DOCUMENTS FOR THE CONSTRUCTION OF THE

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE S1

CONFORMED DOCUMENTS

Colorado Springs Utilities
It's how we're all connected

City of Fountain
Pure Colorado

SECURITY WATER DISTRICT
UTILITY DISTRICTS

"Where Eagles Soar"
PUEBLO WEST METROPOLITAN DISTRICT

VOLUME 2 OF 2
DRAWINGS

OCTOBER 2011

CH2MHILL

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COLORADO LICENSED
JODY L. HENRY
39310
PROFESSIONAL ENGINEER

CSU Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG01d_171473.dgn PLOT DATE: 10/25/2011 PLOT TIME: 6:11:30 AM

INDEX TO DRAWINGS

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN E FORD					
DR B NORVILLE					
CHK G SIMPSON					
APVD J HENRY	1	7/13/11	ADDENDUM NO. 1 - DRAWING ADDED	BN	JH
	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
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CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

GENERAL

INDEX TO DRAWINGS

SHEET	2
DWG	S1-G-2
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG02d_171473.dgn PLOT DATE: 8/4/2011 PLOT TIME: 2:58:21 PM

GENERAL NOTES

1. STATIONING AND DISTANCES SHOWN ON THE DRAWINGS ARE BASED ON HORIZONTAL MEASUREMENTS AND EXPRESSED IN STATE PLANE GRID DISTANCES. CROSS SECTIONS, CROSSING DETAILS, AND REFERENCES TO LEFT AND RIGHT ON THE DRAWINGS ASSUME LOOKING IN THE DIRECTION OF INCREASING STATION ALONG PIPELINE ALIGNMENT.
2. UNLESS OTHERWISE NOTED, PIPE ELEVATIONS SHOWN ARE CENTERLINE ELEVATIONS.
3. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS AND IN ACCORDANCE WITH SPECIFICATION SECTION 33 05 01 02, WELDED STEEL PIPE AND FITTINGS - WELD BEFORE BACKFILL.
4. PIPELINE VERTICAL DEFLECTIONS UP TO SIX (6) DEGREES MAY BE MADE USING A BEVELED END JOINT ON EITHER SIDE OF THE LOCATION SHOWN FOR THE DEFLECTION. INDIVIDUAL BEVELED JOINT DEFLECTIONS SHALL NOT EXCEED THREE (3) DEGREES. MAINTAIN ELEVATIONS AND MINIMUM COVER AS SHOWN ON DRAWINGS.
5. THE CONSTRUCTION WORK LIMITS ARE SHOWN ON THE DRAWINGS. CONFINE CONSTRUCTION ACTIVITIES WITHIN WORK LIMITS.
6. LIMITS OF CONSTRUCTION THAT DO NOT HAVE TEMPORARY CONSTRUCTION EASEMENTS OR PERMANENT EASEMENTS OR DESIGNATED WORK LIMITS ARE LIMITED TO PUBLIC RIGHT-OF-WAY. COORDINATE/ESTABLISH CONSTRUCTION LIMITS WITH PUBLIC ENTITIES.
7. INSTALL CONSTRUCTION WORK LIMIT FENCING AS NOTED ON THE DRAWINGS OR AS DIRECTED BY CONSTRUCTION MANAGER. DO NOT INSTALL WORK LIMIT FENCING ACROSS ROAD RIGHT-OF-WAY.
8. INSTALL CONSTRUCTION WORK LIMIT FENCING 7 DAYS PRIOR TO CONSTRUCTION ACTIVITIES INCLUDING TRAVEL FROM ONE LOCATION TO ANOTHER WITHIN WORK LIMITS. PROVIDE AND MAINTAIN WORK LIMIT FENCE THROUGHOUT THE CONSTRUCTION PERIOD. OBTAIN CONSTRUCTION MANAGER'S WRITTEN PERMISSION PRIOR TO REMOVAL OF WORK LIMIT FENCING.
9. LOCATIONS OF COMBINATION AIR VALVE VAULTS, ACCESS MANWAYS, AND BLOWOFF STRUCTURES ARE SHOWN ON THE DRAWINGS. NO CHANGES IN LOCATIONS ARE ALLOWED EXCEPT AS APPROVED BY THE ENGINEER AND IN ACCORDANCE WITH SPECIFICATION SECTION 33 05 01 02 WELDED STEEL PIPE AND FITTINGS - WELD BEFORE BACKFILL.
10. PROVIDE TRENCH PLUGS WHERE SHOWN AND AS DIRECTED BY CONSTRUCTION MANAGER.
11. SUBJECT FACILITIES ARE SHOWN HEAVY LINED. SCREENING IS USED IN ORDER TO CLARIFY DRAWING. FOR EXAMPLE, STRUCTURES ARE SCREENED ON MECHANICAL DRAWINGS TO HIGHLIGHT PIPING AND EQUIPMENT.
12. INSTALL CATHODIC PROTECTION TEST STATIONS AT THE APPROXIMATE LOCATIONS SHOWN ON THE SCHEDULE LOCATED ON DWG S1-G-14, IN ACCORDANCE WITH SPECIFICATIONS, AND AS APPROVED BY CONSTRUCTION MANAGER. INSTALL ANODES AT LOCATIONS IN ACCORDANCE WITH SPECIFICATION SECTION 26 42 02, GALVANIC ANODE CATHODIC PROTECTION SYSTEM.
13. EXISTING PROPERTY LINE, RIGHT-OF-WAY AND EASEMENT INFORMATION SHOWN ON THESE DOCUMENTS WAS DEVELOPED USING LAND SURVEY PLATS PREPARED BY CRITIGEN.
14. TOPOGRAPHIC MAPPING AND PLAN VIEWS FOR DRAWINGS WERE GENERATED FROM AERIAL PHOTOGRAPHY DATED 5/18/2008.
15. PROTECT EXISTING TREES AND SHRUBS NOT DESIGNATED TO BE REMOVED.
16. PRESERVE EXISTING MONUMENTS, BENCH MARKS, RANGE TIES, PROPERTY MARKERS, REFERENCE POINTS, AND STAKES. A COLORADO LICENSED SURVEYOR IS REQUIRED TO REFERENCE, REPLACE AND REPORT ANY EXISTING LAND CORNERS, MONUMENTS, BENCHMARKS, RANGE TIES, PROPERTY MARKERS, REFERENCE POINTS, AND STAKES POTENTIALLY DISTURBED OR DESTROYED BY CONSTRUCTION.
17. REPAIR OR REPLACE EXISTING CULVERTS THAT ARE DAMAGED BY CONSTRUCTION.
18. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO "CALL BEFORE YOU DIG" PROGRAM AT 1-800-922-1987 (OR 811) 72 BUSINESS HOURS PRIOR TO ANY EXCAVATION.
19. CONTACT UTILITY OWNERS PRIOR TO CONSTRUCTION OF UTILITY CROSSINGS IN ACCORDANCE WITH SPECIFICATION SECTION 01 31 13, PROJECT COORDINATION. PROVIDE UTILITY SUPPORT IN MANNER REQUIRED BY UTILITY OWNERS.
20. FOR UTILITY CROSSINGS GREATER THAN 10" DIAMETER, SEE 3305-762 UNLESS OTHERWISE NOTED.
21. INSTALL PIPE MARKER POSTS 3305-960 ON CENTERLINE OF PIPELINE AT STRUCTURES, BURIED ACCESS MANWAYS, AT LOCATIONS NEAR FIBER OPTIC HANDHOLES, HPI'S, AT ROAD CROSSINGS, AND AT LINE OF SIGHT AS DIRECTED BY CONSTRUCTION MANAGER.
22. RETURN CONTOURS TO PRECONSTRUCTION ELEVATIONS UNLESS OTHERWISE SHOWN. NO NEW ENCLOSED DEPRESSIONS ARE ALLOWED.
23. INSTALL FIBER OPTIC CONDUIT IN ACCORDANCE WITH SPECIFICATION SECTION 40 95 80, FIBER OPTIC COMMUNICATION SUBSYSTEM.
24. VERIFY HEIGHT AND SPAN OF CROSSING OVERHEAD ELECTRIC LINES PRIOR TO CONSTRUCTION.
25. INSTALL EITHER TYPE F OR TYPE J PIPE ZONE MATERIAL EXCEPT WHERE SHOWN ON THE DRAWINGS AND STANDARD DETAILS.

SURVEY CONTROL

POINT NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
CLEVENGER	1248315.200	3249105.975	5204.01	STAINLESS STEEL ROD WITH ACCESS LID STAMPED "CLEVENGER 1991"
CORRAL_BLUFFS	1378767.054	3258121.280	6788.15	USCGS TRIANGULATION DISK STAMPED "CORRAL BLUFFS 1879"
PUEBLO-CBL-973	1176842.746	3266338.244	4946.93	NGS BRASS DISK STAMPED "CALIBRATION BASELINE 973 1983 U.S.C."
SDS-1	1365675.811	3249458.429	6184.90	3.25" ALUMINUM CAP STAMPED "SDS 1"
SDS-2	1356851.864	3249088.332	6053.21	3.25" ALUMINUM CAP STAMPED "SDS 2"
SDS-3	1346767.071	3250590.865	5997.82	3.25" ALUMINUM CAP STAMPED "SDS 3"
SDS-4	1334963.226	3253584.921	5829.49	3.25" ALUMINUM CAP STAMPED "SDS 4"
SDS-5	1319525.733	3251004.267	5727.36	3.25" ALUMINUM CAP STAMPED "SDS 5"
SDS-6	1311290.495	3249115.118	5640.77	3.25" ALUMINUM CAP STAMPED "SDS 6"
SDS-7	1275980.612	3244487.619	5329.01	3.25" ALUMINUM CAP STAMPED "SDS 7"
SDS-8	1272438.655	3234306.298	5465.33	3.25" ALUMINUM CAP STAMPED "SDS 8"
SDS-9	1262622.927	3233038.574	5463.03	3.25" ALUMINUM CAP STAMPED "SDS 9"
SDS-10	1249942.257	3232117.619	5304.13	3.25" ALUMINUM CAP STAMPED "SDS 10"
SDS-11	1240330.711	3232286.734	5468.25	3.25" ALUMINUM CAP STAMPED "SDS 11"
SDS-12	1225582.343	3231669.126	5320.70	3.25" ALUMINUM CAP STAMPED "SDS 12"
SDS-13	1210803.056	3231935.423	5098.26	3.25" ALUMINUM CAP STAMPED "SDS 13"
SDS-14	1196341.401	3232065.878	5032.89	3.25" ALUMINUM CAP STAMPED "SDS 14"
SDS-15	1187476.811	3231961.540	4996.37	3.25" ALUMINUM CAP STAMPED "SDS 15"
SDS-16	1178196.563	3232239.942	4941.71	3.25" ALUMINUM CAP STAMPED "SDS 16"
SDS-17	1171526.900	3232244.310	4960.11	3.25" ALUMINUM CAP STAMPED "SDS 17"
SDS-18	1167871.108	3226253.994	5144.02	3.25" ALUMINUM CAP STAMPED "SDS 18"
SDS-18A	1166477.575	3229461.646	5049.15	2.5" ALUM CAP STAMPED CH2M HILL
SDS-19	1161412.073	3224324.395	4771.63	3.25" ALUMINUM CAP STAMPED "SDS 19"

SURVEY NOTES:

1. PROJECT COORDINATE SYSTEM

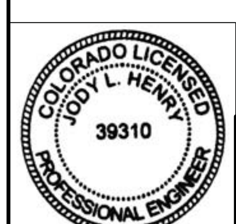
HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983, ADJUSTMENT OF 1986 (NAD 83/86)
PROJECTION: COLORADO STATE PLANE COORDINATES, CENTRAL ZONE
VERTICAL DATUM: NGVD 1929
GEOID MODEL: GEOID 03
UNITS: U.S. SURVEY FEET AT GRID

2. THE PRIMARY PROJECT CONTROL FOR SOUTHERN DELIVERY SYSTEM WAS ESTABLISHED BY KIRKHAM MICHAEL CONSULTING ENGINEERS (KM). A SURVEY CONTROL DIAGRAM WAS PREPARED BY KM AND DEPOSITED WITH THE EL PASO COUNTY CLERK AND RECORDER OFFICE ON AUGUST 10, 2004 UNDER DEPOSIT NUMBER 900110. THE PROJECT CONTROL WAS ACCEPTED BY CH2M HILL AND UTILIZED TO ESTABLISH ADDITIONAL SURVEY CONTROL USING STATIC AND FAST STATIC SURVEY TECHNIQUES.
3. COORDINATES ARE "GRID" VALUES.
4. SOUTHERN DELIVERY SYSTEM SURVEY CONTROL LISTED MAY NOT APPEAR ON THE PLAN SHEETS.

NATIONWIDE PERMIT NOTES

THE FOLLOWING NOTES ARE APPLICABLE TO AREAS THAT ARE SUBJECT TO A NWP 12:

1. TYPE K BACKFILL MUST BE NATIVE TOPSOIL FROM THE TRENCH FOR AREAS SUBJECT TO THE US ARMY CORPS OF ENGINEERS NWP 12 REQUIREMENTS. SEE DWG S1-PP-18 FOR LOCATIONS OF CROSSINGS SUBJECT TO NWP 12.
2. WHEN TEMPORARY FILLS ARE PLACED IN WETLANDS, USE A HORIZONTAL MARKER (FABRIC, CERTIFIED WEED FREE STRAW) AS APPROVED BY CONSTRUCTION MANAGER TO DELINEATE THE EXISTING GROUND ELEVATION OF WETLANDS THAT WILL BE TEMPORARILY FILLED DURING CONSTRUCTION.
3. USE AND MAINTAIN APPROPRIATE SOIL EROSION AND SEDIMENT CONTROLS IN EFFECTIVE OPERATING CONDITION DURING CONSTRUCTION.
4. SEPARATE LOAD BEARING TEMPORARY STRUCTURES IN WATERS OF THE U.S. FROM EXISTING SURFACES BY GEOTEXTILE.
5. PLACE HEAVY EQUIPMENT WORKING IN WETLANDS ON MATS OR OTHER APPROVED MEASURES IN ORDER TO MINIMIZE SOIL DISTURBANCE.
6. PERMANENTLY STABILIZE OTHER FILLS, AS WELL AS ANY WORK BELOW THE ORDINARY HIGH WATER MARK FOR A WATER OF THE U.S. AT THE EARLIEST PRACTICABLE DATE. PERFORM WORK WITHIN WATERS OF THE U.S. DURING LOW-FLOW OR NO FLOW PERIODS.



DSGN E FORD						
DR B NORVILLE						
CHK SIMPSON/ROSSER						
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

VERIFY SCALE
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0 1"
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CH2MHILL
Colorado Springs, CO 80903

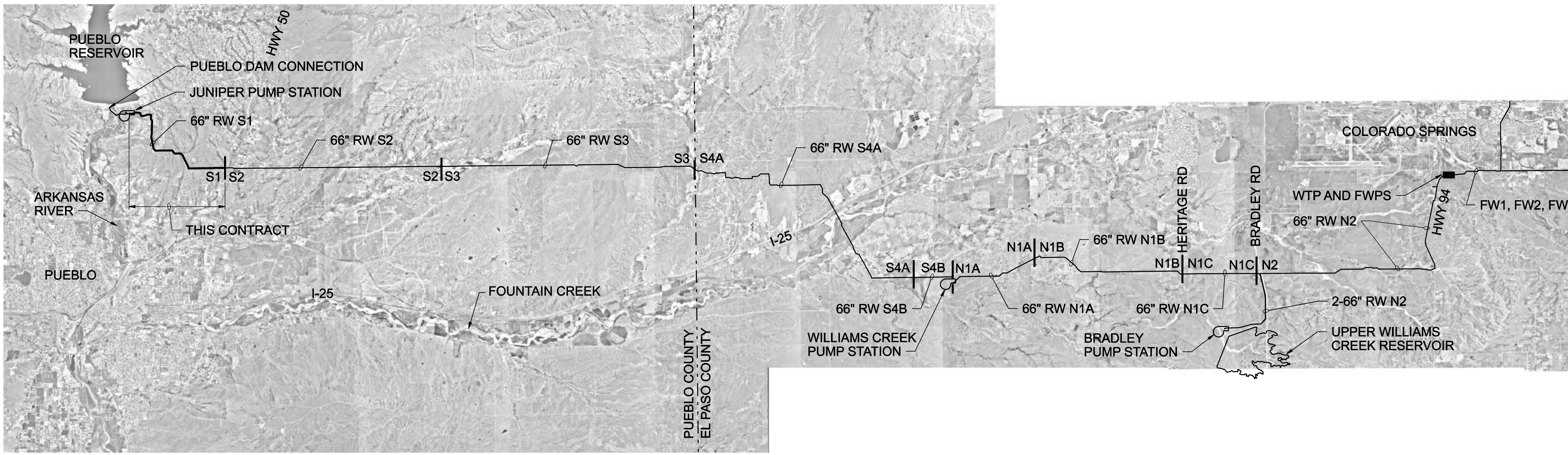
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

GENERAL
SOUTH SECTION ONE
GENERAL NOTES
AND SURVEY CONTROL

SHEET	3
DWG	S1-G-3
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG03d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 7:10:15 AM



COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD						
DR B NORVILLE						
CHK W CHRISTOFFERSON						
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

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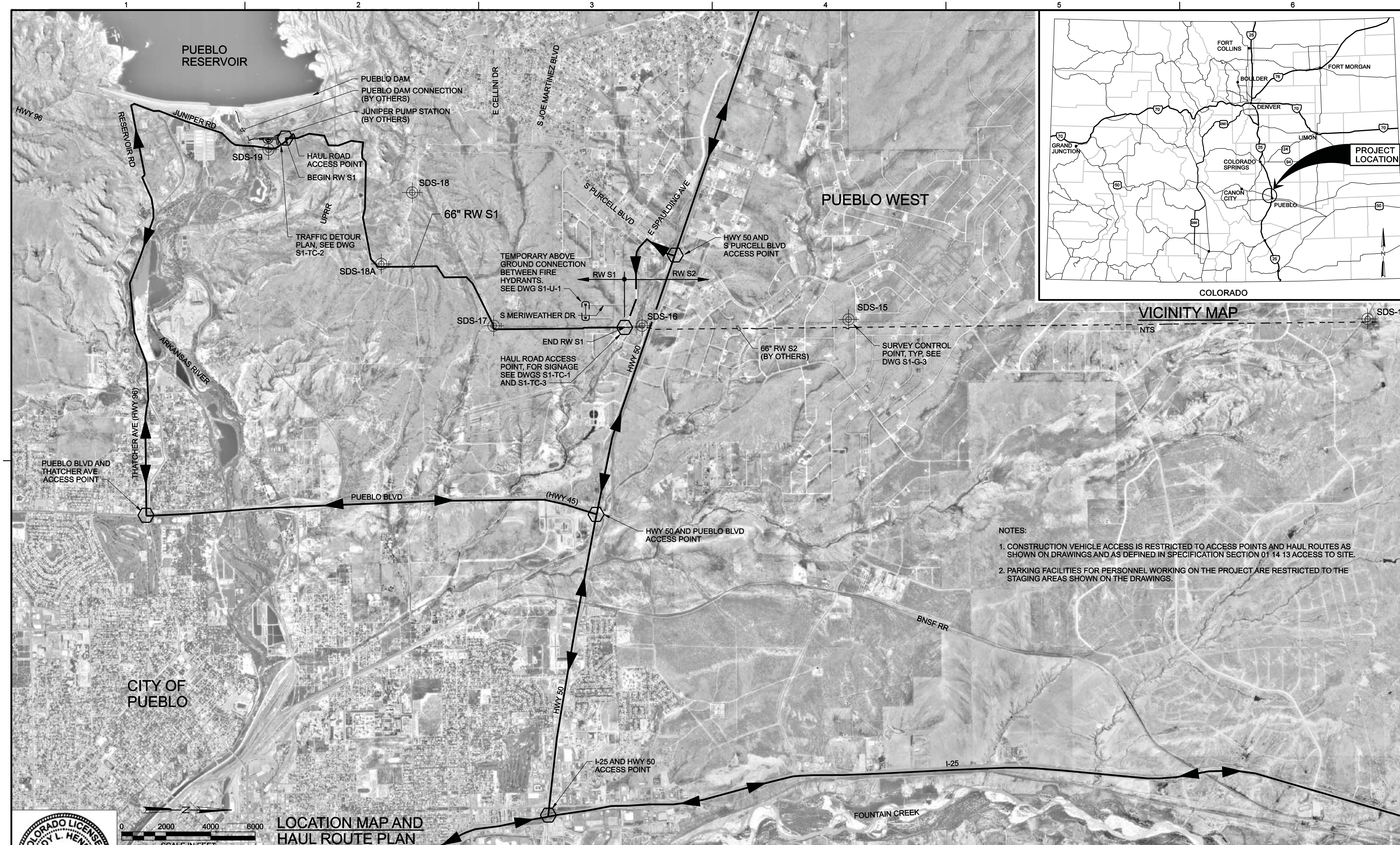
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

GENERAL
SOUTH SECTION ONE
SDS OVERALL MAP

SHEET	4
DWG	S1-G-4
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG04d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 7:18:41 AM



VICINITY MAP

NTS

LOCATION MAP AND HAUL ROUTE PLAN

NOTES:

1. CONSTRUCTION VEHICLE ACCESS IS RESTRICTED TO ACCESS POINTS AND HAUL ROUTES AS SHOWN ON DRAWINGS AND AS DEFINED IN SPECIFICATION SECTION 01 14 13 ACCESS TO SITE.
2. PARKING FACILITIES FOR PERSONNEL WORKING ON THE PROJECT ARE RESTRICTED TO THE STAGING AREAS SHOWN ON THE DRAWINGS.

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN E FORD						
DR B NORVILLE						
CHK W CHRISTOFFERSON						
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

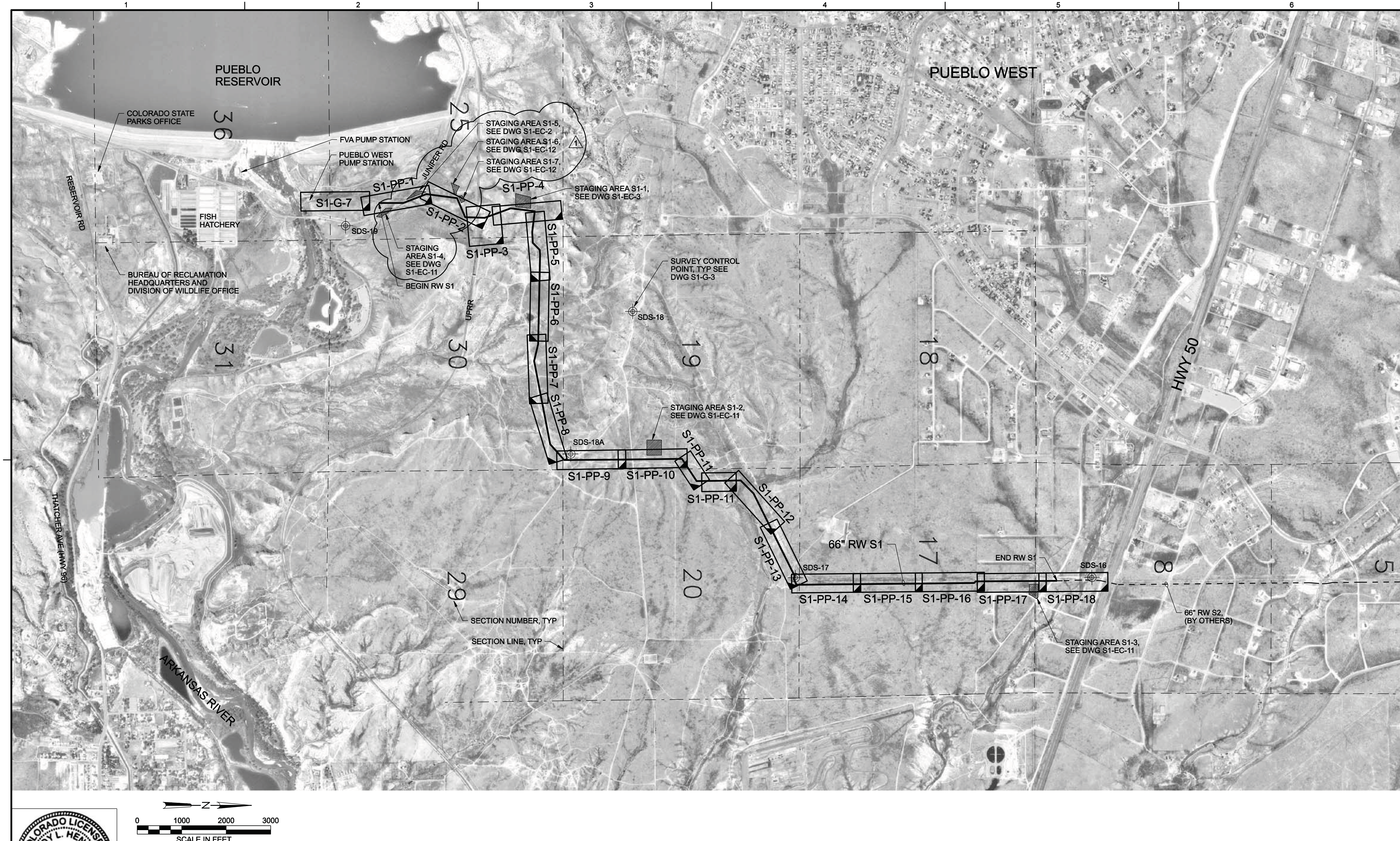
GENERAL

LOCATION MAP, VICINITY MAP, AND HAUL ROUTE PLAN

SHEET	5
DWG	S1-G-5
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG05d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 7:23:24 AM



DSGN J HENRY				
DR B NORVILLE				
CHK J HENRY	1	7/13/11	ADDENDUM NO. 1	BN	JH
APVD J HENRY	NO.	DATE	REVISION	BY	APVD

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

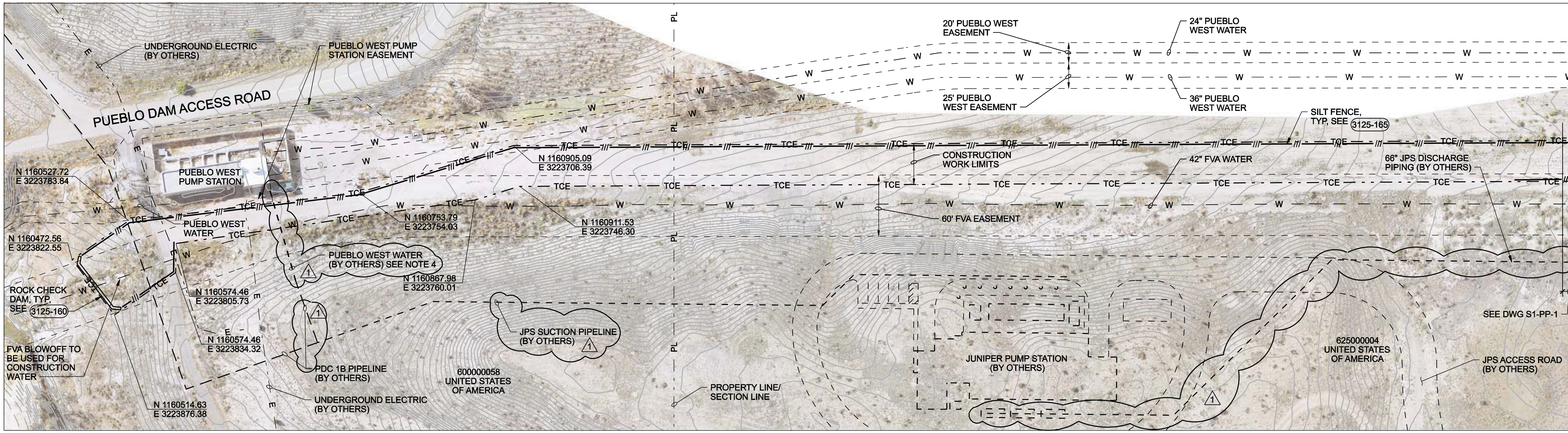
GENERAL

KEY PLAN AND STAGING AREAS

SHEET	6
DWG	S1-G-6
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG06d_171473.dgn PLOT DATE: 7/7/2011 PLOT TIME: 11:52:20 AM



0 50 100 150
SCALE IN FEET

NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS, SEE DWG S1-G-14.
2. CONSTRUCTION WORK LIMITS SHOWN ON THIS DRAWING ARE TO BE USED FOR ACCESS TO FVA BLOWOFF FOR CONSTRUCTION WATER. NO MATERIAL STORAGE OR PARKING ALLOWED WITHIN WORK LIMITS SHOWN ON THIS DRAWING. COORDINATE AND ALLOW ACCESS FOR FVA STAFF AND PUEBLO WEST STAFF AS REQUIRED.
3. FOR TRAVEL ACROSS THE FVA WATER PIPELINE, MAINTAIN PRE-CONSTRUCTION DEPTH OF COVER OVER THE FVA WATER PIPELINE AND DO NOT EXCEED HS-20 LOADING.
4. FOR TRAVEL ACROSS THE PUEBLO WEST WATER PIPELINE, MAINTAIN PRE-CONSTRUCTION DEPTH OF COVER OVER THE PUEBLO WEST WATER PIPELINE AND DO NOT EXCEED HS-20 LOADING. EXTENSION OF THE PUEBLO WEST SUPPLY LINE TO THE PUMP STATION SHOWN IS CONCEPTUAL. IT IS CURRENTLY IN DESIGN AND HAS NOT YET BEEN DETERMINED.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD	NO.	DATE	REVISION	BY	APVD
DR B NORVILLE	1	7/13/11	ADDENDUM NO. 1	BN	JH
CHK W CHRISTOFFERSON					
APVD J HENRY					

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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

GENERAL

ACCESS TO SOUTH FVA BLOWOFF

SHEET	7
DWG	S1-G-7
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG07d_171473.dgn PLOT DATE: 7/28/2011 PLOT TIME: 1:05:03 PM

ABBREVIATIONS

AB	ANCHOR BOLT, AGGREGATE BASE
ABC	AGGREGATE BASE COURSE
ABND	ABANDONED
AC	ASBESTOS CEMENT, ASPHALTIC CONCRETE
ACP	ASBESTOS CEMENT PIPE
ADJ	ADJACENT, ADJUSTABLE
ADPTR	ADAPTER
AGGR	AGGREGATE
AH	AHEAD
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALIGN	ALIGNMENT
AL	ALUMINUM
AMT	AMOUNT
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATELY
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASPH	ASPHALT
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ASWG	AMERICAN STEEL WIRE GAGE
@	AT
AUTH	AUTHORIZE
AUTO	AUTOMATIC
AVRV	AIR VACCUM RELEASE VALVE
AVE	AVENUE
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
AWS	AMERICAN WATER WORKS ASSOCIATION
AWWA	AMERICAN WELDING SOCIETY
BC	BEGIN CURVE
BCR	BEGIN CURVE RETURN
BETW	BETWEEN
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BITUM	BITUMINOUS
BK	BACK
BLDG	BUILDING
BLVD, BD	BOULEVARD
BM	BENCH MARK, BEAM
BMPS	BEST MANAGEMENT PRACTICES
BO	BLOWOFF
BOT	BOTTOM
BRG	BEARING
BV	BALL VALVE
BW	BOTH WAYS
C ESMT	CONSTRUCTION EASEMENT
C&G	CURB AND GUTTER
CATH	CATHODIC
CARV	COMBINATION AIR RELEASE AND VACUUM VALVE
CB	CATCH BASIN
CCP	CONCRETE CYLINDER PIPE
CDF	CONTROL DENSITY FILL
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
CDPHE	COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
CEM	CEMENT
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CIG	COLORADO INTERSTATE GAS
CIP	CAST IRON PIPE
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLASS	CLASSIFICATION
CLR	CLEAR
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CML&C	CEMENT MORTAR LINED & COATED
CMP	CORRUGATED METAL PIPE
CNG	COLORADO NATURAL GAS
CO	CLEANOUT
COMB	COMBINATION
CONC	CONCRETE
CONN	CONNECTING
CONSTR	CONSTRUCT
CONT	CONTINUED/CONTINUATION
COORD	COORDINATE
CORP	CORPORATION
CPLG	COUPLING
CP	CATHODIC PROTECTION
CPP	CORRUGATED PLASTIC PIPE
CR	COUNTY ROAD
CSG	CASING
CT	COUNT, COURT
CTR	CENTER
CTRD	CENTERED
CU	CUBIC
CULV	CULVERT
CY	CUBIC YARD

D	STORM DRAIN, DIAMETER
DC	DEDICATED CORRIDOR
DET	DETAIL
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DIST	DISTANCE
DN	DOWN
DR	DRAIN, DRIVE
DWG	DRAWING
E	EAST, EASTING, ELECTRIC
EA	EACH
ECC	ECCENTRIC
ECR	END CURB RETURN
EF	EACH FACE
ELEV, EL	ELEVATION
ELB,ELL	ELBOW
EMBED	EMBEDDED
ENGR	ENGINEER
E(OH)	OVERHEAD ELECTRIC
E(UG)	UNDERGROUND ELECTRIC
EOP	EDGE OF PAVEMENT
EQ	EQUATION
EQL	EQUAL
EQPT	EQUIPMENT
EQ SP	EQUALLY SPACED
EW	EACH WAY
EWEF	EACH WAY EACH FACE
EXC	EXCAVATE
EXP	EXPOSED, EXPANSION
EXST, EX	EXISTING
EY	EXPRESSWAY
FBO	FURNISHED BY OTHERS
FC	FLEXIBLE COUPLING
FCA	FLEXIBLE COUPLING ADAPTER
FDN	FINAL DESIGN NORTH (PIPELINE)
FE	FIELD EXPLORATION
FG	FINISH GRADE
FHY	FIRE HYDRANT
FMIS	FACILITY INFORMATION MANAGEMENT SYSTEM
FL	FLOWLINE
FLEX	FLEXIBLE
FLG	FLANGE, FLANGED
FLL, FL	FLOW LINE
FO	FIBER OPTIC
FOT	FLAT ON TOP
FPT	FEMALE PIPE THREAD
FRP	FIBERGLASS REINFORCED PLASTIC
FPS	FOOT PER SECOND
FT	FOOT, FEET
FTG	FOOTING
FVA	FOUNTAIN VALLEY AUTHORITY
FUT	FUTURE
FW	FINISHED WATER LINE
FW1	FINISHED WATER 1
FW2	FINISHED WATER 2
FW3	FINISHED WATER 3
G	GAS MAIN
GA	GAGE
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GND,GRND	GROUND
GS	GAS SERVICE LINE
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GVL	GRAVEL
HBP	HOT BITUMINOUS PAVING
HCL	HORIZONTAL CONTROL LINE
HDR	HEADER
HERCP	HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
HG	HYDRAULIC GRADIENT
HGL	HYDRAULIC GRADE LINE
HGT	HEIGHT
HH	HANDHOLE
HI	HIGH
HORZ	HORIZONTAL
HP	HIGH POINT, HIGH PRESSURE
HPI	HORIZONTAL POINT OF INTERSECTION
HWY	HIGHWAY
HYDID	HYDRANT INSIDE DIAMETER
I-25	INTERSTATE 25
ID	INNER DIAMETER, INSIDE DIAMETER
IF	INSULATING FLANGE
IN.	INCH
INV	INVERT
IP	IRON PIPE
IRR	IRRIGATION
IV, IVV	ISOLATION VALVE VAULT

JT	JOINT
kV	KILO VOLT
L	LEFT, ANGLE, LENGTH, LOAD
LAT'L	LATERAL
LF	LINEAR FEET
LG	LENGTH
LN	LANE
LP	LOW POINT, LIQUID PETROLEUM PIPELINE
L-R	LEFT TO RIGHT
LT	LEFT
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MGD	MILLION GALLONS PER DAY
MTP	MAIN TRANSMISSION PIPELINE
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MON	MONUMENT
MPH	MILES PER HOUR
MUTCD	MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS
MTR	METER
MVEA	MOUNTAIN VIEW ELECTRIC ASSOCIATION
N	NORTH, NORTHING
NA	NOT APPLICABLE
NAD	NORTH AMERICAN DATUM
NACE	NATIONAL GEODETIC VERTICAL DATUM
NGVD	NATIONAL ASSOCIATION OF CORROSION ENGINEERS
NIC	NOT IN CONTRACT
NO.,#	NUMBER, NUMBERING
NOM	NOMINAL
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
O&M	OPERATION & MAINTENANCE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OE	OVERHEAD ELECTRIC
OG	ORIGINAL GROUND
OH	OVERHEAD
OPNG	OPENING
ORIG	ORIGINAL
OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
P	POTHOLE LOCATION, PERMANENT
PE, P/E	PERMANENT EASEMENT, POLYETHYLENE, PLAIN END
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PCCP	PRETENSIONED CONCRETE CYLINDER PIPE
PERM	PERMANENT
PI	POINT OF INTERSECTION
PL	PLATE, PLACE
PL, P/L	PROPERTY LINE,
POB	POINT OF BEGINNING
POC	POINT ON CURVE
POE	POINT OF END
PP	POWER POLE, PLAN AND PROFILE
PRC	POINT OF REVERSE CURVE
PREFAB	PREFABRICATED
PRO	PROPOSED
PS	PUMPING STATION
PSCO	PUBLIC SERVICE COMPANY COLORADO
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAGE
PT	POINT OF TANGENCY
PUE, DE, & EE	PUBLIC UTILITY, DRAINAGE, AND EQUESTRIAN EASEMENT
PVI	POINT OF VERTICAL INTERSECTION (USED INTERCHANGABLY WITH VPI)
PVMT	PAVEMENT
PVC	POLYVINYL CHLORIDE
PW	PUEBLO WEST
R	RIGHT
R,RAD	RADIUS
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCPA	REINFORCED CONCRET PIPE ARCH
RD	ROAD, RECORD DRAWING
RDCR	REDUCER
REINF	REINFORCE
REF	REFER, REFERENCE
REM	REMOVED
REQD	REQUIRED
RH	RODHOLE
RP	RADIUS POINT
RR	RAILROAD
RT	RIGHT
R/W,ROW	RIGHT-OF-WAY

RW	RAW WATER
RW N1	RAW WATER PIPELINE NORTH 1
RW N2	RAW WATER PIPELINE NORTH 2
RW S1	RAW WATER PIPELINE SOUTH 1
RW S2	RAW WATER PIPELINE SOUTH 2
RW S3	RAW WATER PIPELINE SOUTH 3
RW S4	RAW WATER PIPELINE SOUTH 4
S	SOUTH, SLOPE
S2	SOUTH 2
SAN,S	SANITARY SEWER MAIN
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SD	STORM DRAIN
SDS	SOUTHERN DELIVERY SYSTEM
SDSP	SOUTHERN DELIVERY SYSTEM PIPELINE
SE	SEWAGE EFFLUENT
SECPA	SOUTHEAST COLORADO POWER ASSOCIATION
SERV	SERVICE
SF	SHEATH FOOTAGE
SH	SHEET
SHTS	SHEETS
SIG	SIGNAL
SIM	SIMILAR
SLP	SLOPE
SPEC	SPECIFICATIONS
SPRR	SOUTHERN PACIFIC RAILROAD
SQ FT	SQUARE FEET
SS	SANITARY SEWER
SST,SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURE
SUB	ELECTRICAL SUB STATION
SWMP	STORMWATER MANAGEMENT PLAN
SYMM	SYMMETRICAL
T	TANGENT, TELEPHONE,
T & B	TOP AND BOTTOM
t	THICKNESS
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB, TEMPORARY CONSTRUCTION
TCE	TEMPORARY CONSTRUCTION EASEMENT
TEL	TELEPHONE
TF	TRENCH FOOTAGE
TEMP	TEMPORARY
TO	TOP OF
TOC	TOP OF CONCRETE
TOP	TOP OF PIPE
TOPO	TOPOGRAPHY
TP	TEST PIT
TRANS	TRANSITION
TRI-STATE	TRI-STATE GENERATION & TRANSMISSION ASSOCIATION, INC.
TS	TEST STATION
T(UG)	UNDERGROUND TELEPHONE
TV	TELEVISION
TYP	TYPICAL
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRIC
UNO	UNLESS NOTED OTHERWISE
UPRR	UNION PACIFIC RAILROAD
UT	ULTRASONIC TESTING
V	VALVE, VENT
VB	VERTICAL BEND
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VPI	VERTICAL POINT OF INTERSECTION (USED INTERCHANGABLY WITH PVI)
VV	VACUUM VALVE
W	WATER,WEST
W/	WITH
WCPS	WILLIAMS CREEK PUMP STATION
WL	WORK LIMIT
WM	WATER METER
WS	WATER SURFACE, WATER STOP, WATER SERVICE
WSP	WELDED STEEL PIPE
W/O	WITHOUT
WSEL	WATER SURFACE ELEVATION
WT	WEIGHT
WTP	WATER TREATMENT PLANT
WY	WAY
XCEL	XCEL ENERGY

NOTE:

THIS IS A STANDARD ABBREVIATION SHEET. THEREFORE, NOT ALL ABBREVIATIONS SHOWN MAY BE USED ON THIS PROJECT.

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD					
DR	B NORVILLE					
CHK	W CHRISTOFFERSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL

Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

GENERAL

ABBREVIATIONS

SHEET	8
DWG	S1-G-8
DATE	JULY 2011
PROJ	171473.20.SP

CIVIL LEGEND

EXISTING FEATURES

- OE — OVERHEAD ELECTRICAL
- E — UNDERGROUND ELECTRIC
- LP — UNDERGROUND LIQUID PETROLEUM
- T — UNDERGROUND TELEPHONE
- FO — FIBER OPTICS LINE
- G — GAS PIPELINE
- W — WATER PIPELINE
- SS — SANITARY SEWER OR SANITARY SEWER FORCE MAIN
- 5000 — CONTOUR W/ ELEVATION
- 28 — SURVEY CONTROL POINT W/ POINT NUMBER
- POWER POLE
- PL — PROPERTY LINE
- FENCE
- SILT FENCE
- WOOD FENCE
- CHAIN LINK FECE
- NON SDS PROJECT UTILITY EASEMENT
- SECTION CORNER
- 1/4 SECTION CORNER
- MANHOLE
- FIRE HYDRANT
- TELEPHONE PEDESTAL

NEW FEATURES

- S 100+00 — NEW PIPELINE W/ STATIONING
- FDS-XXX OR PL-XXX — BORE HOLE LOCATION WITH NUMBER
- COMBINATION AIR RELEASE VALVE (PLAN)
- BLOW OFF ASSEMBLY (PLAN)
- TCE — TEMPORARY CONSTRUCTION EASEMENT
- P/E — CITY OF COLORADO SPRINGS PERMANENT EASEMENT
- DC — DEDICATED CORRIDOR
- WL — WORK LIMITS
- FO — FIBER OPTIC CONDUIT
- ACCESS MANWAY
- PS1-XX — POTHOLE
- H — HANDHOLE
- TS — TEST STATION
- SURFACE MONITORING POINT
- STAGING AREA / TURN AROUND

NOTES:

1. UTILITY LINE TYPE QUALITY LEVEL "B" SHOWN IN LEGEND. LINE TYPES FOR EXISTING UTILITY FEATURES MAY VARY. SEE NOTES ON DWG S1-G-13.
2. SEE DWG S1-EC-1 FOR EROSION CONTROL LEGEND.

MISCELLANEOUS

SHEET IDENTIFICATION SYSTEM

- A — SECTION (LETTER) OR DETAIL (NUMERAL) DESIGNATION
- P-2 — SHEET NUMBER (REPLACE WITH A LINE IF TAKEN AND SHOWN ON SAME DRAWING)
- • ON DRAWING WHERE SECTION OR DETAIL IS SHOWN:
- SHEET NUMBER(S) WHERE TAKEN

DETAIL AND SECTION DESIGNATION

- 3305-762
- STANDARD DETAIL DESIGNATION (NUMERAL)
- SHOWN ON STANDARD DETAIL DRAWING

PIPING DESIGNATION

EXAMPLE

- 66" RW S1
- 66" — NOMINAL PIPE DIAMETER
- RW S1 — FLOW STREAM IDENTIFICATION LEGEND

MECHANICAL LEGEND

PIPE AND FITTING SYMBOLS

DOUBLE LINE / SINGLE LINE

- EXISTING PIPE
- NEW PIPE
- EXISTING PIPE TO BE ABANDONED
- EXISTING PIPE TO BE REMOVED
- WELDED JOINT
- GROOVED END JOINT
- FLANGED JOINT
- MECHANICAL JOINT
- BELL & SPIGOT JOINT
- HUB & SPIGOT JOINT (RUBBER GASKET)
- BALL JOINT
- GROOVED END ADAPTER FLANGE
- FLANGED COUPLING ADAPTER
- FLANGED COUPLING ADAPTER W/ THRUST TIES
- FLEXIBLE COUPLING
- FLEXIBLE COUPLING WITH THRUST TIES
- STEEL BELLOWS EXP JOINT
- ELASTOMER BELLOWS EXP JOINT
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- LATERAL UP
- LATERAL DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- UNION
- CAP

VALVE SYMBOLS

- GATE
- BUTTERFLY
- GLOBE
- BALL
- SEAT PORT ECCENTRIC PLUG
- PLUG OR COCK
- DIAPHRAM
- SWING CHECK
- BALL CHECK
- CARV
- PRESSURE CONTROL

NOTES:

1. ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICAITONS.
2. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY. REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.
3. EXISTING PIPE AND EQUIPMENT IS SHOWN LIGHT-LINED AND/OR SCREENED AND IS NOTED AS EXISTING. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY-LINED.

- ANCHOR
- ELBOW, 90 DEGREE
- CROSS
- TEE
- ELBOW, 45 DEGREE
- LATERAL

VALVE DESIGNATION

- 12", V300
- V300 — REFERENCE NUMBER AS FOUND IN SPECIFICATION SECTION 40 27 02
- V — VALVE DESIGNATION (V)
- 12" — SIZE

THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

STRUCTURAL LEGEND

SYMBOL	DESCRIPTION
	CLSM (TYPE J) OR GROUT
OR	CONCRETE
	CHECKER PLATE
	GRATING
	STRUCTURAL STEEL
	TYPE O BACKFILL

SYMBOL	DESCRIPTION
	CONCRETE FILL
	TYPE D FILL
	TYPE E OR TYPE C FILL
	TYPE K BACKFILL
	TYPE P BACKFILL
	SUBGRADE
	AGGR BASE (TYPE G) OR GRANULAR FILL (TYPE F) OR DRAIN ROCK (TYPE H) OR GRAVEL (TYPE A)
	RIPRAP
	GRADE
	ROCK EXCAVATION

DESIGN CRITERIA

1. DESIGN PER ACI 318-08 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND AISC 360-05 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
2. REFER TO THE DRAWINGS FOR EACH INDIVIDUAL STRUCTURE FOR ADDITIONAL AND SPECIFIC STRUCTURE LOADINGS AND REQUIREMENTS.
3. ROOF LOADS:
   30 PSF SNOW LOAD
   Ce = 1.0
   I = 1.1
   H-20 VEHICLE LOAD

   DEFLECTION CRITERIA FOR ROOF FRAMING MEMBERS:
   TOTAL LOAD L/ 240
   LIVE LOAD L/ 360
   WHERE L IS THE MEMBERS SPAN LENGTH
4. SOIL DESIGN PARAMETERS:
   A. NET ALLOWABLE SOIL BEARING PRESSURES: 2500 PSF
   B. EQUIVALENT DRAINED FLUID PRESSURES FOR GRANULAR BACKFILL SOILS:
      ACTIVE: 35 PSF
      AT REST: 55 PSF
      PASSIVE: 310 PSF
   C. EQUIVALENT UNDRAINED FLUID PRESSURES FOR GRANULAR BACKFILL SOILS:
      ACTIVE: 85 PSF
      AT REST: 95 PSF
      PASSIVE: 205 PSF
   D. EQUIVALENT DRAINED FLUID PRESSURES FOR CLAYEY BACKFILL SOILS:
      ACTIVE: 90 PSF
      AT REST: 105 PSF
      PASSIVE: 120 PSF
   E. EQUIVALENT UNDRAINED FLUID PRESSURES FOR CLAYEY BACKFILL SOILS:
      ACTIVE: 110 PSF
      AT REST: 115 PSF
      PASSIVE: 100 PSF

GENERAL INFORMATION

1. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE KEYED IN EACH LOCATION. CONSULT THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
2. VERIFY OPENING DIMENSIONS IN WALLS, SLABS, AND DECKS WITH THE ARCHITECTURAL, MECHANICAL, HVAC AND ELECTRICAL DRAWINGS.
3. FOR NUMBER, TYPE, SIZE, ARRANGEMENT, AND/OR LOCATION OF EQUIPMENT PADS SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, HVAC AND PLUMBING DRAWINGS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO PLACING SLABS, WALLS AND FOUNDATIONS. COORDINATE MECHANICAL, ELECTRICAL AND HVAC PIPING OPENINGS WITH MECHANICAL, ELECTRICAL AND HVAC DRAWINGS.
4. NO STRUCTURAL MEMBERS SHALL BE CUT FOR PIPES, DUCTS, ETC, UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE ENGINEER.
5. VISITS TO THE JOB SITE BY THE ENGINEER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT ENGINEER IS GUARANTORS OF THE CONSTRUCTOR'S WORK, NOR RESPONSIBLE FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, NOR SAFETY AT THE JOB SITE.
6. SPECIAL INSPECTION AND TESTING (OWNER FURNISHED) IS REQUIRED TO VERIFY INSTALLATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS ON THE FOLLOWING PORTIONS OF THE WORK:
   CONCRETE PLACEMENT
   REINFORCING STEEL PLACEMENT
   ANCHORS, EMBEDS AND BOLTS INSTALLED IN CONCRETE
   HIGH STRENGTH BOLTS
   GRADING, EXCAVATION, AND FILLING
7. SPECIFIED CONCRETE TESTING DURING CONSTRUCTION WILL BE OWNER FURNISHED. LABORATORY TEST MIXES ARE SPECIFIED.

FOUNDATIONS

1. REFER TO SDS GEOTECHNICAL DATA REPORT:
   - RAW WATER PIPELINE - SOUTH SECTION BY GEI CONSULTANTS, INC. DATED DECEMBER 14, 2005, SDS GEOTECHNICAL DESIGN REPORT
   - RAW WATER PIPELINE - SOUTH SECTION BY GEI CONSULTANTS, INC. DATED NOVEMBER 13, 2006, AND SDS GEOTECHNICAL DATA SUMMARY FOR FIVE LOCATIONS ALONG SOUTH PIPELINE ALIGNMENT - S1 BY RJH CONSULTANTS, INC. DATED JANUARY 11, 2011.
2. SHORE EXCAVATION AS REQUIRED TO PREVENT SUBSIDENCE OR DAMAGE TO ADJACENT EXISTING STRUCTURES, STREETS, UTILITIES, ETC.
3. FOUNDATION SLABS, SLABS-ON-GRADE AND WALL AND COLUMN FOUNDATIONS SPECIFICALLY NOTED TO BE ON FILL SHALL BEAR ON COMPACTED GRANULAR FILL OR CLSM AS SPECIFIED.
4. NO BACKFILL SHALL BE PLACED BEHIND WALLS UNTIL THE WALL'S AND TOP SUPPORTING SLAB'S CONCRETE HAVE ATTAINED 100% OF THEIR SPECIFIED COMPRESSIVE STRENGTH, OR UNTIL TOP-OF-WALL FRAMING SYSTEMS, INCLUDING DIAPHRAGMS, HAVE BEEN COMPLETED.
5. NO BACKFILL SHALL BE PLACED BEHIND CANTILEVERED, FREE TOP WALLS UNTIL THE CONCRETE HAS ATTAINED 100% OF ITS SPECIFIED COMPRESSIVE STRENGTH.

FORMWORK, SHORING AND BRACING

1. THE STRUCTURES SHOWN ON THE DRAWINGS HAVE BEEN DESIGNED FOR STABILITY UNDER FINAL CONDITIONS ONLY. THE DESIGN SHOWN DOES NOT INCLUDE THE NECESSARY COMPONENTS OR EQUIPMENT FOR THE STABILITY OF THE STRUCTURES DURING CONSTRUCTION. WORK RELATING TO CONSTRUCTION ERECTION METHODS, BRACING, SHORING, RIGGING, GUYS, SCAFFOLDING, FORMWORK, AND OTHER WORK AIDS ARE REQUIRED TO SAFELY PERFORM THE WORK SHOWN.
2. TEMPORARY SHORING SHALL REMAIN IN PLACE UNTIL ELEVATED CONCRETE FLOOR OR SLABS HAVE REACHED 28 DAY DESIGN STRENGTH AS DETERMINED BY CYLINDER BREAKS.

CONCRETE REINFORCING

1. THE MINIMUM REINFORCING FOR CONCRETE WALLS AND SLABS SHALL BE AS FOLLOWS:

WALL THICKNESS	REINF EACH WAY	LOCATION
6"	#4@12"	CENTERED
8"	#5@12"	CENTERED
10"	#4@12"	EACH FACE
12"	#5@12"	EACH FACE

   PROVIDE LARGER SIZES AND MORE REINFORCING IN SECTIONS OF CONCRETE WHERE REQUIRED BY THE DETAILS ON THE DRAWINGS OR BY THE SPECIFICATIONS.
2. CLEARANCE FOR REINFORCEMENT BARS, UNLESS SHOWN OTHERWISE, SHALL BE:
   WHEN PLACED ON GROUND: 3"

   ALL OTHER CONCRETE SURFACES:
   #5 BAR OR SMALLER 1 1/2"
   #6 BAR OR LARGER 2"
3. REFER TO WALL CORNER AND WALL INTERSECTION REINFORCING STANDARD DETAIL 0330-003. WALL CORNER REINFORCING SIZES AND SPACINGS SHALL BE AS SHOWN ON THE DRAWINGS AND REFERENCED TO THIS DETAIL. TYPICAL HORIZONTAL WALL REINFORCING SHALL LAP WITH THE CORNER HORIZONTAL REINFORCING.
4. BENDS, UNLESS OTHERWISE SHOWN, SHALL BE 90 DEGREE ACI 318 STANDARD HOOKS.
5. WALL CORNER AND WALL INTERSECTION REINFORCEMENT BARS SHALL BE CONTINUOUS AROUND CORNERS AND THROUGH COLUMNS OR PILASTERS. REINFORCEMENT SHALL BE EXTENDED INTO CONNECTING WALLS AND LAPPED ON THE OPPOSITE FACE OF THE CONNECTING WALLS, AS INDICATED IN STANDARD DETAIL 0330-003.
6. VERTICAL WALL BARS SHALL BE LAPPED WITH DOWELS FROM BASE SLABS AND EXTENDED INTO THE TOP FACE OF ROOF SLABS AND LAPPED WITH TOP SLAB REINFORCEMENT. PROVIDE A MINIMUM OF FOUR FULL HEIGHT VERTICAL BARS WITH MATCHING DOWELS AT WALL ENDS, CORNERS AND INTERSECTIONS WITH SIZE TO MATCH TYPICAL VERTICAL REINFORCING STEEL SHOWN OR REQUIRED BY NOTES ABOVE.
7. SLAB AND BEAM TOP BAR SPLICES SHALL BE LOCATED AT MIDSPAN AND BOTTOM BAR SPLICES SHALL BE LOCATED AT SUPPORTS.
8. REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS:

MINIMUM CONCRETE DESIGN STRENGTH = 4,000 PSI		GRADE 60 REINFORCING STEEL								
BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
LAP SPLICE LENGTH										
SPACING<6"	TOP BAR *	1'-4"	2'-0"	3'-0"	4'-0"	5'-10"	6'-8"	7'-7"	8'-6"	9'-5"
	OTHER BAR	1'-4"	1'-7"	2'-4"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"
SPACING≥6"	TOP BAR *	1'-4"	1'-8"	2'-0"	2'-5"	3'-6"	4'-0"	5'-0"	6'-2"	7'-5"
	OTHER BAR	1'-4"	1'-4"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-9"	5'-8"
EMBEDMENT LENGTH										
SPACING<6"	TOP BAR *	1'-0"	1'-7"	2'-4"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"
	OTHER BAR	1'-0"	1'-3"	1'-9"	2'-5"	3'-6"	4'-0"	4'-6"	5'-1"	5'-7"
SPACING≥6"	TOP BAR *	1'-0"	1'-3"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-9"	5'-8"
	OTHER BAR	1'-0"	1'-0"	1'-3"	1'-5"	2'-1"	2'-5"	3'-0"	3'-8"	4'-5"

* TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

CONCRETE

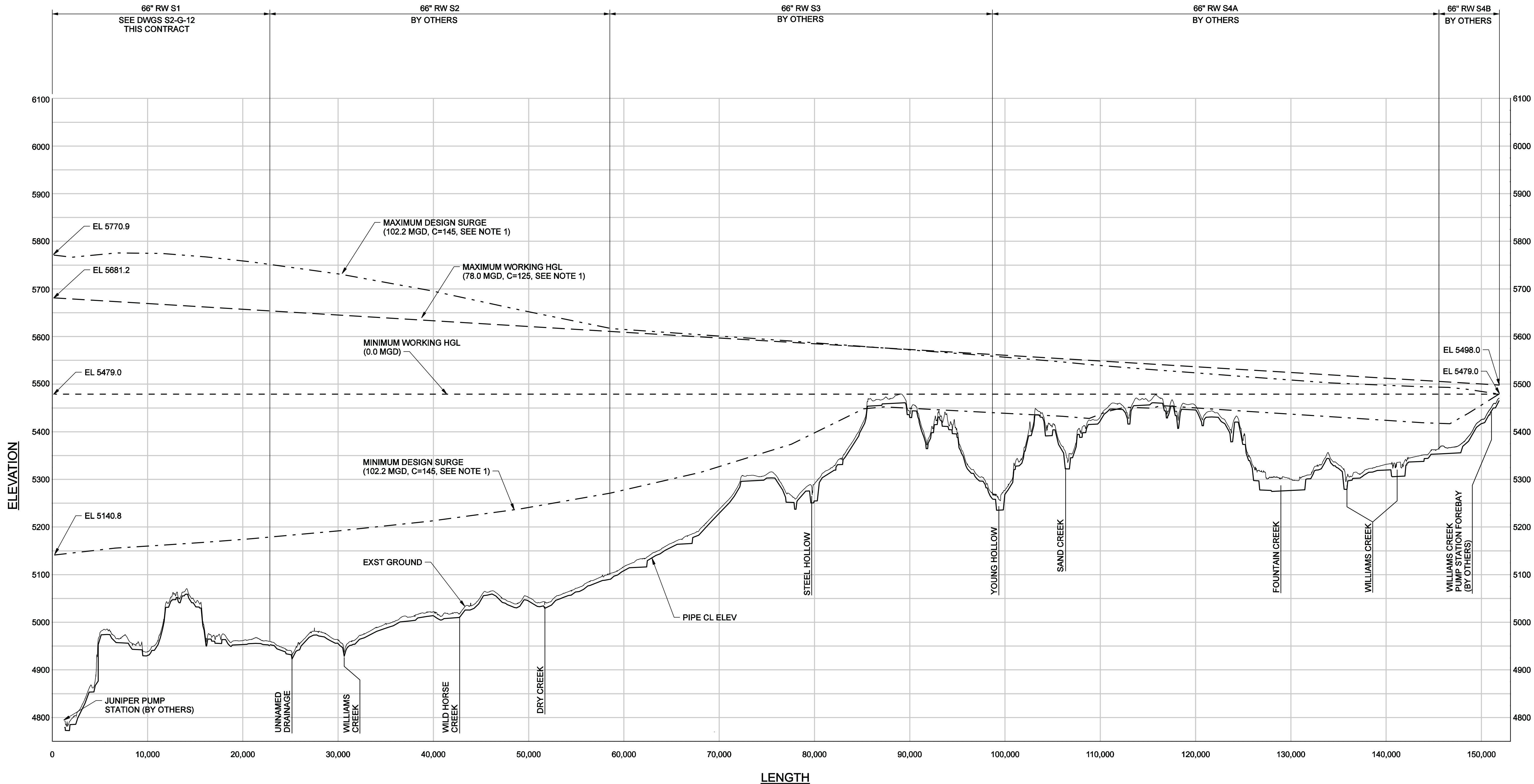
1. 28-DAY CAST-IN-PLACE CONCRETE STRENGTHS:
   TYPICAL: 4500 PSI
   CONCRETE FILL: 2500 PSI
2. REINFORCING STEEL:
   TYPICAL: ASTM A615, GRADE 60
   TO BE WELDED: ASTM A706, GRADE 60
3. FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 "MANUAL OF STANDARD PRACTICE" AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS".
4. CONTINUOUS WATERSTOP AS SPECIFIED SHALL BE INSTALLED IN CONSTRUCTION JOINTS IN WALLS OF BELOW GRADE STRUCTURES, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.
5. CONSTRUCTION JOINTS INDICATED ARE SUGGESTED LOCATIONS. REVISED LOCATION OF JOINTS, SUBJECT TO SPECIFIED REQUIREMENTS, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW BY THE ENGINEER. ADDITIONAL CONSTRUCTION JOINT LOCATIONS, AS REQUIRED FOR CONSTRUCTION, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
6. ROUGHEN AND CLEAN CONSTRUCTION JOINTS IN WALLS AND SLABS AS SPECIFIED PRIOR TO PLACING ADJACENT CONCRETE. SANDBLASTING OR OTHER PREPARATION OF HORIZONTAL AND VERTICAL JOINTS IS REQUIRED.
7. COORDINATE PLACEMENT OF OPENINGS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND INSERTS PRIOR TO PLACEMENT OF CONCRETE.
8. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.
9. CONDUIT SHALL NOT BE PLACED PARALLEL WITH BEAM OR COLUMN REIFORCEMENT UNLESS SPECIFICALLY INDICATED IN DRAWINGS.

STRUCTURAL WELDING

1. WELDS SHALL CONFORM TO AWS D1.1 LATEST EDITION AS SPECIFIED.
2. WELDS FOUND DEFECTIVE SHALL BE REPAIRED IN ACCORDANCE WITH AWS D1.1, 5.26
3. INTERMITTENT WELDS SHALL BE UTILIZED AT ALL FIELD WELDS AND EMBED PLATES AND ANGLES TO AVOID SPALLING OR CRACKING OF THE EXISTING CONCRETE.
4. BUTT JOINT WELDS SHALL BE COMPLETE JOINT PENETRATION (CJP) UNLESS INDICATED OTHERWISE.
5. A CERTIFIED WELDING INSPECTOR (CWI) SHALL BE PRESENT WHEN FIELD WELDING IS PERFORMED. THE CWI SHALL PERFORM 100% VISUAL INSPECTION OF WELDS PRIOR TO ASSEMBLY, DURING ASSEMBLY, DURING WELDING, AND AFTER WELDING.

STRUCTURAL STEEL AND METAL FABRICATIONS

1. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:
   W - SHAPES A992
   MISCELLANEOUS SHAPES INCLUDING ANGLES, CHANNELS, PLATES, ETC. A36
   SQUARE OR RECTANGULAR STEEL TUBING A500, GRADE B
   STEEL PIPE A501 OR A53, GRADE B
2. STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN CONFORMANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION, AND CURRENT OSHA STANDARDS.
3. BOLTS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE FOLLOWING EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE:
   UNLESS SHOWN OTHERWISE A325-N
   SLIP CRITICAL A325-SC
   MACHINE BOLTS (MB) AND ANCHOR BOLTS (AB)
   STAINLESS STEEL A193
   GALVANIZED STEEL A153
4. ITEMS TO BE EMBEDDED IN CONCRETE SHALL BE CLEAN AND FREE OF OIL, DIRT AND PAINT.
5. NO HOLES OTHER THAN THOSE SPECIFICALLY DETAILED SHALL BE ALLOWED THROUGH STRUCTURAL STEEL MEMBERS. NO CUTTING OR BURNING OF STRUCTURAL STEEL IS PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.



NOTES:

1. "C" REPRESENTS THE HAZEN-WILLIAMS ROUGHNESS COEFFICIENT.
2. 66" RW S3 AND S4A HYDRAULIC PROFILE ARE BASED ON SCHEMATIC DESIGN AND IS SUBJECT TO CHANGE AT FINAL DESIGN.
3. LENGTH AND 66" RW S1 STATIONING DO NOT CORRESPOND.

HYDRAULIC PROFILE- 66" RW SOUTH SECTION

NTS

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD					
DR B NORVILLE					
CHK G SIMPSON					
APVD J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

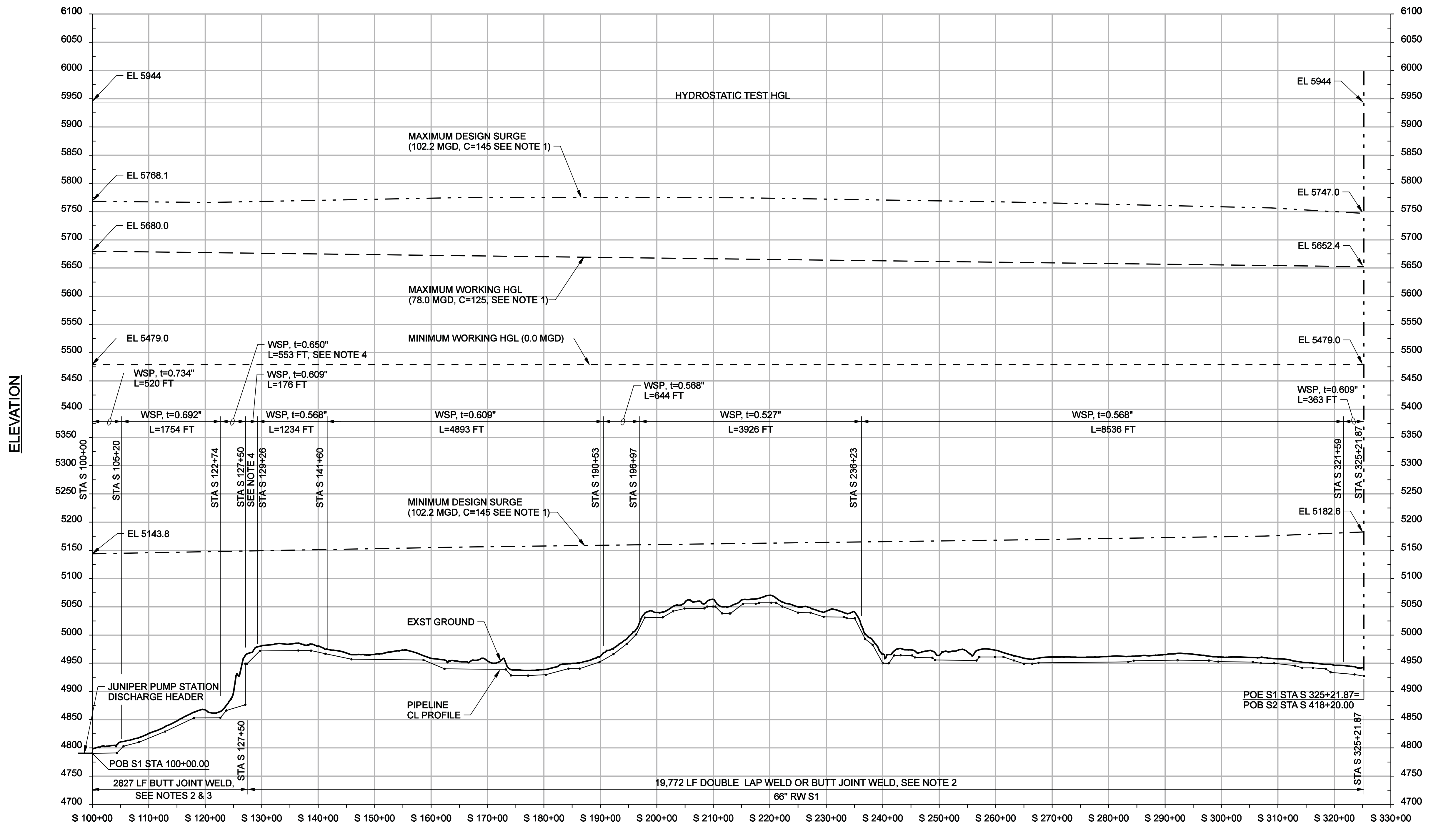
GENERAL

SOUTH SECTION OVERALL
HYDRAULIC PROFILE

SHEET	11
DWG	S1-G-11
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG11d_171473.dgn PLOT DATE: 6/8/2011 PLOT TIME: 2:00:12 PM



HYDRAULIC PROFILE - 66" RW S1

HORZ: 1"=1000'
VERT: 1"=100'

NOTES:

1. "C" REPRESENTS THE HAZEN-WILLIAMS ROUGHNESS COEFFICIENT.
2. SEE SPECIFICATION SECTION 33 05 01.02, WELDED STEEL PIPE & FITTINGS - WELD BEFORE BACKFILL, AND SPECIFICATION SECTION 09 81 12, PIPE JOINT COATING - WELD BEFORE BACKFILL.
3. BUTT JOINT WELD LENGTH INCLUDES JOINT WELDING IN THE RISER PIPE.
4. WSP LENGTH FOR RISER PIPE WALL THICKNESS OF 0.650" INCLUDES VERTICAL PIPELINE IN RISER PIPE.

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN E FORD						VERIFY SCALE	CH2MHILL Colorado Springs, CO 80903
DR B NORVILLE						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
CHK G SIMPSON						IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	
APVD J HENRY	NO.	DATE	REVISION	BY	APVD		

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

GENERAL

HYDRAULIC PROFILE AND PIPE WALL THICKNESS

SHEET	12
DWG	S1-G-12
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG12d_171473.dgn PLOT DATE: 6/17/2011 PLOT TIME: 11:51:07 AM

UTILITY POTHOLE TABLE

POTHOLE ID	APPROXIMATE S1 PIPELINE STATION[1]	UTILITY DESCRIPTION	UTILITY SIZE (IN)	UTILITY MATERIAL 2	NORTHING	EASTING	GROUND ELEVATION AT POTHOLE (FT)	TOP OF PIPE ELEVATION (FT)	BOTTOM OF PIPE ELEVATION (FT)	MINIMUM VERTICAL CLEARANCE REQUIRED FOR CROSSING (IN)
PS1-1A-1	S 103+16	STATE PARK WATER[3]	12	ASBESTOS CEMENT	1162476.89	3223777.88	4804.67	NOT FOUND	NOT FOUND	12
PS1-1A-2	S 103+29	STATE PARK WATER[3]	12	ASBESTOS CEMENT	1162489.82	3223787.52	4804.81	NOT FOUND	NOT FOUND	12
PS1-1B	S 103+91	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1162551.69	3223747.34	4806.18	4797.26	4793.76	N/A
PS1-1	S 106+68	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1162819.64	3223769.47	4813.63	4800.96	4797.46	12
PS1-2	S 105+01	PUEBLO WEST WATER	36	DUCTILE IRON PIPE	1162661.77	3223622.47	4811.28	4801.86	4798.86	N/A
PS1-3	S 105+11	PUEBLO WEST WATER	24	DUCTILE IRON PIPE	1162672.05	3223600.16	4811.95	NOT FOUND	NOT FOUND	N/A
PS1-4-1	S 153+76	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1165775.77	3225432.59	4971.33	NOT FOUND	NOT FOUND	12
PS1-4-2	S 153+80	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1165771.98	3225435.52	4971.13	4966.13	4962.63	12
PS1-5	S 244+14	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1170710.89	3230401.09	4975.40	NOT FOUND	NOT FOUND	N/A
PS1-7	S 268+30	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1171737.26	3232250.07	4964.70	4958.45	4954.95	N/A
PS1-8	S 277+40	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1172648.29	3232303.64	4964.00	4957.583333	4954.08	N/A
PS1-10	S 293+60	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1174261.11	3232289.11	4972.35	NOT FOUND	NOT FOUND	N/A
PS1-11	S 303+25	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1175229.51	3232279.55	4963.60	NOT FOUND	NOT FOUND	N/A
S2-1	S 307+77	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1175667.20	3232274.29	4960.89	4954.888	4951.388	N/A
S2-1A	S 318+57	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1176747.43	3232263.79	4950.64	4943.808667	4940.308667	N/A
S2-1B	S 323+77	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1177264.05	3232259.50	4942.44	4936.194	4932.694	N/A
S2-1C	S 323+57	PUEBLO WEST WATER	6	ASBESTOS CEMENT	1177244.80	3232241.74	4943.20	4938.282333	4937.782333	18
S2-2	S 324+22	PUEBLO WEST WATER	8	ASBESTOS CEMENT	1177309.57	3232297.43	4942.10	4937.1	4936.433333	18
S2-3	S 324+20	PUEBLO WEST WATER	6	ASBESTOS CEMENT	1177308.87	3232293.80	4942.15	4937.15	4936.65	18
S2-4	S 324+57	FVA WATER	42	PRETENSIONED CONCRETE CYLINDER PIPE	1177346.14	3232258.09	4942.37	4934.955333	4931.455333	N/A
S2-4A	S 324+82	PUEBLO WEST WATER	8	ASBESTOS CEMENT	1177373.68	3232218.05	4942.92	4937.499333	4936.832667	18

NOTES:
1. STATIONING BASED ON MAY 2011 S1 STATIONING.
2. POTHOLE INFORMATION SHOWN REGARDLESS IF UTILITY WAS FOUND.
3. STATE PARK WATER COULD NOT BE FOUND AFTER SEVERAL POTHOLE ATTEMPTS. PIPELINE WILL BE SLIP-LINED IN NEAR FUTURE BY OTHERS. CH2M HILL WILL SURVEY PIPELINE WHEN IT IS EXPOSED FOR SLIP LINING AND PROVIDE SURVEY DATA TO CONTRACTOR.

NOTE: IN LAST COLUMN, "N/A" INDICATES THE POTHOLED UTILITY PARALLELS THE RW S1 PIPELINE IN THE VICINITY OF THE POTHOLE.

NOTES:

1. PER ASCE STANDARD CI/ASCE 38-02, LOCATE INFORMATION FOR EXISTING UTILITIES ARE CATEGORIZED WITH A QUALITY LEVEL BASE. THE FOLLOWING DEFINITIONS FROM CI/ASCE 38-02 ARE USED TO DESCRIBE EACH UTILITY QUALITY LEVEL.

   UTILITY QUALITY LEVEL:
   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 IS ESTABLISHED BY DIFFERENT METHODS OF COLLECTION AND INTERPRETATION.

   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 SUBSURFACE 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 0.5-INCH VERTICAL AND TO APPLICABLE HORIZONTAL SURVEY AND MAPPING ACCURACY AS DEFINED OR EXPECTED BY THE PROJECT MANAGER.

   QUALITY LEVEL B:
   INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. QUALITY LEVEL B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.

   QUALITY LEVEL C:
   INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.

   QUALITY LEVEL D:
   INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.

2. UTILITIES SHOWN ON PLAN AND PROFILE SHEETS ARE QUALITY LEVEL"D" UNLESS OTHERWISE SHOWN.

3. QUALITY LEVEL A: POTHOLE
   INFORMATION IS SHOWN ON PLAN AND PROFILE SHEETS AS:
   ⊗PS1-1 AND IS TO BE USED WITH ASCE QUALITY LEVEL A DATA REFERENCE TABLE ON THIS SHEET.

4. QUALITY LEVEL B:
   DATA IS SHOWN AS:

   — — — G — — — — G — — — — G — — —

   GAS UTILITY SHOWN, OTHERS USE SIMILAR DESIGNATION.

5. QUALITY LEVEL C:
   DATA IS SHOWN AS:

   ——— G ——— G ——— G ——— G ——

   GAS UTILITY SHOWN, OTHERS USE SIMILAR DESIGNATION.

6. QUALITY LEVEL D:
   DATA IS SHOWN AS:

   - — - - — G — - - — - - — G — - - — - - — G — - - — -

   GAS UTILITY SHOWN, OTHERS USE SIMILAR DESIGNATION.

7. UTILITIES ARE BURIED UNLESS DESIGNATED OVERHEAD.

8. COORDINATE WITH UTILITY COMPANIES PRIOR TO CROSSING UTILITIES PER SPECIFICATION SECTION 01 31 13, PROJECT COORDINATION. UTILITY SUPPORT SYSTEMS TO BE USED PER REQUIREMENTS OF UTILITY COMPANIES.

9. COORDINATE WITH UTILITY COMPANIES TO PROTECT SERVICE LINES TO STRUCTURES BEING DEMOLISHED INCLUDING BUT NOT LIMITED TO, PUEBLO WEST METROPOLITAN DISTRICT, COLORADO NATURAL GAS, AND BLACK HILLS ENERGY.

10. CONFIRM LOCATION AND DEPTH OF UTILITIES PRIOR TO EXCAVATION.

11. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO "CALL BEFORE YOU DIG" PROGRAM AT 1-800-922-1987 (OR 811) 72 BUSINESS HOURS PRIOR TO ANY EXCAVATION.

SANITARY SEWER MANHOLE DATA

APPROXIMATE STATION	LOCATION RELATIVE TO 66" RW S1/S2	PIPE DIA IN (IN)	PIPE DIA OUT (IN)	NORTHING	EASTING	RIM ELEVATION	INVERT ELEV IN	INVERT ELEV OUT
S1 S 319+45	EAST	18	18	1176836.67	3232322.77	4948.5	4936.71	4938.56
S1 S 319+45	WEST	18	18	NA	NA	4955.29	4945.59	4945.44
S2 S 424+00	EAST	15	15	1177993.61	3232321.71	4934.36	4928.26	4928.11
S2 S 424+60	WEST	15	15	1178057.94	3232139.35	4936.72	4930.12	4929.92

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN E FORD					
DR B NORVILLE					
CHK G SIMPSON	2	8/17/11	ADDENDUM NO. 2	BN	JH
APVD J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

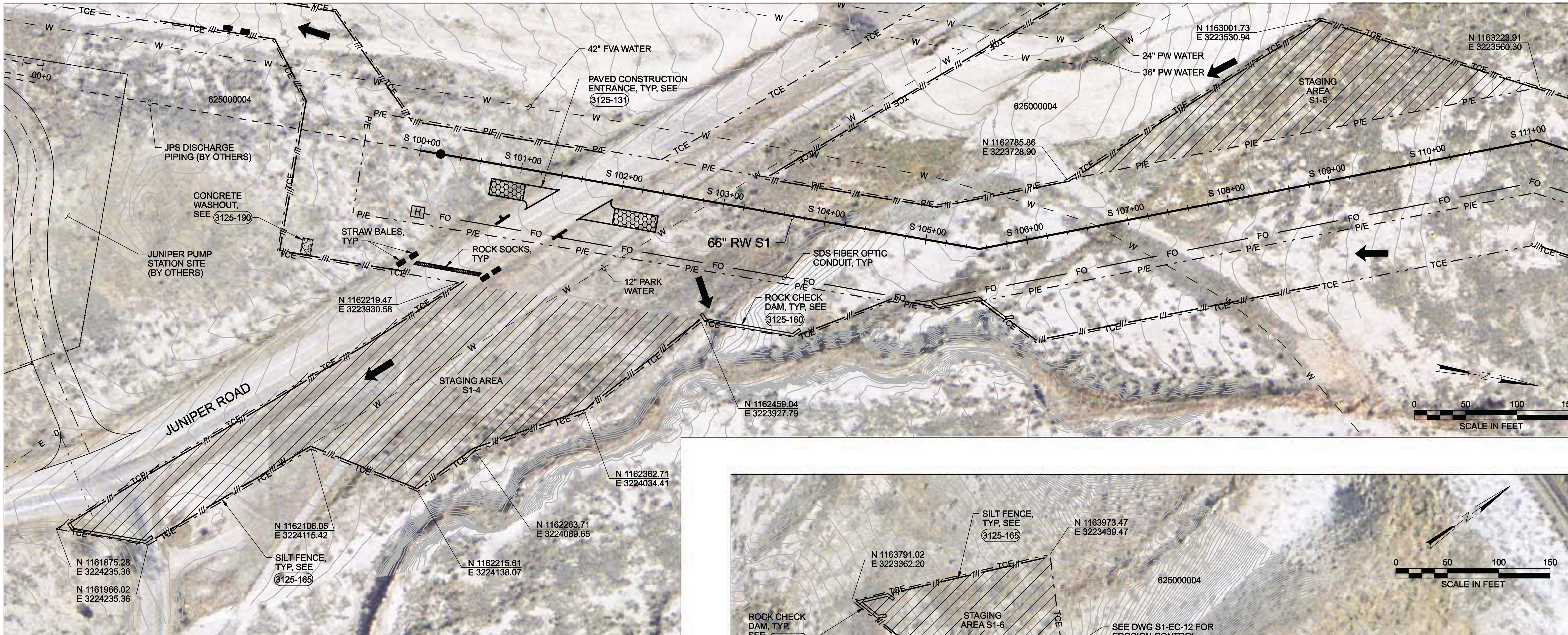
CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

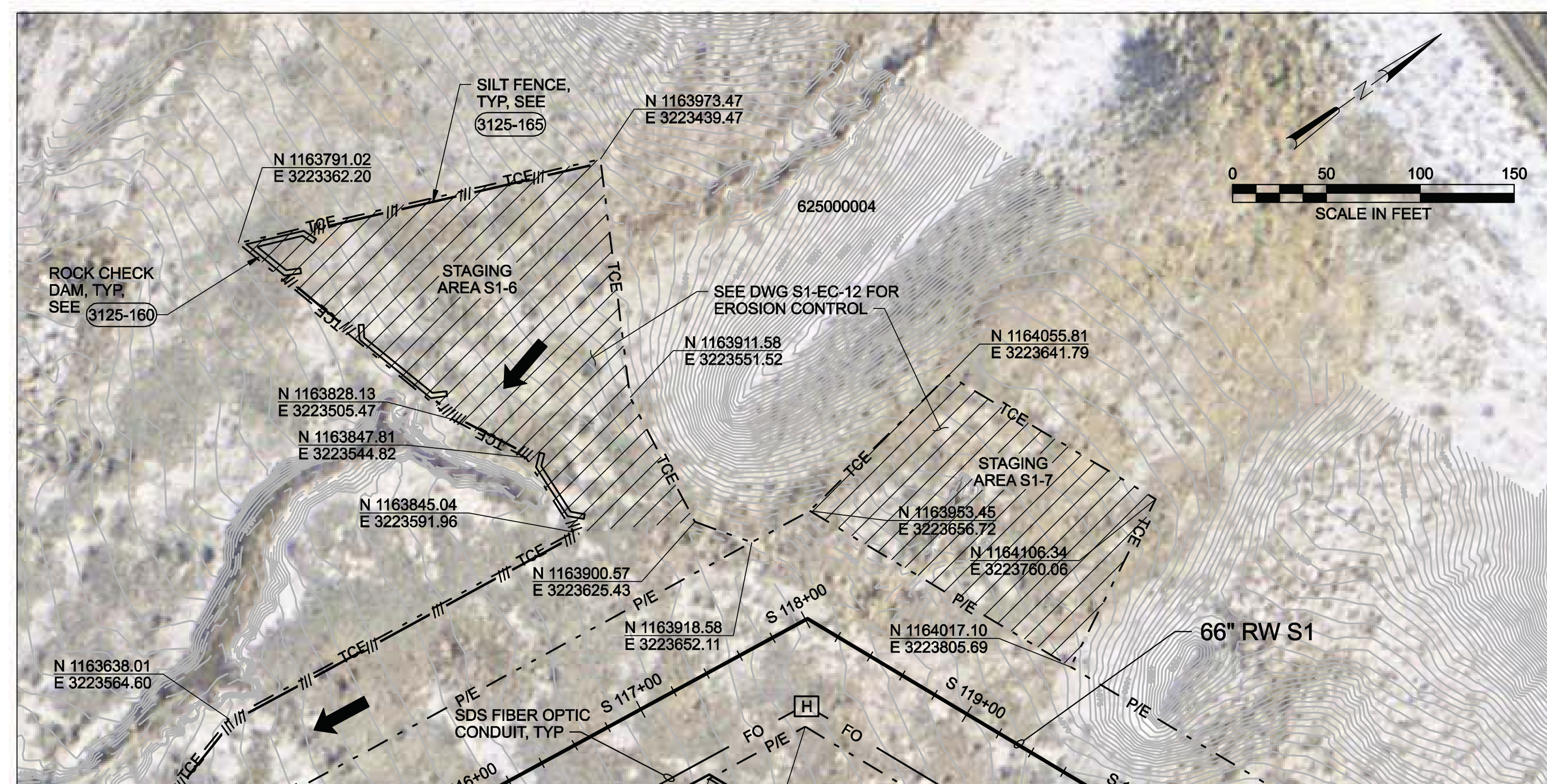
GENERAL

UTILITY INFORMATION LOCATION TABLE

SHEET	13
DWG	S1-G-13
DATE	JULY 2011
PROJ	171473.20.SP



STAGING AREAS S1-4 AND S1-5 1



STAGING AREAS S1-6 AND S1-7 1

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON	1	7/13/11	ADDENDUM NO. 1 - TCE ADDED	BN	JH
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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0 1"
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CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

GENERAL

STAGING AREAS S1-4, S1-5, S1-6, AND S1-7

SHEET	14A
DWG	S1-G-14A
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP101nG14d_171473.dgn PLOT DATE: 8/5/2011 PLOT TIME: 9:55:06 AM

WORK LIMIT CONSTRUCTION FENCING SCHEDULE

WORK LIMIT CONSTRUCTION FENCING SCHEDULE			
LOCATION	EAST FENCE LINE FENCE TYPE STD DETAIL NUMBER	WEST FENCE LINE FENCE TYPE STD DETAIL NUMBER	DWG REFERENCE
ACCESS TO SOUTH FVA BLOWOFF			
PARCEL #600000058 TO POB	3231-666	3231-666	S1-G-7
POB TO E SPAULDING AVE			
POB TO PARCEL #625000004	3231-666	3231-666	S1-PP-1, S1-PP-2, S1-PP-3
PARCEL #625000004 (STAGING AREA S1-4)	3231-410	3231-410	S1-PP-1
PARCEL #625000004 (STAGING AREA S1-5)	3231-410	3231-410	S1-PP-1
PARCEL #625000004 (STAGING AREA S1-6)	3231-410	3231-410	S1-PP-2
PARCEL #625000004 (STAGING AREA S1-7)	3231-410	3231-410	S1-PP-2
PARCEL #625001001 TO PARCEL #625002001	3231-666, 3231-451	3231-666, 3231-451	S1-PP-3, S1-PP-4, S1-PP-5
PARCEL #625002001 (STAGING AREA S1-1)	3231-410	3231-410	S1-PP-4
PARCEL #500000069 TO PARCEL #500000024	3231-666	3231-666	S1-PP-5, S1-PP-6, S1-PP-7, S1-PP-8, S1-PP-9, S1-PP-10, S1-PP-11
PARCEL #500000024 (STAGING AREA S1-2)	3231-410	3231-410	S1-PP-10
PARCEL #500000025 TO PARCEL #517003002	3231-666	3231-666	S1-PP-11, S1-PP-12, S1-PP-13, S1-PP-14, S1-PP-15, S1-PP-16, S1-PP-17
PARCEL #517003001 TO PARCEL #517099366	3231-410	3231-666	S1-PP-17
PARCEL #517099366 (STAGING AREA S1-3)	3231-410	3231-410	S1-PP-17
PARCEL #508015001	3231-666	3231-666	S1-PP-17, S1 PP-18
E SPAULDING AVE TO POE			
E SPAULDING AVE TO GROUSE DR	3231-666	3231-666	S1-PP-18
NOTES:			
1. LOCATION DESCRIPTIONS ARE CONSTRUCTION WORK LIMITS UNLESS NOTED OTHERWISE.			
2. DO NOT INSTALL WORK LIMIT FENCING ACROSS PUBLIC ROADS.			
3. ENCLOSE ENTIRE STAGING AREAS WITH CHAIN LINK FENCE. SECURE STAGING AREAS WITH A LOCKED GATE.			

1

NOTES:

1. AT TURN AROUND AREA AT POB, INSTALL AND ENCLOSE ENTIRE AREA WITH ORANGE SAFETY FENCE, SEE DWG S1-PP-1 AND 3231-666.
2. AT TURN AROUND AREA AT POE INSTALL AND ENCLOSE ENTIRE AREA WITH ORANGE SAFETY FENCE, SEE DWG S1-PP-18 AND 3231-666.
3. DO NOT INSTALL WORK LIMIT FENCING ACROSS ROAD BETWEEN RIGHT-OF-WAY.
4. INSTALL WORK LIMIT FENCING 3231-666 OR 3231-410 PARALLEL TO EACH SIDE OF THE ROAD RIGHT OF WAY IN THE EAST WEST DIRECTION.
5. ENCLOSE ENTIRE STAGING AREA WITH CHAIN LINK FENCE 3231-410 . SECURE STAGING AREAS WITH A LOCKED GATE. SEE DWGS S1-PP-1, S1-PP-2, S1-PP-4, S1-PP-10, S1-PP-17, AND S1-PP-18.
6. SEE DWGS S1-EC-1 THROUGH S1-EC-11 FOR WORK LIMIT FENCING BOUNDARY.

CATHODIC PROTECTION TEST STATION SCHEDULE

CATHODIC PROTECTION TEST STATION SCHEDULE			
P&P SHEET	APPROXIMATE PIPELINE STA	LOCATE TEST STATION NEXT TO:	DETAIL
PP-1	100+20	ACCESS MANWAY	2642-837A
PP-1	106+65	FVA CROSSING	2642-806A
PP-3	124+00	START OF UPRR TUNNEL	2642-811A
PP-3	127+15	ACCESS MANWAY	2642-837A
PP-4	136+37	CARV	2642-801A
PP-5	150+00		2642-802A
PP-5	153+86	FVA CROSSING	2642-806A
PP-6	164+20		2642-802A
PP-7	177+30	BLOWOFF	2642-802A
PP-8	198+07	ACCESS MANWAY	2642-802A
PP-9	209+85	CARV	2642-801A
PP-10	220+16	CARV	2642-802A
PP-11	234+85	ACCESS MANWAY	2642-802A
PP-12	243+08	CARV	2642-802A
PP-13	256+50	BLOWOFF	2642-802A
PP-14	266+00	BLOWOFF	2642-802A
PP-14	279+00		2642-802A
PP-15	292+12	CARV	2642-801A
PP-16	307+20		2642-802A
PP-18	325+22	POE OF S1	2642-837A

NOTES:

1. INSTALL ANODES PER SPECIFICATION SECTION 26 42 02, GALVANIC ANODE CATHODIC PROTECTION SYSTEM.

FIBER OPTICS CONDUIT LENGTHS

APPROXIMATE PIPELINE STATION	LENGTH BETWEEN HANDHOLES
S 100+00	
TO	1801
S 118+01	
TO	467
S 122+68	
TO	92
S 123+60	
TO	37
S 123+97	
TO	318
S 127+15	
TO	1159
S 138+74	
TO	716
S 145+90	
TO	1660
S 162+50	
TO	2500
S 187+50	
TO	958
S 197+08	
TO	2647
S 223+55	
TO	597
S 229+52	
TO	994
S 239+46	
TO	954
S 249+00	
TO	1533
S 264+33	
TO	70
S 265+03	
TO	147
S 266+50	
TO	2500
S 291+50	
TO	1480
S 306+30	
TO	64
S 306+94	
TO	1271
S 319+65	

FIBER OPTIC CONDUIT LENGTHS AT ROAD,UTILITY, AND DRAINAGE CROSSINGS

APPROXIMATE PIPELINE STATION	APPROXIMATE LENGTH	LOCATION
S 101+50 TO S 102+10	60	JUNIPER RD
S 103+70 TO S 104+70	100	DRAINAGE
S 106+15 TO S 107+80	165	DRAINAGE / UTILITY CORRIDOR
S 137+20 TO S 139+40	220	DRAINAGE
S 147+50 TO S 152+00	450	DRAINAGE
S 153+50 TO S 154+50	100	UTILITY CORRIDOR
S 162+00 TO S 163+60	160	DRAINAGE
S 175+30 TO S 182+80	750	DRAINAGE
S 187+30 TO S 193+00	570	DRAINAGE
S 200+00 TO S 201+05	105	DRAINAGE
S 212+00 TO S 213+00	100	DRAINAGE
S 239+80 TO S 241+35	155	DRAINAGE
S 249+26 TO S 250+51	125	DRAINAGE

APPROXIMATE PIPELINE STATION	APPROXIMATE LENGTH	LOCATION
S 255+50 TO S 256+20	70	DRAINAGE
S 257+21 TO S 259+12	191	PROPOSED JOE MARTINEZ BLVD EXTENSION
S 266+00 TO S 267+00	100	DRAINAGE
S 282+50 TO S 283+50	100	DRAINAGE
S 300+00 TO S 301+00	100	DRAINAGE
S 307+00 TO S 307+82	82	UTILITY CORRIDOR
S 314+32 TO S 314+62	30	UTILITY CORRIDOR
S 318+97 TO S 321+02	205	UTILITY CORRIDOR
S 323+50 TO S 325+00	150	E SPAULDING AVE

NOTES:

1. MAINTAIN A MINIMUM BEND RADIUS OF 10 TIMES THE DIAMETER OF THE FIBER OPTIC CONDUIT.
2. BETWEEN THE STATIONS SHOWN, MATCH THE DEPTH OF THE FO CONDUIT TO THE COVER OF THE 66" RW.

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN E FORD						
DR B NORVILLE						
CHK G SIMPSON	1	7/13/11	ADDENDUM NO. 1	BN	JH	
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

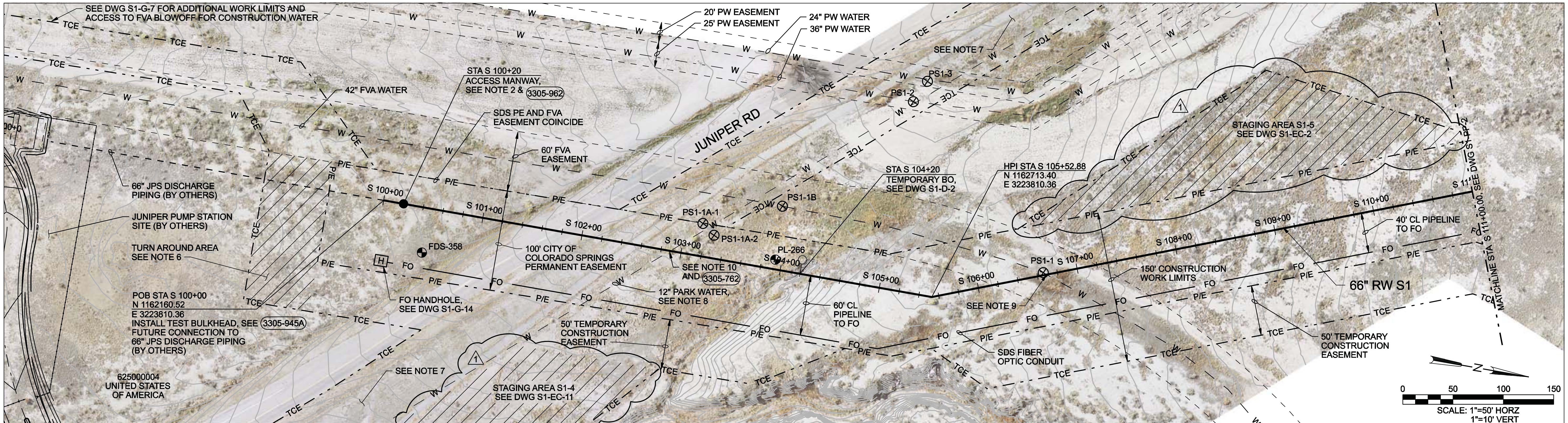
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

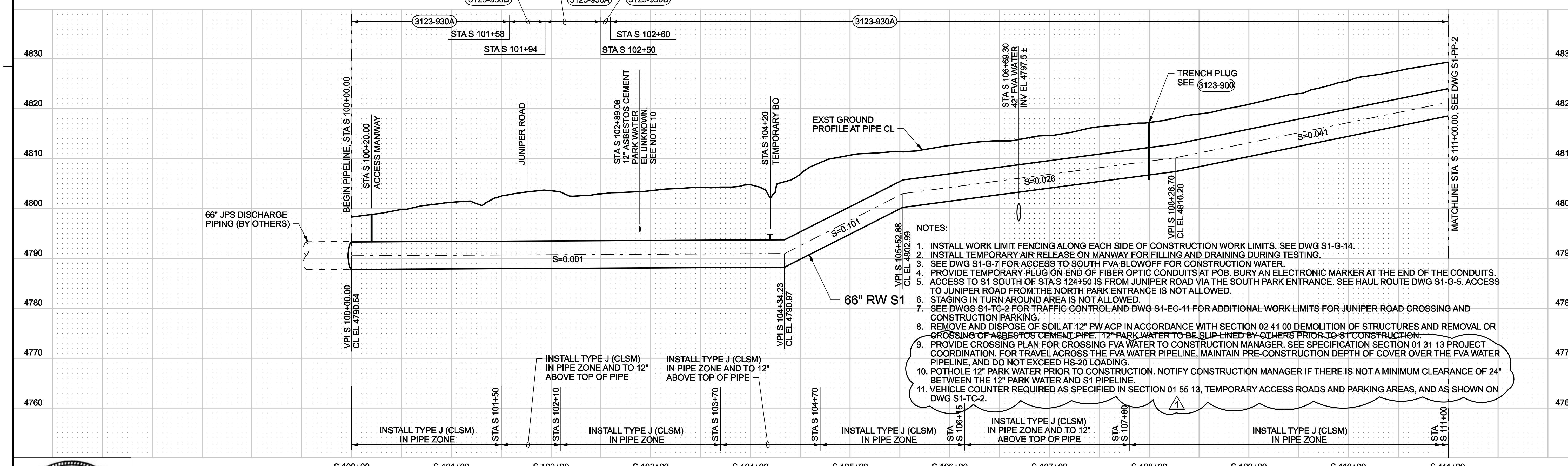
CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

GENERAL
CONSTRUCTION FENCING SCHEDULE, TEST STATION SCHEDULE, AND FIBER OPTIC INFORMATION TABLES

SHEET	14
DWG	S1-G-14
DATE	JULY 2011
PROJ	171473.20.SP





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. INSTALL TEMPORARY AIR RELEASE ON MANWAY FOR FILLING AND DRAINING DURING TESTING.
3. SEE DWG S1-G-7 FOR ACCESS TO SOUTH FVA BLOWOFF FOR CONSTRUCTION WATER.
4. PROVIDE TEMPORARY PLUG ON END OF FIBER OPTIC CONDUITS AT POB. BURY AN ELECTRONIC MARKER AT THE END OF THE CONDUITS.
5. ACCESS TO S1 SOUTH OF STA S 124+50 IS FROM JUNIPER ROAD VIA THE SOUTH PARK ENTRANCE. SEE HAUL ROUTE DWG S1-G-5. ACCESS TO JUNIPER ROAD FROM THE NORTH PARK ENTRANCE IS NOT ALLOWED.
6. STAGING IN TURN AROUND AREA IS NOT ALLOWED.
7. SEE DWGS S1-TC-2 FOR TRAFFIC CONTROL AND DWG S1-EC-11 FOR ADDITIONAL WORK LIMITS FOR JUNIPER ROAD CROSSING AND CONSTRUCTION PARKING.
8. REMOVE AND DISPOSE OF SOIL AT 12" PW ACP IN ACCORDANCE WITH SECTION 02 41 00 DEMOLITION OF STRUCTURES AND REMOVAL OR ~~CROSSING OF ASBESTOS CEMENT PIPE. 12" PARK WATER TO BE SLIP LINED BY OTHERS PRIOR TO S1 CONSTRUCTION.~~
9. PROVIDE CROSSING PLAN FOR CROSSING FVA WATER TO CONSTRUCTION MANAGER. SEE SPECIFICATION SECTION 01 31 13 PROJECT COORDINATION. FOR TRAVEL ACROSS THE FVA WATER PIPELINE, MAINTAIN PRE-CONSTRUCTION DEPTH OF COVER OVER THE FVA WATER PIPELINE, AND DO NOT EXCEED HS-20 LOADING.
10. POTHOLE 12" PARK WATER PRIOR TO CONSTRUCTION. NOTIFY CONSTRUCTION MANAGER IF THERE IS NOT A MINIMUM CLEARANCE OF 24" BETWEEN THE 12" PARK WATER AND S1 PIPELINE.
11. VEHICLE COUNTER REQUIRED AS SPECIFIED IN SECTION 01 55 13, TEMPORARY ACCESS ROADS AND PARKING AREAS, AND AS SHOWN ON DWG S1-TC-2.

1

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON	1	7/13/11	ADDENDUM NO. 1 - TCE ADDED, NOTES	BN	JH
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
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CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

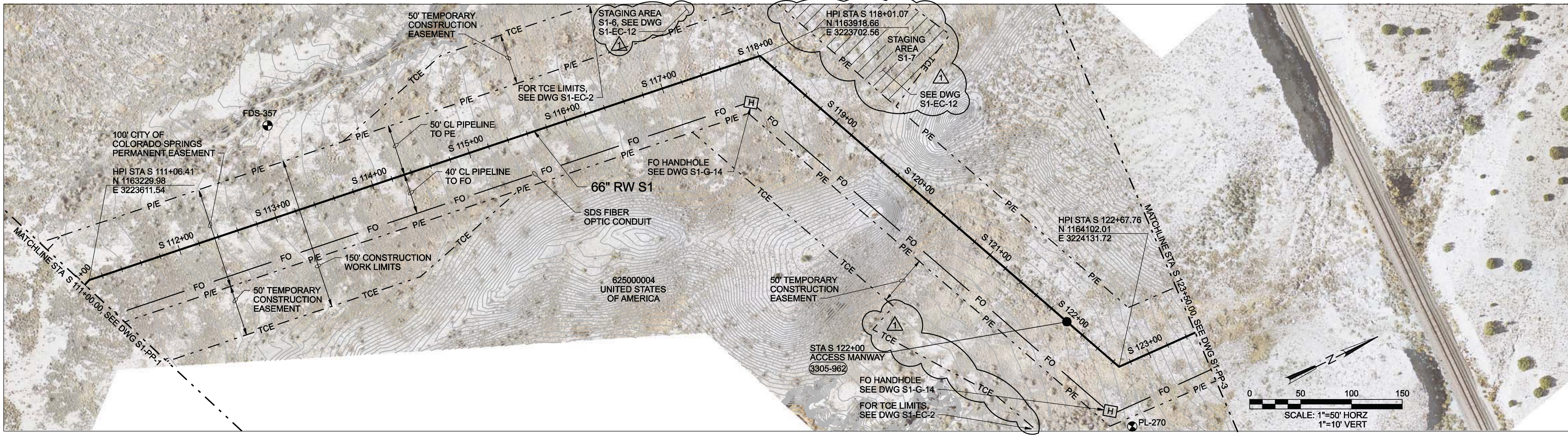
PLAN AND PROFILE

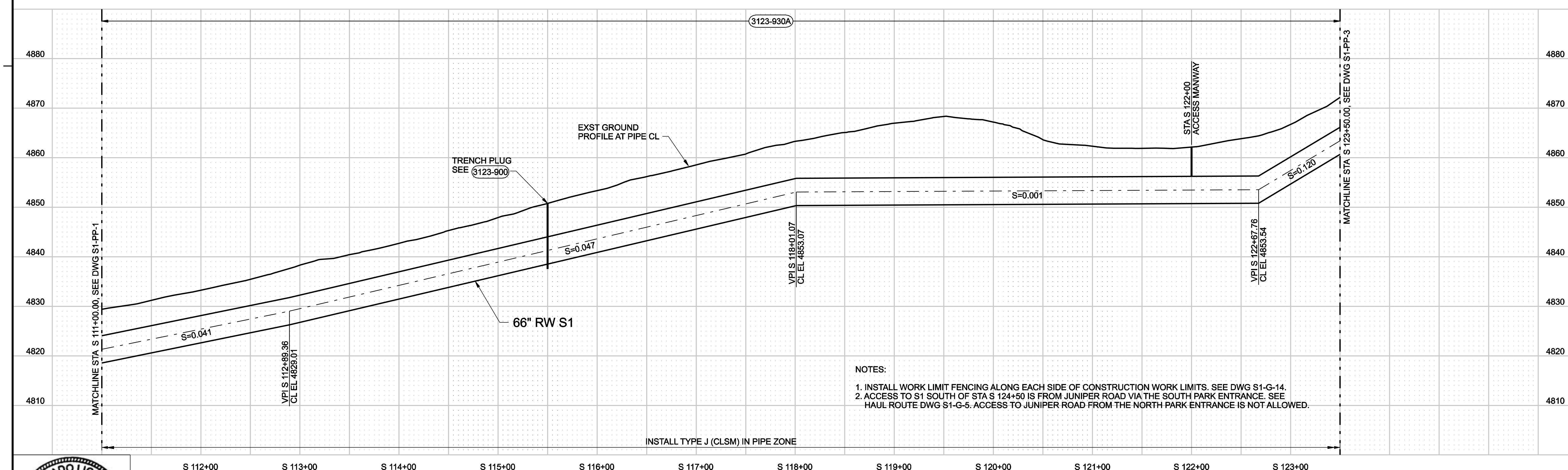
POB STATION S 100+00 TO STATION S 111+00

SHEET	15
DWG	S1-PP-1
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP01d_171473.dgn PLOT DATE: 7/20/2011 PLOT TIME: 8:31:36 AM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. ACCESS TO S1 SOUTH OF STA S 124+50 IS FROM JUNIPER ROAD VIA THE SOUTH PARK ENTRANCE. SEE HAUL ROUTE DWG S1-G-5. ACCESS TO JUNIPER ROAD FROM THE NORTH PARK ENTRANCE IS NOT ALLOWED.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD					
DR B NORVILLE					
CHK G SIMPSON	1	7/13/11	ADDENDUM NO. 1 - TCE ADDED	BN	JH
APVD J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

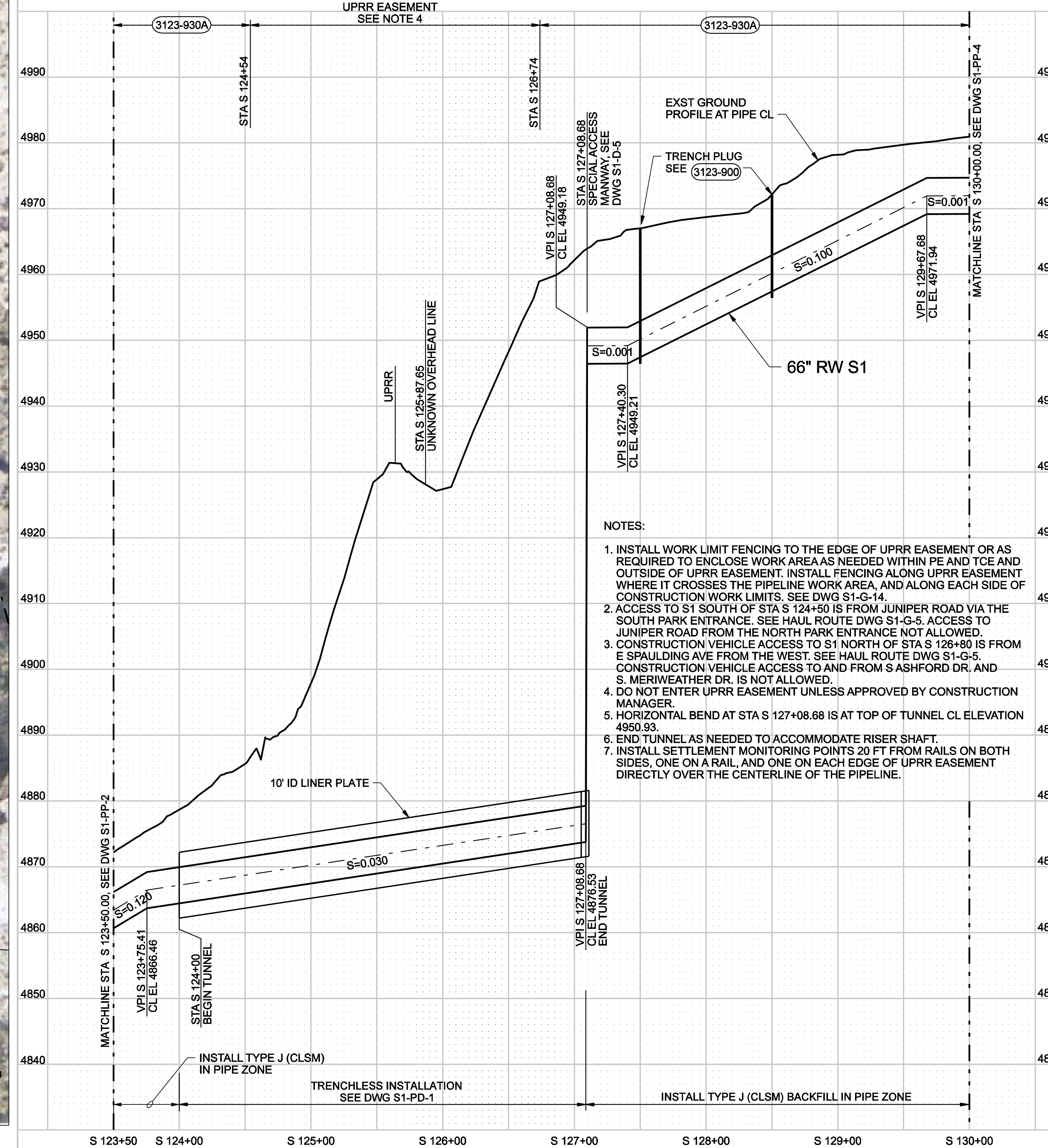
PLAN AND PROFILE

STATION S 111+00 TO STATION S 123+50

SHEET	16
DWG	S1-PP-2
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP02d_171473.dgn PLOT DATE: 7/11/2011 PLOT TIME: 10:31:43 AM



NOTES:

1. INSTALL WORK LIMIT FENCING TO THE EDGE OF UPRR EASEMENT OR AS REQUIRED TO ENCLOSE WORK AREA AS NEEDED WITHIN PE AND TCE AND OUTSIDE OF UPRR EASEMENT. INSTALL FENCING ALONG UPRR EASEMENT WHERE IT CROSSES THE PIPELINE WORK AREA, AND ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. ACCESS TO S1 SOUTH OF STA S 124+50 IS FROM JUNIPER ROAD VIA THE SOUTH PARK ENTRANCE. SEE HAUL ROUTE DWG S1-G-5. ACCESS TO JUNIPER ROAD FROM THE NORTH PARK ENTRANCE NOT ALLOWED.
3. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
4. DO NOT ENTER UPRR EASEMENT UNLESS APPROVED BY CONSTRUCTION MANAGER.
5. HORIZONTAL BEND AT STA S 127+08.68 IS AT TOP OF TUNNEL CL ELEVATION 4950.93.
6. END TUNNEL AS NEEDED TO ACCOMMODATE RISER SHAFT.
7. INSTALL SETTLEMENT MONITORING POINTS 20 FT FROM RAILS ON BOTH SIDES, ONE ON A RAIL, AND ONE ON EACH EDGE OF UPRR EASEMENT DIRECTLY OVER THE CENTERLINE OF THE PIPELINE.

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN	E FORD / A FINNEY
DR	B NORVILLE
CHK	G SIMPSON
APVD	J HENRY

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

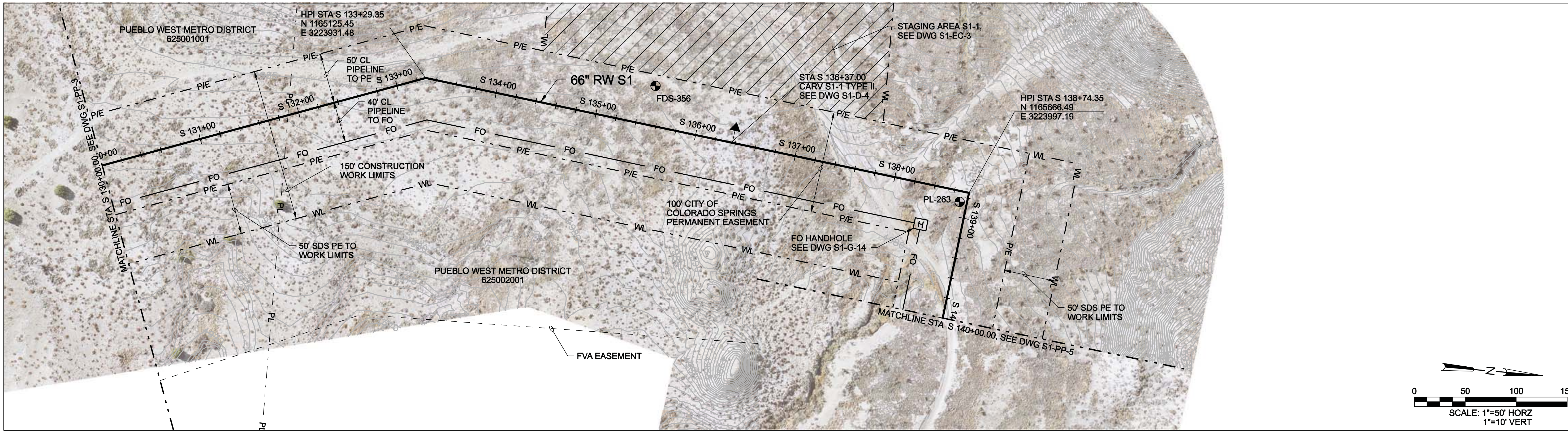
PLAN AND PROFILE

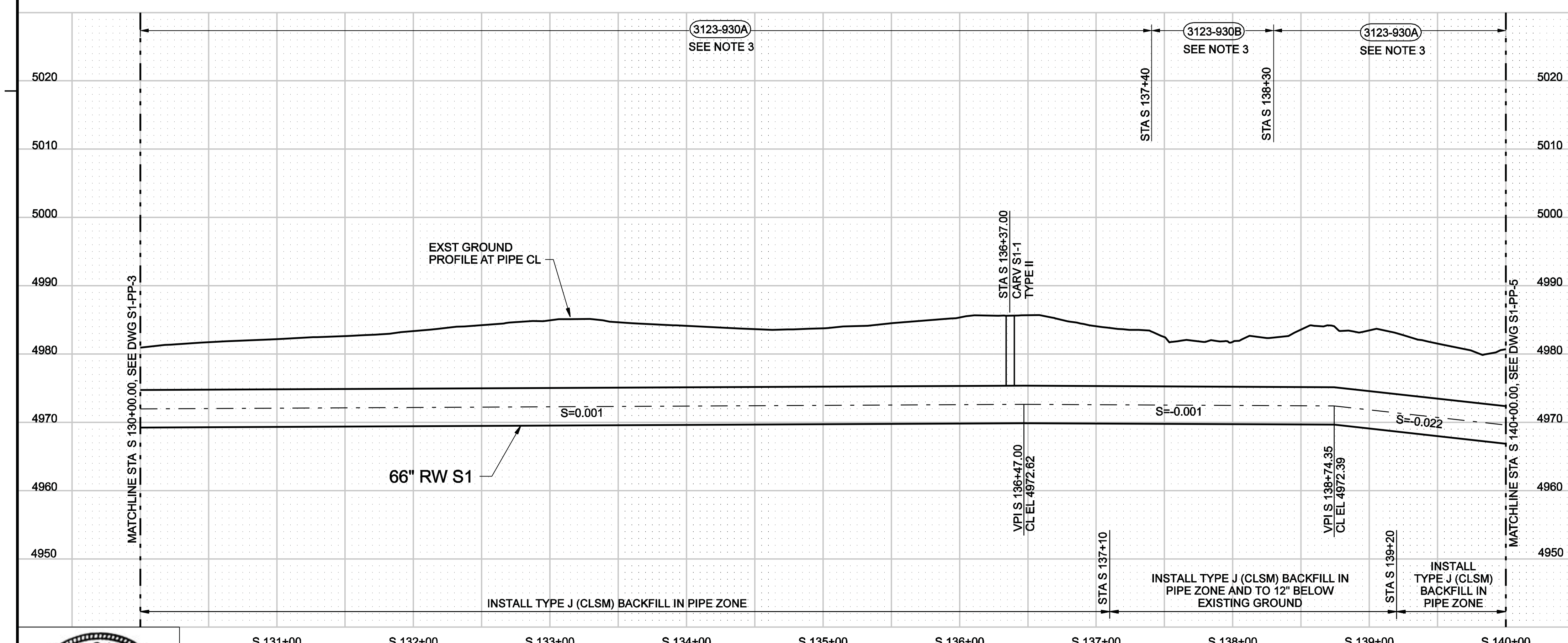
STATION S 123+50 TO STATION S 130+00

SHEET	17
DWG	S1-PP-3
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP03d_171473.dgn PLOT DATE: 6/27/2011 PLOT TIME: 1:01:59 PM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS, SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. RESTORE EXST TWO TRACK DIRT ROADS TO PRE-CONSTRUCTION CONDITIONS.

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD
DR	B NORVILLE
CHK	G SIMPSON
APVD	J HENRY

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE

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0 1"

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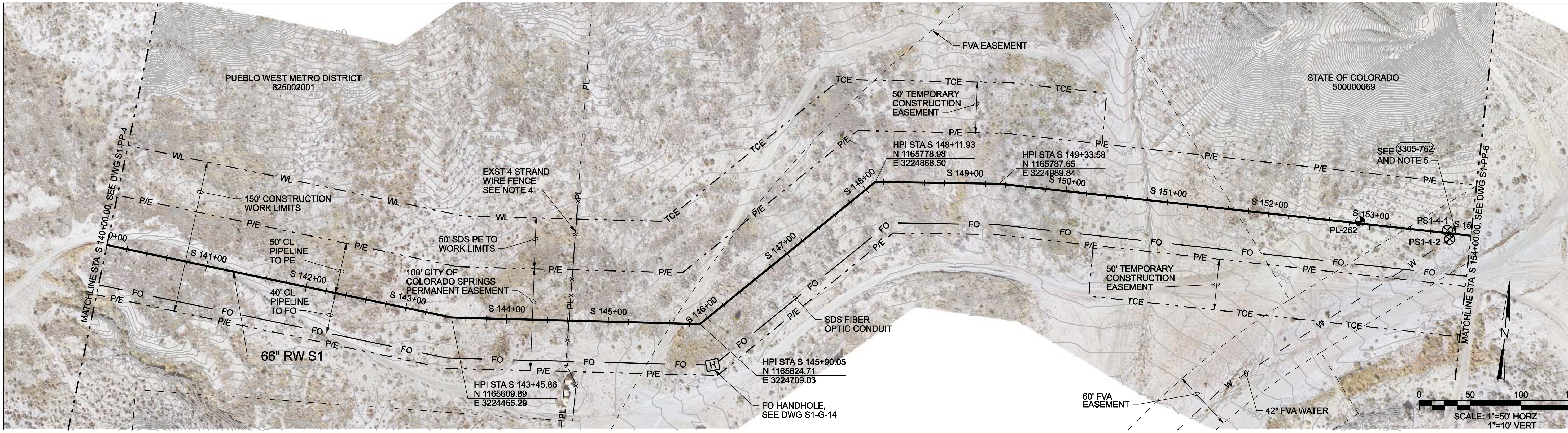
Colorado Springs, CO 80903

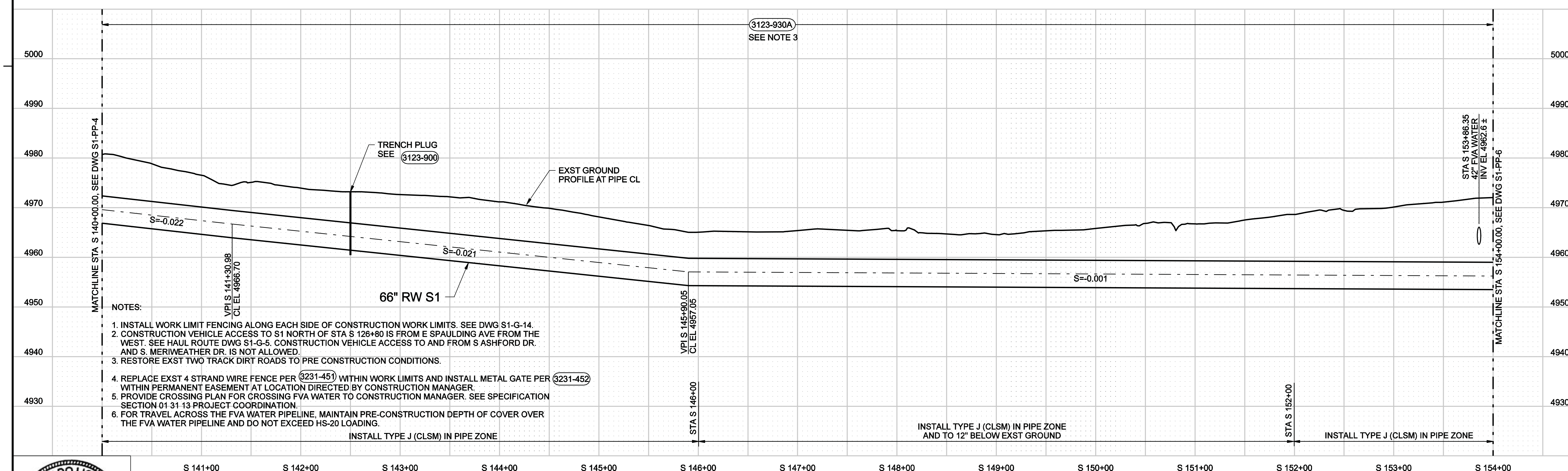
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

PLAN AND PROFILE

STATION S 130+00 TO STATION S 140+00

SHEET	18
DWG	S1-PP-4
DATE	JULY 2011
PROJ	171473.20.SP





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.
4. REPLACE EXST 4 STRAND WIRE FENCE PER 3231-451 WITHIN WORK LIMITS AND INSTALL METAL GATE PER 3231-452 WITHIN PERMANENT EASEMENT AT LOCATION DIRECTED BY CONSTRUCTION MANAGER.
5. PROVIDE CROSSING PLAN FOR CROSSING FVA WATER TO CONSTRUCTION MANAGER. SEE SPECIFICATION SECTION 01 31 13 PROJECT COORDINATION.
6. FOR TRAVEL ACROSS THE FVA WATER PIPELINE, MAINTAIN PRE-CONSTRUCTION DEPTH OF COVER OVER THE FVA WATER PIPELINE AND DO NOT EXCEED HS-20 LOADING.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD
DR	B NORVILLE
CHK	G SIMPSON
APVD	J HENRY

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

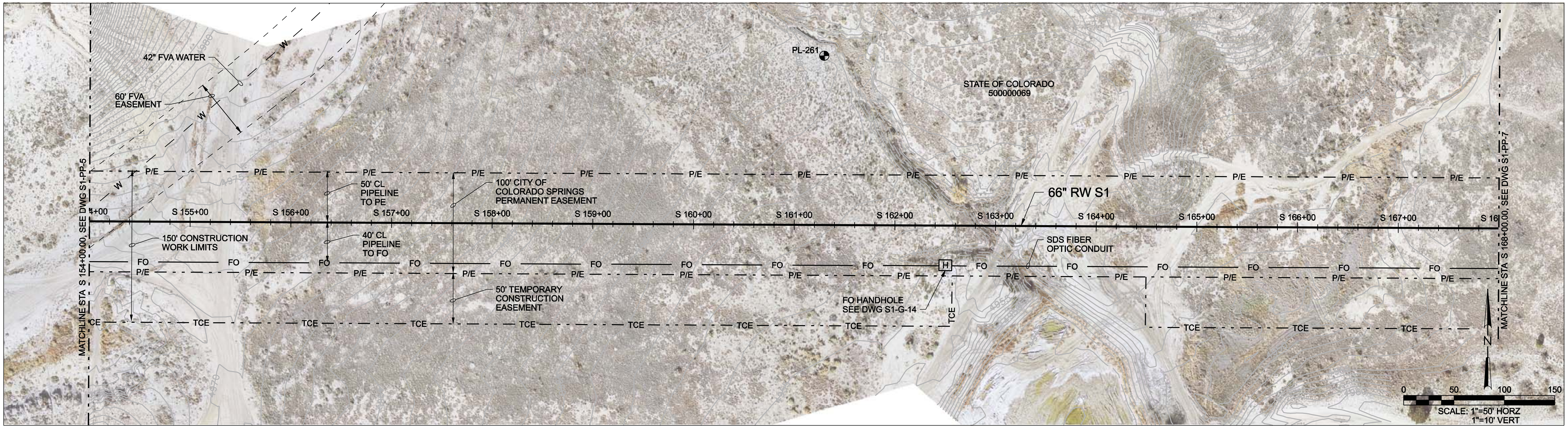
PLAN AND PROFILE

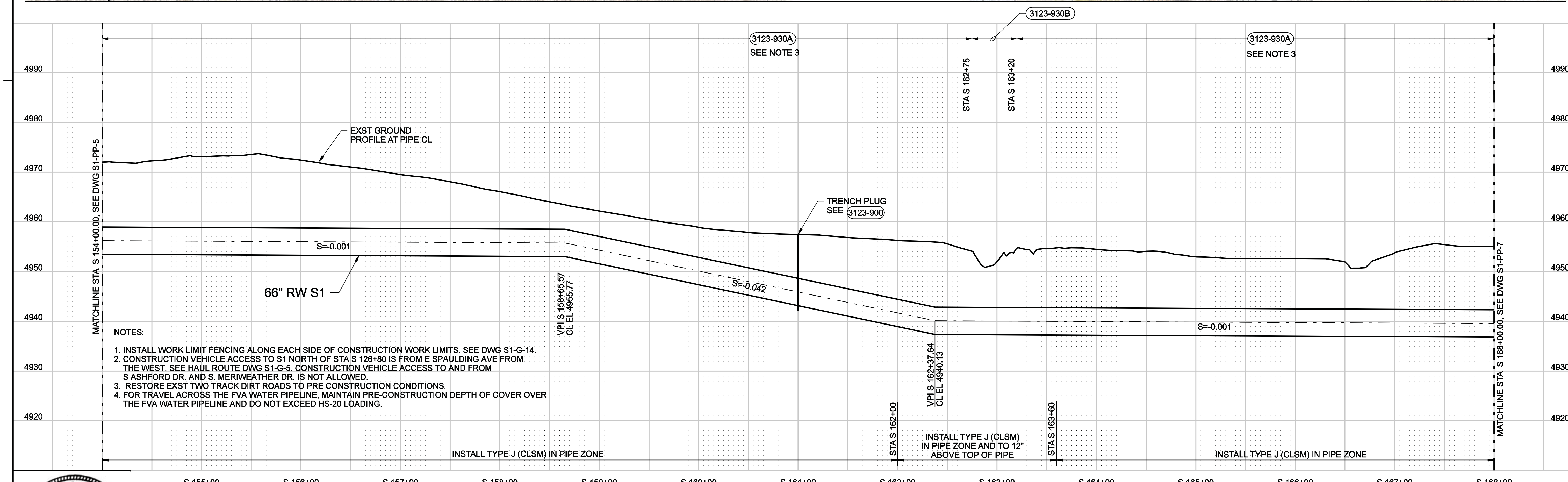
STATION S 140+00 TO STATION S 154+00

SHEET	19
DWG	S1-PP-5
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP05d_171473.dgn PLOT DATE: 6/18/2011 PLOT TIME: 9:58:57 AM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.
4. FOR TRAVEL ACROSS THE FVA WATER PIPELINE, MAINTAIN PRE-CONSTRUCTION DEPTH OF COVER OVER THE FVA WATER PIPELINE AND DO NOT EXCEED HS-20 LOADING.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD						
DR	B NORVILLE						
CHK	G SIMPSON						
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD	

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

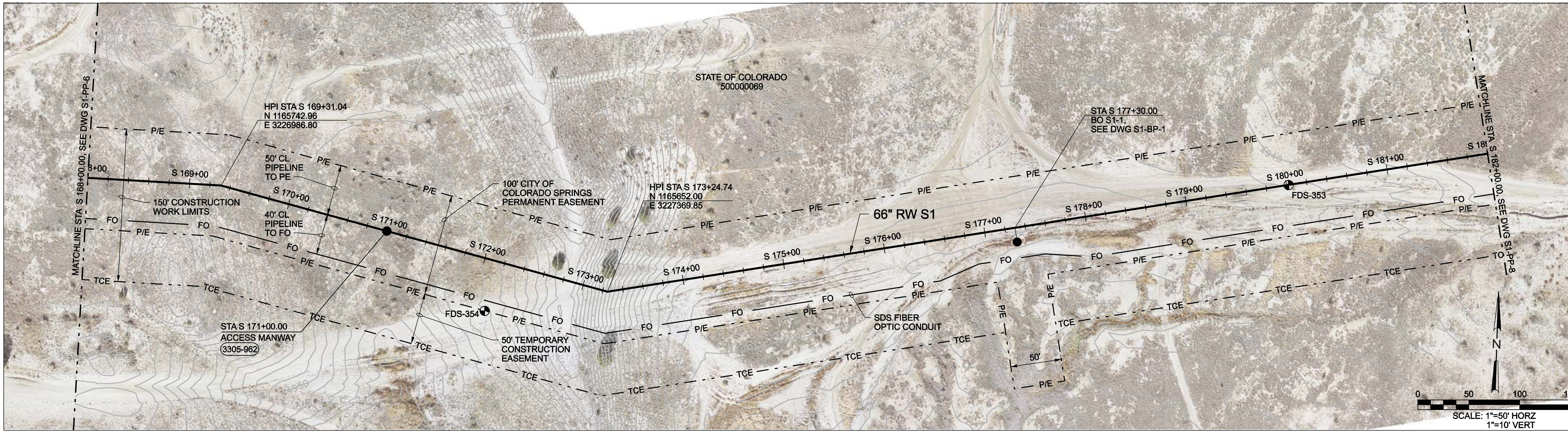
PLAN AND PROFILE

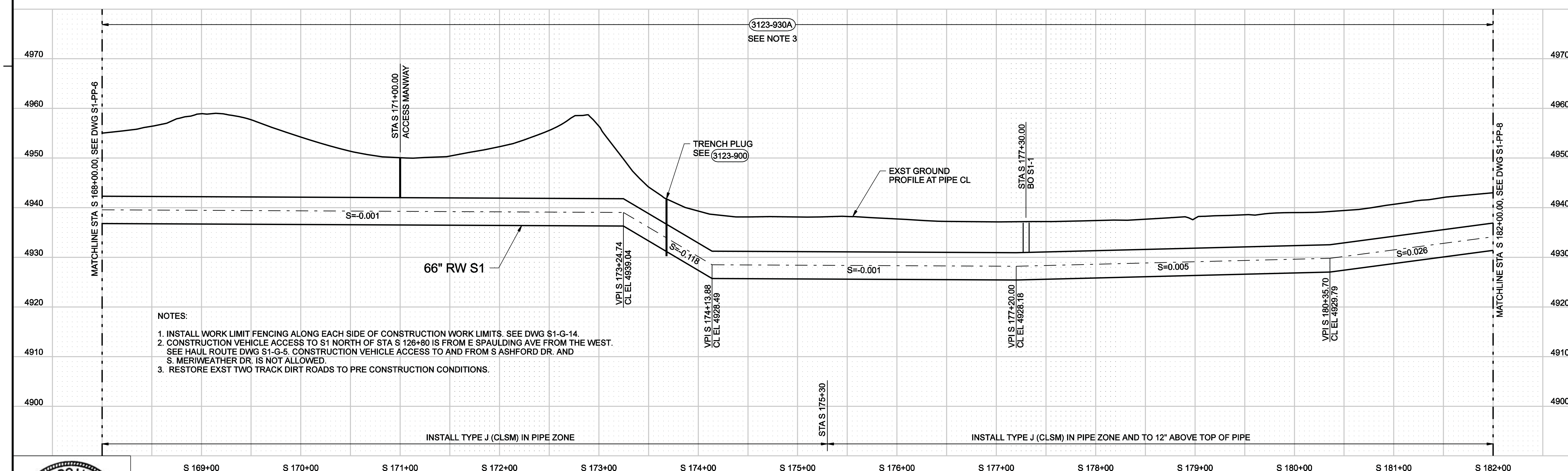
STATION S 154+00 TO STATION S 168+00

SHEET	20
DWG	S1-PP-6
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP06d_171473.dgn PLOT DATE: 6/15/2011 PLOT TIME: 1:02:49 PM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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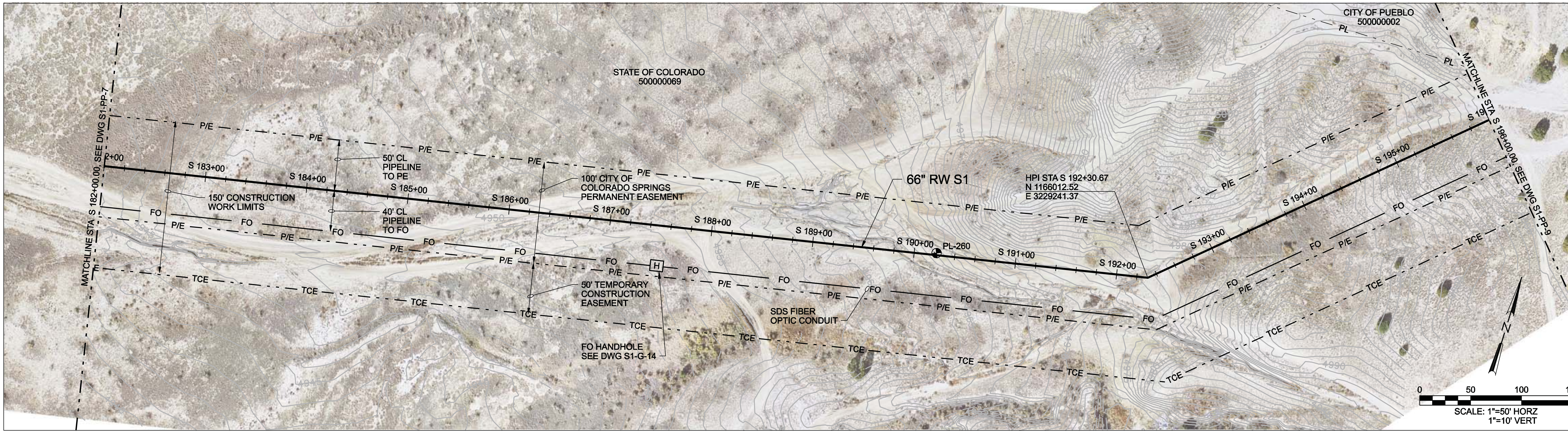
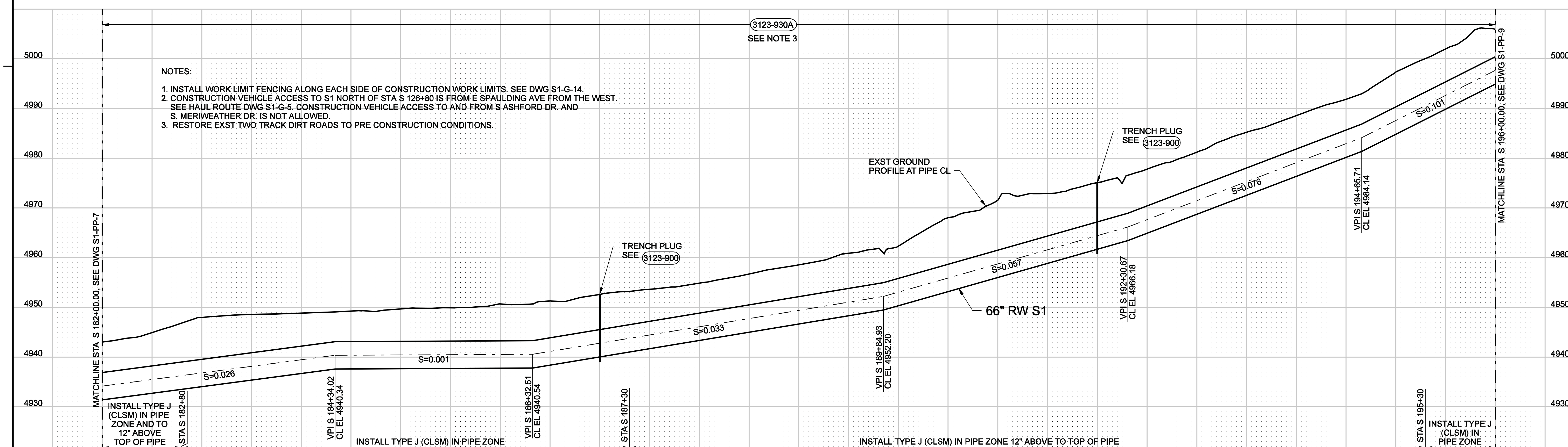
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

PLAN AND PROFILE

STATION S 168+00 TO STATION S 182+00

SHEET	21
DWG	S1-PP-7
DATE	JULY 2011
PROJ	171473.20.SP





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN	E FORD						
DR	B NORVILLE						
CHK	G SIMPSON						
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD	

VERIFY SCALE
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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

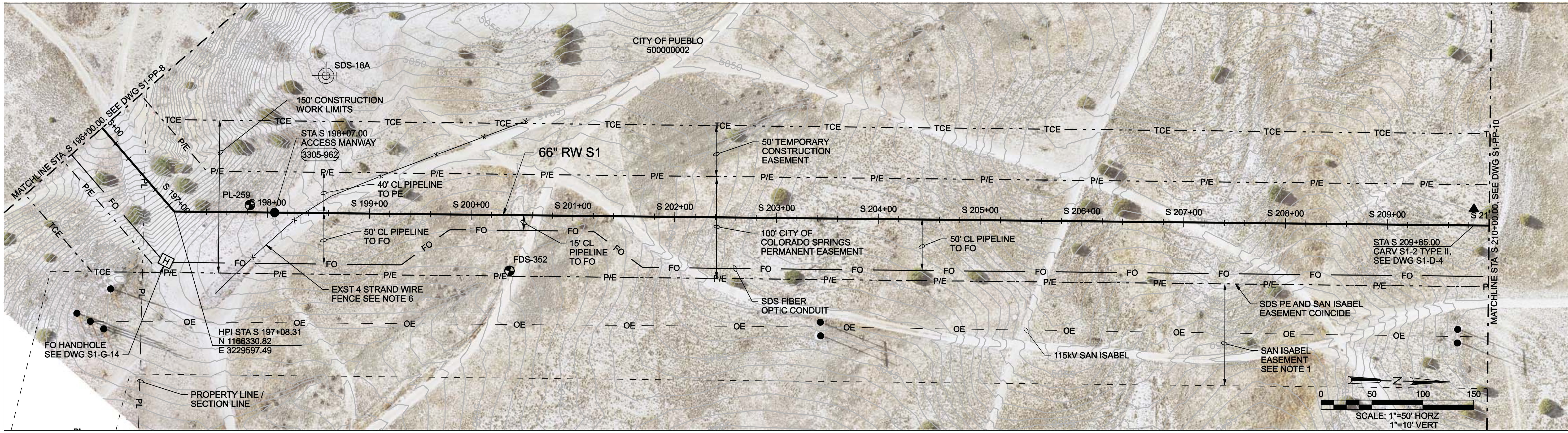
PLAN AND PROFILE

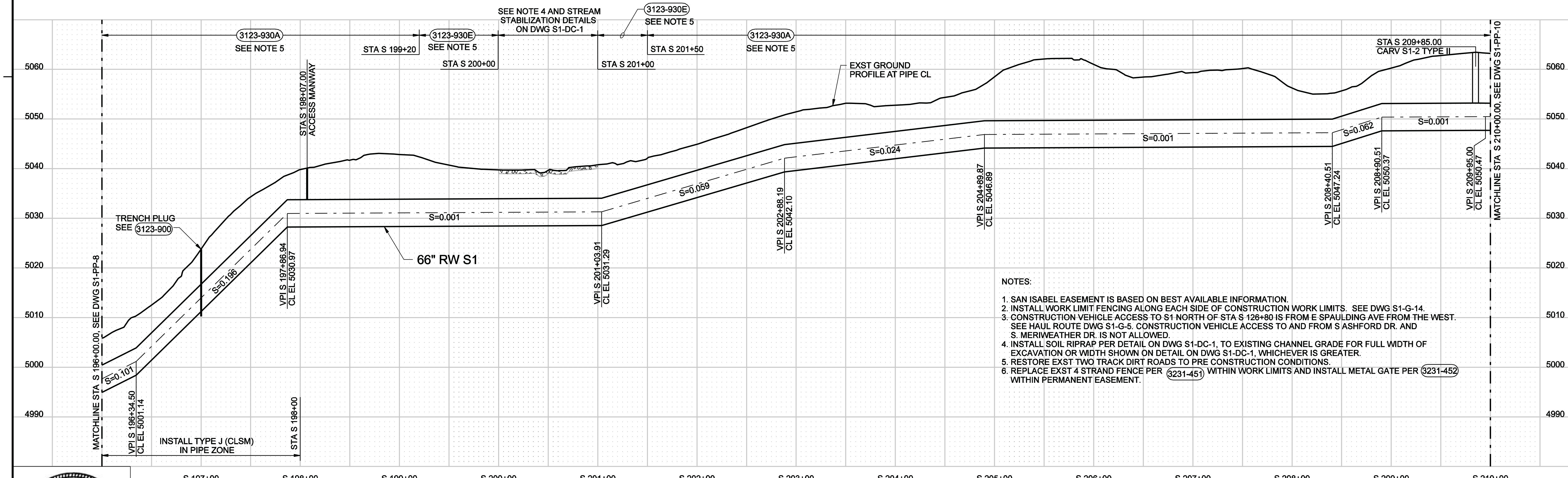
STATION S 182+00 TO STATION S 196+00

SHEET	22
DWG	S1-PP-8
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP08d_171473.dgn PLOT DATE: 6/21/2011 PLOT TIME: 1:02:21 PM





NOTES:

1. SAN ISABEL EASEMENT IS BASED ON BEST AVAILABLE INFORMATION.
2. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
3. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
4. INSTALL SOIL RIPRAP PER DETAIL ON DWG S1-DC-1, TO EXISTING CHANNEL GRADE FOR FULL WIDTH OF EXCAVATION OR WIDTH SHOWN ON DETAIL ON DWG S1-DC-1, WHICHEVER IS GREATER.
5. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.
6. REPLACE EXST 4 STRAND FENCE PER 3231-451 WITHIN WORK LIMITS AND INSTALL METAL GATE PER 3231-452 WITHIN PERMANENT EASEMENT.

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN	E FORD				
DR	B NORVILLE				
CHK	G SIMPSON				
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

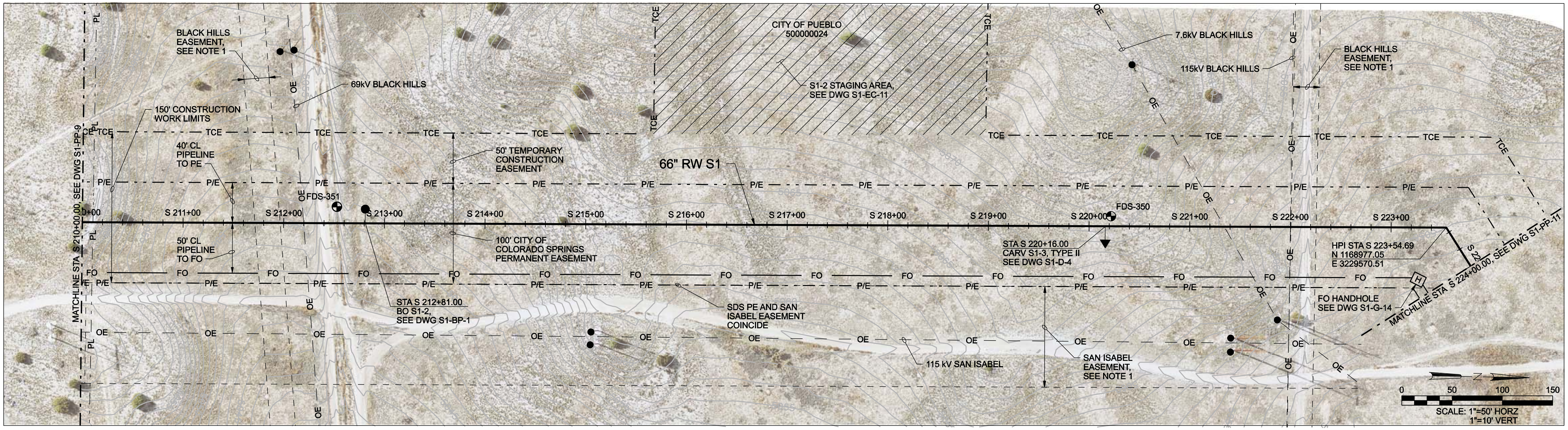
PLAN AND PROFILE

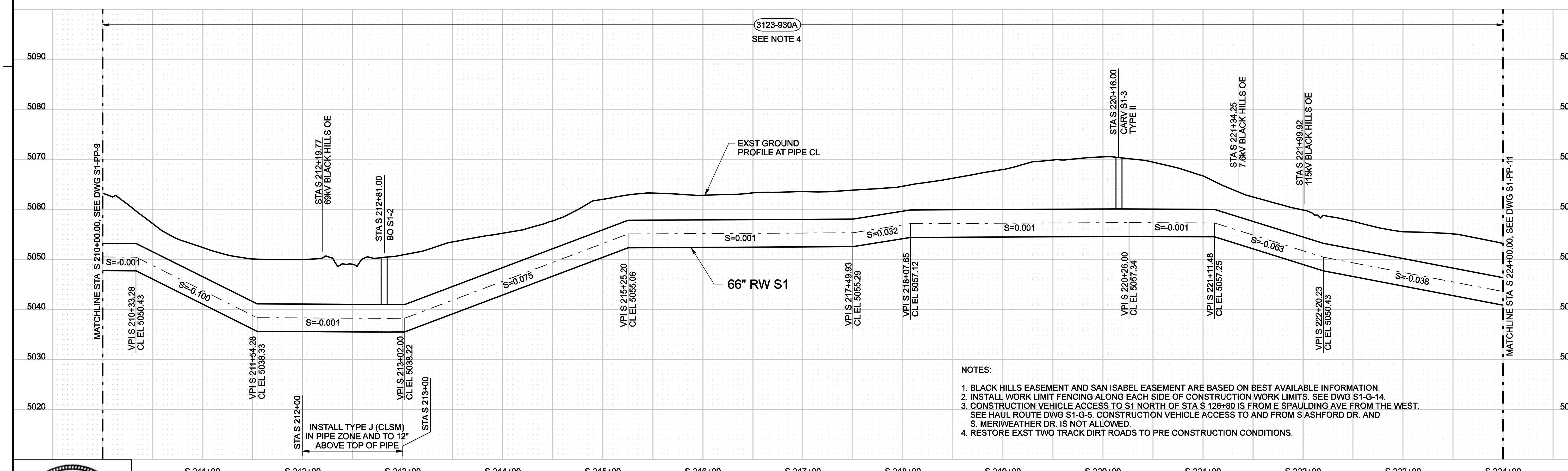
STATION S 196+00 TO STATION S 210+00

SHEET	23
DWG	S1-PP-9
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP09d_171473.dgn PLOT DATE: 6/10/2011 PLOT TIME: 10:48:55 AM





NOTES:

1. BLACK HILLS EASEMENT AND SAN ISABEL EASEMENT ARE BASED ON BEST AVAILABLE INFORMATION.
2. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
3. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
4. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD	NO.	DATE	REVISION	BY	APVD
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY					

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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

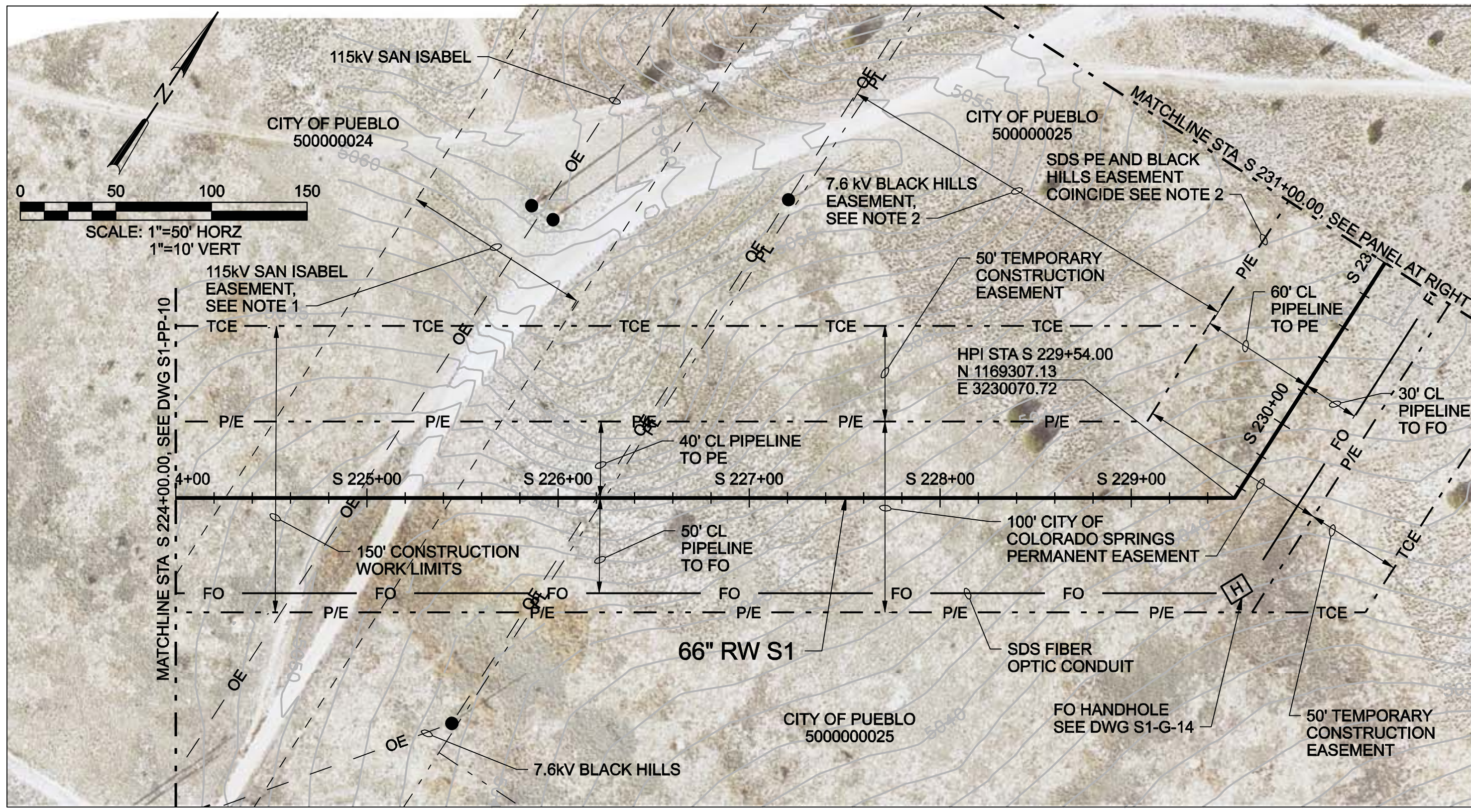
PLAN AND PROFILE

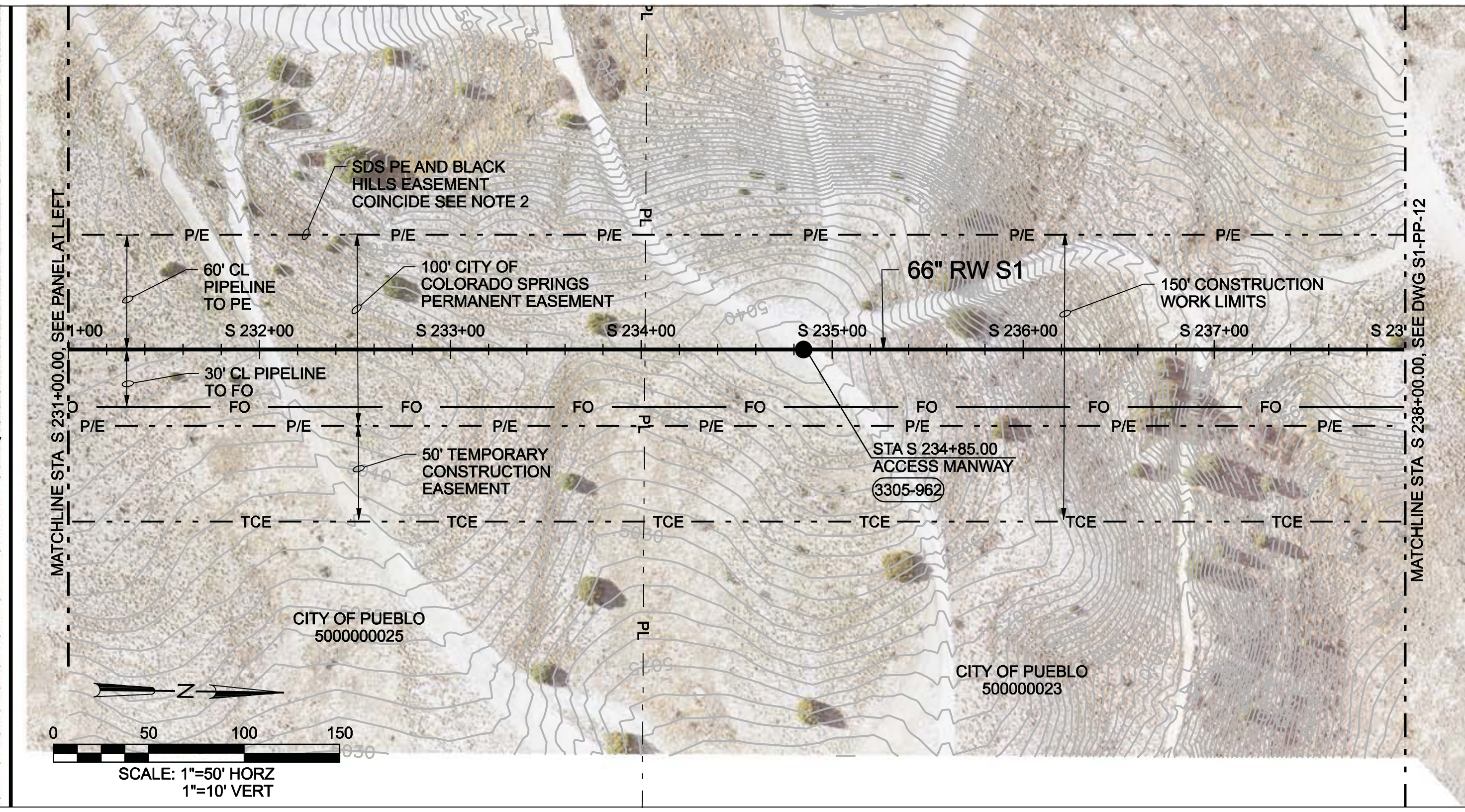
STATION S 210+00 TO STATION S 224+00

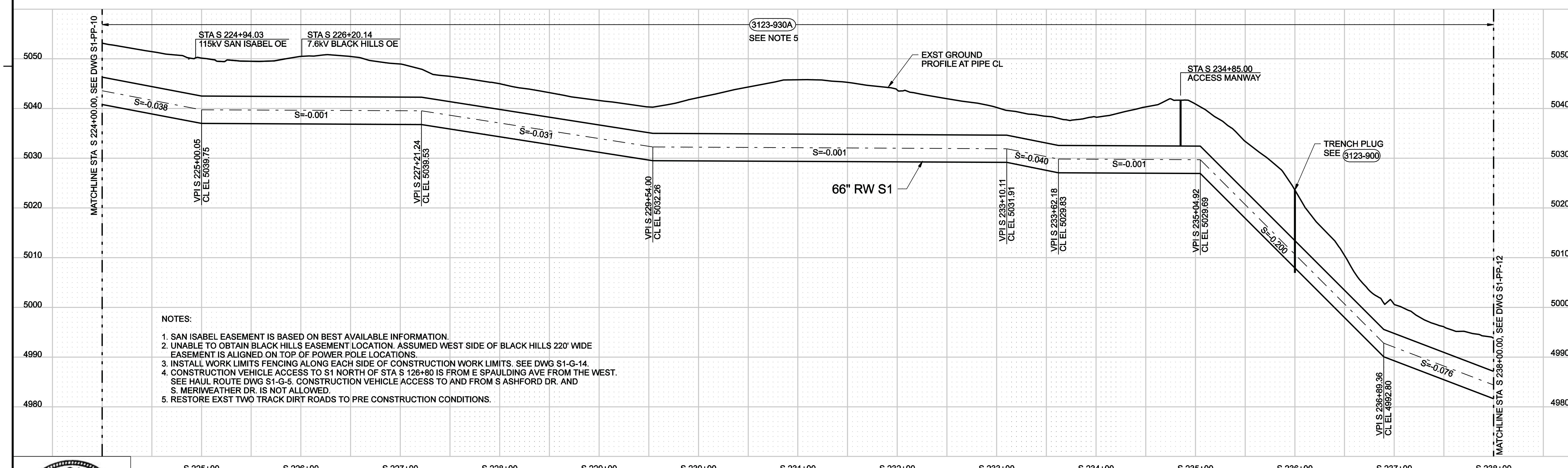
SHEET	24
DWG	S1-PP-10
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP10d_171473.dgn PLOT DATE: 6/10/2011 PLOT TIME: 10:58:54 AM







NOTES:

1. SAN ISABEL EASEMENT IS BASED ON BEST AVAILABLE INFORMATION.
2. UNABLE TO OBTAIN BLACK HILLS EASEMENT LOCATION. ASSUMED WEST SIDE OF BLACK HILLS 220' WIDE EASEMENT IS ALIGNED ON TOP OF POWER POLE LOCATIONS.
3. INSTALL WORK LIMITS FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
4. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
5. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.

COLORADO LICENSED
JODY L. HENRY
39310
PROFESSIONAL ENGINEER

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

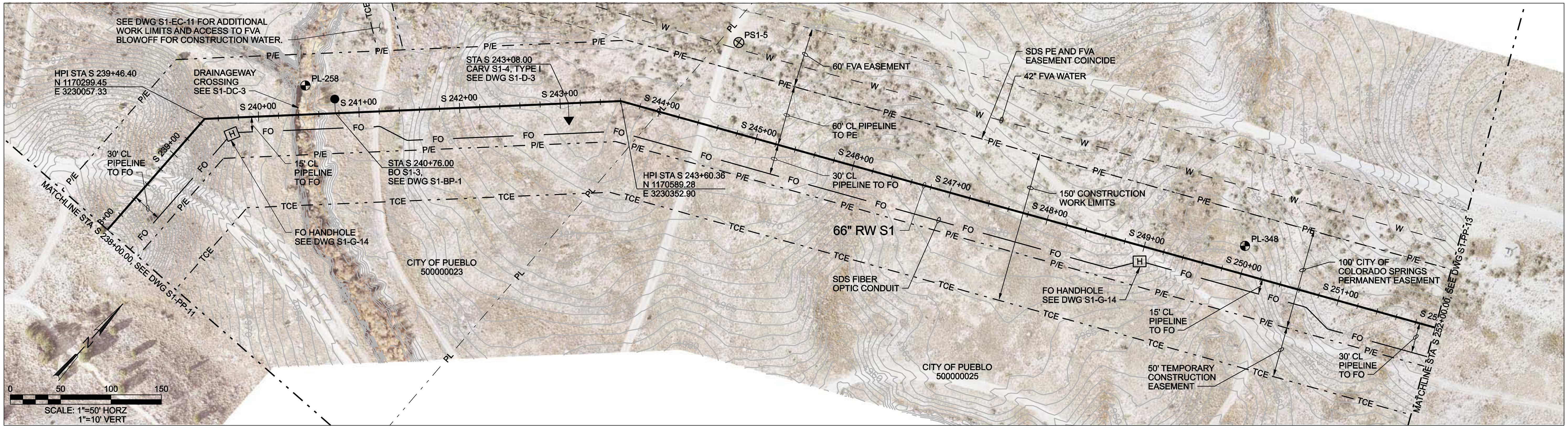
PLAN AND PROFILE

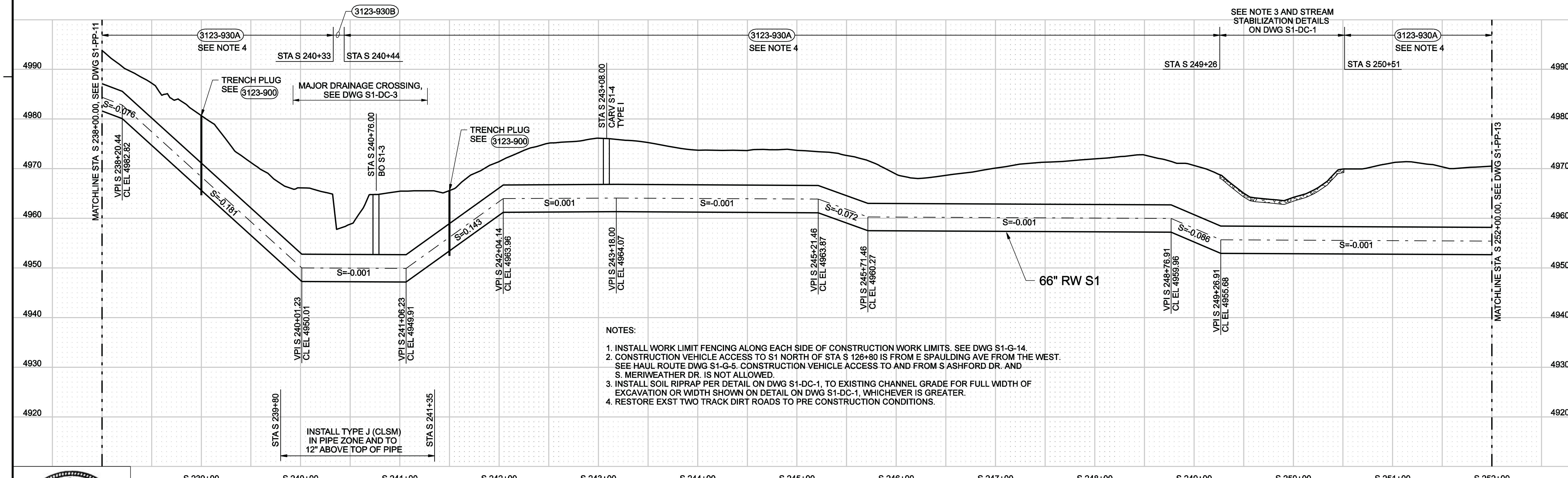
STATION S 224+00 TO STATION S 238+00

SHEET	25
DWG	S1-PP-11
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP11d_171473.dgn PLOT DATE: 6/18/2011 PLOT TIME: 9:55:12 AM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. INSTALL SOIL RIPRAP PER DETAIL ON DWG S1-DC-1, TO EXISTING CHANNEL GRADE FOR FULL WIDTH OF EXCAVATION OR WIDTH SHOWN ON DETAIL ON DWG S1-DC-1, WHICHEVER IS GREATER.
4. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD	NO.	DATE	REVISION	BY	APVD
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY					

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

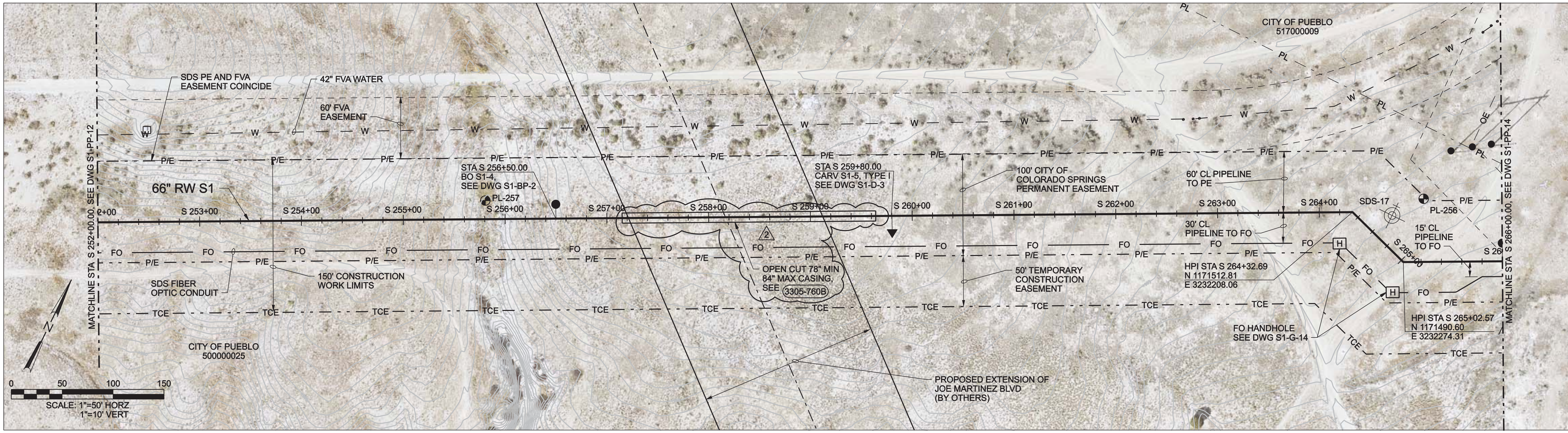
PLAN AND PROFILE

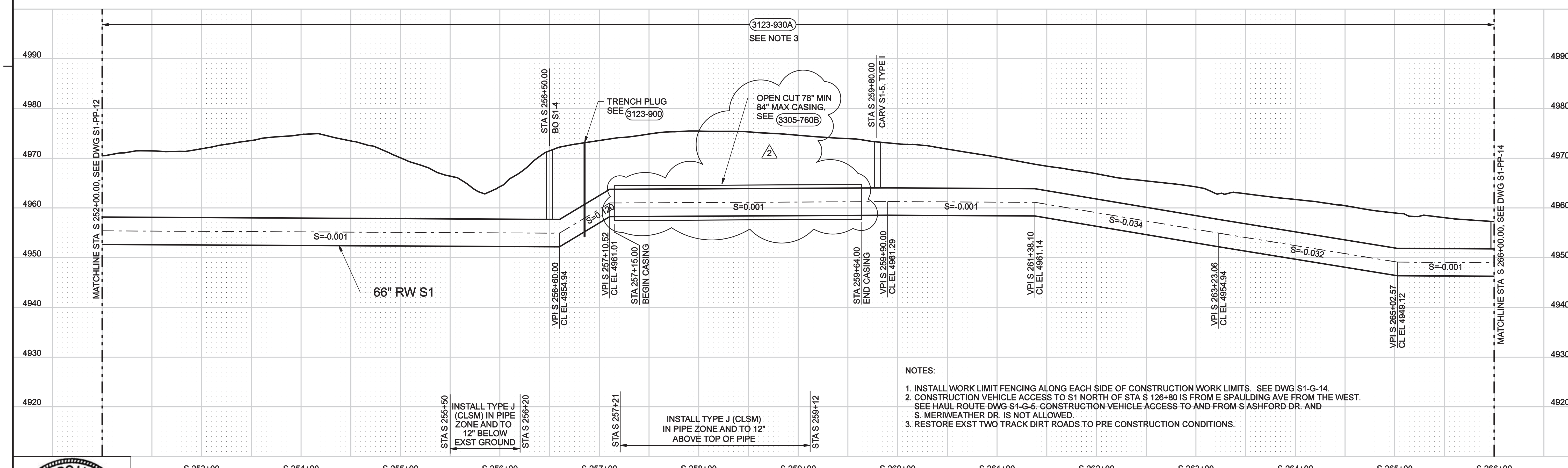
STATION S 238+00 TO STATION S 252+00

SHEET	26
DWG	S1-PP-12
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP12d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 10:08:01 AM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON	2	8/17/11	ADDENDUM NO. 2	BN	JH
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

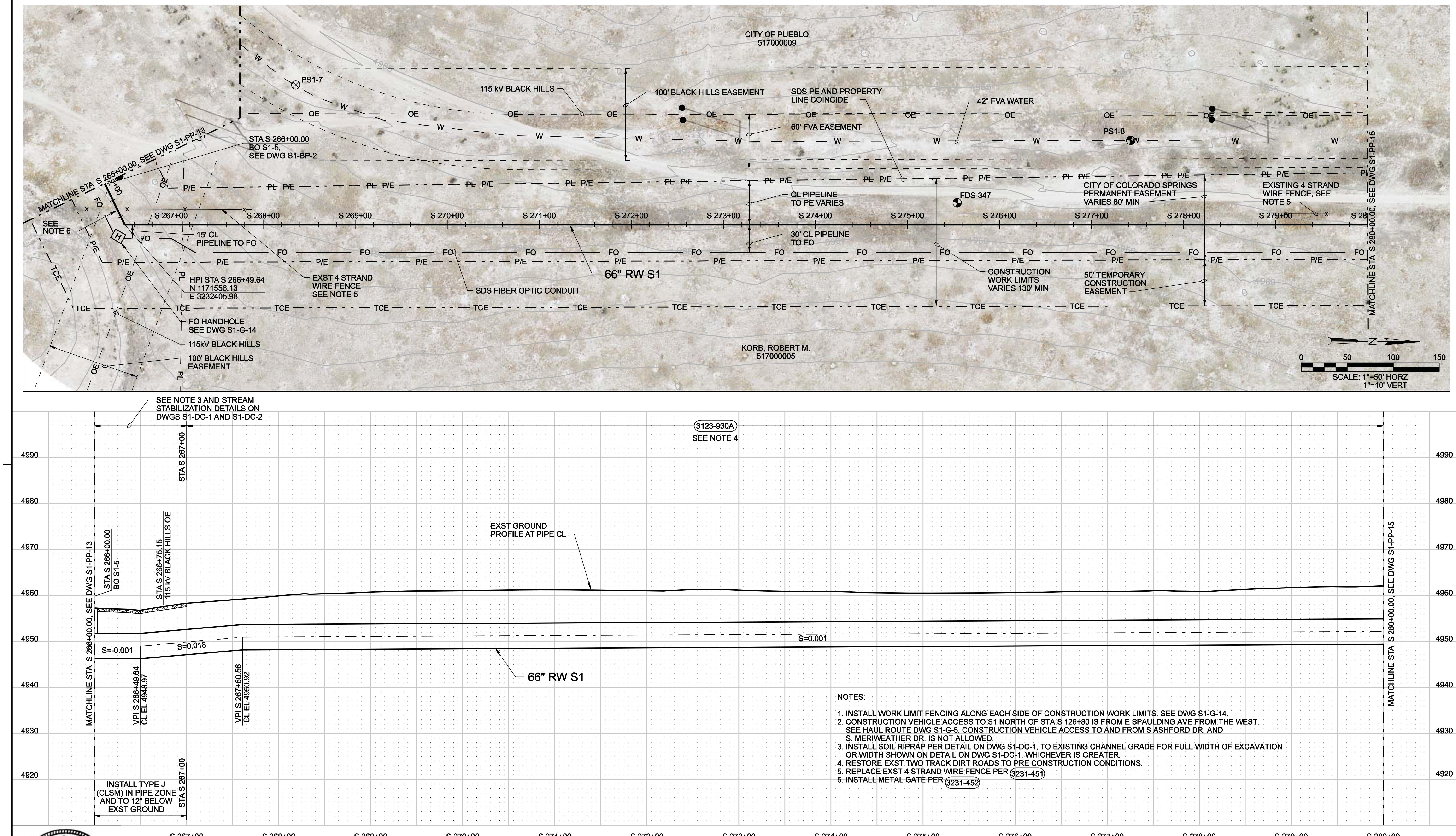
PLAN AND PROFILE

STATION S 252+00 TO STATION S 266+00

SHEET	27
DWG	S1-PP-13
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP13d_171473.dgn PLOT DATE: 8/17/2011 PLOT TIME: 1:41:53 PM



NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. INSTALL SOIL RIPRAP PER DETAIL ON DWG S1-DC-1, TO EXISTING CHANNEL GRADE FOR FULL WIDTH OF EXCAVATION OR WIDTH SHOWN ON DETAIL ON DWG S1-DC-1, WHICHEVER IS GREATER.
4. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.
5. REPLACE EXST 4 STRAND WIRE FENCE PER 3231-451
6. INSTALL METAL GATE PER 3231-452

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD	NO.	DATE	REVISION	BY	APVD
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY					

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

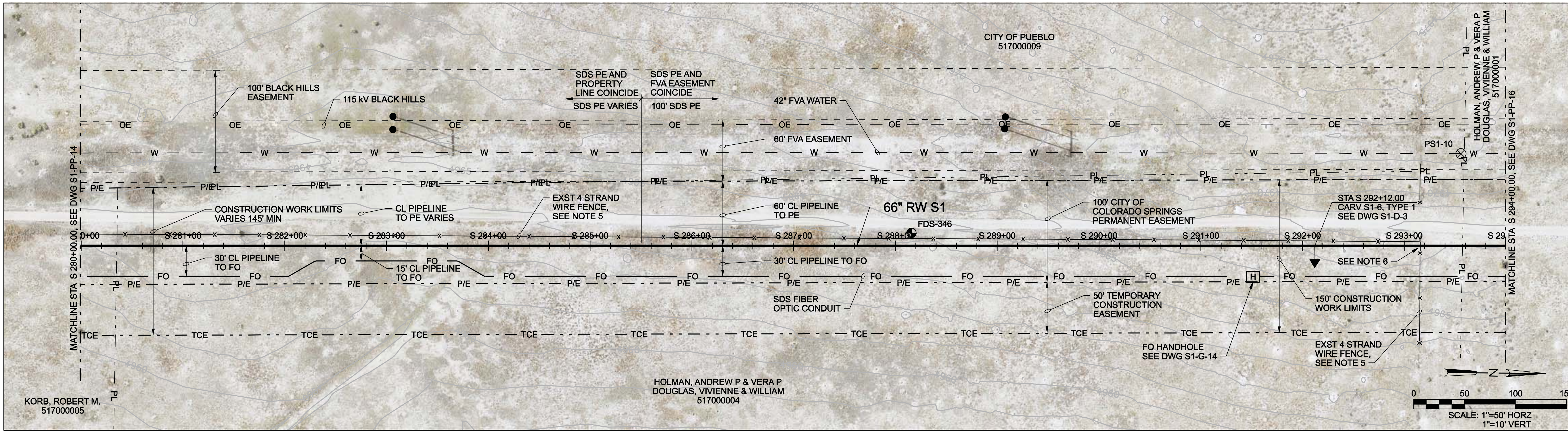
PLAN AND PROFILE

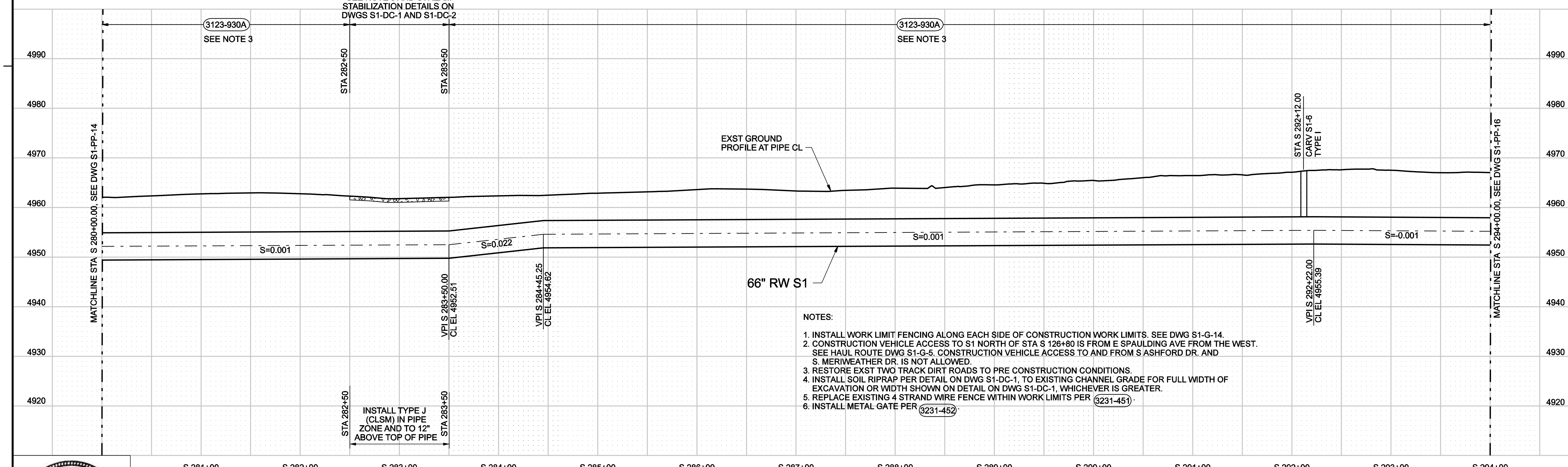
STATION S 266+00 TO STATION S 280+00

SHEET	28
DWG	S1-PP-14
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP14d_171473.dgn PLOT DATE: 6/30/2011 PLOT TIME: 10:10:45 AM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.
4. INSTALL SOIL RIPRAP PER DETAIL ON DWG S1-DC-1, TO EXISTING CHANNEL GRADE FOR FULL WIDTH OF EXCAVATION OR WIDTH SHOWN ON DETAIL ON DWG S1-DC-1, WHICHEVER IS GREATER.
5. REPLACE EXISTING 4 STRAND WIRE FENCE WITHIN WORK LIMITS PER 3231-451.
6. INSTALL METAL GATE PER 3231-452.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD	NO.	DATE	REVISION	BY	APVD
DR B NORVILLE					
CHK G SIMPSON					
APVD J HENRY					

VERIFY SCALE
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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

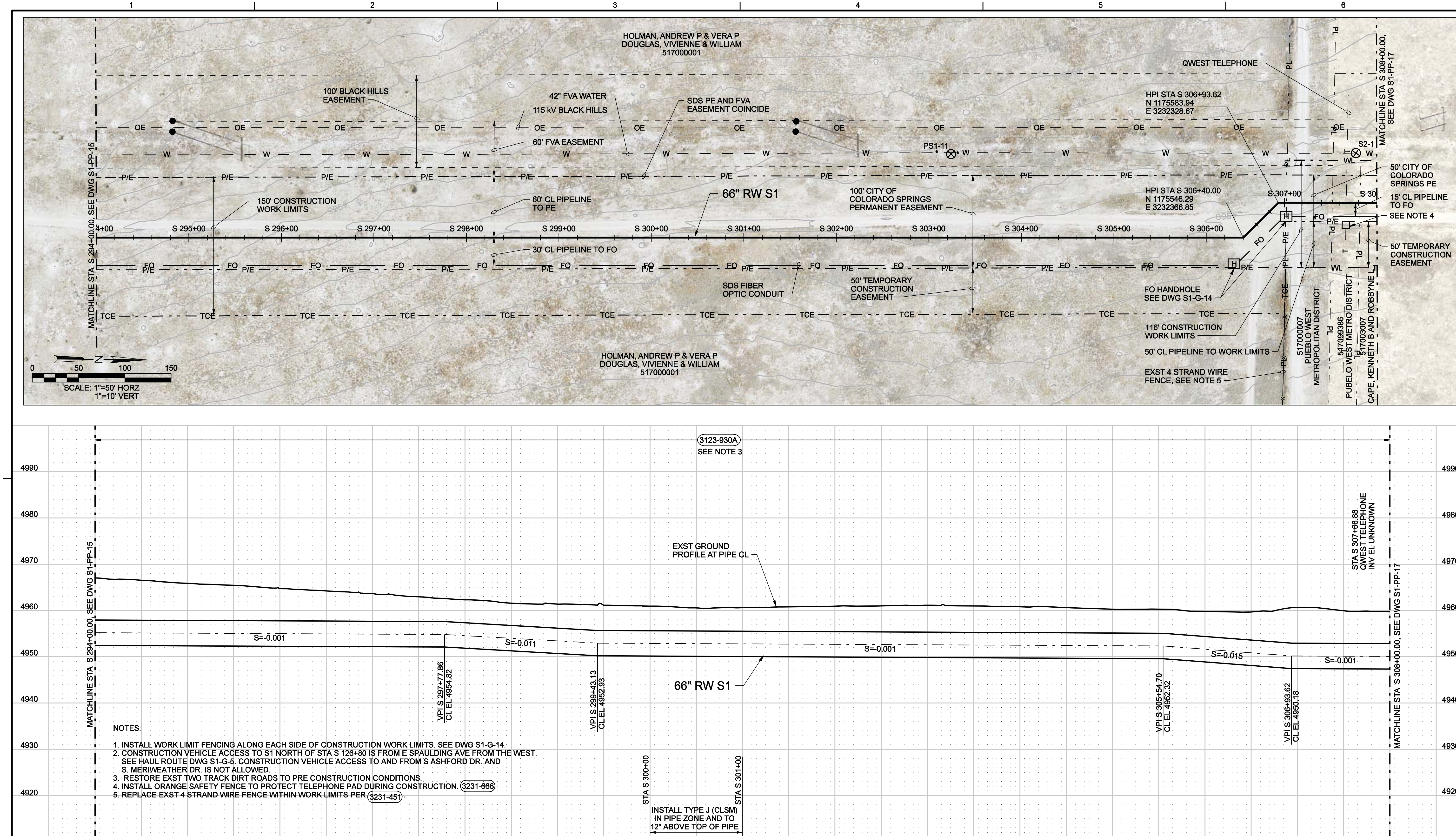
PLAN AND PROFILE

STATION S 280+00 TO STATION S 294+00

SHEET	29
DWG	S1-PP-15
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP15d_171473.dgn PLOT DATE: 6/30/2011 PLOT TIME: 11:13:58 AM



NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5. CONSTRUCTION VEHICLE ACCESS TO AND FROM S ASHFORD DR. AND S. MERIWEATHER DR. IS NOT ALLOWED.
3. RESTORE EXST TWO TRACK DIRT ROADS TO PRE CONSTRUCTION CONDITIONS.
4. INSTALL ORANGE SAFETY FENCE TO PROTECT TELEPHONE PAD DURING CONSTRUCTION. 3231-666
5. REPLACE EXST 4 STRAND WIRE FENCE WITHIN WORK LIMITS PER 3231-451

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD						
DR B NORVILLE						
CHK G SIMPSON						
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

VERIFY SCALE
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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

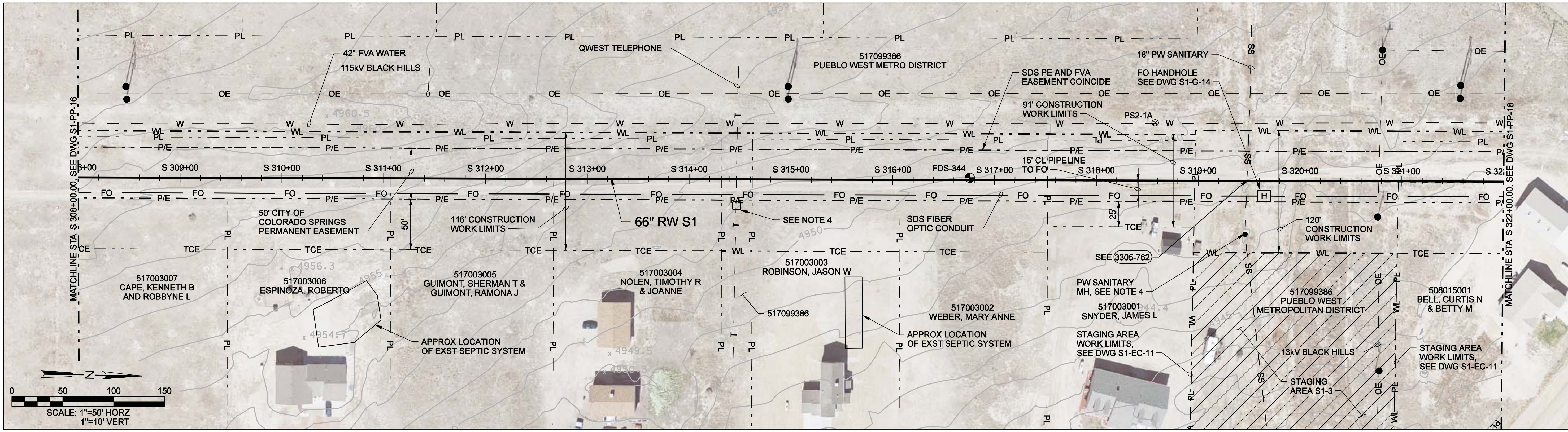
PLAN AND PROFILE

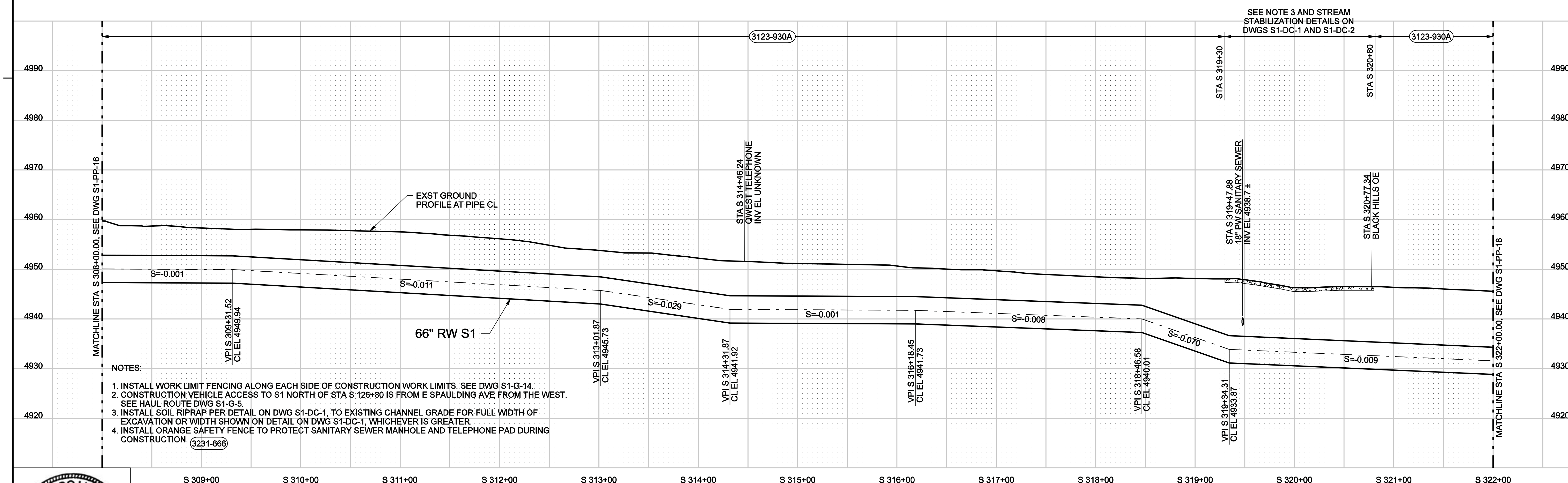
STATION S 294+00 TO STATION S 308+00

SHEET	30
DWG	S1-PP-16
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP16d_171473.dgn PLOT DATE: 6/30/2011 PLOT TIME: 11:17:06 AM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5.
3. INSTALL SOIL RIPRAP PER DETAIL ON DWG S1-DC-1, TO EXISTING CHANNEL GRADE FOR FULL WIDTH OF EXCAVATION OR WIDTH SHOWN ON DETAIL ON DWG S1-DC-1, WHICHEVER IS GREATER.
4. INSTALL ORANGE SAFETY FENCE TO PROTECT SANITARY SEWER MANHOLE AND TELEPHONE PAD DURING CONSTRUCTION. 3231-666

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN	E FORD
DR	B NORVILLE
CHK	G SIMPSON
APVD	J HENRY

NO.	DATE	REVISION	BY	APVD

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CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

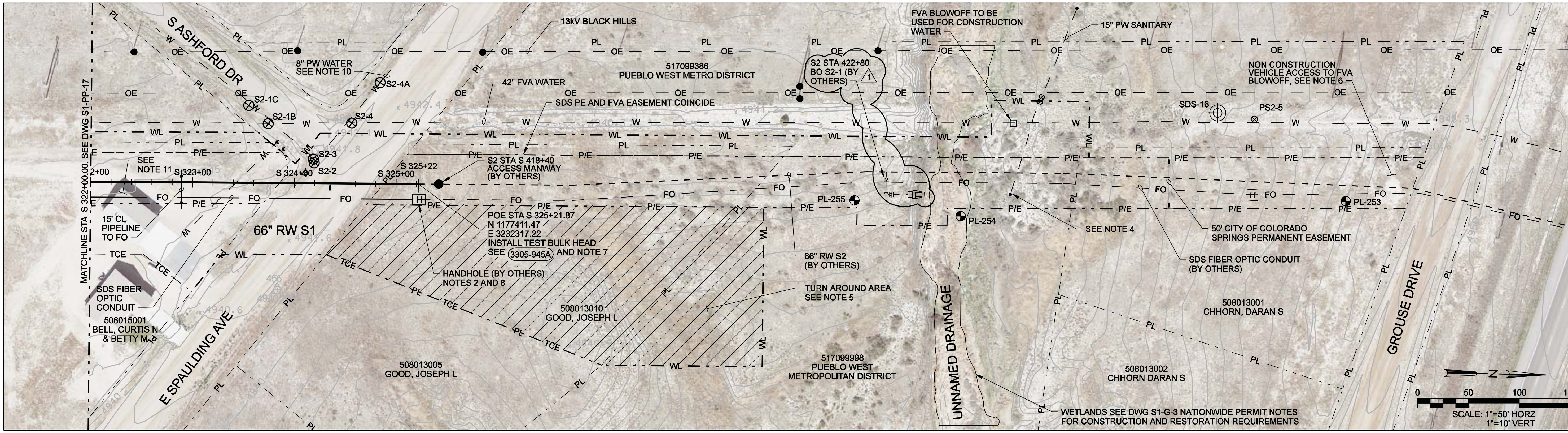
PLAN AND PROFILE

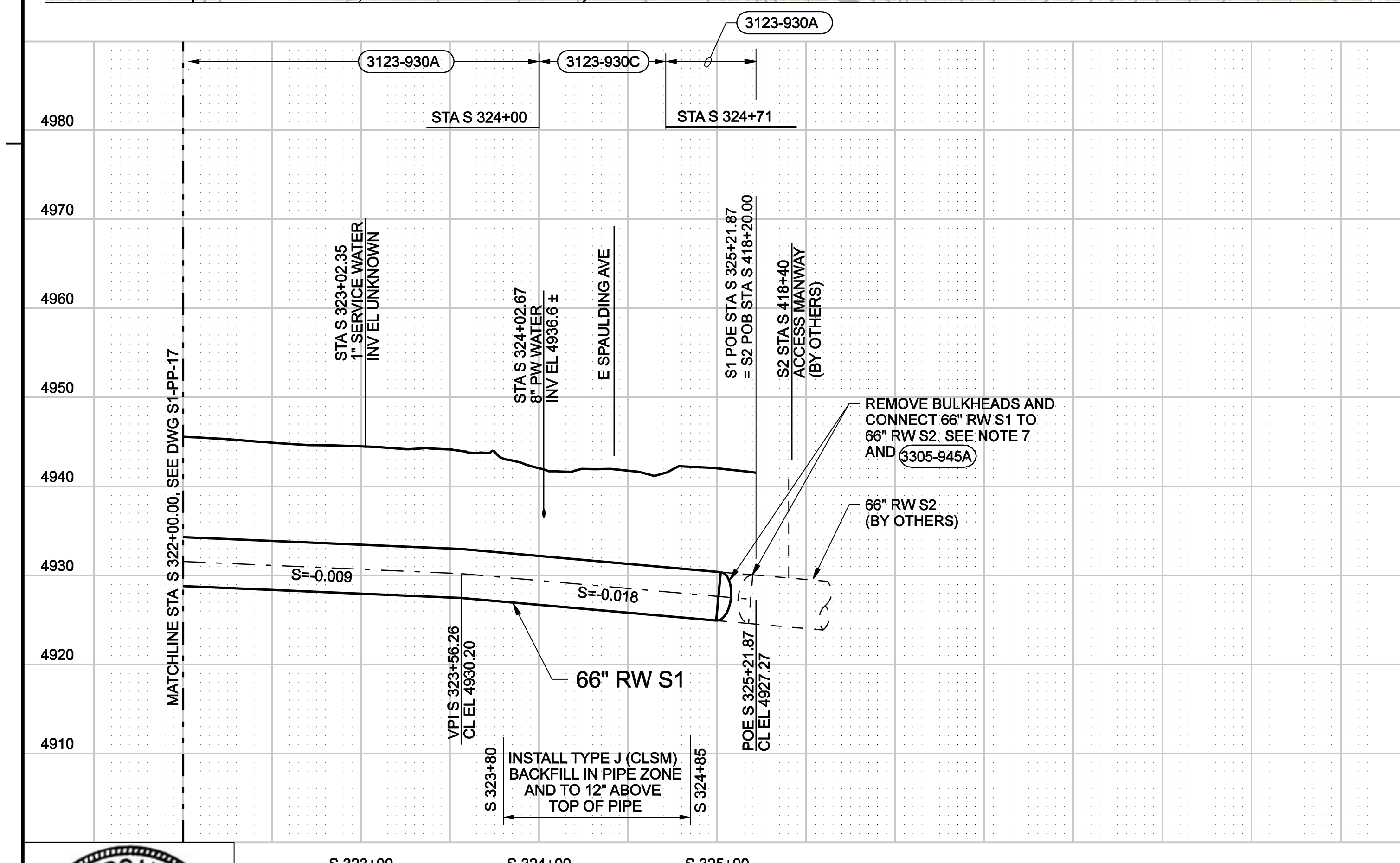
STATION S 308+00 TO STATION S 322+00

SHEET	31
DWG	S1-PP-17
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nP17d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 8:37:38 AM





NOTES:

1. INSTALL WORK LIMIT FENCING ALONG EACH SIDE OF CONSTRUCTION WORK LIMITS. SEE DWG S1-G-14.
2. CONNECT FIBER OPTIC CONDUIT TO HANDHOLE. HANDHOLE INSTALLED BY OTHERS.
3. CONSTRUCTION VEHICLE ACCESS TO S1 NORTH OF STA S 126+80 IS FROM E SPAULDING AVE FROM THE WEST. SEE HAUL ROUTE DWG S1-G-5.
4. INSTALL ORANGE SAFETY FENCE 3231-666 TO PROTECT SANITARY SEWER MANHOLE, DURING CONSTRUCTION.
5. STAGING IN TURN AROUND IS NOT ALLOWED.
6. CONSTRUCTION VEHICLE ACCESS FROM GROUSE DRIVE NOT ALLOWED. CONSTRUCTION VEHICLES ARE AS DEFINED IN SPECIFICATION SECTION 01 14 13 ACCESS TO SITE. ACCESS FROM GROUSE DRIVE TO BE USED TO OBTAIN CONSTRUCTION WATER ONLY.
7. REMOVE TEST BULK HEAD AFTER SUCCESSFUL COMPLETION OF HYDROSTATIC TEST AND AFTER DRAINING. CONNECT 66" RW S1 TO 66" RW S2. VERIFY BY FIELD SURVEY THE LOCATION OF EXISTING 66" RW S2 PRIOR TO START OF PIPE FABRICATION.
8. PROVIDE TEMPORARY PLUG ON END OF FIBER OPTIC CONDUITS AT POE. BURY AN ELECTRONIC MARKER AT THE END OF THE CONDUITS.
9. UNLESS OTHERWISE NOTED RESTORE DISTURBED AREAS PER 3123-930A FROM POE TO GROUSE DRIVE.
10. EXTEND 8" PW WATER SEE S1-U-1.
11. SEE DWG S1-DM-1 FOR DEMOLITION PLAN.
12. FOR TRAVEL ACROSS THE FVA WATER PIPELINE, MAINTAIN PRE-CONSTRUCTION DEPTH OF COVER OVER THE FVA WATER PIPELINE AND DO NOT EXCEED HS-20 LOADING.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD
DR	B NORVILLE
CHK	G SIMPSON
APVD	J HENRY

NO.	DATE	REVISION	BY	APVD
1	7/13/11	ADDENDUM NO. 1	BN	JH

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Colorado Springs, CO 80903

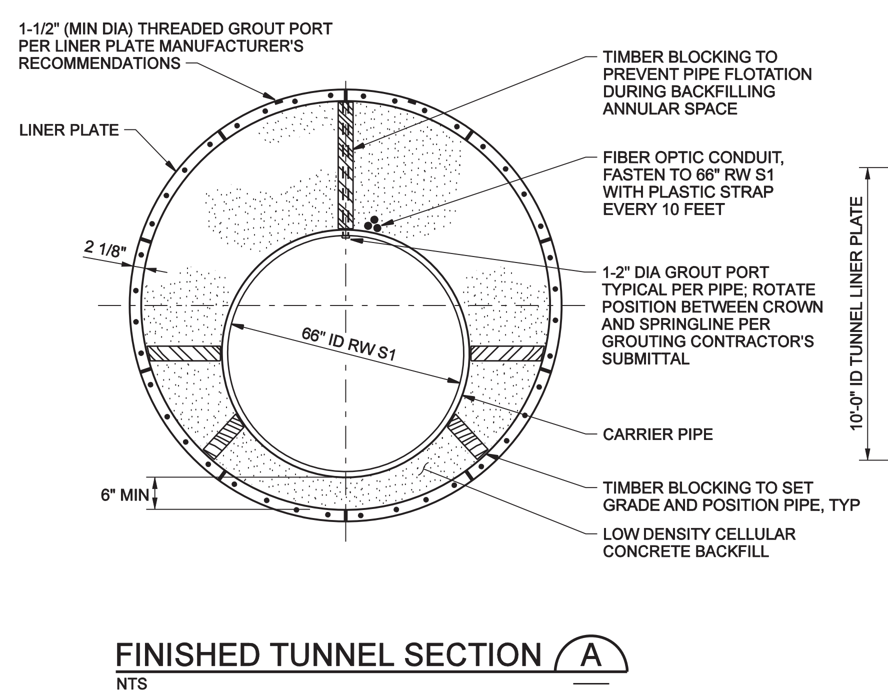
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

PLAN AND PROFILE
STATION S 322+00 TO POE STATION S 325+21.87

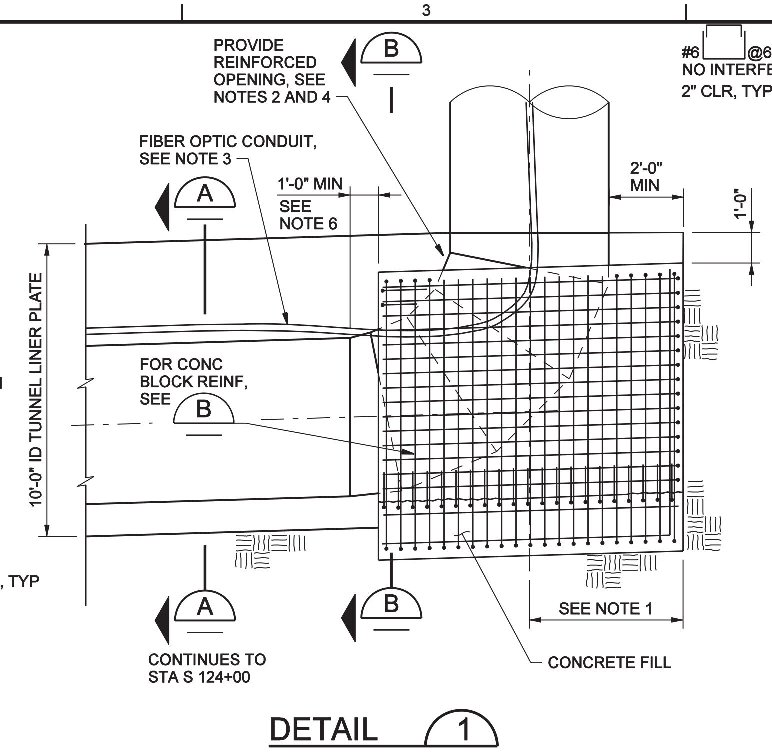
SHEET	32
DWG	S1-PP-18
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

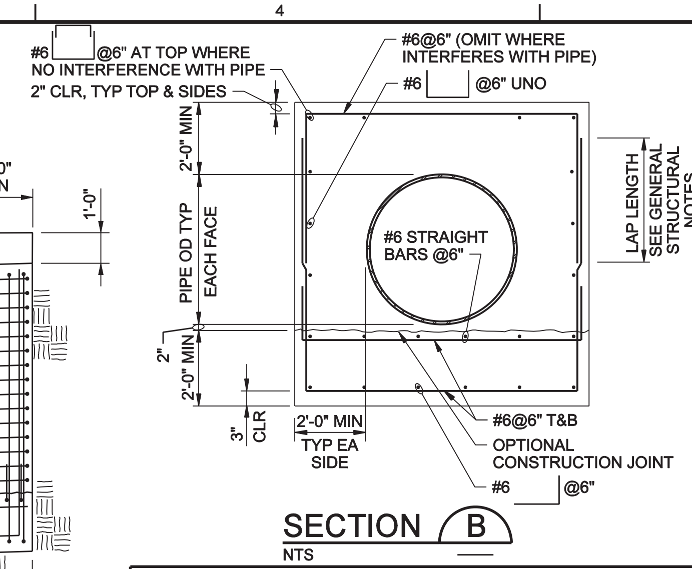
FILENAME: SP105nP18d_171473.dgn PLOT DATE: 7/20/2011 PLOT TIME: 7:33:44 AM



FINISHED TUNNEL SECTION A
NTS



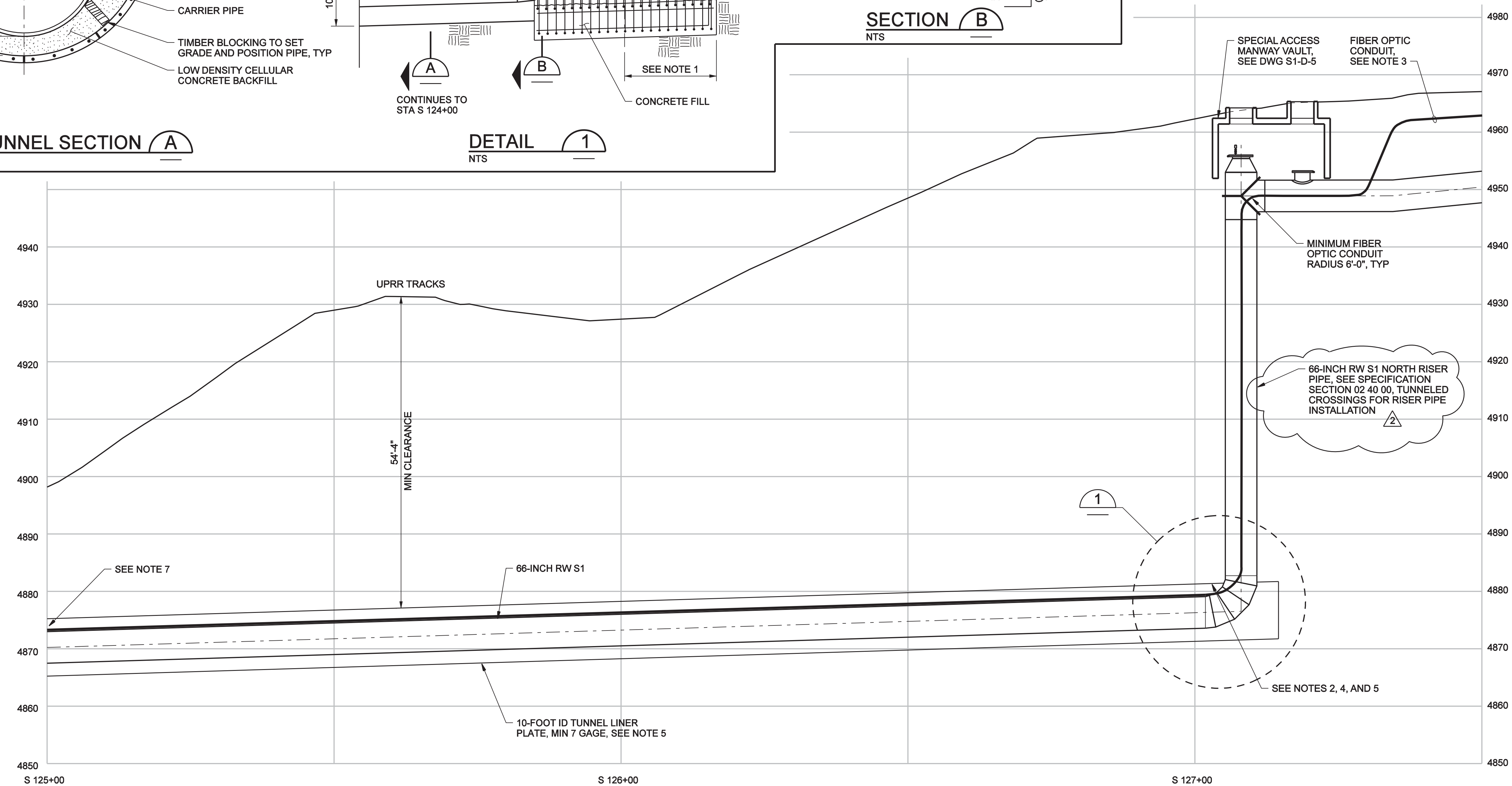
DETAIL 1
NTS



SECTION B
NTS

NOTES:

1. TO BE DETERMINED BY THE CONTRACTOR.
2. SIZE EXCAVATION AND PRIMARY SUPPORT AS REQUIRED TO CONSTRUCT RISER SHAFT AND INSTALL RISER PIPE AND ASSOCIATED ELBOW.
3. INSTALL FIBER OPTIC CONDUIT WITH SMOOTH TRANSITION FROM DOWNSTREAM AT SPECIAL ACCESS MANWAY VAULT TO CONDUIT ALIGNMENT. INSTALL FIBER OPTIC CONDUIT ON TOP SIDE OF 66" RW PIPE IN TUNNEL. TRANSITION FIBER OPTIC CONDUIT FROM TUNNEL TO SHAFT WITHIN A MINIMUM BEND RADIUS OF 6'-0". SECURE CONDUIT TO 66" RW PIPE IN TUNNEL AND RISER SHAFT.
4. PROVIDE REINFORCED OPENING IN THE LINER PLATE. COORDINATE INSTALLATION OF LINER PLATE WITH BORING OF RISER SHAFT.
5. DETERMINE THE EXCAVATED SIZE OF THE TUNNEL TO ACCOMMODATE CONSTRUCTION OF THE RISER SHAFT AND PLACEMENT OF THE RISER PIPE AND ASSOCIATED ELBOW AND FIBER OPTIC CONDUIT. TUNNEL EXCAVATION CANNOT EXCEED OD OF THE LINER PLATE PLUS THE MAXIMUM ALLOWABLE OVERCUT WITHOUT APPROVAL OF THE CONSTRUCTION MANAGER AND UPRR.
6. MAINTAIN A 1'-0" MIN HOLDBACK OF CONCRETE FILL FROM PIPE JOINT ON THE END OF THE ELBOW FITTING.
7. TUNNEL BEGINS AT STA S 124+00. SEE DWG S1-PP-3.



COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

COLORADO REGISTERED WILLIAM C. SHERMAN 15912 PROFESSIONAL ENGINEER

DSGN	A FINNEY/H ROJAS				
DR	B NORVILLE				
CHK	SIMPSON/SHERMAN	2	8/16/11	ADDENDUM NO. 2	BN	JH
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

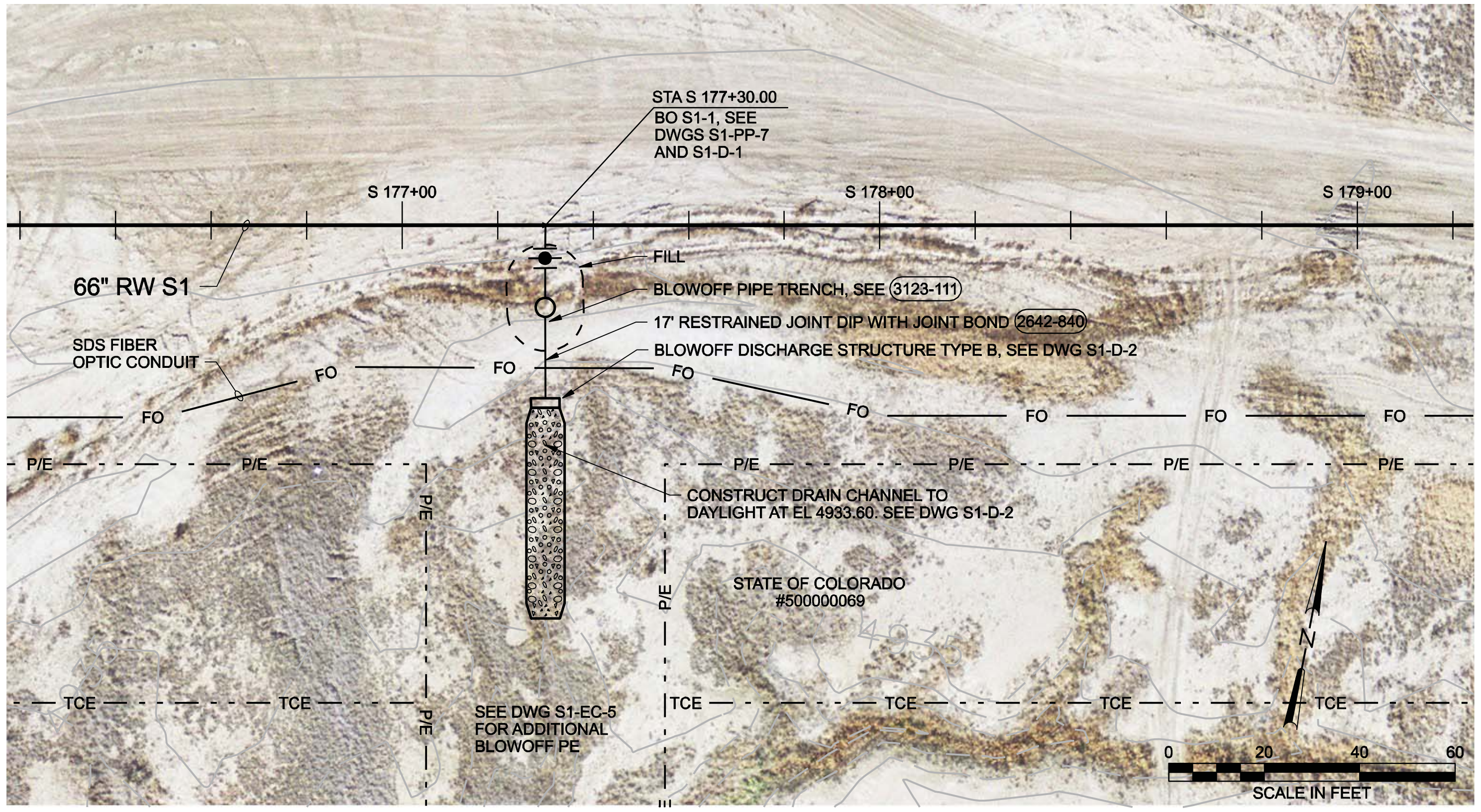
PIPE DETAILS

PIPE CASING DETAILS

SHEET	33
DWG	S1-PD-1
DATE	JULY 2011
PROJ	171473.20.SP

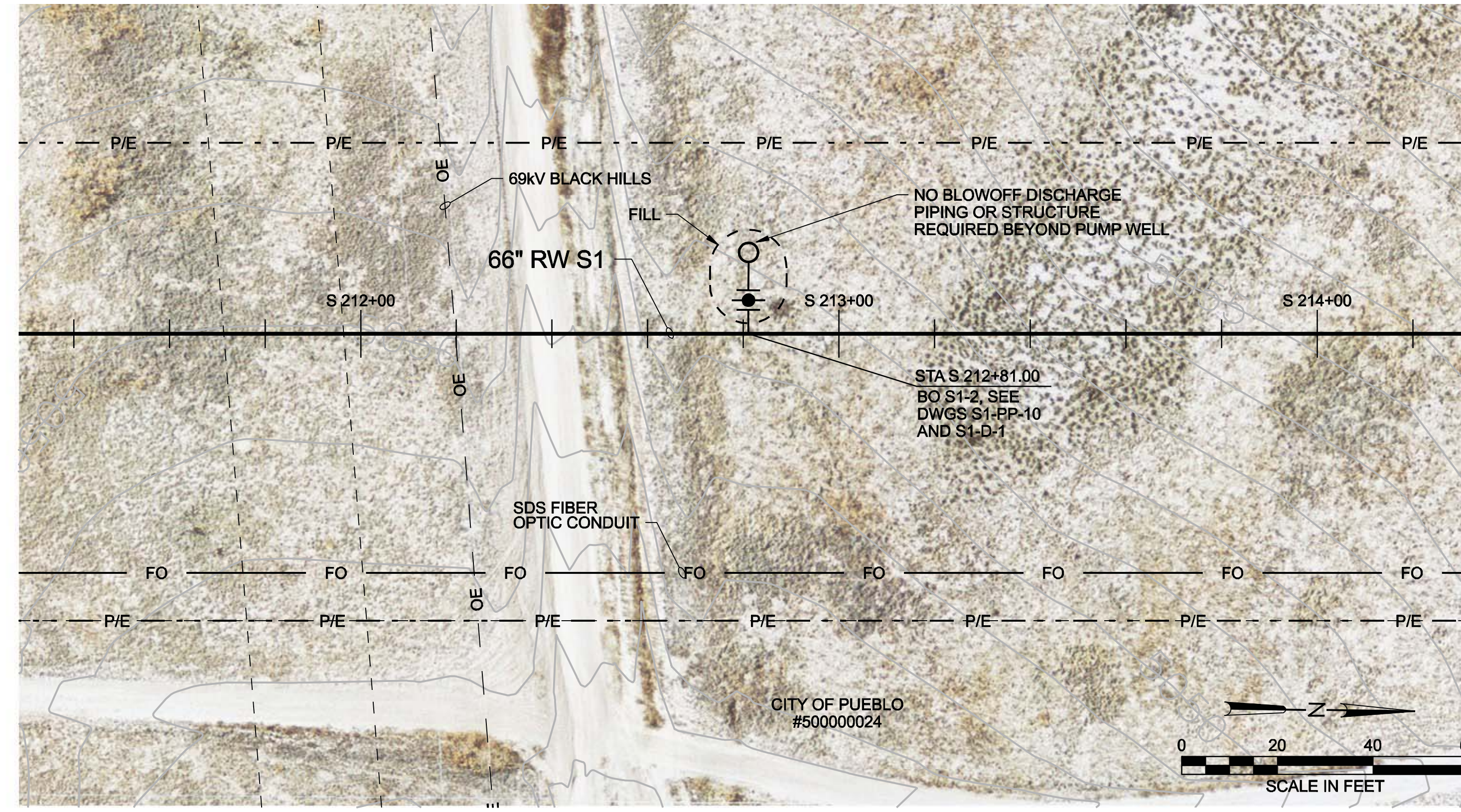
Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nPD1d_171473.dgn PLOT DATE: 8/16/2011 PLOT TIME: 3:33:07 PM



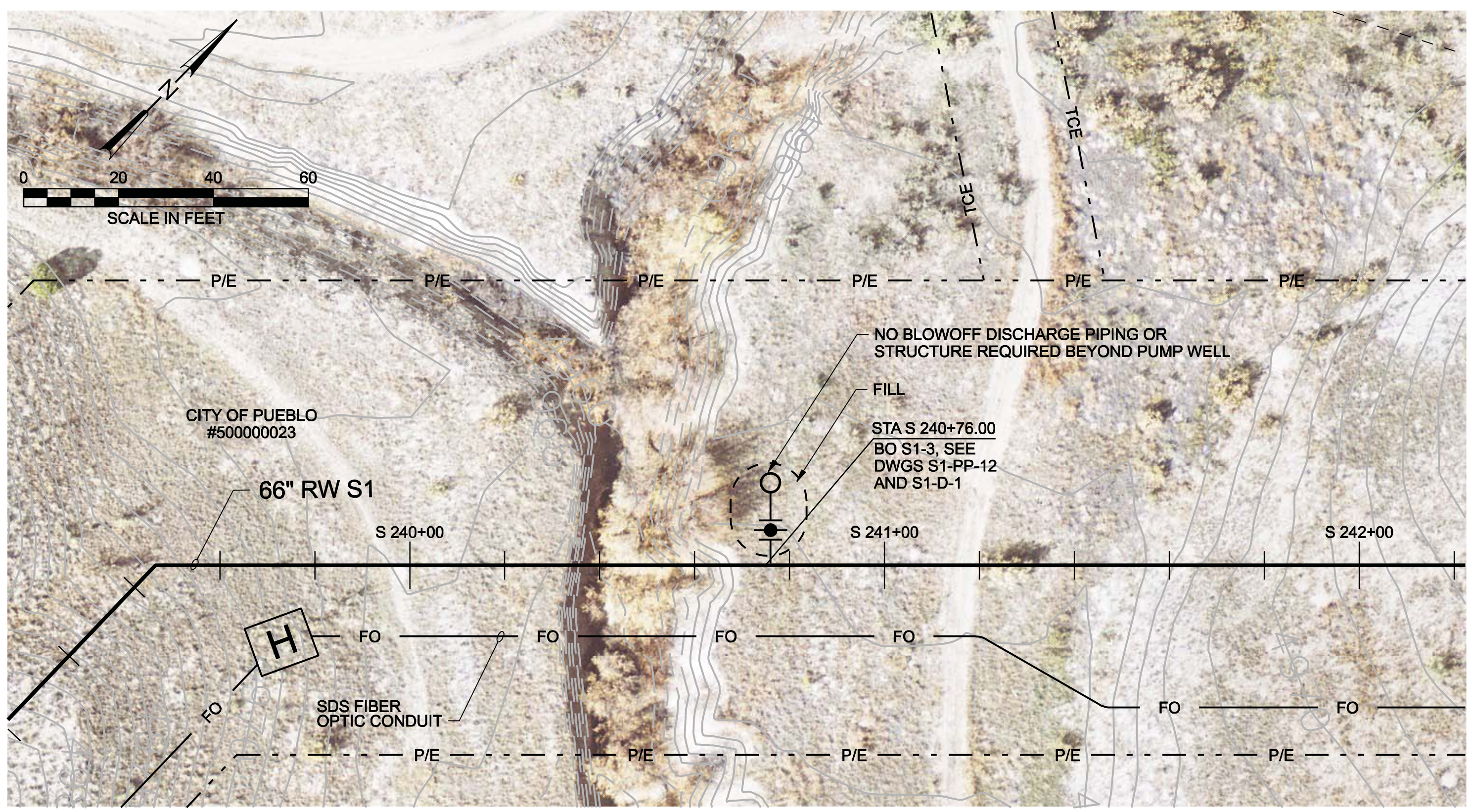
BLOWOFF S1-1 SITE PLAN

1"=20'



BLOWOFF S1-2 SITE PLAN

1"=20'



BLOWOFF S1-3 SITE PLAN

1"=20'

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN E FORD						
DR B NORVILLE						
CHK G SIMPSON						
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

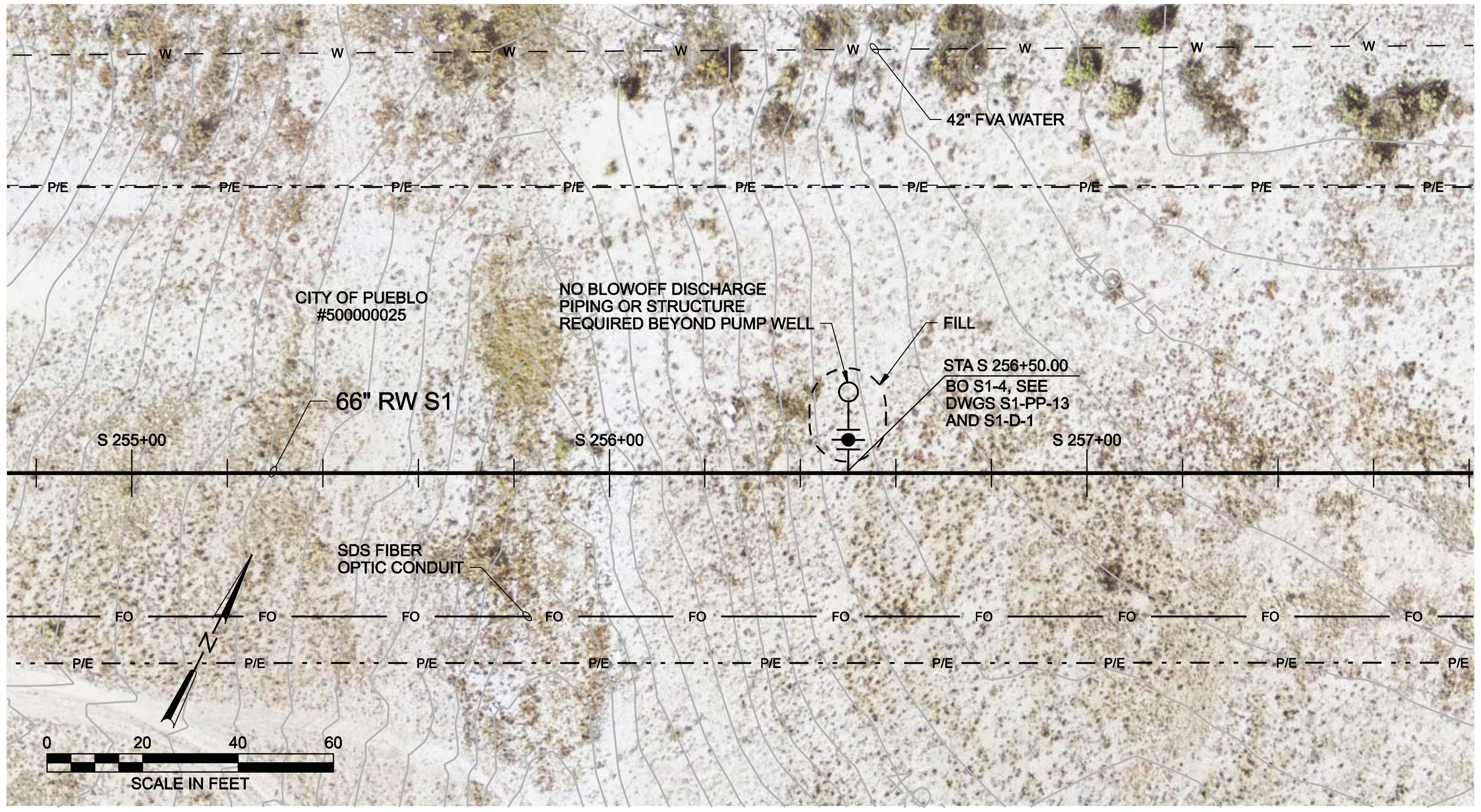
APPURTENANCE PLANS AND DETAILS

BLOWOFF ASSEMBLY SITE PLANS
S1-1, S1-2, & S1-3

SHEET	34
DWG	S1-BP-1
DATE	JULY 2011
PROJ	171473.20.SP

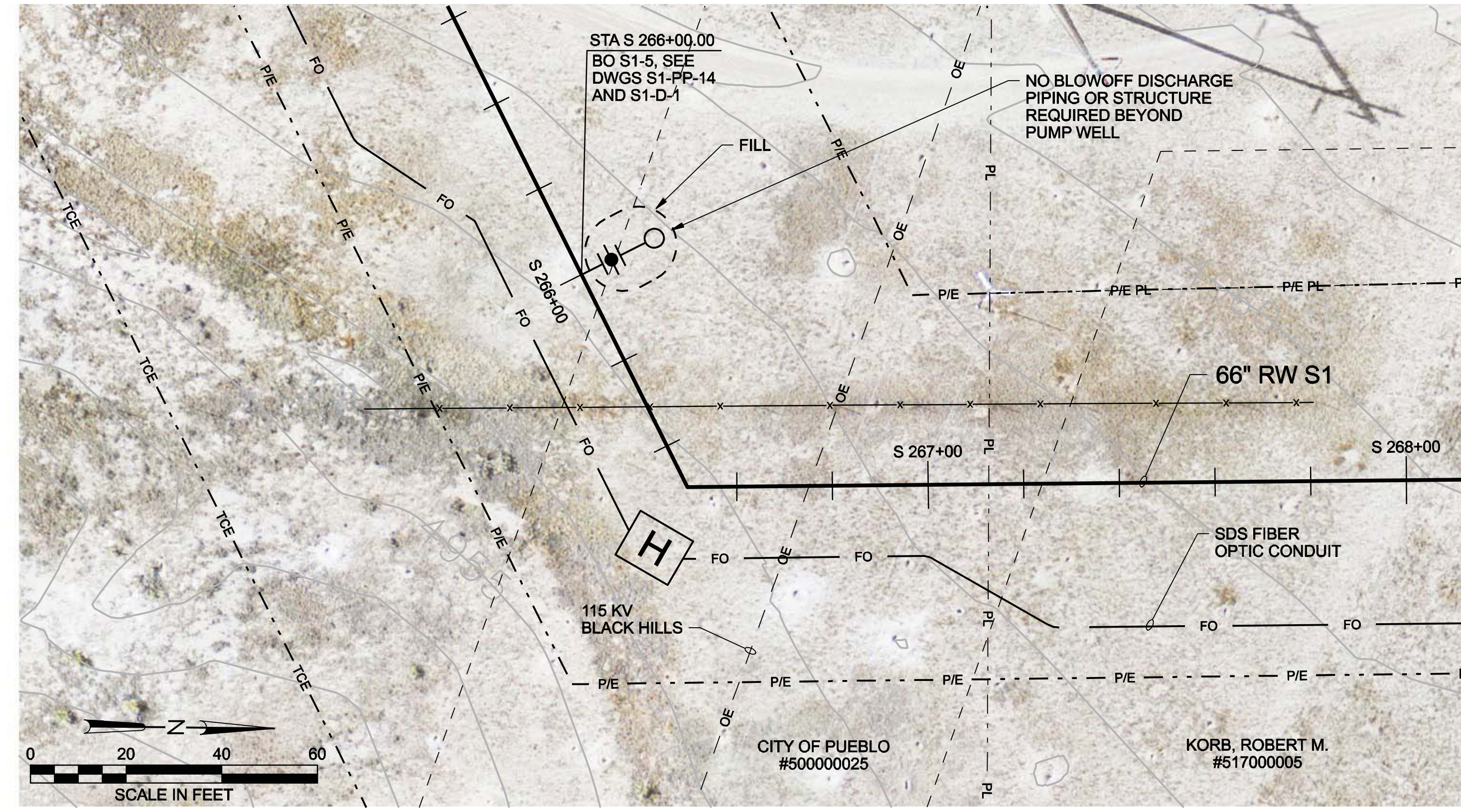
Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nBP01d_171473.dgn PLOT DATE: 6/18/2011 PLOT TIME: 8:43:13 AM



BLOWOFF S1-4 SITE PLAN

1"=20'



BLOWOFF S1-5 SITE PLAN

1"=20'

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD						
DR B NORVILLE						
CHK G SIMPSON						
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

VERIFY SCALE
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0 1"
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CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

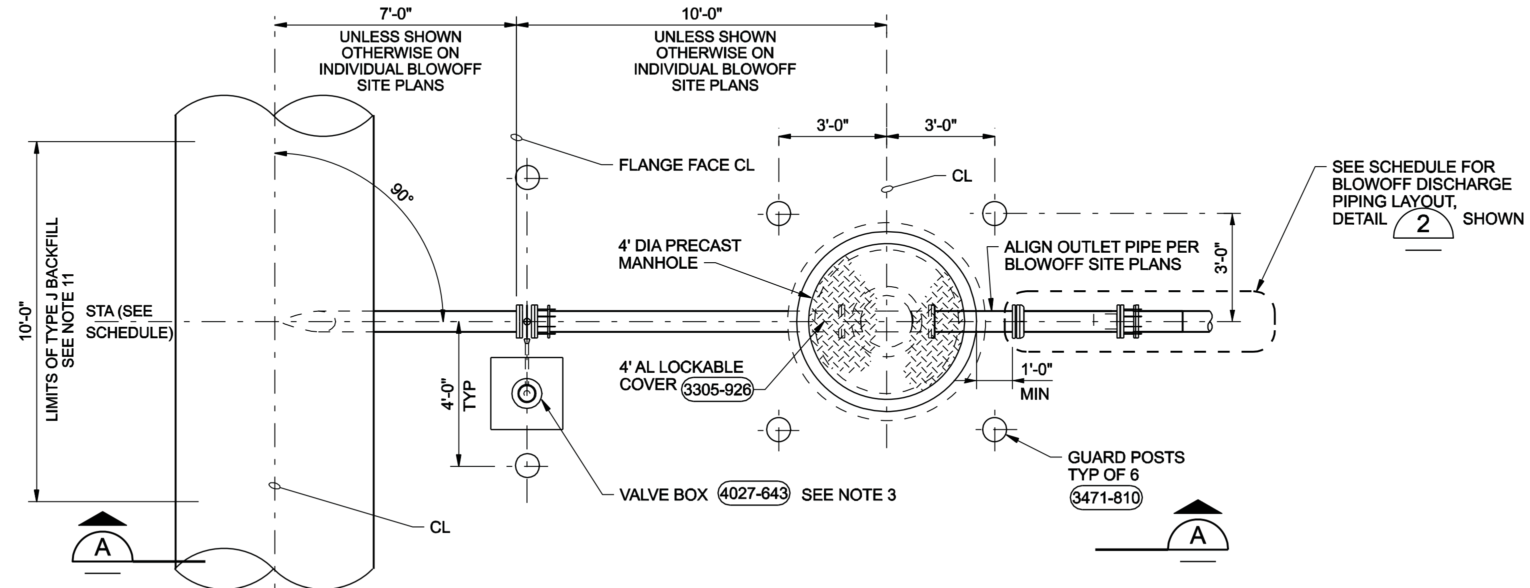
APPURTENANCE PLANS AND DETAILS

BLOWOFF ASSEMBLY SITE PLANS
S1-4 AND S1-5

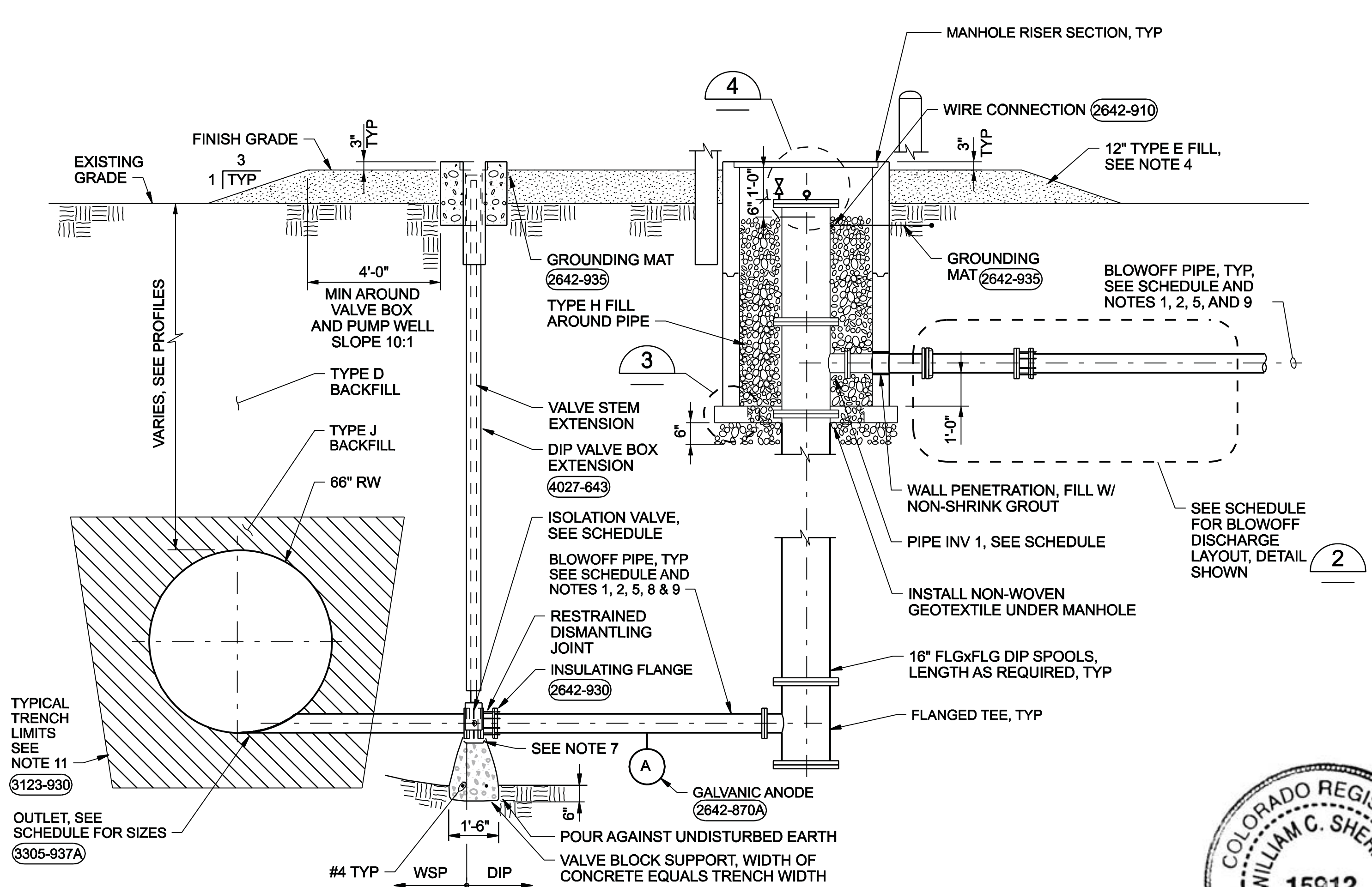
SHEET	35
DWG	S1-BP-2
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

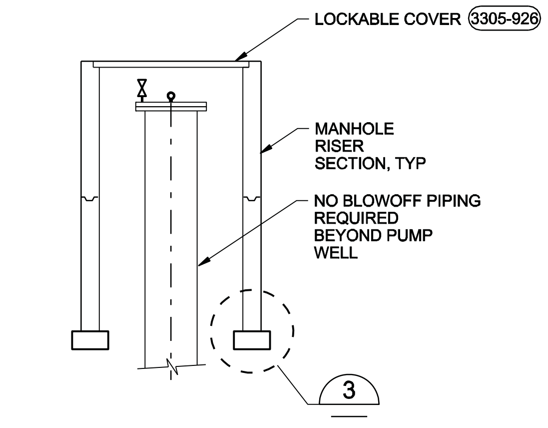
FILENAME: SP105nBP02d_171473.dgn PLOT DATE: 6/14/2011 PLOT TIME: 5:57:57 AM



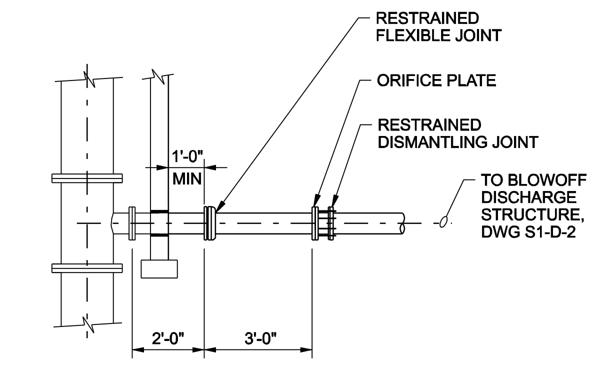
PLAN
3/8"=1'-0"



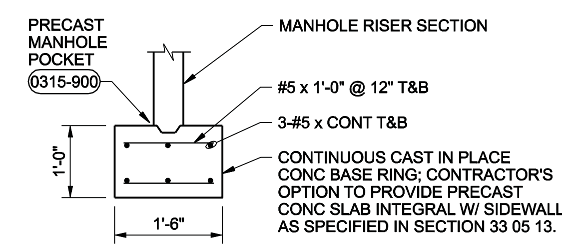
ELEVATION A
3/8"=1'-0"



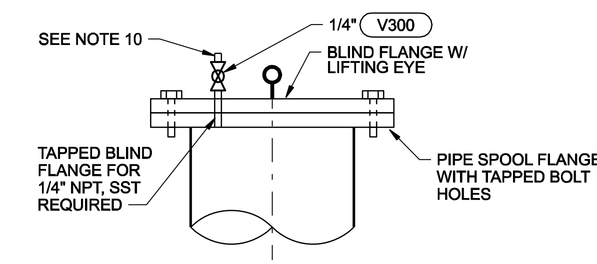
DETAIL 1
3/4"=1'-0"



DETAIL 2
3/4"=1'-0"



DETAIL 3
3/4"=1'-0"



DETAIL 4
3/4"=1'-0"

NOTES:

1. BLOWOFF PIPING IS DUCTILE IRON AND WELDED STEEL PIPE AS SHOWN.
2. INSTALL RESTRAINED JOINT PIPE.
3. LOCATE VALVE BOX CENTERED OVER VALVE OPERATOR STEM.
4. PROVIDE TYPE E FILL AS REQUIRED TO FINISH GRADE AS SHOWN.
5. PROVIDE TRENCH FOR BLOWOFF PIPING, 3123-111 SIM, UNLESS OTHERWISE SHOWN.
6. STRUCTURES MAY BE CAST-IN-PLACE DESIGN IN ACCORDANCE WITH THE DESIGN CRITERIA ON DWG S1-G-10. SUBMIT DESIGN FOR APPROVAL.
7. PLACE DOUBLE LAYER OF 6 MIL POLYETHYLENE BETWEEN CONC AND VALVE.
8. SLOPE BLOWOFF PIPING AT -0.1% FROM 66" RW TO PUMP WELL UNLESS SHOWN OTHERWISE.
9. COAT BURIED FLANGES, VALVES, AND BOLTS WITH WAX TAPE.
10. FURNISH ONE 500 PSI PRESSURE GAUGE PER BLOWOFF.
11. MAKE TRANSITION TO PIPE ZONE OF 0.7 OD OUTSIDE OF LIMITS SHOWN FOR APPURTENANCES.
12. VALVES ARE OWNER FURNISHED. COORDINATE WITH CONSTRUCTION MANAGER REGARDING TYPE, SIZE, AND QUANTITY OF EACH VALVE, AND FOR SCHEDULING PICK-UP OF VALVES AT OWNERS STORAGE FACILITY.

OPERATIONAL NOTES:

1. DO NOT OPEN BLIND FLANGES ON BLOWOFFS UNTIL SYSTEM IS DEPRESSURIZED WITH A GAUGE PRESSURE OF 0 PSIG.
2. DO NOT OPERATE ISOLATION VALVE ON BLOWOFF S1-1 UNTIL THE JUNIPER PUMP STATION BLOWOFF HAS COMPLETELY DRAINED.
3. DO NOT OPERATE BLOWOFF S1-2, S1-3, S1-4, AND S1-5 UNTIL BLOWOFF S2-1 HAS COMPLETELY DRAINED.

SCHEDULE

BLOWOFF NO.	STATION	HILLSIDE OUTLET DIA & BLOWOFF SIZE (INCHES)	DISCHARGE DETAIL TYPE	ISOLATION VALVE TYPE PROVIDED BY OWNER	ORIFICE PLATE OPENING SIZE (INCHES)	PIPE INV 1 ELEVATION	PIPE INV 2 ELEVATION (SEE S1-D-2)	FLANGE PRESSURE CLASS RATING (PSI)
S1-1	S 177+30	8	DETAIL 2	V540A	4.6	4933.7	4933.6	375
S1-2	S 212+81	6	DETAIL 1	V540A	NONE	NONE	NONE	325
S1-3	S 240+76	6	DETAIL 1	V540A	NONE	NONE	NONE	350
S1-4	S 256+50	6	DETAIL 1	V540A	NONE	NONE	NONE	350
S1-5	S 266+00	6	DETAIL 1	V540A	NONE	NONE	NONE	350

COLORADO REGISTERED PROFESSIONAL ENGINEER WILLIAM C. SHERMAN 15912

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD						
DR B NORVILLE						
CHK G SIMPSON						
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

VERIFY SCALE
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CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

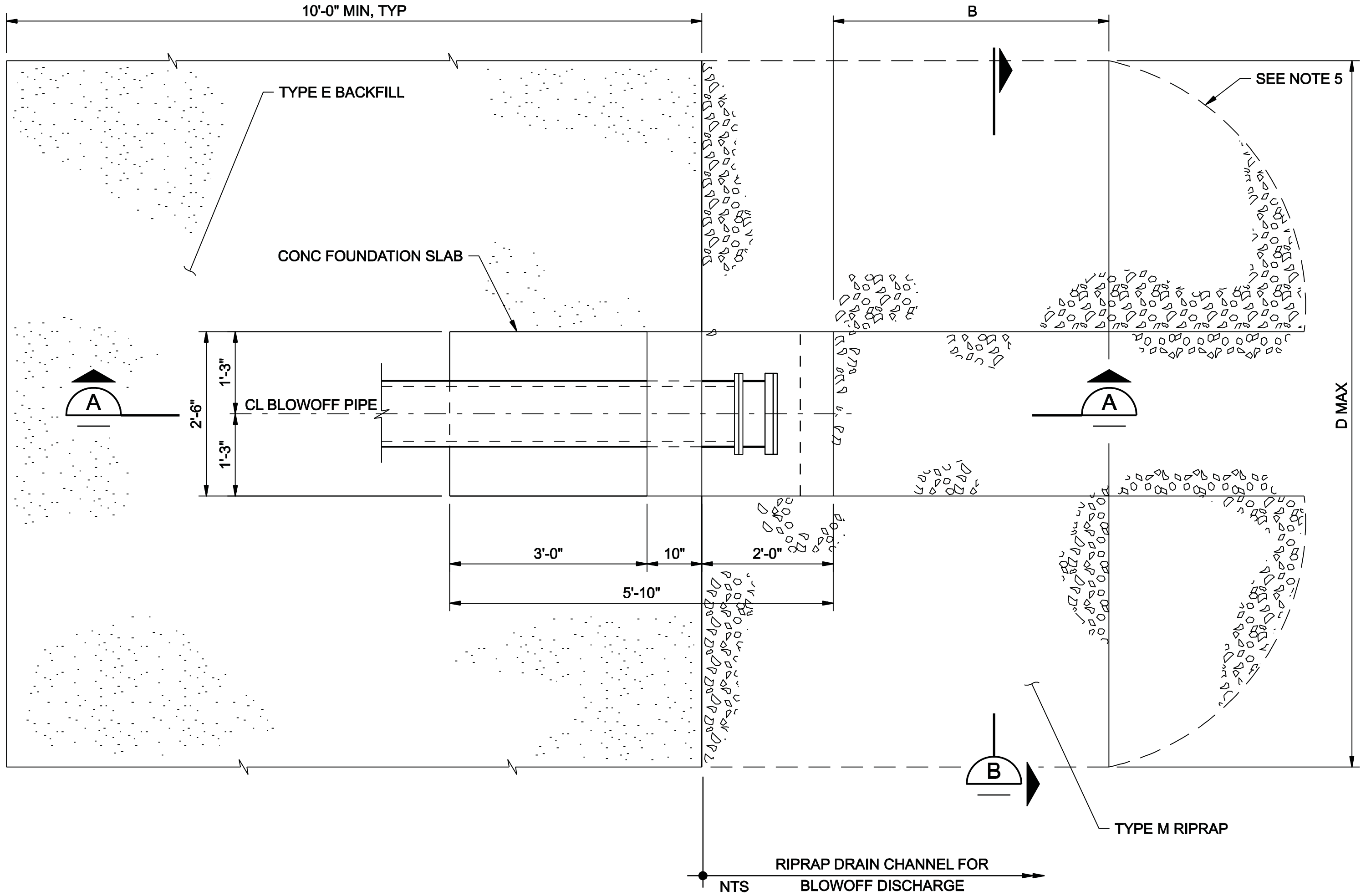
APPURTENANCE PLANS AND DETAILS

BLOWOFF ASSEMBLY TYPE II
PLAN AND ELEVATION

SHEET	36
DWG	S1-D-1
DATE	JULY 2011
PROJ	171473.20.SP

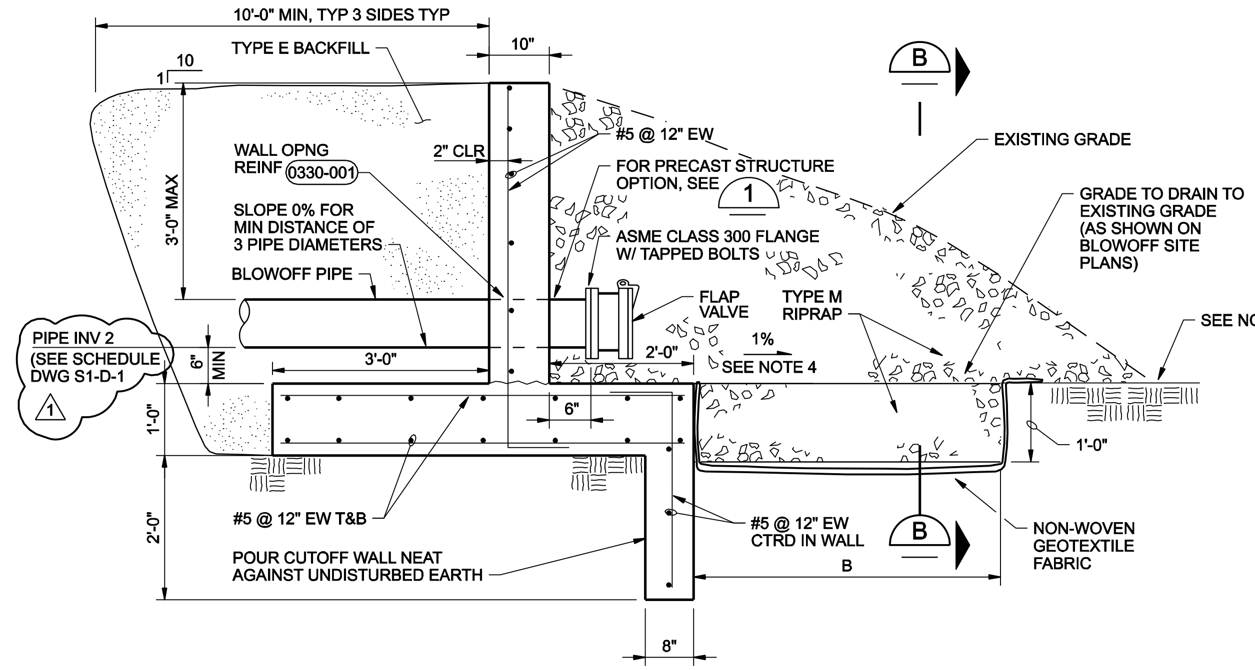
Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nBlowoff2d_171473.dgn PLOT DATE: 6/14/2011 PLOT TIME: 6:27:22 AM



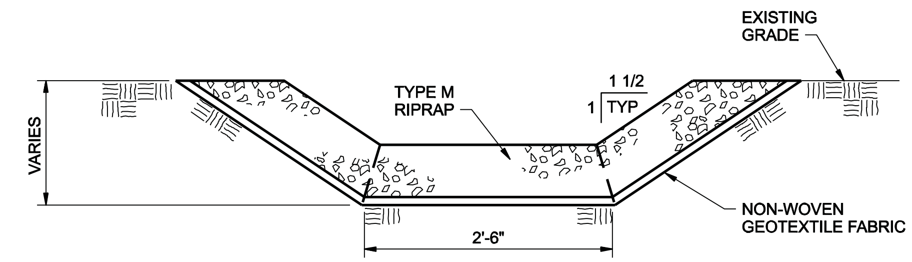
BLOWOFF DISCHARGE STRUCTURE TYPE B - PLAN

3/4"=1'-0"



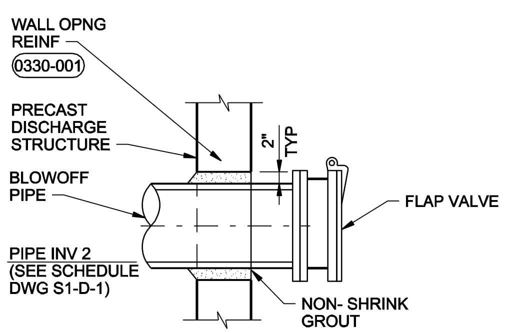
SECTION A

3/4"=1'-0"



SECTION B

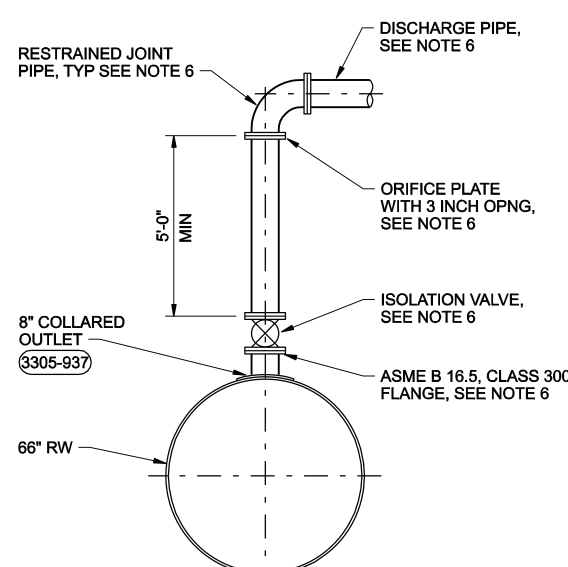
1/2"=1'-0"



PRECAST STRUCTURE PIPE WALL PENETRATION, SEE NOTE 3

DETAIL 1

3/4"=1'-0"



TEMPORARY BLOWOFF 2

NTS

S1-PP-1

GENERAL NOTES:

1. SEE BLOWOFF ASSEMBLY SITE PLAN DRAWINGS FOR BLOWOFF CONFIGURATION AND ROUTING PLANS.
2. LENGTH OF TRAPEZOIDAL CHANNEL AND LENGTH OF APPROXIMATE GRADING ARE SHOWN ON BLOWOFF SITE PLANS.
3. STRUCTURES MAY BE PRECAST, AS SPECIFIED IN SECTION 33 05 13, MANHOLES AND PRECAST VAULTS.
4. DOWNSTREAM DRAIN CHANNEL MINIMUM SLOPE 1%.
5. ~~EXTEND RIPRAP ON SIDE SLOPE OF TRAPEZOIDAL CHANNEL TO MATCH EXISTING GRADE~~
6. INSTALL TEMPORARY BLOWOFF ISOLATION VALVE, ORIFICE PLATE, DISCHARGE PIPING, AND BMP'S FOR DRAINING PIPELINE AFTER PASSING HYDROSTATIC TEST. ISOLATION VALVE TO BE RATED FOR HYDROSTATIC TEST PRESSURE. PIPING DOWNSTREAM OF ISOLATION VALVE AND ORIFICE PLATE TO BE RATED FOR 150 PSI. DISCHARGE POINT TO BE A MINIMUM OF 25 FT FROM MAIN PIPELINE. AFTER DRAINING PIPELINE, REMOVE BLOWOFF PIPING AND INSTALL AN ASME B16.5, CLASS 300 BLIND FLANGE ON 8" OUTLET. RESTORE AREA AFTER PASSING HYDROSTATIC TEST.

1

DIMENSIONS OF BLOW-OFF DISCHARGE STRUCTURES

SCHEDULE				
BLOWOFF NO.	DISCHARGE STRUCTURE	BO PIPE DIAMETER (INCHES)	D MAX	B
S1-1	TYPE B	8	10'-5"	44'-0"

COLORADO REGISTERED PROFESSIONAL ENGINEER WILLIAM C. SHERMAN 15912

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD				
DR	B NORVILLE				
CHK	G SIMPSON	1	7/13/11	ADDENDUM NO. 1	BN	JH
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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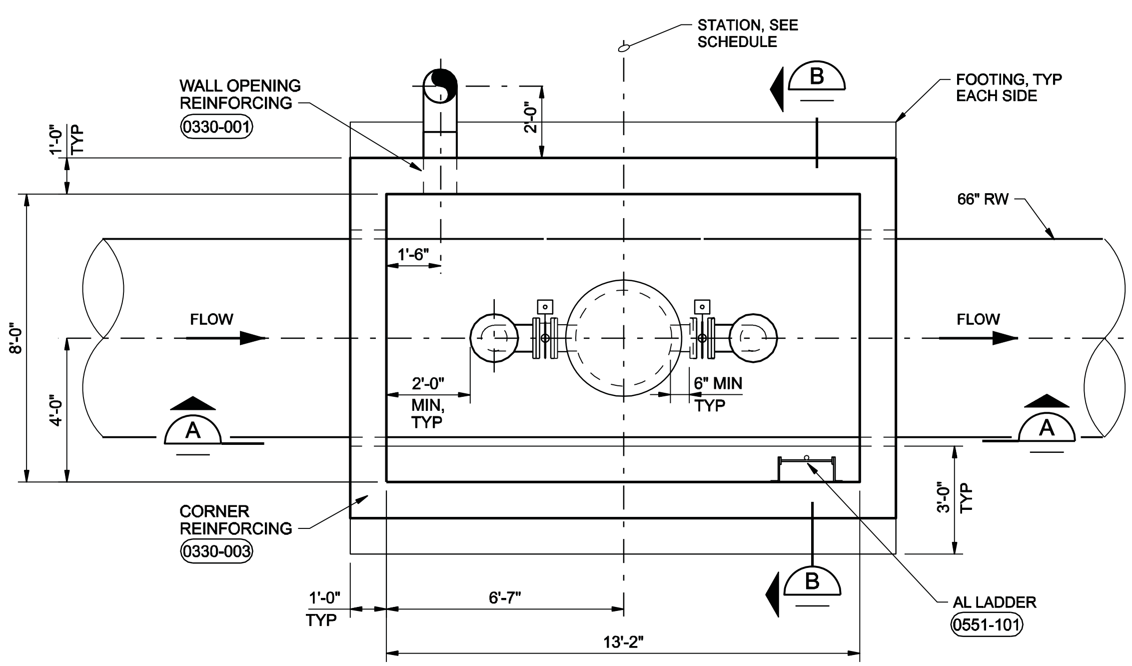
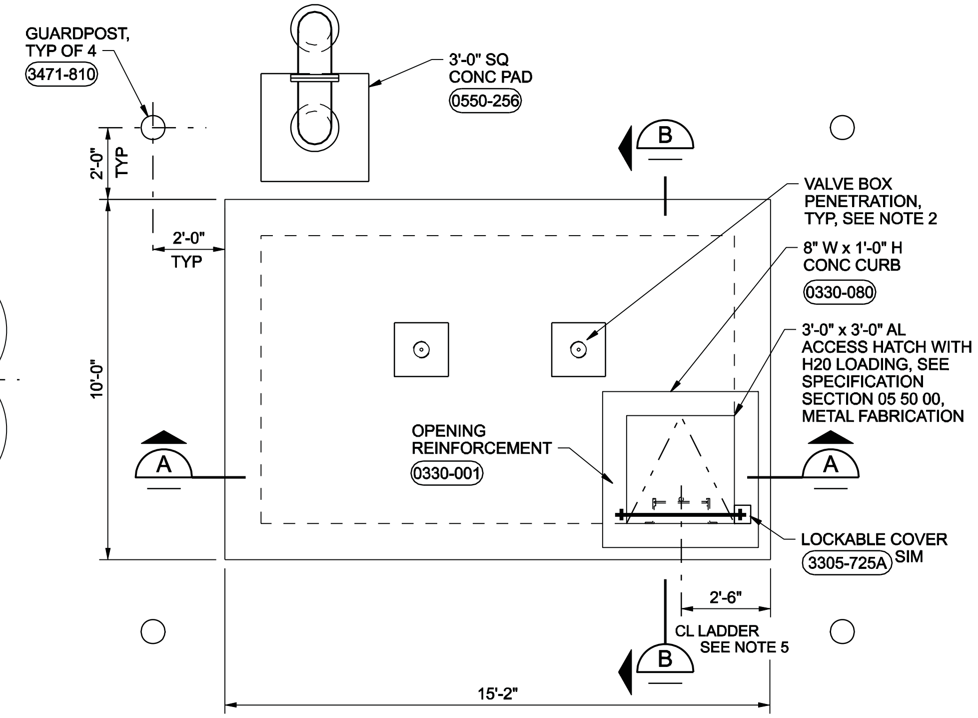
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

APPURTENANCE PLANS AND DETAILS
BLOWOFF ASSEMBLY - TYPE B DISCHARGE STRUCTURE - PLAN AND SECTIONS AND TEMPORARY BLOWOFF

SHEET	37
DWG	S1-D-2
DATE	JULY 2011
PROJ	171473.20.SP



PLAN
3/8"=1'-0"



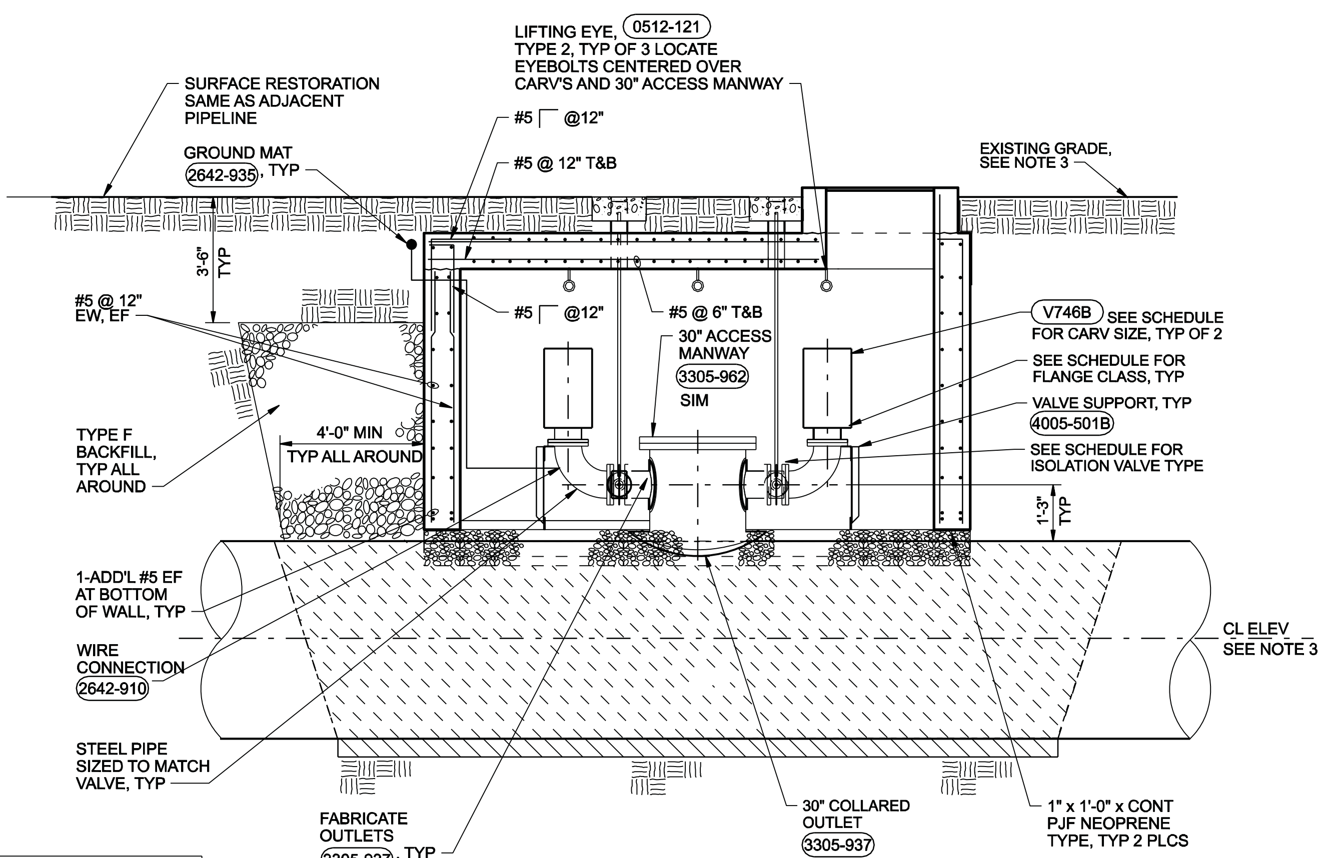
ROOF PLAN
3/8"=1'-0"

NOTES:

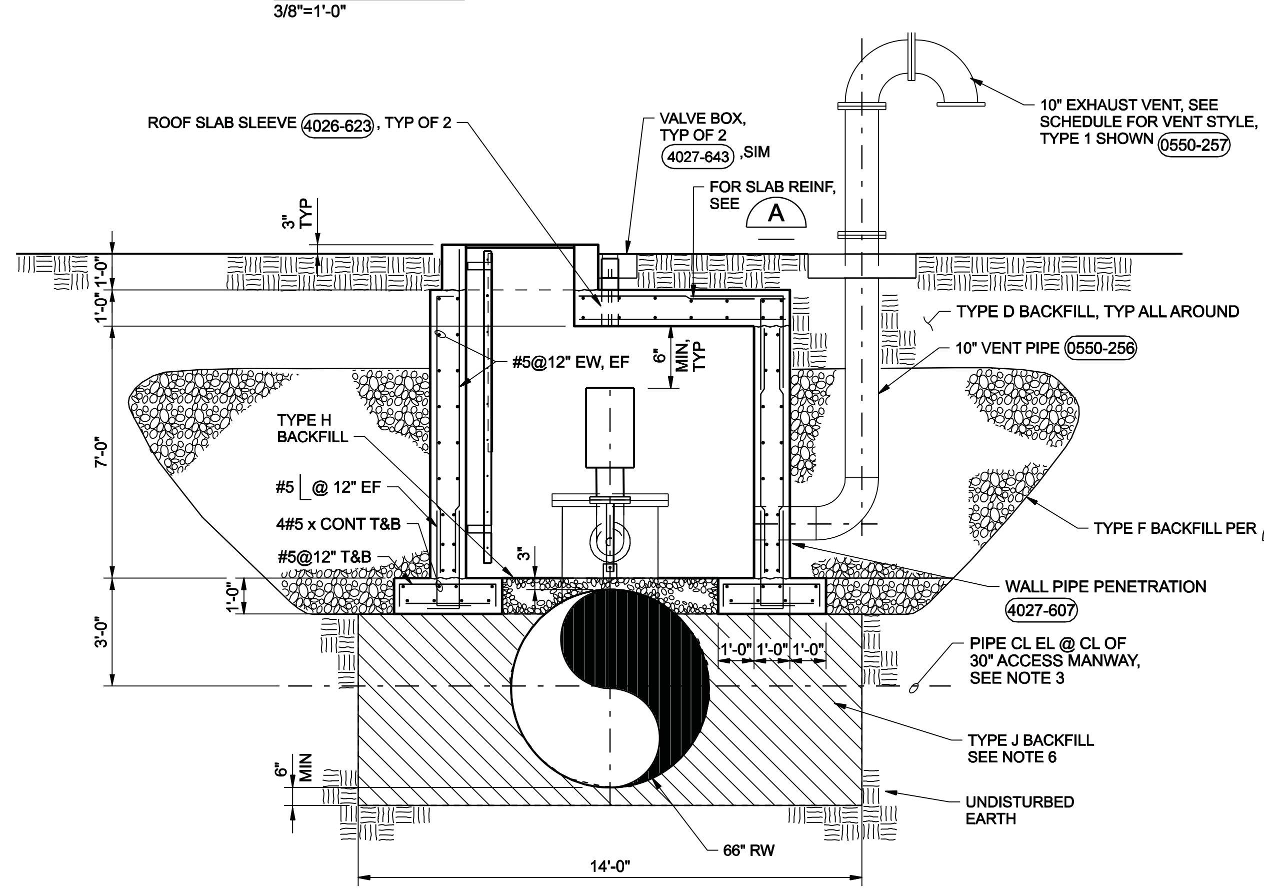
1. SEE GENERAL STRUCTURAL NOTES ON DWG S1-G-10.
2. LOCATE VALVE BOX PENETRATIONS CENTERED OVER VALVE OPERATOR STEM. COORDINATE PENETRATIONS WITH VALVE STEM LOCATION.
3. SEE PLAN AND PROFILE DRAWINGS FOR PIPE CENTERLINE ELEVATION, AND EXISTING GRADE.
4. STRUCTURES MAY BE PRECAST AS SPECIFIED IN SECTION 33 05 13, MANHOLES AND PRECAST VAULTS.
5. CENTER LADDER IN HATCH OPENING.
6. TRANSITION TO PIPE ZONE OF 0.7 D OUTSIDE OF LIMITS SHOWN FOR APPURTENANCE.
7. VALVES ARE OWNER FURNISHED. COORDINATE WITH CONSTRUCTION MANAGER REGARDING TYPE, SIZE, AND QUANTITY OF EACH VALVE, AND FOR SCHEDULING PICK-UP OF VALVES AT OWNER'S STORAGE FACILITY.

SCHEDULE

CARV NO.	STATION	CARV SIZE (INCHES)	FLANGE PRESSURE CLASS RATING (PSI)	ISOLATION VALVE TYPE PROVIDED BY OWNER	VENT STYLE
S1-4	S 243+08	8	350	V506A	Type 1
S1-5	S 259+80	8	350	V506A	Type 1
S1-6	S 292+12	6	350	V506A	Type 1



SECTION A
3/8"=1'-0"



SECTION B
3/8"=1'-0"

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

COLORADO REGISTERED WILLIAM C. SHERMAN 15912 PROFESSIONAL ENGINEER

DSGN	E FORD/H ROJAS	NO.	DATE	REVISION	BY / APVD
DR	B NORVILLE				
CHK	SIMPSON/SHERMAN				
APVD	J HENRY				

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

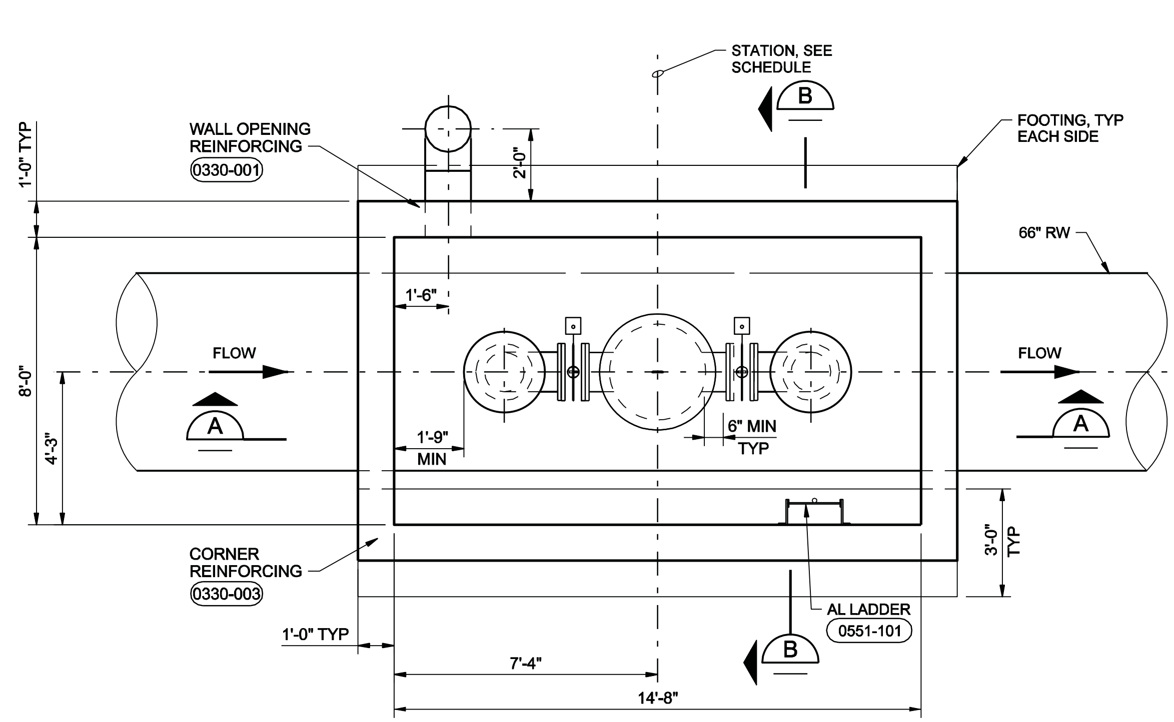
APPURTENANCE PLANS AND DETAILS

CARV VAULT TYPE I
PLAN AND SECTIONS

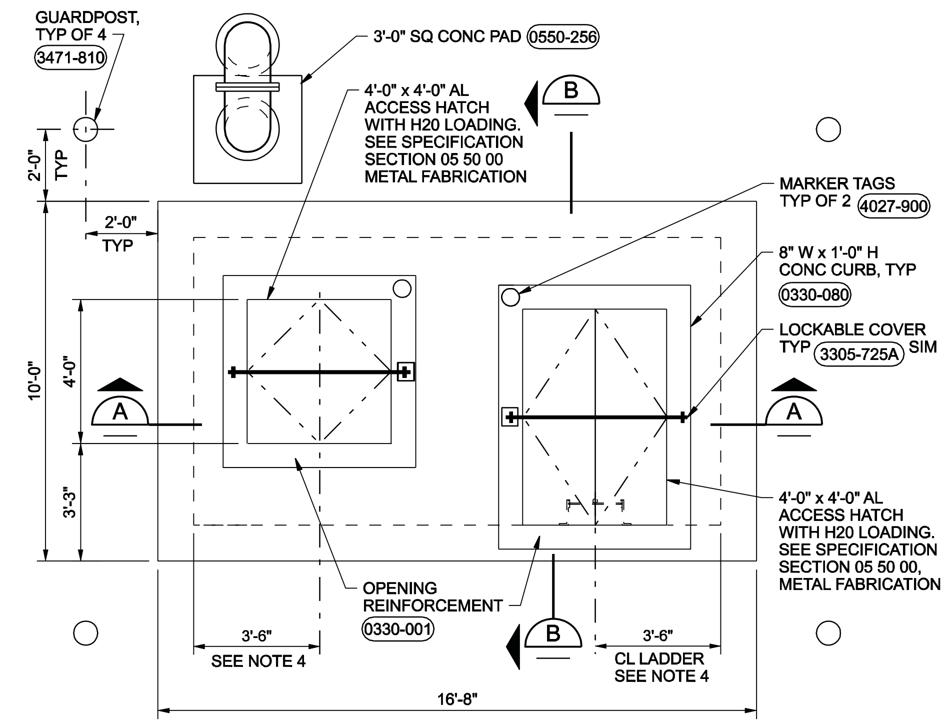
SHEET	38
DWG	S1-D-3
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nCARV1d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 10:51:27 AM



PLAN
3/8"=1'-0"



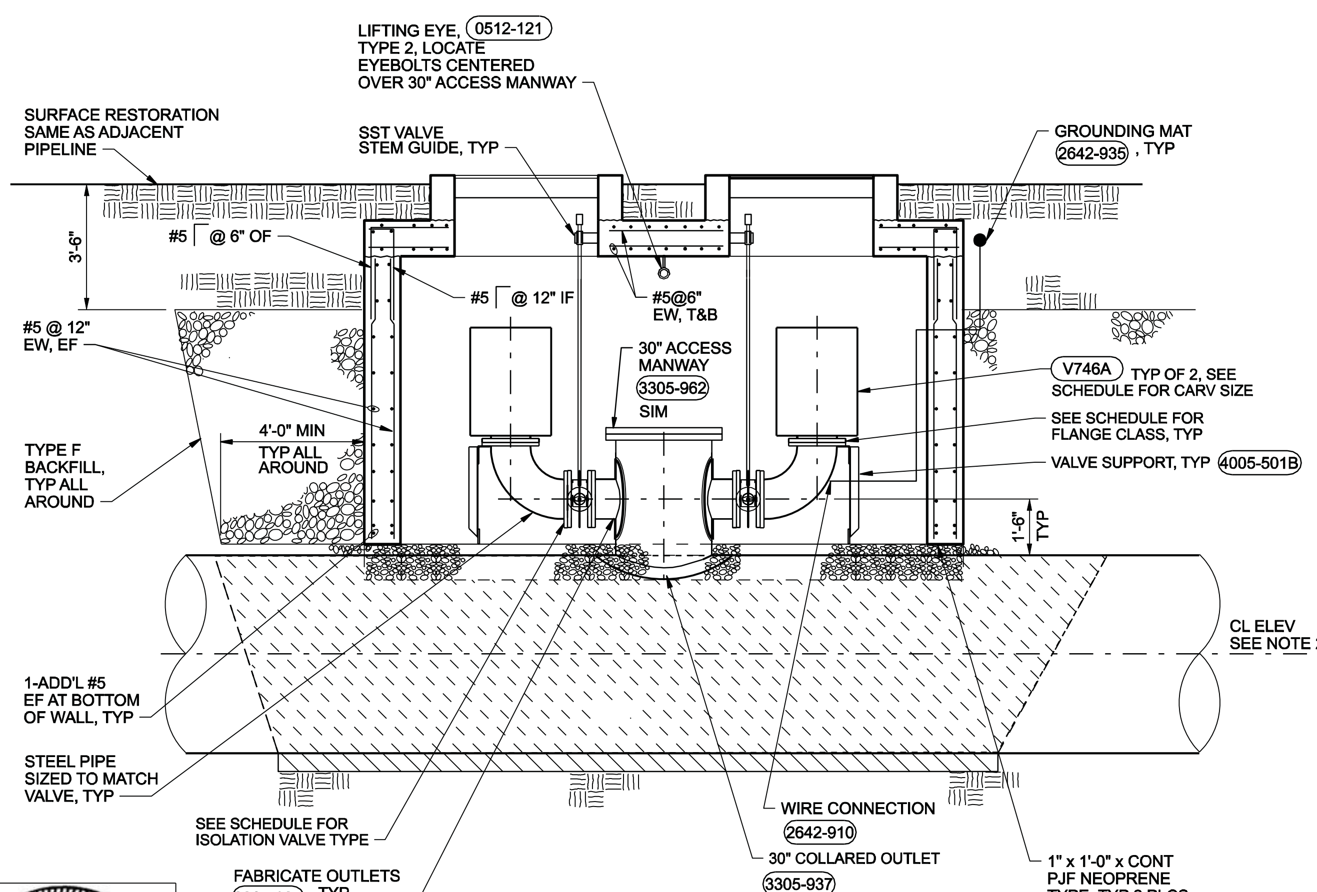
ROOF PLAN
3/8"=1'-0"

NOTES:

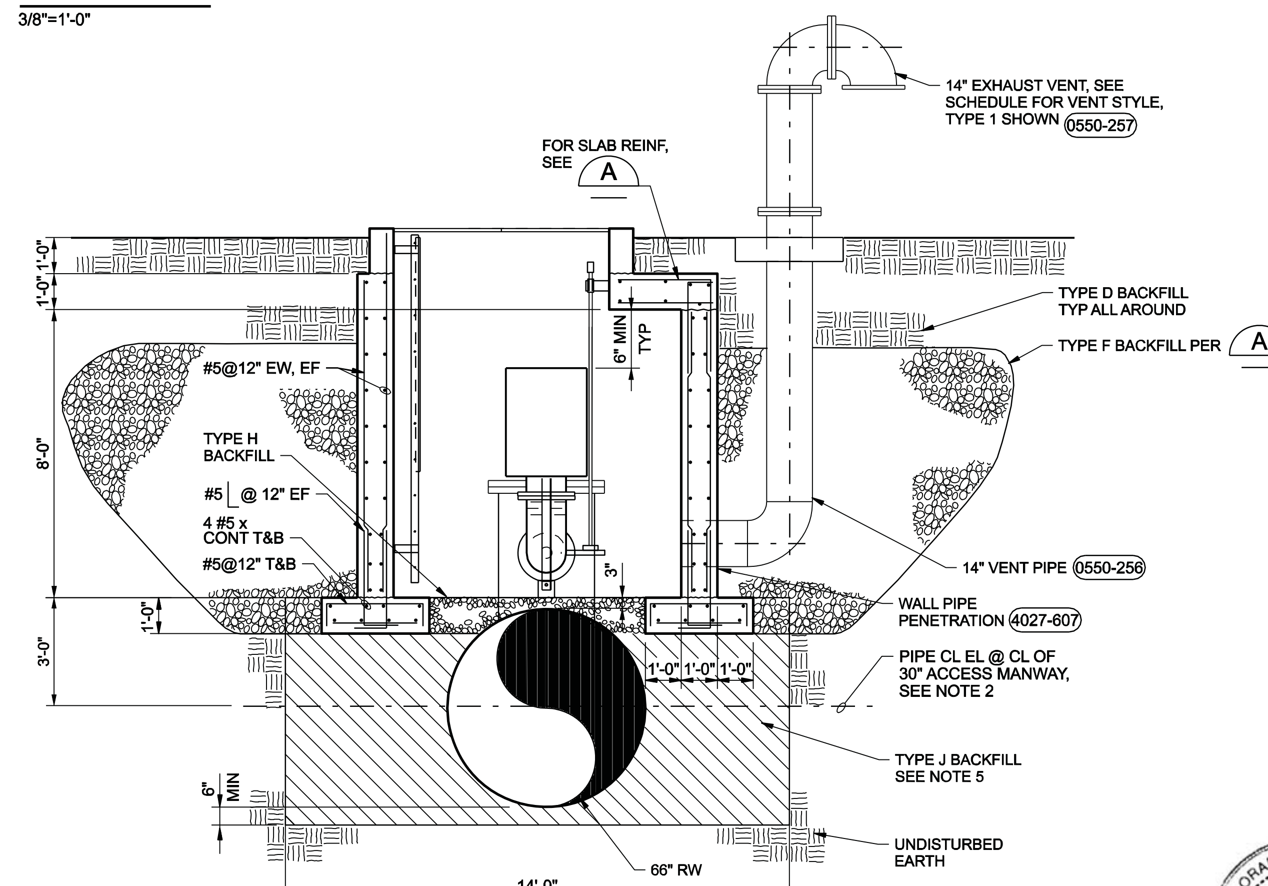
1. SEE GENERAL STRUCTURAL NOTES ON DWG S1-G-10.
2. SEE PLAN AND PROFILE DRAWINGS FOR PIPE CENTERLINE ELEVATION, EXISTING GRADE, AND FINISHED GRADE.
3. STRUCTURES MAY BE PRECAST AS SPECIFIED IN SECTION 33 05 13, MANHOLES AND PRECAST VAULTS.
4. LOCATE ACCESS HATCHES TO ALLOW FOR ISOLATION VALVES TO BE OPERATED FROM ABOVE. COORDINATE OPENINGS PRIOR TO INSTALLATION, CENTER LADDER IN HATCH OPENING.
5. TRANSITION TO PIPE ZONE OF 0.7D OUTSIDE OF LIMITS SHOWN FOR APPURTENANCE.
6. LOCATE ACCESS HATCHES CENTERED OVER V746A COORDINATE OPENINGS PRIOR TO INSTALLATION.
7. VALVES ARE OWNER FURNISHED. COORDINATE WITH CONSTRUCTION MANAGER REGARDING TYPE, SIZE, AND QUANTITY OF EACH VALVE, AND FOR SCHEDULING PICK-UP OF VALVES AT OWNER'S STORAGE FACILITY.

SCHEDULE

CARV NO.	STATION	CARV SIZE (INCHES)	FLANGE PRESSURE CLASS RATING (PSI)	ISOLATION VALVE TYPE PROVIDED BY OWNER	VENT STYLE
S1-1	S 136+37	12	350	V506A	Type 1
S1-2	S 209+85	12	325	V506A	Type 1
S1-3	S 220+16	12	325	V506A	Type 1



SECTION A
3/8"=1'-0"



SECTION B
3/8"=1'-0"

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

COLORADO REGISTERED WILLIAM C. SHERMAN 15912 PROFESSIONAL ENGINEER

DSGN E FORD/H ROJAS					
DR B NORVILLE					
CHK SIMPSON/SHERMAN					
APVD J HENRY	NO.	DATE	REVISION	BY	APVD

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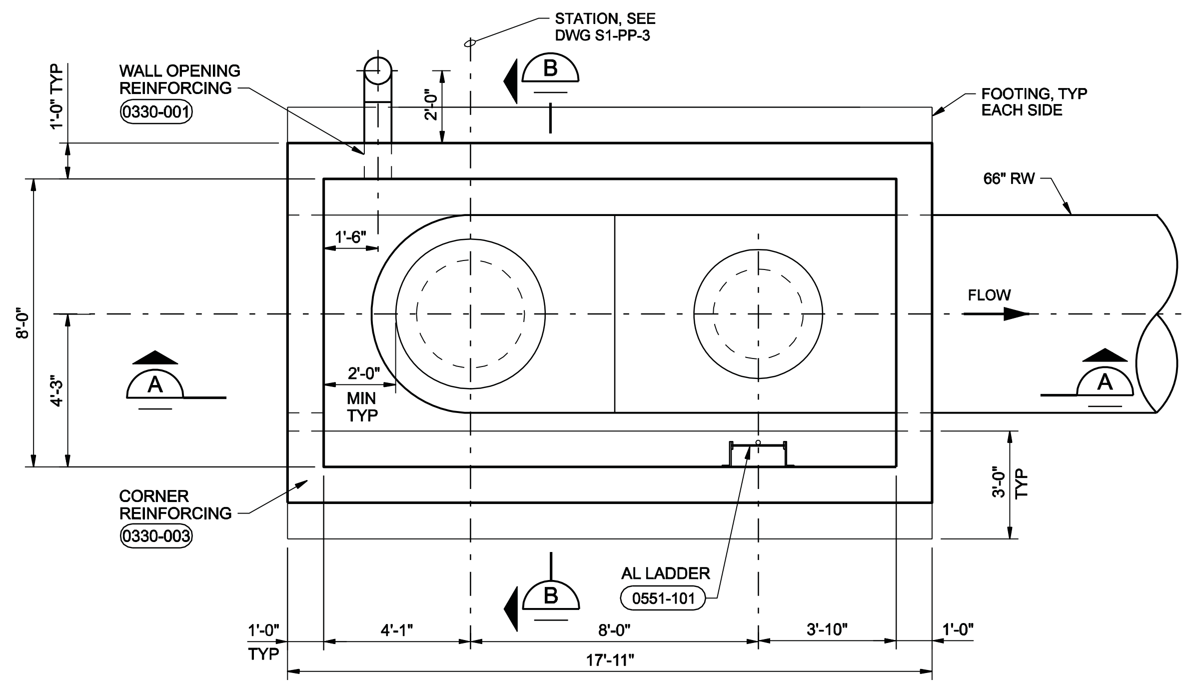
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

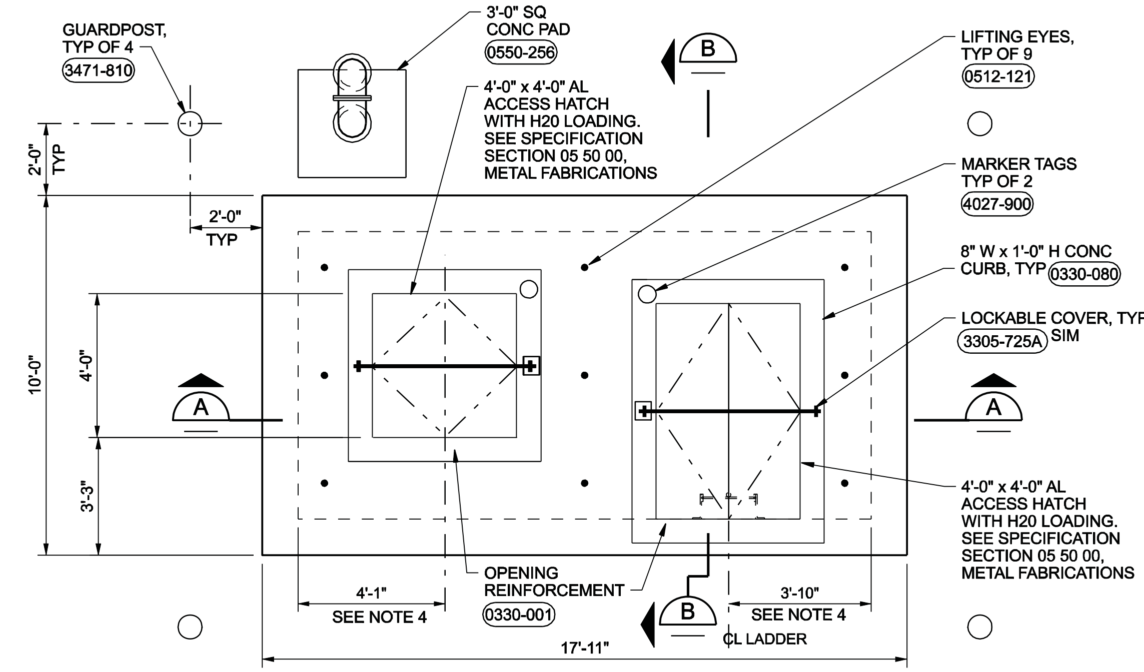
APPURTENANCE PLANS AND DETAILS

CARV VAULT TYPE II
PLANS AND SECTIONS

SHEET	39
DWG	S1-D-4
DATE	JULY 2011
PROJ	171473.20.SP



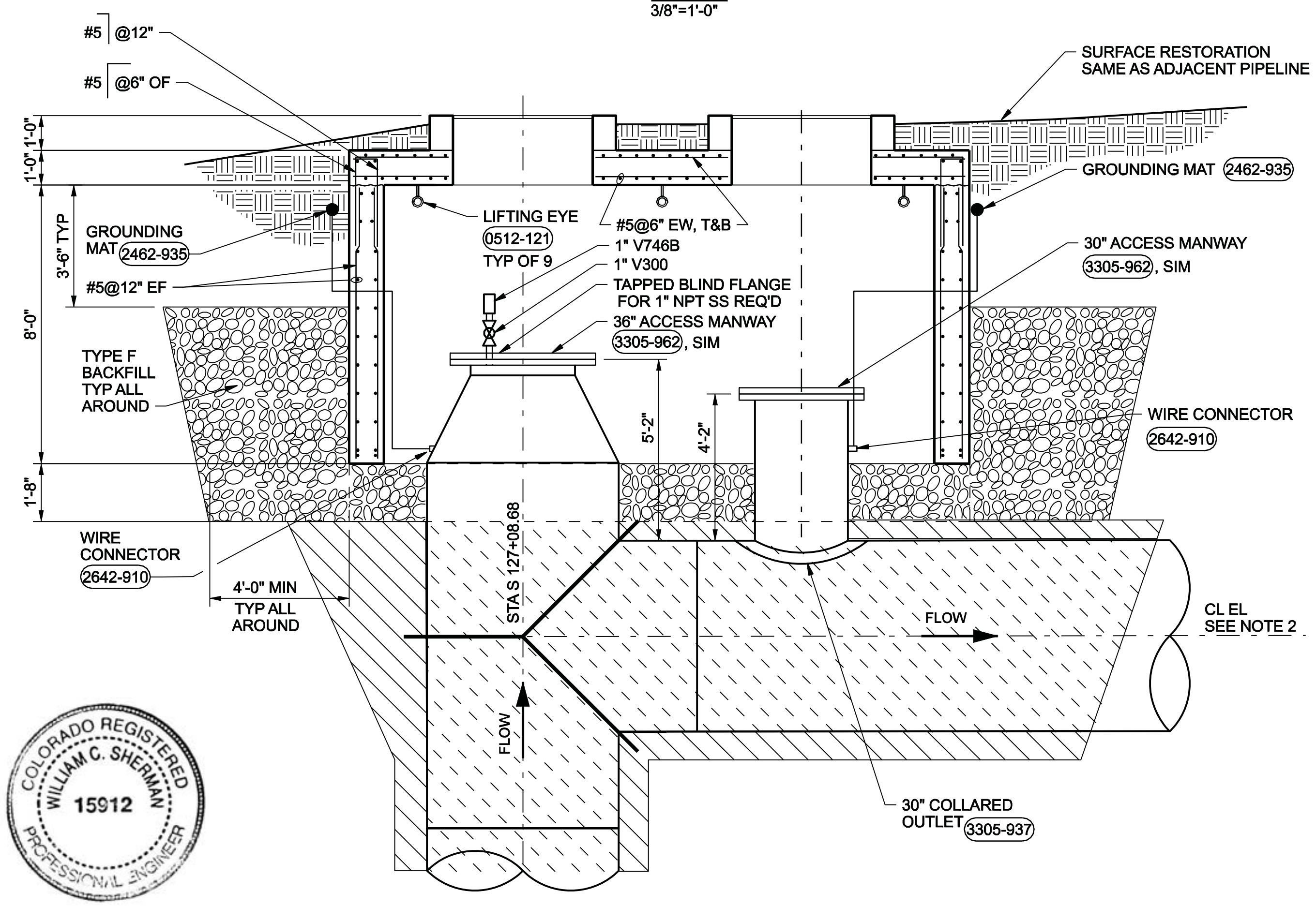
PLAN
3/8"=1'-0"



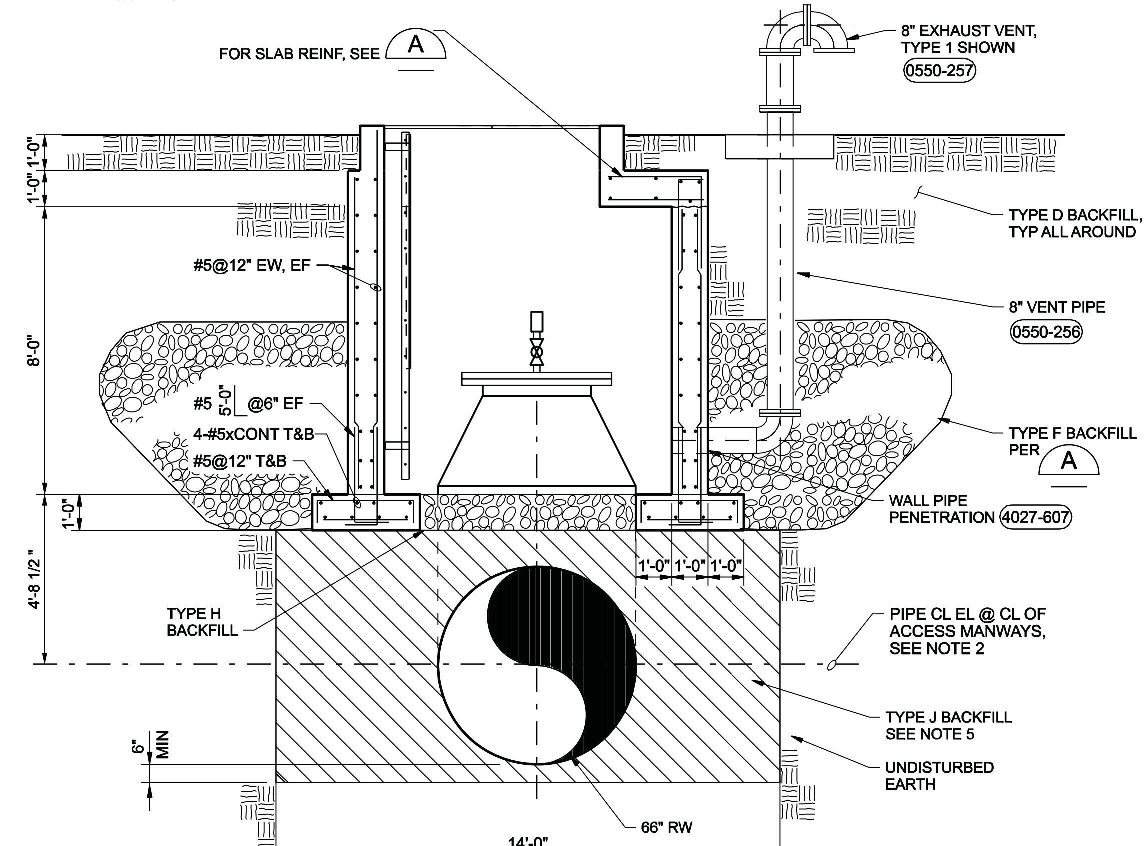
ROOF PLAN
3/8"=1'-0"

NOTES:

1. SEE GENERAL STRUCTURAL NOTES ON DWG S1-G-10.
2. SEE PLAN AND PROFILE DRAWINGS FOR PIPE CENTERLINE ELEVATION, EXISTING GRADE, AND FINISHED GRADE.
3. STRUCTURES MAY BE PRECAST AS SPECIFIED IN SECTION 33 05 13, MANHOLES AND PRECAST VAULTS.
4. LOCATE ACCESS HATCHES CENTERED OVER ACCESS MANWAYS. COORDINATE OPENINGS PRIOR TO INSTALLATION. CENTER LADDERS IN HATCH OPENINGS.
5. TRANSITION TO PIPE ZONE OF 0.7 D OUTSIDE OF LIMITS SHOWN FOR APPURTENANCES.



SECTION A
3/8"=1'-0"



SECTION B
3/8"=1'-0"

COLORADO REGISTERED WILLIAM C. SHERMAN 15912 PROFESSIONAL ENGINEER

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD/H ROJAS				
DR	B NORVILLE				
CHK	SIMPSON/SHERMAN				
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

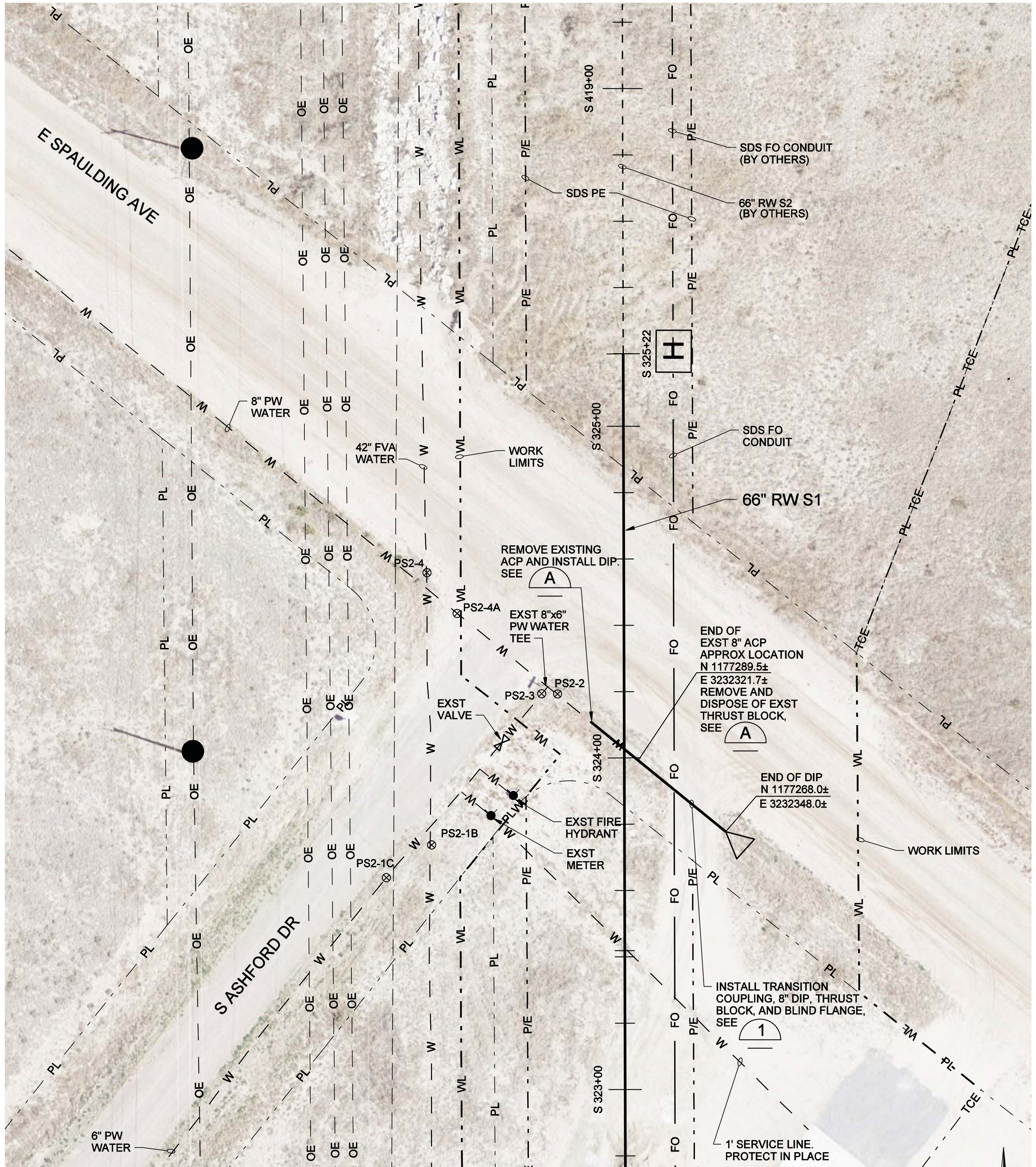
APPURTENANCE PLANS AND DETAILS

SPECIAL ACCESS MANWAY VAULT
PLANS AND SECTIONS

SHEET	40
DWG	S1-D-5
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

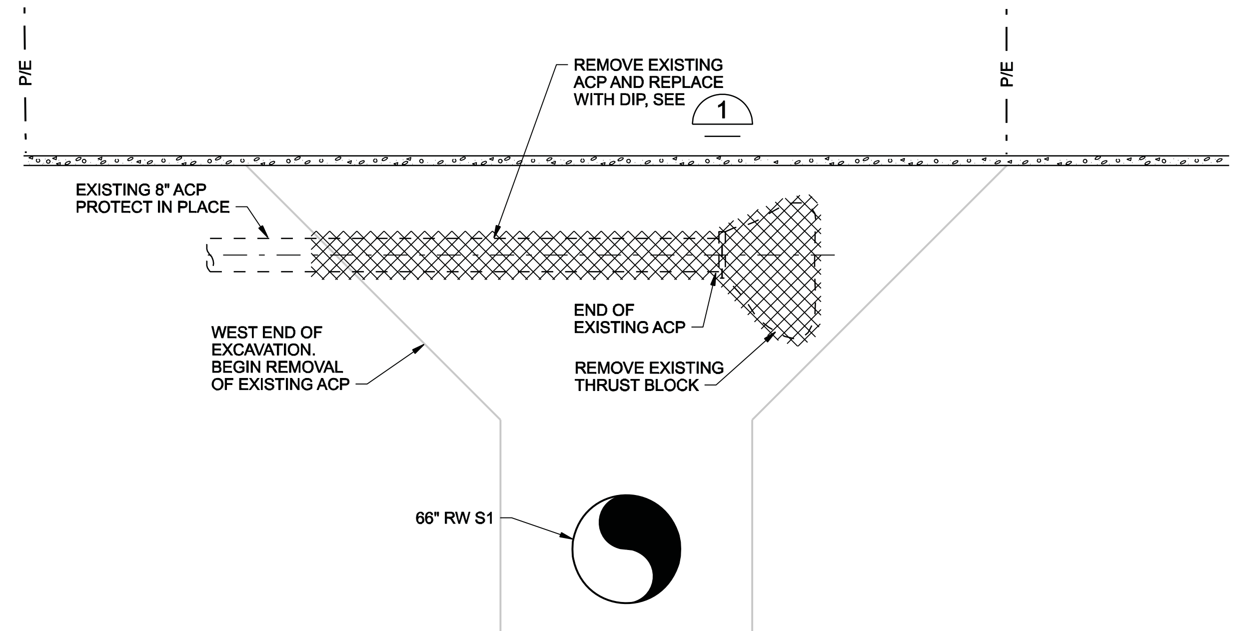
FILENAME: SP105nCARV3d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 10:55:01 AM



ASBESTOS-CEMENT PIPELINE REPLACEMENT AT S. ASHFORD DRIVE AND E. SPAULDING AVENUE

1"=20'

0 20 40 60
SCALE IN FEET

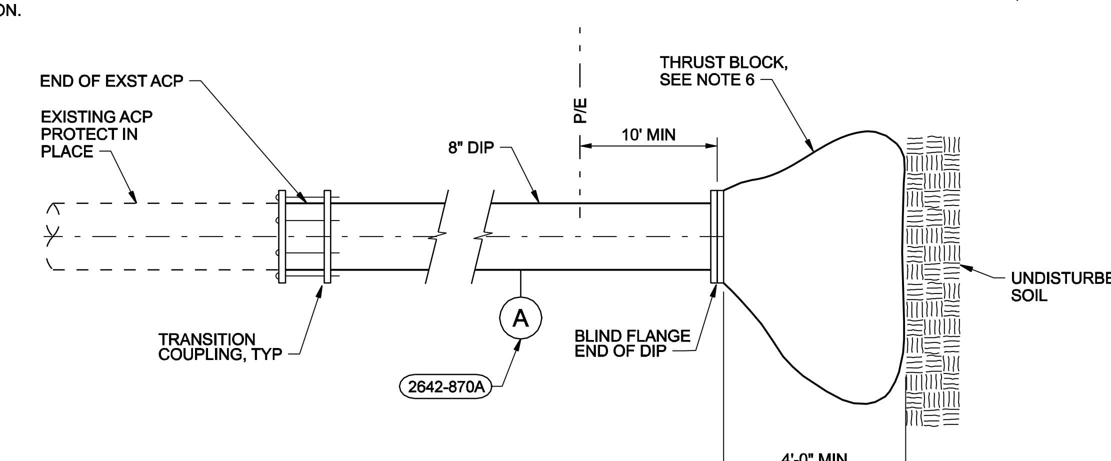


ASBESTOS-CEMENT PIPELINE REPLACEMENT TRENCH SECTION (A)

NTS

NOTES:

1. PRIOR TO EXCAVATION FOR THE ACP, EXISTING PUEBLO WEST METROPOLITAN DISTRICT PIPELINES IMPACTING ON THE WORK MUST BE SHUTDOWN. PUEBLO WEST METROPOLITAN DISTRICT SHALL BE RESPONSIBLE FOR SHUTDOWN. COORDINATE WITH PUEBLO WEST METROPOLITAN DISTRICT.
2. INSTALL TEMPORARY ABOVE GROUND CONNECTION BETWEEN FIRE HYDRANTS ON THE SOUTH END OF S. ASHFORD DRIVE AND THE SOUTH END OF S. MERIWEATHER DRIVE AS SHOWN ON DWG S1-G-5. COORDINATE WITH PUEBLO WEST DESIGN APPROVAL PRIOR TO INSTALLATION. SEE SPECIFICATION SECTION 01 31 13, PROJECT COORDINATION.
3. DRAIN 8" PW WATER ASBESTOS-CEMENT PIPELINE PRIOR TO REMOVAL.
4. JUST PRIOR TO TRENCHING AND INSTALLATION OF 66" RW S1 PIPELINE, REMOVE AND DISPOSE OF ASBESTOS-CEMENT PIPE AND THRUST BLOCK AS SHOWN ON THE PLAN VIEW AND SECTION A IN ACCORDANCE WITH SPECIFICATION SECTION 02 41 00, DEMOLITION OF STRUCTURES AND REMOVAL OR CROSSING OF ASBESTOS CEMENT PIPE. DEWATER AND DEPRESSURIZE ASBESTOS- CEMENT PIPELINES PRIOR TO REMOVAL. REMOVE AND DISPOSE OF EXISTING THRUST BLOCK IN ACCORDANCE WITH SPECIFICATION SECTION 02 41 00, DEMOLITION OF STRUCTURES AND REMOVAL OR CROSSING OF ASBESTOS CEMENT PIPE.
5. AFTER INSTALLATION OF THE 66" RW S1 PIPELINE, BACKFILL UP TO INVERT OF PUEBLO WEST METROPOLITAN DISTRICT PIPELINE. INSTALL DIP EXTENSION, SEE PLAN VIEW (1). ONCE DIP IS INSTALLED, DISINFECT PER CDPHE AND PUEBLO WEST METROPOLITAN DISTRICT REQUIREMENTS.
6. INSTALL CONCRETE THRUST BLOCK WITH 64 SF BEARING SURFACE AGAINST UNDISTURBED SOIL. CONCRETE MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 03 30 10, STRUCTURAL REINFORCED CONCRETE.
7. INSTALL TYPE J (CLSM) TO 6" ABOVE TOP OF PIPE.
8. PROVIDE REPLACEMENT PLAN FOR PUEBLO WEST ACP REPLACEMENT TO CONSTRUCTION MANAGER. SEE SPECIFICATION SECTION 01 31 13, PROJECT COORDINATION.



DIP EXTENSION DETAIL (1)

NTS

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	T MATSUURA					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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Colorado Springs, CO 80903

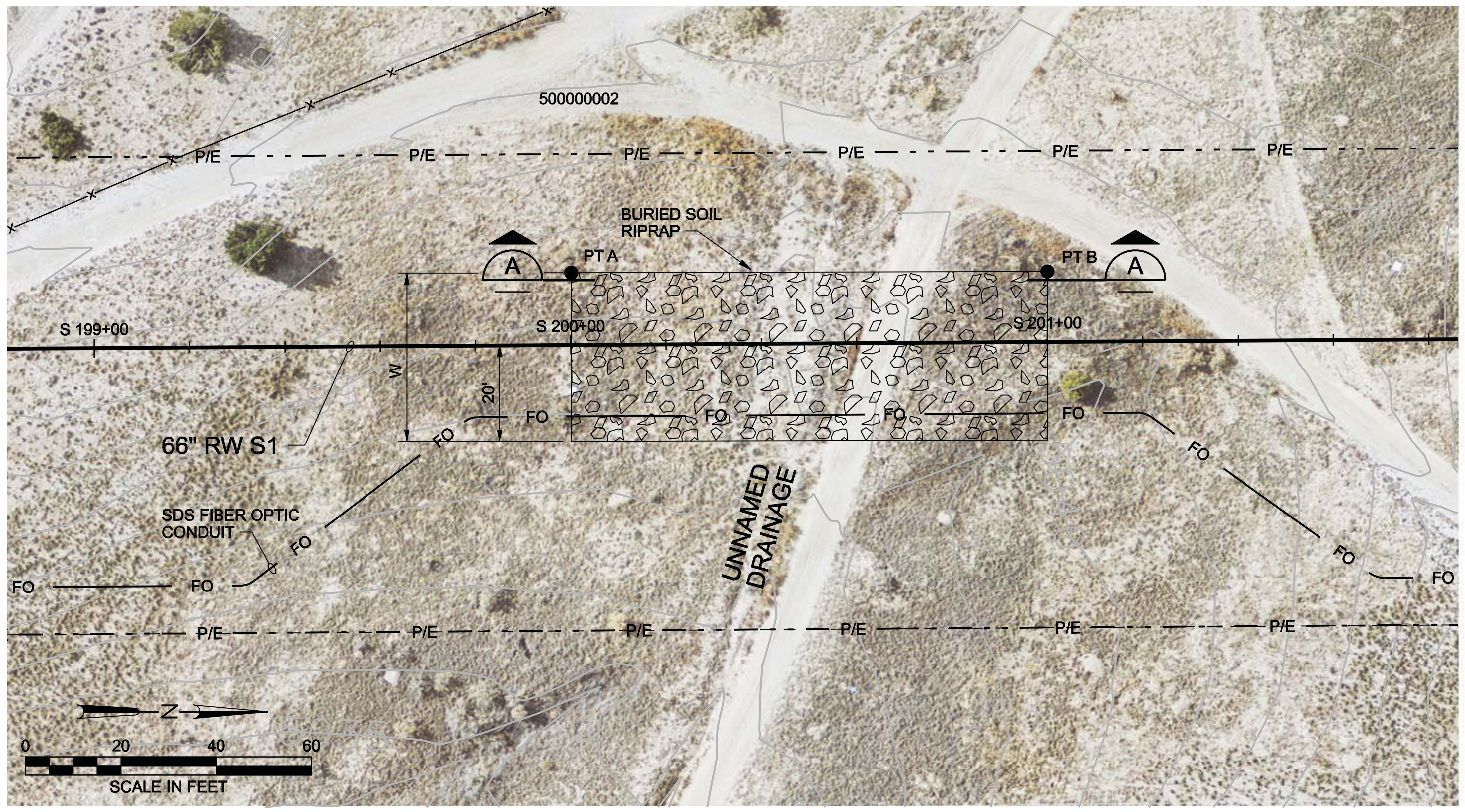
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

UTILITY RELOCATION
PUEBLO WEST
ASBESTOS CEMENT PIPELINE
REPLACEMENT DETAILS

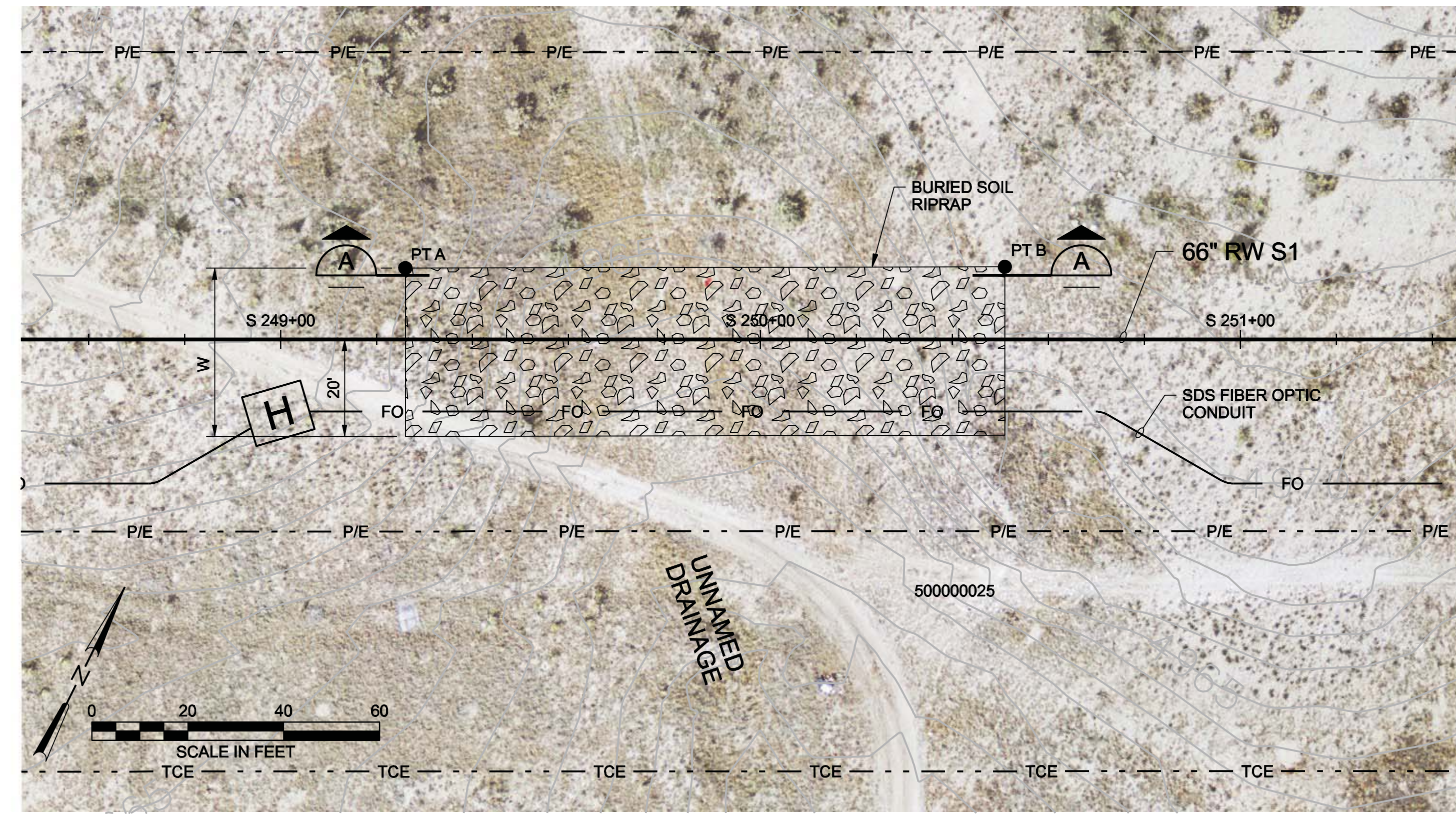
SHEET	41
DWG	S1-U-1
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

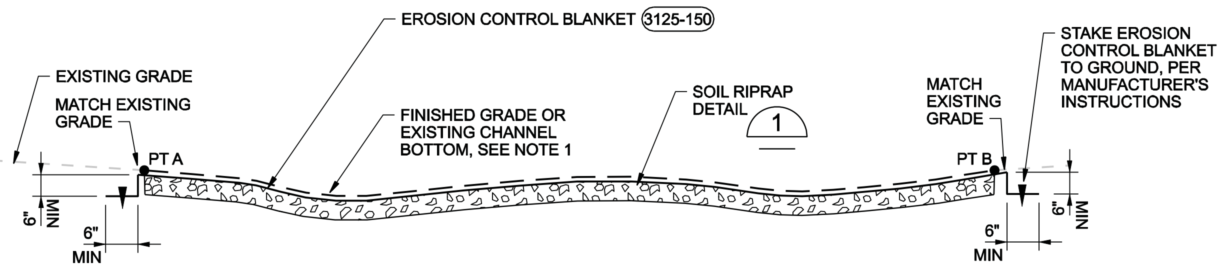
FILENAME: SP105nUR1d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 10:57:29 AM



UNNAMED DRAINAGE STA S 200+00 TO STA S 201+00



UNNAMED DRAINAGE STA S 249+26 TO STA S 250+51



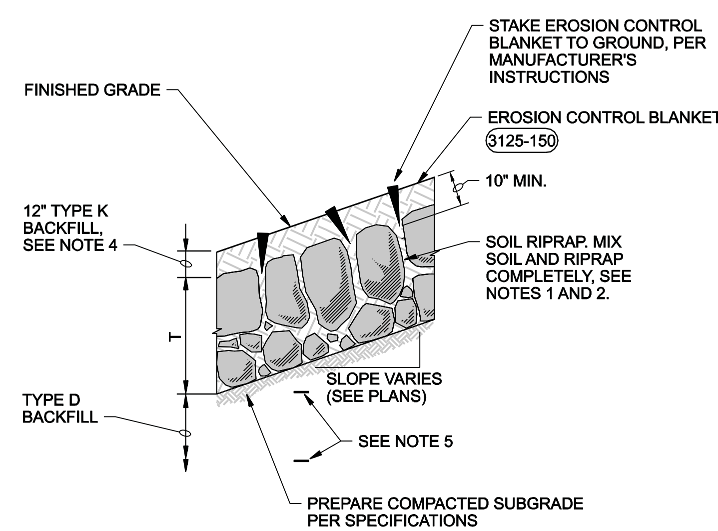
NOTES:

1. RESTORE CHANNEL BOTTOM TO EXISTING LINES AND GRADES FOLLOWING THE CONSTRUCTION OF THE PIPELINE.
2. PT. A AND PT. B ARE INTENDED TO MATCH THE LIMITS OF STREAM PROTECTION AND ARE LOCATED AT THE LIMITS OF RIPRAP.
3. PROTECT CHANNEL BANKS LOCATED OUTSIDE OF THE RIPRAP LIMITS.

SECTION A

NTS

S1-DC-1
S1-DC-2



NOTES:

1. MIX UNIFORMALLY 65% RIPRAP BY VOLUME WITH 35% OF APPROVED SOIL BY VOLUME PRIOR TO PLACEMENT.
2. PLACE STONE-SOIL MIX TO RESULT IN SECURELY INTERLOCKED ROCK AT THE DESIGN THICKNESS AND GRADE. COMPACT AND LEVEL TO ELIMINATE ALL VOIDS AND ROCKS PROJECTING ABOVE DESIGN RIPRAP GRADE.
3. INSTALL SOIL RIPRAP AND EROSION CONTROL PER LIMITS IN PLAN VIEW AND HORIZONTAL CONTROL INFORMATION TABLE.
4. USE NATIVE TOPSOIL FROM PROJECT SITE.
5. INSTALL MARKING TAPE 3 FEET BELOW GRADE AND 1 FOOT ABOVE TOP OF PIPE AS INDICATED.

SOIL RIPRAP DETAIL 1

NTS

HORIZONTAL CONTROL INFORMATION

PT. A	PT. B	PT. C	W *	D_{50}	RIP RAP TYPE	T
200 + 00	201 + 00	NA	35'	9"	L	18"
249 + 26	250 + 51	NA	35'	9"	L	18"
266 + 00	267 + 00	266 + 50	35'	9"	L	18"
282 + 50	283 + 50	NA	35'	9"	L	18"
319 + 30	320 + 80	NA	35'	9"	L	18"

* IF WIDTH OF EXCAVATION EXCEEDS 30', EXTEND SOIL RIPRAP AS NECESSARY TO MEET THE WIDTH OF EXCAVATION.

DSGN	A TURNER					
DR	B NORVILLE					
CHK	C HOOPER					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

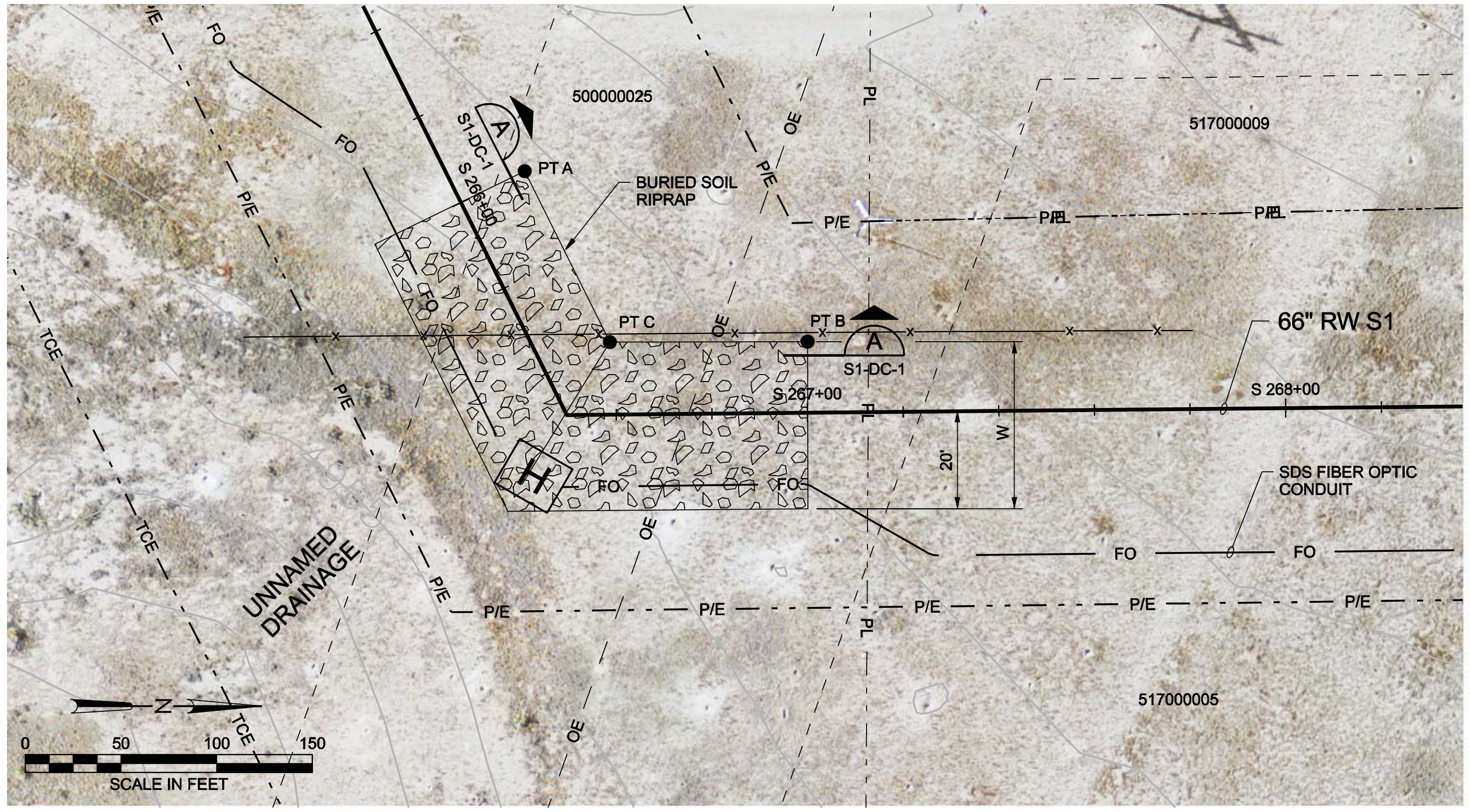
DRAINAGE CROSSINGS

STREAM STABILIZATION PLANS AND DETAILS

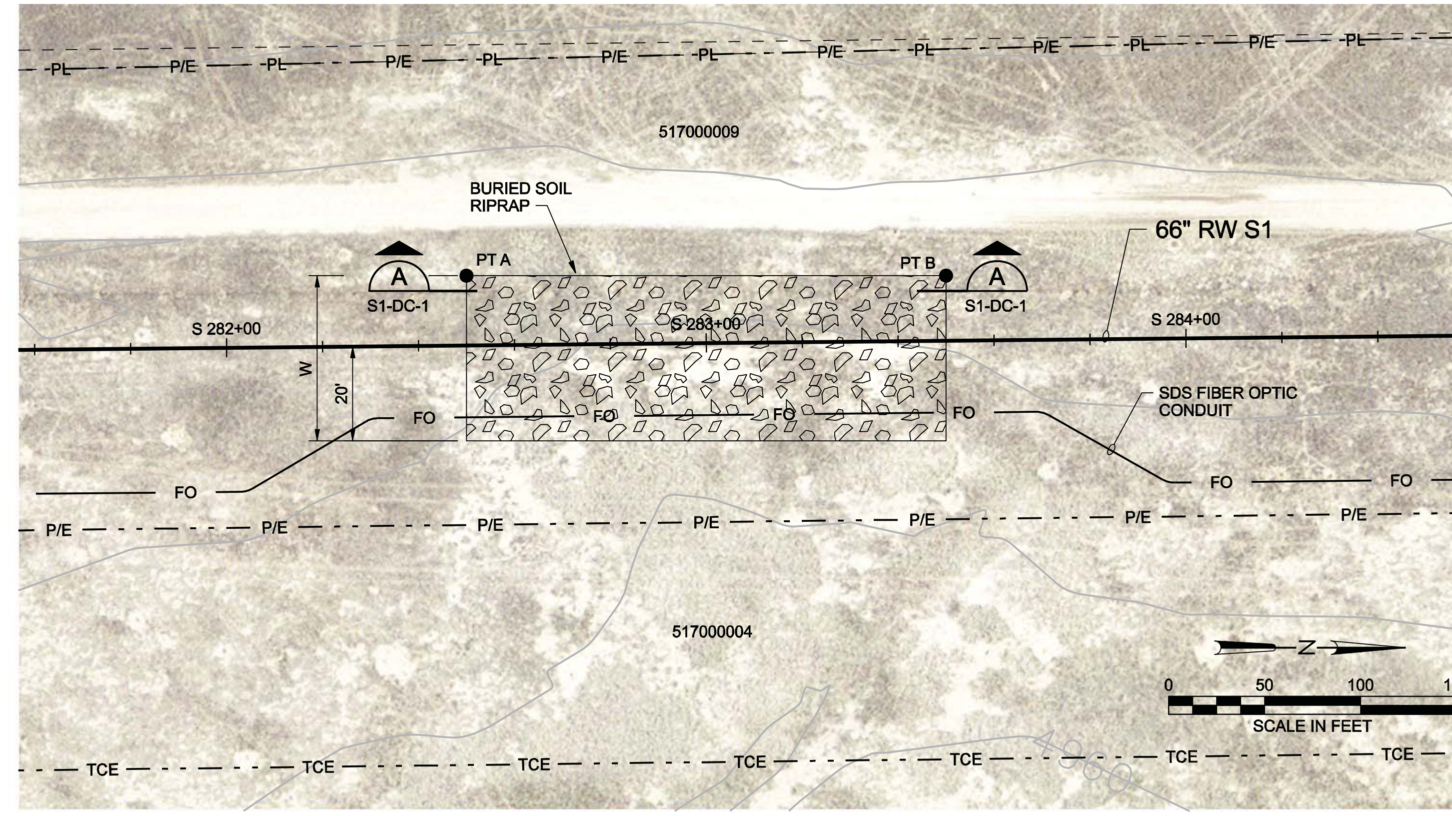
SHEET	42
DWG	S1-DC-1
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

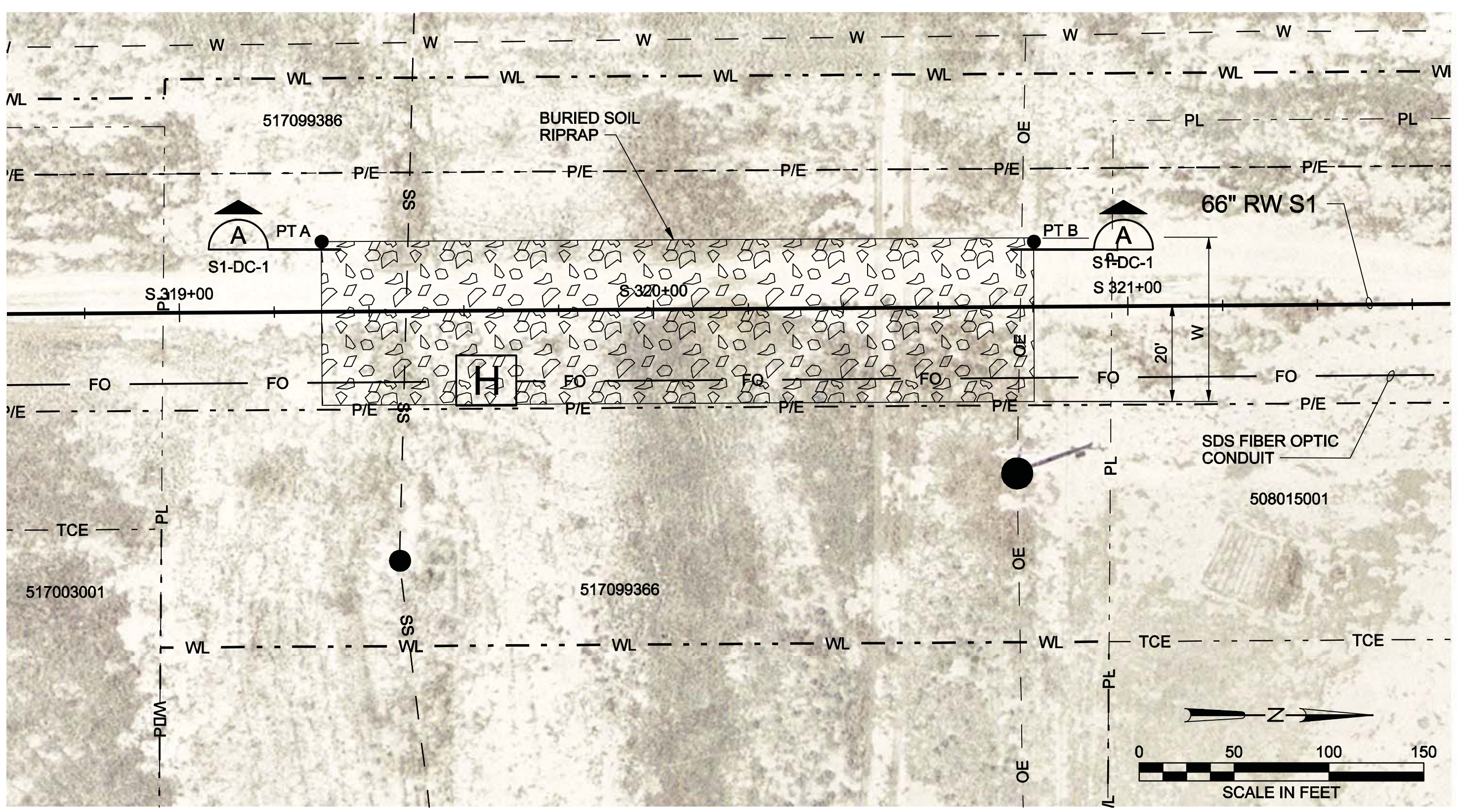
FILENAME: SP105nDC01d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 10:59:28 AM



UNNAMED DRAINAGE STA 266+00 TO STA S 267+00



UNNAMED DRAINAGE STA S 282+00 TO STA 283+50



UNNAMED DRAINAGE STA S 319+30 TO STA S 320+80

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	A TURNER					
DR	B NORVILLE					
CHK	C HOOPER					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

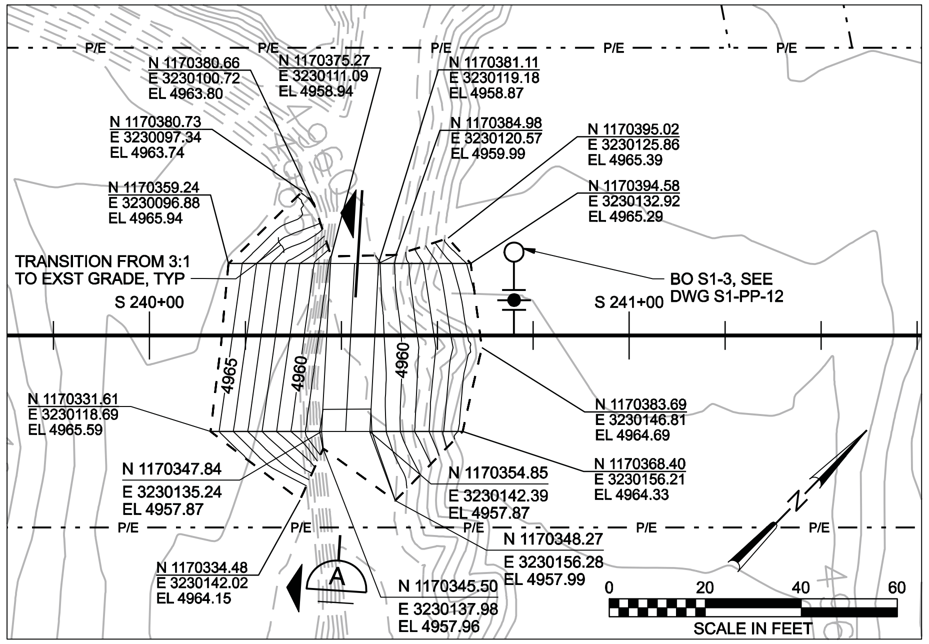
DRAINAGE CROSSINGS

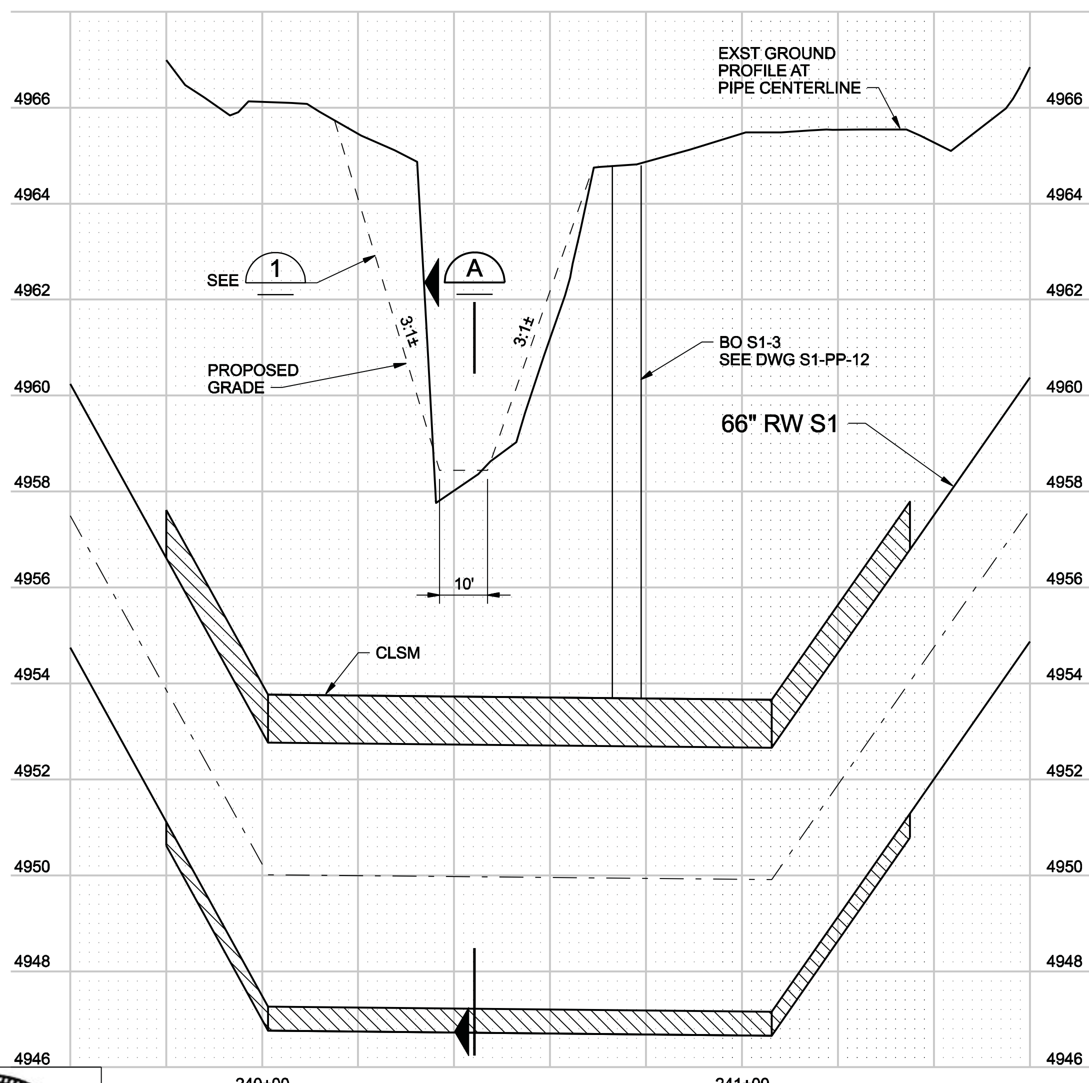
STREAM STABILIZATION PLANS

SHEET	43
DWG	S1-DC-2
DATE	JULY 2011
PROJ	171473.20.SP

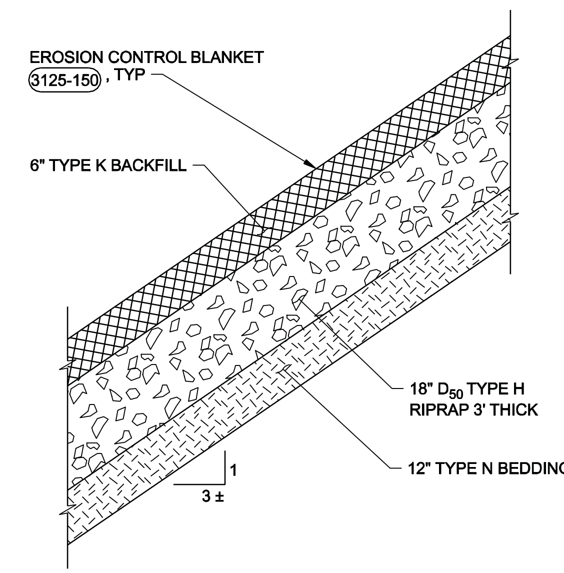
Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nDC02d_171473.dgn PLOT DATE: 6/14/2011 PLOT TIME: 10:15:05 AM



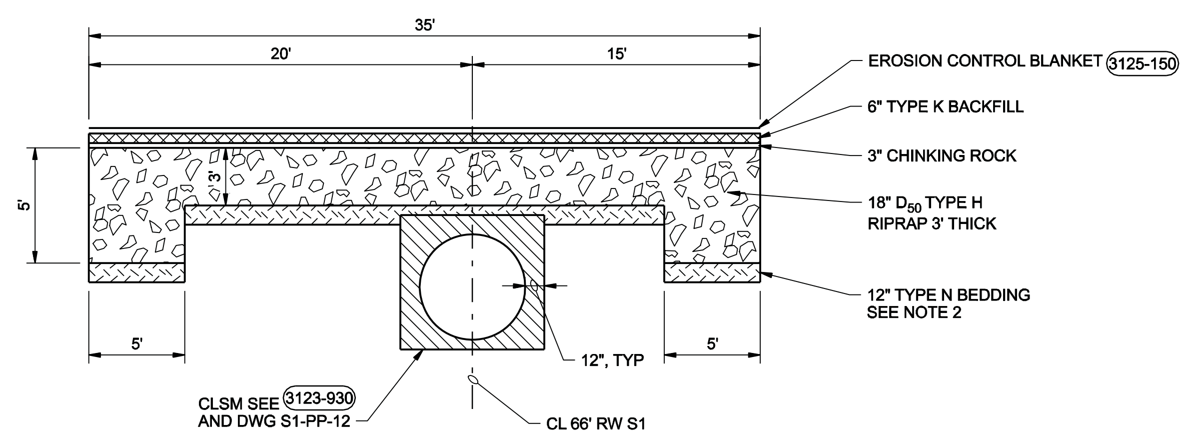


PIPELINE PROFILE



SIDE SLOPES DETAIL 1

NTS



CHANNEL BOTTOM SECTION A

1"=20'

NOTES:

1. INSTALL RIPRAP AND EROSION CONTROL PER LIMITS IN PLAN VIEW AND HORIZONTAL CONTROL INFORMATION.
2. TYPE N BEDDING TO BE 6" THICK ABOVE CLSM.
3. $Q_{100} = Q_{DESIGN}$ = 2016CFS

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN A ESPOSITO						
DR B NORVILLE/J WALKER						
CHK C HOOPER						
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

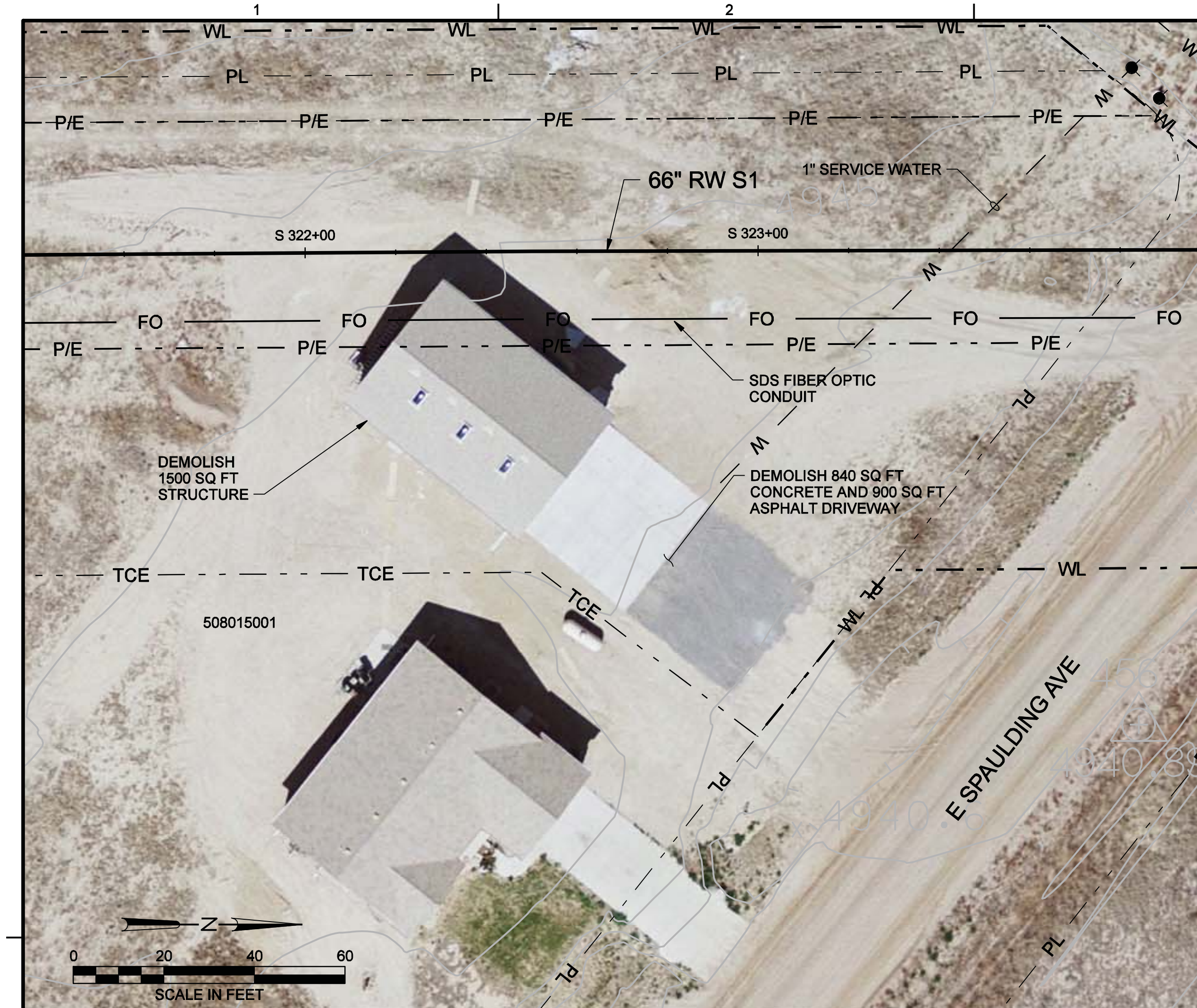
DRAINAGE CROSSING

DRAINAGEWAY CROSSING
PLAN AND DETAILS

SHEET	44
DWG	S1-DC-3
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nDC03d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 11:00:49 AM



508015001 PROPERTY PLAN

NOTES:

1. DISCONNECT AND CAP UTILITIES SERVING THE STRUCTURE PER THE REQUIREMENTS OF PUEBLO COUNTY BUILDING CODE AND UTILITY COMPANIES.
2. VEHICLES REMOVED BY OTHERS.

ELEVATION - NORTH
NTS

ELEVATION - WEST
NTS

ELEVATION - SOUTH
NTS

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

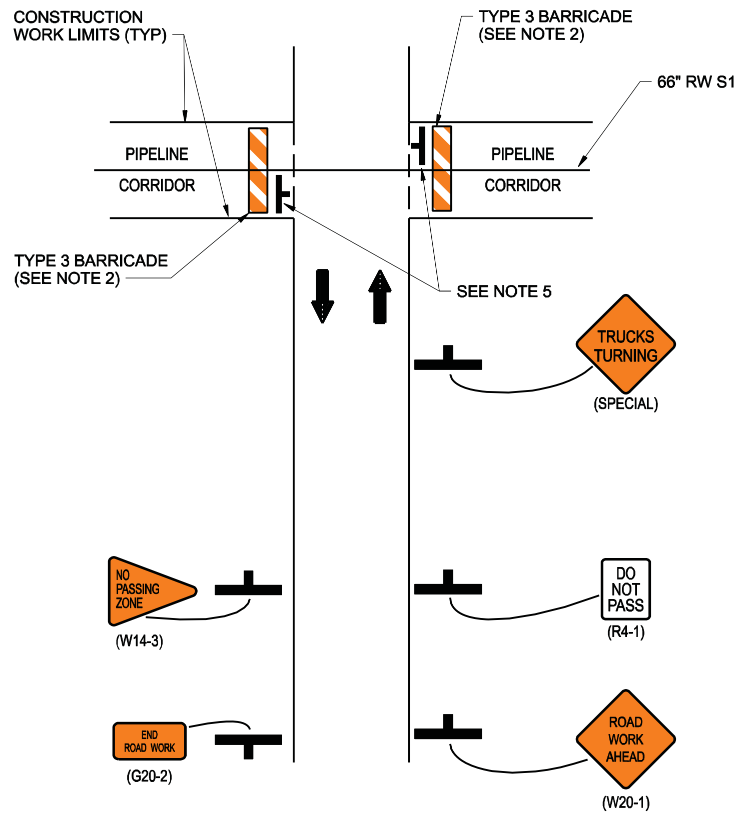
DEMOLITION PLANS

508015001 PROPERTY
DEMOLITION PLAN AND PHOTOS

SHEET	45
DWG	S1-DM-1
DATE	JULY 2011
PROJ	171473.20.SP

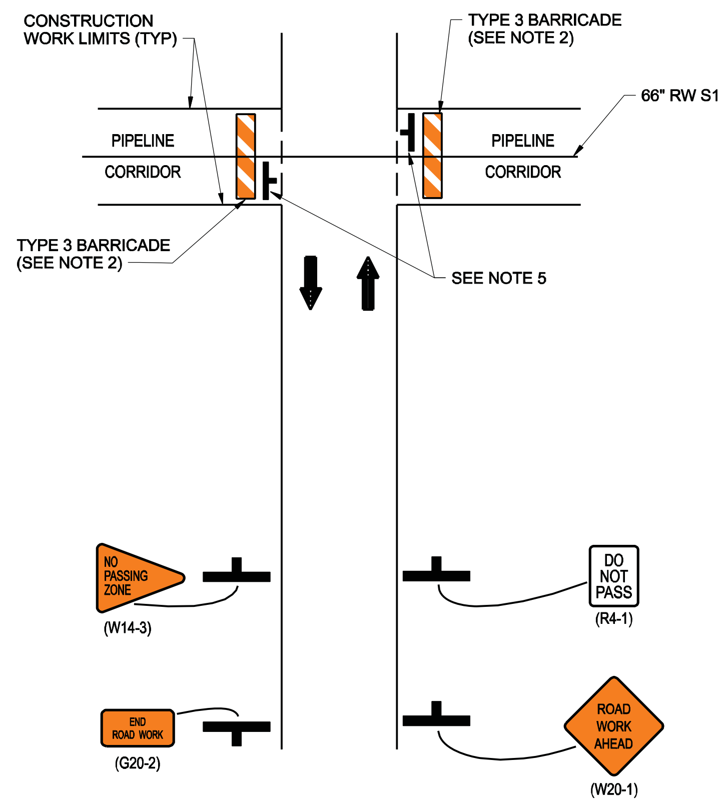
Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nDM01d_171473.dgn PLOT DATE: 6/14/2011 PLOT TIME: 10:32:09 AM



TYPICAL HAUL ROAD ACCESS POINT SIGNAGE (1)

NTS S1-TC-2



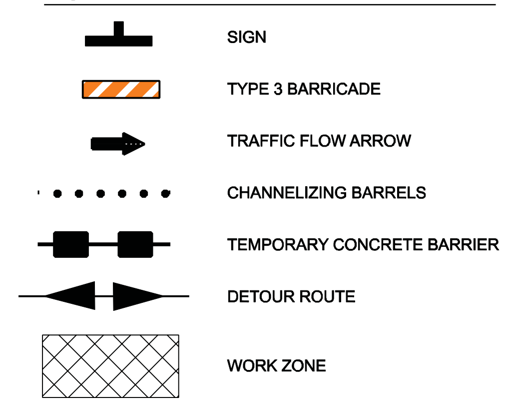
TYPICAL PIPELINE CROSSING SIGNAGE (2)

NTS S1-TC-2

WORK ZONE TRAFFIC CONTROL GENERAL NOTES:

1. PROVIDE WORK ZONE TRAFFIC CONTROL IN CONFORMANCE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (MUTCD).
2. THESE TRAFFIC MAINTENANCE PLANS DO NOT DEPICT THE ADVANCE WARNING SIGNS FOR EACH PHASE OF CONSTRUCTION. SUBMIT DETAILED METHOD OF HANDLING TRAFFIC DRAWINGS WITH REQUIRED SIGNAGE FOR EACH PHASE AS PART OF SUBMITTAL FOR WORK IN RIGHT-OF-WAY.
3. PROVIDE FLAGGERS OR PORTABLE TRAFFIC SIGNAL WHERE A ONE-WAY BI-DIRECTIONAL LANE IS BEING USED.
4. PROVIDE ACCESSIBLE AND MAINTAINED PEDESTRIAN ACCESS AND CROSSINGS AT ALL TIMES UNLESS OTHERWISE SHOWN IN THE CONSTRUCTION DOCUMENTS.
5. PROVIDE CRASHWORTHY TEMPORARY BARRIERS AND END TREATMENTS.
6. PROVIDE DISTANCE BETWEEN WORK ZONE TRAFFIC CONTROL AND DETOUR SIGNS IN ACCORDANCE WITH THE MUTCD.
7. PROVIDE AND DESIGN TRAFFIC LANES AT INTERSECTIONS WIDE ENOUGH TO INCLUDE AN ALLOWABLE TRAVEL PATH FOR SEMITRAILER TRUCKS TO TURN ONTO/FROM CROSS STREETS.
8. ACCESS TO THE PIPELINE EASEMENT AT DESIGNATED ACCESS POINTS ONLY. SEE HAUL ROUTE PLAN FOR ACCESS POINT, SEE DWGS S1-G-5.
9. USE OF COUNTY ROADS NOT IDENTIFIED AS HAUL ROADS ON THE HAUL ROUTE PLANS BY CONSTRUCTION VEHICLES NOT ALLOWED.

LEGEND



TYPICAL SIGNAGE NOTES:

1. PROVIDE TRAFFIC CONTROL SIGNAGE IN BOTH DIRECTIONS.
2. CLOSE THE PIPELINE CONSTRUCTION ENTRANCES WHEN NOT IN USE, WITH TYPE 3 BARRICADES AND COVER THE UNUSED SIGNS.
3. DURING ROAD CLOSURES, ADDITIONAL SIGNAGE AND DETAILED DETOUR PLAN IS REQUIRED.
4. ADDITIONAL SIGNAGE MAY BE REQUIRED FOR DIRECTING MATERIAL DELIVERIES TO THE SITE.
5. INSTALL STOP SIGNS AT LOCATIONS WHERE CONSTRUCTION TRAFFIC EXITS WORK LIMITS ONTO PUBLIC LAND.

DSGN	J HENRY					
DR	S KRAMER					
CHK	K RONAT					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

TRAFFIC PHASING PLANS

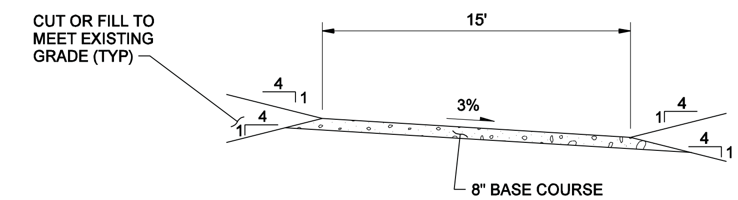
ACCESS POINT AND HAUL ROAD SIGNAGE, GENERAL NOTES AND LEGENDS

SHEET	46
DWG	S1-TC-1
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nTC1d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 11:05:45 AM

JUNIPER ROAD TRAFFIC MAINTENANCE AND DETOUR PLAN



TEMPORARY GRAVEL ROAD TYPICAL SECTION 1

NTS

NOTES:

1. MAINTAIN A MINIMUM OF ONE 15' WIDE BI-DIRECTIONAL LANE FOR THE DURATION OF THE PIPELINE ROAD CROSSING CONSTRUCTION.
2. PROVIDE FLAGGERS OR PORTABLE TRAFFIC SIGNAL FOR THE DURATION OF THE PIPELINE ROAD CROSSING CONSTRUCTION AT JUNIPER ROAD.
3. REPLACE ASPHALT PAVEMENT AND STRIPING IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
4. PROVIDE ADVANCE WARNING SIGNS AND FLAGGERS OR PORTABLE TRAFFIC SIGNAL IN CONFORMANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
5. TRAFFIC CONTROL PLANS REQUIRED.
6. INSTALL TRAFFIC COUNTER IN ACCORDANCE WITH SPECIFICATION SECTION 01 55 13, TEMPORARY ACCESS ROAD AND PARKING AREAS. CONTRACTOR, SUBCONTRACTOR, AND DELIVERIES TO ENTER SITE FROM THIS LOCATION FOR DURATION OF WORK AT LAKE PUEBLO STATE PARK. TEMPORARILY REMOVE TRAFFIC COUNTER DURING PUBLIC USE OF DETOUR.
7. PROVIDE TRAIL DETOUR DURING CONSTRUCTION. 1

0 50 100 200

SCALE IN FEET

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN J HENRY						VERIFY SCALE
DR S KRAMER						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK K RONAT	1	7/13/11	ADDENDUM NO. 1	BN	JH	
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

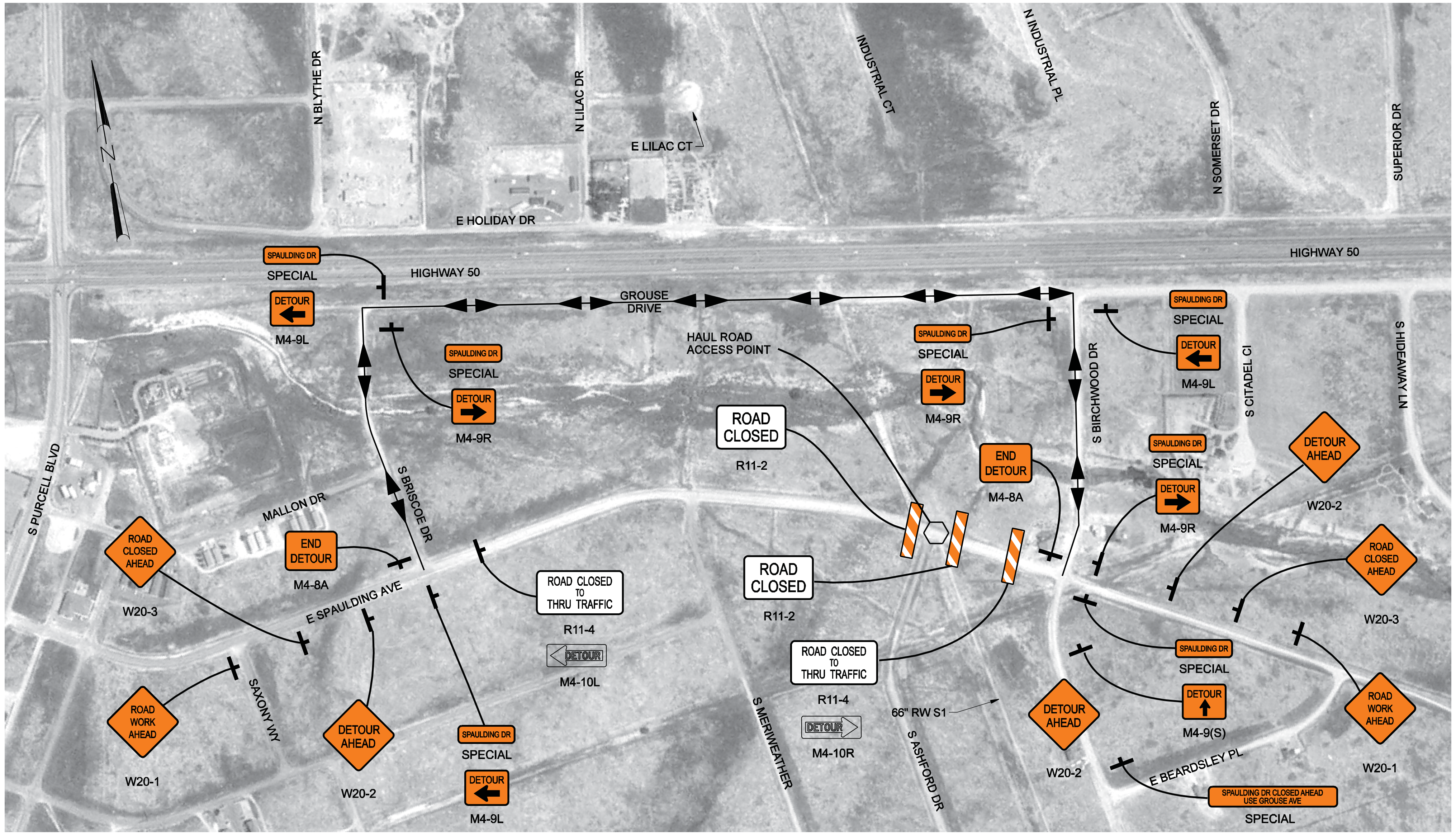
CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

TRAFFIC PHASING PLANS

TRAFFIC MAINTENANCE DETOUR PLAN

SHEET	47
DWG	S1-TC-2
DATE	JULY 2011
PROJ	171473.20.SP



E. SPAULDING AVE. TRAFFIC MAINTENANCE AND DETOUR PLAN

0 300 600 900
SCALE IN FEET

COLORADO LICENSED PROFESSIONAL ENGINEER
KELLY RENEE RONAT
40108

DSGN	J HENRY				
DR	S KRAMER				
CHK	K RONAT				
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

TRAFFIC PHASING PLANS
TRAFFIC MAINTENANCE DETOUR PLAN

SHEET	48
DWG	S1-TC-3
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nTC3d_171473.dgn PLOT DATE: 6/14/2011 PLOT TIME: 12:30:54 PM

SEDIMENT AND EROSION CONTROL GENERAL NOTES

1. A STORMWATER MANAGEMENT PLAN (SWMP) HAS BEEN PREPARED BY UTILITIES FOR USE BY THE CONTRACTOR. THE SWMP HAS BEEN PREPARED IN ACCORDANCE WITH PUEBLO COUNTY, PUEBLO WEST METRO DISTRICT AND COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT CRITERIA. USE AS REQUIRED TO OBTAIN PERMITS IDENTIFIED IN THE SPECIFICATIONS. OBTAIN AND RETAIN A COPY OF THE SWMP ON SITE.
2. PLACE EROSION AND SEDIMENT CONTROL BMPS AND PROVIDE MAINTENANCE AND RECORD KEEPING IN ACCORDANCE WITH FEDERAL, STATE, AND COUNTY STANDARDS.
3. INSTALL WORK LIMIT FENCING DEFINING THE LIMITS OF CONSTRUCTION PRIOR TO OTHER CONSTRUCTION ACTIVITIES, INCLUDING CONSTRUCTION LIMITS ADJACENT TO STREAM CORRIDORS AND OTHER AREAS TO BE PRESERVED.
4. INSTALL EROSION AND SEDIMENT CONTROL BMPS, WHERE POSSIBLE, BEFORE THE START OF CONSTRUCTION.
5. INSTALL APPROVED BMPS AROUND STOCKPILED MATERIALS PER THE SPECIFICATIONS.
6. INSTALL APPROVED BMPS AROUND STAGING AREAS AND MAINTENANCE AREAS. PROTECT AND MAINTAIN AREAS PER FEDERAL, STATE, AND COUNTY STANDARDS.
7. STORE AND PROTECT HAZARDOUS MATERIAL PER REQUIREMENTS OF PROJECT PERMITS AND PER FEDERAL, STATE AND COUNTY OR OTHER APPLICABLE REQUIREMENTS
8. ADHERE TO THE APPROVED LIMITS OF CONSTRUCTION. OBTAIN APPROVAL FROM CONSTRUCTION MANAGER PRIOR TO MAKING CHANGES TO THE WORK LIMITS. ADDITIONAL EROSION/SEDIMENT CONTROLS MAY BE REQUIRED.
9. RETAIN AND PROTECT NATURAL VEGETATION WHEREVER POSSIBLE. LIMIT EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS.
10. CONSTRUCTION VEHICLE TRAFFIC MUST ENTER/EXIT THE SITE THROUGH THE APPROVED ACCESS POINTS. VEHICLE TRACKING CONTROLS ARE REQUIRED AT ACCESS POINTS ON THE SITE. ADDITIONAL VEHICLE TRACKING CONTROLS TO BE ADDED AS REQUIRED BY PUEBLO COUNTY. INSTALL AND MAINTAIN VEHICLE TRACKING CONTROLS PER PUEBLO COUNTY.
11 KEEP PAVED AREAS CLEAN INCLUDING STREETS THROUGHOUT CONSTRUCTION. CLEAN WITH A STREET SWEEPER OR SIMILAR DEVICE. AT FIRST NOTICE OF DIRT TRACKED ON PAVED AREAS, STREET WASHING IS NOT ALLOWED. THE CONSTRUCTION MANAGER RESERVES THE RIGHT TO REQUIRE ADDITIONAL MEASURES TO ENSURE AREA STREETS ARE KEPT FREE OF SEDIMENT AND/OR CONSTRUCTION DEBRIS.
12. THE EROSION CONTROL PLANS MAY REQUIRE CHANGES OR ALTERATIONS TO MEET CHANGING SITE OR PROJECT CONDITIONS, TO ADDRESS INEFFICIENCIES IN DESIGN OR INSTALLATION, OR TO MEET PERMIT REQUIREMENTS.
13. PROVIDE LINING OF TEMPORARY SWALES AND DITCHES. NO PERMANENT EARTH SLOPES GREATER THAN 3:1 ALLOWED, EXCEPT WHERE SHOWN ON DRAWINGS.
14. REMEDIATE SEDIMENT OR SOIL ACCUMULATIONS CREATED DUE TO CONSTRUCTION ACTIVITIES BEYOND THE LIMITS OF CONSTRUCTION IMMEDIATELY.
15. PROVIDE A WATER SOURCE ON SITE DURING CONSTRUCTION ACTIVITIES AND UTILIZE AS REQUIRED TO MINIMIZE DUST FROM EQUIPMENT AND WIND IN ACCORDANCE WITH THE SPECIFICATIONS.
16. SEED AND MULCH SOILS THAT WILL BE STOCKPILED FOR MORE THAN FOURTEEN (14) DAYS. DO NOT PLACE STOCKPILES WITHIN ONE HUNDRED (100) FEET OF THE TOP OF BANK OF ANY WATERWAY OR DRAINAGE.
17. CHEMICAL OR HAZARDOUS MATERIAL SPILLS THAT MAY ENTER WATERS OF THE STATE OF COLORADO, THAT INCLUDE BUT ARE NOT LIMITED TO, SURFACE WATER, GROUNDWATER AND DRY GULLIES OR STORM SEWERS, LEADING TO THE RELEASES OF PETROLEUM PRODUCTS AND CERTAIN HAZARDOUS SUBSTANCES LISTED UNDER THE FEDERAL CLEAN WATER ACT (40 CFR PART 116) MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER AS WELL AS THE CDPHE. REPORT SPILLS THAT POSE AN IMMEDIATE RISK TO HUMAN LIFE TO 911.
18. THE USE OF REBAR, STEEL STAKES, OR STEEL FENCE POSTS FOR STAKING OR SUPPORT OF BMPS IS PROHIBITED.
19. INSTALL CONCRETE WASHOUT LOCATIONS AS NEEDED WITHIN THE WORK LIMITS. THE DISCHARGE OF WATER CONTAINING WASTE CONCRETE IS PROHIBITED WITHIN 500 FEET OF ANY WATERWAY. PROPERLY CLEAN UP AND DISPOSE OF CONCRETE WASTE AT AN APPROPRIATE LOCATION.
20. STABILIZE DISTURBED AREAS INCLUDING ROADS, WITHIN 14 DAYS OF SUBSTANTIAL COMPLETION OF GRADING, INCLUDING AREAS TO REMAIN DORMANT FOR LONGER THAN 30 DAYS, WHICHEVER IS LESS. THIS MAY REQUIRE MULTIPLE MOBILIZATIONS FOR SEEDING AND MULCHING.
21. TRASH RECEPTACLES AND PORTABLE TOILETS ARE PROHIBITED WITHIN 500 FEET OF ANY WATERWAY OR DRAINAGE.
22. CONDUCT VEHICLE MAINTENANCE, CLEANING, AND FUELING OFF-SITE, IF POSSIBLE. IF CONDUCTED ONSITE, THESE OPERATIONS MUST BE APPROVED BY CONSTRUCTION MANAGER, AND CONDUCTED ON A LEVEL GROUND SURFACE IN A DESIGNATED AREA WITH APPROVED PERIMETER CONTROLS.
23. STORE HAZARDOUS MATERIALS AND CHEMICALS ONSITE ONLY IN THE STAGING AREA AND ONLY IN AN APPROVED, COVERED TEMPORARY STRUCTURE. OBTAIN ANY REQUIRED PERMITS OR APPROVALS.
24. INSPECT BMPS A MINIMUM OF EVERY 14 DAYS AND IMMEDIATELY AFTER STORM EVENTS. CORRECT ANY DAMAGE OR DEFICIENCIES DISCOVERED DURING THE INSPECTION IN ACCORDANCE WITH PERMIT REQUIREMENTS, SPECIFICATIONS, AND PUEBLO COUNTY.
25. REMOVE SEDIMENTS WHEN SEDIMENTS HAVE ACCUMULATED TO 1/2 THE HEIGHT OF THE BMP.

EROSION CONTROL LEGEND

STRAW BALES

ROCK SOCKS

ROCK CHECK DAMS

SILT FENCE

CONCRETE WASHOUT

CONSTRUCTION ENTRANCE

PAVED

GRAVEL

DIRECTION OF DRAINAGE FLOW

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN E FORD	DR B NORVILLE	CHK G SIMPSON	APVD J HENRY	
NO.	DATE	REVISION	BY	APVD

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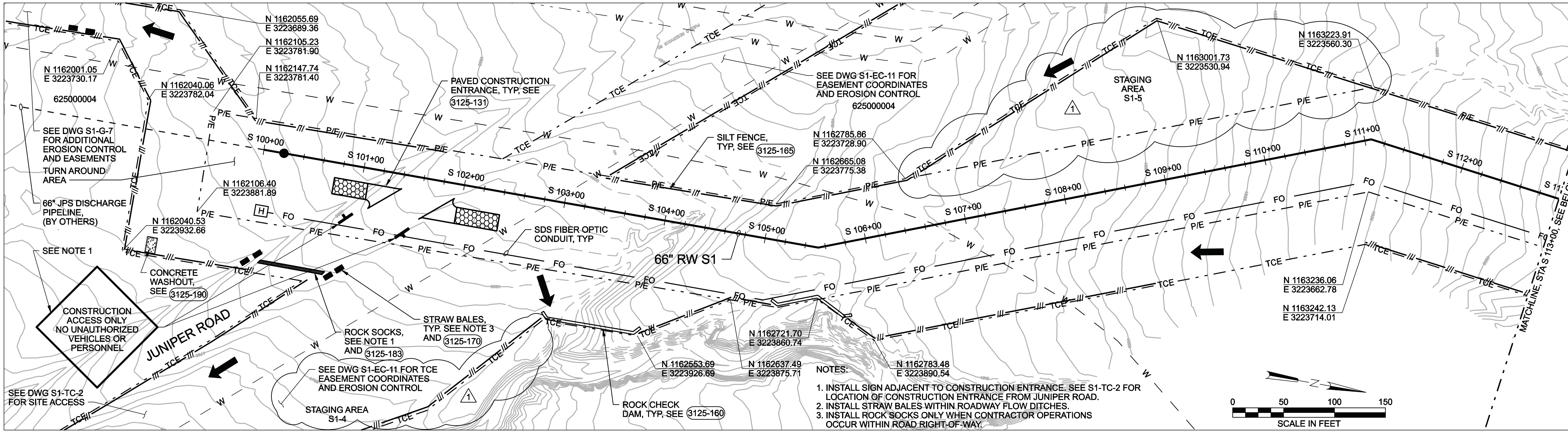
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

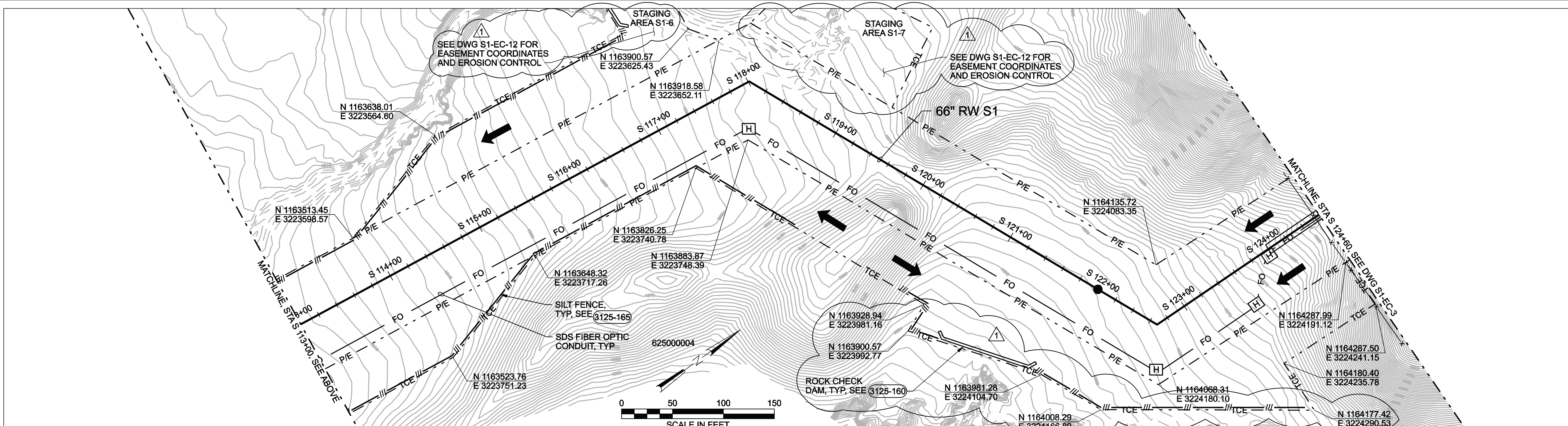
EROSION CONTROL AND EASEMENT PLANS

EROSION CONTROL NOTES

SHEET	49
DWG	S1-EC-1
DATE	JULY 2011
PROJ	171473.20.SP



EROSION CONTROL PLAN, SEE S1-PP-1



EROSION CONTROL PLAN, SEE S1-PP-2

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD						
DR B NORVILLE						
CHK G SIMPSON	1	7/13/11	ADDENDUM NO. 1 - TCE ADDED	BN	JH	
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

EROSION CONTROL AND EASEMENT PLANS

STATION S 100+00 TO STATION S 124+60

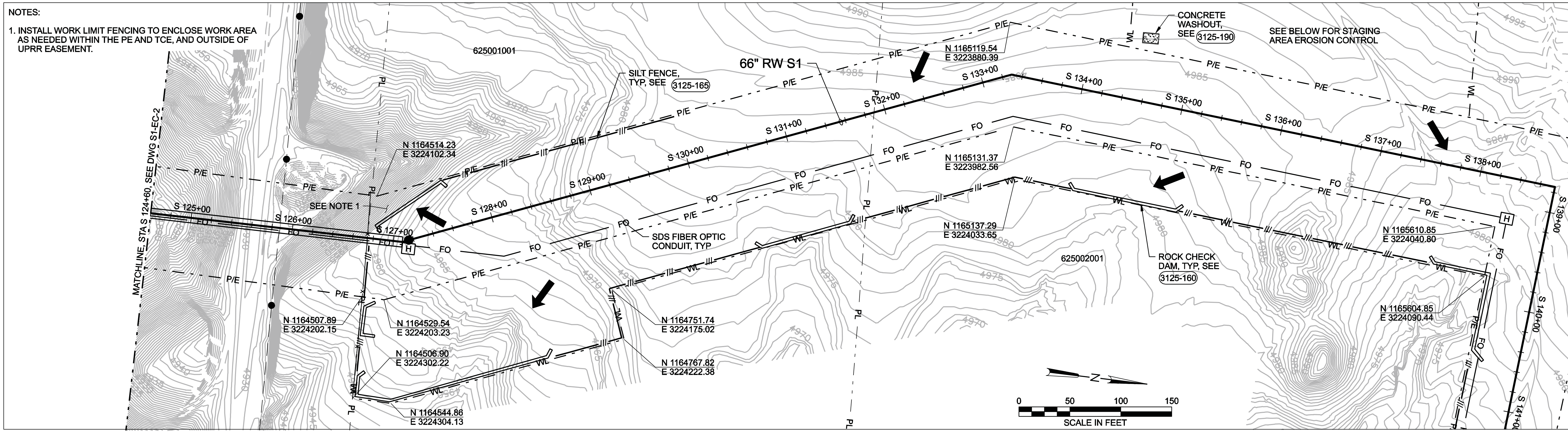
SHEET	50
DWG	S1-EC-2
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

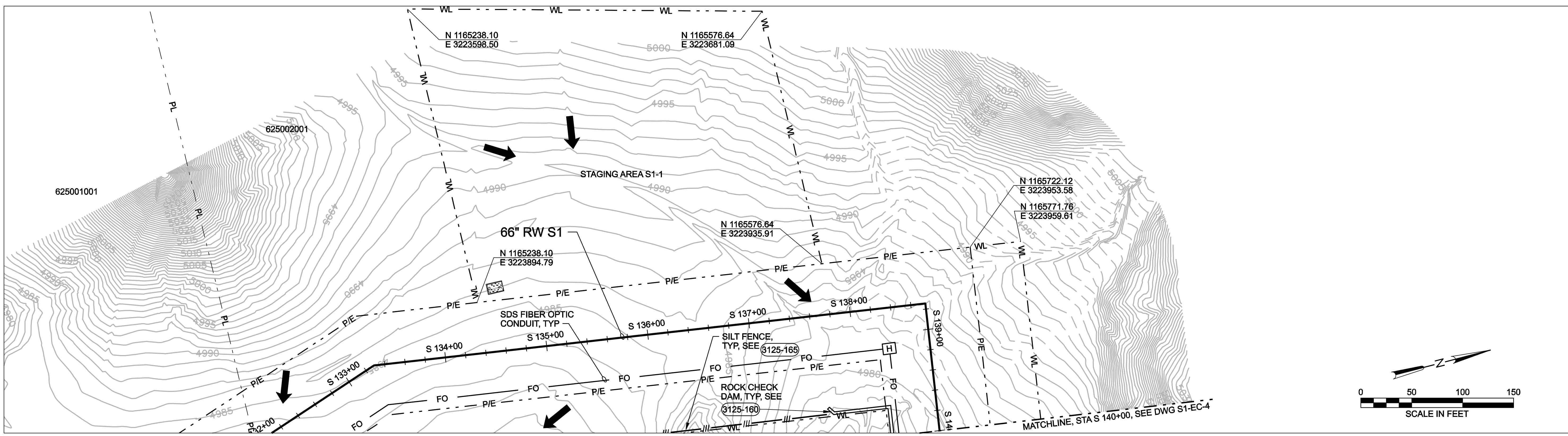
FILENAME: SP105nEC02d_171473.dgn PLOT DATE: 7/13/2011 PLOT TIME: 11:30:57 AM

NOTES:

1. INSTALL WORK LIMIT FENCING TO ENCLOSE WORK AREA AS NEEDED WITHIN THE PE AND TCE, AND OUTSIDE OF UPRR EASEMENT.



EROSION CONTROL PLAN, SEE S1-PP-3 AND S1-PP-4



EROSION CONTROL PLAN, SEE S1-PP-4

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD						
DR	B NORVILLE						
CHK	G SIMPSON						
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD	

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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

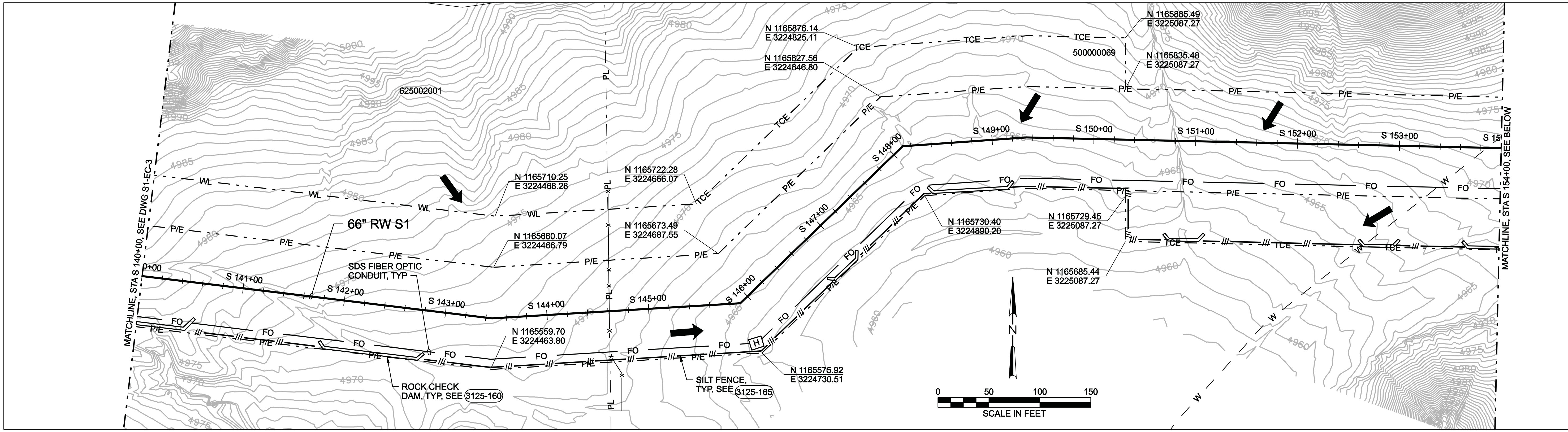
EROSION CONTROL AND EASEMENT PLANS

STATION S 124+60 TO STATION S 140+00

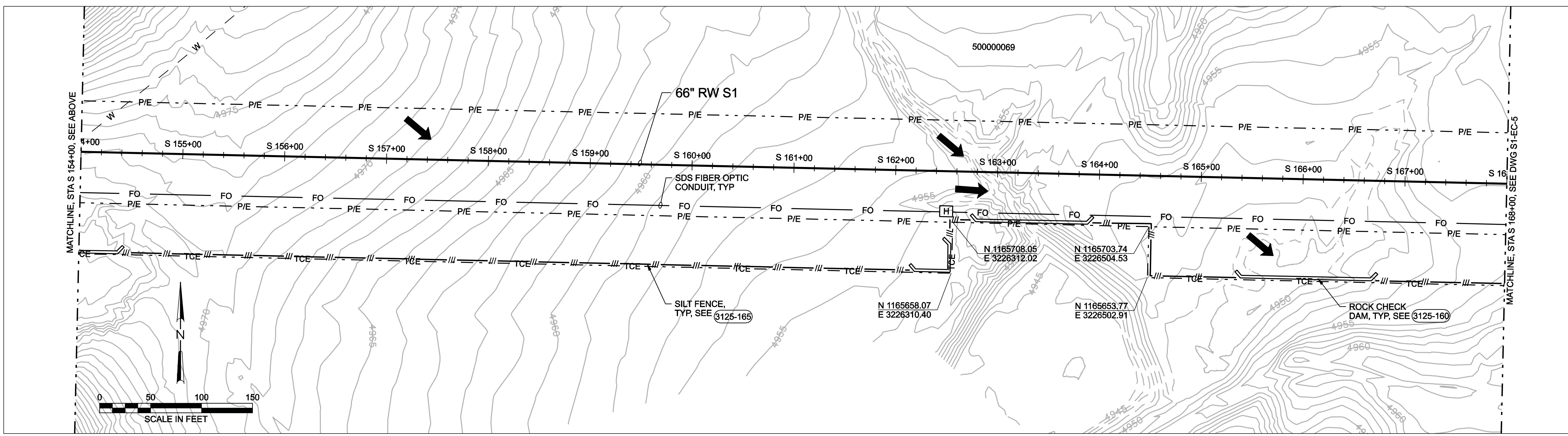
SHEET	51
DWG	S1-EC-3
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC03d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 9:22:02 AM



EROSION CONTROL PLAN, SEE S1-PP-5



EROSION CONTROL PLAN, SEE S1-PP-6

COLORADO LICENSED
JODY L. HENRY
39310
PROFESSIONAL ENGINEER

DSGN	E FORD						
DR	B NORVILLE						
CHK	G SIMPSON						
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD	

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

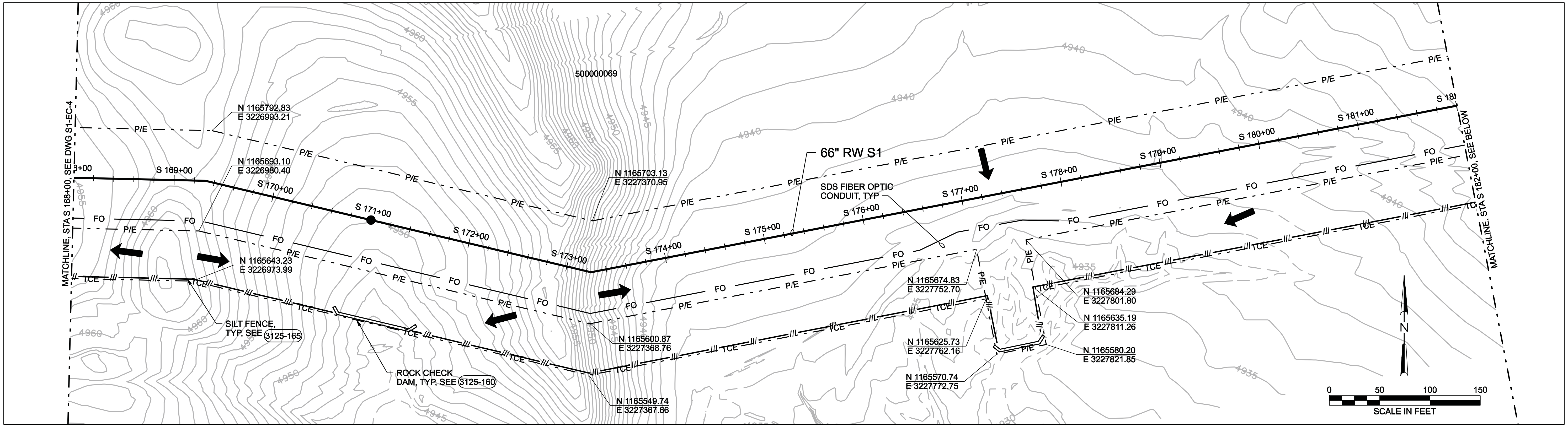
EROSION CONTROL AND EASEMENT PLANS

STATION S 140+00 TO STATION S 168+00

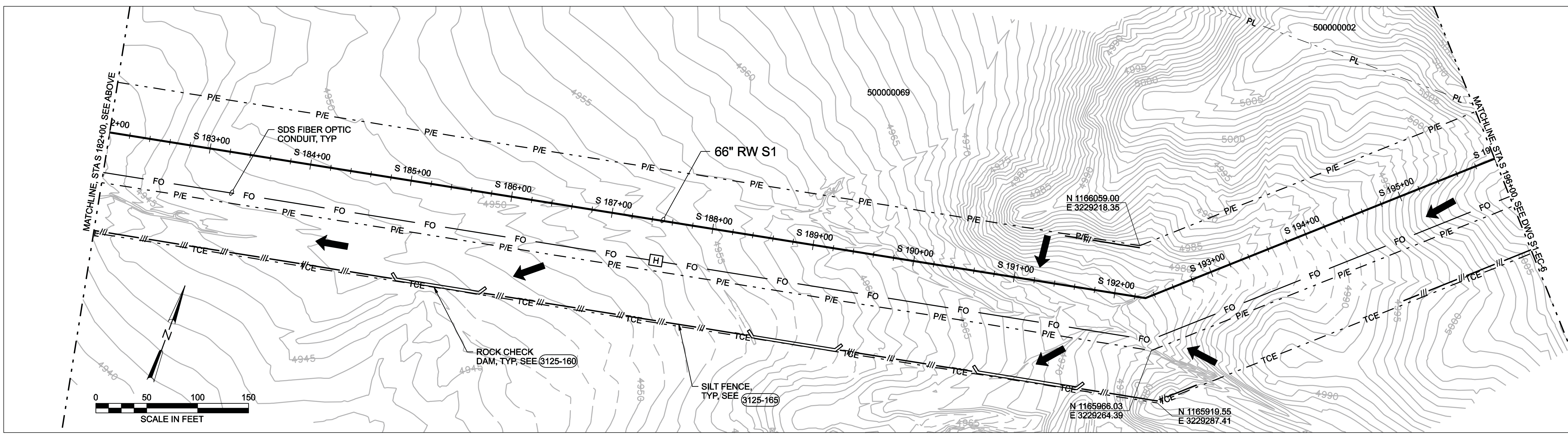
SHEET	52
DWG	S1-EC-4
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC04d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 9:22:55 AM



EROSION CONTROL PLAN, SEE S1-PP-7



EROSION CONTROL PLAN, SEE S1-PP-8

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
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CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

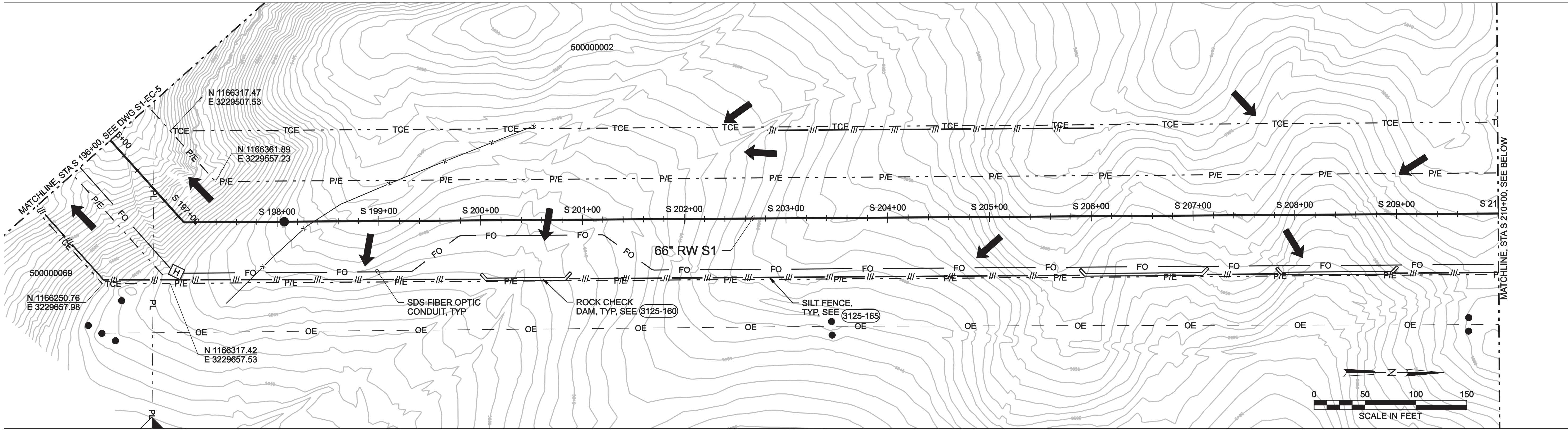
EROSION CONTROL AND EASEMENT PLANS

STATION S 168+00 TO STATION S 196+00

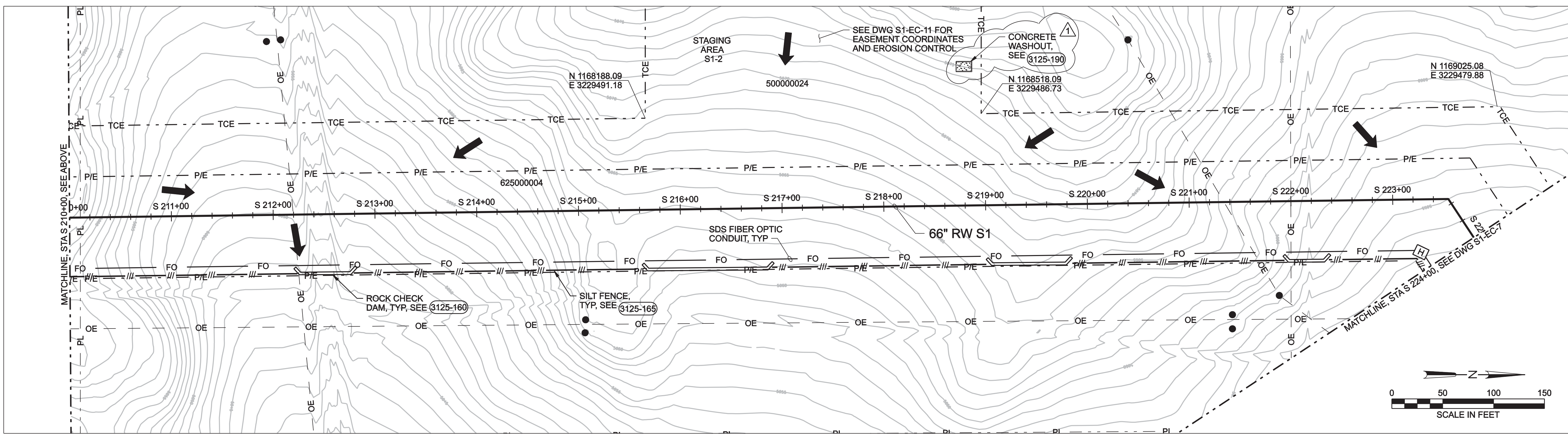
SHEET	53
DWG	S1-EC-5
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC05d_171473.dgn PLOT DATE: 6/14/2011 PLOT TIME: 2:16:04 PM



EROSION CONTROL PLAN, SEE S1-PP-9



EROSION CONTROL PLAN, SEE S1-PP-10

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN E FORD					
DR B NORVILLE					
CHK G SIMPSON	1	7/13/11	ADDENDUM NO. 1	JH	BN
APVD J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

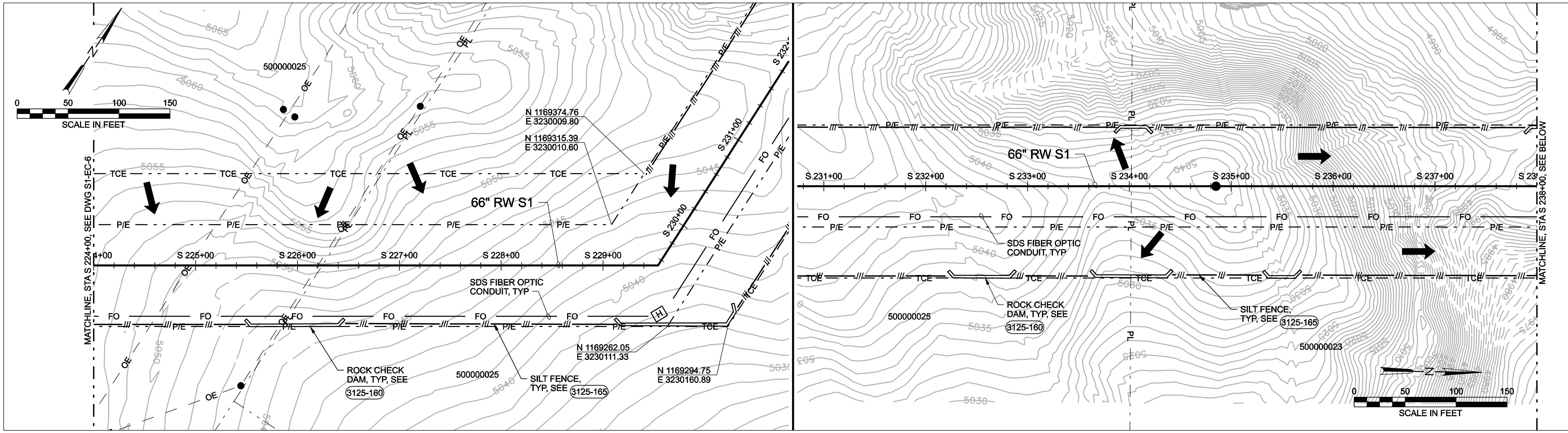
EROSION CONTROL AND EASEMENT PLANS

STATION S 196+00 TO STATION S 224+00

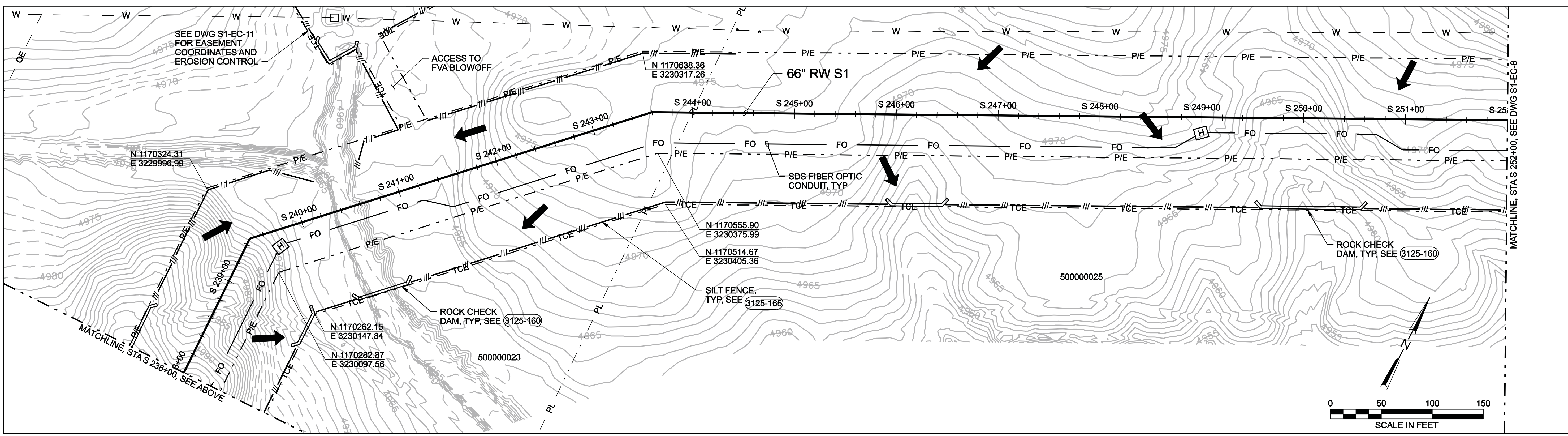
SHEET	54
DWG	S1-EC-6
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC06d_171473.dgn PLOT DATE: 8/4/2011 PLOT TIME: 3:40:13 PM



EROSION CONTROL PLAN, SEE S1-PP-11



EROSION CONTROL PLAN, SEE S1-PP-12

COLORADO LICENSED PROFESSIONAL ENGINEER
JODY L. HENRY
39310

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

EROSION CONTROL AND EASEMENT PLANS

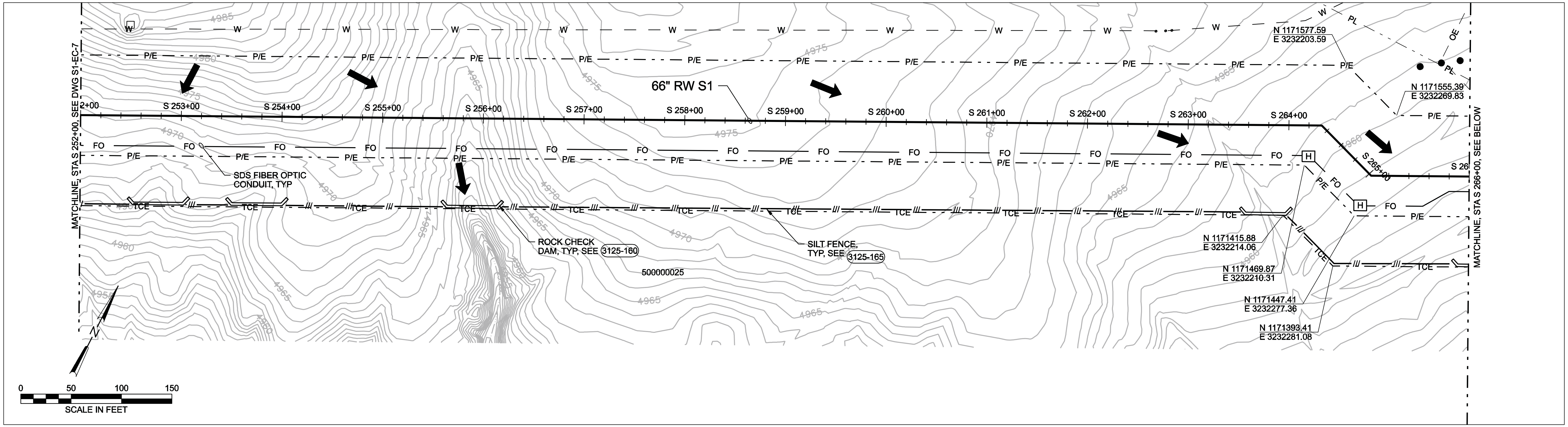
STATION S 224+00 TO STATION S 252+00

SHEET	55
DWG	S1-EC-7
DATE	JULY 2011
PROJ	171473.20.SP

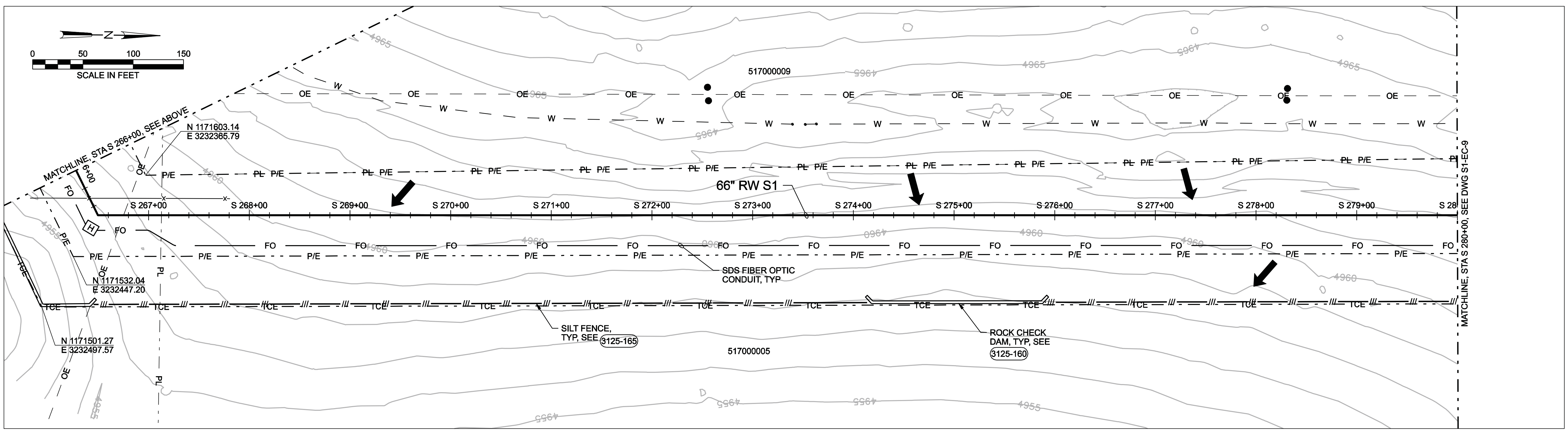
Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC07d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 9:42:35 AM

1 2 3 4 5 6



EROSION CONTROL PLAN, SEE S1-PP-13



EROSION CONTROL PLAN, SEE S1-PP-14

COLORADO LICENSED
JODY L. HENRY
39310
PROFESSIONAL ENGINEER

DSGN E FORD							
DR B NORVILLE							
CHK G SIMPSON							
APVD J HENRY	NO.	DATE	REVISION	BY	APVD		

VERIFY SCALE
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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

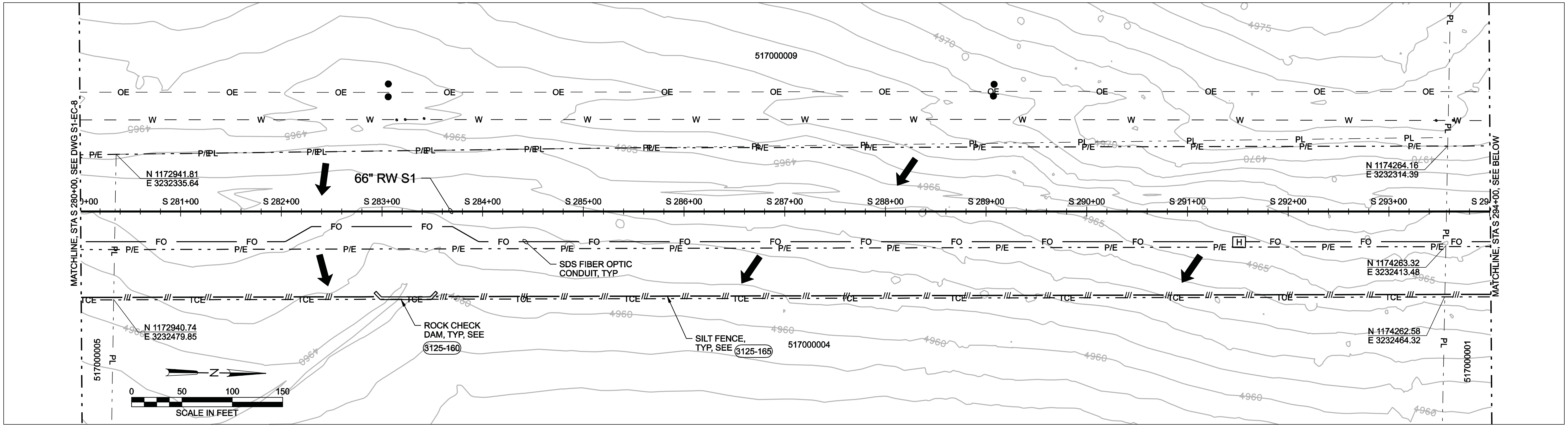
EROSION CONTROL AND EASEMENT PLANS

STATION S 252+00 TO STATION S 280+00

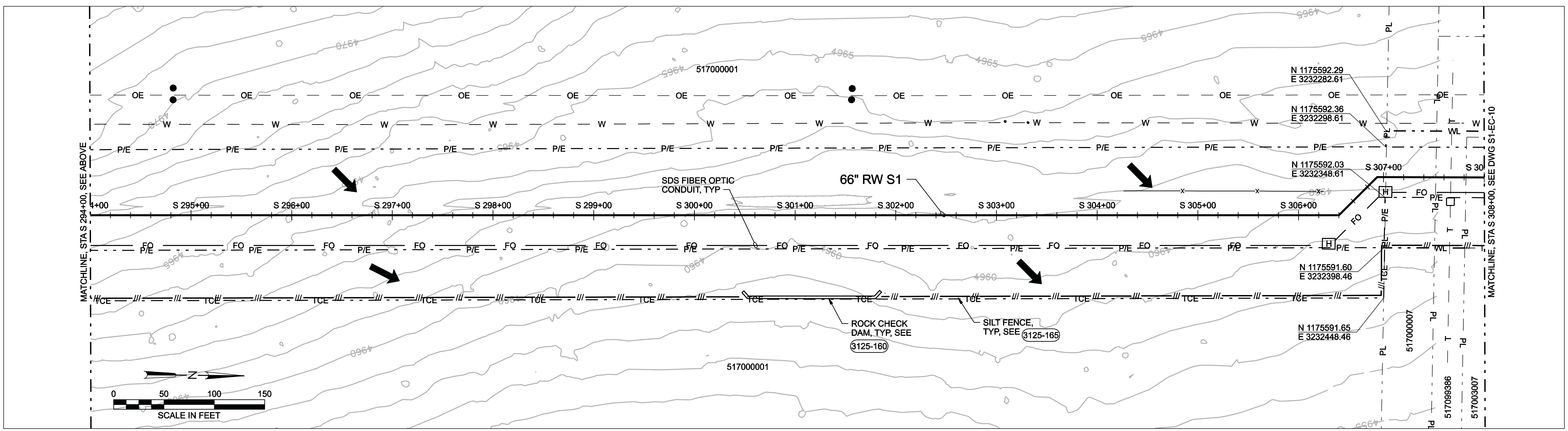
SHEET	56
DWG	S1-EC-8
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC08d_171473.dgn PLOT DATE: 6/15/2011 PLOT TIME: 8:48:01 AM



EROSION CONTROL PLAN, SEE S1-PP-15



EROSION CONTROL PLAN, SEE S1-PP-16

COLORADO LICENSED
JODY L. HENRY
39310
PROFESSIONAL ENGINEER

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

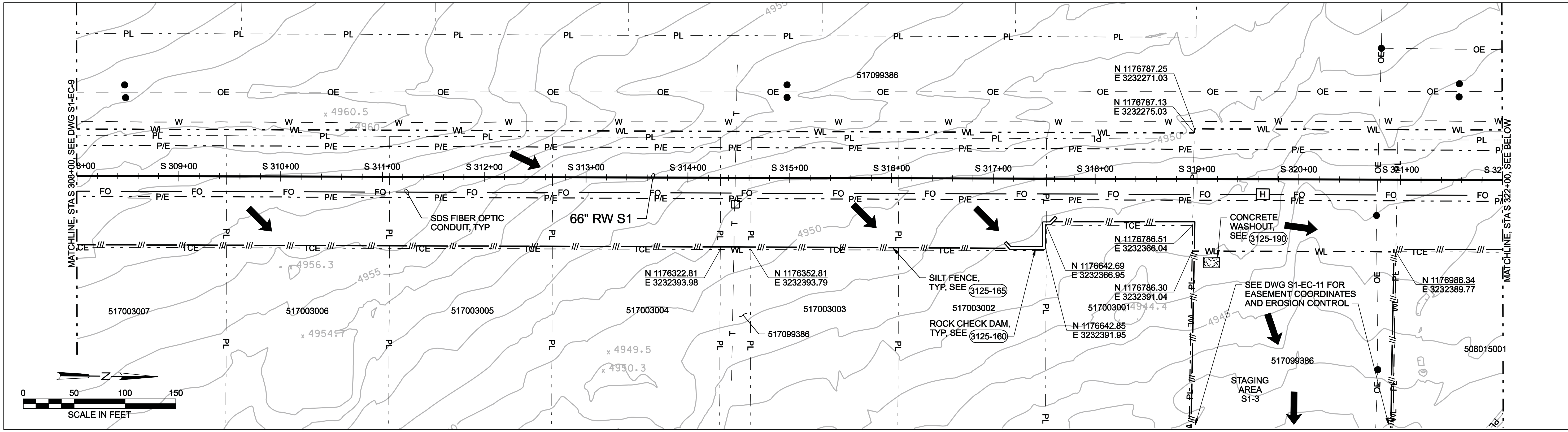
EROSION CONTROL AND EASEMENT PLANS

STATION S 280+00 TO STATION S 308+00

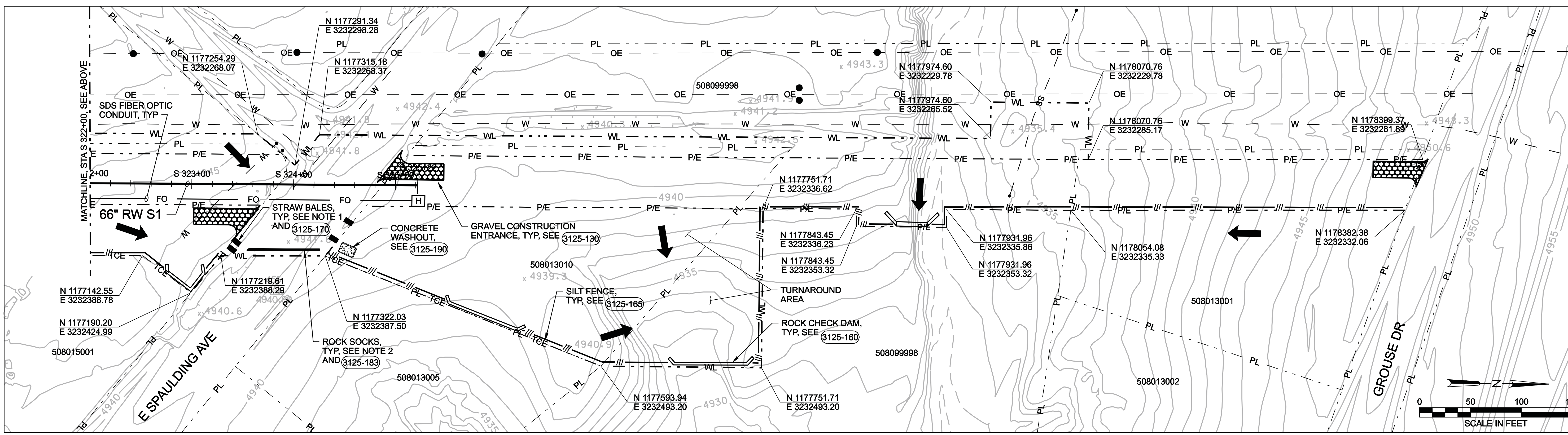
SHEET	57
DWG	S1-EC-9
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC09d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 9:46:43 AM



EROSION CONTROL PLAN, SEE S1-PP-17



NOTES:

1. INSTALL STRAW BALES WITHIN ROADWAY FLOW DITCHES.
2. INSTALL ROCK SOCKS ONLY WHEN CONTRACTOR OPERATIONS OCCUR WITHIN ROAD RIGHT-OF-WAY.

EROSION CONTROL PLAN, SEE S1-PP-18

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

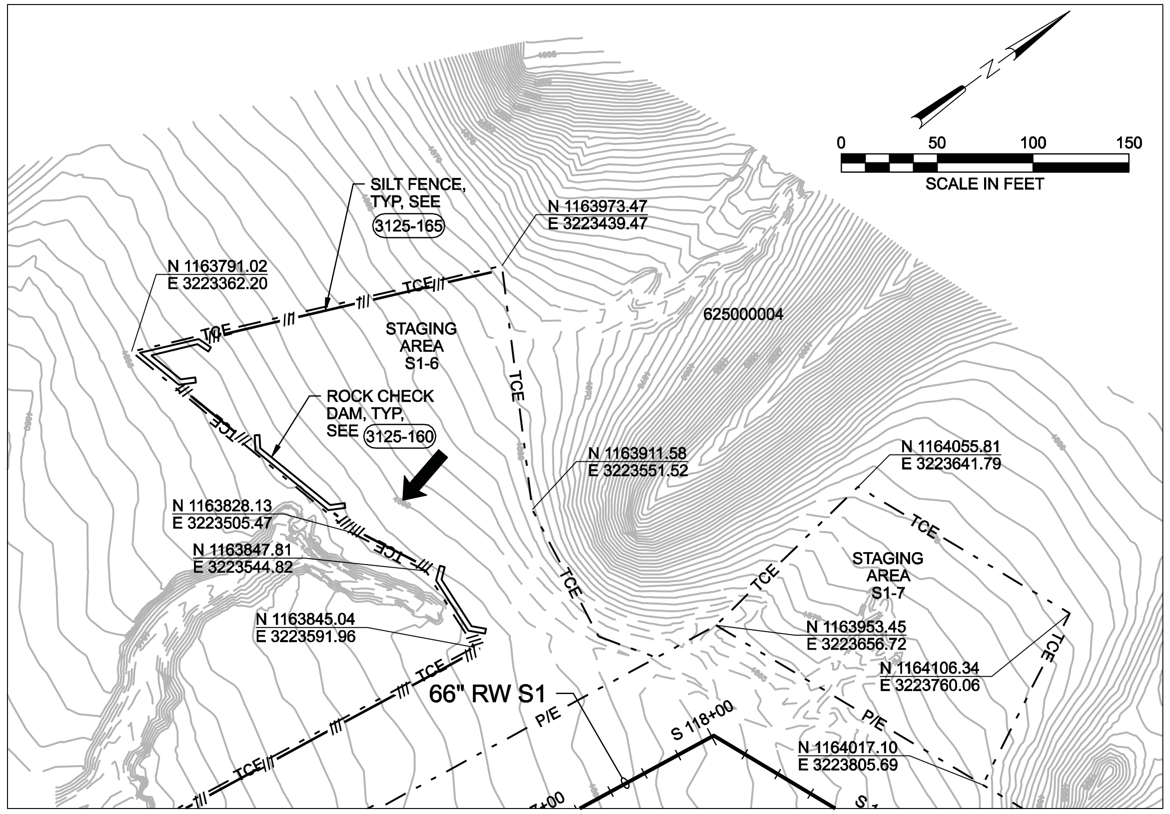
EROSION CONTROL AND EASEMENT PLANS

STATION S 308+00 TO POE STATION S 325+21.87

SHEET	58
DWG	S1-EC-10
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC10d_171473.dgn PLOT DATE: 6/29/2011 PLOT TIME: 10:01:07 AM



PARTIAL EASEMENT PLAN, SEE S1-PP-2

1

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN E FORD						
DR B NORVILLE						
CHK G SIMPSON	1	7/13/11	ADDENDUM NO. 1 - TCE ADDED	BN	JH	
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

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SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

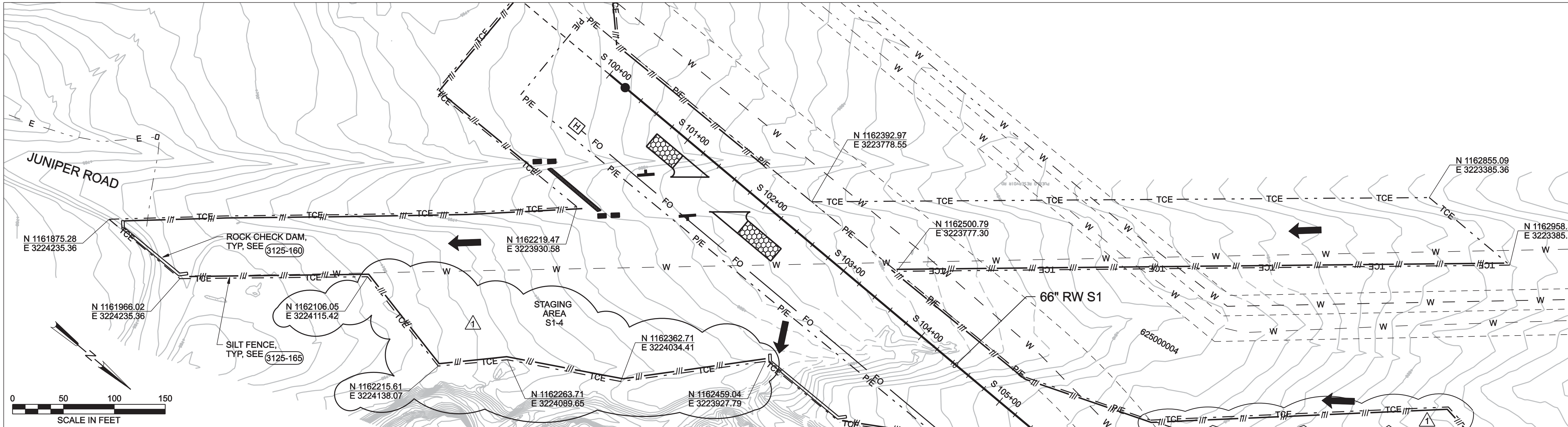
EROSION CONTROL AND EASEMENT PLANS

MISCELLANEOUS PARTIAL PLANS

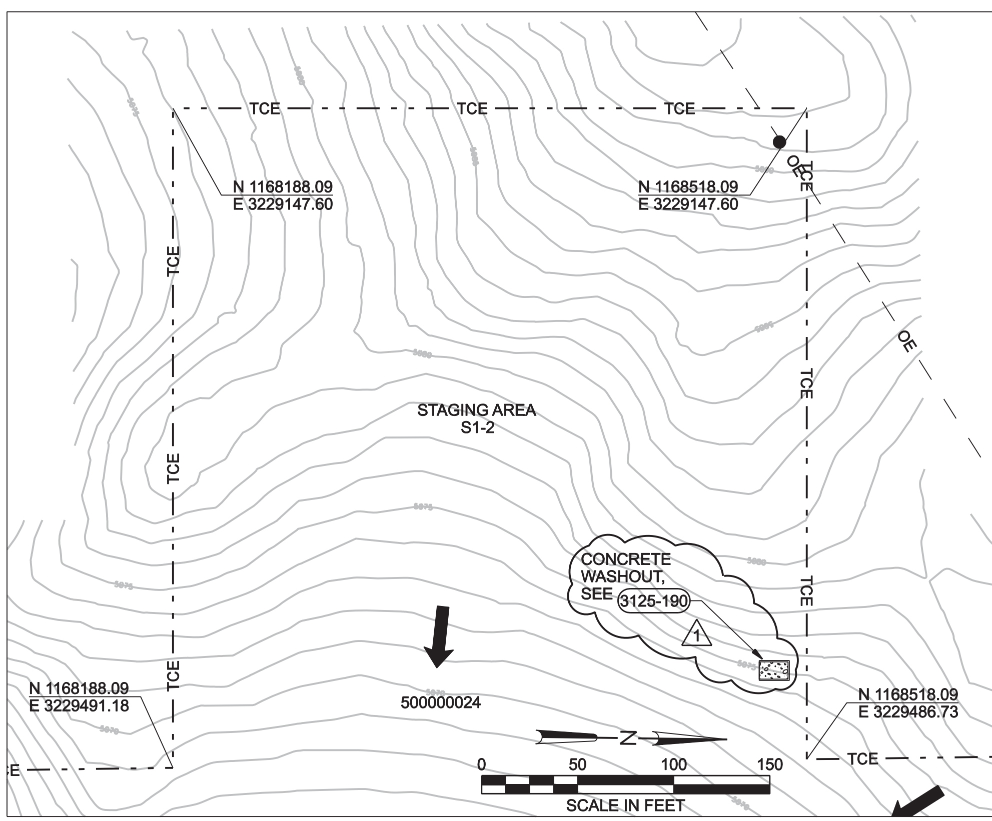
SHEET	59A
DWG	S1-EC-12
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

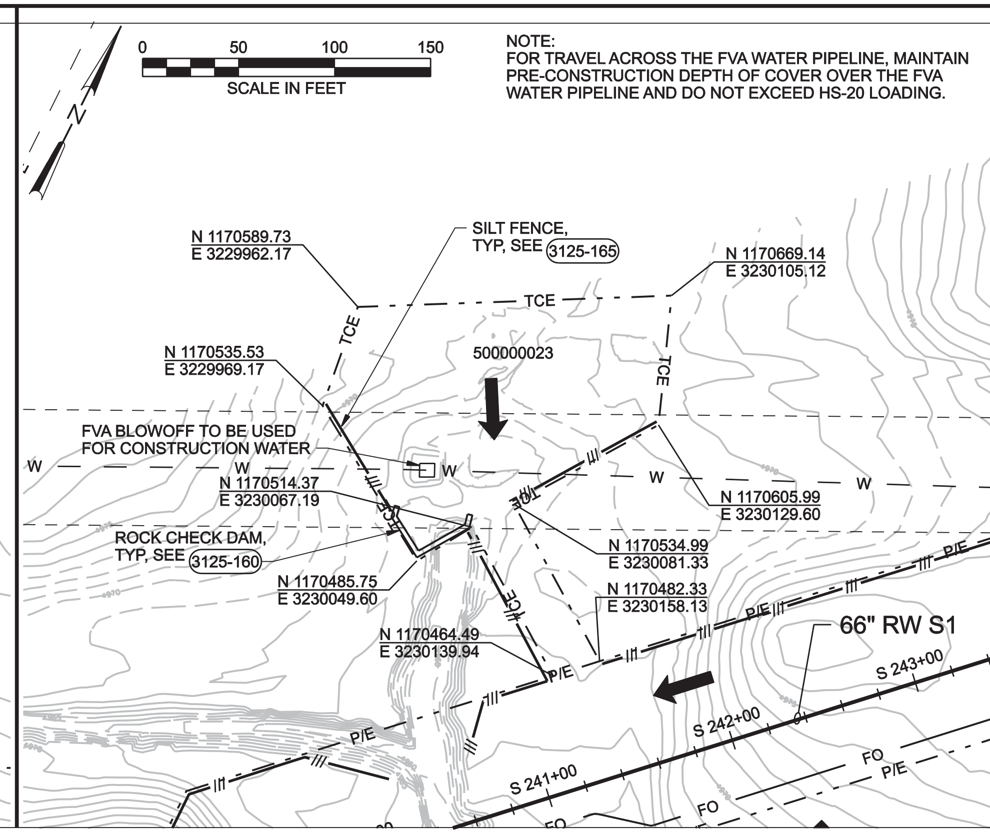
FILENAME: SP105nEC12d_171473.dgn PLOT DATE: 7/25/2011 PLOT TIME: 12:03:39 PM



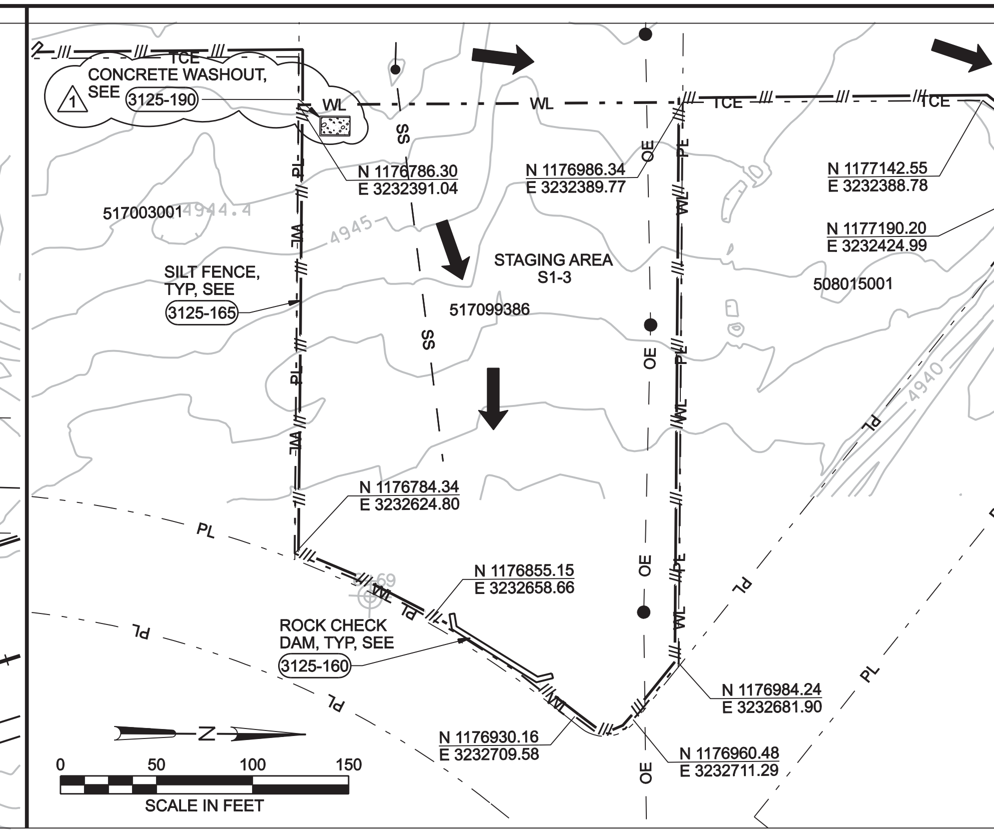
PARTIAL EASEMENT PLAN, SEE S1-PP-1



PARTIAL EASEMENT PLAN, SEE S1-PP-10



PARTIAL EASEMENT PLAN, SEE S1-PP-12



PARTIAL EASEMENT PLAN, SEE S1-PP-17

COLORADO LICENSED
JODY L. HENRY
39310
PROFESSIONAL ENGINEER

DSGN E FORD					
DR B NORVILLE					
CHK G SIMPSON	1	7/13/11	ADDENDUM NO. 1 - TCE ADDED	BN	JH
APVD J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
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0 1"
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Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

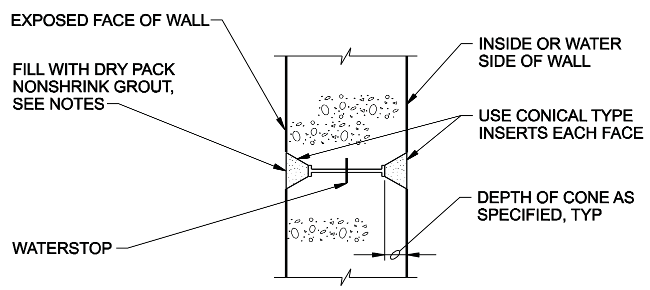
EROSION CONTROL AND EASEMENT PLANS

MISCELLANEOUS PARTIAL PLANS

SHEET	59
DWG	S1-EC-11
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP105nEC11d_171473.dgn PLOT DATE: 8/4/2011 PLOT TIME: 3:50:53 PM

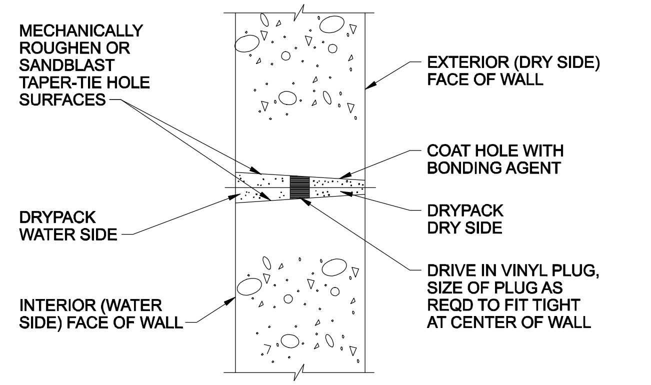


NOTES:

1. THE SPACING OF FORM TIES ON EXPOSED PORTIONS OF WALLS SHALL BE APPROXIMATELY EQUAL HORIZONTALLY AND VERTICALLY AND SHALL BE UNIFORM IN EACH DIRECTION.
2. DRY PACK METHOD SHALL BE AS SPECIFIED USING STEEL TOOLS.

FORM SNAP-TIE HOLE
NTS

(0310-051)



NOTE:

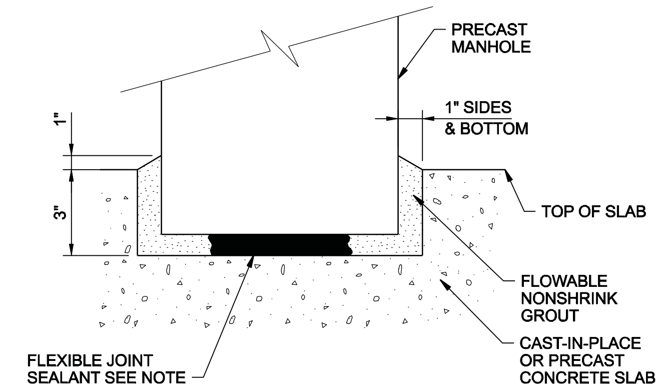
MINIMUM HOLE DIAMETER AT EXTERIOR FACE = 1". TAPER HOLE SO THAT MINIMUM HOLE DIAMETER AT INTERIOR FACE = 1 1/4"

CONSTRUCTION STEPS:

1. SANDBLAST OR MECHANICALLY ROUGHEN WITH ELECTRIC EQUIPMENT.
2. DRIVE IN VINYL PLUG.
3. COAT HOLE ON DRY SIDE OF PLUG AND WHILE BONDING AGENT IS TACKY, DRYPACK.
4. COAT HOLE ON WATER SIDE OF PLUG AND WHILE BONDING AGENT IS TACKY, DRYPACK.
5. USE CATEGORY II, NON-SHRINK GROUT AS SPECIFIED.

ALTERNATE FORM TIE - THROUGH BOLT
NTS

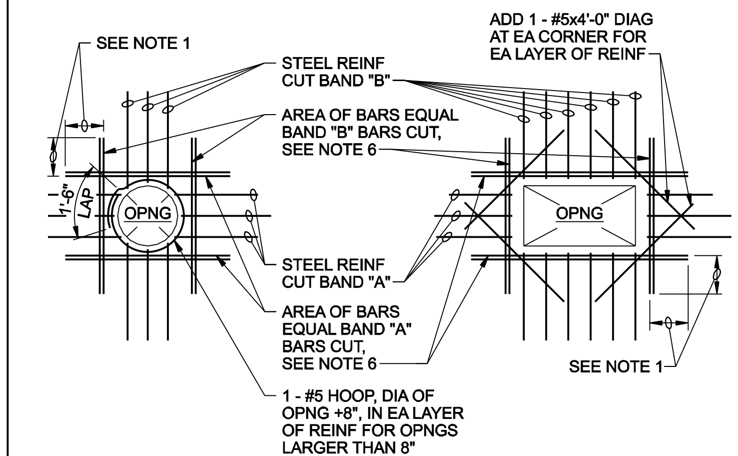
(0310-052)



NOTE: INSTALL FLEXIBLE JOINT SEALANT PRIOR TO SETTING FIRST MANHOLE SECTION.

PRECAST MANHOLE POCKET
NTS

(0315-900)

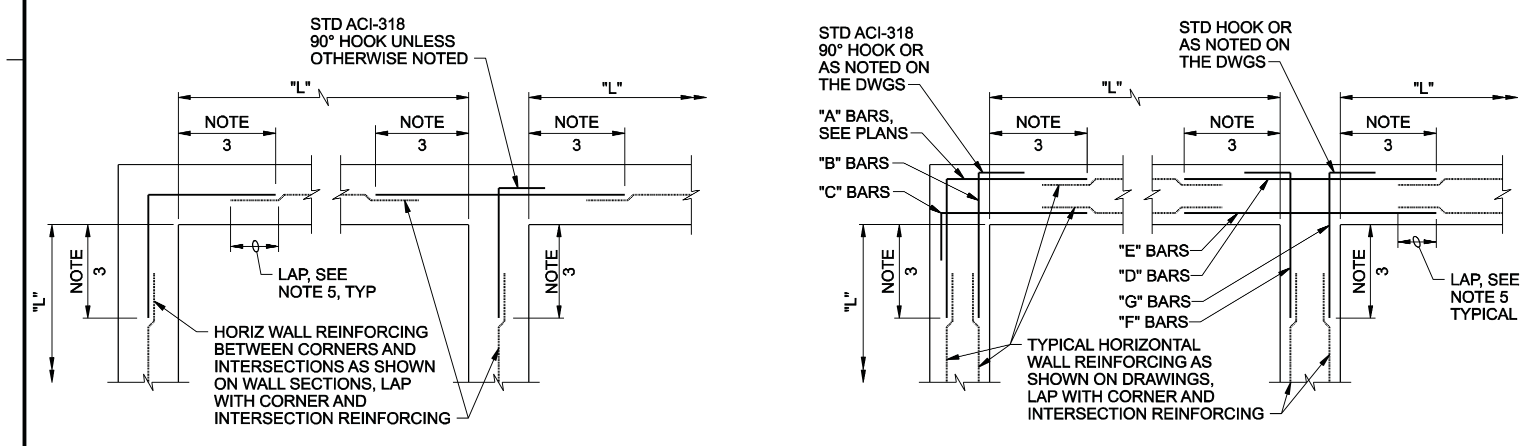


NOTES:

1. PROVIDE MINIMUM LAP, SEE GENERAL STRUCTURAL NOTES.
2. TYPICAL FOR OPENINGS IN CONCRETE WALLS OF BELOW GRADE AND HYDRAULIC STRUCTURES AND STRUCTURAL CONCRETE SLABS UNLESS INDICATED OTHERWISE ON PLANS.
3. DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.
4. PROVIDE A MINIMUM OF 2 "A" BARS AND 2 "B" BARS EACH SIDE OF OPENING (1 EACH FACE).
5. FOR OPENINGS LARGER THAN 8'-0", REINFORCE SAME AS 8'-0" OPENINGS.
6. SPACE AT 3 BAR DIAMETERS (OR 3" MINIMUM) ON CENTER.

OPENING REINFORCING
NTS

(0330-001)



SINGLE REINFORCING MAT

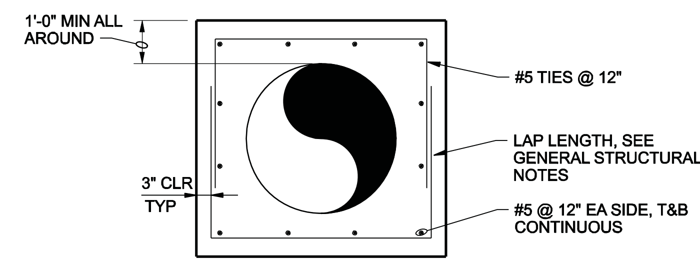
DOUBLE REINFORCING MAT

NOTES:

1. TYPICAL HORIZONTAL WALL CORNER AND INTERSECTION REINFORCING LAYOUT IS SHOWN TO AVOID CONGESTION AND PERMIT PROPER PLACEMENT, FOR SIZE AND SPACING SEE PLANS. HORIZONTAL REINFORCING AT CORNERS AND INTERSECTIONS SHALL BE FABRICATED AND INSTALLED WITH SPLICES LOCATED WHERE SHOWN REGARDLESS OF BAR SIZE AND SPACING.
2. WHERE THE CORNER OR INTERSECTION REINFORCING SIZE AND SPACING IS NOT SHOWN, NOTED OR TABULATED ON THE PLANS, THE SIZE AND SPACING SHALL BE THE SAME AS THE WALL HORIZONTAL REINFORCING SHOWN ON THE WALL SECTIONS OR AS NOTED FOR THE REINFORCING BETWEEN THE CORNERS OR INTERSECTIONS.
3. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 3" SHALL BE THE LESSER OF L/4, 10 FEET, OR 1.0 TIMES THE HEIGHT OF THE WALL, EXCEPT THAT IN NO CASE SHALL IT BE LESS THAN 2 FEET.
4. L = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION.
5. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 5" SHALL BE EQUAL TO ONE "LAP LENGTH" AS REQUIRED BY THE GENERAL STRUCTURAL NOTES. USE THE LAP LENGTH AS REQUIRED FOR THE SMALLER OF THE TWO REINFORCING BARS BEING SPLICED.
6. UNLESS OTHERWISE NOTED, "B" AND "C" BARS ARE THE SAME SIZE AND SPACING AND, "F" AND "G" BARS ARE THE SAME SIZE AND SPACING.

TYPICAL WALL CORNER AND INTERSECTION REINFORCING
NTS

(0330-003)

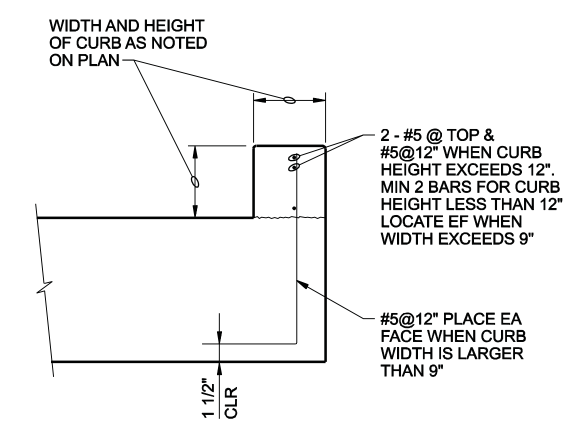


NOTES:

1. APPLIES TO ALL PIPE SIZES.

PIPE ENCASEMENT
NTS

(0330-017A)



CONCRETE CURB
NTS

(0330-080)

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
Colorado Springs, CO 80903

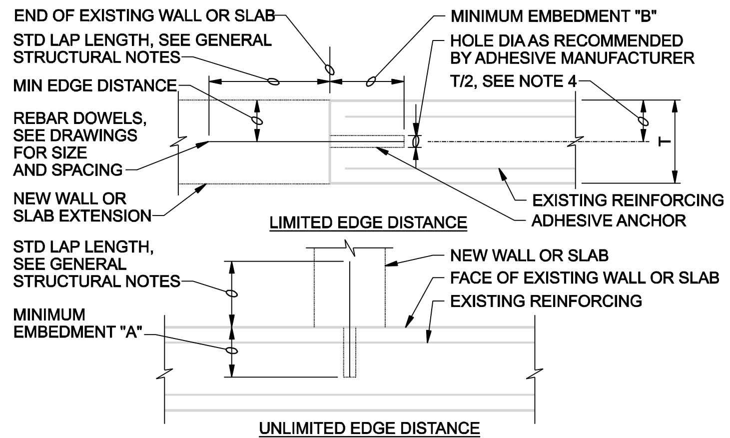
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

STANDARD DETAILS

STANDARD DETAILS

SHEET	60
DWG	S1-SD-1
DATE	JULY 2011
PROJ	171473.20.SP

1 2 3 4 5 6



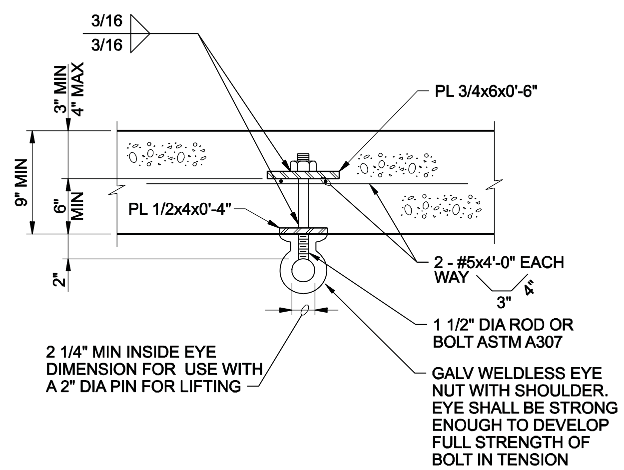
DOWEL SIZE	MINIMUM EDGE DIST	MINIMUM EMBEDMENT A	MINIMUM EMBEDMENT B
#3	2 1/2"	5"	8"
#4	3 1/2"	7"	11"
#5	4"	8"	13"
#6	5"	10 1/2"	16"
#7	6"	12 1/2"	20"
#8	7"	14"	22"
#9	7 1/2"	15"	24"

NOTES:

1. CONFORM TO THE REQUIREMENTS OF SPECIFICATION SECTION 03 63 00, CONCRETE DOWELING.
2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
3. USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
4. LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.

ADHESIVE DOWEL

NTS (0330-105)



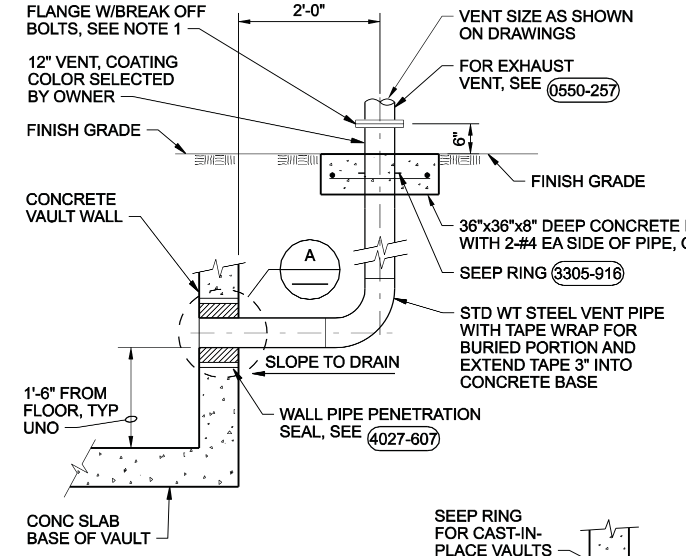
TYPE 2

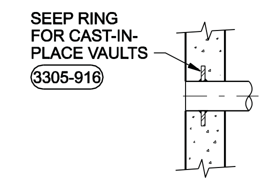
NOTES:

1. MAXIMUM LOAD RATING FOR LIFTING EYE 5000 LBS.
2. SUBMIT DATA ON EYE BOLT WITH SHOP DRAWINGS.

LIFTING EYE - TYPE 2

NTS (0512-121)





NOTE:

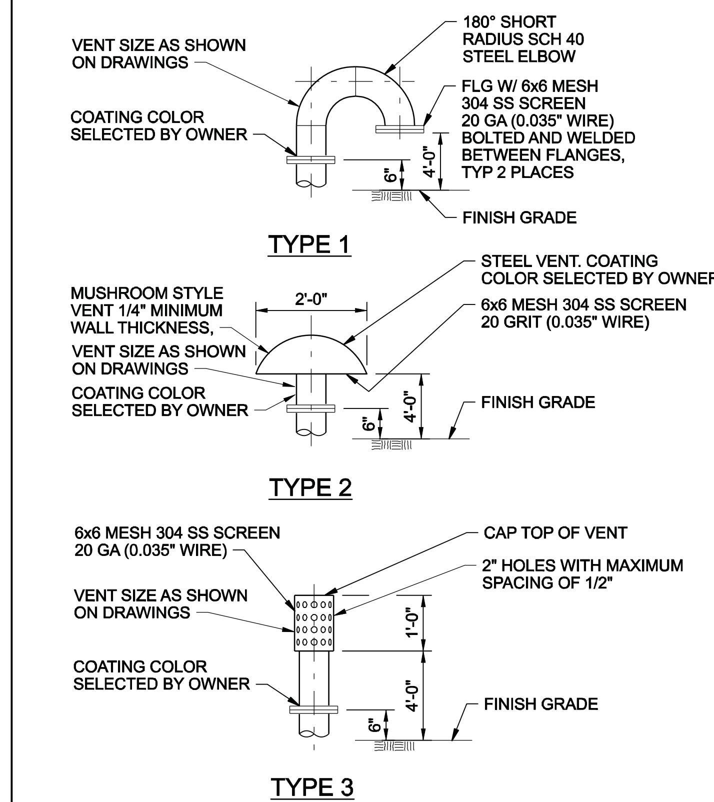
1. INSTALL FLANGE WITH BREAK OFF BOLTS ONLY WHERE SHOWN ON VAULT DETAILS. FLANGES SHALL BE DRILLED FOR EIGHT EQUALLY SPACED 1/2 INCH DIAMETER BOLTS PER AWWA REQUIREMENTS EXCEPT WHERE NUMBER OF BOLTS AND BOLT DIAMETER CONFLICT. FLANGE CONNECTION SHALL BE MADE WITH EIGHT 1/2 INCH DIAMETER CARBON STEEL BOLTS, NUTS AND ASTM FU36 WASHERS AS SPECIFIED. COAT AS SPECIFIED.

A — VENT FOR CAST-IN-PLACE CONCRETE STRUCTURES

NTS

VENT FOR PRECAST & CAST-IN-PLACE CONCRETE STRUCTURES

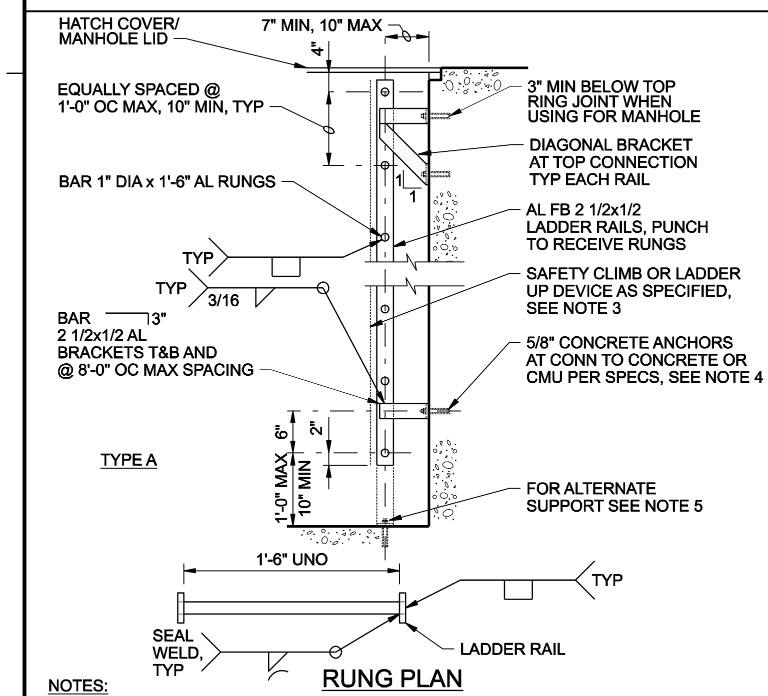
NTS (0550-256)



EXHAUST VENT

NTS (0550-257)

A B C D



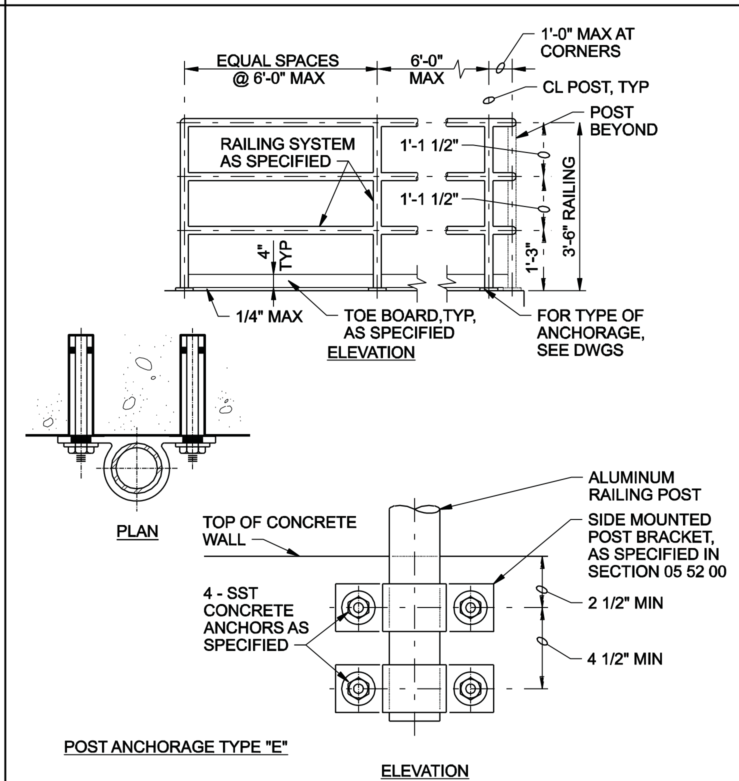
NOTES:

1. ALUMINUM IN CONTACT WITH CONCRETE SHALL BE COATED WITH BITUMASTIC COATING.
2. AT CONTRACTOR'S OPTION, PRE-ENGINEERED PIPE LADDER AS SPECIFIED MAY BE USED IN LIEU OF FLAT BAR LADDERS.
3. PROVIDE LADDER SAFETY POST AND FALL PROTECTION SYSTEMS AS SPECIFIED.
4. PROVIDE SST CONCRETE ANCHORS LOCATED BELOW MAXIMUM WATER SURFACE.
5. FOR INTERIOR, DRY AREAS, EXTEND RAILS AND BEND 3" AT FLOOR. SECURE WITH 5/8" CONCRETE ANCHORS.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

FLAT BAR LADDER UNDERCOVER - ALUMINUM

NTS (0551-101)

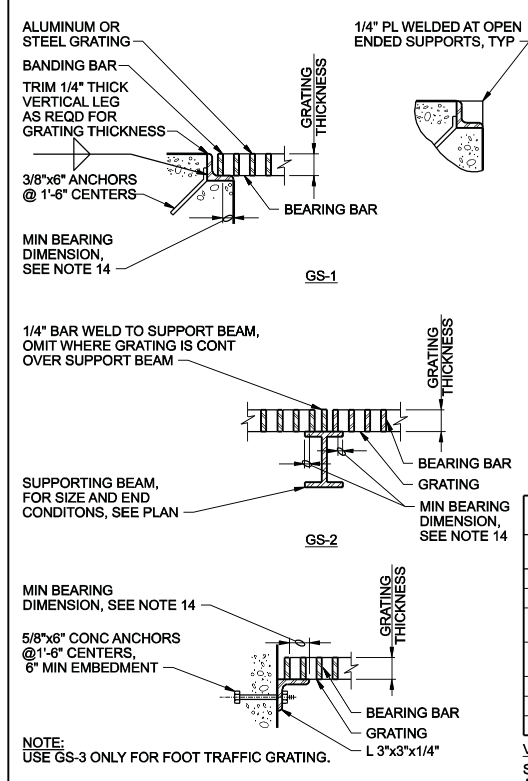


NOTES:

1. PROVIDE PROTECTION FOR DISSIMILAR METALS AND CONCRETE PER SPECIFICATIONS.
2. USE SIDE MOUNTED POST BRACKET AS A TEMPLATE FOR THE ANCHOR BOLTS.

RAILING - THREE RAIL - ALUMINUM

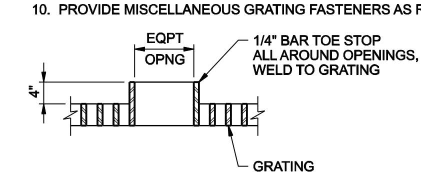
NTS (0552-001)



NOTE:
USE GS-3 ONLY FOR FOOT TRAFFIC GRATING.

GENERAL NOTES:

1. EXTEND GRATING CONTINUOUSLY OVER GATE GUIDES AND GATES.
2. NOTCH GRATING SUPPORTS AT GATES AS REQUIRED.
3. GRATING SPAN ⟶ SEE PLAN.
4. WIDTH OF GRATING SECTIONS SHALL NOT EXCEED 3'-0".
5. SHOP DRAWINGS BASED ON FIELD DIMENSIONS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION.
6. MATERIAL FOR SUPPORTS OF STEEL AND ALUMINUM GRATING TO BE SAME AS GRATING, EXCEPT METAL SUPPORTS THAT ARE TO BE EMBEDDED IN CONCRETE SHALL BE TYPE 316 STAINLESS STEEL.
7. UNLESS NOTED OTHERWISE ON PLANS, GRATING THICKNESS SHALL BE AS TABULATED IN "GRATING THICKNESS TABLE" FOR APPLICABLE TRAFFIC.
8. BEARING BAR THICKNESS FOR GRATING TO BE 3/16" MINIMUM.
9. BAND ALL EDGES WITH 3/16 x DEPTH OF BEARING BAR.
10. PROVIDE MISCELLANEOUS GRATING FASTENERS AS REQUIRED.
11. TYPE OF MATERIAL USED SHALL BE AS SHOWN ON PLANS OR AS SPECIFIED. THIS STANDARD DETAIL INCLUDES 2 TYPES, ALTHOUGH BOTH MAY NOT BE INCLUDED IN PROJECT.
12. THE HORIZONTAL CLEARANCE BETWEEN THE GRATING AND GRATING SUPPORTS SHALL NOT BE LESS THAN 1/4" NOR GREATER THAN 1/2" AND AS SPECIFIED.
13. ALL GRATING SECTIONS, WHEN IN PLACE, SHALL ALWAYS BE FIRMLY ANCHORED TO THEIR SUPPORTS AS SPECIFIED.
14. MIN BEARING HORIZONTAL DIMENSION = 1" FOR GRATING DEPTH 2 1/4" OR LESS, MIN BEARING HORIZONTAL = 2" FOR GRATING DEPTH GREATER THAN 2 1/4"



EQUIPMENT OPENINGS

FOOT TRAFFIC

GRATING THICKNESS TABLE

MAXIMUM SPAN	ALUMINUM	STEEL
3'-6"	1 1/4"	1"
4'-0"	1 1/2"	1"
4'-6"	1 3/4"	1"
5'-0"	1 3/4"	1 1/4"
5'-6"	2"	1 1/4"
6'-0"	2 1/4"	1 1/2"
6'-6"	2 1/4"	1 1/2"
7'-0"	2 1/2"	1 3/4"

HEAVY VEHICULAR TRAFFIC
(HS 20-44)

MAXIMUM SPAN	STEEL	ALUMINUM
1'-0"	2"x3/16"	DO NOT USE ALUMINUM GRATING
1'-8"	2 1/2"x1/4"	
2'-0"	2 1/2"x3/8" OR 3"x1/4"	
2'-6"	3"x3/8" OR 4"x1/4"	
3'-3"	3 1/2"x3/8"	
4'-0"	4"x3/8"	
5'-0"	4 1/2"x3/8"	

LIGHT VEHICULAR TRAFFIC
(WHEEL LOAD = 2000 POUNDS OR LESS)

MAXIMUM SPAN	STEEL	ALUMINUM
1'-0"	1 3/4"x3/16"	1 3/4"x3/16"
1'-6"	1 3/4"x3/16"	1 3/4"x3/16"
2'-0"	2"x3/16"	2"x3/16"
2'-6"	2 1/4"x3/16"	2 1/4"x3/16"
3'-0"	2 1/2"x3/16"	2 1/2"x3/16"
4'-0"	2 1/2"x1/4"	DO NOT USE ALUMINUM GRATING
5'-0"	2 1/2"x3/8"	
6'-0"	2 1/2"x3/8"	
7'-0"	3"x3/8"	

VEHICULAR TRAFFIC NOTE:

STEEL GRATING BEARING BARS FOR VEHICULAR TRAFFIC SHALL BE SPACED AT 1 7/8" OC;
ALUMINUM GRATING BEARING BARS FOR VEHICULAR TRAFFIC SHALL BE SPACED AT 1 3/16" OC.

SERRATED BEARING BARS:

INCREASE GRATING THICKNESSES SHOWN IN TABLES BY 1/4" FOR GRATING WITH SERRATED SLIP RESISTANT SURFACES.

STANDARD GRATING

NTS (0553-001)

DSGN	E FORD						VERIFY SCALE
DR	B NORVILLE						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK	G SIMPSON						
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD	

CH2MHILL
Colorado Springs, CO 80903

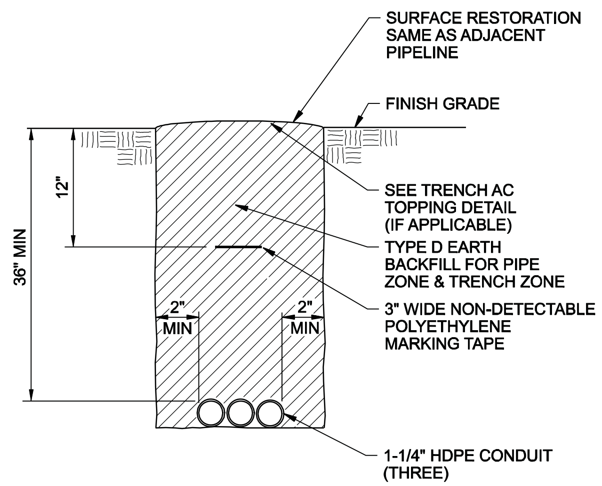
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

STANDARD DETAILS

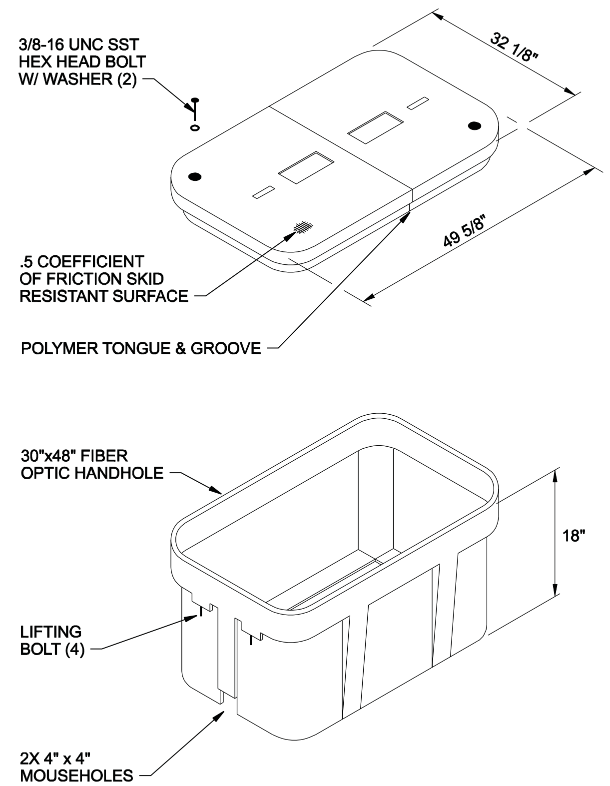
STANDARD DETAILS

SHEET	61
DWG	S1-SD-2
DATE	JULY 2011
PROJ	171473.20.SP

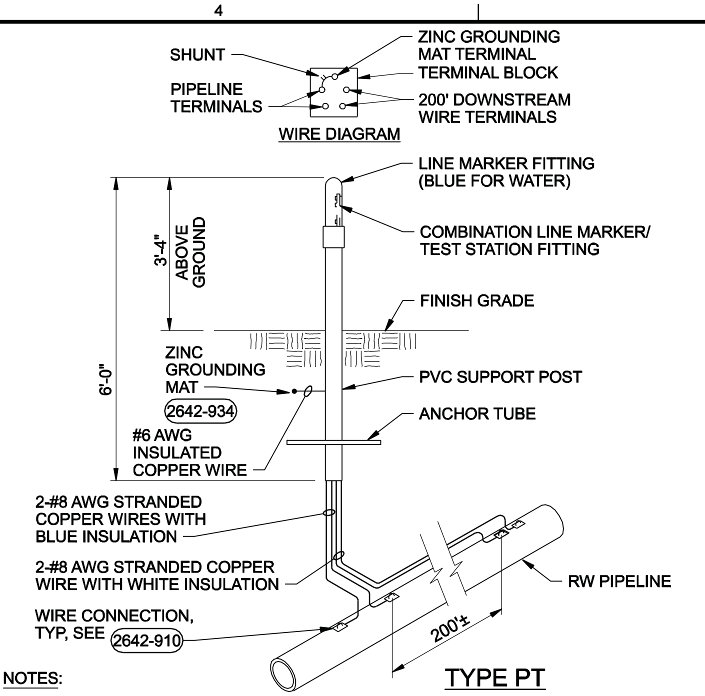
1 2 3 4 5 6



FIBER OPTIC CONDUIT TRENCH (2605-423B)
NTS



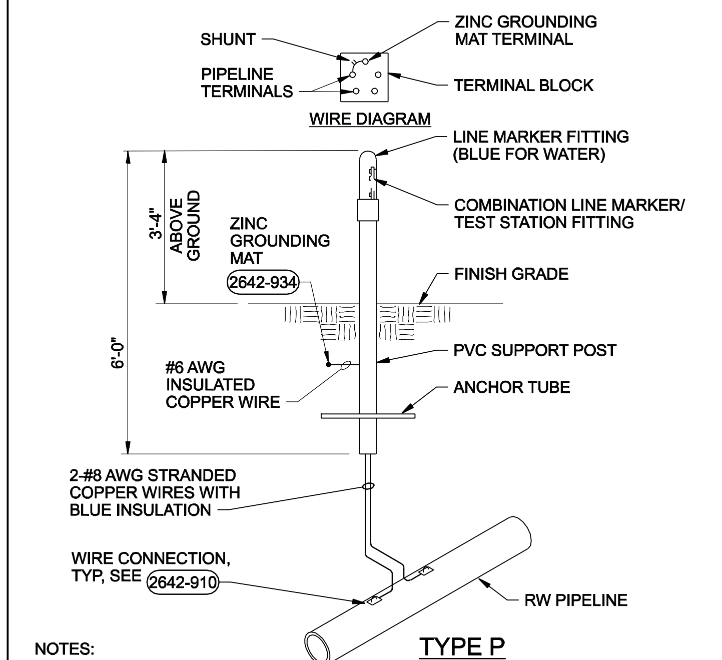
FIBER OPTIC HANDHOLE (2605-444)
NTS



NOTES:

1. INSTALL TYPE PT TEST STATIONS WHERE INDICATED ON DWGS. ADJUST ACTUAL LOCATION TO NEAREST JOINT.
2. SHOW EXACT LOCATION OF WIRE CONNECTIONS, REFERENCING PIPE PIECE NUMBERS FROM PIPE MANUFACTURER LAYOUT SHEETS AND A MEASURED DISTANCE FROM PIPE END, ON AS-BUILT DRAWINGS.
3. NOT ALL OF GROUNDING MAT IS SHOWN, FOR CLARITY.

POST MOUNTED TEST STATION - TYPE PT (2642-801A)
NTS

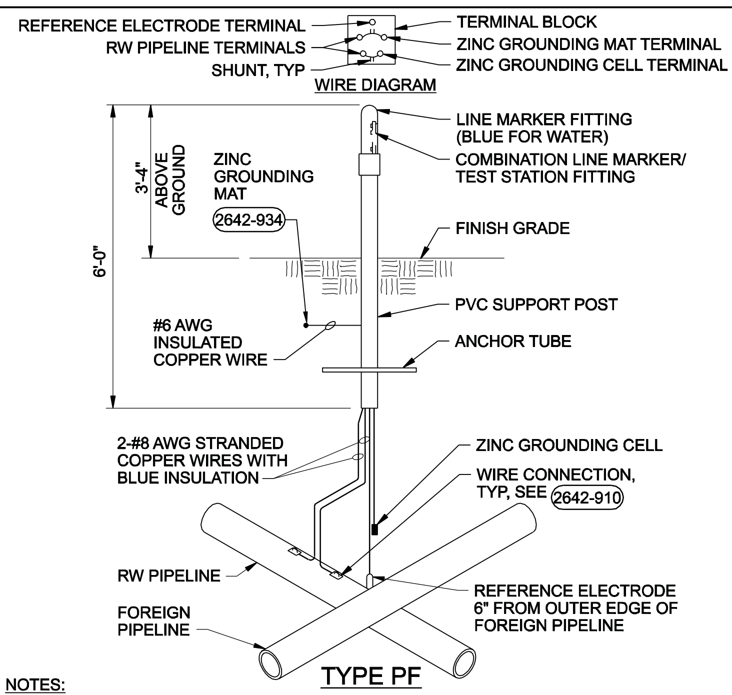


NOTES:

1. INSTALL TYPE P TEST STATIONS WHERE INDICATED ON DWGS. ADJUST ACTUAL LOCATION TO NEAREST JOINT.
2. SHOW EXACT LOCATION OF WIRE CONNECTIONS, REFERENCING PIPE PIECE NUMBERS FROM PIPE MANUFACTURER LAYOUT SHEETS AND A MEASURED DISTANCE FROM PIPE END, ON AS-BUILT DRAWINGS.
3. NOT ALL OF GROUNDING MAT IS SHOWN, FOR CLARITY.

POST MOUNTED TEST STATION - TYPE P (2642-802A)
NTS

A B C D

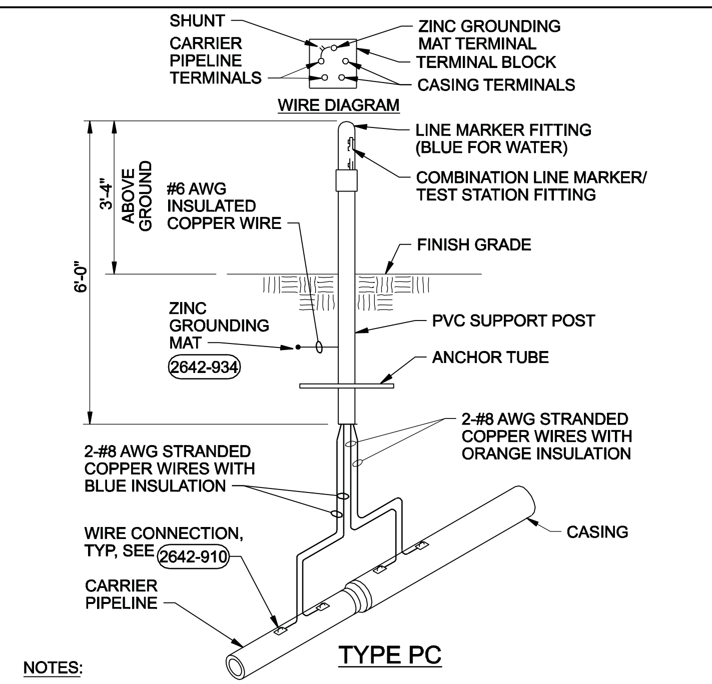


NOTES:

1. INSTALL TYPE PF TEST STATIONS WHERE INDICATED ON DWGS.
2. OBTAIN APPROVAL OF FOREIGN PIPELINE OWNER PRIOR TO EXCAVATION.
3. SHOW EXACT LOCATION OF WIRE CONNECTIONS, REFERENCING PIPE PIECE NUMBERS FROM PIPE MANUFACTURER LAYOUT SHEETS AND A MEASURED DISTANCE FROM PIPE END, ON AS-BUILT DRAWINGS.
4. NOT ALL OF GROUND MAT IS SHOWN, FOR CLARITY.

COLORADO LICENSED
JODY L. HENRY
39310
PROFESSIONAL ENGINEER

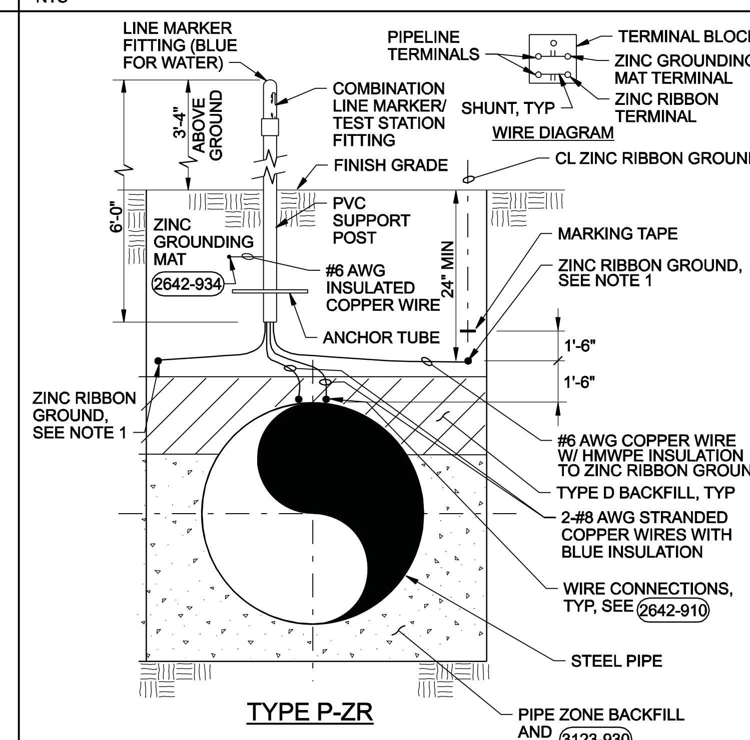
POST MOUNTED TEST STATION - TYPE PF (2642-806A)
NTS



NOTES:

1. INSTALL TYPE PC TEST STATIONS WHERE INDICATED ON DWGS. ADJUST ACTUAL LOCATION TO NEAREST JOINT.
2. SHOW EXACT LOCATION OF WIRE CONNECTIONS, REFERENCING PIPE PIECE NUMBERS FROM PIPE MANUFACTURER LAYOUT SHEETS AND A MEASURED DISTANCE FROM PIPE END, ON AS-BUILT DRAWINGS.
3. NOT ALL OF GROUND MAT IS SHOWN, FOR CLARITY.

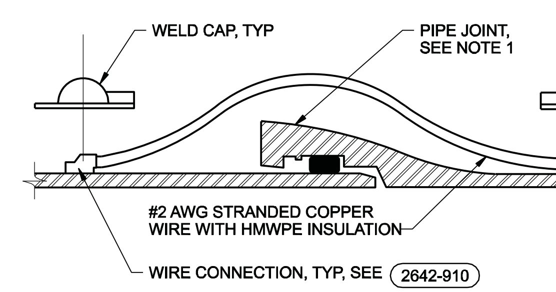
POST MOUNTED TEST STATION - TYPE PC (2642-811A)
NTS



NOTES:

1. AT POB INSTALL TWO ZINC RIBBON GROUND AT EDGE OF PIPE TRENCH SURROUNDED BY 6" OF NATIVE SOIL.
2. NOT ALL OF GROUNDING MAT IS SHOWN, FOR CLARITY.

POST MOUNTED TEST STATION - TYPE P-ZR (2642-837)
NTS



NOTES:

1. PUSH ON TYPE JOINT SHOWN. RESTRAINED JOINT TYPE SHALL HAVE SIMILAR JOINT BONDS.

PUSH-ON JOINT BOND (2642-840)
NTS

DSGN E FORD						VERIFY SCALE
DR B NORVILLE						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"
CHK G SIMPSON						IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

CH2MHILL
Colorado Springs, CO 80903

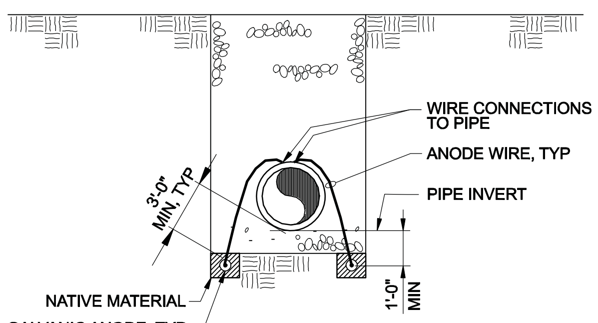
SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

STANDARD DETAILS

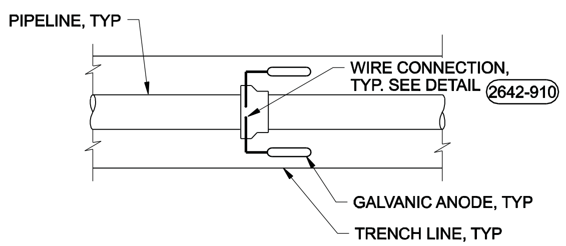
STANDARD DETAILS

SHEET	62
DWG	S1-SD-3
DATE	JULY 2011
PROJ	171473.20.SP

1 2 3 4 5 6



TRENCH SECTION

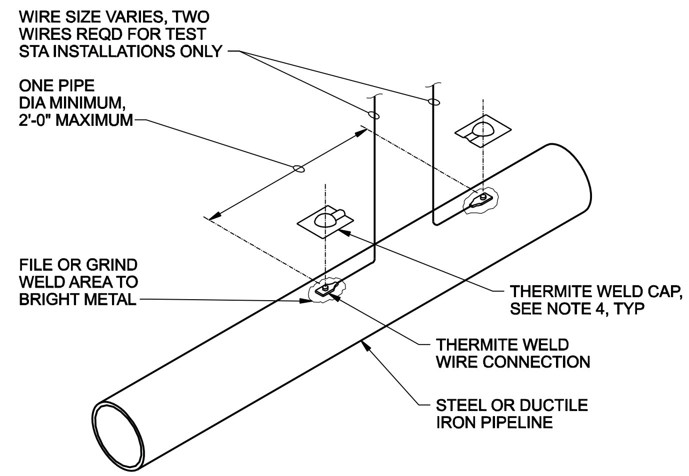


PLAN

NOTES:

1. JOINT BONDS AND COATING NOT SHOWN.

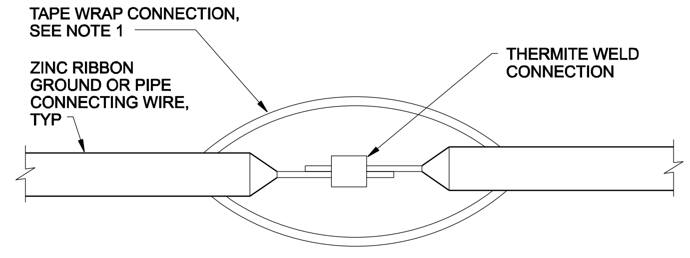
GALVANIC ANODE INSTALLATION
NTS
2642-870A



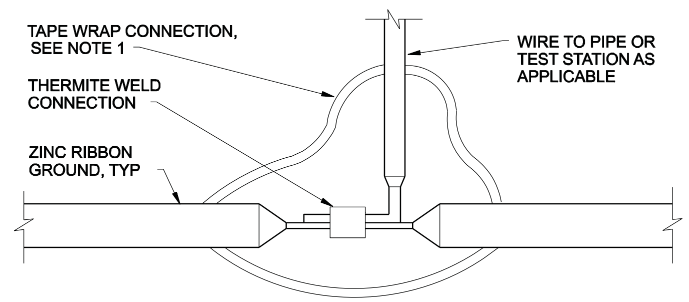
NOTES:

1. COPPER SLEEVE REQUIRED FOR THERMITE WELDING OF #10 AWG AND SMALLER WIRE.
2. USE COPPER SLEEVE ON #2 AWG JOINT BONDING WIRES.
3. WELDER AND CARTRIDGE SIZE VARIES ACCORDING TO WIRE SIZE AND PIPE MATERIAL, CONSULT WELDER MANUFACTURER FOR RECOMMENDED WELDER AND CARTRIDGE.
4. COAT WELD AREA AND FILL RECESS ON THERMITE WELD CAP WITH COLD APPLIED COAL TAR MASTIC AND APPLY CAP TO WELD.

WIRE CONNECTION FOR STEEL AND DUCTILE IRON PIPE
NTS
2642-910



INLINE SPLICE

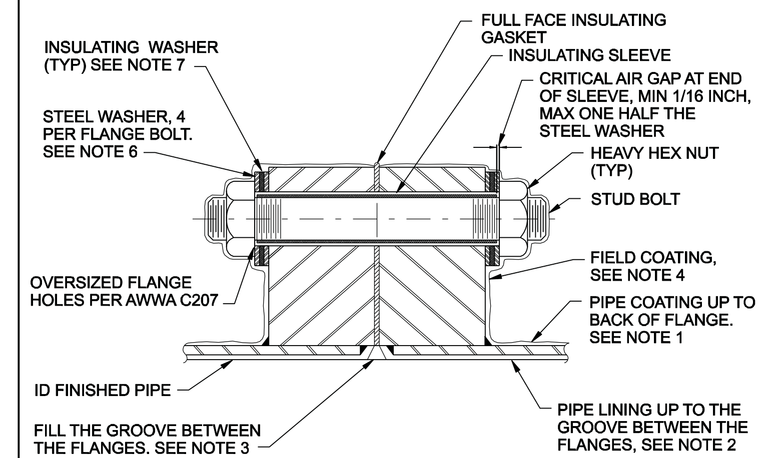


TAP SPLICE

NOTES:

1. WRAP ENTIRE CONNECTION WITH 3 LAYERS HIGH VOLTAGE RUBBER TAPE. THEN WRAP WITH 3 LAYERS VINYL ELECTRICAL TAPE

ZINC RIBBON GROUND AND WIRE SPLICES
NTS
2642-911A

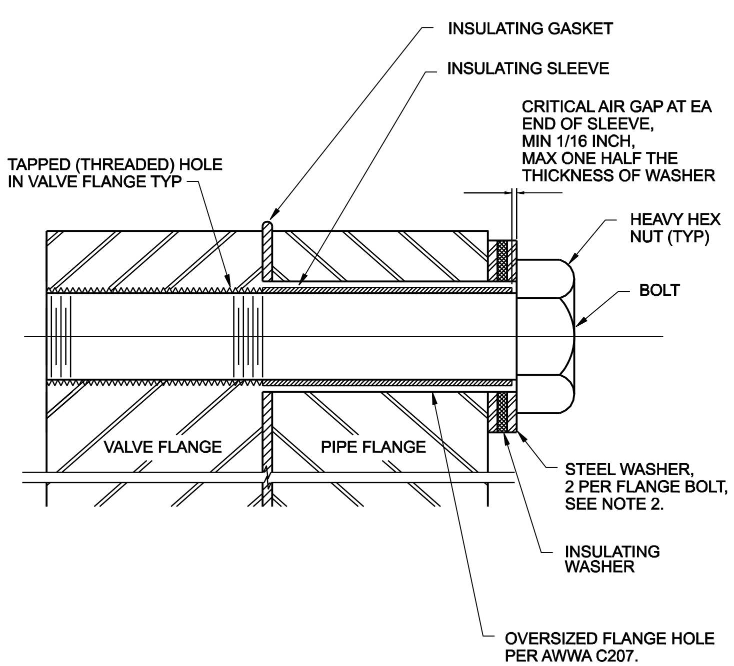


NOTES:

1. THE PIPE COATING ON EACH SIDE OF THE INSULATED FLANGE SHALL BE THE SAME IN TYPE, THICKNESS, AND QUALITY UP TO THE BACK SIDE OF THE RESPECTIVE FLANGE.
2. THE LINING ON THE PIPE SHALL BE THE SAME IN TYPE, THICKNESS, AND QUALITY UP TO THE INSULATED FLANGE JOINT.
3. FOR PIPE LARGER THAN 24 INCH DIAMETER , FILL THE INSULATED FLANGE'S INTERNAL GAP WITH A MATERIAL COMPATIBLE WITH THE PIPE LINING.
4. COAT JOINTS AS SPECIFIED AFTER INSTALLATION.
5. SEE 2642-932 FOR INSULATED BOLTS AT TAPPED VALVE FLANGES.
6. FOR PIPE SMALLER THAN 36 INCH DIAMETER DELETE INNER STEEL WASHERS.
7. FOR BURIED OR SUBMERGED INSULATING FLANGE, DO NOT INSTALL INSULATING WASHER ON PROTECTED SIDE OF FLANGE.

INSULATED FLANGES
NTS
2642-930

A B C D

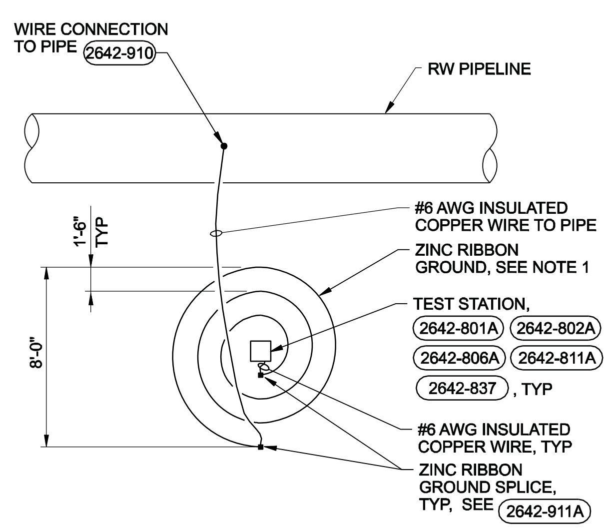


NOTES:

1. COAT COMPLETED JOINT AS SPECIFIED AFTER INSULATION.
2. FOR PIPE SMALLER THAN 36 INCH DIAMETER, DELETE INNER STEEL WASHER.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

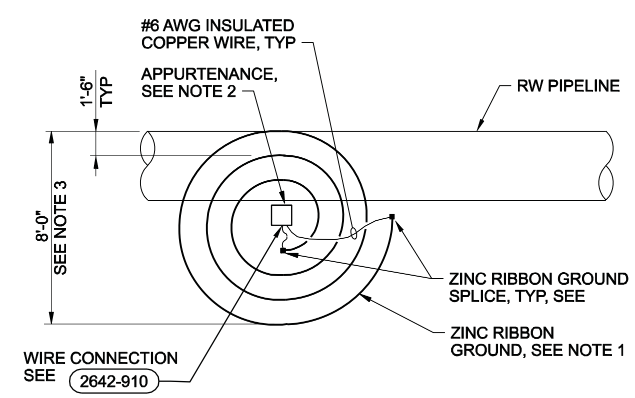
INSULATED BOLTS AT TAPPED VALVE FLANGES
NTS
2642-932



NOTES:

1. INSTALL RIBBON GROUND 12" TO 18" BELOW FINISHED GRADE, COVER WITH 6" MIN THICK, TYPE H DRAIN GRAVEL, EXTEND GRAVEL BACKFILL 18" BEYOND ALL SIDES OF GROUND MAT EXCEPT WHERE SHOWN OTHERWISE.
2. CONNECT 1-#6 AWG WIRE FROM ZINC RIBBON TO WIRE FROM PIPELINE IN TEST STATION USING SHUNT SPECIFIED.
3. CONNECT 1=#6 AWG WIRE FROM ZINC RIBBON DIRECTLY TO PIPELINE.

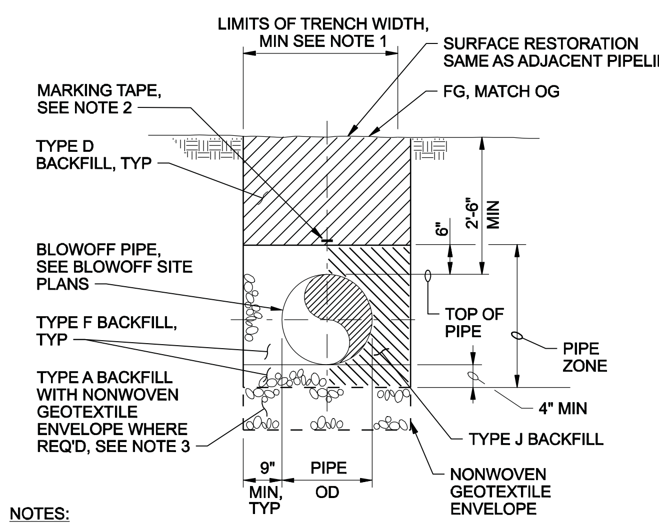
TEST STATION GROUNDING MAT
NTS
2642-934



NOTES:

1. INSTALL RIBBON GROUND 12" TO 18" BELOW FINISHED GRADE, COVER WITH 6" MIN THICK, TYPE H DRAIN GRAVEL, EXTEND GRAVEL BACKFILL 18" BEYOND ALL SIDES OF GROUND MAT EXCEPT WHERE SHOWN OTHERWISE.
2. PROVIDE GROUNDING MATS FOR APPURTENANCES INCLUDING BUT NOT LIMITED TO BURIED ACCESS MANWAYS, BLOWOFFS, AIR VAC VAULTS, VALVES, AND VALVE OPERATORS.
3. DIMENSION AS REQUIRED AT VAULTS TO ACHIEVE 3 COMPLETE SPIRALS OF RIBBON GROUND AROUND VAULT AT 1'-6" SEPARATION AS SHOWN.

APPURTENANCE GROUNDING MAT
NTS
2642-935



NOTES:

1. SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION SAFETY AND IN ACCORDANCE WITH OSHA REQUIREMENTS. FOR ROADWAY CROSSING, CONSTRUCTION PERMIT FROM ROADWAY PERMITTING AUTHORITY WILL GOVERN THE USE OF SLOPED TRENCH SIDEWALLS.
2. INSTALL MARKING TAPE ON TOP OF PIPE ZONE AT TRENCH CENTERLINE AS SHOWN.
3. USE OVER EXCAVATION AND FOUNDATION STABILIZATION MATERIAL WHEN ORDERED BY THE CONSTRUCTION MANAGER WHEN UNSUITABLE, UNEXPECTED TRENCH CONDITIONS ARE FOUND DURING CONSTRUCTION.

TYPICAL BLOWOFF PIPE TRENCH
NTS
3123-111

DSGN E FORD	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE
DR B NORVILLE						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK G SIMPSON						
APVD J HENRY						

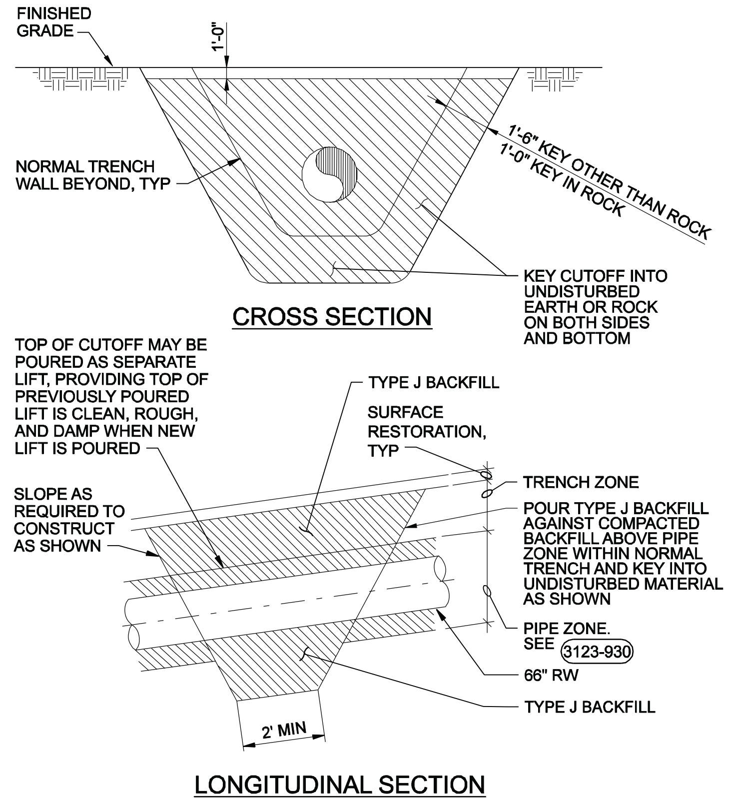
CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

STANDARD DETAILS

STANDARD DETAILS

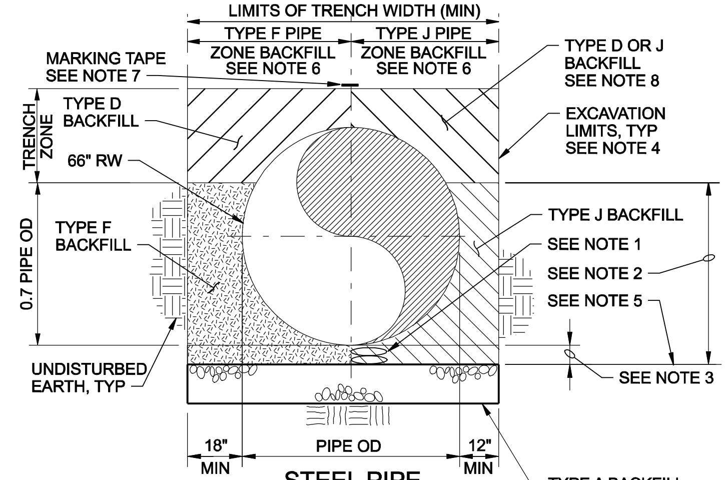
SHEET	63
DWG	S1-SD-4
DATE	JULY 2011
PROJ	171473.20.SP



TRENCH PLUG

NTS

3123-900



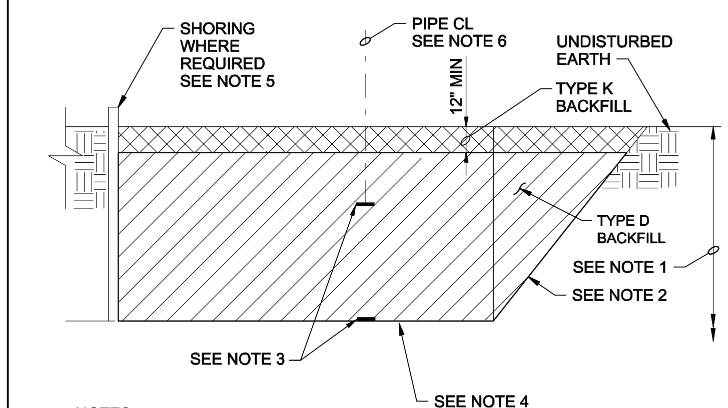
NOTES:

1. SAND BAG SUPPORTS IF TYPE J BACKFILL IS USED. PIPE BEDDING OTHERWISE.
2. PIPE ZONE.
3. PIPE BEDDING SHALL BE 6" MIN FOR TYPE J BACKFILL AND 8" MIN FOR TYPE F.
4. SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION SAFETY AND IN ACCORDANCE WITH OSHA REQUIREMENTS. FOR ROADWAY CROSSINGS, CONSTRUCTION PERMIT FROM ROADWAY OWNER WILL GOVERN THE USE OF SLOPED TRENCH SIDEWALLS.
5. DURING CONSTRUCTION, IF THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, NOTIFY THE ENGINEER, DEWATER AS SPECIFIED.
6. SEE 3123-930A, 3123-930B, 3123-930C, 3123-930D, & 3123-930E FOR TRENCH ZONE.
7. ~~INSTALL MARKING TAPE ONE FOOT ABOVE TOP OF PIPE~~
8. INSTALL TYPE J BACKFILL TO 12" ABOVE TOP OF PIPE OR UP TO 12" BELOW EXST GRADE WHERE INDICATED ON DWGS. 1

TYPICAL PIPE ZONE

NTS

3123-930



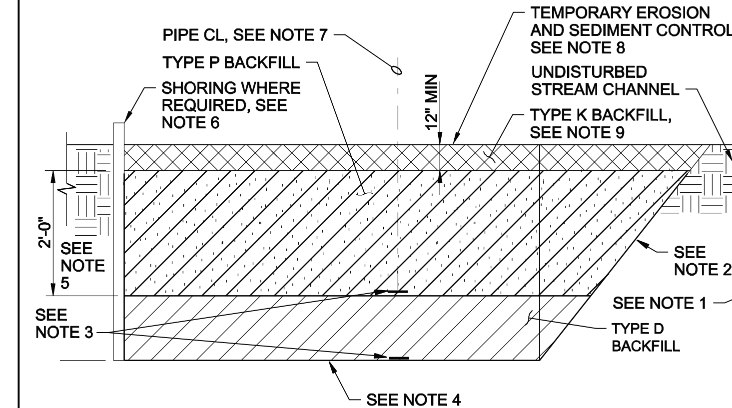
NOTES:

1. TRENCH ZONE.
2. SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION SAFETY AND IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. INSTALL MARKING TAPE 2 FEET BELOW GRADE AND ONE FOOT ABOVE TOP OF PIPE AT CENTERLINE, AS INDICATED.
4. SEE 3123-930.
5. REMOVE SHORING UNLESS OTHERWISE APPROVED BY THE CONSTRUCTION MANAGER.
6. LIMITS OF TRENCH WIDTH 3123-930.

TRENCH ZONE - OPEN COUNTRY SURFACE RESTORATION

NTS

3123-930A



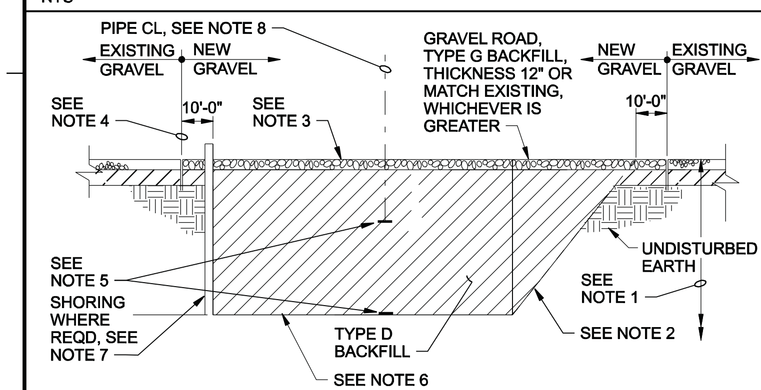
NOTES:

1. TRENCH ZONE.
2. SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION SAFETY AND IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. INSTALL MARKING TAPE 2 FEET BELOW GRADE AND ONE FOOT ABOVE TOP OF PIPE AT CENTERLINE, AS INDICATED.
4. SEE 3123-930.
5. INSTALL TYPE P BACKFILL IN TRENCH ZONE TWO FEET BELOW TYPE K BACKFILL.
6. REMOVE SHORING UNLESS OTHERWISE APPROVED BY THE CONSTRUCTION MANAGER.
7. LIMITS OF TRENCH WIDTH 3123-930.
8. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS PER SPECIFICATION 01 57 13 TEMPORARY EROSION AND SEDIMENT CONTROLS.
9. USE NATIVE TOPSOIL FROM PROJECT SITE.

TRENCH ZONE - VEGETATED STREAM CHANNEL RESTORATION

NTS

3123-930B



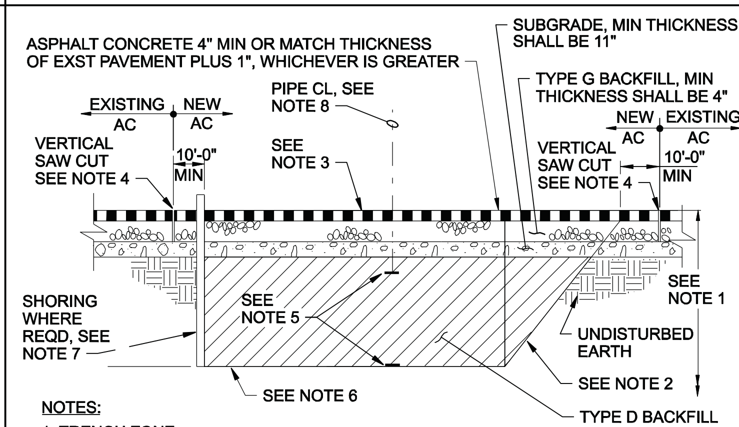
NOTES:

1. TRENCH ZONE.
2. SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION SAFETY AND IN ACCORDANCE WITH OSHA REQUIREMENTS. FOR ROADWAY CROSSINGS, CONSTRUCTION PERMIT FROM ROADWAY PERMITTING AUTHORITY WILL GOVERN THE USE OF SLOPED TRENCH SIDEWALLS.
3. REPLACE GRAVEL ROADWAY SECTION, MINIMUM THICKNESS 12".
4. EXTEND NEW GRAVEL 10 FEET OUTSIDE LIMITS OF TRENCH EXCAVATION EACH SIDE.
5. INSTALL MARKING TAPE 2 FEET BELOW GRADE AND ONE FOOT ABOVE TOP OF PIPE AT CENTERLINE, AS INDICATED.
6. SEE 3123-930.
7. REMOVE SHORING UNLESS OTHERWISE APPROVED BY THE CONSTRUCTION MANAGER.
8. LIMITS OF TRENCH WIDTH 3123-930.

TRENCH ZONE - GRAVEL SURFACE RESTORATION

NTS

3123-930C



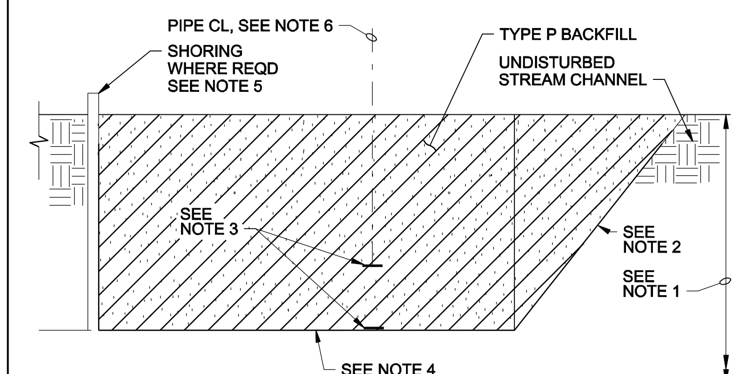
NOTES:

1. TRENCH ZONE.
2. SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION SAFETY IN ACCORDANCE WITH OSHA REQUIREMENTS. FOR ROADWAY CROSSINGS, CONSTRUCTION PERMIT FROM ROADWAY PERMITTING TRENCH SIDEWALLS.
3. REPLACE PAVED ROADWAY SECTION AS INDICATED.
4. CONDUCT SAW CUTS OF EXISTING PAVEMENT STRAIGHT, SQUARE AND PARALLEL TO THE TRENCH, A MINIMUM OF 10' OUTSIDE LIMITS OF TRENCH EXCAVATION. PAINT EDGE OF EXISTING ASPHALT WITH TACK COAT PRIOR TO PAVING. CRACK SEAL AFTER PAVING OPERATION.
5. INSTALL MARKING TAPE 4 FEET BELOW GRADE AND ONE FOOT ABOVE TOP OF PIPE AT CENTERLINE, AS INDICATED.
6. SEE 3123-930.
7. REMOVE SHORING UNLESS OTHERWISE DIRECTED BY THE CONSTRUCTION MANAGER.
8. LIMITS OF TRENCH WIDTH 3123-930, PERMITTING AUTHORITY WILL GOVERN THE USE OF SLOPES AS INDICATED.

TRENCH ZONE - PAVED SURFACE RESTORATION

NTS

3123-930D



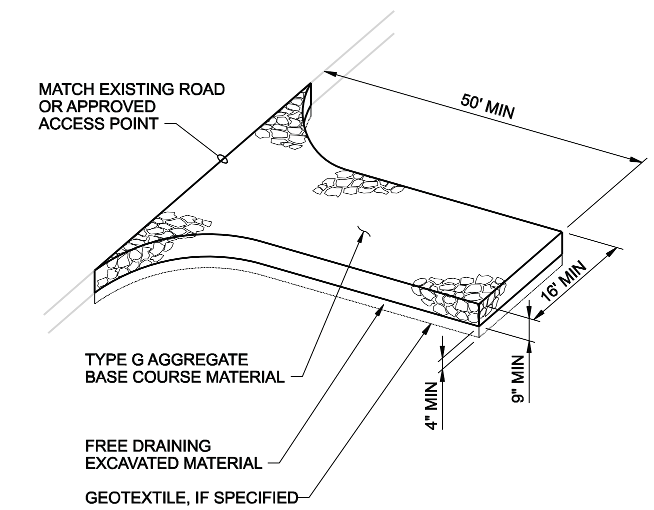
NOTES:

1. TRENCH ZONE.
2. SLOPE TRENCH WALLS OR SHORE EXCAVATIONS FOR CONSTRUCTION SAFETY IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. INSTALL MARKING TAPE 3 FEET BELOW GRADE AND ONE FOOT ABOVE TOP OF PIPE AT CENTERLINE, AS INDICATED.
4. SEE 3123-930.
5. REMOVE SHORING UNLESS OTHERWISE APPROVED BY THE CONSTRUCTION MANAGER.
6. LIMITS OF TRENCH WIDTH 3123-930.
7. IN SOME CASES CLSM MAY EXTEND INTO TRENCH ZONE.

TRENCH ZONE - NON-VEGETATED STREAM CHANNEL RESTORATION

NTS

3123-930E



NOTES:

1. ADDITIONAL GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
2. REMOVE GRAVEL ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF ACCESS ROAD
3. LOCATE AS REQUIRED WITHIN WORK LIMITS TO ACCOMODATE CONSTRUCTION.

GRAVEL CONSTRUCTION ENTRANCE

NTS

3125-130

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON	1	7/13/11	ADDENDUM NO. 1 - 3123-930 CHANGED	BN	JH
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

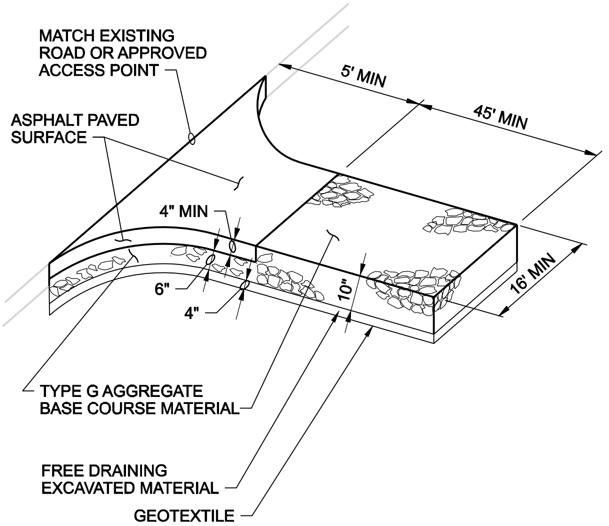
STANDARD DETAILS

STANDARD DETAILS

SHEET	64
DWG	S1-SD-5
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP1SDnD05d_171473.dgn PLOT DATE: 7/25/2011 PLOT TIME: 1:22:52 PM



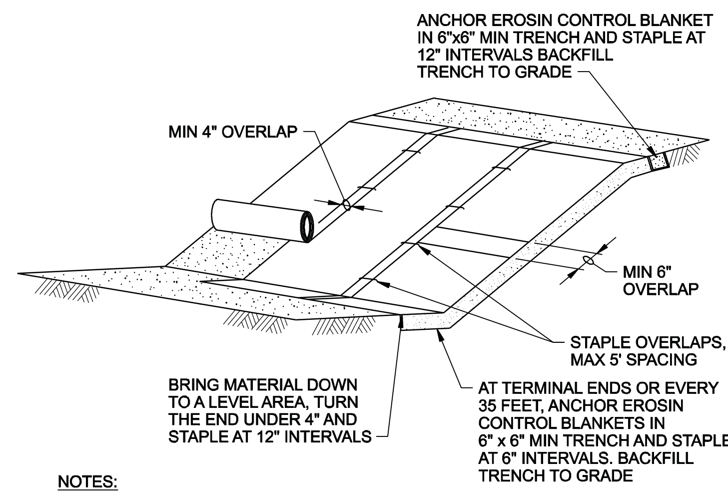
NOTES:

1. ADDITIONAL ASPHALT AND GRAVEL MAY HAVE TO BE ADDED PERIODICALLY TO MAINTAIN PROPER FUNCTION OF THE PAD.
2. REMOVE PAVED ENTRANCE AND REPLACE WITH NEW BASE COURSE PRIOR TO COMPLETION OF ACCESS ROAD.
3. LOCATE AS REQUIRED WITHIN WORK LIMITS TO ACCOMODATE CONSTRUCTION.

PAVED CONSTRUCTION ENTRANCE

NTS

3125-131



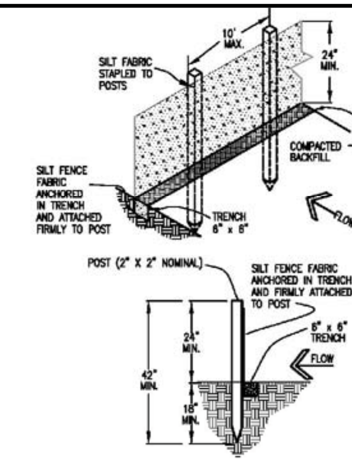
NOTES:

1. DO NOT STRETCH BLANKETS/MATTING TIGHT, ALLOW ROLLS TO MOLD TO ANY IRREGULARITIES.
2. STAPLING PATTERN AS PER MANUFACTURER'S RECOMMENDATIONS.
3. PREP SOIL BEFORE INSTALLATION IN ACCORDANCE WITH SPECIFICATIONS.

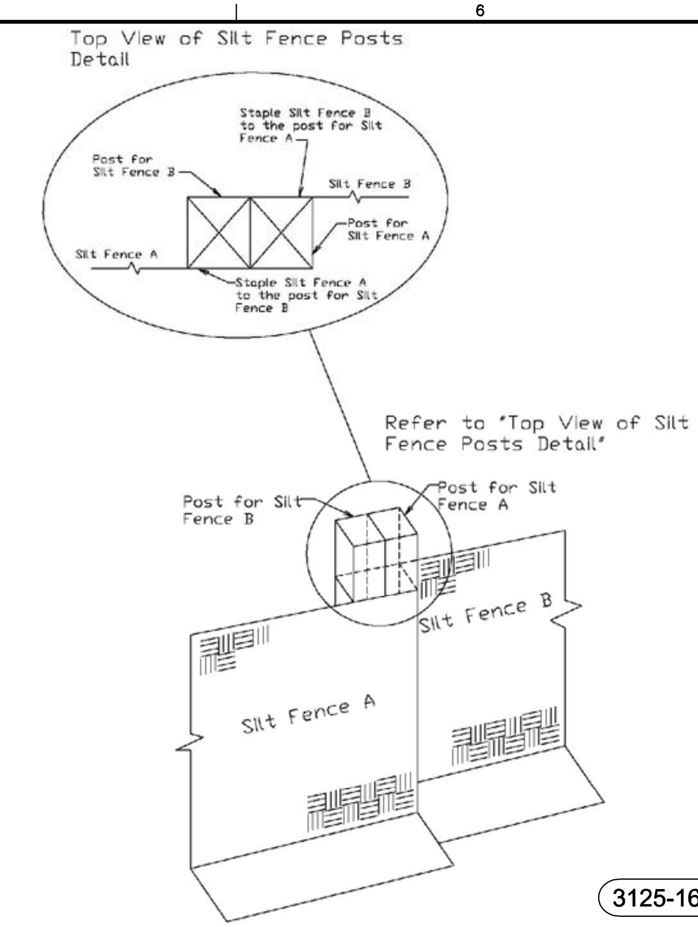
EROSION CONTROL BLANKET

NTS

3125-150



SILT FENCE



SILT FENCE NOTES

INSTALLATION REQUIREMENTS

1. SILT FENCES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. WHEN JOINTS ARE NECESSARY, SILT FENCE GEOTEXTILE SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POST AND SECURELY SEALED.
3. METAL POSTS SHALL BE "STUDDED TEE" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD POSTS SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
4. THE FILTER MATERIAL SHALL BE FASTENED SECURELY TO METAL OR WOOD POSTS USING WIRE TIES, OR TO WOOD POSTS WITH 3/4" LONG #9 HEAVY-DUTY STAPLES. THE SILT FENCE GEOTEXTILE SHALL NOT BE STAPLED TO EXISTING TREES.
5. WHILE NOT REQUIRED, WIRE MESH FENCE MAY BE USED TO SUPPORT THE GEOTEXTILE. WIRE FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 3/4" LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 6" AND SHALL NOT EXTEND MORE THAN 3' ABOVE THE ORIGINAL GROUND SURFACE.
6. ALONG THE TOE OF FILLS, INSTALL THE SILT FENCE ALONG A LEVEL CONTOUR AND PROVIDE AN AREA BEHIND THE FENCE FOR RUNOFF TO POND AND SEDIMENT TO SETTLE. A MINIMUM DISTANCE OF 5 FEET FROM THE TOE OF THE FILL IS RECOMMENDED.
7. THE HEIGHT OF THE SILT FENCE FROM THE GROUND SURFACE SHALL BE MINIMUM OF 24 INCHES AND SHALL NOT EXCEED 36 INCHES; HIGHER FENCES MAY INPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

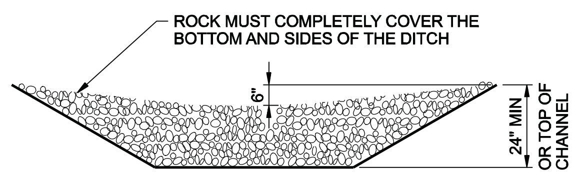
MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT SILT FENCES IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL. DAMAGED, COLLAPSED, UNENTRENCHED OR INEFFECTIVE SILT FENCES SHALL BE PROMPTLY REPAIRED OR REPLACED.
2. SEDIMENT SHALL BE REMOVED FROM BEHIND SILT FENCE WHEN IT ACCUMULATES TO HALF THE EXPOSED GEOTEXTILE HEIGHT.
3. SILT FENCES SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED AS APPROVED BY THE CITY.

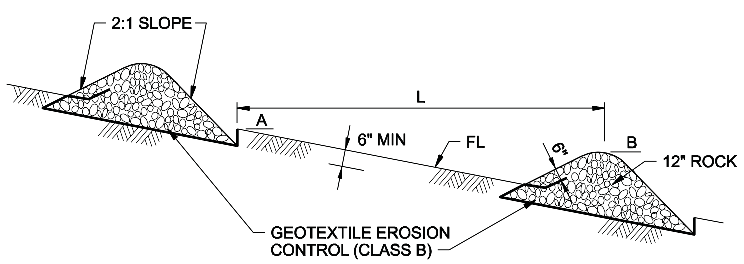
SILT FENCE

NTS

3125-165



CROSS SECTION



L = THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATIONS

DAM SPACING

MAINTENANCE STANDARDS:

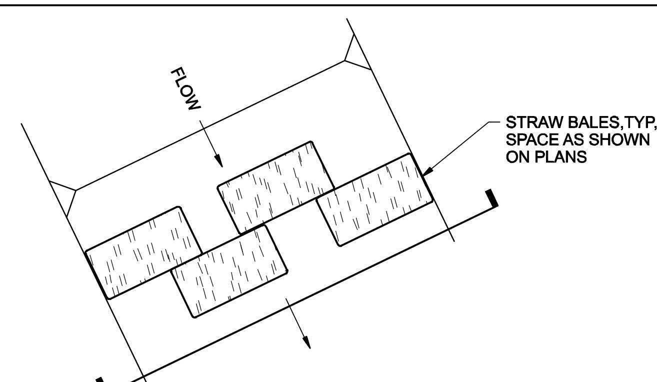
1. ANY SEDIMENT DEPOSITION OF MORE THAN 0.5 FEET SHALL BE REMOVED SO THAT THE CHANNEL IS RESTORED TO ITS DESIGN CAPACITY.
2. THE CHANNEL SHALL BE EXAMINED FOR SIGNS OF SCOURING AND EROSION OF THE BED AND BANKS. IF SCOURING OR EROSION HAS OCCURRED, AFFECTED AREAS SHALL BE PROTECTED BY RIP-RAP OR AN EROSION CONTROL BLANKET OR NET.

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

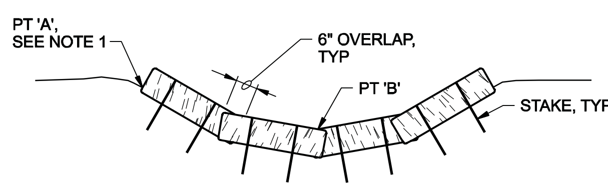
ROCK CHECK DAMS

NTS

3125-160



PLAN



SECTION

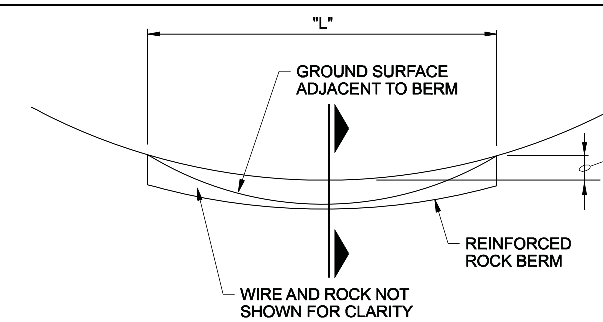
NOTES:

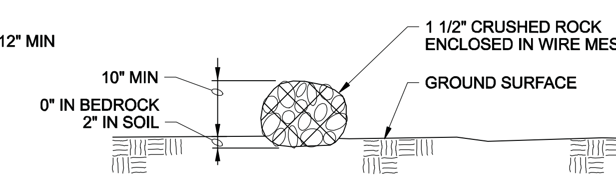
1. POINT 'A' MUST BE 6" MINIMUM HIGHER THAN PT 'B'.
2. STAKING OF BALES IS REQUIRED USING (2)2"x2"x3' LONG WOOD STAKES OR APPROVED EQUAL PER BALE.
3. DRIVE STAKES MINIMUM 12" INTO GROUND AND FLUSH WITH TOP OF BALES.
4. EMBED BALES MINIMUM OF 4" INTO GROUND SURFACE.
5. BIOFILTER BAGS TO BE USED, IF SPECIFIED.

STRAW BALES IN DITCHES

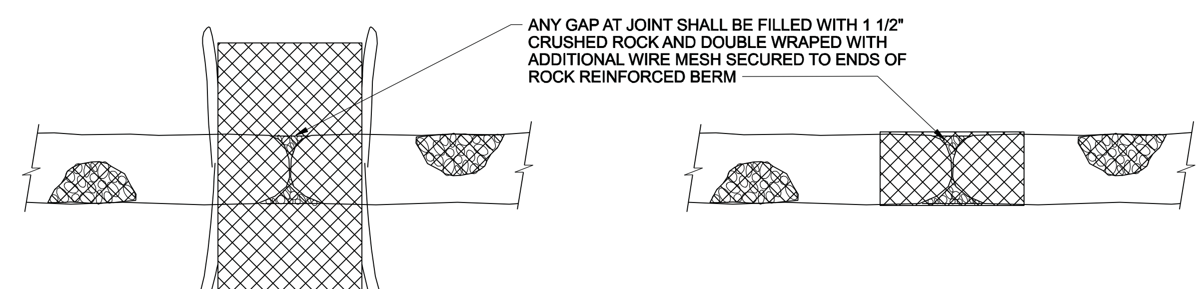
NTS

3125-170





SECTION



JOINT DETAIL

NOTES:

1. CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES). RECYCLED CONCRETE MEETING THE GRADATION MAY BE USED.
2. WIRE MESH SHALL BE FABRICATED OF 10 GAUGE WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1.0 INCH (COMMONLY TERMED CHICKEN WIRE). ROLL WIDTH SHALL BE 48 INCHES.
3. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6-INCH CENTERS ALONG ALL JOINTS AND AT 2-INCH CENTERS ON ENDS OF BERM.
4. FOR CONCENTRATED FLOW AREAS, THE ENDS OF THE REINFORCED ROCK BERM SHALL BE 12" HIGHER THAN THE CENTER OF THE BERM.

ROCK SOCKS

NTS

3125-183

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

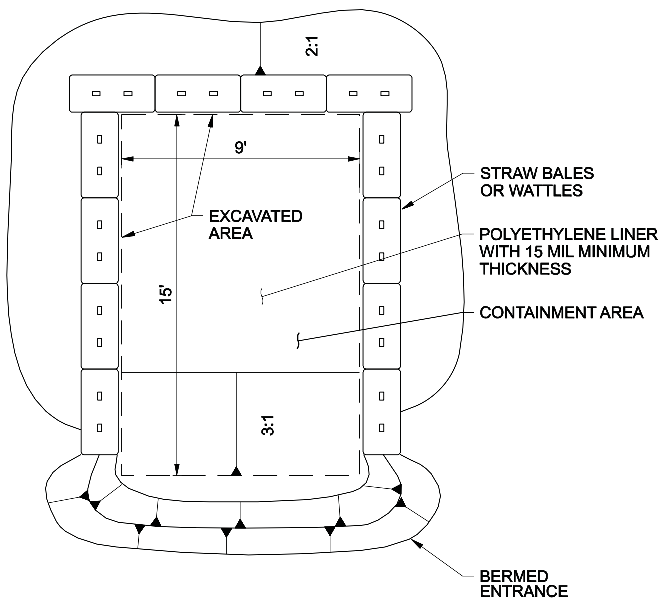
CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

STANDARD DETAILS

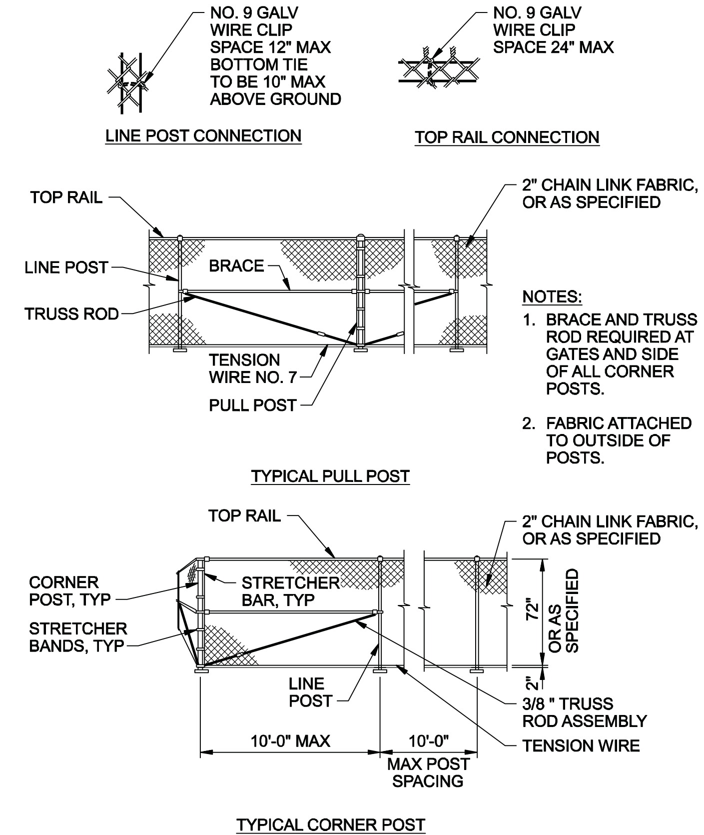
STANDARD DETAILS

SHEET	65
DWG	S1-SD-6
DATE	JULY 2011
PROJ	171473.20.SP



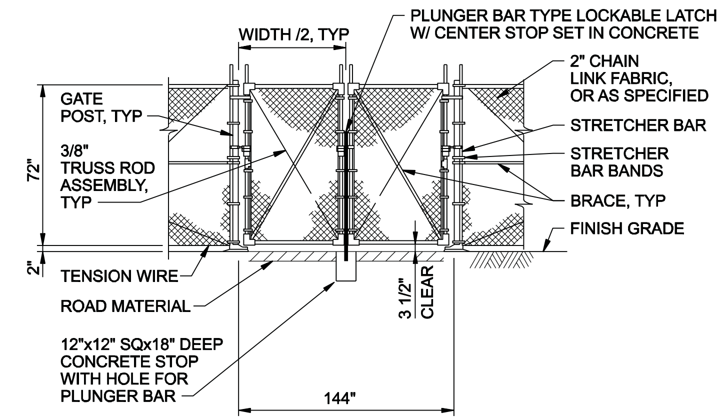
NOTE:
1. PROPERLY CLEAN UP AND DISPOSE OF WASHOUT AT APPROPRIATE LOCATION AFTER CONSTRUCTION.

CONCRETE WASHOUT
NTS
3125-190

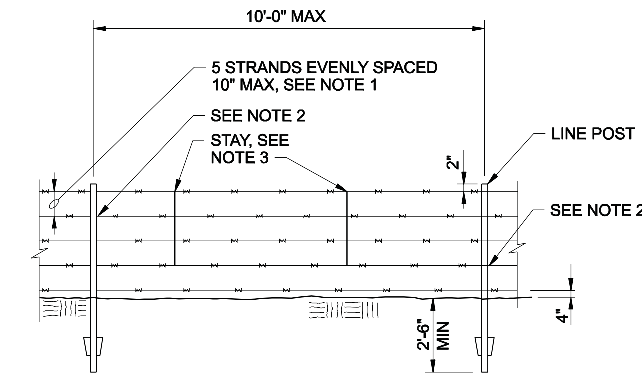


NOTES:
1. BRACE AND TRUSS ROD REQUIRED AT GATES AND SIDE OF ALL CORNER POSTS.
2. FABRIC ATTACHED TO OUTSIDE OF POSTS.

CHAIN LINK FENCE
NTS
3231-410

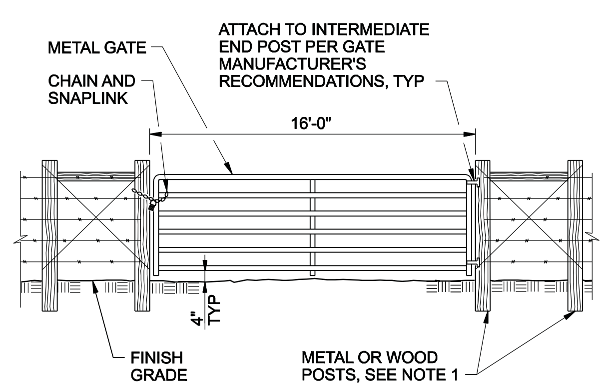


DOUBLE SWING GATE
NTS
3231-415



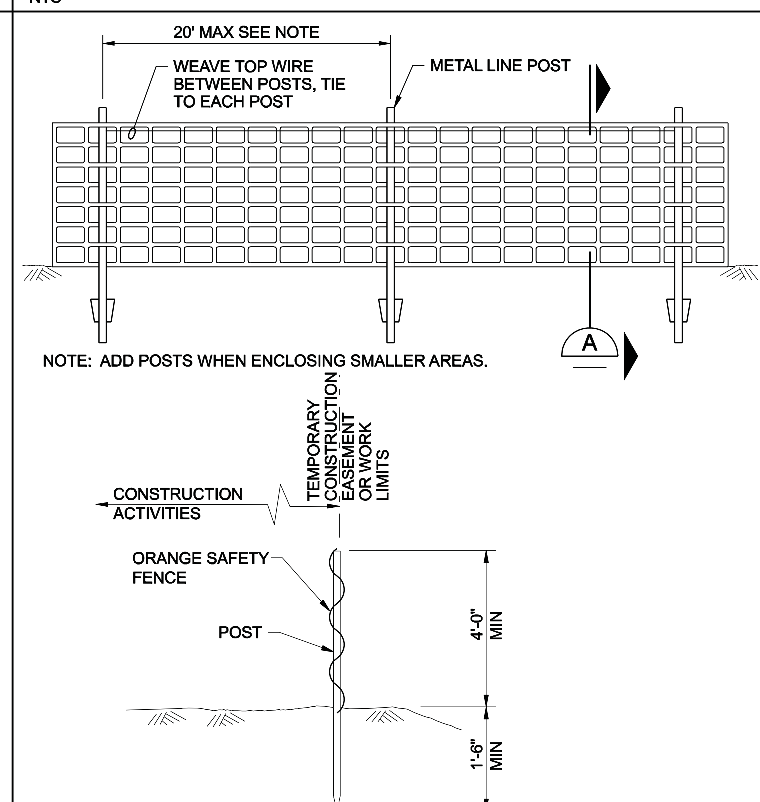
NOTES:
1. SPACING FOR BARBED WIRE FENCE, 5 STRAND SHOWN, ADJUST SPACING ACCORDINGLY FOR 4 STRAND.
2. ATTACH WIRE TO METAL FENCE POSTS WITH CLIPS AS SPECIFIED.
3. 2 STAYS PER PANEL REQUIRED, SPACE EVENLY.

WIRE FENCE
NTS
3231-451



NOTE:
1. IF GALVANIZED TUBULAR STEEL IS USED FOR GATE END POST ASSEMBLY, FILL WITH CONCRETE. PROVIDE 1" HIGH GROUT CAP.

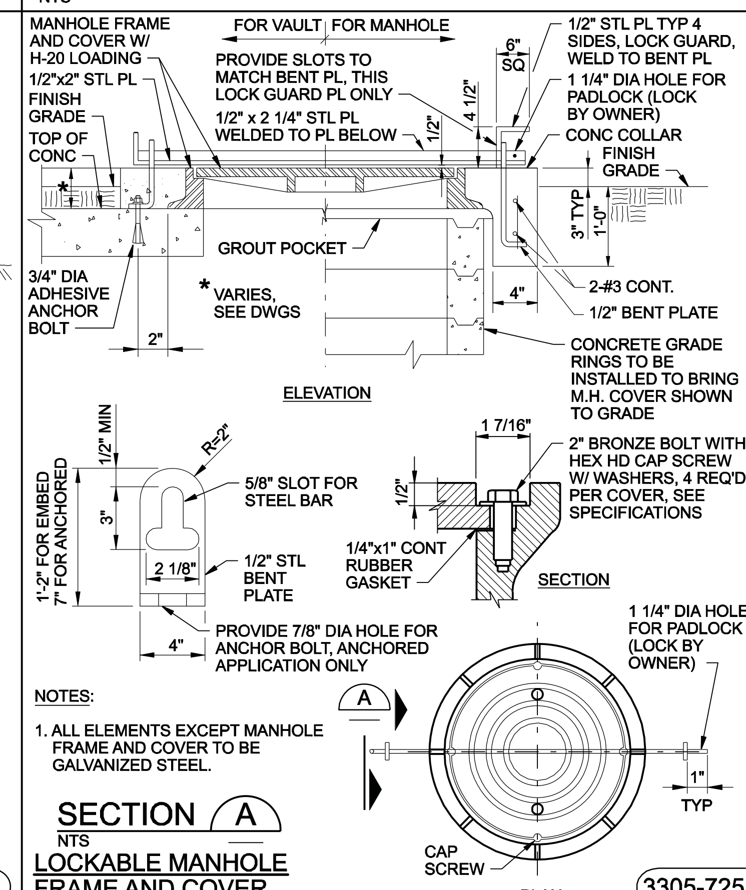
METAL GATE
NTS
3231-452



NOTE: ADD POSTS WHEN ENCLOSING SMALLER AREAS.

SECTION A

ORANGE SAFETY FENCE
NTS
3231-666



NOTES:
1. ALL ELEMENTS EXCEPT MANHOLE FRAME AND COVER TO BE GALVANIZED STEEL.

SECTION A
NTS

LOCKABLE MANHOLE FRAME AND COVER
NTS
3305-725A

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

STANDARD DETAILS

STANDARD DETAILS

SHEET	66
DWG	S1-SD-7
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP1SDnD07d_171473.dgn PLOT DATE: 6/7/2011 PLOT TIME: 10:44:47 AM

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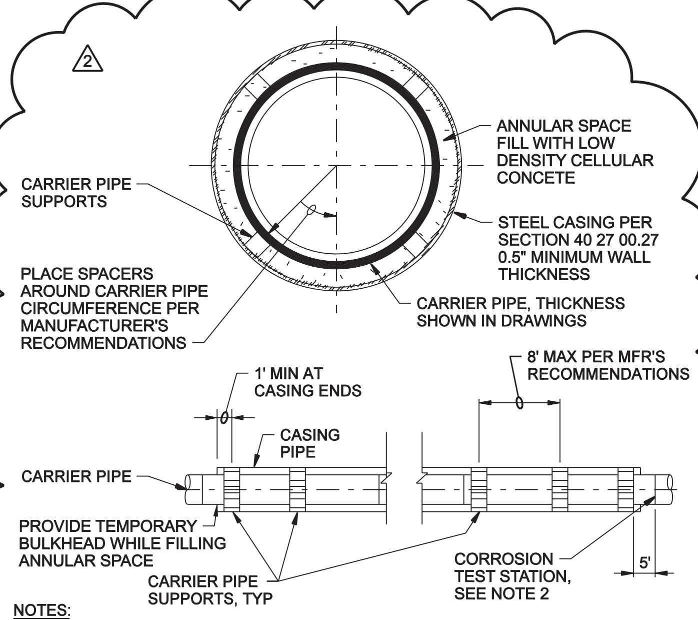
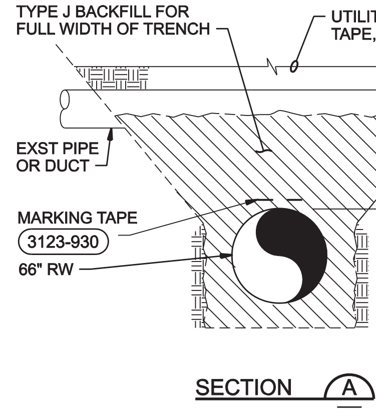


NOTES:

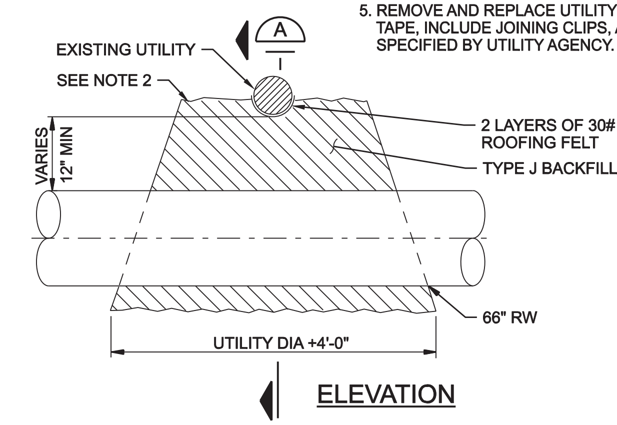
1. INSTALL CASING AND CARRIER PIPE AND OTHER COMPONENTS AS SHOWN IN ACCORDANCE WITH SECTIONS 02 24 32.01, BACKFILL GROUTING FOR OPEN CUT STEEL CASING INSTALLATION, AND 31 60 00.01, INSTALLATION OF CARRIER PIPE IN OPEN CUT STEEL CASING.
2. INSTALL TEST STATION PER 2642-811A, TYPICAL EACH END.
3. PERFORM ELECTRICAL ISOLATION TESTING BETWEEN CASING AND CARRIER PIPE, AS SPECIFIED, PRIOR TO ATTACHING CARRIER PIPE TO ADJACENT PIPELINE.

PIPE WITH CASING - OPEN CUT INSTALLATION
3305-76OB
NTS

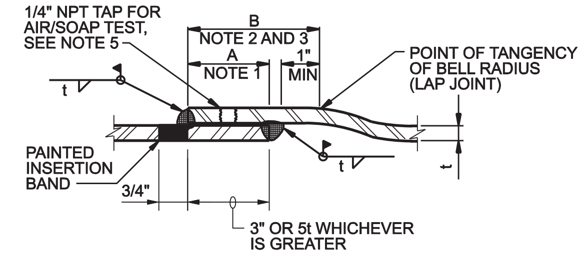


NOTES:

1. SUPPORT EXISTING PIPE OR DUCT DURING INSTALLATION OF NEW PIPE.
2. INSTALL TYPE J BACKFILL TO CENTERLINE OF EXISTING PIPE OR DUCT.
3. UNDERGROUND UTILITY SUPPORT AS INDICATED IS TO BE PROVIDED AT UTILITY CROSSINGS 10" DIAMETER OR LARGER.
4. MEET OR EXCEED UTILITY AGENCY REQUIREMENTS FOR BACKFILL.
5. REMOVE AND REPLACE UTILITY MARKING TAPE, INCLUDE JOINING CLIPS, AS SPECIFIED BY UTILITY AGENCY.



MAJOR UTILITY CROSSING
3305-762
NTS

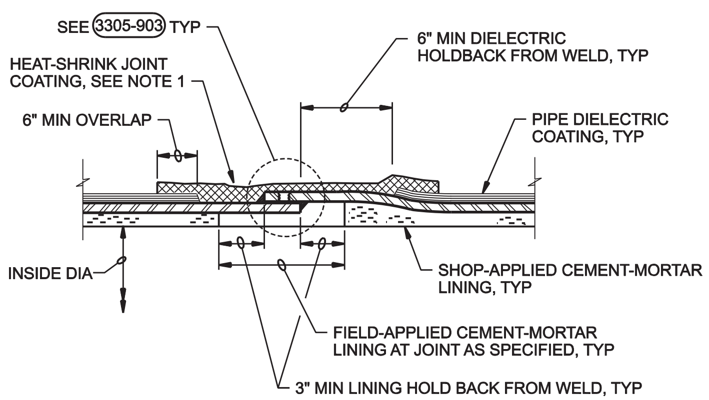


NOTES:

1. DIMENSION "A" CORRESPONDS TO THE COMPLETED JOINT OVERLAP AFTER WELDING. DIMENSION "A" IS THE GREATER OF 3 INCHES OR 5t, MINIMUM FOR STANDARD JOINTS. INCREASE DIMENSION "A" FOR SPECIAL TEMPERATURE CONTROL JOINTS AS FURTHER DISCUSSED IN NOTE 3.
2. PROVIDE THE MINIMUM OVERLAP DIMENSION "A" AND MAINTAIN THE INDICATED HOLDBACK FOR THE WELD AS REQUIRED FOR THE MINIMUM DIMENSION "B" FOR STANDARD JOINTS.
3. INCREASE DIMENSION "B" BY 3 INCHES FOR SPECIAL TEMPERATURE CONTROL JOINTS. AT THE TIME OF INSTALLATION AND PRIOR TO WELDING, INSERT THE SPIGOT INTO THE LENGTHENED BELL TO PROVIDE "A" +3 INCHES MINIMUM OVERLAP. SEE SPECIFICATIONS FOR SPECIAL TEMPERATURE CONTROL JOINT WELDING REQUIREMENTS.
4. CONFIGURATION FOR BELL AND SPIGOT LAP JOINTS SHOWN. CONFIGURATION ON BUTT STRAP JOINTS ARE SIMILAR.
5. INSTALL TAP ON BELL. PERFORM AIR/SOAP TEST AND OTHER WELD TESTS AS REQUIRED IN ACCORDANCE WITH SPECIFICATIONS. PLUG TAP WITH WELDED PLUG AFTER COMPLETION OF SUCCESSFUL AIR/SOAP TEST.
6. FABRICATE AND INSTALL JOINTS WITHIN THE TOLERANCES INDICATED. TOLERANCE REQUIREMENTS APPLY TO BOTH WELDS AND TO BOTH STRAIGHT AND DEFLECTED JOINTS.

DOUBLE LAP JOINT WELD
3305-903
NTS

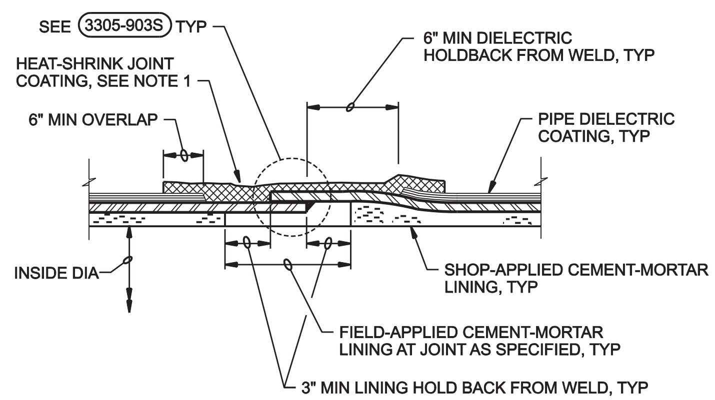
A B C D



NOTES:

1. ELECTRICAL COATING TEST AFTER HEAT-SHRINK JOINT COATING INSTALLATION PER SPECIFICATION 09 81 12, PIPE JOINT COATING - WELD BEFORE BACKFILL.

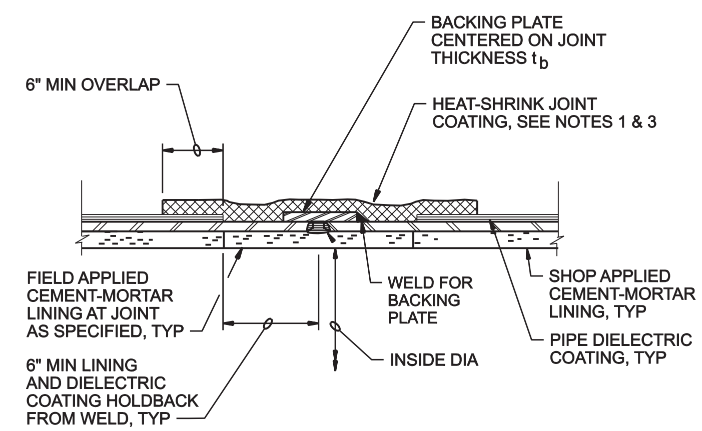
DOUBLE LAP WELDED SLIP JOINT
3305-904
NTS



NOTES:

1. APPLY PER SPECIFICATION SECTION 09 81 10, PIPE JOINT COATING - WELD AFTER BACKFILL, AND WELD AFTER BACKFILL PLAN.

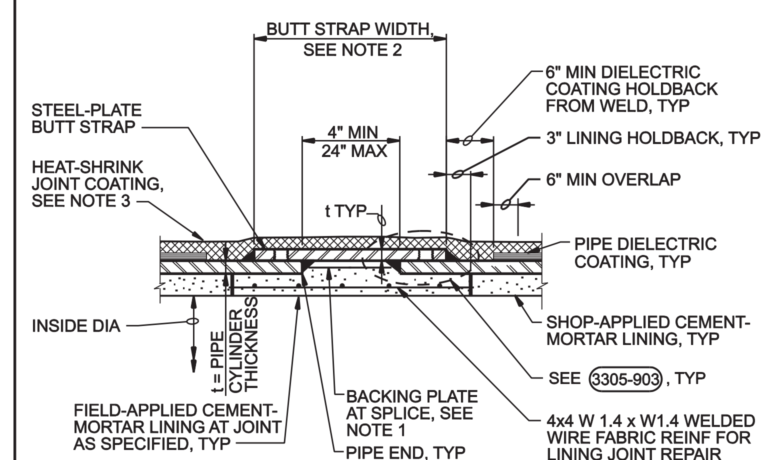
SINGLE LAP WELDED SLIP JOINT
3305-904A
NTS



NOTES:

1. ELECTRICAL COATING TEST AFTER HEAT-SHRINK JOINT COATING INSTALLATION PER SPECIFICATION 09 81 12 PIPE JOINT COATING WELD BEFORE BACKFILL.
2. WELDING AFTER BACKFILL IS NOT ALLOWED.
3. HEAT-SHRINK JOINT COATING NOT REQUIRED ON VERTICAL JOINT OF 90 DEGREE ELBOW INSIDE THE RISER SHAFT.

BUTT WELD
3305-906
NTS



NOTES:

1. FOR FIELD WELDING OF INDIVIDUAL BUTT STRAP PIECES TO EACH OTHER, SEE 3305-910.
2. UNLESS OTHERWISE NOTED, CONFORM BUTT STRAP WIDTH TO THE LIMITATIONS SHOWN FOR PIPE END SEPARATION AND STEEL OVERLAP REQUIREMENTS. THIS INCLUDES THE ADDITIONAL 3-INCH INCREASE IF A TEMPERATURE CONTROL JOINT IS REQUIRED AT A BUTT STRAP JOINT.
3. ELECTRICAL COATING TEST AFTER HEAT-SHRINK JOINT COATING INSTALLATION PER SPECIFICATION 09 81 12, PIPE JOINT COATING - WELD BEFORE BACKFILL.

BUTT STRAP JOINT
3305-908
NTS

COLORADO LICENSED PROFESSIONAL ENGINEER JODY L. HENRY 39310

DSGN E FORD						VERIFY SCALE
DR B NORVILLE						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.
CHK G SIMPSON	2	8/17/11	ADDENDUM NO. 2	BN	JH	
APVD J HENRY	NO.	DATE	REVISION	BY	APVD	

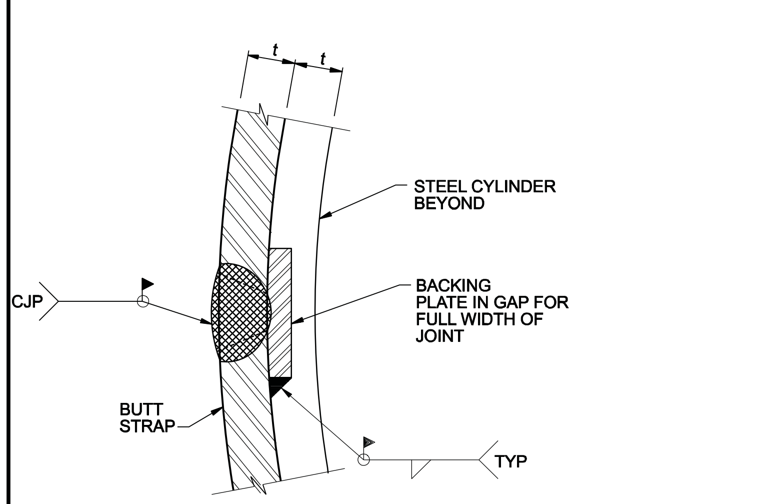
CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

STANDARD DETAILS

STANDARD DETAILS

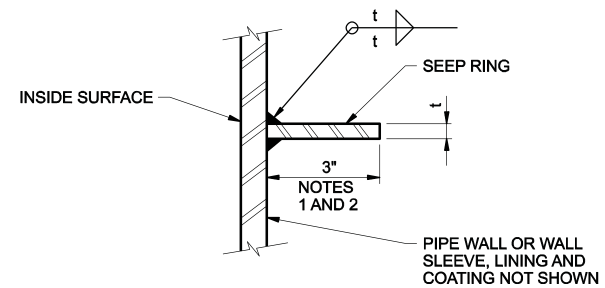
SHEET	67
DWG	S1-SD-8
DATE	JULY 2011
PROJ	171473.20.SP



NOTES:

1. LININGS AND COATINGS ARE NOT SHOWN FOR CLARITY.
2. BEVEL ENDS OF BACKING PLATE AT BUTT STRAP PRIOR TO WELDING OR BACK GOUGE AT CONTACT WITH ADJACENT CYLINDER PRIOR TO COMPLETING INSIDE FILLET WELD.

BUTT STRAP SPLICE
NTS
3305-910

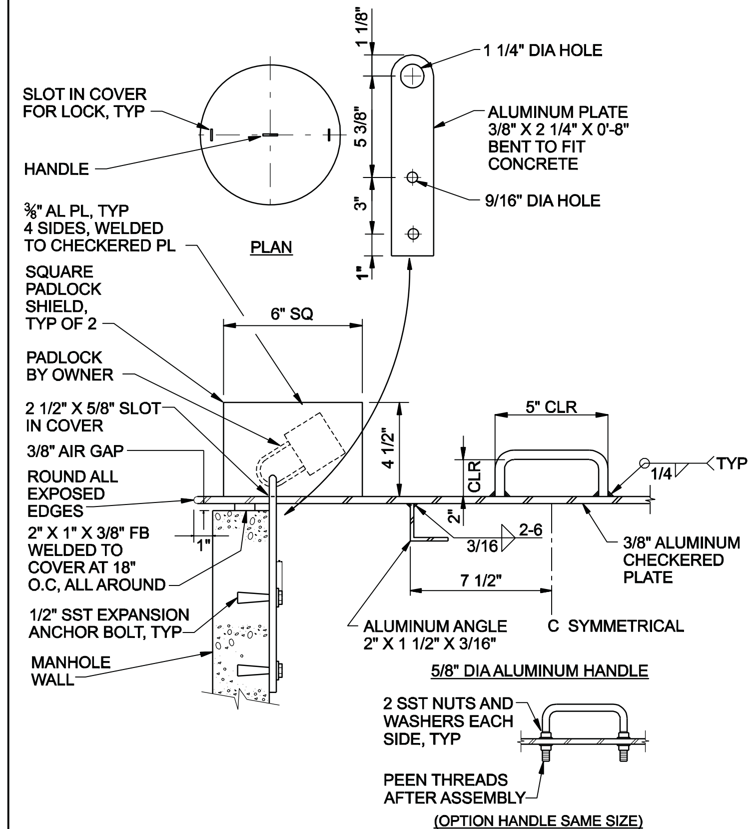


SEEP RING THICKNESS	
PIPE SIZE	THICKNESS-t
30" & UNDER	1/4"
31" TO 60"	5/16"
61" & OVER	3/8"

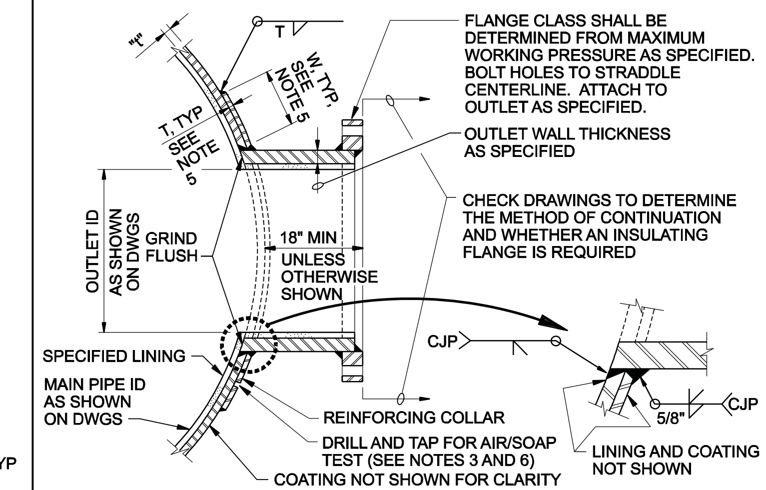
NOTES:

1. PROVIDE 2" CLEAR BETWEEN REINFORCING BARS AND SEEP RING.
2. PROVIDE 3" SEEP RING LENGTH UNLESS OTHERWISE SHOWN.
3. LINE AND COAT AS SPECIFIED.

SEEP RING
NTS
3305-916



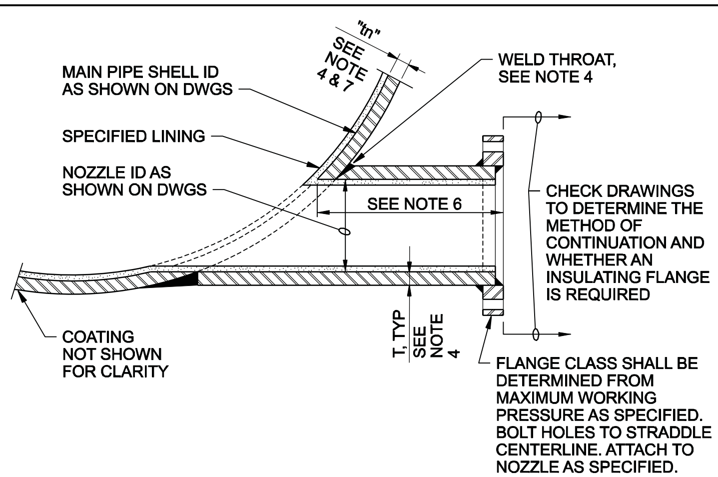
ABOVE GRADE MANHOLE COVER
NTS
3305-926



NOTES:

1. COAT AND LINE ALL EXPOSED SURFACES AS SPECIFIED.
2. "t" INDICATES THE THICKNESS OF THE WSP AT THE STATION WHERE USED.
3. TEST WELDS AND COLLARED OUTLETS IN ACCORDANCE WITH SPECIFICATIONS.
4. MATERIAL FOR CONSTRUCTION OF REINFORCING COLLARS SHALL BE THE SAME AS THE ADJOINING PIPING (MAIN PIPE).
5. DESIGN REINFORCING COLLARS WHERE CENTERLINES OF MAIN PIPE AND COLLARED OUTLET INTERSECT AND ARE ORTHOGONAL. DESIGN IN ACCORDANCE WITH THE LATEST AWWA M-11.
6. PLUG TAP WITH WELDED PLUG AFTER COMPLETION OF AIR/SOAP TEST.

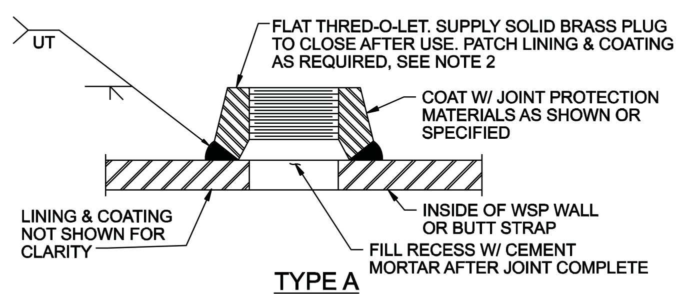
3-INCH AND LARGER REINFORCED OPENINGS - COLLARED OUTLETS
NTS
3305-937



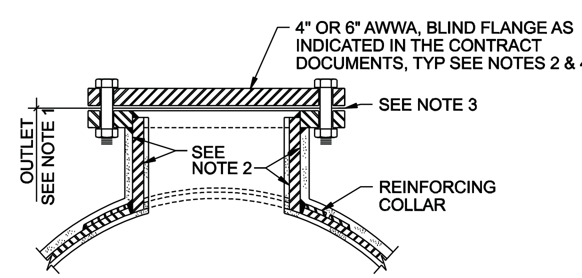
NOTES:

1. COAT AND LINE EXPOSED SURFACES AS SPECIFIED.
2. TEST NOZZLES AND WELDS IN ACCORDANCE WITH SPECIFICATIONS.
3. MATERIAL FOR CONSTRUCTION OF MAIN PIPE SHELL AND NOZZLE IN ACCORDANCE WITH SPECIFICATIONS.
4. DESIGN NOZZLES (T), MAIN PIPE SHELL (tn) AND WELD THROAT IN ACCORDANCE WITH ASME BOILER AND PRESSURE VESSEL CODE SECTION VIII, DIVISION I, RULES FOR CONSTRUCTION OF PRESSURE VESSELS.
5. MATCH INVERTS OF MAIN PIPE SHELL AND NOZZLE OR WITH MINIMAL OFFSET.
6. EXTEND NOZZLE 18" MIN BEYOND MAIN PIPE SHELL UNLESS OTHERWISE SHOWN ON DWGS.
7. SHOP TAPER ASME MAIN PIPE SHELL (tn) AT 4:1 AND BUTT JOINT WELD PER 3305-906 TO AN AWWA MAIN PIPE BELL AND SPIGOT OF CORRESPONDING FIELD LOCATION WALL THICKNESS.

3-INCH AND LARGER REINFORCED OPENINGS - NOZZLES
NTS
3305-937A



TYPE A



NOTES:

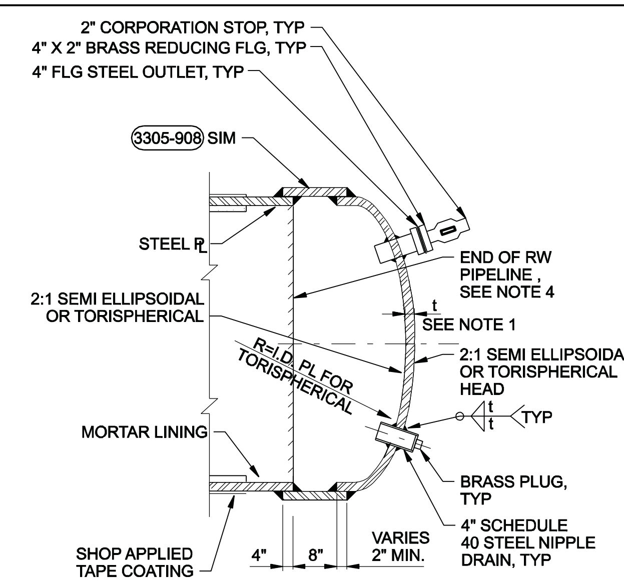
1. FABRICATE OUTLET PER 3305-937.
2. LINE AND COAT AS SPECIFIED.
3. GASKET AS INDICATED IN THE CONTRACT DOCUMENTS.
4. FLANGE CLASS SHALL BE DETERMINED FROM MAXIMUM WORKING PRESSURE AS SPECIFIED

TYPE B

NOTE:

CONTRACTOR MAY USE TYPE A OUTLET FOR UP TO 3" DIA OUTLETS. 4" AND 6" DIA OUTLETS SHALL BE TYPE B.

BURIED WELD LEAD OUTLET
NTS
3305-939

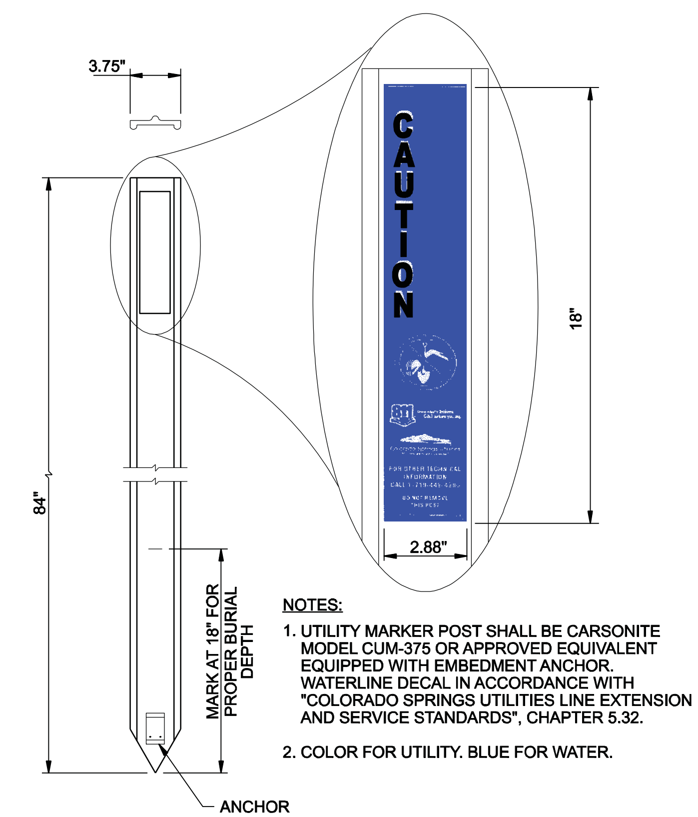


TYPE II

NOTES:

1. WALL THICKNESS (t) EQUALS THICKNESS OF THE ADJOINING PIPE.
2. LINE AND COAT TEST BULKHEAD AND PLAIN END WITH 9 MILS MINIMUM RUST INHIBITING PRIMER.
3. MINIMUM 8" HOLDBACK REQUIRED AFTER TEST HEAD IS CUT OFF.
4. SEE DRAWINGS FOR STATION AND LOCATION OF PIPELINE ENDS.

TEST BULKHEAD
NTS
3305-945A



NOTES:

1. UTILITY MARKER POST SHALL BE CARSONITE MODEL CUM-375 OR APPROVED EQUIVALENT EQUIPPED WITH EMBEDMENT ANCHOR. WATERLINE DECAL IN ACCORDANCE WITH "COLORADO SPRINGS UTILITIES LINE EXTENSION AND SERVICE STANDARDS", CHAPTER 5.32.
2. COLOR FOR UTILITY. BLUE FOR WATER.

PIPE MARKER POST
NTS
3305-960

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

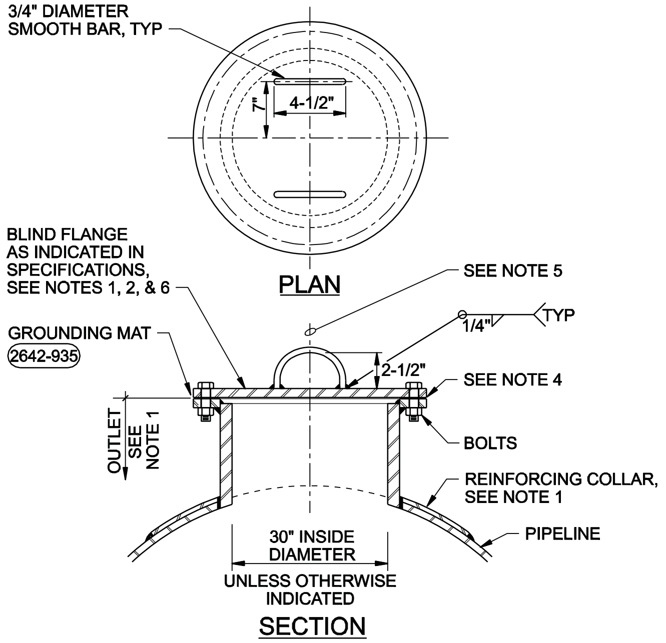
STANDARD DETAILS

STANDARD DETAILS

SHEET	68
DWG	S1-SD-9
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP1SDnD09d_171473.dgn PLOT DATE: 6/7/2011 PLOT TIME: 11:02:23 AM

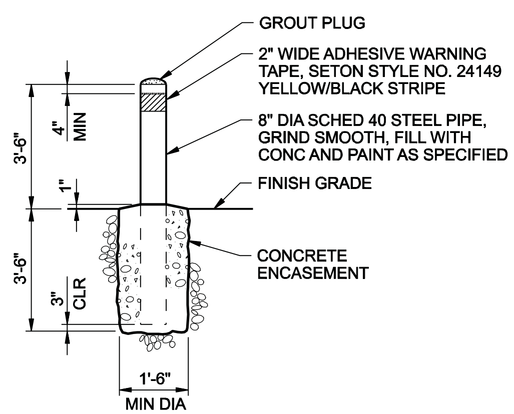


NOTES:

1. FABRICATE OUTLET PER 3305-937 EXCEPT AS MODIFIED HEREIN.
2. LINE AND COAT AS SPECIFIED.
3. AFTER COMPLETION OF BACKFILLING PROVIDE A PERMANENT MARKER DIRECTLY ABOVE MANWAY AS INDICATED ON 3123-930
4. GASKET AS INDICATED IN THE SPECIFICATIONS.
5. TOP CENTER OF PIPELINE EXCEPT WHERE SHOWN DIFFERENT.
6. FLANGE CLASS SHALL BE DETERMINED FROM MAXIMUM WORKING PRESSURE AS SPECIFIED.

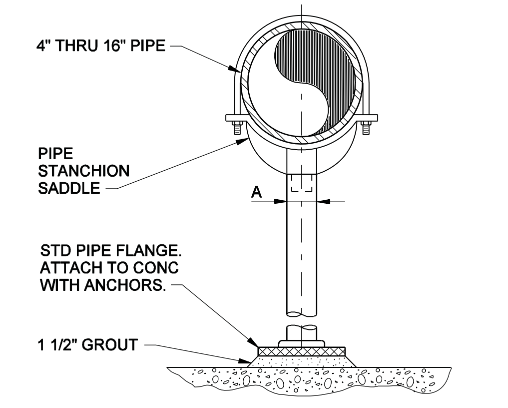
BURIED ACCESS MANWAY 3305-962

NTS



GUARDPOST - EXTERIOR 3471-810

NTS



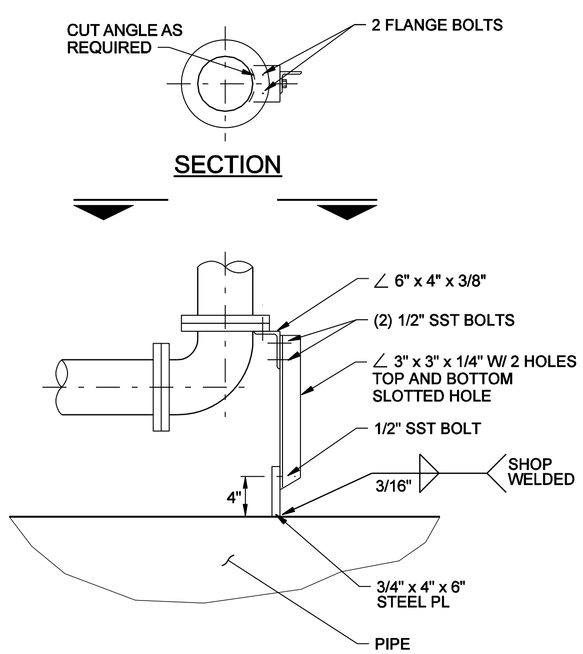
DIMENSION TABLE	
PIPE SIZE	A
4"	3"
5"	3"
6"	3"
8"	3"
10"	3"
12"	3"
16"	4"

NOTES:

1. FOR BASE, HEIGHT, AND FLANGE DIMENSIONS, SEE TABLE
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD WITH 2-INCH EXTENSION BEYOND SADDLE ON EACH SIDE.

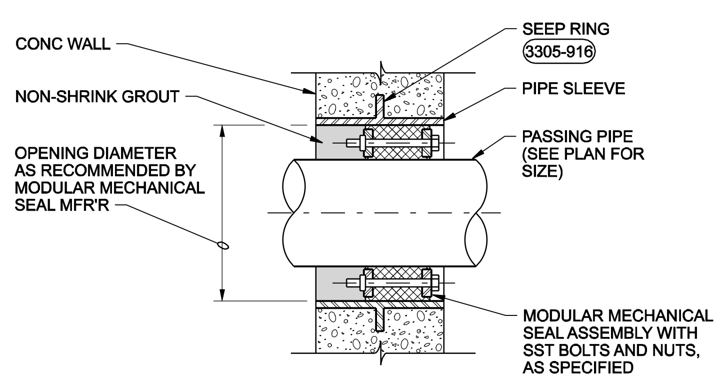
PIPE SUPPORT 4005-501A

NTS



AIR/VAC VALVE SUPPORT 4005-501B

NTS

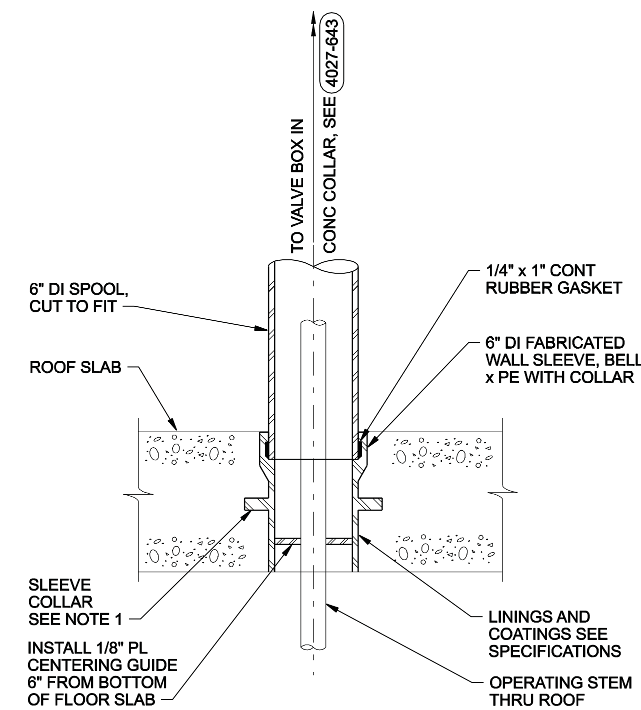


NOTES:

1. PIPE SLEEVE NOT REQUIRED FOR CORE DRILL OPENINGS OR PRECAST CONCRETE WALLS.

WALL PIPE PENETRATION SEAL 4027-607

NTS

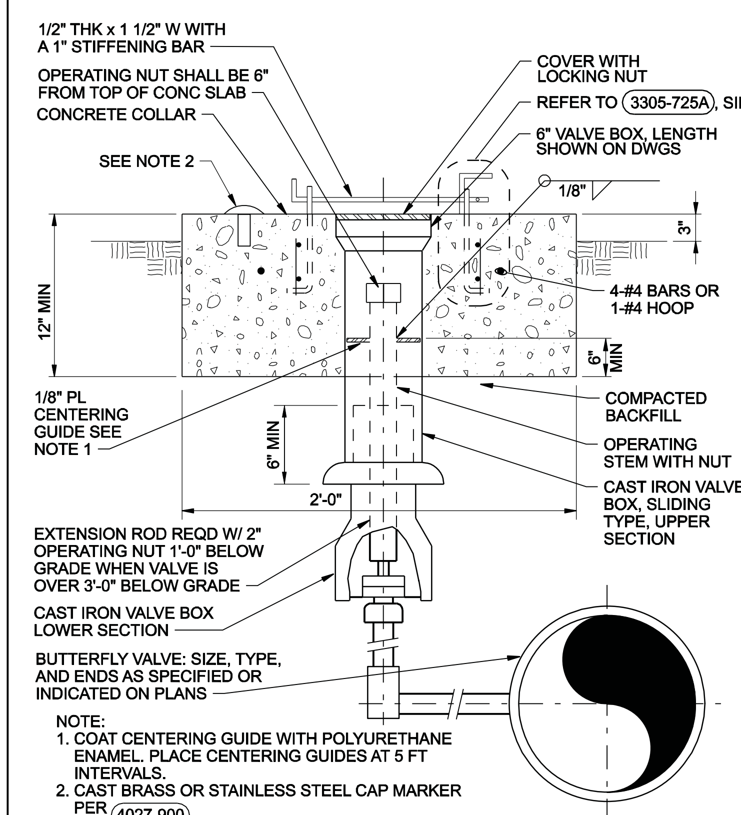


NOTE:

1. REINFORCING BARS IN CONCRETE SHALL MAINTAIN 2" CLEAR DISTANCE FROM COLLAR.

DUCTILE IRON ROOF SLAB SLEEVE 4026-623

NTS



NOTE:

1. COAT CENTERING GUIDE WITH POLYURETHANE ENAMEL. PLACE CENTERING GUIDES AT 5 FT INTERVALS.
2. CAST BRASS OR STAINLESS STEEL CAP MARKER PER 4027-900

VALVE BOX IN CONCRETE COLLAR 4027-643

NTS

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD
DR	B NORVILLE
CHK	G SIMPSON
APVD	J HENRY

NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

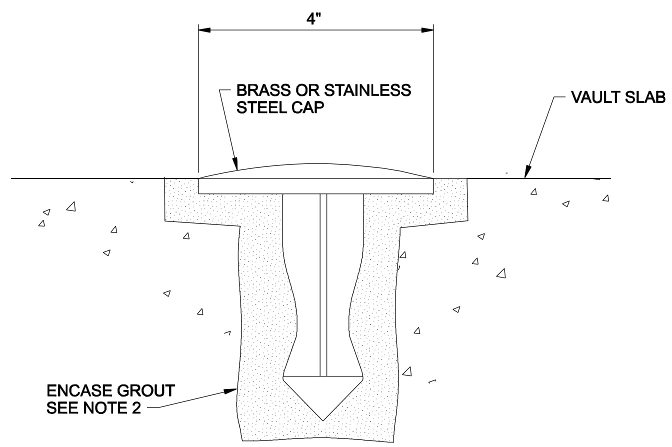
STANDARD DETAILS

STANDARD DETAILS

SHEET	69
DWG	S1-SD-10
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP1SDnD10d_171473.dgn PLOT DATE: 6/7/2011 PLOT TIME: 11:01:30 AM



NOTES:
1. CAST TAG INTO SLAB.
2. FOR EXISTING SLAB, DRILL 1" DIAMETER HOLE 4" DEEP. CLEAN HOLE, INSERT TAG, MARK OUTLINE OF TAG. ENLARGE HOLE TO PROVIDE COUNTER SUNK DEPTH OF CAP. USE NON-SHRINK GROUT TO FILL HOLE, INSERT TAG. CLEAN AREA.
3. SEE SPECIFICATIONS FOR CAP MARKINGS.

MARKER TAG
NTS
4027-900

COLORADO LICENSED JODY L. HENRY 39310 PROFESSIONAL ENGINEER

DSGN	E FORD					
DR	B NORVILLE					
CHK	G SIMPSON					
APVD	J HENRY	NO.	DATE	REVISION	BY	APVD

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CH2MHILL
Colorado Springs, CO 80903

SOUTHERN DELIVERY SYSTEM
RAW WATER PIPELINE
SOUTH SECTION ONE

STANDARD DETAILS

STANDARD DETAILS

SHEET	70
DWG	S1-SD-11
DATE	JULY 2011
PROJ	171473.20.SP

Colorado Springs Utilities Project Number: SDS-002 CSU Work Order Number: 1146977

FILENAME: SP1SDnD11d_171473.dgn PLOT DATE: 6/7/2011 PLOT TIME: 11:04:09 AM