SAND CREEK RESTORATION

A PORTION OF SAND CREEK CHANNEL STERLING RANCH
LOCATED IN SECTIONS 33, 28, TOWNSHIP 12S, RANGE 65W OF THE 6TH PRINCIPAL MERIDIAN
COUNTY OF EL PASO, STATE OF COLORADO

PUBLIC IMPROVEMENT CONSTRUCTION PLANS

EPC STORMWATER REVIEW COMMENTS ARE SHOWN IN ORANGE BOXES WITH BLACK TEXT

Please include completed GEC checklist with next submittal. Checklists can be found at: https://publicworks.elpasoco.com/stormwater/

AGENCIES

OWNER/DEVELOPER:	SR LAND, LLC 20 BOULDER CRESCENT, SUITE 201 COLORADO SPRINGS, CO 80903 JAMES F. MORLEY (719) 471–1742
CIVIL ENGINEER:	JR ENGINEERING, LLC 5475 TECH CENTER DRIVE COLORADO SPRINGS, CO 80919 MIKE BRAMLETT P.E. (303) 267–6240
COUNTY ENGINEERING:	EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT 2880 INTERNATIONAL CIRCLE, SUITE 110 COLORADO SPRINGS, CO 80910 JEFF RICE, P.E. (719) 520–6300
TRAFFIC ENGINEERING:	EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS 3275 AKERS DRIVE COLORADO SPRINGS, CO 80922 JENNIFER IRVINE, P.E. (719) 520–6460
WATER RESOURCES:	STERLING RANCH METRO DISTRICT ENGINEERS JDS–HYDRO CONSULTANTS 545 E. PIKES PEAK AVE., SUITE 300 COLORADO SPRINGS, CO 80903 JOHN MCGINN (719) 668–8769
FIRE DISTRICT:	BLACK FOREST FIRE PROTECTION DISTRICT 11445 TEACHOUT ROAD COLORADO SPRINGS, CO 80908 CHIEF BRYAN JACK (719) 495–4300
GAS DEPARTMENT:	COLORADO SPRINGS UTILITIES 7710 DURANT DR. COLORADO SPRINGS, CO 80947 TIM WENDT (719) 668–3556
ELECTRIC DEPARTMENT:	MOUNTAIN VIEW ELECTRIC 11140 E. WOODMEN ROAD FALCON, CO 80831 (719) 495–2283
COMMUNICATIONS:	QWEST COMMUNICATIONS (U.N.C.C. LOCATORS) (800) 922–1987 AT&T (LOCATORS) (719) 635–3674
COMMUNICATIONS:	QWEST COMMUNICATIONS (U.N.C.C LOCATORS) (800) 922–1987 AT&T (LOCATORS) (719) 635–3674
GAS:	STEPHEN BACON SR. ROW AGENT II COLORADO INTERSTATE GAS CO. (KINDER MORGAN) 2 N. NEVADA AVE. COLORADO SPRINGS, CO 80903 719–659–5936
GAS:	CRAIG KEIRSEY REAL ESTATE | MAGELLAN MIDSTREAM PARTNERS, L.P. ONE WILLIAMS CENTER, OTC–8, TULSA, OK 74172 918–574–7986

VICINITY MAP
1" = 1000'

SHEET INDEX

1	–	COVER SHEET
2	–	GENERAL NOTES
3	–	LEGEND
4	–	EARTHWORK & PHASING PLAN
5–8	–	DEMOLITION PLAN
9	–	TYPICAL SECTIONS
10–14	–	HORIZONTAL CONTROL PLAN
15–20	–	CHANNEL PLAN & PROFILE
21–31	–	CROSS SECTIONS
32–39	–	POND PLANS
40–45	–	GSB DETAILS
46	–	CONSTRUCTION DETAILS
47	–	STRUCTURAL DETAILS
48–52	–	MAINTENANCE ACCESS PLAN & PROFILE
52	–	TOTAL SHEETS

Replace with Statements for GEC Plan within Construction Drawing Set (GEC Checklist Item gg andd ii)

Incorporate GEC Plans into CDs or update GEC_v2 to match CD proposed design

JR-UPDATED. STATEMENTS NOW MATCH ITEMS gg AND ii FROM THE GEC CHECKLIST

EL PASO COUNTY STATEMENT

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTORS DISCRETION.

JENNIFER IRVINE, P.E. DATE

COUNTY ENGINEER/ECM ADMINISTRATOR

OWNER/DEVELOPER STATEMENT

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN.

JAMES F. MORLEY DATE

SR LAND, LLC
20 BOULDER CRESCENT, SUITE 201
COLORADO SPRINGS, CO 80903

ENGINEER'S STATEMENT

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECT SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR DETAILED ROADWAY, DRAINAGE, GRADING AND EROSION CONTROL PLANS AND SPECIFICATIONS, AND SAID PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH APPLICABLE MASTER DRAINAGE PLANS AND MASTER TRANSPORTATION PLANS. SAID PLAN AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR ROADWAY AND DRAINAGE FACILITIES ARE DESIGNED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

COLORADO REGISTERED MIKE BRAMLETT 32314 PROFESSIONAL ENGINEER

MIKE A. BRAMLETT, P.E. DATE
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42
2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40
3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82

BASIS OF BEARINGS

THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. AS MONUMENTED AT THE SOUTHWEST CORNER OF SAID BY A 2–1/2" ALUMINUM CAP STAMPED "LS 11624" AND AT THE SOUTEAST CORNER OF SAID SOUTHWEST QUARTER BY A 2–1/2" ALUMINUM CAP STAMPED "LS 11624", SAID LINE BEARS N89°14'14"E, A DISTANCE OF 2,722.69 FEET.

PCD-ENGINEERING REVIEW COMMENTS IN BLUE BOXES WITH BLUE TEXT

Engineering Review
12/14/2021 2:32:23 PM
dsdrice
JeffRice@elpasoco.com
(719) 520-7877
EPC Planning & Community Development Department

See comment letter also.

Add PCD Project Number: CDR-20-004

Know what's below. Call before you dig.

DISTRICT APPROVALS

THESE DOCUMENTS HAVE BEEN REVIEWED AND APPROVED FOR STORM DRAIN AND ASSOCIATED UTILITY SERVICE CONSTRUCTION.

FOR AND ON BEHALF OF THE STERLING RANCH METRO DISTRICT DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419–3024

J·R ENGINEERING
A Westrian Company
Centennial 303–740–9393 • Colorado Springs 719–593–2593
Fort Collins 970–491–9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H–SCALE	N/A
V–SCALE	N/A
DATE	10/21/21
DESIGNED BY	SCH
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

COVER SHEET

SHEET 1 OF 52

JOB NO. 25188.04

x:\2510000.all\25188.04\Drawing\sheet dwgs\Cover Sheet\25188.04CV01.dwg, CV01, 10/21/2021 4:16:44 PM, VaughnD

CONSTRUCTION NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN COMPLIANCE WITH EL PASO COUNTY ENGINEERING CRITERIA MANUAL AND EL PASO COUNTY DRAINAGE CRITERIA MANUAL.

2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF THE WORK. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE PLANS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF OR A DEFINITE LOCATION OF EXISTING UNDERGROUND UTILITIES. ANY DAMAGE TO THE UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.

3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
   3.1. EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
   3.2. CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL VOLUMES 1&2

4. THE CONTRACTOR WILL HOLD A PRE-CONSTRUCTION MEETING WITH THE EL PASO COUNTY ENGINEERING DEPARTMENT REPRESENTATIVE AND THE ENGINEER PRIOR TO CONSTRUCTION OF PUBLIC IMPROVEMENTS.

5. ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.

6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT, REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FUGITIVE DUST PERMITS.

7. CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND EPC. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.

8. CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.

9. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.

10. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DOT, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.

11. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY.

12. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER OR APPLICABLE ENTITY.

13. EL PASO COUNTY SHALL BE NOTIFIED 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

14. ALL WORK SHALL BE DONE TO THE LINES, GRADES, SECTIONS, AND ELEVATIONS SHOWN ON THE PLANS UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER.

15. ALL RANGE POINTS, TIES, BENCH MARKS, AND OTHER SURVEY CONTROL POINTS WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION MUST BE PRESERVED.

16. THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THOSE AREAS WITHIN THE LIMITS OF DISTURBANCE AND/OR TOES OF SLOPE AS SHOWN ON THE PLANS AND CROSS SECTIONS. ANY DISTURBANCE BEYOND THESE LIMITS SHALL BE RESTORED TO ORIGINAL CONDITIONS AT THE CONTRACTOR'S EXPENSE. CONSTRUCTION ACTIVITIES, IN ADDITION TO NORMAL CONSTRUCTION PROCEDURES, SHALL INCLUDE THE PARKING OF VEHICLES OR EQUIPMENT, DISPOSAL OF LITTER AND ANY OTHER ACTION WHICH WOULD ALTER EXISTING CONDITIONS AS APPROVED.

17. CONSTRUCTION ACTIVITY SHALL BE SCHEDULED WITH MINIMUM IMPACT TO PEDESTRIAN AND VEHICULAR TRAFFIC. ALLOWABLE WORK HOURS SHALL BE AS SPECIFIED IN THE PROJECT SPECIAL PROVISIONS.

18. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL UTILITIES AND STRUCTURES AFFECTED BY THE WORK AND ANY DAMAGE SHALL BE REPAIRED AND RESTORED TO THE SATISFACTION OF THE ENGINEER OR APPLICABLE ENTITY.

19. THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN TEMPORARY TRAFFIC CONTROL DEVICES NECESSARY THROUGHOUT THE DURATION OF CONSTRUCTION IN CONFORMANCE WITH TRAFFIC CONTROL PLANS. NO LANE CLOSURES WILL BE PERMITTED UNLESS OTHERWISE SPECIFIED IN THE PROJECT SPECIAL PROVISION "TRAFFIC CONTROL".

20. THE CONTRACTOR SHALL MAINTAIN PAVEMENT MARKINGS ON THE ROADWAYS DURING ALL PHASES OF CONSTRUCTION IN ACCORDANCE WITH MUTCD AND CDOT STANDARDS.

21. WATER SHALL BE USED AS A DUST PALLIATIVE WHERE REQUIRED. LOCATIONS SHALL BE AS ORDERED. WATER WILL NOT BE PAID FOR SEPARATELY.

22. THE CONTRACTOR SHALL OBTAIN A STATE CONSTRUCTION DEWATERING DISCHARGE PERMIT FOR DISCHARGES TO ANY ROADWAY DITCHES, STORM SEWER, CHANNEL, IRRIGATION DITCH, ANY STREAM THAT IS TRIBUTARY TO THE AFOREMENTIONED FACILITIES, OR ANY WATERS OF THE UNITED STATES.

23. DEWATERING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 107 OF THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

24. CONTRACTOR SHALL NOTIFY ALL BUSINESSES AND RESIDENTS, IN WRITING, PRIOR TO ANY INTERRUPTION IN UTILITY SERVICE. NOTICE MUST BEAR ALL APPROPRIATE CONTACT INFORMATION, AND AN EMERGENCY NUMBER FOR AFTER HOURS CALLS.

25. AT THE COMPLETION OF CONSTRUCTION AND PRIOR TO PROJECT CLOSEOUT, THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF PLANS MARKED "AS-BUILT". THE PLANS SHALL SHOW ANY AND ALL VARIATIONS FROM THE APPROVED PLAN SET.

26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A SITE SPECIFIC STAGING PLAN FOR ACCESS TO THE WORK AREAS AND FIELD FACILITIES TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO BEGINNING CONSTRUCTION. ALL COSTS ASSOCIATED WITH THE CONSTRUCTION OF TEMPORARY INGRESS/EGRESS SHALL BE PAID FOR UNDER THE LUMP SUM TRAFFIC CONTROL. EARTHWORK, DRAINAGE, AND OTHER ITEMS RELATED TO THE ACCESS SHALL BE SUBSIDIARY TO THE WORK INCLUDING EROSION CONTROL MEASURES FOR RESTORATION OF THE SITE TO ORIGINAL CONDITION.

27. THE CONTRACTOR SHALL PROTECT EXISTING WETLANDS WITH TEMPORARY FENCING BEFORE ANY GROUND DISTURBANCE BEGINS. WETLANDS AREAS TO BE PROTECTED ARE SHOWN ON THE PLANS.

GRADING NOTES:

1. SAND CREEK IS AN ACTIVE MAJOR DRAINAGEWAY WITH PERENNIAL BASE FLOWS. CONTRACTOR SHALL ANTICIPATE STORMWATER INFLOWS TO THE SITE DURING CONSTRUCTION AND PROVIDE A MEANS OF CONVEYANCE/REMOVAL OF ANY CONTINUOUS INFLOWS.

2. THERE IS A LIKELIHOOD FOR LARGE FLOW EVENTS IN SAND CREEK WHICH COULD JEOPARDIZE CONSTRUCTION. THE LIKELIHOOD OF THESE EVENTS CHANGES WITH THE SEASONS. THE CONTRACTOR SHOULD ACCOUNT FOR THE EVENTUALITY OF THESE LARGE FLOW EVENTS BASED ON THE TIMING OF CONSTRUCTION.

3. DEWATERING.
   3.a. DEWATERING/BYPASS PUMPING OF SAND CREEK SHALL OCCUR IN ADVANCE OF CONSTRUCTION ACTIVITIES.
   3.b. THE CONTRACTOR SHALL OBTAIN A CONSTRUCTION DEWATERING (CDW) PERMIT FROM CDPHE ANYTIME GROUNDWATER, INCLUDING GROUNDWATER THAT IS COMMINGLED WITH STORMWATER OR SURFACE WATER, IS ENCOUNTERED DURING CONSTRUCTION ACTIVITIES AND THE GROUNDWATER OR COMMINGLED WATER NEEDS TO BE DISCHARGED TO SURFACE WATER.
   3.c. WATER FROM DEWATERING OPERATIONS SHALL ONLY BE DISCHARGED INTO STATE WATERS IF ALLOWED BY A PERMIT.

4. MUCK EXCAVATION IS NOT ANTICIPATED FOR THIS PROJECT. IF ENCOUNTERED, CONTRACTOR SHALL REMOVE UNSUITABLE ORGANIC MATERIAL TO THE DEPTH AS DETERMINED BY THE ENGINEER AND REPLACE THE EXCAVATED VOLUME WITH SUITABLE APPROVED FILL MATERIAL PRIOR TO CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.

5. THE MAXIMUM SLOPE FOR EXCAVATION AND PLACEMENT OF FILL IS 4:1 HORIZONTAL:VERTICAL, UNLESS OTHERWISE SHOWN IN THE PLANS.

6. THE EXISTING DROP STRUCTURE, ANY ASSOCIATED FEATURES, AND DEBRIS SHOULD BE REMOVED FROM THE PROPOSED CONSTRUCTION AREA. EXPOSED SURFACES SHOULD BE FREE OF MOUNDS AND DEPRESSIONS WHICH COULD PREVENT UNIFORM COMPACTION.

7. EXPOSED AREAS WHICH WILL RECEIVE FILL, ONCE PROPERLY CLEARED WHERE NECESSARY, SHOULD BE SCARIFIED TO A MINIMUM DEPTH OF 8 INCHES, CONDITIONED TO NEAR OPTIMUM WATER CONTENT, AND COMPACTED.

8. A GEOTECHNICAL ENGINEER SHALL BE PRESENT FOR OVER-EXCAVATION AND FILL OPERATIONS.

9. THE EARTHWORK EFFORTS SHOULD BE MONITORED UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER. MONITORING SHOULD INCLUDE DOCUMENTATION OF ADEQUATE REMOVAL OF VEGETATION AND TOP SOIL, PROOF-ROLLING AND MITIGATION OF AREAS DELINEATED BY THE PROOF-ROLL TO REQUIRE MITIGATION.

10. EACH LIFT OF COMPACTED FILL SHOULD BE TESTED, EVALUATED, AND REWORKED AS NECESSARY UNTIL APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF ADDITIONAL LIFTS. EACH LIFT OF FILL SHOULD BE TESTED FOR DENSITY AND WATER CONTENT AT A FREQUENCY OF AT LEAST ONE TEST FOR EVERY 2,500 SQUARE FEET OF COMPACTED FILL PLACED BENEATH THE DROP STRUCTURE, OR WITHIN CONSTRUCTED SLOPES.

11. IN AREAS OF FOUNDATION EXCAVATIONS, THE BEARING SUBGRADE SHOULD BE EVALUATED UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER. IN THE EVENT UNANTICIPATED CONDITIONS ARE ENCOUNTERED, THE GEOTECHNICAL ENGINEER SHOULD PRESCRIBE MITIGATION OPTIONS.

12. THE ON-SITE SOILS ARE GENERALLY CONSIDERED SUITABLE FOR REUSE AS STRUCTURAL AND/OR GENERAL FILL. IMPORTED SOILS SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER. ALL UNSUITABLE MATERIAL SHALL BE DISPOSED OF AS DIRECTED. PARTIAL REMOVAL OF THE FILL SOILS SHOULD INCLUDE OVER-EXCAVATING A MINIMUM OF 4 FEET OF THE FILL SOILS, PROCESSING AS REQUIRED, MOISTURE CONDITIONING, AND RECOMPACTING AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

13. THE FILL SHALL BE PLACED IN THIN, LOOSE LIFTS OF 8 INCHES OR LESS (WHEN HEAVY SELF-PROPELLED COMPACTION EQUIPMENT IS USED) OR 4-6 INCHES (WHEN HAND-GUIDED EQUIPMENT IS USED). WATER CONTENT SHALL BE WITHIN 3 PERCENT OF OPTIMUM. FILL IS TO BE COMPACTED TO A MINIMUM OF:
   13.a. WITHIN 10 FEET OF STRUCTURES, OR IN CONSTRUCTED SLOPES:
   95 PERCENT OF MAXIMUM DRY DENSITY
   13.b. GENERAL FILL OUTSIDE OF STRUCTURAL AREAS:
   90 PERCENT OF MAXIMUM DRY DENSITY

14. A COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) WATER QUALITY DIVISION STORMWATER DISCHARGE PERMIT SHALL BE OBTAINED AND A COPY SHALL BE SUBMITTED TO EL PASO COUNTY.

15. PROPOSED SPOT ELEVATIONS REFLECT MEAN FINISHED GROUND GRADES IRRESPECTIVE OF VARIATIONS DUE TO PROPOSED GROUT, BOULDER, AND RIPRAP.

16. EXISTING GRADES REFLECT CHANNEL CONDITIONS AS OF AUGUST 1, 2017. CHANNEL SCOUR MAY AFFECT SHOWN ELEVATIONS.

17. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICAL ON THE SITE FOR USE ON AREAS TO BE REVEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS. THE MINIMUM THICKNESS OF TOPSOIL SHALL BE 4" AND SHALL BE OBTAINED BY STOCKPILING EXISTING TOPSOIL. THE TOPSOIL SHALL BE APPLIED TO ALL SURFACES REQUIRING SEEDING OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL DISPOSE OF EXCESS TOPSOIL IN A DESIGNATED AREA ON SITE.

ABBREVIATIONS

AC	ACRE
AD	ALGEBRAIC DIFFERENCE
AH	AHEAD
ARCH	ARCHITECT
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASS'Y	ASSEMBLY
AVE	AVENUE
BB	BOX BASE
BK	BACK
BNDY	BOUNDARY
BOP	BOTTOM OF PIPE
BOV	BLOW OFF VALVE
BFV	BUTTERFLY VALVE
BLVD	BOULEVARD
BW	BOTTOM OF WALL
C&G	CURB & GUTTER
CATV	CABLE TELEVISION
CB	CATCH BASIN
CBC	CONCRETE BOX CULVERT
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
CDS	CUL-DE-SAC
CF	CUBIC FOOT
CFS	CUBIC FEET PER SECOND
CIP	COMPLETE IN PLACE
CL	CENTER LINE
CLOMR	CONDITIONAL LETTER OF MAP REVISION
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
COCS	CITY OF COLORADO SPRINGS
CONC	CONCRETE
CR	CIRCLE
CSP	CORRUGATED STEEL PIPE
CSU	COLORADO SPRINGS UTILITIES
CT	COURT
CTRB	CONCRETE THRUST REDUCER BLOCK
CY	CUBIC YARD
DBPS	DRAINAGE BASIN PLANNING STUDY
DE	DRAINAGE EASEMENT
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE
DRC	DESIGN REVIEW COMMITTEE
DU	DWELLING UNITS
DY	DAY
E	EAST
EA	EACH
EGL	ENERGY GRADE LINE
EL	ELEVATION
ELEC	ELECTRIC
EOA	EDGE OF ASPHALT
EPC	EL PASO COUNTY
ERCP	ELLIPTICAL RCP
ESMT	EASEMENT
EST	ESTIMATE
EX	EXISTING
FDP	FINAL DEVELOPMENT PLAN
FDR	FINAL DRAINAGE REPORT
FES	FLARED END SECTION
FF	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOWLINE
FIL	FILING
FO	FIBER OPTIC CABLE
GB	GRADE BREAK
GE	GAS EASEMENT
GIS	GEOGRAPHIC INFORMATION SYSTEM
GL	GAS LINE
GPS	GLOBAL POSITIONING SYSTEM
GV	GATE VALVE
HBP	HOT BITUMINOUS PAVEMENT
HC	HANDICAP
HDC	HIGH DEFLECTION COUPLING
HDPE	HIGH DENSITY POLYETHYLENE
HGL	HYDRAULIC GRADE LINE
HMA	HOT MIX ASPHALT
HOA	HOME OWNERS ASSOCIATION
HP	HIGH POINT
HR	HOUR
I	INLET
IE	IRRIGATION EASEMENT
INT	INTERSECTION
INV	INVERT
IRR	IRRIGATION
KB	KICK (THRUST) BLOCK
LB	POUND
LE	LANDSCAPE EASEMENT
LF	LINEAR FOOT
LN	LANE
LOMR	LETTER OF MAP REVISION
LP	LOW POINT
LS	LUMP SUM
LT	LEFT
MAX	MAXIMUM
M/D	MOISTURE DENSITY
MDDP	MASTER DEVELOPMENT DRAINAGE PLAN
MH	MANHOLE
MIN	MINIMUM
MS	MOUNTABLE SIDEWALK
N	NORTH
NRCP	NON-REINFORCED CONCRETE PIPE
ODP	OFFICIAL DEVELOPMENT PLAN
OHE	OVERHEAD ELECTRIC
OHU	OVERHEAD UTILITY
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	POINT OF CURB RETURN
PDP	PRELIMINARY DEVELOPMENT PLAN
PE	PROFESSIONAL ENGINEER
PI	POINT OF INTERSECTION
PKWY	PARKWAY
PL	PROPERTY LINE
PR	PROPOSED
PRC	POINT OF REVERSE CURVATURE
PT	POINT OF TANGENCY
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCBC	REINFORCED CONCRETE BOX CULVERT
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
ROW	RIGHT OF WAY
RT	RIGHT
S	SOUTH
STE	STEEL
SAN	SANITARY SEWER
SF	SQUARE FOOT
ST	STREET
STA	STATION
STM	STORM SEWER
SY	SQUARE YARD
SY-IN	SQUARE YARD INCH
TB	THRUST BLOCK
TBC	TOP BACK OF CURB
TBW	TOP BACK OF WALK
TEL	TELEPHONE
TN	TON
TOA	TOP OF ASPHALT
TOB	TOP OF BOX
TOC	TOP OF CURB OR CONCRETE
TOF	TOP OF FOUNDATION
TOP	TOP OF PIPE
TW	TOP OF WALL
TYP	TYPICAL
UDFCD	URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
UE	UTILITY EASEMENT
U&DE	UTILITY & DRAINAGE EASEMENT
UGE	UNDERGROUND ELECTRIC
VCP	VITRIFIED CLAY PIPE
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
VTC	VEHICLE TRACKING CONTROL
W	WEST
WL	WATER LINE
WM	WATER MAIN
WRD	WATER RESOURCES DEPARTMENT
WS	WATER SURFACE
WSE	WATER SURFACE ELEVATION
WTR	WATER
YR	YEAR

Update notes. See GEC Checklist Section 3.

JR-UPDATED. STATEMENTS NOW MATCH SECTION 3 NOTES FROM GEC CHECKLIST

GRADING, EROSION AND STORMWATER QUALITY NOTES:

1. ALL CONSTRUCTION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH EL PASO COUNTY DRAINAGE CRITERIA MANUALS AND ENGINEERING CRITERIA MANUAL.

2. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS.

3. CONCRETE WASH WATER SHALL NOT BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.

4. BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. BMP'S MAY BE REQUIRED BY COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES E.G., ESTIMATED TIME OF EXPOSURE, SEASON OF THE YEAR, ETC.

5. VEHICLE TRACKING OF SOILS OFF-SITE SHALL BE MINIMIZED.

6. ALL WASTES COMPOSED OF BUILDING MATERIALS MUST BE REMOVED FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.

7. NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE CITY ENGINEER. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.

8. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.

9. ALL PERSONS ENGAGED IN EARTH DISTURBANCE SHALL IMPLEMENT AND MAINTAIN ACCEPTABLE SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BMP'S IN CONFORMANCE WITH THE EROSION CONTROL TECHNICAL STANDARDS OF THE MANUAL AND IN ACCORDANCE WITH THE EROSION AND STORMWATER QUALITY CONTROL PLAN APPROVED BY EL PASO COUNTY, IF REQUIRED.

10. ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMP'S AND ALL PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS, SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS AND THE MANUAL AND MAINTAINED THROUGHOUT THE DURATION OF THE EARTH DISTURBANCE OPERATION. THE INSTALLATION OF THE FIRST LEVEL OF TEMPORARY EROSION CONTROL FACILITIES AND BMP'S SHALL BE INSTALLED AND INSPECTED PRIOR TO ANY EARTH DISTURBANCE OPERATIONS TAKING PLACE.

11. ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION.

12. ALL EARTH DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED IN SUCH A MANNER SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME.

13. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.

14. SUSPENDED SEDIMENT CAUSED BY ACCELERATED SOIL EROSION SHALL BE MINIMIZED IN RUNOFF WATER BEFORE IT LEAVES THE SITE OF THE EARTH DISTURBANCE.

15. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED TO LIMIT THE DISCHARGE TO A NON-EROSIVE VELOCITY.

16. TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND EARTH DISTURBANCE AREAS GRADED AND STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES PURSUANT TO THE STANDARDS AND SPECIFICATIONS PRESCRIBED IN THE MANUAL, AND IN ACCORDANCE WITH THE PERMANENT EROSION CONTROL FEATURES SHOWN ON THE EROSION AND STORMWATER QUALITY CONTROL PLANS APPROVED BY EL PASO COUNTY, IF REQUIRED.

17. SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN TWENTY-ONE (21) CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE, HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEEDED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMP'S SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED.

18. NO PERSON SHALL CAUSE, PERMIT, OR CONTRIBUTE TO THE DISCHARGE INTO THE MUNICIPAL SEPARATE STORM SEWER POLLUTANTS THAT COULD CAUSE EL PASO COUNTY TO BE IN VIOLATION OF ITS COLORADO DISCHARGE PERMIT SYSTEM MUNICIPAL STORMWATER DISCHARGE PERMIT.

19. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.

20. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER, INCLUDING THE TEMPORARY OR PERMANENT RAMPING WITH MATERIALS FOR VEHICLE ACCESS.

21. INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS); AND THE "CLEAN WATER ACT" (33 USC 1344), REGULATIONS PROMULGATED, CERTIFICATIONS OR PERMITS ISSUED, IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE MANUAL. IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND WATER QUALITY CONTROL LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL OR STATE AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

22. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS. MATERIALS SHALL NOT BE STORED IN A LOCATION WHERE THEY MAY BE CARRIED BY STORMWATER RUNOFF INTO A STATE WATER AT ANY TIME.

23. SPILL PREVENTION AND CONTAINMENT MEASURES SHALL BE USED AT STORAGE, AND EQUIPMENT FUELING AND SERVICING AREAS TO PREVENT THE POLLUTION OF ANY STATE WATERS, INCLUDING WETLANDS. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY, OR CONTAINED UNTIL APPROPRIATE CLEANUP METHODS CAN BE EMPLOYED. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE FOLLOWED, ALONG WITH PROPER DISPOSAL METHODS.

24. THE CONTRACTOR SHALL OBTAIN COPIES OF THE SOILS REPORT FROM THE GEOTECHNICAL ENGINEER TO BE KEPT ONSITE DURING THE CONSTRUCTION PHASES.

25. THOSE PORTIONS WITHIN LIMITS OF CONSTRUCTION SHALL BE CLEARED AND GRUBBED OF ALL VEGETATIVE AND ORGANIC MATERIALS. A MINIMUM OF 0.5' BELOW EXISTING GRADE. THE CLEARED MATERIAL SHALL BE REUSED IN AREAS NOT REQUIRED FOR STRUCTURAL FILL.

26. MAXIMUM CUT/FILL SLOPES SHALL NOT EXCEED 3:1, UNLESS OTHERWISE NOTED.

27. ALL GRADING, EROSION CONTROL, AND STORMWATER MANAGEMENT SHALL BE IN CONFORMANCE WITH EL PASO COUNTY STANDARDS AND SPECIFICATIONS.

28. ALL PROPOSED MODIFICATIONS TO THE APPROVED GRADING AND EROSION CONTROL PLANS MUST BE SUBMITTED ALONG WITH SUPPORTING MATERIALS TO THE ENGINEERING DIVISION. NO WORK IN CONNECTION WITH THE PROPOSED MODIFICATIONS SHALL BE PERMITTED WITHOUT PRIOR APPROVAL, APPROVAL FOR WHICH MAY BE ISSUED IF THE APPLICANT CAN DEMONSTRATE THAT THE MODIFICATIONS WILL PROVIDE SOIL EROSION CONTROLS EQUIVALENT TO, OR BETTER THAN THAT OF THE ORIGINALLY APPROVED SOIL DISTURBANCE PLANS.

29. AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 1 ACRE OR MORE, THE OWNER OR OPERATOR OF THE CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY CONTROL DIVISION (SEE BELOW). THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORM WATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART.

CDPHE WATER QUALITY CONTROL DIVISION
ATTN: PERMITS UNIT
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530

RIPRAP NOTES:

1. WHERE "SOIL RIPRAP" IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP VOIDS ARE TO BE FILLED WITH APPROVED FILL. THE RIPRAP SHALL BE PRE-MIXED WITH THE APPROVED FILL AT THE FOLLOWING PROPORTIONS BY VOLUME: 65 PERCENT RIPRAP AND 35 PERCENT SOIL. THE SOIL USED FOR MIXING SHALL BE NATIVE TOPSOIL AND SHALL HAVE A MINIMUM FINES CONTENT OF 15 PERCENT. THE SOIL RIPRAP SHALL BE INSTALLED IN A MANNER THAT RESULTS IN A DENSE, INTERLOCKED LAYER OF RIPRAP WITH RIPRAP VOIDS FILLED COMPLETELY WITH SOIL. SEGREGATION OF MATERIALS SHALL BE AVOIDED AND IN NO CASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF SOIL; THE DENSITY AND INTERLOCKING NATURE OF RIP

LAYER LINETYPE LEGEND

	EXISTING	PROPOSED
PHASE LINE		
MATCH LINE		
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
R.O.W. A LINE	A	A
CENTERLINE		
CITY LIMITS		
WIRE FENCE	X	X
CHAIN LINK FENCE	O	O
WOOD FENCE	◇	◆
MASONRY FENCE	□	■
GUARDRAIL		
CONC. BARRIER		
CABLE TV	TV	TV
ELECTRIC	E	E
FIBER OPTIC	FO	FO
GAS MAIN	G	G
IRRIGATION MAIN	IRR	IRR
OIL/PETRO. MAIN	O	O
OVERHEAD UTILITY	OHU	OHU
SANITARY SEWER	S	S
STORM DRAIN		
TELEPHONE	T	T
WATER MAIN	W	W
RAW WATER LINE	RWL	RWL
SWALE/WATERWAY FLOWLINE		
DIVERSION DITCH		
DIVERSION CHANNEL		
MAJOR DRAINAGE BASIN		
MINOR DRAINAGE BASIN		
TOP OF SLOPE		
TOE OF SLOPE		
EDGE OF WATER		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
DEPRESSION CONT. (INDEX)	6100	6100
DEPRESSION CONT. (INTER)		
TOP OF CUTS		
TOE OF FILLS		
CUT AND FILL LINE		C/F C/F
SILT FENCE	SF SF	SF SF
100 YEAR FLOODPLAIN	100YR	100YR
500 YEAR FLOODPLAIN	500YR	500YR
FLOODWAY	FLDWY	FLDWY
BASE FLOOD ELEVATION		
EDGE OF WETLANDS		

UTILITIES LEGEND

	EXISTING	PROPOSED
STORM SEWER		
MANHOLE		
STORM INLET		
AREA INLET – SQUARE		
AREA INLET – ROUND		
FLARED END SECTION		
RIPRAP		
SANITARY SEWER		
LINE MARKER	Mkr San	
SERVICE MARKER		
CLEAN-OUT		
MANHOLE W/ DIRECTIONAL FLOW ARROW		
WATER LINE		
LINE MARKER	Mkr W	
SERVICE MARKER		
FIRE HYDRANT		
FIRE CONNECTION		
MANHOLE		
BEND		
BLOW-OFF VALVE		
WELL	WELL	WELL
METER		
VALVE		
REDUCER		
THRUST BLOCK		
CROSS		
PLUG W/ THRUST BLOCK		
TEE		
REVERSE ANCHOR		
ANODE		
AIR & VACUUM VALVE ASSEMBLY		
TRANSMISSION BLOW-OFF ASSEMBLY		
GAS LINE		
MARKER	Mkr G	
SERVICE MARKER		
METER		
VALVE		
PLUG		
TEE		
DRY UTILITIES		
CABLE TV MARKER	Mkr TV	
CABLE TELEVISION PEDESTAL		
ELECTRIC MARKER	Mkr E	
ELECTRIC SERVICE MARKER		
ELECTRICAL PEDESTAL		
ELECTRICAL METER		
ELECTRICAL MANHOLE		
FIBER-OPTIC MARKER	Mkr FO	
IRRIGATION PEDESTAL		
TELEPHONE MARKER	Mkr T	
TELEPHONE PEDESTAL		
TELEPHONE MANHOLE		
UTILITY POLE		
GUY ANCHOR		
GUY POLE		
MISC. UTILITIES		
VENT PIPE	VP	VP
TEST HOLE DESIGNATOR	TH# FIRM/AGENCY	

MONUMENTATION LEGEND

ALUMINUM CAP – FOUND	AC
BRASS CAP – FOUND	BC
BENCHMARK – FOUND	
CROSS – FOUND	
MONUMENT – SET	
MONUMENT – FOUND (DEFAULT)	
MONUMENT – FOUND (ALTERNATE 1)	
MONUMENT – FOUND (ALTERNATE 2)	
MONUMENT – FOUND (ALTERNATE 3)	
MONUMENT – FOUND (ALTERNATE 4)	
MONUMENT – FOUND (ALTERNATE 5)	
MONUMENT – FOUND (ALTERNATE 6)	
MONUMENT – FOUND (ALTERNATE 7)	
NAIL & WASHER – FOUND	NAIL & WASHER
PANEL – FOUND	
PK NAIL – FOUND	PK NAIL
ROW MONUMENT – FOUND	
ROW MARKER – FOUND	
SECTION CORNER – FOUND	
SECTION CORNER – SET	
QUARTER-SECTION CORNER – FOUND	
QUARTER-SECTION CORNER – SET	
SECTION CENTER – FOUND	
SECTION CENTER – FOUND	
CONTROL/TRAVERSE POINT – SET	

TRAFFIC LEGEND

	EXISTING	PROPOSED
PARKING METER		
TRAFFIC SIGNAL BOX		
TRAFFIC SIGNAL POLE		
TRAFFIC SIGNAL		
BARRICADE		
GUARD RAIL POST		
IMPACT ATTENUATOR		
BRIDGE STYLE HIGHWAY SIGN POST		
CANTILEVER STYLE HIGHWAY SIGN POST		
SIGN		
RAILROAD MARKER/SIGN		
STREET LIGHT		
STREET LIGHT – SINGLE		
STREET LIGHT – DOUBLE		
LUMINAIRE		
ALTERNATE LUMINAIRE		
SIGNAL MAST ARM W/ LUMINAIRE		
PEDESTAL POLE FOUNDATION		
TRAFFIC SIGNAL POLE		
ROUND PULL BOX		
MEDIUM PULL BOX		
LARGE PULL BOX (20X33X15)		
SIGNAL HEAD WITHOUT BACK PLATE		
SIGNAL HEAD WITH BACK PLATE		
PEDESTRIAN SIGNAL HEAD		
VIDEO IMAGE DETECTOR		
OPTICOM DETECTOR		
VEHICLE DETECTION ZONE		V

STORM WATER MANAGEMENT

	KEY	SYMBOL
CHECK DAM	CD	
CONSTRUCTION ROAD STABILIZATION	CRS	
CURB SOCK INLET PROTECTION	CS	
CONCRETE WASHOUT AREA	CWA	
DIVERSION DITCH AND DIKE, TEMPORARY	DD	
DIVERSION CHANNEL, TEMPORARY	DV	
DEWATERING	DW	
EROSION CONTROL BLANKET	ECB	
INLET FILTER	IF	
INLET PROTECTION	IP	
MULCHING	MU	
OUTLET PROTECTION	OP	
PAVED FLUME	PF	
PERMENENT SEEDING	PS	
REINFORCED CONCRETE DAM	RCD	
ROUGH CUT STREET CONTROL	RCS	
SEDIMENT BASIN	SB	
SEDIMENT CONTROL LOG	SCL	
SILT FENCE	SF	
SURFACE ROUGHENING	SR	
STABILIZED STAGING AREA	SSA	
SEDIMENT TRAP	ST	
STRAW BALE BARRIER	STB	
TERRACING	TER	
TEMPORARY SEEDING	TS	
TEMPORARY STREAM CROSSING CULVERT/BRIDGE	TSC C	
TEMPORARY STREAM CROSSING FORD TYPE	TSC F	
TEMPORARY SLOPE DRAIN	TSD	
VEHICLE TRACKING CONTROL	VTC	
VEHICLE TRACKING CONTROL WITH WASH RACK	WR	

LANDSCAPE LEGEND

	EXISTING
TREE – CONIFEROUS	
TREE – DECIDUOUS	
SHRUB/BUSH	
SHRUBS AND BUSHES	
IRRIGATION BOX	
IRRIGATION SPRINKLER	
IRRIGATION VALVE	
BOLLARD	
FLAGPOLE	FP

811 Know what's below. Call before you dig.

ENGINEER'S STATEMENT

STANDARD DETAILS SHOWN WERE REVIEWED ONLY AS TO THEIR APPLICATION ON THIS PROJECT.

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32,314
FOR AND ON BEHALF OF JR ENGINEERING, LLC.

DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419-3024

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	10/21/21
DESIGNED BY	SCH
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

LEGEND

SHEET 3 OF 52

JOB NO. 25188.04

X:\2510000.all\25188\04\Drawings\sheet dwgs\Cover Sheet\25188\04CV01.dwg, LG01, 10/21/2021 4:17:22 PM, VaughnD

KEY MAP
SCALE: 1"=2000'

GRADING NOTES:

Prior to (they won't issue a permit if work has already started)

JR-UPDATED

1. SAND CREEK IS AN ACTIVE MAJOR DRAINAGEWAY WITH PERENNIAL BASE FLOWS. CONTRACTOR SHALL ANTICIPATE STORMWATER INFLOWS TO THE SITE DURING CONSTRUCTION AND PROVIDE A MEANS OF CONVEYANCE/REMOVAL OF ANY CONTINUOUS INFLOWS.

2. THERE IS A LIKELIHOOD FOR LARGE FLOW EVENTS IN SAND CREEK WHICH COULD JEOPARDIZE CONSTRUCTION. THE LIKELIHOOD OF THESE EVENTS CHANGES WITH THE SEASONS. THE CONTRACTOR SHOULD ACCOUNT FOR THE EVENTUALITY OF THESE LARGE FLOW EVENTS BASED ON THE TIMING OF CONSTRUCTION.

3. DEWATERING.
   - 3.a. DEWATERING/BYPASS PUMPING OF SAND CREEK SHALL OCCUR IN ADVANCE OF CONSTRUCTION ACTIVITIES.
   - 3.b. THE CONTRACTOR SHALL OBTAIN A CONSTRUCTION DEWATERING (CDW) PERMIT FROM CDPHE ~~APPROPRIATE~~ GROUNDWATER, INCLUDING GROUNDWATER THAT IS COMMINGLED WITH STORMWATER OR SURFACE WATER, IS ENCOUNTERED DURING CONSTRUCTION ACTIVITIES AND THE GROUNDWATER OR COMMINGLED WATER NEEDS TO BE DISCHARGED TO SURFACE WATER.
   - 3.c. WATER FROM DEWATERING OPERATIONS SHALL ONLY BE DISCHARGED INTO STATE WATERS IF ALLOWED BY A PERMIT.

4. MUCK EXCAVATION IS NOT ANTICIPATED FOR THIS PROJECT. IF ENCOUNTERED, CONTRACTOR SHALL REMOVE UNSUITABLE ORGANIC MATERIAL TO THE DEPTH AS DETERMINED BY THE ENGINEER AND REPLACE THE EXCAVATED VOLUME WITH SUITABLE APPROVED FILL MATERIAL PRIOR TO CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.

5. THE MAXIMUM SLOPE FOR EXCAVATION AND PLACEMENT OF FILL IS 4:1 HORIZONTAL:VERTICAL, UNLESS OTHERWISE SHOWN IN THE PLANS.

specify local JR-ADDED

6. THE EXISTING DROP STRUCTURE, ANY ASSOCIATED FEATURES, AND DEBRIS SHOULD BE REMOVED FROM THE PROPOSED CONSTRUCTION AREA. EXPOSED SURFACES SHOULD BE FREE OF MOUNDS AND DEPRESSIONS WHICH COULD PREVENT UNIFORM COMPACTION.

7. EXPOSED AREAS WHICH WILL RECEIVE FILL, ONCE PROPERLY CLEARED WHERE NECESSARY, SHOULD BE SCARIFIED TO A MINIMUM DEPTH OF 8 INCHES, CONDITIONED TO NEAR OPTIMUM WATER CONTENT, AND COMPACTED.

8. A GEOTECHNICAL ENGINEER SHALL BE PRESENT FOR OVER-EXCAVATION AND FILL OPERATIONS.

9. THE EARTHWORK EFFORTS SHOULD BE MONITORED UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER. MONITORING SHOULD INCLUDE DOCUMENTATION OF ADEQUATE REMOVAL OF VEGETATION AND TOP SOIL, PROOF-ROLLING AND MITIGATION OF AREAS DELINEATED BY THE PROOF-ROLL TO REQUIRE MITIGATION.

10. EACH LIFT OF COMPACTED FILL SHOULD BE TESTED, EVALUATED, AND REWORKED AS NECESSARY UNTIL APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF ADDITIONAL LIFTS. EACH LIFT OF FILL SHOULD BE TESTED FOR DENSITY AND WATER CONTENT AT A FREQUENCY OF AT LEAST ONE TEST FOR EVERY 2,500 SQUARE FEET OF COMPACTED FILL PLACED BENEATH THE DROP STRUCTURE, OR WITHIN CONSTRUCTED SLOPES.

11. IN AREAS OF FOUNDATION EXCAVATIONS, THE BEARING SUBGRADE SHOULD BE EVALUATED UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER. IN THE EVENT UNANTICIPATED CONDITIONS ARE ENCOUNTERED, THE GEOTECHNICAL ENGINEER SHOULD PRESCRIBE MITIGATION OPTIONS.

12. THE ON-SITE SOILS ARE GENERALLY CONSIDERED SUITABLE FOR REUSE AS STRUCTURAL AND/OR GENERAL FILL. IMPORTED SOILS SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER. ALL UNSUITABLE MATERIAL SHALL BE DISPOSED OF AS DIRECTED. PARTIAL REMOVAL OF THE FILL SOILS SHOULD INCLUDE OVER-EXCAVATING A MINIMUM OF 4 FEET OF THE FILL SOILS, PROCESSING AS REQUIRED, MOISTURE CONDITIONING, AND RECOMPACTING AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

13. THE FILL SHALL BE PLACED IN THIN, LOOSE LIFTS OF 8 INCHES OR LESS (WHEN HEAVY SELF-PROPELLED COMPACTION EQUIPMENT IS USED) OR 4-6 INCHES (WHEN HAND-GUIDED EQUIPMENT IS USED). WATER CONTENT SHALL BE WITHIN 3 PERCENT OF OPTIMUM. FILL IS TO BE COMPACTED TO A MINIMUM OF:
   - 13.a. WITHIN 10 FEET OF STRUCTURES, OR IN CONSTRUCTED SLOPES:
     95 PERCENT OF MAXIMUM DRY DENSITY
   - 13.b. GENERAL FILL OUTSIDE OF STRUCTURAL AREAS:
     90 PERCENT OF MAXIMUM DRY DENSITY

14. A COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) WATER QUALITY DIVISION STORMWATER DISCHARGE PERMIT SHALL BE OBTAINED AND A COPY SHALL BE SUBMITTED TO EL PASO COUNTY.

15. PROPOSED SPOT ELEVATIONS REFLECT MEAN FINISHED GROUND GRADES IRRESPECTIVE OF VARIATIONS DUE TO PROPOSED GROUT, BOULDER, AND RIPRAP.

16. EXISTING GRADES REFLECT CHANNEL CONDITIONS AS OF AUGUST 1, 2017. CHANNEL SCOUR MAY AFFECT SHOWN ELEVATIONS.

17. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICAL ON THE SITE FOR USE ON AREAS TO BE REVEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS. THE MINIMUM THICKNESS OF TOPSOIL SHALL BE 4" AND SHALL BE OBTAINED BY STOCKPILING EXISTING TOPSOIL. THE TOPSOIL SHALL BE APPLIED TO ALL SURFACES REQUIRING SEEDING OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL DISPOSE OF EXCESS TOPSOIL IN A DESIGNATED AREA ON SITE.

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42

2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40

3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82

BASIS OF BEARINGS

THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. AS MONUMENTED AT THE SOUTHWEST CORNER OF SAID BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624" AND AT THE SOUTEAST CORNER OF SAID SOUTHWEST QUARTER BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624", SAID LINE BEARS N89°14'14"E, A DISTANCE OF 2,722.69 FEET.

APPROXIMATE QUANTITY SUMMARY

718,750 CY CUT
18,666 CY FILL
700,084 CY NET

300 150 0 300
ORIGINAL SCALE: 1" = 300'

Know what's below. Call before you dig.

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION

PRELIMINARY NOT FOR CONSTRUCTION

MIKE A. BRAMLE... COLORADO P.E. 3...
FOR AND ON BEHALF OF JR ENGINEERING, LLC

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
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Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	1"=300'
V-SCALE	N/A
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

EARTHWORK & PHASING PLAN

SHEET 4 OF 52

JOB NO. 25188.04

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DEMOLITION PLANS
EX STA 11+00.00 TO 38+00.00
SCALE: 1"=100'

KEY MAP
SCALE: 1"=2000'

LEGEND

WETLAND: DISTURBED AREAS

DISTURBED BY OTHERS

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42
2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40
3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82

BASIS OF BEARINGS

THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. AS MONUMENTED AT THE SOUTHWEST CORNER OF SAID BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624" AND AT THE SOUTEAST CORNER OF SAID SOUTHWEST QUARTER BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624", SAID LINE BEARS N89°14'14"E, A DISTANCE OF 2,722.69 FEET.

100 50 0 100
ORIGINAL SCALE: 1" = 100'

Sand Creek Demolitions		
Totals	**Sq Ft**	**Acres**
Reach 1 Loss	136,986.84	3.14
Reach 2 Loss	136,406.07	3.82
Reach 3 Loss	152,410.55	3.55
Total Permanent Loss	**425,803.46**	**10.51**

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ENGINEER'S STATEMENT

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CONSTRUCTION

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2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
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H-SCALE	1"=100'
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CHECKED BY	

SAND CREEK RESTORATION

DEMOLITION PLAN

SHEET 5 OF 52

JOB NO. 25188.04

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MATCH STA 68+00.00
SEE SHEET 7

MATCH STA 38+00.00
SEE SHEET 5

DEMOLITION PLANS
EX STA: 38+00.00 TO 68+00.00
SCALE: 1"=100'

KEY MAP
SCALE: 1"=2000'

LEGEND

WETLAND: DISTURBED AREAS

DISTURBED BY OTHERS

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   ELEVATION = 7000.40
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   EASTING = 233849.817
   ELEVATION = 7030.82

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V-SCALE	N/A
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DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

DEMOLITION PLAN

SHEET 6 OF 52

JOB NO. 25188.04

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DEMOLITION PLANS
EX STA: 68+00.00 TO 91+00.00
SCALE: 1"=100'

KEY MAP
SCALE: 1"=2000'

LEGEND

WETLAND: DISTURBED AREAS

DISTURBED BY OTHERS

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DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

DEMOLITION PLAN

SHEET 7 OF 52

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MATCH STA 91+00.00
SEE SHEET 7

DEMOLITION PLANS
EX STA 91+00.00 TO 110+00.00
SCALE: 1"=100'

KEY MAP
SCALE:1"=2000'

LEGEND

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CHECKED BY	

SAND CREEK RESTORATION

DEMOLITION PLAN

SHEET 8 OF 52

JOB NO. 25188.04

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RIFFLE TYPICAL SECTION A-A

SCALE: N.T.S

LEFT POOL TYPICAL SECTION B-B

SCALE: N.T.S

RIGHT POOL TYPICAL SECTION C-C

SCALE: N.T.S

REACH STA	MDDP (100YR)	MEDIAN FLOOD TERRACE WIDTH
1+00.00 TO 10+05.89	1591 cfs	52.00' TO 270.00'
11+18.00 TO 59+27.25	2036 cfs	160.00' TO 410.00'
61+54.83 TO 88+62.94	1834 cfs	180.00' TO 255.00'

SAND CREEK TYPICAL SECTIONS

REACH 1: STA: 1+00.00 TO 10+05.89
REACH 2: STA: 11+18.00 TO 59+27.25
REACH 3: STA: 61+54.83 TO 88+62.94

SAND CREEK
STREAM LAYOUT TYPICAL – PLAN

SCALE: N.T.S.

Sand Creek
Performance Standards

Parameter	Measurement Method	Alternative 2 Functioning	
Hydrology			
Low Flow Channel (IB) Discharge (cfs)	Drainage Area Relationship		
Bankfull Channel Discharge (cfs)	Regional Curve and Existing Condition		
Floodplain Terrace Discharge (cfs)	Drainage Area Relationship		
100-year Discharge (cfs)	F15		
Hydraulics			
Flow Dynamics	Bankfull Velocity	<9.0 fps	
	Floodplain Shear Stress	< 1.2 psf	
Geometry (Refer to typical section)			
Proposed Stream Type	Stream Classification	C4	
Valley Type	Stream Classification	Terraced Alluvial	
Floodplain Connectivity	Bank Height Ration (BHR)	1.0	1.1
	Entrenchment Ratio (ER)	6.0	8.0
Low Flow Channel (IB)	Width; ft		
	Mean Depth; ft		
	Max Depth; ft		
	Inner Berm Bench Width; ft		
	Area (33% Bankfull Area); sqft	4.6	
Bankfull Channel	Width; ft	17.0	
	Mean Depth; ft	0.71	
	Max Depth; ft		
	Area; sqft	14.0	
	Bend to Bend Spacing; ft	4.5 -6 times Bankfull Width	77 102
	Radius of Curvature (ROC); ft	2.5 - 3.5 times Bankfull Width	43 60
	Tangent Lengths; ft	1.5 - 2.5 times Bankfull Width	26 43
	Meander Wavelength; ft	9- 12 times Bankfull Width	153 204
	Meander Beltwidth; ft	2 - 3.5 times Bankfull Width	34 60
Flood Terrace	Width; ft		
	Area (300% of Bankfull Area); sqft		
	Bend to Bend Spacing; ft	Same as Bankfull Pattern	-- --
	Radius of Curvature; ft	2 - 4 times the Flood Terrace Width	0 0
	Tangent Riffle Lengths; ft	1 - 2 times the Bankfull Width	17 34
	Meander Beltwidth; ft	1.5 - 2 times the Flood Terrace Width	0 0
	Expansion and Contraction Ratios	greater than 10:1	-- --
100-year Floodplain	Width; ft		
	Radius of Curvature; ft	2 - 50 times the Floodplain Width	0 0
	Tangent Lengths; ft	1 - 2 times the Bankfull Width	17 34
	Meander Beltwidth; ft	1.0 - 2 times the Floodplain Width	0 0
	Expansion and Contraction Ratios	greater than 10:1	-- --

Add a note addressing what is proposed where this is not met

Add Froude No. standard (to be subcritical except at drops/riffles)

Add the capacity of 2, 10, and 100-year flows and criteria used (see drainage report redlines)

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SAND CREEK RESTORATION

TYPICAL SECTIONS

SHEET 9 OF 52

JOB NO. 25188.04

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HORIZONTAL CONTROL PLAN - SECOND CREEK CHANNEL

SCALE: 1"=60'

JR-UPDATED

KEY MAP

SCALE: 1"=2000'

LINE AND CURVE TABLES - SAND CREEK FLOOD TERRACE CHANNEL

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N25°40'39"E	21.32'
L2	N77°25'27"E	49.47'
L3	N28°06'10"W	38.95'
L4	N09°33'17"E	44.06'
L5	N21°47'54"W	106.34'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	51°44'47"	200.00'	180.63'
C2	105°31'37"	200.00'	368.36'
C3	37°39'27"	200.00'	131.45'
C4	31°21'11"	200.00'	109.44'

60 30 0 60

ORIGINAL SCALE: 1" = 60'

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SAND CREEK RESTORATION

HORIZONTAL CONTROL PLAN

SHEET 10 OF 52

JOB NO. 25188.04

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HORIZONTAL CONTROL PLAN - SECOND CREEK CHANNEL

SCALE: 1"=

JR-UPDATED

KEY MAP

SCALE: 1"=2000'

LINE AND CURVE TABLES - SAND CREEK FLOOD TERRACE CHANNEL

LINE TABLE		
LINE	BEARING	DISTANCE
L6	N22°48'27"W	65.27'
L7	N09°27'45"W	82.45'
L8	N19°37'18"W	261.89'
L9	N67°06'17"E	86.71'
L10	S13°36'47"W	150.22'
L12	N48°33'18"E	22.55'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C5	1°00'33"	200.00'	3.52'
C6	13°20'42"	200.00'	46.58'
C7	10°09'33"	200.00'	35.46'
C8	86°43'35"	200.00'	302.73'
C9	53°29'30"	200.00'	186.72'
C10	34°56'31"	200.00'	121.97'

60 30 0 60

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SAND CREEK RESTORATION

HORIZONTAL CONTROL PLAN

SHEET 11 OF 52

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HORIZONTAL CONTROL PLAN - SECOND CREEK CHANNEL

SCALE: 1" JR-UPDATED

LINE AND CURVE TABLES - SAND CREEK FLOOD TERRACE CHANNEL

LINE TABLE		
LINE	BEARING	DISTANCE
L12	N48°33'18"E	22.55'
L13	N09°07'34"W	179.29'
L14	N20°33'37"W	244.58'
L15	N15°32'30"W	232.30'
L16	N16°06'36"E	105.01'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C12	57°40'52"	200.00'	201.34'
C13	11°26'04"	200.00'	39.91'
C14	5°01'08"	200.00'	17.52'
C15	31°39'06"	200.00'	110.48'

KEY MAP
SCALE: 1"=2000'

60 30 0 60
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SAND CREEK RESTORATION

HORIZONTAL CONTROL PLAN

SHEET 12 OF 52

JOB NO. 25188.04

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KEY MAP
SCALE: 1"=2000'

HORIZONTAL CONTROL PLAN - SECOND CREEK CHANNEL

SCALE: 1" JR-UPDATED

LINE AND CURVE TABLES - SAND CREEK FLOOD TERRACE CHANNEL

LINE TABLE		
LINE	BEARING	DISTANCE
L17	N83°30'44"E	39.99'
L18	N41°12'49"E	174.99'
L19	N69°22'36"E	524.37'
L20	N04°34'45"E	280.81'
L21	N79°52'04"E	4.37'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C16	67°24'08"	200.00'	235.28'
C17	42°17'55"	200.00'	147.65'
C18	28°09'48"	200.00'	98.31'
C19	10°29'27"	200.00'	36.62'
C20	75°17'19"	200.00'	262.81'

60 30 0 60
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PRELIMINARY NOT FOR CONSTRUCTION

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PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419–3024

J·R ENGINEERING
A Westrian Company
Centennial 303–740–9393 • Colorado Springs 719–593–2593
Fort Collins 970–491–9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H–SCALE	1"=60'
V–SCALE	N/A
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION
HORIZONTAL CONTROL PLAN

SHEET 13 OF 52
JOB NO. 25188.04

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HORIZONTAL CONTROL PLAN - SECOND CREEK CHANNEL

SCALE: 1" JR-UPDATED

LINE AND CURVE TABLES - SAND CREEK FLOOD TERRACE CHANNEL

LINE TABLE		
LINE	BEARING	DISTANCE
L22	N35°34'23"E	136.50'
L23	N05°20'40"W	144.08'
L24	N00°08'15"W	231.64'
L25	N59°00'59"E	73.58'
L26	N17°28'01"E	63.10'
L27	N23°44'28"E	151.64'
L28	N10°35'12"E	8.46'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C21	30°59'37"	200.00'	108.19'
C22	40°55'03"	200.00'	142.83'
C23	5°12'25"	200.00'	18.18'
C24	59°09'14"	200.00'	206.49'
C25	41°32'58"	200.00'	145.04'
C26	6°16'26"	200.00'	21.90'
C27	13°09'16"	200.00'	45.92'

60 30 0 60
ORIGINAL SCALE: 1" = 60'

Know what's below. Call before you dig.

ENGINEER'S STATEMENT
PREPARED UNDER MY DIRECT SUPERVISION

PRELIMINARY NOT FOR CONSTRUCTION

MIKE A. BRAMLE
COLORADO P.E. 3
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SAND CREEK RESTORATION

HORIZONTAL CONTROL PLAN

SHEET 14 OF 52

JOB NO. 25188.04

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KEY MAP
SCALE: 1"=2000'

LEGEND

- FINISHED GRADE @ CHANNEL ℄
- THALWEG
- EXISTING GRADE @ CHANNEL ℄
- EXISTING THALWEG
- 100-YR HGL
- 100-YR FIS
- 100-YR DESIGN WSEL

(Areas of concern are highlighted)

SAND CREEK - BANKFULL PROFILE 1
STA 1+00.00 TO 9+50.00

SAND CREEK FLOW RATES			
Location	Station	Flow Rate (cfs)	
		100-YR Design	100-YR FIS
Northern Bndy	STA: 87+01	1627.1	2600
Stock Pond 2	STA:73+50	1648.7	2600
Briargate Pkwy	STA:61+55	1833.5	2600
	STA:36+05	2023.6	2600
Stock Pond 1	STA:16+80	1921.7	2600
Sterling Ranch Road	STA:9+05	1590.5	2600

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42
2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40
3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82

BASIS OF BEARINGS

THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. AS MONUMENTED AT THE SOUTHWEST CORNER OF SAID BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624" AND AT THE SOUTEAST CORNER OF SAID SOUTHWEST QUARTER BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624", SAID LINE BEARS N89°14'14"E, A DISTANCE OF 2,722.69 FEET.

NOTE

NO GRADING OR CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY

60 30 0 60
HORIZONTAL
ORIGINAL SCALE: 1" = 60'
VERTICAL
ORIGINAL SCALE: 1" = 6'

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V-SCALE	1"=6'
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SAND CREEK RESTORATION

CHANNEL PLAN & PROFILE

SHEET 15 OF 52

JOB NO. 25188.04

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KEY MAP
SCALE: 1"=2000'

LEGEND

- FINISHED GRADE @ CHANNEL ℄
- THALWEG
- EXISTING GRADE @ CHANNEL ℄
- EXISTING THALWEG
- 100-YR HGL
- 100-YR FIS
- 100-YR DESIGN WSEL

SAND CREEK - BANKFULL PROFILE 2
STA 9+50.00 TO 23+00.00

label spillway elev., reference detail sheets

JR-UPDATED

SAND CREEK FLOW RATES			
Location	Station	Flow Rate (cfs)	
		100-YR Design	100-YR FIS
Northern Bndy	STA: 87+01	1627.1	2600
Stock Pond 2	STA:73+50	1648.7	2600
Briargate Pkwy	STA:61+55	1833.5	2600
	STA:36+05	2023.6	2600
Stock Pond 1	STA:16+80	1921.7	2600
Sterling Ranch Road	STA:9+05	1590.5	2600

60 30 0 60
HORIZONTAL ORIGINAL SCALE: 1" = 60'
VERTICAL ORIGINAL SCALE: 1" = 6'

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND REVIEW

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COLORADO P.E. 3
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SAND CREEK RESTORATION

CHANNEL PLAN & PROFILE

SHEET 16 OF 52

JOB NO. 25188.04

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If there are any pond overflow spillways the conveyance to the channel needs to be addressed

JR: Buried riprap beneath the trails will reinforce the trails from flows from the spillway

KEY MAP
SCALE: 1"=2000'

LEGEND

- FINISHED GRADE @ CHANNEL ℄
- THALWEG
- EXISTING GRADE @ CHANNEL ℄
- EXISTING THALWEG
- 100-YR HGL
- 100-YR FIS
- 100-YR DESIGN WSEL

SAND CREEK - BANKFULL PROFILE 3
STA 23+00.00 TO 36+00.00

SAND CREEK FLOW RATES			
Location	Station	Flow Rate (cfs)	
		100-YR Design	100-YR FIS
Northern Bndy	STA: 87+01	1627.1	2600
Stock Pond 2	STA:73+50	1648.7	2600
Briargate Pkwy	STA:61+55	1833.5	2600
	STA:36+05	2023.6	2600
Stock Pond 1	STA:16+80	1921.7	2600
Sterling Ranch Road	STA:9+05	1590.5	2600

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60 30 0 60
HORIZONTAL ORIGINAL SCALE: 1" = 60'
VERTICAL ORIGINAL SCALE: 1" = 6'

ENGINEER'S STATEMENT

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SAND CREEK RESTORATION

CHANNEL PLAN & PROFILE

SHEET 17 OF 52

JOB NO. 25188.04

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KEY MAP
SCALE: 1"=2000'

LEGEND

- FINISHED GRADE @ CHANNEL ℄
- THALWEG
- EXISTING GRADE @ CHANNEL ℄
- EXISTING THALWEG
- 100-YR HGL
- 100-YR FIS
- 100-YR DESIGN WSEL

60 30 0 60
HORIZONTAL
ORIGINAL SCALE: 1" = 60'
VERTICAL
ORIGINAL SCALE: 1" = 6'

SAND CREEK - BANKFULL PROFILE 4
STA 36+00.00 TO 53+50.00

SAND CREEK FLOW RATES			
Location	Station	Flow Rate (cfs)	
		100-YR Design	100-YR FIS
Northern Bndy	STA: 87+01	1627.1	2600
Stock Pond 2	STA:73+50	1648.7	2600
Briargate Pkwy	STA:61+55	1833.5	2600
	STA:36+05	2023.6	2600
Stock Pond 1	STA:16+80	1921.7	2600
Sterling Ranch Road	STA:9+05	1590.5	2600

Know what's **below.**
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V-SCALE	1"=6'
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SAND CREEK RESTORATION
CHANNEL PLAN & PROFILE

SHEET 18 OF 52
JOB NO. 25188.04

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KEY MAP
SCALE: 1"=2000'

LEGEND

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- THALWEG
- EXISTING GRADE @ CHANNEL ℄
- EXISTING THALWEG
- 100-YR HGL
- 100-YR FIS
- 100-YR DESIGN WSEL

60 30 0 60
HORIZONTAL
ORIGINAL SCALE: 1" = 60'
VERTICAL
ORIGINAL SCALE: 1" = 6'

SAND CREEK - BANKFULL PROFILE 5
STA 53+50.00 TO 71+50.00

SAND CREEK FLOW RATES			
Location	Station	Flow Rate (cfs)	
		100-YR Design	100-YR FIS
Northern Bndy	STA: 87+01	1627.1	2600
Stock Pond 2	STA:73+50	1648.7	2600
Briargate Pkwy	STA:61+55	1833.5	2600
	STA:36+05	2023.6	2600
Stock Pond 1	STA:16+80	1921.7	2600
Sterling Ranch Road	STA:9+05	1590.5	2600

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ENGINEER'S STATEMENT
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MIKE A. BRAMLE... E
COLORADO P.E. 3...
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DATE	10/21/21
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DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION
CHANNEL PLAN & PROFILE

SHEET 19 OF 52
JOB NO. 25188.04

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KEY MAP
SCALE: 1"=2000'

Address up to Poco also

JR: The channel grading upstream of the property line is to be done by Classic.

JR: HEC-RAS model has been updated to include sections north of the property line. Construction plan are only intended to show what JR will be designing and constructing

adjust HGL/WSEL as appropriate. Extend model to the north

SAND CREEK - BANKFULL PROFILE 6
STA 71+25.00 TO 88+64.00

SAND CREEK FLOW RATES			
Location	Station	Flow Rate (cfs)	
		100-YR Design	100-YR FIS
Northern Bndy	STA: 87+01	1627.1	2600
Stock Pond 2	STA:73+50	1648.7	2600
Briargate Pkwy	STA:61+55	1833.5	2600
	STA:36+05	2023.6	2600
Stock Pond 1	STA:16+80	1921.7	2600
Sterling Ranch Road	STA:9+05	1590.5	2600

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CHECKED BY	

SAND CREEK RESTORATION

CHANNEL PLAN & PROFILE

SHEET 20 OF 52

JOB NO. 25188.04

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CROSS SECTION – SAND CREEK
STA: 1+00 TO 35+00
SCALE: 1"=100'

NOTE

SEE SHEETS 24–30 FOR CROSS SECTIONS

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42
2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40
3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82

BASIS OF BEARINGS

THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. AS MONUMENTED AT THE SOUTHWEST CORNER OF SAID BY A 2–1/2" ALUMINUM CAP STAMPED "LS 11624" AND AT THE SOUTEAST CORNER OF SAID SOUTHWEST QUARTER BY A 2–1/2" ALUMINUM CAP STAMPED "LS 11624", SAID LINE BEARS N89°14'14"E, A DISTANCE OF 2,722.69 FEET.

100 50 0 100
ORIGINAL SCALE: 1" = 100'

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SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 21 OF 52

JOB NO. 25188.04

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JR- ADJACENT CROSS SECTION HAS BEEN MODIFIED (SL-45)
Show trail / maintenance road
JR- MAINTENANCE TRAIL GRADING HAS BEEN UPDATED
JR- SEE GSB PLANS FOR CROSS SECTIONS
JR- GRADING HAS BEEN ADJUSTED
Adjust grading
STERLING RANCH FILLING NO. 1
CUT BANK DRIVE
SL-45
SL-46
SL-47
SL-48
SL-49
SL-50
SL-51
SL-52
SL-53
SL-54
SL-55
36+00
37+00
38+00
39+00
40+00
41+00
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CROSS SECTION – SAND CREEK
STA: 60+00 TO 88+60
SCALE: 1"=100'

JR- NAMING HAS BEEN UPDATED TO SPECIFY BANKFULL CROSS SECTIONS

These should be labeled as low-flow or bankfull cross-sections

Please also provide cross-sections where shown and to match the HEC-RAS cross-sections

KEY MAP
N.T.S.

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42
2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40
3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82

NOTE

SEE SHEETS 24–30 FOR CROSS SECTIONS

BASIS OF BEARINGS

THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. AS MONUMENTED AT THE SOUTHWEST CORNER OF SAID BY A 2–1/2" ALUMINUM CAP STAMPED "LS 11624" AND AT THE SOUTEAST CORNER OF SAID SOUTHWEST QUARTER BY A 2–1/2" ALUMINUM CAP STAMPED "LS 11624", SAID LINE BEARS N89°14'14"E, A DISTANCE OF 2,722.69 FEET.

100 50 0 100
ORIGINAL SCALE: 1" = 100'

Know what's below. Call before you dig.

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND REVIEW

PRELIMINARY NOT FOR CONSTRUCTION

MIKE A. BRAMLE
COLORADO P.E. 3
FOR AND ON BEHALF OF JR ENGINEERING, LLC

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419–3024

J·R ENGINEERING
A Westrian Company
Centennial 303–740–9393 • Colorado Springs 719–593–2593
Fort Collins 970–491–9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H–SCALE	1"=100'
V–SCALE	N/A
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 23 OF 52

JOB NO. 25188.04

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   ELEVATION = 7030.82

LEGEND

- PROP GROUND SURFACE
- EX GROUND SURFACE
- 100YR FIS WSEL
- 100YR DESIGN WSEL

BASIS OF BEARINGS

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

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V-SCALE	1"=10'
DATE	10/21/21
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SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 24 OF 52

JOB NO. 25188.04

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LEGEND

- PROP GROUND SURFACE
- EX GROUND SURFACE
- 100YR FIS WSEL
- 100YR DESIGN WSEL

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

ENGINEER'S STATEMENT

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COLORADO P.E. 3
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V-SCALE	1"=10'
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SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 25 OF 52

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LEGEND

- PROP GROUND SURFACE
- EX GROUND SURFACE
- 100YR FIS WSEL
- 100YR DESIGN WSEL

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MIKE A. BRAMLE[illegible]
COLORADO P.E. 3[illegible]
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SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 26 OF 52

JOB NO. 25188.04

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   EASTING = 235167.071
   ELEVATION = 7023.42
2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40
3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82

LEGEND

- PROP GROUND SURFACE
- EX GROUND SURFACE
- 100YR FIS WSEL
- 100YR DESIGN WSEL

BASIS OF BEARINGS

THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. AS MONUMENTED AT THE SOUTHWEST CORNER OF SAID BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624" AND AT THE SOUTEAST CORNER OF SAID SOUTHWEST QUARTER BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624", SAID LINE BEARS N89°14'14"E, A DISTANCE OF 2,722.69 FEET.

811 Know what's below. Call before you dig.

100 50 0 100

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

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND CHECKED

PRELIMINARY NOT FOR CONSTRUCTION

MIKE A. BRAMLE
COLORADO P.E. 3
FOR AND ON BEHALF OF JR ENGINEERING, LLC

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
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2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419-3024

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A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	1"=100'
V-SCALE	1"=10'
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 27 OF 52

JOB NO. 25188.04

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Show both maintenance roads/trail and lot lines

LEGEND

- PROP GROUND SURFACE
- EX GROUND SURFACE
- 100YR FIS WSEL
- 100YR DESIGN WSEL

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42
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   ELEVATION = 7030.82

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ENGINEER'S STATEMENT

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PRELIMINARY NOT FOR CONSTRUCTION

MIKE A. BRAMLE... E
COLORADO P.E. 3...
FOR AND ON BEHALF OF JR ENGINEERING, LLC

100 50 0 100

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

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2ND FLOOR
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DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 28 OF 52

JOB NO. 25188.04

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BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
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- EX GROUND SURFACE
- 100YR FIS WSEL
- 100YR DESIGN WSEL

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ORIGINAL SCALE: 1" = 10'

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COLORADO P.E.
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V-SCALE	1"=10'
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 29 OF 52

JOB NO. 25188.04

x:\2510000.all\2518804\Drawing\sheet dwgs\Cross Sections\2518804_X301.dwg, X301, 10/21/2021 4:17:56 PM, ltimmons

BENCHMARK

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VERTICAL
ORIGINAL SCALE: 1" = 10'

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No.	REVISION	BY	DATE

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V-SCALE	1"=10'
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 30 OF 52

JOB NO. 25188.04

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show 100 yr WSEL

JR- WSEL UPDATED AND IS NOW SHOWN IN XS

BENCHMARK

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100 50 0 100

HORIZONTAL
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VERTICAL
ORIGINAL SCALE: 1" = 10'

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION

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COLORADO P.E. 3
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20 BOULDER CRESCENT
2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419-3024

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No.	REVISION	BY	DATE

H-SCALE	1"=100'
V-SCALE	1"=10'
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

CROSS SECTIONS

SHEET 31 OF 52

JOB NO. 25188.04

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POND W-3 PLAN
SCALE: 1"=100'

MAINTENANCE & ACCESS ROAD ABOVE EURV TYPICAL SECTION
SCALE: N.T.S.

NOTE:
ROAD SLOPE DIRECTION VARIES REFER TO PLAN

MAINTENANCE & ACCESS ROAD BELOW EURV TYPICAL SECTION
SCALE: N.T.S.

KEY MAP
SCALE: 1"=2000'

GRADING NOTES:

1. ALL PROPOSED CONTOURS ARE TO FINISHED GRADE.
2. EARTHEN CUT AND FILL SLOPES SHALL BE 3:1 MAXIMUM. SLOPES IN EXCESS OF 4:1 AND AREAS OTHERWISE INDICATED BY WITHIN THESE PLANS, SHALL BE COVERED WITH SOIL RETENTION BLANKET OVER 4" MIN. THICKNESS OF TOPSOIL AND SEEDED.
3. IF THE PROJECT IS CONSTRUCTED DURING THE SUMMER WHEN SEEDING IS NOT ALLOWED, APPLY 1-1/2 TONS OF CERTIFIED WEED FREE MULCH PER ACRE MECHANICALLY CRIMPED INTO THE SOIL IN COMBINATION WITH AN ORGANIC MULCH TACKIFIER.
4. PRIOR TO ANY CONSTRUCTION ACTIVITIES THE PROPOSED SILT FENCE SHOWN ON THE EROSION CONTROL SHEET SHALL BE CONSTRUCTED. THE FENCE SHALL BE REMOVED UPON THE LATER OF STABILIZATION OF THE SITE OR COMPLETION OF CONSTRUCTION.
5. TO REDUCE THE POTENTIAL FOR CLOGGING OF DEBRIS GRATES, NO STRAW MULCH SHALL BE USED WITHIN THE EURV OR WQCV OF A DETENTION BASIN. INSTEAD, EROSION CONTROL BLANKETS SHALL BE INSTALLED FOR A WIDTH OF AT LEAST 6 FEET ON EITHER SIDE OF CONCRETE LOW-FLOW CHANNELS. THE BLANKETS SHALL COMPLY WITH THE MATERIALS AND INSTALLATION REQUIREMENTS FOR EROSION CONTROL BLANKETS (STRAW COCONUT OR 100 PERCENT COCONUT). SITE-SPECIFIC CONDITIONS MAY REQUIRE ADDITIONAL BLANKET OR OTHER EROSION CONTROL MEASURES.

POND WARNING SIGN
SCALE: N.T.S.

50 25 0 50
ORIGINAL SCALE: 1" = 50'

Know what's below. Call before you dig.

ENGINEER'S STATEMENT
PREPARED UNDER MY DIRECT SUPERVISION.
MIKE A. BRAMLE
COLORADO P.E. 3
FOR AND ON BEHALF OF JR ENGINEERING, LLC

PRELIMINARY NOT FOR CONSTRUCTION

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PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419-3024

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Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	1"=50'
V-SCALE	N/A
DATE	10/21/21
DESIGNED BY	DV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

POND PLANS

SHEET 32 OF 52

JOB NO. 25188.04

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POND W-3 OVERFLOW WEIR
SCALE: 1"=20'

CROSS SECTION A-A
STA 1+00.00 TO 9+55.00

POND W-3
CROSS SECTION A-A
HORIZONTAL SCALE: 1"=100'

KEY MAP
SCALE: 1"=2000'

LOW FLOW CHANNEL 1
STA 9+50.00 TO 19+00.00

POND W-3 LOW FLOW CHANNEL
HORIZONTAL SCALE: 1"=100'

label width of maintenance access, show riprap

PLACE FLOOR ATOP 6" OF AGGREGATE BASE BASE COARSE AND COMPACTED SUBGRADE. IF MUCK IS ENCOUNTERED, USE MAX. OF 1-1/2" TO 3" ROCK ATOP 12" OF 3"-5" ROCK (DEPENDANT UPON FIELD CONDITIONS)

BERM DETAIL
SCALE: N.T.S.

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No.	REVISION	BY	DATE

H-SCALE	VARIES
V-SCALE	1"=5'
DATE	10/21/21
DESIGNED BY	DV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

POND PLANS

SHEET 33 OF 52

JOB NO. 25188.04

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37

JR-UPDATED

Adjust grading?

STOCK POND 2 PROFILE
STA 69+00.00 TO 75+00.00

CROSS SECTION B-B
STA 1+00.00 TO 4+79.69

KEY MAP
SCALE: 1"=2000'

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V-SCALE	1"=5'
DATE	10/21/21
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DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

POND PLANS

50 25 0 50
HORIZONTAL
ORIGINAL SCALE: 1" = 50'
VERTICAL
ORIGINAL SCALE: 1" = 5'

Know what's below. Call before you dig.

ENGINEER'S STATEMENT
PREPARED UNDER MY DIRECT SUPERVISION AND REVIEW
MIKE A. BRAMLE
COLORADO P.E. 3
FOR AND ON BEHALF OF JR ENGINEERING, LLC

PRELIMINARY
NOT FOR
CONSTRUCTION

SHEET 34 OF 52

JOB NO. 25188.04

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GRADING NOTES:

1. ALL PROPOSED CONTOURS ARE TO FINISHED GRADE.
2. EARTHEN CUT AND FILL SLOPES SHALL BE 3:1 MAXIMUM. SLOPES IN EXCESS OF 4:1 AND AREAS OTHERWISE INDICATED BY WITHIN THESE PLANS, SHALL BE COVERED WITH SOIL RETENTION BLANKET OVER 4" MIN. THICKNESS OF TOPSOIL AND SEEDED.
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KEY MAP
SCALE: 1"=2000'

EXISTING STOCK POND EMERGENCY SPILLWAY
SCALE: 1"=50'

STOCK POND 1 EMERGENCY SPILLWAY PROFILE STA 16+00.00 TO 19+00.00

811 Know what's below. Call before you dig.

N

50 25 0 50
HORIZONTAL
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VERTICAL
ORIGINAL SCALE: 1" = 5'

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DATE	10/21/21
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DRAWN BY	DJV
CHECKED BY	

SAND CREEK RESTORATION

POND PLANS

SHEET 35 OF 26

JOB NO. 25188.04

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STOCK POND 1 OUTLET STRUCTURE PLAN

SCALE: 1/4"=1'

SECTION A–A

SCALE: 1/4"=1'

SECTION B–B

SCALE: 1/4"=1'

ENGINEER'S STATEMENT

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SAND CREEK RESTORATION

POND PLANS

SHEET 36 OF 52

JOB NO. 25188.04

x:\2510000.all\2518804\Drawings\sheet dwgs\Details\2518804 - Outlet Structure Details.dwg, Pond 1, 10/21/2021 4:23:20 PM, hinnens

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1. ALL PROPOSED CONTOURS ARE TO FINISHED GRADE.
2. EARTHEN CUT AND FILL SLOPES SHALL BE 3:1 MAXIMUM. SLOPES IN EXCESS OF 4:1 AND AREAS OTHERWISE INDICATED BY WITHIN THESE PLANS. SHALL BE COVERED WITH SOIL RETENTION BLANKET OVER 4" MIN. THICKNESS OF TOPSOIL AND SEEDED.
3. IF THE PROJECT IS CONSTRUCTED DURING THE SUMMER WHEN SEEDING IS NOT ALLOWED, APPLY 1-1/2 TONS OF CERTIFIED WEED FREE MULCH PER ACRE MECHANICALLY CRIMPED INTO THE SOIL IN COMBINATION WITH AN ORGANIC MULCH TACKIFIER.
4. PRIOR TO ANY CONSTRUCTION ACTIVITIES THE PROPOSED SILT FENCE SHOWN ON THE EROSION CONTROL SHEET SHALL BE CONSTRUCTED. THE FENCE SHALL BE REMOVED UPON THE LATER OF STABILIZATION OF THE SITE OR COMPLETION OF CONSTRUCTION.
5. TO REDUCE THE POTENTIAL FOR CLOGGING OF DEBRIS GRATES, NO STRAW MULCH SHALL BE USED WITHIN THE EURV OR WQCV OF A DETENTION BASIN. INSTEAD, EROSION CONTROL BLANKETS SHALL BE INSTALLED FOR A WIDTH OF AT LEAST 6 FEET ON EITHER SIDE OF CONCRETE LOW-FLOW CHANNELS. THE BLANKETS SHALL COMPLY WITH THE MATERIALS AND INSTALLATION REQUIREMENTS FOR EROSION CONTROL BLANKETS (STRAW COCONUT OR 100 PERCENT COCONUT). SITE-SPECIFIC CONDITIONS MAY REQUIRE ADDITIONAL BLANKET OR OTHER EROSION CONTROL MEASURES.

KEY MAP
SCALE: 1"=2000'

STOCK POND 2 EMERGENCY SPILLWAY PROFILE
STA 68+00.00 TO 74+00.00

811 Know what's below. Call before you dig.

N

50 25 0 50
HORIZONTAL
ORIGINAL SCALE: 1" = 50'
VERTICAL
ORIGINAL SCALE: 1" = 5'

ENGINEER'S STATEMENT
PREPARED UNDER MY DIRECT SUPERVISION

PRELIMINARY NOT FOR CONSTRUCTION

MIKE A. BRAMLE
COLORADO P.E. 3
FOR AND ON BEHALF OF JR ENGINEERING, LLC

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419-3024

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	1"=50'
V-SCALE	1"=5'
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	DJV
CHECKED BY	

SAND CREEK RESTORATION

POND PLANS

SHEET 37 OF 26

JOB NO. 25188.04

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STOCK POND 2 OUTLET STRUCTURE PLAN

SCALE: 1/4"=1'

SECTION A–A

SCALE: 1/4"=1'

SECTION B–B

SCALE: 1/4"=1'

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SAND CREEK RESTORATION

POND PLANS

SHEET 38 OF 52

JOB NO. 25188.04

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label slopes (ensure compliance with access road criteria)

POND 1 SECTION AA PROFILE
STA 0+00.00 TO 6+23.64

STOCK POND 1 SPILLWAY PROFILE

HORZ SCALE: 1"=50'
VERT SCALE: 1"=10'

adjust text

Provide for top and bottom of spillways

POND 2 SPILLWAY PROFILE
STA 0+00.00 TO 3+16.95

adjust text

STOCK POND 2 SPILLWAY PROFILE

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

CONCRETE SHEET PILE CAP

N.T.S.

RIPRAP NOTES:

1. WHERE "SOIL RIPRAP" IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP VOIDS ARE TO BE FILLED WITH APPROVED FILL. THE RIPRAP SHALL BE PRE-MIXED WITH THE APPROVED FILL AT THE FOLLOWING PROPORTIONS BY VOLUME: 65 PERCENT RIPRAP AND 35 PERCENT SOIL. THE SOIL USED FOR MIXING SHALL BE NATIVE TOPSOIL AND SHALL HAVE A MINIMUM FINES CONTENT OF 15 PERCENT. THE SOIL RIPRAP SHALL BE INSTALLED IN A MANNER THAT RESULTS IN A DENSE, INTERLOCKED LAYER OF RIPRAP WITH RIPRAP VOIDS FILLED COMPLETELY WITH SOIL. SEGREGATION OF MATERIALS SHALL BE AVOIDED AND IN NO CASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF SOIL; THE DENSITY AND INTERLOCKING NATURE OF RIPRAP IN THE MIXED MATERIAL SHALL ESSENTIALLY BE THE SAME AS IF THE RIPRAP WAS PLACED WITHOUT SOIL.
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RIPRAP DESIGNATION	INTERMEDIATE ROCK DIMENSION (IN.)	PERCENT PASSING (%)	D_{50} (IN.)
TYPE VL	12 9 6 2	70–100 50–70 35–50 2–10	6
TYPE M	21 18 12 4	70–100 50–70 35–50 2–10	12
TYPE H	30 24 18 6	70–100 50–70 35–50 2–10	18

TYPICAL SECTION - MIXED SIZE RIPRAP

TYPICAL SECTION - SOIL RIPRAP

Know what's **below.** **Call** before you dig.

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H-SCALE	1"=50'
V-SCALE	VARIES
DATE	10/21/21
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DRAWN BY	DJV
CHECKED BY	

SAND CREEK RESTORATION

POND PLANS

SHEET 39 OF 26

JOB NO. 25188.04

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GROUTED STEPPED BOULDER DROP #1 DETAIL
PLAN VIEW
SCALE: 1"=20'

Provide profile of the sheet pile structure

JR-ADDED

GSB DETAIL 1
STA 2+50.00 TO 5+50.00

KEY MAP
SCALE: 1"=2000'

20 10 0 20
HORIZONTAL
ORIGINAL SCALE: 1" = 20'
VERTICAL
ORIGINAL SCALE: 1" = 5'

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No.	REVISION	BY	DATE

H-SCALE	1" = 20'
V-SCALE	1" = 5"
DATE	10/21/21
DESIGNED BY	DV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

GSB DETAILS

SHEET 40 OF 52

JOB NO. 25188.04

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GROUTED STEPPED BOULDER DROP #2 DETAIL
PLAN VIEW
SCALE: 1"=20'

KEY MAP
SCALE: 1"=2000'

GSB PROFILE 2
STA 7+00.00 TO 10+00.00

20 10 0 20
HORIZONTAL
ORIGINAL SCALE: 1" = 20'
VERTICAL
ORIGINAL SCALE: 1" = 5'

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No.	REVISION	BY	DATE

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V-SCALE	1"=20'
DATE	10/21/21
DESIGNED BY	DV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

GSB DETAILS

SHEET 41 OF 52

JOB NO. 25188.04

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GROUTED STEPPED BOULDER DROP #3 DETAIL
PLAN VIEW
SCALE: 1"=20'

KEY MAP
SCALE: 1"=2000'

GSB PROFILE 3
STA 49+00.00 TO 52+00.00

20 10 0 20
HORIZONTAL
ORIGINAL SCALE: 1" = 20'
VERTICAL
ORIGINAL SCALE: 1" = 5'

Know what's **below.**
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ENGINEER'S STATEMENT
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V-SCALE	1"=5'
DATE	10/21/21
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CHECKED BY	

SAND CREEK RESTORATION

GSB DETAILS

SHEET 42 OF 52

JOB NO. 25188.04

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Provide profile of the sheet pile structure

JR-ADDED

GROUTED STEPPED BOULDER DROP #4 DETAIL
PLAN VIEW
SCALE: 1"=20'

KEY MAP
SCALE: 1"=2000'

GSB PROFILE 4
STA 54+00.00 TO 57+00.00

20 10 0 20
HORIZONTAL
ORIGINAL SCALE: 1" = 20'
VERTICAL
ORIGINAL SCALE: 1" = 5'

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V-SCALE	1"=5'
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

GSB DETAILS

SHEET 43 OF 52

JOB NO. 25188.04

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GROUTED STEPPED BOULDER DROP #4 DETAIL
PLAN VIEW
SCALE: 1"=20'

KEY MAP
SCALE: 1"=2000'

GSB PROFILE 5
STA 72+00.00 TO 74+00.00

20 10 0 20
HORIZONTAL
ORIGINAL SCALE: 1" = 20'
VERTICAL
ORIGINAL SCALE: 1" = 5'

Know what's **below.**
Call before you dig.

ENGINEER'S STATEMENT
PREPARED UNDER MY DIRECT SUPERVISION
MIKE A. BRAMLE
COLORADO P.E. 3
FOR AND ON BEHALF OF JR ENGINEERING, LLC

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No.	REVISION	BY	DATE

H-SCALE	1"=20'
V-SCALE	1"=5'
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

GSB DETAILS

SHEET 44 OF 52

JOB NO. 25188.04

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GROUTED STEPPED BOULDER DROP #5 DETAIL
PLAN VIEW
HOIZONTAL SCALE: 1'=5"

extend to channel flow area?

JR-UPDATED

KEY MAP
SCALE: 1"=2000'

GSB PROFILE 6
STA 75+00.00 TO 78+00.00

20 10 0 20
HORIZONTAL
ORIGINAL SCALE: 1" = 20'
VERTICAL
ORIGINAL SCALE: 1" = 5'

Know what's **below.**
Call before you dig.

ENGINEER'S STATEMENT
PREPARED UNDER MY DIRECT SUPERVISION

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SAND CREEK RESTORATION

GSB DETAILS

SHEET 45 OF 52

JOB NO. 25188.04

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STRUCTURE EDGE WALL DETAIL (GSB)
NTS

GROUT WALL CONNECTION TRENCHED VERTICAL WALL UPSTREAM OF DROP

GROUTED BOULDER NOTES:

1. BOULDERS USED FOR GROUTING SHOULD MEET ALL THE PROPERTIES OF ROCK FOR ORDINARY RIPRAP, AND ROCK OF UNIFORM SIZE SHOULD BE USED.
2. ROCK SHALL BE HARD, DURABLE, AND FREE FROM CRACKS, OVERBURDEN, SHALE, AND ORGANIC MATTER.
3. GROUTED BOULDERS SHALL BE PLACED DIRECTLY ON STABILIZED, COMPACTED SUBGRADE WITHOUT GRANULAR BEDDING.
4. THE TOP ONE-THIRD OF THE BOULDERS SHALL BE LEFT UNGROUTED AND EXPOSED.
5. ROCK HAVING A MINIMUM SPECIFIC GRAVITY OF 2.65 IS PREFERRED; HOWEVER, IN NO CASE SHALL ROCK HAVE A SPECIFIC GRAVITY LESS THAN 2.50.
6. WEEP HOLES SHALL BE PROVIDED AT THE CHANNEL SLOPES AND CHANNEL DROPS AS SHOWN TO REDUCE UPLIFT FORCES ON THE GROUTED CHANNEL LINING.
7. PLACEMENT AND GROUTING OF BOULDERS SHALL GENERALLY CONFORM TO THE SPECIFICATIONS AND DETAILS FOR GROUTED BOULDER DROPS. SEE DETAILS AND NOTES FOR GROUTED BOULDER DROPS ON THIS SHEET.
8. BOULDERS SHALL BE SET IN A STEPPED MANNER. BOULDERS SHALL NOT BE ORIENTED INTO A SMOOTH SLOPING FACE.
9. BOULDERS SHALL BE GROUTED TO ⅔ THE ROCK HEIGHT.
10. BOULDERS OF DIFFERENT SOURCES AND/OR COLORS SHALL BE MIXED WITH THE OTHER ROCK AND EVENLY DISPERSED THROUGHOUT THE PROJECT TO AVOID HAVING AREAS OF NON-UNIFORMITY.
11. THE BOULDER SIZES SHOWN ON THE PLANS ARE MINIMUM DIMENSIONS. LARGER ROCK MAY BE SUBSTITUTED AS LONG AS THE TOP OF BOULDER ELEVATIONS SHOWN ON THE PLANS ARE MET AND THE MINIMUM OVER-EXCAVATION REQUIREMENTS ARE MET AT EACH BOULDER LOCATION.

BOULDER PLACEMENT NOTES:
1. PLACE BOULDERS WITH THE REQUIRED BOULDER HEIGHT VERTICAL. PLACE BOULDERS AS TIGHTLY TOGETHER AS POSSIBLE (WITHOUT TOUCHING) WHILE PROVIDING ENOUGH ROOM BETWEEN THEM TO THOROUGHLY VIBRATE THE GROUT AND TO ENSURE NO GAPS IN THE GROUT. THE SMALL DIMENSION OF A 2X4 CAN BE USED AS A GUIDE TO CHECK MINIMUM SPACING.
2. BEFORE GROUTING, CLEAN ALL DIRT AND MATERIAL FROM ROCK THAT COULD PREVENT THE GROUT FROM BINDING TO THE ROCK. KEEP BOULDERS FROM TOUCHING. AVOID SLIDING BOULDERS AGAINST SUBGRADE TO PROPERLY POSITION.

MATERIAL SPECIFICATIONS:
1. ALL GROUT SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO 3200 PSI.
2. ONE CUBIC YARD OF GROUT SHALL HAVE A MINIMUM OF SIX (6) SACKS OF TYPE II PORTLAND CEMENT.
3. A MAXIMUM OF 25% TYPE F FLY ASH MAY BE SUBSTITUTED FOR THE PORTLAND CEMENT.
4. THE AGGREGATE SHALL BE COMPRISED OF 70% NATURAL SAND (FINES) AND 30% ⅜-INCH ROCK (COARSE).
5. THE GROUT SLUMP SHALL BE BETWEEN 4-INCHES TO 6-INCHES.
6. AIR ENTRAINMENT SHALL BE BETWEEN 5.5% AND 7.5%.
7. TO CONTROL SHRINKAGE AND CRACKING, 1.5 POUNDS OF FIBERMESH, OR EQUIVALENT, SHALL BE USED PER CUBIC YARD OF GROUT.
8. COLOR ADDITIVE IN REQUIRED AMOUNTS SHALL BE USED WHEN SO SPECIFIED BY CONTRACT.

GROUT PLACEMENT SPECIFICATIONS:
1. SPECIAL PROCEDURES SHALL BE REQUIRED FOR GROUT PLACEMENT WHEN THE AIR TEMPERATURES ARE LESS THAN 40°F OR GREATER THAN 90°F. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER OF THE PROCEDURES TO BE USED FOR PROTECTING THE GROUT.
2. GROUT SHALL BE DELIVERED BY MEANS OF A LOW PRESSURE (LESS THAN 10 PSI) GROUT PUMP USING A 2-INCH DIAMETER (MAXIMUM) NOZZLE.
3. FULL DEPTH PENETRATION OF THE GROUT INTO THE BOULDER VOIDS SHALL BE ACHIEVED BY INJECTING GROUT STARTING WITH THE NOZZLE NEAR THE BOTTOM AND RAISING IT AS THE GROUT FILLS, WHILE VIBRATING GROUT INTO PLACE USING A PENCIL VIBRATOR.
4. ALL GROUT BETWEEN BOULDERS SHALL BE TREATED WITH A BROOM FINISH.
5. AFTER GROUT PLACEMENT, EXPOSED BOULDER FACES SHALL BE CLEANED AND FREE OF GROUT.
6. ALL FINISHED GROUT SURFACES SHALL BE SPRAYED WITH A CLEAR LIQUID MEMBRANE CURING COMPOUND AS SPECIFIED IN ASTM C309.

GROUTED BOULDER PLACEMENT DETAIL
NTS

GROUTED BOULDERS

DETAIL 1
WEEP DRAIN

NOTE: INSTALL WEEP DRAINS FOR DROPS AND WALLS 5' AND GREATER AT 10' O.C. AT ELEVATIONS AND LOCATIONS SHOWN ON THE DRAWINGS

WEEP DRAINS

UDFCD CONSTRUCTION OBSERVATION:

THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT (UDFCD) MAY CONDUCT SITE VISITS DURING PROJECT CONSTRUCTION TO OBSERVE CONSTRUCTION FOR CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. ALL GROUTED BOULDER INSTALLATIONS MUST HAVE A PRE-GROUT INSPECTION. COORDINATION WITH UDFCD CONSTRUCTION MANAGER IS REQUIRED 48 HOURS PRIOR TO ANY CONSTRUCTION AND AHEAD OF ANY GROUT OPERATIONS. CONTACT MIKE SARMENTO, UDFCD CONSTRUCTION MANAGER, 303-455-6277, MSARMENTO@UDFCD.ORG.

delete

TYPICAL SECTION - MIXED SIZE RIPRAP

TYPICAL SECTION - SOIL RIPRAP

RIPRAP NOTES:

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TYPE M	21 18 12 4	70-100 50-70 35-50 2-10	12
TYPE H	30 24 18 6	70-100 50-70 35-50 2-10	18

SOIL LIFT TYPICAL SECTION

ENGINEER'S STATEMENT

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COLORADO P.E. 3
FOR AND ON BEHALF OF JR ENGINEERING, LLC

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PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
2ND FLOOR
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 419-3024

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	10/21/21
DESIGNED BY	DJV
DRAWN BY	DJV
CHECKED BY	

SAND CREEK RESTORATION

CONSTRUCTION DETAILS

SHEET 46 OF 52

JOB NO. 25188.04

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HW TOW PROFILE
STA 1+00.00 TO 2+40.08

POND W-3 OVERFLOW WEIR HEADWALL

KEY MAP
SCALE: 1"=2000'

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V-SCALE	1"=5'
DATE	10/21/21
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SAND CREEK RESTORATION

STRUCTURAL DETAILS

SHEET 47 OF 52

JOB NO. 25188.04

811
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MAINTENANCE TRAIL PROFILE 1
STA 1+00.00 TO 10+02.59

Don't show future lots

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N63°13'50"E	75.03'
L2	N30°52'17"E	151.77'
L3	N02°08'36"W	50.01'
L4	N52°28'39"W	11.91'
L5	N52°13'37"W	37.30'
L6	N12°52'54"W	63.47'
L7	N13°01'28"W	344.19'
L8	N41°45'19"W	40.40'
L9	N22°31'54"W	8.82'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	32°21'33"	20.00'	11.30'
C2	33°00'53"	25.00'	14.41'
C3	50°20'03"	20.00'	17.57'
C4	39°20'42"	50.00'	34.34'
C5	28°43'51"	50.00'	25.07'
C6	19°13'25"	50.00'	16.78'

KEY MAP
SCALE: 1"=2000'

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DATE	10/21/21
DESIGNED BY	SCH
DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

MAINTENANCE ACCESS PLAN & PROFILE

SHEET 48 OF 52

JOB NO. 25188.04

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42
2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40
3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82

BASIS OF BEARINGS

THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M. AS MONUMENTED AT THE SOUTHWEST CORNER OF SAID BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624" AND AT THE SOUTEAST CORNER OF SAID SOUTHWEST QUARTER BY A 2-1/2" ALUMINUM CAP STAMPED "LS 11624", SAID LINE BEARS N89°14'14"E, A DISTANCE OF 2,722.69 FEET.

-Consider using a base course that will minimize migration of fines when the pond is detaining water.

SAND CREEK MAINTENANCE TRAIL
N.T.S.

100 50 0 100
HORIZONTAL
ORIGINAL SCALE: 1" = 100'
VERTICAL
ORIGINAL SCALE: 1" = 10'

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ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION

MIKE A. BRAMLE
COLORADO P.E.
FOR AND ON BEHALF OF JR ENGINEERING, LLC

PRELIMINARY NOT FOR CONSTRUCTION

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KEY MAP
SCALE: 1"=2000'

MAINTENANCE ACCESS TRAIL 2
STA 1+00.00 TO 25+00.00

LINE TABLE		
LINE	BEARING	DISTANCE
L10	S89°44'41"E	10.91'
L11	N02°49'40"E	48.18'
L12	N32°23'27"W	110.68'
L13	N01°43'21"E	145.71'
L14	N46°05'22"E	116.15'
L15	N06°32'16"E	78.16'
L16	N12°28'20"E	95.59'
L17	N08°10'55"W	114.81'
L18	N30°16'31"W	88.30'
L19	N31°30'35"W	111.34'
L20	N20°58'09"W	15.83'
L21	N14°40'22"E	60.94'
L22	S85°34'27"E	14.09'
L23	N70°03'19"E	56.22'
L24	N45°21'50"E	154.36'
L25	N61°01'32"E	100.32'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C7	87°25'39"	50.00'	76.29'
C8	35°13'07"	100.00'	61.47'
C9	34°06'48"	100.00'	59.54'
C10	44°22'02"	100.00'	77.44'
C11	39°33'06"	100.00'	69.03'
C12	5°56'04"	200.00'	20.71'
C13	20°39'16"	100.00'	36.05'
C14	22°05'36"	500.00'	192.80'
C15	10°32'27"	500.00'	91.98'
C16	35°38'31"	100.00'	62.21'
C17	79°45'11"	50.00'	69.60'
C18	24°22'14"	100.00'	42.53'
C19	24°41'30"	100.00'	43.09'
C20	15°39'42"	500.00'	136.67'
C21	5°14'24"	100.00'	9.15'

BENCHMARK

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
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100 50 0 100
HORIZONTAL
ORIGINAL SCALE: 1" = 100'
VERTICAL
ORIGINAL SCALE: 1" = 10'

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COLORADO P.E. 3
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V-SCALE	1"=10'
DATE	10/21/21
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DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

MAINTENANCE ACCESS PLAN & PROFILE

SHEET 49 OF 52

JOB NO. 25188.04

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KEY MAP
SCALE: 1"=2000'

MAINTENANCE ACCESS TRAIL PROFILE 3
STA 25+00.00 TO 39+10.11

LINE TABLE		
LINE	BEARING	DISTANCE
L26	N66°15'56"E	155.92'
L27	N64°45'17"E	121.79'
L28	N52°48'26"E	15.63'
L29	N84°52'30"E	66.68'
L30	N60°57'38"E	57.45'
L31	N71°44'16"E	73.49'
L32	N04°45'00"E	109.46'
L33	N52°09'57"E	57.17'
L34	N42°07'31"E	78.55'
L35	N07°34'36"E	108.74'

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C22	1°30'39"	200.00'	5.27'
C23	11°56'50"	100.00'	20.85'
C24	32°04'04"	100.00'	55.97'
C25	23°54'52"	100.00'	41.74'
C26	10°46'38"	200.00'	37.62'
C27	46°22'41"	100.00'	80.94'
C28	20°36'34"	500.00'	179.85'
C29	47°24'56"	100.00'	82.76'
C30	10°02'25"	100.00'	17.52'
C31	34°32'55"	100.00'	60.30'

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100 50 0 100
HORIZONTAL
ORIGINAL SCALE: 1" = 100'
VERTICAL
ORIGINAL SCALE: 1" = 10'

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V-SCALE	1"=10'
DATE	10/21/21
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DRAWN BY	SCH
CHECKED BY	

SAND CREEK RESTORATION

MAINTENANCE ACCESS PLAN & PROFILE

SHEET 50 OF 52

JOB NO. 25188.04

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Don't show future lots or roads

KEY MAP
SCALE: 1"=2000'

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100 50 0 100
HORIZONTAL
ORIGINAL SCALE: 1" = 100'
VERTICAL
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ENGINEER'S STATEMENT

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SAND CREEK RESTORATION

MAINTENANCE ACCESS PLAN & PROFILE

SHEET 51 OF 52

JOB NO. 25188.04

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KEY MAP
SCALE: 1" = 2000'

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SAND CREEK RESTORATION

MAINTENANCE ACCESS PLAN & PROFILE

SHEET 52 OF 52

JOB NO. 25188.04

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