

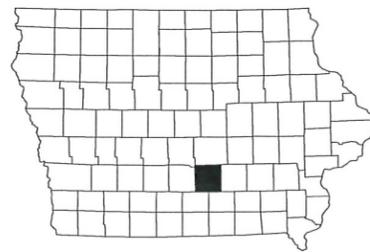
CONSTRUCTION PLANS FOR CITY OF KNOXVILLE

MARION COUNTY, IOWA

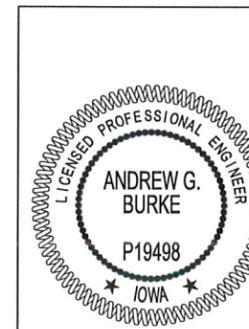
ROCHE ST CULVERT REPLACEMENT



VICINITY MAP



IOWA



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Andrew G. Burke 02/12/20
Andrew G. Burke, P.E. Date

License Number P19498
My License Renewal Date is December 31, 2020

Pages or sheets covered by this seal:
A.1, A.2, B.1, C.1-C.3, C.4, D.1, E.1, G.1, J.1-J.5,
L.1, U.1

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APPROVED FOR CONSTRUCTION
CITY OF KNOXVILLE

Heather Wessery 2-11-20
Assistant City Manager Date

MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: 1"=100'	
Technician: DSS	Date: 01/24/20	Field Bk:	Page:
Project No: 1190729			Sheet A.1

ROCHE ST CULVERT REPLACEMENT

TITLE SHEET

KNOXVILLE, IOWA

2727 S.W. SNYDER BLVD.
ANKENY, IOWA 50023
515-964-2020 | www.snyder-associates.com

SNYDER & ASSOCIATES, INC.



Project No: 1190729

Sheet A.1

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LEGEND

Features	Existing	Proposed
Spot Elevation	93.0	93.0
Contour Elevation	93	93
Fence (Barbed, Field, Hog)	-x-x-	-x-x-
Fence (Chain Link)	- - -	- - -
Fence (Wood)	-o-o-	-o-o-
Fence (Silt)	-o-o-	-o-o-
Tree Line	- - -	- - -
Tree Stump	-o-o-	-o-o-
Deciduous Tree \ Shrub	(Tree Symbol)	(Tree Symbol)
Coniferous Tree \ Shrub	(Tree Symbol)	(Tree Symbol)
Communication	C(x)	C
Overhead Communication	OC(x)	OC
Fiber Optic	FO(x)	FO
Underground Electric	E(x)	E
Overhead Electric	OE(x)	OE
Gas Main with Size	4" G(x)	4" G
High Pressure Gas Main with Size	4" HPG(x)	4" HPG
Water Main with Size	8" W(x)	8" W
Sanitary Sewer with Size	8" S(x)	8" S
Duct Bank	DUCT(x)	DUCT
Test Hole Location for SUE w/ID	12" ST	12" ST
Sanitary Manhole	(Manhole Symbol)	(Manhole Symbol)
Storm Sewer with Size	12" ST	12" ST
Storm Manhole	(Manhole Symbol)	(Manhole Symbol)
Single Storm Sewer Intake	(Manhole Symbol)	(Manhole Symbol)
Double Storm Sewer Intake	(Manhole Symbol)	(Manhole Symbol)
Fire Hydrant	(Hydrant Symbol)	(Hydrant Symbol)
Fire Hydrant on Building	(Hydrant Symbol)	(Hydrant Symbol)
Water Main Valve	(Valve Symbol)	(Valve Symbol)
Water Service Valve	(Valve Symbol)	(Valve Symbol)
Well	(Well Symbol)	(Well Symbol)
Utility Pole	(Pole Symbol)	(Pole Symbol)
Guy Anchor	(Anchor Symbol)	(Anchor Symbol)
Utility Pole with Light	(Pole Symbol)	(Pole Symbol)
Utility Pole with Transformer	(Pole Symbol)	(Pole Symbol)
Street Light	(Light Symbol)	(Light Symbol)
Yard Light	(Light Symbol)	(Light Symbol)
Electric Box	(Box Symbol)	(Box Symbol)
Electric Transformer	(Transformer Symbol)	(Transformer Symbol)
Traffic Sign	(Sign Symbol)	(Sign Symbol)
Communication Pedestal	(Pedestal Symbol)	(Pedestal Symbol)
Communication Manhole	(Manhole Symbol)	(Manhole Symbol)
Communication Handhole	(Handhole Symbol)	(Handhole Symbol)
Fiber Optic Manhole	(Manhole Symbol)	(Manhole Symbol)
Fiber Optic Handhole	(Handhole Symbol)	(Handhole Symbol)
Gas Valve	(Valve Symbol)	(Valve Symbol)
Gas Manhole	(Manhole Symbol)	(Manhole Symbol)
Gas Apparatus	(Apparatus Symbol)	(Apparatus Symbol)
Fence Post or Guard Post	(Post Symbol)	(Post Symbol)
Underground Storage Tank	(Tank Symbol)	(Tank Symbol)
Above Ground Storage Tank	(Tank Symbol)	(Tank Symbol)
Sign	(Sign Symbol)	(Sign Symbol)
Satellite Dish	(Dish Symbol)	(Dish Symbol)
Mailbox	(Mailbox Symbol)	(Mailbox Symbol)
Soil Boring	(Boring Symbol)	(Boring Symbol)

UTILITY QUALITY SERVICE LEVELS

QUALITY LEVELS OF UTILITIES ARE SHOWN IN THE PARENTHESES WITH THE UTILITY TYPE AND WHEN APPLICABLE, SIZE. THE QUALITY LEVELS ARE BASED ON THE CI/ ASCE 38-02 STANDARD.

QUALITY LEVEL (D) INFORMATION IS DERIVED FROM EXISTING UTILITY RECORDS OR ORAL RECOLLECTIONS.

QUALITY LEVEL (C) INFORMATION IS OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION WITH QUALITY D INFORMATION.

QUALITY LEVEL (B) INFORMATION IS OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES.

QUALITY LEVEL (A) IS HORIZONTAL AND VERTICAL POSITION OF UNDERGROUND UTILITIES OBTAINED BY ACTUAL EXPOSURE OR VERIFICATION OF PREVIOUSLY EXPOSED SUBSURFACE UTILITIES, AS WELL AS THE TYPE, SIZE, CONDITION, MATERIAL, AND OTHER CHARACTERISTICS.

UTILITY WARNING

THE UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND/OR RECORDS OBTAINED. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES OR SUBSURFACE FEATURES SHOWN COMPRISE ALL SUCH ITEMS IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES OR SUBSURFACE FEATURES SHOWN ARE IN THE EXACT LOCATION INDICATED EXCEPT WHERE NOTED AS QUALITY LEVEL A.

UTILITY NOTES:

- THE CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE UTILITY COMPANIES WITH RESPECT TO RELOCATING AND CONSTRUCTING THEIR FACILITIES. CALL IOWA ONE CALL FOR UTILITY LOCATIONS 48 HOURS BEFORE CONSTRUCTION, 1-800-292-8989.
- CONTACT THE CITY AND DESIGN ENGINEER AT LEAST 24 HOURS PRIOR TO STARTING WORK.
- BEFORE STARTING CONSTRUCTION IN EACH STAGE, THE CONTRACTOR SHALL EXCAVATE ALL UTILITIES WHICH MAY BE IN CONFLICT WITH PROPOSED CONSTRUCTION. THE CONTRACTOR PROVIDED SURVEYOR SHALL OBTAIN ELEVATIONS OF THE UTILITIES AND NOTIFY THE ENGINEER.
- THE CONTRACTOR SHALL EXERCISE CAUTION AND USE CONSTRUCTION METHODS AND EQUIPMENT TO COMPLETE THE WORK WITHOUT DAMAGING UTILITIES.
- THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES SHALL BE DETERMINED BY THE CONTRACTOR AT THE TIME OF CONSTRUCTION. IT SHALL BE THE DUTY OF THE CONTRACTOR TO ASCERTAIN WHETHER ANY ADDITIONAL FACILITIES OTHER THAN THOSE SHOWN ON THE PLANS MAY BE PRESENT.
- IT IS ANTICIPATED THAT UTILITY RELOCATION WORK BY VARIOUS UTILITY COMPANIES WILL BE DONE IN CONJUNCTION WITH CONSTRUCTION OF THIS PROJECT. CONTRACTOR IS REQUIRED TO COORDINATE AND COOPERATE WITH THESE UTILITY COMPANIES DURING CONSTRUCTION.

UTILITY CONTACT INFORMATION

UTILITY CONTACT FOR MAPPING INFORMATION SHOWN AS RECEIVED FROM THE IOWA ONE CALL DESIGN REQUEST SYSTEM, TICKET NUMBERS 551705185, 551705186, 551705187, 551705188 AND 551705189.

G-GAS	ALLIANT ENERGY CHAD BEAN 319-286-1302 locate IPL@alliantenergy.com
F01-FIBER OPTIC	WINDSTREAM COMMUNICATIONS LOCATE DESK 800-289-1901 LOCATE_DESK@WINDSTREAM.COM
NO MAPS RECEIVED	KNOXVILLE COMMUNITY SCHOOLS DR. RANDY A. FLACK ElackRan@knoxville.k12.ia.us
W-WATER	KNOXVILLE WATER WORKS BRIAN BAILEY 641-828-0557 knoxvillewater@cmhcsi.com
E-UNDERGROUND ELECTRIC OE-OVERHEAD ELECTRIC	MIDAMERICAN ELECTRIC ENERGY JASON SANDIFER 641-672-7008 jwsandifer@midamerican.com
NO MAPS RECEIVED	MARION COUNTY RURAL WATER DIST RANDALL BRANSON 641-842-3304 mcrwmgr@iowatelecom.net
C1-COMMUNICATION FO2-FIBER OPTIC	MEDIACOM L.L.C. PATRICK ZEIMET 845-867-0963 pzeimet@mediacomll.com

GENERAL NOTES:

- NOTIFY THE OWNER AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
- CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO OCCUR BETWEEN 7:00 AM AND 7:00 PM MONDAY THROUGH SATURDAY. NO CONSTRUCTION ACTIVITIES ARE ALLOWED ON SUNDAYS WITHOUT THE APPROVAL OF THE OWNER.
- PROTECT EXISTING DRIVEWAYS AND STREET SURFACING UNLESS SPECIFICALLY NOTED OTHERWISE. REMOVE AND REPLACE DAMAGED SURFACING WITHOUT ADDITIONAL COMPENSATION.
- THE CONTRACTOR SHALL CONFINE CONSTRUCTION OPERATIONS TO WITHIN THE CONSTRUCTION LIMITS AS SHOWN ON THE PLANS UNLESS AUTHORIZED BY THE ENGINEER TO DO OTHERWISE. THE CONTRACTOR SHALL COMPENSATE THE PROPERTY OWNER FOR DAMAGES OUTSIDE OF THE AUTHORIZED CONSTRUCTION LIMITS.
- DRAINAGE SHALL BE MAINTAINED AT ALL TIMES. EXISTING STORM SEWER THAT IS DESIGNATED TO BE REMOVED SHALL BE REMOVED ONLY WHEN CONSTRUCTION HAS PROGRESSED TO THAT LOCATION.
- THE CONTRACTOR SHALL PROTECT ALL STORM SEWER INLETS AND UTILITY ACCESSES FROM SILTATION AND DEBRIS DURING CONSTRUCTION. REFER TO POLLUTION PREVENTION PLAN.
- ALL REMOVAL AND DISPOSAL OF ABANDONED UTILITY LINES INCLUDING GAS MAINS, WATER MAINS, TELEPHONE CONDUITS, SERVICE LINES, ETC., REQUIRED TO COMPLETE THE WORK SHALL BE INCIDENTAL TO THIS PROJECT.
- ALL HOLES RESULTING FROM OPERATIONS OF THE CONTRACTOR, INCLUDING REMOVAL OF FENCE POSTS AND SIGNAL EQUIPMENT, SHALL BE FILLED AND CONSOLIDATED TO FINISHED GRADE TO PREVENT FUTURE SETTLEMENT. THE VOIDS SHALL BE FILLED AS SOON AS PRACTICAL - PREFERABLY THE DAY CREATED AND NOT LATER THAN THE FOLLOWING DAY. ANY PORTION OF THE RIGHT OF WAY OR PROJECT LIMITS DISTURBED BY ANY SUCH OPERATIONS SHALL BE RESTORED TO AN ACCEPTABLE CONDITION. THESE OPERATIONS SHALL BE CONSIDERED INCIDENTAL TO THIS PROJECT.
- UNLESS OTHERWISE DIRECTED OR AUTHORIZED, ALL REMOVED ASPHALTIC CEMENT CONCRETE AND OTHER BITUMINOUS MATERIALS WHICH ARE NOT SPECIFICALLY ADDRESSED OR DESCRIBED IN THE PLANS SHALL BECOME PROPERTY OF THE CONTRACTOR. THE CONTRACTOR MAY REMOVE THE MATERIAL FROM THE PROJECT AND STOCKPILE FOR FUTURE USE, OR DISPOSE OF THE MATERIAL IN A LICENSED LANDFILL, IN ACCORDANCE WITH CURRENT RULES AND REGULATIONS OF THE IOWA DEPARTMENT OF NATURAL RESOURCES.
- UNLESS OTHERWISE NOTED ON THE PLANS, ALL PARKING AREAS, BACKSLOPES, AND EASEMENT AREAS DISTURBED BY CONSTRUCTION SHALL BE SHAPED TO FINISHED GRADE AND SEEDED. PAYMENT SHALL BE FOR THOSE DISTURBED AREAS WITHIN THE GRADING LIMITS OR EASEMENTS SHOWN ON THE PLANS. THE CONTRACTOR SHALL NOT DISTURB DESIRABLE GRASS AREAS AND DESIRABLE TREES OUTSIDE THE CONSTRUCTION LIMITS. THE CONTRACTOR WILL NOT BE PERMITTED TO PARK OR SERVICE VEHICLES AND EQUIPMENT OR USE THESE AREAS FOR STORAGE OF MATERIALS. STORAGE, PARKING AND SERVICE AREA(S) WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
- UNLESS OTHERWISE APPROVED BY THE ENGINEER, THE CONTRACTOR SHALL ORGANIZE WEEKLY CONSTRUCTION MEETINGS DURING THE DURATION OF THE PROJECT. THIS INCLUDES NOTIFYING SUBCONTRACTORS, CITY AND UTILITY COMPANIES AS NECESSARY.
- THE CONTRACTOR WILL BE REQUIRED TO HAVE A REPRESENTATIVE AT THE FINAL INSPECTION AND WILL BE RESPONSIBLE TO OPEN ALL MANHOLES AND INTAKES FOR INSPECTION.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE WASTE AREAS OR DISPOSAL SITES FOR EXCESS MATERIAL (EXCAVATED MATERIAL OR BROKEN CONCRETE) WHICH IS NOT DESIRABLE TO BE INCORPORATED INTO THE WORK INVOLVED ON THIS PROJECT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT AREAS (INCLUDING HAUL ROADS) SELECTED FOR WASTE OR DISPOSAL NOT IMPACT 1) CULTURALLY SENSITIVE SITES OR GRAVES OR 2) WETLANDS OR "WATERS OF THE U.S."; INCLUDING STREAMS OR STREAM BANKS BELOW THE "ORDINARY HIGH WATER MARK", WITHOUT AN APPROVED U.S. ARMY CORPS OF ENGINEERS SECTION 404 PERMIT. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES. NO WASTE MATERIAL SHALL BE PLACED WITHIN THE RIGHT-OF-WAY, UNLESS SPECIFICALLY STATED IN THE PLANS.
- SPECIAL CARE SHALL BE TAKEN WHEN FORMING AT INTERSECTIONS SO THAT THE PROFILES AND ELEVATIONS SHOWN ON THE CROSS SECTIONS, STREET RETURN PROFILE SHEETS, AND STAKING DIAGRAM SHEETS ARE OBTAINED. SHORT LENGTHS OF FORMS OR FLEXIBLE FORMS MAY BE NECESSARY AT THESE LOCATIONS.
- THE TOP SIX (6) INCHES OF THE DISTURBED AREAS SHALL BE FREE OF ROCK AND DEBRIS AND SHALL BE SUITABLE FOR THE ESTABLISHMENT OF VEGETATION, SUBJECT TO THE APPROVAL OF THE ENGINEER.
- THE CONTRACTOR IS EXPECTED TO HAVE MATERIALS, EQUIPMENT, AND LABOR AVAILABLE ON A DAILY BASIS TO INSTALL AND MAINTAIN EROSION CONTROL FEATURES ON THE PROJECT. THIS MAY INVOLVE SEEDING, SILT FENCE, ROCK DITCH CHECKS, SILT BASINS, OR SILT DIKES.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN ACCESS TO INDIVIDUAL PROPERTIES DURING CONSTRUCTION. RELOCATED ACCESS SHALL BE COMPLETED TO INDIVIDUAL PROPERTIES PRIOR TO REMOVAL OF EXISTING ACCESS. IF THE PERMANENT ACCESS CANNOT BE COMPLETED PRIOR TO REMOVAL OF THE EXISTING ACCESS, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN AN ALTERNATE ACCESS. TEMPORARY GRANULAR SURFACING WILL BE PAID FOR AS A CONTRACT ITEM OR BY EXTRA WORK.
- THE CONTRACTOR IS HEREBY NOTIFIED THAT REMOVAL OF ANY EXISTING TRAFFIC MARKERS, WARNING DEVICES OR GUARDRAIL BARRIERS SHALL BE SCHEDULED SUBJECT TO THE APPROVAL OF THE ENGINEER. THE CONTRACTOR MAY BE REQUIRED TO PLACE TEMPORARY WARNING DEVICES AT CERTAIN LOCATIONS WHERE REPLACEMENT FEATURES ARE NOT INSTALLED THE SAME DAY DURING WHICH ANY SUCH REMOVALS TAKE PLACE.
- A PLAN FOR STAGE CONSTRUCTION OF LOCAL ACCESSES WHICH ARE REQUIRED TO REMAIN OPEN TO TRAFFIC DURING CONSTRUCTION SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
- PROTECT ALL EXISTING UTILITIES UNLESS OTHERWISE NOTED.
- CONTRACTOR TO REMOVE AND REINSTALL ALL TRAFFIC SIGNAGE. COORDINATE WITH CITY AT LEAST 72 HOURS PRIOR TO SIGNAGE REMOVAL. THIS WORK IS INCIDENTAL TO THE PROJECT.
- PROTECT ALL EXISTING TREES UNLESS OTHERWISE NOTED.
- THE CONTRACTOR IS EXPECTED TO PROVIDE ADEQUATE PERSONNEL AND EQUIPMENT TO PERFORM WORK WITHIN SPECIFIED TIME OF CONSTRUCTION. ONCE WORK WITHIN A SPECIFIED AREA HAS COMMENCED, THE CONTRACTOR SHALL PUT FULL AND CONTINUOUS WORKFORCE TO COMPLETE THE AREA AS SOON AS POSSIBLE TO MINIMIZE INCONVENIENCE TO TRAVELING PUBLIC, AND TO ADJACENT PROPERTY OWNERS.
- ALL HAND POURS REQUIRE REINFORCEMENT TO BE PLACED ON SUPPORT CHAIRS AND APPROVED BY CITY PRIOR TO CONSTRUCTION.
- NO 3D SURFACE FILES OR CROSS SECTIONS WERE PREPARED FOR THIS PROJECT AS THE EXISTING ROADWAY PAVEMENT WILL BE REPLACED TO CONDITIONS THAT NEARLY MATCH EXISTING. DESIGN FILES ARE AVAILABLE FOR REFERENCE AND USE.
- OVERHEAD POWER LINES ALONG THE EAST SIDE OF ROCHE STREET ARE PLANNED TO BE RELOCATED UNDERGROUND FOR THIS PROJECT. ANTICIPATED SCHEDULE FOR THE RELOCATION WORK IS BETWEEN MARCH 2020 TO APRIL 2020. COORDINATION WITH MIDAMERICAN ENERGY IS REQUIRED.

ROCHE ST CULVERT REPLACEMENT

GENERAL NOTES AND LEGEND

KNOXVILLE, IOWA

SNYDER & ASSOCIATES, INC.



Project No: 1190729

Sheet A.2

MARK	REVISION	DATE	BY
	Checked By: ACB	AS SHOWN	
	Engineer: JDS	Scale:	
	Technical: DSS	Date: 01/24/20	Field By:
			Project No: 1190729
			Sheet A.2

2727 S.W. SNYDER BLVD.
ANKENY, IOWA 50023
515-964-2020 | www.snyder-associates.com

100-1C
 MODIFIED

ESTIMATED ROADWAY QUANTITIES

Item No.	SUDAS No.	Item	Unit	Estimated		As-Built	
				Division 1	Division 2	Division 1	Division 2
				Total	Total	Total	Total
DIVISION 1: CITY OF KNOXVILLE							
DIVISION 2: KNOXVILLE WATER WORKS							
2							
Earthwork, Subgrade, and Subbase							
2.01	2010-108-A-0	Clearing and Grubbing	LS	1			
2.02	2010-108-D-1	Topsoil, On-site	CY	150			
2.03	2010-108-E-0	Excavation, Class 10	CY	1125			
2.04	2010-108-G-0	Subgrade Preparation	SY	340			
2.05	2010-108-I-0	Subbase, Modified, 6 Inches	SY	341			
2.06	2010-108-L-0	Compaction Testing	LS	1			
3							
Trench and Trenchless Construction							
3.01	3010-108-F-0	Trench Compaction Testing	LS	1			
4							
Sewers and Drains							
4.01	4010-108-A-1	Sanitary Sewer Gravity Main, Trenched, PVC, 8 In.	LF	46			
4.02	4010-108-H-0	Removal of Sanitary Sewer, 8 In.	LF	46			
4.03	4020-108-A-1	Storm Sewer, Trenched, RCP, 15 In.	LF	50	84		
4.04	4020-108-C-0	Removal of Storm Sewer, RCP, 15 In.	LF	53	88		
4.05	4040-108-A-0	Subdrain, HDPE, 4 In.	LF	220			
4.06	4040-108-C-0	Subdrain Cleanout, Type A-1, 6 In.	EA	4			
4.07	4040-108-e-0	Subdrain Outlets and Connections	EA	4			
5							
Water Mains and Appurtenances							
5.01	5010-108-A-1	Water Main, Trenched, C900 PVC, 8 In.	LF		137		
5.02	5010-109-C-1	Fitting, 8" x 45° Bend	EA		8		
5.03	5010-109-C-1	Fitting, 8" x 6" Reducer	EA		1		
5.04	5010-108-D-0	Water Service Stub	EA		1		
5.05	5010-999-9-9	Water Main, Insulation	LF		22		
5.06	5010-999-9-9	Water Main, Abandon or Remove, 6 In.	LF		127		
5.07	5010-999-9-9	Water Main, Connection to Existing	EA		2		
6							
Structures for Sanitary and Storm Sewers							
6.01	6010-108-B-0	Intake, SW-501	EA	1			
6.02	6010-108-B-0	Intake, SW-503	EA	1			
6.03	6010-108-E-0	Manhole Adjustment, Major	EA	1			
6.04	6010-108-H-0	Remove Intake	EA	2			
7							
Streets and Related Work							
7.01	7010-108-A-0	Pavement, PCC, 7 In.	SY	293			
7.02	7010-108-D-0	Special Subgrade Preparation for Shared Use Path	SY	307			
7.03	7010-108-I-0	PCC Pavement Samples and Testing	LS	1			
7.04	7030-108-I-0	Shared Use Path, PCC, 6 In.	SY	221			
7.05	7030-108-G-0	Detectable Warning, Cast Iron	SF	24			
7.06	7030-108-H-1	Driveway, Paved, PCC, 6 In.	SY	10			
7.07	7030-999-9-9	Temporary Surfacing, 12 In.	TON	150			
7.08	7040-108-H-0	Pavement Removal	SY	305			
8							
Traffic Control							
8.01	8030-108-A-0	Temporary Traffic Control	LS	1			
8.02	8030-999-9-9	Temporary Barrier Rail	LF	300			
9							
Site Work and Landscaping							
9.01	9040-108-D-1	Filter Sock, 12 Inch.	LF	410			
9.02	9040-108-D-2	Filter Sock, Removal	LF	410			
9.03	9040-108-J-0	Rip Rap, Class A	TON	262			
9.04	9040-108-Q-0	Erosion Control Mulching, Hydromulching with Temporary Seed	AC	0.3			
9.05	9040-108-Q-0	Hydroseeding, Fertilizer, Hydromulch, Type 1 Seeding	AC	0.3			
11							
Miscellaneous							
11.01	11,010-108-A	Construction Survey	LS	0.93	0.07		
11.02	11,020-108-A	Mobilization	LS	0.93	0.07		
11.03	11,030-108-A-0	Maintenance of Postal Service	LS	1			
11.04	11,030-108-B-0	Maintenance of Solid Waste Collection	LS	1			
11.05	11,050-108-A-0	Concrete Washout	LS	1			

REFER TO V-SHEETS FOR CULVERT QUANTITIES

100-4A
 MODIFIED

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
2		
EARTHWORK		
2.01	2010-108-A-0	Clearing and Grubbing Quantity includes clearing and grubbing within the project grading limits. Payment will be made for plan quantity only and no measurements will be made. Bidders shall familiarize themselves with site conditions prior to submittal of the bid.
2.02	2010-108-D-1	Topsoil, On-site Quantity includes stripping of all topsoil to a depth of 6 inches from the area within the grading limits. Material to be stockpiled and spread at a depth no less than 6 inches. Bidders shall determine quantities and satisfy themselves for all conditions of earthwork requirements in the submittal of the bid. Contractor is responsible for stockpiling and transporting of materials. Payment will be made for plan quantity only. No additional compensation shall be made for export of waste material. Total topsoil stripping quantity comprises 150 CY. Total topsoil placement quantity comprises 130 CY, including 30% shrink.
2.03	2010-108-E-0	Excavation, Class 10 Bidders shall determine quantities and satisfy themselves for all conditions of earthwork requirements in the submittal of the bid. Compacted fill quantities include an assumed 30% shrink factor. Total Class 10 Cut quantity comprises 150 CY. Total Class 10 fill quantity comprises 1125 CY including 30% shrink. Fill quantity includes material used for backfill of twin RCB culvert. Suitable Material to be used in fill. Class 20 excavation may be used on culvert backfill if deemed suitable. Payment shall be made at plan quantity and no adjustments will be made. No additional compensation shall be made for the overhaul of material.
2.04	2010-108-G-0	Subgrade Preparation Compaction testing is required for this bid item and paid under the Compaction Testing bid item. Contractor to notify City 48 hours prior to proof rolling subgrade. Refer to B-sheets for details and locations.
2.05	2010-108-I-0	Subbase, Modified, 6 Inches Refer to B-sheets for locations and additional information.
2.06	2010-108-L-0	Compaction Testing Compaction testing shall be performed by an independent testing laboratory approved by the Engineer. Compaction testing shall be performed on subgrade, subbase, and in placing earth fill. Perform compaction testing per Section 2010, 3.09. Coordinate testing results with the Engineer.
3		
Trench and Trenchless Construction		
3.01	3010-108-F-0	Trench Compaction Testing Trench compaction testing shall be performed by an independent testing laboratory approved by the Engineer. Includes testing for all storm sewer, water main, and culvert utility construction. Perform trench compaction testing per Section 3010, 3.05. Coordinate testing with Engineer. Testing required for backfill of each structure on alternating sides of structure. Each pipe segment requires testing per Specifications regardless of length.
4		
Sewers and Drains		
4.01	4010-108-A-1	Sanitary Sewer Gravity Main, Trenched, PVC, 8 In. Refer to D-sheets for additional information. Connection to existing made by pre-approved non-shear couplings. Bypass pumping or similar approved means to maintain sewer service shall be incidental to this item.
4.02	4010-108-H-0	Removal of Sanitary Sewer, 8 In. Refer to D-sheets for locations and additional information.
4.03	4020-108-A-1	Storm Sewer, Trenched, RCP, 15 In. Refer to the D-sheets for locations and elevations. All pipe joints to include profile gaskets per Section 4020, 2.01, A.3. Pipe lengths shown are from inside wall of structure to inside wall of structure. Trench compaction testing is required for this item. Use Class I Granular Bedding Material complying with Section 3010, 2.02. Bedding per SW-102 Type R-2.
4.04	4020-108-C-0	Removal of Storm Sewer, RCP, 15 In. Refer to D-sheets for locations and additional information.
4.05	4040-108-A-0	Subdrain, HDPE, 4 In.
4.06	4040-108-C-0	Subdrain Cleanout, Type A-1, 6 In.
4.07	4040-108-e-0	Subdrain Outlets and Connections Refer to D-sheets for locations. No engineering fabric shall be used. Type A-1, Case B installation shall be used. HPDE shall have smooth interior and corrugated exterior. Subdrain equal to be pre-approved by the Engineer. Assure rock interaction between porous backfill and modified subbase.

MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: AS SHOWN	Field Bc
Technician: DSS	Date: 01/24/20	Project No: 1190729	Sheet C.1

ROCHE ST CULVERT REPLACEMENT

GENERAL NOTES AND QUANTITIES

KNOXVILLE, IOWA

SNYDER & ASSOCIATES, INC.

2727 S.W. SNYDER BLVD.
 ANKENY, IOWA 50023
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Project No: 1190729
 Sheet C.1

ESTIMATE REFERENCE INFORMATION

100-4A
MODIFIED

Item No.	Item Code	Description
5		
Water Mains and Appurtenances		
5.01	5010-108-A-1	Water Main, Trenched, C900 PVC, 8 In. Refer to the D-sheets for locations and additional information. Contractor shall coordinate time period for the water main disconnection with Knoxville Water Works and impacted businesses and residences. Testing and disinfecting shall be completed prior to final acceptance. Class P-2 embedment is required for all water main pipe per SUDAS Figure 3010.104. Minimum of 1.5' cover must be provided between water main and storm sewer. Minimum of 0.5' cover must be provided between water main and culvert. Coordinate outages and connections to water system with Knoxville Water Works and impacted business and residences one (1) week in advance of planned outages. Prior to construction, verify connection location with Knoxville Water Works. No additional compensation is allowed for varying lengths of installed water main.
5.02	5010-109-C-1	Fitting, 8" x 45° Bend
5.03	5010-109-C-1	Fitting, 8" x 6" Reducer Refer to D-sheets for locations and additional information. No additional compensation is allowed for reduced number of fittings.
5.04	5010-108-D-0	Water Service Stub Refer to D-sheets for location. Each water service disconnected from a removed water main and reconnected to a new water main will be counted for payment. Extended pipe material shall be 1 inch-Type K copper. Item shall include all excavation, backfill, disinfection, installation of corporation tap, corporation elbow, water service saddle, additional pipe and fittings necessary to reconnect the water service to new in-service water main. Work shall be completed by a licensed plumber and the contractor shall obtain all permits necessary to complete the required work. Payment will be based on the contract unit price of each water service connected.
5.05	5010-999-9-9	Water Main, Insulation Refer to B-sheets for detail. Refer to D-sheets for locations and additional information. Insulation shall be nominal dimensions at the water main crossing. Install insulation on water main over proposed culvert. Item includes minimum 3" XPS foam board and sand layer for interior and exterior backfill of insulation. Measurement shall be based on each linear foot of insulation protection installed at the water main crossing per details. Payment shall be made at the contract unit price for each linear foot of insulation protection installed at the water main crossing. Water main pipe installation costs to be paid under item 5.01.
5.06	5010-999-9-9	Water Main, Abandon or Remove, 6 In. Contractor may abandon or remove existing main depending on construction sequencing. If abandonment, capping of existing water main ends is required. Measurement shall be made for each linear foot of abandoned or removed water main. Exploratory excavation, backfill, and capping of the water main is considered incidental to this bid item. Payment shall be made at the contract unit price of each linear foot of abandoned or removed water main.
5.07	5010-999-9-9	Water Main, Connection to Existing Refer to the D-sheets for locations and plan and profile information. Contractor shall perform exploratory excavation prior to shutdown to verify pipe sizes, material, and locations. Item shall be measured and paid per each connection made to the existing water main service. Unit prices includes materials, equipment, labor, excavation, thrust restraint, backfilling, compaction, testing, and disinfection. Handbills and notifications are incidental to this bid item. Prior to construction, verify connection location with Knoxville Water Works.
6		
Structures for Sanitary and Storm Sewers		
6.01	6010-108-B-0	Intake, SW-501
6.02	6010-108-B-0	Intake, SW-503 Refer to the D-sheets for locations and plan and profile information. Furnishing, installing, and removal of structural sheeting for staged construction is incidental to this work.
6.03	6010-108-E-0	Manhole Adjustment, Major Refer to D-sheets for location. Item includes adjustment of manhole to final grade, furnish and installation of new casting and infiltration barrier, excavation of vent pipe, removal of vent pipe and capping of pipe by approved method, placement of backfill material, and compaction of backfill. Vent pipe is anticipated to be within 36-inches of existing grade.
6.04	6010-108-H-0	Remove Intake Refer to the D-sheets for locations and additional information.
7		
Streets and Related Work		
7.01	7010-108-A-0	Pavement, PCC, 7 In. Refer to the B-sheets for typical sections. Refer to the D-sheets and L-sheets for locations and additional information. Includes all curb and gutter placement. Class C concrete shall be used.
7.02	7010-108-D-0	Special Subgrade Preparation for Shared Use Path Compaction testing is required for this bid item and paid under the Compaction Testing bid item. Contractor to notify Engineer prior to proof rolling subgrade. Refer to B-sheets for details and locations.
7.03	7010-108-I-0	PCC Pavement Samples and Testing Item includes samples, field, and laboratory testing for all concrete work including but not limited to trail, sidewalks, driveways, and roadway.
7.04	7030-108-I-0	Shared Use Path, PCC, 6 In. Refer to B-sheets for typical section. Refer to D-sheets and L-sheets for locations and additional information. Class C concrete shall be used.

ESTIMATE REFERENCE INFORMATION

100-4A
MODIFIED

Item No.	Item Code	Description
7.05	7030-108-G-0	Detectable Warning, Cast Iron Refer to D-sheets for locations. Detectable warnings shall be cast iron. Install per manufacturer recommendations. Refer to L-sheets for radii information for detectable warnings. Radial panels are required for this bid item. Refer to L-sheets for additional information.
7.06	7030-108-H-1	Driveway, Paved, PCC, 6 In. Refer to D-sheets for locations.
7.07	7030-999-9-9	Temporary Surfacing, 12 In. Refer to J-sheets for locations. Contractor shall be responsible for maintenance of temporary surfacing during staged construction. Maintenance of temporary surfacing considered incidental to this bid item. Placement shall be on subgrade that passes proof roll. Measurement shall be based on truck tickets collected onsite. Payment shall be made at the contract unit price of temporary surfacing installed and maintained following completion of Stage 1 and Stage 2 construction.
7.08	7040-108-H-0	Pavement Removal Refer to D-sheets for removal locations. Existing PCC Pavement is estimated at 7" of pavement. No additional payment or earthwork adjustments will be made for variances in pavement depth. Full depth saw cuts are considered incidental to this item. Pavement removal include curb and gutter. Coordinate with City of Knoxville prior to performing saw cuts.
8		
Traffic Control		
8.01	8030-108-A-0	Temporary Traffic Control Refer to J-sheets for Traffic Control and Staging information. This item shall be measured and paid for as a percentage of the total project completed at each monthly payment. Lump sump price includes furnishing, erecting, operating, maintaining, cleaning, moving, and removing all traffic control devices as shown on the plans and as directed by the City.
8.02	8030-999-9-9	Temporary Barrier Rail Refer to J-sheets for temporary concrete barrier rail (TBR) locations. Included in this item are all materials, labor, equipment, and other associated work required to furnish, place, pin (if noted), maintain, and remove TBR as needed to comply with staged construction within the Contract Documents. Construction, material requirements, method of measurement, and basis of payment shall comply with Iowa DOT Specification Section 2528. Iowa DOT Standard Road Plan BA-401 shall apply to this item.
9		
Site Work and Landscaping		
9.01	9040-108-D-1	Filter Sock, 12 Inch.
9.02	9040-108-D-2	Filter Sock, Removal Items to be used for erosion control at intakes, perimeter control, intermediate control, and other locations as required by the Pollution Prevention Plan or directed by the Engineer. Refer to C Sheets for the PPP.
9.03	9040-108-J-0	Rip Rap, Class A Refer to the D-sheets, L-sheets, and V-sheets for rip rap locations. Refer to SUDAS Figures 9040.110 and 9040.111 for construction details. Rip rap shall be installed at a depth of 2 feet. Engineering fabric and excavation of embedment shall be considered incidental to this bid item.
9.04	9040-108-Q-0	Erosion Control Mulching, Hydromulching with Temporary Seed Apply hydro-mulch per Section 9040, 3.21B. Mulching areas outside of the construction limit shall be the responsibility of the Contractor at no additional cost to the owner. Contractor shall provide mulch and seed bags for quality and quantity verification after each application. Use this item for temporary application to meet NPDES requirements.
9.05	9040-108-Q-0	Hydroseeding, Fertilizer, Hydromulch, Type 1 Seeding Apply hydro-mulch per Section 9040, 3.21B. Install Type 1 Seeding. Mulching areas outside of the construction limits shall be the responsibility of the Contractor at no additional cost to the owner. Contractor shall provide mulch and seed bags for quality and quantity verification after each application. Mulching agent to meet Mechanical Bonded Fiber Matrix.

ROCHE ST CULVERT REPLACEMENT

GENERAL NOTES AND QUANTITIES

SNYDER & ASSOCIATES, INC.

MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	AS SHOWN	Scale:
Technician: DSS	Date: 01/24/20	Field Bc:	Project No: 1190729
			Sheet C-2

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100-4A
 MODIFIED

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
11		Miscellaneous
11.01	11,010-108-A	Construction Survey
11.02	11,020-108-A	Mobilization
11.03	11,030-108-A-0	Maintenance of Postal Service Final locations shall be coordinated with Engineer, Property Owner, and United States Postal Service prior to construction. Contractor to notify USPS 10 days prior to construction of temporary mailboxes on requirements and coordination of location. Contractor shall notify property owners prior to construction with a mail flyer and handbill to inform them the date and location of the temporary mailbox. Temporary mailboxes to be constructed prior to removal of existing mailboxes. Items including maintaining postal service include property owners within the project limits throughout the duration of the project. Item includes all materials, labor, and equipment required to provide postal services. Reinstallation of impacted mailboxes, per USPS standards, are incidental to this item.
11.04	11,030-108-B-0	Maintenance of Solid Waste Collection Item includes maintaining garbage and recycling services to property owners within the project limits through the duration of the project. Item includes all materials, labor, and equipment required to haul garbage and recycling containers from the property owners to a local pick-up point and back to the property within 24 hours following collection. Contractor shall coordinate a local pick-up location with the garbage and recycling services. A removable sticker shall be placed on each container to ensure that the containers are returned to the appropriate property owner. Contractor shall coordinate with the Owner, Engineer, property owners, and garbage and recycling services.
11.05	11,050-108-A-0	Concrete Washout Item includes implementing concrete washout at locations approved by the Engineer prior to construction. Included in this item is removal of hardened concrete following construction. Placement of concrete washout shall be within the right-of-way and not impede pedestrian or vehicular traffic. Progressive payments will be made throughout construction depending on stage of concrete work.

ROCHE ST CULVERT REPLACEMENT

GENERAL NOTES AND QUANTITIES

SNYDER & ASSOCIATES, INC. |



Project No: 1190729

Sheet C.3

KNOXVILLE, IOWA

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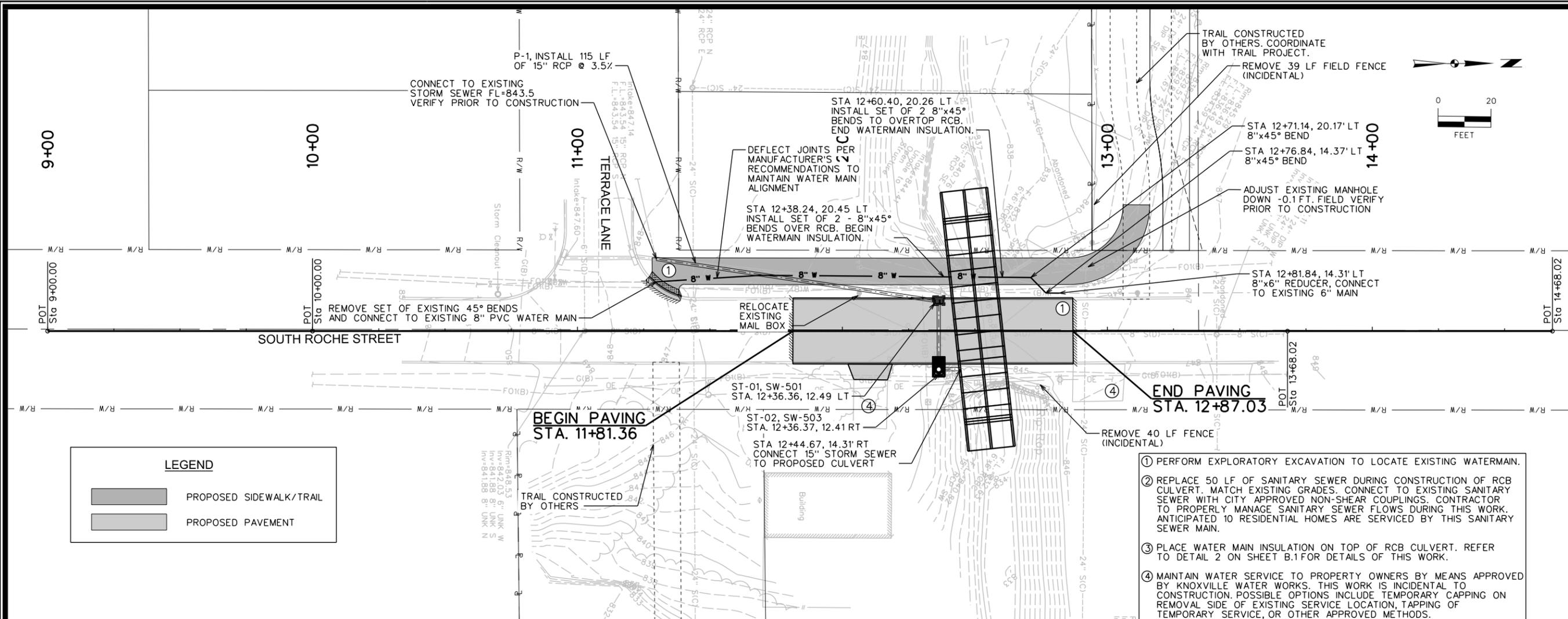
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Engineer: JDS	Checked By: ACB	Scale: AS SHOWN	
Technician: DSS	Date: 01/24/20	Field Bc:	Pg:
Project No: 1190729	Sheet	C.3	

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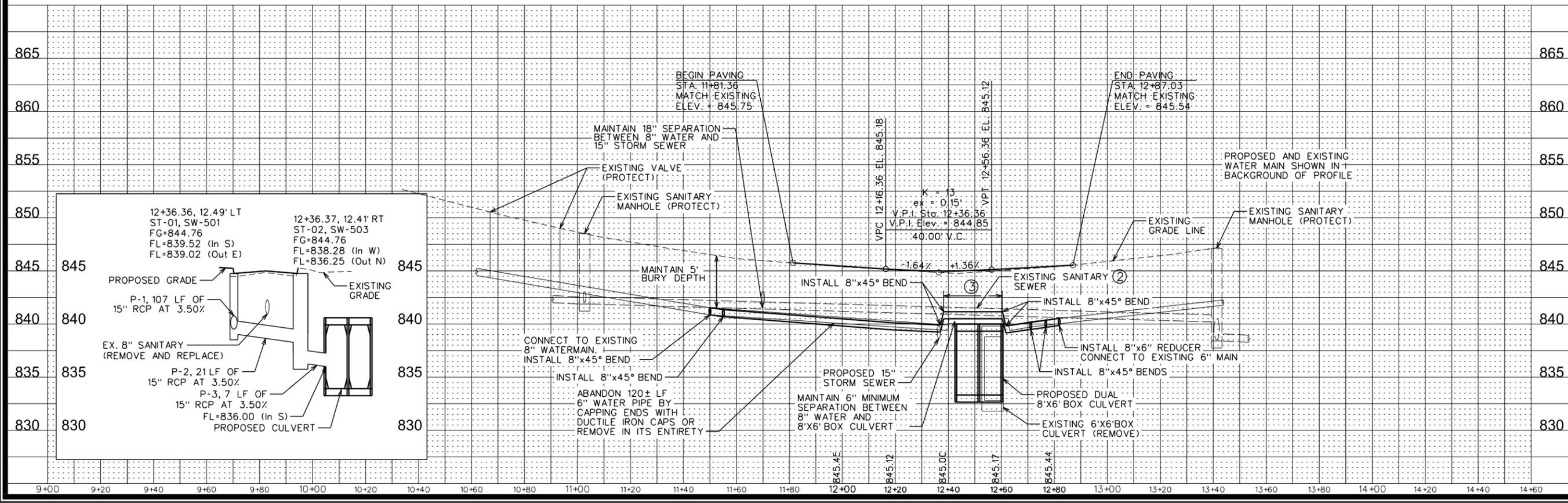
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- PERFORM EXPLORATORY EXCAVATION TO LOCATE EXISTING WATERMAIN.
- REPLACE 50 LF OF SANITARY SEWER DURING CONSTRUCTION OF RCB CULVERT. MATCH EXISTING GRADES. CONNECT TO EXISTING SANITARY SEWER WITH CITY APPROVED NON-SHEAR COUPLINGS. CONTRACTOR TO PROPERLY MANAGE SANITARY SEWER FLOWS DURING THIS WORK. ANTICIPATED 10 RESIDENTIAL HOMES ARE SERVICED BY THIS SANITARY SEWER MAIN.
- PLACE WATER MAIN INSULATION ON TOP OF RCB CULVERT. REFER TO DETAIL 2 ON SHEET B.1 FOR DETAILS OF THIS WORK.
- MAINTAIN WATER SERVICE TO PROPERTY OWNERS BY MEANS APPROVED BY KNOXVILLE WATER WORKS. THIS WORK IS INCIDENTAL TO CONSTRUCTION. POSSIBLE OPTIONS INCLUDE TEMPORARY CAPPING ON REMOVAL SIDE OF EXISTING SERVICE LOCATION, TAPPING OF TEMPORARY SERVICE, OR OTHER APPROVED METHODS.



MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	11/20/20	
Technician: DSS	Date: 01/24/20	Field Bk:	Proj:
Project No:	1190729	Sheet	D.1

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ROCHE ST CULVERT REPLACEMENT

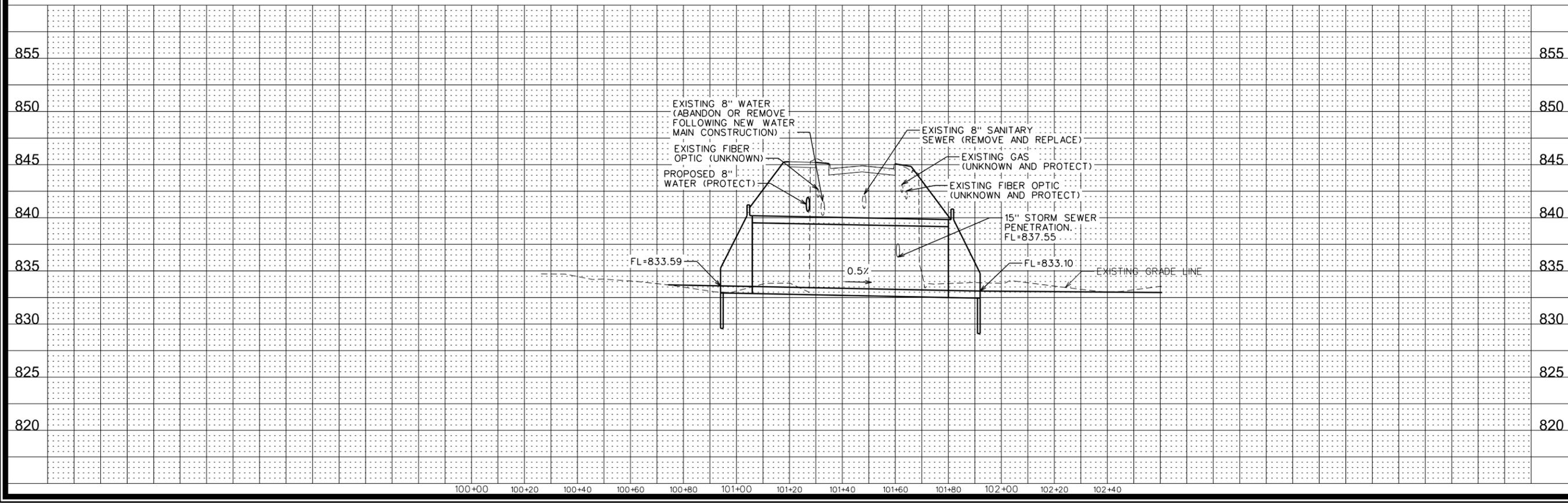
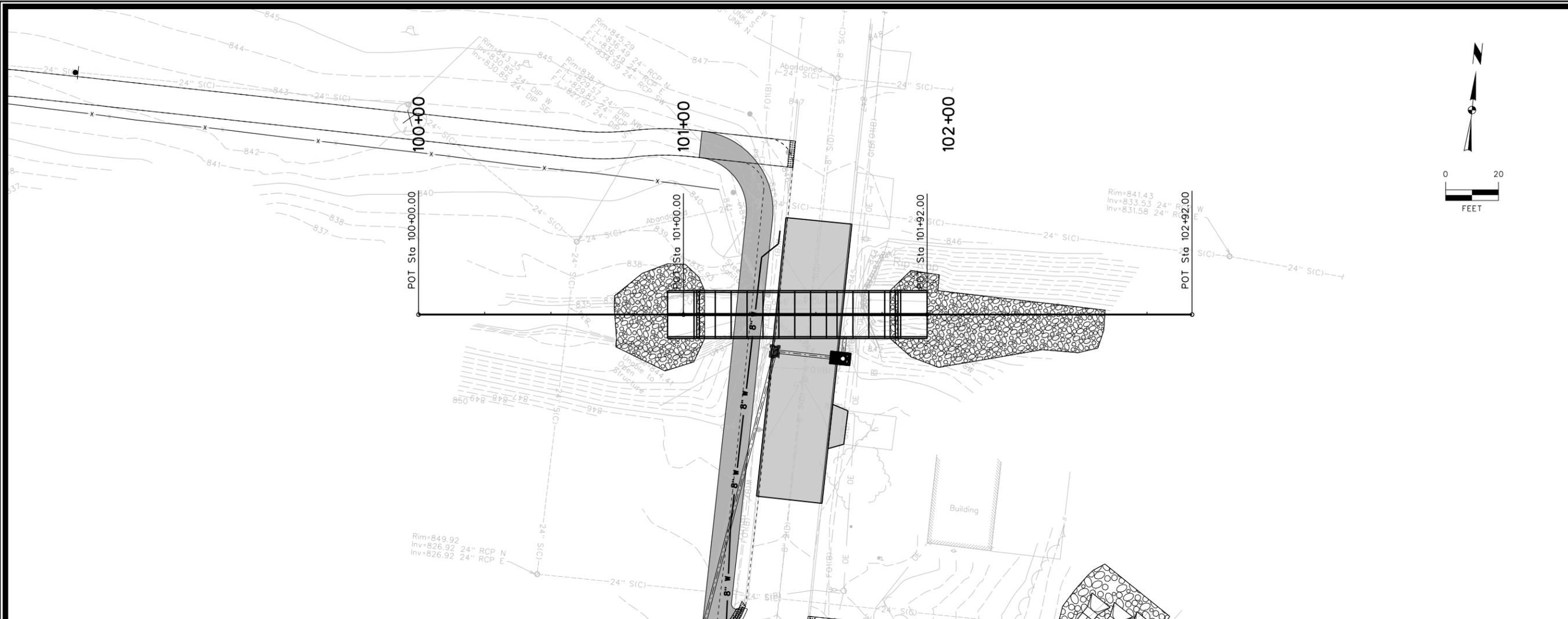
SOUTH ROCHE STREET PLAN AND PROFILE SHEET

SNYDER & ASSOCIATES, INC.

SNYDER & ASSOCIATES

Project No: 1190729

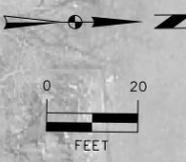
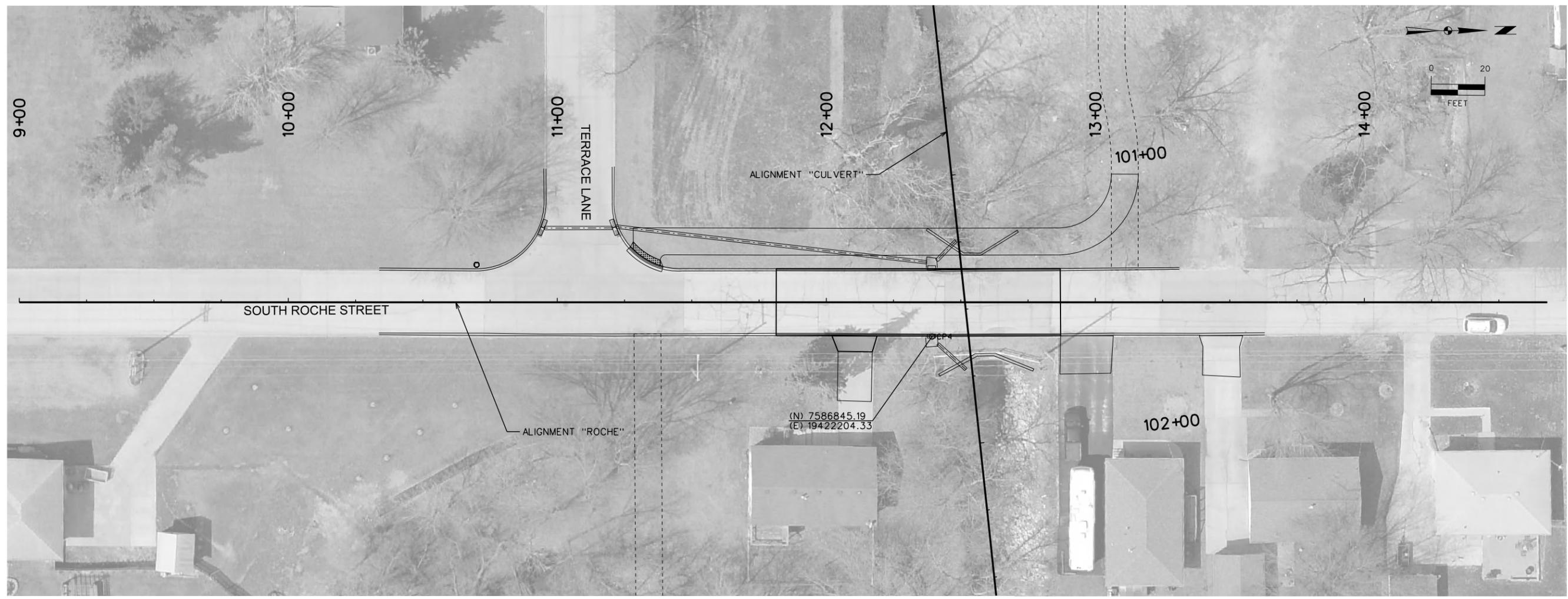
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MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: 1"=20'	Field Bk:
Technician: DSS	Date: 01/24/20	Project No: 1190729	Sheet E.1

ROCHE ST CULVERT REPLACEMENT
CULVERT PLAN PROFILE SHEET
SNYDER & ASSOCIATES, INC.
 KNOXVILLE, IOWA
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SNYDER & ASSOCIATES
 Project No: 1190729
 Sheet E.1



BENCHMARKS

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88 - GEOID12A)
IARTN DERIVED - US SURVEY FEET

BM1 ELEV=867.32
CUT 'X' AT INTAKE AT SOUTHEAST QUAD GORDON DRIVE & STREETER STREET.

BM2 ELEV=832.96
CUT 'X' AT DOUBLE INTAKE, EAST SIDE OF FIFTH STREET AT CREEK CROSSING RCBC.

CONTROL POINTS

IOWA REGIONAL COORDINATE SYSTEM ZONE 9 (NEWTON)
NAD83(2011)(EPOCH 2010.00) IARTN DERIVED - US SURVEY FEET

CP1 N=7586312.48 E=19419067.99
MAG NAIL IN C/L ASPHALT TRAIL AT C/L SIDEWALK NORTH TO GAZEBO AT WEST END OF PROJECT.

CP2 N=7586475.37 E=19420171.96
CUT 'X' AT INTAKE AT SE QUAD GORDON DRIVE & STREETER STREET.

CP3 N=7587088.78 E=19420452.99
MAG NAIL IN C/L DAYTON STREET AT SOUTH END OF STREET.

CP4 N=7586845.19 E=19422204.33
CUT 'X' AT INTAKE ON EAST SIDE OF SOUTH ROCHE STREET, APPROXIMATELY 130' NORTH OF C/L TERRACE LANE.

CP5 N=7586760.35 E=19423784.33
MAG NAIL AT C/L SOUTH FIFTH STREET AT C/L CREEK RCBC.

CP6 N=7586768.81 E=19423796.98
CUT 'X' AT DOUBLE INTAKE, EAST SIDE OF FIFTH STREET AT CREEK CROSSING RCBC.

DESCRIBE CHAIN "ROCHE"

Chain ROCHE contains:
1 2 3 4

Beginning chain ROCHE description
=====

Point 1	N	7,586,505.98 E	19,422,189.69 Sta	9+00.00
Course from 1 to 2 N 0° 19' 23.52" E Dist 100.00				
Point 2	N	7,586,605.98 E	19,422,190.26 Sta	10+00.00
Course from 2 to 3 N 0° 19' 23.52" E Dist 368.02				
Point 3	N	7,586,973.99 E	19,422,192.33 Sta	13+68.02
Course from 3 to 4 N 0° 19' 23.52" E Dist 100.00				
Point 4	N	7,587,073.99 E	19,422,192.90 Sta	14+68.02

=====

Ending chain "ROCHE" description

DESCRIBE CHAIN "CULVERT"

Chain CULVERT contains:
CULVERT1 CULVERT2 CULVERT3 CULVERT4

Beginning chain CULVERT description
=====

Point CULVERT1	N	7,586,842.64 E	19,422,044.96 Sta	100+00.00
Course from CULVERT1 to CULVERT2 N 84° 13' 11.87" E Dist 100.00				
Point CULVERT2	N	7,586,852.71 E	19,422,144.45 Sta	101+00.00
Course from CULVERT2 to CULVERT3 N 84° 13' 11.87" E Dist 92.00				
Point CULVERT3	N	7,586,861.98 E	19,422,235.98 Sta	101+92.00
Course from CULVERT3 to CULVERT4 N 84° 13' 11.87" E Dist 100.00				
Point CULVERT4	N	7,586,872.05 E	19,422,335.47 Sta	102+92.00

=====

Ending chain "CULVERT" description

MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: 1" = 20'	
Technician: DSS	Date: 01/24/20	Field Bk:	Pt:
Project No: 1190729	Sheet	G.1	

ROCHE ST CULVERT REPLACEMENT

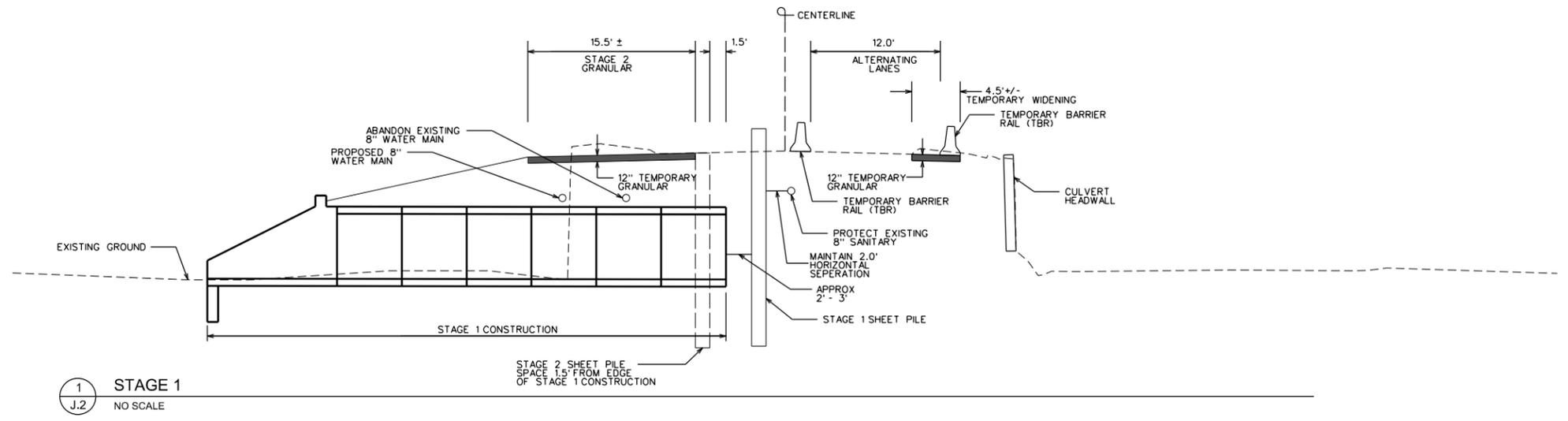
HORIZONTAL AND VERTICAL CONTROL

KNOXVILLE, IOWA

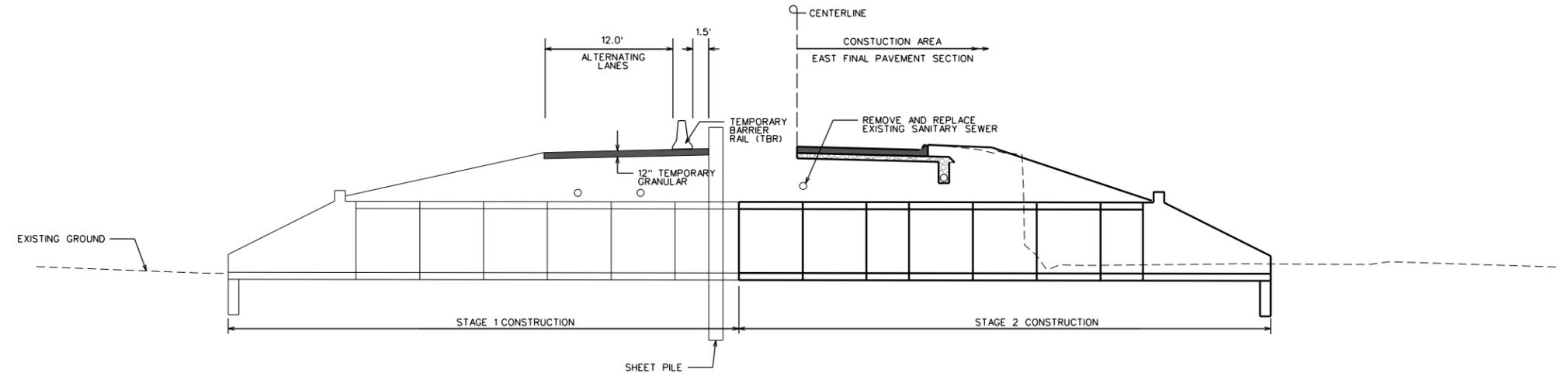
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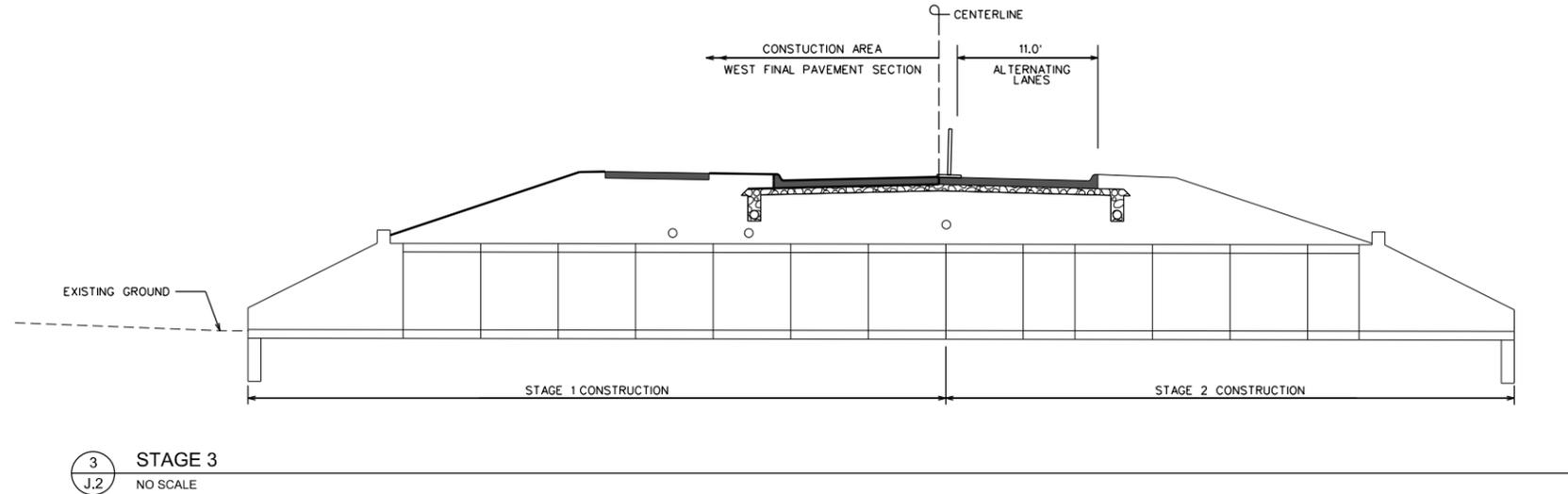




1
J.2 STAGE 1
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2
J.2 STAGE 2
NO SCALE



3
J.2 STAGE 3
NO SCALE

MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: AS SHOWN	
Technician: DSS	Date: 01/24/20	Field Bk:	Pg:
Project No: 1190729	Sheet	J.2	

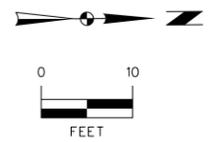
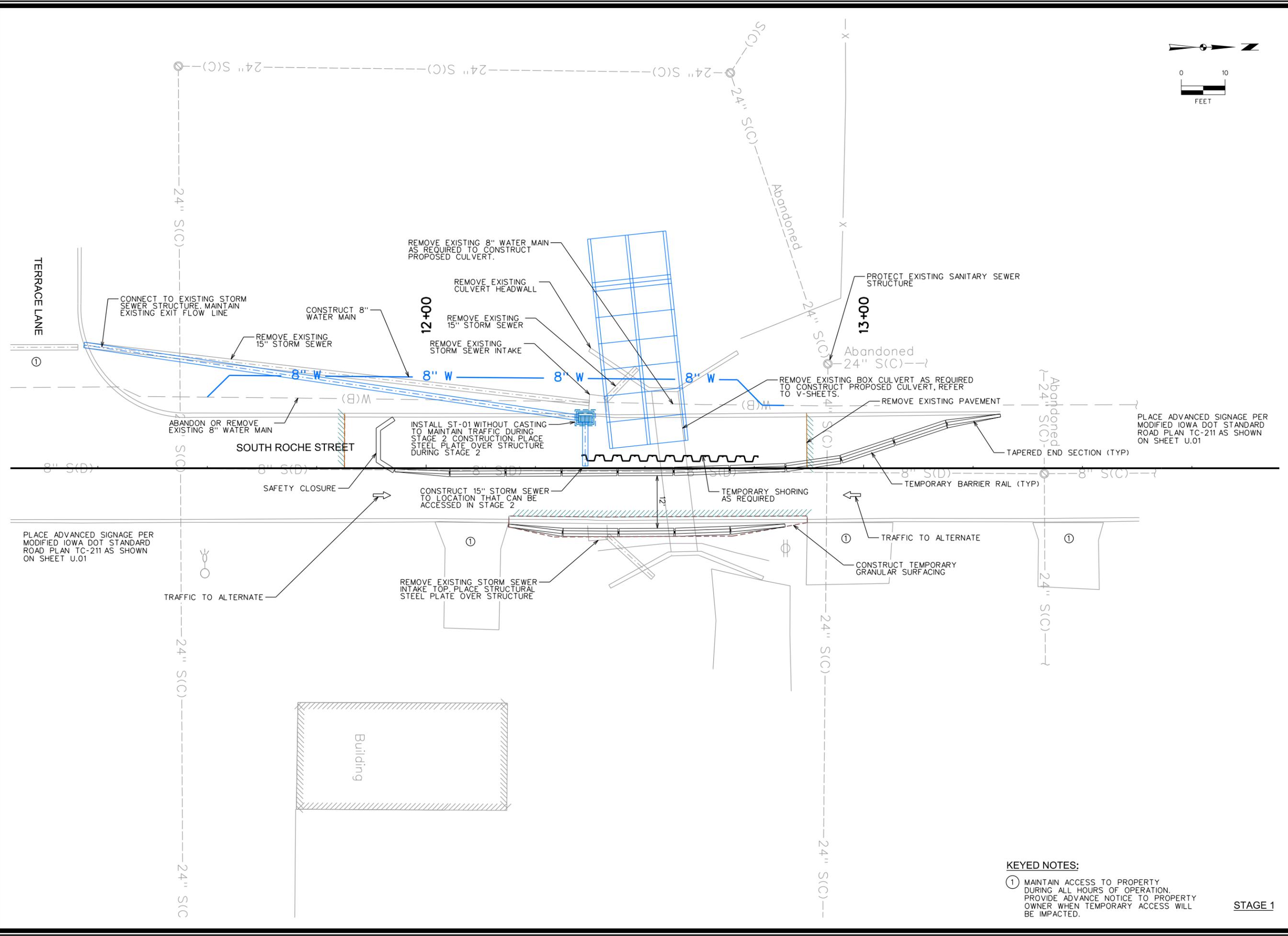
ROCHE ST CULVERT REPLACEMENT
STAGING AND TRAFFIC CONTROL PLAN
SNYDER & ASSOCIATES, INC.

KNOXVILLE, IOWA

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MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: 1" = 10'	Field Bc:
Technician: DSS	Date: 01/24/20	Project No: 1190729	Sheet J.3

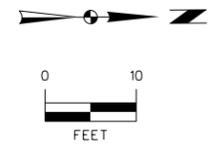
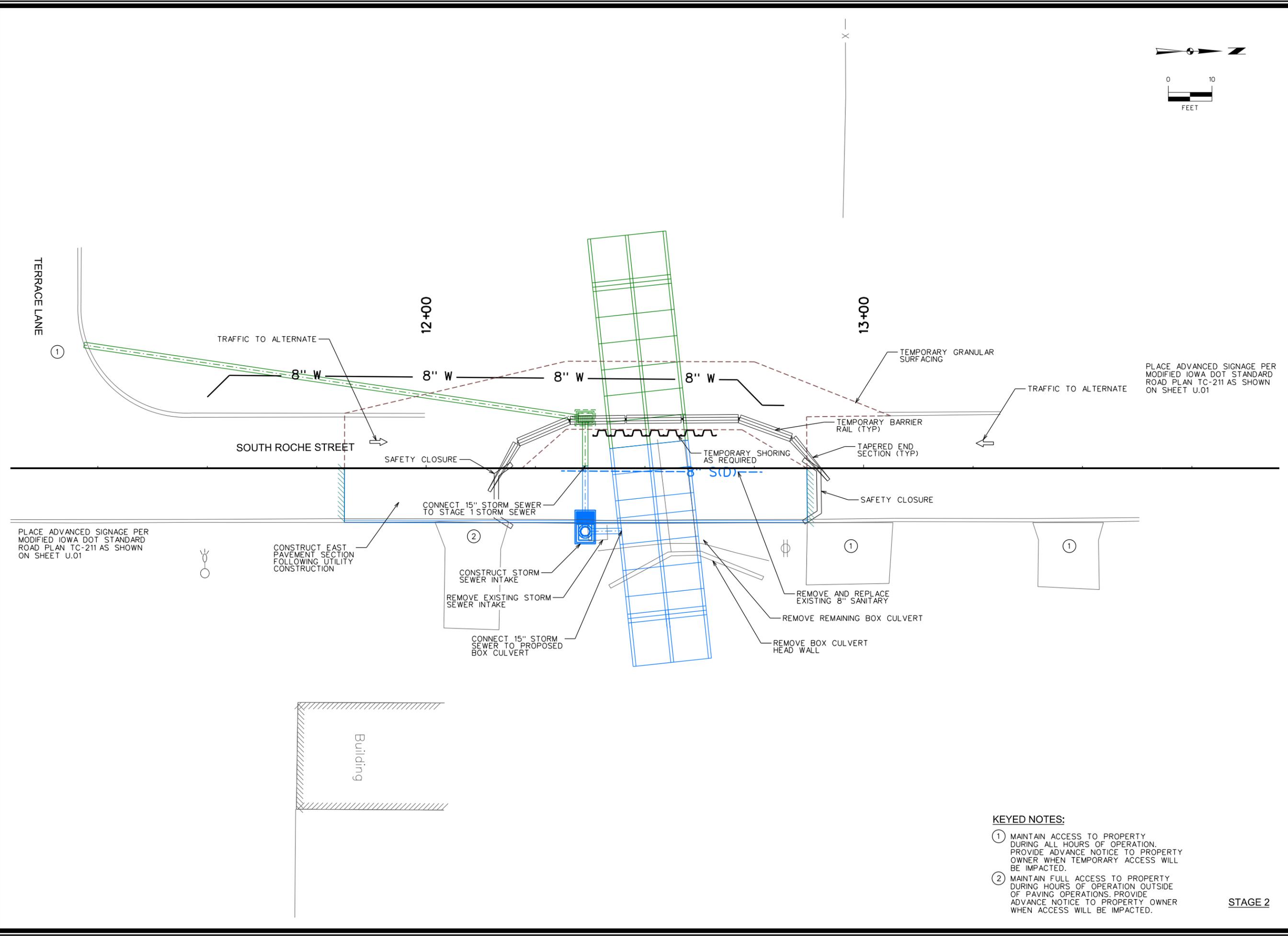
ROCHE ST CULVERT REPLACEMENT
STAGING AND TRAFFIC CONTROL PLAN
SNYDER & ASSOCIATES, INC.
 KNOXVILLE, IOWA
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Project No: 1190729
 Sheet J.3

KEYED NOTES:
 ① MAINTAIN ACCESS TO PROPERTY DURING ALL HOURS OF OPERATION. PROVIDE ADVANCE NOTICE TO PROPERTY OWNER WHEN TEMPORARY ACCESS WILL BE IMPACTED.

STAGE 1

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MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: 1" = 10'	Field Bc:
Technician: DSS	Date: 01/24/20	Project No: 1190729	Sheet J.4

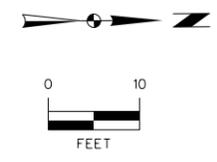
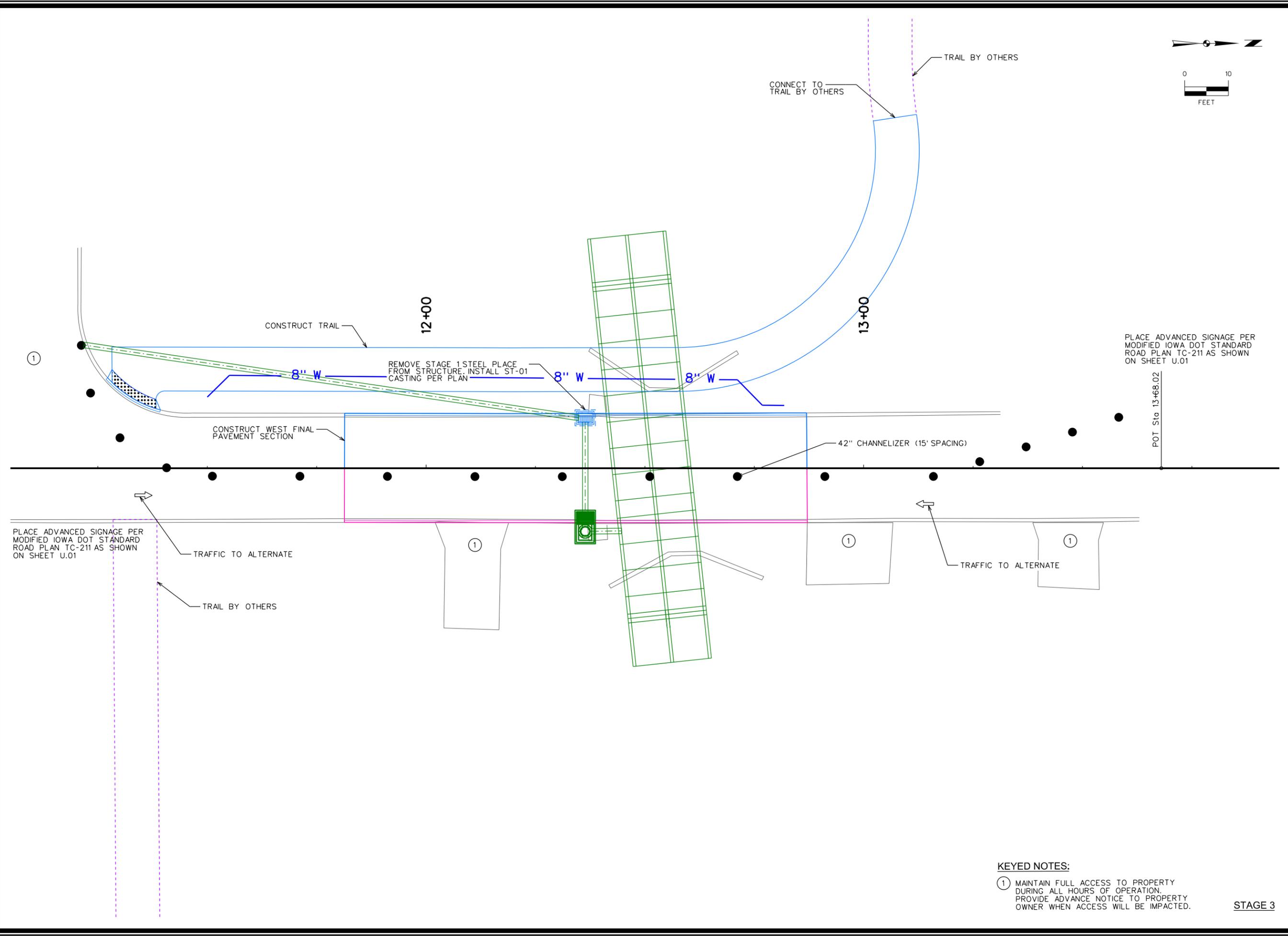
ROCHE ST CULVERT REPLACEMENT
STAGING AND TRAFFIC CONTROL PLAN
SNYDER & ASSOCIATES, INC.

SNYDER & ASSOCIATES

Project No: 1190729
 Sheet J.4

- KEYED NOTES:**
- ① MAINTAIN ACCESS TO PROPERTY DURING ALL HOURS OF OPERATION. PROVIDE ADVANCE NOTICE TO PROPERTY OWNER WHEN TEMPORARY ACCESS WILL BE IMPACTED.
 - ② MAINTAIN FULL ACCESS TO PROPERTY DURING HOURS OF OPERATION OUTSIDE OF PAVING OPERATIONS. PROVIDE ADVANCE NOTICE TO PROPERTY OWNER WHEN ACCESS WILL BE IMPACTED.

STAGE 2



PLACE ADVANCED SIGNAGE PER
MODIFIED IOWA DOT STANDARD
ROAD PLAN TC-211 AS SHOWN
ON SHEET U.01

POT Sta 13+68.02

MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: 1" = 10'	Field Bc:
Technician: DSS	Date: 01/24/20	Project No: 1190729	Sheet J.5

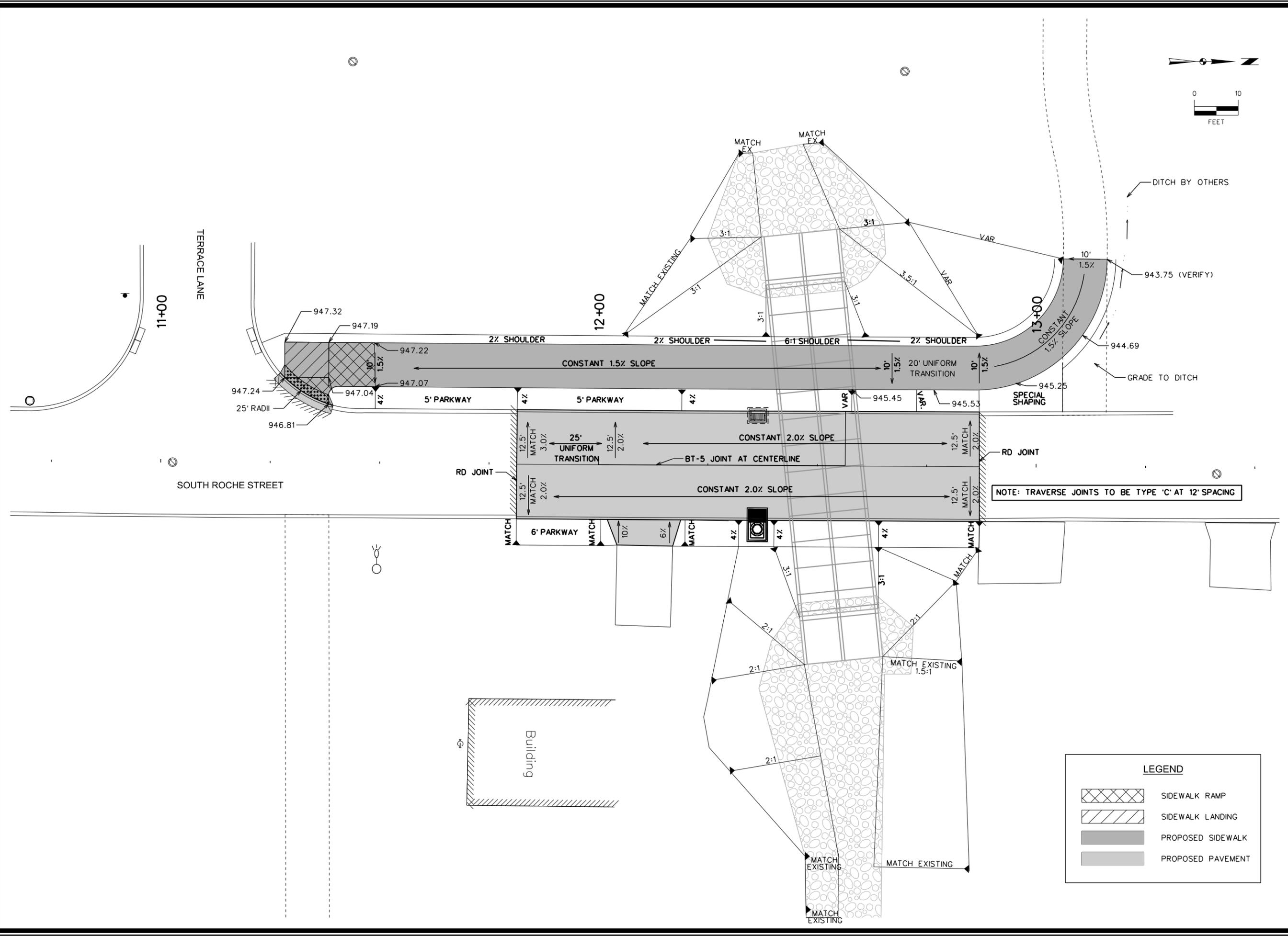
ROCHE ST CULVERT REPLACEMENT
STAGING AND TRAFFIC CONTROL PLAN
SNYDER & ASSOCIATES, INC.
 KNOXVILLE, IOWA
 2727 S.W. SNYDER BLVD.
 ANKENY, IOWA 50023
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Project No: 1190729
 Sheet J.5

KEYED NOTES:
 ① MAINTAIN FULL ACCESS TO PROPERTY DURING ALL HOURS OF OPERATION. PROVIDE ADVANCE NOTICE TO PROPERTY OWNER WHEN ACCESS WILL BE IMPACTED.

STAGE 3

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MARK	REVISION	DATE	BY
Engineer: JDS	Checked By: ACB	Scale: 1" = 10'	Field Bk: Pg:
Technician: DSS	Date: 01/24/20	Project No: 1190729	Sheet L1

ROCHE ST CULVERT REPLACEMENT
SIDEWALK SHEET
SNYDER & ASSOCIATES, INC.

KNOXVILLE, IOWA
 2727 S.W. SNYDER BLVD.
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Project No: 1190729
 Sheet L1

LEGEND

	SIDEWALK RAMP
	SIDEWALK LANDING
	PROPOSED SIDEWALK
	PROPOSED PAVEMENT

ESTIMATED PRECAST CULVERT QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QTY.
1	2102-0425071	SPECIAL BACKFILL	CY	38.8	
2	2107-3825025	GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN	CY	72.4	
3	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LS	1.00	
4	2402-2720000	EXCAVATION, CLASS 20	CY	902	
5	2415-2100000	PRECAST CONCRETE BOX CULVERT	LF	74.0	
6	2415-2200000	PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION	EACH	2	
7	2501-8400172	TEMPORARY SHORING	LS	1.00	
8	2519-1001000	FENCE, CHAIN LINK, VINYL COATED	LF	75.3	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2102-0425071	SPECIAL BACKFILL INCLUDES COST OF 6" GRANULAR BEDDING. RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE SPECIAL BACKFILL.
2	2107-3825025	GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN INCLUDES COST OF 1'-0 THICK GRANULAR BLANKET BELOW THE 6" GRANULAR BEDDING. GRANULAR MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 4118, GRADATION NO. 3 OF THE STANDARD SPECIFICATIONS. RECLAIMED ASPHALT PAVEMENT (RAP) AND RECLAIMED HMA SHALL NOT BE USED FOR THE GRANULAR BLANKET.
3	2401-6745650	REMOVAL OF EXISTING STRUCTURES INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL OF THE EXISTING 6'x6' RCB CULVERT BARREL SECTION AND HEADWALLS. REMOVALS SHALL BE PERFORMED AS NEEDED TO ACCOMPLISH THE NEW CULVERT STAGED CONSTRUCTION AS DETAILED IN THESE PLANS. DRAINAGE THROUGH THE EXISTING CULVERTS/CHANNEL SHALL BE MAINTAINED DURING STAGED REMOVALS AND CONSTRUCTION. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE CITY.
4	2402-2720000	EXCAVATION, CLASS 20 INCLUDES EXCAVATION NECESSARY TO PLACE THE 6" GRANULAR BEDDING AND 1'-0 GRANULAR BLANKET. INCLUDES FILLING AND COMPACTING LOW AREAS AROUND PROPOSED CULVERT.
5	2415-2100000	PRECAST CONCRETE BOX CULVERT INCLUDES ALL COSTS ASSOCIATED WITH THE DESIGN AND FABRICATION OF THE PRECAST REINFORCED CONCRETE BARREL SECTIONS AS INDICATED IN THESE PLANS. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED.
6	2415-2200000	PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION INCLUDES ALL COSTS ASSOCIATED WITH THE DESIGN AND FABRICATION OF THE PRECAST REINFORCED CONCRETE END SECTIONS AS INDICATED IN THESE PLANS. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING THE CULVERT TIES, LIFTING HOLE PLUGS, ENGINEERING FABRIC, JOINT MATERIAL, AND GROUT AS REQUIRED. INCLUDES 0° SKEW, 2 PRECAST END SECTIONS, 2 PRECAST PARAPETS, AND 2 PRECAST CURTAIN WALLS.
7	2501-8400172	TEMPORARY SHORING SEE GENERAL NOTES ON SHEET V.2 FOR MORE INFORMATION.
8	2519-1001000	FENCE, CHAIN LINK, VINYL COATED SEE SHEETS V.9 AND V.10 FOR DETAILS. CHAIN LINK FENCE IS 3'-6 IN HEIGHT.

NOTE:
ROADWAY QUANTITIES SHOWN
ELSEWHERE IN THESE PLANS.

SPECIFICATIONS:

DESIGN:
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH ED., SERIES OF 2017, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.

CONSTRUCTION:

IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH ED., SERIES OF 2017:
BAR REINFORCEMENT IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60.
WELDED WIRE REINFORCEMENT IN ACCORDANCE WITH AASHTO LRFD SECTION 5.
CONCRETE IN ACCORDANCE WITH AASHTO LRFD SECTION 5, $f'c = 5$ KSI MIN.

STRUCTURAL DESIGN



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature: Jordan A. Gustafson Date: 02-12-2020
Printed or Typed Name: Jordan A. Gustafson

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: SHEETS V.1 THRU V.11
(SHEETS V.3 & V.4 EXCLUDING HYDRAULIC DATA, CHANNEL GRADING AND REVETMENT)

HYDRAULIC DESIGN



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature: Steven A. Klocke Date: 2/12/2020
Printed or Typed Name: Steven A. Klocke

My license renewal date is December 31, 2021

Pages or sheets covered by this seal: SHEETS V.3 AND V.4
(HYDRAULIC DATA AND CHANNEL GRADING AND REVETMENT)

DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)
TWIN 8' x 6' x 74'-0
PRECAST R.C.B. CULVERT
ESTIMATED QUANTITIES
STA. 12+51.52 (☺ SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY



GENERAL PROJECT NOTES:

IT IS THE INTENT OF THIS DESIGN TO REPLACE THE EXISTING 6' X 6' REINFORCED CONCRETE BOX CULVERT SKEWED 0° AT STATION 12+57 WITH A TWIN 8' X 6' X 74' PRECAST REINFORCED CONCRETE BOX CULVERT 0° SKEW ROTATED 6.1032° RIGHT AHEAD AT STATION 12+51.52.

NEW PRECAST CULVERT CONSTRUCTION SHALL BE COMPLETED IN STAGES AS SPECIFIED ON THE SITUATION PLANS AND IN THE STAGING NOTES ON THE J SHEETS. NEW PRECAST CULVERT CONSTRUCTION TAKES PLACE IN STAGES 1 AND 2 OF THE PROJECT. TRAFFIC IS TO BE MAINTAINED AS SHOWN IN THE STAGING J SHEETS OF THESE PLANS.

FAINT LINES ON PLANS INDICATE EXISTING STRUCTURE.

UTILITY COMPANIES AND MUNICIPALITIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED OR SHOWN.

THE "ENGINEER", AS REFERENCED IN THESE PLANS IS THE CITY OF KNOXVILLE OR A DESIGNATED REPRESENTATIVE.

EXCESS CLASS 20 EXCAVATION MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED AT THE CONSTRUCTION SITE, AS DIRECTED BY THE ENGINEER.

IT SHALL BE THE CULVERT CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

THE BID ITEM "REMOVAL OF EXISTING STRUCTURES" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVING THE EXISTING 6' X 6' REINFORCED CONCRETE BOX CULVERT BARREL SECTION AND HEADWALLS. REMOVALS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS.

GENERAL PRECAST BARREL NOTES:

- THE PRECAST RCB CULVERT SECTIONS ARE TO BE DESIGNED FOR HL-93 LIVE LOAD AND EARTH FILLS OF 6 FEET MAX. AND 2 FEET MIN.
- VERTICAL EARTH PRESSURE, $E_v = 0.120 \text{ kcf}$.
HORIZONTAL EARTH PRESSURE, $E_{hmax} = 0.060 \text{ kcf MAX}$, $E_{hmin} = 0.030 \text{ kcf}$.
- THE PRECAST RCB CULVERT SECTIONS ARE TO BE DESIGNED FOR CLASS 2 EXPOSURE CONDITIONS.
- THE CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR EDGE OR END OF REINFORCING BAR TO BE 1 1/2" MIN. AND 2" MAX. UNLESS OTHERWISE NOTED.
- THE REINFORCEMENT SUPPLIED FOR THIS STRUCTURE SHALL BE PLAIN AND/OR DEFORMED WELDED WIRE REINFORCEMENT (WWR) $F_y = 65 \text{ ksi}$, AND/OR GRADE 60 REINFORCING STEEL IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ANY OF THE FOLLOWING COMBINATIONS OF REINFORCEMENT MAY BE USED:
 - 1 OR 2 LAYERS OF WELDED WIRE REINFORCEMENT OR
 - 1 LAYER OF WELDED WIRE REINFORCEMENT AND 1 LAYER OF REINFORCEMENT BARS OR
 - 1 LAYER OF REINFORCEMENT BARS.
 THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO LRFD SPECIFICATIONS.
- THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE #6.
- THE MAXIMUM WELDED WIRE REINFORCEMENT SIZE SHALL BE A W23/D23 PER LAYER (MAXIMUM OF 2 LAYERS).
- THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES OR BARS SHALL NOT BE LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES OR BARS SHALL NOT BE MORE THAN 8".
- WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR WELDED WIRE REINFORCEMENT, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE THE WIRE REINFORCEMENT IS ACCEPTABLE.
- WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT REINFORCEMENT.
- ET CULVERT SOFTWARE VERSION 4.0.2 OR AN APPROVED EQUAL MAY BE USED FOR THE DESIGN OF THE PRECAST SECTIONS.
- THESE CULVERT PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (#3 IS 3/8" INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED AT THE PRECAST PLANT MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	3	4	5	6	7	8	9	10	11
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

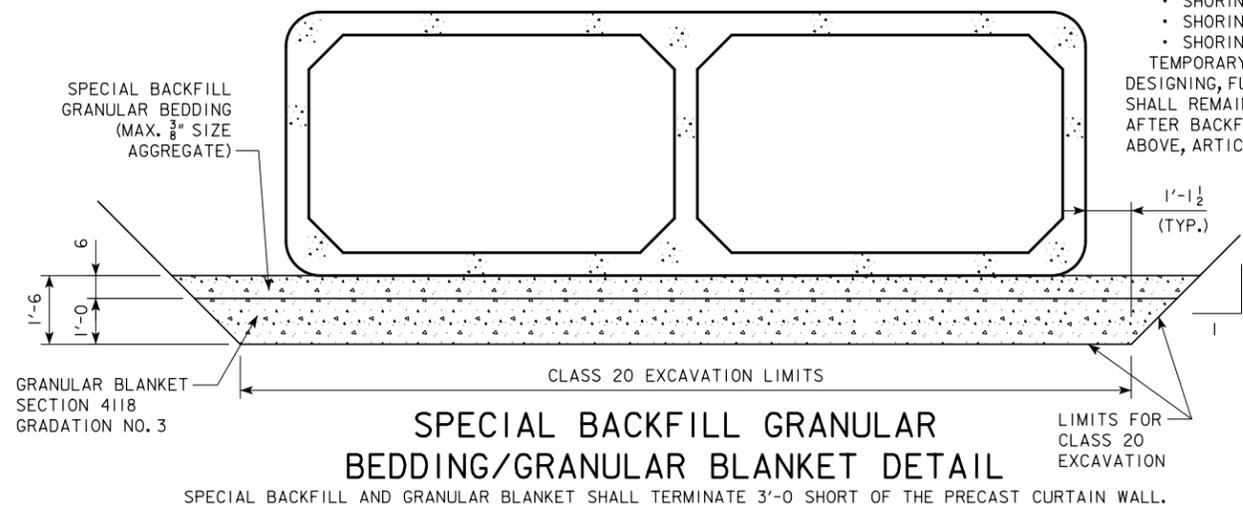
- ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.
- THE FIRST PRECAST BARREL SECTION ADJACENT TO THE OUTLET STRAIGHT END SECTION MAY BE A DOUBLE GROOVE BARREL TO FACILITATE PLACEMENT OF OUTLET END SECTIONS AND ALLOW INLET AND OUTLET END SECTIONS TO BE SIMILAR.

POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN

THE ROADWAY WILL BE OPEN TO ONE LANE. REFER TO THE TRAFFIC CONTROL PLAN INCLUDED IN THE ROAD PLANS.

- THE LENGTH IN LINEAR FEET OF PRECAST REINFORCED CONCRETE BOX CULVERT WILL BE BASED ON THE PLAN QUANTITY. FOR THE NUMBER OF LINEAR FEET GIVEN ON THE PLAN, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION", "CLASS 20 EXCAVATION", "FENCE, CHAIN LINK, VINYL COATED", "TEMPORARY SHORING", "SPECIAL BACKFILL", AND "GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN".
- FOR EACH PRECAST BOX CONCRETE CULVERT STRAIGHT END SECTION INSTALLED THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE PER EACH. THE PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING LINTEL BEAMS AND CURTAIN WALLS), LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK EXCEPT FOR BID ITEMS "PRECAST CONCRETE BOX CULVERT", "CLASS 20 EXCAVATION", "FENCE, CHAIN LINK, VINYL COATED", "TEMPORARY SHORING", "SPECIAL BACKFILL" AND "GRANULAR MATERIAL FOR BLANKET AND SUBDRAIN".
- THE CURTAIN WALL AND PARAPET SHALL BE PRECAST.
- THE CONTRACTOR SHALL FURNISH AND INSTALL CULVERT TIES FOR ALL JOINTS. THE MAIN SECTION JOINTS WILL HAVE ONE TIE ON EACH SIDE OF THE BARREL AND THE LAST BARREL SECTION WILL BE ATTACHED TO THE END SECTIONS WITH TWO TIES PER SIDE. THE END SECTION JOINTS WILL HAVE TWO TIES PER SIDE.
- CULVERT TIES SHALL BE INCLUDED IN THE COST FOR PRECAST CONCRETE BOX CULVERT. TIE RODS WILL BE 1 INCH DIAMETER STEEL AND SHALL MEET REQUIREMENTS OF ASTM A709 GRADE 36 OR EQUAL.
- CULVERT TIE ASSEMBLIES SHALL BE GALVANIZED AFTER FABRICATION.
- THE CLASS 20 EXCAVATION QUANTITY IS BASED ON THE ASSUMPTION THAT AT THE START OF CULVERT CONSTRUCTION, THE EXISTING GROUNDLINE SHOWN ON THE "SITUATION PLAN" SHEETS HAS REMAINED UNDISTURBED. THE CLASS 20 EXCAVATION QUANTITY IS MEASURED FROM THE EXISTING GROUNDLINE SHOWN ON THE "SITUATION PLAN" SHEETS DOWN TO THE LIMIT SHOWN IN THE SPECIAL BACKFILL GRANULAR BEDDING/GRANULAR BLANKET DETAIL ON THIS SHEET.
- A MINIMUM OF 6 INCHES OF SPECIAL BACKFILL WITH A MAXIMUM AGGREGATE SIZE OF 3/8" INCH SHALL BE USED AS BEDDING FOR THE PRECAST CONCRETE BOX CULVERT. THE BEDDING SHALL BE SHAPED TO A FLAT BASE USING A TEMPLATE.
- A MINIMUM OF 12" OF A GRANULAR BLANKET IN ACCORDANCE WITH SECTION 4118, GRADATION NO. 3 OF THE STANDARD SPECIFICATIONS SHALL BE PLACED UNDER THE SPECIAL BACKFILL AS INDICATED IN THE SPECIAL BACKFILL GRANULAR BEDDING/GRANULAR BLANKET DETAIL SHOWN ON THIS SHEET.
- THE PRECAST BOX CULVERT SHALL BE BUILT TO THE DIMENSIONS AND SPECIFICATIONS SHOWN IN THESE PLANS.
- THE CONTRACTOR SHALL SUBMIT DETAILS OF THE PROPOSED PRECAST CONCRETE BOX SECTIONS FOR THIS PROJECT. THE DETAILS SHALL INCLUDE THE FOLLOWING INFORMATION AS FOUND ON THE "SUBMITTAL SHOP DRAWING" SHEET ON SHEET V.6:
 - A SITUATION PLAN DRAWING SHOWING THE BACK TO BACK PARAPET DIMENSION FOR THE LINE OF THE CULVERT SECTIONS.
 - DIMENSION THE NUMBER OF PRECAST SECTIONS AND SECTION LENGTHS.
 - A DETAIL OF THE PRECAST BARREL SECTIONS SHOWING A CROSS SECTION VIEW OF THE SECTION, STEEL LOCATIONS, DIMENSIONS, ETC.
 - A DETAIL OF THE PRECAST CONCRETE CULVERT END SECTION SHOWING A CROSS SECTION VIEW OF THE SECTIONS, STEEL LOCATIONS, DIMENSIONS, ETC.
 - DETAILS OF REINFORCING AROUND PIPE PENETRATION IN CULVERT BARREL WALL. SEE STAGE 2 SITUATION PLAN FOR LOCATION AND SIZE OF PIPE PENETRATION.
- THE CONTRACTOR SHALL PROVIDE ALL INFORMATION SHOWN ON THE SUBMITTAL SHOP DRAWING SHEET. SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:
City_Project_SubmittalDescription.pdf
Example: Knoxville_SouthRocheStreetCulvert_PrecastBarrel.pdf
- THE DETAILS SHALL BE RECEIVED AND REVIEWED BY THE ENGINEER PRIOR TO THE START OF FABRICATION.



PRECAST INSTALLATION NOTES:

- PRECAST CONCRETE BOX CULVERT SECTIONS SHALL BE LAID WITH THE GROOVE END OF EACH SECTION UP-GRADE, AND THE SECTIONS SHALL BE TIGHTLY JOINED. CONCRETE TIES TO BE USED ONLY TO HOLD BOX SECTIONS TOGETHER, NOT FOR PULLING SECTIONS TIGHT. JOINT OPENINGS BETWEEN SECTIONS SHOULD BE AS TIGHT AS PRACTICABLE AND LIMITED TO A MAXIMUM OF 3/4 INCH OPENINGS. THE JOINTS OF THE CULVERT SHALL BE SEALED WITH A FLEXIBLE WATER TIGHT 1 INCH BUTYL ROPE GASKET AS PER MATERIALS I.M. 491.09.
- BUTYL ROPE GASKET SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER AND AS DETAILED ON SHEET V.5 AND SHALL EXTEND AROUND THE WALLS, SLAB, AND FLOOR OF THE PRECAST BARREL JOINTS. ALL JOINTS SHALL BE TRIMMED CLEAN ON THE INSIDE AFTER SEALING.
- THE CONTRACTOR SHALL PLACE A 2 FOOT WIDE PIECE OF ENGINEERING FABRIC AROUND THE TOP AND SIDES OF EACH PRECAST JOINT. THE FABRIC SHALL BE CENTERED WITH 1 FOOT ON EACH SIDE OF THE JOINT, THE FABRIC SHALL BE ATTACHED TO THE WALLS AND TOP OF EACH SECTION TO PREVENT THE FABRIC FROM SLIPPING OFF THE JOINT DURING BACKFILLING OPERATIONS. ATTACHMENT METHODS SHALL BE APPROVED BY THE ENGINEER. ALL COSTS INCLUDING MATERIAL AND LABOR ASSOCIATED WITH PROVIDING THE ENGINEERING FABRIC AND INSTALLING IT AS REQUIRED SHALL BE INCLUDED IN THE BID ITEMS "PRECAST CONCRETE BOX CULVERT" AND "PRECAST CONCRETE BOX CULVERT STRAIGHT END SECTION". THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS.
- CLASS A REVETMENT WILL BE PLACED AROUND BOTH PRECAST CONCRETE BOX CULVERT END SECTIONS, AS SHOWN IN THESE PLANS.
- DURING BACKFILLING THE COMPACTION ADJACENT TO THE BOTTOM CORNER RADIUS OR CHAMFER SHALL BE ACCOMPLISHED WITH A MECHANICAL HAND COMPACTOR.
- THE CONTRACTOR SHALL FURNISH AND INSTALL LIFTING HOLE PLUGS FOR EACH SECTION. LIFTING HOLES SHALL BE PLUGGED WITH A PRECAST CONCRETE PLUG OR PLASTIC PLUG APPROVED BY THE ENGINEER, SEALED AND COVERED WITH A 2'-0 X 2'-0 PIECE OF ENGINEERING FABRIC CENTERED OVER THE HOLE AND ATTACHED TO THE SECTION TO PREVENT THE FABRIC FROM SLIPPING.

SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:

City_Project_SubmittalDescription.pdf
Example: Knoxville_SouthRocheStreetCulvert_PrecastBarrel.pdf

1	TEMPORARY SHORING
2	PRECAST BOX CULVERT SUBMITTAL
3	CHAIN LINK FENCE

TEMPORARY SHORING NOTES:

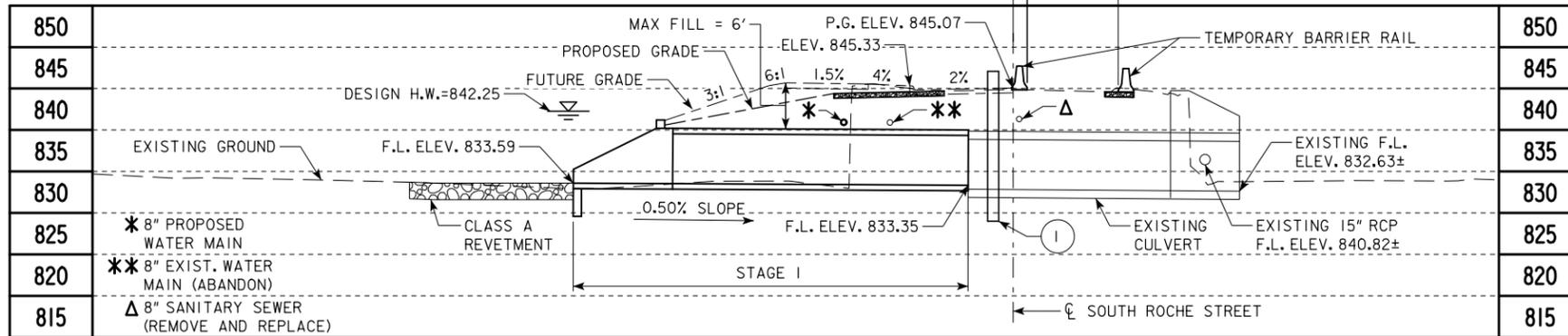
TEMPORARY SHORING (SHEET PILE OR OTHER) SHALL BE REQUIRED AS NECESSARY TO PREVENT THE EARTH UNDER THE TRAFFIC LANE FROM SLOUGHING IN DURING CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A TEMPORARY SHORING PLAN FOR REVIEW. THE TEMPORARY SHORING PLAN SHALL BE DESIGNED AND CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF IOWA. THE CONTRACTOR SHALL NOT PROCEED WITH INSTALLATION OF THE TEMPORARY SHORING WITHOUT NOTICE TO PROCEED FROM THE ENGINEER.

- THE TEMPORARY SHORING SUBMITTAL SHALL INCLUDE:
- DESIGN CALCULATIONS (INCLUDING A GLOBAL STABILITY ANALYSIS)
 - SOIL PROPERTIES
 - SHORING MATERIAL PROPERTIES
 - SHORING PLAN LAYOUT (SHOWING LOCATION OF TRAFFIC)
 - SHORING DETAILS

TEMPORARY SHORING SHALL BE PAID FOR AS A LUMP SUM INCLUDING ALL COST FOR DESIGNING, FURNISHING, INSTALLING, AND REMOVAL. ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. SHORING IS TO BE REMOVED ONLY AFTER BACKFILLING HAS BEEN COMPLETED. IN ADDITION TO THE REQUIREMENTS NOTED ABOVE, ARTICLE 1107.07 OF THE STANDARD SPECIFICATIONS STILL APPLIES.

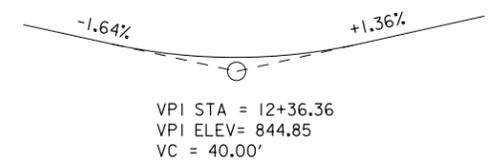
DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)
TWIN 8' X 6' X 74'-0
PRECAST R.C.B. CULVERT

GENERAL NOTES
STA. 12+51.52 (☺ SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY



LONGITUDINAL SECTION ALONG PRECAST CULVERT
ANTICIPATED SETTLEMENT = 2"

NOTES:
NEW PRECAST CULVERT CONSTRUCTION SHALL BE DONE IN STAGES AS SPECIFIED ON THE SITUATION PLANS AND IN THE STAGING NOTES ON THE J SHEETS. TRAFFIC IS TO BE MAINTAINED AS SHOWN IN THE STAGING J SHEETS OF THESE PLANS.
SEE ROADWAY PLANS FOR STAGED ROADWAY ITEMS AND UTILITY DETAILS.



PROPOSED PROFILE GRADE
SOUTH ROCHE STREET

NOTES:

- 1 TEMPORARY SHORING AS REQUIRED FOR STAGED CONSTRUCTION. MAINTAIN 2'-0" MIN. HORIZONTAL CLEAR DISTANCE FROM 8" SANITARY SEWER.
- 2 STA. 12+50.94, 5.43' RT. EXIST. F.L. ELEV. = 833.35
- 3 REMOVE EXISTING INLET HEADWALL AND A PORTION OF THE 6'x6' BARREL SECTION.
- 4 CONSTRUCT TWIN 8'x6'x74'-0" PRECAST RCBC WITH 0° SKEW HEADWALLS, ROTATED 6° (R.A.) IN STAGES (36'-0" FOR STAGE I)
- 5 MAINTAIN DRAINAGE THROUGHOUT CONSTRUCTION.
- 6 MAINTAIN EXISTING OUTLET HEADWALL AND BARREL SECTION.

TRAFFIC ESTIMATE

NO TRAFFIC DATA

HYDRAULIC DATA

DRAINAGE AREA = 1.08 SQ. MI.
STREAM SLOPE = 41 FT./MI.
DESIGN DISCHARGE Q_{50} = 1045 CFS
STAGE = EL. 842.25
BACKWATER = 2.55 FT.
OUTLET VELOCITY = 10.89 FPS
DESIGN DISCHARGE Q_{100} = 1261 CFS
STAGE = EL. 843.93
BACKWATER = 1.64 FT.
OUTLET VELOCITY = 13.14 FPS

REVETMENT LAYOUT:

- R1 12+61.09, 42.87' LT.
- R2 12+65.35, 48.49' LT.
- R3 12+64.89, 55.15' LT.
- R4 12+60.33, 64.24' LT.
- R5 12+50.74, 73.81' LT.
- R6 12+31.66, 71.29' LT.
- R7 12+24.67, 51.85' LT.
- R8 12+29.18, 41.42' LT.

UTILITIES LEGEND:

W - WATER - CITY OF KNOXVILLE
S - SANITARY SEWER - CITY OF KNOXVILLE
G - GAS - ALLIANT ENERGY
FO1 - FIBER OPTIC - WINDSTREAM COMMUNICATIONS
FO2 - FIBER OPTIC - MEDIACOM L.L.C.
CI - COMMUNICATION - MEDIACOM L.L.C.
OE - OVERHEAD ELECTRIC - MIDAMERICAN ENERGY

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

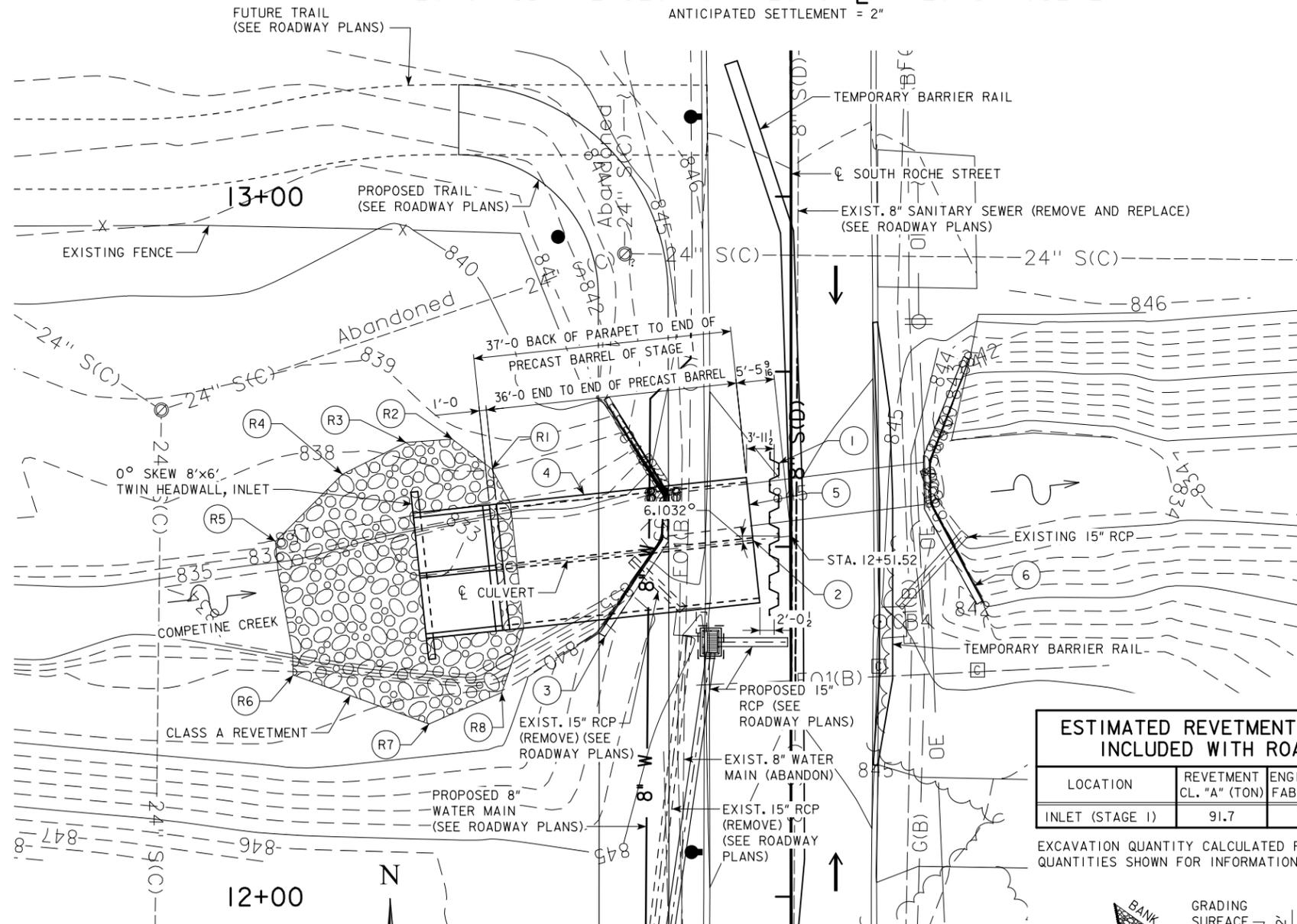
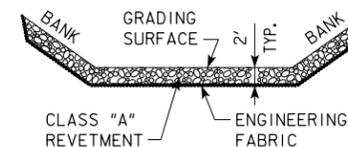
LOCATION

SOUTH ROCHE ST. OVER COMPETINE CREEK
T-75N R-19W/R-20W
SECTIONS 7/12
KNOXVILLE TOWNSHIP
CITY OF KNOXVILLE
MARION COUNTY
LATITUDE 41.311440°
LONGITUDE -93.099876°

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS

LOCATION	REVETMENT CL. "A" (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET (STAGE I)	91.7	136.0	64.7

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE. QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.

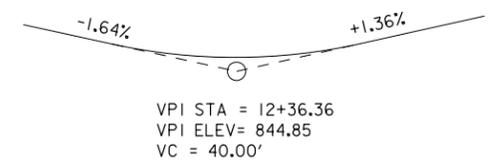
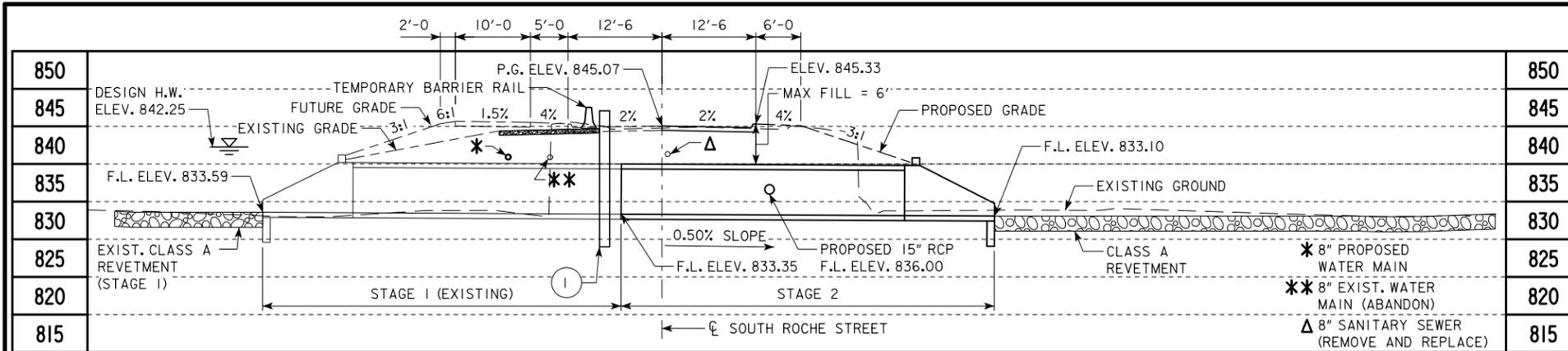


SITUATION PLAN - STAGE I

DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)
TWIN 8' x 6' x 36'-0" PRECAST R.C.B. CULVERT
SITUATION PLAN - STAGE I
STA. 12+51.52 (CL SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY

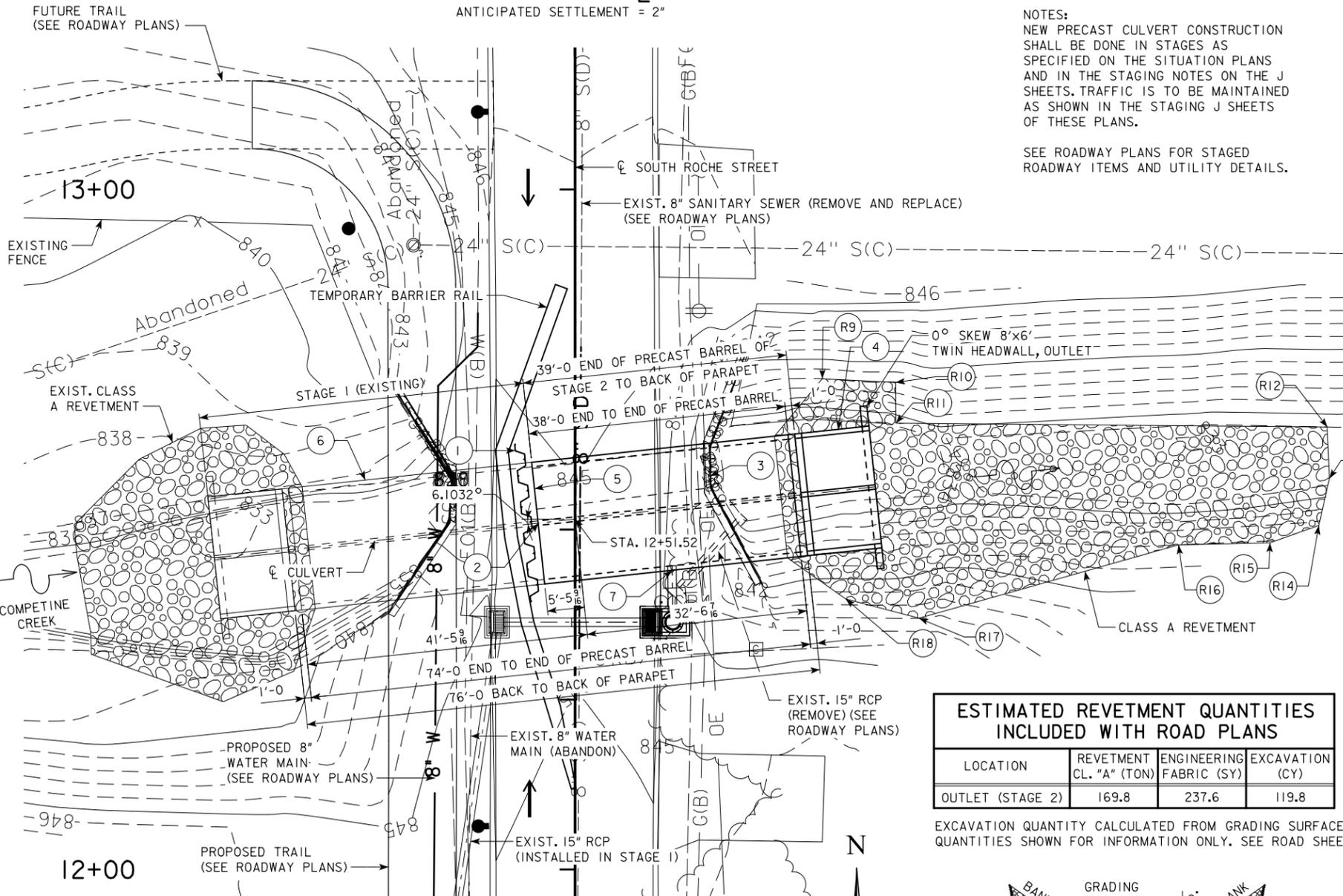


BENCH MARK: BMI: ELEV. 867.32 N=7586475.37 E=19420171.96; CUT 'X' AT INTAKE AT SOUTHEAST QUAD GORDON DRIVE & STREETER STREET.



**PROPOSED PROFILE GRADE
SOUTH ROCHE STREET**

LONGITUDINAL SECTION ALONG CL PRECAST CULVERT



NOTES:
NEW PRECAST CULVERT CONSTRUCTION SHALL BE DONE IN STAGES AS SPECIFIED ON THE SITUATION PLANS AND IN THE STAGING NOTES ON THE J SHEETS. TRAFFIC IS TO BE MAINTAINED AS SHOWN IN THE STAGING J SHEETS OF THESE PLANS.

SEE ROADWAY PLANS FOR STAGED ROADWAY ITEMS AND UTILITY DETAILS.

NOTES:

- 1 TEMPORARY SHORING AS REQUIRED FOR STAGED CONSTRUCTION. MAINTAIN 1'-6" MIN. HORIZONTAL CLEARANCE FROM START OF STAGE 2 CULVERT BARREL.
- 2 STA. 12+50.94, 5.43' RT. EXIST. F.L. ELEV. = 833.35
- 3 REMOVE EXISTING OUTLET HEADWALL AND THE REMAINING 6'x6' BARREL SECTION.
- 4 CONSTRUCT TWIN 8'x6'x74'-0" PRECAST RCBC WITH 0° SKEW HEADWALLS, ROTATED 6° (R.A.) IN STAGES (38'-0" FOR STAGE 2)
- 5 MAINTAIN DRAINAGE THROUGHOUT CONSTRUCTION.
- 6 MAINTAIN EXISTING PRECAST TWIN 8'x6' OUTLET HEADWALL AND BARREL SECTION.
- 7 STA. 12+44.00, 14.31' RT. PROPOSED 15" RCP TO BARREL WALL F.L. ELEV. 836.00

TRAFFIC ESTIMATE

NO TRAFFIC DATA

HYDRAULIC DATA

DRAINAGE AREA = 1.08 SQ. MI.
STREAM SLOPE = 41 FT./MI.
DESIGN DISCHARGE Q₅₀ = 1045 CFS
STAGE = EL. 842.25
BACKWATER = 2.55 FT.
OUTLET VELOCITY = 10.89 FPS

DESIGN DISCHARGE Q₁₀₀ = 1261 CFS
STAGE = EL. 843.93
BACKWATER = 1.64 FT
OUTLET VELOCITY = 13.14 FPS

UTILITIES LEGEND:

- W - WATER - CITY OF KNOXVILLE
- S - SANITARY SEWER - CITY OF KNOXVILLE
- G - GAS - ALLIANT ENERGY
- FO1 - FIBER OPTIC - WINDSTREAM COMMUNICATIONS
- FO2 - FIBER OPTIC - MEDIACOM L.L.C.
- CI - COMMUNICATION - MEDIACOM L.L.C.
- OE - OVERHEAD ELECTRIC - MIDAMERICAN ENERGY

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

REVETMENT LAYOUT:

- R9 12+72.17, 36.45' RT.
- R10 12+71.64, 47.27' RT.
- R11 12+65.63, 47.30' RT.
- R12 12+65.07, 110.89' RT.
- R13 12+57.51, 111.20' RT.
- R14 12+50.59, 109.64' RT.
- R15 12+48.03, 102.44' RT.
- R16 12+47.74, 88.96' RT.
- R17 12+36.95, 50.72' RT.
- R18 12+39.79, 39.90' RT.

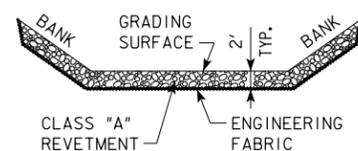
LOCATION

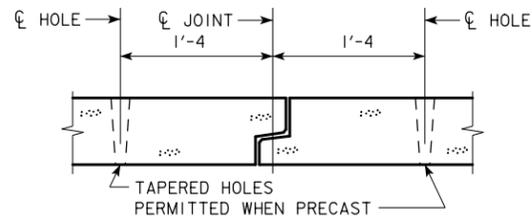
SOUTH ROCHE ST. OVER COMPETINE CREEK
T-75N R-19W/R-20W
SECTIONS 7/12
KNOXVILLE TOWNSHIP
CITY OF KNOXVILLE
MARION COUNTY
LATITUDE 41.311440°
LONGITUDE -93.099876°

ESTIMATED REVETMENT QUANTITIES INCLUDED WITH ROAD PLANS

LOCATION	REVETMENT CL. "A" (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
OUTLET (STAGE 2)	169.8	237.6	119.8

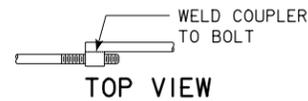
EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE. QUANTITIES SHOWN FOR INFORMATION ONLY. SEE ROAD SHEETS.



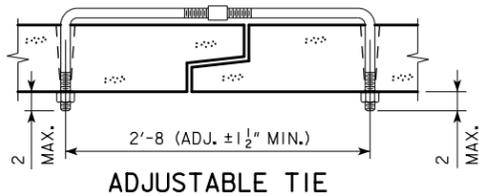


TYPICAL TIE LAYOUT

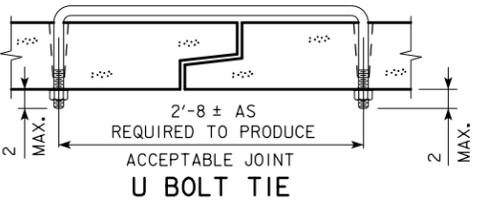
NOTE: HOLES SHALL BE CAST OR DRILLED 1'-4 FROM CENTERLINE OF JOINTS AS SHOWN ABOVE, UNLESS FORMS ARE SET UP FOR 1'-4 SPACING FROM OUTSIDE OF JOINT.



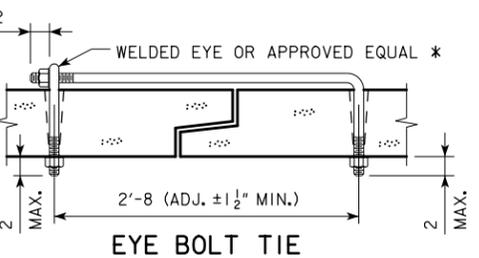
TOP VIEW



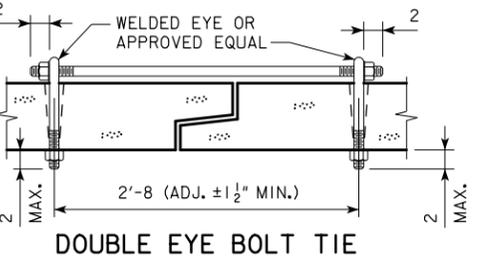
ADJUSTABLE TIE



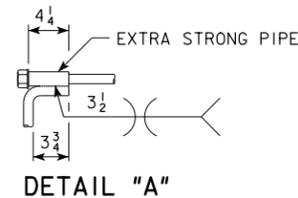
U BOLT TIE



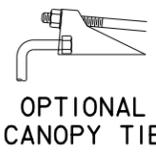
EYE BOLT TIE



DOUBLE EYE BOLT TIE

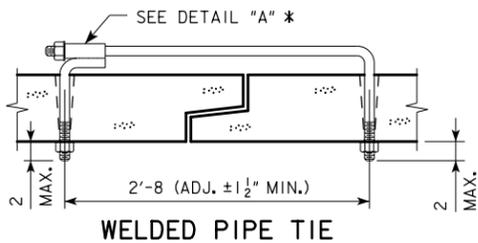


DETAIL "A"

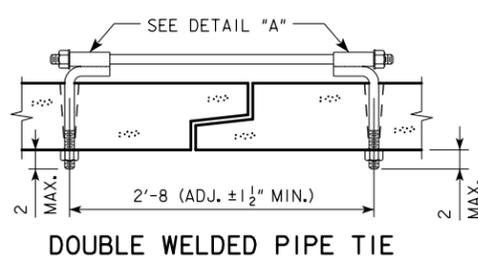


OPTIONAL CANOPY TIE

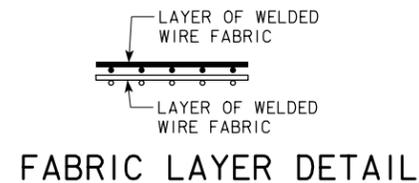
* THE CONNECTIONS SHALL BE PLACED AT THE DOWNSTREAM END WHEN THE CONNECTIONS ARE PLACED INSIDE OF STRUCTURE.



WELDED PIPE TIE

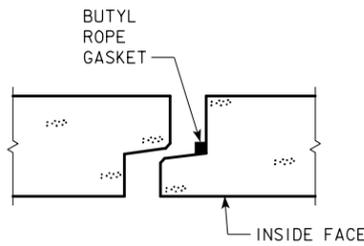


DOUBLE WELDED PIPE TIE



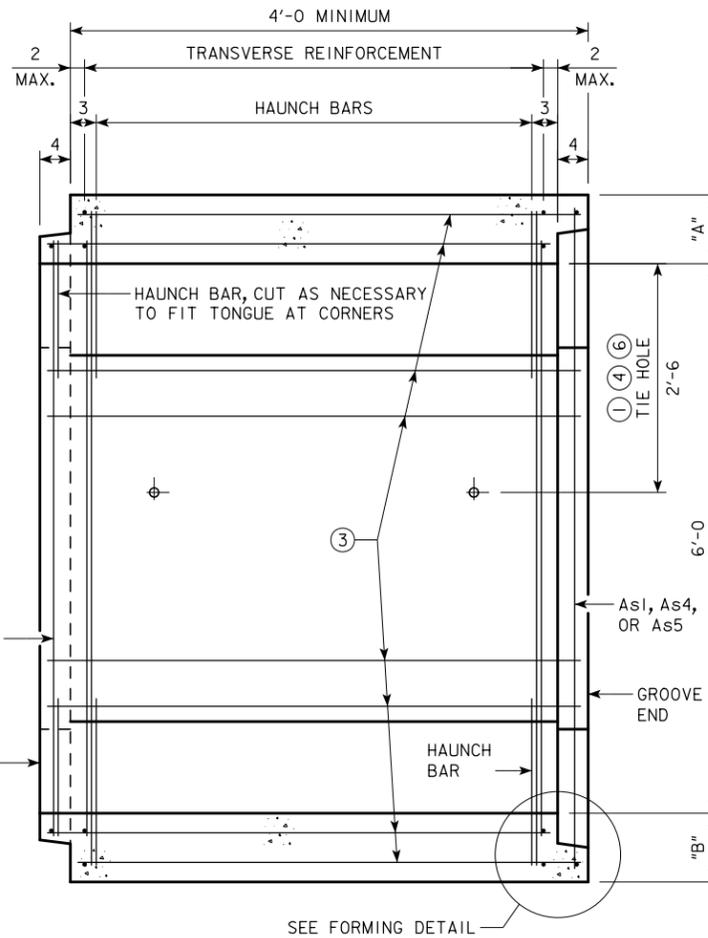
FABRIC LAYER DETAIL

NOTE: WHEN MORE THAN ONE LAYER OF WELDED WIRE FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE WELDED WIRE FABRIC SHALL BE PLACED AS SHOWN.

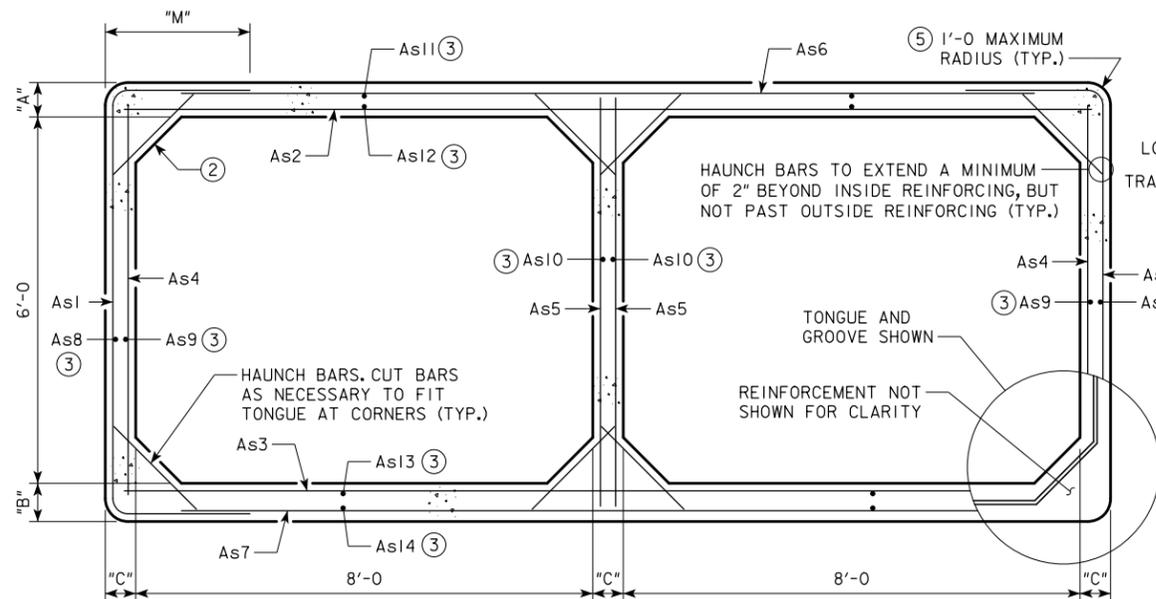


JOINT DETAIL

CUT OR BEND INSIDE REINFORCEMENT AS NECESSARY TO ACHIEVE CORNER REQUIREMENTS



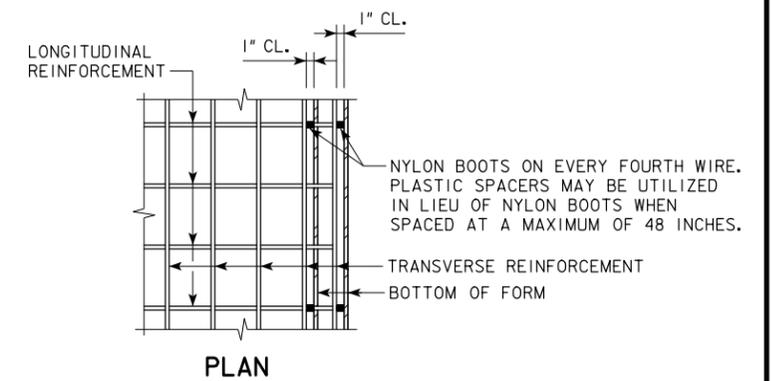
LONGITUDINAL BARREL SECTION
(REINFORCEMENT BAR OPTION SHOWN)



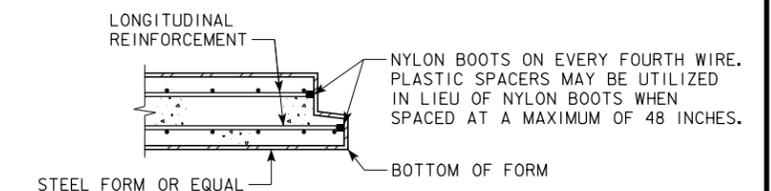
TRANSVERSE BARREL SECTION
(REINFORCEMENT BAR OPTION SHOWN)

NOTES:

- ① CULVERT TIES ARE TO BE 1" Φ RODS. SEE THIS SHEET FOR CONNECTION DETAILS.
- ② HAUNCH SIZES ARE TO BE 12" VERTICAL, 12" HORIZONTAL.
- ③ LONGITUDINAL REINFORCEMENT DENOTED AS As8 THRU As14 MUST BE PLACED IN SLAB, FLOOR, AND WALLS AND MUST BE 0.06 IN²/FT. MIN.
- ④ REFER TO END SECTION DETAIL SHEET FOR BARREL TO END SECTION CONNECTION TIE HOLE LOCATIONS.
- ⑤ OPTIONAL SQUARED CORNERS WITH 3/4" TO 2" CHAMFER.

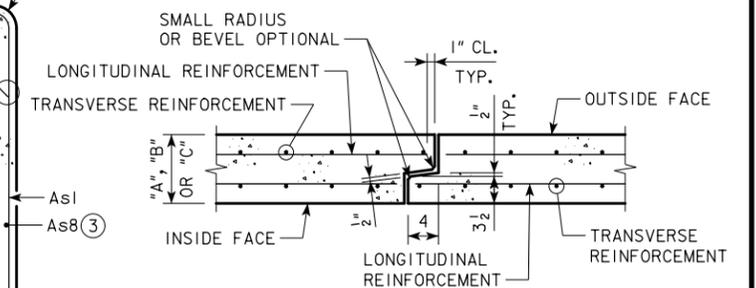


PLAN



SECTION

FORMING DETAIL

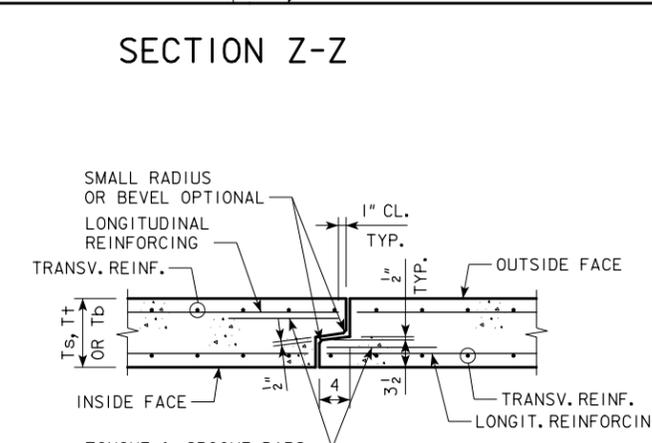
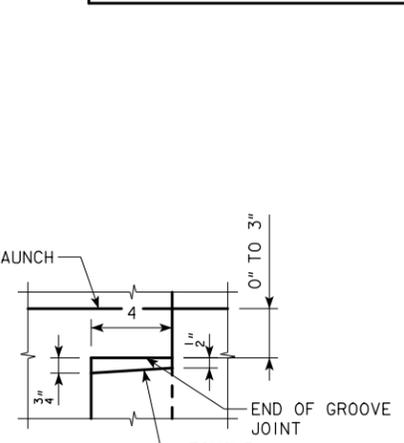
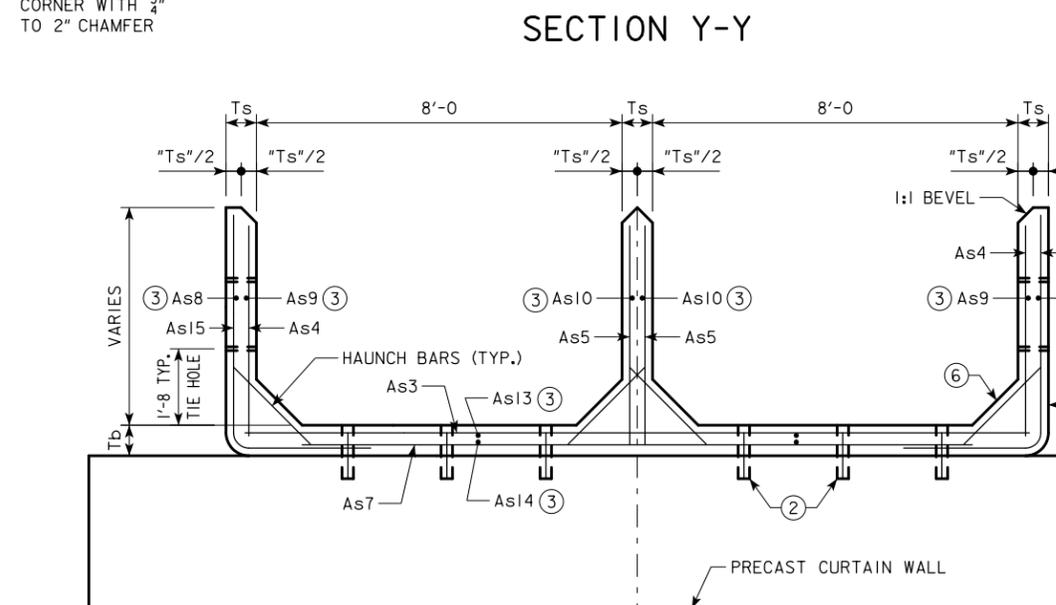
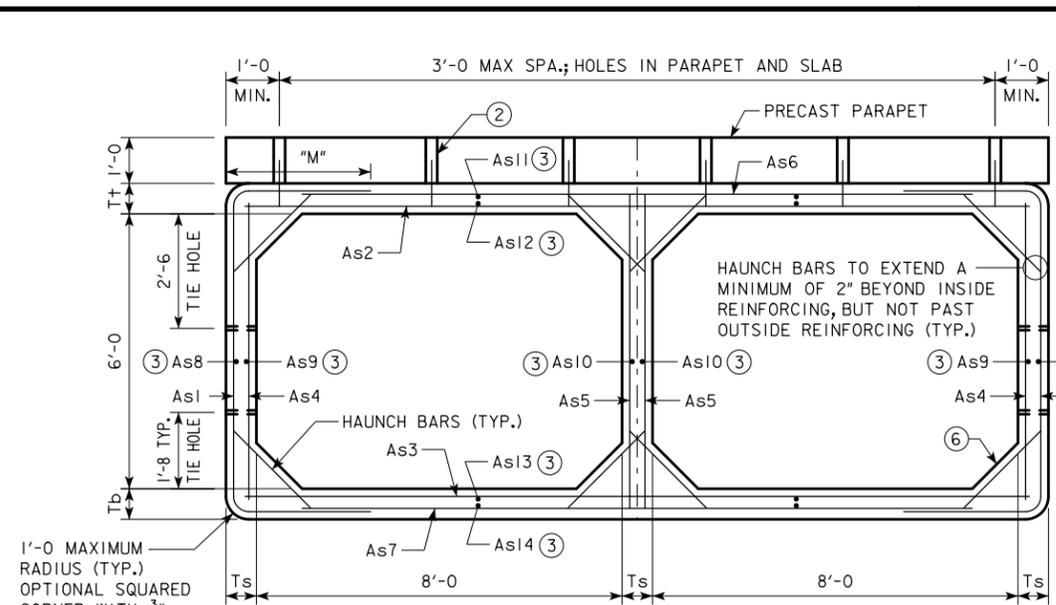
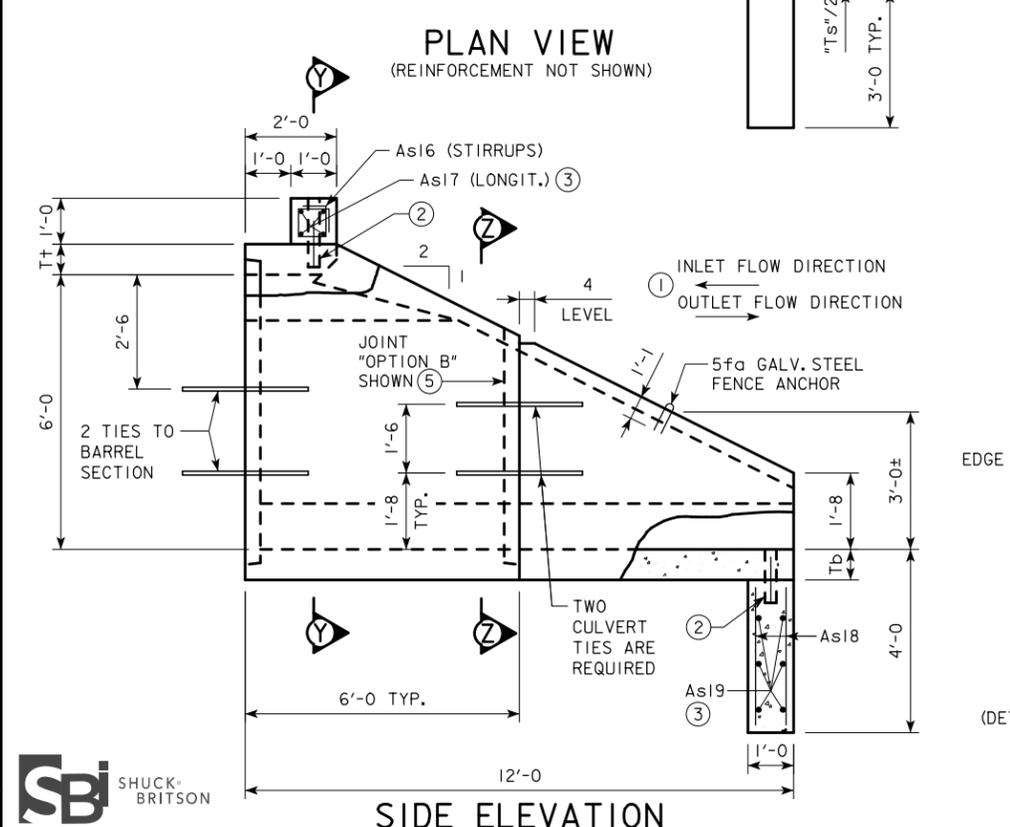
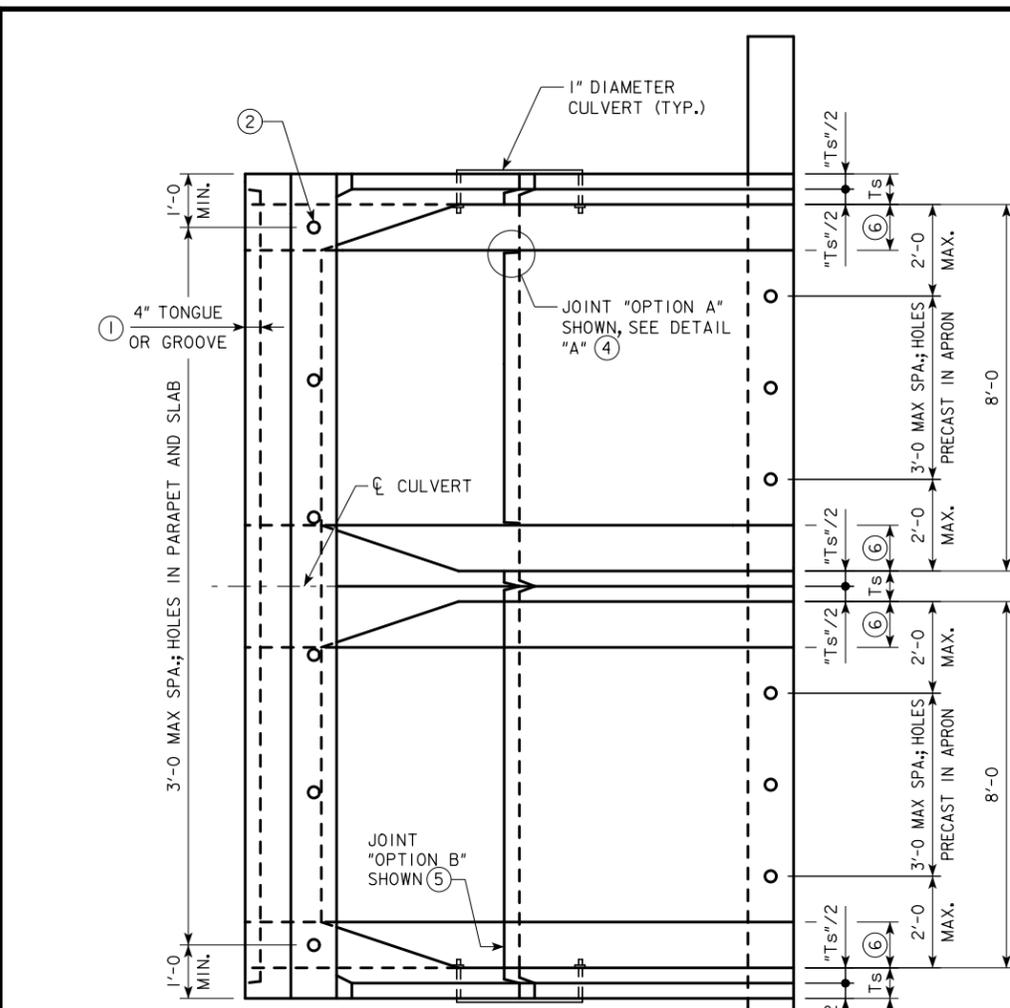


TONGUE AND GROOVE JOINT DETAIL

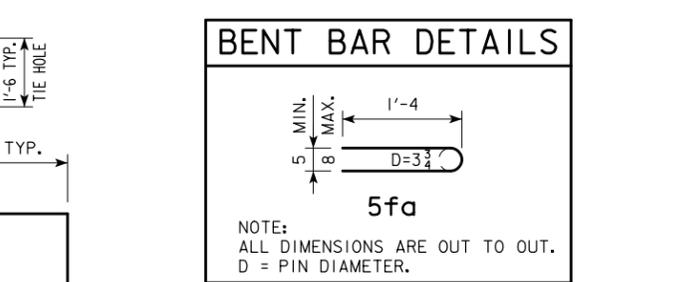
DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)
TWIN 8' x 6' x 74'-0
PRECAST R.C.B. CULVERT
CULVERT BARREL DETAILS
 STA. 12+51.52 (C SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY



APPROVED CONCRETE BOX TIES

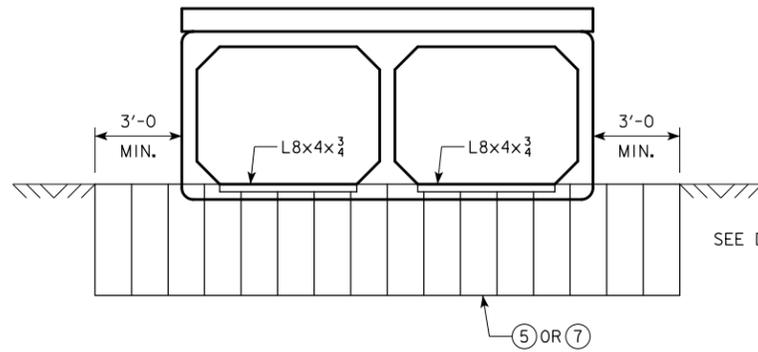


- ### CONSTRUCTION NOTES:
- PRECAST BOX CULVERT END SECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS AND NOTES, AS SHOWN BELOW:
- REINFORCING FOR PRECAST END SECTIONS & CURTAIN WALLS SHALL BE WELDED WIRE REINFORCING (WWR) MEETING THE REQUIREMENTS OF AASHTO LRFD SECTION 5. THE CONCRETE COVER OVER THE REINFORCING STEEL SHALL NOT BE LESS THAN 1.5 INCHES OR GREATER THAN 2.0 INCHES.
- REFER TO SHEET V.2 FOR ADDITIONAL NOTES.
- REFER TO FABRIC DETAIL ON SHEET V.5 FOR MULTIPLE WWR LAYERS.
- LAP SPLICES SHALL BE CLASS B AND SHALL BE DESIGNED ACCORDING TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- USE TONGUE ON INLET END SECTION AND GROOVE ON OUTLET END SECTION.
 - HOLES WITH DOWEL BAR, FILL HOLES WITH GROUT. GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4 INCHES.
 - MINIMUM LONGITUDINAL REINFORCEMENT SHALL BE 0.06 SQ. INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE END SECTION, EXCEPT IN THE TONGUE AND GROOVE AREA.
 - JOINT "OPTION A": PROVIDE JOINT IN WALLS AND FLOOR. TERMINATE JOINT AT HAUNCH. SEE DETAIL "A" ON THIS SHEET.
 - JOINT "OPTION B": PROVIDE JOINT IN WALLS, FLOOR AND HAUNCH.
 - HAUNCH DIMENSION TO MATCH BARREL HAUNCH SIZE.

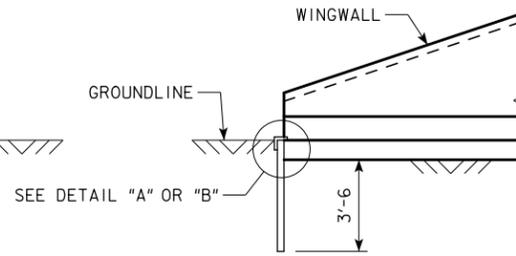


- ### DOWEL SETTING NOTE :
- THE 5fa BARS MAY BE SET AS DOWELS IN DRILLED HOLES. HOLES SHALL BE DRILLED TO THE DEPTH REQUIRED TO ACHIEVE BAR EMBEDMENT AS SHOWN IN THE "SIDE ELEVATION" DETAIL. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. EITHER OF THE FOLLOWING SYSTEMS MAY BE USED AS A BONDING AGENT:
- POLYMER GROUT SYSTEM SHALL BE IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS.
 - HYDRAULIC CEMENT GROUT SYSTEMS. DRILLED HOLES ARE TO BE 2 1/2 TIMES THE DOWEL DIAMETER AND ARE TO BE BLOWN CLEAN WITH COMPRESSED AIR IMMEDIATELY PRIOR TO PLACING GROUT. THE HYDRAULIC CEMENT GROUT SHALL BE ONE OF THOSE APPROVED IN MATERIALS 1.M. 491.13.

DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)
TWIN 8' x 6' x 74'-0
PRECAST R.C.B. CULVERT
CULVERT END SECTION DETAILS
 STA. 12+51.52 (C SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY

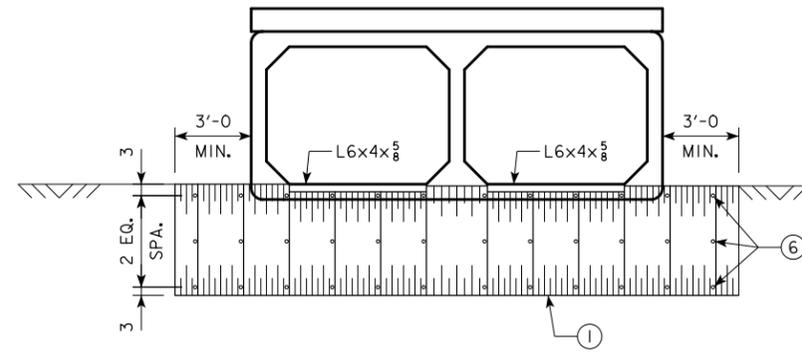


END VIEW

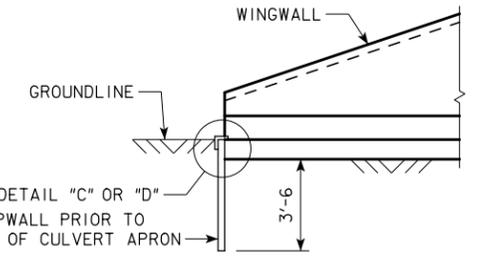


ELEVATION

ALTERNATES 1 & 2 (GALVANIZED STEEL SHEET PILING)

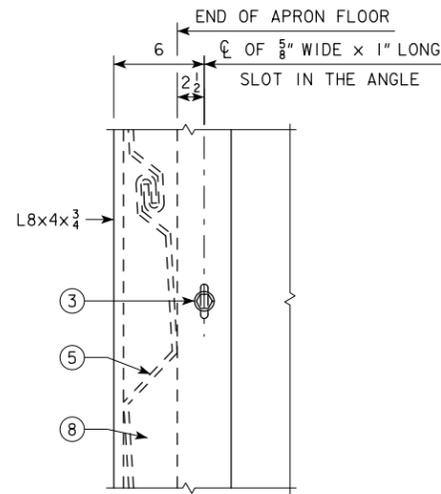


END VIEW

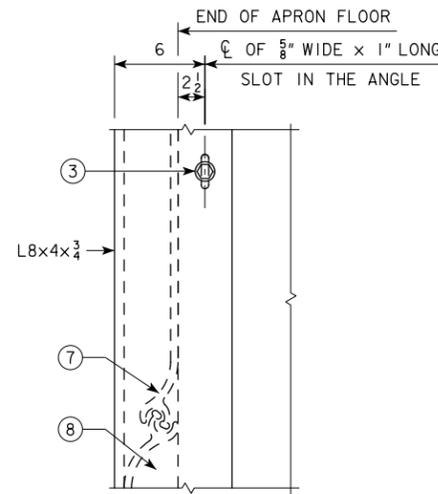


ELEVATION

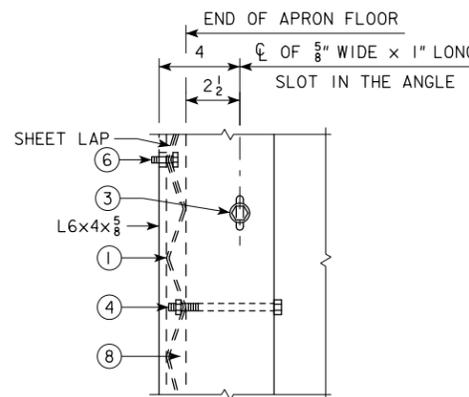
ALTERNATES 3 & 4 (GALVANIZED STEEL SHEETS)



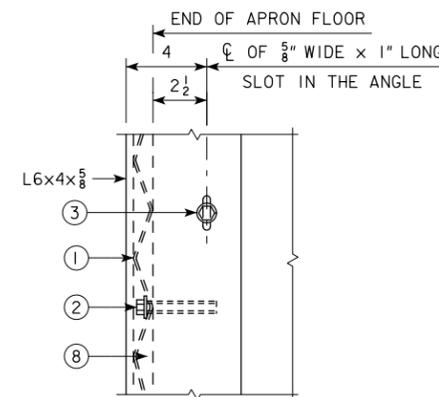
PLAN



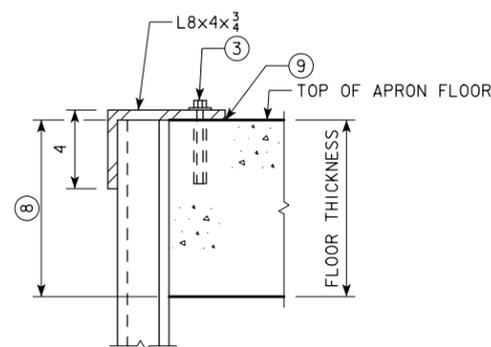
PLAN



PLAN

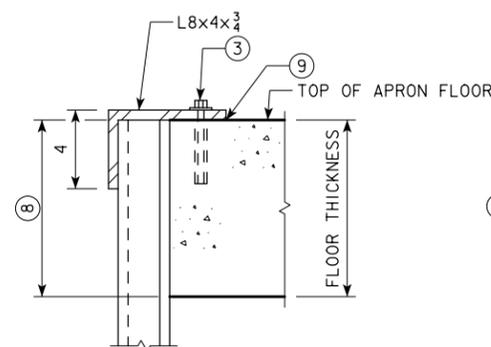


PLAN



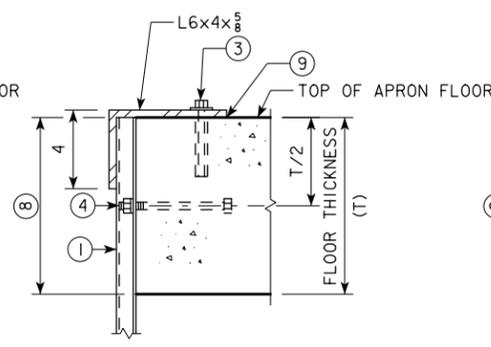
ELEVATION

DETAIL "A"
ALTERNATE 1
STEEL SHEET PILING SHOWN



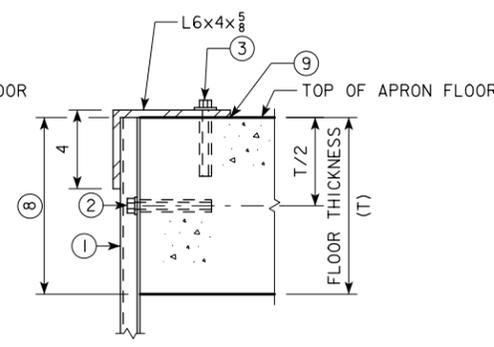
ELEVATION

DETAIL "B"
ALTERNATE 2
STEEL SHEET PILING SHOWN



ELEVATION

DETAIL "C"
ALTERNATE 3
ON NEW CONSTRUCTION ONLY



ELEVATION

DETAIL "D"
ALTERNATE 4
ON NEW OR OLD CONSTRUCTION

NOTES:

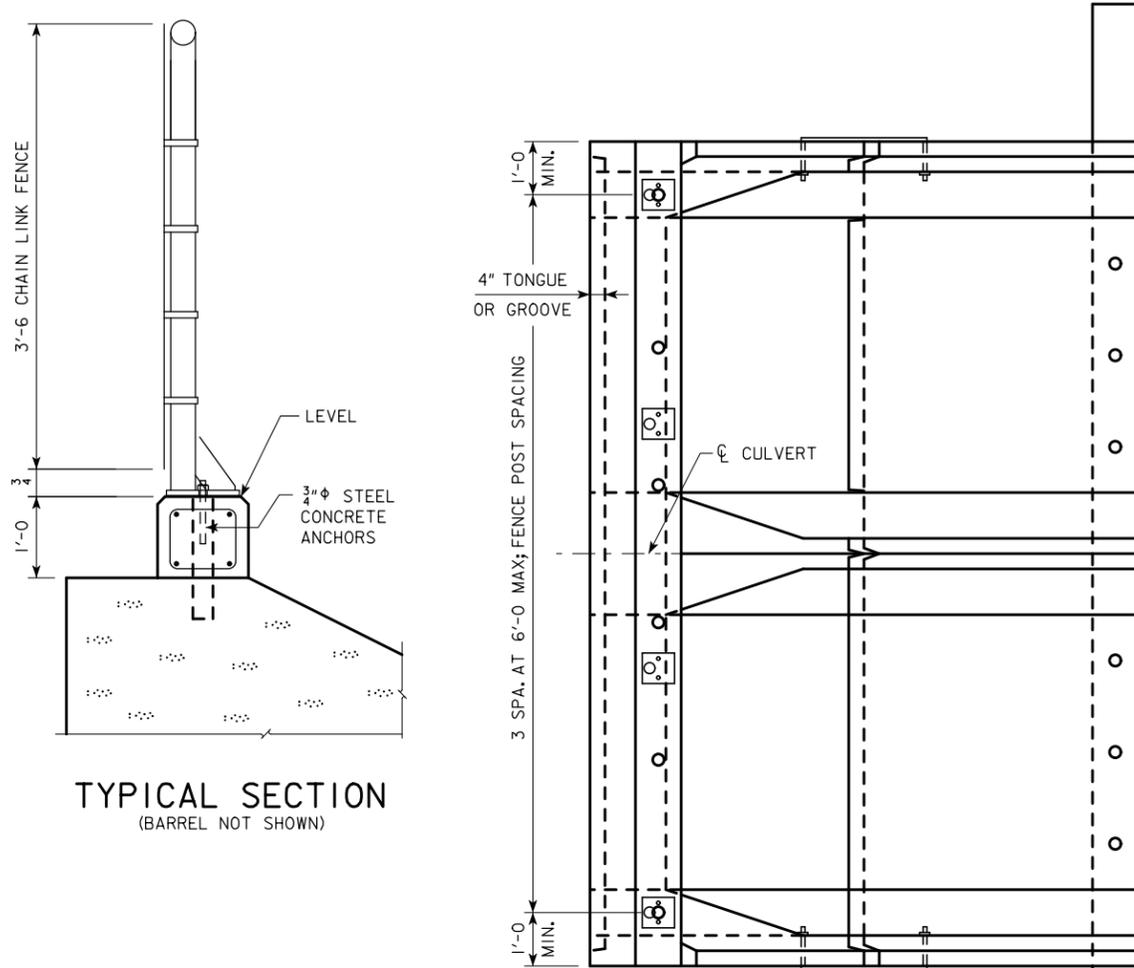
USE OF ALTERNATE CURTAIN WALLS SHALL BE APPROVED BY THE ENGINEER.

ALL CURTAIN WALL MATERIAL, INCLUDING BOLTS, NUTS, WASHERS, AND ANGLES SHALL BE GALVANIZED.

- ① 2 1/2" x 1/2" OR 2" x 1/2" CORRUGATED (12 GAGE OR HEAVIER) GALVANIZED STEEL SHEETS.
- ② FASTEN THE STEEL SHEETS TO THE FRONT EDGE OF THE APRON WITH 3/8" x 0'-4 BOLTS AND APPROVED ANCHORAGES (10" CENTER TO CENTER, TO THE NEAREST VALLEY).
- ③ FASTEN THE L8x4x3/4 OR L6x4x5/8 WITH 3/8" x 0'-4 BOLTS, 1" O.D. WASHER AND AN APPROVED ANCHORAGE (2'-0 SPACING).
- ④ FASTEN THE STEEL SHEETS TO THE FRONT EDGE OF THE APRON WITH 3/8" x 0'-5 BOLTS WITH NUT AND LOCK WASHER (10" CENTER TO CENTER, TO THE NEAREST VALLEY).
- ⑤ GALVANIZED CORRUGATED (12 GAUGE OR HEAVIER) STEEL SHEET PILING, INTERLOCKING TYPE A.
- ⑥ 3/8" x 0'-1 BOLT WITH NUT, TO LAP STEEL SHEETS.
- ⑦ GALVANIZED STEEL SHEET PILING, SECTION PS 27.5 OR EQUAL.
- ⑧ FILL THE VOIDS AS SHOWN, WITH CONCRETE OR CONCRETE GROUT, AS APPROVED BY THE ENGINEER.
- ⑨ CAULK JOINT BETWEEN TOP OF APRON FLOOR AND ANGLE. CAULKING MATERIAL SHALL BE NEUTRAL CURE AND NON-SAG SILICONE. THREE PRODUCTS MEETING THESE CRITERIA ARE DOW 888, CSL 342 JOINT SEALANT, AND CRAFTCO ROAD SAVER SILICONE.

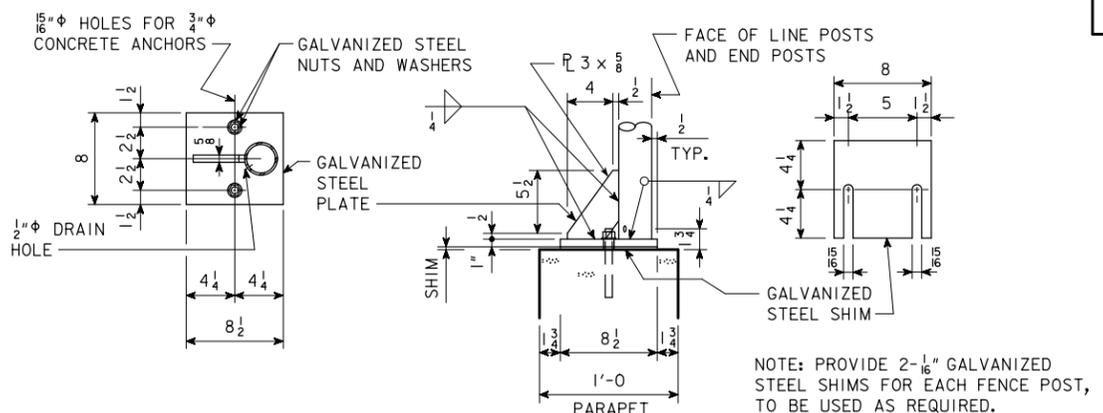
DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)
TWIN 8' x 6' x 74'-0
PRECAST R.C.B. CULVERT
 ALTERNATE CURTAIN WALL DETAILS
 STA. 12+51.52 (C SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY





TYPICAL SECTION
(BARREL NOT SHOWN)

PLAN VIEW
(REINFORCEMENT NOT SHOWN)



BASE PLATE DETAILS FOR END POST AND LINE POSTS

NOTE: POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.

QUANTITIES		
ITEM	UNITS	AMOUNT
FENCE, CHAIN LINK, VINYL COATED	LIN. FT.	75.3

NOTE: FOR ESTIMATED QUANTITY PURPOSES, PRECAST CULVERT WALL THICKNESSES HAVE BEEN ESTIMATED AT 8" THICK. THE QUANTITY FOR "FENCE, CHAIN LINK, VINYL COATED" MAY BE ADJUSTED BASED ON ACTUAL PRECAST CULVERT WALL THICKNESSES.

CONCRETE ANCHOR NOTES:

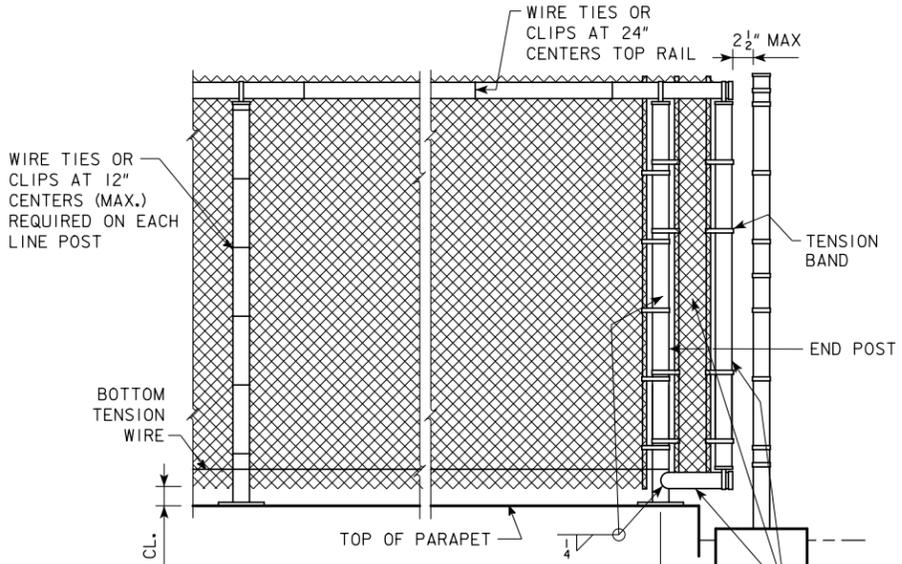
CAST-IN-PLACE THREADED CONCRETE ANCHORS SHALL BE INCORPORATED IN PRECAST ELEMENTS TO ACCOMMODATE THE CHAIN LINK FENCE POSTS AT THE LOCATIONS SHOWN ON THIS PLAN SHEET. THE PARAPET REINFORCING STEEL SHALL BE PLACED WITH 1 1/2" CLEAR TO ACCOMMODATE THE THREADED CONCRETE ANCHORS.

THE THREADED CONCRETE ANCHORS SHALL BE STAINLESS STEEL AND HAVE A MINIMUM PULLOUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.

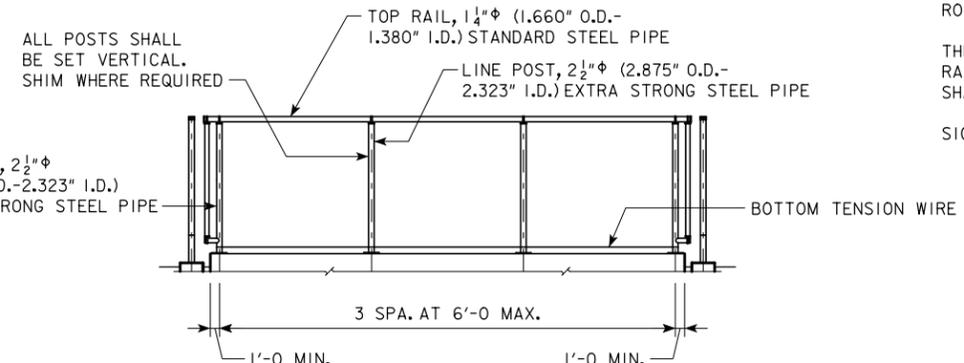
THE PRECAST CULVERT FABRICATOR SHALL DELINEATE THREADED CONCRETE ANCHOR LOCATIONS DURING FABRICATION TO DETERMINE PLACEMENT OF ANCHORS. THE ANCHORS SHALL BE TIED SECURELY IN PLACE PRIOR TO PLACEMENT OF CONCRETE, AND SHALL NOT CONTACT REINFORCING STEEL AT ANY LOCATION. REINFORCING BARS MAY BE SHIFTED SLIGHTLY TO PREVENT CONTACT WITH ANCHORS.

THE FABRICATOR SHALL SUBMIT THE PROPOSED ANCHOR TYPE FOR USE IN FABRICATION AS A PART OF THE SHOP DRAWINGS FOR THE PRECAST CULVERTS FOR REVIEW BY THE ENGINEER. THE ANCHORS SHALL BE STRAIGHT LOOP FERRULE TYPE, TYPE 304 STAINLESS STEEL, 3/4"-11 NC INTERNAL THREAD, MINIMUM LENGTH OF 6 1/2" INCH. APPROVED MANUFACTURERS AND ITEMS ARE AS FOLLOWS:

DAYTON SUPERIOR - F64
MEADOW BURKE FX-2
NATIONAL CONCRETE ACCESSORIES SLF-4W



FENCE DETAILS
(SYMMETRICAL ABOUT ϕ FENCE)



ELEVATION OF FENCE

STEEL CHAIN LINK FENCE NOTES:

THE CHAIN LINK FENCE IS TO BE BID ON A LINEAR FOOT BASIS MEASURED FROM ϕ TO ϕ OF END POSTS. THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING CONCRETE ANCHORS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE FENCE ON THE PRECAST PARAPET AND IN THE GROUND ALONG THE PRECAST HEADWALLS IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.

THE CHAIN LINK FENCE SHALL BE EITHER ZINC (ASTM A392) OR ALUMINUM (ASTM A491) COATED FABRIC, 2" MESH, No. 9 WIRES, 3'-6" HEIGHT WITH KNUCKLED SELVAGES TOP AND BOTTOM.

THE MATERIAL FOR POSTS, BRACES, AND RAILS SHALL BE STEEL PIPE IN ACCORDANCE WITH ARTICLE 4154.10, A, OF THE STANDARD SPECIFICATIONS. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A-36. POSTS, BASE PLATES, AND RAILS SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A-123.

CHAIN LINK FABRIC, RAILS, AND FENCE ACCESSORIES ARE TO BE PVC COATED IN ACCORDANCE WITH ASTM F 668, CLASS 2B. COLOR SHALL BE BLACK IN ACCORDANCE WITH ASTM F 934. THE COST OF PVC COATING IS TO BE INCLUDED IN THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED."

STEEL FENCE POST ASSEMBLIES SHALL BE ABRASIVE BLAST CLEANED TO A MINIMUM OF SSPC-SP6 "COMMERCIAL BLAST CLEANING" PRIOR TO HOT-DIP GALVANIZING. GALVANIZE COMPONENTS IN ACCORDANCE WITH ASTM A-123. DO NOT QUENCH OR APPLY CHROMATE CONVERSION COATINGS TO ANY GALVANIZED COMPONENTS THAT WILL RECEIVE POWDER COATING. FOLLOWING GALVANIZING, POWDER COAT COMPONENTS IN ACCORDANCE WITH MATERIALS I.M. 568.

PREPARATION OF GALVANIZED SURFACES FOR PAINT SHALL BE IN ACCORDANCE WITH MATERIALS I.M. 568, APPENDIX F. COMPLETE "PAINT OVER GALVANIZED SURFACE TRAVEL LOG" IN APPENDIX E.

ALL POWDER COATING EXCEPT FIELD TOUCH-UP SHALL BE PERFORMED IN AN APPROVED SHOP IN ACCORDANCE WITH MATERIALS I.M. 568.

SUBMIT PROPOSED PREPARATION METHODS AND PRODUCT DATA FOR ALL COATINGS PROPOSED FOR USE TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO POWDER COATING. POWDER COATING SHALL MATCH SAE AMS-STD-595 COLOR NUMBER 27038 (BLACK).

IF AVAILABLE, VINYL COATED FENCE POST ASSEMBLIES MAY BE SUBSTITUTED FOR POWDER COATED COMPONENTS PROVIDED THE MATERIAL IS IN COMPLIANCE WITH ALL OTHER REQUIREMENTS LISTED IN THESE PLANS AND THE STANDARD SPECIFICATIONS. PVC COATING SHALL COMPLY WITH ASTM F 668, CLASS 2B AND SHALL BE BLACK IN ACCORDANCE WITH ASTM F 934. THE COST OF PVC COATED FENCE POST ASSEMBLIES SHALL BE INCLUDED IN THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED."

PROTECT ALL POWDER COATED RAILING SURFACES FROM DAMAGE DURING SHIPPING, HANDLING, AND INSTALLATION.

FOLLOWING FENCE INSTALLATION, REPAIR ANY DAMAGE TO THE POWDER COATED FINISH IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATIONS. ALL COSTS ASSOCIATED WITH POWDER COATING SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM, "FENCE, CHAIN LINK, VINYL COATED."

SPECIAL FITTINGS SHALL BE AS SPECIFIED IN ARTICLE 4154.11 OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED. SIMILAR FENCE PARTS AND FITTINGS WITH DIFFERENT SHAPES OR CONFIGURATIONS SHALL NOT BE INTERMINGLED WITHIN THE PROJECT LIMITS.

RAIL MEMBERS SHALL BE CUT SQUARE AT ALL POST CONNECTION LOCATIONS. CUT EDGES SHALL BE FILLED OR GROUND SMOOTH TO REMOVE SHARP EDGES AT CORNER LOCATIONS. DAMAGED PAINT OR VINYL COATING SHALL BE PAINTED BLACK TO MATCH FENCE.

CAULK FOR BASE PLATES SHALL BE BLACK NONSAG LATEX CAULK MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED. EXCESS CAULK SHALL BE COMPLETELY REMOVED FROM SURROUNDING CONCRETE SURFACES.

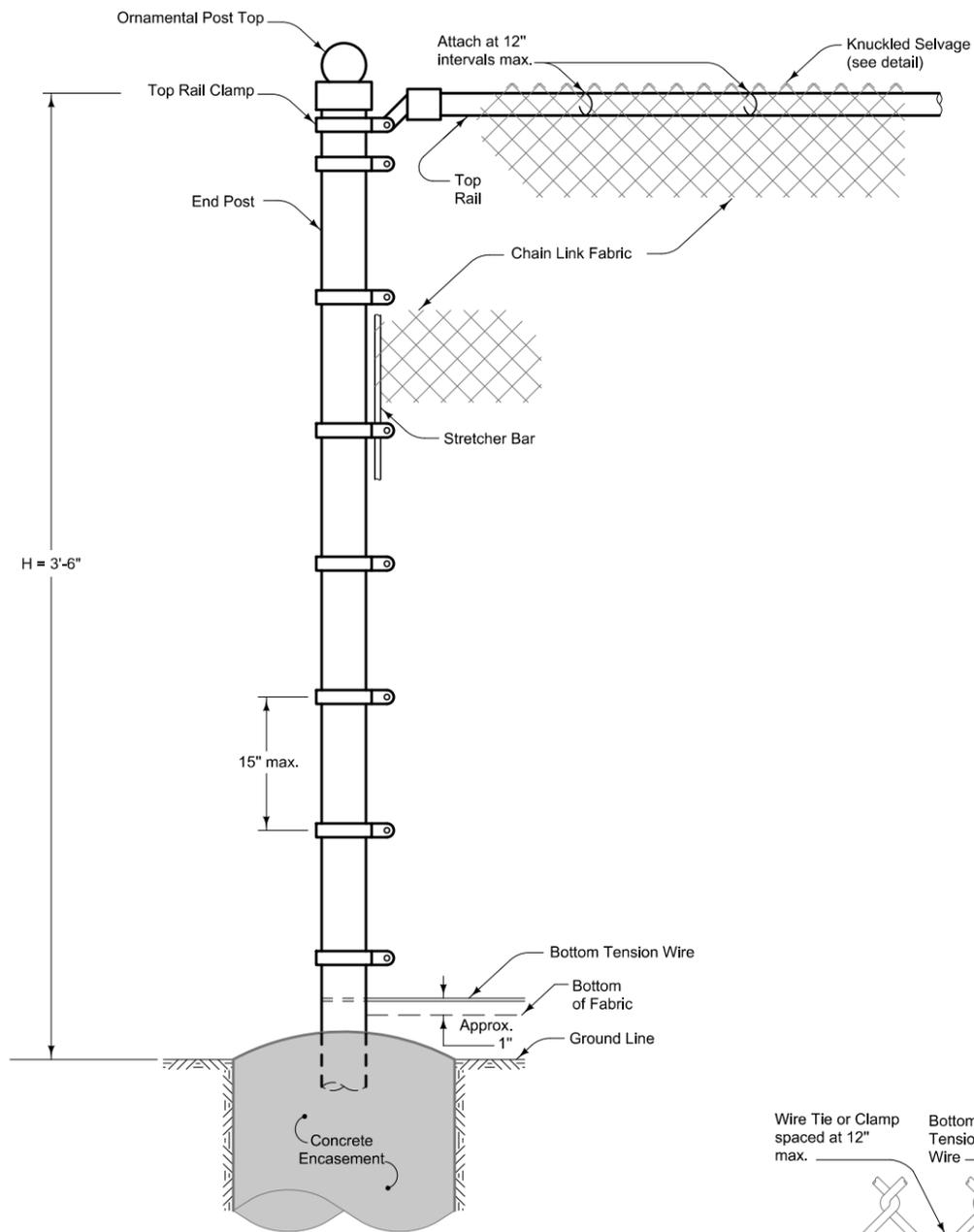
THE FENCE SHALL BE TRUE TO LINE, TAUT, AND COMPLY WITH THE BEST PRACTICE FOR FENCE CONSTRUCTION OF THIS TYPE. ALL ENDS OF WIRES SHALL BE TURNED SO THAT THEY EXTEND AWAY FROM THE ROADWAY SIDE OF THE FENCE.

THE CONTRACTOR SHALL SUBMIT FOR APPROVAL SHOP DRAWINGS OF THE FENCE, SHOWING LAYOUT OF POSTS AND FABRICATION DETAILS OF RAILS, BRACING, ANCHORAGES, AND HARDWARE. ALTERNATE DETAILS, IF ANY, SHALL BE SUBMITTED WITH THE SHOP DRAWINGS.

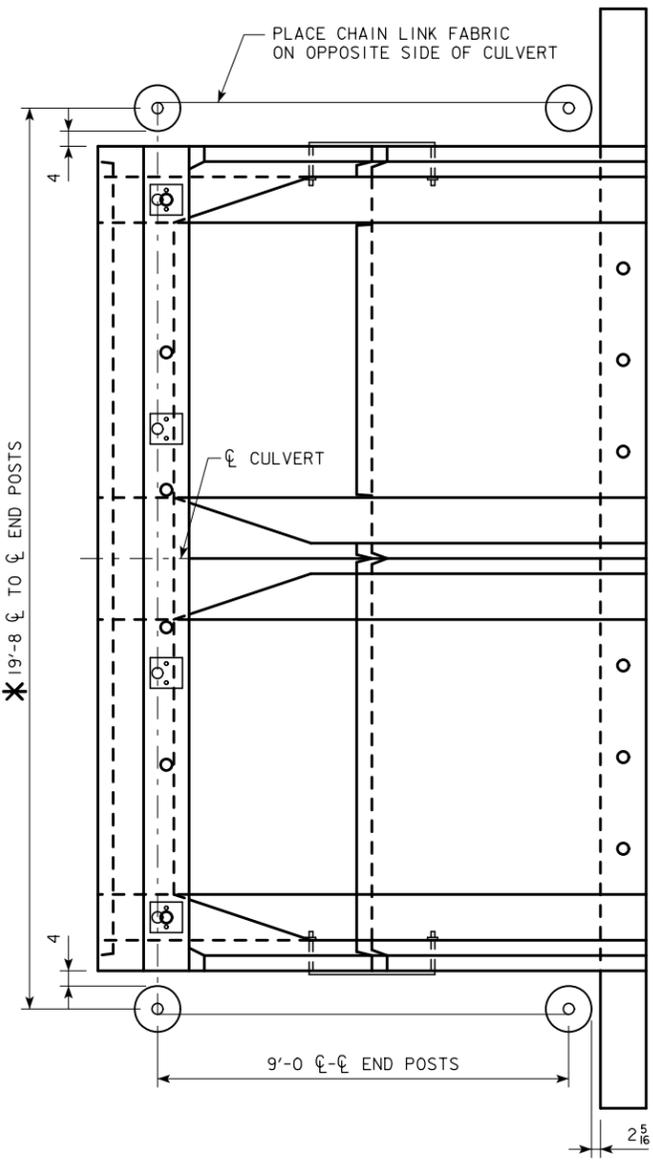
THE CONTRACTOR SHALL NOT INSTALL ANY NAMEPLATES OR OTHER SIGNAGE ON THE FENCE.

DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)
TWIN 8' x 6' x 74'-0"
PRECAST R.C.B. CULVERT
PARAPET FENCE DETAILS
STA. 12+51.52 (C SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY

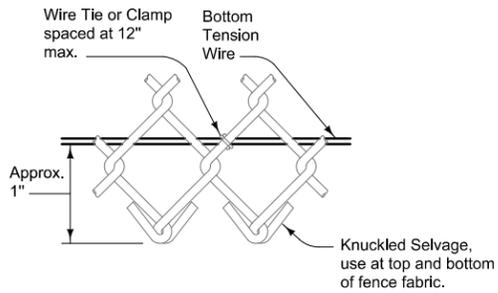




END POST ASSEMBLY



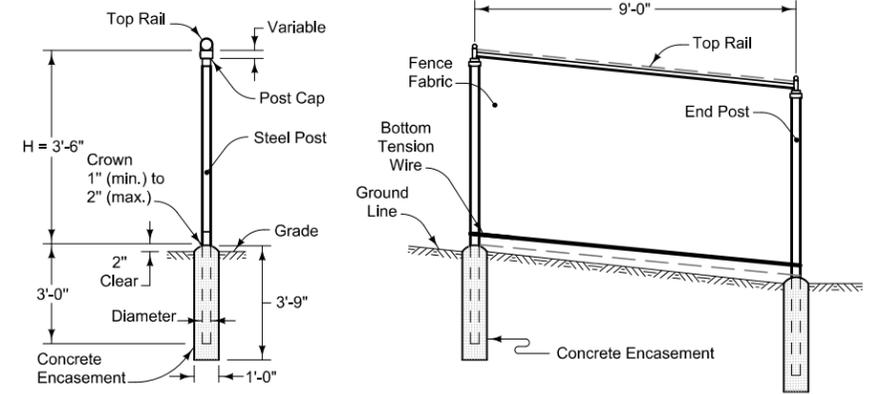
GROUND FENCE PLAN VIEW
(REINFORCEMENT NOT SHOWN)



BOTTOM TENSION WIRE AND KNUCKLED SELVAGE

STEEL CHAIN LINK FENCE NOTES:
 SEE CHAIN LINK FENCE NOTES AND QUANTITY ON SHEET V.9 FOR FENCE DETAILS AND SPECIFICATIONS.
 ATTACH CHAIN LINK FABRIC TO TOP RAIL, TENSION WIRE, AND END POSTS AT INTERVALS OF 12" MAXIMUM.
 CONNECT BOTTOM TENSION WIRE TO END POSTS.
 SECURE EACH END OF EACH RUN OF FABRIC USING A STRETCHER BAR INSERTED IN THE FINAL LINKS OF THE FABRIC. USE A BAR THAT IS AS LONG AS THE FABRIC IS WIDE.

* FOR ESTIMATED QUANTITY PURPOSES, PRECAST CULVERT WALL THICKNESSES HAVE BEEN ESTIMATED AT 8" THICK. THE QUANTITY FOR "FENCE, CHAIN LINK, VINYL COATED" MAY BE ADJUSTED BASED ON ACTUAL PRECAST CULVERT WALL THICKNESSES.

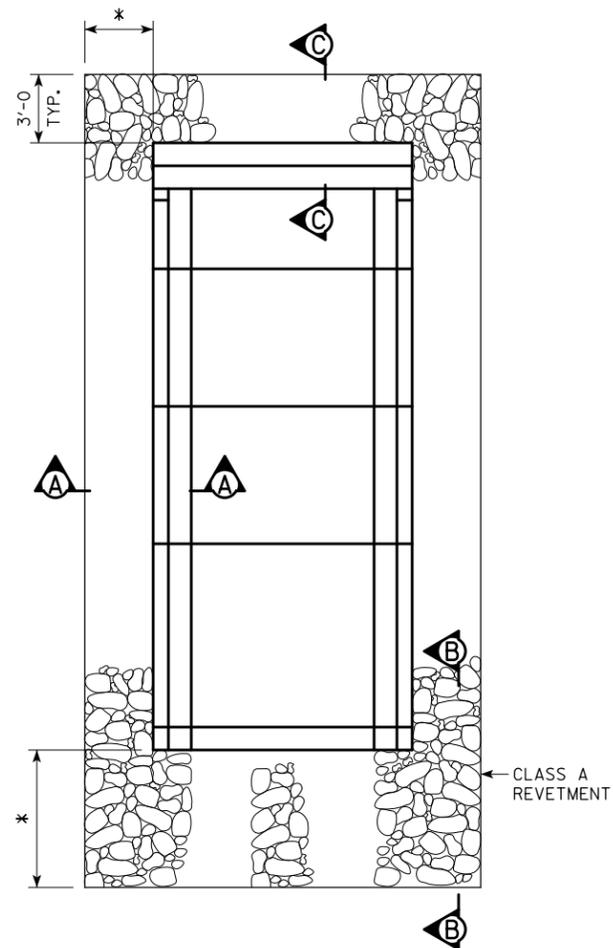


POST INSTALLATION DETAILS

ITEM	POST SIZE		
	Nominal Pipe Size, in.	Outside Diameter, in.	Weight, lb./ft.
Rail	1 1/2	1.660	2.27
End Post	2 1/2	2.875	5.79

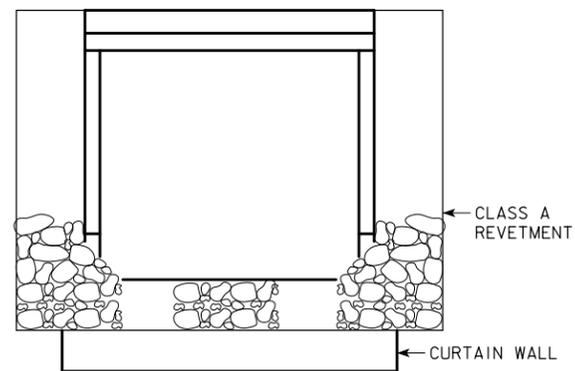
DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)
TWIN 8' x 6' x 74'-0
PRECAST R.C.B. CULVERT
GROUND FENCE DETAILS
 STA. 12+51.52 (C SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY



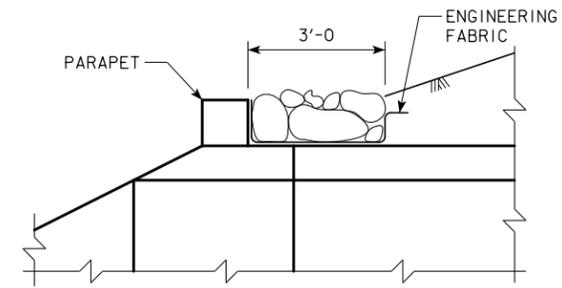


PLAN VIEW

* = SEE SITUATION PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.

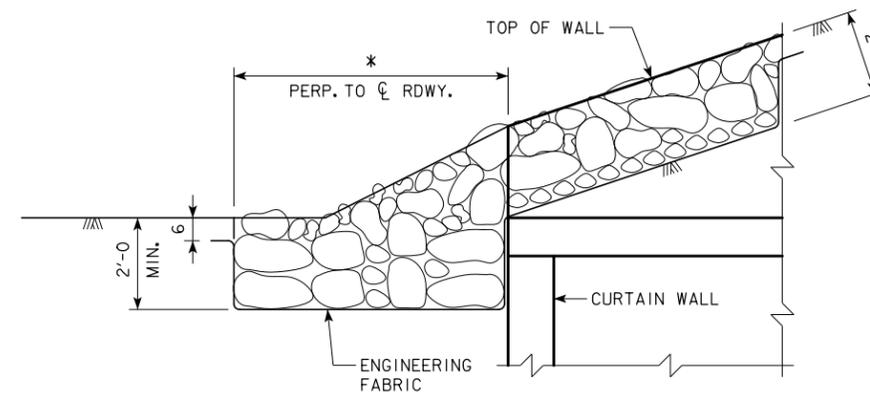


ELEVATION VIEW
NON-SKEW END SECTIONS

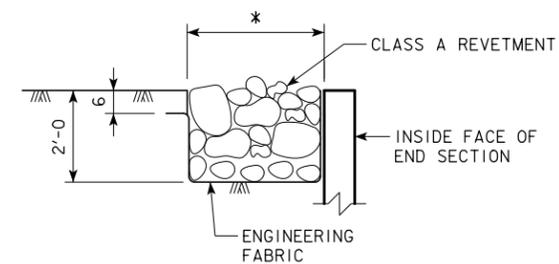


SECTION C-C

* = SEE SITUATION PLANS FOR LIMITS OF REVETMENT AND ENGINEERING FABRIC.



SECTION B-B



SECTION A-A
TYPICAL DETAILS

CONSTRUCTION NOTES:

CLASS A REVETMENT SHOULD BE USED AND PLACED ACCORDING TO ARTICLE 2507.03 OF THE STANDARD SPECIFICATIONS.

THE ENGINEERING FABRIC SHALL MEET THE MATERIAL REQUIREMENTS IN ACCORDANCE WITH ARTICLE 4196.01, B, 3 OF THE STANDARD SPECIFICATIONS.

DESIGN FOR 0° SKEW ROTATED 6.1032° (R.A.)

TWIN 8' x 6' x 74'-0
PRECAST R.C.B. CULVERT

EMBANKMENT PROTECTION DETAILS
STA. 12+51.52 (CL SOUTH ROCHE STREET) FEBRUARY, 2020
MARION COUNTY

