City of Rapid City

Pennington County

FOR BIDDING PURPOSES ONLY

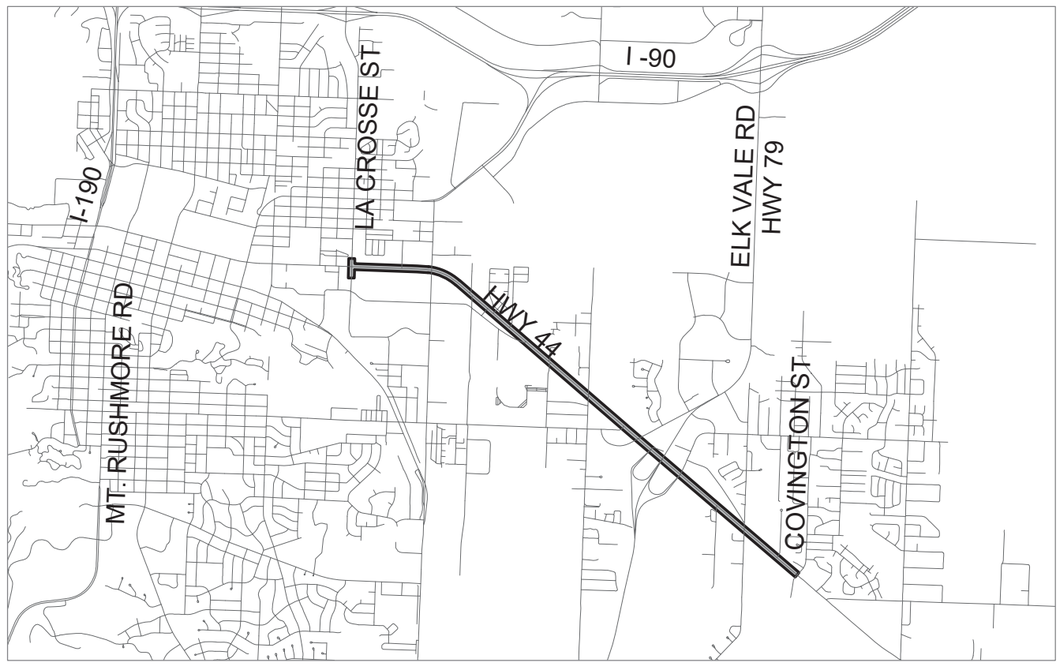
OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES

CITY OF RAPID CITY PROJECT NO. 19-2488 CIP # 51212 - PCN X05G
IN CONJUNCTION WITH SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION
PROJECT NH0044(00)46 PCN 04PD

INDEX OF SHEETS

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/15/21

CITY OF RAPID CITY, SOUTH DAKOTA



PROJECT LOCATION MAP NOT TO SCALE

N.T.S.

Prepared By:

Ferber Engineering Company, Inc.
Civil Engineering • Water Resources • Transportation • Land Surveying • GIS
729 East Watertown St, Rapid City, SD 57701 ~ Phone: (605) 343-3311

ONE CALL BEFORE DIGGING 1-800-781-7474

TABLE OF DESIGN EXCEPTIONS FROM STANDARD SPECIFICATIONS

CITY EXCEPTION FILE NUMBER	SPECIFICATION SECTION	DESCRIPTION	JUSTIFICATION
21EX118	IDCM 3.9.9	ALLOW EXCEPTION TO FIRE HYDRANT AND VALVE CLUSTER LOCATIONS	VALVE CLUSTERS WILL STILL BE MET, EXACT LOCATIONS MAY NOT BE PER CRITERIA DUE TO SDDOT INTERSECTION MODIFICATIONS
21EX119	IDCM 3.12.4.3	ALLOW UPSTREAM SEWER DIAMETER TO BE LARGER THAN THE DOWNSTREAM PIPE DIAMETER.	FUTURE PROJECT WILL EXTEND LARGER DIAMETER DOWNSTREAM
21EX120	IDCM 3.12.9.3	ALLOW THE USE OF LARGER DIAMETER MANHOLES IN LIEU OF PRECAST TEE	CORC RECOMMENDED, HAS BEEN DESIGNED USING SUPPLIER ONLINE TOOL.

CITY of RAPID CITY
PUBLIC WORKS
ENGINEERING SERVICES

OMAHA AND LACROSSE STREET INTERSECTION UTILITY UPGRADES
CITY OF RAPID CITY PROJECT NO. 19-2488

3

Plan Set Number

January 19, 2022

10-12-21 P:\19-115\AutoCAD\PlanSheets\2488TTL.dwg

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3200	Construction Staking	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	55	Ft
110E0460	Remove Manhole	4	Each
110E0480	Remove Manhole Frame and Lid	14	Each
110E0520	Remove Sewer Pipe	179	Ft
110E1100	Remove Concrete Pavement	162.0	SqYd
110E1130	Remove Concrete Driveway Pavement	13.0	SqYd
110E1140	Remove Concrete Sidewalk	13.9	SqYd
110E1965	Remove Gate Valve	3	Each
110E5750	Salvage Fire Hydrant with Valve and Box	8	Each
110E7150	Remove Sign for Reset	1	Each
250E0010	Incidental Work	Lump Sum	LS
260E1010	Base Course	70.0	Ton
380E0050	8" Nonreinforced PCC Pavement	162.0	SqYd
380E3525	6" Reinforced PCC Approach Pavement	22.0	SqYd
380E6000	Dowel Bar	99	Each
380E6110	Insert Steel Bar in PCC Pavement	60	Each
451E0606	6" PVC Water Main	91	Ft
451E0608	8" PVC Water Main	60	Ft
451E0612	12" PVC Water Main	10	Ft
451E1008	8" PVC Sewer Pipe	151	Ft
451E1010	10" PVC Sewer Pipe	92	Ft
451E1018	18" PVC Sewer Pipe	4	Ft
451E1021	21" PVC Sewer Pipe	5	Ft
451E1024	24" PVC Sewer Pipe	312	Ft
451E1550	Sanitary Sewer Video Inspection	564	Ft
451E2213	8"x6" Pipe Tee	2	Each
451E3006	6" Pipe Bend	5	Each
451E3206	6" Pipe Coupling	3	Each
451E3208	8" Pipe Coupling	8	Each
451E3412	6" Pipe Plug	1	Each
451E4208	8" Gate Valve with Box	2	Each
451E4380	Tracer Wire Access Box, Type 1	8	Each
451E4400	Pipe Insulation	600	SqFt
451E4585	Fire Hydrant with Auxiliary Valve & Box	8	Each
451E4901	Type 1 Bedding Material	25.0	Ton
451E4904	Type 3 Foundation Material	25.0	Ton
451E5052	Trench 8' to 10' Deep	94	Ft
451E5053	Trench 10' to 12' Deep	470	Ft
451E6080	Adjust Water Valve Box	27	Each
451E6105	Connect To Existing Water Main	18	Each
451E7016	Connect to Existing Sewer Main	5	Each
451E7020	Sewer Bypass Pumping	Lump Sum	LS
451E7402	Test Station	4	Each
632E3500	Reset Sign	1	Each
633E1222	High Build Waterborne Pavement Marking Paint, 4" Yellow	135	Ft

634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0700	Traffic Control Movable Concrete Barrier	24	Each
650E0080	Type B68 Concrete Curb and Gutter	35	Ft
650E4680	Type P8 Concrete Gutter	20	Ft
651E0040	4" Concrete Sidewalk	50	SqFt
671E1048	48" Manhole	2	Each
671E1060	60" Manhole	5	Each
671E5510	Extra Depth for 48" Manhole	38.2	Ft
671E6100	Manhole Frame & Lid, Install	14	Each
671E7010	Adjust Manhole	2	Each

Ferber Engineering Company, Inc.

PROJECT	SHEET NO.	TOTAL SHEETS
OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	1.2	36

PLOTTING DATE: 10-13-21

PROJECT NO 19-2488 / CIP 51212

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/13/21

EXISTING LEGEND

- BOREHOLE
- CABLE TV OR TELEPHONE RISER
- ELECTRICAL JUNCTION BOX
- FIBER OPTIC VAULT
- BLACK HILLS FIBER
- DECIDUOUS TREE
- CONIFEROUS TREE
- DECIDUOUS HEDGE/TREE LINE
- CONIFEROUS HEDGE/TREE LINE
- DECIDUOUS BUSH
- CONIFEROUS BUSH
- STUMP
- 2 POLE SIGN
- 1 POLE SIGN
- POST / BOLLARD
- FIRE HYDRANT
- MONITORING WELL
- CURB STOP
- IRRIGATION CONTROL VALVE
- GATE VALVE
- WATER MANHOLE
- TELEPHONE MANHOLE
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- CLEAN OUT
- GAS METER
- CONTROL POINT
- RIGHT-OF-WAY MARKER
- ELECTRICAL MANHOLE
- LIGHT POLE
- GUY WIRE ANCHOR
- POWER POLE
- TYPE "S" INLET
- TYPE "B" INLET
- MAILBOX
- DELINEATOR
- EXISTING GRAVEL
- EXISTING CURB AND GUTTER
- S — SANITARY SEWER LINE — FOR PIPES 18" AND LARGER
- 18" PVC
- 18" RCP
- W — WATER LINE — FOR PIPES 18" AND LARGER
- 18" PVC
- WS — WATER SERVICE LINE
- T — TELEPHONE LINE
- OH — OVERHEAD LINES (POWER, CABLE, ETC)
- P — POWER LINE
- G — GAS LINE
- FO — FIBEROPTIC LINE
- TV — CABLE TV LINE
- CHAINLINK FENCE
- BARBED WIRE FENCE
- WOOD FENCE
- BUILDING LINE
- PROPERTY LINE
- SECTION LINE
- EASEMENT LINE
- 100 — MAJOR CONTOUR
- MINOR CONTOUR

PROPOSED LEGEND

- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEANOUT
- FIRE HYDRANT W/ AUXILIARY VALVE
- GATE VALVE
- 11.25°, 22.5°, 45° BEND
- 45° VERTICAL BEND, FLEXIBLE COUPLING
- TEE
- CAP
- THRUST BLOCK
- CATHODIC TEST STATION
- TRACER WIRE ACCESS BOX
- S — SANITARY SEWER LINE
- SS — SANITARY SEWER SERVICE
- ABANDON SANITARY SEWER LINE
- REMOVE SANITARY SEWER LINE
- W — WATER LINE
- ABANDON WATER LINE
- DOT PROPOSED SURFACING
- DOT R.O.W.

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Ferber Engineering Company, Inc.		PROJECT	SHEET NO.	TOTAL SHEETS
		OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	1.3	36

PLOTTING DATE: 10-13-21 PROJECT NO 19-2488 / CIP 51212

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REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/13/21

PROJECT NOTE:

THE CITY UTILITY RECONSTRUCTION SHOWN HEREIN IS BEING CONSTRUCTED IN CONJUNCTION WITH THE SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION ADA CURB RAMP, INTERSECTION MODIFICATIONS AND SIDEWALK PROJECT FOR SD HIGHWAY 44 FROM LACROSSE STREET TO COVINGTON STREET PROJECT NH 0044(220)44.

THIS UTILITY PROJECT INCLUDES THE RECONSTRUCTION OF 8–INCH, 10–INCH AND 24–INCH SANITARY SEWER MAINS IN THE OMAHA STREET (HW44) AND LACROSSE STREET INTERSECTION, AND ABANDONMENT OF SANITARY SEWER IN THE OMAHA STREET AND CAMBELL STREET INTERSECTION. PROJECT ALSO INCLUDES SEVERAL WATER SYSTEM MODIFICATIONS INCLUDING NEW FIRE HYDRANTS, VALVES AND ABANDONMENTS FROM LA CROSSE STREET TO COVINGTON STREET.

SPECIFICATIONS TO BE USED

ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF RAPID CITY STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION 2007 EDITION (STANDARD SPECIFICATIONS) WITH ALL CURRENT UPDATES, EXCEPT AS MODIFIED IN THE BID DOCUMENTS. A COPY OF THE STANDARD SPECIFICATIONS MAY BE OBTAINED FROM THE RAPID CITY PUBLIC WORKS DEPARTMENT AT 300 SIXTH STREET RAPID CITY, SD.

SECTION 8 OF THE STANDARD SPECIFICATIONS IS NOT APPLICABLE FOR THIS PROJECT. REFER TO SECTION 8A "WATER PIPING SYSTEMS" AND SECTION 8B "CORROSION PROTECTION–PLASTIC PIPE SYSTEMS" FOUND IN THE DETAILED SPECIFICATIONS FOR THIS PROJECT.

ALL BIDDING REQUIREMENTS, SURFACING REPLACEMENT, TRAFFIC CONTROL, EROSION CONTROL AND OTHER MISCELLANEOUS ITEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (DOT SPECIFICATIONS) FOR ROADS AND BRIDGES, 2015 EDITION, AND REQUIRED PROVISIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS AS INCLUDED IN THE PROPOSAL.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF CONFLICTS BETWEEN DRAWINGS, DETAILED SPECIFICATIONS, THE STANDARD SPECIFICATIONS AND SDDOT SPECIFICATIONS AND REQUIRED PROVISIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS AS INCLUDED IN THE PROPOSAL. THE MORE STRICT INTERPRETATION WILL BE USED TO RESOLVE THE CONFLICT.

ANY REFERENCE REGARDING BUY AMERICAN WILL NOT APPLY TO CITY MATERIALS.

PROJECT COORDINATION

CONTRACTOR IS RESPONSIBLE FOR COORDINATING WORK WITH ALL ADJACENT PROPERTY OWNERS THAT WILL BE TEMPORARILY IMPACTED BY CONSTRUCTION OF THIS PROJECT.

CONTRACTOR FURNISHED STAKING

ALL STAKING ON THE PROJECT WILL BE BY THE CONTRACTOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. PAYMENT FOR CONTRACTOR FURNISHED STAKING WILL BE AT THE CONTRACT LUMP SUM PRICE FOR "CONSTRUCTION STAKING".

TRAFFIC CONTROL

A TRAFFIC CONTROL PLAN HAS BEEN PROVIDED FOR THE SANITARY SEWER INSTALLATION IN THE SOUTH BOUND LANE OF LACROSSE STREET. IF THE SDDOT TRAFFIC CONTROL DOES NOT EXTEND FAR ENOUGH SOUTH, IT SHOULD BE EXTENDED AS SHOWN IN THE TRAFFIC CONTROL LAYOUT PROVIDED IN THESE PLANS. PAYMENT FOR ADDITIONAL TRAFFIC ITEMS OUTSIDE THE LIMITS OF THE SDDOT PROJECT SHALL BE PAID FOR UNDER THE CONTRACT LUMP SUM PRICE FOR "TRAFFIC CONTROL, MISCELLANEOUS".

A TRAFFIC CONTROL PLAN HAS NOT BEEN COMPLETED FOR THE REMAINING UTILITY PORTION OF THIS PROJECT AS IT WILL BE COVERED BY THE OVERALL SDDOT TRAFFIC CONTROL PLAN.

EROSION AND SEDIMENT CONTROL

AN EROSION AND SEDIMENT CONTROL PLAN AND SWPPP HAS NOT BEEN COMPLETED FOR THE UTILITY PORTION OF THIS PROJECT AS IT WILL BE COVERED BY THE OVERALL SDDOT EROSION AND SEDIMENT CONTROL PLAN. HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO OBTAIN A CITY OF RAPID CITY EROSION & SEDIMENT CONTROL PERMIT.

EXISTING UTILITIES

LOCATION OF EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE AND WERE TAKEN FROM AVAILABLE RECORDS. PRIOR TO EXCAVATION, THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL PROTECT ALL UTILITIES DURING CONSTRUCTION. EXCAVATORS SHALL MAINTAIN A MINIMUM HORIZONTAL CLEARANCE OF EIGHTEEN INCHES BETWEEN A MARKED UNDERGROUND FACILITY AND THE CUTTING EDGE OF ANY MECHANICAL EQUIPMENT. IF EXCAVATION IS REQUIRED WITHIN EIGHTEEN INCHES, HORIZONTALLY, THE EXCAVATOR SHALL EXPOSE THE FACILITY WITH HAND TOOLS OR APPROVED NONINVASIVE METHODS AND SHALL PROTECT AND SUPPORT THE FACILITY PRIOR TO FURTHER EXCAVATION WITH MECHANICAL EQUIPMENT.

UNLESS EXPLICITLY NOTED, ANY DISTURBANCE OR REPLACEMENT OF EXISTING UTILITIES SHALL BE INCIDENTAL TO THE PROJECT. IF REQUIRED, THE CONTRACTOR SHALL COORDINATE RELOCATION OF UTILITY WITH THE UTILITY OWNER. ALL UTILITIES ARE TO BE ADJUSTED AND/OR RELOCATED BY THE RESPECTIVE UTILITY COMPANIES UNLESS OTHER PROVISIONS ARE EXPLICITLY CALLED FOR WITHIN THESE DRAWINGS.

EXISTING UTILITY CROSSINGS

REFER TO SPECIFICATIONS FOR CROSSING OF EXISTING STORM SEWERS, SANITARY SEWERS, WATER MAINS, AND WATER MAIN LOWERINGS. AT ALL LOCATIONS WHERE THE PROPOSED UTILITY IMPROVEMENT CROSSES OR IS ADJACENT TO EXISTING STORM SEWERS, SANITARY SEWERS OR WATER MAINS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING THE EXISTING UTILITIES TO ENSURE THAT THEY ARE NOT DISTURBED DURING THE WORK. TEMPORARY STRUCTURAL SUPPORT FOR THE UTILITIES MAY BE REQUIRED. NO SEPARATE PAYMENT SHALL BE MADE FOR CROSSED UTILITY PROTECTION. ANY REPAIR WORK NECESSARY TO A CROSSED UTILITY RESULTING FROM THE CONTRACTOR'S ACTIVITY SHALL BE AT THE CONTRACTOR'S EXPENSE.

UTILITIES

THE INFORMATION ON THESE DRAWINGS CONCERNING THE TYPE, SIZE, AND LOCATION OF UTILITIES HAS BEEN SHOWN BASED UPON THE BEST INFORMATION AVAILABLE AT THE TIME OF THE DESIGN SURVEY. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES IN PLACE.

CONTRACTOR SHALL COORDINATE ALL RELOCATIONS WITH THE UTILITY COMPANIES. ELECTRIC, TELEPHONE, TELEVISION, FIBER AND GAS UTILITIES MAY BE ADJUSTED AND/OR RELOCATED BY THE RESPECTIVE UTILITY COMPANIES.

THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES PRIOR TO BIDDING THIS PROJECT SO THAT THEY ARE AWARE OF THEIR RELOCATION / ADJUSTMENT / OR INSTALLATION REGARDING THIS PROJECT; AND INCLUDE ANY NECESSARY IMPACT TO THE SCHEDULE THEY INTEND TO FOLLOW. ANY CONFLICTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND UTILITY TO RESOLVE AT NO COST IN TIME OR MONEY TO THE CITY.

UTILITIES:
SOUTH DAKOTA ONE CALL
1–800–781–7474

(ELECTRIC)
BLACK HILLS ENERGY
409 DEADWOOD AVENUE
(605) 721–3200

(TELEPHONE)
CENTURYLINK
(800) 573–1311

(TELEPHONE–TELEVISION)
VAST BROADBAND
809 DEADWOOD AVENUE
(605) 721–2000

(GAS)
MONTANA–DAKOTA UTILITIES
718 STEELE AVENUE
(605) 342–0160

(TELEPHONE–TELEVISION)
MIDCONTINENT COMMUNICATIONS
1301 W. OMAHA STREET SUITE 106
(605) 888–1300

(SEWER, WATER)
CITY OF RAPID CITY
251 E MAIN ST NORTH
(605) 394–4163

(SIGNAL, STREET LIGHTS)
CITY OF RAPID CITY
TRAFFIC OPERATIONS
720 CENTRE STREET
(605) 394–4118

(ELECTRIC)
WEST RIVER ELECTRIC ASSOCIATION
3250 SD 44
(605) 393–1500

PRIVATE UTILITIES

THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO VERIFY THE SIZE AND LOCATION OF NEAR EXISTING FACILITIES TO AVOID POTENTIAL CONFLICTS AND TO COORDINATE RESOLUTION OF UNAVOIDABLE CONFLICTS IN CONJUNCTION WITH THE SDDOT PROJECT.

SUBMITTALS

SUBMITTALS ARE REQUIRED FOR ALL ITEMS LISTED BELOW AND AS REQUIRED IN THE DETAILED SPECIFICATIONS. A SUBMITTAL SCHEDULE IS PROVIDED IN SECTION 01330 OF THE DETAILED SPECIFICATIONS. THIS SUBMITTAL SCHEDULE WILL BE UTILIZED THROUGHOUT CONSTRUCTION BY THE CONTRACTOR, ENGINEER AND CITY FOR TRACKING OF SUBMITTALS.

THE CONTRACTOR SHALL SUBMIT THE FOLLOWING ITEMS TO THE ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO A PRECONSTRUCTION CONFERENCE:

- DETAILED CONSTRUCTION SCHEDULE;
- AIR QUALITY CONSTRUCTION PERMIT FROM THE CITY OF RAPID CITY;
- A COPY OF THE NOTICE OF INTENT (PREPARED BY SDDOT) AND A COPY OF THE CONTRACTORS AUTHORIZATION FORM;
- A COPY OF THE APPROVED RAPID CITY EROSION AND SEDIMENT CONTROL PERMIT;
- LIST OF LICENSED PIPE INSTALLERS WHO WILL BE ON THE PROJECT.

STOCKPILED MATERIALS

PAYMENT FOR STOCKPILED MATERIALS WILL ONLY BE CONSIDERED FOR PIPE AND PIPE FITTINGS. NO ADDITIONAL ACCOMMODATIONS WILL BE MADE.

REQUESTS FOR PAYMENT FOR STOCKPILED MATERIALS SHALL BE ACCOMPANIED BY INVOICES WITH THE RESPECTIVE BID ITEM NUMBER INDICATED FOR EACH INDIVIDUAL STOCKPILED ITEM. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PREPARING AND SUBMITTING DOCUMENTATION IN THE FORM AND FORMAT REQUIRED BY THE ENGINEER AND OWNER TO BE CONSIDERED FOR PAYMENT.

PERMITS

THE CITY OF RAPID CITY HAS ACQUIRED A SDDOT UTILITY PERMIT.

COPIES OF PERMITS OBTAINED BY THE CITY WILL BE PROVIDED TO THE SELECTED CONTRACTOR.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THIS PROJECT INCLUDING, BY NOT LIMITED TO, THE FOLLOWING:

1. SDANR CONTRACTOR AUTHORIZATION FORM
2. CITY OF RAPID CITY PERMIT RIGHT–OF–WAY WORK PERMIT;
3. CITY OF RAPID CITY AIR QUALITY PERMIT;
4. CITY OF RAPID CITY EROSION AND SEDIMENT CONTROL PERMIT;
5. SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION RIGHT–OF–WAY WORK PERMIT.

ANY FEES ASSOCIATED WITH PERMITS SHALL BE INCIDENTAL TO THE PROJECT.

CONSTRUCTION LIMITS

IN GENERAL, THE CONSTRUCTION LIMITS FOR THE PROJECT SHALL BE DEFINED AS PROPERTY LINES, RIGHT–OF–WAY LINES, EXISTING UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT LINES OTHERWISE INDICATED UNLESS ON THE DRAWINGS OR FURTHER DEFINED HEREIN.

CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED TO THE CONSTRUCTION LIMITS UNLESS PRIOR APPROVAL IS RECEIVED FROM THE ENGINEER.

PROTECTION OF EXISTING FEATURES

EXISTING FEATURES, INCLUDING TREES, LANDSCAPING, PAVEMENTS, STRUCTURES, ETC, NOT CALLED OUT FOR REMOVALS; OR REMOVE AND RESET; SHALL BE PROTECTED BY THE CONTRACTOR. METHODS OF PROTECTION SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

STAGING AREAS

A RECOMMENDED STAGING AREA HAS NOT BEEN IDENTIFIED IN THESE PLANS. IF THE CONTRACTOR WISHES TO STAGE OUTSIDE THE WORK LIMITS, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING WRITTEN PERMISSION FROM THE OWNER OF THE PROPOSED LOCATION AND THE ENGINEER. COPIES OF ANY WRITTEN PERMISSION SHALL BE DELIVERED TO THE ENGINEER.

THE CONTRACTOR IS RESPONSIBLE FOR REPAIRS NECESSARY TO ANY DISTURBANCE OR DAMAGE TO AREAS OUTSIDE OF THE DESIGNATED STAGING AREAS.

TEMPORARY CONSTRUCTION EASEMENTS

TEMPORARY CONSTRUCTION EASEMENTS HAVE BEEN OBTAINED ALONG THE PROJECT LIMITS BY THE SDDOT. DISTURBANCE OF PRIVATE PROPERTY WITHIN THESE EASEMENTS OTHER THAN THAT SPECIFICALLY DIRECTED WITHIN THESE PLANS OR AUTHORIZED BY SUBSEQUENT FIELD CHANGE ORDERS APPROVED BY THE ENGINEER IS PROHIBITED. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRS TO ANY DISTURBANCE OR DAMAGE WITHIN THE EASEMENTS NOT AUTHORIZED BY THE ENGINEER.

10–13–21 P:\19–115\AutoCAD\PlanSheets\2488NOTE.dwg

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INCIDENTAL WORK

THIS WORK INCLUDES ALL MISCELLANEOUS ITEMS NOT INCLUDED UNDER THE REGULAR ITEMS COVERED BY UNIT PRICES AS LISTED IN THE PROPOSAL, BUT WHICH MUST BE PERFORMED IN ORDER TO COMPLETE THE CONTRACT. SPECIFIC INCIDENTAL ITEMS ARE SHOWN ON THE DRAWINGS AND WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "INCIDENTAL WORK." INCIDENTAL WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

1. ADJUST PRIVATE UTILITIES;
2. PROTECTION OF EXISTING FEATURES/UTILITIES;
3. ALL REQUIRED PERMITS AND FEES TO COMPLETE THE PROJECT;
4. EXISTING UTILITY LOCATION AND VERIFICATION;
5. EXPLORATORY EXCAVATION;
6. PROJECT COORDINATION, INCLUDING LANDOWNER/RESIDENT NOTIFICATION, PUBLIC SERVICE ANNOUNCEMENTS, ETC;
7. WASTE DISPOSAL SITE;
8. DUST CONTROL;
9. TEMPORARY WATER SERVICE;
10. TEMPORARY SANITARY SEWER HANDLING; AND
11. WATER FOR COMPACTION.

RECORD DOCUMENTS (UTILITIES)

SPECIFICATIONS OUTLINING THE CONTRACTOR'S RESPONSIBILITIES ARE PROVIDED IN SECTION 01780 OF THE DETAILED SPECIFICATIONS.

MATERIAL STOCKPILE IDENTIFICATION

THE CONTRACTOR SHALL CLEARLY IDENTIFY MATERIAL STOCKPILES SO THAT MATERIAL TYPES AND USES ARE CLEARLY IDENTIFIED, FOR EXAMPLE – BEDDING, BASE COURSE, TOPSOIL, OVERBURDEN, FOUNDATION, ETC.

EXPLORATORY EXCAVATION

THE CONTRACTOR SHALL PROVIDE EXPLORATORY EXCAVATION AS NECESSARY FOR THE COMPLETION OF THE WORK UNDER THIS CONTRACT. EXPLORATORY EXCAVATION IS INCIDENTAL TO THE CONTRACT LUMP SUM PRICE FOR INCIDENTAL WORK.

TRENCH BACKFILL

ALL TRENCH BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 11 OF THE CITY OF RAPID CITY STANDARD SPECIFICATIONS.

CONTRACTOR PROVIDED WATER

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING WATER FOR COMPACTION OF EARTHEN AND GRANULAR MATERIALS USED FOR, BUT NOT LIMITED TO, GRADING, SUBGRADE PREPARATION, AND TRENCH BACKFILL. WATER NEEDED FOR SOD AND SEED IRRIGATION, STREET CLEANING, AND OTHER MISCELLANEOUS ITEMS SHALL ALSO BE PROVIDED BY THE CONTRACTOR. CONTRACTOR PROVIDED WATER IS INCIDENTAL TO THE CONTRACT LUMP SUM PRICE FOR INCIDENTAL WORK.

THE CONTRACTOR WILL BE REQUIRED TO PAY FOR METER FEES AND INSTALLATION ONTO A FIRE HYDRANT IF THE WATER IS PURCHASED FROM THE CITY OF RAPID CITY.

TESTING

ALL TESTING ON THE PROJECT SHALL BE IN ACCORDANCE WITH THE RAPID CITY STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION CURRENT EDITION WITH THE FOLLOWING EXCEPTION. THE MODIFIED PROCTOR SOIL COMPACTION TESTS (AASHTO T180) REQUIRED FOR SOILS WITHIN THE WORK LIMITS WILL BE COMPLETED BY THE ENGINEER OR HIS DESIGNATED REPRESENTATIVE AND ARE NOT THE RESPONSIBILITY OF THE CONTRACTOR. UTILITY CONTRACTOR IS RESPONSIBLE FOR UTILITY TRENCH BACKFILL COMPACTION UP TO THE SDDOT UNDERCUT LIMIT, WHICH IS 26" BELOW FINISHED STREET GRADE. BASE COURSE AND PAVEMENT TESTING SHALL BE IN ACCORDANCE WITH THE SDDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, CURRENT EDITION.

THRUST BLOCKS

THRUST BLOCKS ARE REQUIRED AT BOTH CAP LOCATIONS IDENTIFIED IN THESE PLANS AND IN ACCORDANCE THE STANDARD SPECIFICATIONS.

PAYMENT FOR THRUST BLOCKS SHALL BE INCIDENTAL TO THE FITTINGS AND WATER MAIN BID ITEMS AND NO SEPARATE PAYMENT WILL BE MADE.

CONTROLLED LOW STRENGTH MATERIAL

UNDER SOME CIRCUMSTANCES, CONTROLLED LOW STRENGTH MATERIAL MAY BE REQUIRED FOR SUPPORT AND OTHER STRUCTURAL REASONS. UNDER THESE SITUATIONS, THE CONTROLLED LOW STRENGTH MATERIAL SHALL BE INCIDENTAL TO THE INSTALLATION OF SANITARY SEWER MAIN BEING CONSTRUCTED. THE USE OF CONTROLLED LOW STRENGTH BACKFILL SHALL BE AUTHORIZED BY THE ENGINEER PRIOR TO PLACEMENT.

PIPE INSULATION

A QUANTITY OF 600 SQFT OF PIPE INSULATION HAS BEEN INCLUDED IN THE CONTRACT IN THE EVENT THE EXISTING WATER MAIN IS NOT AS DEEP AS EXPECTED. PIPE INSULATION SHALL BE INSTALLED PER CITY OF RAPID CITY DETAIL 11–1. PAYMENT SHALL INCLUDE ALL MATERIALS, LABOR, EQUIPMENT AND ANY OTHER INCIDENTALS NECESSARY TO INSTALL THE INSULATION. PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE PER SQFT FOR "PIPE INSULATION."

CORROSION PROTECTION

CORROSION PROTECTION FOR THIS PROJECT SHALL BE IN CONFORMANCE WITH SECTION 8B OF THE DETAILED SPECIFICATIONS AS REVISED IN OCTOBER 2016. CATHODIC PROTECTION, INCLUDING ANODES, TEST WIRES, LEAD WIRES, JOINT BONDS, THERMITE WELDS, EPOXY REPAIR COATINGS, LABOR AND EQUIPMENT NECESSARY TO INSTALL THE CATHODIC PROTECTION AS CALLED OUT IN THE PLANS IS INCIDENTAL TO EACH METALLIC FITTING, VALVE, HYDRANT OR WATER SERVICE CALLED OUT IN THE PLANS.

GALVANIC ANODES SHALL BE ZINC.

BOLT AND FITTING COATINGS AND TRACER WIRE SPECIFICATIONS ARE FOUND IN SECTION 8B OF THE DETAILED SPECIFICATIONS.

SANITARY SEWER CORROSION PROTECTION

ALL PRECAST CONCRETE MANHOLES SHALL BE CONSTRUCTED WITH A CORROSION RESISTANT INTERIOR GROUT OR EPOXY LINER.

THE LINER SHALL BE "SEWERGARD" NO. 210" AS MANUFACTURED BY SAUEREISEN, "CERAMASAFE 90" AS MANUFACTURED BY INDURON PROTECTIVE COATINGS OR AN APPROVED EQUAL, SPECIFICALLY FORMULATED FOR COATING THE INTERIOR OF CONCRETE STRUCTURES FOR CORROSION PROTECTION. THE COATING COLOR SHALL BE GRAY.

THE LINER SHALL COVER ALL INTERIOR SURFACES OF THE STRUCTURE INCLUDING CAST–IN–PLACE INVERTS AND EXPOSED JOINTS TO A MINIMUM DRY THICKNESS OF 1/8" FOR GROUT LINER AND 20 MILS FOR EPOXY LINER. THE CONTRACTOR SHALL APPLY THE LINER TO THE INTERIOR, IN THE FIELD, AFTER INSTALLATION. THE CONCRETE SURFACES SHALL BE THOROUGHLY CLEANED AND PREPARED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS PRIOR TO APPLICATION. THE CONTRACTOR SHALL FIELD TOUCH–UP AND REPAIR ANY LINING DAMAGED IN ANY WAY PRIOR TO ACCEPTANCE. THE CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR APPLICATION INCLUDING: APPLICATION TEMPERATURE RANGE, CURE TIME, MIX RATIO, POT LIFE AND WORKING TIME.

PAYMENT FOR THE LINER SHALL BE INCIDENTAL TO EACH PRECAST CONCRETE MANHOLE.

SANITARY SEWER MAIN

ALL SANITARY SEWER MAIN SHALL CONFORM TO ASTM D3034 PER SECTION 9 OF THE STANDARD SPECIFICATIONS.

INSTALLATION OF THE SANITARY SEWER MAINS SHALL BE IN ACCORDANCE WITH SECTION 9 OF THE STANDARD SPECIFICATIONS. PAYMENT SHALL BE MADE AT THE UNIT BID PRICE FOR THE SIZE AND DEPTH OF SANITARY SEWER MAIN PROVIDED IN THESE PLANS AND IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

CONNECT TO EXISTING SANITARY SEWER

IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATION OF THE EXISTING SANITARY SEWER MAIN AT THE PROPOSED CONNECTION TO EXISTING LOCATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INFORM THE ENGINEER OF LOCATION AND ELEVATION PRIOR TO CONSTRUCTION OF THE SANITARY SEWER MAIN AND MANHOLES REQUIRED TO CONNECT TO THE EXISTING SANITARY SEWER MAIN. ALL WORK NECESSARY TO DETERMINE THE LOCATION OF THE EXISTING SANITARY SEWER MAIN SHALL BE INCIDENTAL TO THE CONTRACT BID ITEM "CONNECT TO EXISTING SEWER MAIN".

ALL LABOR AND MATERIALS NECESSARY FOR CONNECTING TO EXISTING SEWER MAIN SHALL BE INCLUDED IN THE BID ITEM "CONNECT TO EXISTING SEWER MAIN" AND PAID FOR AT THE CONTRACT UNIT PRICE PER EACH.

TEMPORARY SANITARY SEWAGE HANDLING

DURING THE REMOVAL AND INSTALLATION OF SEVERAL OF THE SANITARY SEWER MAINS AND MANHOLES WITHIN THIS PROJECT, IT WILL BE NECESSARY TO EITHER PROVIDE BYPASS PUMPING OR TEMPORARILY REROUTE UPSTREAM SEWAGE FLOWS TO DOWNSTREAM EXISTING SANITARY SEWER FACILITIES. UNDER NO CIRCUMSTANCE WILL SUCTION OR DISCHARGE PIPING BE ALLOWED TO CROSS THE SURFACE OF ANY STREET, DRIVEWAY OR STATE HIGHWAY THAT IS OPEN TO TRAFFIC.

THE CONTRACTOR SHALL DEVELOP A FLOW HANDLING PLAN IN ACCORDANCE WITH SECTION 9 OF THE RAPID CITY STANDARD SPECIFICATIONS. THE FLOW HANDLING PLAN SHALL BE SUBMITTED TO THE ENGINEER A MINIMUM OF 14 DAYS PRIOR TO COMMENCEMENT OF SANITARY SEWER CONSTRUCTION ACTIVITIES. THE PLAN SHALL OUTLINE SPECIFICS REGARDING EACH LOCATION WHERE BYPASS PUMPING OR REROUTING IS REQUIRED.

THE COST OF PREPARATION AND IMPLEMENTATION OF THE FLOW HANDLING PLAN SHALL BE INCIDENTAL TO THE CONSTRUCTION OF THE SANITARY SEWER SYSTEM. NO SEPARATE PAYMENT WILL BE MADE.

ESTIMATED FLOW RATES ARE PROVIDED BELOW:

PIPE 13183 (8" WEST OF LA CROSSE) = 50 TO 150 GPM
PIPE 12738 (8" EAST OF LA CROSSE) = 100 TO 500 GPM
PIPE P13177 (NORTH OF OMAHA) = 1000 TO 2000 GPM

A DETAILED OPTION FOR TEMPORARY SANITARY SEWER HANDLING HAS BEEN PROVIDED ON SHEET 2.2.

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BEDDING, FOUNDATION MATERIAL AND IMPORTED BACKFILL (TRENCH)

GROUNDWATER WILL BE ENCOUNTERED ALONG SIGNIFICANT PORTIONS OF THE PROJECT. THESE CONDITIONS DO NOT DEEM THE EXCAVATED MATERIAL UNSUITABLE AND IS NOT JUSTIFICATION FOR THE USE OF IMPORTED MATERIAL.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR EITHER DRYING THE WET BUT OTHERWISE SUITABLE MATERIAL OR HAULING IN DRIER MATERIAL AT NO ADDITIONAL COST TO THE CITY.

THE USE OF IMPORTED BACKFILL WILL ONLY BE AUTHORIZED BY THE ENGINEER, IF IN THE ENGINEER'S OPINION, THERE IS INSUFFICIENT QUANTITY OF SUITABLE BACKFILL MATERIAL, INCLUDING MATERIAL THAT CAN BE DRIED.

A QUANTITY OF BOTH TYPE 1 BEDDING MATERIAL AND TYPE 3 FOUNDATION MATERIAL HAS BEEN INCLUDED IN THE ESTIMATE OF QUANTITIES FOR USE WHERE UNSTABLE TRENCH BOTTOM IS ENCOUNTERED. BEYOND THE LIMITS OF TYPICAL PIPE BEDDING PER THE STANDARD SPECIFICATIONS.

THE USE OF TYPE 1 BEDDING MATERIAL, TYPE 3 FOUNDATION MATERIAL, OR IMPORTED BACKFILL SHALL BE AUTHORIZED BY THE ENGINEER PRIOR TO PLACEMENT. MEASUREMENT AND PAYMENT WILL BE MADE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. BEDDING MATERIAL IS INCIDENTAL TO THE CONSTRUCTION OF THE WATER MAINS AND SANITARY SEWER MAINS PER THE STANDARD SPECIFICATIONS.

TRENCH CHECK DAM

CONTRACTOR SHALL PLACE WITHIN THE TRENCH A COMPACTED COHESIVE CLAY CHECK DAM. CHECK DAM LOCATIONS SHALL BE AS INDICATED ON THE PLANS AND AT SERVICE LINES PER THE CITY OF RAPID CITY STANDARD SPECIFICATIONS. DURING CONSTRUCTION CHECK DAM LOCATIONS MAY BE MOVED DUE TO FIELD CONDITIONS UPON NOTIFICATION TO THE ENGINEER. THE ADJUSTED LOCATION SHALL BE RECORDED. THE CHECK DAM SHALL EXTEND FROM THE BOTTOM OF THE EXCAVATION THROUGH THE BEDDING MATERIAL TO THE BACKFILL AND SHALL EXTEND COMPLETELY TO EACH TRENCH SIDEWALL. THE CHECK DAM IS USED AS A MEANS TO PREVENT THE CONVEYANCE OF WATER THROUGH THE TRENCH BEDDING. COMPACTED COHESIVE CLAY SHALL CONSIST OF MATERIAL THAT CONTAINS A MINIMUM OF 25% MINUS NO. 200 SIEVE MATERIAL, WITH 70% PASSING A 3/4–INCH SIEVE AND A MINIMUM P.I. OF 10%, THE MATERIAL SHALL CONSIST OF CLAY, SILTY SAND, OR SILTY CLAY. IF THE NORMAL EXCAVATED MATERIAL IS NOT SUITABLE FOR CONSTRUCTION OF THE CHECK DAM THEN THE CONTRACTOR SHALL OBTAIN MATERIAL FROM OUTSIDE SOURCES. CHECK DAM INSTALLATION AND MATERIAL SHALL BE CONSIDERED AS INCIDENTAL TO THE SEWER PIPE INSTALLATION.

SANITARY SEWER MAIN INSPECTION

THE VIDEO INSPECTION CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS TO PROVIDE THE VIDEO INSPECTION, A NATIONAL ASSOCIATION OF SEWER SERVICE COMPANIES (NASSCO) – PIPELINE ASSESSMENT CERTIFICATION PROGRAM (PACP) COMPLIANT DATABASE, A NASSCO PACP STANDARD VIDEO RECORDED IN MPEG–1 FORMAT, AND A NASSCO PACP CERTIFIED OPERATOR. ALL INSPECTIONS SHALL BE IN ACCORDANCE WITH CURRENT NASSCO PACP REQUIREMENTS AND A NASSCO PACP DATABASE SHALL BE SUBMITTED TO THE ENGINEER. ALL DIGITAL VIDEO FILES SHALL BE COLOR, CLOSED CIRCUIT TV IN MPEG–1 FORMAT. THE PRIME CONTRACTOR SHALL PROVIDE ALL INSPECTION DATA OF MAINS, MANHOLES, JUNCTION BOXES AND INLETS WRITTEN TO A SINGLE STORAGE DEVICE TO THE ENGINEER WITHIN 48 HOURS OF WORK BEING COMPLETED.

VIDEO INSPECTION CONTRACTOR IS TO COORDINATE THE VIDEO PROCEDURES INCLUDING NAMING SCHEMES FOR PIPE SEGMENTS, MANHOLES, JUNCTION BOXES AND INLETS WITH THE ENGINEER AND UTILITY MAINTENANCE PERSONNEL PRIOR TO COMMENCEMENT OF ANY WORK, INCLUDING MOBILIZATION TO THE PROJECT. THE DATABASE MUST INCLUDE ALL THE TELEVISED SEGMENTS FOR THE ENTIRE PROJECT, OR FOR EACH WORKSITE. THE VIDEO INSPECTION CONTRACTOR SHALL PROVIDE A LINE DIAGRAM SKETCH AND WRITTEN LOG FOR EACH COMPLETED SEGMENT OF VIDEOED SEWER MAIN DESCRIBING THE SECTION BEING TELEVISED, FLOW AND CAMERA DIRECTION, RECORDED DISTANCES TO CENTER OF SERVICE CONNECTIONS, THE CLOCK POSITION OF SERVICE CONNECTIONS, DESCRIPTION AND LOCATION OF ANY FAILURES, OVERALL PIPE CONDITION, WEATHER CONDITIONS, AND OTHER SIGNIFICANT OBSERVATIONS.

AFTER COMPLETION OF WORK SPECIFIED IN THE CONTRACT DOCUMENTS, AND PRIOR TO PLACEMENT OF SURFACING, THE NEWLY CONSTRUCTED OR REHABILITATED SANITARY SEWER AND/OR STORM SEWER MAINS SHALL BE TELEVISED AND ALL INSPECTION DATA SUBMITTED TO THE ENGINEER.

THE CONTRACTOR PROVIDING THE VIDEO INSPECTION SERVICES SHALL BE INDEPENDENT FROM ANY OTHER CONTRACTOR PERFORMING WORK FOR THIS PROJECT. THE PRIME CONTRACTOR WILL BE REQUIRED TO SUBMIT THE NAME(S) AND NASSCO CERTIFICATE NUMBER FOR THE PERSONNEL PERFORMING THE VIDEO INSPECTION TO THE ENGINEER.

EQUIPMENT:

a. THE TELEVISION UNIT SHALL HAVE THE CAPABILITY OF DISPLAYING IN COLOR, ON THE VIDEO, PIPE INSPECTION OBSERVATIONS SUCH AS PIPE DEFECTS, SAGS, POINTS OF ROOT INTRUSION, OFFSET JOINTS, SERVICE CONNECTION LOCATIONS, AND ANY OTHER RELEVANT PHYSICAL ATTRIBUTES.
b. THE TELEVISION INSPECTION EQUIPMENT SHALL HAVE AN ACCURATE FOOTAGE COUNTER WHICH DISPLAYS ON THE MONITOR THE EXACT DISTANCE OF THE CAMERA FROM ENTRANCE OF PIPE.
c. A CAMERA WITH ROTATING AND PANNING LENS CAPABILITIES IS REQUIRED.
d. THE CAMERA HEIGHT SHALL BE CENTERED IN THE PIPE BEING TELEVISED.
e. THE SPEED OF THE CAMERA THROUGH THE PIPE SHALL NOT EXCEED 40 FEET PER MINUTE.
f. THE VIDEO INSPECTION CONTRACTOR SHALL BE REQUIRED TO HAVE ALL MATERIALS, EQUIPMENT, AND LABOR FORCE NECESSARY TO COMPLETE ALL VIDEOTAPING ON THE JOB SITE PRIOR TO ISOLATING THE SEWER MANHOLE SEGMENT AND BEGINNING VIDEOTAPING OPERATIONS.

EACH VIDEO SHALL BE PERMANENTLY LABELED WITH THE FOLLOWING:

a. PROJECT NAME / CITY JOB # / WORK ORDER #;
b. DATE OF TELEVISION INSPECTION;
c. SIZE OF SANITARY SEWER;
d. MANHOLE NUMBERS AND PIPE SEGMENT NUMBERS;
e. STREET/EASEMENT LOCATION;
f. NAME OF CONTRACTOR;
g. DATE VIDEO SUBMITTED;
h. VIDEO FILE NAME;
i. NAASCO INSPECTOR NAME AND CERTIFICATE NUMBER.

VIDEO INSPECTION SHALL BE OBSERVED BY THE ENGINEER AND UTILITY CONTRACTOR, AS THE CAMERA IS RUN THROUGH THE SYSTEM.

ANY ABNORMALITIES SUCH AS, BUT NOT LIMITED TO, MISALIGNED JOINTS, CRACKED/DEFECTED PIPE, ROLLED GASKETS, SHALL BE REPAIRED BY THE CONTRACTOR SOLELY AT HIS EXPENSE.

SECTIONS REQUIRING REPAIR SHALL BE RE-TELEVISED FROM MANHOLE TO MANHOLE TO VERIFY CONDITION OF REPAIR.

IF THE VIDEO INSPECTION CONTRACTOR PROVIDES A VIDEO OF SUCH POOR QUALITY THAT IT CANNOT BE PROPERLY EVALUATED, THE VIDEO INSPECTION CONTRACTOR SHALL RE-TELEVISE AS NECESSARY AND PROVIDE A VIDEO OF GOOD QUALITY AT NO ADDITIONAL COST TO THE CITY.

IF THE CONTRACTOR CANNOT PROVIDE A VIDEO OF SUCH GOOD QUALITY THAT CAN BE REVIEWED BY THE CITY, THE CITY MAY ELECT TO TELEVISE THE LINE AT THE CONTRACTOR'S EXPENSE.

NO ADDITIONAL PAYMENT SHALL BE MADE FOR ADDITIONAL SETUPS REQUIRED.

ALL LATERAL CONNECTIONS SHALL CLEARLY INDICATE DISTANCE TO THE CENTER OF THE SERVICE CONNECTION AND WHICH SIDE OF THE SANITARY SEWER MAIN IT WAS INSTALLED FROM.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY DAMAGE OF SEWER MAINS AS A DIRECT RESULT OF VIDEO INSPECTION OPERATIONS. ANY REPAIR SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR.

THE CONTRACTOR SHALL PAY THE COST OF ANY JETTING OR PRE CLEANING OF PIPE SEGMENTS AS NEEDED FOR VIDEO INSPECTION.

THE METHOD(S) USED FOR SECURING PASSAGE OF THE CAMERA ARE AT THE DISCRETION OF THE CONTRACTOR, AND AS APPROVED BY THE INSPECTOR.

NO SEPARATE AND/OR ADDITIONAL PAYMENT WILL BE MADE FOR ANY EXCAVATION, MAN ENTRY, OR ANY OTHER METHOD, WHICH MAY BE REQUIRED TO RETRIEVE VIDEO EQUIPMENT THAT MAY HAVE BEEN HUNG UP, DESTROYED, AND/OR LOST DURING THE OPERATION.

THE VIDEO INSPECTION CONTRACTOR SHALL NOT BE ALLOWED TO FLOAT THE CAMERA.

FLOW IN THE SECTION BEING TELEVISED SHALL BE BYPASSED IF THE LINE IS IN SERVICE AND THE FLOW EXCEEDS 25% OF THE INTERNAL PIPE DIAMETER.

WHEN THE DEPTH OF FLOW AT THE UPSTREAM MANHOLE OF THE PIPE SECTION BEING WORKED IS ABOVE THE MAXIMUM ALLOWABLE FOR TELEVISION INSPECTION, THE FLOW CAN BE REDUCED TO ALLOWABLE LEVELS BY PERFORMING BYPASS PUMPING, AS APPROVED BY THE INSPECTOR.

BYPASS PUMPING:

a. THE CONTRACTOR SHALL FURNISH ALL LABOR, SUPERVISION, TOOLS, EQUIPMENT, APPLIANCES, AND MATERIALS TO PERFORM ALL OPERATIONS IN CONNECTION WITH BYPASS PUMPING OF SEWAGE FLOW FOR THE PURPOSE OF PREVENTING INTERFERENCE WITH THE VIDEO INSPECTION OF THE SANITARY SEWER MANHOLES AND MAINLINES AS WELL AS PROVIDING RELIABLE SEWER SERVICE TO THE OCCUPANTS OF THE BUILDINGS BEING SERVED.
b. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE ADEQUATE PUMPING EQUIPMENT AND FORCE MAINS IN ORDER TO MAINTAIN RELIABLE SANITARY SEWER SERVICE IN ALL MAINS INVOLVED IN THE SCOPE OF THE WORK.
c. UNDER NO CIRCUMSTANCES SHALL THE FLOW BE INTERRUPTED OR STOPPED, SUCH THAT DAMAGE IS DONE TO EITHER PRIVATE OR PUBLIC PROPERTY, OR SEWAGE FLOWS/OVERFLOWS INTO A STORM SEWER OR NATURAL WATERWAY.
d. THE CONTRACTOR SHALL PROVIDE BYPASS PUMPING OF SEWAGE AROUND EACH SEGMENT(S) OF MAIN THAT IS TO BE TELEVISED AND SHALL BE RESPONSIBLE FOR ALL REQUIRED BULKHEADS, PUMPS, EQUIPMENT, PIPING, AND OTHER RELATED APPURTENANCES TO ACCOMPLISH THE SEQUENCE OF PUMPING.
e. THE CONTRACTOR SHALL BE REQUIRED TO HAVE ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE THE REPAIR OR REPLACEMENT ON THE JOBSITE PRIOR TO ISOLATING THE SEWER MANHOLE OR LINE SEGMENT AND BEGINNING BYPASS PUMPING OPERATIONS.
f. THE CONTRACTOR SHALL LOCATE BYPASS PUMPING SUCTION AND DISCHARGE LINES SO AS TO NOT CAUSE UNDUE INTERFERENCE WITH THE USE OF STREETS, PRIVATE DRIVEWAYS, AND ALLEYS TO INCLUDE THE POSSIBLE TEMPORARY TRENCHING OF FORCE MAINS AT CRITICAL INTERSECTIONS.
g. THE CONTRACTOR SHALL NOT INITIATE ANY EFFORT TO ACCOMMODATE BYPASS PUMPING PIPING OPERATIONS UNTIL SPECIFIC WRITTEN APPROVAL IS GIVEN.
h. THE CONTRACTOR SHALL COORDINATE WITH ALL PROPERTY OWNERS TO ENSURE THAT NO DAMAGE WILL BE CAUSED TO THEIR PROPERTY DURING ANY AND ALL SEWER REHABILITATION WORK.
i. THE CONTRACTOR SHALL COMPLETE THE VIDEO INSPECTION AS QUICKLY AS POSSIBLE AND SHALL SATISFACTORILY MEET ALL REQUIREMENTS PRIOR TO DISCONTINUING BYPASS PUMPING OPERATIONS AND RETURNING FLOW TO THE SEWER MANHOLE OR MAIN SEGMENT.
j. THE CONTRACTOR SHALL ENSURE THAT NO DAMAGE WILL BE CAUSED TO PRIVATE PROPERTY AS A RESULT OF BYPASS PUMPING OPERATIONS. INGRESS AND EGRESS TO ADJACENT PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
k. RAMPS, STEEL PLATES, OR OTHER METHODS SHALL BE EMPLOYED BY THE CONTRACTOR TO FACILITATE TRAFFIC OVER SURFACE PIPING.

NO ADDITIONAL COMPENSATION WILL BE MADE FOR RE-TELEVISING OR RE-CLEANING OF THE MAINS. BYPASS PUMPING REQUIRED BY THE CONTRACTOR TO COMPLETE THE VIDEO INSPECTION EFFORTS WILL BE INCIDENTAL TO THE UNIT BID PRICE BID PER LF OF VIDEO INSPECTION. PAYMENT WILL BE MADE FOR THE WORK DONE ON THE BASIS OF THE UNIT BID PRICE PER LF FOR "SANITARY SEWER VIDEO INSPECTION".

TABLE OF 8-INCH NONREINFORCED CONCRETE PAVEMENT

NOTE: AGGREGATE BASE QUANTITIES BASED ON 6" DEPTH

ALIGNMENT	STATION	TO	STATION	SIDE	AREA (SY)	AGGREGATE BASE COURSE (TONS)
LACROSSE ST	1+61.6		2+94.8	LT	162	55
TOTAL					**162**	**55**

TABLE OF PCC APPROACH PAVEMENT, 6" REINFORCED

NOTE: AGGREGATE BASE COURSE QUANTITIES BASED ON 6" DEPTH

ALIGNMENT	STATION	TO	STATION	SIDE	AREA (SY)	AGGREGATE BASE (TON)
LACROSSE ST	1+63.9		1+91.2	LT	22	7
TOTAL					**22**	**7**

TABLE OF CONCRETE SIDEWALK, 4" NONREINFORCED

ALIGNMENT	STATION	TO	STATION	SIDE	AREA (SF)
LACROSSE ST	1+54.2		1+68.0	LT	50
TOTAL					**50**

TABLE OF CONCRETE CURB & GUTTER, TYPE P8

NOTE: AGGREGATE BASE COURSE QUANTITIES BASED ON 3.67' WIDTH AND 6" DEPTH

ALIGNMENT	STATION	TO	STATION	SIDE	LENGTH (LF)	AGGREGATE BASE COURSE (TON)
LACROSSE ST	1+68.0		1+87.2	LT	20	3
TOTAL					**20**	**3**

TABLE OF AGGREGATE BASE COURSE

LOCATION	AGGREGATE BASE COURSE (TON)
P8 CURB & GUTTER	3
B68 CURB & GUTTER	5
8" NON-REINFORCED CONCRETE PAVEMENT	55
6" REINFORCED APPROACH & DRIVEWAY	7
TOTAL	**70**

TABLE OF CONCRETE CURB & GUTTER, TYPE B68

NOTE: AGGREGATE BASE COURSE QUANTITIES BASED ON 3.67' WIDTH AND 6" DEPTH

ALIGNMENT	STATION	TO	STATION	SIDE	LENGTH (LF)	AGGREGATE BASE COURSE (TON)
LACROSSE ST	1+55.2		1+68.0	LT	13	2
LACROSSE ST	1+87.2		2+10.1	LT	22	3
TOTAL					**35**	**5**

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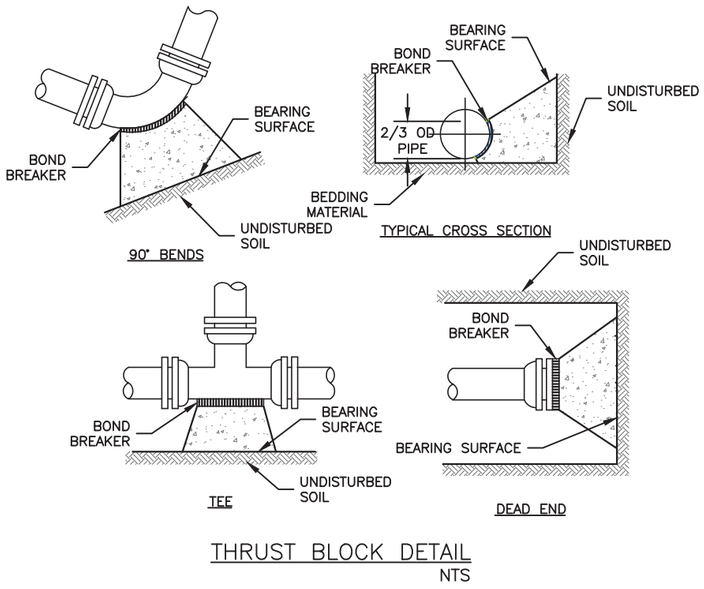
TABLE OF CATHODIC PROTECTION TEST STATION AND TRACER WIRE ACCESS BOX LOCATIONS

ALIGNMENT	STATION	OFFSET	TYPE	DETAIL NUMBER	REMARKS
OMAHA STREET	33+99.7	48.7' LT	TS/TW	13942FH	1 LEAD
OMAHA STREET	35+46.8	69.0' LT	TW	13947F	2 LEADS
OMAHA STREET	35+69.7	40.3' RT	TS/TW	13942FH	2 LEADS
OMAHA STREET	44+26.9	50.9' RT	TW	13947F	1 LEAD
OMAHA STREET	48+73.5	50.9' RT	TW	13947F	1 LEAD
OMAHA STREET	56+84.3	52.7' RT	TS/TW	13942FH	1 LEAD
OMAHA STREET	62+56.8	52.6' LT	TW	13947F	1 LEAD
OMAHA STREET	67+03.9	64.9' LT	TS/TW	13942FH	1 LEAD
TOTAL METALLIC FITTINGS: 36					

TABLE OF THRUST BLOCKS

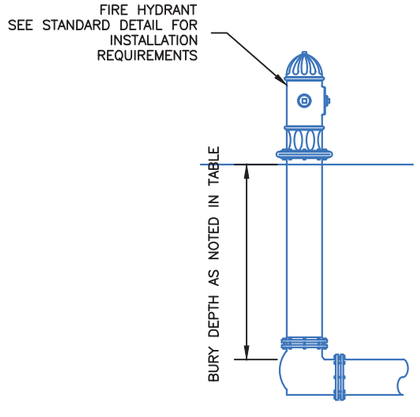
ALIGNMENT	STATION	OFFSET	FITTING TYPE	MINIMUM BEARING AREA (SF)	MINIMUM CONCRETE VOL (CY)
OMAHA STREET	33+99.7	48.7' LT	6" HYDRANT	3.8	0.15
OMAHA STREET	34+18.31	27.65' LT	6" MJ PLUG	2.7	0.11
OMAHA STREET	34+71.01	65.50' RT	6" MJ PLUG	2.7	0.11
OMAHA STREET	34+71.73	20.80' LT	6" MJ PLUG	2.7	0.11
OMAHA STREET	35+10.63	63.62' LT	6" MJ PLUG	2.7	0.11
OMAHA STREET	35+46.5	61.7' LT	8" X 6" TEE	2.7	0.11
OMAHA STREET	35+46.8	69.0' LT	6" HYDRANT	3.8	0.15
OMAHA STREET	35+69.7	40.3' RT	6" HYDRANT	3.8	0.15
OMAHA STREET	35+70.1	48.3' RT	8" X 6" TEE	2.7	0.11
OMAHA STREET	44+26.9	50.9' RT	6" HYDRANT	3.8	0.15
OMAHA STREET	48+73.5	50.9' RT	6" HYDRANT	3.8	0.15
OMAHA STREET	56+84.3	52.7' RT	6" HYDRANT	3.8	0.15
OMAHA STREET	62+56.8	52.6' LT	6" HYDRANT	3.8	0.15
OMAHA STREET	67+03.9	64.9' LT	6" HYDRANT	3.8	0.15
TOTAL				**46.6**	**1.86**



THRUST BLOCK DETAIL
NTS

TABLE OF FIRE HYDRANTS

ALIGNMENT	STATION	OFFSET	BURYLINE	6" LEAD (TOP ELEV)	BURY DEPTH
OMAHA STREET	33+99.7	48.7' LT	3190.5	3184.5	6.0
OMAHA STREET	35+46.8	69.0' LT	3190.0	3184.0	6.0
OMAHA STREET	35+69.7	40.3' RT	3190.3	3184.3	6.0
OMAHA STREET	44+26.9	50.9' RT	3202.3	3196.3	6.0
OMAHA STREET	48+73.5	50.9' RT	3219.7	3213.7	6.0
OMAHA STREET	56+84.3	52.7' RT	3222.0	3216.0	6.0
OMAHA STREET	62+56.8	52.6' LT	3213.7	3207.7	6.0
OMAHA STREET	67+03.9	64.9' LT	3214.7	3208.7	6.0
TOTAL FIRE HYDRANTS				**8**	**EA**



FIRE HYDRANT BURY DEPTH DETAIL
NTS

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TABLE OF EXISTING MANHOLE ADJUSTEMENTS

STATION	OFFSET	MANHOLE ID	EXISTING RIM ELEVATION	PROPOSED RIM ELEVATION	ELEVATION DIFFERENCE (INCH)	EXISTING ADJUSMENT RING HEIGHT	DESCRIPTION OF WORK	PAY ITEM
40+84.73	40.73' L	NA	3191.12	3190.94	-2.17	8"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
42+88.03	39.89' L	I7-005	3197.22	3196.95	-3.21	5"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
47+89.00	44.41' L	I7-004	3218.62	3218.25	-4.49	10"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
51+25.31	43.82' L	I7-003	3226.97	3226.97	0.00	18"	REMOVE AND REPLACE MANHOLE FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
56+23.86	42.19' L	I7-002	3223.14	3223.14	0.00	1"	REMOVE AND REPLACE MANHOLE FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
56+32.37	49.53' R	NA	3222.81	3222.81	0.00	5"	REMOVE AND REPLACE MANHOLE FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
66+30.08	56.53' L	J7-032	3214.95	3213.81	-13.70	5"	REMOVE 4' BARREL SECTION, REPLACE WITH 3.25' BARREL SECTION,REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100 671E7010
80+91.03	35.81' L	J7-060	3199.60	3199.39	-2.55	5"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
106+13.01	36.68' L	J7-006	3173.56	3173.50	-0.67	6"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
110+03.18	36.60' L	J7-007	3169.88	3170.37	5.87	14"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
111+70.24	29.99' L	RAPID VALLEY	3169.88	3169.74	-1.72	21"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
143+26.87	31.11' L	RAPID VALLEY	3137.64	3137.64	0.00	6"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
198+55.96	59.50' L	RAPID VALLEY	3109.92	3108.07	-22.20	28"	REMOVE ADJUSTING RINGS & FRAME & GRATE, INSTALL NEW ADJUSTING RINGS AND NEW FRAME & GRATE WITH CHIMNEY SEAL	110E0480 671E6100
202+19.93	59.15' L	RAPID VALLEY	3113.78	3111.78	-24.00	0"	REMOVE 4' BARREL SECTION, INSTALL 3' BARREL SECTION, REMOVE AND REPLACE MANHOLE FRAME & GRATE WITH CHIMNEY SEAL, GRADE AROUND MANHOLE	110E0480 671E6100 671E7010

ALL COSTS FOR REMOVING THE MANHOLE FRAME & LIDS, AND ANY ADJUSTING RINGS SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH FOR "REMOVE MANHOLE FRAME AND LID. ALL COSTS ASSOCIATED WITH THE NEW FRAME AND LIDS, ANY NECESSARY ADJUSTING RINGS, AND CHIMNEY SEAL SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH FOR "MANHOLE FRAME & LID, INSTALL. MANHOLE FRAME AND LID AND CHIMNEY SEAL SHALL BE PER CITY OF RAPID CITY STANDARD SPECIFICATIONS. ALL COSTS FOR REMOVING BARREL SECTION AND REPLACING WITH SHORTER SECTIONS SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH FOR "ADJUST MANHOLE".

STATION INFORMATION PROVIDED IN THESE TABLES ARE BASED ON THE OMAHA STREET OR SDDOT MAINLINE ALIGNMENT. REFER TO SDDOT PLANS FOR ALIGNMENT DATA INFORMATION.

ADJUST WATER VALVE BOX	
STATION	OFFSET
34+14.29	26.95' L
34+21.46	26.91' L
34+73.13	24.39' L
34+76.51	25.78' L
37+47.29	58.42' L
50+70.31	32.39' L
51+59.33	52.79' L
51+80.13	47.05' L
58+89.93	51.67' R
61+07.33	234.20' L
61+09.24	236.46' L
61+43.17	77.71' L
62+48.73	42.02' L
62+65.36	42.19' L
66+92.11	47.27' L
67+01.52	47.18' L
86+08.17	64.16' L
189+46.78	37.43' L
195+56.21	38.97' L
196+17.79	30.42' L
200+08.85	37.94' L
204+89.46	38.18' L
209+90.65	39.75' L
209+95.71	51.78' L
210+06.94	50.61' L
217+62.71	46.70' L
218+06.93	50.91' L

WATER VALVE ADJUSMENTS MAY BE REQUIRED AT THE LOCATIONS PROVIDED ABOVE. PAYMENT FOR ADJUST WATER VALVE BOX SHALL INCLUDE ANY EXCAVATION, GRADING, TURNING OF VALVE BOXES, REPLACEMENT OF VALVE BOXES, OR NEW VALVE BOXES AS NECESSARY.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/13/21

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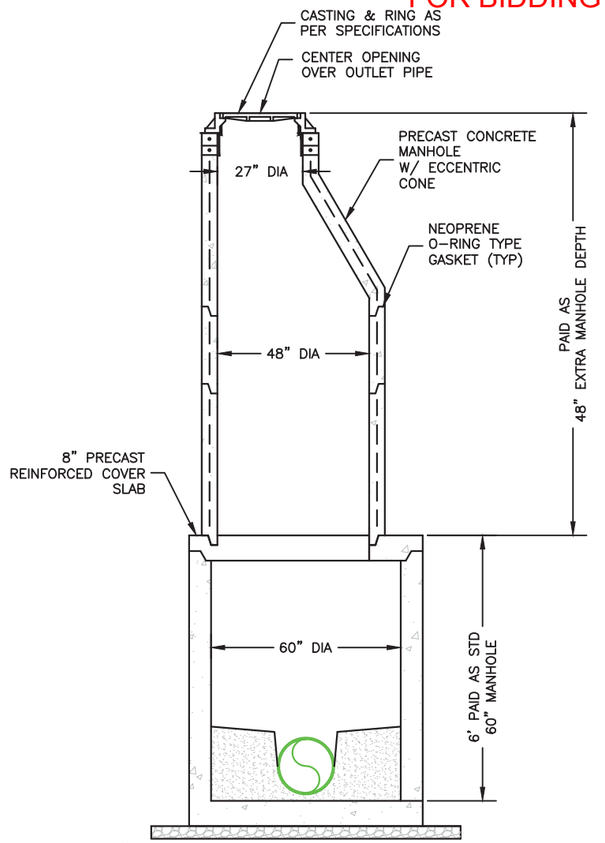
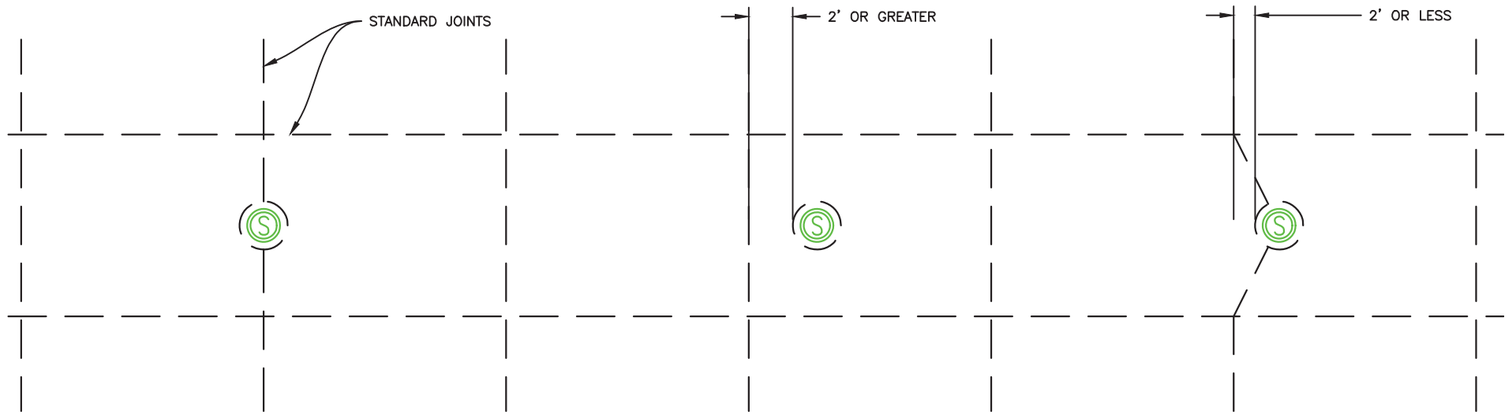
TABLE OF SANITARY SEWER MANHOLES

MANHOLE NO.	MANHOLE SIZE/TYPE	ALIGNMENT	STATION	RIM ELEV	INVERT OUT	DEPTH	EXTRA VF
10	60''	LACROSSE STREET	1+64.91	3197.07	3178.30	18.8	12.8
20	60''	LACROSSE STREET	1+77.86	3189.00	3178.46	10.5	4.5
30	60''	LACROSSE STREET	3+65.99	3190.06	3179.31	10.8	4.8
31	48''	OMAHA STREET	33+26.90	3190.77	3180.51	10.3	4.3
40	60''	LACROSSE STREET	4+31.97	3190.09	3179.68	10.4	4.4
41	48''	OMAHA STREET	35+48.46	3189.95	3180.72	9.2	3.2
50	60''	LACROSSE STREET	4+69.67	3190.22	3179.98	10.2	4.2
TOTAL 48" MANHOLES =		2.0	EA				
TOTAL 60" MANHOLES =		5.0	EA				
TOTAL 48" EXTRA VF=		38.2	VF				



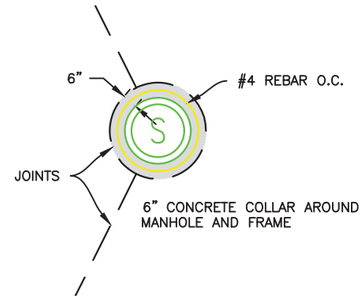
60" DIAMETER SANITARY SEWER MANHOLE
NTS



THE INTENT OF THE CONCRETE PAVEMENT JOINT LAYOUT IS TO HAVE A JOINT INTERSECT THE CENTER OF EACH MANHOLE RIM AS SHOWN IN THE LEFTMOST OPTION ABOVE. THE "2' OR GREATER" AND "2' OR LESS" OPTIONS WILL ONLY BE ALLOWED BY THE ENGINEER IN CASES WHERE INTERSECTION WITH THE CENTER OF THE RIM IS NOT POSSIBLE.

SANITARY SEWER MANHOLE JOINT DETAIL
NTS

TRANSVERSE JOINTS IN THE PCC PAVEMENT THAT WILL BE LESS THAN 2 FEET FROM THE EDGE OF A SANITARY SEWER MANHOLE RIM SHALL BE MODIFIED TO INTERSECT THE JOINT AROUND THE MANHOLE PERPENDICULARLY.



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10/13/21

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Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	1.9	36

PLOTTING DATE: 09-14-21 PROJECT NO 19-2488 / CIP 51212

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
10/15/21

LACROSSE STREET

LACROSSE STREET ALIGNMENT

EOP STA 6+50.00

6+00

BOP STA 32+00.00

PI STA 4+28.10

4+00

34+00 36+00 38+00 40+00 42+00 44+00 46+00 48+00 50+00

OMAHA STREET

PI STA 3+27.17

PI STA 34+74.73

2+00

BOP STA 0+00.00

LACROSSE STREET

PI#	STATION		NORTHING	EASTING
L1	0+00.00	N 2°06'06" E	649777.81	1214910.20
	3+27.17	327.17'	650104.76	1214922.20
L2	3+27.17	N 0°29'04" W	650104.76	1214922.20
	4+28.10	100.93'	650205.68	1214921.34
L3	4+28.10	N 1°58'57" E	650205.68	1214921.34
	6+50.00	221.90'	650427.45	1214929.02

COORDINATE SYSTEM: NAD83/2011 SOUTH DAKOTA STATE PLANE, SOUTH DAKOTA SOUTH
SCALE FACTOR: 0.9997877
VERTICAL DATUM: NAVD88

THE ALIGNMENT SHOWN ON THIS SHEET FOR OMAHA STREET IS COINCIDENT WITH THE SDDOT MAINLINE ALIGNMENT. THE ALIGNMENT DATA HAS SPECIFICALLY BEEN EXCLUDED ON THIS SHEET TO AVOID MISINTERPRETATION. FOR ALIGNMENT DATA INFORMATION FOR OMAHA STREET/MAINLINE ALIGNMENTS REFER THE THE SDDOT PLANS.

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TEMPORARY TRAFFIC CONTROL & PHASING

FOR BIDDING PURPOSES ONLY

Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	2.1	36

PLOTTING DATE: 10-13-21 PROJECT NO 19-2488 / CIP 51212

PENN 04UA CAMBELL STREET FROM ROCKER DRIVE TO OMAHA STREET. THE CONTRACTOR MAY WORK IN THIS AREA CONCURRENTLY WITH THE OMAHA/CAMBELL STREET INTERSECTION, BUT MAY NOT WORK IN THIS AREA WHEN THE SOUTHBOUND LANE OF CAMBELL STREET IS CLOSED FOR THE OMAHA/CAMBELL STREET INTERSECTION WORK. THE CONTRACTOR MAY ALSO WORK IN THIS AREA CONCURRENTLY WITH ANY OTHER WORK ON PENN 04PD.

MOVABLE F SHAPE CONCRETE BARRIER, END SECTION

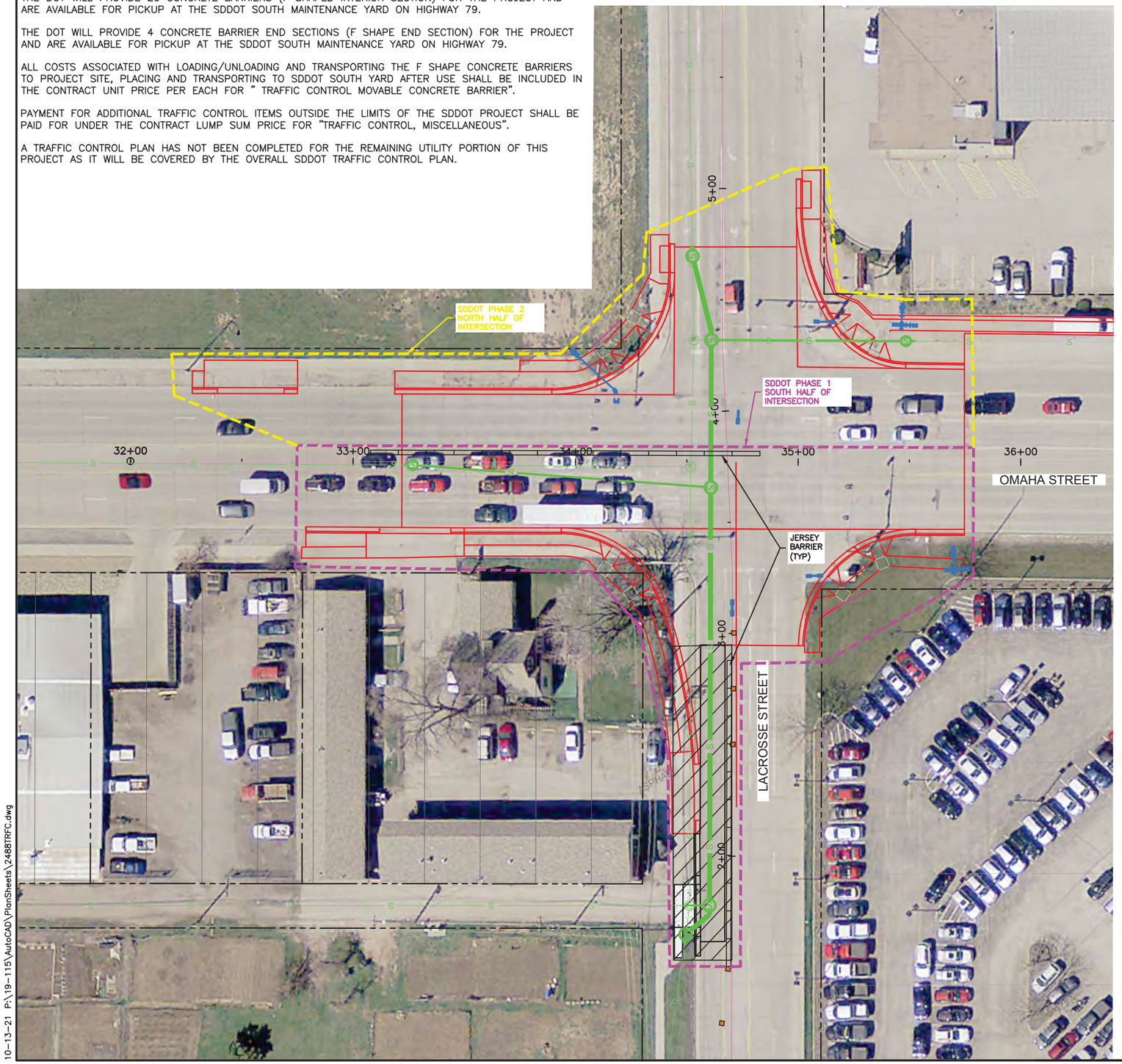
THE DOT WILL PROVIDE 20 CONCRETE BARRIERS (F SHAPED INTERIOR SECTION) FOR THE PROJECT AND ARE AVAILABLE FOR PICKUP AT THE SDDOT SOUTH MAINTENANCE YARD ON HIGHWAY 79.

THE DOT WILL PROVIDE 4 CONCRETE BARRIER END SECTIONS (F SHAPE END SECTION) FOR THE PROJECT AND ARE AVAILABLE FOR PICKUP AT THE SDDOT SOUTH MAINTENANCE YARD ON HIGHWAY 79.

ALL COSTS ASSOCIATED WITH LOADING/UNLOADING AND TRANSPORTING THE F SHAPE CONCRETE BARRIERS TO PROJECT SITE, PLACING AND TRANSPORTING TO SDDOT SOUTH YARD AFTER USE SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER EACH FOR " TRAFFIC CONTROL MOVABLE CONCRETE BARRIER".

PAYMENT FOR ADDITIONAL TRAFFIC CONTROL ITEMS OUTSIDE THE LIMITS OF THE SDDOT PROJECT SHALL BE PAID FOR UNDER THE CONTRACT LUMP SUM PRICE FOR "TRAFFIC CONTROL, MISCELLANEOUS".

A TRAFFIC CONTROL PLAN HAS NOT BEEN COMPLETED FOR THE REMAINING UTILITY PORTION OF THIS PROJECT AS IT WILL BE COVERED BY THE OVERALL SDDOT TRAFFIC CONTROL PLAN.



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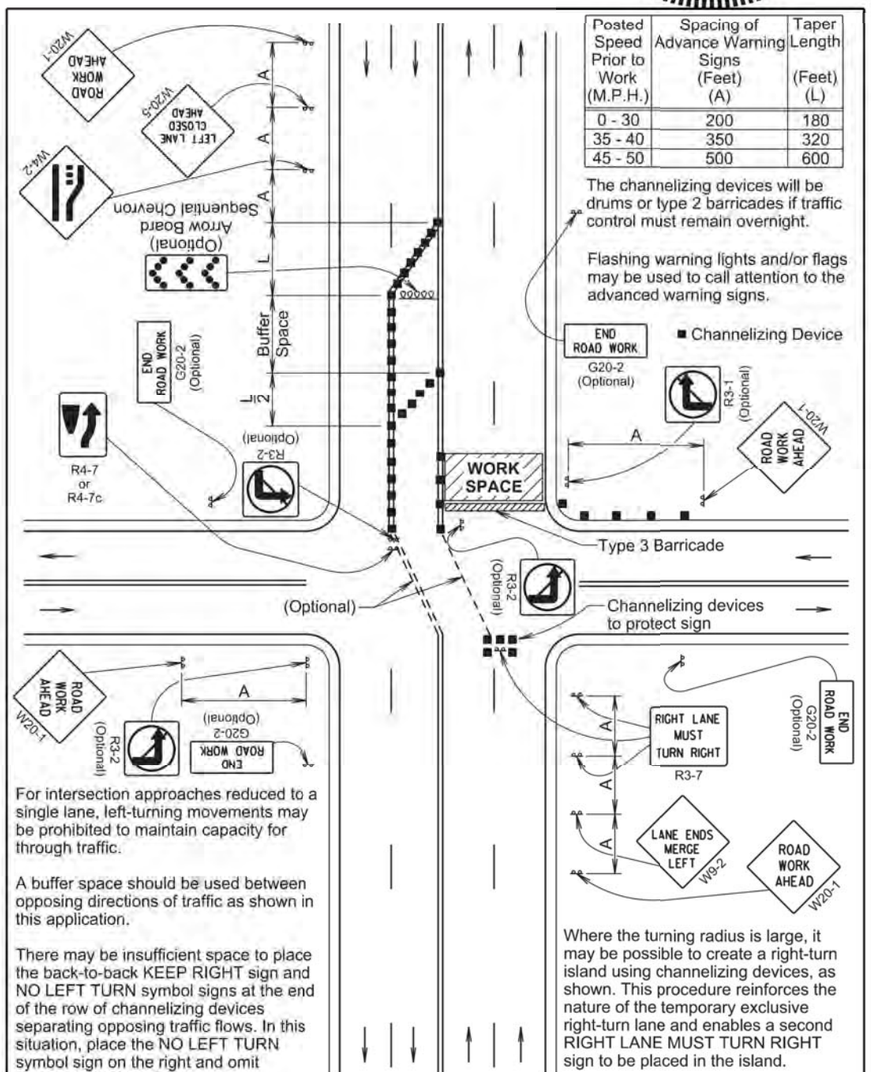


Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600

The channelizing devices will be drums or type 2 barricades if traffic control must remain overnight.

Flashing warning lights and/or flags may be used to call attention to the advanced warning signs.

For intersection approaches reduced to a single lane, left-turning movements may be prohibited to maintain capacity for through traffic.

A buffer space should be used between opposing directions of traffic as shown in this application.

There may be insufficient space to place the back-to-back KEEP RIGHT sign and NO LEFT TURN symbol signs at the end of the row of channelizing devices separating opposing traffic flows. In this situation, place the NO LEFT TURN symbol sign on the right and omit the KEEP RIGHT sign.

Where the turning radius is large, it may be possible to create a right-turn island using channelizing devices, as shown. This procedure reinforces the nature of the temporary exclusive right-turn lane and enables a second RIGHT LANE MUST TURN RIGHT sign to be placed in the island.

January 22, 2021

Published Date: 3rd Qtr. 2021

SDDOT

HALF ROAD CLOSURE FAR SIDE OF INTERSECTION

PLATE NUMBER 634.44

Sheet 1 of 1

10-13-21 P:\19-115\AutoCAD\PlanSheets\24881TRFC.dwg

TEMPORARY SEWAGE HANDLING PLAN

FOR BIDDING PURPOSES ONLY

PROJECT	SHEET NO.	TOTAL SHEETS
OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	2.2	36

PLOTTING DATE: 10-13-21

PROJECT NO 19-2488 / CIP 51212

SANITARY SEWER TO BE CONSTRUCTED IN PHASE 1 OF THE SDDOT TRAFFIC CONTROL PLANS.

TASK 1A – INSTALL MANHOLE 20 THROUGH MANHOLE 30, INCLUDING THE 24" X 18" WYE, AND 24" STUB TOWARDS MANHOLE 40 TO THE PHASE 1 AND 2 INTERFACE. ONCE INSTALLED FROM MANHOLE 20 TO MANHOLE 30 THE CONTRACTOR SHALL VIDEO AND TEST THIS ENTIRE STRETCH.

TASK 1B – CONTRACTOR SHALL PERFORM NIGHT WORK TO COMPLETE THIS TASK. INSTALL MANHOLE 10 AND MAKE THE PERMANENT CONNECTION TO THE EXISTING SEWER.

TASK 1C – CONTRACTOR SHALL PERFORM NIGHT WORK TO COMPLETE THIS TASK SAME NIGHT AS TASK 1B. INSTALL TEMPORARY CONNECTION FROM THE EXISTING 18–INCH VCP TO THE NEW 24" WYE NORTH OF MANHOLE 30. BYPASS PUMPING WILL BE REQUIRED WHEN MAKING THIS CONNECTION.

TASK 1D – INSTALL THE REMAINDER OF SANITARY SEWER IN PHASE 1 (MANHOLE 30 TO MANHOLE 31). BYPASS PUMPING, OR TEMPORARY PLUGGING WILL BE REQUIRED FOR THE ENTIRE INSTALLATION OF THIS STRETCH.

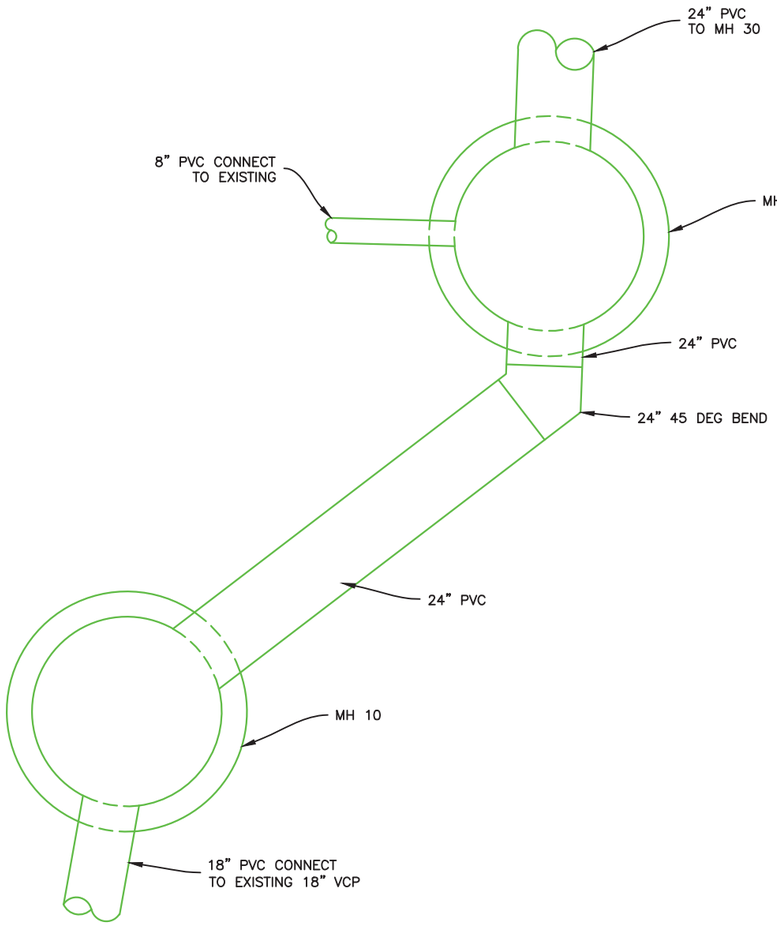
SANITARY SEWER TO BE CONSTRUCTED IN PHASE 2 OF THE SDDOT TRAFFIC CONTROL PLANS.

TASK 2A – INSTALL SANITARY SEWER FROM 24" STUB INSTALLED IN TASK 1A TO WITHIN APPROXIMATELY 10' FROM MANHOLE 50. THIS INSTALLATION SHALL NOT AFFECT THE EXISTING 18" VCP.

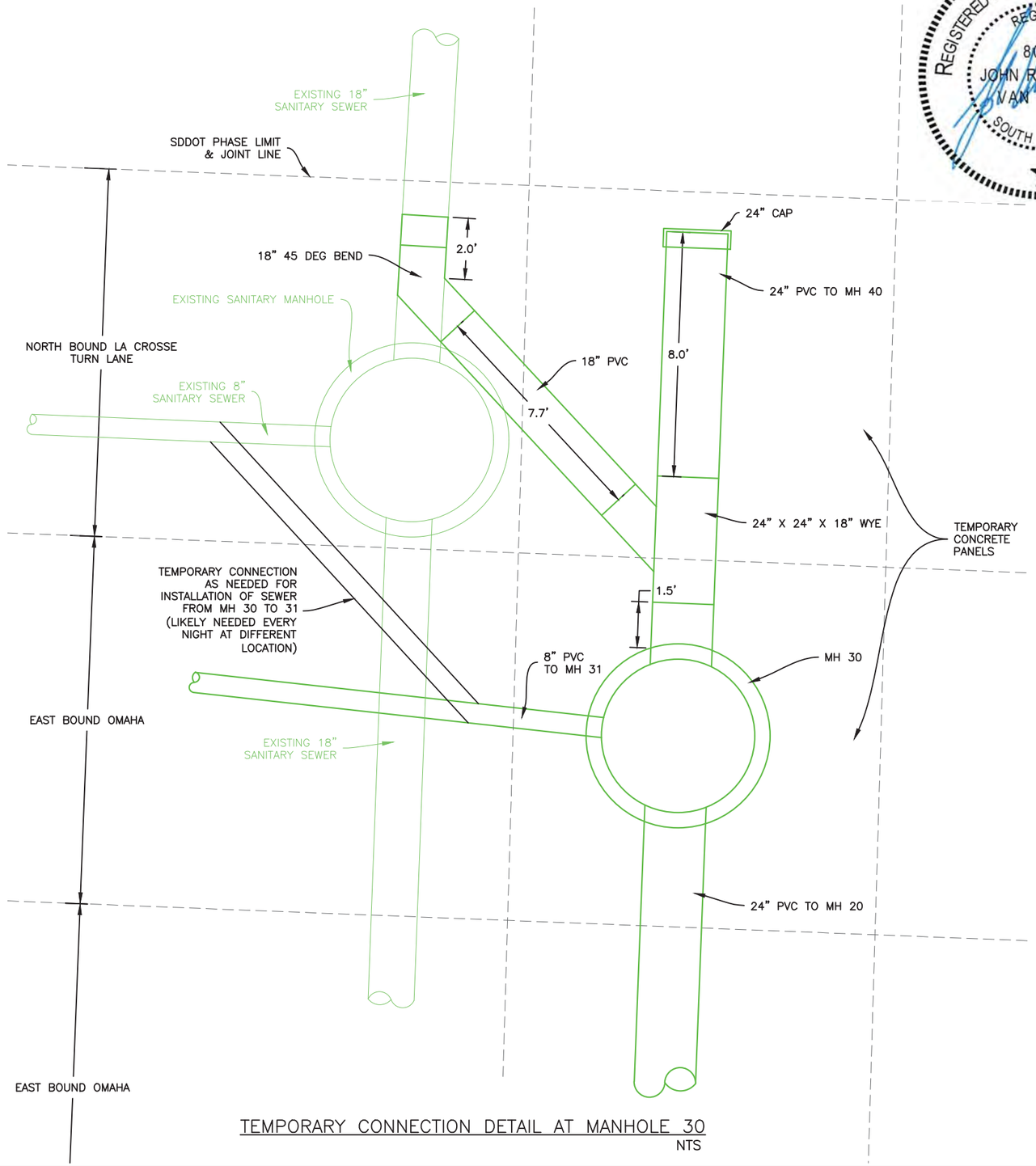
TASK 2B – INSTALL SANITARY SEWER FROM MANHOLE 40 TO MANHOLE 41. BYPASS PUMPING, OR TEMPORARY PLUGGING WILL BE REQUIRED FOR THE ENTIRE INSTALLATION OF THIS STRETCH.

TASK 2C – INSALL REMAINDER OF PIPE AND MANHOLE 50, MAKE PERMANENT CONNECTION TO EXISTING SYSTEM. CONTRACTOR MAY ELECT TO PERFORM NIGHT WORK TO MAKE THE PERMANENT CONNECTION AT MANHOLE 50 FOR REDUCED SEWAGE FLOWS. BYPASS PUMPING WILL BE REQUIRED WHEN MAKING THIS CONNECTION.

TASK 2D – ROTATE UP THE TEMPORARY 24" X 24" X 18" WYE CONNECTION AND CAP THE 18" LEG OF THE WYE. 18" WYE SHALL BE ROTATED TO THE TOP OR VERTICAL POSITION.



SPECIAL CONNECTION DETAIL FOR MANHOLES 10 AND 20
NTS



TEMPORARY CONNECTION DETAIL AT MANHOLE 30
NTS

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10/13/21

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REMOVALS & ABANDONMENTS

FOR BIDDING PURPOSES ONLY

Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	3.1	36

PLOTTING DATE: 10-13-21 PROJECT NO 19-2488 / CIP 51212

LACROSSE STREET REMOVALS & ABANDONMENTS

REMOVE AND RESET SIGN
STA 1+56.6 - 19.8' LT

REMOVE CONCRETE PAVEMENT
STA 1+61.6 - 3.1' LT TO STA 2+94.8 - 3.2' LT 162 SQYD

REMOVE APPROACH AND DRIVEWAY PAVEMENT
STA 1+63.9 - 16.8' LT TO STA 1+91.9 - 16.9' LT 13 SQYD

REMOVE CONCRETE CURB & GUTTER
STA 1+55.1 - 14.1' LT TO STA 2+10.1 - 14.2' LT 55 FT

REMOVE CONCRETE SIDEWALK
STA 1+54.2 - 22.2' LT TO STA 1+87.2 - 25.9' LT 13.9 SQYD

REMOVE SANITARY SEWER MANHOLE
STA 1+77.8 - 18.9' LT
STA 3+75.6 - 16.6' LT
STA 4+32.1 - 12.9' LT

ABANDON SANITARY SEWER MAIN (INCIDENTAL)
STA 1+80.3 - 18.9' LT TO STA 3+64.8 - 17.1' LT
STA 3+75.9 - 19.0' LT TO STA 3+80.1 - 105.2' LT
STA 3+78.1 - 16.5' LT TO STA 4+29.6 - 13.0' LT
STA 4+34.4 - 13.0' LT TO STA 4+59.3 - 13.4' LT

REMOVE SANITARY SEWER MAIN
STA 1+60.9 - 21.3' LT TO STA 1+75.5 - 19.2' LT 15 FT
STA 1+77.9 - 13.0' LT TO STA 1+77.9 - 21.3' LT 8 FT
STA 3+64.8 - 17.1' LT TO STA 3+73.4 - 16.7' LT 8 FT
STA 3+80.1 - 105.2' LT TO STA 3+82.3 - 145.3' LT 40 FT
STA 4+32.0 - 10.5' LT TO STA 4+31.4 - 86.4' RT 97 FT
STA 4+59.3 - 13.4' LT TO STA 4+74.3 - 13.6' LT 11 FT

REMOVE HYDRANT AND AUX VALVE
STA 3+11.2 - 36.7' RT
STA 4+21.1 - 41.7' LT
STA 4+46.2 - 45.1' RT

REMOVE GATE VALVE
3+25.9 - 36.9' RT
4+03.5 - 48.9' LT
4+40.2 - 47.3 RT

ABANDON GATE VALVE (INCIDENTAL)
3+99.4 - 36.3' LT

ABANDON WATER MAIN (INCIDENTAL)
STA 3+97.6 - 5.6' RT TO STA 4+03.5 - 48.9' LT

NOTE:

ALL WATER MAIN AND WATER FITTING REMOVAL (EXCLUDING VALVES AND FIRE HYDRANTS) SHALL BE INCIDENTAL TO THE PROJECT.

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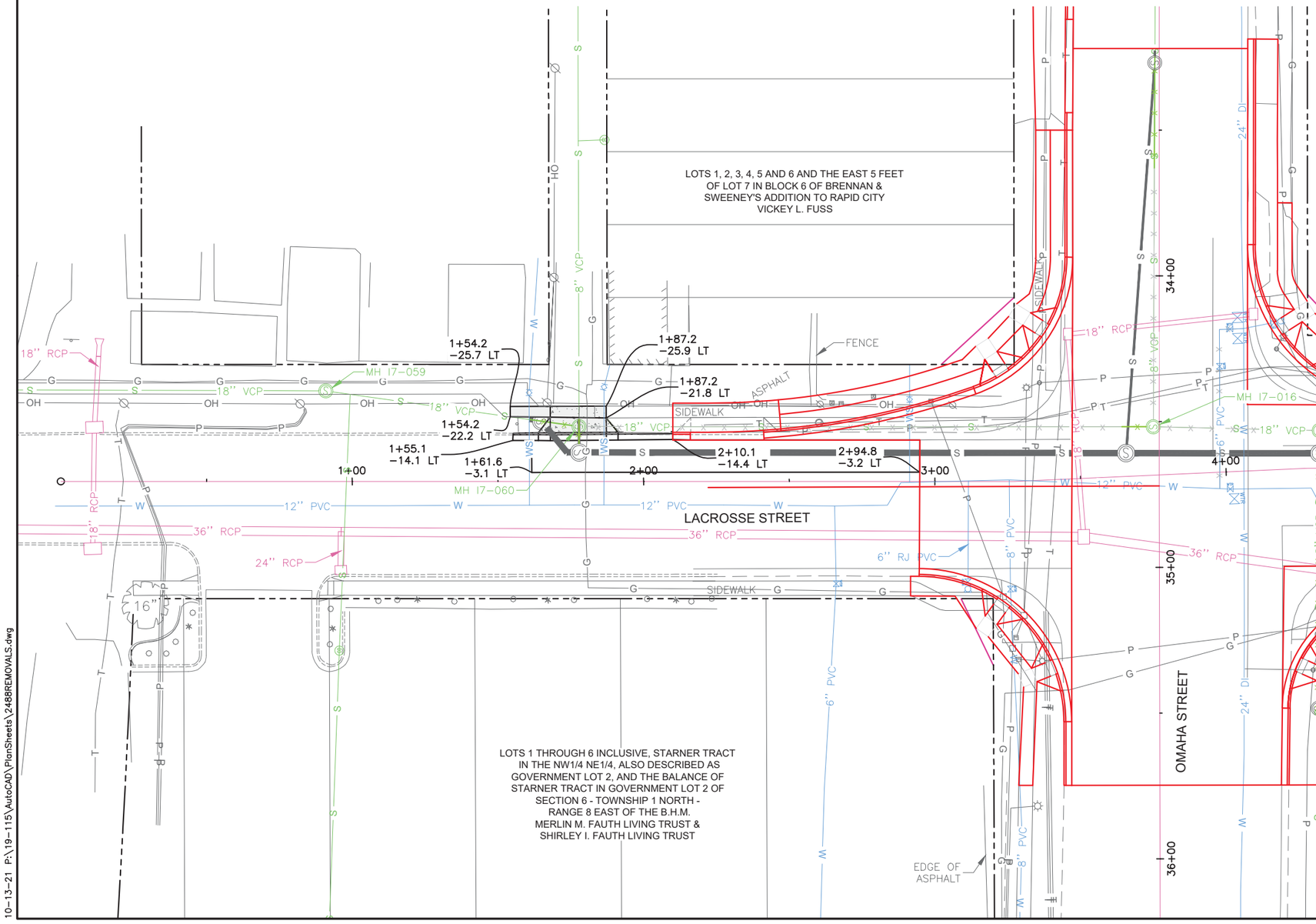
SOUTH DAKOTA
10/13/21



HIGHWAY 44 REMOVALS (NO PLAN SHEET PROVIDED)

REFER TO SDDOT PLANS FOR MAINLINE ALIGNMENT INFORMATION

REMOVE SANITARY SEWER MANHOLE I7-001
STA 59+94.9 - 40.6' LT

ABANDON 8" SANITARY SEWER MAIN (INCIDENTAL)
STA 56+26.4 - 41.7' LT TO STA 59+92.5 - 40.4' LT

REMOVE HYDRANT AND AUX VALVE
STA 44+26.6 - 46.2' RT
STA 48+73.6 - 46.4 RT
STA 56+84.2 - 49.4' RT
STA 62+56.5 - 45.6' LT
STA 67+04.7 - 51.8' LT

LOT 3 OF EASTBROOKE SUBDIVISION TO RAPID CITY
MOLLERS LIMITED PARTNERSHIP

THE SOUTH 80 FEET OF TRACT A OF LOT 1 AND NORTH 97 FEET OF TRACT A OF LOT 1, AND THE SOUTH 80 FEET OF THE WEST 40 FEET OF THE WEST 150 FEET OF TRACT C ALL IN THE NW1/4 NE1/4, ALSO DESCRIBED AS GOVERNMENT LOT 2 OF SECTION 6 - TOWNSHIP 1 NORTH - RANGE 8 EAST OF THE B.H.M.
J & D TIRE, LLC

10−13−21 P:\19−115\AutoCAD\PlanSheets\2488REMOVALS.dwg

LA CROSSE STREET PLAN

FOR BIDDING PURPOSES ONLY

PROJECT	SHEET NO.	TOTAL SHEETS
OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	4.1	36

PLOTTING DATE: 10-13-21 — PROJECT NO 19-2488 / CIP 51212

20 10 0 20

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SOUTH DAKOTA
10/13/21

SANITARY SEWER MAIN NOTES:

STA 1+60.9 – 21.2' LT TO STA 1+64.9 – 20.7' LT	INSTALL 5 LF – 18" PVC SANITARY SEWER MAIN. (CONNECT TO EXISTING)
STA 1+64.9 – 20.7' LT TO STA 1+73.7 – 10.0' LT	INSTALL 14 LF – 24" PVC SANITARY SEWER MAIN.
STA 1+73.7 – 10.0' LT TO STA 1+77.9 – 10.0' LT	INSTALL 5 LF – 24" PVC SANITARY SEWER MAIN. (WITH 45 DEG BEND)
STA 1+77.8 – 21.3' LT TO STA 1+77.9 – 10.0' LT	INSTALL 12 LF – 8" PVC SANITARY SEWER MAIN. (CONNECT TO EXISTING)
STA 1+77.9 – 10.0' LT TO STA 3+66.0 – 8.0' LT	INSTALL 188 LF – 24" PVC SANITARY SEWER MAIN.
STA 3+66.0 – 8.0' LT TO STA 4+32.0 – 5.1' LT	INSTALL 67 LF – 24" PVC SANITARY SEWER MAIN.
STA 4+32.0 – 5.1' LT TO STA 4+36.0 – 5.1' LT	INSTALL 4 LF – 24" PVC SANITARY SEWER MAIN. (WITH 11.25 DEG BEND)
STA 4+36.0 – 5.1' LT TO STA 4+69.7 – 13.5' LT	INSTALL 35 LF – 24" PVC SANITARY SEWER MAIN.
STA 4+69.7 – 13.5' LT TO STA 4+74.3 – 13.6' LT	INSTALL 5 LF – 21" PVC SANITARY SEWER MAIN. (CONNECT TO EXISTING WITH 21" X 18" CONCENTRIC REDUCER MATCH CENTERS)

SANITARY SEWER MANHOLE NOTES:

1+64.9 – 20.7' LT	INSTALL 60" MANHOLE 10.
1+77.9 – 10.0' LT	INSTALL 60" MANHOLE 20.
3+66.0 – 8.0' LT	INSTALL 60" MANHOLE 30.
4+32.0 – 5.1' LT	INSTALL 60" MANHOLE 40.
4+69.7 – 13.5' LT	INSTALL 60" MANHOLE 50.

NOTE:

ALL SANITARY SEWER PIPE BENDS, REDUCERS AND MISCELLANEOUS FITTINGS SHALL BE INCIDENTAL TO THE SANITARY SEWER PIPE.

LOTS 1, 2, 3, 4, 5 AND 6 AND THE EAST 5 FEET OF LOT 7 IN BLOCK 6 OF BRENNAN & SWEENEY'S ADDITION TO RAPID CITY
VICKEY L. FUSS

LOT 3 OF EASTBROOKE SUBDIVISION TO RAPID CITY
MOLLERS LIMITED PARTNERSHIP

LOTS 1 THROUGH 6 INCLUSIVE, STARNER TRACT IN THE NW1/4 NE1/4, ALSO DESCRIBED AS GOVERNMENT LOT 2, AND THE BALANCE OF STARNER TRACT IN GOVERNMENT LOT 2 OF SECTION 6 - TOWNSHIP 1 NORTH - RANGE 8 EAST OF THE B.H.M.
MERLIN M. FAUTH LIVING TRUST & SHIRLEY I. FAUTH LIVING TRUST

THE SOUTH 80 FEET OF TRACT A OF LOT 1 AND NORTH 97 FEET OF TRACT A OF LOT 1, AND THE SOUTH 80 FEET OF THE WEST 40 FEET OF THE WEST 150 FEET OF TRACT C ALL IN THE NW1/4 NE1/4, ALSO DESCRIBED AS GOVERNMENT LOT 2 OF SECTION 6 - TOWNSHIP 1 NORTH - RANGE 8 EAST OF THE B.H.M.
J & D TIRE, LLC

LACROSSE STREET

OMAHA STREET

MH I7-059 MH I7-060 MH 10 MH 20 MH I7-016 MH 30 MH I7-015 MH 40 MH 50 MH 41

1+00 2+00 3+00 4+00 5+00 6+00

FENCE ASPHALT SIDEWALK EDGE OF ASPHALT

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LA CROSSE STREET PROFILE

FOR BIDDING PURPOSES ONLY

Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	4.2	36

PLOTTING DATE: 10-13-21

PROJECT NO 19-2488 / CIP 51212

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SOUTH DAKOTA
10/13/21

MH 10 (60")
STA 1+64.9 – 20.7' LT
RIM ELEV = 3189.07
18" INV OUT (S) = 3178.30
24" INV IN (NE) = 3178.35

MH 20 (60")
STA 1+77.9 – 10.0' LT
RIM ELEV = 3189.00
24" INV OUT (S) = 3178.46
24" INV IN (N) = 3178.56
8" INV IN (W) = 3178.61

MH 30 (60")
STA 3+66.0 – 8.0' LT
STA 34+60.8 – 11.4' RT (OMAHA STREET)
RIM ELEV = 3190.06
24" INV OUT (S) = 3179.31
24" INV IN (N) = 3179.41
8" INV IN (W) = 3179.84

MH 40 (60")
STA 4+32.0 – 5.1' LT
RIM ELEV = 3190.09
24" INV OUT (S) = 3179.68
24" INV IN (N) = 3179.78
10" INV IN (E) = 3180.11

MH 50 (60")
STA 4+69.7 – 13.5' LT
RIM ELEV = 3190.22
24" INV OUT (S) = 3179.98
21" INV IN (N) = 3180.08

12" PVC
18" VCP
TELEPHONE
POWER
GAS
18" RCP
6" RJ PVC WATER
6" DI

1.6 LF 18" PVC SANITARY SEWER @ 1.79%
11.3 LF 24" PVC SANITARY SEWER @ 0.73%
1.7 LF 24" PVC SANITARY SEWER @ 1.53%
8.8 LF 8" PVC SANITARY SEWER @ 1.02%
182.7 LF 24" PVC SANITARY SEWER @ 0.41%
SEWER TRENCH CHECK DAM (TYP
61.3 LF 24" PVC SANITARY SEWER @ 0.44%
83.0 LF 10" PVC SANITARY SEWER @ 0.53%
2.1 LF 21" PVC SANITARY SEWER @ 0.88%
32.3 LF 24" PVC SANITARY SEWER @ 0.52%
1.5 LF 24" PVC SANITARY SEWER @ 2.08%

19 LF 24" SAN SEWER @ 10'–12'
5 LF 18" SAN SEWER @ 10'–12'
188 LF 24" SAN SEWER @ 10'–12'
67 LF 24" SAN SEWER @ 10'–12'
39 LF 24" SAN SEWER @ 10'–12'
5 LF 21" SAN SEWER @ 10'–12'

3189.51
3189.51
3189.96
3189.96

3240 3230 3220 3210 3200 3190 3180 3170 3160 3150

0+00 1+00 2+00 3+00 4+00 5+00 6+00

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OMAHA STREET PLAN

FOR BIDDING PURPOSES ONLY

Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	4.3	36
	PLOTTING DATE: 10-13-21	PROJECT NO 19-2488 / CIP 51212	

WATER MAIN:

34+18.0 – 31.9' LT TO 33+99.7 – 48.7' LT	INSTALL 25 LF – 6" RJ PVC WATER MAIN.
34+70.5 – 68.0' RT TO 34+70.5 – 63.0' RT	INSTALL 5 LF – 12" PVC WATER MAIN.
34+72.9 – 18.4' LT TO 34+73.1 – 23.4' LT	INSTALL 5 LF – 12" PVC WATER MAIN. (CONNECT TO EXISTING)
35+04.8 – 51.2' RT TO 35+09.8 – 51.0' RT	INSTALL 5 LF – 8" PVC WATER MAIN.
35+08.3 – 63.1' LT TO 35+15.3 – 63.0' LT	INSTALL 7 LF – 8" PVC WATER MAIN.
35+43.5 – 61.8' LT TO 35+46.5 – 61.7' LT	INSTALL 3 LF – 8" PVC WATER MAIN.
35+46.5 – 61.7' LT TO 35+46.8 – 69.0' LT	INSTALL 8 LF – 6" PVC WATER MAIN.
35+46.5 – 61.7' LT TO 35+49.5 – 61.5' LT	INSTALL 3 LF – 8" PVC WATER MAIN.
35+49.5 – 61.5' LT TO 35+52.5 – 61.4' LT	INSTALL 4 LF – 8" PVC WATER MAIN.
35+67.1 – 48.4' RT TO 35+70.1 – 48.3' RT	INSTALL 4 LF – 8" PVC WATER MAIN.
35+70.1 – 48.3' RT TO 35+69.7 – 40.3' RT	INSTALL 9 LF – 6" PVC WATER MAIN.
35+70.1 – 48.3' RT TO 35+73.0 – 48.2' RT	INSTALL 4 LF – 8" PVC WATER MAIN.
35+73.0 – 48.2' RT TO 35+76.0 – 48.0' RT	INSTALL 4 LF – 8" PVC WATER MAIN.

WATER FITTINGS:

33+99.7 – 48.7' LT	INSTALL 6" FIRE HYDRANT WITH AUXILIARY VALVE.
34+18.0 – 31.9' LT	INSTALL 6" 45 DEG BEND. (CONNECT TO EXISTING)
34+18.3 – 27.7' LT	INSTALL 6" CAP. (MJ PLUG) WITH ZINC ANODE & THRUST BLOCK
34+70.5 – 63.0' RT	INSTALL 12" COUPLING. (CONNECT TO EXISTING)
34+70.5 – 68.0' RT	INSTALL 12" COUPLING. (CONNECT TO EXISTING)
34+72.9 – 18.4' LT	INSTALL 12" COUPLING. (CONNECT TO EXISTING)
35+04.8 – 51.2' RT	INSTALL 8" COUPLING. (CONNECT TO EXISTING)
35+08.3 – 63.1' LT	INSTALL 8" COUPLING. (CONNECT TO EXISTING)
35+09.8 – 51.0' RT	INSTALL 8" COUPLING. (CONNECT TO EXISTING)
35+15.3 – 63.0' LT	INSTALL 8" COUPLING. (CONNECT TO EXISTING)
35+43.5 – 61.8' LT	INSTALL 8" COUPLING. (CONNECT TO EXISTING)

WATER FITTINGS:

35+46.5 – 61.7' LT	INSTALL 8" X 6" TEE.
35+46.8 – 69.0' LT	INSTALL 6" FIRE HYDRANT WITH AUXILIARY VALVE.
35+49.5 – 61.5' LT	INSTALL 8" GATE VALVE.
35+52.5 – 61.4' LT	INSTALL 8" COUPLING. (CONNECT TO EXISTING)
35+67.1 – 48.4' RT	INSTALL 8" COUPLING. (CONNECT TO EXISTING)
35+69.7 – 40.3' RT	INSTALL 6" FIRE HYDRANT WITH AUXILIARY VALVE.
35+70.1 – 48.3' RT	INSTALL 8" X 6" TEE.
35+73.0 – 48.2' RT	INSTALL 8" GATE VALVE.
35+76.0 – 48.0' RT	INSTALL 8" COUPLING. (CONNECT TO EXISTING)

SANITARY SEWER MAIN NOTES:

STA 33+22.9 – 1.5' RT TO STA 33+26.9 – 1.5' RT	INSTALL 4 LF – 8" PVC SANITARY SEWER MAIN. (CONNECT TO EXISTING)
STA 33+26.9 – 1.5' RT TO STA 34+60.8 – 11.4' RT	INSTALL 135 LF – 8" PVC SANITARY SEWER MAIN.
STA 34+60.9 – 54.9' LT TO STA 35+48.5 – 54.4' LT	INSTALL 88 LF – 10" PVC SANITARY SEWER MAIN.
STA 35+48.5 – 54.4' LT TO STA 35+52.5 – 54.3' LT	INSTALL 4 LF – 10" PVC SANITARY SEWER MAIN. (CONNECT TO EXISTING WITH 10" X 8" ECCENTRIC REDUCER MATCH CROWNS)

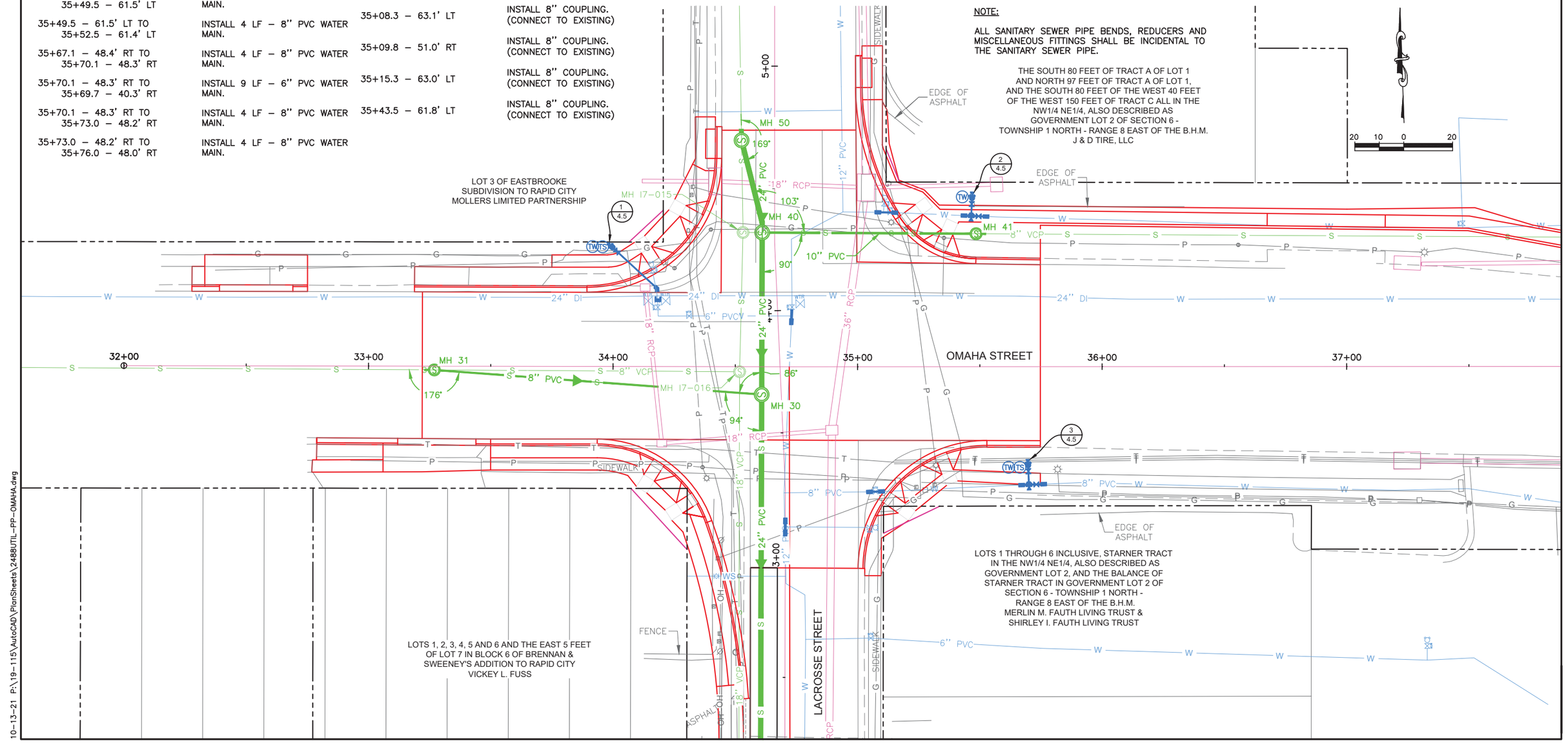
SANITARY SEWER MANHOLE NOTES:

33+26.9 – 1.5' RT	INSTALL 48" MANHOLE 31.
35+48.5 – 54.4' LT	INSTALL 48" MANHOLE 41.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/13/21

NOTE:

ALL SANITARY SEWER PIPE BENDS, REDUCERS AND MISCELLANEOUS FITTINGS SHALL BE INCIDENTAL TO THE SANITARY SEWER PIPE.



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OMAHA STREET PROFILE

FOR BIDDING PURPOSES ONLY

Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	4.4	36

PLOTTING DATE: 10-13-21

PROJECT NO 19-2488 / CIP 51212

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/13/21

MH 31 (48")
STA 33+26.9 – 1.5' RT
RIM ELEV = 3190.77
8" INV OUT (E) = 3180.51
8" INV IN (W) = 3180.61

MH 30 (60")
STA 34+60.8 – 11.4' RT
STA 3+66.0–8.0' LT (LACROSSE STREET)
RIM ELEV = 3190.06
24" INV OUT (S) = 3179.31
24" INV IN (N) = 3179.41
8" INV IN (W) = 3179.84

MH 40 (60")
STA 4+32.0 – 5.1' LT
LACROSSE STREET ALIGNMENT
RIM ELEV = 3190.09
24" INV OUT (S) = 3179.68
24" INV IN (N) = 3179.78
10" INV IN (E) = 3180.11

MH 41 (48")
STA 35+48.5 – 54.4' LT
RIM ELEV = 3189.95
10" INV OUT (W) = 3180.55
10" INV IN (E) = 3180.65

TELEPHONE
POWER
18" RCP
POWER
36" RCP
GAS
POWER
12" PVC

2.0 LF 8" PVC SANITARY SEWER @ 1.00%
8" VCP
129.8 LF 8" PVC SANITARY SEWER @ 0.51%
SEWER TRENCH CHECK DAM (TYP)
83.0 LF 10" PVC SANITARY SEWER @ 0.53%
2.0 LF 10" PVC SANITARY SEWER @ 1.08%
8" VCP

4 LF 8" SAN SEWER @ 10'–12'
134 LF 8" SAN SEWER @ 10'–12'
88 LF 10" SAN SEWER @ 8'–10'
4 LF 10" SAN SEWER @ 8'–10'

3190.89 3190.46 3190.12 3189.96 3189.79 3189.38

3240 3235 3230 3225 3220 3215 3210 3205 3200 3195 3190 3185 3180 3175 3170 3165 3160 3155 3150

32+00 33+00 34+00 35+00 36+00 37+00 38+00

10-13-21 P:\19-115\AutoCAD\PlanSheets\2488UTIL-PP-OMAHA.dwg

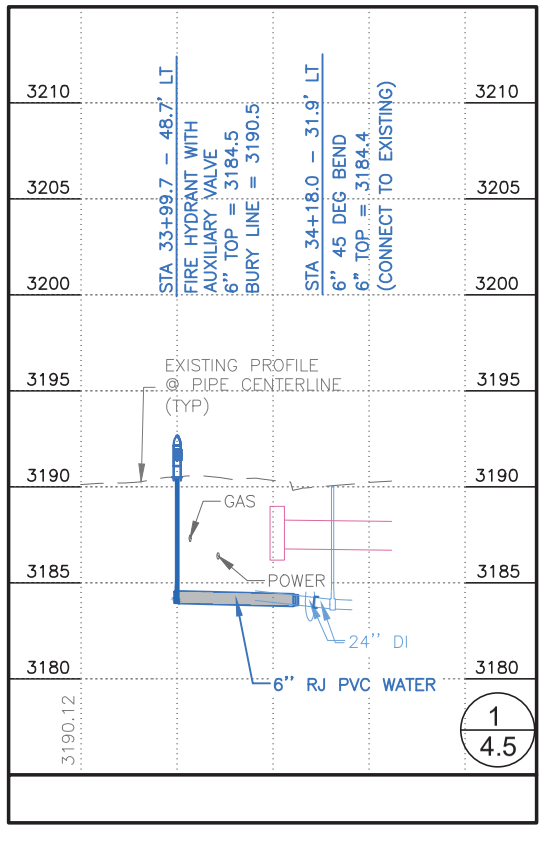
FIRE HYDRANT LEAD PROFILES

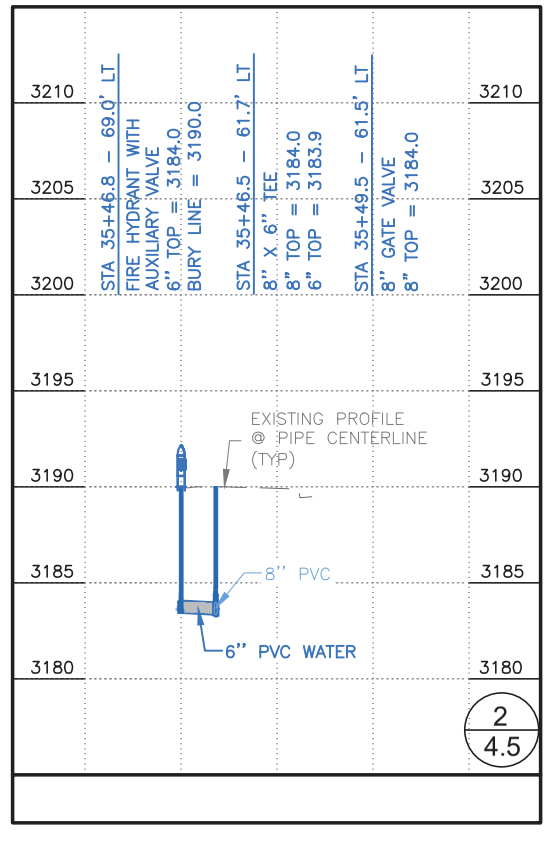
FOR BIDDING PURPOSES ONLY

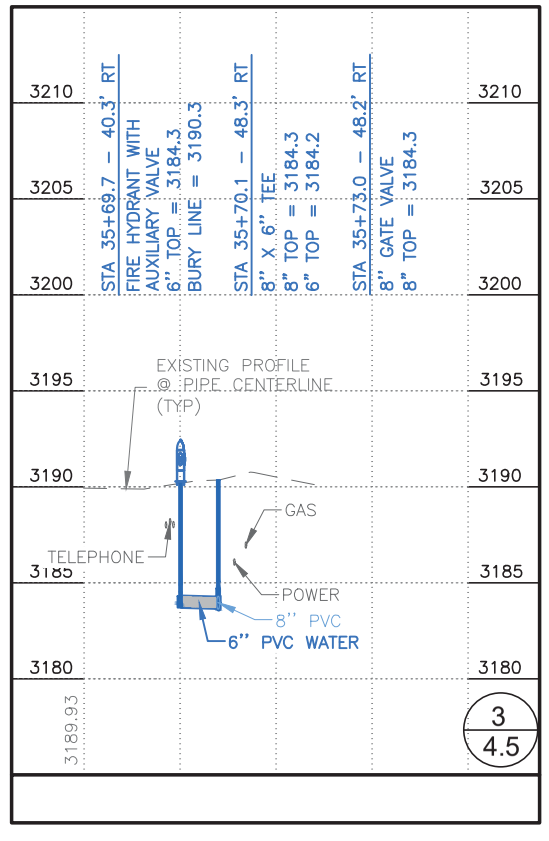
Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	4.5	36

PLOTTING DATE: 10-13-21 PROJECT NO 19-2488 / CIP 51212

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/13/21







FIRE HYDRANT LEAD PROFILES

FOR BIDDING PURPOSES ONLY

Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	4.6	36

PLOTTING DATE: 10-13-21

PROJECT NO 19-2488 / CIP 51212

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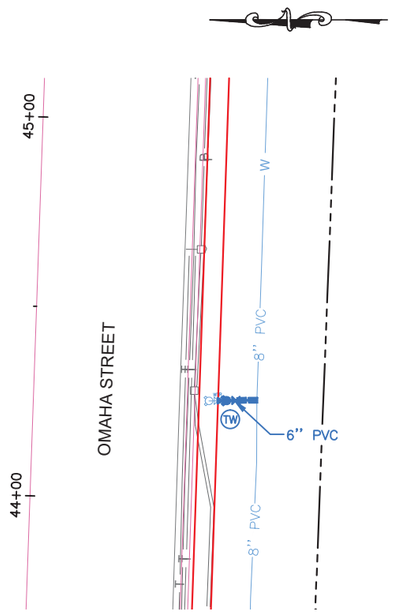
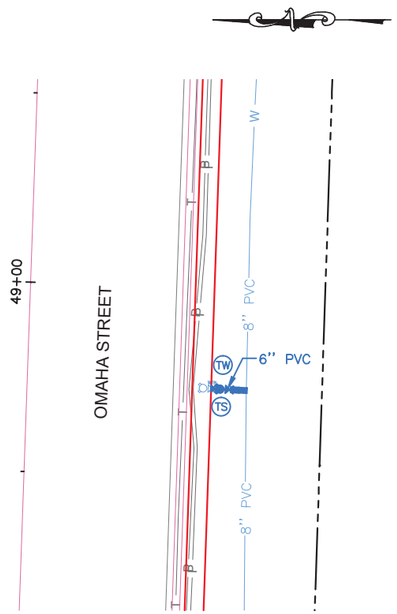
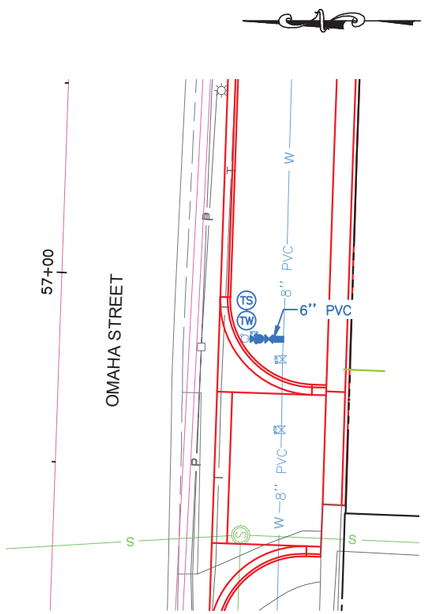
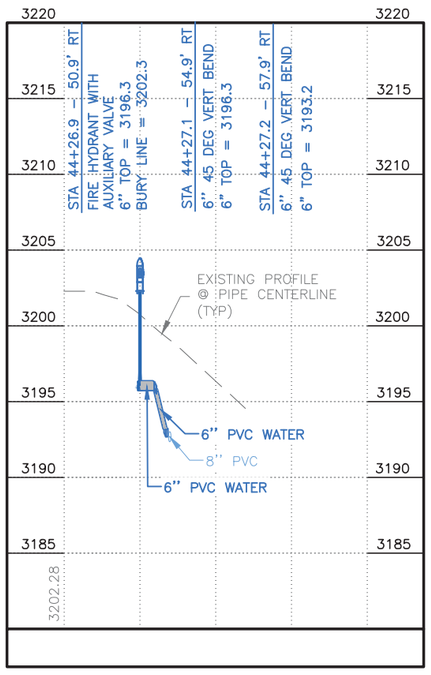
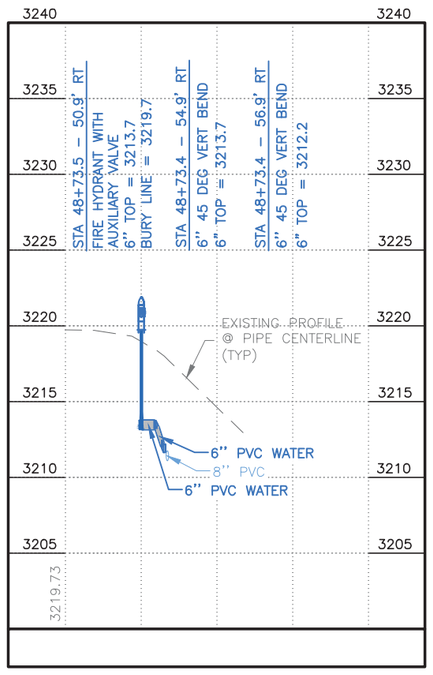
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/13/21

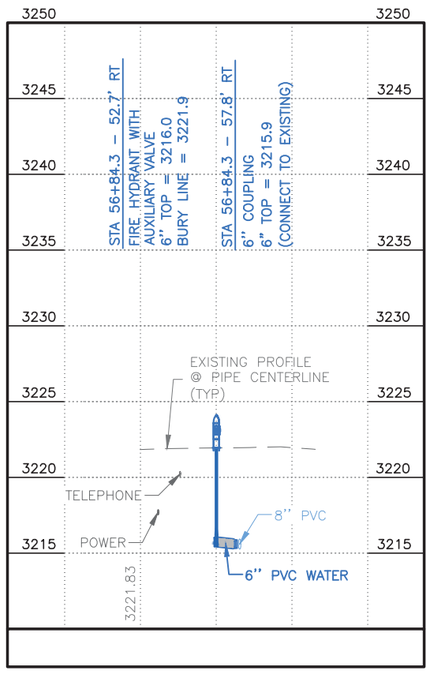












THE ALIGNMENT SHOWN ON THIS SHEET FOR OMAHA STREET IS COINCIDENT WITH THE SDDOT MAINLINE ALIGNMENT. THE ALIGNMENT DATA HAS SPECIFICALLY BEEN EXCLUDED ON THIS SHEET TO AVOID MISINTERPRETATION. FOR ALIGNMENT DATA INFORMATION FOR OMAHA STREET/MAINLINE ALIGNMENTS REFER THE THE SDDOT PLANS.

WATER MAIN:

44+26.9 – 50.9' RT TO 44+27.1 – 54.9' RT	INSTALL 5 LF – 6" PVC WATER MAIN.
44+27.1 – 54.9' RT TO 44+27.2 – 57.9' RT	INSTALL 4 LF – 6" PVC WATER MAIN.
48+73.4 – 54.9' RT TO 48+73.4 – 56.9' RT	INSTALL 2 LF – 6" PVC WATER MAIN.
48+73.5 – 50.9' RT TO 48+73.4 – 54.9' RT	INSTALL 4 LF – 6" PVC WATER MAIN.
56+84.3 – 57.8' RT TO 56+84.3 – 52.7' RT	INSTALL 6 LF – 6" PVC WATER MAIN.

WATER FITTINGS:

44+26.9 – 50.9' RT	INSTALL 6" FIRE HYDRANT WITH AUXILIARY VALVE.
44+27.1 – 54.9' RT	INSTALL 6" 45 DEG VERT BEND.
44+27.2 – 57.9' RT	INSTALL 6" 45 DEG VERT BEND. (CONNECT TO EXISTING)
48+73.4 – 54.9' RT	INSTALL 6" 45 DEG VERT BEND.
48+73.4 – 56.9' RT	INSTALL 6" 45 DEG VERT BEND. (CONNECT TO EXISTING)
48+73.5 – 50.9' RT	INSTALL 6" FIRE HYDRANT WITH AUXILIARY VALVE.
56+84.3 – 52.7' RT	INSTALL 6" FIRE HYDRANT WITH AUXILIARY VALVE.
56+84.3 – 57.8' RT	INSTALL 6" COUPLING. (CONNECT TO EXISTING)

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FIRE HYDRANT LEAD PROFILES

FOR BIDDING PURPOSES ONLY

Ferber Engineering Company, Inc.	PROJECT	SHEET NO.	TOTAL SHEETS
	OMAHA AND LA CROSSE STREET INTERSECTION UTILITY UPGRADES PCN X05G	4.7	36

PLOTTING DATE: 10-13-21 PROJECT NO 19-2488 / CIP 51212

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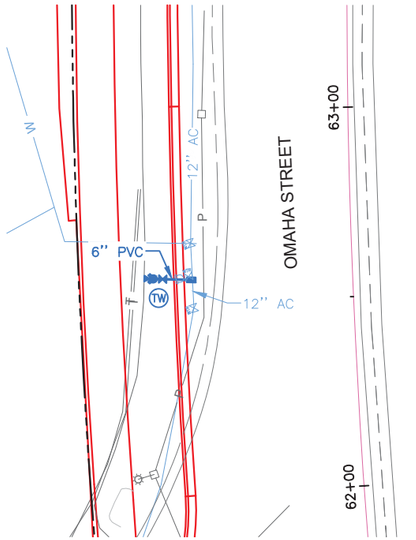
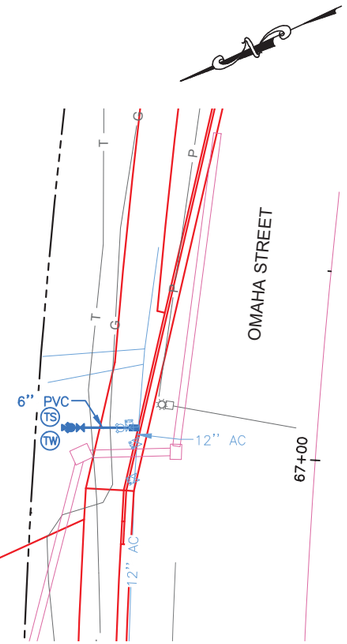
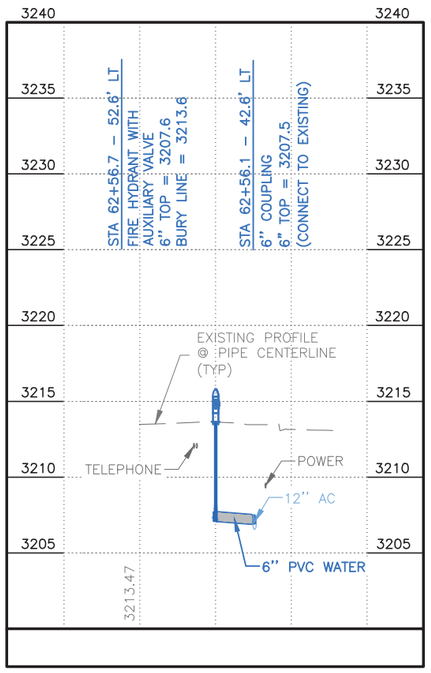
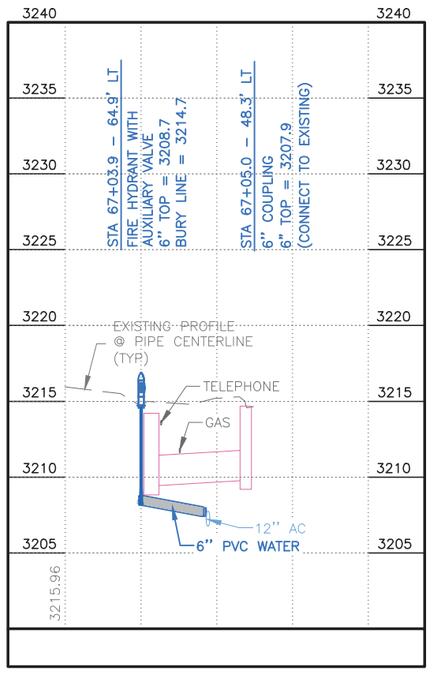
REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8019
JOHN RAYMOND VAN BEEK
SOUTH DAKOTA
10/13/21









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WATER MAIN:

62+56.1 – 42.6' LT TO 62+56.7 – 52.6' LT	INSTALL 11 LF – 6" PVC WATER MAIN.
67+05.0 – 48.3' LT TO 67+03.9 – 64.9' LT	INSTALL 17 LF – 6" PVC WATER MAIN.

WATER FITTINGS:

62+56.1 – 42.6' LT	INSTALL 6" COUPLING. (CONNECT TO EXISTING)
62+56.7 – 52.6' LT	INSTALL 6" FIRE HYDRANT WITH AUXILIARY VALVE.
67+03.9 – 64.9' LT	INSTALL 6" FIRE HYDRANT WITH AUXILIARY VALVE.
67+05.0 – 48.3' LT	INSTALL 6" COUPLING. (CONNECT TO EXISTING)

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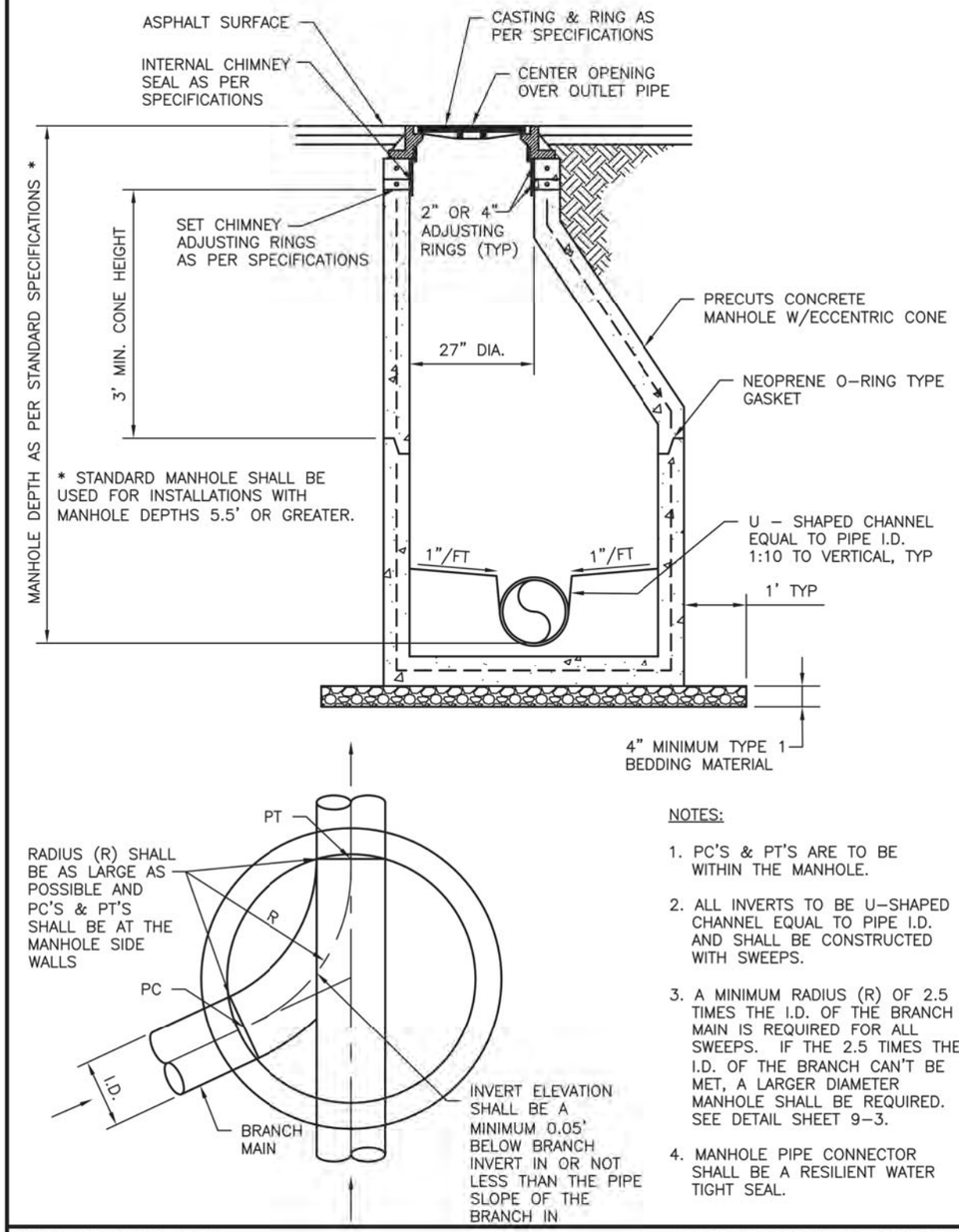


NOTES:

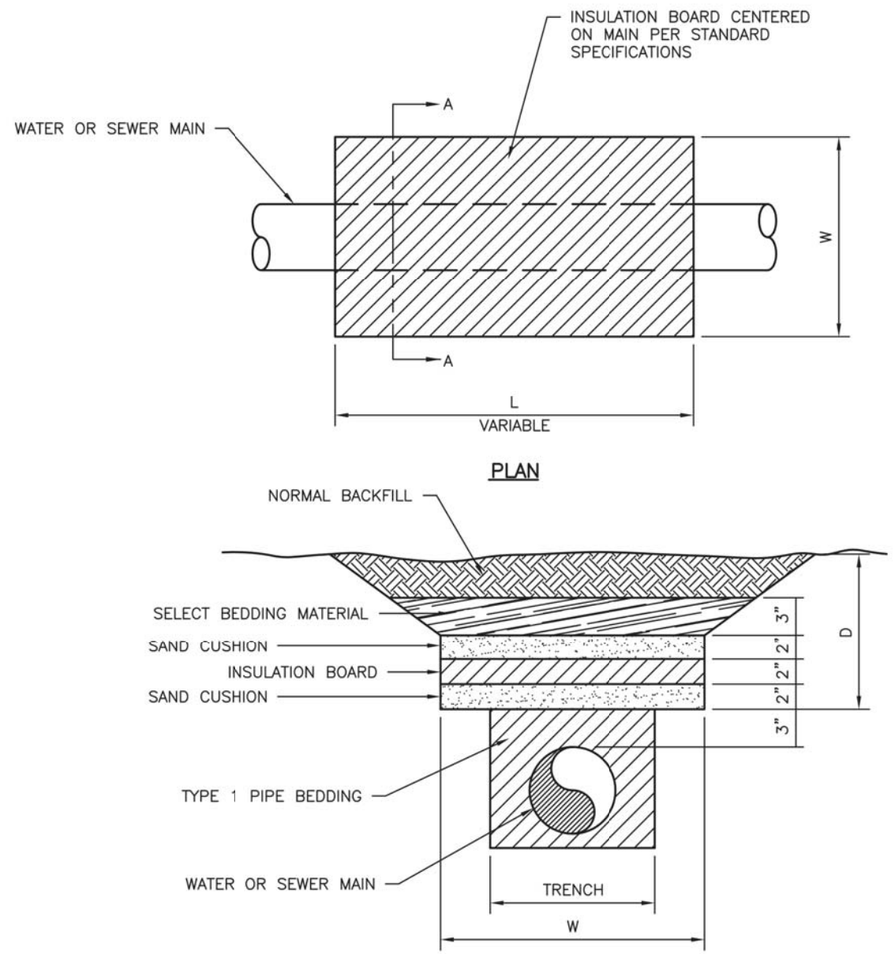
1. PC'S & PT'S ARE TO BE WITHIN THE MANHOLE.
2. ALL INVERTS TO BE U-SHAPED CHANNEL EQUAL TO PIPE I.D. AND SHALL BE CONSTRUCTED WITH SWEEPS.
3. A MINIMUM RADIUS (R) OF 2.5 TIMES THE I.D. OF THE BRANCH MAIN IS REQUIRED FOR ALL SWEEPS. IF THE 2.5 TIMES THE I.D. OF THE BRANCH CAN'T BE MET, A LARGER DIAMETER MANHOLE SHALL BE REQUIRED. SEE DETAIL SHEET 9-3.
4. MANHOLE PIPE CONNECTOR SHALL BE A RESILIENT WATER TIGHT SEAL.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

STANDARD MANHOLE DETAIL WITH MONOLITHIC BASE (48" & 60")

DATE: 5-1-07

SEC. 9 — SHT. 1



INSULATION WIDTH VS. PIPE DEPTH

WATER		SEWER	
D (FEET)	W (FEET)	D (FEET)	W (FEET)
3	8	2.5	8
4	6	3	6
5	4	3.5	4

SECTION A-A

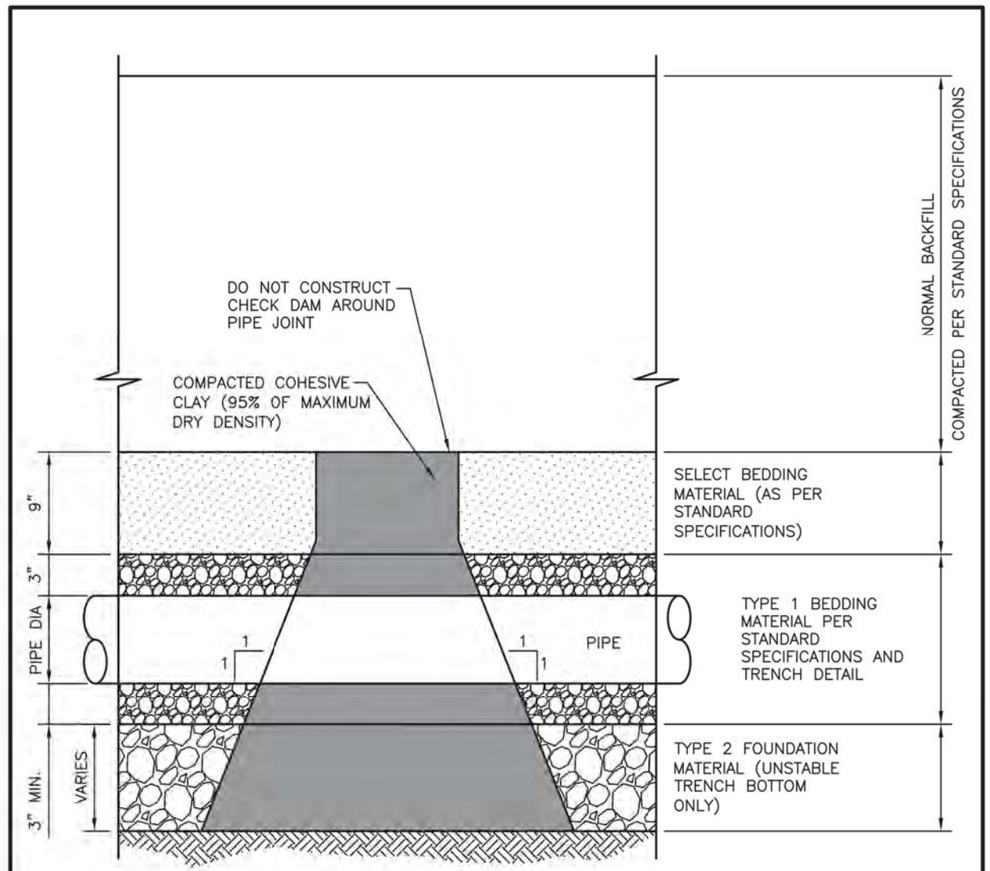
* THE USE OF INSULATION REQUIRES PRIOR APPROVAL BY THE ENGINEER.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

WATER & SEWER MAIN INSULATION DETIAL

DATE: 5-1-07

SEC. 11 — SHT. 1



ELEVATION

NOTE:

CHECK DAM INSTALLATION LOCATIONS SHALL BE AS INDICATED ON THE PLANS. HOWEVER DURING CONSTRUCTION, CHECK DAM INSTALLATION LOCATIONS MAY BE MOVED DUE TO FIELD CONDITIONS.

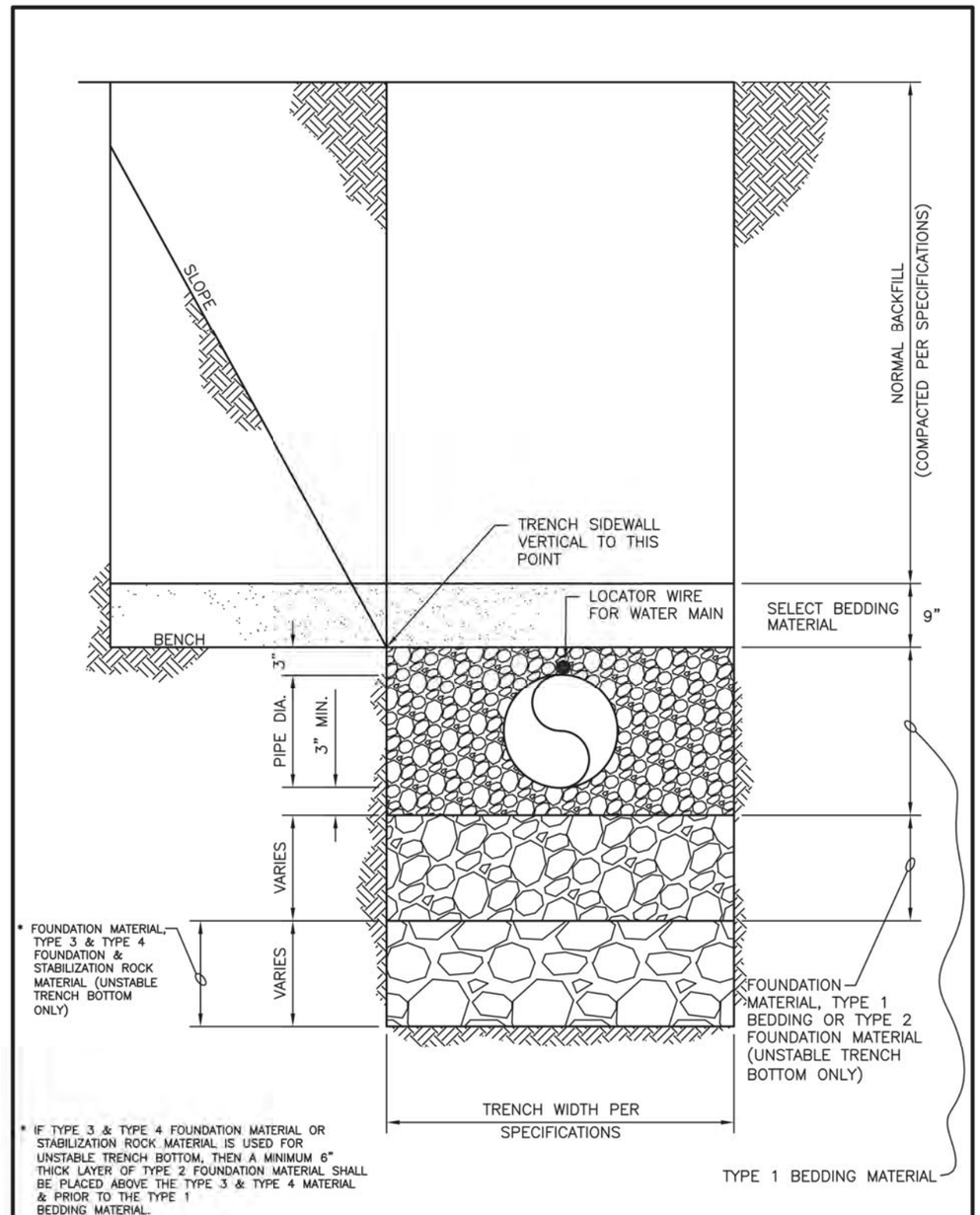
THE CHECK DAM SHALL EXTEND FROM THE BOTTOM OF THE EXCAVATION THROUGH THE BEDDING MATERIAL TO THE "NORMAL BACKFILL" AND SHALL EXTEND COMPLETELY TO EACH TRENCH SIDEWALL. CHECK DAM MATERIAL SHALL BE COMPACTED COHESIVE CLAY THAT CONTAINS A MINIMUM OF 25% MINUS NO. 200 SIEVE MATERIAL, WITH 70% PASSING A 3/4 INCH SIEVE. IF THE NORMAL EXCAVATED MATERIAL IS NOT SUITABLE FOR CONSTRUCTION OF THE CHECK DAM, THEN THE CONTRACTOR SHALL OBTAIN MATERIAL FROM OUTSIDE SOURCES. CHECK DAM INSTALLATION AND MATERIAL SHALL BE CONSIDERED AS INCIDENTAL TO THE PIPE INSTALLATION.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

TYPICAL TRENCH CHECK DAM DETAIL FOR WATER & SEWER MAINS

DATE: 5-1-07

SEC. 11 — SHT. 2



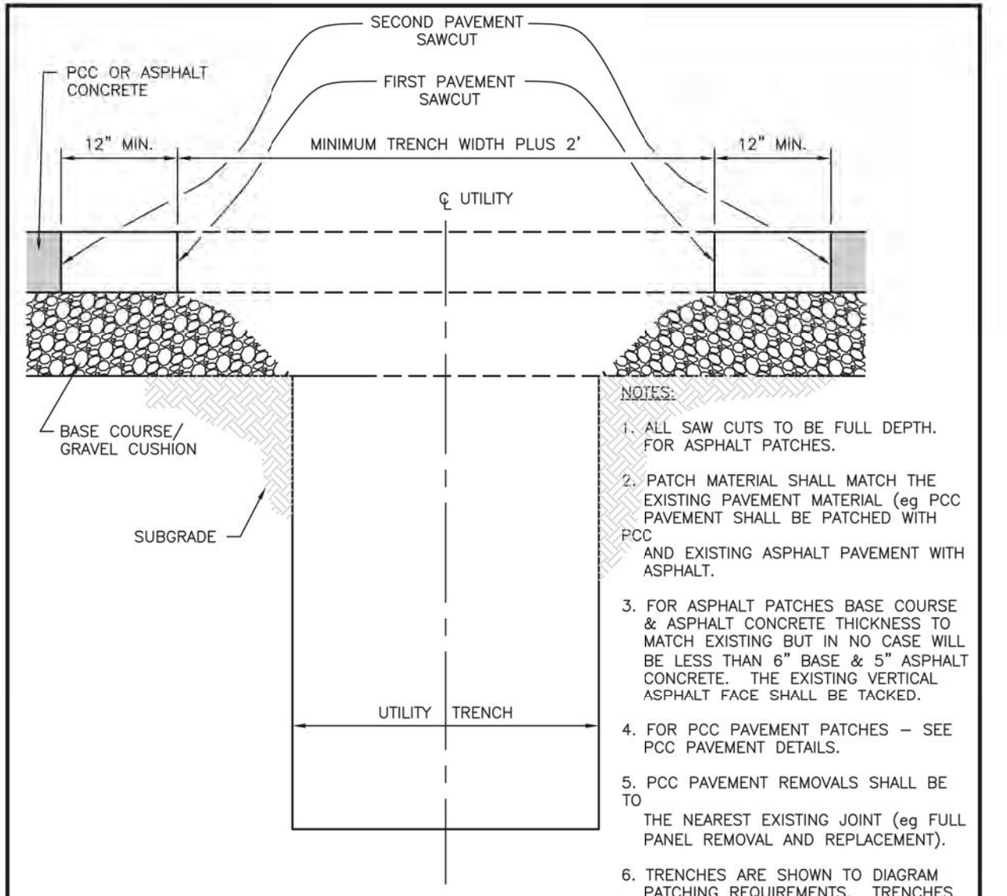
* IF TYPE 3 & TYPE 4 FOUNDATION MATERIAL OR STABILIZATION ROCK MATERIAL IS USED FOR UNSTABLE TRENCH BOTTOM, THEN A MINIMUM 6" THICK LAYER OF TYPE 2 FOUNDATION MATERIAL SHALL BE PLACED ABOVE THE TYPE 3 & TYPE 4 MATERIAL & PRIOR TO THE TYPE 1 BEDDING MATERIAL.

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

TRENCH DETAIL FOR WATER & SEWER MAIN

DATE: 5-1-07

SEC. 11 — SHT. 3



NOTES:

1. ALL SAW CUTS TO BE FULL DEPTH. FOR ASPHALT PATCHES.
2. PATCH MATERIAL SHALL MATCH THE EXISTING PAVEMENT MATERIAL (eg PCC PAVEMENT SHALL BE PATCHED WITH PCC AND EXISTING ASPHALT PAVEMENT WITH ASPHALT.
3. FOR ASPHALT PATCHES BASE COURSE & ASPHALT CONCRETE THICKNESS TO MATCH EXISTING BUT IN NO CASE WILL BE LESS THAN 6" BASE & 5" ASPHALT CONCRETE. THE EXISTING VERTICAL ASPHALT FACE SHALL BE TACKED.
4. FOR PCC PAVEMENT PATCHES – SEE PCC PAVEMENT DETAILS.
5. PCC PAVEMENT REMOVALS SHALL BE TO THE NEAREST EXISTING JOINT (eg FULL PANEL REMOVAL AND REPLACEMENT).
6. TRENCHES ARE SHOWN TO DIAGRAM PATCHING REQUIREMENTS. TRENCHES SHALL BE CONSTRUCTED TO MEET OSHA REQUIREMENTS.
7. PAVEMENT REMOVAL BETWEEN FIRST AND SECOND SAW CUT SHALL BE REMOVED AT TIME OF PATCHING.

TABLE 11–1 MINIMUM TRENCH WIDTH TABLE

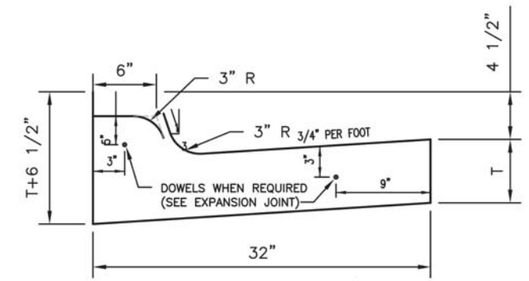
PIPE DIAMETER	MINIMUM WIDTH	MINIMUM BETWEEN FIRST SAWCUTS	MINIMUM BETWEEN SECOND SAWCUTS	PCC PAVEMENT
<8 in.	24"	4'	6'	SECOND SAWCUTS SHALL BE AT EXISTING JOINTS SEE NOTE #5
8in. – 12in.	30"	4'–6"	6'–6"	
14in. – 18in.	36"	5'	7'	
20in. – 21in.	42"	5'–6"	7'–6"	
24in. – 36in.	1.25 (PIPE OD) PLUS 12in.	MIN. WIDTH PLUS 2'	MIN. WIDTH PLUS 4'	
>36in.	PER PLANS	MIN. WIDTH PLUS 2'	MIN. WIDTH PLUS 4'	

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

UTILITY TRENCH PATCH DETAIL

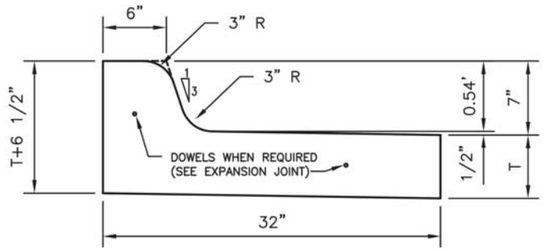
DATE: 5–1–07

SEC. 41–1 SHT.

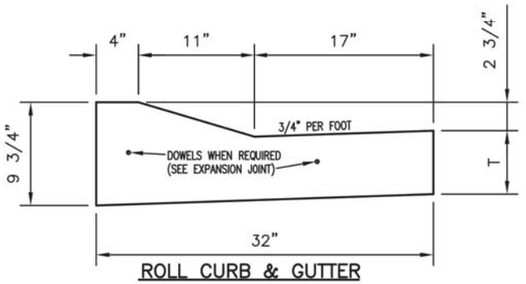


STANDARD CURB & GUTTER (TYPE B)

WHERE T IS EQUAL TO PAVEMENT THICKNESS OR 6", WHICHEVER IS GREATER

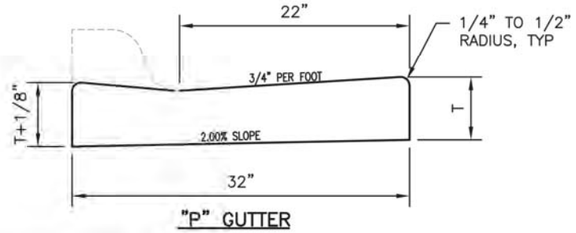


TILTED CURB & GUTTER (TYPE BL)



ROLL CURB & GUTTER

(WHEN APPROVED)



"P" GUTTER

NOTES:
ALL CURB & GUTTER SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 P.S.I. & AIR ENTRAINED 6% ± 1.5% (4.5% TO 7.5%). ALL DESIGN GRADES ARE TOP OF CURB ELEVATIONS UNLESS OTHERWISE INDICATED ON PLANS. EXPANSION JOINT FILLER IS TO BE PLACED IN THE CURB & GUTTER AT EACH JUNCTION OF A RADIUS. IT SHALL BE PLACED AS PER DETAIL. 60–7, TRANSVERSE EXPANSION JOINT OR CONTRACTION JOINTS SHALL BE PLACED IN THE CURB & GUTTER AT 15' MAXIMUM INTERVALS OR MATCH JOINTS OF CONCRETE PAVEMENT. DOWELS WHEN REQUIRED SHALL BE #5 SMOOTH EPOXY COATED.

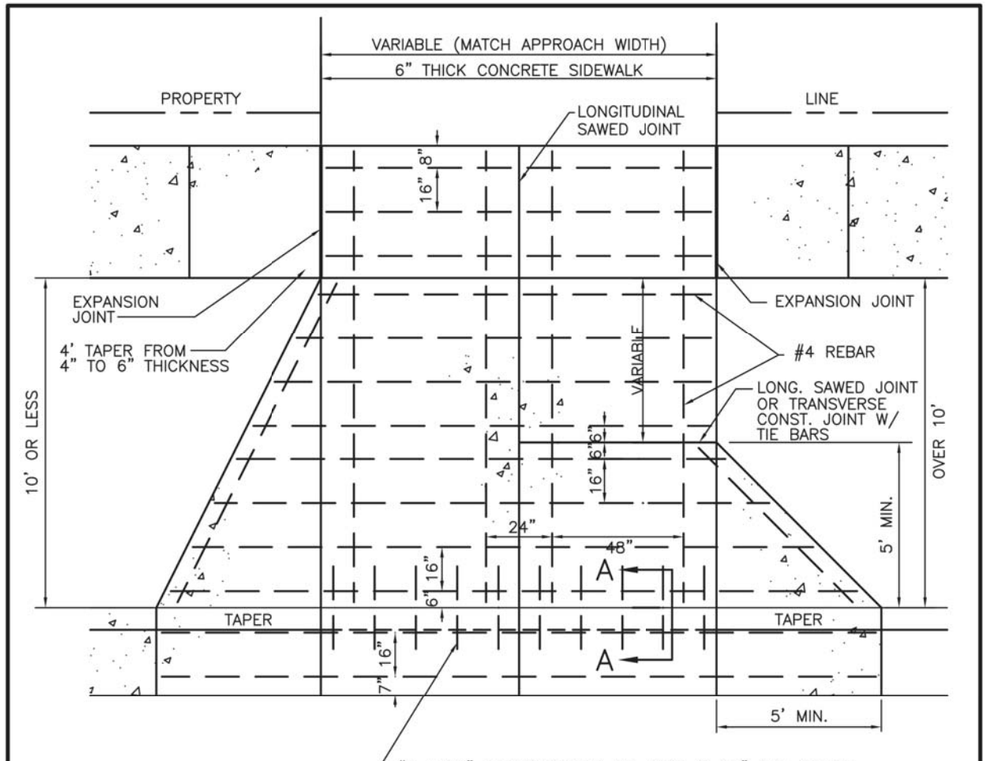
MINIMUM DEPTH OF GRANULAR MATERIAL PLACED UNDER CURB & GUTTER SHALL BE 4".

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

CURB & GUTTER

DATE: 5–1–07

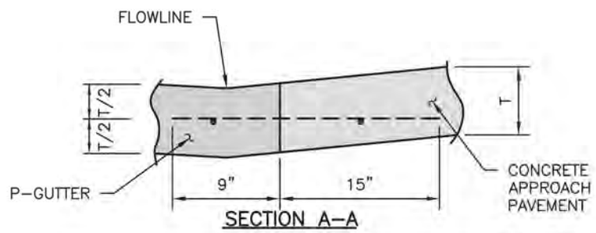
SEC. 60–2 SHT.



NOTE:
MINIMUM DEPTH OF GRANULAR MATERIAL PLACED UNDER REINFORCED DRIVEWAY APPROACH SHALL BE 4".

WHEN REMOVING EXISTING CURB & GUTTER FOR NEW APPROACH CONSTRUCTION, AN EXPANSION JOINT SHALL BE CONSTRUCTED. (SEE JOINT DETAILS 60-7)

REINFORCED DRIVEWAY & SIDEWALK SHALL BE PLACED AT ALL ALLEY ENTRANCES & AT DRIVEWAYS INTO PROPERTY WHICH IS MULTI-FAMILY, COMMMERCIAL, LIGHT INDUSTRIAL & HEAVY INDUSTRIAL. #4 EPOXY COATED REBAR SHALL BE PLACED AS PER DETAIL & TIED TOGETHER. TWO INCH (2") CLEARANCE SHALL BE MAINTAINED BETWEEN BOTTOM OF CONCRETE & REBAR. (PROPERTY LINE SIDEWALK SHOWN)

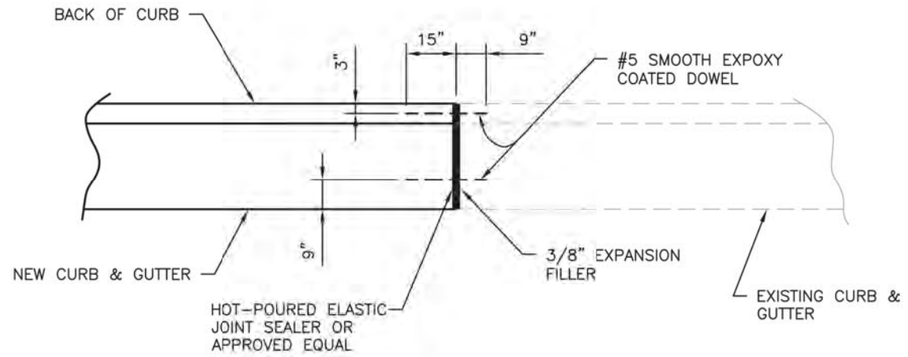


SECTION A-A

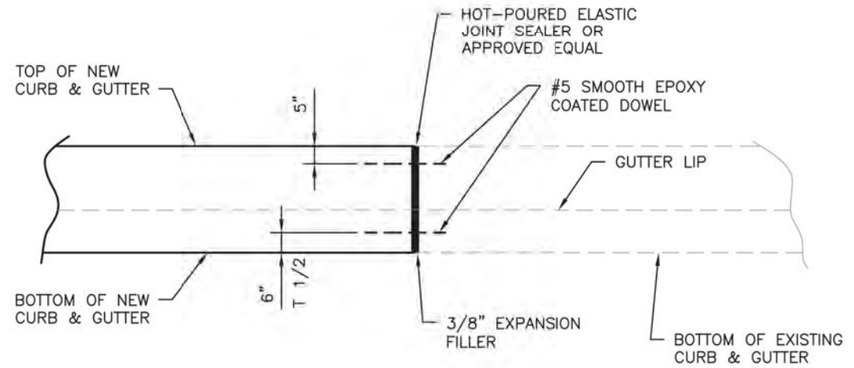
CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

REINFORCED DRIVEWAY APPROACH

DATE: 5-1-07
SEC. 60-4 SHT.



PLAN

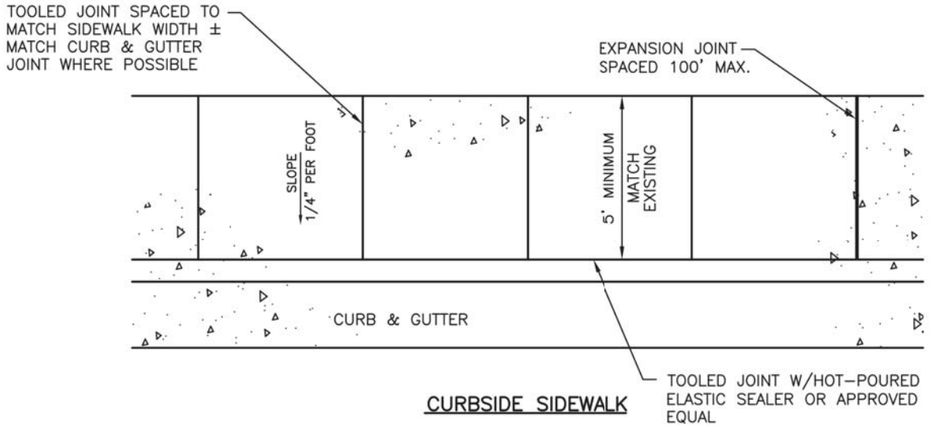


PROFILE

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

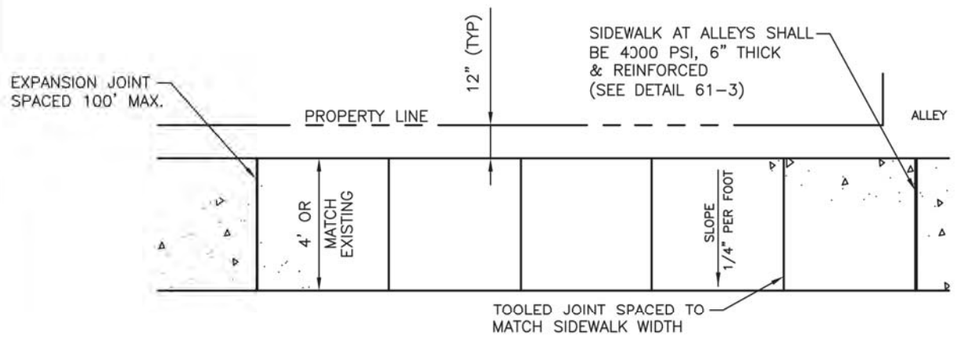
CURB & GUTTER EXPANSION JOINT

DATE: 5-1-07
SEC. 60-7 SHT.



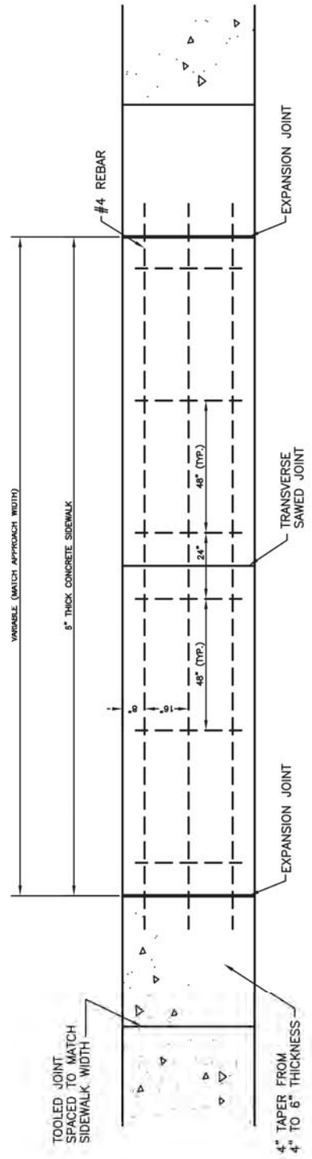
CURBSIDE SIDEWALK

ALL SIDEWALKS SHALL BE A MINIMUM OF 4" THICK 4000 PSI CONCRETE WITH A MINIMUM OF 2" OF COMPACTED CUSHION MATERIAL PLACED UNDER THE SIDEWALK



PROPERTY LINE SIDEWALK

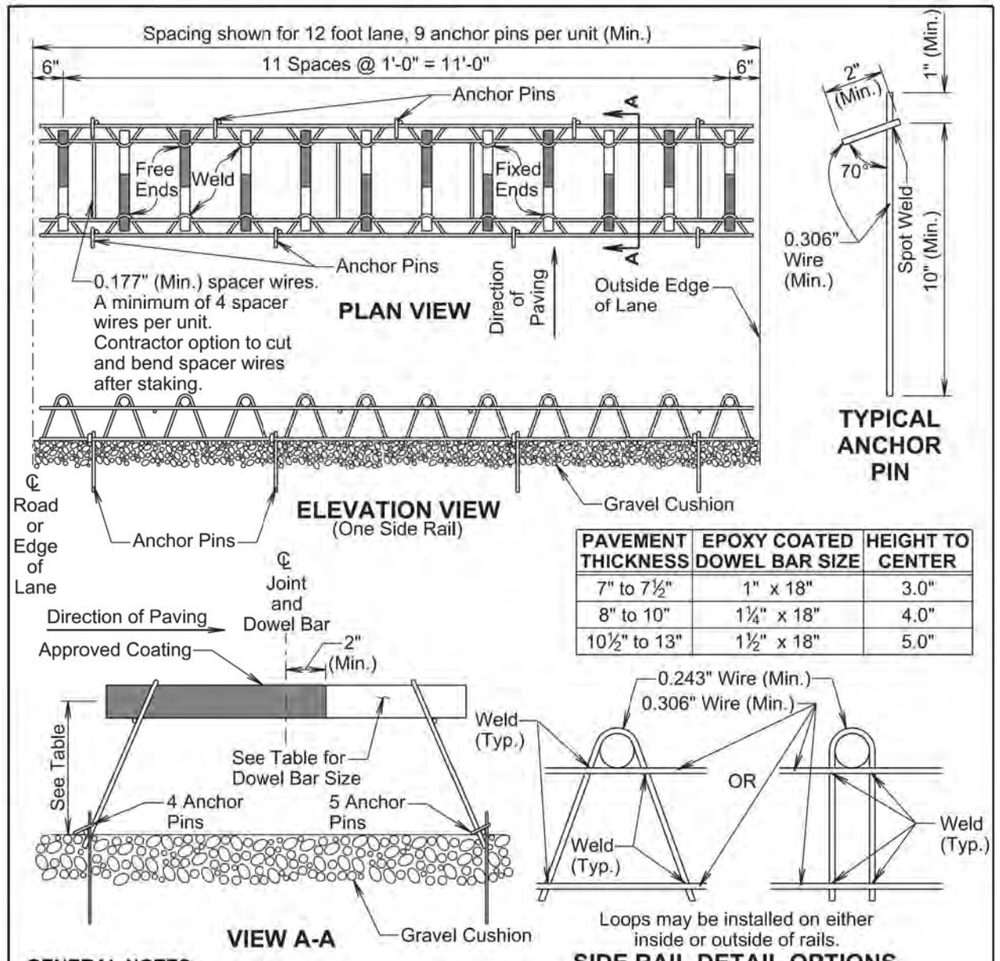
CITY OF RAPID CITY	PUBLIC WORKS DEPARTMENT
SIDEWALKS	DATE: 5-1-07
	SEC. 61-2 SHT.



6" REINFORCED SIDEWALK

REINFORCED SIDEWALK SHALL BE PLACED AT ALL ENTRANCES INTO ALLEYS, PARKING LOTS, AND PROPERTY WHICH IS ZONED COMMERCIAL, LIGHT INDUSTRIAL & HEAVY INDUSTRIAL. #4 EPOXY COATED REBAR SHALL BE PLACED AS PER DETAIL AND TIED TOGETHER. TWO INCH (2") CLEARANCE SHALL BE MAINTAINED BETWEEN BOTTOM OF CONCRETE & REBAR. MINIMUM DEPTH OF GRANULAR MATERIAL PLACED UNDER REINFORCED SIDEWALK SHALL BE 4".

CITY OF RAPID CITY	PUBLIC WORKS DEPARTMENT
REINFORCED SIDEWALKS (MULTI-FAMILY, ALLEY ENTR., INDUSTRIAL & COMMERCIAL APPLICATIONS	DATE: 5-1-07
	SEC. 61-3 SHT.



PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 13"	1½" x 18"	5.0"

GENERAL NOTES:

Longitudinal joint tie bars will be placed a minimum of 15 inches from the transverse contraction joint.

Centerline of individual dowel bars will be parallel to top of subgrade ±1/8 inch in 18 inches and to all other dowel bars in the assembly ±1/16 inch in 18 inches.

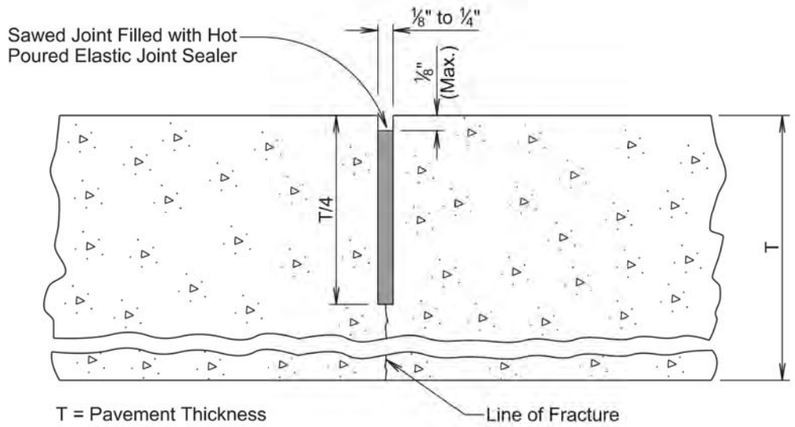
Centerline of individual dowel bars will be parallel to the centerline of the roadway ±1/2 inch in 18 inches.

The transverse contraction joints will be sawed perpendicular to the centerline of the roadway and the dowel bars will be centered on the sawed joint ±1 inch.

Supporting devices as shown on this sheet, or equivalent as approved by the Engineer, will be used to maintain proper horizontal and vertical alignment of the dowel bars.

June 26, 2019

Published Date: 3rd Qtr. 2021	SDDOT	PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material	PLATE NUMBER 380.01 Sheet 1 of 1



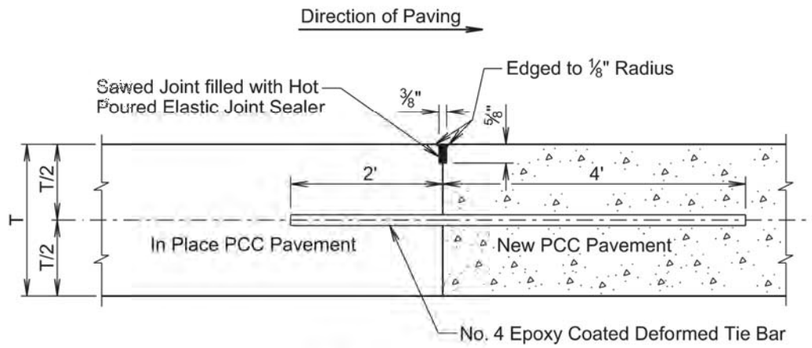
GENERAL NOTES:

If an early entrance saw cut does not develop the full transverse crack, then the saw cut to control cracking will be a minimum ¼ of the thickness of the pavement.

All hot poured elastic joint sealer material spilled on the surface of the concrete pavement will be removed as soon as the material has cooled. The extent of removal of material will be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material will be borne by the Contractor.

June 26, 2019

Published Date: 3rd Qtr. 2021	SDDOT	PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.05 Sheet 1 of 1



T = Pavement Thickness

GENERAL NOTES:

No. 4 epoxy coated deformed tie bars will be spaced 12 inches center to center and will be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

The minimum distance between a transverse construction joint with tie bars and an adjacent transverse contraction joint will be 5 feet.

When a transverse construction joint is made, paving will not be allowed in this area for 12 hours.

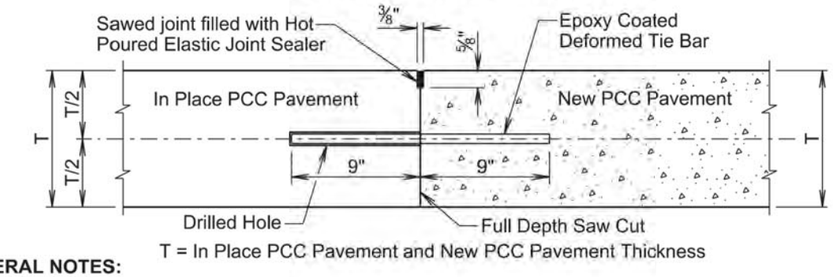
A transverse construction joint may be placed in lieu of the transverse contraction joint when shown in the plans.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on the current project.

June 26, 2019

Published Date: 3rd Qtr. 2021	SDDOT	PCC PAVEMENT MID PANEL TRANSVERSE CONSTRUCTION JOINT	PLATE NUMBER 380.07
			Sheet 1 of 1

DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

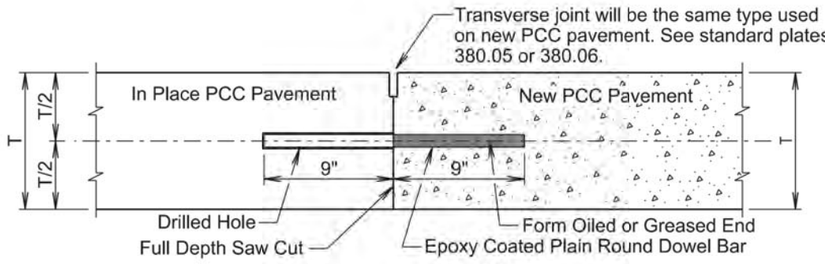
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

See sheet 2 of 2 of this standard plate to determine if Detail A will be used.

The tie bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

No. 9 epoxy coated deformed tie bars will be used in 10 inch thickness and less PCC Pavement and No. 11 epoxy coated deformed tie bars will be used in 10.5 inch thickness and greater PCC Pavement. The tie bar spacing will be 18 inches center to center and will be a minimum of 3 inches and a maximum of 9 inches from the pavement edges.

DETAIL B
TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS



GENERAL NOTES: T = In Place PCC Pavement and New PCC Pavement Thickness

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project or current project.

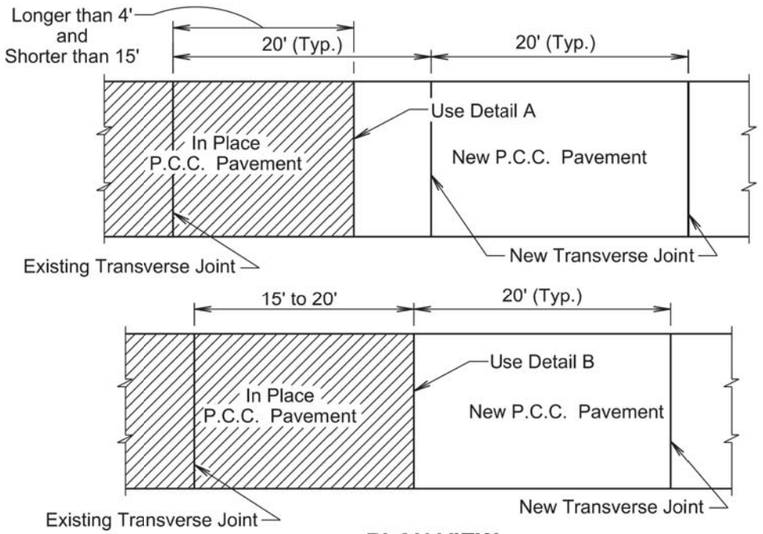
See sheet 2 of 2 of this standard plate to determine if Detail B will be used.

The plain round dowel bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

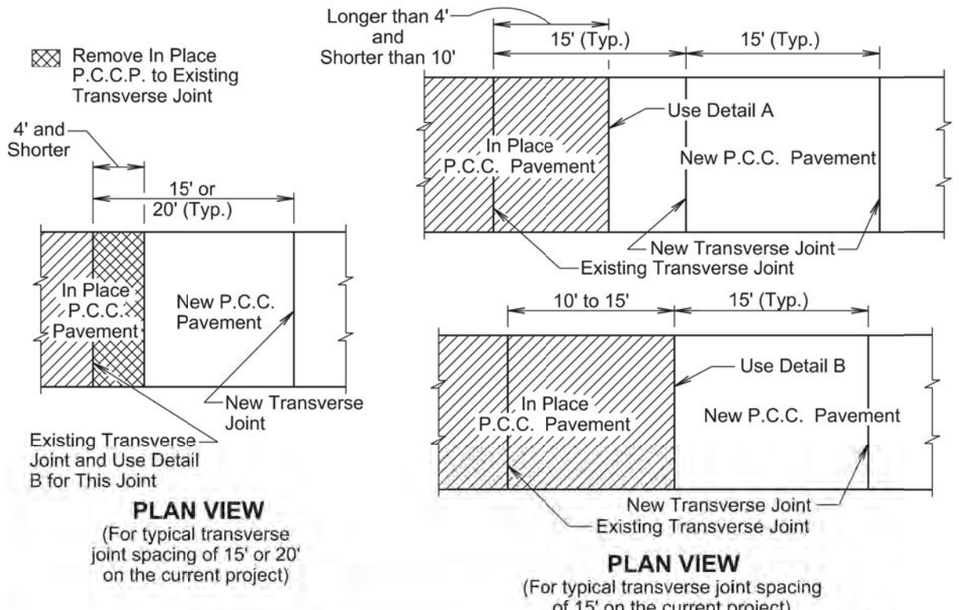
The epoxy coated plain round dowel bar size, number, and spacing will be the same as detailed on the corresponding dowel bar assembly standard plate (380.01, 380.02, 380.03, or 380.04). The epoxy coated plain round dowel bars will be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

June 26, 2019

Published Date: 3rd Qtr. 2021	SDDOT	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
			Sheet 1 of 2



PLAN VIEW
(For typical transverse joint spacing of 20' on the current project)



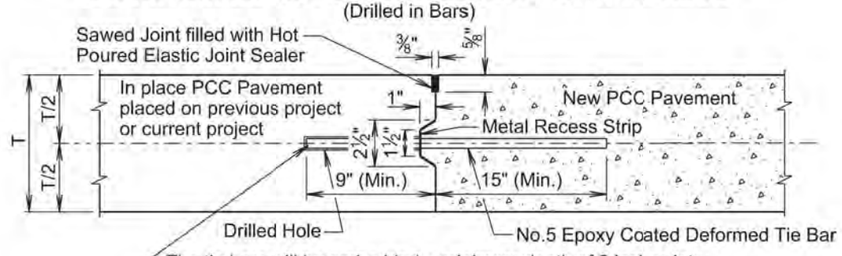
PLAN VIEW
(For typical transverse joint spacing of 15' or 20' on the current project)

PLAN VIEW
(For typical transverse joint spacing of 15' on the current project)

June 26, 2019

Published Date: 3rd Qtr. 2021	SDDOT	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08 Sheet 2 of 2

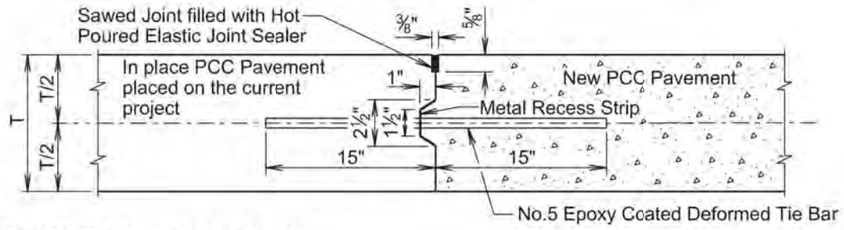
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS
(Drilled in Bars)



The tie bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

T = Pavement Thickness

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS
(Inserted or Formed in Bars)



GENERAL NOTES (For the details above):

The epoxy coated deformed tie bars will be spaced in accordance with the following tables:

TIE BAR SPACING 48" MAXIMUM	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

TIE BAR SPACING 30" MAXIMUM	
Transverse Contraction Joint Spacing	Number of Tie Bars
5' to 7'	2
7.5' to 9.5'	3
10' to 12'	4
12.5' to 14.5'	5
15' to 17'	6
17.5' to 19.5'	7
20' to 22'	8

The tie bars will be placed a minimum of 15 inches from transverse contraction joints.

The required number of tie bars as shown in the table will be uniformly spaced within each panel. The uniformly spaced tie bars will be spaced a maximum of 48 inches center to center for a female keyway and will be spaced a maximum of 30 inches center to center for a vertical face and male keyway. The maximum tie bar spacing will apply to tie bars within each panel.

The keyway illustrated in the above details depict a female keyway.

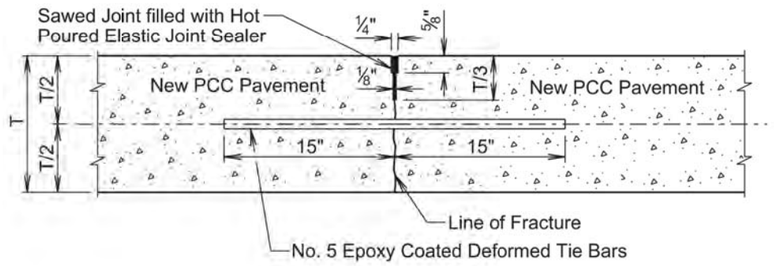
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip will be used. When concrete pavement is slip formed, a metal recess strip is not required.

June 26, 2019

Published Date: 3rd Qtr. 2021	SDDOT	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10 Sheet 1 of 2

SAWED LONGITUDINAL JOINT WITH TIE BARS

(Poured Monolithically)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

The epoxy coated deformed tie bars will be spaced in accordance with the following table:

TIE BAR SPACING 48" MAXIMUM	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

The tie bars will be placed a minimum of 15 inches from the transverse contraction joints.

The required number of tie bars as shown in the table will be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing will apply to tie bars within each panel.

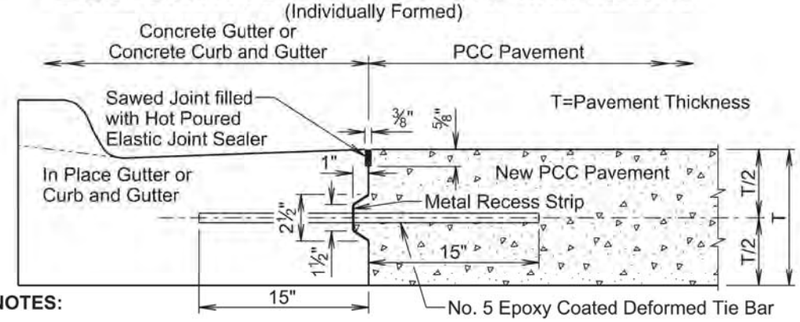
The first saw cut to control cracking will be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer is necessary.

June 26, 2019

Published Date: 3rd Qtr. 2021	SDDOT	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
			Sheet 2 of 2

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(Individually Formed)



GENERAL NOTES:

No. 5 epoxy coated deformed tie bars will be spaced 48 inches center to center. The keyway shown above is a female keyway.

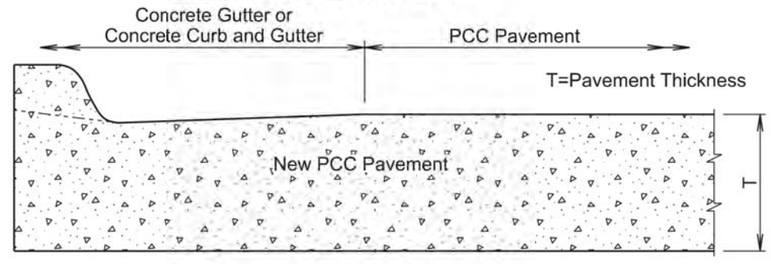
The tie bars will be placed a minimum of 15 inches from existing transverse contraction joints.

The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip will be used. When concrete pavement is slip formed, a metal recess strip is not required.

The transverse contraction joints in the concrete gutter or concrete curb and gutter will be placed at each mainline PCC pavement transverse contraction joint. The transverse contraction joints in the concrete gutter or the concrete curb and gutter will be 1½ inches deep if formed in fresh concrete using a suitable grooving tool. If a saw is used to cut the transverse contraction joints, then the depth of the joint will be at least ¼ the thickness of the concrete gutter or concrete curb and gutter.

The term "In Place Gutter or Curb and Gutter" in the above drawing indicates that the in place concrete gutter and concrete curb and gutter was placed on the current project.

POURED MONOLITHICALLY



GENERAL NOTES:

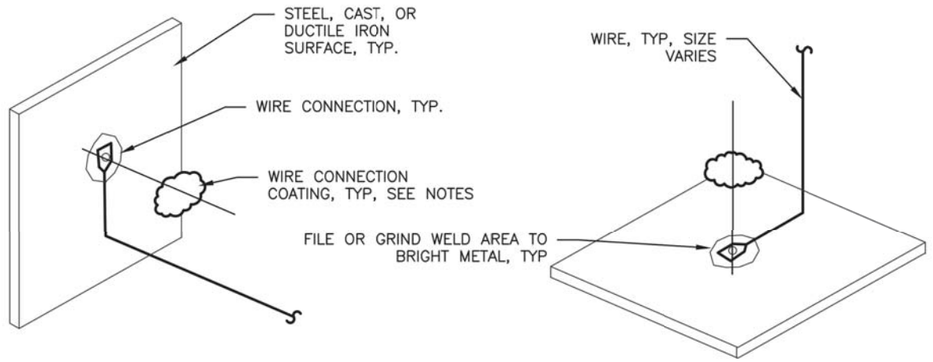
The mainline curb and gutter may be placed monolithically with the PCC pavement if the mainline lane width is less than or equal to 12 feet. If this method of construction is used, the tie bars and the sawed joint between the curb and gutter and the PCC pavement will be eliminated.

The gutter or curb and gutter will be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter will be sawed and sealed same as the transverse contraction joints in the PCC pavement.

The slope of the gutter will be the slope designated for the type of gutter or curb and gutter to be constructed. The bottom slope of the gutter or curb and gutter will be constructed at the same slope as the mainline concrete pavement.

June 26, 2019

Published Date: 3rd Qtr. 2021	SDDOT	PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER	PLATE NUMBER 380.11
			Sheet 1 of 1



NOTES:

1. COPPER ADAPTER SLEEVE REQUIRED FOR THERMITE WELDING OF NO. 2, NO. 4, NO. 10 AND NO. 12 AWG WIRES.

2. WELDER AND CARTRIDGE SIZE VARIES ACCORDING TO SURFACE SHAPE, MATERIAL, AND HORIZONTAL OR VERTICAL SURFACE. CONSULT WELDER MANUFACTURER FOR RECOMMENDED WELDER AND CARTRIDGE.

3. FOR MULTIPLE WIRE CONNECTIONS TO PIPE, SEPARATE THERMITE WELD CONNECTIONS BY ONE PIPE DIAMETER MINIMUM, 2'–0" MAXIMUM.

4. WIRE CONNECTIONS TO FOREIGN PIPELINES SHALL BE MADE BY FOREIGN PIPELINE REPRESENTATIVE.

5. COAT COMPLETED THERMITE WELD CONNECTIONS WITH EPOXY REPAIR COATING, THERMITE WELD PROTECTER PAD, OR AS OWNER SPECIFIED.

6. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED. COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE, SEE (13902PRC)

7. CONNECT BOND AND TEST WIRES TO METALLIC FITTINGS PRIOR TO ASSEMBLY, AS REQUIRED TO ALLOW CONNECTIONS TO BE MADE TO LEVEL FLAT (HORIZONTAL TYPE) SURFACES ON TOP OF FITTINGS.

8. ATTACH THERMITE WELD TO STUD OR WELD BASE PLATE IF PROVIDED OR TO DRY SIDE OF JOINT IF APPROVED BY PIPE MANUFACTURER.

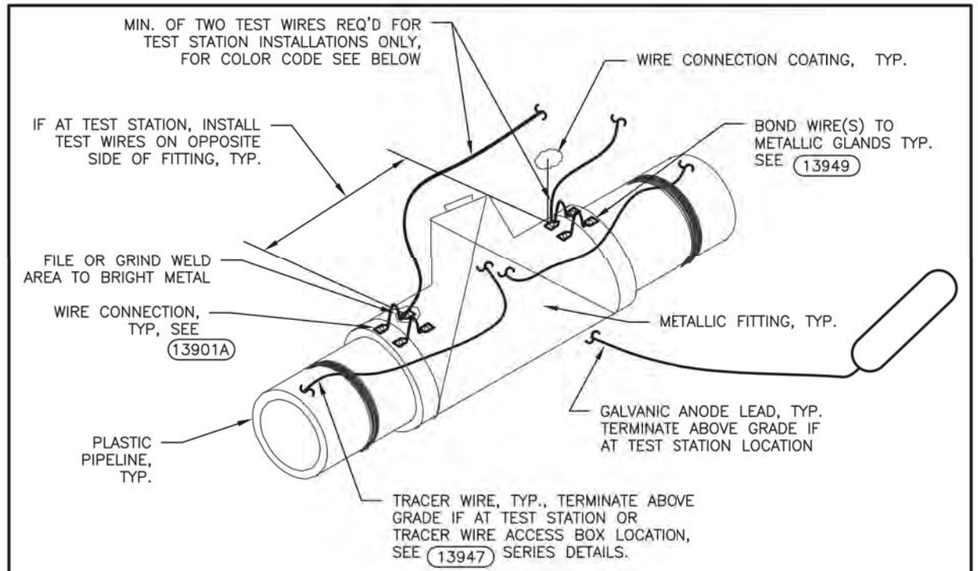
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

VERTICAL AND HORIZONTAL WIRE THERMITE WELD CONNECTIONS

DATE: 9–26–16

(13901A)



NOTES:

1. THERMITE OR PIN BRAZE WELD TO METALLIC PIPE, FITTINGS, & STRUCTURES ONLY.

2. STANDARD LOCATION FOR ANODE PLACEMENT IS ON EAST SIDE OF NORTH–SOUTH MAIN AND NORTH SIDE OF EAST–WEST MAIN. ACTUAL PLACEMENT LOCATION WILL VARY BASED UPON OTHER UTILITY CONFLICTS.

3. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED.

4. UTILIZE PURPLE TAPE TO IDENTIFY NORTH (1 STRIP) OR WEST (2 STRIPS) WIRE DIRECTION & GRAY TAPE TO IDENTIFY SOUTH (1 STRIP) OR EAST (2 STRIPS) WIRE DIRECTION, AS REQ'D.

WIRE COLOR CODE

1. PIPELINE TEST WIRES:

WATER – BLUE
HIGH LEVEL – DARK BLUE WITH 1 STRIP OF BLUE TAPE
LOW LEVEL – LIGHT BLUE WITH 1 STRIP OF WHITE TAPE

2. UNPROTECTED PIPELINE (NOT CATHODICALLY PROTECTED–e.g. PUMP STATION SIDE OF METALLIC PIPE) – BLACK

3. ANODE LEADS – BLACK

4. REFERENCE ELECTRODE WIRES – YELLOW

5. TRACER WIRES ON NON–METALLIC PIPE – BLUE W/ 2 STRIPS BLACK TAPE AND STRIPS OF PURPLE OR GRAY TAPE PER WIRE DIRECTION, SEE NOTE ABOVE

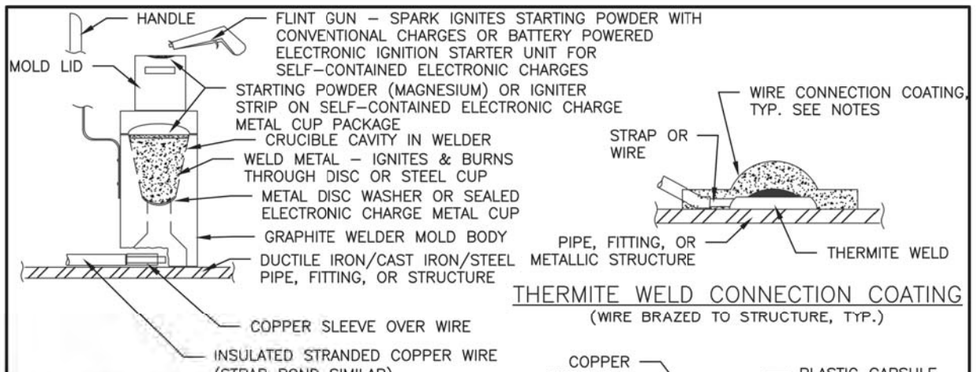
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

PLASTIC PIPELINE METALLIC FITTING WIRE CONNECTION AND COLOR CODE

DATE: 9–23–16

(13902PRC)



THERMITE WELD

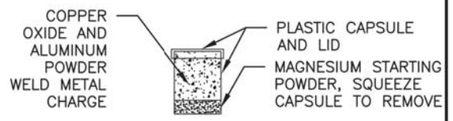
USE CAST IRON CHARGES FOR DUCTILE IRON AND CAST IRON STRUCTURES. USE STEEL CHARGES FOR STEEL STRUCTURES.

(SIMILAR SIZE AND TYPE OF CONVENTIONAL OR ELECTRONIC IGNITION TYPE CHARGES ACCEPTABLE)

COMPLETE WELDS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS

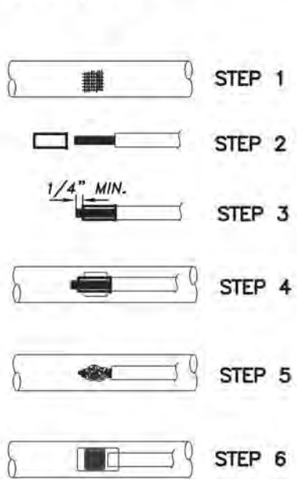
THERMITE WELD CONNECTION COATING

(WIRE BRAZED TO STRUCTURE, TYP.)



CONVENTIONAL WELD METAL CAPSULE

TYPE & SIZE VARIES (MAXIMUM 25 GRAM FOR STEEL, 32 GRAM FOR CAST & DUCTILE IRON, & 15 GRAM SIZE FOR OIL & GAS TYPE PIPELINES)



FILE STRUCTURE CONNECTION AREA (2"x2") TO BARE BRIGHT SHINY METAL & CLEAN. ALL WIRE WELDS ON PIPE SHALL BE A MINIMUM OF ONE PIPE DIAMETER APART UP TO A MAXIMUM OF 2 FEET SEPARATION DISTANCE.

STRIP INSULATION FROM WIRE. ATTACH COPPER SLEEVE (REQUIRED ON NO. 2, NO. 4, NO. 10 AND NO. 12 AWG WIRE)

ATTACH COPPER SLEEVE TO WIRE WITH CORRECT HAMMER DIE OR CRIMP TOOL. FACTORY SLEEVES SHALL BE ANGLED AND FIELD MADE BONDS SHALL HAVE WIRE EXTEND 1/4" PAST SLEEVE SO WIRE IS EXPOSED TO THERMITE WELD.

PLACE WASHER IN BOTTOM OF MOLD AND FILL CRUCIBLE W/POWDER OR INSERT PREPACKED ELECTRONIC CANISTER CHARGE, CLOSE LID, HOLD FIRMLY W/OPENING AWAY FROM OPERATOR, & IGNITE W/FLINT GUN OR ELECTRONIC IGNITION STARTER.

REMOVE SLAG FROM CONNECTION, VISUALLY INSPECT & TAP WELD TO TEST FOR SOUNDNESS & ADHESION W/ HAMMER. MEASURE JOINT BOND RESISTANCE AS SPECIFIED. REPLACE ALL POORLY FORMED, UNSIGHTLY, POROUS, HIGH RESISTANT, OR DEFECTIVE WELDS. INSTALL ADDITIONAL BOND WIRE OR STRAP IF REQUIRED.

CLEAN AND COAT CONNECTION AND EXPOSED STRUCTURE SURFACE WITH COATING MATERIALS, SEE NOTE BELOW. APPLY IN ACCORDANCE WITH COATING MANUFACTURER'S RECOMMENDATIONS.

6–A. UTILIZE 100–PERCENT MOISTURE TOLERANT EPOXY REPAIR COATING FOR WIRE CONNECTIONS AND FOR SPOT EXTERNAL COATING REPAIRS;
6–B. UTILIZE EXOTHERMIC WELD PROTECTOR PAD(S) TO COVER WELD AREA AND EXPOSED WIRE AT WELD; OR
6–C. REPAIR FITTING OR STRUCTURE COATING DAMAGE WITH SPECIFIED AND APPROVED COATING REPAIR MATERIALS FOR ORIGINAL COATING TYPE.

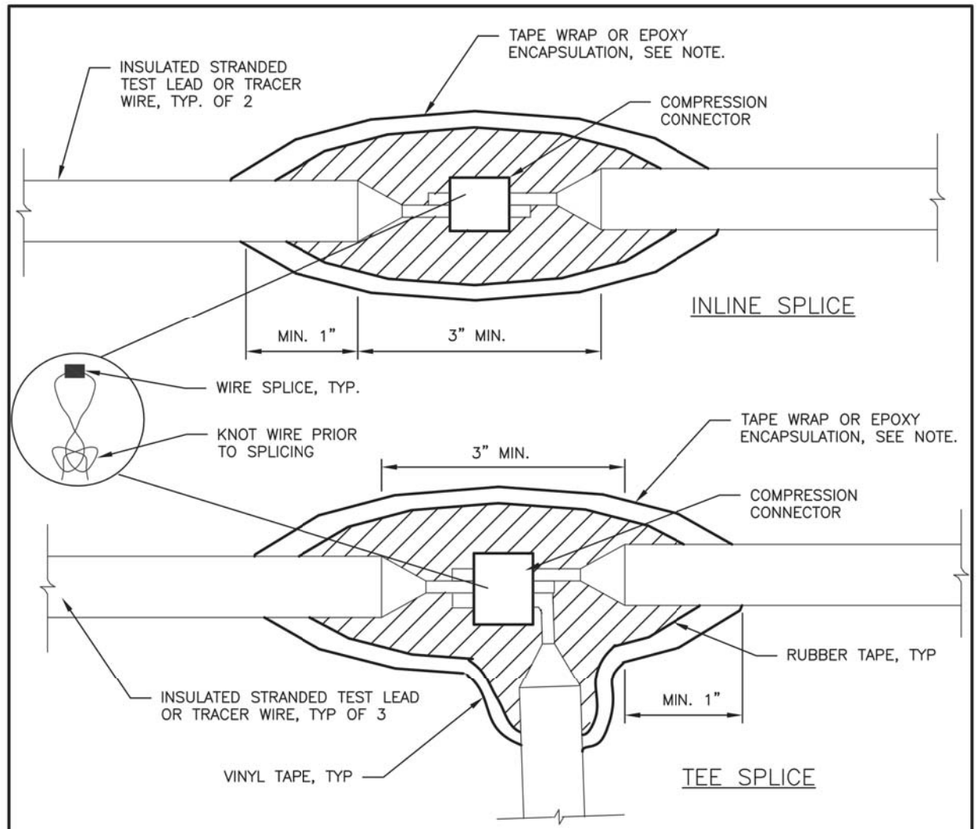
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

GENERAL EXOTHERMIC WELD AND COATING PROCEDURES THERMITE WELD WIRE CONNECTIONS

DATE: 9–26–16

13903P



NOTES:

1. KNOT WIRES PRIOR TO MAKING SPLICE TO MINIMIZE STRESS ON SPLICE.

2. MAKE WIRE SPLICE CONNECTION WITH COMPRESSION TYPE CONNECTOR IN ACCORDANCE WITH COMPRESSION CONNECTOR MANUFACTURER RECOMMENDATIONS OR SECURE WITH SPLIT BOLT AND SILVER SOLDER FOR TEST WIRES. DO NOT USE BUTT SPLICES OR WIRE NUTS. COMPLETE ALL SPLICES ONLY IN THE PRESENCE OF THE ENGINEER.

3. WRAP ENTIRE CONNECTION WITH TWO (2) LAYERS OF HIGH VOLTAGE RUBBER TAPE AND THEN WRAP WITH TWO (2) LAYERS OF VINYL ELECTRICAL TAPE AND COAT WITH SEALER OR ENCAPSULATE IN EPOXY SPLICE KIT. EXTEND A MINIMUM OF 1–INCH ONTO INTACT WIRE INSULATION.

4. TEST LEADS SHALL BE COMPLETED PER DETAIL.

5. TEST LEAD SPLICE LOCATIONS SHALL BE DOCUMENTED BY THE CONTRACTOR IN THE RED–LINE, AS–CONSTRUCTED PLANS BY STATION/OFFSET OR SURVEY COORDINATES CONSISTENT WITH PROJECT HORIZONTAL DATUM. LOCATION PROVIDED SHALL BE WITHIN 0.5 FEET OF TRUE LOCATION.

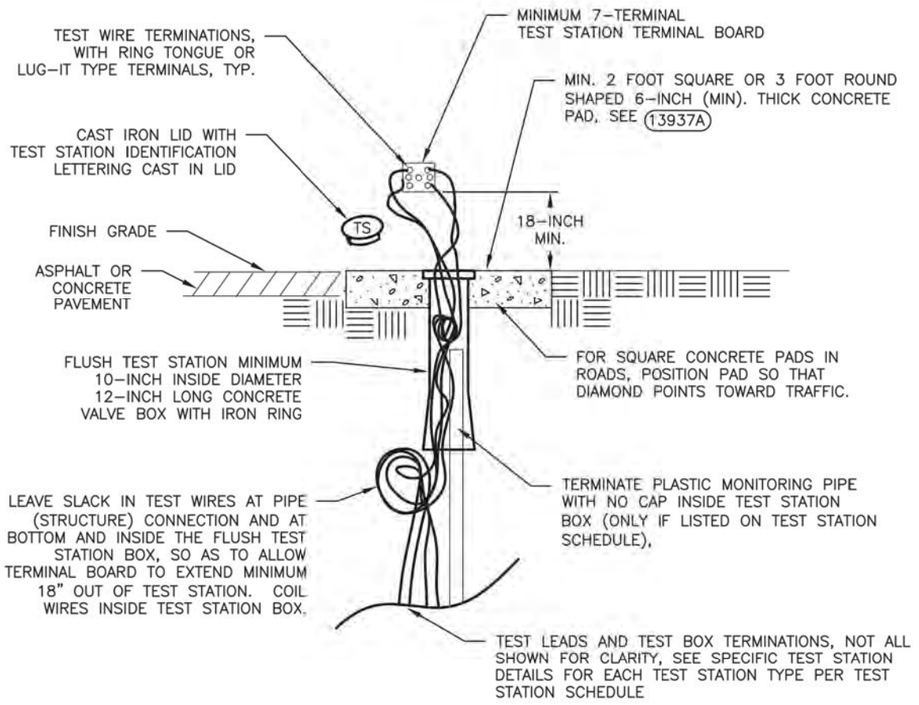
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

TEST LEAD SPLICES

DATE: 9–26–16

13929S



NOTES:

1. INSTALL PLASTIC MONITORING PIPE OR REFERENCE ELECTRODE ONLY AT TEST STATION LOCATIONS INDICATED ON TEST STATION LOCATION SCHEDULE OR DRAWINGS. INSTALL PIPE MARKING SIGNS NEXT TO TEST STATIONS IF SPECIFIED.
2. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED. COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE, SEE 13902PRC
3. LOCATE TEST STATION IN PROTECTED LOCATION DIRECTLY OVER PIPE UNLESS OFFSET REQUIRED BY SPECS. OR FIELD CONDITIONS (IN ROAD, FIELD, ETC.). OFFSET TO APPURTENANCES, R.O.W. FENCELINE OR EDGE OF ROADWAY, IF NO PROTECTED LOCATION AVAILABLE OVER PIPELINE. COORDINATE LOCATIONS WITH ENGINEER.
4. IF TEST STATION AND TRACER WIRE ACCESS BOXES AT SAME LOCATION, SEE INSET ON 13942FH
5. TEST STATION LOCATIONS SHALL BE DOCUMENTED BY THE CONTRACTOR IN THE RED–LINE, AS–CONSTRUCTED PLANS BY STATION/OFFSET OR SURVEY COORDINATES CONSISTENT WITH PROJECT HORIZONTAL DATUM. LOCATION PROVIDED SHALL BE WITHIN 0.5 FEET OF TRUE LOCATION.

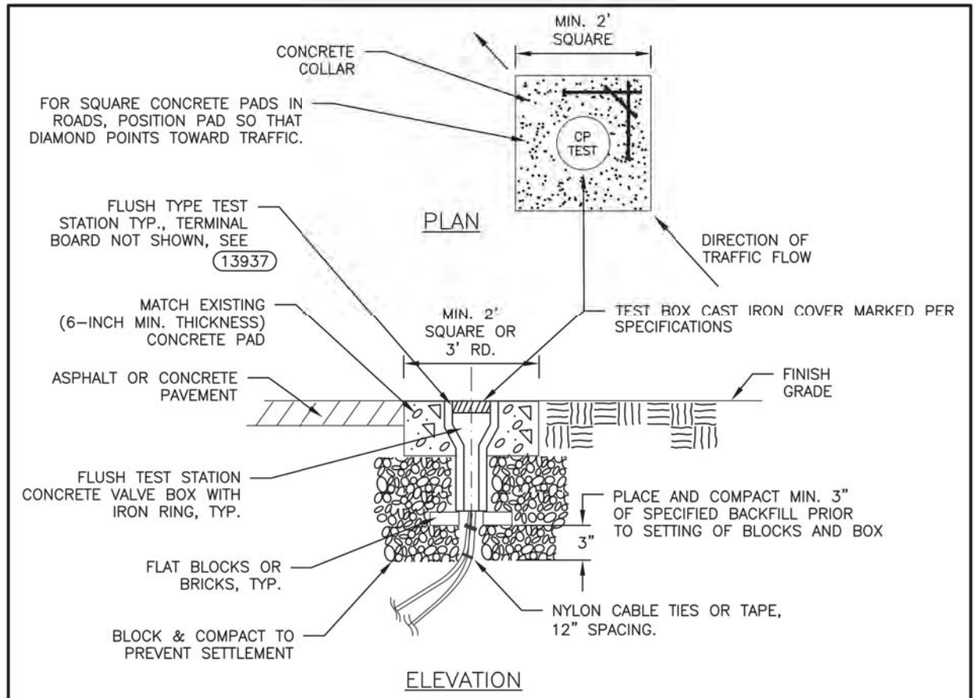
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

FLUSH-MOUNTED TEST STATION STANDARD FLUSH TYPES

DATE: 9–23–16

13937



NOTES:

1. TEST STATION TYPE AND NUMBER OF TEST LEADS SHALL BE AS INDICATED ON TEST STATION SCHEDULE OR DRAWINGS. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED. COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE SPECIFIED, SEE 13902PRC
2. ALL WIRES SHALL BE RUN WITHOUT SPLICES FROM THE CONNECTION TO THE TEST STATION BOX. TERMINATE WITH RING TONGUE OR LUG–IT TYPE TERMINALS AND BUNDLE WIRES TOGETHER AT 12–INCH INTERVALS WITH ELECTRICAL TAPE OR NYLON CABLE TIES.
3. PROVIDE ALL WIRES WITH SUFFICIENT SLACK SO THAT THE TERMINAL BOARD MAY BE EXTENDED A MINIMUM OF 18–INCHES ABOVE THE TOP OF THE TEST BOX. COIL WIRES IN TEST STATION. LOOP WIRES BOTH AT BOTTOM OF TEST STATION AND AT PIPE OR STRUCTURE TO MINIMIZE DAMAGE DURING BACKFILLING AND/OR FUTURE SETTLEMENT.

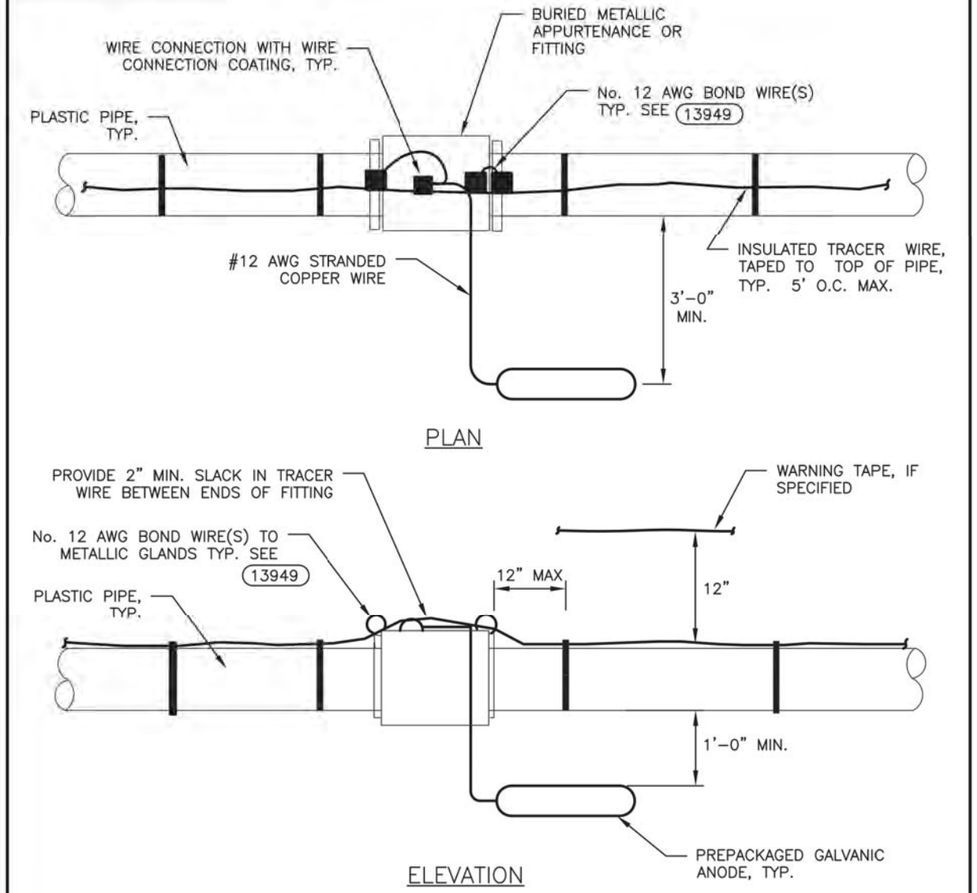
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

TYPICAL FLUSH MOUNTED TEST STATION BOX SUPPORT

DATE: 9–26–16

13937A



NOTES

1. MINIMUM OF TWO NO. 12 AWG BOND WIRES EACH FOR 12" AND LARGER PIPE. ONE BOND WIRE FOR SMALLER PIPE.

2. PROVIDE TYPE, NUMBER AND SIZE OF ANODES AS SPECIFIED. MINIMUM SHALL BE ONE ANODE PER FITTING.

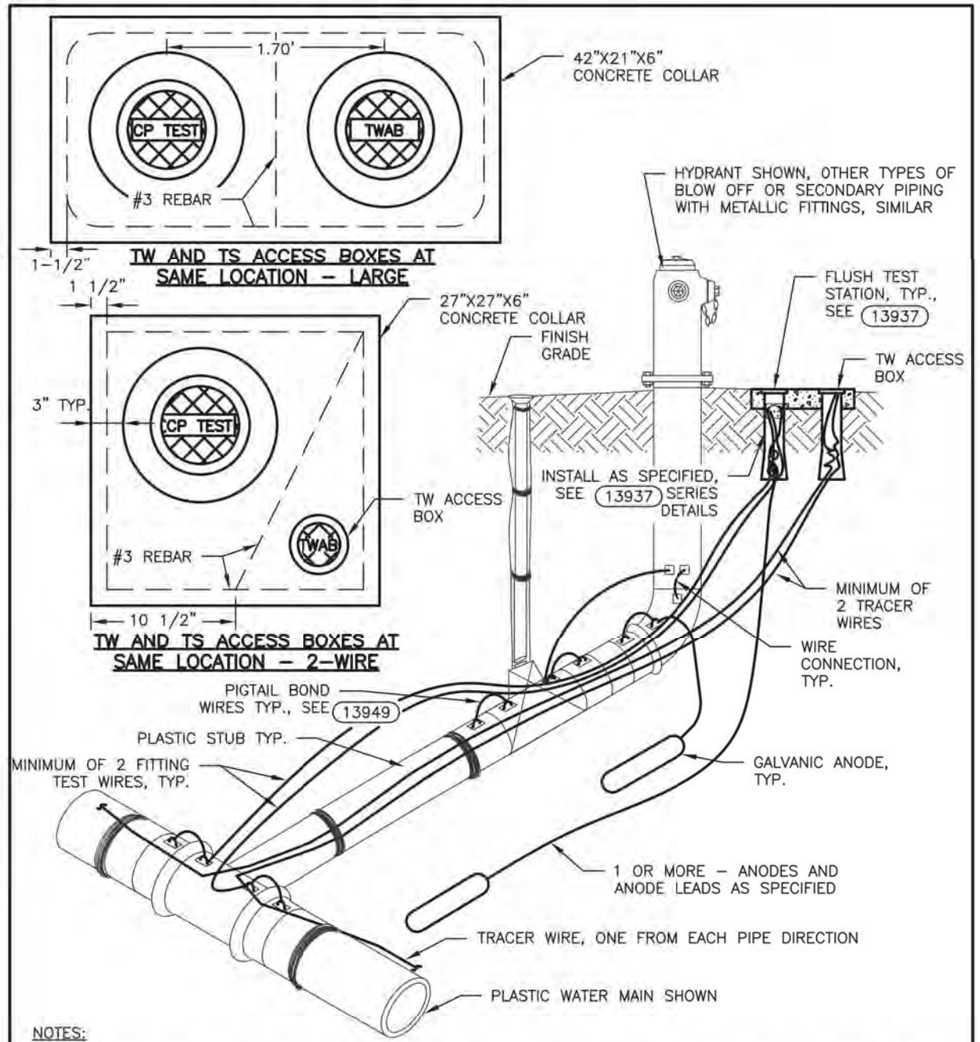
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

GALVANIC ANODE INSTALLATION AT BURIED METALLIC FITTINGS

DATE: 9-23-16

13940



NOTES:

1. PLACE TEST STATION IN A PROTECTED LOCATION SO AS TO NOT INTERFERE WITH OPERATION OF VALVES OR FIRE HYDRANT. TERMINATE FITTING TEST WIRES, ANODE LEAD AND TRACER WIRES IN TEST STATION AND TRACER WIRE ACCESS BOX, RESPECTIVELY, WITH MIN. 18" SLACK.

2. INSTALL GALVANIC ANODE MINIMUM 3'-0" FROM AND 1'-0" BELOW PIPELINE, FITTING, OR VALVE INVERT ELEVATION. INSTALL MINIMUM NUMBER, TYPE, AND SIZE OF GALVANIC ANODES SPECIFIED.

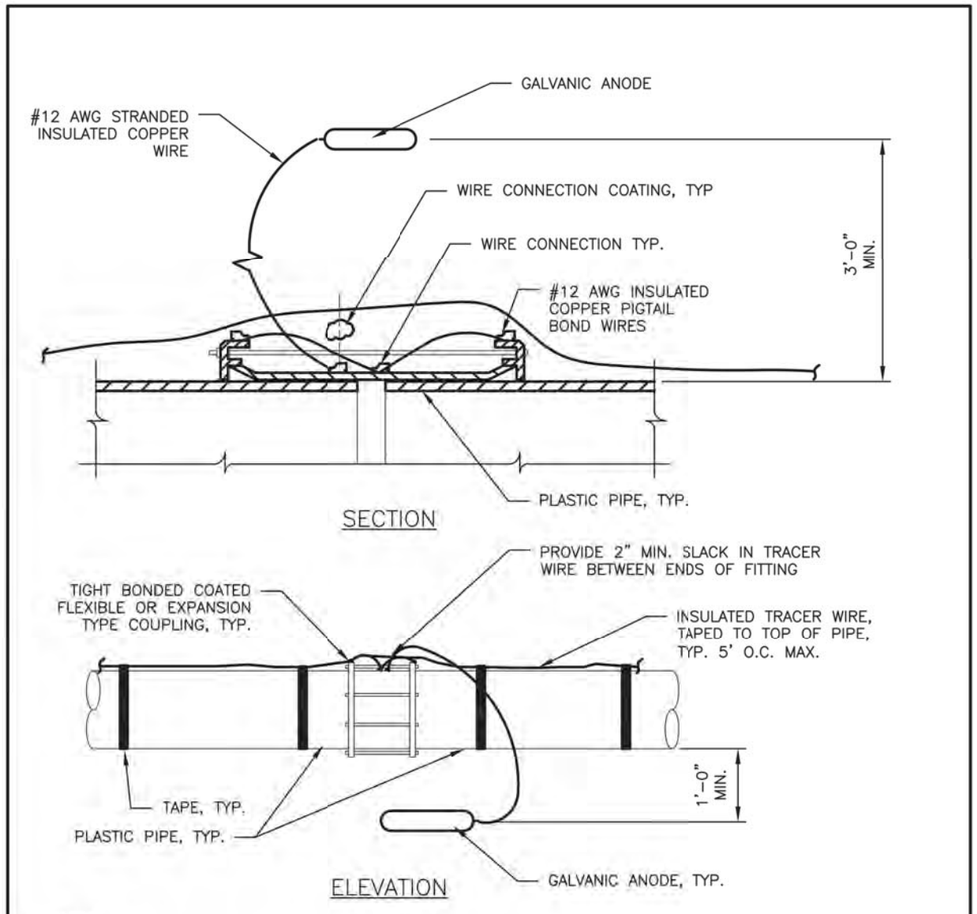
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

FLUSH TYPE TEST STATIONS AT HYDRANT ASSEMBLIES W/ PLASTIC STUB

DATE: 10-31-16

13942FH



NOTES:

1. MIN. TWO EACH NO. 12 AWG BONDS EACH FOR 12" AND LARGER PIPE, ONE BOND ALLOWED FOR SMALLER PIPE.
2. PROVIDE TYPE, NUMBER AND SIZE OF ANODES AS SPECIFIED. MINIMUM SHALL BE ONE ANODE PER FITTING.

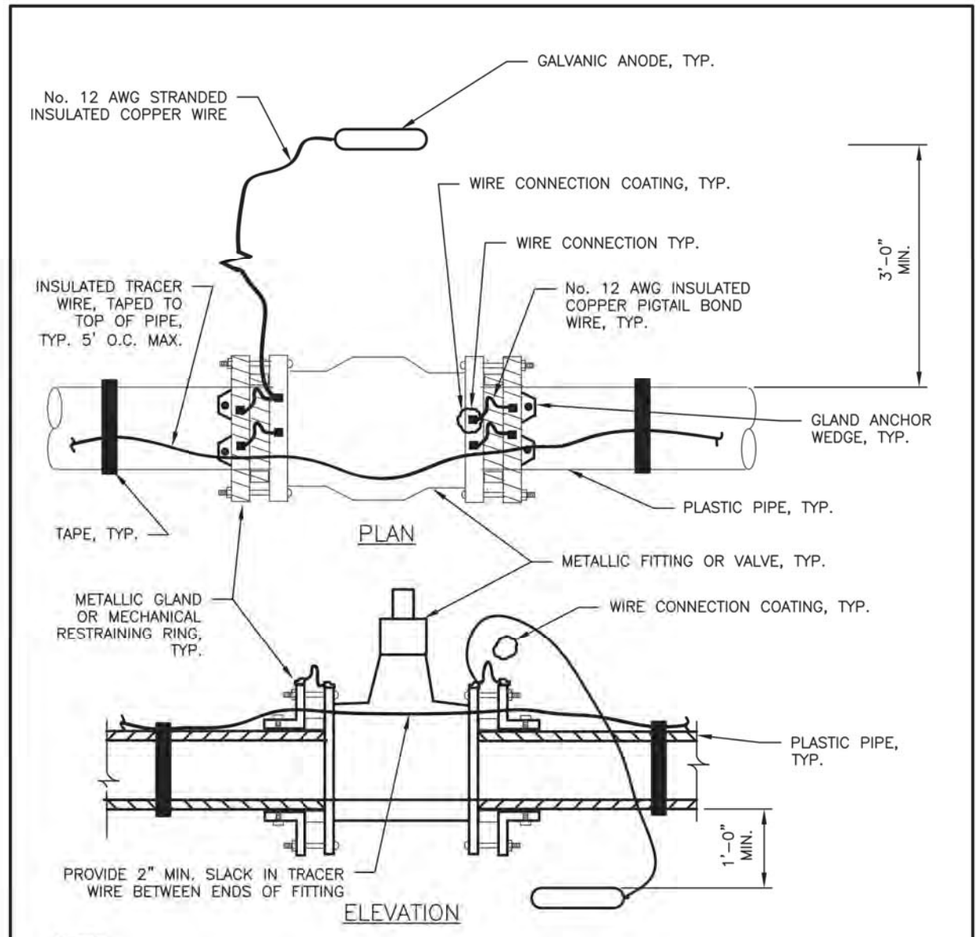
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

CORROSION PROTECTION FOR FLEXIBLE METALLIC COUPLINGS ON PLASTIC PIPE

DATE: 9-23-16

13943



NOTES:

1. BOND PLASTIC PIPE METALLIC GLANDS OR MECHANICAL RESTRAINING RINGS TO METALLIC VALVE OR FITTING BODY, SEE (13940) AND (13949)
2. PROVIDE TYPE, NUMBER & SIZE OF ANODES AS SPECIFIED. MINIMUM SHALL BE ONE ANODE PER FITTING.

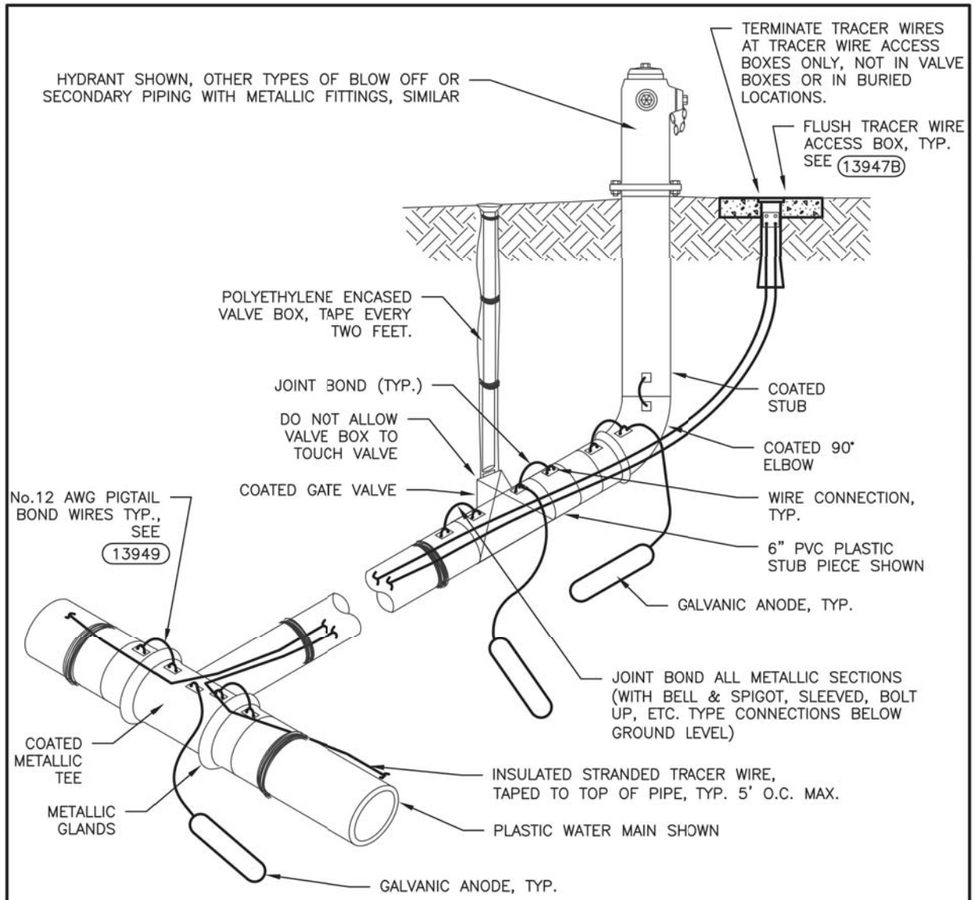
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

CORROSION PROTECTION FOR METALLIC VALVES OR FITTINGS ON PLASTIC PIPE

DATE: 9-23-16

13943DIP



NOTES:

1. INSTALL GALVANIC ANODE MINIMUM 3'–0" FROM AND 1'–0" BELOW PIPELINE, FITTING, OR VALVE INVERT ELEVATION.
2. INSTALL MINIMUM NUMBER, TYPE, AND SIZE OF GALVANIC ANODES SPECIFIED. NUMBER AND SIZE OF ANODES ON MAINLINE METALLIC TEE WILL DEPEND ON MAINLINE DIAMETER.

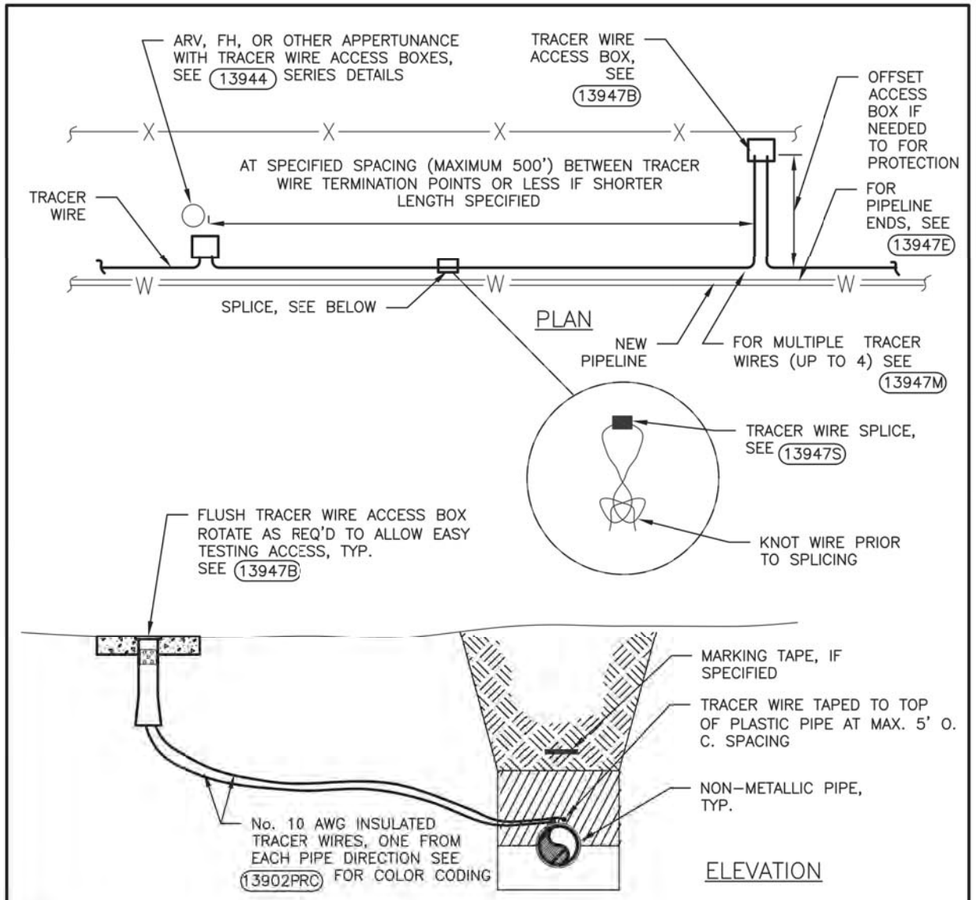
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

GALVANIC ANODE INSTALLATION AT HYDRANT ASSEMBLIES W/ PLASTIC STUB

DATE: 9–23–16

13944T



NOTES:

1. TERMINATE TRACER WIRE AT TRACER WIRE ACCESS BOXES ONLY LOCATED AT SPECIFIED DISTANCES, STRUCTURES AND END OF EACH PIPE RUN. TEST TRACER WIRE ELECTRICAL CONTINUITY AS SPECIFIED PRIOR TO PLACEMENT OF CURB AND GUTTER OR PAVING. DO NOT CONNECT TRACER WIRE DIRECTLY TO EXISTING OR NEW METALLIC PIPE OR FITTING.
2. LOCATE TRACER WIRE ACCESS BOXES IN PROTECTED LOCATIONS DIRECTLY OVER PIPE UNLESS OFFSET REQUIRED BY PLANS OR FIELD CONDITIONS (IN ROAD, FIELD, ETC.). OFFSET TO BACK OF CURB AND GUTTER OR HYDRANT, IF NO PROTECTED LOCATION AVAILABLE OVER PIPELINE. COORDINATE LOCATIONS WITH ENGINEER.
3. TRACER WIRE ACCESS BOX LOCATIONS SHALL BE DOCUMENTED BY THE CONTRACTOR IN THE RED–LINE, AS–CONSTRUCTED PLANS BY STATION/OFFSET OR SURVEY COORDINATES CONSISTENT WITH PROJECT HORIZONTAL DATUM. LOCATION PROVIDED SHALL BE WITHIN 0.5 FEET OF TRUE LOCATION.

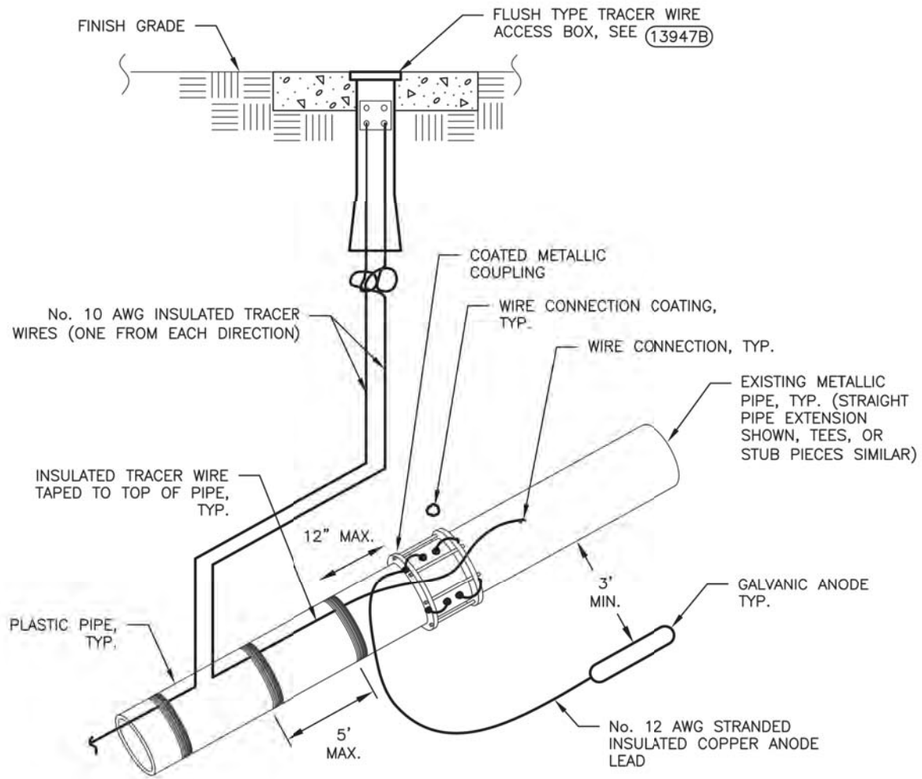
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

TRACER WIRE DETAIL

DATE: 12–6–16

13947



NOTES:

1. INSTALL GALVANIC ANODE TO METALLIC FITTING AT CONNECTION TO EXISTING METALLIC PIPELINE (IF METALLIC PIPE NOT ALREADY CATHODICALLY PROTECTED WITH AN IMPRESSED CURRENT CATHODIC PROTECTION SYSTEM).
2. IF TRACER WIRE CONNECTED TO EXISTING METALLIC PIPELINE, LOOP TRACER WIRES ABOVEGRADE AND TERMINATE IN TRACER WIRE ACCESS BOX. SEE (13947) SERIES DETAILS.
6. TRACER WIRE ACCESS BOX LOCATIONS SHALL BE DOCUMENTED BY THE CONTRACTOR IN THE RED-LINE, AS-CONSTRUCTED PLANS BY STATION/OFFSET OR SURVEY COORDINATES CONSISTENT WITH PROJECT HORIZONTAL DATUM. LOCATION PROVIDED SHALL BE WITHIN 0.5 FEET OF TRUE LOCATION.

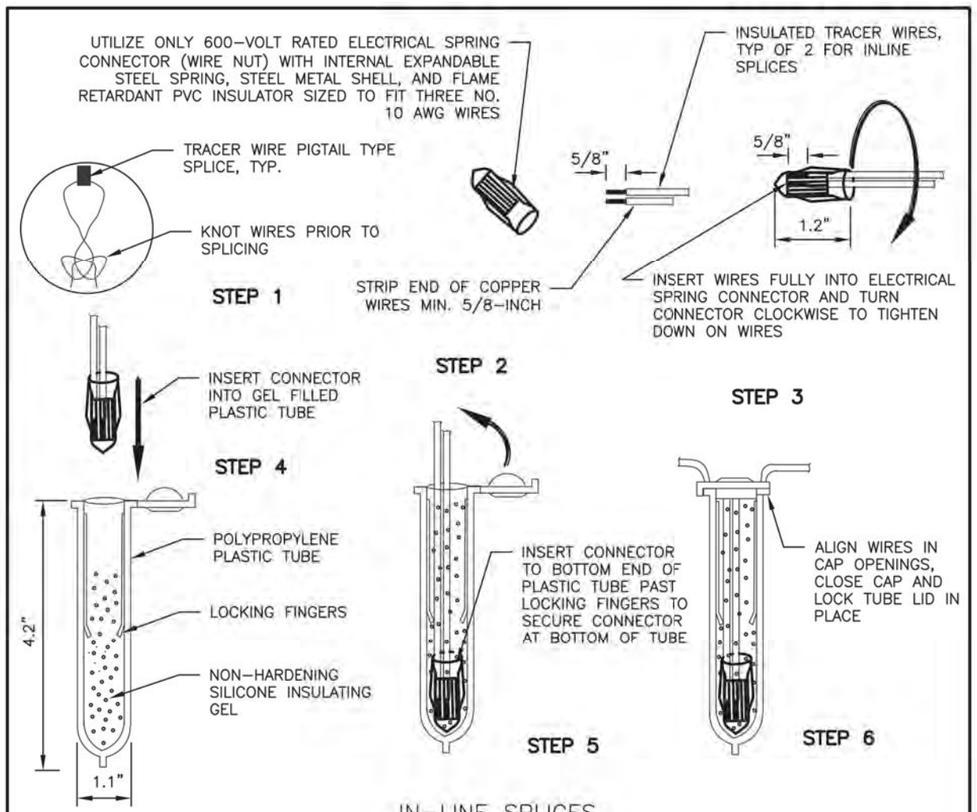
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

TRACER WIRE ACCESS BOXES AT CONNECTION TO EXISTING

DATE: 9-23-16

(13947F)



IN-LINE SPLICES

NOTES:

1. ALLOWED FOR TRACER WIRE TYPE SPLICES ONLY. TRACER WIRE ONLY REQUIRED FOR NON-METALLIC PIPE TYPE INSTALLATIONS. KNOT WIRES PRIOR TO MAKING SPLICE TO MINIMIZE STRESS ON SPLICE.
2. FOR COPPER WIRE SPLICES ONLY. STRIP WIRES AND MAKE WIRE SPLICE CONNECTION WITH ELECTRICAL SPRING (WIRE NUT) TYPE CONNECTORS. INSERT THE CONNECTOR INTO THE GEL FILLED TUBE TO THE END PAST THE LOCKING FINGERS TO HOLD THE CONNECTOR SECURELY IN PLACE, ALIGN WIRES AND THEN SHUT AND LOCK THE INSULATOR TUBE TOP LID COVER INTO PLACE. COMPLETE SPLICES AND INSULATE IN ACCORDANCE WITH CONNECTOR MANUFACTURER'S RECOMMENDATIONS.
3. COMPLETE ALL SPLICES ONLY IN THE PRESENCE OF THE ENGINEER.
4. IN-LINE SPLICE LOCATIONS SHALL BE DOCUMENTED BY THE CONTRACTOR IN THE RED-LINE, AS-CONSTRUCTED PLANS BY STATION/OFFSET OR SURVEY COORDINATES CONSISTENT WITH PROJECT HORIZONTAL DATUM. LOCATION PROVIDED SHALL BE WITHIN 0.5 FEET OF TRUE LOCATION.

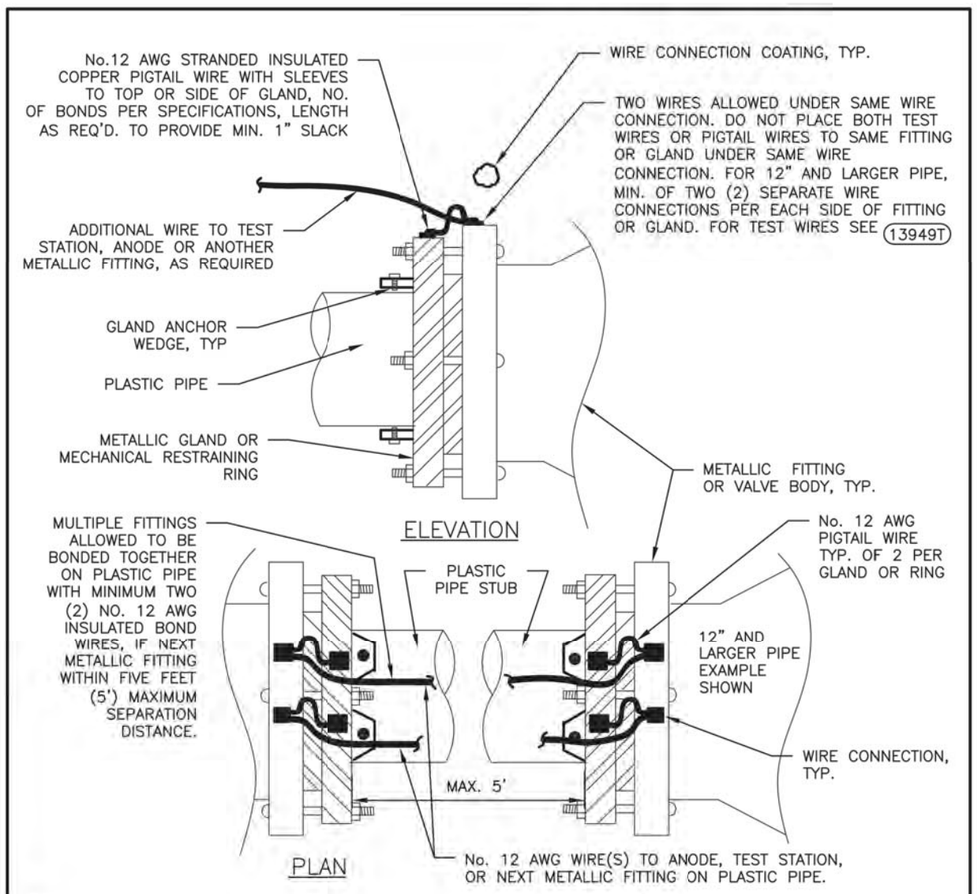
NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

TRACER WIRE SPLICES

DATE: 9-26-16

(13947S)



NOTES:

1. BOND PLASTIC PIPE METALLIC GLANDS TO METALLIC FITTING BODY. COMPLETE PIGTAIIL WIRE CONNECTIONS TO GLANDS BEFORE ASSEMBLY.

2. MINIMUM OF 2 NO. 12 AWG PIGTAIL BONDS EACH FOR 12" AND LARGER PIPE. MINIMUM OF ONE BOND FOR PIPE SMALLER THAN 12".

3. NUMBER, SIZE AND TYPE OF GALVANIC ANODES REQUIRED PER SPECIFICATIONS.

NTS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT

PLASTIC PIPE METALLIC FITTING GLANDS AND MECHANICAL RESTRAINT RINGS BONDING

DATE: 9-23-16

13949P