GENERAL

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH CONTRACT SPECIFICATIONS.
- GEOMETRY, REINFORCEMENT AND LAYOUT OF THE EXISTING STRUCTURE ARE BASED ON EXISTING DESIGN INFORMATION AND LIMITED FIELD SURVEY DATA. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL NECESSARY DIMENSIONS SUCH THAT WORK CAN BE CONSTRUCTED AS SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR PRIOR TO CONSTRUCTION.
- CONTRACTOR TO REFER TO REFERENCE DRAWINGS FOR DETAILS OF EXISTING CONSTRUCTION.
- WHOLE DIMENSIONS SHOWN ON THESE DRAWINGS ARE IN MILLIMETERS. DECIMAL DIMENSIONS ARE IN METRES. THE ORIGINAL STRUCTURES MAY HAVE BEEN CONSTRUCTED WITH IMPERIAL UNITS OF MEASURE (HARD UNIT CONVERSION WHERE APPLICABLE).
- THE SCALES SHOWN ON THESE DRAWINGS ARE CORRECT FOR A1 SIZED DRAWING SHEETS. DO NOT DETERMINE DIMENSIONS BY SCALING OFF DRAWINGS.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXACT LOCATIONS OF ALL EXISTING ABOVE GROUND AND BELOW GROUND UTILITIES AND REPORTING ANY DISCREPANCIES OR CONFLICTS TO THE CONSULTANT PRIOR TO CONSTRUCTION.
- EXCEPT WHERE INDICATED OTHERWISE THESE DRAWINGS SHOW DETAILS FOR THE COMPLETED STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF WORKERS AND THE DESIGN AND STABILITY OF ANY TEMPORARY WORKS DURING CONSTRUCTION. CONSTRUCTION METHODS REQUIRING THE TEMPORARY INSTALLATION OF SHORING, SCAFFOLDING, BRACING, ETC. SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW AND ACCEPTANCE PRIOR TO PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA TO PERFORM AND TAKE RESPONSIBILITY FOR ANY SUCH DESIGNS NECESSARY TO COMPLETE THE CONSTRUCTION AND AS REQUIRED BY THE CONTRACT DOCUMENTS.

DESIGN DATA NOTES

STRUCTURAL DESIGN DATA

- RETAINING WALL CONFIGURATION: BICYCLE RAILING SUPPORTED BY CAST-IN-PLACE CURB ON CAST-IN-PLACE CORBEL BEAM ON DRIVEN STEEL SHEET PILE WALL.
- DESIGN SPECIFICATION: CAN/CSA-S6-14 “CANADIAN HIGHWAY BRIDGE DESIGN CODE + SUPPLEMENTS”
- DESIGN LIFE: 75 YEARS
- LIVE LOAD:
  - BICYCLE RAIL LOADING PER CAN/CSA S6-14 CL 3.8.8.2 AND FIGURE 12.3
  - LIVE LOAD SURCHARGE BEHIND WALL:
    - 5.0 kPa ASSEMBLY OCCUPANCY EXTENDING OVER THE FULL WIDTH OF THE ACTIVE TRANSPORTATION PATH, OR
    - CAN/CSA S6-14 CL 3.8.11 MAINTENANCE VEHICLE (NO DYNAMIC LOAD ALLOWANCE)
- SPECIAL STRUCTURAL DESIGN PROVISIONS RELATED TO FLOOD CONDITIONS:
  - REGULATED FLOOD PROTECTION LEVEL (RFPL) OVERTOPS THE CURB ELEVATION OF TACHE PROMENADE. ACCORDINGLY, THE THICKNESS OF CELLULAR CONCRETE BACKFILL SPECIFIED IS DESIGNED WITH SUFFICIENT BALLAST WEIGHT SUCH THAT FLOATATION WILL NOT OCCUR IN THE EVENT OF COMPLETE SUBMERGENCE OF TACHE AVENUE.
  - SHOULD TEMPORARY DYKES BE REQUIRED TO PREVENT FLOODWATERS FROM EXTENDING ACROSS TACHE AVENUE, IT IS ASSUMED THE DYKES WILL BE CONSTRUCTED ON THE ROADWAY AND NOT ON THE ACTIVE TRANSPORTATION PATH. NO LIVE LOAD SURCHARGE ASSOCIATED WITH SANDBAG DYKES HAS BEEN CONSIDERED IN THE DESIGN OF THE TACHE PROMENADE SHEET PILE WALL.

TRANSPORTATION DESIGN DATA

- DESIGN SPECIFICATIONS:
  - CITY OF WINNIPEG TRANSPORTATION STANDARDS (2012 UPDATE)
  - TRANSPORTATION ASSOCIATION OF CANADA GEOMETRIC DESIGN GUIDE FOR CANADIAN ROADS
  - ROADWAY DESIGN CRITERIA:
    - ROADWAY CLASSIFICATION: COLLECTOR (PART TIME TRUCK ROUTE)
    - POSTED SPEED: 50 km/h; DESIGN SPEED: 60 km/h

GEOTECHNICAL DESIGN DATA

- A GEOTECHNICAL REPORT HAS BEEN PREPARED BY TREK GEOTECHNICAL TITLED RFP NO. 180-017 - PROMENADE TACHE GEOTECHNICAL RECOMMENDATIONS FOR SHEET PILE WALL AND LOOKOUT STRUCTURE FOUNDATIONS DATED AUGUST 31, 2017. REFER TO GEOTECHNICAL REPORT FOR DETAILED DESIGN DATA AND RECOMMENDATIONS.
- IT IS NOTED THAT CLAYEY SAND WITH GRAVEL HAS BEEN OBSERVED IN SOME TEST HOLES. DEBRIS FROM HISTORIC CONSTRUCTION ACTIVITIES ALONG TACHE AVENUE MAY ALSO BE PRESENT IN THE BANK. THE CONTRACTOR SHALL BE PREPARED TO REMOVE OBSTRUCTIONS TO SHEET PILING SHOULD THEY BE ENCOUNTERED.
- SELECT GEOTECHNICAL DESIGN DATA:
  - SHEET PILE DESIGN CAPACITY:
    - SKIN FRICTION CAPACITY = 12 kPa
    - ULS COMPRESSIVE RESISTANCE FACTOR, Φ=0.4
    - END BEARING CAPACITY = 3,000 kPa
    - GLOBAL STABILITY HAS BEEN DETERMINED BASED ON A FINITE ELEMENT ANALYSIS CONSIDERING SOIL-STRUCTURE INTERACTION

MATERIAL PROPERTIES		
PROPERTY	CLAY	GRANULAR FILL
UNDRAINED SHEAR STRENGTH ABOVE ELEV 219m, (kPa)	50	-
UNDRAINED SHEAR STRENGTH BELOW ELEV 219m, (kPa)	25	-
ACTIVE PRESSURE COEFFICIENT	0.5	0.3
PASSIVE PRESSURE COEFFICIENT	2.0	3.70
BULK UNIT WEIGHT, (kN/m^3)	17.5	21
EFFECTIVE UNIT WEIGHT, (kN/m^3)	7.7	11

ENVIRONMENTAL PROTECTION:

- IMPLEMENT ENVIRONMENTAL PROTECTION MEASURES AS DESCRIBED BY THE SPECIFICATIONS.
- NO IN-STREAM WORK IS PERMITTED BETWEEN APRIL 1 AND JUNE 15.

EXISTING UTILITY PROTECTION:

- THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE EXACT LOCATIONS OF ALL EXISTING ABOVE AND BELOW GROUND UTILITIES AND REPORTING ANY DISCREPANCIES OR CONFLICTS TO THE CONSULTANT PRIOR TO CONSTRUCTION.

MATERIAL NOTES

CAST-IN-PLACE CONCRETE:

ITEM	CLASS OF EXPOSURE	CEMENT TYPE	MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (MPa)	NOMINAL MAX SIZE OF AGGREGATE (mm)	AIR CONTENT (%)	SPECIAL REQUIREMENTS	MINIMUM POST RESIDUAL CRACKING INDEX
CORBEL BEAM	C-1	GU	35	20	5-8	SYNTHETIC FIBRES	0.15

CLEAR COVER TO REINFORCING STEEL (mm) UNLESS NOTED OTHERWISE	LOCATION
50	BACK SIDE OF CURB AND CORBEL BEAM - FACING TOWARDS RIVER
75	RETAINED EARTH AND ROADWAY SIDE OF CURB AND CORBEL BEAM

- CONCRETE FINISHES - REFER TO SPECIFICATIONS.
- ALL VISUALLY EXPOSED CONCRETE CORNERS SHALL HAVE A 20 mm CHAMFER UNLESS NOTED OTHERWISE.

REINFORCING STEEL

- GALVANIZED REINFORCING STEEL TO CAN/CSA-G30.18-M92 GRADE 400W.
- REINFORCING STEEL SPLICES TO CAN/CSA S6-14 CLASS B.

LAP SPLICE TABLE		
BAR SIZE	HORIZONTAL LAP	VERTICAL LAP
15M	700	550
20M	850	650

SHEET PILE

- SHEET PILE SECTION SHALL BE PZC 26 TYPE SHEET PILE MANUFACTURED BY GERDAU OR ACCEPTED EQUIVALENT SECTION WITH EQUAL OR GREATER STIFFNESS DRIVEN TO MINIMUM DESIGN ELEVATION SHOWN ON SHEET 2.
- SHEET PILE STEEL TO CAN/CSA G40.20-13/G40.21-13 (r2009) GRADE 350W
- DURABILITY: DESIGN FOR LONG TERM CONDITIONS ASSUMES 2mm LOSS OF SHEET PILING THICKNESS DUE TO CORROSION

CONSTRUCTION TOLERANCES, AT COMPLETION OF INSTALLATION

- FACE OF WALL AT TOP OF SHEET PILE WITHIN ±25 OF LOCATION INDICATED
- BATTER NOT TO EXCEED 1H : 100V
- SHEET PILING DRIVEN AT LEAST TO TARGET DEPTH OF INSTALLATION AS SHOWN ON DRAWING No. 04
- TOP OF SHEET PILING CUT-OFF ELEVATION ±25

STRUCTURAL STEEL

- STRUCTURAL SHAPES AND PLATES, MATERIAL REQUIREMENTS TO CAN/CSA G40.20-13/G40.21-13 (r2009) GRADE 300W.
- ANY WELDING SHALL CONFORM TO CURRENT AWS SPECIFICATION D1.5.

SUBGRADE PREPARATION

- CLAY SUBGRADE SHALL BE PREPARED AND COMPACTED TO A MINIMUM 95% SPD PER CW 3110.

SUBDRAINS

- SUBDRAINS SHALL BE PERFORATED SCHEDULE 40 PVC DRAIN PIPE IN CLEAN-DRAINING GRAVEL WRAPPED IN GEOTEXTILE.
- CLEANOUTS AND OUTLETS SHALL BE PROVIDED AS LOCATED ON THE DRAWINGS.
- ALL SUBDRAIN PIPE JOINTS SHALL BE SOLVENT WELDED.
- PROVIDE GALVANIZED SCREEN AT SUBDRAIN OUTLET ON SLOPE.
- GALVANIZED OR STAINLESS STEEL COVER PLATE

CELLULAR CONCRETE BACKFILL

- CELLULAR CONCRETE BACKFILL TO COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATIONS
- WET CAST DENSITY (ASTM C 495): 400 kg/m^3 ±10%
- MINIMUM UNCONFINED COMPRESSIVE STRENGTH AT 28 DAYS (ASTM C 495): 300 kPa
- BASIS OF DESIGN: CEMATRIX CMEF-400 OR ACCEPTED EQUIVALENT

STRUCTURAL BACKFILL

- STRUCTURAL BACKFILL TO BE TYPE 2 GRANULAR BACKFILL PER CW 2030
- SPECIAL COMPACTION REQUIREMENTS:
  - WITHIN 1.5 m OF RETAINING WALL AND CORBEL BEAM, LIGHTLY COMPACT GRANULAR BACKFILL TO 92% SPMDD.
  - AT ALL OTHER LOCATIONS COMPACT TO 98% SPMDD

NON-WOVEN GEOTEXTILE

- NON-WOVEN GEOXTILE SHALL BE IN ACCORDANCE WITH CW 3120 AND CW 3130.

GEOGRID

- GEOGRID SHALL BE IN ACCORDANCE WITH CW 3135.

BASE & SUBBASE

- BASE AND SUBBASE SHALL BE IN ACCORDANCE WITH CW 3110.

ASPHALTIC CONCRETE PAVEMENT

- ASPHALTIC CONCRETE PAVEMENT SHALL BE TYPE 1A PER CW 3110.

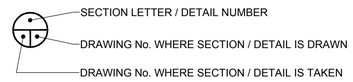
ALUMINUM BICYCLE RAILING

- ALUMINUM BICYCLE RAILING SHALL BE COMPOSED OF EXTRUDED SHAPES OR DRAWN TUBING, ALUMINUM SHEET, BAR, SUPPORT PIN, ANGLE AND PLATE WITH MATERIAL CONFORMING TO THE SPECIFICATIONS.
- BOLTS AND CAP SCREWS, NYLON LOCK NUTS, AND WASHERS SHALL BE STAINLESS STEEL CONFORMING TO ASTM A276, TYPE 316.
- INTEGRAL RAILING LIGHTING SHALL BE INCORPORATED INTO ALUMINUM BICYCLE RAILING HANDRAIL. REFER TO DRAWINGS AND SPECIFICATIONS FOR PRODUCT REQUIREMENTS.

LIST OF ACRONYMS & SYMBOLS

N,S,E,W	COMPASS DIRECTIONS
ALT	ALTERNATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
BLL	BOTTOM LOWER LAYER
BRG	BEARING
BUL	BOTTOM UPPER LAYER
CB	CATCH BASIN
CL	CENTRELINE
CSA	CANADIAN STANDARDS ASSOCIATION
C/W	COMPLETE WITH
EB	EASTBOUND
EL	ELEVATION
EX	EXISTING
FM	FEEDERMAIN
HWL	HIGH WATER LEVEL
LG	LONG
MIN	MINIMUM
O/C	ON CENTRE
O/H	OVERHEAD
OHWL	ORDINARY HIGH WATER LEVEL
RSIC	REINFORCING STEEL INSTITUTE OF CANADA
SD	STANDARD DRAWING (CITY OF WINNIPEG STANDARD CONSTRUCTION SPECIFICATIONS)
SHLD	SHOULDER
SPMDD	STANDARD PROCTOR MODIFIED DRY DENSITY
TLL	TOP LOWER LAYER
TUL	TOP UPPER LAYER
TYP	TYPICAL
UNS	UNIFIED CLASSIFICATION SYSTEM
W/	WITH
WB	WESTBOUND
WL	WATER LEVEL
WM	WATER MAIN
@	AT
Ø	DIAMETER

SECTION & DETAIL SYMBOLS



ENGINEERS GEOSCIENTISTS MANITOBA
Certificate of Authorization
MORRISON HERSHFIELD
No. 1736

BID OPPORTUNITY No. 754-2017

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METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

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.

BM ELEV

No.	REVISIONS	YY/MM/DD	BY
0	ISSUED FOR TENDER	17/10/13	DAN

MORRISON HERSHFIELD

DESIGNED BY	TN	CHECKED BY	DAN
DRAWN BY	MS	APPROVED BY	BE
HOR SCALE	AS SHOWN	RELEASED FOR CONSTRUCTION	
VERT SCALE	AS SHOWN		
DATE	17/10/13	DATE	

PROFESSIONAL'S SEAL
PROVINCE OF MANITOBA
D.A. NEILSON
Member
37248
REGISTERED PROFESSIONAL ENGINEER

CONSULTANT FILE NAME
5170563 - SP01 - GN.dwg

Winnipeg

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

TACHE PROMENADE
SHEET PILE WALL

GENERAL NOTES & DESIGN DATA

CITY DRAWING NUMBER	B250-17-17
SHEET	17
OF	70
DRAWING No.	01
REV	0