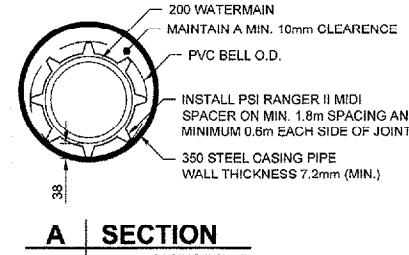
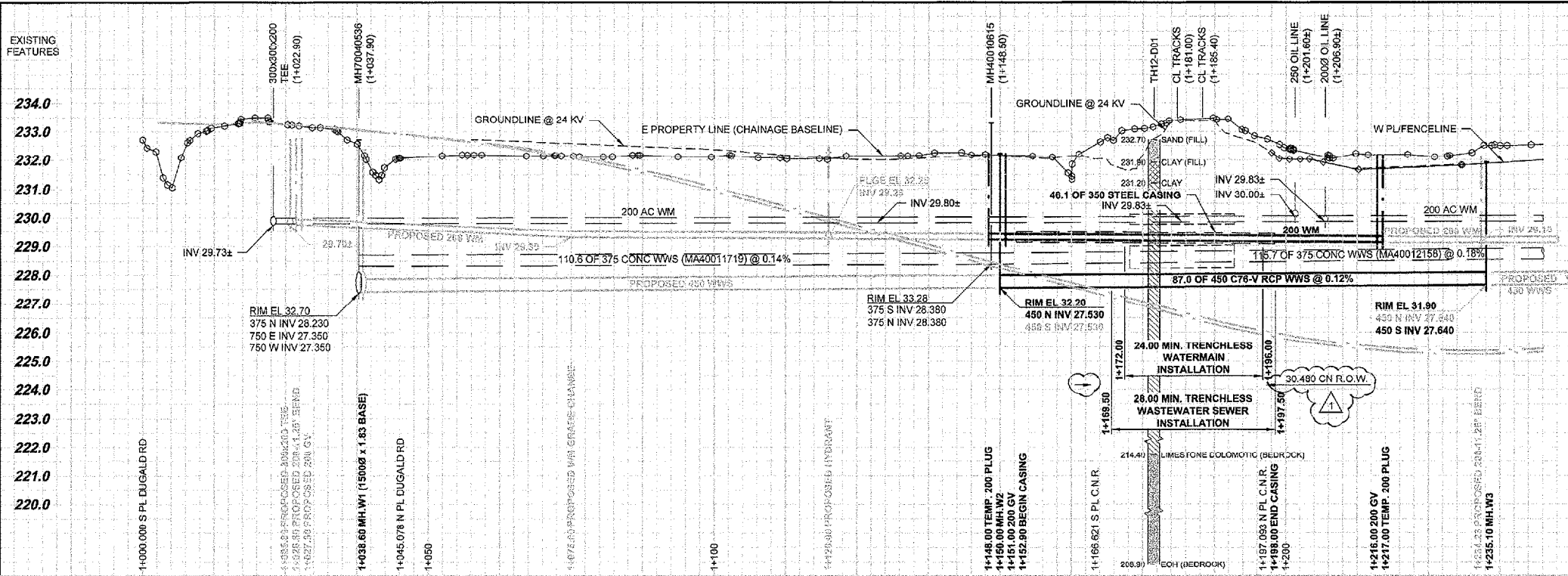


# **APPENDIX 'C'**

## **REFERENCE DRAWINGS**

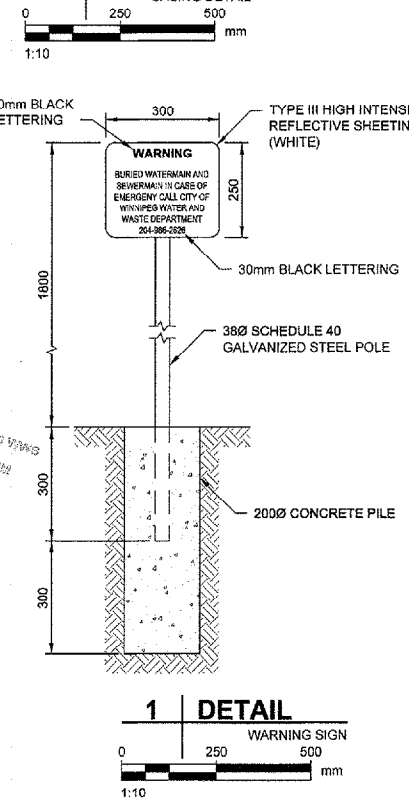
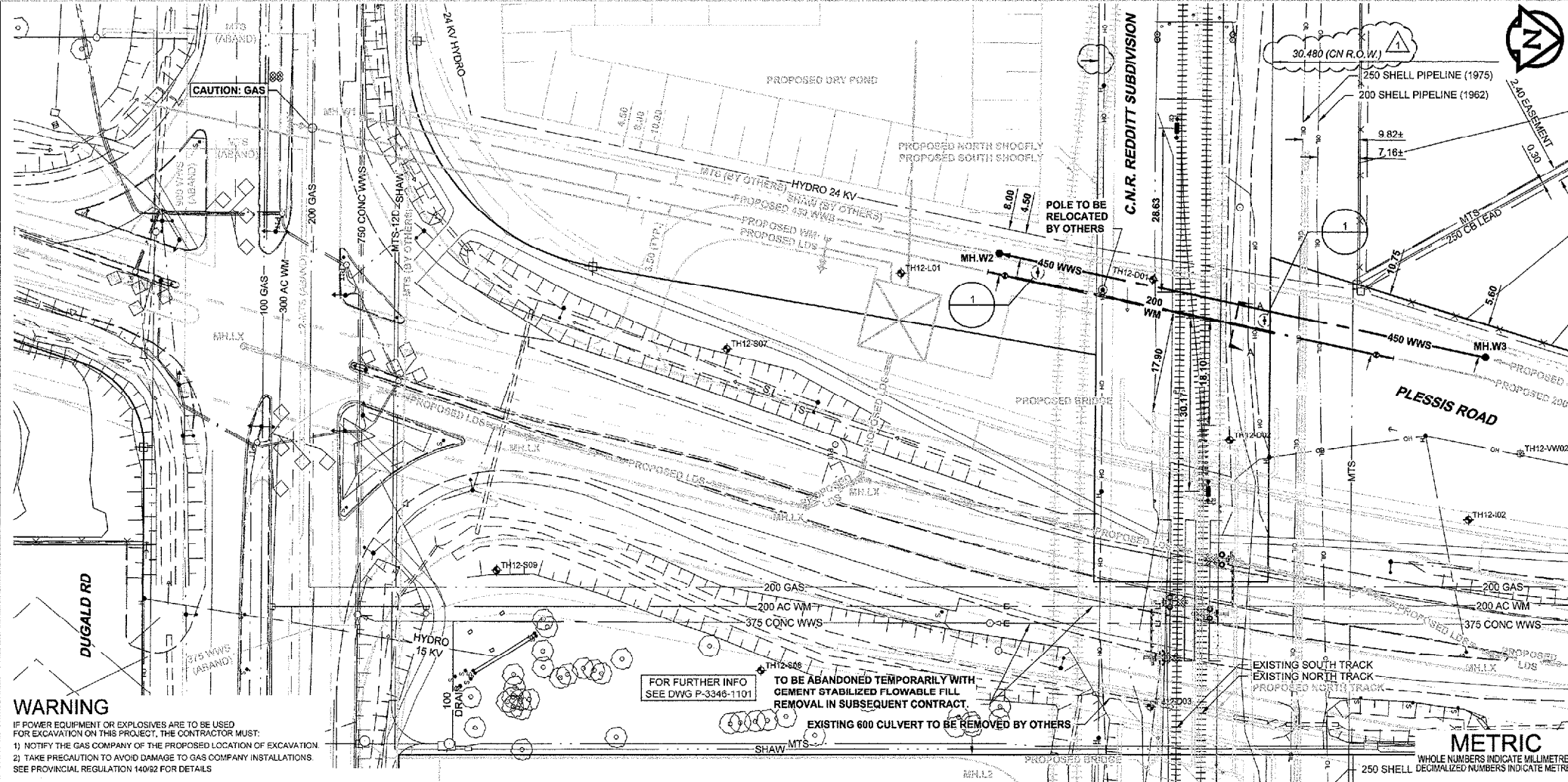
D SIZE 22" x 34" (560mm x 864mm)



**RAIL CROSSING NOTES:**

RAILWAY MILEAGE AND SUBDIVISION:	MAIN LINE - REDDITT SUBDIVISION - MILE 246.67
MUNICIPAL DESCRIPTION OF ADJACENT PROPERTIES:	PLESSIS ROAD CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT
NAME OF PIPELINE OWNER:	PLESSIS ROAD CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT
CONTENTS TO BE HANDLED:	WASTEWATER SEWER NON-SURCHARGED GRAVITY
MAXIMUM OPERATING PRESSURE:	ATMOSPHERIC
MAXIMUM SURGE AND TEST PRESSURE:	NA
MAXIMUM OPERATING TEMPERATURE:	NA
MINIMUM OPERATING TEMPERATURE:	NA
PIPING MATERIALS:	CARRIER 450 mm
NOMINAL DIAMETER:	523 mm
OUTSIDE DIAMETER:	REINFORCED CONCRETE
MATERIAL SPECIFICATION AND GRADE:	ASTM C76 CLASS 5
WALL THICKNESS:	53 mm
TYPE OF JOINT:	RUBBER GASKET BELL AND SPIGOT
COATING:	NA
LOCATION OF SHUT OFF VALVES:	NA
METHOD OF INSTALLATION:	TRENCHLESS - CONCRETE PIPE TO BE JACKED WITH NO SOIL REMOVAL AHEAD OF PIPE
VENTS:	NA
SEALS:	NUMBER: NA HEIGHT ABOVE GROUND: NA BOTH ENDS: NA TYPE: NA
BURY:	BASE OF RAIL TO TOP OF CARRIER: 5.5 m NOT BENEATH TRACKS: 4.0 m ROADWAY DITCHES: 3.5 m BASE OF RAIL TO BOTTOM OF JACKING/RECEIVING PITS: 6.5 m
EXTENT OF CASING MEASURED PERPENDICULAR TO CENTERLINE OF TRACK:	NA
ANGLE OF PIPE / TRACK CROSSING:	79°28'
DIRECTION OF FLOW:	NA
CENTERLINE OF TRACK TO FACE OF JACKING/RECEIVING PITS:	12.0m
TYPE, SIZE AND SPACING OF INSULATORS OR SUPPORTS:	NA
CATHODIC PROTECTION:	NA
GEOTECHNICAL BOREHOLES:	SEE PROFILE
SOIL TYPE:	CLAY
BASE OF RAIL TO GROUND WATER:	10.4m - 11.5m

TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH TO C-10



**RAIL CROSSING NOTES:**

RAILWAY MILEAGE AND SUBDIVISION:	MAIN LINE - REDDITT SUBDIVISION - MILE 246.67
MUNICIPAL DESCRIPTION OF ADJACENT PROPERTIES:	PLESSIS ROAD CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT
NAME OF PIPELINE OWNER:	PLESSIS ROAD CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT
CONTENTS TO BE HANDLED:	POTABLE WATER
MAXIMUM OPERATING PRESSURE:	400 KPa (58 psi)
MAXIMUM SURGE AND TEST PRESSURE:	1000 KPa (145 psi)
MAXIMUM OPERATING TEMPERATURE:	20°C
MINIMUM OPERATING TEMPERATURE:	4°C
PIPING MATERIALS:	CARRIER 200 mm
NOMINAL DIAMETER:	230 mm
OUTSIDE DIAMETER:	290 mm
MATERIAL SPECIFICATION AND GRADE:	PVC AWWA C900 DR18
WALL THICKNESS:	12.8 mm
TYPE OF JOINT:	RUBBER GASKET BELL AND SPIGOT
COATING:	NA
LOCATION OF SHUT OFF VALVES:	A) 18.5m NORTH OF NORTH LIMIT OF R.O.W. B) 15.6m SOUTH OF SOUTH LIMIT OF R.O.W.
METHOD OF INSTALLATION:	TRENCHLESS - CASING TO BE JACKED WITH NO SOIL REMOVAL AHEAD OF PIPE
VENTS:	NUMBER: NA HEIGHT ABOVE GROUND: NA BOTH ENDS: YES TYPE: PSI MODEL W-BUNA
BURY:	BASE OF RAIL TO TOP OF CASING: 4.2 m NOT BENEATH TRACKS: 2.6 m ROADWAY DITCHES: 2.1 m BASE OF RAIL TO BOTTOM OF JACKING/RECEIVING PITS: 4.9 m
EXTENT OF CASING MEASURED PERPENDICULAR TO CENTERLINE OF TRACK:	45.2m
ANGLE OF PIPE / TRACK CROSSING:	79°28'
DIRECTION OF FLOW:	BI-DIRECTIONAL
CENTERLINE OF TRACK TO FACE OF JACKING/RECEIVING PITS:	10.0m
TYPE, SIZE AND SPACING OF INSULATORS OR SUPPORTS:	PSI RANGER II MIDI SPACERS WITH 38mm RUNNER HEIGHT 1.8m O.C.
CATHODIC PROTECTION:	NA
GEOTECHNICAL BOREHOLES:	SEE PROFILE
SOIL TYPE:	CLAY
BASE OF RAIL TO GROUND WATER:	10.4m - 11.5m

TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH TO C-10

**PLAN / PROFILE**

0 12.5 25 50 m H=1:500 V=1:100

**WARNING**  
IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT, THE CONTRACTOR MUST:  
1) NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION  
2) TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS  
SEE PROVINCIAL REGULATION 149/92 FOR DETAILS

FOR FURTHER INFO SEE DWG P-3346-1101  
TO BE ABANDONED TEMPORARILY WITH CEMENT STABILIZED FLOWABLE FILL REMOVAL IN SUBSEQUENT CONTRACT.  
EXISTING 600 CULVERT TO BE REMOVED BY OTHERS

AECOM REVIEW DRFT CHK

150 WM	WATERMAIN	150 WM	CURB STOP	150 WM	WATERMAIN
HYDRANT	REDUCER	HYDRANT	REDUCER	HYDRANT	REDUCER
VALVE	COUPLING	VALVE	COUPLING	VALVE	COUPLING
900 LDS	LAND DRAINAGE SEWER	300 LDS	ANODE	300 LDS	LAND DRAINAGE SEWER
250 WWS	WASTE WATER SEWER	250 WWS	HYDRO	250 WWS	WASTE WATER SEWER
MANHOLE		MANHOLE	MTS	MANHOLE	
CATCH BASIN		CATCH BASIN	GAS	CATCH BASIN	
CURB INLET		CURB INLET	TESTHOLE	CURB INLET	
CULVERT		CULVERT	LAMP STANDARD	CULVERT	
PIPE ABANDONMENTS		PIPE ABANDONMENTS	TREE	PIPE ABANDONMENTS	
SURVEY BAR		SURVEY BAR		SURVEY BAR	
EXISTING	LEGEND - PLAN	NEW	EXISTING	LEGEND - PLAN	NEW
EXISTING	LEGEND - PROFILE	NEW	EXISTING	LEGEND - PROFILE	NEW

**LOCATION APPROVED UNDERGROUND STRUCTURES**

SUPR. U/G STRUCTURES DATE COMMITTEE

**NOTE:**  
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

1	ADDED CN R.O.W WIDTH	13/06/09	ADL
0	ISSUED FOR CN APPROVAL	13/04/23	ADL
NO.	REVISIONS	TYMMDD	BY

**AECOM**

DESIGNED BY: FJM  
DRAWN BY: ADL  
CHECKED BY: [Signature]  
APPROVED BY: [Signature]  
HOR. SCALE: 1:500  
VERT. SCALE: 1:100  
RELEASED FOR CONSTRUCTION: [Signature]  
DATE: [Signature]

PROFESSIONAL'S SEAL  
PROVINCE OF MANITOBA  
D.M.R. ENNS  
31777  
Member  
REGISTERED PROFESSIONAL ENGINEER  
CONSULTANT DRAWING NO.  
60273041-SHT-00-Cont1-C-0001\_C-0002

**THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT**

**UNDERPASS OF THE CNR AT PLESSIS ROAD EXISTING WATER & SEWER RELOCATIONS**

DUGALD ROAD TO 350m SOUTH OF KERNAGHAN AVENUE

CITY DRAWING NUMBER: P-3346-1100  
SHEET: 01 OF 03  
CONSULTANT DWG No. REV: C-0001 1

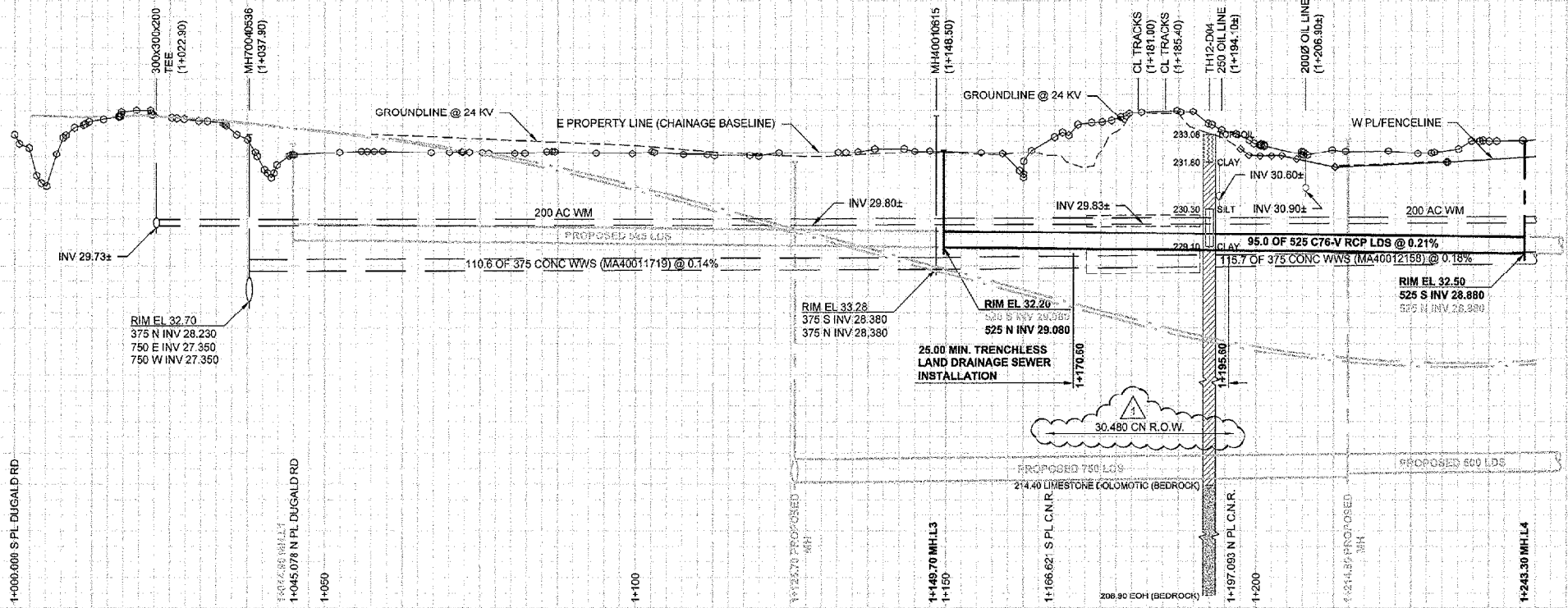
BID OPPORTUNITY NO. 342-2013

D SIZE 22" x 34" (559mm x 864mm)

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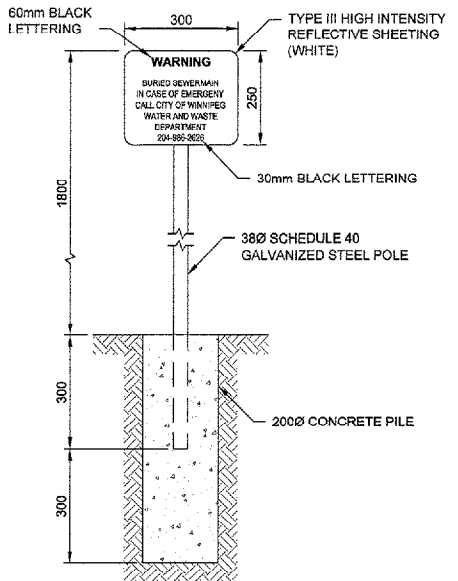
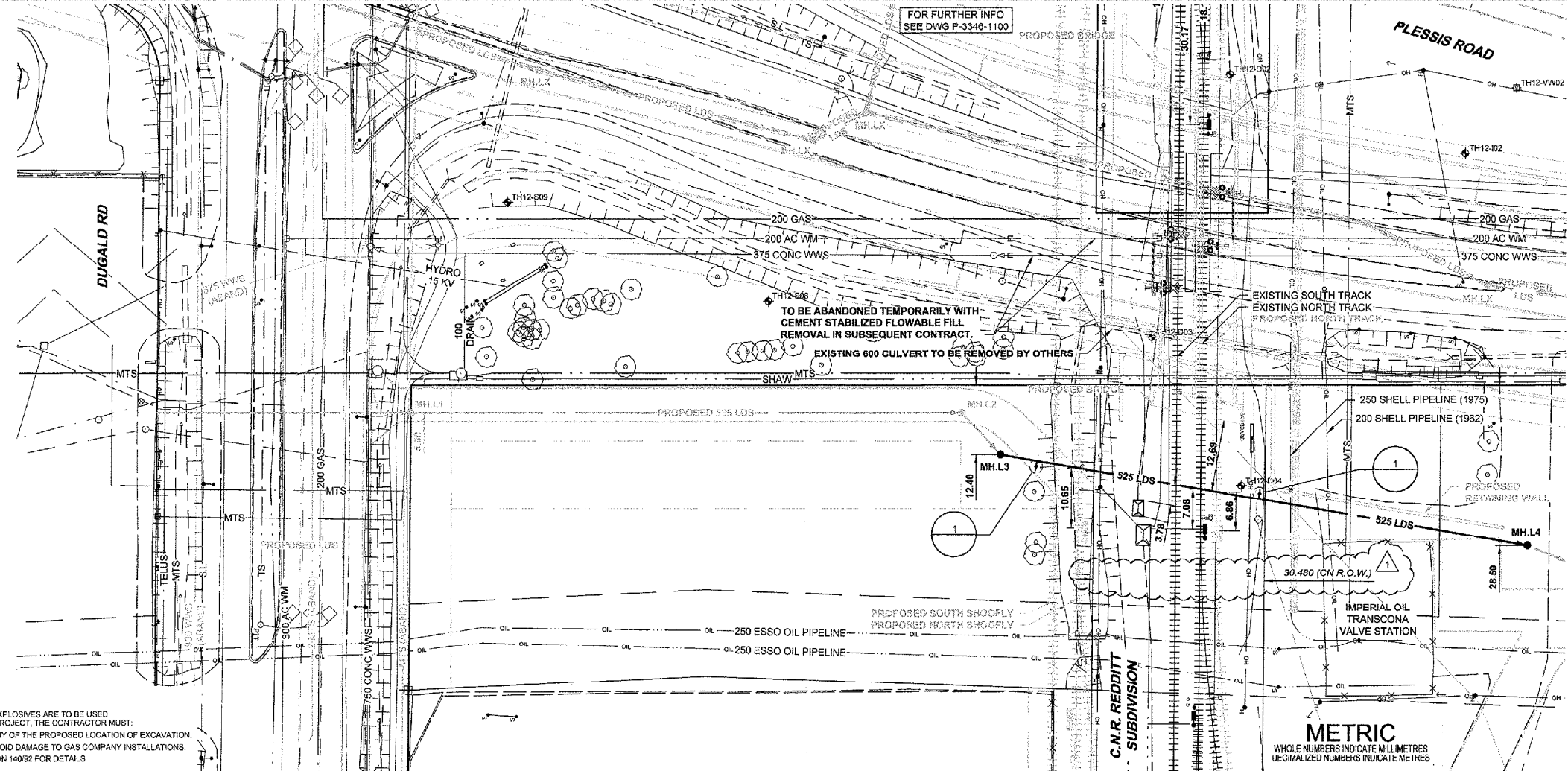
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EXISTING FEATURES  
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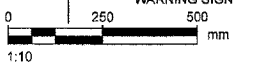


RAIL CROSSING NOTES:

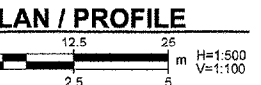
RAILWAY MILEAGE AND SUBDIVISION:	MAIN LINE - REDDIT SUBDIVISION - MILE 246.61
MUNICIPAL DESCRIPTION OF ADJACENT PROPERTIES:	PLESSIS ROAD
NAME OF PIPELINE OWNER:	CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT
CONTENTS TO BE HANDLED:	LAND DRAINAGE SEWER
MAXIMUM OPERATING PRESSURE:	NON-SURCHARGED GRAVITY
MAXIMUM SURGE AND TEST PRESSURE:	NA
MAXIMUM OPERATING TEMPERATURE:	ATMOSPHERIC
MINIMUM OPERATING TEMPERATURE:	NA
PIPING MATERIALS:	CARRIER
NOMINAL DIAMETER:	225 mm
OUTSIDE DIAMETER:	711 mm
MATERIAL:	REINFORCED CONCRETE
SPECIFICATION AND GRADE:	ASTM C76 CLASS 5
WALL THICKNESS:	89 mm
TYPE OF JOINT:	RUBBER GASKET
COATING:	BELL AND SPIGOT
LOCATION OF SHUT OFF VALVES:	NA
METHOD OF INSTALLATION:	TRENCHLESS - CONCRETE PIPE TO BE JACKED WITH NO SOIL REMOVAL AHEAD OF PIPE
VENTS:	NA
SEALS:	NUMBER: NA HEIGHT ABOVE GROUND: NA BOTH ENDS: NA TYPE: NA
BURY:	BASE OF RAIL TO TOP OF CARRIER: 4.1 m NOT BENEATH TRACKS: 3.1 m ROADWAY DITCHES: 2.1 m BASE OF RAIL TO BOTTOM OF JACKING/RECEIVING PIT: 5.1 m
EXTENT OF CASING MEASURED PERPENDICULAR TO CENTERLINE OF TRACK:	NA
ANGLE OF PIPE / TRACK CROSSING:	80°/40°
DIRECTION OF FLOW:	NA
CENTERLINE OF TRACK TO FACE OF JACKING/RECEIVING PIT:	10.0m
TYPE, SIZE, AND SPACING OF INSULATORS OR SUPPORTS:	NA
CATHODIC PROTECTION:	NA
GEOTECHNICAL BOREHOLES:	SEE PROFILE
SOIL TYPE:	CLAYSILT
BASE OF RAIL TO GROUND WATER:	10.4m - 11.5m
TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH C-10	



1 DETAIL



PLAN / PROFILE



**WARNING**  
IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT, THE CONTRACTOR MUST:  
1) NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.  
2) TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.  
SEE PROVINCIAL REGULATION 140/92 FOR DETAILS

150 WM	WATERMAIN	150 WM	150 WM	CURB STOP	150 WM	WATERMAIN	150 WM	LOCATION APPROVED
HYDRANT	REDUCER	COUPLING	VALVE	ANODE	HYDRANT	VALVE	DATE	COMMITTEE
300 LDS	LAND DRAINAGE SEWER	250 WWS	MANHOLE	HYDRO	300 LDS	LAND DRAINAGE SEWER	DATE	COMMITTEE
250 WWS	WASTE WATER SEWER	250 WWS	CATCH BASIN	MTS	250 WWS	WASTE WATER SEWER	DATE	COMMITTEE
MANHOLE	MANHOLE	MANHOLE	CURB INLET	GAS	PAVEMENT CROWN	PAVEMENT CROWN	DATE	COMMITTEE
CULVERT	CULVERT	CULVERT	PIPE ABANDONMENTS	TESTHOLE	NW PROPERTY LINE	NW PROPERTY LINE	DATE	COMMITTEE
SURVEY BAR	SURVEY BAR	SURVEY BAR	EXISTING	LAMP STANDARD	NW GUTTER	NW GUTTER	DATE	COMMITTEE
LEGEND - PLAN	LEGEND - PLAN	LEGEND - PLAN	NEW	TREE	S/E GUTTER	S/E GUTTER	DATE	COMMITTEE
LEGEND - PLAN	LEGEND - PLAN	LEGEND - PLAN	NEW	LEGEND - PROFILE	LEGEND - PROFILE	LEGEND - PROFILE	DATE	COMMITTEE
LEGEND - PLAN	LEGEND - PLAN	LEGEND - PLAN	NEW	LEGEND - PROFILE	LEGEND - PROFILE	LEGEND - PROFILE	DATE	COMMITTEE

**LOCATION APPROVED**  
UNDERGROUND STRUCTURES  
DATE  
COMMITTEE

NOTE:  
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

NO.	REVISIONS	DATE	BY
1	ADDED ON R.O.W WIDTH	13/05/08	ADL
2	ISSUED FOR CN APPROVAL	13/04/23	ADL

**AECOM**

DESIGNED BY: FMI  
DRAWN BY: ADL  
CHECKED BY: [Signature]  
APPROVED BY: [Signature]  
RELEASED FOR CONSTRUCTION: [Signature]  
HOR. SCALE: 1:500  
VERT. SCALE: 1:100

PROFESSIONAL'S SEAL  
PROVINCE OF MANITOBA  
D.M.R. ENNS  
Member  
31777  
May 6, 2013  
REGISTERED PROFESSIONAL ENGINEER  
CONSULTANT DRAWING NO.  
80273041-SHT-00-C001-C-0001-C-0002

**THE CITY OF WINNIPEG**  
PUBLIC WORKS DEPARTMENT

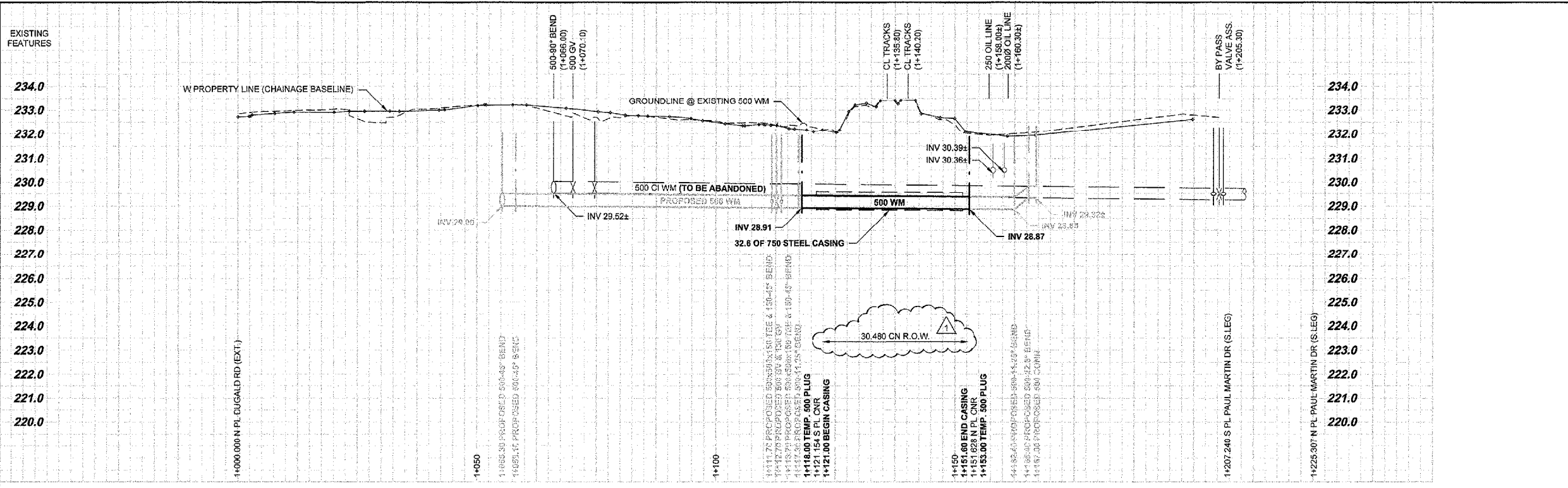
**UNDERPASS OF THE CNR AT PLESSIS ROAD**  
EXISTING WATER & SEWER RELOCATIONS

PROPOSED 525 LDS CROSSING  
DUGALD ROAD TO  
350m SOUTH OF KERNAGHAN AVENUE

CITY DRAWING NUMBER: P-3346-1101  
SHEET: 02 OF 03  
CONSULTANT DWG No.: C-0002  
REV: 1

BID OPPORTUNITY NO. 342-2013

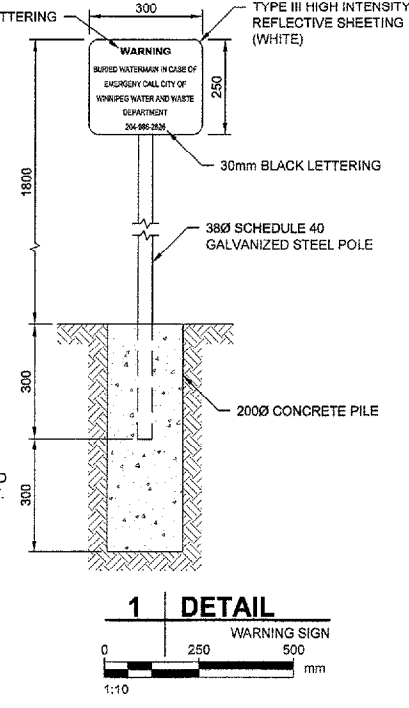
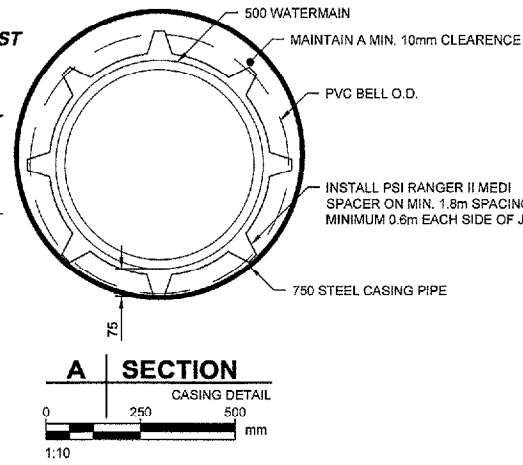
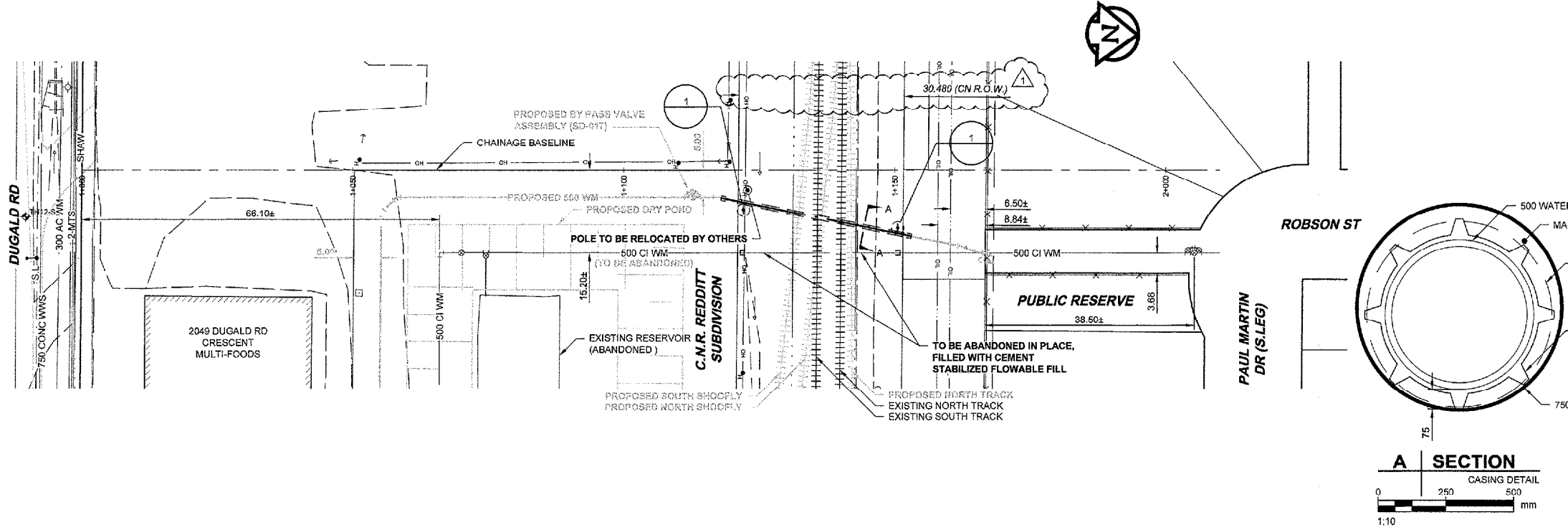
D SIZE 22" x 34" (559mm x 864mm)



**RAIL CROSSING NOTES:**

RAILWAY MILEAGE AND SUBDIVISION:	MAIN LINE - REDDITT SUBDIVISION - MILE 246.78
MUNICIPAL DESCRIPTION OF ADJACENT PROPERTIES:	200m WEST OF PLESSIS ROAD (OPPOSITE ROBSON STREET EXTENSION) CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT
NAME OF PIPELINE OWNER:	CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT
CONTENTS TO BE HANDLED:	POTABLE WATER
MAXIMUM OPERATING PRESSURE	450 KPa (65 psf)
MAXIMUM SURGE AND TEST PRESSURE	1000 KPa (145 psf)
MAXIMUM OPERATING TEMPERATURE	20°C
MINIMUM OPERATING TEMPERATURE	4°C
PIPING MATERIALS	CARRIER CASING
NOMINAL DIAMETER	500 mm 750 mm
OUTSIDE DIAMETER	540 mm 782 mm
MATERIAL	PVC STEEL
SPECIFICATION AND GRADE	AWWA C905 DR18 MIN. YIELD STRENGTH 241 MPa
WALL THICKNESS	30.5 mm 11.0 mm MIN.
TYPE OF JOINT	RUBBER GASKET BELLS AND SPIGOT WELDED
COATING	NA
LOCATION OF SHUT OFF VALVES	A.) 53.8m NORTH OF NORTH LIMIT OF R.O.W. B.) 8.4m SOUTH OF SOUTH LIMIT OF R.O.W.
METHOD OF INSTALLATION	TRENCHLESS - CASING TO BE JACKED WITH NO SOIL REMOVAL AHEAD OF PIPE
VENTS:	NA
SEALS:	HEIGHT ABOVE GROUND: NA BOTH ENDS: YES TYPE: PSI BUNA-N MODEL W
BURY:	BASE OF RAIL TO TOP OF CASING: 4.0 m NOT BENEATH TRACKS: 2.5 m ROADWAY DITCHES: 2.5 m BASE OF RAIL TO BOTTOM OF JACKING/RECEIVING PITS: 5.0 m
EXTENT OF CASING MEASURED PERPENDICULAR TO CENTERLINE OF TRACK	30.6m
ANGLE OF PIPE / TRACK CROSSING	79°11"
DIRECTION OF FLOW	BI-DIRECTIONAL
CENTERLINE OF TRACK TO FACE OF JACKING/RECEIVING PITS	11.5m NORTH / 14.7m SOUTH
TYPE, SIZE, AND SPACING OF INSULATORS OR SUPPORTS	PSI RANGER II MEDI SPACERS WITH 75mm RUNNER HEIGHT 1.8m O.C.
CATHODIC PROTECTION	NA
GEOTECHNICAL BOREHOLES	NA
SOIL TYPE	NA
BASE OF RAIL TO GROUND WATER	NA

TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH TC E-10



**WARNING**  
IF POWER EQUIPMENT OR EXPLOSIVES ARE TO BE USED FOR EXCAVATION ON THIS PROJECT, THE CONTRACTOR MUST:  
1) NOTIFY THE GAS COMPANY OF THE PROPOSED LOCATION OF EXCAVATION.  
2) TAKE PRECAUTION TO AVOID DAMAGE TO GAS COMPANY INSTALLATIONS.  
SEE PROVINCIAL REGULATION 140/92 FOR DETAILS

EXISTING	LEGEND - PLAN	NEW	EXISTING	LEGEND - PLAN	NEW	EXISTING	LEGEND - PROFILE	NEW
150 WM	WATERMAIN	150 WM	CURB STOP	150 WM	WATERMAIN	150 WM	WATERMAIN	150 WM
HYDRANT	VALVE	HYDRANT	REDUCER	HYDRANT	VALVE	HYDRANT	HYDRANT	HYDRANT
300 LDS	LAND DRAINAGE SEWER	300 LDS	COUPLING	300 LDS	LAND DRAINAGE SEWER	300 LDS	LAND DRAINAGE SEWER	300 LDS
250 WWS	WASTE WATER SEWER	250 WWS	ANODE	250 WWS	WASTE WATER SEWER	250 WWS	WASTE WATER SEWER	250 WWS
MANHOLE	CATCH BASIN	MANHOLE	HYDRO	MANHOLE	CATCH BASIN	MANHOLE	MANHOLE	MANHOLE
CURB INLET	CULVERT	CURB INLET	MTS	CURB INLET	CULVERT	CURB INLET	CULVERT	CULVERT
PIPE ABANDONMENTS	SURVEY BAR	PIPE ABANDONMENTS	GAS	PIPE ABANDONMENTS	SURVEY BAR	PIPE ABANDONMENTS	SURVEY BAR	PIPE ABANDONMENTS
			TESTHOLE					
			LAMP STANDARD					
			TREE					

**LOCATION APPROVED**  
UNDERGROUND STRUCTURES

SUPR. U/G STRUCTURES COMMITTEE DATE

**NOTE:**  
LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE, BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

NO.	REVISIONS	YYMMDD	BY
1	ADDED CN R.O.W WIDTH	13/05/09	ADL
0	ISSUED FOR CN APPROVAL	13/04/23	ADL

**AECOM**

DESIGNED BY: FMI  
CHECKED BY: [Signature]  
DRAWN BY: ADL  
APPROVED BY: [Signature]  
HOR. SCALE: 1:500  
VERT. SCALE: 1:100

PROFESSIONAL'S SEAL  
PROVINCE OF MANITOBA  
D.M.R.  
ENNS  
Member  
31777  
May 6, 2013  
REGISTERED PROFESSIONAL ENGINEER

**THE CITY OF WINNIPEG**  
PUBLIC WORKS DEPARTMENT

**UNDERPASS OF THE CNR AT PLESSIS ROAD**  
EXISTING WATER & SEWER RELOCATIONS

200m WEST OF PLESSIS ROAD  
DUGALD ROAD TO PAUL MARTIN DR (S. LEG) R.O.W.

CITY DRAWING NUMBER: P-3346-1102  
SHEET: 03 OF 03  
CONSULTANT DWG No. REV: C-0003

BID OPPORTUNITY NO. 342-2013

PLOT: 56/2013 1:53:33 PM

AECOM REVIEW DRET CHK (C)