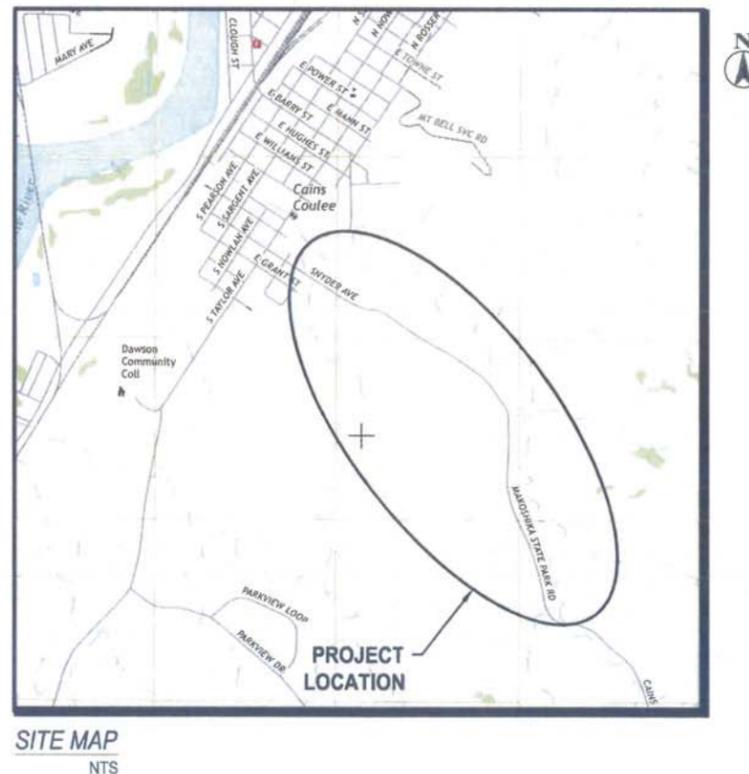
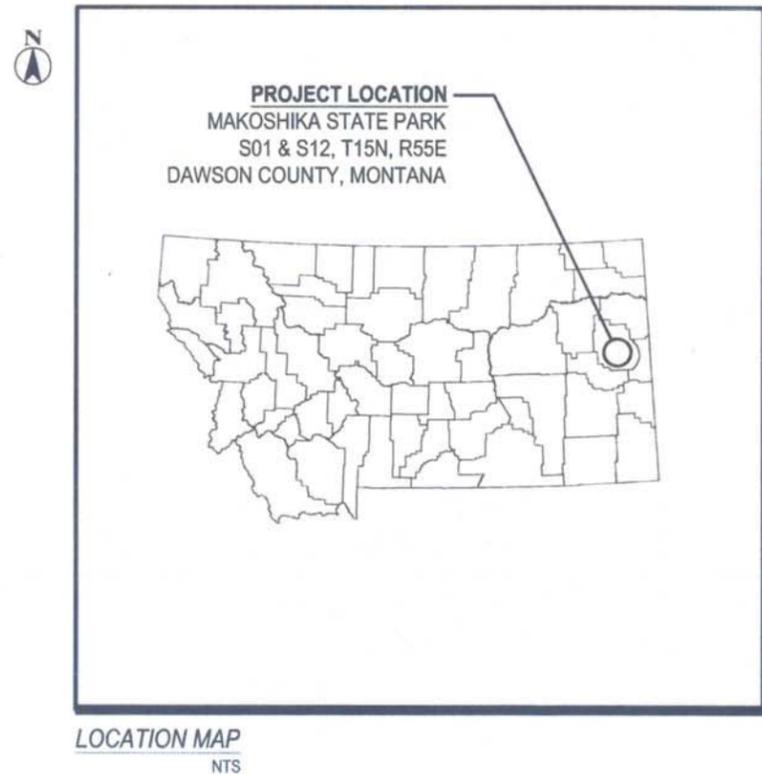


CONSTRUCTION PLANS FOR

MAKOSHIKA STATE PARK WATER SUPPLY PROJECT GLENDIVE, MT

PREPARED FOR

MONTANA FISH, WILDLIFE AND PARKS FWP #76652



APPROVED : <i>May 26</i> , 2020	QUALITY REVIEW BY: <i>May 26</i> , 2020
BY: JORDAN MAYER INTERSTATE ENGINEERING, INC. PROJECT ENGINEER	BY: DEAN PETERSON INTERSTATE ENGINEERING, INC.

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34	C-19	MSP - (STA. 76+00 TO 80+00)
35	C-20	MSP - (STA. 80+00 TO 81+39)



DRAWN BY: KKB
CHECKED BY: JLM
DATE: MAY 26, 2020
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REVISIONS:
DEQ APPROVAL - 6/9/2020
CONSTRUCTION - 6/9/2020

MAKOSHIKA WATER LINE EXTENSION
MONTANA FISH, WILDLIFE AND PARKS
COVER

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INTERSTATE ENGINEERING
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G-1
1 OF 35

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GENERAL CONSTRUCTION NOTES:

1. THE GENERAL CONSTRUCTION NOTES APPLY TO THE UTILITY PROJECT IN ITS ENTIRETY, UNLESS NOTED OTHERWISE, CONSTRUCTION NOTES THAT HAVE BEEN INCLUDED PAGE BY PAGE SHALL BE CONSIDERED ADDITIONAL NOTES APPLICABLE TO THAT SECTION OF WORK.
2. UNLESS NOTED OTHERWISE CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE PROJECT DOCUMENTS. PLAN SHEET DETAILS SHALL TAKE PRECEDENCE OVER THE PROJECT SPECIFICATIONS.
3. ITEMS NOT INCLUDED AS A PAY ITEM ON THE BID FORM SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT AND CONSIDERED INCIDENTAL TO THE COST OF CONSTRUCTION.
4. **EXISTING UTILITIES**
 - 4.1. UTILITIES ARE DEPICTED ON THESE PLANS IN ACCORDANCE WITH THEIR ACHIEVED "QUALITY LEVEL" AS DEFINED IN THE AMERICAN SOCIETY OF CIVIL ENGINEER'S DOCUMENT ASCE 38, "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA" RELIANCE UPON THIS DATA FOR RISK MANAGEMENT PURPOSES DURING BIDDING DOES NOT RELIEVE THE EXCAVATOR OR UTILITY OWNER FROM FOLLOWING ALL APPLICABLE UTILITY DAMAGE PREVENTION STATUTES, POLICIES, AND/OR PROCEDURES DURING EXCAVATION. IT IS IMPORTANT THAT THE CONTRACTOR INVESTIGATES AND UNDERSTANDS THE SCOPE OF THE WORK BETWEEN MAKOSHKA PARK AND THEIR ENGINEER REGARDING THE SCOPE AND LIMITS OF THE UTILITY INVESTIGATIONS LEADING TO THESE UTILITY DEPICTIONS.
 - 4.1.1. **UTILITY QUALITY LEVEL "A":** A PROFESSIONAL OPINION OF THE QUALITY AND RELIABILITY OF UTILITY INFORMATION, SUCH RELIABILITY IS DETERMINED BY THE MEANS AND METHODS OF THE PROFESSIONAL. EACH OF THE FOUR EXISTING UTILITY DATA QUALITY LEVELS ARE ESTABLISHED BY DIFFERENT METHODS OF DATA COLLECTION AND INTERPRETATION.
 - 4.1.2. **UTILITY QUALITY LEVEL "A":** PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUB-SURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. MINIMALLY INTRUSIVE EXCAVATION EQUIPMENT IS TYPICALLY USED TO MINIMIZE THE POTENTIAL FOR UTILITY DAMAGE. A PRECISE HORIZONTAL AND VERTICAL LOCATION, AS WELL AS OTHER UTILITY ATTRIBUTES, IS SHOWN ON PLAN DOCUMENTS. ACCURACY IS TYPICALLY SET TO 15 MM VERTICAL AND TO APPLICABLE HORIZONTAL SURVEY AND MAPPING ACCURACY AS DEFINED OR EXPECTED BY THE PARK.
 - 4.1.3. **UTILITY QUALITY LEVEL "B":** INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEO-PHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. QUALITY LEVEL "B" DATA SHOULD BE REPRODUCIBLE BY SURFACE GEO-PHYSICS AT ANY POINT ON THE DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.
 - 4.1.4. **UTILITY QUALITY LEVEL "C":** INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL "D" INFORMATION.
 - 4.1.5. **UTILITY QUALITY LEVEL "D":** INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.
 - 4.2. THE UTILITIES SHOWN ON THESE PLANS ARE LOCATED APPROXIMATELY, HAVING AN ACHIEVED QUALITY LEVEL OF "C", THROUGH A COMBINATION OF FIELD SURVEY AND PARK MAINTAINED MAPS. THE USE OF UTILITY LOCATIONS AND DEPTHS SHOWN HEREIN ARE FOR REFERENCE ONLY AND NOT FOR CONSTRUCTION PURPOSES. THE EXACT SIZE, LOCATION, MATERIAL AND DEPTH OF ALL UTILITIES SHALL BE DETERMINED ONSITE BEFORE CONSTRUCTION COMMENCES. ANY PARTY FAILING TO LOCATE UTILITIES RELATIVE TO THE CONSTRUCTION AREA AGREES TO BE FULLY RESPONSIBLE.
 - 4.3. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND EXPOSING ALL UTILITIES PRIOR TO EXCAVATION WORK. THE CONTRACTOR SHALL CALL FOR UTILITY LOCATES PRIOR TO BEGINNING SAID WORK, AND BE RESPONSIBLE FOR PROTECTING ALL UNDERGROUND UTILITIES. CONTRACTOR SHALL COORDINATE ANY REQUIRED UTILITY RELOCATION WITH THE AFFECTED UTILITY OWNER.
 - 4.4. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION, TEMPORARY SUPPORT, ADJUSTMENT, OR RELOCATION OF ANY UTILITIES AND STRUCTURES (OVERHEAD, UNDERGROUND, OR SURFACE) REQUIRED FOR INSTALLATION OF THE WATER AND/OR SEWER LINE AND APPURTENANCES. ANY UTILITY MODIFICATIONS SHALL BE COORDINATED WITH THE OWNER OF EACH UTILITY BEFORE CONSTRUCTION COMMENCES, UNLESS NOTED AS BEING RELOCATED BY THE UTILITY OWNER. ALL COSTS ASSOCIATED WITH SAID WORK SHALL BE INCIDENTAL THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE AWARDED FOR SUCH.
 - 4.5. CONTRACTOR SHALL FIELD VERIFY EXACT ELEVATIONS OF EXISTING STORM SEWER, SANITARY SEWER, POTABLE WATER, ELECTRIC, TELEPHONE, FIBER OPTIC, GAS, AND OTHER UTILITY CROSSINGS BEFORE PLACEMENT OF NEW WATER AND/OR SEWER PIPELINES.
 - 4.6. CONTRACTOR SHALL FIELD VERIFY ALL ELEVATION AND GRADES PRIOR TO BEGINNING WORK, AND SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN DESIGN AND AS-CONSTRUCTED INFRASTRUCTURE IMPROVEMENTS.
5. **PLAN SHEETS AND DRAWINGS**
 - 5.1. THE EXISTING SITE COMPONENTS ARE SHOWN IN GRAY. WORK INCLUDED IN THIS PROJECT IS SHOWN AS A SOLID LINE TYPE AND DESIGNATED BY COLOR.
 - 5.2. IMPROVEMENT OFF-SETS LISTED IN PLAN VIEW ARE "LT" MEANING LEFT OFF-SET IN DIRECTION OF STATIONING AND "RT" MEANING RIGHT OFF-SET IN DIRECTION OF STATIONING. OFF-SET IS IN RELATION TO LOCATION AT WATER/SEWER MAIN CENTERLINE FOR PLAN VIEW. OFF-SETS LISTED IN PROFILE VIEW REPRESENT DIRECTION OF SERVICES/HYDRANTS FROM WATER/SEWER MAIN CENTERLINE IN DIRECTION OF STATIONING.
 - 5.3. IMPROVEMENTS LISTED WITH "H" REPRESENTS HORIZONTAL ALIGNMENT ADJUSTMENT, "V" REPRESENTS VERTICAL ALIGNMENT ADJUSTMENT.
 - 5.4. DETAIL DRAWINGS NOT INCLUDED UNDER THIS COVER MAY BE REFERENCED FROM MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS, 6TH EDITION, APRIL 2010.
6. **SITE PROTECTION AND/OR USE**
 - 6.1. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL LAND, APPROVAL, AND/OR EASEMENTS NECESSARY FOR STAGING AND STORAGE OF CONSTRUCTION MATERIAL AND MACHINERY AS WELL AS

- 6.2. SPECIAL INSTALLATION SETUPS FOR CONSTRUCTION (HDD, JACK & BORE, ETC.).
- 6.2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY PERMITS REQUIRED TO PERFORM THIS WORK, INCLUDING PERMITS FROM THE FOLLOWING:
 - 6.2.1. BUILDING PERMIT.
 - 6.2.2. ELECTRICAL PERMIT.
- 6.3. THE CONTRACTOR IS RESPONSIBLE FOR, BUT NOT LIMITED TO, DEVELOPING AND IMPLEMENTING A SITE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IF THE WORK IS PLANNED TO EXCEED 1 ACRE. CONTRACTOR SHALL SUBMIT THE PLAN TO THE ENGINEER PRIOR TO FILING THE NOTICE OF INTENT WITH THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY (MDEQ) FOR THIS PROJECT, IF REQUIRED.
- 6.4. CONTRACTOR SHALL SUBMIT AN EROSION CONTROL PLAN TO THE ENGINEER FOR APPROVAL. CONTRACTOR IS ENCOURAGED TO FOLLOW MDT'S EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MANUAL (DECEMBER 2016).
- 6.5. ALL SALVAGEABLE MATERIALS, IF DESIRED BY THE PARK STAFF, SHALL BECOME THE PROPERTY OF THE PARK. EXCESS EXCAVATED MATERIAL INCLUDING PIPE, STUMPS, ROOTS, DIRT, STOCKPILED SPOILS AND ANY OTHER ITEMS THE PARK STAFF DOES NOT WISH TO SALVAGE SHALL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY, INCIDENTAL TO THE CONTRACT WITH NO ADDITIONAL COMPENSATION AWARDED FOR SUCH.
- 6.6. THE CONTRACTOR WILL PROTECT ALL PAVEMENT, SURFACING, DRIVEWAYS, CURBS, WALKS, BUILDINGS, UTILITY POLES, GUY WIRES, MAILBOXES, PLANTERS, AND OTHER SURFACE STRUCTURES AFFECTED BY CONSTRUCTION ACTIVITIES IN CONNECTION WITH PERFORMANCE OF THE CONTRACT TOGETHER WITH GRASS, SHRUBS, LAWN ORNAMENTS, ETC., OF YARDS CROSSED OR ADJACENT TO THE WORK FROM DAMAGE AND/OR DISTURBANCE. IF REMOVED OR OTHERWISE DAMAGED, THE CONTRACTOR SHALL RESTORE ALL SURFACE STRUCTURES TO THE ORIGINAL CONDITION OR BETTER AS DETERMINED BY THE ENGINEER. ALL REPLACEMENT OF SUCH SURFACING AND SURFACE STRUCTURES SHALL BE MADE WITH NEW MATERIALS CONFORMING TO THE SPECIFICATIONS OR AS APPROVED BY THE ENGINEER.
- 6.7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO STREETS, ROADS, HIGHWAYS, DITCHES, SHOULDERS, EMBANKMENTS, CULVERTS, BRIDGES, OR OTHER PUBLIC OR PRIVATE PROPERTY OR FACILITY THAT MAY BE DAMAGED BY MOVING, HAULING, OR OTHERWISE TRANSPORTING EQUIPMENT, MATERIALS TO OR FROM THE WORK. THE CONTRACTOR SHALL MAKE, WITHOUT DELAY, SATISFACTORY AND ACCEPTABLE ARRANGEMENTS WITH THE OWNER OF THE AGENCY HAVING JURISDICTION OVER THE DAMAGED PROPERTY CONCERNING REPAIR OR REPLACEMENT OR PAYMENT OF COSTS INCURRED IN CONNECTION WITH SAID DAMAGE.
- 6.8. EXISTING LANDSCAPE AND IRRIGATION SYSTEMS ARE NOT SHOWN BUT SHALL BE PROTECTED BY THE CONTRACTOR. ANY DAMAGED COMPONENTS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- 6.9. CONTRACTOR SHALL MAINTAIN ACCESS FOR ALL PROPERTY OWNER(S) AND BUSINESSES, AND SHALL COORDINATE DETOURS AND TEMPORARY CLOSURES WITH AFFECTED PROPERTY OWNER(S).
- 6.10. CONSTRUCTION ACTIVITIES REQUIRING ROAD CLOSURES SHALL BE RELAYED TO THE LOCAL DISPATCH OFFICE, BY THE CONTRACTOR TO ENSURE EMERGENCY SERVICES ARE NOTIFIED OF ALTERNATE ROUTES THROUGHOUT THE DURATION OF THE PROJECT.
- 6.11. ALL TRAFFIC CONTROL DEVICES AND PLANS ARE SUBJECT TO REVIEW BY THE ENGINEER AS APPLICABLE. ALL TRAFFIC CONTROL/DEVICES SHALL MEET THE REQUIREMENTS OF THE MUTCD, LATEST EDITION.
- 6.12. CONTRACTOR SHALL KEEP THE PROJECT SITE CLEAN AND ORDERLY DURING THE COURSE OF CONSTRUCTION, AS APPROVED BY THE ENGINEER.
- 6.13. CONTRACTOR SHALL PROVIDE DUST CONTROL MEASURES THROUGHOUT THE COURSE OF CONSTRUCTION, AS APPROVED BY THE ENGINEER.
- 6.14. CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO PREVENT EXCESSIVE AMOUNTS OF OPEN TRENCH. OPEN TRENCH IS DEFINED AS AREAS ABSENT THE FOLLOWING CRITERIA; BACKFILL/COMPACTION PER THE SPECIFICATIONS, AND TEMPORARY SURFACE COURSE (IF REQUIRED) TO FINISH GRADE.
 - 6.14.1. THE MAXIMUM PERMISSIBLE DISTANCE OF OPEN TRENCH BETWEEN BACKFILLING/COMPACTION/TEMPORARY SURFACING OPERATIONS FROM THE END OF NEWLY INSTALLED PIPE SHALL NOT EXCEED 500 FEET IN ALL AREAS, UNLESS OTHERWISE APPROVED BY ENGINEER. SHORTER DISTANCES MAY BE REQUIRED BASED ON PROXIMITY TO PUBLIC BUILDINGS. REFER TO SECTION 31 23 33 TRENCHING AND BACKFILL FOR MORE INFORMATION.
 - 6.14.2. OPEN TRENCH OUTSIDE OF THESE LIMITS SHALL BE BACKFILLED, COMPACTED, AND HAVE TEMPORARY SURFACING INSTALLED TO FINISH GRADE PER THE SPECIFICATIONS AND BE OPEN AND ACCESSIBLE TO THE PUBLIC WITHIN TRAVELED ROADWAYS.
7. **NEW UTILITY INSTALLATION**
 - 7.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL O.S.H.A. STANDARDS FOR TRENCH EXCAVATION.
 - 7.2. ALL WATER MAINS, SERVICES, VALVES, HYDRANTS, AND FITTINGS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE DIVISION 33 - UTILITIES OF THE PROJECT SPECIFICATIONS.
 - 7.3. CONTRACTOR SHALL COORDINATE THE OPERATION OF EXISTING VALVES AND HYDRANTS WITH THE CITY/TOWN PUBLIC WORKS DEPARTMENT.
 - 7.4. ALL CURB STOP AND HYDRANT LOCATIONS SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO PLACEMENT.
 - 7.5. THE EXACT TYPE AND SIZE OF EXISTING WATER MAIN/SERVICES ARE UNKNOWN. CONTRACTOR SHALL VERIFY SIZE, TYPE, AND LOCATION OF EXISTING MAINS/SERVICES AND ACQUIRE THE NECESSARY FITTINGS, VALVES, ADAPTORS, AND OTHER MATERIALS REQUIRED TO COMPLETE THE PROJECT. THIS INCLUDES HAVING A SMALL QUANTITY OF SERVICE LINE FITTINGS NOT NECESSARILY CALLED OUT ON THE PLANS. IF THE CONTRACTOR IS REQUIRED TO ACQUIRE/RETURN ANY FITTINGS, VALVES, ETC., THE COST OF SUPPLYING AND/OR RESTOCKING THE NECESSARY FITTINGS SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.
 - 7.6. ALL WATER SERVICE CONNECTIONS NOT COVERED UNDER THE PROJECT DOCUMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE UNIFORM PLUMBING CODE AS ADOPTED BY MONTANA IN ARM 24.301.301.
 - 7.7. THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN ADDITIONAL WATER OR SEWER SERVICES ARE ENCOUNTERED THAT ARE NOT SHOWN ON THE PLANS, WHETHER THEY ARE ACTIVE OR INACTIVE.

8. **SURFACE RESTORATION**
 - 8.1. ALL DISTURBED LANDSCAPE AREAS SHALL BE RE-LANDSCAPED WITH A MINIMUM 3 INCHES OF TOPSOIL AND RE-SEEDED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 32 92 19 SEEDING OF THE PROJECT SPECIFICATIONS, UTILIZING A SEED MIX APPROVED BY THE ENGINEER AND AFFECTED PROPERTY OWNER(S).
 - 8.1.1. CONTRACTOR SHALL INSTALL AN EROSION CONTROL MAT AFTER SEED APPLICATION.
 - 8.1.2. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING NEW LANDSCAPING UNTIL VEGETATION HAS BEEN FULLY ESTABLISHED, UNLESS OTHER ARRANGEMENTS ARE MADE AND APPROVED BY ENGINEER.
9. **MISCELLANEOUS**
 - 9.1. ARCHAEOLOGICAL MONITORING WILL BE PROVIDED BY THE OWNER AND IS NOT THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE HIRED.

LEGEND

EXISTING	NEW	UTILITY (TYP.)
		ELECTRICAL BOX (ELC)
		COMM. PED (TEL / FIBER)
		STREET SIGN (VARIOUS TYP.)
		LIGHT POLE
		WATER WELL
		HYDRANT
		GATE VALVE
		CURB STOP
		AIR VAC VALVE ASSEMBLY
		SANITARY SEWER SEPTIC TANK
		TREE STUMP
		SHRUBS
		TREES
		SOIL BORING LOCATION - NUMBER
		LINE (TYP.)
		WATER MAIN & SIZE
		WATER SERVICE / HYDRANT LEAD
		SEWER MAIN & SIZE
		IRRIGATION PIPE/CULVERT (EDG. PIPE)
		UTILITY EASEMENTS
		APPROXIMATE PROP. LINES
		OVERHEAD ELECTRIC
		GAS LINE
		TELEPHONE LINE
		FIBER OPTIC LINE
		BELOW GROUND ELECTRIC
		FENCE
		ALIGNMENT CENTERLINE
		EXST. GROUND CONTOURS
		CONCRETE
		GRAVEL
		SAND
		ASPHALT
		PLANTER/LANDSCAPE
		DETAIL OR SECTION NUMBER
		SHEET NUMBER
		SURVEY CONTROL
		CONTROL POINT

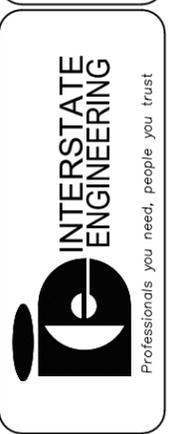
- DESIGN AND CONSTRUCTION CRITERIA:**
1. MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS, 6TH EDITION, APRIL 2010.
 2. MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY, CIRCULAR 1 & 3, AUGUST 2014 & 2018.



Revision No.	Date	By	Description
1	6/9/2020	KKB	DEQ APPROVAL (E.O. 20-2254)
2	6/9/2020	KKB	CONSTRUCTION PLANS

MAKOSHKA WATER LINE EXTENSION MONTANA FISH, WILDLIFE AND PARKS GLENDIVE, MONTANA		Project No.: S19-00-115 Date: MAY 26, 2020
Drawn By: KKB Checked By: JLM	GENERAL NOTES	

Other offices in Minnesota, North Dakota and South Dakota



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SUBMITTAL SUMMARY TABLE

DIVISION	SECTION - SPECIFICATION	MATERIAL - DELIVERABLES	NOTES
DIVISION 01 - GENERAL REQUIREMENTS	01 31 00 - PROJECT MANAGEMENT AND COORDINATION	STAGING AREA LOCATION/APPROVAL (IF REQUIRED)	
DIVISION 01 - GENERAL REQUIREMENTS	01 31 00 - PROJECT MANAGEMENT AND COORDINATION	RESULTS OF CONTRACTOR EXPLORATIONS (IF ANY)	
DIVISION 01 - GENERAL REQUIREMENTS	01 33 00 - SCHEDULE OF VALUES	LUMP SUM (LS) ITEM SCHEDULE OF VALUES	
DIVISION 01 - GENERAL REQUIREMENTS	01 33 00 - CONSTRUCTION PROGRESS DOCUMENTATION	PRELIMINARY CONSTRUCTION SCHEDULE	(UPDATED MONTHLY WITH PAY APPLICATIONS)
DIVISION 01 - GENERAL REQUIREMENTS	01 41 00 - REGULATORY REQUIREMENTS	SWPP (IF REQUIRED)	
DIVISION 01 - GENERAL REQUIREMENTS	01 41 00 - REGULATORY REQUIREMENTS	EROSION CONTROL PLAN	(INCLUDES BUT NOT LIMITED TO; TEMPORARY SOIL STABILIZATION, RUNOFF CONTROL, SEDIMENT CONTROL, ETC.)
DIVISION 01 - GENERAL REQUIREMENTS	01 55 26 - TRAFFIC CONTROL	TRAFFIC CONTROL PLAN	
DIVISION 03 - CONCRETE	03 05 00 - COMMON WORK RESULTS FOR CONCRETE	EXPANSION JOINT MATERIAL	
DIVISION 03 - CONCRETE	03 20 00 - CONCRETE REINFORCING	CONCRETE REINFORCEMENT	(INCLUDES BUT NOT LIMITED TO; REBAR, DOWELS, ETC.)
DIVISION 03 - CONCRETE	03 31 00 - STRUCTURAL CONCRETE	CONCRETE MIX DESIGN	(INCLUDES BUT NOT LIMITED TO; THRUST BLOCK MIX, STANDARD MIX, ADMIXTURES, ETC.)
DIVISION 03 - CONCRETE	03 39 00 - CONCRETE CURING	CONCRETE CURING AGENT/SEALERS	
DIVISION 31 - EARTHWORK	31 23 23.33 - FLOWABLE FILL	FLOWABLE FILL MIX DESIGN (IF REQUIRED)	
DIVISION 31 - EARTHWORK	31 23 33 - TRENCHING AND BACKFILL	TYPE I PIPE BEDDING	
DIVISION 31 - EARTHWORK	31 23 33 - TRENCHING AND BACKFILL	TYPE II PIPE BEDDING (IF REQUIRED)	
DIVISION 31 - EARTHWORK	31 23 33 - TRENCHING AND BACKFILL	IMPORT BACKFILL (IF REQUIRED)	
DIVISION 32 - EXTERIOR IMPROVEMENTS	32 11 23 - AGGREGATE BASE COURSE	CRUSHED AGGREGATE BASE COURSE	(INCLUDES BUT NOT LIMITED TO; BASE COURSE, SURFACE COURSE, ETC.)
DIVISION 32 - EXTERIOR IMPROVEMENTS	32 12 13 - PREPARATORY COATS	ASPHALT TACK COAT	
DIVISION 32 - EXTERIOR IMPROVEMENTS	32 12 16 - ASPHALT PAVING	ASPHALT PAVING MIX DESIGN	
DIVISION 32 - EXTERIOR IMPROVEMENTS	32 92 19 - SEEDING	LANDSCAPING	(INCLUDES BUT NOT LIMITED TO; SOD, SEED MIX(ES), TOPSOIL, ETC.)
DIVISION 33 - UTILITIES	33 01 12 - INSPECTION AND TESTING OF WATER UTILITIES	TESTING PLAN/SCHEDULE	
DIVISION 33 - UTILITIES	33 05 00 - COMMON WORK RESULTS FOR UTILITIES	DETECTABLE WARNING TAPE	
DIVISION 33 - UTILITIES	33 05 00 - COMMON WORK RESULTS FOR UTILITIES	POLYETHYLENE ENCASUREMENT	
DIVISION 33 - UTILITIES	33 05 00 - COMMON WORK RESULTS FOR UTILITIES	UTILITY INSULATION BOARD	
DIVISION 33 - UTILITIES	33 05 00 - COMMON WORK RESULTS FOR UTILITIES	TRACER WIRE	(INCLUDES BUT NOT LIMITED TO; ACCESS BOXES, ANODES BAGS, GROUNDING RODS, CONNECTORS, ETC.)
DIVISION 33 - UTILITIES	33 05 07.13 - UTILITY DIRECTIONAL DRILLING	HORIZONTAL DIRECTIONAL DRILLING PLAN/SCHEDULE	
DIVISION 33 - UTILITIES	33 05 07.13 - UTILITY DIRECTIONAL DRILLING	DRILLING FLUID	
DIVISION 33 - UTILITIES	33 05 33 - POLYETHYLENE UTILITY PIPE	FUSING TECHNICIAN CERTIFICATE	
DIVISION 33 - UTILITIES	33 05 33.23 - POLYETHYLENE PRESSURE PIPE AND TUBING	HDPE WATER MAIN	(INCLUDES BUT NOT LIMITED TO; HDPE WATER MAIN, WALL ANCHOR, MJ ADAPTOR, ACCESSORIES, ETC.)
DIVISION 33 - UTILITIES	33 14 13 - PUBLIC WATER UTILITY DISTRIBUTION PIPING	DIP WATER MAIN	
DIVISION 33 - UTILITIES	33 14 13 - PUBLIC WATER UTILITY DISTRIBUTION PIPING	PVC WATER MAIN	
DIVISION 33 - UTILITIES	33 14 13 - PUBLIC WATER UTILITY DISTRIBUTION PIPING	DUCTILE IRON FITTINGS (VARIOUS SIZE & TYPE)	
DIVISION 33 - UTILITIES	33 14 13 - PUBLIC WATER UTILITY DISTRIBUTION PIPING	WATER PIPE COUPLINGS	
DIVISION 33 - UTILITIES	33 14 13 - PUBLIC WATER UTILITY DISTRIBUTION PIPING	MECHANICAL JOINT RESTRAINTS	
DIVISION 33 - UTILITIES	33 14 17 - SITE WATER UTILITY SERVICE LATERALS	WATER SERVICE PIPE	(INCLUDES BUT NOT LIMITED TO; SERVICE PIPE, CORPORATION STOP, SERVICE SADDLE, CURB STOP, CURB BOX, SERVICE COUPLING, ETC.)
DIVISION 33 - UTILITIES	33 14 19 - VALVES AND HYDRANTS FOR WATER UTILITY SERVICE	GATE VALVES	
DIVISION 33 - UTILITIES	33 14 19 - VALVES AND HYDRANTS FOR WATER UTILITY SERVICE	VALVE BOX (DEPTH OF BURY WILL VARY)	
DIVISION 33 - UTILITIES	33 14 19 - VALVES AND HYDRANTS FOR WATER UTILITY SERVICE	HYDRANT	(INCLUDES BUT NOT LIMITED TO; FROST FREE AND FLUSHING, ETC.)
DIVISION 33 - UTILITIES	33 14 19 - VALVES AND HYDRANTS FOR WATER UTILITY SERVICE	AIR-VAC ASSEMBLY	

NOTES:
 1. THIS LIST IS NOT MEANT TO BE ALL INCLUSIVE OF THE MATERIAL(S) REQUIRED UNDER THIS PROJECT COVER. REFERENCE THE SPECIFICATIONS SECTION FOR ADDITIONAL MATERIAL AND SEQUENCING SUBMITTAL REQUIREMENTS.

Revision No.	By	Date	Description
---	KKB	6/9/2020	DEQ APPROVAL (E.O. 20-2254)
---	KKB	6/9/2020	CONSTRUCTION PLANS

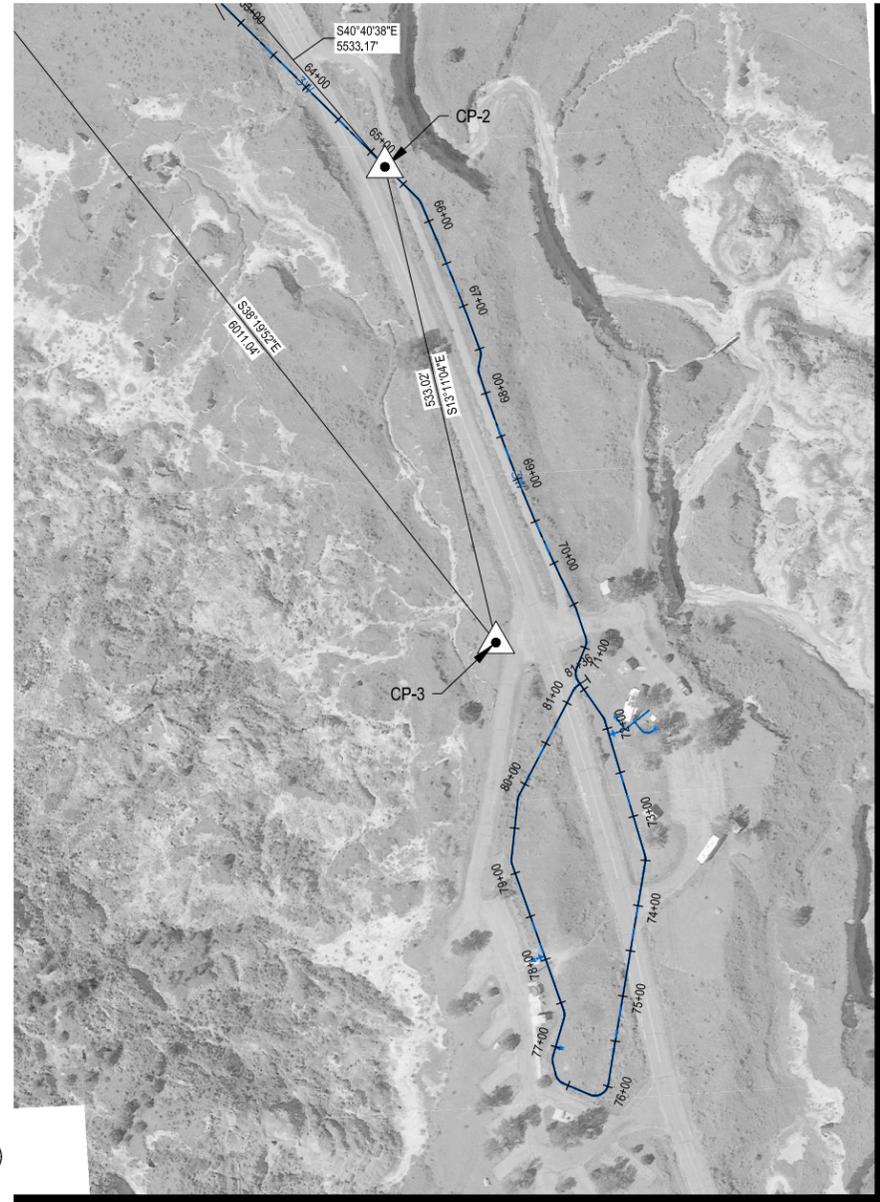
MAKOSHIKA WATER LINE EXTENSION
MONTANA FISH, WILDLIFE AND PARKS
GLENDIVE, MONTANA
SUBMITTAL SUMMARY

Drawn By: KKB
 Checked By: JLM

Project No.: S19-00-115
 Date: MAY 26, 2020

Other offices in Minnesota, North Dakota and South Dakota





PROJECT CONTROL / BENCHMARK				
POINT NO.	N.	E.	ELV.	DES.
CP-1	1071805.409	3160361.499	2113.79	RPA RPC
CP-2	1067609.074	3163967.985	2154.80	RPA RPC
CP-3	1067090.114	3164089.576	2161.00	RPA RPC
CP-100	1071826.899	3160444.945	2113.07	MAG NAIL

NOTES:
 1. PROJECT SITE BENCHMARKS TO BE PROVIDED IF REQUESTED BY CONTRACTOR. REFER TO SECTION 01 71 23 FIELD ENGINEERING AND SURVEYING FOR ADDITIONAL INFORMATION.

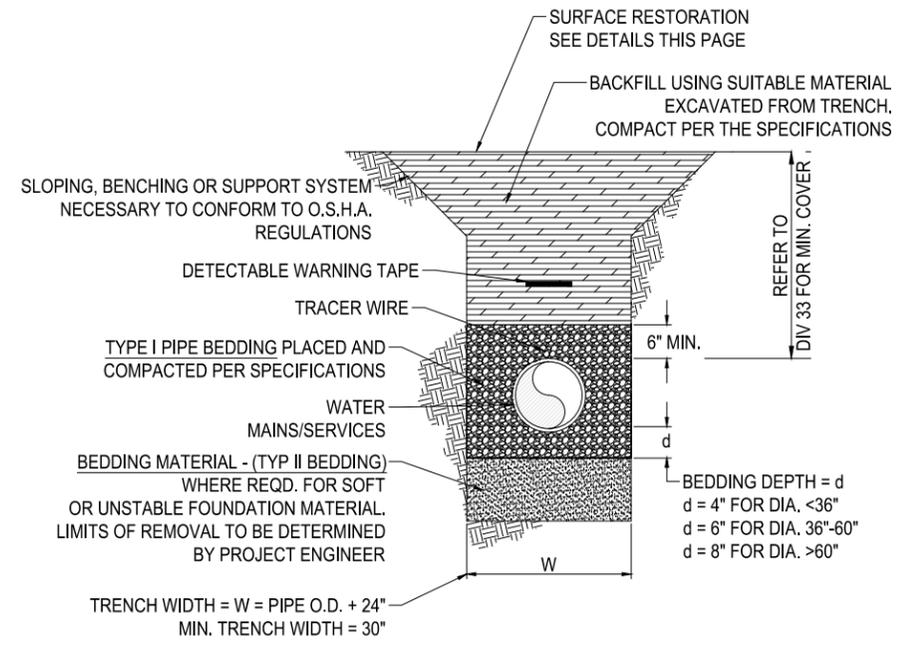
Revision No.	Date	By	Description
---	6/8/2020	KKB	DEQ APPROVAL (E.O. 20-2254)
---	6/9/2020	KKB	CONSTRUCTION PLANS

MAKOSHIKA WATER LINE EXTENSION MONTANA FISH, WILDLIFE AND PARKS	
GLENNDIVE, MONTANA	
Drawn By: KKB	Survey Summary
Checked By: JLM	Project No.: S19-00-115
	Date: MAY 26, 2020

Other offices in Minnesota, North Dakota and South Dakota

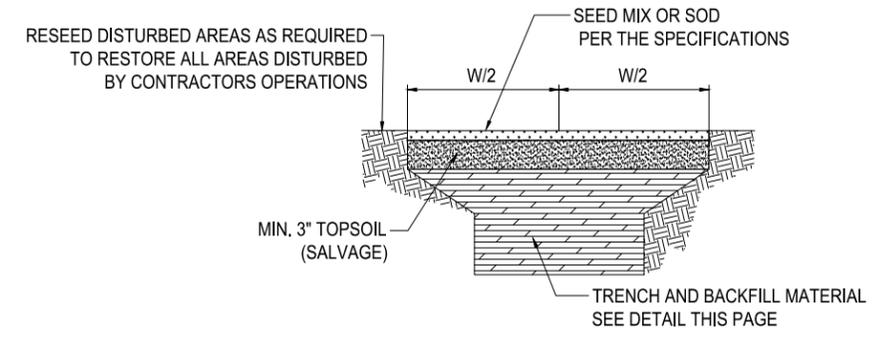


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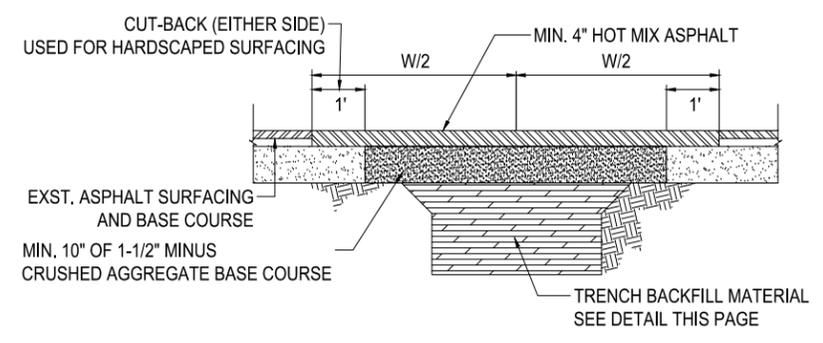
- NOTES:**
- TRENCHING AND EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF DIVISION 31 EARTHWORK AND DIVISION 33 UTILITIES.
 - SEE CONTRACT SPECIFICATIONS FOR ANY MODIFICATIONS TO STANDARD TRENCH MATERIALS AND/OR TRENCH DESIGN FEATURES.
 - PIPE INSTALLED VIA "OPEN CUT" METHODS SHALL BE FURNISHED AND INSTALLED WITH DETECTABLE WARNING TAPE. PIPE SHALL INCLUDE MAINS, SERVICES, AND HYDRANT LEADS AS APPLICABLE.
 - DETECTABLE WARNING TAPE SHALL BE PLACED 24" TO 36" ABOVE THE PIPE, OR AS APPROVED BY ENGINEER.
 - TRACER WIRE SHALL BE INSTALLED ON ALL WATER MAINS, SERVICES, AND HYDRANT LEADS. REFER TO SECTION 33 05 00 COMMON WORK RESULTS FOR UTILITIES.

A
D-1 TRENCH BACKFILL DETAIL
Scale: NTS



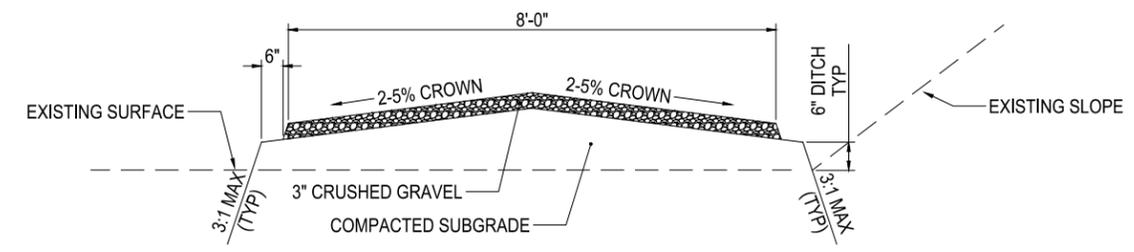
- NOTES:**
- SEEDING REQUIRED FOR GRASS RESTORATION SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 32 92 19 SEEDING.
 - PAY LIMITS FOR SURFACE RESTORATION SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF SECTION 01 22 19 MEASUREMENT AND PAYMENT. "W" REPRESENTS THE PAY LIMIT AS MEASURED OVER THE CENTERLINE OF THE UTILITY BEING INSTALLED.
 - RESTORATION REQUIRED OUTSIDE OF THE ESTABLISHED PAY LIMITS DUE TO CONTRACTOR'S OPERATIONS SHALL NOT BE INCLUDED IN THE PAY QUANTITIES.

C
D-1 GRASS RESTORATION DETAIL
Scale: NTS



- NOTES:**
- HOT MIX ASPHALT SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 32 12 16 ASPHALT PAVING.
 - CRUSHED AGGREGATE BASE COURSE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 32 11 23 AGGREGATE BASE COURSE.
 - HOT MIX ASPHALT SHALL BE PLACED AND COMPACTED IN 2 LIFTS WITH TACK COAT PLACED BETWEEN LIFTS.
 - CRUSHED AGGREGATE BASE COURSE SHALL BE PLACED AND COMPACTED IN 2 LIFTS.
 - WHEN THE EDGE OF THE ASPHALT CUT-BACK IS LESS THAN 2 FEET FROM A PERMANENT SURFACE AND/OR OBJECT AND IS LOCATED OUTSIDE THE ESTABLISHED PAY LIMIT, THE ASPHALT SHALL BE REMOVED TO THE PERMANENT SURFACE AND/OR OBJECT AND RESTORED. THE EXTRA SURFACE RESTORATION SHALL BE ADDED IN THE PAY QUANTITY, AS APPROVED BY ENGINEER.
 - FINAL GRADE/SLOPE ASPHALT SURFACE SHALL MATCH PREVIOUS GRADE/SLOPE (I.E. CROWNED, SHEET FLOW, ETC.).
 - PAY LIMITS FOR SURFACE RESTORATION SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF SECTION 01 22 19 MEASUREMENT AND PAYMENT. "W" REPRESENTS THE PAY LIMIT AS MEASURED OVER THE CENTERLINE OF THE UTILITY BEING INSTALLED.

B
D-1 ASPHALT RESTORATION DETAIL
Scale: NTS



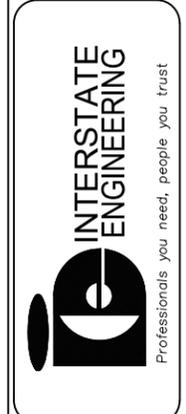
- NOTES:**
- CRUSHED AGGREGATE SURFACE COURSE SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 32 11 23 AGGREGATE BASE COURSE.
 - PAY LIMITS FOR SURFACE RESTORATION SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF SECTION 01 22 19 MEASUREMENT AND PAYMENT.

D
D-1 WALKING PATH RESTORATION DETAIL
Scale: NTS

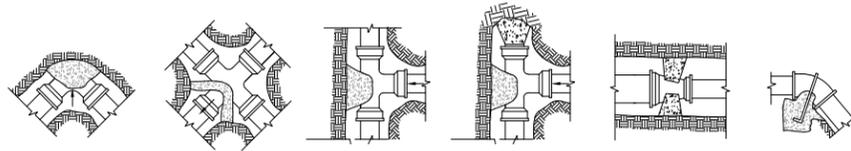
Revision No.	Date	By	Description
---	6/9/2020	KKB	DEQ APPROVAL (E.O. 20-2254)
---	6/9/2020	KKB	CONSTRUCTION PLANS

MAKOSHIKA WATER LINE EXTENSION MONTANA FISH, WILDLIFE AND PARKS GLENNDIVE, MONTANA		DETAILS	
Drawn By: KKB	Checked By: JLM	Project No.: S19-00-115	Date: MAY 26, 2020

Other offices in Minnesota, North Dakota and South Dakota

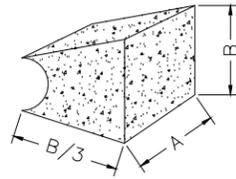


STANDARD DIMENSIONS FOR THRUST BLOCKS (FT)								
FITTING SIZE	TEES/DEAD ENDS		90° BEND		45° BEND		22.5° BEND	
	A	B	A	B	A	B	A	B
4	1.79	1.19	2.13	1.42	1.57	1.04	1.12	0.75
6	2.69	1.79	3.19	2.13	2.35	1.57	1.68	1.12
8	3.58	2.39	4.26	2.84	3.13	2.09	2.24	1.49
10	4.48	2.98	5.32	3.55	3.92	2.61	2.80	1.86
12	5.37	3.58	6.39	4.26	4.70	3.13	3.35	2.24
14	6.27	4.18	7.45	4.97	5.48	3.65	3.91	2.61
16	7.16	4.77	8.52	5.68	6.26	4.18	4.47	2.98
18	8.06	5.37	9.58	6.39	7.05	4.70	5.03	3.35

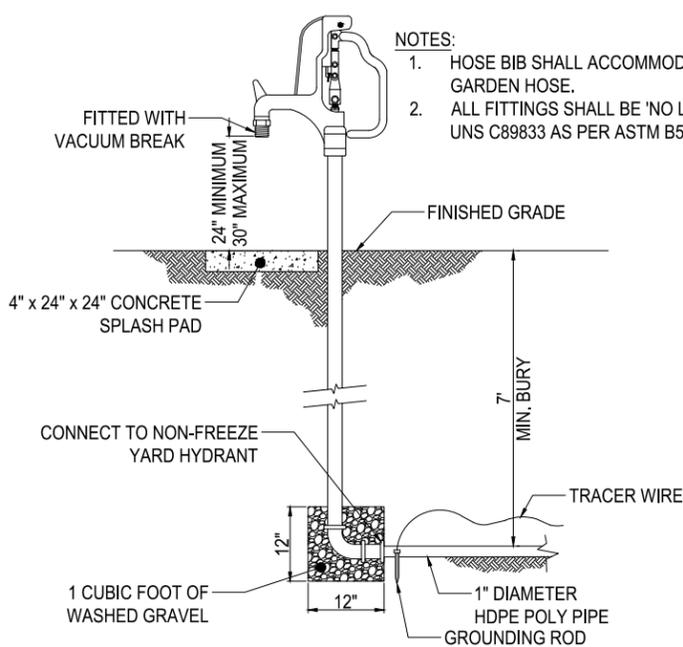


NOTES:

- TABLE IS BASED ON MAIN PRESSURE OF 150 PSI AND SOIL BEARING PRESSURE OF 1500 PSF.
- ALL DUCTILE IRON FITTINGS SHALL BE WRAPPED IN POLYETHYLENE ENCASEMENT.
- JOINT RESTRAINTS SHALL BE USED IN TANDEM WITH THRUST BLOCKS UNLESS OTHERWISE APPROVED BY ENGINEER.

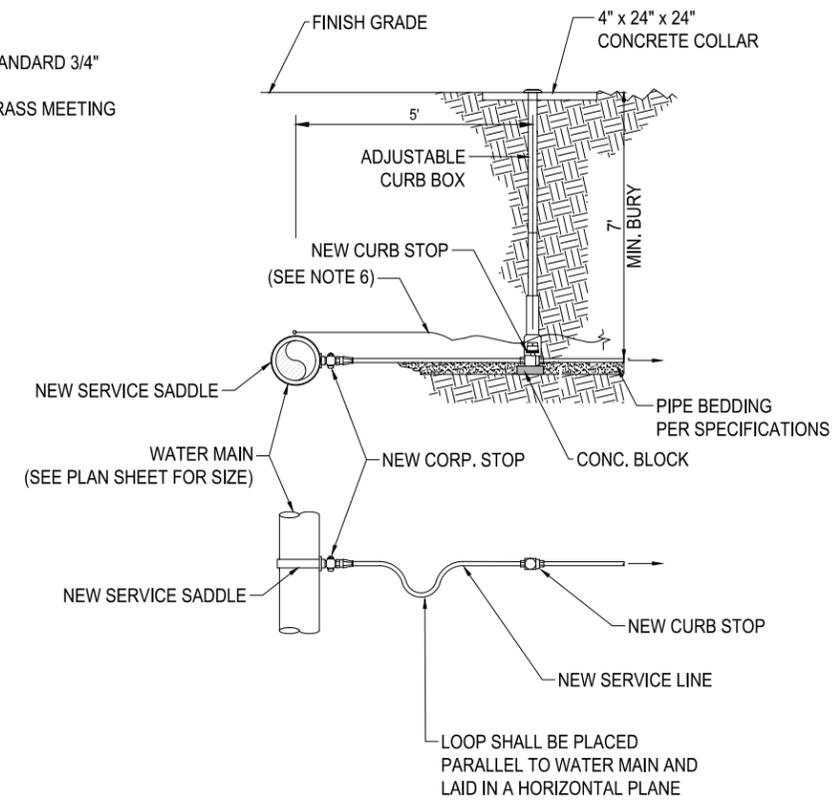


A
D-2 **THRUST BLOCK DETAIL**
Scale: NTS



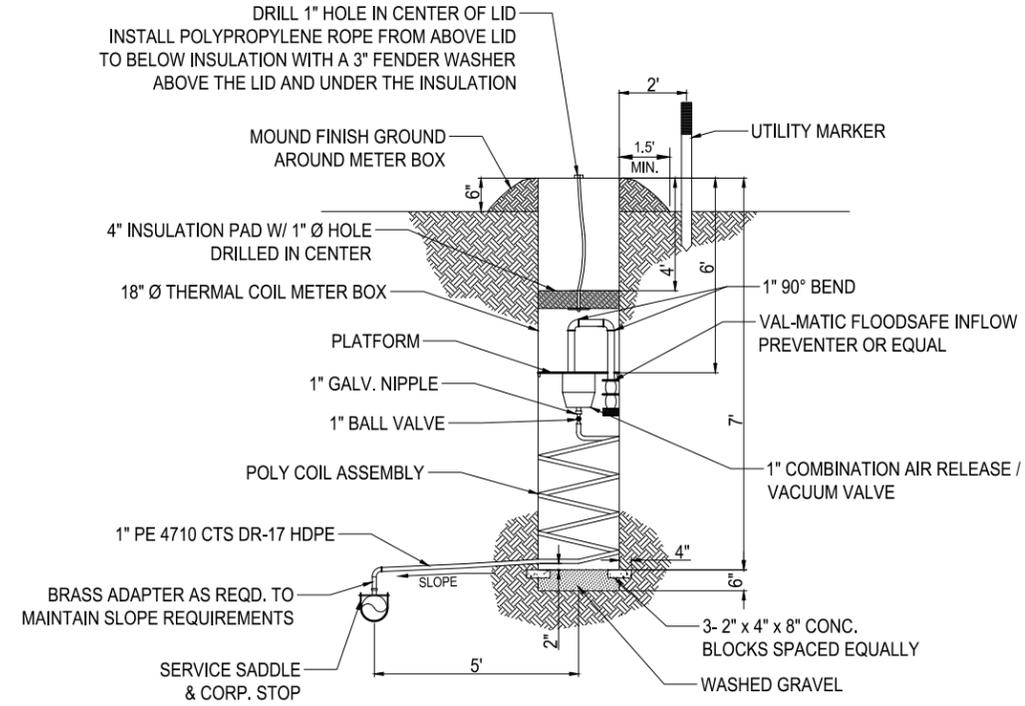
- NOTES:**
- HOSE BIB SHALL ACCOMMODATE STANDARD 3/4" GARDEN HOSE.
 - ALL FITTINGS SHALL BE 'NO LEAD' BRASS MEETING UNS C89833 AS PER ASTM B584.

B
D-2 **7' BURY NON-FREEZE YARD HYDRANT DETAIL**
Scale: NTS

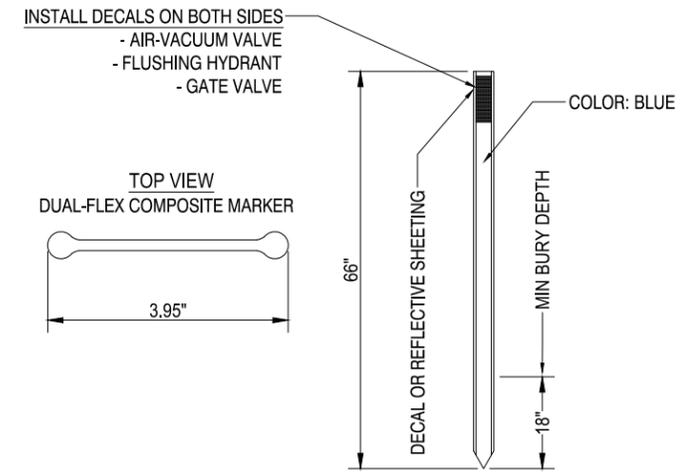


- NOTES:**
- ALL SERVICE LINE PIPE AND APPURTENANCES SHALL CONFORM TO THE PROVISIONS OF SECTION 33 14 17 SITE WATER UTILITY SERVICE LATERALS.
 - CURB BOXES PLACED IN CONCRETE SHALL BE PLACED FLUSH WITH FINISH GRADE OF CONCRETE AND HAVE TOP PORTION PROTECTED FROM CONCRETE DURING CONSTRUCTION.
 - NO COUPLINGS ARE PERMITTED BETWEEN THE CORPORATION STOP AND THE CURB STOP UNLESS OTHERWISE SPECIFIED AND APPROVED.
 - SERVICE LINE SHALL BE MINIMUM 1" NOMINAL SIZE, UNLESS OTHERWISE APPROVED BY ENGINEER.
 - TRACER WIRE SHALL BE INSTALLED ALONG THE LENGTH OF SERVICE LINE AND BE TERMINATED AT THE FINAL LOCATION OF THE HYDRANT OR CONNECTION POINT VIA AN ANODE OR GROUNDING ROD.
 - FINAL CURB STOP LOCATIONS SHALL BE FIELD VERIFIED AND APPROVED BY ENGINEER.

C
D-2 **WATER SERVICE CONNECTION (W.S.C.) DETAIL**
Scale: NTS



D
D-2 **AIR-VACUUM VALVE ASSEMBLY DETAIL**
Scale: NTS



E
D-2 **UTILITY MARKER DETAIL**
Scale: NTS

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Revision No.	6/9/2020	6/9/2020		
By	KKB	KKB		
Description	DEQ APPROVAL (E.O. 20-2254)	CONSTRUCTION PLANS		
Project No.	S19-00-115			
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MAKOSHIKA WATER LINE EXTENSION
MONTANA FISH, WILDLIFE AND PARKS
GLENDALE, MONTANA

Drawn By: KKB
Checked By: JLM

DETAILS

