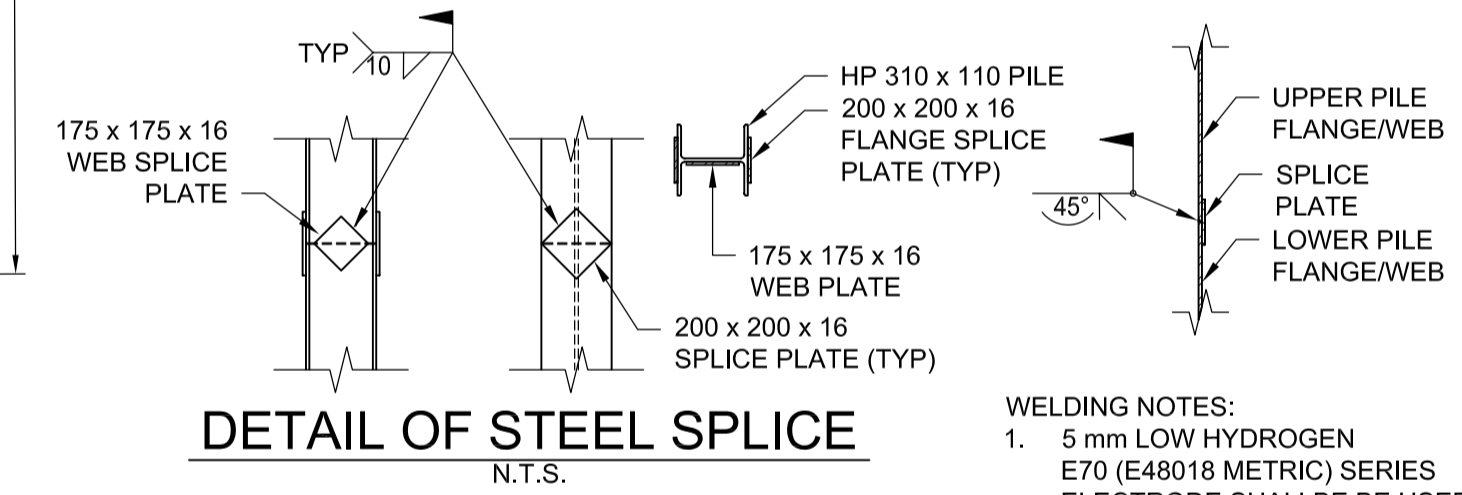
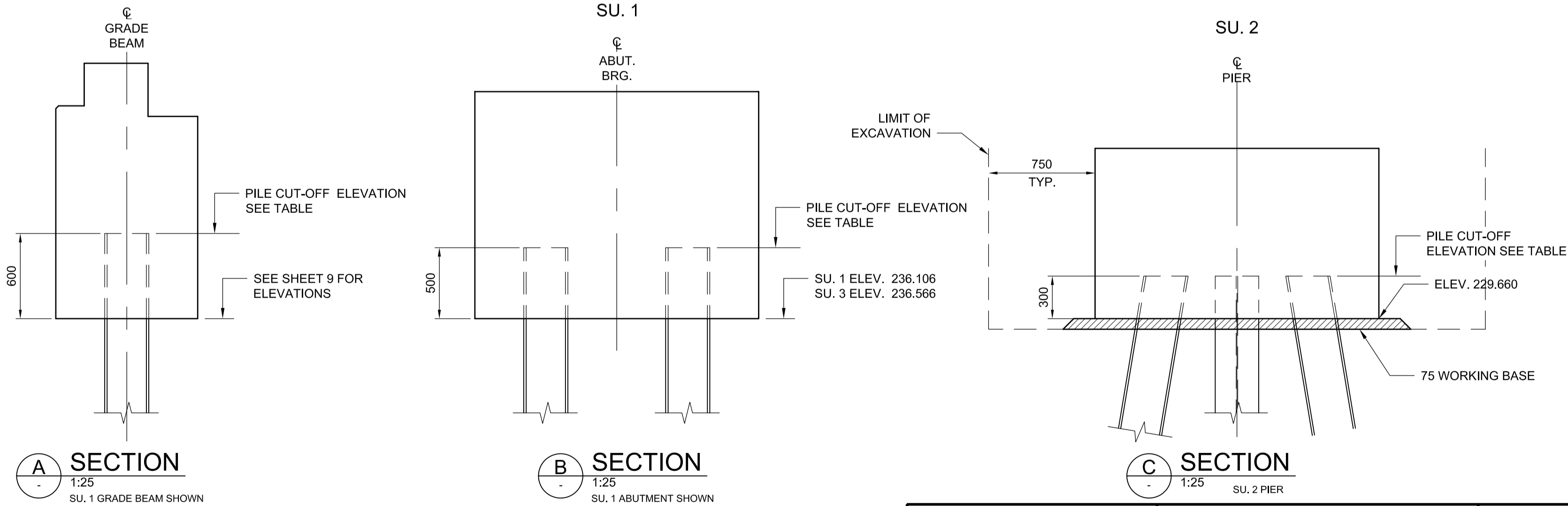
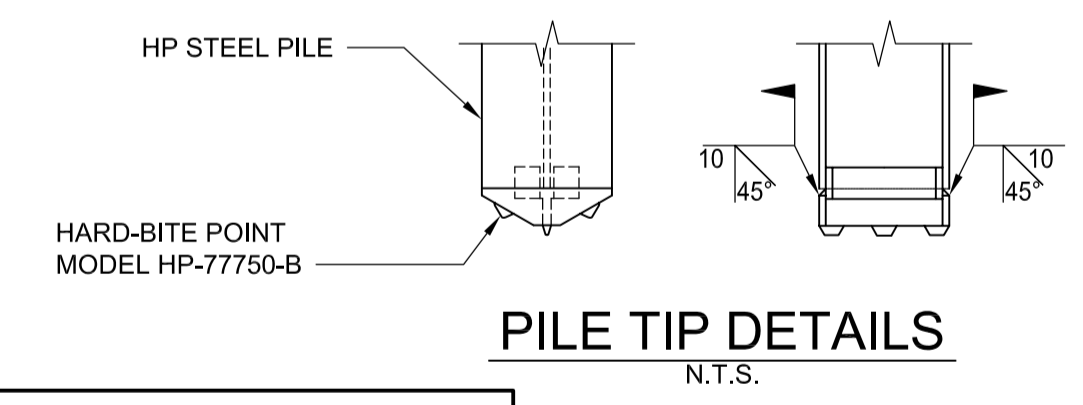


- NOTES:**
- PILE SPACING SHALL BE MEASURED AT THE UNDERSIDE OF THE ABUTMENT SEAT AND PIER PILE CAP.
 - ALL PILES SHALL BE PROVIDED WITH STEEL PILE TIPS PRIOR TO INSTALLATION.
 - AFTER DRIVING, THE STEEL PILES SHALL BE LOCATED WITHIN 50 MM OF THE LOCATIONS SHOWN ON THE DRAWINGS.
 - STEEL H-PILES SHALL CONFORM TO CSA-G40.20M/G40.20, GRADE 350W. PILE TIP REINFORCING PLATES SHALL CONFORM TO CSA-G40.20M/G40.20 GRADE 300W.
 - ABUTMENT PILE LOADS (FACTORED):
 - DEAD LOAD (DL) = 370kN
 - DOWNDRAG (DD) = 580kN
 - LIVE LOAD (LL) = 340kN
 - DL + DD = 950kN
 - DL + LL = 710kN
 - MAXIMUM (ULS COMB #1) = 950kN
 - REQUIRED = 1200kN
 - PIER PILE LOADS (FACTORED):
 - DEAD LOAD (DL) = 860kN
 - DOWNDRAG (DD) = 580kN
 - LIVE LOAD (LL) = 510kN
 - DL + DD = 1440kN
 - DL + LL = 1370kN
 - MAXIMUM (ULS COMB #1) = 1440kN
 - REQUIRED = 1500kN
 - STEEL PILES SHALL BE DRIVEN TO THE APPROXIMATE TIP ELEVATIONS AS SHOWN. EXCEPT THAT WHEN REQUIRED BY THE ENGINEER THE PILES SHALL BE DRIVEN TO A FACTORED CAPACITY OF 1500kN BASED ON PILE DYNAMIC ANALYZER (PDA) TEST. PRIOR TO PILE CONSTRUCTION THE ACCEPTABILITY OF THE PILE DRIVING SYSTEM AND THE REQUIRED SET CRITERIA SHALL BE DETERMINED BY WAVE EQUATION ANALYSIS. THE SET CRITERIA SHALL BE CONFIRMED DURING CONSTRUCTION BY PDA TESTING.
 - THE PILE DESIGN IS BASED ON THE ASSUMPTION THAT THERE WILL BE NO DISTURBANCES DUE TO THE EXCAVATIONS OR ANY OTHER REASONS TO THE GROUND WITHIN 1.0 m OF ANY PILE. IF SUCH DISTURBANCES ARE REQUIRED THE DESIGN ENGINEER SHALL BE NOTIFIED PRIOR TO THE DISTURBANCES SO THAT ANY POTENTIAL IMPACT TO THE PILE DESIGN CAN BE EVALUATED AND MODIFICATIONS CAN BE MADE TO THE PILE DESIGN AS REQUIRED.
 - SUPPLY MAXIMUM LENGTHS OF PILES TO MINIMIZE FIELD SPlicing DURING INSTALLATION.
 - IF FIELD SPICES ARE REQUIRED THEY SHALL BE MOMENT SPICES AS SHOWN.
 - FIELD SPICES SHALL BE LOCATED SUCH THAT NO MORE THAN 50% OF THE PILES ARE SPICED AT THE SAME ELEVATION.
 - PILE ENDS TO BE SPICED SHALL BE FLAMED CUT USING A STEEL GUIDE TO OBTAIN A SQUARE AND EVEN CUT. BEVEL CUT SHALL BE MADE AT 45°. SPICE PLATES SHALL BE WELDED TO THE UPPER PILE BEFORE POSITIONING. THE UPPER PILE SHALL BE POSITION ON AND THE SPICE PLATES WELDED TO THE LOWER PILE. BUTT WELDS SHALL THE BE MADE.
 - ALL WELDING SHALL BE PERFORMED TO C.S.A. W59 BY QUALIFIED WELDERS WITH VALID "S" CLASSIFICATION CLASS "H" CERTIFICATES ISSUED BY THE CANADIAN WELDING BUREAU.
 - WHEN THE AIR TEMPERATURE IS BELOW 0°C ALL MATERIALS TO BE WELDED SHALL BE PREHEATED TO 100°C FOR A DISTANCE OF 80 mm BEYOND THE WELD AND SHALL BE SHELTERED FROM THE WIND.
 - WHEN THE AIR TEMPERATURE IS BELOW -18°C WELDING WILL NOT BE PERMITTED UNLESS SUITABLE HOARDING APPROVED BY THE ENGINEER IS PROVIDED.



- WELDING NOTES:**
- 5 mm LOW HYDROGEN E70 (E48018 METRIC) SERIES ELECTRODE SHALL BE USED
 - THE MINIMUM ROOT PASS SHALL BE 6 mm.
- PILE TIP NOTES:**
- EDGES OF HARD-BITE POINT PILE TIP TO BE GROUND ON 45° BEVEL FOR 10 mm.
 - 5 mm LOW HYDROGEN E70 (E48018 METRIC) SERIES ELECTRODES SHALL BE USED.
 - THE MINIMUM ROOT PASS SHALL BE 6 mm.



BILL OF PILES FOR SU. 1 TO SU. 3					
LOCATION	No.	DESCRIPTION	ESTIMATED LENGTH	ESTIMATED TOTAL	
SU. 1	GRADE BEAM	4	STEEL PILES - HP 310 x 110	25.50	102.00
	ABUTMENT SEAT	20	STEEL PILES - HP 310 x 110	22.75	455.00
SU. 2	PIER	21	STEEL PILES - HP 310 x 110	16.25	341.25
SU. 3	ABUTMENT SEAT	20	STEEL PILES - HP 310 x 110	23.25	465.00
	GRADE BEAM	4	STEEL PILES - HP 310 x 110	26.00	104.00
SU. 1, SU. 2 & SU. 3	69	HARD-BITE POINT HP-77750 FOR HP 310 x 110 PILES			
			TOTAL LENGTH =	1467.25	

PILE ELEVATIONS			
LOCATION		PILE CUT-OFF ELEVATION	ESTIMATED PILE TIP ELEVATION
SU. 1	GRADE BEAM	SEE SHEET 9	214.00
	ABUTMENT	236.606	214.00
SU. 2		229.960	214.00
SU. 3	ABUTMENT	237.066	214.00
	GRADE BEAM	SEE SHEET 9	214.00

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UNDERGROUND STRUCTURES		B.M. ELEV.	DESIGNED BY	ENGINEER'S SEAL
SUPV. U/G STRUCTURES COMMITTEE	DATE		KGW	
			RCB	
			RE	
			MBL	
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.			HOR. SCALE	ENGINEER'S SEAL
0	ISSUED FOR TENDER	13/08/08	AS SHOWN	
			VERTICAL	
NO.	REVISIONS	DATE	BY	CONSULTANT PROJECT NUMBER
			2013/08/01	12-6606

DILLON CONSULTING

ENGINEER'S SEAL: K.G. WILLIS, Member 33036, 2013/08/08

ENGINEER'S SEAL: S.S. RIHAL, Member 33036, 2013/08/08

CONSULTANT PROJECT NUMBER: 12-6606

THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT

Waverley West Arterial Roads Project (WWARP) PART 3 - CONTRACT 2
ROUTE 90 TO ROUTE 165, OVERPASS (KENASTON BLVD.) AND ASSOCIATED WORKS

CITY DRAWING NUMBER: B242-13-08
SHEET 08 OF 128

CONSULTANT DRAWING NUMBER