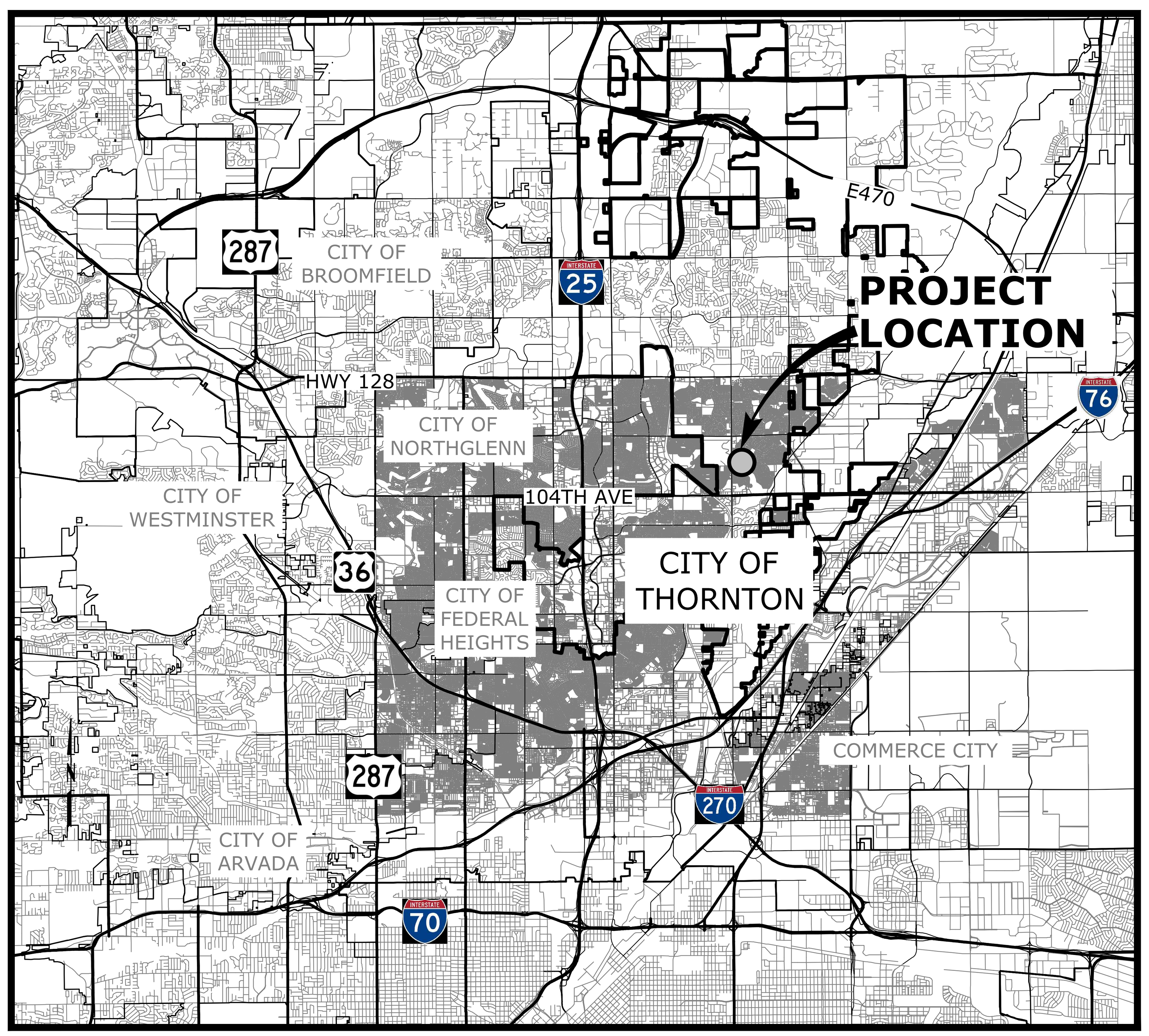
City of Thornton Colorado

CITY OF THORNTON (CITY PROJECT NO. 22-033)

GRANGE CREEK IRRIGATION PUMP STATION

OCTOBER 2023

BID DOCUMENTS



VICINITY MAP

SCALE: 1"=10000'

INDEX OF DRAWINGS

GENERAL

1 G-1 COVER SHEET, INDEX OF DRAWINGS, VICINITY MAP
2 G-2 GENERAL NOTES AND PROJECT CONTACTS
3 G-3 SYMBOLS AND LEGEND
4 G-4 GENERAL ABBREVIATIONS
5 G-5 GENERAL SITE SURVEY LEGEND & NOTES - 1
6 G-6 GENERAL SITE SURVEY LEGEND & NOTES - 2
7 G-7 GENERAL SITE SURVEY CONTROL POINTS
8 G-8 GENERAL EXISTING FLOODPLAIN MAPPING

EROSION CONTROL

9 EC-1 EROSION AND SEDIMENT CONTROL GENERAL NOTES
10 EC-2 EROSION AND SEDIMENT CONTROL LAYOUT
11 EC-3 EROSION AND SEDIMENT CONTROL DETAILS - 1
12 EC-4 EROSION AND SEDIMENT CONTROL DETAILS - 2

CIVIL

13 C-1 CIVIL EXISTING SITE & DEMOLITION
14 C-2 CIVIL SITE AND GRADING LAYOUT
15 C-3 CIVIL DETAILS - 1
16 C-4 CIVIL DETAILS - 2

STRUCTURAL

17 S-001 GENERAL NOTES & TYPICAL DETAILS
18 S-101 FOUNDATION AND ROOF FRAMING PLAN & DETAILS

ARCHITECTURAL

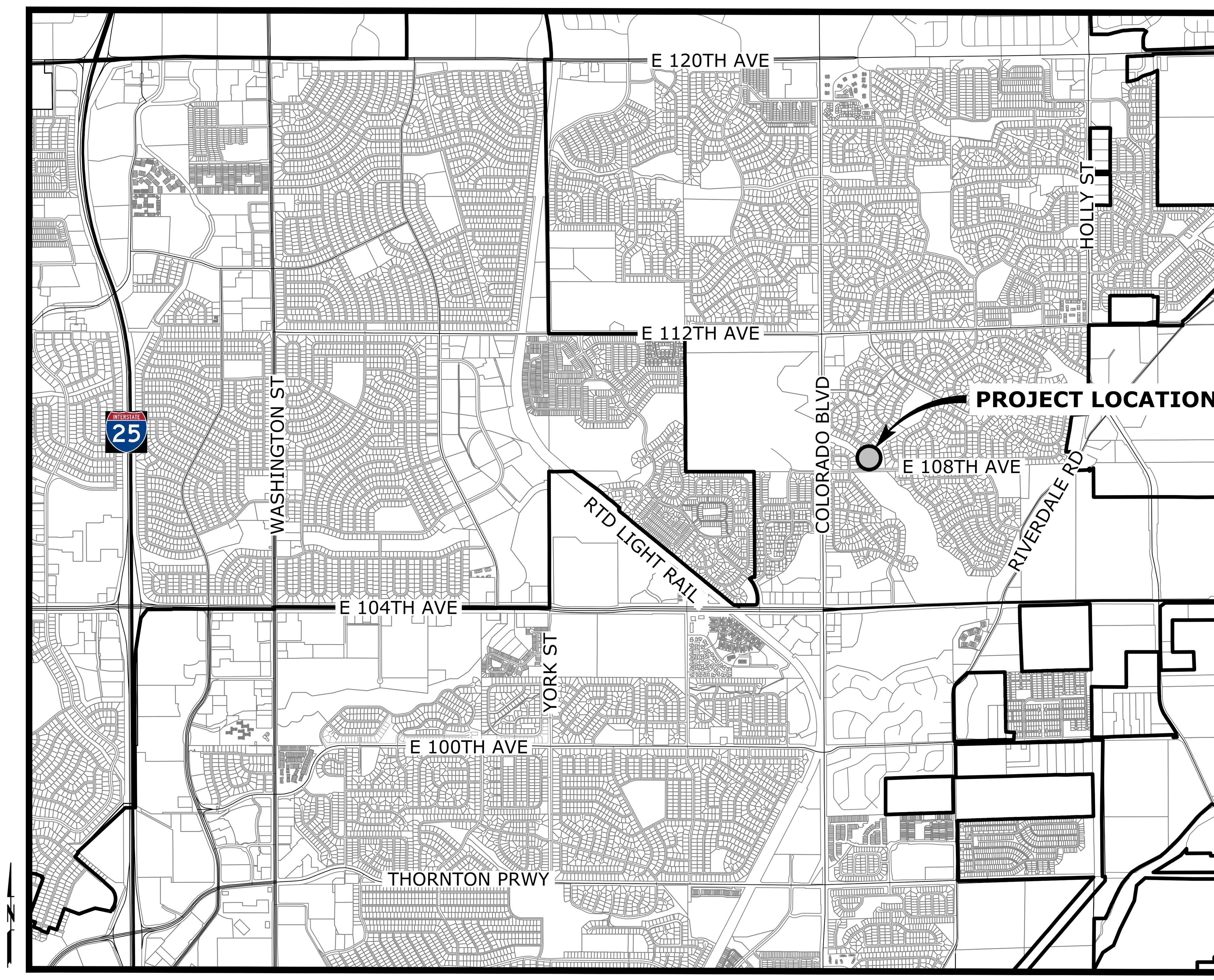
19 A-100 FLOOR PLAN, CODE PLAN, AND EXTERIOR ELEVATIONS
20 A-101 BUILDING & WALL SECTIONS AND ARCHITECTURAL DETAILS

MECHANICAL

21 M-1 MECHANICAL DEMOLITION PLAN
22 M-2 MECHANICAL PLAN
23 M-3 MECHANICAL SECTION
24 M-4 MECHANICAL DETAILS - 1
25 M-5 MECHANICAL DETAILS - 2

ELECTRICAL

25 E0 ELECTRICAL LEGEND
26 E1 ELECTRICAL POWER-ONE LINES
27 E2 ELECTRICAL PUMP SCHEMATIC
28 E3 ELECTRICAL NETWORKING DIAGRAM
29 E4 ELECTRICAL VAULT PLAN VIEW
30 E5 ELECTRICAL VAULT LIGHTING AND RECEPTACLES



VICINITY MAP

SCALE: 1"=2000'

APPROVALS

CITY OF THORNTON

WORK SHALL BE CONSTRUCTED TO CITY OF THORNTON STANDARDS AND SPECIFICATIONS. THIS APPROVAL IS FOR CONFORMANCE TO THESE STANDARDS AND SPECIFICATIONS AND OTHER CITY REQUIREMENTS. THE DESIGN AND CONCEPT REMAINS RESPONSIBILITY OF THE PROFESSIONAL ENGINEER OR LANDSCAPE PROFESSIONAL.

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PETE BREZALL, PROJECT MANAGER, CITY OF THORNTON DATE

DocuSigned by: Dan Schiltz 10/30/2023
DAN SCHILTZ, P.E., INFRASTRUCTURE ENGINEERING MANAGER, CITY OF THORNTON DATE

DocuSigned by: Elena Acker 10/30/2023
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COLORADO LICENSED PROFESSIONAL ENGINEER 10-26-2023

COLORADO 811 KNOW WHAT'S BELOW. CALL BEFORE YOU DIG.

22-3525

CITY OF THORNTON GENERAL NOTES

1. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE; INCLUDING, SAFETY OF PERSONS AND PROPERTY DURING THE PERFORMANCE OF WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CITY CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE.

2. THE TYPE, SIZE, LOCATION, AND NUMBER OF ALL KNOWN UNDERGROUND UTILITIES ARE APPROXIMATE WHEN SHOWN ON THE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF THE WORK. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO DATE OF CONSTRUCTION. FOR INFORMATION CONTACT: UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) - 1- 800-922-1987. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY SIZE AND HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING FACILITIES PRIOR TO CONSTRUCTION AND NOTIFY THE CITY AND ENGINEER OF ANY DISCREPANCIES.

3. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC AND PRIVATE IMPROVEMENTS AND WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY AUTHORIZED CITY OF THORNTON PERSONNEL.

4. ALL TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SAFETY OF WORKERS PROVIDED FOR AS REQUIRED BY THE MOST RECENT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION." THESE REGULATIONS ARE DESCRIBED IN SUBPART P, PART 1926 OF THE CODE OF FEDERAL REGULATIONS. SHEETING AND SHORING SHALL BE UTILIZED WHERE NECESSARY TO PREVENT ANY EXCESSIVE WIDENING OR SLOUGHING OF THE TRENCH WHICH MAY BE DETRIMENTAL TO HUMAN SAFETY, TO THE PIPE BEING PLACED, TO TREES, OR TO ANY EXISTING STRUCTURE WHERE EXCAVATIONS ARE MADE UNDER SEVERE WATER CONDITIONS. THE CONTRACTOR MAY BE REQUIRED TO USE AN APPROVED PILING INSTEAD OF SHEETING AND SHORING.

5. THE CONTRACTOR SHALL FURNISH THE ENGINEER THE "AS CONSTRUCTED" LOCATIONS OF FACILITIES INSTALLED AND, THIS IN TURN, SHALL BE SUBMITTED TO THE CITY OF THORNTON ON ELECTRONIC FILES PREPARED BY THE ENGINEER.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING NEARBY PUBLIC STREETS OF MUD OR DEBRIS DUE TO CONSTRUCTION ACTIVITY INITIATED BY SAID CONTRACTOR ON A DAILY BASIS OR AS OTHERWISE DIRECTED BY AUTHORIZED CITY PERSONNEL.

7. PRIOR TO THE BEGINNING OF WORK, A PRECONSTRUCTION CONFERENCE SHALL BE HELD BETWEEN THE CITY, THE RESPONSIBLE PARTY WHO IS SCHEDULED TO PERFORM THE WORK, THE DESIGNATED ON-SITE FIELD REPRESENTATIVE, THE CONSULTING ENGINEER OR LANDSCAPE PROFESSIONAL, AND ANY OTHER ENTITIES INVOLVED IN THE CONSTRUCTION.

8. NO WORK SHALL BEGIN UNTIL THE INSTALLING RESPONSIBLE PARTY IS IN POSSESSION OF AN APPROVED SET OF PLANS AND THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC AND PRIVATE IMPROVEMENTS, AND ALL NECESSARY PERMITS FOR THE IMPROVEMENTS HAS BEEN ISSUED BY THE CITY. DEVELOPMENT ENGINEERING'S APPROVAL SHALL BE FOR GENERAL CONFORMITY TO THE UTILITY SPECIFICATIONS AND SHALL NOT CONSTITUTE BLANKET APPROVAL OF ALL DIMENSIONS, QUANTITIES AND DETAILS OF THE MATERIAL OR EQUIPMENT SHOWN. NOR SHALL SUCH APPROVAL RELIEVE THE RESPONSIBLE PARTY, CONSULTING ENGINEER, OR LANDSCAPE ARCHITECT OF THEIR RESPONSIBILITY FOR ERRORS CONTAINED IN THE DRAWINGS. A COPY OF THE APPROVED PLANS AND ALL PERMITS SHALL BE ONSITE AT ALL TIMES.

9. THE MATERIALS USED IN PROJECTS SHALL BE NEW AND SUBJECT TO THE INSPECTION AND APPROVAL OF THE INSPECTOR AT ALL TIMES. THE INSPECTOR HAS THE RIGHT TO PERFORM ANY TESTING DEEMED NECESSARY TO ENSURE COMPLIANCE OF THE MATERIAL WITH THESE STANDARDS. NO MATERIAL SHALL BE USED BEFORE BEING INSPECTED AND APPROVED BY THE INSPECTOR. FAILURE OR NEGLECT ON THE PART OF THE INSPECTOR TO CONDEMN OR REJECT INFERIOR MATERIALS OR WORK SHALL NOT BE CONSTRUED TO IMPLY THEIR ACCEPTANCE SHOULD THEIR INFERIORITY BECOME EVIDENT AT ANY TIME PRIOR TO FINAL ACCEPTANCE OF THE WORK. INSPECTORS HAVE THE AUTHORITY TO REJECT DEFECTIVE OR INFERIOR MATERIALS AND/OR DEFECTIVE WORKMANSHIP AND TO SUSPEND WORK UNTIL SUCH TIME AS THE RESPONSIBLE PARTY SHALL CORRECT THE DISCREPANCIES IN QUESTION.

10. WHENEVER DEFECTIVE MATERIALS AND WORK ARE REJECTED, THE RESPONSIBLE PARTY SHALL PROMPTLY REMOVE SUCH DEFECTIVE MATERIALS AND CONSTRUCTION FROM THE JOB SITE AND REPLACE ALL DEFECTIVE PORTIONS TO THE SATISFACTION OF DEVELOPMENT ENGINEERING. IN THE EVENT THE RESPONSIBLE PARTY FAILS TO REMOVE REJECTED ITEMS FROM THE JOB SITE WITHIN A REASONABLE LENGTH OF TIME, DEVELOPMENT ENGINEERING MAY ARRANGE FOR SUCH REMOVAL AT THE EXPENSE OF THE RESPONSIBLE PARTY.

11. INSPECTION SHALL NOT RELIEVE THE RESPONSIBLE PARTY FROM ANY OBLIGATION TO PERFORM THE WORK STRICTLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR ANY MODIFICATIONS THEREOF. WORK NOT SO CONSTRUCTED SHALL BE REMOVED AND CORRECTED BY THE RESPONSIBLE PARTY AT HIS SOLE EXPENSE, WHENEVER SO ORDERED BY DEVELOPMENT ENGINEERING, WITHOUT REFERENCE TO ANY PREVIOUS ERROR OR OVERSIGHT IN INSPECTION.

12. EXCEPT IN CASES OF EMERGENCY, MAINTENANCE, OR PROTECTION OF WORK ALREADY COMPLETED, NO WORK SHALL BE ALLOWED BETWEEN THE HOURS OF 7 P.M. AND 7 A.M.; NOR ON SATURDAY, SUNDAY, OR LEGAL HOLIDAYS UNLESS APPROVED BY DEVELOPMENT ENGINEERING IN EACH CASE. WHEN ANY INSPECTOR IS REQUIRED TO WORK OUTSIDE THE HOURS OF 7 A.M. TO 4 P.M. ON REGULAR CITY BUSINESS DAYS, OVERTIME SHALL BE CHARGED TO THE RESPONSIBLE PARTY. HOWEVER, SUCH INSPECTORS SHALL REMAIN EMPLOYEES OF THE CITY FOR ALL PURPOSES. REQUESTS FOR OVERTIME SHALL BE MADE TO ENGINEERING AT LEAST 48 HOURS IN ADVANCE. PAYMENT FOR SUCH OVERTIME WORK SHALL BE MADE TO THE CITY PRIOR TO FINAL ACCEPTANCE.

13. THE WORK SHALL BE SURVEYED AND STAKED UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR IN ACCORDANCE WITH THE APPROVED PLANS.

14. COMPACTION OF ALL TRENCHES MUST BE ATTAINED AND COMPACTION TEST RESULTS SUBMITTED TO THE ENGINEER AND THE CITY OF THORNTON PRIOR TO INITIAL ACCEPTANCE.

15. ALL WORK, INCLUDING CORRECTION WORK, SHALL BE INSPECTED BY A CITY REPRESENTATIVE WHO SHALL HAVE THE AUTHORITY TO HALT CONSTRUCTION WHEN STANDARD CONSTRUCTION PRACTICES ARE NOT BEING ADHERED TO.

16. CONTRACTOR SHALL REGULARLY PATROL THE PUBLIC LANDS ADJACENT TO THE DEVELOPMENT TO REMOVE CONSTRUCTION DEBRIS AND KEEP THE SITE CLEAN AND SAFE.

17. ALL SITE GRADING (EXCAVATION, EMBANKMENT, AND COMPACTION) SHALL CONFORM TO THE RECOMMENDATIONS OF THE LATEST SOILS INVESTIGATION FOR THIS PROPERTY AND SHALL FURTHER BE IN CONFORMANCE WITH THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC AND PRIVATE IMPROVEMENTS", LATEST EDITION. A CDPS GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES SHALL BE OBTAINED PRIOR TO ANY GRADING BEING PERFORMED ON SITES ONE (1) ACRE OR LARGER IN SIZE. THESE PERMITS CAN BE OBTAINED FROM THE STATE WATER QUALITY CONTROL DIVISION.

18. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME.

19. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE REVEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND AND PROPER MEASURES TAKEN TO CONTROL EROSION AND SEDIMENT MOVEMENT.

20. AT ALL TIMES, THE PROPERTY SHALL BE MAINTAINED AND/OR WATERED TO PREVENT WIND-CAUSED EROSION. EARTHWORK OPERATIONS SHALL BE DISCONTINUED WHEN DUST SIGNIFICANTLY IMPACTS ADJACENT PROPERTY. IF EARTHWORK IS COMPLETE OR DISCONTINUED AND DUST FROM THE SITE CONTINUES TO CREATE PROBLEMS, THE OWNER/DEVELOPER SHALL IMMEDIATELY INSTITUTE MITIGATIVE MEASURES AND SHALL CORRECT DAMAGE TO ADJACENT PROPERTY.

21. THIS EROSION AND SEDIMENT CONTROL PLAN HAS BEEN SUBMITTED TO THE CITY OF THORNTON AND IS IN GENERAL CONFORMANCE WITH THE CITY'S EROSION CONTROL STANDARDS. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURE MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEM OR IF THE PROPOSED EROSION CONTROL MEASURES DO NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS EROSION CONTROL PLAN AND THE OBLIGATION OF THE LANDOWNER SHALL RUN WITH THE LAND UNTIL SUCH TIME AS THE EROSION CONTROL PLAN IS PROPERLY COMPLETED, OFFICIALLY MODIFIED, OR VOIDED.

22. WATER MAINS SHALL BE LAID IN CONFORMANCE WITH THE LATEST EDITION OF THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC AND PRIVATE IMPROVEMENTS AND SHALL BE SUBJECT TO CITY INSPECTION AND APPROVAL.

23. BEDDING AND BACKFILL MATERIALS FOR BOTH WATER AND SEWER SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC AND PRIVATE IMPROVEMENTS.

24. THRUSTBLOCKS SHALL BE PLACED AT FITTINGS, TEES, BENDS, CROSSES, PLUGS, ETC., IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC AND PRIVATE IMPROVEMENTS.

25. DURING CONSTRUCTION, CARE MUST BE TAKEN TO AVOID ANY GROUND WATER, STORM WATER, CONSTRUCTION DEBRIS, SOIL, OR ANY OTHER FOREIGN MATERIALS FROM ENTERING ANY ACTIVE CITY OF THORNTON SEWER. THE USE OF THE SANITARY SEWER SYSTEM FOR THE PURPOSES OF DEWATERING IS STRICTLY PROHIBITED.

26. ALL CONSTRUCTION ACTIVITIES DEWATERING MUST COMPLY WITH THE STATE OF COLORADO PERMITTING PROCESS FOR "STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY." FOR INFORMATION, PLEASE CONTACT COLORADO DEPARTMENT OF HEALTH, WATER QUALITY CONTROL DIVISION.

27. ALL DAMAGED EXISTING CURB, GUTTER, AND SIDEWALK SHALL BE REPAIRED PRIOR TO ACCEPTANCE OF COMPLETED IMPROVEMENTS.

28. ALL CURB RETURNS WITHIN PUBLIC RIGHT-OF-WAY SHALL BE CONSTRUCTED WITH SIDEWALK RAMPS IN ACCORDANCE WITH THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC AND PRIVATE IMPROVEMENTS. ALL SIDEWALK RAMPS SHALL INCLUDE A TRUNCATED DOME DETECTABLE WARNING PATTERN AS SHOWN ON THE DETAIL SHEETS.

29. THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN PROPER TRAFFIC CONTROL DEVICES UNTIL THE SITE IS OPEN TO TRAFFIC. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY OF THORNTON FOR APPROVAL PRIOR TO CONSTRUCTION.

30. REPAIR OF ANY DAMAGE TO EXISTING IMPROVEMENTS OR LANDSCAPING IS THE RESPONSIBILITY OF THE CONTRACTOR.

31. CONTRACTOR SHALL BE REQUIRED TO DOCUMENT EXISTING CONDITIONS OF ALL MATERIALS TO BE PROTECTED IN PLACE PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR SHALL SUBMIT PHOTOGRAPHS OR VIDEO OF EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION FOR APPROVAL BY ENGINEER. CONTRACTOR SHALL ALSO SUBMIT PHOTOGRAPHS OR VIDEOS OF SITE CONDITIONS FOLLOWING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY AREAS THAT ARE DISTURBED WITHOUT PRIOR APPROVAL FROM THE OWNER OR THE ENGINEER.

32. ALL MECHANICAL PIPING AND ACCESSORIES INSIDE THE PUMP STATION SHALL BE PAINTED SAFETY GREEN, PC855 PER THE SPECIFICATIONS.

PROJECT CONTACTS

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NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED
CAD DRAWN
CMJ CHECKED

COLORADO LICENSED PROFESSIONAL ENGINEER
10-26-2023

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

GENERAL NOTES

SHEET G-2

PROJECT NO.: 22-3525 SCALE: AS SHOWN DATE: OCTOBER 2023

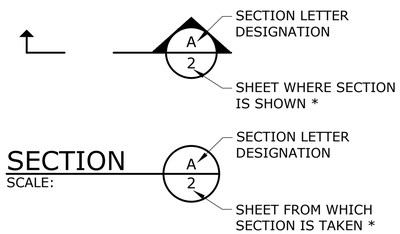
TOPOGRAPHIC LEGEND

	EXISTING	PROPOSED
WATERLINE	10"W	12"PVC W
RAW WATERLINE	12"RW	12"RW
ELECTRICITY	E	E
GAS	4"G	4"G
TELEPHONE/TELEMETRY	T	T
CABLE TELEVISION	CATV	CATV
SANITARY SEWER LINE	8"SS	8"SS
SANITARY SEWER FORCE MAIN	6"FM	6"FM
STORM DRAIN	8"SD	8"SD
CULVERT	12"CMP	18"D
ABANDON PIPE		
DRAINAGE DITCH		
WOODEN FENCE		
CHAIN LINK FENCE		
TEMPORARY SILT FENCE		
GUARDRAIL		
TREE/BUSH LINE		
CENTERLINE		
CITY OPEN SPACE SHADING		
EASEMENT		
PROPERTY LINE		
RIGHT-OF-WAY		
EDGE OF PAVEMENT/AC		
EDGE OF GRAVEL		
CURB		
RESTRAINED JOINT PIPE		R
SURFACE ELEVATION	+ 176.63	+ 176.63

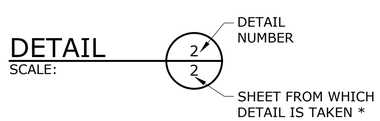
	EXISTING	PROPOSED
SIDEWALK/CONCRETE	S/W	
STRUCTURE OR FACILITY		
CONTOUR MINOR		
CONTOUR MAJOR	200	200
MANHOLE		
CLEAN-OUT		
CATCH BASIN/FIELD INLET		
THRUST BLOCK		
VALVE		
AIR INJECTION ASSEMBLY		
BLOW-OFF ASSEMBLY		
AIR RELEASE ASSEMBLY		
FIRE HYDRANT ASSEMBLY		
WATER METER		
VENT		
UTILITY MARKER/POST		
PULL BOX/JUNCTION BOX		
COMMUNICATIONS RISER		
UTILITY POLE		
GUY WIRE		
LIGHT POST		
MAILBOX		
SIGN		
BENCHMARK		
POTHOLE		
CONTROL POINT/MONUMENT		
TREE DECIDUOUS		
TREE CONIFEROUS		
TREE TO BE REMOVED		

SECTION AND DETAIL DESIGNATIONS

SECTION DESIGNATIONS



DETAIL DESIGNATIONS



* NOTE: IF PLAN AND SECTION FOR DETAIL CALL-OUT AND DETAIL ARE SHOWN ON THE SAME DRAWING, DRAWING NUMBER IS REPLACED WITH A DASH.

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED

CAD DRAWN

CMJ CHECKED

COLORADO LICENSED CHRISTOPHER MICHAEL MINNIX 45381 10-26-2023 PROFESSIONAL ENGINEER

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

SYMBOLS, LEGEND, AND SCHEDULE OF VALUES

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET G-3

3 of 31

@	AT
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
AB	ANCHOR BOLT
ABAN(D)	ABANDON(ED)
ABS	ACRYLONITRILE BUTADIENE STYRENE
ABV	ABOVE / ALCOHOL BY VOLUME
AC	ASPHALTIC CONCRETE
ACP	ASPHALTIC CONCRETE PAVING
ADJ	ADJUSTABLE
ADJC	ADJACENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHR	ANCHOR
AL	ALUMINUM
ALT	ALTERNATE
AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APPVD	APPROVED
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
ARCH	ARCHITECTURAL
ARV	AIR RELEASE VALVE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASR	AQUIFER STORAGE & RECOVERY
ASSN	ASSOCIATION
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AWWA	AMERICAN WATER WORKS ASSOCIATION
B&S	BELL & SPIGOT
BC	BOLT CIRCLE
BD	BOARD
BETW	BETWEEN
BF	BOTH FACE
BFD	BACKFLOW PREVENTION DEVICE
BFILL	BACKFILL
BFV	BUTTERFLY VALVE
BHP	BRAKE HORSEPOWER
BKGD	BACKGROUND
BLDG	BUILDING
BLK	BLOCK
BLVD	BOULEVARD
BM	BENCHMARK / BEAM
BMP	BEST MANAGEMENT PRACTICES
BO	BLOW-OFF
BOC	BACK OF CURB
BS	BOTH SIDES
BSMT	BASEMENT
BTF	BOTTOM FACE
BTU	BRITISH THERMAL UNIT
BV	BALL VALVE
BW	BOTH WAYS
C	CELSIUS
C TO C	CENTER TO CENTER
CALTRANS	CALIFORNIA DEPARTMENT OF TRANSPORTATION
CARV	COMBINATION AIR RELEASE VALVE
CATV	CABLE TELEVISION
CB	CATCH BASIN
CCP	CONCRETE CYLINDER PIPE
CCW	COUNTER CLOCKWISE
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHAN	CHANNEL
CHEM	CHEMICAL
CHFR	CHAMFER
CHKV	CHECK VALVE
CI	CAST IRON
CIP	CAST IRON PIPE
CIPC	CAST IN PLACE CONCRETE
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
CL OR C/L	CENTER LINE
CL2	CHLORINE
CLG	CEILING
CLJ	CONTROL JOINT
CLR	CLEAR
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CND	CONDUIT
CO	CLEANOUT
COL	COLUMN
COMB	COMBINATION
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS / CONTINUATION
CONTR	CONTRACT(OR)
COORD	COORDINATE
COP	COPPER
CORP	CORPORATION
CORR	CORRUGATED
CP	CONTROL POINT
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CR	CRUSHED ROCK
CS	COMBINED SEWER
CSP	CONCRETE SEWER PIPE
CT	COURT
CTR	CENTER
CU	CUBIC
CULV	CULVERT
CV	CONTROL VALVE
CW	CLOCKWISE / COLD WATER
CY	CUBIC YARDS
CYL	CYLINDER LOCK
D	DRAIN
DC	DIRECT CURRENT
DEFL	DEFLECTION
DEQ	DEPARTMENT OF ENVIRONMENTAL QUALITY
DET	DETAIL
DI	DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DIR	DIRECTION
DIST	DISTANCE
DN	DOWN
DR	DRIVE
DS	DOWNSPOUT
DWG	DRAWING
DWL	DOWEL
DWV	DRAIN WASTE AND VENT
DWY	DRIVEWAY
E / ELEC	ELECTRICAL
EA	EACH
ECC	ECCENTRIC
EF	EACH FACE
EL	ELEVATION
ELB	ELBOW
ENCL	ENCLOSURE
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQL SP	EQUALLY SPACED
EQUIP	EQUIPMENT
ESMT	EASEMENT
EW	EACH WAY
EXC	EXCAVATE
EXIST	EXISTING
EXP	EXPANSION
EXP BT	EXPANSION BOLT
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
F	FAHRENHEIT
F TO F	FACE TO FACE
FAB	FABRICATE
FB	FLAT BAR
FCA	FLANGED COUPLING ADAPTER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDN	FOUNDATION
FEXT	FIRE EXTINGUISHER
FF	FINISHED FLOOR / FAR FACE
FGL	FIBERGLASS
FH	FIRE HYDRANT
FIN	FINISH(ED)
FIPT	FEMALE IRON PIPE THREAD
FITG	FITTING
FL	FLOOR LINE
FLEX	FLEXIBLE
FLG	FLANGE
FLL	FLOW LINE
FLR	FLOOR
FM	FORCE MAIN
FO	FIBER OPTIC
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET / FOOT
FTG	FOOTING
FUT	FUTURE
FXTR	FIXTURE
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GROOVED COUPLING
GFA	GROOVED FLANGE ADAPTER
GI	GALVANIZED IRON
GIP	GALVANIZED IRON PIPE
GJ	GRIP JOINT
GL	GLASS
GLV	GLOBE VALVE
GND	GROUND
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPS	GALLONS PER SECOND
GR	GRADE
GR LN	GRADE LINE
GRTG	GRATING
GV	GATE VALVE
GRVL	GRAVEL
GYP	GYPSUM
HB	HOSE BIBB
HC	HOLLOW CORE
HDPE	HIGH DENSITY POLYETHYLENE
HDR	HEADER
HDWE	HARDWARE
HGR	HANGER
HGT	HEIGHT
HH	HANDHOLD
HM	HOLLOW METAL
HMAC	HOT MIX ASPHALT CONCRETE
HNDRL	HANDRAIL
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HORIZ	HORIZONTAL
HP	HIGH PRESSURE / HORSEPOWER
HPG	HIGH PRESSURE GAS
HPT	HIGH POINT
HR	HOUR
HSB	HIGH STRENGTH BOLT
HV	HOSE VALVE
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HWL	HIGH WATER LINE
HWY	HIGHWAY
HYD	HYDRANT
HYDR	HYDRAULIC
I&C	INSTRUMENTATION & CONTROL
IAW	IN ACCORDANCE WITH
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IF	INSIDE FACE
IMPVT	IMPROVEMENT
IN	INCH
INCC	INCLUDE(D)(ING)
INFL	INFLUENT
INJ	INJECTION
INSTL	INSTALLATION / INSTALL
INSUL	INSULATION
INTER	INTERCEPTOR
INTR	INTERIOR
INV	INVERT
IP	IRON PIPE
IPT	IRON PIPE THREAD
IR	IRON ROD
IRRIG	IRRIGATION
ITD	IDAHO TRANSPORTATION DEPARTMENT
JT	JOINT
JUNC	JUNCTION
KPL	KICK PLATE
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWY	KEYWAY
L	LENGTH
LAB	LABORATORY
LAV	LAVATORY
LB	POUND
LF	LINEAR FOOT
LIN	LINEAL
LN	LANE
LOC	LOCATION
LONG	LONGITUDINAL
LP	LOW PRESSURE
LPT	LOW POINT
LRG	LARGE
LS	LONG SLEEVE / LUMP SUM
LT	LEFT
LVL	LEVEL
LWL	LOW WATER LINE
MAN	MANUAL
MAT	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCP	MASTER CONTROL PANEL
MECH	MECHANICAL
MET	METAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MIPT	MALE IRON PIPE THREAD
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MON	MONUMENT / MONOLITHIC
MOT	MOTOR
MP	MILEPOST
MSL	MEAN SEAL LEVEL
MTD	MOUNTED
NA	NOT APPLICABLE
NAVD	NORTH AMERICAN VERTICAL DATUM
NC	NORMALLY CLOSED
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO / NO.	NORMALLY OPEN / NUMBER
NOM	NOMINAL
NORM	NORMAL
NRS	NON-RISING STEM
NTS	NOT TO SCALE
O TO O	OUT TO OUT
OAR	OREGON ADMINISTRATIVE RULES
OC	ON CENTER
OD	OUTSIDE DIAMETER
ODOT	OREGON DEPARTMENT OF TRANSPORTATION
OF	OVERFLOW / OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OVHD	OVERHEAD
P&ID	PROCESS & INSTRUMENTATION DIAGRAM
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PCVC	POINT OF CURVATURE ON VERTICAL CURVE
PE	PLAIN END
PERF	PERFORATED
PERM	PERMANENT
PERP	PERPENDICULAR
PG	PRESSURE GAUGE
PH	PIPE HANGER
PI	POINT OF INTERSECTION
PIVC	POINT OF INTERSECTION ON VERTICAL CURVE
PL OR P/L	PROPERTY LINE / PLATE / PLASTIC
PLBG	PLUMBING
PNL	PANEL
POC	POINT OF CURVATURE
POLY	POLYETHYLENE
PP	POWER POLE / PURPLE PIPE
PRC	POINT OF REVERSE CURVATURE
PRCST	PRECAST
PREP	PREPARATION
PRESS	PRESSURE
PRKG	PARKING
PROP	PROPERTY
PRV	PRESSURE REDUCING VALVE
PS	PUMP STATION
PSIG	POUNDS PER SQUARE INCH GAUGE
PSL	PIPE SLEEVE
PSPT	PIPE SUPPORT
PT	POINT OF TANGENCY
PTVC	POINT OF TANGENCY ON VERTICAL CURVE
PTW	PUMP TO WASTE
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PW	POTABLE WATER
PWR	POWER
QTY	QUANTITY
RAD	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD / ROOF DRAIN
RDCR	REDUCER
REF	REFERENCE
REINF	REINFORCE(D)(ING)(MENT)
REQ'D	REQUIRED
RESTR	RESTRAINED
RFCA	RESTRAINED FLANGE COUPLING ADAPTER
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
R/W	RIGHT-OF-WAY
RPBPD	REDUCED PRESSURE BACKFLOW PREVENTION DEVICE
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RST	REINFORCED STEEL
RT	RIGHT
SALV	SALVAGE
SAN	SANITARY
SC	SOLID CORE
SCHED	SCHEDULE
SD	STORM DRAIN
SDL	SADDLE
SDR	STANDARD DIMENSION RATIO
SECT	SECTION
SHLDR	SHOULDER
SHT	SHEET
SIM	SIMILAR
SLP	SLOPE
SLV	SLEEVE
SOLN	SOLUTION
SP	SOIL PIPE / SEWER PIPE
SPCL	SPECIAL
SPEC(S)	SPECIFICATION(S)
SPG	SPACING
SPL	SPOOL
SPRT	SUPPORT
SQ	SQUARE
SQ FT	SQUARE FOOT
SQ IN	SQUARE INCH
SQ YD	SQUARE YARD
SS	SANITARY SEWER
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STR	STRAIGHT
STRUCT	STRUCTURE / STRUCTURAL
SUBMG	SUBMERGED
SUCT	SUCTION
SV	SOLENOID VALVE
S/W	SIDEWALK
SWD	SIDEWATER DEPTH
SWGR	SWITCH GEAR
SYMM	SYMMETRICAL
SYS	SYSTEM
T OR TEL	TELEPHONE
T&B	TOP & BOTTOM
TAN	TANGENCY
TB	THRUST BLOCK
TBM	TEMPORARY BENCHMARK
TC	TOP OF CONCRETE / TOP OF CURB
TCE	TEMPORARY CONSTRUCTION EASEMENT
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPERATURE / TEMPORARY
T&G	TONGUE & GROOVE
THK	THICK / THICKNESS
THRD	THREAD (ED)
THRU	THROUGH
TP	TEST PIT / TOP OF PAVEMENT / TURNING POINT
TRANS	TRANSITION
TSP	TRI-SODIUM PHOSPHATE
TST	TOP OF STEEL
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UN	UNION
UON	UNLESS OTHERWISE NOTED
USGS	UNITED STATES GEOLOGIC SURVEY
V	VENT / VOLT
VAC	VACUUM
VB	VACUUM BREAKER
VBOX	VALVE BOX
VC	VERTICAL CURVE
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
VCP	VITRIFIED CLAY PIPE
VTR	VENT THROUGH ROOF
W	WATER
W/	WITH
W/IN	WITHIN
W/O	WITHOUT
W/W	WALL TO WALL
WD	WOOD
WF	WIDE FLANGE
WH	WATER HEATER
WI	WROUGHT IRON
WM	WATER METER
WP	WORKING POINT / WATERPROOFING
WS	WATER SERVICE
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WT	WEIGHT
WTP	WATER TREATMENT PLANT
WTRT	WATERTIGHT
WWF	WELDED WIRE FABRIC
WWTF	WASTEWATER TREATMENT FACILITY
WWTP	WASTEWATER TREATMENT PLANT
X SECT	CROSS SECTION
XFMR	TRANSFORMER
YD	YARD DRAIN / YARD
YH	YARD HYDRANT
YR	YEAR
ZN	ZINC

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED
CAD DRAWN
CMJ CHECKED

10-26-2023

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

GENERAL ABBREVIATIONS

SHEET G-4

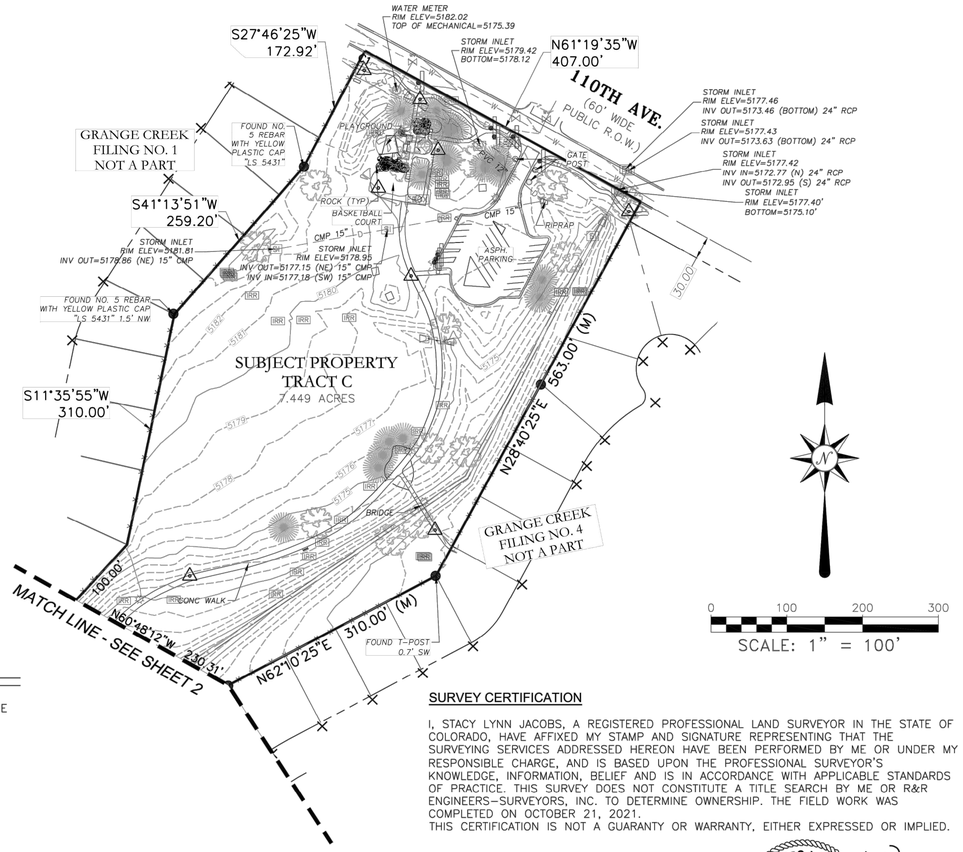
PROJECT NO.: 22-3525 SCALE: AS SHOWN DATE: OCTOBER 2023

IMPROVEMENT SURVEY PLAT

TRACT B AND TRACT C, GRANGE CREEK PHASE ONE P.U.D. FILING NO. 4
LOCATED IN THE NORTH HALF OF SECTION 7, TOWNSHIP 2 SOUTH, RANGE 67 WEST OF THE 6TH PRINCIPAL MERIDIAN
COUNTY OF ADAMS, STATE OF COLORADO

GENERAL NOTES

1. UTILITY INFORMATION WAS OBTAINED FROM FIELD OBSERVATION, UTILITY LOCATE SERVICE, AND RECORD MAPS. THE LOCATION OF UNDERGROUND UTILITIES ARE SHOWN BASED ON VISIBLE EVIDENCE ONLY AND NO RESPONSIBILITY IS ACCEPTED FOR THEIR ACCURACY. THE LOCATIONS OF UNDERGROUND UTILITIES MUST BE FIELD VERIFIED PRIOR TO ANY DIGGING ON OR ADJACENT TO THE SUBJECT PROPERTY. UTILITY NOTIFICATION CENTER OF COLORADO 1-800-922-1987
2. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUE 18-4-508, C.R.S.
3. NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATE SHOWN HEREON.
4. THE BENCHMARK FOR THIS SURVEY IS: NGS KK1401 J 411, BEING A STAINLESS STEEL ROD STAMPED "J 411 1984" FLUSH WITH GROUND WITH A 5" LOGO CAP, AT THE INTERSECTION OF EAST 104TH AVENUE AND RIVERDALE ROAD, 467.2 FEET NORTH OF THE CENTERLINE OF THE AVENUE, 121.1 FEET EAST OF THE CENTER OF THE ROAD AND 1.0 FOOT EAST OF THE SOUTHEAST CORNER OF A CHAIN LINK FENCE AROUND A WATER PUMPING STATION.
   ELEVATION: 5098.49 FEET (NAVD 1988 DATUM)
5. BEARINGS ARE BASED ON THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 2 SOUTH, RANGE 67 WEST, SIXTH PRINCIPAL MERIDIAN, COUNTY OF ADAMS, STATE OF COLORADO, AS MONUMENTED AT BOTH ENDS BY A FOUND 3.5" ALUMINIUM CAP STAMPED "LS 24968: IN RANGE BOX. SAID LINE IS ASSUMED TO BEAR SOUTH 0°25'06" EAST.
6. LINEAR DISTANCES SHOWN HEREON ARE IN U.S. SURVEY FEET.
7. FENCES AND OCCUPATION LINES ARE NOT COINCIDENT WITH THE DEEDED AND PLATTED BOUNDARY LINES.



LEGEND

FOUND MONUMENT, AS NOTED	SUBJECT PARCEL BOUNDARY LINE
FOUND CHISELED "X"	SECTION LINE
SECTION CORNER, AS NOTED	TRACT LINE
C1 CURVE DATA NUMBER	ADJACENT PROPERTY LINE
WATER VALVE	EASEMENT LINE, AS NOTED
WM WATER METER	RIGHT-OF-WAY LINE
EM ELECTRICAL METER	OFFSET / TIE LINE
S SANITARY SEWER MANHOLE	CURB LINE
SD STORM DRAIN INLET	CURB AND GUTTER LINE
SD STORM DRAIN MANHOLE	1' CONTOUR LINE
SIGN	5' CONTOUR LINE
FLARED END SECTION	UNDERGROUND WATER LINE
LIGHT POST	UNDERGROUND COMMUNICATION LINE
BOLLARD / POST	UNDERGROUND ELECTRIC LINE
BFP BACK FLOW PREVENTOR	FENCE LINE
IRR IRRIGATION CONTROL BOX	WALL / PLANTER WALL
TC TELEPHONE RISER	UNDERGROUND FIBER OPTIC LINE
W WATER MANHOLE	
T TELEPHONE MANHOLE	

SURVEY CERTIFICATION

I, STACY LYNN JACOBS, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, HAVE AFFIXED MY STAMP AND SIGNATURE REPRESENTING THAT THE SURVEYING SERVICES ADDRESSED HEREON HAVE BEEN PERFORMED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND IS BASED UPON THE PROFESSIONAL SURVEYOR'S KNOWLEDGE, INFORMATION, BELIEF AND IS IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY ME OR R&R ENGINEERS-SURVEYORS, INC. TO DETERMINE OWNERSHIP. THE FIELD WORK WAS COMPLETED ON OCTOBER 21, 2021.
THIS CERTIFICATION IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

STACY LYNN JACOBS P.L.S.
COLORADO REG. NO. 38495
FOR AND ON BEHALF OF
R&R ENGINEERS-SURVEYORS, INC.

COLORADO LICENSED STACY LYNN JACOBS 38495 PROFESSIONAL LAND SURVEYOR
38495
3/2/2022

R&R ENGINEERS-SURVEYORS, INC.
1635 W. 13TH AVENUE, SUITE 310
DENVER, COLORADO 80204
303-753-6730 WWW.RRENGINEERS.COM
WWW.RRENGINEERS.COM

REVISIONS	
	File No. DC21145 ISP
	Date Drawn 12/05/21
	Drawn By MG/SLJ
	Checked By
	Job No. DC21145

IMPROVEMENT SURVEY PLAT

TRACT B AND TRACT C, GRANGE CREEK PHASE ONE P.U.D. FILING NO. 4
LOCATED IN THE NORTH HALF OF SECTION 7, TOWNSHIP 2 SOUTH, RANGE 67 WEST OF THE 6TH PRINCIPAL MERIDIAN
COUNTY OF ADAMS, STATE OF COLORADO

SHEET 1 OF 2

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED
CAD DRAWN
CMJ CHECKED

COLORADO LICENSED CHRISTOPHER MICHAEL JANNING 43391 PROFESSIONAL ENGINEER
10-26-2023

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

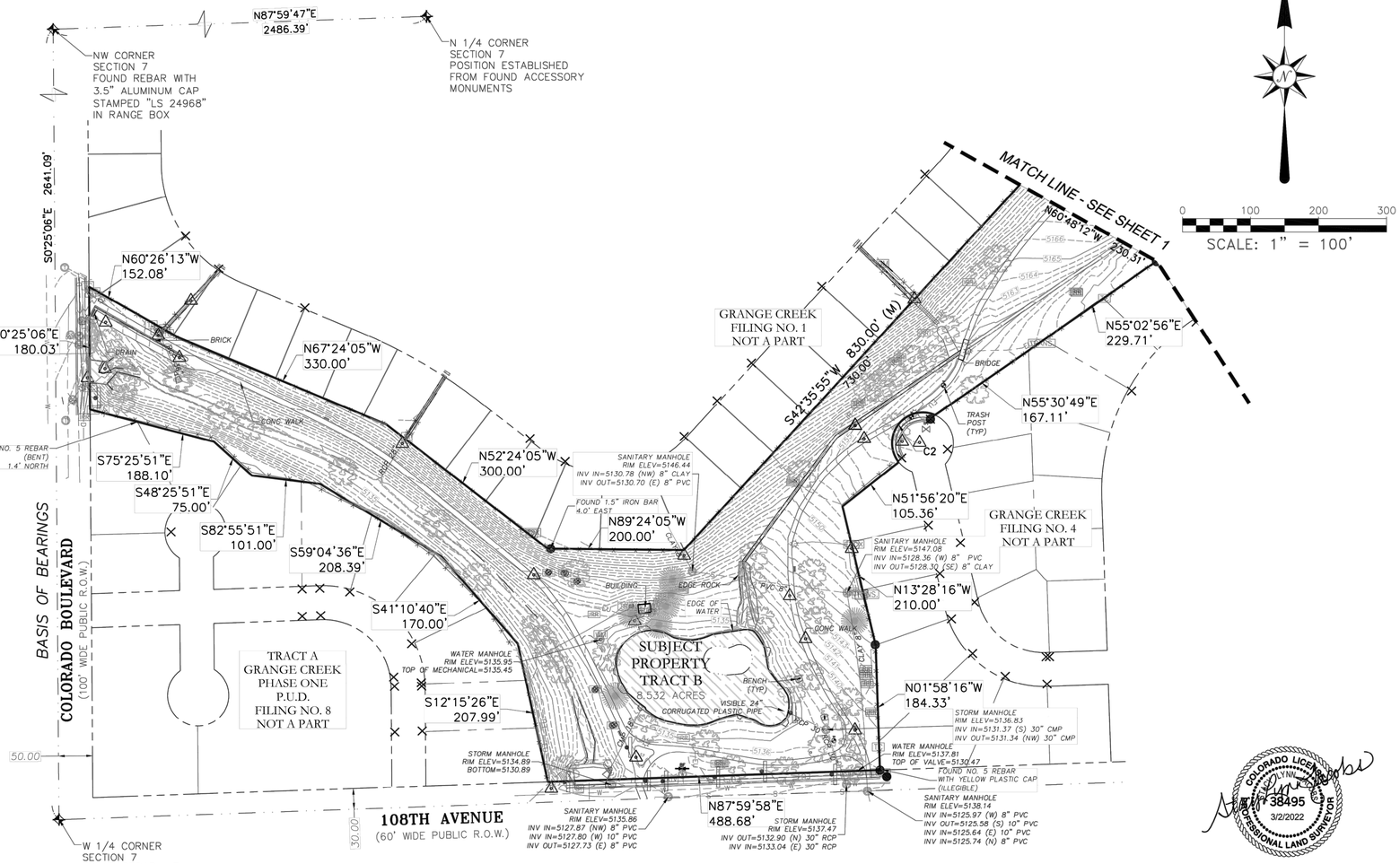
GENERAL
SITE SURVEY LEGEND & NOTES - 1

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
G-5
5 of 31

IMPROVEMENT SURVEY PLAT

TRACT B AND TRACT C, GRANGE CREEK PHASE ONE P.U.D. FILING NO. 4
LOCATED IN THE NORTH HALF OF SECTION 7, TOWNSHIP 2 SOUTH, RANGE 67 WEST OF THE 6TH PRINCIPAL MERIDIAN
COUNTY OF ADAMS, STATE OF COLORADO



CURVE DATA TABLE					
CURVE #	RADIUS	LENGTH	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	295.00'	7.72'	1°30'00"	N62°04'35"W	7.72'
C2	45.00'	118.97'	151°28'45"	N37°31'02"E	87.23'

COLORADO LICENSED
BENJAMIN MICHAEL MINNIX
38495
3/2/2022
PROFESSIONAL LAND SURVEYOR

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IMPROVEMENT SURVEY PLAT

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COUNTY OF ADAMS, STATE OF COLORADO

SHEET 2 OF 2

NO.	DATE	BY	REVISION

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CAD DRAWN
CMJ CHECKED

COLORADO LICENSED
BENJAMIN MICHAEL MINNIX
38495
10-26-2023
PROFESSIONAL ENGINEER

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

GENERAL
SITE SURVEY LEGEND & NOTES - 2

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
G-6
6 of 31

PLAN

SCALE: 1"=300'

GENERAL NOTES

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7. FENCES AND OCCUPATION LINES ARE NOT COINCIDENT WITH THE DEEDED AND PLATTED BOUNDARY LINES.

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

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NLO DESIGNED
CAD DRAWN
CMJ CHECKED

COLORADO LICENSED CHRISTOPHER MICHAEL JANVRIN 43384 10-26-2023 PROFESSIONAL ENGINEER

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

GENERAL
SITE SURVEY CONTROL POINTS

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET G-7

PLAN
SCALE: 1"=40'

NOTES:

1. FLOODWAY ELEVATION AT PUMP STATION HAS BEEN CALCULATED TO BE 5137.3'.
2. NO OBSTRUCTIONS SHALL BE PERMITTED IN THE FLOODWAY.
3. NO LONG TERM OR OVERNIGHT STORAGE SHALL BE PERMITTED IN THE FLOODWAY.
4. CONSTRUCTION TRAILERS, STORAGE, AND/OR SANITATION FACILITIES SHALL BE PERMITTED IN THE FLOOD FRINGE GIVEN PROPER ANCHORING.
5. SHORT TERM, TEMPORARY STOCKPILES THAT DO NOT POSE AN OBSTRUCTION TO THE SITE WILL BE PERMITTED OUTSIDE OF THE FLOODWAY.
6. CONTRACTOR SHALL RESTORE SITE TO ORIGINAL GROUND ELEVATION AND SHALL HAUL EXCESS MATERIAL OFFSITE AT THEIR EXPENSE.
7. FLOODPLAIN MAPPING SHOWN IS APPROXIMATE BASED ON FIRM PANELS 08001C0318J, EFFECTIVE 12/02/2021.

FEMA FIRM LEGEND

ZONE AE	BASE FLOOD ELEVATIONS DETERMINED.
ZONE X	AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD
	FLOODWAY AREAS IN ZONE AE
	FLOOD HAZARD ZONE X

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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NLO DESIGNED
CAD DRAWN
CMJ CHECKED

COLORADO LICENSED
CHRISTOPHER MICHAEL MARTIN
43511
10-26-2023
PROFESSIONAL ENGINEER

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

GENERAL
EXISTING FLOODPLAIN MAPPING

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
G-8
8 of 31

\\ad.msa-ep.com\Boise\BOI_Projects\22\3525 - Browns Hill - Grange Crk Irrigation PS Ph.1\CAD\Sheets\22-3525-CO-GEN_Site_Access.dwg G-8 10/26/2023 2:28 PM NICOLAS.ORDONEZ 23.0s (LMS Tech)

CITY OF THORNTON GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. CONTRACTOR SHALL OBTAIN A STORMWATER CONSTRUCTION PERMIT FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY CONTROL DIVISION, PRIOR TO CLEARING, GRADING, OR EXCAVATING A SITE OF ONE (1) ACRE OR MORE. A COPY OF THE APPROVED PERMIT MUST BE SUBMITTED TO THE CITY OF THORNTON PRIOR TO THE START OF CLEARING, GRADING, OR EXCAVATING OF THE SITE. A COPY OF THE APPROVED PERMIT MUST ALSO BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES DURING CONSTRUCTION. IN ADDITION, CONTRACTOR SHALL COMPLETE AND SUBMIT CITY OF THORNTON SWMP TEMPLATE TO THE CITY PRIOR TO THE NOTICE TO PROCEED. THE TEMPLATE HAS BEEN PARTIALLY PREPARED BY MURRAYSMITH AND WILL BE TRANSFERRED TO CONTRACTOR TO COMPLETE AFTER NOTICE OF AWARD.
2. CONTROL MEASURES SHALL BE INSTALLED BEFORE ANY EARTH DISTURBING ACTIVITIES COMMENCE.
3. THE CONTRACTOR SHALL NOTIFY THE THORNTON INSPECTOR ONCE ALL INITIAL CONTROL MEASURES HAVE BEEN INSTALLED FOR AN INITIAL INSPECTION AT LEAST FORTY EIGHT (48) HOURS PRIOR TO THE INSPECTION. CONSTRUCTION ACTIVITY CANNOT BEGIN UNTIL A PASSING INITIAL INSPECTION HAS OCCURRED.
4. STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES SHALL NOT CAUSE, HAVE THE REASONABLE POTENTIAL TO CAUSE, OR MEASURABLY CONTRIBUTE TO EXCEED ANY WATER QUALITY STANDARD.
5. CONSTRUCTION SHALL BE PHASED IN A MANNER TO LIMIT EARTH DISTURBING ACTIVITIES (I.E. THE ENTIRE PROJECT SITE SHOULD NOT BE DISTURBED IF CONSTRUCTION WILL ONLY BE OCCURRING IN ONE PARTICULAR SECTION).
6. SEDIMENT CAUSED BY ACCELERATED SOIL EROSION SHALL BE REMOVED FROM RUNOFF WATER BEFORE IT LEAVES THE CONSTRUCTION SITE.
7. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND ANY OTHER CHEMICALS SHALL HAVE SECONDARY CONTAINMENT OR EQUIVALENT PROTECTION TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING THE MS4 OR STATE WATERS.
8. A COPY OF THE SWMP AND EROSION AND SEDIMENT CONTROL (ESC) PLANS MUST BE AVAILABLE AT ALL TIMES ON THE CONSTRUCTION SITE UNLESS OTHERWISE APPROVED BY CDPHE OR THORNTON.
9. THE SWMP AND EC PLAN SHALL BE CONTINUOUSLY UPDATED TO REFLECT NEW OR REVISED CONTROL MEASURES (CM) DUE TO CHANGES IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE OF THE CONSTRUCTION SITE. UPDATES MUST BE MADE WITHIN 72-HOURS FOLLOWING THE CHANGE IN CONTROL MEASURES.
10. THE CONTRACTOR SHALL INSPECT THE CONSTRUCTION SITE (INCLUDING ALL CONTROL MEASURES, STORAGE CONTAINERS, AND CONSTRUCTION EQUIPMENT) AT A MINIMUM OF EVERY **7 CALENDAR DAYS OR EVERY 14 CALENDAR DAYS.** IF ON THE 14 DAY FREQUENCY A 24-HOUR POST STORM INSPECTION MUST BE CONDUCTED AFTER A PRECIPITATION EVENT OR SNOW MELT. INSPECTIONS SHALL CONTINUE UNTIL AN INACTIVATION NOTICE IS FILED WITH CDPHE.
11. THE OWNER/CONTRACTOR SHALL KEEP A RECORD OF ALL INSPECTIONS ON SITE AND AVAILABLE FOR REVIEW BY CDPHE OR CITY STAFF. INSPECTION REPORTS MUST IDENTIFY ANY INCIDENTS OF NON-COMPLIANCE WITH THE TERMS AND CONDITIONS OF THE PERMIT.
12. CONTROL MEASURES REQUIRING MAINTENANCE OR ADJUSTMENT SHALL BE REPAIRED IMMEDIATELY AFTER OBSERVATION OF THE FAILING CONTROL MEASURE.
13. SILT FENCE PATCHING: PATCHING IS ONLY ALLOWED ON THE TOP HALF OF THE FENCE. NOT MORE THAN TWO (2) PATCHES PER SECTION OF FENCE. SILT FENCE WITH HOLES OR DETERIORATION ON THE LOWER HALF OF THE FENCE MUST BE REPLACED. REPAIR TYPICALLY INVOLVES REPLACING THE SILT FENCE TO MAINTAIN THE CMS EFFECTIVENESS TO DRAIN SLOWLY AND FUNCTION AS ORIGINALLY DESIGNED.
14. FOR ALL INSTANCES OF NONCOMPLIANCE BASED ON ENVIRONMENTAL HAZARDS AND CHEMICAL SPILLS AND RELEASES, ALL NEEDED INFORMATION MUST BE PROVIDED ORALLY TO CDPHE SPILL REPORTING LINE (24-HOUR NUMBER FOR ENVIRONMENTAL HAZARDS AND CHEMICAL SPILLS AND RELEASES: 1-877-518-5608) WITHIN **24-HOURS** FROM THE TIME THE OWNER/CONTRACTOR BECOMES AWARE OF THE CIRCUMSTANCES.
15. STRAW BALES **SHALL NOT** BE USED FOR PRIMARY EROSION OR SEDIMENT CONTROL (I.E. STRAW BALES MAY BE USED FOR REINFORCEMENT BEHIND ANOTHER BMP SUCH AS SILT FENCE).
16. CONTROL MEASURES REFERRED TO AS "CUTBACK CURB" ARE **NOT ALLOWED**. THE CUTBACK CURB MAY BECOME INEFFECTIVE AND MAY ALSO COMPROMISE THE INTEGRITY OF THE CURB AND IN MOST CASES DOES NOT PROVIDE ANY WATER QUALITY BENEFIT FOR FILTERING OUT SEDIMENT.
17. INLET PROTECTION AND VEGETATIVE BUFFER CONTROL MEASURES **SHALL NOT** BE USED AS STANDALONE CMS. THESE METHODS MUST BE UTILIZED WITH AT LEAST ONE ADDITIONAL CM.
18. CONTROL MEASURES INTENDED FOR SHEET FLOW SEDIMENT RUNOFF SHALL BE PLACED PARALLEL TO THE SLOPE.
19. ALL CONTROL MEASURES SHALL BE CLEANED WHEN SEDIMENT LEVELS ACCUMULATE TO HALF THE DESIGN OF THE CM UNLESS OTHERWISE SPECIFIED.
20. A VEHICLE TRACKING CONTROL (VTC) SHALL BE PLACED AT ALL ENTRANCES/EXITS FROM THE SITE AS WELL AS ANY EGRESS FROM EXPOSED DIRT TO PAVED AREAS TO PREVENT TRACK-OUT ONTO STREETS. IF TRACK-OUT DOES OCCUR, THE OWNER/CONTRACTOR SHALL IMMEDIATELY SWEEP THE STREET OF DEBRIS. RECYCLED CRUSHED CONCRETE OR ASPHALT **SHALL NOT** BE USED FOR VEHICLE TRACKING PADS.
21. FOR RESIDENTIAL PROJECTS, BACK OF CURB PROTECTION IS REQUIRED ALONG ALL INTERIOR LOTS.
22. ALL SEDIMENT COLLECTED IN CONTROL MEASURES SHALL BE REMOVED UPON INITIAL ACCEPTANCE.
23. WIND EROSION AND DUST CONTROL MEASURES MUST BE UTILIZED TO MINIMIZE AIRBORNE PARTICULATE DUST. CONTROL MEASURES MAY INCLUDE MINIMIZING DISTURBED AREAS, WATERING, AND/OR PROVIDING TEMPORARY STABILIZATION.
24. PERMANENT EROSION CONTROL MEASURES FOR SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN **14 CALENDAR DAYS** AFTER FINAL GRADING OR THE FINAL EARTH DISTURBANCE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH DISTURBANCE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH DISTURBANCE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN 14 CALENDAR DAYS. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION MEASURES ARE IMPLEMENTED.
25. ALL SLOPES IN PERMANENT WATER QUALITY FEATURES MUST UTILIZE EROSION CONTROL BLANKETS FOR EROSION CONTROL. IN EXTENDED DETENTION BASINS, ECB MUST COVER TOP OF SLOPE TO SIDES OF TRICKLE CHANNELS AND AROUND STRUCTURES. IN BIORETENTION SUCH AS SAND FILTERS AND RAIN GARDENS, ECB MUST COVER TOP OF SLOPE TO EDGE OF BIOMEDIA. EXCEPTIONS WILL BE MADE FOR FEATURES WHICH WILL BE STABILIZED BY MEANS OTHER THAN SEEDING.
26. FINAL STABILIZATION HAS BEEN ACHIEVED WHEN ALL EARTH DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED, AND UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED WITH AN INDIVIDUAL PLANT DENSITY OF AT LEAST **70 PERCENT** OF PRE-DISTURBANCE LEVELS, OR EQUIVALENT PERMANENT, PHYSICAL EROSION REDUCTION METHODS HAVE BEEN EMPLOYED.
27. ALL TEMPORARY CONTROL MEASURES SHALL BE REMOVED FROM THE SITE UPON SUBMITTING THE INACTIVATION NOTICE.
28. ALL SITE WASTES (INCLUDING TRASH AND BUILDING MATERIALS) MUST BE PROPERLY MANAGED TO PREVENT POTENTIAL POLLUTION DISCHARGES TO THE MS4 OR STATE WATERS.
29. STREET REPAIR OPERATIONS SUCH AS ROTOR MILLING, SLURRY SEAL AND CHIP SEAL. THE MINIMUM CMS REQUIRED ARE; INLET PROTECTION, CURB SOCKS AND STREET SWEEPING.
30. CONCRETE WASHOUT LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE LOCATIONS OF ALL CONCRETE WASHOUT AREAS WILL BE DETERMINED BY THE CONTRACTOR.

CONSTRUCTION SEQUENCE

1. INSTALL VEHICLE TRACKING CONTROL AT ALL PROJECT ENTRANCE(S).
2. CONSTRUCT TEMPORARY CONSTRUCTION GATE AT THE PROJECT ENTRANCE(S) .
3. FURNISH AND INSTALL CONSTRUCTION FENCING, SILT FENCE, GRAVEL CURB OR COIR ROLL ALONG THE LIMITS OF DISTURBANCE.
4. INSTALL INLET PROTECTION AT ALL STORM DRAIN INLETS WITHIN PROJECT LIMITS OR THAT MAY BE AFFECTED BY OVERFLOW OR DRAINAGE.
5. CLEAR AND GRUB SITE . CUT AND DISPOSE OF ANY DEBRIS PRODUCED DURING THE CLEARING AND GRUBBING ACTIVITY.
6. PROVIDE STOCKPILE LOCATIONS AND PROTECT FROM RAINFALL EROSION AT ALL TIMES WITH SILT FENCE.
7. BEGIN SITE EXCAVATION FOR FOUNDATIONS
8. INSTALLATION OF UNDERGROUND UTILITY TRENCHES AND STRUCTURE EXCAVATIONS SHALL BE PROTECTED FROM SEDIMENT AT ALL TIMES.
9. AS THE SITE IMPROVEMENTS ARE BEING COMPLETED, ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED.
10. INSPECT AND MAINTAIN ALL SEDIMENT AND EROSION CONTROL MEASURES AT REQUIRED FREQUENCY.
11. REMOVE ANY TEMPORARY CONTROL MEASURES NOT NEEDED AFTER STABILIZATION IS COMPLETE.
12. DUST SHALL BE CONTROLLED DURING CONSTRUCTION BY ADEQUATE USE OF WATER AND STREET SWEEPING.

SEQUENCE PROVIDED HERE IS FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION ACTIVITY PLANNING AND SEQUENCING TO ENSURE COMPLIANCE WITH ALL REGULATIONS AND PERMITS.

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED

CAD DRAWN

CMJ CHECKED

COLORADO LICENSED PROFESSIONAL ENGINEER — CHRISTOPHER MICHAEL MAYNE — 43802 — 10-26-2023

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

EROSION AND SEDIMENT CONTROL GENERAL NOTES

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET EC-1

PLAN
SCALE: 1"=20'

NOTES:

1. REFER TO SHEET G-7 FOR FLOODWAY ELEVATION AND LIMITS. NO OBSTRUCTIONS SHALL BE PERMITTED IN THE FLOODWAY.NO LONG TERM OR OVERNIGHT STORAGE SHALL BE PERMITTED IN THE FLOODWAY.CONSTRUCTION TRAILERS, STORAGE, AND/OR SANITATION FACILITIES SHALL BE PERMITTED IN THE FLOOD FRINGE GIVEN PROPER ANCHORING.SHORT TERM, TEMPORARY STOCKPILES THAT DO NOT POSE AN OBSTRUCTION TO THE SITE WILL BE PERMITTED OUTSIDE OF THE FLOODWAY.
2. THE PROPOSED STAGING AREAS IDENTIFIED ON THE PLANS MAY BE SUBJECT TO CHANGE. CONTRACTOR SHALL COORDINATE WITH CITY FOR FINAL STAGING LOCATION PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOT STORE MATERIALS IN A WAY THAT BLOCKS ANY DRIVEWAYS OR OTHER MEANS OF RESIDENTIAL ACCESS FOR RESIDENTS. CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC OPEN AT ALL TIMES.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING PERIMETER CONTROLS AROUND ALL STOCKPILES PER THE STOCKPILE MANAGEMENT DETAIL ON SHEET EC-3.
4. THE LOCATIONS OF ALL CONCRETE WASHOUT AREAS WILL BE DETERMINED BY THE CONTRACTOR. A PROPRIETARY MOBILE CONCRETE WASHOUT SYSTEM MAY BE USED, BUT THE CORRESPONDING DETAIL AND PLAN OF USE MUST BE APPROVED PRIOR TO CONSTRUCTION.

LEGEND

BMP	PHASING	SYMBOLS
LIMITS OF CONSTRUCTION	1, 2, 3	LOC
SILT FENCING	1, 2	SF
TEMPORARY CONSTRUCTION FENCING	1, 2	CF
VEHICLE TRACKING CONTROL	2	VTC
STAGING AREA (SSA-R)/ STABILIZED STAGING AREA	2	SSA-R / SSA
CONCRETE WASHOUT	2	CWA
INLET PROTECTION	1,2	IP
STREET SWEEPING	2	SS
SEEDING AND MULCHING	3	SM
SURFACE FLOW		

PHASING KEY: 1 = INITIAL
2 = INTERIM
3 = FINAL

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED
CAD DRAWN
CMJ CHECKED

COLORADO L.S. LICENSED CHRISTOPHER MICHAEL MARTIN 38314 10-26-2023 PROFESSIONAL ENGINEER

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

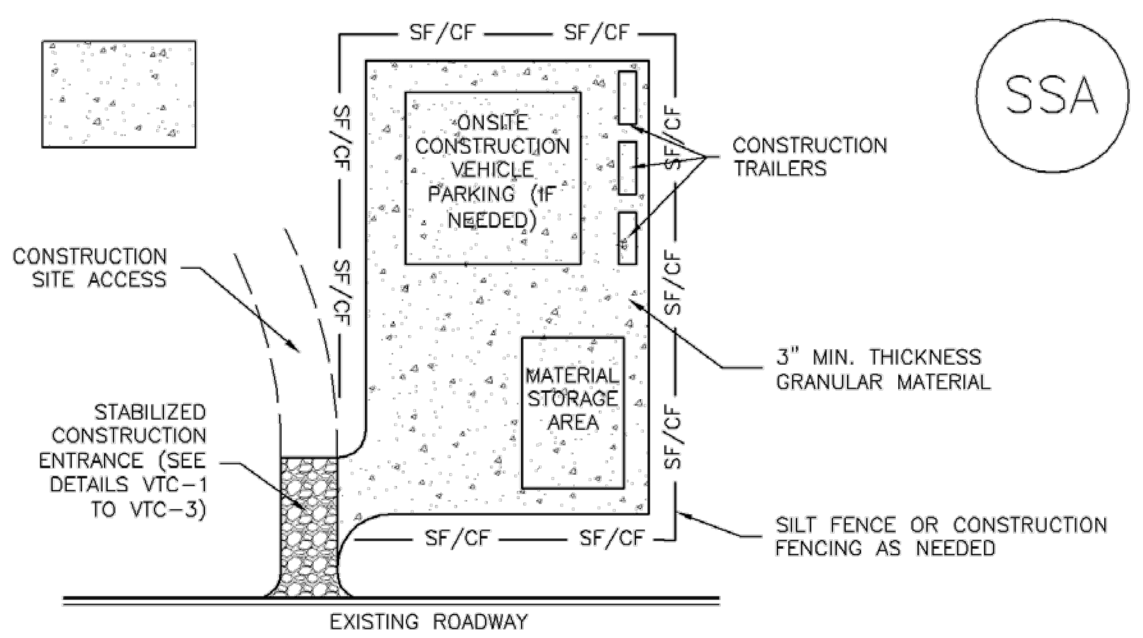
EROSION AND SEDIMENT CONTROL LAYOUT

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
EC-2
10 of 31

\\ad.msa-ep.com\Boise\BOI_Projects\22\3525 - Browns Hill - Grange Crk Irrigation PS Ph.1\CAD\Sheets\22-3525-CO-EC-1.dwg EC-2 10/26/2023 2:26 PM NICOLAS.ORDONEZ 23.0s (LMS Tech)

Stabilized Staging Area (SSA) SM-6



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   - LOCATION OF STAGING AREA(S).
   - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

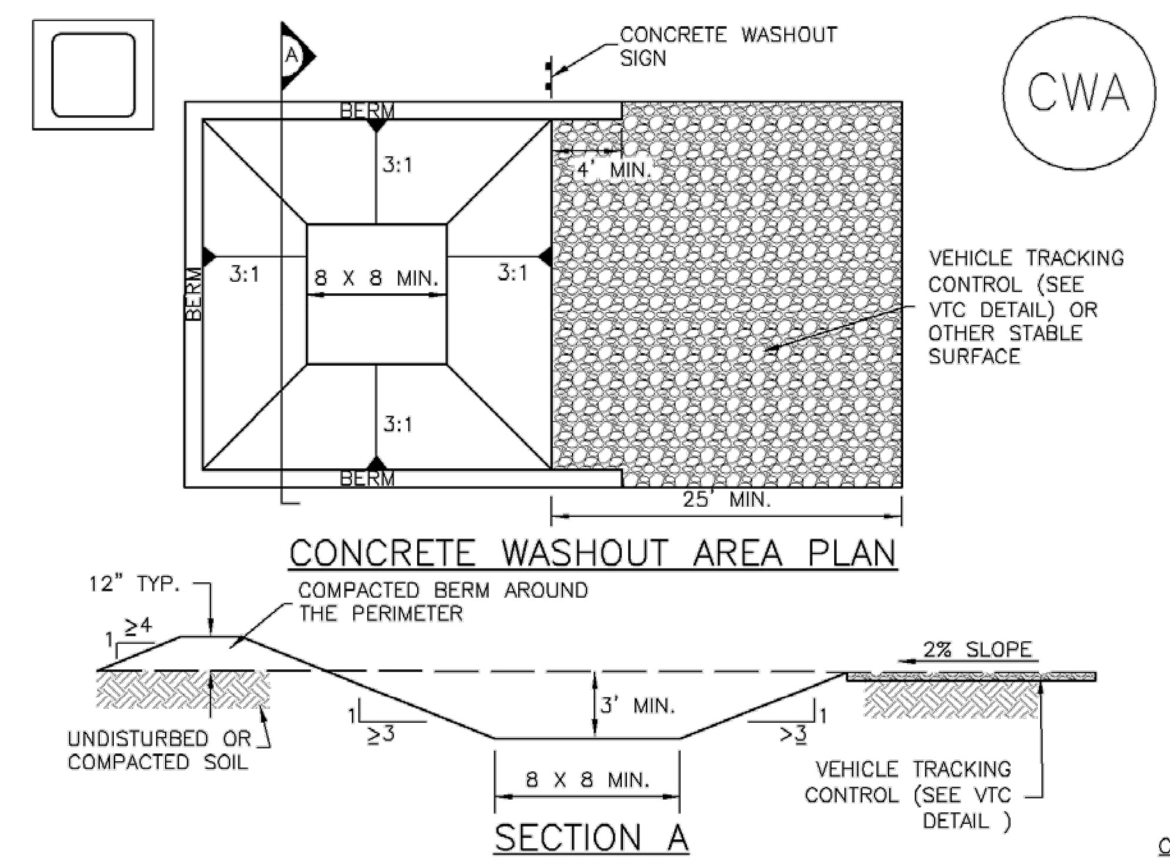
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

Concrete Washout Area (CWA) MM-1



CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - CWA INSTALLATION LOCATION.
2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

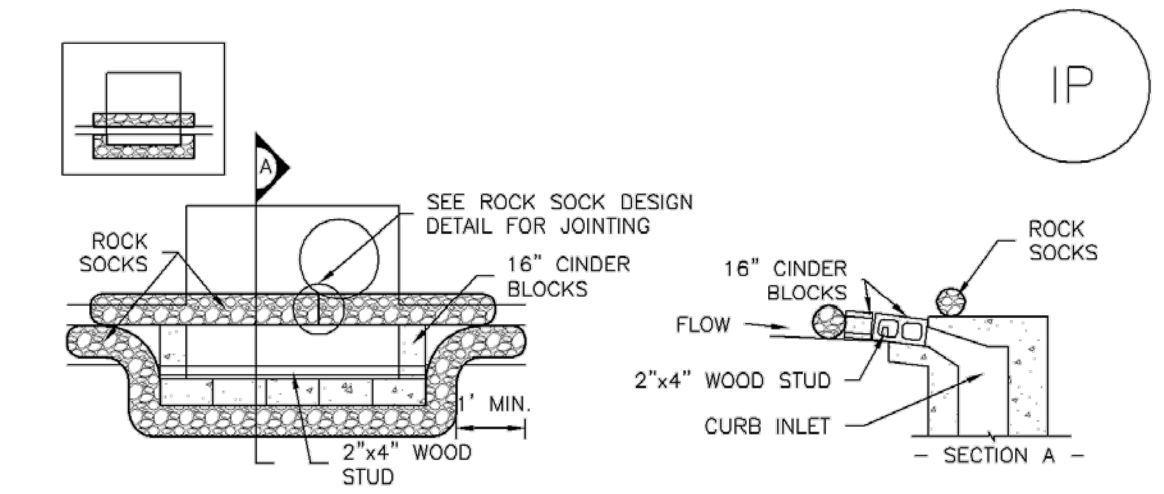
CWA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

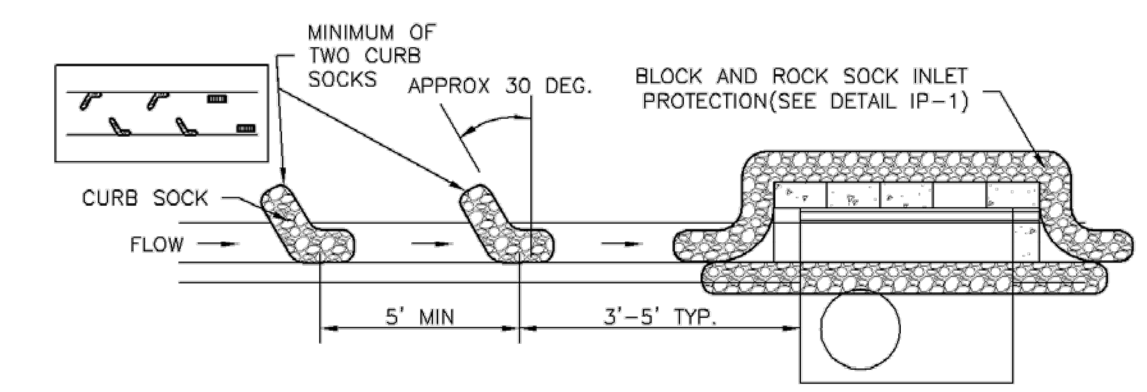
SC-6 Inlet Protection (IP)



IP-1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP-2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.
4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION OF INLET PROTECTION.
   - TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)
2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.
3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.
5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

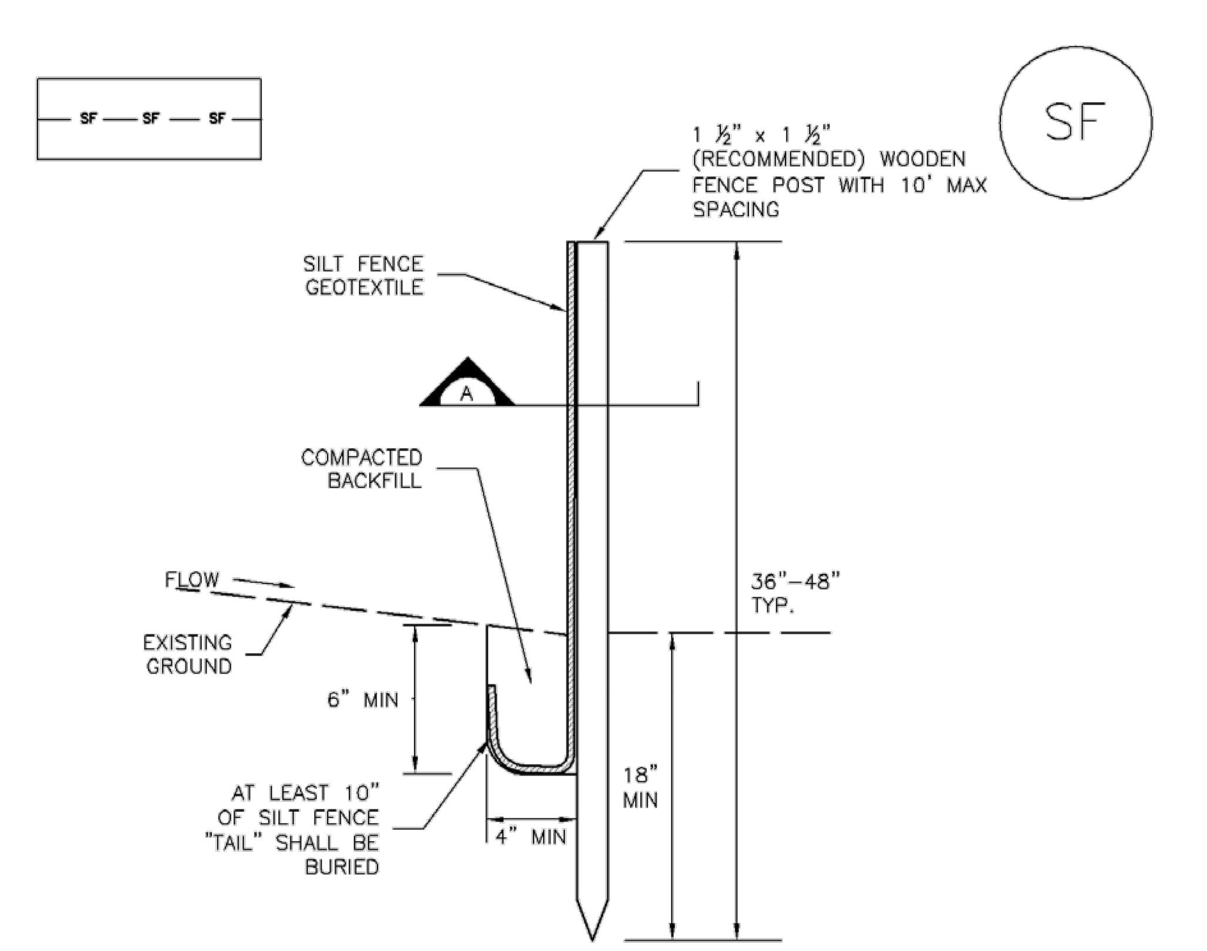
(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

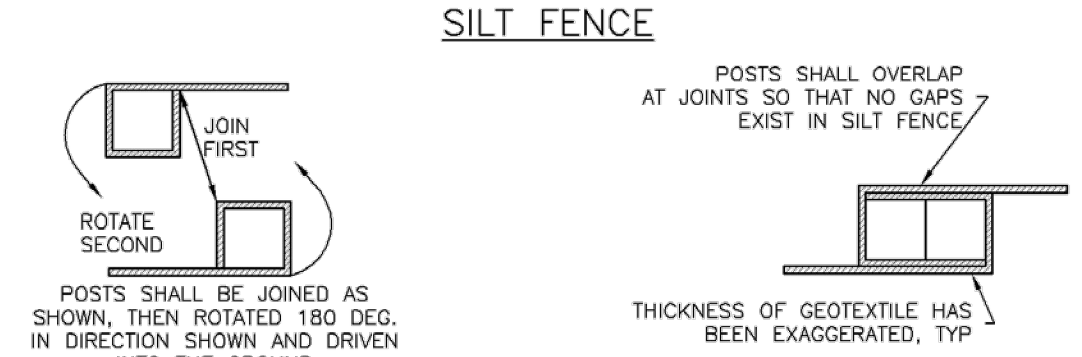
NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

Silt Fence (SF) SC-1



SILT FENCE



SECTION A

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

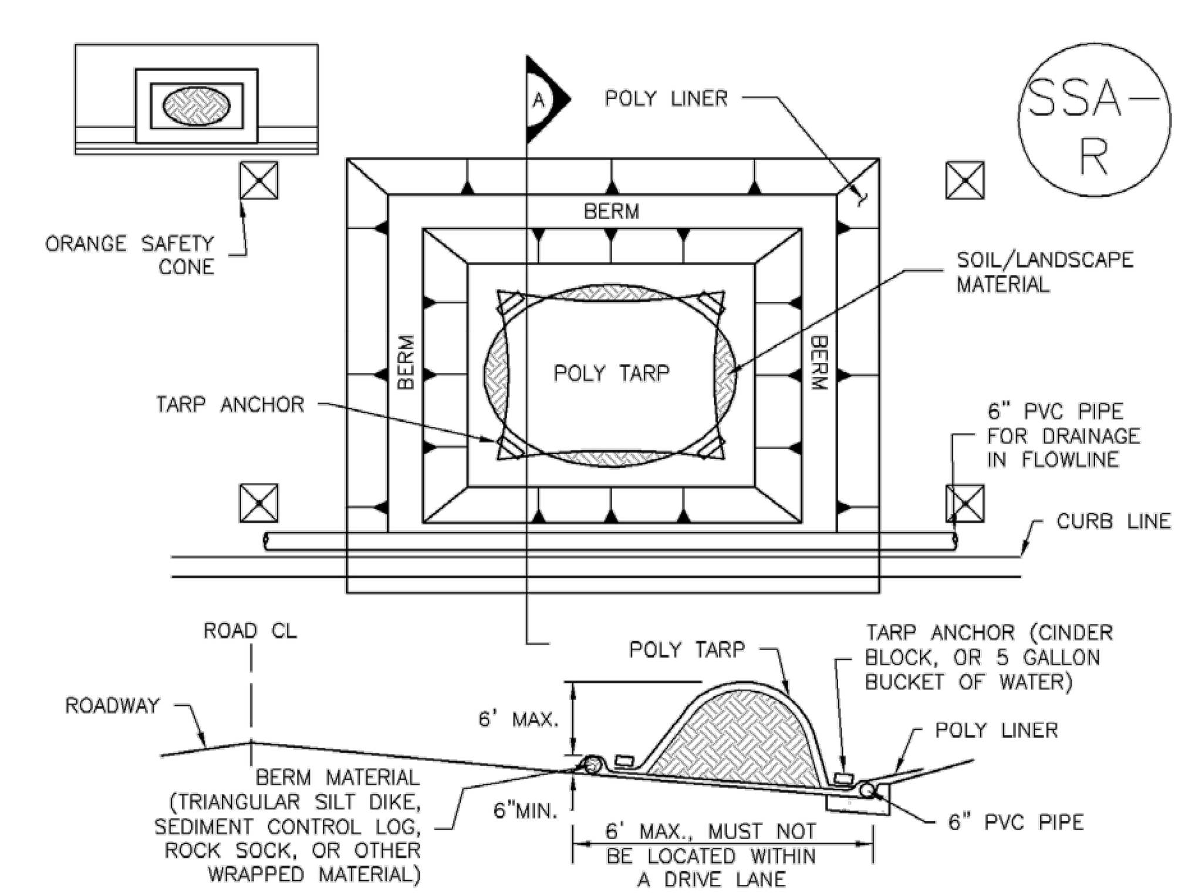
SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Stockpile Management (SP) MM-2



SP-2. MATERIALS STAGING IN ROADWAY

MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   - LOCATION OF MATERIAL STAGING AREA(S).
   - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.
3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.
4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.
5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.
6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.
7. THIS FEATURE CAN BE USED FOR:
   - UTILITY REPAIRS.
   - WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
   - OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.

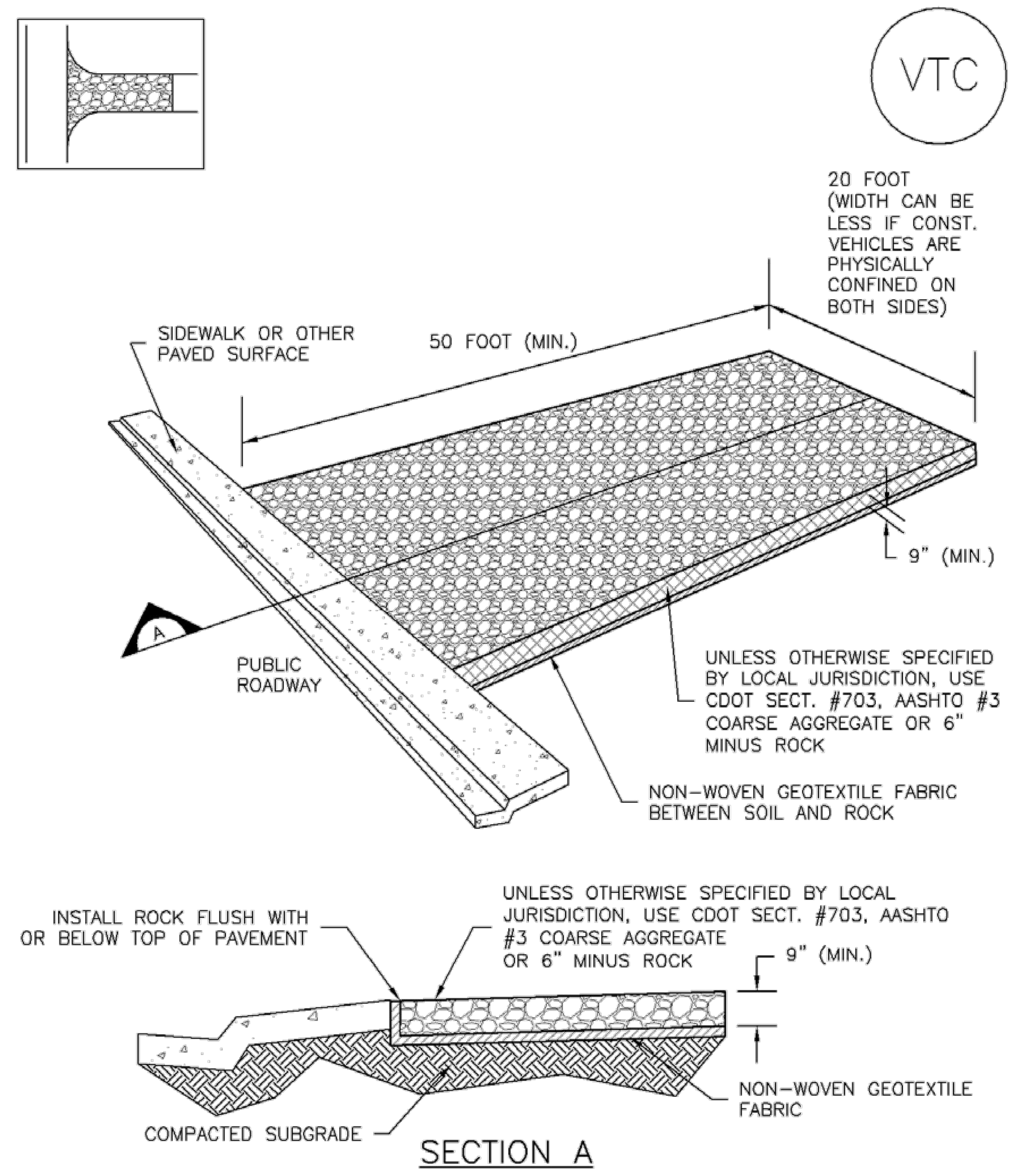
MATERIALS STAGING IN ROADWAY MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. INSPECT PVC PIPE ALONG CURB LINE FOR CLOGGING AND DEBRIS. REMOVE OBSTRUCTIONS PROMPTLY.
5. CLEAN MATERIAL FROM PAVED SURFACES BY SWEEPING OR VACUUMING.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM AURORA, COLORADO)

Vehicle Tracking Control (VTC) SM-4



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   - LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   - TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).
2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

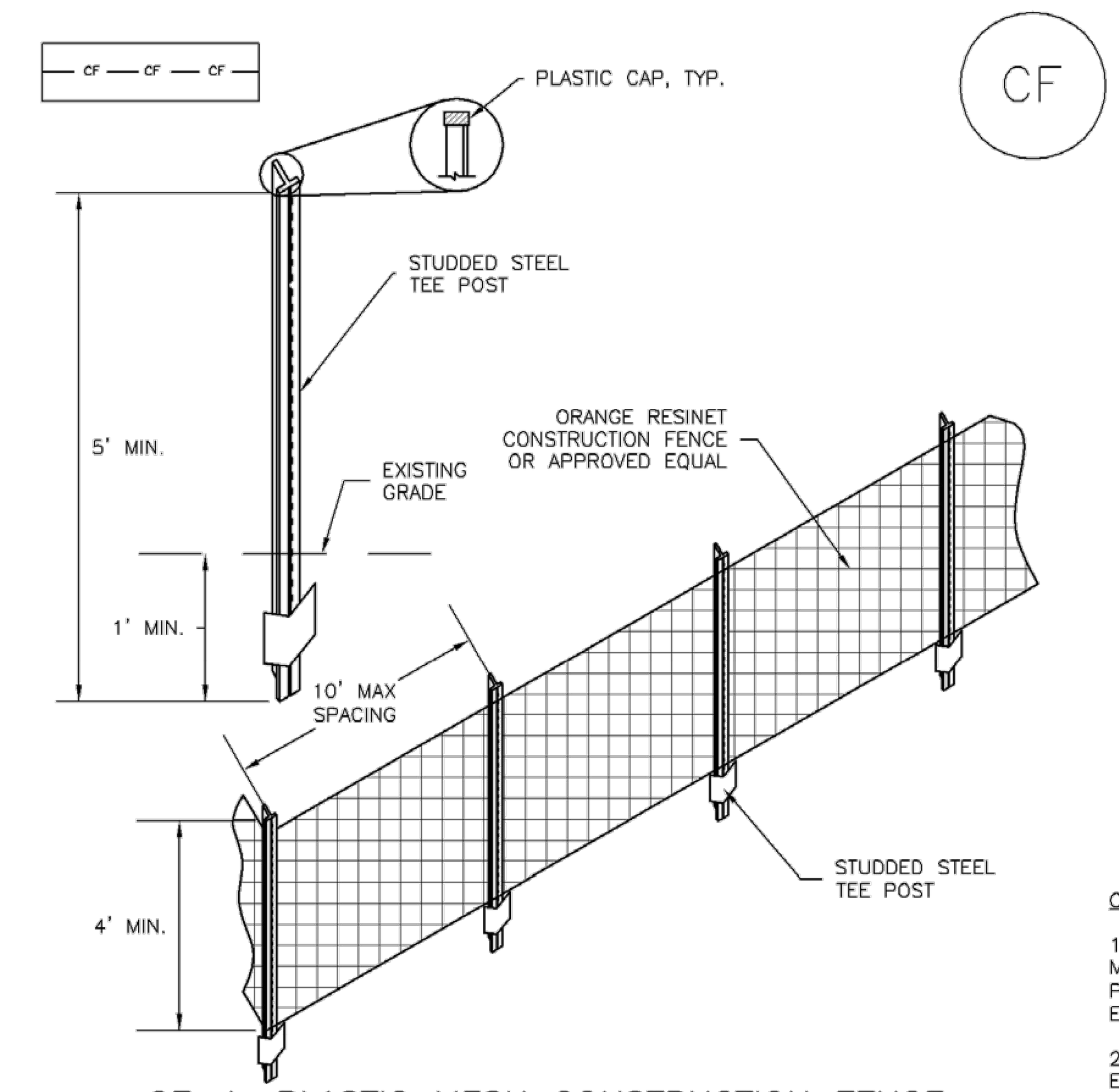
STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

SM-3 Construction Fence (CF)



CF-1. PLASTIC MESH CONSTRUCTION FENCE

CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION OF CONSTRUCTION FENCE.
2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR-GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.
4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.
5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

CONSTRUCTION FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

Temporary and Permanent Seeding (TS/PS) EC-2

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5–10	½ - ¾
7. Sorghum	Warm	5–10	½ - ¾
8. Winter wheat	Cool	20–35	1 - 2
9. Winter barley	Cool	20–35	1 - 2
10. Winter rye	Cool	20–35	1 - 2
11. Triticale	Cool	25–40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common[a] Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Alakali Soil Seed Mix					
Alkali sacaton	*Sporobolus airoides*	Cool	Bunch	1,750,000	0.25
Basin wildrye	*Elymus cinereus*	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Jose tall wheatgrass	*Agropyron elongatum 'Jose'*	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.75**
Fertile Loamy Soil Seed Mix					
Ephriam crested wheatgrass	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	2.0
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	7.0
Total					**15.5**
High Water Table Soil Seed Mix					
Meadow foxtail	*Alopecurus pratensis*	Cool	Sod	900,000	0.5
Redtop	*Agrostis alba*	Warm	Open sod	5,000,000	0.25
Reed canarygrass	*Phalaris arundinacea*	Cool	Sod	68,000	0.5
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Pathfinder switchgrass	*Panicum virgatum 'Pathfinder'*	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	*Agropyron elongatum 'Alkar'*	Cool	Bunch	79,000	5.5
Total					**10.75**
Transition Turf Seed Mix[c]					
Ruebens Canadian bluegrass	*Poa compressa 'Ruebens'*	Cool	Sod	2,500,000	0.5
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	*Lolium perenne 'Citation'*	Cool	Sod	247,000	3.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Total					**7.5**

Temporary and Permanent Seeding (TS/PS) EC-2

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	*Bouteloua gracilis*	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	*Schizachyrium scoparium 'Camper'*	Warm	Bunch	240,000	1.0
Prairie sandreed	*Calamovilfa longifolia*	Warm	Open sod	274,000	1.0
Sand dropseed	*Sporobolus cryptandrus*	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**10.25**
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass[d]	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	*Agropyron intermedium 'Oahe'*	Cool	Sod	115,000	5.5
Vaughn sideoats grama[e]	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.5**

[a] All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

[b] See Table TS/PS-3 for seeding dates.

[c] If site is to be irrigated, the transition turf seed rates should be doubled.

[d] Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

[e] Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

NO.	DATE	BY	REVISION

NOTICE
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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED
CAD DRAWN
CMJ CHECKED

COLORADO LICENSED PROFESSIONAL ENGINEER 10-26-2023

consor

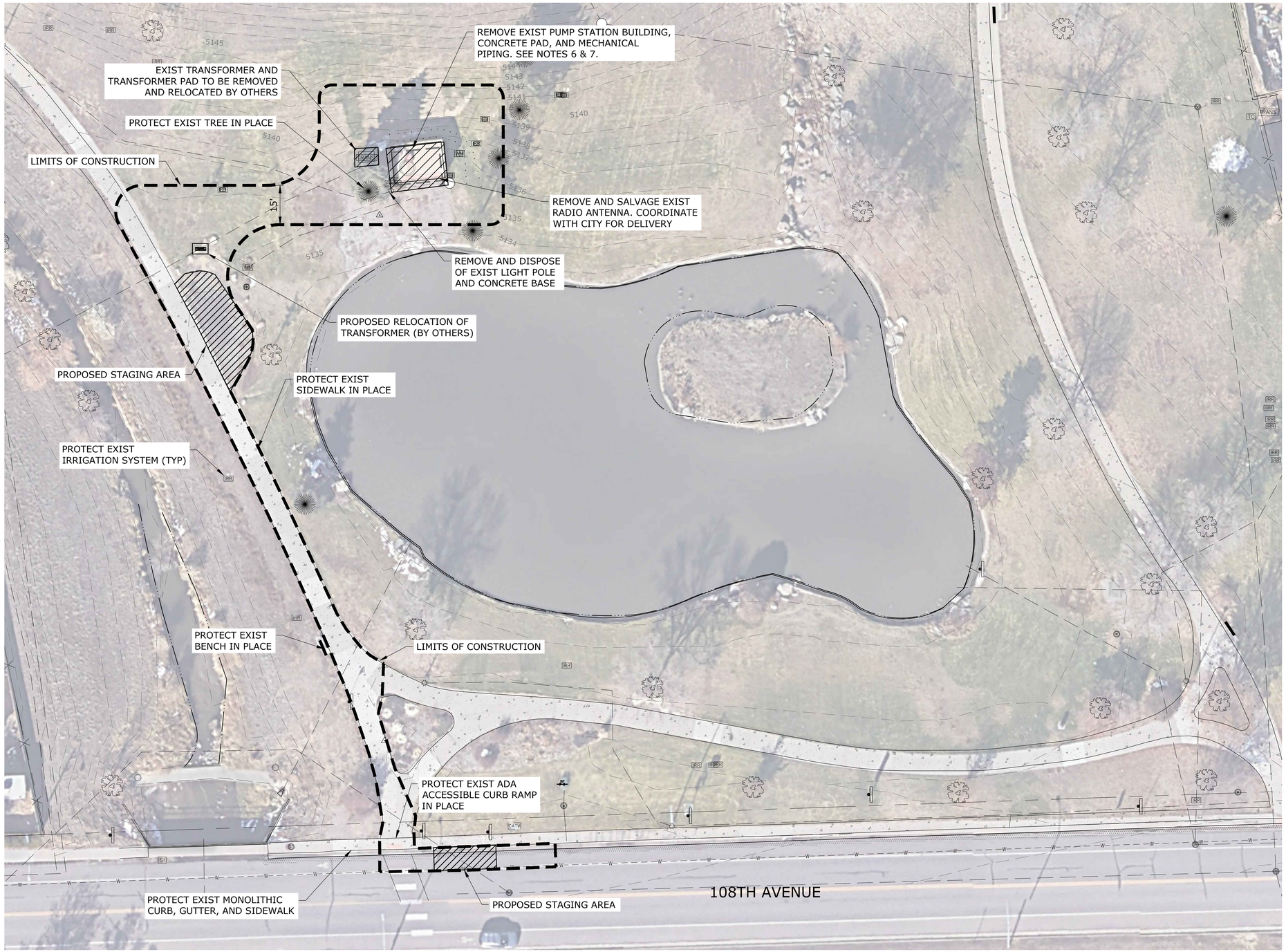
City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

EROSION AND SEDIMENT CONTROL DETAILS - 2

PROJECT NO.: 22-3525 SCALE: AS SHOWN DATE: OCTOBER 2023

SHEET EC-4



PLAN
SCALE: 1"=20'

NOTES:

1. CONTRACTOR SHALL REPLACE ALL DAMAGED IRRIGATION AND LANDSCAPING.
2. CONTRACTOR SHALL ACCESS PUMP STATION BUILDING VIA THE EXISTING SIDEWALK PATH AS SHOWN ON THE PLANS.
3. THE GRANGE CREEK LANDSCAPE IMPROVEMENTS PROJECT SHALL BE TAKING PLACE ADJACENT TO THE CONSTRUCTION SITE. CONTRACTOR SHALL COORDINATE AS NECESSARY WITH CITY FOR SEQUENCING.
4. STAGING AREA SHOWN IN PLANS IS PROPOSED ONLY. CONTRACTOR SHALL COORDINATE WITH CITY OF THORNTON ON FINAL STAGING AREA LOCATION.
5. THE STORAGE OF MATERIALS WITHIN THE FLOODWAY IS NOT ALLOWED. CONTRACTOR SHALL REFER TO SHEET G-7 FOR FLOODWAY LIMITS.
6. REFER TO SHEET M-1 FOR ALL MECHANICAL PIPING DEMOLITION.
7. REFER TO SHEET C-3 FOR ADDITIONAL DEMOLITION DETAILS.

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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CMJ CHECKED

COLORADO LICENSED CHRISTOPHER MICHAEL JANNEY 43900 10-26-2023 PROFESSIONAL ENGINEER

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

CIVIL
EXISTING SITE & DEMOLITION

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
C-1
13 of 31

\\ad.msa-ep.com\Boise\BOI_Projects\22\3525 - Browns Hill - Grange Crk Irrigation PS Ph.1\CAD\Sheets\22-3525-CO-C-1.dwg C-1 10/26/2023 2:25 PM NICOLAS.ORDONEZ 23.0s (LMS Tech)

NOTES:

1. ALL DISTURBED PERVIOUS AREA SHALL BE SODDED PER THE SPECIFICATIONS.
2. REFER TO DETAIL 7 ON SHEET C-4 FOR GRASS SWALE DETAIL.
3. REFER TO ARCHITECTURAL SHEETS A-100 AND A-101 FOR BUILDING DETAILS.
4. THE GRANGE CREEK LANDSCAPE IMPROVEMENTS PROJECT SHALL BE TAKING PLACE ADJACENT TO THE CONSTRUCTION SITE. CONTRACTOR SHALL CONFIRM EXIST WL SIZE AND MATERIAL PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE AS NECESSARY WITH CITY FOR FINAL TIE-IN POINT. NEW IRRIGATION HYDROMETER SHALL BE INSTALLED BY OTHERS.
5. CONTRACTOR SHALL COORDINATE TO FIELD FIT FINAL LOCATION OF PROPOSED IRRIGATION BOX WITH CITY OF THORNTON. PROPOSED IRRIGATION BOX SHALL BE OLDCASTLE POLYMER 1118 OR APPROVED EQUAL.
6. CONTRACTOR SHALL INSTALL A 4"x1" CUT-IN TEE AT THE EXISTING WL WITH A 1"x3/8" COUPLING AND A 3/8" BALL VALVE. BLOW-OFF SHALL BE 3/8" QUICK CONNECT FEMALE FOR PNEUMATIC FITTINGS.

LIMITS OF CONSTRUCTION (TYP)

PROP BLDG CORNER
PROP EL: 5136.90
N: 49499.38
E:29256.19

SWALE MID-POINT
PROP EL: 5136.09

BEGIN SWALE
PROP EL: 5136.52

PROP BLDG CORNER
PROP EL: 5137.00
N: 49497.35
E:29236.97

FFE = 5137.30'

ROUTE NEW 4" WL AND CONNECT TO EXIST WL MIN 2' OUTSIDE BUILDING. REFER TO NOTE 4.

END RAMP
SEE ARCH SHEETS
PROP EL: 5136.99

END RAMP
SEE ARCH SHEETS
PROP EL: 5136.92

NEW IRRIGATION BOX FOR BLOW-OFF. SEE NOTE 5 & 6.

PROP BLDG CORNER
PROP EL: 5136.52
N: 49483.43
E:29238.44

PROP BLDG CORNER
PROP EL: 5136.52
N: 49485.46
E:29257.67

END SWALE
PROP EL: 5135.77

PROTECT EXIST SURVEY MONUMENT IN PLACE

TRANS.

PROPOSED TRANSFORMER (BY OTHERS). ROUTE ELECTRICAL CONDUIT TO METER AT BUILDING. REFER TO ELECTRICAL SHEETS.

5140 5139 5138 5137 5136 5135 5134 5133

IRR

W

PLAN
SCALE: 1"=5'

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED
CAD DRAWN
CMJ CHECKED

COLORADO LICENSED
CHRISTOPHER MICHAEL MARTINEZ
43902
10-26-2023
PROFESSIONAL ENGINEER

consor

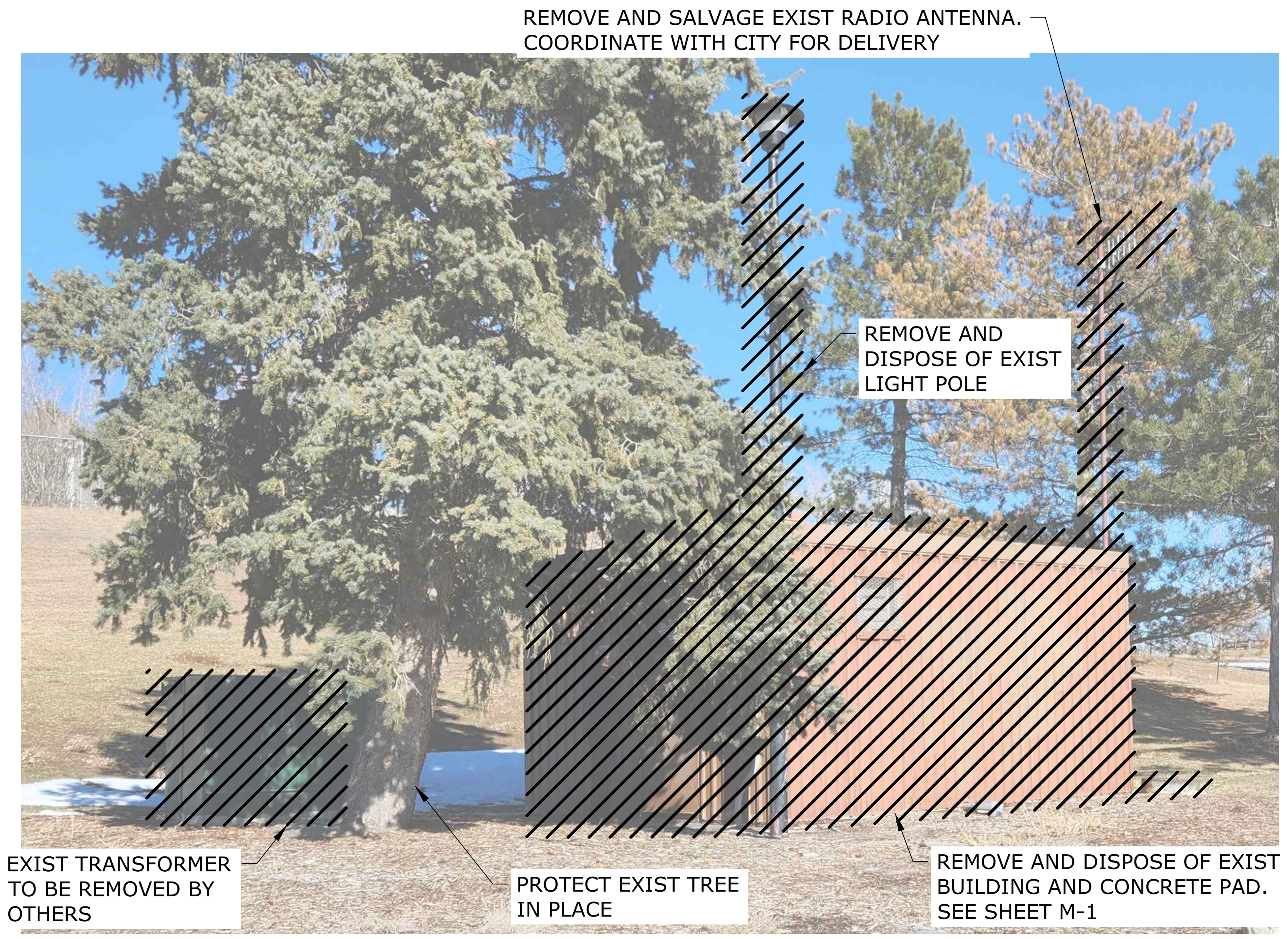
City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

CIVIL
SITE AND GRADING LAYOUT

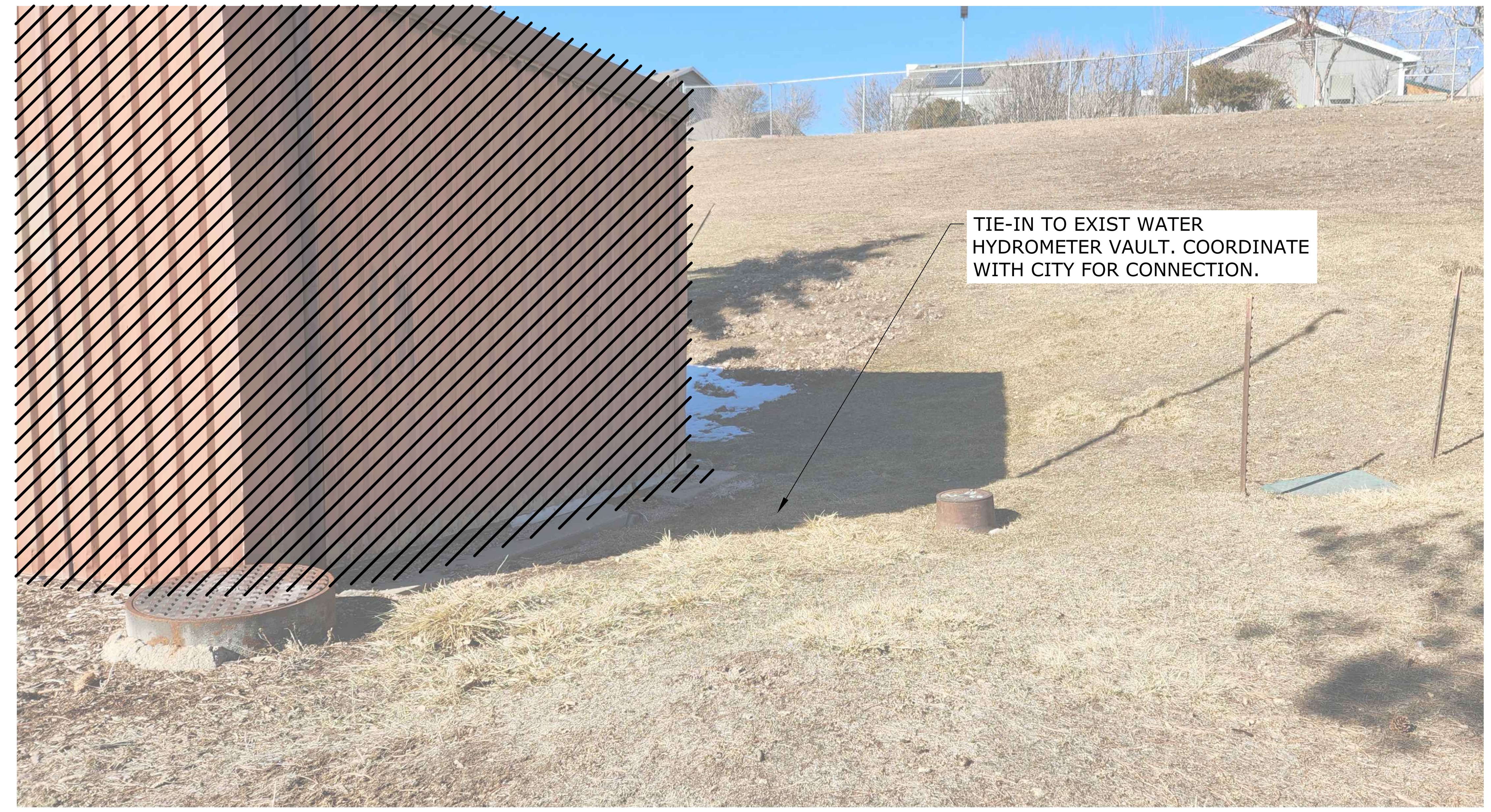
PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
C-2
14 of 31



SITE & BUILDING DEMOLITION DETAIL (1 / -)

SCALE: NTS



SITE DEMOLITION DETAIL (2 / -)

SCALE: NTS

THRUST BLOCKS SHALL BE CONSTRUCTED AT BENDS AND FITTINGS WHICH RESULT IN UNBALANCED LINE THRUST. CARE SHALL BE TAKEN NOT TO BLOCK OUTLETS OR TO COVER BOLTS, NUTS, CLAMPS OR OTHER FITTINGS OR TO MAKE THEM INACCESSIBLE.

A BOND BREAKER SHALL BE PLACED BETWEEN THE FITTING AND THE THRUST BLOCK TO AID IN EASE OF FUTURE REMOVAL.

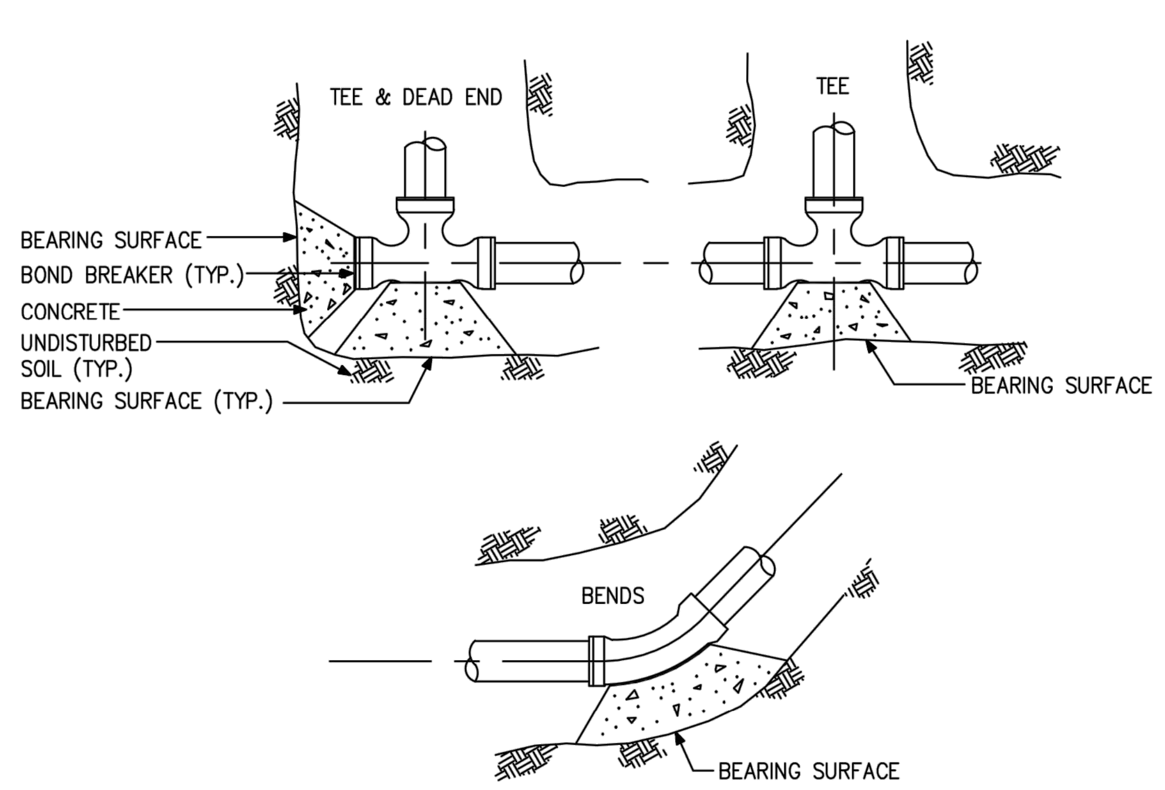
THE VERTICAL SIDES OF THE CONCRETE THRUST BLOCKS SHALL BE FORMED TO ALLOW FOR SYMMETRICAL THRUST.

WHEN IT IS IMPOSSIBLE THROUGH OVER EXCAVATION OR OTHER CAUSES TO POUR A THRUST BLOCK AGAINST UNDISTURBED EARTH, HARNESS RODS SHALL BE REQUIRED TO ANCHOR THE FITTINGS TO THE MAIN UPON APPROVAL OF THE DEVELOPMENT ENGINEERING MANAGER.

BACKFILL MAY BE PLACED OVER THE THRUST BLOCK ONCE THE SURFACE HAS SET SUFFICIENTLY TO RESIST THE WEIGHT OF THE BACKFILL.

NO DRY KICKERS SHALL BE ALLOWED.

NO HAND MIXED CONCRETE SHALL BE ALLOWED.



PLAN VIEW

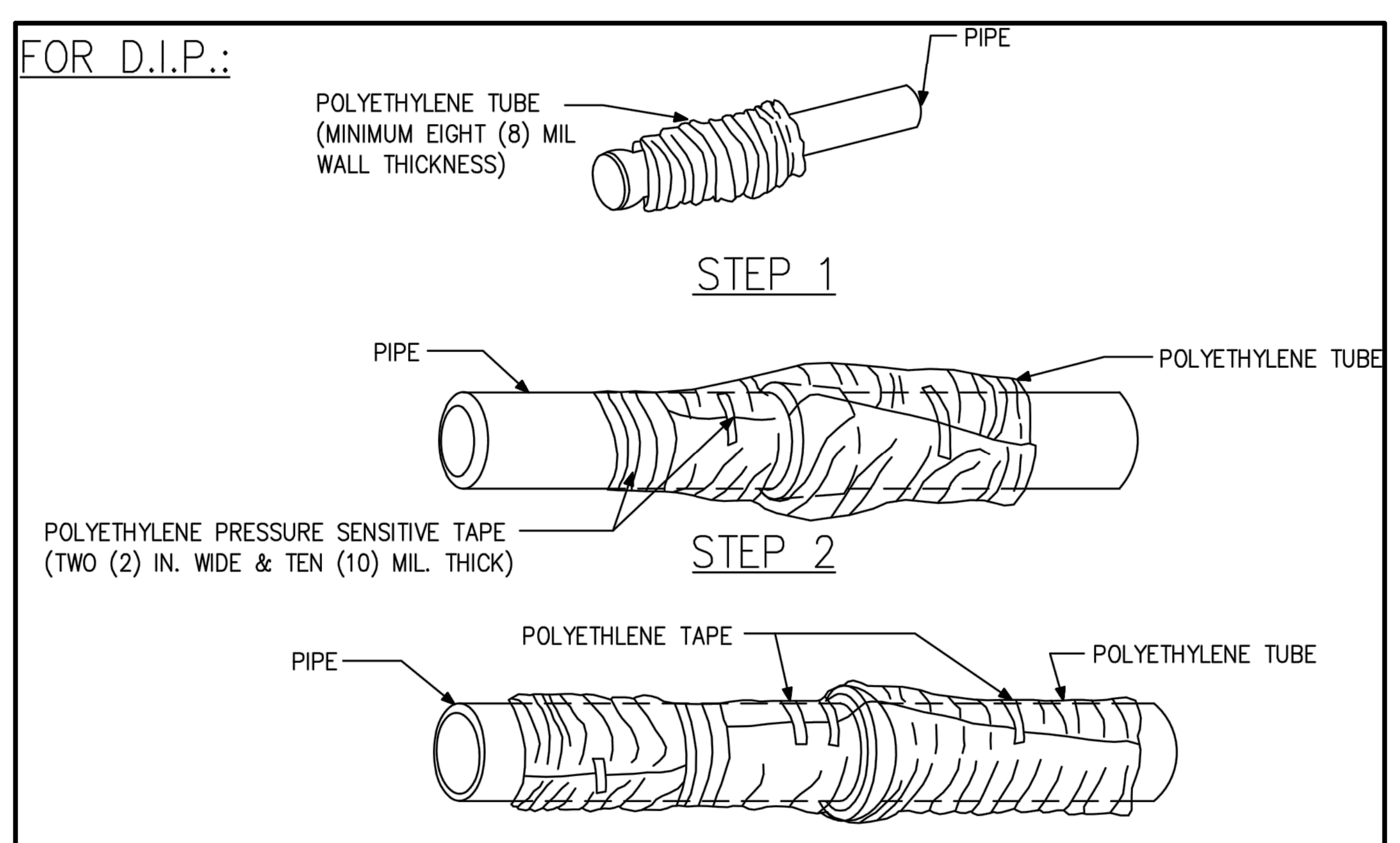
NOTES:
1. THRUST BLOCKS MUST BE CAST IN PLACE CONCRETE.
2. NO TAMPING OR COMPACTING SHALL BE ALLOWED ABOVE THRUST BLOCK FOR A MINIMUM OF TWENTY-FOUR (24) HOURS AFTER PLACEMENT.
3. CONCRETE MUST SET A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE PERFORMANCE OF A HYDROSTATIC TEST.
4. BEARING SURFACE BASED ON BEARING STRENGTH OF 3000 P.S.F. AND MAIN PRESSURE OF 200 P.S.I.. FOR MAINS GREATER THAN 16" OR VERICAL THRUSTS, SHOW AREA REQUIREMENT ON STANDARD DETAILS.
5. BOND BREAKER TO BE MINIMUM OF 8 MIL. POLYETHYLENE PLASTIC.

N.T.S.

THRUST BLOCK DETAIL (3 / -)

SCALE: NTS

FOR D.I.P.:



NOTE: POLYETHYLENE ENCASEMENT MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH CURRENT ASTM STANDARD. THE RAW MATERIAL USED TO MANUFACTURE POLYETHYLENE FILM SHALL BE TYPE I, CLASS A, GRADE E-1 IN ACCORDANCE WITH CURRENT ASTM STANDARD.

STEP 1 – PLACE TUBE OF POLYETHYLENE MATERIAL ON PIPE PRIOR TO LOWERING IT INTO TRENCH.

STEP 2 – PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.

STEP 3 – OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF PIPE AND TAPED IN PLACE.

FOR STEEL:

BITUMINOUS MATERIAL IS TO BE USED FOR CORROSION PROTECTION ON ALL STEEL PIPES.

SOIL RESISTIVITY TESTS:

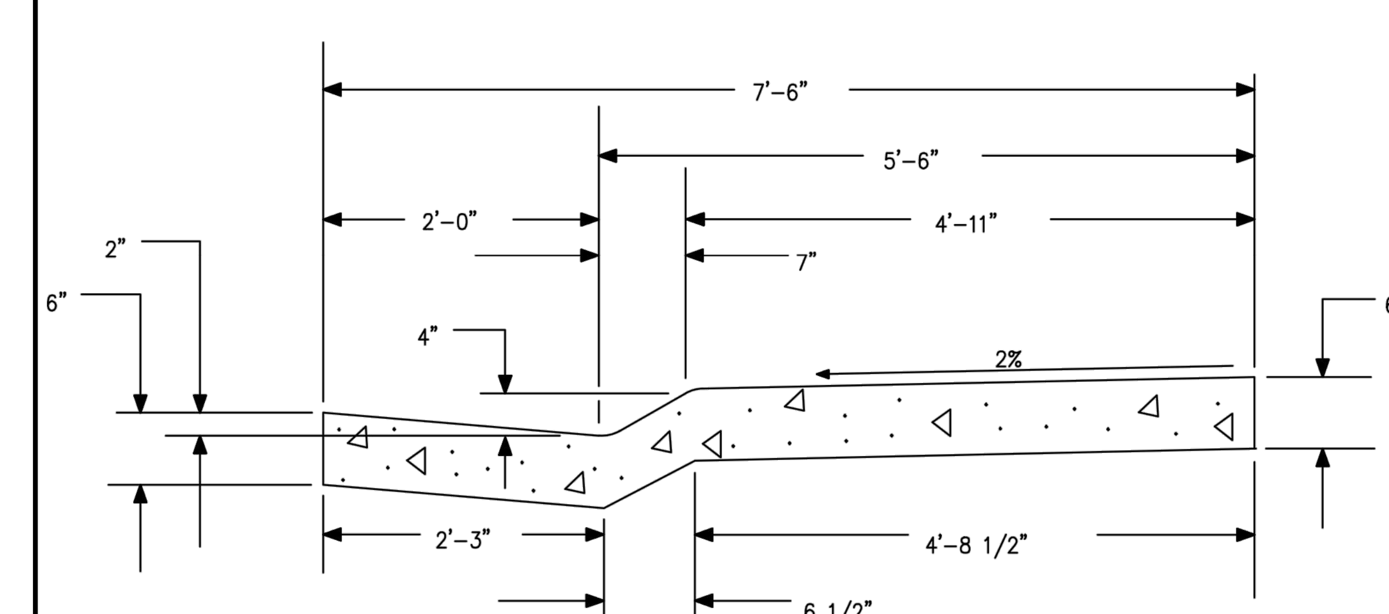
SOIL RESISTIVITY TESTS AND/OR ANY OTHER SOIL TESTS ARE REQUIRED WITH THE UTILIZATION OF METAL PIPING OR AT THE SOLE DISCRETION OF THE DEVELOPMENT ENGINEERING MANAGER. OTHER MEANS OF CORROSION PROTECTION MUST BE SPECIFICALLY APPROVED BY THE DEVELOPMENT ENGINEERING MANAGER. THE RESPONSIBLE PARTY SHALL INCUR THE COSTS OF ALL SOIL TESTING AS REQUIRED.

N.T.S.

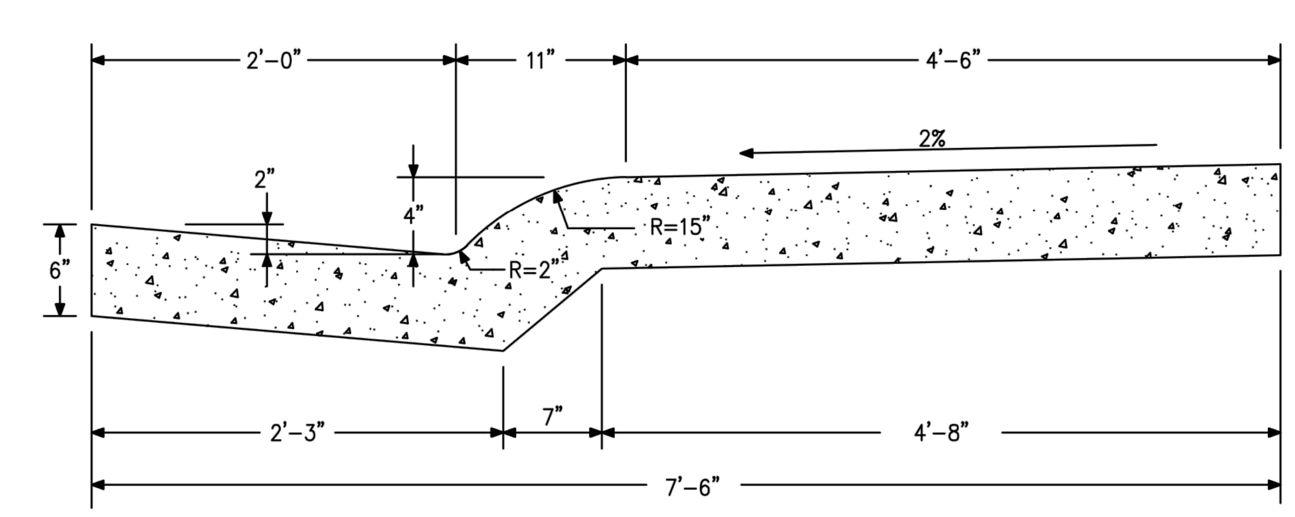
CORROSION PROTECTION DETAIL (4 / -)

SCALE: NTS

NOTE:
CONCRETE SHALL CONFORM TO CITY OF THORNTON SECTION 600-CONCRETE.
4500PSI CDOT CLASS D CONCRETE WITH FIBER MESH REINFORCEMENT



LOCAL ATTACHED SECTION 1



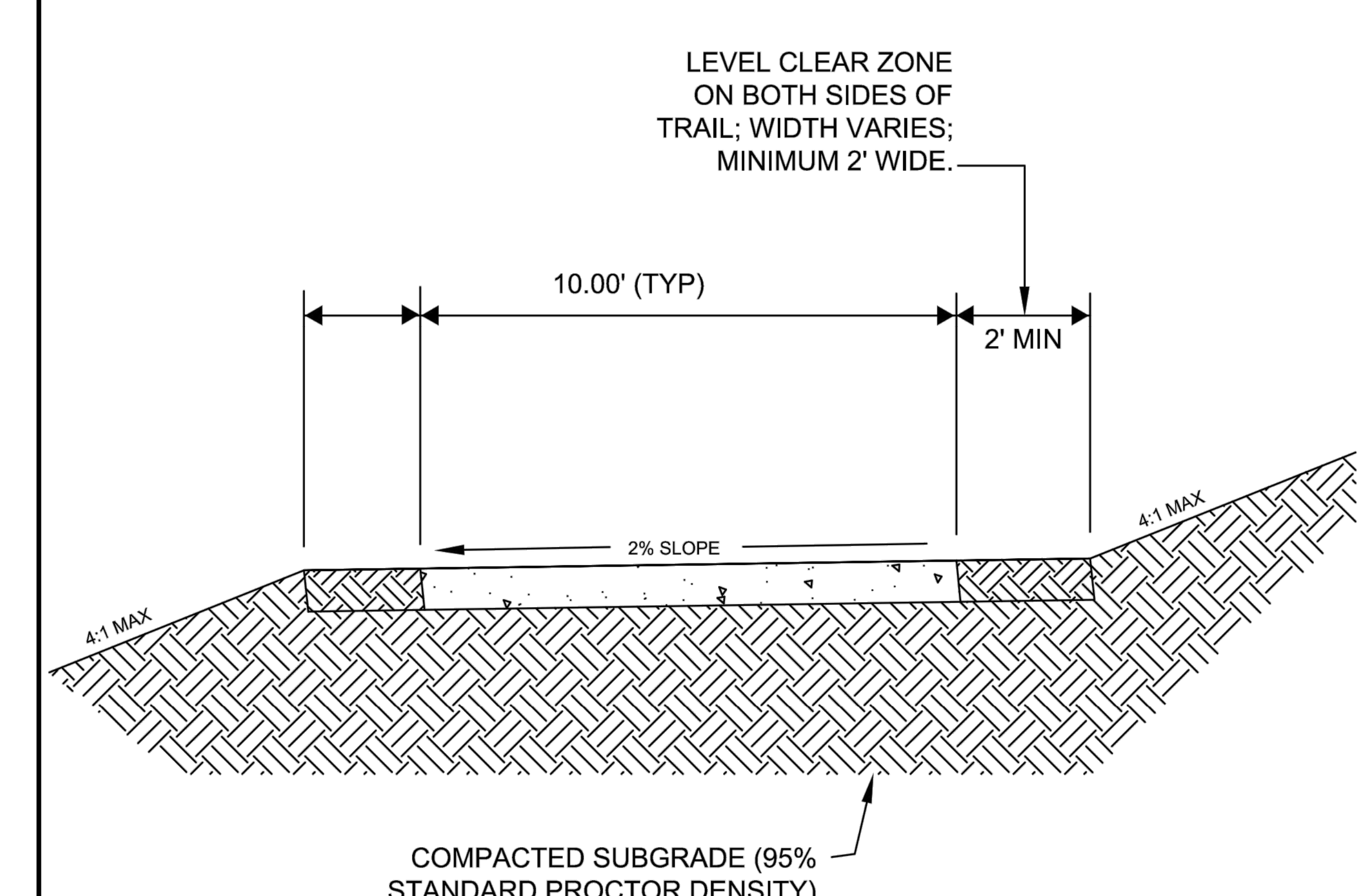
LOCAL ATTACHED SECTION 2

N.T.S.

COMBINATION CURB, GUTTER & WALK (5 / -)

SCALE: NTS

6" DEPTH
SAWCUT JOINTS EVERY 10' AND EXPANSION JOINTS EVERY 100'
FIBER MESH REINFORCEMENT IS REQUIRED
4500 PSI CONCRETE AT 28 DAYS



N.T.S.

CONCRETE PATH DETAIL (6 / -)

SCALE: NTS

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO	DESIGNED
CAD	DRAWN
CMJ	CHECKED

COLORADO LICENSED PROFESSIONAL ENGINEER — CHRISTOPHER MICHAEL MINNING — 43890 — 10-26-2023

consor

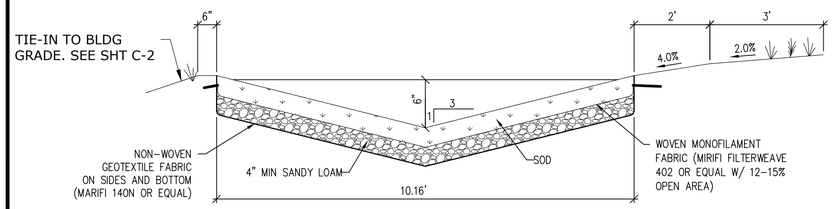
City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

CIVIL DETAILS-1

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET C-3



NOTES:

1. MAINTENANCE REQUIREMENTS:
   a) MAINTAIN IRRIGATED GRASS AT 2 TO 4 INCHES TALL OR NONIRRIGATED NATIVE GRASS AT 6 TO 8 INCHES TALL. COLLECT CUTTINGS AND DISPOSE OF THEM OFFSITE OR USE A MULCHING MOWER.

   b) AS NEEDED BY INSPECTION, REMOVE ALL COLLECTED DEBRIS AND LITTER. KEEP THE AREA CLEAN FOR AESTHETIC REASONS, WHICH ALSO REDUCES FLOATABLES BEING FLUSHED DOWNSTREAM. REPAIR SWALE IF DAMAGED AFTER STORM EVENTS

   c) ANNUALLY CHECK THE SWALE FOR RIPRAP PLACEMENT, COBBLE LAYER COVERAGE, AND SEDIMENT ACCUMULATED IN SWALE AND NEAR INLETS AND FLARED END SECTIONS.

   d) ROUTINELY REMOVE ACCUMULATED SEDIMENT NEAR CULVERTS AND WITHIN THE CHANNEL TO MAINTAIN FLOW CAPACITY. REPLACE THE GRASS AREAS DAMAGED IN THE PROCESS. PERIODICALLY REPAIR AND REVEGETATE ERODED AREAS IN THE CHANNELS DUE TO HIGH FLOWS.

.

GRASS SWALE (7 / -)
SCALE: NTS

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

NLO DESIGNED
CAD DRAWN
CMJ CHECKED

COLORADO LICENSED CHRISTOPHER MICHAEL JANVRIN 45384 10-26-2023 PROFESSIONAL ENGINEER

consor

City of Thornton Colorado

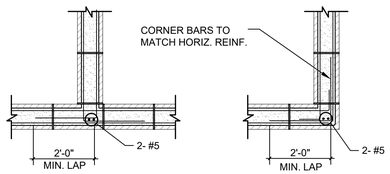
GRANGE CREEK IRRIGATION PUMP STATION

CIVIL DETAILS-2

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

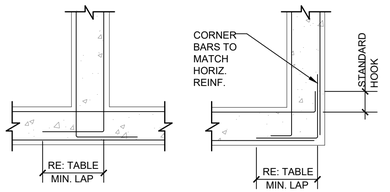
SHEET C-4

TABLE: MIN. LAP, DOWEL LENGTH & STD. HOOK FOR VERT. AND HORIZ. BARS		
BARS	MIN. LAP AND DOWEL LENGTH	STD. HOOK
#5	2'-6"	10"
#6	3'-0"	11"
#7	4'-3"	1'-0"
#8	5'-0"	1'-2"
#9	5'-8"	1'-4"
#10	6'-4"	1'-6"



TYPICAL INTERSECTION OF MASONRY BOND BEAM

TYPICAL CORNER OF MASONRY BOND BEAM



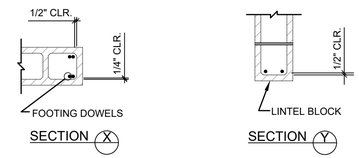
TYPICAL INTERSECTION OF CONCRETE WALLS AND FOOTINGS

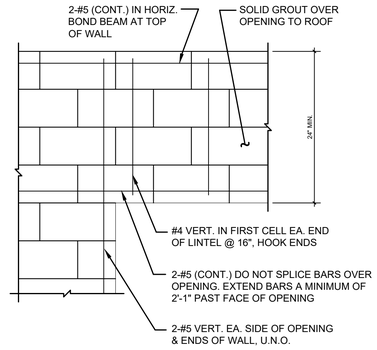
TYPICAL CORNER OF CONCRETE WALLS AND FOOTINGS

TYPICAL CORNER REINFORCING DETAIL 1 — 1/2"=1'-0"

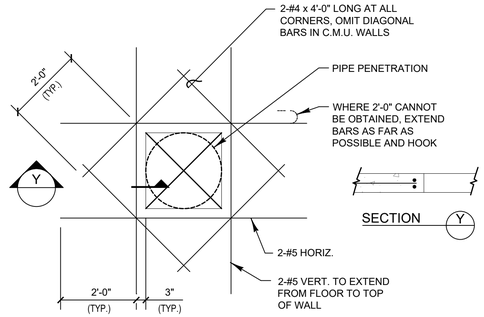
MASONRY BLOCK TERMINOLOGY

- LINTEL BLOCK USED FOR HORIZONTAL BARS AT BOTTOM OF MASONRY LINTELS AND HAS SOLID BOTTOM. - BOND BEAM BLOCK USED FOR HORIZONTAL BARS AT TOP OF WALLS (AND LINTELS) AND HAS OPEN BOTTOM AT CELLS. VERTICAL REINFORCEMENT IN WALLS SHALL EXTEND INTO BOND BEAMS AS SHOWN IN SECTIONS. DAM UNGROUTED CELLS TO ALLOW FOR CONTINUOUS GROUTING OF BOND BEAM.

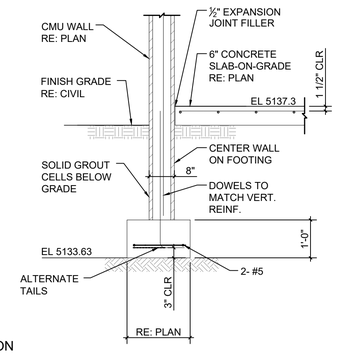




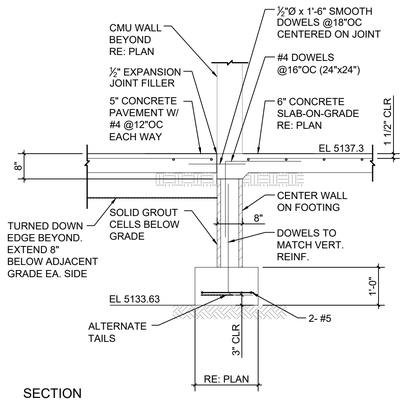
TYPICAL MASONRY LINTEL & END WALL REINFORCING 2 — 3/4"=1'-0"



REINF. AROUND OPENINGS IN CONCRETE & MASONRY WALLS & CONCRETE SLABS 3 — 1/2"=1'-0"



SECTION 4 — NTS



SECTION 5 — NTS

STRUCTURAL NOTES:

DESIGN CRITERIA

1. IBC 2015
2. WIND - 110 MPH, 3 SEC GUST. EXP C
3. ROOF SNOW LOAD = 100 PSF

FOUNDATIONS

1. THE OWNER SHALL RETAIN THE SERVICES OF A LICENSED COLORADO GEOTECHNICAL ENGINEER TO PERFORM AN OPEN HOLE INVESTIGATION AND CONFIRM A MINIMUM ALLOWABLE SOIL BEARING PRESSURE OF 1,500 PSF. A LETTER SHALL BE PROVIDED TO THE OWNER AND ENGINEER CONFIRMING SUCH.

GENERAL NOTES

1. THE CONTRACTOR SHALL REVIEW EXISTING CONDITIONS ON THE SITE DURING THE BIDDING.
2. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS AND ELEVATIONS ON ALL DRAWINGS PRIOR TO STARTING WORK AND SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES OR INCONSISTENCIES PRIOR TO PROCEEDING.
3. REFERENCE ARCHITECTURAL, CIVIL, PROCESS, MECHANICAL, AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
   A. SIZE AND LOCATIONS OF SPOOLS IN CONCRETE WALLS AND SLABS.
   B. SIZE AND LOCATIONS OF ALL OPENINGS
   C. SIZE AND LOCATIONS OF ALL NON-BEARING PARTITIONS
   D. SIZE AND LOCATION OF ALL CONCRETE CURBS, WALKS, ROOF AND FLOOR DRAINS, SLOPES, DEPRESSED SLAB AREAS, ETC.
   E. FLOOR AND ROOF FINISHES
   F. COVERINGS (HATCHES, GRATING, ETC.) OVER OPENINGS.
4. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF THE WORK, THE DETAILS SHALL BE THE SAME AS FOR OTHER SIMILAR WORK.
5. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT LIFE AND THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE BUT NOT BE LIMITED TO BRACING AND SHORING OF LOADS DUE TO CONSTRUCTION EQUIPMENT, WIND, ETC.

REINFORCING STEEL

1. FABRICATE AND PLACE REINFORCING BARS IN ACCORDANCE WITH CRSI "MANUAL OF STANDARD PRACTICE" AND CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS".
2. REINFORCING STEEL TO COMPLY WITH ASTM A615, AS FOLLOWS: IN CONCRETE AND MASONRY, NO. 4 BARS AND LARGER GRADE 60, NO. 3 BARS AND SMALLER, GRADE 40.
3. WELDED WIRE MESH SHALL CONFORM TO ASTM A185 OR A497.
4. LAP HORIZONTAL BARS IN MASONRY WHERE SPLICED, 40 DIAMETERS BUT NOT LESS THAN 2'-0", TYP. U.N.O.
5. LAP REINFORCING STEEL IN CONCRETE AS SPECIFIED IN DETAIL 1/S-001.
6. WHERE LAP SPLICES ARE REQUIRED IN SLAB AND BEAM REINF. TOP BARS SHALL BE SPLICED AT MIDSPAN AND BOTTOM BARS SHALL BE SPLICED 12" OVER SUPPORTS.
7. PROVIDE REINFORCING STEEL WITH THE FOLLOWING PROTECTIVE COVERING OF CONCRETE:
   FOOTINGS AND MAT FOUNDATIONS
   TOP = 3"
   BOTTOM = 3"
   WALLS
   AGAINST EARTH (FORMED) OR IN CONTACT WITH WATER = 2"
   OTHER = 2"
8. DO NOT USE BRICK OR POROUS MATERIAL TO SUPPORT FOOTING STEEL OFF THE GROUND.
9. SUBMIT SHOP DRAWINGS AS SPECIFIED.
10. REINFORCE AROUND ALL OPENINGS PER 3/S-001 U.N.O ON PLAN.
11. THE CONTRACTOR SHALL PROVIDE AND INSTALL 10,000 POUNDS OF ADDITIONAL REINF. STEEL AS DIRECTED BY THE ENGINEER. SIZES REQUIRED BY THE ENGINEER WILL NOT BE SMALLER THAN #4 NOR LARGER THAN #6.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF ACI 301 "SPECIFICATIONS FOR STRUCTURAL BUILDINGS," EXCEPT AS MODIFIED BY THE SUPPLEMENTAL REQUIREMENTS CONTAINED HERIN OR SHOWN ON THE DRAWINGS, AND AS SPECIFIED IN DIVISION 3 SPCIFICATIONS.
2. SEE ARCHITECTURAL DRAWINGS FOR THE LOCATION OF ARCHITECTURAL FINISHES.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS 4,500 PSI.
4. CEMENT SHALL CONFORM TO ASTM C 150, TYPE I/II; CONTRACTOR SHALL SUBSTITUTE 20% OF CLASS F FLYASH FOR CEMENT.
5. AGGREGATES ASTM C 33.
6. CONCRETE SHALL CONTAIN 6" AIR ENTRAINMENT, ±1%.
7. PROVIDE 3/4" CHAMFER ON ALL EXPOSED EDGES PER 5/S-001.
8. ROUGHEN SURFACE, CLEAN FREE OF DEBRIS, AND APPLY BONDING AGENT PRIOR TO CONCRETE PLACEMENT AGAINST EXISTING CONCRETE SURFACES. EPOXY ADHESIVE FOR DOWELS SHALL BE HILTI HIT-HY 200
9. WATER CEMENT RATIO SHALL BE 0.45 MAX.

MASONRY

1. CONCRETE BLOCK UNITS ARE TO BE IN ACCORDANCE WITH ASTM SPECIFICATIONS C 90 GRADE N. 1900 PSI AVERAGE NET AREA COMPRESSIVE STRENGTH.
2. F'm = 1500 PSI, (COMPRESSIVE STRENGTH OF THE MASONRY ASSEMBLAGE)
3. MORTAR SHALL CONFORM TO ASTM C 270, TYPE S. 1800 PSI.
4. GROUT SHALL CONFORM TO ASTM C1019 AND C476, 2000 PSI.
5. PLACE VERTICAL BARS IN WALLS IN CENTER OF WALL UNLESS NOTED OTHERWISE.
6. TIE OR OTHERWISE FIX VERTICAL BARS IN POSITION IN MASONRY AT INTERVALS OF NOT LESS THAN 4'-0" AND AT TOP AND BOTTOM.
7. PROVIDE DUR-O-WALL HORIZONTAL LADUR REINFORCEMENT @ 16" O.C. CONTINUOUS THROUGHOUT WALLS.
8. GROUT VERTICAL CELLS CONTAINING REINFORCING STEEL AND ANCHOR BOLTS AND HORIZONTAL BOND BEAMS IN WALL U.N.O.
9. PROVIDE 1" MINIMUM GROUT COVER ON ALL BOLTS AND PLATES.
10. RE: 2/S-001 FOR TYP. MASONRY LINTELS AND END WALL REINF.
11. FULL BUTTER ALL BED AND HEAD JOINTS AND WEBS OR USE OPEN END UNITS AT SOLID GROUTED MASONRY.
12. RE: 2/S-001 FOR MASONRY BLOCK TERMINOLOGY.
13. USE RUNNING BOND.
14. SHORE MASONRY LINTELS A MINIMUM OF 28 DAYS OR UNTIL 75% OF STRENGTH HAS BEEN REACHED.
15. EPOXY ADHESIVE FOR REINFORCING STEEL AND THREADED RODS INTO MASONRY SHALL BE HILTI HIT-HY 200.

STRUCTURAL STEEL

1. FABRICATION AND ERECTION TO CONFORM TO AMERICAN INSTITUTE OF STEEL CONSTRUCTION AISC 360-05 AND AISC 303-05, "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" AND "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES," EXCEPT AS OTHERWISE SHOWN OR SPECIFIED. BURNING OF HOLES NOT ALLOWED.
2. QUALIFIED AND CERTIFIED WELDERS TO BE USED FOR ALL WELDING. WELDING TO BE PERFORMED IN THE SHOP OF A CERTIFIED FABRICATOR. ALL WELDING TO CONFORM TO THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE D1.1.
3. MATERIALS:
   STRUCTURAL STEEL WIDE FLANGE AND S SHAPES: ASTM A992
   STRUCTURAL STEEL SHAPES, BAR AND PLATES
   OTHER THAN WIDEFLANGE AND S SHAPES: ASTM A36
   STRUCTURAL STEEL TUBES: ASTM A500, GRADE B
   STRUCTURAL STEEL PIPE: ASTM A53, GRADE B
   WELDING ELECTRODES: ASTM A5.1 OR A5.5, E70-XX ELECTRODE
   NUTS AND BOLTS: ASTM 325N
   ANCHOR BOLTS AND THREADED RODS ASTM A307 OR A36
   RUST-INHIBITING PRIMER: TT-P-31
4. CONTRACTOR SHALL INSTALL AND MAINTAIN ADEQUATE BRACING AND SHORING UNTIL PERMANENT CONNECTIONS TO THE STRUCTURE ARE EFFECTIVE.
5. GROUT BENEATH BASE PLATES SHALL BE MASTERFLOW 830 OR 870 NON-SHRINK, NON METALLIC GROUT OR ACCEPTED EQUIVALENT.
6. CJP DENOTES COMPLETE JOINT PENETRATION WELD.
7. GALVANIZE ALL STRUCTURAL STEEL.

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

GR DESIGNED
JB DRAWN
GR CHECKED

BID SET
DO NOT USE FOR CONSTRUCTION
OCTOBER 2023
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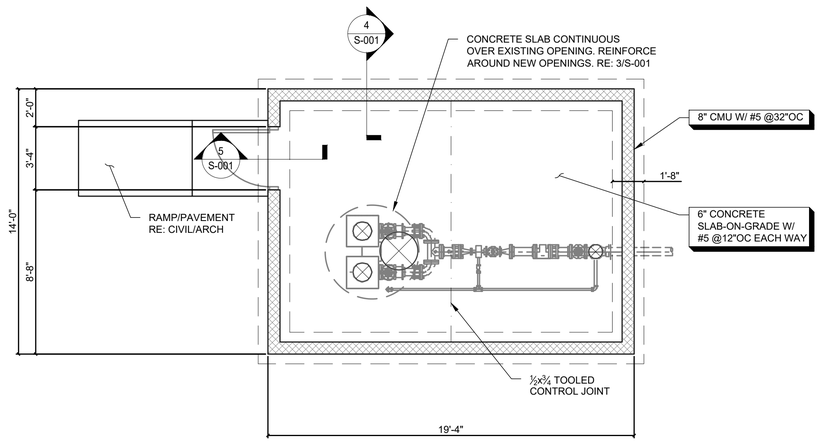
City of Thornton Colorado
GRANGE CREEK IRRIGATION PUMP STATION

GENERAL NOTES & TYPICAL DETAILS

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
S-001
17 of 31

E:\Beiermann Dropbox\Jeff Beiermann\BDA\Repella\CON-2305 Thornton Grange Creek Pump House\S-001.dwg S-001 10/10/2023 6:57 AM JEFF.BEIERMANN 24.3s (LMS Tech)

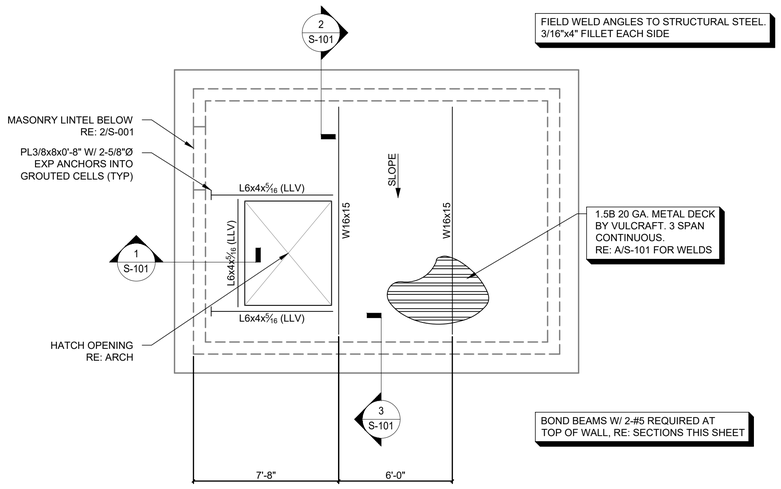


FOUNDATION PLAN

1/4" = 1'-0"

N

NOTES:
1. COORDINATE THIS PLAN WITH ARCHITECTURAL FLOOR PLAN.



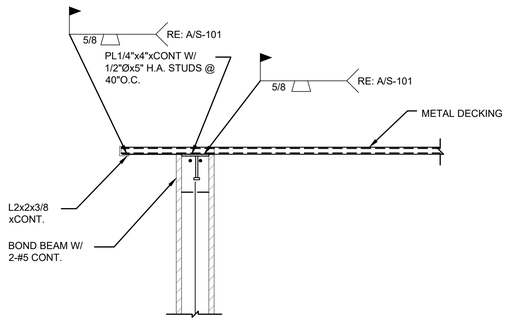
ROOF FRAMING PLAN

1/4" = 1'-0"

N

NOTES:
1. COORDINATE THIS DRAWING WITH THE ARCHITECTURAL ROOF PLAN.
2. RE: ARCHITECTURAL DRAWINGS (BUILDING ELEVATIONS) FOR TOP OF WALL ELEVATIONS.

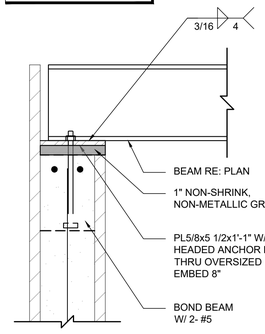
RE: A/S-101 FOR METAL DECK
PROPERTIES AND WELDS



1 SECTION

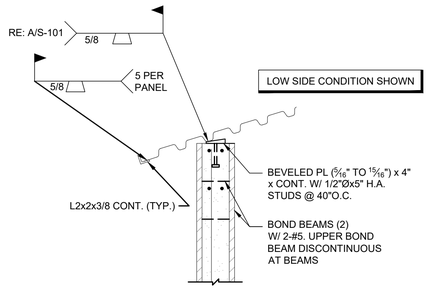
SCALE: 3\4"=1'-0"

METAL DECK ABOVE NOT
SHOWN FOR CLARITY



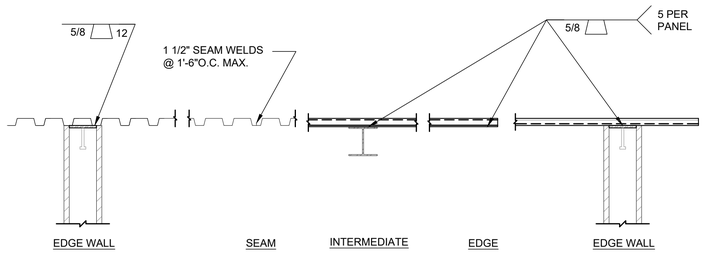
2 SECTION

SCALE: 1 1/2"=1'-0"



3 SECTION

SCALE: 3\4"=1'-0"



NOTE: WELDS BASED ON 36" WIDE PANEL

ROOF:
1.5B 20ga. METAL DECKING
MIN. PROPERTIES PER FT OF WIDTH:
I = 0.212 IN^4
S+ = 0.234 IN^3
S- = 0.247 IN^3

A TYPICAL DECK WELDING AND SHAPE

SCALE: 3\4"=1'-0"

COLORADO REGISTERED
PROFESSIONAL ENGINEER
17990
25 OCT 2023

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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GR DESIGNED
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GR CHECKED

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City of Thornton Colorado

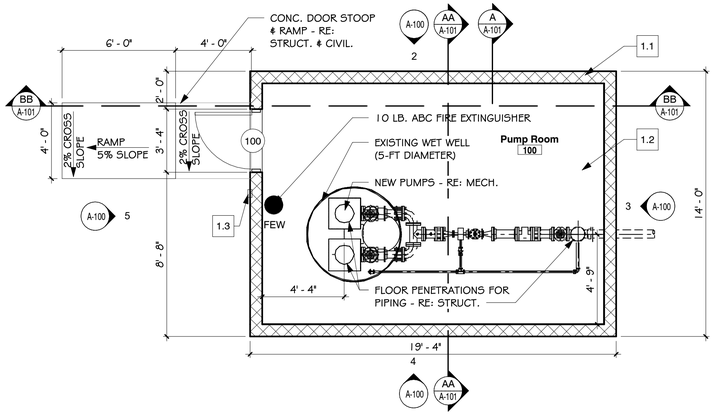
GRANGE CREEK IRRIGATION PUMP STATION

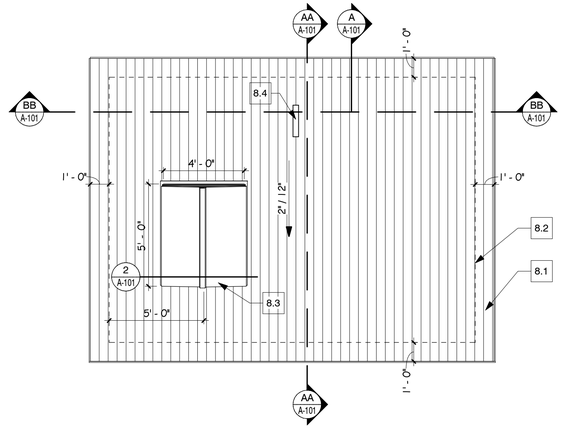
FOUNDATION AND ROOF FRAMING PLAN & DETAILS

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
S-101
18 of 31

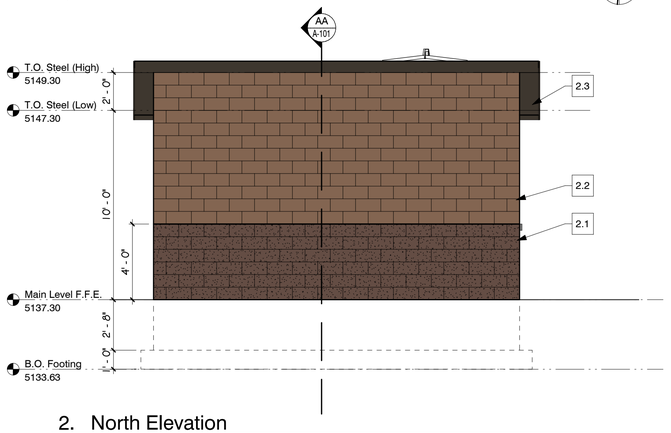
E:\Beiermann Dropbox\Jeff Beiermann\BDA\Repella\CON-2305 Thornton Grange Creek Pump House\S-101.dwg S-101 10/25/2023 11:44 AM JEFF.BEIERMANN 24.3s (LMS Tech)





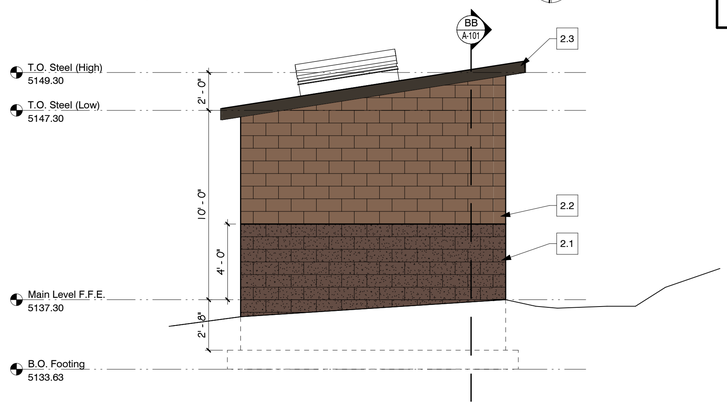
1. Main Level Floor Plan

1/4" = 1'-0"



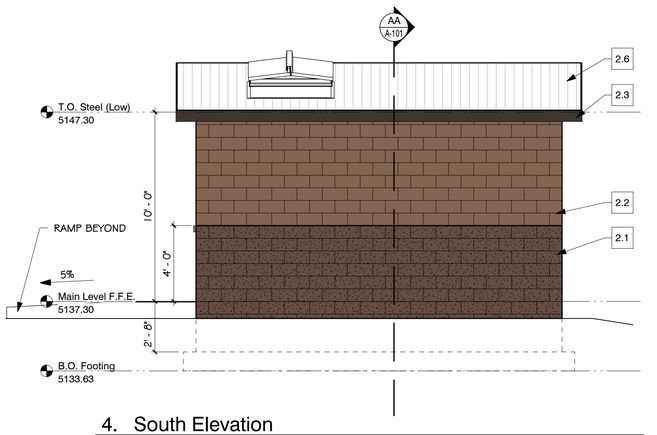
Roof Plan

1/4" = 1'-0"



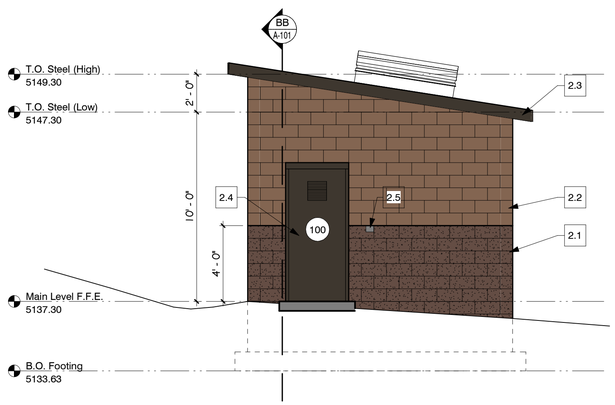
2. North Elevation

1/4" = 1'-0"



3. East Elevation

1/4" = 1'-0"



4. South Elevation

1/4" = 1'-0"

5. West Elevation

1/4" = 1'-0"

Keynote Legend - Floor Plans

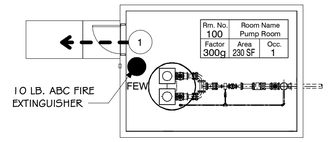
1.1	8" CMU BLOCK WALL - FILL CMU CELLS WITH PERLITE LOOSE FILL MASONRY INSULATION
1.2	6" CONC. SLAB ON GRADE - RE: STRUCT.
1.3	RECESSED FIRE DEPT. KNOX BOX - VERIFY FINAL LOCATION WITH FIRE DEPT.

Keynote Legend - Roof Plans

8.1	PRE-FIN. STANDING SEAM MTL. ROOF - COLOR WHITE ON ICE & WATER SHIELD ON 1/2" COVER BOARD ON 2" POLYISO INSUL. ON 1-1/2" MTL. DECK ON STL. BEAMS (RE: STRUCT).
8.2	OUTLINE OF BUILDING FOOTPRINT
8.3	48" x 60" ROOF HATCH - PT. COLOR TO MATCH ROOF. CENTER LOCATION OVER WELL PUMP BELOW
8.4	STANDING SEAM ROOF ANCHOR 1 (SSRA1) MANUF.: ACTION MANUFACTURING, LLC

Keynote Legend - Elevations

2.1	CMU-1: 8" SPLIT FACE CMU WITH GRAFFITI SEALER. BASALITE COLOR MATCH ROBINSON BLOCK BURNT SIENNA.
2.2	CMU-2: 8" SMOOTH FACE CMU WITH GRAFFITI SEALER. BASALITE COLOR MATCH ROBINSON BLOCK ADOBE TAN.
2.3	FASCIA & SOFFIT PANEL - COLOR: MANSARD BROWN
2.4	HOLLOW METAL DOOR & FRAME, PT. BENJAMIN MOORE- MOCHA BROWN COLOR 2107-20
2.5	RECESSED FIRE DEPT. KNOX BOX - VERIFY FINAL LOCATION WITH FIRE DEPT.
2.6	PRE-FIN. STANDING SEAM MTL. ROOF - COLOR WHITE ON ICE & WATER SHIELD ON 1/2" COVER BOARD ON 2" POLYISO INSUL. ON 1-1/2" MTL. DECK ON STL. BEAMS (RE: STRUCT).



Main Level Code Plan

1/8" = 1'-0"

General Notes

1. Do not scale the drawings. The Contractor shall field verify all dimensions before construction. If there are any discrepancies, the Contractor shall notify the Architect before proceeding with the Work.
2. All dimensions on the drawings are to the face of stud, masonry and foundation walls unless noted otherwise.
3. All angles shown on the plans are 90 degrees unless noted otherwise.
4. The Contractor shall coordinate and implement all safety measures requested and/or required by the local Fire Marshal, Health Department, Building Officials, and other authorities having jurisdiction on the project.
5. The Contractor shall slope all floors within a two-foot radius of a floor drain at a minimum slope of one eighth of an inch per foot to drain, unless noted otherwise.
6. All penetrations in surfaces exposed to weather, fire walls, surfaces exposed to view, and other similar conditions shall have pipe sleeves or final assemblies fit tight to surrounding construction. Penetrations in fire rated assemblies shall be sealed as required to maintain the integrity of the assembly.
7. Refer to sheet A-101 for door and window frame types & details.

Code Analysis

Codes Used: 2021 IBC, 2021 IPC, 2021 IFC, 2021 IMC, 2020 NEC, 2021 IFGC
IECC 2021 - Climate Zone 5B, Building Unconditioned

Occupancy Classification: F-1

Construction Type: Type II-B

Building Height: Allowable Ht.: 55' (Table 504.3)
Actual Bldg. Ht.: 12' - 11"

Building Stories: Allowable # of Stories: 2 (Table 504.4)
Actual # of Stories: 1

Building Area: Allowable Area Per Floor: (Table 506.2)
F-1 Occupancy: 15,500 S.F.

Actual Area Per Floor:
F-1 Occupancy: 270 S.F. < 15,500 S.F.

Fire Protection: Not fire sprinklered

Occupant Load: 270 SF / 300 SF per occ = 1 occupant

Exits: 1 exit provided at grade

Classified Spaces: None

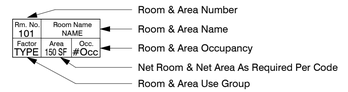
ADA Accessibility: The new building is not required to be ADA accessible. The occupants of this building, by nature of their jobs, cannot perform their work with disabilities. Per IBC Section 1103.2.9, "Spaces frequented only by service personnel for maintenance, repair and occasional monitoring of equipment are not required to comply with this chapter."

Fire-Resistive Rating Requirements for Building Elements (Table 601):

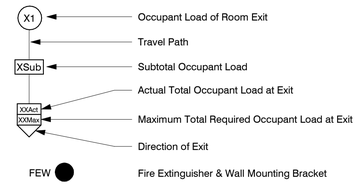
Type II-B			
Primary Structural Wall	0 hr	Interior Non-Bearing Walls	0 hr
Bearing Walls	0 hr	Floor Construction	0 hr
Exterior Non-Bearing Walls	0 hr (Tbl. 602)	Roof Construction	0 hr

Code Legend

Room Use Occupancy Load



Egress Component Capacity



STATE OF COLORADO
10/24/2023
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

Eidos ARCHITECTS
5400 Greenwood Plaza Boulevard
Greenwood Village, Colorado 80111

NO.	DATE	BY	REVISION

NOTICE
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GRANGE CREEK IRRIGATION PUMP STATION

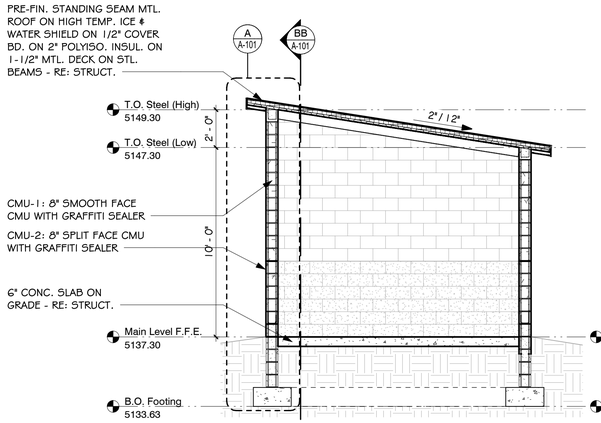
FLOOR PLAN, CODE PLAN, AND EXTERIOR ELEVATIONS

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET A-100

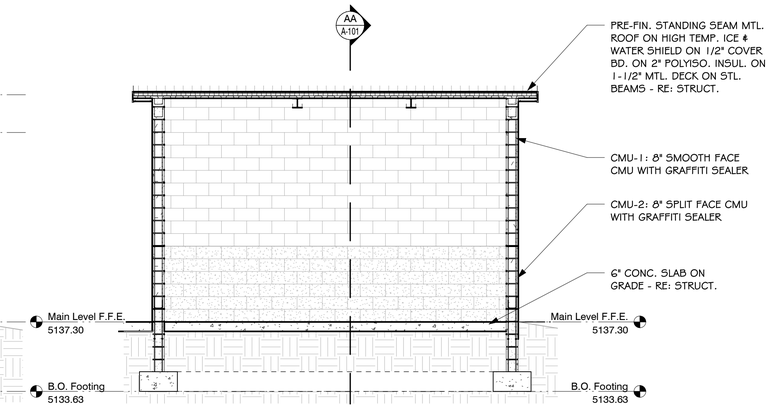
19 of 31

\\ad.msa-ep.com\Boise\BOI_Projects\22\3525 - Browns Hill - Grange Crk Irrigation PS Ph.1\CAD\Xrefs\22-3525-D-TBLK-ATT.dwg Model 5/12/2023 5:45 PM NICOLAS.ORDONEZ 23.0s (LMS Tech)



AA. Building Section

1/4" = 1'-0"



BB. Building Section

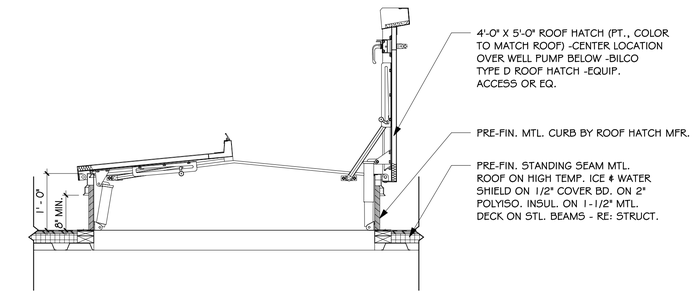
1/4" = 1'-0"

A. Wall Section

1/2" = 1'-0"

1. Roof Eave Detail

1" = 1'-0"



2. Roof Hatch Detail

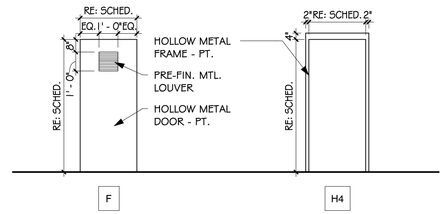
3/4" = 1'-0"

Door & Frame Schedule

Door No.	S / PR	Door Width	Door Height	Door Type	Door Thickness	Door Mat'l	Frame Type	Frame Mat'l	Details Head	Details Jamb	Details Sill	Fire Rating	Hdwr Group	Remarks
100	S	3' - 0"	7' - 0"	F	1 3/4"	HM	H4	HM	3/A-101	4/A-101	5/A-101	N/A	1	

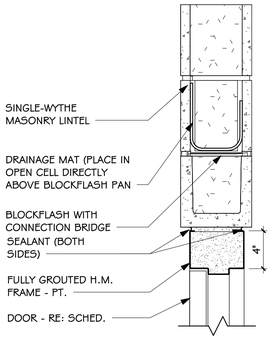
Room Finish Schedule

Room No.	Room Name	Floor Material	Base Material	Wall Finish North	Wall Finish East	Wall Finish South	Wall Finish West	Ceiling Material / Finish	Ceiling Height	Remarks
100	Pump Room	Sealed Conc.	None	CMU-Paint	CMU-Paint	CMU-Paint	CMU-Paint	Open to deck - paint	11' +/-	



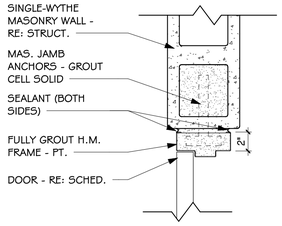
Door & Frame Types

1/4" = 1'-0"



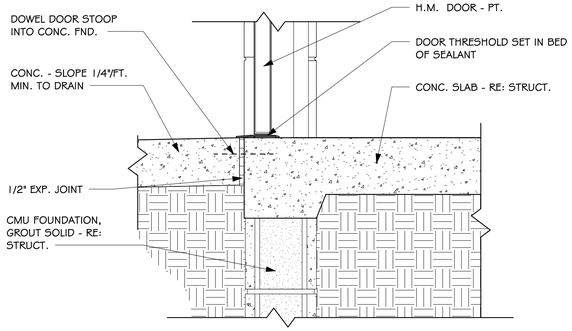
3. Door Head Detail

1 1/2" = 1'-0"



4. Door Jamb Detail

1 1/2" = 1'-0"



5. Door Threshold Detail

1 1/2" = 1'-0"

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10/24/2023
LORI MARIE HANSON
ARC-400684
LICENSED ARCHITECT

Eidos ARCHITECTS
5400 Greenwood Plaza Boulevard
Greenwood Village, Colorado 80111

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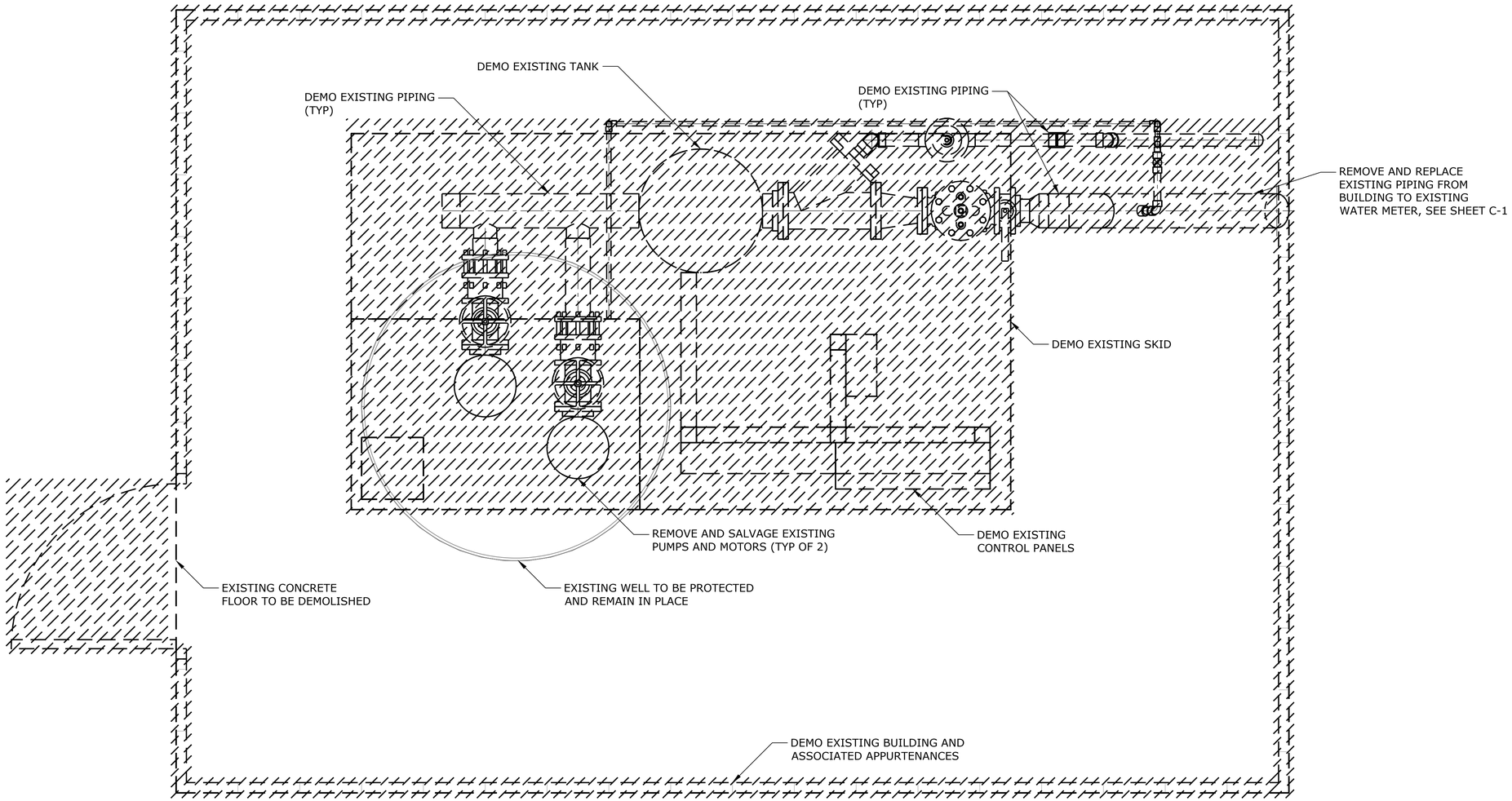
GRANGE CREEK IRRIGATION PUMP STATION

BUILDING & WALL SECTIONS AND ARCHITECTURAL DETAILS

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
A-101
20 of 31



PLAN
SCALE: 1" = 1'-0"

NOTES:

1. REFER TO DET 1, SHT M-1 FOR PICTURE OF EXISTING MECHANICAL PIPING.

2. REMOVE EXIST ELECTRICAL METER AND ABANDON EXIST ELECTRICAL LINE BETWEEN EXIST TRANSFORMER AND METER. EXIST TRANSFORMER SHALL BE REMOVED BY XCEL.

3. REMOVE AND DISPOSE OF EXIST HEATER (NOT SHOWN)

NO.	DATE	BY	REVISION

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JLC DRAWN
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COLORADO LICENSED
JENNIFER MICHEL MANNE
43382
10-26-2023
PROFESSIONAL ENGINEER

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City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

MECHANICAL DEMOLITION PLAN

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
M-1
21 of 31

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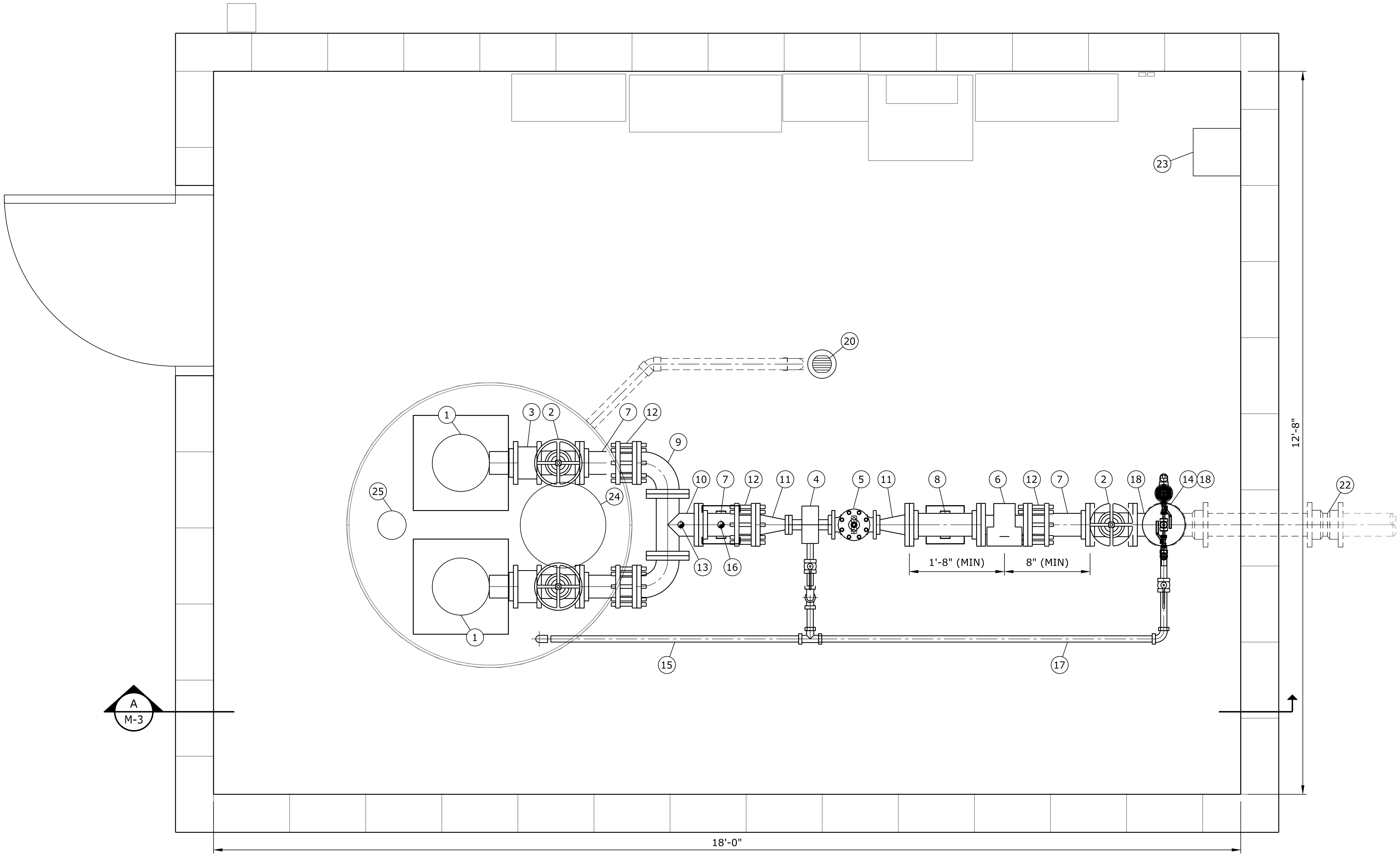

PLAN
SCALE: 1" = 1'-0"

KEY NOTES

1. XYLEM GOULD 15HP VERTICAL TURBINE PUMPS TO BE FURNISHED BY OWNER
2. 4" DI FLxFL GATE VALVE
3. 4" DI WAFER STYLE SILENT CHECK VALVE, VAL-MATIC OR APPROVED EQUAL
4. 3" FLxFL STRAINER, VAL-MATIC X43H OR APPROVED EQUAL
5. 3" FLxFL SURGE ANTICIPATOR, CLA-VAL 52-01 OR APPROVED EQUAL WITH PRESSURE GAUGE
6. 4" ELECTROMAGNETIC BADGER METER
7. 4" DI FLxPE SPOOL PIECE
8. 4" DI FLxFL SPOOL PIECE
9. 4" DI FLxFL 90-DEGREE BEND
10. 4" DI FLxFL TEE
11. 4"x3" DI FLxFL REDUCER
12. 4" DI FLANGE COUPLING ADAPTOR
13. 1" TAP ON NEW TEE TO COMBINATION AIR VALVE
14. 4" DI BLIND FLANGE WITH 1" TAP TO PRESSURE GAUGE & ARV
15. 1" PVC BLOW-OFF LINE ROUTED FROM STRAINER TO EXIST WET WELL
16. 1/2" TAP TO PRESSURE TRANSDUCER
17. 1" PVC BLOW-OFF LINE ROUTED FROM NEW COLUMN PIPE TO NEW BLOW-OFF LINE
18. 4" DI FLxFL TEE. CONNECT TO EXIST PIPING
19. 1" TAP ON NEW COLUMN PIPE
20. 6" FLOOR DRAIN W/ P-TRAP. USE 2" PVC PIPE TO ROUTE FROM FLOOR DRAIN TO WET WELL. SLOPE FLOOR TO DRAIN. SEE DET 9, SHT M-5.
21. 4" DI PIPE WITH 4" FLEX COUPLING.
22. CONNECT TO EXISTING PIPING. USE DI MJ FITTINGS TO ROUTE NEW PIPE TO EXIST PIPE. CONTRACTOR TO VERIFY SIZE AND DEPTH OF EXISTING PIPE AT CONNECTION POINT PRIOR TO CONSTRUCTION.
23. 3/4 HP EXHAUST FAN. SEE ELECTRICAL SHEETS.
24. 18" DIA MANHOLE FRAME AND COVER. D&L FOUNDRY B-5020 OR APPROVED EQUAL.
25. 6" FLOOR DRAIN FOR AIR VENTILATION.
26. 8" WALL BLOCKOUT FOR PIPE PENETRATION.

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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JLC
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CHECKED

COLORADO LICENSED PROFESSIONAL ENGINEER
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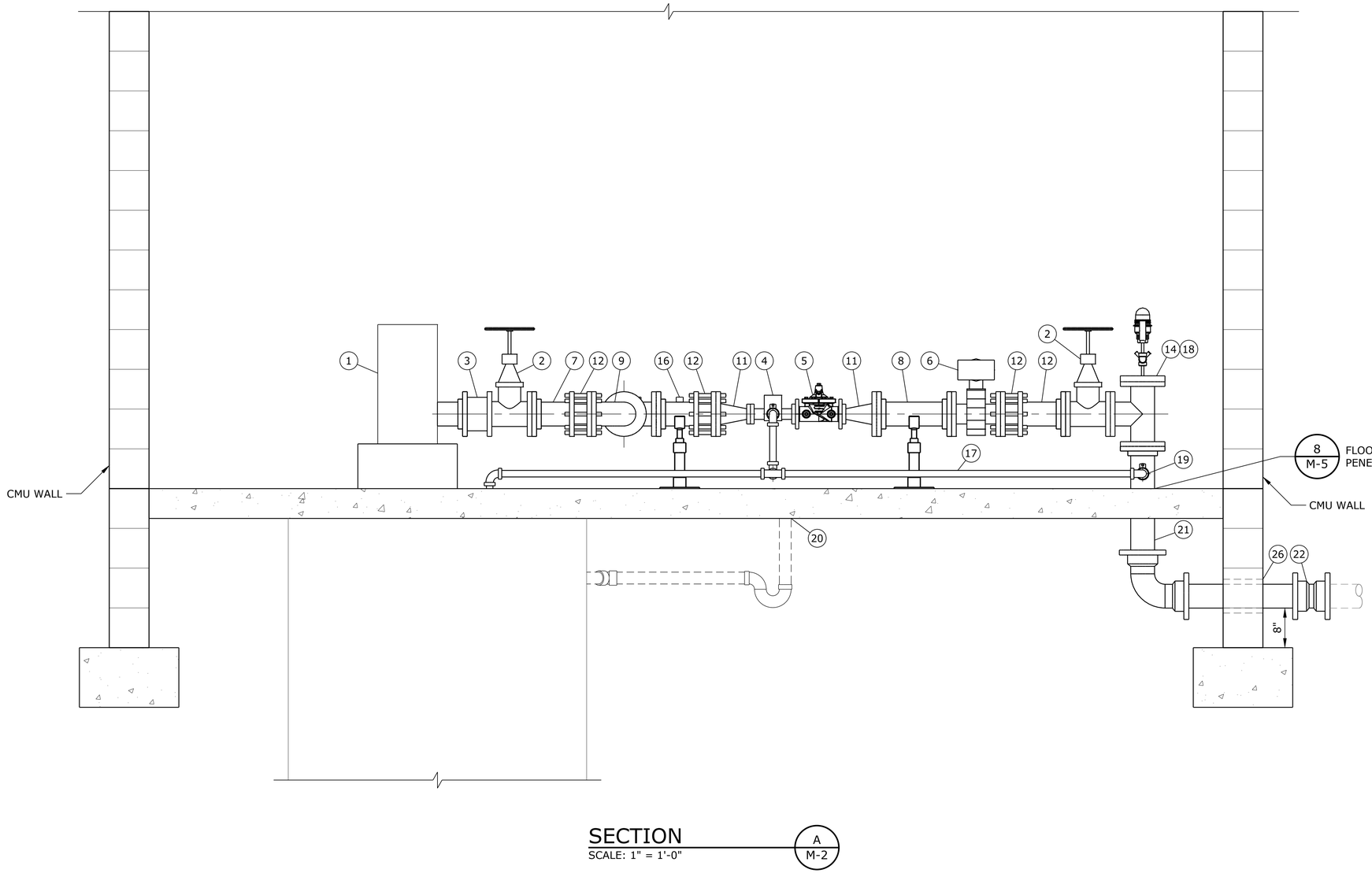
GRANGE CREEK IRRIGATION PUMP STATION

MECHANICAL PLAN

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
M-2



SECTION
SCALE: 1" = 1'-0"

A
M-2

KEY NOTES

1. XYLEM GOULD 15HP VERTICAL TURBINE PUMPS TO BE FURNISHED BY OWNER
2. 4" DI FLxFL GATE VALVE
3. 4" DI WAFER STYLE SILENT CHECK VALVE, VAL-MATIC OR APPROVED EQUAL
4. 3" FLxFL STRAINER, VAL-MATIC X43H OR APPROVED EQUAL
5. 3" FLxFL SURGE ANTICIPATOR, CLA-VAL 52-01 OR APPROVED EQUAL WITH PRESSURE GAUGE
6. 4" ELECTROMAGNETIC BADGER METER
7. 4" DI FLxPE SPOOL PIECE
8. 4" DI FLxFL SPOOL PIECE
9. 4" DI FLxFL 90-DEGREE BEND
10. 4" DI FLxFL TEE
11. 4"x3" DI FLxFL REDUCER
12. 4" DI FLANGE COUPLING ADAPTOR
13. 1" TAP ON NEW TEE TO COMBINATION AIR VALVE
14. 4" DI BLIND FLANGE WITH 1" TAP TO PRESSURE GAUGE & ARV
15. 1" PVC BLOW-OFF LINE ROUTED FROM STRAINER TO EXIST WET WELL
16. 1/2" TAP TO PRESSURE TRANSDUCER
17. 1" PVC BLOW-OFF LINE ROUTED FROM NEW COLUMN PIPE TO NEW BLOW-OFF LINE
18. 4" DI FLxFL TEE. CONNECT TO EXIST PIPING
19. 1" TAP ON NEW COLUMN PIPE
20. 6" FLOOR DRAIN W/ P-TRAP. USE 2" PVC PIPE TO ROUTE FROM FLOOR DRAIN TO WET WELL. SLOPE FLOOR TO DRAIN. SEE DET 9, SHT M-5.
21. 4" DI PIPE WITH 4" FLEX COUPLING.
22. CONNECT TO EXISTING PIPING. USE DI MJ FITTINGS TO ROUTE NEW PIPE TO EXIST PIPE. CONTRACTOR TO VERIFY SIZE AND DEPTH OF EXISTING PIPE AT CONNECTION POINT PRIOR TO CONSTRUCTION.
23. 3/4 HP EXHAUST FAN. SEE ELECTRICAL SHEETS.
24. 18" DIA MANHOLE FRAME AND COVER. D&L FOUNDRY B-5020 OR APPROVED EQUAL.
25. 6" FLOOR DRAIN FOR AIR VENTILATION.
26. 8" WALL BLOCKOUT FOR PIPE PENETRATION.

NO.	DATE	BY	REVISION

NOTICE
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JLC DRAWN
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COLORADO LICENSED
CHRISTOPHER MICHAEL MANNING
43382
10-26-2023
PROFESSIONAL ENGINEER

consor

City of Thornton Colorado

GRANGE CREEK IRRIGATION PUMP STATION

MECHANICAL SECTION

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
M-3
23 of 31

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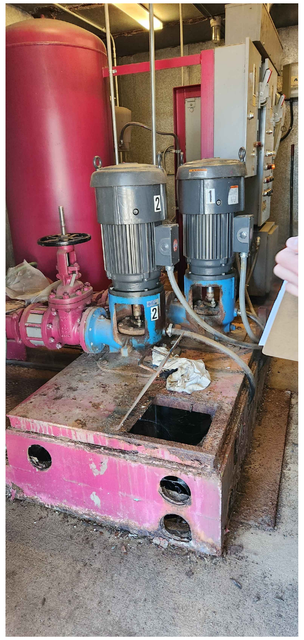
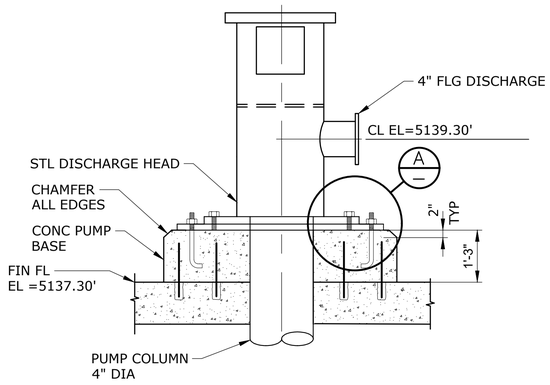


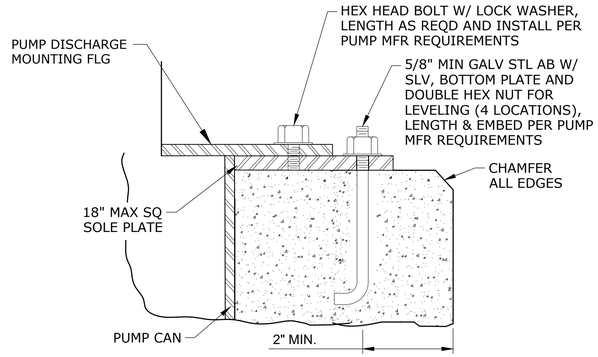
EXISTING MEHCANICAL PIPING (1)
SCALE: NTS



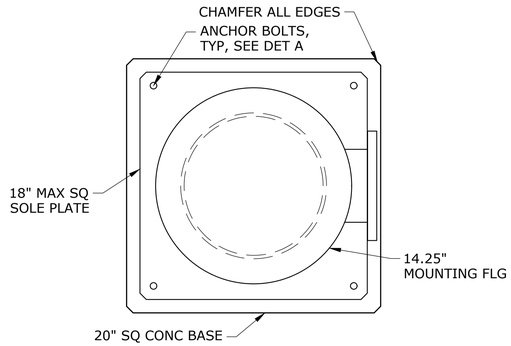
NOTES:

1. COORDINATE CONCRETE PUMP BASE HEIGHT WITH PUMP DISCHARGE HEAD DIMENSIONS AND REQUIRED HEIGHT OF DISCHARGE PIPE CENTERLINE ABOVE FINISH FLOOR.SELECT STRUCTURAL MEMBERS NOT SHOWN FOR CLARITY.
2. SEE STRUCTURAL SHEETS FOR PUMP BASE STRUCTURAL COMPONENTS.

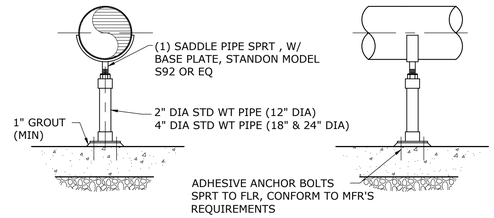
PUMP BASE (2)
SCALE: NTS



SOLE PLATE DETAIL (A)
SCALE: NTS



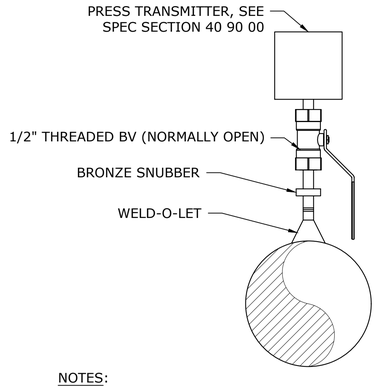
PUMP BASE - PLAN VIEW (3)
SCALE: NTS



NOTE:

ALL MATERIALS ASTM A36 CARBON STRUCTURAL STEEL.

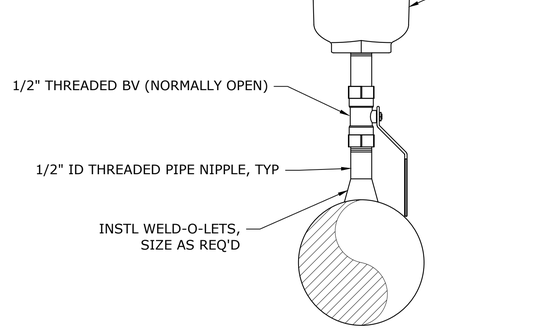
S92 PIPE SUPPORT (4)
SCALE: NTS



NOTES:

1. REFER TO SPECIFICATIONS FOR PIPE MATERIAL

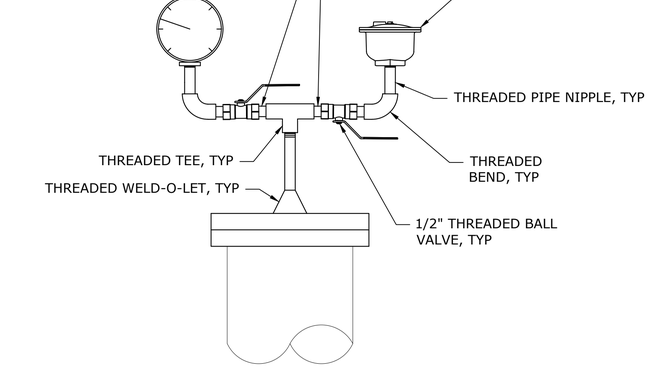
PRESSURE TRANSMITTER (5)
SCALE: NTS



NOTES:

1. PIPE, FITTING, AND VALVE SIZES SHALL MATCH AIR VALVE INLET DIAMETER UNLESS NOTED OTHERWISE.

TYPICAL ARV (6)
SCALE: NTS



AIR VALVE WITH PRESSURE GAUGE (7)
SCALE: NTS

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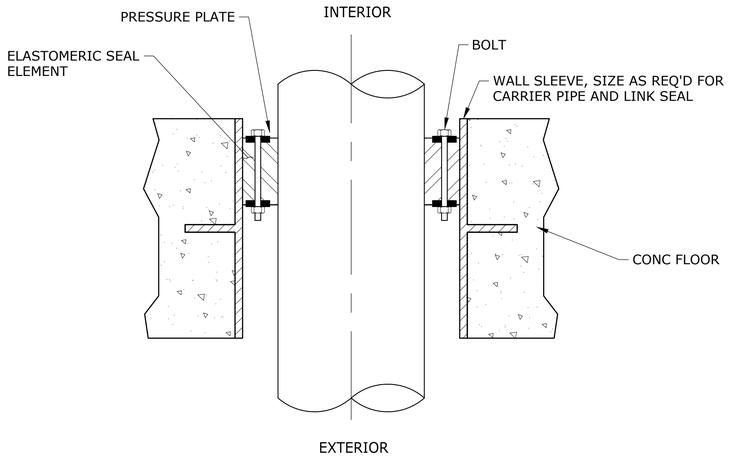
GRANGE CREEK IRRIGATION PUMP STATION

MECHANICAL DETAILS-1

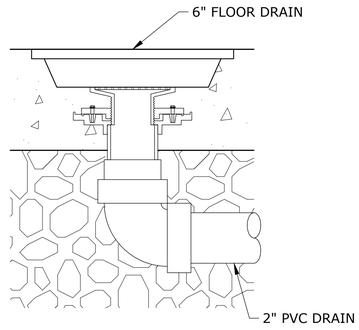
PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET M-4

24 of 31



LINK SEAL PENETRATION 8
SCALE: NTS



TYPICAL FLOOR DRAIN 9
SCALE: NTS

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GRANGE CREEK IRRIGATION PUMP STATION

MECHANICAL DETAILS-2

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: OCTOBER 2023

SHEET
M-5
25 of 31

ONE LINE DIAGRAM LEGEND

1500KVA
2.4KV-480Y/277
3-PHASE, 60 HZ — TRANSFORMER WITH PRIMARY AND SECONDARY VOLTAGE, AND KVA RATING AS NOTED.

20 — 22: 3#8,#10G,2" — CIRCUIT NO. 22 WITH #8 INSULATED CONDUCTORS, 1#10 BARE GROUND WIRE ALL IN 2" CONDUIT TO 20 HP MOTOR.

AUXILIARY ITEMS MAY NOT BE SHOWN COMPLETELY
15 — ONE-LINE SHOWING POWER AND CONTROL TO A PACKAGE UNIT, AS FOR EXAMPLE A STEAM GENERATOR OR AN AIR HANDLING UNIT, SHALL IMPLY THAT ANY AND ALL ASSOCIATED EQUIPMENT SHALL ALSO BE INSTALLED AND WIRED AS REQUIRED BY THE EQUIPMENT FURNISHED.

INDICATES THAT ALL OR PART OF CIRCUIT MAY BE ROUTED IN DUCT BANK OR UNDERGROUND. CONDUIT SIZE SHOWN ON ONE-LINE IS ABOVE GROUND AND/OR INSIDE OF STRUCTURE. SEE DUCT BANK SCHEDULE AND SECTIONS FOR CONDUIT SIZE OF UNDERGROUND PORTION OF CIRCUIT.

HIGH VOLTAGE DRAWOUT AIR OR VACUUM CIRCUIT BREAKER.

3P-20 — LOW VOLTAGE AIR CIRCUIT BREAKER, 3 POLE, 20 AMPERE.

S4 — SIZE 4 COMBINATION MAGNETIC MOTOR STARTER.

S4 — SIZE 4 REDUCED VOLTAGE SOFT STARTER

LOW VOLTAGE DRAWOUT AIR CIRCUIT BREAKER.

HIGH VOLTAGE DRAWOUT CONTACTOR.

FUSE AND DISCONNECT SWITCH.

S2 — SIZE 2 COMBINATION MAGNETIC MOTOR STARTER, REVERSING OR 2 SPEED.

POTENTIAL TRANSFORMER.

CURRENT TRANSFORMER.

CONDUIT & WIRING INSTALLATION LEGEND

CONDUIT EXPOSED.

CONDUIT CONCEALED.

CONDUIT TURNING UP, CONDUIT TURNING DOWN.

CONDUIT PLUGGED FLUSH, CONDUIT CAPPED.

L2-5 — TYPICAL FOR HOME RUN TO BE ROUTED TO LIGHTING PANEL L2 AND CONNECTED TO CIRCUIT #5 (MINIMUM NO. 12 AWG CONDUCTORS & ¾" CONDUIT.)

A — LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE.

11 — FLUORESCENT FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE.

LP1-3 — RECEPTACLE POWERED FROM LIGHTING PANEL LP1, CIRCUIT 3.

A LP2-2 — LIGHTING FIXTURE POWERED FROM LIGHTING PANEL LP2, CIRCUIT 2 (NON-SWITCHED.)

LPA-4 / 11 — LIGHTING FIXTURE POWERED FROM LIGHTING PANEL LPA, CIRCUIT 4

A / 11 — LIGHTING FIXTURE POWERED VIA SWITCH A.

UNDERGROUND CONCRETE ENCASED ELECTRICAL DUCT BANK.

UNDERGROUND CONCRETE ENCASED ELECTRICAL BANK ROUTED BENEATH SLAB-ON-GRADE.

DIRECT BURIED CONDUIT.

GROUND CONDUCTOR.

SCHEMATIC SYMBOLS

- WIRE CONNECTION POINT
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- STARTER, CONTACTOR OR RELAY COIL
- NORMALLY OPEN PUSH BUTTON
- NORMALLY CLOSED PUSH BUTTON
- MAINTAINED PUSH BUTTON
- NORMALLY CLOSED GEARED LIMIT SWITCH
- NORMALLY OPEN GEARED LIMIT SWITCH
- INDICATING LIGHT
- FUSE
- CONTROL POWER TRANSFORMER
- SWITCH
- MS — MANUAL STARTER
- OL — OVERLOAD
- FLOAT SWITCH (CLOSING ON RISING LEVEL)
- FLOAT SWITCH (OPENING ON RISING LEVEL)
- PRESSURE SWITCH (CLOSING ON RISING PRESSURE)
- PRESSURE SWITCH (OPENING ON RISING PRESSURE)
- VACUUM SWITCH (CLOSING ON INCREASING VACUUM)
- VACUUM SWITCH (OPENING ON INCREASING VACUUM)
- TEMPERATURE SWITCH (CLOSING ON RISING TEMPERATURE)
- TEMPERATURE SWITCH (OPENING ON RISING TEMPERATURE)
- FLOW ACTUATED SWITCH (CLOSING ON INCREASE IN FLOW)
- FLOW ACTUATED SWITCH (OPENING ON INCREASE IN FLOW)
- ON TIME DELAY SWITCH (NORMALLY OPEN WITH TIME DELAY CLOSING AFTER COIL IS ENERGIZED)
- ON TIME DELAY SWITCH (NORMALLY CLOSED WITH TIME DELAY OPENING AFTER COIL IS ENERGIZED)
- OFF TIME DELAY SWITCH (NORMALLY OPEN WITH TIME DELAY OPENING AFTER COIL IS DE-ENERGIZED)
- OFF TIME DELAY SWITCH (NORMALLY CLOSED WITH TIME DELAY CLOSING AFTER COIL IS DE-ENERGIZED)
- TORQUE SWITCH (NORMALLY OPEN)
- TORQUE SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY OPEN)
- LIMIT SWITCH (NORMALLY OPEN, HELD CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED, HELD OPEN)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY OPEN, CLOSING ON INCREASING DIFF.)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY CLOSED, OPENING ON INCREASING DIFF.)
- SUPX — 24 VDC SURGE PROTECTION

SWITCH & OUTLET SYMBOLS

- S^{A} SINGLE POLE SWITCH, A=SWITCH DESIGNATION
- S_2^{A} TWO POLE SWITCH, A=SWITCH DESIGNATION
- S_3^{A} THREE-WAY SWITCH, A=SWITCH DESIGNATION
- S_4^{A} FOUR-WAY SWITCH, A=SWITCH DESIGNATION
- S_{WP}^{A} WEATHERPROOF SWITCH, A=SWITCH DESIGNATION
- S_{KO}^{A} KEY OPERATED SWITCH, A=SWITCH DESIGNATION
- S_{XP}^{A} EXPLOSION PROOF SWITCH, A=SWITCH DESIGNATION
- SO^{A} OCCUPANCY SENSOR SWITCH, A=SWITCH DESIGNATION
- DUPLEX RECEPTACLE 120 VOLT
- 240V, 1 PHASE RECEPTACLE, TYPICAL AMPERE RATING NOTED
- 480V, 3 PHASE WELDING RECEPTACLE, TYPICAL AMPERE RATING NOTED

MISCELLANEOUS SYMBOLS

- E — ETHERNET PORT
- T — THERMOSTAT
- J — JUNCTION BOX
- DISCONNECT SWITCH
- COMBINATION STARTER
- POWER PANEL
- LIGHTING PANEL
- MISCELLANEOUS PANEL

ABBREVIATIONS

A	AMBER, AMPERE, ALARM
AC	ALTERNATING CURRENT
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AM	AMMETER
ATO	AUTOMATIC THROWOVER
AWG	AMERICAN WIRE GAUGE
C	CLOSE, COUNTER, CONTACTOR
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CD	CONTROL DAMPER
CKT	CIRCUIT
CL2	CHLORINE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CS	CONTROL STATION
CT	CYCLE TIMER, CURRENT TRANSFORMER
CTM	CYCLE TIMER MOTOR
2/C	2 CONDUCTOR
4"C	4" CONDUIT
DC	DIRECT CURRENT
DM	DAMPER MOTOR, DEMAND METER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPS	DIFFERENTIAL PRESSURE SWITCH
DS	DISCONNECT SWITCH
E	ELECTRIC OPERATOR FOR CONTROL DAMPER OR VALVE
EMH	ELECTRICAL MANHOLE
ETM	ELAPSED TIME METER
EX	EXISTING
F	FORWARD
FS	FLOW SWITCH
G	GREEN, GROUND
GFI	GROUND FAULT INTERRUPTER
GLS	GEARED LIMIT SWITCH
#8G	#8 GROUND WIRE
H	HIGH, HUMIDISTAT
HH	HANDHOLE
HMT	HIGH MOTOR TEMPERATURE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HP	HORSEPOWER
HWCO	HIGH WATER CUTOFF
HZ	HERTZ (CYCLE)
I/O	INPUT/OUTPUT
J	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR
KW	KILOWATT
KWH	KILOWATT HOUR
L	LOW, LEVEL
LA	LIGHTNING ARRESTOR
LAN	LOCAL AREA NETWORK
LP	LIGHTING PANEL
LS	LIMIT SWITCH, LEVEL SWITCH
LWCO	LOW WATER CUTOFF
M	MAGNETIC MOTOR STARTER
MA	MILLIAMPERE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MIL
MD	MOISTURE DETECTOR
MH	MANHOLE, MOUNTING HEIGHT
MOV	MOTOR OPERATED VALVE
MS	MANUAL MOTOR STARTER
MSH	MOTOR SPACE HEATER
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN, NUMBER
O	OPEN
OL	OVERLOAD
PB	PUSH BUTTON, PULL BOX
PF	POWER FACTOR METER
PH	PHASE (CHEMICAL TERM)
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	POWER PANEL
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER, PROGRAM TIMER
2P	2 POLE
R	RED, RAISE, RELAY, REVERSE
RECP	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RTD	RESISTANCE TYPE TEMP DETECTOR
RTU	REMOTE TERMINAL UNIT
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
S2	SIZE 2 STARTER
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SP	SINGLE POLE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SS	SELECTOR SWITCH
SV	SOLENOID VALVE
SWB	SWITCHBOARD
SWGR	SWITCHGEAR
T	THERMOSTAT, TIMER, TOTALIZER
TACH	TACHOMETER
TB	TERMINAL BLOCK
TD	TIME DELAY RELAY
TEMP	TEMPERATURE
TQ	TORQUE
TS	TEMPERATURE SWITCH
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VA	VOLT AMPERE
VLS	VALVE LIMIT SWITCH
VM	VOLTMETER
W	WHITE, WATTS
WH	WATTHOUR METER
WM	WATT METER
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
Y	YELLOW
Z	AUXILIARY RELAY
ZS	POSITION SWITCH

AREA DESIGNATIONS

THE SPECIAL AREA DESIGNATION BOXES, AS DEFINED BELOW, ARE LOCATED ON THE PLAN DRAWINGS TO DEFINE ELECTRICAL INSTALLATION REQUIREMENTS. DESIGNATION BOXES ARE LOCATED WITHIN ROOM OR BELOW ROOM NUMBER. ALL INDOOR AREAS NOT INDICATED OTHERWISE ARE AREA TYPE 1 AND MINIMUM NEMA TYPE 1 ENCLOSURES.

AREA TYPE 1 — INDOOR AND DRY AREA. REQUIRES MINIMUM NEMA TYP 1 ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITINGS IN CONDUIT SYSTEMS.

AREA TYPE 1A — CORROSIVE CHEMICAL FEED AND STORAGE ROOMS. CONDUIT SYSTEM SHALL BE EXPOSED PVC COATED CONDUIT WITH FITTINGS, AND ACCESSORIES.

AREA TYPE 4 — INDOOR WET LOCATIONS SUCH AS VAULTS, HOSEDOWN AREAS, BASEMENTS, ETC. MINIMUM NEMA TYPE 4 ENCLOSURE FOR EQUIPMENT AND GASKETED FITTINGS IN A CONDUIT SYSTEM.

AREA TYPE 7A — CLASS 1, DIVISION 1 AREA AS DEFINED BY NEC. ALL EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.

AREA TYPE 7B — CLASS 1, DIVISION 2, GROUP C AND D (METHANE, GASOLINE) AS DEFINED BY NEC. EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.

AREA TYPE 12 — INDOOR, DRY, DIRTY AREA. REQUIRES MINIMUM NEMA TYPE 12 GASKETED ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITTINGS IN CONDUIT SYSTEMS.

AREA TYPE 4X — OUTDOOR AND INDOOR WET LOCATIONS SUBJECT TO CORROSION. CONDUIT SYSTEM SHOULD BE PVC COATED RIGID GALVANIZED STEEL WITH PVC COATED FITTINGS, BOXES, AND STAINLESS STEEL HARDWARE.

GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS NOT SHOWN ON THE PLANS. THIS SHALL INCLUDE ALL CONDUITS SHOWN ON THE ONE-LINES AND HOME-RUNS SHOWN ON THE PLAN DRAWINGS. CONDUITS SHALL BE ROUTED AS DEFINED IN THE SPECIFICATIONS.
2. SPARE WIRES SHALL BE TAPED AND COILED.
3. IF EQUIPMENT SUPPLIED BY MANUFACTURER HAS A LARGER LOAD THAN VALUE SHOWN, THE CABLE CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE ENLARGED, AS REQUIRED, TO ACCOMODATE THE HIGHER VALUE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING PROPERLY SIZED STARTER OVERLOADS FOR EQUIPMENT FURNISHED.
5. LIGHTING AND RECEPTACLE CIRCUITS DESIGNATED ON THE FLOOR PLANS ARE NOT SHOWN ON THE ONE-LINES. CONDUCTORS FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM NO. 12 AWG. CONDUIT FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM ¾".
6. IN AREAS WHERE THERE ARE OVERHEAD BRIDGE CRANES, HOISTS, ETC., NO CONDUITS SHALL BE RUN OVERHEAD THAT WILL INTERFERE WITH THE OPERATION OF THE EQUIPMENT.

GENERAL NOTES

1. SOLID LINES —— INDICATE NEW WORK OR EQUIPMENT.
2. DOTTED LINES . . . INDICATE EXISTING WORK OR EQUIPMENT.
3. DASHED LINES — — INDICATE FUTURE WORK OR EQUIPMENT.
4. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
5. INFORMATION RELATED TO CIRCUIT IDENTIFICATION, WIRE & CONDUIT SIZES, AND ROUTING, IS ON THE FOLLOWING DRAWING TYPES.
   - A. ONE-LINE DIAGRAMS SHOW CIRCUIT IDENTIFICATION, WIRE QUANTITY AND SIZES, AND CONDUIT SIZE WITHIN STRUCTURES. ONE-LINE DIAGRAMS ALSO INDICATE ORIGIN AND DESTINATION OF CIRCUITS, AND IDENTIFY CIRCUITS ROUTED UNDERGROUND.
   - B. FOR CIRCUITS WITHOUT UNDERGROUND PORTIONS, BUILDING FLOOR PLANS SHOW LOCATION OF EQUIPMENT FOR DETERMINING CIRCUIT LENGTH WITHIN THE STRUCTURE. FOR CIRCUITS WITH UNDERGROUND PORTIONS, ANTICIPATED PENETRATION OF UNDERGROUND CONDUITS ARE SHOWN ON STRUCTURE PLANS FOR DETERMIINING THE LENGTH OF IN-STRUCTURE PORTIONS OF CIRCUITS. BUILDING FLOOR PLANS MAY ALSO SHOW HOME RUNS FOR LIGHTING, RECEPTACLE, AND OTHER MISCELLANEOUS EQUIPMENT CIRCUITS.
   - C. SITE PLANS INDICATE THE GENERAL ROUTING OF UNDERGROUND CONDUITS AND DUCT BANKS. CIRCUITS ROUTED IN UNDERGROUND CONDUITS OR DUCT BANKS ARE INDICATED IN DUCT BANK SECTIONS REFERENCED ON THE SITE PLAN.
   - D. DUCT BANK SECTIONS AND SCHEDULES IDENTIFY CONDUIT SIZE, CONDUIT MATERIAL, ARRANGEMENT OF THE UNDERGROUND CONDUITS, AND CIRCUITS ROUTED IN EACH UNDERGROUND CONDUIT.
6. CLOUDED MARKINGS INDICATE WORK IN EXISTING AREAS THAT IS NEW OR NEW WORK ON AN EXISTING PIECE OF EQUIPMENT.

COLORADO REGISTERED — THEODORE W. [illegible] — 30647 — 10-24-23 — PROFESSIONAL ENGINEER

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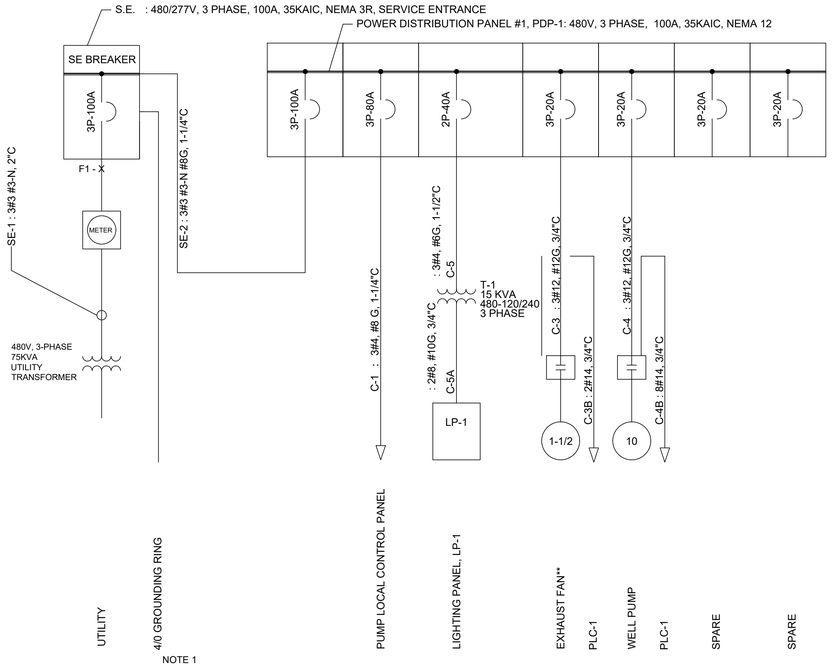
GRANGE CREEK IRRIGATION PUMP STATION

ELECTRICAL LEGEND

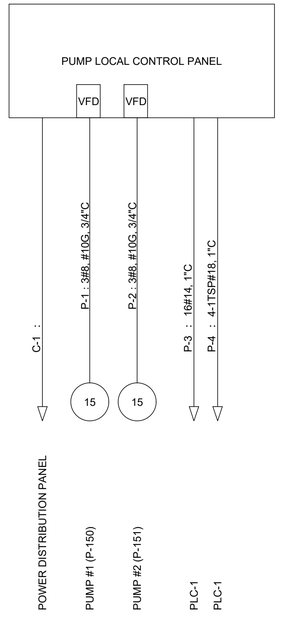
PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: SEPTEMBER 2023

SHEET E0

X:\BH Office Clients\Thornton\Engineering\Grange Creek Pump Station\Engineering Drawings\E0 Legend-Onelines.dwg E0 9/19/2023 9:06 AM BBCHRISTIANSON 24.2s (LMS Tech)



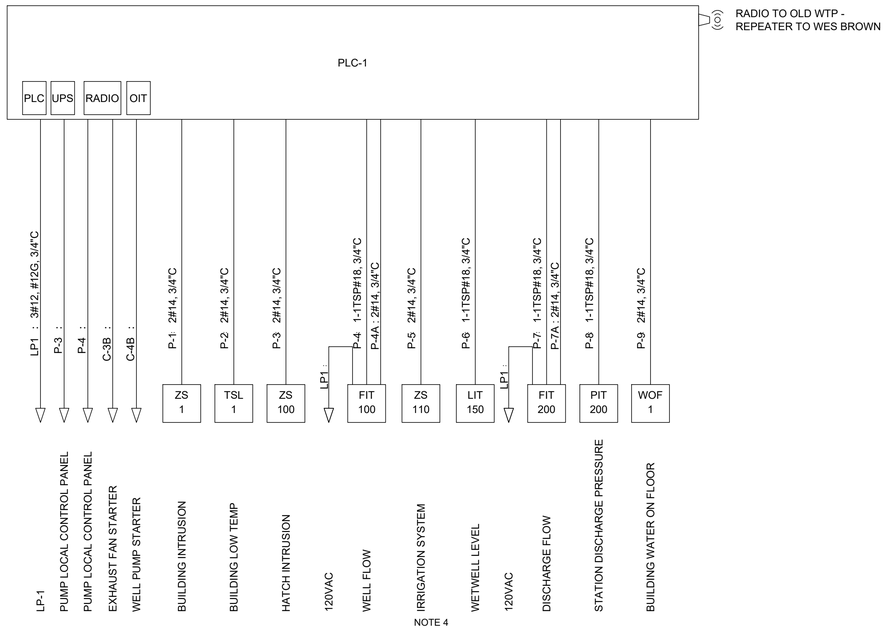
SERVICE ENTRANCE & POWER DISTRIBUTION PANEL (PDP-1)
ONE-LINE DIAGRAM



PUMP LOCAL CONTROL PANEL
ONE-LINE DIAGRAM

FAULT CURRENT	
UTILITY	5,600A
F1	4,318A

NOTES:
1. BONDING AND GROUNDING SHALL INCLUDE BUILDING STEEL AND PROCESS PIPE AS PER N.E.C.
2. ALL 120VAC CONDUCTORS WITH 20 AMP BREAKER SHALL BE 3#12, 3/4"C. ALL OTHER CONDUCTORS SHALL BE SIZED TO OVER CURRENT PROTECTION.
3. * INDICATES A PACKAGED SYSTEM.
4. IRRIGATION SYSTEM CALL FOR WATER SIGNAL, THIS IS A 24VAC SIGNAL FROM A PUMP START/STOP RELAY biCODER. A 24VAC TRANSFORMER IS REQUIRED TO POWER AN INTERPOSING RELAY FOR THIS SIGNAL.



PLC-1 PANEL
ONE-LINE DIAGRAM

NAME:		LP-1		BUS:		COPPER			MAINS:		2P-80A		
SERVICE:		120/240VAC		RATING:		125A			LOCATION:		PUMP STATION		
MOUNTING:		SURFACE, NEMA 12		AIC RATING:		10,000A							
V.A.						CIRCUIT NUMBER					V.A.		
A	B	C	LOAD	PHASE	BREAKER			BREAKER	PHASE	LOAD	A	B	C
200			PUMP STATION LIGHTING	1	20	1	2	20	1	PLC-1 PANEL	150		
	720		PUMP STATION RECEPTACLES	1	20	3	4	20	1	WELL FLOW METER (FIT-100)		150	
		300	IRRIGATION SYSTEM	1	20	5	6	20	1	DISCHARGE FLOW METER (FIT-150)			150
1200			UNIT HEATER PLUG	2	30	7	8	20	1	SPARE	0		
	1200		-	-	-	9	10	20	1	SPARE		0	
		0	SPARE	1	20	11	12	20	1	SPARE			0
0			SPARE	1	20	13	14	20	1	SPARE	0		
	0		SPARE	1	20	15	16	20	1	SPARE		0	
		0	SPARE	1	20	17	18	20	1	SPARE			0
1400	1920	300	TOTALS PER PHASE PER SIDE								150	150	150
1550	2070	450	TOTALS PER PHASE										
	4070		PANEL TOTAL										

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GRANGE CREEK IRRIGATION PUMP STATION

ELECTRICAL POWER ONE LINES

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: SEPTEMBER 2023

SHEET
E1
27 of 31

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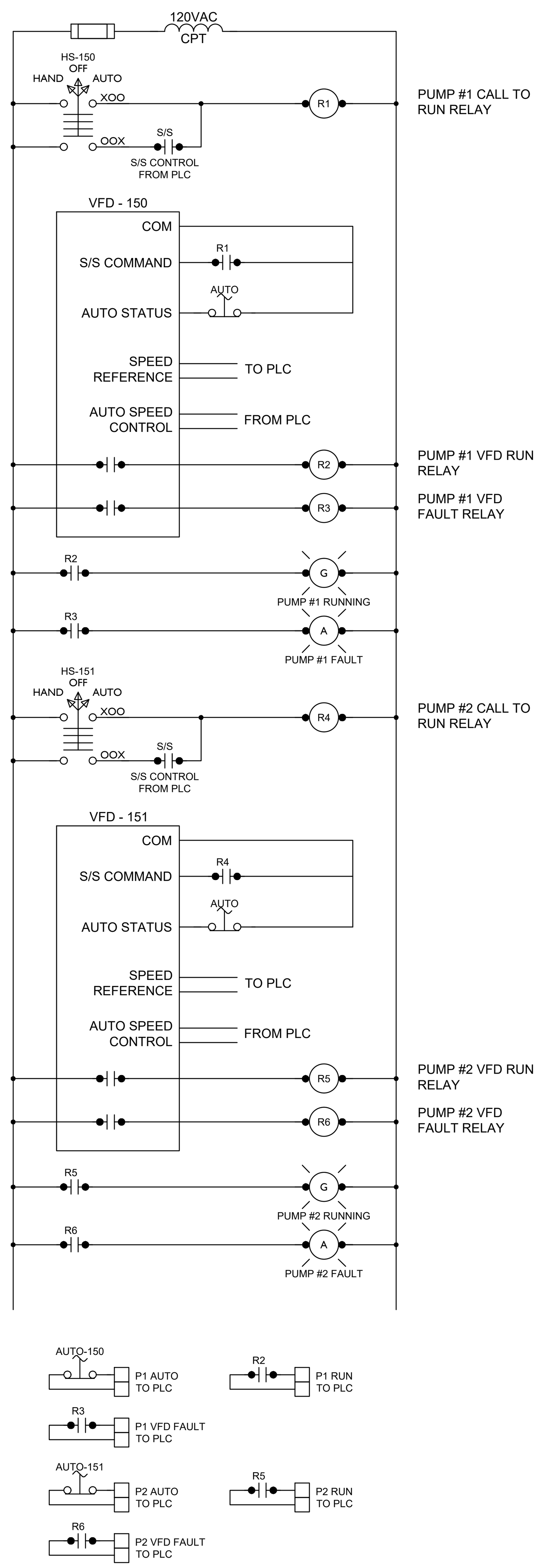
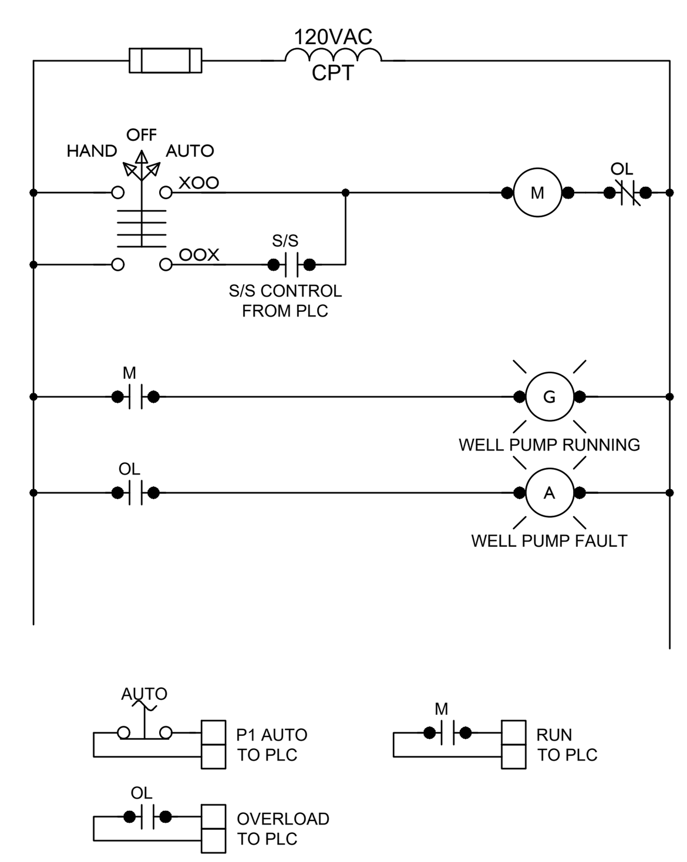


PUMP LOCAL CONTROL PANEL SCHEMATIC



WELL PUMP SCHEMATIC

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ELECTRICAL PUMP SCHEMATICS

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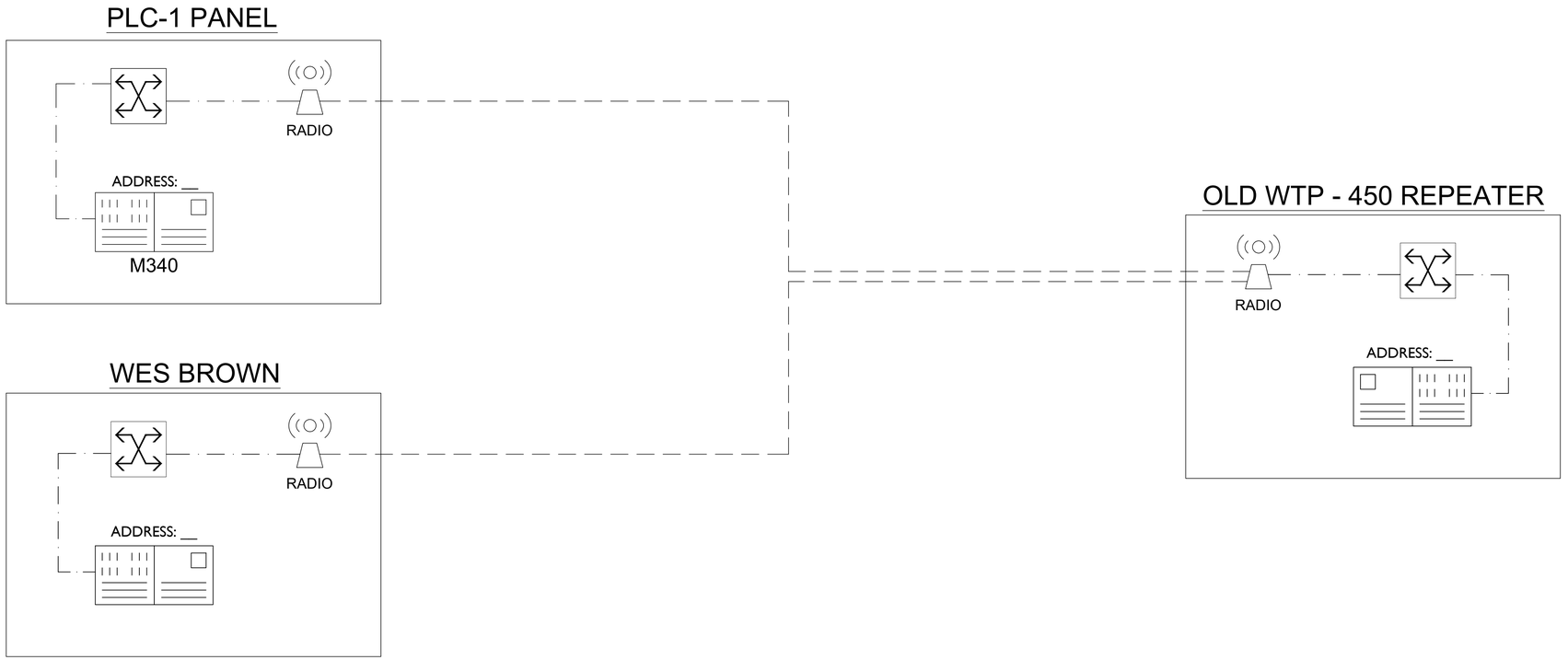
SHEET
E2



SYSTEM NETWORK DIAGRAM

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ELECTRICAL NETWORKING DIAGRAM

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: SEPTEMBER 2023

SHEET
E3
29 of 31

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X:\BH Office Clients\Thornton\Engineering\Grange Creek Pump Station\Engineering Drawings\E4 Vault Background.dwg E4 9/19/2023 6:06 PM BBCHRISTIANSON 24.2s (LMS Tech)

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GRANGE CREEK IRRIGATION PUMP STATION

ELECTRICAL VAULT PLAN VIEW

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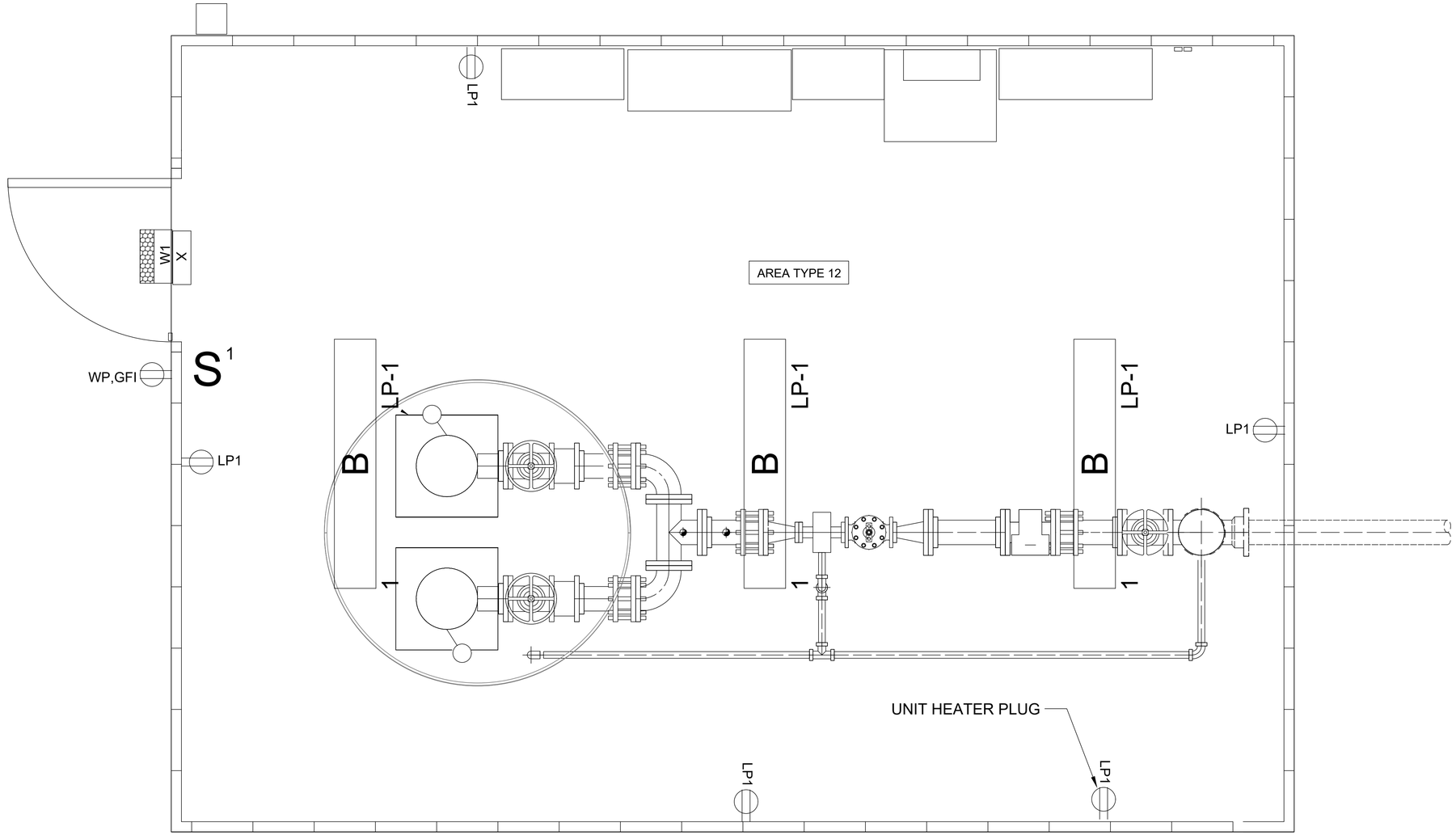

LIGHTING FIXTURE SCHEDULE

SYMBOL	LAMP	MTG HEIGHT	DESCRIPTION	MANUFACTURER
X	LED, 120V	1 FT ABOVE DOOR	ILLUMINATED EXIT SIGN WITH EMERGENCY LIGHT, COMPLETELY SEALED HOUSING	COMPASS: ECCCGRC
B	LED, 120V	MOUNT AT 10' AFF	4 FOOT FIXTURE-HEAVY DUTY AND MOUNTING HARDWARE SUITABLE FOR WET OR DUSTY LOCATIONS	EIKO: VTS-4/75/B0/850-DIM-U
W1	LED, 120V	1 FT ABOVE DOOR	DIE CAST ALUMINUM FOR RUGGED MOUNTING AND HEAT DISSIPATION, SPECULAR REFLECTOR, VERTICAL LAMP AND REFRACTOR WITH MOTION SENSOR.	HUBBELL: LNC2-12LU-4K-4-SCP

N

PLAN
SCALE: 1" = 1'-0"

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GRANGE CREEK IRRIGATION PUMP STATION

ELECTRICAL
VAULT LIGHTING & RECEPTACLES

PROJECT NO.: 22-3525 | SCALE: AS SHOWN | DATE: SEPTEMBER 2023

SHEET
E5
31 of 31

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