

BENCHMARK:

TRAVERSE STATION #469017, STA. 113+80.07, 107.74' LT. ELEV. 634.72 (ON CITY OF WATERLOO PROPERTY)

EXISTING STRUCTURES:

THE EXISTING STRUCTURE CONSISTS OF WINGWALLS ON THE DOWNSTREAM END SUPPORTING A PEDESTRIAN WALKWAY. WINGWALLS ARE CONNECTED AND TAPERED INTO A CONCRETE 7.5' (SPAN) x 6' (RISE) BOX CULVERT. ON THE UPSTREAM END, A FOREMENTIONED BOX CULVERT IS CONNECTED TO A 9' x 3' MASONRY JUNCTION BOX WITH A POURED SLAB ON TOP SERVING AS A SWALE. THE JUNCTION BOX CONNECTS TO AN UPSTREAM 54" DIAMETER CONCRETE PIPE AND TWO OTHER SMALLER PIPES. TWO APPROXIMATE 12" DIAM. CASING PIPES CARRYING CITY-OWNED 4" GAS MAIN AND 10" SANITARY SEWER RUN THROUGH THE STRUCTURE. "REMOVAL OF EXIST. STRUCTURES NO. 2" ENTAILS ONLY THE 54" PIPE WHILE "REMOVAL OF EXIST. STRUCT. NO. 1" ENTAILS OTHER STRUCTURES.

THE EXISTING ROADWAY SHALL BE CLOSED TO TRAFFIC AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

THE EXISTING STRUCTURE SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH THE PROVISIONS OF SECTION 501 OF THE STANDARD SPECIFICATIONS.

DESIGN SPECIFICATIONS

2002 AASHTO

DESIGN STRESSES

PRECAST UNIT

$f'_c = 5,000$ p.s.i.
 $f_y = 65,000$ p.s.i. (WELDED WIRE FABRIC)

LOADING HS 20-44

ALLOW 50 PSF FOR FUTURE WEARING SURFACE.

SEISMIC DATA

SEISMIC PERFORMANCE CATEGORY (SPC) = B
BEDROCK ACCELERATION COEFFICIENT (A) = 11.5% OF GRAVITY
SITE COEFFICIENT (S) = 1.5

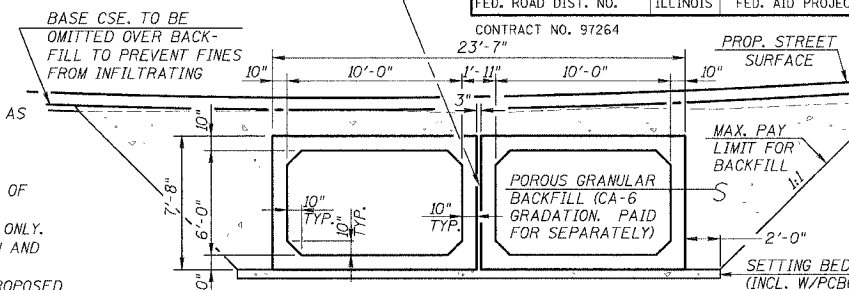
HORIZONTAL CURVE DATA

F.A.U. 9315 (MOORE STREET)
P.I. STA. 114+94.82
 $\Delta = 40^\circ-54'-45"$ RT.
 $D = 16^\circ-13'-52"$
 $T = 131.67'$
 $R = 353.00'$
 $L = 252.06'$
 $E = 23.76'$
S.E. = NONE
P.R.C. STA. 113+63.144
P.T. STA. 116+15.207

GENERAL NOTES

- FOR BACKFILLING AND EMBANKMENT, SEE STANDARD SPECIFICATIONS AND DETAILS HEREIN.
- THE COSTS OF REMOVING EXISTING RIPRAP AND SLOPE PROTECTION SHALL BE INCLUDED IN THE UNIT BID PRICE OF "PRECAST CONCRETE BOX CULVERT 10'x6' (M273)".
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DIVERT THE WATER DURING CONSTRUCTION IN ORDER TO KEEP THE CONSTRUCTION AREAS FREE OF WATER. THE METHOD OF DIVERSION SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER AND THE COST SHALL BE INCLUDED IN THE UNIT BID PRICE OF "PRECAST CONCRETE BOX CULVERT 10'x6' (M273)".
- LAYOUT OF STONE DUMPED RIPRAP MAY BE VARIED IN THE FIELD TO SUIT GROUND CONDITIONS AS DIRECTED BY THE ENGINEER.
- ALL WORK SHALL CONFORM TO SECTION 540 OF THE STANDARD SPECIFICATIONS.
- ALL UNITS SHALL BE DESIGNED IN ACCORDANCE WITH AASHTO M273, INCLUDING END SECTIONS.
- THE SHOP DRAWINGS SHALL BE SEALED BY A LICENSED STRUCTURAL ENGINEER IN THE STATE OF ILLINOIS.
- THE LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR/FABRICATOR ARE RESPONSIBLE FOR VERIFYING THESE BEFORE FABRICATION AND INSTALLATION OF THE STRUCTURE(S).
- THE CONTRACTOR/FABRICATOR'S ATTENTION IS CALLED TO THE NEED TO KEEP INVERTS OF PROPOSED STORM SEWER ENTERING THE CULVERT BARRELS AT APPROXIMATE ELEVATIONS AND HEIGHTS FROM FLOWLINE OF THE BARREL SHOWN ON THESE PLANS TO ALLEVIATE BACKWATER EFFECTS IN PROPOSED STORM SEWER SYSTEMS. ONLY TWO STORM SEWER PIPES (AT THE SOUTHEAST CORNER OF THE ELBOW AND ALONG THE EAST SIDE OF THE EASTERMOST BARREL) SHALL ENTER THE BARREL AT ITS FLOWLINE.
- ONLY EXPOSED PORTIONS OF BOX CULVERTS AND RETAINING WALLS TO RECEIVE ANTI-GRAFFITI PROTECTION, INCLUDING THE INSIDE OF THE BOX CULVERTS TO WITHIN 12 FEET OF THE U.S. OR D.S. FLOWLINE.
- ALL OPENINGS CAST OR CUT INTO PC BOX CULVERTS FOR PLACEMENT OF STORM SEWER PIPES AND INLETS SHALL BE GROUTED WITH NON-SHRINK GROUT OR CLASS II CONCRETE AND MADE WATERTIGHT AFTER PLACEMENT OF PIPES AND INLETS, COSTS FOR WHICH WILL BE INCLUDED IN "PRECAST CONC. BOX CULVERT..." COSTS.

CLASS II CONCRETE TO BE PLACED IN SPACE BETWEEN BOXES & END SECTIONS, THEIR FULL LENGTH PER STD. SPECIFICATION (COSTS INCL. IN "PRECAST CONCRETE BOX CULVERT..."



BOX CULVERT CROSS SECTION

WATERWAY INFORMATION

DRAINAGE AREA = 0.3 SQ. MI. LOW GRADE EL. = 637.54 @ STA. 114+78

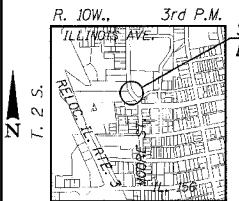
FLOOD	FREQ. YR.	Q C.F.S.	OPENING SQ. FT.		HEAD - FT.		HEADWATER EL.		
			EXIST.	PROP.	EXIST.	PROP.	EXIST.	PROP.	
DESIGN	50	572	13	120	635.7	3.0**	0.00	638.7	634.2
BASE	100	691	13	120	636.2	2.7**	0.00	639.0	634.9
MAX. CALC.	500	896		120	637.0	2.3**	0.00	639.4	636.0

* COMPARED AT PROPOSED STRUCTURE'S UPSTREAM FACE
** INCLUDES OVER-THE-ROAD FLOW

TOTAL BILL OF MATERIAL

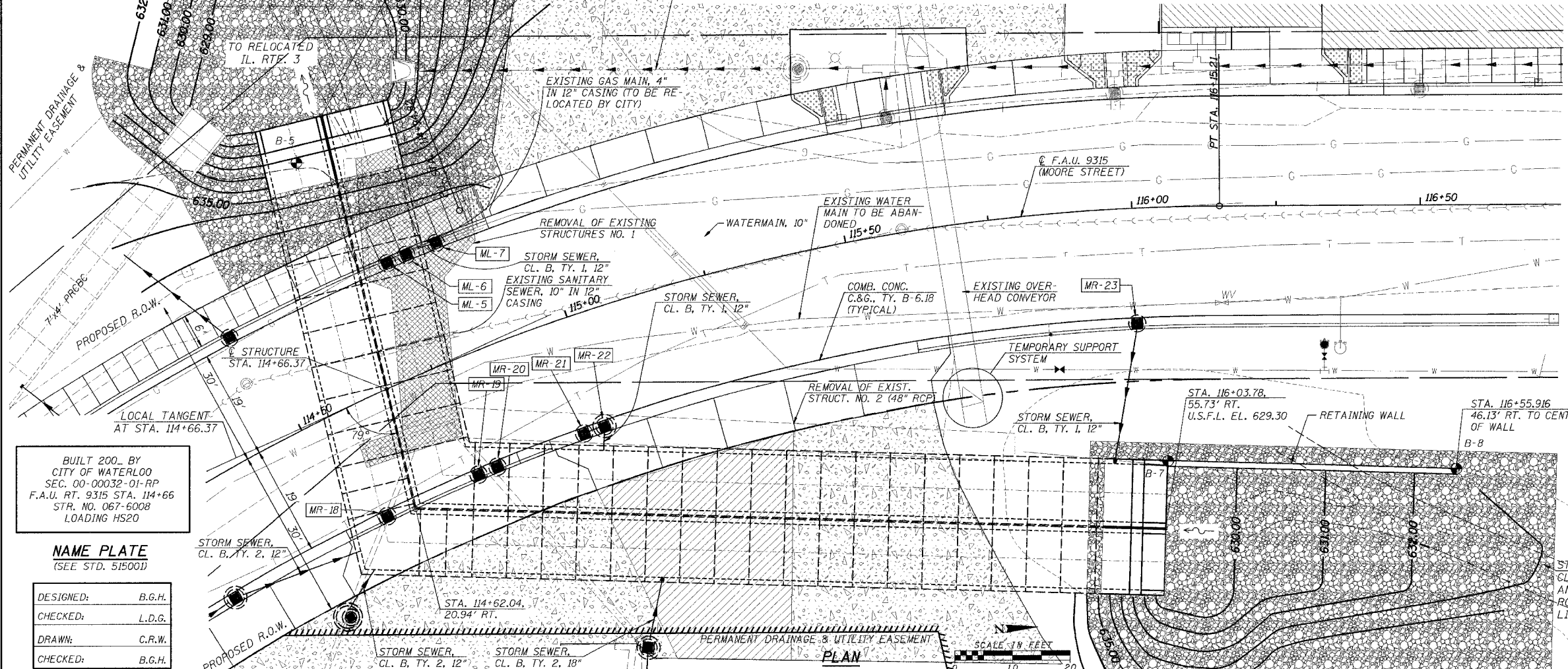
(INCLUDES RETAINING WALL BILL OF MATERIAL)

ITEM	UNIT	QUANTITY
POROUS GRANULAR BACKFILL	CU. YD.	1,477
GEOTECHNICAL FABRIC FOR FRENCH DRAINS	SQ. YD.	96.0
REMOVAL OF EXISTING STRUCTURES NO. 1	EACH	1
REMOVAL OF EXISTING STRUCTURES NO. 2	EACH	1
CONCRETE STRUCTURES REINFORCEMENT BARS, EPOXY COATED	CU. YD.	27.4
NAME PLATES	EACH	1
BOX CULVERT END SECTIONS, SPECIAL	EACH	1
BOX CULVERT END SECTION, CULVERT NO. 1	EACH	3
PRECAST CONCRETE BOX CULVERT 10' x 6' (M273)	FOOT	376.2
PIPE DRAINS, 6"	FOOT	50.0
ANTI-GRAFFITI PROTECTION SYSTEM	SQ. FT.	2,746.0
TEMPORARY SUPPORT SYSTEM	L. SUM	1
SANITARY SEWER, PVC, 10" IN 16" CASING PIPE	L. SUM	1

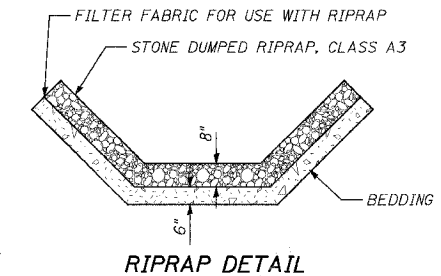


LOCATION SKETCH

STONE DUMPED RIPRAP, CLASS A3 WITH BEDDING AND FILTER FABRIC (SEE ROADWAY PLANS FOR LIMITS & QUANTITIES)



PLAN



RIPRAP DETAIL

BUILT 200_ BY CITY OF WATERLOO SEC. 00-00032-01-RP F.A.U. RT. 9315 STA. 114+66 STR. NO. 067-6008 LOADING HS20

NAME PLATE
(SEE STD. 515001)

DESIGNED:	B.G.H.
CHECKED:	L.D.G.
DRAWN:	C.R.W.
CHECKED:	B.G.H.

GENERAL PLAN
F.A.U. 9315 OVER DOUBLE 10'x6' CONCRETE BOX CULVERT SECTION 00-00032-01-RP MONROE COUNTY S.N. 067-6008

4690/STRUCT-1.dgn CRW AUG 26, 2003