

Y:\Shared\Helena Projects\1-22139-DHOC2USFS R3 ONF-KNF Water and Sewer Improvements\Coconino NF - Flagstaff RD Wastewater Improvements\CADD 1-22139\Sheets\1-22139-1 - COVER.dwg



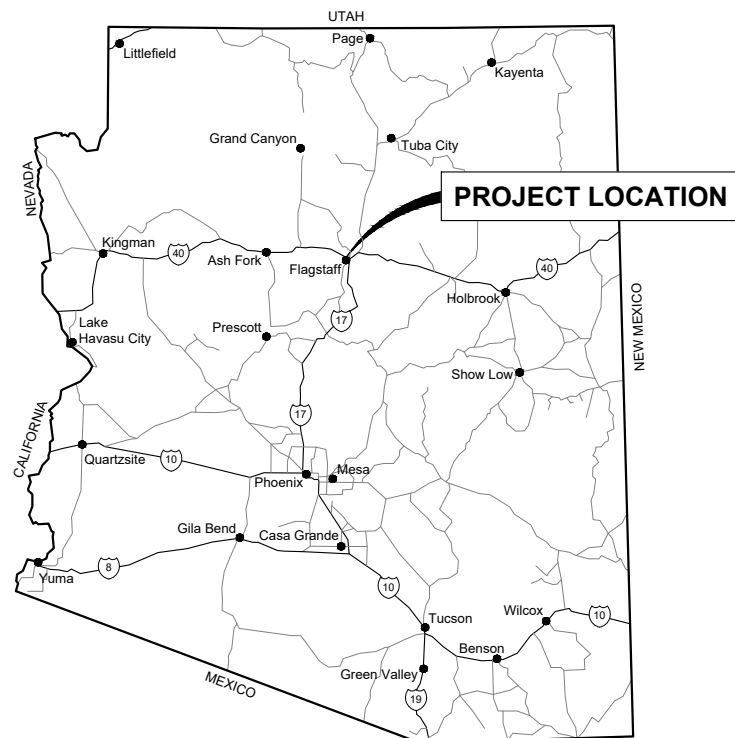
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
REGION THREE



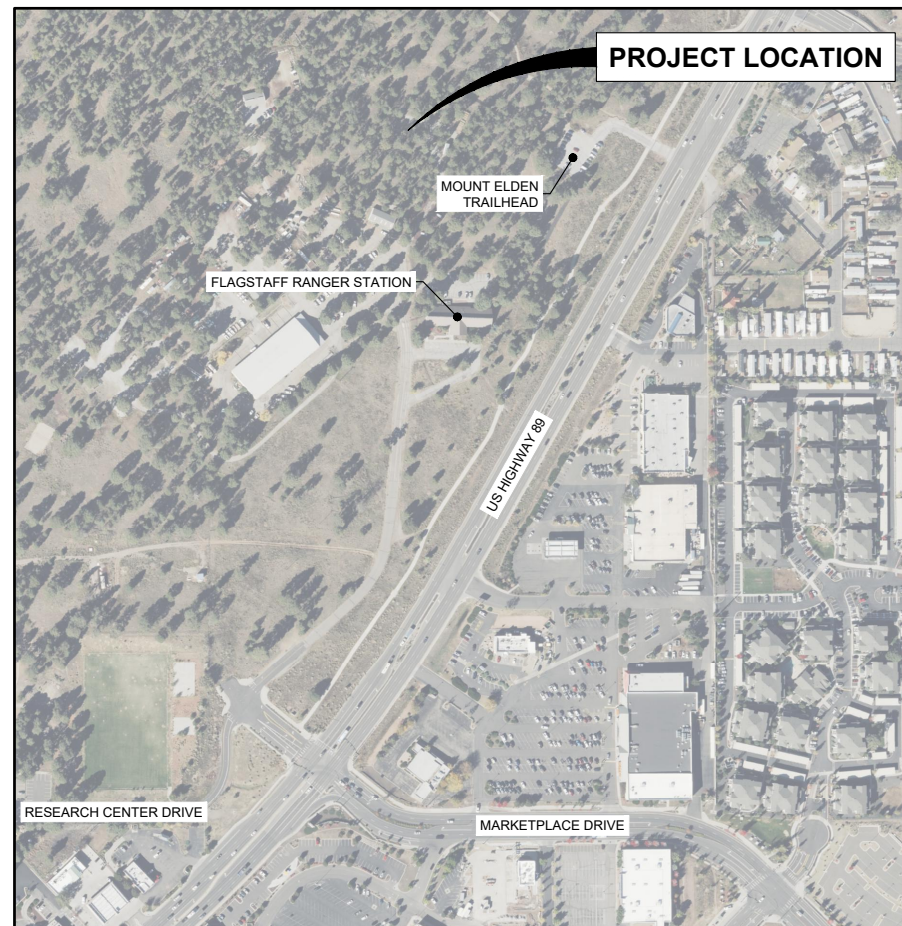
CONSTRUCTION PLANS FOR
**FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS**

COCONINO NATIONAL FOREST
FLAGSTAFF RANGER DISTRICT
COCONINO COUNTY, ARIZONA

SECTION 06, TOWNSHIP 21 NORTH, AND RANGE 08 WEST
LATITUDE 35° 13' 43.10" NORTH AND LONGITUDE 111° 34' 54.66" WEST



LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



SHEET INDEX

PROJECT: 1-22139
DATE: AUGUST 14, 2024

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APPROVED BY:

LINE OFFICER
COCONINO NATIONAL FOREST

DATE

RECOMMENDED BY:

FOREST ENGINEER
COCONINO NATIONAL FOREST

DATE

RECOMMENDED BY:

REGIONAL WATER/WASTEWATER ENGINEER
REGION THREE

DATE

RECOMMENDED BY:

DIRECTOR OF ENGINEERING
REGION THREE

DATE

PLANS PREPARED BY:

DAN BAUM
PAUL KARCHER, E.I.
KRISTOPHER BOSCH, E.I.

APPROVED BY:
AMY DEITCHLER, P.E.



NOTE:
DRAWING SCALE IS ONLY ACCURATE
WHEN PLANS ARE PLOTTED ON 11" X 17"
(TABLOID)-SIZED PAPER.

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ABBREVIATIONS

⊙	AT	LPG	LIQUID PROPANE GAS
Δ	ANGLE OF DEFLECTION, DELTA ANGLE	LT	LEFT
<PT	ANGLE POINT	MAX	MAXIMUM
AB	ANCHOR BOLT	MD	MEASURE DOWN
ABDN	ABANDON	MFD	MANUFACTURED
AC	ASBESTOS CONCRETE	MFR	MANUFACTURE, MANUFACTURER
ADDN	ADDITIONAL	MH	MANHOLE
ADJ	ADJACENT	MIN	MINIMUM
AFF	ABOVE FINISHED FLOOR	MISC	MISCELLANEOUS
ALT	ALTERNATE	MJ	MECHANICAL JOINT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MOV	MOTOR OPERATED VALVE
APPROX	APPROXIMATE	MPWSS	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS
APVD	APPROVED	N	NORTH
ARCH	ARCHITECTURE, ARCHITECTURAL	NE	NORTHEAST
ASPH	ASPHALT	NG	NATURAL GAS
AVE	AVENUE	NIC	NOT IN CONTRACT
AVG	AVERAGE	NO	NUMBER
BFV	BUTTERFLY VALVE	NOM	NOMINAL
BLDG	BUILDING	NTS	NOT TO SCALE
BLK	BLOCK	NW	NORTHWEST
BLVD	BOULEVARD	OC	ON CENTER
BM	BEAM, BENCHMARK	OD	OUTSIDE DIAMETER
BOT	BOTTOM	OF	OVERFLOW
BRG	BEARING	OH	OVERHEAD
BRKT	BRACKET	OHP	OVERHEAD POWER
BVC	BEGIN VERTICAL CURVE	OHT	OVERHEAD TELEPHONE
C-C	CENTER TO CENTER	OPNG	OPENING
CHAN	CHANNEL	PC	POINT OF CURVATURE
CHK	CHECK	PCC	POINT OF COMPOUND CURVATURE
CI	CAST IRON	PE	PLAIN END, POLYETHYLENE
CIPC	CAST-IN-PLACE CONCRETE	PERP	PERPENDICULAR
CIRC	CIRCULAR	PI	POINT OF INTERSECTION
CJ	CONSTRUCTION JOINT, CONTROL JOINT	PL	PROPERTY LINE
☒	CENTER LINE	PNL	PANEL
CLR	CLEAR, CLEARANCE	PRC	POINT OF REVERSE CURVATURE
CMP	CORRUGATED METAL PIPE	PREFAB	PREFABRICATED
CMU	CONCRETE MASONRY UNITS	PRELIM	PRELIMINARY
CO	CLEANOUT	PREP	PREPARE, PREPARATION
COL	COLUMN	PROP	PROPERTY
CONC	CONCRETE	PRV	PRESSURE REDUCING VALVE
CONSTR	CONSTRUCTION	PSF	POUNDS PER SQUARE FOOT
CONT	CONTINUE, CONTINUED, CONTINUOUS	PSI	POUNDS PER SQUARE INCH
CONTR	CONTRACTOR	PT	POINT, POINT OF TANGENCY
COORD	COORDINATE	PVC	POLYVINYL CHLORIDE
CP	CONTROL PANEL, CONTROL POINT	PVI	POINT OF VERTICAL INTERSECTION
CPLG	COUPLING	PVMT	PAVEMENT
CTR	CENTER	R, RAD	RADIUS
CTV	CABLE TELEVISION	RC	REINFORCED CONCRETE
CU	CUBIC, COPPER	RCP	REINFORCED CONCRETE PIPE
CF	CUBIC FEET	RD	ROAD
CULV	CULVERT	RDCR	REDUCER
CY	CUBIC YARD	REBAR	REINFORCEMENT BAR
DET	DETAIL	REF	REFERENCE
DI	DUCTILE IRON, DRAIN INLET	REINF	REINFORCE
DIA, ⌀	DIAMETER	REQD	REQUIRED
DIAG	DIAGONAL	RR	RAILROAD
DIM	DIMENSION	RST	REINFORCING STEEL
DR	DRIVE	RT	RIGHT
DWG	DRAWING	R/W	RIGHT-OF-WAY
E	EAST	S	SOUTH, SANITARY SEWER
EA	EACH	SAN	SANITARY
EL, ELEV	ELEVATION	SCH	SCHEDULE
ELB	ELBOW	SD	STORM DRAIN
ELEC	ELECTRIC, ELECTRICAL	SDWK	SIDEWALK
ENCLOS	ENCLOSE	SE	SOUTHEAST
ENGR	ENGINEER	SECT	SECTION
EOP	EDGE OF PAVEMENT	SF	SQUARE FOOT
EQ	EQUAL, EQUALLY	SHT	SHEET
EQ SP	EQUALLY SPACED	SIM	SIMILAR
EQUIP	EQUIPMENT	SLP	SLOPE
EQUIV	EQUIVALENT	SPEC	SPECIFICATION
EVC	END VERTICAL CURVE	SQ	SQUARE
EW	EACH WAY	SSTL	STAINLESS STEEL
EXC	EXCAVATE	STA	STATION
EXP	EXPANSION	SS	SANITARY SEWER SERVICE
EXP JT	EXPANSION JOINT	STD	STANDARD
EXST	EXISTING	ST	STREET
FCV	FLOW CONTROL VALVE	STL	STEEL
FD	FLOOR DRAIN	STRUCT	STRUCTURE
FDN	FOUNDATION	SW	SOUTHWEST
FES	FLARED END SECTION	SYM	SYMMETRICAL
FET	FLARED END TERMINAL	TB	THRUST BLOCK
FF	FINISHED FLOOR	TBC	TOP BACK OF CURB
FG	FINISH GRADE	TBM	TEMPORARY BENCH MARK
FHYD	FIRE HYDRANT	TEL	TELEPHONE
FJ	FLANGE JOINT	TEMP	TEMPORARY
FL	FLOW LINE	THRU	THROUGH
FLEX	FLEXIBLE	TYP	TYPICAL
FM	FORCEMAIN	UG	UNDERGROUND
FT	FOOT, FEET	UGP	UNDERGROUND POWER
FO	FIBER OPTIC	UGT	UNDERGROUND TELEPHONE
FTG	FOOTING, FITTING	UTIL	UTILITY
G	NATURAL GAS	V	VALVE, VOLT
GA	GAGE, GAUGE	VB	VALVE BOX
GAL	GALLON	VERT	VERTICAL
GALV	GALVANIZED	VOL	VOLUME
GND	GROUND	W	WEST, WATER
GVL	GRAVEL	WTR	WATER
HB	HOSE B/B	WD	WOOD
HDPE	HIGH DENSITY POLYETHYLENE	W/	WITH
HOR, HORIZ	HORIZONTAL	W/O	WITHOUT
Hwy	HIGHWAY	WL	WETLAND
HYD	HYDRANT	WM	WIRE MESH, WATER METER
ID	INSIDE DIAMETER	WS	WATERSTOP, WATER SURFACE, WATER SERVICE
IE	INVERT ELEVATION	WT	WEIGHT
IN	INCH	WV	WATER VALVE
INV	INVERT	WWF	WELDED WIRE FABRIC
JB	JUNCTION BOX	WWM	WELDED WIRE MESH
JT	JOINT	XFMR	TRANSFORMER
K	RATE OF VERTICAL CURVATURE	X-ING	CROSSING
LBS	POUNDS	XS	CROSS SECTION
LF	LINEAR FEET	YD	YARD
LN	LANE		

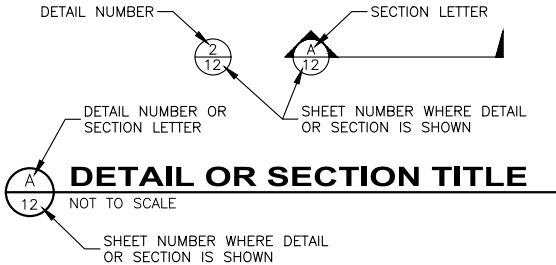
LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
-----	-----	MAJOR CONTOUR	⊙	⊙	STUMP
-----	-----	MINOR CONTOUR	☁	☁	SHRUB/BUSH
----- OHT -----	----- OHT -----	OVERHEAD TELEPHONE	☀	☀	TREE--CONIFER
----- UGT -----	----- UGT -----	UNDERGROUND TELEPHONE	☀	☀	TREE--DECIDUOUS
----- CTV -----	----- CTV -----	CABLE TELEVISION	~~~~~	~~~~~	TREE LINE
----- FO -----	----- FO -----	FIBER OPTIC	⊙	⊙	COMMUNICATION MANHOLE
----- G -----	----- G -----	NATURAL GAS	⊞	⊞	COMMUNICATION VAULT
----- OHP -----	----- OHP -----	OVERHEAD POWER	☐ _T	☐ _T	TELEPHONE RISER
----- UGP -----	----- UGP -----	UNDERGROUND POWER	☐ _{TV}	☐ _{TV}	CABLE TV RISER
----- S -----	----- S -----	SANITARY SEWER	☐ _G	☐ _G	NATURAL GAS METER
--- SS --- SS --- $\frac{SS}{S}$ ---	--- SS --- SS --- $\frac{SS}{S}$ ---	SANITARY SEWER SERVICE	☐ _V	☐ _V	NATURAL GAS RISER
----- FM -----	----- FM -----	SANITARY SEWER FORCEMAIN	☐ _G	☐ _G	NATURAL GAS VALVE
----- SD -----	----- SD -----	STORM DRAIN	☐ _V	☐ _V	LIGHT POLE
=====	=====	STORM CULVERT	☐ _G	☐ _G	STREET LIGHT POLE
----- W -----	----- W -----	WATER	☐ _V	☐ _V	POWER RISER
--- WS --- WS --- $\frac{WS}{S}$ ---	--- WS --- WS --- $\frac{WS}{S}$ ---	WATER SERVICE	☐ _G	☐ _G	PAD MOUNTED TRANSFORMER
○ ○ ○ ○ ○	○ ○ ○ ○ ○	CHAINLINK FENCE	☐ _V	☐ _V	POWER VAULT
--- X --- X --- X ---	--- X --- X --- X ---	BARBED WIRE FENCE	☐ _G	☐ _G	UTILITY POLE
☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	WOOD FENCE	☐ _V	☐ _V	GUY WIRE
=====	=====	PAVED ROAD	☐ _G	☐ _G	SANITARY MANHOLE
=====	=====	GRAVEL ROAD	☐ _V	☐ _V	SANITARY CLEANOUT
-----	-----	PROPERTY/LOT LINE	☐ _G	☐ _G	SANITARY LAMPHOLE
-----	-----	PROPERTY EASEMENT	☐ _V	☐ _V	STORM MANHOLE
-----	-----	PROPERTY SETBACK	☐ _G	☐ _G	STORM ROUND INLET
-----	-----	RIGHT-OF-WAY	☐ _V	☐ _V	STORM SQUARE INLET
-----	-----	CITY LIMIT/DISTRICT BOUNDARY	☐ _G	☐ _G	STORM CATCH BASIN
-----	-----	RAILROAD	☐ _V	☐ _V	11.25° ELBOW
-----	-----	DITCH	☐ _G	☐ _G	22.50° ELBOW
-----	-----	WATER EDGE	☐ _V	☐ _V	45° ELBOW
-----	-----	WETLAND	☐ _G	☐ _G	90° ELBOW
☐	☐	BUILDING	☐ _V	☐ _V	TEE
☐	☐	BENCHMARK	☐ _G	☐ _G	CROSS
☐	☐	CONTROL POINT	☐ _V	☐ _V	CAP
☐	☐	PROPERTY PIN	☐ _G	☐ _G	FIRE HYDRANT
☐	☐	BORING	☐ _V	☐ _V	GATE VALVE
☐	☐	MONITORING WELL	☐ _G	☐ _G	REDUCER
☐	☐	TEST PIT	☐ _V	☐ _V	WATER METER
☐	☐	BOLLARD	☐ _G	☐ _G	WELL
☐	☐	MAIL BOX	☐ _V	☐ _V	CURB STOP
☐	☐	SIGN	☐ _G	☐ _G	FROST FREE HYDRANT

GENERAL NOTES:

- THIS IS A STANDARD LEGEND AND ABBREVIATION LIST. THEREFORE, NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED ON THIS PROJECT.
- UNLESS MODIFIED BY THE CONTRACT DOCUMENTS, ALL WORK WILL CONFORM TO THE CURRENT CITY OF FLAGSTAFF MUNICIPAL CODES AS STATED IN DIVISION 13-09-002.
- CITY OF FLAGSTAFF MUNICIPAL CODES SHALL TAKE PRECEDENCE OVER ADEQ CRITERIA SUCH AS IN ENGINEERING BULLETIN NO. 11.
- EXISTING UNDERGROUND UTILITIES SHOWN ARE FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS APPROXIMATE AND MAY BE INCOMPLETE. FOR ACCURATE LOCATION, THE CONTRACTOR SHALL CONTACT, PRIOR TO EXCAVATION, THE UTILITIES UNDERGROUND LOCATION CENTER AT: 1-800-782-5348.

GENERAL DESIGN DESIGNATIONS:



COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS
GENERAL, NOTES, LEGEND AND ABBREVIATIONS

SHEET NO.

2
OF 11

NO.	REVISION DESCRIPTION	BY	DATE
1	90% SUBMITTAL		

PROJECT: 1-22139	DESIGNED: DB KB	DRAWN: PK KB	CHECKED: AE	APPROVED: AD	DATE: AUGUST 14, 2024
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ESTIMATED QUANITIES**				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	REMARKS
01000-1	MOBILIZATION (10% OF TOTAL)	LUMP SUM	1	
01172-1	CONSTRUCTION SURVEY AND STAKING	LUMP SUM	1	
01500-1	TRAFFIC CONTROL	LUMP SUM	1	
02221-1	SOIL ERROSION AND POLLUTION CONTROL	LUMP SUM	1	
02221-2	PAVED STREET SURFACE RESTORATION (A)	LINEAL FOOT	600	
02221-3	UNPAVED STREET SURFACE RESTORATION (B)	LINEAL FOOT	12	
02221-4	NATIVE GROUND SURFACE RESTORATION (C)	LINEAL FOOT	2750	
02221-5	SEED AND FERTILIZE	LUMP SUM	1	
02221-6	URBAN TRAIL RESTORATION	LINEAL FOOT	30	
02221-7	CURB AND GUTTER RESTORATION	LINEAL FOOT	60	
02232-1	CLEARING AND GRUBBING	LUMP SUM	1	
02730-1	8-INCH SDR 35 PVC SEWER MAIN	LINEAL FOOT	1960	
02730-2	48-INCH CONCRETE MANHOLE	EACH	9	
02730-3	CONNECTION TO EXISTING MANHOLE	EACH	1	
02730-4	DROP SEWER CONNECTION OUTSIDE MANHOLE	EACH	1	
02730-5	4-INCH SDR 35 PVC SEWER SERVICE LATERAL	LINEAL FOOT	1390	
02730-6	SEWER SERVICE CLEANOUT (NON-TRAFFIC AREAS)	EACH	16	
02730-7	SEWER SERVICE CONNECTION	EACH	4	
02730-8	ABANDON EXISTING SEPTIC TANK	EACH	4	
02730-9	EXISTING WATER AND GAS MAIN CROSSING	EACH	6	
60101-1	FLOWABLE FILL CONCRETE	CUBIC YARD	30	

** INFORMATIONAL ONLY – NOT TO BE USED FOR BIDDING PURPOSES – REFER TO BID SCHEDULE

PROJECT NOTES:

1. CONTRACTOR TO AVOID ANY DISTURBANCES TO ARCHEOLOGICAL SITES. ARCHEOLOGIST TO BE ON-SITE DURING ALL TRENCHING ACTIVITIES. CONTRACTOR MUST STOP WORK IF ARCHEOLOGICAL SITES ARE DISCOVERED DURING ANY TRENCH EXCAVATION. CONTRACTOR TO NOTIFY THE USFS CONTRACTING OFFICER (CO)/CONTRACTING OFFICER REPRESENTATIVE (COR) IMMEDIATELY UPON DISCOVERY. WORK MAY RESUME PENDING THE APPROVAL OF THE CO/COR.
2. MATERIALS MAY BE STOCKPILED ON-SITE. A STAGING AND STORAGE AREA CAN BE ESTABLISHED AT THE LOCATION SPECIFIED IN THE CONTRACT DRAWINGS OR AT A LOCATION APPROVED BY THE CO/COR.
3. ALL PROJECT-GENERATED DEBRIS AND WASTE MATERIALS SHALL BE REMOVED AND DISPOSED OF LEGALLY BY THE CONTRACTOR.
4. GREEN PLASTIC COVERED NO. 12 AWG TYPE UF 600V TRACER WIRE SHALL BE INSTALLED WITH ALL SEWER PIPE. TRACER WIRE SHALL BE INSTALLED WITH SEWER MAINS AND SEWER SERVICES SUCH THAT IT IS CONTINUOUS. TRACER WIRE SHALL BE WRAPPED AROUND MANHOLES FOR SEWER MAINS.
5. A TRACER WIRE CONNECTION STATION SHALL BE INSTALLED FOR EACH 500-LINEAR FEET OF SEWER MAIN. A FIVE POUND MAGNESIUM ANODE SHALL BE INSTALLED EVERY 1,000-LINEAR FEET OF TRACER WIRE AT THE TRACER WIRE CONNECTION STATIONS UNDER THE VALVE BOX.
6. NEW SEWER MAINS TO HAVE MINIMUM 4-FEET BURY DEPTH OR AS SPECIFIED IN THE CONTRACT DRAWINGS.
7. EXISTING SEPTIC TANKS ARE TO BE ABANDONED FOLLOWING THE COMPLETION OF THE NEW SEWER COLLECTION SYSTEM.
8. EXISTING SEPTIC TANKS ARE TO BE PUMPED AND ABANDONED IN PLACE PER THE ADEQ REQUIREMENTS STATED IN A.A.C. R18-9-A309(D). EXISTING SEPTIC SYSTEM PIPING AND CLEANOUTS SHALL BE REMOVED AS NEEDED TO ALLOW FOR INSTALLATION OF THE NEW SEWER SERVICE CONNECTIONS.
9. ALL EQUIPMENT SHALL BE WASHED PRIOR TO ENTERING THE PROJECT SITE TO REMOVE VEGETATION TO AVOID THE SPREAD OF WEEDS.
10. STATIONING IS SHOWN ON MANHOLES FOR REFERENCE AND FOR USE WHILE CONSTRUCTION SURVEYING/STAKING. FINAL INSTALLED LOCATION MAY VARY.
11. EXISTING SEPTIC SYSTEM DEPTHS ARE UNKNOWN. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING SEPTIC SYSTEM DEPTHS AND CONNECTING NEW SEWER SERVICES, THIS WORK IS INDIRECT TO SEWER MAIN INSTALLATION (ITEM NO. 02730-5).
12. COORDINATE CONSTRUCTION SCHEDULE WITH THE CO/COR.
13. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE GAS COMPANY DURING THE PROJECT.
14. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE CITY OF FLAGSTAFF DURING THE PROJECT.
15. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING DAMAGED LANDSCAPE AREAS THAT MAY RESULT FROM CONSTRUCTION OPERATIONS.
16. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE LOCAL POWER COMPANY TO PROTECT ANY OVERHEAD POWER POLES DURING EXCAVATION.
17. THE CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ALL PERMITS THAT ARE REQUIRED FOR CONSTRUCTION OPERATIONS.
18. ALL NEW SEWER MAINS TO BE 8-INCH SDR35 PVC PIPE.
19. ALL NEW SEWER SERVICES TO BE 4-INCH SDR35 PVC PIPE.
20. LOCATION, DEPTH, AND SIZE OF EXISTING BURIED UTILITIES ARE SHOWN BASED ON THE BEST INFORMATION AVAILABLE. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF BURIED UTILITIES FOR THE NEW INSTALLATIONS AND CONNECTIONS. VERIFY BURIED UTILITY LOCATIONS WITH THE OWNER PRIOR TO COMMENCING EXCAVATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ALL UTILITIES IF DAMAGED DURING CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.
21. MAINTAIN MINIMUM OF 2-FEET VERTICAL SEPARATION AND 6-FEET HORIZONTAL SEPARATION BETWEEN ALL WATER AND SEWER MAINS OR PROVIDE ADEQUATE PROTECTION AS SPECIFIED IN THE CONTRACT DRAWINGS.
22. AERIAL IMAGES PROVIDED ARE 2023 NAIP AERIAL WITH 96 DPI RESOLUTION.

COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS
ESTIMATED QUANTITIES AND PROJECT NOTES

SHEET NO.

3

OF 11



NO.	REVISION DESCRIPTION	BY	DATE
1	90% SUBMITTAL		

PROJECT: 1-22139	DESIGNED: DB, KB	DRAWN: PK, KB	CHECKED: AE	APPROVED: AD	DATE: AUGUST 14, 2024
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CONTROL POINT COORDINATE TABLE				
CONTROL PT	NORTHING	EASTING	ELEVATION	DESCRIPTION
GWE CP1	1538526.30	799545.78	6900.58	REBAR W/ RPC
GWE CP2	1538743.09	799542.30	6912.88	REBAR W/ RPC
GWE CP3	1538748.64	799707.04	6908.79	REBAR W/ RPC
GWE CP4	1538412.82	799813.57	6886.44	REBAR W/ RPC
GWE CP5	1538555.06	800361.58	6876.91	REBAR W/ RPC
GWE CP6	1537796.36	799959.90	6863.20	REBAR W/ RPC
GWE CP7	1537521.25	799790.97	6858.10	REBAR W/ RPC
GWE CP8	1539304.88	800384.92	6909.21	REBAR W/ RPC
GWE CP9	1539362.84	800311.59	6915.95	REBAR W/ RPC
GWE CP10	1539223.07	800276.67	6912.39	REBAR W/ RPC
GWE CP11	1538895.57	800292.08	6893.62	REBAR W/ RPC
GWE CP12	1538174.23	800088.55	6870.55	REBAR W/ RPC
GWE CP99	1538548.55	800066.35	6886.45	REBAR W/ RPC

1. RPC=RED PLASTIC CAP
2. GWE CP99 WAS USED AS BASE STATION FOR SURVEY GRADE GPS. IT IS A RPC LOCATED APPROX. 100 FEET SOUTHEAST OF THE WAREHOUSE BUILDING IN THE FLAGSTAFF RANGER STATION.
3. HORIZONTAL CONTROL AND VERTICAL COORDINATES WERE ESTABLISHED USING ARIZONA STATE PLANE COORDINATES BROUGHT TO GROUND (INTERNATIONAL FEET), UTILIZING SURVEY GRADE GPS RECEIVERS AND OPUS STATIC SOLUTION.
4. TOPOGRAPHIC INFORMATION WAS COLLECTED BY LIDAR DRONE FLIGHTS AND SURVEY GRADE GPS RECEIVERS.
5. GPS AND LIDAR SURVEYING COMPLETED DECEMBER 2023. TOPOGRAPHIC INFORMATION UTILITY LOCATIONS ARE SUBJECT TO CHANGE SINCE SURVEY WAS COMPLETED.

1. BORE HOLES ARE SHOWN AS BH-1 THROUGH BH-5. BORE HOLES ARE LOCATED ALONG FOREST SERVICE ROAD 989C. SEE THE GEOTECHNICAL REPORT FOR INFORMATION REGARDING BORE HOLES COMPLETED FOR THIS PROJECT.

1. CONTRACTOR TO COORDINATE WITH THE U.S. FOREST SERVICE TO STORE MATERIALS ONSITE. CONTRACTOR IS RESPONSIBLE FOR STORING MATERIALS IN THE PROPOSED STAGING AREA SHOWN IN THE CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR THE CONDITION OF MATERIALS STORED ONSITE. CONTRACTOR IS RESPONSIBLE FOR PROPER DISPOSAL OF EXCESS SPOILS AND FOR AVOIDING ARCHEOLOGICAL SITES. OTHER LOCATIONS FOR STORING MATERIALS ONSITE WILL REQUIRE PRIOR APPROVAL FROM THE CO/COR AND ARCHEOLOGIST.
2. PROPOSED MOUNT ELDEN TRAILHEAD EXPANSION PROJECT NOT INCLUDED IN THIS WASTEWATER SYSTEM IMPROVEMENTS AND IS SHOWN FOR REFERENCE PURPOSES ONLY. CONTRACTOR TO COORDINATE WITH THE U.S. FOREST SERVICE TO AVOID MOUNT ELDEN TRAILHEAD EXPANSION AREA.
3. CONTRACTOR TO MAINTAIN ACCESS TO MARKET PLACE DRIVE, RANGER STATION, AND OTHER BUSINESSES.

NO.	REVISION DESCRIPTION	BY	DATE
△	90% SUBMITTAL		
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PROJECT: 122139
DESIGNED: DB, KB
DRAWN: PK, KB
CHECKED: AE
APPROVED: AD
DATE: AUGUST 14, 2024



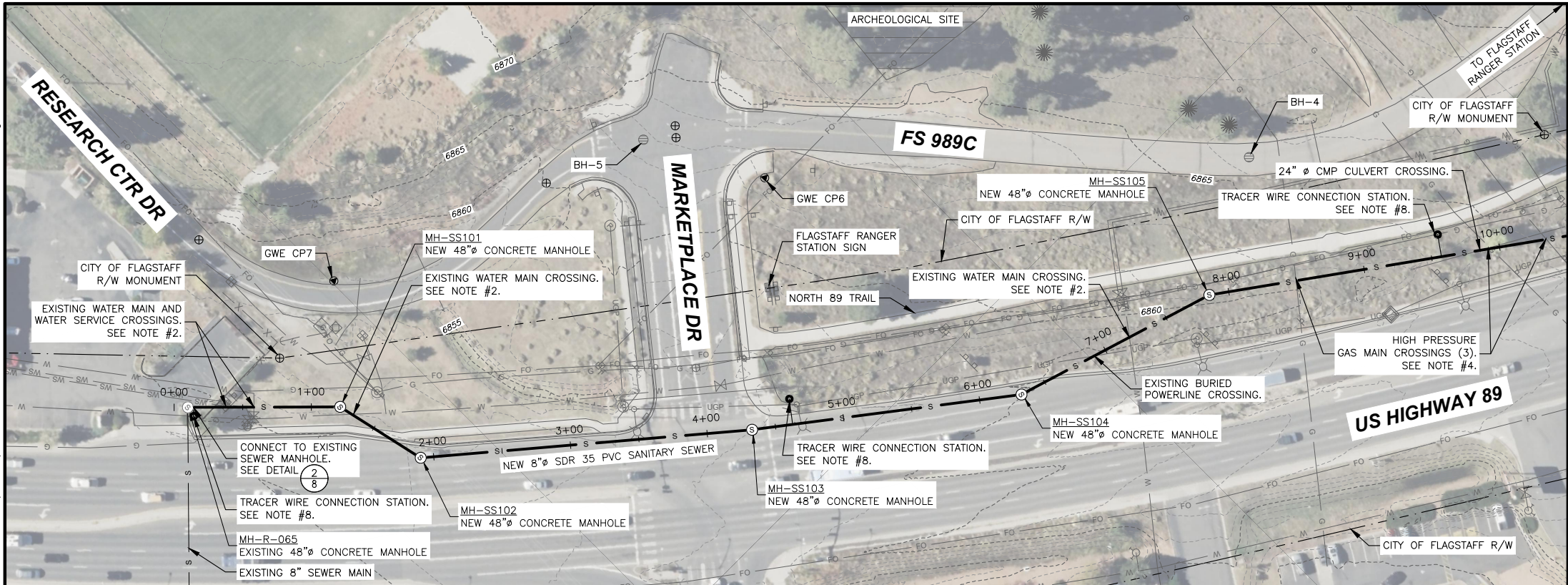
**COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS**

OVERALL SITE PLAN AND CONTROL DIAGRAM

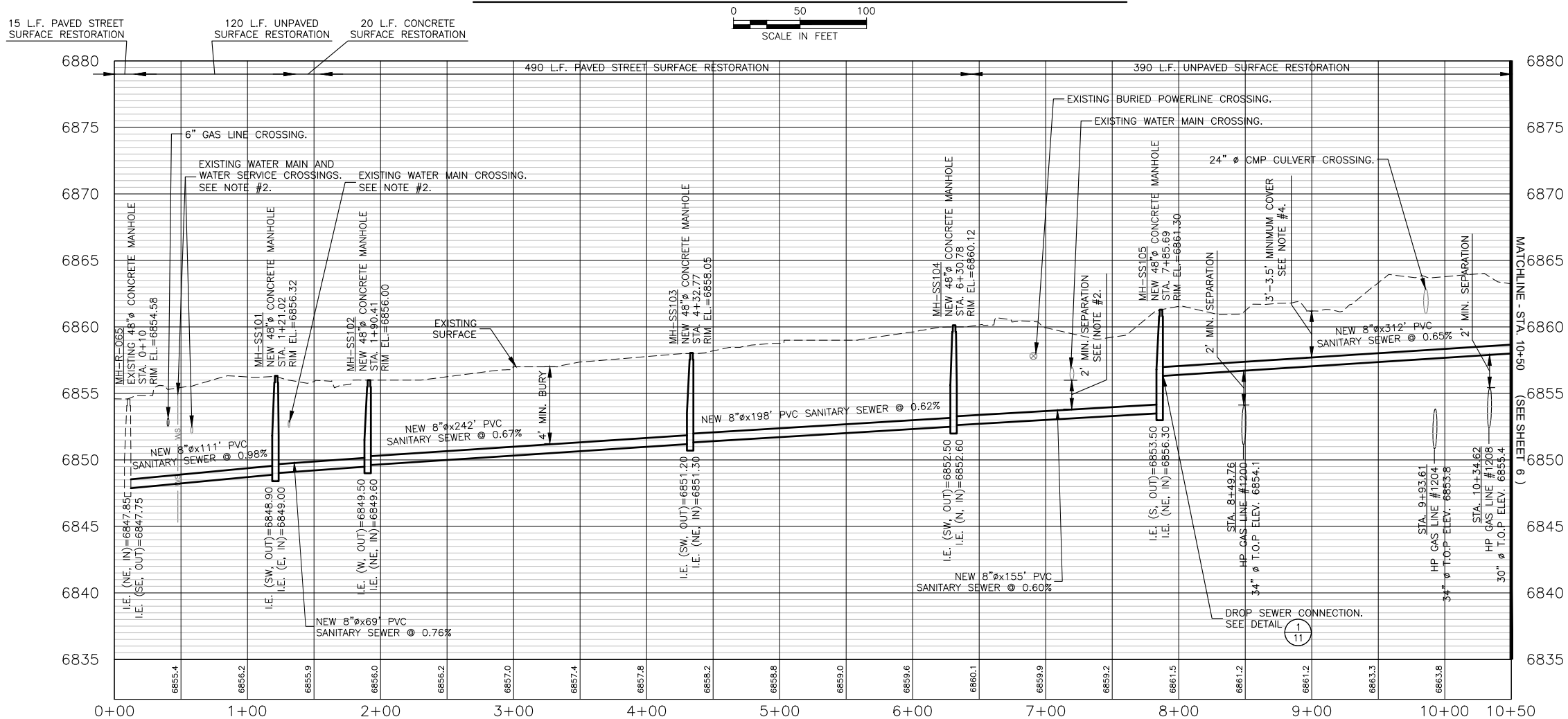
SHEET NO.

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OF 11

Y:\Shared\Helena Projects\1-22139-DHC2USFS R3 CNF-KNF Water and Sewer Improvements\Coconino NF - Flagstaff RD Wastewater Improvements\CADD 1-22139\Sheets\1-22139-5-SEWER MAIN P&P STA 0+00 TO STA 10+50.dwg



PLAN VIEW OF SEWER MAIN - STA. 0+00 TO STA. 10+50



PROFILE VIEW OF SEWER MAIN - STA. 0+00 TO STA. 10+50

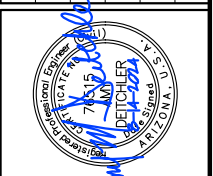
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

GENERAL NOTES:

- UTILITY INFORMATION SHOWN ON THE DRAWINGS IS APPROXIMATE AND MAY BE INCOMPLETE. FOR ACCURATE LOCATION, THE CONTRACTOR SHALL CONTACT, PRIOR TO EXCAVATION, THE UTILITIES UNDERGROUND LOCATION CENTER: 1-800-782-5348
- VERIFY DEPTH AND LOCATION OF WATER MAIN CROSSINGS PRIOR TO INSTALLING NEW SEWER MAIN. PROVIDE 6' MINIMUM HORIZONTAL SEPARATION AND 2' MINIMUM VERTICAL SEPARATION OR PROVIDE ADEQUATE PROTECTION PER SHEET 9.
- INDIVIDUAL SEWER SERVICE LINE DEPTH ARE NOT SHOWN. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SERVICE DEPTHS AND RECONNECTING SEWER SERVICES, INCIDENTAL TO WATER MAIN INSTALLATION.
- MINIMUM COVER 4' AS REQUESTED BY CITY OF FLAGSTAFF. COVER CAN BE 3'-3.5' FOR SECTIONS ABOVE HIGH PRESSURE GAS LINES IN ORDER TO MAINTAIN 2' VERTICAL SEPARATION.
- SEWER ALIGNMENT DRAWN TO ACCOMMODATE 6' HORIZONTAL SEPARATION. MUST MAINTAIN THIS HORIZONTAL SEPARATION PER CITY OF FLAGSTAFF AND ADEQ.
- MANHOLE NEEDED AT LEAST EVERY 400' PER ENGINEERING BULLETIN NO. 11.
- TRACER WIRE TO BE FASTENED ON TOP OF THE NEW SEWER MAIN BY 10MIL PVC TAPE PER TRENCH DETAIL 09-01-030 SHOWN ON SHEET 10.
- TRACER WIRE CONNECTION STATIONS SHALL BE INSTALLED PER DETAILS 09-01-020 AND 09-03-062 FOR EACH 500'-LINEAR FEET OF SEWER MAIN. A FIVE POUND MAGNESIUM ANODE SHALL BE INSTALLED EVERY 1,000'-LINEAR FEET OF TRACER WIRE AT THE TRACER WIRE CONNECTION STATIONS UNDER THE VALVE BOX. SEE SHEET 10.
- CONTRACTOR TO AVOID ANY DISTURBANCES TO ARCHEOLOGICAL SITES. ARCHEOLOGIST TO BE ON-SITE DURING ALL TRENCHING ACTIVITIES. CONTRACTOR MUST STOP WORK IF ARCHEOLOGICAL SITES ARE DISCOVERED DURING ANY TRENCH EXCAVATION. CONTRACTOR TO NOTIFY THE CO/COR IMMEDIATELY UPON DISCOVERY. WORK MAY RESUME PENDING THE APPROVAL OF THE CO/COR.
- CONTRACTOR TO MAINTAIN ACCESS TO MARKET PLACE DRIVE, RANGER STATION, AND OTHER BUSINESSES.

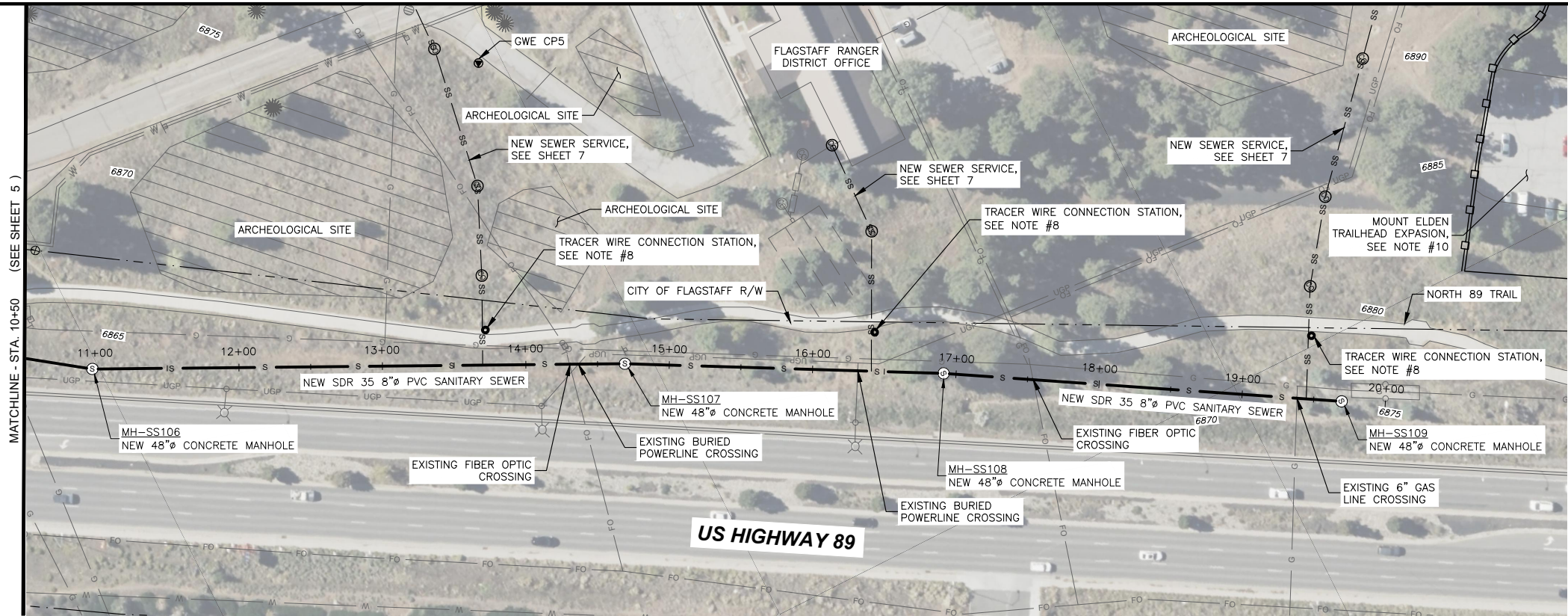
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PROJECT: 1-22139	DESIGNED: DB, KB
DRAWN: PK, KB	CHECKED: AE
APPROVED: AD	DATE: AUGUST 14, 2024

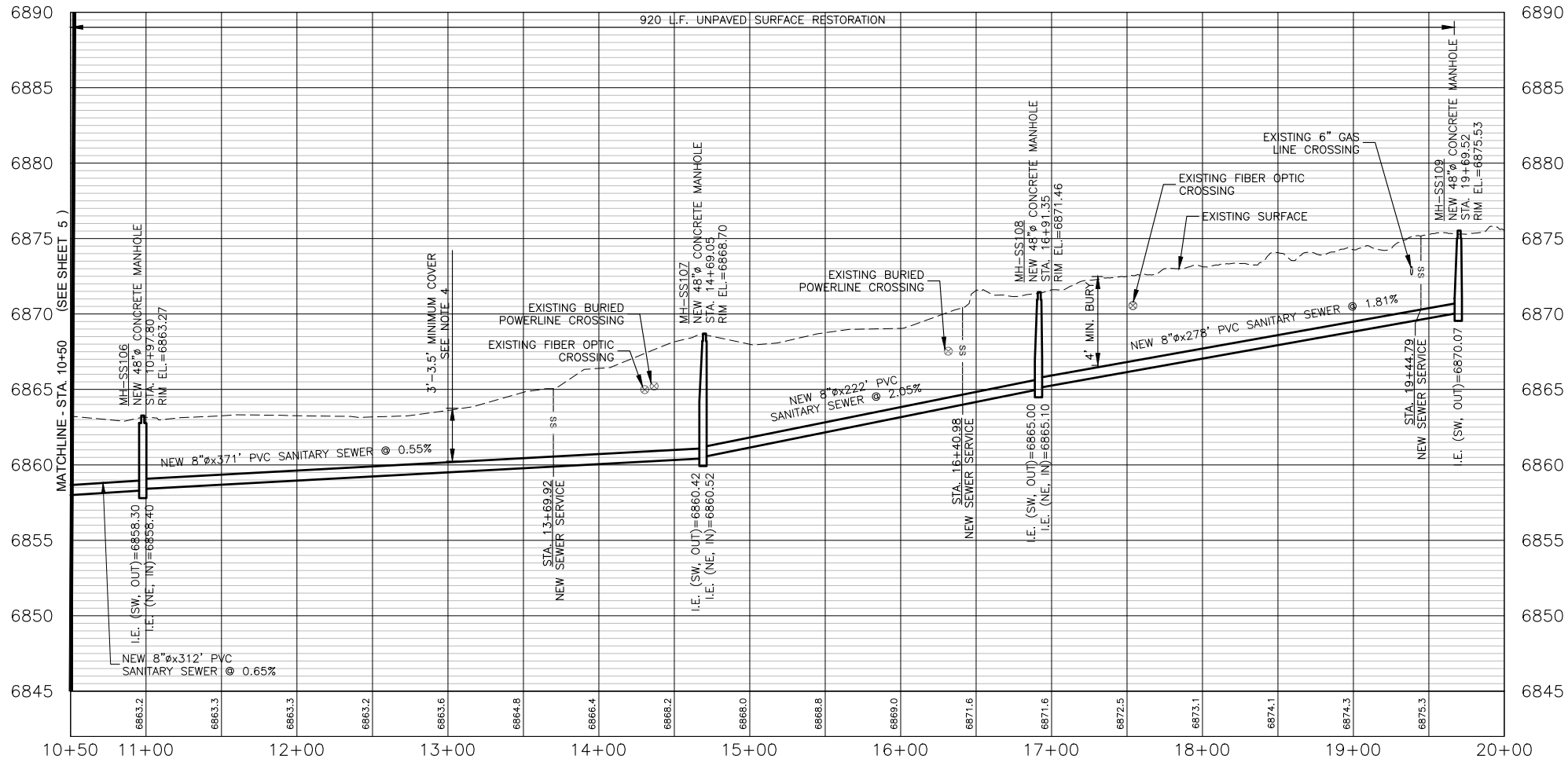
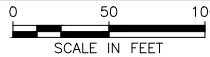


**COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS**

Y:\Shared\Helena Projects\1-22139-DHOCUSFS R3 CNF-KNF Water and Sewer Improvements\Coconino NF - Flagstaff RD Wastewater Improvements\CADD 1-22139\Sheets\1-22139-6-SEWER MAIN P&P STA 11+00 to STA 20+50.dwg



PLAN VIEW OF SEWER MAIN - STA. 10+50 TO STA. 20+00



PROFILE VIEW OF SEWER MAIN - STA. 10+50 TO STA. 20+00

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

GENERAL NOTES:

1. UTILITY INFORMATION SHOWN ON THE DRAWINGS IS APPROXIMATE AND MAY BE INCOMPLETE. FOR ACCURATE LOCATION, THE CONTRACTOR SHALL CONTACT, PRIOR TO EXCAVATION, THE UTILITIES UNDERGROUND LOCATION CENTER: 1-800-782-5348
2. VERIFY DEPTH AND LOCATION OF WATER MAIN CROSSINGS PRIOR TO INSTALLING NEW SEWER MAIN. PROVIDE 6" MINIMUM HORIZONTAL SEPARATION AND 2' MINIMUM VERTICAL SEPARATION.
3. INDIVIDUAL SEWER SERVICE LINE DEPTH ARE NOT SHOWN. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SERVICE DEPTHS AND RECONNECTING SEWER SERVICES, INCIDENTAL TO WATER MAIN INSTALLATION.
4. MINIMUM COVER 4' AS REQUESTED BY CITY OF FLAGSTAFF. COVER CAN BE 3'-3.5' FOR SECTIONS ABOVE HIGH PRESSURE GAS LINES IN ORDER TO MAINTAIN 2' VERTICAL SEPARATION.
5. SEWER ALIGNMENT DRAWN TO ACCOMMODATE 6' HORIZONTAL SEPARATION. MUST MAINTAIN THIS HORIZONTAL SEPARATION PER CITY OF FLAGSTAFF AND ADEQ.
6. MANHOLE NEEDED AT LEAST EVERY 400' PER ENGINEERING BULLETIN NO. 11.
7. TRACER WIRE TO BE FASTENED ON TOP OF THE NEW SEWER MAIN BY 10MIL PVC TAPE PER TRENCH DETAIL 09-01-030 SHOWN ON SHEET 10.
8. TRACER WIRE CONNECTION STATIONS SHALL BE INSTALLED PER DETAILS 09-01-020 AND 09-03-062 FOR EACH 500'-LINEAR FEET OF SEWER MAIN. A FIVE POUND MAGNESIUM ANODE SHALL BE INSTALLED EVERY 1,000'-LINEAR FEET OF TRACER WIRE AT THE TRACER WIRE CONNECTION STATIONS UNDER THE VALVE BOX. SEE SHEET 10.
9. CONTRACTOR TO AVOID ANY DISTURBANCES TO ARCHEOLOGICAL SITES. ARCHEOLOGIST TO BE ON-SITE DURING ALL TRENCHING ACTIVITIES. CONTRACTOR MUST STOP WORK IF ARCHEOLOGICAL SITES ARE DISCOVERED DURING ANY TRENCH EXCAVATION. CONTRACTOR TO NOTIFY THE CO/COR IMMEDIATELY UPON DISCOVERY. WORK MAY RESUME PENDING THE APPROVAL OF THE CO/COR.
10. PROPOSED MOUNT ELDEN TRAILHEAD EXPANSION PROJECT NOT INCLUDED IN THIS WASTEWATER SYSTEM IMPROVEMENTS AND IS SHOWN FOR REFERENCE PURPOSES ONLY. CONTRACTOR TO COORDINATE WITH THE U.S. FOREST SERVICE TO AVOID MOUNT ELDEN TRAILHEAD EXPANSION AREA.

COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS

SEWER MAIN
STA. 10+50 TO STA. 20+00

SHEET NO.

6

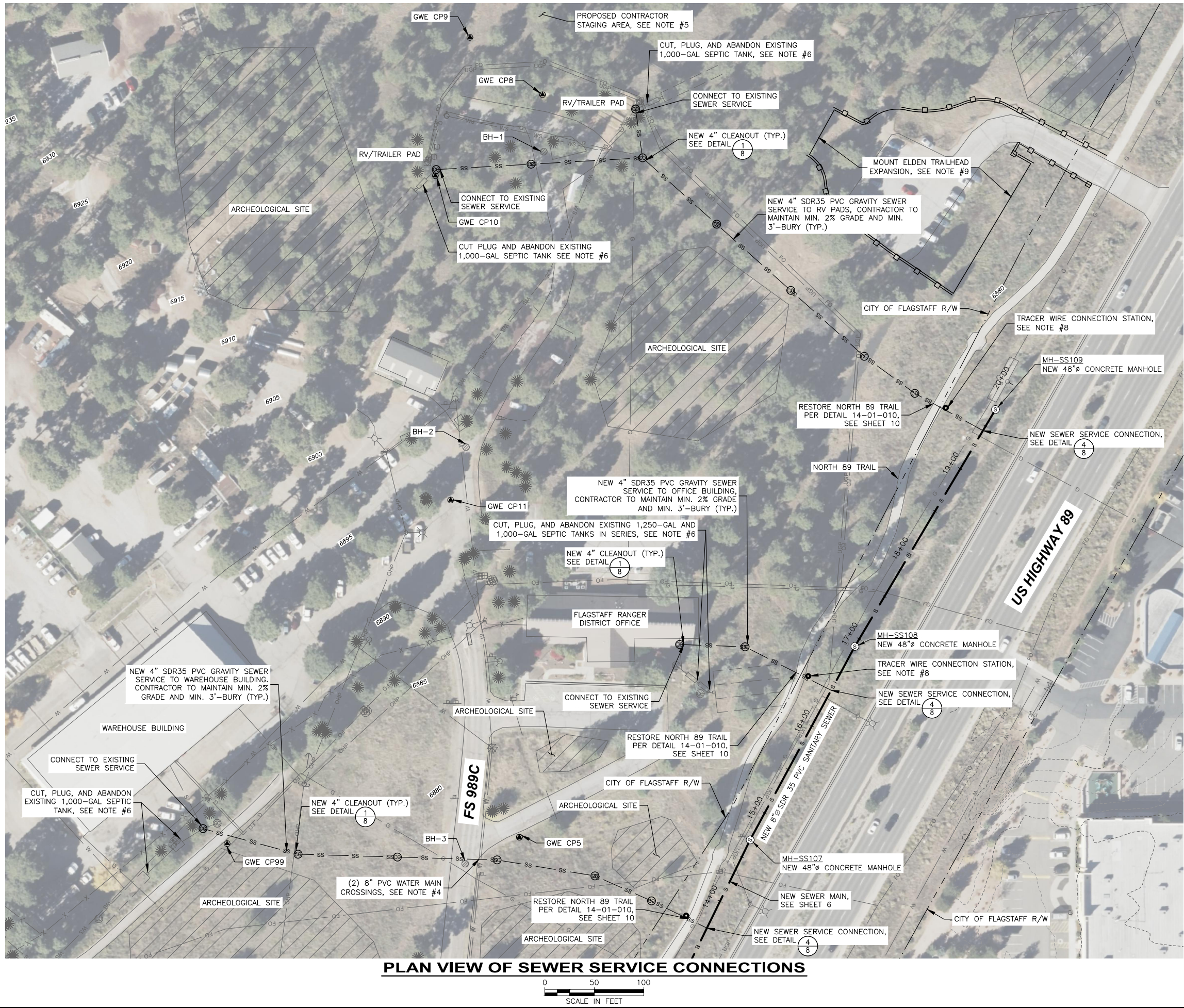
OF 11

NO.	REVISION DESCRIPTION	BY	DATE
1	90% SUBMITTAL		

PROJECT: 1-22139	DESIGNED: DB, KB
DRAWN: PK, KB	CHECKED: AE
APPROVED: AD	DATE: AUGUST 14, 2024



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PLAN VIEW OF SEWER SERVICE CONNECTIONS



GENERAL NOTES:

- UTILITY INFORMATION SHOWN ON THE DRAWINGS IS APPROXIMATE AND MAY BE INCOMPLETE. FOR ACCURATE LOCATION, THE CONTRACTOR SHALL CONTACT, PRIOR TO EXCAVATION, THE UTILITIES UNDERGROUND LOCATION CENTER: 1-800-782-5348
- EXISTING SEPTIC SYSTEM AND SEWER SERVICE LINE DEPTH ARE NOT SHOWN. CONTRACTOR IS RESPONSIBLE FOR VERIFYING SERVICE DEPTHS INDIRECT TO CONNECTING NEW SEWER SERVICE LINES.
- CONTRACTOR TO AVOID ANY DISTURBANCES TO ARCHEOLOGICAL SITES. CONTRACTOR MUST STOP WORK IF ARCHEOLOGICAL SITES ARE DISCOVERED DURING TRENCH EXCAVATION. WORK MAY RESUME PENDING THE APPROVAL OF THE CONTRACTING OFFICER.
- VERTICAL CLEARANCE BETWEEN EXISTING WATER MAINS AND SEWER SERVICE CONNECTIONS SHALL NOT BE LESS THAN SIX INCHES ABOVE THE SEWER SERVICE PER MAG STANDARD DETAIL 404-1. SEE SHEET 9.
- CONTRACTOR TO COORDINATE WITH THE U.S. FOREST SERVICE TO STORE MATERIALS ONSITE. CONTRACTOR IS RESPONSIBLE FOR STORING MATERIALS IN THE PROPOSED STAGING AREA SHOWN IN THE CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR PROPER DISPOSAL OF EXCESS SPOILS AND FOR AVOIDING ARCHEOLOGICAL SITES. OTHER LOCATIONS FOR STORING MATERIALS ONSITE WILL REQUIRE PRIOR APPROVAL FROM THE CONTRACTING OFFICER AND ARCHEOLOGIST.
- EXISTING SEPTIC TANKS ARE TO BE PUMPED AND ABANDONED IN PLACE PER THE ADEQ REQUIREMENTS STATED IN A.A.C. R18-9-A309(D). EXISTING SEPTIC SYSTEM PIPING AND CLEANOUTS SHALL BE REMOVED AS NEEDED TO ALLOW FOR INSTALLATION OF THE NEW SEWER SERVICE CONNECTION.
- TRACER WIRE TO BE FASTENED ON TOP OF THE NEW SEWER SERVICE BY 10MIL PVC TAPE.
- TRACER WIRE CONNECTION STATIONS SHALL BE INSTALLED PER DETAILS 09-01-020 AND 09-03-062 FOR EACH 500'-LINEAR FEET OF SEWER MAIN. A FIVE POUND MAGNESIUM ANODE SHALL BE INSTALLED EVERY 1,000'-LINEAR FEET OF TRACER WIRE AT THE TRACER WIRE CONNECTION STATIONS UNDER THE VALVE BOX. SEE SHEET 10.
- PROPOSED MOUNT ELDEN TRAILHEAD EXPANSION PROJECT NOT INCLUDED IN THIS WASTEWATER SYSTEM IMPROVEMENTS AND IS SHOWN FOR REFERENCE PURPOSES ONLY. CONTRACTOR TO COORDINATE WITH THE U.S. FOREST SERVICE TO AVOID MOUNT ELDEN TRAILHEAD EXPANSION AREA.
- CONTRACTOR TO MAINTAIN ACCESS TO MARKET PLACE DRIVE, RANGER STATION, AND OTHER BUSINESSES.
- IF MINIMUM 2% GRADE CANNOT BE MET DUE TO ELEVATIONS, A GRINDER PUMP MAY BE REQUIRED. CO WILL WORK WITH CONTRACTOR IF GRINDER PUMP IS NECESSARY TO THE PROJECT. CONTRACTOR TO VERIFY POWER SOURCE IF GRINDER PUMPS ARE NEEDED.

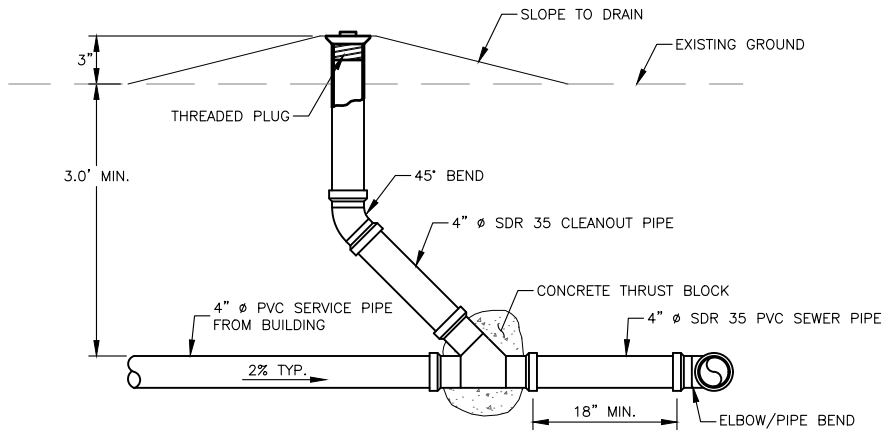
NO.	REVISION DESCRIPTION	BY	DATE
1	90% SUBMITTAL		

PROJECT: 1-22139	DESIGNED: DB, KB	PROJECT: 1-22139	DESIGNED: DB, KB
DRAWN: PK, KB	CHECKED: AE	DRAWN: PK, KB	CHECKED: AE
APPROVED: AD	DATE: AUGUST 14, 2024	APPROVED: AD	DATE: AUGUST 14, 2024

Great West
ENGINEERING, INC.
2601 BELT VIEW DRIVE
HELENA, MT 59601
(406)443-8627

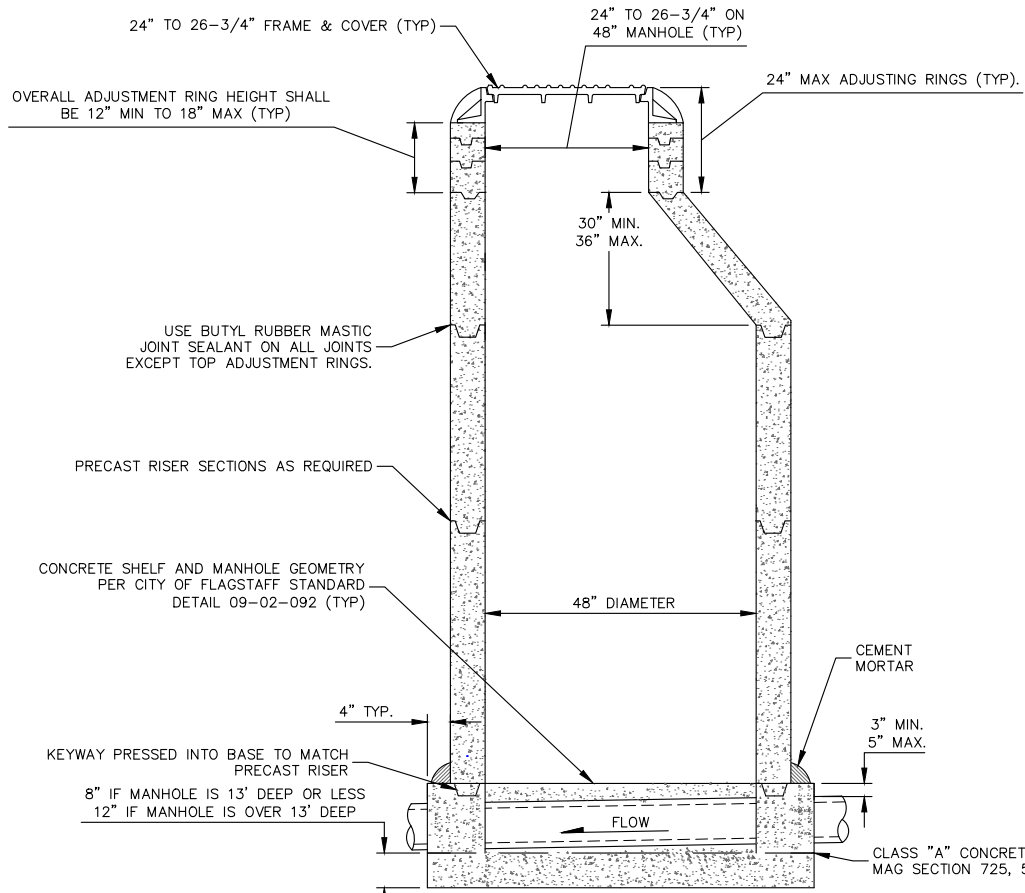
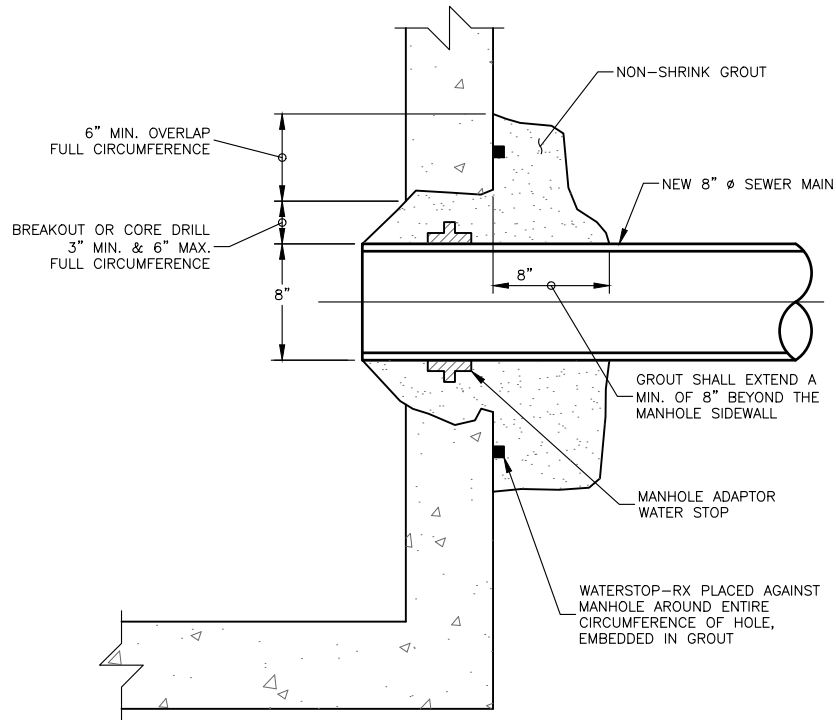
COCONINO NATIONAL FOREST FLAGSTAFF RANGER STATION WASTEWATER SYSTEM IMPROVEMENTS	SEWER SERVICE CONNECTIONS
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SHEET NO.
7
OF 11



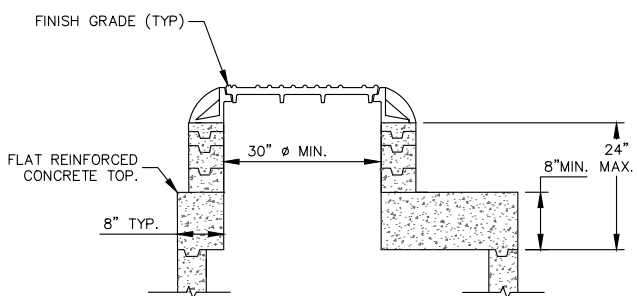
GENERAL NOTES:

1. PLEASE REFERENCE THE UNIFORM PLUMBING CODE, SECTION 707.0 CLEANOUTS, FOR SPECIFIC REQUIREMENTS.
2. A CLEANOUT MUST BE PLACED WITHIN 5 FEET OF THE BUILDING/HOUSE BEING SERVICED (OR WITHIN THE TIE IN POINT), UNLESS A CLEANOUT IS ALREADY LOCATED ON THE INSIDE OF THE BUILDING/TRAILER PAD.
3. SANITARY SEWER SERVICE LINES MUST HAVE A CLEANOUT EVERY 100 FEET.
4. WHEN AT ALL POSSIBLE, 90° BENDS ARE TO BE AVOIDED IN SANITARY SEWER SERVICE LINES. HOWEVER, IN SITUATIONS WHERE A 90° BEND MUST BE USED, A CLEANOUT WILL NEED TO BE PLACED AT EACH 90° BEND.
5. A CLEANOUT SHALL BE PROVIDED IN A SANITARY SEWER SERVICE LINE FOR EACH AGGREGATE HORIZONTAL CHANGE OF DIRECTION EXCEEDING 135° IN CUMULATIVE BENDS. (FOR EXAMPLE IF THREE 45° BENDS ARE USED IN ONE SERVICE LINE, THE CUMULATIVE AGGREGATE HORIZONTAL CHANGE EQUALS 135° AND A CLEANOUT MUST BE PLACED AT THE THIRD BEND.)



PRECAST ECCENTRIC CONICAL TOP MANHOLE

NOT TO SCALE

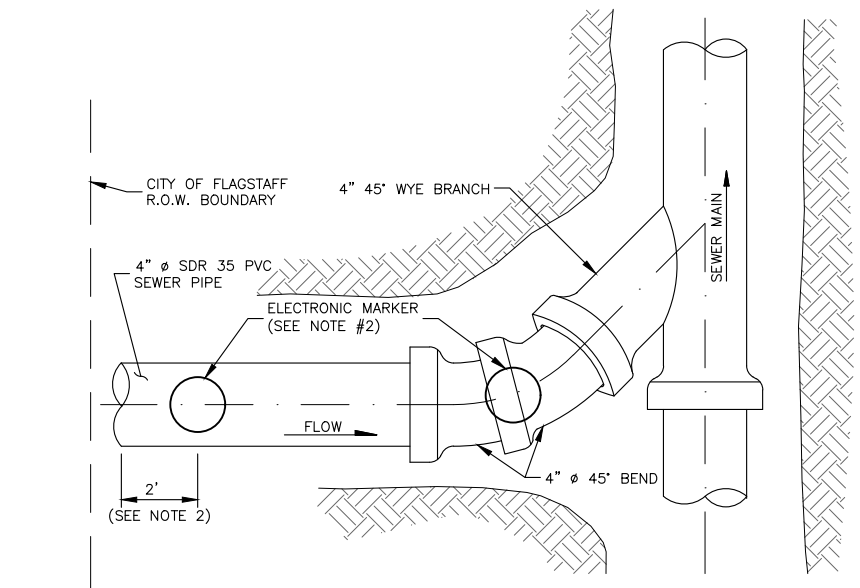


PRECAST FLAT TOP MANHOLE

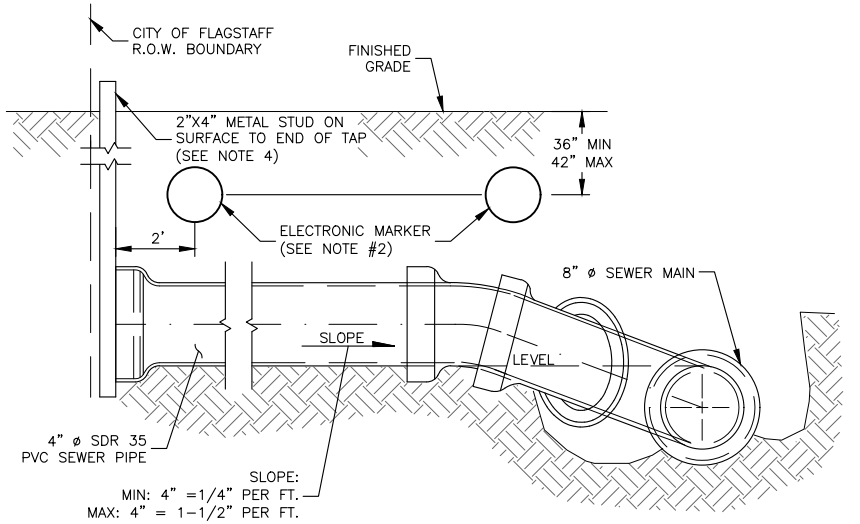
NOT TO SCALE

GENERAL NOTES:

1. PRECAST STEEL REINFORCED MANHOLE SECTIONS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C478 EXCEPT AS MODIFIED HEREIN.
2. THE MANHOLE ACCESS POINT SHALL BE ORIENTED IN SUCH A WAY THAT THE OPENING IS DIRECTLY ABOVE THE LOWEST INVERT, OR AS OTHERWISE DIRECTED BY THE PLANS OR THE CONTRACTING OFFICER.
3. MANHOLE RING AND COLLAR TO BE ADJUSTED PER CITY OF FLAGSTAFF DETAIL 09-03-062 SHOWN ON SHEET 10.
4. FOR MANHOLE BASE GEOMETRY, SEE CITY OF FLAGSTAFF STANDARD DETAIL 09-02-092 SHOWN ON SHEET 10.
5. FLAT TOP MANHOLES SHALL ONLY BE USED WITH APPROVAL FROM THE CO/COR.



PLAN VIEW



SECTION VIEW

GENERAL NOTES:

1. ELECTRONIC MARKER SHALL BE A 3M MODEL 1424-XR/ID [4" DIAMETER SELF LEVELING MARKER BALL GREEN IN COLOR] OR APPROVED EQUAL OR AS REQUIRED BY THE CITY OF FLAGSTAFF.
2. MARKER SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS, 2' BACK FROM THE END OF THE SEWER SERVICE STUB AND CINCH TIED TO PIPE OR ABOVE PIPE AS REQUIRED BY CITY OF FLAGSTAFF. AN ADDITIONAL MARKER SHALL BE INSTALLED AT EACH SERVICE STUB BEND.
3. ELECTRONIC MARKER SHALL BE RESTORED BY CONTRACTOR IF DISTURBED WHEN PRIVATE SERVICE LINE CONNECTION IS INSTALLED.
4. USING THE APPROPRIATE FITTINGS AS REQUIRED (I.E. 45",22.5") EXTEND THE SERVICE VERTICALLY AT THE R.O.W BOUNDARY. COVER THE END WITH A (NO-GLUE) CAP AND MARK WITH A BRICK AND WIRE. THE BRICK SHALL BE PLACED ON THE SURFACE AND CONNECTED TO THE SERVICE WITH 12 GA. (MIN.) GALVANIZED STEEL OR A 12. GA. (MIN.) COPPER WIRE WITH GREEN INSULATION.
5. SIZE OF TAP SHALL BE DESIGNATED ON PLANS.
6. CONSTRUCT TAP AT MINIMUM SLOPE IF COVER WILL BE LESS THAN 5' AT CITY OF FLAGSTAFF R.O.W. BOUNDARY.
7. ALL FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D-2321. THE CONTRACTOR MAY VARY FROM THE DRAWING TO USE THE APPROPRIATE WYES, TEE-WYES AND BENDS TO ENSURE NO MISALIGNMENT OF THE PIPE AND FITTINGS. BLOCK OR BRACE FITTINGS JOINTS TO ENSURE ZERO DEGREES ANGULAR JOINT DEFLECTION.
8. END OF TAP TO BE SEALED AND MARKED AS NOTED.

**NEW SEWER SERVICE LINE
MAG STANDARD DETAIL 440-1**



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PROJECT: 1-22139
DESIGNED: DB, KB
DRAWN: PK, KB
CHECKED: AE
APPROVED: AD
DATE: AUGUST 14, 2024



COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS

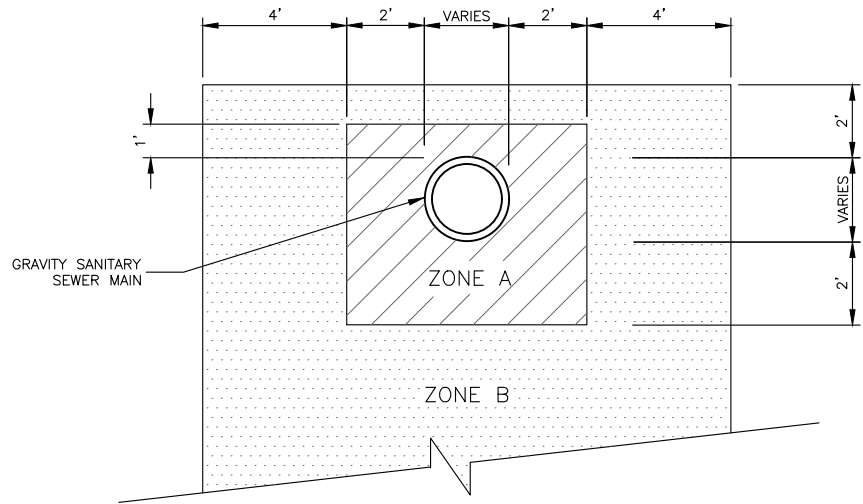
STANDARD DETAILS

SHEET NO.

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OF 11

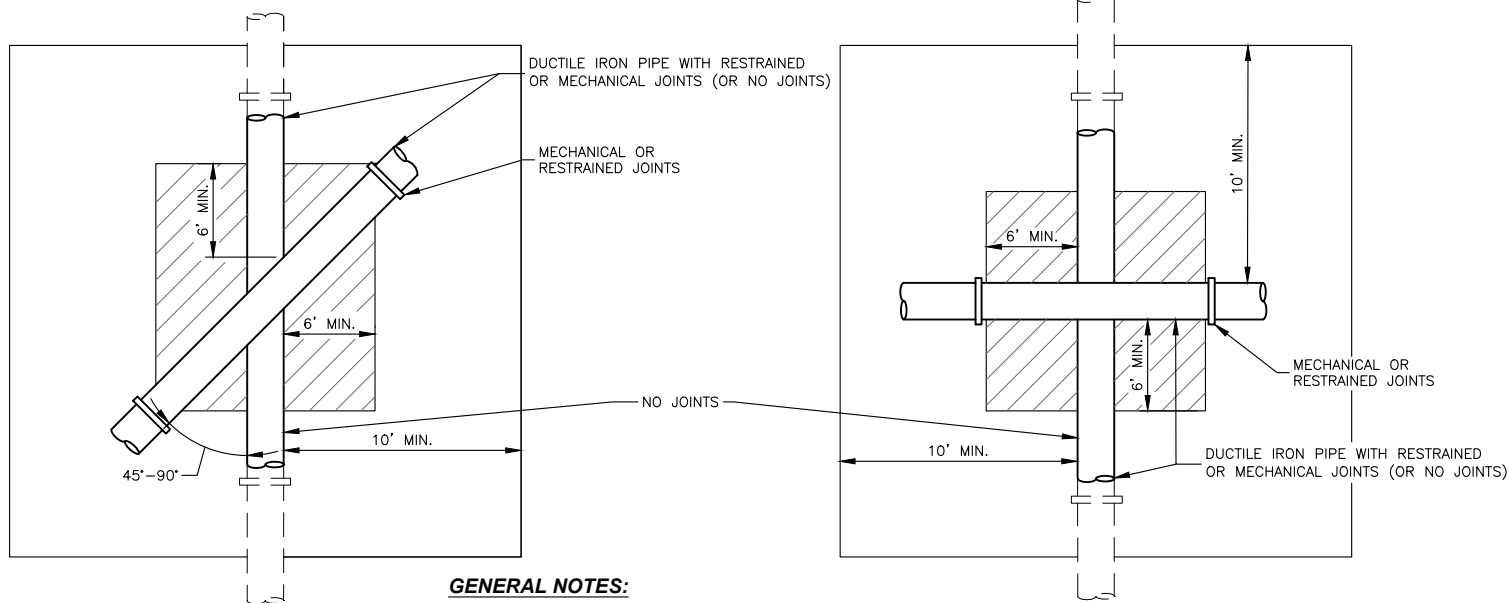
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GENERAL NOTES:

1. ZONE A: NO WATER LINES ALLOWED/MINIMUM SEPARATION.
2. ZONE B: EXTRA PROTECTION REQUIRED FOR WATER LINES.
3. REFER TO MAG SECTION 610, WATER LINE CONSTRUCTION.

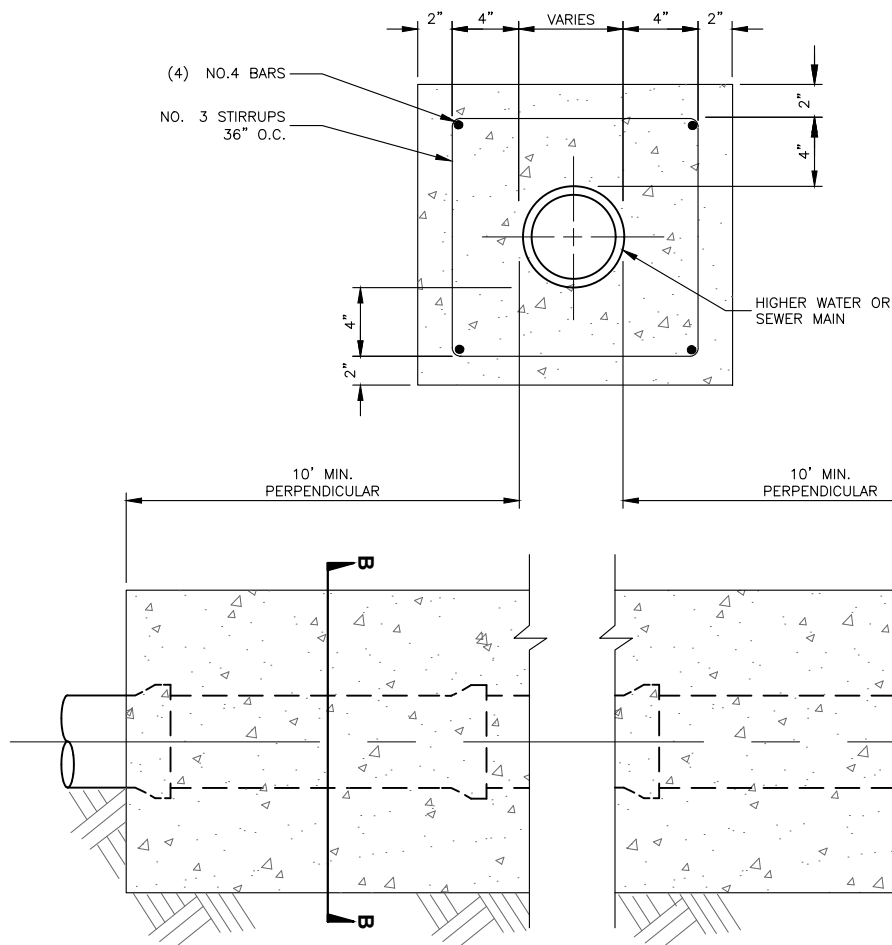
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9 **WATER AND SANITARY SEWER SEPARATION/ PROTECTION MAG STANDARD DETAIL 404-1**
NOT TO SCALE



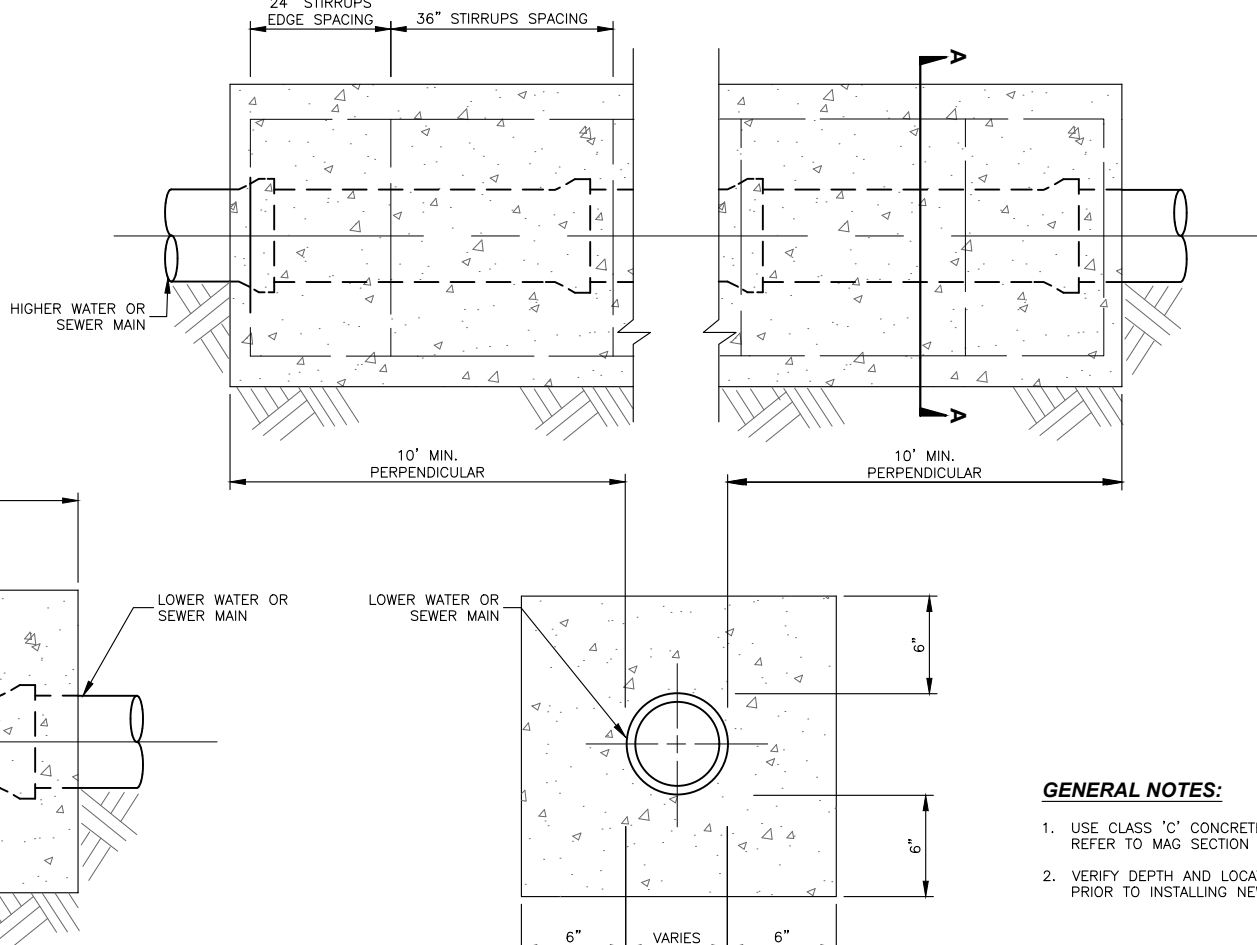
GENERAL NOTES:

1. REFER TO MAG SECTION 610, WATER LINE CONSTRUCTION.

2
9 **WATER AND SANITARY SEWER SEPARATION/ PROTECTION MAG STANDARD DETAIL 404-2**
NOT TO SCALE



SECTION VIEW A - A
NOT TO SCALE



SECTION VIEW B - B
NOT TO SCALE

GENERAL NOTES:

1. USE CLASS 'C' CONCRETE AS PER MAG SECTION 725. REFER TO MAG SECTION 610, WATER LINE CONSTRUCTION.
2. VERIFY DEPTH AND LOCATION OF WATER MAIN CROSSINGS PRIOR TO INSTALLING NEW SEWER MAIN.

3
9 **WATER AND SANITARY SEWER SEPARATION/ PROTECTION MAG STANDARD DETAIL 404-3**
NOT TO SCALE

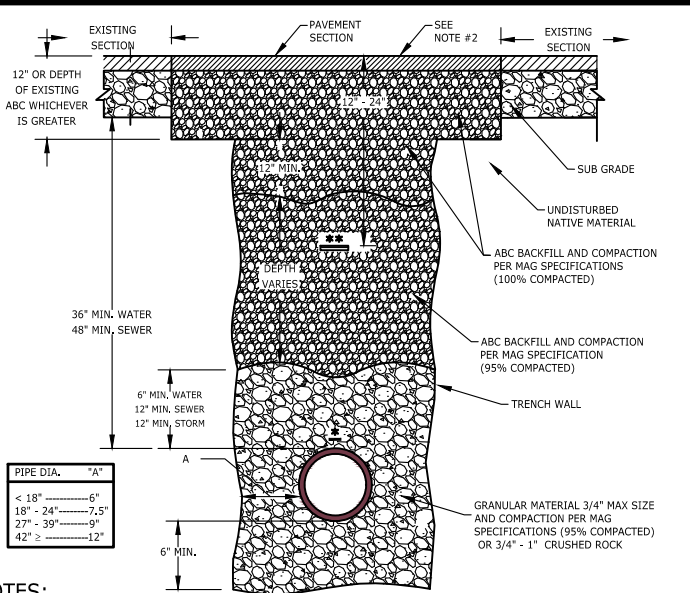
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PROJECT: 1-22139	DESIGNED: DB, KB	DRAWN: PK, KB	CHECKED: AE	APPROVED: AD	DATE: AUGUST 14, 2024
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**COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS**
STANDARD DETAILS

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NOTES:

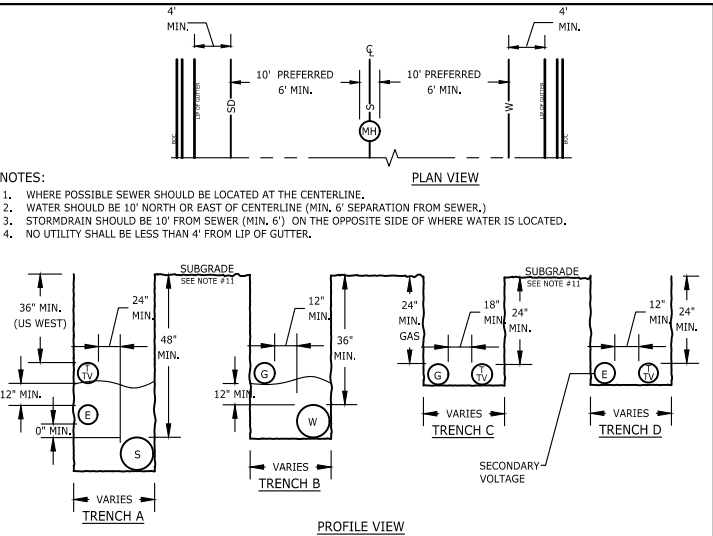
- BACKFILL MATERIAL SHALL BE PER MAG SPECS.
- THE DEPTH OF THE AC SHALL MATCH EXISTING OR TYPICAL MIN. PAVEMENT DEPTH FOR THE TYPE OF ROADWAY, WHICHEVER IS GREATER. THE TYPICAL MINIMUM PAVEMENT DEPTHS ARE AS FOLLOWS: ARTERIAL = 5", COLLECTOR = 4", LOCAL = 3"
- NON-SHRINK BACKFILL IN ACCORDANCE WITH COF STD. 9-6-030 AND MAY BE USED FOR BACKFILL UP TO EXISTING SUBGRADE. THE NON-SHRINK BACKFILL SHALL BE PROPORTIONED AS FOLLOWS: 2600 LBS OF 3/8" MINUS AGGREGATE, 800 LBS SAND, 94 LBS CEMENT AND 11 GALLONS WATER.
- A MIN. 2" OF UPM™ MAY BE USED FOR TEMPORARY TRENCH PAVING IF HOT MIX IS NOT AVAILABLE. UPM™ TEMPORARY PAVEMENT SHALL NOT REMAIN IN PLACE LONGER THAN 5 WORKING DAYS OR UNTIL HOT MIX ASPHALT IS AVAILABLE. AFTER 5 WORKING DAYS, THE CITY MAY PERFORM THE PERMANENT TRENCH PAVEMENT AT THE CONTRACTORS EXPENSE. IN LIEU OF PLACING UPM™ THOUGH STILL TEMPORARY, THE CONTRACTOR MAY ELECT TO COMPLETELY BACKFILL THE TRENCH TO WITHIN 2" OF THE FINISH TRENCH GRADE WITH NON-SHRINK BACKFILL; THE FINAL 2" SHALL BE MAG CLASS "C" CONCRETE

* TRACER WIRE TAPED TO TOP CENTER OF MAIN WITH 10MIL PVC TAPE ON 4' CENTERS, SEE COF STD 9-01-020.

** WARNING TAPE

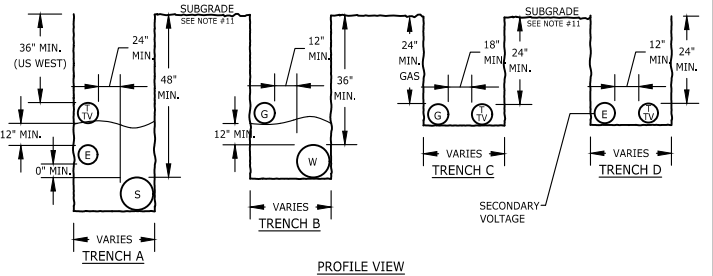
NTS

City of Flagstaff		'TRENCHING & BACKFILL' EXISTING PAVED STREET	
	ENGINEERING DETAIL	DETAIL NO.	REVISION DATE:
		09-01-030	12/30/2017
		1 1	



NOTES:

- WHERE POSSIBLE SEWER SHOULD BE LOCATED AT THE CENTERLINE.
- WATER SHOULD BE 10' NORTH OR EAST OF CENTERLINE (MIN. 6' SEPARATION FROM SEWER.)
- STORMDRAIN SHOULD BE 10' FROM SEWER (MIN. 6') ON THE OPPOSITE SIDE OF WHERE WATER IS LOCATED.
- NO UTILITY SHALL BE LESS THAN 4' FROM LIP OF GUTTER.

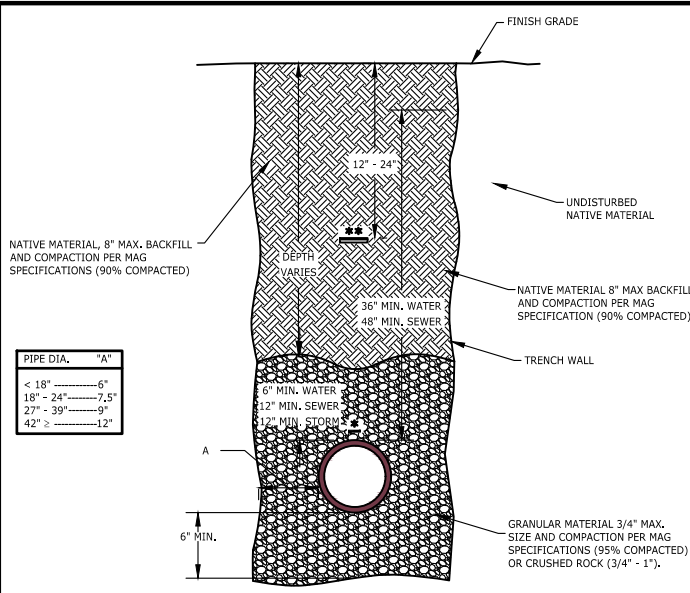


NOTES:

- THE DIMENSIONS GIVEN IN THESE TRENCH DETAILS ARE MINIMUM. DEPENDING ON THE NUMBER AND SIZE OF UTILITIES IN A TRENCH, ADDITIONAL COVER AND/OR CLEARANCES MAY BE REQUIRED.
- MINIMUM COVER SHALL BE MEASURED FROM THE TOP OF THE PIPE TO THE SUBGRADE UNDER EXISTING OR PROPOSED PAVEMENT. IN AREAS THAT ARE NOT TO BE PAVED, MINIMUM COVER SHALL BE MEASURED FROM FINISHED GRADE.
- MINIMUM HORIZONTAL DISTANCE BETWEEN WATER AND SEWER PIPS IS 6 FEET.
- WHEN SEWER AND WATER LINES CROSS, REFER TO ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (A.D.E.Q.) GUIDELINES, AND OTHER CITY STANDARDS.
- WHILE POWER AND COMMUNICATION CABLES MAY BE INSTALLED IN SANITARY SEWER TRENCHES, A SEPARATE TRENCH MAY BE REQUIRED WHEN DEEMED NECESSARY BY UTILITY COMPANIES.
- WATER AND ELECTRIC POWER LINES ARE NOT ALLOWED IN THE SAME TRENCH.
- GAS AND SEWER LINES ARE NOT ALLOWED IN THE SAME TRENCH.
- TWO WORKING DAYS BEFORE YOU DIG, CALL FOR THE BLUE STAKES 1-800-STAKE-IT
- TRACER WIRES SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 9-01-020.
- WHEN POWER AND COMMUNICATION CABLES ARE NOT IN THE SAME TRENCH, THEY SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 36" FROM WATER LINES AND 24" FROM SEWER LINES, AND SHALL MAINTAIN A MINIMUM OF 24" ABOVE SEWER LINES. WHEN GAS LINES ARE NOT IN THE SAME TRENCH, A MINIMUM HORIZONTAL SEPARATION OF 36" FROM SEWER LINES AND 18" FROM WATER LINES SHALL BE MAINTAINED; GAS LINES SHALL ALSO BE A MINIMUM OF 18" ABOVE WATER LINES. ALL MEASUREMENTS SHALL BE MADE FROM THE OUTSIDE EDGE OF PIPE OR CABLE.
- MINIMUM DEPTHS FOR POWER, GAS, TELEVISION, AND COMMUNICATION ARE MEASURED FROM FINISHED GRADE.
- ALL WATERLINE (FIRE HYDRANT LEAD LINES, FIRE LINES AND SERVICE LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 3')

NTS

City of Flagstaff		UNDERGROUND UTILITIES IN STREETS TYPICAL LOCATION AND TRENCH DETAIL	
	ENGINEERING DETAIL	DETAIL NO.	REVISION DATE:
		09-01-010	12/30/2017
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NOTES:

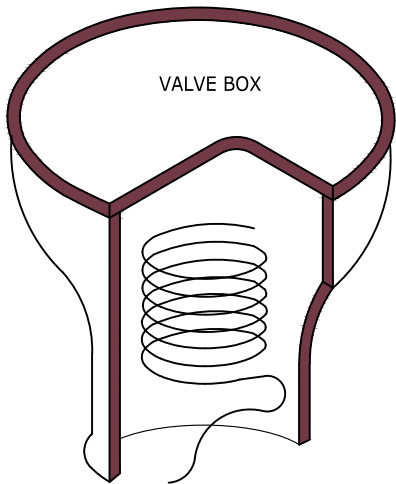
- NATIVE BACKFILL SHALL BE PER MAG SPECS AND MAY BE SELECTED FROM THE EXCAVATION MATERIAL OR FROM A SOURCE SELECTED BY THE CONTRACTOR AND APPROVED BY THE CITY ENGINEER.
- IF THE UNPAVED STREET HAS A SURFACE MATERIAL (ABC, CINDERS, ETC) OTHER THAN NATIVE, THE SURFACE MATERIAL SHALL BE REPLACED TO ITS EXISTING DEPTH.
- NON-SHRINK BACKFILL IN ACCORDANCE WITH COF STD. 9-6-030 AND MAY BE USED FOR BACKFILL UP TO 6" BELOW FINISH GRADE. THE FINAL 6" SHALL BE NATIVE MATERIAL 8" MAX. THE NON-SHRINK BACKFILL SHALL BE PROPORTIONED AS FOLLOWS: 2600 LBS OF 3/8" MINUS AGGREGATE, 800 LBS SAND, 94 LBS CEMENT AND 11 GALLONS WATER

* TRACER WIRE TAPED TO TOP CENTER OF MAIN WITH 10MIL PVC TAPE ON 4' CENTERS, SEE COF STD 9-01-020.

** WARNING TAPE

NTS

City of Flagstaff		TRENCHING AND BACKFILL UNPAVED EASEMENT OR STREET	
	ENGINEERING DETAIL	DETAIL NO.	REVISION DATE:
		09-01-032	12/30/2017
		1 1	

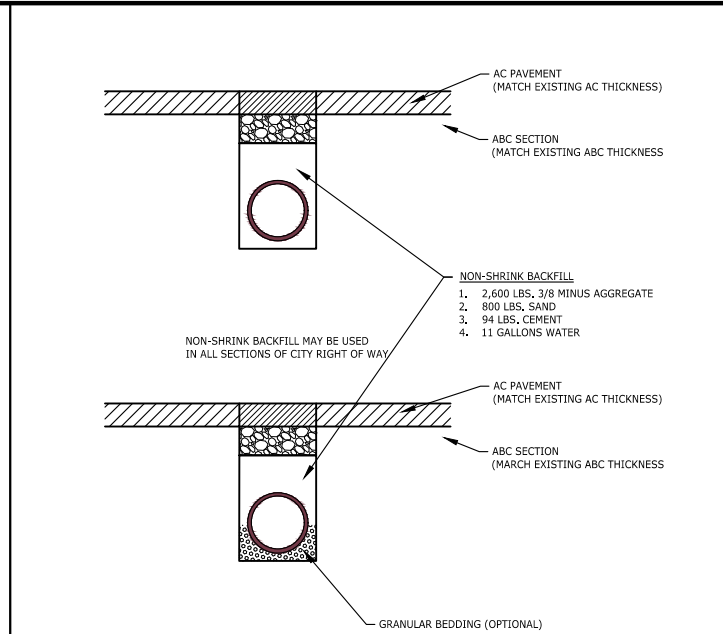


NOTES:

- THE UF-600 TRACER WIRE SHALL BE A MINIMUM 8 FOOT OUTSIDE OF BOX WHEN EXTENDED, IN A CAST IRON VALVE BOX WITHOUT A VALVE.
- THE TRACER WIRE EXTENDS FROM THE MAIN ON THE FIRE HYDRANT OR METER SERVICE RUNS. THE END COIL MUST BE SET IN A SEPARATE VALVE BOX.
- COVER SHALL BE LABELED WATER, SEWER OR RECLAIM WASTEWATER.
- LOCATE VALVE BOX 1 FOOT BEHIND SIDEWALK WITHIN RIGHT OF WAY.

NTS

City of Flagstaff		TRACER WIRE	
	ENGINEERING DETAIL	DETAIL NO.	REVISION DATE:
		09-01-020	12/30/2017
		1 1	

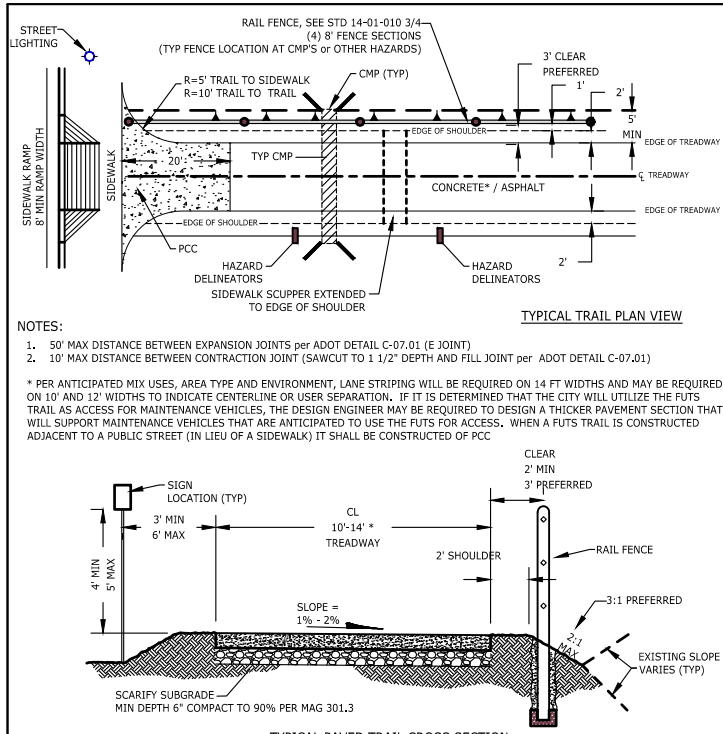


NOTES:

- COLD MIX ASPHALT MAY BE USED FOR TEMPORARY PATCH IF HOT MIX ASPHALT IS NOT AVAILABLE.
- A MINIMUM OF 2" OF UPM™ MAY BE USED FOR TEMPORARY TRENCH PAVING IF HOT MIX IS NOT AVAILABLE. UPM™ TEMPORARY PAVEMENT SHALL NOT REMAIN IN PLACE LONGER THAN 5 WORKING DAYS OR UNTIL HOT ASPHALT IS AVAILABLE. AFTER 5 WORKING DAYS, THE CITY MAY PERFORM THE PERMANENT TRENCH PAVEMENT AT THE CONTRACTORS EXPENSE. IN LIEU OF PLACING UPM™ THOUGH STILL TEMPORARY, THE CONTRACTOR MAY ELECT TO COMPLETELY BACKFILL THE TRENCH TO WITHIN 2" OF THE FINISHED TRENCH GRADE WITH NON-SHRINK BACKFILL, THE FINAL 2" SHALL BE MAG CLASS "C" CONCRETE.
- WHEN PIPE IS ENCASED IN NON-SHRINK BACKFILL, THE PIPE SHALL BE WRAPPED PER MAG SPECIFICATION 610.6.2

NTS

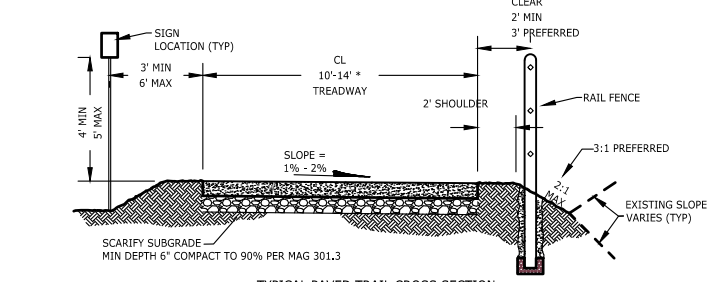
City of Flagstaff		NON-SHRINK SLURRY BACKFILL	
	ENGINEERING DETAIL	DETAIL NO.	REVISION DATE:
		09-06-030	12/30/2017
		1 1	



NOTES:

- 50' MAX DISTANCE BETWEEN EXPANSION JOINTS per ADOT DETAIL C-07.01 (E JOINT)
- 10' MAX DISTANCE BETWEEN CONTRACTION JOINT (SAWCUT TO 1 1/2" DEPTH AND FILL JOINT per ADOT DETAIL C-07.01)

* PER ANTICIPATED MIX USES, AREA TYPE AND ENVIRONMENT, LANE STRIPING WILL BE REQUIRED ON 14 FT WIDTHS AND MAY BE REQUIRED ON 10' AND 12' WIDTHS TO INDICATE CENTERLINE OR USER SEPARATION. IF IT IS DETERMINED THAT THE CITY WILL UTILIZE THE FUTS TRAIL AS ACCESS FOR MAINTENANCE VEHICLES, THE DESIGN ENGINEER MAY BE REQUIRED TO DESIGN A THICKER PAVEMENT SECTION THAT WILL SUPPORT MAINTENANCE VEHICLES THAT ARE ANTICIPATED TO USE THE FUTS FOR ACCESS. WHEN A FUTS TRAIL IS CONSTRUCTED ADJACENT TO A PUBLIC STREET (IN LIEU OF A SIDEWALK) IT SHALL BE CONSTRUCTED OF PCC



NOTES:

- 6" CLASS "A" PCC OVER 4" ABC WITH MAG STD 201 "A" TURN DOWN AT THE END OF THE TRAIL OR 3" AC OVER 6" ABC WITH MAG STD 201 TYPE "A" TURN DOWN WHEN APPROVED BY CITY ENGINEER. VEHICLE CROSSINGS TO MEET COF DRIVEWAY STDS WHEN TRAIL IS USED FOR VEHICLE TRAFFIC, A GREATER SECTION MAY BE REQUIRED.
- SEED ALL DISTURBED AREAS PER COF STD. 13-17-002

NTS

City of Flagstaff		FLAGSTAFF URBAN TRAILS SYSTEM DETAILS	
	ENGINEERING DETAIL	DETAIL NO.	REVISION DATE:
		14-01-010	12/30/2017
		14 4	

NO.	REVISION DESCRIPTION	BY	DATE
1	90% SUBMITTAL		
2			
3			
4			
5			

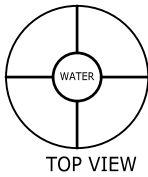
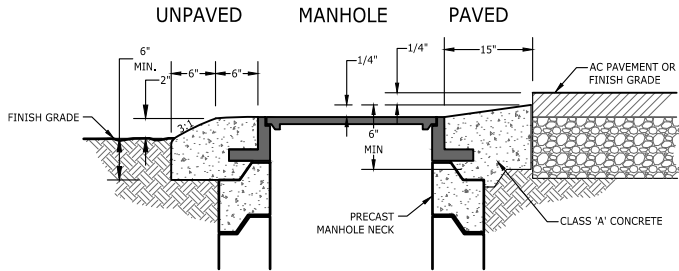
PROJECT: 1-22139	DESIGNED: DB KB	DRAWN: PK KB	CHECKED: AE	APPROVED: AD	DATE: AUGUST 14, 2024
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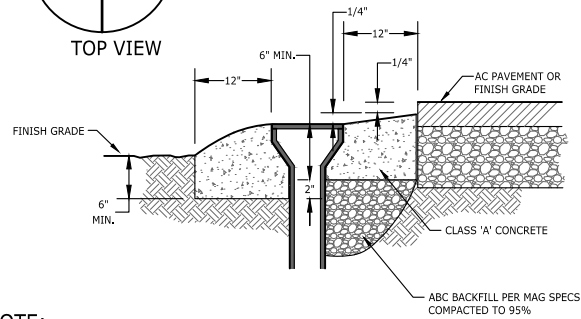
COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS
STANDARD DETAILS

SHEET NO.
10
OF 11

Y:\Shared\Helena Projects\1-22139-DHOC2USFS R3 ONF-KNF Water and Sewer Improvements\Coconino NF - Flagstaff RD Wastewater Improvements\CADD 1-22139-Sheets\1-22139-11-STANDARD DETAILS.dwg

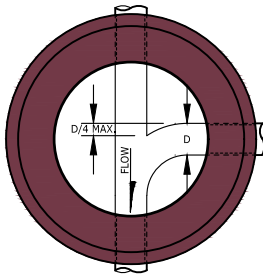


WATER VALVES, BLOWOFFS AND SURVEY HANDHOLES



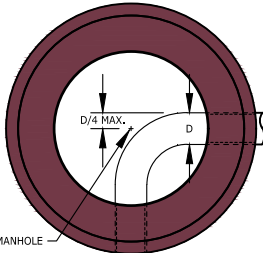
- NOTE:
1. TOP OF VALVE BOX AND CONCRETE RING MUST BE 1/4" BELOW FINISHED GRADE.
 2. CONCRETE RING FOR VALVES AND MANHOLES SHALL HAVE FOUR (4) STRESS JOINTS AT 90° ANGLES.
 3. DEPTH OF CONCRETE SHALL BE A MIN. 6" OR SAME AS AC AND ABC SECTION, NOT TO EXCEED 8".
 4. VALVES AND MANHOLES LOCATED UNDER CONCRETE PAVING SHALL HAVE A COLD JOINT OR EXPANSION JOINT CONCRETE COLLAR.

City of Flagstaff		RING, FRAME or COVER INSTALLATION	
	ENGINEERING DETAIL	DETAIL NO.	REVISION DATE:
		09-03-062	12/30/2017
		1 1	



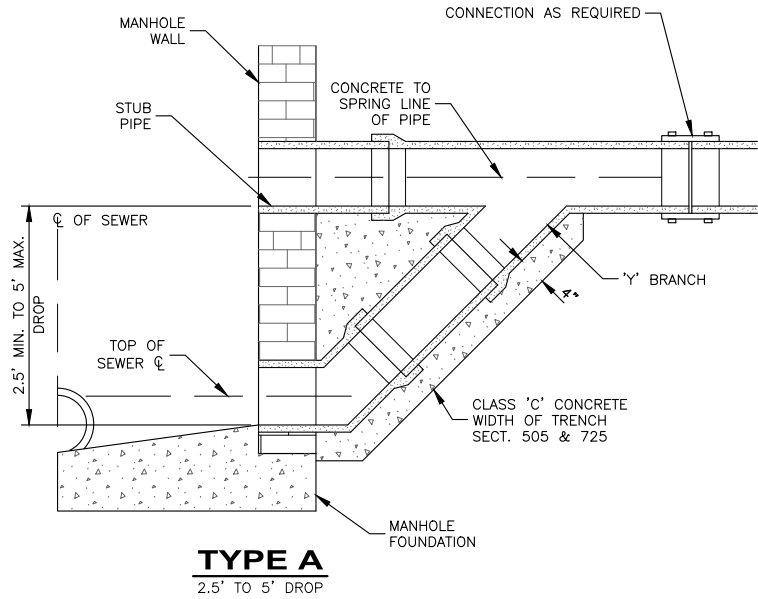
3 or 4 LEG INTERSECTION

- NOTES:
1. PIPE SIZE AND ELEVATION AS SHOWN ON PLANS
 2. MIN. FLOW LINE RADIUS ON 8" PIPE IS 2 FEET



2 LEG INTERSECTION

City of Flagstaff		MANHOLE BASE GEOMETRY		NTS
	ENGINEERING DETAIL	DETAIL NO.	REVISION DATE:	1
		09-02-092	12/30/2017	1



DROP SEWER CONNECTION MAG STANDARD DETAIL 426
NOT TO SCALE

COCONINO NATIONAL FOREST
FLAGSTAFF RANGER STATION
WASTEWATER SYSTEM IMPROVEMENTS
STANDARD DETAILS

NO.	REVISION DESCRIPTION	BY	DATE
1	90% SUBMITTAL		
2			
3			
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PROJECT: 1-22139	DESIGNED: DB KB	DRAWN: PK KB	CHECKED: AE	APPROVED: AD	DATE: AUGUST 14, 2024
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