



April 1, 2024

G:\500\536\536.02\02\Mario Milanese\Draft Prelim Design\Stage III Subdivision - Pre-Design Report.docx

Mr. Roger Nesbitt, CAO
City of Dryden
30 Van Horne Avenue
Dryden, Ontario P8N 2A7

via email only

D-536.02

Dear Mr. Nesbitt,

Re: Mario Milanese Subdivision - Stage 3 – Pre-Design Report

1.0 INTRODUCTION

JR Cousin Consultants Ltd. (JRCC) was retained by the City of Dryden (the City) to complete the preliminary design for the Stage 3 extension of the Mario Milanese Subdivision. The Mario Milanese Subdivision is located in the south portion of Dryden. Stage 3 development includes a total area of approximately 4.46 ha (11 acres), including extension of Mario Milanese Place, a south extension of Elvis Avenue, and proposed lots along Sandy Beach Road beginning at Sandy Beach Mews and extending eastward toward Milanese's Lakes.

Other than the existing Sandy Beach Road, the land is mostly undeveloped. The legal plan of the subdivision has been established. Therefore, the surveyed and registered layout of the lots and right of ways are retained with minimal alterations. There are some existing watermain (WM), sanitary sewer (WWS), and land drainage sewer (LDS) underground pipe utilities constructed to previous development plans, and some existing drainage infrastructure along Sandy Beach Road. The existing infrastructure is incorporated into the preliminary design wherever feasible.

2.0 SUBDIVISION BACKGROUND AND PLANNING

JRCC reviewed the original Design Brief for Stage 3 of the Milanese Subdivision (Design Brief, 7709-5), previous design drawings, and all available as-built record information, JRCC has incorporated the City's criteria and standards for water and sewer mainlines, the preferred locations of underground utilities, lot servicing, lot grading and drainage, roads, and active transportation paths and walkways in the preliminary design drawings, located in Appendix A. Thus, the subdivision preliminary design meets the City's vision and the City of Dryden, City of Thunder Bay, and OPSS / MOE standards and specifications.

The current JRCC preliminary design includes a total of 42 single family lots, which includes the amalgamation of the original lot layout's Lot 76 (Block 15) into lots 77, 78, and 79.

The design population estimate for the subdivision extension is based on City of Thunder Bay Standards residential single family dwelling population density of 37 persons per hectare. The area of the proposed 42 lots is 4.19 hectares. Therefore, the design population used for Stage 3 is 155. With 42 lots, the population density is further calculated to be 3.69 persons per single family dwelling or lot. Additional future development is incorporated into the WWS design with an estimated additional 24 lots along Sandy Beach Road to the east of Stage 3.

Proposed vehicle and pedestrian access is provided from Sandy Beach Road and St. Charles Drive via reconstruction of approximately 220 m of Sandy Beach Road, extensions of Elvis Avenue and Mario Milanese Place, and proposed walking pathway and recreational activity trails.

JRCC.ca

It is anticipated that when the final design for Stage 3 extension of the Mario Milanese Subdivision is complete, the City will proceed with the subdivision approval process in preparation for tendering of the project.

3.0 WATER DISTRIBUTION

JRCC preliminary design plans of the proposed underground infrastructure are included in Appendix A, Plans ML1 to ML6. The water distribution system will be connected to existing watermains on Mario Milanese Place, Elvis Avenue, and Sandy Beach Road. Watermain looping is designed within the subdivision to efficiently provide the required system design flows and pressures.

Based on the City's standards, unless noted otherwise, the following are the criteria used for the preliminary design of the water distribution system:

1. The watermain will be constructed of PVC C-900 pipe.
2. Fire hydrants will be Clow Brigadier model M-67.
3. City of Thunder Bay Standards specify minimum and maximum operation pressures of 350 kPa (35.7 m of water) and 700 kPa (71.4m). The standard states homes subjected pressure exceeding 550 kPa (56.1 m) shall be equipped with a pressure regulating device to maintain water pressure in the home at less than 550kPa. The Design Brief assumed operating pressures of the existing system between 350 to 385 kPa (59.5 m).
4. City of Thunder Bay Standards for design domestic water demands and pressures are as follows:
 - a. It is assumed the proposed connections to the existing system can supply at least 350 kPa to the proposed extension.
 - b. Average daily demand is 400 L/p/d.
 - c. The maximum day water demand factor for population up to 500 is 3.00, or 1200 L/p/d.
 - d. The peak rate factor for population up to 500 is 4.50. Therefore, the maximum hourly peak demand is 1800 L/p/d.
 - e. Under maximum hourly demand, the minimum system pressure shall not be less than 275 kPa (28.0 m).
5. City of Thunder Bay Standards design with fire flow assumptions and requirements are:
 - a. The minimum fire flow required is 4550 L/minute, or 76 Liters per second.
 - b. The minimum residual pressure at any location in the system is 140 kPa (14.3 m), with the design maximum daily demand and a design fire flow located at the most critical location.
6. The minimum size of watermain is 150 mm.
7. JRCC design follows The City of Thunder Bay maximum fire hydrant spacing, using a 75 m maximum radius circular zone coverage and maximum 150 m line spacing.
8. The maximum spacing of watermain valves is 240 m. The maximum number of services affected by shutting off any proposed segment of WM is 14.
9. Following The City of Thunder Bay Standards, the design WM cover is 2.15 m to 2.75 m. The cover for service lines is from 2.15 m to 2.5 m.
10. JRCC has designed the watermains offset from the right of way lines as shown on the plans.
11. The JRCC design for proposed mainlines is based on typical offsets from right of way lines for both watermain and sewermain, with horizontal separation being the remainder of the width of the right of ways.
12. Watermain valves and hydrants are to include anode protection in accordance with City of Thunder Bay Standards.
13. City of Thunder Bay Standards recommend 1.0 m preferred and minimum 0.5 m vertical separation between watermains and sewermain.

14. Water service connections will use stainless steel 19 mm service saddle clamps, corporation stops, and curb stops.
15. The water service lines will be Municipex 19 mm. The service lines will be capped at the property line.
16. The service lines will include a minimum fourteen (14) gauge TWH solid copper light coloured plastic coated tracer wire for all non-metallic water connections and fire service mains.

Following the above criteria, the subdivision water distribution system hydraulic properties were modelled using the software EPA Net version 2.2; using the Hazen-Williams friction loss equation to determine pressure losses in the system. The EPA Net model diagrams are included in Appendix B. Pipe roughness coefficients, “C”, used in the model, follow City of Thunder Bay Standards:

- 150 mm and smaller pipe uses a C of 100,
- 200 to 300 mm diameters use a C of 110,
- and pipe 300 mm and larger use a C of 120.

The model uses proposed 150 mm WM pipe throughout. The model also assumes the existing City water distribution system supplies 350 kPa and the required peak hour demands and the combined maximum day demands and fire flow rates. The City of Thunder Bay Standards state with the peak hourly demand, system pressures shall not be less than 275 KPa. The model returns a minimum lowest peak hour demand system operating pressure of 35.70 m, or 350.2 kPa, at the intersection of Sandy Beach Road and Memorial Avenue; model node n129.

A fire flow of 76 liters per second was applied at various proposed subdivision fire hydrant locations, combined with the maximum day demands, to determine the critical fire location. The water distribution system must maintain a minimum of 140 kPa with the design maximum daily demand and a design fire flow located at the most critical fire hydrant location. Table 1: Water Distribution System Pressure with Fire Flow below lists the critical node and minimum system pressure.

Table 1: Water Distribution System Pressure with Maximum Day Demand and Critical Fire Flow

Critical FH node 76 L/s	System Node with Lowest Pressure	Head (m)	Head (kPa)
FHn136	FHn136	23.25	228

Based on the EPA net model analysis, PVC C-900 DR-18 pipe with 150 mm diameter are sufficient for the proposed water mains. The watermain will be installed with 2.15 m to 2.75 m of ground cover.

Service lines will extend to the property line with a curb stop installed 0.3 m from the road allowance. In accordance with City of Dryden recommendations, a 19 mm diameter Municipex service line pipe will be used for housing lots with 2.15 m to 2.5 m of ground cover.

WM construction is to be in accordance with City of Dryden, City of Thunder Bay, and OPSS specifications and standards.

4.0 WASTEWATER COLLECTION

Stage 3 of the Mario Milanese Subdivision will be serviced with a gravity wastewater sewer collection system, which will discharge to an existing lift station location on Sandy Beach Road. The lift station is currently non-operational and

requires pumps and pipe upgrades to accommodate the sewage design flows. See section 8.0 for more information on the lift station and forcemain.

The JRCC mainline gravity wastewater sewer preliminary design criteria is based on the City of Dryden and City of Thunder Bay Standards:

1. The minimum wastewater sewermain diameter is 200 mm.
2. The City of Thunder Bay Standards minimum pipe slope is 0.3%, with 0.5% preferable, as used for Stage 3.
3. The City of Thunder Bay Standards specify a wastewater sewer residential flow rate of 400 L/p/d, and an infiltration rate used for design of sanitary sewers of 0.26 L/s/ha. Further, the maximum allowable infiltration rate is not to exceed 0.075 L/hour/mm of pipe diameter/each 100 m of pipe. The largest infiltration rate calculated by the two criteria above will be used in the design of the sewer system.
4. Weeping tile connections to the wastewater sewer system are not allowed.
5. No roof drain connections are allowed.
6. Wastewater sewermain pipe is to be SDR-35 PVC.
7. City of Thunder Bay Standards minimum ground cover over sanitary sewers is followed, and is 2.5 m, with 2.75 m preferable.
8. City of Thunder Bay Standards recommend manholes to be spaced a maximum of 110 m apart, with 100 m recommended.
9. The City of Thunder Bay Standards for the additional vertical fall in manholes based on the degree of bend of the flow will be followed.
10. All service line pipe is to be a minimum of 150 mm SDR-21 PVC.
11. The minimum slope of service lines is to be 1%.
12. Service lines will be plugged at the front lot property line.

In general, when sizing sewer trunk lines, the maximum recommended flow depth is 70% of the internal diameter of the pipe. When sizing sewer lateral branches, the maximum recommended flow depth is 50% of the internal diameter of the pipe. Flow capacity is calculated using a Mannings roughness factor “n” of 0.013. All sections of pipe have been designed to maintain a minimum 0.6 m/s scour velocity during peak hour flow to prevent buildup of debris with the system.

Table 2: Pipe Flow Rate Capacity at Minimum and Recommended Pipe Slopes

Diameter	Min % Slope	Flow Rate at 50% Flow Depth	Flow Velocity (m/s)	Flow Rate at 70% Flow Depth	Flow Velocity (m/s)
200	0.30	8.98 L/s	0.57	15.0 L/s	0.74
200	0.50	11.6 L/s	0.64	19.4 L/s	0.83

Using City of Thunder Bay infiltration design rate of 0.26 L/s/ha, with an estimated area of 7.36 ha contributing to infiltration, the total flow is 1.9136 L/s for Stage 3. Further, this criteria’s infiltration rate can be calculated as 0.0456 L/s per lot. Using the City of Thunder Bay maximum allowable infiltration rate of 0.075 L/hour/mm of pipe diameter/100 m of pipe, the total infiltration rate is 2.1515 L/s, or 0.0512 L/s per lot. For sizing the Stage 3 WWS pipe, the 2.1515 L/s infiltration rate is used.

City of Thunder Bay peak sewage flow rate factors are calculated based on system population using the Harmon equation:

$$1 + \{14 / [4 + (P/1000)^{0.5}]\}, \text{ where } P \text{ is the total population.}$$

The 42 lot Stage 3 development design population is 155. Additionally, the proposed sewer system will collect sewage diverted from 30 existing houses on Mario Milanese Place (design population of 111), and another 24 future development lots east of Stage 3 along Sandy Beach Road (design population of 89). Therefore, the Harmon peak hour factor is 4.046. Peak design sewage flow, based on a total population of 355, 400 L/p/d, and the peak hour factor, is calculated to be 6.65 L/s. Adding the maximum allowable infiltration, the entire network was analyzed to have sufficient design capacity for 8.80 L/s. The proposed development wastewater sewer is shown on Appendix A, ML1 to ML6. The table below shows the pipe slope and expected flow rates for several key system locations.

Table 3: Sewer Pipe Peak Flow Rates

Upstream Manhole	Downstream Manhole	Diameter	% Slope	Expected Flow Rate	Velocity (m/s)
MH1A	MH1B	200	3.37	2.73 L/s	0.96
MH1B	MH2	200	1.71	2.87 L/s	0.78
MH6	MH8	250	0.68	4.31 L/s	0.63
MH8	MH9	200	6.26	5.17 L/s	1.46

In summary, the proposed 200mm SDR-35 PVC wastewater sewermain pipes will have sufficient capacity. The proposed manholes have been spaced to a maximum of 100 m, and the depth of the sewer will maintain minimum 2.75 m cover.

The proposed wastewater sewers are to be construction in accordance with City, the City of Thunder Bay, and OPSS specifications and standards.

5.0 LOT GRADING AND DRAINAGE

The existing topography is relatively level ground in at the west end of the proposed Stage 3 development. This area requires maximum lot grades of 5%. However, the east side topography drops off steeply toward Milanese's Lakes with slopes of more than 25%.

Previous conceptual design plans used back to front or front to back lot drainage schemes. This lot grading scheme was adopted for the preliminary JRCC proposed lot grading design. However, the east side lots along Elvis Avenue would have to include slopes up to 25% over the entire depth of the lots. In order to reduce the steep front and rear grades of these lots to a 7% maximum, JRCC recommended a walk out basement lot grading scheme for the east side of Elvis Avenue. The walk out lots proposed by JRCC have been accepted by the City.

To ensure the runoff from higher elevation lots will not drain onto adjacent lots, rear lot drainage swales with easements divide the lots along shared rear property lines and direct runoff onto the roadway drainage system. At the lots on the south side of Sandy Beach Road, a proposed perimeter drainage ditch and easement conveys runoff to a short section of LDS under Sandy Beach Road, discharging to Milanese's Lakes.

Final lot grading has not been included in the cost estimate.

6.0 ROADS AND DRAINAGE

The development will be serviced with a network of asphalt paved roads. The road design includes 4.43 m driving lanes, matching the existing roads, and 0.6 m wide concrete curbs and gutters. All roads will have a 3% cross fall and minimum 0.5% longitudinal grade.

Based on the City of Thunder Bay Standards and Specifications:

- The road pavement structure will have:
 - a pavement structure of 80 mm asphalt in two 40 mm lifts,
 - 150 mm A-base,
 - 500 mm B-base,
 - and non-woven geotextile.
- The driveway pavement structure will have:
 - 80 mm asphalt,
 - 150 mm A-base,
 - 200 mm B-base,
 - and non-woven geotextile.
- The 1.5 m and 4.0 m wide development active transportation sidewalks will be designed with:
 - 80mm asphalt,
 - 350 mm A-base,
 - and non-woven geotextile.

All topsoil within the ROW will be stripped prior to construction. Seeding and topsoil has been included for the area between the edge of road and the property line.

Following City of Thunder Bay Standards, minimum intersection curb radii are 8.0 m. Curb and gutter grades will be minimum 0.5%. The maximum road gutter grade is 8%. The maximum sidewalk slope is 5%, with a minimum 2% cross slope. The roadway structures will be constructed over a compacted subgrade free of organic or frost susceptible soil. Minimum boulevard grades of 2% are to be used wherever feasible.

Subdivision drainage throughout the proposed development will be provided using concrete curb and gutter roads for all roadways fronting residential lots. The existing and proposed LDS networks described in section 7.0 will convey the curb and gutter flows to the Milanese's Lakes, and side roadway ditches will be used for drainage of the eastern portion of Sandy Beach Road. All roadway drainage will be located within the proposed road ROW.

7.0 LAND DRAINAGE SEWER

There is an existing LDS in the Mario Milanese Place and Elvis Avenue extensions, including some catch basin inlets along the proposed routes of Mario Milanese Place and Elvis Avenue, discharging to Milanese's Lakes east of Mario Milanese Place. The existing LDS requires adjustment of the catch basin elevations to match with the proposed roadway.

Following the City's standards, the LDS will be PVC SDR-35 pipe with 250 mm to 450 mm diameters. When sizing the LDS pipes, the maximum flow depth is 97% of the internal diameter of the pipe. Flow capacity is calculated using a Mannings roughness factor "n" of 0.013 for smooth wall pipe and 0.025 for corrugated metal pipe. All sections of pipe have been designed to maintain a minimum 0.6 m/s scour velocity during peak hour flow to prevent buildup of debris with the

system. The minimum pipe gradient is 0.5%, and the pipes are sized based on a maximum flow depth of 97%. The LDS will be installed with a minimum of 1.8 m of ground cover.

Table 4: LDS Gravity Pipe Flow at 0.1% Gradient

Diameter	Min % Slope	Flow Rate at 97% Flow Depth
250	0.50	44.81 L/s
300	0.50	72.87 L/s
375	0.50	123.13 L/s
450	0.50	214.85 L/s

Extension of the existing Sandy Beach Road LDS is required, which will discharge into Milanese's Lakes. The proposed LDS pipes are sized in accordance with City of Thunder Bay Standards and Ministry of Transportation (MTO) guidelines to accommodate a 1 in 10-year return storm with a duration of 60 minutes for urban and rural local road LDS pipes and structures. Based on storm intensity, duration, and frequency data from the nearest available rainfall recording station at Rawson Lake Ontario, the 1 in 10-year 60-minute duration storm intensity used is 40 mm per hour.

The estimation of the design flow of the existing LDS pipe on Sandy Beach Road was determined as the maximum capacity of the existing 400 mm diameter pipe at 97% full and 1.45% grade; which is 267.26 L/s. The Stage 3 Subdivision layout along Sandy Beach Road was divided into catchment areas contributing additional runoff to the proposed LDS extension, based on proposed locations of catch basin inlets. The Rational Method was used to calculate peak storm water flow rates, with an assumed post development runoff coefficient of 0.5; which is typical for residential subdivision development.

The layout of the proposed LDS is shown on Plans ML4 and ML5, Appendix A. The table below shows the pipe slope and expected flow rates and velocities for key locations.

Table 5: Proposed LDS Pipe Flow Rates

Upstream LDS CB / Manhole	Downstream LDS Manhole	Diameter	% Slope	Catchment Area [m ²]	Expected 10 Year Return Flow Rate	Flow Depth	Velocity [m/s]
TIE-IN	CB1	400	1.45	N/A	267.26 L/s	97%	2.15
CB1	CB2	450	2.86	6,099.0	301.14 L/s	58%	3.21
CB2	LDS OUTLET	450	7.57	17,594.6	398.89 L/s	51%	4.97

The LDS will be construction is to be in accordance with City of Dryden, City of Thunder Bay, and OPSS specifications and standards.

Various approvals are required (DFO, MNRF, LRCA), with reference to City of Thunder Bay section 2. 2.3.3 and OPSS for the proposed LDS design and construction requirements.

8.0 LIFT STATION AND FORCEMAIN

The existing lift station location on Sandy Beach Road was installed around 1995 but was never commissioned. The Lift station was complete with internal metal piping and a 150 mm diameter PVC C900 forcemain. The internal piping has corroded and will be replaced with new stainless-steel piping and valves. The valves will have their operating rods extended through the lift station lid, to allow operation from the surface.

It is proposed to install 4 hp submersible pumps, with each pump capable of pumping 9.5 L/s at 17.8 m of head. This would meet the peak wet weather flow of 8.8 L/s. Together, both pumps would produce 15.2 L/s at 19.9 m of head.

The existing forcemain is 150 mm diameter PVC C-900 pipe with an inside diameter of 154.7 mm. At the single pump flow of 9.5 L/s, the velocity in the existing forcemain will be 0.50 m/s. This is less than the recommended cleaning velocity of 0.6 m/s from the *Recommended Standards for Wastewater Facilities (Ten State Standards)*, 2014. Therefore, the pump control panel will be programmed to run both pumps periodically to achieve cleaning velocities. When both pumps run the velocity in the forcemain will be 0.81 m/s.

Based on measurements of the existing lift station cover, the proposed pumps would fit through the pump hatch. Several modifications to the existing lift station lid are required, including coring holes for the plug valve operators, installing a davit for a pump lifting hoist. A fiberglass platform and fiberglass ladders will be installed in the lift station for maintenance access.

It is assumed that the electrical service will be 600V, three phase, as that was used in the original lift station and forcemain project. The voltage and size of the service will be confirmed prior to finishing detailed design.

9.0 COST ESTIMATE

An itemized budget class “A” cost estimate of construction and non-construction costs is presented in Appendix B. The following is a summarization of the capital costs for each area of required works for a 2024 construction season. The costs for each year after this projection period should be inflated per prevailing inflation and market conditions.

Table 6 - Class C Cost Estimate – Mario Milanese Subdivision Stage 3

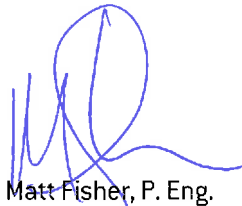
Description	Total
Mobilization, Insurance, and Bonding	\$184,000.00
Water Works	\$706,250.00
Sanitary Sewer Works	\$1,027,050.00
Road Works and Drainage	\$1,934,568.00
Subtotal Construction	\$3,851,868.00
Contingency (5%)	\$192,593.40
Engineering (8%)	\$308,149.44
HST (13%)	\$500,742.84
Total	\$4,853,353.68

Yours truly,

JR Cousin Consultants Ltd.



Scott Blonski, P. Eng.
Municipal Engineer



Matt Fisher, P. Eng.
Senior Municipal Engineer

APPENDIX A

CITY OF DRYDEN

MARIO MILANESE SUBDIVISION STAGE 3

ISSUED FOR
99% REVIEW

PLAN INDEX

GENERAL INFORMATION

GI1 DRAWING LEGEND, ABBREVIATIONS, AND LOCATION PLAN

DESIGN PLANS

ML1	MARIO MILANESE PLACE	PLAN AND PROFILE	STA 1+000.00 TO STA 1+155.00
ML2	ELVIS AVENUE	PLAN AND PROFILE	STA 2+000.00 TO STA 2+140.00
ML3	ELVIS AVENUE	PLAN AND PROFILE	STA 2+140.00 TO STA 2+275.00
ML4	SANDY BEACH ROAD	PLAN AND PROFILE	STA 3+000.00 TO STA 3+195.00
ML5	SANDY BEACH ROAD	PLAN AND PROFILE	STA 3+195.00 TO STA 3+325.00
ML6	LIFTSTATION PRECEDENTS AND EXISTING FORCEMAIN		

GD1	EXISTING CONTOUR PLAN AND TEST HOLE INFORMATION
GD2	TREE CLEARING EXTENTS
GD3	GRADING PLAN

DETAIL PLANS

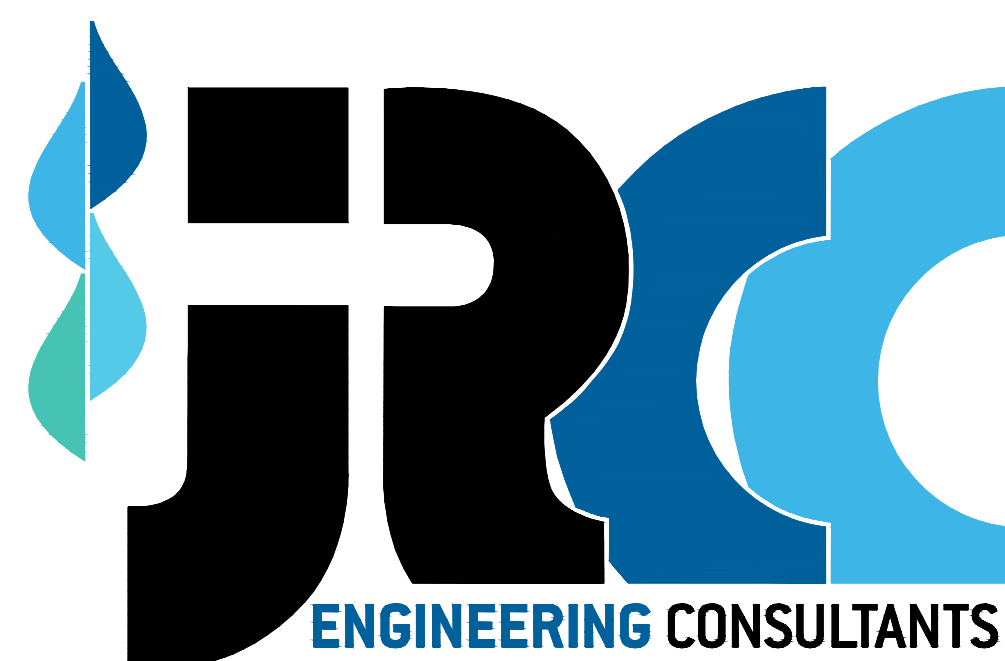
DT1	GRADING AND DRAINAGE DETAILS
DT2	EROSION CONTROL DETAILS
DT3	ROADWAY DETAILS
DT4	UNDERGROUND DETAILS

LIFT STATION PLANS

LS1	LIFT STATION SECTION DETAILS
LS2	LIFT STATION DETAILS

SIGNAGE PLANS

SN1 SIGNAGE PLAN



JR Cousin Consultants Ltd.

91A Scurfield Blvd. Winnipeg MB R3Y 1G4

p. (204) 489-0474

f. (204) 489-0487

www.jrcc.ca

ENGINEERING CONSULTANTS

ENGINEERING EXCELLENCE SINCE 1981

DRAWING LEGEND:

PIPING:

	EXISTING WATERMAIN
	PROPOSED WATERMAIN
	FUTURE WATERMAIN
	EXISTING SEWERMAIN
	PROPOSED SEWERMAIN
	FUTURE SEWERMAIN
	EXISTING FORCEMAIN/PRESSURE SEWER
	PROPOSED FORCEMAIN/PRESSURE SEWER
	FUTURE FORCEMAIN/PRESSURE SEWER
	EXISTING RAW WATERMAIN
	PROPOSED RAW WATERMAIN
	FUTURE RAW WATERMAIN
	EXISTING LAND DRAINAGE SEWER
	PROPOSED LAND DRAINAGE SEWER
	FUTURE LAND DRAINAGE SEWER
	EXISTING FIRE HYDRANT
	PROPOSED FIRE HYDRANT
	EXISTING VALVE
	PROPOSED VALVE
	EXISTING CLEANOUT
	PROPOSED CLEANOUT
	EXISTING MANHOLE
	PROPOSED MANHOLE
	EXISTING CURBSTOP
	PROPOSED CURBSTOP
	EXISTING CURB INLET
	PROPOSED CURB INLET
	EXISTING CATCH BASIN
	PROPOSED CATCH BASIN

ROADS AND DRAINAGE:

	EXISTING ROAD CENTERLINE
	PROPOSED ROAD CENTERLINE
	FUTURE ROAD CENTERLINE
	EXISTING ROAD SHOULDER
	PROPOSED ROAD SHOULDER
	EXISTING ROAD EDGE
	PROPOSED ROAD EDGE
	FUTURE ROAD EDGE
	EXISTING SIDEWALK
	PROPOSED SIDEWALK
	EXISTING DITCH
	PROPOSED DITCH
	EXISTING CULVERT
	PROPOSED CULVERT
	EXISTING DRAINAGE DIRECTION
	PROPOSED DRAINAGE DIRECTION
	CONTOURS - MAJOR INTERVALS
	CONTOURS - MINOR INTERVALS
	EXISTING GROUND ELEVATION
	PROPOSED GROUND ELEVATION
	EXISTING ROAD ELEVATION
	PROPOSED ROAD ELEVATION
	EXISTING SLOPE
	PROPOSED SLOPE
	ASPHALT SURFACE
	GRAVEL SURFACE

MISCELLANEOUS:

	EXISTING FENCE LINE
	PROPOSED FENCE LINE
	EXISTING PROPANE LINE
	PROPOSED PROPANE LINE
	EXISTING HYDRO LINE
	PROPOSED HYDRO LINE
	EXISTING GAS LINE
	EXISTING MTS LINE
	EXISTING BUILDING
	PROPOSED BUILDING
	LEGAL/LOT LINE
	RAILWAY LINE
	MATCH LINE
	EXISTING HYDRO POLE
	PROPOSED HYDRO POLE
	WATER HOLDING TANK
	SEPTIC TANK
	SEWAGE HOLDING TANK
	SURVEY BAR
	SURVEY MONUMENT/BENCHMARK
	EXISTING VEGETATION
	PROPOSED VEGETATION
	DOOR CONSTRUCTION TYPE
	WALL CONSTRUCTION TYPE
	WELDING SYMBOL
	EASEMENT
	NORTH ARROW

ABBREVIATIONS:

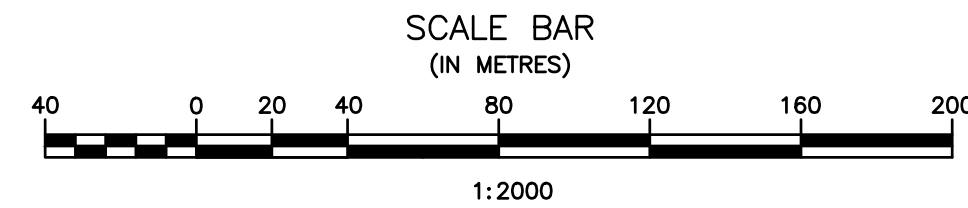
AT	AIR CONDITIONING	E	EAST	JCT	JUNCTION	RAD	RADIUS
ALUM	ALUMINUM	EC	END OF CURVE	JP	JOCKEY PUMP	RD	ROAD
ASPH	ASPHALT	ELEV	ELEVATION	LAB	LABORATORY	REV	REVISION
AVE	AVENUE	ELEC	ELECTRICAL	LAM	LAMINATE	ROW	RIGHT OF WAY
AVG	AVERAGE	EP	EDGE OF PAVEMENT	LAT	LATITUDE	RM	ROOM
BD	BOTTOM OF DITCH	ER	EDGE OF ROAD	LDS	LAND DRAINAGE SEWER	S	SOUTH
BLDG	BUILDING	E/W	EACHWAY	LFS	LEVEL FLOAT SWITCH	SCH	SCHEDULE
BLVD	BOULEVARD	EXT	EXTERIOR	LONG	LONGITUDE	SECT	SECTION
BM	BENCHMARK	FAX	FAX MACHINE STAND	LPS	LOW PRESSURE SEWER	SHT	SHEET
BOT	BOTTOM	FD	FLOOR DRAIN	LWL	LOW WATER LEVEL	SIB	STEEL IRON BAR
BP	BACKWASH PUMP	F/F	FACE TO FACE	m	METRE	SPEC	SPECIFICATION
B/W	BOTHWAYS	FH	FIRE HYDRANT	MCC	MOTOR CONTROL CENTER	SQ	SQUARE
CB	CATCH BASIN	FM	FORCEMAIN	MECH	MECHANICAL	SSL	SEWER SERVICE LINE
CI	CAST IRON	FP	FIRE PUMP	MEMB	MEMBRANE	ST	STREET
CHKD	CHECKED	FT	FOOT, FEET	MH	MANHOLE	STD	STANDARD
CNR	CANADIAN NATIONAL RAILWAY	GA	GAUGE	MIN	MINIMUM	SUSP	SUSPENDED
CO	CLEANOUT	GALV	GALVANIZED	mm	MILLIMETRE	SW	SIDEWALK
COL	COLUMN	HA	HECTARE	MON	MONUMENT	TEL	TELEPHONE
CONC	CONCRETE	HB	HOSE BIBB	N	NORTH	TEMP	TEMPORARY
CONST	CONSTRUCTION	HDPE	HIGH DENSITY POLYETHYLENE	NAT	NATURAL	TP	TRUCKFILL PUMP
CONT	CONTINUOUS	HI	HEIGHT OF INSTRUMENT	NBC	NATIONAL BUILDING CODE	TYP	TYPICAL
COORD	COORDINATE	HPW	HIGH PRESSURE WATER LINE	NTS	NOT TO SCALE	VERT	VERTICAL
CPR	CANADIAN PACIFIC RAILWAY	HORIZ	HORIZONTAL	NWL	NORMAL WATER LEVEL	VOL	VOLUME
C/W	COMPLETE WITH	HP	HYDRO POLE	O/C	ON CENTRE	US	ULTRASONIC TRANSDUCER
DCW	DOMESTIC COLD WATER	HR	HOUR	O/D	OUTSIDE DIAMETER	VAR	VARIES
DEG.	DEGREE	HVAC	HEATING, VENTILATING AND	O/F	OUTSIDE FACE	VB	VAPOUR BARRIER
DHW	DOMESTIC HOT WATER	HW	HOT WATER TANK	O/H	OVER HEAD	VERT	VERTICAL
DIA.Ø	DIAMETER	HWL	HIGH WATER LEVEL	OD	OUTSIDE DIAMETER	VFD	VARIABLE FREQUENCY DRIVE
DIM	DIMENSION	ID	INSIDE DIAMETER	ORIG	ORIGINAL	W	WEST
DIST	DISTANCE	IL	ICE LEVEL	OWSJ	OPEN WEB STEEL JOIST	W/O	WITHOUT
DN	DOWN	INCL	INCLUDE	PLYWD	PLYWOOD	WL	WATER LEVEL
DP	DUTY PUMP	INT	INTERIOR	PROP	PROPERTY	WM	WATERMAIN
DR	DRIVE	INV	INVERT	PS	PRESSURE SEWER	WSL	WATER SERVICE LINE
DWG	DRAWING			PVC	POLYVINYL CHLORIDE	WWS	WASTEWATER SEWER
						WT	WEIGHT

NOTE:

DECIMALIZED NUMBERS INDICATE METRES.
WHOLE NUMBERS INDICATE MILLIMETRES.

A	A - DETAIL NUMBER
B	B - PLAN WHERE DETAIL EXPANDED
C	C - PLAN WHERE DETAIL ORIGINATES

A	A
C	B



LOCATION PLAN
SCALE = 1:2000



PROJECT BENCHMARKS			
BENCHMARK	NORTHING	EASTING	ELEVATION
FH 1	5513590.985	512841.241	388.655
FH 2	5513493.723	512727.537	387.420
FH 3	5513349.571	512878.934	377.145

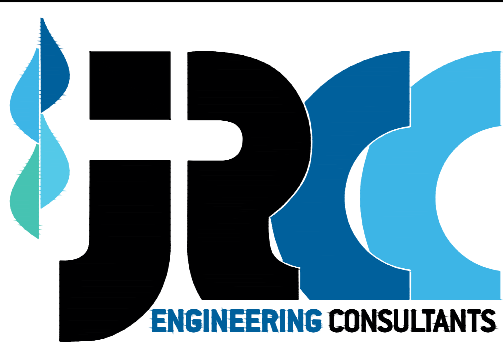
B.M. EL.

SEE TABLE ABOVE

LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.

ENGINEER'S SEAL

PRELIMINARY



JR Cousin Consultants Ltd.

91A Scurfield Blvd. Winnipeg MB R3Y 1G4
p. (204) 489-0474
f. (204) 489-0487
www.jrcc.ca

ENGINEERING EXCELLENCE SINCE 1981

CODE:

D-536.02

DESIGNED BY:

MF

DRAWN BY:

JW

REVIEWED BY:

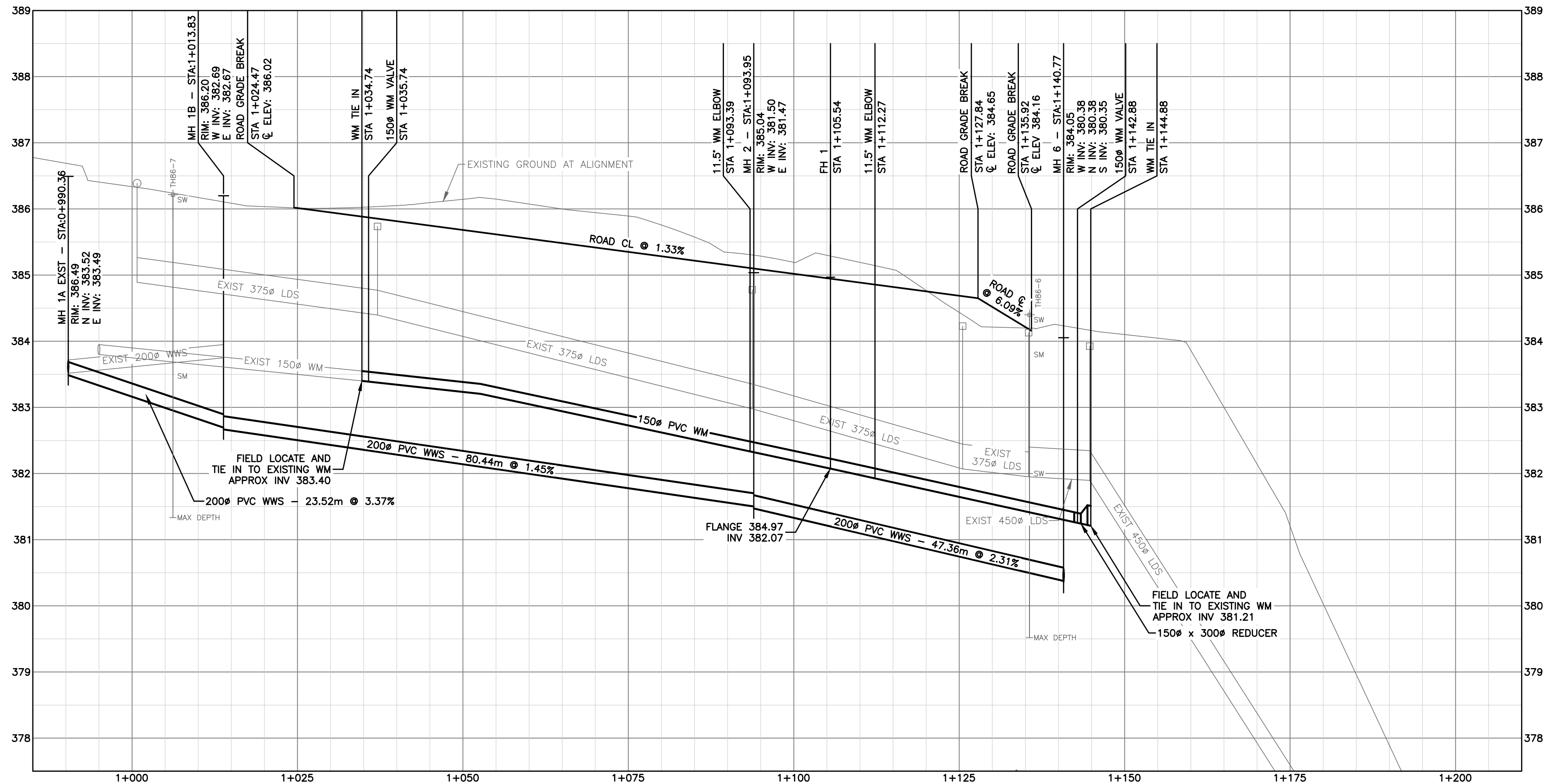
SB

PROJECT:
CITY OF DRYDEN
MARIO MILANESE SUBDIVISION STAGE 3

TITLE:
DRAWING LEGEND, ABBREVIATIONS, AND
LOCATION PLAN

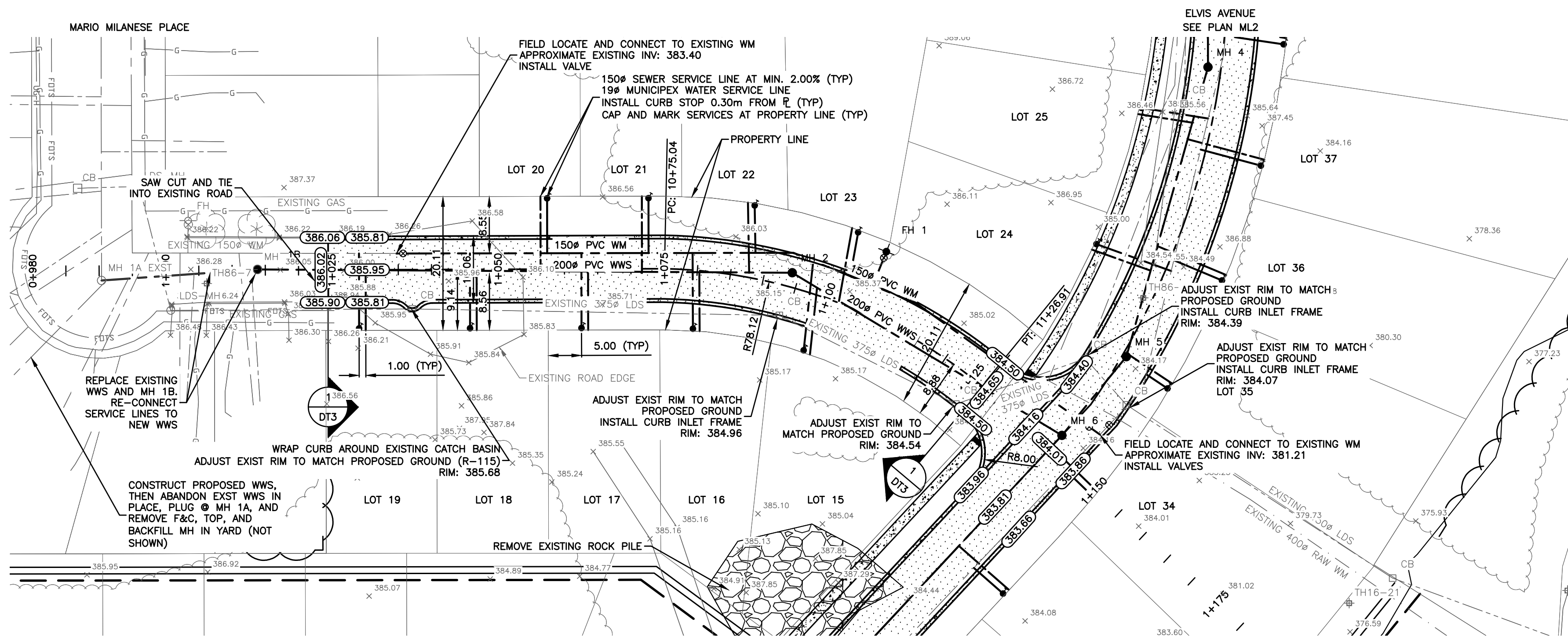
SCALE: 1:2000 DATE: 24/04/01 PLAN: G11 SHEET: 1 of 17

Apr 01, 2024 - 21:11pm 0:0003342 City of Dryden\33632 Mario Milaneze Subdivision Stage 3\A Drawings\Map Design Plans - Mario Milaneze\Variation Plans\ML1-5.dwg



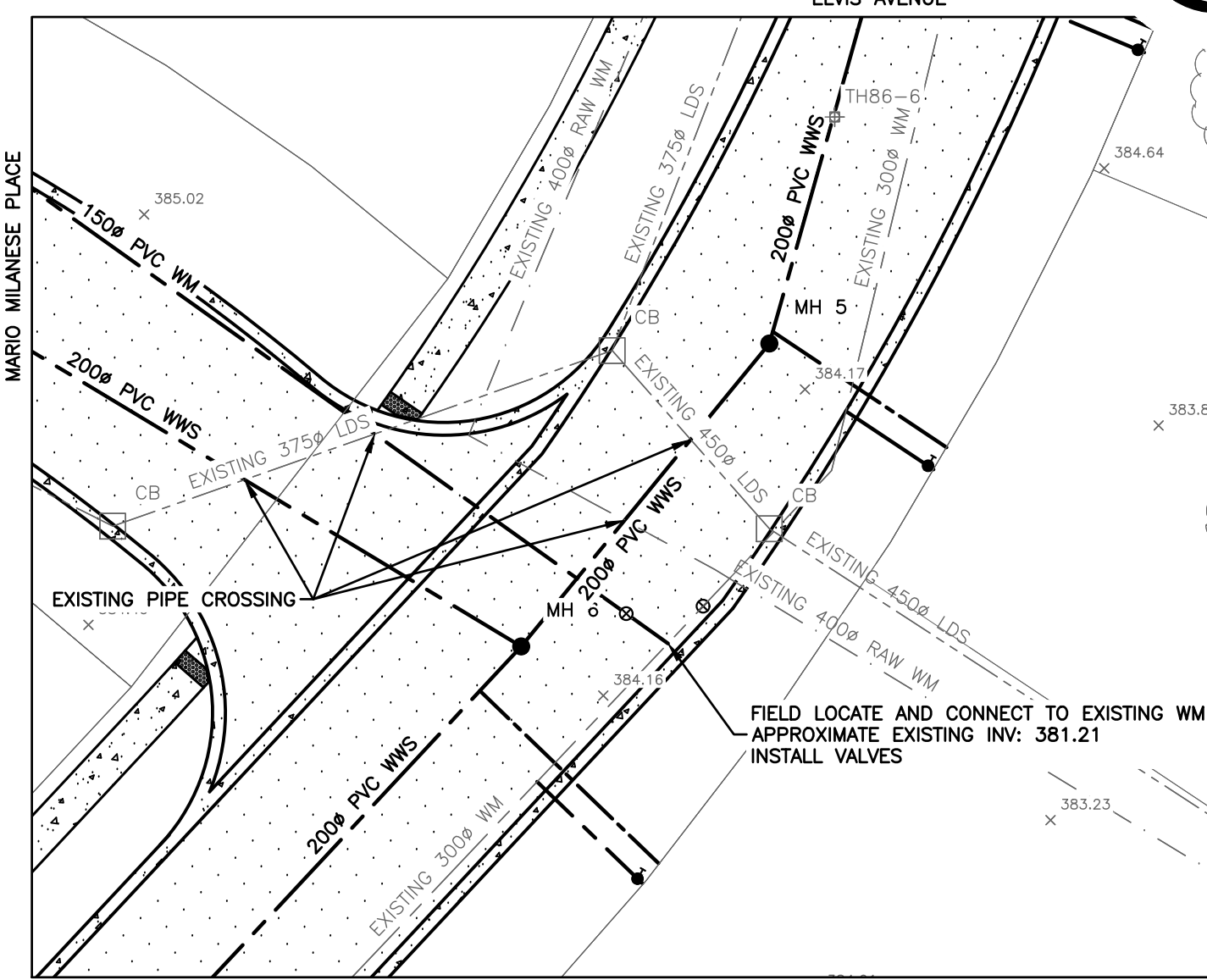
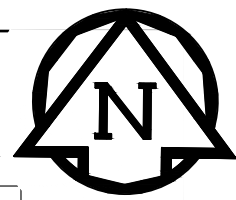
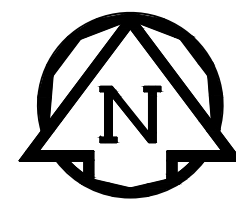
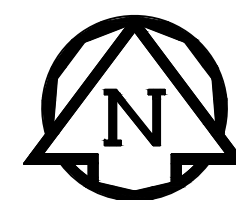
MARIO MILANESE PLACE - STA 1+000.00 TO STA 1+155.00

SCALE = V: 1:50
H: 1:500



MARIO MILANESE PLACE - STA 1+000.00 TO STA 1+155.00

SCALE = 1:500



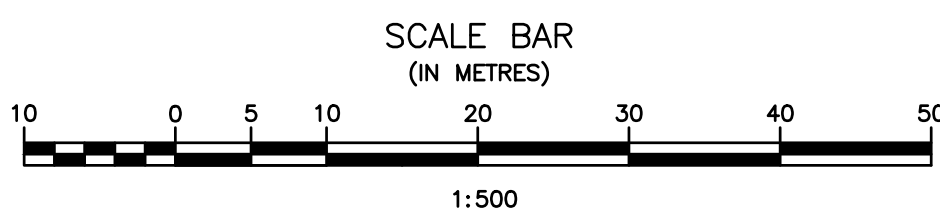
MARIO MILANESE PLACE AND ELVIS AVENUE U/G INTERSECTION

SCALE = 1:250



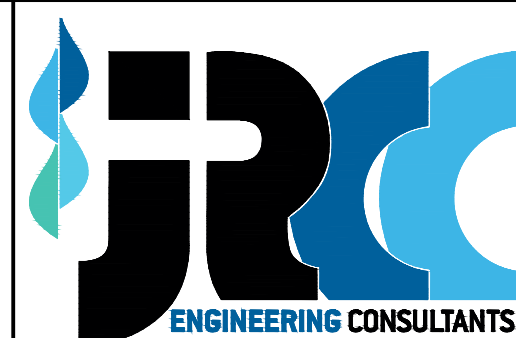
KEY PLAN

SCALE = 1:5000



B.M. EL.			
SEE PLAN G11			
LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION, BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.			
No.	REVISIONS	DATE	INITIALS
1	ISSUED FOR 99% REVIEW	DEC 2023	JW

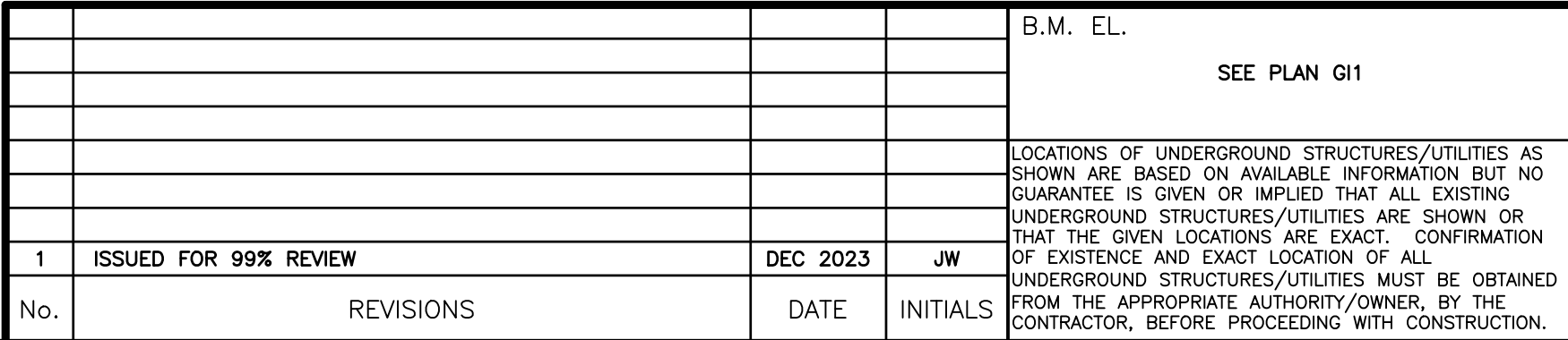
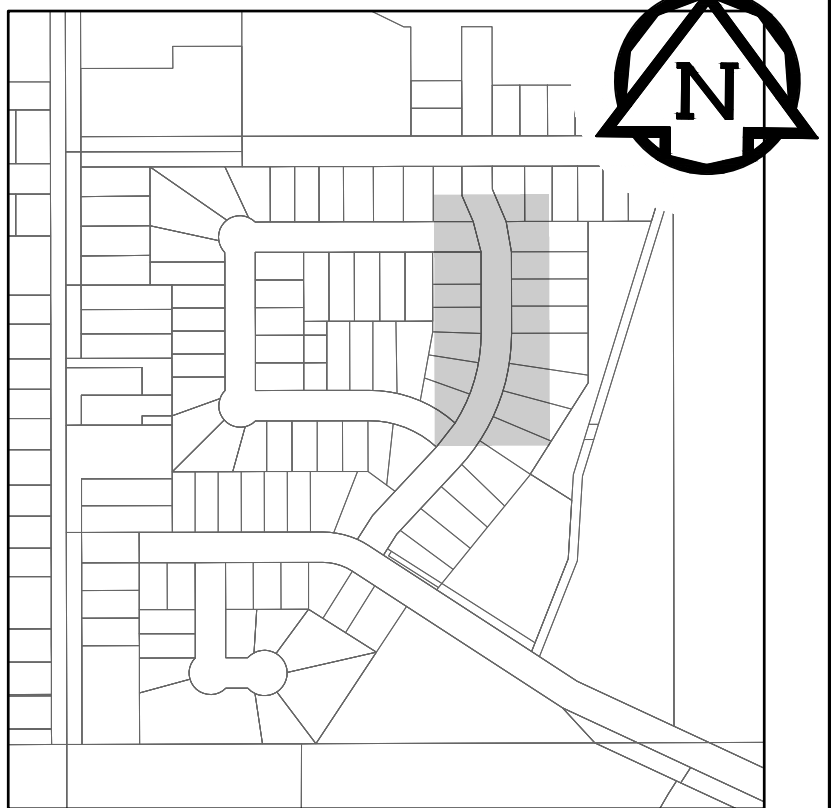
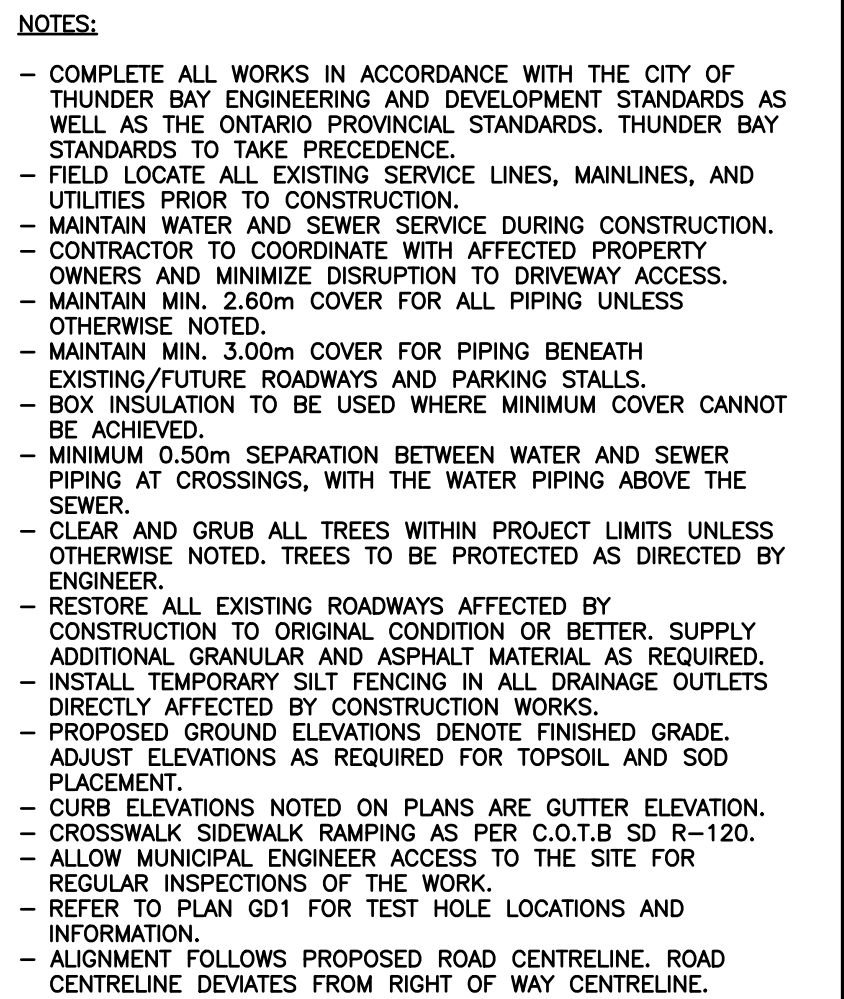
ENGINEER'S SEAL
PRELIMINARY



JR Cousin Consultants Ltd.
91A Scurfield Blvd, Winnipeg MB R3Y 1G4
p. (204) 489-0474
f. (204) 489-0487
www.jrcc.ca

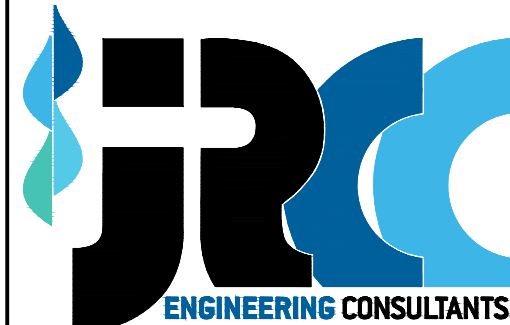
ENGINEERING EXCELLENCE SINCE 1981

CODE: D-536.02	PROJECT: CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3		
DESIGNED BY: MF	TITLE: MARIO MILANESE PLACE PLAN AND PROFILE		
DRAWN BY: JW	STA 1+000.00 TO STA 1+155.00		
REVIEWED BY: SB	SCALE: 1:500	DATE: 24/04/01	PLAN: ML1
			SHEET: 2 of 17



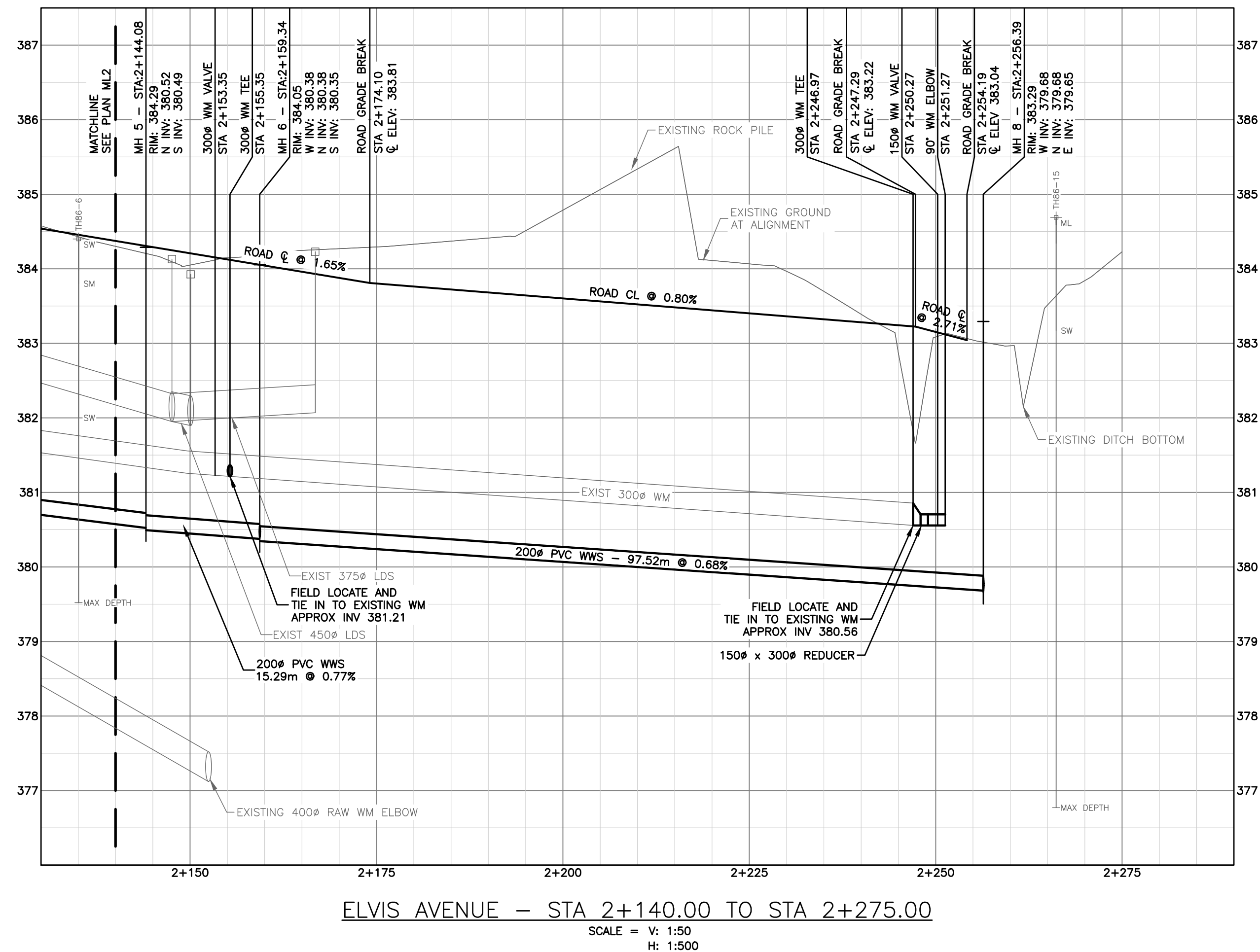
ENGINEER'S SEAL

PRELIMINARY

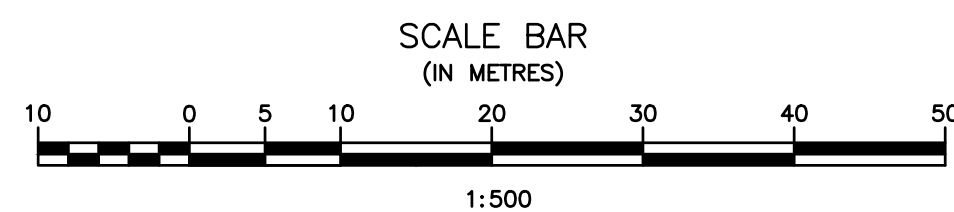
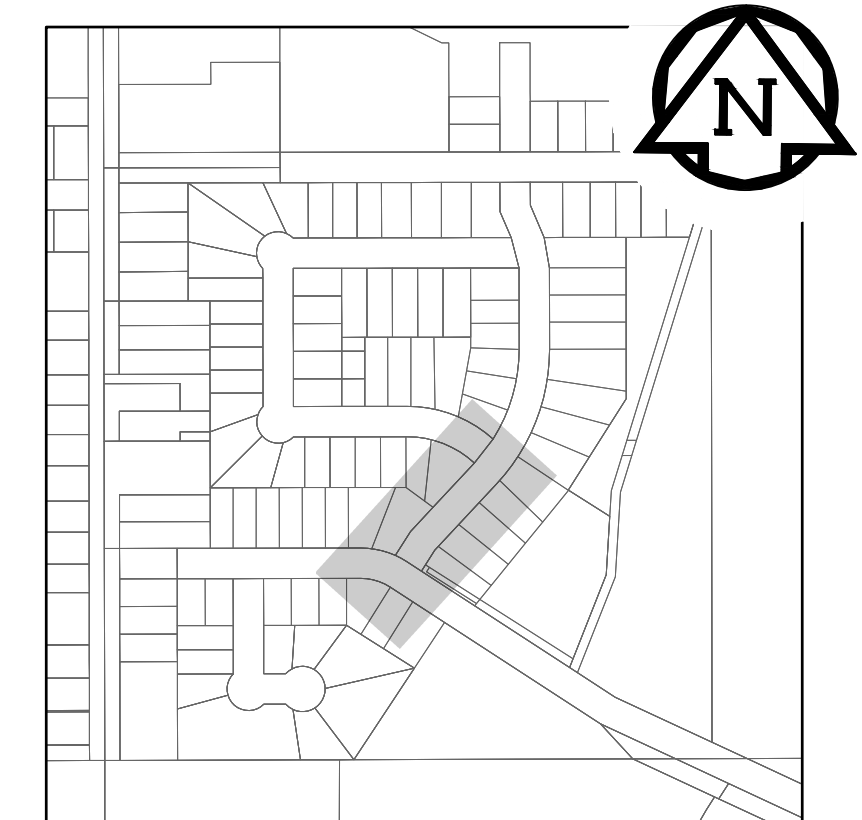
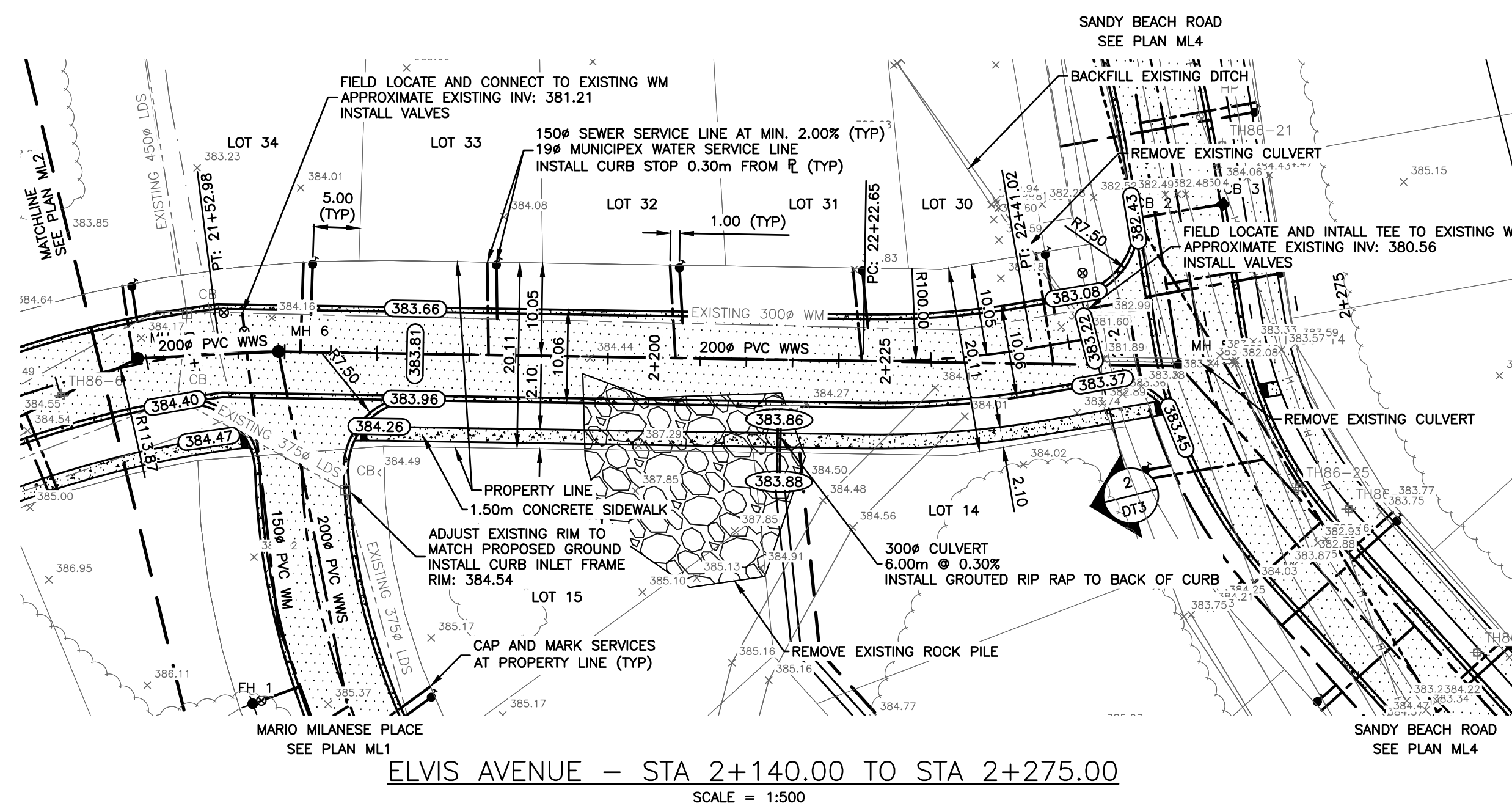


JR Cousin Consultants Ltd.
91A Scurfield Blvd. Winnipeg MB R3Y 1G4
p. (204) 489-0474
f. (204) 489-0487
www.jrcc.ca

CODE:	PROJECT:				
D-536.02	CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3				
DESIGNED BY:	TITLE:				
MF	ELVIS AVENUE				
DRAWN BY:	PLAN AND PROFILE				
JW	STA 2+000.00 TO STA 2+140.00				
REVIEWED BY:	SCALE:	DATE:	PLAN:	SHEET:	
SB	1:500	24/04/01	ML2	3 of 17	



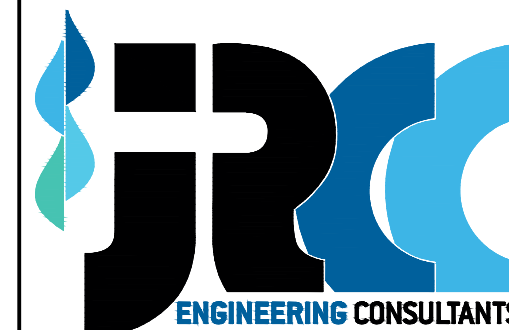
- COMPLETE ALL WORKS IN ACCORDANCE WITH THE CITY OF THUNDER BAY ENGINEERING AND DEVELOPMENT STANDARDS AS WELL AS THE ONTARIO PROVINCIAL STANDARDS. THUNDER BAY STANDARDS TO TAKE PRECEDENCE.
- FIELD LOCATE ALL EXISTING SERVICE LINES, MAINLINES, AND UTILITIES PRIOR TO CONSTRUCTION.
- MAINTAIN WATER AND SEWER SERVICE DURING CONSTRUCTION.
- CONTRACTOR TO COORDINATE WITH AFFECTED PROPERTY OWNERS AND MINIMIZE DISRUPTION TO DRIVEWAY ACCESS.
- MAINTAIN MIN. 2.60m COVER FOR ALL PIPING UNLESS OTHERWISE NOTED.
- MAINTAIN MIN. 3.00m COVER FOR PIPING BENEATH EXISTING/FUTURE ROADWAYS AND PARKING STALLS.
- BOD INSULATION TO BE USED WHERE MINIMUM COVER CANNOT BE ACHIEVED.
- MINIMUM 0.50m SEPARATION BETWEEN WATER AND SEWER PIPING AT CROSSINGS, WITH THE WATER PIPING ABOVE THE SEWER.
- CUT AND GRUB ALL TREES WITHIN PROJECT LIMITS UNLESS OTHERWISE NOTED. TREES TO BE PROTECTED AS DIRECTED BY ENGINEER.
- RESTORE ALL EXISTING ROADWAYS AFFECTED BY CONSTRUCTION TO ORIGINAL CONDITION OR BETTER. SUPPLY ADDITIONAL GRANULAR AND ASPHALT MATERIAL AS REQUIRED.
- INSTALL TEMPORARY SILT FENCING IN ALL DRAINAGE OUTLETS DIRECTLY AFFECTED BY CONSTRUCTION WORKS.
- PROPOSED GROUND SURFACE TO BE FINISHED GRADE. ADJUST ELEVATIONS AS REQUIRED FOR TOPSOIL AND SOD PLACEMENT.
- CURB ELEVATIONS NOTED ON PLANS ARE GUTTER ELEVATION.
- SIDEWALK SIDEWALK RAMPAGE PER C.O.T.B SD R-120.
- ALLOW MUNICIPAL ENGINEER ACCESS TO THE SITE FOR REGULAR INSPECTIONS OF THE WORK.
- REFER TO PLAN GD1 FOR TEST HOLE LOCATIONS AND INFORMATION.
- ALIGNMENT FOLLOWS PROPOSED ROAD CENTRELINE. ROAD CENTRELINE DEVIATES FROM RIGHT OF WAY CENTRELINE.



					B.M. EL.
					SEE PLAN G1
					LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL
1	ISSUED FOR 99% REVIEW		DEC 2023	JW	UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.
No.	REVISIONS		DATE	INITIALS	

ENGINEER'S SEAL

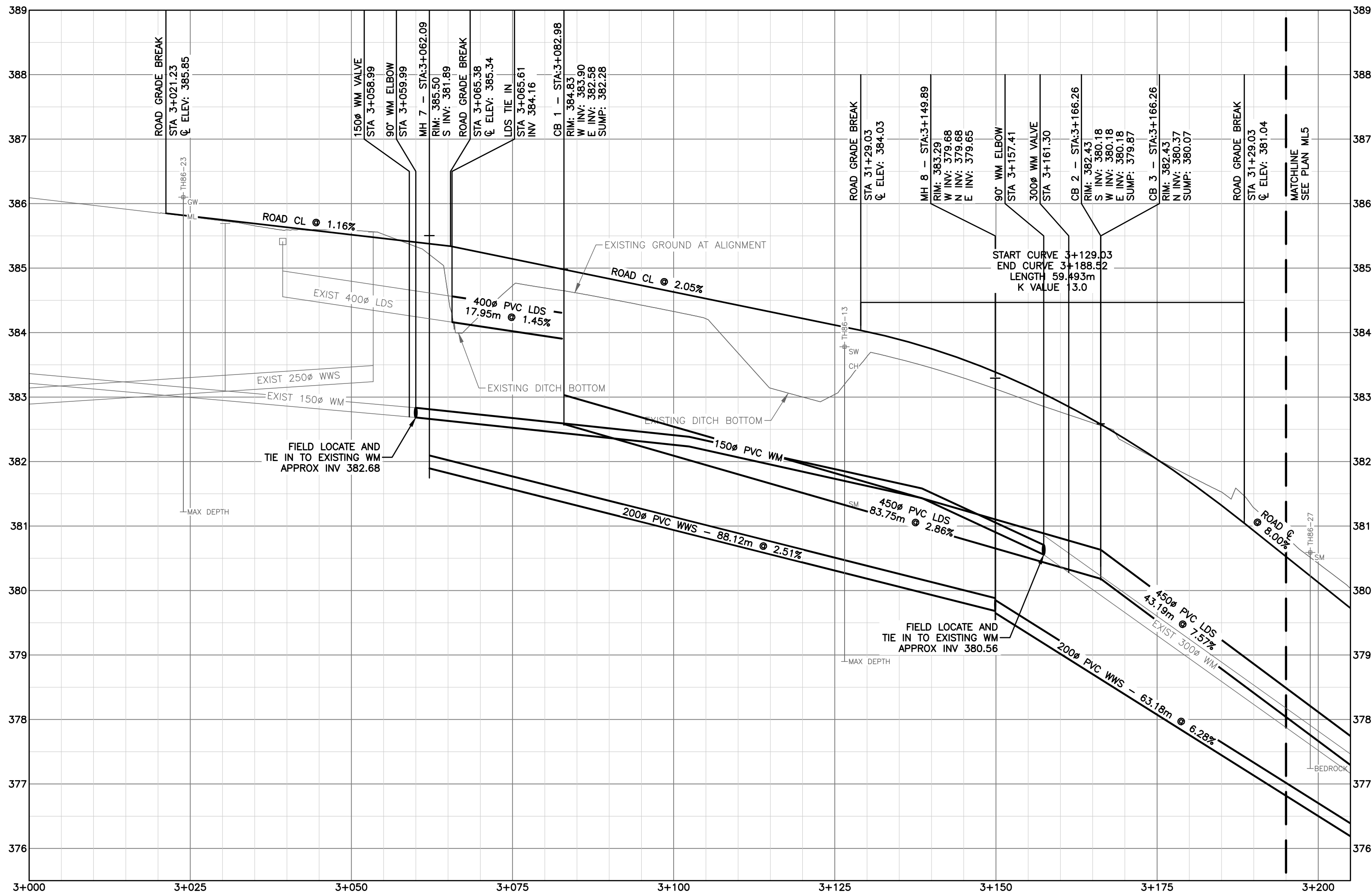
PRELIMINARY



JR Cousin Consultants Ltd.
91A Scurfield Blvd. Winnipeg MB R3Y 1G4
p. (204) 489-0474
f. (204) 489-0487
www.jrcc.ca

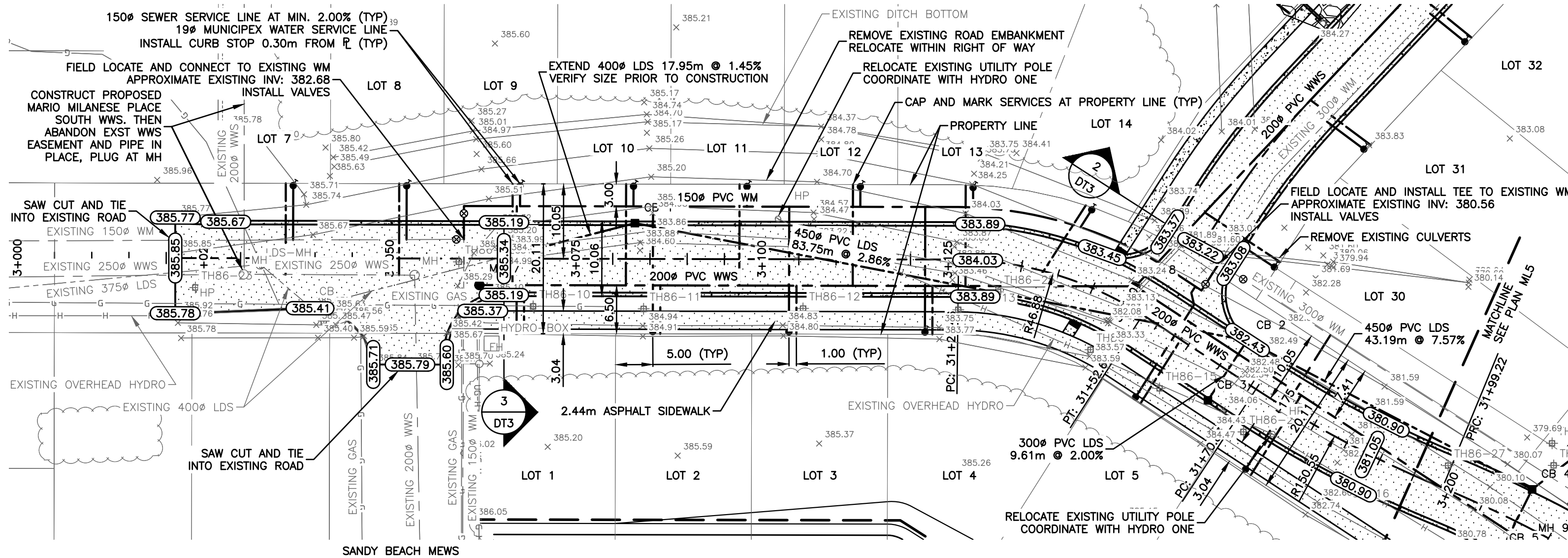
CODE:	PROJECT:			
D-536.02	CITY OF DRYDEN			
DESIGNED BY:	MARIO MILANESE SUBDIVISION STAGE 3			
	TITLE:			
MF	ELVIS AVENUE			
DRAWN BY:	PLAN AND PROFILE			
	STA 2+140.00 TO STA 2+275.00			
JW				
REVIEWED BY:	SCALE:	DATE:	PLAN:	SHEET:
SB	1:500	24/04/01	ML3	4 of 17

Apr 01, 2024 - 2:12pm 0:00:00:00 City of Dryden\036.02 New Home Landscaping Subdivision Design and Mario Milanesi Subdivision Stage 3\04 Drawings\04\Design Plans - Mario Milanesi\04\Subdivision Plans\ML1-5.dwg



SANDY BEACH ROAD – STA 3+000.00 TO STA 3+195.00

SCALE = V: 1:50
H: 1:500



SANDY BEACH ROAD – STA 3+000.00 TO STA 3+195.00

SCALE = 1:500

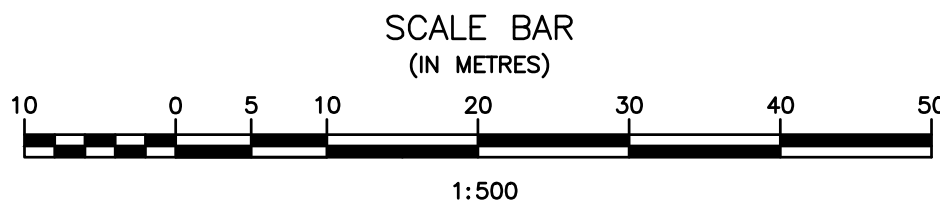
NOTES:

- COMPLETE ALL WORKS IN ACCORDANCE WITH THE CITY OF THUNDER BAY ENGINEERING AND DEVELOPMENT STANDARDS AS WELL AS THE ONTARIO PROVINCIAL STANDARDS. THUNDER BAY STANDARDS TO TAKE PRECEDENCE.
- FIELD LOCATE ALL EXISTING SERVICE LINES, MAINLINES, AND UTILITIES PRIOR TO CONSTRUCTION.
- MAINTAIN WATER AND SEWER DURING CONSTRUCTION. CONTRACTOR TO COORDINATE WITH AFFECTED PROPERTY OWNERS AND MINIMIZE DISRUPTION TO DRIVEWAY ACCESS.
- MAINTAIN MIN. 2.60m COVER FOR ALL PIPING UNLESS OTHERWISE NOTED.
- MAINTAIN MIN. 3.00m COVER FOR PIPING BENEATH EXISTING/FUTURE ROADWAYS AND PARKING STALLS.
- BOX INSULATION TO BE USED WHERE MINIMUM COVER CANNOT BE ACHIEVED.
- MINIMUM 0.50m SEPARATION BETWEEN WATER AND SEWER PIPING AT CROSSINGS, WITH THE WATER PIPING ABOVE THE SEWER.
- CLEAR AND GRUB ALL TREES WITHIN PROJECT LIMITS UNLESS OTHERWISE NOTED. TREES TO BE PROTECTED AS DIRECTED BY ENGINEER.
- RESTORE ALL EXISTING ROADWAYS AFFECTED BY CONSTRUCTION TO ORIGINAL CONDITION OR BETTER. SUPPLY ADDITIONAL GRANULAR AND ASPHALT MATERIAL AS REQUIRED.
- INSTALL TEMPORARY SILT FENCING IN ALL DRAINAGE OUTLETS DIRECTLY AFFECTED BY CONSTRUCTION WORKS.
- PROPOSED GROUND ELEVATIONS DENOTE FINISHED GRADE. ADJUST ELEVATIONS AS REQUIRED FOR TOPSOIL AND SOD PLACEMENT.
- CURB ELEVATIONS NOTED ON PLANS ARE GUTTER ELEVATION.
- CROSSWALK SIDEWALK RAMPING AS PER C.O.T.B SD R-120.
- ALLOW MUNICIPAL ENGINEER ACCESS TO THE SITE FOR REGULAR INSPECTIONS OF THE WORK.
- REFER TO PLAN G01 FOR TEST HOLE LOCATIONS AND INFORMATION.
- ALIGNMENT FOLLOWS PROPOSED ROAD CENTRELINE. ROAD CENTRELINE DEVIATES FROM RIGHT OF WAY CENTRELINE.



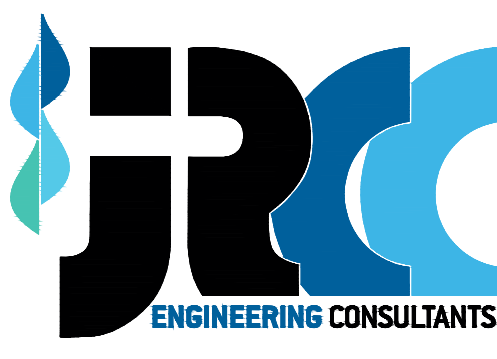
KEY PLAN

SCALE = 1:5000



				B.M. EL.
				SEE PLAN G11
				LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.
1	ISSUED FOR 99% REVIEW	DEC 2023	JW	
No.	REVISIONS	DATE	INITIALS	

ENGINEER'S SEAL
PRELIMINARY

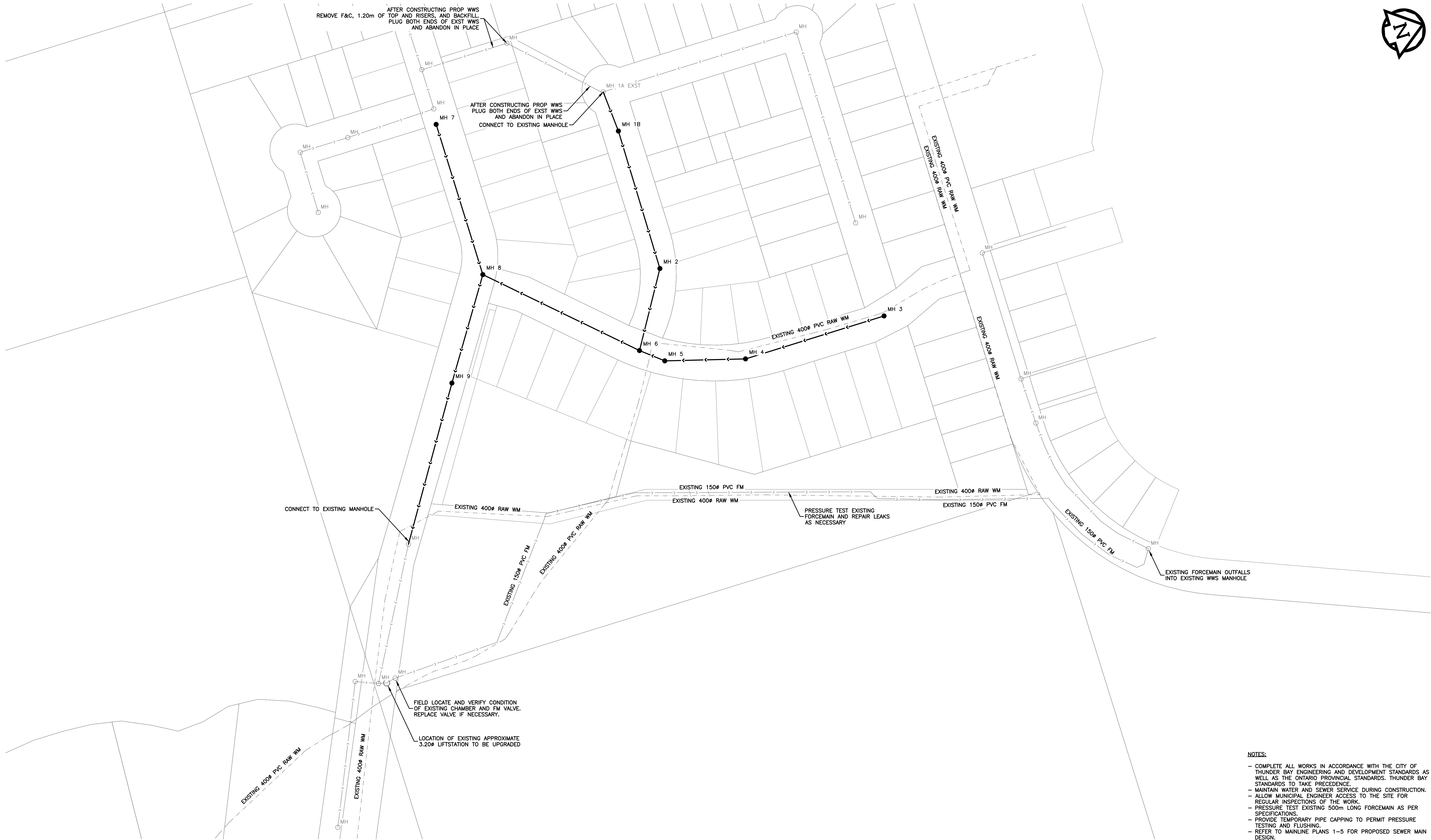
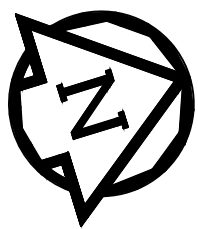


JR Cousin Consultants Ltd.

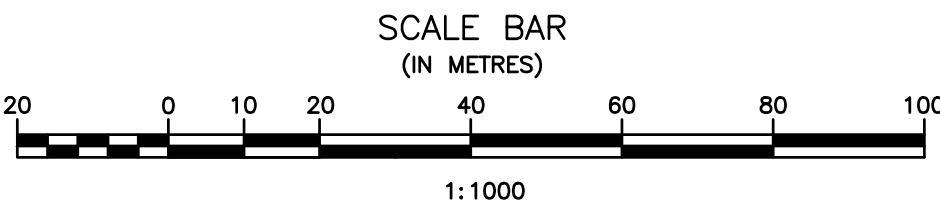
91A Scurfield Blvd, Winnipeg MB R3Y 1G4
p. [204] 489-0474
f. [204] 489-0487
www.jrcc.ca

ENGINEERING EXCELLENCE SINCE 1981

CODE: D-536.02	PROJECT: CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3
DESIGNED BY: MF	TITLE: SANDY BEACH ROAD PLAN AND PROFILE
DRAWN BY: JW	STA 3+000.00 TO STA 3+195.00
REVIEWED BY: SB	SCALE: 1:500 DATE: 24/04/01 PLAN: ML4 SHEET: 5 of 17



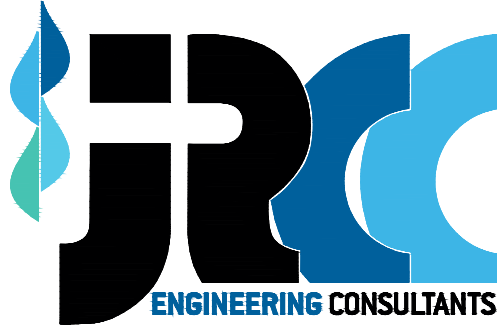
- NOTES:**
- COMPLETE ALL WORKS IN ACCORDANCE WITH THE CITY OF THUNDER BAY ENGINEERING AND DEVELOPMENT STANDARDS AS WELL AS THE ONTARIO PROVINCIAL STANDARDS. THUNDER BAY STANDARDS TO TAKE PRECEDENCE.
 - MAINTAIN WATER AND SEWER SERVICE DURING CONSTRUCTION.
 - ALLOW MUNICIPAL ENGINEER ACCESS TO THE SITE FOR REGULAR INSPECTIONS OF THE WORK.
 - PRESSURE TEST EXISTING 500m LONG FORCEMAIN AS PER SPECIFICATIONS.
 - PROVIDE TEMPORARY PIPE CAPPING TO PERMIT PRESSURE TESTING AND FLUSHING.
 - REFER TO MAINLINE PLANS 1-5 FOR PROPOSED SEWER MAIN DESIGN.



				B.M. EL.
				SEE PLAN G11
				LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.
1	ISSUED FOR 99% REVIEW	DEC 2023	JW	
No.	REVISIONS	DATE	INITIALS	

ENGINEER'S SEAL

PRELIMINARY



JR Cousin Consultants Ltd.

91A Scurfield Blvd. Winnipeg MB R3Y 1G4

p. [204] 489-0474

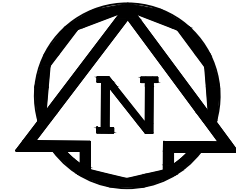
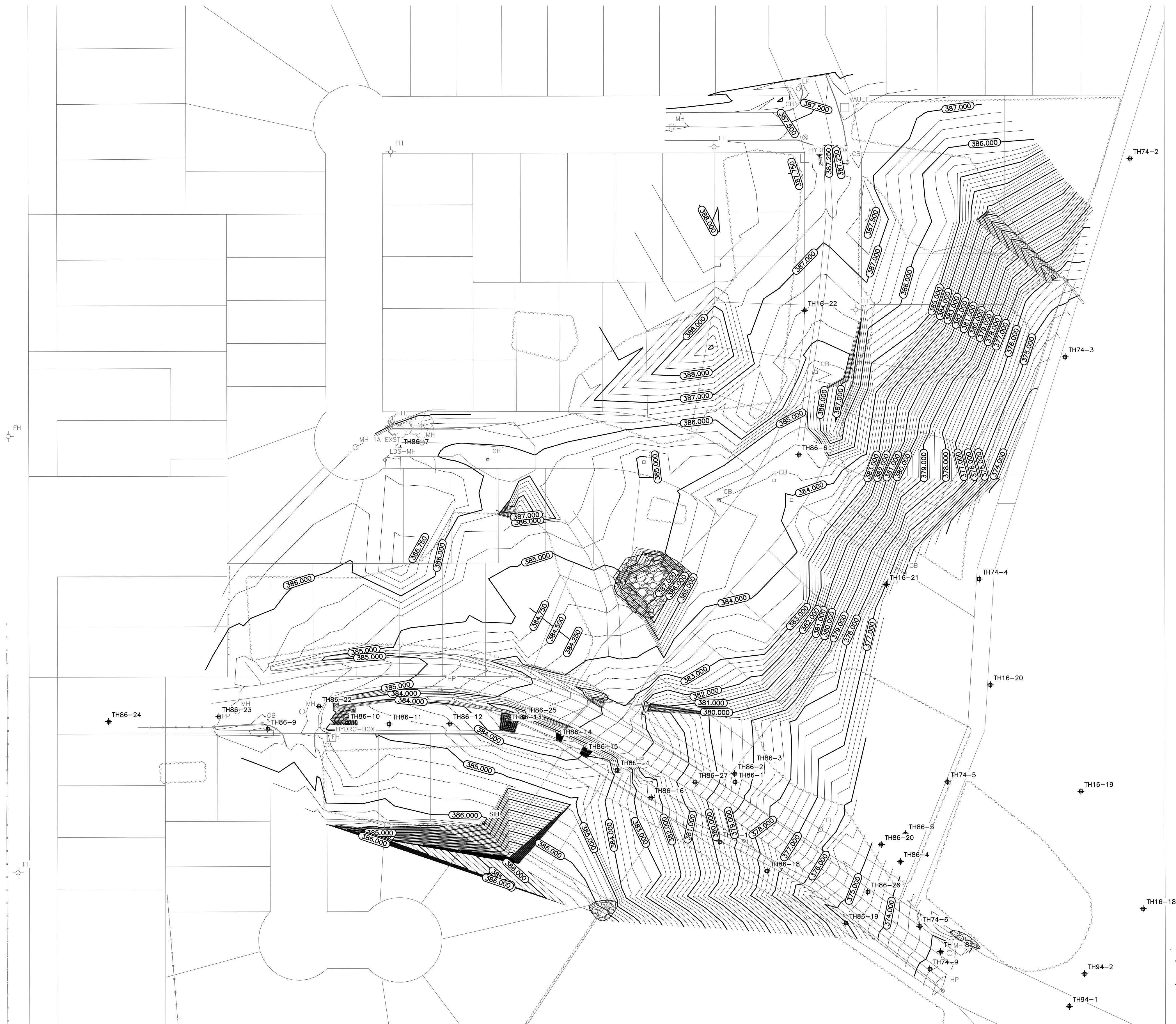
f. [204] 489-0487

www.jrcc.ca

ENGINEERING EXCELLENCE SINCE 1981

CODE: D-536.02	PROJECT: CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3			
DESIGNED BY: MF	TITLE: LIFTSTATION PRECEDENTS AND EXISTING FORCEMAIN			
DRAWN BY: JW				
REVIEWED BY: SB				
SCALE: 1:1000	DATE: 24/04/01	PLAN: ML6	SHEET: 7 of 17	

Apr 01, 2024 - 21:22pm 0:0000336 City of Dryden\336.02 Mario Milaneze Subdivision Stage 3\336.02 Drawings\Map\Design Plans - Mario Milaneze\Variation Plans\031 002.dwg



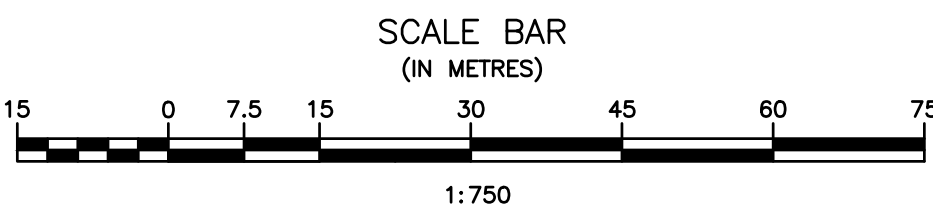
TESTHOLE LOG:
TEST HOLES FROM 1974 INTAKE LINE PROFILE
TH74-2 - ELEV. 381.8
-SAND TO 3.0m (MAX DEPTH DRILLED)
TH74-3 - ELEV. 373.6
-SAND TO 2.6m (MAX DEPTH DRILLED)
(WET/WATER AT 1.5m)
TH74-4 - ELEV. 372.8
-LOOSE SAND TO 1.8m (MAX DEPTH DRILLED)
(WET AND CAVING AT 0.6m)
TH74-5 - ELEV. 374.1
-SAND & BOULDERS TO 1.0m
-BEDROCK @ 1.0m
TH74-6 - ELEV. 372.9
-SAND & BOULDERS TO 2.0m
-BEDROCK @ 2.0m
TH74-8 - ELEV. 371.6
-SAND & BOULDERS TO 0.46m
-BEDROCK @ 0.46m
TH74-9 - ELEV. 371.6
-SAND & BOULDERS TO 0.9m
-BEDROCK @ 0.9m

MILANESE SUBDIVISION TEST HOLES (UMA-1986)
TH86-1 - ELEV. 378.47
-SAND TO 1.67m
-BEDROCK @ 1.67m
TH86-2 - ELEV. 378.53
-SAND TO 1.83m
-BEDROCK @ 1.83m
TH86-3 - ELEV. 379.17
-SAND WITH SILT TO 9.9m
-WATER LEVEL AT 5.8m
-BEDROCK @ 9.9m
TH86-4 - ELEV. 374.09
-SAND WITH SHOT ROCK TO 1.52m
-BEDROCK @ 1.52m
TH86-5 - ELEV. 373.85
-SAND TO 2.13m
-BEDROCK @ 2.13m
TH86-6 - ELEV. 384.4
-SAND TO 0.6m
-SILTY CLAY 0.6m TO 2.4m
-SAND 2.4m TO 4.88m (MAX DEPTH DRILLED)
TH86-7 - ELEV. 386.2
-SAND TO 2.74m
-SILTY SAND 2.74m TO 4.88m (MAX DEPTH DRILLED)
TH86-8 - ELEV. 387.2
-FINE SAND TO 2.7m
-WET SAND 2.7m TO 4.0m (MAX DEPTH DRILLED)
TH86-9 - ELEV. 385.53
-SAND TO 0.46m
-CLAY 0.46m TO 4.34m
-SILTY SAND 4.34m TO 4.88m (MAX DEPTH DRILLED)
TH86-10 - ELEV. 385.24
-CLAY TO 3.96m
-SAND 3.96m TO 4.88m (MAX DEPTH DRILLED)
TH86-11 - ELEV. 385.12
-SAND TO 0.30m
-CLAY 0.30m TO 3.96m
-SILT 3.96m TO 4.88m (MAX DEPTH DRILLED)
TH86-12 - ELEV. 384.73
-SAND TO 0.15m
-CLAY 0.15m TO 3.66m
-SAND 3.66m TO 4.88m (MAX DEPTH DRILLED)
TH86-13 - ELEV. 383.78
-SAND TO 0.30m
-CLAY 0.30m TO 2.44m
-SILT WITH SAND 2.44m TO 4.88m (MAX DEPTH DRILLED)
TH86-14 - ELEV. 384.12
-CLAY TO 1.83m
-SAND WITH SILT 1.83m TO 4.88m
-SAND 4.88m 6.40m (MAX DEPTH DRILLED)
TH86-15 - ELEV. 384.69
-SILT TO 1.52m
-SAND 1.52m TO 7.92m (MAX DEPTH DRILLED)

TH86-16 - ELEV. 382.09
-SAND TO 5.64m
-BEDROCK @ 5.64m
TH86-17 - ELEV. 378.95
-SAND TO 3.81m
-BEDROCK @ 3.81m
TH86-18 - ELEV. 378.93
-SAND TO 0.61m
-BEDROCK @ 0.61m
TH86-19 - ELEV. 375.07
-SAND TO 1.52m
-BEDROCK @ 1.52m
TH86-20 - ELEV. 373.82
-SAND TO 1.52m
-SAND WITH SILT AND CLAY 1.52m TO 2.29m
-SAND 2.29m TO 2.74m
-BEDROCK @ 2.74m
TH86-21 - ELEV. 380.56
-SILT TO 4.88m (MAX DEPTH DRILLED)
TH86-22 - ELEV. 380.56
-SAND TO 1.22m
-CLAY 1.22m TO 3.05m
-SILT 3.05m TO 4.88m (MAX DEPTH DRILLED)
TH86-23 - ELEV. 386.10
-GRANULAR TO 0.15m
-SILT 0.15m TO 4.88m (MAX DEPTH DRILLED)
TH86-24 - ELEV. 386.58
-GRANULAR TO 0.15m
-SAND 0.15m TO 0.21m
-CLAY 0.21m TO 1.83m
-SILT 1.83m TO 4.88m (MAX DEPTH DRILLED)
TH86-25 - ELEV. 384.80
-GRANULAR TO 0.15m
-CLAY 0.15m TO 2.44m
-SILT 2.44m TO 4.88m (MAX DEPTH DRILLED)
TH86-26 - ELEV. 374.03
-GRANULAR TO 0.15m
-SILT 0.15m TO 1.52m
-SAND 1.52m TO 3.81m
-BEDROCK @ 3.81m
TH86-27 - ELEV. 380.59
-SILTY SAND TO 3.35m
-BEDROCK @ 3.35m

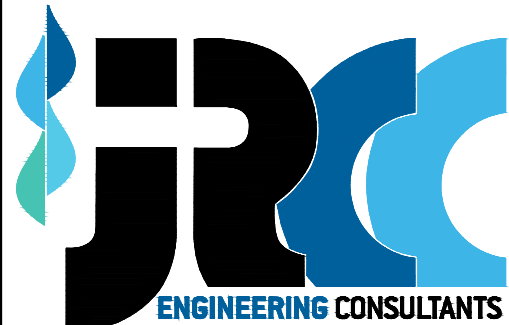
SANDY BEACH ROAD PUMPING STATION TEST HOLES (TROW 1994)
TH94-1 - ELEV. 370.4
-GRAVEL FILL (ROAD BED) TO 1.2m
-SAND MED GRAIN 1.2m TO 1.7m
-PEAT SOFT WET 1.7m TO 3.0m
-LAKE SEDIMENT, VERY SOFT 3.0m TO 4.1m
-SAND (COMPACT AT 4.9) 4.1m TO 6.3m
-BEDROCK @ 6.3m
TH94-2 - ELEV. 370.30
-SILTY SAND SOME CLAY TO 1.5m
-PEAT SOFT WET 1.5m TO 3.0m
-LAKE SEDIMENT, VERY SOFT 3.0m TO 3.5m
-SILTY SAND (SATURATED) 3.5m TO 4.6m
-SAND 4.6m TO 5.6m
-BEDROCK @ 5.6m

TEST HOLES FROM 2016 INTAKE LINE PROFILE
TH16-18 - ELEV. 371.9m
-TOPSOIL TO 0.2m
-SAND 0.2m TO 0.7m
-BEDROCK 0.7m TO 4.6m (MAX DEPTH DRILLED)
TH16-19 - ELEV. 370.9m
-TOPSOIL TO 0.2m
-SAND 0.2m TO 0.9m
-BEDROCK 0.9m TO 4.4m (MAX DEPTH DRILLED)
TH16-20 - ELEV. 373.8m
-TOPSOIL TO 0.2m
-SAND 0.2m TO 5.2m (MAX DEPTH DRILLED)
TH16-21 - ELEV. 377.0m
-TOPSOIL TO 0.2m
-SAND 0.2m TO 5.2m (MAX DEPTH DRILLED)
TH16-22 - ELEV. 386.7m
-TOPSOIL TO 0.2m
-SAND 0.2m TO 5.2m (MAX DEPTH DRILLED)



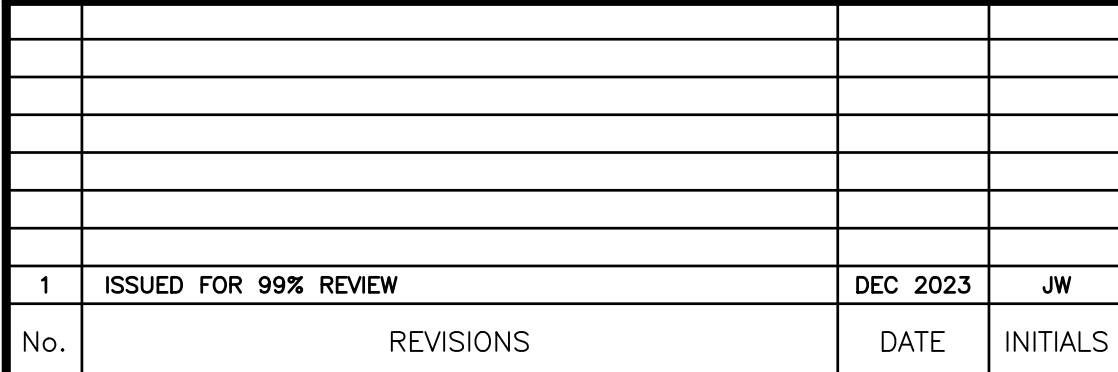
						B.M. EL.
						SEE PLAN G11
						LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.
1	ISSUED FOR 99% REVIEW	DEC 2023	JW			
No.	REVISIONS	DATE	INITIALS			

ENGINEER'S SEAL
PRELIMINARY



JR Cousin Consultants Ltd.
91A Scurfield Blvd, Winnipeg MB R3Y 1G4
p. [204] 489-0474
f. [204] 489-0487
www.jrcc.ca
ENGINEERING EXCELLENCE SINCE 1981

CODE: D-536.02		PROJECT: CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3			
DESIGNED BY: MF		TITLE: EXISTING CONTOUR PLAN AND TEST HOLE INFORMATION			
DRAWN BY: JW					
REVIEWED BY: SB		SCALE: 1:750	DATE: 24/04/01	PLAN: GD1	SHEET: 8 of 17

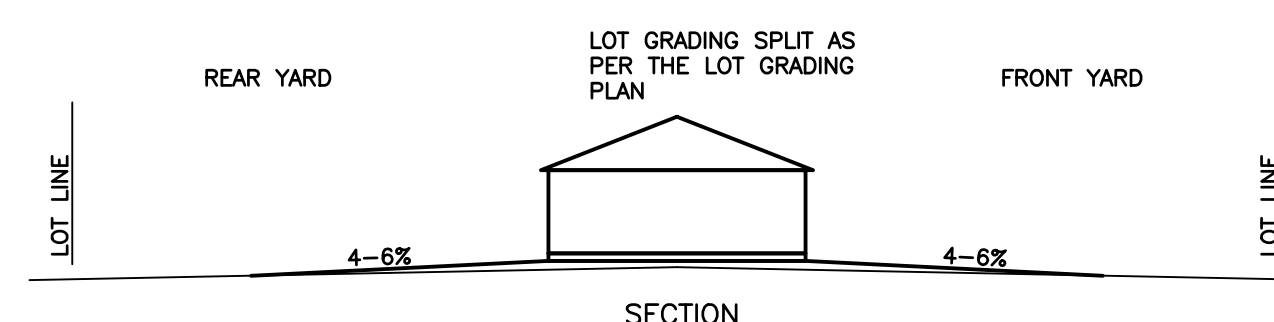
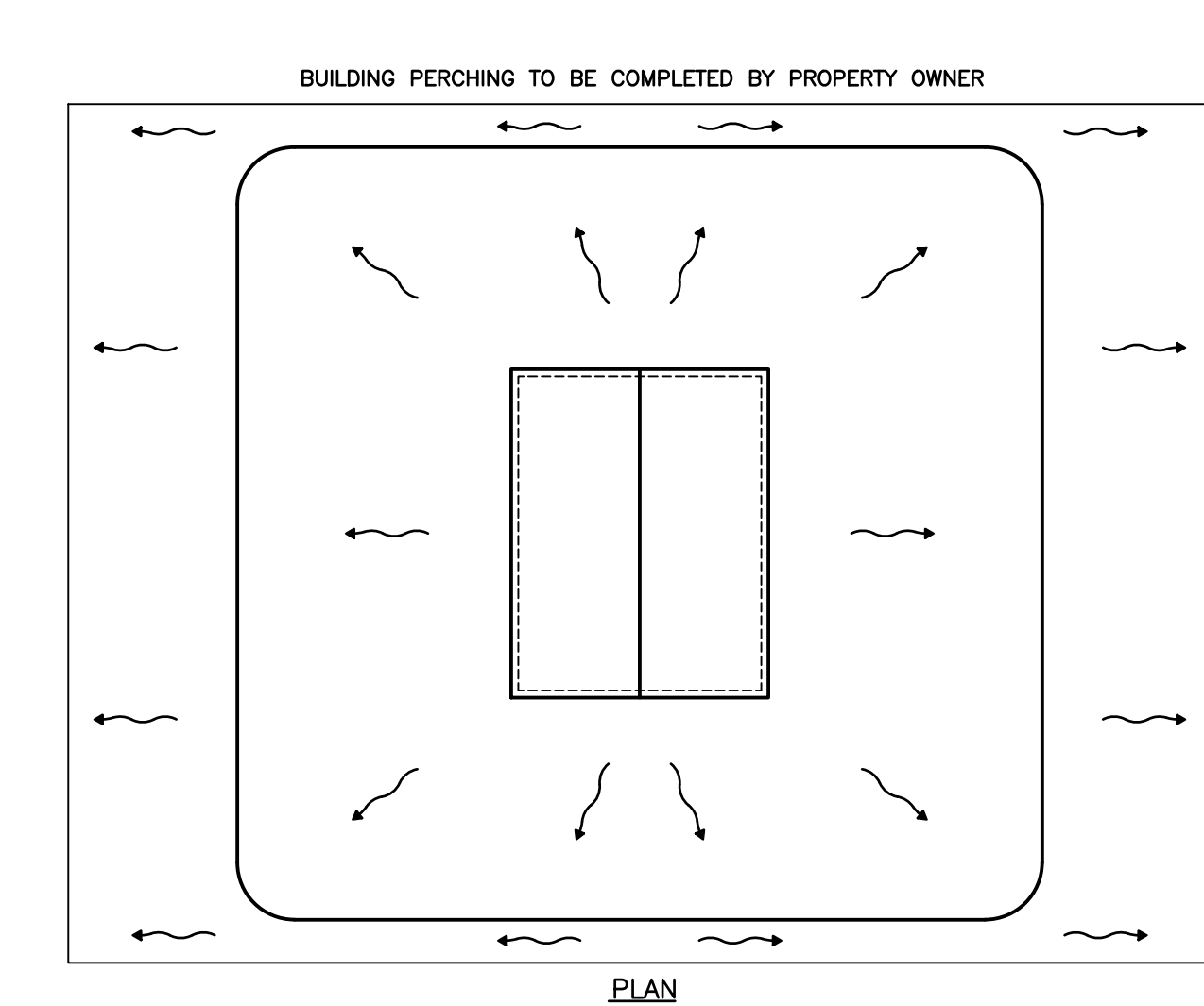


B.M. EL.	SEE PLAN G1
LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.	



JR Cousin Consultants Ltd.
91A Scurfield Blvd. Winnipeg MB R3Y 1G4
p. (204) 489-0474
f. (204) 489-0487
www.jrcc.ca

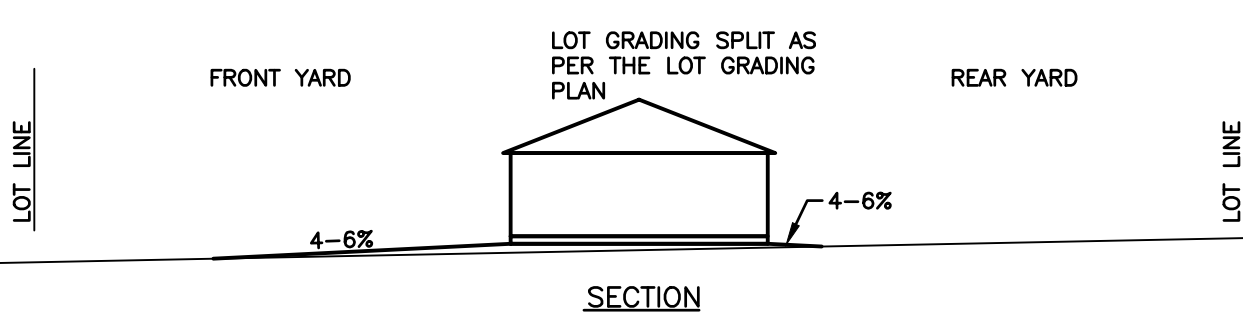
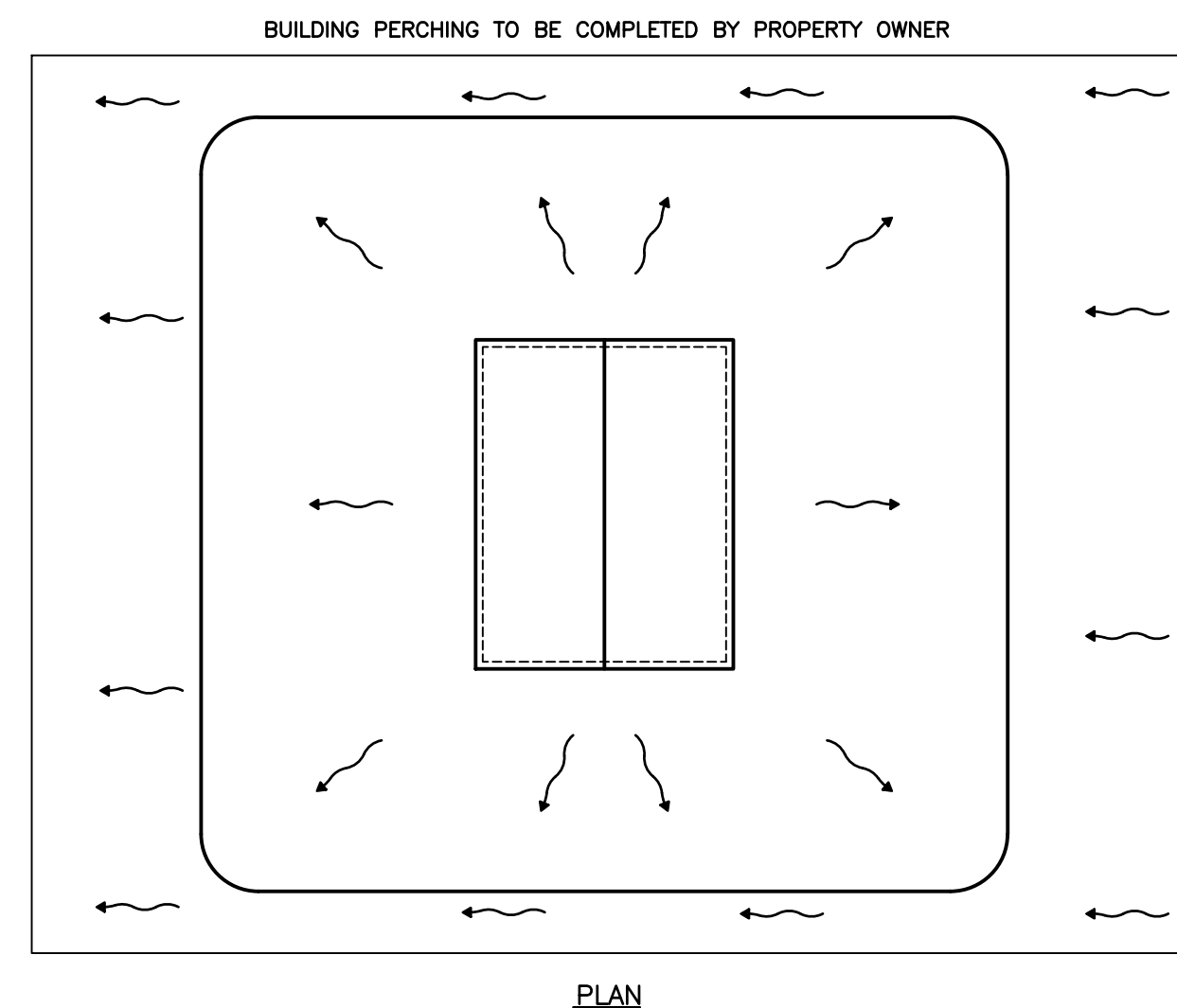
CODE: D-536.02	PROJECT: CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3			
DESIGNED BY: MF	TITLE: TREE CLEARING EXTENTS			
DRAWN BY: JW				
REVIEWED BY: SB	SCALE: 1:750	DATE: 24/04/01	PLAN: GD2	SHEET: 9 of 17



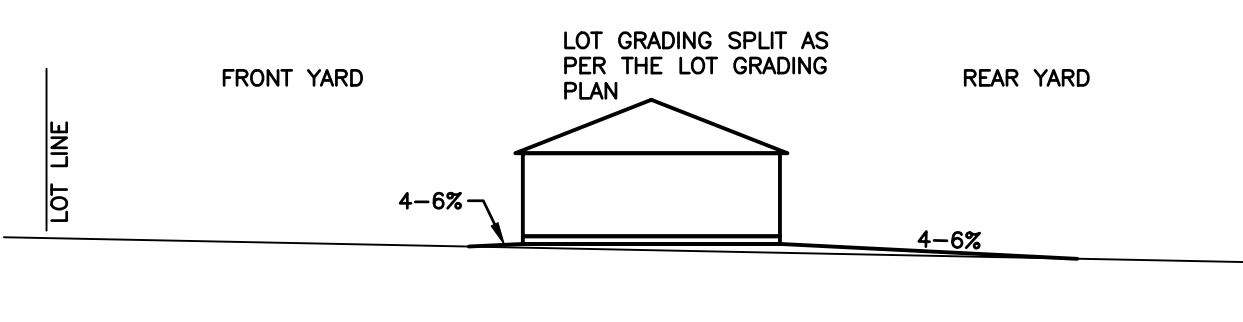
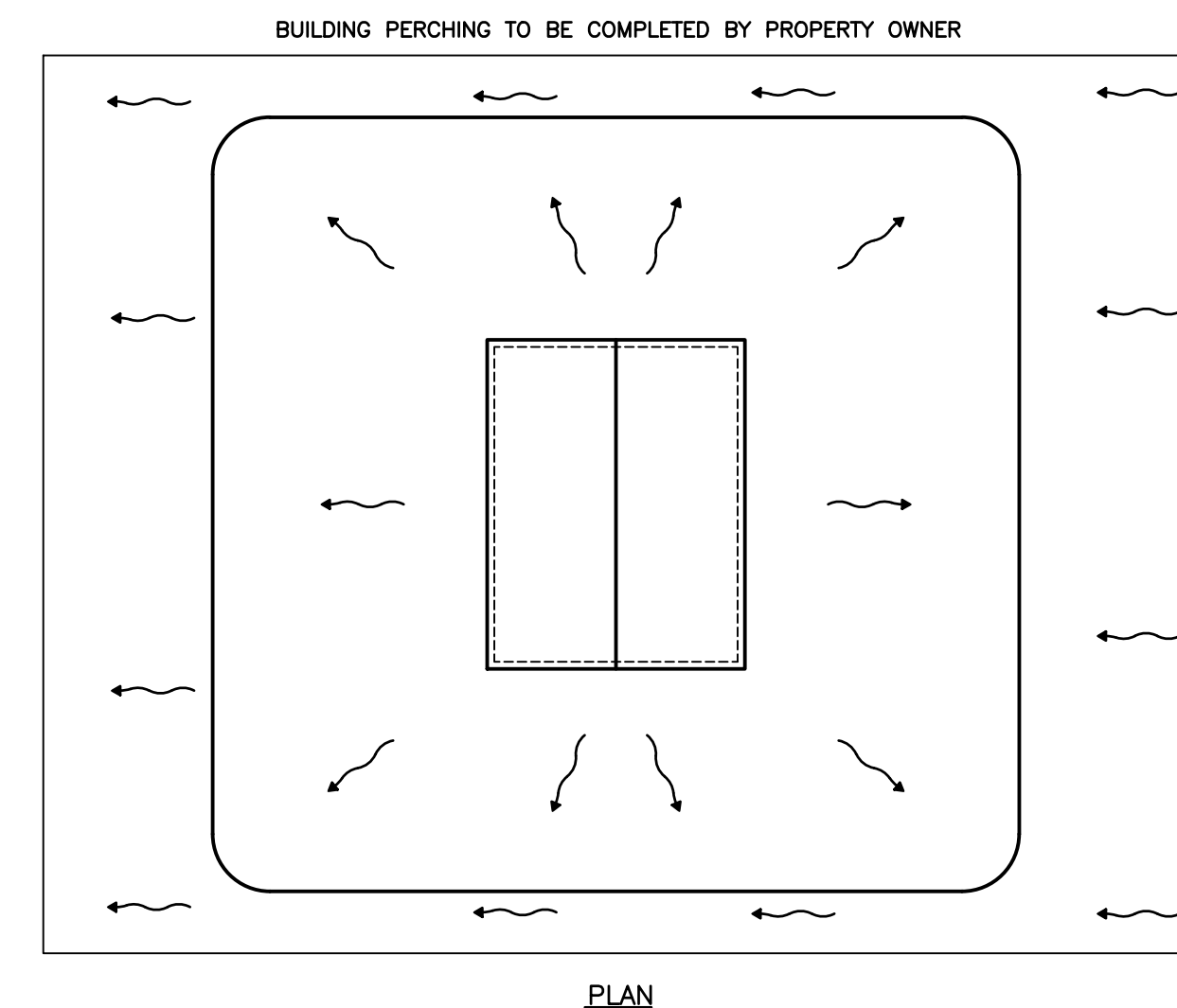
1
1

SPLIT LOT DRAINAGE — HOUSE PERCHING

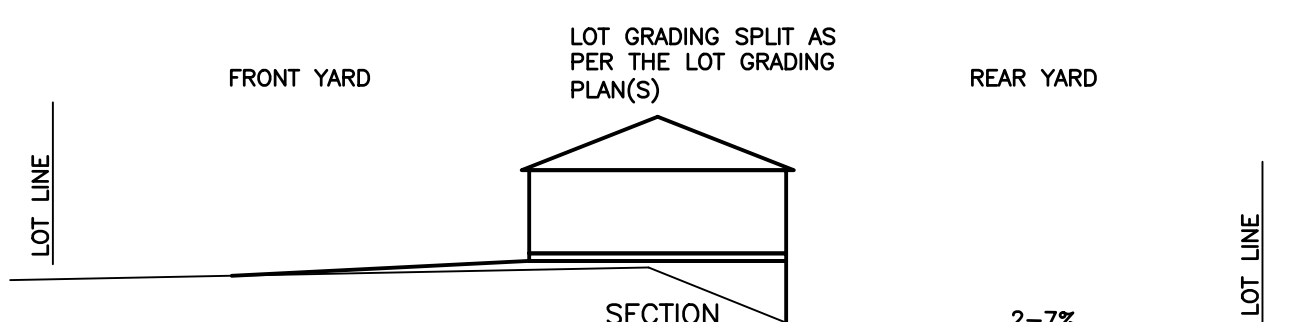
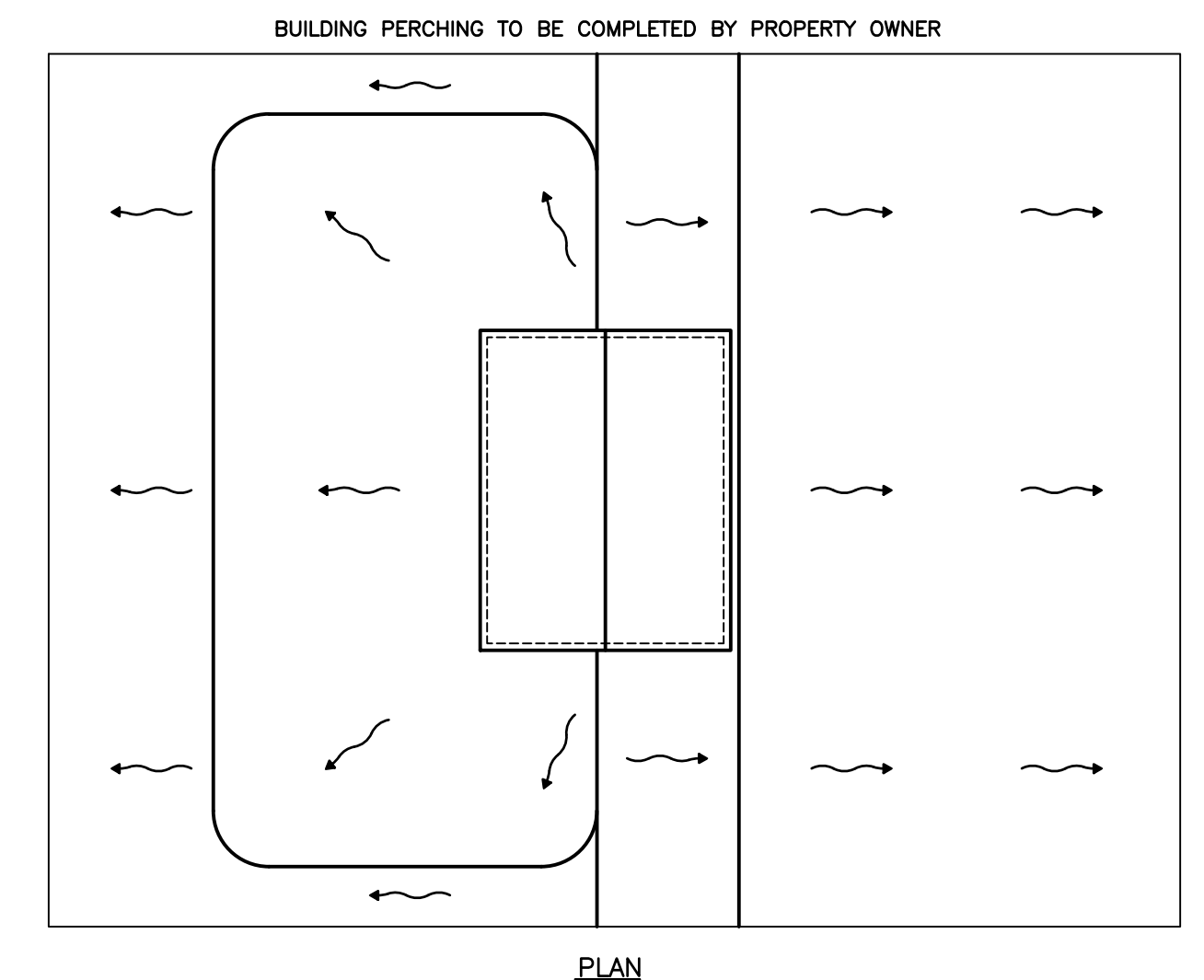
SCALE = NTS



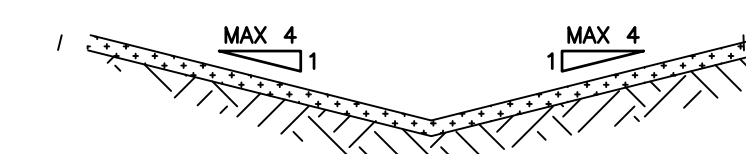
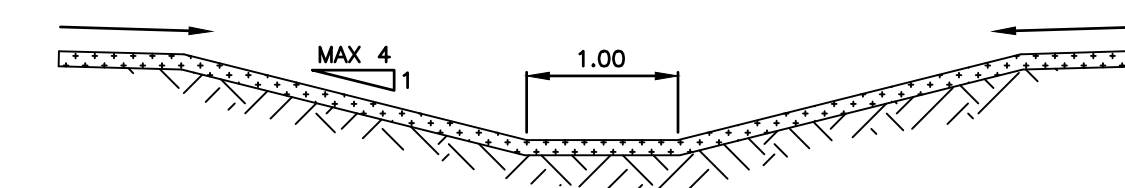
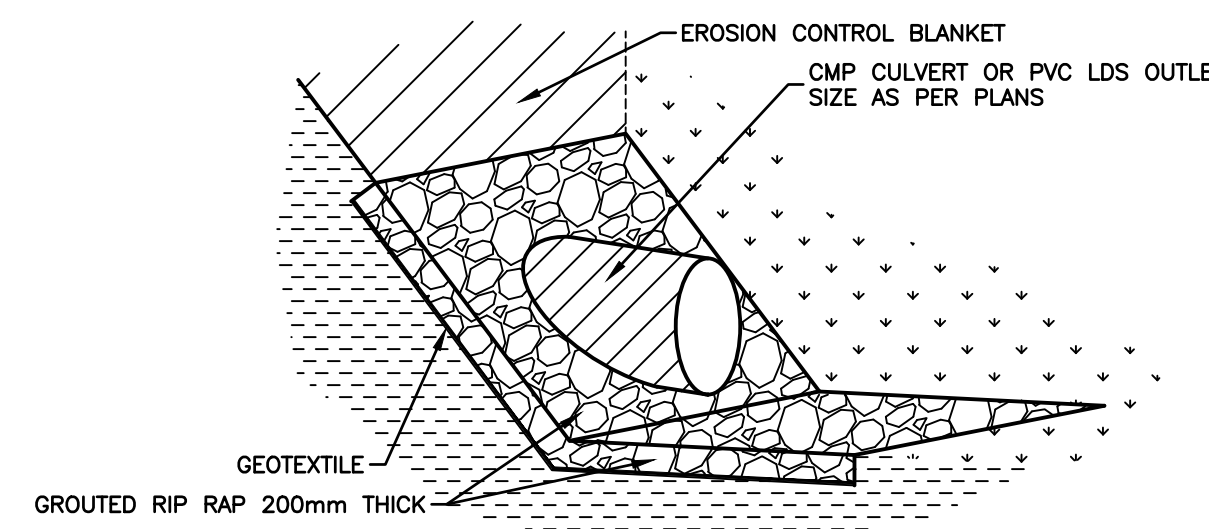
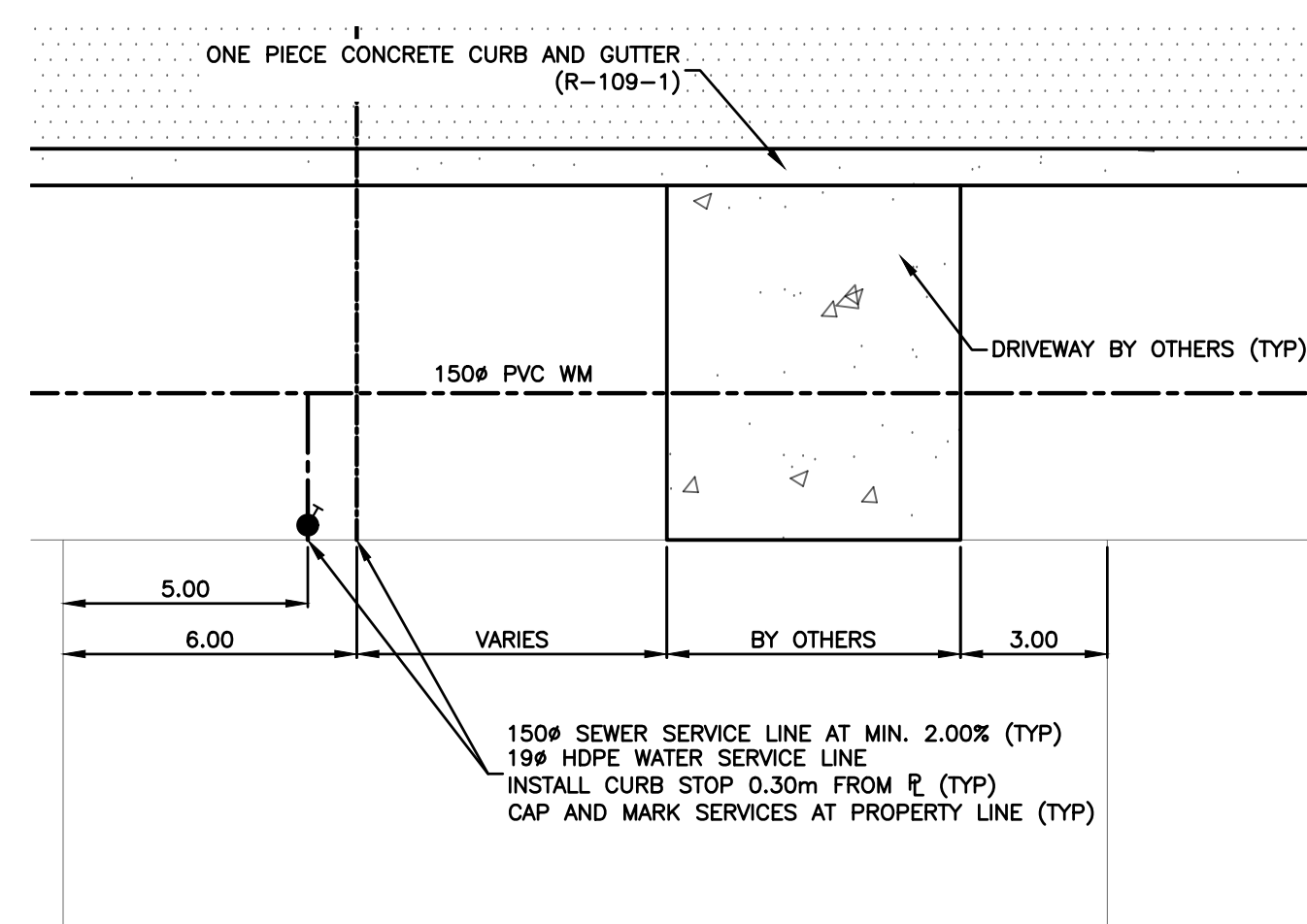
2 BACK-FRONT LOT DRAINAGE - HOUSE PERCHING
1 SCALE = NTS



3 FRONT-BACK LOT DRAINAGE - HOUSE PERCHING
1 SCALE = NTS



4 REAR WALK-OUT LOT DRAINAGE - HOUSE PERCHING
1 SCALE = NTS

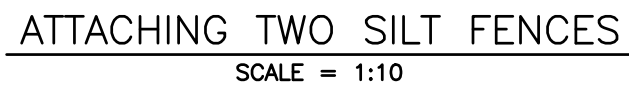
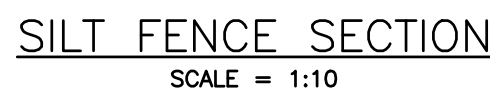


																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

Apr 01, 2024 - 2:13pm G:\500\536 City of Dryden\536.02 Van Horns Landing Subdivision Design and Mario Milanese\dwg\Design Plans - Mario Milanese\Annotation Plans\DT1 DT2 DT3 DT4.dwg



- 1 SILT FENCE DETAIL
2 SCALE = 1:40



-
- EROSION CONTROL BLANKET**
- BLANKETS SHALL BE INSTALLED VERTICALLY DOWNSLOPE.**
- MIN. 50mm OVERLAP**
- STAPLES (SEE STAPLING DETAIL)**
- EROSION CONTROL BLANKET TO BE ANCHORED AT BOTTOM OF GRADE OR BACK SLOPE WITH STAPLES AT 300 mm INTERVALS**
- GROUND LINE (DITCH AREA)**
- 200mm STAPLES (SEE STAPLING DETAIL)**
- VARIABLE SLOPE**
- 1.20**
- 0.50**
- 4**
2

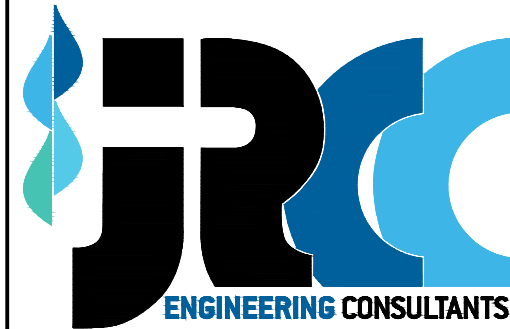


B.M.	EL.
1	100.00
2	100.00
3	100.00
4	100.00
5	100.00
6	100.00
7	100.00
8	100.00
9	100.00
10	100.00
11	100.00
12	100.00
13	100.00
14	100.00
15	100.00
16	100.00
17	100.00
18	100.00
19	100.00
20	100.00
21	100.00
22	100.00
23	100.00
24	100.00
25	100.00
26	100.00
27	100.00
28	100.00
29	100.00
30	100.00
31	100.00
32	100.00
33	100.00
34	100.00
35	100.00
36	100.00
37	100.00
38	100.00
39	100.00
40	100.00
41	100.00
42	100.00
43	100.00
44	100.00
45	100.00
46	100.00
47	100.00
48	100.00
49	100.00
50	100.00
51	100.00
52	100.00
53	100.00
54	100.00
55	100.00
56	100.00
57	100.00
58	100.00
59	100.00
60	100.00
61	100.00
62	100.00
63	100.00
64	100.00
65	100.00
66	100.00
67	100.00
68	100.00
69	100.00
70	100.00
71	100.00
72	100.00
73	100.00
74	100.00
75	100.00
76	100.00
77	100.00
78	100.00
79	100.00
80	100.00
81	100.00
82	100.00
83	100.00
84	100.00
85	100.00
86	100.00
87	100.00
88	100.00
89	100.00
90	100.00
91	100.00
92	100.00
93	100.00
94	100.00
95	100.00
96	100.00
97	100.00
98	100.00
99	100.00
100	100.00

LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.

ENGINEER'S SEAL

PRELIMINARY

**JR Cousin Consultants Ltd.**

91A Scurfield Blvd. Winnipeg MB R3Y 1G4
p. (204) 489-0474
f. (204) 489-0487
www.jrcc.ca

ENGINEERING EXCELLENCE SINCE 1981

CODE:	
-------	--

D-536.02

DESIGNED BY:

MF
DRAWN BY:

IW

REVIEWED BY:

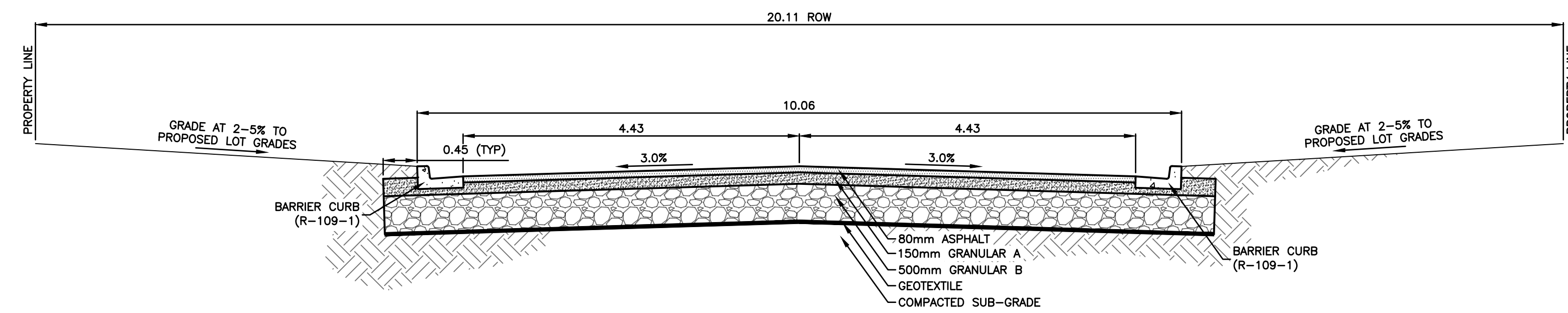
PROJECT:
CITY OF DRYDEN
MARIO MILANESE SUBDIVISION STAGE 3

EROSION CONTROL DETAILS

SCALE:

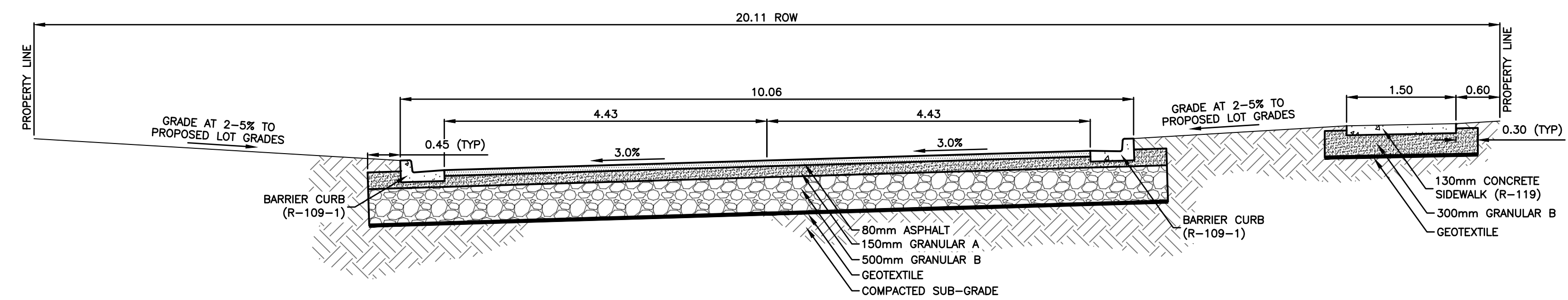
DATE: _____

PLAN:	SHEET:
-------	--------

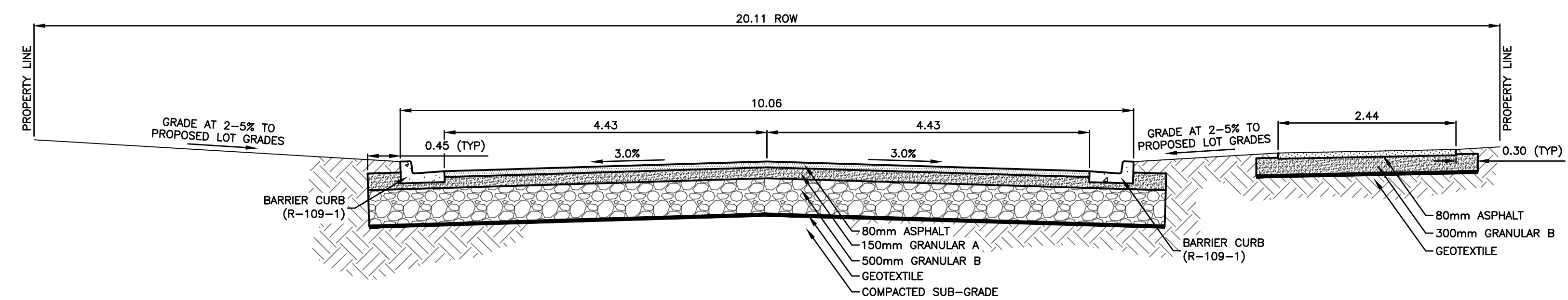


ROAD CROSS SECTION

SCALE = 1:50

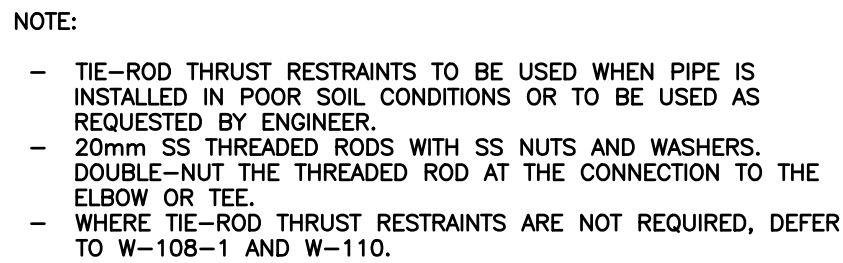


ROAD CROSS SECTION
SCALE = 1:50



ROAD CROSS SECTION WITH SIDEWALK
SCALE = 1:50

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



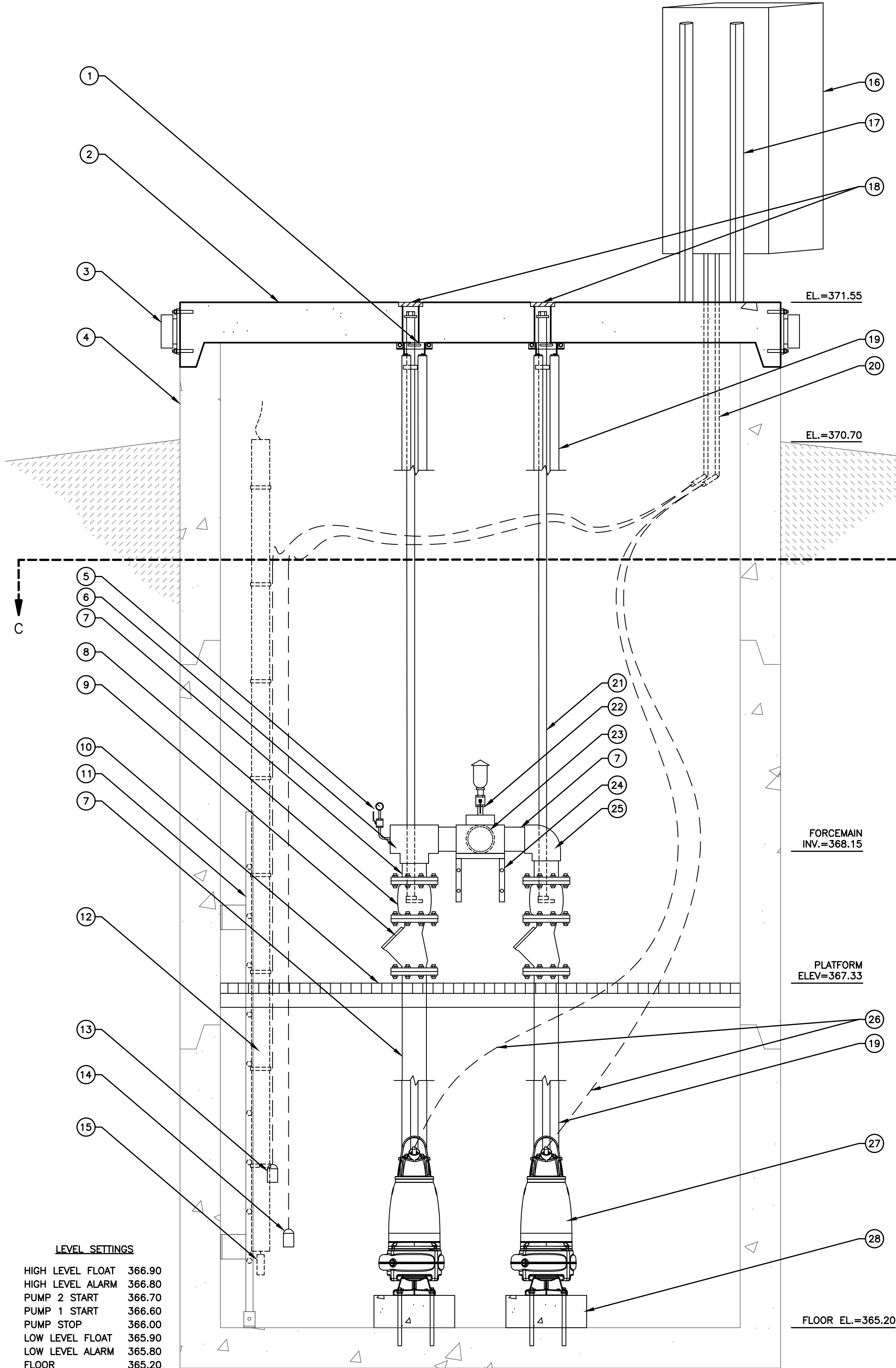
2 TIE-ROD THRUST RESTRAINT DETAILS
4 SCALE = 1:20

[illegible]

ITEM	DESCRIPTION
1	STAINLESS STEEL UPPER GUIDE BAR HOLDER
2	REPLACEMENT CONCRETE FLAT TOP, MATCH EXISTING BARREL DIAMETER
3	SOCKET FOR LIFTING DAVIT
4	EXISTING LIFT STATION BARREL (APPROX 3200mm ID)
5	PRESSURE GAUGE
6	150# SS TEE (TAP BLIND FLANGE END FOR PRESSURE GAUGE)
7	150# SS PIPING C/W PIPE SUPPORT
8	150# PLUG VALVE
9	150# FLANGED BALL CHECK VALVE
10	SLIP RESISTANT FIBERGLASS INTERMEDIATE FLOOR 38mm THICK X 38mm MESH YELLOW GRATING. SUPPORT ON FRP I-BEAM OR ANGLE SUPPORTS SECURED TO WALL. DESIGN ASSEMBLY TO SUPPORT 100 LBS/SQ. FT. WITH LESS THAN 8.1mm OF DEFLECTION. (FIBREGRATE CANADA OR APPROVED EQUAL)
11	ACCESS LADDER LOWER LEVEL
12	150# PVC STILLING WELL, CUT PIPE AT 180°, FASTEN AT 600mm SPACING TO LIFT STATION BARREL WITH STAINLESS STEEL SUPPORTS.
13	HIGH LEVEL FLOAT
14	LOW LEVEL FLOAT
15	HYDROSTATIC LEVEL CONTROLLER
16	LIFT STATION PUMP CONTROL PANEL C/W HAZARDOUS JUNCTION BOX AND AUTOMATIC TRANSFER SWITCH PANEL
17	2-75# GALVANIZED STEEL PIPES AS SUPPORT POST
18	CORE HOLES THROUGH BARREL TOP FOR PLUG VALVE OPERATOR RODS. PROVIDE STAINLESS STEEL COVER BOLTED TO BARREL TOP. COVER TO BE FLUSH WITH BARREL TOP (TYP)
19	50# SS SCH. 40 PIPE AS GUIDE BARS COMPLETE WITH INTERMEDIATE GUIDE BAR HOLDERS AS REQUIRED (25# PER OPTIONAL EQUIPMENT)
20	POWER AND CONTROL CONDUITS FROM LIFT STATION PANEL
21	PLUG VALVE OPERATOR ROD
22	AIR RELEASE VALVE C/W 25# BALL VALVE
23	150# SS TEE
24	SS SUPPORT BRACKETS
25	150# SS ELBOW
26	ELECTRICAL CABLE FOR PUMPS
27	SUBMERSIBLE PUMPS AS PER SPECIFICATION
28	200mm TALL CONCRETE PEDESTAL BASE FOR PUMPS. DRILL AND ANCHOR TO LIFT STATION FLOOR.
29	CORE HOLE THROUGH BARREL TOP FOR KNIFE GATE VALVE OPERATOR ROD. PROVIDE STAINLESS STEEL COVER BOLTED TO BARREL TOP. COVER TO BE FLUSH WITH BARREL TOP (TYP).
30	7mm# GALVANIZED STEEL CHAIN. MINIMUM 12m LONG COMPLETE WITH STAINLESS STEEL CHAIN HOOK. LOCATE IN ACCESS OPENING. COIL EXCESS CHAIN AT HOOK
31	KNIFE GATE VALVE OPERATOR ROD
32	ACCESS LADDER UPPER LEVEL
33	PROVIDE STAINLESS STEEL SUPPORTS AS REQUIRED FOR VALVE OPERATING RODS
34	200# KNIFE GATE VALVE C/W FLANGE ADAPTER TO EXISTING SEWER STUB
35	EXISTING 200# SEWER PIPING
36	150# SS CHAMBER VENT, C/W 150# FLANGE, 180° RET. BEND, BIRDSCREEN
37	150# SS TEE (ONE END FLANGED FOR AIR RELEASE VALVE)
38	EXISTING 150# PVC FORCEMAIN
39	150# RESTRAINED COUPLER
40	150# DISCHARGE ELBOW
41	ACCESS HATCH

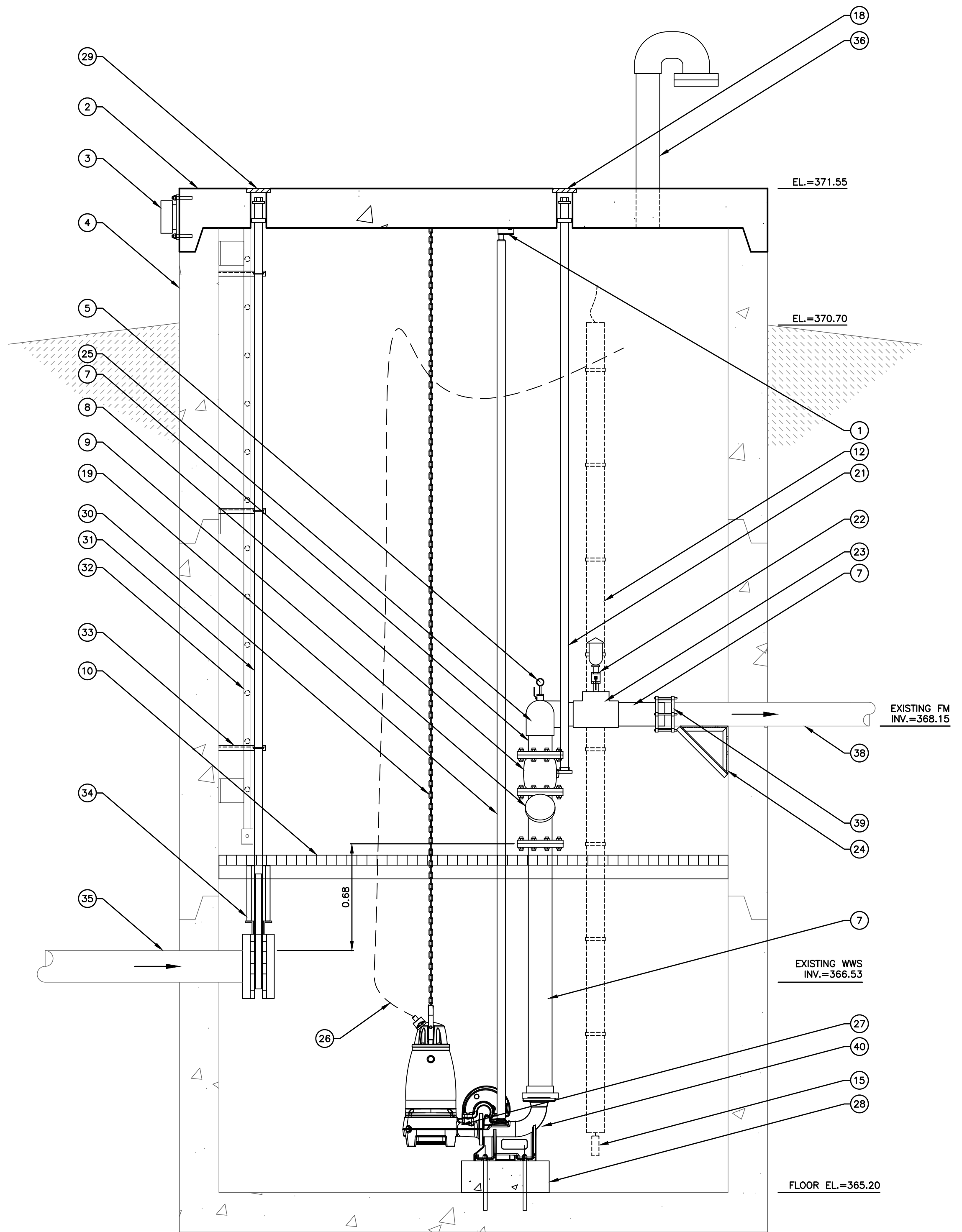
GENERAL NOTES:

- ALL WORK TO BE PERFORMED PER CANADA'S NATIONAL WORK PLACE HEALTH AND SAFETY.
- PROVIDE VALVE ROD SUPPORTS AS REQUIRED.
- PROVIDE SUPPORT/RESTRAINT FOR ALL PIPING AS REQUIRED.
- PROVIDE GALVANIZED STEEL SUPPORT POST FOR CONTROL PANEL.
- SUPPORT POSTS FOR CONTROL PANEL TO EXTEND MINIMUM 1500mm BELOW GROUND AND BE BOLTED IN TWO LOCATIONS TO BARREL WITH STAINLESS STEEL BOLTS AND BRACKETS.
- ENSURE THE SWING OF THE LIFT STATION ACCESS HATCHES CLEAR THE CONTROL PANEL.
- ALL PIPING TO BE SCH 40 STAINLESS STEEL UNLESS OTHERWISE NOTED.
- LIFT STATION BARREL TO BE WATERTIGHT. INSPECT EXISTING CONCRETE BARREL AND PACK VOIDS WITH XPEX CONCENTRATE.
- CONTRACTOR SHALL PERFORM FIELD PRESSURE TEST ON PIPES AS PER SPECIFICATIONS.
- INSTALL PUMPS AS PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL PERFORM PUMP TESTS AS PER SPECIFICATIONS.
- REFER TO ELECTRICAL DRAWINGS FOR LIFT STATION EQUIPMENT CONTROLS AND OPERATIONAL REQUIREMENTS.



1 LIFT STATION SIDE SECTION A-A
SCALE = 1:20

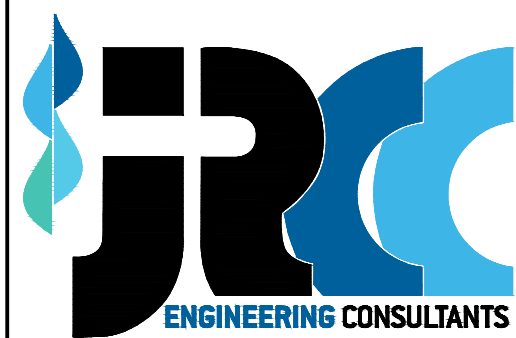
LEVEL SETTINGS	
HIGH LEVEL FLOAT	366.90
HIGH LEVEL ALARM	366.80
PUMP 2 START	366.70
PUMP 1 START	366.60
PUMP STOP	366.00
LOW LEVEL FLOAT	365.90
LOW LEVEL ALARM	365.80
FLOOR	365.20



2 LIFT STATION SIDE SECTION B-B
SCALE = 1:20

				B.M. EL.
				SEE PLAN G11
				LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.
1	ISSUED FOR 99% REVIEW	DEC 2023	JW	
No.	REVISIONS	DATE	INITIALS	

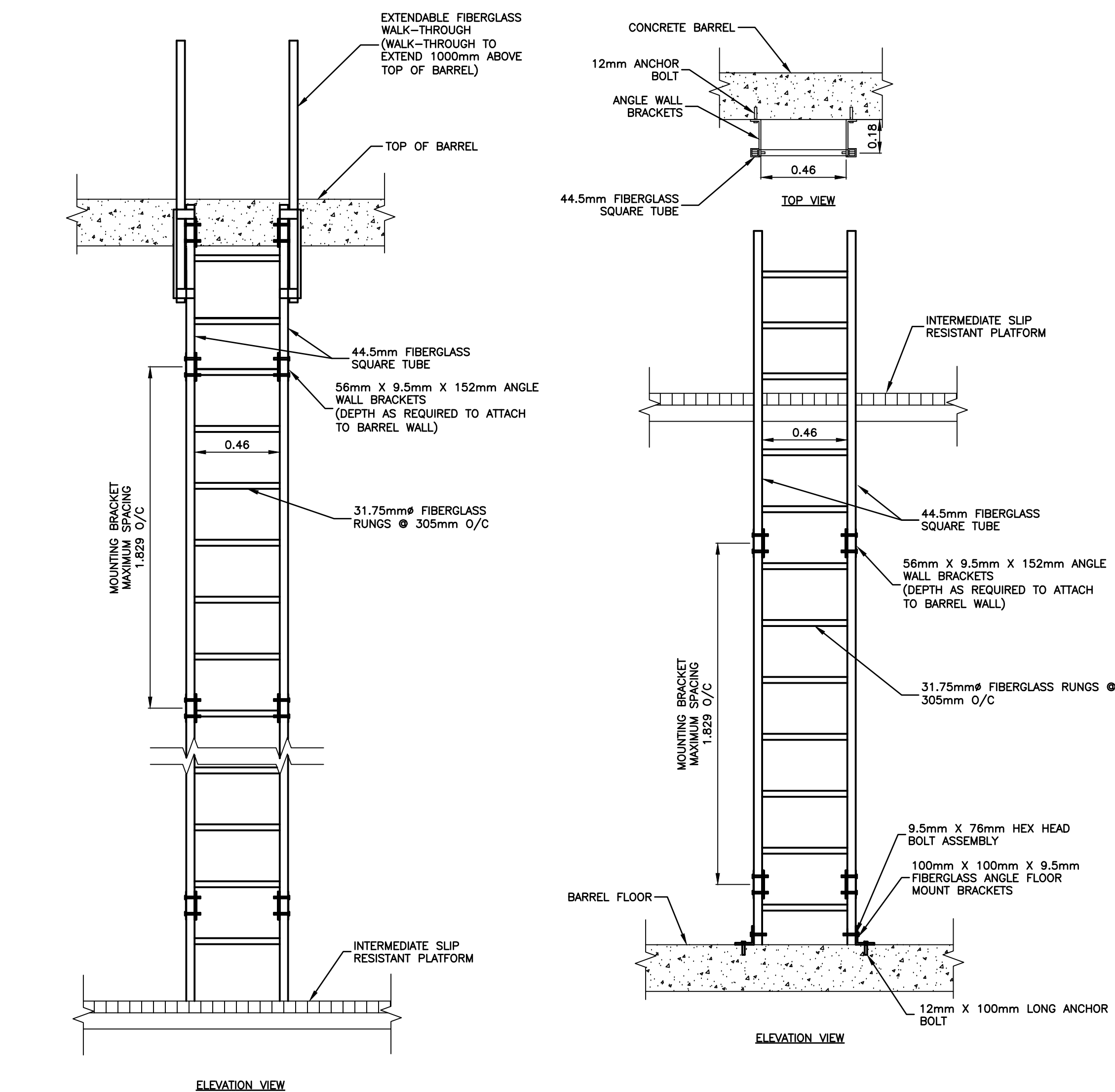
ENGINEER'S SEAL
PRELIMINARY



JR Cousin Consultants Ltd.
91A Scurfield Blvd. Winnipeg MB R3Y 1G4
p. [204] 489-0474
f. [204] 489-0487
www.jrcc.ca

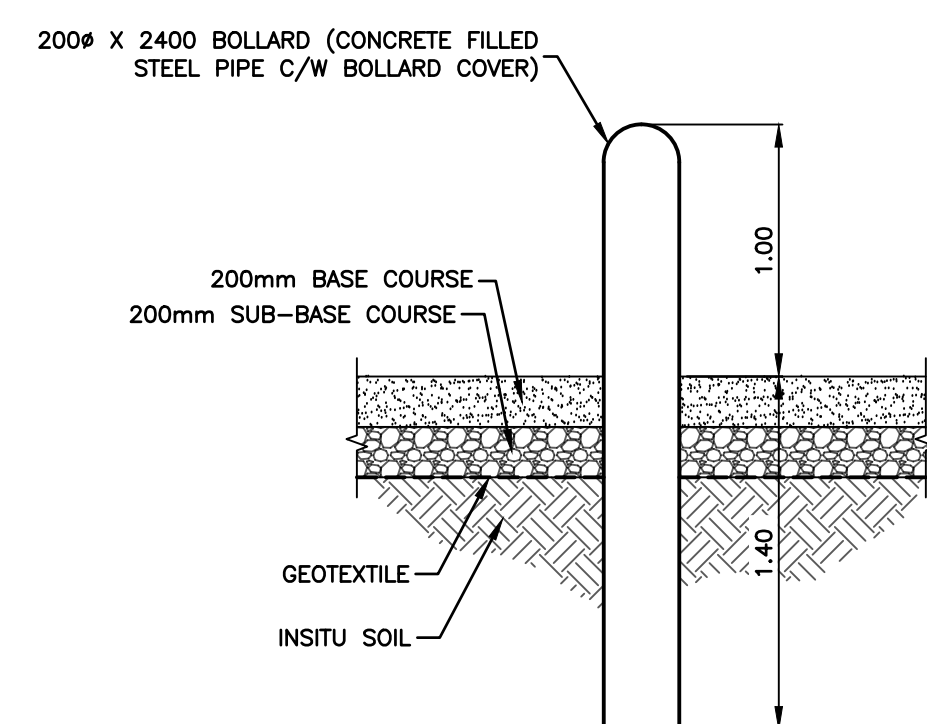
ENGINEERING EXCELLENCE SINCE 1981

CODE: D-536.02	PROJECT: CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3
DESIGNED BY: MF	TITLE: LIFT STATION SECTION DETAILS
DRAWN BY: JW	
REVIEWED BY: SB	
SCALE: AS NOTED	DATE: 24/04/01
PLAN: LS1	SHEET: 15 of 17



1 UPPER ACCESS LADDER DETAIL
2 SCALE = 1:20

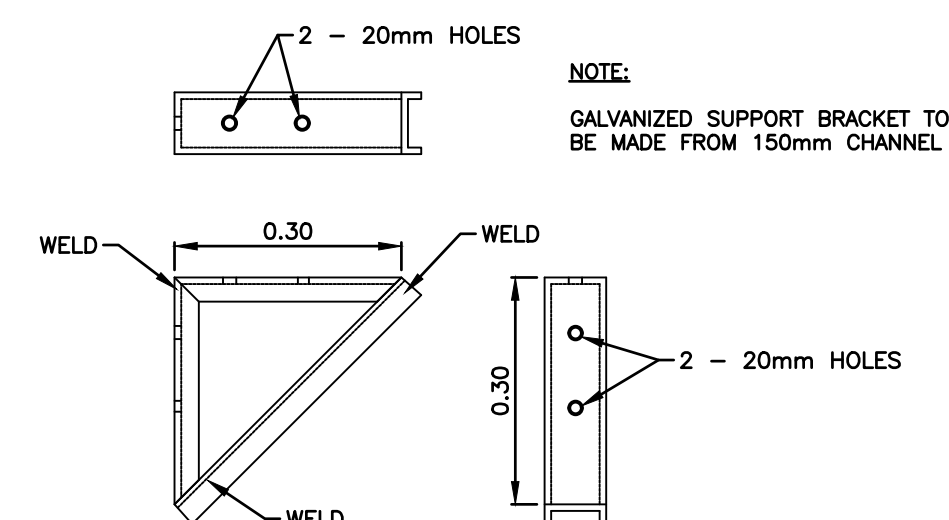
2 LOWER ACCESS LADDER DETAIL
2 SCALE = 1:20



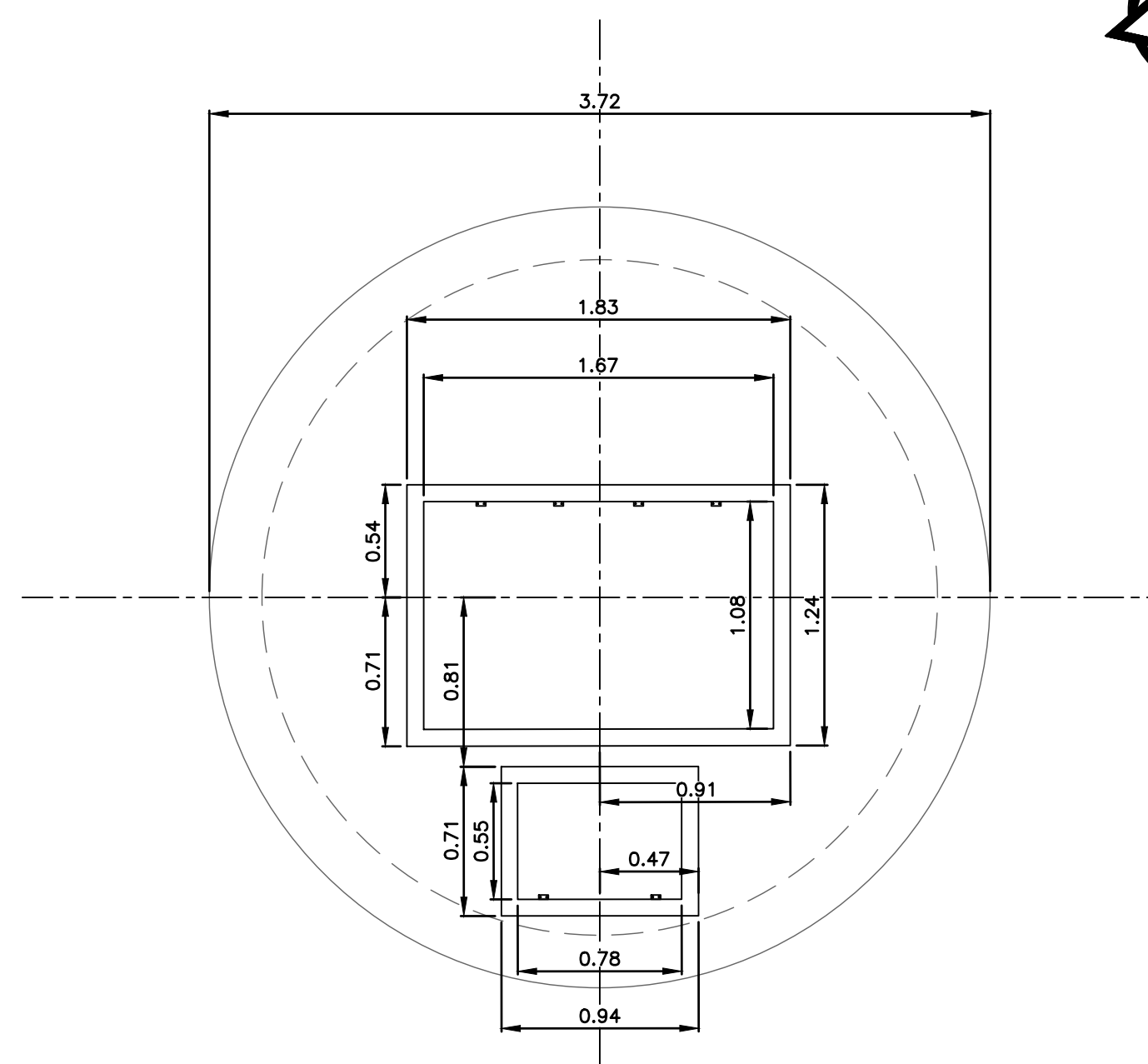
4
2

TYPICAL BOLLARD DETAIL

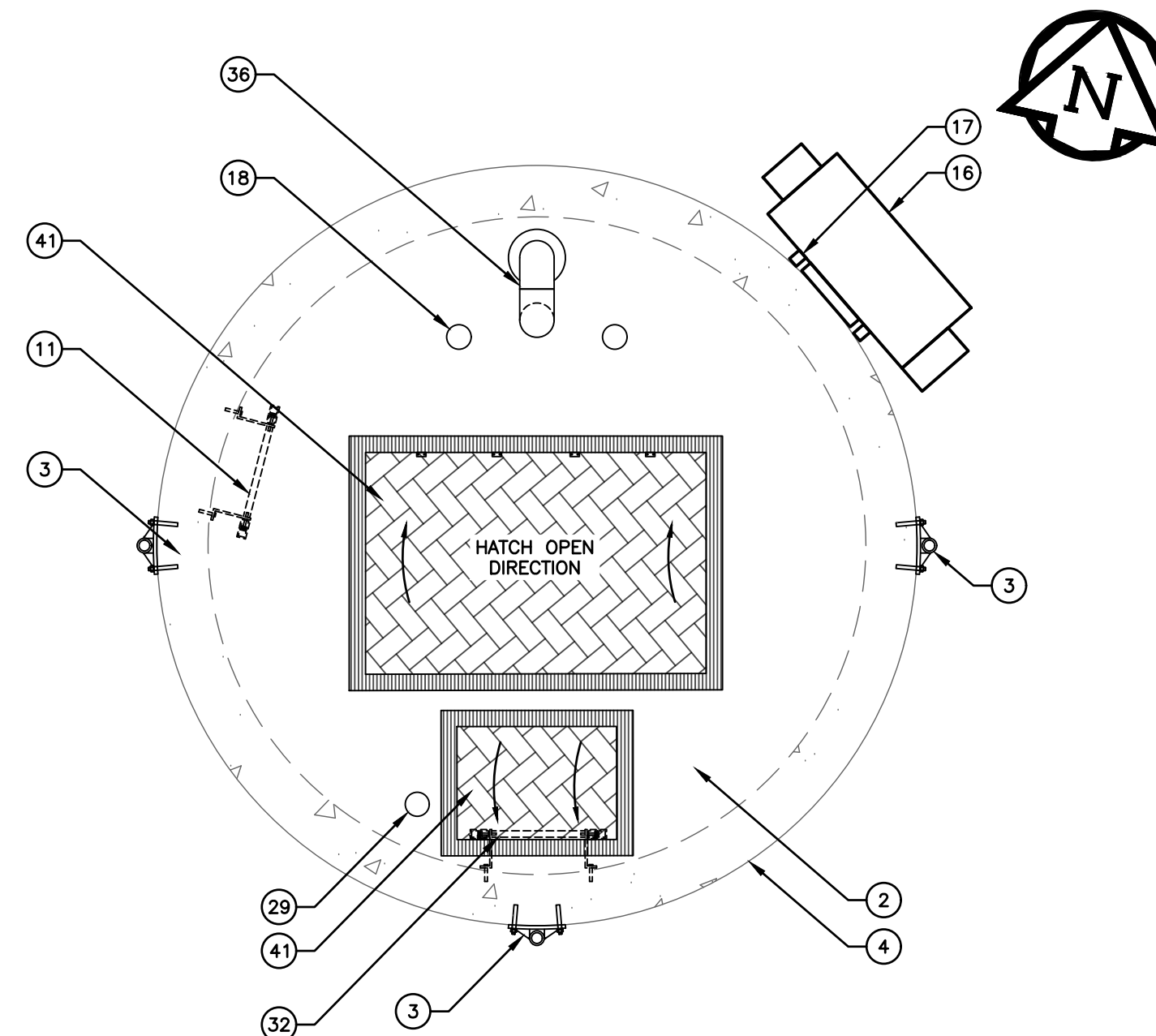
SCALE = 1:30



5 TYPICAL SUPPORT BRACKET
2 SCALE = 1:10



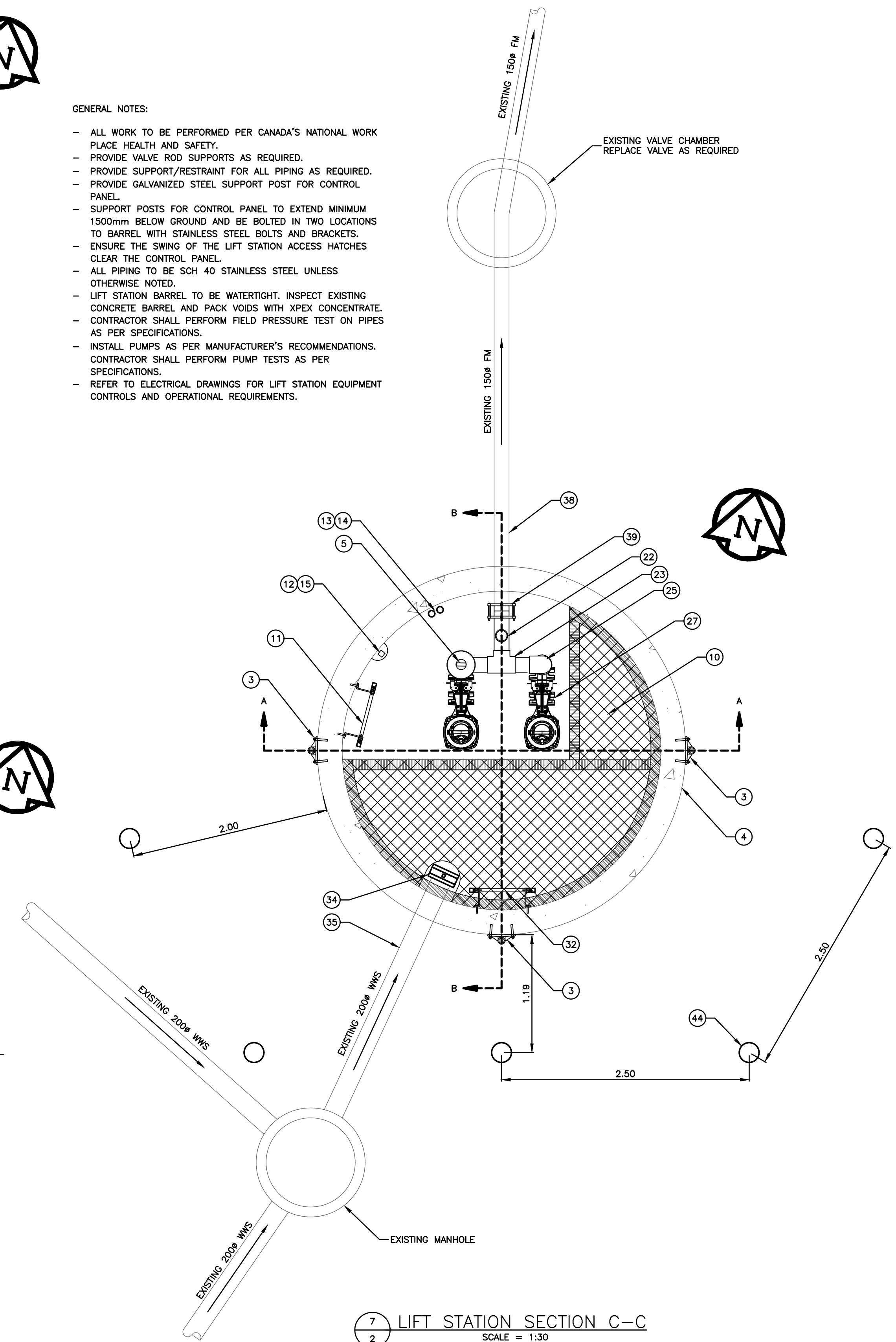
6 ACCESS HATCH PLACEMENT
2 SCALE = 1:50



PROPOSED LIFT STATION TOP

SCALE = 1:30

- GENERAL NOTES:
- ALL WORK TO BE PERFORMED PER CANADA'S NATIONAL WORK PLACE HEALTH AND SAFETY.
 - PROVIDE VALVE ROD SUPPORTS AS REQUIRED.
 - PROVIDE SUPPORT/RESTRAINT FOR ALL PIPING AS REQUIRED.
 - PROVIDE GALVANIZED STEEL SUPPORT POST FOR CONTROL PANEL.
 - SUPPORT POSTS FOR CONTROL PANEL TO EXTEND MINIMUM 1500MM BELOW GROUND AND BE BOLTED IN TWO LOCATIONS TO BARREL WITH STAINLESS STEEL BOLTS AND BRACKETS.
 - ENSURE THE SWING OF THE LIFT STATION ACCESS HATCHES CLEAR THE CONTROL PANEL.
 - ALL PIPING TO BE SCH 40 STAINLESS STEEL UNLESS OTHERWISE NOTED.
 - LIFT STATION BARREL TO BE WATERTIGHT. INSPECT EXISTING CONCRETE BARREL AND PACK VOIDS WITH XPEX CONCENTRATE.
 - CONTRACTOR SHALL PERFORM FIELD PRESSURE TEST ON PIPES OF SPECIFIED SIZE.
 - INSTALL PUMPS AS PER MANUFACTURER'S RECOMMENDATIONS.
 - CONTRACTOR SHALL PERFORM PUMP TESTS AS PER SPECIFICATIONS.
 - REFER TO ELECTRICAL DRAWINGS FOR LIFT STATION EQUIPMENT CONTROLS AND OPERATIONAL REQUIREMENTS.



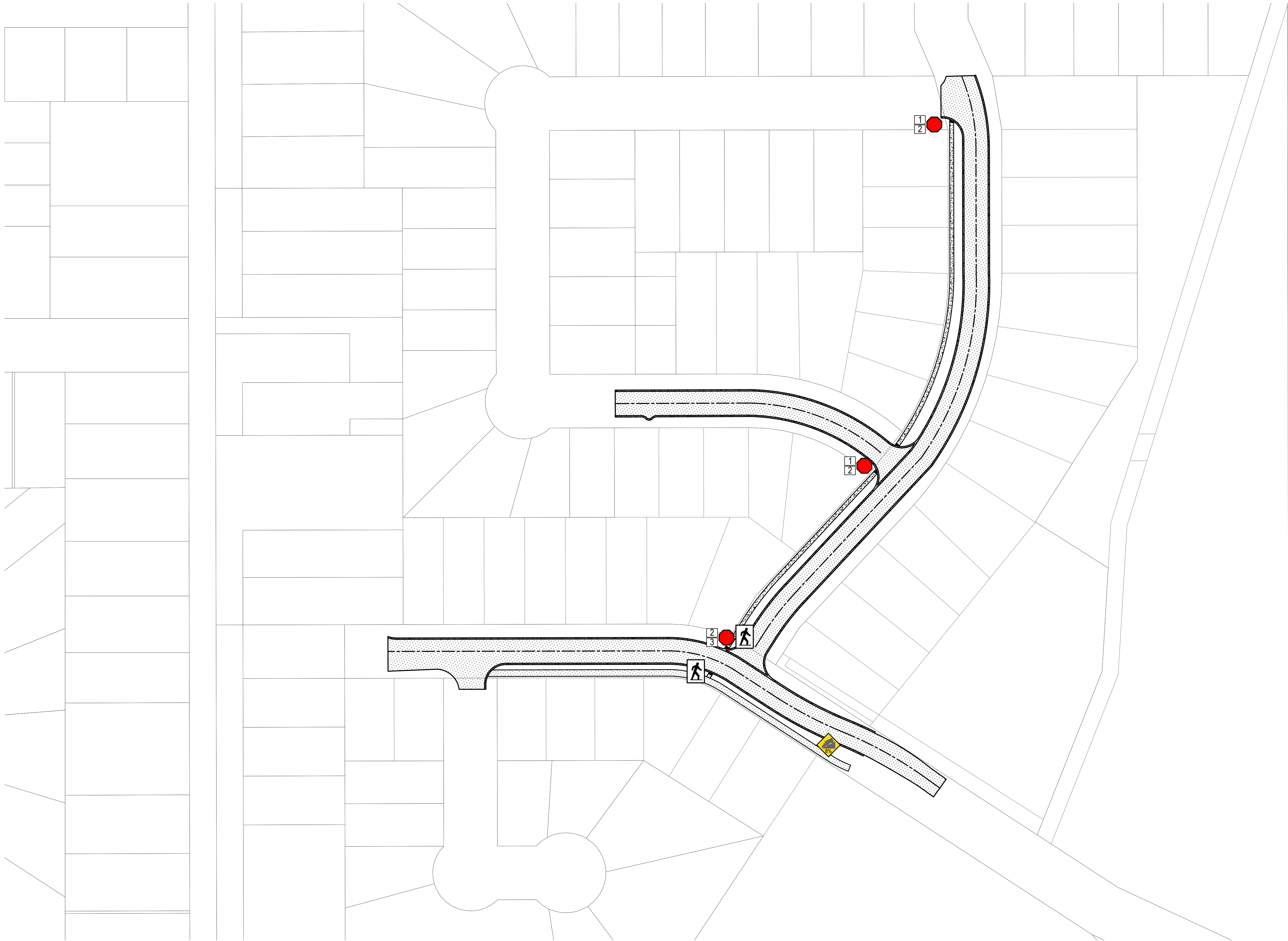
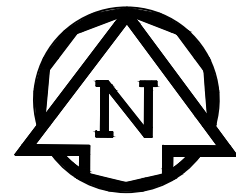
7
2

LIFT STATION SECTION C-C

SCALE = 1:30

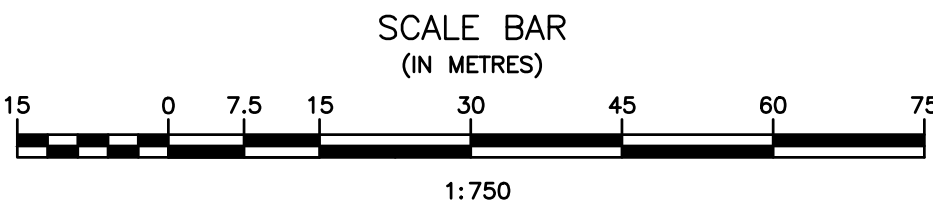
					B.M. EL.	ENGINEER'S SEAL PRELIMINARY  JR Cousin Consultants Ltd. 91A Scurfield Blvd. Winnipeg MB R3Y 1G4 p. (204) 489-0474 f. (204) 489-0487 www.jrcc.ca ENGINEERING EXCELLENCE SINCE 1981	CODE: D-536.02	PROJECT: CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3				
					SEE PLAN G11		DESIGNED BY: MF	TITLE: LIFT STATION DETAILS				
					LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL		DRAWN BY: JW					
					UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.		REVIEWED BY: SR	SCALE:	AS NOTED	DATE: 24/04/01	PLAN: 1S2	SHEET: 16 of 17
1	ISSUED FOR 99% REVIEW		DEC 2023	JW								
No.	REVISIONS		DATE	INITIALS								

Apr 01, 2024 - 21:30pm © 2000-2024 City of Dryden\326.02 - Mr. Mario Milanesi Subdivision Stage 3\34 Drawings\34\Design Plans - Mario Milanesi\Variation Plans\321.rdg



SIGNAGE LEGEND:	
1	MARIO MILANESE PLACE
2	ELVIS AVENUE
3	SANDY BEACH ROAD
	STOP SIGN
	PEDESTRIAN CROSWALK
	STEEP SLOPE - 8%

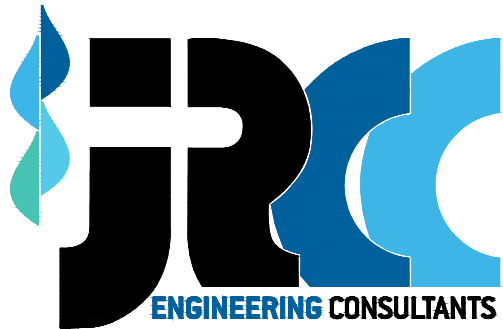
- NOTES:
- COMPLETE ALL WORKS IN ACCORDANCE WITH THE CITY OF THUNDER BAY ENGINEERING AND DEVELOPMENT STANDARDS AS WELL AS THE ONTARIO PROVINCIAL STANDARDS. THUNDER BAY STANDARDS TO TAKE PRECEDENCE.
 - FIELD LOCATE ALL EXISTING SERVICE LINES, MAINLINES, AND UTILITIES PRIOR TO CONSTRUCTION.
 - J.R. COUSIN CONSULTANTS LTD. RETAINS THE RIGHT TO ALTER THE DESIGN AT A LATER DATE AS ACTUAL CONDITIONS MAY DICTATE.
 - SALVAGE AND REINSTALL EXISTING SIGNAGE AS DIRECTED BY ENGINEER.
 - FINAL LOCATION OF SIGNS TO BE DETERMINED ON SITE.
 - STREET PARKING AND PUBLIC TRANSIT SIGNAGE TO BE INSTALLED AS DIRECTED BY THE CITY OF DRYDEN.



				B.M. EL.
				SEE PLAN G11
				LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.
1	ISSUED FOR 99% REVIEW	DEC 2023	JW	
No.	REVISIONS	DATE	INITIALS	

ENGINEER'S SEAL

PRELIMINARY



JR Cousin Consultants Ltd.

91A Scurfield Blvd. Winnipeg MB R3Y 1G4
p. [204] 489-0474
f. [204] 489-0487
www.jrcc.ca

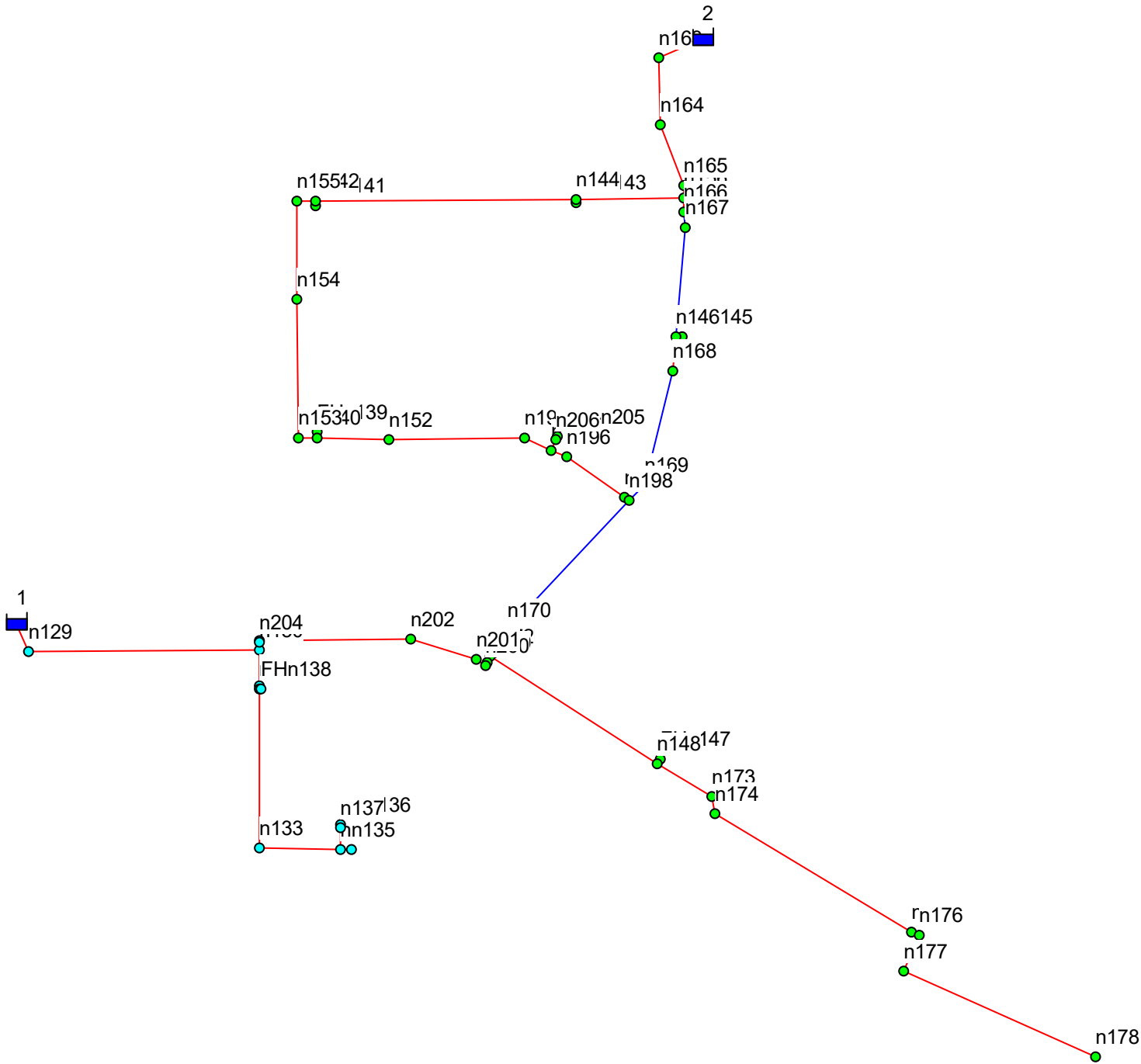
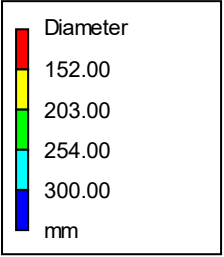
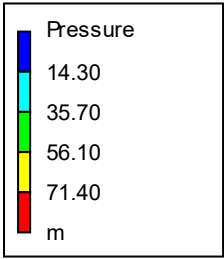
ENGINEERING EXCELLENCE SINCE 1981

CODE: D-536.02	PROJECT: CITY OF DRYDEN MARIO MILANESE SUBDIVISION STAGE 3			
DESIGNED BY: MF	TITLE: SIGNAGE PLAN			
DRAWN BY: JW				
REVIEWED BY: SB				
SCALE: 1:750	DATE: 24/04/01	PLAN: SG1	SHEET: 17 of 17	

APPENDIX B

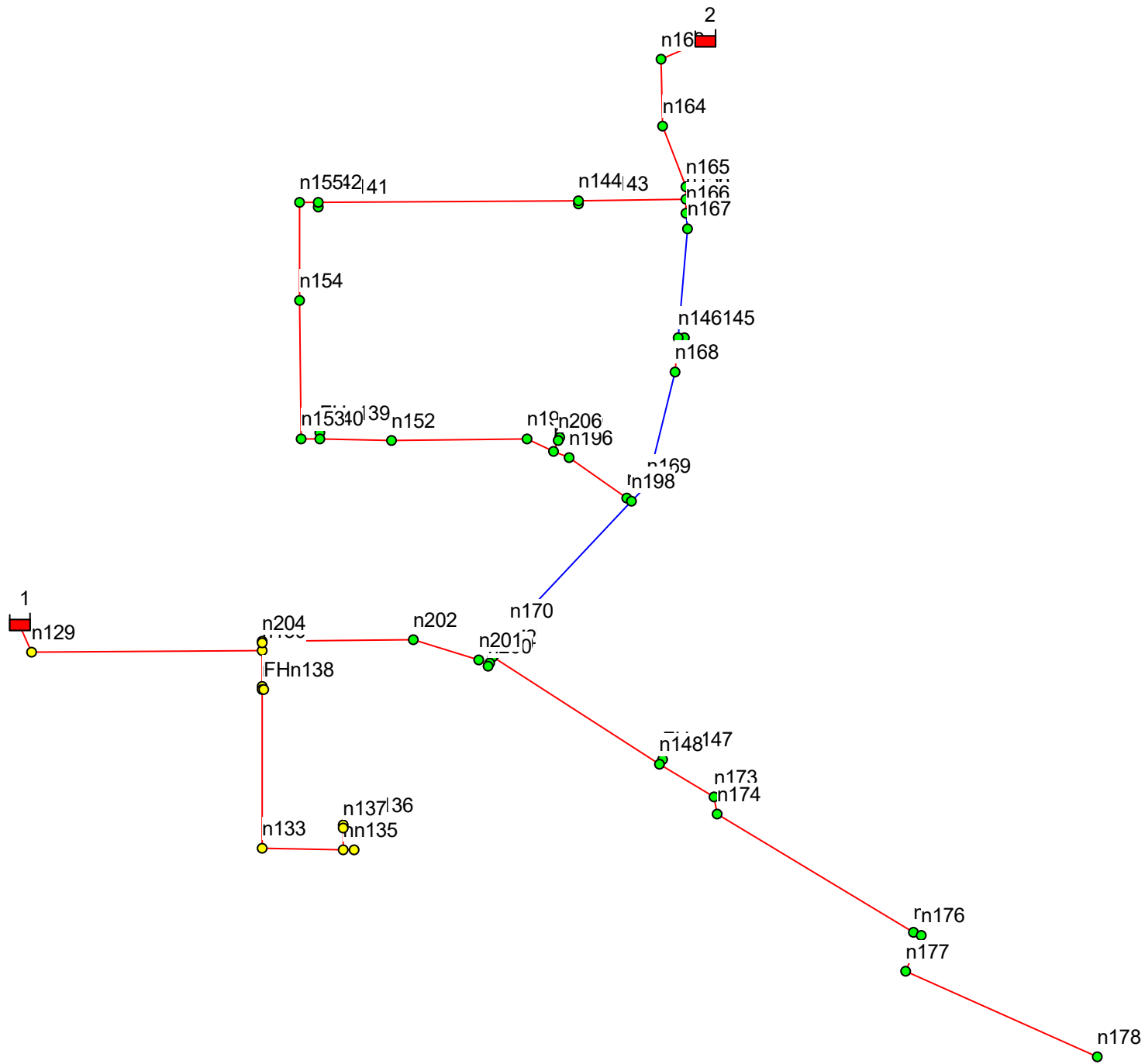
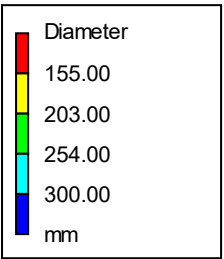
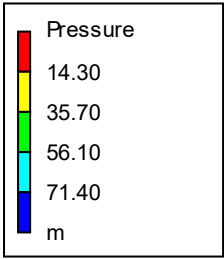
D-536.02 Mario Milanese Stage III

Day 1, 12:00 AM



D-536.02 Mario Milanese

Day 1, 12:00 AM



Class A Cost Estimate

Mario Milanese Subdivision

Mario Milanese Subdivision Stage 3

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
1	Mobilization, Insurance, and Bonding	lump sum	1	\$ 184,000.00	\$ 184,000.00
	Water Works				
2	Watermain				
	a) 150 mm PVC	metre	225	\$ 330.00	\$ 74,250.00
3	Watermain Gate Valve				
	a) 150 mm	each	5	\$ 3,500.00	\$ 17,500.00
	b) 300 mm	each	2	\$ 7,000.00	\$ 14,000.00
4	Fire Hydrant Assembly	each	1	\$ 13,500.00	\$ 13,500.00
5	Connection to Existing Watermain	each	4	\$ 10,000.00	\$ 40,000.00
6	Water Service Main Stop and Curb Stop Assembly				
	a) 19 mm	each	44	\$ 2,100.00	\$ 92,400.00
7	Water Service Line Piping				
	a) 19 mm	metre	420	\$ 155.00	\$ 65,100.00
8	Bedrock Removal	cubic metre	820	\$ 475.00	\$ 389,500.00
	Sanitary Sewer Works				
9	Gravity Sewermain				
	a) 200 mm PVC	metre	640	\$ 330.00	\$ 211,200.00
10	Gravity Sewer Manhole Frame and Cover	each	9	\$ 1,750.00	\$ 15,750.00
11	Gravity Sewer Manhole Riser	metre	40	\$ 3,000.00	\$ 120,000.00
12	Road Crossing Surcharge	each	48	\$ 2,500.00	\$ 120,000.00
13	Gravity Sewer Service Tee	each	44	\$ 900.00	\$ 39,600.00
14	Gravity Sewer Service Piping				
	a) 150 mm PVC	metre	460	\$ 275.00	\$ 126,500.00
15	Remove / Abandon Existing WWS	lump sum	1	\$ 12,000.00	\$ 12,000.00
16	Lift Station Electrical	lump sum	1	\$ 144,000.00	\$ 144,000.00
17	Lift Station Mechanical	lump sum	1	\$ 216,000.00	\$ 216,000.00
18	Forcemain Testing	lump sum	1	\$ 6,000.00	\$ 6,000.00
19	Television and Mandrel Testing	metre	640	\$ 25.00	\$ 16,000.00

Class A Cost Estimate

Mario Milanese Subdivision

Mario Milanese Subdivision Stage 3

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	Road Works and Drainage				
20	Clearing and Grubbing	square metre	18,550	\$ 3.00	\$ 55,650.00
21	Shape and Compact Road Subgrade				
	a) Roadway	square metre	6,605	\$ 3.50	\$ 23,118.00
22	Geotextile				
	a) Roadway	square metre	6,605	\$ 4.80	\$ 31,704.00
	b) Pathway	square metre	1,010	\$ 5.00	\$ 5,050.00
23	Granular B Sub-Base Course				
	a) Roadway 500mm	square metre	6,605	\$ 45.00	\$ 297,225.00
24	Granular A Base Course Material				
	a) Roadway 150mm	square metre	6,605	\$ 25.00	\$ 165,125.00
	b) Pathway 300mm	square metre	1,010	\$ 40.00	\$ 40,400.00
25	Asphaltic Concrete				
	a) Roadway 80mm	square metre	5,575	\$ 70.00	\$ 390,250.00
	b) Pathway 80mm	square metre	355	\$ 70.00	\$ 24,850.00
26	Asphalt Removal	square metre	2,460	\$ 22.00	\$ 54,120.00
27	Concrete Curb and Gutter	metre	1,070	\$ 200.00	\$ 214,000.00
28	Excavation	square metre	42,645	\$ 8.00	\$ 341,160.00
29	Culverts				
	a) 300mm CMP	metre	6	\$ 300.00	\$ 1,800.00
30	Land Drainage Sewer				
	a) 300mm PVC	metre	10	\$ 375.00	\$ 3,750.00
	b) 375mm PVC	metre	30	\$ 400.00	\$ 12,000.00
	c) 400mm PVC	metre	20	\$ 425.00	\$ 8,500.00
	d) 450mm PVC	metre	135	\$ 450.00	\$ 60,750.00
31	Catch Basin Frame and Cover	each	5	\$ 2,500.00	\$ 12,500.00
32	Catch Basin Riser	metre	15	\$ 2,300.00	\$ 34,500.00
33	Grouted Rip Rap	square metre	40	\$ 40.00	\$ 1,600.00
34	LDS Outfall	lump sum	1	\$ 5,000.00	\$ 5,000.00
35	Television and Mandrel Testing	metre	195	\$ 25.00	\$ 4,875.00
36	Granular Density Testing	lump sum	1	\$ 15,000.00	\$ 15,000.00
37	Concrete Testing	lump sum	1	\$ 9,000.00	\$ 9,000.00
38	Asphalt Testing	lump sum	1	\$ 8,000.00	\$ 8,000.00
39	Boulevard Grading	square metre	4,535	\$ 3.00	\$ 13,605.00
40	Swale	metre	26	\$ 16.00	\$ 416.00
41	Topsoil and Seeding	square metre	5,860	\$ 7.00	\$ 41,020.00
42	Lot Grading	square metre	29,800	\$ 2.00	\$ 59,600.00

Subtotal Construction: \$ 3,851,868.00

Contingency (5%): \$ 192,593.40

Engineering (8%): \$ 308,149.44

HST(13%): \$ 500,742.84

Mario Milanese Subdivision Stage 3 Class A Cost Estimate: \$ 4,853,353.68