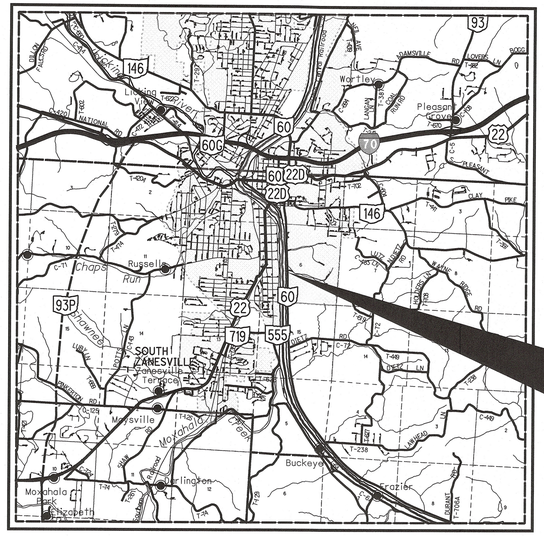
WAYNE AVE. CULVERT REPLACEMENT

CITY OF ZANESVILLE

MUSKINGUM COUNTY



LOCATION MAP

LATITUDE: 39°55'21.22" N LONGITUDE: 82°00'05.40" W

SCALE IN MILES

0 1 2 3 4

N

PORTION TO BE IMPROVED
INTERSTATE HIGHWAY
FEDERAL ROUTES
STATE ROUTES
COUNTY & TOWNSHIP ROADS
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2019)	12,700
DESIGN YEAR ADT (2039)	15,200
DESIGN HOURLY VOLUME (2039)	1,368
DIRECTIONAL DISTRIBUTION	60%
TRUCKS (24 HOUR B&C)	13%
DESIGN SPEED	40 MPH
LEGAL SPEED	35 MPH

DESIGN FUNCTIONAL CLASSIFICATION:
URBAN PRINCIPAL ARTERIAL

NHS PROJECT NO

DESIGN EXCEPTIONS

NONE

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF THE REPLACEMENT OF THE DEFICIENT CULVERT ON WAYNE AVENUE JUST SOUTH OF ARCADIA LANE IN THE CITY OF ZANESVILLE, OHIO

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA:	0.12 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	N/A
NOTICE OF INTENT EARTH DISTURBED AREA:	N/A

2019 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND CHANGES LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

INDEX OF SHEETS:

OHIO811.org Before You Dig

PLAN PREPARED BY:

HULL
Environment / Energy / Infrastructure
59 Grant Street
Newark, Ohio 43055
Tel: 740-344-5451
Fax: 740-344-8659
www.hullinc.com

ENGINEER'S SEAL:

STATE OF OHIO BENJAMIN W. RUSSELL PE-66937 REGISTERED PROFESSIONAL ENGINEER

SIGNED:
DATE: 8-15-19

STANDARD CONSTRUCTION DRAWINGS		SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS
BP-3.1	7/18/14	800-2019 7/19/19	
BP-5.1	1/18/19		
CB-2.1	7/20/18		
MGS-1.1	1/19/18		
MGS-2.1	1/19/18		
MGS-4.3	1/18/13		
MT-101.60	1/20/17		
MT-105.10	7/19/13		
TC-61.30	7/19/19		

APPROVED
CHARLES SAUNDERS, P.E., CITY ENGINEER DATE

APPROVED
JAY D. BENNETT, CITY SERVICE DIRECTOR DATE

FEDERAL PROJECT NO. NONE

PID NO. NONE

CONSTRUCTION PROJECT NO. NONE

RAILROAD INVOLVEMENT NONE

MUS-SR60

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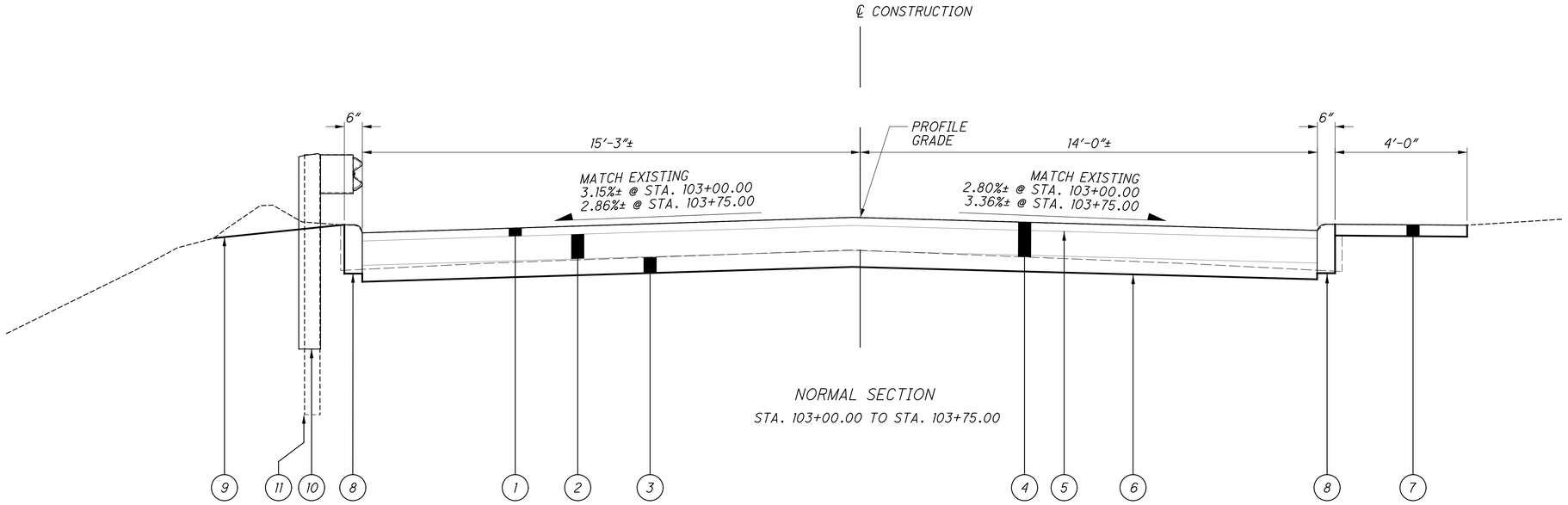


NORMAL SECTION

STA. 103+00.00 TO STA. 103+75.00

LEGEND

1. ITEM 441 - 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
2. ITEM 301 - 9″ ASPHALT CONCRETE BASE, PG64-22
3. ITEM 304 - 6″ AGGREGATE BASE
4. ITEM 202 - PAVEMENT REMOVED
5. ITEM 407 - TACK COAT (0.075 GAL/SQ. YD.)
6. ITEM 204 - SUBGRADE COMPACTION
7. ITEM 608 - 4″ CONCRETE WALK
8. ITEM 609 - CURB, TYPE 6
9. ITEM 659 - SEEDING AND MULCHING, CLASS 1
10. ITEM 606 - GUARDRAIL, TYPE MGS
11. ITEM 202 - GUARDRAIL REMOVED

TYPICAL SECTIONS

MUS-SR60

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

GAS:
COLUMBIA GAS OF OHIO
2429 NORTH LINDEN AVENUE
ZANESVILLE, OH 43701
P: (740) 260-0370
ATTN: MICHAEL DIBENEDETTO
mdibenedetto@nisource.com

SEWER
ZANESVILLE WASTEWATER
1730 MOXAHALA AVENUE
ZANESVILLE, OH 43701
ATTN: DAVE MARKLEY
(740) 455-0641
wwsupt@coz.org

COMMUNICATIONS:
AT&T - OHIO
169 NORTH 6TH STREET
ZANESVILLE, OH 43701
P: (740) 454-3552
ATTN: BARRETT TAMASOVICH
BT2178@att.com

CHARTER COMMUNICATIONS
4547 NORTH LEEDOM ROAD
CHANDLERSVILLE, OH 43727
P: (740) 303-3100
ATTN: BRAD ST. CLAIR
Bradley.StClair@charter.com

ELECTRIC
AEP
130 WEST MAIN STREET
CROOKSVILLE, OH 43731
ATTN: RANDY TOLLEY
(740) 469-1064
rdtolley@AEP.com

WATER
ZANESVILLE WATER
14 BUCKEYE DRIVE
ZANESVILLE, OH 43701
ATTN: PAUL MILLS
(740) 455-0631
paul.mills@coz.org

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

ITEM 614, MAINTAINING TRAFFIC

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, SHALL BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD CLOSURE. THE SIGNS SHALL BE ERECTED ON THE RIGHT-HAND SIDE OF THE ROAD FACING TRAFFIC. THEY SHALL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. ON ROADWAYS, THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE.

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN SIGNS, SIGN SUPPORTS, AND TYPE III BARRICADES AS DETAILED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND PER ODOT STANDARD CONSTRUCTION DRAWING MT-101.60 AT THE POINTS OF CLOSURE.

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 60 CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED. A DISINCENTIVE SHALL BE ASSESSED IN THE AMOUNT OF $600 FOR EACH CALENDAR DAY THE ROADWAY REMAINS CLOSED TO TRAFFIC BEYOND THE SPECIFIED LIMIT.

LOCAL ACCESS SHALL BE MAINTAINED FROM ONE DIRECTION AT ALL TIMES, INCLUDING THE PROPERTIES BETWEEN THE BOX CULVERT AND THE SLIP REPAIR PROJECTS.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH CMS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 611 CONDUIT ITEM.

ACCESS TO ADJACENT PROPERTIES

THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AT ALL TIMES IN ACCORDANCE WITH THE REQUIREMENTS OF ITEM 614. DRIVEWAYS SHALL BE CLOSED TO TRAFFIC FOR THE ACTUAL TIME NECESSARY TO PERFORM THE UTILITY RELOCATION WORK SHOWN IN THESE PLANS. THE CONTRACTOR SHALL GIVE THE AFFECTED PROPERTY OWNERS A SEVEN DAY MINIMUM WRITTEN NOTICE WHEN THE DRIVEWAYS WILL BE CLOSED FOR CONSTRUCTION.

SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, SEEDING AND MULCHING
300 SQ. YD.

659, REPAIR SEEDING AND MULCHING
15 SQ. YD.

659, INTER-SEEDING
15 SQ. YD.

659, COMMERCIAL FERTILIZER
0.04 TON

659, LIME
0.06 ACRES

659, WATER
2 M. GAL.

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

ITEM SPECIAL - PIPE CLEANOUT

THIS WORK SHALL CONSIST OF REMOVING THE LARGE AMOUNT OF ACCUMULATED SEDIMENT AND DEBRIS FROM THE EXISTING DRAINAGE CONDUITS SPECIFIED IN THE PLANS. THE ACCUMULATED DEBRIS AND SEDIMENT WILL LIKELY REQUIRE EQUIPMENT TO ENTER THE CULVERTS. CARE SHALL BE TAKEN TO NOT DAMAGE THE EXISTING STRUCTURES DURING REMOVAL. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. ALL CONDUITS SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE PIPE SHALL BE PAID FOR AT THE UNIT PRICE BID FOR ITEM SPECIAL - PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE ABOVE NOTED WORK:

SPECIAL, PIPE CLEANOUT, OVER 48" 44 FT.

ITEM 202 - PIPE REMOVED, 24" AND UNDER, AS PER PLAN

THIS WORK SHALL CONSIST OF REMOVING THE EXISTING STORM SEWER PIPES IN ADDITION TO PLUGGING THE ACCESS TO THE EXISTING REINFORCED CONCRETE ARCH.

ALL LABOR, EQUIPMENT, AND INCIDENTALS REQUIRED TO REMOVE THE EXISTING STORM PIPES AND PLUG THE ACCESS TO THE EXISTING REINFORCED CONCRETE ARCH SHALL BE INCLUDED IN ITEM 202 - PIPE REMOVED, 24" AND UNDER, AS PER PLAN.

ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN

ALL EXCAVATION FOR THIS PROJECT, INCLUDING ANY EXCAVATION REQUIRED BEYOND THE LIMITS OF THE CULVERT REPLACEMENT FOR ROADWAY PURPOSES, SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 503 - UNCLASSIFIED EXCAVATION, AS PER PLAN.

PLAN ABBREVIATIONS

ABUT.	= ABUTMENT
ADT	= AVERAGE DAILY TRAFFIC
ADTT	= AVERAGE DAILY TRUCK TRAFFIC
BRG.	= BEARING
c/c	= CENTER TO CENTER
CLR.	= CLEAR COVER
CONST.	= CONSTRUCTION
C.J.	= CONSTRUCTION JOINT
C.R.	= COUNTY ROAD
DND	= DO NOT DISTURB
E.F.	= EACH FACE
EL.	= ELEVATION
F/F	= FACE TO FACE
F.A.	= FORWARD ABUTMENT
F.F.	= FAR FACE
℄	= FLOW LINE
FWD.	= FORWARD
M.N.S.	= MAGNETIC NAIL SET
N.F.	= NEAR FACE
PEJF	= PREFORMED EXPANSION JOINT FILLER
P.G.	= PROFILE GRADE
R.A.	= REAR ABUTMENT
SCD	= STANDARD CONSTRUCTION DRAWING
STA.	= STATION
T.R.	= TOWNSHIP ROAD
TYP.	= TYPICAL

CALCULATED CES CHECKED BWR

GENERAL NOTES

MUS-SR60

SHEET NUM.													PART.	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
3	5	7	8	13									01/BRO/BR/ZAN						
																		ROADWAY	
													LS	201	11000	LS		CLEARING AND GRUBBING	
	244												244	202	23000	244	SY	PAVEMENT REMOVED	
	30												30	202	35101	30	FT	PIPE REMOVED, 24" AND UNDER, AS PER PLAN	3
	75												75	202	38000	75	FT	GUARDRAIL REMOVED	
	2												2	202	58100	2	EACH	CATCH BASIN REMOVED	
		78	34										112	203	20000	112	CY	EMBANKMENT	
	269												269	204	10000	269	SY	SUBGRADE COMPACTION	
	75												75	606	15050	75	FT	GUARDRAIL, TYPE MGS	
	300												300	608	10000	300	SF	4" CONCRETE WALK	
	150												150	609	26000	150	FT	CURB, TYPE 6	
																		EROSION CONTROL	
													17	601	32100	17	CY	ROCK CHANNEL PROTECTION, TYPE B WITH FILTER	
300													300	659	10000	300	SY	SEEDING AND MULCHING	
15													15	659	14000	15	SY	REPAIR SEEDING AND MULCHING	
15													15	659	15000	15	SY	INTER-SEEDING	
0.04													0.04	659	20000	0.04	TON	COMMERCIAL FERTILIZER	
0.06													0.06	659	31000	0.06	ACRE	LIME	
2													2	659	35000	2	MGAL	WATER	
													5,000	832	30000	5,000	EACH	EROSION CONTROL	
																		DRAINAGE	
													44	SPECIAL	20270130	44	FT	PIPE CLEANOUT OVER 48"	3
	54												54	611	04400	54	FT	12" CONDUIT, TYPE B	
	2												2	611	98150	2	EACH	CATCH BASIN, NO. 3	
																		PAVEMENT	
	63												63	301	46000	63	CY	ASPHALT CONCRETE BASE, PG64-22	
	43												43	304	20000	43	CY	AGGREGATE BASE	
	14												14	407	10000	14	GAL	TACK COAT	
	21												21	441	50000	21	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
																		TRAFFIC CONTROL	
	2												2	626	00110	2	EACH	BARRIER REFLECTOR, TYPE 2	
	0.01												0.01	642	00290	0.01	MILE	CENTER LINE	
																		STRUCTURE 20 FOOT SPAN AND UNDER (MUS-SR60)	
													LS	202	11001	LS		STRUCTURE REMOVED, AS PER PLAN	11
													LS	503	11100	LS		COFFERDAMS AND EXCAVATION BRACING	
													LS	503	21301	LS		UNCLASSIFIED EXCAVATION, AS PER PLAN	3
				2,243									2,243	509	10000	2,243	LB	EPOXY COATED REINFORCING STEEL	
													7	511	46010	7	CY	CLASS QC1 CONCRETE, RETAINING/WINGWALL NOT INCLUDING FOOTING	
													19	511	46510	19	CY	CLASS QC1 CONCRETE, FOOTING	
													1	511	46610	1	CY	CLASS QC1 CONCRETE, HEADWALL	
													20	512	10100	20	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	
													141	512	33000	141	SY	TYPE 2 WATERPROOFING	
													17	516	13600	17	SF	1" PREFORMED EXPANSION JOINT FILLER	
													32	518	21200	32	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	
													46	611	94911	46	FT	8' X 6' CONDUIT, TYPE A, 706.05, AS PER PLAN	11
																		MAINTENANCE OF TRAFFIC	
													LS	614	11000	LS		MAINTAINING TRAFFIC	
													LS	623	10000	LS		CONSTRUCTION LAYOUT STAKES AND SURVEYING	
													LS	624	10000	LS		MOBILIZATION	

CALCULATED CES CHECKED BWR

GENERAL SUMMARY

MUS-SR60

REF. NO.	SHEET NO.	STATION FROM	STATION TO	SIDE	202 PAVEMENT REMOVED	202 GUARDRAIL REMOVED	202 PIPE REMOVED, 24" AND UNDER, AS PER PLAN	202 CATCH BASIN REMOVED	202 STRUCTURE REMOVED, AS PER PLAN	606 GUARDRAIL, TYPE MGS	608 4" CONCRETE WALK	609 CURB, TYPE 6	611 12" CONDUIT, TYPE B	611 CATCH BASIN, 3	626 BARRIER REFLECTOR, TYPE 2	642 CENTERLINE
					SY	FT	FT	EACH	LS	FT	SF	FT	FT	EACH	EACH	MILE
R-1	6	103+00.00	103+75.00	CL	244											
R-2	6	103+00.00	103+75.00	LT		75										
R-3	9	103+19.06					30									
R-4	9	103+19.06						1								
R-5	9	103+19.06						1								
R-6	10	103+40.07							LS							
G-1	6	103+00.00	103+75.00	LT						75					2	
SW-1	6	103+00.00	103+75.00	RT							300					
C-1	6	103+00.00	103+75.00	LT & RT								150				
TC-1	6	103+00.00	103+75.00	CL												0.01
D-1	9	103+19.06		CL									54			
CB-1	9	103+19.06		LT										1		
CB-2	9	103+19.06		RT										1		
TOTALS CARRIED TO GENERAL SUMMARY					244	75	30	2		75	300	150	54	2	2	0.01

REF. NO.	SHEET NO.	STATION TO STATION	SIDE	204 CAD MEASURED AREA (ITEM 204)	301 CAD MEASURED AREA (ITEM 301)	304 CAD MEASURED AREA (ITEM 304)	441 CAD MEASURED AREA (ITEM 441)	204 SUBGRADE COMPACTION	301 ASPHALT CONCRETE BASE, PG64-22	304 AGGREGATE BASE	407 TACK COAT	441 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22
				SF	SF	SF	SF	SY	CY	CY	GAL	CY
		103+00 103+75	CL	2417	2242	2317	2195	269	63	43	14	21
TOTALS								269	63	43	14	21

CALCULATED BWR
CHECKED CES

SUBSUMMARY

MUS-SR60

5
14

BENCHMARK DATA

BM #1: CAPPED IRON PIN,
STA. 99+98.73, 20.00' RT.,
ELEV. 697.17, N 700290 - E 2108346

BM #2: MAG NAIL, STA. 103+34.88,
11.26' LT., ELEV. 694.43,
N 700625 - E 2108315

HORIZONTAL SCALE IN FEET
0 5 10 20

CALCULATED BWR
CHECKED CES

CONSTRUCTION LIMITS

OVERHEAD UTILITY LINE TO BE TEMPORARILY RELOCATED BY OTHERS

END WORK/PROJECT
FULL DEPTH PAVEMENT
REPLACEMENT STA. 103+75.00

BEGIN WORK/PROJECT
FULL DEPTH PAVEMENT
REPLACEMENT STA. 103+00.00

℄ CONST. & ℄ ROW S.R. 60

N 1° 41' 09" W

BM #2

15'-3"±
14'-0"±
4'-0"±

15'-3"
14'-0"
4'-0"

G-1 R-1 R-2 C-1 TC-1 SW-1

EXISTING 12" STORM PIPE INTO TOP OF REINFORCED CONCRETE ARCH TO BE REMOVED, ACCESS TO EXISTING ARCH TO BE PLUGGED

DAVID M. MOODY & MARY E. MOODY
P.N. 81-28-02-01-000
O.R. 2667, PG. 337
1030 WAYNE AVE.

LUTHER HILL & ANNA MAE HILL
P.N. 81-28-01-03-000
O.R. 1658, PG. 872
1040 WAYNE AVE.

EX SH

HS EX

OH-T

W T

102 103 104

569 589

EXIST. PROFILE

PROPOSED PROFILE

+0.48 %

STA. 103+00.00
TIE INTO EXIST.
℄ S.R. 60
EL. 694.84

STA. 103+75.00
TIE INTO EXIST.
℄ S.R. 60
EL. 695.20

EXIST. TELECOM ON EAST SIDE

EXIST. 8" WATER ON EAST SIDE

EXISTING 12" STORM PIPE INTO TOP OF REINFORCED CONCRETE ARCH TO BE REMOVED, ACCESS TO EXISTING ARCH TO BE PLUGGED

8'-0"

6'-0"

700	695	690	685	680
695.22	695.08	694.93	694.88	694.84
694.91	695.00	695.20	695.50	695.85
696.26	696.67			

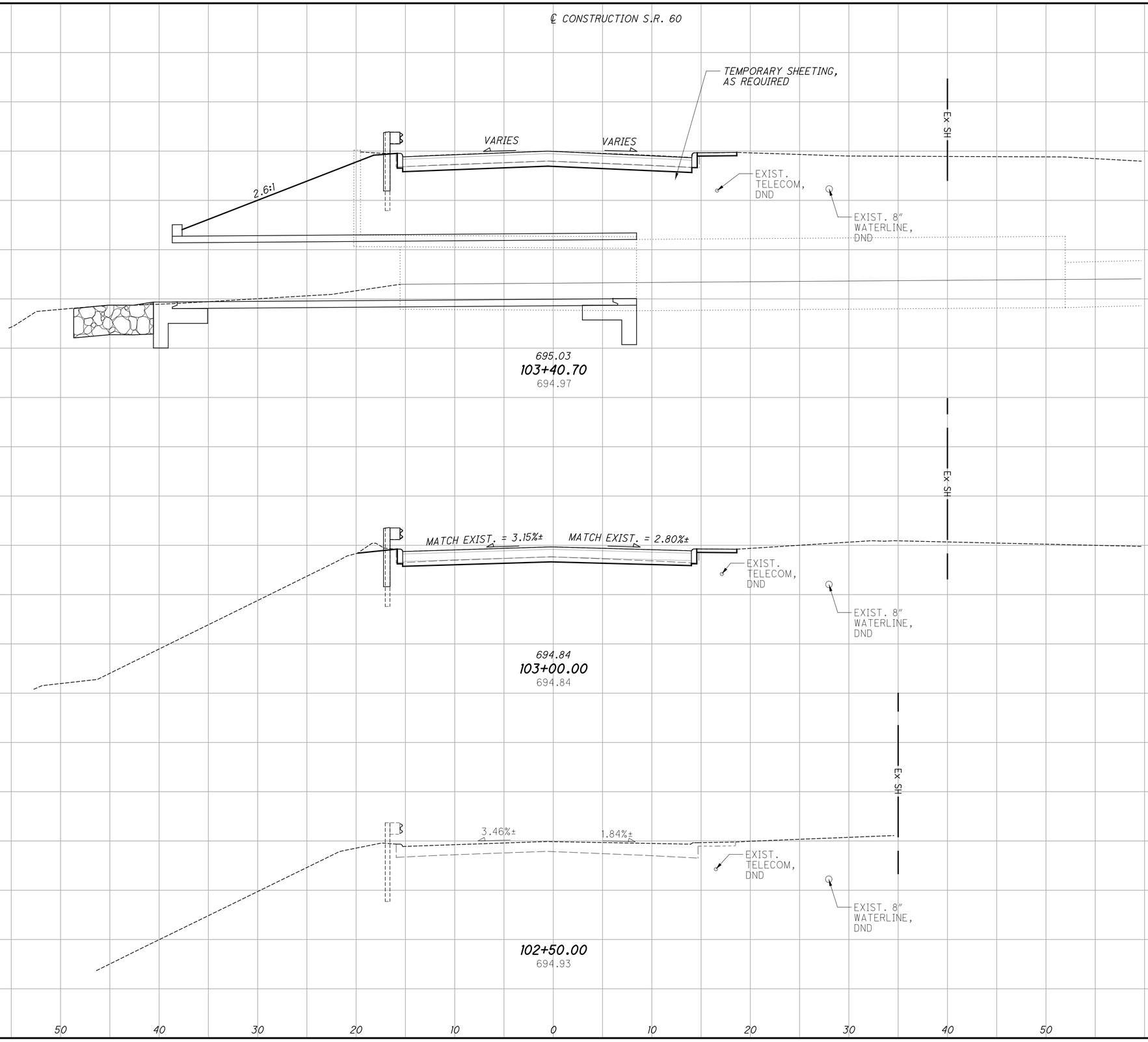
102+00 102+50 103+00 103+50 104+00 104+50

PLAN AND PROFILE

MUS-SR60

6
14

SEEDING END WIDTH	SEEDING SQ. YDS.
23	62
4	11
	73



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
0	104	0	78
2	0	1	0
		1	78

CALCULATED CES
CHECKED BWR

CROSS SECTIONS
STA. 102+50.00 TO STA. 103+40.70

MUS-SR60

7
14

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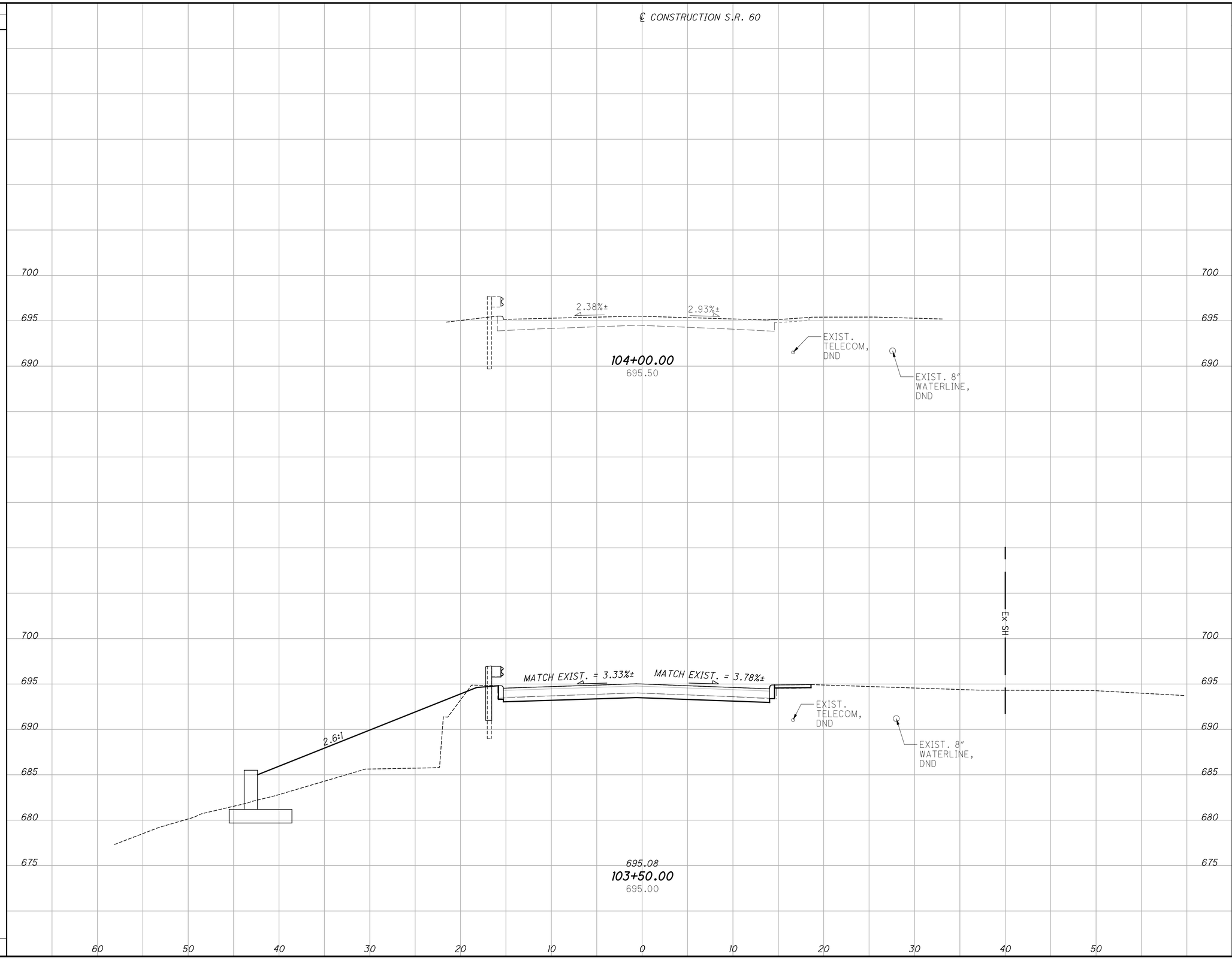
SEEDING	
END WIDTH	SQ. YDS.
28	
	27
	27



END AREA		VOLUME	
CUT	FILL	CUT	FILL
1	92		
		0	34
		0	34

CALCULATED CES
CHECKED BWR

CROSS SECTIONS
STA. 103+50.00 TO STA. 104+00.00

MUS-SR60

8
14

R-3

℄ CONST. & ℄ ROW S.R. 60

R-3

R-4

CB-1

D-1

R-5

CB-2

℄ PROP. 12" CONDUIT, TYPE B, STA. 103+19.08

OH-T

T

R-3

694

692

690

688

686

684

682

680

EXISTING GROUND ELEV.

PROPOSED WINGWALL

PROPOSED 12" CONDUIT, TYPE B

5% SLOPE

PROPOSED 12", TYPE B OULET INV 682.47

PROPOSED 12" CONDUIT, TYPE B

5% SLOPE

PROPOSED CATCH BASIN, NO. 3
STA. 103+19.06, 15.28' LT, INLET ELEV. 694.03
PROP. 12" CONDUIT, TYPE B (E) INV 689.72
PROP. 12" CONDUIT, TYPE B (W) INV 683.82

PROPOSED 12" CONDUIT, TYPE B

2.5% SLOPE

EXIST. TELECOM, DND

PROPOSED CATCH BASIN, NO. 3
STA. 103+19.09, 14.00' RT, INLET ELEV. 693.88
PROP. 12" CONDUIT, TYPE B (W) INV 690.38

1000+58.71

1000+38

1000+30

1000+20

1000+10

1000+00

HORIZONTAL SCALE IN FEET

0 2 4

CALCULATED CES

CHECKED BWR

PLAN AND PROFILE STORM SEWER

MUS-SR60

9
14

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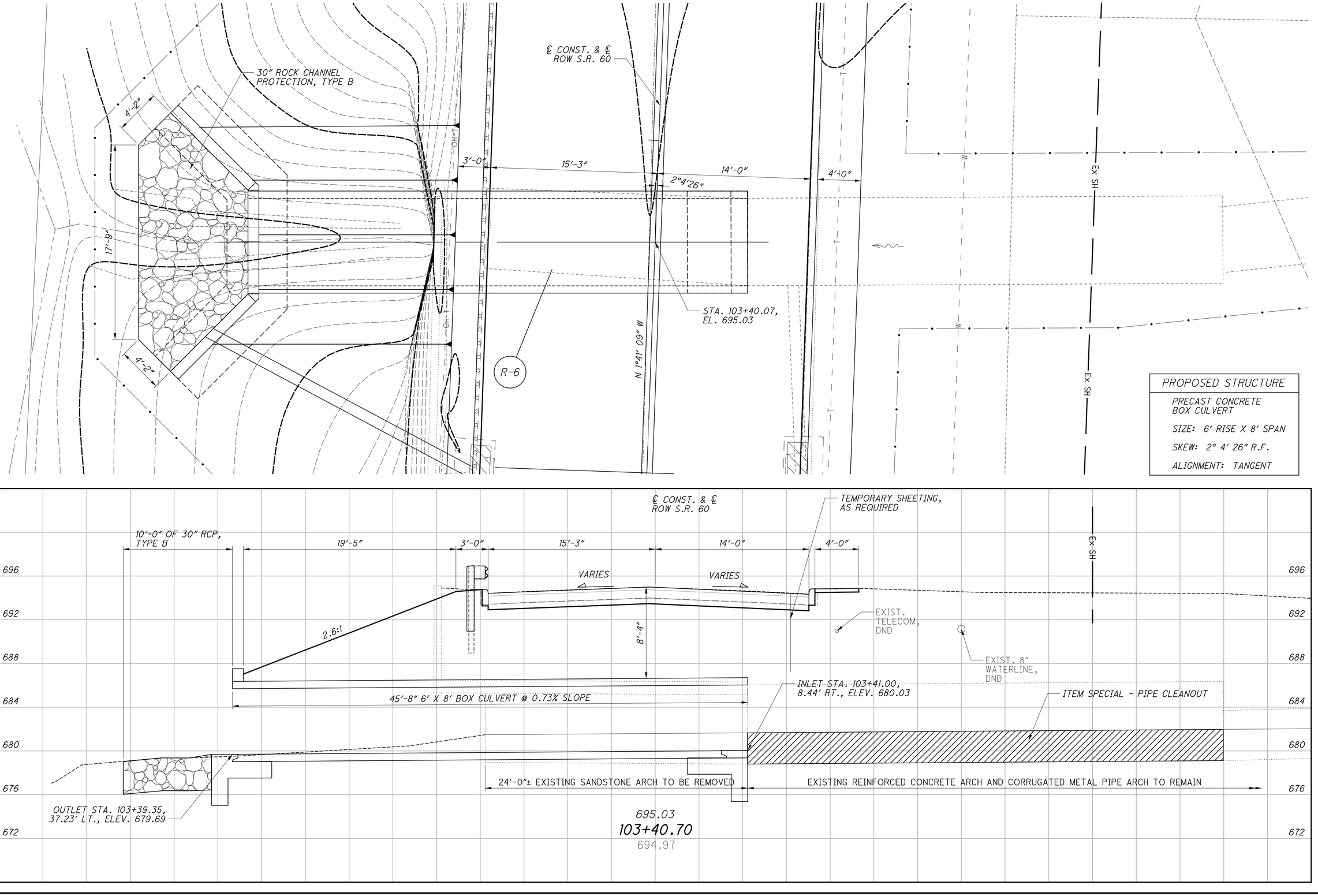

HORIZONTAL SCALE IN FEET
0 2 4 8

CALCULATED BWR
CHECKED CES

PLAN AND PROFILE
STA. 103+40.07

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GENERAL NOTES

DESIGN SPECIFICATIONS: THIS STANDARD DRAWING CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2014, INCLUDING THE 2015 & 2016 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2019.

DESIGN DATA: THE FOLLOWING DESIGN DATA IS ASSUMED:

DESIGN LOAD: HL-93
FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS/SQ. FT.
DEPTH OF COVER: 8'-4" @ ℄ ROADWAY
INTERNAL ANGLE OF FRICTION OF BACKFILL SOIL, ϕ_f = 30°
TOTAL UNIT WEIGHT OF BACKFILL SOIL = 120 PCF
INTERNAL ANGLE OF FRICTION (DRAINED), FOUNDATION SOIL, ϕ_s = 28°
UNDRAINED SHEAR STRENGTH (COHESIVE), FOUNDATION SOIL, S_{ut} = 1500 PSF
UNIT WEIGHT OF CONCRETE = 150 PCF
SLOPE OF BACKFILL = 2:1 (TYPE A & B HEADWALLS)
HEIGHT OF LIVE LOAD SURCHARGE = 2 FT (TYPE C HEADWALLS)

CONCRETE CLASS QC1 - COMPRESSIVE STRENGTH 4000 PSI
(FOOTING, WINGWALL AND FORESLOPE WALL)

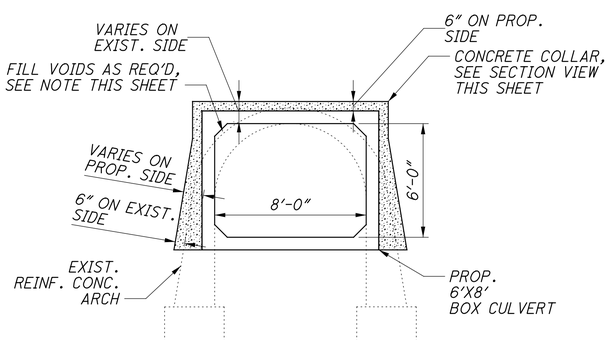
REINFORCING STEEL - ASTM A615, A616, OR A617
GRADE 60 MINIMUM YIELD STRENGTH
60,000 PSI (ALL REINFORCING SHALL BE EPOXY COATED)

PRECAST CONCRETE: AT THE OPTION OF THE CONTRACTOR, PRECAST WINGWALLS MAY BE USED IN ACCORDANCE WITH CMS 602.03.E.

FORESLOPE WALL ANCHOR DOWELS: ANCHOR PER CMS 510 WITH NONSHRINK, NONMETALLIC GROUT CONFORMING TO CMS 705.20 AND TO A DEPTH SPECIFIED ON SHEET 6/6. PAYMENT FOR DOWEL HOLES, GROUT AND INSTALLATION SHALL BE INCLUDED WITH ITEM 511.

THREADED INSERTS OR NON-PROTRUDING MECHANICAL CONNECTORS CAPABLE OF DEVELOPING AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCEMENT SHOWN ARE AN ACCEPTABLE ALTERNATIVE TO RESIN BONDING. MAINTAIN A MINIMUM COVER OF 3 INCHES AT THE BOTTOM OF THE CULVERT SLAB. MECHANICAL CONNECTORS SHALL HAVE AN "L-SHAPED" BAR INSIDE THE CULVERT WITH A MINIMUM HORIZONTAL LENGTH OF 12 INCHES. THE DEPARTMENT WILL CONSIDER PAYMENT FOR INSERTS OR MECHANICAL CONNECTORS AS INCIDENTAL TO ITEM 611.

BACKFILL LIMITATION: WHEN THE DESIGN HEIGHT IS GREATER THAN 10 FT, THE BACKFILL BEHIND THE WINGWALLS SHALL NOT BE PLACED HIGHER THAN THE ELEVATION OF THE SOIL ABOVE THE TOE. WHEN THE SOIL ABOVE THE TOE IS AT ITS FINISHED ELEVATION, THE REMAINDER OF THE BACKFILL MAY BE PLACED.



INTERFACE BETWEEN EXISTING AND NEW CULVERTS

POROUS BACKFILL WITH FILTER FABRIC 1'-6" THICK SHALL BE PLACED BEHIND THE WINGWALLS ONLY AND SHALL EXTEND TO 12" BELOW THE EMBANKMENT SURFACE. GEOTEXTILE FABRIC TYPE A SHALL BE PLACED BETWEEN THE POROUS BACKFILL AND REPLACED EXCAVATION ADJACENT TO THE STRUCTURE. IT SHALL TURN UNDER THE BOTTOM OF THE POROUS BACKFILL AND RETURN 6" ABOVE THE TOP ELEVATION OF THE WEEPHOLE.

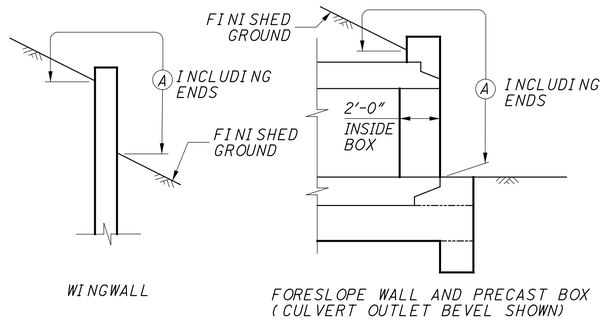
WEEPHOLES SHALL BE PLACED 6" TO 12" ABOVE THE NORMAL WATER ELEVATION OR GROUND LINE AND SHALL HAVE A MAXIMUM SPACING OF 10'-0". A MINIMUM OF ONE WEEPHOLE SHALL BE PROVIDED PER WINGWALL.

PREFORMED EXPANSION JOINT FILLER: PREFORMED EXPANSION JOINT FILLER (PEJF) CONFORMING TO CMS 705.03, 1 INCH THICK, SHALL BE PLACED ABOVE THE FOOTING BETWEEN THE SIDES OF THE BOX CULVERT AND THE ENDS OF THE WINGWALLS. PAYMENT FOR MATERIALS AND INSTALLATION SHALL BE INCLUDED WITH ITEM 516 - 1" PREFORMED EXPANSION JOINT FILLER.

SEALING OF FORESLOPE WALL AND WINGWALLS: ALL EXPOSED FORESLOPE WALL AND WINGWALL CONCRETE SHALL BE SEALED WITH EPOXY-URETHANE SEALER. THE LIMITS SHALL BE AS SHOWN IN THE DIAGRAMS BELOW. PAYMENT FOR THE EPOXY-URETHANE SEALER SHALL BE PER ITEM 512 - SEALING OF CONCRETE SURFACES.

WATERPROOFING: TYPE 2 WATERPROOFING, PER CMS 512 AND 711.25, SHALL EXTEND VERTICALLY DOWN THE ENTIRE SIDES OF THE PRECAST CULVERT SECTIONS FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512 - TYPE 2 WATERPROOFING.

IF PAVEMENT IS NOT PLACED DIRECTLY ON TOP OF THE CULVERT, TYPE 2 WATERPROOFING, PER CMS 512 AND 711.25 SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE PRECAST CULVERT SECTIONS AND SHALL EXTEND ONE FOOT VERTICALLY DOWN THE SIDES FOR ALL PORTIONS OF THE CULVERT WHICH SHALL BE IN CONTACT WITH THE BACKFILL. PAYMENT FOR THE MEMBRANE WATERPROOFING SHALL BE AT THE CONTRACT PRICE BID PER SQUARE YARD FOR ITEM 512 - TYPE 2 WATERPROOFING.



LIMITS OF ITEM 512-SEALING CONCRETE SURFACES
Ⓐ - SEAL ENTIRE CONCRETE SURFACE AREA

ITEM 611 - 8' X 6' CONDUIT, TYPE A, 706.05, AS PER PLAN
THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING PRECAST REINFORCED CONCRETE BOX CULVERT SECTIONS AT THE LOCATIONS SHOWN IN THE PLANS.

PRECAST REINFORCED CONCRETE BOX CULVERT REINFORCING STEEL AREAS, WALL AND SLAB THICKNESSES AND CONCRETE COMPRESSIVE STRENGTH SHALL BE DESIGNED AND PROVIDED BY THE PRECAST REINFORCED CONCRETE BOX CULVERT MANUFACTURER.

PRECAST REINFORCED CONCRETE BOX CULVERT SHALL BE DESIGNED TO MEET HL-93 LOADING WITH A 60 PSF FUTURE WEARING SURFACE.

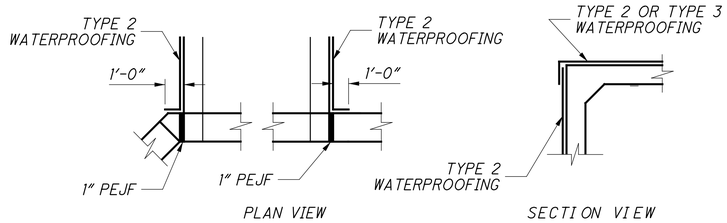
ALL LABOR, EQUIPMENT, CONCRETE, REINFORCING STEEL, AND INCIDENTALS REQUIRED TO CONSTRUCT THE 4-SIDED PRECAST CONCRETE BOX CULVERT ARE INCLUDED IN ITEM 611 - 8' X 6' CONDUIT, TYPE A, 706.05, AS PER PLAN.

INTERFACE BETWEEN EXISTING AND NEW CULVERTS
THE INTERFACE BETWEEN THE EXISTING REINFORCED CONCRETE ARCH AND THE NEW BOX CULVERT SHALL BE ENCASED IN A CONCRETE COLLAR AS DETAILED ON THIS SHEET. ANY VOIDS CREATED WHEN PLACING THE NEW BOX CULVERT ADJACENT TO THE EXISTING CONCRETE ARCH SHALL BE FILLED WITH CEMENTITIOUS MATERIAL TO PROVIDE A SMOOTH, UNIFORM TRANSITION BETWEEN THE TWO STRUCTURES. THIS WORK SHALL BE INCLUDED FOR PAYMENT WITH ITEM 611 - 8' X 6' CONDUIT, TYPE A, 706.05, AS PER PLAN.

ITEM 202 - STRUCTURE REMOVED, AS PER PLAN

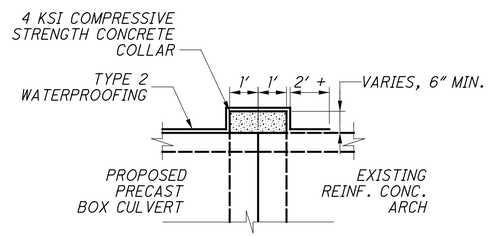
THIS ITEM SHALL CONSIST OF REMOVING THE EXISTING SANDSTONE ARCH STRUCTURE, WALL AND OTHER PORTIONS OF THE EXISTING STRUCTURE NECESSARY TO INSTALL THE PROPOSED BOX CULVERT.

ALL LABOR, EQUIPMENT, AND INCIDENTALS REQUIRED TO REMOVE THE EXISTING SANDSTONE ARCH AND WALL SHALL BE INCLUDED IN ITEM 202 - STRUCURE REMOVED, AS PER PLAN.



WATERPROOFING DETAILS

BASIS OF PAYMENT: ALL LABOR, EQUIPMENT AND INCIDENTALS REQUIRED TO CONSTRUCT THE FOOTING, CUTOFF WALL, WINGWALLS AND FORESLOPE WALL SHALL BE INCLUDED WITH ITEM 511 - CLASS QC1 CONCRETE, RETAINING/WINGWALL INCLUDING FOOTING. PAYMENT FOR REINFORCING STEEL SHALL BE INCLUDED WITH ITEM 509 - EPOXY COATED REINFORCING STEEL.



SECTION VIEW
+ EXTEND TYPE 2 WATERPROOFING 2'-0" ONTO EXISTING CONCRETE ARCH

CALCULATED BWR
CHECKED CES

CULVERT NOTES

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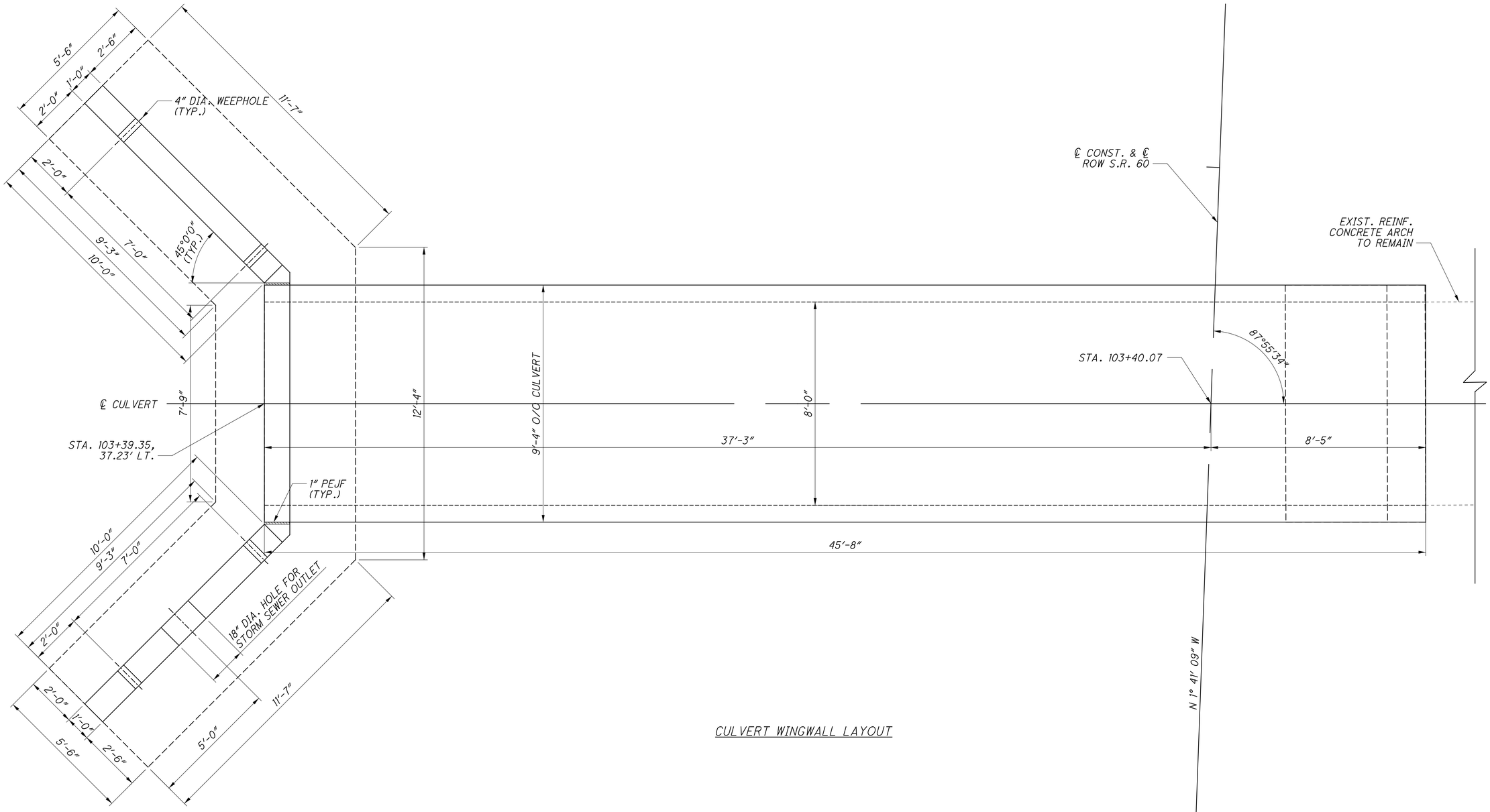
11
14



CULVERT WINGWALL LAYOUT

CALCULATED BWR
CHECKED CES

CULVERT LAYOUT

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TYPE A HEADWALL REINFORCING SCHEDULE

BAR MARK	NUMBER	LENGTH	WEIGHT (LBS.)	TYPE	BAR TYPE DIMENSIONS A	B	C	D	INC.
				WINGWALLS					
	2	4'- 10"							
X501	SERIES	TO	124	STR.					0'- 5 1/4"
	of 9	8'- 4"							
X502	4	8'- 4"	35	STR.					
Y501	22	4'- 0"	93	1	0'- 6"	3'- 8"			
	2	4'- 10"							
WW501	SERIES	TO	110	STR.					0'- 6"
	of 8	8'- 4"							
WW502	16	9'- 8"	162	STR.					
	4	3'- 3"							
WW503	SERIES	TO	81	STR.					3'- 2 1/2"
	of 3	9'- 8"							
WW504	14	3'- 6"	52	2	0'- 7"	0'- 2 "	2'- 1/4"	2'- 10 "	
WW505	4	12'- 8"	53	3	2'- 5"	3'- 4"	9'- 8"		
WW506	2	1'- 1"	3	4	0'- 7"	0'- 2 "			
WW507	16	3'- 10"	64	STR.					
WW508	16	2'- 0"	34	STR.					
				FOOTINGS & CUTOFF WALLS					
V501	30	5'- 2"	162	STR.					
W501	30	5'- 2"	162	STR.					
Z501	34	6'- 2"	219	5	2'- 7"	1'- 2"			
F501	12	4'- 8"	59	STR.					
F502	16	3'- 8"	62	STR.					
	2	13'- 0"					8'- 3/4"		
F503	SERIES	TO	158	6	1'- 9"	1'- 9"	TO		1'- 7/8"
	of 5	17'- 3"					12'- 4"		
	4	9'- 1"							
F504	SERIES	TO	212	STR.					0'- 6 1/4"
	of 5	11'- 2"							
	1	13'- 0"					8'- 3/4"		
F505	SERIES	TO	29	6	1'- 9"	1'- 9"	TO		0'- 11 5/8"
	2	13'- 11"					9'- 1/4"		
	2	9'- 1"							
F506	SERIES	TO	39	STR.					0'- 5"
	2	9'- 6"							
F507	14	3'- 8"	54	1	1'- 11"	1'- 10"			
F508	20	9'- 0"	188	STR.					
				FORESLOPE WALL					
FS501	4	9'- 0"	38	STR.					
FS502	10	2'- 1"	22	5	0'- 10"	0'- 8"			
FS503	10	2'- 8"	28	7	0'- 10"	0'- 8"	1'- 5"		
		TOTAL	2,243						

REINFORCING STEEL LIST NOTES

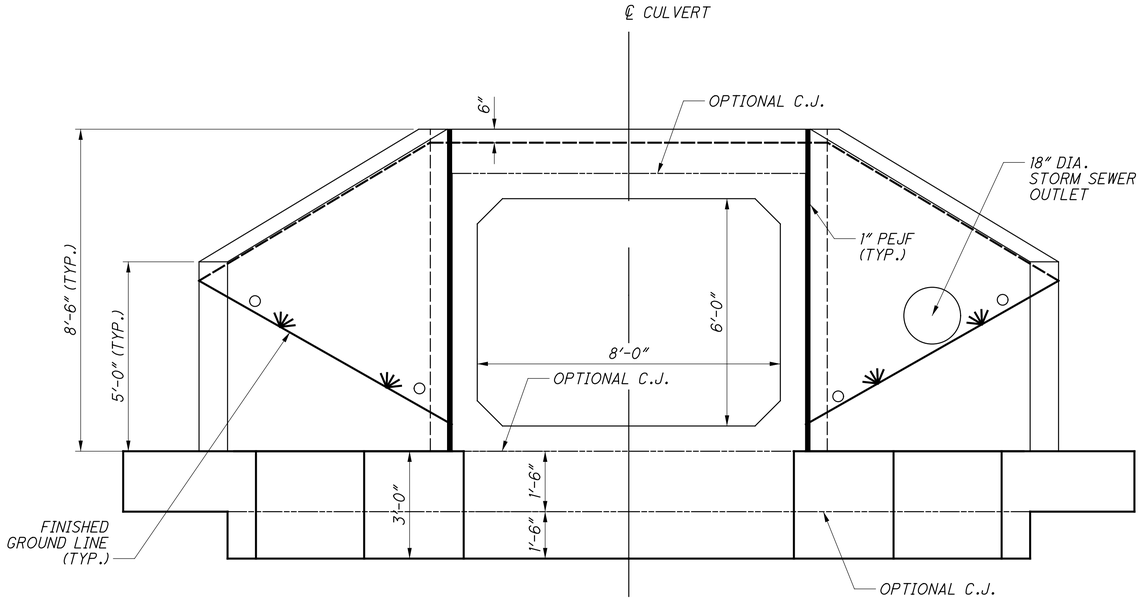
THE BAR SIZE IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN.
THE FIRST DIGIT INDICATES THE BAR SIZE NUMBER.

ALL DIMENSIONS ARE MEASURED OUT-TO-OUT OF BAR, UNLESS NOTED OTHERWISE.

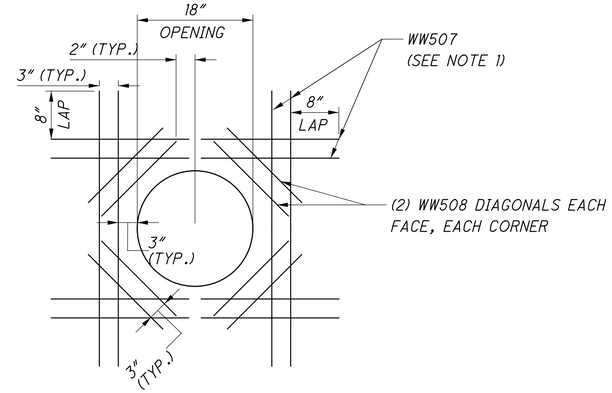
FOR STANDARD HOOK DIMENSIONS, SEE SECTION 509.05 OF THE SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED, GRADE 60.

PAYMENT FOR REINFORCING STEEL SHALL BE INCLDUED IN THE CONTRACT BID PRICE FOR ITEM 509 - EPOXY COATED REINFORCING STEEL.

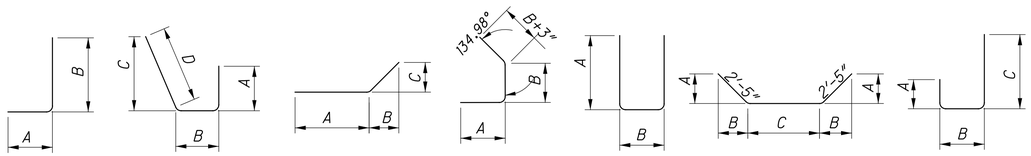


ELEVATION
TYPE A HEADWALL



REINFORCING AROUND STORM SEWER OUTLET

1. PROVIDE ADDITIONAL REINFORCEMENT EQUAL IN AREA TO THE TYPICAL REINFORCEMENT CUT BY OPENING IN EACH DIRECTION. ADDITIONAL REINFORCEMENT (MIN. 2 BARS ES AND EF) AND PLACED BETWEEN TYPICAL REINFORCEMENT @ 3" SPACING ON EACH SIDE OF OPENING.



TYPE-1 TYPE-2 TYPE-3 TYPE-4 TYPE-5 TYPE-6 TYPE-7

CALCULATED BWR CHECKED CES

CULVERT LAYOUT

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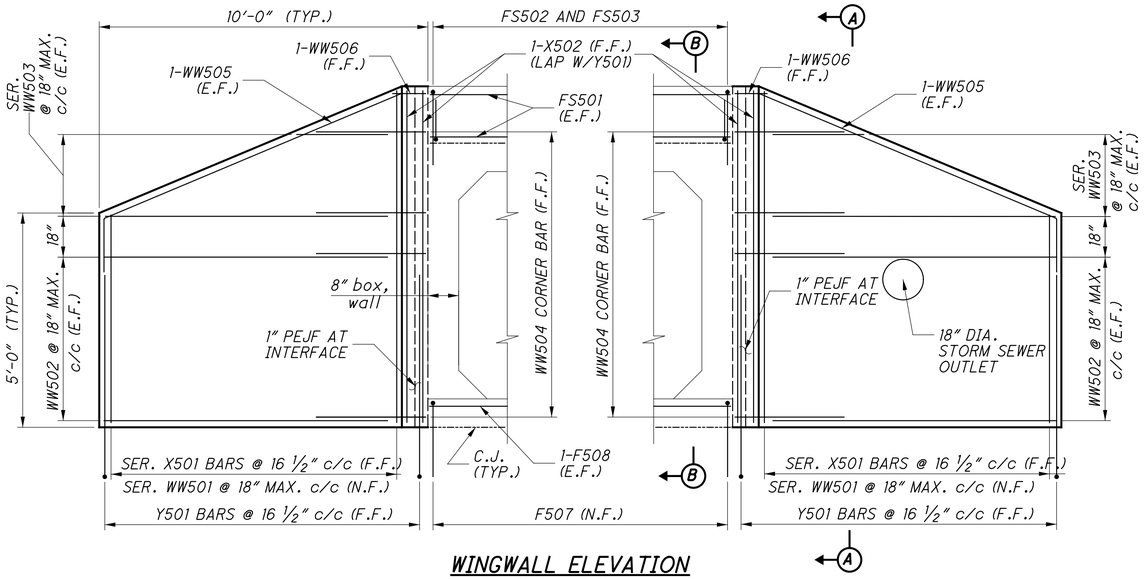
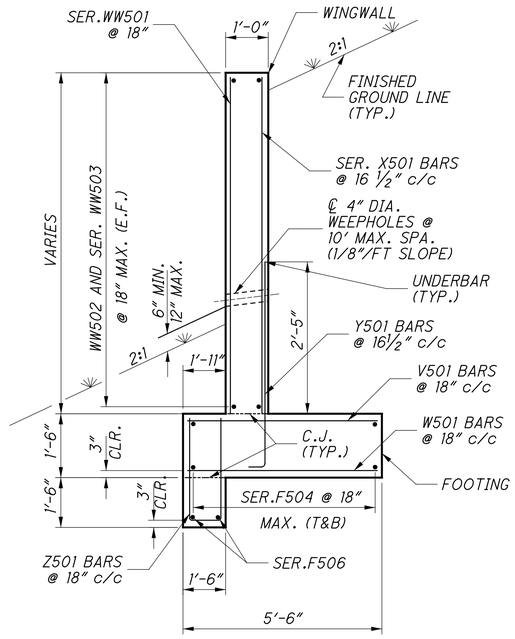


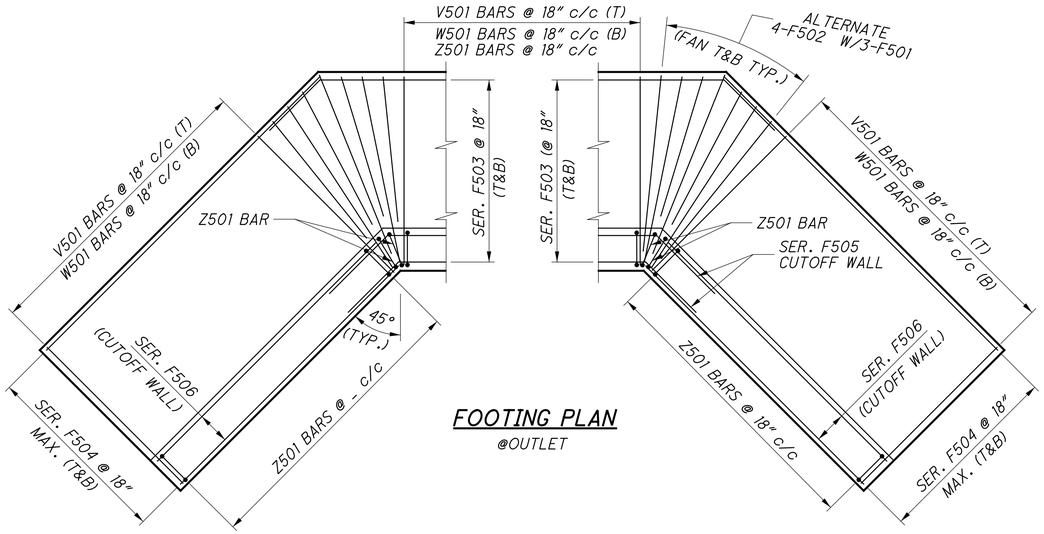
WINGWALL ELEVATION

(FOOTING NOT SHOWN)



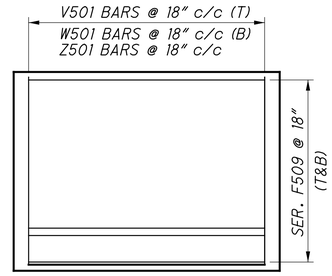
SECTION A-A

(POROUS BACKFILL NOT SHOWN FOR CLARITY)



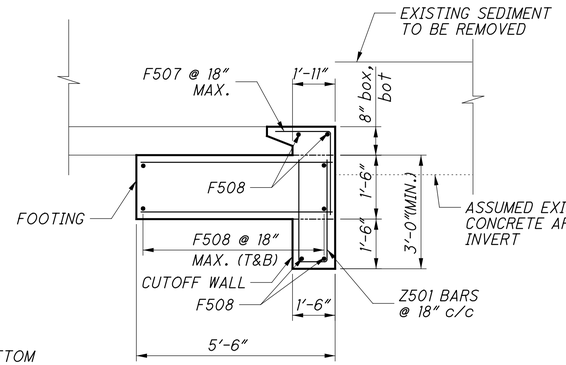
FOOTING PLAN

@OUTLET



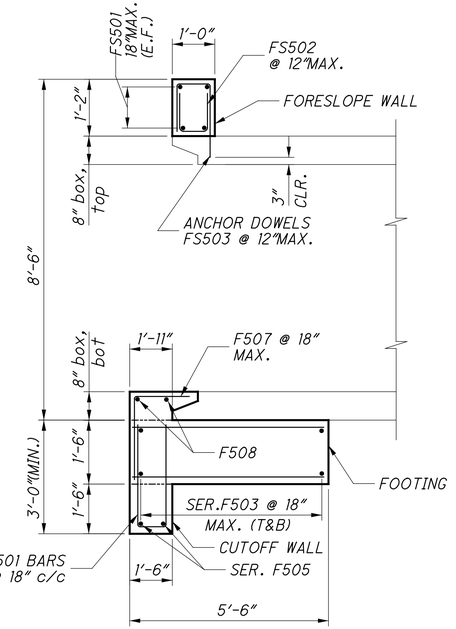
FOOTING PLAN

@INLET



SECTION B-B

(@ INLET)



SECTION B-B

(@ OUTLET)

NOTES

1. FOR CULVERT LOCATION PLAN, SEE SHEET 10/14.
2. FOR PRECAST BOX CULVERT DETAILS, SEE SHEETS 10-14/14.
3. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, WW501 IS A NO.5 BAR. BAR DIMENSIONS SHOWN ARE OUT TO OUT. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
4. THE LAP SPLICE LENGTHS USED IN THESE DETAILS ARE AS FOLLOWS: 2'-5" FOR #5 BARS; 2'-11" FOR #6 BARS.

LEGEND:

C.J.	CONSTRUCTION JOINT	N.F.	NEAR FACE
CLR.	CLEAR	SER.	SERIES
DIA.	DIAMETER	STR.	STRAIGHT
E.F.	EACH FACE	(T)	TOP
F.F.	FAR FACE	(B)	BOTTOM
MAX.	MAXIMUM	T&B	TOP AND BOTTOM
MIN.	MINIMUM	TYP.	TYPICAL
PEJF	PREFORMED EXPANSION JOINT FILLER	INC.	INCREMENT

CALCULATED BWR
CHECKED CES

HEADWALL & WINGWALL DETAILS

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14
14