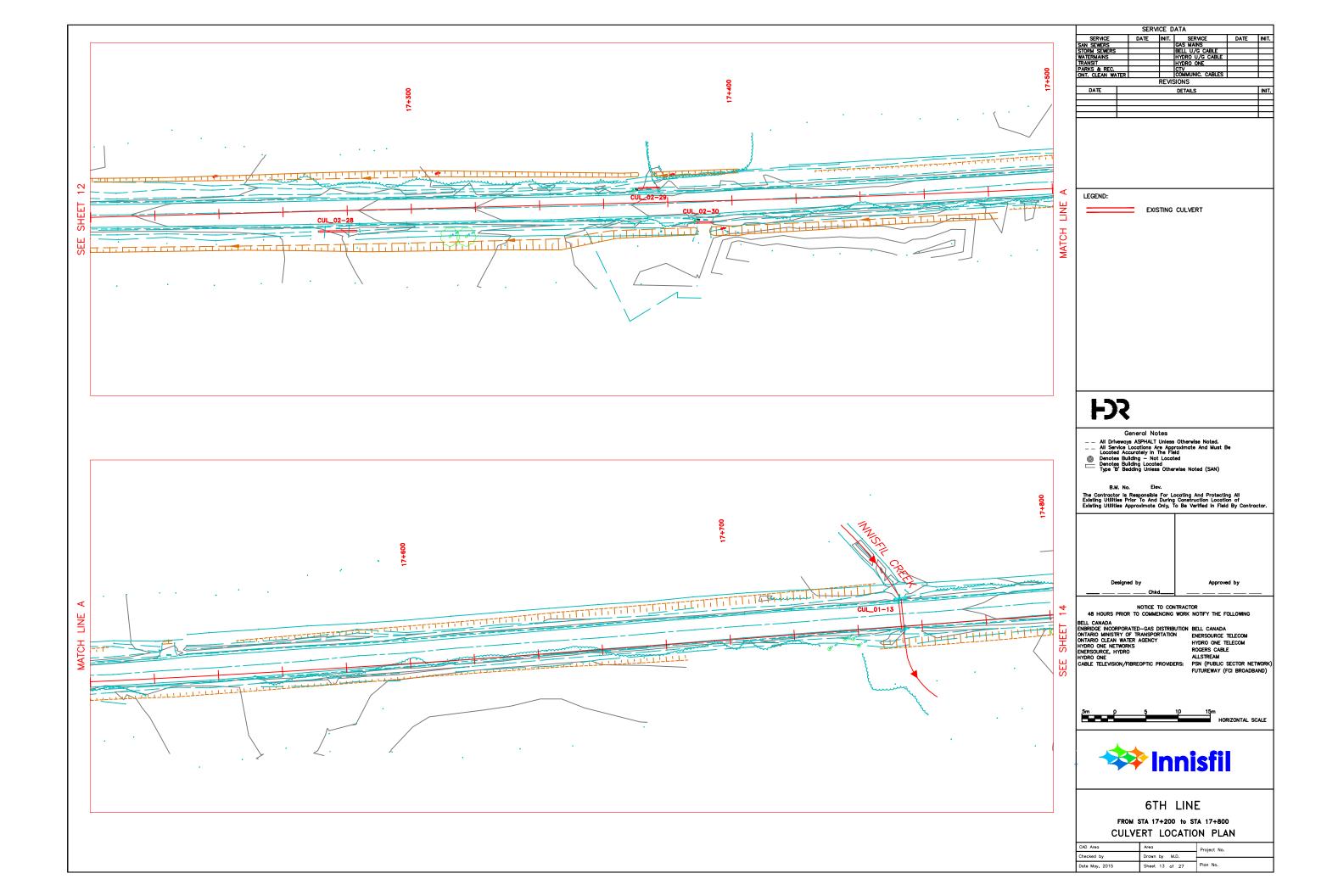
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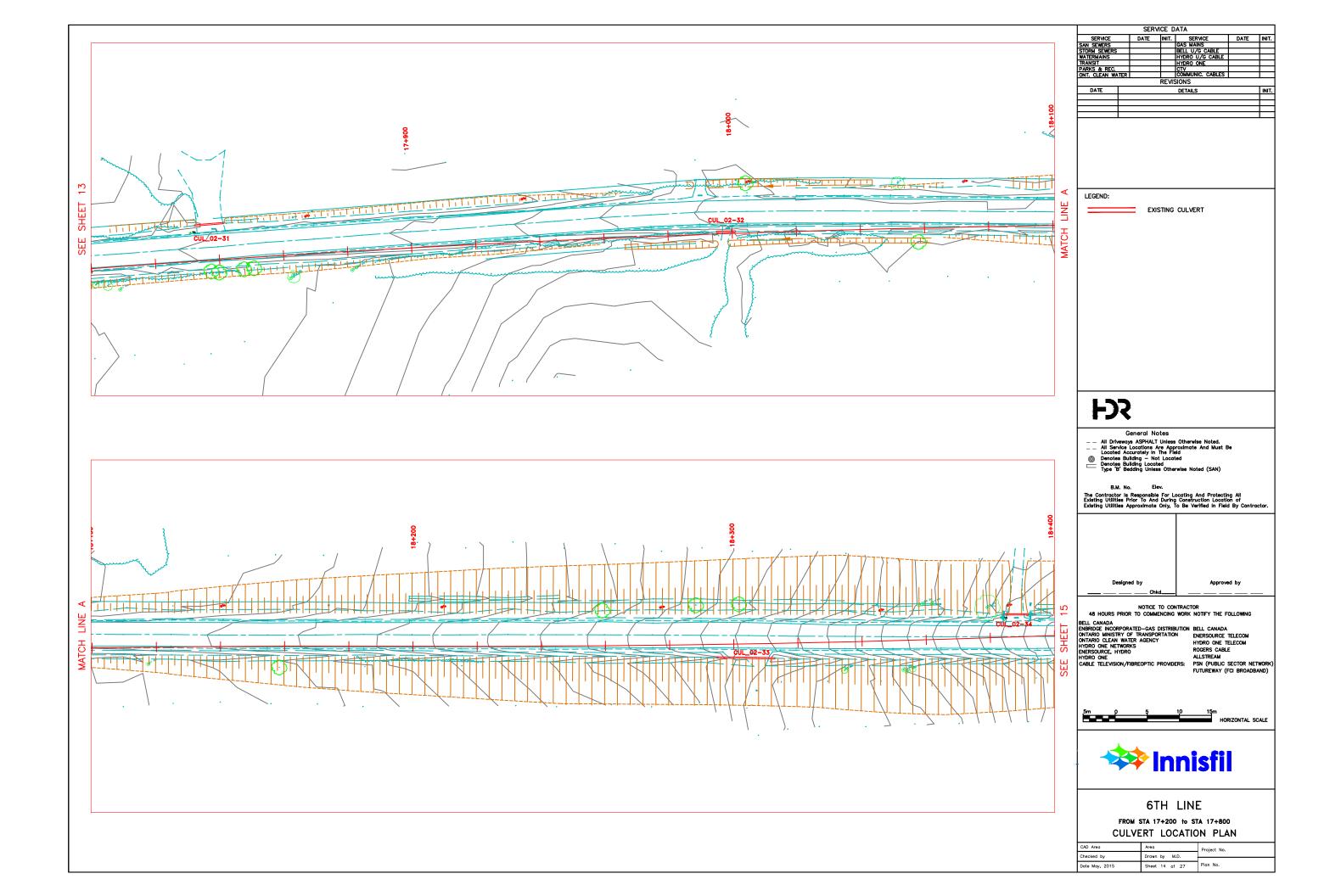


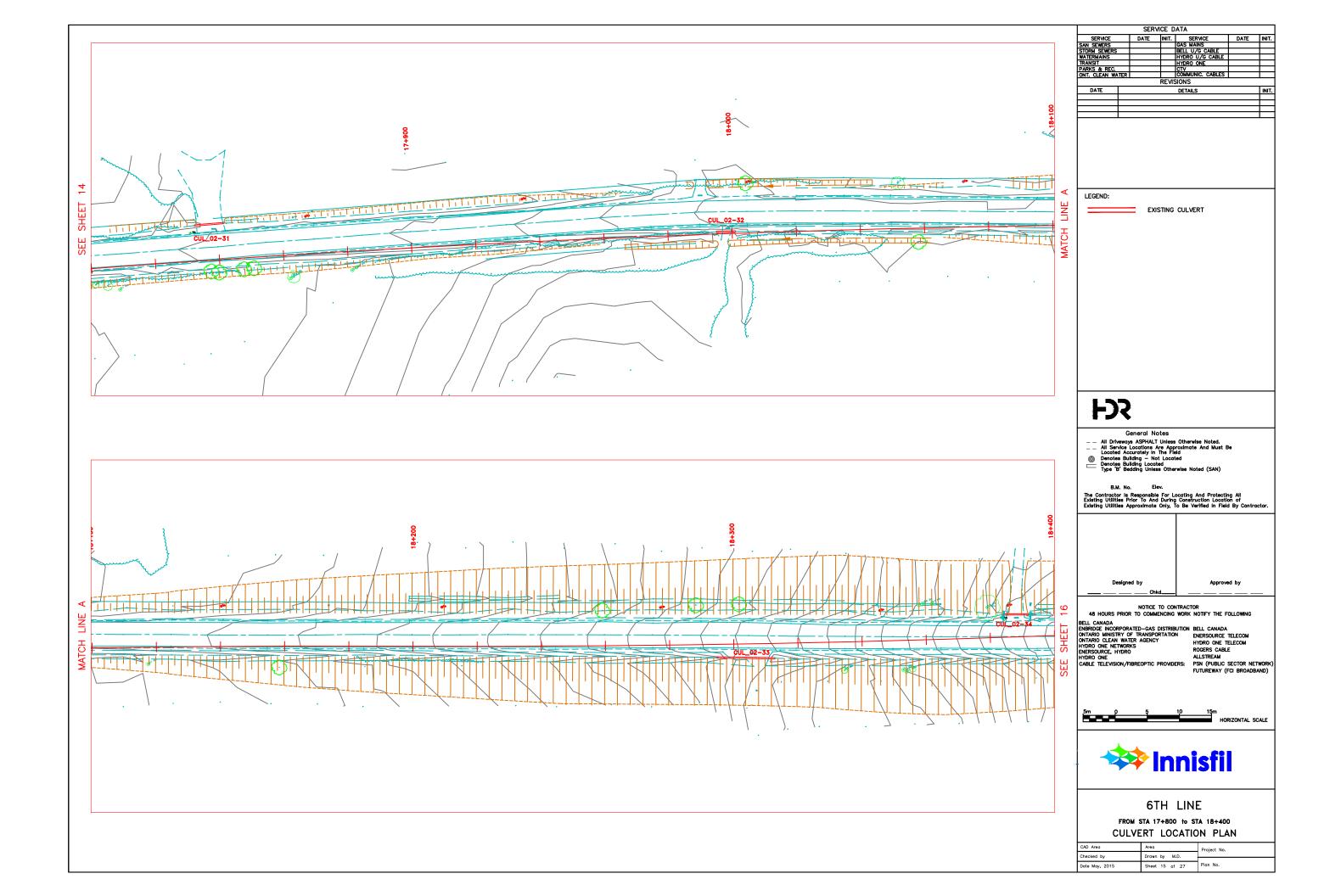
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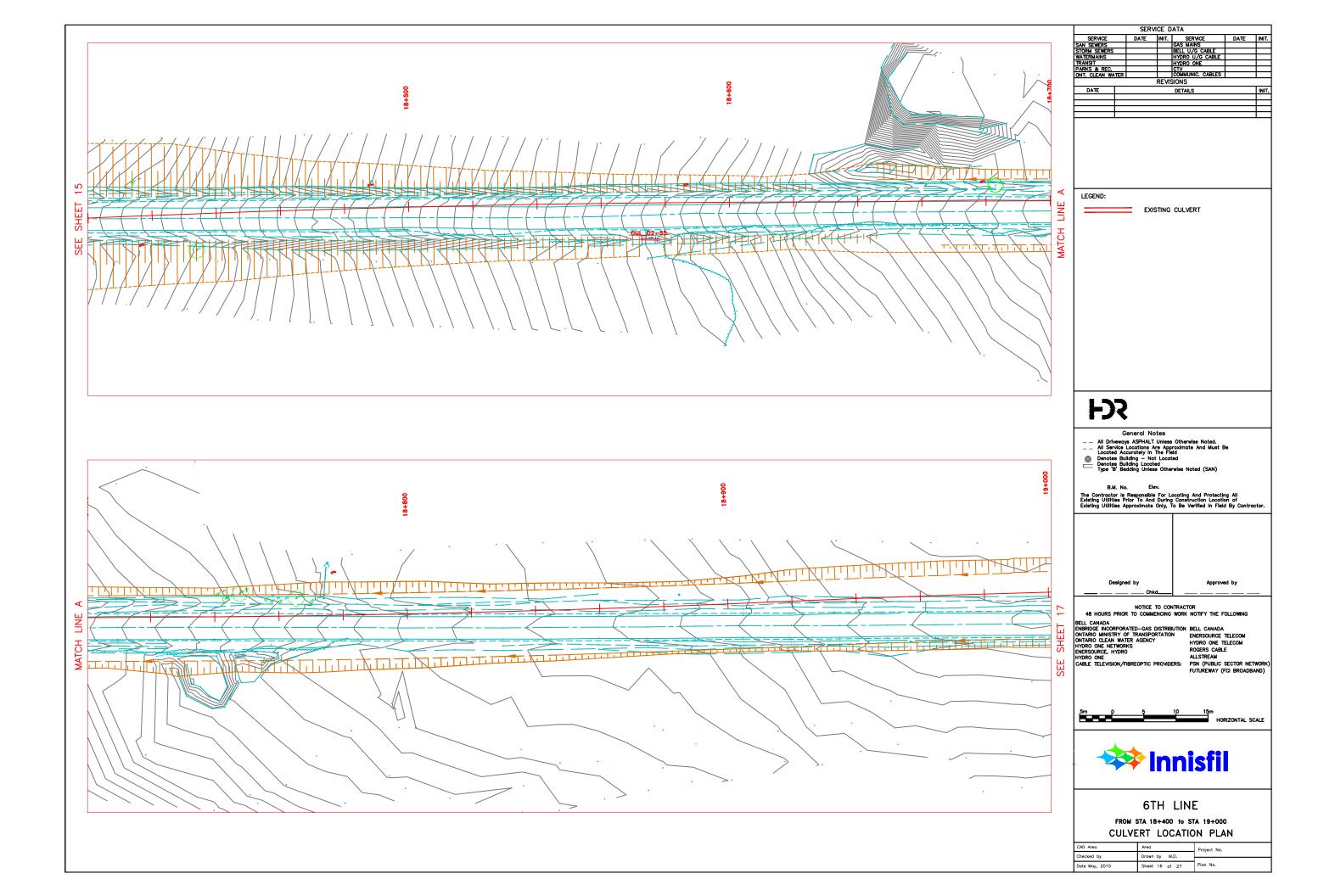


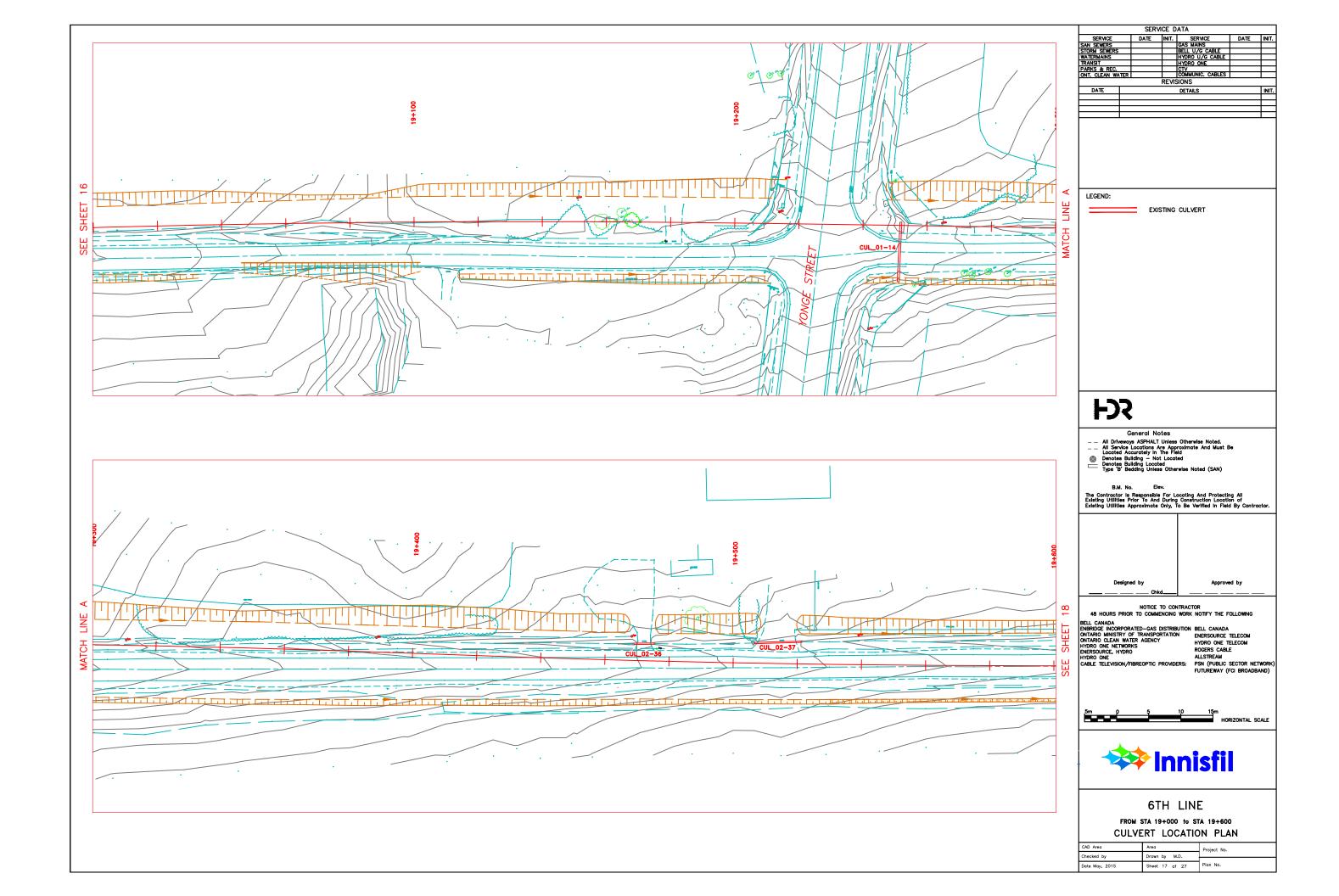


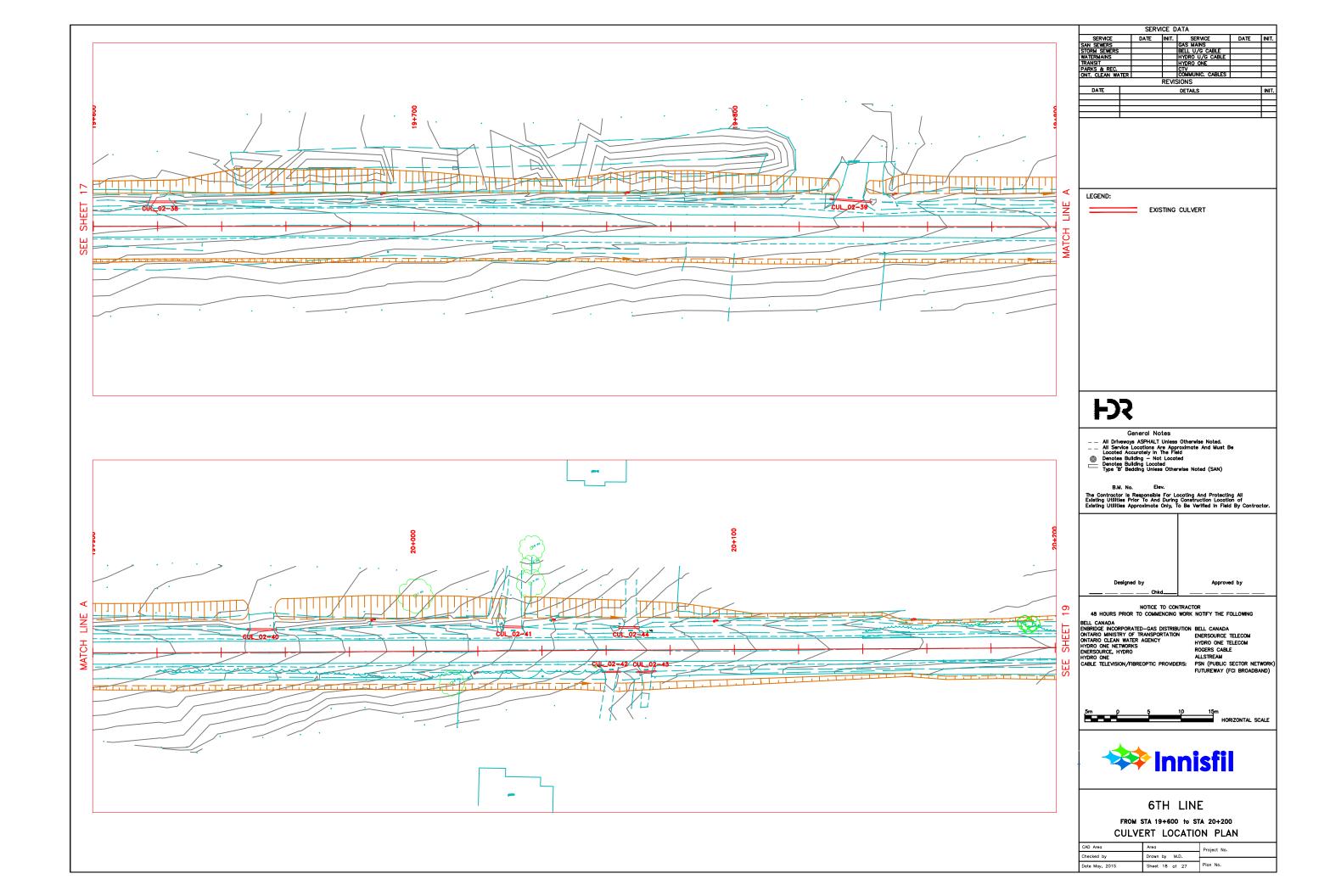


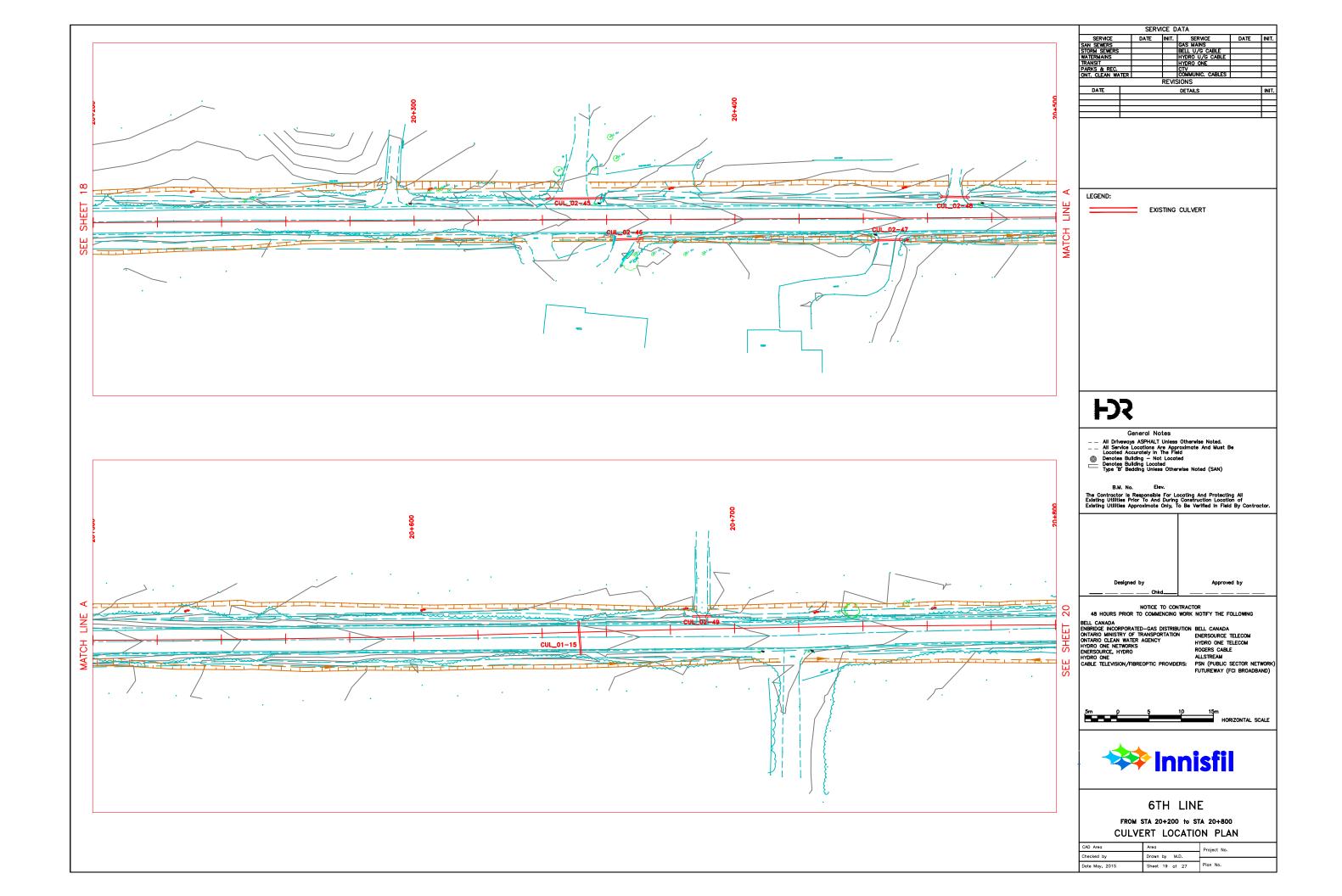


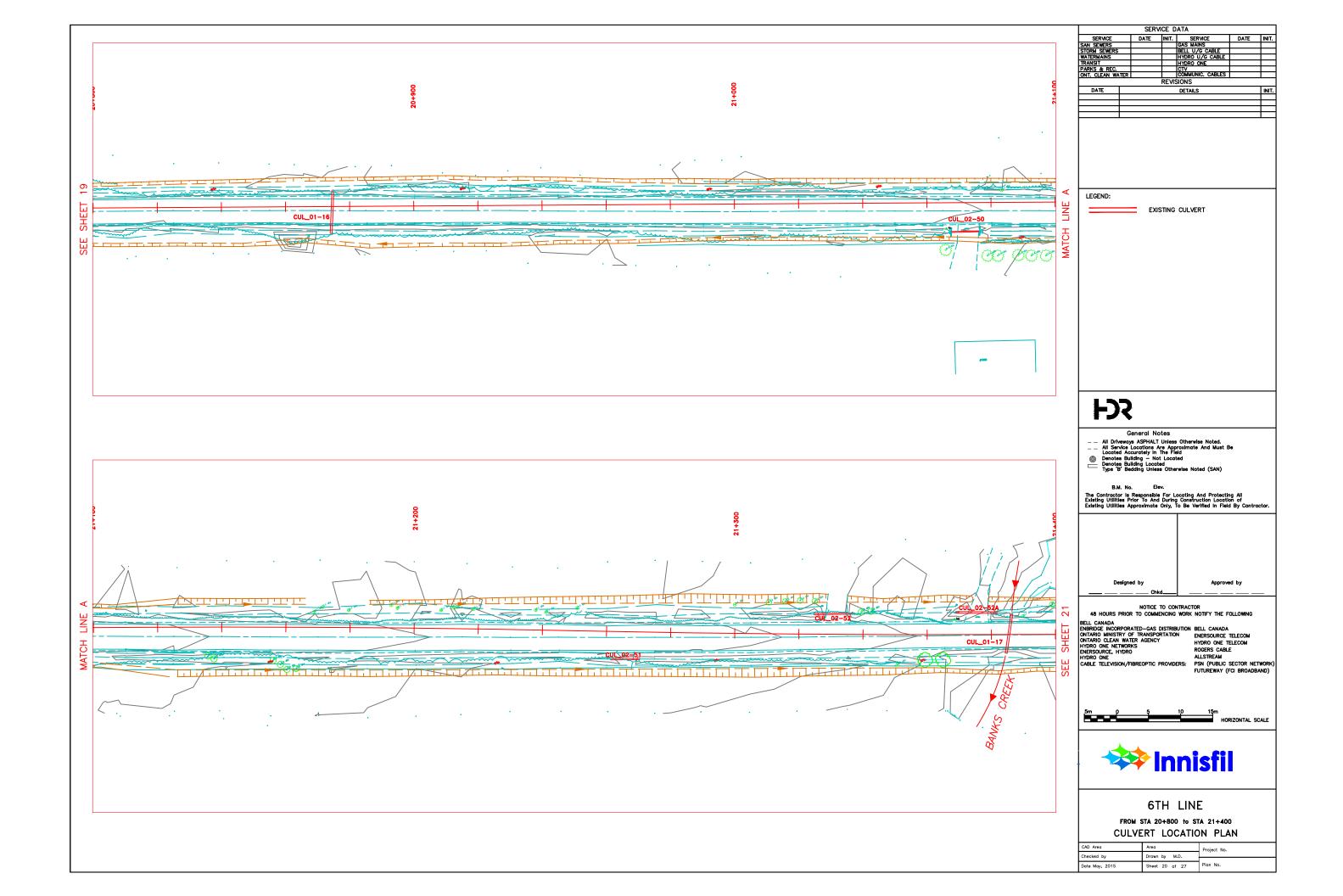


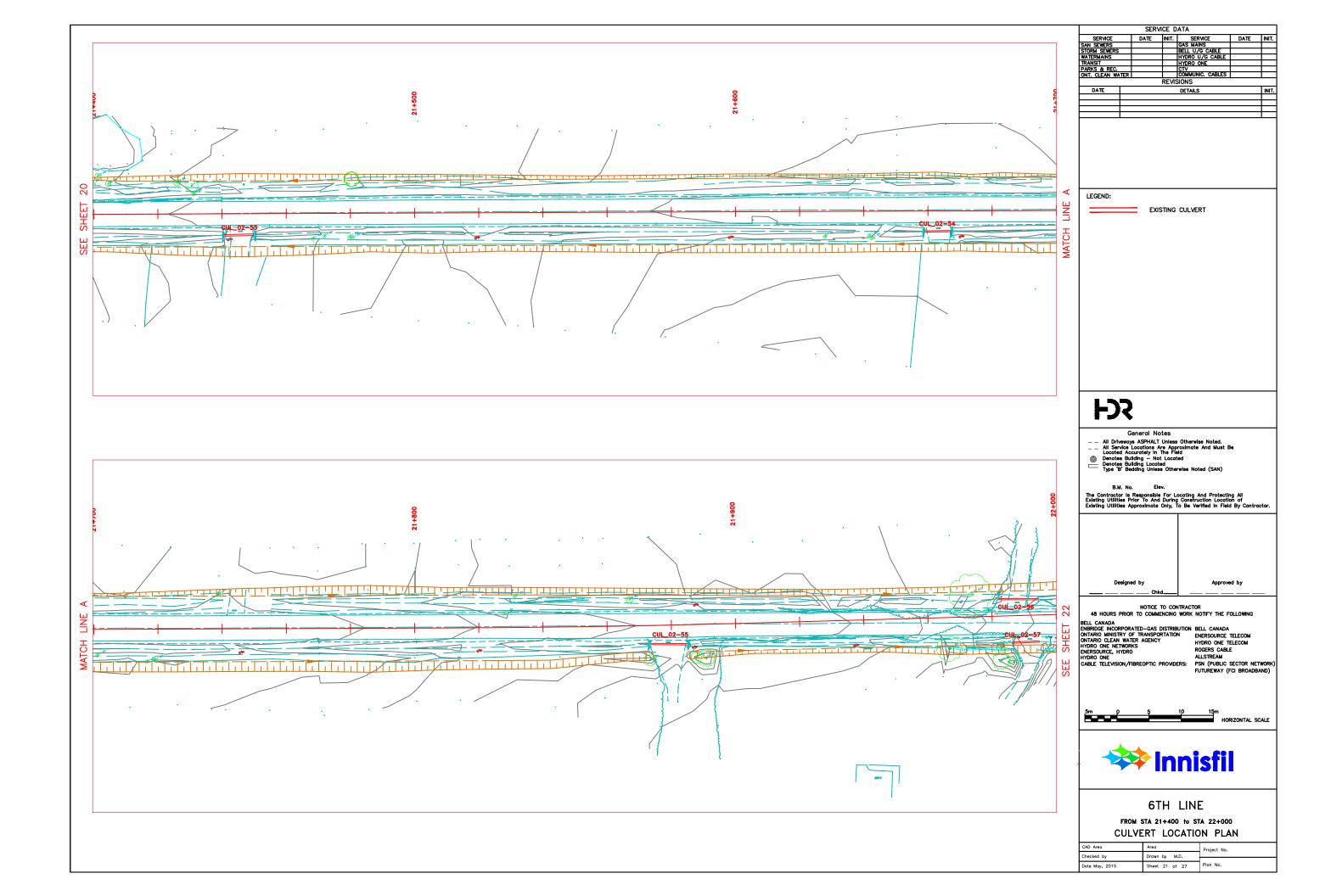


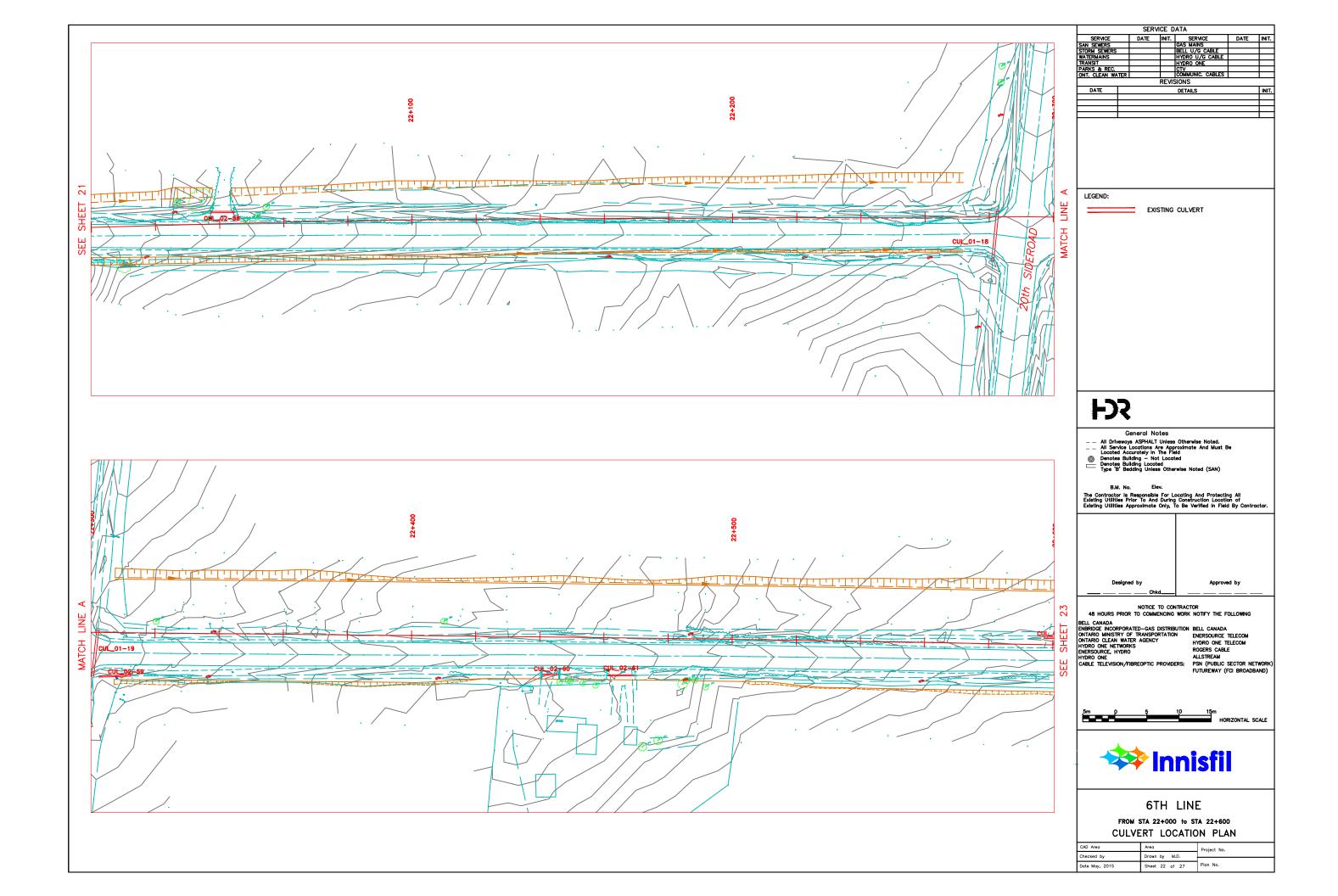


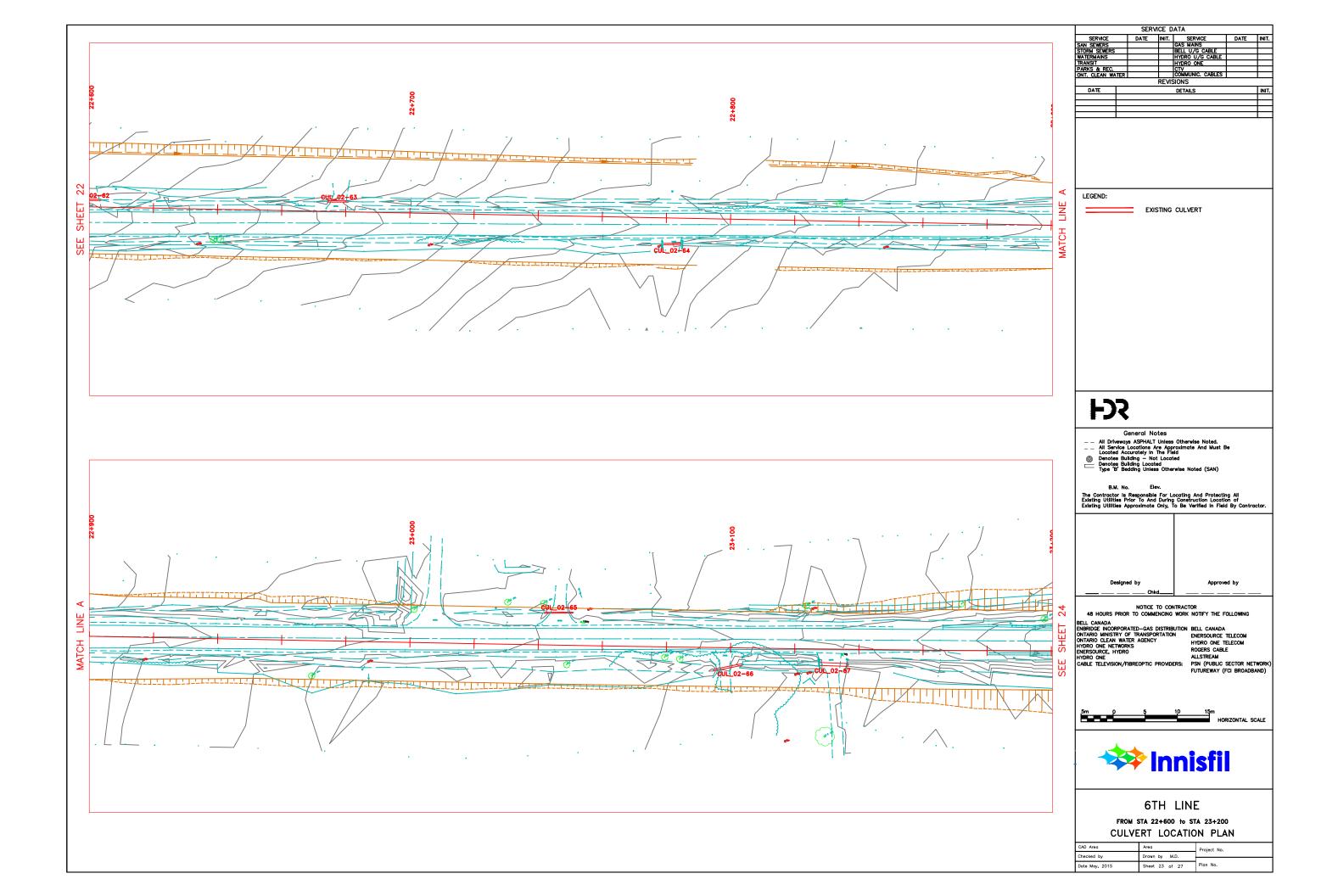


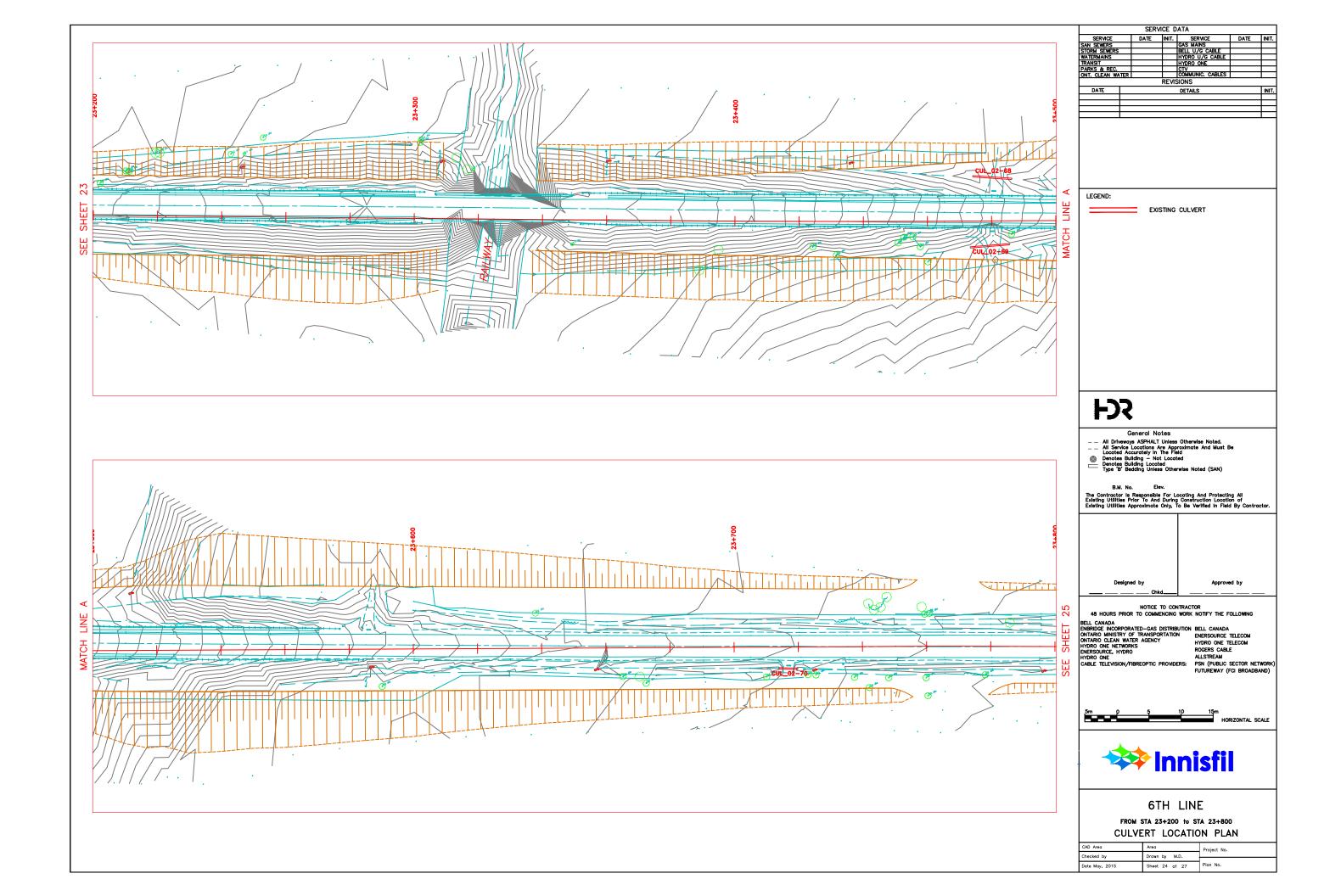


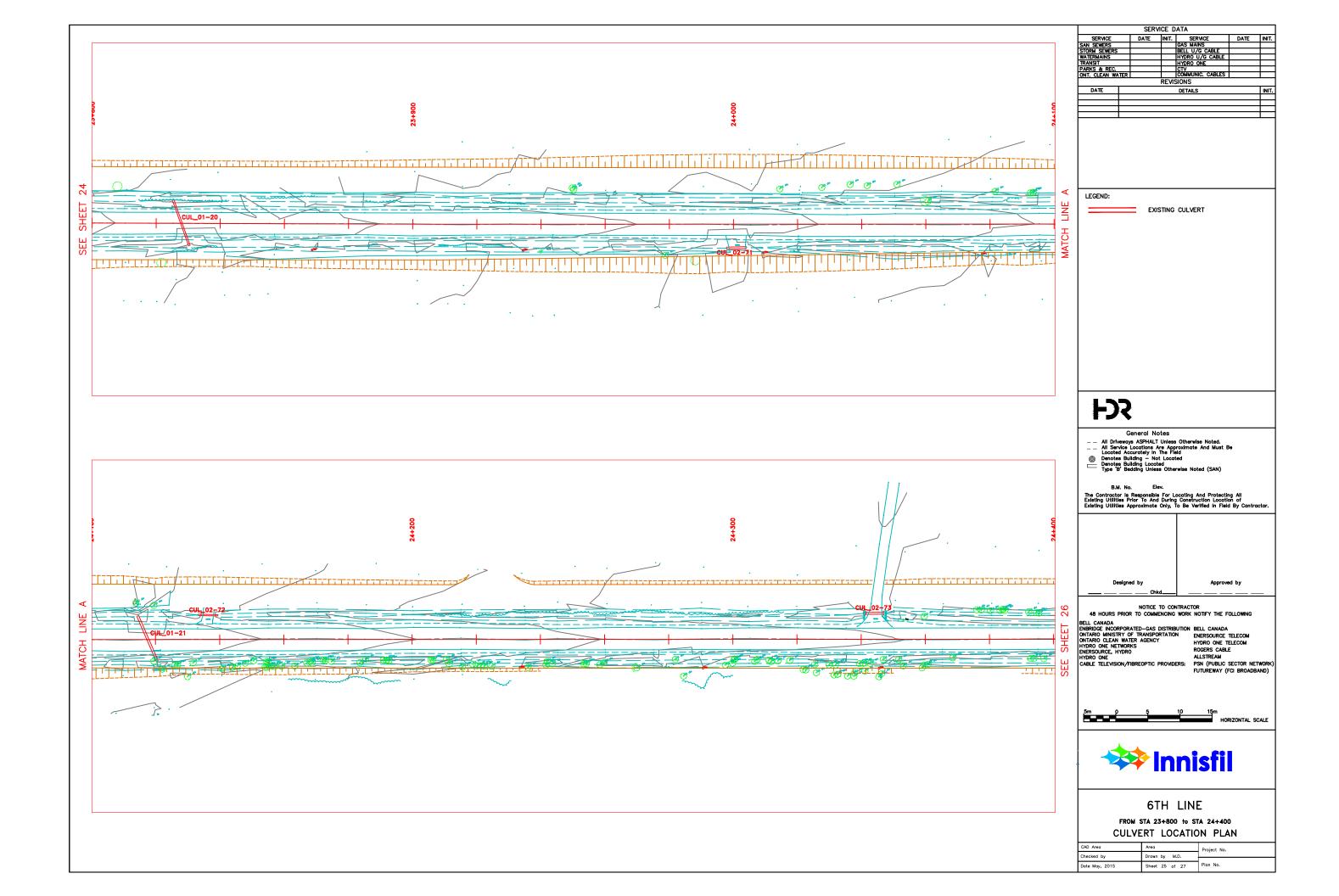


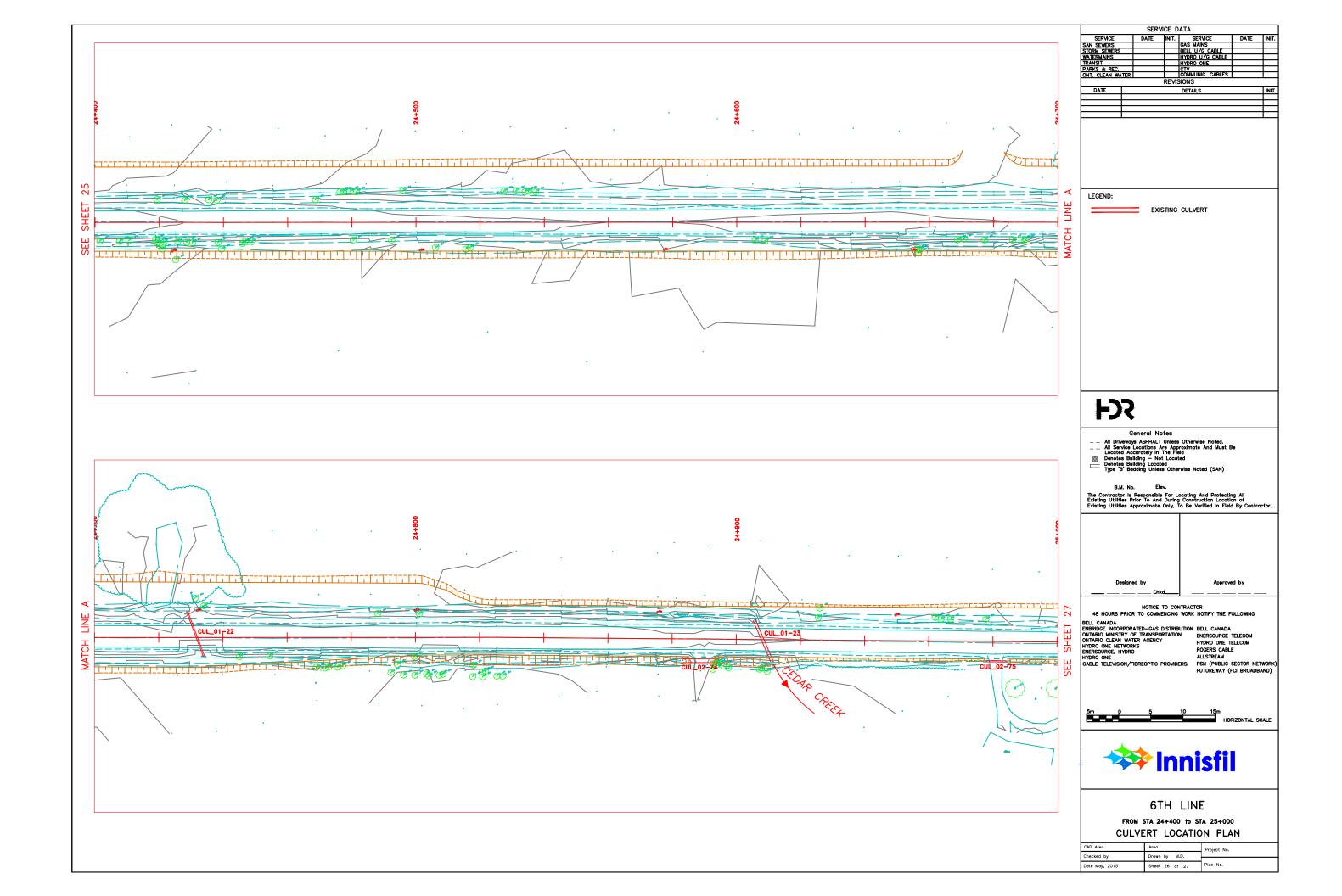


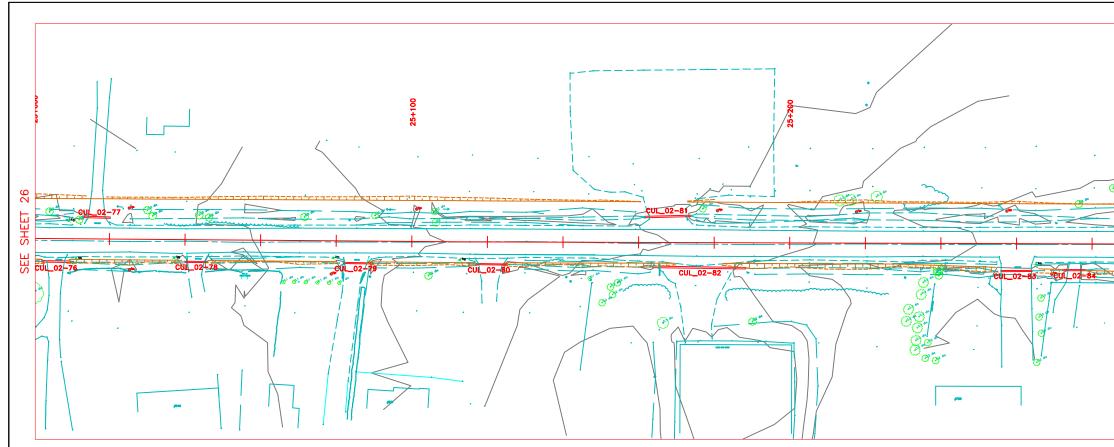


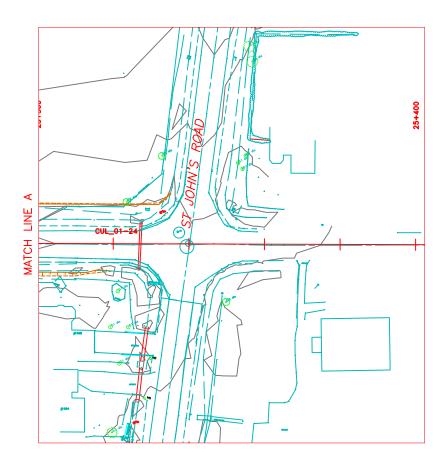


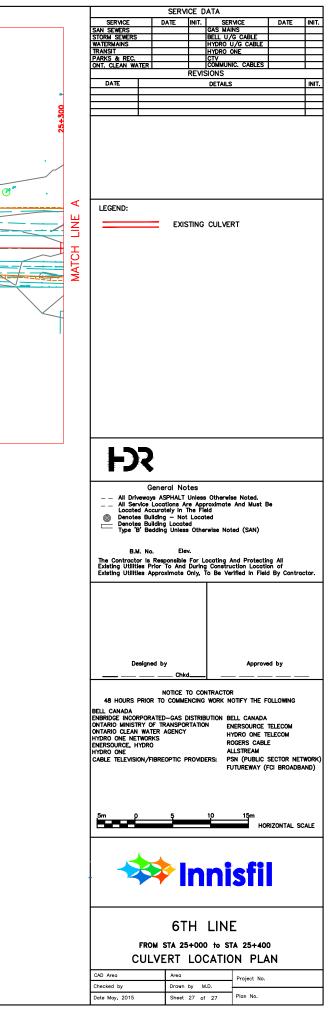












Appendix B Centerline Culvert Photographic Inventory Data Sheet

Inspection Date	02-Apr-15	Culvert No. 01-01 Inspector M.Darling
Township	Innisfil	LHRS 10+061 OFFSET 0 km
Road	6th Line	PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	and the second se
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	North	
Culvert Length (m)	19.8	
Culvert Size (mm)	600	PHOTO OF OUTLET
Fill Over Culvert (m)	0.8	
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	0	any in straight of
Blockage In Culvert	Minor Sediments	18 2 13 13 1 C
Culvert Condition	Fair	
Inlet Condition	Fair	
Outlet Condition	Bent - Ok	- Altone - And

Additional Comments

Inspection Date	02-Apr-15	Culvert No. 01-02 Inspector M.Darling
Township	Innisfil	
		LHRS 10+121 OFFSET 0 km
Road	6th Line	PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	12.4	
Culvert Size (mm)	500	PHOTO OF OUTLET
Fill Over Culvert (m)	0.5	
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	100	- Aller Contraction
Blockage In Culvert	None	
Culvert Condition	Rusted	
Inlet Condition	Good	
Outlet Condition	10% Buried	
		and an extension of the second state of the
Additional Comments		

CULVERT FIELD	D INVESTIGATION	N DATA SHEET
Inspection Date	02-Apr-15	Culvert No. 01-03 Inspector M.Darling
Township	Innisfil	
Road	6th Line	LHRS 10+924 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	12.4	
Culvert Size (mm)	1100	
Fill Over Culvert (m)	1	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	200	
Blockage In Culvert	None	
Culvert Condition	Good	
Inlet Condition	Good	
Outlet Condition	Good	
Additional Comments		

Inspection Date	02-Apr-15	Culvert No. 01-04 Inspector M.Darling
Township	Innisfil	
Road	6th Line	LHRS 11+175 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	- Alian - Alian
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	North	
Culvert Length (m)	12.5	
Culvert Size (mm)	1800	
Fill Over Culvert (m)	0.7	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	400	
Blockage In Culvert	90% Water	
Culvert Condition	Poor	
Inlet Condition	Poor	
Outlet Condition	Poor	

CULVERT FIELD	INVESTIGATIO	N DATA SHEET
Inspection Date	02-Apr-15	Culvert No. 01-05 Inspector M.Darling
Township	Innisfil	LHRS 12+673 OFFSET 0 km
Road	6th Line	LHRS 12+673 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	12.3	
Culvert Size (mm)	300	PHOTO OF OUTLET
Fill Over Culvert (m)	1.1	
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	50	
Blockage In Culvert	None	
Culvert Condition	Rusted	
Inlet Condition	Fair	
Outlet Condition	Poor - Bent/Rusting	
Additional Comments		

Inspection Date	02-Apr-15	Culvert No. 01-06 Inspector M.Darling
Township	Innisfil	
Road	6th Line	LHRS 13+158 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	13	
Culvert Size (mm)	800	
Fill Over Culvert (m)	2	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	500	
Blockage In Culvert	90% Water	
Culvert Condition	Poor	
Inlet Condition	Poor	
Outlet Condition	Poor	

Additional Comments needs ditches regraded

	02-Apr-15	Culvert No. 01-07 Inspector M.Darling
Γownship	Innisfil	
Road	6th Line	LHRS 13+164 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	Concrete Box	
Culvert Shape	BOX	
Culvert Bottom	Open	
Culvert Flow Direction	South	- A CARLE MAL
Culvert Length (m)	9.5	
Culvert Size (mm)	1200x800	
Fill Over Culvert (m)	1	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	0	
Blockage In Culvert	Garbage Bags	
Culvert Condition	Good	
	Good	
Inlet Condition		
Inlet Condition Outlet Condition	Good	

CULVERT FIELD	INVESTIGATIO	N DATA SHEET
Inspection Date	02-Apr-15	Culvert No. 01-08 Inspector M.Darling
Township	Innisfil	LHRS 13+454 OFFSET 0 km
Road	6th Line	LHRS 13+454 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	North	
Culvert Length (m)	17.8	
Culvert Size (mm)	1800	
Fill Over Culvert (m)	2.5	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	400	
Blockage In Culvert	None	
Culvert Condition	Minor Rusting	
Inlet Condition	Good	
Outlet Condition	Good	
Additional Comments		

CULVERT FIELD	INVESTIGATIO	N DATA SHEET
Inspection Date	02-Apr-15	Culvert No. 01-09 Inspector M.Darling
Township	Innisfil	LHRS 14+038 OFFSET 0 km
Road	6th Line	LHRS 14+038 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	North	
Culvert Length (m)	12.4	
Culvert Size (mm)	500	
Fill Over Culvert (m)	0.7	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	200	
Blockage In Culvert	None	
Culvert Condition	Rusting - Fair	
Inlet Condition	Fair	
Outlet Condition	Fair	
Additional Comments		

CULVERT FIELD	D INVESTIGATIO	N DATA SHEET
Inspection Date	19-Jun-15	Culvert No. 01-10 Inspector S. Percy
Township	Innisfil	
Road	6th Line	PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	17.0	
Culvert Size (mm)	400	PHOTO OF OUTLET
Fill Over Culvert (m)	0.5	
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	50	
Blockage In Culvert	Water/Sediment 70-80%	
Culvert Condition	Poor	
Inlet Condition	80% Buried	
Outlet Condition	70% Buried	

Additional Comments Severe vegetation needs to be cleared.

Inspection Date	02-Apr-15	Culvert No. 01-11 Inspector M.Darling
Township	Innisfil	L
	mmom	LHRS 16+641 OFFSET 0 km
Road	6th Line	PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	Equalization	
Culvert Length (m)	12.3	
Culvert Size (mm)	400	PHOTO OF OUTLET
Fill Over Culvert (m)	0.5	
Fill Material Type	Granular	A subtractive function of a start where the
Depth of Water In Culvert (mm)	10	
Blockage In Culvert	None	
Culvert Condition	Poor - Rusted	
Inlet Condition	Poor - Bent	
Outlet Condition	Poor - Bent	
Additional Comments		

	INVESTIGATIO				
nspection Date	02-Apr-15	Culvert No.	01-12	Inspector	M.Darling
ownship	Innisfil			IOFFOFT	
load	6th Line		LHRS 17+110 PHOTO OF INLE	OFFSET	0 kn
ulvert Crossing Type	HIGHWAY C/L				
ulvert Type	CSP		CAN !!	W.C.S.	
ulvert Shape	CIRCLE				A N
ulvert Bottom	Steel				A PAR
ulvert Flow Direction	North		T.S.S.	E. B	a par
culvert Length (m)	14.2		ANT I		Rollin
culvert Size (mm)	1200				
ill Over Culvert (m)	1		PHOTO OF OUTI	.EI	
ill Material Type	Granular				The start
epth of Water In Culvert (mm)	400		Series -	-	-
lockage In Culvert	None			1 Car	
ulvert Condition	Bottom Half Rusted				
let Condition	Poor				
Dutlet Condition	Poor			Alle M	100

	02-Apr-15
nship	Innisfil
	6th Line
ert Crossing Type	HIGHWAY C/L
vert Type	CSP
ert Shape	CIRCLE
ert Bottom	Steel
ert Flow Direction	South
ert Length (m)	10.0
ert Size (mm)	800
Over Culvert (m)	1
laterial Type	Granular
h of Water In Culvert (mm)	100
ckage In Culvert	Ice - 90% Blocked
vert Condition	Fair
t Condition	Fair
utlet Condition	Fair

CULVERT FIELD	INVESTIGATIO	
Inspection Date	02-Apr-15	Culvert No. 01-14 Inspector M.Darling
Township	Innisfil	
Road	6th Line	LHRS 19+252 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	18.7	
Culvert Size (mm)	600	PHOTO OF OUTLET
Fill Over Culvert (m)	1.5	
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	0	
Blockage In Culvert	Sediments	
Culvert Condition	Fair	
Inlet Condition	20% Buried	
Outlet Condition	90% Buried	
Additional Comments		
channel needs cleared		

	02-Apr-15 Cul	vert No. 01-15 Inspector M.Darling
Township	Innisfil	
Road	6th Line	LHRS 20+652 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	11000
Culvert Shape	CIRCLE	1111000
Culvert Bottom	Steel	F. I MARINE SAMUEL
Culvert Flow Direction	South	
Culvert Length (m)	10.6	
Culvert Size (mm)	400	1.1.6.1
Fill Over Culvert (m)	1	PHOTO OF OUTLET
Fill Material Type	Granular	and the second se
Depth of Water In Culvert (mm)	500	
Blockage In Culvert	None	
Culvert Condition	Good	
Inlet Condition	Good	A STAND
Outlet Condition	Good	Street Ward
		· · · · · · · · · · · · · · · · · · ·

Inspection Date	02-Apr-15	Culvert No.	01-16	Inspector	M.Darling
Township	Innisfil	□ ,	LHRS 20+875	OFFSET	0 km
Road	6th Line		PHOTO OF INLET		0 km
Culvert Crossing Type	HIGHWAY C/L		28110	Visite	Provide and
Culvert Type	CSP				
Culvert Shape	CIRCLE			M	10
Culvert Bottom	Steel				N. A.
Culvert Flow Direction	South		Alter E	al al	X
Culvert Length (m)	13.6		A Date	al are	
Culvert Size (mm)	600		Sel is	N. Com	
Fill Over Culvert (m)	1.2		PHOTO OF OUTL		1 3 4 C 1.
Fill Material Type	Granular		S. T. S.	1	A See
Depth of Water In Culvert (mm)	200		12 12 183	E I	No.
Blockage In Culvert	Ice				V-L
Culvert Condition	Good		Sec. N.	T.p.	1
nlet Condition	Fair		1.1	Tr. 2	4 15
Outlet Condition	Good				
		L		SHOWIN & I	And in case of the local division of the loc
Additional Comments					

CULVERT FIELI	D INVESTIGATION	NDATA SHEET
Inspection Date	19-Jun-15	Culvert No. 01-17 Inspector S. Percy
Township	Innisfil	
Road	6th Line	PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	North	
Culvert Length (m)	12.3	- Alternation - Alternation
Culvert Size (mm)	600	PHOTO OF OUTLET
Fill Over Culvert (m)	0.7	
Fill Material Type	Granular	Miller The strange and and the
Depth of Water In Culvert (mm)	300	
Blockage In Culvert	Sediment Water 50%	
Culvert Condition	Good	
Inlet Condition	Fair	
Outlet Condition	Fair	

Additional Comments Both ends are partially submerged in water.

CULVERT FIELD	NVESTIGATI	
Inspection Date	19-Jun-15	Culvert No. 01-18 Inspector S. Percy
Township	Innisfil	LHRS 22+282 OFFSET 0 km
Road	6th Line	LHRS 22+282 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	16.1	
Culvert Size (mm)	700	PHOTO OF OUTLET
Fill Over Culvert (m)	0.6	
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	100	
Blockage In Culvert	10% Sediment	
Culvert Condition	Poor	
Inlet Condition	Poor-Deformed	32 30 30 1
Outlet Condition	Fair - 10% Sediment	

Additional Comments Vegetation needs to be cleared as well as sediment.

CULVERT FIELI	D INVESTIGATION		SHE	EET			
Inspection Date	19-Jun-15	Culvert No.			Inspector	S. Percy	
Township	Innisfil]		8			
Road	6th Line]	LHRS PHOTO	22+301 OF INLET	OFFSET	0	km
Culvert Crossing Type	HIGHWAY C/L]		-Cont	Terrent		10
Culvert Type	CSP]		P		ternia	A Start
Culvert Shape	CIRCLE]					
Culvert Bottom	Steel]		.2			
Culvert Flow Direction	South]	18 Star		2		
Culvert Length (m)	14.9]		Alla-	Tom-B		
Culvert Size (mm)	700]	DUOTO	OF OUTLE		The second	
Fill Over Culvert (m)	0.6]	PHOTO				
Fill Material Type	Granular]				1	JX .
Depth of Water In Culvert (mm)	0]	125				ANP.D
Blockage In Culvert	20% Sediment/debris]	1.2	New 12	and the second		-
Culvert Condition	Fair]		The second	mar have		
Inlet Condition	Fair]				1	2.76
Outlet Condition	Severe vegetation overgrowth]	3772		A second		SV1-
						1	and a second
Additional Comments			E.	1		1000	11
Severe vegetation needs to be clear	ed		11	1 de la	-	Mill	111
			111	f M			111
			11		Nor-	El/	111
				1472		and a	11
				1-4	the second	4	Ser

Inspection Date	19-Jun-15	Culvert No. 01-20 Inspector S. Percy
Township	Innisfil	
Road	6th Line	LHRS 23+828 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	15.3	
Culvert Size (mm)	500	
Fill Over Culvert (m)	1	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	100	
Blockage In Culvert	5% Sediment	
Culvert Condition	Good	
nlet Condition	Good	
Outlet Condition	Moderate-Severe Vegetation	

Vegetation must be cleared.

Inspection Date	19-Jun-15	Culvert No. 01-21 Inspector S. Percy
Township	Innisfil	
Road	6th Line	LHRS 24+118 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	15.4	
Culvert Size (mm)	650	
Fill Over Culvert (m)	0.3	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	20	
Blockage In Culvert	Mild Debris	
Culvert Condition	Good	
Inlet Condition	Good	
Outlet Condition	Fair - Moderate deformation	

CULVERT FIEL	D INVESTIGATION	DATA	SHE	ET			
Inspection Date	19-Jun-15	Culvert No.	01-22		Inspector	S. Percy	,
Township	Innisfil	I	LHRS	04+704	OFFSET	0	
Road	6th Line	l	-	24+731 OF INLET			km
Culvert Crossing Type	HIGHWAY C/L	l	1		11/1	1-	
Culvert Type	CSP	l	12		1 AF	100	an
Culvert Shape	CIRCLE			4,	2812		1 E
Culvert Bottom	Steel		50%	X		R	
Culvert Flow Direction	South			3 - 14	m-1	1	
Culvert Length (m)	14.8			The A	17.0		2011
Culvert Size (mm)	400	l	PHOTO	OF OUTLE		1 1 - 1	
Fill Over Culvert (m)	1.5	I					
Fill Material Type	Granular	I	144	1 BAK	PC B		
Depth of Water In Culvert (mm)	100	I	18		1 - A	2	1000
Blockage In Culvert	Water/Sediment 60%	l		\mathbb{N}_{i}	-	312	19. Sa
Culvert Condition	Poor Rusted	l	A. 1.	X			1A
Inlet Condition	Poor- 60% Blocked/Rust/Deformation	l		4	4		~ 他
Outlet Condition	Poor-60% blocked standing water/m	ud and rust	No.		1.2	11	NOV
			L				

Additional Comments

Water flow from nearby field held back by 10-15 ft long stone dam allowing small amount of water to trickle to inlet and through culvert. Standing water at outlet. Culvert likely requires replacement.

	N DATA SHEET
19-Jun-15	Culvert No. 01-23 Inspector S. Percy
Innisfil	LHRS 24+909 OFFSET 0 km
6th Line	LHRS 24+909 OFFSET 0 km PHOTO OF INLET
HIGHWAY C/L	
CSP	
CIRCLE	
Steel	
South	
14.2	
800	
0.7	PHOTO OF OUTLET
Granular	
150	
Water/Sediment 40%	
Good	
Fair- 10% water	
Fair- 40% water	
	Innisfil 6th Line HIGHWAY C/L CSP CIRCLE Steel South 14.2 800 0.7 Granular 150 Water/Sediment 40% Good Fair- 10% water

Additional Comments

Water courses at each end. Seever vegetation must be cleared.

CULVERT FIELD	INVESTIGATIO	N DATA SHEET
Inspection Date	19-Jun-15	Culvert No. 01-24 Inspector S. Percy
Township	Innisfil	
Road	6th Line	LHRS 25+328 OFFSET 0 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)	12.5	
Culvert Size (mm)	500	
Fill Over Culvert (m)	0.4	PHOTO OF OUTLET
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	10	
Blockage In Culvert	10% Sediment	- Alter Lange Alter
Culvert Condition	Fair	
Inlet Condition	Poor- Rust/Deformation	
Outlet Condition	Fair	

Additional Comments Vegetation at Inlet must be cleared.

CULVERT FIELD	INVESTIGAT	ON DAT	A SHEET		
Inspection Date	19-Jun-15	Culvert No.	03-01	Inspector S.	Percy
Township	Innisfil		LHRS 13+110 LT		20 km
Road	5th Sideroad		PHOTO OF INLET	OFFSEI	20 KIII
Culvert Crossing Type	HIGHWAY C/L		Sauk?	a series of	al den.
Culvert Type	CSP			and the state of the	WET I
Culvert Shape	CIRCLE			Company and	
Culvert Bottom	Steel			14. 14	100
Culvert Flow Direction	South		A DATE OF		
Culvert Length (m)			法主动问题		
Culvert Size (mm)	1500		PHOTO OF OUTLET	A Star Providence	
Fill Over Culvert (m)	600		PHOTO OF OUTLET		111
Fill Material Type	Granular		Realist	W. States	Set 4-7
Depth of Water In Culvert (mm)			Ri- Indi	and and	to hat
Blockage In Culvert	Minor Sediment		9.9	12.4	Q. 10
Culvert Condition	Good		Spelle	4	1 A
Inlet Condition	Good		10,221,5190	1 Alt	
Outlet Condition	Good			1 AGO	
			A HEALER	100	107 DAVE.
Additional Comments					

CULVERT FIELD	INVESTIGAT	ION DATA SHEET
Inspection Date	19-Jun-15	Culvert No. 03-02 Inspector S. Percy
Township	Innisfil	LHRS 13+110 RT OFFSET 20 km
Road	5th Sideroad	PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	and the second s
Culvert Type	CSP	
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)		
Culvert Size (mm)	500	PHOTO OF OUTLET
Fill Over Culvert (m)	500	
Fill Material Type	Granular	
Depth of Water In Culvert (mm)		
Blockage In Culvert	15% Sediment	
Culvert Condition	poor	
Inlet Condition	Poor	
Outlet Condition	Fair	
Additional Comments		

Inspection Date	19-Jun-15	Culvert No. 03-03 Inspector S. Percy
	10 0411 10	
Township	Innisfil	
Road	10th Sideroad	LHRS 16+180 LT OFFSET 10 km PHOTO OF INLET
Culvert Crossing Type	HIGHWAY C/L	- Physical States
Culvert Type	CSP	- REAL ME AT
Culvert Shape	CIRCLE	
Culvert Bottom	Steel	
Culvert Flow Direction	South	
Culvert Length (m)		
Culvert Size (mm)	400	PHOTO OF OUTLET
Fill Over Culvert (m)	700	
Fill Material Type	Granular	
Depth of Water In Culvert (mm)	60% Blocked	
Blockage In Culvert	15% Sediment	
Culvert Condition	poor	
Inlet Condition	Buried	
	Buried	