

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

PLAN SET INFORMATION:  
100% DRAWINGS – FOR CDPHE APPROVAL

CODE STATEMENT

I. APPLICABLE CODES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

- A. INTERNATIONAL BUILDING CODE (2009)  
B. PIKES PEAK REGIONAL BUILDING CODE (2011)  
C. INTERNATIONAL PLUMBING CODE OF THE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS (LATEST EDITION)  
D. INTERNATIONAL PLUMBING CODE (2015)  
E. INTERNATIONAL FIRE CODE (2009)  
F. INTERNATIONAL MECHANICAL CODE (2009)  
G. NATIONAL ELECTRICAL CODE (2014)  
H. ICC/ANSI 117.1 (2003)  
I. INTERNATIONAL ENERGY CONSERVATION CODE (2009)

II. CODE ABSTRACT:

A. GENERAL INFORMATION:

LOCATION: NEAR STAPLETON DRIVE & HWY 24 INTERSECTION  
PEYTON, CO 80831

OWNER: FOUR WAY RANCH METROPOLITAN DISTRICT  
TAX ID #: 98-18964-0000

PROPERTY STATUS: EXEMPT  
TOTAL BUILDING AREA: 1,200 SF  
BUILDING CONSTRUCTION TYPE: V-B

EPC SCHEDULE #: 42000-00-366

B. OCCUPANCY TYPE(S):

OCCUPANCY TYPE: FACTORY & INDUSTRIAL (F-2)

C. OCCUPANCY LOAD CALCULATION:

WAREHOUSES FLOOR AREA IN SF/OCCUPANT = 500 GROSS  
3.0 OCCUPANT LOAD

LEGEND

---	BOUNDARY / RIGHT-OF-WAY	---	GAS	EXISTING GAS LINE
---	EXISTING WATER LINE (W)	---	FOP	EXISTING FIBER OPTIC LINE
---	EXISTING RAW WATER LINE	---	---	EXISTING VALVE
---	EXISTING SANITARY SEWER LINE	---	---	PROPOSED VALVE
---	EXISTING STORM SEWER	---	---	SANITARY SEWER MANHOLE
---	EXISTING FENCE	---	---	STORM SEWER MANHOLE
---	EXISTING UNDERGROUND ELECTRIC	---	---	FIRE HYDRANT
---	EXISTING OVERHEAD ELECTRIC	---	---	PROPOSED MANHOLE
---	EXISTING TELEPHONE LINE			

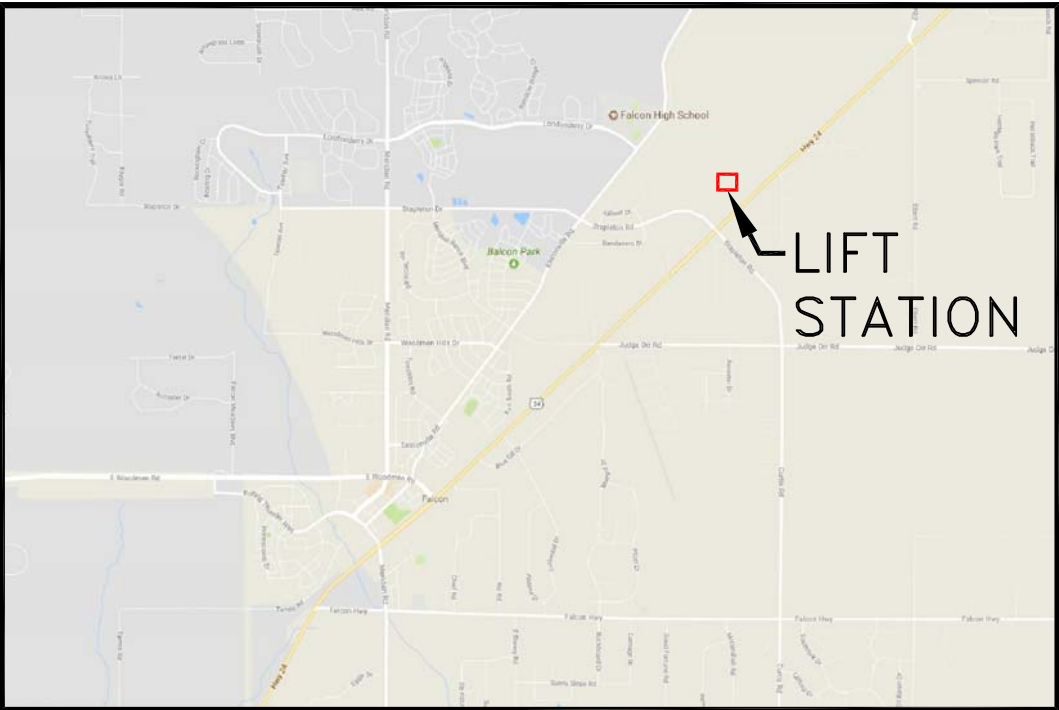
PRE-EXCAVATION CHECKLIST

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

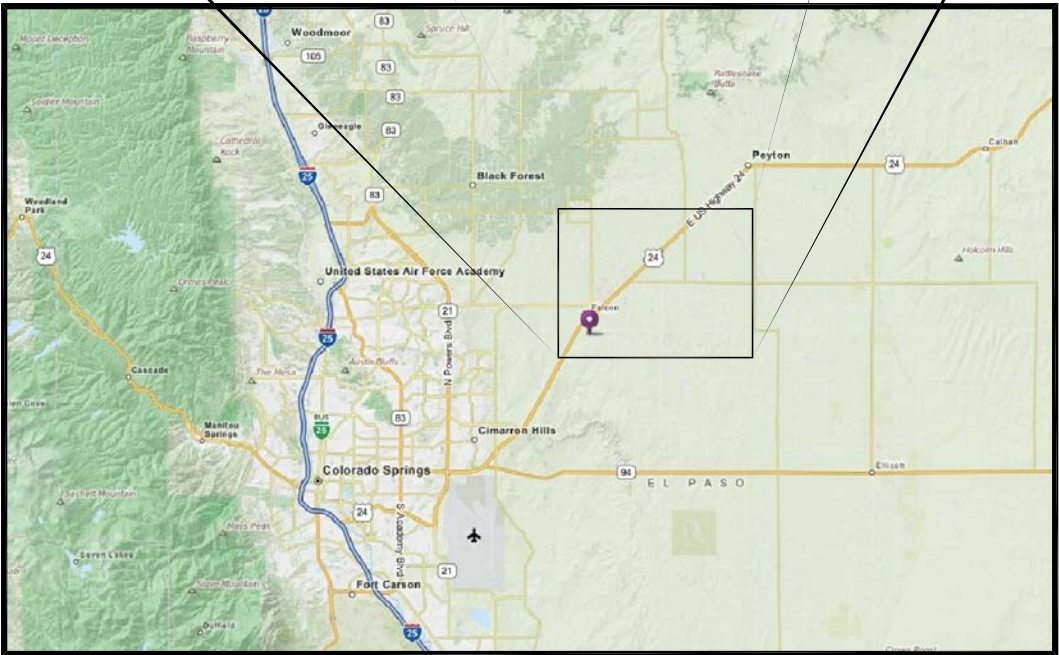
COLOR CODE FOR MARKING UNDERGROUND UTILITY LINES	
WHITE	PROPOSED EXCAVATION
MAGENTA	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC
YELLOW	GAS, OIL, STEAM
ORANGE	COMMUNICATION, CATV
BLUE	POTABLE WATER
PURPLE	IRRIGATION, RECLAIMED WATER, SLURRY LINES
GREEN	SEWER

UNCC  
UTILITY NOTIFICATION CENTER OF COLORADO  
3 Days Before You Dig:  
Call: 1-800-922-1987  
Click: www.UNCC.org

LOCATION & VICINITY MAPS



VICINITY MAP  
N.T.S.



LOCATION MAP  
N.T.S.

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SIGNATURES

DISTRICT APPROVALS:

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

DISTRICT MANAGER: \_\_\_\_\_

DISTRICT ENGINEER: \_\_\_\_\_

DATE: \_\_\_\_\_

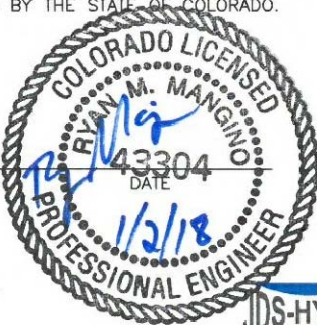
PROJECT NO. \_\_\_\_\_

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.

*[Signature]*  
RYAN MANGINO, P.E. #43304



JDS-HYDRO CONSULTANTS, INC.  
545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072

G1

GENERAL NOTES

1.

ALL UTILITY CONSTRUCTION TO BE CONDUCTED IN CONFORMANCE WITH THE CURRENT WOODMEN HILLS METROPOLITAN DISTRICT (WHMD, 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 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 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 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% MODIFIED 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 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 (719–495–2500) 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.

IN GENERAL, WATER MAINS SHALL BE DESIGNED TO HAVE TEN FEET (10’) HORIZONTAL SEPARATION FROM POSSIBLE SOURCES OF POLLUTION. WHEN THE HORIZONTAL SEPARATION IS NOT ACHIEVABLE, THEN THE WATER MAIN SHALL BE DESIGNED SO THAT THE BOTTOM OF THE WATER MAIN IS TWO (2) FEET ABOVE THE TOP OF ANY SEWER PIPE. WHEN TWO FEET OF VERTICAL SEPARATION CANNOT BE ACHIEVED, THEN THE WATER MAIN WILL BE CONSTRUCTED IN TWENTY–FOOT (20’) SECTIONS OF DUCTILE IRON WITH NO JOINTS ON THE SEWER PIPE. THE TWENTY–FOOT SECTION SHALL BE CENTERED ABOVE THE SEWER PIPE WITH TEN FEET (10’) TO EACH JOINT. WHEN SEPARATION CAN NOT BE ACHIEVED, CASING MAY BE USED UPON WRITTEN REQUEST TO THE DISTRICT ENGINEER FOR CONSIDERATION.

32.

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.

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 MUELLER SUPER CENTURION 250.

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 MANHOLE CENTER TO MANHOLE 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.

CABLE  
FALCON BROADBAND (719) 573–5343  
COMCAST (800) 266–2278

DRAINAGE  
EL PASO COUNTY (719) 520–6300

TELEPHONE  
ICG (719) 593–2165  
AT&T (800) 222–0300  
QWEST (800) 244–1111

ELECTRIC  
MOUNTAIN VIEW ELECTRIC ASSOC. (719) 495–2283

GAS  
CSU GAS (719) 448–4800

TRANSPORTATION  
EL PASO COUNTY PUBLIC WORKS DEPARTMENT  
(719) 520–6300

WATER AND SANITARY SEWER  
WOODMEN HILLS METRO DISTRICT (719) 495–2500

JDS-HYDRO

CONSULTANTS, INC.

545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072

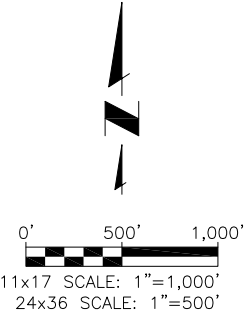
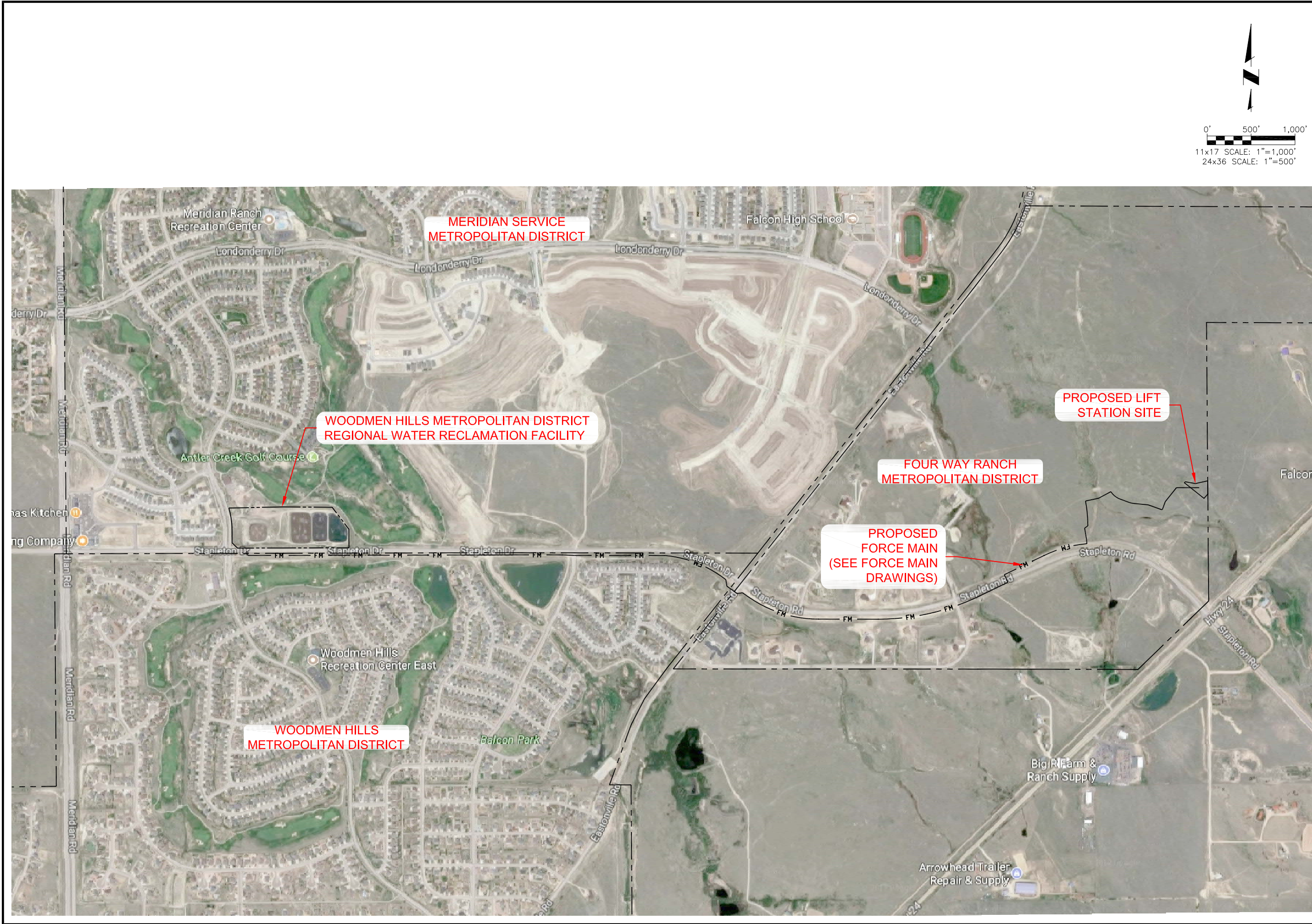
FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

GENERAL NOTES

Project No.:	136.12
Scale:	AS NOTED
Date:	01/02/18
Design:	RMM
Drawn:	RMM
Check:	JPM
Revised:	

G2  
of 2



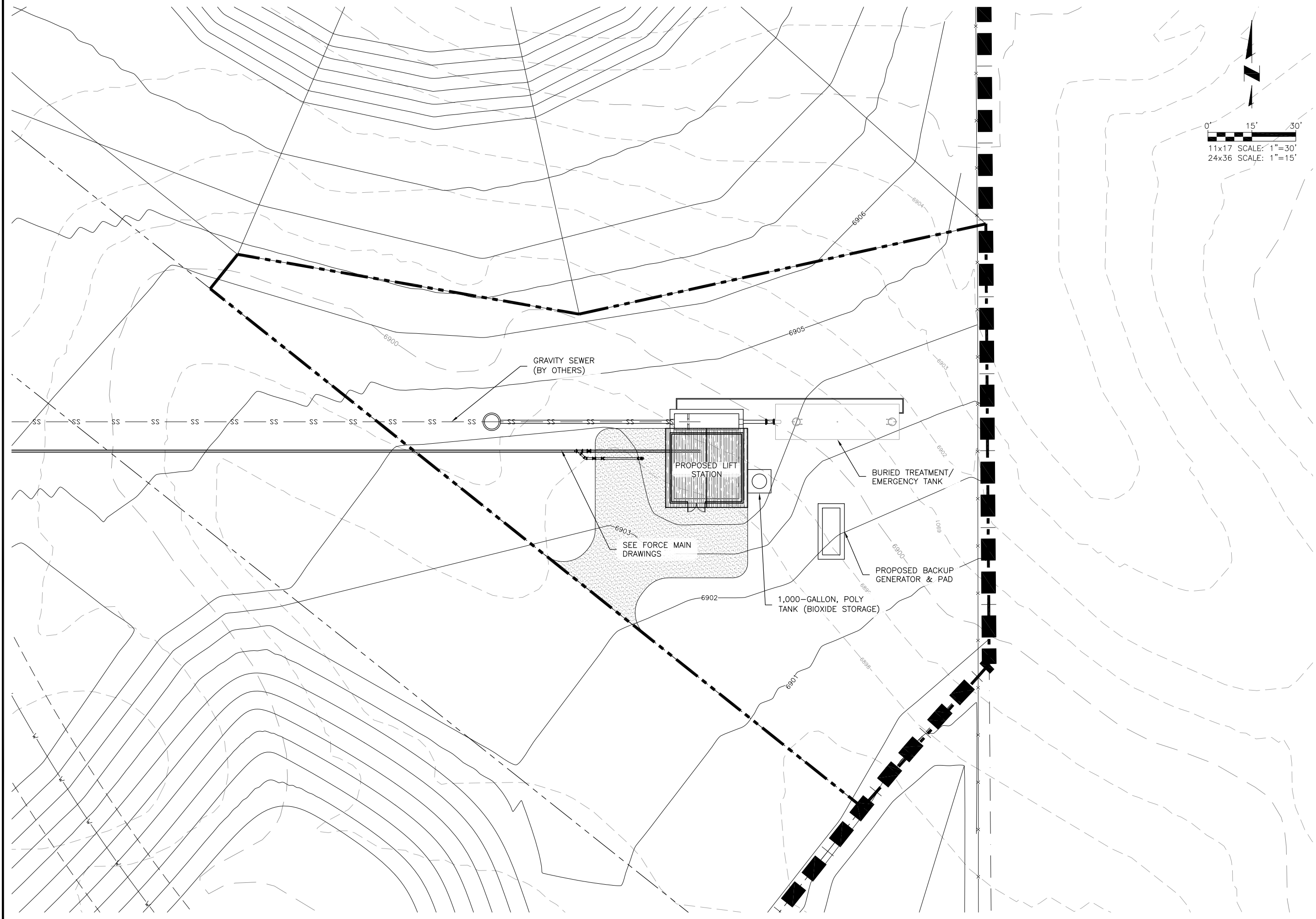


FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION  
OVERALL SITE PLAN

**JDS-HYDRO** CONSULTANTS, INC.  
545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072

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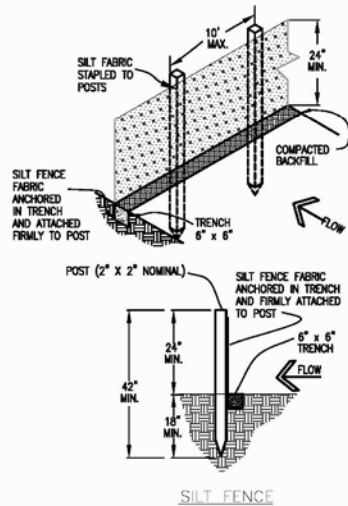




CONSULTANTS, INC.  
545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION  
PROPOSED SITE PLAN

Project No.:	136.12
Scale:	AS NOTED
Date:	01/02/18
Design:	RMM
Drawn:	RMM
Check:	JPM
Revised:	



#### SILT FENCE NOTES

##### INSTALLATION REQUIREMENTS

1. SILT FENCES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. WHEN JOINTS ARE NECESSARY, SILT FENCE GEOTEXTILE SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POST AND SECURELY SEALED.
3. METAL POSTS SHALL BE "STUDDED TEE" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD POSTS SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
4. THE FILTER MATERIAL SHALL BE FASTENED SECURELY TO METAL OR WOOD POSTS USING WIRE TIES, OR TO WOOD POSTS WITH 3/4" LONG #9 HEAVY-DUTY STAPLES. THE SILT FENCE GEOTEXTILE SHALL NOT BE STAPLED TO EXISTING TREES.
5. WHILE NOT REQUIRED, WIRE MESH FENCE MAY BE USED TO SUPPORT THE GEOTEXTILE. WIRE FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 3/4" LONG. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 6" AND SHALL NOT EXTEND MORE THAN 3" ABOVE THE ORIGINAL GROUND SURFACE.

6. ALONG THE TOE OF FILLS, INSTALL THE SILT FENCE ALONG A LEVEL CONTOUR AND PROVIDE AN AREA BEHIND THE FENCE FOR RUNOFF TO POND AND SEDIMENT TO SETTLE. A MINIMUM DISTANCE OF 5 FEET FROM THE TOE OF THE FILL IS RECOMMENDED.
7. THE HEIGHT OF THE SILT FENCE FROM THE GROUND SURFACE SHALL BE MINIMUM OF 24 INCHES AND SHALL NOT EXCEED 36 INCHES; HIGHER FENCES MAY INPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

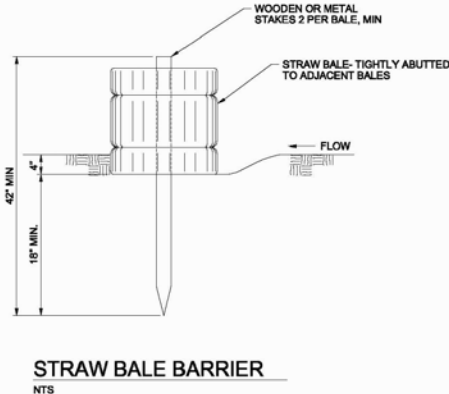
##### MAINTENANCE REQUIREMENTS

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

City of Colorado Springs  
Stormwater Quality

Figure SF-2  
Silt Fence  
Construction Detail and Maintenance  
Requirements

3-36



STRAW BALE BARRIER  
NTS

#### STRAW BALE BARRIER NOTES

##### INSTALLATION REQUIREMENTS

1. STRAW BALE BARRIERS SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. BALES SHALL CONSIST OF APPROXIMATELY 5 CUBIC FEET OF CERTIFIED WEED FREE HAY OR STRAW AND WEIGH NOT LESS THAN 35 POUNDS.
3. BALES ARE TO BE PLACED IN A SINGLE ROW WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.
4. EACH BALE IS TO BE SECURELY ANCHORED WITH AT LEAST TWO STAKES AND THE FIRST STAKE IS TO BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
5. STAKES ARE TO BE A MINIMUM OF 42 INCHES LONG. METAL STAKES SHALL BE STANDARD "T" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD STAKES SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
6. BALES ARE TO BE BOUND WITH EITHER WIRE OR STRING AND ORIENTED SUCH THAT THE BINDINGS ARE AROUND THE SIDES AND NOT ALONG THE TOPS AND BOTTOMS OF THE BALE.
7. GAPS BETWEEN BALES ARE TO BE CHINKED (FILLED BY WEDGING) WITH STRAW OR THE SAME MATERIAL OF THE BALE.
8. END BALES ARE TO EXTEND UPSLOPE SO THE TRAPPED RUNOFF CANNOT FLOW AROUND THE ENDS OF THE BARRIER.

##### MAINTENANCE REQUIREMENTS

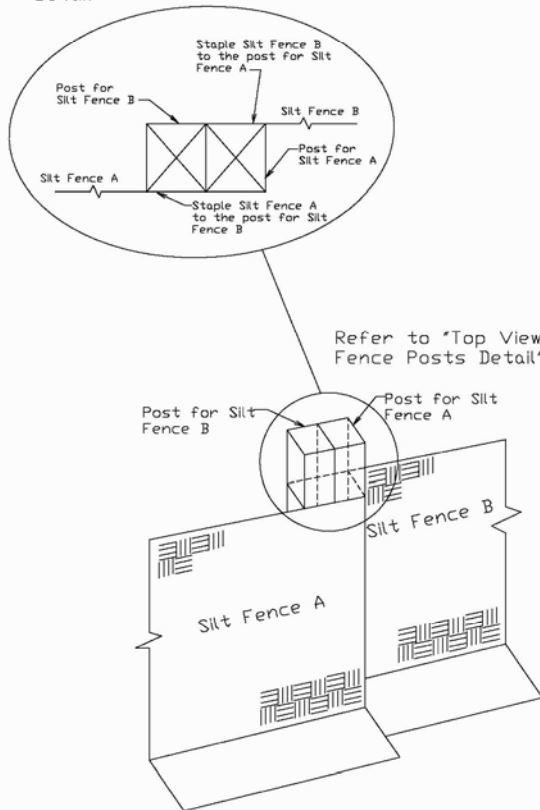
1. CONTRACTOR SHALL INSPECT STRAW BALE BARRIERS IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED OR INEFFECTIVE BARRIERS SHALL BE PROMPTLY REPAIRED, REPLACING BALES IF NECESSARY, AND UNENTRENCHED BALES NEED TO BE REPAIRED WITH COMPACTED BACKFILL MATERIAL.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALE BARRIERS WHEN IT ACCUMULATES TO APPROXIMATELY 1/2 THE HEIGHT OF THE BARRIER.
4. STRAW BALE BARRIERS SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED AS APPROVED BY THE CITY.

City of Colorado Springs  
Stormwater Quality

Figure SBB-2  
Straw Bale Barrier  
Construction Detail and Maintenance  
Requirements

3-42

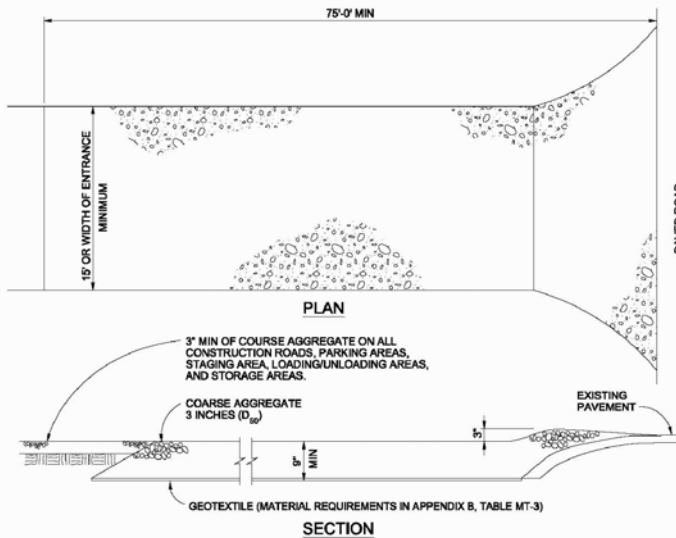
#### Top View of Silt Fence Posts Detail



City of Colorado Springs  
Stormwater Quality

Figure SF-3  
Silt Fence Joint Tying  
Construction Detail and Maintenance  
Requirements

3-37



VEHICLE TRACKING  
NTS

#### VEHICLE TRACKING NOTES

##### INSTALLATION REQUIREMENTS

1. ALL ENTRANCES TO THE CONSTRUCTION SITE ARE TO BE STABILIZED PRIOR TO CONSTRUCTION BEGINNING.
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 PRIOR TO LAYING DOWN GEOTEXTILE AND STONE.
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. STORM SEWER INLET PROTECTION IS TO BE IN PLACE, INSPECTED, AND CLEANED IF NECESSARY.
5. OTHER ASSOCIATED SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED TO ENSURE GOOD WORKING CONDITION.

City of Colorado Springs  
Stormwater Quality

Figure VT-2  
Vehicle Tracking  
Application Examples

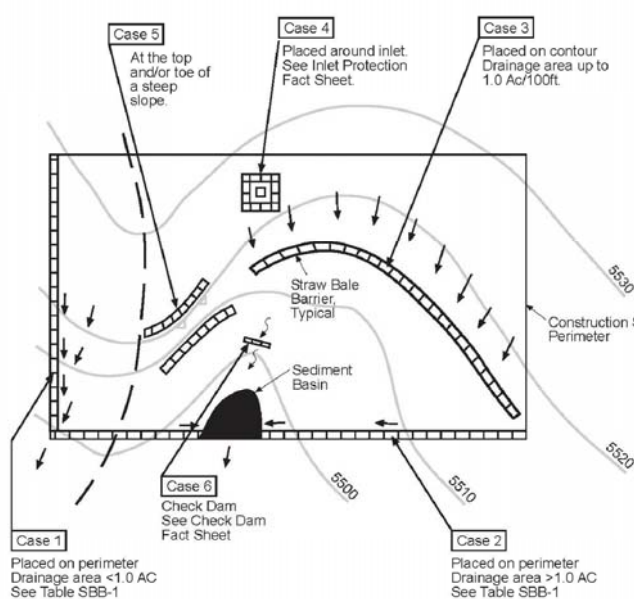


Table SBB-1

Straw Bale Barrier Used as Perimeter Control	Case 1 DA < 1.0 AC	Case 2 DA > 1.0 AC
Continuous Grade	OK <sup>(1)</sup>	OK <sup>(1)</sup>
Area of Concentrated Flow	OK <sup>(2)</sup>	NO <sup>(3)</sup>

- (1) Temporary Swale or Silt Fence may be used as alternative to a Straw Bale Barrier.  
(2) Straw Bale Check Dam may be used at low points.  
(3) Sediment Basin is required for concentrated flow from drainage areas > 1.0 AC.

City of Colorado Springs  
Storm Water Quality

Figure SBB-1  
Straw Bale Barrier  
Application Examples

3-41

#### MULCHING NOTES

##### INSTALLATION REQUIREMENTS

1. ALL DISTURBED AREAS MUST BE MULCHED WITHIN 21 DAYS AFTER FINAL GRADE AND SEEDED AREAS ARE TO BE MULCHED WITHIN 24 HOURS AFTER SEEDING.
2. MATERIAL USED FOR MULCH CAN BE CERTIFIED CLEAN, WEED- AND SEED-FREE LONG STEMMED FIELD OR MARSH HAY, OR STRAW OF OATS, BARLEY, WHEAT, RYE, OR TRITICALE CERTIFIED BY THE COLORADO DEPARTMENT OF AGRICULTURE WEED FREE FORAGE CERTIFICATION PROGRAM.
3. HYDRAULIC MULCHING MATERIAL SHALL CONSIST OF VIRGIN WOOD FIBER MANUFACTURED FROM CLEAN WHOLE WOOD CHIPS. WOOD CHIPS CANNOT CONTAIN ANY GROWTH OR GERMINATION INHIBITORS OR BE PRODUCED FROM RECYCLED MATERIAL. GRAVEL CAN ALSO BE USED.
4. MULCH IS TO BE APPLIED EVENLY AT A RATE OF 2 TONS PER ACRE.
5. MULCH IS TO BE ANCHORED EITHER BY CRIMPING (TUCKING MULCH FIBERS 4 INCHES INTO THE SOIL), USING NETTING (USED ON SMALL AREAS WITH STEEP SLOPES), OR WITH A TACKIFIER.
6. HYDRAULIC MULCHING AND TACKIFIERS ARE NOT TO BE USED IN THE PRESENCE OF FREE SURFACE WATER.

##### MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL MULCHED AREAS.
2. MULCH IS TO BE REPLACED IMMEDIATELY IN THOSE AREAS IT HAS BEEN REMOVED, AND IF NECESSARY THE AREA SHOULD BE RESEDED.

City of Colorado Springs  
Stormwater Quality

Figure MU-1  
Mulching  
Construction Detail and Maintenance  
Requirements

3-30

Project No.: 136.12  
Scale: AS NOTED  
Date: 01/02/18  
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STRUCTURAL NOTES

GENERAL:

1. FOUNDATION DESIGN IS IN ACCORDANCE WITH THE SOILS INFORMATION PROVIDED BY THE GEOTECHNICAL INVESTIGATION PROVIDED BY ENTECH ENGINEERING INC., ENTECH JOB NO. 152161, DECEMBER 28, 2015.
2. FILL PLACED BELOW THE FOUNDATION SHOULD CONSIST OF ON-SITE SAND SOILS THAT HAVE BEEN UNIFORMLY MOISTURE-CONDITIONED WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT AND COMPACTED IN THIN LIFTS TO AT LEAST 95 PERCENT OF MAXIMUM MODIFIED PROCTOR DRY DENSITY (ASTM D 1557).
3. THE PLACEMENT AND COMPACTION OF BELOW-SLAB FILL SHOULD BE OBSERVED AND TESTED BY A REPRESENTATIVE OF ENTECH DURING CONSTRUCTION.
4. IF THE SOIL PROPERTIES ARE FOUND TO BE DIFFERENT FROM THE CRITERIA IN THE GEOTECHNICAL INVESTIGATION, THE DESIGN ENGINEER SHALL BE PROMPTLY NOTIFIED.
5. REFER TO MANUFACTURER’S ENGINEERED DRAWINGS FOR LOADS USED IN DESIGN.
6. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND NOTIFY ARCHITECT/ENGINEER OF DISCREPANCIES. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS.

CONCRETE:

1. ALL CONCRETE DESIGN, MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE, 2003 EDITION.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:

FOOTING, WALLS.....4000 PSI (CEMENT TYPE II)

SLABS ON GRADE.....4000 PSI (CEMENT TYPE II)

STRUCTURAL SLABS.....4000 PSI (CEMENT TYPE II)
3. GROUT UNDER BASE PLATES AND BEARING PLATES SHALL BE NON-SHRINK, NON-METALLIC GROUT WITH A MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS OF 7500 p.s.i.
4. ALL REINFORCING BARS SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615, GRADE 60, AND FREE FROM LOOSE RUST AND SCALE. ALL REINFORCING STEEL TO BE WELDED SHALL BE ASTM A706, GRADE 60. WELDED WIRE FABRIC SHALL BE SMOOTH STEEL WIRE FABRIC CONFORMING TO ASTM A185.
5. REINFORCEMENT SHALL BE DETAILED IN ACCORDANCE WITH THE ACI DETAILING MANUAL, LATEST EDITION.
6. FORMWORK SHALL BE DESIGNED, ERECTED AND REMOVED IN ACCORDANCE WITH THE SPECIFICATIONS.
7. REINFORCEMENT SHALL BE PLACED SO THAT THE FOLLOWING MINIMUM CONCRETE PROTECTION IS PROVIDED, UNLESS NOTED OTHERWISE.

CONCRETE SURFACES POURED AGAINST GROUND.....2” CLEAR

FORMED SURFACES EXPOSED TO GROUND OR WEATHER

BARS #6 AND LARGER..... 2” CLEAR

BARS #5 AND SMALLER..... 1-1/2” CLEAR

SLABS ON GRADE..... AT CENTERS
8. REINFORCEMENT SHALL BE SECURELY TIED AND SHALL BE SUPPORTED WITH METAL CHAIRS OR HUNG FROM FORMS.
9. CONTINUOUS HORIZONTAL BARS AND CORNER BARS IN FOOTINGS, STEM WALLS AND SLABS SHALL BE LAPPED A MINIMUM OF 36 BAR DIAMETERS AT SPLICES. SPLICE LOCATIONS SHALL BE STAGGERED WHERE POSSIBLE.
10. VERTICAL DOWEL BARS IN WALLS AND COLUMNS SHALL BE LAPPED A MINIMUM OF 46 BAR DIAMETERS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
11. CONCRETE TOPPING SHALL BE REINFORCED WITH 6"x6" W1.4xW1.4 WELDED WIRE FABRIC. WELDED WIRE FABRIC SHALL BE LAPPED A MINIMUM OF ONE FULL MESH, PLUS 2", 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.
12. TWO (2) ADDITIONAL #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.
13. STEM WALLS BELOW GRADE SHALL HAVE BACKFILL PLACED EQUALLY ON BOTH SIDES UNTIL THE REQUIRED LEVELS ARE REACHED.
14. EXPANSION JOINTS SHALL BE PLACED BETWEEN ALL SLABS ON GRADE AND VERTICAL WALLS, AND BETWEEN CONCRETE FLOOR TOPPING AND VERTICAL MASONRY WALLS. A BOND BREAKER OF 90 LB FELT SHALL BE PROVIDED BETWEEN WALL AND EDGE OF SLAB.
15. CONTROL AND/OR CONSTRUCTION JOINTS IN SLABS ON GRADE SHALL BE SPACED AT INTERVALS ENCLOSING NO MORE THAN 144 SQUARE FEET WITH A MAXIMUM OF 12 FEET IN ANY ONE DIRECTION. CONSTRUCTION JOINTS SHALL BE FORMED WITH METAL LOAD KEY JOINT SUPPLIED BY JAHN CONCRETE PRODUCTS OR APPROVED EQUAL.
16. CONSTRUCTION JOINTS (COLD JOINTS) SHALL BE PROVIDED IN WALLS AND GRADE BEAMS WHICH ARE OVER 70 FEET IN A STRAIGHT RUN. WATERSTOPS AND KEYWAYS SHALL BE PROVIDED AT ALL CONSTRUCTION JOINTS WHERE INTERIOR SLABS ON GRADE OCCUR BELOW EXTERIOR GRADE. ALL CONSTRUCTION JOINTS SHALL BE APPROVED BY THE ENGINEER.
17. ALL EXPOSED CONCRETE CORNERS (INCLUDING PUMP PADS, CONCRETE PIPE SUPPORTS, HOUSEKEEPING PADS, ETC.) ARE TO BE CHAMFERED 1/2".
18. ALL EXPANSION JOINTS AND SEAMS TO BE SEALED WITH SELF-LEVELING POLYURETHANE CAULK PER SPECIFICATIONS. USE NON-SAG TYPE POLYURETHANE FOR VERTICAL WALLS.

WOOD:

1. ALL LUMBER DESIGN, MATERIALS, FABRICATION AND CONSTRUCTION SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE, 2009 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.

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
2. 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.....2,600 PSI

HORIZONTAL SHEAR, Fv.....285 PSI

MODULUS OF ELASTICITY, E..... 1,900,000 PSI
3. 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
4. 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.
5. DESIGN VALUES USED FOR TRUSSES AND FABRICATED ITEMS SHALL BE SUBMITTED WITH SHOP DRAWINGS.
6. 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.
7. 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.
8. BRIDGING AND NAILING SCHEDULES SHALL BE PROVIDED IN ACCORDANCE WITH THE UNIFORM BUILDING CODE, LATEST EDITION.
9. ALL TRUS-JOINT (OR EQUIVALENT) MEMBERS SHALL MEET ICBO PRODUCT ACCEPTANCE NATIONAL EVALUATION REPORT.
10. WHERE USP CONNECTORS ARE NOTED, SIMPSON BRAND EQUIVALENT CONNECTORS MAY BE USED. VERIFY SUBSTITUTIONS WITH ENGINEER.
11. ALL TRUSS JOIST SUSPENDED PIPE HANGERS TO INCLUDE A METAL PLATE CONNECTION SLEEVE AT SUSPENSION POINT. SIZE PER MANUFACTURER RECOMMENDATION.
12. SEE MANUFACTURER’S RECOMMENDATIONS FOR FASTENER AND NAILING SCHEDULES FOR ALL METAL PLATE CONNECTORS.

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

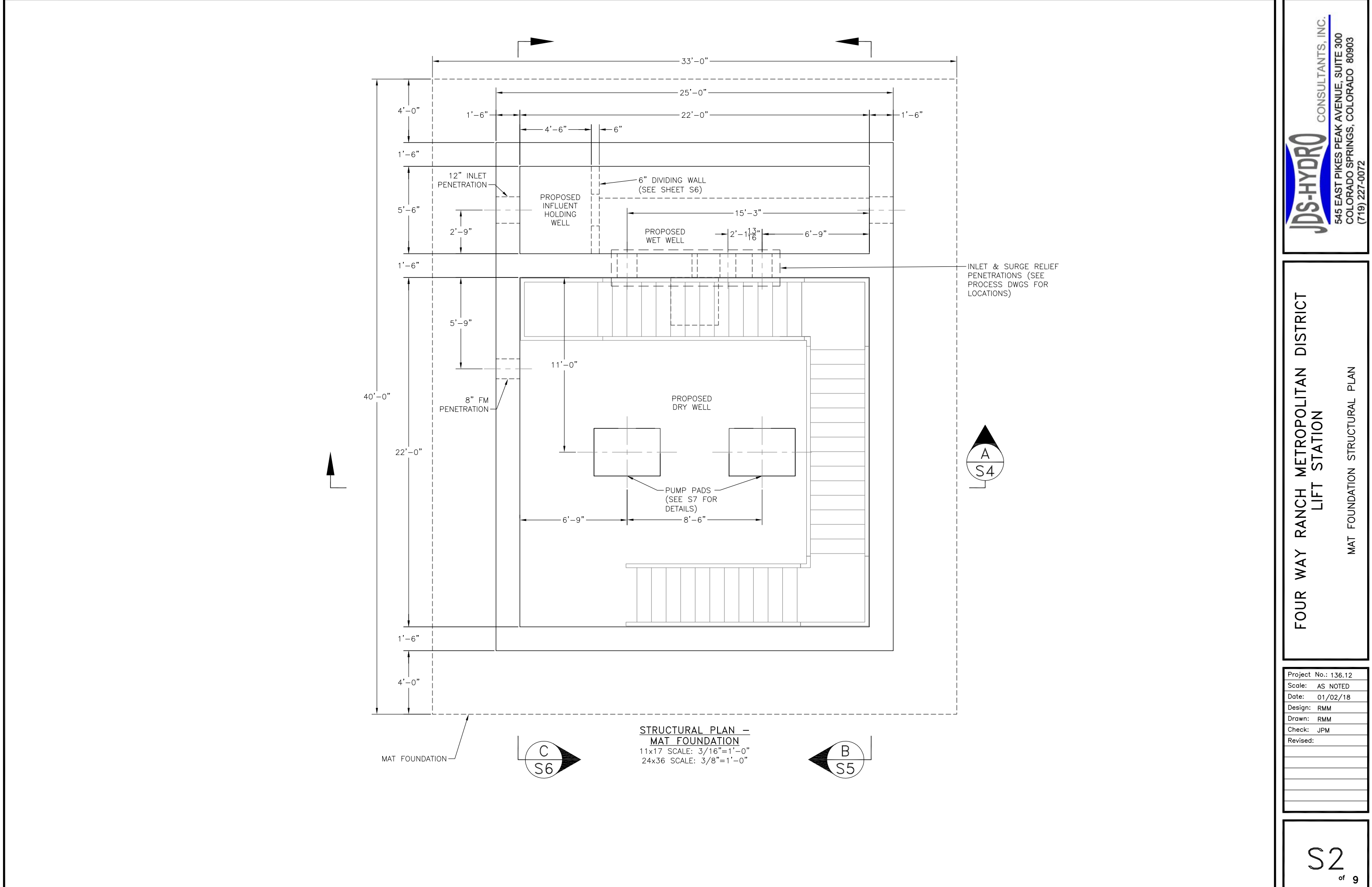
STRUCTURAL NOTES

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Revised:	

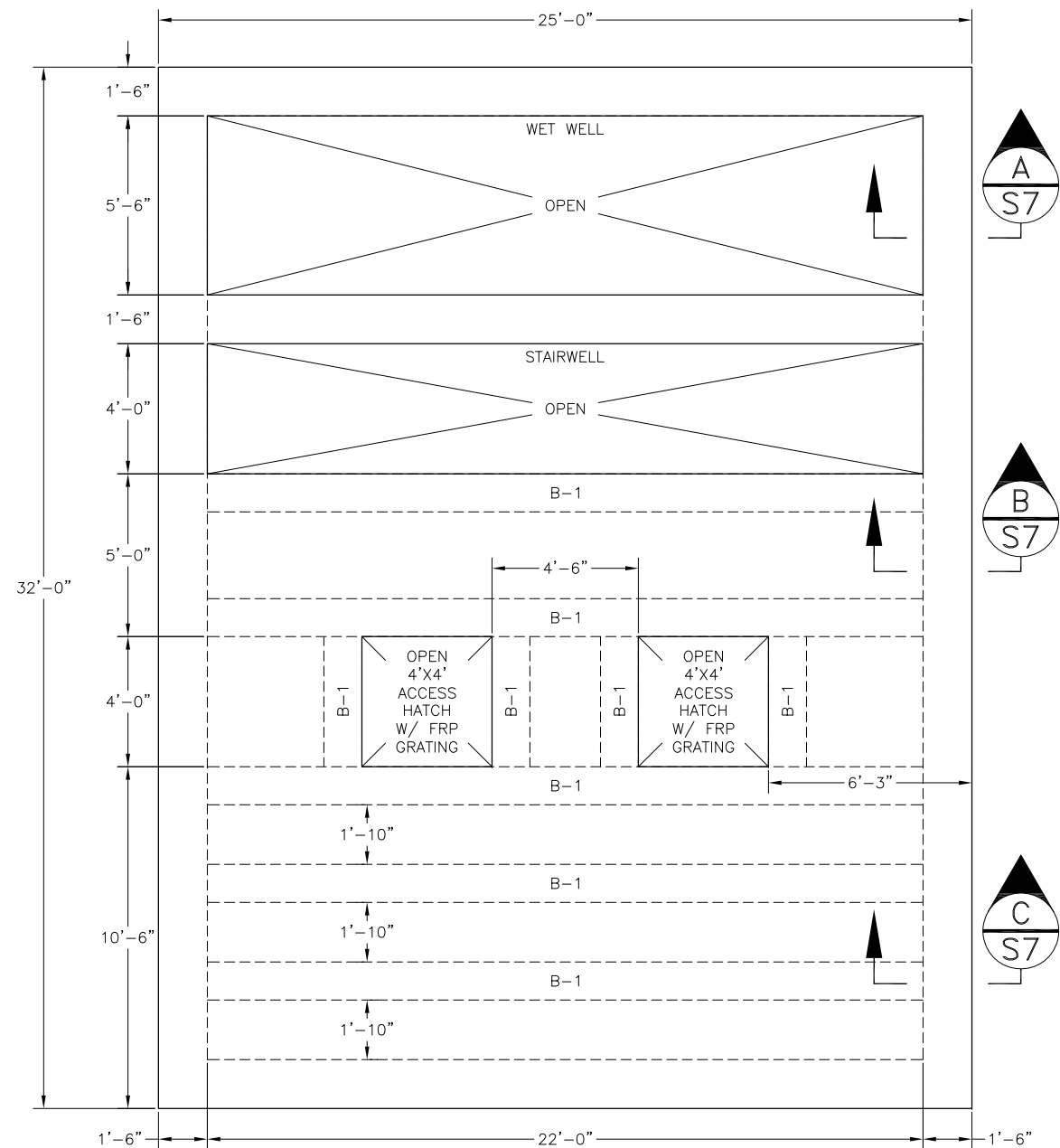
JDS-HYDRO

CONSULTANTS, INC.

545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072



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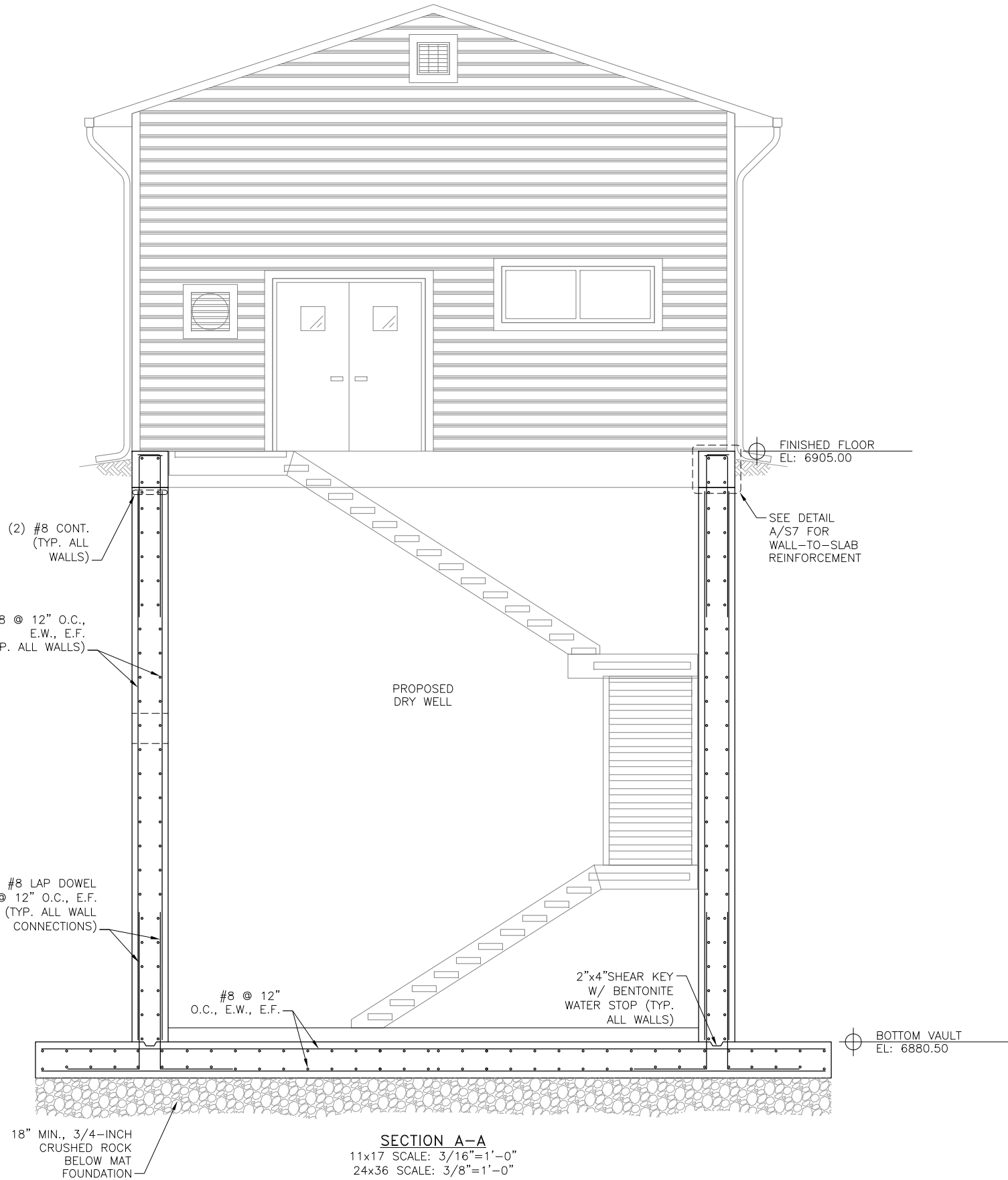


STRUCTURAL PLAN —  
SUSPENDED SLAB  
11x17 SCALE: 3/16"=1'-0"  
24x36 SCALE: 3/8"=1'-0"

BEAM SCHEDULE						
MARK	WIDTH (IN.)	DEPTH (IN.)	BOTTOM BARS	TOP BARS	STIRRUP SIZE	STIRRUP SPACING (IN.)
B-1	14"	18"	(4) #6	(4) #6	#3	8"
SLAB REINFORCEMENT = #8 @ 12" O.C., E.W., E.F.						

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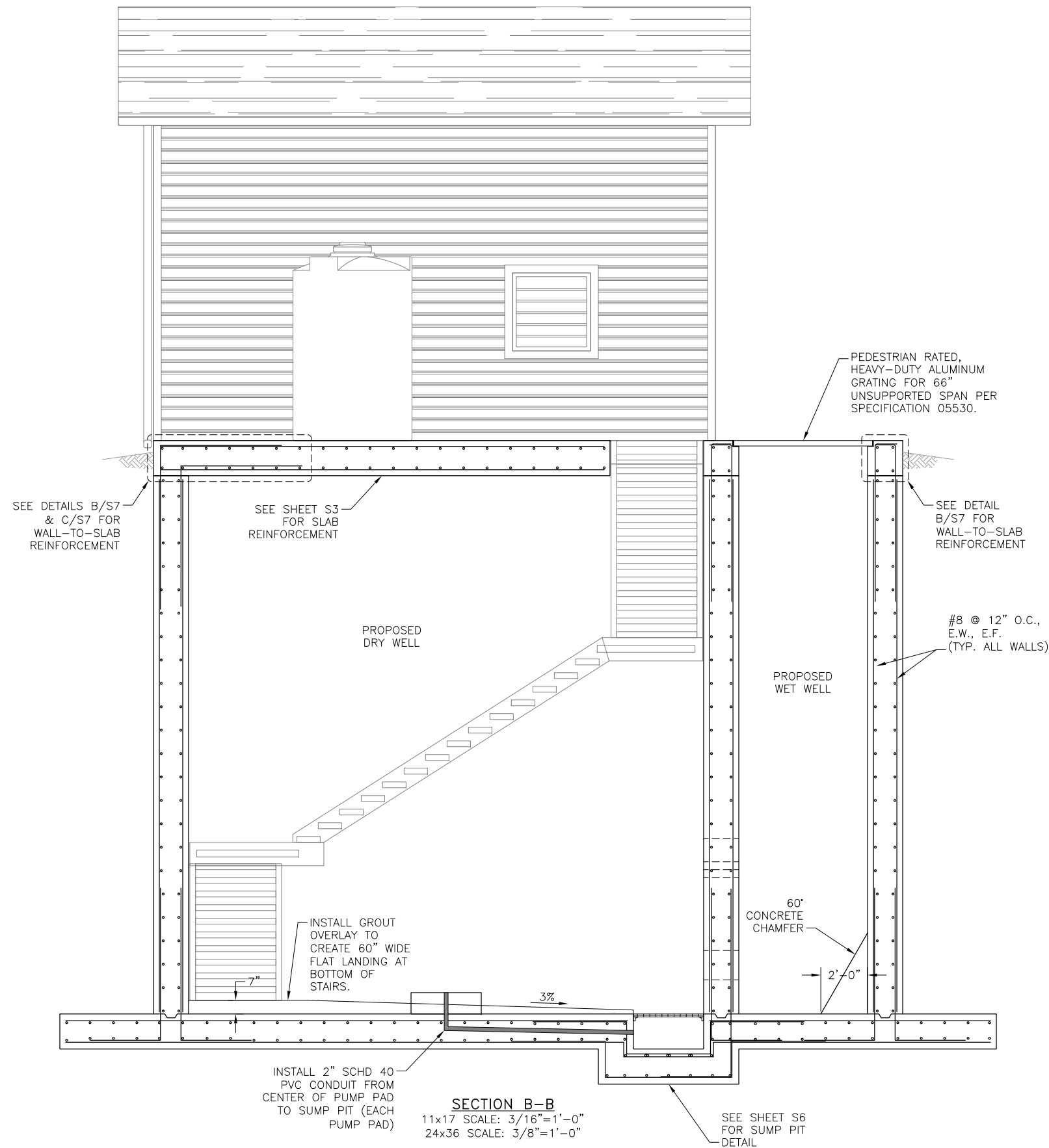


SECTION A-A  
11x17 SCALE: 3/16"=1'-0"  
24x36 SCALE: 3/8"=1'-0"

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

STRUCTURAL SECTIONS 1

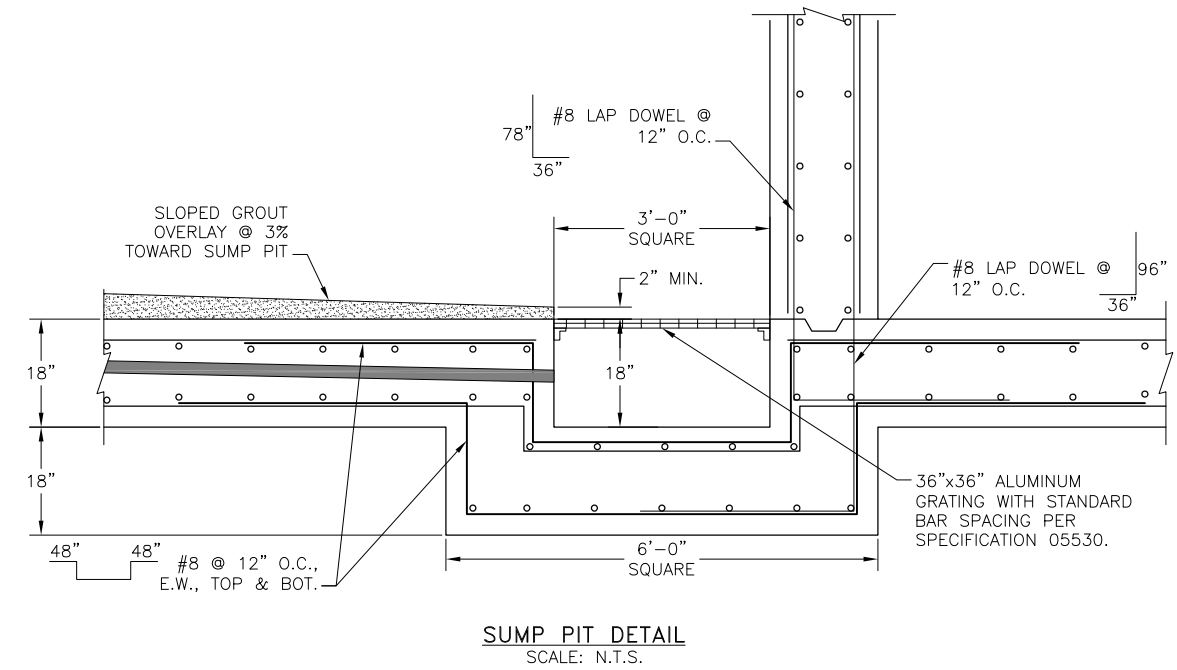
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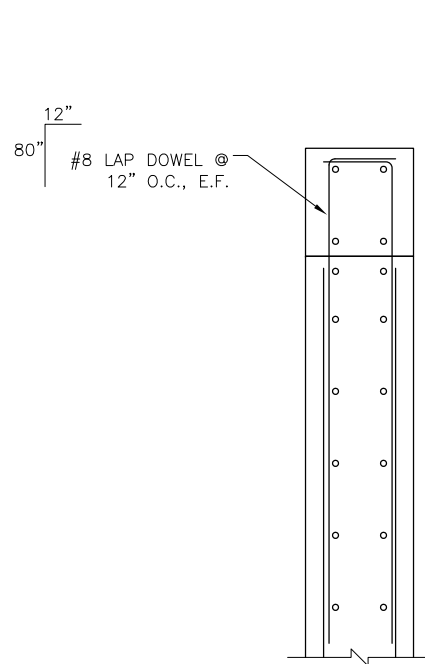


FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION  
STRUCTURAL SECTIONS 2

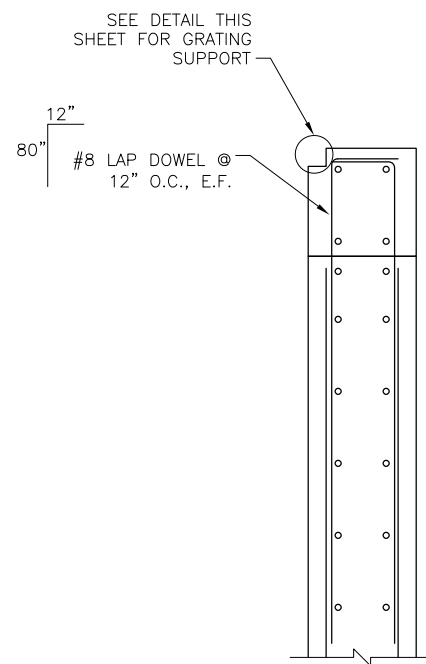
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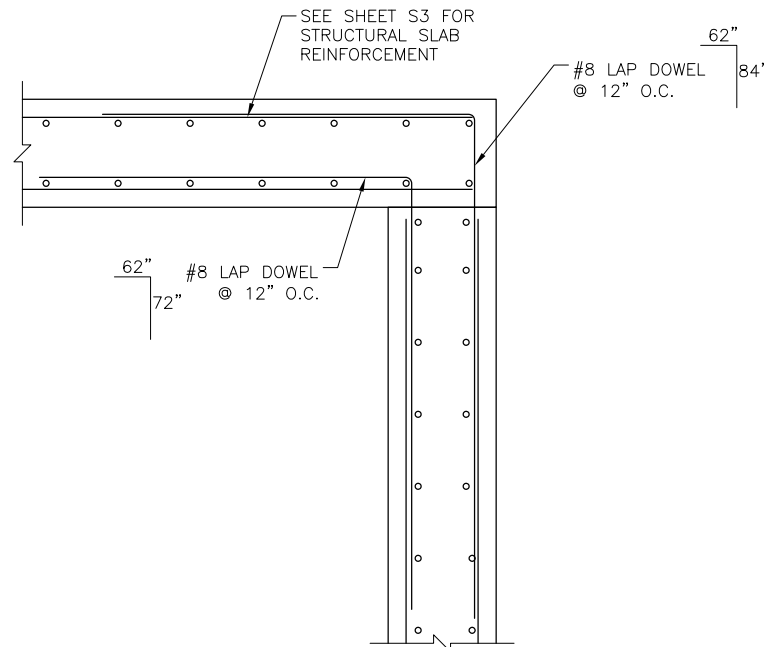




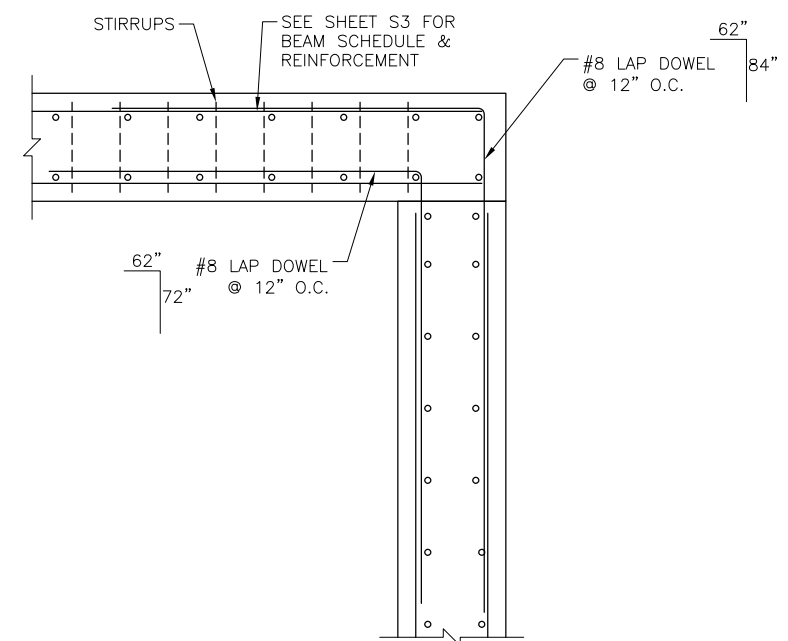
**A**  
S7 WALL-TO-SLAB DETAIL  
SCALE: N.T.S.



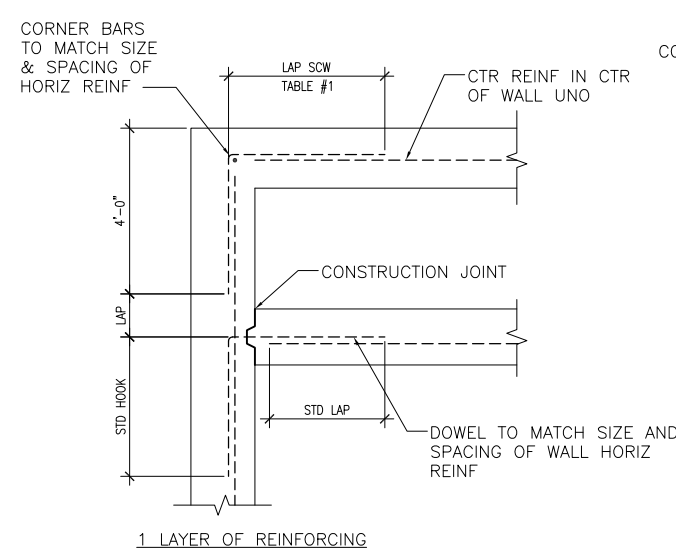
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S7 WALL-TO-SLAB DETAIL  
SCALE: N.T.S.



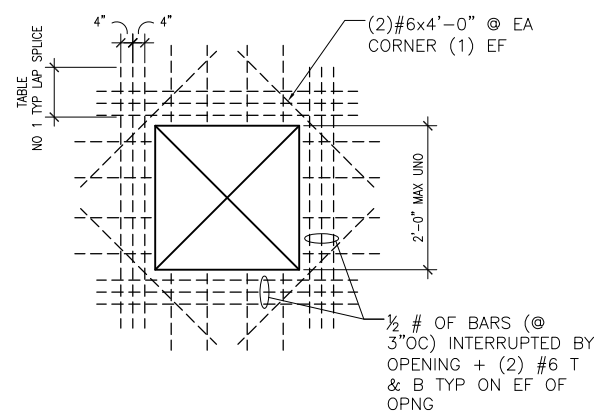
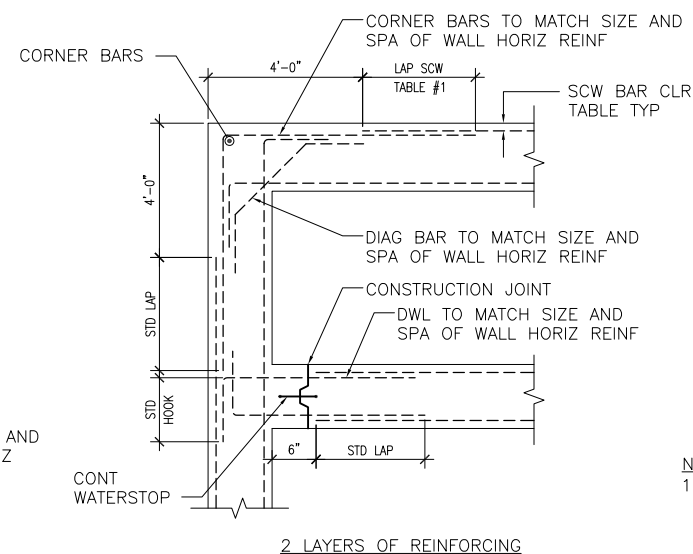
**C**  
S7 WALL-TO-SLAB DETAIL  
SCALE: N.T.S.



**D**  
S7 WALL-TO-BEAM DETAIL  
SCALE: N.T.S.

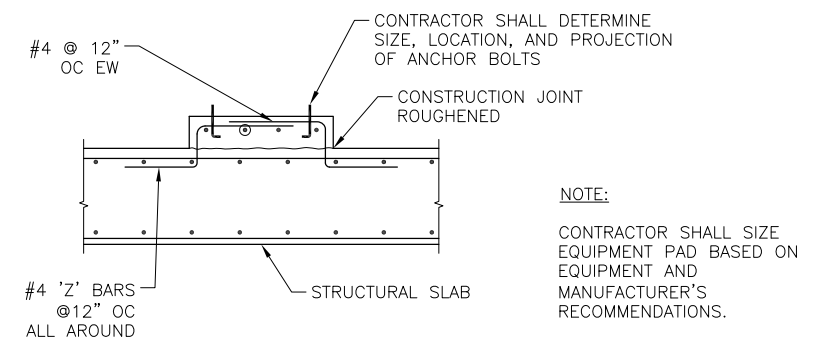


**E**  
S7 TYPICAL WALL CORNER DETAIL  
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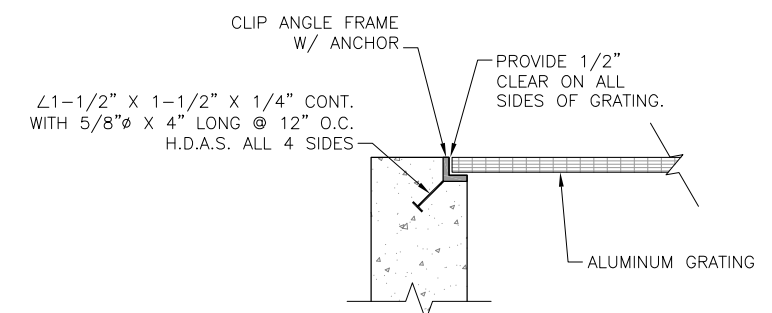


**NOTES:**  
1. ALL HOLES & CUT OUT IN THE FLOOR SLAB(S) & WALL SHALL BE EITHER FORMED OR PROVIDED W/ PIPE SLEEVES BEFORE POURING CONC HOLES SHALL NOT BE DRILLED OR CUT WITHOUT THE WRITTEN PERMISSION OF STRUCTURAL ENGINEER OF RECORD.

**F**  
S7 TYPICAL OPENING DETAIL  
SCALE: N.T.S.



**G**  
S7 EQUIPMENT PAD DETAIL  
SCALE: N.T.S.



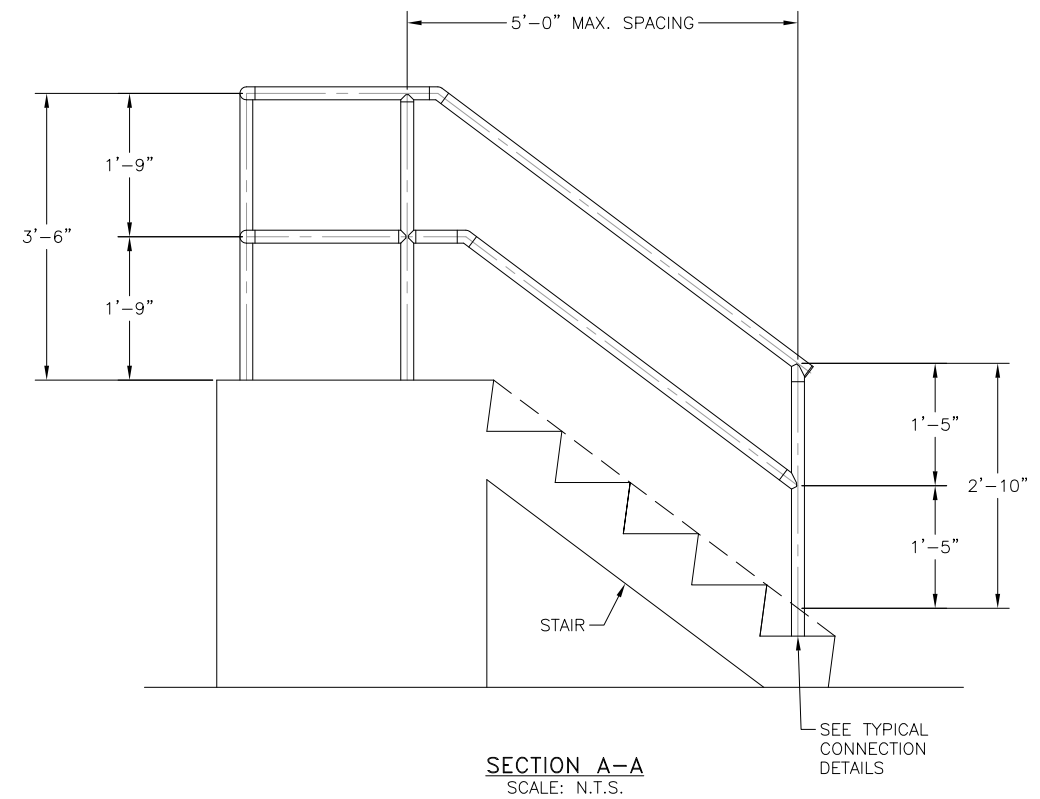
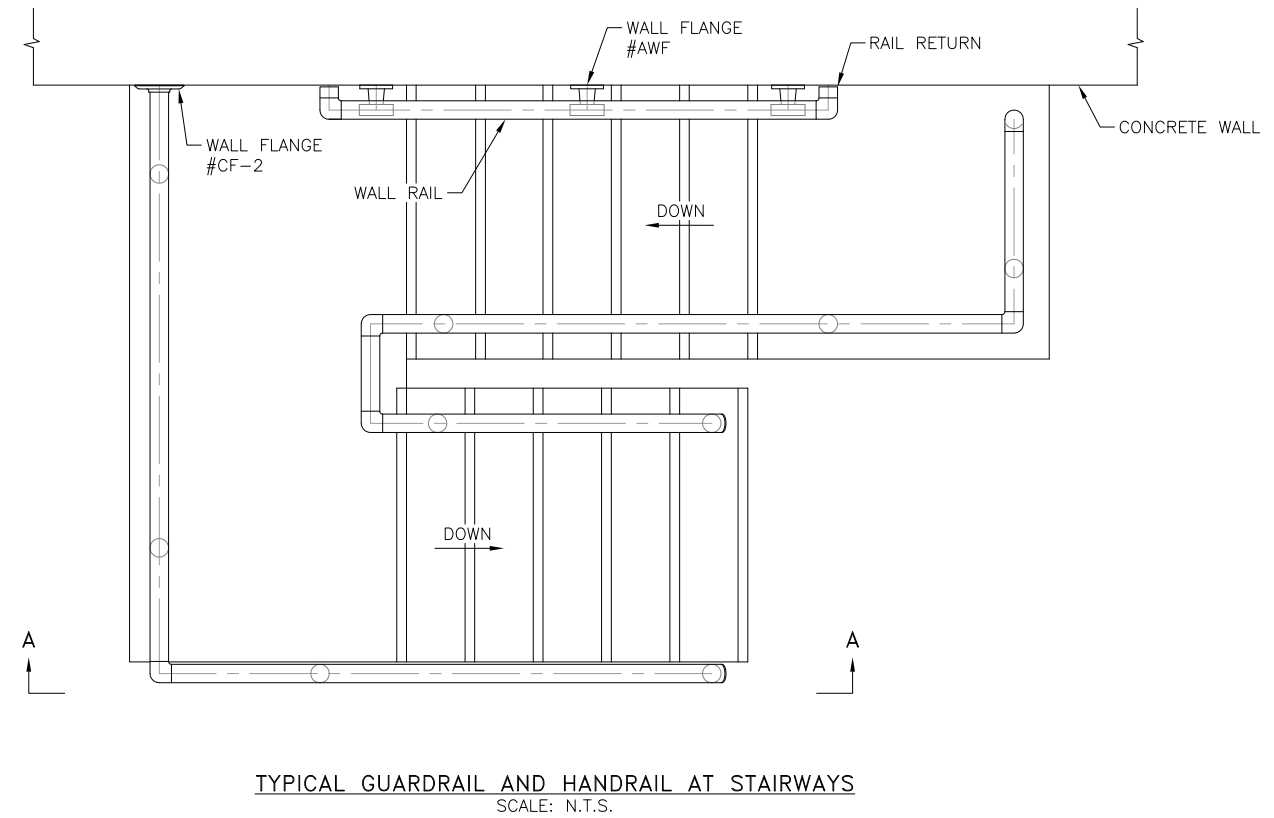
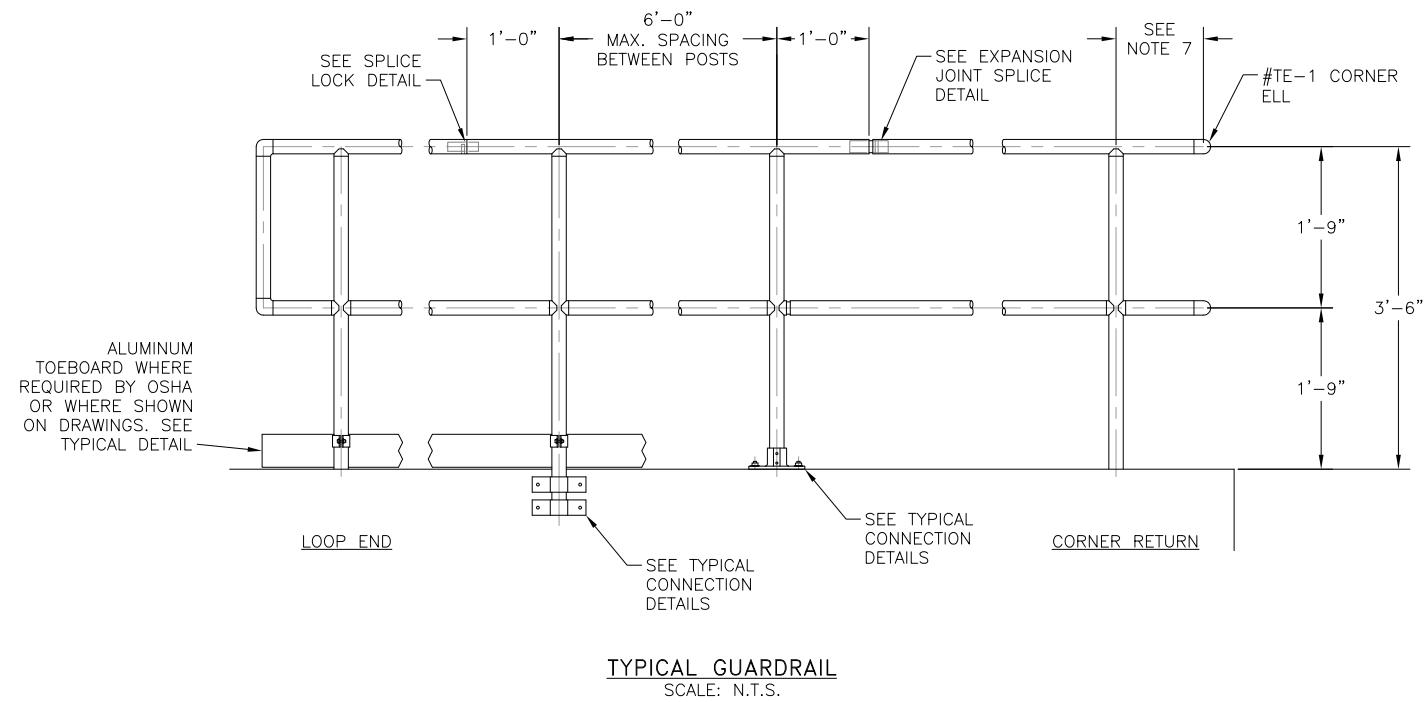
**H**  
S7 GRATING SUPPORT DETAIL  
SCALE: N.T.S.

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION  
STRUCTURAL DETAILS

**JDS-HYDRO** CONSULTANTS, INC.  
545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072

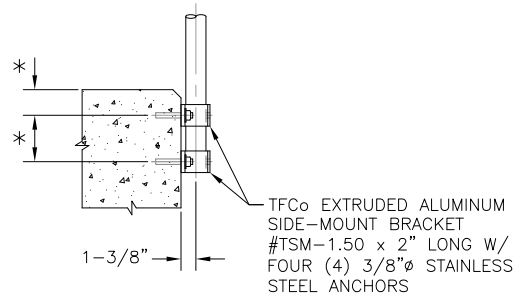
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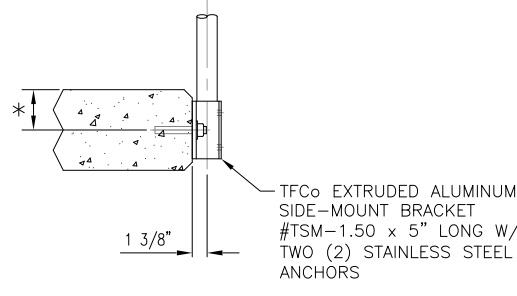


FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

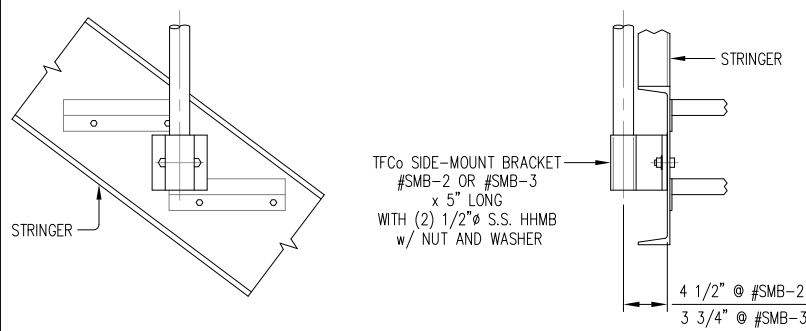
GUARDRAIL/HANDRAIL DETAILS 1



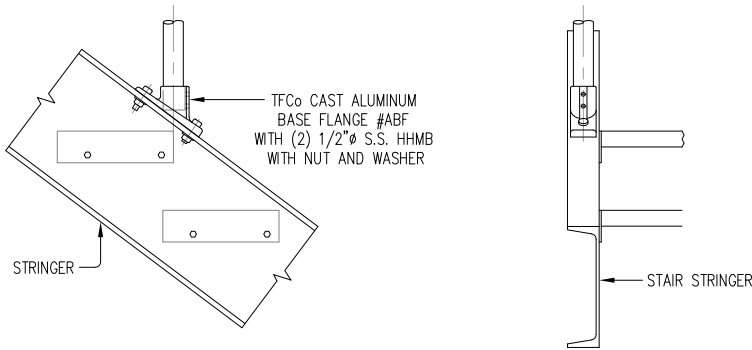
TYPICAL SIDE-MOUNT CONNECTION TO  
CONCRETE WALL  
SCALE: N.T.S.



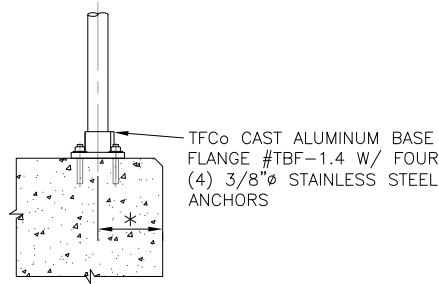
TYPICAL SIDE-MOUNT CONNECTION TO  
CONCRETE SLAB  
SCALE: N.T.S.



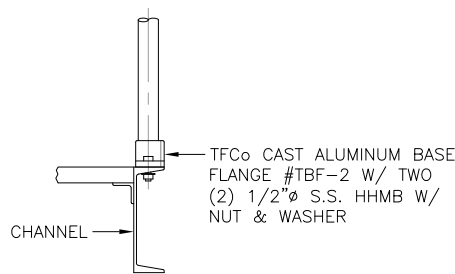
TYPICAL SIDE-MOUNT  
CONNECTION TO STRINGER  
SCALE: N.T.S.



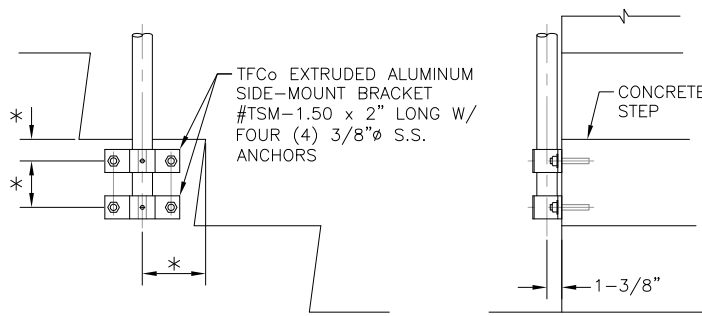
TYPICAL TOP-MOUNT  
CONNECTION TO STRINGER  
SCALE: N.T.S.



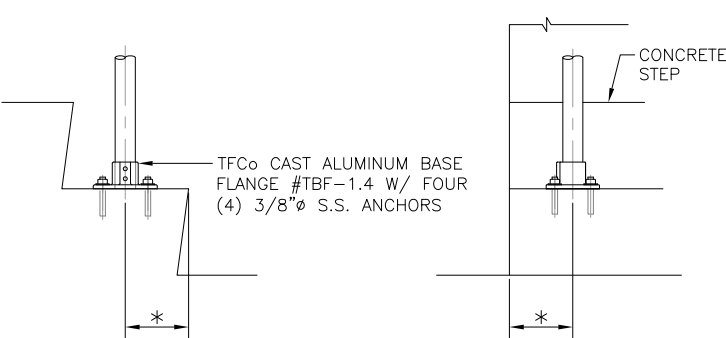
TYPICAL TOP-MOUNT CONNECTION TO  
CONCRETE WALL  
SCALE: N.T.S.



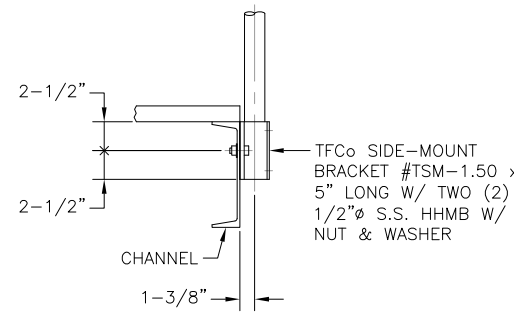
TYPICAL TOP-MOUNT  
CONNECTION TO CHANNEL  
SCALE: N.T.S.



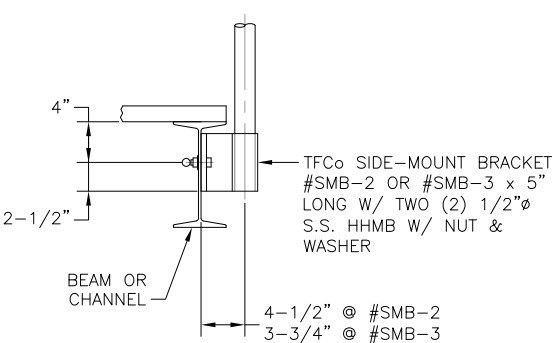
TYPICAL SIDE-MOUNT CONNECTION  
TO CONCRETE STAIR  
SCALE: N.T.S.



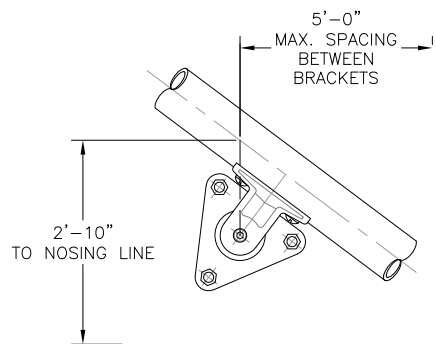
TYPICAL TOP-MOUNT CONNECTION  
TO CONCRETE STAIR  
SCALE: N.T.S.



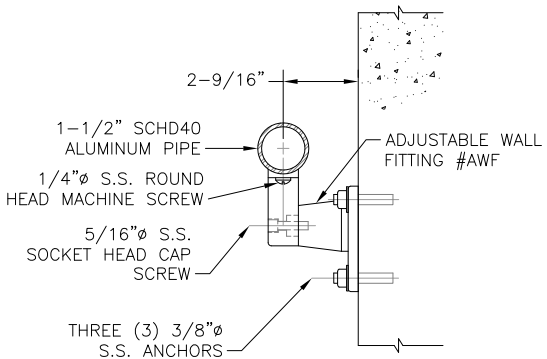
TYPICAL SIDE-MOUNT  
CONNECTION TO CHANNEL  
SCALE: N.T.S.



TYPICAL SIDE-MOUNT  
CONNECTION TO BEAM  
SCALE: N.T.S.



WALL RAIL ELEVATION  
SCALE: N.T.S.



DESIGN SPECIFICATIONS

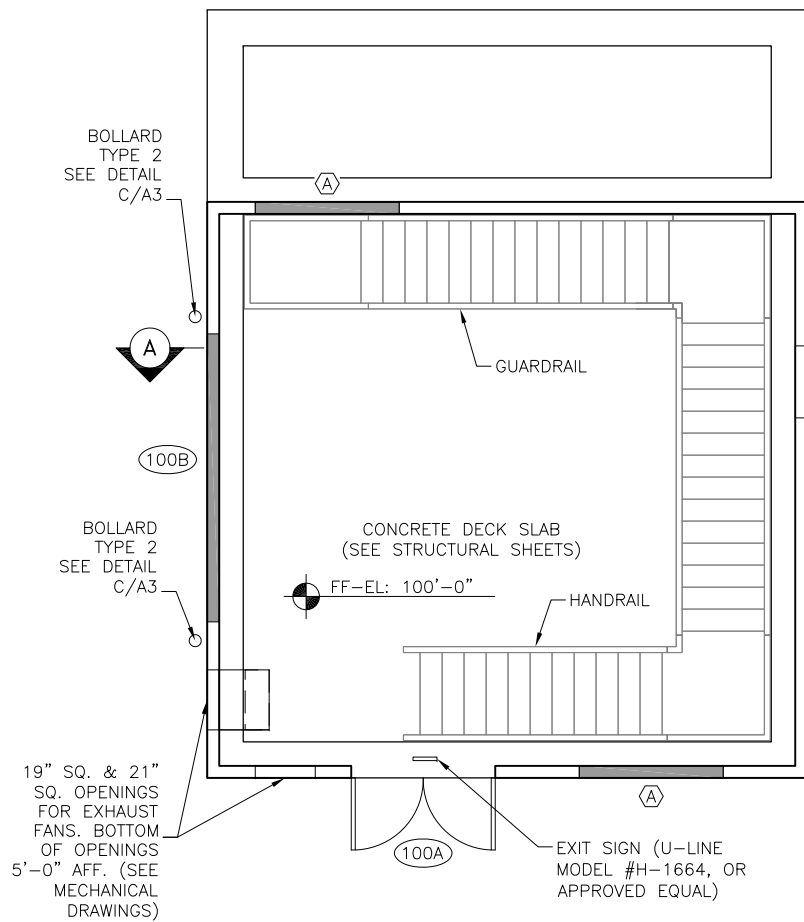
1. GUARDRAILS AND HANDRAILS SHALL BE THE PRODUCT OF A COMPANY NORMALLY ENGAGED IN THE MANUFACTURE OF PIPE RAILING. RAILING SHALL BE SHOP ASSEMBLED IN LENGTHS NOT TO EXCEED 24 FEET FOR FIELD ERECTION.
2. THE HANDRAIL SHALL BE MADE OF PIPES JOINED TOGETHER WITH COMPONENT FITTINGS. SAMPLES OF ALL COMPONENTS, BASES, TOE PLATE AND PIPE SHALL BE SUBMITTED FOR APPROVAL AT THE REQUEST OF THE ENGINEER. COMPONENTS THAT ARE POP-RIVETED OR GLUED AT THE JOINTS WILL NOT BE ACCEPTABLE. ALL COMPONENTS MUST BE MECHANICALLY FASTENED WITH STAINLESS STEEL HARDWARE. HANDRAIL AND COMPONENTS SHALL BE TUFRAIL, AS MANUFACTURED BY THOMPSON FABRICATING, LLC (BIRMINGHAM, ALABAMA) OR AN APPROVED EQUAL.
3. RAILINGS SHALL BE 1 1/2" SCHEDULE 40 ALUMINUM PIPE ALLOY 6105-T5, ASTM-B-429 OR ASTM-B-221. POSTS SHALL BE 1 1/2" SCHEDULE 40 ALUMINUM PIPE OF THE SAME ALLOY. POST SPACING SHALL BE A MAXIMUM OF 6'-0".
4. GUARDRAILS AND HANDRAILS SHALL BE DESIGNED TO WITHSTAND A 200 LB CONCENTRATED LOAD APPLIED IN ANY DIRECTION AND AT ANY POINT ON THE TOP RAIL.
5. THE MANUFACTURER SHALL SUBMIT CALCULATIONS FOR APPROVAL AT THE REQUEST OF THE ENGINEER. TESTING OF BASE CASTINGS OR BASE EXTRUSIONS BY AN INDEPENDENT LAB OR MANUFACTURER'S LAB (IF MANUFACTURER'S LAB MEETS THE REQUIREMENTS OF THE ALUMINUM ASSOCIATION) WILL BE AN ACCEPTABLE SUBSTITUTE FOR CALCULATIONS. CALCULATIONS WILL BE REQUIRED FOR APPROVAL OF ALL OTHER DESIGN ASPECTS.
6. POSTS SHALL NOT INTERRUPT THE CONTINUATION OF THE TOP RAIL AT ANY POINT ALONG THE RAILING, INCLUDING CORNERS AND END TERMINATIONS (OSHA 1910.23). THE TOP SURFACE OF THE TOP RAILING SHALL BE SMOOTH AND SHALL NOT BE INTERRUPTED BY PROJECTED FITTINGS.
7. THE MID-RAIL AT A CORNER RETURN SHALL BE ABLE TO WITHSTAND A 200 LB LOAD WITHOUT LOOSENING. THE MANUFACTURER IS TO DETERMINE THIS DIMENSION FOR THEIR SYSTEM AND PROVIDE PHYSICAL LABORATORY TESTS TO CONFIRM COMPLIANCE.
8. CONCRETE ANCHORS SHALL BE STAINLESS STEEL TYPE 303 OR 304 AND SHALL BE FURNISHED BY THE HANDRAIL MANUFACTURER. THE ANCHOR DESIGN SHALL INCLUDE THE APPROPRIATE REDUCTION FACTORS FOR SPACING AND EDGE DISTANCES IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED DATA.
9. TOE PLATE SHALL CONFORM TO OSHA STANDARDS. TOE PLATE SHALL BE A MINIMUM OF 4" HIGH AND SHALL BE BE AN EXTRUSION THAT ATTACHES TO THE POSTS WITH CLAMPS THAT WILL ALLOW FOR EXPANSION AND CONTRACTION BETWEEN POSTS. TOE PLATES SHALL BE SET 1/4" ABOVE THE WALKING SURFACE. TOE PLATES SHALL BE PROVIDED ON HANDRAILS AS REQUIRED BY OSHA AND/OR AS SHOWN ON DRAWINGS. TOE PLATES SHALL BE SHIPPED LOOSE IN STOCK LENGTHS FOR FIELD INSTALLATION.
10. OPENINGS IN THE RAILING SHALL BE GUARDED BY A SELF-CLOSING GATE (OSHA 1910.23). SAFETY CHAINS SHALL NOT BE USED UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.
11. FINISH SHALL BE ALUMINUM ASSOCIATION M10-C22-A41 (215-R1). THE PIPE SHALL BE PLASTIC-WRAPPED. THE PLASTIC WRAP IS TO BE REMOVED AFTER ERECTION.
12. ALUMINUM SURFACES IN CONTACT WITH CONCRETE, GROUT OR DISSIMILAR METALS WILL BE PROTECTED WITH A COAT OF BITUMINOUS PAINT, MYLAR ISOLATORS OR OTHER APPROVED MATERIAL.

\* CONCRETE ANCHOR DIAMETER, EDGE DISTANCES, EMBEDMENT, AS WELL AS POST SPACINGS, TO BE DETERMINED UPON ANCHOR SELECTION.

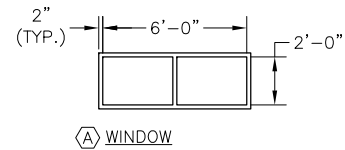
FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

GUARDRAIL/HANDRAIL DETAILS 2

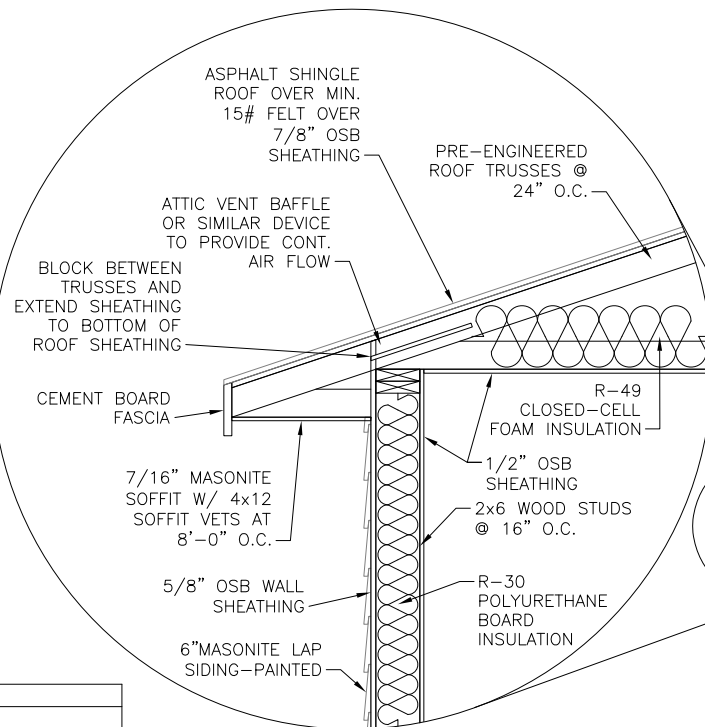




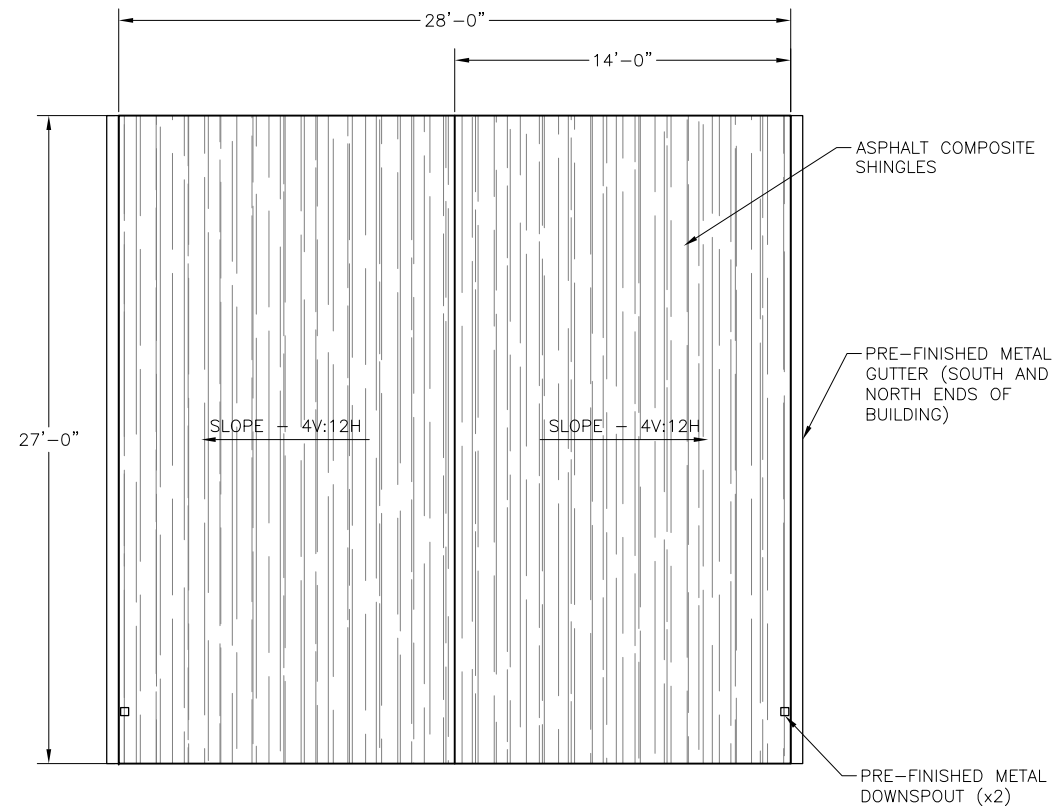
**ARCHITECTURAL FLOOR PLAN**  
11x17 SCALE: 1/8"=1'-0"  
24x36 SCALE: 1/4"=1'-0"



DOOR/WINDOW SCHEDULE					
NO./MARK	SIZE	DOOR		FRAME	
		MAT'L.	FINISH	MAT'L.	FINISH
(100A)	3'-0" x 7'-0" (PAIR)	HM	PAINT	HM	PAINT
		<ul style="list-style-type: none"> <li>INSULATED, HOLLOW METAL, FLUSH-FACE DOUBLE DOOR W/ SHOP PRIMER FOR FIELD-PAINTING, 12"x12" SIGHT GLASS, AND PANIC HARDWARE.</li> <li>HOLLOW METAL FRAME W/ FACTORY WELDED CORNERS. SHOP PRIME FOR FIELD PAINT.</li> </ul>			
(100B)	12'-0" WIDE 10'-0" HIGH	COIL	PAINT	STEEL	PAINT
		<ul style="list-style-type: none"> <li>MC6 STEEL CHANNEL FRAME W/ FIELD WELDED CORNERS. SHOP PRIME FOR FIELD PAINT.</li> <li>20 GA. INSULATED SLATS. 18" HOOD HEIGHT.</li> <li>INTERIOR, FACE-OF-WALL MOUNT.</li> <li>HARDWARE PER MANUFACTURER.</li> </ul>			
A	6'-0" WIDE 2'-0" HIGH			STEEL	PAINT
		<ul style="list-style-type: none"> <li>NON-OPERABLE, 14 GAUGE STEEL FRAME, MOUNT 5'-0" A.F.F.</li> <li>INSULATED, LAMINATED, LOW-E</li> <li>SEE WINDOW DETAIL ABOVE.</li> </ul>			



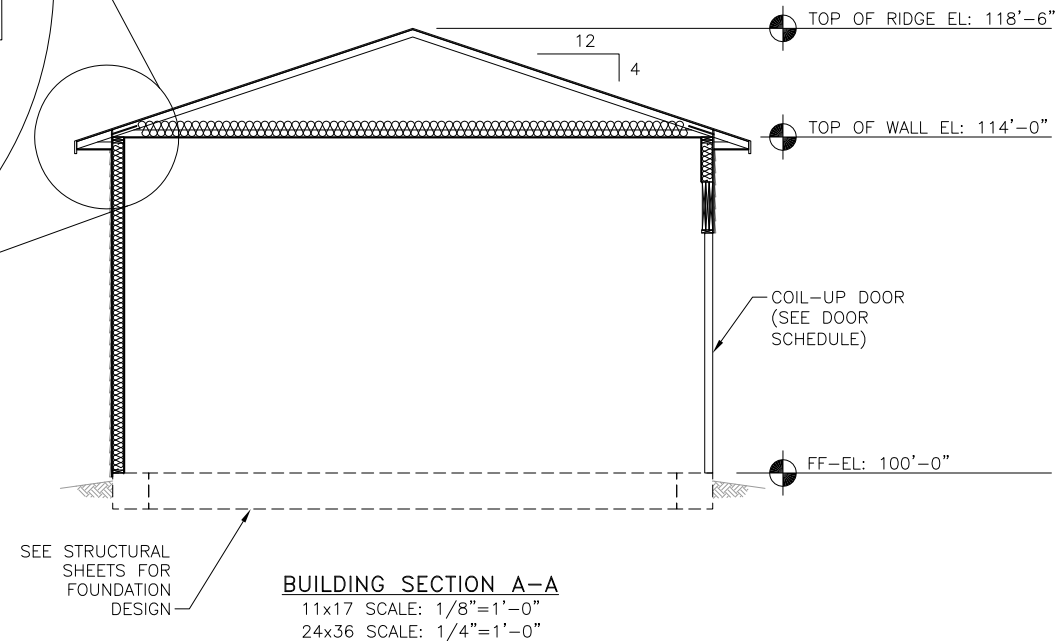
**BUILDING SECTION**  
SCALE: N.T.S.



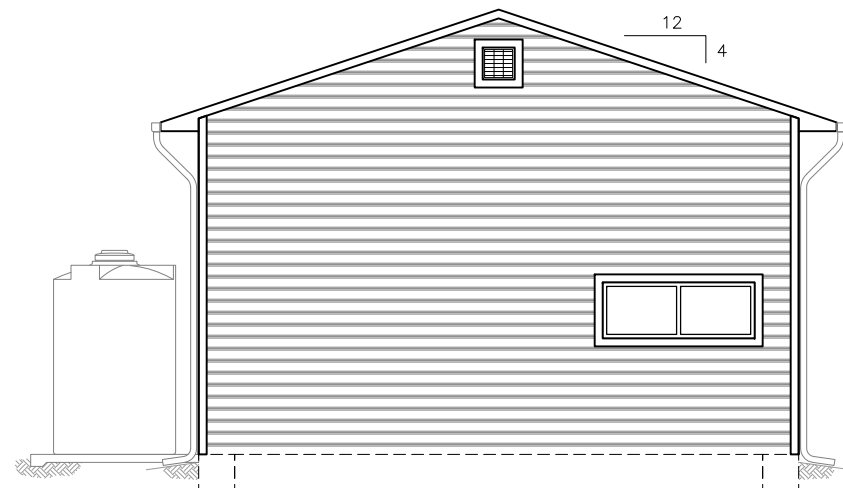
**ARCHITECTURAL ROOF PLAN**  
11x17 SCALE: 1/8"=1'-0"  
24x36 SCALE: 1/4"=1'-0"

**NOTES:**

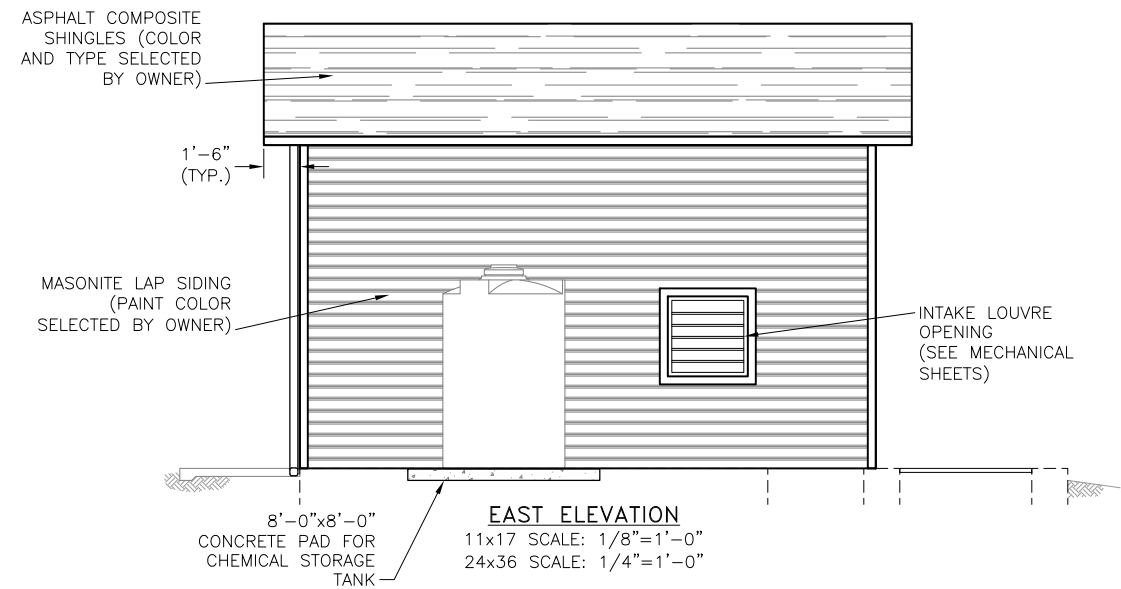
- OWNER TO SELECT ALL INTERIOR AND EXTERIOR MATERIAL COLORS. SEE SPECS FOR FINISHES. VERIFY COLOR WITH OWNER PRIOR TO FABRICATION.
- ALL GUTTERS AND DOWNSPOUTS SHALL BE FREEZE-PROOF.



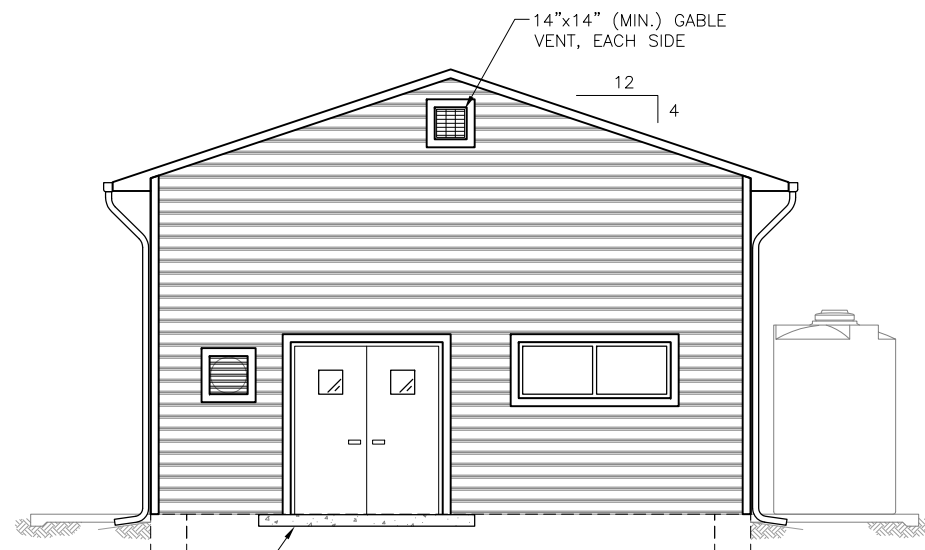
**BUILDING SECTION A-A**  
11x17 SCALE: 1/8"=1'-0"  
24x36 SCALE: 1/4"=1'-0"



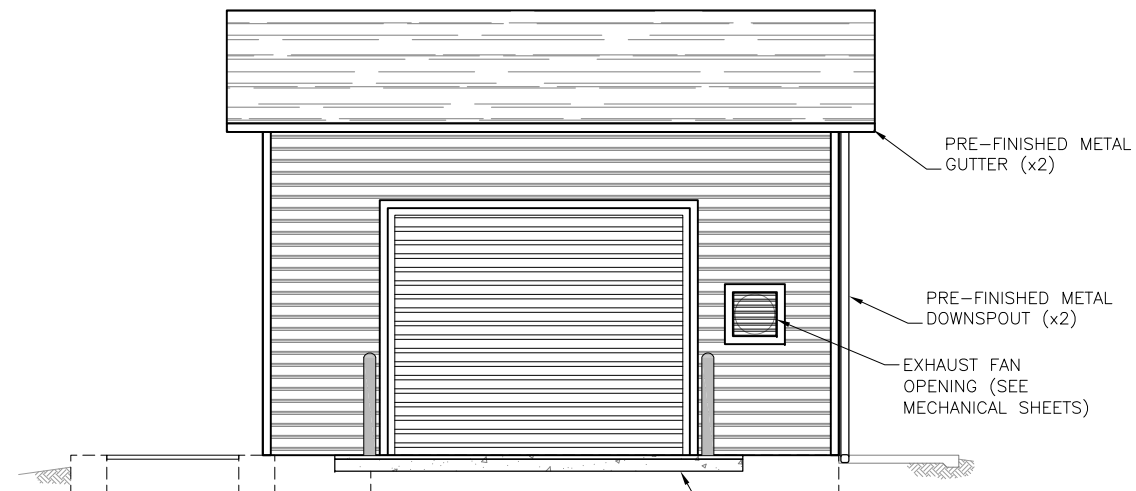
**NORTH ELEVATION**  
11x17 SCALE: 1/8"=1'-0"  
24x36 SCALE: 1/4"=1'-0"



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



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

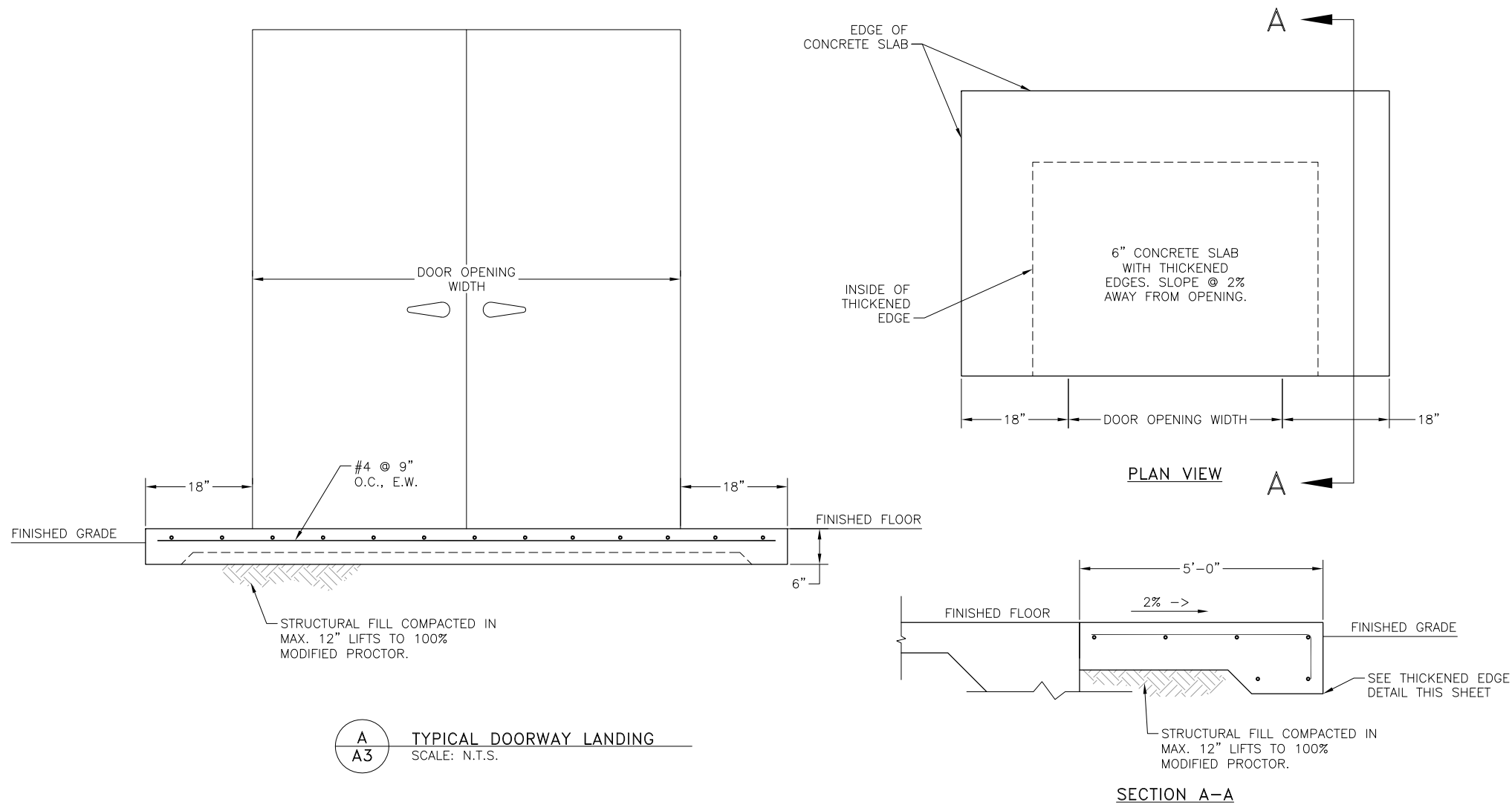


**WEST ELEVATION**  
11x17 SCALE: 1/8"=1'-0"  
24x36 SCALE: 1/4"=1'-0"

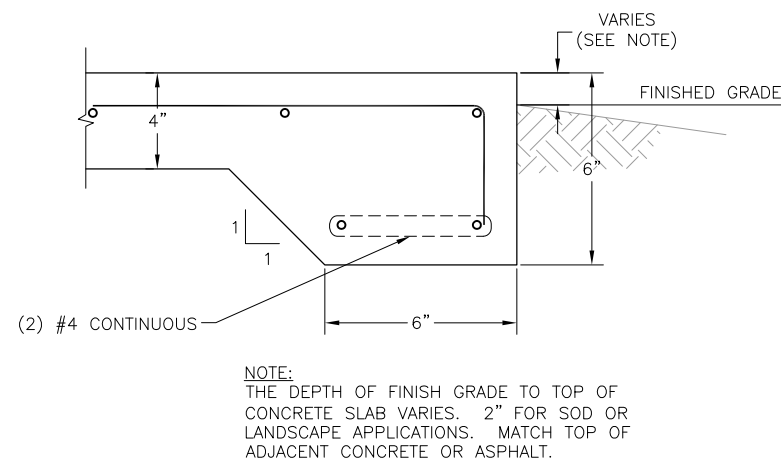
**FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION**  
ARCHITECTURAL ELEVATIONS

Project No.: 136.12  
Scale: AS NOTED  
Date: 01/02/18  
Design: RMM  
Drawn: RMM  
Check: JPM  
Revised:

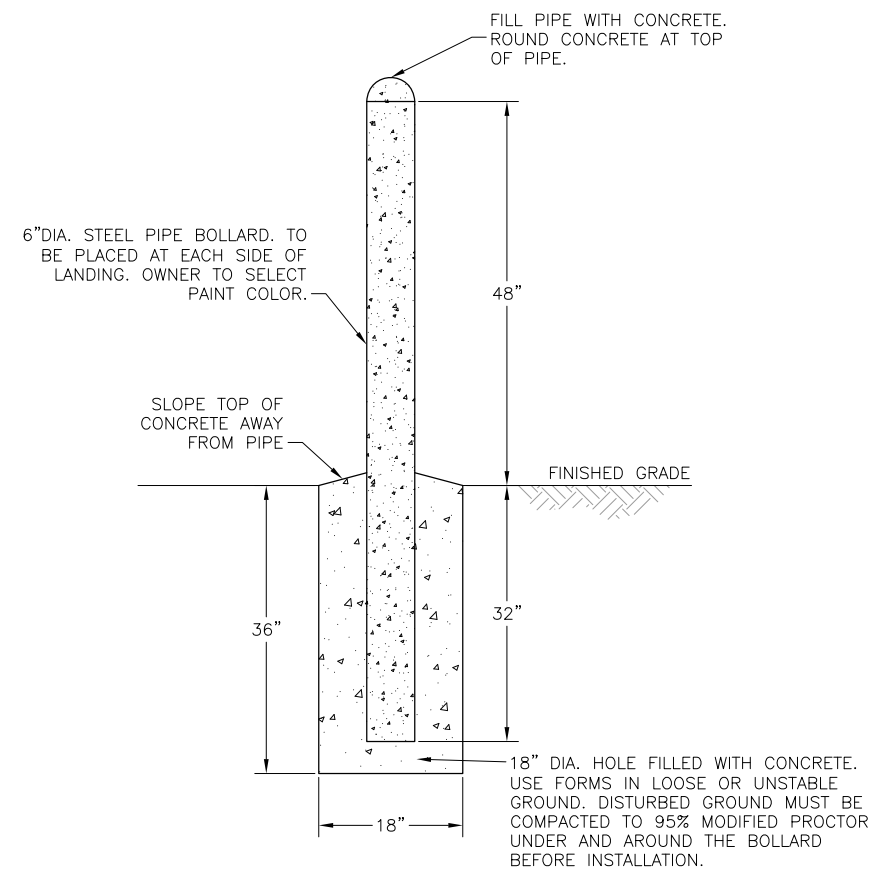




**A**  
**A3** TYPICAL DOORWAY LANDING  
SCALE: N.T.S.



**B**  
**A3** LANDING SLAB EDGE  
SCALE: N.T.S.

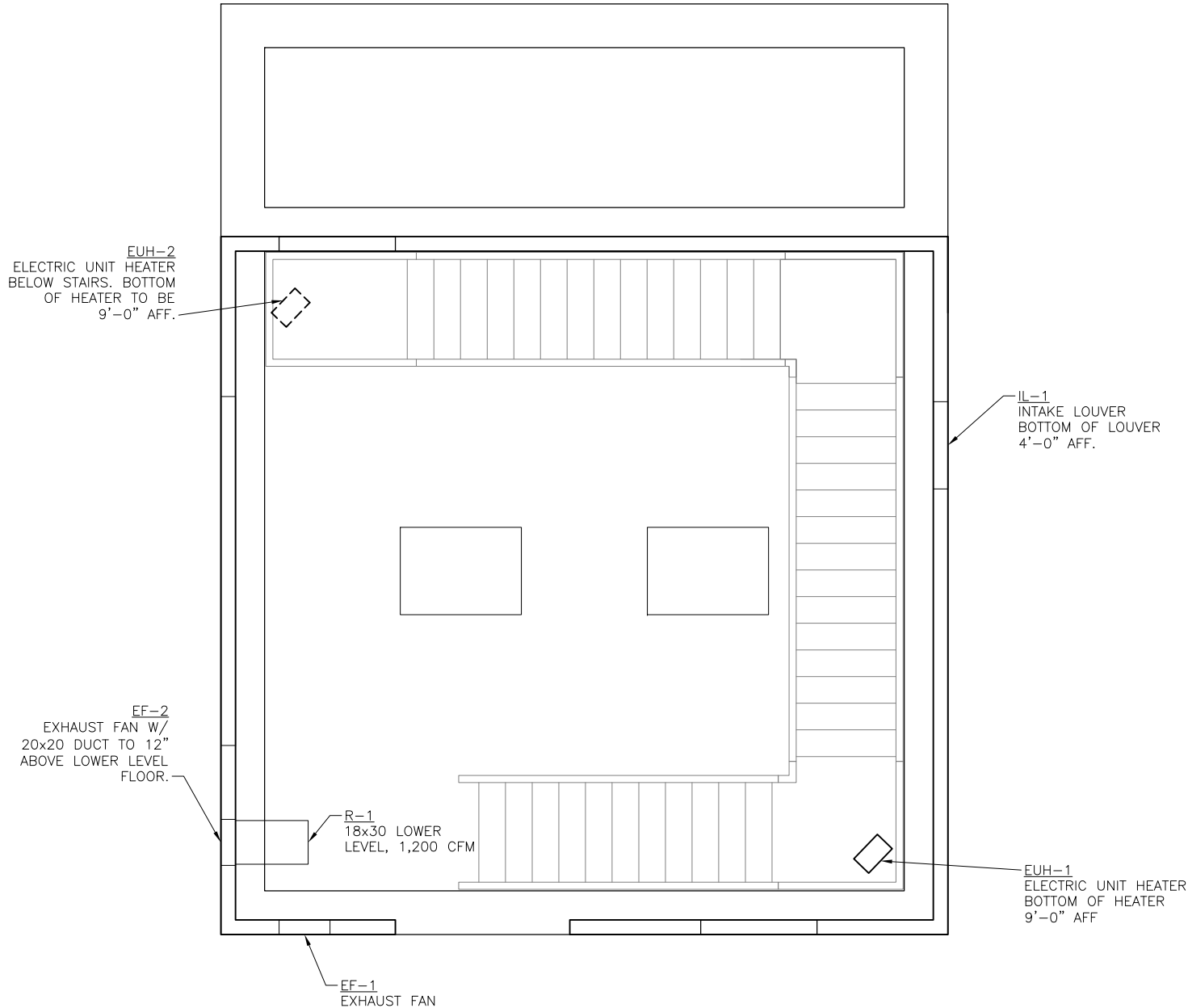


**C**  
**A3** BOLLARD DETAIL  
SCALE: N.T.S.

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION  
ARCHITECTURAL DETAILS

Project No.: 136.12  
Scale: AS NOTED  
Date: 01/02/18  
Design: RMM  
Drawn: RMM  
Check: JPM  
Revised:

**JDS-HYDRO** CONSULTANTS, INC.  
545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072



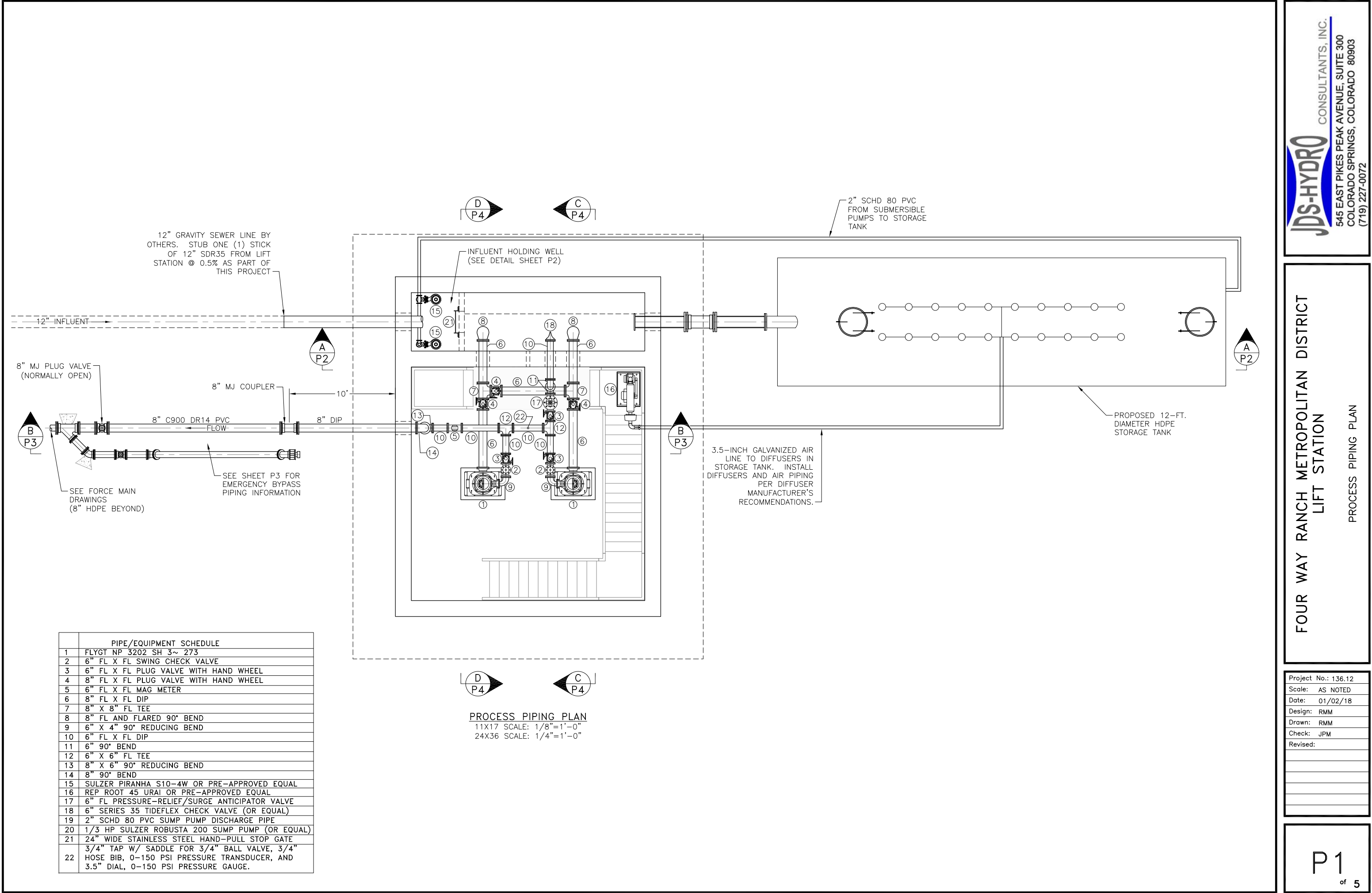
MECHANICAL FLOOR PLAN  
SCALE: 3/16"=1'-0"  
SCALE: 3/8"=1'-0"

LOUVER SCHEDULE						
MARK	MANUFACTURER	MODEL NO.	CFM @ S.P.	MATERIAL	TYPE	REMARKS
IL-1	DAYTON	5NKJ7	3,063 MAX INTAKE	MILL FINISH EXTRUDED ALUMINUM	FIXED INTAKE/EXHAUST LOUVER	1
1. BIRD SCREEN AND FASTENERS SHALL BE INCLUDED. FURNISH LOUVER WITH 24-MESH INSECT SCREEN. MIN. WALL OPENING = 36"Hx36"W.						

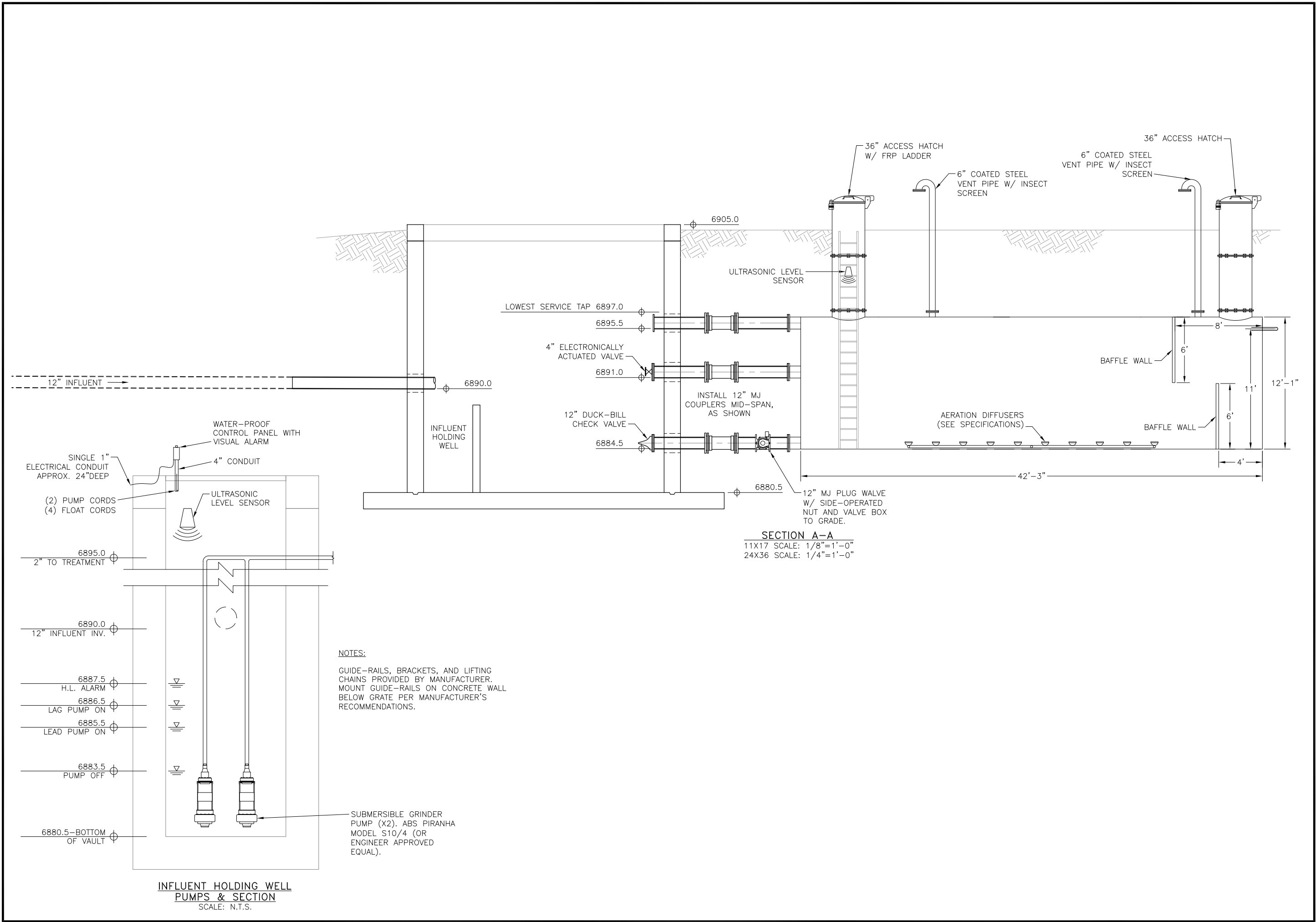
RETURN GRILL SCHEDULE						
MARK	MANUFACTURER	MODEL NO.	CFM @ S.P.	MATERIAL	TYPE	REMARKS
R-1	TITUS	60F	1,249 @ 0.020	ALUMINUM	HEAVY-DUTY RETURN GRILLE	1
1. NC=10, DAMPER						

EXHAUST FAN SCHEDULE							
MARK	MANUFACTURER	MODEL NO.	CFM @ S.P.	VOLTAGE/PHASE	HP	CONTROL	REMARKS
EF-1	DAYTON	1HLA4	1,108 @ 0.125	115V/1 $\phi$	1/15	MOUNTED THERMOSTAT	1
EF-2	DAYTON	1HLA9	1,868 @ 0.250	115V/1 $\phi$	1/4	MOUNTED THERMOSTAT	2
1. FURNISH WITH INTAKE FAN GUARD AND SHUTTER. VARIABLE SPEED, 18" BLADE DIAMETER, 19" SQUARE OPENING. 0.85 FLA, STEEL & ALUMINUM MAKEUP, CONTINUOUSLY RUN.							
2. FURNISH WITH INTAKE FAN GUARD AND SHUTTER. VARIABLE SPEED, 20" BLADE DIAMETER, 21" SQUARE OPENING. 2.75 FLA, STEEL & ALUMINUM MAKEUP, CONTINUOUSLY RUN.							

UNIT HEATER SCHEDULE (ELECTRIC)							
MARK	MANUFACTURER	MODEL NO.	VOLTAGE	KW	BTU/H	AMPS	REMARKS
EUH-1	DAYTON	2YU62	240	5.0	17,000	21.0	1
EUH-2	DAYTON	2YU62	240	5.0	17,000	21.0	1
1. FURNISH WITH MANUFACTUER-RECOMMENDED WALL BRACKET. CONTROLLED VIA THERMOSTAT. TEFC MOTOR.							







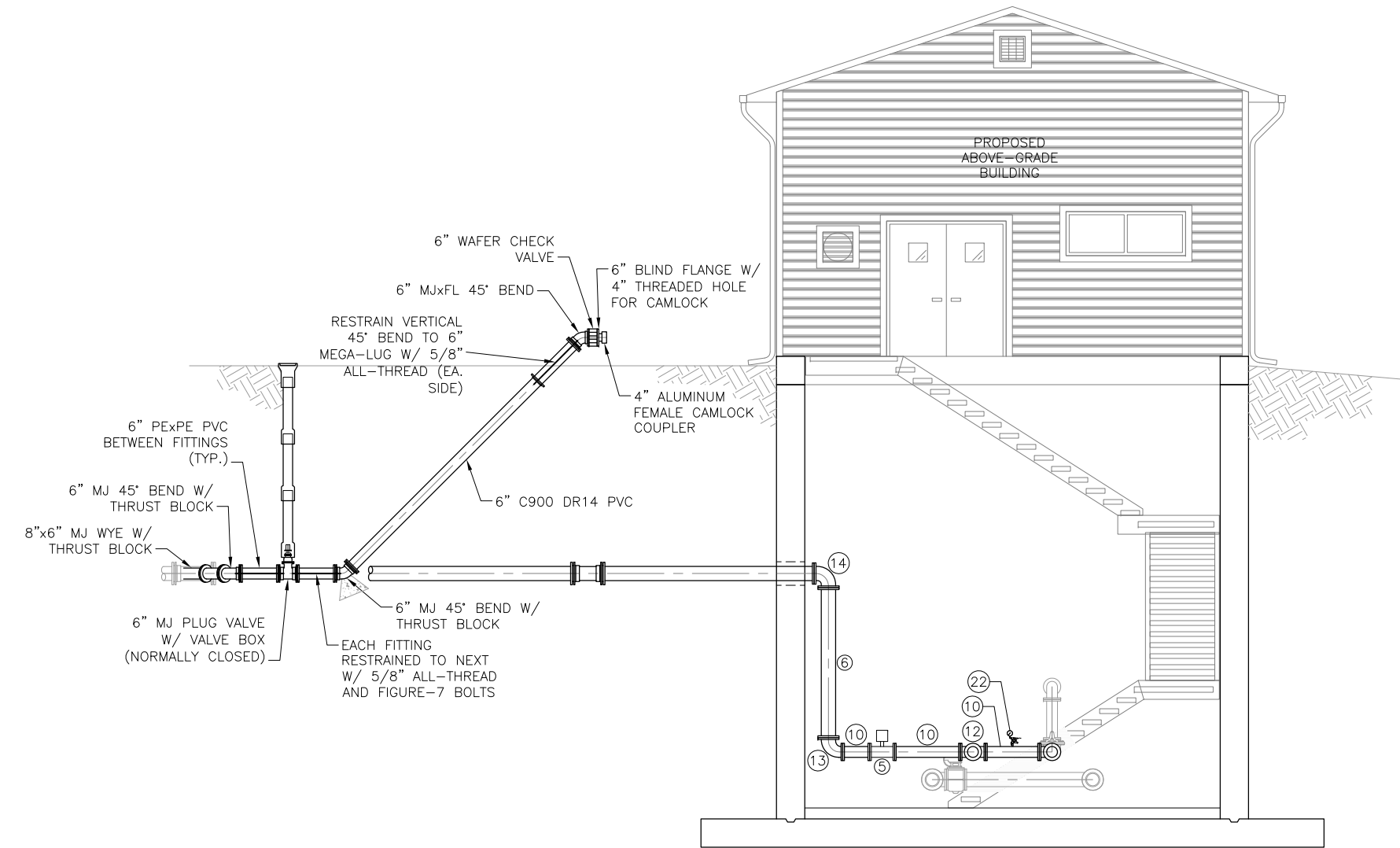
**JDS-HYDRO**  
CONSULTANTS, INC.  
545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072

**FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION**

PROCESS PIPING SECTION 1

Project No.: 136.12  
Scale: AS NOTED  
Date: 01/02/18  
Design: RMM  
Drawn: RMM  
Check: JPM  
Revised:

**P2**  
of 5



SECTION B-B  
11X17 SCALE: 1/8"=1'-0"  
24X36 SCALE: 1/4"=1'-0"

	PIPE/EQUIPMENT SCHEDULE
1	FLYGT NP 3202 SH 3~ 273
2	6" FL X FL SWING CHECK VALVE
3	6" FL X FL PLUG VALVE WITH HAND WHEEL
4	8" FL X FL PLUG VALVE WITH HAND WHEEL
5	6" FL X FL MAG METER
6	8" FL X FL DIP
7	8" X 8" FL TEE
8	8" FL AND FLARED 90° BEND
9	6" X 4" 90° REDUCING BEND
10	6" FL X FL DIP
11	6" 90° BEND
12	6" X 6" FL TEE
13	8" X 6" 90° REDUCING BEND
14	8" 90° BEND
15	SULZER PIRANHA S10-4W OR PRE-APPROVED EQUAL
16	REP ROOT 45 URAI OR PRE-APPROVED EQUAL
17	6" FL PRESSURE-RELIEF/SURGE ANTICIPATOR VALVE
18	6" SERIES 35 TIDEFLEX CHECK VALVE (OR EQUAL)
19	2" SCHD 80 PVC SUMP PUMP DISCHARGE PIPE
20	1/3 HP SULZER ROBUSTA 200 SUMP PUMP (OR EQUAL)
21	24" WIDE STAINLESS STEEL HAND-PULL STOP GATE
	3/4" TAP W/ SADDLE FOR 3/4" BALL VALVE, 3/4"
22	HOSE BIB, 0-150 PSI PRESSURE TRANSDUCER, AND 3.5" DIAL, 0-150 PSI PRESSURE GAUGE.

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

PROCESS PIPING SECTION 2

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

PROCESS PIPING SECTION 3

Project No.: 136.12

Scale: AS NOTED

Date: 01/02/18

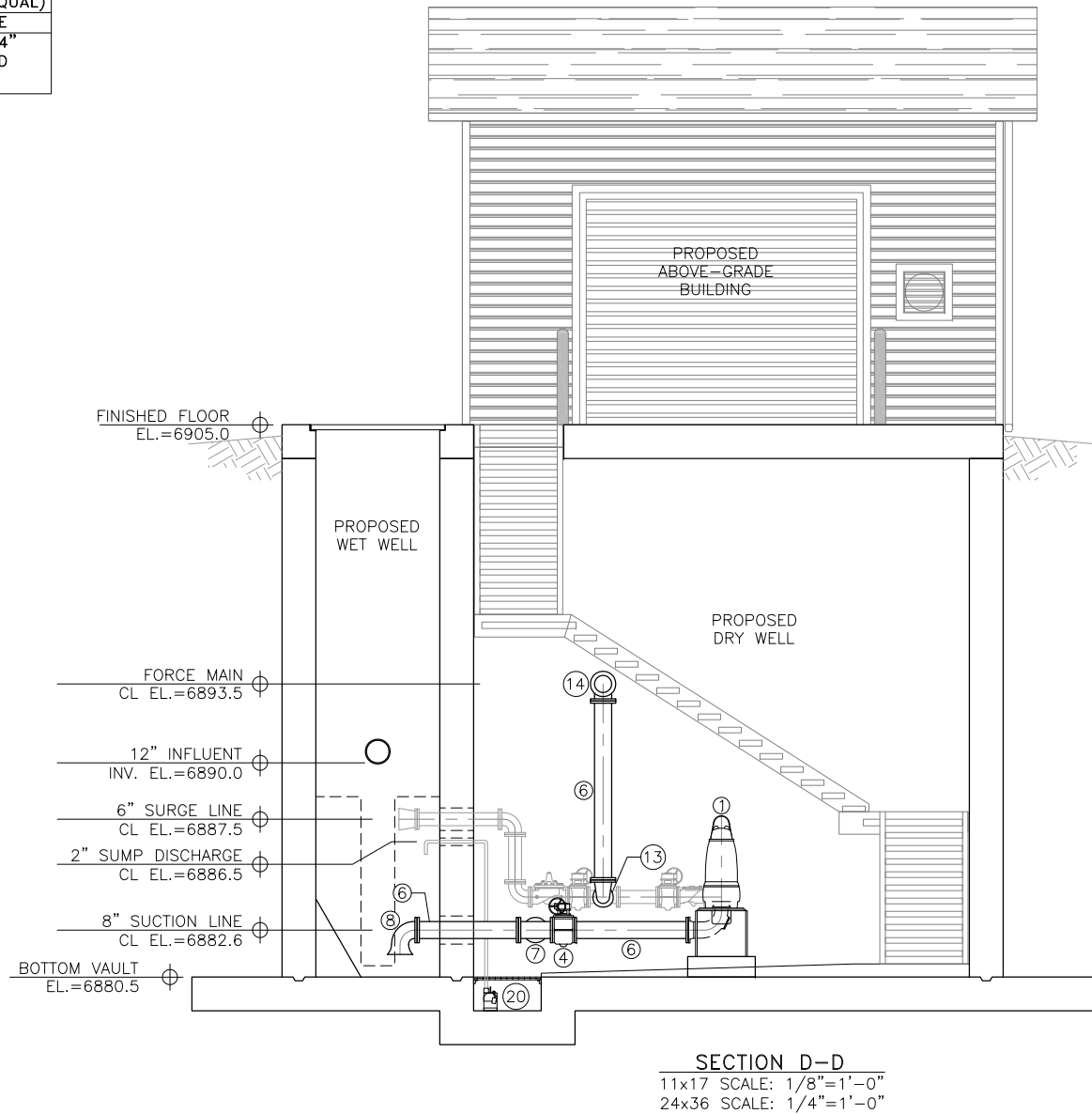
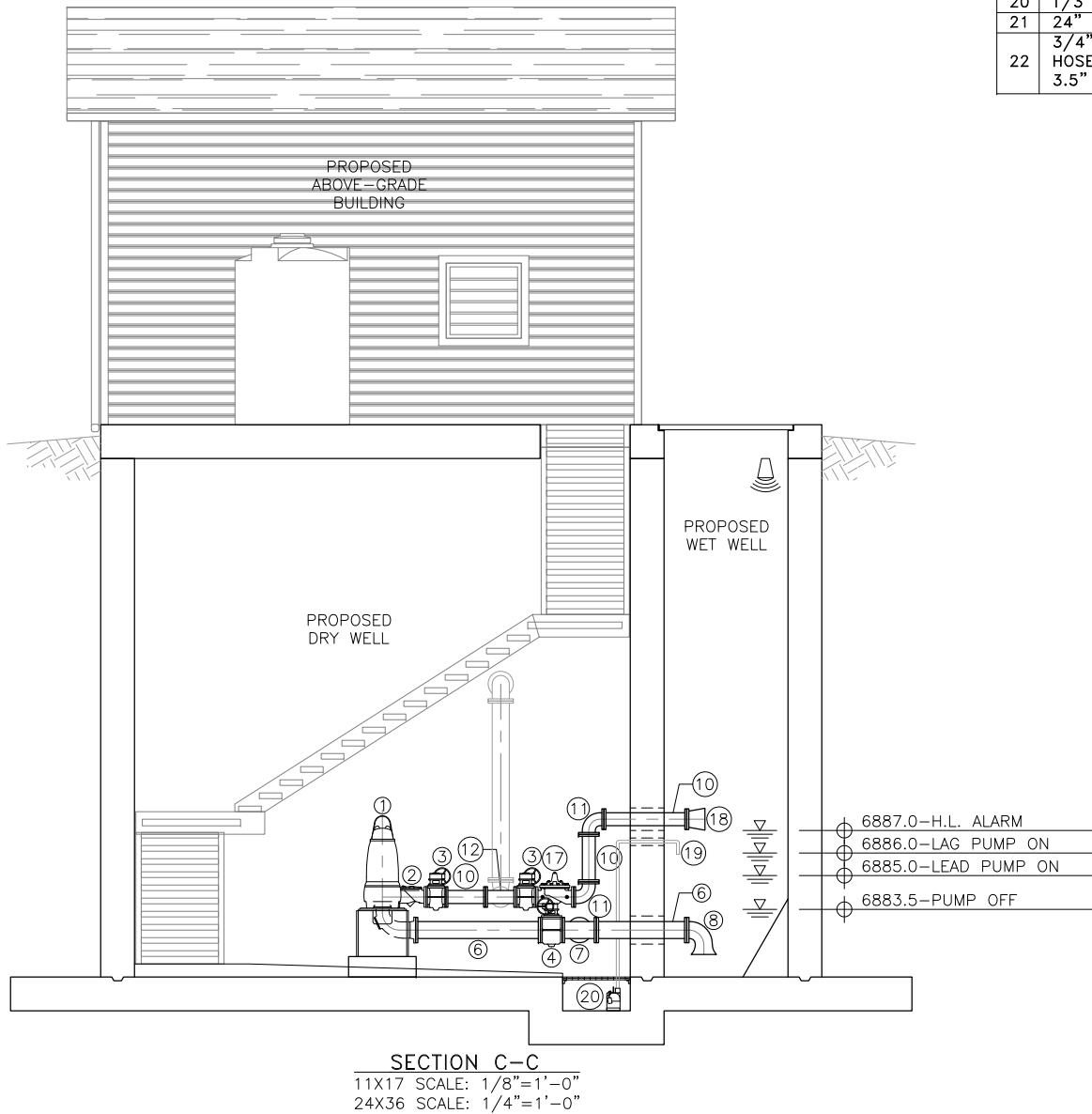
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Check: JPM

Revised:

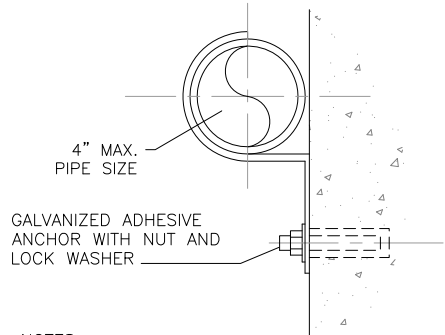
PIPE/EQUIPMENT SCHEDULE	
1	FLYGT NP 3202 SH 3~ 273
2	6" FL X FL SWING CHECK VALVE
3	6" FL X FL PLUG VALVE WITH HAND WHEEL
4	8" FL X FL PLUG VALVE WITH HAND WHEEL
5	6" FL X FL MAG METER
6	8" FL X FL DIP
7	8" X 8" FL TEE
8	8" FL AND FLARED 90° BEND
9	6" X 4" 90° REDUCING BEND
10	6" FL X FL DIP
11	6" 90° BEND
12	6" X 6" FL TEE
13	8" X 6" 90° REDUCING BEND
14	8" 90° BEND
15	SULZER PIRANHA S10-4W OR PRE-APPROVED EQUAL
16	REP ROOT 45 URAI OR PRE-APPROVED EQUAL
17	6" FL PRESSURE-RELIEF/SURGE ANTICIPATOR VALVE
18	6" SERIES 35 TIDEFLEX CHECK VALVE (OR EQUAL)
19	2" SCHD 80 PVC SUMP PUMP DISCHARGE PIPE
20	1/3 HP SULZER ROBUSTA 200 SUMP PUMP (OR EQUAL)
21	24" WIDE STAINLESS STEEL HAND-PULL STOP GATE
22	3/4" TAP W/ SADDLE FOR 3/4" BALL VALVE, 3/4" HOSE BIB, 0-150 PSI PRESSURE TRANSDUCER, AND 3.5" DIAL, 0-150 PSI PRESSURE GAUGE.



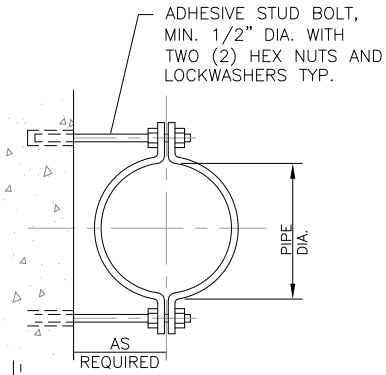
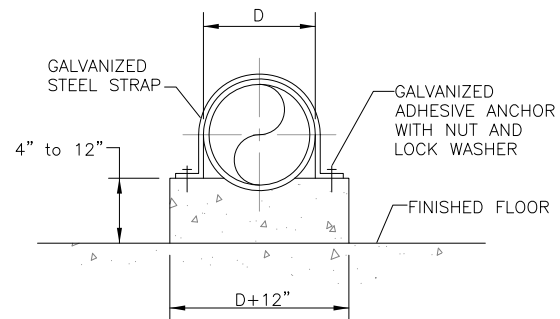


PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)
CAST-IRON PIPE	5	15
COPPER OR COPPER-ALLOY PIPE	12	10
COPPER OR COPPER - ALLOY TUBING 1 1/4" DIA. AND SMALLER	6	10
COPPER OR COPPER - ALLOY TUBING 1 1/2" DIA. AND LARGER	10	10
CPVC PIPE OR TUBING 1" OR SMALLER	3	10
CPVC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

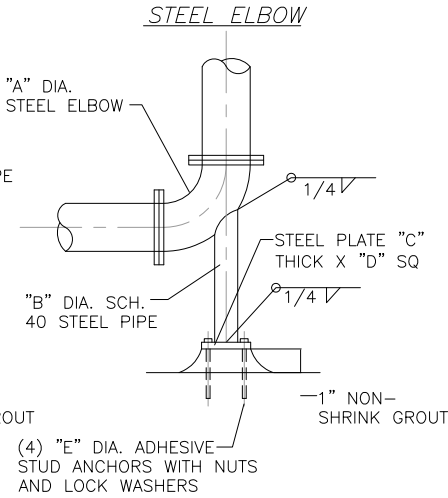
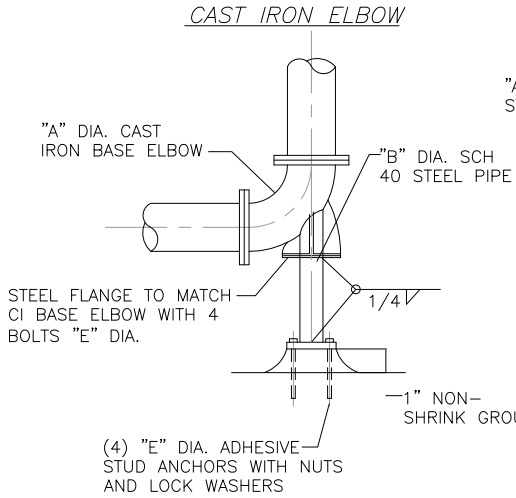
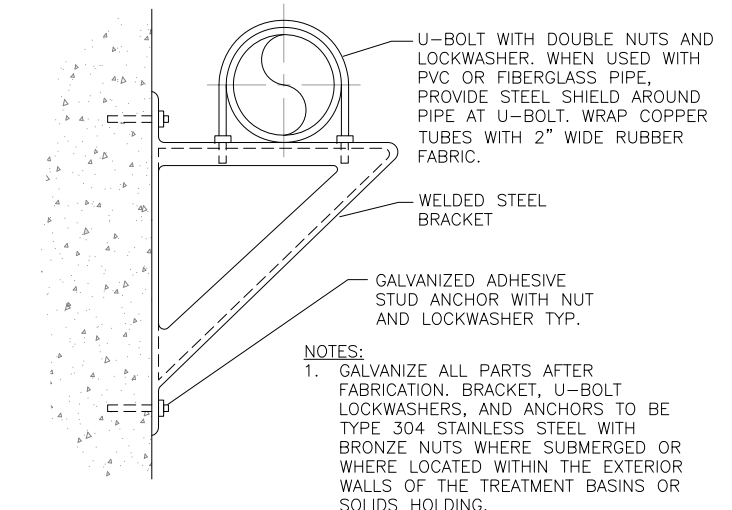
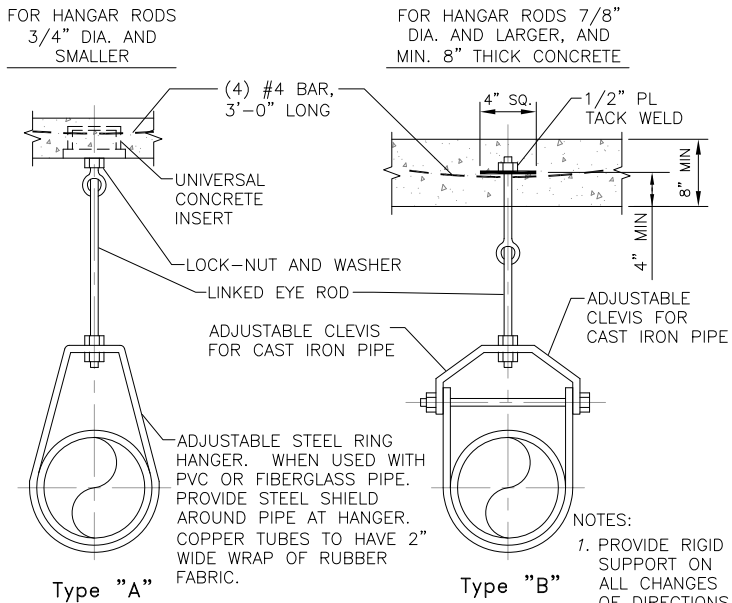
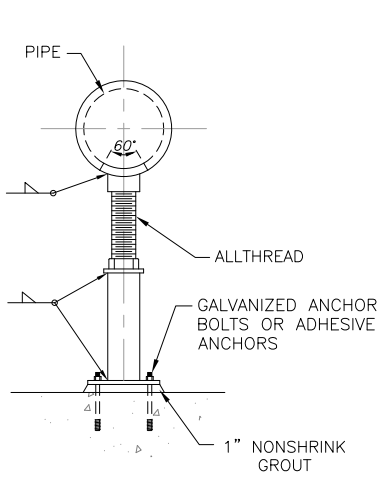
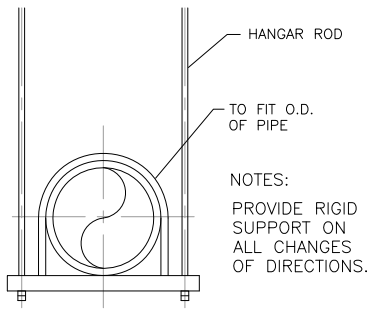
- NOTES:
- REFER TO SECTION 305 OF 2009 INTERNATIONAL MECHANICAL CODE FOR DETAIL INFORMATION.
  - THE MAXIMUM HORIZONTAL SPACING OF CAST-IRON PIPE HANGERS SHALL BE INCREASED TO 10 FEET WHERE 10-FOOT LENGTHS OF PIPE ARE INSTALLED.
  - ALSO INCLUDES STEEL AIR PIPING SYSTEM.



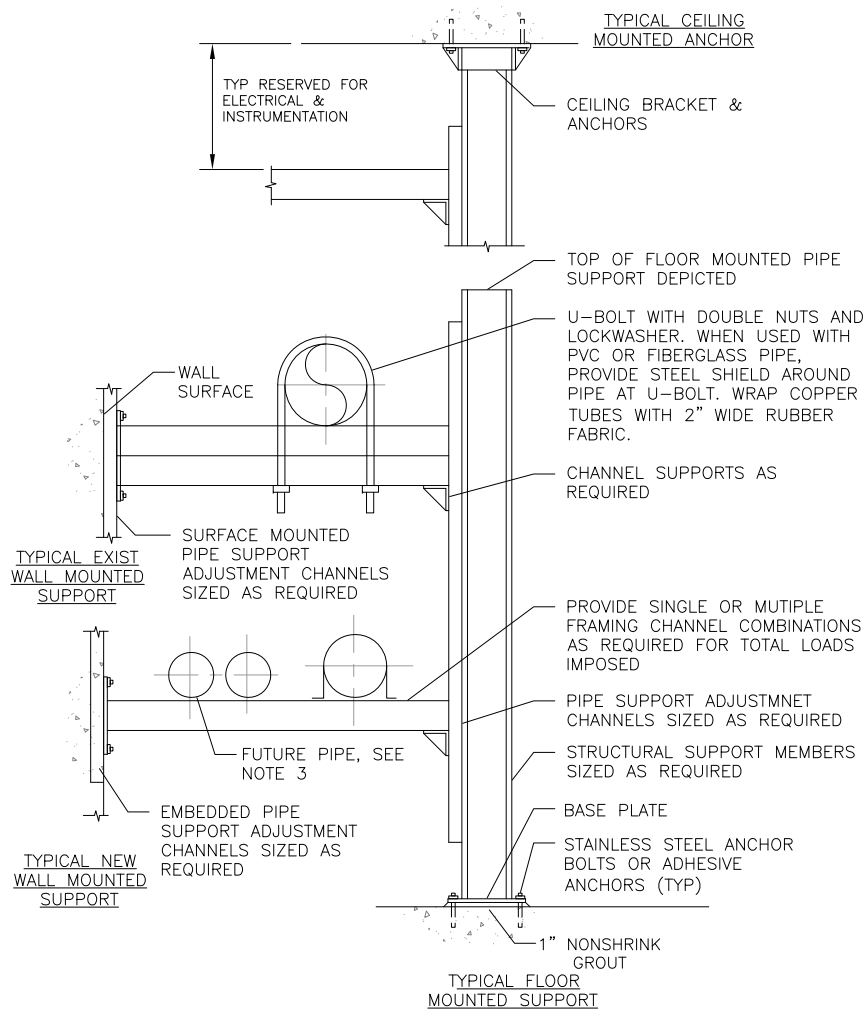
- NOTES:
- GALVANIZE ALL PARTS AFTER FABRICATION. PIPE CLAMP, SHIELD AND ANCHOR TO BE TYPE 304 STAINLESS STEEL WHERE SUBMERGED OR WHERE LOCATED WITHIN THE EXTERIOR WALLS OF THE TREATMENT BASINS OR SOLIDS HOLDING.
  - WHEN USED WITH PVC OR FIBERGLASS PIPE, PROVIDE STEEL SHIELD AROUND PIPE AT CLAMP. WRAP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



- NOTES:
- GALVANIZE ALL PARTS AFTER FABRICATION. PIPE CLAMP, NUTS, LOCKWASHERS, ANCHORS AND SHIELDS 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.
  - WHEN USED WITH PVC OR FIBERGLASS PIPE PROVIDE STEEL SHIELD AROUND PIPE AT CLAMP. WRAP COPPER TUBES WITH 2" WIDE RUBBER FABRIC.



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



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

# FOUR WAY RANCH METROPOLITAN DISTRICT LIFT STATION

PROCESS DETAILS

Project No.: 136.12  
Scale: N.T.S.  
Date: 01/02/18  
Design: RMM  
Drawn: RMM  
Check: JPM  
Revised:

SYMBOL DESCRIPTION

LIGHT FIXTURES



RECESSED FLUORESCENT LIGHT FIXTURE, WITH TYPE NOTED IN PLAN. SEE FIXTURE SCHEDULE FOR DETAILS.



SURFACE FLUORESCENT LIGHT FIXTURE, WITH TYPE NOTED IN PLAN. SEE FIXTURE SCHEDULE FOR DETAILS.



FLUORESCENT STRIP LIGHT FIXTURE, WITH TYPE NOTED IN PLAN. SEE FIXTURE SCHEDULE FOR DETAILS.



WALL MOUNTED LIGHT FIXTURE, WITH TYPE NOTED IN PLAN. SEE FIXTURE SCHEDULE FOR DETAILS.



EMERGENCY LIGHT, WITH TYPE NOTED IN PLAN. SEE FIXTURE SCHEDULE FOR DETAILS.



EXIT SIGN, WITH TYPE NOTED IN PLAN. SEE PLAN FOR ARROWS AND FACE OF EXIT NEEDED. SEE FIXTURE SCHEDULE FOR DETAILS.

SWITCHES



TOGGLE SWITCH, 20A, SINGLE POLE, VOLTAGE AS REQUIRED, MOUNTED AT 48" ABOVE FINISHED FLOOR.



OCCUPANCY SENSOR, WALL MTD., 48" AFF. SENSOR SWITCH WSD PDT, OR EQUAL.



OCCUPANCY SENSOR, CEILING MTD. SENSOR SWITCH CMR PDT OR EQUAL.



PHOTOCELL SWITCH, MOUNT ON NORTH FACING EXTERIOR WALL, UNO.

SUBSCRIPTS FOR SWITCHES

3

THREE-WAY TOGGLE SWITCH

4

FOUR-WAY TOGGLE SWITCH

0

0 - 10 VOLT ELECTRONIC DIMMER SWITCH, 1000W, 120V LUTRON DIVA OR EQUAL, UNO. COORDINATE COMPATIBLE DIMMER WITH LIGHTING MANUFACTURER.

M

MANUAL MOTOR STARTER WITH THERMAL OVERLOAD

RECEPTACLES



DUPLEX RECEPTACLE, 20A, 120V, 3 WIRE GROUNDED, NEMA 5-20R, UNO., MOUNT 18" AFF.



QUAD RECEPTACLE, 20A, 120V, 3 WIRE GROUNDED, NEMA 5-20R, UNO., MOUNT 18" AFF.



SIMPLEX RECEPTACLE, 20A, 120V, 3 WIRE GROUNDED, NEMA 5-20R, UNO., MOUNT 18" AFF.



SPECIAL RECEPTACLE, 220V, TYPE AS INDICATED OR MATCH EQUIPMENT CAP., MOUNT AT HEIGHT AS REQUIRED PER EQUIPMENT.



DUPLEX RECEPTACLE, 20A, 120V, 3 WIRE GROUNDED, NEMA 5-20R, UNO., WITH TIE-BAR REMOVED FOR SWITCHING., MOUNT 18" AFF.



SPECIAL PURPOSE RECEPTACLE, NEMA TYPE AS INDICATED., MOUNT AT HEIGHT AS REQUIRED PER EQUIPMENT.



FLOOR BOX DUPLEX RECEPTACLE, FLUSH MOUNTED, PROVIDE COVER AS REQUIRED.



FLOOR BOX QUAD RECEPTACLE, FLUSH MOUNTED, PROVIDE COVER AS REQUIRED.

SUBSCRIPTS FOR RECEPTACLES

C

CLOCK RECEPTACLE

CE

CEILING FLUSH MOUNTED

IG

ISOLATED GROUND

GFI

GROUND FAULT INTERRUPTER

WR

WEATHER RESISTANT WITH GROUND FAULT INTERRUPTER IN WEATHER PROOF BOX

OC

OVER COUNTER, MOUNT RECEPTACLE MOUNTED 6" ABOVE BACKSPLASH.

UC

UNDER COUNTER

USB

DUPLEX RECEPTACLE WITH TWO USB CHARGER PORTS (HUBBELL USB20X2W OR EQUAL)

POWER SYMBOLS



JUNCTION BOX, FLUSH/SURFACE MTD.



POWER POLE WITH COMM AND POWER.



MOTOR



NON FUSIBLE DISCONNECT SWITCH, RATING AS INDICATED.



FUSIBLE DISCONNECT SWITCH, RATING AS INDICATED.



PANELBOARD/LOADCENTER.

NOTE: NOT ALL SYMBOLS ARE USED. VERIFY ALL CONNECTIONS AND RECEPTACLE TYPES FOR EQUIPMENT FROM FROM APPROVED MECHANICAL AND EQUIPMENT SUBMITTALS PRIOR TO INSTALLATION.

SYMBOL DESCRIPTION

ONE-LINE SYMBOLS



CIRCUIT BREAKER, FRAME AND TRIP AS INDICATED.



POWER TRANSFORMER, RATING AS INDICATED.



GROUND ELECTRODE



CURRENT TRANSFORMER (CT)



NON-FUSIBLE SWITCH, RATING AS INDICATED.



FUSIBLE SWITCH, RATING AND FUSE SIZE AS INDICATED.



FEEDER SCHEDULE KEY TAG



UTILITY TRANSFORMER



UTILITY ELECTRIC METER



MOTOR WITH DISCONNECT



MOTOR WITH CONTROLLER AND DISCONNECT



GENERATOR



TRANSFER SWITCH



WEATHERHEAD



PANELBOARD OR LOADCENTER, IDENTIFICATION, AMPERES AND VOLTAGE.

ABBREVIATIONS

UNO

UNLESS NOTED OTHERWISE.

TVSS

TRANSIENT VOLTAGE SURGE SUPPRESSOR

EWC

ELECTRIC WATER COOLER, PROVIDE GFI PROTECTION

E

EXISTING DEVICE TO REMAIN

N

NEW DEVICE TO BE INSTALLED

H

MOUNT DEVICE 6" AFF. HORIZONTALLY.

TP

TAMPER-PROOF

SWD

SWITCH RATED BREAKERS

NL

NIGHTLIGHT WIRED FIXTURE

GENERAL NOTES

GENERAL: THESE DRAWINGS REMAIN THE SOLE PROPERTY OF CHAVEZ, TIFFANY AND AYERS ENGINEERING CORPORATION AND MAY BE USED ONLY FOR THE PROJECT AS INDICATED BY NAME AND LOCATION. ANY OTHER USE REQUIRES PRIOR, WRITTEN PERMISSION. THE CONTRACTOR WILL PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, TOOLS, TRANSPORTATION, LICENSES, FEES, PERMITS, ETC. TO COMPLETE THE ELECTRICAL WORK DESCRIBED ON THE DRAWINGS. THE CONTRACTOR WILL WARRANT EQUIPMENT, MATERIAL AND WORKMANSHIP FOR A MINIMUM PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE. WARRANTY SHALL INCLUDE REPLACEMENTS OR REPAIRS WITHOUT COST TO THE OWNER DURING THE WARRANTY PERIOD. ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) 2014 AND ALL OTHER APPLICABLE LOCAL CODES AND ORDINANCES. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.

USE OF DRAWINGS: DO NOT SCALE FROM THE ELECTRICAL DRAWINGS. FOR EXACT LOCATIONS USE ARCHITECT'S DIMENSIONED DRAWINGS, SHOP DRAWINGS AND FIELD MEASUREMENTS. VERIFY ALL LOCATIONS WITH THE ARCHITECT PRIOR TO ELECTRICAL ROUGH-IN.

WIRING METHODS: ALL WIRING FOR LIGHTING AND POWER SYSTEMS WILL BE IN CONDUIT OR CABLE ASSEMBLIES APPROVED BY THE GOVERNING AUTHORITIES. CONDUIT OR SIZES SHOWN ARE BASED ON AMPACITIES FOR COPPER CONDUCTORS, UNLESS OTHERWISE NOTED. WHEN APPROVED BY ENGINEER, FEEDERS MAY BE ALUMINUM CONDUCTORS OF EQUIVALENT AMPACITIES. GROUNDING CONDUCTORS SHALL BE PROVIDED FOR ALL CIRCUITS SHOWN ON THE DRAWINGS. PROVIDE BLOCKING AND OTHER NECESSARY SUPPORTS IN WALLS AND CEILINGS FOR MATERIAL AND EQUIPMENT TO BE PROVIDED. BRANCH CIRCUIT NUMBERS SHOWN ON THE DRAWINGS MAY BE REARRANGED WITHIN A GIVEN PANELBOARD TO SUIT THE NEEDS OF THE INSTALLATION. ELECTRICAL BRANCH CIRCUITS SHALL BE BALANCED BETWEEN LINES AND PHASES. MULTIWIRE BRANCH CIRCUITS SHALL HAVE A MEANS TO SIMULTANEOUSLY DISCONNECT ALL UNDERGROUND CONDUCTORS AT THE POINT WHERE BRANCH CIRCUITS ORIGINATE (HANDLE TIES ARE AN APPROVED MEANS). THE GROUNDED AND UNDERGROUND CONDUCTOR OF EACH MULTIWIRE BRANCH CIRCUIT SHALL BE GROUNDED BY WIRE TIES AT ONE LOCATION IN PANELBOARD. ALL PATIENT CARE AREAS SHALL COMPLY WITH NEC 517.13(A)(B) TO INCLUDE LUMINAIRES AND NEC 250.118. CAN NOT BE IN PVC.

UTILITY COORDINATION: PROVIDE ALL COORDINATION WITH THE UTILITY INCLUDING LOAD DATA FORMS AND APPLICATION FOR SERVICE AS APPLICABLE. INSTALLATION OF SERVICE, PRIMARY OR SECONDARY FEEDERS AND METERING SHALL BE PERFORMED IN ACCORDANCE WITH THE UTILITY REQUIREMENTS.

GROUNDING: PROVIDE A COMPLETE GROUNDING SYSTEM AS REQUIRED BY THE NEC AND LOCAL AUTHORITIES HAVING JURISDICTION. ALL BRANCH CIRCUITS SHALL INCLUDE A GROUND CONDUCTOR. USE OF RACEWAY FOR GROUNDING IS NOT PERMITTED. GALVANIZED GROUND RODS ARE NOT PERMITTED.

PANELBOARDS: PROVIDE MINIMUM INTEGRATED EQUIPMENT SHORT CIRCUIT RATING AS INDICATED ON PANEL SCHEDULES. PROVIDE BOLT-ON BREAKERS UNLESS OTHERWISE NOTED. PROVIDE CIRCUIT BREAKERS SHOWN ON THE PANELBOARD SCHEDULES. ALL TERMINATIONS AND LUGS SHALL BE RATED FOR 75-DEGREE CONDUCTORS. PROVIDE TYPE WRITTEN CIRCUIT SCHEDULES TO IDENTIFY PANELBOARD AND EACH BRANCH BREAKER. ACCEPTABLE MANUFACTURERS ARE SQUARE D, SIEMENS AND EATON.

WIRING DEVICES: PROVIDE SPECIFICATION GRADE 15 AND 20-AMPERE SWITCH AND RECEPTACLE DEVICES, AS APPLICABLE. OTHER DEVICES SHALL BE PROVIDED AS INDICATED AND SHALL MATCH PLUG-CONNECTED EQUIPMENT FURNISHED FOR THE PROJECT. DEVICE WALL PLATES SHALL BE SMOOTH, NYLON TYPE AND SHALL BE OFFICE WHITE IN COLOR OR AS OTHERWISE SPECIFIED. DEVICE COLOR SHALL MATCH WALL PLATES. RECEPTACLES IN PATIENT CARE AREAS MUST BE HOSPITAL GRADE.

DISCONNECT SWITCHES: HEAVY DUTY QUICK-MAKE, QUICK-BREAK TYPE, NON-FUSED UNLESS OTHERWISE NOTED. PROVIDE MEANS TO LOCK SWITCH IN OFF POSITION WITH PAD-LOCK. ENCLOSURES SHALL BE NEMA TYPE 1 OR NEMA TYPE 3R FOR OUTDOOR INSTALLATION. PROVIDE PERMANENT LABELS FOR DISCONNECTS TO INDICATE EQUIPMENT SERVED.

LIGHTING FIXTURES: SEE LIGHT FIXTURE SCHEDULE. PROVIDE ALL FIXTURES WITH LAMPS AS INDICATED. WHERE REQUIRED, FIXTURES SHALL BE WET OR DAMP LOCATION LABELED. VERIFY MOUNTING HEIGHTS PRIOR TO ELECTRICAL ROUGH-IN. PROVIDE ALL REQUIRED MOUNTING ACCESSORIES REQUIRED FOR PROPER MOUNTING TO SURFACES. SUCH ACCESSORIES TO INCLUDE BUT NOT LIMITED TO SLOPE ADAPTORS, CANOPIES, AND VAULTED CEILING CANOPIES, ETC. PROVIDE DISCONNECTING MEANS FOR LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND BALLASTS(S) IN ACCORDANCE WITH NEC 410.130(Q)(1). ALTERNATES NOT ACCEPTABLE UNLESS NOTED AS "OR EQUAL" ON LIGHT FIXTURE SCHEDULE.

VOICE DATA: RACEWAY SYSTEM BY CONTRACTOR. ALL RACEWAYS SHALL BE PROVIDED WITH PULLSTRINGS OF MINIMUM OF 400-LB. TEST STRENGTH. ALL EQUIPMENT, RECEPTACLES AND CABLING BY OTHERS. PROVIDE BLANK COVERS OVER ALL UNUSED OUTLETS, CABLES, DEVICES AND CABLE TERMINATION IS BY OTHERS.

FIRE ALARM: DESIGN BUILD CONTRACTOR TO PROVIDE AS REQUIRED PER FIRE AND LOCAL CODES.



COMcheck Software Version 4.0.5.2

Interior Lighting Compliance Certificate

Section 1: Project Information

Energy Code: 2009 IECC  
Project Title: 4-WAY RANCH LIFT STATION  
Project Type: New Construction

Construction Site:

Owner/Agent:

Designer/Contractor:

Section 2: Interior Lighting and Power Calculation

A	B	C	D
Area Category	Floor Area (ft <sup>2</sup> )	Allowed Watts / ft <sup>2</sup>	Allowed Watts (B x C)
Warehouse	800	0.8	640
Total Allowed Watts =			640

Section 3: Interior Lighting Fixture Schedule

Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B	C	D	E
Lamp/ Fixture	# of Fixtures	Fixture Watt	(C x D)	
Warehouse (800 sq.ft.)				
LED 1: S: 4' STRIP LIGHT: Other:	1	3	42	126
Total Proposed Watts =			126	

Section 4: Requirements Checklist

Interior Lighting PASSES: Design 80% better than code

Lighting Wattage:

1. Total proposed watts must be less than or equal to total allowed watts.

Allowed Watts	Proposed Watts	Complies
640	126	YES

Controls, Switching, and Wiring:

2. Daylight zones under skylights more than 15 feet from the perimeter have lighting controls separate from daylight zones adjacent to vertical fenestration.  
3. Daylight zones have individual lighting controls independent from that of the general area lighting.

Exceptions:

- Contiguous daylight zones spanning no more than two orientations are allowed to be controlled by a single controlling device.  
Daylight spaces enclosed by walls or ceiling height partitions and containing two or fewer light fixtures are not required to have a separate switch for general area lighting.

4. Independent controls for each space (switch/occupancy sensor).

Exceptions:

- Areas designated as security or emergency areas that must be continuously illuminated.  
Lighting in stairways or corridors that are elements of the means of egress.

5. Master switch at entry to hotel/motel guest room.  
6. Individual dwelling units separately metered.

Project Title: 4-WAY RANCH LIFT STATION  
Data filename: Z:\SCA\inc\Projects\4-Way Ranch Lift Station\Project Elec\Schedules\4-WAY RANCH IECC.cck

Report date: 03/10/17  
Page 1 of 2

7. Medical task lighting or art/historic display lighting claimed to be exempt from compliance has a control device independent of the control of the nonexempt lighting.  
8. Each space required to have a manual control also allows for reducing the connected lighting load by at least 50 percent by either controlling all luminaires, dual switching of alternate rows of luminaires, alternate luminaires, or alternate lamps, switching the middle lamp luminaires independently of other lamps, or switching each luminaire or each lamp.

Exceptions:

- Only one luminaire in space.  
An occupant-sensing device controls the area.  
The area is a corridor, storeroom, restroom, public lobby or sleeping unit.  
Areas that use less than 0.6 Watts/sq. ft.

9. Automatic lighting shutoff control in buildings larger than 5,000 sq. ft.

Exceptions:

- Sleeping units, patient care areas; and spaces where automatic shutoff would endanger safety or security.

10. Photocell/astromonical time switch on exterior lights.

Exceptions:

- Lighting intended for 24hour use.

11. Tandem wired one-lamp and three-lamp ballasted luminaires (No single-lamp ballasts).

Exceptions:

- Electronic high-frequency ballasts; Luminaires on emergency circuits or with no available pair.

Section 5: Compliance Statement

Compliance Statement: The proposed lighting design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed lighting system has been designed to meet the 2009 IECC requirements in COMcheck Versen 4.0.5.2 and to comply with the mandatory requirements in the Requirements Checklist.

Name - Title

Signature

Date

Project Title: 4-WAY RANCH LIFT STATION  
Data filename: Z:\SCA\inc\Projects\4-Way Ranch Lift Station\Project Elec\Schedules\4-WAY RANCH IECC.cck

Report date: 03/10/17  
Page 2 of 2

LIGHT FIXTURE SCHEDULE										
TYPE	MFGR	CATALOG NO.	LAMPS				MTG	DESCRIPTION	NOTES	VOLTS
			LUMENS	COLOR TEMP	WATTS	TYPE				
S	LITHONIA OR EQUAL	ZL1N L48 5000LM FST MVOLT 40K 90CRI WH	5000	4000K	42	LED	SURFACE	4' LED STRIP LIGHT		120
W	LITHONIA OR EQUAL	DSXW1 LED 10C 1000MA 40K MVOLT		4000K	40	LED	WALL/SURFACE	LED WALL PACK WITH FULL CUTOFF SHIELD		120
XE	LITHONIA OR EQUAL	LHQM LED G			6	LED	UNIVERSAL	EMERGENCY EXIT SIGN COMBO WITH BATTERY BACK-UP	A	120

GENERAL NOTES:

1. ALL LED LIGHT FIXTURE TO BE 3500K COLOR TEMP.

NOTES:

- A. FIXTURE TO HAVE BUILT-IN PHOTOCELL CONTROL.

PANEL H												
VOLTAGE (L-N):			277		ENCLOSURE TYPE:			NEMA 3R				
VOLTAGE (L-L):			480		MOUNTING:			SURFACE				
PHASES, WIRES:			3 Ø 4 W		AIC RATING (A):			14000				
MINIMUM BUS CAPACITY (A):			400 A		NOTES:			FULLY RATED				
MAIN O.C. DEVICE (A):			400 A									
CKT NO	DESCRIPTION	TRIP AMPS	POLE	PHASE LOADS (VA)			POLE	TRIP AMPS	DESCRIPTION	CKT NO		
				A	B	C						
1,3,5	PANEL L via Transformer	45	3	6588	20785		3	125	P1 (72 HP)	2,4,6		
1,3,5	PANEL L via Transformer	45	3		6720	20785	3	125	P1 (72 HP)	2,4,6		
1,3,5	PANEL L via Transformer	45	3			6205	20785	3	125	P1 (72 HP)	2,4,6	
7,9,11	BLOWER (15HP)	30	3	5577	20785		3	125	P2 (72 HP)	8,10,12		
7,9,11	BLOWER (15HP)	30	3		5577	20785	3	125	P2 (72 HP)	8,10,12		
7,9,11	BLOWER (15HP)	30	3			5577	20785	3	125	P2 (72 HP)	8,10,12	
13,15,17	BLANK	0	3	0	0		3	0	BLANK	14,16,18		
13,15,17	BLANK	0	3		0	0	3	0	BLANK	14,16,18		
13,15,17	BLANK	0	3				0	0	3	0	BLANK	14,16,18
				CONNECTED LOAD PHASE TOTALS (VA)								
				53735			53867			53352		

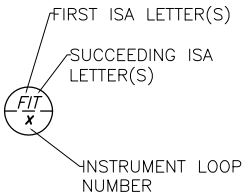




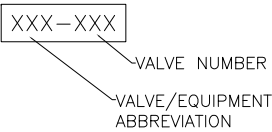
GENERAL NOTES

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

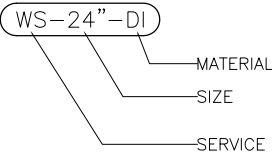
INSTRUMENT IDENTIFICATION TAG NUMBER



EQUIPMENT IDENTIFICATION



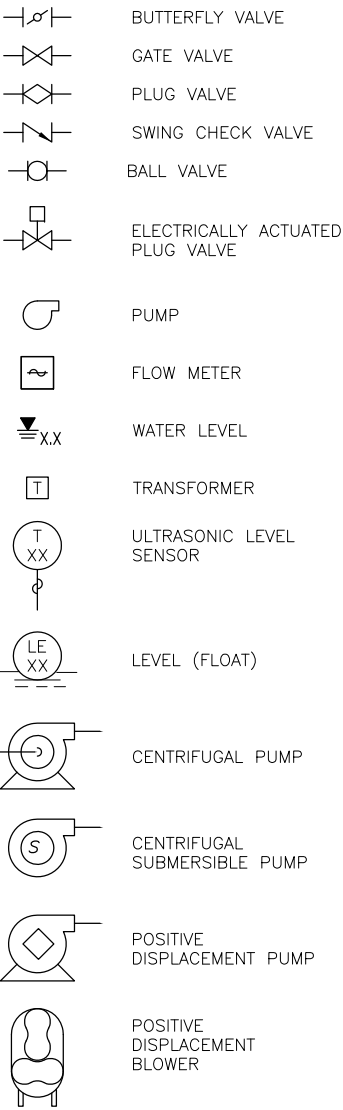
LINE IDENTIFICATION



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	DENSITY (S.G.)	DIFFERENTIAL			CONTROLLED VIA LOCAL THERMOSTAT
E	VOLTAGE		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 RATE	RATIO			
G	USER'S CHOICE (*)		GLASS, GAUGE VIEWING DEVICE		
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	(ELECTRICAL) POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION	MOMENTARY			MIDDLE
N	USER'S CHOICE (*)		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		(TEST CONNECTION) POINT		
Q	QUANTITY	INTEGRATE			
R	RADIATION	TOTALIZE	RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		UNCLASSIFIED (+)
X	UNCLASSIFIED (+)	X AXIS	UNCLASSIFIED (+)	UNCLASSIFIED (+)	
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	
	(<+> WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL.			(<*> WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT	

INSTRUMENTATION LEGEND:



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



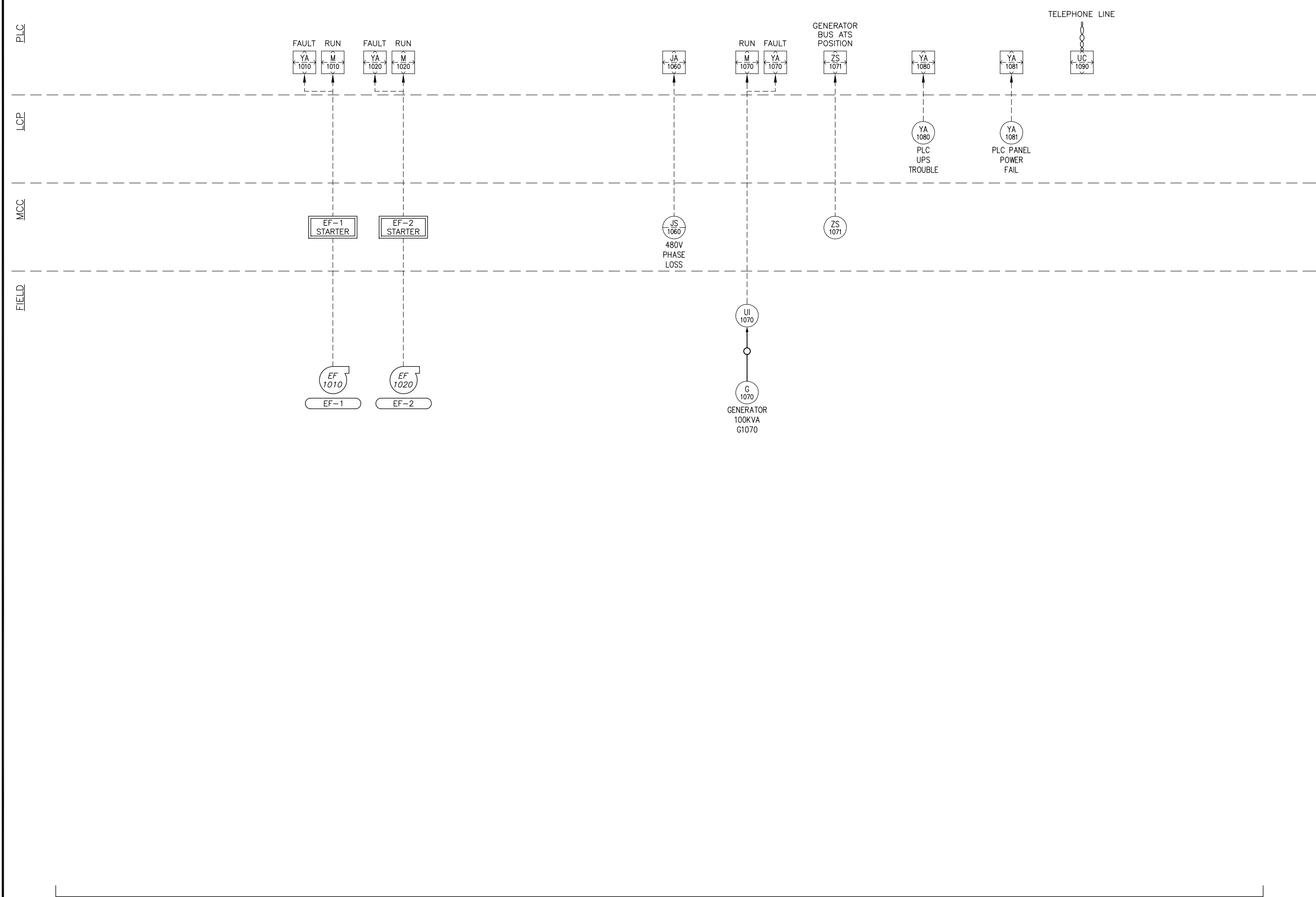
A	=	ALARM
C	=	CONTROLLER
I	=	INDICATOR
R	=	RECORDER
S	=	SWITCH
T	=	TRANSMITTER
X	=	UNCLASSIFIED

FOUR WAY RANCH METROPOLITAN DISTRICT LIFT STATION

INSTRUMENTATION NOTES, ABBREVIATIONS, & LEGEND

Project No.:	136.12
Scale:	AS NOTED
Date:	01/02/18
Design:	RMM
Drawn:	RMM
Check:	JPM
Revised:	





FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

PROCESS & INSTRUMENTATION CONTROL DIAGRAM 2

Project No.:	136.12
Scale:	AS NOTED
Date:	01/02/18
Design:	RMM
Drawn:	RMM
Check:	JPM
Revised:	



**JDS-HYDRO**  
CONSULTANTS, INC.  
545 EAST PIKES PEAK AVENUE, SUITE 300  
COLORADO SPRINGS, COLORADO 80903  
(719) 227-0072



INFLUENT HOLDING WELL (DESIGNATION 100)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
TREATMENT FEED PUMPS	P110/P120	1.5 HP (EA.)	SULZER PIRANHA S10-4W OR PRE-APPROVED EQUAL. SOLIDS HANDLING.
LEVEL INDICATOR	LE150		INDICATES LEVEL IN INFLUENT HOLDING WELL. ULTRASONIC. OUTPUT SIGNAL TO PLC.

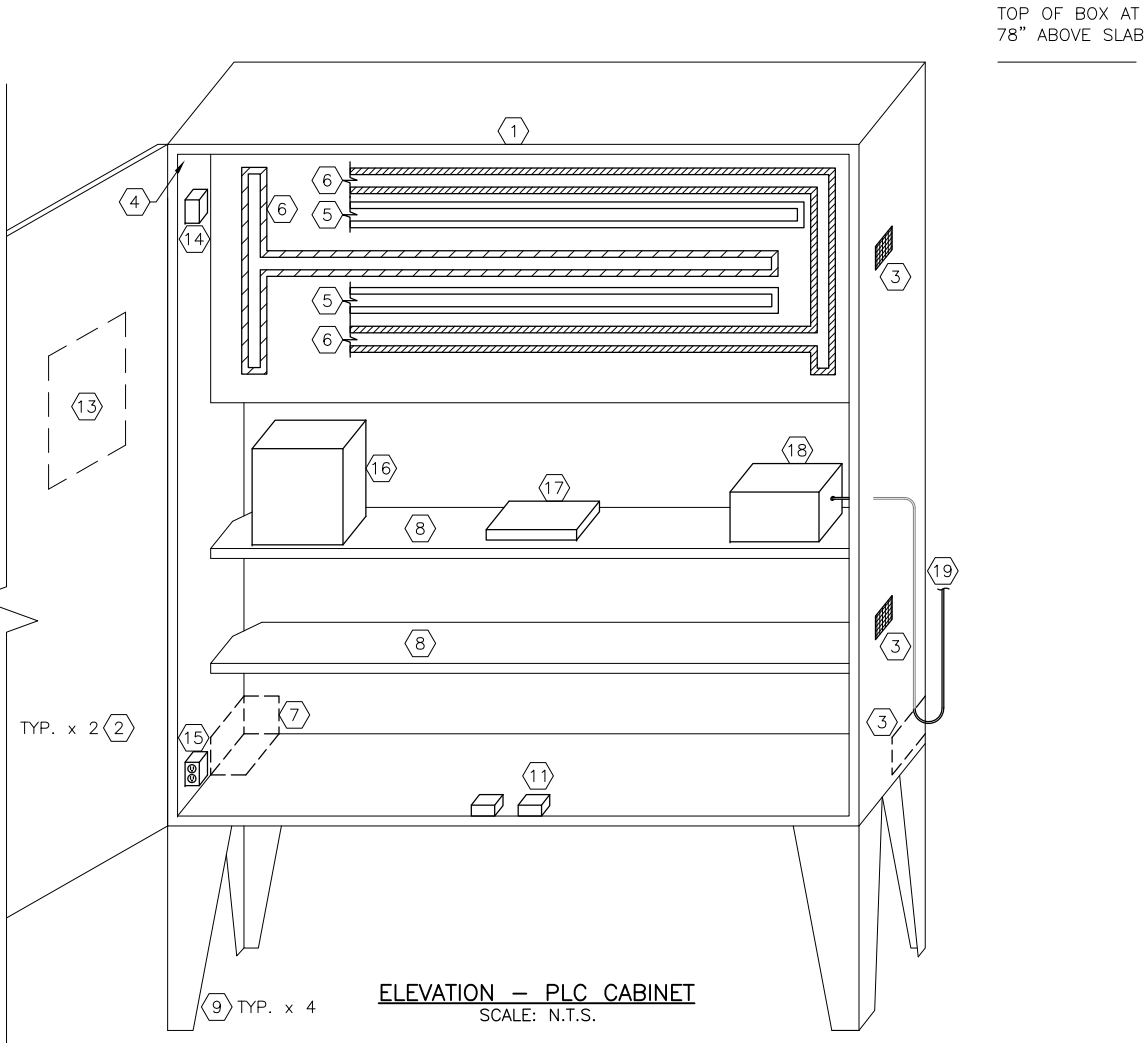
TREATMENT (DESIGNATION 200)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
BLOWER	B210	250 SCFM, 25 HP	BLOWER CONTROLLED BY PROGRAMMING IN PLC BASED PRIMARILY ON AERATION TIMES PRIOR TO SETTLING AND DECANTING OF BASIN. BLOWER IS HOUSED IN DRY WELL.
CONTROL VALVE	CV250	4" STAINLESS STEEL BALL VALVE	ELECTRICALLY ACTUATED PLUG VALVE TO ALLOW DECANT FROM TREATMENT BASIN INTO MAIN LIFT STATION WET WELL. CONTROLLED BY PROGRAMMING IN PLC.
LEVEL INDICATOR	LE260		INDICATES LEVEL IN TREATMENT BASIN. ULTRASONIC. OUTPUT SIGNAL TO PLC.

MAIN WET WELL (DESIGNATION 300)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
LEVEL INDICATOR	LE350		INDICATES LEVEL IN MAIN WET WELL. ULTRASONIC. OUTPUT SIGNAL TO PLC.
BIOXIDE PUMP	P380	120VAC	TRANSFERS BIOXIDE FROM STORAGE TANK TO WET WELL.

DRY WELL (DESIGNATION 400)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
MAIN PUMPS	P410/P420	75 HP. EA.	VFD DRIVEN PUMPS TO SEND WASTEWATER FROM THE MAIN WET WELL TO THE RECEIVING TREATMENT FACILITY VIA THE FORCE MAIN. PUMP CONTROLS ARE BASED ON LEVELS IN WET WELL. PUMPS WILL ALTERNATE BETWEEN LEAD AND LAG VIA LOGIC IN THE PLC.

DRY WELL (DESIGNATION 400, CONT'D)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
PRESSURE INDICATING TRANSDUCERS	PIT410/PIT420	4~20 mA	ANALOG PRESSURE TRANSDUCERS (IN COMBINATION WITH VISUAL PRESSURE GAUGES) SEND A 4~20 mA SIGNAL TO THE PLC.
SUMP PUMP	SP450	1/3 HP, 120VAC, SINGLE-PHASE	ACROSS-THE-LINE STARTER DRIVEN PUMP TO CONVEY ACCUMULATED SEEPAGE WATER FROM THE DRY WELL TO THE MAIN WET WELL. PUMP WILL START AND STOP BASED ON BUILT-IN LEVEL CONTROLS.
MAGNETIC FLOWMETER	FE460	24VAC	METER 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.
GAS DETECTOR	AE480		COMBINATION METHANE AND HYDROGEN SULFIDE GAS DETECTOR. REPORTS TO PLC.

MISC. CONTROLS (DESIGNATION 1000)			
EQUIPMENT	EQUIPMENT NUMBER	RATING	COMMENTS
EXHAUST FAN 1	EF1010	1/5	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	BACKUP GENERATOR TO BE INTEGRATED WITH AUTOMATIC TRANSFER SWITCH AND PROVIDE POWER TO ENTIRE FACILITY IN THE EVENT OF A MAIN POWER LOSS.



**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 NEC-2008.
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 4X 60X60X24 MIN 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

FOUR WAY RANCH METROPOLITAN DISTRICT  
LIFT STATION

CONTROL SCHEDULE & PLC DETAILS

Project No.:	136.12
Scale:	AS NOTED
Date:	01/02/18
Design:	RMM
Drawn:	RMM
Check:	JPM
Revised:	