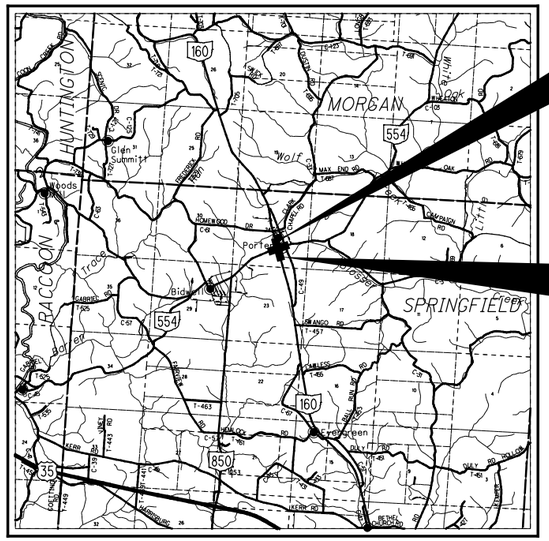


LOCATION MAP

LATITUDE: 38°55'35" LONGITUDE: 82°16'60"

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

	SR 160	SR 554
CURRENT ADT (2021)	5,000	3,000
DESIGN YEAR ADT (2041)	5,400	3,500
DESIGN HOURLY VOLUME (2041)	550	350
DIRECTIONAL DISTRIBUTION	59%	66%
TRUCKS (24 HOUR B&C)	7%	7%
DESIGN SPEED	55 MPH	55 MPH
LEGAL SPEED	55 MPH	55 MPH

DESIGN FUNCTIONAL CLASSIFICATION:
SR 160: 05 MAJOR COLLECTOR (RURAL)
SR 554: 05 MAJOR COLLECTOR (RURAL)

NHS PROJECT	NO	NO

DESIGN EXCEPTIONS

NONE REQUIRED

UNDERGROUND UTILITIES
Contact Two Working Days Before You Dig
OHIO811.org Before You Dig
OHIO811, 8-1-1, or 1-800-362-2764
(Non-members must be called directly)

PLAN PREPARED BY:

KORDA
KORDA/NEMETH ENGINEERING, INC - CONSULTING ENGINEERS
1650 Watermark Drive, Suite 200 - Columbus, OH 43215-7010
TEL. 614-487-1650 WEB www.korda.com

ENGINEERS SEAL:
LIGHTING
STATE OF OHIO · STEPHEN W. GRIFFITH · E-82352 · REGISTERED · PROFESSIONAL ENGINEER
SIGNED:
DATE: 11/24/2020

ENGINEERS SEAL:
FOR ENTIRE PLAN EXCEPT LIGHTING
STATE OF OHIO · BROOKS M. VOGEL · 71238 · REGISTERED · PROFESSIONAL ENGINEER
SIGNED:
DATE: 11/24/2020

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION

GAL-160-9.57

SPRINGFIELD TOWNSHIP
GALLIA COUNTY

INDEX OF SHEETS:

STANDARD CONSTRUCTION DRAWINGS

BP-3.1	01/17/20	RM-1.1	1/15/21	MT-96.11	4/17/20	
BP-4.1	7/19/13	RM-3.1	7/20/18	MT-96.20	7/15/16	
BP-5.1	1/18/19			MT-96.26	1/18/19	
BP-7.1	7/17/20	LA-1.2	1/16/09	MT-97.10	4/19/19	
				MT-101.60	1/17/20	
CB-1.1	7/19/19	HW-2.1	7/20/18	MT-101.90	7/17/20	
CB-1.2	1/15/16	HW-2.2	7/20/18	MT-105.10	1/17/20	
CB-2.1	1/15/21					
CB-2.3	1/15/16	HL-10.11	1/15/21	TC-41.20	10/18/13	
		HL-10.12	1/20/17	TC-41.30	10/18/13	
DM-1.1	7/17/20	HL-10.13	4/17/20	TC-42.20	10/18/13	
DM-1.2	1/18/13	HL-20.11	1/15/21	TC-52.10	10/18/13	
DM-4.2	7/20/12	HL-40.10	7/17/20	TC-52.20	1/15/21	
DM-4.3	1/15/16	HL-40.20	7/17/20			
DM-4.4	1/15/16	HL-60.11	7/21/17			
		HL-60.31	1/17/20			

SUPPLEMENTAL SPECIFICATIONS

800-2019	1/15/21	
813	10/19/18	
832	10/19/18	
902	7/19/19	
913	4/21/17	

SPECIAL PROVISIONS

PROJECT DESCRIPTION

IMPROVEMENT OF THE INTERSECTION OF STATE ROUTE (SR) 160 AT SR 554 BY CONSTRUCTION OF A MODERN ROUNDABOUT. IMPROVEMENT OF 0.20 MILES ALONG SR 160 AND 0.16 MILES ALONG SR 554. INCLUDING WIDENING, GRADING, DRAINAGE, AND LIGHTING.

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA:	4.77 ACRES
ESTIMATED CONTRACTOR EARTH DISTURBED AREA:	0.25 ACRES
NOTICE OF INTENT EARTH DISTURBED AREA:	5.02 ACRES

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.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT AS NOTED ON SHEETS 11 - 22, AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED _____
DATE _____ DISTRICT DEPUTY DIRECTOR

APPROVED _____
DATE _____ DIRECTOR, DEPARTMENT OF TRANSPORTATION

FEDERAL PROJECT NO. E191(031)
PID NO. 110510
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
GAL-160-9.57
1 / 106

H:\Projects\2019\2019-0439_00 GAL-160-9.49\110510\Design\Roadway\Sheets\110510_GT001.dgn 4/20/2021 8:24:46 PM cplacek

ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS

USE OF LAW ENFORCEMENT OFFICERS (LEOS) BY CONTRACTORS OTHER THAN THE USES SPECIFIED BELOW WILL NOT BE PERMITTED AT PROJECT COST. LEOS SHOULD NOT BE USED WHERE THE OMUTCD INTENDS THAT FLAGGERS BE USED.

IN ADDITION TO THE REQUIREMENTS OF C&MS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHALL BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS:

- DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE WHERE COMPLETE BLOCKAGE OF TRAFFIC IS REQUIRED.

- DURING A TRAFFIC SIGNAL INSTALLATION WHEN IMPACTING THE NORMAL FUNCTION OF THE SIGNAL OR THE FLOW OF TRAFFIC, OR WHEN TRAFFIC NEEDS TO BE DIRECTED THROUGH AN ENERGIZED TRAFFIC SIGNAL CONTRARY TO THE SIGNAL DISPLAY (E.G., DIRECTING MOTORISTS THROUGH A RED LIGHT).

IN ADDITION TO THE REQUIREMENT OF C&MS 614 AND THE OMUTCD, A UNIFORMED LEO WITH AN OFFICIAL PATROL CAR (CAR WITH TOP-MOUNTED EMERGENCY FLASHING LIGHTS AND COMPLETE MARKINGS OF THE APPROPRIATE LAW ENFORCEMENT AGENCY) SHOULD BE PROVIDED FOR THE FOLLOWING TRAFFIC CONTROL TASKS AS APPROVED BY THE ENGINEER:

- FOR LANE CLOSURES: DURING INITIAL SET-UP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED FOR LONG-TERM LANE CLOSURES/SHIFTS (FOR THE FIRST AND LAST DAY OF MAJOR CHANGES IN TRAFFIC CONTROL SETUP).

IN GENERAL, LEOS SHOULD BE POSITIONED IN ADVANCE OF AND ON THE SAME SIDE AS THE LANE RESTRICTION OR AT THE POINT OF ROAD CLOSURE, AND TO MANUALLY CONTROL TRAFFIC MOVEMENTS THROUGH SIGNALIZED INTERSECTIONS IN WORK ZONES.

LEOS SHOULD NOT FORGO THEIR TRAFFIC CONTROL RESPONSIBILITIES TO APPREHEND MOTORISTS FOR ROUTINE TRAFFIC VIOLATIONS. HOWEVER, IF A MOTORIST'S ACTIONS ARE CONSIDERED TO BE RECKLESS, THEN PURSUIT OF THE MOTORIST IS APPROPRIATE.

THE LEOS WORK AT THE DIRECTION OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE SERVICES OF THE LEOS WITH THE APPROPRIATE AGENCIES AND COMMUNICATING THE INTENTIONS OF THE PLANS WITH RESPECT TO DUTIES OF THE LEOS. THE ENGINEER SHALL HAVE FINAL CONTROL OVER THE LEOS' DUTIES AND PLACEMENT, AND WILL RESOLVE ANY ISSUES THAT MAY ARISE BETWEEN THE TWO PARTIES.

ENSURE PROVIDED LEOS HAVE BEEN TRAINED APPROPRIATE TO THE JOB DECISIONS THEY ARE REQUIRED TO MAKE WHILE ON THE PROJECT, IN ACCORDANCE WITH C&MS 614.03.

THE LEO SHALL REPORT IN TO THE CONTRACTOR PRIOR TO THE START OF THE SHIFT, IN ORDER TO RECEIVE INSTRUCTIONS REGARDING SPECIFIC WORK ASSIGNMENTS DURING HIS/HER SHIFT. THE LEO IS EXPECTED TO STAY AT THE PROJECT SITE FOR THE ENTIRE DURATION OF HIS/HER SHIFT. THE LEO SHALL REPORT TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT. SHOULD IT BE NECESSARY TO LEAVE THE PROJECT SITE, THE

ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE DURING CONSTRUCTION OPERATIONS (CONTINUED)

LEO SHALL NOTIFY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE LEO WITH A TWO-WAY COMMUNICATION DEVICE WHICH SHALL BE RETURNED TO THE CONTRACTOR AT THE END OF HIS/HER SHIFT.

LEOS (WITH PATROL CAR) REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614, LAW ENFORCEMENT OFFICER (WITH PATROL CAR) FOR ASSISTANCE. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE 40 HOURS

THE HOURS PAID SHALL INCLUDE ANY MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED.

ANY ADDITIONAL COSTS (ADMINISTRATIVE OR OTHERWISE) INCURRED BY THE CONTRACTOR TO OBTAIN THE SERVICES OF AN LEO ARE INCLUDED WITH THE BID UNIT PRICE FOR ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE.

NOTIFICATION OF TRAFFIC RESTRICTIONS

THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES. THE CONTRACTOR SHALL ENSURE THE WRITTEN NOTIFICATION IS SUBMITTED IN A TIMELY MANNER TO ALLOW THE PROJECT ENGINEER TO MEET THE REQUIRED TIME FRAMES SET FORTH IN THE TABLE BELOW TO INFORM SPECIAL HAULING PERMITS SECTION (HAULING.PERMITS@DOT.OHIO.GOV) AND THE DISTRICT PUBLIC INFORMATION OFFICE (PIO). THIS NOTIFICATION SHALL BE RECEIVED BY THE PROJECT ENGINEER PRIOR TO THE PHYSICAL SETUP OF ANY APPLICABLE SIGNS OR MESSAGE BOARDS.

INFORMATION SHOULD INCLUDE, BUT IS NOT LIMITED TO, ALL CONSTRUCTION ACTIVITIES THAT IMPACT OR INTERFERE WITH TRAFFIC AND SHALL LIST THE SPECIFIC LOCATION, TYPE OF WORK, ROAD STATUS, DATE AND TIME OF RESTRICTION, DURATION OF RESTRICTION, NUMBER OF LANES MAINTAINED, NUMBER OF LANES CLOSED, MINIMUM VERTICAL CLEARANCE, MINIMUM WIDTH OF DRIVABLE PAVEMENT, DETOUR ROUTES, IF APPLICABLE, AND ANY OTHER INFORMATION REQUESTED BY THE PROJECT ENGINEER.

NOTICE OF CLOSURE SIGN TIME TABLE

ITEM	DURATION OF CLOSURE	SIGN DISPLAYED TO PUBLIC
RAMP & ROAD CLOSURES	>=2 WEEKS	21 CALENDAR DAYS PRIOR TO CLOSURE
	>12 HOURS & <2 WEEKS	14 CALENDAR DAYS PRIOR TO CLOSURE
	<12 HOURS	4 BUSINESS DAYS PRIOR TO CLOSURE
LANE CLOSURES & RESTRICTIONS	>= 2 WEEKS	14 CALENDAR DAYS PRIOR TO CLOSURE
	< 2 WEEKS	5 BUSINESS DAYS PRIOR TO CLOSURE
START OF CONSTRUCTION & TRAFFIC PATTERN CHANGES	N/A	14 CALENDAR DAYS PRIOR TO IMPLEMENTATION

ANY UNFORESEEN CONDITIONS NOT SPECIFIED IN THE PLANS REQUIRING TRAFFIC RESTRICTIONS SHALL ALSO BE REPORTED TO THE PROJECT ENGINEER USING THE NOTIFICATION TIME TABLE.

SEQUENCE OF CONSTRUCTION

PHASE 0

1. MAINTAIN TWO-WAY, TWO DIRECTIONAL TRAFFIC ON EXISTING PAVEMENT OF SR160 AND SR554, USING FLAGGERS AND ONE-LANE OPERATION AS PER SCD MT-97.10. DURING NON-WORKING HOURS STEEL PLATE OVER THE PIPE TRENCH UNTIL CONSTRUCTION OF THE WATER MAIN IS COMPLETE AND THE TRENCH CAN BE BACKFILLED AND PAVED.

2. CONSTRUCT PHASE 0 WATER MAIN CROSSINGS ALONG BOTH SR160 AND SR554.

PHASE 1A

1. MAINTAIN TWO-LANE, TWO-DIRECTIONAL TRAFFIC ON THE EXISTING PAVEMENT OF SR 160, USING FLAGGERS AND ONE-LANE OPERATION, AS PER SCD MT-97.10. DURING NON-WORKING HOURS, STEEL PLATE OVER THE PIPE TRENCH UNTIL CONSTRUCTION OF PIPE IS COMPLETE AND THE TRENCH CAN BE BACKFILLED AND PAVED.

2. CONSTRUCT PHASE 1A DRAINAGE CROSSING AT STA. 510+45, AS SHOWN ON THE PLANS.

PHASE 1B

1. WHEN PHASE 1A IS COMPLETE, ERECT THE TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED TO MAINTAIN TWO-LANE, TWO-DIRECTIONAL TRAFFIC ON EXISTING SR 160. ERECT THE TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED TO CLOSE AND DETOUR THE EAST SIDE OF SR 554.

2. MAINTAIN TWO-LANE, TWO-DIRECTIONAL TRAFFIC ON EXISTING SR 160, AS SHOWN ON THE PLANS.

3. MAINTAIN TWO-WAY, TWO-DIRECTIONALTRAFFIC ON THE WEST LEG OF SR 554 AS SHOWN ON THE PLANS.

4. MAINTAIN LOCAL ACCESS AND MAINTAIN THRU ACCESS FOR EASTBOUND EMERGENCY VEHICLES THROUGH THE WORK ZONE FROM THE SPRINGFIELD TOWNSHIP FIRE DEPARTMENT TO PORTER ROAD.

5. CLOSURE OF THE EAST LEG OF SR554 SHALL NOT EXCEED 42 CALENDAR DAYS, INCLUDING CLOSURE TIME IN PHASES 2A AND 2B.

6. CONSTRUCT PHASE 2A ROADWAY ITEMS, AS SHOWN ON THE PLANS. THIS INCLUDES BUT IS NOT LIMITED TO PORTIONS OF THE ROADWAY, CURB AND GUTTER, CURB RAMPS, WALK, SPLITTER ISLANDS, TRUCK APRONS, DRAINAGE, GRADING AND TRAFFIC CONTROL ITEMS.

7. PERMANENT PAVEMENT SHALL BE CONSTRUCTED THROUGH THE SURFACE COURSE.

PHASE 2A

1. CAN BE CONSTRUCTED CONCURRENTLY WITH PHASE 1B. ERECT THE TEMPORARY TRAFFIC CONTROL DEVICES, TEMPORARY PAVEMENT MARKINGS AND TEMPORARY TRAFFIC SIGNAL DEVICES REQUIRED TO MAINTAIN ONE-LANE, TWO-DIRECTIONAL TRAFFIC ON THE LEFT SIDE OF EXISTING SR 160. ERECT THE TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED TO CLOSE AND DETOUR THE EAST SIDE OF SR 554.

2. MAINTAIN ONE-LANE, TWO-DIRECTIONAL TRAFFIC CONTROLLED BY TEMPORARY TRAFFIC SIGNALS ON THE LEFT SIDE OF EXISTING SR 160, AS SHOWN ON THE PLANS AND APPLICABLE STANDARD CONSTRUCTION DRAWINGS.

3. MAINTAIN TWO-WAY, TWO-DIRECTIONALTRAFFIC ON THE WEST LEG OF SR 554, AS SHOWN ON THE PLANS.

4. MAINTAIN LOCAL ACCESS AND MAINTAIN THRU ACCESS FOR EASTBOUND EMERGENCY VEHICLES THROUGH THE WORK ZONE FROM THE SPRINGFIELD TOWNSHIP FIRE DEPARTMENT TO PORTER ROAD.

5. CLOSURE OF THE EAST LEG OF SR554 SHALL NOT EXCEED 42 CALENDAR DAYS, INCLUDING CLOSURE TIME IN PHASES 1B AND 2B.

6. CONSTRUCT PHASE 2A ROADWAY ITEMS, AS SHOWN ON THE PLANS. THIS INCLUDES BUT IS NOT LIMITED TO PORTIONS OF THE ROADWAY, DRAINAGE, GRADING AND TRAFFIC CONTROL ITEMS.

7. PERMANENT PAVEMENT SHALL BE CONSTRUCTED THROUGH THE SURFACE COURSE.

PHASE 2B

1. WHEN PHASE 2A IS COMPLETE, ERECT THE TEMPORARY TRAFFIC CONTROL DEVICES, TEMPORARY PAVEMENT MARKINGS AND TEMPORARY TRAFFIC SIGNAL DEVICES REQUIRED TO MAINTAIN ONE-LANE, TWO-DIRECTIONAL TRAFFIC ON THE RIGHT SIDE OF PROPOSED SR 160. ERECT THE TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED TO CLOSE AND DETOUR THE WEST SIDE OF SR 554.

2. MAINTAIN ONE-LANE, TWO-DIRECTIONAL TRAFFIC CONTROLLED BY TEMPORARY TRAFFIC SIGNALS ON THE RIGHT SIDE OF PROPOSED SR 160, AS SHOWN ON THE PLANS AND APPLICABLE STANDARD CONSTRUCTION DRAWINGS.

3. MAINTAIN TWO-WAY, TWO-DIRECTIONALTRAFFIC ON THE EAST LEG OF SR 554, AS SHOWN ON THE PLANS.

4. MAINTAIN LOCAL ACCESS AND MAINTAIN THRU ACCESS FOR WESTBOUND EMERGENCY VEHICLES THROUGH THE WORK ZONE FROM THE SPRINGFIELD TOWNSHIP FIRE DEPARTMENT ON THE WEST LEG OF SR554.

5. CLOSURE OF THE WEST LEG OF SR554 SHALL NOT EXCEED 35 CALENDAR DAYS, INCLUDING CLOSURE TIME IN PHASE 2B.

6. CONSTRUCT PHASE 3 ROADWAY ITEMS, AS SHOWN ON THE PLANS. THIS INCLUDES BUT IS NOT LIMITED TO PORTIONS OF THE ROADWAY, CURB AND GUTTER, CURB RAMPS, WALK, SPLITTER ISLANDS, TRUCK APRONS, DRAINAGE, GRADING AND TRAFFIC CONTROL ITEMS.

7. PERMANENT PAVEMENT SHALL BE CONSTRUCTED THROUGH THE SURFACE COURSE.

PHASE 3

1. CAN BE CONSTRUCTED CONCURRENTLY WITH PHASE 2B. ERECT THE TEMPORARY TRAFFIC CONTROL DEVICES REQUIRED TO CLOSE AND DETOUR THE WEST SIDE OF SR 554.

2. MAINTAIN TWO-LANE, TWO-DIRECTIONAL TRAFFIC ON PROPOSED SR 160, AS SHOWN ON THE PLANS.

3. MAINTAIN TWO-WAY, TWO-DIRECTIONALTRAFFIC ON THE EAST LEG OF SR 554, AS SHOWN ON THE PLANS.

4. MAINTAIN LOCAL ACCESS AND MAINTAIN THRU ACCESS FOR WESTBOUND EMERGENCY VEHICLES THROUGH THE WORK ZONE FROM THE SPRINGFIELD TOWNSHIP FIRE DEPARTMENT ON THE WEST LEG OF SR554.

5. CLOSURE OF THE WEST LEG OF SR554 SHALL NOT EXCEED 35 CALENDAR DAYS, INCLUDING CLOSURE TIME IN PHASE 2B.

6. CONSTRUCT PHASE 3 ROADWAY ITEMS, AS SHOWN ON THE PLANS. THIS INCLUDES BUT IS NOT LIMITED TO PORTIONS OF THE ROADWAY, CURB AND GUTTER, CURB RAMPS, WALK, SPLITTER ISLANDS, TRUCK APRONS, DRAINAGE, GRADING AND TRAFFIC CONTROL ITEMS.

7. PERMANENT PAVEMENT SHALL BE CONSTRUCTED THROUGH THE SURFACE COURSE.

CALCULATED CLP CHECKED BMV

MAINTENANCE OF TRAFFIC GENERAL NOTES

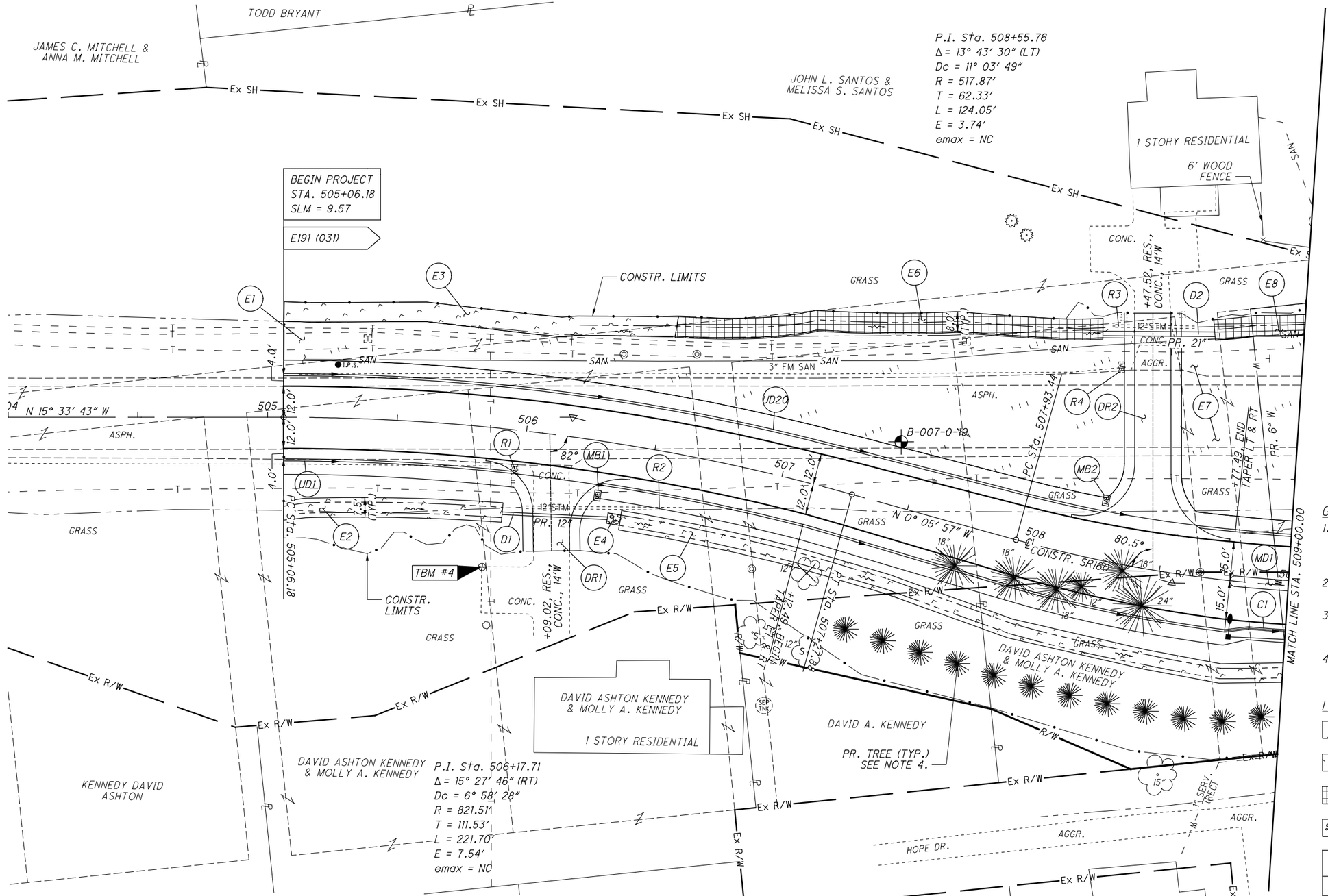
GAL-160-9.57

SHEET NUM.												PART.	ITEM	ITEM EXT	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
OFFICE CALCS.	10	41	42	74	78	79	80	81	82	83	92	01/SAF/OT						
																	PAVEMENT	
1,287												1,287	301	46000	1,287	CY	ASPHALT CONCRETE BASE, PG64-22	
1,499				287								1,786	304	20000	1,786	CY	AGGREGATE BASE	
758												758	407	20000	758	GAL	NON-TRACKING TACK COAT	
239												239	441	50000	239	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	
335												335	441	50300	335	CY	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	
				4								4	441	50400	4	CY	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), (DRIVEWAYS)	
				241								241	452	10010	241	SY	6" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
				700								700	452	12010	700	SY	8" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
		492										492	452	13010	492	SY	9" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	
		1,519										1,519	609	12000	1,519	FT	COMBINATION CURB AND GUTTER, TYPE 2	
		124										124	609	12001	124	FT	COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN	10
				157								157	609	26000	157	FT	CURB, TYPE 6	
		183										183	609	28001	183	FT	CURB, TYPE 7, AS PER PLAN	10
		296										296	609	31000	296	FT	COMBINATION CURB AND GUTTER, TYPE 9	
		531										531	609	72000	531	SY	CONCRETE MEDIAN	
																	WATER WORK	
			2									2	638	07801	2	EACH	6" GATE VALVE AND VALVE BOX, AS PER PLAN	94B
			1									1	638	11100	1	EACH	METER AND CHAMBER REMOVED AND RESET	
			445									445	638	98600	445	FT	WATER WORK, MISC.:6" WATER MAIN, HDPE PIPE AND FITTINGS, AS PER PLAN	94A-94B
			217									217	638	98600	217	FT	WATER WORK, MISC.:10" PVC PIPE ENCASEMENT, OPEN CUT, AS PER PLAN	94B
																	LIGHTING	
											22	22	625	00450	22	EACH	CONNECTION, FUSED PULL APART	
											23	23	625	00480	23	EACH	CONNECTION, UNFUSED PERMANENT	
											11	11	625	10490	11	EACH	LIGHT POLE, CONVENTIONAL, DESIGN A8B30	
											11	11	625	14100	11	EACH	LIGHT POLE FOUNDATION, 24" X 8' DEEP	
											648	648	625	23302	648	FT	NO. 6 AWG 2400 VOLT DISTRIBUTION CABLE	
											1,584	1,584	625	23410	1,584	FT	NO. 12 AWG POLE AND BRACKET CABLE	
											873	873	625	24324	873	FT	1-1/2" DUCT CABLE WITH THREE NO. 6 AWG 2400 VOLT CABLES	
											186	186	625	25500	186	FT	CONDUIT, 3", 725.04	
											11	11	625	26253	11	EACH	LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), AS PER PLAN (IES-III-M, LED, 9,000-10,000 LUMENS)	91
											944	944	625	29002	944	FT	TRENCH, 24" DEEP	
											3	3	625	30700	3	EACH	PULL BOX, 725.08, 18"	
											11	11	625	32000	11	EACH	GROUND ROD	
											1	1	625	34000	1	EACH	POWER SERVICE	
											944	944	625	36010	944	FT	UNDERGROUND WARNING/MARKING TAPE	
																	TRAFFIC CONTROL	
									16			16	621	54000	16	EACH	RAISED PAVEMENT MARKER REMOVED	
						40						40	630	02100	40	FT	GROUND MOUNTED SUPPORT, NO. 2 POST	
					154	380.5	341	119				994.5	630	03100	994.5	FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
							35	35				70	630	04100	70	FT	GROUND MOUNTED SUPPORT, NO. 4 POST, TYPE S (SQUARE POST)	
						4	4					8	630	08600	8	EACH	SIGN POST REFLECTOR	
					82	247.8	184.7	82.6				597.1	630	80100	597.1	SF	SIGN, FLAT SHEET	
					51							51	630	84900	51	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
					3							3	630	85100	3	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
					40							40	630	86002	40	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
									22			22	642	30000	22	FT	REMOVAL OF PAVEMENT MARKING	
									0.6			0.6	644	00104	0.6	MILE	EDGE LINE, 6"	
									0.38			0.38	644	00300	0.38	MILE	CENTER LINE	
									320			320	644	00600	320	FT	CROSSWALK LINE	
										257		257	644	00700	257	FT	TRANSVERSE/DIAGONAL LINE	
										4		4	644	01410	4	EACH	WORD ON PAVEMENT, 96"	
										146		146	644	01514	146	FT	DOTTED LINE, 8"	
										64		64	644	20800	64	FT	YIELD LINE	
																	LANDSCAPING	
	13											13	661	50100	13	EACH	EVERGREEN TREE, 5' HEIGHT (CUPROCYPARIS LEYLANDII "LEYLAN CYPRESS")	10
	195											195	662	31000	195	GAL	LANDSCAPE WATERING	10

CALCULATED ATD
CHECKED CLP

GENERAL SUMMARY

GAL-160-9.57



GENERAL NOTES

1. FLARE CURB AT 4:1 RATE, FROM OUTSIDE EDGE OF THE PAVED SHOULDER. TRANSITION CURB HEIGHT FROM 0" TO 6" THROUGH THE LENGTH OF THE FLARE.
2. PROVIDE OUTLET PER DRAINAGE CONTINUANCE NOTE.
3. TRANSITION SHOULDER PER "SHOULDER TRANSITION DETAIL" ON SHEET 4/106.
4. PROPOSED TREES SHALL BE PLANTED AT THE TOP OF THE PROPOSED MOUND AND EVENLY SPACED.

LEGEND

- SLOPE EROSION PROTECTION MAT, TYPE B
- DITCH EROSION PROTECTION MAT, TYPE B
- TIED CONCRETE BLOCK MAT WITH TYPE 2 UNDERLAYMENT
- ROCK CHANNEL PROTECTION, TYPE C WITH GEOTEXTILE FABRIC

CROSS REFERENCES	
SHEET	DESCRIPTION
23-25	GENERAL SUMMARY
40-44	ESTIMATED QUANTITIES
71-73	INTERSECTION DETAILS
74-77	MISCELLANEOUS DETAILS
91-94	LIGHTING PLANS

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED CLP
CHECKED BMV

PLAN - SR 160
STA. 504+50.00 TO STA. 509+00.00

GAL-160-9.57

27
106

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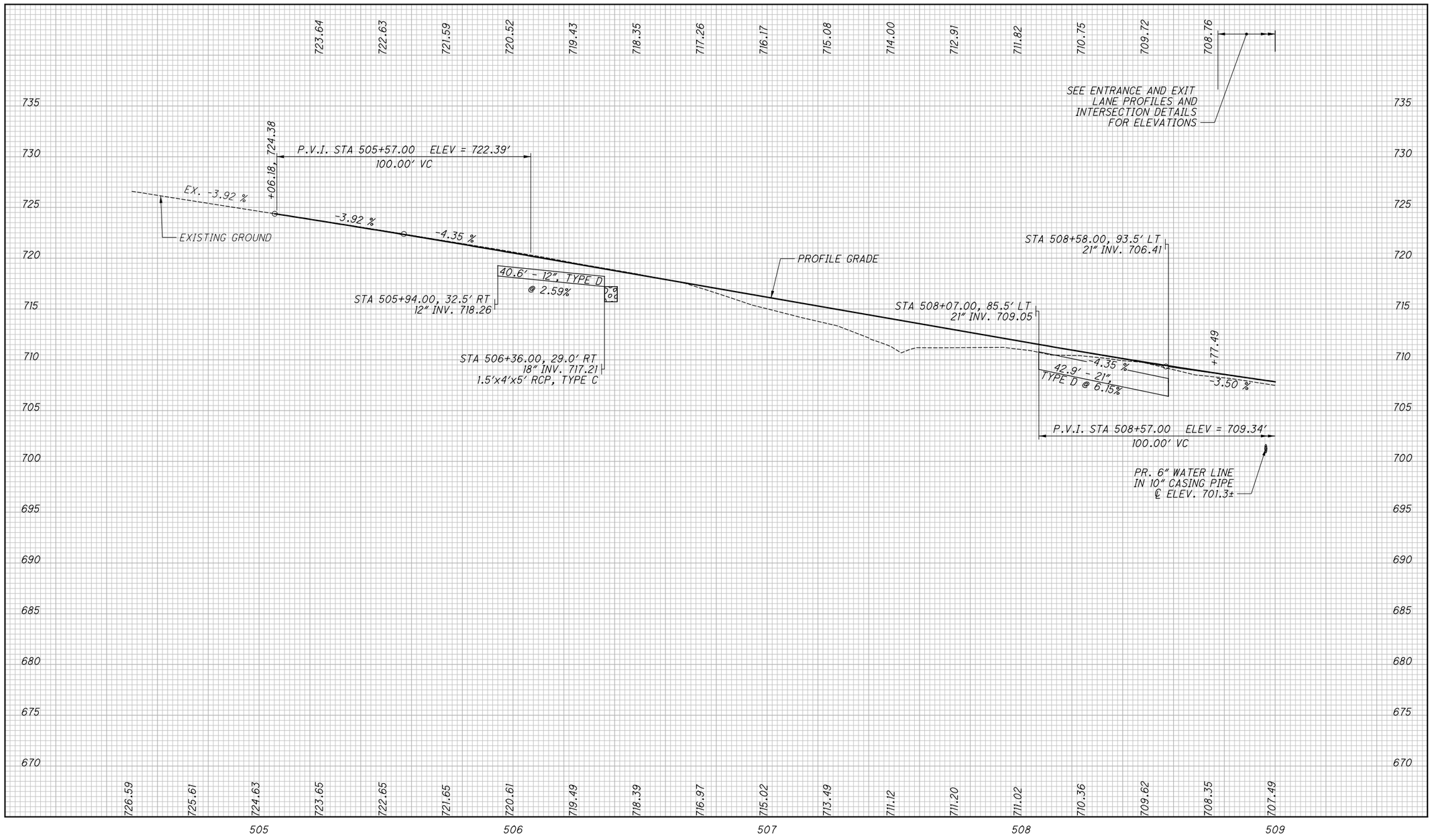

CALCULATED CLP
CHECKED BMV

PROFILE - SR 160
STA. 504+50.00 TO STA. 509+00.00

GAL-160-9.57

GENERAL NOTES

1. FLARE CURB AT 4:1 RATE, FROM OUTSIDE EDGE OF THE PAVED SHOULDER. TRANSITION CURB HEIGHT FROM 0" TO 6" THROUGH THE LENGTH OF THE FLARE.
2. PROVIDE OUTLET PER DRAINAGE CONTINUANCE NOTE.
3. TRANSITION SHOULDER PER "SHOULDER TRANSITION DETAIL" ON SHEET 4/106.
4. PROPOSED TREES SHALL BE PLANTED AT THE TOP OF THE PROPOSED MOUND AND EVENLY SPACED.

LEGEND

- SLOPE EROSION PROTECTION MAT, TYPE B
- DITCH EROSION PROTECTION MAT, TYPE B
- TIED CONCRETE BLOCK MAT WITH TYPE 2 UNDERLAYMENT
- ROCK CHANNEL PROTECTION, TYPE C WITH GEOTEXTILE FABRIC

CROSS REFERENCES	
SHEET	DESCRIPTION
23-25	GENERAL SUMMARY
40-44	ESTIMATED QUANTITIES
71-73	INTERSECTION DETAILS
74-77	MISCELLANEOUS DETAILS
91-94	LIGHTING PLANS

N

0 10 20 40 HORIZONTAL SCALE IN FEET

CALCULATED CLP CHECKED BMV

PLAN - SR 160
STA. 509+00.00 TO STA. 513+50.00

GAL-160-9.57

29/106

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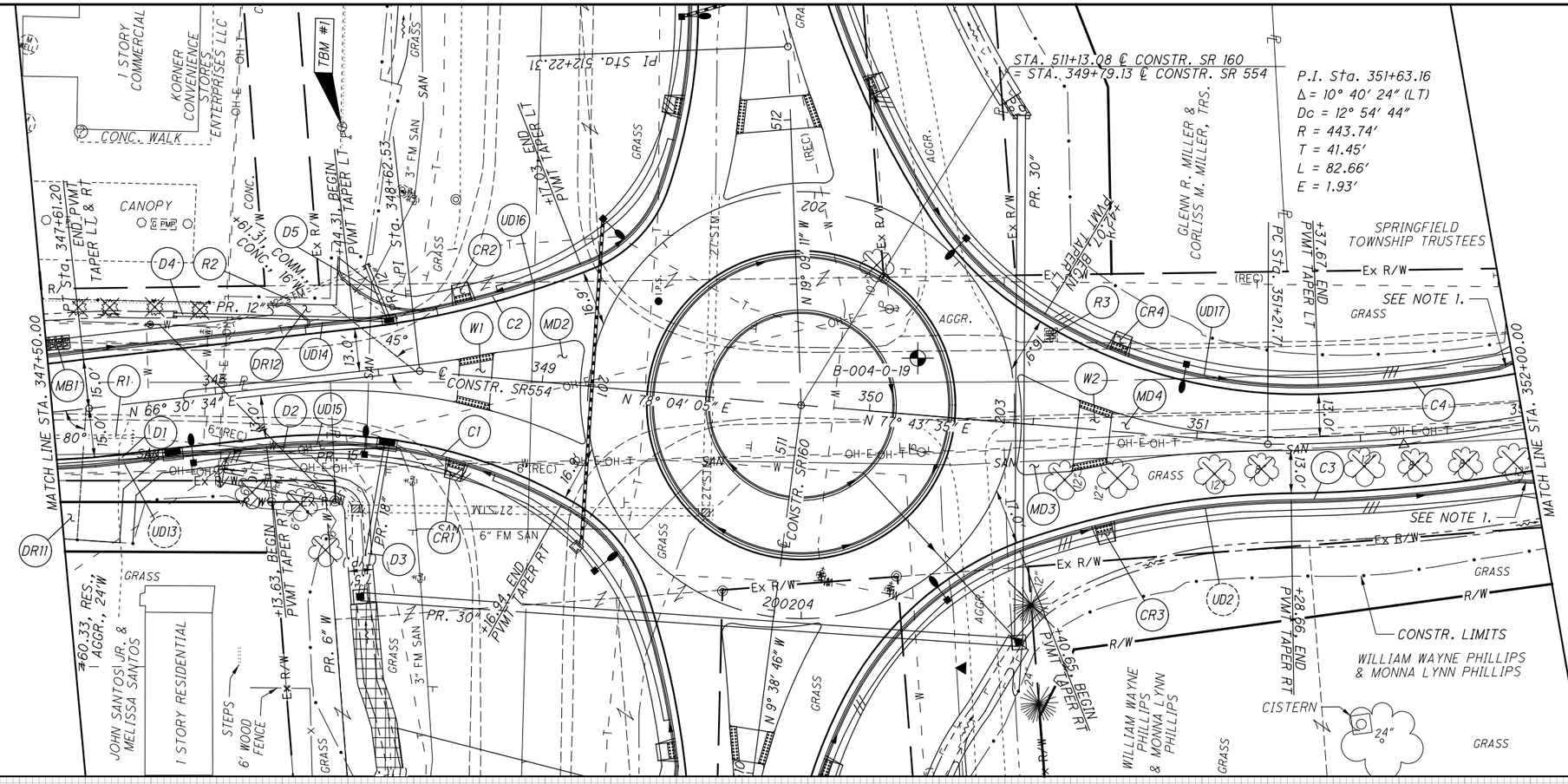


GENERAL NOTES

1. FLARE CURB AT 4:1 RATE, FROM OUTSIDE EDGE OF THE PAVED SHOULDER. TRANSITION CURB HEIGHT FROM 0″ TO 6″ THROUGH THE LENGTH OF THE FLARE.
2. PROVIDE OUTLET PER DRAINAGE CONTINUANCE NOTE.
3. TRANSITION SHOULDER PER "SHOULDER TRANSITION DETAIL" ON SHEET (4/106).
4. PROPOSED TREES SHALL BE PLANTED AT THE TOP OF THE PROPOSED MOUND AND EVENLY SPACED.

LEGEND

- SLOPE EROSION PROTECTION MAT, TYPE B
- DITCH EROSION PROTECTION MAT, TYPE B
- TIED CONCRETE BLOCK MAT WITH TYPE 2 UNDERLAYMENT
- ROCK CHANNEL PROTECTION, TYPE C WITH GEOTEXTILE FABRIC

CROSS REFERENCES

HORIZONTAL SCALE IN FEET (0, 10, 20, 40)

CALCULATED CLP CHECKED BMV

PLAN AND PROFILE - SR 554
STA. 347+50.00 TO STA. 352+00.00

GAL-160-9.57

REF NO.	SHEET NO.	LOCATION	STATION TO STATION					202 HEADWALL REMOVED EACH	202 PIPE REMOVED, 24" AND UNDER FT	202 PIPE REMOVED, OVER 24" FT	202 MAILBOX REMOVED EACH	202 CATCH BASIN REMOVED EACH	SPECIAL FILL AND PLUG EXISTING CONDUIT FT	202 FENCE REMOVED FT	608 8" CONCRETE WALK SF	608 CURB RAMP, AS PER PLAN SF	608 DETECTABLE WARNING SF
R1	27	SR 160	505+97	RT							1						
R2	27	SR 160	506+03	RT	TO	506+64	RT		61								
R3	27	SR 160	508+11	LT	TO	508+48	LT		31								
R4	27	SR 160	508+18	LT							1						
R1	29	SR 160	509+25	LT	TO	510+07	LT							101			
R2	29	SR 160	510+64	LT	TO	510+77	LT			107		1					
R3	29	SR 160	510+77	LT	TO	511+78	LT			97		1					
R4	29	SR 160	512+81	LT	TO	513+23	LT		44								
R1	31	SR 160	513+89	RT							1						
R2	31	SR 160	513+88	RT	TO	514+28	RT			40							
R3	31	SR 160	514+31	LT	TO	514+69	LT		42								
R4	31	SR 160	515+80	RT							1						
R1	33	SR 554	344+92	RT	TO	345+19	RT		28								
R2	33	SR 554	344+93	LT	TO	345+97	LT							114			
R3	33	SR 554	345+95	LT	TO	346+24	LT		29								
R4	33	SR 554	346+33	LT							2						
R5	33	SR 554	346+42	RT	TO	346+63	RT		21								
R6	33	SR 554	346+64	LT	TO	347+38	LT		70								
R7	33	SR 554	347+02	RT	TO	347+50	RT		49								
R8	33	SR 554	347+38	LT							4						
R1	34	SR 554	347+50	RT	TO	347+74	RT	1	24								
R2	34	SR 554	348+03	LT	TO	348+50	LT		28				25				
R3	34	SR 554	350+53	LT							2						
R1	35	SR 554	352+20	LT	TO	353+23	LT		106			1					
R2	35	SR 554	352+17	RT	TO	353+80	RT		162			1					
R3	35	SR 554	352+19	RT	TO	352+33	RT		40								
R4	35	SR 554	352+20	RT	TO	352+58	RT		50								
R5	35	SR 554	353+23	LT	TO	354+00	LT		77								
R6	35	SR 554	353+80	RT	TO	354+00	LT		37								
W1	29	SR 160	510+03	RT/LT	TO	510+13	RT/LT								120		40
W2	29	SR 160	511+97	RT/LT	TO	512+07	RT/LT								239		40
W1	34	SR 554	348+74	RT/LT	TO	348+84	RT/LT								155		40
W2	34	SR 554	350+62	RT/LT	TO	350+75	RT/LT								191		40
CR1	29	SR 160	510+05	RT												37	
CR2	29	SR 160	510+04	LT												37	
CR3	29	SR 160	512+05	LT												37	
CR4	29	SR 160	512+09	RT												37	
CR1	34	SR 554	348+76	RT												37	
CR2	34	SR 554	348+74	LT												37	
CR3	34	SR 554	350+74	RT												37	
CR4	34	SR 554	350+74	LT												37	
TOTALS CARRIED TO GENERAL SUMMARY								1	899	244	12	4	25	215	705	296	160

CALCULATED ATD
CHECKED CLP

ESTIMATED QUANTITIES

GAL-160-9.57

ESTIMATED QUANTITIES

CALCULATED ATD
CHECKED CLP

REF NO.	SHEET NO.	LOCATION	STATION TO STATION					452	609	609	609	609	609	SPECIAL														
								9" NON-REINFORCED CONCRETE PAVEMENT, CLASS QC 1P	COMBINATION CURB AND GUTTER, TYPE 2	COMBINATION CURB AND GUTTER, TYPE 2, AS PER PLAN	CURB, TYPE 7, AS PER PLAN	COMBINATION CURB AND GUTTER, TYPE 9	CONCRETE MEDIAN	MAILBOX SUPPORT														
								SY	FT	FT	FT	FT	SY	EACH														
C1	27	SR 160	508+77	RT	TO	509+00	RT		24																			
C1	29	SR 160	509+00	RT	TO	510+82	RT		202																			
C2	29	SR 160	509+91	LT	TO	510+75	LT		23	74																		
C3	29	SR 160	510+66	RT/LT	TO	511+60	RT/LT					296																
C4	29	SR 160	510+84	RT/LT	TO	511+42	RT/LT				183																	
C5	29	SR 160	511+57	LT	TO	513+50	LT		151	50																		
C6	29	SR 160	511+39	RT	TO	513+50	RT		232																			
C1	31	SR 160	513+50	LT	TO	513+55	LT		5																			
C2	31	SR 160	513+51	RT	TO	513+56	RT		5																			
C1	33	SR 554	345+21	RT	TO	347+50	RT		232																			
C1	34	SR 554	347+50	RT	TO	349+12	RT		160																			
C2	34	SR 554	347+50	LT	TO	349+11	LT		169																			
C3	34	SR 554	350+53	RT	TO	352+00	RT		155																			
C4	34	SR 554	350+46	LT	TO	352+00	LT		153																			
C1	35	SR 554	352+00	RT	TO	352+04	RT		4																			
C2	35	SR 554	352+00	LT	TO	352+04	LT		4																			
MD1	27	SR 160	508+77	RT/LT	TO	509+00	RT/LT						9															
MD1	29	SR 160	509+00	RT/LT	TO	510+03	RT/LT						54															
MD2	29	SR 160	510+13	RT/LT	TO	510+48	RT/LT						75															
MD3	29	SR 160	511+77	RT/LT	TO	511+97	RT/LT						58															
MD4	29	SR 160	512+07	RT/LT	TO	512+46	RT/LT						59															
MD1	34	SR 554	347+90	RT/LT	TO	348+75	RT/LT						56															
MD2	34	SR 554	348+85	RT/LT	TO	349+15	RT/LT						74															
MD3	34	SR 554	350+44	RT/LT	TO	350+64	RT/LT						50															
MD4	34	SR 554	350+73	RT/LT	TO	352+00	RT/LT						80															
MD1	35	SR 554	352+00	RT/LT	TO	352+04	RT/LT						16															
AP1	29	SR 160	510+12	LT	TO	510+80	LT	37																				
AP2	29	SR 160	510+68	RT/LT	TO	511+57	RT/LT	424																				
AP3	29	SR 160	511+51	LT	TO	511+95	LT	31																				
MB1	27	SR 160	506+31	RT										1														
MB2	27	SR 160	508+24	LT										1														
MB1	31	SR 160	514+20	RT										1														
MB2	31	SR 160	515+72	RT										1														
MB1	33	SR 554	346+35	LT										2														
MB1	34	SR 554	347+53	LT										4														
TOTALS CARRIED TO GENERAL SUMMARY								492	1519	124	183	296	531	10														

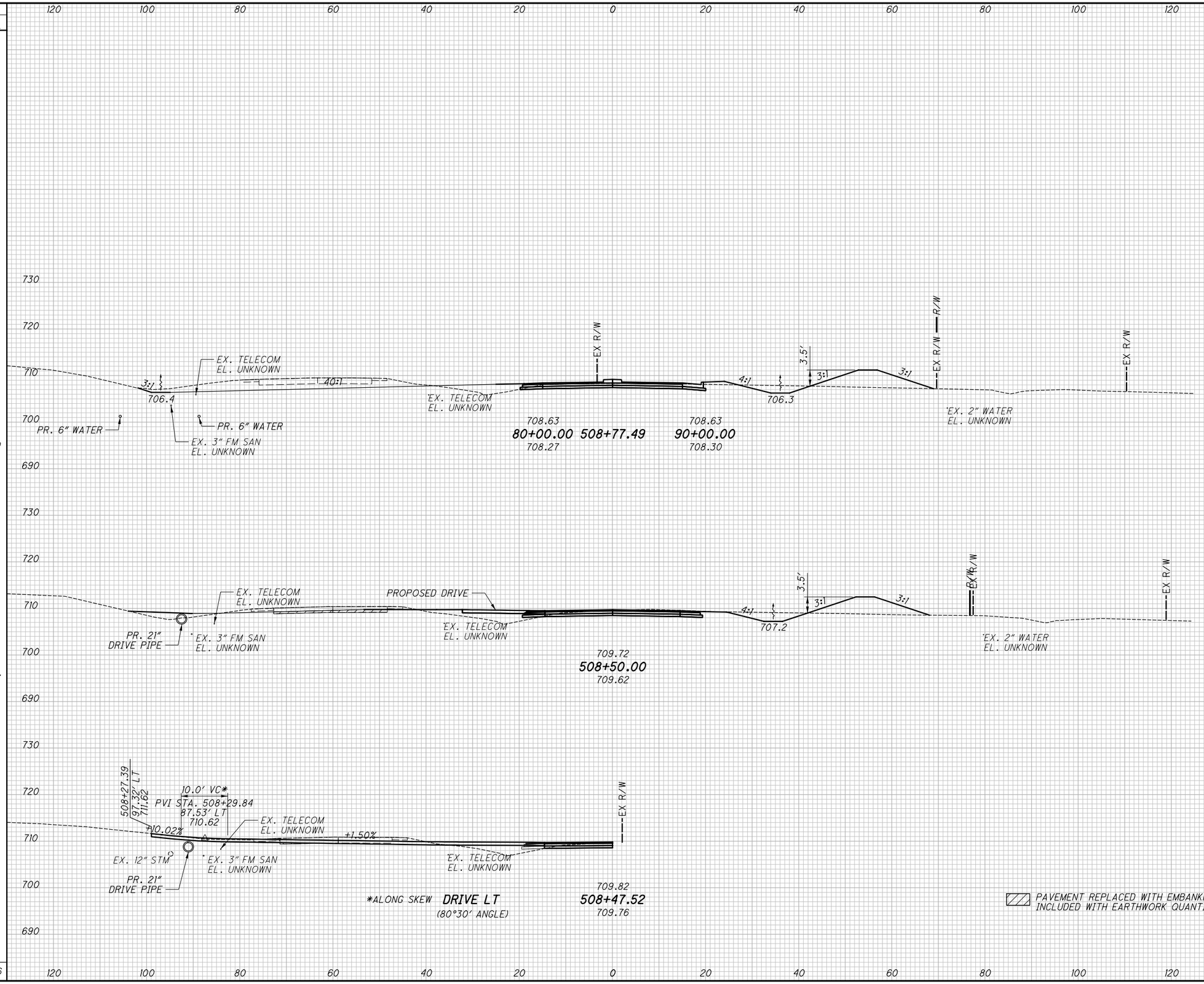
ESTIMATED QUANTITIES

CALCULATED ATD
CHECKED CLP

REF NO.	SHEET NO.	LOCATION	STATION TO STATION					601 TIED CONCRETE BLOCK MAT WITH TYPE 2 UNDERLAYMENT (SY)	601 ROCK CHANNEL PROTECTION, TYPE C WITH GEOTEXTILE FABRIC (CY)	670 SLOPE EROSION PROTECTION MAT, TYPE B (SY)	670 DITCH EROSION PROTECTION MAT, TYPE B (SY)	638 6" GATE VALVE AND VALVE BOX, AS PER PLAN (EACH)	638 METER AND CHAMBER REMOVED AND RESET (EACH)	638 WATER WORK, MISC.: 6" WATER MAIN, HDPE PIPE AND FITTINGS, AS PER PLAN (FT)	638 WATER WORK, MISC.: 10" PVC PIPE ENCASEMENT, OPEN CUT, AS PER PLAN (FT)
E1	27	SR 160	505+06	LT	TO	508+29	LT			1113					
E2	27	SR 160	505+06	RT	TO	505+94	RT				70				
E3	27	SR 160	505+06	LT	TO	506+50	LT				127				
E4	27	SR 160	506+36	RT	TO	506+41	RT		1						
E5	27	SR 160	506+41	RT	TO	508+43	RT				170				
E6	27	SR 160	506+50	LT	TO	508+05	LT	147							
E7	27	SR 160	508+53	LT	TO	509+00	LT			342					
E8	27	SR 160	508+58	LT	TO	509+00	LT	31							
E1	29	SR 160	509+00	LT	TO	510+00	LT			812					
E2	29	SR 160	509+00	RT	TO	510+52	RT				128				
E3	29	SR 160	509+00	LT	TO	510+38	LT	127							
E4	29	SR 160	510+38	LT	TO	510+80	LT				61				
E5	29	SR 160	511+99	RT	TO	512+05	RT		2						
E6	29	SR 160	512+05	RT	TO	513+50	RT				136				
E7	29	SR 160	513+46	LT	TO	513+50	LT				5				
E1	31	SR 160	513+50	LT	TO	514+32	LT			397					
E2	31	SR 160	513+50	RT	TO	513+60	RT				8				
E3	31	SR 160	514+27	RT	TO	514+38	RT		3						
E4	31	SR 160	514+38	RT	TO	515+05	RT				53				
E5	31	SR 160	514+68	LT	TO	515+88	LT			354					
E6	31	SR 160	514+80	LT	TO	514+86	LT		1						
WM1	94C	SR554	347+78	RT									1		
WM2	94C	WATER	0+15			1+88						1		173	145
WM3	94C	WATER	1+88			3+85								197	
WM4	94C	WATER	3+85			4+60						1		75	72
TOTALS CARRIED TO GENERAL SUMMARY								305	7	3018	758	2	1	445	217

GAL-160-9.57

SEEDING END WIDTH	SEEDING SQ. YDS.
54	199
75	137
	336



END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
125	85	96	100
64	112	132	169
		228	269

CALCULATED ATD
CHECKED CLP

CROSS SECTIONS - SR160
STA. 508+47.52 TO STA. 508+77.49

GAL-160-9.57

49
106

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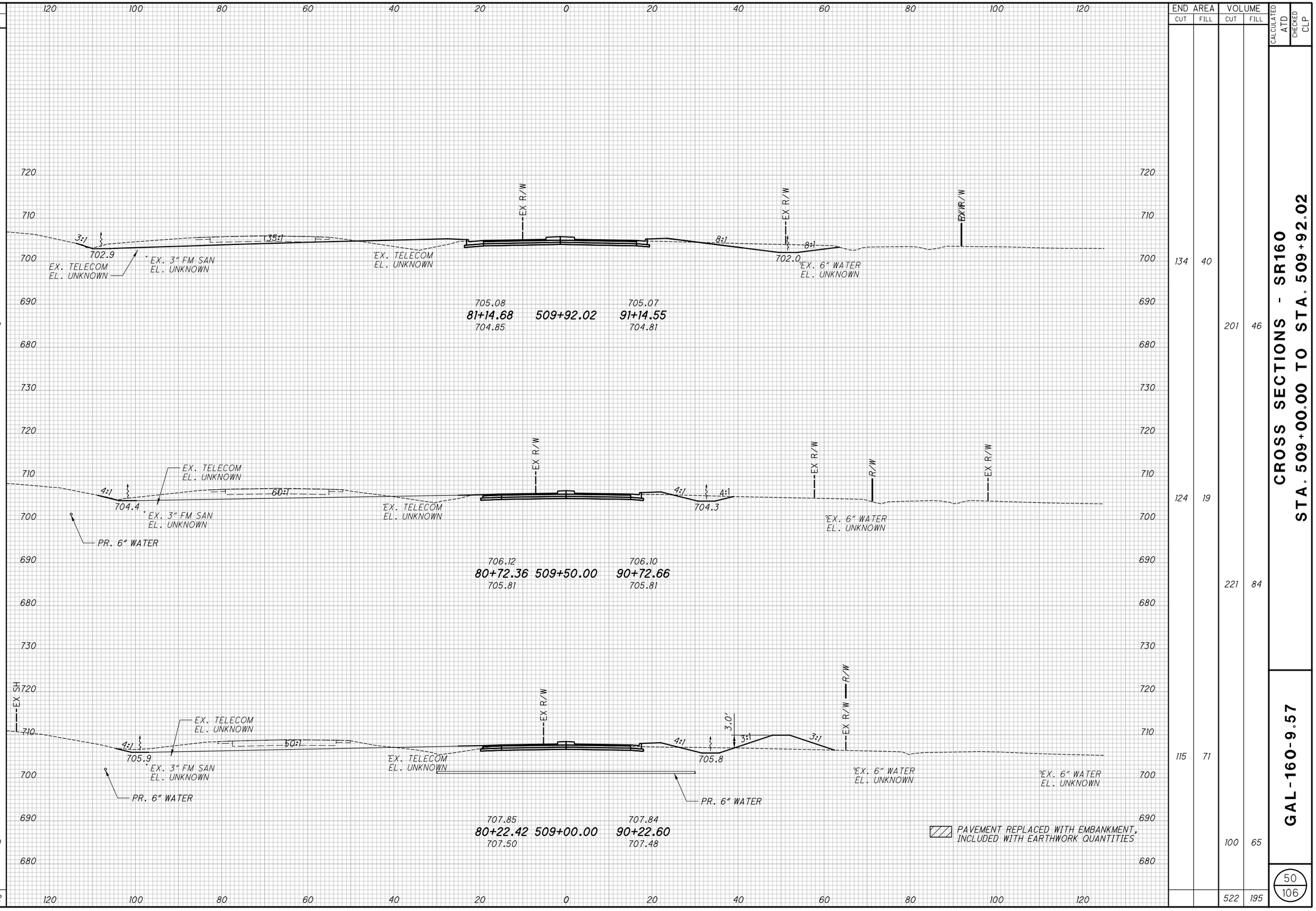
SEEDING END WIDTH	SEEDING SQ. YDS.	END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
178	481	134	40	201	46
26	211	124	19	221	84
49	130	115	71	100	65
	822			522	195



CALCULATED ATD
CHECKED CLP

CROSS SECTIONS - SR160
STA. 509+00.00 TO STA. 509+92.02

GAL-160-9.57

50
106

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SEEDING END WIDTH	SEEDING SQ. YDS.
24	25
21	67
20	12
	104

60 50 40 30 20 10 0 10 20 30 40 50 60

710 / 705 / 700 / 695

EX R/W — R/W — TMP

VAR. — 3:1 — 704.0

PR. 12" STM

EX. TELECOM
EL. UNKNOWN

EX. 6" WATER
EL. UNKNOWN

PR. 6" WATER

EX. 6" WATER
EL. UNKNOWN

EX. 6" FM SAN
EL. UNKNOWN

PR. 15" STM

703.68
20+38.80
703.93

348+00.00

703.67
30+38.80
703.88

STA 347+90.00, 25.50' LT
PR. HW-2.1 OR HW-2.2
INV 12" E 702.90

STA 347+85.00, 16.63' RT
PR. CB NO. 3, GRATE ELEV 703.56
4" W 701.00
15" W 700.06
15" E 699.96

EX. 6" WATER
EL. UNKNOWN

PR. 6" WATER

EX. 6" FM SAN
EL. UNKNOWN

703.88
20+28.95
704.13

347+90.14

703.86
30+28.95
704.09

3:1 — 703.0 — 3:1

EX. TELECOM
EL. UNKNOWN

EX. 12" STM

EX. 6" WATER
EL. UNKNOWN

EX. 6" FM SAN
EL. UNKNOWN

PR. 15" STM

704.60
20+00.00
704.64

347+61.19

30+00.00

PAVEMENT REPLACED WITH EMBANKMENT,
INCLUDED WITH EARTHWORK QUANTITIES

END AREA CUT	END AREA FILL	VOLUME CUT	VOLUME FILL
20	10	7	4
20	11	42	8
59	4	29	2
		78	14

CALCULATED ATD
CHECKED CLP

CROSS SECTIONS - SR554
STA. 347+61.19 TO STA. 348+00.00

GAL-160-9.57

62
106

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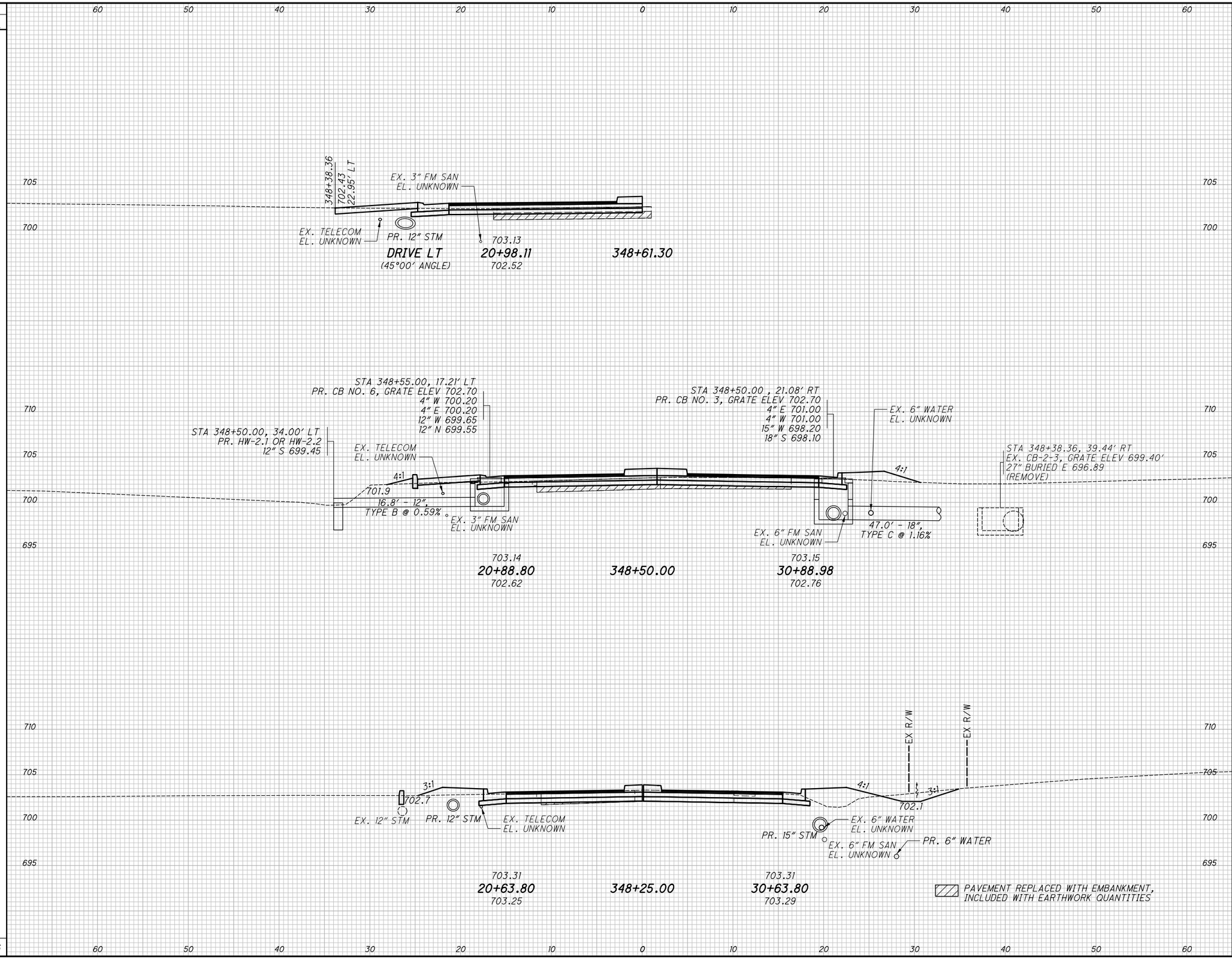
SEEDING	
END WIDTH	SQ. YDS.
15	61
28	75
	136

END AREA	
CUT	FILL
9	20
20	25

VOLUME	
CUT	FILL
13	21
19	16
32	37

CALCULATED ATD
CHECKED CLP



CROSS SECTIONS - SR554
STA. 348+25.00 TO STA. 348+61.30

GAL-160-9.57

63
106

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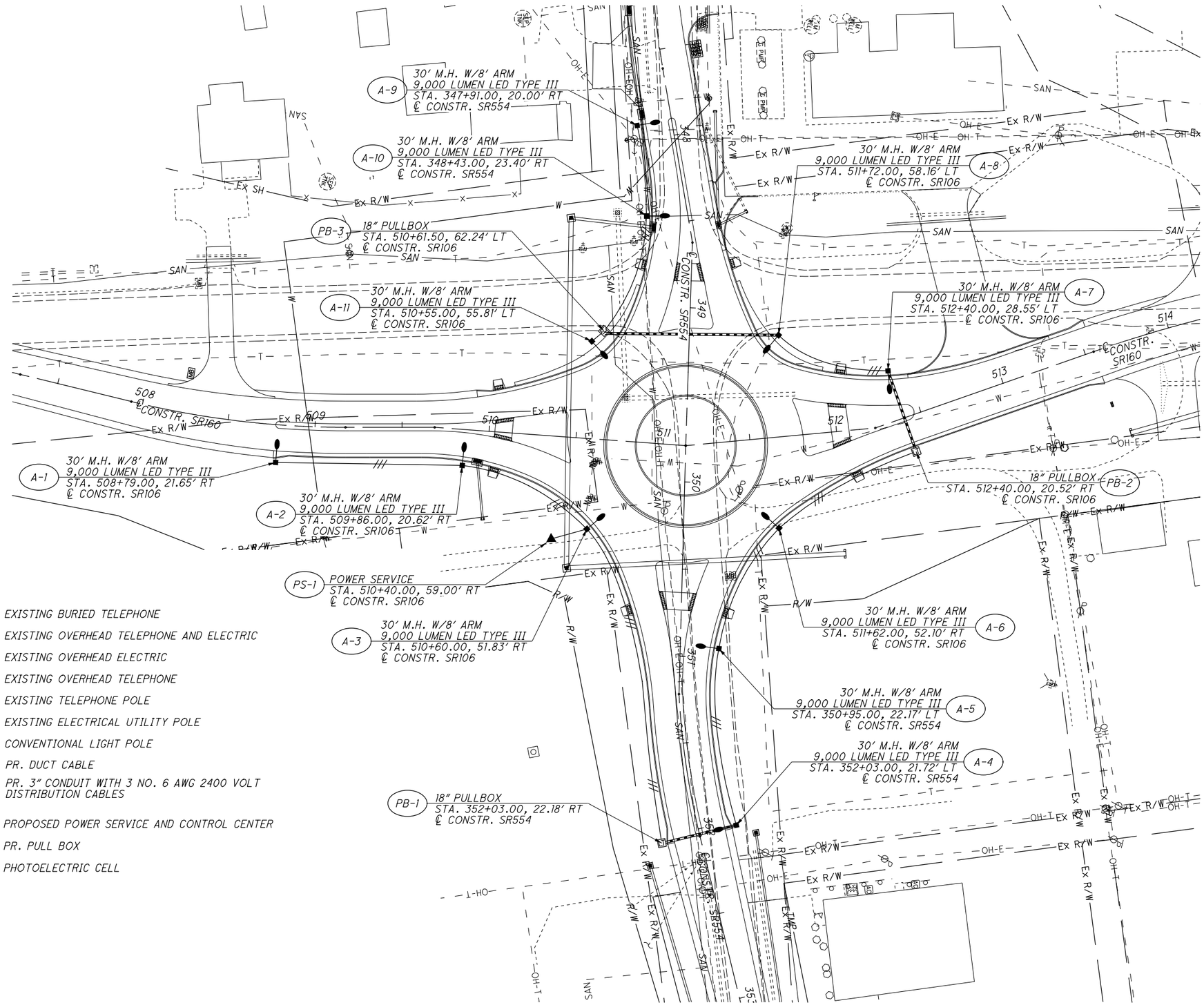
LIGHTING SUBSUMMARY

CALCULATED SWG
CHECKED CLP

SHEET NO.	LOCATION & REF. NO.			625 CONNECTION, FUSED PULL APART EACH	625 CONNECTION, UNFUSED PERMANENT EACH	625 LIGHT POLE, CONVENTIONAL, DESIGN A8B30 EACH	625 LIGHT POLE FOUNDATION, 24" X 8' DEEP EACH	625 NO. 6 AWG 2400 VOLT DISTRIBUTION CABLE FT	625 NO. 12 AWG POLE AND BRACKET CABLE FT	625 1-1/2" DUCT CABLE WITH THREE NO. 6 AWG 2400 VOLT CABLES FT	625 CONDUIT, 3", 725.04 FT	625 LUMINAIRE, CONVENTIONAL, SOLID STATE (LED), AS PER PLAN (IES-III-M, LED, 9,000-10,000 LUMENS) EACH	625 TRENCH, 24" DEEP FT	625 PULL BOX, 725.08, 18" EACH	625 GROUND ROD EACH	625 POWER SERVICE EACH	625 UNDERGROUND WARNING/MARKING TAPE FT
93	A-1	TO	A-2	2	1	1	1		144	117		1	107		1		107
93	A-2	TO	A-3	2	1	1	1		144	91		1	81		1		81
93	PS-1	TO	A-3		3					35			20			1	20
93	A-3	TO	PB-1	2	1	1	1		144	94		1	84		1		84
93	PB-1	TO	A-4		3			171			47		47	1			47
93	A-4	TO	A-5	2	1	1	1		144	112		1	102		1		102
93	A-5	TO	A-6	2	1	1	1		144	89		1	79		1		79
93	A-6	TO	PB-2	2	1	1	1		144	97		1	87		1		87
93	PB-2	TO	A-7		3			168			46		46	1			46
93	A-7	TO	A-8	2	1	1	1		144	77		1	67		1		67
93	A-8	TO	PB-3	2	1	1	1	309	144		93	1	93		1		93
93	PB-3	TO	A-10		3					79			69	1			69
93	A-10	TO	A-9	2	1	1	1		144	64		1	54		1		54
93	A-9	TO	A-9	2	1	1	1		144			1			1		
93	A-11	TO	PB-3	2	1	1	1		144	18		1	8		1		8
TOTALS CARRIED TO GENERAL SUMMARY				22	23	11	11	648	1584	873	186	11	944	3	11	1	944



LEGEND

- EXISTING BURIED TELEPHONE
- EXISTING OVERHEAD TELEPHONE AND ELECTRIC
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD TELEPHONE
- EXISTING TELEPHONE POLE
- EXISTING ELECTRICAL UTILITY POLE
- CONVENTIONAL LIGHT POLE
- PR. DUCT CABLE
- PR. 3" CONDUIT WITH 3 NO. 6 AWG 2400 VOLT DISTRIBUTION CABLES
- PROPOSED POWER SERVICE AND CONTROL CENTER
- PR. PULL BOX
- PHOTOELECTRIC CELL

HORIZONTAL SCALE IN FEET
0 15 30 60

CALCULATED SWG
CHECKED BMV

LIGHTING PLAN

GAL-160-9.57

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ITEM 638- WATER WORK, MISC.: 6" WATER MAIN, HDPE PIPE AND FITTINGS, AS PER PLAN

NEW 6 INCH WATER MAIN SHALL BE INSTALLED IN GENERAL ACCORDANCE WITH SECTION 638 WITH THE FOLLOWING EXCEPTIONS:

*638.02 MATERIALS (PIPE)- PIPE SHALL BE HIGH DENSITY, EXTRA HIGH MOLECULAR WEIGHT, HDPE POLYETHYLENE PIPE MADE FROM PE 4710 OR PE3710 MATERIALS. PIPE SHALL BE SDR 13.5 (160 PSI CLASS) IRON PIPE SIZE (IPS) MEETING THE REQUIREMENTS OF AWWA C-906 AND SHALL BE NSF CERTIFIED FOR POTABLE WATER USE.

*638.02 MATERIALS (FITTINGS)-
A. POLYETHYLENE FITTINGS AND CUSTOM FABRICATIONS: THE CONTRACTOR SHALL PROVIDE POLYETHYLENE FITTINGS AND CUSTOM FABRICATIONS THAT HAVE BEEN MOLDED OR FABRICATED BY THE MANUFACTURER OF THE ADJACENT PIPE. BUTT FUSION OUTLETS SHALL BE MADE TO THE SAME OUTSIDE DIAMETER, WALL THICKNESS, AND TOLERANCES AS THE MATING PIPE. ALL FITTINGS AND CUSTOM FABRICATIONS SHALL BE FULLY RATED FOR THE SAME INTERNAL PRESSURE AS THE MATING PIPE. PRESSURE DE-RATED FABRICATED FITTINGS ARE PROHIBITED.

B. FABRICATED FITTINGS: FABRICATED FITTINGS SHALL BE MADE BY HEAT FUSION JOINING SPECIALLY MACHINED SHAPES CUT FROM PIPE FITTINGS. FABRICATED FITTINGS SHALL BE RATED FOR INTERNAL PRESSURE SERVICE EQUIVALENT TO THE FULL SERVICE PRESSURE RATING OF THE MATING PIPE. DIRECTIONAL FITTINGS 16 INCH IPS AND LARGER SUCH AS ELBOWS, TEES, ETC. SHALL HAVE A PLAIN END INLET FOR BUTT FUSION AND PLAIN END DIRECTIONAL OUTLETS.

C. POLYETHYLENE FLANGE ADAPTERS: FLANGE ADAPTERS SHALL BE MADE WITH SUFFICIENT THROUGHBORE LENGTH TO BE CLAMPED IN A BUTT FUSION JOINING MACHINE WITHOUT THE USE OF A STUB-END HOLDER. THE SEALING SURFACE OF THE FLANGE ADAPTER SHALL BE MACHINED WITH A SERIES OF SMALL V-SHAPED GROOVES TO PROVIDE GASKETLESS SEALING, OR TO RESTRAIN THE GASKET AGAINST BLOWOUT.

D. BACK-UP RINGS AND FLANGE BOLTS: FLANGE ADAPTERS SHALL BE FITTED WITH LAP JOINT FLANGES PRESSURE RATED EQUAL TO OR GREATER THAN THE MATING PIPE. THE LAP JOINT FLANGE BORE SHALL BE CHAMFERED OR RADIUSED TO PROVIDE CLEARANCE TO THE FLANGE ADAPTER RADIUS. FLANGE BOLTS AND NUTS SHALL BE GRADE 2 OR HIGHER.

E. SADDLE CONNECTIONS FOR CORPORATION STOP: SERVICE CONNECTIONS, INCLUDING AIR RELEASES, SHALL BE ELECTROFUSION SADDLES WITH A STAINLESS-STEEL THREADED OUTLET. THE SIZE OF THE THREADED OUTLET SHALL BE 2 INCH IPS. PIPING BEYOND THE THREADED OUTLET SHALL BE AS PER CMS. ELECTROFUSION SADDLES SHALL BE MADE FROM SAME MATERIALS AS HDPE PIPE.

*638.05 PIPE BEDDING- BEDDING SHALL BE A MINIMUM 4 INCHES OF SAND PER 703.02 OR ROUNDED #8 OR #57 STONE CONSTRUCTED ACCORDING TO ITEM 611.

*638.06 D PIPE HANDLING- WHEN LIFTING WITH SLINGS, USE ONLY WIDE FABRIC CHOKER SLINGS TO LIFT, MOVE, OR LOWER PIPE AND FITTINGS. DO NOT USE WIRE ROPE OR CHAIN. SLINGS SHALL BE OF SUFFICIENT CAPACITY FOR THE LOAD, AND SHALL BE INSPECTED BEFORE USE. DO NOT USE WORN OR DEFECTIVE EQUIPMENT. AT ALL TIMES THROUGH DELIVERY, STORAGE, ON-SITE STAGING AND INSTALLATION, THE CONTRACTOR SHALL PROTECT AND ENSURE THAT THE HDPE PIPE IS NOT EXPOSED TO LIQUID HYDROCARBONS. IF ANY PORTIONS OF THE PIPE ARE EXPOSED TO HYDROCARBONS, THAT SECTION OF PIPE SHALL BE CUT-OUT AND REMOVED FROM USE.

*638.05 I TRACER TAPE- PER CMS EXCEPT TRACER WIRE SHALL BE 12 GAUGE.

*638.07 PIPE JOINTS- BUTT FUSION JOINING- WHERE HDPE PIPE IS JOINED TO HDPE PIPE IT SHALL BE BY THERMAL BUTT FUSION EXCEPT IN CASES WHERE ELECTROFUSION IS PERMITTED ONLY AT CRITICAL LOCATIONS AND ON A LIMITED BASIS WITH PRIOR APPROVAL OF THE ENGINEER. BUTT FUSION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE PIPE MANUFACTURER AND FUSION EQUIPMENT SUPPLIER SPECIFICATIONS.

A. BUTT FUSION JOINING: MAKE JOINTS BETWEEN PLAIN END PIPES AND FITTINGS BY BUTT FUSION USING ONLY PROCEDURES THAT ARE RECOMMENDED BY THE PIPE AND FITTING MANUFACTURER. ENSURE THAT PERSONS MAKING BUTT FUSION JOINTS ARE CERTIFIED ACCORDING TO THE STANDARDS AND HAVE PROVEN EXPERIENCE TO MAKE FUSION WELDS FOLLOWING MANUFACTURER'S RECOMMENDED PROCEDURES. MAINTAIN RECORDS OF TRAINED PERSONNEL AND CERTIFY THAT TRAINING WAS RECEIVED NOT MORE THAN 12 MONTHS BEFORE COMMENCING CONSTRUCTION. EXTERNAL AND INTERNAL BEADS RESULTING FROM BUTT FUSION JOINING SHALL NOT BE REMOVED.

B. USE CAUTION TO PROTECT THE EXPOSED BUTT ENDS OF PIPES FROM EXPOSURE TO OILS, GREASES, OR HYDROCARBONS. ANY PIPE EXPOSED TO HYDROCARBONS OF ANY TYPE SHALL BE CUT-OUT AND REMOVED PRIOR TO BUTT FUSION.

C. ELECTROFUSION JOINING: ELECTROFUSION JOINING SHALL BE PERMITTED ONLY AS SPECIFIED ABOVE. COUPLINGS SHALL BE PRODUCED FROM PE4710 OR GREATER QUALITY MATERIALS, BE MANUFACTURED PER ASTM F1055, AND SHALL BE SUITABLE FOR FUSION WITH PE4710 PIPE. FUSION MUST BE PERFORMED IN DRY CONDITIONS WITH A BALANCE OF TEMPERATURE BETWEEN PIPE AND FITTINGS. THE ENTIRE FUSION OPERATION (PREPARATION, INSTALLATION, FUSION, ETC.) MUST BE CARRIED OUT BY A CERTIFIED AND TRAINED INSTALLER, FOLLOWING THE MANUFACTURER'S RECOMMENDED PROCEDURE, AND ASTM F1290 AND PPI TN 34. ALL MATERIALS AND EQUIPMENT SHALL BE AS REQUIRED BY THE COUPLING MANUFACTURER.

1. DETERMINE PIPE TOLERANCE: WITH A TAPE MEASURE OR A PI TAPE, MEASURE THE CIRCUMFERENCES OF THE PIPE AREA TO BE FUSED. IF PIPE IS NOT WITHIN MINIMUM TOLERANCE, CONTACT FUSION OR COUPLING MANUFACTURER BEFORE PROCEEDING.

2. IF THE PIPE MEASURES TOWARDS THE LOWER END OF THE TOLERANCE, TAKE CARE TO CHECK FOR EXCESSIVE GAPS. DO NOT OVER SCRAPE PIPE. DO NOT USE A PLANER TO SCRAPE AS THIS MAY REMOVE TOO MUCH MATERIAL AND CREATE TOO LARGE A GAP. UTILIZE THE PREHEAT CYCLE TO CLOSE ANY GAPS LARGER THAN 1 MM (BETWEEN WIRES AND PIPE SURFACE).

3. CUTTING PIPE ENDS: CUT THE PIPE ENDS AT RIGHT ANGLES TO THE PIPE AXIS. DO NOT ALLOW THE USE OF ANY LUBRICANT ON THE CUTTING TOOL. OIL ON THE CUTTING TOOL WILL CREATE A NON-FUSIBLE BARRIER BETWEEN THE PIPE AND COUPLING WHICH WILL LEAD TO JOINT FAILURE. FOR THE PIPE CUTTING, A SUITABLE CUTTER FOR PLASTICS MUST BE USED. AN IMPROPER CUT CAN LEAD TO THE PIPE ENDS BEING OUTSIDE THE COLD ZONE IN THE COUPLER WHICH WILL RESULT IN EXCESSIVE MELT OF THE COUPLER. IF POSSIBLE, USE A SAW WITH A RIGHT-ANGLED GUIDE. IF IT IS NOT POSSIBLE TO PROVIDE A CUTTING DEVICE WITH A GUIDE, THE CUTTING LINES SHOULD BE MARKED ON WHOLE CIRCUMFERENCE OF PIPE TO ACHIEVE A RIGHT-ANGLE CUT-OFF PIPE. IT IS RECOMMENDED TO USE AN ELECTRIC PLANER TO FACE THE ROUGH ENDS OF THE PIPE TO MAKE THEM FLAT AND SMOOTH. USE OF MECHANICAL SCRAPER TOOLS WHICH USE THE PIPE ENDS AS A GUIDE WILL OPERATE MUCH EASIER WITH PIPE ENDS THAT ARE FLAT AND SMOOTH.

4. MARK THE FUSION ZONE: THE FUSION ZONE IS THE HALF-LENGTH OF THE COUPLER. THE FUSION ZONE MUST BE MEASURED AND MARKED WITH A MARKER ON THE PIPE.

5. SCRAPING FUSION ZONE: IN ORDER TO REMOVE THE OXIDE LAYER COMPLETELY, THE PIPE END MUST BE SCRAPED SO THAT SHAVINGS ARE FORMED. THIS OPERATION ENSURES REMOVAL OF OXIDE LAYER, WHICH WILL INCREASE MELT FLOW DURING THE FUSION PROCESS. IT IS CRITICAL THAT THE OXIDE LAYER BE REMOVED COMPLETELY; OTHERWISE, IT MAY CAUSE COLD WELDING RESULTING IN LEAKAGE. THIS CAN BE ACCOMPLISHED WITH A MANUAL SCRAPER TOOL OR A SUITABLE MECHANICAL SCRAPER TOOL. MAKE SURE THAT THE SCRAPER BLADE IS SHARP. IT IS RECOMMENDED TO USE A TUNGSTEN CARBIDE BLADE. IT MUST BE TAKEN INTO ACCOUNT THAT THE SURFACE OF PIPE WITHIN THE FUSION ZONE MUST BE SMOOTH (I.E. WITHOUT ANY GROOVES, GOUGES, ETC.). IF THERE IS ANY UN-SCRAPED AREA ON THE PIPE SURFACE, THESE AREAS MUST ALSO BE SCRAPED (IF THE PIPE IS OVAL AND A MECHANICAL SCRAPER IS USED, IT IS POSSIBLE THAT SOME AREAS WILL REMAIN UN-SCRAPED). THESE AREAS MUST BE SCRAPED WITH A MANUAL SCRAPER TOOL. THE PREPARED SURFACE MUST BE PROTECTED AGAINST DIRT, GREASE, AND WET WEATHER CONDITIONS. AFTER SCRAPING, DO NOT TOUCH THE FUSION ZONE AGAIN. DO NOT SCRAPE THE INSIDE OF THE FITTING.

6. CORRECT PIPE ROUNDNESS: MEASURE FOR PIPE OVALITY TO DETERMINE THE AREA THAT IS OUT OF TOLERANCE. MARK THE AREAS THAT ARE OUTSIDE THE STANDARD TOLERANCE FOR THE OD OF THE PIPE WITH A WHITE MARKER. IF ALL AREAS OF THE OUTSIDE DIAMETER ARE EQUAL TO OR LESS THAN THE STANDARD TOLERANCE, THEN YOU MAY PROCEED TO CLEANING OR DEGREASING THE PIPE. IF IT IS DETERMINED THAT SOME OF THE AREAS HAVE AN OD THAT IS TOO LARGE, THEN YOU WILL NEED TO UTILIZE THE PIPE RE-ROUNDING CLAMPS IN ORDER TO INSTALL THE COUPLER.

7. ROUNDING CLAMPS: IF REGROUND CLAMPS BECOME NECESSARY TO CORRECT FOR OVALITY IN THE PIPES, PLACE THE REGROUND CLAMPS ON THE OVAL AREA, AND BEGIN TO TIGHTEN UNTIL THE PIPE COMES BACK INTO TOLERANCE. CHECK THE FIT OF THE PIPE INTO THE COUPLER. IF THE COUPLER WILL STILL NOT FIT INTO THE PIPE, THEN THE PEELING OPERATION MUST BE REPEATED. LOCALIZED HIGH SPOTS CAN BE REMOVED WITH A HAND SCRAPER, BUT SPECIAL CARE MUST BE TAKEN TO ENSURE THAT THE ANNULAR GAP FORMED IS AS SMALL AS POSSIBLE.

8. DE-BURRING AND BEVELING ENDS: THE INTERNAL END OF PIPE MUST BE DE-BURRED, AND THEN ROUND OFF THE OUTER EDGE. ROUND OFF THE INTERNAL AND OUTER EDGES WITH A HAND SCRAPER, ELECTRIC PLANER, OR ROUTER.

9. CLEANING THE FUSION ZONE: THE PREPARED PIPE END AND INTERAL FACE OF EACH FITTING MUST BE DEGREASED WITH A SUITABLE CLEANING AGENT AND A WHITE ABSORBENT AND NON-FIBROUS CLOTH. THE CLEANING AGENT (ALCOHOL GREATER THAN 96%) MUST BE COMPLETELY EVAPORATED BEFORE INSTALLATION OF THE FITTING. AFTER CLEANING AGENT IS APPLIED, RE-MARK THE FUSION ZONE. DEGREASED SURFACES MUST BE PROTECTED AGAINST DIRT OR WET WEATHER CONDITIONS. THE OPERATOR SHOULD WEAR CLEAN COTTON GLOVES TO ENSURE THE CLEANED SURFACES DO NOT COME IN CONTACT WITH BARE HANDS OR ANY EQUIPMENT/DEBRIS.

10. INSERTING THE PIPE INTO THE COUPLER: INSERTING OF THE PIPE END INTO THE COUPLER SHOULD BE DONE WITHOUT CAUSING ANY TILTING, AND THE PIPES MUST BE IN ALIGNMENT WITH THE FITTING. TAPPING WITH A PLASTIC HAMMER AROUND THE FACE OF THE COUPLER CAN ASSIST INSERTION. DO NOT TAP NEAR THE FUSION CONNECTIONS AS THEY COULD BECOME DAMAGED. THE PIPE END MUST BE INSERTED INTO THE FITTING UP TO THE INSERTION MARK. PIPE SHOULD NOT BE INSERTED IF THE FIT IS TOO TIGHT. IN ORDER TO CONTROL BENDING STRESSES, DO NOT LET THE PIPES SUPPORT THEIR OWN WEIGHT IN THE COUPLER. IN ORDER TO PROVIDE UNSTRESSED ASSEMBLY, IT IS RECOMMENDED TO USE A SUITABLE HOLDING DEVICE. THIS STRESS-FREE CONDITION MUST BE MAINTAINED DURING THE COOLING PERIOD. POSITION THE COUPLER SO THAT THE CONTACT TERMINALS OF THE FITTINGS ARE EASILY ACCESSIBLE. AN ASSEMBLY WHICH IS STRESSED MAY RESULT IN DEFECTIVE JOINT. BEFORE STARTING FUSION OPERATION, CHECK SEATING OF PIPE INSERTION BY MEANS OF LINE MARKS. IF NECESSARY, DO CORRECTIONS. ENSURE THAT BOTH PIPES ARE INSERTED INTO THE FITTING AND THE TWO ENDS ARE MEETING EACH OTHER IN THE CENTER OF THE COUPLER (THE COLD ZONE). THE MAXIMUM ALLOWABLE GAP BETWEEN THE TWO PIPES IS TO BE LESS THAN ½ INCH.

11. CHECK FOR GAPS/PREHEAT CYCLE: WITH A LARGE ELECTRICAL TIE, CHECK AROUND THE CIRCUMFERENCE OF THE PIPE BETWEEN THE PIPE AND COUPLER TO DETERMINE FOR ANY GAPS LARGER THAN 1 MM, BUT LESS THAN 5 MM. THE ELECTRICAL TIE SHOULD HIT THE FIRST WIRE AND STOP. IF THERE ARE NO GAPS LARGER THAN 1 MM (THE ELECTRICAL TIE STOPS AT THE FIRST WIRE), THEN PROCEED TO CARRY OUT THE FUSION. MARK ANY AREAS WITH GAPS LARGER THAN 1 MM WITH A WHITE MARKER PEN. IT WILL BE NECESSARY TO PERFORM A PREHEATING CYCLE TO CLOSE ANY GAPS BETWEEN THE PIPE AND COUPLER LARGER THAN 1 MM (DISTANCE FROM WIRE TO PIPE SURFACE). ATTACH THE LEADS OF THE PROCESSOR TO THE COUPLER. SWITCH THE PROCESSOR TO MANUAL MODE AND INPUT THE PROPER VOLTAGE FOR THE FUSION TIME SPECIFIED ON THE COUPLER (CHECK WITH MANUFACTURER FOR PROPER VOLTAGE). PRESS START AND ALLOW THE PREHEAT CYCLE TO COMPLETE. AFTER THE CYCLE IS COMPLETE, WAIT ANOTHER 10 MINUTES TO ALLOW THE PIPE TO EXPAND. MEASURE THE AREAS WITH GAPS AGAIN. IF THE GAPS HAVE CLOSED TO LESS THAN 1 MM, THEN GO ONTO THE FUSION PROCESS. IF THE GAPS HAVE NOT CLOSED, THEN REPEAT THE PREHEAT CYCLE A SECOND TIME. ALLOW THE COUPLER TO COOL 50 MINUTES AFTER THE PREHEAT PROCESS IS COMPLETED BEFORE CHECKING THE GAPS AGAIN. REPEAT THIS PROCESS UNTIL GAPS ARE REDUCED TO 1 MM.

12. FUSION PROCESS: PROVIDED THAT THE INSTALLATION INSTRUCTIONS ARE FOLLOWED STEP BY STEP, THE FUSION PROCESS CAN BE STARTED. FUSION PARAMETERS ARE INCLUDED IN THE BARCODE LABEL ON THE FITTING. THE FUSION PARAMETERS ARE TRANSFERRED INTO THE FUSION CONTROL BOX BY MEANS OF BARCODE READER. AFTER READING THE BARCODE, THE DATA ON BARCODE LABEL SHOULD BE COMPARED WITH THE DATA ON DISPLAY. EACH SIDE OF BIFILAR COUPLERS (COUPLER WITH TWO SEPARATE WINDINGS) HAS TO BE FUSED SEPARATELY. START THE FUSION PROCESS. PROGRESS OF FUSION OPERATION CAN BE FOLLOWED BY THE DISPLAY ON FUSION UNIT TO SEE IF THE PROCESS IS GOING ON PROPERLY. AS A SAFETY PRECAUTION, BE CAREFUL TO STAY AT LEAST 1 M AWAY FROM THE FUSION AREA. IF THE FUSION PROCESS IS INTERRUPTED FOR ANY REASON (E.G. DUE TO POWER FAILURE), THE FUSION PROCESS CAN BE REPEATED AFTER THE JOINT HAS COOLED ADEQUATELY. COOLING TIME IS INDICATED AS CT ON THE BARCODE LABEL. IT IS TIME NECESSARY TO ALLOW THE JOINTED PART TO COOL DOWN TO A TEMPERATURE. BEFORE COMPLETION OF COOLING TIME, IT IS NOT ALLOWED TO MOVE OR PRESSURIZE THE JOINTED COMPONENTS.

CALCULATED MTS CHECKED BMV

WATER WORK GENERAL NOTES

GAL-160-9.57

94A
106

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ITEM 638 - WATER WORK, MISC.: 6" WATER MAIN, HDPE PIPE AND FITTINGS, AS PER PLAN (CONT.)

13. EXAMINATION: WITH A FLASHLIGHT, EXAMINE THE AREA BETWEEN THE COUPLER AND PIPE TO CHECK FOR ANY REMAINING GAPS OR WIRES THAT CAN BE SEEN. WITH A LARGE ELECTRICALTIE, SIMILAR ITEM, INSERT INTO THE SPACE BETWEEN THE PIPE AND COUPLER, YOU SHOULD HIT THE ELECTROFUSION WIRES AND NOT BE ABLE TO INSERT THE TIE ANY MORE (THE TIE WILL STOP). IF THERE ARE ANY AREAS IN WHICH THE CLAMP CAN BE INSERTED WITHOUT STOPPING, THEN ALLOW THE COUPLER TO COOL AND FUSE THE COUPLER AGAIN. AFTER THE FUSION PROCESS, REPEAT BOTH THE FLASHLIGHT AND TIE EXAMINATION TO DETERMINE THAT PROPER HDPE MELT HAS CLOSED ANY GAPS. THE ELECTROFUSION FITTING CAN BE FUSED A MAXIMUM OF THREE TIMES AFTER ALLOWING THE COOLING PROCESS TO COMPLETE.

D. SADDLE FUSION JOINING: SADDLE FUSION SHALL BE PERFORMED IN ACCORDANCE WITH ASTM F2620, PPI TR-41, AND FITTING MANUFACTURER'S REQUIREMENTS. THE ENTIRE FUSION OPERATION (PREPARATION, INSTALLATION, FUSION, ETC.) MUST BE CARRIED OUT BY A CERTIFIED AND TRAINED OPERATOR.

E. CONNECTION TO OTHER PIPE MATERIALS: WHERE HDPE PIPE IS TO BE JOINED TO OTHER MATERIALS IS SHALL BE BY MEANS OF FLANGED CONNECTIONS OR MECHANICAL JOINTS (FLANGE ADAPTORS, TRANSITION FITTINGS, AND BACKUP RINGS) DESIGNED FOR JOINING HDPE PIPE TO ANOTHER MATERIAL. MECHANICAL JOINTS AND FLANGE CONNECTIONS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURE AND PLASTIC PIPE INSTITUTE (PPI) TN-38 "BOLT TORQUE FOR POLYETHYLENE FLANGED JOINTS". CENTER AND ALIGN FLANGE FACES TO EACH OTHER BEFORE ASSEMBLING AND TIGHTENING BOLTS DO NOT USE THE FLANGE BOLTS TO DRAW THE FLANGES INTO ALIGNMENT. LUBRICATE BOLT THREADS, AND FIT FLAT WASHERS UNDER THE FLANGE NUTS. TIGHTEN BOLTS EVENLY ACCORDING TO THE TIGHTENING PATTERN AND TORQUE STEP RECOMMENDATIONS OF THE MANUFACTURER AND PPI TN-38. AT LEAST ONE HOUR AFTER INITIAL ASSEMBLY, RE-TIGHTEN FLANGE CONNECTIONS FOLLOWING THE TIGHTENING PATTERN AND TORQUE STEP RECOMMENDATIONS OF THE MANUFACTURER AND PPI TN-38.

F. TESTING OF JOINTS:

1. BUTT FUSION TESTING: ON THE FIRST DAY, BUTT FUSIONS ARE TO BE MADE FOR EACH PIPE SIZE; THE FIRST FUSION IS A TRIAL FUSION. AFTER THE TRIAL FUSION IS ALLOWED TO COOL COMPLETELY, CUT OUT FUSION TEST STRAPS. THE TEST STRAP SHALL BE 12 INCHES (MINIMUM) OR 30 TIMES THE WALL THICKNESS IN LENGTH WITH THE FUSION IN THE CENTER, AND 1 INCH (MINIMUM) OR 1.5 TIMES THE WALL THICKNESS IN WIDTH. BEND THE TEST STRAP UNTIL THE ENDS OF THE STRAP TOUCH. IF THE FUSION FAILS AT THE JOINT, MAKE A NEW TRIAL FUSION, COOL COMPLETELY, AND RE-TEST. DO NOT COMMENCE BUTT FUSION OF PIPE TO BE INSTALLED UNTIL A TRIAL FUSION HAS PASSED THE BENT STRAP TEST. TESTS SHALL BE WITNESSED AND APPROVED BY THE ENGINEER.

2. DURING THE INTIAL TRIAL FUSION, A DATA LOGGER SHALL BE USED TO MONITOR THE FUSION PROCESS TO RECORD THE NECESSARY CRITICAL PARAMETERS CRITICAL TO THE FUSION PROCESS. UPON A SUCCESSFUL TRIAL FUSION AS TESTED BY THE BEND BACK TEST STRAP, ALL SUBSEQUENT BUTT FUSIONS SHALL BE RECORDED USING THE DATA LOGGER AND SHALL MATCH THE CONDITION OF THE INITIAL SUCCESSFUL AND APPROVED TRIAL FUSION. PROVIDED THE CONDITIONS RECORDED ON THE DATA LOGGER MATCH THE CONDITIONS OF THE TRIAL FUSION, NO ADDITIONAL BENT STRAP TESTS WILL BE REQUIRED.

ITEM 638 - 6 INCH WATER MAIN, AS PER PLAN (CONT.)

3. PERFORM ALL FUSION JOINTS IN THE PRESENCE OF THE ENGINEER. RECORD THE TEMPERATURE AND CORRESPONDING TIME FOR EACH FUSION JOINT.

*638.08 BACKFILLING- PER CMS EXCEPT ANY GRANULAR MATERIALS IN CONTACT WITH THE HDPE PIPE SHALL BE WASHED OR ROUNDED.

*638.09 HYDROSTATIC TESTS- PRESSURE TEST HDPE PIPES IN ACCORDANCE WITH ASTM F2164, "STANDARD PRACTICE FOR FIELD LEAK TESTING OF POLYETHYLENE (PE) PRESSURE PIPING SYSTEMS USING HYDROSTATIC PRESSURE".

ITEM 638 - WATER WORK, MISC.: 10" PVC PIPE ENCASEMENT, OPEN CUT, AS PER PLAN

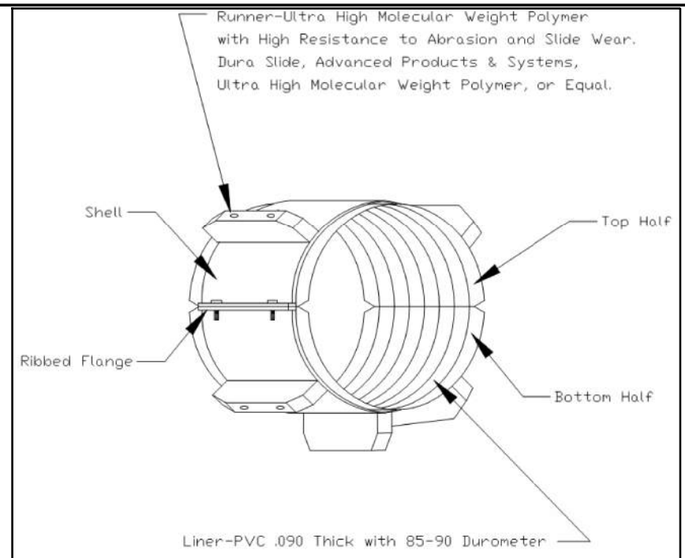
WHERE SHOWN ON THE PLANS THE 6 INCH HDPE WATER MAIN SHALL BE INSTALLED WITHIN A 10 INCH PVC CASING PIPE. CASING PIPE SHALL BE PER 707.43 OR 707.45. INSTALLATION SHALL BE PER 638.11. SPACERS SHALL BE PER DETAIL ON THIS SHEET.

ITEM 638 - 6 INCH GATE VALVE, AS PER PLAN

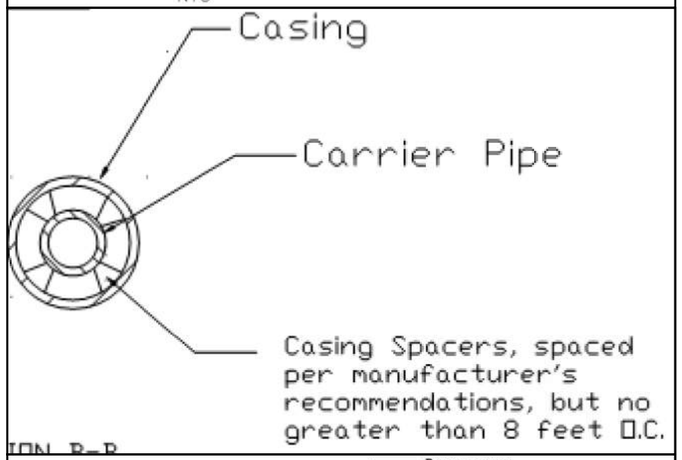
MATERIALS AND INSTALLATION SHALL MEET THE REQUIREMENTS OF ITEM 638 EXCEPT AS MODIFIED BY THE DETAIL, THIS SHEET. TRANSITION BETWEEN HDPE PIPE WITH MECHANICAL JOINT ADAPTORS PER NOTES IN ITEM 638 - 6 INCH WATER MAIN, AS PER PLAN.

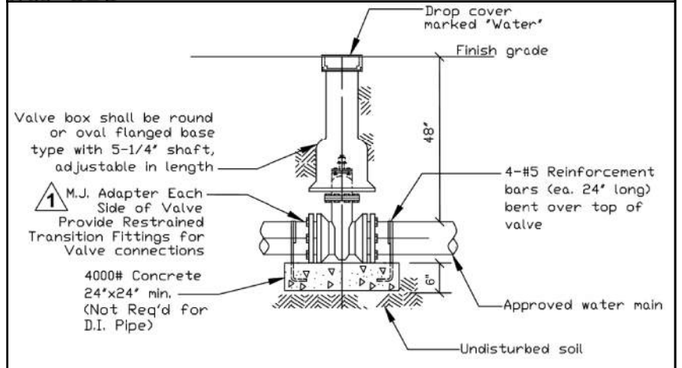
WATERLINE ABANDONMENT

EXISTING WATER LINES BETWEEN THE POINT OF CONNECTION OF THE NEW WATER LINES AS SHOWN ON THE PLANS SHALL BE ABANDONED IN PLACE PER ITEM 202. ALL VISIBLE VALVE BOXES ON THE WATER LINE TO BE ABANDONED SHALL BE REMOVED. COST FOR VALVE BOX REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID ITEM FOR THE NEW WATER MAIN PIPE.



Casing Spacers
NTS





Detail of Typical Gate Valve and Box Installation
NTS

CALCULATED MTS
CHECKED BMV

WATER WORK GENERAL NOTES

GAL-160-9.57

94B
106

STA. 1+88.10
90°BEND
N = 337216.58
E= 2030497.63

STA. 3+85.12
45°BEND (DELTA=40°)
N=337399.99
E=2030425.65

STA. 4+60.21
6" GATE VALVE
CONNECT TO EXISITING 6"
N=337433.76
E=2030359.48

STA. 4+57.39
45°BEND
N=337434.55
E=2030362.19

PT Sta. 347+61.20

PI Sta. 348+62.53

PC Sta. 507+93.44

PT Sta. 507+27.88

PT Sta. 509+17.49

PI Sta. 509+68.68

N 0° 05' 57" W

N 13° 49' 28" W

N 9° 38' 46" W

N 66° 30' 34" E

N 19° 09' 11" W

N 7° 43' 35" E

STA 0+15.42
REMOVE EXISTING 90° BEND
INSTALL NEW 6" GATE VALVE
N= 337279.67
E= 2030658.38

GENERAL NOTES

1. FOR WATER WORK ESTIMATED QUANTITIES SEE SHEET 42/106.

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MTS
CHECKED BMV

WATER WORK PLAN AND PROFILE
STA. 0+00.00 TO STA. 5+00.00

GAL-160-9.57

94C
106

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