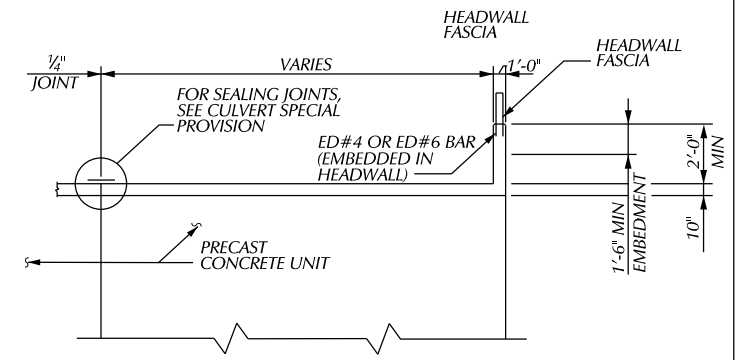
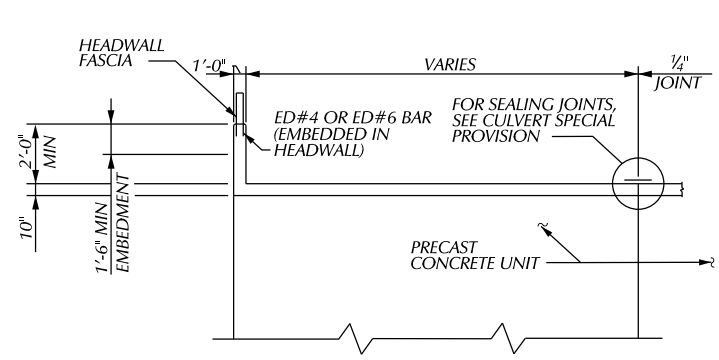


MISCELLANEOUS QUANTITIES

62 FT	CULV, PRECAST THREE-SIDED OR ARCH, 16 FOOT BY 10 FOOT
100 SYD	WATER REPELLANT TREATMENT, PENETRATING

NOTES:
DESIGN ALL CULVERT / HEADWALL CONNECTIONS FOR TRAFFIC LOADS.

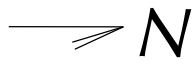


PLAN	BY	CHECKED BY	APPROVED:
GRADE			
ESTIMATE			
DESCRIPTION	DR	CHK	DATE
REVISIONS			

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

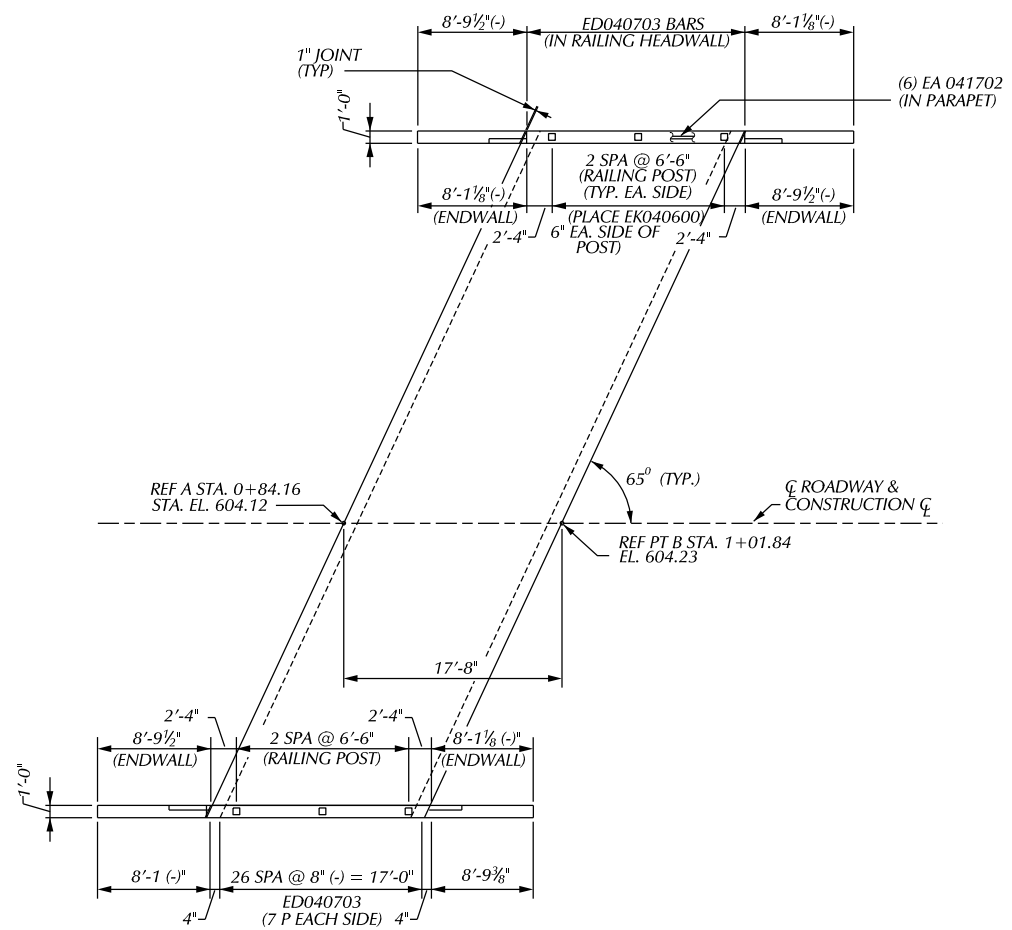
WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN
CONCRETE ARCH DETAILS

SHEET 35 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018

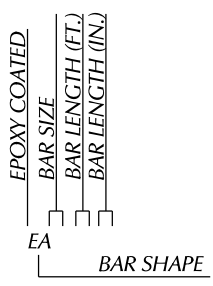
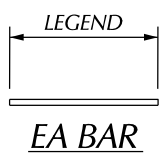
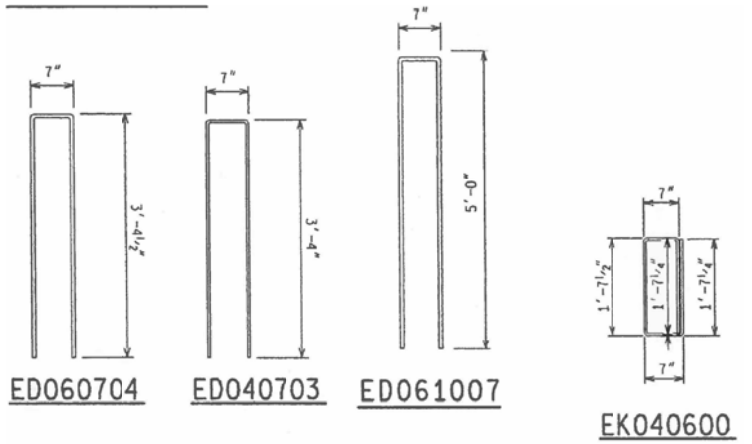


BENCH MARKS ELEV

MISCELLANEOUS QUANTITIES	
36 FT	BRIDGE RAILING, AESTHETIC PARAPET TUB, MODIFIED
24 CYD	SUBSTRUCTURE CONC.
1 LS	SUBSTRUCTURE CONC. FORM FINISH AND CURE (C01 OF 63821)
2009 LB	REINFORCEMENT STEEL, EXPOXY COATED



PLAN OF RAILING



BAR LEGEND

EPOXY COATED STEEL REINFORCEMENT

BAR	NO. REQ'D	TOTAL WT
EA041702	12	138
EA040600	12	48
EA040703	54	262
EA061007	48	763
EA060704	54	595
EA040800	20	107
EA040702	20	96

NOTES:

- FOR NAME PLATE LOCATION, SEE GENERAL PLAN OF STRUCTURE SHEETS.
- FOR BRIDGE RAILING, ANCHORAGE FOR GUARDRAIL AND NAME PLATE MOUNTING DETAILS, SEE STANDARD PLAN B-25 SERIES. FOR DETAILS OF NAME PLATES MOLDINGS AND BEVELS, SEE STANDARD PLAN B-103 SERIES.
- A RUBBED SURFACE FINISH ON THE VERTICAL AND TOP CONCRETE SURFACES OF THE PARAPET RAILING IS REQUIRED ON THIS STRUCTURE.
- LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03J, OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. LOW TEMPERATURE PROTECTION OF CONCRETE WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE BID "SUPERSTRUCTURE CONC".
- THE UTILITY COMPANY SHALL BE NOTIFIED 10 WORKING DAYS IN ADVANCE FOR REMOVAL OF EXISTING LIGHT STANDARDS AND 10 WORKING DAYS IN ADVANCE OF THE TIME OF INSTALLATION OF THE PROPOSED DUCTS IN THE SIDEWALK.

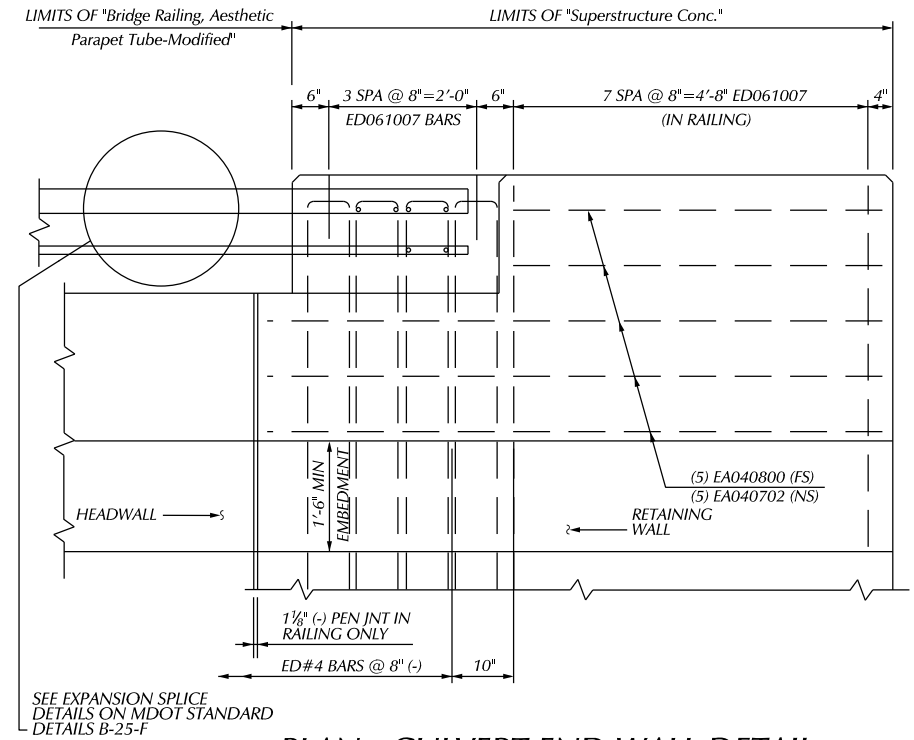
			BY	CHECKED BY	APPROVED
					ENGINEER BY STREET
DESCRIPTION	OR	CHK	APPROV	DATE	
REVISIONS					

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

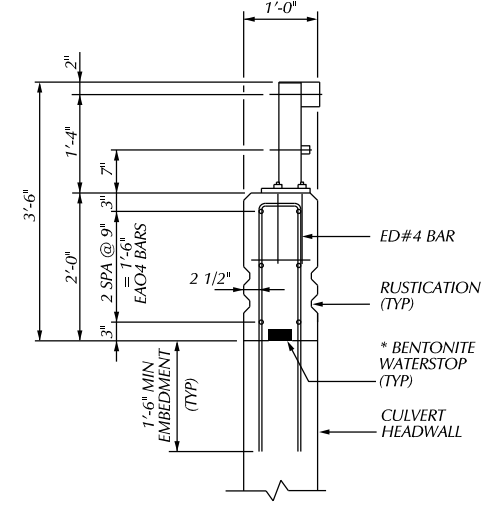
WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN
CULVERT & RETAINING WALL RAILING DETAILS

SHEET 38 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018

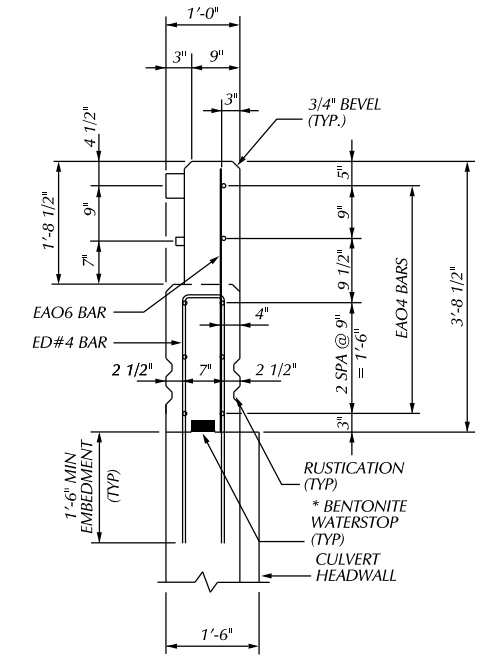
SCALE	HORIZONTAL	BOOK NO.	PG.	LEVEL DATE	BEFORE STARTING CONSTRUCTION CONTRACTOR MUST CHECK WITH UTILITIES FOR LOCATIONS OF EXISTING STRUCTURES WHETHER OR NOT INDICATED ON PLANS.
	VERTICAL	PAVING COMPLETED			



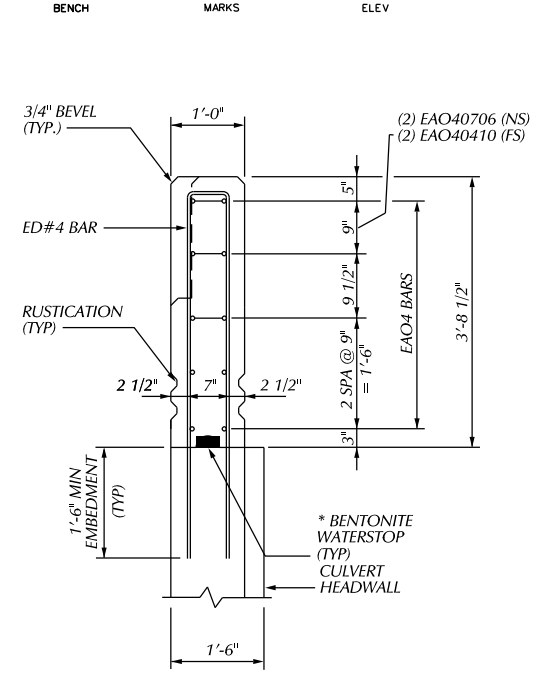
PLAN - CULVERT END WALL DETAIL
 NS - DENOTES NEAR SIDE
 FS - DENOTES FAR SIDE



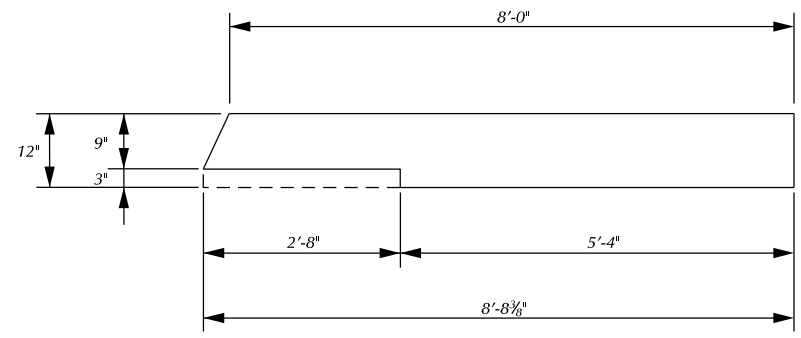
TYPICAL CULVERT RAILING SECTION



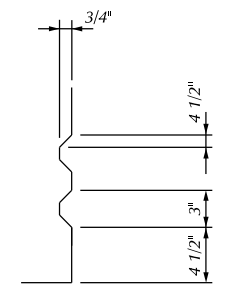
SECTION AT CULVERT END WALL
 (TUBE CONNECTION AREA)



SECTION AT CULVERT END WALL
 (FULL CONCRETE AREA)



PLAN - CULVERT END WALL
 SEE PLAN OF RAILING FOR DETAILS
 SHEET # _____



RUSTICATION DETAIL
 (SHOWING RUSTICATION)

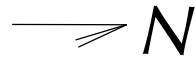
NOTES:
 * BENTONITE WATERSTOP SHALL NOT BE PAID SEPARATELY BUT ARE INCLUDED IN PAYMENT FOR "BRIDGE RAILING, AESTHETIC PARAPET TUBE-MODIFIED"

DESCRIPTION	DR	CHK	DATE	BY	CHECKED BY	APPROVED:
REVISIONS						

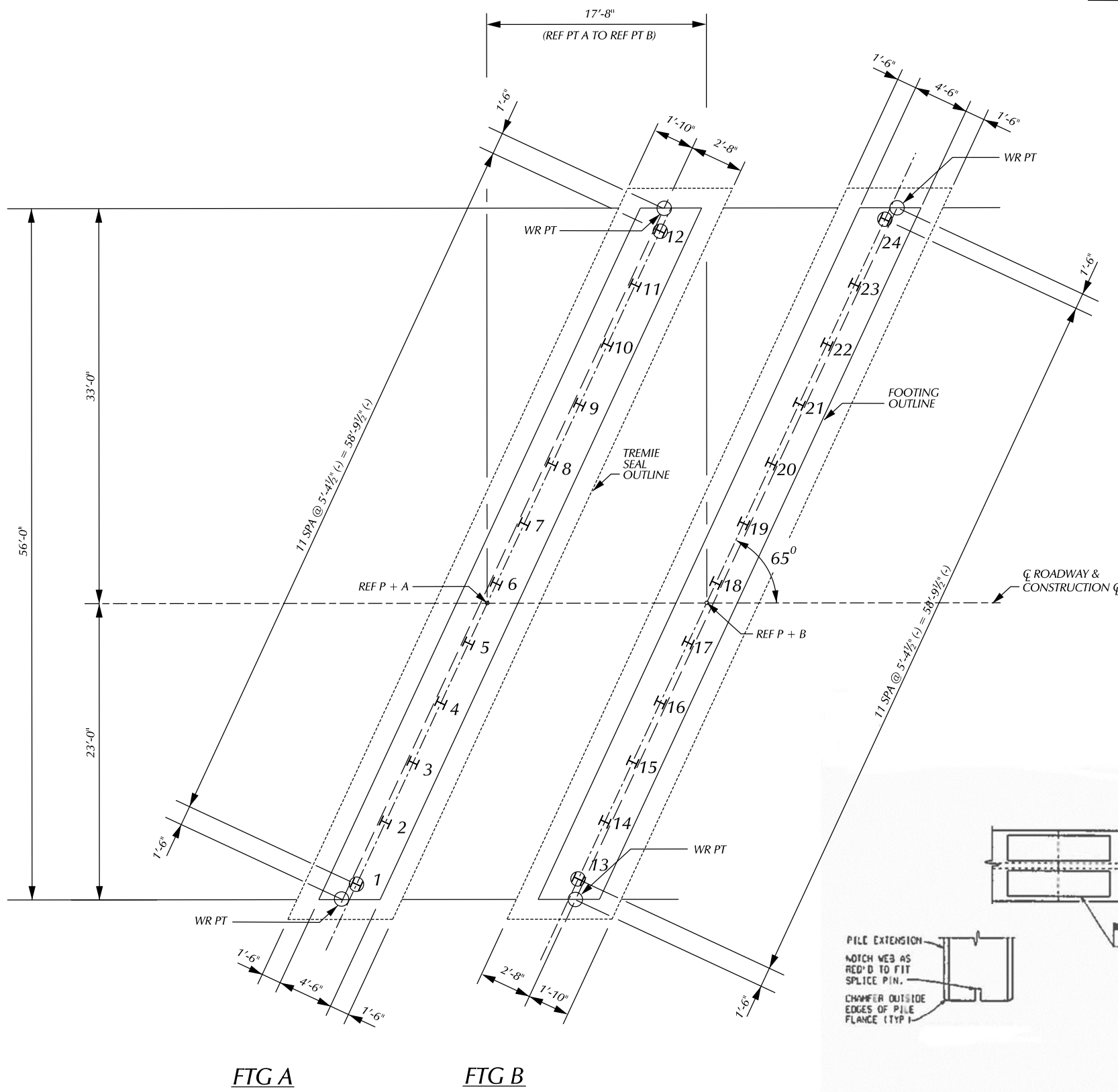
CITY OF DETROIT
 CITY ENGINEERING DIVISION - D.P.W.
 BUREAUS OF STREETS AND HIGHWAYS
 FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN
CULVERT & RETAINING WALL RAILING DETAILS

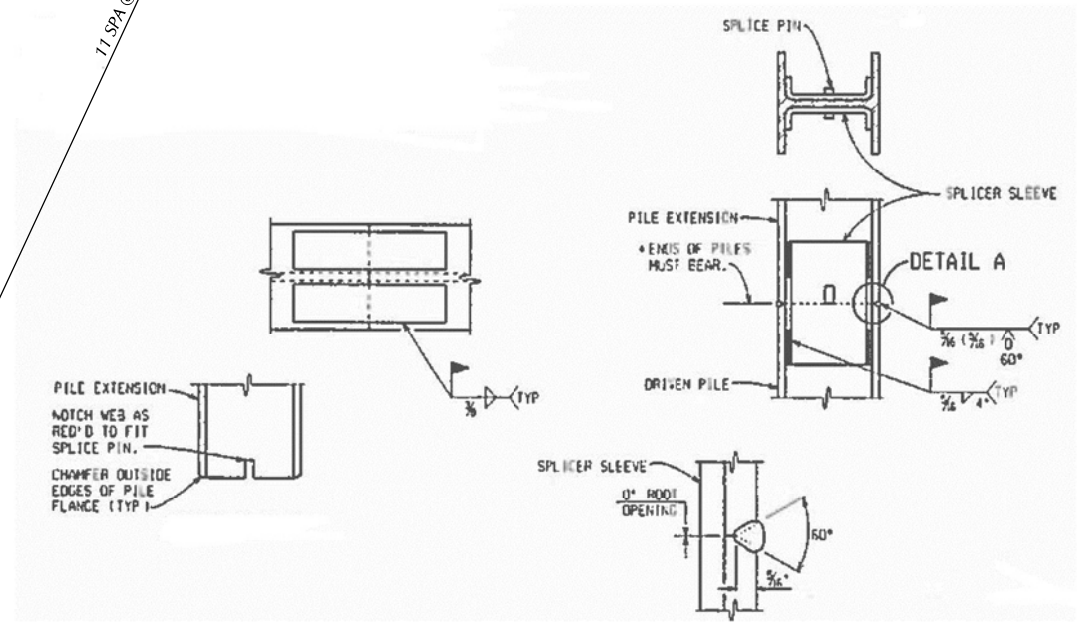
SHEET	39	OF	39	SHEETS
CONTRACT NO.	PW-6987			
ASSIGNMENT NO.				
DATE	01/24/2018			



BENCH MARKS ELEV

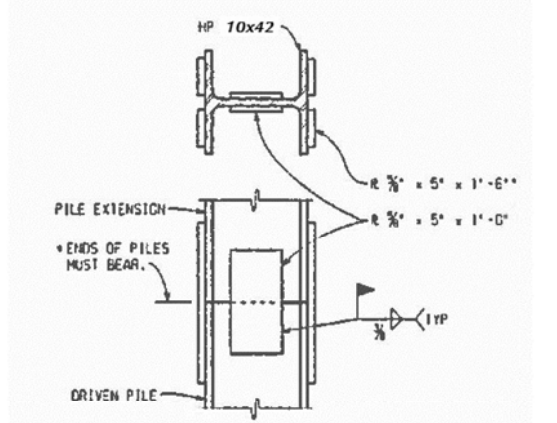


FTG A **FTG B**
PILE LAYOUT



NOTCH DETAIL **DETAIL A**
ALTERNATE SPLICE DETAILS

* SET PILE EXTENSION IN PLACE WITH SPLICE PLATES ATTACHED. TAP SEVERAL TIMES WITH THE HAMMER TO IMPROVE BEARING CONTACT, THEN COMPLETE WELDING OF PLATES TO THE LOWER SECTION.



SPLICE DETAILS
* SET PILE EXTENSION IN PLACE WITH SPLICE PLATES ATTACHED. TAP SEVERAL TIMES WITH THE HAMMER TO IMPROVE BEARING CONTACT, THEN COMPLETE WELDING OF PLATES TO THE LOWER SECTION.

55 TON STEEL "H" PILES					
LOCATION	PILE TYPE	NUMBER OF PILES	ESTIMATED LENGTH FURNISHED & DRIVEN		CUT-OFF ELEV.
			EACH LFT	TOTAL LFT	
FTG A	TEST	2	35	70	566.00
	VERTICAL	10	25	250	566.00
FTG B	TEST	2	30	70	566.00
	VERTICAL	10	25	250	566.00
TOTAL				640	

MISCELLANEOUS QUANTITIES	
1 LS	PILE DRIVING EQUIPMENT, FURN
640 FT	PILE STEEL, FURN AND DRIVEN, 10 INCH
4 EA	TEST PILE, STEEL 10 INCH
24 EA	PILE POINT, STEEL

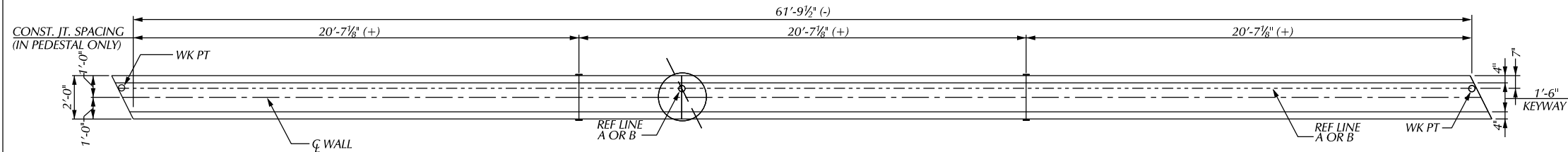
- NOTES:**
- H - DENOTES VERTICAL PILES.
 - (H) - DENOTES VERTICAL TEST PILES.
 - ALL PILES SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 55 TONS.
 - NOMINAL DRIVING RESISTANCE R_{ndr} OF PILES SHALL BE 275 KPS
 - STEEL PILES SHALL BE HP 10 X 42.
 - ESTIMATED PILE PENETRATIONS HAVE BEEN DETERMINED BY USE OF THE STATIC FORMULA.
 - THE PILE DRIVING FORMULAS IN THE STANDARD SPECIFICATIONS ARE NOT TO BE USED TO DETERMINE BATTERED PILE CAPACITY. BATTERED PILES ARE TO BE DRIVEN TO THE ELEVATION ESTABLISHED FOR VERTICAL PILES.
 - THE USE OF VIBRATORY HAMMERS FOR INSTALLING H-PILES SHALL NOT BE ALLOWED.

PLAN	BY	CHECKED BY	APPROVED:
GRADE			ENGINEER OF STREETS
ESTIMATE			
DESCRIPTION	DR	CHK	DATE
REVISIONS	FINAL	****	****

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN
CULVERT H PILE LAYOUT

SHEET 32 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018



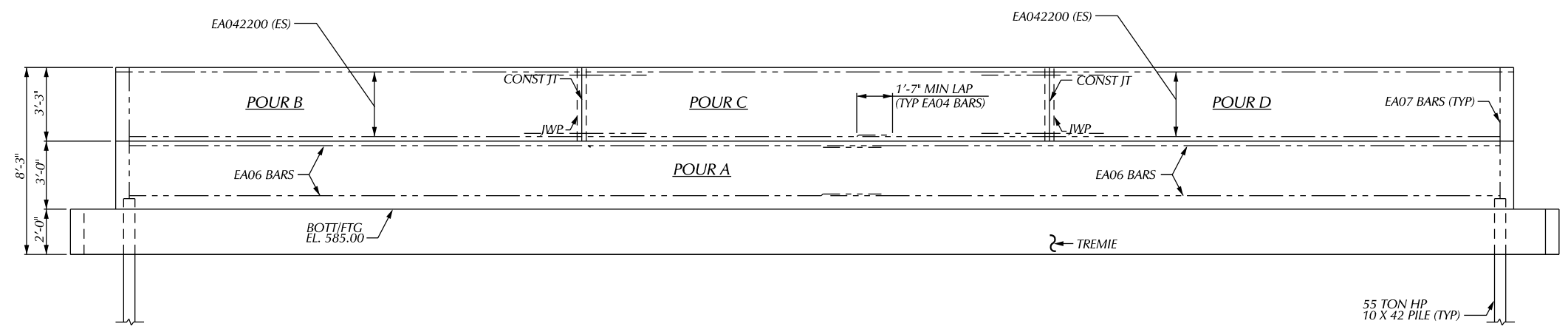
PLAN OF PEDESTAL WALL

SUBSTRUCTURE CONCRETE QUANTITIES

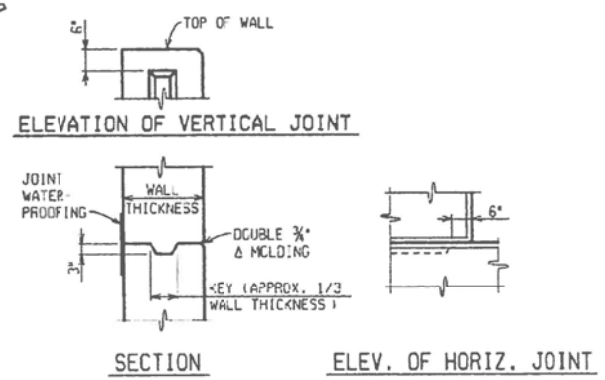
POUR	FTG A	FTG B
A	31	31
B	5	5
C	5	5
D	5	5

MISCELLANEOUS QUANTITIES

WALL A	WALL B	TOTAL	
31	31	62 CYD	CONC. GRADE T
15	15	30 CYD	SUBSTRUCTURE CONC.
4319	4319	8638 LB	REINFORCEMENT STEEL, EPOXY COATED
15	15	30 SFT	JOINT WATERPROOFING

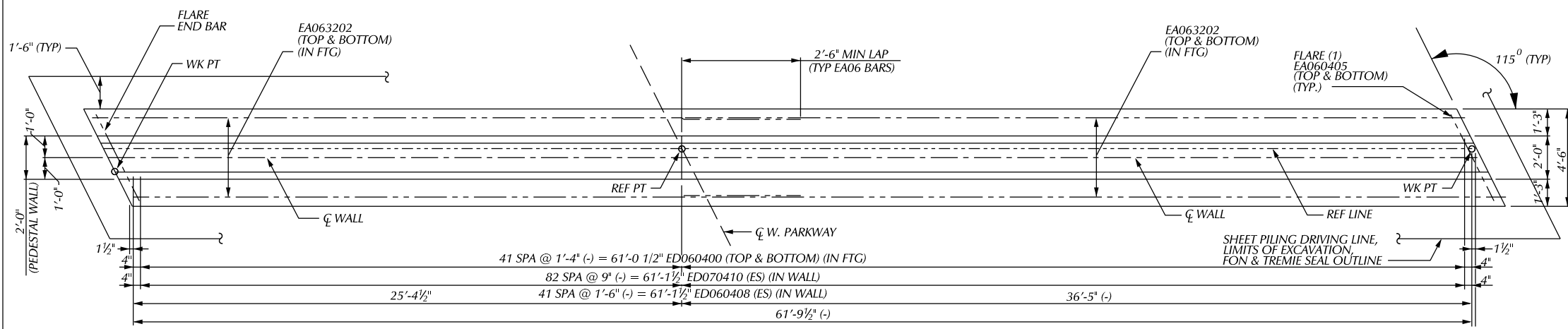


ELEVATION - PEDESTAL WALL

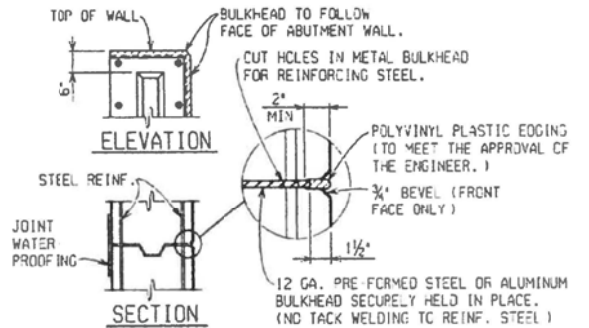


CONSTRUCTION JOINT DETAILS

NOTE: WHERE OPTIONAL CONSTRUCTION JOINTS ARE USED, THERE WILL BE NO PAYMENT FOR THE REQUIRED JOINT WATERPROOFING.



PLAN OF FOOTINGS
(FTG A SHOWN, FTG B OPPOSITE)



METAL BULKHEAD DETAILS

NOTES: METAL BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT AT CONTRACTOR'S EXPENSE. CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

NOTES:
THE SUBSTRUCTURE DESIGN IS BASED ON A FACTORED MAXIMUM VERTICAL LOAD OF 20 KIPS/FT AND A HORIZONTAL LOAD OF 8 KIPS/FT.
JWP DENOTES JOINT WATERPROOFING.

FOR PILE QUANTITIES, LAYOUT AND NOTES, SEE SHEET ____.

LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.03J OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

LOW TEMPERATURE PROTECTION OF CONCRETE WILL NOT PAID FOR SEPARATELY BUT WILL INCLUDED IN THE BID ITEM FOR "SUBSTRUCTURE CONC" AND "CONCRETE GRADE T".

ES - DENOTES EACH SIDE

DESCRIPTION	DR	CHK	APPV	DATE	BY	CHECKED BY	APPROVED:
PLAN							
GRADE							
ESTIMATE							
FINAL							

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

CULVERT SUBSTRUCTURE DETAILS

SHEET 33 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018

DATE	REVISIONS
	OLD MAP 3-30-15
	Added Note 'X' 6-12-59 V.E.
	QUANTITY CHANGE FOR ALLEY
	REPAIR PERMANENT GUE STREET
	SEE PLAN RELIANCE USE

ADJUST W.M.H. (BASE E.N.H. 104) 2'	FULL SAND GRAVEL 2912'	354'
REMOVE CONC. 4027'	FULL SAND 4027'	354'
PAVING 8'x10' 50 YDS	ARCH CULVERT 24'	24'
	12" GUARD RAIL 14'	14'

ESTIMATE	LOTS	CITY
EXCAVATION	CU. YDS.	761
NEW CURB	LN. FT.	713
PAVING 10'-3" 10'	SQ. YDS.	4008
12" UNIF. 30 YD		369
12" UNIF. 29 YD		248
TEST CONES	24	51
SIDEWALK 4" CONC. R.	SQ. FT.	2836
ADJUST		1207
MANHOLES	CONSTRUCT	1
CONSTR.	ADJUST	1
BASINS	CONSTRUCT	10
SEWER-12"	LN. FT.	500

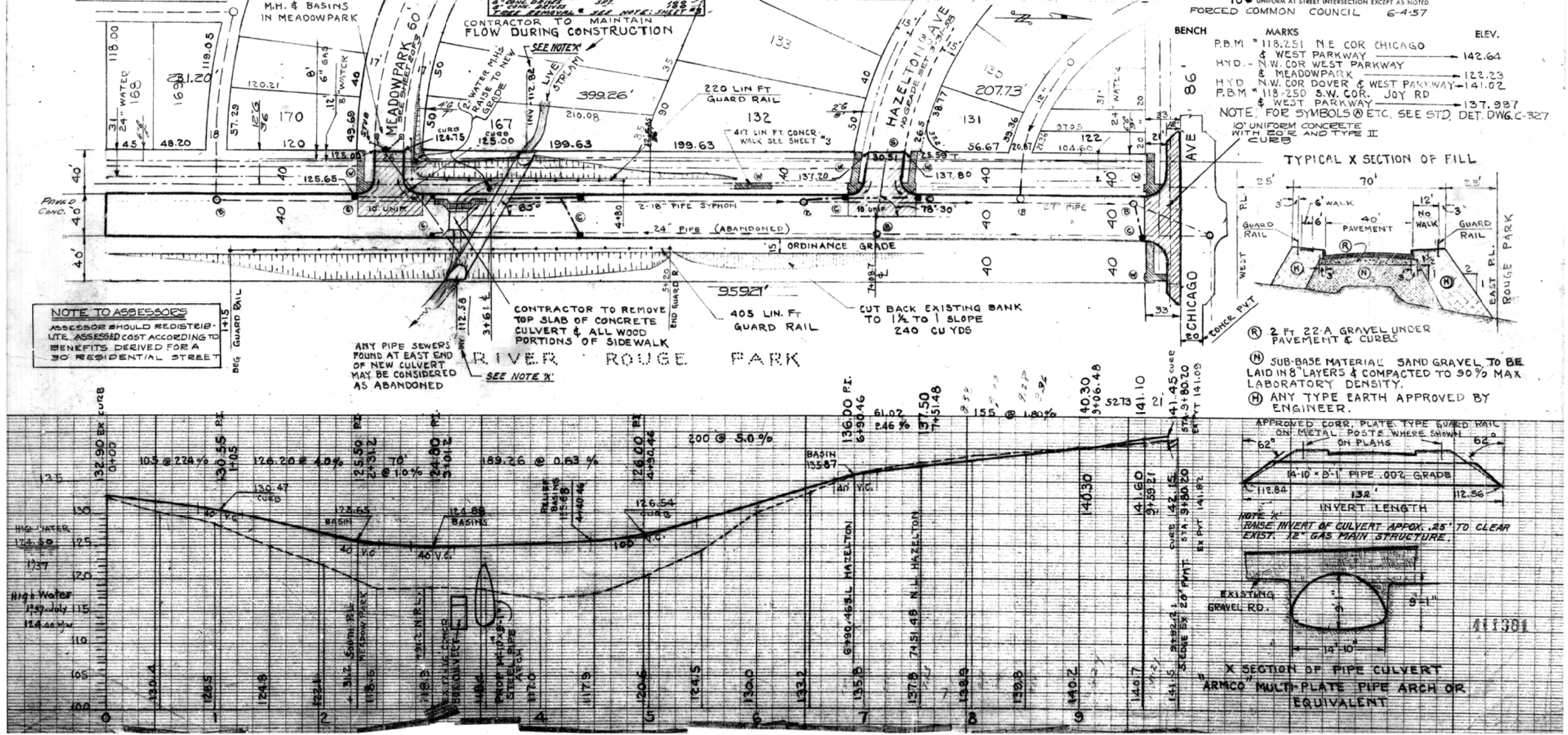
PERMITION NO. FCC	DATE 6-4-57
ASSIGNMENT NO. 325-CO-2	GROUP NO.
BOOK 935	PG. 44
NO. 169	PG. 30
LEVEL 3 24-53	DATE 10-12-54
DATE OF DRAWG.	

MADE BY	CHECKED BY
PLAN	
PROFILE	
GRADE	
ESTIMATE	
SEWER APPROVED	
FINAL CHECK	
APPROVED	

CONTRACT NO. P.W. 3249 F
STREET PAVING PLAN
CITY OF DETROIT
 DEPARTMENT OF PUBLIC WORKS - CITY ENGINEERS OFFICE

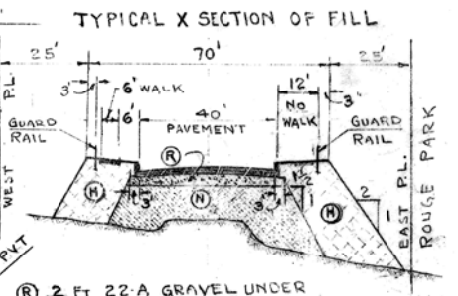
NAME OF STREET **WEST PARKWAY**
 FROM **959.21' S. OF S.L. CHICAGO**
 TO **33 N. OF S.L. CHICAGO**
 TYPE OF PAVEMENT **10" UNIFORM CONCRETE INTEGRAL CURB**
10" UNIFORM AT STREET INTERSECTION EXCEPT AS NOTED
 FORCED COMMON COUNCIL 6-4-57

BENCH MARKS	ELEV.
P.B.M. 118.251 NE COR CHICAGO & WEST PARKWAY	142.64
HYD. N.W. COR WEST PARKWAY & MEADOWPARK	122.23
HYD. N.W. COR DOVER & WEST PARKWAY	141.02
P.B.M. 118.250 S.W. COR. JOY RD & WEST PARKWAY	137.987

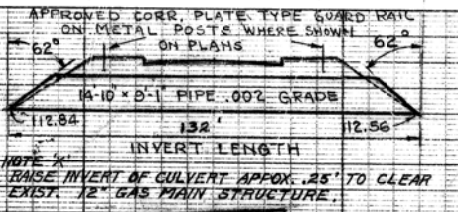


NOTE TO ASSESSORS
 ASSESSOR SHOULD REEVALUATE ASSESSED COST ACCORDING TO BENEFITS DERIVED FOR A 30' RESIDENTIAL STREET

CONTRACTOR TO REMOVE TOP SLAB OF CONCRETE CULVERT & ALL WOOD PORTIONS OF SIDEWALK



(R) 2 FT 22-A GRAVEL UNDER PAVEMENT & CURBS
 (N) SUB-BASE MATERIAL SAND GRAVEL TO BE LAID IN 8 LAYERS & COMPACTED TO 90% MAX LABORATORY DENSITY.
 (H) ANY TYPE EARTH APPROVED BY ENGINEER.



APPROVED CORR. PLATE TYPE GUARD RAIL ON METAL POSTS WHERE SHOWN ON PLANS
 14'-10" x 10'-1" PIPE .002 GRADE
 INVERT LENGTH 132'
 NOTE: RAISE INVERT OF CULVERT APPROX. 25' TO CLEAR EXIST. 12" GAS MAIN STRUCTURE.

EXISTING
 FOR INFORMATION ONLY
 DO NOT WORK FROM THIS SHEET. THE INFORMATION SHOWN HERE IS FOR REFERENCE ONLY. NO PAY ITEMS ARE SHOWN.

DATE	REVISIONS		
OLD MAP	3-30-55		
	Added Sec. AA 6-12-58 J.E.		
SUPPLEMENTARY DETAILS			
C-325	C-324	C-733	C-928
C-326A	C-385	C-739	C-1608
C-327	C-386	C-739A	C-1783
C-390	C-587	C-739B	

BEFORE STARTING CONSTRUCTION CONTRACTOR MUST CHECK WITH UTILITIES FOR LOCATIONS OF EXISTING STRUCTURES WHETHER OR NOT INDICATED ON PLANS.
SCALE
LOTS & ALLEYS
STREET WIDTH
VERTICAL
DRAINAGE COMPLETED
PAVING COMPLETED C.C. 8-4-59

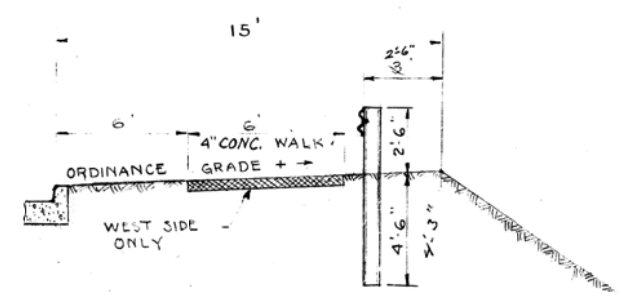
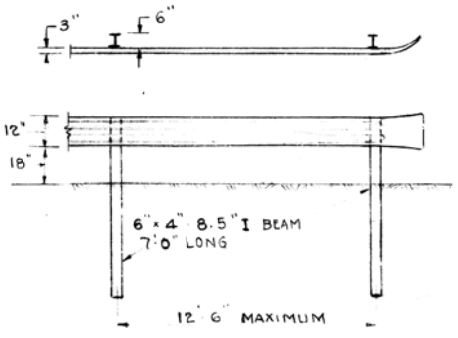
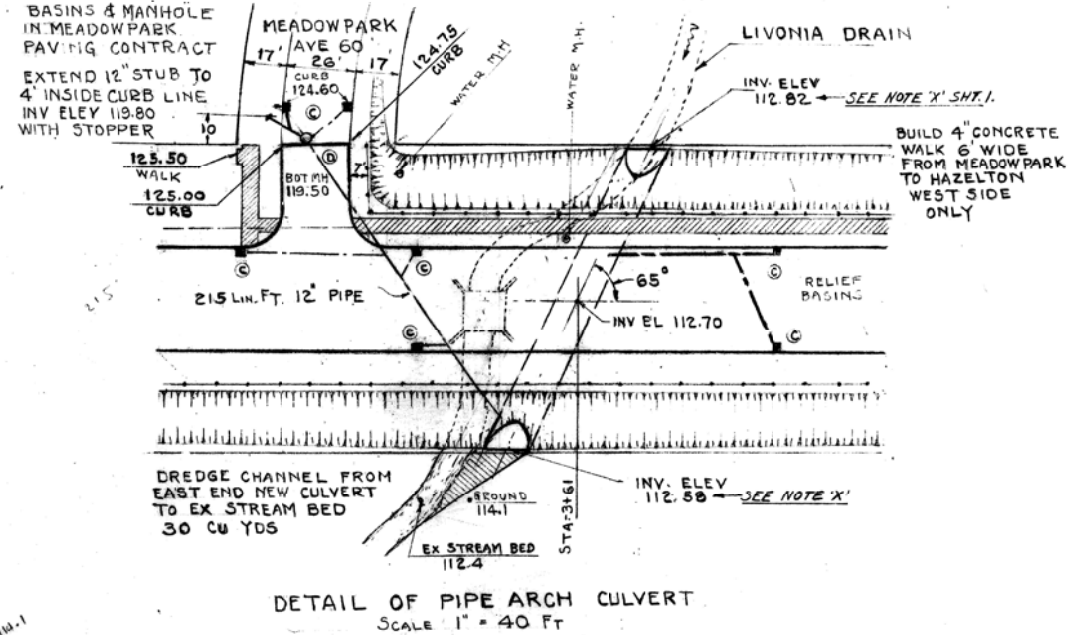
QUANTITIES	ESTIMATED	
	LOTS	CITY
EXCAVATION CU. YDS.		
NEW CURB LIN. FT.		
PAVING LIN. FT.		
TEST CORES		
SIDEWALK		
HANDHOLES	ADJUST	CONSTRUCT
*ASINS	ADJUST	CONSTRUCT
SEWER-12"	CONSTRUCT	CONSTRUCT
	LIN. FT.	

FEETION NO. FCC	DATE 6-4-57
ASSIGNMENT NO.	GROUP NO.
BOOK NO.	LEVEL DATE
DATE OF DRAWG.	

MADE BY	CHECKED BY
ESTIMATE	SEWER APPROVED
FINAL CHECK	APPROVED
CITY ENGINEER	

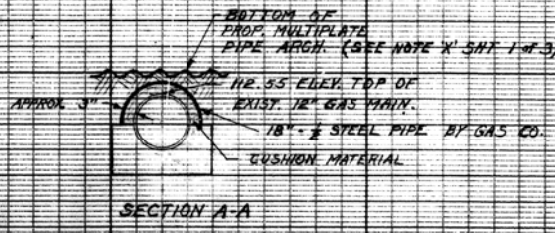
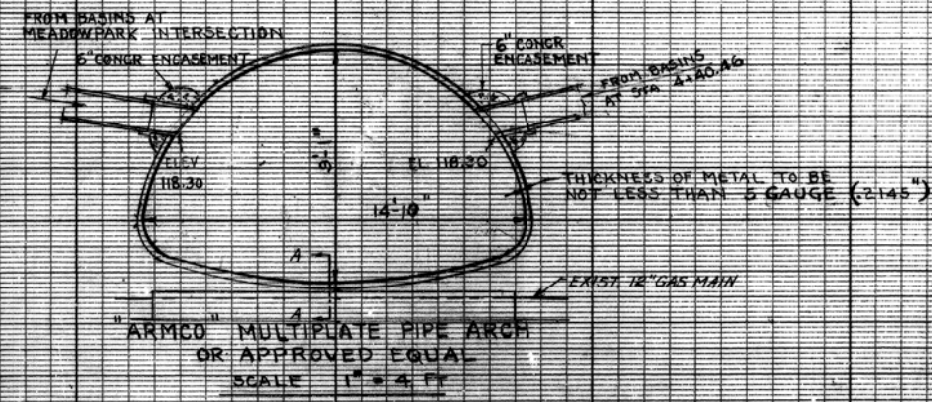
INDEX NO.	77
TOPO NO.	117
INDEXED	1

CONTRACT NO. P.W. 3249 F
STREET PAVING PLAN
CITY OF DETROIT
 DEPARTMENT OF PUBLIC WORKS - CITY ENGINEERS OFFICE
 NAME OF STREET **WEST PARKWAY**
 FROM **959.2' S OF S.L. CHICAGO**
 TO **33' N OF S.L. CHICAGO**
 TYPE OF PAVEMENT 8 & B. ONE COURSE CONCRETE INTEGRAL CURB
 B. UNIFORM AT STREET INTERSECTION EXCEPT AS NOTED
 FORCED COMMON COUNCIL 6-4-57
 BENCH MARKS ELEV.



FOR LOTS ONLY

#	STA.	SIZE	NO.
0173	6' ASH	1	
0177	6' ASH	2	
0185	6' ASH	1	
2110	8' ASH	1	
2116	14\"/>		



411392

EXISTING

FOR INFORMATION ONLY

DO NOT WORK FROM THIS SHEET. THE INFORMATION SHOWN HERE IS FOR REFERENCE ONLY. NO PAY ITEMS ARE SHOWN.

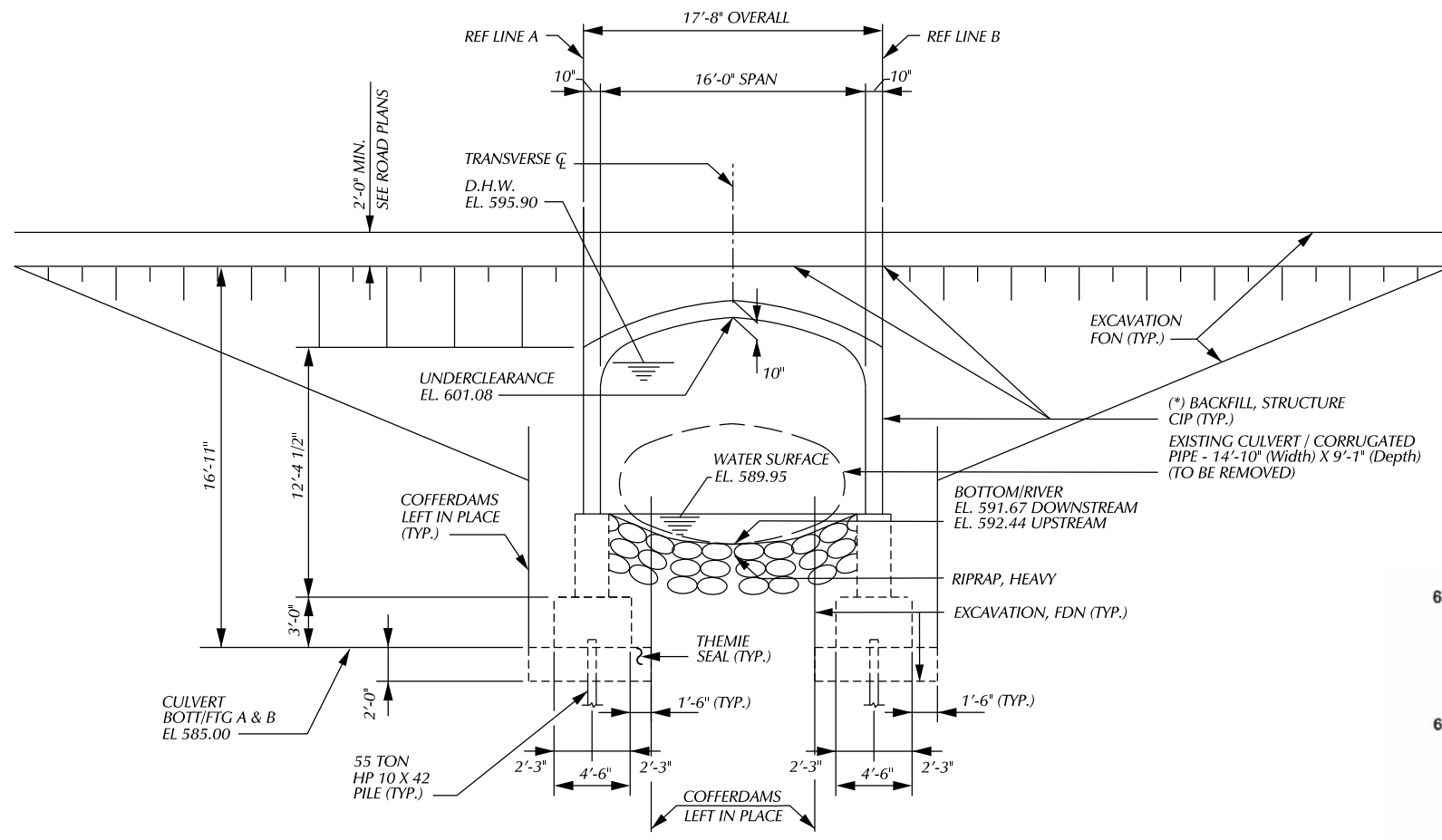
DESCRIPTION	DR.	CHK.	DATE	BY	CHECKED BY	APPROVED
PLAN						
GRADE						
ESTIMATE						
FINAL						

CITY OF DETROIT
 CITY ENGINEERING DIVISION - D.P.W.
 BUREAUS OF STREETS AND HIGHWAYS
 FOR

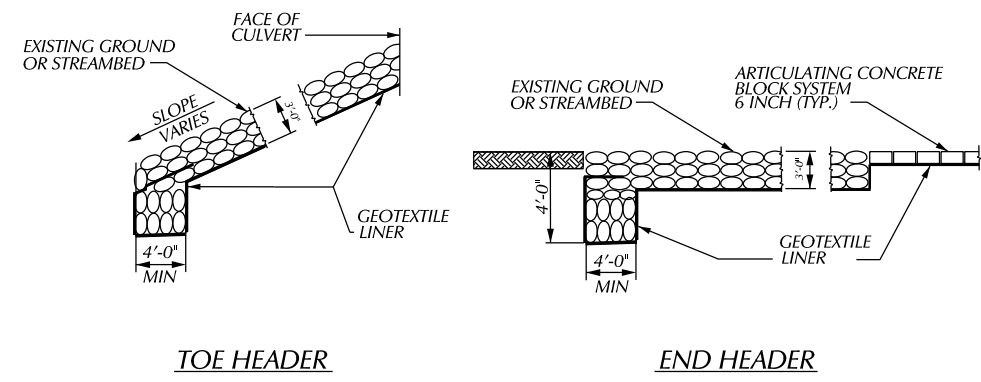
WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

EXISTING PLAN

SHEET 31 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018



CULVERT SECTION

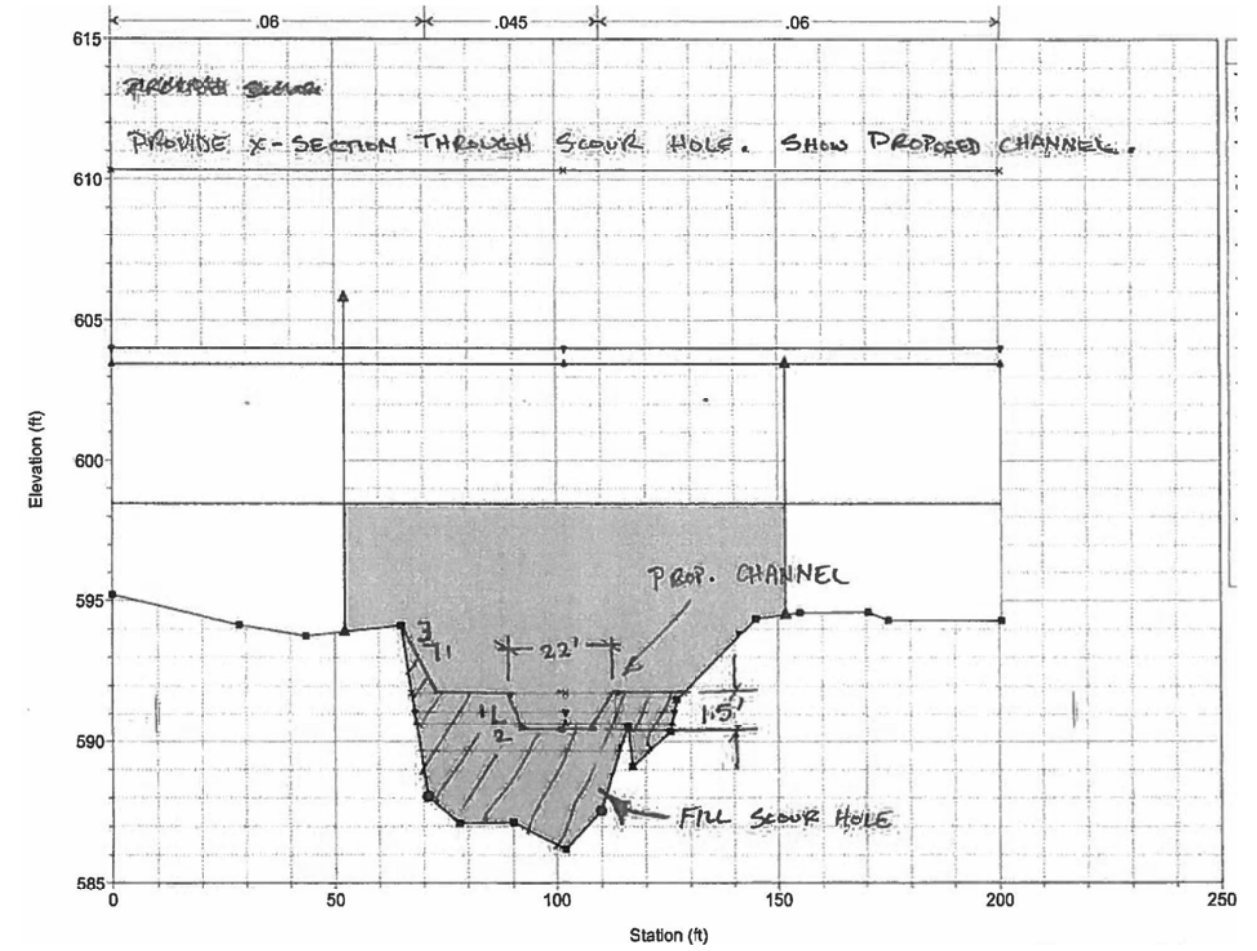


RIPRAP HEADER DETAILS

RIPRAP SHALL BE BURIED BELOW TOP OF EXISTING SLOPE

NOTES:

- * - BACKFILL FRONT ABUT A & B : 50 CYD (EA)
- * - BACKFILL BACK ABUT A & B : 368 CYD (EA)
- SCOUR FILL: 700 CYD
- BACKFILL & SCOUR FILL INCLUDED IN PAY ITEM "BACKFILL, STRUCTURE, CIP."



CROSS-SECTION THROUGH SCOUR HOLE

(DOWNSTREAM)

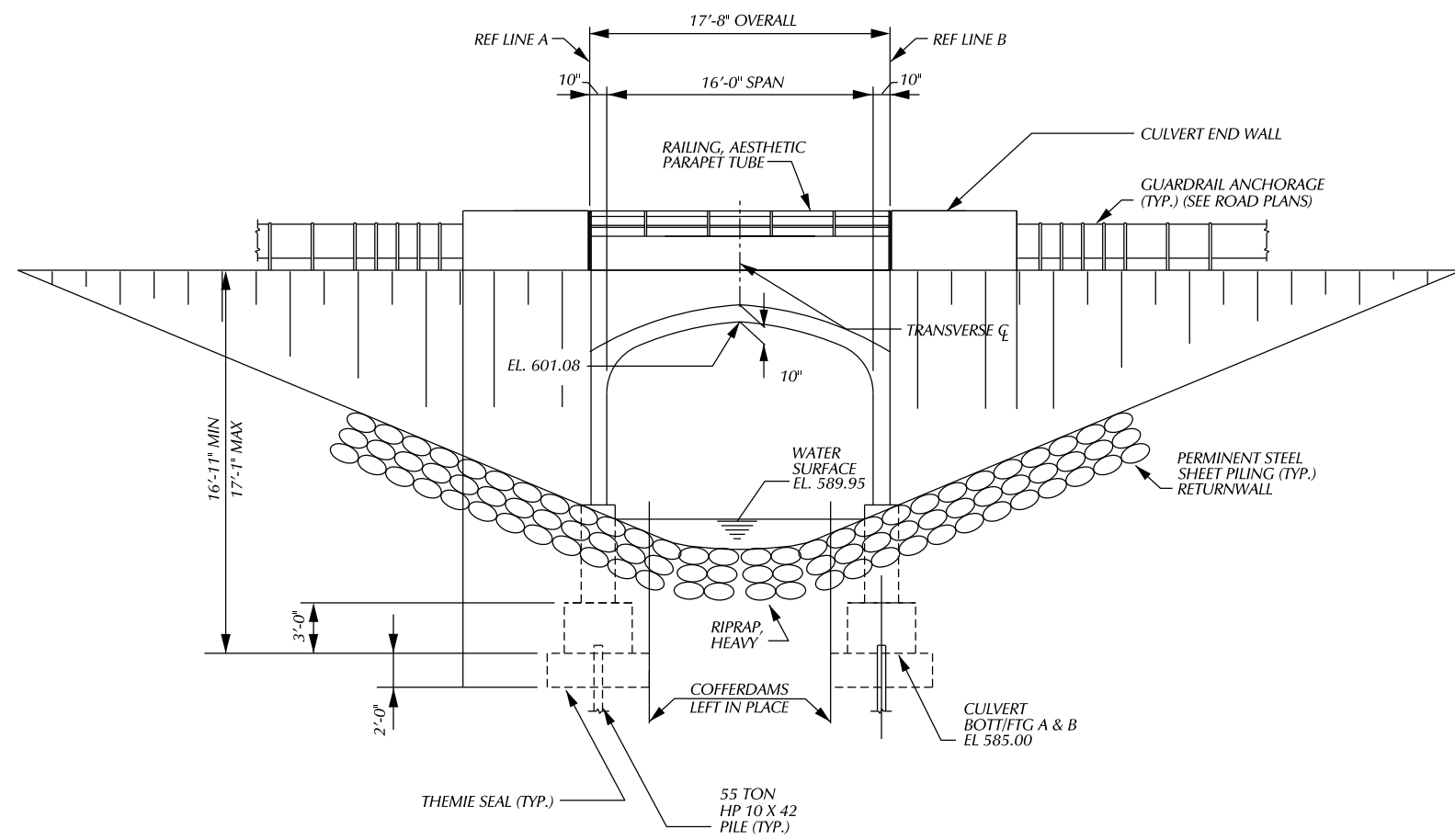
DESCRIPTION	DATE	BY	CHECKED BY	APPROVED
PLAN				
GRADE				
ESTIMATE				
REVISIONS				

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAU OF STREETS AND HIGHWAYS
FOR

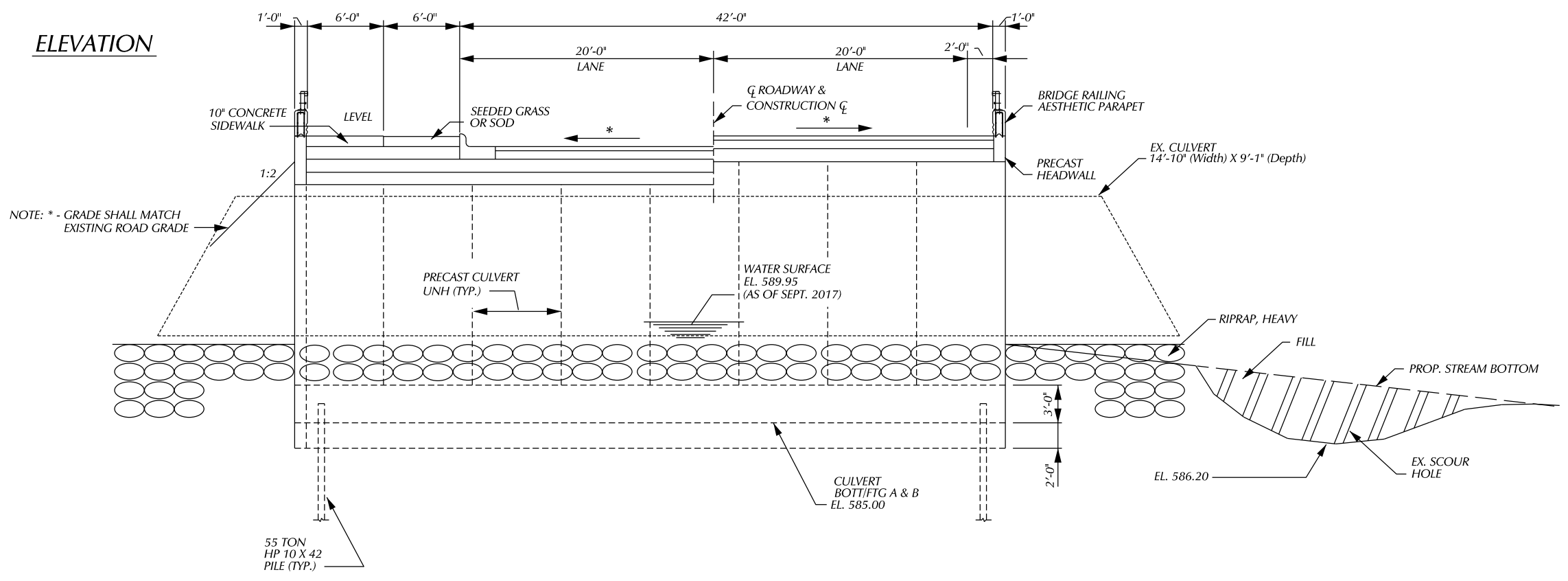
WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

GENERAL PLAN OF STRUCTURE

SHEET 29 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018



ELEVATION



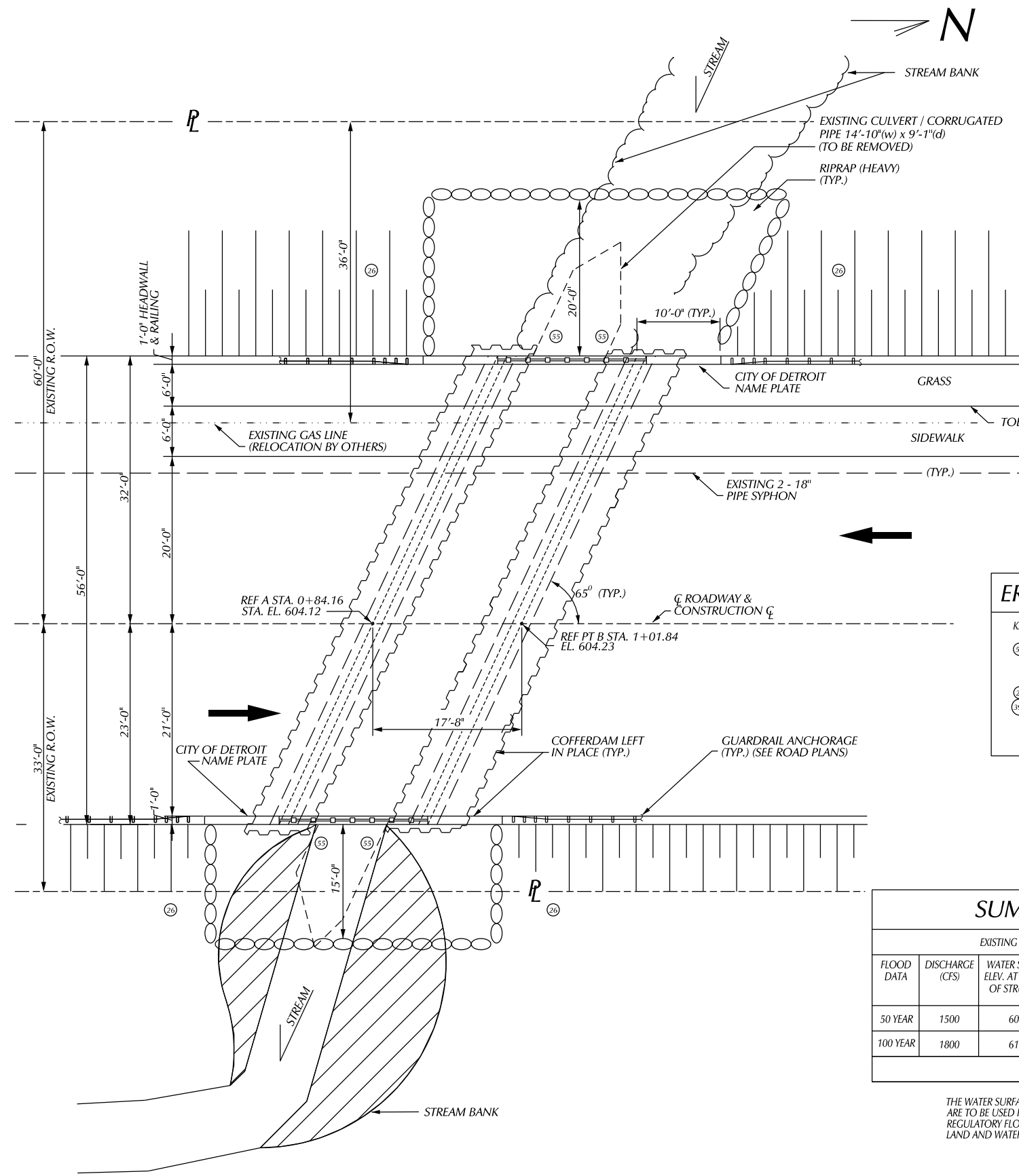
SECTION A - A

PLAN	BY	CHECKED BY	APPROVED:
GRADE			ENGINEER OF STRUCTS
ESTIMATE			
REVISIONS	DR	CHK	APV
	DATE		

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN
GENERAL PLAN OF STRUCTURE

SHEET 28 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018



MISCELLANEOUS QUANTITIES

1 LS	MONITORING, VIBRATIONS UTILITIES
1 LS	STRUCTURES, REM *
4 CYD	EXCAVATION, FDN **
2,270 CYD	BACKFILL, STRUCTURE, CIP
569 CYD	EMBANKMENT, CIP
610 CYd	NON HAZ CONTAMINATED MATERIAL HANDLING AND DISPOSAL, LM
400 TON	RIPRAP, HEAVY
1 LS	CONFFERDAMS, LEFT IN PLACE
150 SYD	CONC. SURFACE COATING

* STRUCTURE, REM INCLUDED: REMOVAL OF EXISTING CORRUGATED PIPE-CULVERT, REMOVAL EXISTING GUARDRAIL, EXCAVATING, FDN FOR CULVERT REMOVAL.
 ** THIS QUANTITY FOR EXCAVATION FOUNDATION FOR PROPER INSTALLATION OF PROPOSED COFFERDAMS.

NOTES:

- THE DESIGN OF THIS STRUCTURE IS BASED ON CURRENT AASHTO STANDARDS SPECIFICATIONS FOR HIGHWAY BRIDGES HS25 LOADING. THE LOAD FACTOR METHOD OF DESIGN WAS USED FOR THIS STRUCTURE.
- THE REMOVAL OF THE EXISTING STRUCTURE, SLOPEWALLS AND GABIONS IS INCLUDED IN THE PAY ITEM, "STRUCTURE, REM". SEE "STRUCTURES REMOVAL SEQUENCE" ON SHEET.
- REMOVAL OF THE EXISTING SUBSTRUCTURE UNITS SHALL BE ISOLATED FROM THE WATERWAY USING TEMPORARY STEEL SHEET PILING. TEMPORARY SHEETING FOR THE REMOVAL SHALL ADHERE TO THE SAME REQUIREMENTS FOR CONSTRUCTION AND DE-WATERING AS THE COFFERDAM. TEMPORARY SHEETING SHALL BE CUT OFF 1'-0" BELOW FINISH GRADE AND SHALL NOT INTERFERE WITH PROPOSED CONSTRUCTION. ALL COST ASSOCIATED WITH THE TEMPORARY SHEETING IS INCLUDING IN THE REMOVAL ITEMS.
- DURING WORK ON THE EXISTING AND PROPOSED RETAINING WALLS CASE SHALL BE TAKEN TO PREVENT ANY MATERIAL FROM ENTERING THE WATERWAY. THE CONTRACTOR SHALL PROPOSED A SYSTEM FOR PROTECTION OF THE WATERWAY & SUBMIT IT TO THE ENGINEER FOR APPROVAL. PAID FOR AS "SEDIMENTATION CONTROL". SEE SPECIAL PROVISION.
- PAYMENT FOR FALSE DECKING SHALL BE BASED ON THE AREA OF THE EXISTING ARCH BARREL OVER THE WATERWAY REGARDLESS OF THE SIZE OF THE BARGE OR PLATFORM USED. THE CONTRACTOR SHALL TAKE CARE NOT TO ALLOW THE EXISTING EARTH FILL TO FALL INTO THE WATERWAY.
- GEOTEXTILE LINER SHALL BE PLACED ON ALL SLOPES PRIOR TO PLACING RIPRAP. PAYMENT FOR GEOTEXTILE LINER SHALL BE INCLUDED IN THE PAYMENT FOR "RIPRAP, HEAVY".
- THE EXISTING STRUCTURE PROVIDES A WATERWAY AREA OF 91 SQUARE FEET. TO UNDERCLEARANCE ELEVATION 592.15.
- WITHOUT THE PREVENTIVE MEASURES SHOWN ON THESE PLANS, THERE IS A POSSIBILITY THAT STREAM BED SCOUR MAY OCCUR. THE ESTIMATED TOTAL SCOUR DEPTH IS CALCULATED TO BE 12.6 AT ABUTMENT A AND 12.6 AT ABUTMENT B. THESE DEPTHS ARE BASED ON A 100 YEAR RUNOFF EVENT.
- THE DRAINAGE AREA CONTRIBUTORY TO THIS CROSSING IS ___ SQUARE MILES.
- BROKEN CONCRETE SHALL NOT BE USED AS RIPRAP.
- THE TREMIE SEAL DESIGN WAS BASED ON A WATER SURFACE AT EL. 580.00.
- THE WIDTH OF THE TREMIE UNDER THE STRUCTURE MAY NOT BE INCREASED EXCEPT IN THE SOUTHWEST QUADRANT IN THE VICINITY OF THE EXISTING AND PROPOSED SANITARY SEWER.
- THE USE OF VIBRATORY HAMMERS FOR INSTALLATION COFFERDAM SHALL NOT BE ALLOWED.
- DEWATERING OF THE COFFERDAM IS TO BE MADE THRU FILTER BAGS UNTIL COMPLETION OF THE TREMIE SEAL. ALL COST ASSOCIATED WITH DEWATERING ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- COFFERDAMS IN STREAM SHALL BE CUT OFF AT ELEVATION 585.2 OR A MINIMUM OF 1'-0" BELOW THE STREAM BOTTOM OR 1'-0" BELOW GRADE. WORK IS INCLUDED IN THE BID ITEM, "COFFERDAMS, LEFT IN PLACE".
- CONCRETE SURFACE COATING IS TO BE APPLIED TO BOTH SIDES OF THE RAILING, THE HEADRAIL FACIA, THE CULVERT AND PEDESTAL WALL END FACES, THE TOP AND EXPOSED SIDE OF THE WINGWALL, RETURNWALLS AND THE RETAINING WALL. COATING SHALL EXTEND 6 INCHES MINIMUM BELOW FINISHED GRADE.
- ALL EXCAVATION ON THE PROJECT SHALL BE CONSIDERED NONHAZARDOUS CONTAMINATED. STORAGE AREA FOR THE MATERIAL ON SITE MAY BE LIMITED.

EROSION AND SEDIMENTATION CONTROL

KEY	QUANTITY	PAY ITEM
53	4 EA	EROSION CONTROL, FILTER BAG
	500 FT	TURBIDITY CURTAIN (SHALLOW)
20	100 FT	EROSION CONTROL, SILT FENCE
19A	4 EA	EROSION CONTROL, INLET PROTECTION, FABRIC DROP
	1 LS	SEDIMENTATION CONTROL

SUMMARY OF HYDRAULIC ANALYSIS

FLOOD DATA	EXISTING			PROPOSED			
	DISCHARGE (CFS)	WATER SURFACE ELEV. AT U/S FACE OF STRUCTURE	VELOCITY AT D/S FACE (FPS)	WATER SURFACE ELEV. AT U/S FACE OF STRUCTURE	VELOCITY AT D/S FACE (FPS)	WATERWAY AREA (SFT) AT D/S FACE	CHANGE IN WS EL. 3 U/S OF PROPOSED STRUCTURE
50 YEAR	1500	609.2	13.3	606	9.9	1321	3.2
100 YEAR	1800	610.2	13.8	607.8	11.9	1842	1.9

MAXIMUM BRIDGE AREA BELOW LOW CHORD IS 151 SQUARE FEET

THE WATER SURFACE AND/OR ENERGY GRADE ELEVATIONS SHOWN ON THE ABOVE HYDRAULIC TABLE ARE TO BE USED FOR COMPARISON PURPOSES ONLY AND ARE NOT TO BE USED FOR ESTABLISHING A REGULATORY FLOORPLAIN. THE ELEVATIONS MAY NOT BE USED PROVIDED THEY ARE VERIFIED WITH THE LAND AND WATER MANAGEMENT DIVISION, MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY.

PLAN

DESCRIPTION	DR	CK	AP	PR	DATE
REVISIONS					

CITY OF DETROIT
 CITY ENGINEERING DIVISION - D.P.W.
 BUREAUS OF STREETS AND HIGHWAYS
 FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

GENERAL PLAN OF STRUCTURE

SHEET 27 OF 39 SHEETS
 CONTRACT NO. PW-6987
 ASSIGNMENT NO.
 DATE 01/24/2018

BENCHMARKS

BM#1 ELEV = 616.82
CHISEL MARK 26.4 FEET
RIGHT OF STA 4+81

BM#2 ELEV = 605.44
CHISEL MARK SW COR.
W. PARKWAY & MEADOWPARK

WITNESSES

WITNESSES TO CP#2 EAST - W. PARKWAY, NORTH HAZELTON
55' FRONT LIGHTPOLE NORTH

CP#86 SW COR. W. PARKWAY & MEADOWPARK
5" N. FIRE HYDRANT
7" W. CURB LINE
30' S. SOUTH CURB LINE OF MEADOWPARK

REF PT COORDINATES

REF PT A X=5000.00
Y=5092.93

REF PT B X=5040.57
Y=4555.99

NOTES:

THE WORK COVERED BY THESE PLANS INCLUDED REMOVAL OF THE EXISTING METAL CORRUGATED STEEL CULVERT, CONSTRUCTION OF THE PROPOSED CULVERT & RETAINING WALL, PLACING RIPRAP TO THE LIMITS SHOWN, RE-WORK APPROACHES AND MAINTAINING TRAFFIC. ALL OTHER WORK NOT INCLUDED IN THESE PLANS THAT AREN'T PART OF THE PACKAGE.

THE STATIONING SHOWN IS UNIQUE TO THIS PROJECT AND CANNOT BE RELATED TO ANY OTHER EXISTING STATIONING.

W. PARKWAY TRAFFIC IS TO BE DETOURED OVER OTHER EXISTING ROADS.

THE CONTRACTOR SHALL LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.

WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.

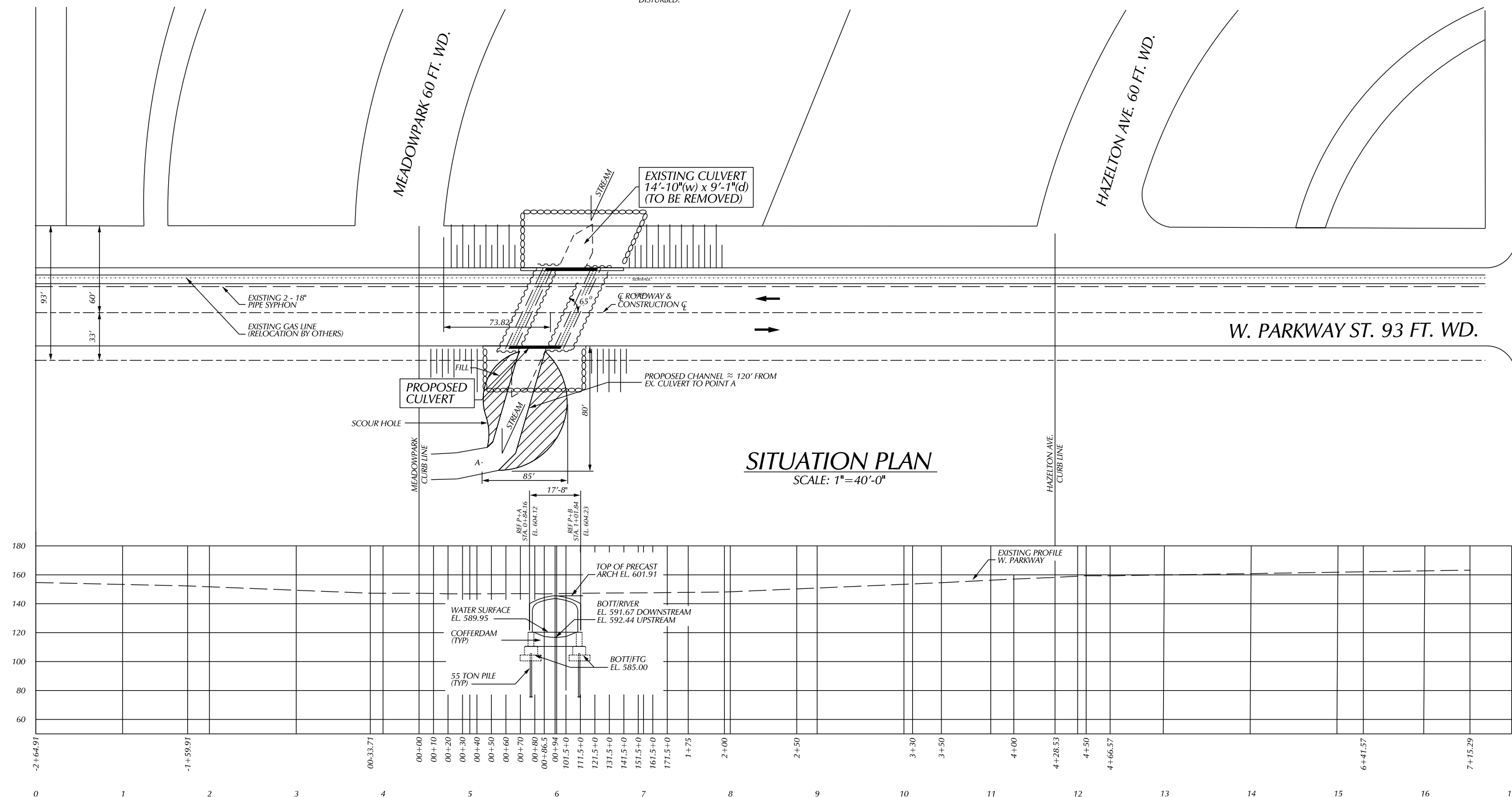
MEASURES SHALL BE TAKEN TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURES, IF DEBRIS FALLS INTO THE WATERWAY, IT SHALL BE REMOVED WITHIN 24 HOURS. SINCE DISTURBANCE OF THE WATERWAY BOTTOM MAY BE AS HARMFUL AS THE DEBRIS ITSELF, THE PREVENTIVE MEASURES MUST BE EFFECTIVE.

IMMEDIATELY AFTER THE CONSTRUCTION OF A CULVERT SLOPE IS COMPLETED, SLOPE PROTECTION AND SEEDING OR SODDING SHALL BE PLACED ON THE ADJACENT EMBANKMENT SLOPES.

BENCH MARKS ELEV

PLANS REFER TO THE NAVD88 DATUM.

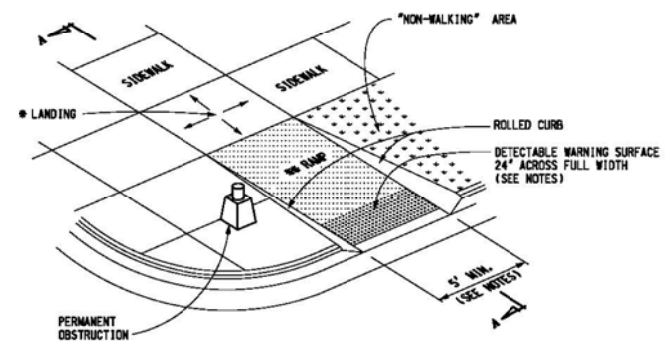
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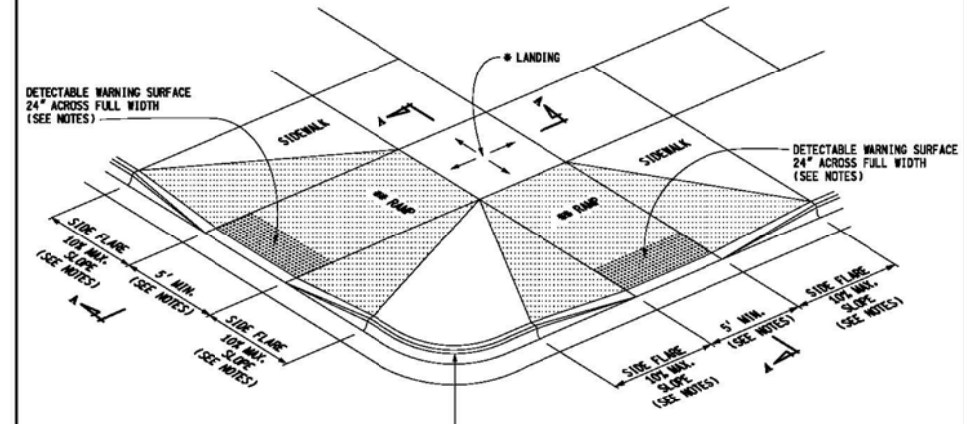
W. CHICAGO AVE. 86 FT. WD.

BY: _____ CHECKED BY: _____ APPROVED: _____		CITY OF DETROIT CITY ENGINEERING DIVISION - D.P.W. BUREAU OF STREETS AND HIGHWAYS FOR	WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN GENERAL PLAN OF SITE	SHEET 2 OF 39 SHEETS CONTRACT NO. PW-6987 ASSIGNMENT NO. _____ DATE 01/24/2018
PLAN GRADE ESTIMATE FINAL	REVISIONS DR CKD APV DATE FINAL *****			

• MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.
 •• MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



SIDEWALK RAMP TYPE R
(ROLLED SIDES)

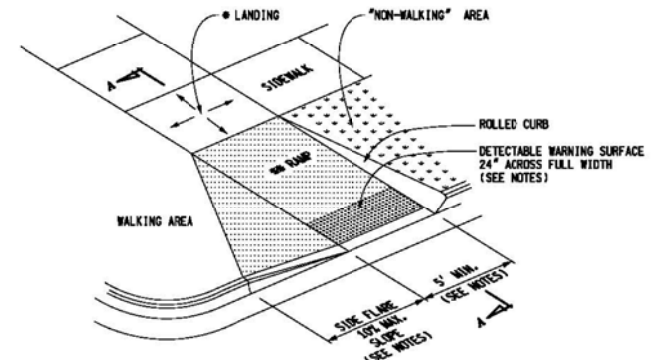


SIDEWALK RAMP TYPE F
(FLARED SIDES, TWO RAMPS SHOWN)

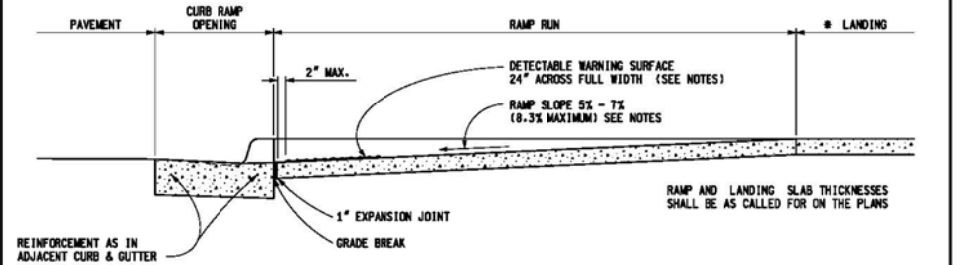
	DEPARTMENT DIRECTOR Kirk T. Stouffe	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR
	APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES	SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT	F.H.W.A. APPROVAL
		12-11-2017 PLAN DATE

R-28-J SHEET 1 OF 7

• MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. LANDING MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.
 •• MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.

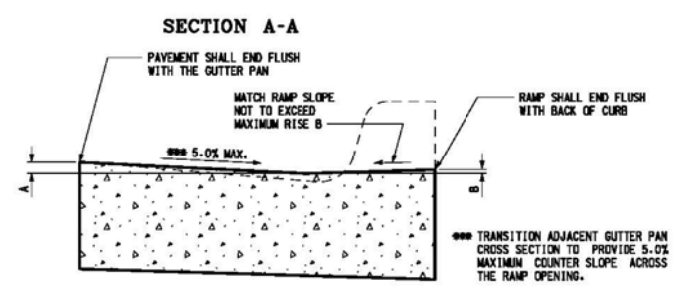


SIDEWALK RAMP TYPE RF
(ROLLED / FLARED SIDES)



CURB TYPE	MAXIMUM RISE (INCHES)	
	A	B
B1	3/4	1
B2	3/4	1
B3	3/4	1
D1	3/4	1
D2	3/4	1
D3	3/4	1
C1	1/2	1/2
C2	1/2	1/2
C3	3/4	1/2
C4	3/4	1/2
C5	1	1/2
C6	1	1/2
F1	1/2	1/2
F2	1/2	1/2
F3	3/4	1/2
F4	3/4	1/2
F5	1	1/2
F6	1	1/2

FOR CURB TYPES SEE STANDARD PLAN R-30-SERIES



SECTION THROUGH CURB RAMP OPENING
(TYPICAL ALL RAMP TYPES)

	DEPARTMENT DIRECTOR Kirk T. Stouffe	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR
	APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES	SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT	F.H.W.A. APPROVAL
		12-11-2017 PLAN DATE

R-28-J SHEET 2 OF 7

AS-LET PLAN REVISIONS					
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE

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HORZ. (FT.)

DATE: _____ CS: _____

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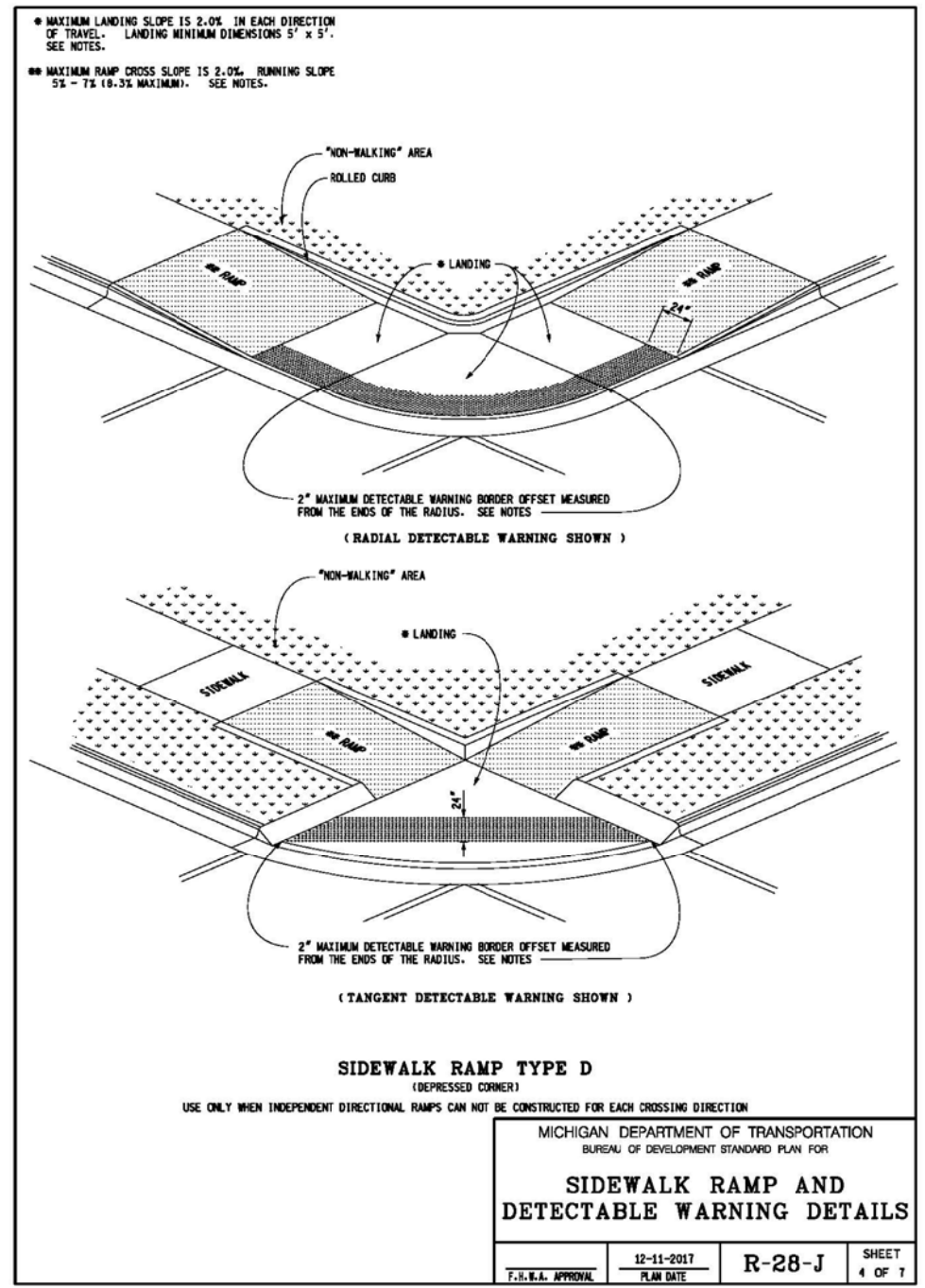
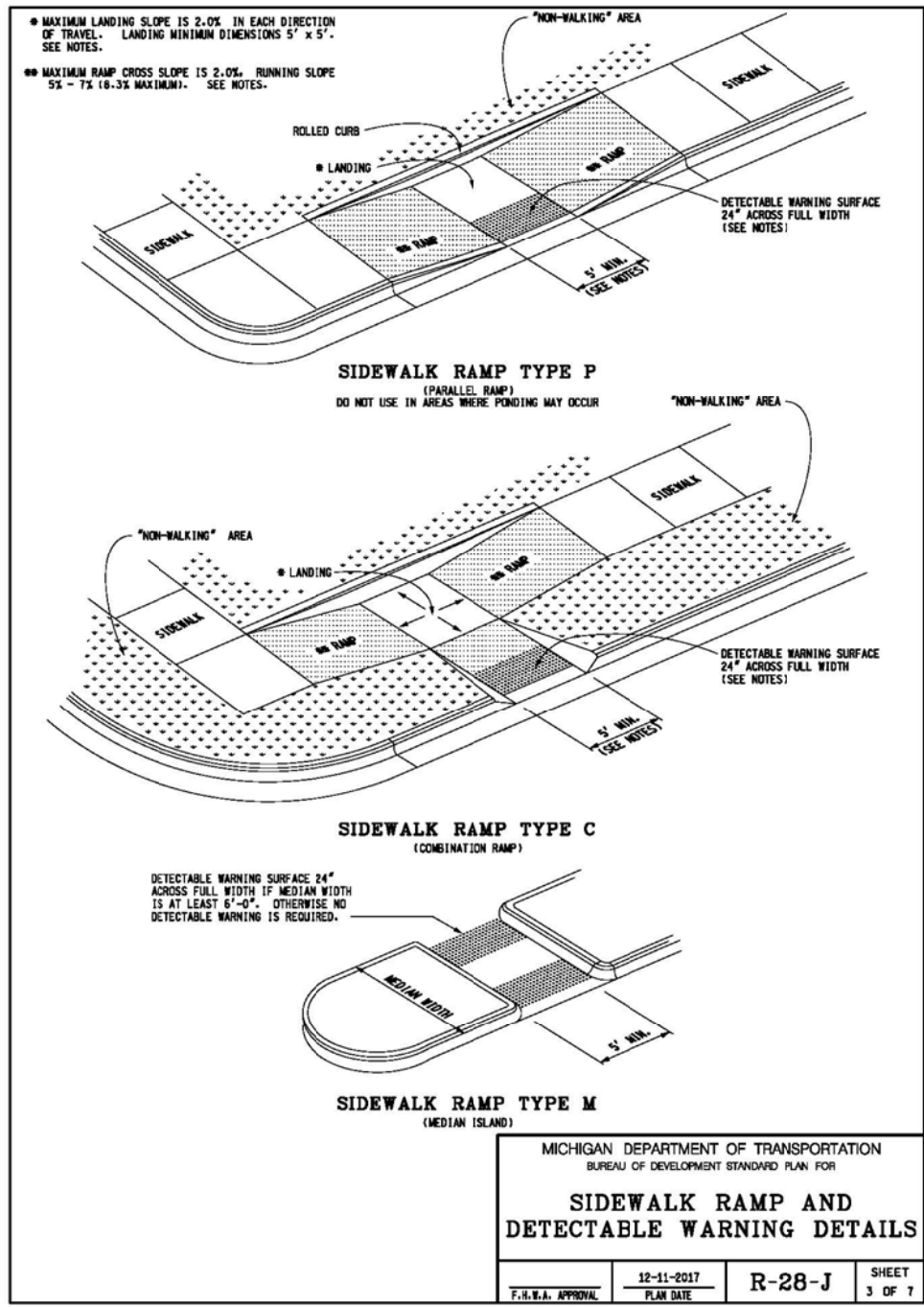
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CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET	6	OF	39	SHEETS
CONTRACT NO.	PW-6987			
ASSIGNMENT NO.				
DATE	01/24/2018			



AS-LET PLAN REVISIONS				MDOT Michigan Department of Transportation		VERT. (FT)		DATE:		CS:		DRAWING SHEET	
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PLAN					
GRADE					
ESTIMATE					
FINAL					

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET 7 OF 39 SHEETS
CONTRACT NO. PW-6987
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DATE 01/24/2018

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

F.H.V.A. APPROVAL	PLAN DATE	SHEET OF
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DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMP ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMP SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMP SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT PRACTICABLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4' x 4'.

CURB RAMP WITH A RUNNING SLOPE ≤5% DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0% FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMP TO EXCEED 15 FEET IN LENGTH NOT INCLUDING LANDINGS OR TRANSITIONS.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMP. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN 1/2". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS, WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**SIDEWALK RAMP AND
DETECTABLE WARNING DETAILS**

F.H.V.A. APPROVAL	12-11-2017 PLAN DATE	R-28-J SHEET 7 OF 7
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AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: _____

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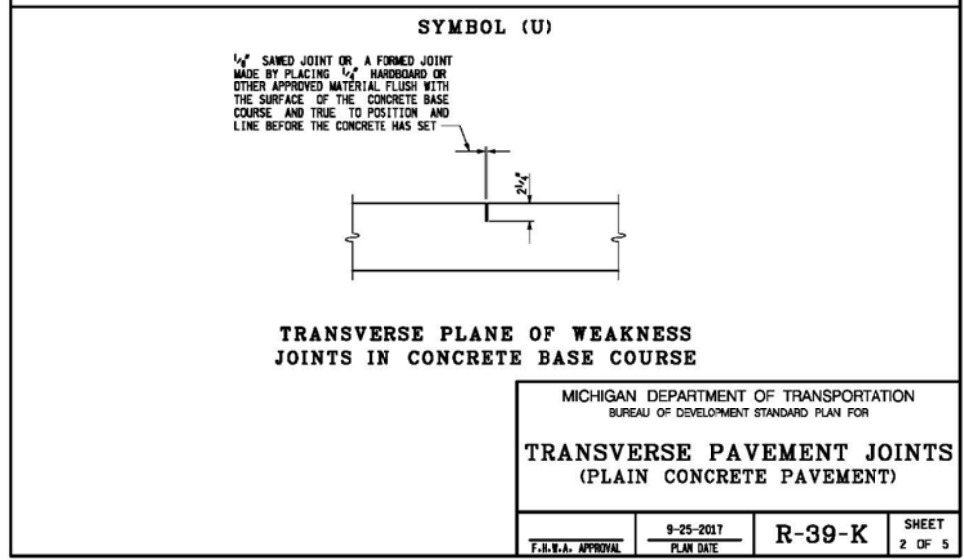
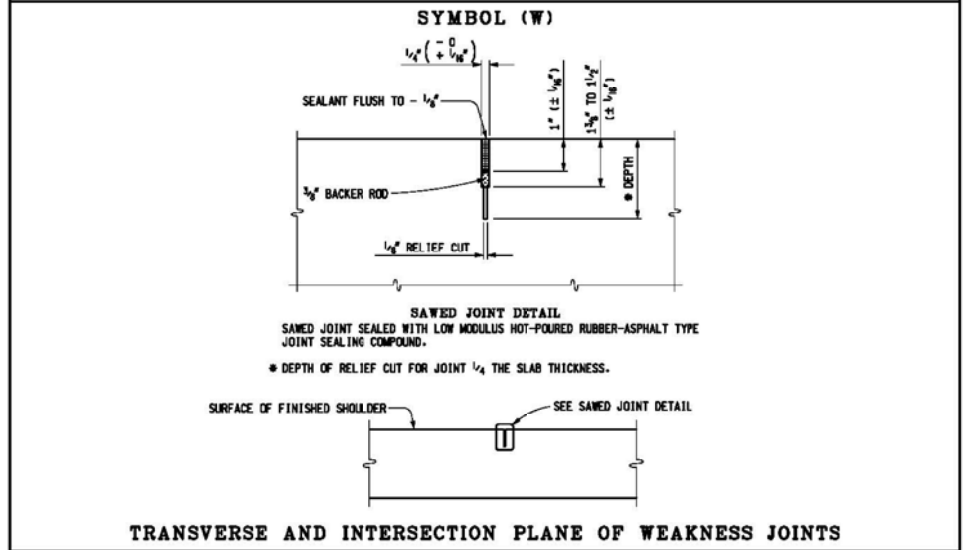
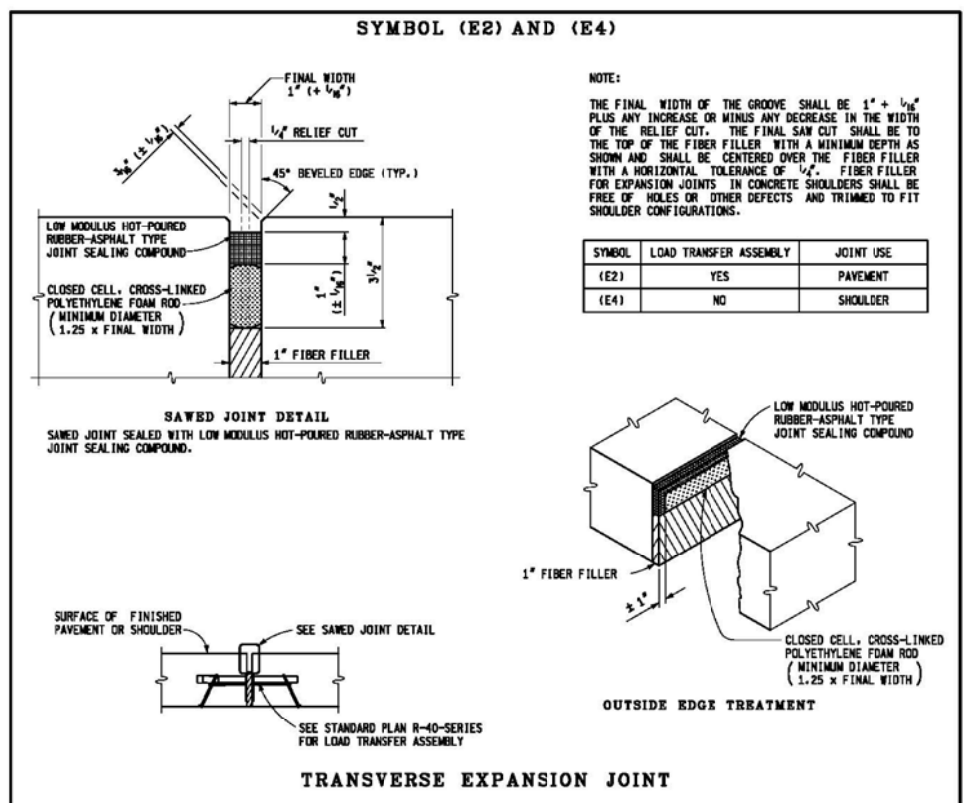
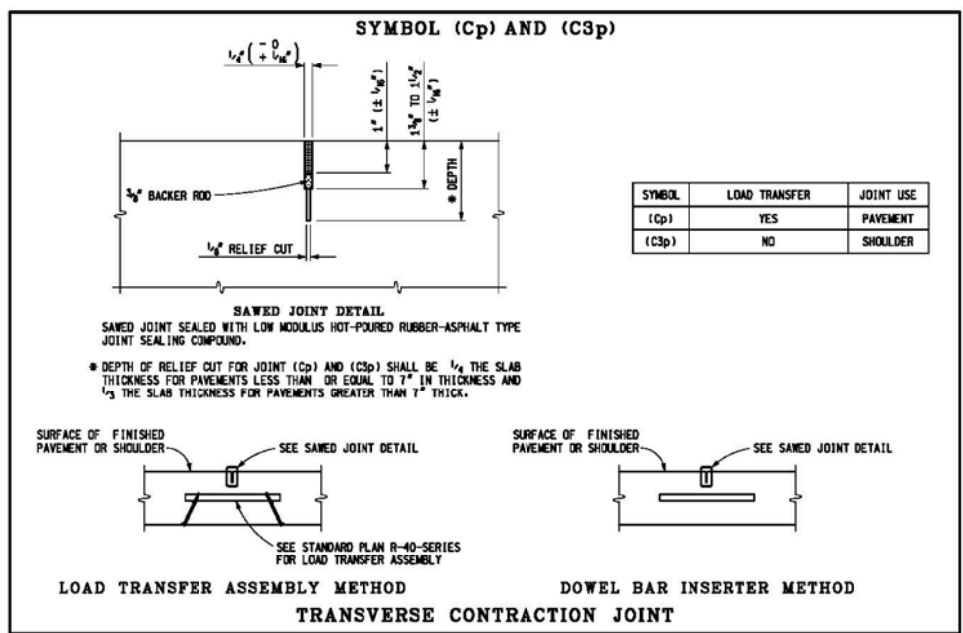
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CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET **9** OF **39** SHEETS
CONTRACT NO. **PW-6987**
ASSIGNMENT NO. _____
DATE **01/24/2018**



AMDOT Michigan Department of Transportation

DEPARTMENT DIRECTOR
Mark T. Staudts

APPROVED BY: _____ ENGINEER OF DELIVERY

APPROVED BY: _____ ENGINEER OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
TRANSVERSE PAVEMENT JOINTS (PLAIN CONCRETE PAVEMENT)

F.I.R.A. APPROVAL	9-25-2017 PLAN DATE	R-39-K	SHEET 1 OF 5
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MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
TRANSVERSE PAVEMENT JOINTS (PLAIN CONCRETE PAVEMENT)

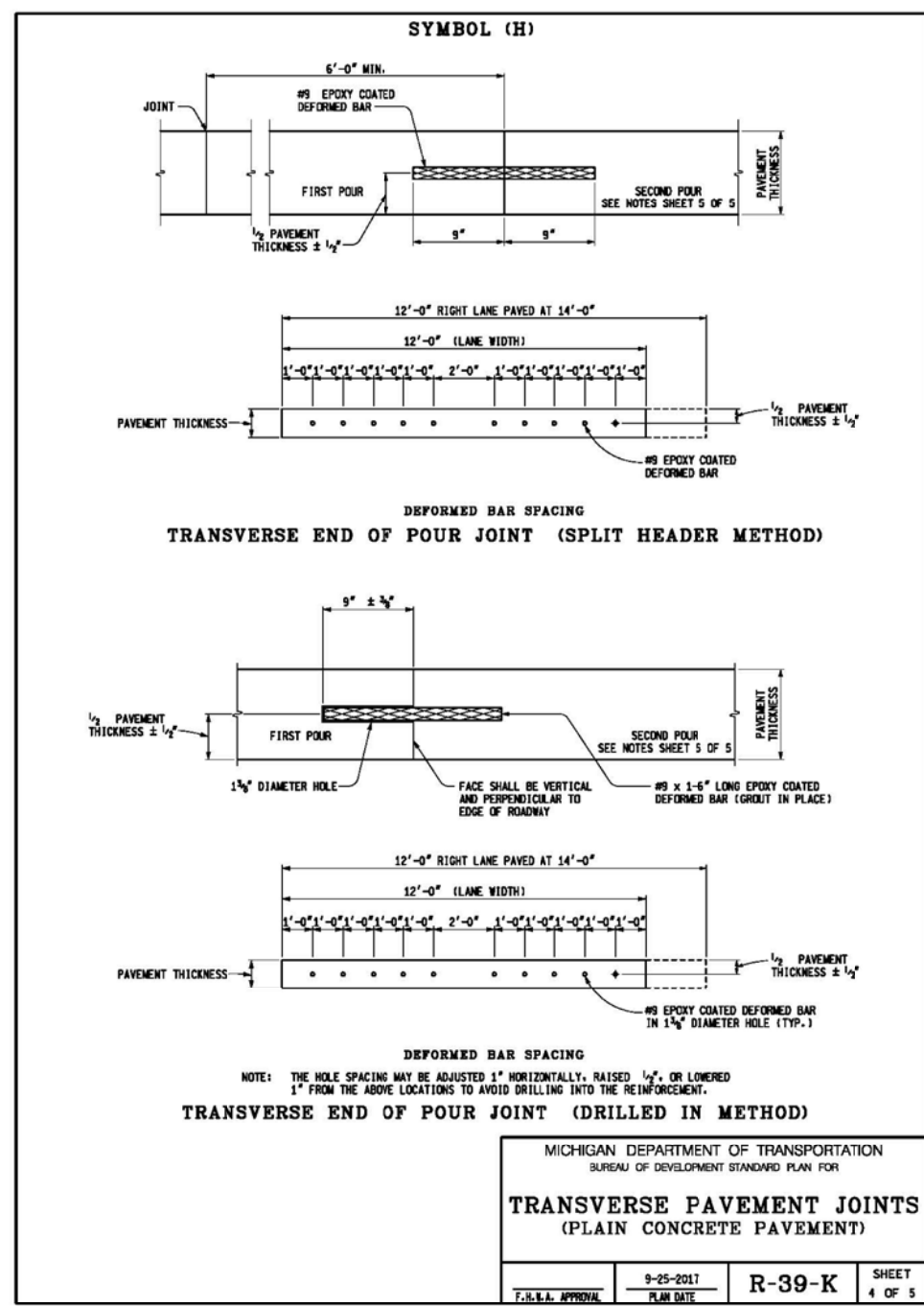
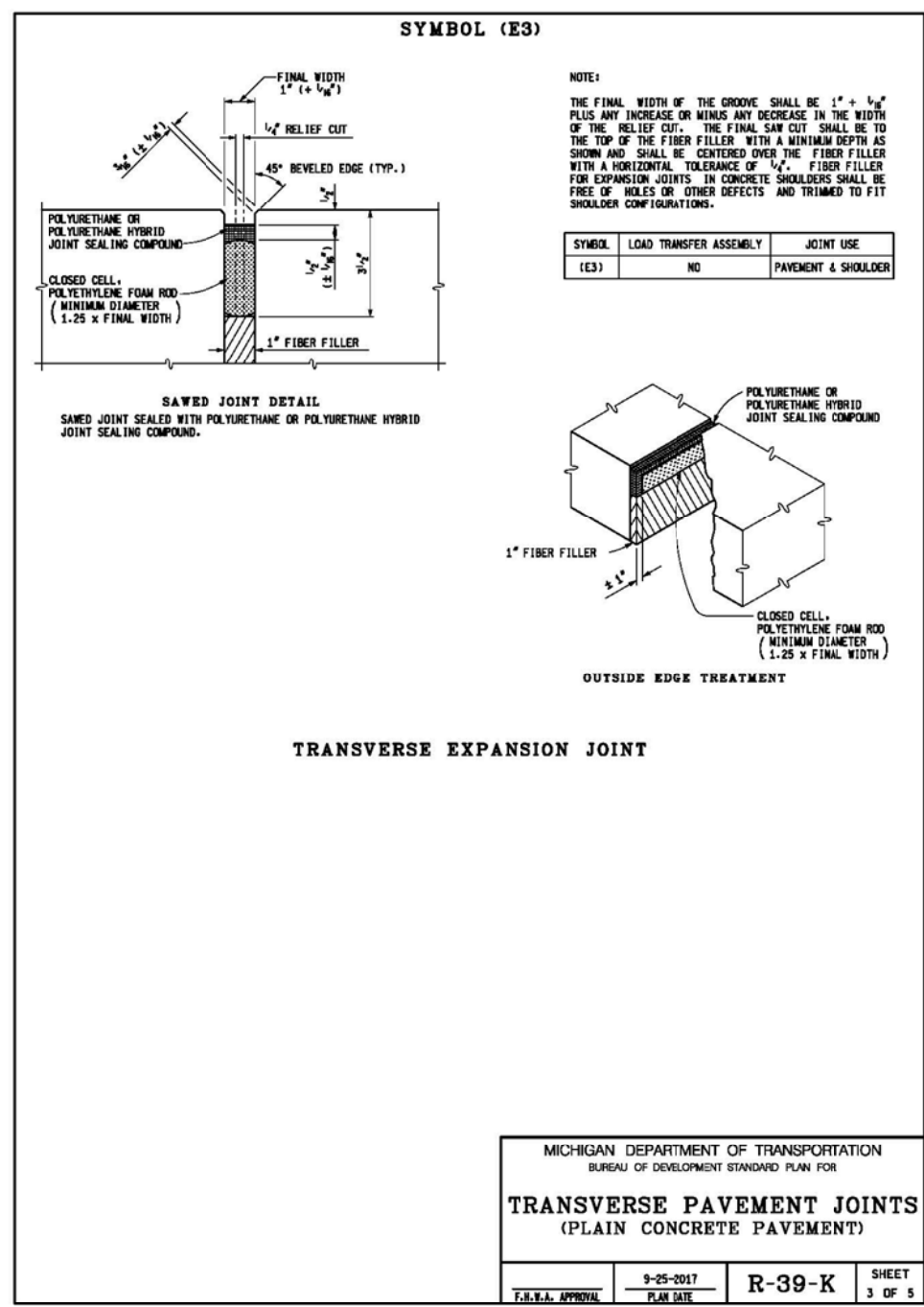
F.I.R.A. APPROVAL	9-25-2017 PLAN DATE	R-39-K	SHEET 2 OF 5
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AS-LET PLAN REVISIONS						AMDOT Michigan Department of Transportation	0 VERT. (FT) 0 HORZ. (FT)	DATE: DESIGN UNIT: TSC:	CS: JN:	DRAWING SHEET
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CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET	11	OF	39	SHEETS
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ASSIGNMENT NO.				
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MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

F.H.W.A. APPROVAL	PLAN DATE	SHEET OF
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SYMBOL (H)

TRANSVERSE END OF POUR JOINT (PLASTIC TUBE METHOD)

NOTES:

LOAD TRANSFER ASSEMBLIES ARE DETAILED ON THE CURRENT STANDARD PLAN R-40-SERIES.

TRANSVERSE JOINTS SHALL BE SPACED ACCORDING TO THE CURRENT STANDARD PLAN R-43-SERIES.

A TRANSVERSE END OF POUR JOINT (DRILLED IN METHOD) SYMBOL (H), SHALL BE CONSTRUCTED WHEN IT IS ANTICIPATED THAT THE SECOND POUR WILL BE DELAYED 7 DAYS OR LONGER.

A TRANSVERSE END OF POUR JOINT (SPLIT HEADER METHOD) OR (PLASTIC TUBE METHOD) SHALL BE USED AT THE END OF THE DAY'S POUR OR WHEN THERE IS AN UNAVOIDABLE INTERRUPTION OF THE WORK FOR MORE THAN ONE-HALF HOUR AND LESS THAN 7 DAYS. THE JOINT SHALL BE CONSTRUCTED ACCORDING TO TRANSVERSE END OF POUR JOINT (SPLIT HEADER METHOD) OR (PLASTIC TUBE METHOD), SYMBOL (H).

THE EXPANSION JOINT MATERIAL IN THE SHOULDERS SHALL BE SUPPORTED BY ONE OF THE FOLLOWING METHODS:

1. A CONTINUOUS SUPPORT WIRE, AS SPECIFIED FOR EXPANSION LOAD TRANSFERS ASSEMBLIES, AS DETAILED ON STANDARD PLAN R-40-SERIES, SHALL BE USED ON EACH SIDE OF EXPANSION MATERIAL. THIS WIRE SHALL BE EQUIPPED WITH STAKES AND STAKE POCKETS TO RIGIDLY HOLD THE EXPANSION MATERIAL IN PLACE DURING CONCRETE PLACEMENT. STAKES SHALL BE AS SPECIFIED ON STANDARD PLAN R-40-SERIES, SPACED NOT MORE THAN 2'-0" APART.
2. "U" OR "J" SHAPE STAPLES OF W8 WIRE (0.315" NOMINAL DIAMETER) SHALL BE SPACED ON 2'-0" CENTERS, EACH SIDE OF THE EXPANSION MATERIAL. EACH VERTICAL LEG OF THE STAPLE SHALL BE AT LEAST 1'-3" LONG.
3. OTHER EQUIVALENT METHODS MAY BE USED WHEN APPROVED BY THE ENGINEER.

JOINTS SHALL NOT BE SEALED IN CONCRETE BASE COURSE.

WHEN CONCRETE SHOULDERS ARE CAST SEPARATELY FROM MAINLINE CONCRETE PAVEMENT, A KEYWAY MAY BE USED TO FACILITATE THE PLACING OF LAME TIES. WHEN A KEYWAY GROOVE IS USED, IT SHALL BE CONTINUOUS AND UNIFORM.

THE LOCATION OF TRANSVERSE JOINTS IN CONCRETE SHOULDERS SHALL MATCH THE LOCATION OF ADJACENT TRANSVERSE PAVEMENT JOINTS. CORRESPONDING TRANSVERSE CONCRETE SHOULDER AND PAVEMENT JOINTS SHALL BE (C3) SHOULDER WITH (C3) PAVEMENT, (E4) SHOULDER WITH (E2) PAVEMENT, AND (E3) BEING THE SAME IN BOTH SHOULDER AND PAVEMENT.

DEFORMED BARS FOR TRANSVERSE END OF POUR JOINTS (DRILLED IN METHOD) SHALL BE GROUTED INTO EXISTING PAVEMENT WITH A GROUT SELECTED FROM THE PREQUALIFIED MATERIALS LISTED IN THE DEPARTMENT'S "MATERIALS SOURCE GUIDE" UNDER ADHESIVE SYSTEMS FOR GROUTING DOBEL BARS AND TIE BARS FOR FULL-DEPTH PAVEMENT REPAIRS.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**TRANSVERSE PAVEMENT JOINTS
(PLAIN CONCRETE PAVEMENT)**

F.H.W.A. APPROVAL	9-25-2017 PLAN DATE	R-39-K SHEET 5 OF 5
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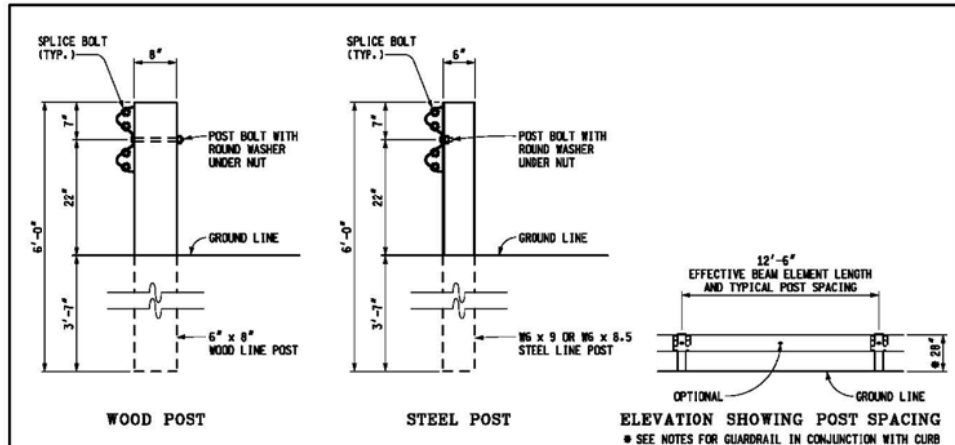
AS-LET PLAN REVISIONS				MDOT Michigan Department of Transportation		0 VERT. (FT) 0 HORZ. (FT)	DATE:	CS:	DRAWING SHEET	
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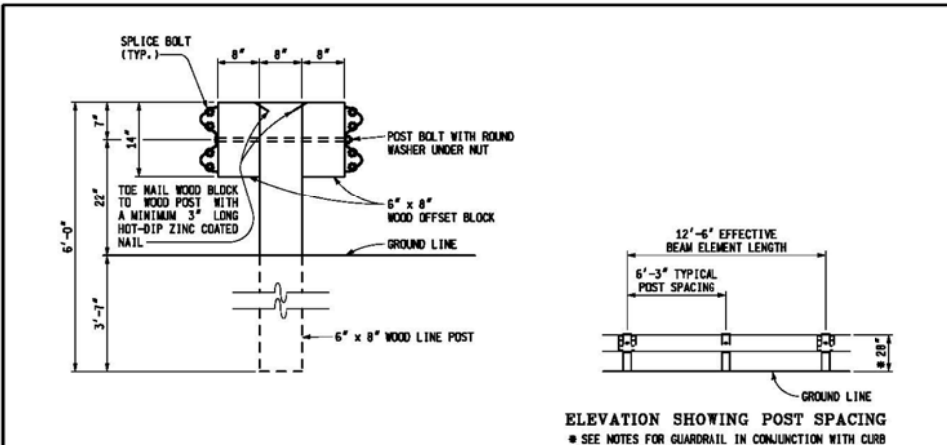
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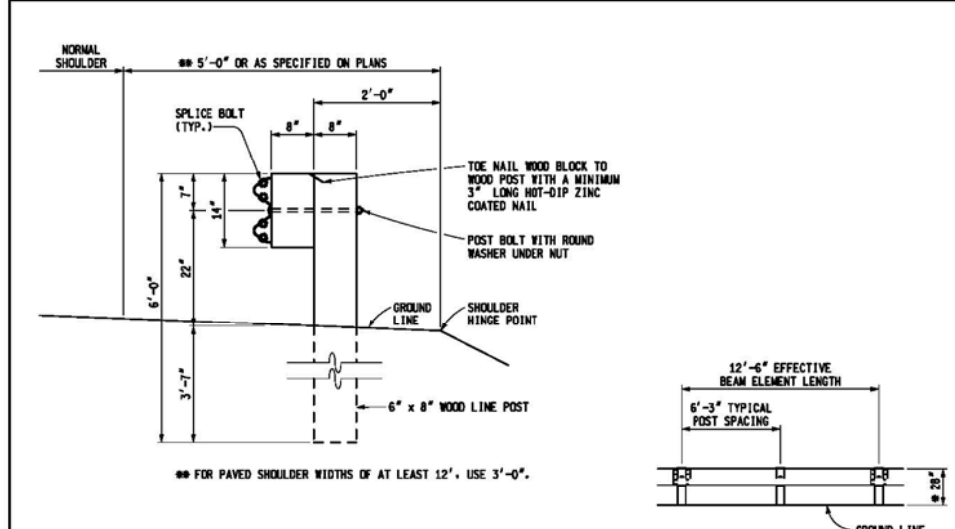
	BY	CHECKED BY	APPROVED:	CITY OF DETROIT CITY ENGINEERING DIVISION - D.P.W. BUREAUS OF STREETS AND HIGHWAYS FOR	WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN	ROAD - DETAILS	SHEET 12 of 39 SHEETS CONTRACT NO. PW-6987 ASSIGNMENT NO. DATE 01/24/2018
DESCRIPTION	DR	CK	APPROV	DATE			
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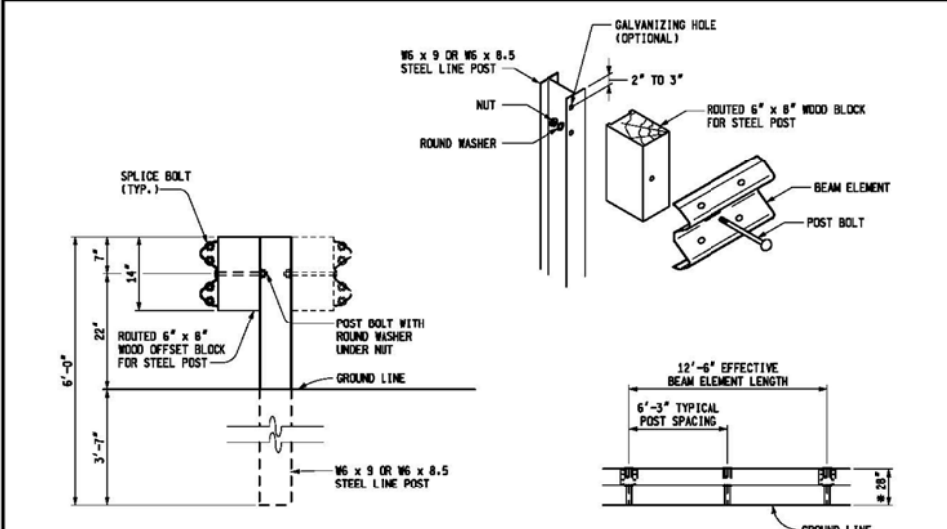
WOOD POST STEEL POST
ELEVATION SHOWING POST SPACING
* SEE NOTES FOR GUARDRAIL IN CONJUNCTION WITH CURB
OPTIONAL GROUND LINE
GUARDRAIL, TYPE A



ELEVATION SHOWING POST SPACING
* SEE NOTES FOR GUARDRAIL IN CONJUNCTION WITH CURB
GROUND LINE
GUARDRAIL, TYPE BD (WOOD POST)



FOR PAVED SHOULDER WIDTHS OF AT LEAST 12', USE 3'-0".
ELEVATION SHOWING POST SPACING
* SEE NOTES FOR GUARDRAIL IN CONJUNCTION WITH CURB
GROUND LINE
GUARDRAIL, TYPE B (WOOD POST)



ELEVATION SHOWING POST SPACING
* SEE NOTES FOR GUARDRAIL IN CONJUNCTION WITH CURB
GROUND LINE
GUARDRAIL, TYPE B (OR BD) (STEEL POST)

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DEPARTMENT DIRECTOR: KIM T. STAUDIG
APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES
PREPARED BY: DESIGN DIVISION
DRAWN BY: B.L.T.
CHECKED BY: M.K.P.
APPROVED BY: DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
GUARDRAIL, TYPES A, B, BD, T, TD, MGS-8, & MGS-8D
7-26-2017 PLAN DATE
R-60-J
SHEET 1 OF 17
T.H.V.A. APPROVAL

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
GUARDRAIL, TYPES A, B, BD, T, TD, MGS-8, & MGS-8D
7-26-2017 PLAN DATE
R-60-J
SHEET 2 OF 17
T.H.V.A. APPROVAL

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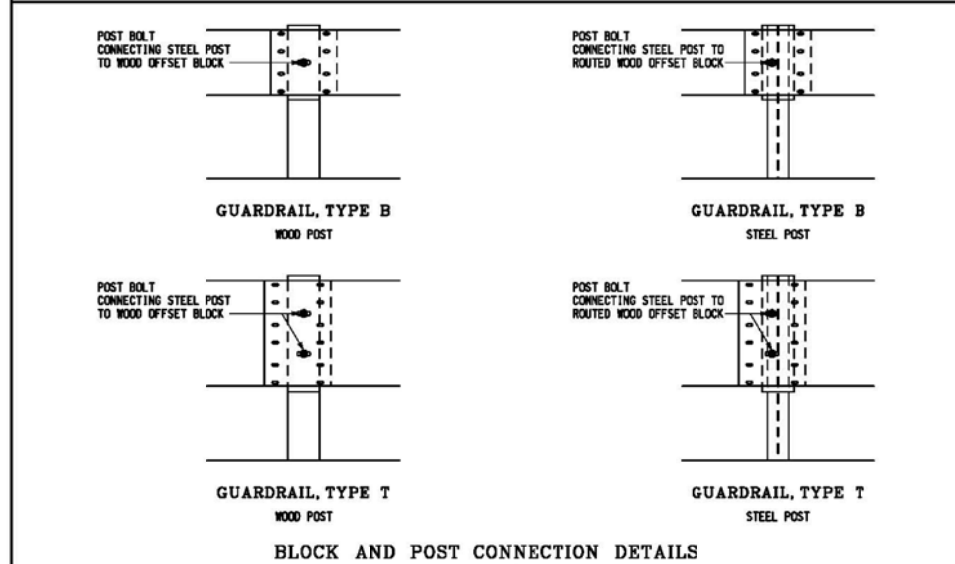
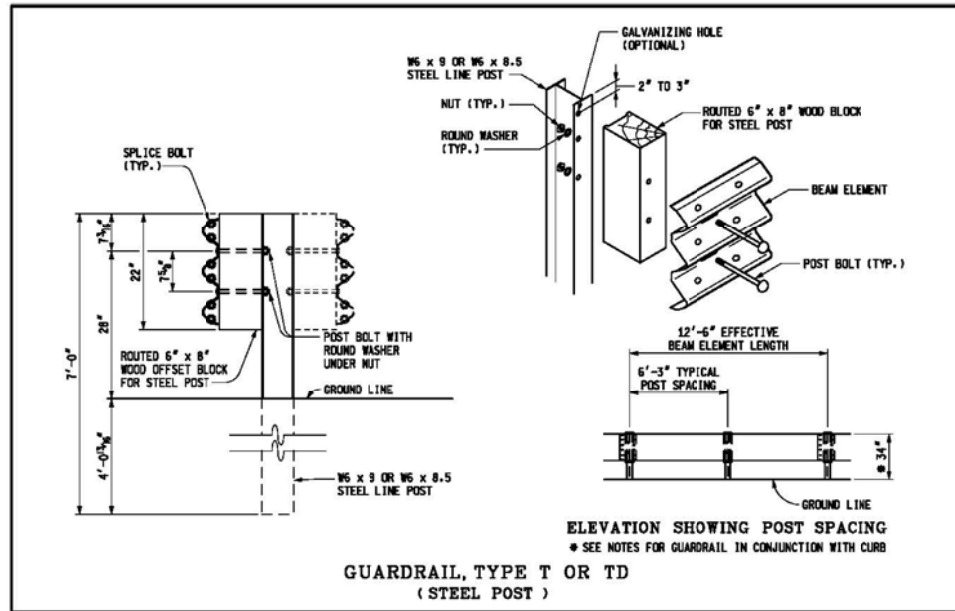
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CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

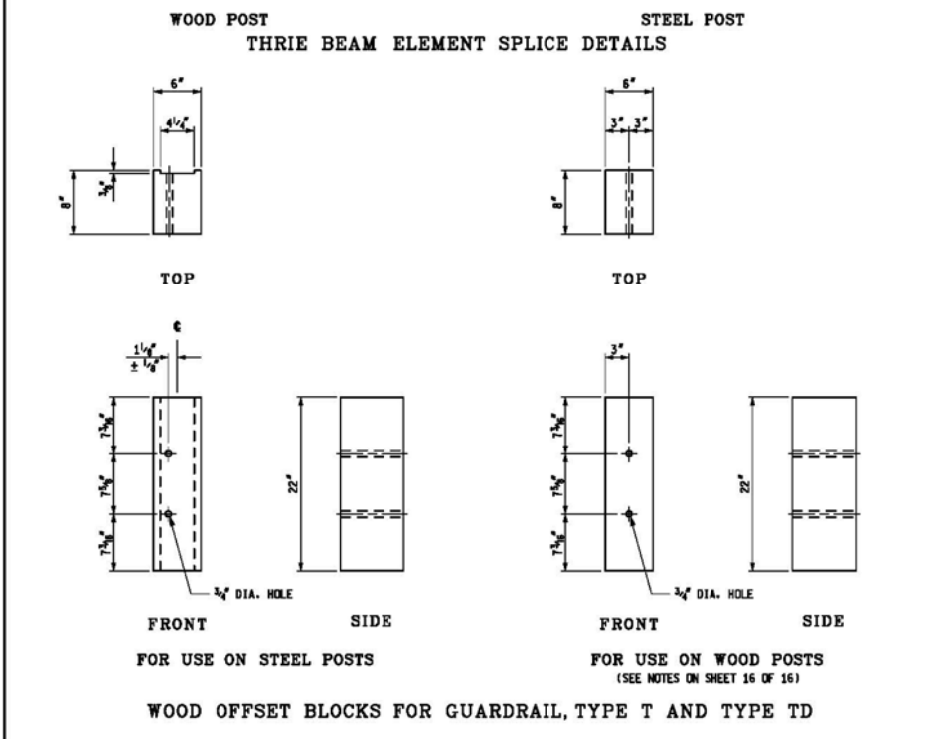
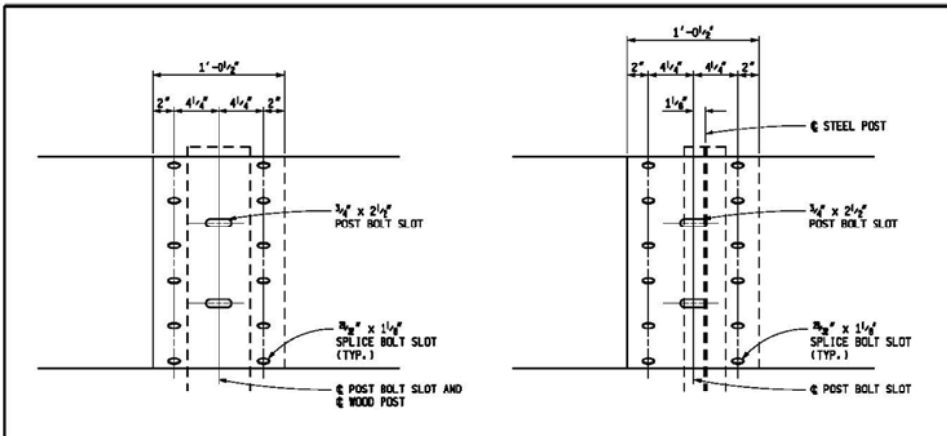
WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN
ROAD - DETAILS

SHEET 13 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018



MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
GUARDRAIL,
TYPES A, B, BD, T, TD,
MGS-8, & MGS-8D

F.H.W.A. APPROVAL: _____ 7-26-2017 PLAN DATE: _____ R-60-J SHEET 5 OF 17



MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
GUARDRAIL,
TYPES A, B, BD, T, TD,
MGS-8, & MGS-8D

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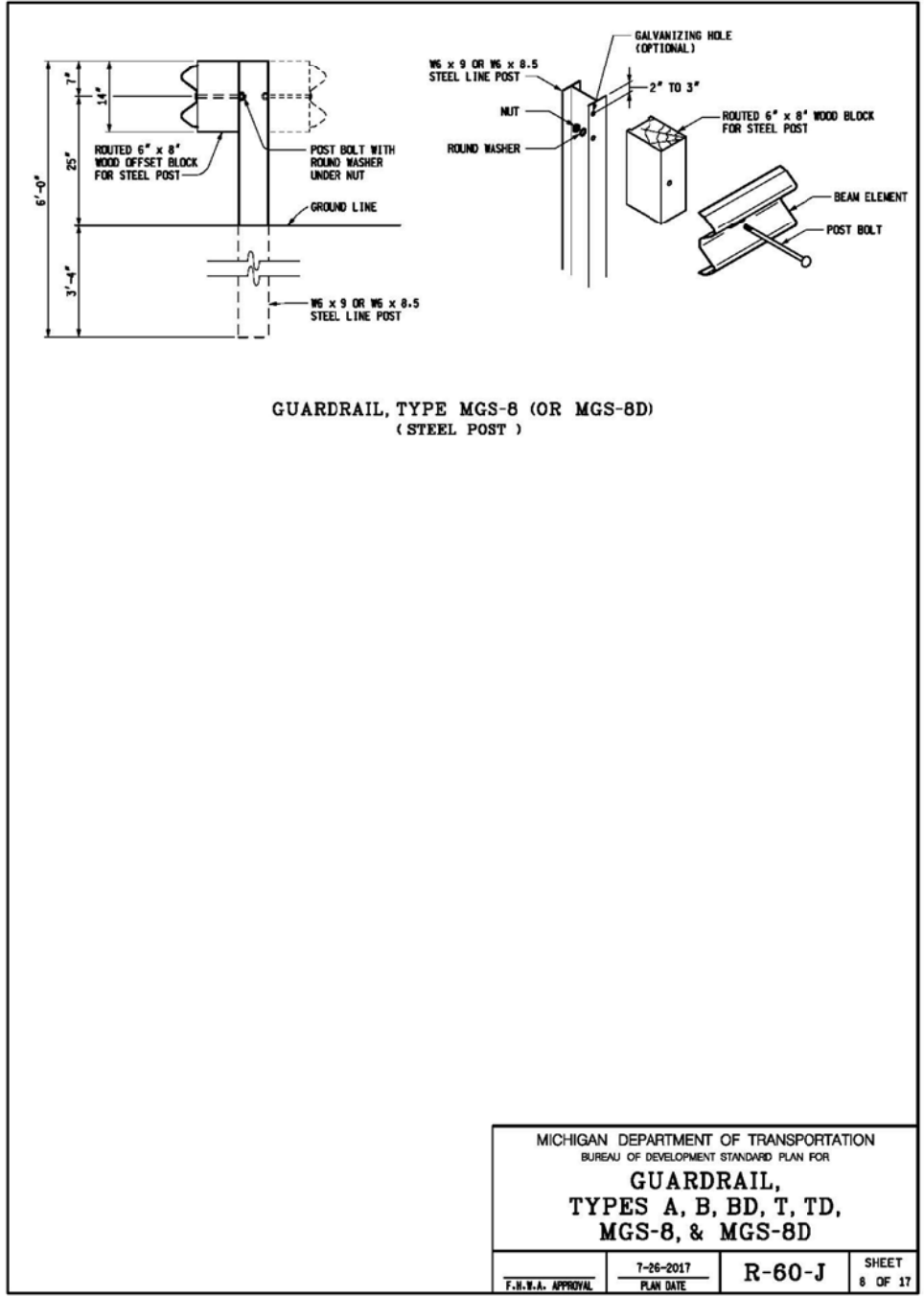
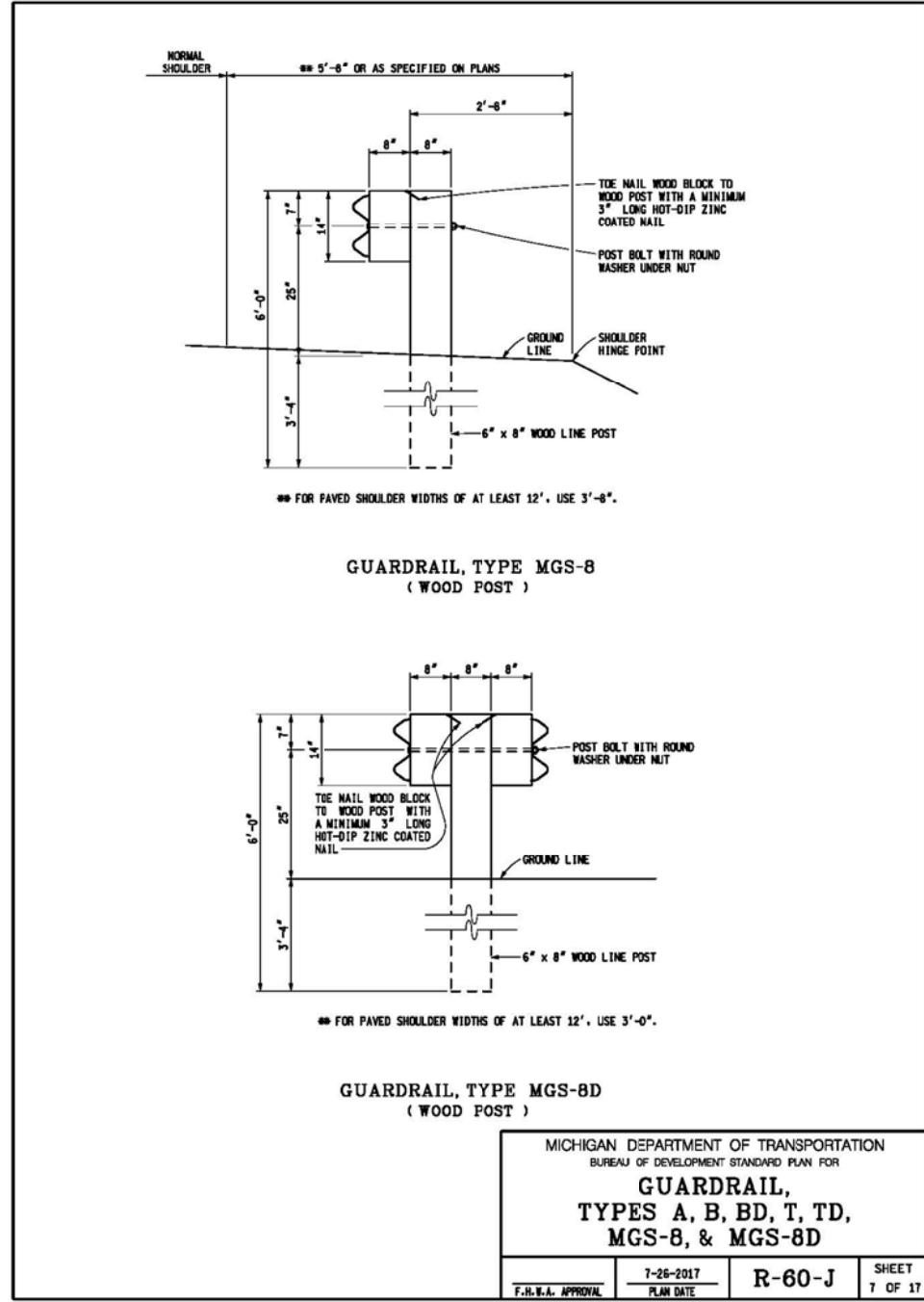
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CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET	15	OF	39	SHEETS
CONTRACT NO.	PW-6987			
ASSIGNMENT NO.				
DATE	01/24/2018			



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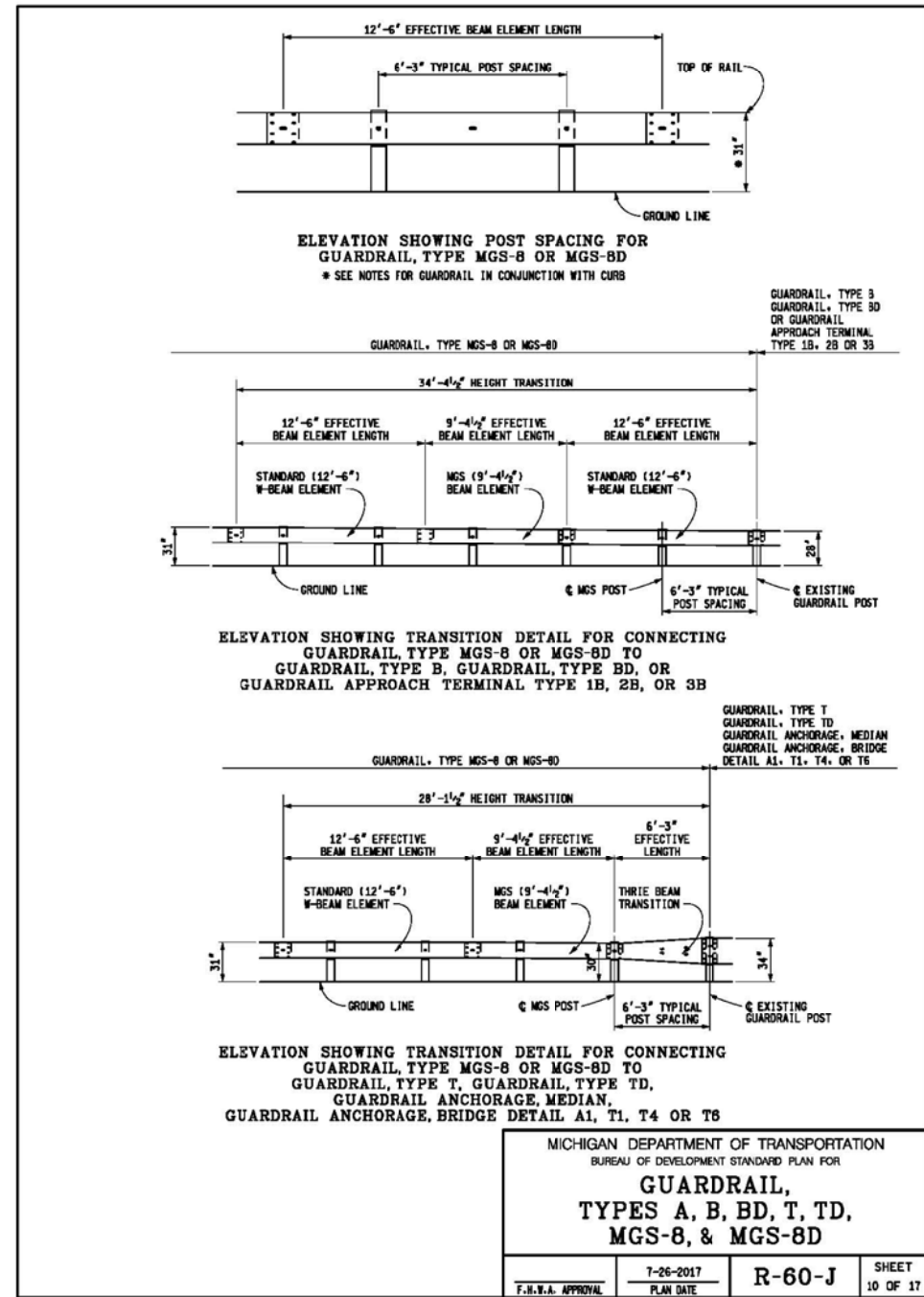
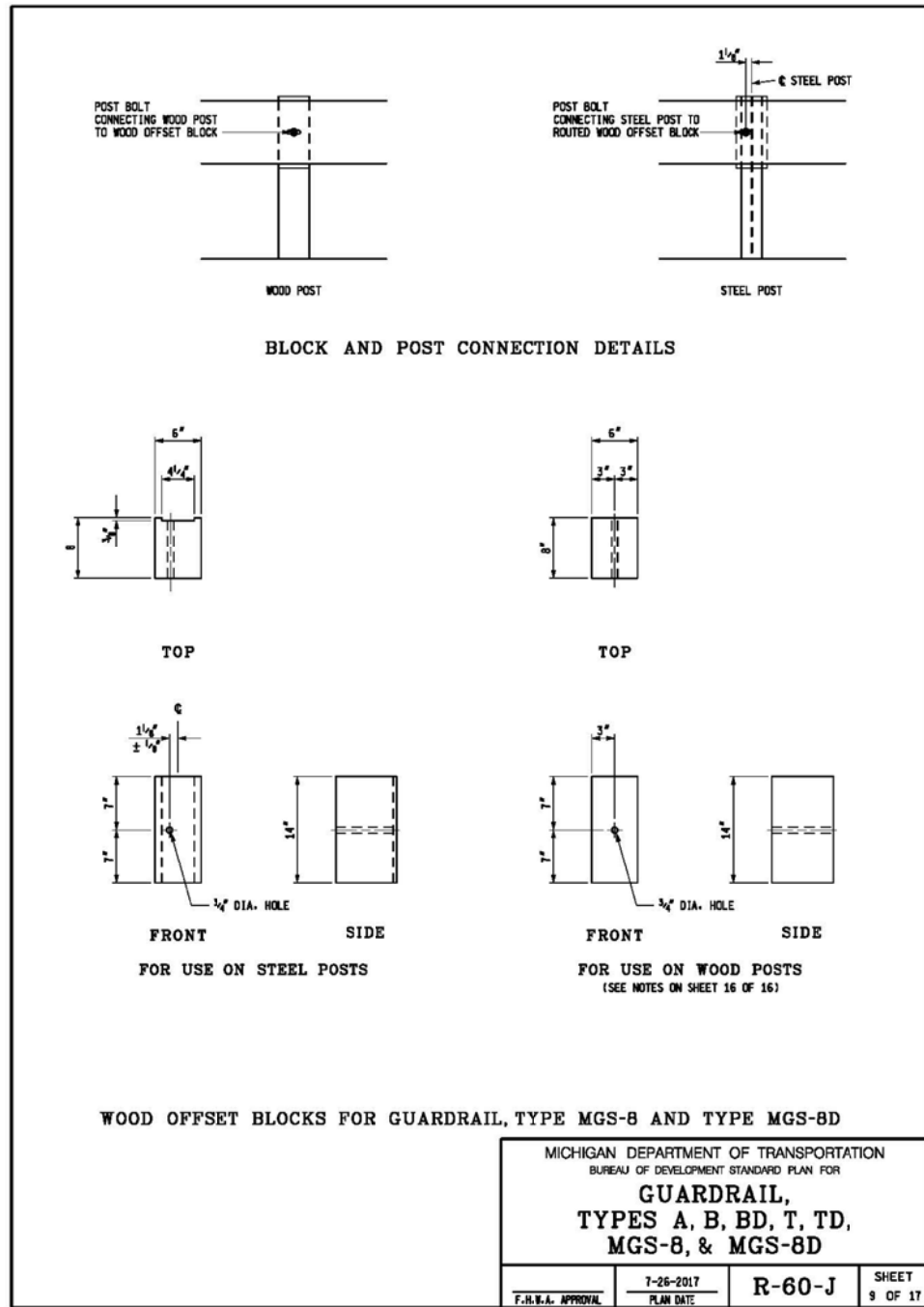
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CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET	16	OF	39	SHEETS
CONTRACT NO.	PW-6987			
ASSIGNMENT NO.				
DATE	01/24/2018			



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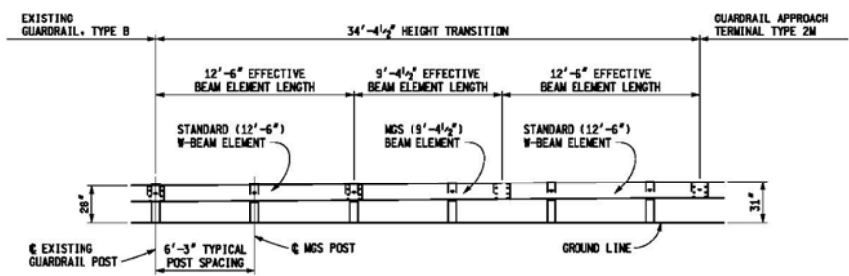
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CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

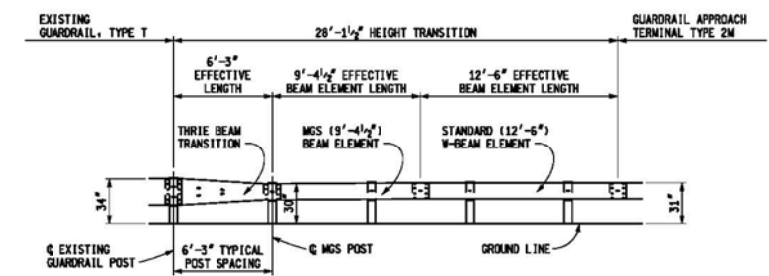
WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET 17 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018



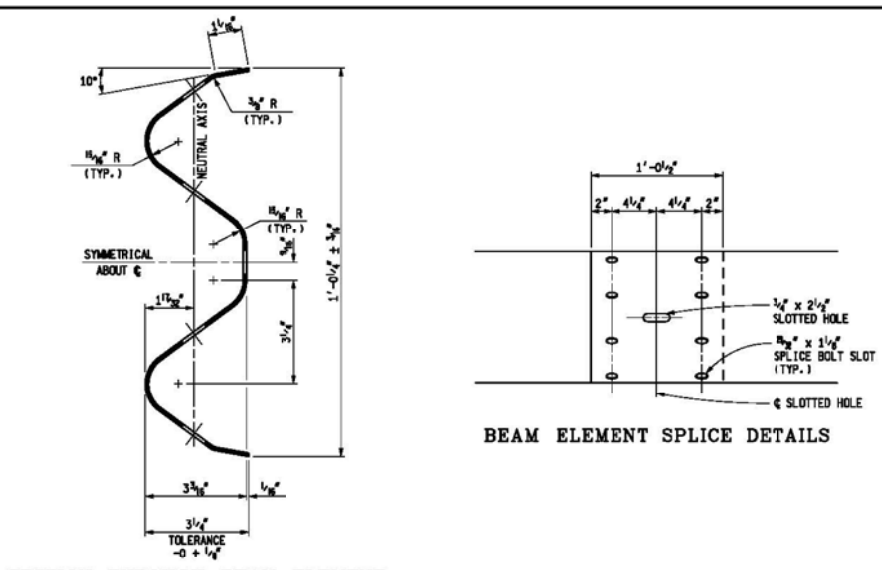
ELEVATION SHOWING TRANSITION DETAIL FOR CONNECTING GUARDRAIL, TYPE B TO GUARDRAIL APPROACH TERMINAL TYPE 2M



ELEVATION SHOWING TRANSITION DETAIL FOR CONNECTING GUARDRAIL, TYPE T TO GUARDRAIL APPROACH TERMINAL TYPE 2M

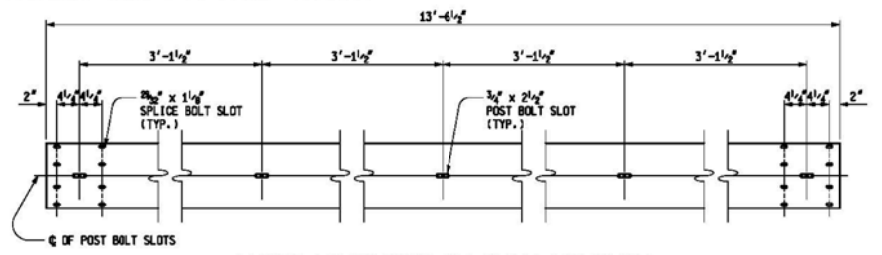
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
**GUARDRAIL,
TYPES A, B, BD, T, TD,
MGS-8, & MGS-8D**

F.H.S.A. APPROVAL 7-26-2017 PLAN DATE R-60-J SHEET 11 OF 17

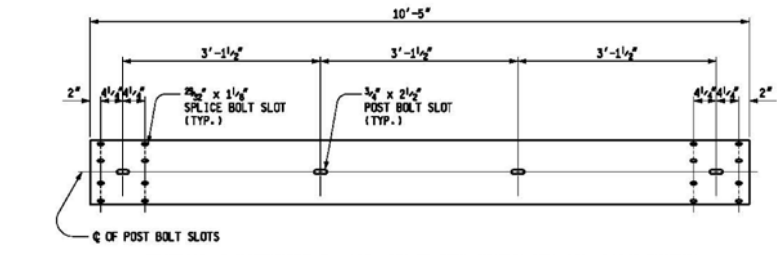


SECTION THROUGH BEAM ELEMENT

BEAM ELEMENT SPLICE DETAILS



FRONT ELEVATION OF BEAM ELEMENT



FRONT ELEVATION OF MGS (9'-4 1/2") BEAM ELEMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
**GUARDRAIL,
TYPES A, B, BD, T, TD,
MGS-8, & MGS-8D**

F.H.S.A. APPROVAL 7-26-2017 PLAN DATE R-60-J SHEET 12 OF 17

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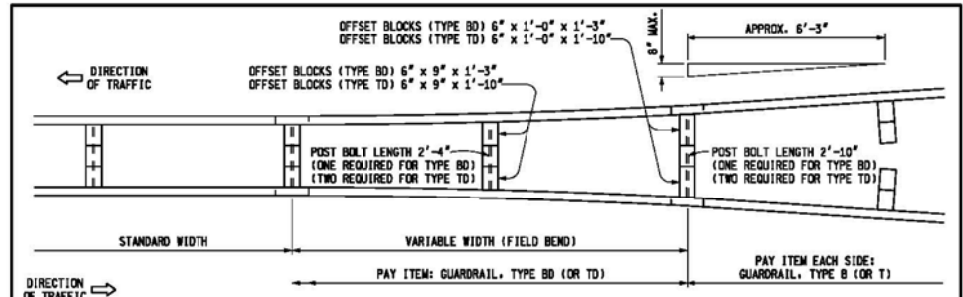
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CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

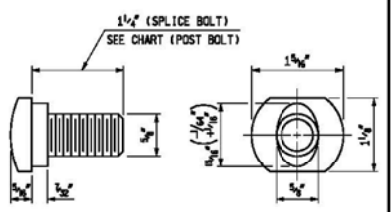
SHEET 18 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO. _____
DATE 01/24/2018



DETAIL SHOWING TRANSITION FROM GUARDRAIL, TYPE B (OR TYPE T) TO GUARDRAIL, TYPE BD (OR TYPE TD)

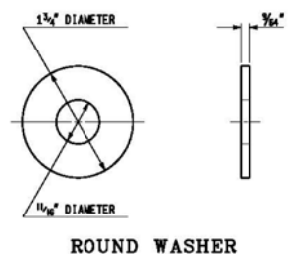
POST BOLTS, SPLICE BOLTS AND WASHERS AT BEAM ELEMENT SPLICE POSTS AND AT INTERMEDIATE POSTS						
GUARDRAIL TYPE	POST	OFFSET BLOCK	POST BOLTS (NO. REQ'D)	SPLICE BOLTS (1 1/2" LONG) (NO. REQ'D)	WASHERS (ROUND) (NO. REQ'D)	
A	WOOD	N/A	1	9 1/2"	6	1
	STEEL	N/A	1	2"	6	1
B	WOOD	WOOD	1	18"	1	1
	STEEL	WOOD	1	9 1/2"	6	1
BD	WOOD	WOOD	1	26 1/2"	16	2
	STEEL	WOOD	2	9 1/2"	16	2
T	WOOD	WOOD	2	18"	12	2
	STEEL	WOOD	2	9 1/2"	12	2
TD	WOOD	WOOD	2	26 1/2"	24	4
	STEEL	WOOD	4	9 1/2"	24	4

MINIMUM POST BOLT THREAD LENGTH	
BOLT LENGTH	MINIMUM THREAD LENGTH
9 1/2"	1 1/2"
18"	2 1/2"
26 1/2"	3"

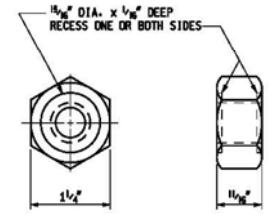


SPLICE BOLT AND POST BOLT

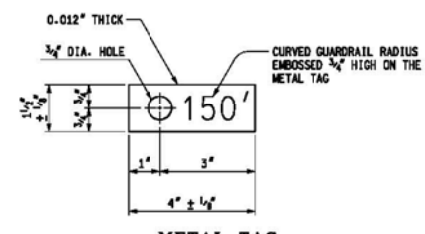
THREE BEAM TRANSITIONS REQUIRE 20 SPLICE BOLTS EACH (12 ON TYPE T END AND 8 ON TYPE B END).
 * EXCEPT AS SPECIFIED ON DETAIL SHOWING TRANSITION FROM GUARDRAIL, TYPE B (OR TYPE T) TO GUARDRAIL, TYPE BD (OR TYPE TD), POST BOLTS SHALL NOT EXTEND MORE THAN 1/2" BEYOND NUT.



ROUND WASHER



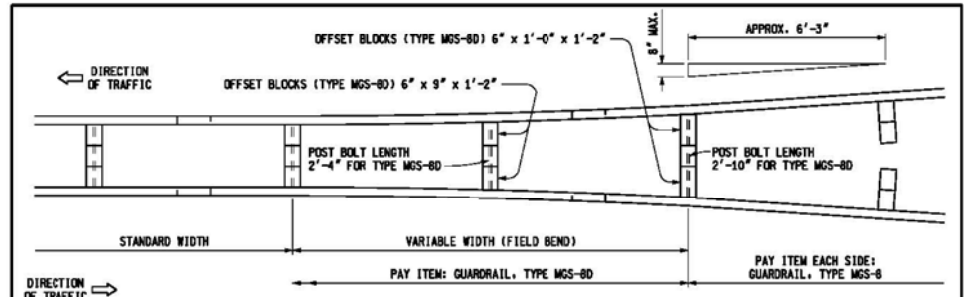
NUT



METAL TAG FOR CURVED GUARDRAIL WITH RADIUS OF 150' OR LESS

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT STANDARD PLAN FOR
GUARDRAIL, TYPES A, B, BD, T, TD, MGS-8, & MGS-8D

F.I.E.L. APPROVAL: _____ 7-25-2017 PLAN DATE: _____ R-60-J SHEET 15 OF 17



DETAIL SHOWING TRANSITION FROM GUARDRAIL, TYPE MGS-8 TO GUARDRAIL, TYPE MGS-8D

POST BOLTS, SPLICE BOLTS AND WASHERS AT BEAM ELEMENT SPLICE POSTS AND AT INTERMEDIATE POSTS						
GUARDRAIL TYPE	POST	OFFSET BLOCK	POST BOLTS (NO. REQ'D)	SPLICE BOLTS (1 1/2" LONG) (NO. REQ'D)	WASHERS (ROUND) (NO. REQ'D)	
MGS-8	WOOD	WOOD	1	18"	6	1
	STEEL	WOOD	1	9 1/2"	6	1
MGS-8D	WOOD	WOOD	1	26 1/2"	16	2
	STEEL	WOOD	2	9 1/2"	16	2

MINIMUM POST BOLT THREAD LENGTH	
BOLT LENGTH	MINIMUM THREAD LENGTH
9 1/2"	1 1/2"
18"	2 1/2"
26 1/2"	3"

THREE BEAM TRANSITIONS REQUIRE 20 SPLICE BOLTS EACH (12 ON TYPE T END AND 8 ON TYPE MGS END).
 * EXCEPT AS SPECIFIED ON DETAIL SHOWING TRANSITION FROM GUARDRAIL, TYPE MGS-8 TO GUARDRAIL, TYPE MGS-8D POST BOLTS SHALL NOT EXTEND MORE THAN 1/2" BEYOND NUT.

MICHIGAN DEPARTMENT OF TRANSPORTATION
 BUREAU OF DEVELOPMENT STANDARD PLAN FOR
GUARDRAIL, TYPES A, B, BD, T, TD, MGS-8, & MGS-8D

F.I.E.L. APPROVAL: _____ 7-25-2017 PLAN DATE: _____ R-60-J SHEET 16 OF 17

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CITY OF DETROIT
 CITY ENGINEERING DIVISION - D.P.W.
 BUREAUS OF STREETS AND HIGHWAYS
 FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN
 ROAD - DETAILS
 SHEET 20 OF 39 SHEETS
 CONTRACT NO. PW-6987
 ASSIGNMENT NO. _____
 DATE 01/24/2018

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

F.H.W.A. APPROVAL	PLAN DATE	SHEET OF
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GUARDRAIL REFLECTOR

ONE-WAY TRAFFIC

TWO-WAY TRAFFIC
DIRECTION OF RAIL LAP

NOTES:

DETAILS SPECIFIED ON THIS STANDARD ARE ACCORDING TO THE AASHTO-AGC-ARTBA JOINT COMMITTEE, TASK FORCE 13 PUBLICATION TITLED "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE."

BEAM ELEMENTS SHALL BE SHOP BENT TO PLAN RADIUS FOR CURVE RADIUS 150' OR LESS. A TAG IDENTIFYING THE CURVATURE OF THE SHOP BENT SECTION WILL BE REQUIRED FOR EACH CURVED ELEMENT.

SEE STANDARD PLAN R-61-SERIES, R-62-SERIES OR R-63-SERIES FOR GUARDRAIL APPROACH TERMINALS; STANDARD PLAN R-66-SERIES FOR GUARDRAIL DEPARTING TERMINALS AND STANDARD PLAN R-67-SERIES FOR GUARDRAIL ANCHORAGE, BRIDGE.

WHEN THE PLANS SPECIFY GUARDRAIL (TYPE B OR T) TO BE PLACED ON THE SHOULDER HINGE POINT, RATHER THAN AS SPECIFIED ON THIS PLAN, 8'-0" POSTS SHALL BE PROVIDED, WITH THE ADDITIONAL LENGTH EMBEDDED FOR ADDED STABILITY. (NOT NECESSARY WHEN THE SLOPE IS REASONABLY LEVEL BEYOND THE SHOULDER HINGE POINT, AS DETERMINED BY THE ENGINEER.)

WHEN THE PLANS SPECIFY GUARDRAIL TYPE MGS-8 TO BE PLACED ON THE SHOULDER HINGE POINT, RATHER THAN AS SPECIFIED ON THIS PLAN, 9'-0" POSTS SHALL BE PROVIDED, WITH THE ADDITIONAL LENGTH EMBEDDED FOR ADDED STABILITY. (NOT NECESSARY WHEN THE SLOPE IS REASONABLY LEVEL BEYOND THE SHOULDER HINGE POINT, AS DETERMINED BY THE ENGINEER.)

WOOD POSTS WITH 1/2" BEVELS AT THE TOP MAY BE USED IN LIEU OF WOOD POSTS WITHOUT BEVELS SPECIFIED. THE LENGTH, WIDTH AND DEPTH OF THE POST SHALL BE AS SPECIFIED ON THIS STANDARD AND THE POST BOLT HOLES SHALL BE LOCATED TO ENSURE PROPER RAIL HEIGHT.

WOOD OFFSET BLOCKS WITH 1/2" BEVELS AT THE TOP AND BOTTOM OR A 1" BEVELED TOP MAY BE USED IN LIEU OF WOOD BLOCKS WITHOUT BEVELS SPECIFIED. THE LENGTH (FRONT AND BACK FACE), WIDTH AND DEPTH OF THE BLOCK SHALL BE AS SPECIFIED ON THIS STANDARD AND THE POST BOLT HOLES SHALL BE LOCATED TO ENSURE PROPER RAIL HEIGHT AND COMPATIBILITY WITH POST HOLES.

WHEN THE FACE OF GUARDRAIL IS PLACED FLUSH WITH FACE OF CURB, THE RAIL HEIGHT SHOULD BE MEASURED FROM THE FRONT EDGE OF THE GUTTER PAN, WHICH IS THE POINT ON THE GUTTER PAN THAT IS CLOSEST TO THE EDGE OF THE TRAVELED LANE. WHEN THE FACE OF THE GUARDRAIL PANEL IS LOCATED BEHIND THE CURB THE RAIL HEIGHT SHOULD BE MEASURED FROM THE GROUND JUST IN FRONT OF THE GUARDRAIL.

NOTES GOVERNING THE USE OF GUARDRAIL REFLECTORS

- GUARDRAIL REFLECTORS SHALL BE USED ON ALL STANDARD GUARDRAIL RUNS, REGARDLESS OF ROADWAY LIGHTING.
- GUARDRAIL REFLECTORS ARE TO BE SPACED AT THE FOLLOWING INTERVALS:
 - 50'-0" ON TANGENT SECTIONS AND CURVES WITH A RADIUS OF 1150' OR MORE.
 - 25'-0" ON CURVES WITH A RADIUS LESS THAN 1150'.
- FOR GUARDRAIL REFLECTOR PLACEMENT ON APPROACH TERMINALS, SEE THE APPROPRIATE GUARDRAIL APPROACH TERMINAL STANDARD PLAN.
- A GUARDRAIL REFLECTOR IS TO BE PLACED ON THE SECOND POST FROM THE GUARDRAIL DEPARTING TERMINAL.
- ON GUARDRAIL, TYPE T AND TYPE TD GUARDRAIL REFLECTORS ARE TO BE PLACED ON THE UPPER POST BOLT.
- GUARDRAIL REFLECTORS SHALL MATCH COLOR OF EDGE LINE.

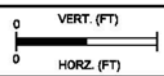
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

**GUARDRAIL,
TYPES A, B, BD, T, TD,
MGS-8, & MGS-8D**

F.H.W.A. APPROVAL	7-26-2017 PLAN DATE	R-60-J	SHEET 17 OF 17
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AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR



DATE:	CS:	DRAWING SHEET
DESIGN UNIT:	JN:	
TSC:		
FILE:		

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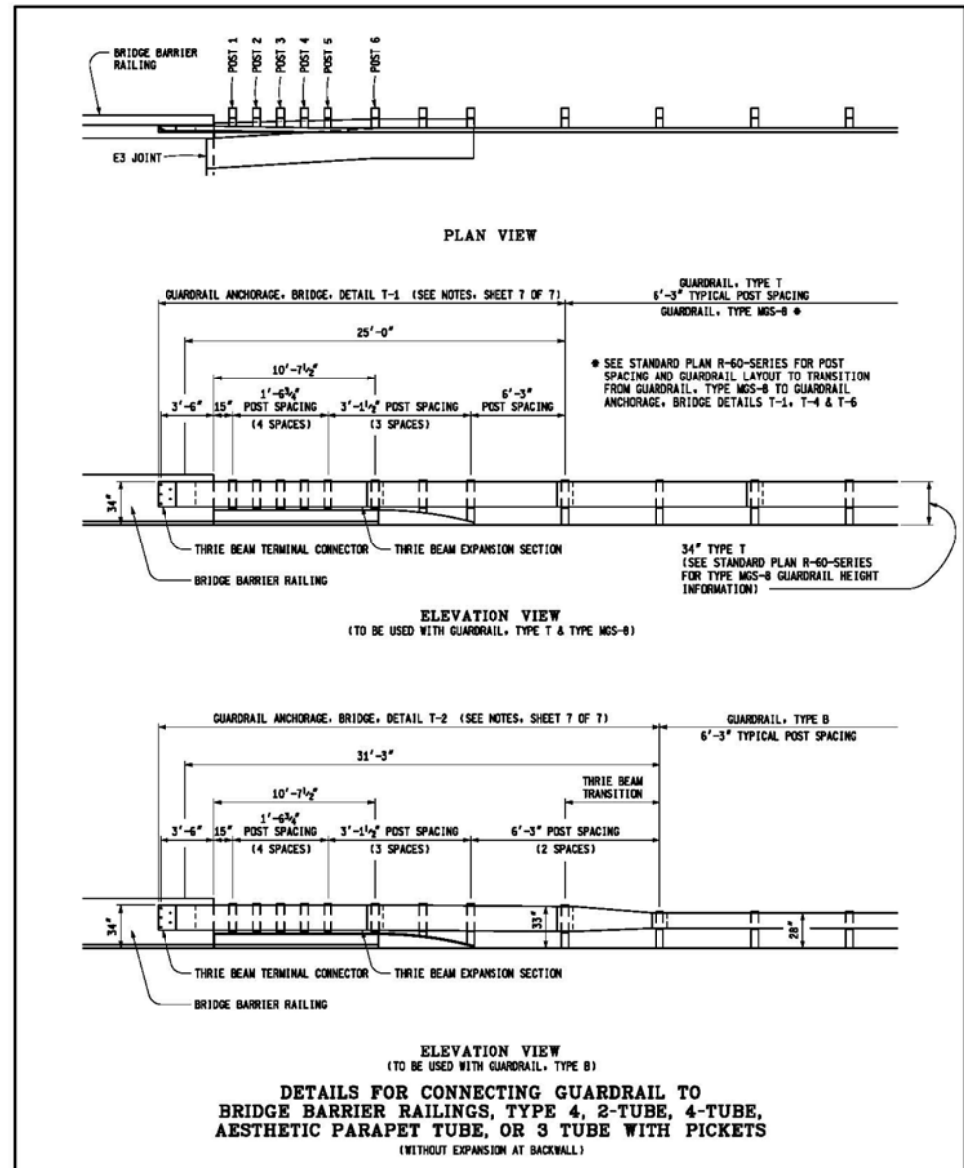
DESCRIPTION	DR	CK	AP	DATE	BY	CHECKED BY	APPROVED:
PLAN							
GRADE							
ESTIMATE							
REVISIONS							

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAUS OF STREETS AND HIGHWAYS
FOR

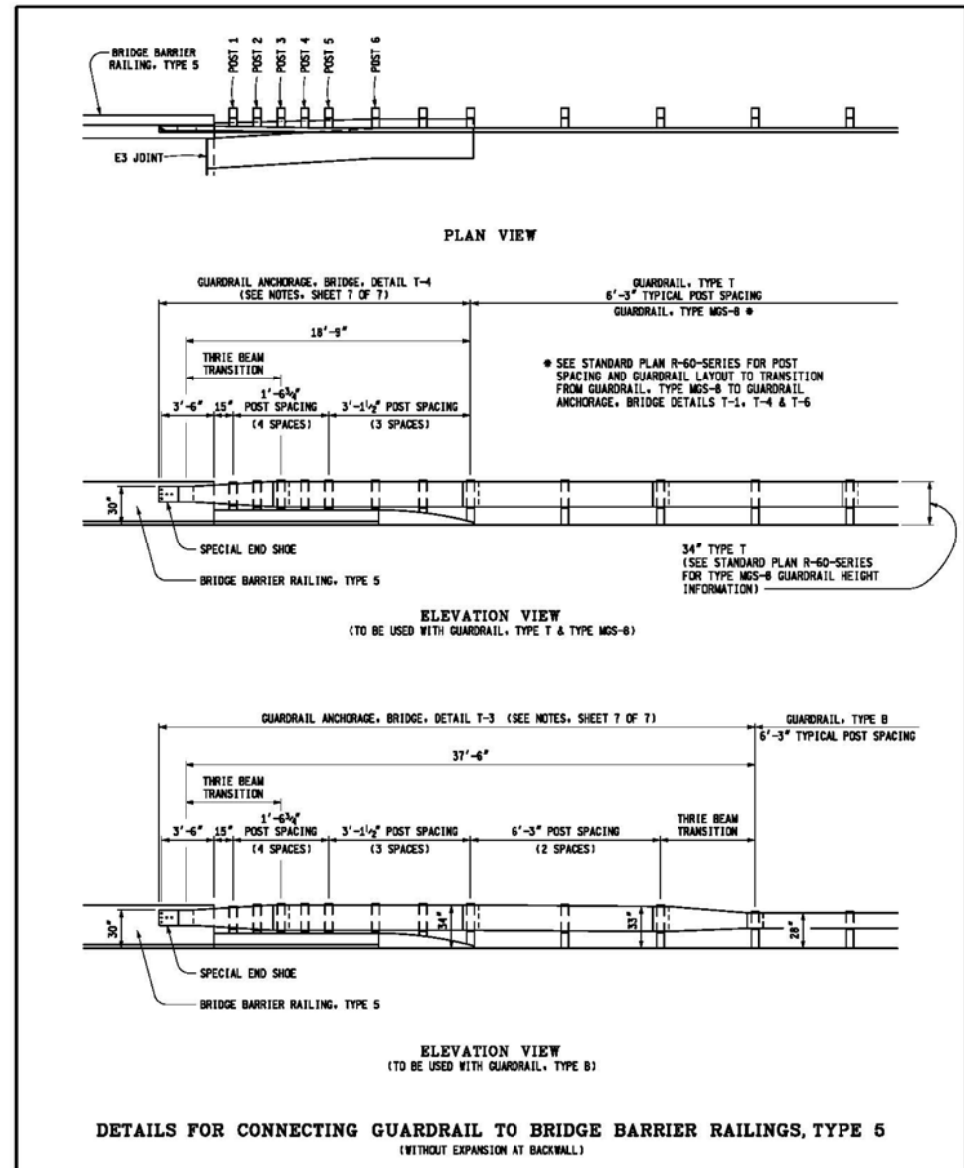
WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET 21 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018



	DEPARTMENT DIRECTOR Kirk T. Steudle	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR
	APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES	GUARDRAIL ANCHORAGE, BRIDGE, DETAILS
PREPARED BY DESIGN DIVISION	APPROVED BY: _____ DIRECTOR, BUREAU OF DEVELOPMENT	F.H.W.A. APPROVAL
DRAWN BY: _____	8-9-2017 PLAN DATE	R-67-G
CHECKED BY: _____		SHEET 1 OF 7



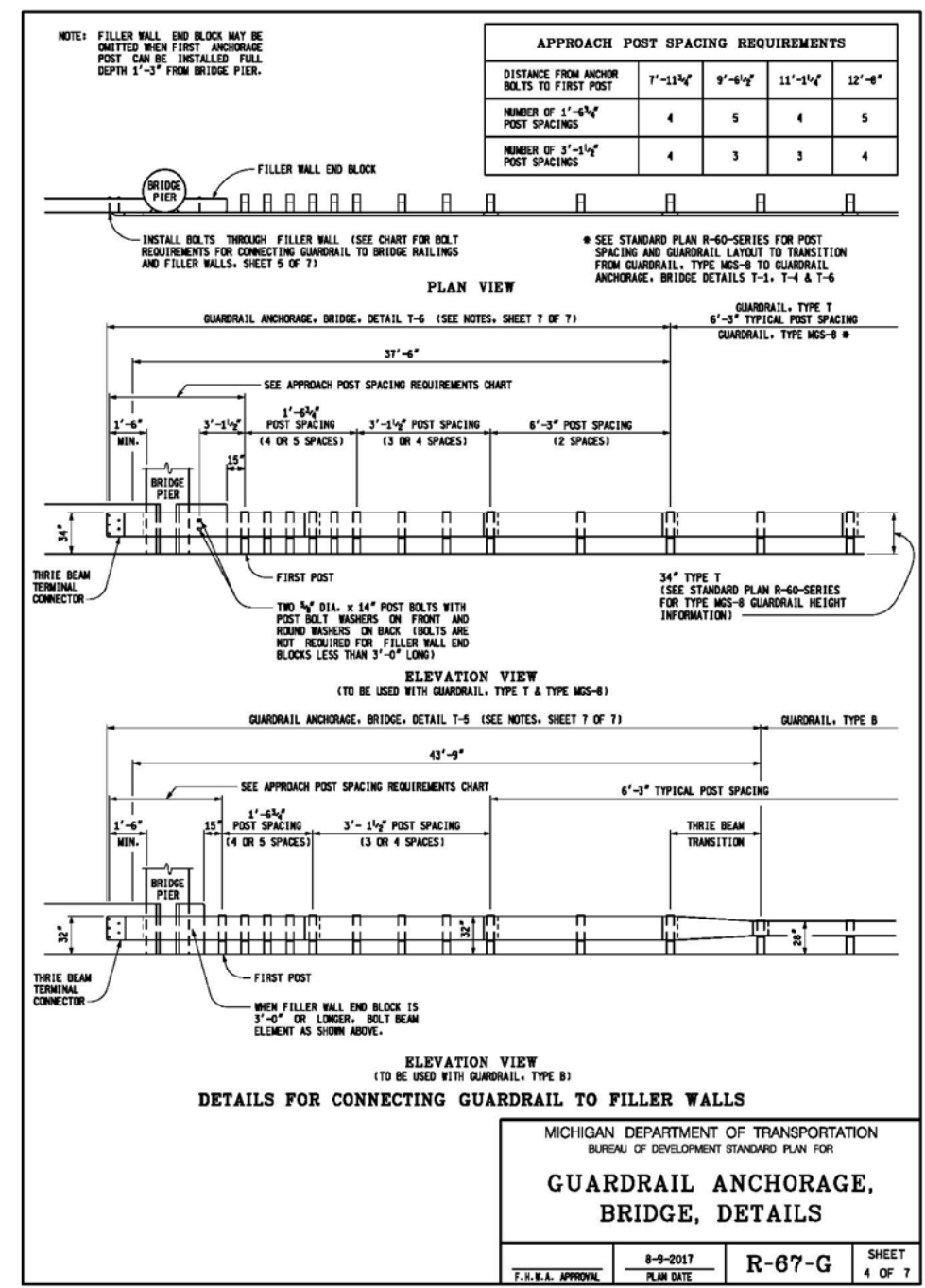
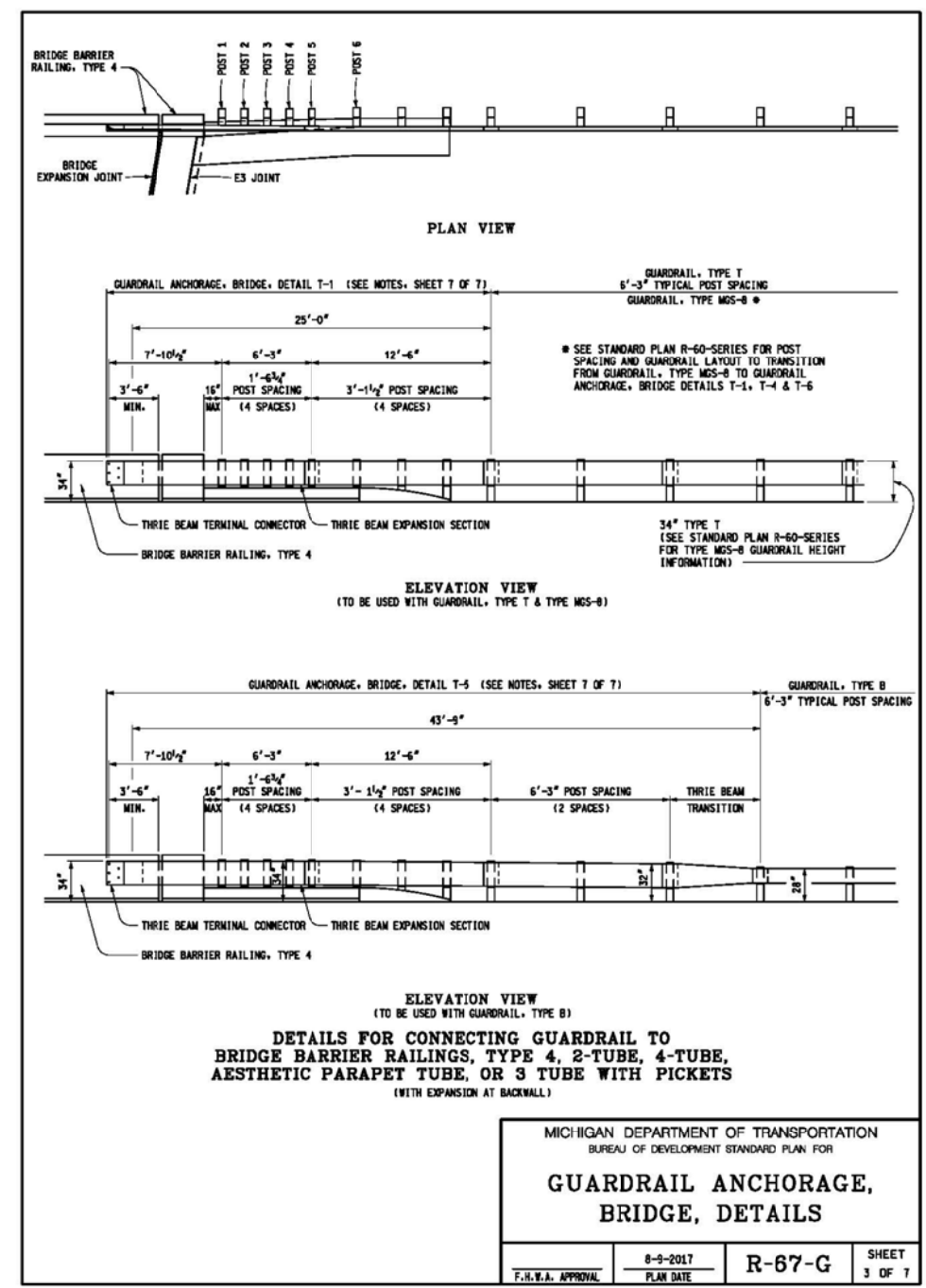
	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR
	GUARDRAIL ANCHORAGE, BRIDGE, DETAILS
F.H.W.A. APPROVAL	
8-9-2017 PLAN DATE	R-67-G
	SHEET 2 OF 7

AS-LET PLAN REVISIONS									0 VERT. (FT) 0 HORZ. (FT)	DATE:	CS:	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION			DESIGN UNIT:	JN:	FILE:	

EXISTING

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AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

MDOT
Michigan Department of Transportation

VERT. (FT)
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HORZ. (FT)
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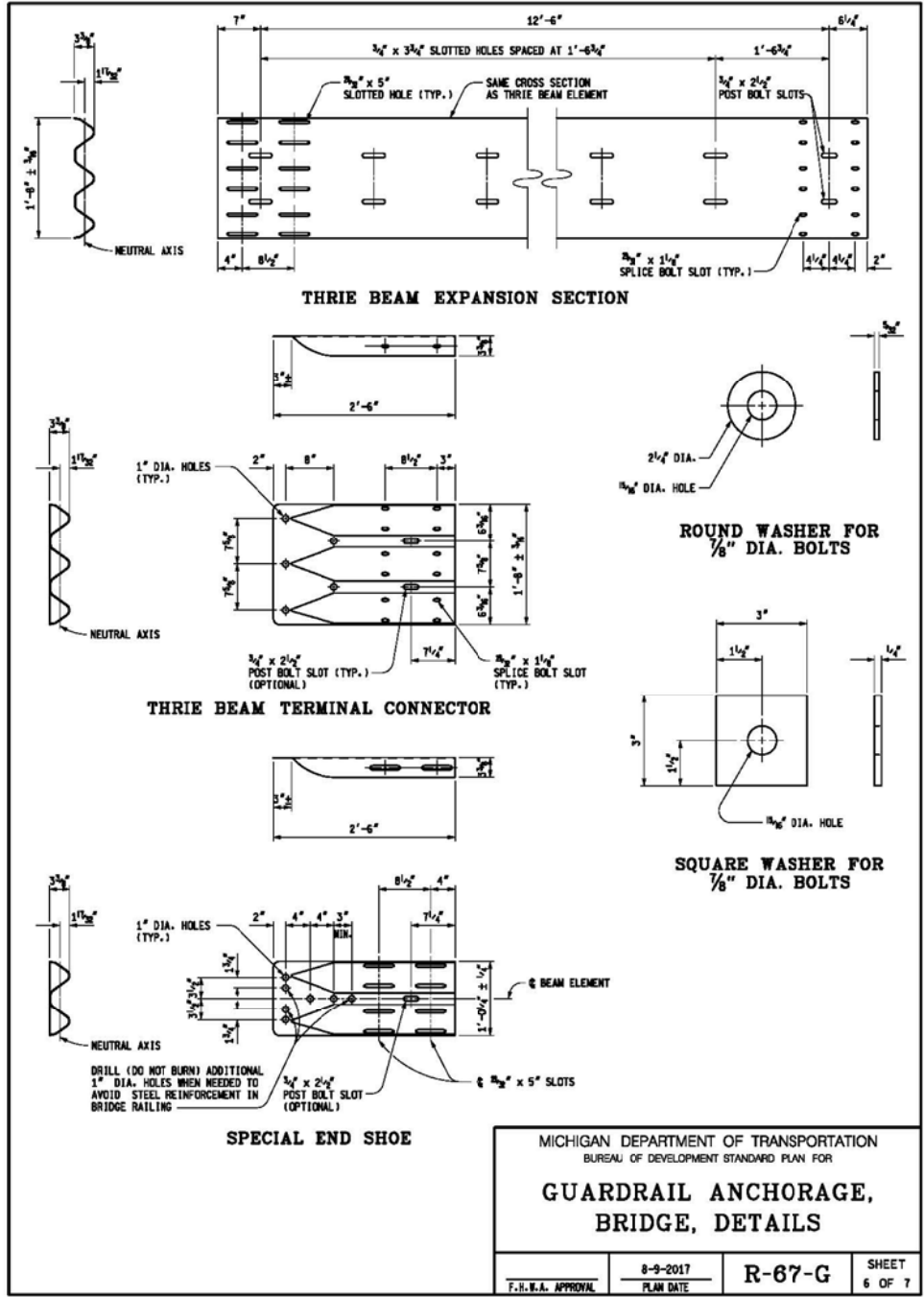
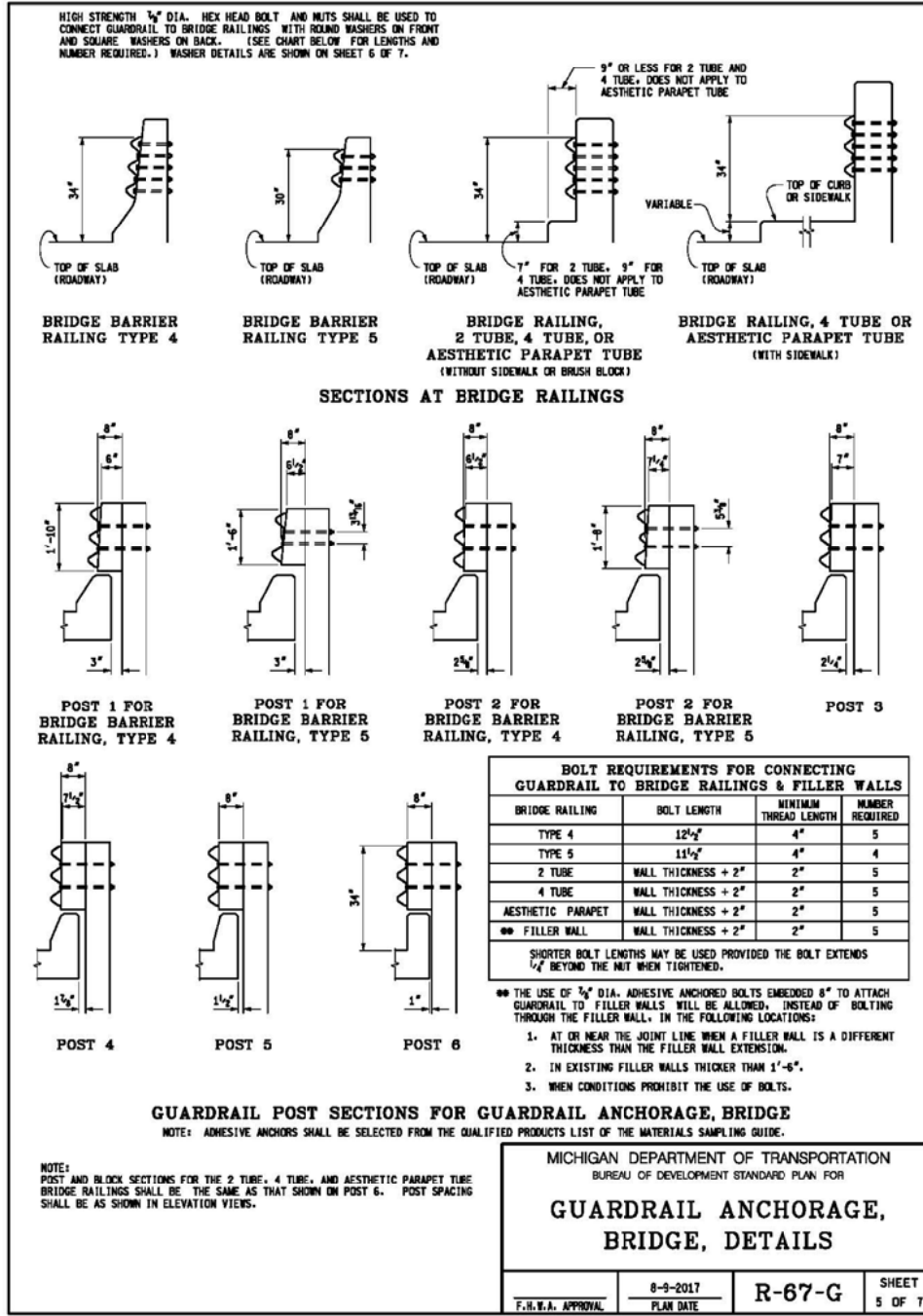
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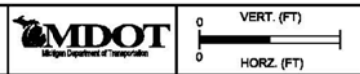
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AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION



DATE:	CS:	DRAWING	SHEET
DESIGN UNIT:	JN:		
TSC:			

EXISTING

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DESCRIPTION	DR	CHK	APP	DATE	FINAL	BY	CHECKED BY	APPROVED:
PLAN								
GRADE								
ESTIMATE								
REVISIONS								

CITY OF DETROIT
 CITY ENGINEERING DIVISION - D.P.W.
 BUREAUS OF STREETS AND HIGHWAYS
 FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

ROAD - DETAILS

SHEET 24 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018

<p style="text-align: center;">MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">F.H.W.L. APPROVAL</td> <td style="width: 30%;">PLAN DATE</td> <td style="width: 20%;">SHEET OF</td> </tr> </table>	F.H.W.L. APPROVAL	PLAN DATE	SHEET OF	<p>NOTES:</p> <p>ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, REFLECTORS, AND HARDWARE, (INCLUDING BOLTS, NUTS, AND WASHERS) SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND TO THE CURRENT STANDARD PLAN R-60-SERIES, WHERE APPLICABLE, EXCEPT AS SPECIFIED ON THIS STANDARD.</p> <p>ALL POSTS USED TO CONSTRUCT GUARDRAIL ANCHORAGE, BRIDGE SHALL BE 7'-0" LONG.</p> <p>THE THRIE BEAM TERMINAL CONNECTOR AND SPECIAL END SHOE SHALL BE THE SAME MATERIAL AS ADJACENT RUN OF GUARDRAIL, EXCEPT THAT THEY SHALL NOT BE LIGHTER THAN 10 GAGE (0.136").</p> <p>SECTIONS OF THE THRIE BEAM ELEMENT REQUIRED TO BE TWISTED FOR USE IN ANCHORAGE SHALL BE FIELD BENT.</p> <p>GUARDRAIL BEAM ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC, EXCEPT FOR THE THRIE BEAM TERMINAL CONNECTOR WHICH MAY BE LAPPED IN EITHER DIRECTION.</p> <p>STANDARD SPLICE BOLTS SHALL BE USED WHEN SPLICING THE THRIE BEAM TERMINAL CONNECTOR TO THE THRIE BEAM EXPANSION SECTION AND WHEN SPLICING THE SPECIAL END SHOE TO THE TRANSITION SECTION. THE SPLICE BOLT NUT SHALL BE INSTALLED FINGER-TIGHT AND SHALL FULLY ENGAGE THE SPLICE BOLT WITH A MINIMUM OF ONE THREAD EXTENDING BEYOND THE NUT. THIS SHALL BE FOLLOWED UP BY UPSETTING THE FIRST THREAD ON THE OUTSIDE OF THE NUT WITH A CENTER PUNCH OR COLD CHISEL, SO THAT IT WILL NOT LOOSEN.</p> <p>SEE THE CURRENT STANDARD PLAN R-32-SERIES FOR APPROACH CURB AND GUTTER AND DOWNSPOUT HEADER.</p> <p>GUARDRAIL ANCHORAGE, BRIDGE, DETAILS T-1, T-2, T-5, AND T-6 REQUIRE THAT THE THRIE BEAM TERMINAL CONNECTOR BE ATTACHED TO THE 2 1/2" x 5" LONG SLOTTED HOLES IN THE THRIE BEAM EXPANSION SECTION.</p> <p>SEE APPROPRIATE PLANS TO DETERMINE WHETHER GUARDRAIL ANCHORAGE, BRIDGE SPANS A BRIDGE EXPANSION JOINT.</p> <p>SEE THE CURRENT STANDARD PLAN R-55-SERIES FOR FILLER WALLS AND FILLER WALL END BLOCK.</p> <p style="text-align: center;">MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR</p> <p style="text-align: center;">GUARDRAIL ANCHORAGE, BRIDGE, DETAILS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">F.H.W.L. APPROVAL</td> <td style="width: 30%;">8-9-2017 PLAN DATE</td> <td style="width: 20%;">R-67-G</td> <td style="width: 20%;">SHEET 1 OF 1</td> </tr> </table>	F.H.W.L. APPROVAL	8-9-2017 PLAN DATE	R-67-G	SHEET 1 OF 1
F.H.W.L. APPROVAL	PLAN DATE	SHEET OF						
F.H.W.L. APPROVAL	8-9-2017 PLAN DATE	R-67-G	SHEET 1 OF 1					

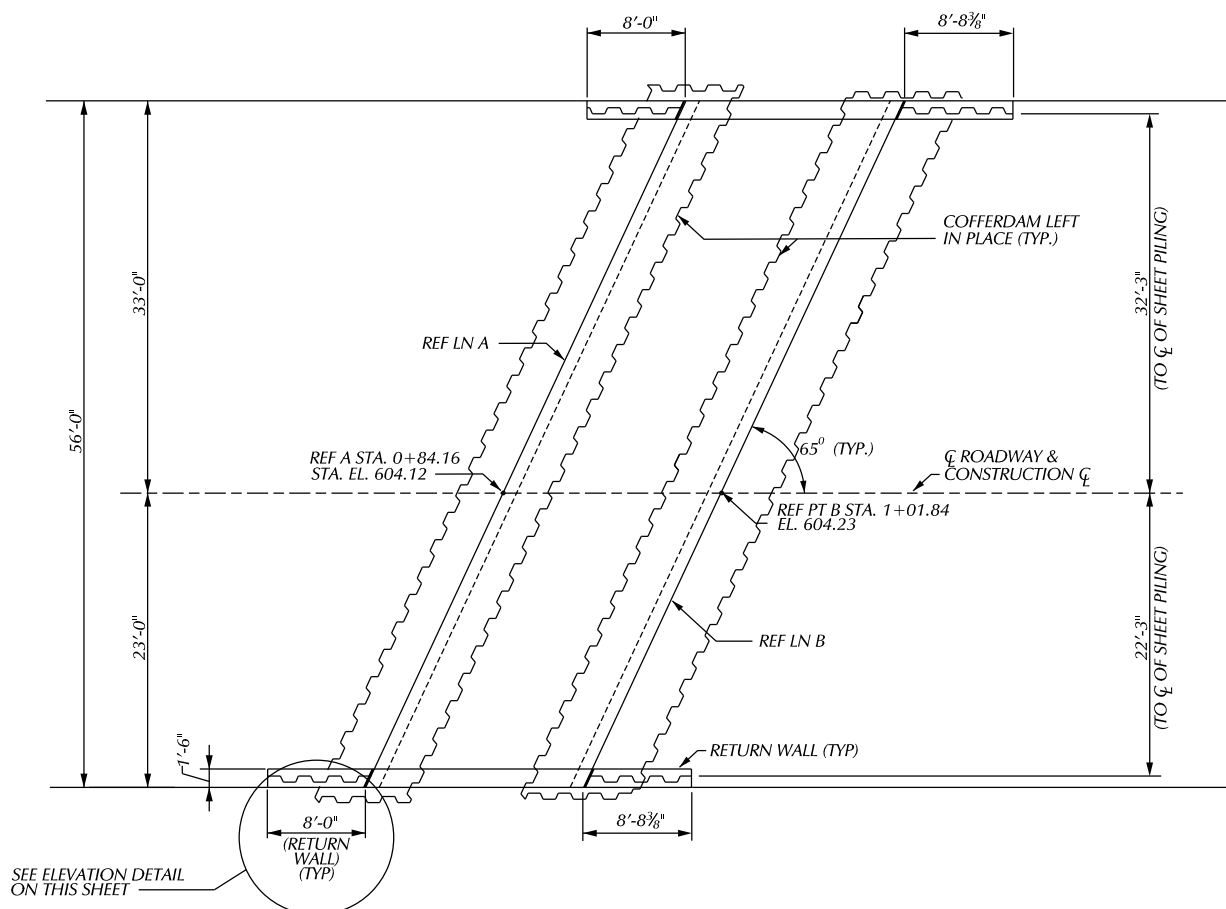
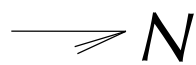
AS-LET PLAN REVISIONS						DATE:	CS:	DRAWING SHEET
NO.	DATE	AUTH	DESCRIPTION			DESIGN UNIT:	JN:	

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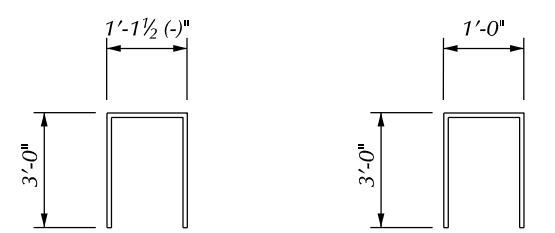
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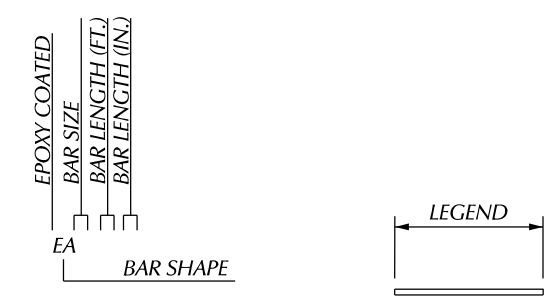
PLAN GRADE ESTIMATE FINAL	BY CHECKED BY APPROVED	CITY OF DETROIT CITY ENGINEERING DIVISION - D.P.W. BUREAUS OF STREETS AND HIGHWAYS FOR	WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN ROAD - DETAILS	SHEET 25 OF 39 SHEETS CONTRACT NO. PW-6987 ASSIGNMENT NO. DATE 01/24/2018
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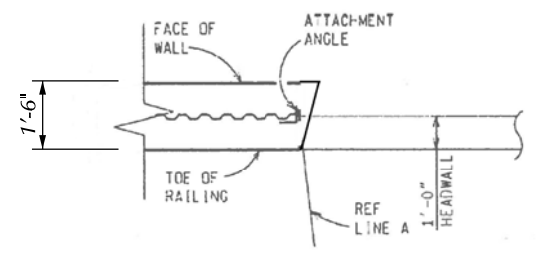
PLAN OF RETURN WALLS



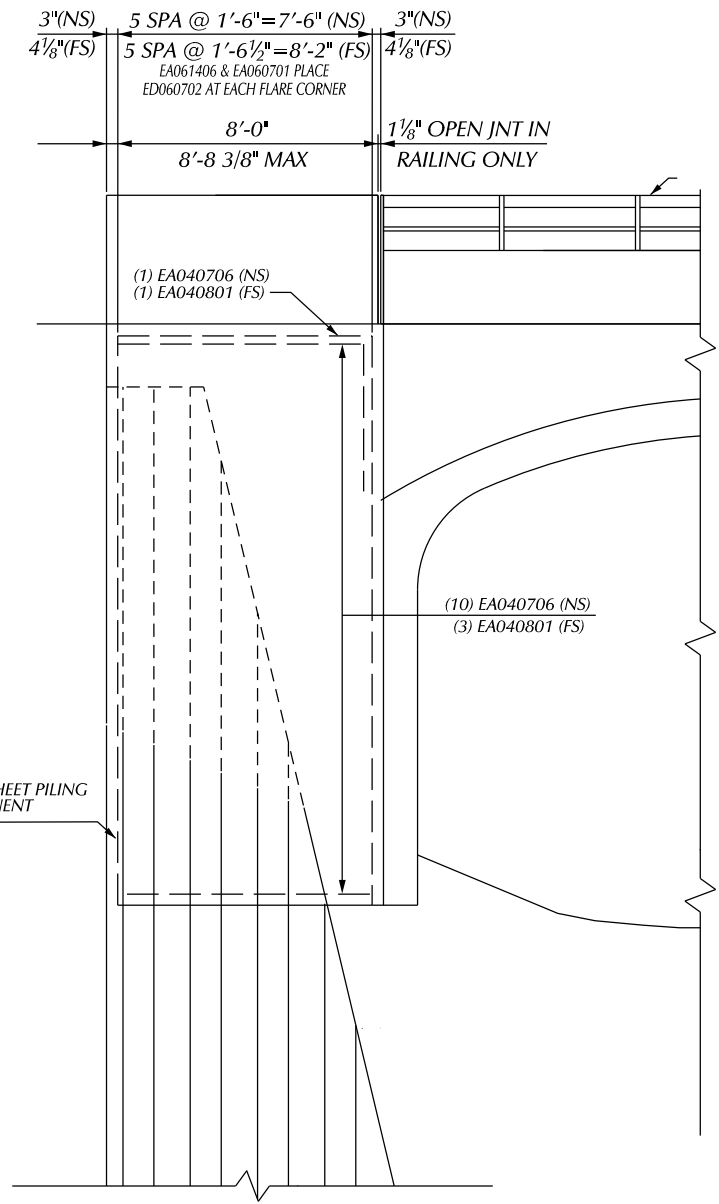
ED060702 ED060700



BAR LEGEND EA BAR



DETAIL



ELEVATION SHEET PILE RETAINING WALL

(SOUTHEAST RETURN WALL SHOWN, OTHER RETURN WALLS ARE SIMILAR)

MIN. LAP TABLE

EA 03BEIR 1'-2"
EA 03BEIR 1'-2"
EA 03BEIR 1'-2"
EA 03BEIR 1'-2"

SUBSTRUCTURE CONCRETE QUANTITIES

POUR	AMT (CYDS)
A	4.5
B	4.5
C	4.5
D	4.5

MISCELLANEOUS QUANTITIES

810 SFT	STEEL SHEET PILING, PERMANENT
18 CYD	SUBSTRUCTURE CONC.
1,160 LB	REINFORCEMENT STEEL, EPOXY COATED

NOTES:

ALL PERMANENT STEEL SHEET PILING SHALL BE ASTM A-572, PZ-22, WHERE ALLOWED BY THE ENGINEER, SELECT ALTERNATE HOT ROLLED SHEET PILING WITH A NOMINAL SECTION MODULUS OF AT LEAST 18.1 CUBIC INCHES PER FOOT OF WALL.

ALL LABOR AND MATERIALS REQUIRED FOR CONSTRUCTION OF THE PERMANENT STEEL SHEET PILING REQUIRED FOR CONSTRUCTION OF THE PERMANENT STEEL SHEET PILING WITH TIE NOT BE PAID FOR SEPARATELY, BUT INCLUDED IN THE PAVEMENT FOR "STEEL SHEET PILING, PERMANENT".

TIE RODS SHALL BE PLACED AND TIGHTENED BEFORE CASTING THE CONCRETE FACING.

THE USE OF VIBRATORY HAMMERS FOR INSTALLING SHEET PILING SHALL NOT BE ALLOWED.

TOP ROW OF SHEAR STUDS SHALL BE 3" BELOW THE TOP OF SHEETING AND ADDITIONAL ROWS SHALL BE SPACED VERTICALLY AT 1'-6" MAX. BOTTOM ROW OF STUDS SHALL BE 3" ABOVE THE BOTTOM OF CONCRETE ELEVATION.

SHEAR STUDS SHALL NOT BE PAID SEPARATELY BUT ARE INCLUDED IN PAYMENT FOR "STEEL SHEET PILING, PERMANENT".

INSTALL RAILING REINFORCEMENT PRIOR TO POURING CONCRETE CAP ON RETAINING WALL PRIOR TO POURING CONCRETE CAP ON RETAINING WALL.

THE CONTRACTOR SHALL PROVIDE & INSTALL A MAT OF 6X6-D6XD6 WELDED WIRE FABRIC IN THE FRONT FACE OF SHEET PILING CAP WHERE STANDARD REINFORCEMENT IS NOT SHOWN. THE COST TO PROVIDE AND INSTALL THE WIRE FABRIC IS INCLUDED IN "STEEL SHEET PILING, PERMANENT". PROVIDE A MINIMUM OF 2" OF CLEAR COVER ON ALL SIDES.

PRIOR TO DRIVING PERMANENT SHEETING, THE CONTRACTOR SHALL ANCHOR L 6"x6"x1/2" ANGLES TO THE PEDESTAL WALL, CULVERT AND HEADWALL TO USE AS A DRIVING GUIDE FOR THE SHEET PILING. ANGLES SHALL BE ATTACHED UTILIZING EITHER 3/8" ADHESIVE ANCHORED OR 3/4" EXPANSION ANCHORED BOLTS CHOSEN FROM THE QUALIFIED PRODUCT LIST.

AFTER DRIVING PILING, ATTACHED WEB OF PILING TO OUTSTANDING LEG OF ANGLES WITH 1/2" HIGH STRENGTH BOLTS. ALL WORK AND MATERIALS FOR ANGLES AND CONNECTORS ARE INCLUDED IN "STEEL SHEET PILING, PERMANENT".

LOW TEMPERATURE PROTECTION OF CONCRETE SHALL BE APPLIED ACCORDING TO SECTION 706.030 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. LOW TEMPERATURE PROTECTION OF CONCRETE WALL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE BID ITEM "SUBSTRUCTURE CONC".

EPOXY COATED STEEL REINFORCEMENT

BAR	NO. REQ'D	TOTAL WT
EA040706	26	130
EA040801	26	141
EA060706	4	45
EA060801	4	49
EA061406	20	436
EA060700	20	210
EA060702	4	43
	OVERRUN	106

DESCRIPTION	DR	CHK	DATE	BY	CHECKED BY	APPROVED
PLAN						
GRADE						
ESTIMATE						
REVISIONS						

CITY OF DETROIT
CITY ENGINEERING DIVISION - D.P.W.
BUREAU OF STREETS AND HIGHWAYS
FOR

WEST PARKWAY CULVERT OVER ASHCROFT - SHERWOOD DRAIN

SHEET PILE WALL DETAILS

SHEET 36 OF 39 SHEETS
CONTRACT NO. PW-6987
ASSIGNMENT NO.
DATE 01/24/2018

INDEX OF SHEETS

SHEET NO.	DESCRIPTION	# OF SHEET
1	TITLE SHEET	1
2	GENERAL PLAN OF SITE	1
3	MAINTAINING TRAFFIC	1
4	ROAD - REMOVAL	1
5	ROAD - CONSTRUCTION	1
6 - 25	ROAD - DETAILS	20
26	SOIL BORINGS	1
27 - 29	GENERAL PLAN OF STRUCTURES	3
30 - 31	EXISTING PLAN	2
32	CULVERT H-PILE LAYOUT	1
33 - 34	CULVERT SUBSTRUCTURE DETAILS	2
35	CONCRETE ARCH DETAILS	1
36 - 37	SHEET PILE WALLS DETAILS	2
38 - 39	CULVERT & RETAINING WALL RAILING DETAILS	2

STANDARD PLANS

WHERE THE FOLLOWING ITEMS ARE CALLED FOR ON THE PLANS THEY ARE TO BE CONSTRUCTED ACCORDING TO THE STANDARDS PLAN GIVEN BELOW OPPOSITE EACH ITEM UNLESS OTHERWISE INDICATED

ROAD

- SIDEWALK RAMP DETAILS
- DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALKS
- CONCRETE CURB AND CONCRETE CURB & GUTTERS
- LONGITUDINAL PAVEMENT JOINTS
- TYPICAL JOINT LAYOUT FOR CONCRETE PAVEMENT
- LOCATION OF TRANSVERSE JOINTS IN PLAIN CONCRETE PAVEMENT
- CONCRETE PAVEMENT REPAIR
- GUARDRAIL TYPES A, B, BD, T AND TD
- GUARDRAIL ANCHORAGE, BRIDGE, DETAILS
- GRANULAR BLANKET, UNDERDRAINS AND OUTLET ENDINGS FOR UNDERDRAINS
- SOIL EROSION & SEDIMENTATION CONTROLS MEASURES
- SCODING, SEEDING AND TREE PLANTING
- SUPERELEVATION AND PAVEMENT CROWNS
- TEMPORARY TRAFFIC CONTROL DEVICES
- GUARDRAIL AT INTERSECTIONS

- R-28-J*
- R-29-I
- R-30-G
- R-39-K*
- R-42-F
- R-43-T
- R-44-F
- R-60-J*
- R-67-G*
- R-80-E
- R-96-E
- R-100-H
- R-107-E
- R-125-D*
- 21*

BRIDGE

- BRIDGE RAILING, AESTHETIC PARAPET TUBE
- MOLDING, BEVEL, LIGHT STANDARD ANCHOR BOLT ASSEMBLY AND NAME PLATE DETAILS
- SEE ROAD PLANS FOR ADDITIONAL STANDARD PLANS & SPECIAL DETAILS.

- B-25-K
- B-103-E

PUBLIC UTILITIES

<p>AT&T METRO EAST 100 S MAIN ST, SUITE 314 MT CLEMENS, MI 487043-2374 JOE SIKOKI</p> <p>RIGHT OF WAY- METRO WEST 17651 MICHIGAN AVE., RM 301 DEARBORN, MI 48126 KEVIN LOGAN CELL FAX K129152att.com MARK BRANAM Mark.branam@att.com BRADLEY HALL Bradley.hall@att.com DEREK BULKLEY Derek.m.bulkley@att.com</p> <p>NOTE: AT&T WILL REQUIRE FIVE TO SEVEN BUSINESS DAYS ADVANCE NOTICE PRIOR TO ADJUSTING FRAMES AND COVERS. CONTACT AT&T AT (734) 523-6883.</p> <p>CITY OF DETROIT PUBLIC LIGHTING AUTHORITY OF DETROIT 65 CADILLAC SQUARE, SUITE 3100 DETROIT, MI 48226 PHONE WEBSITE: www.pladetroit.org</p> <p>CITY OF DETROIT DETROIT WATER & SEWERAGE DEPARTMENT 6425 HUBER (CSF) A-219 DETROIT, MI 48211 DEBRA SINGLETON dsingleton@dwsd.org EMERGENCY 24 HOUR SERVICE</p>	<p>TELEPHONE</p> <p>(586) 466-6310</p> <p>(313) 240-5482 (734) 223-5645 (313) 982-1029</p> <p>(313) 240-5390</p> <p>(313) 466-1049</p> <p>(313) 240-5480</p> <p>(313) 324-8290</p> <p>(313) 267-8309</p> <p>(313) 267-7401</p>	<p>CITY OF DETROIT DETROIT FIRE DEPARTMENT FIRE MARSHAL'S DIVISION 1301 THIRD STREET DETROIT, MI 48226 PHONE CHIEF OTIS B. HOLT FAX</p> <p>CITY OF DETROIT, DETROIT POLICE DEPARTMENT DETROIT PUBLIC SAFETY HEADQUARTERS 1301 THIRD STREET DETROIT, MI 48226 PHONE FAX</p> <p>CITY OF DETROIT TRAFFIC ENGINEERING, D.P.W. 2633 MICHIGAN AVENUE DETROIT, MI 48207 ASHOK PATEL FAX AshPat@detroitmi.gov JUBI CHACKUNKAL JubCha@detroitmi.gov KIRIT PATEL Patelki@detroitmi.gov</p> <p>SIGN SHOP 2425 FENKELL DETROIT, MI 48238 SIGN SHOP MANAGE FAX</p> <p>COMCAST CABLEVISION 12775 LYNDON DETROIT, MI 48227 BENE CUMMINGS FAX</p>	<p>FIRE CALL BOXES AND FIRE HYDRANTS</p> <p>(313) 596-2900 (313) 224-1311 (313) 596-2978</p> <p>POLICE CALL BOXES</p> <p>(313) 596-2200 (313) 596-1450</p> <p>PAVEMENT MARKINGS, SIGNS & TRAFFIC SIGNALS</p> <p>(313) 224-1610 (313) 224-1304</p> <p>(313) 224-1315 (313) 407-4124 (313) 628-5641</p> <p>SIGNS REMOVALS & INSTALLATIONS</p> <p>(313) 628-2923 (313) 628-4966</p> <p>TV CABLES</p> <p>(313) 934-2600 (313) 934-4824</p>	<p>DTE, GAS COMPANY ONE ENERGY PLAZA-WCB1722 DETROIT, MI 48226 DAVE ORZEL orzeld2@teenergy.com</p> <p>DTE, ELECTRIC COMPANY ONE ENERGY PLAZA IGS GROUP, 5185B DETROIT, MI 48226 ROBIN O'CONNELL FAX EXPOSED OR DAMAGED FACILITIES</p> <p>DTE, ENERGY/MICHIGAN GAS DATA INTEGRITY GAS ONE ENERGY PLAZA-WCB1836 DETROIT, MI 48226 BARBARA SAUNDERS CELL EXPOSED OR DAMAGED FACILITIES</p> <p>HIGH PRESSURE GAS TRANSMISSION</p> <p>(313) 235-1135</p> <p>ELECTRIC POWER</p> <p>(313) 235-5632 (313) 235-9366 (313) 237-9564</p> <p>GAS MAINS</p> <p>(313) 235-5111 (313) 920-4488 (800) 477-4747</p>	<p>NOTE: CONTACT DTE TEN (10) WORKING DAYS PRIOR TO THE CONSTRUCTION START DATE TO COORDINATE ADJUSTMENTS FOR DETROIT EDISON MANHOLES.</p> <p>DETROIT THERMAL LLC 541 MADISON DETROIT, MI 48226 TOM MONRO FAX</p> <p>STEAM LINES</p> <p>(313) 921-1922 (313) 921-1972</p> <p>ELECTRICITY TRANSMISSION COMPANY</p> <p>(248) 946-3322</p> <p>ALL UNDERGROUND UTILITIES</p> <p>MISS DIG CALL THREE (3) WORKING DAYS BEFORE YOU DIG (800) 482-7171 OR 811</p> <p>WAYNE COUNTY TRAFFIC OFFICE 29900 GODDARD RD. DETROIT, MI 48242 PHONE</p> <p>(734) 955-2154</p>
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CITY OF DETROIT
DEPARTMENT OF PUBLIC WORKS



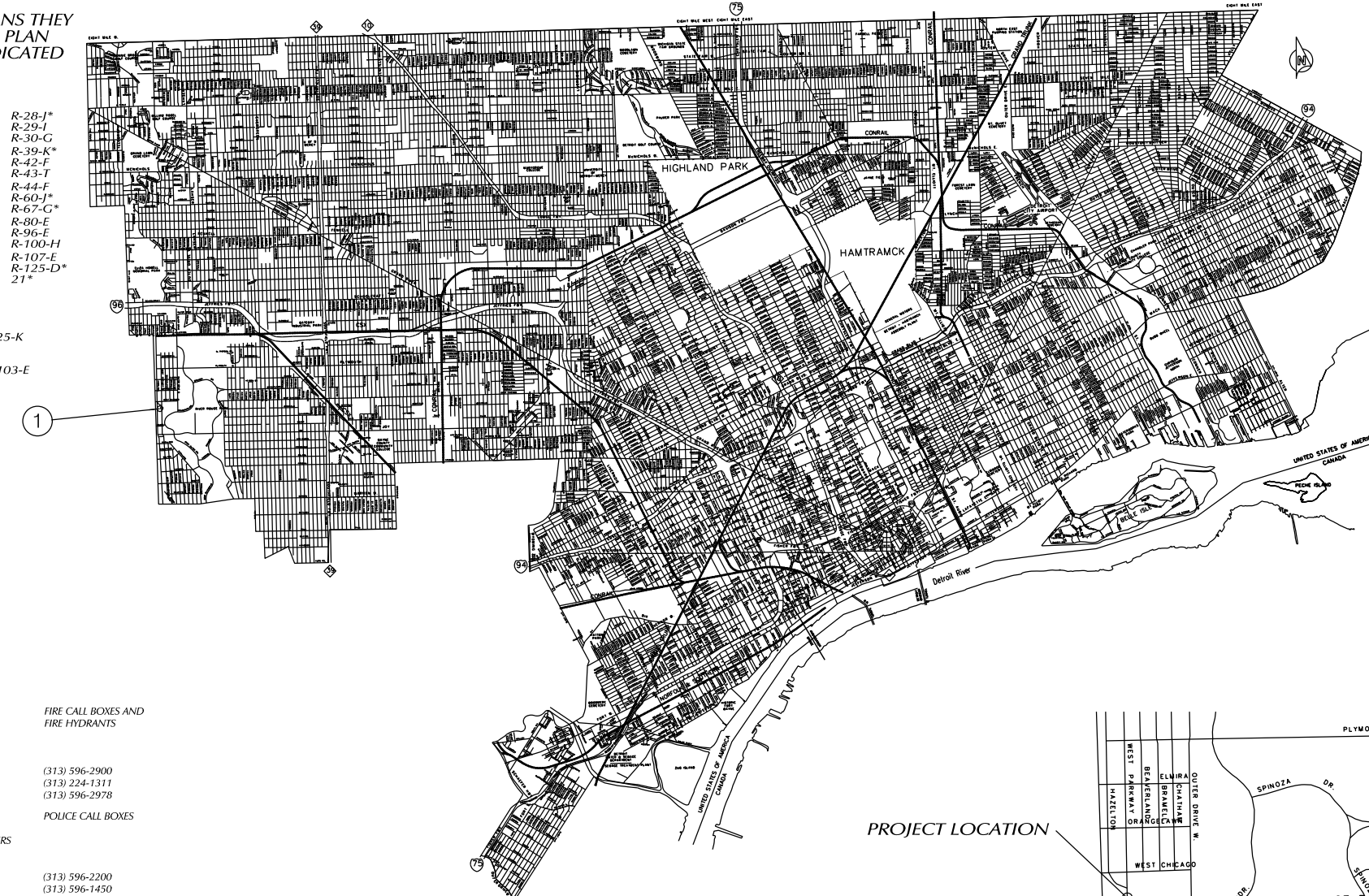
CONTROL SECTION

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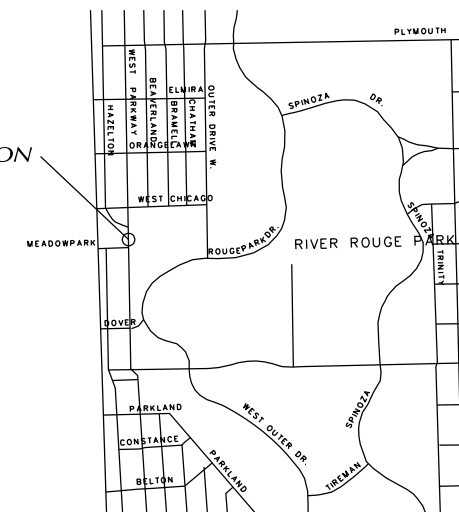
PROJECT JOB NO.

PW-6987

CULVERT REPLACEMENT PROJECT
REPLACEMENT OF THE W. PARKWAY CULVERT OVER
ASHCROFT - SHERWOOD DRAIN



PROJECT LOCATION



THE DESIGN OF THIS STRUCTURE IS BASED ON CURRENT AMERICAN ASSOCIATION OF THE STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO), FOR HIGHWAY BRIDGES HS 25 LOADING. LIVE LOAD PLUS IMPACT DEFLECTION DOES NOT EXCEED 1/800 OF THE SPAN LENGTH. THE LOAD FACTOR METHOD OF DESIGN WAS USED FOR THIS STRUCTURE.

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARDS SPECIFICATIONS FOR CONSTRUCTION 2003 EDITION.

ALL EXPOSED CONCRETE CORNERS SHOWN SQUARE ON THE PLANS SHALL BE BELIEVE WITH 1/2" TRIANGULAR MOLDINGS EXCEPT AS OTHERWISE NOTED.

THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIALS OF THE FOLLOWING GRADES AND STRESSES.

- CONCRETE: GRADE S2 f'c = 3,000 PSI
- CONCRETE: GRADE D f'c = 4,000 PSI
- STEEL REINFORCEMENT: fy = 60,000 PSI
- PRESTRESSED CONCRETE: f'c = 5,000 PSI

ALL DIMENSIONS ON THESE PLANS ARE IN INCHES EXCEPT AS NOTED.



DESIGNED BY LA		Date: 01/24/2018
Drawn WLW		
Checked By ---	Approved By ---	Job No: PW-6987

CONTRACT FOR:
REPLACEMENT OF THE W. PARKWAY CULVERT OVER
ASHCROFT - SHERWOOD DRAIN

LOCAL AUTHORITY APPROVAL
CITY OF DETROIT
DEPARTMENT OF PUBLIC WORKS
CITY ENGINEERING DIVISION

APPROVED BY _____ DATE _____

PREPARED UNDER THE SUPERVISION OF

REGISTERED PROFESSIONAL ENGINEER REGISTRATION NO. _____
CITY OF DETROIT ORGANIZATION
CITY ENGINEERING DIVISION, D.P.W.
2 WOODWARD AVE. SUITE 601 DETROIT MI 48216
ADDRESS

CONTROL SECTION NO.: XXX XXXXX
JOB NO.: PW-6987