CITY OF STOCKTON

PUBLIC WORKS DEPARTMENT
22 East Weber Avenue, Room 301 • Stockton, CA 95202-2317 • 209 / 937-8411 • Fax 209 / 937-8277
www.stocktonca.gov

LETTER OF CLARIFICATION NO. 1

SIERRA NEVADA SANITARY SEWER REHABILITATION PROJECT
PROJECT NO. UW18029

TO ALL PROSPECTIVE BIDDERS DATE: January 13, 2022

Letter of Clarification No. 1 for the above-mentioned project consists of the following:

1. This acknowledgement form (see important notice at the end of this document).

BID FORMS:

2. Bidding Schedule: The Bidding Schedule has been updated to replace Bid Item 6 with Alternate Bid Item 6A. Replace the Bidding Schedule with the revised form dated January 11, 2022.

PLANS:

3. Sheet No. 3: General Notes:

    A. **REPLACE** with the attached revised Sheet No. 3.

4. Sheet No. 5: Plan & Profile Sierra Nevada St STA 1+00 to 11+50.

    A. **REPLACE** with the attached revised Sheet No. 5.

5. Sheet No. 8: Civil Details.

    A. **REPLACE** with the attached revised Sheet No. 8.

6. Sheet No. 11: Flow Rerouting and Bypass Pumping General Plan.

    A. **REPLACE** with the attached revised Sheet No. 11.

7. Sheet No. 12: Flow Blockage, Bypass, and Reroute Details.

    A. **REPLACE** with the attached revised Sheet No. 12.

SPECIAL PROVISIONS:

8. Pages SP-29 through SP-34:

   REPLACE with the attached revised Pages SP-29 through SP-34.

9. Appendix A:

   ADD the attached to Appendix A:

   A. Figure 1: General Shoring Requirements

   B. Figure 2: Live Load Pressure Due to Cooper E80

   C. BNSF Railway Utility Accommodation Policy

10. Page SP18, under “Preserving and Perpetuating Survey Monuments”:

    ADD the following to the second paragraph:

    A. “The ‘Acknowledgement of Monument Preservation’ form can also be found in Appendix B.”

11. Appendix B:

    ADD the attached to Appendix B:

    A. City of Stockton Acknowledgement of Monument Preservation Form

JODI ALMASSY, DIRECTOR
PUBLIC WORKS DEPARTMENT

JLA:EA:WJ:RD:TP:dc

NOTICE: THIS FORM MUST BE SIGNED AND RETURNED WITH YOUR BID. FAILURE TO SO INCLUDE OR ACKNOWLEDGE A CLARIFICATION MAY RESULT IN THE BID BEING REJECTED AS NOT RESPONSIVE.

CONTRACTOR:_____

BIDDER SIGNATURE:_____

DATE:_____

Base Bid Schedule

ITEM NO.	ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY
1	MOBILIZATION AND DEMOBILIZATION	LS	1
2	SHEETING, SHORING, & BRACING	LS	1
3	CURED-IN-PLACE-PIPE REHABILITATION OF 36" CONCRETE SEWER – SIERRA NEVADA STREET	LF	1,101
4	CURED-IN-PLACE-PIPE REHABILITATION OF 36" CONCRETE SEWER WITH PRELINER – HAZELTON AVE	LF	441
5	REHABILITATION OF MAINTENANCE HOLE - SIERRA NEVADA & HAZELTON	LS	1
6	REMOVAL AND REPLACEMENT OF EXISTING TYPE 2 MAINTENANCE HOLE WITH STUBOUT – SIERRA NEVADA & WORTH	LS	1
7	REHABILITATION OF MAINTENANCE HOLE - NEAR BNSF RAILROAD	LS	1
8	INSTALLATION OF NEW TYPE 2 MAINTENANCE HOLE WITH INTERNAL DROP	EA	1
9	INSTALLATION OF NEW TYPE 2 MAINTENANCE HOLE	EA	1
10	CLEAN AND CCTV OF SANITARY SEWER LINES	LS	1
11	UPSTREAM PLUG INSTALLATION	LS	1
12	DOWNSTREAM BYPASS PUMPING	LS	1
13	SCOTTS AVE REROUTE	LS	1
14	TRAFFIC STAGING SYSTEM	LS	1
15	PAVEMENT RESTORATION	LS	1
16	STORMWATER HANDLING AND EROSION CONTROL	LS	1
17	SITE RESTORATION	LS	1

Alternative Bid Schedule

ITEM NO.	ALTERNATIVE ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY
5A	REMOVAL AND REPLACEMENT OF EXISTING TYPE 2 MAINTENANCE HOLE – SIERRA NEVADA & HAZELTON	LS	1
7A	REMOVAL AND REPLACEMENT OF EXISTING TYPE 2 MAINTENANCE HOLE - NEAR BNSF	LS	1
18A	POINT REPAIR OF DETERIORATED SEWER PIPE IN ADVANCE OF CIPP	LS	1

GENERAL NOTES (CITY OF STOCKTON):

1. ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE FOLLOWING: CURRENT CITY OF STOCKTON STANDARD SPECIFICATIONS AND PLANS, INCLUSIVE OF ALL CURRENT REVISIONS AND AMENDMENTS, CALIFORNIA DEPARTMENT OF TRANSPORTATION CURRENT STANDARD PLANS AND SPECIFICATIONS (CALTRANS), INCLUSIVE OF ALL CURRENT REVISIONS AND AMENDMENTS, AND CA-MUTCD LATEST EDITION, INCLUSIVE OF ALL CURRENT REVISIONS AND AMENDMENTS THERETO. WHERE THERE IS A CONFLICT BETWEEN THE PLANS AND THE CITY'S STANDARD SPECIFICATIONS AND PLANS, THE CITY OF STOCKTON STANDARD SPECIFICATIONS AND PLANS SHALL PREVAIL. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTING THE IMPROVEMENTS IN ACCORDANCE WITH THE ABOVE-MENTIONED STANDARDS AND SPECIFICATIONS.
2. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE COMPLETE WORK SCOPE AND ALL RELATED CONDITIONS PRIOR TO BID. ANY QUESTIONS OR DISCREPANCIES WITH THE INFORMATION SHOWN HEREIN MUST BE DIRECTED TO THE ENGINEER PRIOR TO BID.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND LICENSES REQUIRED FOR THE CONSTRUCTIONS AND COMPLETION OF THE PROJECT AND SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS AND CONDITIONS OF ALL PERMITS AND APPROVALS APPLICABLE TO THIS PROJECT. THE CONTRACTOR SHALL ENSURE THAT THE NECESSARY PERMITS AND/OR LICENSES ARE SECURED PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FROM THE CITY OF STOCKTON FOR ANY WORK DONE WITHIN CITY RIGHTS-OF-WAY OR ON CITY-OWNED FACILITIES WITHIN AN EASEMENT. CONTRACTOR SHALL CALL THE PERMIT CENTER AT (209) 937-8366 TO REQUEST A CONTROL NUMBER AND ACTIVATE THE PERMIT NO LESS THAN 24 HOURS, BUT NOT IN EXCESS OF 72 HOURS PRIOR TO START OF WORK.
5. ALL STATIONS REFER TO DISTANCES ALONG STREET CENTERLINE THE 36" PIPE BEING REHABILITATED, UNLESS OTHERWISE NOTED. ALL STATIONS OFF CENTERLINE ARE PERPENDICULAR TO OR RADIALLY OPPOSITE CENTERLINE STATIONS.
6. THE CONTRACTOR SHALL RECEIVE PRIOR APPROVAL FROM THE ENGINEER FOR ANY EXTRA WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE ENGINEER AT NO ADDITIONAL COST TO THE CITY.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING FROM DAMAGE ALL EXISTING AND NEWLY PLACED IMPROVEMENTS THAT ARE TO REMAIN. SUCH IMPROVEMENTS THAT ARE DAMAGED BY THE CONTRACTOR SHALL BE REPLACED AT NO ADDITIONAL COST TO THE CITY.
8. THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING SAFETY AND SECURITY OF JOB SITE, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
9. THE CONTRACTOR SHALL MAINTAIN A NEATLY MARKED SET OF FULL-SIZE AS-BUILT DRAWINGS SHOWING THE FINAL LOCATION OF FINAL IMPROVEMENTS. AS-BUILT DRAWINGS SHALL REFLECT CHANGE ORDERS, ACCOMMODATIONS, AND ADJUSTMENTS TO ALL IMPROVEMENTS CONSTRUCTED. WHERE NECESSARY, SUPPLEMENTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR.
10. PRIOR TO ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL DELIVER TO THE ENGINEER, ONE SET OF NEATLY MARKED AS-BUILT DRAWINGS. AS-BUILT DRAWINGS SHALL BE REVIEWED AND THE COMPLETE AS-BUILT DRAWING SET SHALL BE CURRENT WITH ALL CHANGES AND DEVIATIONS REDLINED AS A PRECONDITION TO THE FINAL PROGRESS PAYMENT APPROVAL AND/OR FINAL ACCEPTANCE.
11. ALL TRENCH EXCAVATION SHALL BE IN ACCORDANCE WITH SECTION 7 OF THE CITY OF STOCKTON STANDARD SPECIFICATIONS.
12. THE CONTRACTOR SHALL PROVIDE ALL SHORING, BRACING, SLOPING OR OTHER PROVISIONS NECESSARY TO PROTECT WORKERS FOR ALL AREAS TO BE EXCAVATED TO A DEPTH OF 5' OR MORE. EXCAVATIONS OF 5 FEET OR MORE IN DEPTH WILL REQUIRE AN EXCAVATIONS PERMIT FROM THE STATE OF CALIFORNIA DEPARTMENT OF INDUSTRIAL SAFETY FOR TRENCHES 5 FEET OR MORE IN DEPTH, THE CONTRACTOR SHALL COMPLY WITH SECTION 7-1.02K(6)(a) OF THE CALTRANS STANDARDS, SECTION 6705 OF THE STATE OF CALIFORNIA LABOR CODE, AND ANY LOCAL CODES OR ORDINANCES.
13. ATTENTION IS CALLED TO: SECTION 1541(b)(1) OF THE CONSTRUCTION SAFETY ORDERS (CALIFORNIA CODE OF REGULATIONS, TITLE 8), ISSUED BY THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD PURSUANT TO THE CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ACT OF 1973, WHICH STATES: "THE APPROXIMATE LOCATION OF SUBSURFACE INSTALLATIONS, SUCH AS SEWER, TELEPHONE, FUEL, ELECTRIC, WATER LINES, OR ANY OTHER SUBSURFACE INSTALLATIONS THAT REASONABLY MAY BE EXPECTED TO BE ENCOUNTERED DURING EXCAVATION WORK, SHALL BE DETERMINED BY THE EXCAVATOR PRIOR TO OPENING AN EXCAVATION."
14. PRIOR TO COMMENCING ANY WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE EACH UTILITY COMPANY LOCATE IN THE FIELD THEIR MAIN AND SERVICE LINES. THE CONTRACTOR SHALL NOTIFY MEMBERS OF THE UNDERGROUND SERVICE ALERT (U.S.A.) 48 HOURS IN ADVANCE OF PERFORMING EXCAVATION WORK BY CALLING THE TOLL-FREE NUMBER (800) 227-2600.
15. IT SHALL BE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES SO THAT NO DAMAGE RESULTS TO THEM DURING THE PERFORMANCE OF HIS CONTRACT. THE CONTRACTOR SHALL BE REQUIRED TO COOPERATE WITH OTHER CONTRACTORS AND UTILITY COMPANIES INSTALLING NEW OR MODIFIED STRUCTURES, UTILITIES AND SERVICES WITHIN THE PROJECT LIMITS.
16. THE CONTRACTOR SHALL EXERCISE DUE CAUTION AND SHALL CAREFULLY PRESERVE BENCH MARKS, CONTROL POINTS, REFERENCE POINTS AND ALL SURVEY MONUMENTS, AND SHALL BEAR ALL EXPENSES FOR REPLACEMENT AND/OR ERROR CAUSED BY HIS UNNECESSARY LOSS OR DISTURBANCE. THE CONTRACTOR SHALL CONSULT WITH A LICENSED LAND SURVEYOR OR CIVIL ENGINEER LICENSED TO PRACTICE LAND SURVEYING IN CALIFORNIA PRIOR TO BEGINNING CONSTRUCTION TO ENSURE THAT ANY PRECONSTRUCTION CORNER RECORDS, AS REQUIRED BY THE STATE OF CALIFORNIA PROFESSIONAL LAND SURVEYOR ACT HAVE BEEN FILED WITH THE COUNTY SURVEYOR, PURSUANT TO SECTION 8771(a-f) OF THE CALIFORNIA BUSINESS AND PROFESSION CODE.
17. ALL WORK IN THE PUBLIC RIGHT-OF-WAY IS SUBJECT TO THE APPROVAL AND ACCEPTANCE OF THE ENGINEER.
18. PRIOR TO PLACEMENT OF ANY FINISH ASPHALT CONCRETE OR CONCRETE, THE CONTRACTOR SHALL VERIFY ALL FINISH GRADES AND SLOPES FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND OBTAIN APPROVAL AND ACCEPTANCE BY THE ENGINEER.
19. THE CONTRACTOR SHALL LAYOUT IMPROVEMENTS FROM THE DIMENSIONS SHOWN ON THE PLANS. ANY CLARIFICATION OR CONFLICTS, DISCREPANCIES OR AMBIGUITIES SHALL BE DIRECTED TO THE ENGINEER PRIOR TO THE CONSTRUCTION OF THE IMPROVEMENTS.
20. DUST CONTROL SHALL BE PERFORMED AT ALL TIMES, AT THE CONTRACTORS' EXPENSE, TO MINIMIZE ANY DUST NUISANCE AND SHALL BE IN ACCORDANCE WITH SECTION 10-5 OF CALTRANS STANDARD SPECIFICATIONS AND THE REQUIREMENTS OF THE CITY OF STOCKTON.
21. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING WATER, SEWER, AND DRAINAGE FACILITIES WITHIN THE CONSTRUCTION AREA UNTIL NEW IMPROVEMENTS ARE IN PLACE AND FUNCTIONING, EXCEPT WHERE OTHERWISE APPROVED.
22. INGRESS AND EGRESS BY PROPERTY OWNERS, BUSINESSES, AND OTHERS SHALL BE PROVIDED AT ALL TIMES DURING THE COURSE OF CONSTRUCTION UNLESS OTHERWISE APPROVED OR SPECIFIED.
23. SIDEWALK REMOVAL SHALL BE TO THE NEAREST SCORE MARK OR AS DETERMINED BY THE ENGINEER. CONTRACTOR SHALL NEATLY SAW-CUT CONCRETE WHERE PULL BOXES ARE TO BE PLACED AND SHALL RESTORE THE SLAB TO MATCH THE EXISTING CONDITION.
24. NEW SIDEWALK SHALL BE DOWELED INTO EXISTING SIDEWALK ACCORDING TO CITY STANDARD DRAWING NO. R-55.
25. THE CONTRACTOR SHALL ADJUST TO GRADE ALL FACILITIES (INCLUDING, BUT NOT LIMITED TO VALVE BOXES, PULL BOXES, MAINTENANCE HOLE RIM AND COVERS, METER BOXES) WITHIN THE LIMITS OF WORK AND/OR AS DIRECTED BY ENGINEER. THE FACILITIES SHALL BE ADJUSTED AS SET FORTH IN C.O.S. STANDARD DRAWING NO. R30 AND/OR AS DIRECTED BY ENGINEER.
26. THE CONTRACTOR SHALL PROVIDE A MAINTENANCE CONNECTION PLAN. SUBMIT THIS PLAN TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO COMMENCING CONSTRUCTION.
27. THE CONTRACTOR SHALL PROVIDE A PIPE TESTING PLAN. SUBMIT THIS PLAN TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO COMMENCING CONSTRUCTION.

STRIPING AND SIGNAGE NOTES:

1. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGMEN OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.
2. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL AND/OR DETOUR PLAN FOR APPROVAL BY THE CITY OF STOCKTON TRAFFIC ENGINEER PRIOR TO THE START OF CONSTRUCTION.
3. ALL PAVEMENT MARKINGS, STRIPING AND CROSSWALKS SHALL BE THERMOPLASTIC.
4. STRIPING SHALL BE IN STRICT CONFORMANCE WITH THE CA-MUTCD (LATEST EDITION) AND THE SPECIAL PROVISIONS SECTION 84. LONGITUDINAL STRIPING EXCLUDED, PAVEMENT MARKINGS SHALL CONFORM TO THE CALTRANS SPECIFICATIONS (LATEST EDITION) SECTION 84 AND THE CA-MUTCD (LATEST EDITION).
5. SIGNING SHALL CONFORM TO THE CA-MUTCD (LATEST EDITION) AND CALTRANS SPECIFICATIONS (LATEST EDITION) SECTION 82.
6. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE REMOVED BY GRINDING PER CALTRANS STANDARD SPECIFICATIONS SECTION 84-9.
7. CONTRACTOR SHALL INSTALL A BLUE REFLECTOR ON FIRE HYDRANT SIDE AT ALL FIRE HYDRANT LOCATIONS PER CA-MUTCD, SECTION 3B.11 AND FIGURE 3B-102.
8. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF TWO (2) WORKING DAYS IN ADVANCE TO VERIFY THE LAYOUT AND CAT-TRACKING OF THE PROPOSED IMPROVEMENTS. CAT-TRACKING TO BE APPROVED BY TRAFFIC ENGINEERING PRIOR TO FINAL ACCEPTANCE OF STRIPING AND PAVEMENT MARKINGS.
9. THE CONTRACTOR SHALL ENSURE THAT THE APPROPRIATE STRIPING AND PAVEMENT MARKINGS ARE IN PLACE AT ALL TIMES. TEMPORARY STRIPING AND/OR PAVEMENT MARKINGS SHALL BE INSTALLED TO REPLACE ANY EXISTING STRIPING OR MARKINGS WHICH HAVE BEEN REMOVED. ANY CONFLICTING STRIPING SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR PRIOR TO REOPENING THE STREET TO TRAFFIC.
10. R30E (CA) "NO PARKING" SIGNS ARE TO BE INSTALLED AT A 45° ANGLE FACING DIRECTION OF TRAFFIC FLOW. SIGN SIZE SHALL BE 18" X 24".
11. THE CONTRACTOR SHALL REPLACE ANY PAVEMENT DELINEATION AND TRAFFIC MARKINGS THAT ARE DAMAGED DURING THE COURSE OF WORK AT NO ADDITIONAL COST TO THE CITY.

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL CLEAN AND CCTV INSPECT SEWERS TO VERIFY LATERAL LOCATIONS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL INSPECT CONDITION AND SERVICEABILITY OF ALL PIPES AND LATERALS PRIOR TO MODIFICATIONS AND RECONNECTIONS. CONTRACTOR SHALL COORDINATE WITH THE CITY FOR ANY ADDITIONAL REPAIRS PRIOR TO CONTINUATION OF WORK.
3. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL DIMENSIONS. MATERIAL AND PRODUCT DIMENSIONS SHALL BE ADJUSTED TO MATCH THE ACTUAL DIMENSIONS PRIOR TO PROCUREMENT OR CONSTRUCTION AS APPLICABLE.
4. SIGNIFICANT LONG-LEAD COORDINATION AND ENGINEERING BY THE CONTRACTOR IS REQUIRED TO COMPLY WITH THE TERMS OF BNSF REQUIREMENTS FOR SSMH-34P074 AND THE PORTION OF THE PIPE CROSSING UNDER THE NEARBY TRACKS. IF SSMH-34P074 IS TO BE REPLACED, THE COVER OF THE SSMH HAS BEEN PAVED OVER; CONTRACTOR SHALL POSITIVELY LOCATE PRIOR TO SUBMITTING SHORING PLAN AND ANY OTHER DOCUMENTS REQUIRED AS NOTED IN THE SPECIAL PROVISIONS INCLUDING THOSE IN APPENDIX A.

PROJECT ALIGNMENT MAINTENANCE HOLE SUMMARY

STATION	SSMH ID #	SCOPE	CITY STANDARD DWGS	DESCRIPTION	ALTERNATIVE BID ITEM DESCRIPTION
PRIMARY CIPP REHABILITATION ALIGNMENT					
1+00	34P088	REHAB	S-12	REHABILITATE IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS. R&R: ALSO REMOVE & REPLACE 12 LF OF 24" VCP ON MORMON SLOUGH TRUNK SEWER INTO SSMH W/ 30" ASTM F679 115 PSI PVC PIPE. INSTALL ONE 8-FOOT SECTION WITH BELL FACING UPSTREAM & ONE PLAIN-END 4-FOOT SECTION THAT CONNECTS TO (E) SS PER DETAIL 2, DWG 8. INSTALL 30" SS AT INVERT OF -2.76 INTO SSMH-34P088. (N) 30" PVC SS INTO (N) SSMH SHALL BE SIMILAR TO PAGE 3 OF STD DWG S-12. (1)	-
4+45	34P074	REHAB	S-12	LOCATE & REHABILITATE IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS. RAISE FRAME & COVER TO MATCH (E) GRADE.	R&R: FLOW IS STRAIGHT THROUGH, NO ADD'L INFLOWS, SHORING REQUIRES COMPLIANCE WITH BNSF LOADING A & DESIGN PER COOPER E-80 LOADING.
7+65	34P062	ABANDON	NA	INSTALL REINFORCED CONCRETE CLOSURE CAP ACROSS TOP OF BASE, BACKFILL ABOVE (E) BASE W/ CDF TO AB SUBGRADE. REMOVE ALL MH BARRELS, CONE, FRAME, & COVER COMPONENTS LESS THAN 8' BELOW GRADE. SALVAGE FRAME AND COVER, RETURN TO CITY.	--
8+41		INSTALL (N) DROP MH	S-6, S-12	CONSTRUCT BASE AND BARRELS PER S-12. CONNECT 6" PVC PIPE FROM EAST TO (N) DROP MH. DROP IS INTERNAL & DEVIATION FROM STANDARD; UPSIZE DETAIL FROM STD DWG S-6 TO 6" TO MATCH (E) PIPE SIZE.	--
12+01	34P037	REHAB	S-12	REHABILITATE IN ACCORDANCE WITH PROJECT SPECIAL PROVISIONS.	R&R: 90-DEGREE BEND, NO ADD'L INFLOWS; CHANNELIZE SIMILAR TO STD DWD D-5 W/ MINIMUM RADIUS OF 2' THROUGH TURN.
15+25		INSTALL (N) MH	S-12	FLOW IS STRAIGHT THROUGH, NO ADD'L INFLOWS.	--
16+42	34P025		NA	UPSTREAM END OF PIPE REHAB - NO MH MODIFICATION. ALTERNATIVE LOCATION FOR UPSTREAM PLUG, MUST BE UPSTREAM OF SSMH & CLEAR OF OPERATIONS.	--
	34P109		NA	INSTALL UPSTREAM PLUG.	--
SCOTTS AVENUE REROUTE					
7+66, 8' EAST		INSTALL (N) MH	S-10	COMBINE FLOWS FROM 6" SS LATERALS SIMILAR TO STANDARD DETAIL D-5.	--
8+16, 7' EAST		REMOVE (E) MH		REMOVE & RECONECT UPSTREAM 6" SS TO (N) 6" SEWER USING WYE. SALVAGE FRAME & COVER, RETURN TO CITY.	--
8+41, 8' EAST		MODIFY (E) MH	S-10	INSTALL INTERNAL DROP ON (E) 6" UNCONTROLLED DROP FROM NORTH. DROP IS INTERNAL & DEVIATION FROM STANDARD; UPSIZE 4" PIPE FROM STD DWG S-6 TO 6" TO MATCH (E) PIPE SIZE. CORE THRU BASE & CHIP OUT CONCRETE TO CREATE (N) CHANNEL FOR (N) 6" SEWER FROM SOUTH PER STANDARD DETAIL D-5, PACK W/ GROUT.	--

NOTE:
1. FOR ALL SSMH R&R, (E) CAST-IN-PLACE RCP IS TO BE SAWCUT AT EACH END OF THE (N) SSMH TO BE CAST. COAT EXPOSED REBAR W/ RUST INHIBITOR PRIOR TO CASTING SSMH BASE. CONTRACTOR SHALL SALVAGE FRAME AND COVER AND RETURN TO CITY. CONTRACTOR SHALL INCLUDE CONE AND FRAME & COVER PER CITY STANDARD DRAWINGS. SSMHS SHALL BE COATED WHERE REQUIRED PER CITY STANDARD SPECIFICATION 71-1.09.
2. CITY WILL DETERMINE WHEN ALTERNATIVE SCOPE WILL BE IMPLEMENTED AND PROVIDE NOTICE TO CONTRACTOR.
3. THE SAME NEW SANITARY SEWER MH IS USED FOR MHs THAT ARE TO BE REHABBED UNDER THE BASE SCOPE OR REMOVED & REPLACED IF ALTERNATIVE SCOPE IS IMPLEMENTED.

PAVEMENT REPAIR TABLE

STREET	TI	MINIMUM AC DEEPLIFT
SIERRA NEVADA STREET	6.0	12"
HAZELTON AVENUE	7.0	12.5"
WILSON WAY	8.0	14.5"
WILSON WAY (FRONTAGE)	6.0	12"
SCOTTS AVENUE	6.0	12"
WORTH STREET	6.0	12"
NOTE: MAXIMUM 15" A.C. DEEPLIFT FOR ALL STREETS TAYLOR STREET MAY NOT BE ACCESSED OR DISTURBED WITHOUT BNSF PERMISSION		

UTILITY CONTACTS

AT&T (PACIFIC BELL) . . . . . .213-633-3122. . . . .MARSHALL JOHNSON
CALIFORNIA WATER SERVICE . . . . .209-547-7900. . . . .JEREMIAH MECHAM
CENTURY LINK . . . . . .303-992-9931. . . . .
COMCAST . . . . . .925-424-0278. . . . .MARTINA GOMEZ
PG&E . . . . . .877-743-7782. . . . .BRAD JOAQUIN
BNSF. . . . . .559-457-7621. . . . .MATT HANS

STANDARD DRAWINGS SPECIAL REFERENCES

DWG. NO.	DESCRIPTION
CITY OF STOCKTON	
R-36. . . .	EXISTING STREET TRENCH SECTION FOR TRENCHES WIDER THAN 8"
R-38. . . .	TRENCH SECTION (EXISTING STREET) ADDITIONAL PAVEMENT RESTORATION
S-4	CALIFORNIA HEALTH DEPARTMENT REQUIREMENTS
S-6	INSIDE SANITARY SEWER DROP
S-7	PRE-CAST CONCRETE MAINTENANCE HOLE CONES
S-8	MAINTENANCE HOLE FRAME & COVER
S-10	TYPE 1 MAINTENANCE HOLE FOR PIPES 33" DIAMETER OR SMALLER
S-12. . . .	TYPE 2 MAINTENANCE HOLE FOR PIPES 36" DIAMETER AND LARGER.
S-15	PROTECTION OF STORM DRAINS AND SANITARY SEWER LINES
S-18	CLEANOUT
D-5	TYPICAL INTERSECTION FOR TYPE 1 MAINTENANCE HOLE

CALL BEFORE YOU DIG 1-800-227-2600 UNDERGROUND SERVICE ALERT

PROJECT ENGINEER — REGISTERED PROFESSIONAL ENGINEER — WILLIAM D. WORRALL — NO. 62870 — CIVIL — STATE OF CALIFORNIA — 10/07/2021

DRAWING SCALE: AS SHOWN
ORIGINAL DRAWING SCALE: 0 ½" 1"

KSN inc. KJELDSEN SINNOCK NEUDECK — CIVIL ENGINEERS & LAND SURVEYORS
www.ksninc.com
711 N. Pershing Avenue, Stockton, CA 95203, 209-946-0268
1550 Harbor Blvd., Suite 212, West Sacramento, CA 95691, 916-403-5900

NO.	DESCRIPTION	DATE	APPR.
1	LETTER OF CLARIFICATION NO. 1	JAN. 2022	BDW

DATE OCT. 2021
HORIZONTAL DATUM CCS83, ZONE 3
VERTICAL DATUM NAVD88
KSN PROJECT FILE NO. 2404-0010

SIERRA NEVADA STREET
SANITARY SEWER LINE REHABILITATION

GENERAL NOTES

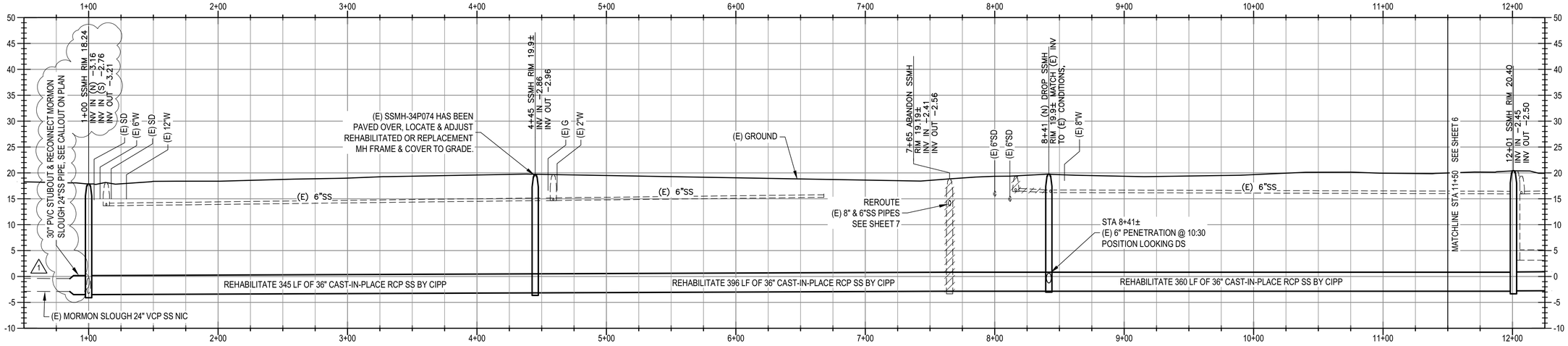
DEPARTMENT OF PUBLIC WORKS
CITY OF STOCKTON, CALIFORNIA

SCALE: AS SHOWN
DESIGNED BY: BDW
DRAWN BY: PX
CHECKED BY: SKS
RECORD DWG:

APPROVED BY: DATE:
CITY ENGINEER
STOCKTON, CALIF.

SHEET NO. 3
OF 17 SHTS
PROJECT NO. UW18029

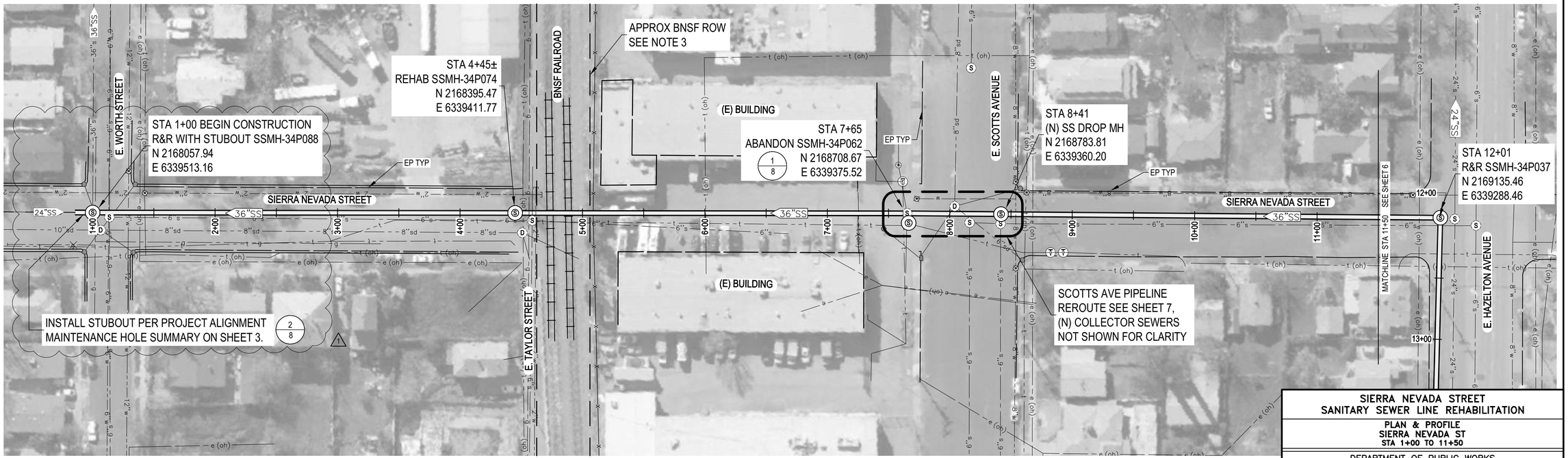
FILE SPEC: \\domain.ksninc.pvt\Folders\Proj\2404_COS_Sierra_Nevada_St_SS_Rehab\0010_SN_SS-Rehab\08_Civil\400_Plans\020_CAD\Sheets\2&3_G-002-Notes.dwg
PLOT DATE: Jan 05, 2022 - 8:42am



LEGEND

TO BE ABANDONED

NOTES:
1. SEE SPECIAL PROVISIONS FOR CIPP CRITERIA.
2. REFER TO "PROJECT ALIGNMENT MAINTENANCE HOLE SUMMARY" ON SHEET 3 FOR SSMH SCOPE & ALTERNATIVE SCOPE.
3. BNSF ROW HAS NOT BEEN SURVEYED AND ONLY SHOWN IN APPROX LOCATION.



FILE SPEC: P:\2404_COS_Sierra_Nevada_St_SS_Rehab\0010_SN_SS-Rehab\08_Civil\400_Plans\020_CAD\Sheets\5 to 7_CU-200.dwg
PLOT DATE: Jan 06, 2022 - 11:02am

CALL BEFORE YOU DIG 1-800-227-2600 UNDERGROUND SERVICE ALERT

PROJECT ENGINEER
REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. WORRALL
NO. 62870
CIVIL
STATE OF CALIFORNIA
10/07/2021

DRAWING SCALE
AS SHOWN
ORIGINAL DRAWING SCALE
0 ½" 1"

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KSN PROJECT FILE NO. 2404-0010

SIERRA NEVADA STREET SANITARY SEWER LINE REHABILITATION

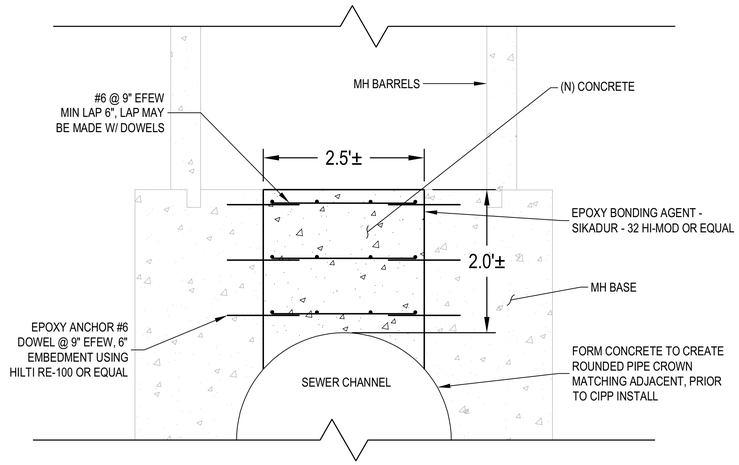
PLAN & PROFILE SIERRA NEVADA ST STA 1+00 TO 11+50

DEPARTMENT OF PUBLIC WORKS
CITY OF STOCKTON, CALIFORNIA

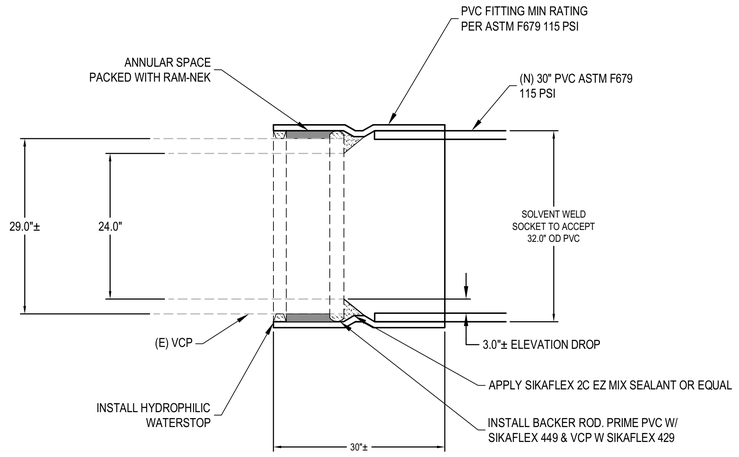
SCALE: AS SHOWN
DESIGNED BY: BDW
DRAWN BY: PX
CHECKED BY: SKS
RECORD DWG:

APPROVED BY: DATE:
CITY ENGINEER
STOCKTON, CALIF.

SHEET NO. 5
OF 17 SHTS
PROJECT NO. UW18029



1 SSMH-34P062 BASE CLOSURE
N.T.S.



NOTES:
1. FITTINGS SHALL BE BY SPECIFIED FITTINGS, BELLINGHAM, WA OR EQUAL
2. CONTRACTOR TO CONFIRM OD OF (E) 24" VCP SEWER PRIOR TO PREPARING SUBMITTAL AND INSTALLATION.

2 CONCENTRIC PVC ADAPTER - STUBOUT FROM SSMH-34P088
N.T.S.

1

FILE SPEC: \\domain-ksninc.pvt\Folders\Proj\2404_COS_Sierra_Nevada_St_SS_Rehab\0010_SN_SS-Rehab\08_Civil\400_Plans\020_CAD\Sheets\8_CZ-500.dwg
PLOT DATE: Jan 05, 2022 - 9:07am

CALL BEFORE YOU DIG 1-800-227-2600 UNDERGROUND SERVICE ALERT

PROJECT ENGINEER
REGISTERED PROFESSIONAL ENGINEER WILLIAM D. WORRALL No. 62870 CIVIL STATE OF CALIFORNIA
10/07/2021

DRAWING SCALE
AS SHOWN
ORIGINAL DRAWING SCALE
0 ½" 1"

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CIVIL ENGINEERS & LAND SURVEYORS
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209-946-0268
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West Sacramento, CA 95691
916-403-5900

NO.	DESCRIPTION	DATE	APPR.
1	LETTER OF CLARIFICATION NO. 1	JAN. 2022	BDW

DATE OCT. 2021
HORIZONTAL DATUM CCS83, ZONE 3
VERTICAL DATUM NAVD88
KSN PROJECT FILE NO. 2404-0010

SIERRA NEVADA STREET
SANITARY SEWER LINE REHABILITATION

CIVIL DETAILS

DEPARTMENT OF PUBLIC WORKS
CITY OF STOCKTON, CALIFORNIA

SCALE: AS SHOWN
DESIGNED BY: BDW
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RECORD DWG:

APPROVED BY: DATE:
CITY ENGINEER
STOCKTON, CALIF.

SHEET NO. 8
OF 17 SHTS
PROJECT NO. UW18029

PLUG AND BYPASS PUMPING SUMMARY						
COMPONENT	BYPASS FLOW CAPACITY	APPROX LENGTH	US MH INV	DS MH INV	DS PLUG TO PREVENT BACKWATER	DESCRIPTION
UPSTREAM PLUG	NA	NA	4.48	NA	NA	PLUG TO BLOCK FLOW IN MH-34P109 FROM FLOWING OVER WEIR INTO 36" PIPE.
DOWNSTREAM BYPASS	4.8 MGD	10-15 FT	-2.51	-3.4	YES	ROUTE FLOWS INTO MH-34P088 FROM 24" MORMON SLOUGH SEWER TO DS SIDE OF SSMH.
SCOTTS AVE REROUTE BYPASS	25 GPM	225 FT	12	15	NO	FOR (N) DROP MH AT STA 8+41 CONSTRUCTION & SCOTTS AVE REROUTE.

LEGEND

1/13 — LIGHT TRAFFIC BYPASS TRENCH

GENERAL NOTES:

1. CONTRACTOR MAY PROPOSE ALTERNATIVE ROUTE FOR ANY BYPASS.
2. BYPASS TRENCH SHALL BE AGAINST OR AS CLOSE TO CURB OR GUTTER AS POSSIBLE.
3. UTILITIES ARE NOT SHOWN, CONTRACTOR TO PERFORM RECONNAISSANCE AND AVOID CONFLICTS.
4. CONTRACTOR TO SUBMIT BYPASS-SPECIFIC TRAFFIC CONTROL PLANS. LOCATION OF BARRICADES, SIGNAGE, RAMPS & DETOURS, ETC SHALL BE SHOWN ON THE BYPASS PUMPING PLAN.
5. CONTRACTOR TO MAINTAIN/REPAIR BYPASS LINE IMMEDIATELY IF ANY DAMAGE/VANDALISM OCCURS.
6. REPLACE ANY STRIPING DAMAGED DUE TO TRENCHING FOR TEMPORARY BYPASS.
7. TRAFFIC LOOPS DAMAGED BY CONTRACTOR ARE TO BE REPLACED AT CONTRACTOR'S EXPENSE.

AIRPORT WAY

BNSF RAILROAD

SCOTTS AVE REROUTE BYPASS FROM (E) MH 8'± E OF (N) DROP MH, REFER TO SHEET 7

SEE TRENCH DETAIL ON SHEET 13.

DOWNSTREAM BYPASS SEE 4/12

SSMH-34P088

SSMH-34P062

SIERRA NEVADA STREET

E. ANDERSON STREET

(E) MORMON SLOUGH SEWER

E. WORTH STREET

E. TAYLOR STREET

E. SCOTTS AVENUE

E. HAZELTON AVENUE

(WEST FRONTAGE) WILSON WAY

S. WILSON WAY

SSMH-34P109

UPSTREAM PLUG SEE 2/12

SCALE: 1" = 60'

0 60' 120'

SIERRA NEVADA STREET
SANITARY SEWER LINE REHABILITATION

FLOW REROUTING AND BYPASS PUMPING
GENERAL PLAN

DEPARTMENT OF PUBLIC WORKS
CITY OF STOCKTON, CALIFORNIA

PROJECT ENGINEER
REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. WORRALL
No. 62870
CIVIL
STATE OF CALIFORNIA
10/07/2021

DRAWING SCALE
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1	LETTER OF CLARIFICATION NO. 1	JAN. 2022	BDW

DATE OCT. 2021
HORIZONTAL DATUM CCS83, ZONE 3
VERTICAL DATUM NAVD88
KSN PROJECT FILE NO. 2404-0010

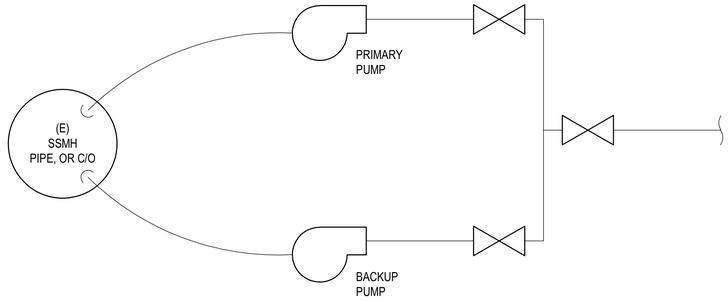
SCALE: AS SHOWN
DESIGNED BY: BDW
DRAWN BY: PX
CHECKED BY: SKS
RECORD DWG:

APPROVED BY: DATE:
CITY ENGINEER
STOCKTON, CALIF.

SHEET NO. 11
OF 17 SHTS
PROJECT NO. UW18029

CALL BEFORE YOU DIG 1-800-227-2600 UNDERGROUND SERVICE ALERT

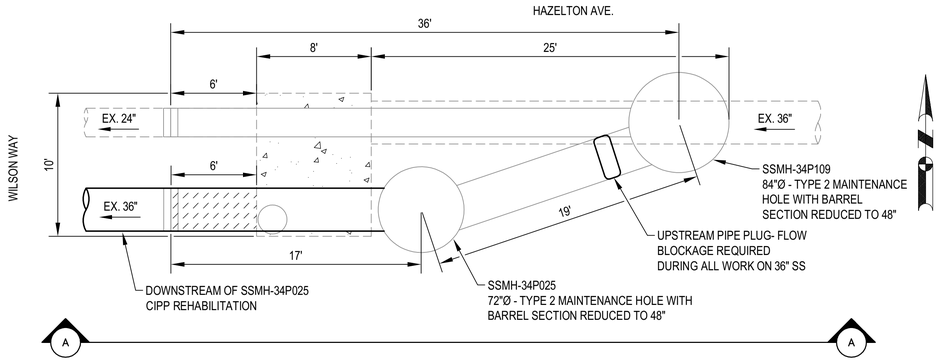
FILE SPEC: \\domain.ksninc.pvt\folders\Proj\2404_COS_Sierra_Nevada_St_SS_Rehab\0010_SN_SS-Rehab\08_Civil\400_Plans\020_CAD\Sheets\11_CB-200.dwg
PLOT DATE: Jan 05, 2022 - 9:29am



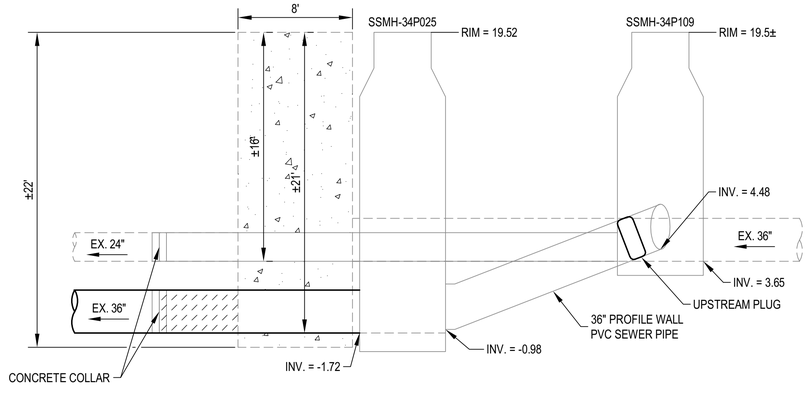
NOTE:

1. NUMBER & CAPACITY OF PUMPS AND NUMBER & SIZE OF PIPE(S) TO BE DETERMINED BY CONTRACTOR
2. AT LEAST TWO PUMPS REQUIRED. EACH LOCATION SHALL HAVE REQUIRED CAPACITY WITH LARGEST PUMP OUT OF SERVICE.
3. PUMPS MAY BE LOCATED IN MH OR ABOVE GRADE. CONTRACTOR TO PROTECT ALL ABOVE GROUND EQUIPMENT INCLUDING POWER SOURCE WITH FENCING, IF WITHIN ROADWAY K-RAIL WITH FENCING REQUIRED.

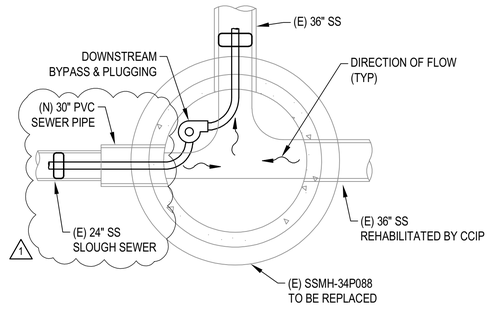
1 TYPICAL BYPASS / REROUTE HEADER ASSEMBLY
NTS



2 UPSTREAM PLUG - PLAN VIEW
NTS



3 EXISTING SANITARY SEWER - SECTION A-A VIEW
NTS



NOTES:

1. BACKWATER TO 36" REHABILITATION PROJECT IS EXPECTED AT ALL TIMES. PLUG MUST BE PROVIDED AT BOTH THE UPSTREAM MORMON SLOUGH & DOWNSTREAM SIDE WITH BYPASS PUMPING OR ON THE UPSTREAM 36" SIERRA NEVADA SEWER SIDE OF SSMH-34P088 TO PREVENT BACKWATER INTO THE SIERRA NEVADA SEWER DURING ALL 36" SSMH & CIPP WORK. CONTRACTOR TO DETERMINE SEQUENCE OF WORK & WHICH PLUGGING/BYPASS OPTIONS ARE APPLICABLE. (1)
2. DOWNSTREAM BYPASS MAY OCCUR THROUGH OR AROUND (E) OR (N) SSMH; CONTRACTOR TO DETERMINE METHODS & SEQUENCING.
3. NO SSMH ACCESS UPSTREAM OF SSMH-34P088 ON THE MORMON SLOUGH TRUNK SEWER EXISTS.
4. THE NEXT MAINTENANCE HOLE DOWNSTREAM OF THE REHABILITATION WORK WITH CAPACITY FOR BYPASS FLOWS IS ON PILGRIM ST, APPROXIMATELY 775' WEST OF SSMH-34P088; CROSSING AIRPORT WAY WOULD REQUIRE HEAVY TRENCH PER DETAIL 2 SHEET 13.

4 DOWNSTREAM BYPASS - CONCEPTUAL - PLAN VIEW
NTS

CALL BEFORE YOU DIG 1-800-227-2600 UNDERGROUND SERVICE ALERT

PROJECT ENGINEER
REGISTERED PROFESSIONAL ENGINEER
WILLIAM D. WORRALL
No. 62870
CIVIL
STATE OF CALIFORNIA
10/07/2021

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DATE OCT. 2021
HORIZONTAL DATUM CCS83, ZONE 3
VERTICAL DATUM NAVD88
KSN PROJECT FILE NO. 2404-0010

SIERRA NEVADA STREET
SANITARY SEWER LINE REHABILITATION

FLOW BLOCKAGE, BYPASS, AND REROUTE DETAILS

DEPARTMENT OF PUBLIC WORKS
CITY OF STOCKTON, CALIFORNIA

SCALE: AS SHOWN
DESIGNED BY: BDW
DRAWN BY: PX
CHECKED BY: SKS
RECORD DWG:

APPROVED BY: DATE:
CITY ENGINEER
STOCKTON, CALIF.

SHEET NO. 12
OF 17 SHTS
PROJECT NO. UW18029

FILE SPEC: \\domain.ksninc.pvt\Folders\Proj\2404_COS_Sierra_Nevada_St_SS_Rehab\0010_SN_SS-Rehab\08_Civil\400_Plans\020_CAD\Sheets\12&13_CB-500.dwg
PLOT DATE: Jan 05, 2022 - 10:23am

9-1.02 Description of Work and Payment

The work to be performed consists of furnishing all labor, materials, tools, transportation, supplies, equipment, appurtenances, fuel, and power, unless specifically excepted, necessary, or required to install the sewer rehabilitation, as further delineated on the plans and described in these Special Provisions.

The work shall include, but not be limited to, the following bid items as described:

1. Mobilization and Demobilization
    a. Includes all costs associated with mobilization and demobilization of Contractor's operations as described in the project plans and these special provisions. Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site; for the establishment of all offices, buildings and other facilities necessary for work on the project, including obtaining a laydown and staging area; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site.

2. Sheeting, Shoring, and Bracing
    a. All costs for providing shoring to support trench and other excavations conforming to applicable safety orders and as Contractor determines necessary to ensure safe earthwork operations. Includes all subsurface investigations; preparing and submitting shoring designs, labor, tools, materials, and equipment, power/fuel for all work, complete as specified and indicated on the drawings, are included in the lump sum price.

3. Cured-in-place Pipe Lining Rehabilitation of 36" Concrete Sewer – Sierra Nevada Street
    a. All costs associated with installing CIPP liner to restore the structural integrity and hydraulic function of the existing 36-inch sanitary sewer from station 1+00 to 12+01 as shown on the plans, including measure pipe to obtain accurate dimensions, design of CIPP by Professional Engineer, install and cure CIPP and dispose of materials, complete and in-place, are included in the unit price.

4. Cured-in-place Pipe Lining Rehabilitation of 36" Concrete Sewer with Preliner – Hazelton Ave
    a. All costs associated with installing CIPP liner to restore the structural integrity and hydraulic function of the existing 36-inch sanitary sewer from station 12+01 to 16+42 as shown on the plans, including identify sewer location with transponder or other method, measure pipe to obtain accurate dimensions, design CIPP by Professional Engineer, install a preliner, install and cure CIPP and dispose of materials, complete and in-place, are included in the unit price.

5. Rehabilitation of Existing Type 2 Maintenance Hole – Sierra Nevada and Hazelton
    a. All costs to rehabilitate the maintenance hole at station 12+01 including initial safe entry to evaluate for rehabilitation, clean, repair and protect rebar, repair concrete, apply repair mortar, and epoxy line, consistent with these Special Provisions.

6. Removal and Replacement of Existing Type 2 Maintenance Hole with Stubout – Sierra Nevada and Worth
    a. All costs to remove and replace existing maintenance hole at station 1+00, including excavate for removal of the base and sawcut existing pipe, recast the base including closure pours to re-establish the channel, install new 30” PVC stubout and reconnect to the Mormon Slough Sewer with specially fabricated fitting, and install new manhole barrels, cone, grade rings, and frame and cover, and epoxy coat, consistent with City Standard Detail S-12, backfill, and asphalt deep lift repaving of the excavation, complete and in-place, are included in the lump sum price.

7. Rehabilitation of Existing Type 2 Maintenance Hole – near BNSF Railroad
    a. All costs to rehabilitate the maintenance hole at station 4+45 including locate buried frame and cover, initial safe entry to evaluate for rehabilitation, clean, repair and protect rebar, repair concrete, apply repair mortar, and epoxy line, and raise the frame and cover to existing pavement grade, consistent with these Special Provisions and City Standard Details.

8. Installation of New Type 2 Maintenance Hole with Internal Drop
    a. All costs to install MH at station 8+41 including: excavate, sawcut existing pipe and cast a new base including closure pours to re-establish the channel, connect to the existing 6” PVC pipe and install a 6” internal drop similar to City Standard Detail S-6, install new manhole barrels, cone, grade rings, and frame and cover, and epoxy coat, consistent with City Standard Detail S-12, and backfill, and asphalt deep lift repaving of the excavation, complete and in-place, are included in the unit price.

9. Installation of New Type 2 Maintenance Hole
    a. All costs for station 15+25 MH including: excavate, cast a new base and sawcut existing pipe, including closure pours to re-establish the channel, and installation of new manhole barrels, cone, grade rings, and frame and cover, and epoxy coat, consistent with City Standard Detail S-12, backfill, and asphalt deep lift repaving of the excavation, complete and in-place, are included in the unit price. Maintenance holes under this Bid Item have no other special features such as drops or additional pipes routing through or into the structure.

10. Clean and CCTV of Sanitary Sewer Lines
    a. All costs to clean the lines in preparation for CIPP and to perform a pre-(on rehabilitated) and post-install CCTV of the full length of sewer lines rehabilitated by CIPP and the new sewers on the Scotts Avenue Reroute, are included in the lump sum price.

11. Upstream Plug Installation
    a. All costs for confined space entry, installation, and maintenance of the upstream plug at SSMH-34P109 to prevent flow and hazardous gases from entering the sewer to be rehabilitated, are included in the lump sum price.

12. Downstream Bypass Pumping
    a. All costs to route the flows indicated on the drawings from the existing 24" Mormon Slough Sewer from the south into SSMH-34P068 through the SSMH to prevent backup and facilitate rehabilitation of the sewer pipelines and provide a plug on the downstream end of SSMH-34-P068 to prevent backwater, are included in the lump sum price. Item may include other plugging depending upon contractor-chosen sequencing.

13. Scotts Ave Reroute
    a. Includes all costs to install the reroute including: installation of the internal drop in existing Type 1 SSMH, creating penetration and creation of new channel for new pipe entering from the south, on the existing SSMH at station 8+41, 8' east,; installation of 75 lineal feet of new 6" PVC sewer pipe, rerouting existing 6" (one potentially 8") laterals; installation of a new Type 1 SSMH connecting two new 6" PVC sewer laterals at station 7+66, 8' east; potholing of all crossing utilities prior to new sewer installation, removal of SSMH-34P062; grout abandonment of the portion of the sewer lateral inactivated by abandonment of SSMH-34P062 and the new 6" sewer lines and laterals; backfill of all excavations, and bypass pumping, complete and in-place, are included in this lump sum price. The work is primarily shown on Drawing 7.

14. Traffic Staging System
    a. Includes all labor, materials to provide in accordance with Section 12, "Temporary Traffic Control" of the Caltrans Specifications and California Manual on Uniform Traffic Control Devices (CA MUTCD), latest editions, for the entirety the project. Includes designing, furnishing, installing and maintaining traffic control as indicated on the plans and described in these Special Provisions. Includes any and all pedestrian detouring. Also includes flagging costs, materials (including signs, cones, project information signs, portable delineators, portable changeable message signs, flashing arrows, and barricades and all other items shown on the traffic handling plans for which there is not a contract item in the estimate), tools, equipment, and incidentals (including overhead lighting, cellular phones and radios), and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing and disposing of the components of the traffic control system shown on the plans, and other items approved for construction, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer, including, but not limited to, temporary pavement markings (paint), temporary markers, temporary traffic striping (paint), and channelizers (surface mounted); erecting,

maintaining, and disposing of any temporary Fence (Type CI-6), chain link fence (Type BW or WM, wood or metal posts) in Section 80, of the Caltrans Specifications and CA MUTCD, or other materials and devices for performing the work as indicated on the plans and described in these Special Provisions, are included in the lump sum price. Payment shall be by lump sum and in accordance with accepted schedule of values.

15. Pavement Restoration
    a. For asphalt concrete deeplift indicated on plans, and as necessary to complete the work, includes supplying and placing asphalt binder, supplying, placing, and compacting asphalt concrete in the Base Bid Schedule that is removed or damaged during construction operations. Price also includes all traffic stripes and markings removed or damaged during construction

16. Stormwater Handling and Erosion Control
    a. Includes all costs to implement and maintain Best Management Practices to reduce surface water pollution and minimize erosion associated with stormwater and construction discharges, including preparation by a qualified person, for the entire project.

17. Site Restoration
    a. Includes all other costs to restore the sites to pre-construction condition before demobilization, excluding pavement restoration.

The Contractor shall also bid upon the following alternative bid items. Alternative bid items may be implemented instead of the corresponding same-numbered bid schedule items at the City's option. For example, if Bid Item 5 is implemented, Alternative Bid Item 5A will not be implemented, and vice vera. The City reserves the right to determine which bid items or alternative bid item(s) it wishes to implement during construction.

5A. Removal and Replacement of Existing Type 2 Maintenance Hole – Sierra Nevada and Hazelton
    a. All costs to remove and replace existing maintenance hole at station 12+01, including initial safe entry to evaluate for rehabilitation, excavate to include removal of the base and sawcut existing pipe, recasting of the base including closure pours to re-establish the channel, and install new manhole barrels, grade rings, and frame and cover, and epoxy coating, consistent with City Standard Detail S-12, backfill, and asphalt deep lift repaving of the excavation, complete and in-place, are included in the unit price. Maintenance holes under this Bid Item have no other special features such as drops or additional pipes routing through or into the structure.

7A. Removal and Replacement of Existing Type 2 Maintenance Hole – near BNSF Railroad
    a. All costs remove and replace the existing maintenance hole at station 4+45, including coordination to comply with BNSF requirements, a one-hour meeting with BNSF and Engineer prior to submitting shoring

submittals, specially prepared shoring submittals, shoring designed per BNSF requirements, locate the buried frame and cover, initial safe entry to evaluate for rehabilitation, excavate, sawcut existing pipe and remove the base, recast the base with closure pours to re-establish the channel, install new manhole barrels, cone, grade rings, and frame and cover, and epoxy coat, consistent with City Standard Detail S-12, backfill, and asphalt deep lift repaving of the excavation, complete and in-place, are included in the lump sum price.

18A. Point Repair of Deteriorated Sewer Pipeline in Advance of CIPP

a. All work to be performed during night hours. Includes all costs to: prepare and implement traffic staging, coordinate traffic signals with City, shore and excavate, cover excavation with plates during day hours, remove and replace of up to 10 feet of significantly deteriorated pipe with 36" SDR 35 PVC with couplings to prevent soil collapsing into the pipe, and other incidental work necessary to prepare this portion for CIPP lining, plus backfill and asphalt deep lift repaving of the trench. All tasks necessary for repair are contained in this Alternative Bid Item; costs in the Base Bid for traffic staging system, stormwater and erosion control, paving restoration, and site restoration, and any other Base Bid Item work are excluded.

9-1.03 Quantities

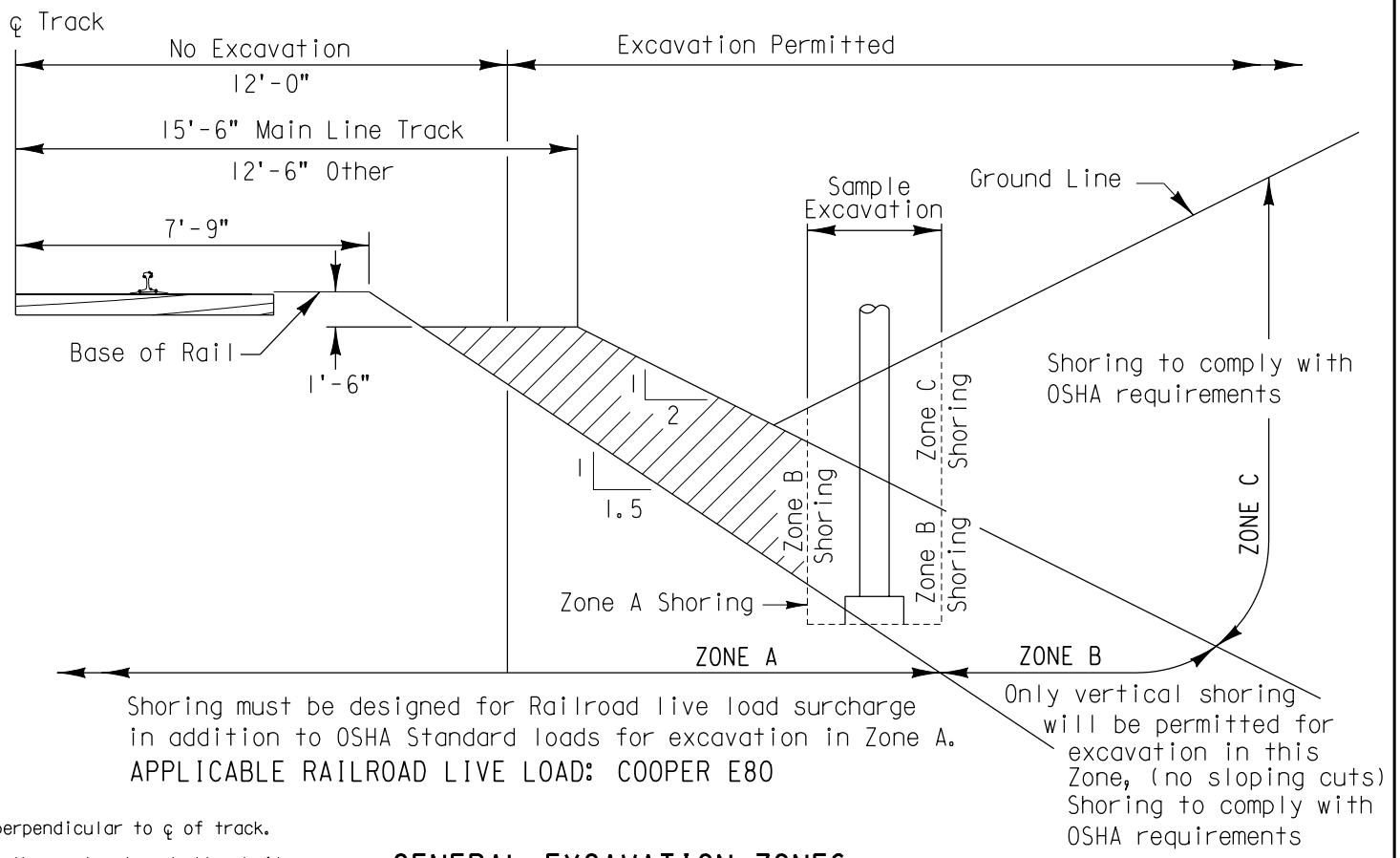
The **following** estimate of the quantities of work to be done and materials to be furnished are **approximate only**, and are intended as a basis for the comparison of bids. The City does not expressly or by implications agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work without increase or decrease in the unit price bid or to omit portions of the work that may be deemed necessary or expedient by the Engineer.

Base Bid Schedule

ITEM NO.	ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY
1	MOBILIZATION AND DEMOBILIZATION	LS	1
2	SHEETING, SHORING, & BRACING	LS	1
3	CURED-IN-PLACE-PIPE REHABILITATION OF 36" CONCRETE SEWER – SIERRA NEVADA STREET	LF	1,101
4	CURED-IN-PLACE-PIPE REHABILITATION OF 36" CONCRETE SEWER WITH PRELINER – HAZELTON AVE	LF	441
5	REHABILITATION OF MAINTENANCE HOLE - SIERRA NEVADA & HAZELTON	LS	1
6	REMOVAL AND REPLACEMENT OF EXISTING TYPE 2 MAINTENANCE HOLE WITH STUBOUT – SIERRA NEVADA & WORTH	LS	1
7	REHABILITATION OF MAINTENANCE HOLE - NEAR BNSF RAILROAD	LS	1
8	INSTALLATION OF NEW TYPE 2 MAINTENANCE HOLE WITH INTERNAL DROP	EA	1
9	INSTALLATION OF NEW TYPE 2 MAINTENANCE HOLE	EA	1
10	CLEAN AND CCTV OF SANITARY SEWER LINES	LS	1
11	UPSTREAM PLUG INSTALLATION	LS	1
12	DOWNSTREAM BYPASS PUMPING	LS	1
13	SCOTTS AVE REROUTE	LS	1
14	TRAFFIC STAGING SYSTEM	LS	1
15	PAVEMENT RESTORATION	LS	1
16	STORMWATER HANDLING AND EROSION CONTROL	LS	1
17	SITE RESTORATION	LS	1

Alternative Bid Schedule

ITEM NO.	ALTERNATIVE ITEM DESCRIPTION	UNITS	ESTIMATED QUANTITY
5A	REMOVAL AND REPLACEMENT OF EXISTING TYPE 2 MAINTENANCE HOLE – SIERRA NEVADA & HAZELTON	LS	1
7A	REMOVAL AND REPLACEMENT OF EXISTING TYPE 2 MAINTENANCE HOLE - NEAR BNSF	LS	1
18A	POINT REPAIR OF DETERIORATED SEWER PIPE IN ADVANCE OF CIPP	LS	1



GENERAL NOTES:

All dimensions are measured perpendicular to ℄ of track.

Prior to commencing any work, the contractor shall submit for approval by the Railroad detailed plans indicating the nature and extent of the track protection shoring proposed. The contractor shall install the temporary shoring system per the approved plans. Design of the temporary shoring system to comply with **GUIDELINES FOR TEMPORARY SHORING.**

For excavations which encroach into zone A or B, shoring plans shall be accompanied by design calculations. Plans and calculations must be signed and stamped by a Professional Engineer registered in the state where the work will be performed.

GENERAL EXCAVATION ZONES

SCALE: (NOT TO SCALE)

REVISIONS		
DATE	LTR.	DESCRIPTION
5/03	1	FORMERLY UPRR C.E. 106613
/		
/		
/		
/		
/		

DESIGN BY: PGP | DRAWN BY: JFS | CHECKED BY: AA

APPROVED:

K.H. Jennison
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN

Hugo J. Myra 9-1-04
UPRR - MGR SPECIAL PROJECTS STRUCTURES DESIGN

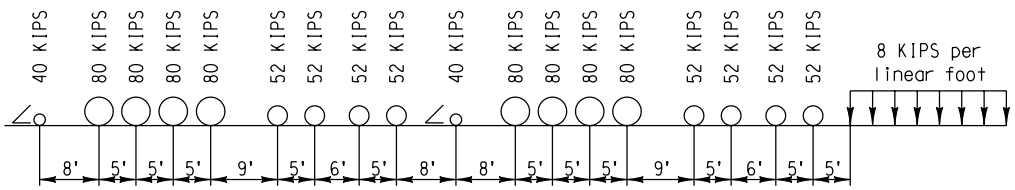
BRIDGE STANDARDS

GENERAL SHORING REQUIREMENTS

FILE OWNER: UPRR | DATE: 5-6-03
PLAN NO.: 710000 1 | SHEET: 1 OF 1

PLOTTED: $$$$DATE$$$ $TIME

Figure 1



COOPER E80 LOAD
SCALE: (NOT TO SCALE)

Vertical pressure q shall be based on a distribution width Ld.
Ld is the length of tie plus H_1.
H_1 is the height from the bottom of tie to the top of shoring.
H_2 is the depth of point being evaluated with the Boussinesq equation.
S is a distance perpendicular from centerline of track to the face of shoring.
D is from top of shoring to one foot below dredge line.
Zp is the minimum embedment depth.
Length of tie is 9 feet
q is the intensity of strip load due to E80 Railroad live load
and shall be calculated as follows:

For $H_1 = 0$ Ld = length of tie; therefore, $q = \frac{80{,}000 \text{ lb}}{(5 \text{ feet})(9 \text{ feet})} = 1{,}778 \text{ psf}$

For $H_1 > 0$ Ld = length of tie + H_1; therefore, $q = \frac{80{,}000 \text{ lb}}{(5 \text{ feet})(Ld)}$

CASE 1: Lateral live load pressure Ps, due to E80 loading for track **parallel** to shoring system is calculated using the Boussinesq Strip Load Equation.

$$Ps = \frac{2q}{\pi}(\beta + \sin\beta \sin^2\alpha - \sin\beta \cos^2\alpha)$$

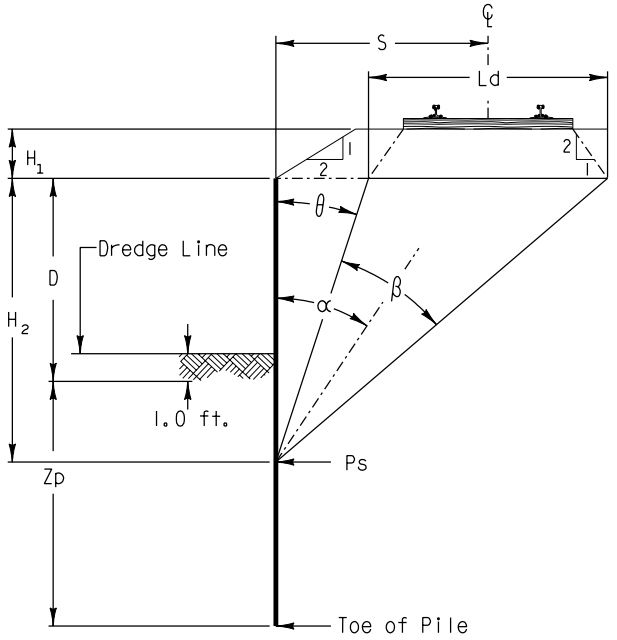
The above equation can be simplified into the following equivalent form:

$$Ps = \frac{2q}{\pi}[\beta - \sin\beta \cos(2\alpha)]$$

α and β are angles measured in radians, $\alpha = \theta + \frac{\beta}{2}$

CASE 2: Live load pressure due to E80 loading for track at a **right angle** to the shoring system can be calcuated using the following equation.

$Ps = K_A q$
where $K_A = \tan^2(45 - \frac{\phi}{2})$
ϕ is the angle of internal friction in degrees



PLAN
SCALE: (NOT TO SCALE)

REVISIONS		
DATE	LTR.	DESCRIPTION
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DESIGN BY: PGP | DRAWN BY: JFS | CHECKED BY: AA

APPROVED:

K.H. Jennison
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN

Hugo J. Myra 9-1-04
UPRR - MGR SPECIAL PROJECTS STRUCTURES DESIGN

BRIDGE SHORING STANDARDS

LIVE LOAD PRESSURE DUE TO COOPER E80

FILE OWNER: UPRR | DATE:
PLAN NO.: 710001 | SHEET: 1 OF 1

PLOTTED: $$$$DATE$$$ $TIME

Figure 2

UTILITY ACCOMMODATION POLICY

BNSF RAILWAY

Engineering Services
October 16, 2020

TABLE OF CONTENTS

PART 1

GENERAL POLICY

I. PART 1 - GENERAL POLICY

A. Policy Application

1. Purpose

This policy is to prescribe the accommodation, location and method of installation, adjustments, removal, relocation, and maintenance of utility facilities within the property of BNSF. The policy was developed in the interest of safety, protection, utilization, and future development of BNSF with due consideration given to public and private service afforded by adequate and economical utility installations.

2. Application

The policy concerning utility accommodations shall apply to all:

a. New utility installations

b. Additions to existing utility installations

c. Adjustment and relocation of utilities

d. Existing or planned utility installations for which agreements with BNSF were entered prior to the date of the adoption of this policy

e. Existing utility installations that do not meet the current license requirements may remain at the discretion of BNSF

Various types of utility lines not specifically discussed herein shall be considered within the provisions of this policy. It shall be the general practice to consider all lines carrying caustic, flammable or explosive materials under the provisions for high-pressure gas and liquid fuel lines.

3. Scope

Utilities include lines, facilities and systems for producing, transmitting or distributing communications, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water and other similar commodities which are privately, publicly or cooperatively owned and which serve directly or indirectly the public or any part thereof.

A Utility Agreement License allowing a Utility Owner the privilege of placing its facilities in or on railroad property does not constitute permanent right for such usage. Whether required by BNSF or not, any removal, remodeling, maintenance,

or relocation of the facilities, will be accomplished promptly by the Utility Owner at no cost to BNSF.

4. Exceptions

Exceptions to any design, location or methods of installation provisions contained in this policy must be authorized by BNSF. Requests for exceptions will be considered only where it is shown that extreme hardship and/or unusual conditions provide justification and where alternate measures can be prescribed in keeping with the intent of this policy. All requests for exceptions shall be fully documented by identifying what variance is needed, and why, including design data, cost comparisons and other pertinent information. Please Note: BNSF authorization may add up to 60 days additional processing time for the application.

5. Liability

The Utility Owner, its successor(s), or assignees shall assume all risk and liability for accidents and damages that may occur to persons or property on account of this work, and shall indemnify and hold BNSF harmless from any and all costs, liabilities, expenses, suits, judgments or damages to persons or property, or claims of any nature whatsoever, arising out of or in connection with the permit, or the operation and performance thereunder by the utility, its agents, employees or subcontractors. In this regard, it is further understood and agreed that the utility may be required to obtain insurance coverage as determined by BNSF.

The Utility Owner agrees that if liability insurance is required, it will file with the designated office, prior to granting of the license, “Certificates of Insurance” or other evidence to show that the appropriate insurance is carried.

Insurance, as may be required, shall be maintained in force until the final release of the Utility Owner by BNSF from all obligations under the terms of the license. The insurance contract shall cover claims for such length of time as law permits said claims. The insurance document shall include a clause requiring the insurer to notify BNSF at least ten (10) days in advance of any cancellation or change in insurance contracts.

The Utility Owner is responsible for any subcontractor to be knowledgeable of this policy and require all work to be conducted in compliance with it. Subcontractors must carry a liability insurance policy unless the subcontractor is covered by the Utility Owner’s insurance.

6. Replacement/Relocation of Facility

Replacement or relocation of an existing facility with the same facilities or facilities of a different type, or design, is to be considered as a new utility installation and all work shall adhere to this policy. This includes such things as extension of an existing casing, replacing with a larger / smaller pipe diameter, etc.

7. Change in Ownership

It is the Utility Owner's responsibility to inform BNSF, in writing, of any name, ownership or address changes.

8. Non-compliance

Non-compliance with any terms of this Utility Accommodation Policy or Utility License Agreements may be considered as cause for discontinuance of construction or operations until compliance is assured. Continued non-compliance will result in the revocation of the license. The cost of any work required by BNSF in the removal of non-complying construction will be assessed against the Utility Owner.

9. Discharge of Waste Material

Applications for a Utility License Agreement for the installation of utility facilities which will discharge materials into the nation's waters, must comply with all applicable requirements of the Corps of Engineers, and other federal, state, or local environmental protection agencies. Identification of applicable requirements and administration of compliance procedures are the responsibility of the Utility Owner.

B. Utility License Agreement Requirements

1. General

Utility License Agreements are required when utility facilities are installed, relocated, removed, or maintained along or across all BNSF property.

If liability insurance is required, then evidence of adequate liability insurance is to be on file with BNSF for each agreement prior to any construction activity.

2. Applications

Approved requests to install, maintain, relocate, or remove a utility within the property of BNSF shall be authorized by a Utility License Agreement. All applications for utility license agreements along with plans for the proposed

installation shall be submitted to BNSF and approved before construction has commenced. Any exceptions to this policy will require the completion of an exception form and may add up to 60 days additional processing time.

3. Plans and Approvals

   a. Approval of plans and application forms are required for all installations of utilities prior to initiation of work on railroad property.

   b. If surveying is necessary for the completion of an application, a "Right of Entry" or "Temporary Occupancy Permit" must be executed and referenced

   c. When a geotechnical study is required, the findings and protection plan shall be sealed by a Professional Engineer and included with the plans. The geotechnical crew will need a right of entry permit to enter BNSF right-of-way and a BNSF qualified flagman will be required when working within twenty-five (25) feet of the track.

4. License Procedures:

   a. Submit applications to:

      Jones Lang LaSalle
      4200 Buckingham Road, Suite 110
      Fort Worth, TX 76155

   b. Upon receipt of the application, a letter will be forwarded acknowledging receipt and advising of the Permit & Contract file reference number that has been assigned and the person who should be contacted for further inquiries.

   c. Office Hours: 8:00 A.M. to 5:00 P.M. Monday through Friday, CT
      Phone Number: (toll free) 866-498-6647. Fax: 817-306-8265

   d. Agreements will be required for all encroachments on railroad property.

   e. Generally, agreement-processing time will be thirty to sixty days. Please allow sufficient lead-time for document handling prior to desired construction date. Before construction begins, agreements must be executed by Utility Owner and returned. Verbal authorizations will not be granted or permitted. All work must be set up, in advance, with the BNSF Utility Coordinator to coordinate the Construction Inspector and flagger.

   f. License fees must be submitted at the time the agreement is executed and returned.

5. Location

a. Utility lines shall be located to avoid, or minimize, the need for adjustments for future railroad improvements and to permit access to the utility lines for their maintenance with minimum interference to railroad traffic.

b. Pipelines shall be installed under tracks by boring, jacking, or in some cases, open trenching. **WATER JETTING IS NOT PERMITTED.**

c. Where practical, pipelines carrying liquefied petroleum gas shall cross the railway where the tracks are carried on an embankment.

d. All high-pressure pipelines (greater than 60-psi internal pressure), except those in public roads, shall be prominently marked and maintained at the property line (on both sides of the track for under crossings) by signs which state the utility owner, size of the line and its depth as well as a 24-hour emergency contact number, which will be maintained as long as the utility is in service. These signs will be inspected annually and replaced should they become unreadable.

Example:

CAUTION: Bob's Gas Service, 1-800-123-4567, 30-inch diameter high-pressure Gas main 7 feet deep.

6. Design Considerations

a. The design of any utility installation will be the responsibility of the Utility Owner. Any proposed installation within the railroad property must be reviewed and approved by the railroad regarding location and the method of construction, installation, and replacement. This includes the measures to be taken to preserve the safety and flow of rail traffic, insure it does not obstruct right of way access for BNSF, structural integrity of the roadway or structure, ease of maintenance and the integrity of the utility facility. Utility installations, on, over or under BNSF property shall conform with the requirements contained herein, or the appropriate requirements outlined in the following, whichever is deemed most safe:

(1) Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines-National Electric Safety Code.

(2) Title 49 C.F.R. Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards.

(3) Title 49 C.F.R. Part 195, Transportation of Hazardous Liquids by Pipelines and.

(4) American Society for Testing and Materials (ASTM) Specifications - latest edition.

(5) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) - latest edition, published by the Federal Highway Administration (FHWA) of the United States Department of Transportation (USDOT).

(6) Rules and Regulations for Public Water Systems - latest edition, published by the appropriate State Health Department.

(7) Occupational Safety and Health Administration (OSHA) Title 29 C.F.R. Standard 1926 – Safety and Health Regulations for Construction.

b. All utility installations on, over or under BNSF property shall be of durable materials designed for long service life and relatively free from routine servicing and maintenance requirements. Conformance with current applicable material specifications and codes is mandatory.

c. References given to any manual, publication or specification are intended to be the most current edition. If a conflict occurs between any publication and this manual, the specification deemed most safe will be used.

d. Geo-technical Study – BNSF will no longer require a geo-tech study for pipeline installations crossing under the tracks provided the method of installation is jack-and-bore. Any other method of installation that is greater than twenty-six (26) inches in diameter, and within the six (6) foot to twelve (12) foot depth will require this study. Refer to part B.3.c., found on page 1-4 of this document for requirements of the study and review.

C. Construction

1. Coordination with the Construction Inspector and/or flagging company, along with any required deposits, will be arranged prior to any construction on BNSF property.

2. The execution of the work on railroad property shall be subject to the inspection and direction of the Construction Inspector.

3. A representative of BNSF Signal Department must be present during installation if railroad signals are in the vicinity of the proposed construction.

4. Any dirt that is excavated for pits, poles, bores, etc. will remain on BNSF property. BNSF Environmental will be consulted before any soils are removed from BNSF property which can be coordinated through the Construction Inspector.

5. Spills, of any quantity, must be reported to the Service Interruption Desk. This can be coordinated through the Construction Inspector.

6. A plan to monitor for settlement or heave of the railroad facilities must be developed and implemented to assure no adverse effect on the railroad's activities because of the work. The plan should detail the types of settlement points that will be installed and monitored as well as the frequency of monitoring and the reporting mechanism. Because the track will tend to bridge over the area by affected by the drilling / boring / trenching operation, the monitoring plan should include checking for settlement or heave at a depth below the track. Surveying of the monitoring points may be accomplished by traditional means or an automated system. A baseline survey should be conducted before the start of construction.

   Most settlement plans include a two-step process against which the monitoring data is measured. The alert threshold limit is the value intended to bring attention to the movement so that it can be managed without reaching the maximum level. The maximum level is the highest allowable movement value and should be less than the value that could result in damage to the railroad facilities.

   Reaching the threshold limit may trigger the following actions:

   (1) Discussion of the data and its implications
   (2) Increase in the frequency of monitoring
   (3) Independent confirmation of the monitoring data
   (4) A review of construction methods to determine if changes are required to mitigate further movement

   Reaching the maximum limit may trigger the following actions:

   (1) Immediate stoppage of construction and notification to the railroad
   (2) Independent confirmation of movement
   (3) Review of construction methods and implementation of contingency plans, if needed
   (4) Re-evaluation of critical structures in the area and installation of additional monitoring devices if needed.

   Alert threshold values are from ¼ to ¾ inch with maximum values from ½ to 1 inch.

7. The utility installation is not considered complete until as-built drawings are submitted and verified as correct by the Construction Inspector.

D. Safety

The BNSF Contractor orientation course must be completed by all workers prior to entering BNSF property. It is the contractor's responsibility to implement a safety program for its employees. Training materials are available on the web site: www.bnsfcontractor.com. The contractor must comply with all federal, state, and local safety regulations.

1. Construction Inspector

   a. A Construction Inspector shall be required for all utility installations on BNSF right of way and the total cost borne by the Utility Owner.

   b. The Construction Inspector will be notified of the construction monitoring methods and frequency to be used.

   c. Once construction is complete, the Utility Owner will provide the Construction Inspector with as-built drawings noting any changes from the original specifications approved when the permit was issued. These as-built drawings must be verified by the Construction Inspector and submitted to BNSF for their records.

2. Flagging

   a. When work is performed within twenty-five (25) feet of the centerline of the track, railroad flagging and construction inspection will be required.

   b. Railroad flagging will be required:

      i. During the period of construction when it is necessary for the Contractor to operate equipment in the vicinity of, under, or over, BNSF property which may endanger railroad operations, or

      ii. Two or more railroad flagmen may be required at other times that the Railway Company's sole discretion shall deem necessary.

   c. Flagging services shall be performed by a BNSF qualified flagger and the total cost borne by the Utility Owner.

   d. The Utility Owner will be billed monthly at a rate to be determined by BNSF to include labor and associated costs plus any expenses incurred for flagging services.

   e. A written request for flagging services will be required at least two (2) weeks prior to the time when such services are needed. This request is made to the BNSF Construction Inspector, as noted in executed agreement.

E. Material Storage

Storage of materials, parking of equipment and vehicles when not being used in actual utility work, will not be permitted on railroad property without an executed temporary easement.

F. **Call Before You Dig!**

Call 811 to schedule a utility locate and call 1-800-533-2891 to arrange for a BNSF underground cable locate. BNSF form "Underground Cable Location & Acknowledgement" will be completed by a BNSF representative with a copy provided to the contractor. The contractor must always have this completed form available for review at the job site.

G. Maintenance and Servicing Utilities

1. Utility Owner's Responsibility

    a. Maintenance of the utility is the responsibility of the Utility Owner.

    b. Maintenance must be performed to keep the facility in an as-constructed condition, and in a good state of repair in accordance with the requirements of Federal, State and Local laws, regulatory standards, and utility codes.

    c. It is the Utility Owner's responsibility to replace and stabilize all earth cover and vegetation when it has eroded over an underground utility facility where such erosion is due to, or caused by, the placement or existence of the underground utility facility.

    d. The Utility Owner shall be responsible for any settlement of backfill, fills, and embankments that may occur.

2. Emergency Maintenance

    a. Emergency maintenance of utilities located on railroad property is permissible without obtaining a Utility License Agreement if an emergency exists that is dangerous to the life, safety, or welfare of the public and which requires immediate repair. The Utility Owner shall take all necessary and reasonable safety measures to protect the public and the railroad.

    b. The Utility Owner, in such an event, will advise the Railway as soon as possible. Damage to the right-of-way and facilities will be restored to its original condition. A Utility License Agreement should be requested by the Utility Owner within the second working day provided the work is not covered under any previously granted license. Flagging requirements described earlier apply in all situations.

H. Preservation, Restoration and Cleanup

1. Disturbed Areas

   a. Areas of railroad property disturbed by the installation, maintenance, removal, and relocation of utilities shall be kept to a minimum.

   b. Disturbed areas shall be returned to normal grade and elevation, with compaction of backfill material, and all excess or undesirable material removed by the Utility Owner. The Utility Owner shall replace destroyed vegetation by sodding, or seeding, fertilizing, and mulching, or a combination thereof.

   c. The Utility Owner shall provide protection against erosion in disturbed areas that are subject to erosion. Such protection may be in the form of rock riprap, wash checks, hay or straw cover, or other material that is approved and does not interfere with railroad maintenance.

2. Drainage Facilities

   a. Care shall be taken to avoid disturbing existing drainage facilities. Underground utility facilities shall be bedded with pervious material and outlets provided for entrapped water. Underdrains should be provided where necessary.

   b. Grades shall be sloped away from the track roadbed and towards the ditch when possible with the goal of no standing water on railroad property.

3. Cleanup

   Unused material or debris shall be removed from the work site area. At the end of every construction day, construction equipment and materials shall be removed as far from the operating railroad tracks as possible (minimum twenty-five (25) feet from centerline). All machines will be disabled when not in use to prevent unauthorized operation. No equipment or materials will be allowed to be staged on BNSF property without an executed temporary easement.

I. Protection of Vegetation

1. Trimming, Clearing or Removal of Vegetation

   a. Consistent with the preservation of planted vegetation, consideration will be given to Utility Owners for the necessary trimming, clearing or removal of vegetation to provide adequate clearance of overhead wires. Such work will be done in accordance with established practices and standards; however, approval will not be granted for wasteful or wanton trimming, or removal to provide easy solutions to a difficult situation.

b. No trees, shrubs, bushes, vines, or ground cover on railroad property shall be sprayed, trimmed, cut down, rooted up, removed, or mutilated in any manner unless a permit is granted by BNSF to do such work.

2. Chemical Brush Control

a. Spraying brush and seedling tree growth to prevent re-sprouting may be permitted, and when permitted, shall be carried out with extreme caution and careful performance. The Utility Owner shall be responsible for the performance of their employees or contractors in the application of brush control with methods and proposed chemicals approved by BNSF Environmental Department.

b. All spraying shall be done by an herbicide applicator that is licensed in the state where the work is to be performed.

c. Permit applications for spraying shall list the kinds of chemical weed and brush killers that will be used. When liability insurance is required, it shall be provided by the herbicide applicator, or be insured under the liability insurance of the Utility Owner.

d. Plants over five (5) feet in height should not be sprayed for control. Brush over five (5) feet in height, which is to be removed, should be cut and the stumps treated to prevent growth. Shrubbery type growth such as dogwood, sumac, redbud, plum, etc., should not be sprayed as a rule. Steep slopes, where brushy growth is a major factor in preventing erosion, should not be sprayed.

3. Tree Pruning

a. Tree pruning on railroad property for utility lines will utilize the best horticultural practices. All cut branches, dead limbs, etc., shall be removed. Such materials shall not be burned or disposed of on railroad property unless permission is granted by the Utility License Agreement.

b. Should burning be permitted, the Utility Owner will be held liable for any damage to grass, crops, native shrubs, and trees arising from careless burning of such brush.

c. All limbs trimmed shall be removed with a clean cut and all limb scars over one (1) inch in diameter shall be treated with appropriate tree paint.

PART 2

UTILITIES PARALLELING

RAILROAD PROPERTY

PART 2 - UTILITIES PARALLELING RAILROAD PROPERTY

A. General Provisions

This section of the policy applies to all public and private utilities, including electric power, telephone, fiber optics, telegraph, cable television, water, gas, oil, petroleum products, steam, chemicals, sewage, drainage, irrigation and similar lines that are located, adjusted or relocated within the property under the jurisdiction of BNSF, but not actually crossing the tracks. Such utilities may involve underground, surface, or overhead facilities.

Any utility line will be considered a parallel line and is to be located on a uniform alignment, within ten (10) feet or less of the property line and a minimum of forty (40) feet from centerline of track so as to provide a safe environment and to preserve space for future railroad improvements or other utility installations. BNSF Engineering must approve any installation over one mile.

Utilities will be located to provide a safe environment and shall conform to the current "National Electrical Safety Code," "American Waterworks Association Specifications," "Federal Pipeline Safety Regulations," and "The American Railway Engineering and Maintenance Association (AREMA) recommendations." Where laws or orders of public authority prescribe a higher degree of protection, then the higher degree of protection prescribed shall supersede the provisions of this manual.

B. Overhead Installations

1. Must comply with all requirements of Part 1 – General Policy of this manual.

2. The design of all utility installations will be the responsibility of the Utility owner. Plans shall be drawn to scale showing the relationship of the proposed utility line to the railroad tracks, the angle of crossing, location of valves and vents, the railroad mile post and engineering station, railroad property lines and general layout of tracks and other railroad facilities. The plans should include a cross-section (or sections) from the field survey that will show utility placement in relation to actual profile of ground and tracks.

3. Applications can be found at www.bnsf.com/about-bnsf/pdf/PIPELINE-with-sample.pdf and must be completed and submitted along with plans detailing location, both horizontal and vertical, of proposed utility with dimensions from track and/or right-of-way boundaries.

4. A minimum of four (4) feet clearance is required above existing signal and communication lines.

5. Pole height and distance from centerline of nearest track must be shown on an aerial exhibit and included with the application along with a profile that includes the wire attachment height and anticipated maximum sag.

Poles must be located fifty (50) feet out from the centerline of railroad mainline, branch and running tracks, CTC sidings, and heavy tonnage spurs. Pole locations adjacent to industry tracks; must provide at least a ten (10) foot clearance from the centerline of track, when measured at right angles. If located adjacent to curved track, then said clearance must be increased at a rate of one and one-half (1-1/2) inches per degree of curved track.

Regardless of the voltage, un-guyed poles shall be located a minimum distance from the centerline of any track, equal to the height of the pole above the ground-line plus ten (10) feet. If guying is required, the guys shall be placed in such a manner as to keep the pole from leaning/falling in the direction of the tracks.

Poles (including steel poles) must be located a minimum distance from the railroad signal and communication line equal to the height of the pole above the ground-line or else be guyed at right angles to the lines. High voltage towers (34.5 kV and higher) must be located off railroad right of way. All poles will contain a sign stating the utility owner, voltage of the lines and a 24-hour emergency contact phone number that will be maintained as long as the utility is in service. The utility will be responsible to de-energize, sleeve, etc. in the event a BNSF emergency requires access.

For proposed electrical lines paralleling tracks, BNSF may request that an inductive coordination study be performed at the expense of the utility owner. Inductive interference from certain lines has the potential to disrupt the signal system in the track causing failures in the track signals and highway grade crossing warning devices. Generally, if the proposed electrical line exceeds 12.5 kV *and* runs parallel to the track for at least 1,000 feet, a study will be required. A study will be required if a new sub-station is to be located within 1,000 feet of the track. The General Director of Signals will determine the need for a study on a case-by-case basis.

C. Underground Installations

1. Must comply with all requirements of Part 1 – General Policy of this manual.

2. The design of all utility installations will be the responsibility of the Utility owner. Plans shall be drawn to scale showing the relationship of the proposed utility line to the railroad tracks, the angle of crossing, location of valves and vents, the railroad mile post and engineering station, railroad property lines and general layout of tracks and other railroad facilities. The plans should include a cross-section (or sections) from the field survey that will show utility placement in relation to actual profile of ground and tracks.

3. Applications can be found at www.bnsf.com/about-bnsf/pdf/PIPELINE-with-sample.pdf and must be completed and submitted along with plans detailing location, both horizontal and vertical, of proposed utility with dimensions from track and/or right-of way boundaries.

4. The plans should contain the following data for carrier and casing pipe:

    - Contents to be carried
    - Inside diameter
    - Pipe material
    - Specifications and grade of pipe material
    - Wall thickness
    - Actual working pressure
    - Type of joints
    - Longitudinal joint factor
    - Coating
    - Method of Installation
    - Vents-Number, Size, Location including Height above ground
    - Seals-Both ends, One end
    - Cover (top of tie to top of pipe casing)
    - Cover (other than under tracks)
    - Cover (at ditches)
    - Cathodic protection
    - Type, Size and Spacing of insulators or supports

5. Underground utility installations should be located on top of the back slope at the outer limits of railroad property as follows:

    1. Electric power / Fiber Optic / Communication Lines

    i. A minimum depth of six (6) feet BNG for Electric and Fiber Optic Lines.

    ii. Whenever feasible, all cable should be laid within five (5) feet from property lines.

    iii. A 6-inch wide warning tape will be installed, one (1) foot BNG directly over the underground fiber optic line where located on Railroad right-of-way outside the track ballast sections.

    2. Pipelines

    i. Any pipeline installation paralleling BNSF property shall be within ten (10) feet of property line or a minimum of forty (40) feet from track.

    ii. If the pipeline is proposed to be located forty (40) feet or less from centerline of track, the pipeline shall be encased in a steel pipe subject to approval from BNSF. No pipe may be placed closer than twenty-five (25) feet from centerline of track. Pipe must be buried with a minimum cover of six (6) feet. If less than minimum depth is necessary because of existing utilities, water table, ordinance or similar reasons, the line shall be rerouted.

iii. Locations where it will be difficult to attain minimum depth due to wet or rocky terrain shall be avoided. Any location change from plan must be approved by BNSF.

iv. The use of plastic carrier pipe for sewer, water, natural gas, and other liquids is acceptable under specific circumstances. The use of plastic pipe is satisfactory if the pipe is designed to meet AREMA and all applicable federal and state codes, and if the carrier pipe is properly encased with a steel casing pipe for the entire length on BNSF right of way.

v. Manholes shall be limited to those necessary for installation and maintenance of underground lines. Manholes vary as to size and shape depending on the type of utility they serve. To conserve space, their dimensions should be minimally acceptable by good engineering and safety standards. In general, the only equipment to be installed in manholes located on railroad property is that which is essential to the normal flow of the utility, such as circuit reclosers, cable splices, relays, valves, and regulators. Other equipment should be located outside the limits of the railroad property. Manholes shall not protrude above the surrounding ground nor be in the shoulder, shoulder slope, ditch, backslope, or within twenty-five (25) feet of the centerline of track without approval of BNSF.

3. Abandonment/Removal of Facilities

i. Upon termination of license the utility needs to be removed from BNSF property except for the portion under the track embankment.

ii. Portion of abandoned pipe under track embankment to remain in place shall be filled by pressure grouting. The grout material should be a sand cement slurry with a minimum of two (2) sacks of cement per cubic yard and a minimum amount of water to assure satisfactory placement.

D. Attachment to Bridges and Other Structures

The Utility Owner will not be permitted to attach to BNSF bridges or route facilities through drainage structures or cattle passes. Utilities are not to be attached to other railroad structures without the written approval of BNSF Engineering. As a rule, overhead power, communication, and cable television line crossings at railroad bridges must be avoided. Pipelines laid longitudinally on railroad property shall be located as far as practical from any tracks or other important structures. If located within forty (40) feet of the centerline of any track, the carrier pipe shall be encased or be of special design as approved by BNSF Engineering.

E. Drains for Steep Slopes (Tight Lines)

Drainage onto BNSF property from adjacent land that is significantly higher than the track elevation should be directed through a pipe anchored into the steep slope. The pipe needs to be designed to withstand the weight of the water in the pipe. The drainage system will include a diffuser at the bottom to prevent erosion on BNSF property.

PART 3

UTILITIES PERPENDICULAR TO RAILROAD PROPERTY

PART 3 - UTILITIES PERPENDICULAR TO RAILROAD PROPERTY

A. General Provisions

This section of the policy applies to all public and private utilities, including electric power, telephone, fiber optics, telegraph, cable television, water, gas, oil, petroleum products, steam, chemicals, sewage, drainage, irrigation and similar lines that are located, adjusted or relocated within the property under the jurisdiction of BNSF. Such utilities may involve underground, surface, or overhead facilities.

Installations crossing the property of the railroad, to the extent feasible and practical, are to be perpendicular to the railroad alignment and preferably at not less than forty-five (45) degrees to the centerline of the track. Utilities shall not be placed within culverts or under railroad bridges, buildings, or other important structures.

Utilities will be located to provide a safe environment and shall conform to the current "National Electrical Safety Code," "American Waterworks Association Specifications," "Federal Pipeline Safety Regulations," and "The American Railway Engineering and Maintenance Association (AREMA) Recommendations." Where laws or orders of public authority prescribe a higher degree of protection, then the higher degree of protection prescribed shall supersede the provisions of this manual.

B. Overhead Installations

1. Must comply with all requirements of Part 1 – General Policy of this manual.

2. The design of all utility installations will be the responsibility of the Utility owner. Plans shall be drawn to scale showing the relationship of the proposed utility line to the railroad tracks, the angle of crossing, location of valves and vents, the railroad mile post and engineering station, railroad property lines and general layout of tracks and other railroad facilities. The plans should include a cross-section (or sections) from the field survey that will show utility placement in relation to actual profile of ground and tracks.

3. Applications can be found at www.bnsf.com/about-bnsf/pdf/PIPELINE-with-sample.pdf and must be completed and submitted along with plans detailing location, both horizontal and vertical, of proposed utility with dimensions from track and/or right-of way boundaries.

4. Minimum four (4) feet clearance required above existing signal and communication lines.

5. Poles must be located fifty (50) feet out from the centerline of railroad main, branch and running tracks, CTC sidings, and heavy tonnage spurs. Pole location adjacent to industry tracks; must provide at least a 10-foot clearance from the centerline of track, when measured at right angles. If located adjacent to curved track, then said clearance must be increased at a rate of one and one-half (1-½) inches per degree of curved track.

6. Regardless of the voltage, un-guyed poles shall be located a minimum distance from the centerline of any track, equal to the height of the pole above the ground-line plus 10 feet. If guying is required, the guys shall be placed in such a manner as to keep the pole from leaning/falling in the direction of the tracks.

7. Poles (including steel poles) must be located a minimum distance from the railroad signal and communication line equal to the height of the pole above the ground-line or else be guyed at right angles to the lines. High voltage towers (34.5 kV and higher) must be located off railroad right of way.

8. Crossings must not be installed within 500 feet of any railroad bridge, or 300 feet from the centerline of any culvert or switch area.

9. Complete spanning of the property is encouraged with supportive structures and appurtenances located outside railroad property.

    a. For electric supply lines, normally the crossing span shall not exceed 150 feet with adjacent span not exceeding 1-1/2 times the crossing span length.

    b. For communication lines, the crossing span shall not exceed 100 feet in heavy loading districts, 125 feet in medium loading districts, and 150 feet in light loading districts; and the adjacent span shall not exceed 1-1/2 times the crossing span length.

    c. For heavier type construction, longer spans will be considered.

10. Joint-use construction is encouraged at locations where more than one utility or type of facility is involved. However, electricity and petroleum, natural gas or flammable materials shall not be combined. Pipe truss design and layout shall be sealed by a Professional Engineer and will need to be reviewed and approved by BNSF Engineering.

11. To ensure that overhead wire crossings are clear from contact with any equipment passing under such wires, lines shall be constructed with a minimum clearance above top of rail as required by NESC + 3 feet or greater. Electric lines must have a florescent ball marker on lowest wire over centerline of track.

12. The utility owner will label the posts closest to the crossing with the owner's name and telephone number for emergency contact.

13. All overhead flammable and hazardous material lines will need BNSF Engineering approval but should be avoided if possible.

14. For proposed electrical lines crossing tracks, BNSF may request that an inductive coordination study be performed at the expense of the utility owner. Inductive interference from certain lines have the potential to disrupt the signal system in the track causing failures in the track signals and highway grade crossing warning devices. The General Director of Signals will determine the need for a study on a case-by-case basis.

C. Underground Installations

1. General

a. Must comply with all requirements of Part 1 – General Policy of this manual.

b. The design of all utility installations will be the responsibility of the Utility owner. Plans shall be drawn to scale showing the relationship of the proposed utility line to the railroad tracks, the angle of crossing, location of valves and vents, the railroad mile post and engineering station, railroad property lines and general layout of tracks and other railroad facilities. The plans should include a cross-section (or sections) from the field survey that will show utility placement in relation to actual profile of ground and tracks.

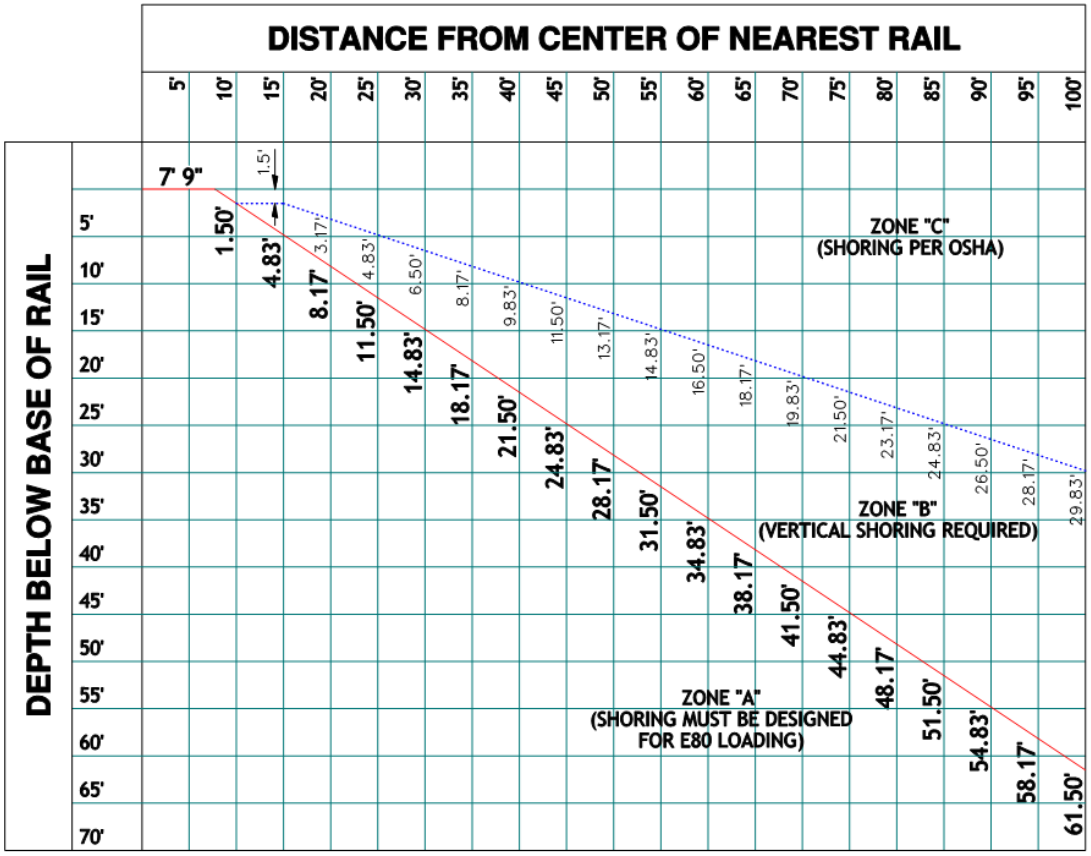
c. Applications can be found at www.bnsf.com/about-bnsf/pdf/PIPELINE-with-sample.pdf and must be completed and submitted along with plans, stamped by a Professional Engineer, detailing location, both horizontal and vertical, of proposed utility with dimensions from track and/or right-of way boundaries.

d. The plans should contain the following data for carrier and casing pipe:

- Contents to be carried
- Inside diameter
- Pipe material
- Specifications and grade of pipe material
- Wall thickness of pipe
- Actual working pressure
- Type of joints
- Longitudinal joint factor
- Coating
- Method of Installation
- Vents-Number, Size, Location and Height above ground
- Seals-Both ends, One end
- Cover (top of tie to top of pipe casing)
- Cover (other than under tracks)
- Cover (at ditches)
- Cathodic protection
- Type, Size and Spacing of insulators or supports

e. All underground utility crossings of railroad trackage shall be designed to carry Cooper's E-80 Railroad live loading with diesel impact (*Design Loads* Section Found in AREMA Manual for Railway Engineering, Chapter 8 section 2.2.3). This 80,000-lb. axle load may be distributed laterally a distance of three (3) feet, plus a distance equal to the depth from structure grade line to base of rail, on each side of centerline of single tracks, or centerline of outer track where multiple tracks are to be crossed. In no case shall railroad loading design extend less than ten (10) feet laterally from centerline of track. Longitudinally, the load may be distributed between the five-foot axle spacing of the Cooper configuration. Railroad loading criteria will also apply where future tracks on BNSF are contemplated, to the extent this information is available.

f. All utilities crossing under ditches and railroad trackage using jacking and dry boring installation should have a minimum depth of cover of six (6) feet below the flowline of the ditch or ground surface and eight (8) feet – three (3) inches from base of rail. In fill sections, the natural ground line at the toe of slope will be considered as ditch grade.



RAILROAD SHORING GUIDE

i. Jacking/boring pits shall be located outside railroad property when possible at a minimum of thirty (30) feet from the centerline of track and kept to the minimum size necessary. Do not locate the bore pits in the slope of a cut or fill section of the roadbed. Keep the bore pit size to a minimum. Use shoring, temporary or permanent, conforming to the most restrictive of state, OSHA, or AREMA recommended practices in all excavations, where required. Submit shoring plans and calculations, sealed by a Professional Engineer, with application for approval prior to construction.

ii. All excavations will be attended or protected. Fence, fill or guard each site prior to leaving. Monitor shored excavations continuously during work for signs of instability and failure.

iii. Under-track bores shall be located greater than 150 feet from the nearest bridge, culvert, track switch, building or other major structure, regardless of commodity or installation method.

iv. For any installation other than jack and bore under main and siding tracks greater than twenty-six (26) inches in diameter, and at a depth of twelve (12) feet below top of tie, a geotechnical study will need to be performed to determine the presence of granular material and/or high water table elevation, at the sole expense of the Permittee. The study will include recommendations and a plan for a procedure to prevent failure and a potential collapse of the bore. Generally, core samples are to be taken near the ends of tie at the proposed location, at least as deep as the bottom of the proposed horizontal bore. Test results must be reviewed and approved by BNSF, or its agent, prior to boring activities commencing. BNSF reserves the rights, based on test results, to require the Permittee to select an alternate location, or to require additional engineering specifications be implemented, at the sole expense of the Permittee, to utilize existing location.

v. BNSF Engineering will not need to review projects involving underground crossings of uncased gravity-flow sewer pipelines provided the material is one of the following:

1) Class V reinforced concrete pipe (RCP).
2) Steel pipe with proper wall thickness as prescribed in this policy.
3) HOBAS pipe.

g. All encased utility pipeline crossings under ditches and railroad trackage using horizontal directional drilling (HDD) installation should have a minimum depth of cover of six (6) feet below the flowline of the ditch or ground surface and twelve (12) feet from base of rail. In fill sections, the natural ground line at the toe of slope will be considered as ditch grade. Detailed drawings should be included with the application.

Example detailed drawings to be submitted:

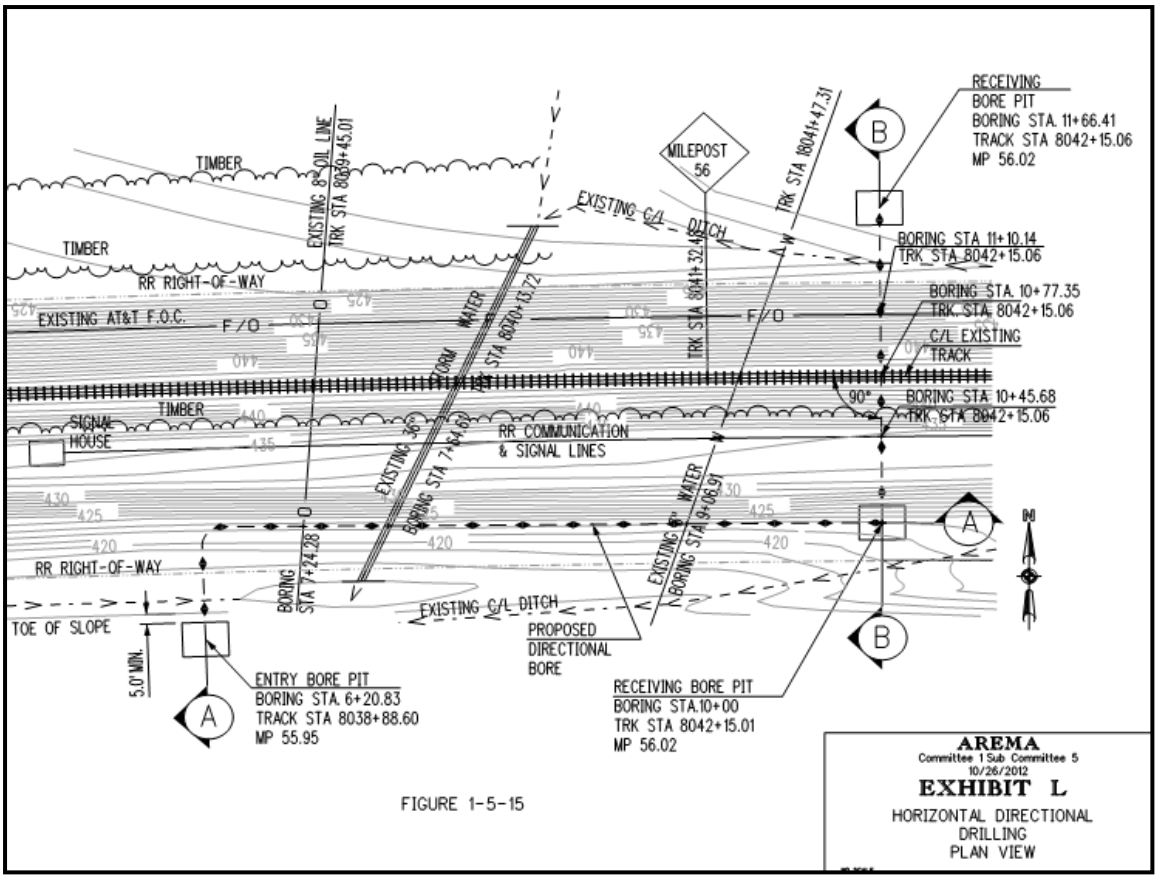
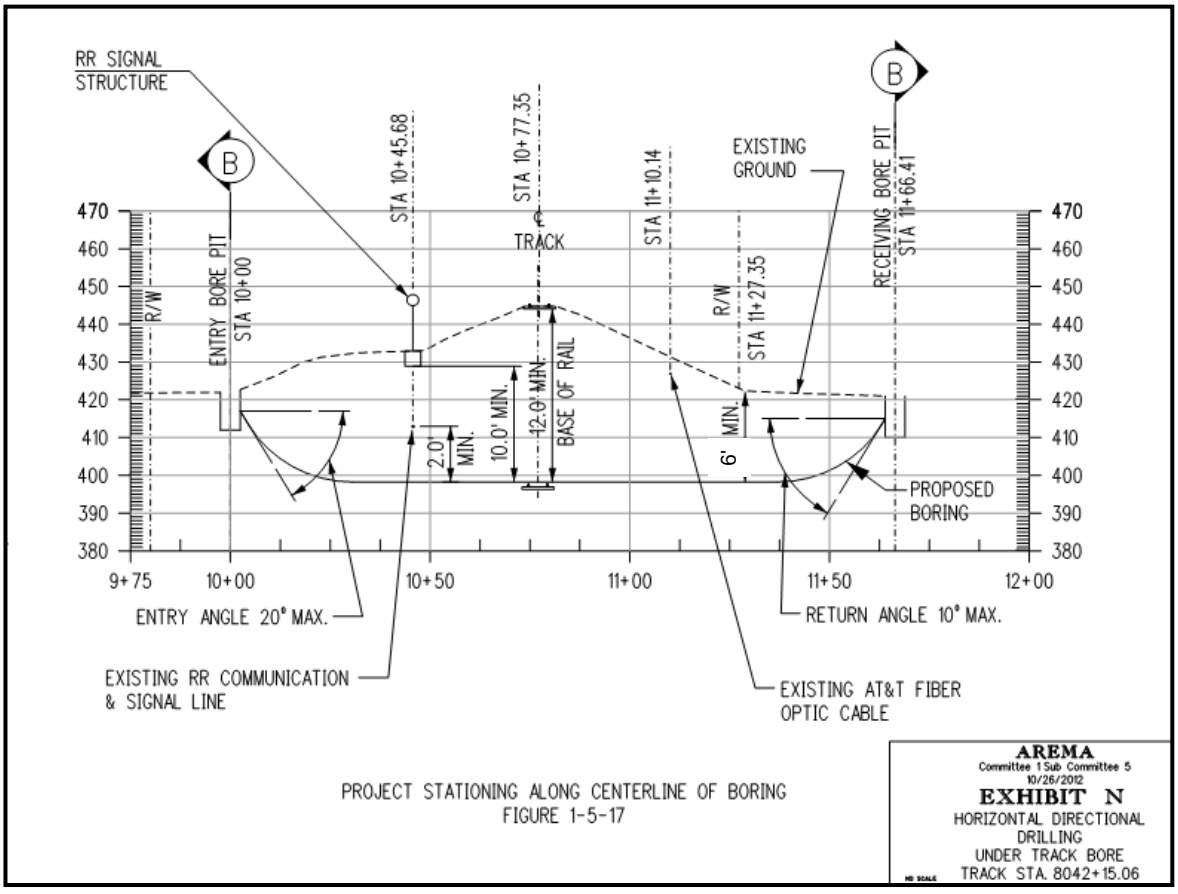


FIGURE 1-5-15



PROJECT STATIONING ALONG CENTERLINE OF BORING
FIGURE 1-5-17

h. Underground installations may be made by open trenching from the property line to the toe of the fill slope in fill sections and to the toe of the shoulder slope in cut sections but to no closer than thirty (30) feet of the centerline of track.

i. Underground installations crossing or paralleling BNSF will need to be a minimum of six (6) feet below natural ground / ditches regardless of installation method.

j. The use of plastic carrier pipe for sewer, water, natural gas, and other liquids is acceptable under specific circumstances. The use of plastic pipe is satisfactory if the pipe is designed to meet all applicable federal and state codes, and if the carrier pipe is properly encased within a steel casing pipe per AREMA standards. This casing must extend the full width of the right of way.

k. If the minimum depth is not attainable because of existing utilities, water table, ordinances, or similar reasons, the line shall be rerouted.

l. Locations that are considered unsuitable or undesirable are to be avoided. These include deep cuts and in wet or rocky terrain or where it will be difficult to obtain minimum depth.

m. Manholes should be located outside railroad property, when possible. No manhole may be in the shoulder, shoulder slope, ditch or backslope, or within twenty-five (25) feet of the centerline of track and shall not protrude above the surrounding ground without approval of BNSF.

n. Utilities, except temporary water lines, will not be attached to or routed through drainage structures or cattle passes. Utilities are not to be attached to other railroad structures without written approval of the BNSF Structures Department.

o. Crossings shall not be installed under or within one-hundred and fifty (150) feet of any Railroad bridge, railroad switch/turnout or the centerline of any culvert.

p. A BNSF signal representative must be present during installation if railroad signals are in the vicinity of wireline crossings unless signal representative authorizes otherwise.

q. Markers that identify the Utility Owner shall be placed at both property lines for utilities crossing the railroad property. For parallel lines markers shall be placed above the cable at intervals no less than three hundred (300) feet apart. The markers should identify the owner, type of cable and emergency telephone number. A six (6) inch wide warning tape will be installed one (1) foot BNG directly over the underground power line where located on Railroad right-of-way and outside the track ballast sections.

r. Above-ground utility appurtenances installed as a part of an underground installation shall be located at or near the railroad property line and shall not be any closer than twenty-five (25) feet to the centerline of track.

2. **Pipeline Requirements**

a. Pipeline designs are to specify the type and class of material, maximum working pressures and test and design pressure. All pipes are to be constructed per most recently published or regulated standard of the USDOT Hazardous Material Regulation Board.

b. Pipelines carrying oil, liquefied petroleum gas, natural or manufactured gas and other flammable products shall conform to the requirements of the current AREMA, ANSI/ASME B 31.4 Code for pressure piping - Liquid Petroleum Transportation Piping Systems; ANSI B 31.8 Code for pressure piping - Gas Transmission and Distribution Piping Systems; other applicable ANSI codes and 49 C.F.R. Part 192 – Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards or Part 195 - Transportation of Hazardous Liquids by Pipeline, except that the maximum allowable stress of design of steel pipe shall not exceed the specified minimum yield strength (multiplied by longitudinal joint factor) of the pipe as defined in the ANSI codes.

c. New and relocated sewer lines shall be constructed with satisfactory joints, materials and designs which will provide protection and resistance to damage from sulfide gases and other corrosive elements to which they may be exposed. Where non-metallic pipe is permitted and installed, a durable metal wire shall be concurrently installed; or other means shall be provided for detection purposes.

d. Pipelines under railroad tracks and across railroad property shall be encased in a larger pipe or conduit called “casings.” Generally, casings shall extend from right-of-way line to right-of-way line, unless otherwise approved.

e. Pipelines and casing pipes shall be suitably insulated from underground conduits carrying electric wires on railroad property.

f. Reinforced concrete pipe, with storm water and sewer being the exception, will need to be encased for a distance as wide as the embankment at the utility crossing. This is to protect against track failure due to joint separation.

3. **Encasement of Utilities**

a. Casings are oversized load-bearing conduits or ducts through which a utility is inserted:

i. To protect the railroad from damages and to provide for repair, removal, and replacement of the utility without interference to railway traffic.

ii. To protect the carrier pipe from external loads or shock, either during or after construction.

iii. To convey leaking fluids or gases away from the area directly beneath the railroad trackage to a point of venting at the railroad property line.

iv. Casing may be omitted for **gaseous products only** if the carrier pipe is steel, the wall thickness conforms to E-80 loading shown in the table on page 3-10, the pipe is coated and cathodically protected, and is placed twelve (12) feet minimum below the base of rail per AREMA standards.

v. Casing may be omitted for other products under the following circumstances:

(a) When carrier pipe is steel, and the wall thickness conforms to E-80 loading for casing pipe shown in the tables as included in AREMA manual Chapter 1, Part 5 for Utility Crossings. The length of thicker-walled pipe shall extend from railroad right-of-way line to right-of-way line.

(b) When steel carrier pipe is coated and cathodically protected.

(c) When the depth from base of rail to top of pipe is greater than thirty (30) feet and minimum depth of cover is six (6) feet below the flowline of the ditch or ground surface.

b. In circumstances where it is not feasible to install encasement from right-of-way line to right-of-way line, casing pipe under railroad tracks and across railroad property shall extend to the greater of the following distances, measured at right angles to the centerline of track:

i. Two (2) feet beyond toe of slope.

ii. Three (3) feet beyond ditch line.

iii. Twenty-five (25) feet from centerline of outside track when casing is sealed at both ends.

iv. Forty-five (45) feet from centerline of outside track when casing is open at both ends.

v. If additional track is planned for future construction, casing must extend far enough to meet above distances given the additional track requirement.

c. Pipelines and casing pipe shall be suitably insulated from underground conduits carrying electric wires on railroad property.

d. Casing pipe and joints shall be made of metal, and of leakproof construction. Casings shall be capable of withstanding the railroad loadings and other loads superimposed upon them.

e. Wall thickness designations for steel carrier and casing pipe for E-80 loading (including impact) are:

Nominal Diameter (inches)	**When coated or cathodically protected Nominal Thickness (inches)**
12-3/4 and under	0.188
14	0.188
16	0.219
18	0.250
20 and 22	0.281
24	0.312
26	0.344
28	0.375
30	0.406
32	0.438
34 and 36	0.469
38	0.500
40	0.531
42	0.562
44 and 46	0.594
48	0.625
50	0.656
52	0.688
54	0.719
56 and 58	0.750
60	0.781
62	0.812
64	0.844
66 and 68	0.875
70	0.906
72	0.938

i. Steel pipe shall be in conformance with ASTM A1097 and of leakproof construction, such as butt welded or interlocking joints which are capable of withstanding railroad loading. Pipe shall have a specified minimum yield strength, SMYS, of at least 35,000 psi (pounds per square inch / 241.317kPa).

ii. All metallic casing pipes are to be designed for effective corrosion control, long service life and relatively free from routine servicing and maintenance. Corrosion control measures for metallic casing piping must include cathodic protection or coating, such as Fusion Bonded Epoxy Coating (FBE) with an Abrasion Resistant Overcoating (ARO).

iii. Cast iron may be used for casing. It shall conform to ANSI A21. The pipe shall be connected by mechanical-type joints. Plain-end pipe shall be connected by compression-type couplings. The strength of the cast iron pipe to sustain external loads shall be computed in accordance with the most current ANSI A21.1 "Manual for the Computation of Strength and Thickness of Cast Iron Pipe."

f. The inside diameter of the casing pipe shall be such that the carrier pipe can be removed without disturbing the casing. All joints or couplings, supports, insulators or centering devices for the carrier pipe shall be considered in the selection of the casing diameter.

g. For flexible casing pipe, a maximum vertical deflection clearance of the casing pipe shall be three percent (3%) of its diameter plus one-half (1/2) inch so that no loads from the roadbed, track, railroad traffic or casing pipe are transmitted to the carrier pipe. When insulators are used on the carrier pipe, the relationship of the casing size to the size of the carrier pipe is:

Diameter of Carrier Pipe	Inside Diameter of Casing Pipe Equals Outside Diameter of Carrier Pipe Plus
0" – 7.9"	2"
8" - 16"	3-1/4"
Over 16"	4-1/2"

Underground electric and fiber installations must be encased completely across the Railroad right-of-way with a rigid conduit. The conduit can be steel, HDPE SCH 80, HDPE SDR-11, or HDPE SDR-9 (with no casing pipe for a single conduit). Any installations crossing BNSF with multiple duct installations must be in a single casing unless they are placed 5' or more apart. A metallic ribbon or wire must be included in the pipe to allow for radio locating later.

4. **Casing and Pipeline Installation**

a. Casing and pipeline installations should be accomplished by Horizontal Directional Drilling (HDD) dry jack-and-bore, tunneling or other approved methods. Tunneling construction under tracks will be permitted only under direct supervision of a BNSF Engineer. Tunneling procedures and equipment, as well as structural design, must have BNSF Engineering approval prior to starting any work on BNSF property. Generally, tunneling shall not be considered where less than six (6) feet of cover exists, or where excessively sandy, loose, or rocky soils are anticipated.

All utilities crossing under ditches and railroad trackage using jacking and dry boring installation should have a minimum depth of cover of six (6) feet below the flowline of the ditch or ground surface and eight (8) feet – three (3) inches from base of rail. In fill sections, the natural ground line at the toe of slope will be considered as ditch grade.

Jacking/boring pits shall be located outside railroad property when possible at a minimum of thirty (30) feet from the centerline of track and kept to the minimum size necessary. Do not locate the bore pits in the slope of a cut or fill section of the roadbed. Keep the bore pit size to a minimum. Use shoring, temporary or permanent, conforming to the most restrictive of state, OSHA, or AREMA

recommended practices in all excavations, where required. Submit shoring plans sealed by a Professional Engineer with application for approval prior to construction.

Under-track bores shall be located greater than 150 feet from the nearest bridge, culvert, track switch, building or other major structure, regardless of commodity or installation method.

All encased utility pipeline crossings under ditches and railroad trackage using horizontal directional drilling (HDD) installation should have a minimum depth of cover of six (6) feet below the flowline of the ditch or ground surface and twelve (12) feet from base of rail. In fill sections, the natural ground line at the toe of slope will be considered as ditch grade. Detailed drawings should be included with the application.

Rail elevations over the work must be monitored at intervals prescribed by BNSF to detect any track movement. Movements of over one-quarter (1/4) inch vertically shall be immediately reported to the BNSF Roadmaster. Due to the danger to rail traffic that is caused by only small amounts of track movement, BNSF forces may have to be called to surface the track several times. The cost of any work required by BNSF in the repair of track caused by utility installation will be assessed against the Utility Owner.

The following requirements shall apply to these construction methods:

i. The use of water under pressure jetting or puddling will not be permitted to facilitate boring, pushing or jacking operations. Some boring may require water to lubricate cutter and pipe, and under such conditions, is considered dry boring.

ii. Where unstable soil conditions exist, boring or tunneling operations shall be conducted in such a manner as not to be detrimental to the railroad being crossed.

iii. If excessive voids or too large of a bored hole is produced during casing or pipeline installations, or if it is necessary to abandon a bored or tunneled hole, prompt remedial action should be taken by the Utility Owner.

iv. All voids or abandoned holes caused by boring or jacking are to be filled by pressure grouting. The grout material should be a sand cement slurry with a minimum of two (2) sacks of cement per cubic yard and a minimum of water to assure satisfactory placement.

v. For bored or tunneled installations less than seventeen and one-half (17-1/2) feet deep, less than 300 feet long and pipe diameters less than or equal to 20 inches, the hole diameter shall not exceed the outside diameter of the utility pipe, cable or casing (including coating) by more than one and one-half (1-1/2) inches for pipes with an inside diameter of twelve (12) inches or less, or two (2) inches on pipes with an inside diameter greater than twelve (12) inches.

II.

vi. For bored or tunneled installations seventeen and one-half (17-1/2) feet deep or deeper, 300 feet long or longer, or greater than 20 inches in pipe diameter, the hole diameter shall not exceed one and one-half (1-1/2) times the diameter of the pipe.

This is further clarified as follows:

Hole Diameter	Depth	Length	Pipe Outside Diameter
Pipe OD + 1-1/2"	< 17.5'	<300'	<=12"
Pipe OD + 2"	< 17.5'	<300'	12" <= 20"
Pipe OD x 1.5	> 17.5'	>= 300'	> 20"

b. Vents. In casing pipe installations, vents are appurtenances by which fluids or gases between carrier and casing may be inspected, sampled, exhausted, or evacuated.

i. Vents shall be located at the high end of short casings and at both ends of casings longer than one hundred fifty (150) feet.

ii. Vent standpipes shall be located and constructed so as not to interfere with maintenance of the railroad or to be concealed by vegetation. Where possible, they shall be marked and located at the property line. The markers shall give the name, address of the owner, and a 24-hour phone number to contact in case of emergency.

iii. Casing pipe, when sealed, shall be properly vented. Vent pipes shall be of sufficient diameter, but in no case less than two (2) inches in diameter and shall be attached near each end of casing projecting through ground surface at property lines.

Venting is not required for encased water lines; however, sealing will be required if the ends of the casing are not above the high-water table.

Where casing pipe is used on sewer lines, venting, and sealing of casing will be required on pressurized lines.

iv. Vent pipes shall extend not less than four (4) feet above ground surface. Top of vent pipes shall be fitted with a down-turned elbow, properly screened, or a relief valve.

v. For pipelines carrying flammable materials, vent pipes on casings shall be at least sixteen (16) feet (vertically) from aerial electric wires. Casings shall be suitably insulated from underground conduits carrying electric wires on Railroad right-of-way.

c. Shut-Off Valves

i. The Utility Owner shall install accessible emergency shut-off valves on each side of the railroad. Locating a shut-off valve on railroad property

should be avoided. If approval is acquired, a guardrail must protect the shut-off valve.

ii. When a guardrail is required, its height shall be four (4) feet above the ground line. All four corner posts shall be driven to a minimum depth of four (4) feet below ground line. There shall be a minimum clearance of two (2) feet from the valve to the guardrail. The steel pipes for the four corner posts and guardrail shall have a minimum diameter of four (4) inches. All joints will be welded with a one-quarter (1/4) inch fillet weld all around.

iii. Where pipelines are provided with automatic control stations, no additional valves will be required.

5. **Abandonment / Removal of Facilities**

a. Upon termination of license the pipeline needs to be removed from BNSF property except for the portion under the track embankment. For pipelines crossing under the tracks the pipe and casing will be cut just short of the toe of embankment slope, purged, and filled with a flowable grout.

b. Portion of abandoned pipe under track embankment to remain in place shall be filled by pressure grouting. The grout material should be a sand cement slurry with a minimum of two (2) sacks of cement per cubic yard and a minimum amount of water to assure satisfactory placement.

APPENDIX

OVERHEAD INSTALLATION EXAMPLE

APPLICATION PACKET

Example

APPLICATION FOR PIPELINE or WIRE LINE - CROSSING AND/OR LONGITUDINAL

Jones Lang LaSalle Brokerage, Inc.
ATTN: Permit Services
4200 Buckingham, Suite 110
Fort Worth, TX 76155

We submit for your approval the following specifications for a pipeline or wire line we propose to build across and/or along **BNSF RAILWAY COMPANY'S** right-of-way, as shown on the enclosed location plan and detailed sketch.

***Legal* name of company/municipality who will own the pipeline/ wire line:** ABC Electric
State in which incorporated: TX (If not incorporated, please attach name of owners or partners.) _____
Name of contact for ownership entity: John Smith Phone #: 123-456-7890
EMail Address: JSmith@ABCElec.com Fax: 123-456-7890
Mailing Address: 1234 S. Main Street, Corinth, TX 76210

Is this project **ARRA** funded? Yes ☐ No ☒
Is applicant a condemning authority? Yes ☒ No ☐
Is applicant a Railroad Shipper? Yes ☐ No ☒
If yes, BNSF Marketing Rep. name: _____ Phone # _____
Was this service requested by BNSF? Yes ☐ No ☒
If yes, person requesting service: _____ Phone # _____
Is this installation in conjunction with a track or track expansion project? Yes ☐ No ☒
If yes, BNSF contact name: _____ Phone # _____
Is this installation associated with a public road crossing/widening or a grade separation project? Yes ☐ No ☒
If yes, please provide details and plans for said crossing/widening or grade separation project with your application.

Type of Encroachment: Crossing ☒ Longitudinal ☐ Both ☐
Name of nearest town on RR Rhome County Wise State TX
Name of nearest roadway crossing RR? CR 4925
Location of Encroachment: NW 1/4 Section 6 Township 106N Range 52W
Railroad Mile Post 20.49 Latitude 32°59'56.28"N Longitude 97°25'5.44"W
Within limits of public road or street? Yes ☒ No ☐ If yes, distance from center line of road: 48 ft.
Width of public road or street: 30 ft. Width of Public Road Right-of-Way: 30 ft.

PIPELINE:

(Note: For wire line see pg. 2)

Contents to be handled through pipeline: _____

	CARRIER	CASING
Length of pipe on RR property (plastic pipe must be encased full width of ROW)	ft.	ft.
Inside diameter of pipe	in.	in.
Pipe Material		
Specification & grade (Minimum yield strength casing 35,000 psi)		
Wall thickness (minimum wall thickness of casing pipe under 14 in. – 0.188 in E-80 Loading)		
Actual working pressure		
Type of Joint	Mechanical ☐ Welded ☐	Mechanical ☐ Welded ☐

	CARRIER	CASING
Coating		
Distance from base of rail to top of pipe (Flammable contents, steam, water or non-flammable – minimum 5 ½ ft. under main track) (uncased gaseous products – minimum 10' under track)		
Minimum ground cover on RR property (minimum 3 ft.)		
Cathodic protection casing (flammable substance)		

Type of insulators or support: _____ Size: _____ Space: _____
Number of Vents (flammable substances require 2 vents) _____ Size: _____ Height Above Ground: _____

Does pipeline support an oil or gas well? Yes ☐ No ☐
If yes, distance from RR property. ft. Name of well:

Method of Crossing:

Jacking/Dry Bore ☐
(Jacking pit location min. 30 ft. from centerline of track. Pit must not be open more than 48 hrs. and must be protected when not in use.)

Trench ☐
(RR to furnish flagman at applicant's expense)

Horizontal Directional Drilling (HDD) ☐
(Jacking pit location min. 30 ft. from centerline of track. Pit must not be open more than 48 hrs. and must be protected when not in use.)

If installation is via Horizontal Direction Drilling (HDD) - Cutting head must travel at 0.0% grade (or downward) beginning 25' (minimum) from centerline of track until it reaches a point 25' (minimum) from the centerline of track. Minimum pressure must be applied to pumping the slurry to the cutting head during drilling. This will deter the bentonite slurry used for lubrication from seeping up and fouling the track roadbed. A BNSF Flagman must be present during installation and will monitor the ballast and roadbed.

WIRE LINE:

Kind of encroachment: Electric ☒ Communication ☐ If other, describe: _____
Type of wires/cables: 6A Copper # of wires or cables: 2 Existing Volts 14.4 / 24.9 Phase Single Cycles 60 Hz
Conduits:
Occupied conduits: N/A Vacant conduits: N/A Total Conduits: N/A
Length of encroachment: 245' Adjacent spans: 376 ft. 188 ft.
Appurtenances on RR Co. property: N/A
Wire clearance over or under top of rail: 31' 3" ft. over or _____ ft. under
If under track: kind of conduit N/A size of conduit N/A
Wire clearance over RR Co. wire lines: N/A

POLES

Kind: 2 - Wood Size: _____
Height: 50' / 55' Class: 2 - HI
Set in: Earth ☒ Rock ☒
Number of poles on RR property: 0
Distance of poles from track: SEE EXHIBIT

GUY WIRES

Overhead yes Down yes
Kind Concrete Pole 212 acting as guy & Pole 259A with 3/8" Size 3/8" Steel Down Guy Wires

CROSS ARMS

Material: Fiberglass
Size: (4) 3-5/8" x 4-5/8" x 8' stacked

FRONT ELEVATION

SIDE ELEVATION

INSULATORS

Material: Polymer Deadend Belk

Type: Dead-End Suspension Size: 8' Stacked

BRACKETS

Material: N/A

Type: N/A Size: N/A

CONDUCTORS

Material: New ACSR

Type: Stranded Size: 477 (Hawk)

LINE CHARACTERISTICS

Voltage: 14.4 / 24.9 Phase: 3 Cycle: 60 Hz

I agree that I have read the instructions for the installation of wire lines as detailed in the *Utility Accommodation Policy.*

Attached to this sheet is a location plan and a detailed sketch. Sketch should show tie-down measurement to centerline of nearest road crossing, bridge or other railroad structure.

Please authorize us to proceed with this installation or advise what changes are necessary to meet BNSF's specifications.

Date: _____

Signed: _____

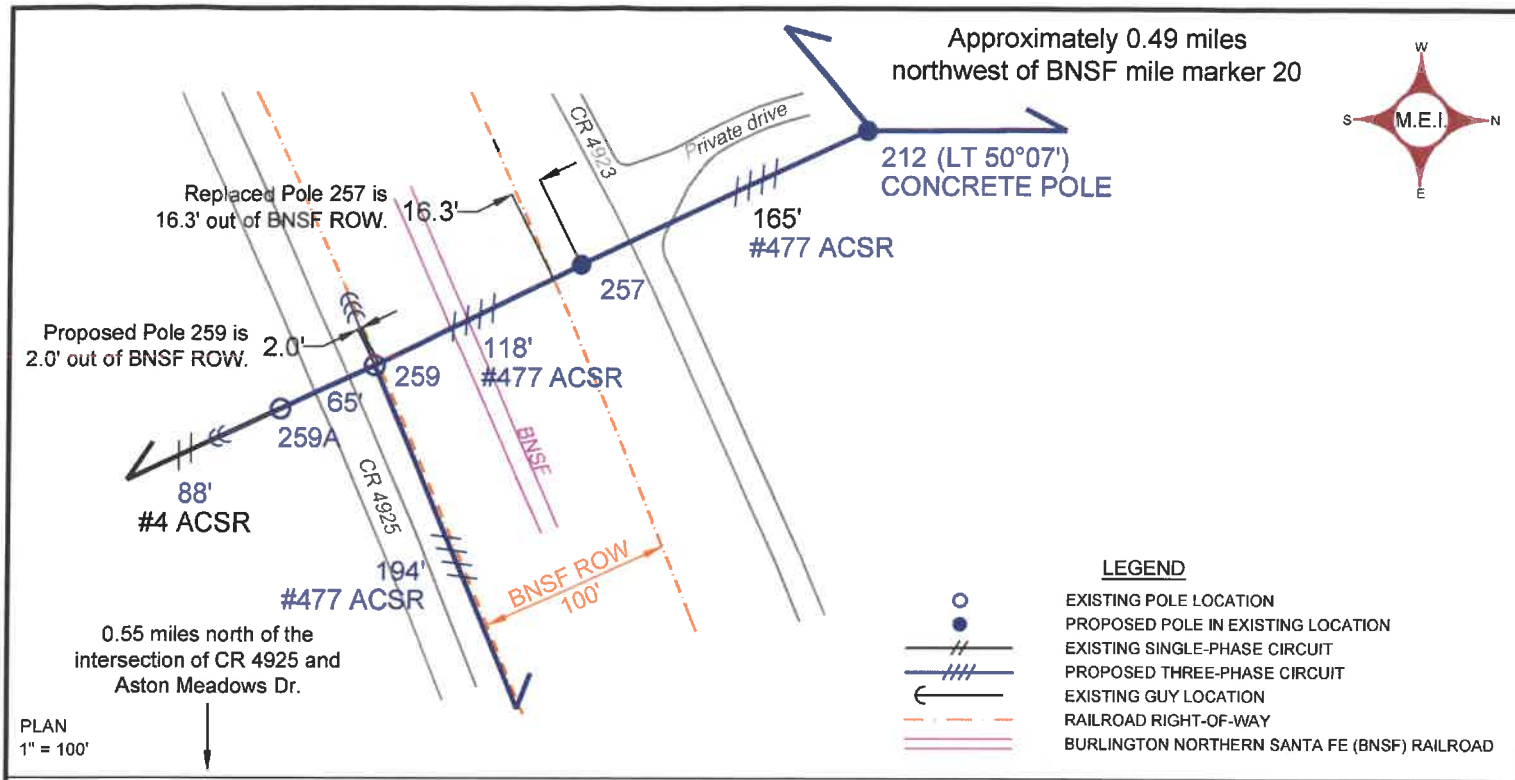
Print Name: _____

Company: _____

Title: _____

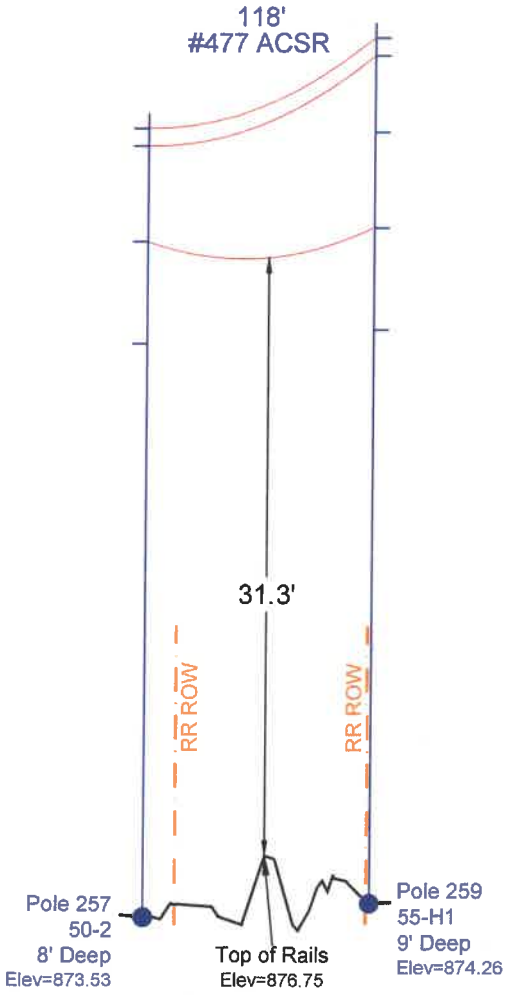
Phone #: _____ Fax: _____

If you require additional assistance, please contact your Jones Lang LaSalle Brokerage, Inc. representative.



PROFILE
H: 1" = 100'
V: 1" = 10'

#477 ACSR
215' RS - 3900#
120°/Final
(0.656/955)



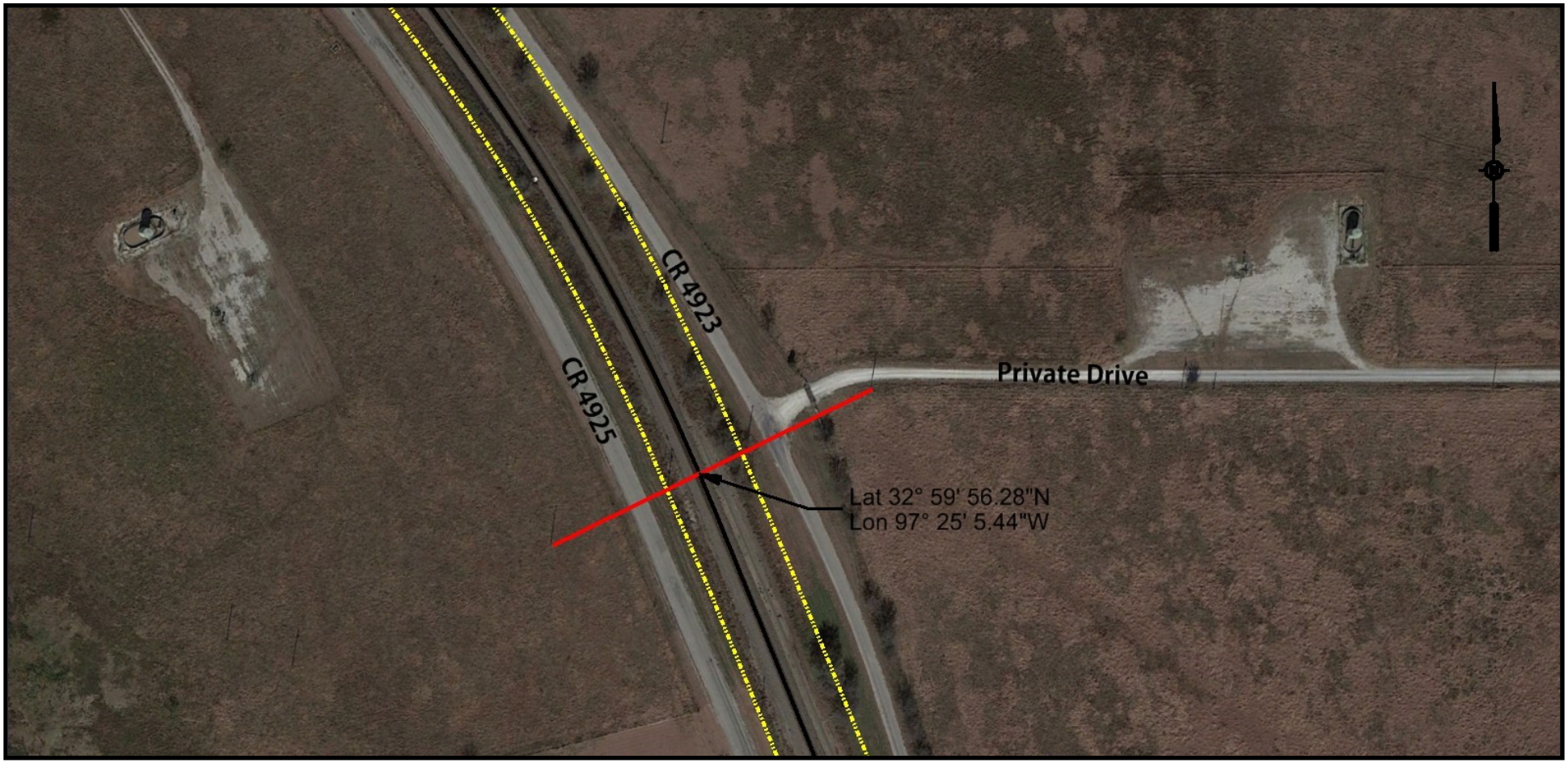
Engineering Inc
STATE OF TEXAS
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY

NOT VALID UNLESS SIGNED.
ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

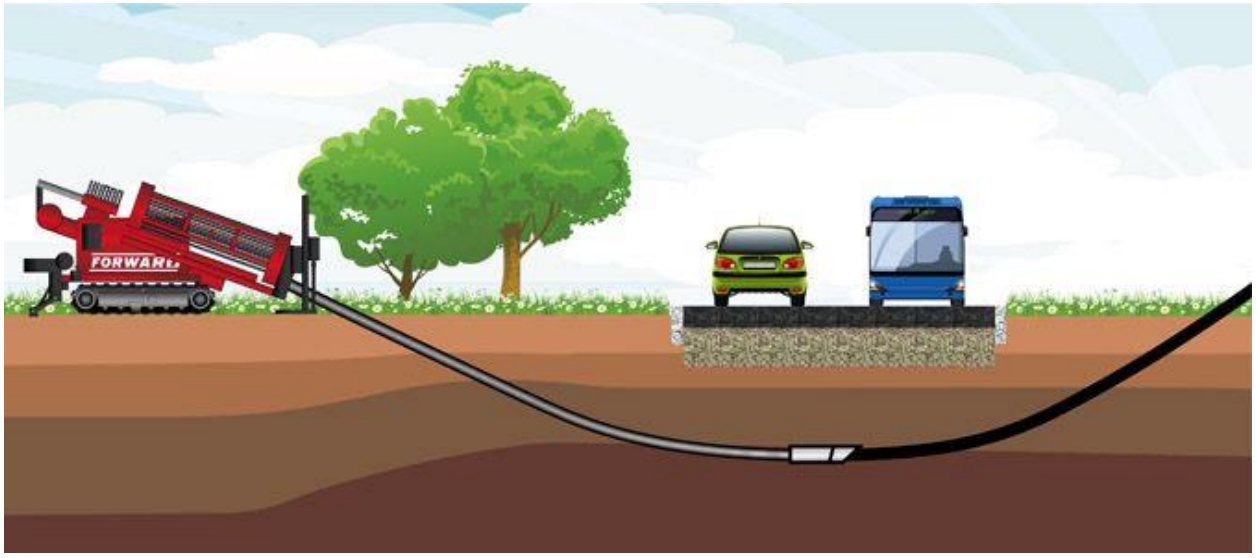
APPROVED
FOR CONSTRUCTION

Example



See schematic for dimensions for existing / proposed pole locations

Example



UNDERGROUND INSTALLATION HORIZONTAL DIRECTIONAL DRILLING (HDD) EXAMPLE APPLICATION PACKET

Example

APPLICATION FOR PIPELINE or WIRE LINE - CROSSING AND/OR LONGITUDINAL

Jones Lang LaSalle Brokerage, Inc.
ATTN: Permit Services
4200 Buckingham, Suite 110
Fort Worth, TX 76155

We submit for your approval the following specifications for a pipeline or wire line we propose to build across and/or along **BNSF RAILWAY COMPANY'S** right-of-way, as shown on the enclosed location plan and detailed sketch.

***Legal* name of company/municipality who will own the pipeline/ wire line:** ABC Energy Corporation
State in which incorporated: IL (If not incorporated, please attach name of owners or partners.) _____
Name of contact for ownership entity: John Smith Phone #: 123-456-7890
EMail Address: JSmith@ABCEnergy.com Fax: 123-456-7890
Mailing Address: 12345 Main St., St. Louis, MO 63166

Is this project **ARRA** funded? Yes ☐ No ☒
Is applicant a condemning authority? Yes ☐ No ☒
Is applicant a Railroad Shipper? Yes ☐ No ☒
If yes, BNSF Marketing Rep. name: _____ Phone # _____
Was this service requested by BNSF? Yes ☐ No ☒
If yes, person requesting service: _____ Phone # _____
Is this installation in conjunction with a track or track expansion project? Yes ☐ No ☒
If yes, BNSF contact name: _____ Phone # _____
Is this installation associated with a public road crossing/widening or a grade separation project? Yes ☐ No ☒
If yes, please provide details and plans for said crossing/widening or grade separation project with your application.

Type of Encroachment: Crossing ☒ Longitudinal ☐ Both ☐
Name of nearest town on RR Lewiston County Fulton State IL
Name of nearest roadway crossing RR? Patton Ave.
Location of Encroachment: _____ 1/4 Section 22 Township 5N Range 3E
Railroad Mile Post _____ Latitude 40.400058 Longitude -90.149968
Within limits of public road or street? Yes ☒ No ☐ If yes, distance from center line of road: 15 ft.
Width of public road or street: 40 ft. Width of Public Road Right-of-Way: _____ ft.

PIPELINE:

(Note: For wire line see pg. 2)

Contents to be handled through pipeline: Natural Gas in a Gaseous State

	CARRIER	CASING
Length of pipe on RR property (plastic pipe must be encased full width of ROW)	100 ft.	100 ft.
Inside diameter of pipe	3.682 in.	7.981 in.
Pipe Material	Plastic	Steel
Specification & grade (Minimum yield strength casing 35,000 psi)	2406 PE	SCH 40
Wall thickness (minimum wall thickness of casing pipe under 14 in. – 0.188 in E-80 Loading)	0.409 in	0.322 in
Actual working pressure	60 psig	
Type of Joint	Mechanical ☐ Welded ☒	Mechanical ☐ Welded ☒

	CARRIER	CASING
Coating		
Distance from base of rail to top of pipe (Flammable contents, steam, water or non-flammable – minimum 5 ½ ft. under main track) (uncased gaseous products – minimum 10' under track)	9 ft 6 in	12 ft
Minimum ground cover on RR property (minimum 3 ft.)	6 ft	6 ft
Cathodic protection casing (flammable substance)		

Type of insulators or support: _____ Size: _____ Space: _____
Number of Vents (flammable substances require 2 vents) _____ Size: _____ Height Above Ground: _____

Does pipeline support an oil or gas well? Yes ☐ No ☒
If yes, distance from RR property. ft. Name of well:

Method of Crossing:

Jacking/Dry Bore ☐
(Jacking pit location min. 30 ft. from centerline of track. Pit must not be open more than 48 hrs. and must be protected when not in use.)

Trench ☐
(RR to furnish flagman at applicant's expense)

Horizontal Directional Drilling (HDD) ☒
(Jacking pit location min. 30 ft. from centerline of track. Pit must not be open more than 48 hrs. and must be protected when not in use.)

If installation is via Horizontal Direction Drilling (HDD) - Cutting head must travel at 0.0% grade (or downward) beginning 25' (minimum) from centerline of track until it reaches a point 25' (minimum) from the centerline of track. Minimum pressure must be applied to pumping the slurry to the cutting head during drilling. This will deter the bentonite slurry used for lubrication from seeping up and fouling the track roadbed. A BNSF Flagman must be present during installation and will monitor the ballast and roadbed.

WIRE LINE:

Kind of encroachment: Electric ☐ Communication ☐ If other, describe: _____
Type of wires/cables: _____ # of wires or cables: _____ Volts _____ Phase _____ Cycles _____
Conduits:
Occupied conduits: _____ Vacant conduits: _____ Total Conduits: _____
Length of encroachment: _____ Adjacent spans: _____ ft. _____ ft.
Appurtenances on RR Co. property: _____
Wire clearance over or under top of rail: _____ ft. over or _____ ft. under
If under track: kind of conduit _____ size of conduit _____
Wire clearance over RR Co. wire lines: _____

POLES

Kind: _____ Size: _____
Height: _____ Class: _____
Set in: Earth ☐ Rock ☐
Number of poles on RR property: _____
Distance of poles from track: _____

GUY WIRES

Overhead _____ Down _____
Kind _____ Size _____

CROSS ARMS

Material: _____
Size: _____ x _____ x _____

FRONT ELEVATION

INSULATORS
Material: _____
Type: _____ Size: _____

BRACKETS
Material: _____
Type: _____ Size: _____

CONDUCTORS
Material: _____
Type: _____ Size: _____

SIDE ELEVATION

LINE CHARACTERISTICS
Voltage: _____ Phase: _____ Cycle: _____

I agree that I have read the instructions for the installation of wire lines as detailed in the *Utility Accommodation Policy.*

Attached to this sheet is a location plan and a detailed sketch. Sketch should show tie-down measurement to centerline of nearest road crossing, bridge or other railroad structure.

Please authorize us to proceed with this installation or advise what changes are necessary to meet BNSF's specifications.

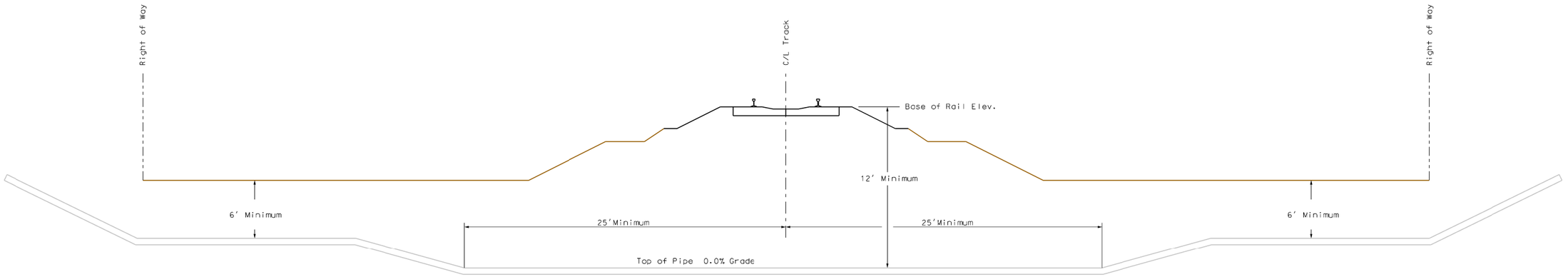
Date: _____

Signed: _____
Print Name: _____
Company: _____
Title: _____
Phone #: _____ Fax: _____

If you require additional assistance, please contact your Jones Lang LaSalle Brokerage, Inc. representative.

Example

LICENSED PROFESSIONAL ENGINEER
JOHN
DOE
062-123456
OF ILLINOIS



Cutting head must travel at 0.0% grade (or downward) beginning 25' (minimum) from centerline of track until it reaches a point 25' (minimum) from the centerline of track. Minimum pressure must be applied to pumping the slurry to the cutting head during drilling. This will deter the bentonite slurry used for lubrication from seeping up and fouling the track roadbed.

The plans submitted with the application must show the planned travel path of the cutting head.

A construction observer must be present during installation and will monitor the ballast and roadbed.

APPROVALS	TITLE	DATE

REVISIONS

NO.	DESCRIPTION	DATE	BY
1	Added "minimum" to distance from track	9/19/08	JRG
2	Revised minimum depth requirements	9/8/20	BAL

DESIGNED:
DRAWN:
CHECKED:

ENGINEERING SERVICES
www.bnsf.com/tools/fieldengineering/index

FILE NO.
RFA / AFE NO.
STATUS

BNSF RAILWAY

DATE: 06/20/08
LS/mp:
DIVISION:
SUBD:

\utilaccom\hdd.dgn

HORIZONTAL DIRECTIONAL DRILLING STANDARDS NOT TO SCALE

UNDERGROUND INSTALLATION JACK AND BORE EXAMPLE APPLICATION PACKET

Example

APPLICATION FOR PIPELINE or WIRE LINE - CROSSING AND/OR LONGITUDINAL

Jones Lang LaSalle Brokerage, Inc.
ATTN: Permit Services
4200 Buckingham, Suite 110
Fort Worth, TX 76155

We submit for your approval the following specifications for a pipeline or wire line we propose to build across and/or along **BNSF RAILWAY COMPANY'S** right-of-way, as shown on the enclosed location plan and detailed sketch.

***Legal* name of company/municipality who will own the pipeline/ wire line:** City of Waxahachie
State in which incorporated: TX (If not incorporated, please attach name of owners or partners.) _____
Name of contact for ownership entity: John Smith Phone #: 123-456-7890
EMail Address: JSmith@Waxahachie.com Fax: 123-456-7890
Mailing Address: 101 Main Street, Waxahachie, TX 75165

Is this project **ARRA** funded? Yes ☐ No ☒
Is applicant a condemning authority? Yes ☐ No ☒
Is applicant a Railroad Shipper? Yes ☐ No ☒
If yes, BNSF Marketing Rep. name: _____ Phone # _____
Was this service requested by BNSF? Yes ☐ No ☒
If yes, person requesting service: _____ Phone # _____
Is this installation in conjunction with a track or track expansion project? Yes ☐ No ☒
If yes, BNSF contact name: _____ Phone # _____
Is this installation associated with a public road crossing/widening or a grade separation project? Yes ☒ No ☐
If yes, please provide details and plans for said crossing/widening or grade separation project with your application.

Type of Encroachment: Crossing ☒ Longitudinal ☐ Both ☐
Name of nearest town on RR Waxahachie County Ellis State TX
Name of nearest roadway crossing RR? Flat Street
Location of Encroachment: _____ 1/4 Section _____ Township _____ Range _____
Railroad Mile Post 270.77 Latitude 32.3823912 Longitude -96.8473435
Within limits of public road or street? Yes ☒ No ☐ If yes, distance from center line of road: 6 ft.
Width of public road or street: 24 ft. Width of Public Road Right-of-Way: 60 ft.

PIPELINE:

(Note: For wire line see pg. 2)

Contents to be handled through pipeline: Water

	CARRIER	CASING
Length of pipe on RR property (plastic pipe must be encased full width of ROW)	82 ft.	82 ft.
Inside diameter of pipe	8 in.	18 in.
Pipe Material	PVC	Steel
Specification & grade (Minimum yield strength casing 35,000 psi)	DR-18	35,000 PSI (MIN)
Wall thickness (minimum wall thickness of casing pipe under 14 in. – 0.188 in E-80 Loading)	1 in.	0.25" (MIN)
Actual working pressure	150 PSI (Pressure Class)	
Type of Joint	Mechanical ☒ Welded ☐	Mechanical ☐ Welded ☒

	CARRIER	CASING
Coating		
Distance from base of rail to top of pipe (Flammable contents, steam, water or non-flammable – minimum 5 ½ ft. under main track) (uncased gaseous products – minimum 10' under track)	7.4 ft.	8' 3"
Minimum ground cover on RR property (minimum 3 ft.)	7.4 ft.	6'
Cathodic protection casing (flammable substance)	No	Yes

Type of insulators or support: _____ Size: _____ Space: _____
Number of Vents (flammable substances require 2 vents) _____ Size: _____ Height Above Ground: _____

Does pipeline support an oil or gas well? Yes ☐ No ☒
If yes, distance from RR property. ft. Name of well:

Method of Crossing:

Jacking/Dry Bore ☒
(Jacking pit location min. 30 ft. from centerline of track. Pit must not be open more than 48 hrs. and must be protected when not in use.)

Trench ☐
(RR to furnish flagman at applicant's expense)

Horizontal Directional Drilling (HDD) ☐
(Jacking pit location min. 30 ft. from centerline of track. Pit must not be open more than 48 hrs. and must be protected when not in use.)

If installation is via Horizontal Direction Drilling (HDD) - Cutting head must travel at 0.0% grade (or downward) beginning 25' (minimum) from centerline of track until it reaches a point 25' (minimum) from the centerline of track. Minimum pressure must be applied to pumping the slurry to the cutting head during drilling. This will deter the bentonite slurry used for lubrication from seeping up and fouling the track roadbed. A BNSF Flagman must be present during installation and will monitor the ballast and roadbed.

WIRE LINE:

Kind of encroachment: Electric ☐ Communication ☐ If other, describe: _____
Type of wires/cables: _____ # of wires or cables: _____ Volts _____ Phase _____ Cycles _____
Conduits:
Occupied conduits: _____ Vacant conduits: _____ Total Conduits: _____
Length of encroachment: _____ Adjacent spans: _____ ft. _____ ft.
Appurtenances on RR Co. property: _____
Wire clearance over or under top of rail: _____ ft. over or _____ ft. under
If under track: kind of conduit _____ size of conduit _____
Wire clearance over RR Co. wire lines: _____

POLES

Kind: _____ Size: _____
Height: _____ Class: _____
Set in: Earth ☐ Rock ☐
Number of poles on RR property: _____
Distance of poles from track: _____

GUY WIRES

Overhead _____ Down _____
Kind _____ Size _____

CROSS ARMS

Material: _____
Size: _____ x _____ x _____

FRONT ELEVATION

INSULATORS
Material: _____
Type: _____ Size: _____

BRACKETS
Material: _____
Type: _____ Size: _____

CONDUCTORS
Material: _____
Type: _____ Size: _____

SIDE ELEVATION

LINE CHARACTERISTICS
Voltage: _____ Phase: _____ Cycle: _____

I agree that I have read the instructions for the installation of wire lines as detailed in the *Utility Accommodation Policy.*

Attached to this sheet is a location plan and a detailed sketch. Sketch should show tie-down measurement to centerline of nearest road crossing, bridge or other railroad structure.

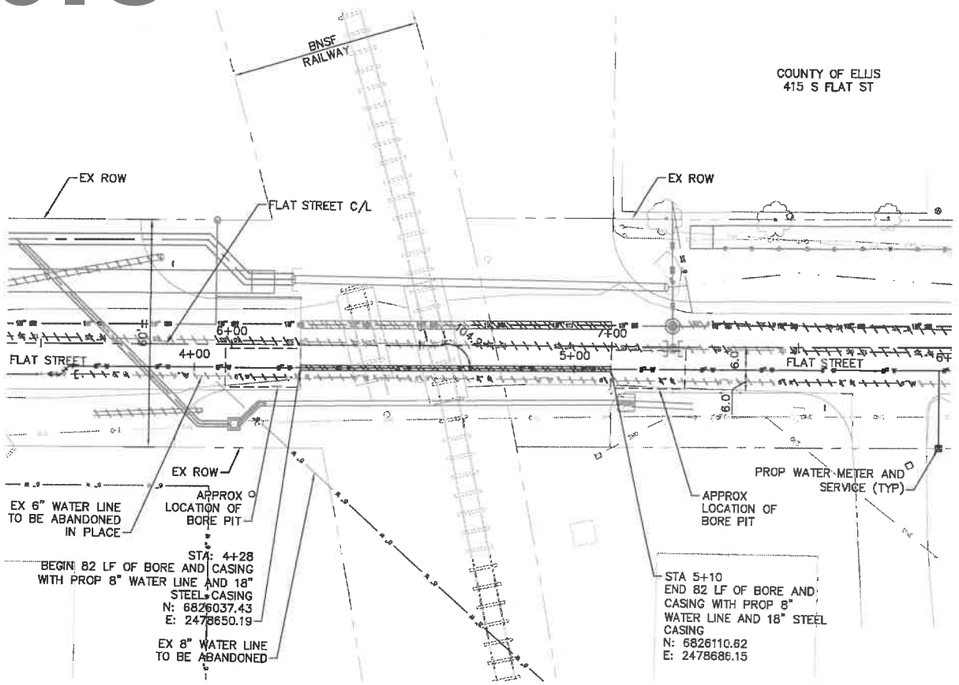
Please authorize us to proceed with this installation or advise what changes are necessary to meet BNSF's specifications.

Date: _____

Signed: _____
Print Name: _____
Company: _____
Title: _____
Phone #: _____ Fax: _____

If you require additional assistance, please contact your Jones Lang LaSalle Brokerage, Inc. representative.

Example

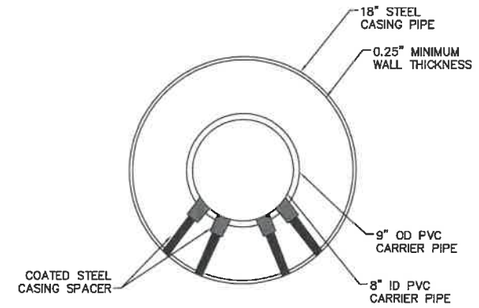


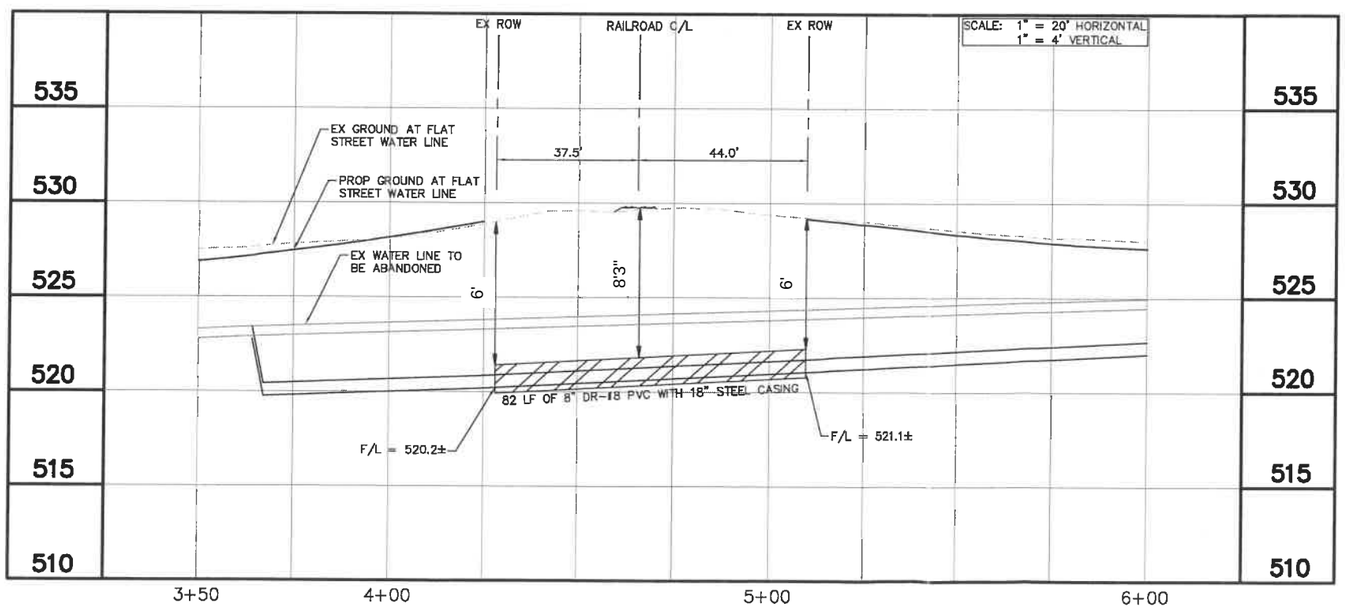
GRAPHIC SCALE

20 0 10 20 40

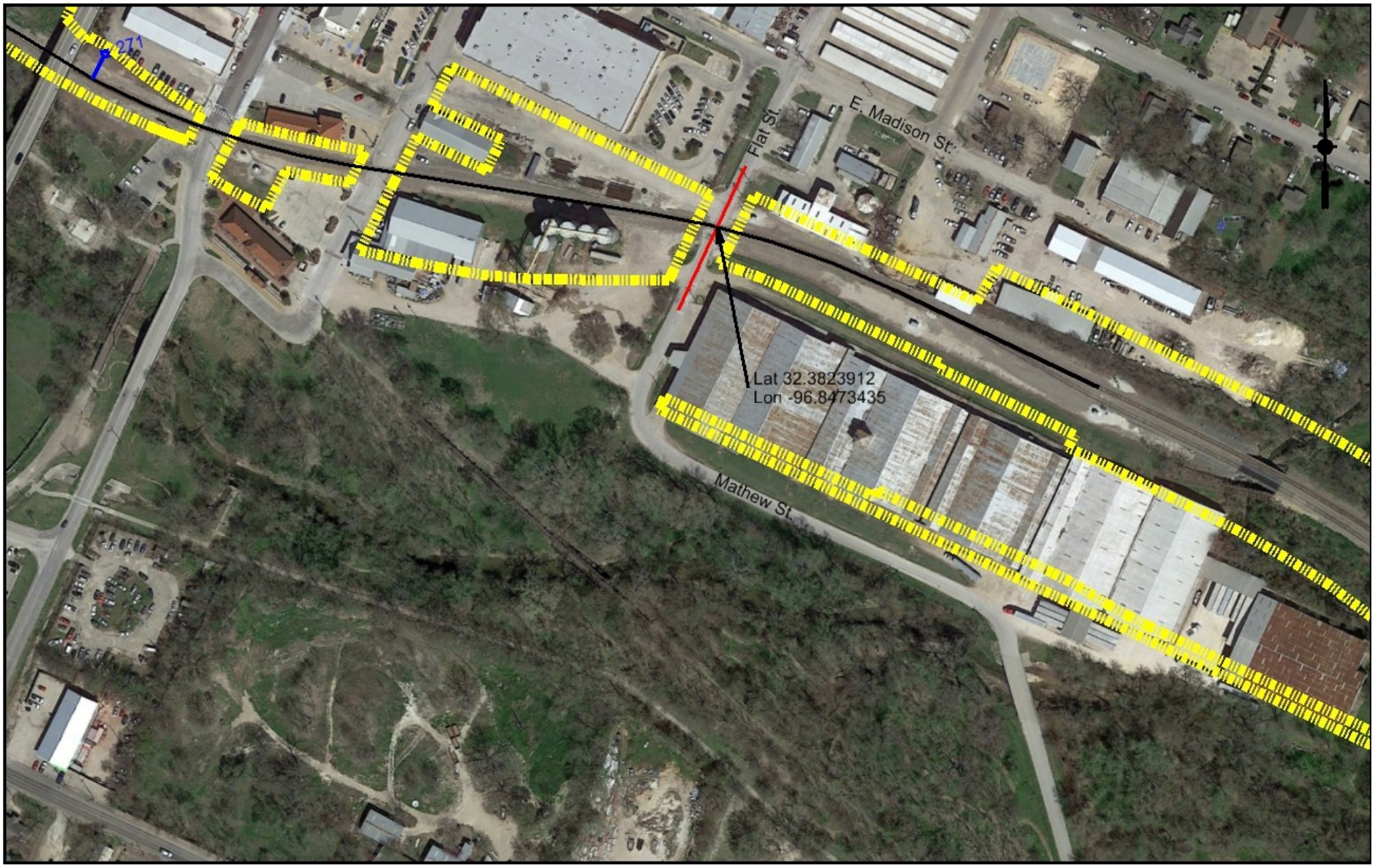
ORIGINAL PLOTTED SCALE:
1 Inch = 20 ft.

IF PLAN SHEET IS 11" X 17",
SCALE IS 1 INCH = 40 FT



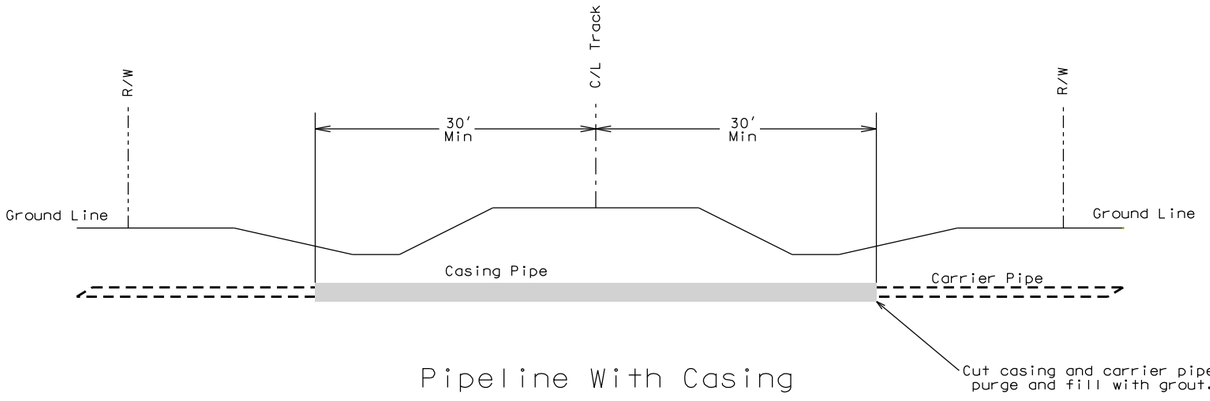


STATE OF TEXAS
JOHN DOE
123456
LICENSED
PROFESSIONAL ENGINEER

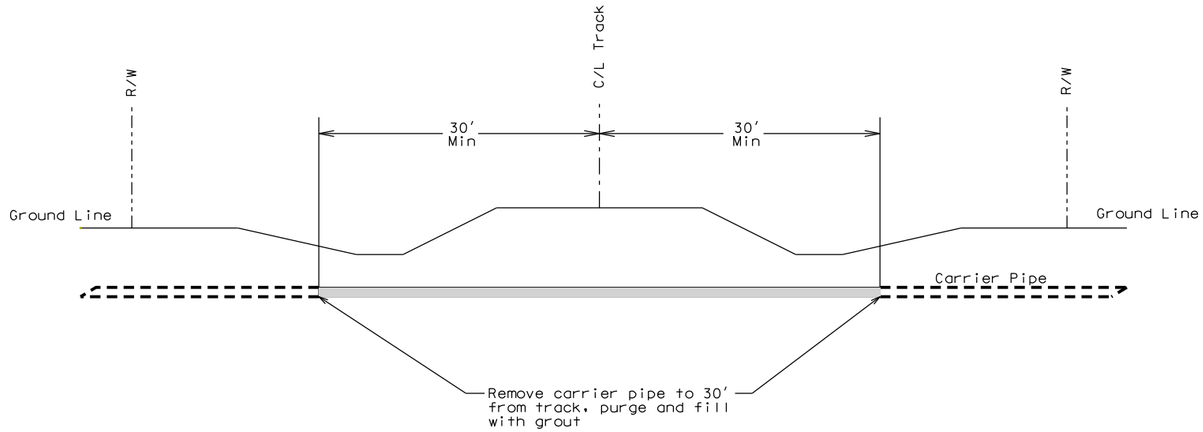


See schematic / plan sheet for dimensions

Example



Pipeline With Casing



Pipeline Without Casing

Upon termination all pipelines and casings will be removed entirely from BNSF property up to the toe of track embankment, but no closer than 30′ from centerline of track.

APPROVALS - (NAME - TITLE)	DATE	APPROVALS - (NAME - TITLE)	DATE

DRAWN	CHECKED	BNSF RAILWAY COMPANY - ENGINEERING SERVICES	PROTRAK SEQ NO

REVISIONS

NO.	DESCRIPTION	DATE	BY

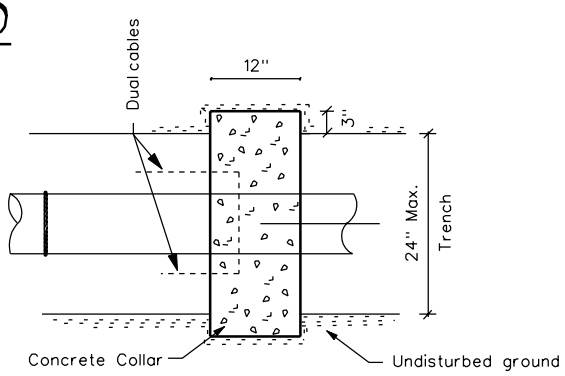
BNSF RAILWAY

RETIREMENT/REMOVAL OF PIPELINES ON BNSF PROPERTY

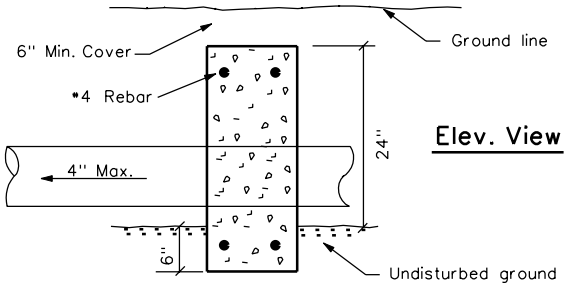
FILE: remove pipeline	SHEET 1 OF 1	DATE: 05/11/2011

DRAINS FOR STEEP SLOPES

Installation of the pipeline will be difficult due to the slope in which the pipe will be laid. Any damage to the slope due to construction must be repaired to its original condition. A large load on the conrete anchor which supports the pipe at the top of the slope will result due to this installation. This anchor should be moved as far away from the face of the slope as possible to maximize its support capability. The pipeline should be designed to withstand the weight of the water within the pipe.
See details below commonly used to support and hold the pipe in place, which should be used for this installation. If the pipeline fails, it will be the owners responsibility to reinstall the pipeline. If damage occurs to railway property due to the failure of the pipeline, the property owner will be responsible for damages. The property owner must not deposit grass clippings, yard waste, trees or other debris on the slope at any time.

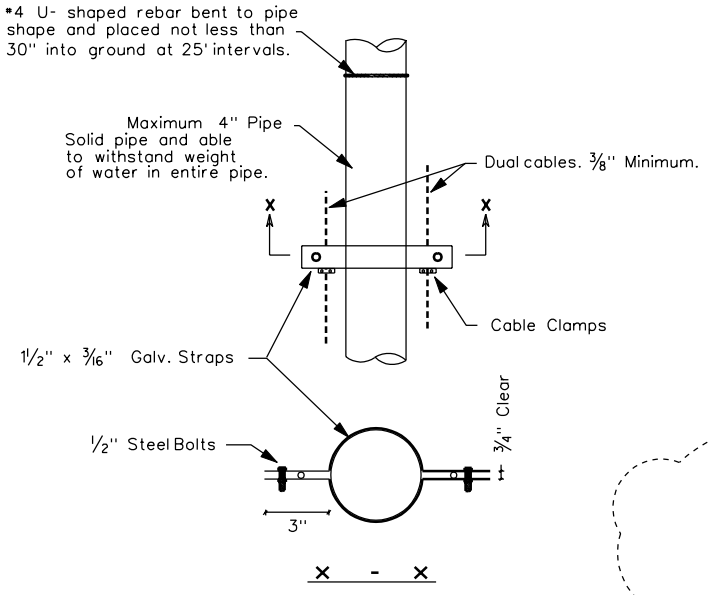


Plan View

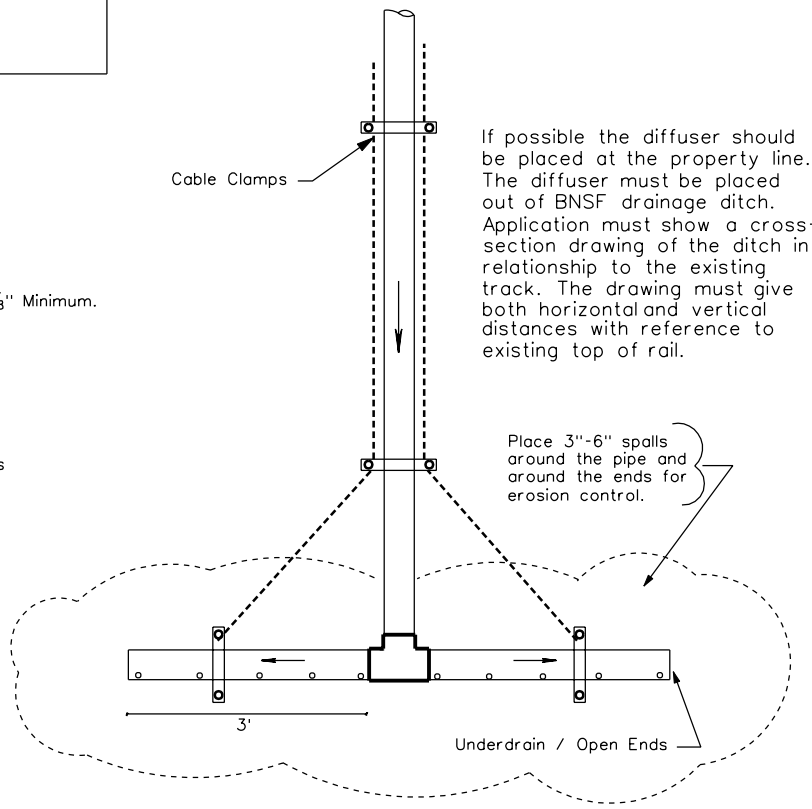


Elev. View

PIPE ANCHOR DETAIL



CLAMP DETAIL



DIFFUSER

NOT TO SCALE

BURLINGTON NORTHERN & SANTA FE RAILWAY CO.

OCT 1998

DEFINITION OF TERMS

The terminology used in this Policy strives for conventional meaning and to insure uniform interpretation. To this end, the following definitions apply:

ACCESS CONTROL: Restriction of access to and from abutting lands to railroad property.

AREMA: American Railroad Engineering and Maintenance of Way Association.

ANSI: American National Standard Institute.

ASTM: American Society for Testing and Materials.

BACKFILL: Replacement of soil around and over an underground utility facility.

BORING: Piercing a hole under the surface of the ground without disturbing the earth surrounding the hole. Boring may be accomplished by any approved manner. Water jetting or puddling will not be permitted. Holes may be mechanically bored and cased using a cutting head and continuous auger mounted inside of the casing. Small diameter holes may be augured and the casing or utility facility pushed in later.

BNSF: Burlington Northern and Santa Fe Railway Company.

BURY: Placement of the utility facility below grade of roadway, ditch or natural ground to a specified depth.

CARRIER: Pipe directly enclosing a transmitted fluid (liquid or gas).

CASING: A larger pipe enclosing a carrier.

CFR: Code of Federal Regulations.

COATING: Material applied to or wrapped around a pipe.

COMMUNICATION LINE: Fiber optic, telephone cable and similar lines, not exceeding four hundred (400) volts to ground or seven hundred fifty (750) volts between any two (2) points of the circuit, the transmittal power of which does not exceed one hundred fifty (150) watts.

CONDUIT OR DUCT: An enclosed tubular runway for protecting wires or cables.

COVER: The depth of material placed over a utility. Depth of cover is measured from top of utility casing or carrier pipe (if no casing is required) to the natural ground line or construction line above the utility.

DIRECT BURIAL: Installing a utility underground without encasement, by plowing or trenching. No rail plows will be permitted.

ELECTRIC SUPPLY: Electric light, power supply, and trolley lines, irrespective of voltage used for transmitting a supply of electrical energy.

ENCASEMENT: Structural element surrounding a pipe or cable.

FLEXIBLE PIPE: A plastic, fiberglass, or metallic pipe having a large ratio of diameter to wall thickness that can be deformed without undue stress. Copper or aluminum pipe shall be considered as flexible pipe.

GROUNDED: Connected to the earth or to some extended conducting bodies which intentionally or accidentally is connected with the earth.

GROUT: A cement mortar or slurry of fine sand or clay as conditions govern.

HORIZONTAL DIRECTIONAL DRILLING: A steerable trenchless method of installing underground pipes, conduits and cables in a shallow arc along a prescribed bore path by using a surface launched drilling rig, with minimal impact on the surrounding area.

JACK-AND-BORE: The installation method whereby the leading edge of the jacked pipe is well ahead of the cutting face of the auger bit. The auger is removing waste from inside the pipe as it is being jacked. This method greatly reduces the likelihood of subsidence of granular material during installation.

JACKING: The installation of small pipes by the use of hydraulic jacks or rams to push the pipe under the traveled surface of a road, railroad roadbed, or other facility.

LICENSE:

UTILITY LICENSE AGREEMENTS are executed for all utility facilities located on railroad property.

MANHOLE: An opening to an underground utility system which workmen or other may enter for the purpose of maintaining, inspecting, or making installations.

NATURAL GAS PIPELINES:

DISTRIBUTION SYSTEM - A pipeline other than a gathering or transmission line.

SERVICE LINE - A distribution line that transports gas from a common source of supply to a customer meter.

TRANSMISSION SYSTEM - A pipeline other than a gathering line that transports gas from a gathering line or storage facility to a distribution center or storage facility. It operates at a hoop stress of twenty percent (20%) or more of the Specified Minimum Yield Strength.

NORMAL: Crossing at a right angle.

PERMITS:

PERMIT TO BE ON BNSF PROPERTY FOR UTILITY SURVEY is to be executed prior to all survey work on railroad property.

PIPE: A tubular product made as a production item for sale as such. Cylinders formed from plate in the course of fabrication of auxiliary equipment are not pipes as defined here.

PRESSURE: Relative internal pressure in PSI (pounds per square inch) gauge.

PRIVATE LINES: Any privately owned facilities which convey or transmit the commodities outlined under the definition for Utilities but are devoted exclusively to private use.

PUBLIC LINES: Those facilities which convey or transmit the commodities outlined under the definition for Utilities and directly or indirectly serve the public or any part thereof.

RIGHT OF WAY: A general term denoting land, property of interest therein, usually in a strip, acquired for or devoted to railroad transportation purposes.

SEAL: A material placed between the carrier pipe and casing to prevent the intrusion of water, where ends of casing are below the ground surface.

SHOULDER: That portion of the roadbed outside the ballast.

TRENCHED: Installed in a narrow excavation.

TUNNELING: Excavating the earth ahead of a large diameter pipe by one or more of the following processes: 1) The earth ahead of the pipe will be excavated by men using hand tools while the pipe is pushed through the holes by means of jacks, rams or other mechanical devices, 2) The excavation is carried on simultaneously with the installation of tunnel liner plates, and/or 3) The tunnel liner plates are installed immediately behind the excavation as it progresses and are assembled completely away from the inside.

UTILITY OWNER: All privately, publicly or cooperatively owned lines, facilities and systems for producing, transmitting or distributing communications, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water and other similar commodities, including fire and police signal systems and street lighting systems which directly or indirectly serve the public.

CITY OF STOCKTON

COMMUNITY DEVELOPMENT DEPARTMENT
Permit Center • 345 N. El Dorado Street • Stockton, CA 95202-1997 • 209 / 937-8266 • Fax 209 / 937-8893
www.stocktongov.com/cdd

Acknowledgement of Monument Preservation
Monument Preservation prior to construction activity

I, _____, duly licensed Land Surveyor or Professional
(Please Print)

Engineer authorized to perform Land Surveying in the State of California, Registration No. _____, hereby acknowledge and accept all responsibility for the monument preservation as required per Section 8771 (a-f) of the Business and Professional Code within the bounds of the construction activity permitted by the City of Stockton Permit No./ Plan No. _____ .

I further acknowledge that I am hereby responsible for the Acknowledgement of Monument Responsibility prior to final acceptance of construction activity permitted by the City of Stockton Permit No./ Plan No. _____

_____
Signature

_____
Date

Seal

[ ] Survey monuments found - Post Acknowledgment/ Corner Record to follow.
[ ] No survey monuments found.

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Acknowledgement of Monument Preservation
Monument Preservation prior to final acceptance of construction activity

I, _____, duly licensed Land Surveyor or Professional
(Please Print)

Engineer authorized to perform Land Surveying in the State of California, Registration No. _____, hereby acknowledge and accept all responsibility for the monument preservation as required per Section 8771 (a-f) of the Business and Professional Code within the bounds of the construction activity permitted by the City of Stockton Permit No./ Plan No. _____ .

I hereby state that all monuments within the bounds of the construction activity permitted by the City of Stockton Permit No./ Plan No. _____ are in the original location or have been reset in accordance with Section 8771 (a-f) of the Business and Professional Code.

_____
Signature

_____
Date

Seal

[ ] Survey monuments found - Corner Record to be filed.
[ ] No survey monuments found.

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Legislation changes effective January 1, 2015
Senate Bill No. 1467, Chapter 400

"SURVEY MONUMENT PRESERVATION"

Section 16: Section 8771(d) of the Business and Professions Code (Land Surveyor's Act):

> *(d) The governmental agency performing or permitting construction or maintenance work is responsible for ensuring that either the governmental agency or landowner performing the construction or maintenance work provides for monument perpetuation required by this section.*

The City of Stockton has modified the Encroachment, Grading, and Building permit process to ensure that a responsible individual is in charge of the Land Surveying activities within the bounds of the permitted construction activity. The responsible individual shall be a Licensed Land Surveyor or a Professional Engineer authorized to perform Land Surveying in the State of California. It shall be at the sole discretion of the Public Works Department to determine if the permitted construction activity warrants the need to fulfill this requirement.