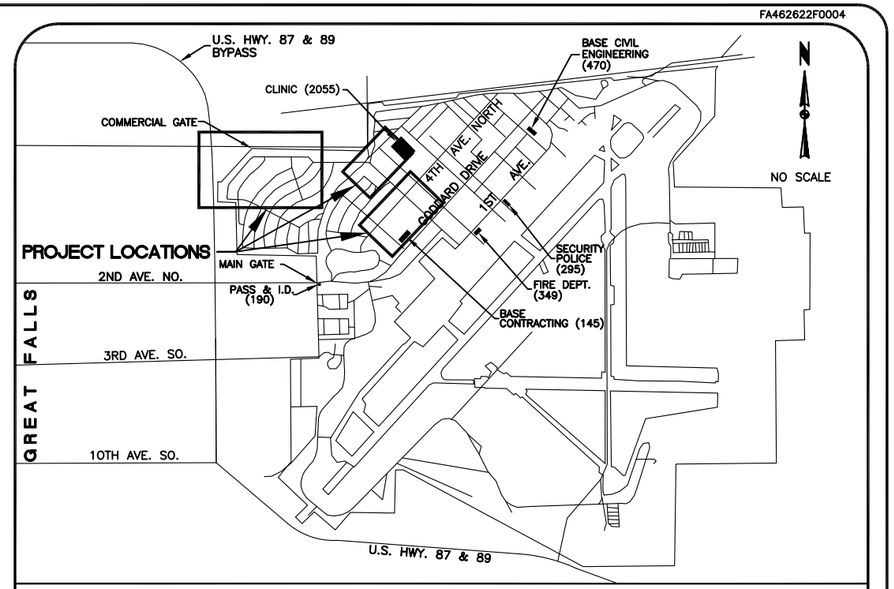
FA462622F0004

REPAIR NORTH SOUTH BASE WATER SYSTEMS - PHASE II

PROJECT NO. 1080765

MALMSTROM AIR FORCE BASE

MONTANA



VICINITY MAP
MALMSTROM A.F.B., MT.

PREPARED FOR:
341ST CONTRACTING SQUADRON/PKA 7015
GODDARD DRIVE, BLDG 145
MALMSTROM AFB, MT 59402-6863

CIVIL

MONTANA
RICHARD J. WEST
No. 0038 PE
LICENSED PROFESSIONAL ENGINEER

SHEET LIST INDEX

SHEET NO.	SHEET TITLE
1	TITLE SHEET
2	CONTROL POINTS
3	LOCUST - STA. 10+00 TO STA. 22+00
4	LOCUST - STA. 22+00 TO STA. 29+18.8
5	CYPRESS DRIVE
6	CEDAR STREET TO CLINIC
7	4TH A. N. STA. 9+85 TO STA. 18+00
8	4TH A. N. STA. 18+00 TO STA. 25+28.0
9	DETAILS
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13	DETAILS

INDEX OF DRAWINGS

CONTROL POINT DATA

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	1195116.96	1549156.51	3441.41	C-SET-NAIL
130	1191731.48	1548900.07	3487.88	C-SET-BAR
131	1191767.93	1547962.80	3487.54	C-SET-BAR
132	1191851.57	1547639.21	3483.91	C-SET-BAR
150	1195037.67	1549620.90	3440.09	C-SET-BAR
151	1195196.18	1546097.22	3453.47	C-SET-BAR
160	1193325.05	1555733.93	3450.41	CTRL-SET-BAR
161	1194273.18	1556795.16	3385.64	CTRL-SET-BAR

MONUMENT CONTROL LEGEND

- = ASPHALT
- = BURIED COMMUNICATION
- = BURIED FIBER OPTIC
- = CHAIN LINK FENCE
- #100 = CONTROL POINT – SET REBAR
- #101 = CONTROL POINT – SET NAIL
- = CURB AND GUTTER
- = GRAVEL LANDSCAPE
- = HYDRANT – FIRE – EXISTING
- = HYDRANT – YARD – EXISTING
- = MONITORING WELL
- = NATURAL GAS
- = OVERHEAD ELECTRIC
- = SANITARY SEWER AND MANHOLE
- SW = SIDEWALK
- = UNDERGROUND ELECTRIC
- = WATER MAIN – EXISTING
- = WATER VALVE – EXISTING
- = WOOD FENCE
- = NEW HYDRANT – FIRE
- = NEW WATER MAIN
- = NEW WATER METER
- = NEW WATER VALVE
- = NEW YARD HYDRANT
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = SOIL
- = ROAD CROSSING

LEGEND

SURVEY NOTES:

1. UTILITIES SHOWN ARE BASED ON AVAILABLE RECORD DRAWINGS, FIELD UTILITY LOCATE MARKINGS, AND ON THE SURVEY CONDUCTED. NO GUARANTEE IS GIVEN OR IMPLIED AS TO THE ACCURACY OF LOCATIONS PROVIDED OR THAT ALL UTILITIES ARE SHOWN.
2. THE CONTRACTOR SHALL VERIFY THE HORIZONTAL LOCATIONS AND THE VERTICAL ELEVATIONS OF THE CONTROL POINTS RELATIVE TO EACH OTHER PRIOR TO USING THE POINTS FOR CONSTRUCTION STAKING.

MT83IF SURVEY NOTES:

1. VERTICAL DATUM: NAVD88 GEOID 09
2. HORIZONTAL DATUM: MONTANA STATE PLANE NAD83
3. COORDINATES ARE SHOWN IN UNITS OF INTERNATIONAL FEET UNLESS INDICATED OTHERWISE.

GENERAL NOTES:

1. THESE DOCUMENTS INDICATE CONSTRUCTION MATERIALS AND METHODS OF CONSTRUCTION IN ORDER TO ESTABLISH STANDARDS FOR QUALITY AND/OR PERFORMANCE. MATERIALS AND METHODS OTHER THAN THOSE INDICATED WITHIN THESE DOCUMENTS SHALL BE CONSIDERED FOR ACCEPTANCE BY THE GOVERNMENT, PROVIDED THEY DO NOT AFFECT THE APPEARANCE FROM THAT INDICATED WITHIN THESE CONSTRUCTION DOCUMENTS IN ANY WAY.
2. FIELD VERIFY ALL DIMENSIONS INDICATED WITHIN THESE DOCUMENTS AND NOTIFY THE CONTRACTING OFFICER OF ANY VARIATION PRIOR TO THE PURCHASING OF MATERIALS, STARTING FABRICATION OR BEGINNING CONSTRUCTION.
3. NOTIFY ALL UTILITY COMPANIES, OBTAIN BASE CIVIL ENGINEERING WORK CLEARANCE REQUEST (AF FORM 103) FOR EXCAVATION AND DETERMINE THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK.
4. RETURN ALL AREAS DISTURBED BY CONSTRUCTION TO PRECONSTRUCTION CONDITION OR BETTER.
5. DISPOSE OF ALL EXCESS EXCAVATED MATERIALS GENERATED ON THE PROJECT. DISPOSE OF ALL DEMOLISHED EXCAVATED AND EXCESS MATERIALS IN A LEGAL MANNER. MATERIALS CANNOT BE DISPOSED OF, DUMPED, OR LEFT ON BASE.
6. TAKE CARE NOT TO DAMAGE ANY OF THE BASE'S PROPERTY, FURNISHINGS, OR OTHER MATERIALS. ANY AND ALL ITEMS DAMAGED SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE GOVERNMENT AT NO EXPENSE TO THE GOVERNMENT.
7. VERIFY THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES THAT WILL BE CROSSED OR EXPOSED TO THE MAXIMUM PIPE BURY DEPTH BY HYDROVAC EXCAVATION PRIOR TO START OF TRENCHING.
8. IN THE EVENT CONTAMINATED SOIL OR GROUNDWATER IS ENCOUNTERED DURING TRENCH EXCAVATION, STOP WORK IN THE AREA AND CONTACT THE CONTRACTING OFFICERS REPRESENTATIVE AND CES/CEIL 731-1423.
9. IN THE EVENT OF A WATER MAIN BREAK OR WATER LINE EMERGENCY, CONTACT THE CONTRACTING OFFICER REPRESENTATIVE AND THE WATER SHOP AT 406-731-6127 IMMEDIATELY.
10. PROTECT EXISTING TREES NOT DESIGNATED FOR REMOVAL FROM DAMAGE. REPLACE DAMAGED TREES TO THE CONTRACTING OFFICER'S SATISFACTION AT NO COST TO THE GOVERNMENT. ANY TREES REMOVED FOR WATER LINE REPLACEMENT SHALL BE REPLACED WITH A SPECIES OF SIMILAR TYPE AND DIAMETER.
11. CONTRACTORS DISTURBING ASBESTOS-CONTAINING MATERIAL MUST BE ACCREDITED BY THE STATE AND COMPLY WITH 29 CFR 1920 AND 29 CFR 1926. THE CONTRACTOR SHALL OBTAIN THE PROPER PERMIT THROUGH MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY AND SUBMIT THE APPROVED DOCUMENTS TO THE GOVERNMENT PRIOR TO DISTURBING THE ASBESTOS-CONTAINING MATERIAL.
ALL ASBESTOS CEMENT PIPE SHALL BE REMOVED AND DISPOSED OF PER MT DEQ REGULATIONS.

GENERAL NOTES

CIVIL NOTES:

1. INSTALL FLOWABLE FILL BACKFILL PER SPEC. SECTION 02225 AT ALL LOCATIONS UNDER ASPHALT, CURB AND GUTTER, SIDEWALK AND DRIVEWAYS. INSTALL FLOWABLE FILL FROM THE TOP OF THE PIPE BEDDING TO THE SUBGRADE LEVEL FOR THE VARIOUS SURFACING TYPES.
2. INSTALL TYPE A TRENCH BACKFILL. ALL LOCATIONS NOT BACKFILLED WITH FLOWABLE FILL PLACE BACKFILL IN MAXIMUM 8" LIFTS AND COMPACT TO 95% MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T-99. COMPACT ALL SUBGRADE SOIL AND GRAVEL LEFT IN PLACE TO 95% MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T99.
3. ALL ASPHALT TO BE TYPE B ASPHALT AGGREGATE (PGAB) PG-58-28, ASPHALT BINDER (SPEC. SECTION 2510).
4. ALL CRUSHED BASE COURSE TO BE 1½" MINUS CRUSHED BASE COURSE (TECH. SPEC. 2235).
5. PROVIDE 14 DAY ADVANCE NOTICE AND COMPLETED "ROAD CLOSURE NOTICE" TO THE CONTRACTING OFFICER'S REPRESENTATIVE. 10TH AVE NORTH SHALL REMAIN OPEN TO TWO-WAY TRAFFIC AT ALL TIMES.
6. THE BID ITEM FOR UNLOCATED UTILITY CROSSINGS WILL BE FULL COMPENSATION FOR THE CONTRACTOR FOR ALL TIME, EQUIPMENT, AND LABOR ASSOCIATED WITH CROSSING OVER OR UNDER, NOTIFICATION, STANDBY AND COORDINATION RELATED TO UTILITY LINES THAT ARE DISCOVERED OR DAMAGED THAT ARE NOT SHOWN ON THE PLANS OR FIELD LOCATED BY THE UTILITY OWNER DURING CONSTRUCTION. THE ITEM DOES NOT INCLUDE REPAIR OR RELOCATION OF THE UTILITY.
7. THE CONTRACTOR SHALL PROVIDE QUALITY CONTROL TESTING BY AN INDEPENDENT TESTING FIRM APPROVED BY THE CONTRACTING OFFICER. THE TEST RESULTS WILL BE SUBMITTED TO THE COR.
8. ALL PIPE SHALL INCLUDE WARNING TAPE AND #10TW THHN TRACER WIRE.
9. PROVIDE CATHODIC PROTECTION FOR ALL FIRE HYDRANTS, METAL PIPING, VALVES, CONNECTIONS, FITTINGS.
10. STOCKPILE ALL AVAILABLE TOPSOIL FROM SOD/SEED AREAS AND REPLACE PRIOR TO SODDING/SEEDING.
11. WATER MAINS REQUIRE 18" VERTICAL SEPARATION AT CROSSINGS WITH SEWER OR STORM PIPES.
12. ALL WATER MAIN FITTINGS AND VALVES ARE PUSH-ON.
13. ALL GATE VALVES REQUIRE VALVE BOXES.
14. ANY EXISTING MAIN TO BE ABANDONED SHALL BE REMOVED OR CAPPED IN PLACE.
15. ALL WATER LINES TO MAINTAIN A MINIMUM OF 6.5' OF COVER TO TOP OF PIPE UNLESS OTHERWISE NOTED IN PLAN SHEETS. WATER MAINS SHALL BE INSTALLED AT DEEPER DEPTHS, ON UNIFORM GRADES AS NECESSARY TO PREVENT LOCAL OR INTERMEDIATE HIGH SPOTS WHERE AIR CAN COLLECT.

CIVIL NOTES

REV.	DATE	DESCRIPTION	DRAWN	APPR'D

P:\06 WORK ORDERS\2026\02-12-26 NS BASE WATER SYSTEMS- DEB\SC-TS01-MAFBM12_COPY.DWG

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

OFFICE	SIGNATURE	DATE	OFFICE	SIGNATURE	DATE	OFFICE	SIGNATURE	DATE	OFFICE	SIGNATURE	DATE
BASE CIVIL ENGINEER			FIRE CHIEF			BIO-ENVIRONMENTAL					
CHIEF ENGINEER			ENVIRONMENTAL ENG.			SAFETY					
PROJECT ENGINEER			COMMUNICATIONS			AT/RPEC REP					
CE OPERATIONS			USING AGENCY								

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II	PROJECT NUMBERS 1080765	
DESIGNED BY WEST	TITLE SHEET	ACAD DRAWING NUMBER	
REVIEWED BY INGMAN	SCALE	DATE 2/18/26	PLATE
	PAGE 1 OF 13	RECORD FILE NUMBER	

FA462622F0004

CONTROL POINT DATA				
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	1195116.96	1549156.51	3441.41	C-SET-NAIL
130	1191731.48	1548900.07	3487.88	C-SET-BAR
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151	1195196.18	1546097.22	3453.47	C-SET-BAR
160	1193325.05	1555733.93	3450.41	CTRL-SET-BAR
161	1194273.18	1556795.16	3385.64	CTRL-SET-BAR

CONTROL POINT LEGEND

- #100 = CONTROL POINT – SET NAIL
- #150 = CONTROL POINT – SET REBAR

REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND

MALMSTROM AIR FORCE BASE, MONTANA

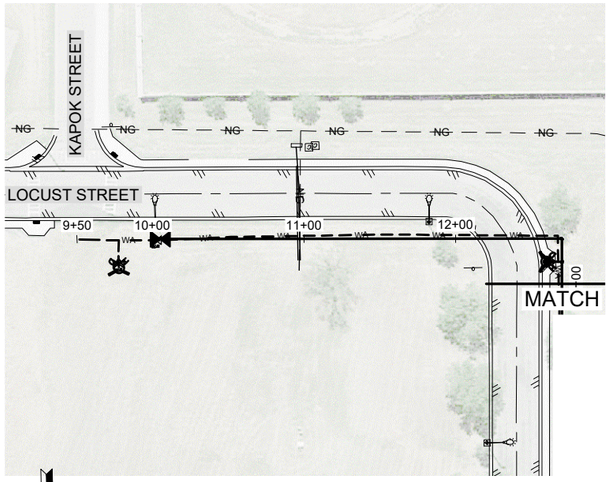
M:\MALMSTROM\MAFBM12\CAD\CIVIL\IFB\SC-C01-MAFBM12.DWG

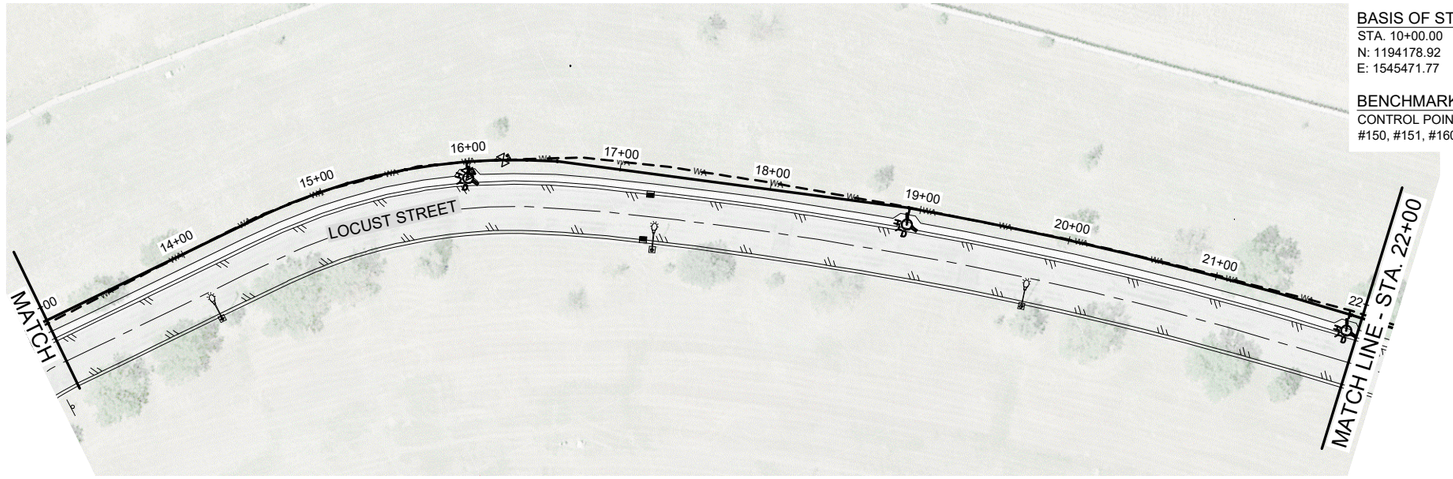
DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II		PROJECT NUMBERS 1080765
DESIGNED BY WEST	CONTROL POINTS		ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE AS SHOWN	DATE 1/12/23 PLATE	PAGE 2 OF 13 RECORD FILE NUMBER

FA462622F0004

BASIS OF STATIONING:
STA. 10+00.00
N: 1194178.92
E: 1545471.77

BENCHMARK:
CONTROL POINTS #100, #130, #131, #132, #150, #151, #160, AND #161 (SEE SHEET 2)





N

STA. 10+00.0
INSTALL 8" COUPLING
CONNECT TO EXISTING MAIN
N: 1194178.92
E: 1545471.77

STA. 10+05.0
INSTALL 8" GATE VALVE
N: 1194179.03
E: 1545466.78

STA. 12+70.1
INSTALL 8" 90° BEND
N: 1194185.28
E: 1545201.76

STA. 12+85.4
INSTALL 8"x6" TEE AND REMOVE AND REPLACE FIRE HYDRANT ASSEMBLY WITH 4" LEAD
N: 1194200.60
E: 1545202.13

STA. 15+98.5
REMOVE EXISTING FIRE HYDRANT ASSEMBLY

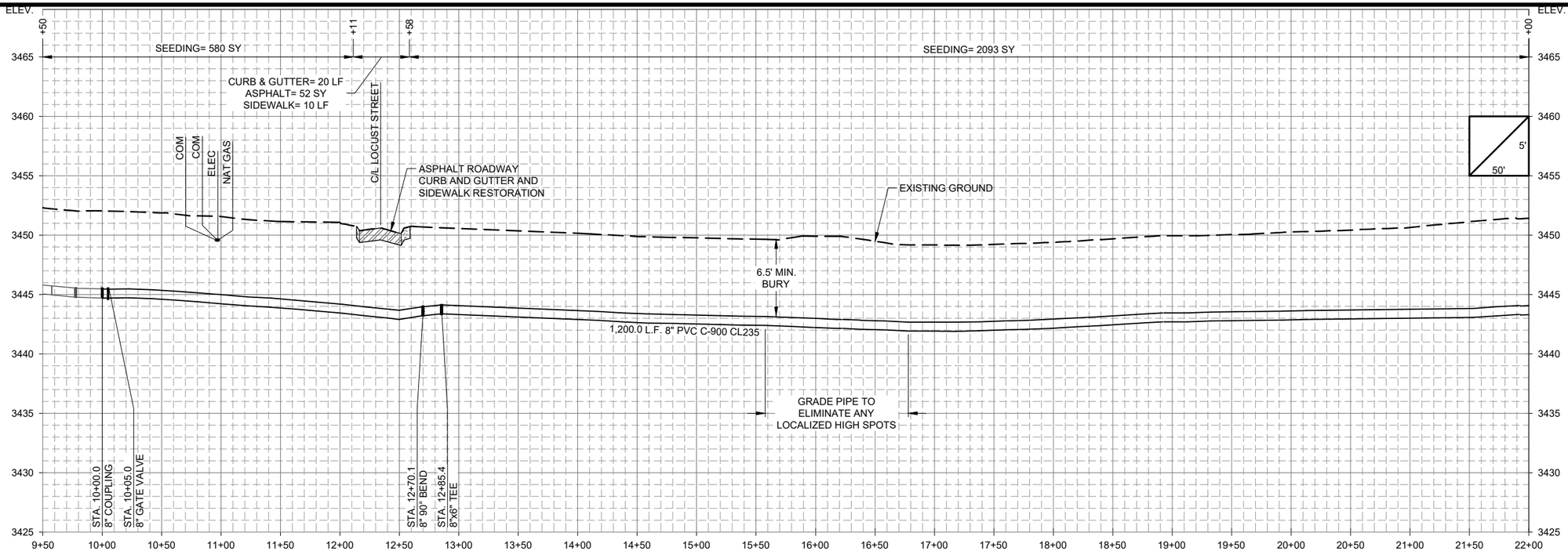
STA. 10+00.0 TO STA. 22+00.0
REMOVE AND REPLACE 1,200.0 L.F. 8" WATER MAIN

STA. 18+92.6
REMOVE EXISTING FIRE HYDRANT ASSEMBLY

STA. 21+92.4
REMOVE EXISTING FIRE HYDRANT ASSEMBLY

N

0 50 100 FEET



REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

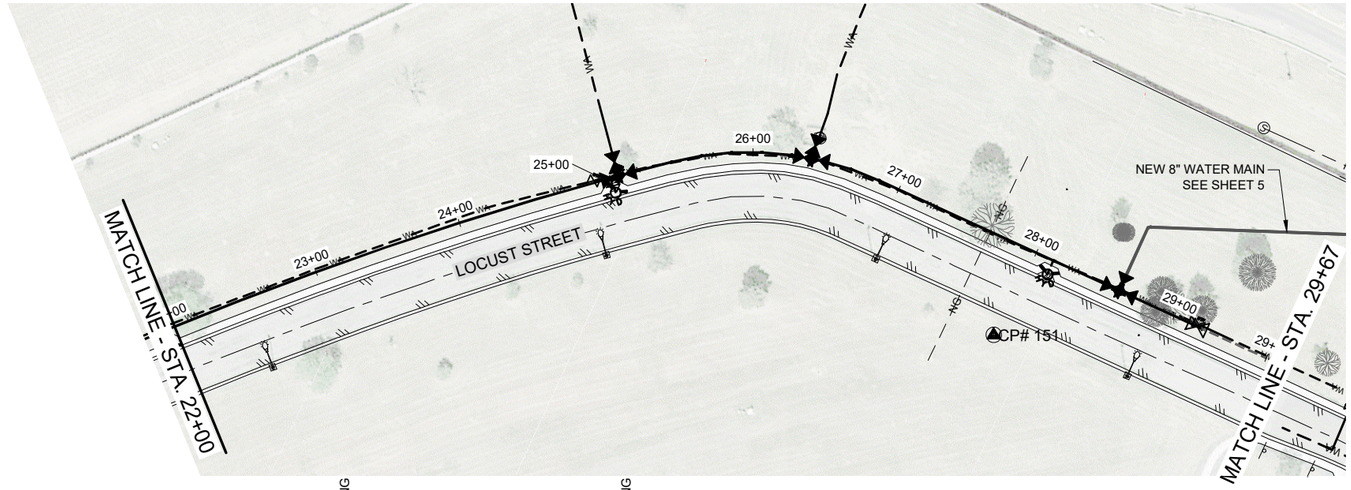
M:\MALMSTROM\MAFBM12\CAD\CIVIL\IFB\SC-WA01-MAFBM12-LOCUST.DWG

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II		PROJECT NUMBERS 1080765
DESIGNED BY WEST	LOCUST – STA. 10+00 TO STA. 22+00		ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE AS SHOWN	DATE 1/12/23	PLATE	PAGE 3 OF 13	RECORD FILE NUMBER

FA462622F0004

BASIS OF STATIONING:
STA. 10+00.00
N: 1194178.92
E: 1545471.77

BENCHMARK:
CONTROL POINTS #100, #130, #131, #132, #150, #151, #160, AND #161 (SEE SHEET 2)



STA. 25+04.4
INSTALL 8" GATE VALVE
N: 1195191.16
E: 1545824.48

STA. 25+04.5
REMOVE EXISTING FIRE HYDRANT ASSEMBLY

STA. 25+09.4
INSTALL 8"x6" TEE
N: 1195194.27
E: 1545828.38

STA. 25+09.4 LT.
INSTALL 5 L.F. 6" PVC, 6" GATE VALVE, 5 L.F. 6" PVC, 6" COUPILNG
CONNECT TO EXISTING MAIN

STA. 25+14.4
INSTALL 8" GATE VALVE
N: 1195197.37
E: 1545832.32

STA. 26+33.9
INSTALL 8" GATE VALVE
N: 1195254.09
E: 1545936.01

STA. 26+38.9
INSTALL 8"x6" TEE
N: 1195255.19
E: 1545940.88

STA. 26+38.9 LT.
INSTALL 5 L.F. 6" PVC, 6" GATE VALVE, 5 L.F. 6" PVC, 6" COUPLING
CONNECT TO EXISTING MAIN

STA. 26+43.9
INSTALL 8" GATE VALVE
N: 1195256.29
E: 1545945.76

STA. 22+00.0 TO STA. 29+18.8
INSTALL 718.8 L.F.
8" PVC WATER MAIN

STA. 28+12.5
REMOVE EXISTING FIRE HYDRANT ASSEMBLY

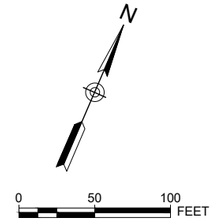
STA. 28+55.0
INSTALL 8" GATE VALVE
N: 1195255.94
E: 1546156.66

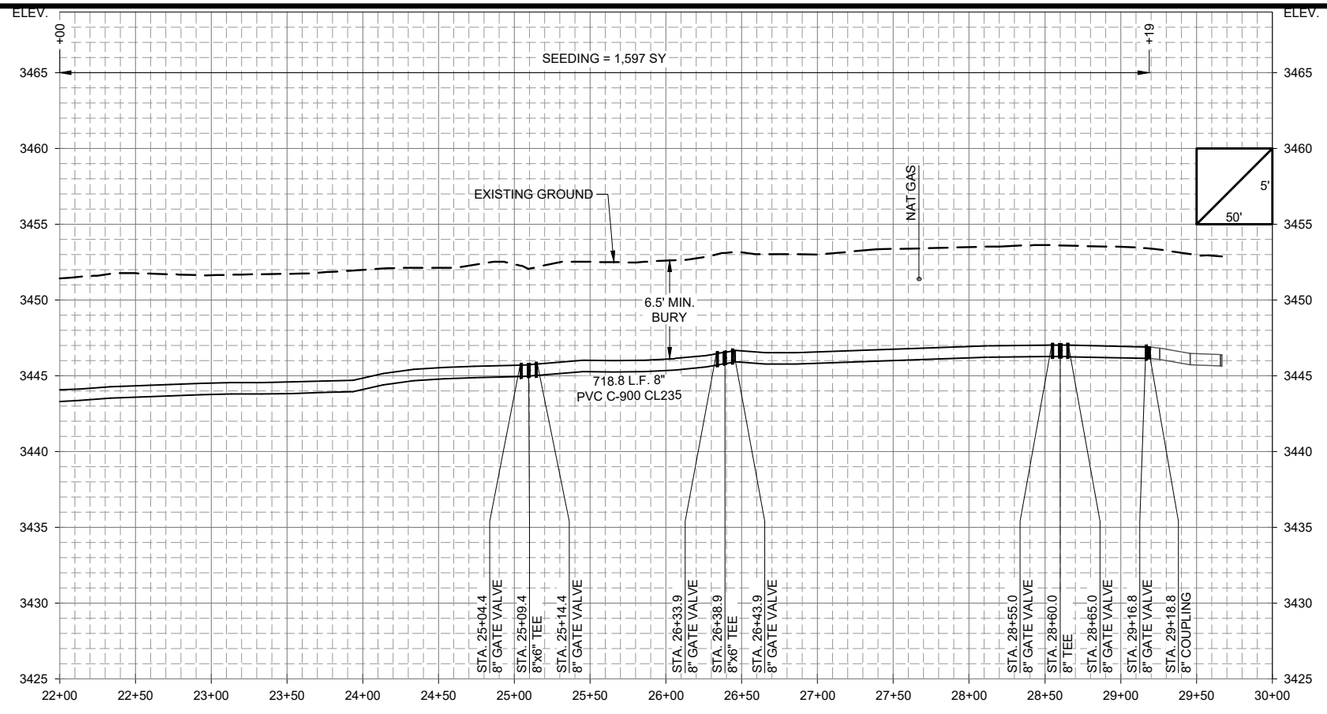
STA. 28+60.0
INSTALL 8" TEE
N: 1195255.82
E: 1546161.66

STA. 28+65.0
INSTALL 8" GATE VALVE
N: 1195255.71
E: 1546166.66

STA. 29+16.8
REMOVE 8" GATE VALVE

STA. 29+18.8
INSTALL 8" COUPLING
CONNECT TO EXISTING MAIN
N: 1195254.51
E: 1546220.47





REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

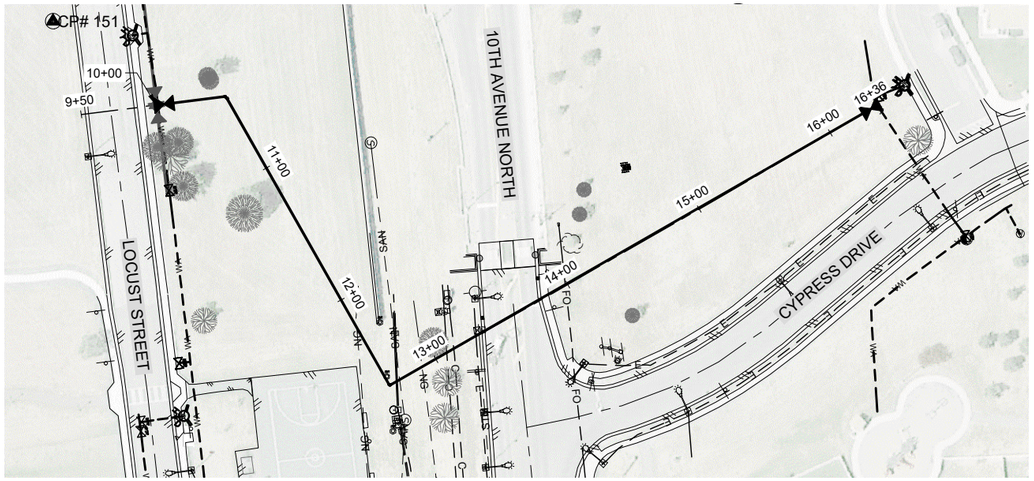
M:\MALMSTROM\MAFBM12\CAD\CIVIL\IFB\SC-WA01-MAFBM12-LOCUST.DWG

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II		PROJECT NUMBERS 1080765
DESIGNED BY WEST	LOCUST – STA. 22+00 TO STA. 29+18.8		ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE AS SHOWN	DATE 1/12/23 PLATE	RECORD FILE NUMBER
		PAGE 4 OF 13	

FA462622F0004

BASIS OF STATIONING:
STA. 10+00.00
N: 1195255.82
E: 1546161.66

BENCHMARK:
CONTROL POINTS #100, #130, #131, #132, #150, #151, #160, AND #161 (SEE SHEET 2)



STA. 10+00.0
CONNECTION - SEE SHEET 4
N: 1195255.82
E: 1546161.66

STA. 10+05.0
INSTALL 8" GATE VALVE
N: 1195260.83
E: 1546161.77

STA. 10+45.5
INSTALL 8" 45° BEND
N: 1195301.37
E: 1546162.67

STA. 10+47.3
INSTALL 8" 22.50° BEND
N: 1195302.53
E: 1546164.01

STA. 12+64.8
INSTALL 8" 90° BEND
N: 1195381.26
E: 1546366.76

STA. 13+25
START/STOP JACK AND BORE
N: 1195425.57
E: 1546333.11

STA. 13+98.2
START/STOP JACK AND BORE
N: 1195495.45
E: 1546308.35

STA. 10+00.0 TO STA. 16+36.1
INSTALL 636.1 L.F. 8" WATER MAIN

STA. 16+31.1
INSTALL 8" GATE VALVE
N: 1195721.98
E: 1546232.19

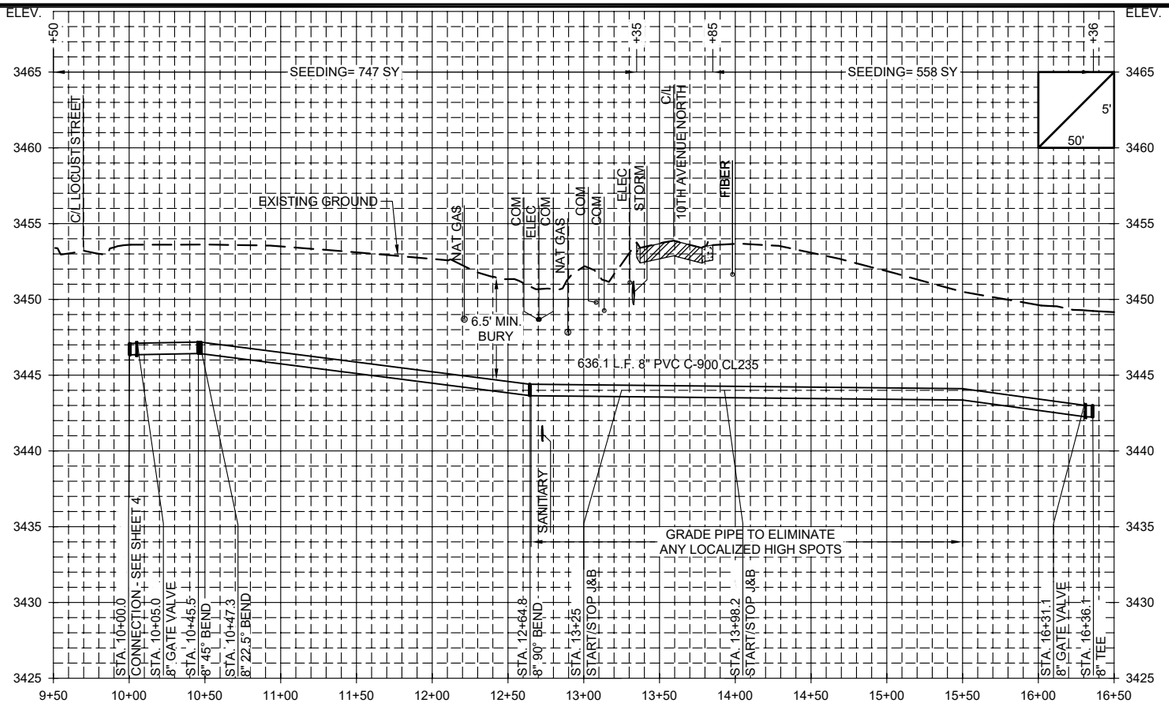
STA. 16+36.1
INSTALL 8" TEE
N: 1195726.63
E: 1546230.35

STA. 16+36.1 LT.
INSTALL 5 L.F. 8" PVC, 8" COUP.
CONNECT TO EXISTING MAIN

STA. 16+36.1 RT.
INSTALL 5 L.F. 8" PVC, 8" COUP.
CONNECT TO EXISTING MAIN

N

0 50 100 FEET



REV.	DATE	DESCRIPTION	DRAWN	APPR'D

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II	PROJECT NUMBERS 1080765
DESIGNED BY WEST	CYPRESS DRIVE	ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE AS SHOWN DATE 2/20/26 PLATE PAGE 5 OF 13	RECORD FILE NUMBER

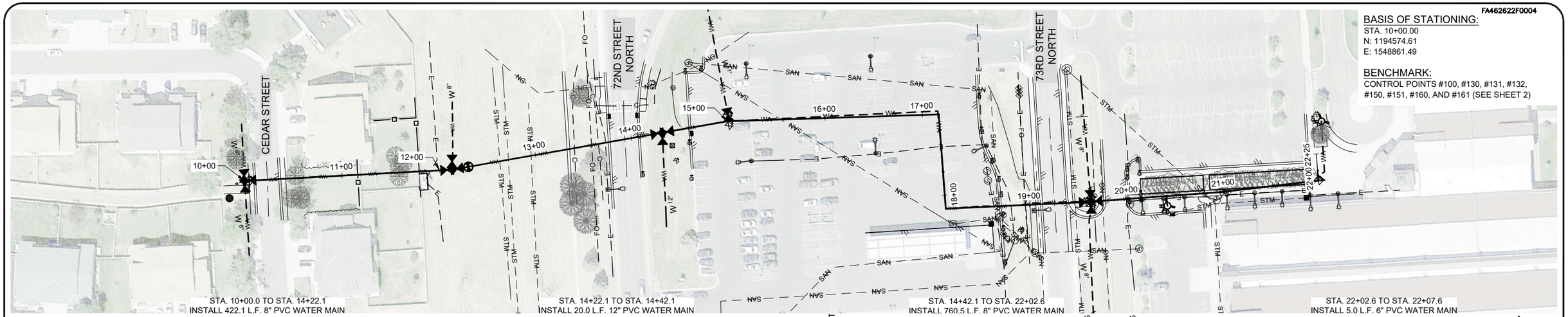
GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

P:\06 WORK ORDERS\2026\02-12-26 NS BASE WATER SYSTEMS- DEBI\3 - SOFTWARE FILES\SC-WA02-MAFBM12-CYPRESS_COPY.DWG

FA462622F0004

BASIS OF STATIONING:
STA. 10+00.00
N: 1194574.61
E: 1548861.49

BENCHMARK:
CONTROL POINTS #100, #130, #131, #132, #150, #151, #160, AND #161 (SEE SHEET 2)



STA. 10+00.0
INSTALL 8" TEE
N: 1194574.62
E: 1548861.49

STA. 10+00.0 LT.
INSTALL 5 L.F. 8" PVC, 8" GATE VALVE, 5 L.F. 8" PVC, 8"x6" REDUCER, 5 L.F. 6" PVC, 6" COUP. CONNECT TO EXISTING MAIN

STA. 10+00.0 RT.
INSTALL 5 L.F. 8" PVC, 8" GATE VALVE, 5 L.F. 8" PVC, 8"x6" REDUCER, 5 L.F. 6" PVC, 6" COUP. CONNECT TO EXISTING MAIN

STA. 10+05.0
INSTALL 8" GATE VALVE
N: 1194578.18
E: 1548864.93

STA. 12+08.1
INSTALL 8" GATE VALVE
N: 1194724.34
E: 1549006.02

STA. 12+13.1
INSTALL 8" TEE
N: 1194727.98
E: 1549009.51

STA. 12+13.1 LT.
INSTALL 5 L.F. 8" PVC, 8" GATE VALVE, 5 L.F. 8" PVC, 8" COUP. CONNECT TO EXISTING MAIN

STA. 12+18.1
INSTALL 8" GATE VALVE
N: 1194731.89
E: 1549012.54

STA. 12+23.1
INSTALL 8" COUPLING
CONNECT TO EXISTING
N: 1194735.95
E: 1549015.54

STA. 12+30.1
EXISTING WATER METER
N: 1194741.48
E: 1549019.79

STA. 12+43.1
INSTALL 8" COUPLING
CONNECT TO EXISTING
N: 1194747.10
E: 1549023.99

STA. 14+22.1
INSTALL 8"x12" REDUCER
N: 1194894.61
E: 1549135.65

STA. 14+27.1
INSTALL 12" GATE VALVE
N: 1194898.59
E: 1549138.67

STA. 14+32.1
INSTALL 12" TEE
N: 1194902.58
E: 1549141.69

STA. 14+32.1 RT.
INSTALL 5 L.F. 12" PVC, 12" GATE VALVE, 5 L.F. 12" PVC, 12" COUP. CONNECT TO EXISTING MAIN

STA. 14+37.1
INSTALL 12" GATE VALVE
N: 1194906.57
E: 1549144.70

STA. 14+42.1
INSTALL 8"x12" REDUCER
N: 1194910.56
E: 1549147.72

STA. 15+00.5
INSTALL 1" SADDLE AND CONNECT TO EXISTING WATER SERVICE LT. (SEE DETAIL)
N: 1194957.11
E: 1549183.00

STA. 17+16.9
INSTALL 8" 90° BEND
N: 1195109.49
E: 1549336.56

STA. 18+14.0
INSTALL 8" 90° BEND
N: 1195043.40
E: 1549407.81

STA. 19+58.0
INSTALL 8" GATE VALVE
N: 1195146.41
E: 1549508.38

STA. 19+63.0
INSTALL 8" CROSS
N: 1195150.08
E: 1549511.79

STA. 19+63.0 LT.
INSTALL 5 L.F. 8" PVC, 8" GATE VALVE, 5 L.F. 8" PVC, 8" COUPLING CONNECT TO EXISTING MAIN

STA. 19+63.0 RT.
INSTALL 5 L.F. 8" PVC, 8" GATE VALVE, 5 L.F. 8" PVC, 8" COUPLING CONNECT TO EXISTING MAIN

STA. 19+68.0
INSTALL 8" GATE VALVE
N: 1195153.76
E: 1549515.21

STA. 20+41.1
INSTALL 8"x6" TEE
N: 1195207.32
E: 1549564.98

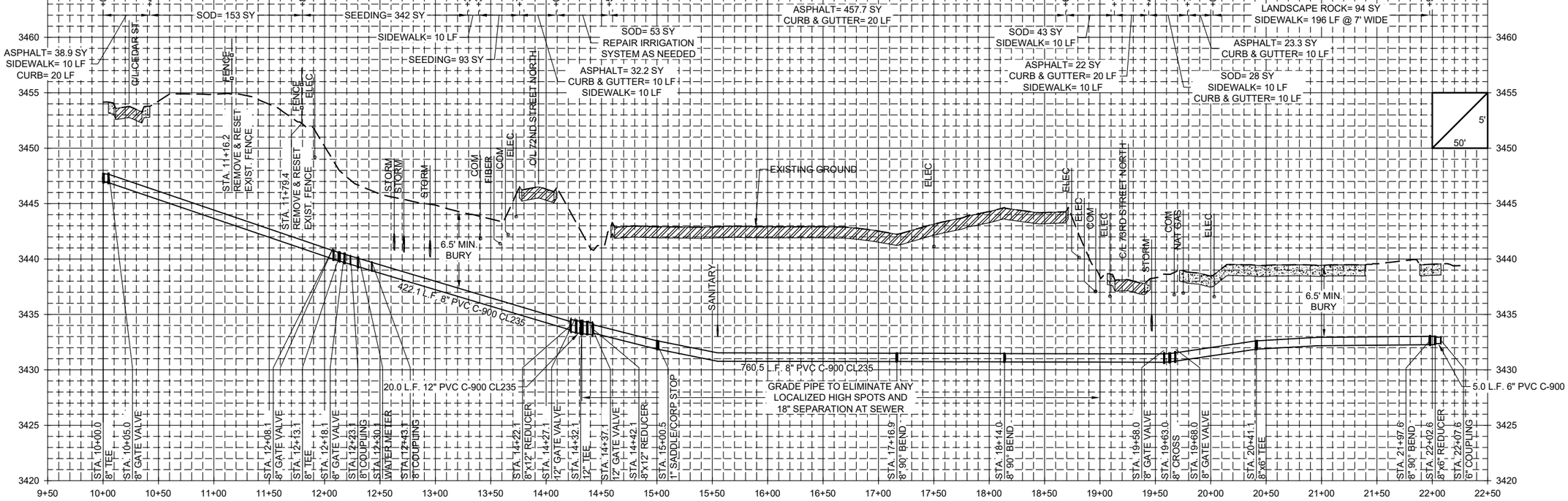
STA. 20+41.1 RT.
REMOVE AND REPLACE FIRE HYDRANT ASSEMBLY WITH 11 L.F. LEAD

STA. 21+97.6
INSTALL 8" 90° BEND
N: 1195324.92
E: 1549668.14

STA. 22+02.6
INSTALL 8"x6" REDUCER
N: 1195328.28
E: 1549664.46

STA. 22+07.6
INSTALL 6" COUPLING
CONNECT TO EXISTING MAIN
N: 1195331.66
E: 1549660.77

0 50 100 FEET



REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

P:\06 WORK ORDERS\2026\02-12-26 NS BASE WATER SYSTEMS- DEBI\SC-WA03-MAFBM12-CEDAR_COPY.DWG

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II		PROJECT NUMBERS 1080765
DESIGNED BY WEST	CEDAR STREET TO CLINIC		ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE AS SHOWN	DATE 2/18/26 PLATE	RECORD FILE NUMBER
		PAGE 6 OF 13	

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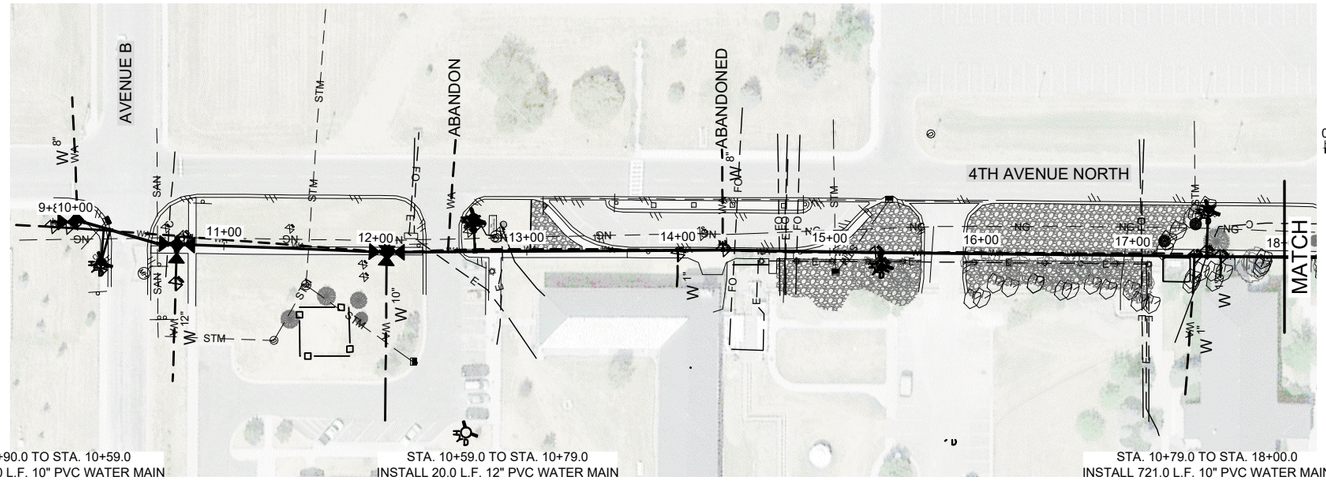


BASIS OF STATIONING:

STA. 10+00.00
N: 1193373.61
E: 1549171.49

BENCHMARK:

CONTROL POINTS #100, #130, #131, #132, #150, #151, #160, AND #161 (SEE SHEET 2)

STA. 9+85.0 TO STA. 9+90.0
INSTALL 5.0 L.F. 8" PVC WATER MAIN

STA. 9+90.0 TO STA. 10+59.0
INSTALL 69.0 L.F. 10" PVC WATER MAIN

STA. 10+59.0 TO STA. 10+79.0
INSTALL 20.0 L.F. 12" PVC WATER MAIN

STA. 10+79.0 TO STA. 18+00.0
INSTALL 721.0 L.F. 10" PVC WATER MAIN

STA. 9+85.0
INSTALL 8" COUPLING
CONNECT TO EXISTING MAIN
N: 1193362.73
E: 1549161.16

STA. 9+90.0
INSTALL 8"x10" REDUCER
N: 1193366.36
E: 1549164.60

STA. 9+95.0
INSTALL 10" GATE VALVE
N: 1193369.98
E: 1549168.05

STA. 10+00.0
INSTALL 8"x10" TEE
N: 1193373.60
E: 1549171.49

STA. 10+00.0 LT.
INSTALL 5 L.F. 8" PVC, 8" GATE VALVE, 5 L.F. 8" PVC, 8" COUPLING
CONNECT TO EXISTING MAIN

STA. 10+05.0
INSTALL 10" 11.25° BEND
N: 1193377.21
E: 1549174.96

STA. 10+23.9
INSTALL 10"x6" TEE
N: 1193386.81
E: 1549191.21

STA. 10+23.9 RT.
REMOVE AND REPLACE FIRE HYDRANT ASSEMBLY WITH 25 L.F. LEAD

STA. 10+56.1
INSTALL 10" 11.25° BEND
N: 1193403.12
E: 1549218.96

STA. 10+59.0
INSTALL 10"x12" REDUCER
N: 1193405.16
E: 1549221.06

STA. 10+64.0
INSTALL 12" GATE VALVE
N: 1193408.66
E: 1549224.63

STA. 10+69.0
INSTALL 12" TEE
N: 1193412.18
E: 1549228.21

STA. 10+69.0 RT.
INSTALL 5 L.F. 12" PVC, 12" GATE VALVE, 5 L.F. 12" PVC, 12" COUP.
CONNECT TO EXISTING MAIN

STA. 10+74.0
INSTALL 12" GATE VALVE
N: 1193415.68
E: 1549231.77

STA. 10+79.0
INSTALL 10"x12" REDUCER
N: 1193419.17
E: 1549235.36

STA. 12+02.6
INSTALL 10" GATE VALVE
N: 1193505.65
E: 1549323.63

STA. 12+07.6
INSTALL 10" TEE
N: 1193509.13
E: 1549327.21

STA. 12+07.6 RT.
INSTALL 5 L.F. 10" PVC, 10" GATE VALVE, 5 L.F. PVC, 10" COUPLING
CONNECT TO EXISTING MAIN

STA. 12+12.6
INSTALL 10" GATE VALVE
N: 1193512.79
E: 1549330.62

STA. 12+65.7
INSTALL 10"x6" TEE
N: 1193551.66
E: 1549366.85

STA. 12+65.7 LT.
REMOVE AND REPLACE FIRE HYDRANT ASSEMBLY WITH 20 L.F. LEAD

STA. 13+99.6
INSTALL 1" SADDLE, CORP STOP, CURB STOP, RECONNECT 1"
SERVICE - FITTINGS AS NEEDED
N: 1193649.57
E: 1549458.09

STA. 14+29.4 LT.
CAP AND ABANDON 6" WATER MAIN - REMOVE VALVE

STA. 15+34.4
INSTALL 10"x6" TEE
N: 1193746.45
E: 1549551.88

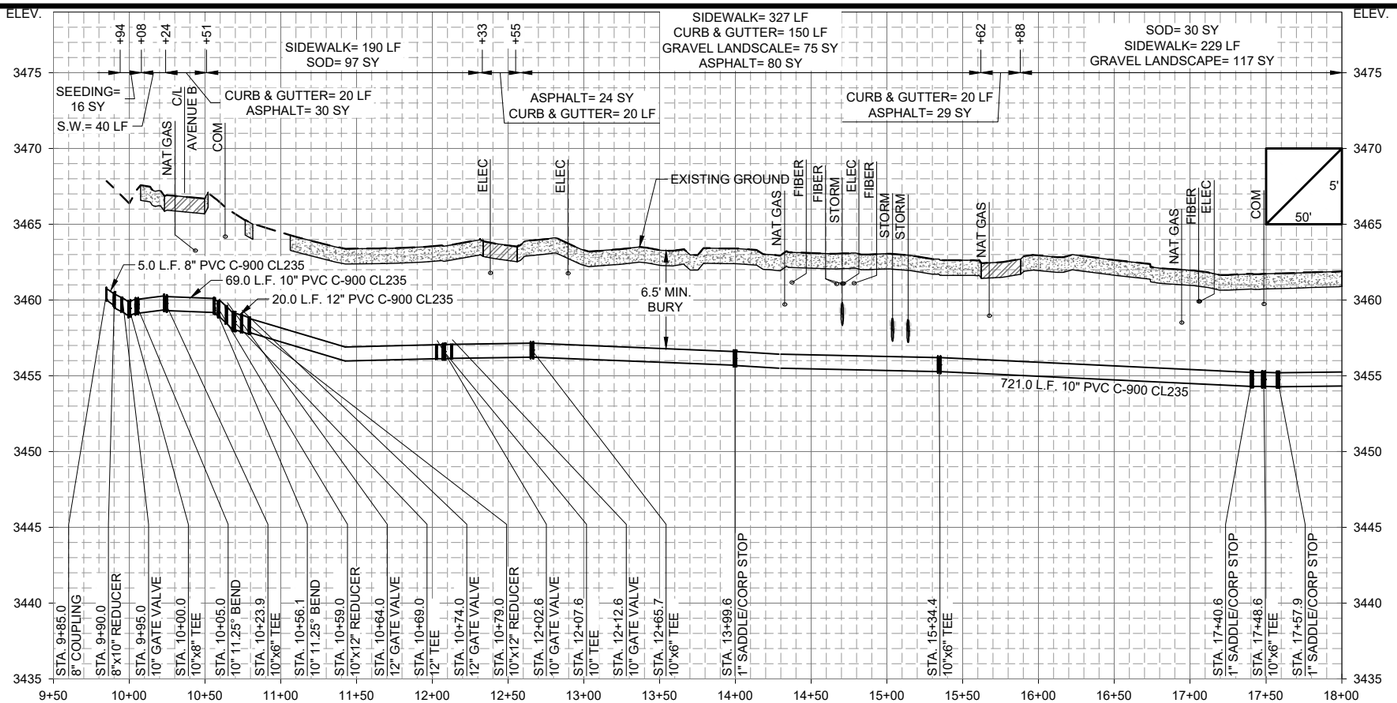
STA. 15+34.4 RT.
REMOVE AND REPLACE FIRE HYDRANT ASSEMBLY WITH 9 L.F. LEAD

STA. 17+40.6
INSTALL 1" SADDLE, CORP STOP, CURB STOP, RECONNECT 1"
SERVICE - FITTINGS AS NEEDED
N: 1193894.66
E: 1549695.23

STA. 17+48.6
INSTALL 10"x6" TEE
N: 1193900.38
E: 1549700.77

STA. 17+48.6 LT.
REMOVE AND REPLACE FIRE HYDRANT ASSEMBLY WITH 30 L.F. LEAD

STA. 17+57.9
INSTALL 1" SADDLE, CORP STOP, CURB STOP, RECONNECT 1"
SERVICE - FITTINGS AS NEEDED
N: 1193907.10
E: 1549707.27



REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

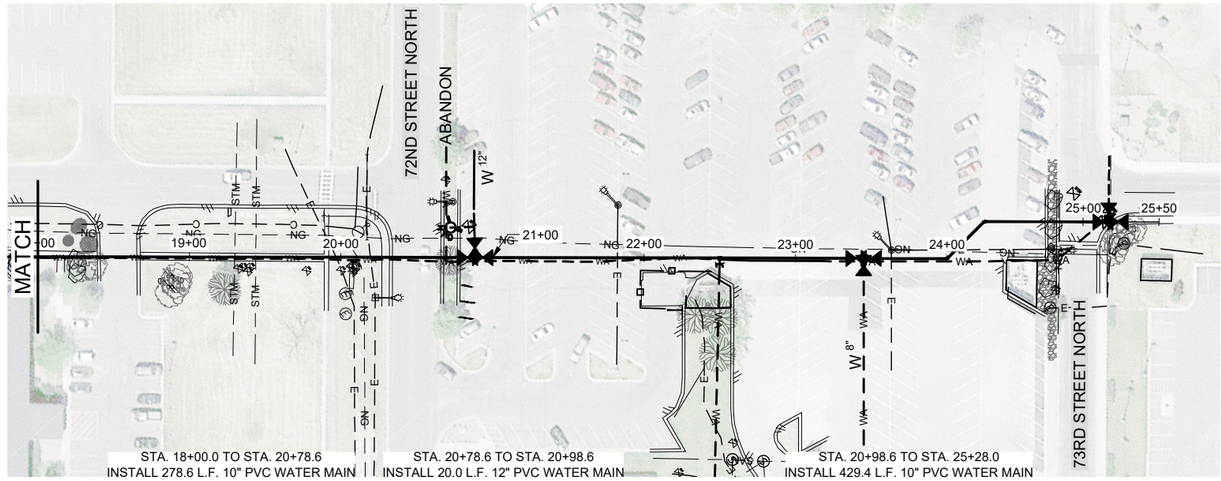
M:\MALMSTROM\MAFBM12\CAD\CIVIL\IFB\SC-WA05-MAFBM12-4TH AVENUE N.DWG

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II	PROJECT NUMBERS 1080765
DESIGNED BY WEST	4TH AVE. N. STA. 9+85 TO STA. 18+00	ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE AS SHOWN DATE 1/12/23 PLATE PAGE 7 OF 13	RECORD FILE NUMBER

FA462622F0004

BASIS OF STATIONING:
STA. 10+00.00
N: 1193373.61
E: 1549171.49

BENCHMARK:
CONTROL POINTS #100, #130, #131, #132, #150, #151, #160, AND #161 (SEE SHEET 2)



0 50 100 FEET

STA. 20+78.6
INSTALL 10"x12" REDUCER
N: 1194139.73
E: 1549928.02

STA. 20+83.6
INSTALL 12" GATE VALVE
N: 1194143.35
E: 1549931.46

STA. 20+88.6
INSTALL 12" TEE
N: 1194146.98
E: 1549934.90

STA. 20+88.6 LT.
INSTALL 5 L.F. 12" PVC, 12" GATE
VALVE, 5 L.F. 12" PVC, 12" COUP.
CONNECT TO EXISTING MAIN

STA. 20+93.6
INSTALL 12" GATE VALVE
N: 1194150.61
E: 1549938.35

STA. 20+98.6
INSTALL 10"x12" REDUCER
N: 1194154.23
E: 1549941.79

STA. 22+50.0 RT.
REMOVE EXISTING VALVE AND
PLUG MAIN

STA. 23+40.0
INSTALL 10" GATE VALVE
N: 1194329.27
E: 1550108.02

STA. 23+45.0
INSTALL 10" TEE
N: 1194332.89
E: 1550111.47

STA. 23+45.0 RT.
INSTALL 5 L.F. 10" PVC, 10" GATE
VALVE, 5 L.F. 10" PVC, 10"x8"
REDUCER, 5 L.F. PVC, 8" COUP.
CONNECT TO EXISTING MAIN

STA. 23+50.0
INSTALL 10" GATE VALVE
N: 1194336.51
E: 1550114.91

STA. 24+00.0
INSTALL 10" 45° BEND
N: 1194372.75
E: 1550149.36

STA. 24+34.7
INSTALL 10" 45° BEND
N: 1194407.44
E: 1550148.50

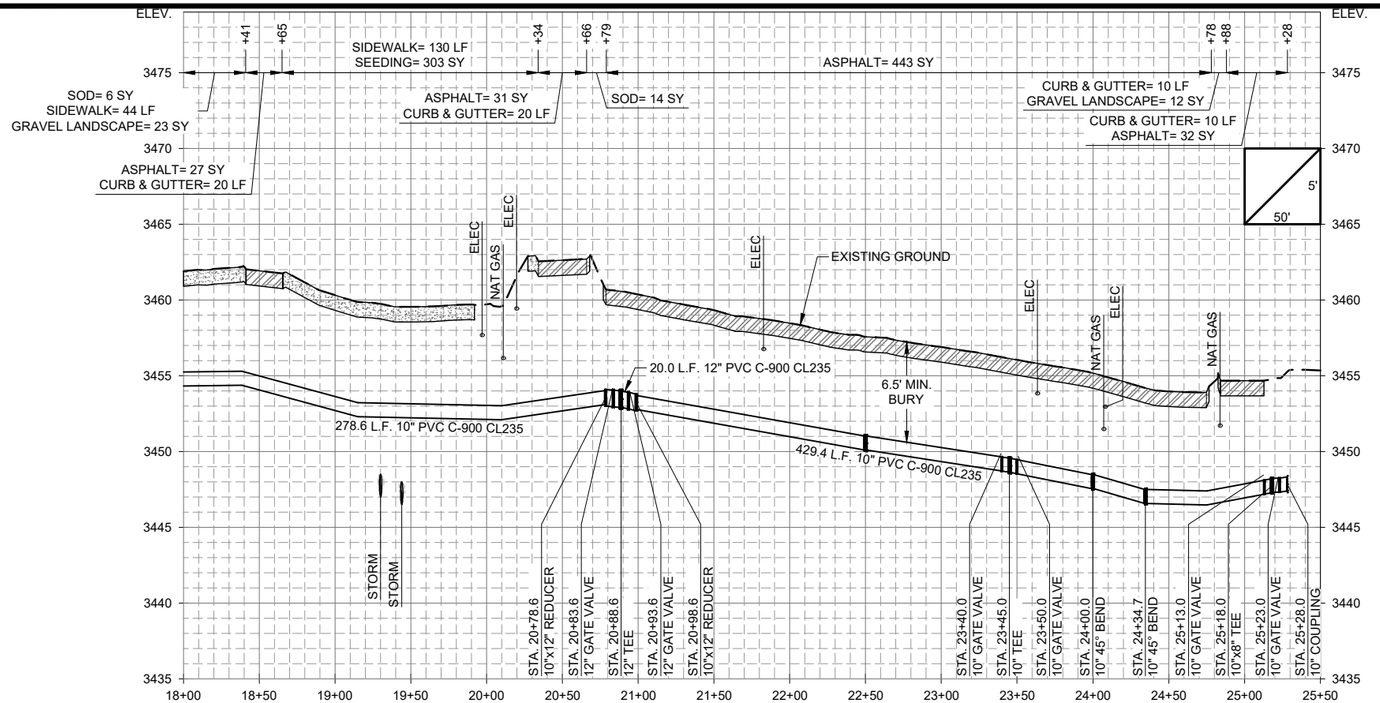
STA. 25+13.0
INSTALL 10" GATE VALVE
N: 1194464.18
E: 1550202.46

STA. 25+18.0
INSTALL 10"x8" TEE
N: 1194467.80
E: 1550205.91

STA. 25+18.0 LT.
INSTALL 5 L.F. 8" PVC, 8" GATE
VALVE, 5 L.F. 8" PVC, 8" COUP.
CONNECT TO EXISTING MAIN

STA. 25+23.0
INSTALL 10" GATE VALVE
N: 1194471.42
E: 1550209.35

STA. 25+28.0
INSTALL 10" COUPLING
CONNECT TO EXISTING MAIN
N: 1194475.05
E: 1550212.80

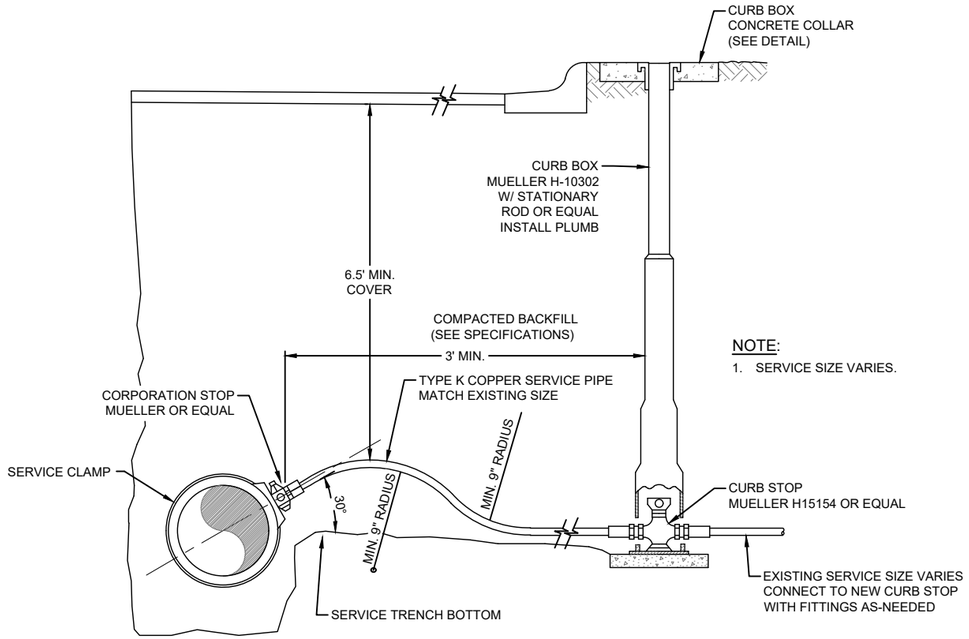


REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

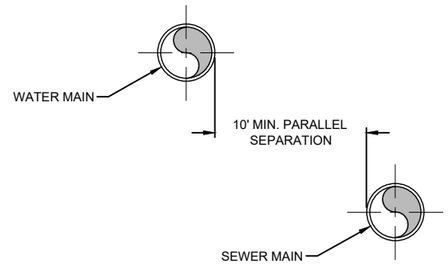
M:\MALMSTROM\MAFBM12\CAD\CIVIL\IFB\SC-WA05-MAFBM12-4TH AVENUE N.DWG

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II	PROJECT NUMBERS 1080765
DESIGNED BY WEST	4TH AVE. N. STA. 18+00 TO STA. 25+28	ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE AS SHOWN DATE 1/12/23 PLATE PAGE 8 OF 13	RECORD FILE NUMBER

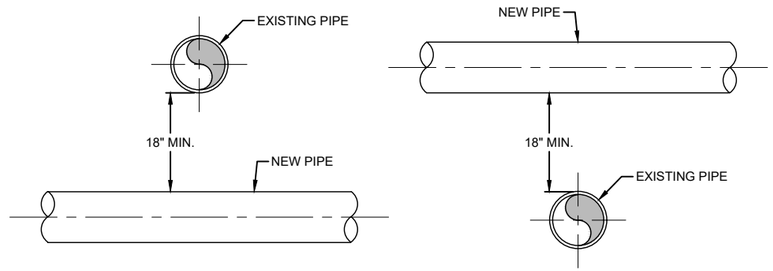


NOTE:
1. SERVICE SIZE VARIES.

CONNECT TO EXISTING WATER SERVICE DETAIL
NOT TO SCALE

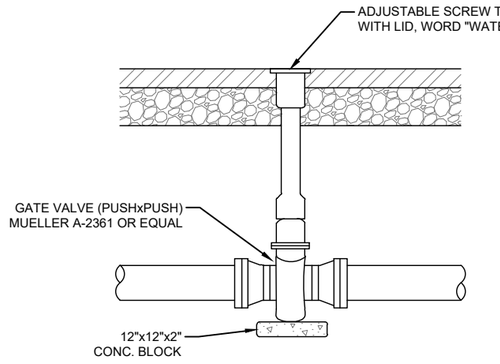


PARALLEL ARRANGEMENT



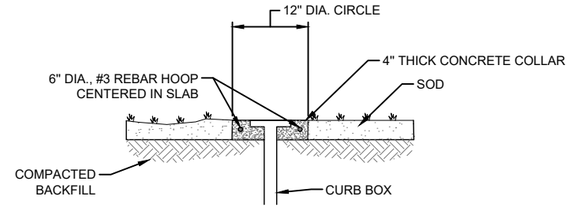
CROSSINGS

WATER/SEWER PIPE SEPARATION
NOT TO SCALE



NOTES:
1. FURNISH PUSH-ON X PUSH-ON GATE VALVE.
2. ADJUST WATER VALVES UPWARD OR DOWNWARD AS REQUIRED TO BE RECESSED ¼" TO ½" BELOW SURROUNDING SURFACE.
3. FINAL ADJUSTMENT SHALL BE MADE BEFORE PAVING.
4. NO PAYMENT SHALL BE MADE FOR ADJUSTMENT OF NEW VALVES TO FINAL GRADE.
5. POLYWRAP (DOUBLE WRAP) VALVES AND BOXES.
6. INSTALL THE VALVE BOX BASE ON THE BEDDING SO IT DOES NOT CONTACT THE VALVE.

GATE VALVE DETAIL
NOT TO SCALE



NOTES:
1. INSTALL M-4500 CONCRETE WITH 28 DAY 4500 PSI BREAK STRENGTH (SPEC. SECTION 03310).
2. ROUGH BROOM FINISH THE TOP OF SURFACE.
3. PLACE SOD EVEN WITH THE TOP OF THE COLLAR.

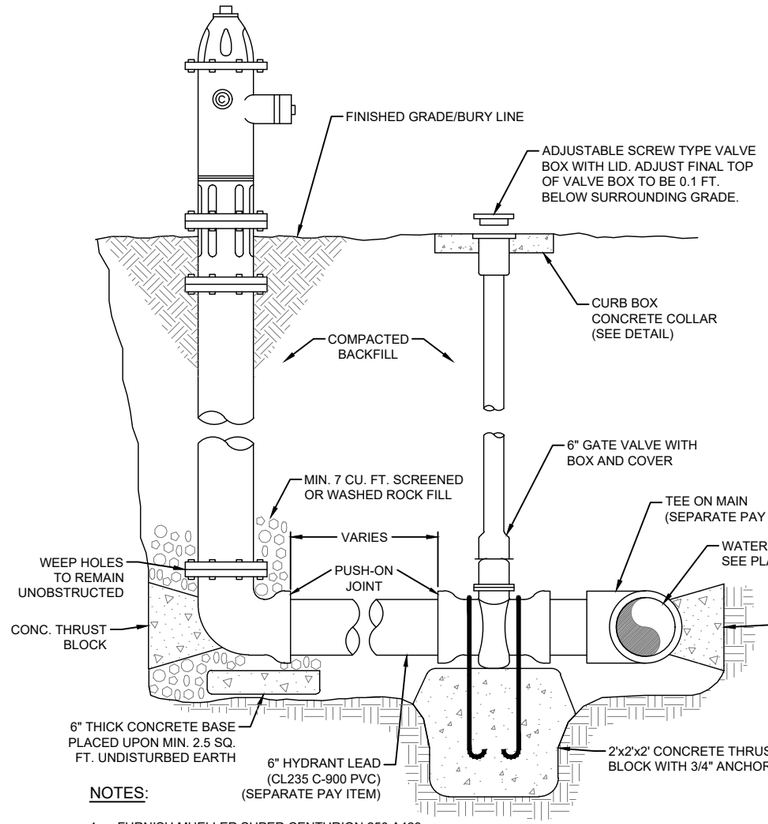
CURB BOX CONCRETE COLLAR
NOT TO SCALE

REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

M:\MALMSTROM\MAFBM12\CAD\CIVIL\IFB\SC-DT01-MAFBM12.DWG

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II		PROJECT NUMBERS 1080765
DESIGNED BY WEST	DETAILS		ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE N.T.S. / DATE 1/12/23 / PLATE / PAGE 9 OF 13		RECORD FILE NUMBER

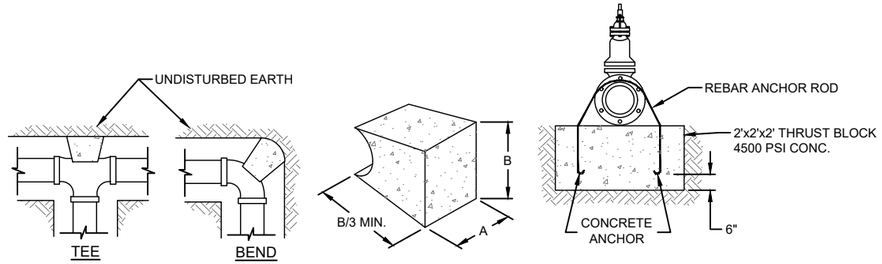


NOTES:

1. FURNISH MUELLER SUPER CENTURION 250 A423.
2. TEE ON MAIN SHALL BE INLINE PUSH-ON X PUSH-ON X PUSH-ON. (FURNISH STAINLESS STEEL BOLTS)
3. HYDRANT THRUST BLOCKING SHALL HAVE A MINIMUM BEARING AREA OF 2 SQ. FT..
4. POLYWRAP HYDRANT BARREL AND ALL UNDERGROUND HYDRANT FITTINGS, INCLUDING VALVES, VALVE BOXES, AND PIPING THAT IS NOT PVC MATERIAL. DO NOT OBSTRUCT WEEP HOLES.
5. FIRE HYDRANT ASSEMBLAGE ITEM INCLUDES EVERYTHING SHOWN ON THIS DETAIL EXCEPT AS NOTED.

FIRE HYDRANT DETAIL

NOT TO SCALE



THRUST BLOCK DIMENSIONS								
FITTING SIZES	TEES & PLUGS		90° BEND		45° BEND & WYES		REDUCERS & 22 1/2° BEND	
	A	B	A	B	A	B	A	B
4"	1'-7"	1'-2"	1'-9"	1'-6"	1'-8"	0'-10"	1'-7"	0'-6"
6"	2'-0"	1'-11"	2'-5"	2'-2"	1'-10"	1'-7"	1'-9"	0'-10"
8"	2'-8"	2'-6"	3'-2"	3'-0"	2'-5"	2'-1"	1'-9"	1'-6"

NOTES:

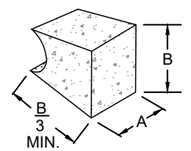
1. THIS TABLE IS BASED ON 150 PSI MAIN PRESSURE 2000 PSF SOIL BEARING PRESSURE.
2. WRAP ALL FITTINGS WITH POLYETHYLENE PRIOR TO THRUST BLOCK PLACEMENT.
3. THRUST BLOCKING NOT REQUIRED ON PUSH ON x PUSH ON VALVE.
4. THRUST BLOCKING AND ANCHORS ARE REQUIRED ON CONNECTION TO EXISTING MAIN VALVES.
5. MAXIMUM WORKING PRESSURE ON THIS PROJECT = 100 PSI
6. FURNISH EPOXY COATED REBAR ROD OR COAT RODS WITH "KOPPERS" BUTAMASTIC NO. 50 COATING OR EQUAL.

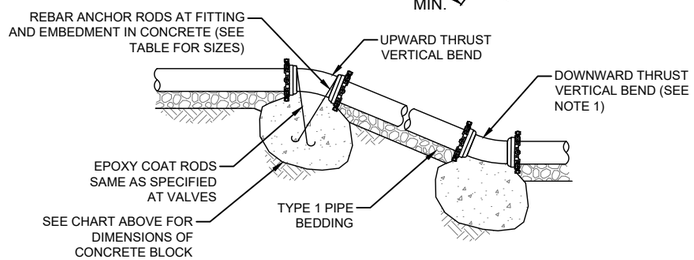
DUCTILE IRON FITTING THRUST BLOCK DETAIL

NOT TO SCALE

THRUST BLOCKS PER MT PUBLIC WORKS SPECIFICATIONS DWG. NO. 02660-1								
FITTING SIZES	TEES & PLUGS		90° BEND		45° BEND & WYES		REDUCERS & 22½° BEND	
	A	B	A	B	A	B	A	B
4"	1'-7"	1'-2"	1'-9"	1'-6"	1'-8"	0'-10"	1'-7"	0'-6"
6"	2'-0"	1'-11"	2'-5"	2'-2"	1'-10"	1'-7"	1'-9"	0'-10"
8"	2'-8"	2'-6"	3'-2"	3'-0"	2'-5"	2'-1"	1'-9"	1'-6"
10"	3'-4"	3'-3"	4'-0"	3'-10"	3'-0"	2'-9"	2'-2"	1'-11"
12"	4'-0"	3'-10"	4'-8"	4'-8"	3'-8"	3'-3"	2'-7"	2'-3"
14"	5'-5"	3'-10"	6'-6"	4'-11"	4'-9"	3'-5"	3'-5"	2'-5"

VERTICAL BEND REBAR		
FITTING SIZE	ROD SIZE	EMBEDMENT
12" AND LESS	#6	30"
14" - 16"	#8	36"
18" - 20"	#10	36"
24"	#11	42"





VERTICAL THRUST BLOCK DETAIL

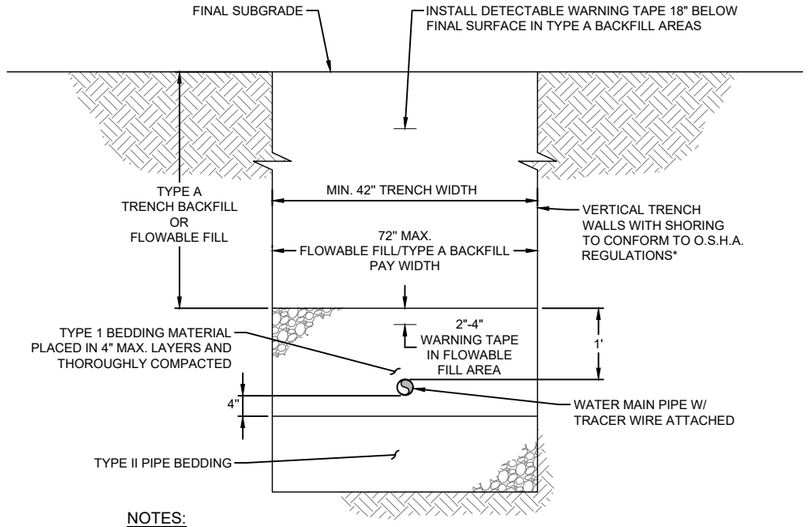
NOT TO SCALE

REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

M:\MALMSTROM\MAFBM12\CAD\CIVIL\IFB\SC-DT01-MAFBM12.DWG

DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II		PROJECT NUMBERS 1080765
DESIGNED BY WEST	DETAILS		ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE N.T.S.	DATE 1/12/23 PLATE	PAGE 10 OF 13 RECORD FILE NUMBER



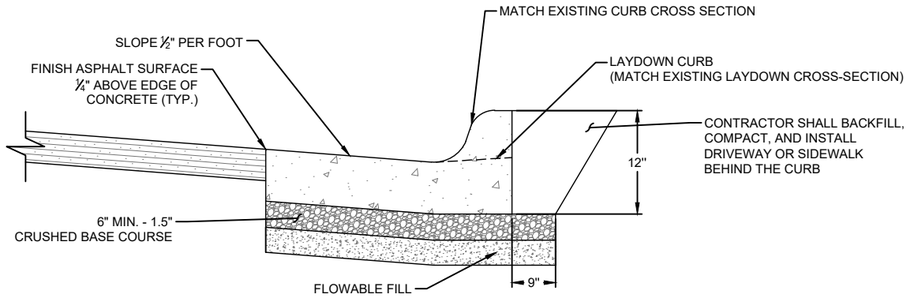
NOTES:

1. PLACE SOIL BACKFILL IN 8-INCH (MAX.) LIFTS WITHIN 3% OF OPTIMUM MOISTURE AND COMPACT TO 95% MAX. DRY DENSITY PER AASHTO T99.
2. INSTALL FLOWABLE FILL PER SPEC. SECTION 02225.
3. INSTALL PIPE A MINIMUM OF 6.5 FEET BELOW THE FINISHED GRADE.
4. ALL TRENCH EXCAVATION, FLOWABLE FILL AND BACKFILL OUTSIDE OF THE MAXIMUM PAY WIDTH WILL BE COMPLETED AT NO ADDITIONAL COST TO THE GOVERNMENT.
5. USE FLOWABLE FILL IN ALL AREAS WITH CONCRETE OR ASPHALT SURFACING.
6. MARK PVC PIPE WITH #10 STRANDED THHN INSULATED TRACER WIRE FOR ENTIRE LENGTH, FIX TO PIPE AT 2 OR 10 O'CLOCK AT 5' SPACING WITH DUCT TAPE.

* SEE O.S.H.A. SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION SECTION 1926.651 AND 1926.652.

TYPICAL UTILITY TRENCH

NOT TO SCALE

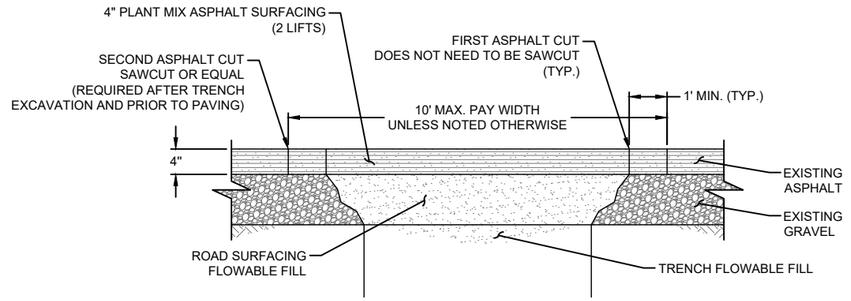


NOTES:

1. SURVEY AND OFFSET REFERENCE THE EXISTING CURB GRADE PRIOR TO REMOVAL. INSTALL NEW CURB TO MATCH EXISTING CURB CROSS-SECTION AND GRADES.
2. INSTALL M-4000 AGGREGATE CONCRETE WITH A 28 DAY 4000 PSI BREAK STRENGTH
3. SAWCUT EXISTING CURB AT EACH END PRIOR TO REMOVAL. REMOVE CONCRETE PER SPEC SECTION 02112.
4. FURNISH ⅜" PREFORMED EXPANSION JOINT MATERIAL MEETING AASHTO M213 AT EACH END OF NEW CURB.
5. CURE CONCRETE PER SPEC. SECTION 03310.
6. IF CURB REPLACEMENT IS LONGER THAN 12 FEET, SAWCUT CONTRACTION JOINTS INTO CURB AFTER CURE TO 2-INCH DEPTH AT THE MID-POINT OF THE CURB REPLACEMENT.
7. CRUSHED BASE COURSE IS INCLUDED IN THE ITEM.
8. FINISH CONCRETE TO MATCH THE SURFACE OF ADJACENT CONCRETE.

CONCRETE CURB AND GUTTER SECTION

NOT TO SCALE

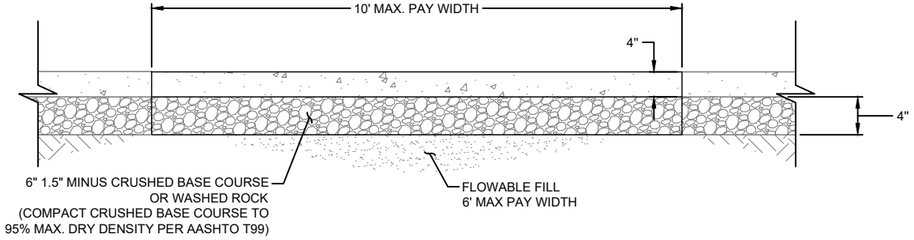


NOTES:

1. MIN. ASPHALT LIFT THICKNESS = 1.5 INCHES.
2. STRAIGHT GRADE THE FINAL ASPHALT SURFACE BETWEEN EXISTING SURFACES ON EACH SIDE OF THE TRENCH.
3. ASPHALT AREAS ON PLANS WERE CALCULATED USING 10 FOOT MAX PAY WIDTH AND AUTOCAD AREA MEASUREMENTS. AREAS REMOVED OR DAMAGED OUTSIDE THE MAX. PAY WIDTH OR PLAN DRAWN AREAS SHALL BE RESURFACED AT NO ADDITIONAL COST TO THE GOVERNMENT.
4. A MINIMUM OF 2 ASPHALT CUTS IS REQUIRED.
5. TACK OIL VERTICAL FACES PRIOR TO PAVEMENT PLACEMENT.
6. ASPHALT CUTTING, REMOVAL, HAUL AND OFF-BASE DISPOSAL ARE INCLUDED IN THE ITEM.
7. EXISTING GRAVEL AND SOIL REMOVAL, HAUL AND OFF-BASE DISPOSAL ARE INCLUDED IN THE ITEM.
8. IF ASPHALT SURFACING IS NOT GOING TO BE PLACED PRIOR TO OPENING THE ROADWAY, THE FLOWABLE FILL WILL BE EXTENDED UP TO THE TOP OF THE ASPHALT AND REMOVED TO THE ASPHALT DEPTH PRIOR TO ASPHALT PLACEMENT. THE COST WILL BE INCIDENTAL TO THE ASPHALT ITEM.
9. THE ASPHALT CUT WIDTH AND LOCATION IS TO MATCH THE CURB CUT WIDTH AND LOCATION.

REMOVE AND REPLACE ASPHALT ROADWAY

NOT TO SCALE



NOTES:

1. CONCRETE SIDEWALK SHALL EXTEND INTO PROPERTY FROM BACK OF CURB TO MATCH EXISTING ADJACENT SIDEWALK. (TYPICALLY 5')
2. INSTALL CLASS M-4000 CONCRETE WITH 28 DAY 4000 PSI BREAK STRENGTH (SPEC. SECTION 03310)
3. SAWCUT ENDS OF EXISTING SIDEWALK PRIOR TO REMOVAL. REMOVE EXISTING SIDEWALK PER SPEC. SECTION 02112 AT NEAREST JOINT.
4. FURNISH ⅜" PREFORMED EXPANSION JOINT MATERIAL MEETING AASHTO M213 AT EACH END OF NEW SIDEWALK.
5. MATCH CROSS SLOPE OF ADJACENT SIDEWALK.
6. FINISH CONCRETE TO MATCH FINISH OF ADJACENT SIDEWALK AND EDGE ¼" INCH RADIUS.
7. EXTEND CONTRACTION JOINTS INTO CONCRETE 1" DEEP AND ⅛ - INCH WIDE ON 5 FOOT INTERVALS.
8. CURE CONCRETE PER SPEC. SECTION 03310.
9. CRUSHED BASE COURSE AND BACKFILL AGAINST THE SIDEWALK IS INCLUDED IN THIS ITEM

REMOVE AND REPLACE SIDEWALK

NOT TO SCALE

REV.	DATE	DESCRIPTION	DRAWN	APPR'D

GLOBAL STRIKE COMMAND

MALMSTROM AIR FORCE BASE, MONTANA

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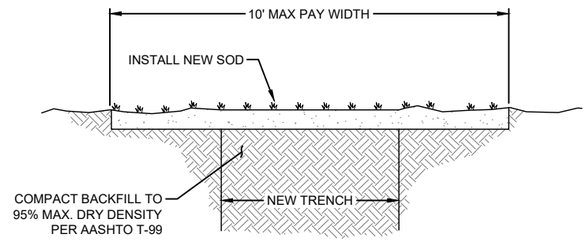
DRAWN BY KOHUT	REPAIR NORTH SOUTH BASE WATER SYSTEMS – PHASE II		PROJECT NUMBERS 1080765
DESIGNED BY WEST	DETAILS		ACAD DRAWING NUMBER
REVIEWED BY INGMAN	SCALE N.T.S. / DATE 1/12/23 / PLATE / PAGE 12 OF 13		RECORD FILE NUMBER

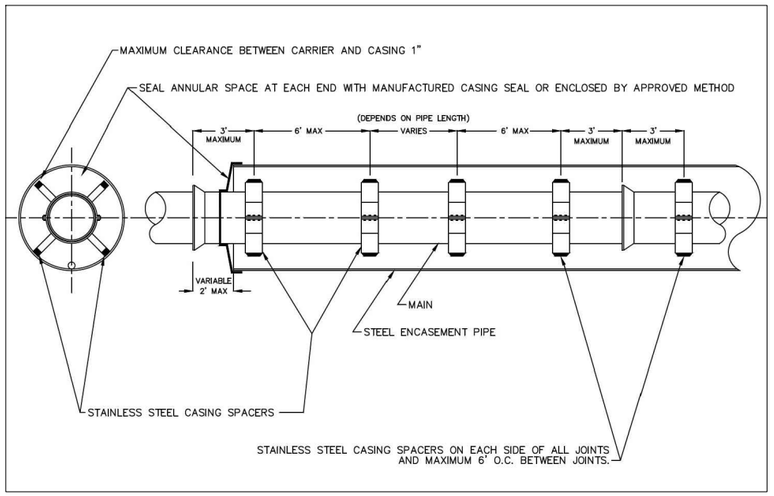


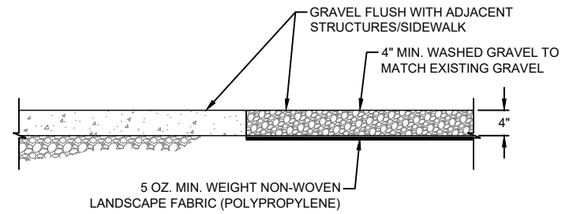
NOTES:

1. MAXIMUM RESTORATION WIDTH FOR SOD USED FOR AREA CALCULATIONS IS 10'. AREAS DISTURBED OUTSIDE THAT WIDTH BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED WITH SOD TO ORIGINAL CONDITION OR BETTER AT NO COST TO THE GOVERNMENT. NO FIELD MEASUREMENT WILL BE MADE FOR THE ITEM.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RESTORATION AREAS THROUGHOUT THE WARRANTY PERIOD.

REMOVE AND REPLACE SOD

NOT TO SCALE





GRAVEL LANDSCAPING

NOT TO SCALE

GLOBAL STRIKE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA

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REV.	DATE	DESCRIPTION	DRAWN	APPR'D

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