NOTES

DESIGN IS BASED ON AREMA 2004 AND CN GUIDELINES.

THESE DRAWINGS TO BE READ IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS.

EXISTING DIMENSIONS ARE APPROXIMATE ONLY. CONTRACTOR SHALL SITE VERIFY ALL DIMENSIONS.

DESIGN LOADS

COOPER E90 PLUS CN IMPACT FOR DIESEL AND ELECTRICAL LOCOMOTIVES.

FOUNDATIONS

FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION PERFORMED BY AND REPORT DATED MARCH 2005 AND OCTOBER 2005 PREPARED BY UMA ENGINEERING LTD. ENSURE THAT THE REQUIREMENTS OUTLINED IN THESE REPORTS ARE READ AND UNDERSTOOD PRIOR TO COMMENCING WITH FOUNDATION WORK. FOR TEST HOLE LOCATIONS REFER TO THE GEOTECHNICAL REPORTS OR SITE PLAN DRAWINGS P-3258-127, DRAWING 3 OF 21.

PROTECT EXCAVATIONS FOR FOOTINGS FROM RAIN, SNOW, FREEZING TEMPERATURES AND STANDING WATER.

PLACE A MAT OF LEAN MIX CONCRETE 10 MPa IMMEDIATELY UPON COMPLETION OF AN EXCAVATION TO MINIMIZE LOSS OF MOISTURE OR DEGRADATION OF THE BASE.

REMOVE GROUND WATER ENTERING EXCAVATIONS BY AN APPROVED DEWATERING METHOD.

DO NOT PLACE CONCRETE AGAINST FROZEN GROUND. THAW BY AN APPROVED METHOD, THEN PROTECT EXCAVATIONS FROM FREEZING PRIOR TO PLACING CONCRETE.

PRECAST CONCRETE PILES

400 A/F PRESTRESSED PRECAST CONCRETE PILES.

MAXIMUM ALLOWABLE LOAD DRIVEN TO REFUSAL IS 800 kN.

BATTER IS AS INDICATED ON THE DRAWINGS. PILES SHALL BE DRIVEN VERTICALLY UNLESS SHOWN OTHERWISE ON THE DRAWINGS. BATTERED PILES SHALL BE DRIVEN TO THE BATTER SPECIFIED AND SHALL NOT BE JACKED OR PULLED INTO THEIR FINAL POSITION.

ROCK SOCKET CAISSONS

THE CAISSONS SHALL BE 1067 Ø TO TILL LAYER, 914 Ø THEREAFTER TO SOUND BEDROCK AS DETERMINED BY THE CONTRACT ADMINISTRATOR. THE ROCK SOCKET SHALL BE 760 Ø TO THE SPECIFIED LENGTH OF 3500mm OR AS DEEMED NECESSARY BY THE CONTRACT ADMINISTRATOR. ANY PROPOSED FIELD CHANGE SHALL BE APPROVED IN WRITING BY THE CONTRACT ADMINISTRATOR PRIOR TO COMMENCEMENT OF THE WORK.

MAXIMUM ALLOWABLE LOAD 5850 kN

CAST IN PLACE CONCRETE

CONCRETE MATERIALS. QUALITY. MIXING. PLACING. FORMWORK AND OTHER CONSTRUCTION PRACTICES TO CONFORM TO CSA-A23.1-2000.

SEE SPECIFICATION FOR CONCRETE MIX DESIGN REQUIREMENTS.

REQUIRED CONCRETE STRENGTH AT 28 DAYS:

CONCRETE LOCATION 28-DAY STRENGTH

ABUTMENT FOOTING	35 MPa	
ABUTMENT BACKWALL	35 MPa	
WINGWALL	35 MPa	
PIER PILE CAP BEAM	35 MPa	
TRAINMANS WALKWAY	35 MPa	
CAISSON FILL	40 MPa	
WORKING SLAB	10 MPa	

DO NOT USE CALCIUM CHLORIDE IN CONCRETE MIX.

FLY ASH MAY BE USED IN MIX TO A MAXIMUM OF 15% OF CEMENT MATERIALS.

REINFORCING

REINFORCING STEEL TO CONFORM TO CSA G30.18, GRADE 400.

CONCRETE CLEAR COVER TO REINFORCEMENT UNLESS NOTED OTHERWISE:

ABUTMENT	75mm
PIER PILE CAP BEAM	60mm
CAISSONS	75mm
BOX GIRDERS	60mm
OTHER	50mm
CONCRETE CAST AGAINST EARTH	75mm

SUPPLY SUPPORT BARS TO SUPPORT MAIN REINFORCEMENT AS REQUIRED.

LAP SPLICE SCHEDULE

	LAI SI LICE SCITE	JOLL
BAR SIZE	EMBEDDMENT	TENSION LAP
10M 15M 20M 25M	300 400 500 800	400 550 700 1100
30M 35M	950 1100	1200 1500
الاادد	1100	1300

LAP SPLICE SCHEDULE IS FOR CLASS B SPLICE UNLESS NOTED OTHERWISE AND APPLIES TO REINFORCING SPLICES NOT OTHERWISE DETAILED.

LOCATE REINFORCING SPLICES NOT INDICATED ON THE DRAWINGS AT POINTS OF MINIMUM STRESS. LOCATIONS OF SPLICES TO BE APPROVED BY THE ENGINEER.

BEFORE PLACING REBAR. ENSURE IT IS CLEAN. FREE OF LOOSE SCALE, DIRT, OR OTHER FOREIGN COATING WHICH WOULD REDUCE THE BOND TO CONCRETE.

PRECAST CONCRETE BOX GIRDERS

CONCRETE MATERIALS, QUALITY, MIXING, PLACING, FORM WORK AND OTHER CONSTRUCTION PRACTICES SHALL CONFORM TO LATEST EDITION OF CSA A23.4 - PRECAST CONCRETE MATERIALS AND CONSTRUCTION.

THE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AS FOLLOWS:

- a) AT TIME OF TRANSFER OF PRE-TENSIONING FORCES f'ci = 45 MPa
- b) AT 28 DAYS f'c = 70 MPa

THE PRE-STRESSING STEEL SHALL CONSIST OF LOW RELAXATION 15¢ SEVEN WIRE PRE-STRESSING STRAND, MINIMUM ULTIMATE STRENGTH 1860 MPa. WITH INITIAL FORCE PER STRAND OF 195

THE POST-TENSIONING STRAND SHALL BE LOW RELAXATION STRAND TO CONFORM TO CSA G279, GRADE 1860, UNCOATED, HIGH TENSILE, LOW RELAXATION SEVEN WIRE STRAND.

GIRDER INSTALLATION WILL NOT BE PERMITTED UNTIL 28-DAY STRENGTH HAS BEEN REACHED. CYLINDER BREAKS MUST BE PROVIDED TO VERIFY GIRDER CONCRETE STRENGTH.

PRIOR TO LATERAL POST TENSIONING, BRACING SHALL BE INSTALLED AS TO PREVENT LONGITUDINAL SHIFTING OF GIRDERS DURING STRESSING. THE DESIGN AND IMPLEMENTATION OF THE BRACING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA RETAINED BY THE CONTRACTOR. TWO COPIES OF SEALED DESIGN NOTES AND DRAWINGS SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR SEVEN (7) DAYS FOR APPROVAL PRIOR TO FABRICATION.

INSTALL THREE (3) 150 TENDONS IN ALL SPANS TRANSVERSE POST TENSIONING DUCTS. STRESS TO 0.7 fpu AND PRESSURE GROUT THE DUCTS WITH 100 MPa NON-SHRINK GROUT.

INSTALL BACKER ROD BETWEEN ADJACENT GIRDERS TO SEAL ANY GAPS THAT STILL EXIST AFTER STRESSING. FILL ALL LONGITUDINAL SHEAR KEYS WITH 100 MPa NON-SHRINK GROUT.

BEARINGS

ALL GIRDER BEARINGS SHALL BE ELASTOMERIC LAMINATED BEARINGS BY GOODCO OR APPROVED EQUAL.

THE EXPANSION BEARINGS SHALL BE 40mm THICK WITH TWO 3mm STEEL PLATES AND SHALL CONFORM TO DIMENSIONS AS SHOWN ON THE DRAWINGS. THE DUROMETER SHALL BE 55 FOR EXPANSION BEARINGS.

THE FIXED BEARINGS SHALL BE 40mm THICK WITH TWO 3mm STEEL PLATES AND SHALL CONFORM TO DIMENSIONS AS SHOWN ON THE DRAWINGS. THE DUROMETER SHALL BE 60 FOR THE FIXED BEARINGS.

FIXED ANCHOR PINTEL SHALL BE STAINLESS STEEL ANSI TYPE

EXPANSION JOINTS

ALL EXPANSION JOINTS SHALL BE GOODCO GOODFLEX TYPE C OR APPROVED EQUAL. THE NEOPRENE SEAL SHALL BE GOODCO FL-125 OR APPROVED EQUAL.

WITHIN THE TRAINMAN'S WALKWAY, O.S. BROWN K-5000 COMPRESSION SEAL SHALL BE USED AND INSTALLED WITHIN THE STEEL ANGLES. THE WIDTH OF THE O.S. BROWN COMPRESSION SEAL SHALL BE IN EXCESS OF THE SPECIFIED ROOT OPENING TO ALLOW FOR THERMAL MOVEMENT AND GIRDER SHRINKAGE. EXPANSION JOINT SHOP DRAWINGS ARE TO BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR REVIEW.

ALL STEEL ANGLES AND PLATES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION AND ASSEMBLY AND SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

MISCELLANEOUS METAL

ALL MISCELLANEOUS STEEL SHALL CONFORM TO CAN/CSA G40.21 GRADE 300W. HOLLOW STRUCTURAL SECTION SHALL BE GRADE 350W.

ALL MISCELLANEOUS METAL SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH CSA G164.

WELDING

WELDING SHALL BE UNDERTAKEN BY A COMPANY WITH PROVEN CAPABILITIES IN THIS TYPE OF WORK AND SHALL HAVE THE APPROVAL OF THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA W47.1.

WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST ISSUE OF CSA W59.

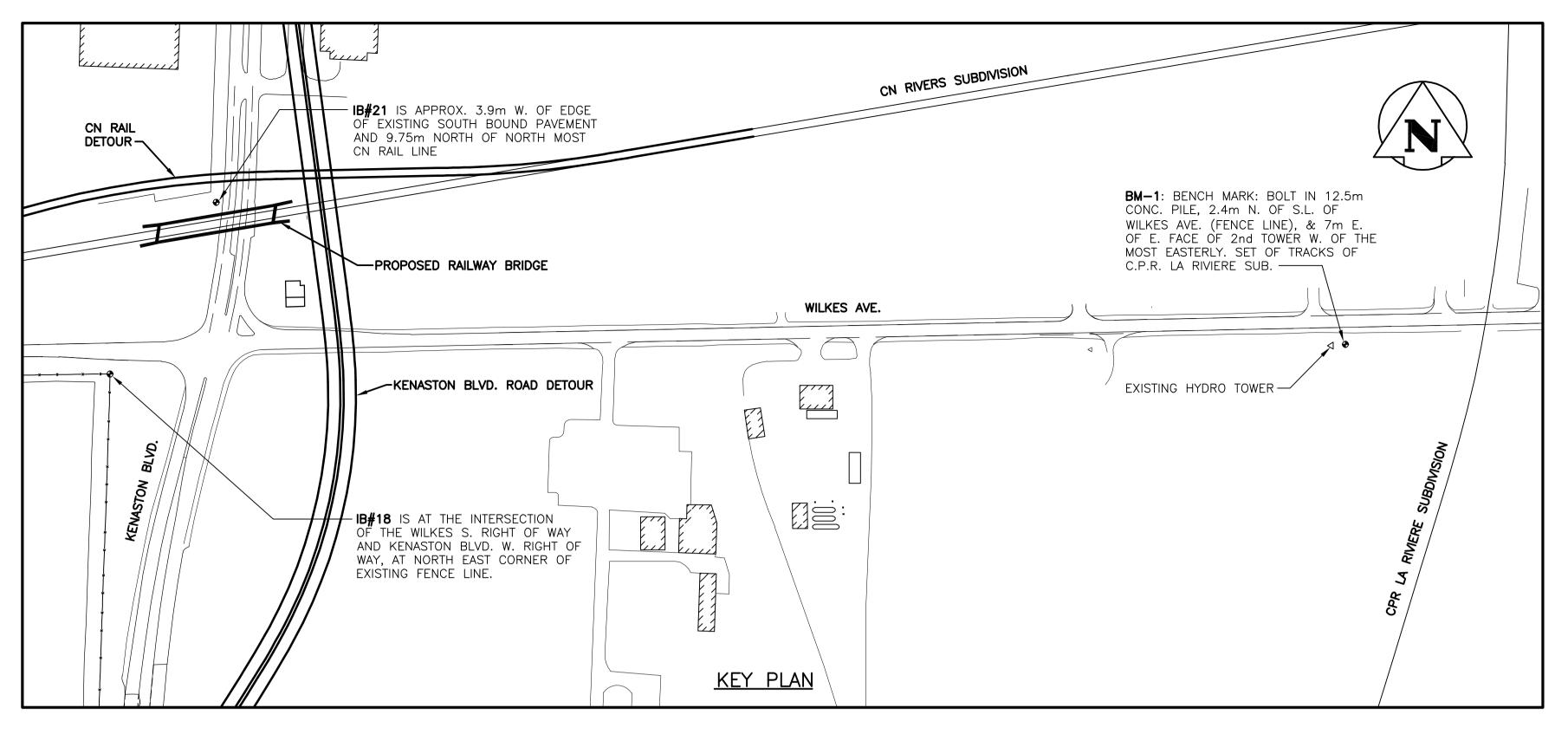
THE WELDING ELECTRODE SHALL BE E480XX.

TEMPORARY DRAINAGE SYSTEM

THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND IMPLEMENTATION OF A TEMPORARY DRAINAGE SYSTEM FOR DEWATERING THE SUBSTRUCTURE EXCAVATIONS. THE CONTRACTOR MUST SUBMIT A DRAWING TO THE CONTRACT ADMINISTRATOR FOR REVIEW SHOWING THE PROPOSED DRAINAGE SYSTEM. EXCAVATION CANNOT COMMENCE UNTIL APPROVAL HAS BEEN RECEIVED FROM THE CONTRACT ADMINISTRATOR FOR THE TEMPORARY DRAINAGE SYSTEM.

TEMPORARY SHORING

THE CONTRACTOR IS RESPONSIBLE FOR DESIGN AND IMPLEMENTATION OF TEMPORARY SHORING AS SHOWN ON THE DRAWINGS. THE LIMITS OF SHORING IS RELATED TO THE PROPOSED EXCAVATION AND LOCATION OF GROUP TELECON FIBRE OPTIC CABLE. THE CONTRACTOR MAY REVISE THE SHORING LENGTHS TO SUIT AN ALTERNATE LIMITS OF EXCAVATION. THE CONTRACTOR MUST SUBMIT A DRAWING FOR REVIEW. SHOWING THE PROPOSED LIMITS OF EXCAVATION AND SHORING FOR SU5. EXCAVATION CANNOT COMMENCE UNTIL APPROVAL HAS BEEN RECEIVED FROM THE CONTRACT ADMINISTRATOR FOR THE TEMPORARY SHORING.



DESIGN DATA

DESIGN SPECIFICATION - AREMA 2004 - CN GUIDELINES LIVE LOAD - COOPER E90 PLUS CN IMPACT FOR DIESEL AND ELECTRICAL LOCOMOTIVES BRAKING OF ONE TRAIN COOPER E90 (FACTORED). LATERAL DESIGN LOAD - BRAKING AND TRACTION OF TWO TRAINS COOPER E90 (SERVICE LOADS). - BRAKING AND TRACTION OF TWO TRAINS COOPER E90 IN OPPOSITE DIRECTION (FACTORED).

BALLAST - BRIDGE DESIGNED FOR 700mm DEPTH OF BALLAST CONCRETE f'c = 35 MPa

CAISSONS f'c = 40 MPa– SUPERSTRUCTURE: BOX GIRDERS f'c = 70 MPaTRAINMANS WALKWAY f'c = 35 MPa - ALL OTHER CONCRETE f'c = 35 MPa U.N.O.

REINFORCING STEEL - CSA G30.18 - (LATEST EDITION) GRADE 400

STRUCTURAL STEEL - CSA. G40.21 - GRADE 350W

- LOW RELAXATION STRESS RELIEVED 15 DIA. SEVEN PRESTRESSING STEEL WIRE STRAND, fpu = 1860 MPa

- MAX. ALLOWABLE AXIAL LOAD = 800 kN ROCK SOCKET CAISSONS - 1067 Ø STEEL SLEEVE, CONCRETE FILLED CAISSON TO TILL

- 914 Ø CONCRETE CAISSON TO SOUND BEDROCK

DIA.

- 760 ø x 3500 CONCRETE ROCK SOCKET - MAX. ALLOWABLE AXIAL LOAD = 5850 kN

- 400 Ø A/F PRECAST PRESTRESSED HEXGONAL PILE

SITE ACCESS

THE BRIDGE CONSTRUCTION SITE CAN ONLY BE ACCESSED FROM THE SOUTH AND SOUTHWEST.

- TRAVELING NORTH OR SOUTH ON KENASTON BLVD. DETOUR, TURN ONTO PREVIOUS KENASTON BLVD., SOUTH OF THE RAILWAY CROSSING, NORTH OF STERLING

LYON PARKWAY. - CONTINUE TRAVELING NORTH ON KENASTON BLVD. TO SITE.

SOUTHWEST ACCESS - WILKES AVENUE BETWEEN STERLING LYON PARKWAY WEST AND KENASTON BLVD. OPEN FOR CONSTRUCTION

ACCESS. - TRAVELING EAST ON WILKES TO SHAFTESBURY CONTINUING ONTO STERLING LYON PARKWAY, TURN

ONTO WILKES AVE. AFTER SHAFTESBURY. - CONTINUE TRAVELING EAST ON WILKES TO KENASTON

- TURN NORTH (LEFT) ON KENASTON BLVD. TO SITE.

OR DETAIL LETTER

MAJOR ITEMS OF WORK

SUPERSTRUCTURE AND SUBSTRUCTURE EXCAVATION. SUPPLY AND INSTALLATION OF PRECAST CONCRETE PILES

INSTALLATION OF ROCK SOCKET CAISSONS. CONSTRUCTION OF REINFORCED CONCRETE SUBSTRUCTURE UNITS.

SUPPLY AND INSTALLATION OF BEARINGS.

FABRICATION OF PRESTRESSED PRECAST CONCRETE BOX GIRDERS. BACKFILL AROUND ABUTMENTS.

INSTALLATION OF PRECAST CONCRETE BOX GIRDERS. 9. INSTALLATION OF LATERAL STRESSING.

10. SUPPLY AND INSTALLATION OF EXPANSION JOINTS. 11. CONSTRUCTION OF REINFORCED CONCRETE TRAINMAN'S

12. SUPPLY AND INSTALLATION OF WATERPROOFING MEMBRANE.

13. FABRICATION AND INSTALLATION OF RAILING.

14. INSTALLATION OF ROUGHED-IN LIGHTING.

CN ITEMS OF WORK

SUPPLY AND INSTALLATION OF BALLAST ON BRIDGE. SUPPLY AND PLACEMENT OF TRACK ON BRIDGE.

TAMP AND FINAL PLACEMENT OF TRACK ON BRIDGE. 4. BRIDGE TRACK TIE-IN TO EXISTING MAINLINE.

SECTION AND DETAILS REINFORCING MARK NUMBERING SYSTEM SECTION NUMBER

MK

m

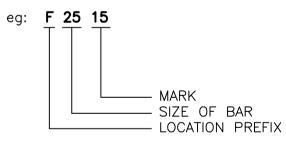
MAX.

MIN.

DRAWING WHERE SECTION OR DETAIL IS DRAWN

OR DETAIL IS TAKEN

DRAWING WHERE SECTION



SAW CUT

SHEET

THICK

TOP OF

UNDERSIDE

VERTICAL

WITH

UNLESS NOTED

WORKING POINT

UNLESS NOTED OTHERWISE

TOP

LOCATION PREFIX P - PIER

A - ABUTMENT D - DECK G - GIRDER

T - TRAINMAN'S WALKWAY C - CAISSON

LIST OF ABBREVIATIONS

CS

COMMITTEE

CSP

SUPV. U/G STRUCTURES

LOCATION APPROVED

UNDERGROUND STRUCTURES

LOCATION OF UNDERGROUND STRUCTURES AS

AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR

THAT THE GIVEN LOCATIONS ARE EXACT.

CONFIRMATION OF EXISTENCE AND EXACT

OBTAINED FROM THE INDIVIDUAL UTILITIES

BEFORE PROCEEDING WITH CONSTRUCTION.

LOCATION OF ALL SERVICES MUST BE

SHOWN ARE BASED ON THE BEST INFORMATION

PRECAST CONCRETE PILES

ALUM.	ALUMINUM
APPROX.	APPROXIMATE
B.O.	BY OTHERS
В/О	BOTTOM OF
В́ОТ.	ВОТТОМ
B/R	BASE OF RAIL
BRG.	BEARING
B.W.	BOTH WAYS
C.I.P.	CAST-IN-PLACE
CJ.	CONTRUCTION JOINT
Q	CENTRE LINE
C/W	COMPLETE WITH
CÓNC.	CONCRETE
CONT.	CONTINUOUS
CI	CLEAR

ACROSS FLATS

COMBINED SEWER

DATE

CORRUGATED STEEL PIPE

ELEV. 233.425m

0 ISSUED FOR TENDER

NO. REVISIONS

ALTERNATING

DTL. DETAIL DWG. DRAWING DWL. DOWEL EACH EACH END EACH FACE E.W. EACH WAY EQ. EQUAL EQUAL SPACE EQ. SP. **ELEVATION EXIST EXISTING** EXP. JT. **EXPANSION JOINT** F.F. FAR FACE GALV. GALVANIZING GRAN. GRANULAR HORIZ. HORIZONTAL IRON BAR

05.10.26 MJE

DATE BY

INSIDE FACE

Stantec

JMB

AS NOTED

AS NOTED

DESIGNED

DRAWN

HOR. SCALE:

DATE 05.10.26

VERTICAL:

DOUBLE

DIAMETER

MILLIMETRE mm N.E. **NORTHEAST** N.F. NEAR FACE N.I.C. NOT IN CONTRACT N.T.S. NOT TO SCALE No. NUMBER N.W. **NORTHWEST** 0/C ON CENTRE 0/H OVERHEAD ÓPNG. OPENING 0/0 OUTSIDE TO OUTSIDE PLATE PVC POLYVINYL CHLORIDE QTY. QUANTITY RADIUS REINF. REINFORCEMENT

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AUTHORIZED BY:

FINGAS

FINGAS, P. ENG.

BRIDGE PROJECTS ENGINEER

GWM

MJB

05.10.26

CHECKED

APPROVED

MARK

METRE

MINIMUM

MAXIMUM

S.E. SRS STD. STIRR STR. S.U. S.W. THK. TYP. T/O U/N U.N.O. U/S VÉRT.

W.P.

ENGINEER'S SEAL

ORIGINAL

SEALED BY

M.J. BOISSONNEAULT

P. ENG.

05.10.26

CONSULTANT DRAWING NO.

113703042-G04

SOUTHEAST STORM RELIEF SEWER STANDAR STIRRUP STRAIGHT SUBSTRUCTURE UNIT SOUTHWEST **TYPICAL**

METRIC WHOLE NUMBERS INDICATE MILLIMETRES DECIMALIZED NUMBERS INDICATE METRES

APEGM Certificate of Authorization Stantec Consulting Ltd. No. 1301 Expiry: April 30, 2006

PUBLIC WORKS DEPARTMENT

Winnipeg ENGINEERING DIVISION

KENASTON BLVD. / CN RIVERS SUB. MILE 5.18 RAILWAY BRIDGE CONSTRUCTION

KENASTON UNDERPASS

THE CITY OF WINNIPEG

GENERAL NOTES & KEY PLAN

2 21 CAD FILE DRAWING NUMBER KU-02-664.dwg CITY DRAWING NUMBER P-3258-126

OF

CN Drawing No. AA6II-5.18-1.02