SADDLEHORN RANCH METROPOLITAN DISTRICT
OVERALL WATER SYSTEM

PLAN SET INFORMATION:
FOR APPROVAL

SHEET INDEX

PARTICIPANTS

OWNER
GORILLA CAPITAL CO
SADDLEHORN RANCH, LLC
1342 HIGH STREET
EUGENE, OR 97401
CONTACT: ROB FULLER
PHONE: (541) 393-9049

CONSULTING/DESIGN ENGINEER
JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR, SUITE 100
COLORADO SPRINGS, CO 80919
CONTACT: RYAN MANGINO, PE
PHONE: (719) 227-0072

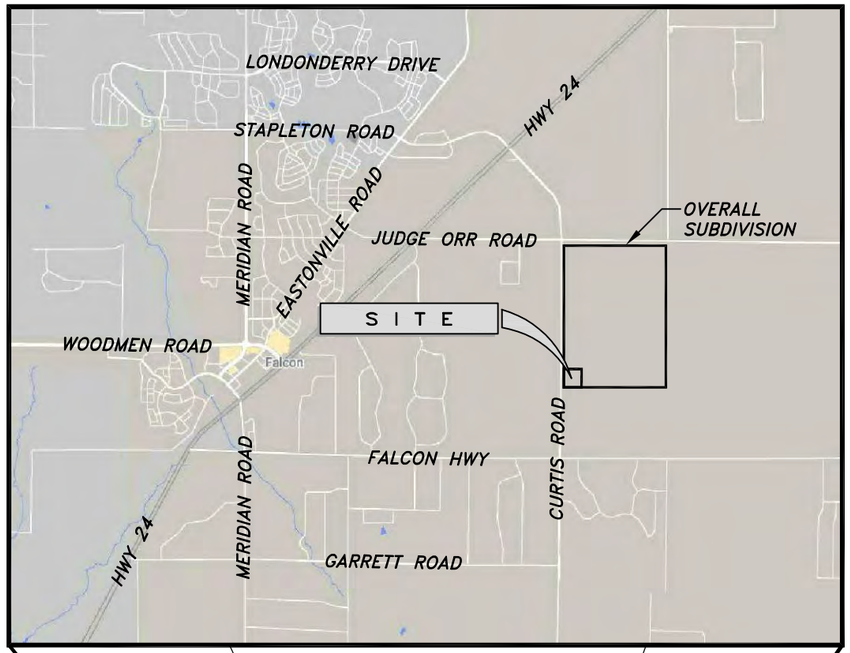
ELECTRICAL ENGINEER
FARRIS ENGINEERING
650 FIRST STREET
COLORADO SPRINGS, CO 80907
CONTACT: JOB GUERRA, EIT
PHONE: (719) 635-0900

INSTRUMENTATION/CONTROLS
FIVE STAR AUTOMATION
589 E. INDUSTRIAL BLVD
PUEBLO WEST, CO 81007
CONTACT: TERRY MARTIN
PHONE: (719) 547-1852

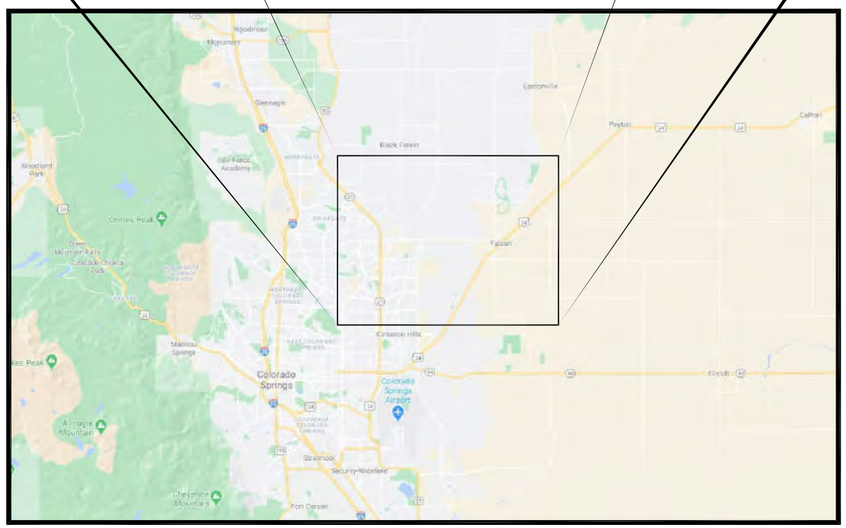
JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

THE PARTIES RESPONSIBLE FOR THIS PLAN HAVE FAMILIARIZED THEMSELVES WITH ALL CURRENT ACCESSIBILITY CRITERIA AND SPECIFICATION AND THE PROPOSED PLAN REFLECTS ALL SITE ELEMENTS REQUIRED BY THE APPLICABLE ADA DESIGN STANDARDS AND GUIDELINES AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAN BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY OTHER FEDERAL OR STATE ACCESSIBILITY LAWS OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS.

LOCATION & VICINITY MAPS



VICINITY MAP
N.T.S.



LOCATION MAP
N.T.S.

PRE-EXCAVATION CHECKLIST

PRE-EXCAVATION CHECKLIST

- ☐ Gas and Other Utility Lines Shown on Construction Plans
- ☐ Utility Notification Center of Colorado (UNCC)—Call at Least Two (2) Business Days Ahead—1-800-922-1987
- ☐ Utilities Located & Marked on the Ground
- ☐ Employees Briefed on Marking and Color Codes*
- ☐ Employees Trained on Excavation and Safety Procedures for Natural Gas Lines
- ☐ When Excavation Approaches Gas Lines, Employees Must Expose Lines by Careful Probing and Hand-Digging

COLOR CODE
FOR MARKING
UNDERGROUND UTILITY LINES

WHITE	PROPOSED EXCAVATION
MAGENTA	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC
YELLOW	GAS, OIL, STEAM
ORANGE	COMMUNICATION, CATV
BLUE	POTABLE WATER
PURPLE	IRRIGATION, RECLAIMED WATER, SLURRY LINES
GREEN	SEWER

COLORADO 811
Always Call Before You Dig 811 or (800) 922-1987

SIGNATURES

DISTRICT APPROVALS:

THE SADDLEHORN RANCH METROPOLITAN DISTRICT RECOGNIZES THE DESIGN ENGINEER AS HAVING RESPONSIBILITY FOR THE DESIGN. THE DISTRICT HAS LIMITED ITS SCOPE OF REVIEW ACCORDINGLY.

DISTRICT MANAGER: _____

DISTRICT ENGINEER: _____

DATE: _____

PROJECT NO. _____

IN CASE OF ERRORS OR OMISSIONS WITH THE DESIGN AS SHOWN ON THIS DOCUMENT, THE STANDARDS AS DEFINED IN THE "GENERAL NOTES" SHALL GOVERN.

ENGINEER'S STATEMENT:

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID DETAILS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE STATE OF COLORADO.

_____
RYAN MANGINO, P.E. #43304

GENERAL NOTES

1. ALL UTILITY CONSTRUCTION TO BE CONDUCTED IN CONFORMANCE WITH THE CURRENT SADDLEHORN RANCH METROPOLITAN DISTRICT (SRMD, THE DISTRICT) SPECIFICATIONS.

2. ALL PLANS ON THE JOB SITE SHALL BE SIGNED BY THE DISTRICT AND THE DISTRICT'S ENGINEER. ANY REVISION TO THE PLANS SHALL BE SO NOTED WITH THE OLD DRAWING MARKED NOT VALID.

3. ALL STATIONING IS CENTER LINE UNLESS OTHERWISE NOTED. ALL ELEVATIONS ARE CENTER LINE UNLESS OTHERWISE NOTED.

4. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE DISTRICT. THE DISTRICT RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.

5. ALL OVER-LOT GRADING MUST BE COMPLETED TO WITHIN ONE (1) FOOT OF FINAL GRADE PRIOR TO INSTALLATION OF WATER AND WASTEWATER INFRASTRUCTURE.

6. ALL WATER AND SEWER SERVICE LOCATIONS SHALL BE CLEARLY MARKED ON EITHER THE CURB HEAD OR THE FACE OF THE CURB, WITH AN "S" FOR SEWER AND A "W" FOR WATER.

7. DUCTILE IRON AND CARBON STEEL PIPES, INCLUDING FITTINGS, VALVES AND FIRE HYDRANTS, SHALL BE WRAPPED WITH POLYETHYLENE TUBING, DOUBLE BONDED AT EACH JOINT AND ELECTRICALLY ISOLATED. BONDING AND ANODE CONNECTIONS SHALL BE THOROUGHLY COATED WITH BITUMINOUS COATINGS.

8. ALL DUCTILE IRON AND CARBON STEEL PIPE LESS THAN 12 INCHES AND FITTINGS SHALL HAVE CATHODIC PROTECTION USING TWO NO. 6 WIRES WITH 17 LB. MAGNESIUM ANODES EVERY 400 FEET AND 9 LB. MAGNESIUM ANODES AT EACH FITTING. ALL DUCTILE IRON AND CARBON STEEL PIPE 12 INCHES AND GREATER AND FITTINGS SHALL HAVE CATHODIC PROTECTION USING TWO NO. 6 WIRES WITH 17 LB. MAGNESIUM ANODES EVERY 300 FEET AND 9 LB. MAGNESIUM ANODES AT EACH FITTING.

9. ALL PIPE MATERIAL, BACKFILL AND INSTALLATION SHALL CONFORM TO THE APPLICABLE SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS, COLORADO DEPARTMENT OF TRANSPORTATION, EL PASO COUNTY DEPARTMENT OF TRANSPORTATION, COLORADO SPRINGS UTILITIES AND THE GEOTECHNICAL ENGINEER.

10. COMPACTION TESTS SHALL BE 95% STANDARD PROCTOR AS DETERMINED BY ASTM D698, UNLESS OTHERWISE APPROVED BY THE DISTRICT OR HIGHER STANDARD AS IMPOSED BY ANOTHER AGENCIES HAVING RIGHT-OF-WAY JURISDICTION. THIS SHALL INCLUDE ALL VALVES, FIRE HYDRANT RUNS, WATER & SEWER SERVICE LINES AND MANHOLES. ALL REPORTS SHALL BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL.

11. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. THE LOCATION OF ALL UTILITIES SHALL BE FIELD VERIFIED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE DISTRICT SHALL BE NOTIFIED OF ANY DEVIATIONS TO THE LINE AND/OR GRADE AS DEPICTED ON THE PLANS. CONTRACTOR SHALL SUBMIT TO THE DISTRICT AND THE ENGINEER OF RECORD A REPORT OF THE FIELD VERIFIED INFORMATION PRIOR TO THE START OF CONSTRUCTION.

12. ALL BENDS SHALL BE FIELD STAKED PRIOR TO THE START OF CONSTRUCTION.

13. BENDS, DEFLECTION & CUT PIPE LENGTHS SHALL BE USED TO HOLD HORIZONTAL ALIGNMENT OF SEWER AND WATER LINES TO NO MORE THAN 0.5' FROM THE DESIGNED ALIGNMENT. CONSTRUCTION STAKES TO BE AT 25' INTERVALS ALONG CURVES TO ASSURE LOCATION OF PIPE LINE CONSTRUCTION.

14. AT ALL LOCATIONS WHERE CAP AND STUB IS NOTED ON DRAWINGS, PROVIDE A PLUG AT THE END OF THE PIPE JOINT NEAREST THE SPECIFIED STATION. PROVIDE A REVERSE ANCHOR AT ALL WATER LINE PLUGS.

15. ALL UNUSED SALVAGED WATER UTILITY MATERIAL SHALL BE RETURNED TO THE METROPOLITAN DISTRICT AS REQUESTED.

16. AT THE CONTRACTOR'S EXPENSE, ALL UTILITY MAINS SHALL BE SUPPORTED AND PROTECTED SUCH THAT THEY SHALL FUNCTION CONTINUOUSLY DURING CONSTRUCTION OPERATIONS. SHOULD A UTILITY MAIN FAIL AS A RESULT OF THE CONTRACTOR'S OPERATION, IT SHALL BE REPLACED IMMEDIATELY BY THE CONTRACTOR OR BY THE DISTRICT AT FULL COST OF LABOR AND MATERIALS TO THE CONTRACTOR/DEVELOPER.

17. PUMPING OR BYPASS OPERATIONS SHALL BE REVIEWED AND APPROVED BY BOTH THE DISTRICT AND THE DISTRICT ENGINEER PRIOR TO EXECUTION.

18. THE CONTRACTOR SHALL REPLACE OR REPAIR DAMAGE TO ALL SURFACE IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO FENCES, LANDSCAPING, CURB AND GUTTER AND/OR ASPHALT THAT MAY BE CAUSED DURING CONSTRUCTION.

19. ALL CONTRACTORS WORKING ON OR NEAR A WATER OR SEWER FACILITY (TO INCLUDE SERVICE LINES) SHALL HAVE LIABILITY INSURANCE NAMING THE DISTRICT AS AN ADDITIONAL INSURED AND SHALL PROVIDE A CURRENT COPY OF WORKERS COMPENSATION INSURANCE ON FILE WITH THE DISTRICT. NO WORK CAN PROCEED WITHOUT CURRENT CERTIFICATES ON FILE AT THE DISTRICTS' OFFICE.

20. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AND ALL AFFECTED UTILITY COMPANIES ADJACENT TO THE PROPOSED UTILITY CONSTRUCTION A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF CONSTRUCTION. A WEEKLY CONSTRUCTION MEETING SHALL BE REQUIRED WITH THE CONTRACTOR, DISTRICT ENGINEER AND ALL OTHER PARTIES AS DEEMED NECESSARY BY THE DISTRICT.

21. COMMENCEMENT OF CONSTRUCTION OF WATER/SEWER SYSTEMS WITHIN METROPOLITAN DISTRICT:

    a) PRIOR TO THE START OF CONSTRUCTION, A PRE-CONSTRUCTION MEETING IS REQUIRED A MINIMUM OF 48 HOURS IN ADVANCE OF COMMENCEMENT OF WORK. A REPRESENTATIVE OF THE OWNER OR DEVELOPER, A REPRESENTATIVE OF THE CONTRACTOR AND DESIGN ENGINEER ARE REQUIRED TO ATTEND. CONTACT THE DISTRICT TO SCHEDULE THE PRE-CONSTRUCTION MEETING. NO PRE-CONSTRUCTION MEETING CAN BE SCHEDULED PRIOR TO FOUR (4) SIGNED/APPROVED PLAN SETS ARE RECEIVED BY THE DISTRICT.

    b) THE CONTRACTOR IS REQUIRED TO NOTIFY THE DISTRICT A MINIMUM OF 48 HOURS AND A MAXIMUM OF 2 WEEKS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL ALSO NOTIFY AFFECTED UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION ADJACENT TO THE KNOWN UTILITY LINES.

22. TESTING OF FACILITIES:

    a) THE CONTRACTOR SHALL NOTIFY THE DISTRICT A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF ANY TESTING.

    b) ALL SECTIONS OF WATER LINE ARE TO MEET THE FOLLOWING PRESSURE TESTING REQUIREMENTS
    - TEST 100 % OF ALL LINES
    - MUST PASS PRESSURE TEST TO 200 PSI FOR TWO HOURS (UNLESS OTHERWISE APPROVED ON THE PLANS).

    c) ALL SANITARY SEWER FACILITIES ARE TO MEET THE FOLLOWING TESTING REQUIREMENTS
    - ALL LINES SHALL BE JET CLEANED PRIOR TO VACUUM OR PRESSURE TESTING
    - ALL MANHOLES SHALL BE VACUUM TESTED WITH DISTRICT STAFF PRESENT PRIOR TO CCTV INSPECTION.
    - SEWER MAINS TO BE PRESSURE TEST PRIOR TO CCTV INSPECTION
    - ALL LINES SHALL BE CCTV INSPECTED AND VIDEO SHALL TO BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL.

23. PRELIMINARY ACCEPTANCE SHALL BE DEFINED AS THE POINT IN TIME THAT THE DISTRICT ACCEPTS THE FACILITY FOR USE. ALL SURFACE IMPROVEMENTS AND RESTORATION SHALL BE COMPLETED WITHIN 30 DAYS OF COMMENCEMENT. SHOULD THE CONTRACTOR FAIL TO COMPLETE ALL SURFACE IMPROVEMENTS AND RESTORATION WITHIN 30 DAYS OF COMMENCEMENT OF SERVICE, THE DISTRICT, AT THEIR DISCRETION, MAY ELECT TO COMPLETE THE IMPROVEMENTS AT THE CONTRACTORS COST.

24. FINAL ACCEPTANCE BY THE DISTRICT OF ANY LINE OR SYSTEM SHALL NOT OCCUR UNTIL COMPLETION OF FINAL ASPHALT LAYERS AND/OR FINAL COMPLETION AND/OR RESTORATION OF ALL SURFACE IMPROVEMENTS. THE WARRANTY PERIOD FOR ALL FACILITIES PRIOR TO FINAL ACCEPTANCE SHALL BE 24 MONTHS COMMENCING AFTER PRELIMINARY ACCEPTANCE.

25. ACCEPTANCE:

    a) THE DISTRICT MAY GIVE PRELIMINARY ACCEPTANCE ONCE ALL OF THE TESTS ON ALL THE LINES HAVE BEEN COMPLETED AND A WALK-THRU HAS OCCURRED.

    b) A SECOND ACCEPTANCE MAY OCCUR ONCE FIRST LIFT OF ASPHALT GOES DOWN AND A SECOND WALK-THRU OF THE SYSTEM OCCURS. IF ALL FACILITIES ARE CLEAN AND ACCESSIBLE, A FINAL ACCEPTANCE MAY OCCUR (THE DISTRICT MAY REQUIRE CLEANING AND RE-VIDEO OF THE SYSTEM, DEPENDING ON THE SEVERITY OF THE CONTAMINATION).

26. ALL WATER AND SEWER MAINS, INCLUDING SERVICE LINES, SHALL HAVE "AS-BUILT" DRAWINGS PREPARED AND APPROVED PRIOR TO PRELIMINARY ACCEPTANCE BY THE DISTRICT.

27. ALL COMMERCIAL/BUSINESS DEVELOPMENTS SHALL HAVE AN EIGHT INCH (MIN.) WATER MAIN LOOPED THROUGH THE PROPOSED PROPERTY WITH GATE VALVES LOCATED WHERE THE MAIN ENTERS THE PROPERTY LINE. AN EIGHT INCH SEWER MAIN SHALL BE INSTALLED FOR SERVICE TO COMMERCIAL/BUSINESS DEVELOPMENTS, AND A MANHOLE SHALL BE LOCATED WHERE THE MAIN ENTERS THE PROPERTY. THE END OF THE MAINS SHALL BE MARKED WITH THE APPROPRIATE COLORED CARSONITE MARKER ALONG WITH TRACER WIRE.

28. AFTER REVIEW AND APPROVAL OF PLANS FOR THE EXTENSION OF LINES, FACILITIES AND/OR SERVICES, CONSTRUCTION MUST BE COMMENCED WITHIN 18 MONTHS FOR RESIDENTIAL SUBDIVISIONS AND 12 MONTHS FOR ANY COMMERCIAL INSTALLATIONS.

29. INSPECTION FEES: CALL THE DISTRICT FOR FEE SCHEDULE.

WATER SYSTEM INSTALLATION NOTES

30. ALL WATER AND FORCE MAIN PIPE SHALL BE AWWA C900 PVC, OR EQUAL, PRESSURE CLASS 200. ALL WATER AND FORCE MAIN FITTINGS SHALL HAVE MECHANICAL RESTRAINTS AND THRUST BLOCKS. ALL WATER AND FORCE MAIN PIPE SHALL HAVE A MINIMUM COVER DEPTH OF FIVE AND ONE-HALF (5.5) FEET.

31. ALL WATER VALVES ASSOCIATED WITH THE POTABLE WATER SYSTEM SHALL BE OPEN CLOCKWISE. ALL VALVES INSTALLED IN LANDSCAPED AREAS AND/OR NOT WITHIN PAVED STREETS SHALL BE MARKED WITH CARSONITE MARKERS. ALL VALVES ASSOCIATED WITH THE RAW WATER SYSTEM SHALL BE OPEN COUNTERCLOCKWISE AND MARKED WITH CARSONITE MARKERS AS APPLICABLE.

32. THE DEVELOPER OR HIS ENGINEER SHALL LOCATE ALL FIRE HYDRANTS AND SERVICE STUB OUTS FOR FUTURE DEVELOPMENT. ANY REQUIRED REALIGNMENT, (HORIZONTAL OR VERTICAL), SHALL BE AT THE EXPENSE OF THE DEVELOPER. FIRE HYDRANT LOCATION SHALL BE REVIEWED AND APPROVED BY THE APPLICABLE FIRE AUTHORITY.

33. FIRE HYDRANTS SHALL BE OPEN RIGHT WITH 7/8" X 7/8" SQUARE TAPERED ALONG WITH SERVICE CAPS. LUBRICATION TYPE: (GREASE). ACCEPTABLE BRANDS ARE AMERICAN AVK SERIES 2700 (MODERN) AND KENNEDY GUARDIAN (K81D, K81A AND K81AM). EACH FIRE HYDRANT LOCATION SHALL ALSO BE USED AS TEST STATION.

34. ALL MAIN LINES (PVC & DUCTILE IRON) SHALL BE INSTALLED WITH COATED #12 TRACER WIRE WITH TEST STATIONS AT INTERVALS NO GREATER THAN 500 FT (VALVE BOXES CAN BE USED AT INTERSECTIONS AND SERVICE STUBS).

35. CONTRACTOR SHALL MAKE CONNECTIONS TO EXISTING WATER LINE WITHOUT SHUTDOWN, OR ELSE NOTIFY THE DISTRICT OF ANY SERVICE SHUTDOWNS NECESSARY TO CONNECT TO EXISTING LINES.

36. IRRIGATION SERVICES SHALL HAVE A STOP AND WASTE CURB STOP VALVE INSTALLED ALONG WITH TRACER WIRE EXTENDING BACK TO THE MAIN LINE.

37. COMMENCEMENT OF USE OF WATER LINES AND/OR SYSTEMS:

    a) NO WATER FACILITY SHALL BE PLACED IN SERVICE UNTIL AFTER THE COMPLETION OF ALL PRESSURE TESTING, FLUSHING, BAC-T TESTING, COMPACTION TESTING, AND AS-BUILT DRAWINGS ARE SUBMITTED AND APPROVED BY THE DISTRICT.

    b) NO WATER FACILITY SHALL BE PLACED IN SERVICE UNTIL ALL SERVICE LINES ARE COMPLETED AND THE FIRST LIFT OF ASPHALT IS COMPLETED OVER THE LINE. IN THE CASE WHERE NO ASPHALT IS TO BE PLACED OVER THE LINE, SURFACE IMPROVEMENTS SHALL BE COMPLETED PRIOR TO USE OF THE FACILITY.

    c) ALL EASEMENTS (PLATTED OR DEEDED) ARE DEDICATED, EXECUTED BY THE DISTRICT, AND RECORDED.

WASTEWATER SYSTEM INSTALLATION NOTES

38. SANITARY SEWER LENGTHS ARE MH CENTER-MH CENTER. ALL SANITARY SEWER PIPES SHALL BE SDR 35 PVC OR EQUAL. SEWER LINES MAY NOT EXCEED 7% GRADE FOR ANY SIZE WITHOUT PRIOR APPROVAL OF THE DISTRICT. ALL NEWLY CONSTRUCTED RESIDENTIAL SANITARY SEWER TAPS SHALL USE PRE-MANUFACTURED IN-LINE PVC PUSH-ON WYES. TAPPING SADDLES MAY ONLY BE USED FOR TAPPING PRE-EXISTING MAINS.

39. ALL SANITARY SEWER MANHOLES SHALL BE WRAPPED WITH RU116 – RUBR-NEK JOINT WRAP OR EQUIVALENT AND COATED.

40. COMMENCEMENT OF USE OF SEWER LINES AND/OR SYSTEMS:

    a) NO SANITARY SEWER FACILITY SHALL BE PLACED IN SERVICE UNTIL THE COMPLETION OF ALL JET CLEANING, PRESSURE TESTING, VACUUM TESTING, CCTV INSPECTION, COMPACTION TESTING, AND AS-BUILT DRAWINGS ARE SUBMITTED AND APPROVED BY THE DISTRICT.

    b) NO SANITARY SEWER FACILITY SHALL BE PLACED IN SERVICE UNTIL ALL SERVICE LINES ARE COMPLETED AND THE FIRST LIFT OF ASPHALT IS COMPLETED OVER THE LINE. IN THE CASE WHERE NO ASPHALT IS TO BE PLACED OVER THE LINE, ANY REQUIRED SURFACE IMPROVEMENTS SHALL BE COMPLETED PRIOR TO USE OF THE FACILITY.

    c) ALL NECESSARY EASEMENTS (PLATTED OR DEEDED) ARE DEDICATED, EXECUTED BY THE DISTRICT, AND RECORDED.

    d) DOWNSTREAM PLUG CAN BE REMOVED ONCE FIRST LIFT OF ASPHALT IS DOWN AND THE ABOVE REQUIREMENTS ARE MET.

THE ABOVE GUIDELINES ARE SUBJECT TO CHANGE AT ANY TIME.

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
GENERAL NOTES

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

G1

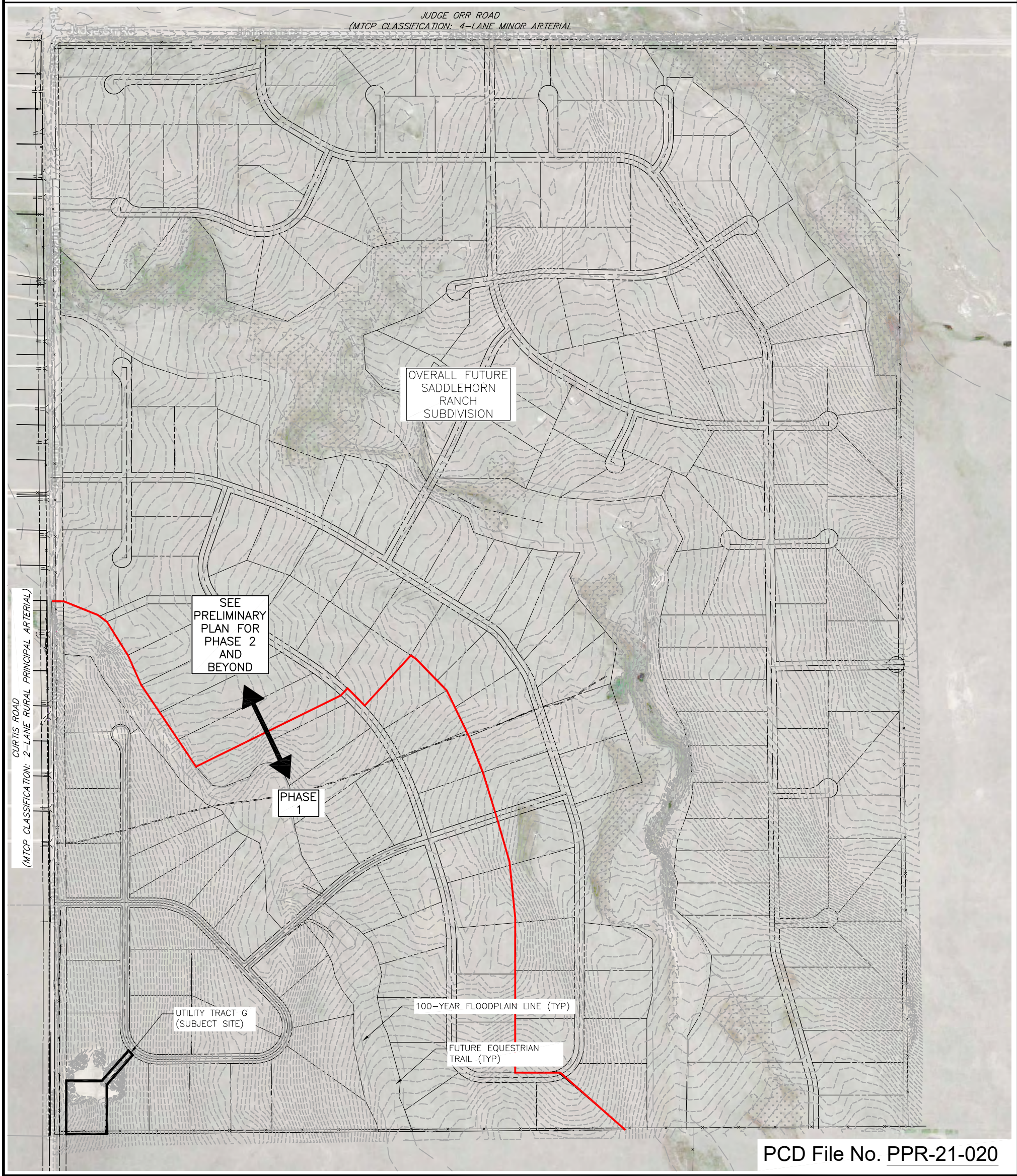
SHEET 1 OF 1

LEGEND

- EX PROPERTY LINE
- EX RIGHT-OF-WAY
- EX FENCE
- 5540 EX CONTOURS-MAJOR
- 5541 EX CONTOURS-MINOR
- 5540 PP CONTOURS-MAJOR
- 5541 PP CONTOURS-MINOR
- PP YARD PIPING
- PP FENCE
- AREA OF CUT
- AREA OF FILL
- VT PP VEHICLE TRACKING PAD (INITIAL)
- SF PP EROSION CONTROL SILT FENCE (INITIAL)
- STAGING AREA (INITIAL)
- CONCRETE WASHOUT (INITIAL)
- RIPRAP (FINAL)
- PRE-DEVELOPED FLOW DIRECTION
- DEVELOPED FLOW DIRECTION
- CHECK DAM
- VEHICLE CIRCULATION PATH

0' 300' 600'

11x17 SCALE: 1"=600'
24x36 SCALE: 1"=300'



PCD File No. PPR-21-020

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
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SHEET 1 OF 23

C1

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

COLORADO LICENSED PROFESSIONAL ENGINEER RYAN M. MANGINO 43304

100% COMPLETE

SADDLEHORN RANCH

OVERALL WATER SYSTEM

OVERALL SUBDIVISION PLAN

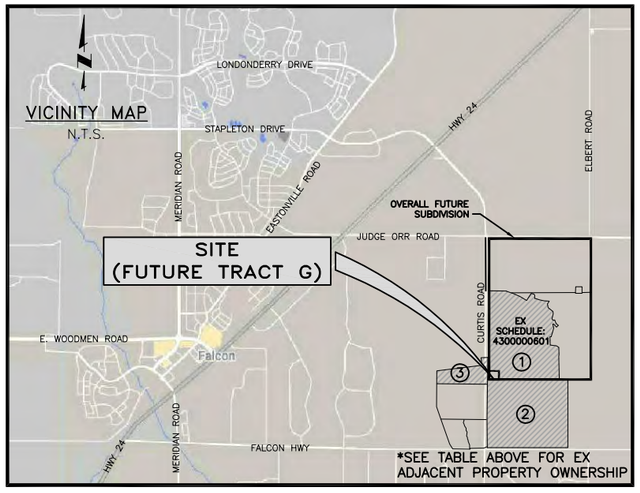
JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

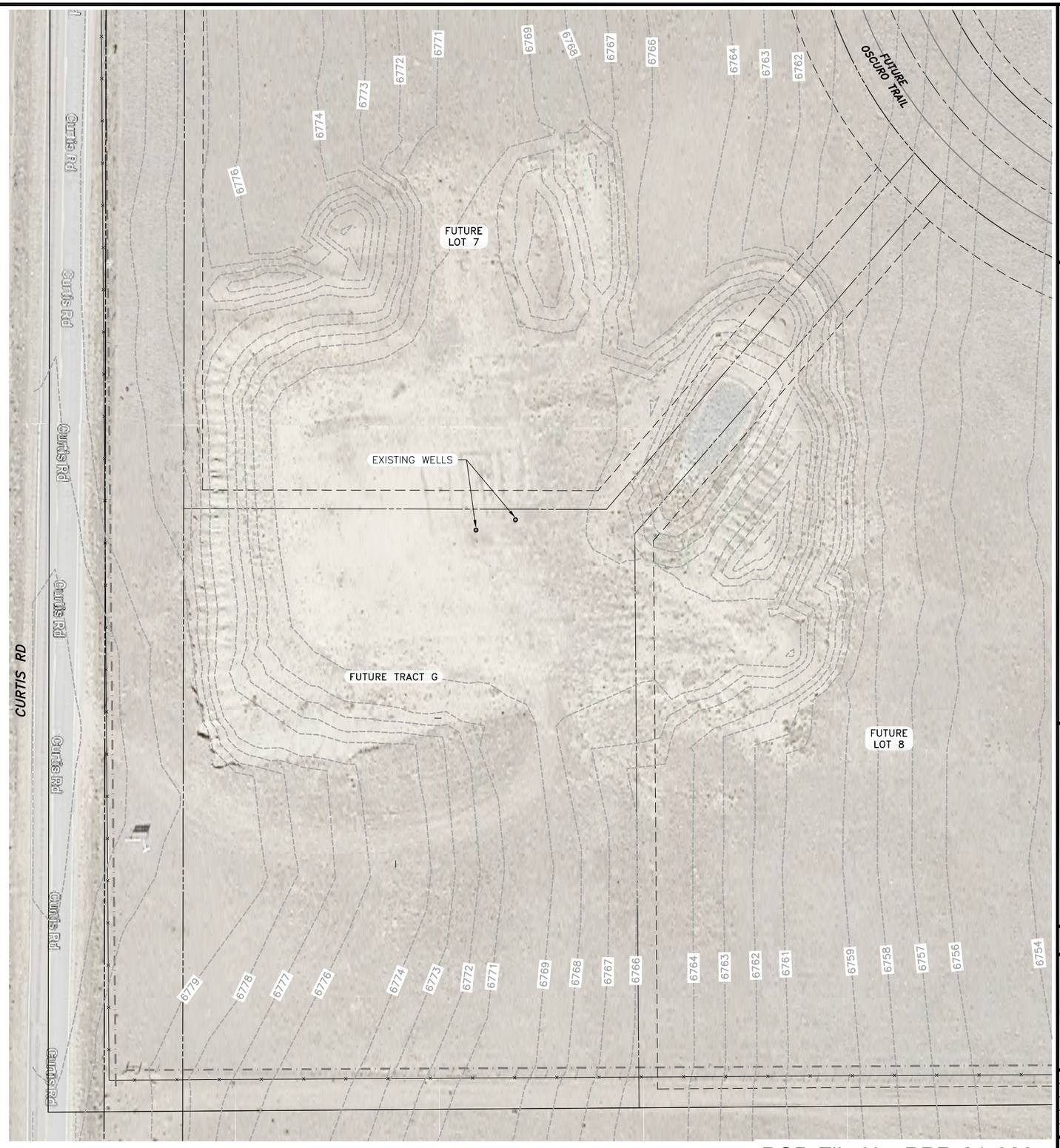
LEGEND

EX PROPERTY LINE	PP VEHICLE TRACKING PAD (INITIAL)
EX RIGHT-OF-WAY	PP EROSION CONTROL SILT FENCE (INITIAL)
EX FENCE	STAGING AREA (INITIAL)
EX CONTOURS-MAJOR (5540)	CONCRETE WASHOUT (INITIAL)
EX CONTOURS-MINOR (5541)	RIPRAP (FINAL)
PP CONTOURS-MAJOR (5540)	PRE-DEVELOPED FLOW DIRECTION
PP CONTOURS-MINOR (5541)	DEVELOPED FLOW DIRECTION
PP YARD PIPING	CHECK DAM
PP FENCE	VEHICLE CIRCULATION PATH
AREA OF CUT	
AREA OF FILL	

EX ADJACENT PROPERTY OWNERSHIP

NO.	OWNER	SCHEDULE #	LAND USE	ZONING
①	GORILLA CAPITAL CO	4300000601	AG GRAZING	RR-2.5
②	REYNOLDS FAYE	4300000550	AG GRAZING	A-35
③	VENTIMIGLIA DOROTHY B TRUST	4300000553	AG GRAZING	PUD





0' 30' 60'
SCALE 11x17: 1" = 60'
SCALE 24x36: 1" = 30'

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

OVERALL EXISTING SITE PLAN

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
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6				
7				

100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

C2

SHEET 2 OF 23

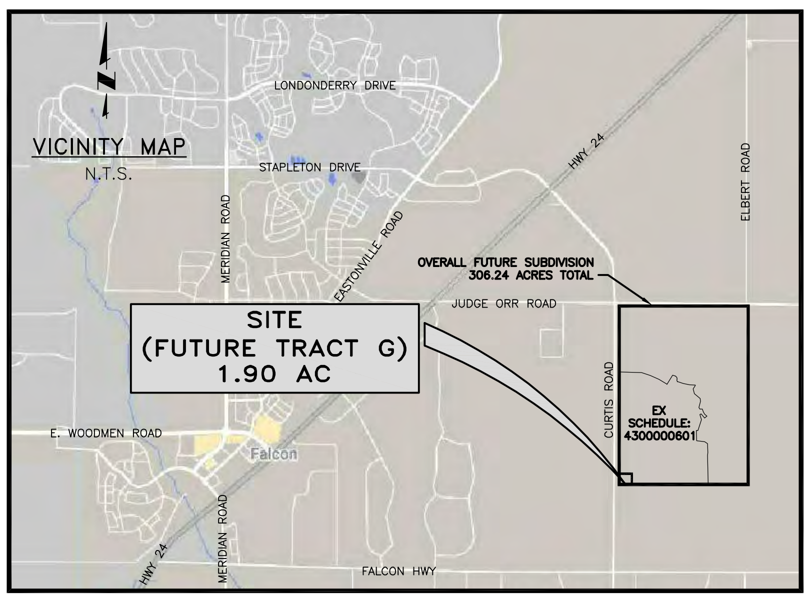
2021/12/02 4:54 PM By: Ryan Mangino J:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\311102_1_Civil.dwg

LEGEND

EX PROPERTY LINE	PP VEHICLE TRACKING PAD (INITIAL)
EX RIGHT-OF-WAY	PP EROSION CONTROL SILT FENCE (INITIAL)
EX FENCE	STAGING AREA (INITIAL)
EX CONTOURS-MAJOR (5540)	CONCRETE WASHOUT (INITIAL)
EX CONTOURS-MINOR (5541)	RIPRAP (FINAL)
PP CONTOURS-MAJOR (5540)	PRE-DEVELOPED FLOW DIRECTION
PP CONTOURS-MINOR (5541)	DEVELOPED FLOW DIRECTION
PP YARD PIPING	CHECK DAM
PP FENCE	VEHICLE CIRCULATION PATH
AREA OF CUT	
AREA OF FILL	

PROPOSED COVERAGE:	SF	%
LOT (FUTURE TRACT G)	82,840	
STRUCTURES (GFA: TREATMENT PLANT & TANK)	4,187	5.1%
DRIVEWAY & PARKING	10,684	12.9%
PUBLIC STREET RIGHT-OF-WAY	232	0.3%
DEDICATED OPEN SPACE & LANDSCAPED AREA	8,054	9.7%
EX WELL HEADS (2)	6	0.0%
DENSITY	0.3	0.0%

PARKING COVERAGE:				
USE	RATIO	REQUIRED	PROVIDED	ADA
INDUSTRIAL	1 PER 750 SF	2	2	N/A

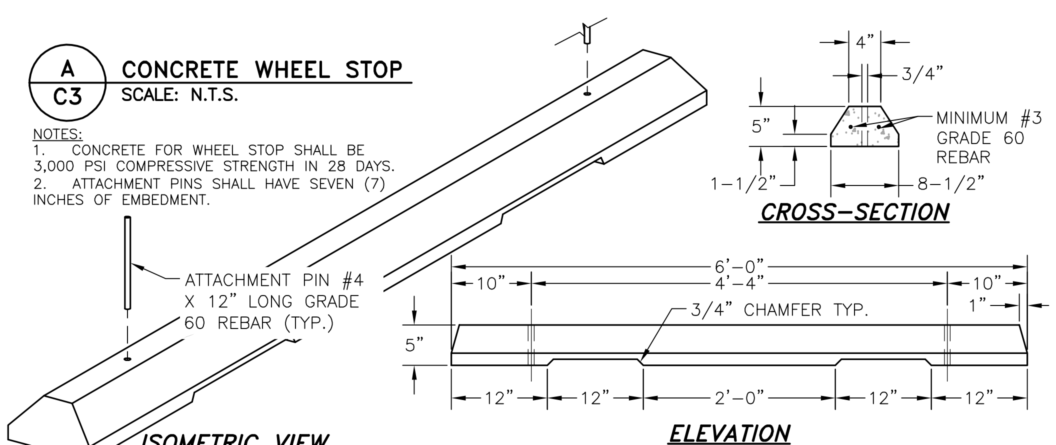


APPLICANT/PLAN PREPARER:
JDS-HYDRO CONSULTANTS, INC
CONTACT: RYAN MANGINO, P.E.:
719-227-0072, EXT. 103
rmangino@jdshydro.com

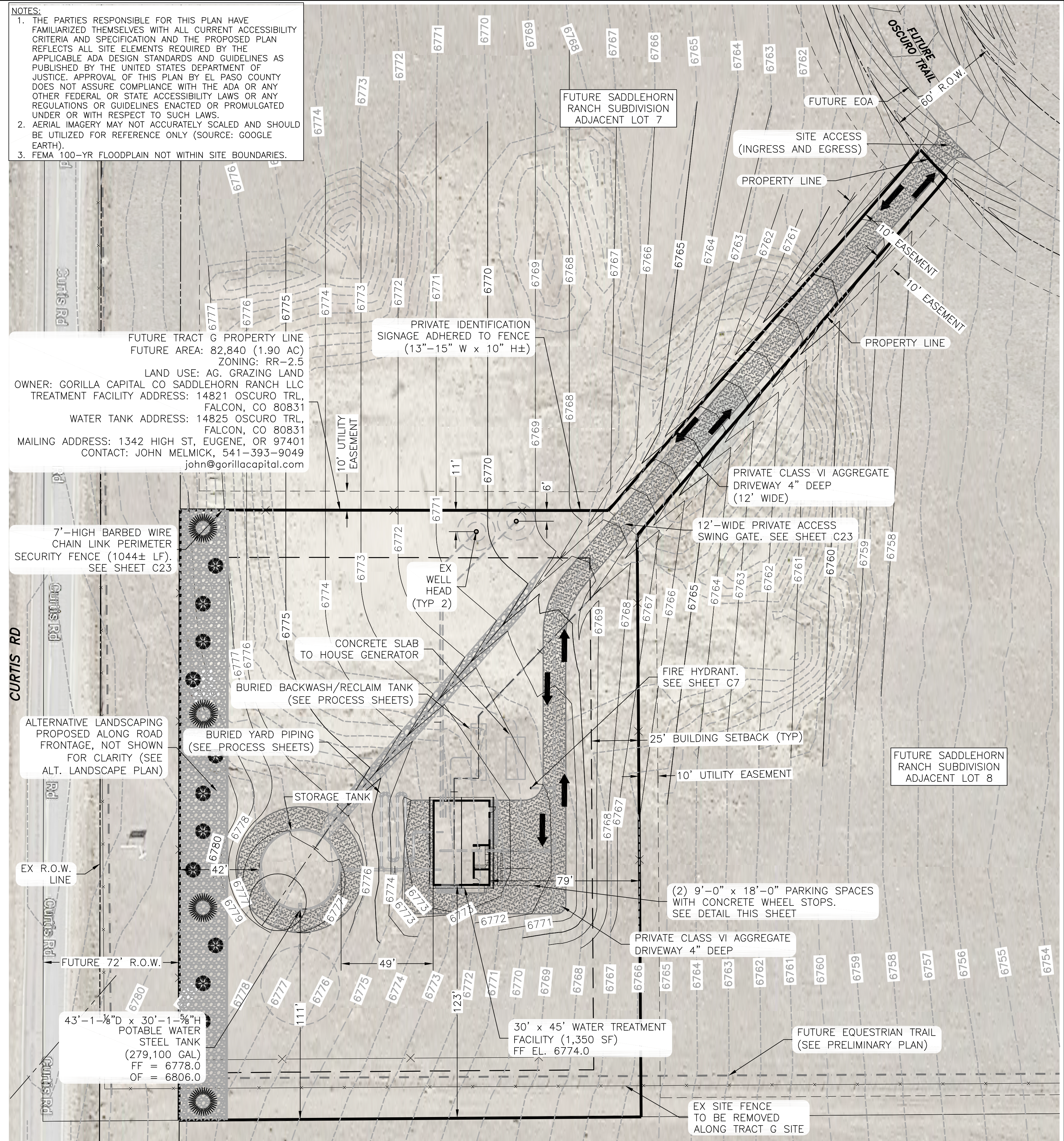
0' 30' 60'
SCALE 11x17: 1" = 60'
SCALE 24x36: 1" = 30'

A / C3 CONCRETE WHEEL STOP
SCALE: N.T.S.

NOTES:
1. CONCRETE FOR WHEEL STOP SHALL BE 3,000 PSI COMPRESSIVE STRENGTH IN 28 DAYS.
2. ATTACHMENT PINS SHALL HAVE SEVEN (7) INCHES OF EMBEDMENT.



NOTES:
1. THE PARTIES RESPONSIBLE FOR THIS PLAN HAVE FAMILIARIZED THEMSELVES WITH ALL CURRENT ACCESSIBILITY CRITERIA AND SPECIFICATION AND THE PROPOSED PLAN REFLECTS ALL SITE ELEMENTS REQUIRED BY THE APPLICABLE ADA DESIGN STANDARDS AND GUIDELINES AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAN BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY OTHER FEDERAL OR STATE ACCESSIBILITY LAWS OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS.
2. AERIAL IMAGERY MAY NOT ACCURATELY SCALED AND SHOULD BE UTILIZED FOR REFERENCE ONLY (SOURCE: GOOGLE EARTH).
3. FEMA 100-YR FLOODPLAIN NOT WITHIN SITE BOUNDARIES.



PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

DISCLAIMER: THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO JDS-HYDRO CONSULTANTS, INC. JDS-HYDRO ASSUMES NO LIABILITY FOR UNAUTHORIZED CHANGES MADE TO PLANS.

SADDLEHORN RANCH
OVERALL WATER SYSTEM
PROPOSED SITE PLAN

NO.	DESCRIPTION	BY	APP.	DATE
1				
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REVISIONS

100% COMPLETE

COLORADO LICENSED PROFESSIONAL ENGINEER 43304 9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

C3
SHEET 3 OF 23

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SITE DEVELOPMENT PLAN

DESIGN ENGINEER'S STATEMENT:

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

6/23/21

RYAN M. MANGINO, PE #43304 — DATE

OWNER/DEVELOPER'S STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH ALL OF THE REQUIREMENTS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

6/23/21

JOHN HELMICK — DATE
GORILLA CAPITAL CO SADDLEHORN RANCH LLC
1342 HIGH ST, EUGENE, OR 97401

EL PASO COUNTY:

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

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

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

JENNIFER IRVINE, P.E. — DATE
COUNTY ENGINEER / ECM ADMINISTRATOR

LEGAL DESCRIPTIONS

1. OVERALL SUBDIVISION LEGAL DESCRIPTION:

A TRACT OF LAND BEING A PORTION OF THE NORTHWEST QUARTER OF SECTION 10 AND A PORTION OF THE SOUTHWEST QUARTER OF SECTION 3, TOWNSHIP 13 SOUTH, RANGE 64 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SECTION 3, THENCE S00°32'28"E 2719.92 FEET ALONG THE WEST LINE OF SECTION 3. THENCE S89°27'32"W 30 FEET TO THE EAST RIGHT-OF-WAY LINE OF CURTIS ROAD TO POINT OF BEGINNING.

THENCE N89°54'33"E 411.76 FEET, THENCE S89°27'49"E 58.11 FEET, THENCE N89°54'03"E 305.40 FEET, THENCE ALONG THE ARC OF A NON-TANGENTIAL CURVE TO THE RIGHT, HAVING A RADIUS OF 779.79 FEET, CENTRAL ANGLE OF 18°45'16", ARC LENGTH OF 255.25 FEET, WHICH CHORD BEARS S00°00'00"E, THENCE S71°14'52"E 260.85 FEET, THENCE ALONG THE ARC OF A NON-TANGENTIAL CURVE TO THE RIGHT, HAVING A RADIUS OF 2919.37 FEET, CENTRAL ANGLE OF 12°29'08", ARC LENGTH OF 636.17 FEET, WHICH CHORD BEARS S19°04'00"W, THENCE S58°08'00"E 223.80 FEET, THENCE S58°08'00"E 60.04 FEET, THENCE N29°38'31"E 450.98 FEET, THENCE S66°12'08"E 147.07 FEET, THENCE ALONG THE ARC OF A NON-TANGENTIAL CURVE TO THE RIGHT, HAVING A RADIUS OF 121.09 FEET, CENTRAL ANGLE OF 73°34'36", ARC LENGTH OF 155.50 FEET, WHICH CHORD BEARS S06°40'58"E, THENCE S15°47'40"E 89.57 FEET, THENCE S71°12'11"E 135.13 FEET, THENCE S73°45'53"E 173.81 FEET, THENCE S83°26'02"E 70.67 FEET, THENCE S74°48'43"E 39.19 FEET, THENCE S85°38'01"E 120.03 FEET, THENCE S89°55'23"E 169.67 FEET, THENCE S32°45'49"W 179.09 FEET, THENCE S13°40'22"E 171.43 FEET, THENCE S48°07'46"E 319.88 FEET, THENCE S04°16'52"E 119.45 FEET, THENCE S16°34'05"W 264.06 FEET, THENCE S27°00'14"E 61.75 FEET, THENCE S86°49'39"E 102.30 FEET, THENCE S20°24'00"E 4.06 FEET, THENCE S22°26'23"E 43.29 FEET, THENCE S15°37'39"E 57.65 FEET, THENCE S17°01'53"E 44.47 FEET, THENCE S36°09'32"E 117.07 FEET, THENCE ALONG THE ARC OF A NON-TANGENTIAL CURVE TO THE LEFT, HAVING A RADIUS OF 175.00 FEET, CENTRAL ANGLE OF 19°58'18", ARC LENGTH OF 61.00 FEET, WHICH CHORD BEARS N44°36'18"E, THENCE S55°13'47"W 108.86 FEET, THENCE N46°15'27"W 229.97 FEET, THENCE S80°50'47"W 56.75 FEET, THENCE S13°08'16"E 233.71 FEET, THENCE S20°15'42"W 464.94 FEET, THENCE ALONG THE ARC OF A NON-TANGENTIAL CURVE TO THE RIGHT, HAVING A RADIUS OF 660.63 FEET, CENTRAL ANGLE OF 05°34'52", ARC LENGTH OF 64.35 FEET, WHICH CHORD BEARS S84°57'58"W, THENCE S00°05'24"W 395.27 FEET, THENCE S00°05'24"W 30.67 FEET, THENCE S83°39'27"E 331.46 FEET, THENCE S55°12'14"E 112.42 FEET, THENCE S00°06'02"E 195.68 FEET, THENCE S00°00'28"E 154.15 FEET, THENCE S13°04'44"W 147.26 FEET, THENCE S00°00'28"E 309.49 FEET, THENCE S00°00'28"E 316.56 FEET, THENCE S05°19'15"E 64.76 FEET, THENCE S89°28'15"W 1039.32 FEET, THENCE S89°34'07"W 2612.73 FEET, THENCE N89°34'07"E 30.00 FEET, THENCE N00°05'52"E 1319.15 FEET, THENCE N00°32'28"W 2787.39 FEET TO THE POINT OF BEGINNING.

COUNTY OF EL PASO, STATE OF COLORADO

CONTAINING 13,339,814.4 SF (306.24 ACRES) MORE OR LESS

2. FUTURE TRACT G LEGAL DESCRIPTION (TREATMENT PLANT AND TANK SITE):

A PARCEL OF LAND LOCATED IN THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 10, TOWNSHIP 13 SOUTH, RANGE 64 WEST OF THE 6TH P.M., COUNTY OF EL PASO, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE SOUTH LINE OF THE NORTH HALF OF THE NORTHWEST QUARTER OF SECTION 10, TOWNSHIP 13 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN, MONUMENTED AT BOTH ENDS BY A 2-1/2" ALUMINUM CAP STAMPED "PLS 38245", BEARING N89°34'07"E AS REFERENCED TO COLORADO STATE PLANE CENTRAL ZONE.

COMMENCING AT THE NORTH SIXTEENTH CORNER COMMON TO SECTIONS 9 AND 10, TOWNSHIP 13 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN;

THENCE ON THE SOUTH LINE OF THE NORTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION 10, N89°34'07"E A DISTANCE OF 72.00 FEET, TO THE POINT OF BEGINNING;

THENCE DEPARTING SAID SOUTH LINE, N00°05'54"E A DISTANCE OF 322.28 FEET;

THENCE S89°54'06"E A DISTANCE OF 226.12 FEET;

THENCE N40°51'42"E A DISTANCE OF 251.84 FEET, TO A POINT OF NON-TANGENT CURVE;

THENCE ON THE ARC OF A CURVE TO THE LEFT WHOSE CENTER BEARS N48°39'57"E, HAVING A RADIUS OF 230.00 FEET, A CENTRAL ANGLE OF 05°00'19" AND AN ARC LENGTH OF 20.09 FEET, TO A POINT OF NON-TANGENT;

THENCE S40°51'42"W A DISTANCE OF 249.99 FEET;

THENCE S00°25'53"E A DISTANCE OF 306.98 FEET, TO A POINT ON SAID SOUTH LINE;

THENCE ON SAID SOUTH LINE, S89°34'07"W A DISTANCE OF 244.12 FEET, TO THE POINT OF BEGINNING.

CONTAINING A CALCULATED AREA OF 82,839 SQUARE FEET OR 1.9017 ACRES.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
PROPOSED SITE PLAN LEGAL DESCRIPTIONS/SIGNATURE BLOCKS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
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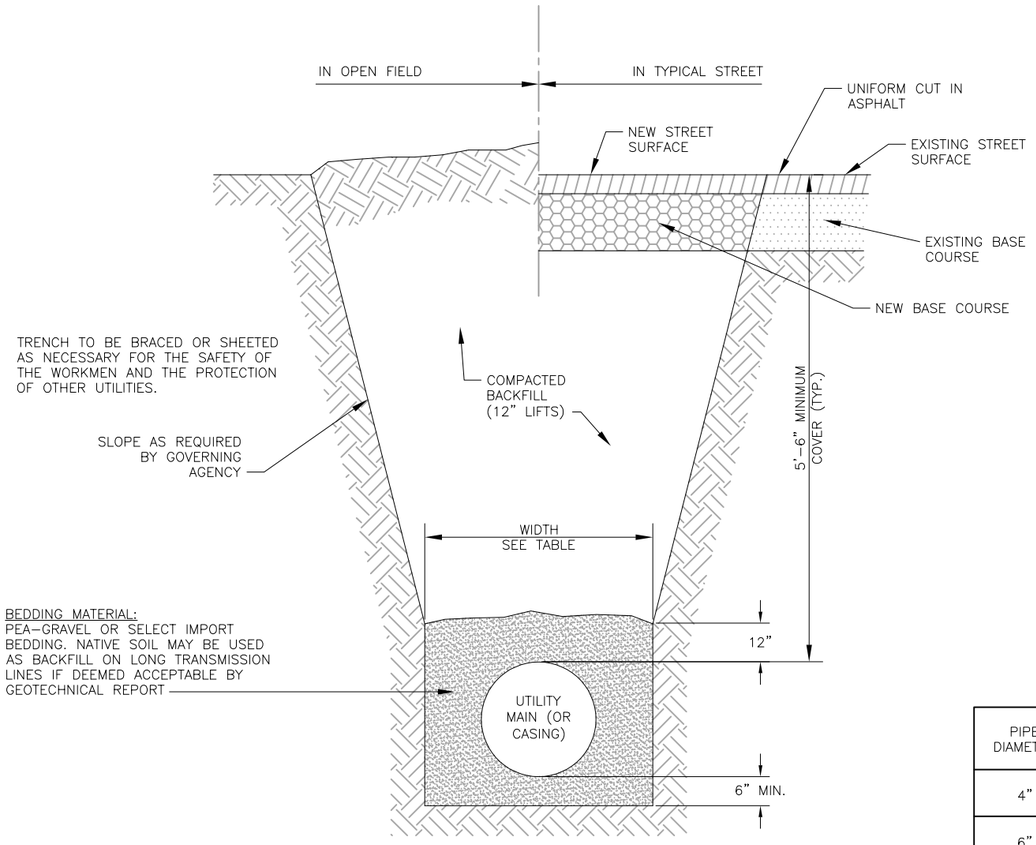
100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

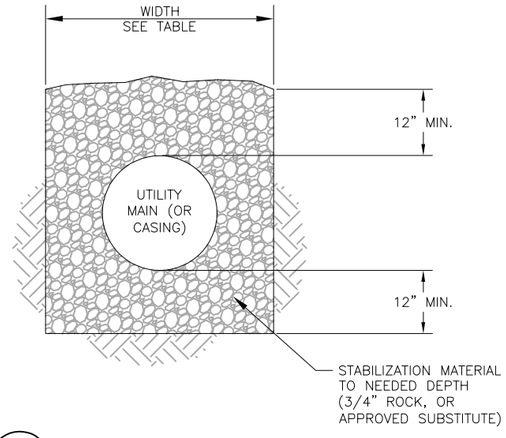
C4
SHEET 4 OF 23



A C5 **TYPICAL TRENCH DETAIL**
SCALE: N.T.S.

PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	2'-2"	3'-0"
6"	2'-2"	3'-0"
8"	2'-2"	3'-0"
10"	2'-4"	3'-0"
12"	2'-6"	3'-6"
18"	2'-10"	3'-9"
24"	3'-2"	4'-3"

NOTES:
1. AN OVER-EXCAVATED TRENCH SHALL BE REFILLED WITH BEDDING MATERIAL AND THOROUGHLY COMPACTED AS PER THE SPECIFICATIONS.



B C5 **UNSTABLE TRENCH DETAIL**
SCALE: N.T.S.

NOTES:
1. MANHOLE I.D. SHALL BE MINIMUM 5 FEET.
2. SHAPING FOR SMOOTH MANHOLE INVERTS MUST BE DONE BY FORMING/SHAPING CONCRETE BASE.
3. PRE-CAST SECTIONS TO CONFORM TO ASTM C-478.
4. STUB-OUTS SHALL EXTEND A MINIMUM OF 6 FEET OUTSIDE OF MANHOLE AND BE SATISFACTORILY PLUGGED.
5. CONCRETE MANHOLES MAY BE POURED IN PLACE ONLY WITH PRIOR DESIGN AND INSPECTION APPROVAL.
6. ALL MORTAR GROUT SHALL BE TYPE V CEMENT.
7. APPLY COAL TAR EPOXY DAMP-PROOFING TO ALL EXTERIOR CONCRETE SURFACES.
8. CENTER REINFORCING IN BASE POUR BELOW PIPE O.D. AT FLOWLINE.
9. ALL EXTERIOR JOINTS SHALL RECEIVE BUTYL RUBBER JOINT WRAP.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
CIVIL DETAILS 1

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
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4				
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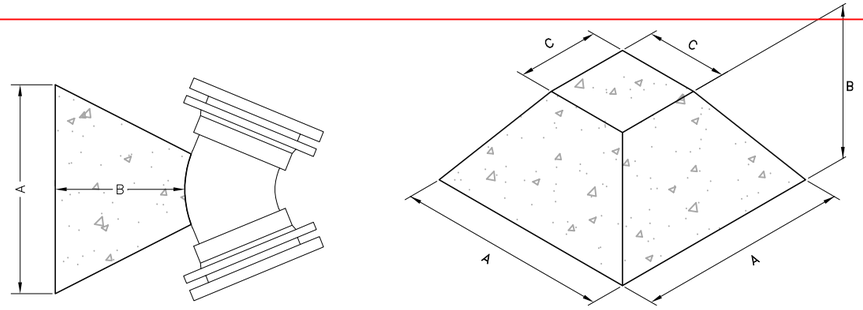
100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

C5
SHEET 5 OF 23

2021/12/02 4:54 PM By: Ryan Mangino J:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\311.02_1_Civil.dwg



NOTE: USE THE FOLLOWING VALUES FOR "C"

PIPE SIZE =	C =
12" & UNDER	1'-6"
16" TO 24"	2'-0"
30" TO 36"	3'-0"
OVER 36"	A, B, & C WILL BE GIVEN IN EACH INSTANCE

VOL. (yds)	A	B if C=1'-6"	B if C=2'-0"	B if C=3'-0"
1/8	2'-6"	0'-10"	N/A	N/A
1/4	2-8"	1'-7"	N/A	N/A
1/2	3'-2"	2'-5"	2'-0"	N/A
3/4	4'-0"	2'-6"	2'-2"	N/A
1	4'-4"	3'-0"	2'-7"	2'-0"
1-1/4	4'-10"	3'-1"	2'-9"	2'-2"
1-1/2	5'-3"	3'-3"	2'-11"	2'-4"
1-3/4	5'-7"	3'-5"	3'-1"	2'-6"
2	5'-10"	3'-7"	3'-3"	2'-8"
2-1/4	6'-3"	3'-8"	3'-4"	2'-9"
2-1/2	6'-4"	3'-11"	3'-7"	3'-0"
2-3/4	6'-9"	3'-11"	3'-7"	3'-0"
3	6'-10"	4'-1"	3'-9"	3'-2"
3-1/4	7'-3"	4'-1"	3'-9"	3'-2"
3-1/2	7'-4"	4'-3"	3'-11"	3'-4"
3-3/4	7'-7"	4'-4"	4'-0"	3'-5"
4	7'-11"		4'-0"	3'-5"
4-1/4	8'-1"		4'-0"	3'-6"
4-1/2	8'-4"		4'-0"	3'-6"
4-3/4	8'-6"		4'-1"	3'-7"

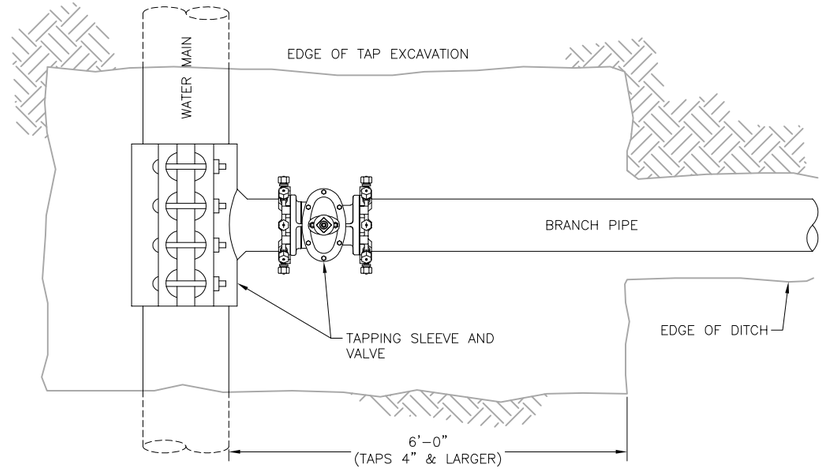
VOL. (yds)	A	B if C=1'-6"	B if C=2'-0"	B if C=3'-0"
5	8'-8"		4'-2"	3'-8"
5-1/4	8'-11"		4'-2"	3'-8"
5-1/2	9'-1"		4'-3"	3'-9"
5-3/4	9'-3"		4'-4"	3'-10"
6	9'-4"		4'-5"	3'-11"
6-1/4	9-6"		4'-6"	4'-0"
6-1/2	9'-8"		4'-6"	4'-0"
6-3/4	9'-11"		4'-6"	4'-0"
7	10'-2"		4'-6"	4'-0"
7-1/4	10'-3"		4'-7"	4'-1"
7-1/2	10'-4"		4'-8"	4'-2"
7-3/4	10'-5"		4'-9"	4'-3"
8	10'-6"		4'-10"	4'-4"
8-1/4	10'-8"		4'-10"	4'-4"
8-1/2	10'-9"		4'-11"	4'-5"
8-3/4	10'-11"		4'-11"	4'-5"
9	11'-1"		4'-11"	4'-5"
9-1/4	11'-2"		5'-0"	4'-6"
9-1/2	11'-4"		5'-0"	4'-6"
9-3/4	11'-6"		5'-0"	4'-6"
10	11'-8"		5'-0"	4'-6"

NOTES:
1. ALL WATER MAINS GREATER THAN 12" IN DIAMETER SHALL HAVE THRUST BLOCKS DESIGNED AND SHOWN ON THE CONSTRUCTION DOCUMENTS.

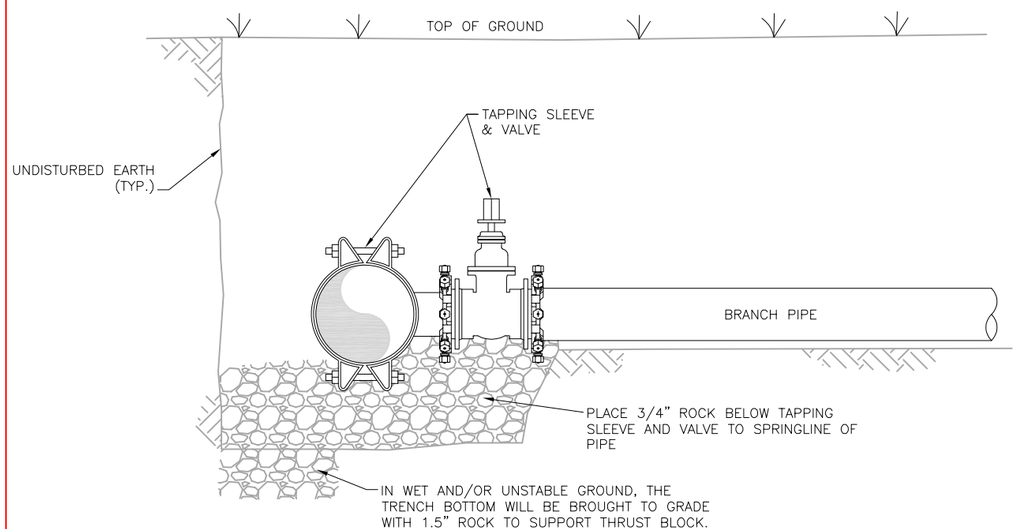
DO WE STILL NEED IF NO THRUST BLOCKS PRESENT IN PIPE TAPPING DETAIL?

FITTING	4"	6"	8"	12"
TEE	1/8 yd.	1/2 yd.	3/4 yd.	2 yd.
90° BEND	1/8 yd.	3/4 yd.	1-1/4 yd.	3 yd.
45° BEND	1/8 yd.	1/2 yd.	3/4 yd.	1-1/2 yd.
22-1/2° BEND	1/8 yd.	1/8 yd.	1/4 yd.	3/4 yd.
11-1/4° BEND	1/8 yd.	1/8 yd.	1/8 yd.	1/4 yd.

A / C6 **THRUST BLOCK DATA**
SCALE: N.T.S.



PLAN VIEW



PROFILE VIEW

B / C6 **PIPE TAPPING DETAIL**
SCALE: N.T.S.

PCD File No. PPR-21-020

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5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
CIVIL DETAILS 2

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
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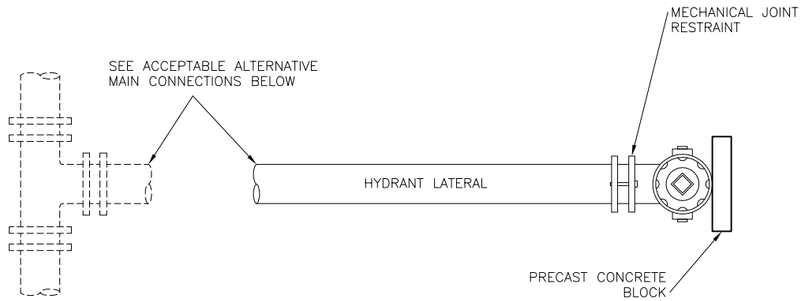
100% COMPLETE

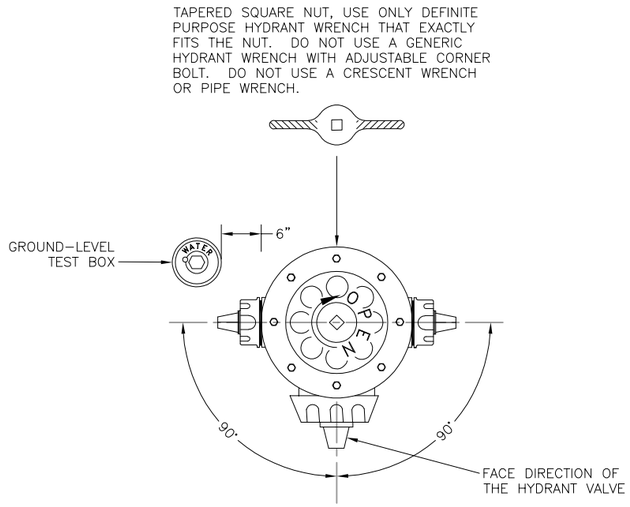
COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

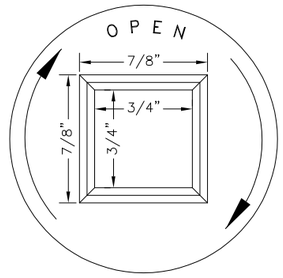
C6
SHEET 6 OF 23



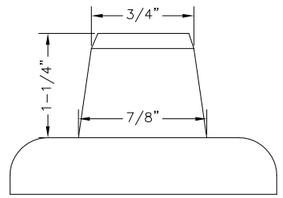
PLAN



PLAN VIEW

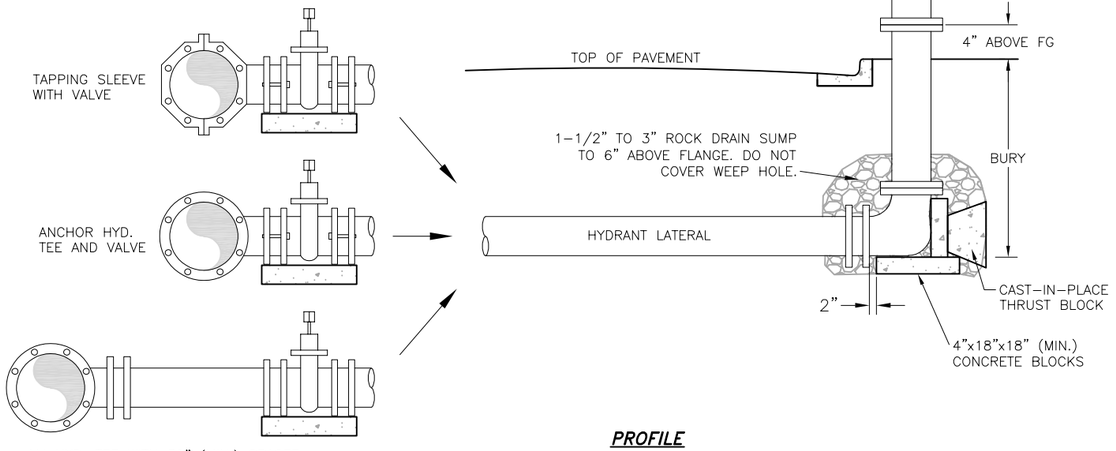


PLAN VIEW



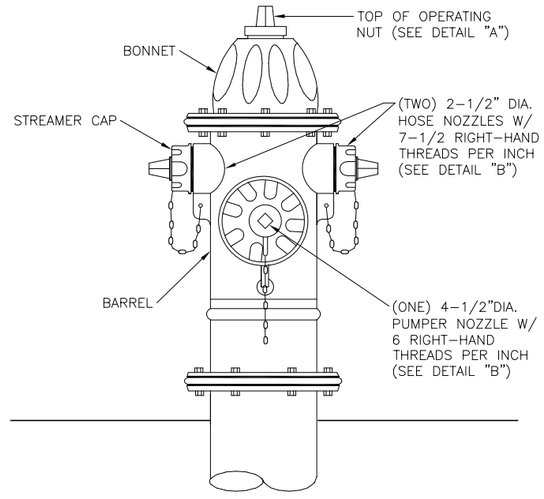
PROFILE

DETAIL "A" – OPERATING NUT



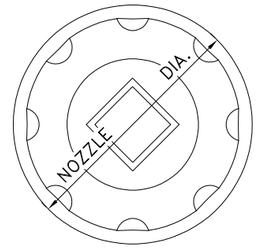
PROFILE

A / C7 **FIRE HYDRANT INSTALLATION DETAIL**
SCALE: N.T.S.

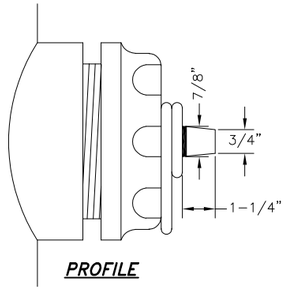


FACE VIEW

B / C7 **FIRE HYDRANT SPECIFICATIONS DETAIL**
SCALE: N.T.S.



FACE VIEW



PROFILE

DETAIL "B" – NOZZLE DETAIL

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
CIVIL DETAILS 3

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
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100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
12/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
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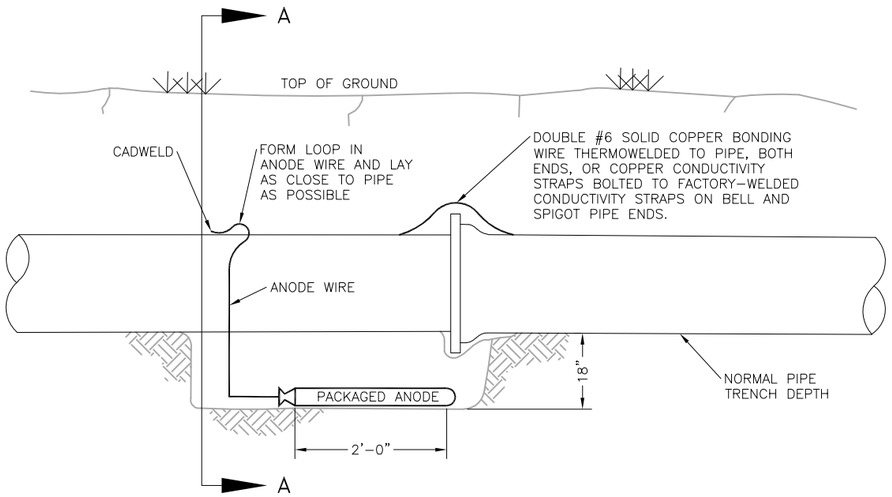
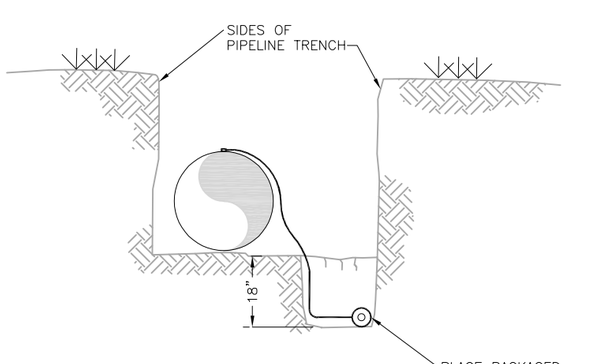
C7
SHEET 7 OF 23



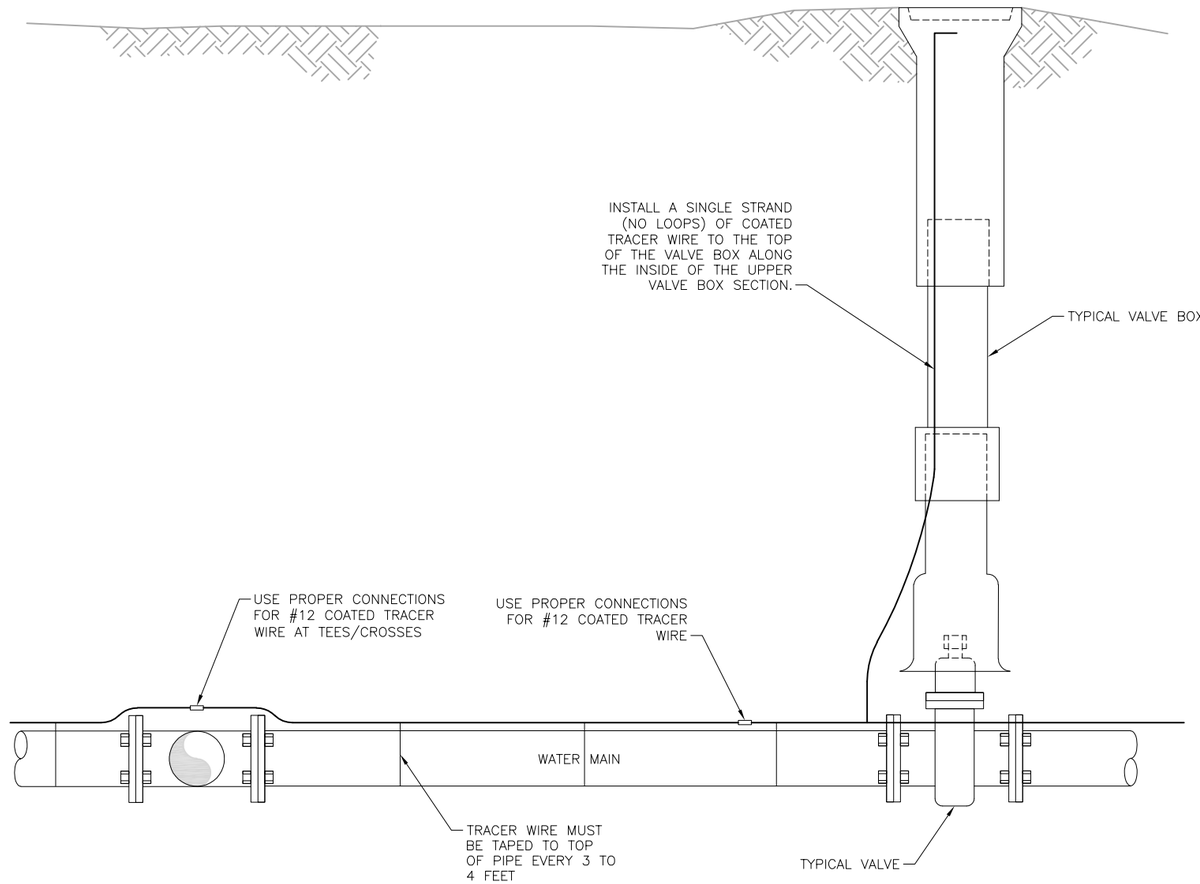
ELEVATION



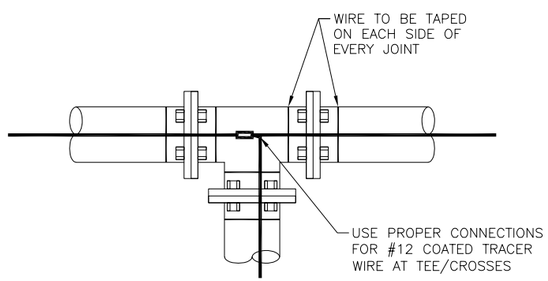
SECTION A-A

NOTES:
1. CADWELD CONNECTION TO BE PRIMED AND COATED CAREFULLY. PACKAGED ANODE SHOULD BE COVERED WITH FINE SOIL CONTAINING NO ROCKS OR DIRT CLUMPS, TAMPED.
2. WHEN ANODES ARE REQUIRED WITH METAL FITTINGS AND APPURTENANCES TOGETHER WITH PVC PIPE INSTALLATION, THE ANODES SHALL BE PLACED AND ATTACHED TO THE METAL IN SAME MANNER AS SHOWN ON THIS DRAWING. 9LB. ANODES CAN BE USED ON METAL FITTINGS 12" AND LESS IN DIAMETER AND 17LB. ANODES FOR METAL FITTINGS GREATER THAN 12" DIAMETER WHEN USING PVC PIPE.
3. PACKAGED ANODE TO BE WETTED AND COVERED WITH SOIL PRIOR TO BACKFILLING.

A / C8 **BONDING JOINT & ANODE INSTALLATION DETAIL**
SCALE: N.T.S.



ELEVATION



PLAN

B / C8 **TRACER WIRE INSTALLATION DETAILS**
SCALE: N.T.S.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
CIVIL DETAILS 4

REVISIONS			
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100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.:	311.02
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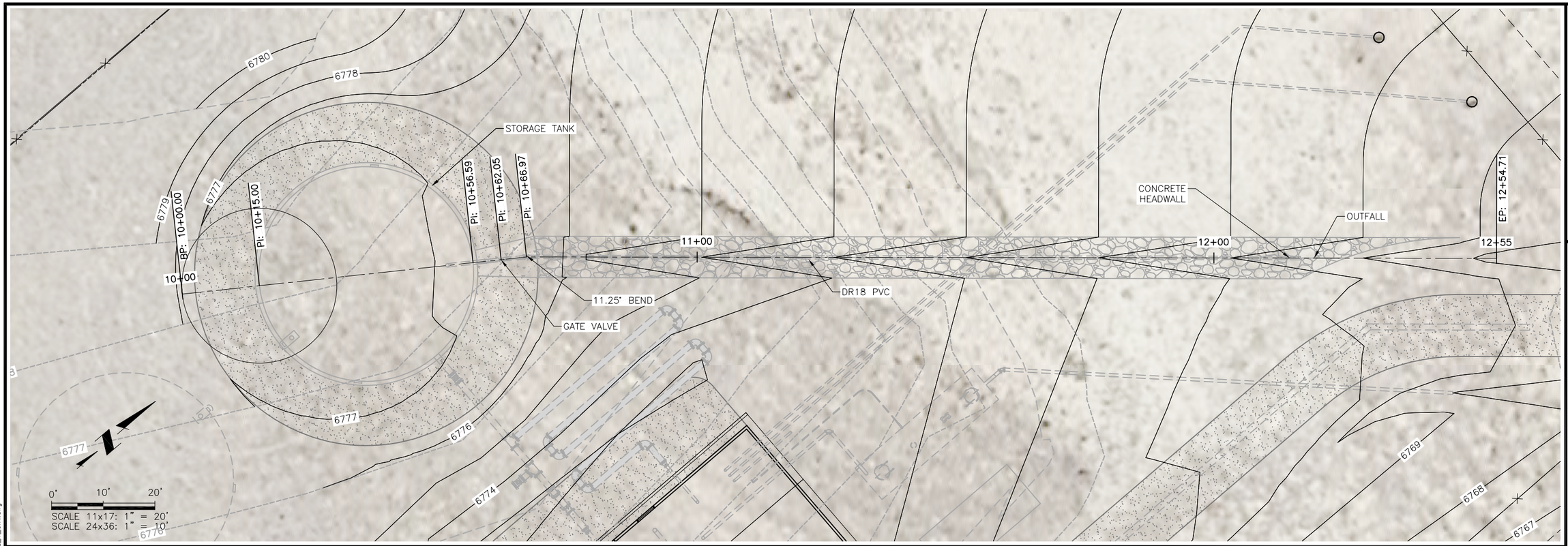
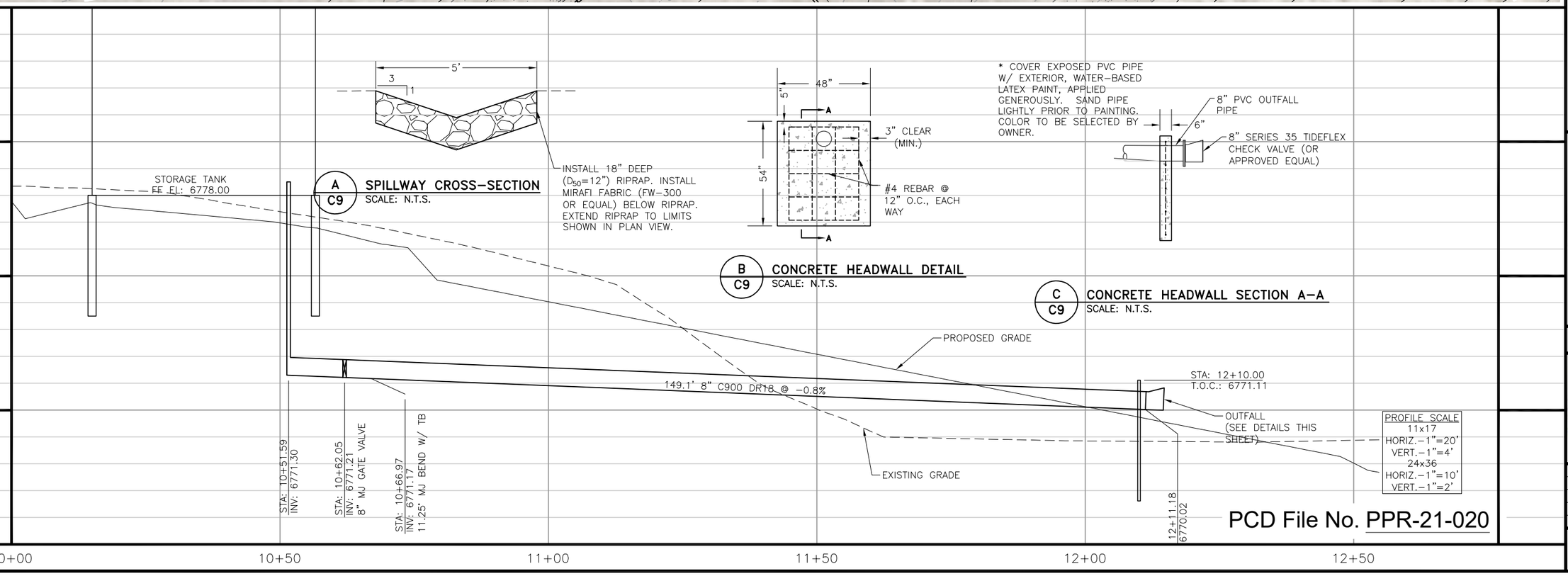
C8
SHEET 8 OF 23

2021/12/02 4:54 PM By: Ryan Mangino J:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\311102_1_Civil.dwg





A/C9 SPILLWAY CROSS-SECTION
SCALE: N.T.S.

B/C9 CONCRETE HEADWALL DETAIL
SCALE: N.T.S.

C/C9 CONCRETE HEADWALL SECTION A-A
SCALE: N.T.S.

PROFILE SCALE
11x17
HORIZ.-1"=20'
VERT.-1"=4'
24x36
HORIZ.-1"=10'
VERT.-1"=2'

PCD File No. PPR-21-020

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

PLAN & PROFILE

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COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

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Design: RMM
Drawn: SKG
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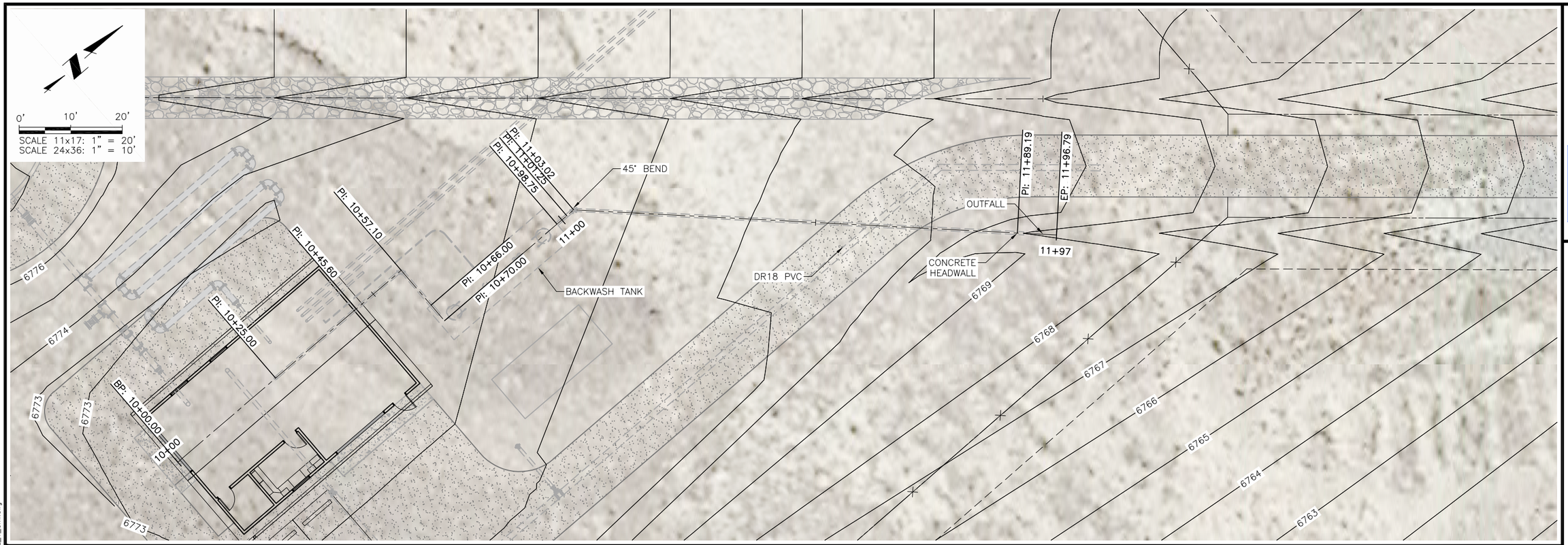
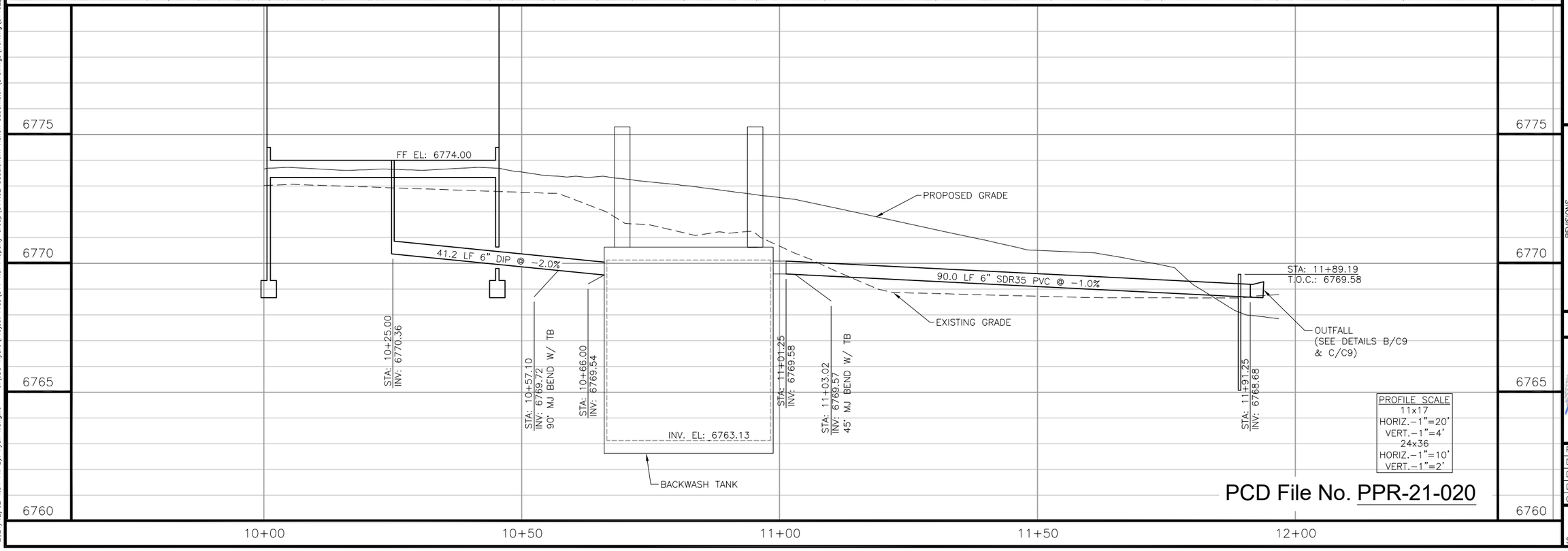
SHEET 9 OF 23

2021/12/02 4:54 PM By: Ryan Mangino J:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\31102_1_Civil.dwg





PROFILE SCALE
11x17
HORIZ.-1"=20'
VERT.-1"=4'
24x36
HORIZ.-1"=10'
VERT.-1"=2'

PCD File No. PPR-21-020

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

BACKWASH TANK PLAN & PROFILE

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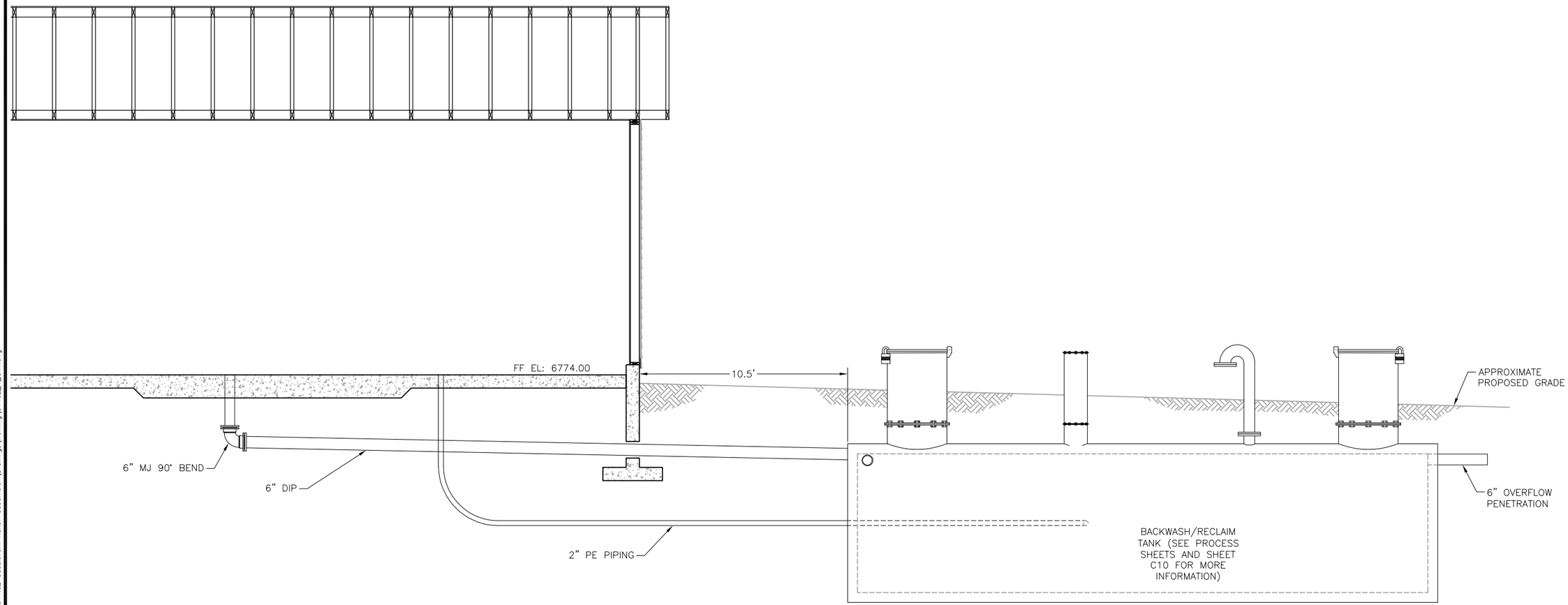
SHEET 10 OF 23

2021/12/02 4:54 PM By: Ryan Mangino i:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\311102_1_Civil.dwg



A / C11 SECTION
SCALE: N.T.S.

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

BACKWASH TANK SECTION

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COLORADO LICENSED
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Drawn: SKG
Check: RMM

C11
SHEET 11 OF 23

2021/12/02 4:54 PM By: Ryan Mangino i:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\311102_1_Civil.dwg

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

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.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

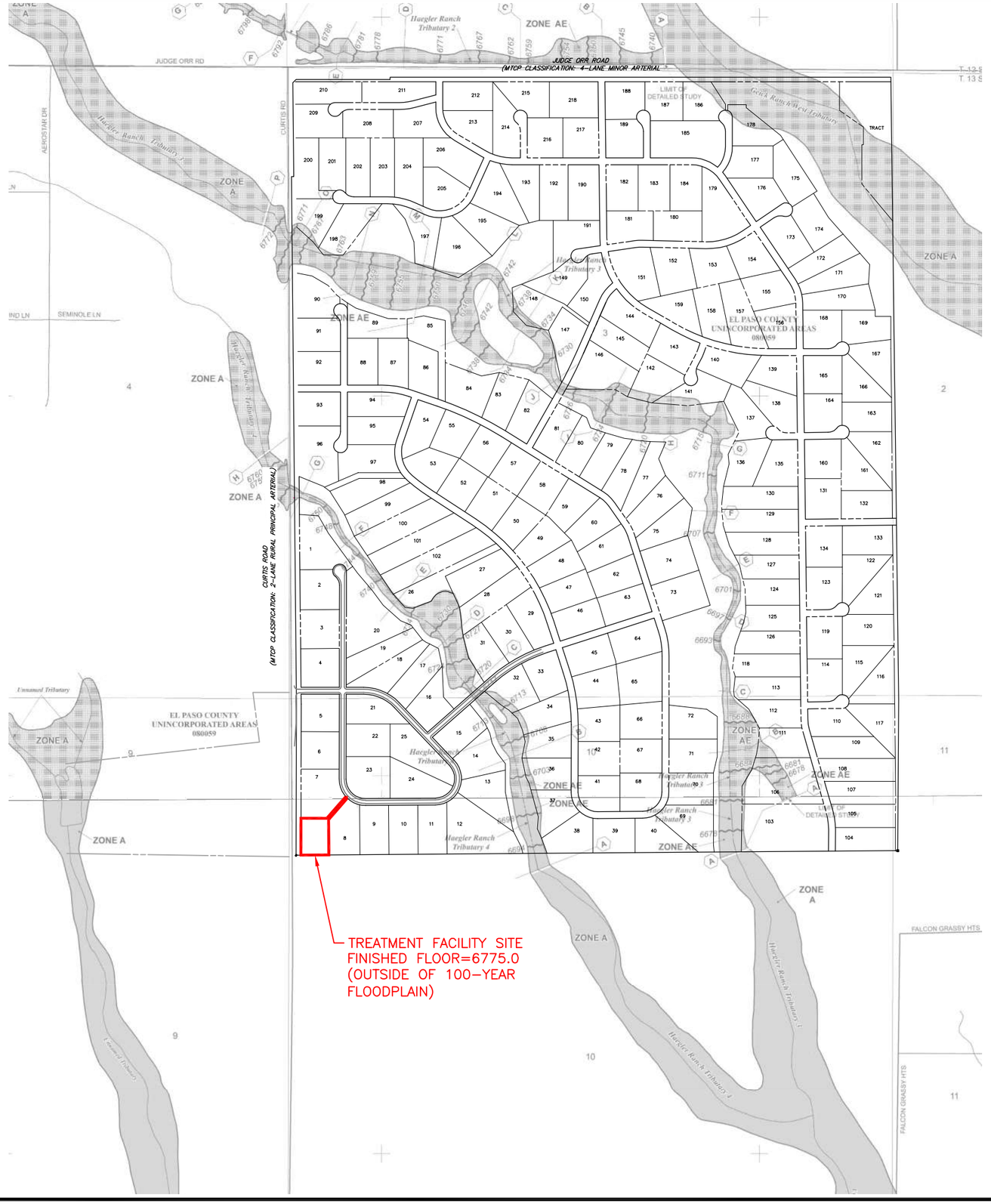
For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0566G

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 566 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY	080059	0566	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08041C0566G

MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

0' 500' 1,000'

11x17 SCALE: 1"=1,000'
24x36 SCALE: 1"=500'

NOTE:

THE PARTIES RESPONSIBLE FOR THIS PLAN HAVE FAMILIARIZED THEMSELVES WITH ALL CURRENT ACCESSIBILITY CRITERIA AND SPECIFICATIONS AND THE PROPOSED PLAN REFLECTS ALL SITE ELEMENTS REQUIRED BY THE APPLICABLE ADA DESIGN STANDARDS AND GUIDELINES AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAN BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

FLOODPLAIN MAP

REVISIONS

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100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.:	311.02
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Check:	RMM

C12

SHEET 12 OF 23

EROSION CONTROL NOTES:

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.

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

3. A SEPARATE STORMWATER MANAGEMENT PLAN (SWMP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP SHALL BE LOCATED ON SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.

4. ONCE THE ESQCP IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.

5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.

6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.

7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND-DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS.

8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND-DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.

9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.

10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.

11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).

12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF SITE.

13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGE TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK, OR STREAM.

14. DURING DEWATERING OPERATIONS OF UNCONTAMINATED GROUND WATER MAY BE DISCHARGED ON SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.

15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.

16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES, OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.

17. WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.

18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.

19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS, AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.

20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, AND WITH ORIGINAL MANUFACTURER'S LABELS.

21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ON SITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.

22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ON SITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM, OR OTHER FACILITIES.

23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.

24. OWNER/DEVELOPER AND THEIR AGENTS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS) AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

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

26. PRIOR TO CONSTRUCTION, THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.

27. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.

28. THE SOILS REPORT FOR THIS SITE WAS PREPARED BY ENTECH ENGINEERING, INC. (DATED 02/26/2021) AND SHALL BE CONSIDERED A PART OF THESE PLANS

29. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-EXCAVATION OF SEDIMENT AND DEBRIS THAT COLLECTS IN THE DOWNSTREAM SEDIMENT BASIN DEPRESSION REQUIRED TO ENSURE THAT THE BASIN MEETS THE DESIGN GRADES FOLLOWING CONSTRUCTION. THE ROADSIDE DITCHES CONVEYING SITE RUNOFF TO THE BASIN SHALL ALSO BE CLEANED AND FREE OF SEDIMENT ONCE THE SITE BECOMES STABILIZED.

30. AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATIONS MATERIALS, CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

TIMING, CONSTRUCTION STAGING, AND SEQUENCING:

EXPECTED START DATE: JULY 2021
INSTALL TEMPORARY EROSION CONTROL - 2 DAYS
- PERIMETER SILT FENCING
- VEHICLE TRACKING CONTROL PAD

ROUGH GRADING - 5 DAYS
INSTALL FINAL SITE IMPROVEMENTS - 10 MONTHS
REMOVE TEMPORARY EROSION CONTROL - 5 DAYS

MINIMUM BEST MANAGEMENT PRACTICES ELEMENTS:

STEP 1- EROSION AND SEDIMENT CONTROL
INSTALL SEDIMENT TRAPPING DEVICES (PERIMETER CONTROLS) PRIOR TO THE START OF CONSTRUCTION.
STEP 2- SPILL PREVENTION AND RESPONSE
STEP 3- MATERIAL MANAGEMENT
MATERIAL AND EQUIPMENT STORAGE AREAS SHALL BE SECURE AND CONTAINED TO PREVENT DISCHARGE OF ANY MATERIAL IN RUNOFF.
WASTE SHALL BE CONTAINED AND DISPOSED OF PROPERLY. MAINTAIN BMP'S DURING BUILDING AND UTILITY CONSTRUCTION.
STEP 4- INSPECTION AND MAINTENANCE (SEE EROSION CONTROL NOTES)
STEP 5- INSTALL FINAL STABILIZATION - BASE COURSE, LANDSCAPING, EROSION CONTROL BLANKETS, AND SEEDING.
STEP 6- REMOVE TEMPORARY CONTROLS - SILT FENCING AFTER PERMANENT FEATURES ARE INSTALLED.

FINAL STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT:

FINAL STABILIZATION MEASURES INCLUDE BASE COURSE, PARTIAL LANDSCAPE, AND REVEGETATION

EARTHWORK SUMMARY:

PROPOSED SITE:
CUT - 5,960 CY
FILL - 6,115 (*1.15) = 7,032 CY
NET - 1,072 CY FILL

DISTURBED AREA - 179,904 SF, 4.13 AC

EROSION CONTROL FACILITIES:

SILT FENCE (SF) - 870 LF
VEHICLE TRACKING PAD (VT) - 1

COMMON NAME (N=NATIVE, I=INTRODUCED)		SCIENTIFIC NAME	LBS PLS/ ACRE
WHEATGRASS, SIBERIAN	I	AGROPYRON FRAGILE	2.04
WHEATGRASS, SLENDER	N	ELYMUS TRACHYCAULUS	10.90
WHEATGRASS, INTERMEDIATE	I	THINOPYRUM INTERMEDIUM	3.00
WILDRYE, RUSSIAN	I	PSATHYROSTACHYS JUNCEA	2.04
WHEATGRASS, WESTERN	N	PASCOPYRUM SMITHII	3.20
CLOVER, RED	I	TRIFOLIUM PRATENSE	0.40
FLAX, BLUE-APPAR	I	LINUM PERENNE	0.41
SULPHUR-FLOWER BUCKWHEAT	N	ERIOGONUM UMBELLATUM	0.55
TOTAL/POUNDS/ACRE			22.54

ENGINEER OF RECORD:

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

RYAN M. MANGINO, PE #43304 — DATE

OWNER'S STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN AND ALL OF THE REQUIREMENTS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

DATE

EL PASO COUNTY:

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

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

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

JENNIFER IRVINE, P.E.
COUNTY ENGINEER / ECM ADMINISTRATOR — DATE

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
GRADING & EROSION CONTROL NOTES

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
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100% COMPLETE

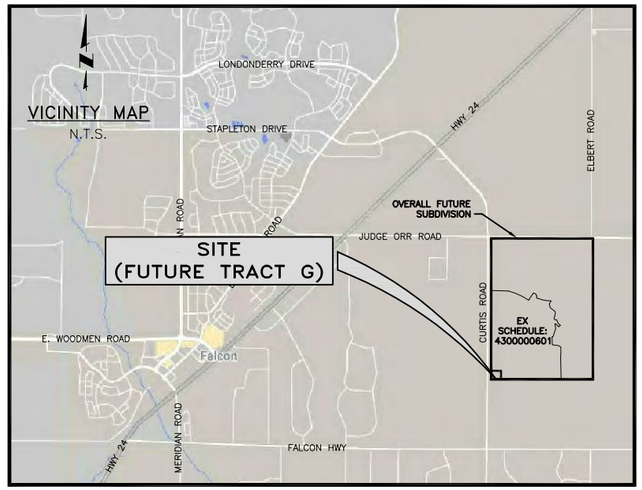
COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/14/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

C13
SHEET 13 OF 23

LEGEND

EX PROPERTY LINE	PP VEHICLE TRACKING PAD (INITIAL)
EX RIGHT–OF–WAY	PP EROSION CONTROL SILT FENCE (INITIAL)
EX FENCE	STAGING AREA (INITIAL)
5540 EX CONTOURS–MAJOR	CONCRETE WASHOUT (INITIAL)
5541 EX CONTOURS–MINOR	RIPRAP (FINAL)
5540 PP CONTOURS–MAJOR	PRE–DEVELOPED FLOW DIRECTION
5541 PP CONTOURS–MINOR	DEVELOPED FLOW DIRECTION
PP YARD PIPING	CHECK DAM
PP FENCE	VEHICLE CIRCULATION PATH
AREA OF CUT	
AREA OF FILL	



FUTURE LOT (TRACT G) COVERAGE	
AREA OF TRACT	82,840 SF
GROSS FLOOR AREA OF TANK & BUILDING	4,187 SF
% TRACT COVERAGE WITH IMPROVEMENTS (INCLUDING FUTURE)	5%
AREA OF GRAVEL/DRIVEWAY	10,684 SF
% IMPERMEABLE SURFACE	10%
% TRACT COVERAGE WITH DRIVEWAY	18%

0' 30' 60'
SCALE 11x17: 1" = 60'
SCALE 24x36: 1" = 30'

NOTES:
1. SEED AND MULCH ALL DISTURBED AREAS THAT WILL NOT HAVE IMPROVEMENTS (I.E. GRAVEL ROADS, RIPRAP, ETC.)
2. EROSION CONTROL BLANKETS ARE REQUIRED ON SLOPES 3:1 AND STEEPER. THERE ARE NO SLOPES ANTICIPATED TO BE 3:1 OR GREATER FOR THIS PROJECT.
3. EASEMENT BOUNDARY IS ALSO CONSIDERED THE CONSTRUCTION BOUNDARY AND LIMITS OF DISTURBANCE.
4. NO VEGETATION EXISTS ON THE SITE PRIOR TO CONSTRUCTION AS SITE WAS ALREADY STRIPPED.
5. NO BATCH PLANTS ARE PROPOSED AS A PART OF THIS PROJECT.
6. THERE ARE NO STREAM CROSSINGS WITHIN THE LIMITS OF THIS PROJECT.
7. ACCESS POINTS AND SITE NOT ACCESSIBLE TO PUBLIC.
8. ALL BMP'S ARE TEMPORARY AND MUST BE INSTALLED PRIOR TO LAND DISTURBANCE. NO BMP'S ARE PHASED FOR THIS PROJECT.
9. ENTIRE PARCEL SHALL BE USED AS A CONSTRUCTION BOUNDARY WITH LIMITS OF CONSTRUCTION DISTURBANCE BEING PARCEL LINES.
10. THE PARTIES RESPONSIBLE FOR THIS PLAN HAVE FAMILIARIZED THEMSELVES WITH ALL CURRENT ACCESSIBILITY CRITERIA AND SPECIFICATIONS AND THE PROPOSED PLAN REFLECTS ALL SITE ELEMENTS REQUIRED BY THE APPLICABLE ADA DESIGN STANDARDS AND GUIDELINES AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAN BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS.
11. FEMA 100–YR FLOODPLAIN NOT WITHIN SITE BOUNDARIES.
12. J–HOOKS TO BE INSTALLED WHEREVER SILT FENCE IS INSTALLED PERPENDICULAR TO CONTOURS.
13. POND 1 WILL REMAIN A TEMPORARY STORMWATER BASIN UNTIL THE END OF CONSTRUCTION.
14. EROSION CONTROL MEASURES FOR OSCURO TRAIL WILL BE IN PLACE DURING CONSTRUCTION OF THAT ROADWAY AND ARE NOT PART OF THIS SITE DEVELOPMENT PLAN.

PCD File No. PPR-21-020

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COLORADO SPRINGS, COLORADO 80919
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SADDLEHORN RANCH

OVERALL WATER SYSTEM

GRADING & EROSION CONTROL PLAN

REVISIONS NO.	DESCRIPTION	BY	APP.	DATE
1				
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6				
7				

100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

C14
SHEET 14 OF 23

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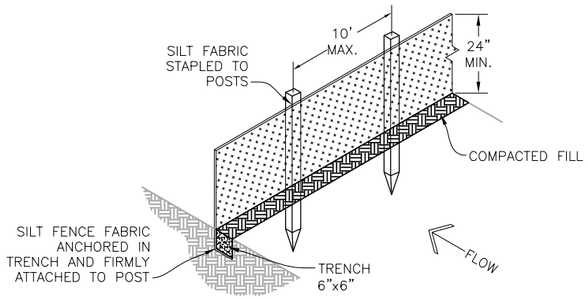
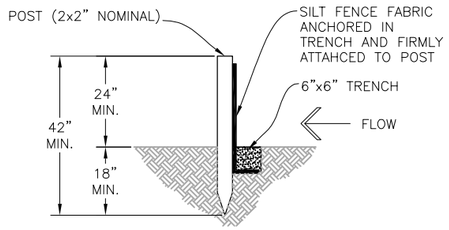




SILT FENCE DETAIL

INSTALLATION REQUIREMENTS:

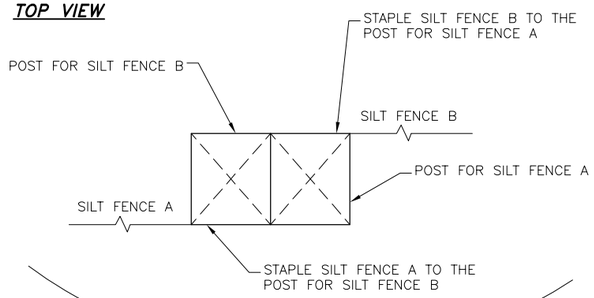
1. SILT FENCES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. WHEN JOINTS ARE NECESSARY, SILT FENCE GEOTEXTILE SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POST AND SECURELY SEALED.
3. METAL POSTS SHALL BE "STUDDED TEE" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD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

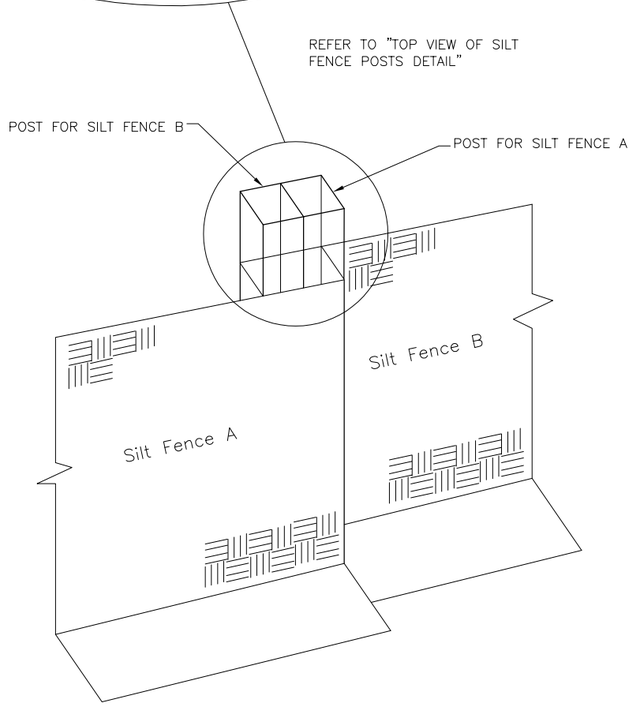
MAINTENANCE REQUIREMENTS:

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

A / **C15** **SILT FENCE DETAIL**
SCALE: N.T.S.

TOP VIEW





B / **C15** **SILT FENCE POSTS DETAIL**
SCALE: N.T.S.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
GRADING & EROSION CONTROL DETAILS 1

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
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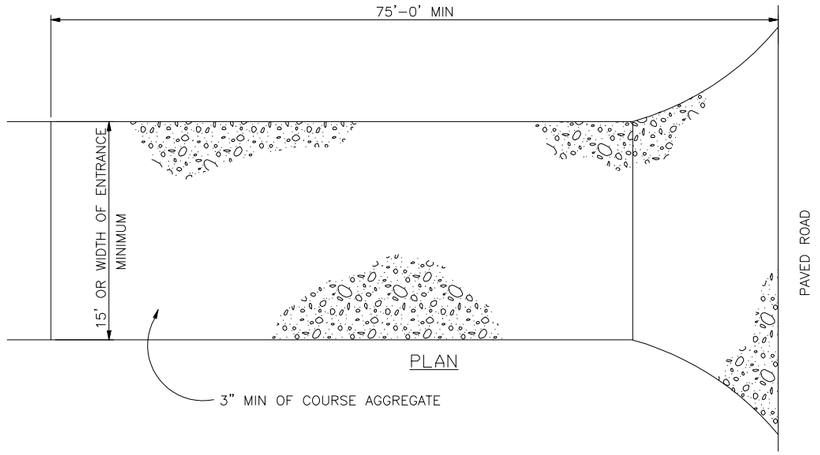
100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

C15
SHEET 15 OF 23



VEHICLE TRACKING PAD DETAIL

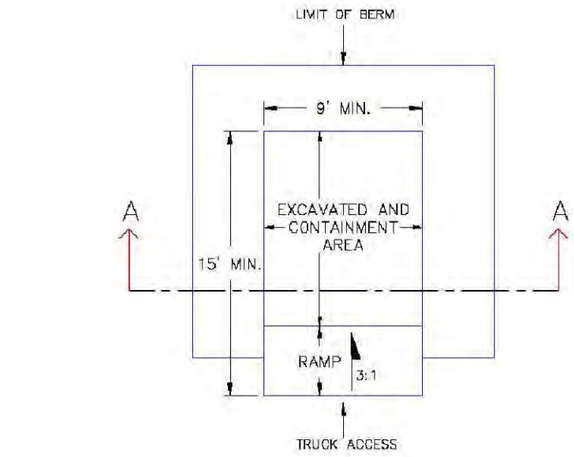
INSTALLATION REQUIREMENTS:

1. ALL ENTRANCES TO THE CONSTRUCTION SITE ARE TO BE STABILIZED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CONSTRUCTION ENTRANCES ARE TO BE BUILT WITH AN APRON TO ALLOW FOR TURNING TRAFFIC, BUT SHOULD NOT BE BUILT OVER EXISTING PAVEMENT EXCEPT FOR A SLIGHT OVERLAP.
3. AREAS TO BE STABILIZED ARE TO BE PROPERLY GRADED AND COMPACTED.
4. CONSTRUCTION ROADS, PARKING AREAS, LOADING/UNLOADING ZONES, STORAGE AREAS, AND STAGING AREAS ARE TO BE STABILIZED.
5. CONSTRUCTION ROADS ARE TO BE BUILT TO CONFORM TO SITE GRADES, BUT SHOULD NOT HAVE SIDE SLOPES OR ROAD GRADES THAT ARE EXCESSIVELY STEEP.

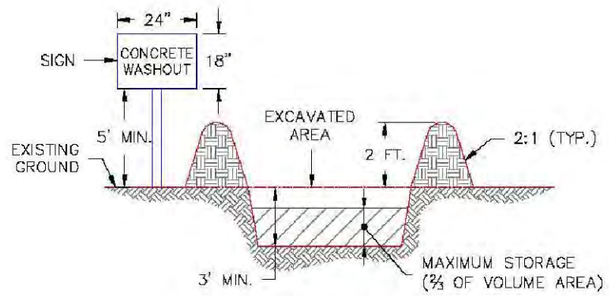
MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL STABILIZED AREAS, ESPECIALLY AFTER STORM EVENTS.
2. STONES ARE TO BE REAPPLIED PERIODICALLY AND WHEN REPAIR IS NECESSARY.
3. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED DAILY BY SHOVELING OR SWEEPING. SEDIMENT IS NOT TO BE WASHED DOWN STORM SEWER DRAINS.
4. OTHER ASSOCIATED SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED TO ENSURE GOOD WORKING CONDITION.
5. TO BE REMOVED JUST PRIOR TO FINAL SURFACING AND STABILIZATION.

A C16 VEHICLE TRACKING PAD DETAIL
SCALE: N.T.S.



PLAN VIEW



SECTION A-A

NOTES:
1. SIGN MATERIAL, EXCAVATION, AND RESTORATION ARE INCLUDED IN THE COST OF THE CONCRETE WASHOUT STRUCTURE.
2. EROSION BALES MAY BE USED AS AN ALTERNATIVE FOR THE BERM.

1/1/08 DATE APPROVED: John A. McCarty DEPARTMENT OF TRANSPORTATION	Concrete Washout Structure Standard Drawing REVISION DATE: 7/17/07 FILE NAME: SD_3-84	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION

B C16 CONCRETE WASHOUT STRUCTURE DETAIL
SCALE: N.T.S.

PCD File No. PPR-21-020

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5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
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SADDLEHORN RANCH
OVERALL WATER SYSTEM
GRADING & EROSION CONTROL DETAILS 2

REVISIONS			
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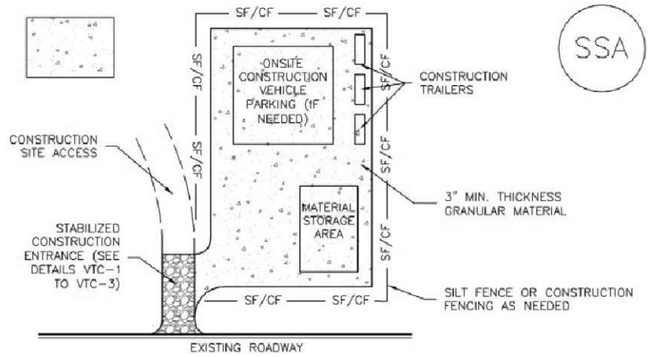
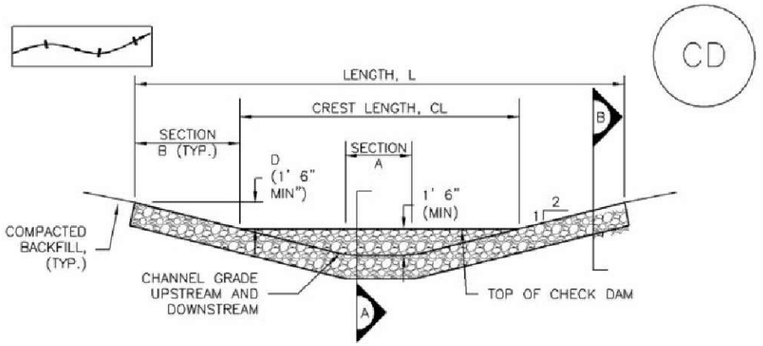
COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

C16
SHEET 16 OF 23



A / C14 **STABILIZED STAGING AREA**
SCALE: N.T.S.



B / C14 **CHECK DAM DETAIL**
SCALE: N.T.S.

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 REESTABLISHMENT 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.

CHECK DAM INSTALLATION NOTES:

1. SEE PLAN VIEW FOR LOCATION OF CHECK DAMS, CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM), LENGTH (L), CREST LENGTH (CL), AND DEPTH (D).
2. CHECK DAMS INDICATED ON INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES
3. RIPRAP UTILIZED FOR CHECK DAMS SHOULD BE OF APPROPRIATE SIZE FOR THE APPLICATION. TYPICAL TYPES OF RIPRAP USED FOR CHECK DAMS ARE TYPE M (D50 12") OR TYPE L (D50 9").
4. RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1'.
5. THE ENDS OF THE CHECK DAM SHALL BE A MINIMUM OF 1'-6" HIGHER THAN THE CENTER OF THE CHECK DAM.

CHECK DAM MAINTENANCE NOTES:

1. INSPECT BMPs EACH WORKDAY AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPSs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION AND PERFORM ANY 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 CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.
5. CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
6. WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. DISTURBED AREA SHALL BE SEEDED AND MULCHED AND COVERED WITH GEOTEXTILE OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE 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.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

GRADING & EROSION CONTROL DETAILS 3

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
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100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 12/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

C17
SHEET 17 OF 23

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.

Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

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.

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5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
GRADING & EROSION CONTROL DETAILS 4

REVISIONS

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COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.: 311.02
Date: 09/01/21
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Drawn: SKG
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C18
SHEET 18 OF 23

PCD File No. PPR-21-020

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**

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.

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.

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JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
GRADING & EROSION CONTROL DETAILS 5

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
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COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.: 311.02
Date: 09/01/21
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Drawn: SKG
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C19
SHEET 19 OF 23

Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeding. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.

- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).

- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.

- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.

- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)

- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)

- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

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5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
GRADING & EROSION CONTROL DETAILS 6

REVISIONS			
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COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

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Drawn: SKG
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C20
SHEET 20 OF 23

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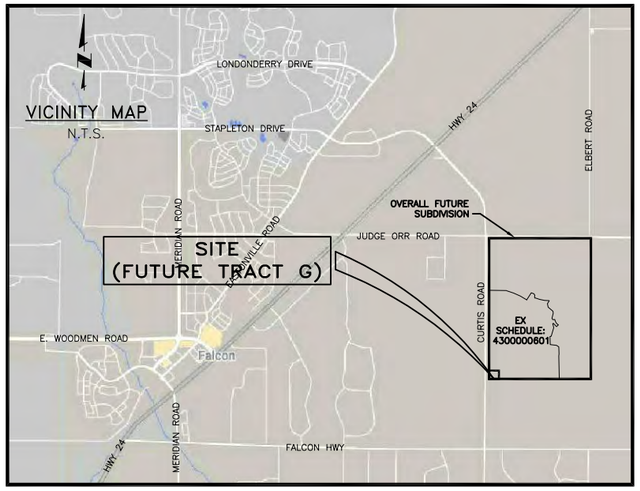
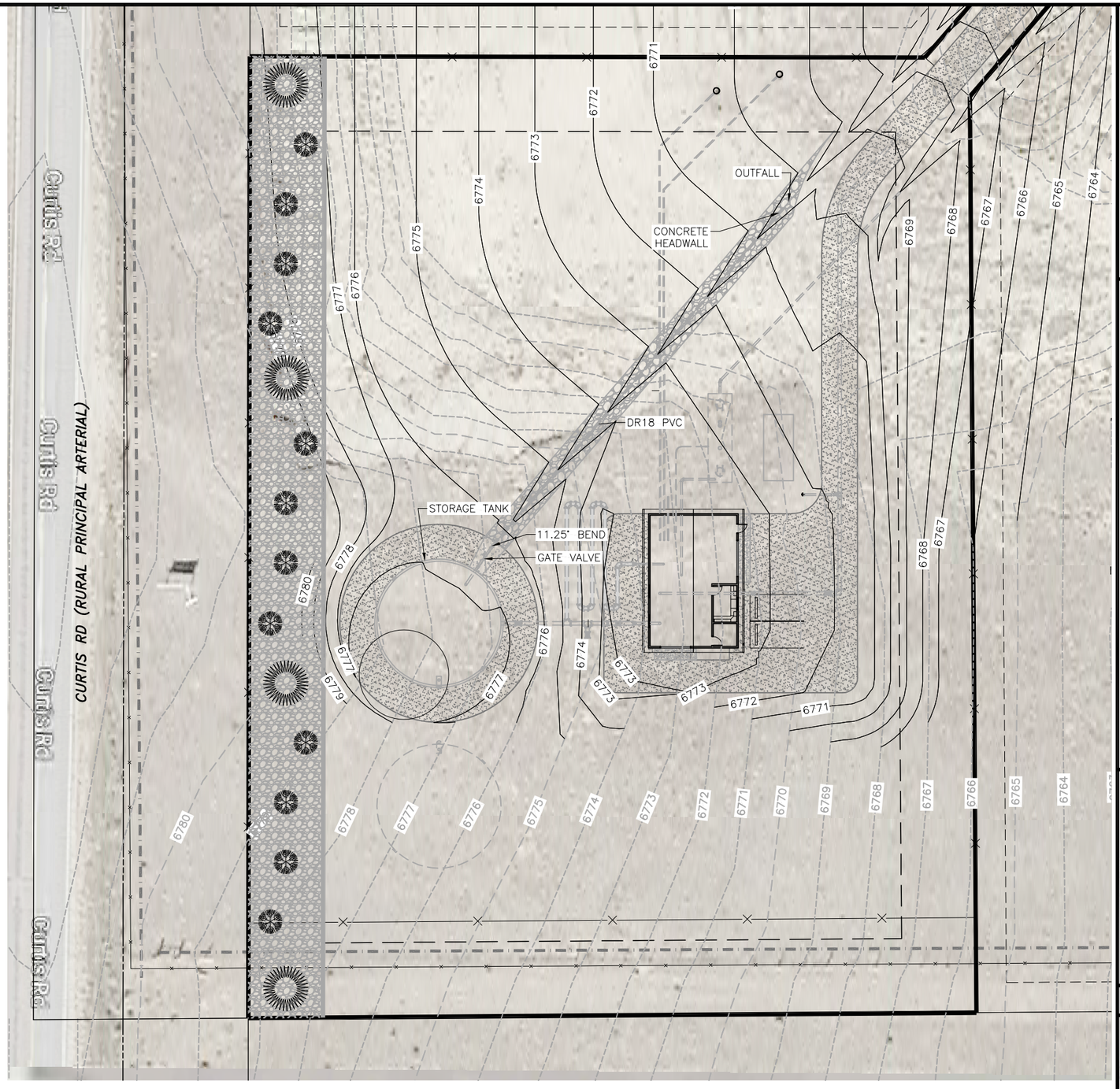
LEGEND

EX PROPERTY LINE	PP VEHICLE TRACKING PAD (INITIAL)
EX RIGHT-OF-WAY	PP EROSION CONTROL SILT FENCE (INITIAL)
EX FENCE	STAGING AREA (INITIAL)
EX CONTOURS-MAJOR	CONCRETE WASHOUT (INITIAL)
EX CONTOURS-MINOR	RIPRAP (FINAL)
PP CONTOURS-MAJOR	PRE-DEVELOPED FLOW DIRECTION
PP CONTOURS-MINOR	DEVELOPED FLOW DIRECTION
PP YARD PIPING	CHECK DAM
PP FENCE	VEHICLE CIRCULATION PATH
AREA OF CUT	
AREA OF FILL	



ALTERNATIVE LANDSCAPING DATA	
NET SITE AREA (FUT. TRACT G)	82,840
ROAD FRONTAGE	
CURTIS ROAD, PRINCIPAL ARTERIAL (RURAL)	322.28 LF
FRONTAGE WIDTH REQUIRED/PROVIDED	25'/25'
NUMBER OF TREES REQUIRED (@ 1/20 LF)/PROVIDED	16/16

NOTES:
1. THE PARTIES RESPONSIBLE FOR THIS PLAN HAVE FAMILIARIZED THEMSELVES WITH ALL CURRENT ACCESSIBILITY CRITERIA AND SPECIFICATION AND THE PROPOSED PLAN REFLECTS ALL SITE ELEMENTS REQUIRED BY THE APPLICABLE ADA DESIGN STANDARDS AND GUIDELINES AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAN BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY OTHER FEDERAL OR STATE ACCESSIBILITY LAWS OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS.
2. AERIAL IMAGERY MAY NOT ACCURATELY SCALED AND SHOULD BE UTILIZED FOR REFERENCE ONLY (SOURCE: GOOGLE EARTH).



0' 20' 40'
SCALE 11x17: 1" = 40'
SCALE 24x36: 1" = 20'

LEGEND - MATERIALS	SCHEDULE - HARDSCAPE
(1) TYP PLANTING REF: SHEET C17	
(2) STEEL EDGE, TYP FOR SEPARATION BETWEEN SEED & GRAVEL/MULCH REF: DETAIL C/C17	3/8" GRAVEL "MULCH": WASHED RIVER ROCK OR APPROVED EQUAL
(3) GRAVEL "MULCH" @ 4" DEPTH MIN	BASECOURSE: CLASS VI AGGREGATE SEE SPECS
(4) BASECOURSE @ 4" DEPTH MIN	

SCHEDULE - XERIC/LOW WATER VEGETATION

SYMBOL	BOTANICAL NAME	COMMON NAME	QTY.	MATURE SIZE	PLANTING SIZE (MIN)	COMMENTS
	EVERGREEN TREE					
	PINUS EDULIS	PINON PINE	4	25'-0" x 15'-0"	4' MIN. HEIGHT	MUST ARRIVE BALLED AND BURLAPPED. PRUNE TO SHAPE TREE AT EARLY GROWTH
	JUNIPERUS SCOPULORUM	ROCKY MOUNTAIN JUNIPER	12	15'-0" x 8'-0"	4' MIN. HEIGHT	MUST ARRIVE BALLED AND BURLAPPED. PRUNE OUT SPORE HORNS WHEN SEEN IN SPRING

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5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

ALTERNATIVE LANDSCAPE PLAN

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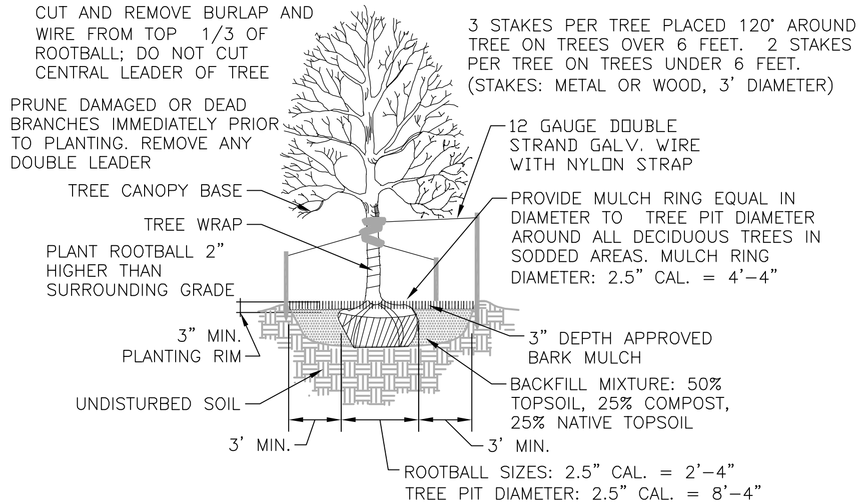

A / C22 TREE PLANTING
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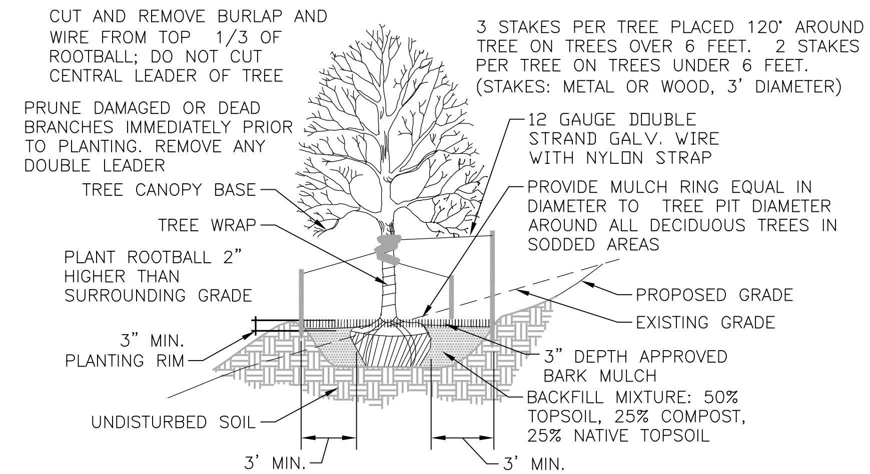
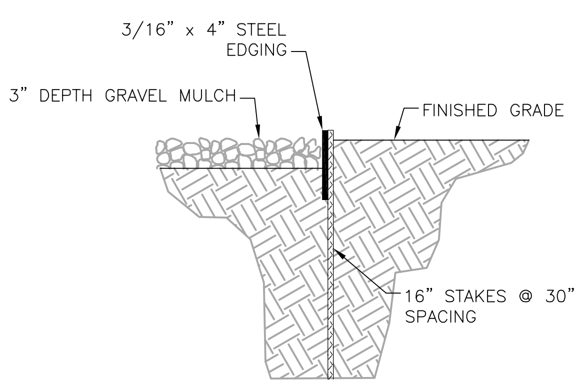


B / C22 TREE PLACEMENT ON SLOPES
SCALE: N.T.S.



C / C22 LANDSCAPE STEEL EDGE
SCALE: N.T.S.

LANDSCAPING NOTES:

1. PLANT QUANTITY AND SUBSTITUTION: IN CASE OF DISCREPANCY IN PLANT QUANTITIES SHOWN ON THE PLANT TABLE AND THOSE SHOWN ON THE PLANTING PLAN, THE QUANTITIES SHOWN ON THE PLANTING PLAN SHALL GOVERN. THE MINIMUM ACCEPTABLE SIZES OF PLANTS MEASURED BEFORE PRUNING WITH BRANCHES IN NORMAL POSITION SHALL CONFORM TO THE PLANTING SIZES AS SPECIFIED IN THE SCHEDULE. ANY SUBSTITUTION OF PLANT SIZE OR SPECIES MUST BE SUBMITTED TO THE ENGINEER IN WRITING FOR APPROVAL PRIOR TO INSTALLATION.

2. ACCEPTABLE PLANT MATERIAL: ALL PLANTS SHALL MEET OR EXCEED STANDARDS SET BY THE "COLORADO NURSERY ASSOCIATION," AND THE "AMERICAN STANDARD OF NURSERY STOCK." ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES, HEALTHY, FREE OF DISEASE, INSECT PESTS, MECHANICAL INJURIES, AND HAVE ADEQUATE ROOT SYSTEMS. ALL PLANTINGS SHALL BE INSTALLED PER PLANTING DETAILS. ALL PLANT MATERIAL SHALL BE INSPECTED BY THE ENGINEER OR OWNER PRIOR TO INSTALLATION.STAKING/CONTRACTOR INSPECTION NOTE: ALL PLANTING LOCATIONS TO BE STAKED AND INSPECTED BY CONTRACTOR PRIOR TO INSTALLATION. ALL PLANTS TO BE INSPECTED AT NURSERY LOCATION PRIOR TO TRANSPORTING TO THE SITE.

3. SITE DISTURBANCE: ALL AREAS OF SITE DISTURBANCE DUE TO CONSTRUCTION SHALL BE RENOVATED OR PLANTED PER THIS PLAN UNLESS OTHERWISE NOTED. SITE-SPECIFIC LANDSCAPING SHALL AT A MINIMUM, INCLUDE REVEGETATION OF DISTURBED AREAS WITH MATERIALS INDIGENOUS TO THE SITE OR OTHERWISE ADAPTABLE.

4. SOIL AMENDMENTS: CONTRACTOR SHALL AMENDED PLANTING AREAS AS FOLLOWS:
   -ADD MINIMUM OF 3 CUBIC YARDS OF WELL-COMPOSTED AGED MANURE OR PREMIUM COMPOST PER 1000 S.F.
   -ALL AMENDED AREAS SHALL BE TILLED TO A DEPTH OF 6" PRIOR TO PLANTING.
   -3 CUBIC YARDS PER 1000 S.F. OF WELL-COMPOSTED AGED MANURE OR PREMIUM COMPOST.
   -ALL AMENDED AREAS SHALL BE TILLED TO A DEPTH OF 6" PRIOR TO PLANTING.

5. SEEDED TURF: ALL SEEDED OR HYDROMULCHED AREAS SHALL DEMONSTRATE 95% GERMINATION PRIOR TO FINAL ACCEPTANCE.

6. IRRIGATION: OWNER TO HAND WATER FOR ONE TO TWO GROWING SEASONS UNTIL ESTABLISHED AND ON AN AS-NEEDED BASIS THEREAFTER. DISTURBED AREA SEED/GRASS MIXTURE MUST BE IRRIGATED BY OWNER UNTIL ESTABLISHED AND IN TIMES OF DROUGHT. THE ON-GOING MAINTENANCE OF THE NATIVE GRASS IS THE RESPONSIBILITY OF OWNER.

7. INORGANIC MULCH AND FABRIC: ALL PLANTINGS TO RECEIVE 3-INCH DEPTH OF INORGANIC MULCH. MULCH RINGS TO BE 15-INCH DIA. FOR (5) GALLON SHRUBS/GRASSES (SEE DETAIL X/X).HIGH QUALITY COMMERCIAL-GRADE (SPUN-BONDED POLYPROPYLENE OR EQUAL) LANDSCAPING FABRIC SHALL BE APPLIED UNDER ALL ROCK BASES.

8. STEEL EDGE: ALL EDGER SHALL BE ACME 4" PERFORATED STEEL EDGER "SELF COLORING" 14 GAUGE OR APPROVED EQUAL.

9. APPROVAL: ANY FIELD CHANGES OR DEVIATIONS TO THESE PLANS WITHOUT PRIOR APPROVAL OF AN AMENDED DEVELOPMENT PLAN MAY RESULT IN A DELAY OF FINAL APPROVAL AND THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

10. FINAL TREE AND SHRUB LOCATIONS: ALL TREE LOCATIONS SHALL BE STAKED FOR APPROVAL BY OWNER REPRESENTATIVE/ENGINEER PRIOR TO PLANTING. SHRUBS SHALL BE PLACED IN THEIR LOCATIONS PER THIS PLAN AND APPROVED BY OWNER REPRESENTATIVE/ENGINEER. THE FINAL LOCATION OF TREES TO BE PLANTED MAY REQUIRE ADJUSTMENT BASED ON APPROVAL OF THE FINAL UTILITIES PLANS AND ASSOCIATED FINAL PLAT AND EASEMENTS.

* BY APPROVING THIS PLAN, THE DIRECTOR IS APPROVING AN ALTERNATE LANDSCAPING DESIGN AS IT RELATES AND CONFORMS TO HOMELAND SECURITY STANDARDS AND PROMOTES WATER CONSERVATION WHILE MEETING THE PURPOSES DESCRIBED IN THE LAND DEVELOPMENT CODE.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
LANDSCAPING DETAILS

REVISIONS

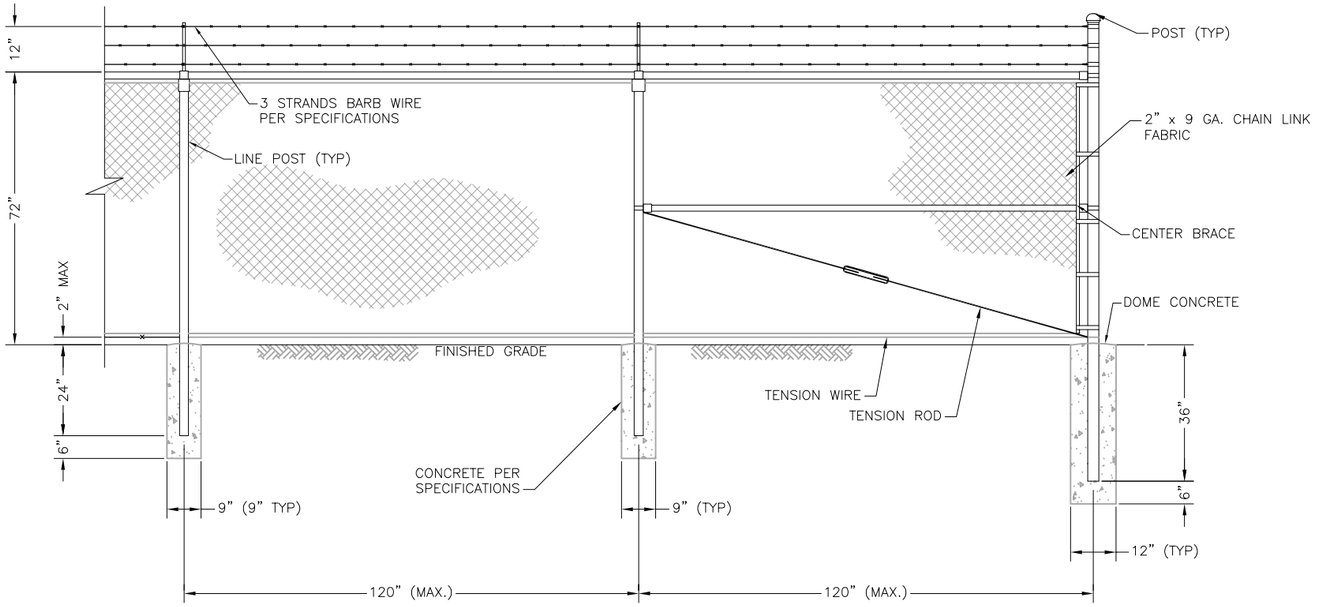
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER
[illegible] 9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: GGM
Check: RMM

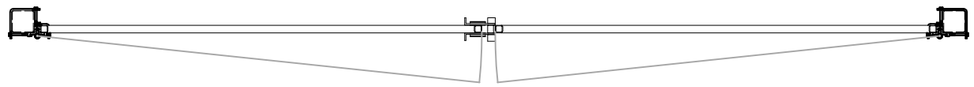
C22
SHEET 22 OF 23



ELEVATION WITH CORNER POST

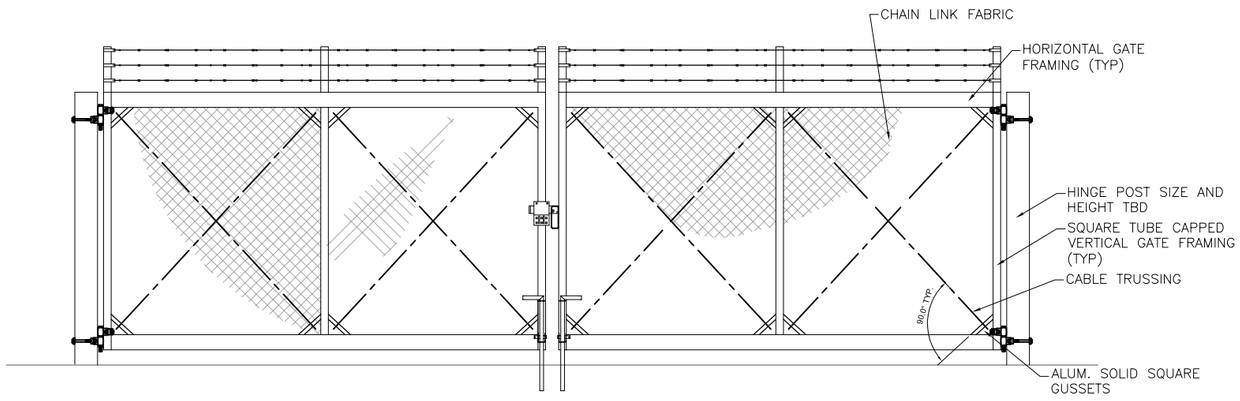
FENCING NOTES:

1. CHAIN LINK FENCE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 181.
2. CHAIN LINK FABRIC SHALL BE 2" MESH NO. 9 GAGE GALVANIZED OR ALUMINUM COATED WIRE SECURELY FASTENED TO TENSION WIRE, LINE POSTS, RAILS, BRACES AND STRETCHER BARS SPACED AS SHOWN HEREON. WIRE FASTENERS AND TIE CLIPS SHALL BE NO. 11 GAGE (W&M) GALVANIZED STEEL WIRE OR NO. 7 GAGE (B&S) ALUMINUM WIRE, AND HOG RINGS SHALL BE NO. 9 GAGE, ALL IN CONFORMANCE WITH ASTM F 626.
3. STEEL POSTS, RAILS AND GATE FRAMES SHALL CONFORM TO AASHTO M 181 TYPE 1, GRADE 1 OR GRADE 2.
4. TENSION WIRE SHALL BE CONTINUOUS BETWEEN END OR CORNER POST AND LINE BRACE POST. A TURNBUCKLE OR OTHER APPROVED TIGHTENING DEVICE SHALL BE USED FOR EACH CONTINUOUS SPAN OF TENSION WIRE.
5. TENSION WIRE SHALL BE AS SPECIFIED IN AASHTO M 181.
6. CONCRETE FOOTINGS SHALL HAVE TOPS CROWNED AT GROUND LEVEL AND SHALL BE CLASS A, AX, OR B.
7. CHAIN LINK FABRIC OVER 5 FEET HIGH SHALL BE TWISTED AND BARBED ON THE TOP SELVAGE AND KNUCKLED ON THE BOTTOM SELVAGE.
8. ATTACH FABRIC TO ALL FENCE & GATE STRUCTURES AT 12" INTERVALS VERTICALLY & AT 20" HORIZONTALLY.
9. MATCH EXISTING SITE BARB WIRE 45° ARM SUPPORTS.
10. DETAILS ARE FOR REFERENCE ONLY – CONTRACTOR TO SUBMIT FENCE DETAILS.
11. DISTRICT IDENTIFICATION SIGNAGE TO BE INSTALLED ON FENCE PER PLANS. KNOXBOX INSTALLED ON GATE FOR FIRE DEPARTMENT ACCESS. SEE SHEET C3.



DOUBLE SWING GATE PLAN

A / C23 **SITE FENCING DETAILS**
SCALE: N.T.S.



DOUBLE SWING GATE ELEVATION

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

SITE FENCING DETAILS

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
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5				
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7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	GGM
Check:	RMM

C23

SHEET 23 OF 23

GENERAL STRUCTURAL NOTES

1. BUILDING CODES:

A. THESE GENERAL NOTES APPLY TO ALL STRUCTURAL DRAWINGS. THIS PROJECT IS DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (IBC), 2015 EDITION, THE MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE 7), AND THE PIKES PEAK REGIONAL BUILDING CODE, 2017 EDITION.

B. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH APPLICABLE PROVISIONS OF THE CODES SPECIFIED ABOVE.

2. DESIGN LOADS:

A. LIVE LOAD REDUCTIONS SHALL BE COMPUTED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE. ROOF LIVE LOADS ARE NON–REDUCIBLE.

B. ROOF LIVE LOADS:
- SITE ELEVATION . . . . 6790 FT
- GROUND SNOW LOAD (Pg). . . . . 27 PSF MIN.
- SNOW LOAD EXPOSURE FACTOR (Ce) 1.0
- SNOW LOAD IMPORTANCE FACTOR (Is) 1.1
- SNOW LOAD THERMAL FACTOR (Ct) 1.0
- FLAT ROOF SNOW LOAD (Pf) . . . . 40 PSF MIN.
- ROOF DEAD LOAD: . . . . 55 PSF

C. FLOOR UNIFORM LIVE LOAD: . . . . .125 PSF

D. FLOOR CONCENTRATED LIVE LOAD . . . . 2,000 PSF

E. FLOOR DEAD LOAD: . . . . SLAB SELF WEIGHT

F. WIND LOAD:
- ULTIMATE DESIGN WIND SPEED (Vult) . . . . 130 MPH
- NOMINAL DESIGN WIND SPEED (Vasd) . . . . 101 MPH
- WIND EXPOSURE CATEGORY C

G. SEISMIC LOAD:
- SEISMIC USE GROUP II
- SOIL SITE CLASS . . . . D

3. COORDINATION:

A. DO NOT SCALE STRUCTURAL DRAWINGS. THE STRUCTURAL LAYOUT SHOWN IS BASED ON ARCHITECTURAL, PROCESS, AND MECHANICAL PLANS FOR OWNER CHANGES AFFECTING THE LAYOUT SHOWN MUST BE SPECIFIC AND CLEARLY CONVEYED TO ENGINEER IN WRITTEN FORM AS A CHANGE FOR INCLUSION INTO THESE PLANS. CONTRACTOR AND/OR CLIENT SHALL VERIFY ALL DIMENSIONS AND LAYOUT PRIOR TO CONSTRUCTION. ALL DIMENSIONS ON STRUCTURAL DRAWINGS SHALL BE CHECKED AGAINST OTHER DISCIPLINE DRAWINGS AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER OF RECORD IMMEDIATELY. SEE THE OTHER DISCIPLINE DRAWINGS FOR ALL DIMENSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO PROCESS, MECHANICAL, ELECTRICAL AND ARCHITECTURAL DRAWINGS FOR OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.

B. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL STRUCTURAL BUILDING COMPONENTS. SHOP DRAWINGS SHALL BE PREPARED BY THE FABRICATOR. COPYING OF THESE CONSTRUCTION DOCUMENTS FOR USE AS SHOP DRAWINGS WILL NOT BE PERMITTED.

C. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, SHORING, DEWATERING, GUYS OR TIE–DOWNS MAY BE NECESSARY.

D. ALL TEMPORARY SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

E. EQUIPMENT FRAMING LOADS, OPENINGS AND STRUCTURE IN ANY WAY RELATED TO HVAC, PLUMBING, PROCESS OR ELECTRICAL REQUIREMENTS ARE SHOWN FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL OBTAIN APPROVAL OF THE PERTINENT TRADES BEFORE PROCEEDING WITH SUCH PORTION OF THE WORK. EXCESS COST RELATED TO VARIATION IN THESE REQUIREMENTS SHALL BE BORNE BY THE APPROPRIATE CONTRACTOR.

F. THIS STRUCTURAL DESIGN WILL BE VOID AFTER TWO YEARS FROM ORIGINAL DATE OF ISSUE, UNLESS UPDATED TO ACCEPTABLE CODES AND PRACTICES.

3.1. LIQUID RETENTION STRUCTURES

A. DURING CONSTRUCTION ALL TANKS, CONCRETE STRUCTURES, ETC. ARE BUOYANT WHEN EMPTY. IN THE EVENT THAT THE EXCAVATION BECOMES FLOODED OR THE SURROUNDING GROUND BECOMES SATURATED, THEY MUST BE FILLED WITH WATER TO PREVENT FLOTATION. PROVIDE OPENINGS OR OTHER DEVICES THAT WILL MAINTAIN THE WATER LEVEL ON THE INSIDE AT THE SAME ELEVATION AS ON THE OUTSIDE AND TAKE OTHER MEASURES AS REQUIRED TO ASSURE THAT THE STRUCTURES DO NOT FLOAT.

B. ALL ALUMINUM IN CONTACT WITH CONCRETE OR DISSIMILAR METALS SHALL BE COATED WITH TWO COATS OF EPOXY. EPOXY COATING SHALL BE A TWO (2) COMPONENT, 100% SOLID, MOISTURE INSENSITIVE EPOXY RESIN, WHICH FORMS A WATERPROOF VAPOR BARRIER. COLOR SHALL BE CONCRETE GRAY.

C. ALL WATERSTOPS SHALL BE PROPERLY SUPPORTED AND WIRED TO REINFORCING TO REMAIN STRAIGHT AND TRUE.

D PROVIDE GROUT FILL FOR CHANNEL AND TANK BOTTOMS WHERE INDICATED.

4. SPREAD FOOTING MAT FOUNDATIONS:

A. THE FOUNDATION DESIGN HAS BEEN COMPLETED IN ACCORDANCE WITH PERTINENT STANDARDS, RECOMMENDED DESIGN SOIL PARAMETERS, ACCEPTED ENGINEERING DESIGN PROCEDURES, AND IS BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF COMPLETION. THE DESIGN IS INTENDED TO MINIMIZE DIFFERENTIAL MOVEMENT RESULTING FROM THE SETTLING OF SUBSURFACE SOILS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND/OR PRESENT OWNER TO INFORM ANY SUBSEQUENT OWNERS OF THE SOIL CONDITION AND ADVISED TO MAINTAIN GOOD PRACTICES IN THE FUTURE WITH REGARD TO SURFACE AND SUBSURFACE DRAINAGE.

B. FOUNDATION DESIGN IS BASED ON SOIL REPORT PREPARED BY ENTECH ENGINEERING, INC. DATED FEBRUARY 26, 2021 AND ASSIGNED JOB NO. 210181. THE CONTRACTOR SHALL THOROUGHLY REVIEW AND UNDERSTAND ALL RECOMMENDATIONS AND PERTINENT CONSTRUCTION ASPECTS OF THIS REPORT BEFORE BEGINNING ANY WORK. PER THE GEOTECHNICAL REPORT, MAXIMUM ALLOWABLE SOIL BEARING PRESSURE IS 2,400 PSF. 1

C. SOIL BENEATH FOUNDATIONS, WALLS, AND SLABS–ON–GRADE SHALL BE SOLID, UNDISTURBED MATERIAL, FREE OF FROST, WATER AND FOREIGN DEBRIS, OR APPROVED STRUCTURAL FILL COMPACTED IN ACCORDANCE WITH THE SOILS REPORT AND PROJECT SPECIFICATIONS.

D. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL OBSERVE THE OPEN EXCAVATION TO DETERMINE THAT THE SOIL TYPE AND CONDITIONS ARE CONSISTENT WITH DESIGN CRITERIA OF THE SOIL REPORT. IF THE SOIL PROPERTIES ARE FOUND TO BE DIFFERENT FROM THIS CRITERIA, ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT THE FOUNDATION DESIGN MAY BE REVIEWED.

E. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LOCATION OF ALL MECHANICAL OPENINGS, FLOOR DRAINS, INSERTS, DEPRESSIONS, BURIED CABLES AND UTLILITIES, ETC. WITH PROCESS, ARCHITECTURAL, CIVIL, MECHANICAL, AND ELECTRICAL DRAWINGS.

F. CONTRACTOR SHALL MECHANICALLY COMPACT ALL INTERIOR AND EXTERIOR BACKFILL PER GEOTECHNICAL ENGINEER RECOMMENDATIONS.

G. ANY FILL PLACED BELOW THE FOUNDATION SHOULD CONSIST OF 3/4" CRUSHED ROCK. PER THE SOILS REPORT, IT IS RECOMMENDED THAT THE MAT FOUNDATION BE PLACED ON THE UNDISTURBED CLAY–STONE AND SANDSTONE BEDROCK.

H. BACKFILL MUST BE PLACED PER THE SOILS REPORT.

I. PLACEMENT AND COMPACTION OF BACKFILL MUST BE OBSERVED AND TESTED BY A REPRESENTATIVE OF CTL–THOMPSON DURING CONSTRUCTION.

J. SLOPE BACKFILL AWAY FROM THE STRUCTURE A MINIMUM OF 10% FOR THE FIRST 10 FEET (2% AT PAVED AREAS) UNLESS A MORE STRINGENT REQUIREMENT IS SPECIFIED BY THE GEOTECHNICAL ENGINEER.

K. UNLESS A SPECIFIC TOP OF WALL CONNECTION IS SHOWN, FOUNDATION WALL STABILITY IS DEPENDENT ON FLOOR FRAMING FOR LATERAL SUPPORT. WALLS HAVING BACKFILL ON BOTH THE INTERIOR AND EXTERIOR FACES SHOULD HAVE BACKFILL ON EITHER SIDE BROUGHT UP APPROXIMATELY TOGETHER. OTHERWISE, WHERE POSSIBLE, NO EXTERIOR BACKFILL SHOULD BE PLACED UNTIL THE FLOOR SLAB IS IN PLACE OR THE FOUNDATION WALL IS OTHERWISE PROPERLY BRACED. TOP OF WALLS MUST ALSO BE BRACED IF BACKFILL IS PLACED WITHIN 14 DAYS OF CONCRETE POUR.

5. CAST–IN–PLACE CONCRETE:

A. ALL CAST–IN–PLACE CONCRETE WORK SHALL CONFORM TO THE PROJECT SPECIFICATIONS. CONCRETE HAS BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" ACI 318, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" ACI 301, AND "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING STRUCTURES" ACI 350 LATEST EDITIONS. ALL CONCRETE SHALL BE OF STONE AGGREGATE, UNLESS NOTED OTHERWISE.

B. GROUT UNDER BASE PLATES AND BEARING PLATES SHALL BE NON–SHRINK, NON–METALLIC GROUT WITH A MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS OF 7,500 PSI.

C. ALL EXPOSED CONCRETE CORNERS (INCLUDING PUMP PADS, PIPE SUPPORTS, HOUSEKEEPING PADS, ETC.) ARE TO BE CHAMFERED.

D. ALL EXPANSION JOINTS AND SEAMS TO BE SEALED WITH SELF–LEVELING POLYURETHANE CAULK PER SPECIFICATIONS. USE NON–SAG TYPE POLYURETHANE FOR VERTICAL WALLS.

E. CONCRETE MIXES:
SEE SPECIFICATIONS

6. REINFORCING:

A. REINFORCING IS TO BE NEW BILLET STEEL ASTM A615, GRADE–60, EXCEPT TIES AND BARS TO BE WELDED SHALL BE GRADE–40. NO SPLICES OF REINFORCEMENT ARE PERMITTED EXCEPT AS DETAILED OR AUTHORIZED BY STRUCTURAL ENGINEER OF RECORD. WELDED WIRE FABRIC (W.W.F.) SHALL BE IN ACCORDANCE WITH ASTM A185 DELIVERED IN FLAT SHEETS. LAP (1) FULL MESH MINIMUM AT SPLICES. LAP WELDED WIRE FABRIC 1 SPACE (2 CROSS WIRES) + 2" AT ALL EDGES AND ENDS OF SHEETS. NO WELDING OF REINFORCEMENT PERMITTED UNLESS DETAILED.

B. WHERE BAR LENGTHS ARE GIVEN ON THE DRAWINGS, THE LENGTH OF ANY HOOK, IF REQUIRED, IS NOT INCLUDED (U.N.O.). USE STANDARD 90° BAR HOOK UNLESS NOTED OTHERWISE.

C. HORIZONTAL BARS SHALL BE CONTINUOUS, PROVIDE CORNER BARS AT ALL CORNERS AND INTERSECTIONS UNLESS NOTED OTHERWISE. REINFORCING BAR LAP SPLICES AND ANCHORAGE LENGTHS SHALL CONFORM WITH TABLE NO.1, "MINIMUM LAP SPLICE AND ANCHORAGE DIMENSION TABLE".

D. PLACING OF REINFORCEMENT: PROVIDE CHAIRS, BOLSTERS, ADDITIONAL REINFORCEMENT, AND ACCESSORIES NECESSARY TO SUPPORT REINFORCEMENT AT POSITION SHOWN ON DRAWINGS. SUPPORT OF REINFORCEMENT ON FORM TIES, WOOD, BRICK, BRICKBAT OR OTHER UNACCEPTABLE MATERIAL, WILL NOT BE PERMITTED.

E. THE CONTRACTOR SHALL REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF ALL EMBEDDED ITEMS, SLEEVES, SLAB DEPRESSIONS, OPENINGS, ETC. REQUIRED BY OTHER TRADES. RECONCILE THEIR EXACT SIZES AND LOCATIONS BEFORE PROCEEDING WITH THE WORK. ALL ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE. SECURE THE APPROVAL OF ENGINEER PRIOR TO PLACING OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS.

F. BACKFILL AGAINST FOUNDATION WALLS SHALL NOT BE PLACED UNTIL SLAB CONSTRUCTION HAS BEEN COMPLETED TO BRACE THE WALL. AT THE CONTRACTOR'S OPTION, WALLS MAY BE TEMPORARILY BRACED AND BACKFILL INSTALLED. ANY SUCH BRACING SHALL BE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL REMAIN IN PLACE UNTIL THE SLAB IS COMPLETED AND CONTINUOUSLY CONNECTED TO THE WALLS.

G. BACK FILL AGAINST WALLS SHALL NOT BE PLACED UNTIL THE COMPRESSIVE STRENGTH OF THE SPECIFIED CONCRETE HAS BEEN REACHED.

H. PROVIDE CONTROL/CONSTRUCTION JOINTS AS SHOWN ON THE STRUCTURAL DRAWINGS. ALL BEAMS AND SLABS SHALL BE CAST MONOLITHICALLY, EXCEPT FOR REQUIRED CONTROL/CONSTRUCTION JOINTS SHOWN ON THE STRUCTURAL DRAWINGS. CONTRACTOR SHALL SUBMIT ALTERNATE AND ADDITIONAL CONSTRUCTION JOINT LOCATIONS AND DETAILS TO THE STRUCTURAL ENGINEER OF RECORD FOR APPROVAL PRIOR TO CONSTRUCTION. AT LEAST 48 HOURS SHALL ELAPSE BETWEEN CASTING OF ADJOINING UNITS. REINFORCEMENT SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS UNLESS DETAILED OTHERWISE ON THE DRAWINGS. CONTRACTOR SHALL SUBMIT ALL CONSTRUCTION JOINT LOCATIONS WITH THE REINFORCING STEEL SHOP DRAWINGS.

I. WHERE CONSTRUCTION JOINTS ARE REQUIRED BUT ARE NOT INDICATED ON THE DRAWINGS, THEY SHALL BE LOCATED AT THE MID–SPAN OF BEAMS, SLABS AND WALLS AND SHALL BE SUBJECT TO REVIEW BY THE STRUCTURAL ENGINEER OF RECORD. UNLESS NOTED OTHERWISE OR SHOWN ON THE DRAWINGS, PROVIDE A CONTINUOUS SHEAR KEY IN SLABS AND WALLS, AND A MINIMUM OF TWO (2) CONTINUOUS HORIZONTAL KEYS IN BEAMS. THE MINIMUM KEY SIZE SHALL BE 1 1/2" DEEP x 1/3 THE DEPTH OR WIDTH OF THE MEMBER.

J. ALL CONSTRUCTION JOINTS BELOW GRADE SHALL HAVE BENTONITE WATERSTOPS.

K. ADDITIONAL (2) #5 BARS (ONE EACH FACE) WITH A 2'–0" PROJECTION SHALL BE PLACED DIAGONALLY ACROSS THE CORNERS OF ALL OPENINGS AND VERTICAL STEPS IN WALLS UNLESS OTHERWISE DETAILED ON PLANS.

L. THE CONTRACTOR SHALL PROVIDE 3/4" CHAMFERS ON ALL EXPOSED CORNERS OF COLUMNS, BEAMS AND WALLS UNLESS OTHERWISE INDICATED ON THE DRAWINGS. MINIMUM CLEARANCES FOR REINFORCING STEEL SHALL CONFORM WITH THE TYPICAL REINFORCING BAR CLEARANCE TABLE.

M. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING WHEN IT IS SAFE TO REMOVE FORMS AND/OR SHORING. FORMS AND SHORING MUST NOT BE REMOVED UNTIL THE WALLS ARE STRONG ENOUGH TO CARRY THEIR OWN WEIGHT AND ANY ANTICIPATED SUPERIMPOSED LOADS. FOR FOUNDATION WALLS, THIS TYPICALLY REQUIRES AT LEAST 12 HOURS OF CUMULATIVE CURING TIME AT A TEMPERATURE OF 50°F OR MORE. CONCRETE MUST BE ADEQUATELY COVERED DURING COLD PERIODS TO MAINTAIN THIS SURFACE TEMPERATURE. WHEN FORMS ARE STRIPPED THERE MUST BE NO EXCESSIVE DEFLECTION OR DISTORTION OR DISCOLORATION AND NO EVIDENCE OF DAMAGE TO THE CONCRETE. ADEQUATE THERMAL PROTECTION OF THE CONCRETE SHALL BE CONTINUED AFTER STRIPPING FOR A CUMULATIVE PERIOD OF 48 HOURS AT 50°F, OR MORE, AFTER THE INITIAL POUR. SEE APPLICABLE NOTES FOR SPECIFICATIONS ON WHEN TO BACKFILL FOUNDATION WALLS.

N. FOUNDATIONS, COLUMNS AND WALLS: DOWELS IN FOOTINGS TO MATCH VERTICAL COLUMN OR WALL REINFORCING UNLESS SHOWN OTHERWISE.

O. THE HARDENED CONCRETE OF CONSTRUCTION JOINTS SHALL BE DAMPENED AND THEN THOROUGHLY COVERED WITH A COAT OF CEMENTITIOUS MATERIAL ACCORDING TO THE PROJECT SPECIFICATIONS. COMPLY WITH THE ARCHITECTURAL DRAWINGS FOR LOCATION AND EXTENT OF SPECIAL FINISHES OR TREATMENTS TO EXPOSED CONCRETE.

P. PROVIDE 6x6–W2.9xW2.9 WELDED WIRE FABRIC IN ALL SLABS ON GRADE, UNLESS NOTED OTHERWISE.

Q. PROVIDE 6x6–W1.4xW1.4 WELDED WIRE FABRIC IN ALL TOPPING SLABS, UNLESS NOTED OTHERWISE.

R. WELDED WIRE FABRIC SHALL BE LAPPED A MINIMUM OF ONE FULL MESH, PLUS 2 INCHES, AND SECURELY WIRED TOGETHER. CUT AND BEND BACK EVERY OTHER WIRE ALONG CONTROL JOINTS. WIRE FABRIC SHALL BE PULLED UP DURING CONCRETE PLACEMENT OR SET ON CHAIRS TO ENSURE MESH IS SET IN MIDPOINT OF TOPPING LAYER.

S. PROVIDE A MINIMUM OF TWO (2) #5 TOP REINFORCING BARS IN BEAMS WHERE NO OTHER TOP BARS ARE AVAILABLE FOR SUPPORTING STIRRUPS. ALL SPANDREL AND EDGE BEAMS SHALL HAVE A MINIMUM OF TWO (2) #5 TOP REINFORCING BARS AND CLOSED STIRRUPS CONTINUOUS ACROSS THE SPAN.

TABLE NO. 1
MINIMUM LAP SPLICE AND ANCHORAGE DIMENSION TABLE

USE THIS TABLE FOR A615 GRADE 60–UNCOATED REINFORCING IN NORMAL WEIGHT CONCRETE WHEN CONCRETE COVER IS GREATER THAN ONE (1) BAR DIAMETER AND BAR SPACING IS GREATER THAN TWO (2) BAR DIAMETERS.

(4000 PSI CONCRETE)					(3000 PSI CONCRETE)				
BAR SIZE	TOP LAP	BARS ANCH	OTHER LAP	BARS ANCH	BAR SIZE	TOP LAP	BARS ANCH	OTHER LAP	BARS ANCH
#3	25"	19"	19"	15"	#3	28"	22"	22"	17"
#4	33"	25"	25"	19"	#4	38"	29"	29"	22"
#5	41"	31"	31"	24"	#5	47"	36"	36"	28"
#6	49"	37"	37"	29"	#6	56"	43"	43"	33"
#7	71"	54"	54"	42"	#7	81"	63"	63"	48"
#8	81"	62"	62"	48"	#8	93"	72"	72"	55"
#9	91"	70"	70"	54"	#9	105"	81"	81"	62"
#10	102"	79"	79"	61"	#10	118"	91"	91"	70"

SPLICE TABLE NOTES:
1. FOR EPOXY–COATED REINFORCING WITH COVER LESS THAN THREE (3) BAR DIAMETERS OR CLEAR SPACING LESS THAN SIX (6) BAR DIAMETERS MULTIPLY THE TABLE VALUES ABOVE BY 1.31 FOR TOP BARS AND 1.50 FOR BOTTOM BARS, FOR ALL OTHER EPOXY–COATED BARS MULTIPLY THE TABLE VALUES BY 1.2.
2. FOR LIGHTWEIGHT CONCRETE MULTIPLY THE TABLE VALUES ABOVE BY 1.3.
3. FOR BUNDLED BARS MULTIPLY THE TABLE VALUES ABOVE BY: 1.2 (3 BAR 1.33 (4 BAR BUNDLE).
4. WHEN LAPPING TWO DIFFERENT SIZE BARS, USE THE LAP DIMENSION OF THE SMALLER BAR OR THE ANCHORAGE DIMENSION OF THE LARGER BAR. USE WHICHEVER DIMENSION IS LARGER.
5. TOP BARS SHALL BE DEFINED AS BEAM AND SLAB HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE TOP REINFORCEMENT. HORIZONTAL REINFORCING IN WALLS SHALL BE CONSIDERED TOP BARS.

TABLE NO. 2
TYPICAL REINFORCING BAR CLEARANCE TABLE

LOCATION	MIN. CLEARANCE
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	2–1/2"
CONCRETE EXPOSED TO EARTH OR WEATHER (#5 AND SMALLER)	2"
CONCRETE EXPOSED TO EARTH OR WEATHER (#6 AND LARGER)	2–1/2"
BEAMS (LONGITUDINAL REINFORCING PARALLEL TO JOIST OR SLAB)	2–1/2"
BEAMS (LONGITUDINAL REINFORCING PERPENDICULAR TO JOIST OR SLAB)	2–1/2"
BEAM STIRRUPS	2"
COLUMNS AND PIERS (VERTICAL REINFORCING)	2 1/2"
COLUMN AND PIER TIES	2"
WALLS (INTERIOR FACE)	2"
WALLS (EXTERIOR FACE, #5 AND SMALLER)	2"
WALLS (EXTERIOR FACE, #6 AND LARGER)	2"
SURFACES EXPOSED TO LIQUIDS	2"
FRAMED SLABS (INTERIOR, INCLUDING STAIRS)	2"
FRAMED SLABS (EXTERIOR, INCLUDING STAIRS)	2"
SLABS ON GRADE (BOTTOM REINFORCING)	2"
SLABS ON GRADE (WELDED WIRE FABRIC)	CENTERED

7. PRECAST, PRESTRESSED CONCRETE:

A. PRECAST, PRESTRESSED CONCRETE UNITS SHALL BE DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN CONCRETE INSTITUTE AND SHALL CONFORM TO THE PRESTRESSED CONCRETE INSTITUTE CODES AND STANDARDS LISTED IN THE PROJECT MANUAL, EXCEPT AS MODIFIED THEREIN.

B. ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE IN 28 DAYS SHALL BE 5000 PSI. MINIMUM CONCRETE STRENGTH AT THE TIME OF TRANSFER OF PRESTRESS FORCE TO CONCRETE SHALL BE 3,500 PSI.

C. PRECAST MEMBERS SHALL BE DESIGNED BY THE MANUFACTURER FOR COMPOSITE ACTION TO SUPPORT SUPERIMPOSED LOADS AS GIVEN IN THE NOTES PLUS THE DEAD LOAD OF PRECAST AND TOPPING. PRESTRESSED UNITS SHALL BE DESIGNED BY THE MANUFACTURER TO MEET THE FOLLOWING MINIMUM CRITERIA:
1. SUPERIMPOSED DEAD LOADS . . . . 10 PSF.
2. SUPERIMPOSED LIVE LOADS . . . . 30 PSF.
3. MAXIMUM BOTTOM FIBER TENSION . . . . 848 PSI.
4. NORMAL WEIGHT AGGREGATE

D. PRESTRESSING WIRE SHALL CONFORM TO ASTM A–421–65, TYPE BA, "SPECIFICATIONS FOR UNCOATED STRESS RELIEVED WIRE FOR PRESTRESSED CONCRETE". PRESTRESSING STRAND SHALL CONFORM TO ASTM A–416–68, GRADE 270, "SPECIFICATIONS FOR UNCOATED STRESS RELIEVED STRAND FOR PRESTRESSED CONCRETE".

E. REINFORCING BARS SHALL BE A615 GRADE, 60 KSI YIELD STRENGTH, UNLESS NOTED OTHERWISE.

F. THE DESIGN CALCULATIONS AND SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF AND BEAR THE SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF COLORADO AND SHALL BE SUBMITTED FOR REVIEW.

G. PROVIDE STANDARD SHEAR CONNECTORS IN THE FLANGES OF PRECAST TEES.

H. THE PRECAST MANUFACTURER SHALL COORDINATE SIZE AND LOCATION OF ALL OPENINGS IN PRECAST MEMBERS WITH ALL OTHER TRADES.

I. BEARING PADS SHALL BE DESIGNED BY THE PRECAST CONCRETE MANUFACTURER AND SHALL CONSIST OF NEOPRENE BEARING PADS CONFORMING TO ASTM D–2240 AND D–412 WITH A DUROMETER HARDNESS OF 60.

J. ALL OPENINGS LARGER THAN 10" SQUARE OR ROUND SHALL BE PROVIDED BY THE PRECAST MANUFACTURER. SMALLER OPENINGS SHALL BE FIELD–CUT OR CORED BY THE TRADES REQUIRING THE OPENINGS AFTER WRITTEN APPROVAL FROM THE PRECAST MANUFACTURER. CONTRACTOR SHALL COORDINATE FIELD–CUT OR CORED OPENINGS TO AVOID PRECAST TENDON LOCATIONS.

8. STRUCTURAL STEEL:

A. STRUCTURAL STEEL, INCLUDING CAST IN ANGLES, PLATES OR OTHER SECTIONS SHALL BE DETAILED AND ERECTED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATIONS AND CODE OF STANDARD PRACTICE, LATEST EDITION. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1, LATEST EDITION.

B. STRUCTURAL STEEL:
- ASTM A992 (Fy=50 KSI) – ROLLED STEEL SHAPES, WIDE FLANGE, AND CHANNELS UNLESS NOTED ON THE DRAWINGS.
- ASTM A36 (Fy=36 KSI) – ROLLED STEEL PLATES, ANGLES, BARS AND RODS AS NOTED ON THE DRAWINGS.

C. SHOP CONNECTIONS SHALL BE WELDED WITH E70XX ELECTRODES AND GROUND SMOOTH WHERE EXPOSED. FIELD CONNECTIONS SHALL BE MADE WITH BOLTS CONFORMING TO ASTM A325N UNLESS OTHERWISE NOTED. FIELD WELDS SHALL BE MADE WITH E70XX ELECTRODES. ALL WELDING SHALL BE IN ACCORDANCE WITH AWS "STRUCTURAL WELDING CODE", LATEST EDITION AND PERFORMED BY CERTIFIED, LICENSED WELDERS. FOR WELDING SYMBOLS WITH NO LENGTH DIMENSION GIVEN, THE WELDING SHALL BE CONTINUOUS BETWEEN ABRUPT CHANGES IN DIRECTION. WELDS NOT OTHERWISE NOTED SHALL BE 1/4" IN SIZE.

D. ALL BEAM CONNECTIONS NOT DETAILED ON THE DRAWINGS SHALL BE STANDARD FRAMED BEAM CONNECTIONS AS SHOWN IN TABLE II AND III OF THE AISC "MANUAL OF STEEL CONSTRUCTION", LATEST EDITION, DESIGNED TO CARRY THE FULL CAPACITY OF THE UNIFORMLY LOADED MEMBER, UNLESS NOTED OTHERWISE.

E. BOLTS AND BOLTED CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS" AS APPROVED BY THE COUNCIL ON RIVETED AND BOLTED JOINTS. USE BEARING–TYPE BOLTS WITH THREADS ALLOWED IN THE SHEAR PLANE. ANCHOR BOLTS SHALL CONFORM TO ASTM F–1554 AS SPECIFIED ON THE DRAWINGS. ALL BOLTS SHALL BE TIGHTENED TO A "SNUG–TIGHT" CONDITION, UNLESS NOTED OTHERWISE.

F. HEADED STUD ANCHORS SHALL CONFORM TO AWS D1.1 AND SHALL BE AUTOMATICALLY END WELDED.

G. STEEL STAIRS SHALL BE DETAILED AND DESIGNED BY OTHERS UNLESS NOTED OTHERWISE. STAIR DETAILER SHALL PROVIDE SHOP DRAWINGS AND CALCULATIONS PREPARED AND STAMPED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF COLORADO, FOR REVIEW BY ENGINEER OF RECORD TO VERIFY CONFORMANCE TO THE REQUIREMENTS OF THE BASIC STRUCTURE. FABRICATION SHALL NOT PROCEED UNTIL COMPLETION OF SHOP DRAWING REVIEW BY THE STRUCTURAL ENGINEER OF RECORD.

H. FIELD QUALITY CONTROL: INSPECT IN ACCORDANCE WITH AISC SPECIFICATIONS. MATERIALS ENGINEER SHALL BE AWS CERTIFIED AND SHALL VISUALLY INSPECT ALL FIELD WELDED CONNECTIONS (100%) AND VISUALLY INSPECT ALL BOLTED CONNECTIONS (100%) TO ASCERTAIN THAT ALL WELDS, BOLTS, NUTS AND REQUIRED WASHERS HAVE BEEN INSTALLED AND ARE OF PROPER TYPE AND THAT ALL FACING SURFACES HAVE BEEN BROUGHT INTO SNUG CONTACT. OPENINGS THROUGH STEEL BEAMS SHALL BE PROVIDED AS DETAILED ON THE DRAWINGS. ALL SUCH OPENINGS SHALL BE MACHINE CUT. ALL RECTANGULAR OPENINGS SHALL HAVE A CORNER RADIUS OF 2 TIMES THE WEB THICKNESS, 1/2" MINIMUM.

I. COLUMN SPLICES SHALL BE DESIGNED IN ACCORDANCE WITH TABLE 14–3, PAGE 14–28 THROUGH 14–47 OF THE AISC ASD "MANUAL OF STEEL CONSTRUCTION LOAD AND RESISTANCE FACTOR DESIGN, THIRD EDITION."

8. WOOD:

A. ALL LUMBER DESIGN, MATERIALS, FABRICATION AND CONSTRUCTION SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE, 2015 EDITION, THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION, LATEST EDITION, ALONG WITH ITS SUPPLEMENT OF WOOD DESIGN VALUES, AND THE PROJECT SPECIFICATIONS. ALL FRAMING, ROOFING, SHEATHING, NAILING, BLOCKING, BRACING AND WOOD DESIGN AND CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE UNIFIED BUILDING CODE. ALL WOOD CONSTRUCTION SPECIFICATIONS NOT DIRECTLY OUTLINED IN THE DRAWINGS OR SPECIFICATIONS SHALL BE ACCOMMODATED BY THE UBC.

B. ALL DIMENSION LUMBER (2" TO 4" THICK) SHALL BE HEM–FIR #2 OR BETTER, WITH THE FOLLOWING MINIMUM ALLOWABLE STRESSES (NORMAL LOADING CONDITIONS AND SINGLE MEMBER USES):
- EXTREME FIBER IN BENDING, Fb...............................850 PSI
- HORIZONTAL SHEAR, Fv...75 PSI
- COMPRESSION PERPENDICULAR TO GRAIN, Fc..........405 PSI
- COMPRESSION PARALLEL TO GRAIN, Fc....................1,300 PSI
- MODULUS OF ELASTICITY, E.......................................1,300,000 PSI

C. ALL MICROLAM MEMBERS SHALL BE HAVE THE FOLLOWING MINIMUM ALLOWABLE STRESSES:
- EXTREME FIBER IN BENDING, Fb...............................2,600 PSI
- HORIZONTAL SHEAR, Fv...285 PSI
- MODULUS OF ELASTICITY, E.......................................1,900,000 PSI

D. ALL PLYWOOD SHEATHING SHALL BEAR THE STAMP OF THE AMERICAN PLYWOOD ASSOCIATION (APA). ORIENTED STRAND BOARD MAY BE SUBSTITUTED FOR PLYWOOD ONLY WITH PRIOR APPROVAL.

E. DESIGN VALUES USED FOR TRUSSES AND FABRICATED ITEMS SHALL BE SUBMITTED WITH SHOP DRAWINGS.

F. MISCELLANEOUS FRAMING CLIPS, ANCHORS, AND HANGERS SHALL BE PROVIDED AS NECESSARY TO ERECT A RIGID STRUCTURAL FRAMEWORK. WALLS SHALL BE FRAMED SOLID AT ALL BEAM AND COLUMN BEARINGS, SECURELY ANCHORED AT TOP AND BOTTOM.

G. ALL BUILT–UP MEMBERS OF TWO PIECES SHALL BE NAILED TOGETHER WITH A MINIMUM OF FOUR (4) 10d NAILS PER FOOT. ALL BUILT–UP MEMBERS OF MORE THAN TWO PIECES SHALL BE BOLTED TOGETHER WITH 1/2" DIAMETER BOLTS AT 24" O.C. (COUNTERSINK AS REQUIRED) WITH A MINIMUM OF THREE (3) BOLTS PER BEAM.

H. BRIDGING AND NAILING SCHEDULES SHALL BE PROVIDED IN ACCORDANCE WITH THE UNIFORM BUILDING CODE, LATEST EDITION.

I. ALL TRUS–JOINT (OR EQUIVALENT) MEMBERS SHALL MEET ICBO PRODUCT ACCEPTANCE NATIONAL EVALUATION REPORT.

J. WHERE USP CONNECTORS ARE NOTED, SIMPSON BRAND EQUIVALENT CONNECTORS MAY BE USED. VERIFY SUBSTITUTIONS WITH ENGINEER.

K. ALL TRUSS JOIST SUSPENDED PIPE HANGERS TO INCLUDE A METAL PLATE CONNECTION SLEEVE AT SUSPENSION POINT. SIZE PER MANUFACTURER RECOMMENDATION.

L. SEE MANUFACTURER'S RECOMMENDATIONS FOR FASTENER AND NAILING SCHEDULES FOR ALL METAL PLATE CONNECTORS.

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SADDLEHORN RANCH
OVERALL WATER SYSTEM
STRUCTURAL NOTES

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
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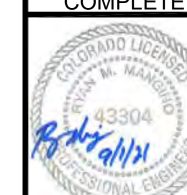

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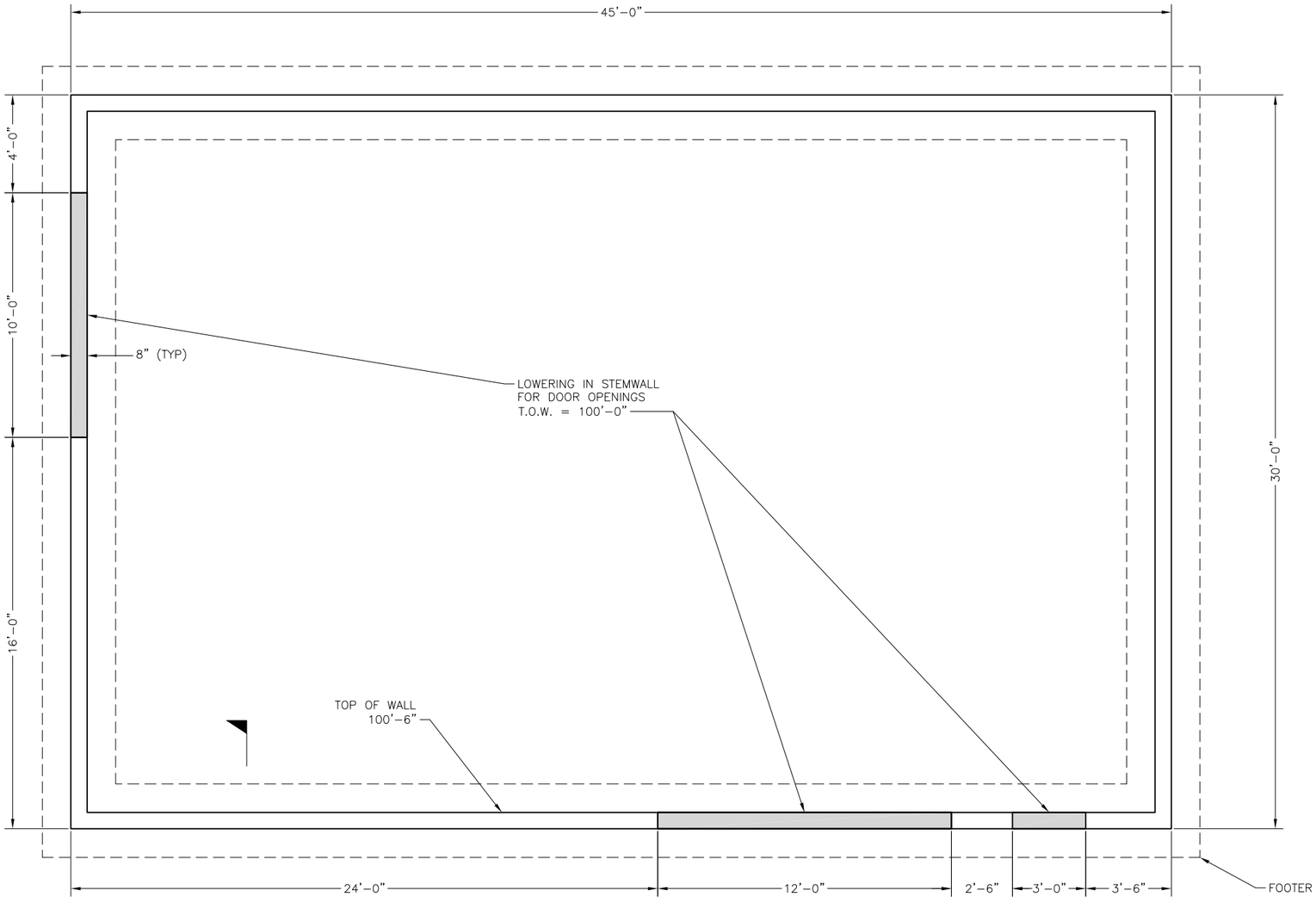
SHEET 1 OF 10



B
S7

STRUCTURAL FOUNDATION PLAN
11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

NOTES:
1. FOR DETAILS CONCERNING DOOR OPENINGS, SEE SHEETS S8–S9.
2. COORDINATE INSTALLATION OF ELECTRICAL CONDUIT ON THE WALL WITH HVAC PLANS. DO NOT PAINT CONDUIT.
3. SEE SHEET S1 FOR GENERAL STRUCTURAL NOTES.

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SADDLEHORN RANCH
OVERALL WATER SYSTEM
STRUCTURAL FOUNDATION PLAN

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RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

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Date: 09/01/21
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Check: RMM

S2
SHEET 2 OF 10

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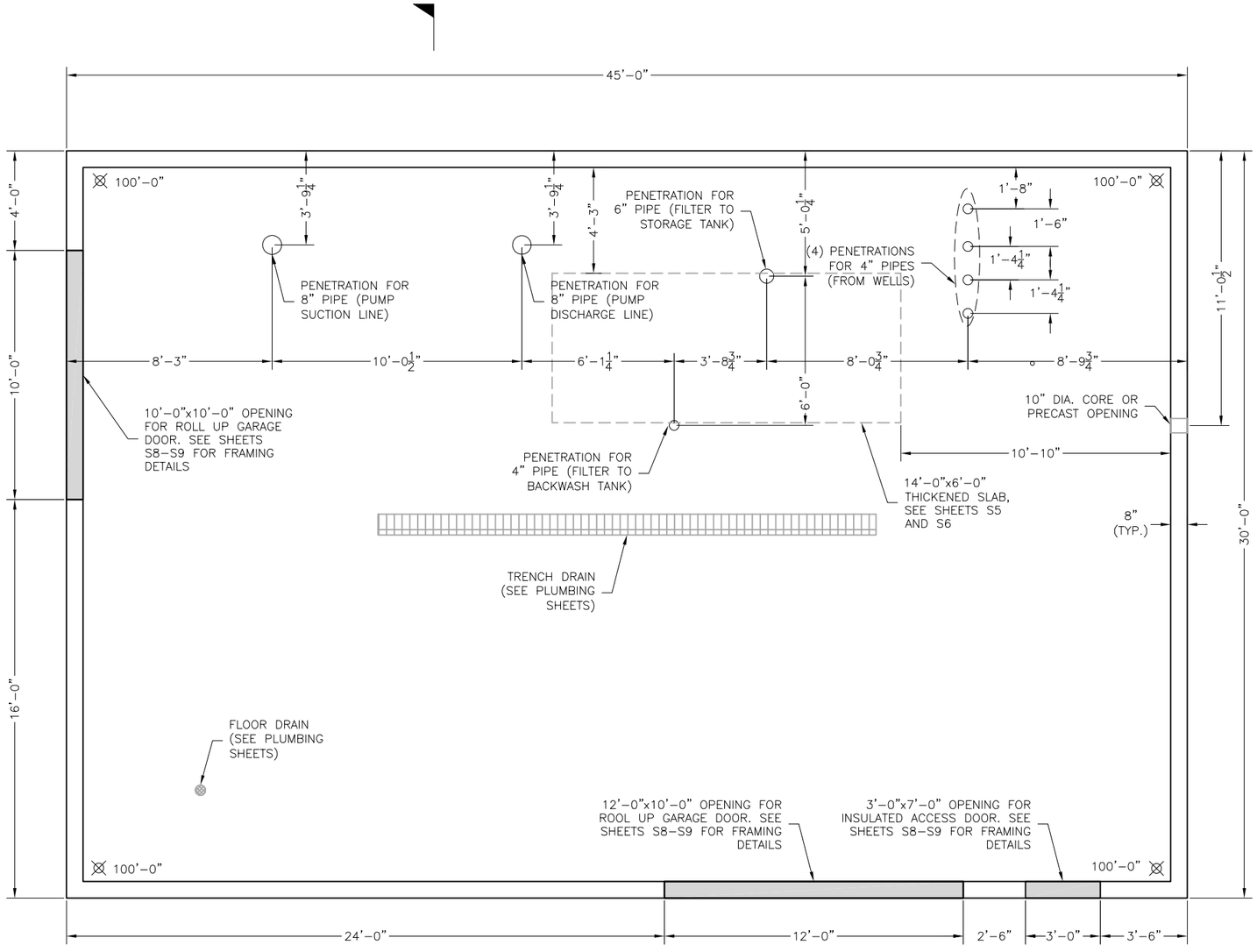

NOTES:
1. SEE STRUCTURAL NOTES FOR PLACEMENT OF CONTROL JOINTS IN FLOOR TOPPING. CONTRACTOR MUST SUBMIT SHOP DRAWINGS OF CRACK CONTROL JOINT LOCATIONS PRIOR TO IMPLEMENTATION.
2. ALL PIPE PENETRATIONS IN FLOOR SLAB MAY BE CORED IN FIELD AFTER PLACEMENT OF CONCRETE FLOOR UNLESS OTHERWISE NOTED ON PLAN SHEET. VERIFY PENETRATION LOCATIONS WITH MECHANICAL SHEETS.

STRUCTURAL FLOOR PLAN

11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

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OVERALL WATER SYSTEM

STRUCTURAL FLOOR PLAN

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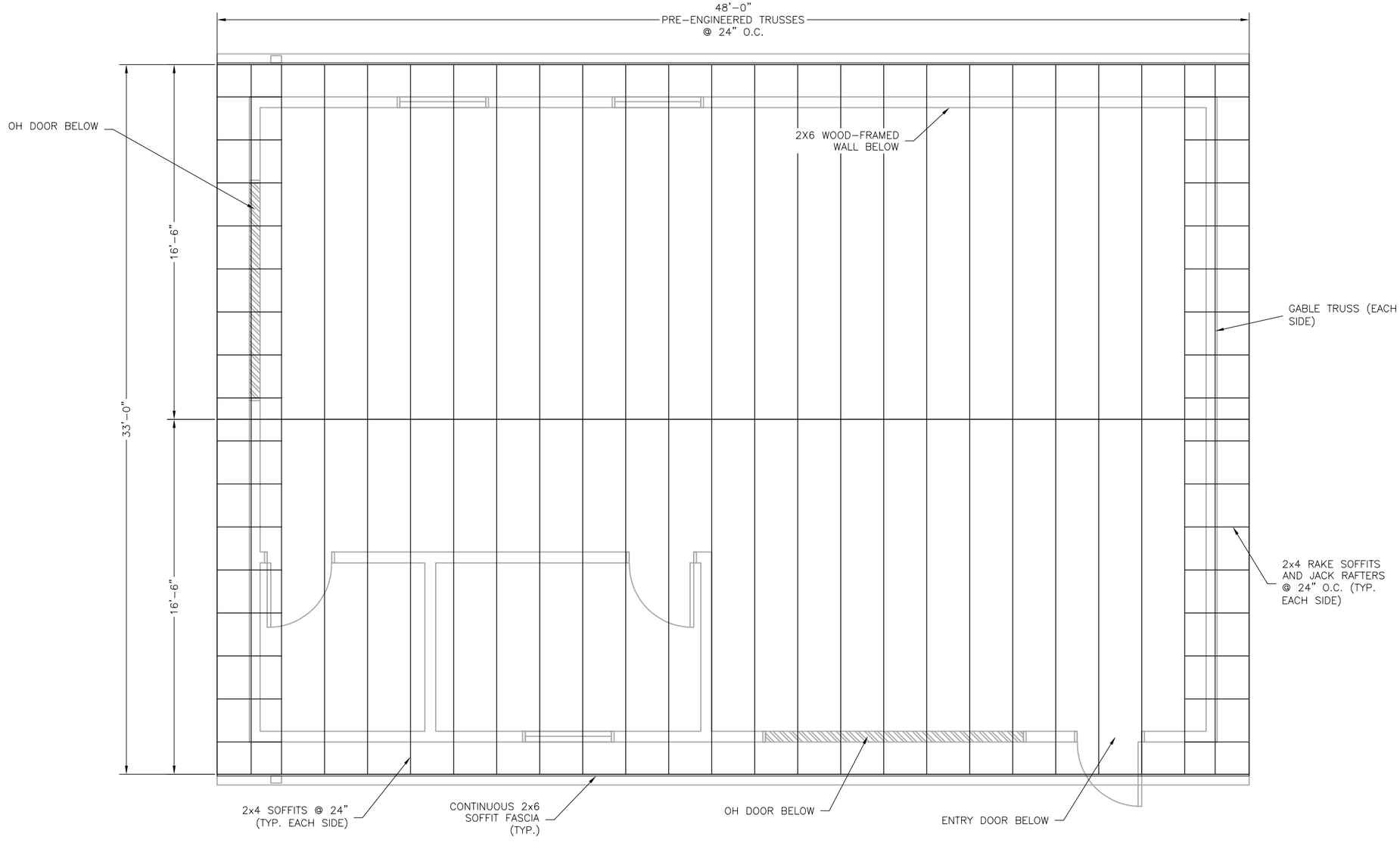
SHEET 3 OF 10



NOTES:
1. PRE-ENGINEERED TRUSSES: SEE GENERAL NOTE SET FOR DESIGN LOADS. SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS PRIOR TO FABRICATION. TOP (RAFTER) AND BOTTOM CHORD (CEILING JOIST) OF TRUSS SHALL BE 2x6's.

STRUCTURAL ROOF FRAMING PLAN

11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

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STRUCTURAL ROOF FRAMING PLAN

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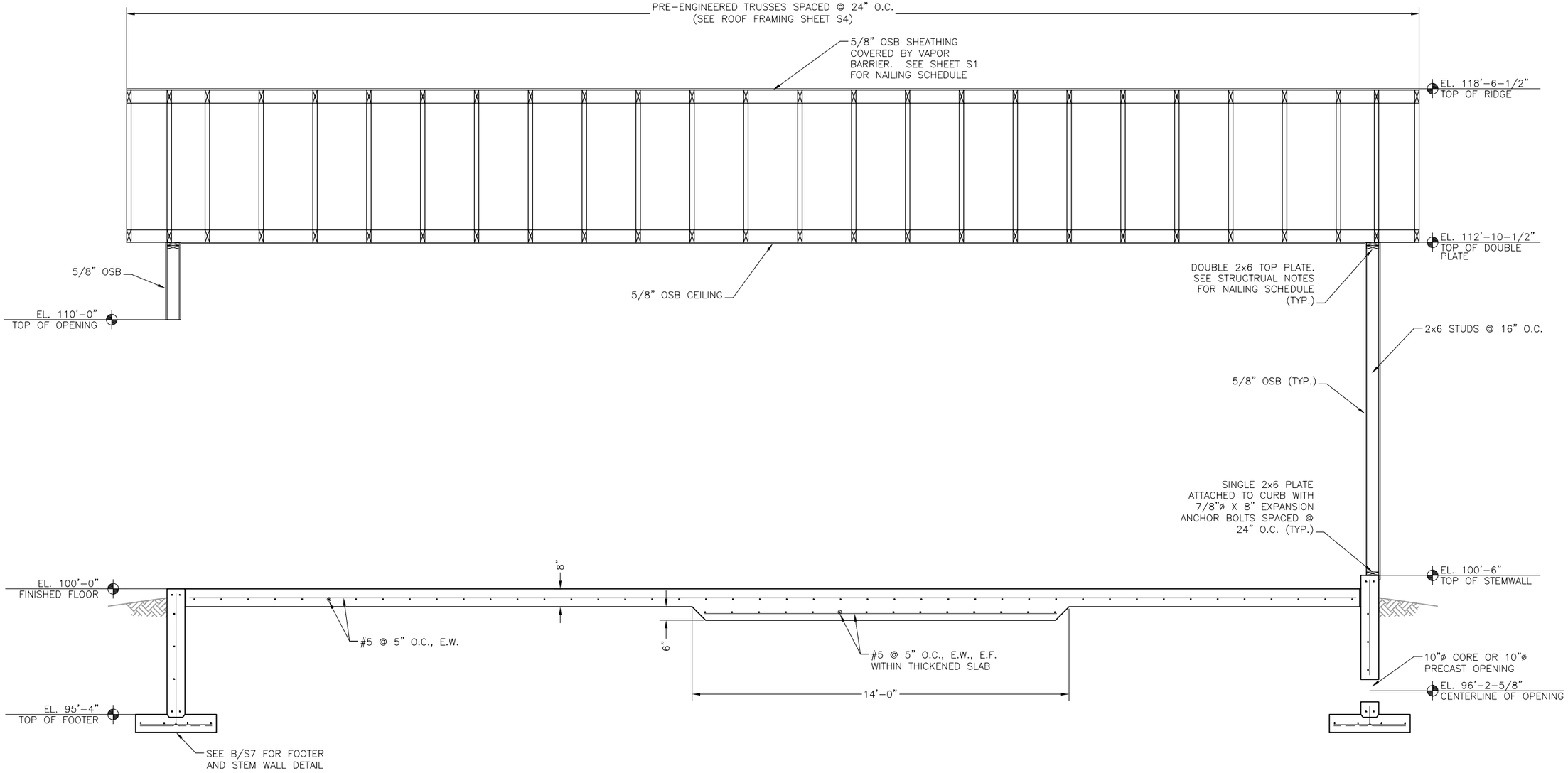
SHEET 4 OF 10



A / S5 **BUILDING SECTION**
11x17 SCALE: 1/4"=1'-0"
24x36 SCALE: 1/2"=1'-0"

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

BUILDING SECTION 1

REVISIONS			
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SHEET 5 OF 10

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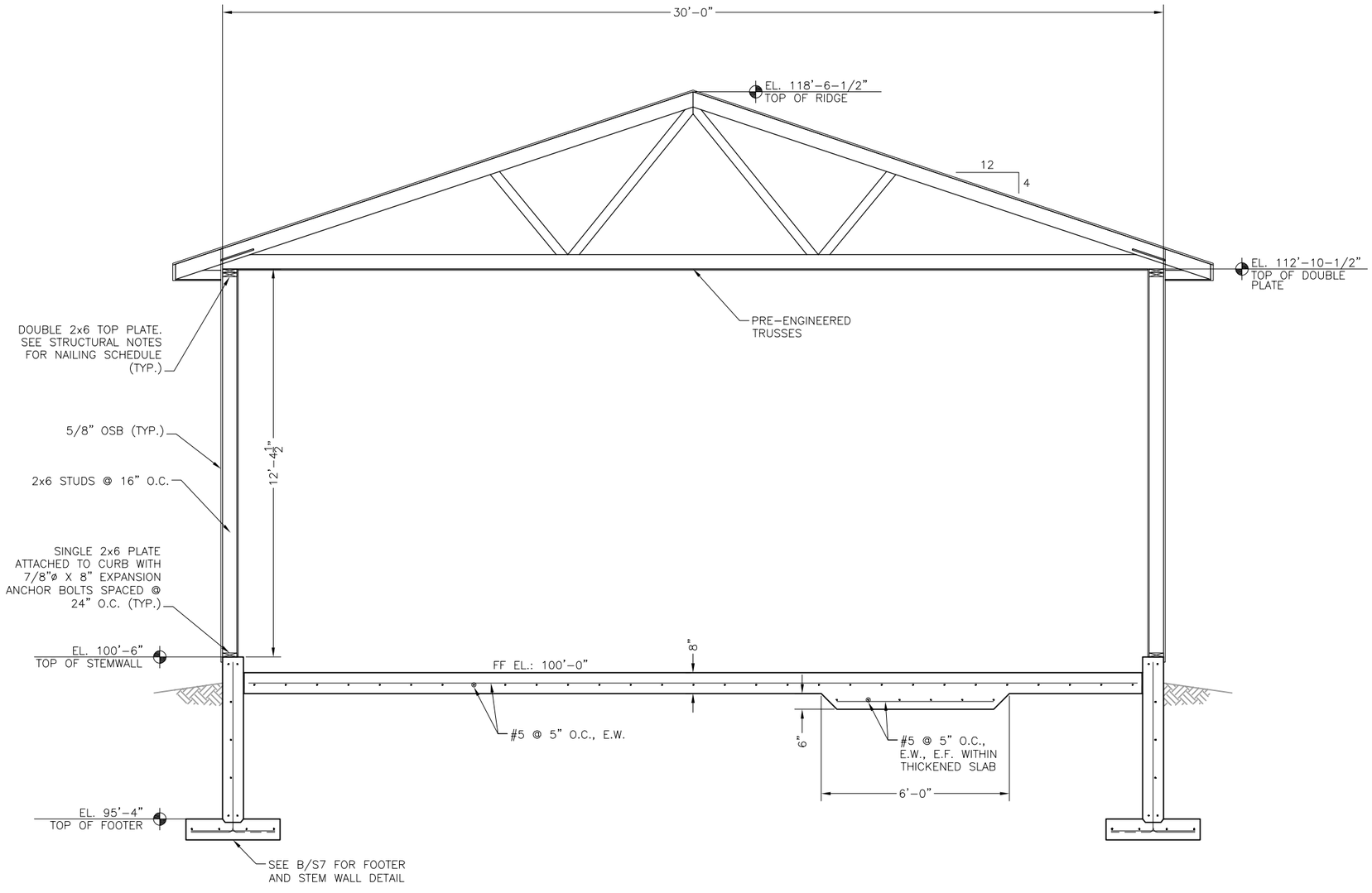

A/S6 **BUILDING SECTION**
11x17 SCALE: 1/4"=1'-0"
24x36 SCALE: 1/2"=1'-0"

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

BUILDING SECTION 2

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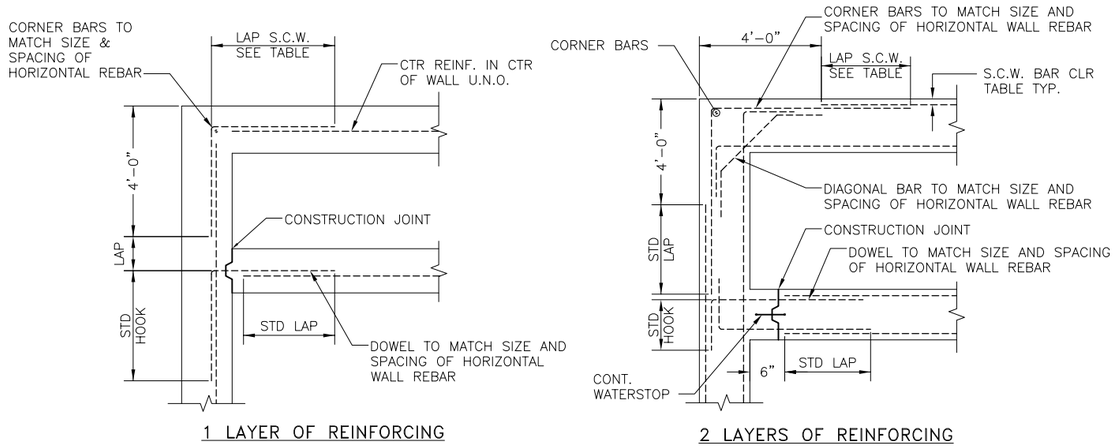
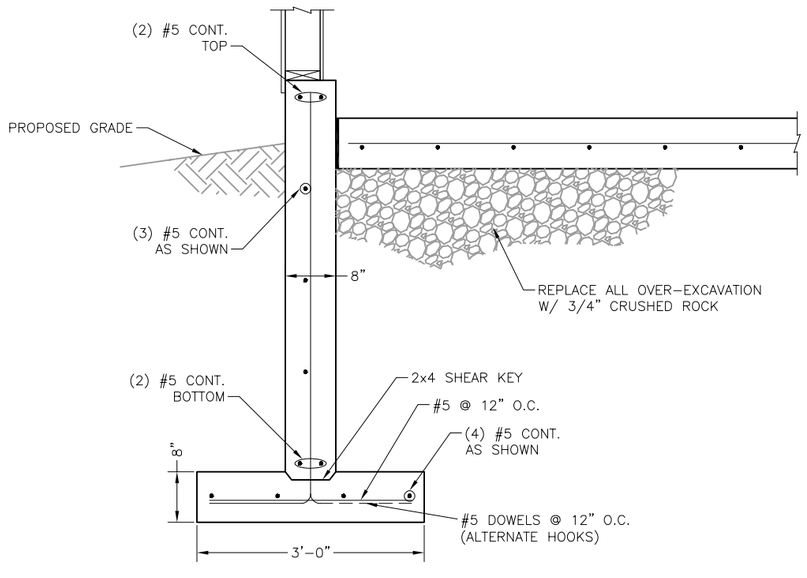
SHEET 6 OF 10

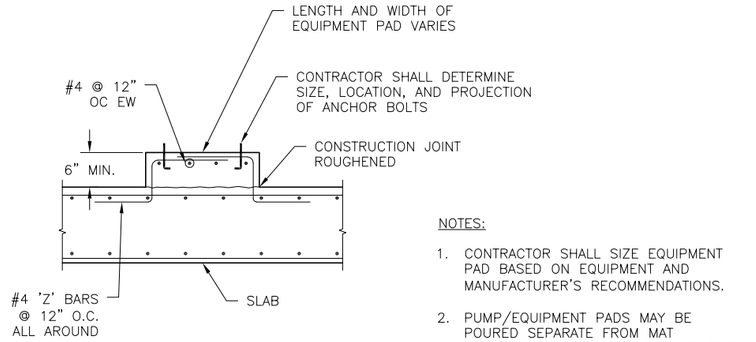


NOTE:
1. SEE TABLES NO. 1 AND NO. 2 ON STRUCTURAL SHEET S1.

A / S7 TYPICAL WALL CORNER DETAIL
SCALE: N.T.S.



B / S7 TYPICAL FOOTER SECTION
11x17 SCALE:1/2"=1'-0"
24x36 SCALE: 1"=1'-0"



NOTES:

1. CONTRACTOR SHALL SIZE EQUIPMENT PAD BASED ON EQUIPMENT AND MANUFACTURER'S RECOMMENDATIONS.
2. PUMP/EQUIPMENT PADS MAY BE POURED SEPARATE FROM MAT FOUNDATION AND GROUT OVERTOPPING.

C / S7 EQUIPMENT PAD DETAIL
SCALE: N.T.S.

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SADDLEHORN RANCH
OVERALL WATER SYSTEM
STRUCTURAL DETAILS 1

REVISIONS			
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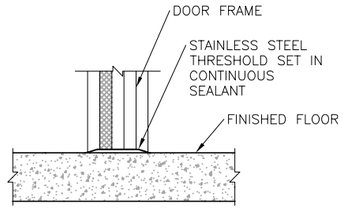
SHEET 7 OF 10



A S8 **DOOR AT THRESHOLD**
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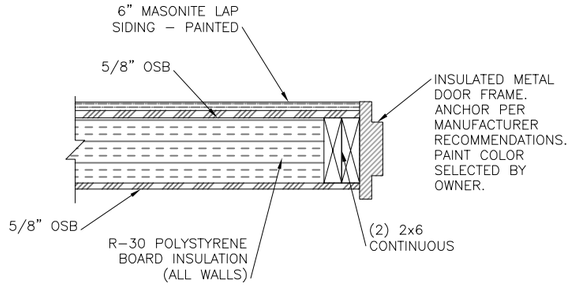

B S8 **DOOR FRAME @ WOODEN JAMB**
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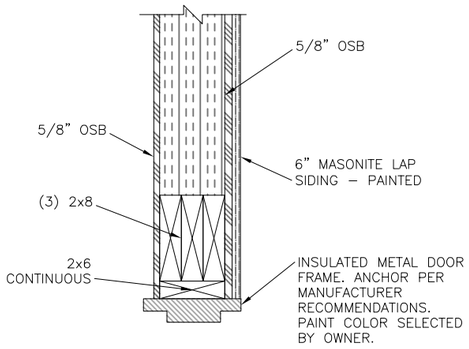

C S8 **DOOR FRAME @ HEADER**
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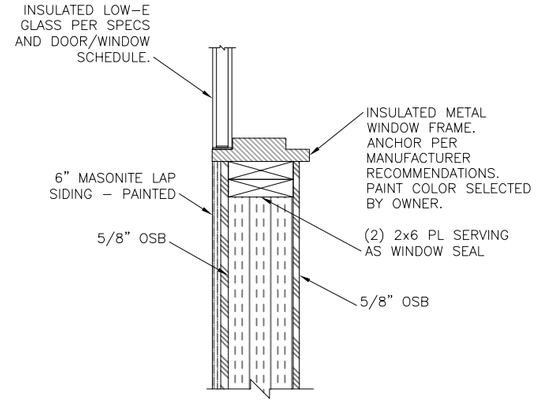

D S8 **WINDOW FRAME @ SILL**
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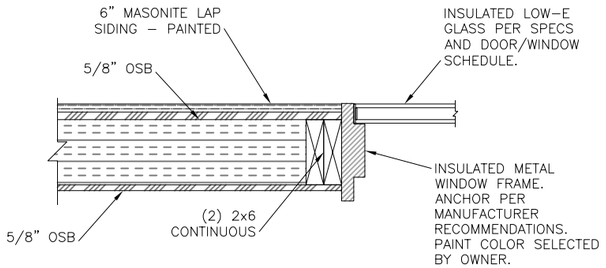

E S8 **WINDOW FRAME @ JAMB**
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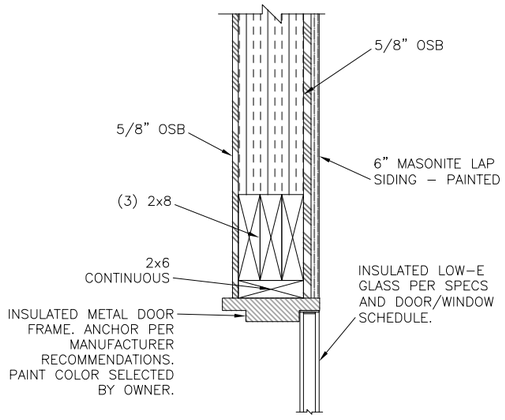

F S8 **WINDOW FRAME @ HEADER**
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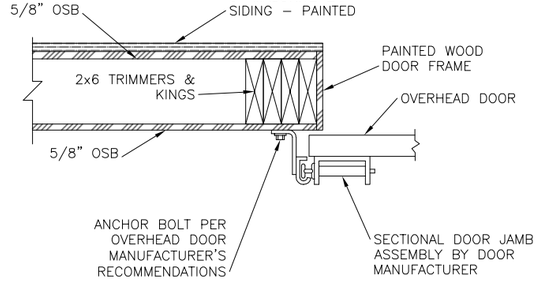

G S8 **OH DOOR FRAME @ JAMB**
SCALE: N.T.S.

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SADDLEHORN RANCH
OVERALL WATER SYSTEM
STRUCTURAL DETAILS 2

REVISIONS

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S8

SHEET 8 OF 10

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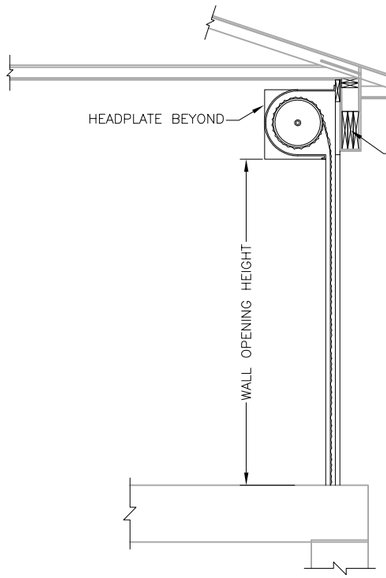
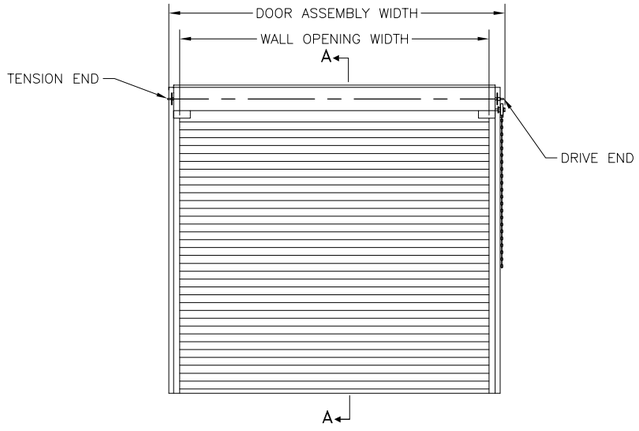
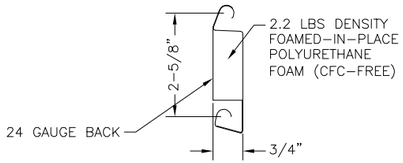
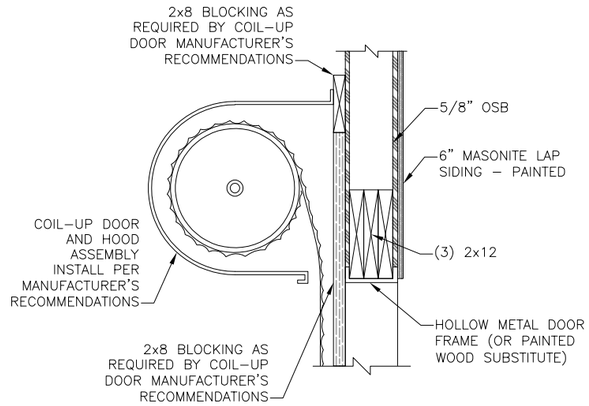


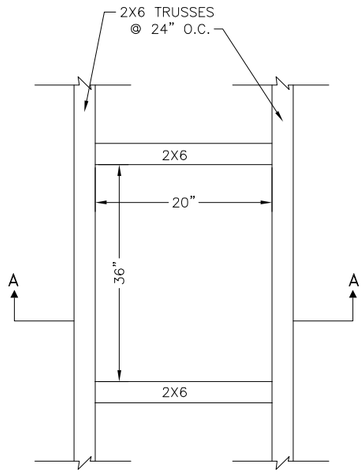


A / S9 COIL–UP DOOR
SCALE: N.T.S.

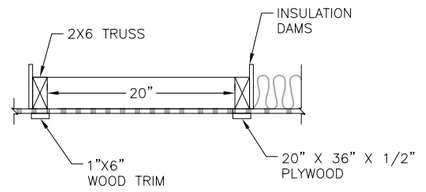




B / S9 COIL–UP DOOR FRAME AT HEADER
SCALE: N.T.S.



PLAN



SECTION A–A

C / S9 ATTIC ACCESS FRAMING
SCALE: N.T.S.

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

STRUCTURAL DETAILS 3

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
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100% COMPLETE

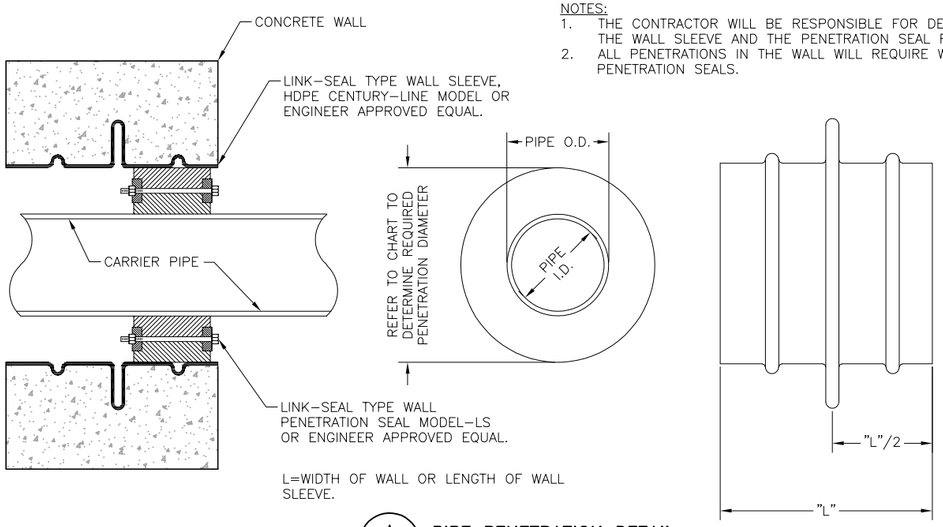
COLORADO LICENSED
RYAN M. MANGINO
49304
PROFESSIONAL ENGINEER
12/1/21

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

S9

SHEET 9 OF 10

2021/12/02 4:57 PM By: Ryan Mangino i:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\311102_2_Structural.dwg

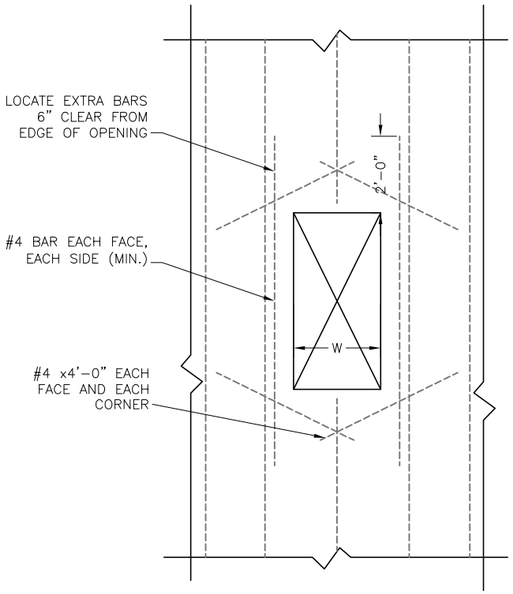


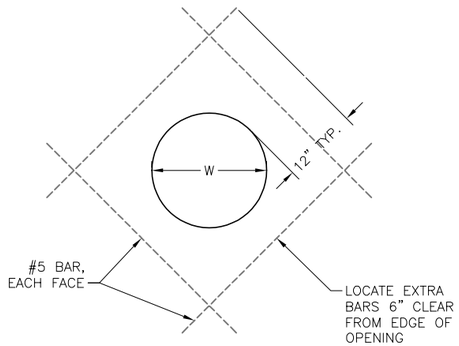
NOTES:
1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING THE SIZE OF THE WALL SLEEVE AND THE PENETRATION SEAL REQUIRED.
2. ALL PENETRATIONS IN THE WALL WILL REQUIRE WALL SLEEVES AND PENETRATION SEALS.

L=WIDTH OF WALL OR LENGTH OF WALL SLEEVE.

A / S10 **PIPE PENETRATION DETAIL**
SCALE: N.T.S.

NOTES:
1. TRANSVERSE REINFORCEMENT NOT SPECIFIED, BUT SHALL BE TREATED IN SAME WAY AS BARS SHOWN.
2. W = DIMENSION OF OPENING PERPENDICULAR TO BARS CUT. W = DIAMETER FOR CIRCULAR OPENING.
3. SUPPLEMENTARY REINFORCEMENT MAY BE OMITTED ONLY WHERE OPENING IS FRAMED BY BEAMS OR WALL.
4. SEE PROCESS, ARCHITECTURAL, AND ELECTRICAL DRAWINGS FOR OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.
5. SUPPLEMENTARY REINFORCEMENT IS NOT REQUIRED WHEN SPECIFIED REINFORCEMENT IS NOT CUT BY PENETRATION.





B / S10 **REINFORCEMENT FOR OPENINGS**
SCALE: N.T.S.

STEEL AND PLASTIC PIPE WITH SAME OUTSIDE DIAMETER (IPS)

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE Model Number	CENTURY-LINE® SLEEVE LINK-SEAL® Size	CENTURY-LINE® SLEEVE Links Per Seal	STEEL SLEEVE Model Number	STEEL SLEEVE LINK-SEAL® Size	STEEL SLEEVE Links Per Seal	CAST OR CORE BIT DRILLED HOLE Hole I.D.	CAST OR CORE BIT DRILLED HOLE LINK-SEAL® Size	CAST OR CORE BIT DRILLED HOLE Links Per Seal
½	0.840	CS-2-*	LS-200-***	4	WS-2-15-S-*	LS-275-***	5	2.000	LS-200-***	4
¾	1.050	CS-3-*	LS-315-***	4	WS-2-½-20-S-*	LS-275-***	6	3.000	LS-315-***	4
1	1.315	CS-3-*	LS-300-***	4	WS-2-½-20-S-*	LS-200-***	5	3.000	LS-300-***	4
1¼	1.660	CS-3-*	LS-275-***	7	WS-3-21-S-*	LS-275-***	8	3.000	LS-275-***	8
1½	1.900	CS-3½-*	LS-275-***	8	WS-3-21-S-*	LS-200-***	7	4.000	LS-315-***	6
2	2.375	CS-4-*	LS-300-***	6	WS-3-½-22-S-*	LS-200-***	8	4.000	LS-300-***	6
2½	2.875	CS-4-*	LS-200-***	9	WS-4-23-S-*	LS-200-***	9	4.000	LS-200-***	9
3	3.500	CS-5-*	LS-300-***	8	WS-6-28-S-*	LS-360-***	7	5.000	LS-300-***	8
3½	4.000	CS-6-*	LS-340-***	10	WS-6-28-S-*	LS-340-***	9	6.000	LS-315-***	10
4	4.500	CS-6-*	LS-300-***	10	WS-6-28-S-*	LS-300-***	10	6.000	LS-300-***	10
5	5.563	CS-8-*	LS-360-***	10	WS-8-32-S-*	LS-340-***	13	8.000	LS-340-***	13
6	6.625	CS-10-*	LS-475-***	10	WS-10-36-S-*	LS-475-***	10	10.000	LS-475-***	10
8	8.625	CS-12-*	LS-475-***	12	WS-12-37-S-*	LS-475-***	12	12.000	LS-475-***	12
10	10.750	CS-14-*	LS-410-***	15	WS-14-37-S-*	LS-425-***	10	14.000	LS-475-***	14
12	12.750	CS-16-*	LS-475-***	17	WS-16-37-S-*	LS-425-***	12	16.000	LS-475-***	17
14	14.000	CS-16-*	LS-340-***	30	WS-18-37-S-*	LS-475-***	18	18.000	LS-575-***	16
16	16.000	CS-20-*	LS-410-***	21	WS-20-37-S-*	LS-475-***	21	20.000	LS-575-***	18
18	18.000	CS-22-*	LS-340-***	38	WS-22-37-S-*	LS-475-***	23	22.000	LS-575-***	20
20	20.000	CS-25-*	LS-500-***	18	WS-24-37-S-*	LS-475-***	25	24.000	LS-475-***	26
22	22.000	CS-25-*	LS-360-***	34	WS-26-37-S-*	LS-475-***	28	26.000	LS-575-***	24
24	24.000	CC-30-**	LS-500-***	21	WS-28-37-S-*	LS-475-***	30	28.000	LS-475-***	31
26	26.000	CC-30-**	LS-400-***	23	WS-30-37-S-*	LS-400-***	23	30.000	LS-575-***	28
28	28.000	CC-32-**	LS-400-***	25	WS-32-37-S-*	LS-400-***	25	32.000	LS-575-***	30
30	30.000	CC-36-**	LS-500-***	26	WS-34-37-S-*	LS-400-***	27	34.000	LS-575-***	32
32	32.000	CC-38-**	LS-500-***	28	WS-36-37-S-*	LS-400-***	29	36.000	LS-575-***	34
34	34.000	CC-38-**	LS-400-***	30	WS-40-37-S-*	LS-500-***	29	38.000	LS-575-***	36
36	36.000	CC-42-**	LS-500-***	31	WS-42-37-S-*	LS-500-***	31	40.000	LS-575-***	38
42	42.000	CC-48-**	LS-500-***	36	WS-48-37-S-*	LS-500-***	36	46.000	LS-575-***	44
48	48.000	CC-54-**	LS-500-***	40	WS-53-37-S-*	LS-525-***	40	52.000	LS-575-***	50

* = Specify sleeve length in inches ** = See CELL-CAST® Page 25 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)
Technically there is no limit to the pipe size that can be sealed using LINK-SEAL® modular seals. Please contact factory for sizes not listed and for CS model plastic sleeves for walls less than 8" thick.
NOTE: Contact GPT (1-800-423-2410) or your local distributor if your pipe sizing solution is not listed in the provided charts

MADE IN AMERICA

DUCTILE IRON PIPE (DIPS, AWWA-C900, AWWA-C905, PVC WATER PIPE)

Pipe Size (Nom.)	Actual O.D. (Inches)	CENTURY-LINE® SLEEVE Model Number	CENTURY-LINE® SLEEVE LINK-SEAL® Size	CENTURY-LINE® SLEEVE Links Per Seal	STEEL SLEEVE Model Number	STEEL SLEEVE LINK-SEAL® Size	STEEL SLEEVE Links Per Seal	CAST OR CORE BIT DRILLED HOLE Hole I.D.	CAST OR CORE BIT DRILLED HOLE LINK-SEAL® Size	CAST OR CORE BIT DRILLED HOLE Links Per Seal
2	2.500	CS-4-*	LS-300-***	6	WS-3-½-22-S-*	LS-200-***	8	4.000	LS-300-***	6
2½	2.750	CS-4-*	LS-275-***	10	WS-4-23-S-*	LS-200-***	9	4.000	LS-200-***	9
3	3.960	CS-6-*	LS-340-***	10	WS-6-28-S-*	LS-340-***	9	6.000	LS-315-***	10
4	4.800	CS-8-*	LS-410-***	7	WS-8-32-S-*	LS-410-***	7	8.000	LS-410-***	7
6	6.900	CS-10-*	LS-475-***	10	WS-10-36-S-*	LS-410-***	10	10.000	LS-410-***	10
8	9.050	CS-12-*	LS-400-***	9	WS-12-37-S-*	LS-400-***	9	12.000	LS-400-***	9
10	11.100	CS-14-*	LS-410-***	15	WS-14-37-S-*	LS-340-***	24	14.000	LS-400-***	10
12	13.200	CS-18-*	LS-575-***	15	WS-18-37-S-*	LS-475-***	18	16.000	LS-360-***	21
14	15.300	CS-20-*	LS-475-***	20	WS-20-37-S-*	LS-575-***	17	18.000	LS-360-***	24
16	17.400	CS-22-*	LS-360-***	28	WS-22-37-S-*	LS-475-***	23	20.000	LS-360-***	27
18	19.500	CS-24-*	LS-410-***	25	WS-24-37-S-*	LS-575-***	21	24.000	LS-525-***	17
20	21.600	CS-25-*	LS-400-***	20	WS-26-37-S-*	LS-475-***	27	26.000	LS-525-***	19
24	25.800	CC-30-**	LS-400-***	23	WS-30-37-S-*	LS-400-***	23	28.000	LS-425-***	23
30	32.000	CC-38-**	LS-500-***	28	WS-36-37-S-*	LS-400-***	29	36.000	LS-575-***	34
36	38.300	CC-44-**	LS-500-***	33	WS-44-½-37-S-*	LS-500-***	33	42.000	LS-575-***	40
42	44.500	CC-50-**	LS-500-***	38	WS-50-37-S-*	LS-500-***	38	50.000	LS-500-***	38
48	50.800	CC-56-**	LS-500-***	43	WS-57-37-S-*	LS-500-***	43	56.000	LS-500-***	43

= Specify sleeve length in inches ** = See CELL-CAST® Page 25 *** = Specify LS Model C, S-316, L...etc when ordering (Example LS-475-C-17)

Technically there is no limit to the conduit or pipe size that can be sealed using LINK-SEAL® Modular Seals. Please contact factory for sizes not listed and for CS model plastic sleeves for walls less than 8" thick.

MADE IN AMERICA

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
STRUCTURAL DETAILS 4

REVISIONS NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
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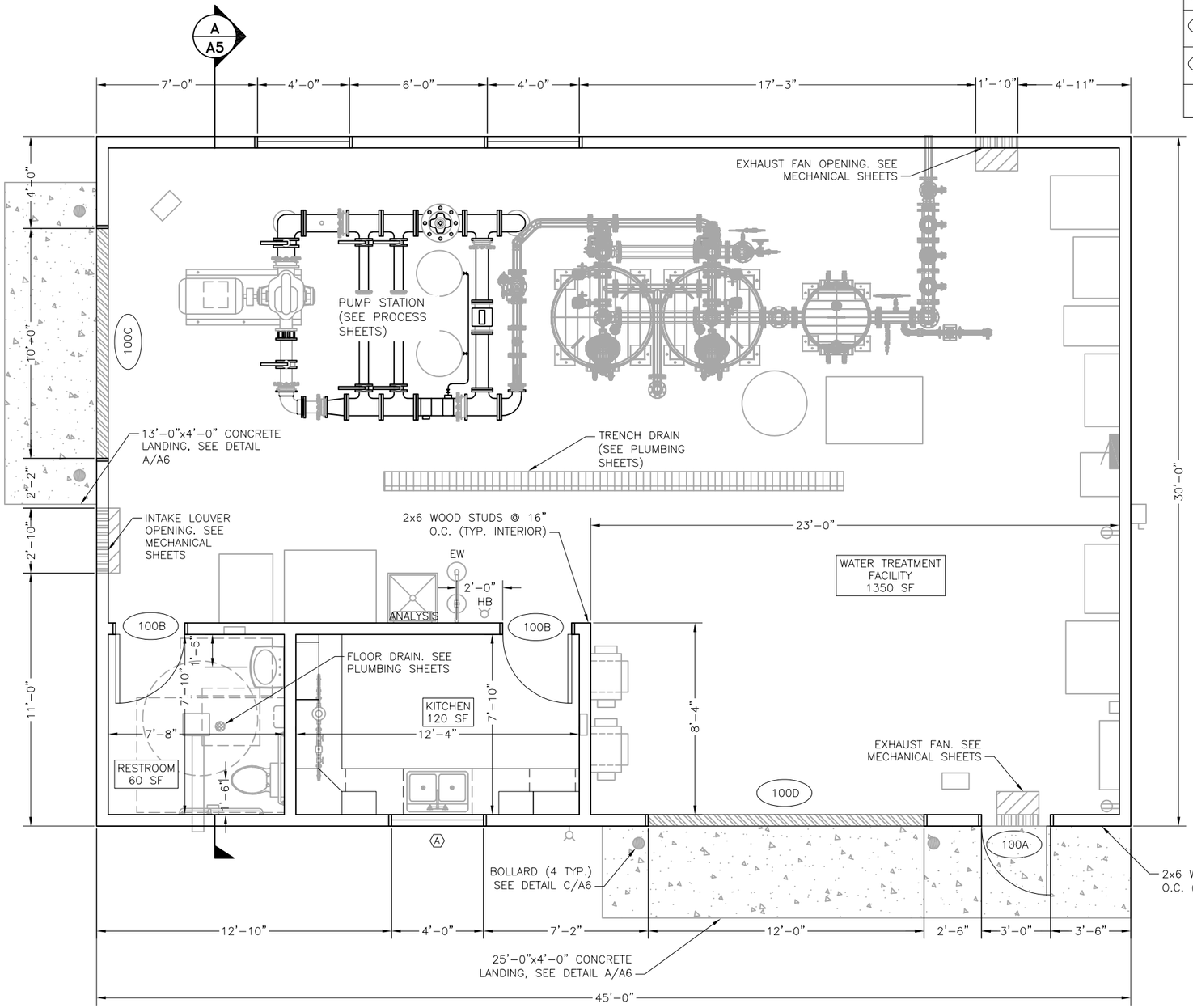
100% COMPLETE

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

S10
SHEET 10 OF 10



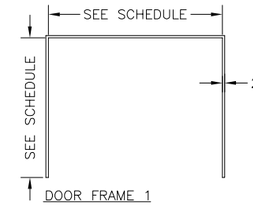
ARCHITECTURAL FLOOR PLAN

11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

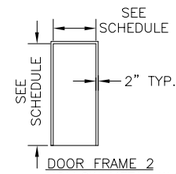
DOOR/WINDOW SCHEDULE									
PLAN MARK	SIZE	DOOR			FRAME			*GLAZING TYPE	REMARKS
		TYPE	MAT'L.	FINISH	TYPE	MAT'L.	FINISH		
100A	3'-0" x 7'-0"	B	HM	PAINT	2	HM	PAINT		
100B	3'-0" x 7'-0"	A	HM	PAINT	2	HM	PAINT		
100C	10'-0" WIDE 10'-0" HIGH	C	STEEL	PAINT	1	HM	PAINT		• SEE MANUFACTURER'S SPECIFICATIONS FOR HARDWARE
100D	12'-0" WIDE 10'-0" HIGH	C	STEEL	PAINT	1	HM	PAINT		• SEE MANUFACTURER'S SPECIFICATIONS FOR HARDWARE
A	4'-0" WIDE 2'-0" HIGH				SEE BELOW	HM	PAINT	A	• FIXED, MOUNT 4'-6" A.F.F.

NOTE: SEE SPECIFICATIONS FOR HARDWARE

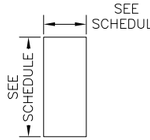
*GLAZING LEGEND	
A	INSULATED, LAMINATED, LOW-E



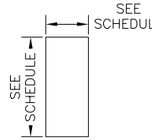
DOOR FRAME 1
MC8 STEEL CHANNEL FRAME W/ FIELD-WELDED CORNERS – SHOP PRIME FOR FIELD PAINT



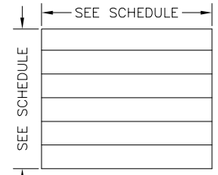
DOOR FRAME 2
HOLLOW METAL W/ FACTORY-WELDED CORNERS – SHOP PRIME FOR FIELD PAINT GAUGE PER SPEC



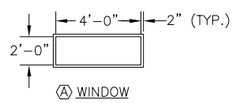
DOOR TYPE A
INTERIOR, 18 GAUGE, INSULATED HOLLOW METAL FLUSH FACE DOOR W/ SHOP PRIME FOR FIELD PAINT



DOOR TYPE B
EXTERIOR, 14 GAUGE, INSULATED HOLLOW METAL FLUSH FACE DOOR W/ SHOP PRIME FOR FIELD PAINT



DOOR TYPE C
2-INCH THICK, INSULATED STEEL SECTIONAL OVERHEAD DOOR. 26 GA. EXTERIOR STEEL, 29 GA. INTERIOR STEEL. POLYSTYRENE INSULATION (MIN. R VALUE OF 9). HARDWARE PER MANUFACTURER



A WINDOW

EXTERIOR ALUMINUM WINDOW, SEE ABOVE FOR GLAZING. FACTORY WELDED CORNERS – SHOP PRIME FOR FIELD PAINT. GAUGE PER SPEC

DOOR/WINDOW SCHEDULE DETAILS

SCALE: N.T.S.

NOTES:
1. OWNER TO SELECT PAINT COLOR FOR ALL PAINTED SURFACES, INCLUDING DOORS, TRIM, INTERIOR AND EXTERIOR MATERIALS. SEE SPECIFICATIONS FOR FINISHES.
2. EXPOSED CONCRETE SURFACES SHALL BE COATED WITH WATERPROOFING PER SPECIFICATIONS.
3. BOLLARDS SHALL BE PAINTED SAFETY YELLOW.
4. FINISHED FLOOR ELEVATION VARIES. SEE STRUCTURAL FLOOR PLAN.
5. SEE SHEET A7 FOR RESTROOM ELEVATIONS.
6. SEE SHEET A8 FOR KITCHEN ELEVATIONS.
7. FINISHED FLOOR ELEVATION VARIES. SEE STRUCTURAL FLOOR PLAN.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

ARCHITECTURAL FLOOR PLAN

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
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100% COMPLETE

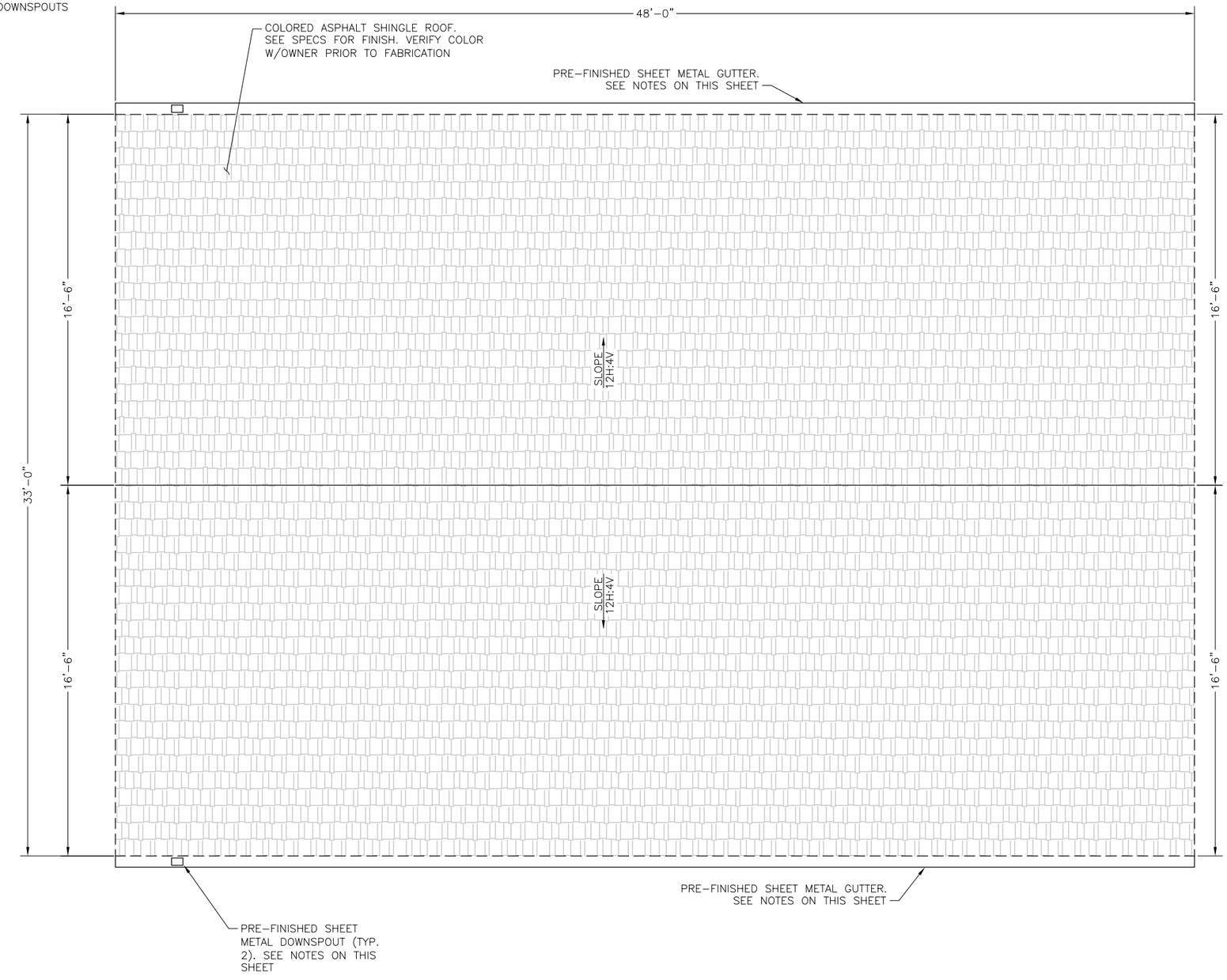
COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG/ACH
Check:	RMM

A1

SHEET 1 OF 9

NOTES:
1. OWNER TO SELECT PAINT COLOR FOR ALL PAINTED SURFACES, INCLUDING DOORS, TRIM, INTERIOR AND EXTERIOR MATERIALS. SEE SPECIFICATIONS FOR FINISHES.
2. OWNER TO SELECT PAINT COLORS OF GUTTER DOWNSPOUT PAINT AND THE COLOR OF ASPHALT SHINGLES. SEE SPECS FOR FINISH. VERIFY COLOR WITH OWNER PRIOR TO FABRICATION.
3. SUBMIT SHOP DRAWINGS FOR GUTTERS AND DOWNSPOUTS FOR APPROVAL PRIOR TO FABRICATION.



ARCHITECTURAL ROOF PLAN

11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

ARCHITECTURAL ROOF PLAN

REVISIONS

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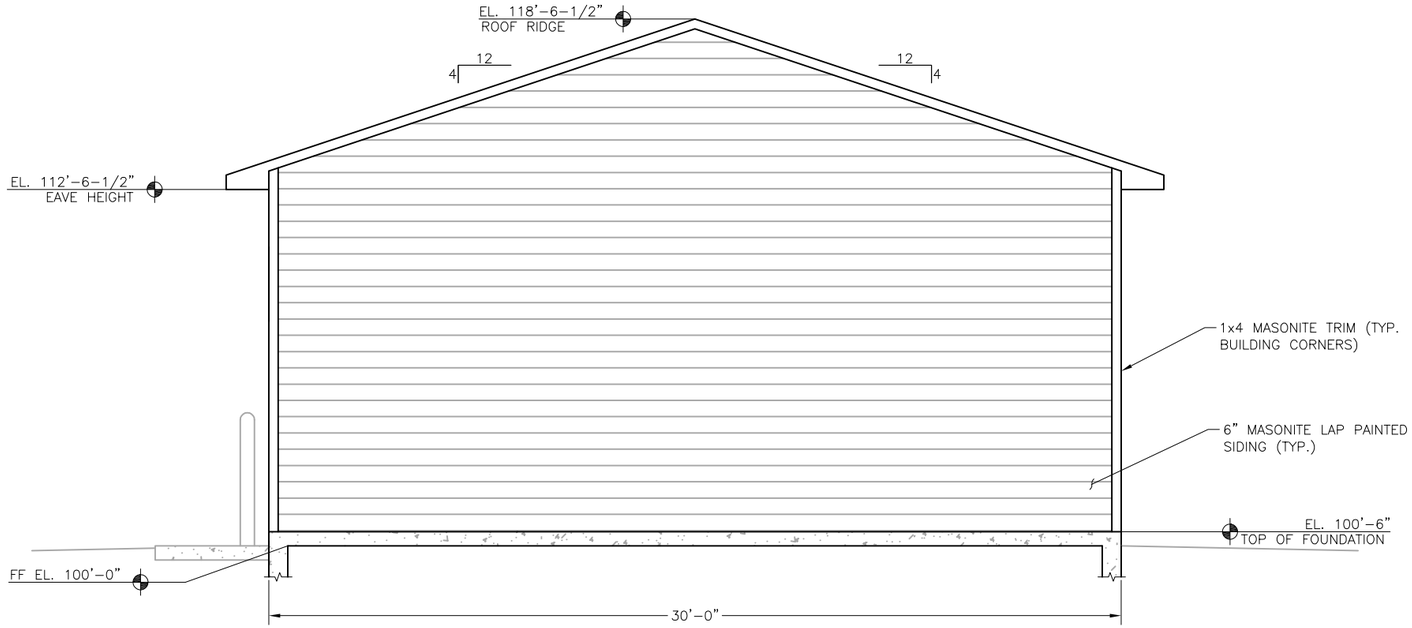
100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

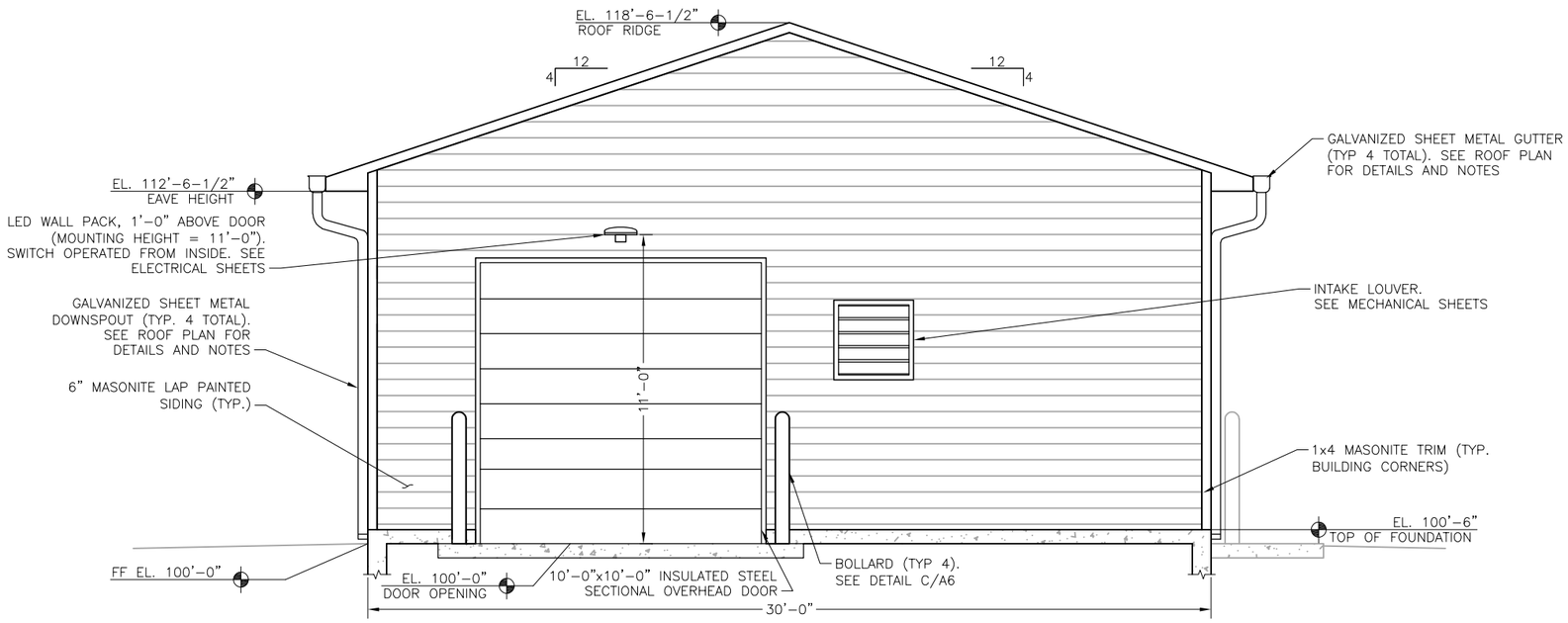
Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG/ACH
Check: RMM

A2

SHEET 2 OF 9



NORTH ELEVATION
11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"



SOUTH ELEVATION
11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

NOTES:
1. OWNER TO SELECT PAINT COLOR FOR ALL PAINTED SURFACES, INCLUDING DOORS, TRIM, INTERIOR AND EXTERIOR MATERIALS. SEE SPECIFICATIONS FOR FINISHES.
2. OWNER TO SELECT PAINT COLORS OF GUTTER DOWNSPOUT PAINT AND THE COLOR OF ASPHALT SHINGLES. SEE SPECS FOR FINISH. VERIFY COLOR WITH OWNER PRIOR TO FABRICATION.
3. SUBMIT SHOP DRAWINGS FOR GUTTERS AND DOWNSPOUTS FOR APPROVAL PRIOR TO FABRICATION.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
NORTH/SOUTH BUILDING ELEVATIONS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
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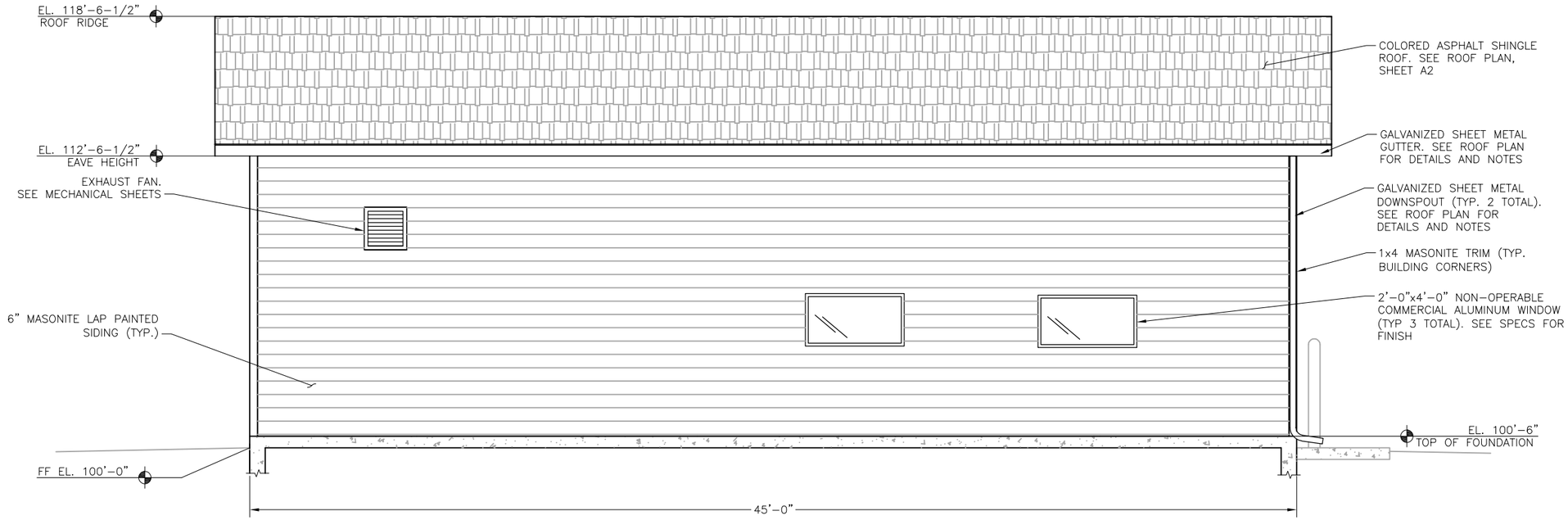
100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 12/1/21

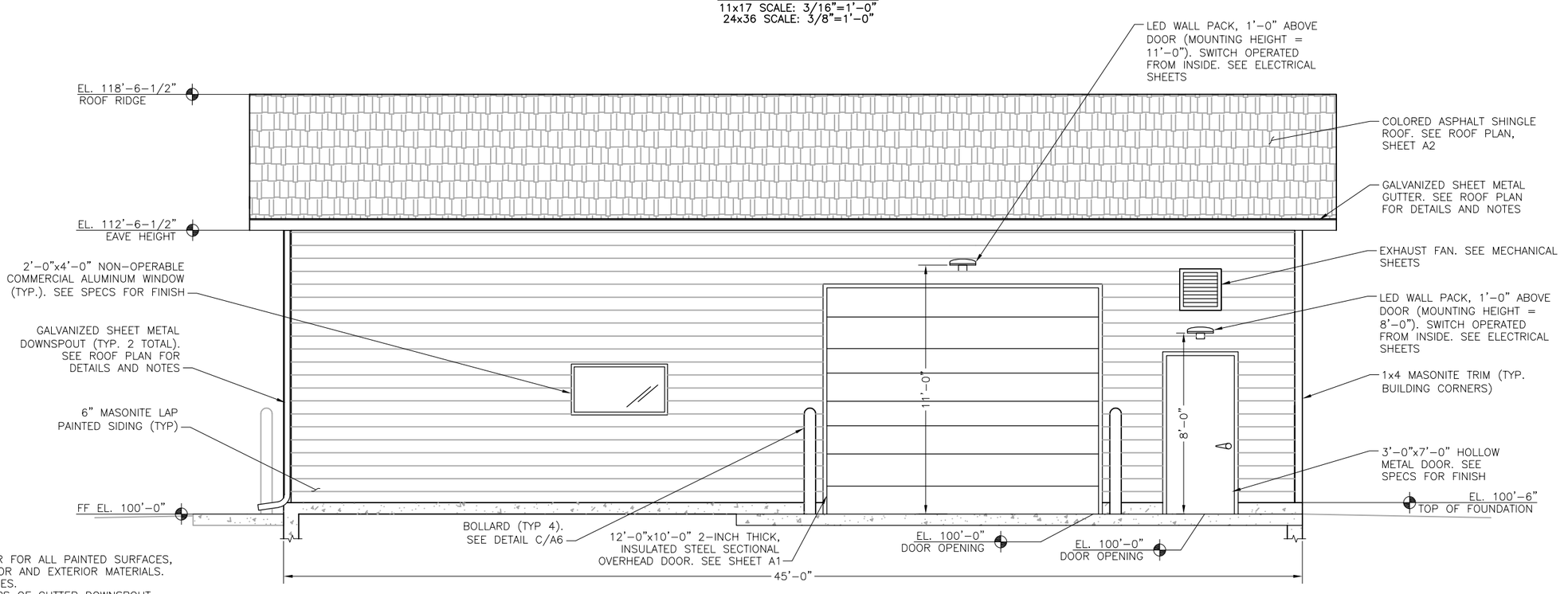
Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG/ACH
Check:	RMM

A3

SHEET 3 OF 9



WEST ELEVATION
11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"



EAST ELEVATION
11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

NOTES:
1. OWNER TO SELECT PAINT COLOR FOR ALL PAINTED SURFACES, INCLUDING DOORS, TRIM, INTERIOR AND EXTERIOR MATERIALS. SEE SPECIFICATIONS FOR FINISHES.
2. OWNER TO SELECT PAINT COLORS OF GUTTER DOWNSPOUT PAINT AND THE COLOR OF ASPHALT SHINGLES. SEE SPECS FOR FINISH. VERIFY COLOR WITH OWNER PRIOR TO FABRICATION.
3. SUBMIT SHOP DRAWINGS FOR GUTTERS AND DOWNSPOUTS FOR APPROVAL PRIOR TO FABRICATION.

PCD File No. PPR-21-020

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COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
EAST/WEST BUILDING ELEVATIONS

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
1				
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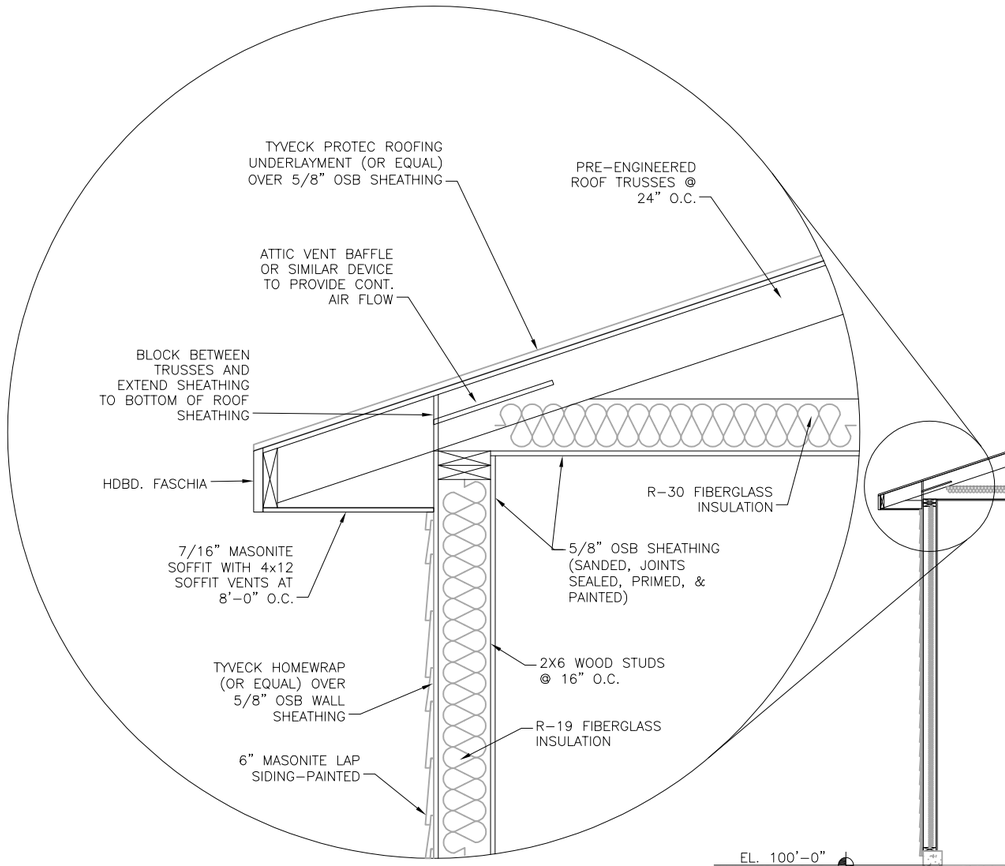
100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

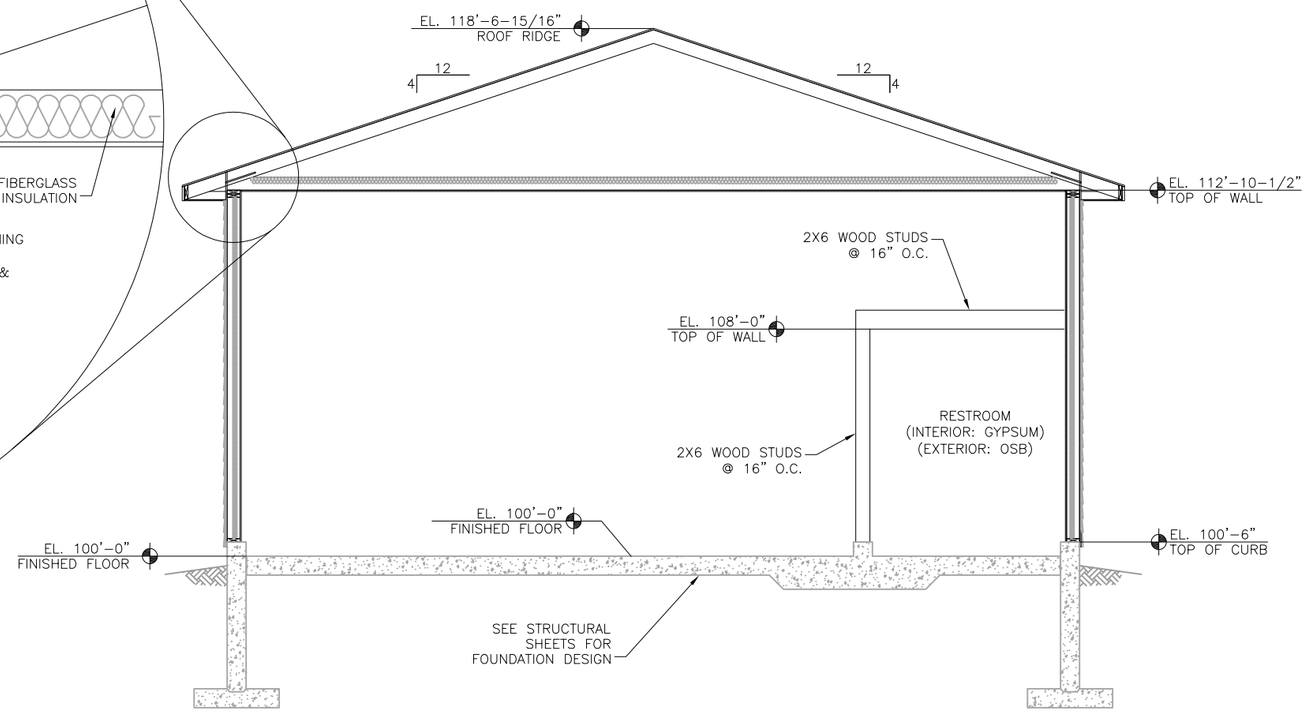
Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG/ACH
Check:	RMM

A4

SHEET 4 OF 9



BUILDING SECTION
SCALE: N.T.S.



A5 SECTION
11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

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SADDLEHORN RANCH
OVERALL WATER SYSTEM
ARCHITECTURAL SECTIONS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
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RYAN M. MANGINO
43304
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9/1/21

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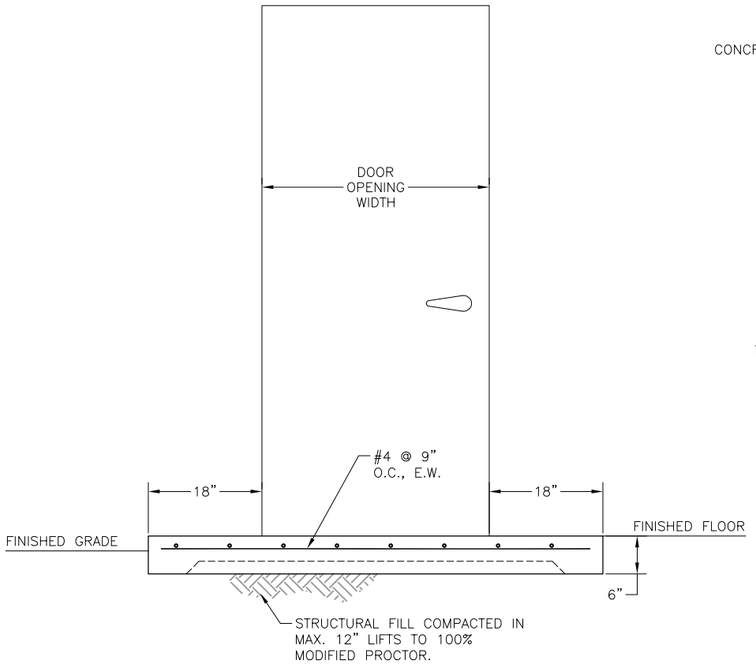
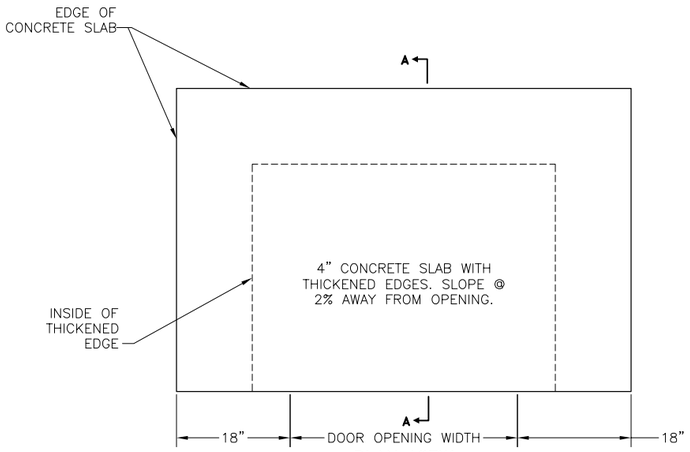
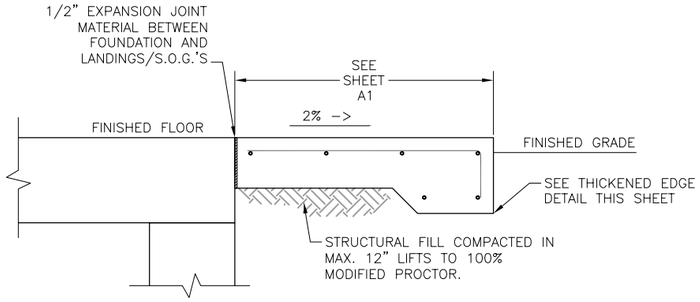
A5
SHEET 5 OF 9



ELEVATION VIEW

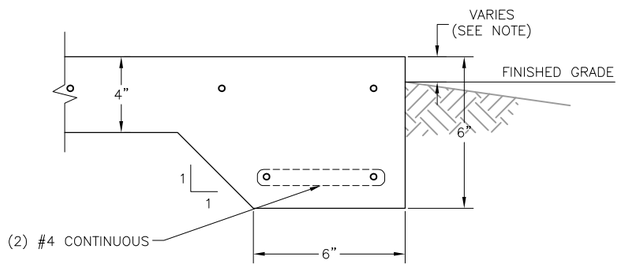


PLAN VIEW



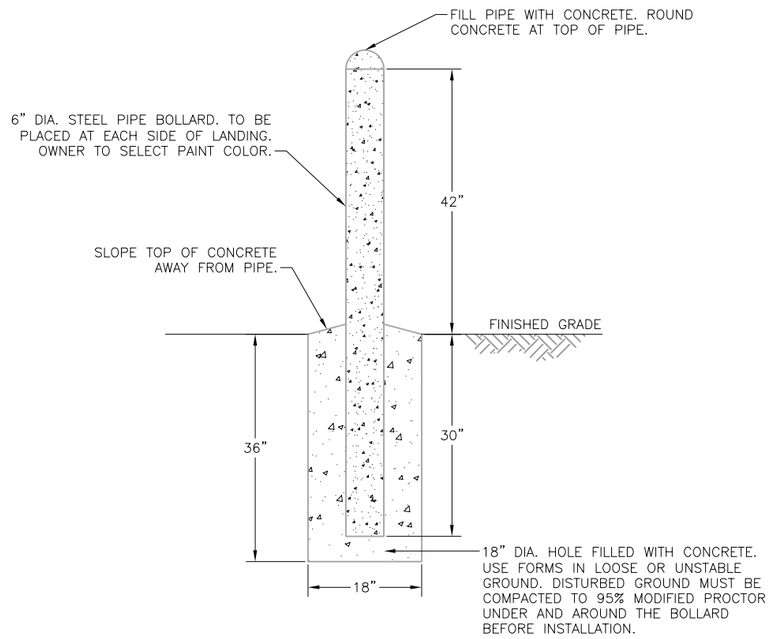
SECTION A–A

A / A6 TYPICAL DOORWAY LANDING
SCALE: N.T.S.



NOTE:
THE DEPTH OF FINISH GRADE TO TOP OF CONCRETE SLAB VARIES. 2" FOR SOD OR LANDSCAPE APPLICATIONS. MATCH TOP OF ADJACENT CONCRETE OR ASPHALT.

B / A6 THICKENED EDGE DETAIL
SCALE: N.T.S.



C / A6 BOLLARD DETAIL
SCALE: N.T.S.

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SADDLEHORN RANCH
OVERALL WATER SYSTEM
ARCHITECTURAL DETAILS

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
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100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
12/1/21

Project No.:	311.02
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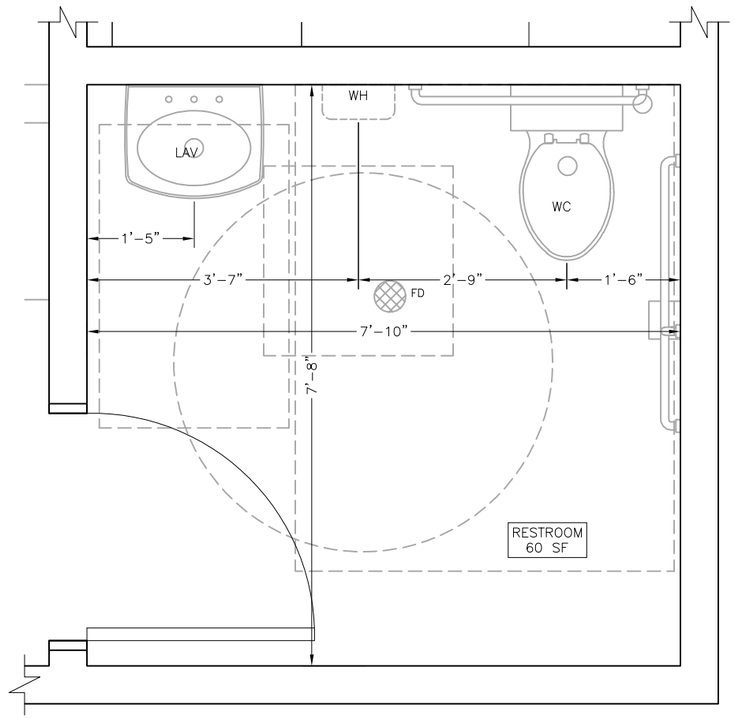
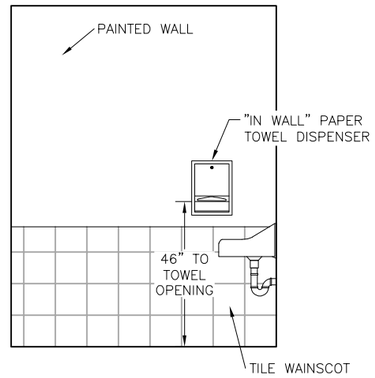
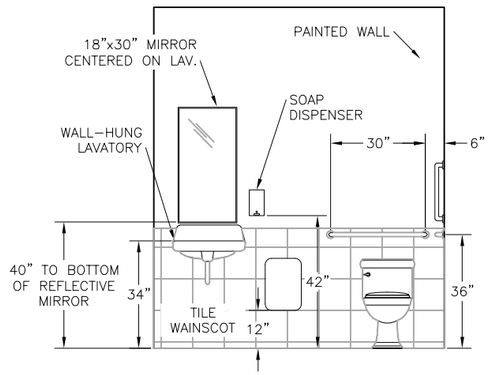
A6
SHEET 6 OF 9



RESTROOM FLOOR PLAN
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"



WEST RESTROOM ELEVATION
11x17 SCALE: 1/4"=1'-0"
24x36 SCALE: 1/2"=1'-0"



NORTH RESTROOM ELEVATION
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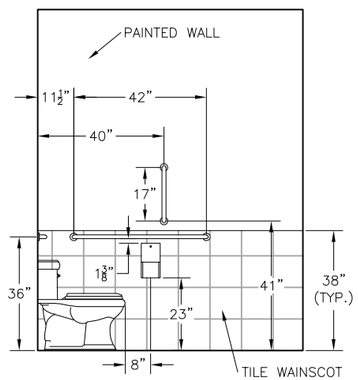
24x36 SCALE: 1/2"=1'-0"



EAST RESTROOM ELEVATION
11x17 SCALE: 1/4"=1'-0"
24x36 SCALE: 1/2"=1'-0"

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JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

RESTROOM DETAILS

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
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100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
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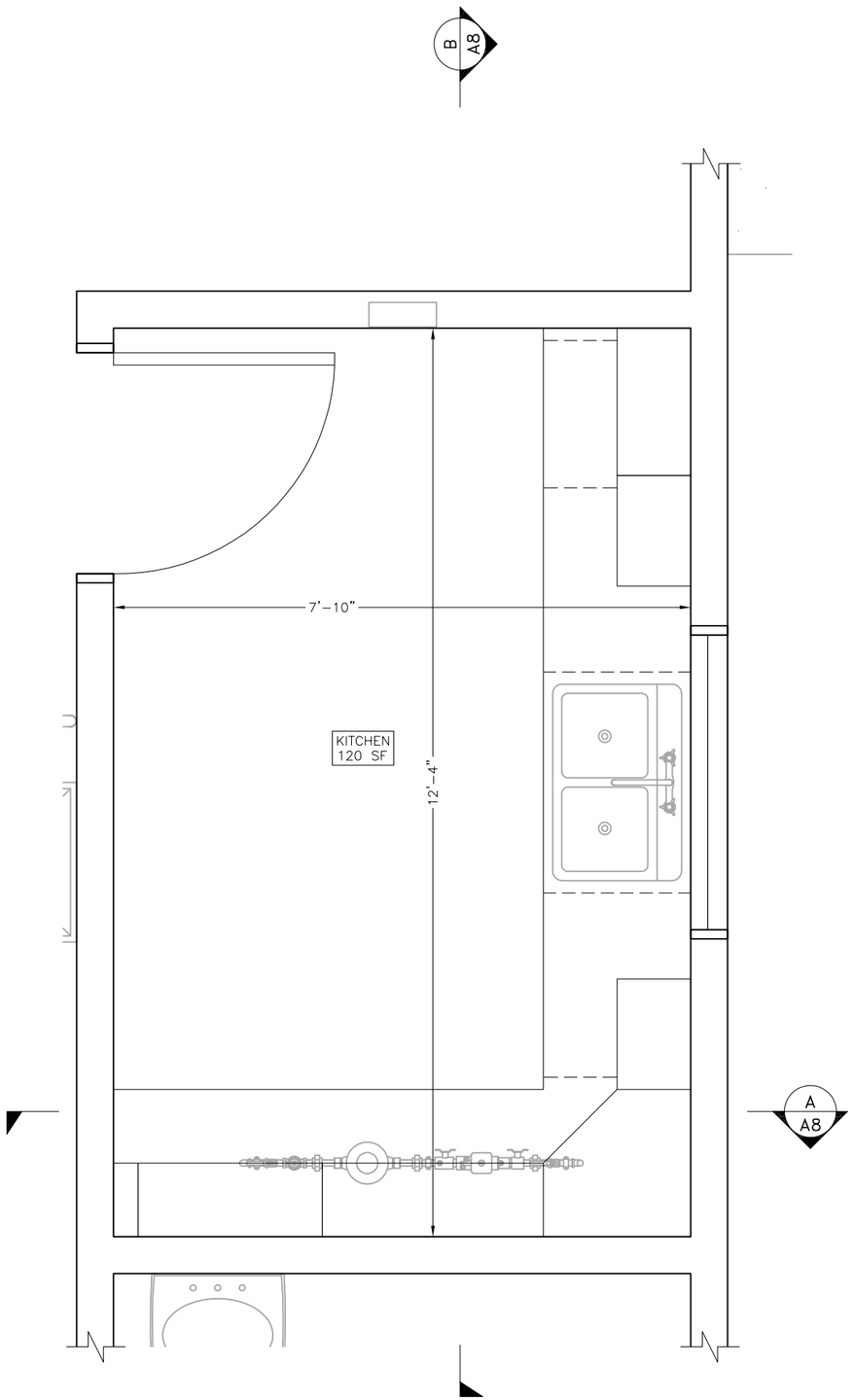
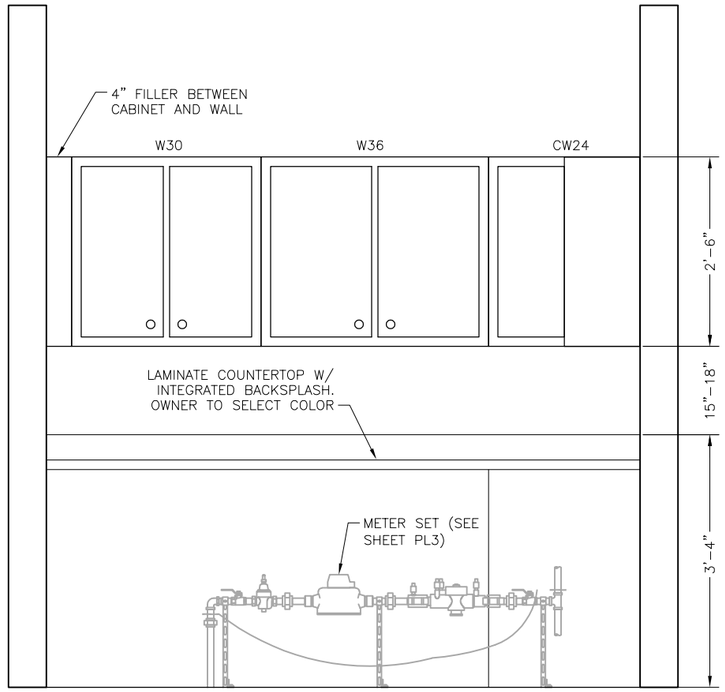
Check:	RMM

A7

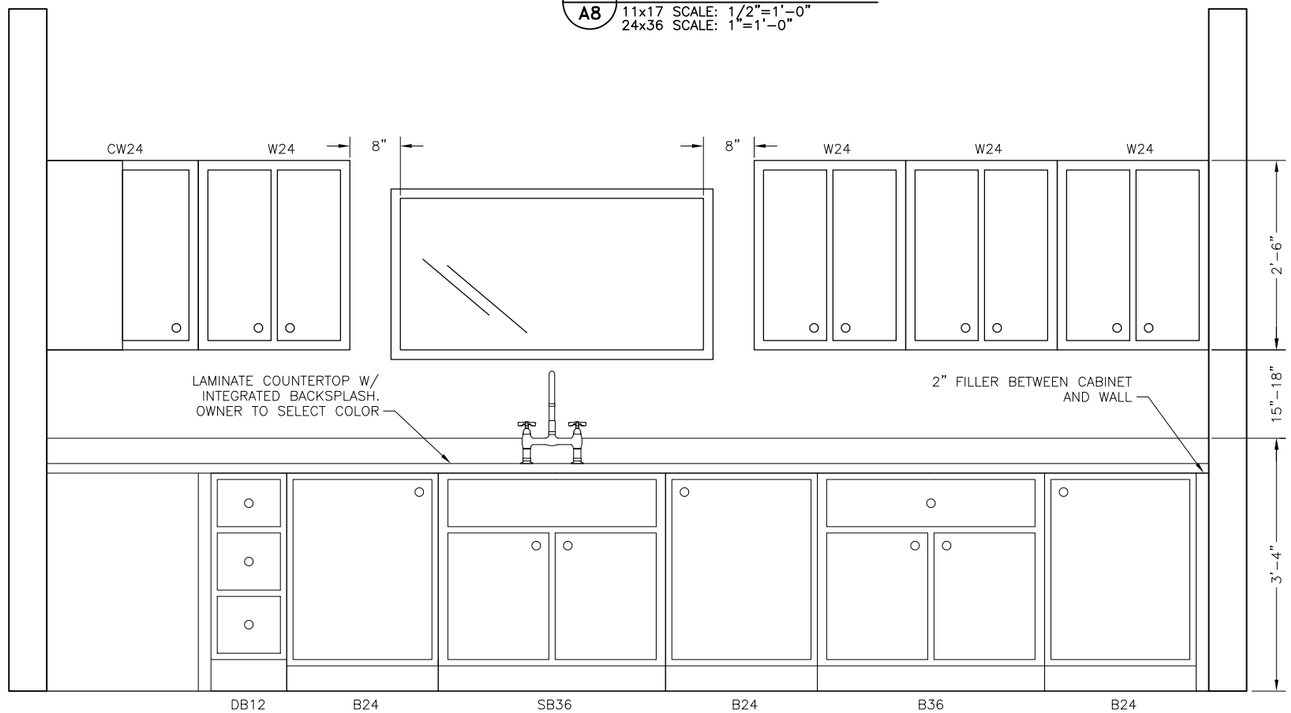
SHEET 7 OF 9



KITCHEN PLAN DETAIL
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"



A
A8
SOUTH KITCHEN ELEVATION
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"



B
A8
EAST KITCHEN ELEVATION
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"

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COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
KITCHEN DETAILS

REVISIONS			
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COLORADO LICENSED
RYAN M. MANGINO
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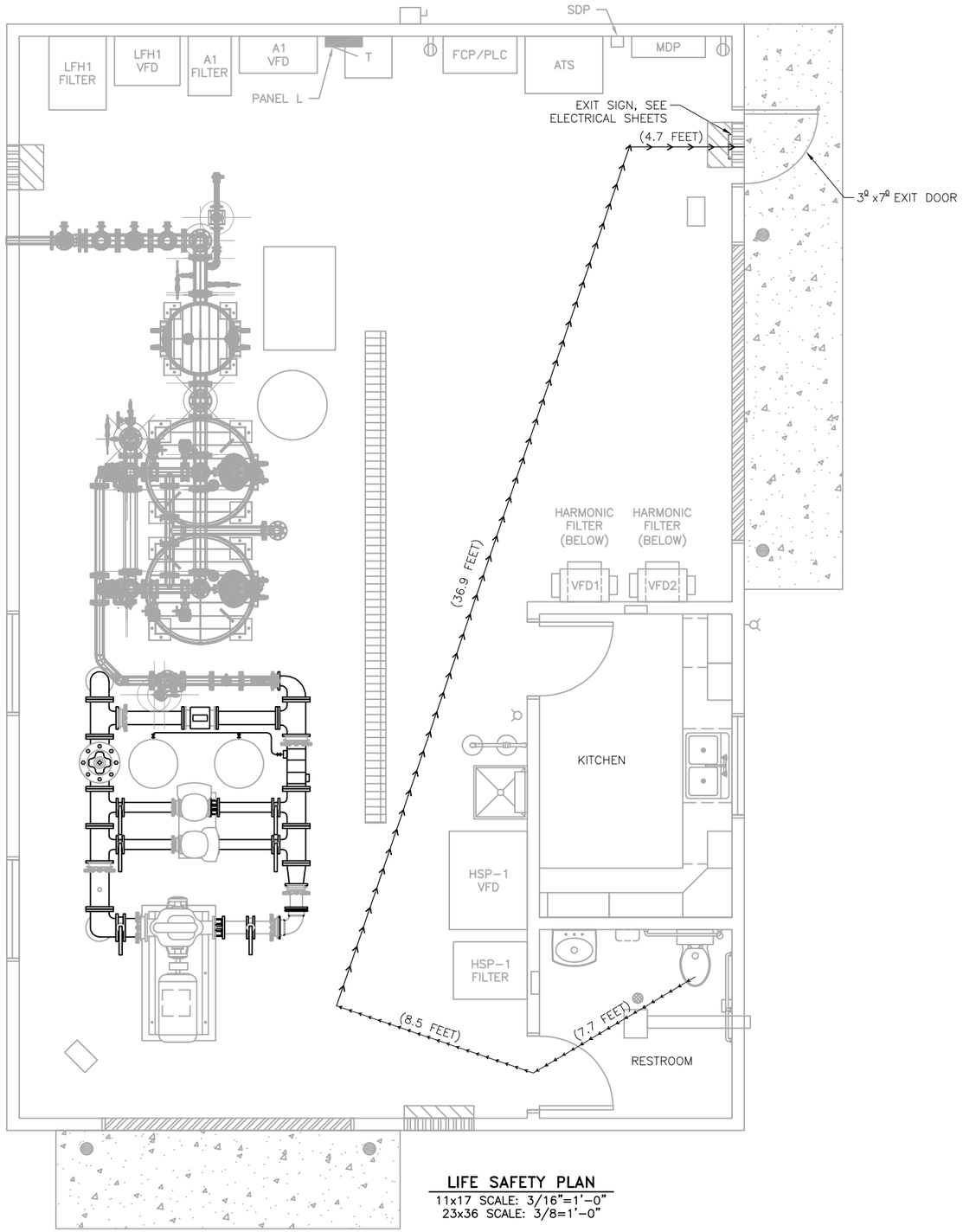
A8
SHEET 8 OF 9



LIFE SAFETY PLAN
11x17 SCALE: 3/16"=1'-0"
23x36 SCALE: 3/8=1'-0"

LEGEND:

MAX TRAVEL

COMMON PATH

LIFE SAFTEY PLAN INFORMATION:

- OCCUPANCY TYPE: FACTORY/INDUSTRIAL (F-2)
- NON-SEPARATED OCCUPANCY
- OCCUPANCY LOADING: 1,350 SF/100 INDUSTRIAL = 13.5
- ALLOWABLE AREA CALCULATION:
  - Aa=At+(NSxIf)
  - Aa=13,000+(13,000x0)
  - Aa=13,000 SQ. FT.
- INCIDENTAL USE AREAS: NONE
- EGRESS WIDTH REQUIREMENTS:
  - REQUIRED:
    OCCUPANT LOAD X 0.3 INCHES = 4.1 INCHES
  - PROVIDED:
    STAIRS: NONE
    EGRESS: 36 INCHES
- MAXIMUM TRAVEL DISTANCE: 57.8'
- MAXIMUM COMMON PATH OF TRAVEL: 41.6'
- BUILDING IS NOT SPRINKLERED
- ITEMS THAT ARE NOT APPLICABLE

  FIRE WALLS
  FIRE BARRIERS
  FIRE PARTITIONS
  SMOKE BARRIERS
  SMOKE PARTITIONS
  RATED ASSEMBLIES

PCD File No. PPR-21-020

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(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

LIFE SAFETY PLAN

REVISIONS			
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COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
12/1/21

Project No.:	311.02
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Drawn:	SKG
Check:	RMM

A9

SHEET 9 OF 9

2021/12/02 5:05 PM By: Ryan Mangino J:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\311.02_3_LifeSafety.dwg

EXHAUST FAN SCHEDULE

MARK	MFR	MODEL	FLOW (CFM)	ESP (IN WC)	ELECTRICAL		DIMENSIONS (IN)			WEIGHT (LBS)	REMARKS
					HP (W)	VOLTAGE	H	W	D		
EF-1	GREENHECK	SE1-16-428-B6	1350	0.2	1/6	120/1ø/60	22	22	12	81	1,3
EF-2	GREENHECK	SE1-16-428-B6	1350	0.2	1/6	120/1ø/60	22	22	12	81	1,3
EF-3	GREENHECK	SP-B80	70	0.125	(14)	120/1ø/60	16	14	7	10	2,4

1. DIRECT-DRIVE, SIDEWALL, ALUMINUM BLADE, PROPELLER-TYPE FAN WITH: PSC MOTOR; MANUFACTURER'S STANDARD FINISH; NEMA DISCONNECT SWITCH SHIPPED LOOSE; ATMOSPHERIC BACKDRAFT DAMPER ASSEMBLY SHIPPED LOOSE; OSHA APPROVED MOTOR GUARD SHIPPED LOOSE; AND SOLID STATE SPEED CONTROLLER (SET TO FULL SPEED) SHIPPED LOOSE.
2. DIRECT-DRIVE, CENTRIFUGAL TYPE, CEILING-MOUNTED FAN WITH: WHITE PLASTIC GRILLE; PLUG DISCONNECT; ALUMINUM WALL CAP; AND INTERNAL BACKDRAFT DAMPER ASSEMBLY.
3. FAN OPERATION SHALL BE INTERLOCKED WITH L-1 DAMPER AND CONTROLLED BY WALL MOUNTED THERMOSTAT (SET TO RUN WHEN SPACE TEMPERATURE EXCEEDS 85°F (ADJUSTABLE).
4. INTERLOCK FAN OPERATION TO LIGHT SWITCH; FAN SHALL CONTINUE TO OPERATE FOR 15 MINUTES (ADJUSTABLE) AFTER SWITCHED OFF.

LOUVER SCHEDULE

MARK	MFR	MODEL	MATERIAL	FRAME STYLE	FLOW (ACFM)	MIN FREE AREA (FT²)	MAX APD (IN WC)	DIMENSIONS (IN)			REMARKS
								W	H	D	
L-1	GREENHECK	ESD-603	EXTRUDED ALUMINUM	CHANNEL	2700	4.03	0.06	34	34	6	1,2

1. FURNISH WITH: MANUFACTURER'S STANDARD FINISH; 120V MOTORIZED BACKDRAFT DAMPER ASSEMBLY; AND STAINLESS STEEL INSECT SCREEN.
2. INTERLOCK DAMPER OPERATION TO EF-1 AND EF-2; DAMPER SHALL PROVE OPEN WITH END SWITCH BEFORE FAN(S) IS ALLOWED TO RUN.

ELECTRIC UNIT HEATER SCHEDULE

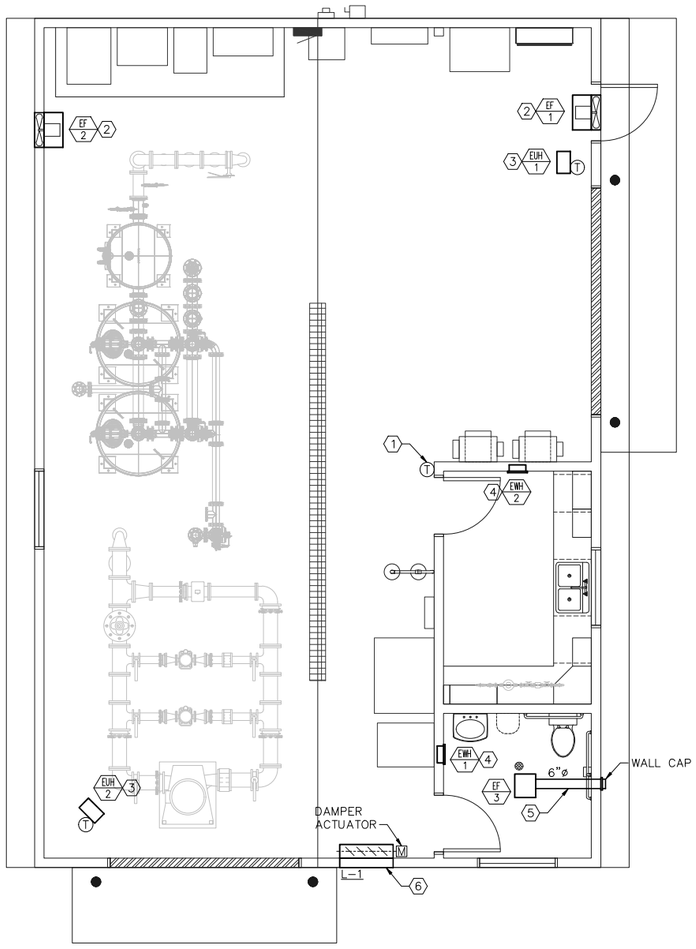
MARK	MFR	MODEL	AIRFLOW (CFM)	ELECTRICAL			DIMENSIONS (IN)			WEIGHT (LBS)	REMARKS
				KW	AMP	VOLTAGE	H	W	D		
EUH-1	BERKO	HUHAA520	350	5.0	24.0	208/1ø/60	16	14	8.5	24	1
EUH-2	BERKO	HUHAA520	350	5.0	24.0	208/1ø/60	16	14	8.5	24	1

1. FURNISH WITH B10 WALL BRACKET, INTERNAL THERMOSTAT (SET TO 65°F), AND TEFC MOTOR.

ELECTRIC WALL HEATER SCHEDULE

MARK	MFR	MODEL	OUTPUT BTUH	ELECTRICAL			DIMENSIONS (IN)			WEIGHT (LBS)	MOUNTING HEIGHT AFF (IN)	REMARKS
				W	AMP	VOLTAGE	H	W	D			
EWH-1	BERKO	SRA1012DSF	3413	1000	8.4	120/1ø/60	12	11	4	-	-	1,2,3,4
EWH-2	BERKO	SRA1012DSF	3413	1000	8.4	120/1ø/60	12	11	4	-	-	1,2,3,4

1. FURNISH WITH INTEGRAL THERMOSTAT (SET TO 65°F).
2. FURNISH WITH INTEGRAL DISCONNECT SWITCH.
3. FURNISH WITH BACK BOX FOR RECESSED MOUNTING.
4. FURNISH WITH LOUVERD COVER.



Plan North

MECHANICAL PLAN
SCALE: 1/4" = 1'-0"
12" 0 5'

KEYNOTES

1. THERMOSTAT FOR EF-1, EF-2, AND L-1.
2. MOUNT FAN AT 9'-0" ABOVE FINISHED FLOOR.
3. MOUNT HEATER AT 9'-0" ABOVE FINISHED FLOOR.
4. MOUNT HEATER AT 16" ABOVE FINISHED FLOOR.
5. ROUTE EXHAUST DUCT ABOVE RESTROOM FRAMING AND THRU EXTERIOR WALL.
6. MOUNTED LOUVER ASSEMBLY AT 4'-0" ABOVE FINISHED FLOOR.

GENERAL NOTES

1. ~~DIVISION 23~~ SCOPE OF WORK GENERALLY CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, SUPPLIES, AND MATERIALS IN PERFORMING ALL OPERATIONS NECESSARY FOR HVAC SYSTEM WORK AS SHOWN ON DRAWINGS. REFER TO COMPLETE SET OF DRAWINGS AND SPECIFICATIONS FOR ENTIRE SCOPE OF WORK. ALL WORK OF THIS SECTION SHALL COMPLY WITH GENERAL AND SUPPLEMENTARY CONDITIONS, AND DIVISION 1 REQUIREMENTS. ALL WORK OF THIS SECTION SHALL BE COORDINATED WITH ALL OTHER DIVISIONS.
2. BEFORE PURCHASE OR FABRICATION OF ANY MATERIALS AND EQUIPMENT, COORDINATE WITH ALL OTHER TRADES AND DETERMINE THAT SUCH WILL PROPERLY FIT SPACE AVAILABLE.
3. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, FREE OF DEFECTS, INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS IN NEAT AND WORKMAN-LIKE MANNER AND IN ACCORDANCE WITH STANDARD PRACTICE OF INDUSTRY.
4. ALL MATERIALS AND EQUIPMENT SHALL COMPLY WITH RULES AND REGULATIONS OF ALL CODES AND ORDINANCES OF LOCAL, STATE AND FEDERAL AUTHORITIES. SUCH CODES, WHERE MORE STRINGENT, SHALL TAKE PRECEDENCE OVER THESE PLANS AND SPECIFICATIONS.
5. ALL SCHEDULED VALUES ARE FOR 6,200 FT. ELEVATION UNLESS NOTED OTHERWISE.
6. ALL PERMITS, FEES, LICENSES AND INSPECTIONS FOR THIS DIVISION OF WORK SHALL BE PAID FOR BY THIS CONTRACTOR.
7. PRODUCT DATA SUBMITTALS SHALL BE MADE FOR ALL EQUIPMENT. SUBMITTALS SHALL BE KEYED TO PLAN IDENTIFICATION MARKS. UNLESS INDICATED OTHERWISE, SUBMIT ELECTRONIC COPY OF EACH SUBMITTAL. SUBMITTALS SHALL BE REVIEWED AND APPROVED BY ~~DIVISION 23~~ CONTRACTOR PRIOR TO SUBMITTING – PROVIDE CONTRACTOR'S SIGNED AND DATED STAMP OF APPROVAL ON EACH COPY OF EACH SUBMITTAL.
8. MATERIALS OR EQUIPMENT SPECIFIED BY MANUFACTURER'S NAME IS USED AS BASIS OF STANDARD. MATERIALS OF EQUAL QUALITY MAY BE USED IF APPROVED BY ENGINEER PRIOR TO BIDDING. UNLESS OTHERWISE INDICATED, SUBMIT ELECTRONIC COPY, INCLUDING ALL DESCRIPTIVE DATA, TO ENGINEER FOR EACH PIECE OF EQUIPMENT BEING PROPOSED FOR SUBSTITUTION AT LEAST FIVE DAYS PRIOR TO BID OPENING.
9. UNLESS OTHERWISE INDICATED, PROVIDE ELECTRONIC COPY OF BOUND OPERATION AND MAINTENANCE INSTRUCTION MANUALS FOR ALL EQUIPMENT TO OWNER UPON COMPLETION OF WORK.
10. CONTRACTOR SHALL PROVIDE ONE (1) YEAR WARRANTY, IN WRITING, ON INSTALLED SYSTEM(S), FROM DATE OF SUBSTANTIAL COMPLETION.

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ROI PROPERTY GROUP
SADDLEHORN RANCH SUBDIVISION
MECHANICAL PLAN

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
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80% SET

M1

FARRIS ENGINEERING
COLORADO SPRINGS | OMAHA | LINCOLN | SYDNEY
farris-usa.com

Project No.: 216001
Date: 03-24-21
Design: SCR
Drawn: JTM
Check: SCR

M100
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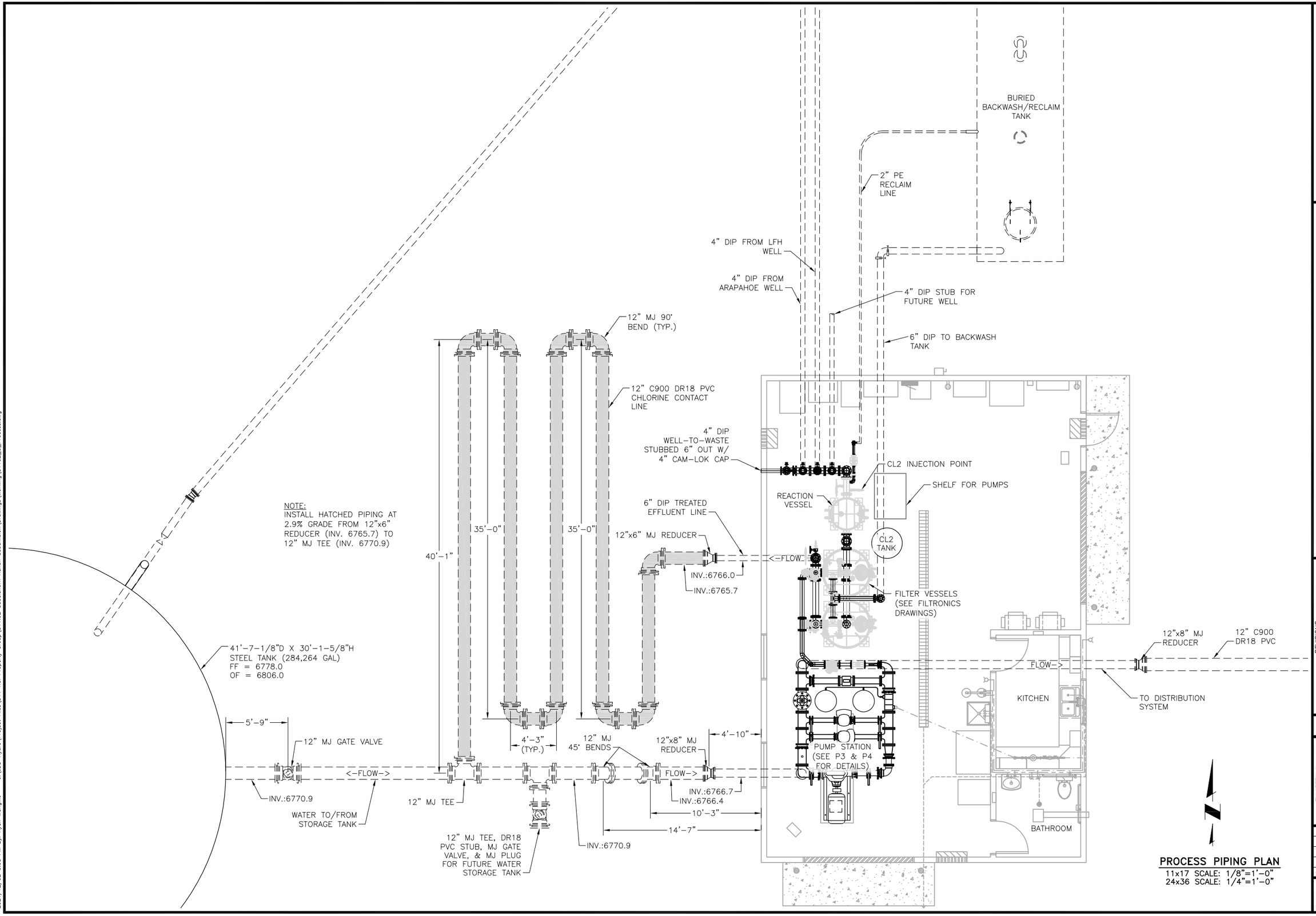

PROCESS PIPING PLAN

11x17 SCALE: 1/8"=1'-0"
24x36 SCALE: 1/4"=1'-0"

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

OVERALL PROCESS PIPING PLAN

REVISIONS			
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100% COMPLETE

COLORADO LICENSED
RYAN M. MARGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.:	311.02
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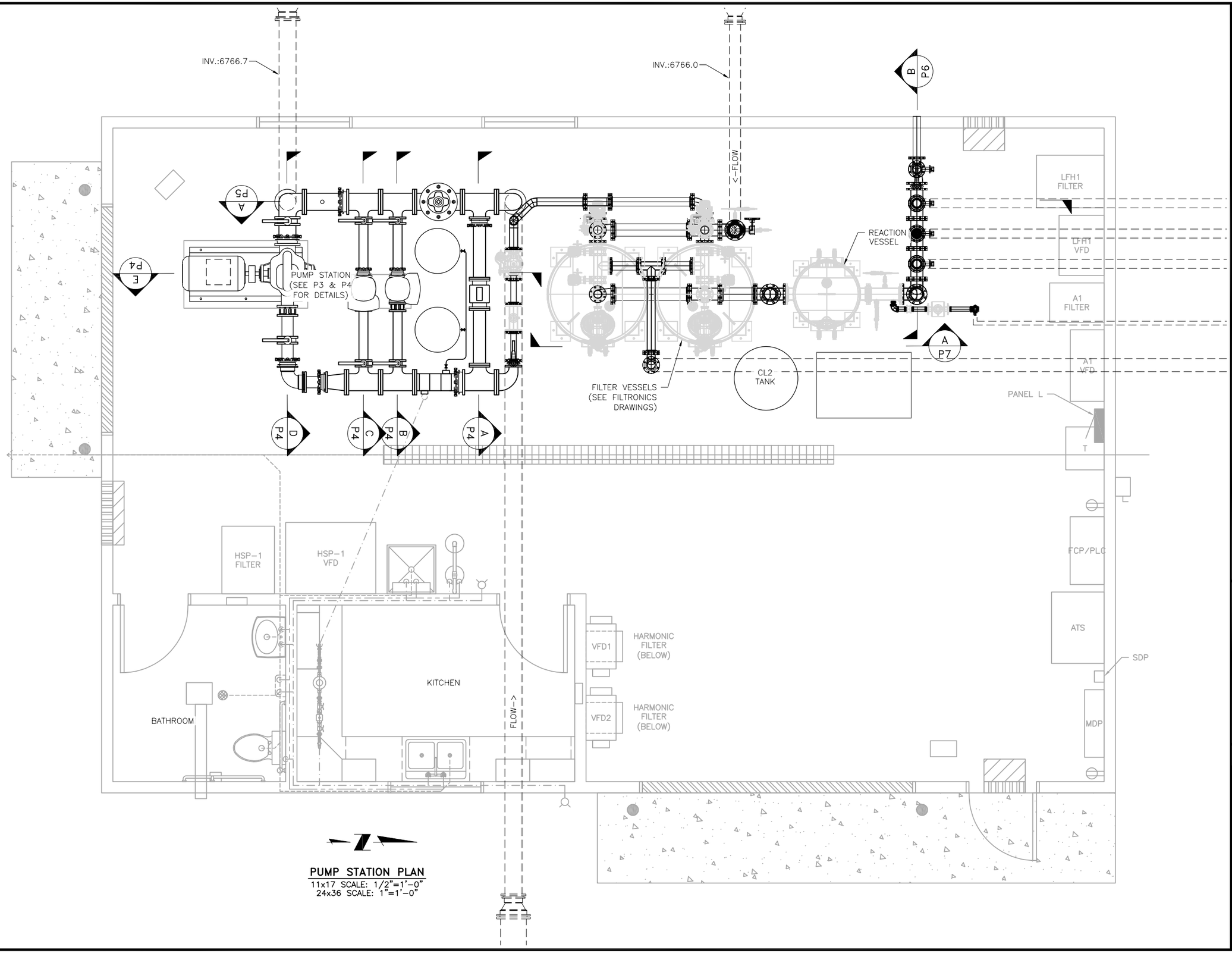
P1

SHEET 1 OF 12



PUMP STATION PLAN
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

INTERIOR PROCESS PIPING PLAN

REVISIONS				
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COLORADO LICENSED
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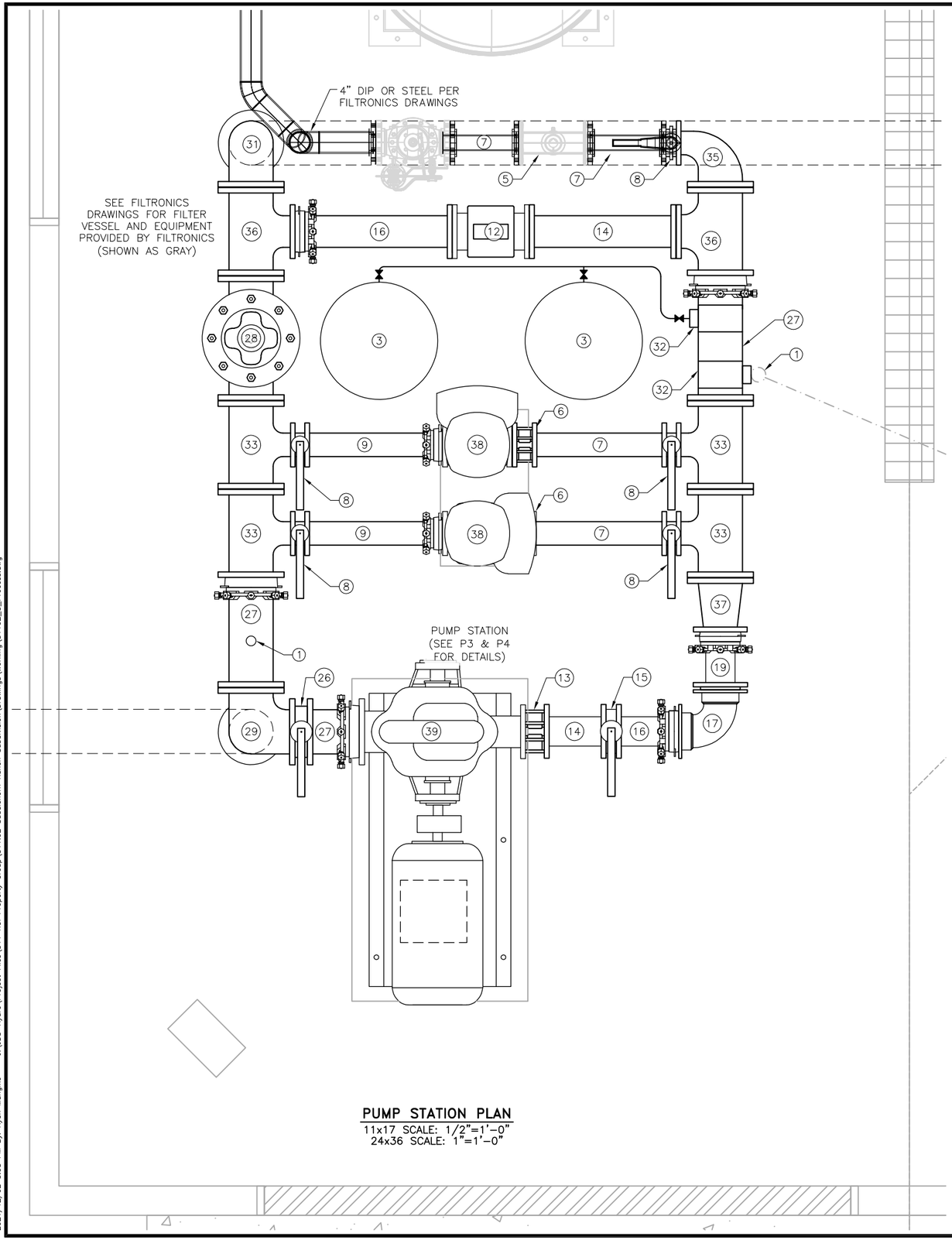
P2

SHEET 2 OF 12

2021/12/02 5:08 PM By: Ryan Mangino I:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\31102_5_Process.dwg



PUMP STATION PLAN
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"

PIPE/EQUIPMENT SCHEDULE		
#	SIZE	PIPE/EQUIPMENT NAME
1		3/4" TAP W/SADDLE FOR 3/4" BALL VALVE, 3/4" HOSE BIB, 0–30 PSI PRESSURE TRANSDUCER, AND 3.5" DIAL, 0–30 PSI PRESSURE GAUGE. (TAP FOR HOUSE WATER, EPDS)
2		AIR/VAC
3		AMTROL BLADDER WELL TANK (MODEL NO. WX–449C)
4	4"	BLIND FLANGE W/1" FMNPT
5	4"	MAG METER
6	4"	WAFER CHECK VALVE
7	4"	FLxFL DIP
8	4"	LUG–STYLE BUTTERFLY VALVE
9	4"	FLxPE DIP
10	4"	90° FL ELBOW
11	4"	FL DIP TEE
12	6"	MAG METER
13	6"	WAFER CHECK VALVE
14	6"	FLxFL DIP
15	6"	LUG–STYLE BUTTERFLY VALVE
16	6"	FLxPE DIP
17	6"	90° MJ ELBOW
18	6"	90° FL ELBOW
19	6"	PExPE DIP
20	6"	FL DIP TEE
21	6"	PLEXI–GLASS BLIND FLANGE
22	6"	STATIC MIXER
23	6"x4"	90° REDUCING FL ELBOW
24	6"x4"	REDUCING DIP FL TEE
25	6"x4"	FL CONCENTRIC REDUCER
26	8"	LUG–STYLE BUTTERFLY VALVE
27	8"	FLxPE DIP
28	8"	ACV (PRESSURE RELIEF VALVE)
29	8"	SIDE OUTLET FL ELBOW
30	8"	FL DIP TEE
31	8"	90° FL ELBOW
32	8"x1"	TAPPING SADDLE
33	8"x4"	FL DIP TEE
34	8"x4"	FL CONCENTRIC REDUCER
35	8"x4"	90° FL REDUCING ELBOW
36	8"x6"	FL DIP TEE
37	8"x6"	FL ECCENTRIC REDUCER
38		DISTRIBUTION PUMP
39		HIGH–SERVICE PUMP

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
PUMP STATION PLAN

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
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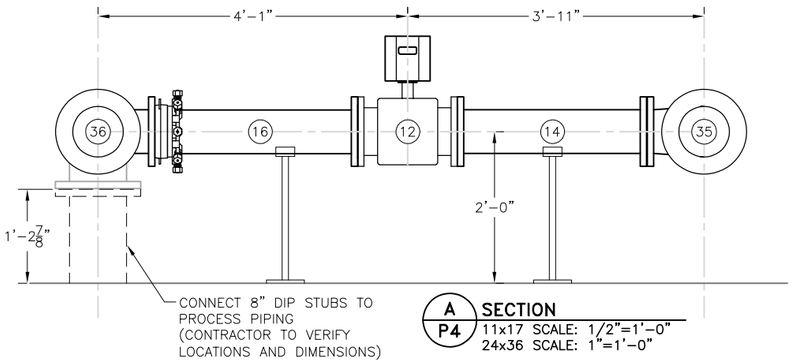
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
49304
PROFESSIONAL ENGINEER
9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

P3
SHEET 3 OF 12



A / P4 SECTION
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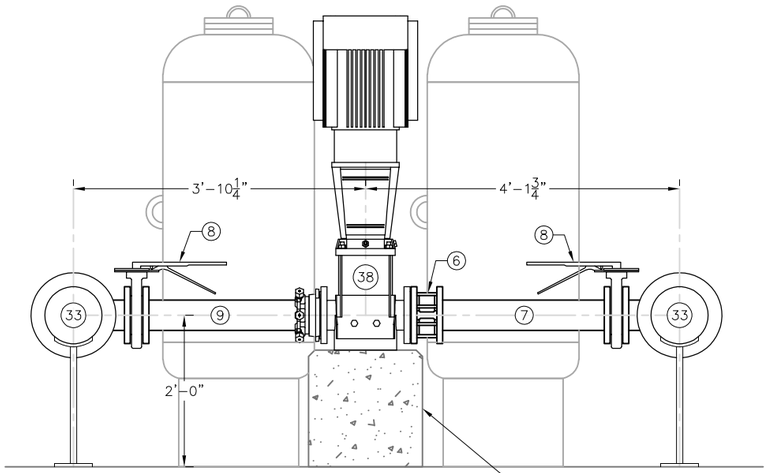
24x36 SCALE: 1"=1'-0"



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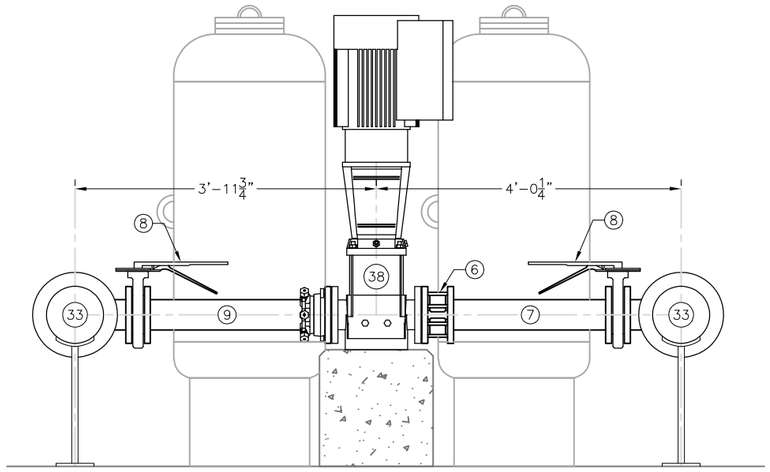
24x36 SCALE: 1"=1'-0"



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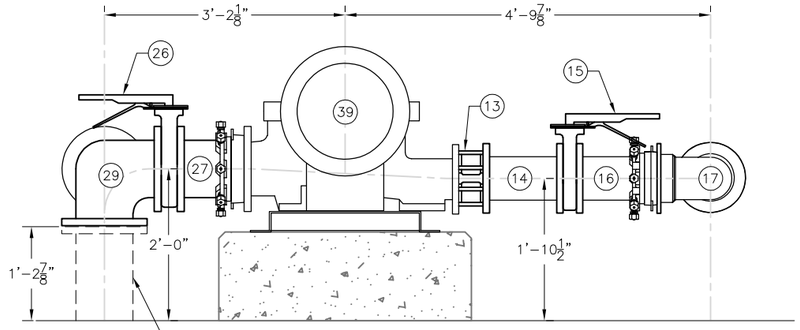
24x36 SCALE: 1"=1'-0"



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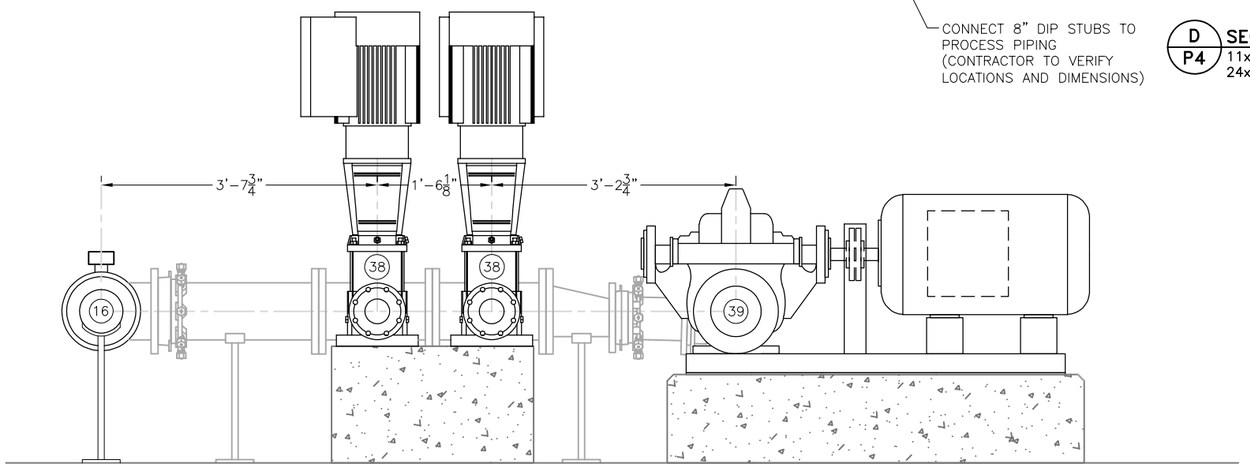
24x36 SCALE: 1"=1'-0"



E / P4 SECTION
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"

PIPE/EQUIPMENT SCHEDULE		
#	SIZE	PIPE/EQUIPMENT NAME
1		3/4" TAP W/SADDLE FOR 3/4" BALL VALVE, 3/4" HOSE BIB, 0-30 PSI PRESSURE TRANSDUCER, AND 3.5" DIAL, 0-30 PSI PRESSURE GAUGE. (TAP FOR HOUSE WATER, EPDS)
2		AIR/VAC
3		AMTROL BLADDER WELL TANK (MODEL NO. WX-449C)
4	4"	BLIND FLANGE W/1" FMNPT
5	4"	MAG METER
6	4"	WAFER CHECK VALVE
7	4"	FLxFL DIP
8	4"	LUG-STYLE BUTTERFLY VALVE
9	4"	FLxPE DIP
10	4"	90° FL ELBOW
11	4"	FL DIP TEE
12	6"	MAG METER
13	6"	WAFER CHECK VALVE
14	6"	FLxFL DIP
15	6"	LUG-STYLE BUTTERFLY VALVE
16	6"	FLxPE DIP
17	6"	90° MJ ELBOW
18	6"	90° FL ELBOW
19	6"	PExPE DIP
20	6"	FL DIP TEE
21	6"	PLEXI-GLASS BLIND FLANGE
22	6"	STATIC MIXER
23	6"x4"	90° REDUCING FL ELBOW
24	6"x4"	REDUCING DIP FL TEE
25	6"x4"	FL CONCENTRIC REDUCER
26	8"	LUG-STYLE BUTTERFLY VALVE
27	8"	FLxPE DIP
28	8"	ACV (PRESSURE RELIEF VALVE)
29	8"	SIDE OUTLET FL ELBOW
30	8"	FL DIP TEE
31	8"	90° FL ELBOW
32	8"x1"	TAPPING SADDLE
33	8"x4"	FL DIP TEE
34	8"x4"	FL CONCENTRIC REDUCER
35	8"x4"	90° FL REDUCING ELBOW
36	8"x6"	FL DIP TEE
37	8"x6"	FL ECCENTRIC REDUCER
38		DISTRIBUTION PUMP
39		HIGH-SERVICE PUMP

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

PUMP STATION SECTIONS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MARGINO
43304
PROFESSIONAL ENGINEER
12/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

P4

SHEET 4 OF 12

PIPE/EQUIPMENT SCHEDULE		
#	SIZE	PIPE/EQUIPMENT NAME
1		3/4" TAP W/SADDLE FOR 3/4" BALL VALVE, 3/4" HOSE BIB, 0–30 PSI PRESSURE TRANSDUCER, AND 3.5" DIAL, 0–30 PSI PRESSURE GAUGE. (TAP FOR HOUSE WATER, EPDS)
2		AIR/VAC
3		AMTROL BLADDER WELL TANK (MODEL NO. WX–449C)
4	4"	BLIND FLANGE W/1" FMNPT
5	4"	MAG METER
6	4"	WAFER CHECK VALVE
7	4"	FLxFL DIP
8	4"	LUG–STYLE BUTTERFLY VALVE
9	4"	FLxPE DIP
10	4"	90° FL ELBOW
11	4"	FL DIP TEE
12	6"	MAG METER
13	6"	WAFER CHECK VALVE
14	6"	FLxFL DIP
15	6"	LUG–STYLE BUTTERFLY VALVE
16	6"	FLxPE DIP
17	6"	90° MJ ELBOW
18	6"	90° FL ELBOW
19	6"	PExPE DIP
20	6"	FL DIP TEE
21	6"	PLEXI–GLASS BLIND FLANGE
22	6"	STATIC MIXER
23	6"x4"	90° REDUCING FL ELBOW
24	6"x4"	REDUCING DIP FL TEE
25	6"x4"	FL CONCENTRIC REDUCER
26	8"	LUG–STYLE BUTTERFLY VALVE
27	8"	FLxPE DIP
28	8"	ACV (PRESSURE RELIEF VALVE)
29	8"	SIDE OUTLET FL ELBOW
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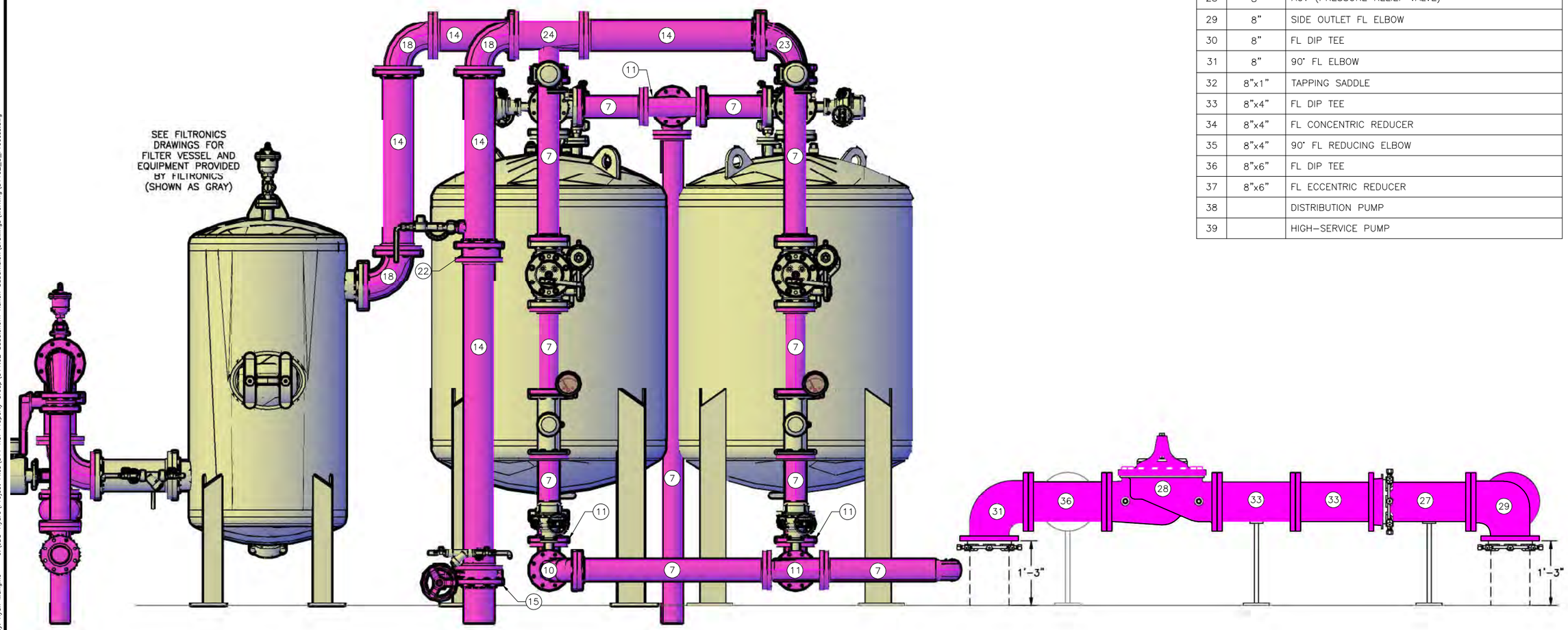
31	8"	90° FL ELBOW
32	8"x1"	TAPPING SADDLE
33	8"x4"	FL DIP TEE
34	8"x4"	FL CONCENTRIC REDUCER
35	8"x4"	90° FL REDUCING ELBOW
36	8"x6"	FL DIP TEE
37	8"x6"	FL ECCENTRIC REDUCER
38		DISTRIBUTION PUMP
39		HIGH–SERVICE PUMP



A / P5 SECTION
11x17 SCALE: 1/2"=1'–0"
24x36 SCALE: 1"=1'–0"

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

PROCESS PIPING SECTIONS 1

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
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5				
6				
7				

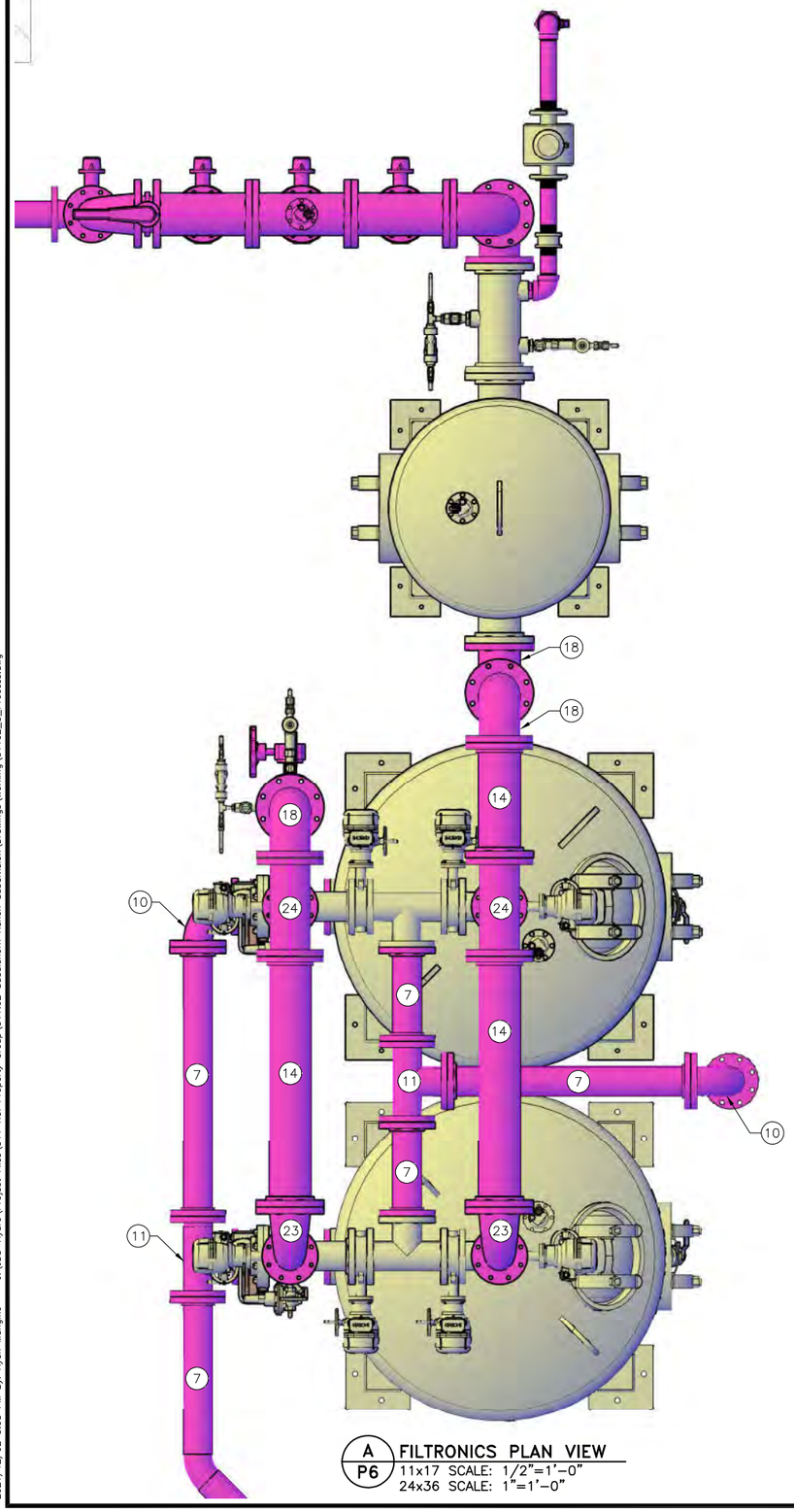
100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
49304
12/1/21
PROFESSIONAL ENGINEER

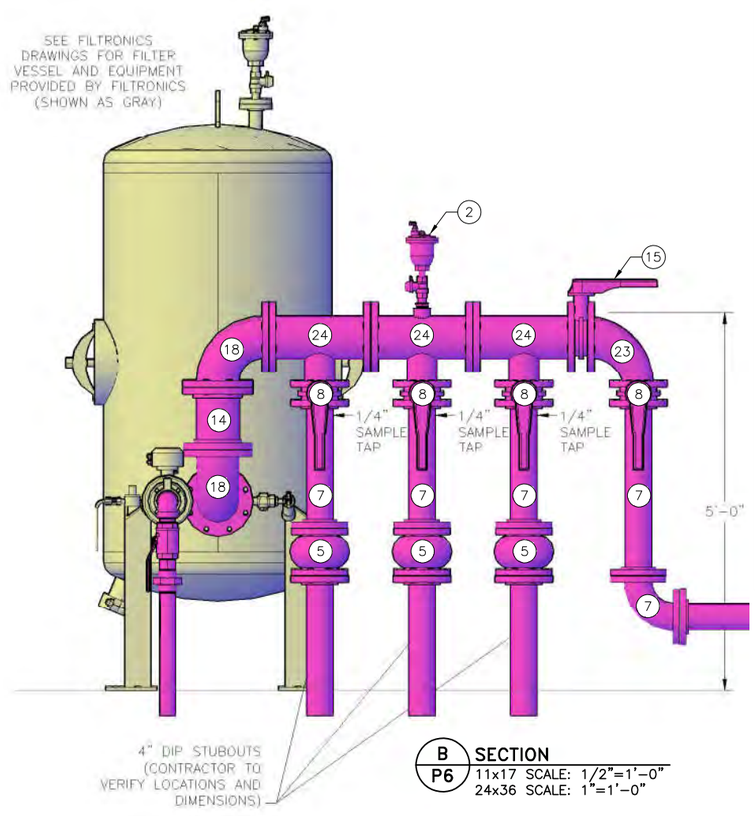
Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

P5

SHEET 5 OF 12



A P6 FILTRONICS PLAN VIEW
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"



B P6 SECTION
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"

PIPE/EQUIPMENT SCHEDULE		
#	SIZE	PIPE/EQUIPMENT NAME
1		3/4" TAP W/SADDLE FOR 3/4" BALL VALVE, 3/4" HOSE BIB, 0-30 PSI PRESSURE TRANSDUCER, AND 3.5" DIAL, 0-30 PSI PRESSURE GAUGE. (TAP FOR HOUSE WATER, EPDS)
2		AIR/VAC
3		AMTROL BLADDER WELL TANK (MODEL NO. WX-449C)
4	4"	BLIND FLANGE W/1" FMNPT
5	4"	MAG METER
6	4"	WAFER CHECK VALVE
7	4"	FLxFL DIP
8	4"	LUG-STYLE BUTTERFLY VALVE
9	4"	FLxPE DIP
10	4"	90° FL ELBOW
11	4"	FL DIP TEE
12	6"	MAG METER
13	6"	WAFER CHECK VALVE
14	6"	FLxFL DIP
15	6"	LUG-STYLE BUTTERFLY VALVE
16	6"	FLxPE DIP
17	6"	90° MJ ELBOW
18	6"	90° FL ELBOW
19	6"	PExPE DIP
20	6"	FL DIP TEE
21	6"	PLEXI-GLASS BLIND FLANGE
22	6"	STATIC MIXER
23	6"x4"	90° REDUCING FL ELBOW
24	6"x4"	REDUCING DIP FL TEE
25	6"x4"	FL CONCENTRIC REDUCER
26	8"	LUG-STYLE BUTTERFLY VALVE
27	8"	FLxPE DIP
28	8"	ACV (PRESSURE RELIEF VALVE)
29	8"	SIDE OUTLET FL ELBOW
30	8"	FL DIP TEE
31	8"	90° FL ELBOW
32	8"x1"	TAPPING SADDLE
33	8"x4"	FL DIP TEE
34	8"x4"	FL CONCENTRIC REDUCER
35	8"x4"	90° FL REDUCING ELBOW
36	8"x6"	FL DIP TEE
37	8"x6"	FL ECCENTRIC REDUCER
38		DISTRIBUTION PUMP
39		HIGH-SERVICE PUMP

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
PROCESS PIPING SECTIONS 2

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
1				
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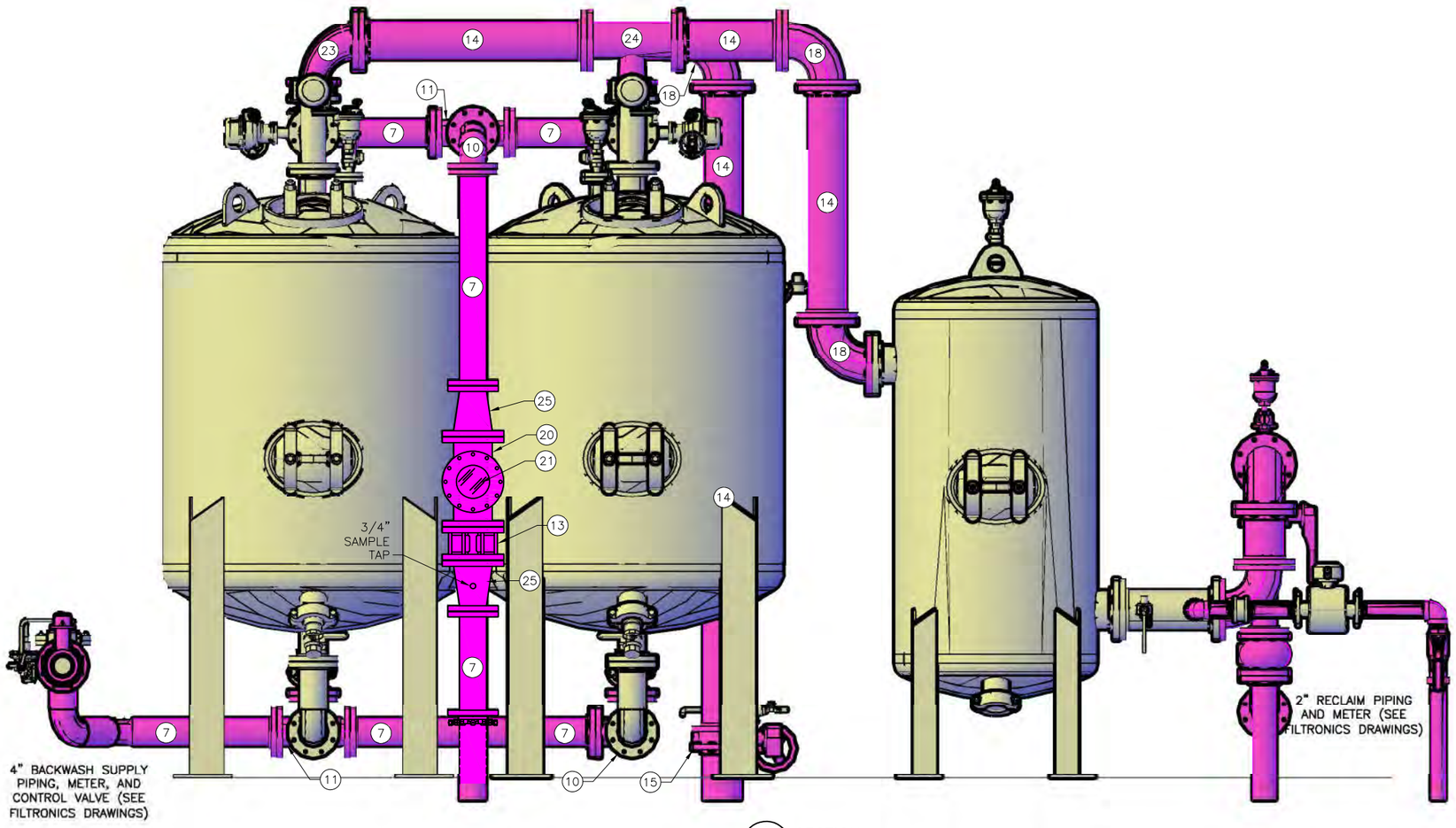
100% COMPLETE

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

P6
SHEET 6 OF 12



A / P7 SECTION
11x17 SCALE: 1/2"=1'-0"
24x36 SCALE: 1"=1'-0"

PIPE/EQUIPMENT SCHEDULE		
#	SIZE	PIPE/EQUIPMENT NAME
1		3/4" TAP W/SADDLE FOR 3/4" BALL VALVE, 3/4" HOSE BIB, 0-30 PSI PRESSURE TRANSDUCER, AND 3.5" DIAL, 0-30 PSI PRESSURE GAUGE. (TAP FOR HOUSE WATER, EPDS)
2		AIR/VAC
3		AMTROL BLADDER WELL TANK (MODEL NO. WX-449C)
4	4"	BLIND FLANGE W/1" FMNPT
5	4"	MAG METER
6	4"	WAFER CHECK VALVE
7	4"	FLxFL DIP
8	4"	LUG-STYLE BUTTERFLY VALVE
9	4"	FLxPE DIP
10	4"	90° FL ELBOW
11	4"	FL DIP TEE
12	6"	MAG METER
13	6"	WAFER CHECK VALVE
14	6"	FLxFL DIP
15	6"	LUG-STYLE BUTTERFLY VALVE
16	6"	FLxPE DIP
17	6"	90° MJ ELBOW
18	6"	90° FL ELBOW
19	6"	PExPE DIP
20	6"	FL DIP TEE
21	6"	PLEXI-GLASS BLIND FLANGE
22	6"	STATIC MIXER
23	6"x4"	90° REDUCING FL ELBOW
24	6"x4"	REDUCING DIP FL TEE
25	6"x4"	FL CONCENTRIC REDUCER
26	8"	LUG-STYLE BUTTERFLY VALVE
27	8"	FLxPE DIP
28	8"	ACV (PRESSURE RELIEF VALVE)
29	8"	SIDE OUTLET FL ELBOW
30	8"	FL DIP TEE
31	8"	90° FL ELBOW
32	8"x1"	TAPPING SADDLE
33	8"x4"	FL DIP TEE
34	8"x4"	FL CONCENTRIC REDUCER
35	8"x4"	90° FL REDUCING ELBOW
36	8"x6"	FL DIP TEE
37	8"x6"	FL ECCENTRIC REDUCER
38		DISTRIBUTION PUMP
39		HIGH-SERVICE PUMP

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
PROCESS PIPING SECTIONS 3

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
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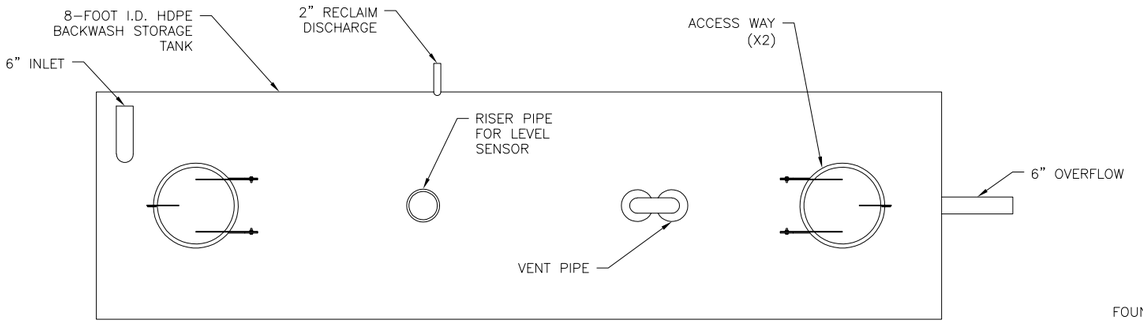
100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

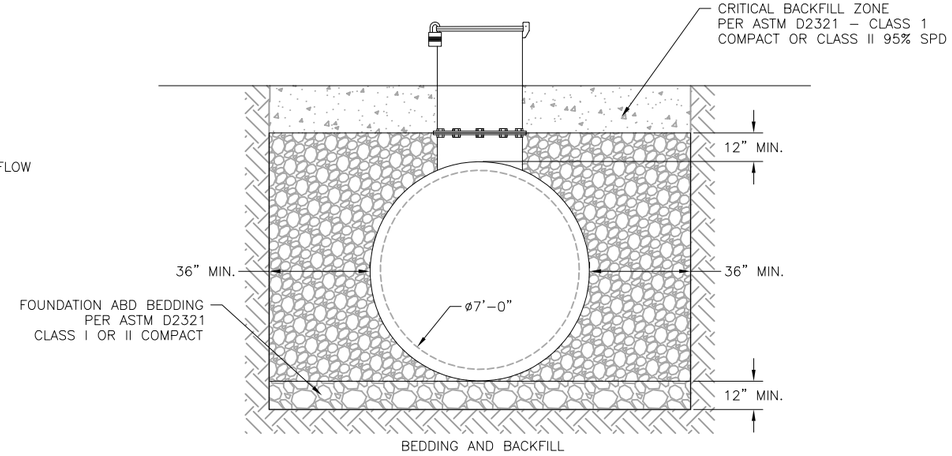
Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

P7

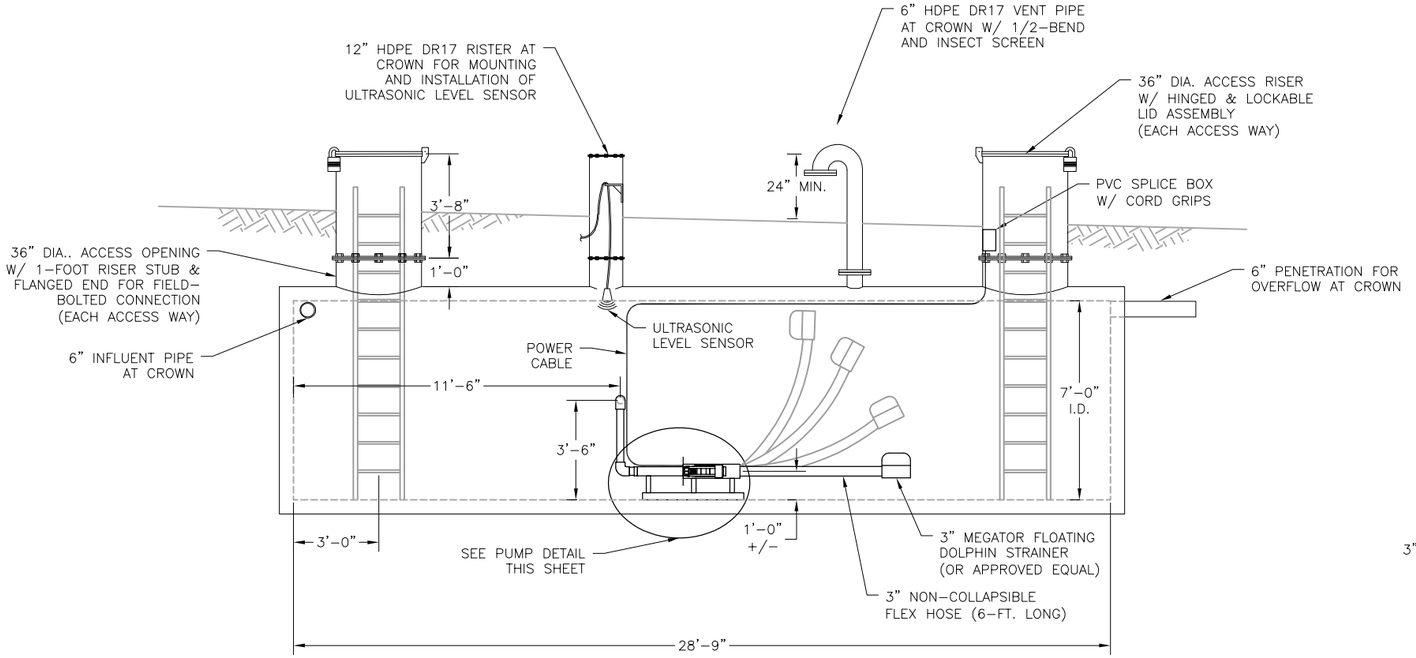
SHEET 7 OF 12



PLAN VIEW

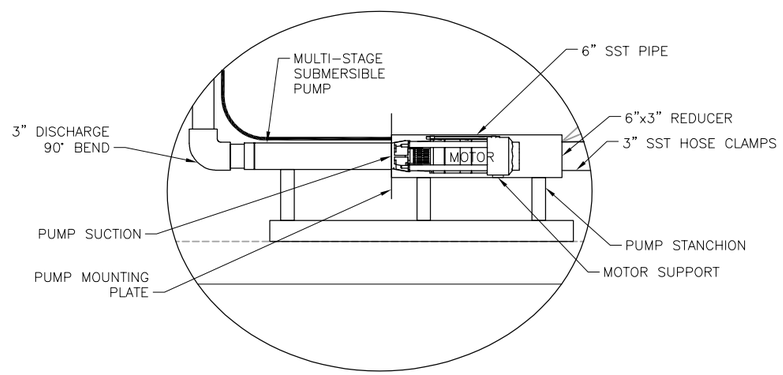


HORIZONTAL VESSEL BACKFILL SECTION



ELEVATION VIEW

A / P8 **BACKWASH TANK**
11x17 SCALE: 3/16"=1'–0"
24x36 SCALE: 3/8"=1'–0"



PUMP DETAIL
SCALE: N.T.S.

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

BACKWASH TANK DETAILS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
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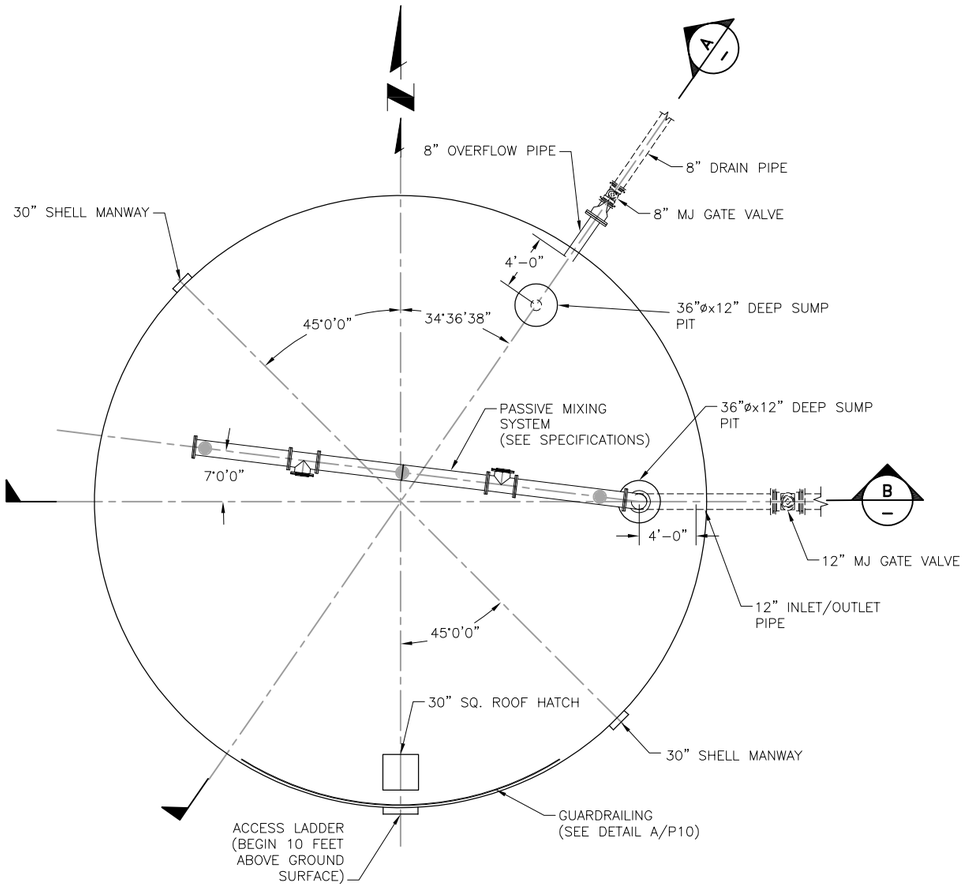
100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
49304
PROFESSIONAL ENGINEER
09/01/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

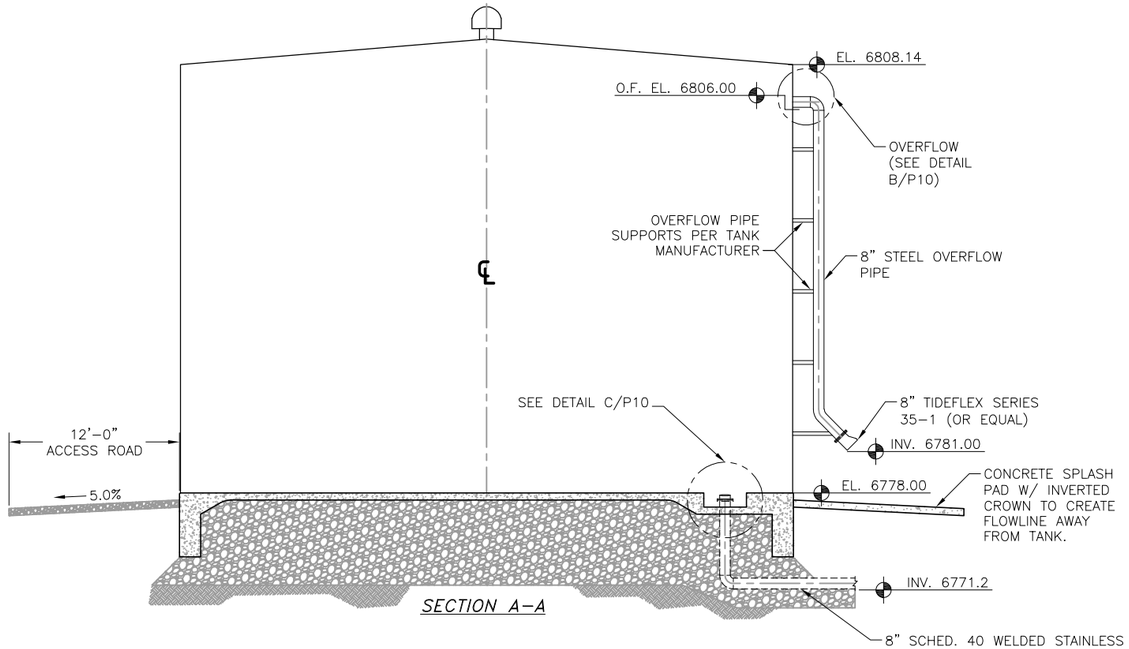
P8

SHEET 8 OF 12

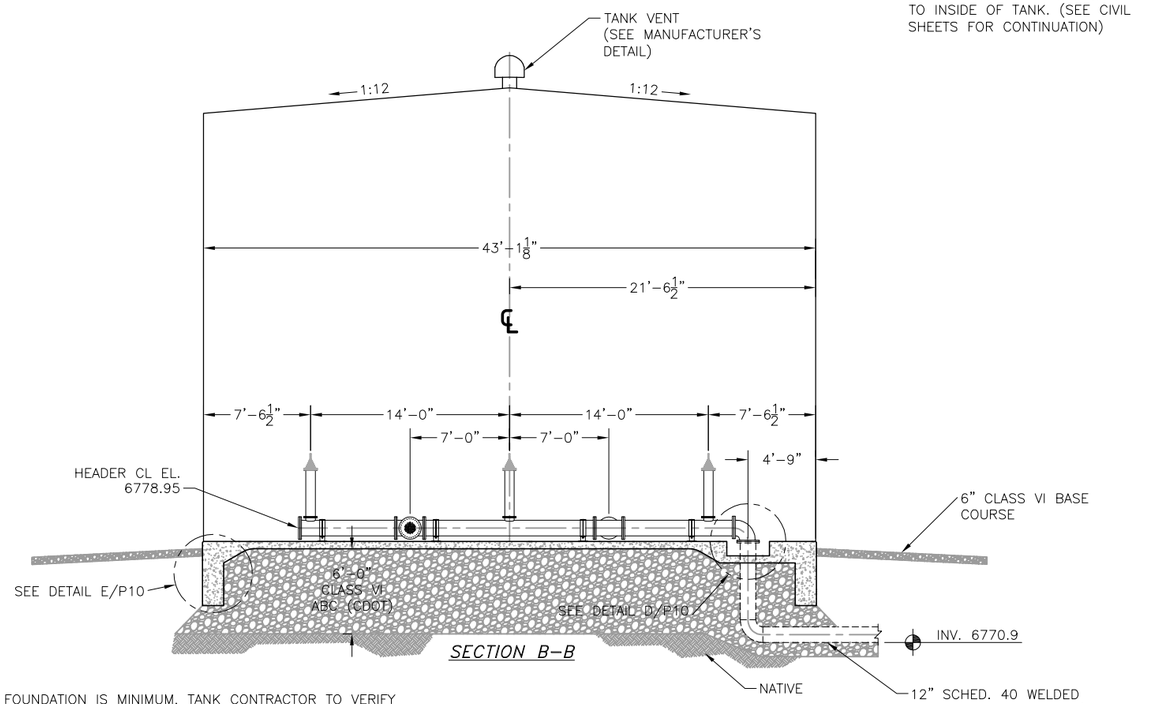


A/P9 43'-1-1/8" DIAMETER TANK GEOMETRY
SCALE: 1"=10'

NOTES:
1. INLET AND OUTLET PIPING SHALL BE ANSI SCH. 80 (FROM TANK TO FIRST FITTING CONNECTING TO EXISTING INLET AND OUTLET PIPING), AND INTERIOR OF SAID PIPING SHALL BE COATED WITH AN EPOXY COATING AWWA APPROVED FOR DRINKING WATER. THE EXTERIOR OF INLET AND OUTLET PIPING SHALL BE COATED AS PER TANK COATING SPECIFICATIONS. THE EXTERIOR OF BURIED PIPING SHALL BE TREATED AS DESCRIBED IN SPECIFICATIONS.
2. ALL BUIRED PIPE BENDS SHALL HAVE THRUST BLOCKS, AND ALL BURIED PIPE SHALL SIT ON 6" OF 3/4" CRUSHED ROCK.
3. ALL BURIED FITTINGS SHALL BE MECHANICAL JOINT, UNLESS OTHERWISE APPROVED OR NOTED.
4. ALL BURIED DUCTILE IRON AND STEEL PIPE SHALL BE CATHODICALLY PROTECTED USING 17 LB. MAGNESIUM ANODES, AND ALL FITTINGS SHALL BE CATHODICALLY PROTECTED USING 9 LB. MAGNESIUM ANODES.



SECTION A-A



SECTION B-B

NOTES:
1. STEEL SHOWN FOR FOUNDATION IS MINIMUM. TANK CONTRACTOR TO VERIFY REQUIREMENTS AND SUBMIT DESIGN FOR REVIEW BY ENGINEER.
2. FOUNDATION TO BE OVER-EXCAVATED AND STRUCTURAL FILL IMPORTED PER "SUBSURFACE SOIL INVESTIGATION" REPORT BY ENTECH ENGINEERING, INC., DATED FEBRUARY 26, 2021.
3. BACKFILL SHALL CONSIST OF ON-SITE PROCESSED SANDSTONE WITH PIECES LESS THAN 2 INCHES IN SIZE, MOISTURE-CONDITIONED TO WITHIN 2% OF OPTIMUM AND COMPACTED TO AT LEAST 95% OF MAXIMUM MODIFIED PROCTOR DRY DENSITY.

PCD File No. PPR-21-020

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
WATER STORAGE TANK
PLAN & ELEVATIONS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
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4				
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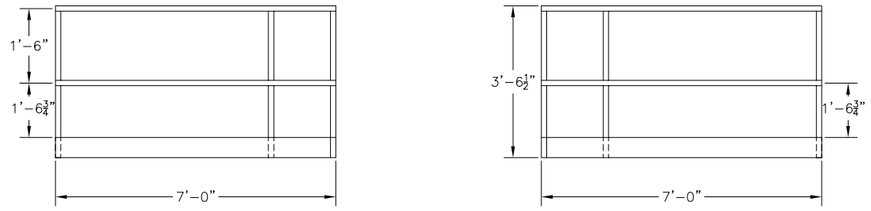
100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 9/1/21

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

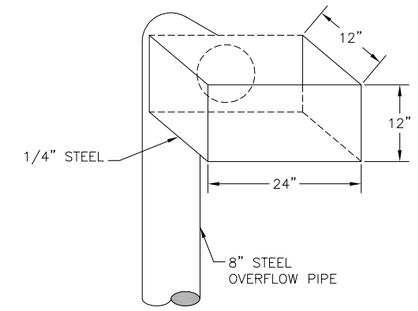
P9

SHEET 9 OF 12



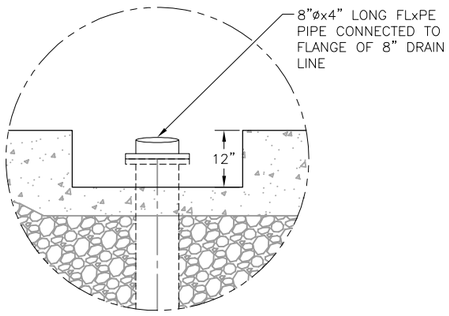
NOTES:
1. SEE TANK MANUFACTURER'S DRAWINGS FOR HARDWARE.

A/P10 **GUARDRAIL DETAIL**
SCALE: N.T.S.

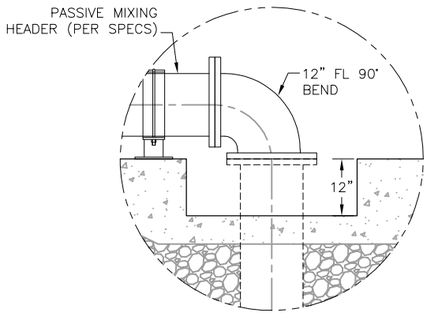


NOTE:
1. USE DIMENSIONS ABOVE OR AS NEEDED TO PASS 0.7 CFS W/ 0.2 FEET OF HEAD OVER WEIR.

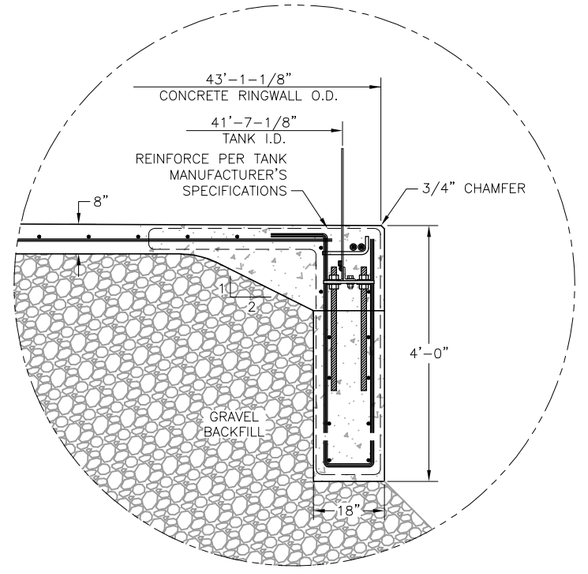
B/P10 **WEIR DETAIL**
SCALE: N.T.S.



C/P10 **DRAIN PIPE DETAIL**
SCALE: N.T.S.



D/P10 **INLET/OUTLET PENETRATION DETAIL**
SCALE: N.T.S.



E/P10 **RINGWALL FOUNDATION SECTION**
SCALE: N.T.S.

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
WATER STORAGE TANK
DETAILS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

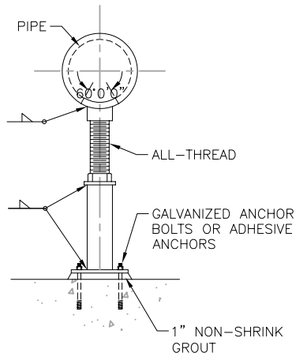
Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

P10
SHEET 10 OF 12

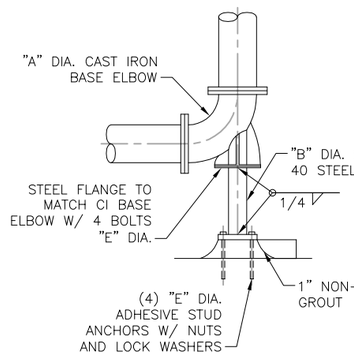
PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (FT.)	MAXIMUM VERTICAL SPACING (FT.)
CAST IRON PIPE	5	15
COPPER OR COPPER–ALLOY PIPE	12	10
COPPER OR COPPER–ALLOY TUBING 1–1/4" DIA. & SMALLER	6	10
COPPER OR COPPER–ALLOY TUBING 1–1/2" DIA. & LARGER	10	10
CPVC PIPE OR TUBING 1" OR SMALLER	3	10
CPVC PIPE OR TUBING 1–1/4" OR LARGER	4	10
STEEL PIPE	12	15
PVC TUBING	8	10
PVC PIPE	4	10

NOTES:

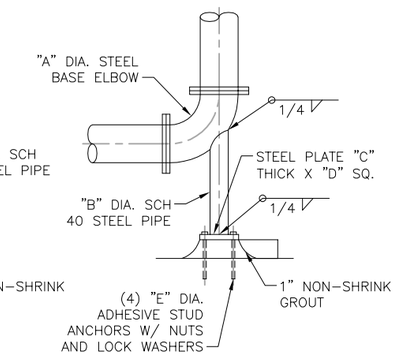
1. REFER TO SECTION 305 OF 2009 INTERNATIONAL MECHANICAL CODE FOR DETAIL INFORMATION.
2. THE MAXIMUM HORIZONTAL SPACING OF CAST–IRON PIPE HANGERS SHALL BE INCREASED TO 10 FEET WHERE 10–FOOT LENGTHS OF PIPE ARE INSTALLED.
3. ALSO INCLUDES STEEL AIR PIPING SYSTEM.



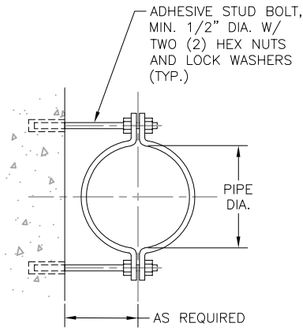
CAST IRON ELBOW



STEEL ELBOW

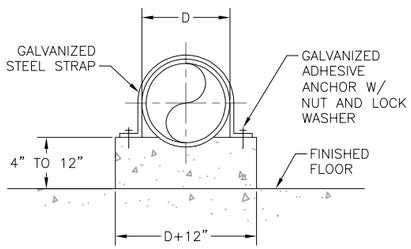


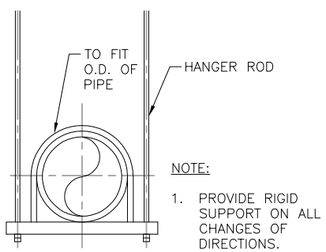
ELBOW "A" DIA.	DIMENSIONS IN INCHES			
	"B" DIA.	"C" DIA.	"D" DIA.	"E" DIA.
4	2	3/8	6	5/8
6	2–1/2	3/8	7	5/8
8	4	1/2	9	5/8
10	4	1/2	9	5/8
12	6	1/2	11	3/4
14	6	1/2	11	3/4
16	6	1/2	11	3/4
18	8	1/2	13–1/2	3/4
20	8	1/2	13–1/2	3/4
24	8	1/2	13–1/2	3/4
30	10	3/4	16	7/8
36	12	3/4	19	7/8
42	16	3/4	23–1/2	1
48	18	3/4	25	1–1/8



NOTES:

1. GALVANIZE ALL PARTS AFTER FABRICATION. PIPE CLAMP, SHIELD AND ANCHOR TO BE TYPE 304 STAINLESS STEEL WHERE SUBMERGED OR WHERE LOCATED WITHIN THE EXTERIOR WALLS OF THE TREATMENT BASINS OR SOLIDS HOLDING.
2. WHEN USED WITH PVC OR FIBERGLASS PIPE, PROVIDE STEEL SHIELD AROUND PIPE AT CLAMP. WRAP COPPER TUBES WITH 2" WIDE RUBBER FABRIC.



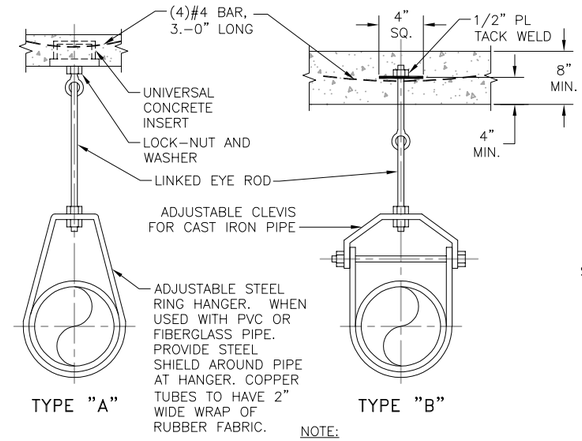


NOTE:

1. PROVIDE RIGID SUPPORT ON ALL CHANGES OF DIRECTIONS.

FOR HANGER RODS 3/4" DIA. AND SMALLER

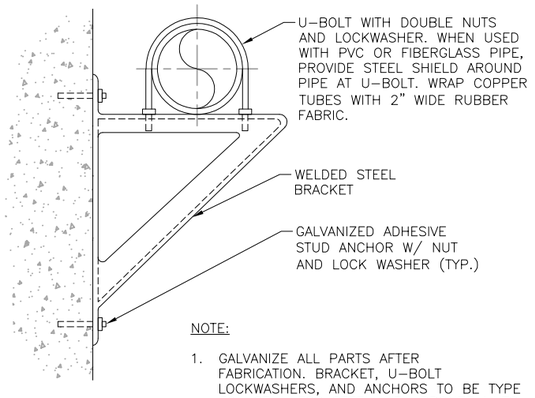
FOR HANGER RODS 7/8" DIA. AND LARGER, AND MIN. 8" THICK CONCRETE



TYPE "A" TYPE "B"

NOTE:

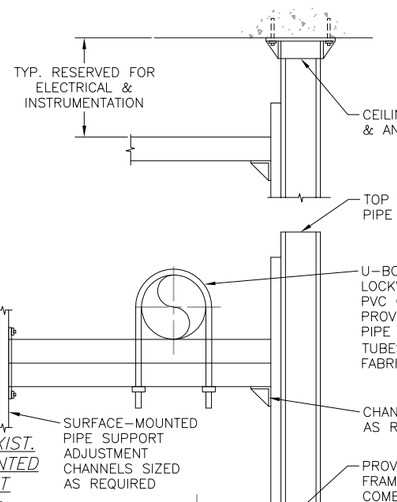
1. PROVIDE RIGID SUPPORT ON ALL CHANGES OF DIRECTIONS.



NOTE:

1. GALVANIZE ALL PARTS AFTER FABRICATION. BRACKET, U–BOLT LOCKWASHERS, AND ANCHORS TO BE TYPE 304 STAINLESS STEEL WITH BRONZE NUTS WHERE SUBMERGED OR WHERE LOCATED WITHIN THE EXTERIOR WALLS OF THE TREATMENT BASINS OR SOLIDS HOLDING.

TYPICAL CEILING MOUNTED ANCHOR



TYPICAL FLOOR MOUNTED SUPPORT

TYPICAL PIPE SUPPORT RACK NOTES:

1. THE RACK ILLUSTRATED IS A COMPOSITE FOR REFERENCE USE ONLY. THE VERTICAL SPACING, RACK WIDTH, COMPONENTS SELECTED AND PLACEMENT IS BY THE CONTRACTOR,
2. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL. PROPOSED PIPE SUPPORTS TO BE BASED ON SPECIFIC CONDITIONS
3. WHERE FUTURE PIPES ARE INDICATED ADJACENT TO PIPES IN THIS CONTRACT, SUPPORT CHANNELS SHALL BE SIZED FOR FUTURE REQUIREMENTS.

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM

PROCESS DETAILS 1

REVISIONS			
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

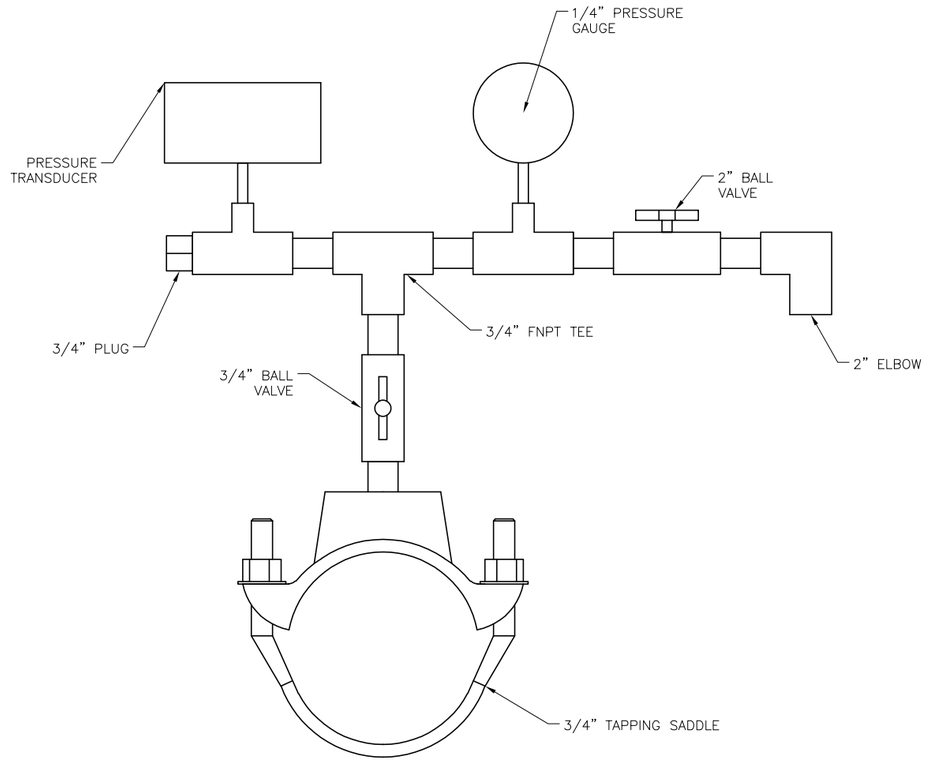
100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 12/1/21

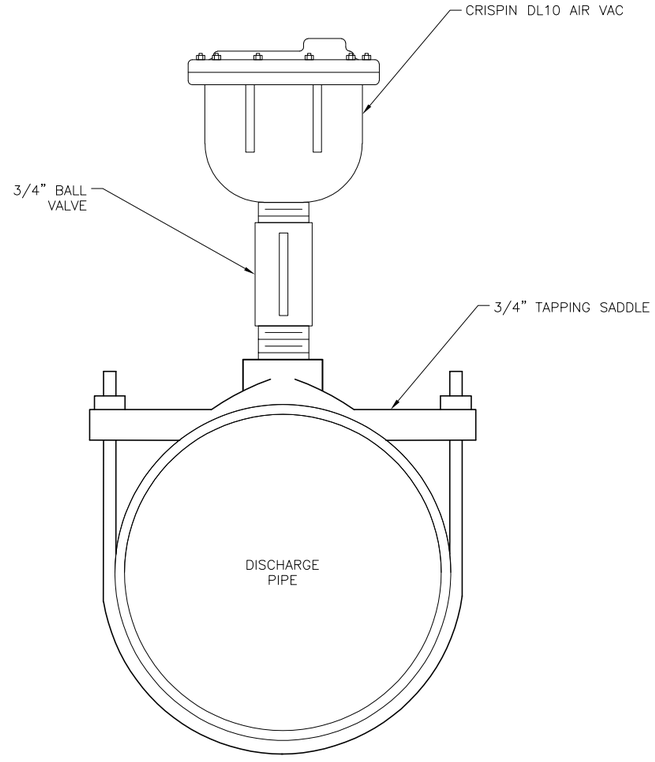
Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

P11

SHEET 11 OF 12



A P12 **TAPPING SADDLE DETAIL**
SCALE: N.T.S.



B P12 **AIR-VAC DETAIL**
SCALE: N.T.S.

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5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH

OVERALL WATER SYSTEM

PROCESS DETAILS 2

REVISIONS

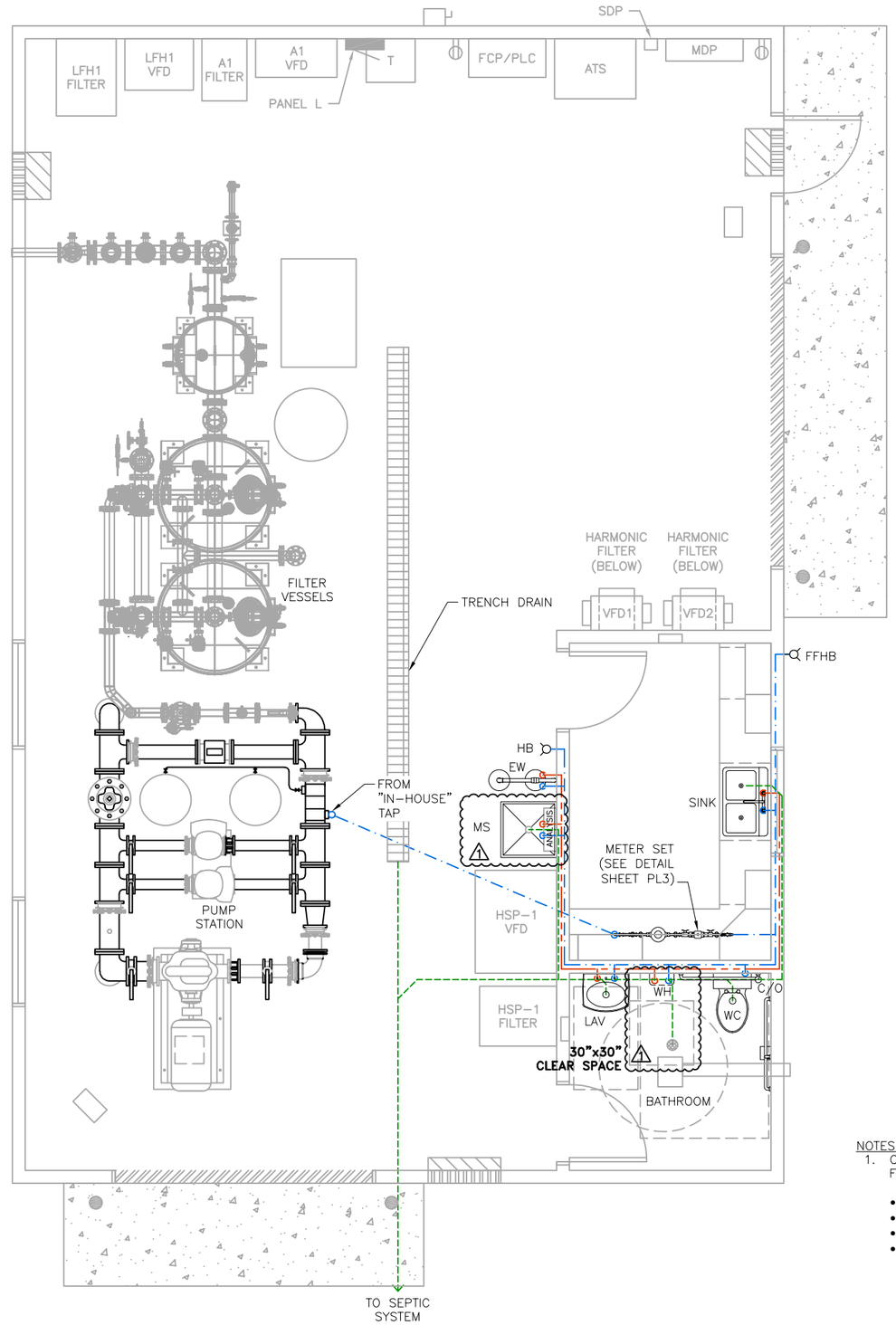
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

P12
SHEET 12 OF 12



PLUMBING PLAN

11x17 SCALE: 3/16"=1'-0"
24x36 SCALE: 3/8"=1'-0"

LEGEND
DOMESTIC WATER – COLD
DOMESTIC WATER – HOT
WASTE & VENT PIPING
HOSE BIB (HB & FFHB)

NOTE:
ALL ABOVE-GRADE PLUMBING WATER LINES TO BE CROSS-LINKED POLYETHYLENE (SEE SPECS).

NOTES:
1. CLEARANCE DIMENSIONS FOR THE BATHROOM FIXTURES ARE AS FOLLOWS:
   - TURNAROUND CLEAR FLOOR SPACE: 60" DIA.
   - WATER HEATER CLEAR FLOOR SPACE: 30"x30"
   - LAV CLEAR FLOOR SPACE: 30"x48"
   - WATER CLOSET CLEAR FLOOR SPACE: 60"x77"

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5540 TECH CENTER DR., SUITE 100
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SADDLEHORN RANCH
OVERALL WATER SYSTEM
PLUMBING PLAN

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
1	PPRBD REVISIONS	SKG	RMM	07/26/21
2				
3				
4				
5				
6				
7				

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RYAN M. MANGINO
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PROFESSIONAL ENGINEER
9/1/21

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Drawn:	SKG
Check:	RMM

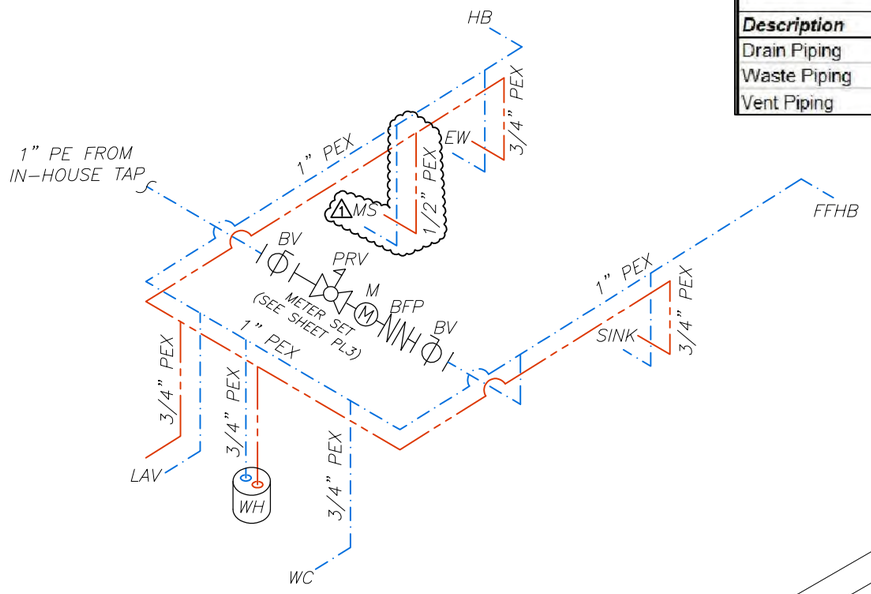
PL1

SHEET 1 OF 3

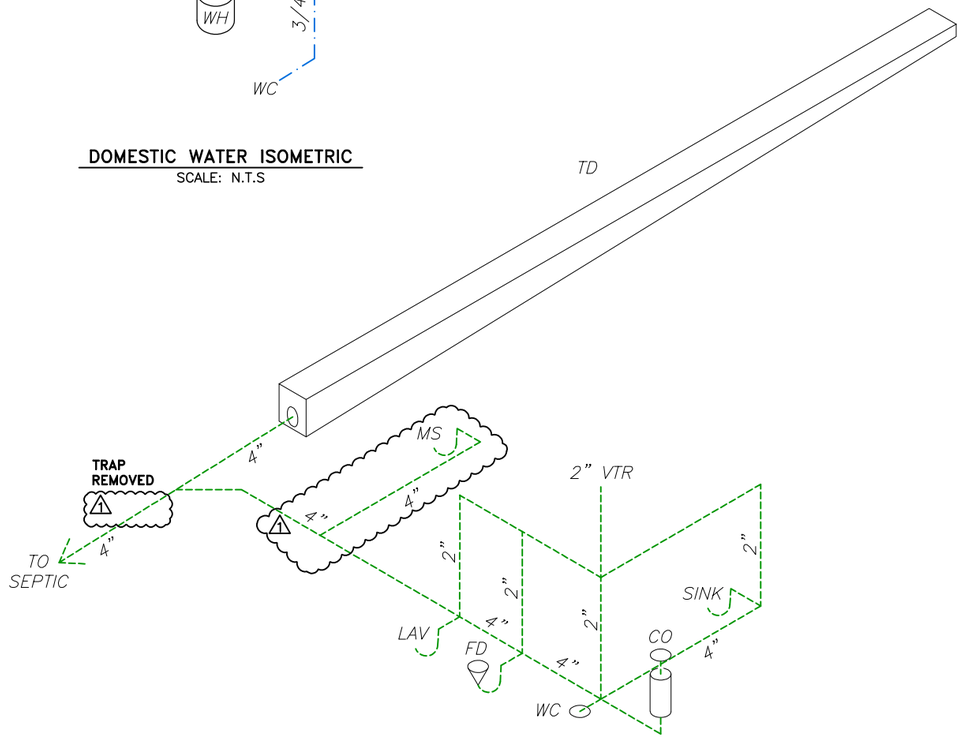
2021/12/02 5:11 PM By: Ryan Mangino J:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\31102_6_Plumbing.dwg

Drain Waste & Vent Pipe Schedule SRMD - Water Treatment Facility	
Description	***Pipe Material***
Drain Piping	SCHD 40 PVC
Waste Piping	SCHD 40 PVC
Vent Piping	SCHD 40 PVC

Water Pipe Size Analysis SRMD - Water Treatment Facility				
Description	***Number of Units***	***DFU Value/ Unit***	***Total DFU Value***	
Water Closets	1	6	6	
Lavoratories	2	2	4	
Hose Bibb	3	2.5	7.5	
		Demand	**17.5**	**GPM**
			(fig. 4.4, pg 32 of AWWA book, Sizing Water Service Lines and Meters	
Conclusions: 1) Use 1" meter 2) Install 1.0" service from main 3) Estimated pressure at 60 psi				



DOMESTIC WATER ISOMETRIC
SCALE: N.T.S



DOMESTIC WASTEWATER ISOMETRIC
SCALE: N.T.S

LEGEND
DOMESTIC WATER – COLD
DOMESTIC WATER – HOT
WASTE & VENT PIPING
HOSE BIB (HB & FFHB)

NOTE:
ALL ABOVE–GRADE PLUMBING WATER LINES TO BE CROSS–LINKED POLYETHYLENE (SEE SPECS).

PLUMBING FIXTURE SCHEDULE

LABEL	DESCRIPTION	FIXTURE		ROUGH–INS					NOTES
		MANUFACTURER	MODEL#	WASTE	TRAP	VENT	CW	HW	
BV	BALL VALVE	WATTS	FBV–3C	N/A	N/A	N/A	1"	N/A	1" QUARTER–TURN, FULL–PORT BRASS BALL VALVE WITH THREADED CONNECTIONS.
PRV	PRESSURE REDUCING VALVE	WATTS	LFN55B–M1	N/A	N/A	N/A	1"	N/A	1" PRESSURE REDUCING VALVE
M	METER	BADGER METER (PROVIDED BY DISTRICT)	M70–100LNS X–HL–GAXX	N/A	N/A	N/A	1"	N/A	1" DISC METER
BFP	BACKFLOW PREVENTER	WATTS	LF009	N/A	N/A	N/A	1"	N/A	REDUCED–PRESSURE BACKFLOW PREVENTER.
HB	HOSE BIBB	ACORN ENGINEERING COMPANY	8126–LF	N/A	N/A	N/A	3/4"	N/A	3/4" BENT NOSE HOSE BIBB WITH VACUUM BREAKER
FFHB	FROST–FREE HOSE BIB	WOODFORD	MODEL 17	N/A	N/A	N/A	3/4"	N/A	3/4" FREEZLESS WALL FAUCET WITH VACUUM–BREAKER
WC	WATER CLOSET	KOHLER	K–3451	12" ROUGH–IN	2–1/8" GLAZED TRAPWAY	2"	1/2"	N/A	PROVIDE WITH RECOMMENDED ANGLE SUPPLY WITH STOP (3/8" NPT)
FD	FLOOR DRAIN	WATTS	FD15–R	3"	0'–3"	0'–2"	N/A	N/A	SUPPLY WITH 5" ROUND STAINLESS STEEL STRAINER.
TD	TRENCH DRAIN	ZURN	Z806–Z	4"	0'–4"	0'–2"	N/A	N/A	
LAV	LAVORATORY	KOHLER	K–2035–4	1–1/2"	0'–1 1/2"	0'–1 1/2"	3/8"	3/8"	PROVIDE WITH K–2057 SINK SHROUD.
SINK	DOUBLE–BASIN SINK	DURCON	SNKD–30D	1–1/2"	1–1/4" X 1–1/2"	1–1/2'	1/2"	1/2"	
MS ⚠1	MOP SINK	FIAT	MSB–2424	3"	3"	1–1/2"	1/2"	1/2"	
WH	WATER HEATER	ECCOTEMP	EM–4.0	N/A	N/A	N/A	1/2"	1/2"	MINI TANK WATER HEATER INSTALLED NEXT TO LAV.
CO	CLEAN–OUT	WATTS	CO–1200–R	3"	N/A	0'–3"	N/A	N/A	

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5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
PLUMBING ISOMETRICS, SCHEDULES, & PIPE SIZE ANALYSIS

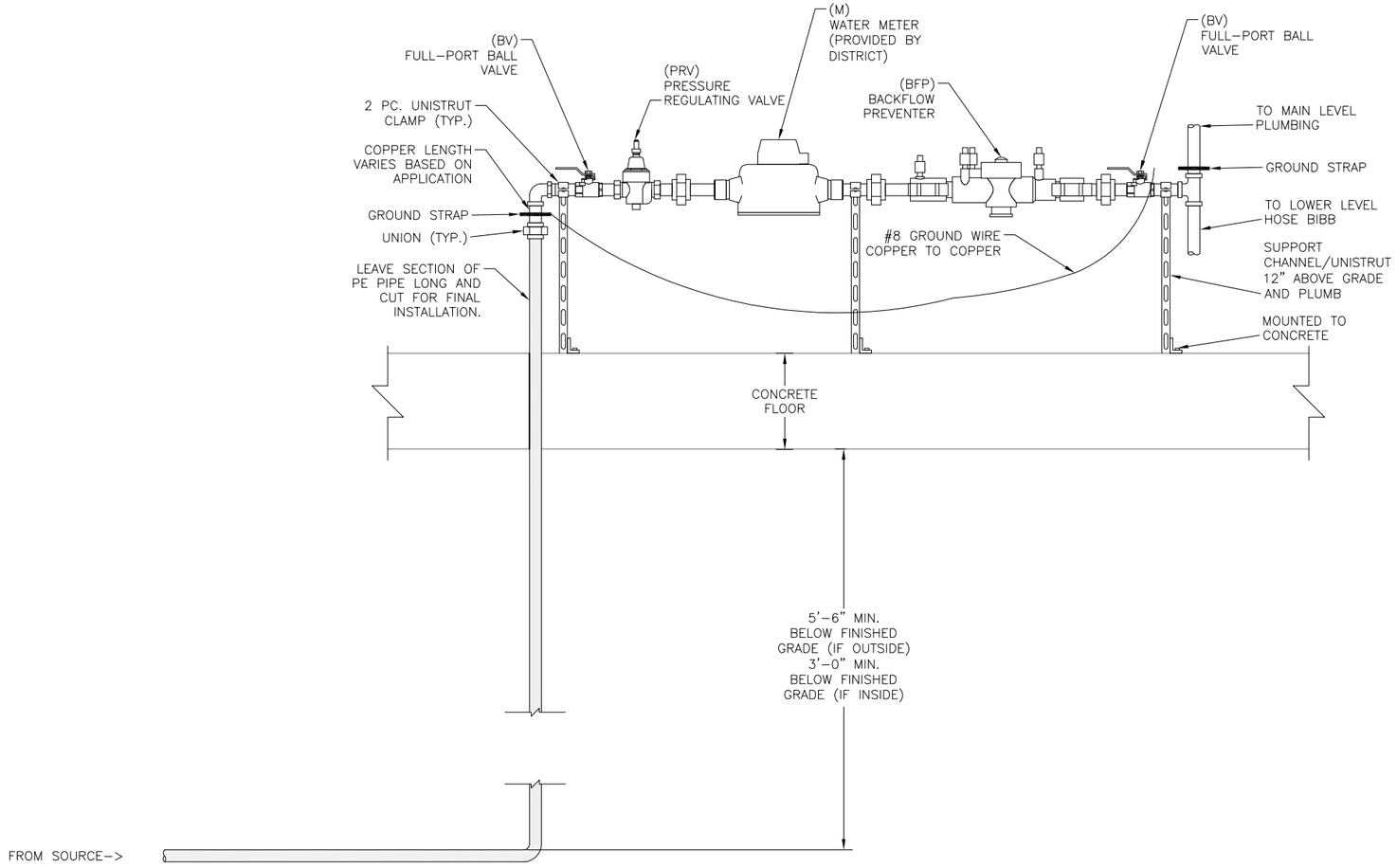
REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
1	PPRBD REVISIONS	SKG	RMM	07/26/21
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MARGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

PL2
SHEET 2 OF 3



METER SET
SCALE: N.T.S.

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

PLUMBING DETAILS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
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7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
9/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

PL3

SHEET 3 OF 3

ELECTRICAL LEGEND

LIGHTING SYMBOLS:

- SURFACE/PENDANT MOUNTED LED LUMINAIRE
- WALL/CEILING MOUNTED EXIT SIGN, (DFU) IMPLIES DOUBLE FACE UNIT ARROWS INDICATE DIRECTION TO DOOR (CHEVRON)
- WALL MOUNTED LIGHT
- WALL MOUNTED LINEAR FIXTURE
- EMERGENCY WALL PACK (BATTERY OPERATED)

CONTROL SYMBOLS:

- SWITCH
- Sˣ x INDICATES SWITCHLEG
- Sₓ x INDICATES FUNCTION:
  NO MARK – STANDARD SWITCH
  P – PILOT LIGHT OR LIGHTED HANDLE
  3 – THREE WAY
  H – HORSEPOWER RATED SWITCH
- PUSH BUTTON SWITCH
- PHOTO CELL 120V, 20A
- CONTACTOR/TIMER

RECEPTACLE/OUTLET SYMBOLS:

- SIMPLEX RECEPTACLE
- #X DUPLEX RECEPTACLE
  RECEPTACLE FUNCTIONS: (TYPICAL)
  G – GROUND FAULT CIRCUIT INTERRUPTER
  T – SURGE PROTECTION DEVICE
  WP – PROVIDE WR RATED DEVICE, WEATHERPROOF COVER AND IN USE CABLE GUARD
- DOUBLE DUPLEX RECEPTACLE
- SPECIAL RECEPTACLE
  (SIZE AND TYPE AS INDICATED BY NEMA NO.)
- 4" SQUARE JUNCTION BOX WITH BLANK COVER UNLESS OTHERWISE NOTED
- J LARGE JUNCTION BOX. SIZE AS NOTED

RACEWAY SYMBOLS:

- PROVIDE A MINIMUM WIRE SIZE OF #12 CONDUCTORS IN 3/4"C. PROVIDE 1 PHASE AND 1 NEUTRAL CONDUCTOR FOR EACH BRANCH CIRCUIT. GROUND CONDUCTORS MAY BE SHARED AMONGST MULTIPLE BRANCH CIRCUITS WITHIN A COMMON CONDUIT UNLESS THE CIRCUITS SUPPLY ELECTRONIC/COMPUTER LOADS. DEDICATED NEUTRALS AND GROUNDS SHALL BE PROVIDED FOR ELECTRONIC/COMPUTER LOADS AND FOR CIRCUITS WITH GFCI TYPE RECEPTACLES.
- RACEWAY CONCEALED ABOVE CEILING OR IN WALL, EXPOSED IN EQUIPMENT ROOMS OR UNFINISHED SPACES.
- RACEWAY UNDERGROUND OR UNDERFLOOR
- RACEWAY UP
- RACEWAY DOWN
- RACEWAY CHANGE IN ELEVATION
- CAPPED CONDUIT
- FLEXIBLE CONDUIT CONNECTION (LIQUIDTIGHT)
- PLUG AND CORD SET
- HOME RUN CONDUIT, SIZE AS INDICATED (#)

MISCELLANEOUS SYMBOLS AND ABBREVIATIONS:

- (X) KEYNOTES (APPLIES TO ENTIRE SHEET WHEN SHOWN UNDER PLAN TITLE)
- EQUIPMENT IDENTIFIER
- REVISION NUMBER
- (REF.) REFERENCE DIMENSION FROM ARCHITECTURAL DRAWINGS (ELEVATION OF FIRST FLOOR)
- EXISTING WORK
- NEW WORK
- (E) EXISTING
- (N) NEW
- (TR) TO REMAIN
- U.O.N. UNLESS OTHERWISE NOTED
- UPS UNINTERRUPTIBLE POWER SYSTEM
- A.I.C. AMPS INTERRUPTING CAPACITY
- A.F.F. ABOVE FINISHED FLOOR
- (TYP.) TYPICAL
- E.C. ELECTRICAL CONTRACTOR
- M.C. MECHANICAL CONTRACTOR
- G.C. GENERAL CONTRACTOR
- SPD SURGE PROTECTION DEVICE
- IAW IN ACCORDANCE WITH
- O.C. ON CENTER
- VSD VARIABLE SPEED DRIVE
- LFMC LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT
- MLO MAIN LUGS ONLY

ONE LINE SYMBOLS

- CIRCUIT BREAKER XXXAT – TRIP RATING / XXXAF – FRAME RATING
- SAFETY DISCONNECT (NON FUSED)
- SAFETY DISCONNECT (FUSED)
- COMBINATION STARTER/DISCONNECT
- FUSED SWITCH – (600V & BELOW)
- XXXAF – FUSE RATING / XXXAS – SWITCH RATING
- FUSED SWITCH – (ABOVE 600V)
- TRANSFORMER: DELTA CONNECTION / WYE CONNECTION
- SURGE ARRESTOR
- GROUND CONNECTION (SIZE AS INDICATED)
- MOTOR, # INDICATES HORSEPOWER
- VFD VARIABLE FREQUENCY DRIVE
- FUSED POTENTIAL TRANSFORMER
- CURRENT TRANSFORMER
- MISCELLANEOUS LOAD
- PANELBOARD
- HPSF – HIGH PERFORMANCE SINEWAVE FILTER
  TVSS – TRANSIENT VOLTAGE SURGE SUPPRESSER
  SPD – SURGE PROTECTIVE DEVICE
- KW KWH METER (REMOTE)

GENERAL NOTES

(APPLY TO ALL ELECTRICAL SHEETS)

1. SIZES OF WIRE AND CABLES ARE BASED ON COPPER CONDUCTORS, UNLESS INDICATED OTHERWISE.
2. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION BETWEEN THE APPROPRIATE DISCIPLINES AND CONTRACTORS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PATCHING, REPAIRING OR THE REPLACEMENT OF ALL WALLS, CEILINGS OR OTHER VAULT ELEMENTS WHICH ARE DISTURBED AS PART OF THE INSTALLATION OF ELECTRICAL WORK.
4. REFER TO THE ELECTRICAL CONNECTIONS SCHEDULE FOR ADDITIONAL REQUIREMENTS ASSOCIATED WITH PLUMBING AND HVAC EQUIPMENT.
5. COORDINATE AND/OR PROVIDE CONCRETE HOUSE KEEPING PADS FOR FLOOR MOUNTED ELECTRICAL EQUIPMENT. PADS SHALL BE 3.5" AFF WITH CHAMFERED EDGE. PADS SHALL EXTEND BEYOND THE EQUIPMENT EDGES BY 3" IN EVERY DIRECTION.

POWER SYSTEMS:

- SERVICE AND DISTRIBUTION EQUIPMENT
  MDP –MAIN DISTRIBUTION PANEL
  MCC – MOTOR CONTROL CENTER
- STARTER
- SAFETY DISCONNECT
- FUSED DISCONNECT
- COMBINATION STARTER/DISCONNECT
- T TRANSFORMER

BRANCH CIRCUIT PANELBOARDS:

- PANELBOARD

LIGHTNING PROTECTION AND GROUNDING SYMBOLS:

- AIR TERMINAL
- GROUND ROD
- GROUND ROD WITH INSPECTION WELL AND COVER
- #4/0 GROUND RING CONDUCTOR
- #1/0 ROOF CONDUCTOR
- EXOTHERMIC WELD
- LPS LIGHTNING PROTECTION SYSTEM
- GROUND BAR
- EES EARTH ELECTRODE SYSTEM

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ROI PROPERTY GROUP
SADDLEHORN RANCH SUBDIVISION
ELECTRICAL LEGEND & GENERAL NOTES

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
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Project No.: 216001
Date: 12/16/21
Design: JJG
Drawn: KDP
Check: MDW

E1
SHEET 1 OF ###

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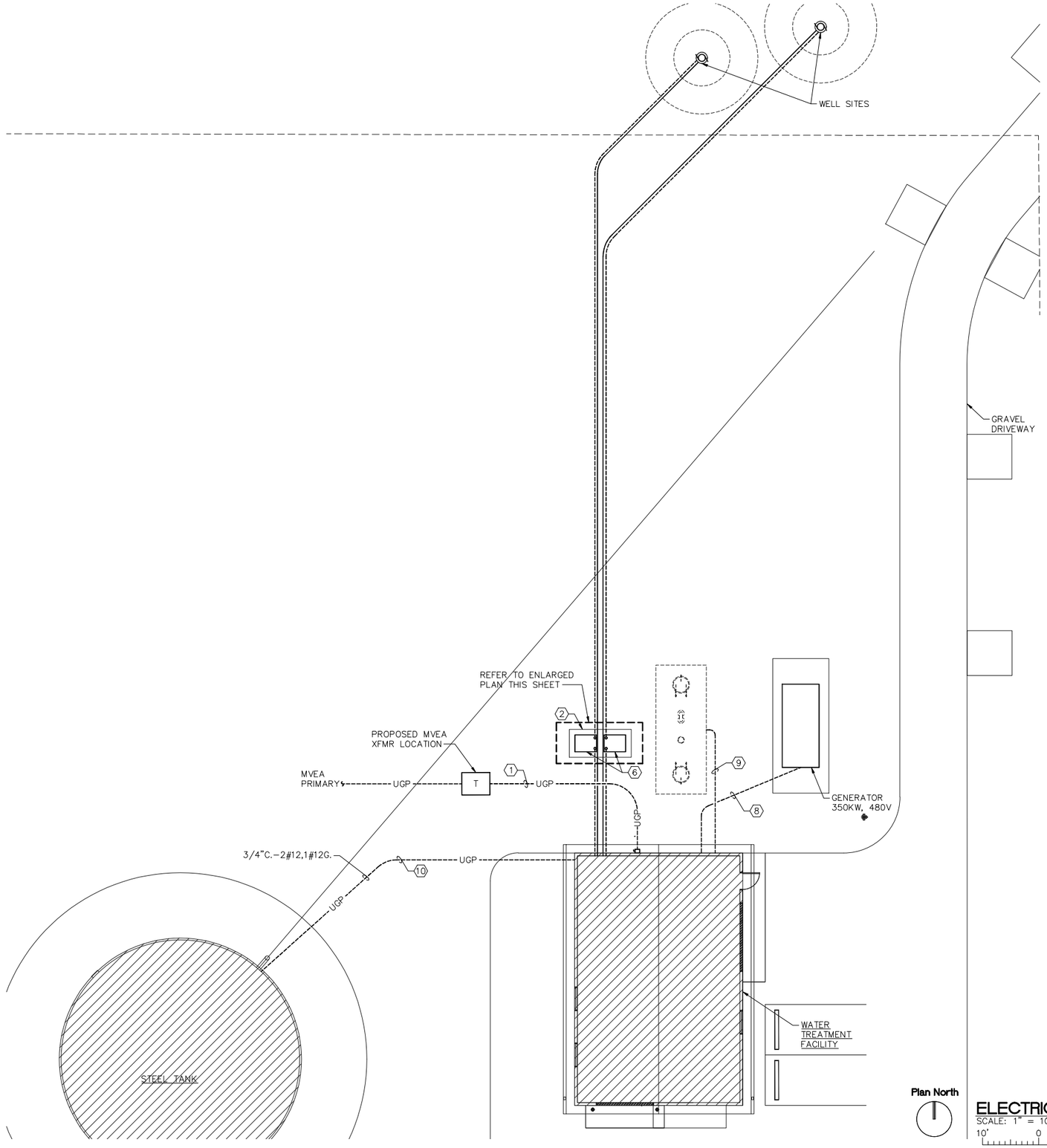


Plan North

ELECTRICAL SITE PLAN
SCALE: 1" = 10'
10' 0 10'

GENERAL NOTES

1. COORDINATE NEW ELECTRICAL SERVICE WITH MOUNTAIN VIEW ELECTRIC ASSOCIATION (MVEA) ENGINEERING SERVICES TEAM, SYSTEMS ENGINEERS AT DIRECT PHONE LINE (719) 494-2632, OR E-MAIL ENGINEERING@MVEA.COOP
2. COORDINATE ALL WELL PUMP ELECTRICAL INSTALLATION WITH WATER WELL CONTRACTOR. COORDINATE VARIABLE SPEED DRIVE (VSD), MUTLI-TAP MEDIUM VOLTAGE TRANSFORMER, 600V CONDUCTOR AND 5KV ARMORED DOWN WELL CABLE REQUIREMENTS FOR EACH WELL PUMP WITH WATER WELL CONTRACTOR AND ENGINEER PRIOR TO SUBMITTING PRODUCT DATA AND SHOP DRAWINGS FOR REVIEW.
3. ALL CONDUIT TURNING UP FROM BELOW GRADE OR SLAB, AND INSIDE VAULT AND EXPOSED ON EQUIPMENT PAD SHALL BE RIGID IMC OR GRS CONDUIT. BELOW SALB OR GRADE CONDUIT RISERS SHALL BE TAPED IMC OR GRS CONDUIT OR PVC-COATED GRS CONDUIT.

KEYNOTES

(1) PROVIDE UNDERGROUND 480V SECONDARY FROM MVEA TRANSFORMER TO MDP. INSTALL CONDUCTORS IN SCHEDULE 40 PVC CONDUITS. INSTALL CONDUIT IN TRENCH WITH A MINIMUM OF 36" COMPACTED COVER. PROVIDE DETECTABLE METALLIC WARNING TAPE ABOVE CONDUIT AT 8" BELOW GRADE. COORDINATE WITH MVEA FOR CONNECTION AT TRANSFORMER.

(2) ROUTE ALL CONDUITS FOR MULTI-TAP XFMRS, BELOW CONCRETE SLAB.

(3) ROUTE 480V FEEDER CONDUCTORS FOR WELL PUMPS IN SCHEDULE 80 PVC CONDUIT BELOW FLOOR FROM VFD OUTPUT FILTERS TO MULTI-TAP XFMRS ON EXTERIOR PAD, WITH 12" OF COVER, MINIMUM.

(4) PROVIDE A 3" PVC SCHEDULE 80 CONDUIT SLEEVE BETWEEN MULTI-TAP TRANSFORMER AND WELL HEAD FOR MEDIUM VOLTAGE (5KV) ARMORED POWER CABLE PROVIDED BY WELL PACKAGE CONTRACTOR. ENCASE CONDUIT IN CONCRETE PER DETAIL ON E5. PROVIDE DETECTABLE METALLIC WARNING TAPE ABOVE CONDUIT.

(5) PROVIDE AN EMPTY 1-1/2" PVC SCHEDULE 80 CONDUIT WITH PULL TAPE BETWEEN THE SCADA PANEL AND THE WELL HEADS FOR PRESSURE TRANSDUCERS AND LOW VOLTAGE CABLING BY OTHERS. ROUTE CONDUIT IN SAME TRENCH AS POWER CABLES WITH 12" SEPARATION.

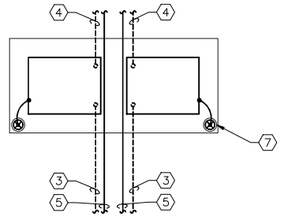
(6) INSTALL MULTI-TAP, 480V TO MEDIUM VOLTAGE STEP-UP TRANSFORMER FURNISHED BY WELL CONTRACTOR. SEE ONE LINE DIAGRAM FOR TRANSFORMER RATINGS.

(7) PROVIDE A DRIVEN 3/4" DIA.x10' LONG COPPERCLAD GROUND ROD IN AN INSPECTION WELL FOR EACH MULTI-TAP TRANSFORMER. INSTALL GROUND WELLS WITH COVER FLUSH WITH FINISHED CONCRETE. GROUND WELL SHALL BE A PRODUCT OF CARLON INDUSTRIES OR APPROVED EQUAL.

(8) PROVIDE SCHEDULE 80 PVC CONDUIT FOR GENERATOR POWER CONNECTIONS TO ATS AND A SEPARATE SCHEDULE 80 PVC, 1-1/2" CONDUIT FOR CONTROL WIRING. REFER TO SHEET E4 FOR DETAILS.

(9) PROVIDE WATERPROOF 3/4" CONDUIT, 3#12, 1#12G. CONDUCTORS AND ALL ASSOCIATED ELBOWS AND SUPPORTS TO RECLAIM PUMP.

(10) PROVIDE UNDERGROUND SERVICE FROM PANEL 'L' TO RECLAIM PUMP. INSTALL CONDUCTORS IN SCHEDULE 40 PVC CONDUITS AND TRENCH WITH A MINIMUM OF 36" COMPACTED COVER. PROVIDE DETECTABLE METALLIC WARNING TAPE ABOVE CONDUIT AT 8" BELOW GRADE.



ENLARGED ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"
12" 0 5'

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ROI PROPERTY GROUP
SADDLEHORN RANCH SUBDIVISION
ELECTRICAL SITE PLAN

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
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Project No.:	216001
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E2
SHEET 1 OF ###

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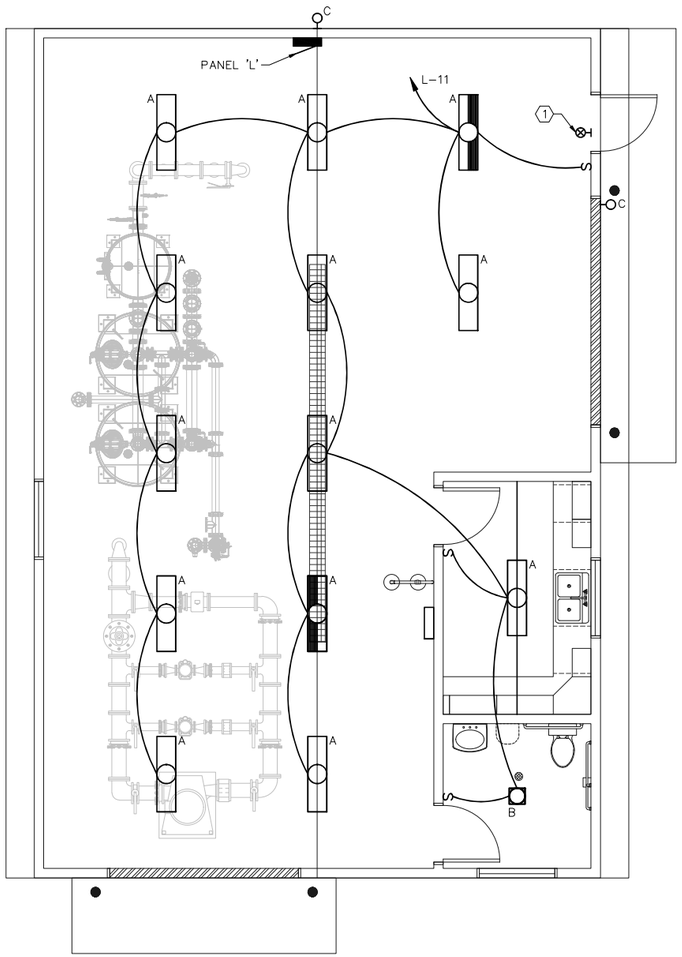
2021/12/20 1:56 PM By: Kevin D. Porter P:\2021\216001 Saddlehorn Ranch Water Treatment Plant\DWG\ELEC\216001_E2.dwg

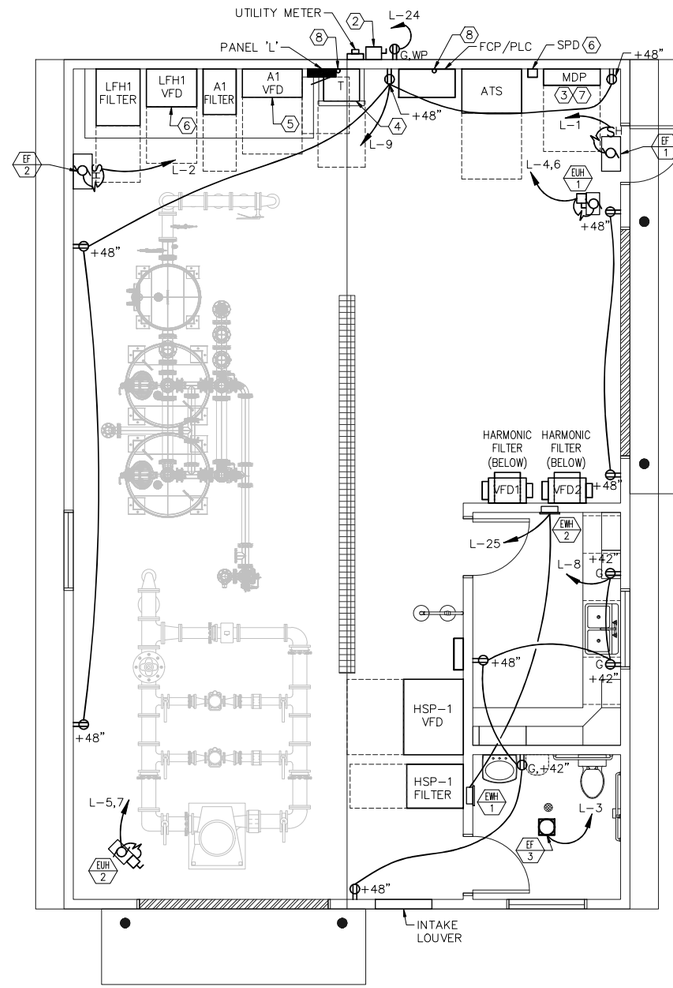


Plan North

LIGHTING PLAN

SCALE: 1/4" = 1'-0"

12" 0 5'



Plan North

POWER PLAN

SCALE: 1/4" = 1'-0"

12" 0 5'

GENERAL NOTES

1. COORDINATE NEW ELECTRICAL SERVICE WITH MOUNTAIN VIEW ELECTRIC ASSOCIATION (MVEA) ENGINEERING SERVICES TEAM, SYSTEMS ENGINEERS AT DIRECT PHONE LINE (719) 494-2632, OR E-MAIL ENGINEERING@MVEA.COOP
2. REFER TO POWER ONE LINE DIAGRAM ON SHEET E4 FOR REQUIRED ELECTRICAL EQUIPMENT AND FEEDER RATINGS REQUIRED. REFER TO EQUIPMENT AND PANEL SCHEDULES ON SHEET E6 FOR SIZING MECHANICAL AND PROCESS EQUIPMENT CIRCUITS, AND FOR THE LIGHTING FIXTURE SCHEDULE.
3. COORDINATE ELECTRICAL EQUIPMENT, BOXES AND CONDUIT INSTALLATION WITH MECHANICAL HVAC EQUIPMENT AND MECHANICAL PROCESS PIPING, VALVES AND INSTRUMENTATION.
4. COORDINATE ALL CONDUIT FOR SCADA CONTROL SYSTEM LOW VOLTAGE CABLING RUNS AND 120V POWER WITH CONTROLS INTEGRATOR. PROVIDE ALL RACEWAYS.
5. PROVIDE TEMPORARY CONSTRUCTION POWER AND LIGHTING AS REQUIRED.
6. PROVIDE PULL TAPE IN ALL EMPTY CONDUITS.

KEYNOTES

1. PROVIDE EMERGENCY/EXIT LIGHT COMBINATION FIXTURE.
2. PROVIDE AN 800A, NEMA 3R, 3ø DISCONNECT SWITCH ADJACENT TO UTILITY METER.
3. PROVIDE A WALL MOUNTED 800 AMP 3-PHASE DISTRIBUTION PANEL, 480Y/277V, WITH FULLY RATED NEUTRAL, COPPER BUSSES, 65K AIC INTERRUPTING CAPACITY, WITH MAIN CIRCUIT BREAKER. PROVIDE BRANCH BREAKERS, SPARES AND BUSSED SPACES AS SHOWN ON THE ONE LINE DIAGRAM.
4. PROVIDE 30 KVA DRY-TYPE TRANSFORMER AND 100-AMP 120/208V PANELBOARD 'L'.
5. PROVIDE POWER FEEDER CONDUIT AND CONDUCTORS FROM MDP TO THE A1 WELL PUMP VFD FURNISHED BY WELL EQUIPPING CONTRACTOR. ROUTE CONDUIT OVERHEAD TO CONDUIT ENTRY OF VFD CABINET.
6. PROVIDE POWER FEEDER CONDUIT AND CONDUCTORS FROM MDP TO THE LFH1 WELL PUMP VFD FURNISHED BY WELL EQUIPPING CONTRACTOR. ROUTE CONDUIT OVERHEAD TO CONDUIT ENTRY OF VFD CABINET.
7. GROUND AND BOND ELECTRICAL SERVICE TO MDP GROUND BUS. PROVIDE CONCRETE ENCASED ELECTRODE, AND GROUND TO STRUCTURAL STEEL OR METALLIC WATER PIPE. SEE ONE LINE FOR REQUIRED GROUND CONNECTIONS.
8. TURN POWER CONDUIT FROM STEP-UP TRANSFORMER TO SINE WAVE FILTER UP THROUGH SLAB AND TRANSITION TO EMT CONDUIT. PROVIDE LIQUID-TIGHT FLEX CONNECTION TO FILTER CABINET AT MANUFACTURER'S RECOMMENDED ENTRY LOCATION.

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ROI PROPERTY GROUP

SADDLEHORN RANCH SUBDIVISION

ELECTRICAL PLAN

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
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E3

SHEET 2 OF ###

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GENERAL NOTES

1. COORDINATE NEW ELECTRICAL SERVICE WITH MOUNTAIN VIEW ELECTRIC ASSOCIATION (MVEA) ENGINEERING SERVICES TEAM, SYSTEMS ENGINEERS AT DIRECT PHONE LINE (719) 494-2632, OR E-MAIL ENGINEERING@MVEA.COOP
2. THE ELEVATION OF THE PROJECT SITE IS APPROXIMATELY 7000 FEET ABOVE SEA LEVEL. PROVIDE ELECTRICAL EQUIPMENT SUCH AS THE VARIABLE FREQUENCY DRIVES AND SINE WAVE FILTERS THAT MEET THE REQUIRED HP, KVA OR FULL LOAD AMP RATINGS REQUIRED AFTER DERATING FOR 7000 FT IN ELEVATION AND ANY TEMPERATURE CONSIDERATIONS.
3. COORDINATE ALL ELECTRICAL WORK WITH WELL EQUIPPING PACKAGE CONTRACTOR.

KEYNOTES

(1) PROVIDE AN INTEGRAL SURGE PROTECTION DEVICE (SPD) / TVSS INSTALLED BY MDP MANUFACTURER WITH A MINIMUM 100KA INTERRUPTING CAPACITY CONNECTED TO THE MDP BUSES. SPD SHALL HAVE VISIBLE LED AND AUDIBLE ALARMS, DRY RELAY CONTACTS AND SURGE COUNTER.

(2) WALL MOUNTED ENCLOSED MAIN DISCONNECT SWITCH ADJACENT TO UTILITY METER. PROVIDE INVERSE TIME FUSES.

(3) PROVIDE SERVICE GROUNDING AS SHOWN, INCLUDING CONCRETE ENCASED FOUNDATION GROUND WITH A MINIMUM OF 20LF #4 CU TIED TO REINFORCING STEEL, AND AT LEAST ONE OTHER GROUND SOURCE (WATER MAIN OR BLDG STEEL).

(4) PROVIDE ELECTRONIC CIRCUIT BREAKER WITH FULL FUNCTION TRIP UNIT FOR BREAKERS 150A AND ABOVE.

(5) 480V VARIABLE FREQUENCY DRIVE IN A PUMP PANEL WITH A NEMA 3R ENCLOSURE PROVIDED BY WELL EQUIPMENT CONTRACTOR WITH THE FOLLOWING PROTECTION FEATURES: INPUT CIRCUIT BREAKER, EMI FILTER, INPUT OVERVOLTAGE PROTECTION, LINE SURGE PROTECTION TO 50KA, OUTPUT PHASE, SHORT CIRCUIT AND GROUND FAULT PROTECTION, OVER TEMP PROTECTION, DC OVERVOLTAGE, DRIVE OVERLOAD, KEYPAD LOCKOUT, FAULT ALARM OUTPUT, INTEGRAL DIAGNOSTICS, PILOT LIGHT. PANEL FEATURES INCLUDE: START/STOP BUTTONS, SPEED CONTROL POT, H-O-A SWITCH, POWER ON, RUN AND FAULT LIGHTS, LOCKABLE DOOR MOUNTED DISCONNECT HANDLE, TVSS, CONTROL POWER TRANSFORMER, CELLULAR GATEWAY FOR DATA TRANSMISSION AND ANALYTICS VIA EATON'S IOT SOLUTION DEVICES.

(6) WELL EQUIPMENT CONTRACTOR TO FURNISH A UL 508 LISTED TCI MOTOR SHIELD (MSD) SINE WAVE FILTER IN A NEMA TYPE 1/3R ENCLOSURE TO FILTER THE OUTPUT OF THE DRIVE. THE MSD CONVERTS THE PWM OUTPUT IT TO A CLEANER, SINUSOIDAL VOLTAGE WAVEFORM TO PROTECT AND LENGTHEN THE LIFE OF EACH INSTALLED WELL PUMP. CONNECT THE FILTER TO THE OUTPUT OF THE DRIVE AND THE 480V SIDE OF THE MULTI-TAP SUBSTATION TRANSFORMER WITH 600V POWER CONDUCTORS SIZED AS SHOWN.

(7) SINE WAVE FILTERS SHALL BE TCI MODEL MSD00###A300 OF APPROPRIATE HORSEPOWER OR APPROVED EQUAL.

(8) INSTALL DRIVE FOR THE 150HP LFH1 PUMP IN A EATON POWER XL DG1 IRRIGATION DRIVE PUMP PANEL IN THE QUICK SHIP PROGRAM, WITH THE FOLLOWING MINIMUM RATINGS: OUTPUT AT 480V, 150HP-VT, 110% OVERLOAD (60 SEC), 100KAIC FAULT CURRENT RATING, PROVIDED BY WELL EQUIPMENT PACKAGE CONTRACTOR.

(9) INSTALL DRIVE FOR THE 75HP A1 PUMP IN A EATON SVX IRRIGATION DRIVE PUMP PANEL IN THE QUICK SHIP PROGRAM, CATALOG NUMBER SVX7534AP-PUMP01, WITH THE FOLLOWING MINIMUM RATINGS: OUTPUT AT 480V, 75HP-VT/75HP-CT, 110% OVERLOAD (60 SEC), 100KAIC FAULT CURRENT RATING. PROVIDED BY WELL EQUIPMENT PACKAGE CONTRACTOR.

(10) INSTALL DRIVE FOR THE 100HP HSP-1 PUMP IN A EATON SVX IRRIGATION DRIVE PUMP PANEL IN THE QUICK SHIP PROGRAM, CATALOG NUMBER SVX10034AP-PUMP01, WITH THE FOLLOWING MINIMUM RATINGS: OUTPUT AT 480V, 100HP-VT/100HP-CT, 110% OVERLOAD (60 SEC), 100KAIC FAULT CURRENT RATING. PROVIDED BY WELL EQUIPMENT PACKAGE CONTRACTOR.

(11) INSTALL MULTI-TAP SUBSTATION TRANSFORMER PROVIDED BY WELL EQUIPMENT PACKAGE CONTRACTOR. TRANSFORMER SHALL BE PAD MOUNTED ON CONCRETE OR STANCHION MOUNTED. COORDINATE WITH WELL EQUIPMENT CONTRACTOR.

(12) ARMORED INSULATED 5KV POWER CABLE BETWEEN TRANSFORMER AND WELL PUMP PROVIDED BY WELL CONTRACTOR.

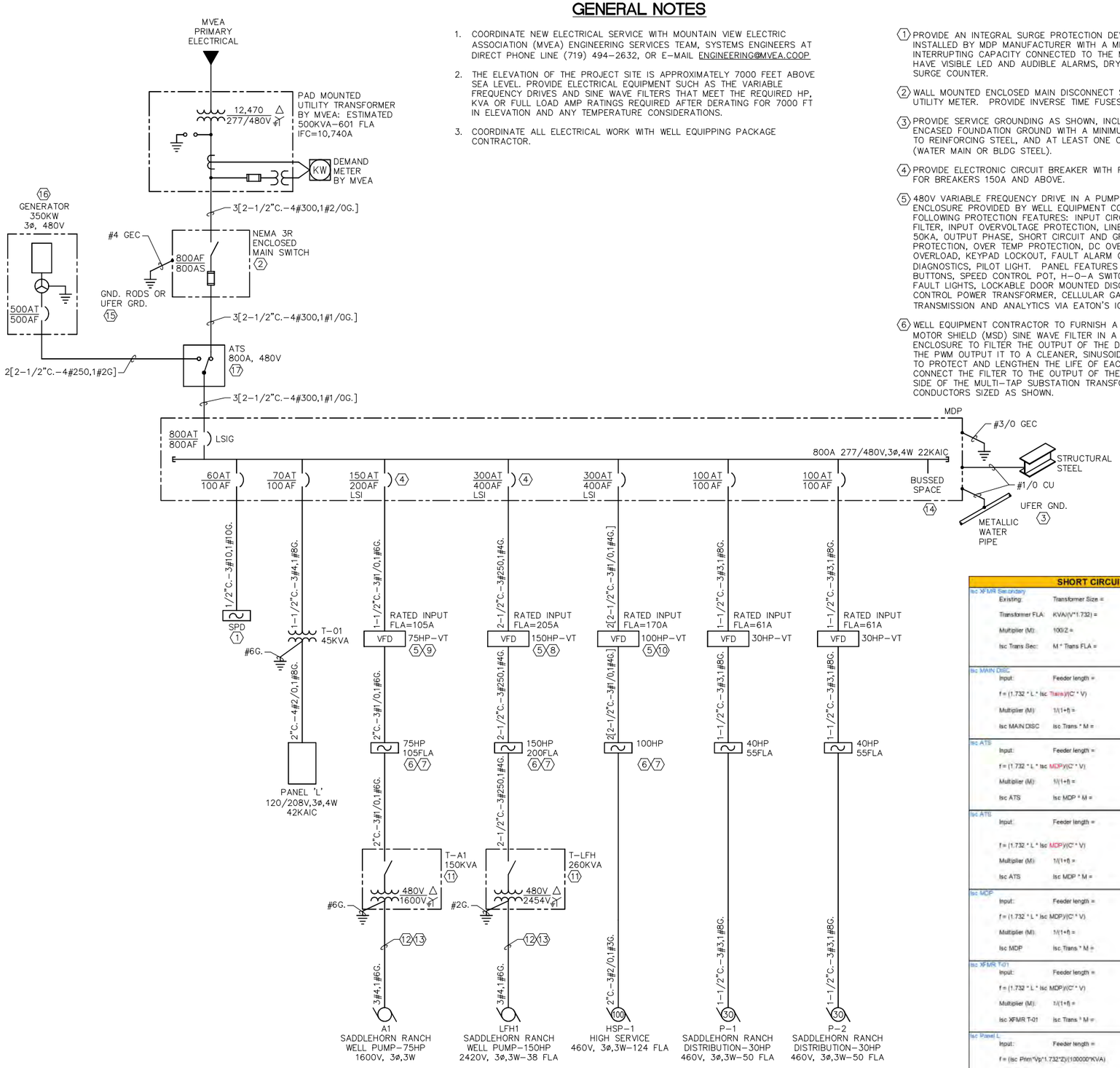
(13) PROVIDE A 3" SCHEDULE 80 PVC CONDUIT SLEEVE FOR ARMORED POWER CABLE WHERE EXPOSED ABOVE GRADE, AND IN UNDERGROUND TRENCH BETWEEN TRANSFORMER AND WELL HEAD.

(14) PROVIDE BUSSED SPACE FOR ONE ADDITIONAL 125A FRAME CIRCUIT BREAKER, FOR FUTURE DENVER FORMATION (D-6) PUMP.

(15) PROVIDE A MINIMUM (2) 3/4" DIAMETER X 10 FOOT GROUND RODS FOR SERVICE GROUNDING. DRIVE A MINIMUM OF 10-FEET APART. CONNECT WITH #4 BARE COPPER GROUND CONDUCTORS A MINIMUM OF 18" BELOW GRADE TO MDP GROUND LUGS. IF METALLIC WATER PIPE IS AVAILABLE, PROVIDE #1/0 BARE COPPER CONDUCTOR 18" BELOW GRADE FROM MDP GROUND LUGS TO PIPE AND BOND WITH LISTED GROUNDING CONNECTOR.

(16) PROVIDE STAND BY GENERATOR AND COORDINATE SEQUENCE WITH OWNER. DEEP WELL PUMPS ARE NOT INCLUDED IN GENERATOR SIZING.

(17) REFER TO SHEET E3 FOR AUTOMATIC TRANSFER WITCH LOCATION. PROVIDE SCHNEIDER ASCO SERIES 300SE OR APPROVED EQUAL.



ELECTRICAL ONE LINE DIAGRAM
NO SCALE

SHORT CIRCUIT (FAULT CURRENT) CALCULATIONS

Isc XFMR Secondary	Existing:	Transformer Size =	500 KVA	min Z = 5.60 %	VOLTAGE = 277/ 480 V	
	Transformer FLA:	KVA/(V*1.732) =	601 A			
	Multiplier (M):	100/Z =	17.86			
	Isc Trans Sec:	M * Trans FLA =	10740 A			
Isc MAIN DISC	Input:	Feeder length =	40	Para Sets= 3	C = 20867	C= 62601
					CONDUCTOR SIZE: 300	
	f = (1.732 * L * Isc Trans)/(C * V)		0.0248		VR RATING: 600	
	Multiplier (M):	1/(1+f) =	0.9758			
	Isc MAIN DISC	Isc Trans * M =	10480 A			
Isc ATS	Input:	Feeder length =	15	Para Sets= 3	C = 18176	C= 54528
					CONDUCTOR SIZE: 300	
	f = (1.732 * L * Isc MDP)/(C * V)		0.0104		VR RATING: 600	
	Multiplier (M):	1/(1+f) =	0.9897			
	Isc ATS	Isc MDP * M =	10372 A			
Isc ATS	Input:	Feeder length =	15	Para Sets= 3	C = 18176	C= 54528
					CONDUCTOR SIZE: 300	
	f = (1.732 * L * Isc MDP)/(C * V)		0.0104		VR RATING: 600	
	Multiplier (M):	1/(1+f) =	0.9897			
	Isc ATS	Isc MDP * M =	10372 A			
Isc MDP	Input:	Feeder length =	8	Para Sets= 3	C = 18176	C= 54528
					CONDUCTOR SIZE: 300	
	f = (1.732 * L * Isc MDP)/(C * V)		0.0055		VR RATING: 600	
	Multiplier (M):	1/(1+f) =	0.9945			
	Isc MDP	Isc Trans * M =	10316 A			
Isc XFMR T-01	Input:	Feeder length =	15	Para Sets= 1	C = 3806	C= 3806
					CONDUCTOR SIZE: 4	
	f = (1.732 * L * Isc MDP)/(C * V)		0.1467		VR RATING: 600	
	Multiplier (M):	1/(1+f) =	0.8721			
	Isc XFMR T-01	Isc Trans * M =	8996 A			
Isc Panel L	Input:	Feeder length =	8	Para Sets= 1	C = 10755	C= 10755
					CONDUCTOR SIZE: 2/0	
	f = (Isc Prim*Vp*1.732*Z)/(100000*KVA)		3.4492		VR RATING: 600	
	Multiplier (M):	1/(1+f) =	0.2248		KVA: 45	
					IMPEDANCE: 1.8	
	Isc Panel L	Isc Trans * M*(Vp/Vs) =	3380 A		Vsec: 208	

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ROI PROPERTY GROUP
SADDLEHORN RANCH SUBDIVISION
ELECTRICAL ONE LINE DIAGRAM

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
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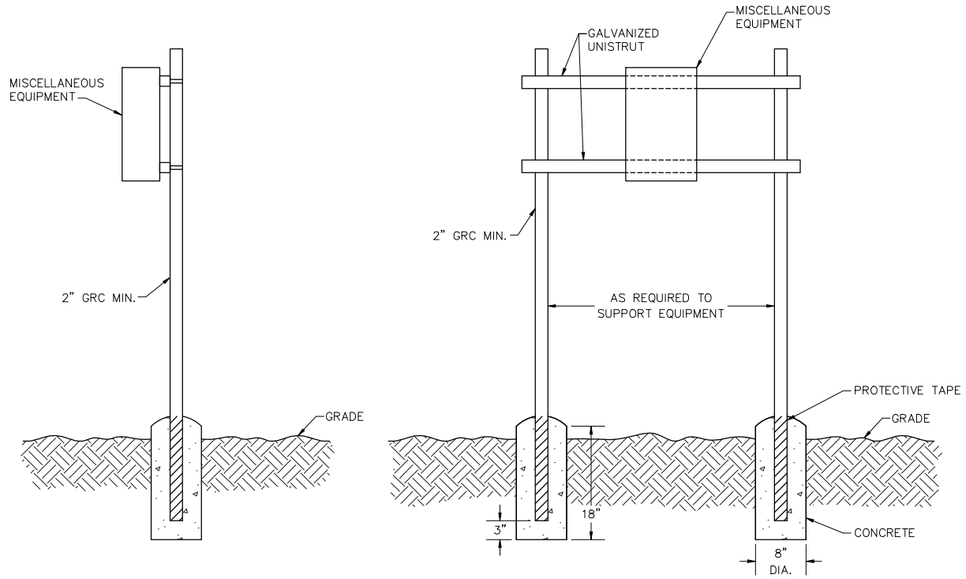
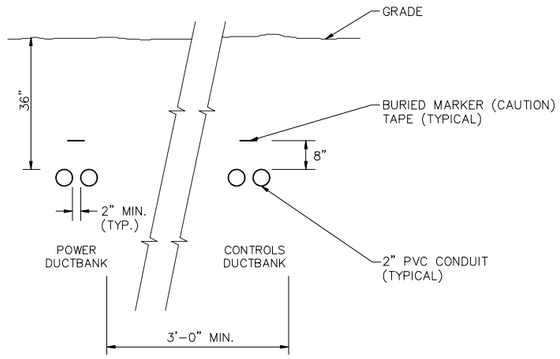
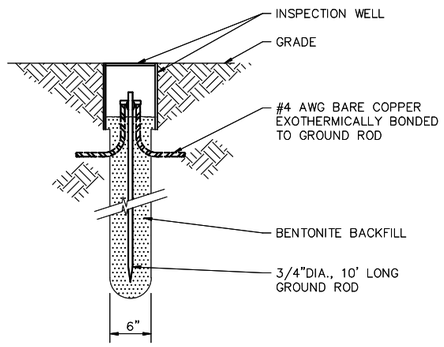


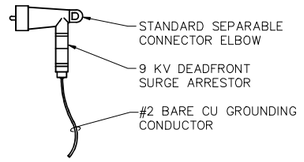
MISCELLANEOUS EQUIPMENT MOUNTING DETAIL
NO SCALE



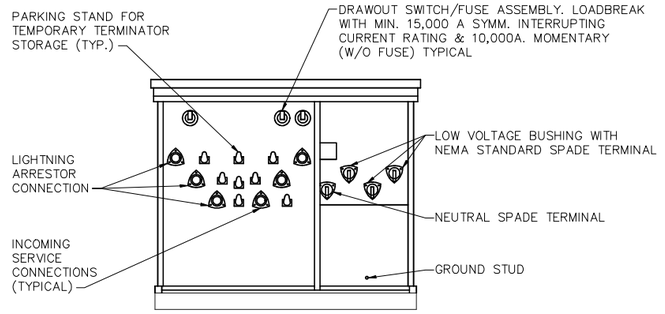
TWO-WAY DUCT BANK SECTION POWER/CONTROLS
NO SCALE



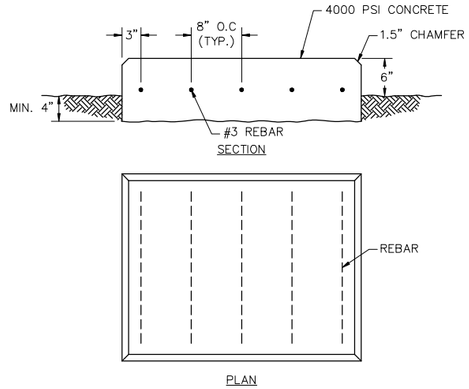
GROUND ROD INSTALLATION DETAIL
NO SCALE



ARRESTOR CONNECTION DEAD FRONT TRANSFORMER
NO SCALE

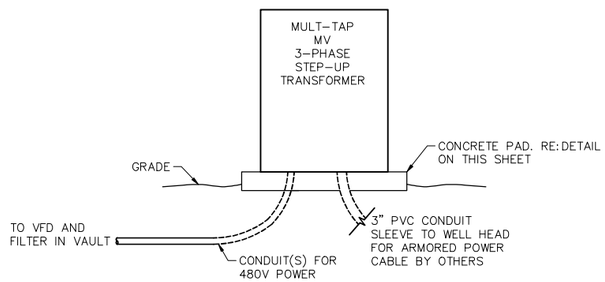


THREE PHASE DEAD FRONT TRANSFORMER DETAIL
NO SCALE



EQUIPMENT PAD REINFORCEMENT DETAIL
NO SCALE

NOTES:
1. COORDINATE REINFORCEMENT WITH GROUNDING AND REQUIRED CONDUIT WINDOW.
2. SUBMIT DETAILED PAD DESIGN FOR STRUCTURAL ENGINEER REVIEW AND APPROVAL.



TYPICAL EXTERIOR PAD MOUNTED MULTI-TAP ELEVATION
NO SCALE

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ELECTRICAL DETAILS

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SHEET 5 OF ###

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PANEL:	MDP	TYPE: DISTRIBUTION PANEL	PROJECT NAME:	SADDLEHORN RANCH
FED FROM:	ATS	MOUNTING: SURFACE	PROJECT NO.:	216001
VOLTAGE:	277/ 480	NEUTRAL BUS:	NOTES: []	
PHASE:	3 PHASE, 4 WIRE	GROUND BUS: CU		
MAIN OC DEVICE:	AMPS	ISO GND:		
MAIN LUGS:	225 AMPS			
BUS MATERIAL:	CU			
A.I.C. RATING:	22K AMPS			

DESCRIPTION	LTG (VA) FL/HD	LTG (VA) LED	RECEP (VA)	MOTOR (VA)	OTHER (VA)	TOTAL (VA)	BRKR AMP	BRKR P	CIRCUIT PHASE	BRKR P	BRKR AMP	TOTAL (VA)	OTHER (VA)	MOTOR (VA)	RECEP (VA)	LTG (VA) LED	LTG (VA) FL/HD	DESCRIPTION
EF-1				102		102	20	1	01 A 02	1	20	330		330				EF-2
BF-1				144		144	20	1	03 B 04		30	2500		2500				EUH-1
EUH-2				2500		2500	30		05 C 06	2		2500		2500				EUH-1
EUH-2				2500		2500		2	07 A 08	1	20	0						SPARE
SPARE						0	20	1	09 B 10	1	20	0						SPARE
SPARE						0	20	1	11 C 12	1	20	0						SPARE
SPARE						0	20	1	13 A 14	1	20	0						SPARE
SPARE						0	20	1	15 B 16	1	20	0						SPARE
SPACE						0			17 C 18			0						SPACE
SPACE						0			19 A 20			0						SPACE
SPACE						0			21 B 22			0						SPACE
SPACE						0			23 C 24			0						SPACE
PANEL L					15000	15000		3	25 A 26			0						SPACE
PANEL L					15000	15000			27 B 28			0						SPACE
PANEL L					15000	15000	60		29 C 30			0						SPACE

PANEL LOAD SUMMARY

CONNECTED LOAD AND PHASE SUMMARY

LOAD TYPE	PH A	PH B	PH C		TOTAL	
LIGHTING LED	0.0	0.0	0.0	KVA	0.0	KVA
LIGHTING FL/HID	0.0	0.0	0.0	KVA	0.0	KVA
RECEPTACLES	0.0	0.0	0.0	KVA	0.0	KVA
MOTORS	2.9	2.6	5.0	KVA	10.6	KVA
OTHER	15.0	15.0	15.0	KVA	45.0	KVA
TOTAL	17.9	17.6	20.0	KVA	55.6	KVA
PHASE BALANCE	A-B	B-C	C-A	PNL PF =	0.92	
	98%	88%	90%			
MIN PANEL AMPACITY =			81.9 AMPS			

DEMAND LOAD SUMMARY

LOAD TYPE	POWER FACTOR	CONNECTED LOAD (KW)	DEMAND FACTOR	NEC CALCULATED LOAD (KVA)
LIGHTING LED	100%	0.0 KW	125%	0.0 KVA
LIGHTING FL/HID	95%	0.0 KW	125%	0.0 KVA
RECEPTACLES				
FIRST 10KVA	95%	0.0 KW	100%	0.0 KVA
REMAINDER	95%	0.0 KW	50%	0.0 KVA
MOTORS				
LARGEST	80%	4.0 KW	125%	6.3 KVA
REMAINDER	80%	4.5 KW	100%	5.6 KVA
OTHER	95%	42.8 KW	125%	56.3 KVA
TOTAL		51.2 KW		68.1 KVA

PANEL:	L	TYPE: LIGHTING & APPLIANCE	PROJECT NAME:	SADDLEHORN RANCH
FED FROM:	MDP	MOUNTING: SURFACE	PROJECT NO.:	216001
VOLTAGE:	120/ 208	NEUTRAL BUS:	NOTES: []	
PHASE:	3 PHASE, 4 WIRE	GROUND BUS: CU		
MAIN OC DEVICE:	NA AMPS	ISO GND:		
MAIN LUGS:	100 AMPS			
BUS MATERIAL:	CU			
A.I.C. RATING:	10K AMPS			

DESCRIPTION	LTG (VA) FL/HD	LTG (VA) LED	RECEP (VA)	MOTOR (VA)	OTHER (VA)	TOTAL (VA)	BRKR AMP	BRKR P	CIRCUIT PHASE	BRKR P	BRKR AMP	TOTAL (VA)	OTHER (VA)	MOTOR (VA)	RECEP (VA)	LTG (VA) LED	LTG (VA) FL/HD	DESCRIPTION
EF-1				102		102	20	1	01 A 02	1	20	330		330				EF-2
BF-1				144		144	20	1	03 B 04		30	2500		2500				EUH-1
EUH-2				2500		2500	30		05 C 06	2		2500		2500				EUH-1
EUH-2				2500		2500		2	07 A 08	1	20	900			900			RECEPTACLES
RECEPTACLES			900			900	20	1	09 B 10		20	1164		1164				RECLAIM PUMP
LIGHTS		630				630	20	1	11 C 12	2		1164		1164				RECLAIM PUMP
SPARE						0	20	1	13 A 14	1	20	500	500					ELEC VALVE 1
ELEC VALVE 2					500	500	20	1	15 B 16	1	20	500	500					ELEC VALVE 3
ELEC VALVE 4					500	500			17 C 18			500	500					ELEC VALVE 5
ELEC VALVE 6					500	500			19 A 20			500	500					ELEC VALVE 7
ELEC VALVE 8					500	500			21 B 22			500	500					ELEC VALVE 9
ELEC VALVE 10					500	500			23 C 24			380			380			EXTERIOR RECEPTACLE
EWH-1 & EWH-2					1200	1200			25 A 26			0						SPACE
SPACE						0			27 B 28			0						SPACE
SPACE						0			29 C 30			0						SPACE

PANEL LOAD SUMMARY

CONNECTED LOAD AND PHASE SUMMARY

LOAD TYPE	PH A	PH B	PH C		TOTAL	
LIGHTING LED	0.0	0.0	0.6	KVA	0.6	KVA
LIGHTING FL/HID	0.0	0.0	0.0	KVA	0.0	KVA
RECEPTACLES	0.9	0.9	0.4	KVA	2.2	KVA
MOTORS	2.9	3.8	6.2	KVA	12.9	KVA
OTHER	2.7	2.0	1.5	KVA	6.2	KVA
TOTAL	6.5	6.7	8.7	KVA	21.9	KVA
PHASE BALANCE	A-B	B-C	C-A	PNL PF =	0.86	
	97%	77%	75%			
MIN PANEL AMPACITY =			69.0 AMPS			

DEMAND LOAD SUMMARY

LOAD TYPE	POWER FACTOR	CONNECTED LOAD (KW)	DEMAND FACTOR	NEC CALCULATED LOAD (KVA)
LIGHTING LED	100%	0.6 KW	125%	0.8 KVA
LIGHTING FL/HID	95%	0.0 KW	125%	0.0 KVA
RECEPTACLES				
FIRST 10KVA	95%	2.1 KW	100%	2.2 KVA
REMAINDER	95%	0.0 KW	50%	0.0 KVA
MOTORS				
LARGEST	80%	4.0 KW	125%	6.3 KVA
REMAINDER	80%	6.3 KW	100%	7.9 KVA
OTHER	95%	5.9 KW	125%	7.8 KVA
TOTAL		18.9 KW		24.9 KVA

EQUIPMENT SCHEDULE

KEY	ITEM DESCRIPTION	A/C VOLTS	PH	HP	KVA	AMPS	CIRCUIT NO.	FEEDERS	LOCAL DISC SW	FUSE, NOTE 1 W/ T.O.	FUSE, NOTE 1 W/O T.O.	REMARKS
EF-1	EXHAUST FAN	120	1	0.07	0.10	0.85	L-01	3/4"C: 2#12, #12G	SW,CB		20A	SEE NOTE 2
EF-2	EXHAUST FAN	120	1	0.25	0.33	2.75	L-02	3/4"C: 2#12, #12G	SW,CB		20A	SEE NOTE 2
EF-3	FAN/LIGHT	120	1	-	0.14	1.2	L-03	3/4"C: 2#12, #12G	SW,CB		20A	SEE NOTE 2
EUH-1	UNIT HEATER	208	1	-	3.74	18	L-04,06	3/4"C: 2#12, #12G	CB		20A	SEE NOTE 2
EUH-2	UNIT HEATER	208	1	-	3.74	18	L-05,07	3/4"C: 2#12, #12G	CB		20A	SEE NOTE 2
P-1	DISTRIBUTION PUMP	480	3	30	41.57	50	MDP	1-1/2"C: 3#3, #8G	-		15A	SEE NOTE 2
P-2	DISTRIBUTION PUMP	480	3	30	41.57	50	MDP	1-1/2"C: 3#3, #8G	-		15A	SEE NOTE 2
HSP-1	HIGH CAPACITY PUMP	480	3	100	103	124	MDP	2(2"C: 3#2/0, #3G)	-			SEE NOTES 2,3,7
A-1	WELL PUMP	480	3	75	87	105	MDP	2"C: 3#1/0, 1#6G	-			SEE NOTES 2,3,7
LFH-1	WELL PUMP	480	3	150	170	205	MDP	2-1/2"C: 3#250, 1#4G	-			SEE NOTES 2,3,7
					0.00							
	TOTAL EQUIP LOAD:	480	3		452	544						

NOTES:

1. FOR MOTORS PROVIDED WITH THERMAL OVERLOAD PROTECTION (W/ T.O.), PROVIDE FUSING AT 150% OF THE FLA AS INDICATED. FOR MOTORS WITH OUT THERMAL OVERLOAD PROTECTION (W/O T.O.), PROVIDE FUSING AT 115% OF THE (FLA) AS INDICATED.
2. THE HORSEPOWER AND WATTAGE RATINGS OF MOTOR LOADS AND OTHER EQUIPMENT ARE APPROXIMATE. IF MOTORS AND/OR EQUIPMENT ARE FURNISHED IN SIZES OTHER THAN THE DESIGN SIZE INDICATED, IT IS THE RESPONSIBILITY OF THE E.C. TO ADJUST THE SIZES OF BRANCH CIRCUITS, DISCONNECTS, BREAKERS, ETC. TO ADJUST AND RECIRCUIT IF NECESSARY AT NO ADDITIONAL COST TO THE OWNER.
3. INDUSTRIAL CONTROL PANELS AS DEFINED BY NEC ARTICLE 409, MOTOR CONTROLLERS AND HERMETIC REFRIGERANT MOTOR COMPRESSORS AND EQUIPMENT SHALL BE MARKED WITH INFORMATION AS REQUIRED BY THE NATIONAL ELECTRICAL CODE (NEC). MARK IN ACCORDANCE WITH NEC ARTICLE 409.110 FOR INDUSTRIAL CONTROL PANELS, NEC ARTICLE 430.8 FOR CONTROLLERS AND NEC ARTICLE 440.4(B) FOR HERMETIC REFRIGERANT MOTOR COMPRESSORS AND EQUIPMENT. THE MARKED SHORT CIRCUIT CURRENT RATING (SCCR) SHALL BE NO LESS THAN THE VALUE INDICATED ABOVE.
4. PROVIDE FUSED SAFETY DISCONNECT SWITCH.
5. PROVIDE NON-FUSED SAFETY DISCONNECT SWITCH.
6. EQUIPMENT SHALL BE PROVIDED IN NEMA 1 ENCLOSURE.
7. EQUIPMENT SHALL BE PROVIDED IN NEMA 3R ENCLOSURE.
8. PROVIDE COMBINATION SNAP SWITCH AND PLUG TYPE FUSE.

LIGHT FIXTURE SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	CATALOG NO.	LAMPS QUAN.	LAMPS TYPE	FIXTURE LOAD (VA)	FINISH	MOUNTING	KEYED NOTES
A	DAMP LOCATION 4-FOOT LED STRIP LIGHT WITH 5000 LUMENS, 4000K CCT, 80 CRI	LITHONIA OR EQUAL	Z1LD-L48-5000LM-FST-40K-80CRI-WH WITH HC36, ZACVH OR SQXX	-	LED	41	WHITE STEEL HOUSING, POLYCARB. LENS	CABLE, CHAIN OR PENDANT	1
B	4" DIAMETER LED CYLINDER DOWNLIGHT, CLEAR SPECULAR REFLECTOR, WHITE FINISH	LITHONIA OR EQUAL	LDN4CYL-40/15-LO4-AR-SS-MVOLT-GZ0-PM-DWHG	-	LED	17.5	WHITE WITH CLEAR SPECULAR REFLECTOR	PENDANT AT 9'-0" AFF	2
C	ARCHITECTURAL FULL CUTOFF EXTERIOR LED WALL LUMINAIRE WITH TYPE 3 MEDIUM DISTRIB.	LITHONIA OR EQUAL	DSWX1-10C-350-40K-T2M-MVOLT-PE-DBLXD	-	LED	15	BLACK	WALL MTD 9'-0" AFG	
⊗	COMB. LED EMERG./EXIT LIGHT, GREEN LETTERS, WHITE THERMOPLASTIC HOUSING.	LITHONIA OR EQUAL	LHQM-LED-G-M6	2	LED	5	WHITE	WALL MTD 8'-0" AFF	

NOTES:

1. MOUNT FIXTURES AT 9'-0" AFF WITH CHAIN, AIRCRAFT CABLE OR SOLID PENDANT FROM SLOPED STRUCTURE ADJUSTED TO LEVEL FIXTURES AT 9'-0" AFF.
2. INSTALL FIXTURES WITH SOLID PENDANTS FROM SLOPED STRUCTURE WITH LENGTHS AS REQUIRED TO MOUNT AT 9'-0" AFF TO BOTTOM.

KEY	
MDP	EQUIPMENT SCHEDULE
L	FIXTURE SCHEDULE

FARRIS ENGINEERING
COLORADO SPRINGS | OMAHA | LINCOLN | SYDNEY
farris-usa.com

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

ROI PROPERTY GROUP

SADDLEHORN RANCH SUBDIVISION

ELECTRICAL SCHEDULES

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
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5				
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7				

100% COMPLETE

Project No.: 216001
Date: 12/16/21
Design: JJG
Drawn: KDP
Check: MDW

E6

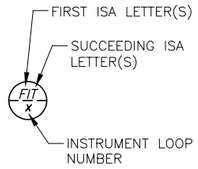
SHEET 5 OF ###

2021/12/20 1:56 PM By: Kevin D. Porter P:\2021\216001 Saddlehorn Ranch Water Treatment Plant\DWG\ELEC\216001_E6.dwg

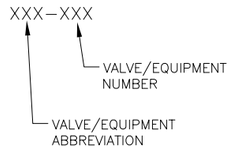
GENERAL NOTES

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

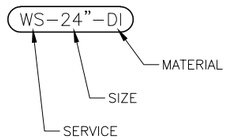
INSTRUMENT IDENTIFICATION TAG NUMBER



EQUIPMENT IDENTIFICATION



LINE IDENTIFICATION



INSTRUMENT IDENTIFICATION TAG LETTER TABLE (ISA)

LETTER	FIRST–LETTER		SUCCEEDING–LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		BINARY	"OR" FUNCTION	INTERLOCK
C	USER'S CHOICE (*)			CONTROL	CLOSE
D	USER'S CHOICE (*)	DIFFERENCE, DIFFERENTIAL			DEVIATION
E	VOLTAGE		SENSOR, PRIMARY ELEMENT		BACKUP GENERATOR TO BE INTEGRATED WITH AUTOMATIC TRANSFER SWITCH AND PROVIDE POWER TO ENTIRE FACILITY IN THE EVENT OF A MAIN POWER LOSS.
F	FLOW, FLOW RATE	RATIO			
G	USER'S CHOICE (*)		GLASS, GAUGE, VIEWING DEVICE		
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE (*)		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL, PROBE		
X	UNCLASSIFIED (+)	X AXIS	UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	EVENT, STATE OR PRESENCE	Y AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z AXIS, SAFETY INSTRUMENTED SYSTEM		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	
	(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL.			(*) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT	

TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

ACCESSORY DEVICES

EXAMPLE: TRANSMITTER AS AN ACCESSORY TO A FLOW ELEMENT

A	=	ALARM
C	=	CONTROLLER
I	=	INDICATOR
R	=	RECORDER
S	=	SWITCH
T	=	TRANSMITTER
X	=	UNCLASSIFIED

INSTRUMENTATION LEGEND:

- BUTTERFLY VALVE
- GATE VALVE
- PLUG VALVE
- SWING CHECK VALVE
- BALL VALVE
- ELECTRICALLY ACTUATED PLUG VALVE
- PUMP
- FLOW METER
- WATER LEVEL (X.X)
- TRANSFORMER (T)
- ULTRASONIC LEVEL SENSOR (T / XX)
- LEVEL (FLOAT) (LE / XX)
- CENTRIFUGAL PUMP
- CENTRIFUGAL SUBMERSIBLE PUMP (S)

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5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
INSTRUMENTATION NOTES & LEGEND

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
09/01/21

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

SHEET 1 OF 4

2021/12/02 5:13 PM By: Ryan Mangino J:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\311102_8_Instrumentation.dwg

PLC

LCP

MAIN LEVEL

PUMP ROOM

FIELD

150

WM-6"-DIP

WM-4"-DIP

4" BACKWASH SUPPLY

8" DIP TREATED WATER

FE 010 FT 010

WM-4"-DIP

FE 020 FT 020

WM-4"-DIP

FE 030 FT 030

WM-4"-DIP

FE 040 FT 040

WM-4"-DIP

LIT 150

LE 150

BW-2"-PE

BW-6"-DIP

FILTRONICS VESSELS. SEE FILTRONICS DWGS

000 – WELLS

100 – BACKWASH TANK

200 – FILTRONICS

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SADDLEHORN RANCH

OVERALL WATER SYSTEM

PROCESS & INSTRUMENTATION CONTROL DIAGRAM 1

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MARGINO
43304
PROFESSIONAL ENGINEER
12/1/21

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

SHEET 2 OF 4

PLC

LCP

MAIN LEVEL

PUMP ROOM

FIELD

LIT 350

PI 515

TYPICAL FOR 3 PUMPS:

SPEED SC 510 | S/S HC 510 | FAULT MA 510 | RUN M 510 | AUTO HS 510

P-510 VFD

4" BACKWASH SUPPLY

8" DIP TREATED WATER

LIT 350

LE 350

CC-12"-DIP

12"-DIP

12"-DIP

WM-4"-DIP

WM-8"-DIP

8" WATER MAIN

PI 515

PIT 515

FT 560

FE 560

WM-8"-DIP

WM-8"-DIP

WM-6"-DIP

BV-510-2

CV-510-1

P 510

BV-510-1

8"-DIP

WM-1-1/2"-DIP

BV-520-2

CV-520-1

P 520

BV-520-1

8"-DIP

WM-4"-DIP

BV-530-2

CV-530-1

PUMP ROOM

P 530

BV-530-1

8"-DIP

8"-DIP

8" SURGE RELIEF VALVE

300 – WATER TANK

400 – CHLORINE CONTACT

500 – PUMP ROOM

2021/12/02 5:13 PM By: Ryan Mangino i:\JDS-Hydro\Project Files\311 ROI Property Group\311.02 Saddlehorn Ranch Subdivision\Drawings\Working\31102_8_instrumentation.dwg

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COLORADO SPRINGS, COLORADO 80919
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SADDLEHORN RANCH

OVERALL WATER SYSTEM

PROCESS & INSTRUMENTATION CONTROL DIAGRAM 2

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED RYAN M. MANGINO 43304 PROFESSIONAL ENGINEER 12/1/21

Project No.:	311.02
Date:	09/01/21
Design:	RMM
Drawn:	SKG
Check:	RMM

13

SHEET 3 OF 4

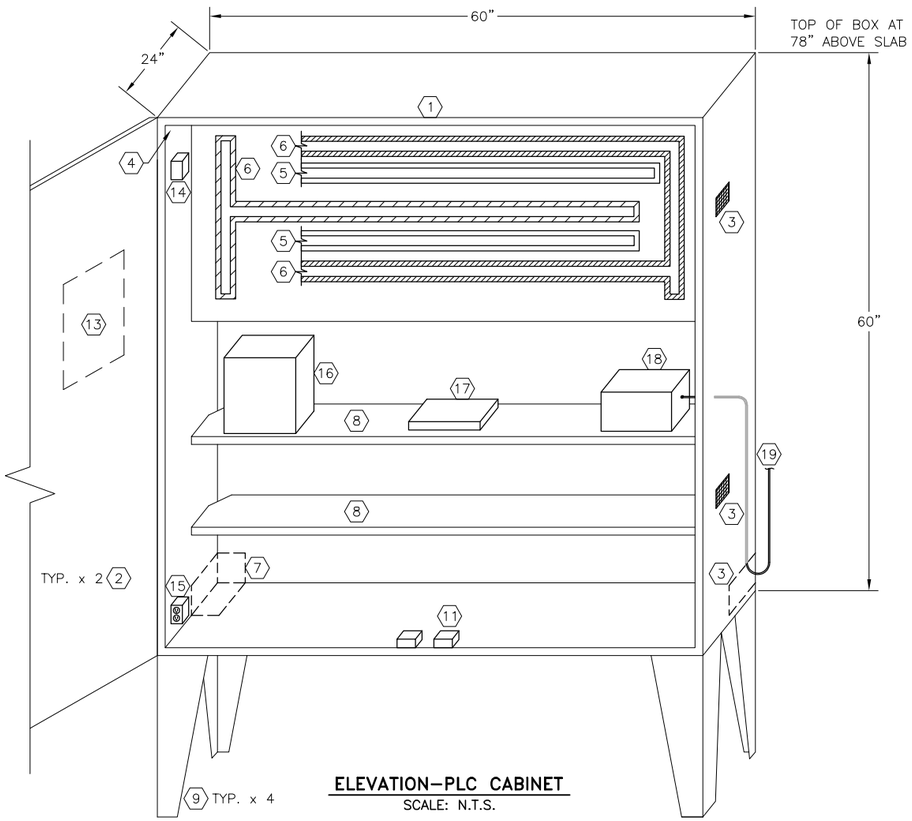
EMERGENCY STORAGE (DESIGNATION 000)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
LEVEL INDICATOR	LE060		INDICATES LEVEL IN MAIN EMERGENCY STORAGE TANK. ULTRASONIC. OUTPUT SIGNAL TO PLC.

WET WELL (DESIGNATION 100)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
LOW LEVEL FLOAT	LSL130		INDICATES LOW LEVEL ALARM IN WET WELL. OUTPUT SIGNAL TO PLC.
HIGH LEVEL FLOAT	LSH140		INDICATES HIGH LEVEL ALARM IN WET WELL. OUTPUT SIGNAL TO PLC.
LEVEL INDICATOR	LE150		INDICATES LEVEL IN WET WELL. ULTRASONIC. OUTPUT SIGNAL TO PLC.

PUMP ROOM (DESIGNATION 200)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
MAIN PUMPS	P210/P220		
PRESSURE INDICATING TRANSDUCERS	PIT210/PIT220	4~20 mA	ANALOG PRESSURE TRANSDUCERS (IN COMBINATION WITH VISUAL PRESSURE GAUGES) SEND A 4~20 mA SIGNAL TO THE PLC.
SUMP PUMP	SP250	1/2 HP, 115VAC, SINGLE-PHASE	ACROSS-THE-LINE STARTER DRIVEN PUMP TO CONVEY ACCUMULATED SEEPAGE WATER FROM THE DRY WELL TO THE WET WELL. PUMP WILL START AND STOP BASED ON INTEGRATED FLOAT SWITCH.
WATER-ON-FLOOR SWITCH	ZS250	120VAC, SINGLE-PHASE	LEVEL SWITCH TO INDICATE WATER IN SUMP PIT. SWITCH SHALL BE SET BELOW "SUMP PUMP ON" LEVEL, BUT ABOVE "SUMP PUMP OFF" LEVEL.

PUMP ROOM (DESIGNATION 200) CONTINUED			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
MAGNETIC FLOWMETER	FE260	120VAC	METERS FLOW FROM MAIN PUMPS AND REPORT TO PLC. SIGNAL IS USED TO CONTROL SPEED OF MAIN PUMPS IN ORDER TO ACHIEVE MINIMUM FLUSHING VELOCITIES IN THE FORCE MAIN.

MISC. CONTROLS (DESIGNATION 1000)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
EXHAUST FAN 1	EF1010	1/15	TO EXHAUST AIR FROM ABOVE-GRADE STRUCTURE. FAN TO BE INTEGRATED WITH MAIN PLC AND LOCAL THERMOSTAT.
EXHAUST FAN 2	EF1020	1/4	TO EXHAUST AIR FROM BELOW-GRADE STRUCTURE. FAN TO BE INTEGRATED WITH MAIN PLC AND LOCAL THERMOSTAT.
UNIT HEATER 1	EUH 1030	5.0 KW	CONTROLLED VIA LOCAL THERMOSTAT
UNIT HEATER 2	EUH 1040	5.0 KW	CONTROLLED VIA LOCAL THERMOSTAT
BACKUP GENERATOR	G1070	100 KVA	EXISTING BACKUP GENERATOR TO BE INTEGRATED WITH NEW AUTOMATIC TRANSFER SWITCH TO PROVIDE POWER TO ENTIRE FACILITY IN THE EVENT OF A MAIN POWER LOSS.
AUTOMATIC TRANSFER SWITCH	ZS1071		PROPOSED AUTOMATIC TRANSFER SWITCH TO AUTOMATICALLY TRANSFER POWER FROM GENERATOR TO LIFT STATION IN THE EVENT OF A MAIN POWER LOSS.



ELEVATION-PLC CABINET
SCALE: N.T.S.

GENERAL NOTES:

1. SHOWN DIMENSIONS ARE MINIMUMS. ENCLOSURE TO BE SIZED BY INTEGRATOR. COORDINATE ROOM SPACE REQUIRED FOR MOUNTING.
2. ENCLOSURE TO BE BONDED TO GROUND BY MOUNTING HARDWARE.
3. INTERIOR LAYOUT SHOWS DESIRED FUNCTIONALITY.
4. SEGREGATION OF SIGNAL AND POWER WIRING SHALL COMPLY WITH CURRENTLY ADOPTED NEC CODE.
5. DIN-RAIL SPACE, WIRING CHANNELS CAPACITY, I/O CAPACITY, POWER SUPPLY CAPACITY AND SHELF SPACE USED SHALL BE NO MORE THAN 50% OF TOTAL BY REQUIREMENTS SHOWN ON THESE PLANS AND SPECIFICATIONS.
6. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS INCLUDING SUBMITTALS AND SHOP DRAWINGS.

WORK NOTES:

(1) NEMA 4 60x60x24 ENCLOSURE.
(2) CENTER OPENING EXTERIOR DOORS SHOWN TRUNCATED FOR CLARITY. 120° OPENING WITH HOLD-OPEN HARDWARE. HASP FOR PADLOCK. FULLY GASKETTED. RIGHT SIDE NOT SHOWN.
(3) INTERIOR FAN AND VENTS. FANS AND AIR FLOW SHALL BE DESIGNED BY INTEGRATOR WHEN INTERIOR LOADS ARE KNOWN. AIRFLOW SHALL BE 150% OF MINIMUM REQUIRED TO MAINTAIN INTERIOR AMBIENT AT NO MORE THAN 100°F GIVEN EXTERIOR AMBIENT OF 85°F.
(4) PLC + I/O WIRING SURFACE PANEL, HINGED. ALL ACTIVE COMPONENTS, SWITCHES, MONITOR POINTS AND INDICATORS ON FRONT SURFACE ONLY. BACK OF PANEL MAY BE USED FOR WIRING. GROMMET HOLES IN PANEL FOR BACKSIDE-TO-FRONTSIDE COMMUNICATION.
(5) DIN-RAIL: HIGH RISE.
(6) FINGERED CABLE AND WIRING TRAY WITH SNAP-ON COVERS (COVERS NOT SHOWN) LINE VOLTAGE WIRING TRAY TO BE A DIFFERENT COLOR FROM THE LOW VOLTAGE TRAY.
(7) CABLE PENETRATIONS SHALL BE ON BOTTOM, OR LOW ON BACK OR SIDES.
(8) SHELVES SHALL STIFFEN BOX. SHELVES SHALL SUPPORT AT LEAST 50lbs EACH. NO SHARP EDGES EXPOSED. PRESERVE CABLE VERTICAL PATHS IN CORNERS.
(9) LEGS SHALL HAVE ANCHOR BOLT PLATES AND BOLTS TO SLAB. BOLTS TO BE 1/2"ø SS ENGAGED IN HILTI EMBEDMENTS IN SLAB.
(10) (NOT SHOWN) 4' T8 STRIP FLUORESCENT LIGHT UNDER TOP WITH WIRE GUARD. MANUAL PULL CHAIN OR DOOR SWITCH. SHALL NOT INTERFERE WITH WIRING PANEL SWING.
(11) DOOR OPEN SWITCH TO PLC.
(12) (NOT SHOWN) IF A MIDDLE VERTICAL BAR IS REQUIRED FOR DOOR CLOSURE, IT SHALL BE REMOVABLE WHEN DOORS ARE OPENED.
(13) (BACKSIDE SHOWN) PLC CONTROLLER I/O PANEL. GASKET INTERFACE TO BE DUST - TIGHT.
(14) PLC ENCLOSURE THERMOSTAT.
(15) GFI 15A RECEPTACLE.
(16) UPS.
(17) AUTO DIALER.
(18) RADIO AND SURGE PROTECTION - PHOENIX CONTACT.
(19) RADIO ANTENNA COAX. ROUTE IN 3/4" EMT TO ROOF.

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

SADDLEHORN RANCH
OVERALL WATER SYSTEM
CONTROL SCHEDULE & PLC DETAILS

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

100% COMPLETE

COLORADO LICENSED
RYAN M. MANGINO
43304
PROFESSIONAL ENGINEER
09/1/21

Project No.: 311.02
Date: 09/01/21
Design: RMM
Drawn: SKG
Check: RMM

SHEET 14 OF 14