



**DRAFT
PRELIMINARY (DESIGN-BUILD READY)
FOUNDATION INVESTIGATION AND DESIGN REPORT
for
DEEP CUT / HIGH FILL EMBANKMENTS
HIGHWAY 400 NORTH CANAL
GWP 2005-11-00
TOWNSHIP OF WEST GWILLIMBURY, SIMCOE COUNTY, ONTARIO**

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Distribution

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PML Ref.: 14TF025-HF
Index No.: 035DIR and 036DDR
GEOCRES No.: Not Assigned
February 17, 2016

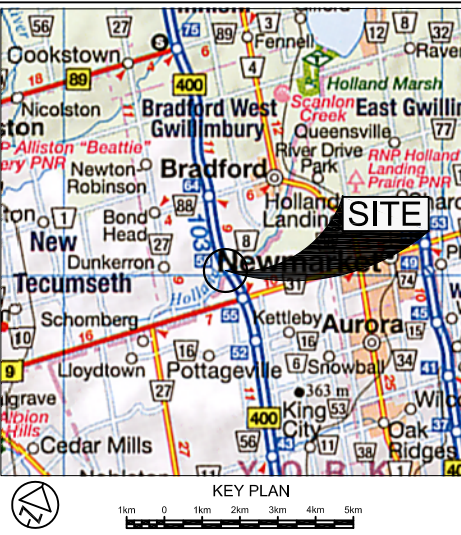
CONT No
GWP No 2005-11-00
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HIGHWAY 400 - CANAL ROAD
FOUNDATION AREAS - KEY PLAN
BOREHOLE LOCATIONS

SHEET

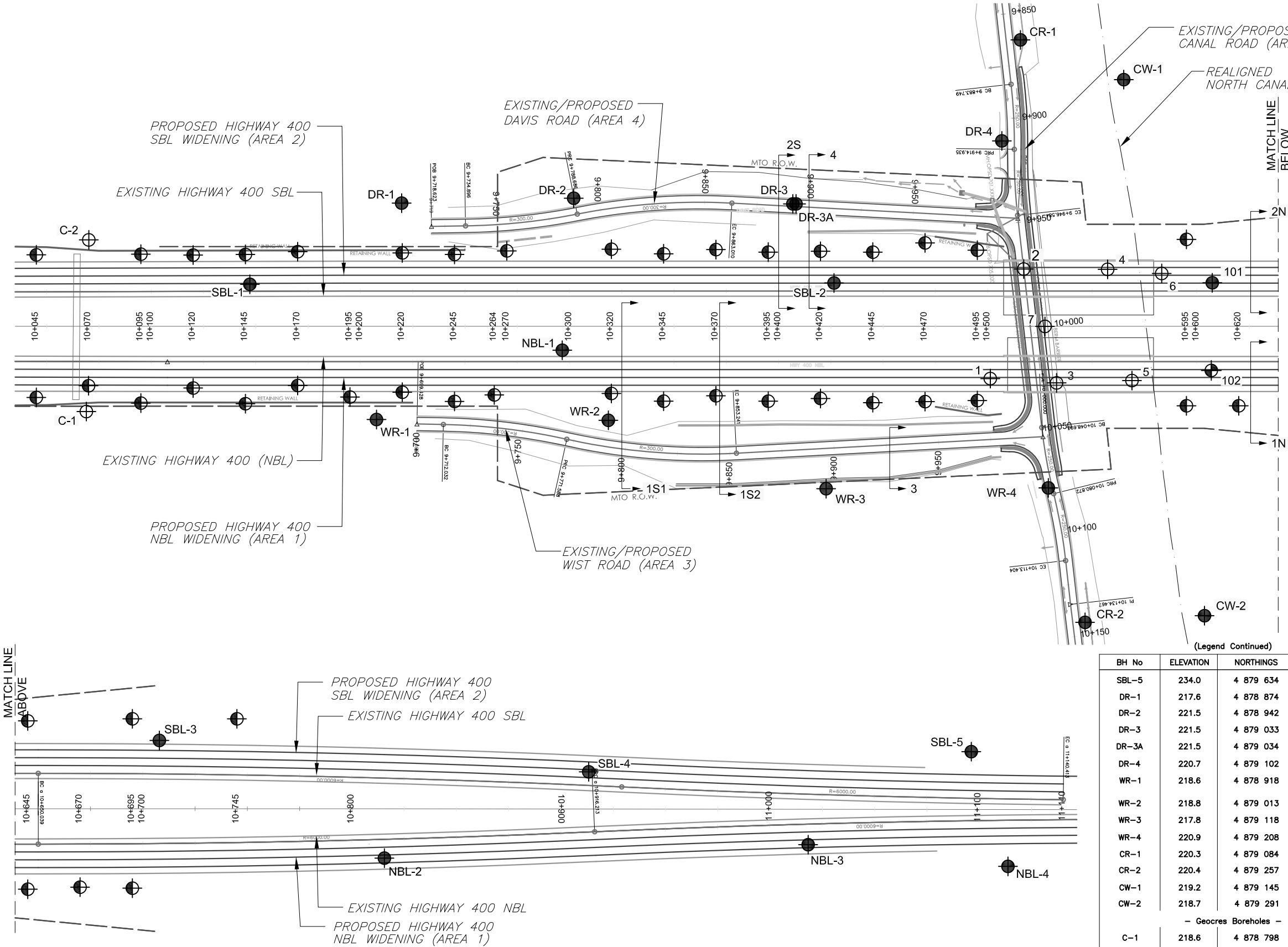
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LEGEND				
	Borehole			
	Borehole and Cone			
	Pavement Borehole by Stantec Consulting Ltd.			
	Geocres Borehole			
	Cross - section for slope stability analysis			

BH No	ELEVATION	NORTHINGS	EASTINGS
SBL-5	234.0	4 879 634	295 707
DR-1	217.6	4 878 874	296 144
DR-2	221.5	4 878 942	296 098
DR-3	221.5	4 879 033	296 045
DR-3A	221.5	4 879 034	296 044
DR-4	220.7	4 879 102	295 967
WR-1	218.6	4 878 918	296 238
WR-2	218.8	4 879 013	296 180
WR-3	217.8	4 879 118	296 152
WR-4	220.9	4 879 208	296 096
CR-1	220.3	4 879 084	295 921
CR-2	220.4	4 879 257	296 141
CW-1	219.2	4 879 145	295 910
CW-2	218.7	4 879 291	296 102
- Geocres Boreholes -			
C-1	218.6	4 878 798	296 308
C-2	219.2	4 878 756	296 238
1	225.7	4 879 157	296 066
2	221.6	4 879 143	296 013
3	221.5	4 879 185	296 051
4	220.9	4 879 177	295 992
5	223.2	4 879 215	296 031
6	227.7	4 879 200	295 980
7	221.6	4 879 166	296 031

REF Drawing: Hwy 400 North Canal Bridge Replacement-Plan & Profile dated July 2015



- NOTES:
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE TEXT OF REPORT AND RECORD OF BOREHOLE LOGS.
 - THIS DRAWING IS FOR SUBSURFACE INFORMATION ONLY. SURFACE DETAILS AND FEATURES ARE FOR CONCEPTUAL ILLUSTRATION.
 - DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN. STATIONS ARE IN KILOMETRES AND METRES.
 - FOR LOCATIONS OF PAVEMENT BOREHOLES REFER TO THE REPORT PREPARED BY STANTEC CONSULTING LTD.



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(Legend Continues)
- NOTE -
The boundaries between soil strata have been established only at Borehole locations. Between Boreholes the boundaries are assumed from geological evidence.

REVISIONS	DATE	BY	DESCRIPTION

Geocres No. XXXX-XXX				
Hwy No	400	CHECKED KD	DATE JAN. 11, 2016	DIST Central
SUBM'D NA	CHECKED KD	DATE JAN. 11, 2016	SITE	
DRAWN NL	CHECKED GD	APPROVED CN	DWG HF-1	

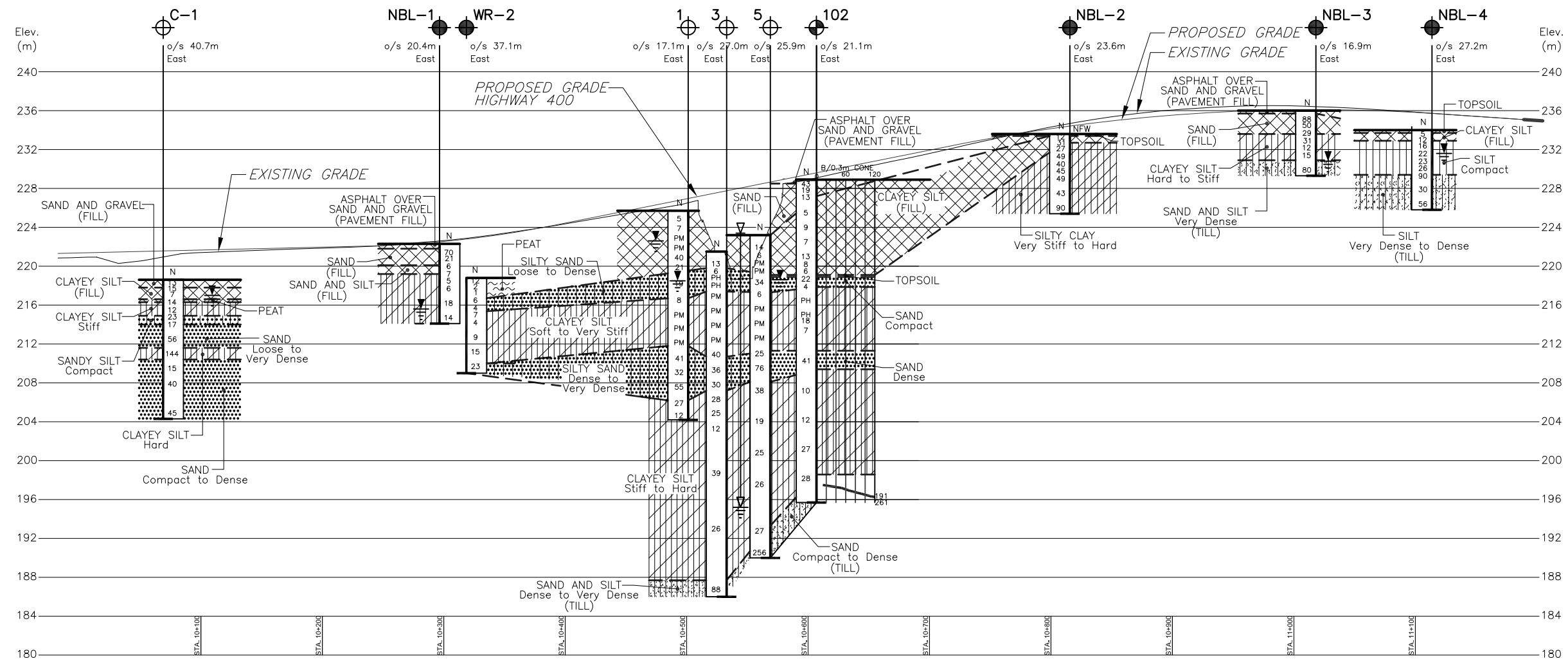
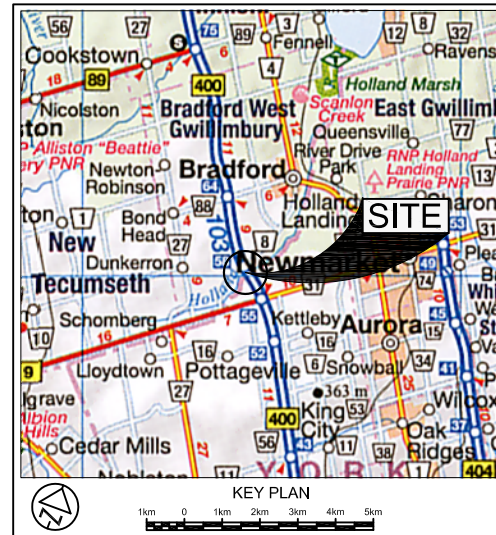
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GWP No 2005-11-00
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HIGHWAY 400 - CANAL ROAD
FOUNDATION AREA 1

SHEET

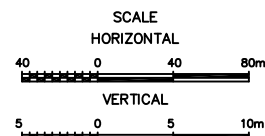
BOREHOLE LOCATIONS & SOIL STRATA



NOTES:

- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE TEXT OF REPORT AND RECORD OF BOREHOLE LOGS.
- REFER TO DRAWING HF-3 FOR PROFILES B-B, HF-4 FOR PROFILES C-C AND D-D, AND PROFILE HF-5 FOR PROFILES E-E & F-F.
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HWY 400 C/L PROFILE SHOWING NBL BOREHOLES (AREA 1)



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LEGEND

- Borehole
- Borehole and Cone
- Geocres Borehole
- N Blows/0.3m (Std. Pen Test, 475 J/blow)
- CONE Blows/0.3m (60 Cone, 475 J/blow)
- WL at time of investigation (Oct.-Nov. 1970, Oct. 2014 and Mar. 2015)
- PM Pushed Mechanically
- PH Pushed Hydraulically
- Head
- ARTESIAN WATER Encountered
- PIEZOMETER

BH No	ELEVATION	NORTHINGS	EASTINGS
NBL-1	222.3	4 878 981	296 170
NBL-2	233.6	4 879 423	295 899
NBL-3	236.0	4 879 592	295 786
NBL-4	234.0	4 879 678	295 744
WR-2	218.8	4 879 013	296 180
102	228.9	4 879 245	296 007
- Geocres Boreholes -			
C-1	218.6	4 878 798	296 308
1	225.7	4 879 157	296 066
3	221.5	4 879 185	296 051
5	223.2	4 879 215	296 031

NOTE

The boundaries between soil strata have been established only at Borehole locations. Between Boreholes the boundaries are assumed from geological evidence.

REVISIONS	DATE	BY	DESCRIPTION
Geocres No. XXXX-XXX			
HWY No	400	CHECKED KD	DATE JAN. 11, 2016
SUBM'D NA	CHECKED KD	DATE JAN. 11, 2016	SITE
DRAWN NL	CHECKED GD	APPROVED CN	DWG HF-2

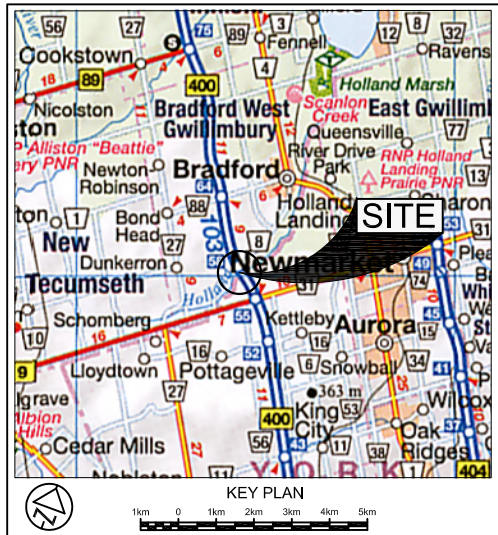
REF Drawing: Hwy 400 North Canal Bridge Replacement-Plan & Profile dated July 2015

CONT No
GWP No 2005-11-00
WP No

HIGHWAY 400 - CANAL ROAD
FOUNDATION AREA 2
BOREHOLE LOCATIONS & SOIL STRATA



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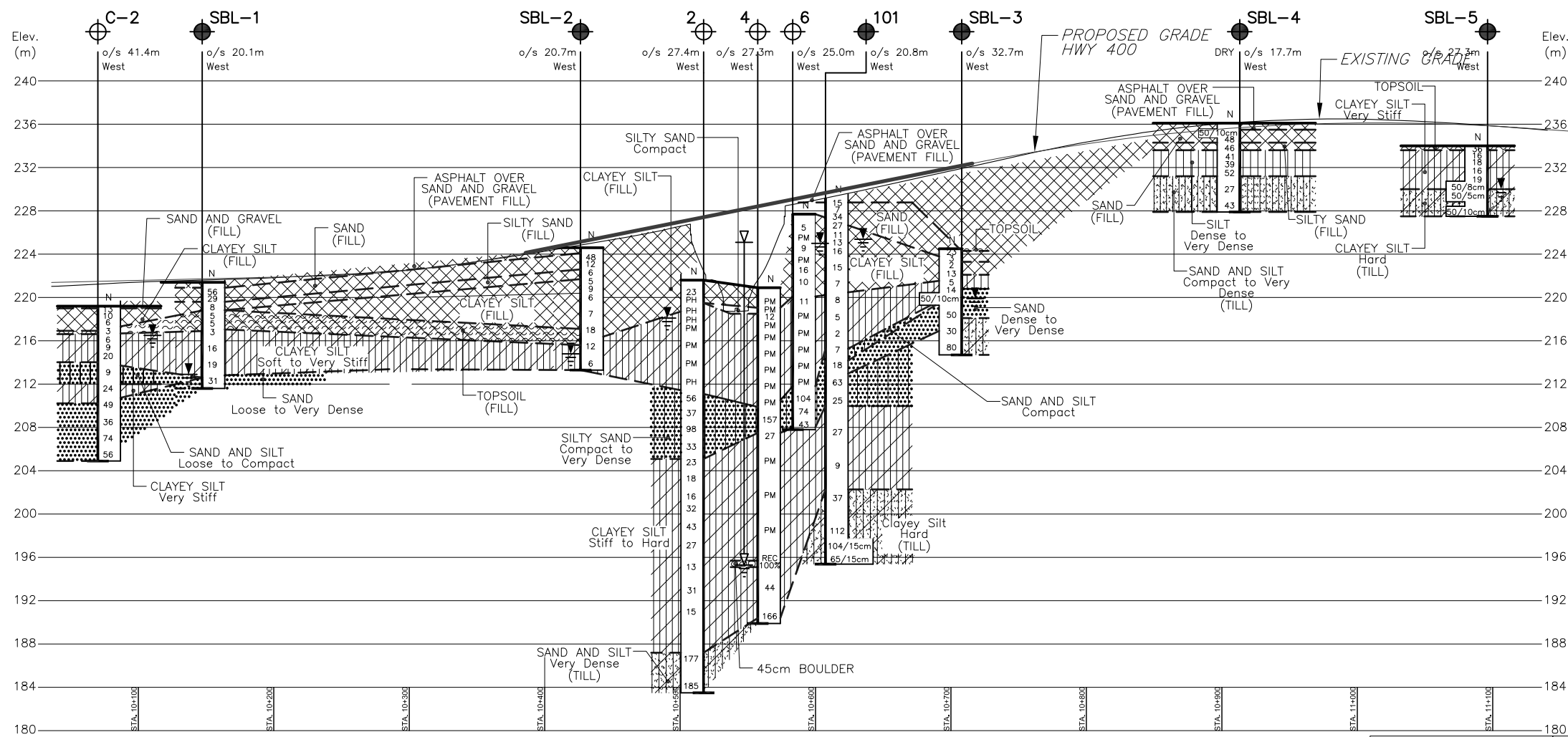
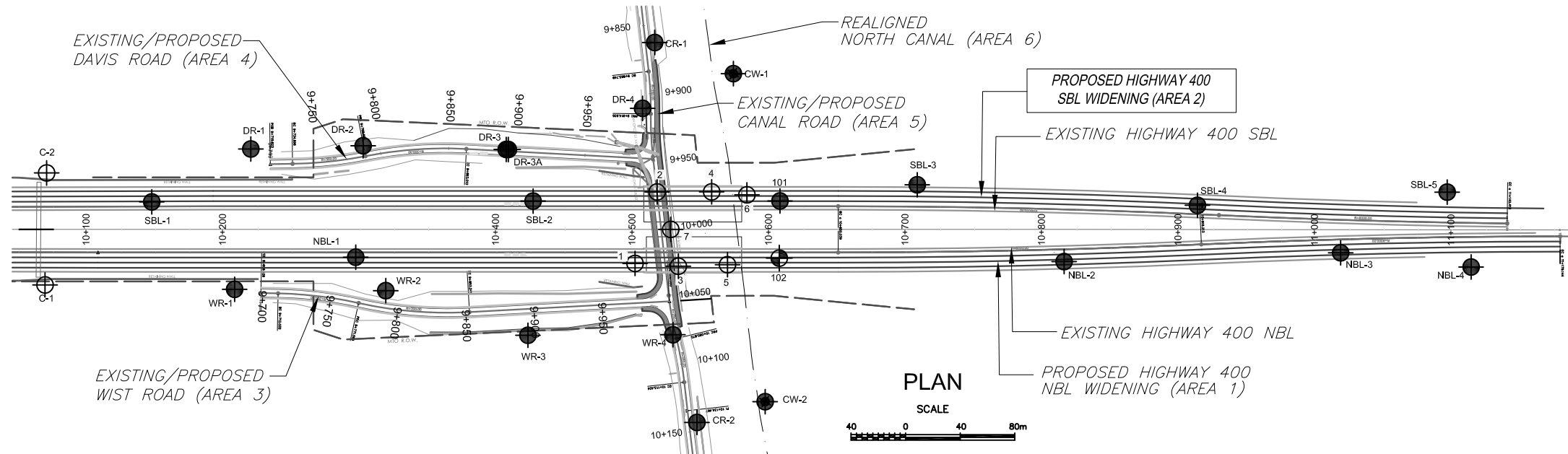
LEGEND	
	Borehole
	Borehole and Cone
	Geocres Borehole
N Blows/0.3m (Std. Pen Test, 475 J/blow)	
CONE Blows/0.3m (60 Cone, 475 J/blow)	
WL at time of investigation (Oct.-Nov. 1970, Oct. 2014 and Mar. 2015)	
PM	Pushed Mechanically
PH	Pushed Hydraulically
Head	Head
ARTESIAN WATER	ARTESIAN WATER
Encountered	Encountered
	PIEZOMETER

BH No	ELEVATION	NORTHINGS	EASTINGS
SBL-1	221.4	4 878 833	296 215
SBL-2	224.6	4 878 069	296 067
SBL-3	224.5	4 879 302	295 908
SBL-4	236.1	4 879 484	295 812
SBL-5	234.0	4 878 634	296 707
101	229.1	4 879 223	295 971
- Geocres Boreholes -			
C-2	219.2	4 878 756	296 238
2	221.6	4 879 143	296 013
4	220.9	4 878 756	296 238
6	227.7	4 879 200	295 980

NOTE
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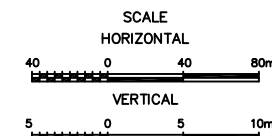
DATE	BY	DESCRIPTION

Geocres No. XXXX-XXX	
HWY No 400	DIST Central
SUBM'D NA	CHECKED KD
DATE JAN. 11, 2016	SITE
DRAWN NL	CHECKED GD
APPROVED CN	DWG HF-3



NOTES:

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- Figure 1 shows two scales. The top scale is labeled 'SCALE HORIZONTAL' and has markings at 40, 0, 40, and 80m. The bottom scale is labeled 'SCALE VERTICAL' and has markings at 5, 0, 5, and 10m.

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REVISIONS			
DATE	BY	DESCRIPTION	

HWY No 400				DIST Central
SUBM'D	NA	CHECKED KD	DATE JAN. 11, 2016	SITE
DRAWN	NL	CHECKED GD	APPROVED CN	DWG HF-4

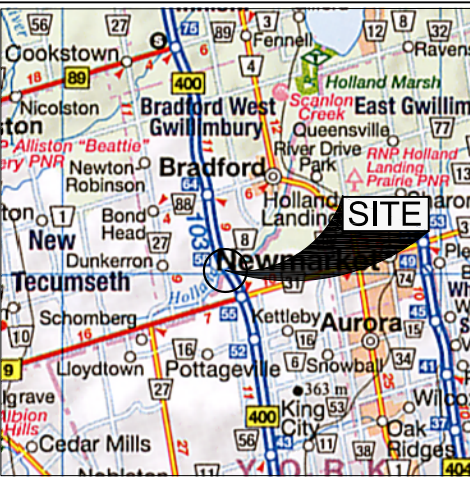
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GWP No 2005-11-00
WP No



HIGHWAY 400 - CANAL ROAD
FOUNDATION AREAS 5 AND 6
BOREHOLE LOCATIONS & SOIL STRATA

SHEET

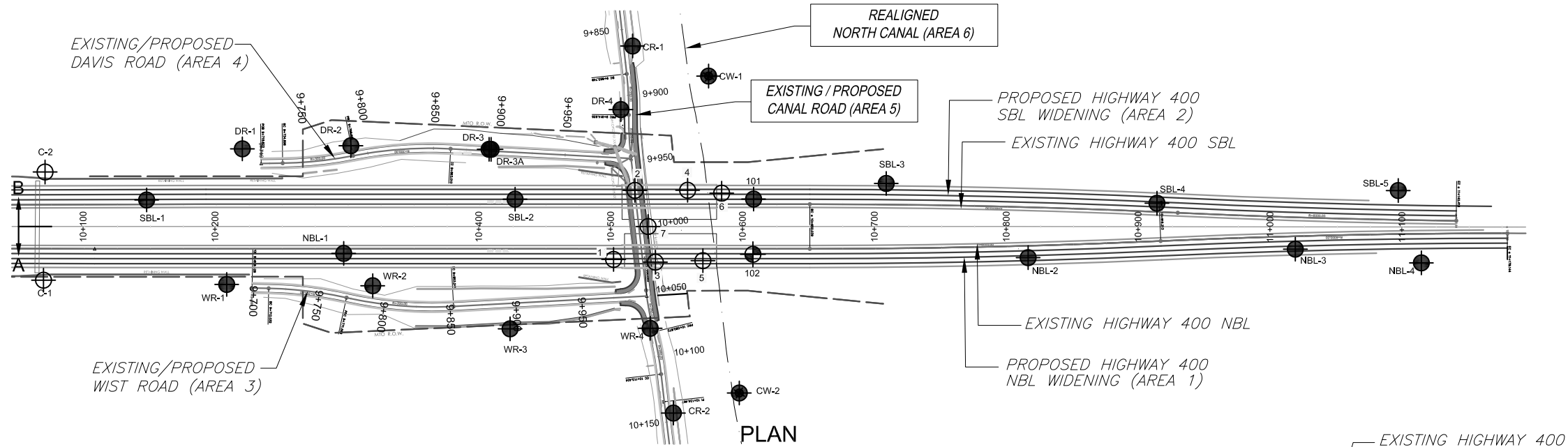
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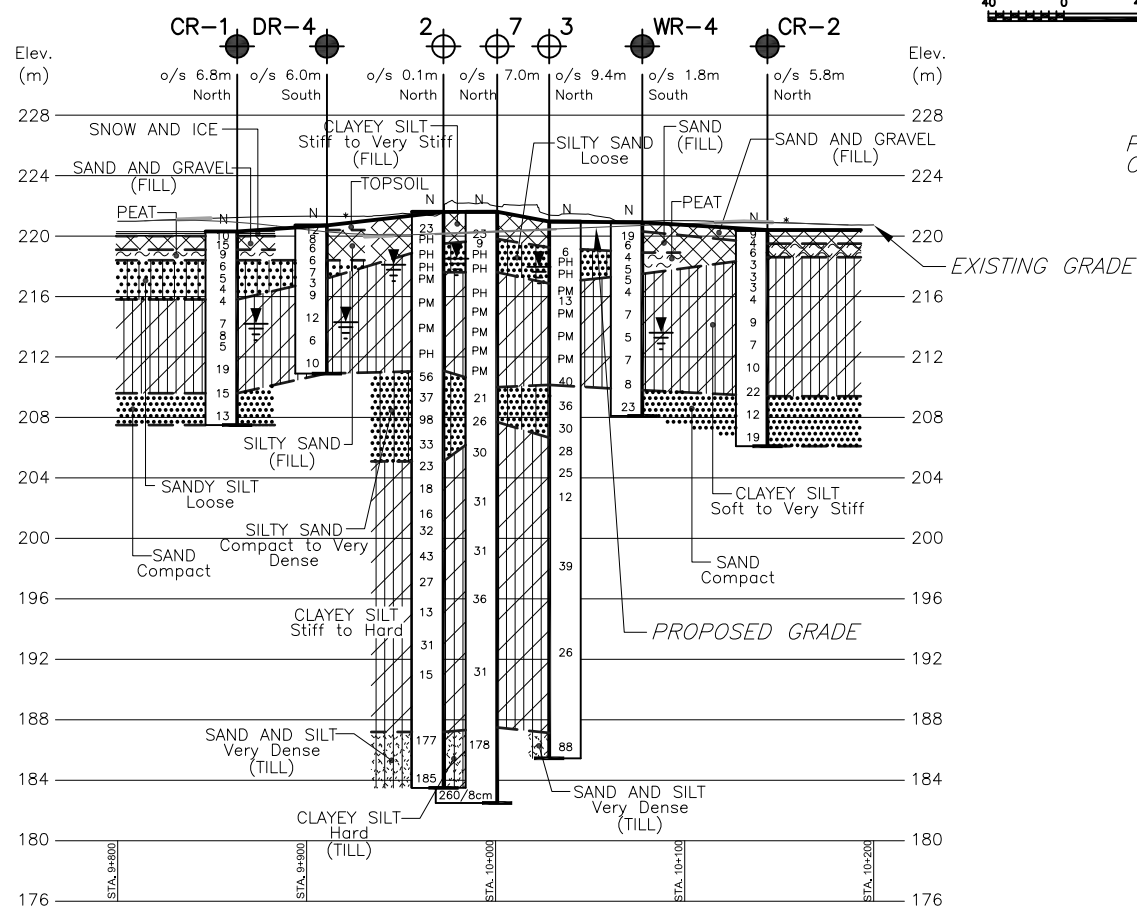
KEY PLAN
1km 0 1km 2km 3km 4km 5km

LEGEND			
	Borehole		
	Borehole and Cone		
	Geocres Borehole		
N	Blows/0.3m (Std. Pen Test, 475 J/blow)		
CONE	Blows/0.3m (60 Cone, 475 J/blow)		
	WL at time of investigation (Oct.-Nov. 1970, Oct. 2014 and Mar. 2015)		
PM	Pushed Mechanically		
PH	Pushed Hydraulically		
	Head		
	ARTESIAN WATER		
	Encountered		
	PIEZOMETER		

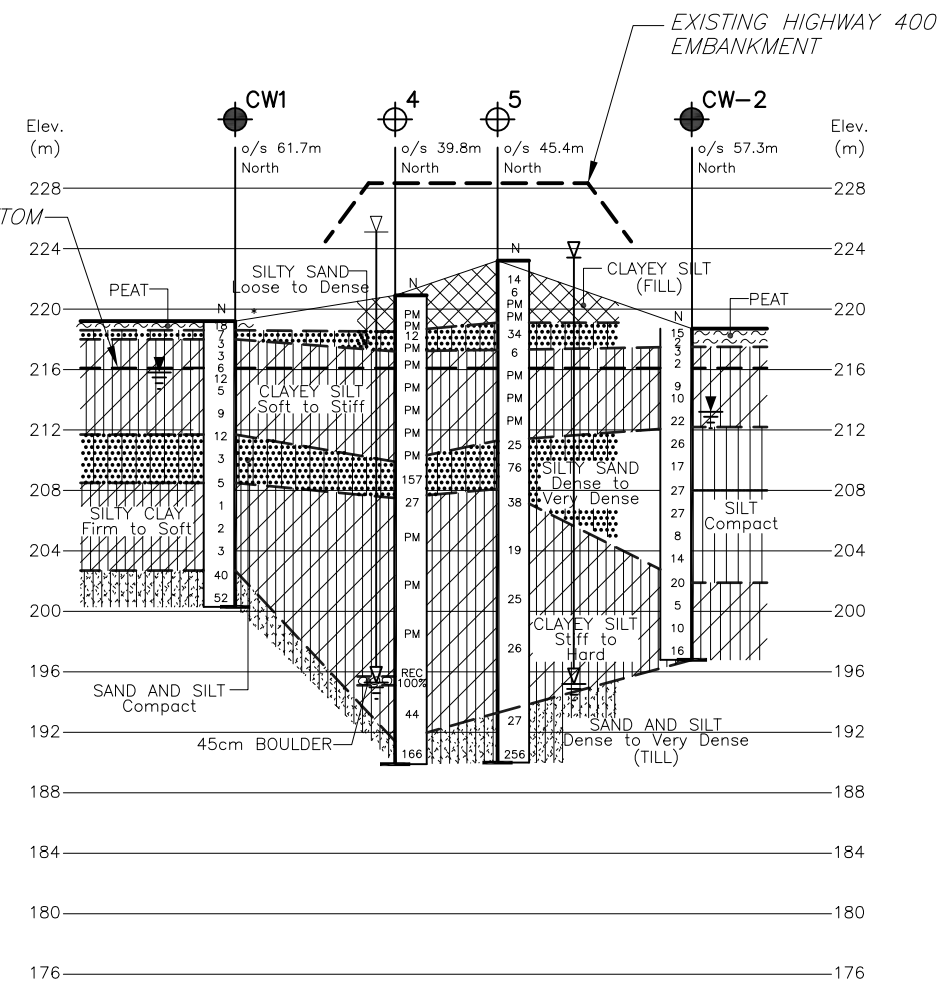
BH No	ELEVATION	NORTHINGS	EASTINGS
CR-1	220.3	4 879 084	295 921
CR-2	220.4	4 879 257	296 141
CW-1	219.2	4 879 145	295 910
CW-2	218.7	4 879 291	296 102
DR-4	220.7	4 879 102	295 967
WR-4	220.9	4 879 208	296 096
- Geocres Boreholes -			
2	221.6	4 879 143	296 013
3	221.5	4 879 185	296 051
4	220.9	4 879 177	295 992
5	223.2	4 879 215	296 031
7	221.6	4 879 166	296 031



PLAN
SCALE
40 0 40 80m



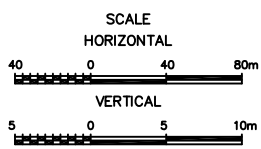
C/L EXISTING CANAL ROAD PROFILE (AREA 5)
(SHOWING SOUTH SIDE BOREHOLES)



C/L EXISTING CANAL ROAD PROFILE (AREA 6)
(SHOWING NORTH SIDE BOREHOLES)

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Geocres No. XXXX-XXX			
HWY No	400	CHECKED KD	DATE JAN. 11, 2016
SUBM'D NA	CHECKED KD	DATE JAN. 11, 2016	DIST Central
DRAWN NL	CHECKED GD	APPROVED CN	SITE
			DWG HF-5

REF Drawing: Hwy 400 North Canal Bridge Replacement-Plan & Profile dated July 2015