

**DRAINAGE (CONT.)**

**PIPE CONNECTION TO CORRUGATED METAL STRUCTURES**

CONNECTION OF PROPOSED LONGITUDINAL DRAINAGE TO CORRUGATED METAL STRUCTURES SHALL BE MADE BY MEANS OF A SHOP FABRICATED OR FIELD WELDED STUB ON THE STRUCTURE. THE STUB SHALL MEET THE REQUIREMENTS OF 707 AND HAVE A MINIMUM LENGTH OF 0.6 METERS AND A MINIMUM WALL THICKNESS OF 1.63 mm.

THE LOCATION AND ELEVATION OF THE STUB ARE TO CONSIDERED APPROXIMATE AND MAY BE ADJUSTED BY THE ENGINEER TO AVOID CUTTING THROUGH JOINTS IN THE STRUCTURE.

THE FIELD WELDED JOINT, IF USED, SHALL BE THOROUGHLY CLEANED AND RE-GALVANIZED OR OTHERWISE SUITABLY REPAIRED. WELDING SHALL MEET THE REQUIREMENTS OF 513.17.

A MASONRY COLLAR, AS PER STANDARD DM-1.1M, METRIC STD. DRAWING WILL BE REQUIRED TO CONNECT THE LONGITUDINAL DRAINAGE TO THE STUB, WHEN PIPE OTHER THAN CORRUGATED METAL IS PROVIDED FOR THE LONGITUDINAL DRAINAGE.

PAYMENT FOR CUTTING INTO THE STRUCTURE AND PROVIDING THE CONNECTION DESCRIBED, SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 603.

**UNTREATED SEPTIC CONNECTIONS**

THIS PLAN MAKES NO PROVISION FOR CONNECTING, NOR SHALL THE ENGINEER OR CONTRACTOR CONNECT, ANY UNTREATED SEPTIC DRAINAGE INTO THE HIGHWAY DRAINAGE SYSTEM. ANY PIPE CARRYING UNTREATED SEPTIC FLOW SHALL BE PLUGGED WITH CLASS C CONCRETE AT THE RIGHT-OF-WAY LINE. PAYMENT FOR PLUGGING SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 202 PIPE REMOVED 600 mm AND UNDER.

**ITEM 603 - CONDUIT, AS PER PLAN**

ALL CONDUITS SHALL CONFORM TO ITEM 603 EXCEPT FOR THE FOLLOWING:

\* SLAG SHALL NOT BE PERMITTED FOR BEDDING OR BACKFILL MATERIAL.

ALL TYPE B AND TYPE C CONDUITS FOR STORM AND/OR SANITARY SEWERS SHALL CONFORM TO THE FOLLOWING CITY OF WILLOUGHBY REQUIREMENTS:

\* CONDUITS WITH DIAMETERS OR RISE LESS THAN 300 mm SHALL BE LIMITED TO 706.08 E.S. WITH 706.12 JOINTS OR 707.45 PS 115 WITH JOINTS CONFORMING TO ASTM 3212.

\* CONDUITS WITH DIAMETERS OR RISE EQUAL TO OR GREATER THAN 300 mm SHALL BE LIMITED TO 706.02 WITH 706.11 JOINTS. TESTING REQUIRED FOR TYPE 706.11 JOINTS SHALL BE WAIVED.

**ITEM 603 - 1200 mm CONDUIT, TYPE B, BORED OR JACKED, AS PER PLAN**

AT STA. 5+375 TO STA. 5+416.5, THE TRENCH SHALL BE NO CLOSER THAN 2.5 METERS TO ANY VEHICULAR TRAFFIC AND SHALL BE PROPERLY PROTECTED. TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SPECIFICATION REQUIREMENTS FOR CLASS B BEDDING SHALL BE DISREGARDED. IF A CASING PIPE IS USED IN THE BORING AND JACKING OPERATION, THE VOID BETWEEN IT AND THE INTERIOR CARRIER PIPE SHALL BE COMPLETELY FILLED WITH SAND, GROUT OR OTHER MATERIAL APPROVED BY THE ENGINEER.

AN "OPTIONAL" BID FOR THE BORED AND JACKED 1200 mm RCP STORM SEWER, STA. 5+375 TO STA. 5+416.5, SHALL BE A 1200 mm, 707.43 STORM SEWER PIPE WITH A 12.7 mm THICK, 1350 mm CASING PIPE INCLUDING SAND AND GROUT BACKFILL.

**ITEM 603 - 900 mm CONDUIT, TYPE C, BORED OR JACKED, AS PER PLAN**

THE CONTRACTOR SHALL FOLLOW THE SPECIAL CLAUSES IN THE PROPOSAL WHEN COMPLETING THIS WORK. EXCEPT AS SPECIFIED IN THESE PLANS, THE CURRENT A.R.E.A. CHAPTER 1, PART 4 AND 5 APPLY TO ALL WORK FOR THIS ITEM. MATERIAL SPECIFICATIONS FOR THE 60" STEEL CASING PIPE SHALL MEET ASTM A 139, GRADE B WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI AND MINIMUM THICKNESS OF 0.875 INCHES. SMOOTH STEEL CASING PIPE SHALL BE CONNECTED BY WELDING USING A FULL DEPTH, SINGLE "V" GROOVE BUTT WELD.

CONTRACTOR SHALL SUBMIT THE INTENDED PROCEDURE FOR APPROVAL BY THE STATE AND OWNER AT LEAST FOURTEEN (14) DAYS PRIOR TO BEGINNING ANY WORK ON THIS ITEM IN ACCORDANCE WITH THE ABOVE MENTIONED GUIDELINES.

THE CONTRACTOR SHALL INSPECT THE SITE WHERE THE CULVERT IS TO BE INSTALLED AND FAMILIARIZE HIMSELF WITH THE CONDITIONS UNDER WHICH THE WORK WILL BE PERFORMED AND WITH ALL NECESSARY DETAILS AS TO THE ORDERLY PROSECUTION OF THE WORK. THE OMISSION OF ANY DETAILS FOR THE SATISFACTORY INSTALLATION OF THE WORK IN ITS ENTIRETY, WHICH MAY NOT APPEAR HEREIN, SHALL NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY.

CONSTRUCTION SHALL BE CARRIED ON IN SUCH A MANNER THAT SETTLEMENT OF THE GROUND SURFACE ABOVE THE PIPELINE SHALL BE HELD TO AN ABSOLUTE MINIMUM. THE INSTALLATION OF THE PIPELINE SHALL FOLLOW THE HEADING OR BORING EXCAVATION AS SOON AS POSSIBLE. EXCAVATION SHALL BE CARRIED ON IN SUCH A MANNER THAT VOIDS BEHIND THE PIPE WILL BE HELD TO A MINIMUM. THE CONTRACTOR SHALL PRESSURE GROUT VOIDS USING AN APPROVED HYDRAULIC PUMPING DEVICE, WITH GROUT MIX IN THE PROPORTIONS OF ONE PART TYPE I CEMENT TO THREE PARTS SAND AND SUFFICIENT WATER TO PRODUCE A FREE FLOWING GROUT.

**ITEM 604 - CATCH BASIN NO. 3, AS PER PLAN & ITEM 604 - CATCH BASIN NO. 3A, AS PER PLAN**

THESE ITEMS SHALL CONFORM TO ITEM 604, EXCEPT SLAG SHALL NOT BE USED AS BEDDING OR BACKFILL MATERIAL.

THESE STRUCTURES SHALL ALSO CONFORM TO THE DRAWINGS AND NOTES ON DRAINAGE DETAIL SHEET NO. 184.

**ITEM 604 - CATCH BASIN NO. (2-2B, 2-3, ETC.) AS PER PLAN**

CATCH BASINS SHALL BE CONSTRUCTED IN CONFORMANCE WITH ITEM 604 EXCEPT THE GRATES SHALL BE NEENAH NO. R-4859-C OR EAST JORDAN NO. 6730-2 OR APPROVED EQUALS. SLAG SHALL NOT BE USED AS BEDDING OR BACKFILL.

**ITEM 604 - MANHOLE NO. 3, AS PER PLAN & ITEM 604 - MANHOLE NO. 5, AS PER PLAN**

THESE ITEMS SHALL CONFORM TO ITEM 604, EXCEPT SLAG SHALL NOT BE USED AS BEDDING OR BACKFILL MATERIAL.

THE FOLLOWING CONTINGENCY QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AT LOCATIONS DIRECTED BY THE ENGINEER IN LIEU OF ITEM 604, MANHOLE RECONSTRUCTED TO GRADE.

ITEM 604 - MANHOLE NO. 3, AS PER PLAN 3 EACH

**ITEM 604 - MANHOLE NO. 3, AS PER PLAN, TYPE A**

THIS ITEM SHALL CONFORM TO ITEM 604, EXCEPT SLAG SHALL NOT BE USED AS BEDDING OR BACKFILL MATERIAL.

THESE STRUCTURES SHALL HAVE THE SANITARY SEWER PASS THRU THE STRUCTURE WITH NO ACCESS AND SHALL ALSO CONFORM TO THE DRAWINGS AND NOTES ON DRAINAGE DETAIL SHEETS NO. 186-188.

**ITEM 604 - MANHOLE ADJUSTED TO GRADE, AS PER PLAN**

SEWER BRICK MUST BE USED IN LIEU OF GRADE RINGS FOR ADJUSTING AND/OR SETTING CASTINGS.

**ITEM 604 - MANHOLE RECONSTRUCTED TO GRADE**

THE FOLLOWING CONTINGENCY QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AT LOCATIONS DIRECTED BY THE ENGINEER IN LIEU OF ITEM 604 - MANHOLE ADJUSTED TO GRADE.

ITEM 604 - MANHOLE RECONSTRUCTED TO GRADE 10 EACH

**ITEM 604 - CATCH BASIN NO. 3A, AS PER PLAN, TYPE A**

THIS ITEM SHALL CONFORM TO ITEM 604, EXCEPT SLAG SHALL NOT BE USED AS BEDDING OR BACKFILL MATERIAL.

THIS ITEM SHALL BE CONSTRUCTED ACCORDING TO DRAINAGE DETAIL SHEET NO. 183A. ALL COSTS ASSOCIATED WITH THESE REQUIREMENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE BID ITEMS.

**ITEM 605 - 150 mm SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP, AS PER PLAN**

BACKFILL FOR THIS ITEM SHALL CONFORM TO 605.03(C), EXCEPT THAT SLAG SHALL NOT BE PERMITTED AS BACKFILL MATERIAL.

**VIDEO TAPING AND CLEANING SEWERS**

PRIOR TO FINAL ACCEPTANCE BY THE STATE AND LOCAL AUTHORITIES, THE CONTRACTOR SHALL HAVE ALL NEW STORM AND SANITARY SEWERS VIDEOTAPED. EXISTING SEWERS WHICH RECEIVED FLOW FROM THE NEW PAVEMENT AND SURROUNDING AREA SHALL ALSO BE VIDEOTAPED.

THE INFORMATION GATHERED FROM THIS VIDEOTAPING SHALL BE USED TO DETERMINE WHICH SEWERS NEED TO BE CLEANED AND TO ENFORCE THE ITEMS COVERED UNDER THE "REVIEW OF DRAINAGE FACILITIES" NOTE.

THE FOLLOWING EXISTING STORM SEWERS SHALL BE VIDEOTAPED AND THOROUGHLY CLEANED PRIOR TO FINAL ACCEPTANCE AND SHALL BE PAID FOR UNDER:

ITEM 604 - CONDUIT, MISC.: VIDEOTAPING AND CLEANING EXISTING SEWER 1642.6 METER

STATION	TO	STATION	SIDE	SIZE (mm)	TYPE	LENGTH (m)
3+756		4+410	R	381	STORM	384
3+756.5		3+388.2	L	762	STORM	125.7
3+882		3+981.8	L	610	STORM	99.8
4+263.4		4+453	CL	457	STORM	89.6
4+353		4+438.5	CL	508	STORM	85.5
4+673		4+711.8	R	533	STORM	38.8
4+711.8		4+819	R	457	STORM	107.2
4+825.5		5+040	CL	381	STORM	214.5
5+040		5+207.5	L	610	STORM	167.5
5+060.5		5+203.5	CL	305	STORM	143.0
5+207.5		5+394.5	L	254	STORM	187.0
						TOTAL = 1642.6

ALL NEW STORM AND SANITARY SEWERS SHALL BE VIDEOTAPED PRIOR TO FINAL ACCEPTANCE AND SHALL BE PAID FOR UNDER:

ITEM 604 - CONDUIT, MISC.: VIDEOTAPING NEW STORM AND SANITARY SEWER 4002 METER

COPIES OF THE VIDEO SHALL BE PROVIDED TO REPRESENTATIVES OF THE STATE OF OHIO AND RESPECTIVE LOCAL REPRESENTATIVES.

THE CITY OF WILLOUGHBY SHALL BE RESPONSIBLE FOR 100% OF THE PROJECT COST TO PERFORM THIS WORK.

THE ABOVE LISTED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

**RESIDENTIAL AND COMMERCIAL DRAINAGE CONNECTIONS**

EXISTING ROOF DRAINS, FOOTER DRAINS, OR YARD DRAINS, DISTURBED BY THE WORK SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS BY CONNECTING A CONDUIT THROUGH THE CURB OR INTO A DRAINAGE STRUCTURE. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEW CONDUIT REQUIRED TO REPLACE OR EXTEND THE EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER.

THE FOLLOWING CONDUIT TYPE MAYBE USED: 707.45 PS46 MIN, 707.41 NON-PERFORATED, OR 706.08.

CALC. BY:  
CHECKED BY:

GENERAL NOTES

LAK-640-3.444

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