

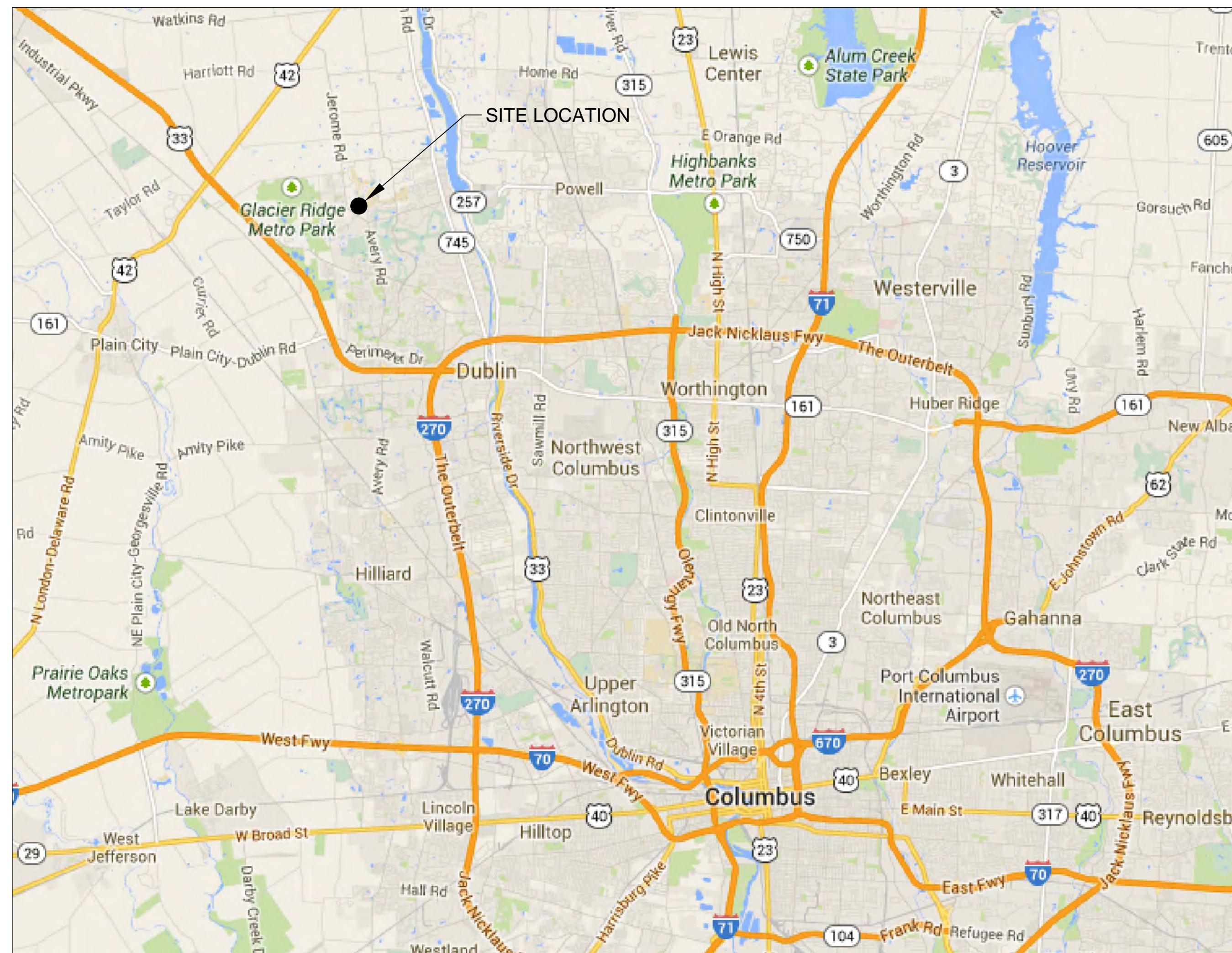
Delaware County Regional Sewer District



County Staff

TIM HANSLEY
TIFFANY JENKINS

COUNTY ADMINISTRATOR
DIRECTOR OF ENVIRONMENTAL SERVICES



LOCATION MAP
NTS

Contract Drawings For

Tartan Fields Wastewater Reuse Facility

Filter Replacement

DRAWING INDEX

| | |
|-----|---|
| G-1 | GENERAL - COVER, SITE MAP, DRAWING INDEX |
| G-2 | GENERAL - GENERAL NOTES AND SYMBOLS |
| C-1 | CIVIL - SITE PLAN |
| P-1 | PROCESS - DEMOLITION PLAN |
| P-2 | PROCESS - DEMOLITION SECTIONS |
| P-3 | PROCESS - FILTERS - LOWER PLAN |
| P-4 | PROCESS - FILTERS - UPPER PLAN |
| P-5 | PROCESS - FILTERS - SECTIONS |
| P-6 | PROCESS - STANDARD DETAILS |
| P-7 | PROCESS - STANDARD DETAILS |
| S-1 | STRUCTURAL - GENERAL NOTES AND DETAILS |
| S-2 | STRUCTURAL - PLAN AND SECTION |
| E-1 | ELECTRICAL - SYMBOL LEGEND AND LIGHT FIXTURE SCHEDULE |
| E-2 | ELECTRICAL - DEMO PLAN |
| E-3 | ELECTRICAL - PLAN |
| E-4 | ELECTRICAL - FILTER CONTROL PANEL |

Board Of County Commissioners

Ken O'Brien
KEN O'BRIEN
5-17-2014
DATE

Dennis Stapleton
DENNIS STAPLETON
5/19/14
DATE

Gary Merrell
GARY MERRELL
5/19/14
DATE

HDR Project No.
00000000227513

Delaware County, Ohio
May 2014

APPROVED: *Tiffany A. Jenkins*
TIFFANY JENKINS
DIRECTOR OF ENVIRONMENTAL SERVICES
5/14/14
DATE



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1 2 3 4 5 6 7 8

SYMBOLS

GRID NORTH

SECTION
1" = 1'-0"

DETAIL
1" = 1'-0"

SECTION / ELEVATION IS SHOWN
C3.1 / C9

SECTION / ELEVATION IS CUT
C3.1 / C9

SECTION / ELEVATION TITLE
C3.1 / C9

SECTION / ELEVATION IS CUT
C3.1 / C9

DETAIL IS SHOWN
C4.3 / C9

DETAIL ID SYMBOL
C4.3 / C9

DETAIL IS SHOWN
C4.3 / C9

DETAIL IS CUT
C4.3 / C9

DETAIL IS CUT
C4.3 / C9

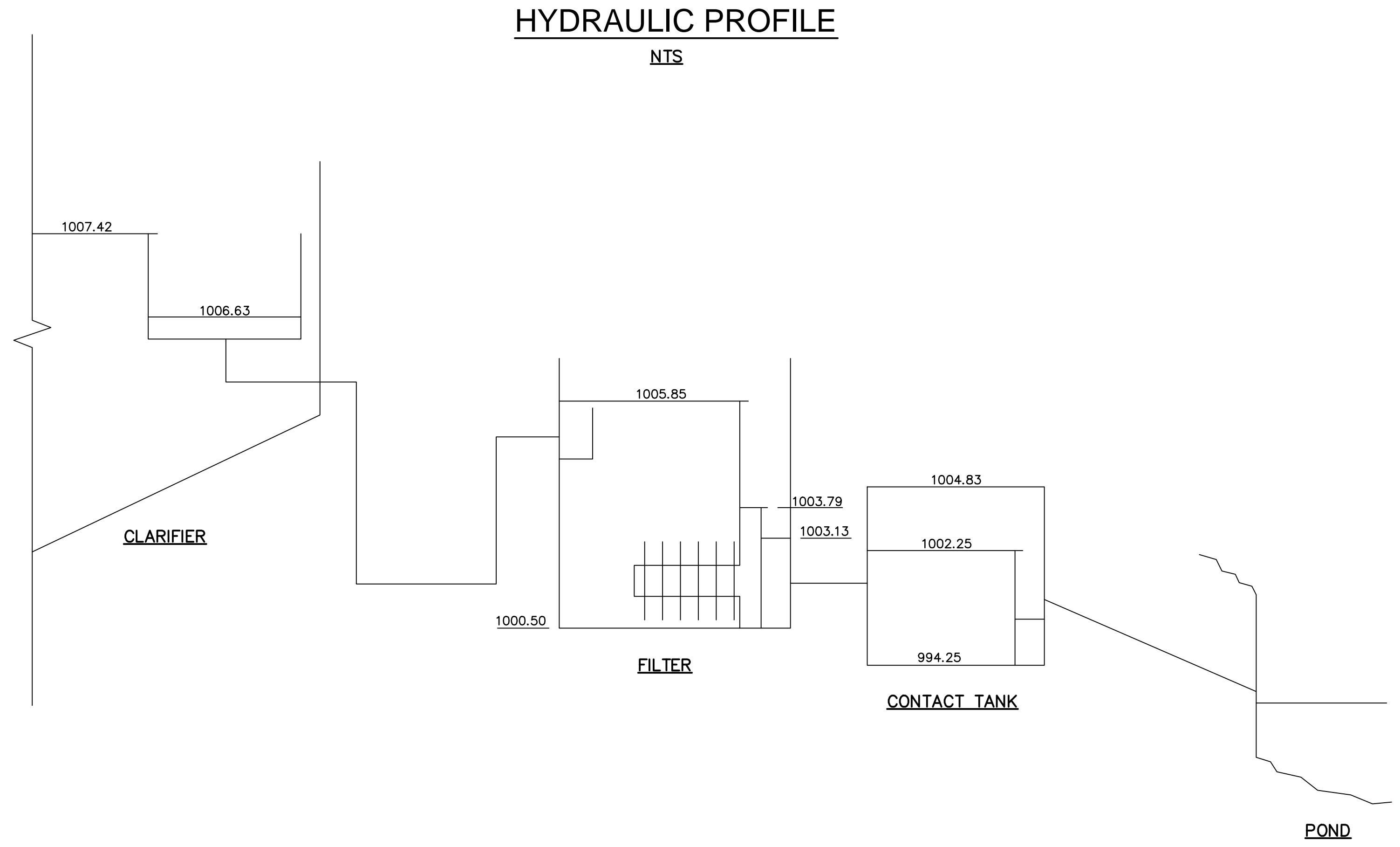
DETAIL TITLE
C4.3 / C9

IF CUT ON MORE THAN ONE SHEET
C7, C8

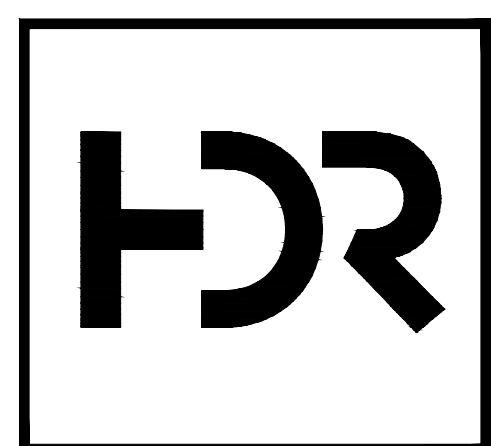
BM-1
BENCHMARK LOCATION

HORIZONTAL CONTROL POINT LOCATION

- PIPING OVER/UNDER
- PIPE INTERSECTION
- MANHOLE
- FLANGED JOINT PIPING
- MECHANICAL JOINT PIPING
- LIQUID SURFACE
- HANDWHEEL FLOORSTAND
- FINISHED GRADE
- ROCK
- SLUICE GATE
- GATE VALVE
- PLUG VALVE
- CHECK VALVE
- BUTTERFLY VALVE
- SLIDE GATE
- VALVE & VALVE BOX



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| PROJECT MANAGER | PLE |
| DESIGNED | PLE |
| DRAWN | CPL |
| CHECKED | |
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| DATE | APRIL 2014 |
| PROJECT NUMBER | 227513 |



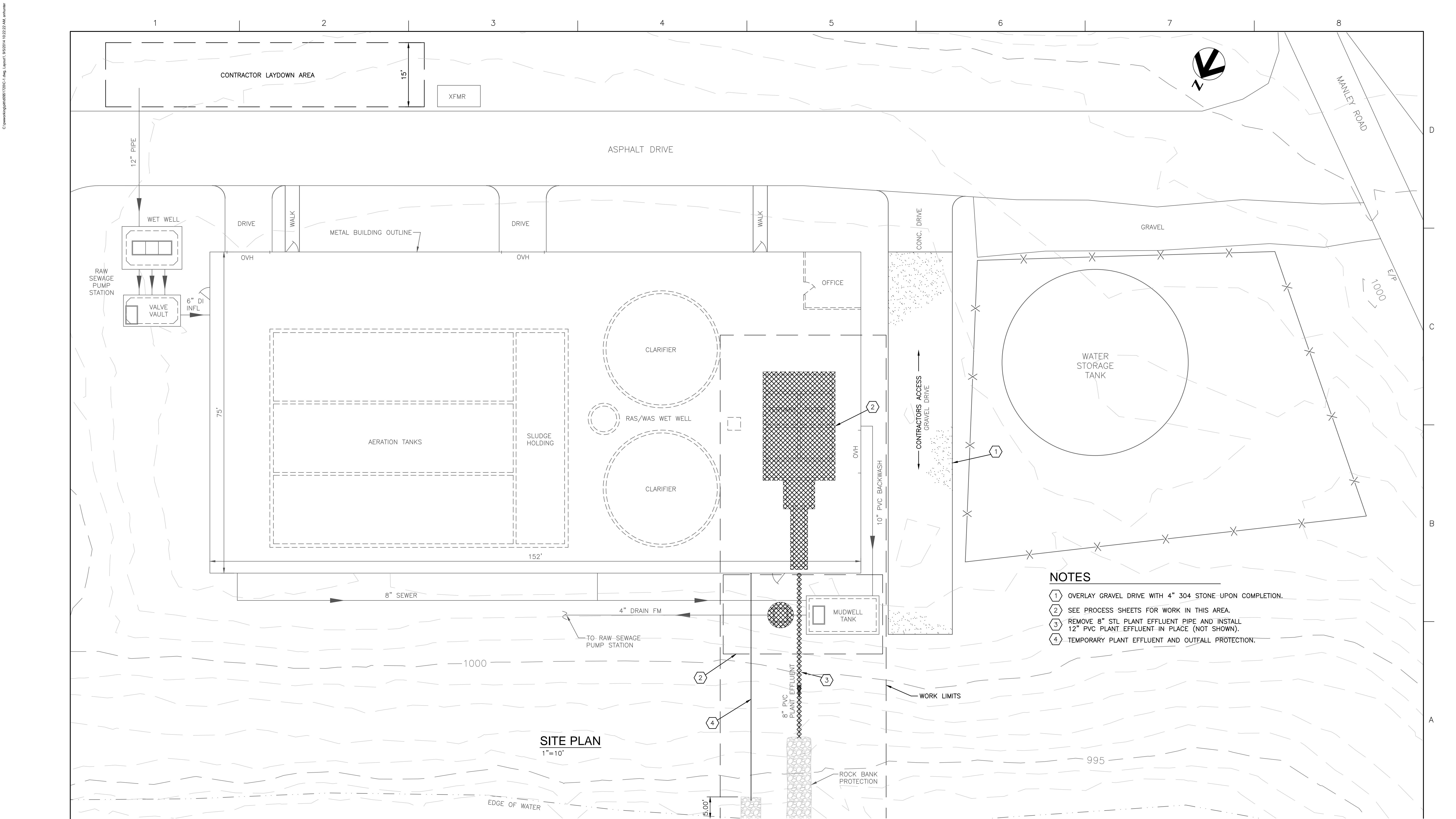
**TARTAN FIELDS WRF
FILTER REPLACEMENT**

SYMBOLS AND HYDRAULIC PROFILE

0 1" 2"

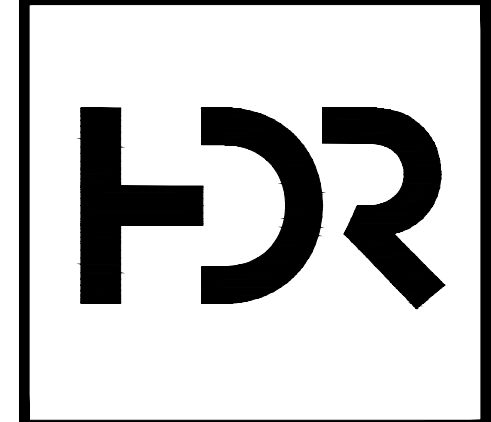
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| FILENAME | G-2.dwg |
| SCALE | NTS |

SHEET
G-2



- NOTES**
- ① OVERLAY GRAVEL DRIVE WITH 4" 304 STONE UPON COMPLETION.
 - ② SEE PROCESS SHEETS FOR WORK IN THIS AREA.
 - ③ REMOVE 8" STL PLANT EFFLUENT PIPE AND INSTALL 12" PVC PLANT EFFLUENT IN PLACE (NOT SHOWN).
 - ④ TEMPORARY PLANT EFFLUENT AND OUTFALL PROTECTION.

SITE PLAN
1"=10'

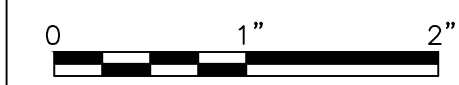


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| PROJECT MANAGER | PLE |
| DESIGNED | PLE |
| DRAWN | CPL |
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| DATE | APRIL 2014 |
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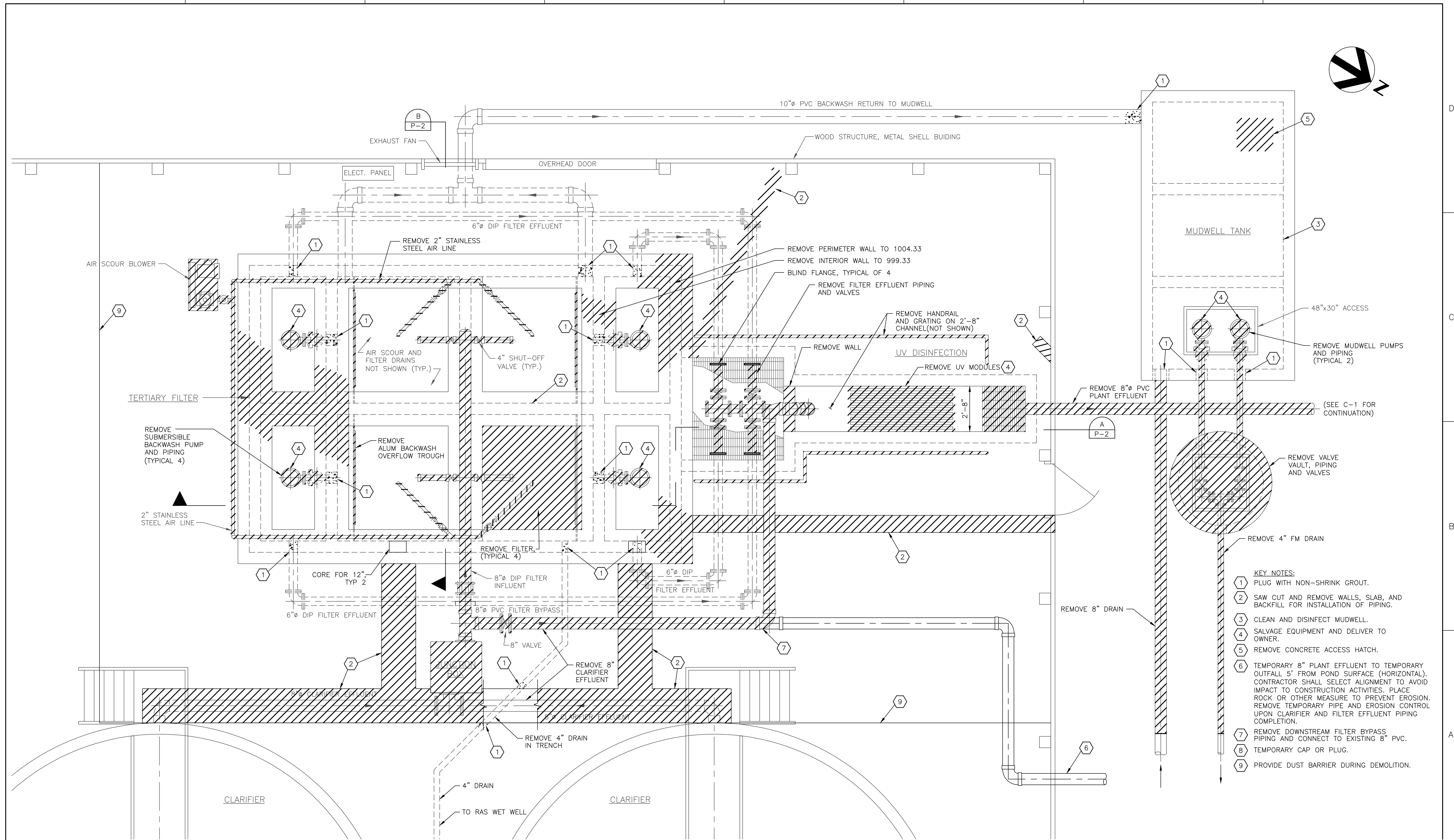
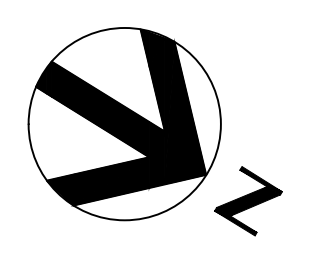


**TARTAN FIELDS WRF
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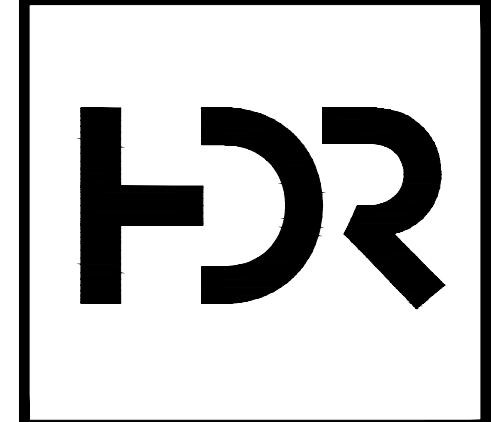


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| FILENAME | C-1.dwg |
| SCALE | 1" = 10' |

SHEET
C-1



- KEY NOTES:**
- 1 PLUG WITH NON-SHRINK GROUT.
 - 2 SAW CUT AND REMOVE WALLS, SLAB, AND BACKFILL FOR INSTALLATION OF PIPING.
 - 3 CLEAN AND DISINFECT MUDWELL.
 - 4 SALVAGE EQUIPMENT AND DELIVER TO OWNER.
 - 5 REMOVE CONCRETE ACCESS HATCH.
 - 6 TEMPORARY 8" PLANT EFFLUENT TO TEMPORARY OUTFALL 5' FROM POND SURFACE (HORIZONTAL). CONTRACTOR SHALL SELECT ALIGNMENT TO AVOID IMPACT TO CONSTRUCTION ACTIVITIES. PLACE ROCK OR OTHER MEASURE TO PREVENT EROSION. REMOVE TEMPORARY PIPE AND EROSION CONTROL UPON CLARIFIER AND FILTER EFFLUENT PIPING COMPLETION.
 - 7 REMOVE DOWNSTREAM FILTER BYPASS. PIPING AND CONNECT TO EXISTING 8" PVC.
 - 8 TEMPORARY CAP OR PLUG.
 - 9 PROVIDE DUST BARRIER DURING DEMOLITION.



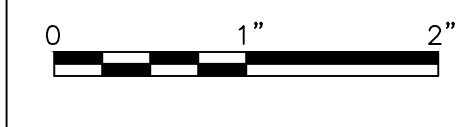
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| PROJECT MANAGER | PLE |
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| DATE | APRIL 2014 |
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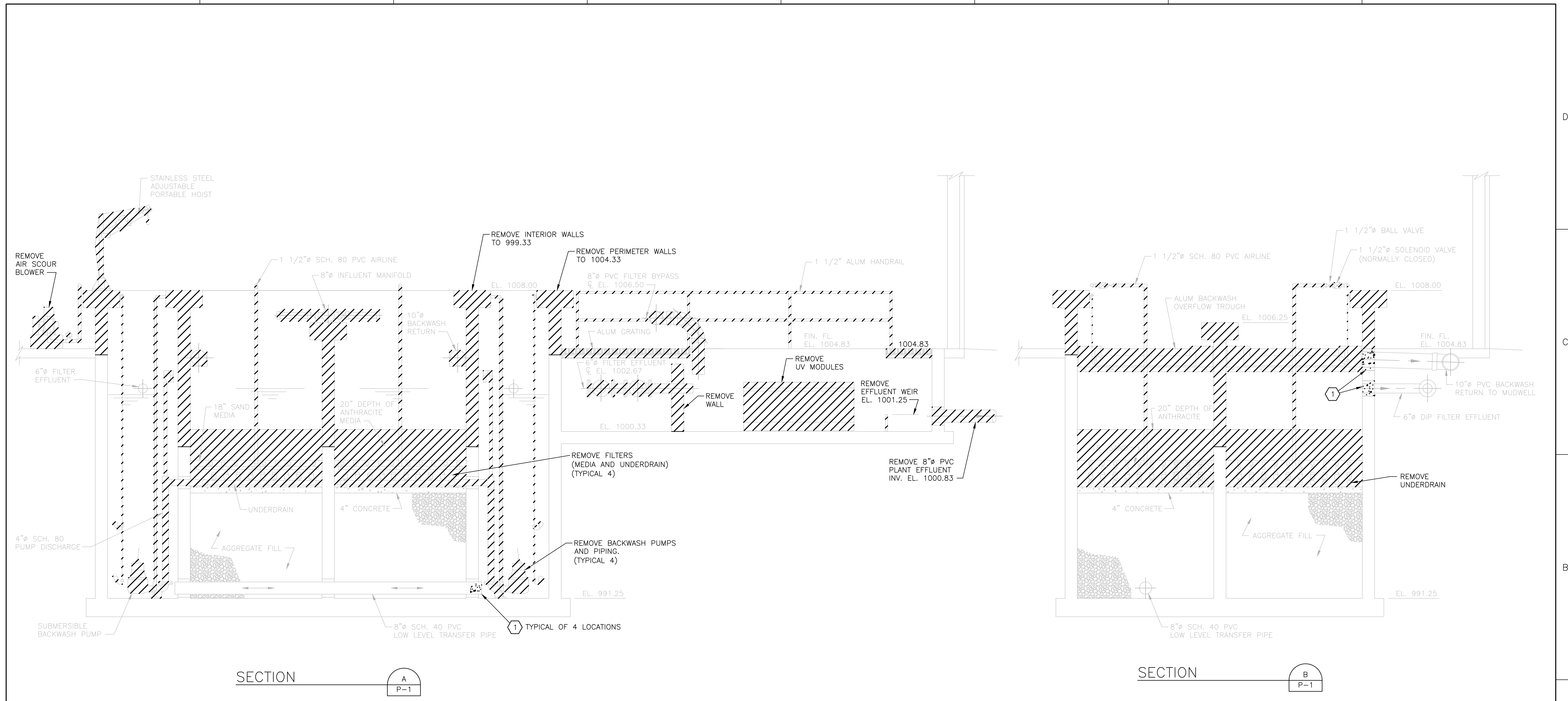
**TARTAN FIELDS WRF
FILTER REPLACEMENT**

PROCESS - DEMOLITION PLAN



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| SCALE | 3/8" = 1'-0" |

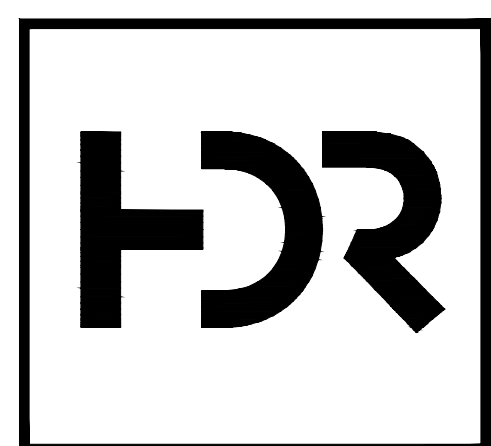
SHEET
P-1



SECTION A
P-1

SECTION B
P-1

KEY NOTES:
1 PLUG WITH NON-SHRINK GROUT.

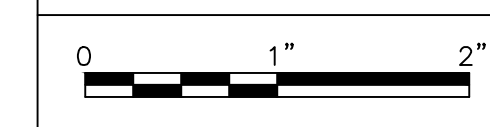


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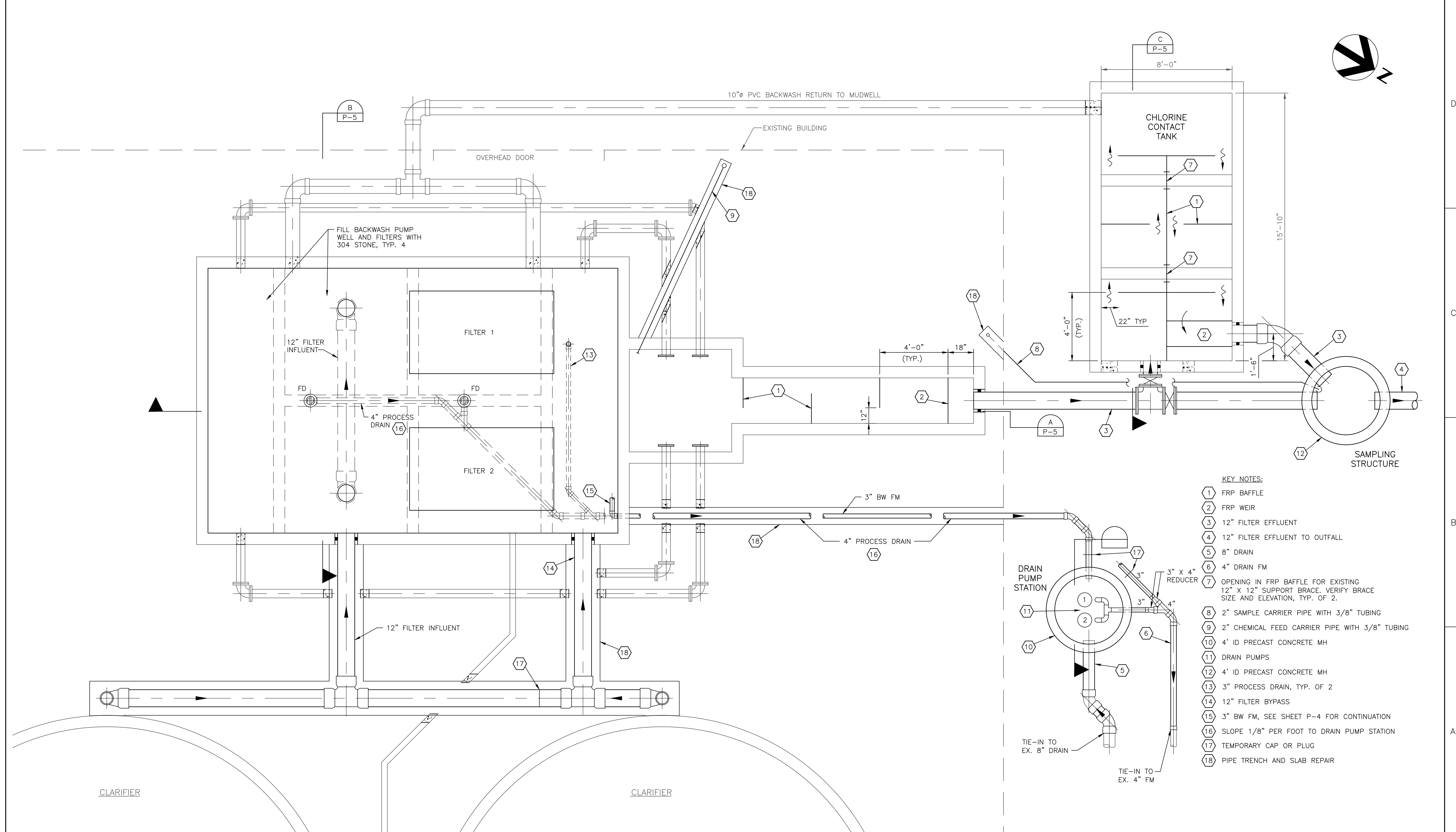
**TARTAN FIELDS WRF
FILTER REPLACEMENT**



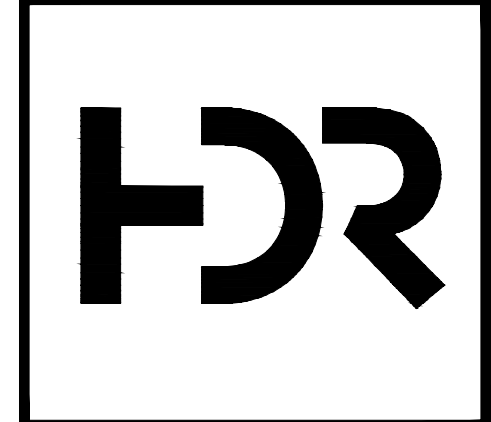
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| FILENAME | P-2.dwg |
| SCALE | 3/8" = 1'-0" |

SHEET
P-2

PROCESS - DEMOLITION SECTIONS



- KEY NOTES:**
- 1 FRP BAFFLE
 - 2 FRP WEIR
 - 3 12" FILTER EFFLUENT
 - 4 12" FILTER EFFLUENT TO OUTFALL
 - 5 8" DRAIN
 - 6 4" DRAIN FM
 - 7 OPENING IN FRP BAFFLE FOR EXISTING 12" X 12" SUPPORT BRACE. VERIFY BRACE SIZE AND ELEVATION, TYP. OF 2.
 - 8 2" SAMPLE CARRIER PIPE WITH 3/8" TUBING
 - 9 2" CHEMICAL FEED CARRIER PIPE WITH 3/8" TUBING
 - 10 4' ID PRECAST CONCRETE MH
 - 11 DRAIN PUMPS
 - 12 4' ID PRECAST CONCRETE MH
 - 13 3" PROCESS DRAIN, TYP. OF 2
 - 14 12" FILTER BYPASS
 - 15 3" BW FM, SEE SHEET P-4 FOR CONTINUATION
 - 16 SLOPE 1/8" PER FOOT TO DRAIN PUMP STATION
 - 17 TEMPORARY CAP OR PLUG
 - 18 PIPE TRENCH AND SLAB REPAIR

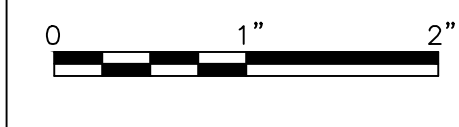


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| CHECKED | QA/QC |
| DATE | APRIL 2014 |
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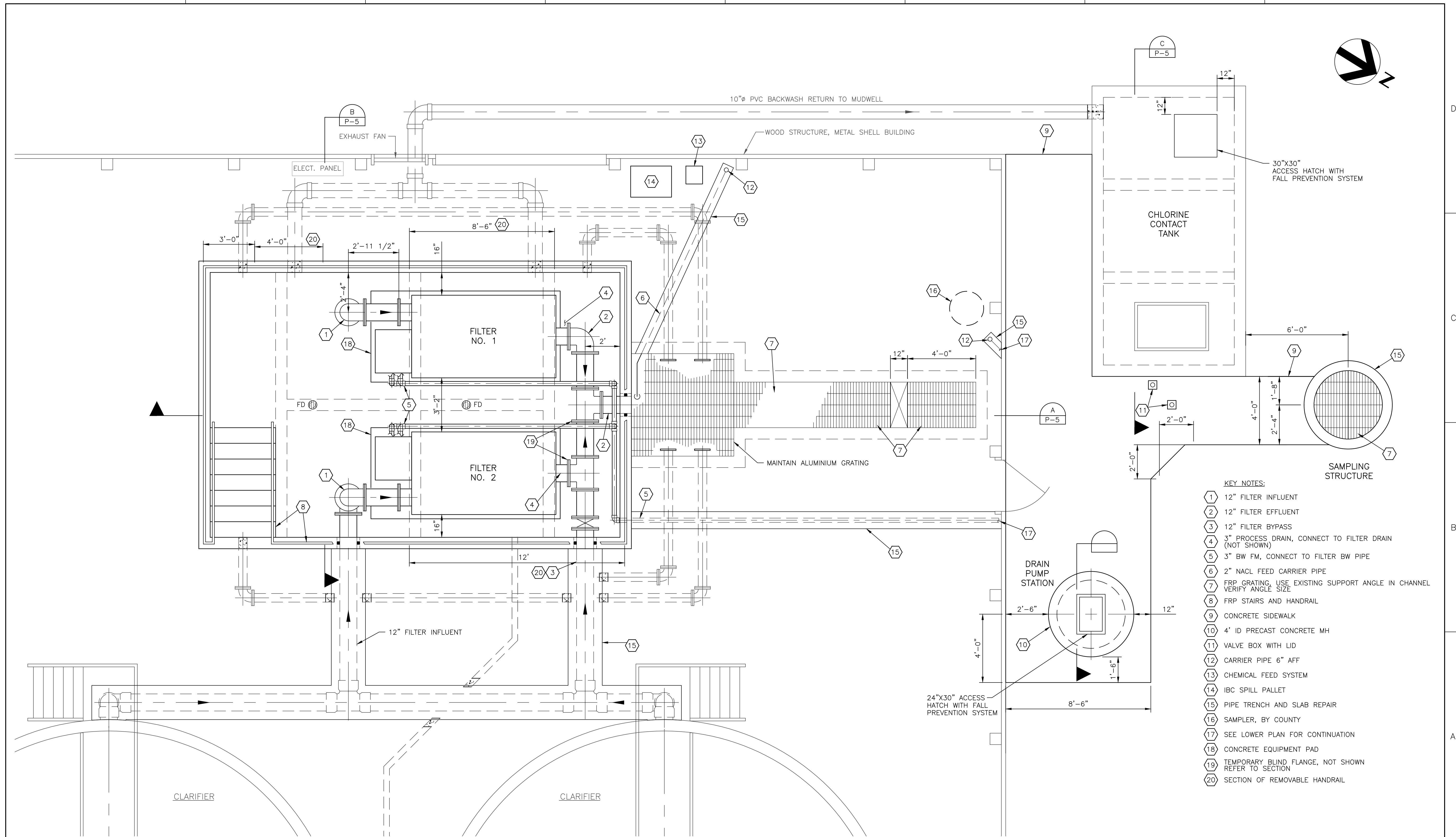


**TARTAN FIELDS WRF
FILTER REPLACEMENT**

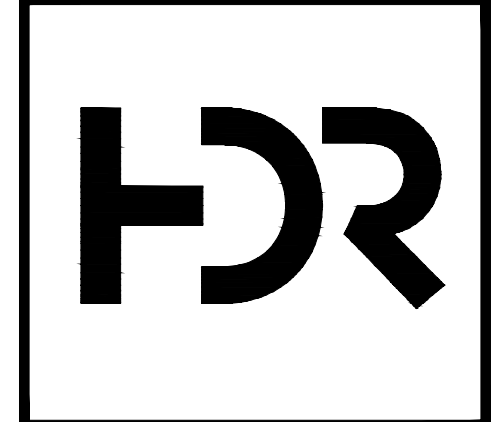


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| FILENAME | P-3.dwg |
| SCALE | 3/8" = 1'-0" |

SHEET
P-3



- KEY NOTES:**
- 1 12" FILTER INFLUENT
 - 2 12" FILTER EFFLUENT
 - 3 12" FILTER BYPASS
 - 4 3" PROCESS DRAIN, CONNECT TO FILTER DRAIN (NOT SHOWN)
 - 5 3" BW FM, CONNECT TO FILTER BW PIPE
 - 6 2" NACL FEED CARRIER PIPE
 - 7 FRP GRATING, USE EXISTING SUPPORT ANGLE IN CHANNEL VERIFY ANGLE SIZE
 - 8 FRP STAIRS AND HANDRAIL
 - 9 CONCRETE SIDEWALK
 - 10 4' ID PRECAST CONCRETE MH
 - 11 VALVE BOX WITH LID
 - 12 CARRIER PIPE 6" AFF
 - 13 CHEMICAL FEED SYSTEM
 - 14 IBC SPILL PALLET
 - 15 PIPE TRENCH AND SLAB REPAIR
 - 16 SAMPLER, BY COUNTY
 - 17 SEE LOWER PLAN FOR CONTINUATION
 - 18 CONCRETE EQUIPMENT PAD
 - 19 TEMPORARY BLIND FLANGE, NOT SHOWN REFER TO SECTION
 - 20 SECTION OF REMOVABLE HANDRAIL

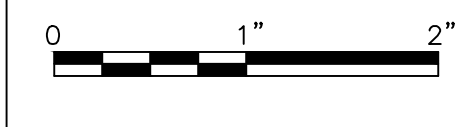


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| DRAWN | CPL |
| CHECKED | QA/QC |
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| DATE | APRIL 2014 |
| PROJECT NUMBER | 227513 |



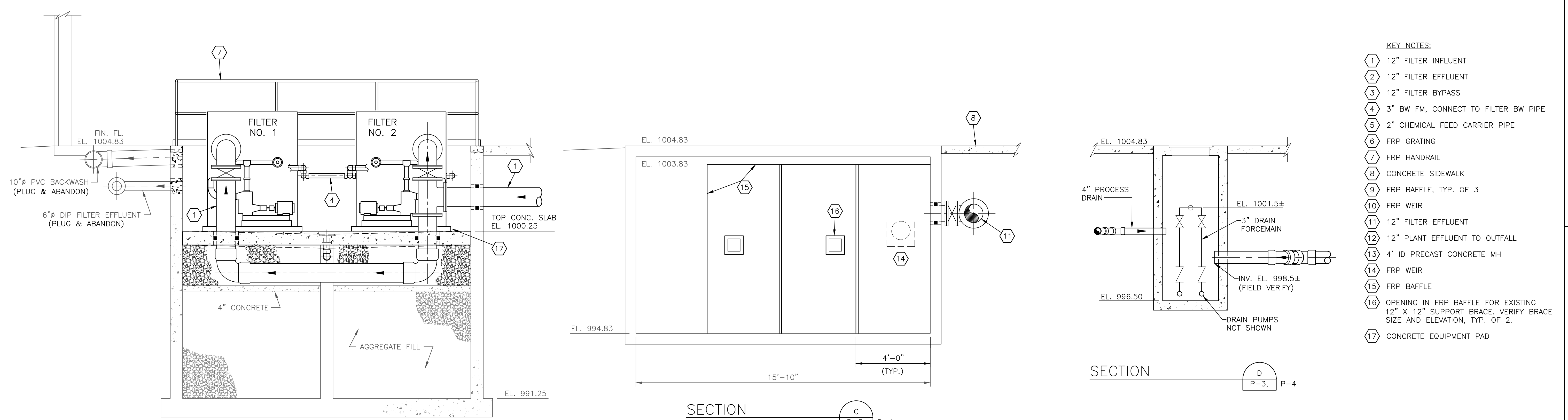
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FILTER REPLACEMENT**



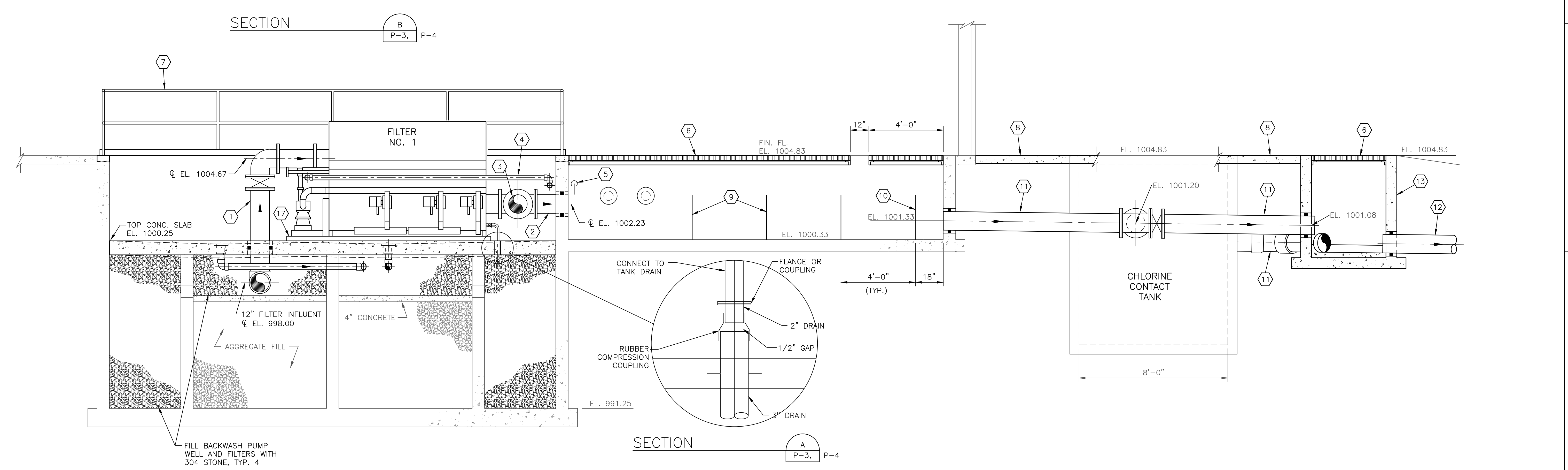
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| SCALE | 3/8" = 1'-0" |

SHEET
P-4

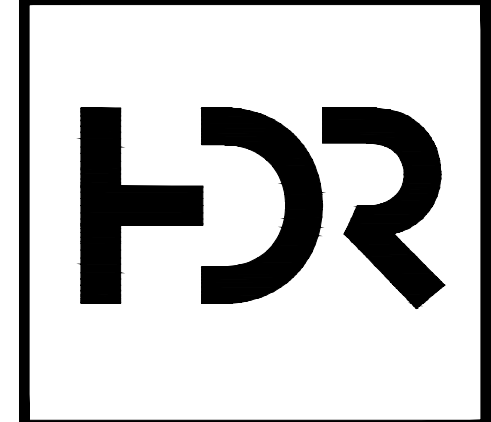
PROCESS - FILTERS - UPPER PLAN



- KEY NOTES:**
- 1 12" FILTER INFLUENT
 - 2 12" FILTER EFFLUENT
 - 3 12" FILTER BYPASS
 - 4 3" BW FM, CONNECT TO FILTER BW PIPE
 - 5 2" CHEMICAL FEED CARRIER PIPE
 - 6 FRP GRATING
 - 7 FRP HANDRAIL
 - 8 CONCRETE SIDEWALK
 - 9 FRP BAFFLE, TYP. OF 3
 - 10 FRP WEIR
 - 11 12" FILTER EFFLUENT
 - 12 12" PLANT EFFLUENT TO OUTFALL
 - 13 4' ID PRECAST CONCRETE MH
 - 14 FRP WEIR
 - 15 FRP BAFFLE
 - 16 OPENING IN FRP BAFFLE FOR EXISTING 12" X 12" SUPPORT BRACE. VERIFY BRACE SIZE AND ELEVATION, TYP. OF 2.
 - 17 CONCRETE EQUIPMENT PAD



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| PROJECT MANAGER | PLE |
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| DRAWN | CPL |
| CHECKED | |
| QA/QC | |
| DATE | APRIL 2014 |
| PROJECT NUMBER | 227513 |



**TARTAN FIELDS WRF
FILTER REPLACEMENT**

PROCESS - FILTERS - SECTIONS

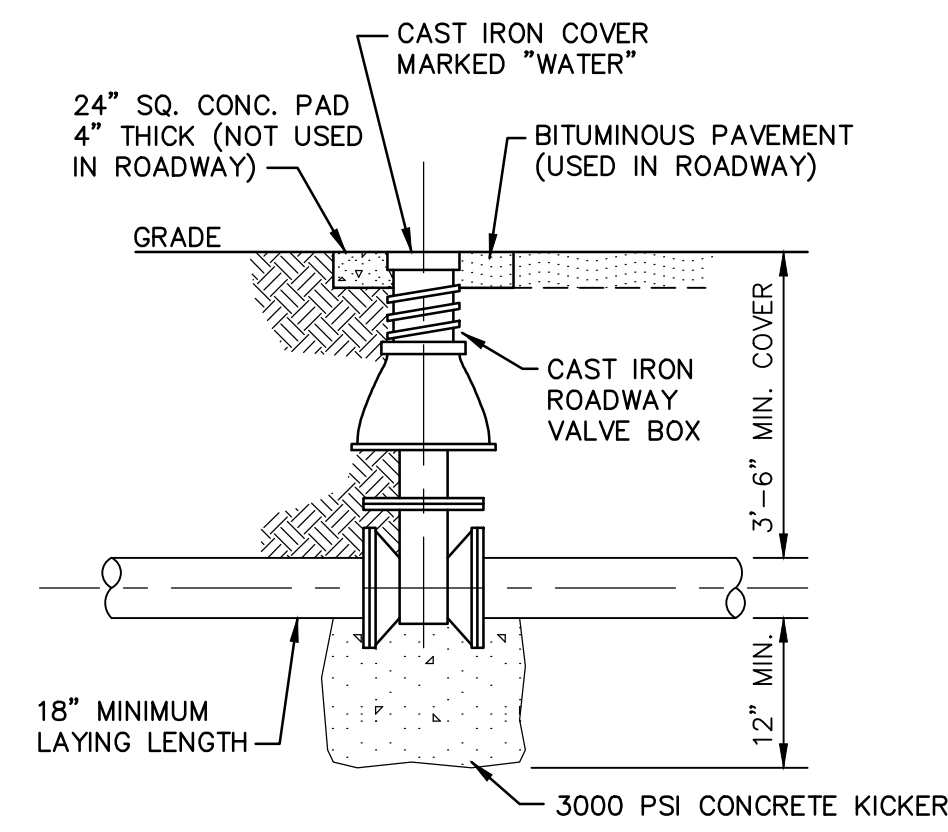
0 1" 2"

FILENAME P-5.dwg

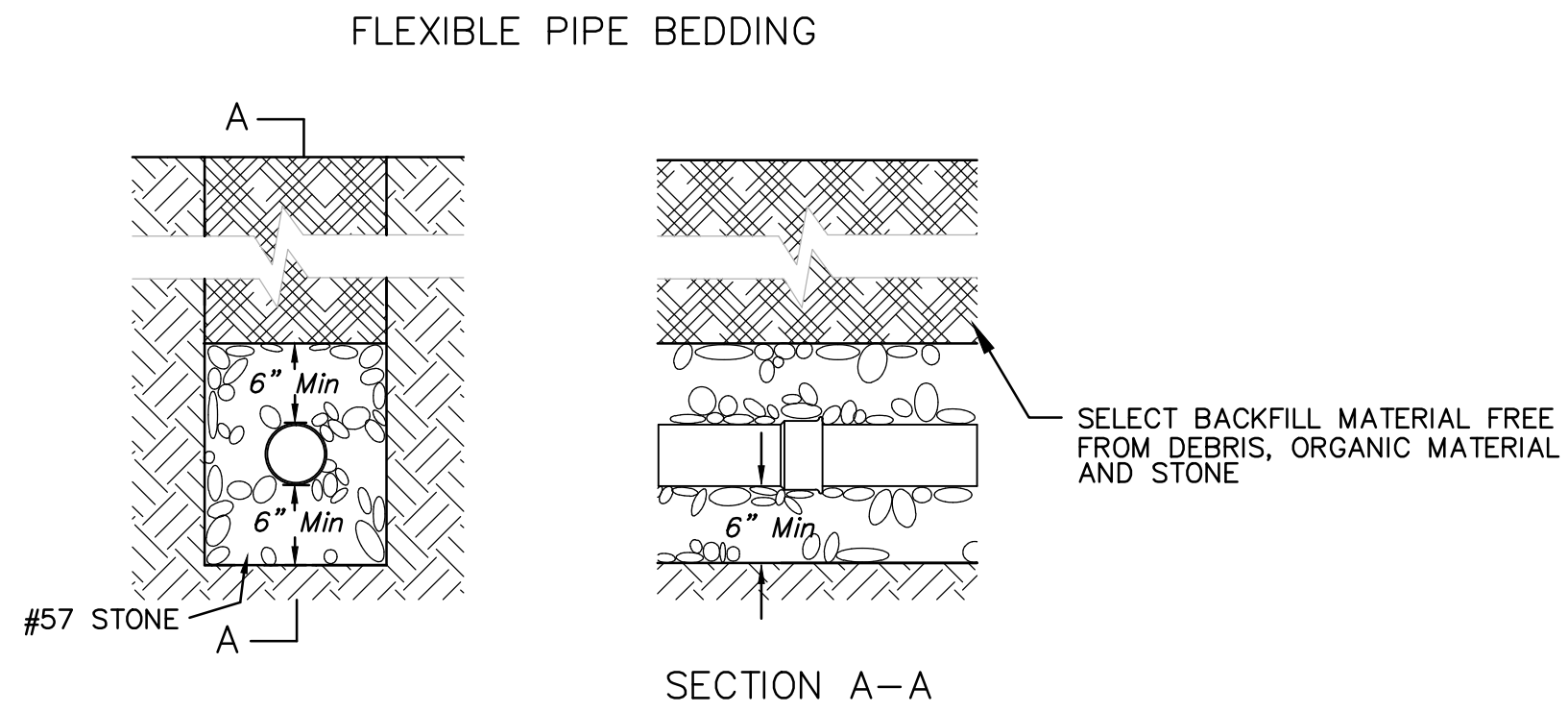
SCALE 3/8" = 1'-0"

SHEET

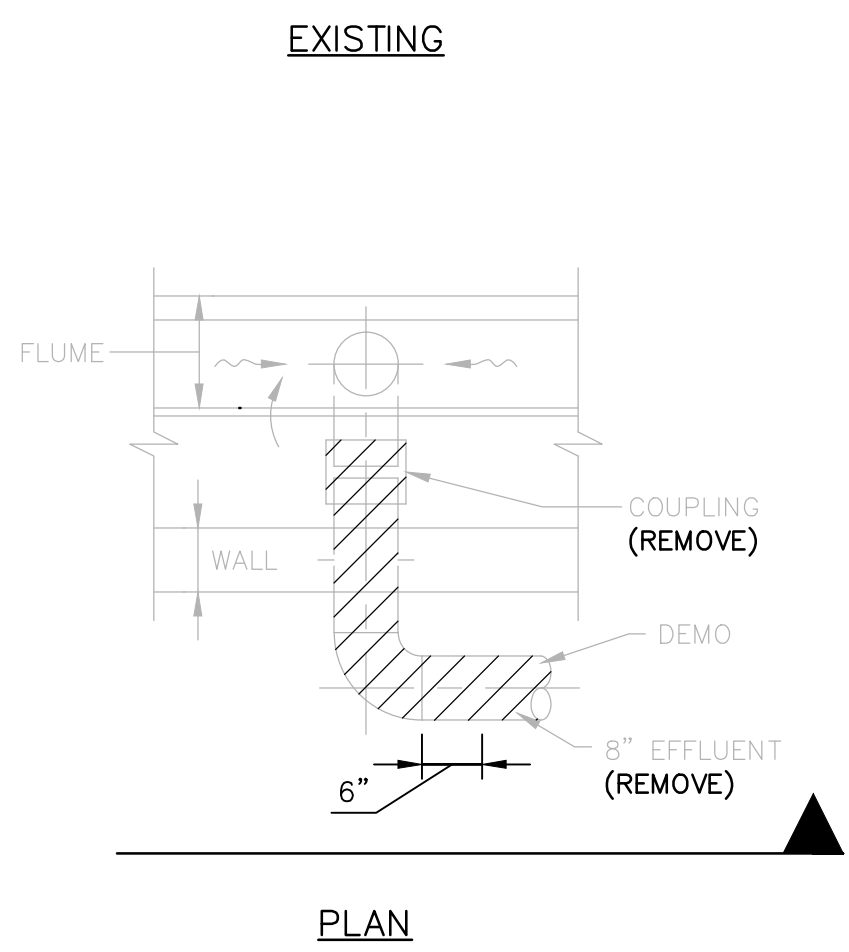
P-5



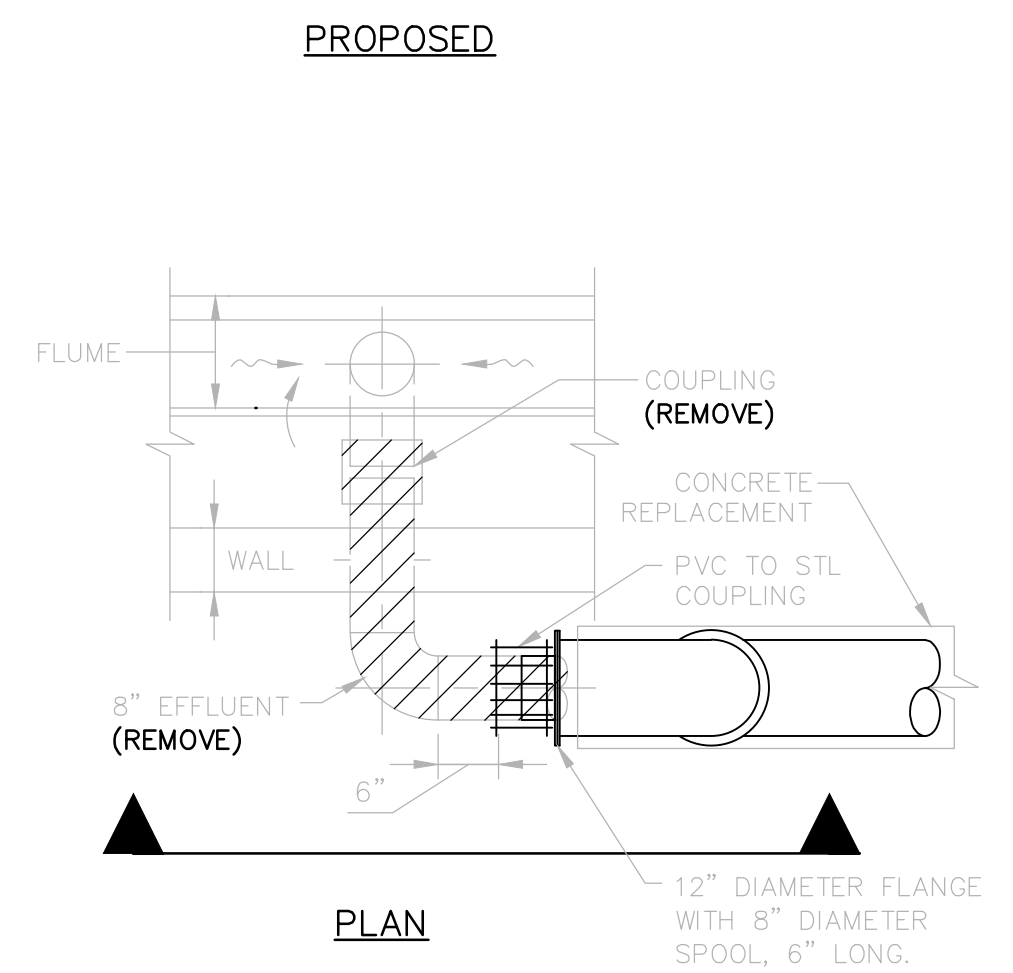
VALVE SETTING
N.T.S.



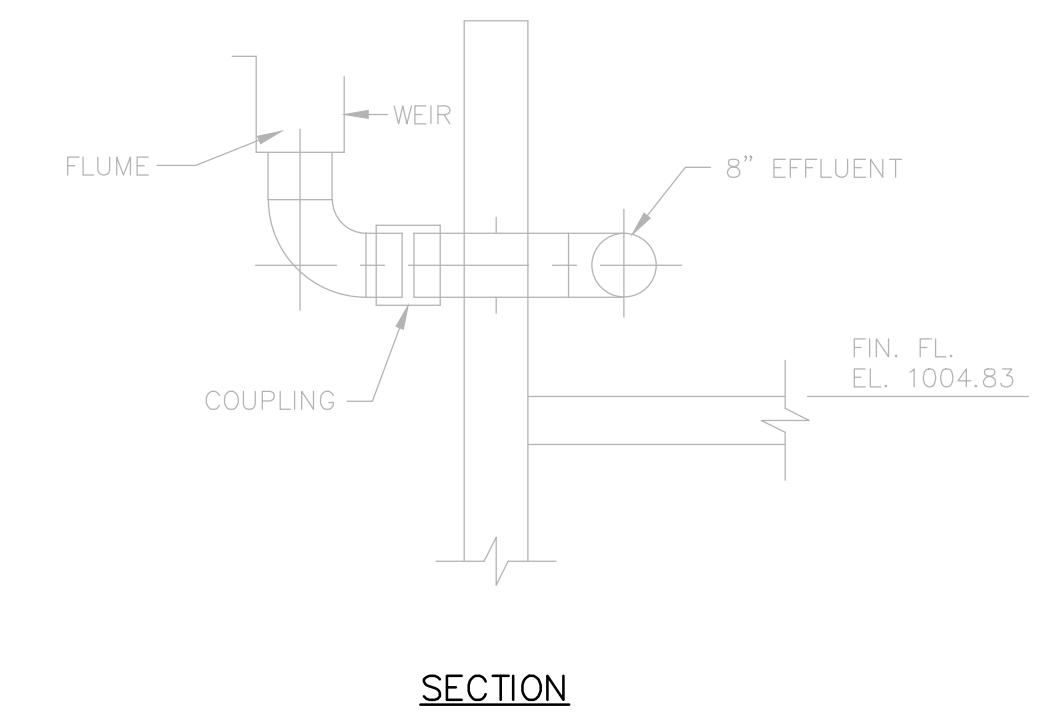
ALL P.V.C. AND OTHER FLEXIBLE PIPE USED FOR SANITARY AND STORM SEWERS SHALL BE TESTED FOR DEFLECTION BY THE CONTRACTOR UNDER THE SUPERVISION OF THE CITY ENGINEER. TESTS SHALL NOT BE CONDUCTED UNTIL AT LEAST 60 DAYS AFTER FINAL FULL BACKFILL HAS BEEN PLACED. MAXIMUM ALLOWABLE DEFLECTION SHALL BE 5%. IF THE TEST IS TO BE ACCOMPLISHED BY PULLING A MANDREL THROUGH THE PIPE, NO MECHANICAL EQUIPMENT SHALL BE USED TO ASSIST.



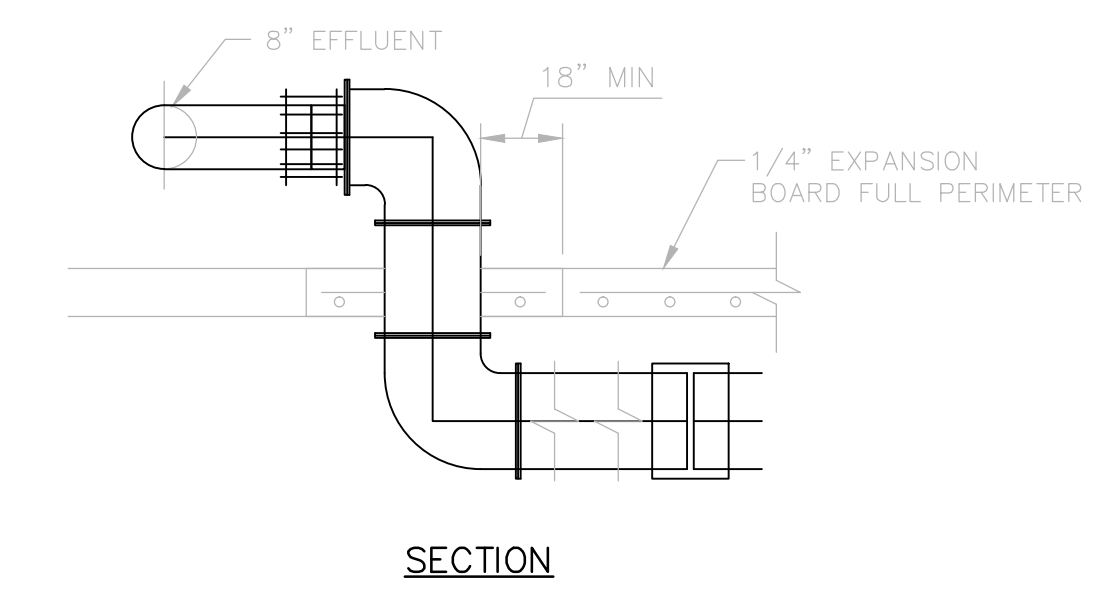
EXISTING
PLAN



PROPOSED
PLAN

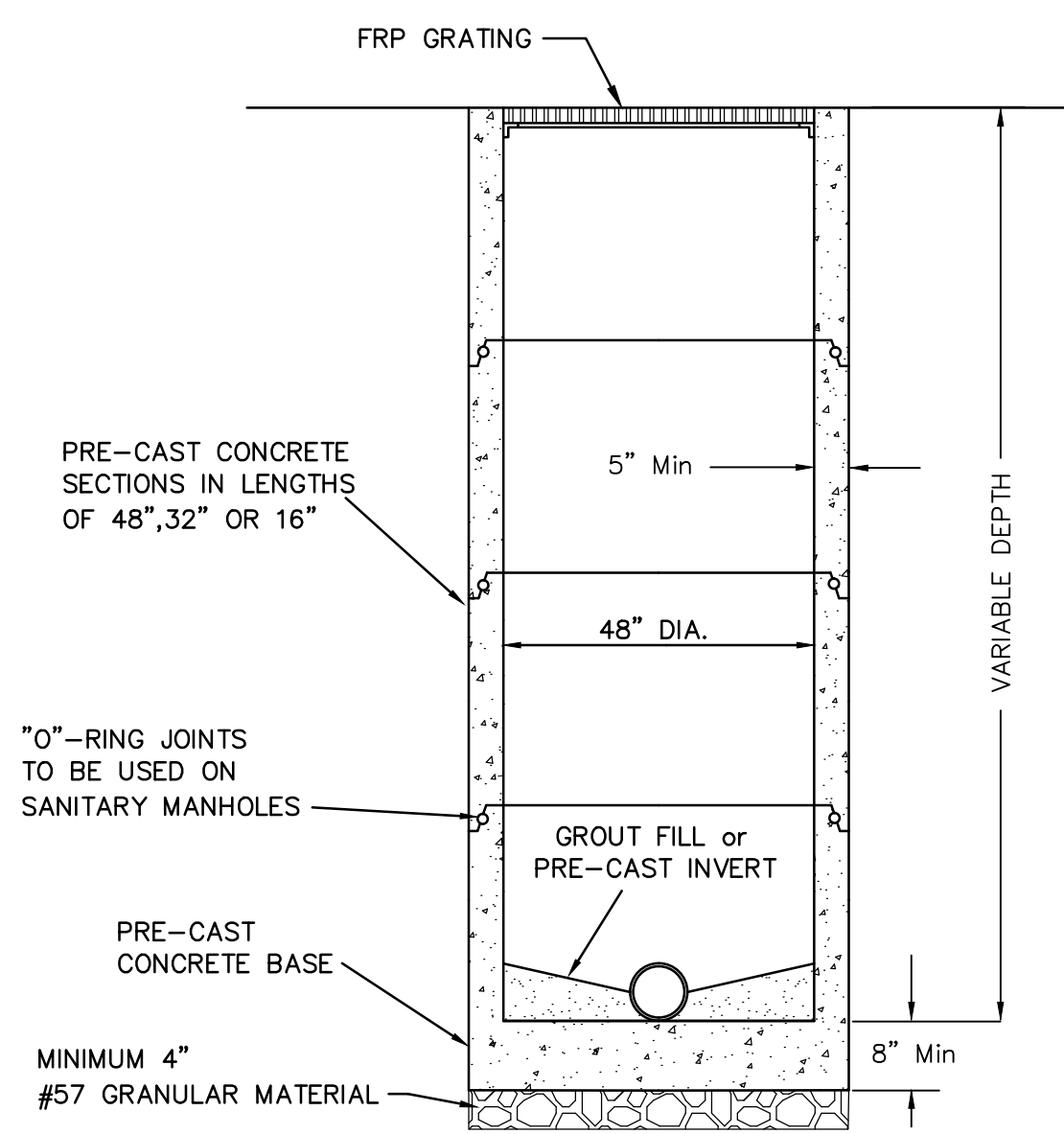


SECTION

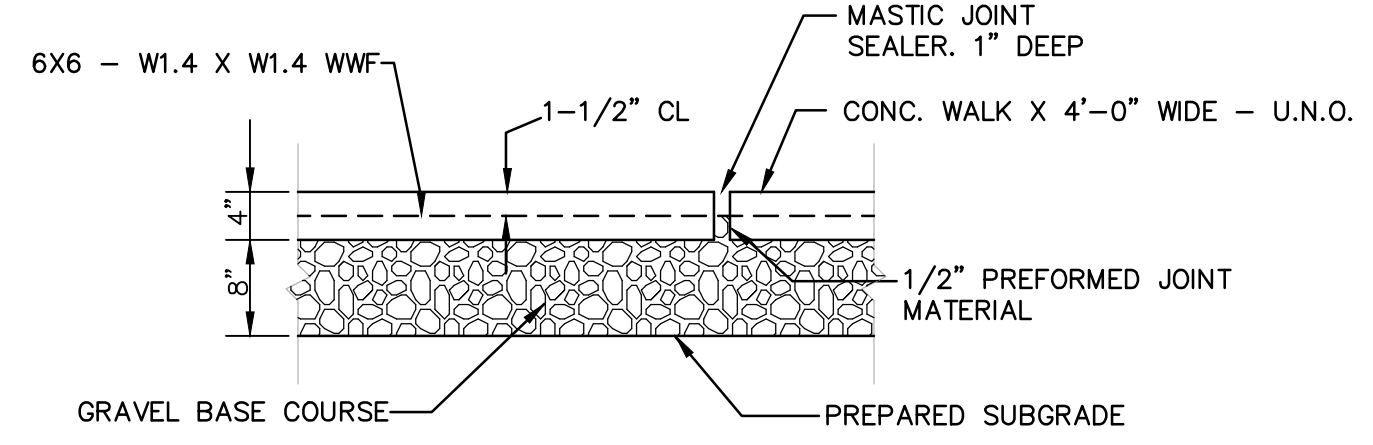


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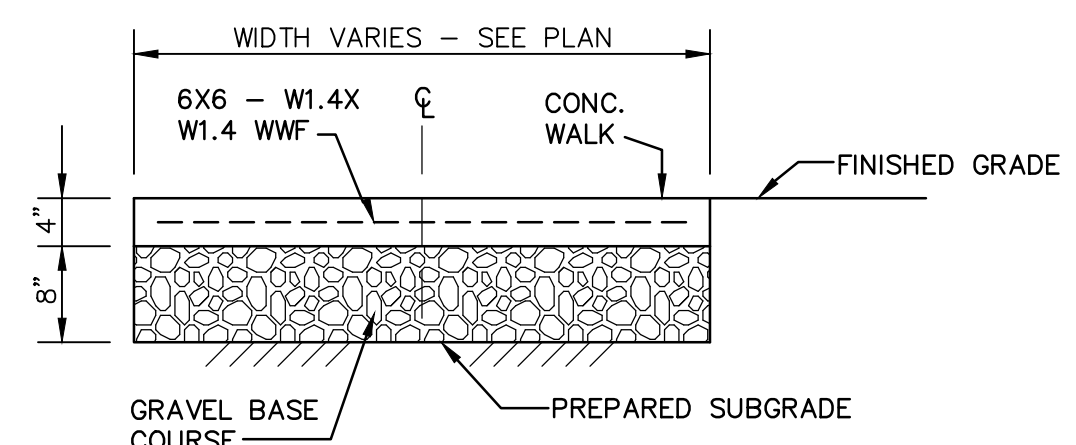
CLARIFIER FLUME OUTLET DETAIL
N.T.S.



PRE-CAST MANHOLE DETAIL
NOT TO SCALE



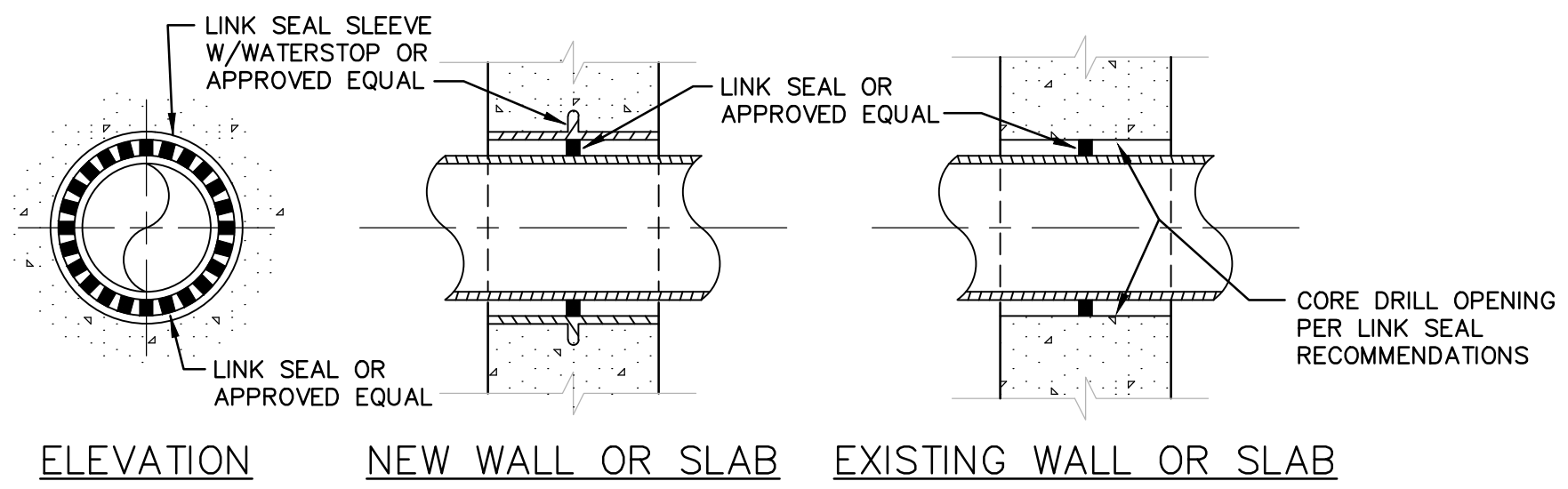
LONGITUDINAL SECTION



TRANSVERSE SECTION

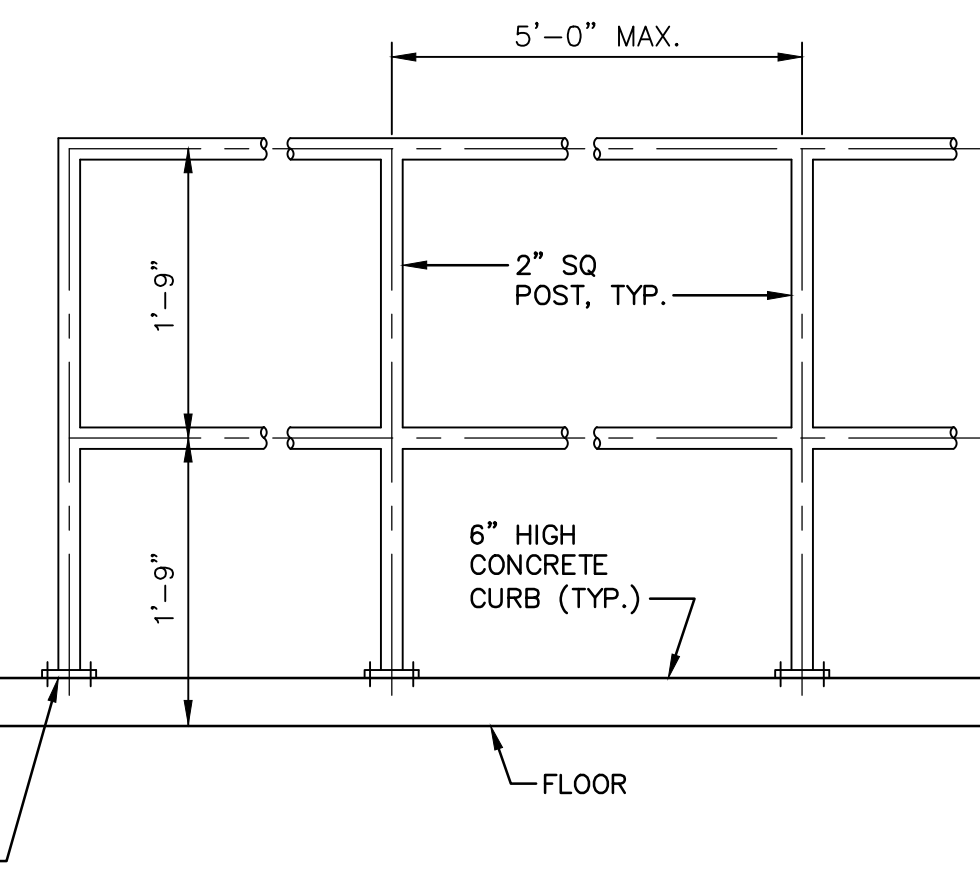
CONCRETE WALK ON GRADE
N.T.S.

- NOTES:
1. EXP. JT'S. TO BE 25'-0" MAX. C-C.
2. SCORE CONC. @5'-0" INTERVALS.

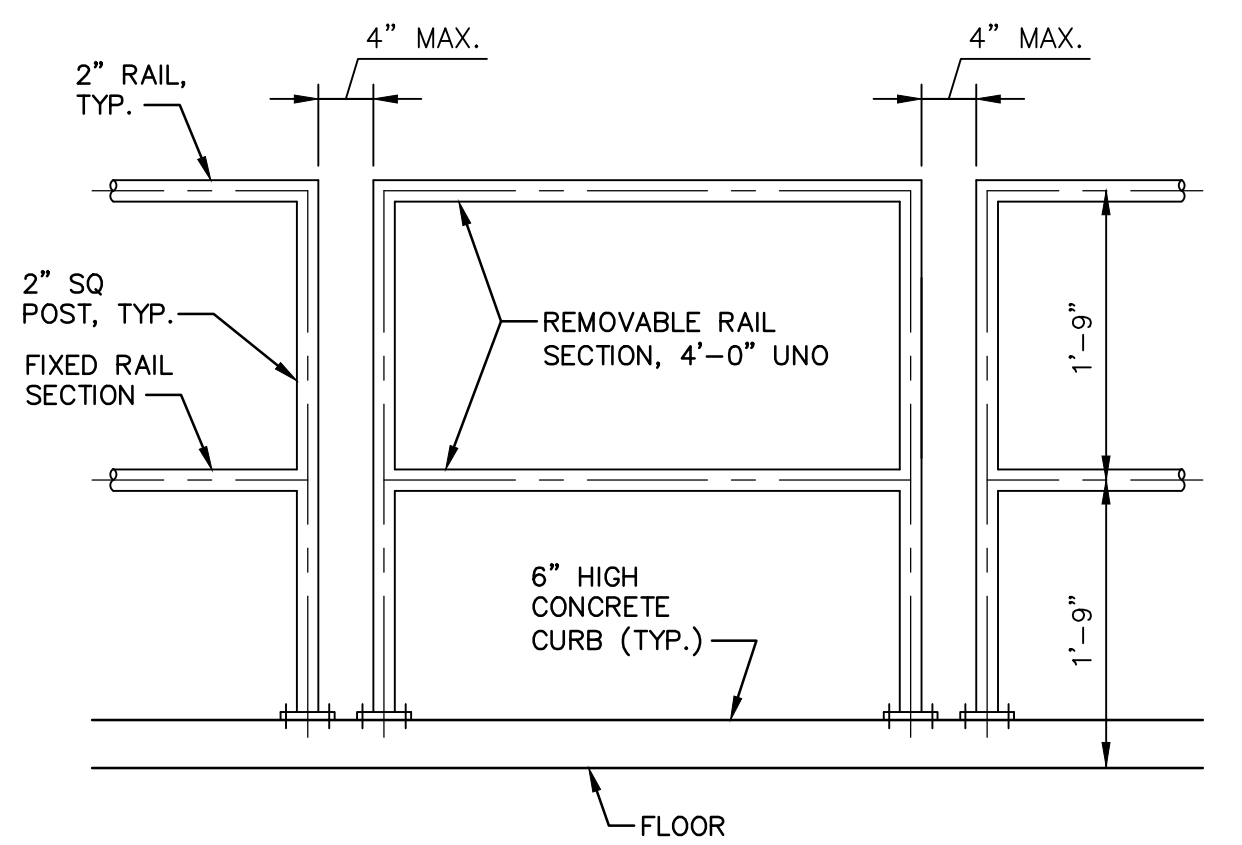


LINK SEAL TYPE WALL/SLAB PENETRATION
N.T.S.

NOTE:
CLOSE OPENING AFTER PIPING INSTALLATION W/ A NON-SHRINKING, NON-METALLIC EMBECCO GROUT.

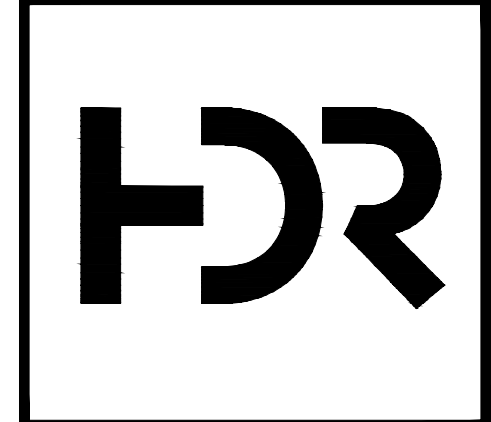


SURFACE MOUNTED RAILING



SURFACE MOUNTED REMOVABLE RAILING

ALUMINUM HANDRAIL DETAILS
N.T.S.



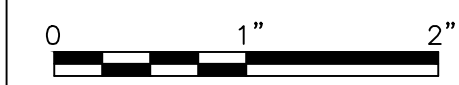
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| PROJECT MANAGER | PLE |
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| DRAWN | CPL |
| CHECKED | QA/QC |
| DATE | MAY 2014 |
| PROJECT NUMBER | 227513 |



**TARTAN FIELDS WRF
FILTER REPLACEMENT**

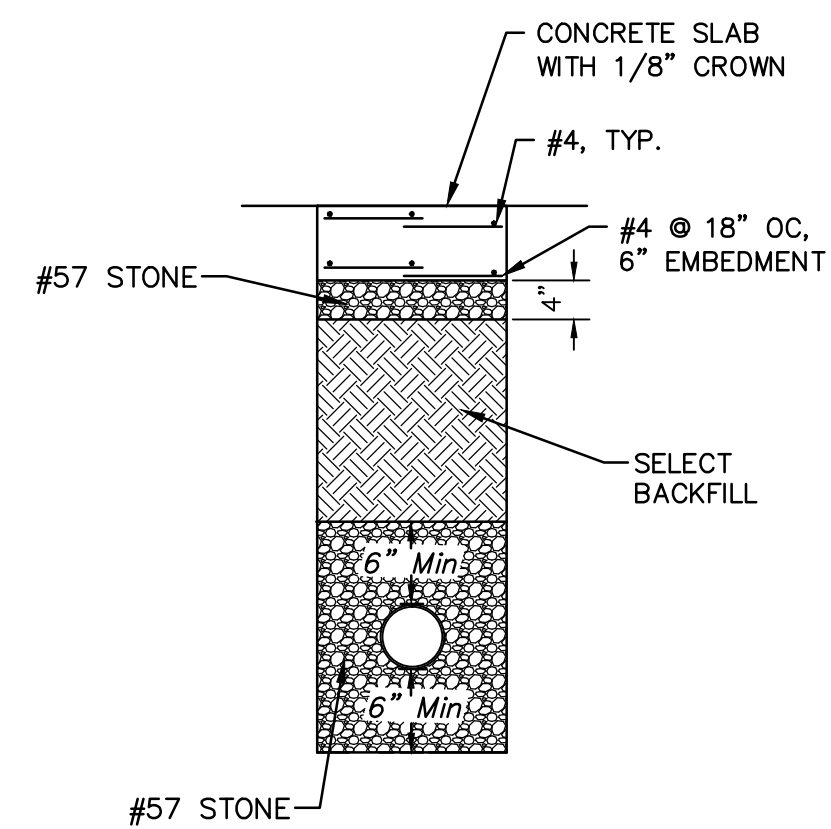
PROCESS - STANDARD DETAILS



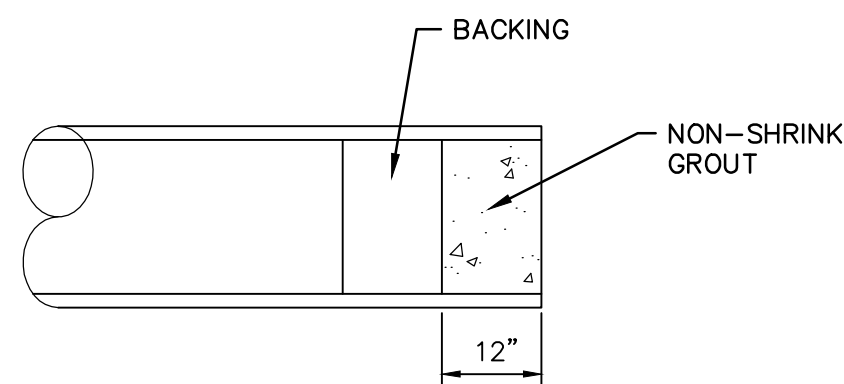
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| SCALE | AS SHOWN |

SHEET
P-6

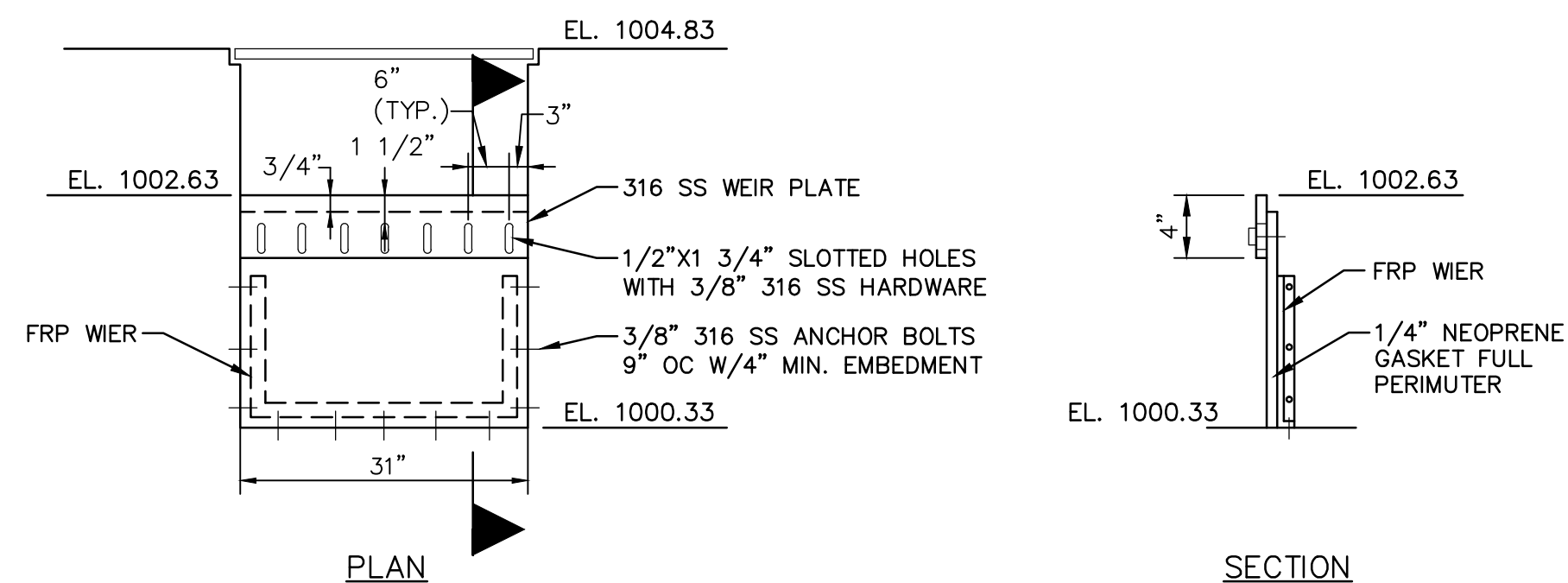
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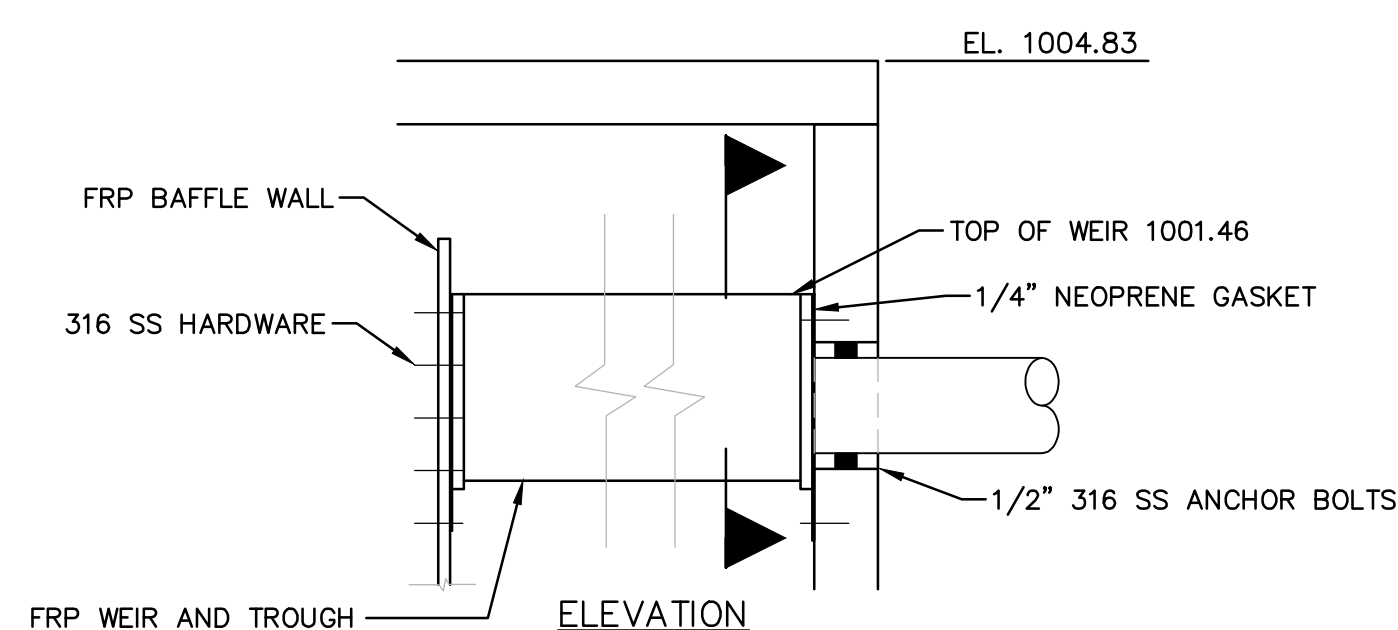
INTERIOR PIPE TRENCH AND SLAB REPAIR DETAIL
N.T.S.



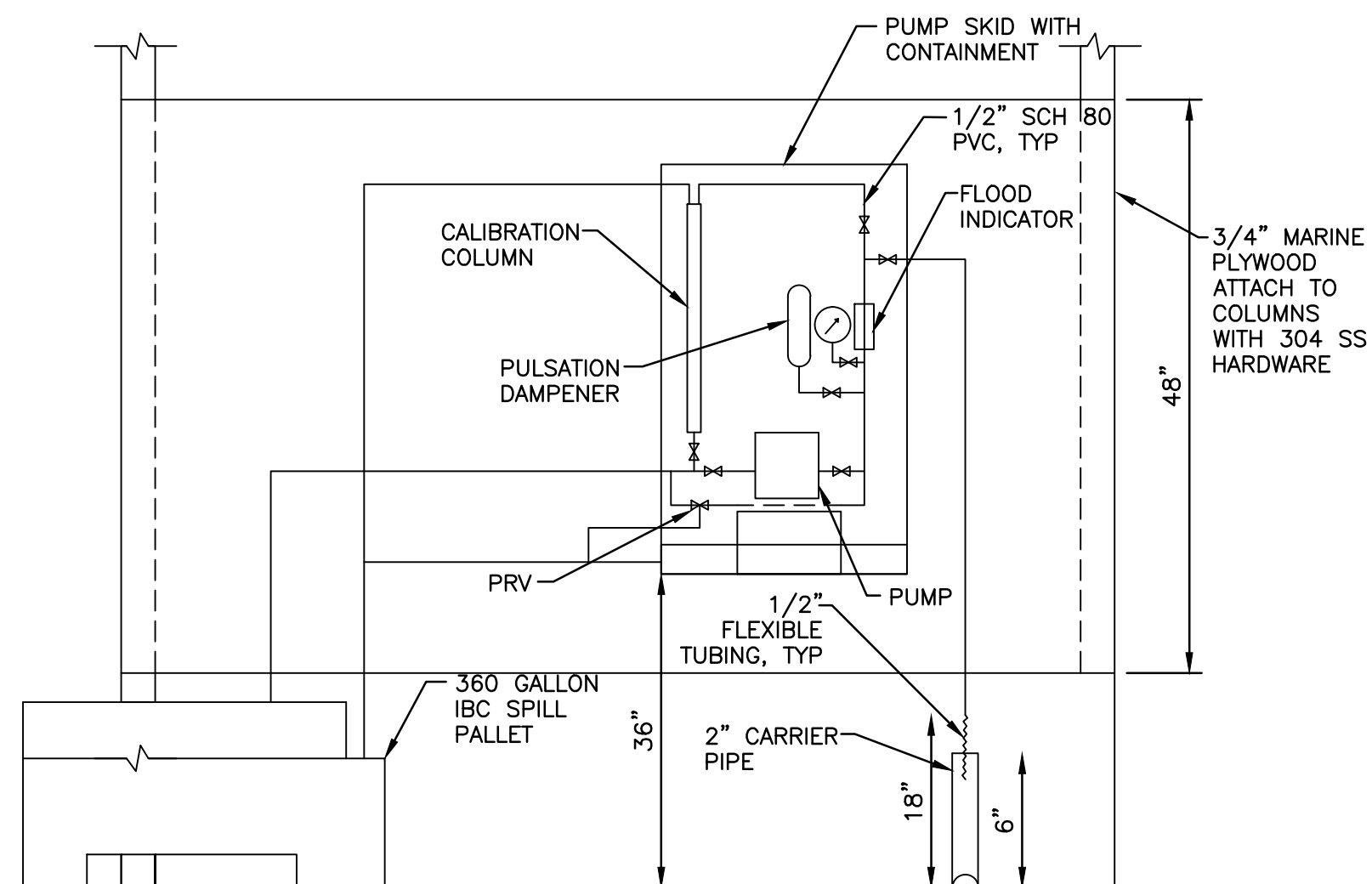
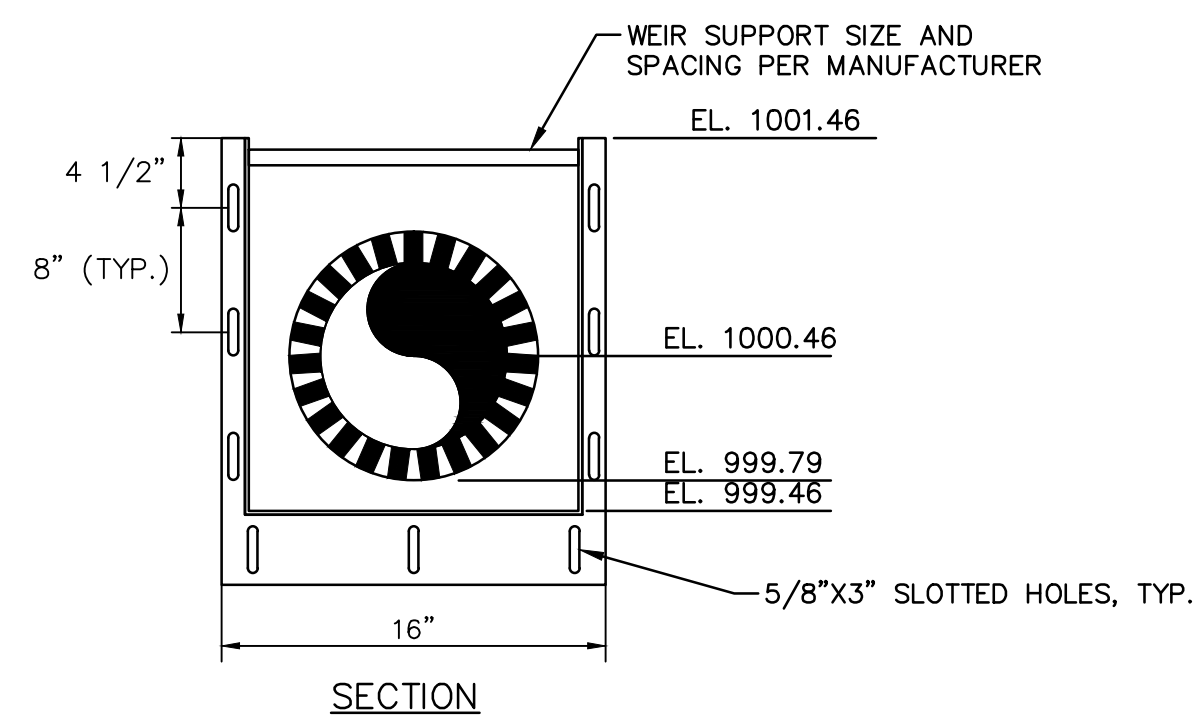
PIPE PLUG DETAIL
N.T.S.



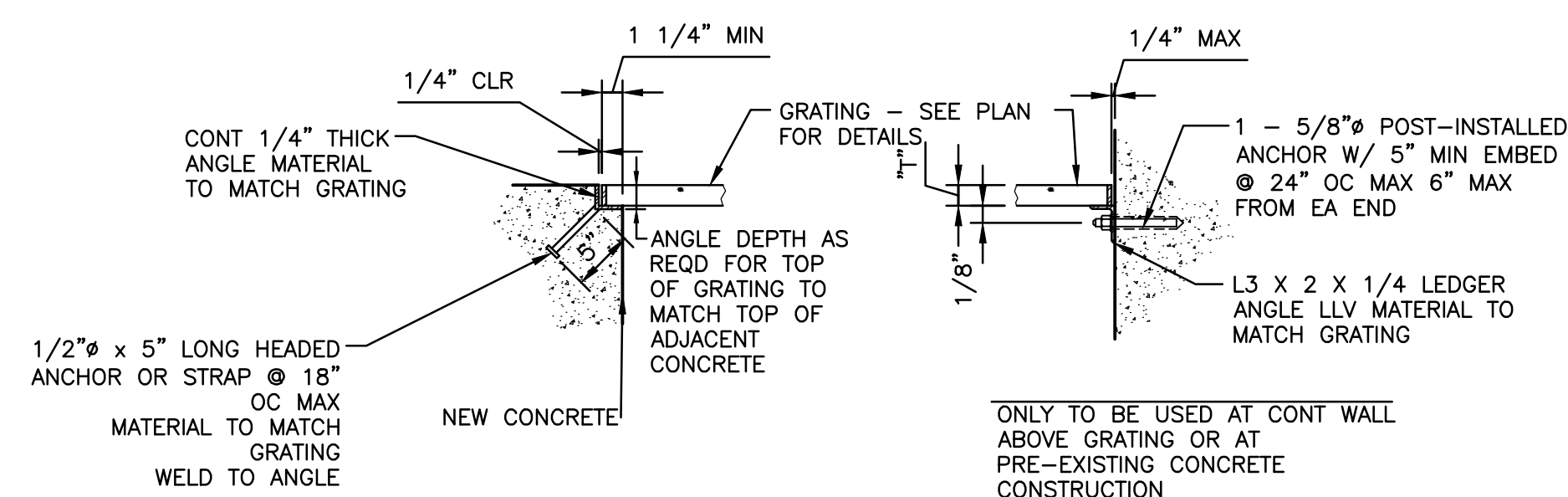
FILTER EFFLUENT CHANNEL WEIR DETAIL
N.T.S.



CHLORINE CONTACT TANK WEIR DETAIL
N.T.S.



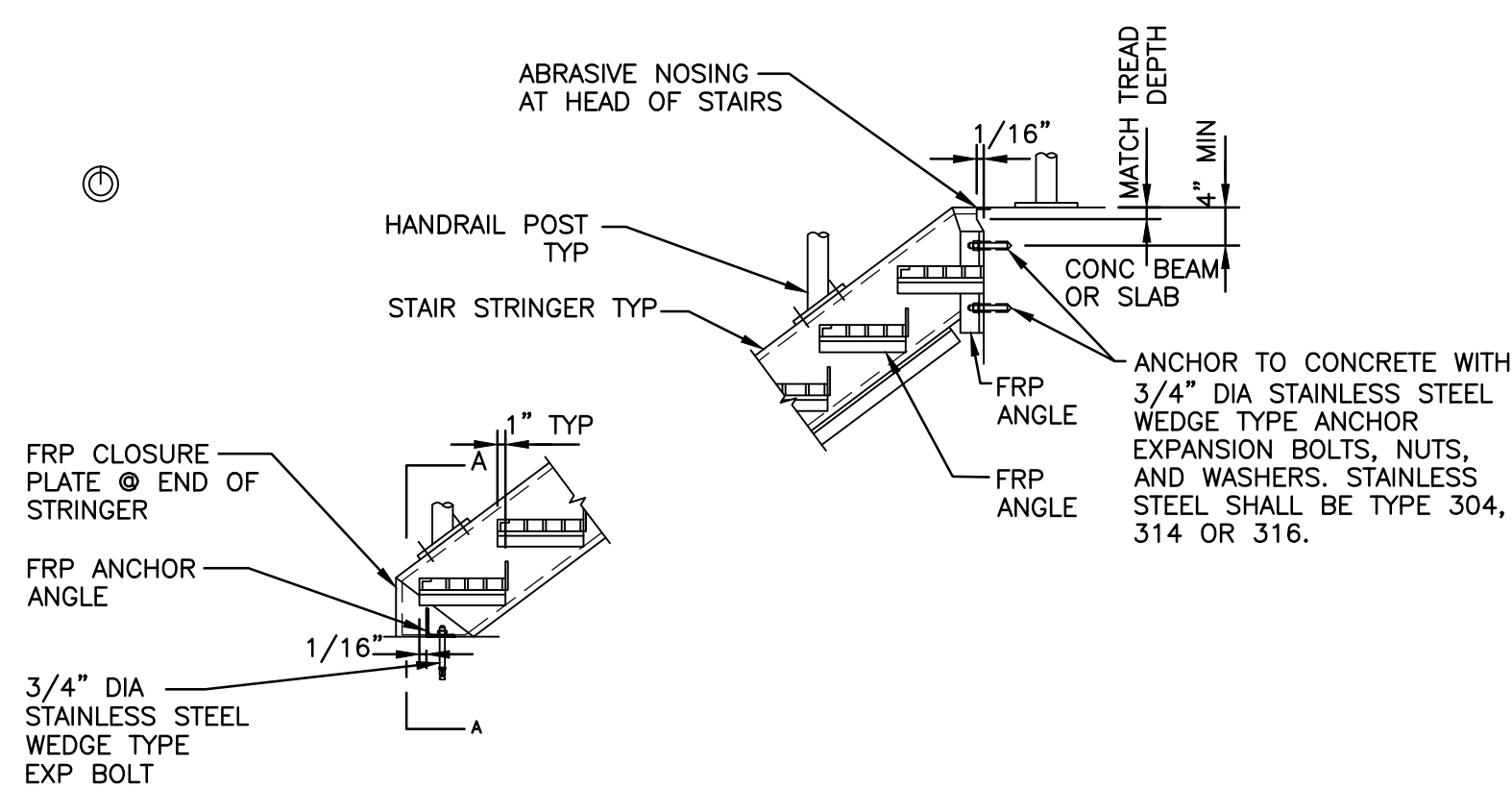
LIQUID CHEMICAL FEED SYSTEM
N.T.S.



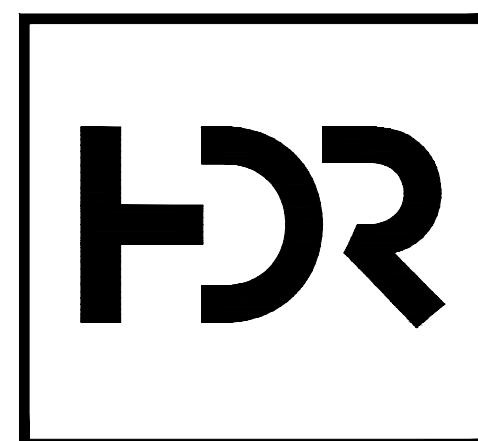
NOTES:

1. GRATING SIZE PER CONTRACT DOCUMENTS.
2. ALL ENDS AND OPENINGS SHALL BE BANDED, SEE SPECIFICATION.
3. ATTACH GRATING TO ALL SUPPORT ANGLES WITH BOLTED CLIPS, SPACED AT 2'-0" MAX CENTERS.
4. PROVIDE DISSIMILAR MATERIAL PROTECTION FOR ALUMINUM IN CONTACT WITH CONCRETE PER SPECIFICATION.

GRATING AND SUPPORT DETAIL
N.T.S.



STAIR DETAIL
N.T.S.



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| PROJECT MANAGER | PLE |
| DESIGNED | PLE |
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| QA/QC | |
| DATE | MAY 2014 |
| PROJECT NUMBER | 227513 |



**TARTAN FIELDS WRF
FILTER REPLACEMENT**

PROCESS - STANDARD DETAILS



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P-7

GENERAL STRUCTURAL NOTES

ABBREVIATIONS

STRUCTURAL DESIGN CRITERIA

1. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE FOLLOWING DESIGN CODES:

- A. ACI 350R-06, "ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES".
- B. ACI 318-05, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
- C. OHIO BUILDING CODE, 2011 EDITION.

DESIGN LOADS

ALL BUILDINGS AND STRUCTURES SHALL BE DESIGNED FOR OCCUPANCY CATEGORY III IN ACCORDANCE WITH ASCE 7-05. (TYPICAL UNLESS NOTED)

1. DEAD LOADS

- A. IN ACCORDANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS ASCE 7-05, "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."

2. LIVE LOADS

- A. THE FOLLOWING LIVE LOADS ARE AS RECOMMENDED IN ACI 350R-01, "ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES".

| | |
|---|--------------------------------|
| ELEVATED SLABS (NOT SUBJECT TO VEHICULAR TRAFFIC) | 100 PSF UNLESS NOTED OTHERWISE |
| ROOF LIVE LOAD | 20 psf |
| GROUND SNOW LOAD | 20 psf |
| FLAT ROOF SNOW LOAD | 22 psf |

3. LATERAL LOADS

- A. EARTHQUAKE LOADS

| | |
|--------------------------------------|--|
| SEISMIC USE GROUP | III |
| SPECTRAL RESPONSE COEFFICIENTS | |
| S _s | .187 |
| S ₁ | .057 |
| S _{0.5} | .199 |
| S _{0.1} | .091 |
| SITE CLASS | D |
| SEISMIC DESIGN CATEGORY | B |
| BASIC SEISMIC-FORCE-RESISTING SYSTEM | ORDINARY REINFORCED MASONRY SHEAR WALL |
| DESIGN BASE SHEAR | .125 x DEAD LOAD |
| ANALYSIS PROCEDURE | EQU. LATERAL FORCE |

- B. WIND LOADS, BASIC WIND SPEED 90 M.P.H.

4. FLOTATION

- A. THE STRUCTURES HAVE BEEN DESIGNED TO RESIST FLOTATION BASED GROUND WATER ELEVATION EQUAL TO THE GRADE ADJACENT TO THE STRUCTURE.
- B. EXCEPT WHERE GROUND WATER RELIEF VALVES HAVE BEEN INDICATED, THE STRUCTURES HAVE BEEN DESIGNED TO RESIST FLOTATION UTILIZING THE BUOYANT WEIGHT OF THE SOIL ABOVE THE TOE. THIS FINISH GRADE MUST BE SUCH THAT THE DEPTH OF SOIL ABOVE THE TOE IS NOT LESS THAN THAT INDICATED.
- C. SITE DRAINAGE MUST BE MAINTAINED TO PREVENT PONDING AROUND THE STRUCTURES, BOTH DURING AND AFTER CONSTRUCTION.

STRUCTURAL STEEL

- ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A992, UNLESS OTHERWISE NOTED.
- ALL STRUCTURAL STEEL BOLTS SHALL BE 3/4 INCH DIAMETER ASTM A325, UNLESS OTHERWISE NOTED.
- ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO AISC PUBLICATION "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", UNLESS OTHERWISE NOTED.
- ALL HEADED STUD ANCHORS SHALL BE "NELSON STUD" OR APPROVED EQUAL.
- ALL WELDING SHALL BE CONDUCTED WITH E70XX ELECTRODES IN ACCORDANCE WITH AMERICAN WELDING SOCIETY(AWS) LATEST CODE.
- ALL ANCHOR RODS SHALL BE ASTM F1554 GR.36..

CAST IN PLACE CONCRETE

- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS.
- ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE ACI 318-05 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE CONSTRUCTION" AND ALL DETAILS SHALL CONFORM TO THE LATEST EDITION OF THE "ACI DETAILING MANUAL" FOR REINFORCED CONCRETE STRUCTURES.
- THE DESIGN AND CONSTRUCTION OF ALL ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES SHALL BE IN ACCORDANCE WITH ACI 350R-01, "ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES".
- ALL REINFORCING STEEL SHALL BE GRADE 60 DEFORMED TYPE CONFORMING TO ASTM A615.
- SPLICES IN CONTINUOUS VERTICAL OR HORIZONTAL REINFORCING STEEL SHALL BE CLASS "B" LAP SPLICE UNLESS OTHERWISE NOTED. ALL REINFORCING STEEL SHALL BE CONTINUOUS OR LAPPED WITH DOWELS AT CORNERS.
- UNLESS OTHERWISE INDICATED, ALL CONCRETE COVER SHALL BE AS FOLLOWS:
 - A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
 - B. CONCRETE CAST WITH FORMS AND EXPOSED TO EARTH, WATER, OR SEWAGE 2"
 - C. ALL OTHER CONCRETE 1 1/2"
- ALL NON-SHRINK GROUT SHALL BE NON-METALLIC TYPE AND SHALL CONFORM TO CRD-C 621, FACTORY PRE-MIXED.

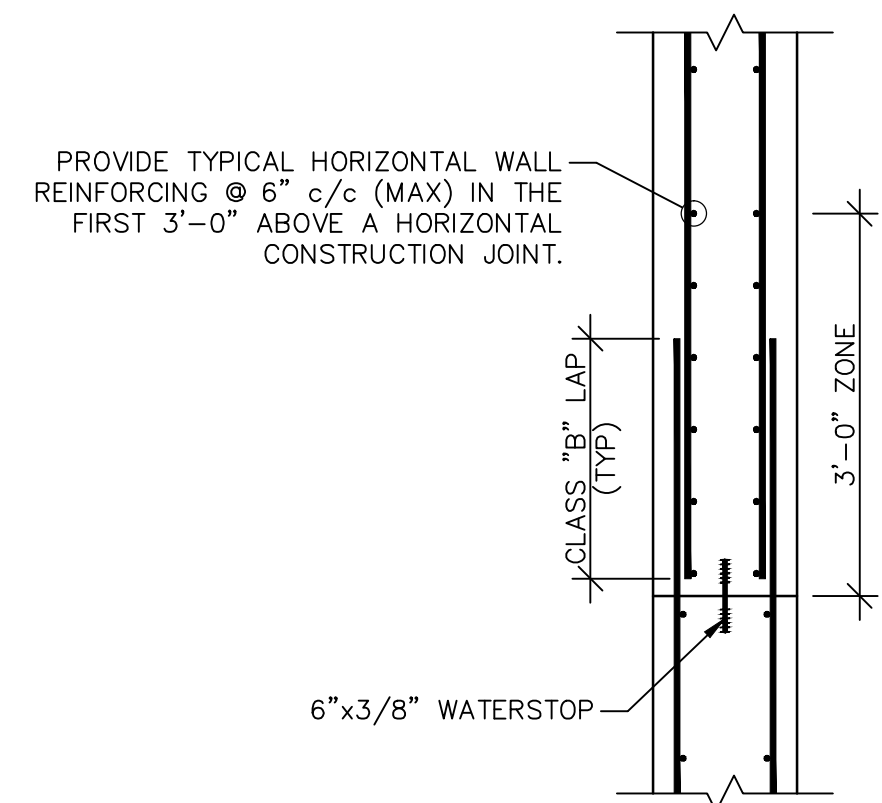
CRACK REPAIR OF NEW CONCRETE

- THIS STRUCTURE HAS BEEN DESIGNED TO MINIMIZE CRACKING, PER THE REQUIRMENTS OF ACI 350-06 AND ACI 350.4R-04. THE CONTRACTOR SHOULD CLOSELY FOLLOW THE PROJECT SPECIFICATIONS AND UTILIZE CONSTRUCTION PRACTICES TO MINIMIZE CONCRETE CRACKS. WITH THAT SAID, CRACKING OF NEW CONCRETE IS INEVITABLE.
- ALL CRACKS THAT ARE ACTIVELY LEAKING OR THOSE WIDER THAN 0.010 INCH THAT OCCUR DURING THE PROJECT WARRANTY PERIOD SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
- ALL CRACK REPAIRS SHALL COMPLY WITH THE REQUIREMENTS INCLUDED IN ACI 546R-04, "CONCRETE REPAIR GUIDE" AND ACI 546.3R-06, "GUIDE FOR THE SELECTION OF MATERIALS FOR THE REPAIR OF CONCRETE."
- THE CONTRACTOR SHALL SUBMIT PROPOSED REPAIR METHODS TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO CONDUCTING ANY REPAIR WORK.

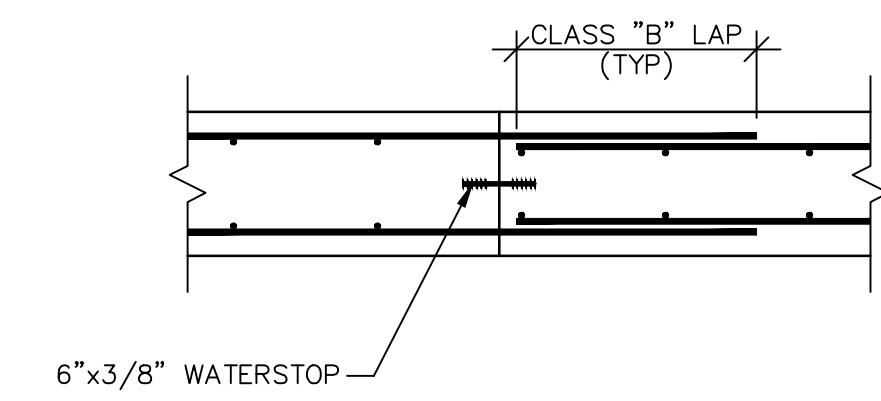
GENERAL

- ALL TRADES SHALL REFER ALL APPLICABLE DRAWINGS FOR QUANTITY, LOCATION AND SIZE OF ALL OPENINGS AND EQUIPMENT PENETRATIONS.
- IT IS THE GENERAL CONTRACTORS RESPONSIBILITY TO COORDINATE ALL OPENING SIZES AND LOCATIONS.
- ALL CONSTRUCTION JOINTS IN VESSELS TO HAVE WATERSTOPS. PROVIDE EXPANDABLE WATERSTOPS @ EXPANSION JOINTS.
- ALL WATER STOPS SHALL BE 6" LONG BY 3/8" THICK PVC TYPE, UNLESS NOTED OTHERWISE.

| | | | |
|-----------|--|-------|------------------------|
| ⊙ | AT | GA | GAUGE |
| AB | ANCHOR BOLT | GR | GRADE |
| ACI | AMERICAN CONCRETE INSTITUTE | ID | INSIDE DIAMETER |
| AFF | ABOVE FINISHED FLOOR | JT | JOINT |
| AISC | AMERICAN INSTITUTE OF STEEL CONSTRUCTION | LB | POUND |
| ALUM | ALUMINUM | LL | LIVE LOAD |
| APPROX | APPROXIMATE | MAX | MAXIMUM |
| BM. BRNG. | BEAM BEARING | MTL | METAL |
| BM. | BEAM | MFR | MANUFACTURER |
| BOF | BOTTOM OF FOOTING | MIN | MINIMUM |
| BRG | BEARING | MISC | MISCELLANEOUS |
| B1 | BEAM DESIGNATION | OC | ON CENTER |
| C/C | CENTER TO CENTER | PCF | POUNDS PER CUBIC FOOT |
| CU FT | CUBIC FOOT | PSF | POUNDS PER SQUARE FOOT |
| COL | COLUMN | PSI | POUNDS PER SQUARE INCH |
| CONC | CONCRETE | REINF | REINFORCING |
| CONST | CONSTRUCTION | REQ'D | REQUIRED |
| CONT | CONTINUOUS | RET | RETAINING |
| CY | CUBIC YARD | SCHED | SCHEDULE |
| DBL | DOUBLE | SECT | SECTION |
| DET | DETAIL | SIM | SIMILAR |
| DIA | DIAMETER | SQ | SQUARE |
| DL | DEAD LOAD | STIR | STIRRUP |
| DWGS | DRAWINGS | STL | STEEL |
| EA | EACH | THD | THREAD |
| EF | EACH FACE | T & B | TOP AND BOTTOM |
| EJ | EXPANSION JOINT | TOB | TOP OF BEAM |
| EL | ELEVATION | TOC | TOP OF CONCRETE |
| ENGR | ENGINEER | TOF | TOP OF FOOTING |
| EQUIP | EQUIPMENT | TOS | TOP OF STEEL |
| EW | EACH WAY | TOW | TOP OF WALL |
| EXIST | EXISTING | TYP | TYPICAL |
| EXP | EXPANSION | UNO | UNLESS NOTED OTHERWISE |
| FND | FOUNDATION | VERT | VERTICAL |
| FL | FLOOR | WP | WORKING POINT |
| FTG | FOOTING | WWF | WELDED WIRE FABRIC |
| FFL | FINISHED FLOOR | W/ | WITH |

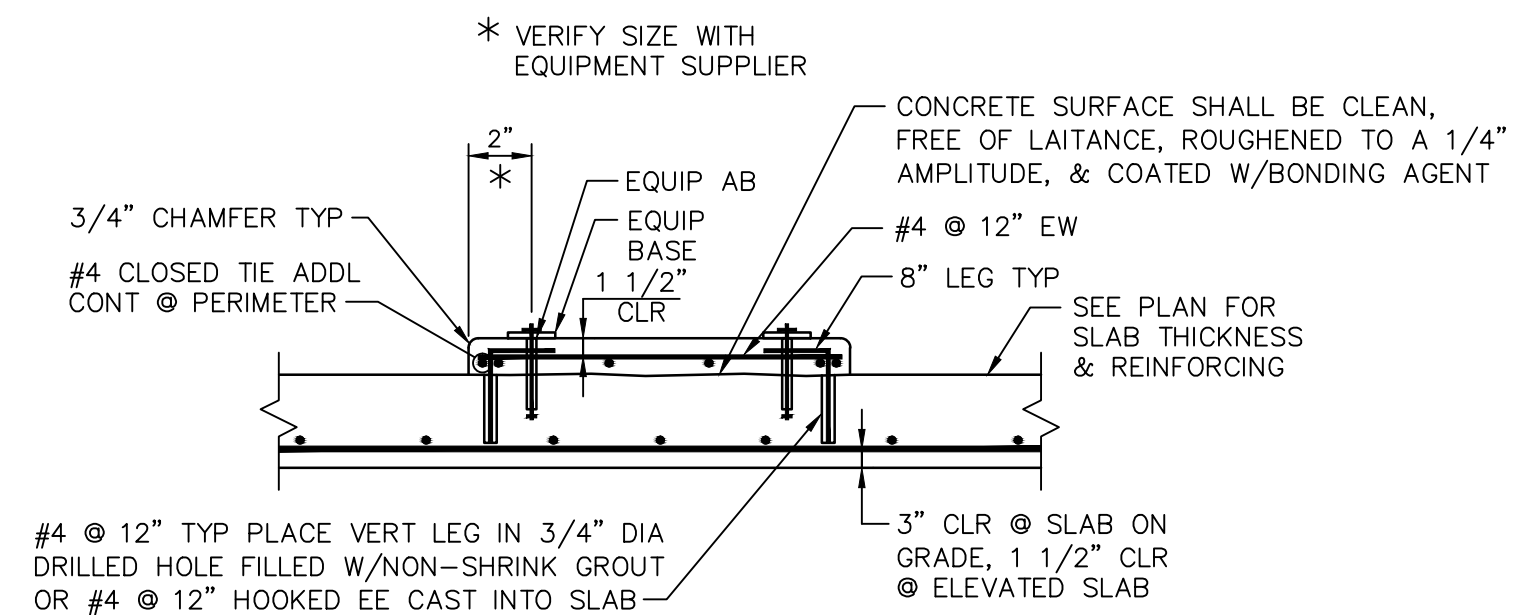


HORIZONTAL CONSTRUCTION JOINT
ELEVATION VIEW



VERTICAL CONSTRUCTION JOINT
PLAN VIEW

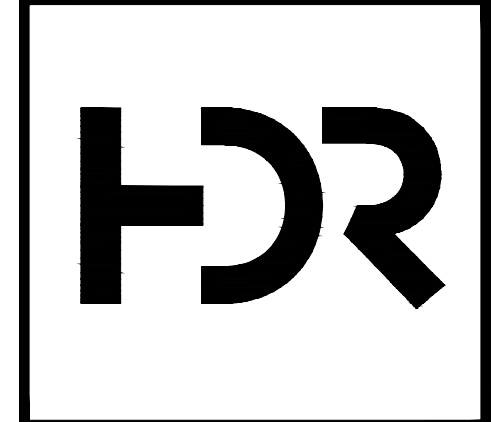
TYPICAL CONSTRUCTION JOINTS



EQUIPMENT PAD

| SIZE | CONCRETE COVER ≥ 1.5" | | MASONRY |
|------|-----------------------|-------|---------|
| | TOP | OTHER | |
| #3 | 21 | 16 | 18" |
| #4 | 21 | 16 | 24" |
| #5 | 26 | 20 | 30" |
| #6 | 36 | 28 | 36" |
| #7 | 61 | 47 | - |
| #8 | 80 | 62 | - |
| #9 | 90 | 69 | - |
| #10 | 100 | 77 | - |
| #11 | 111 | 85 | - |

NOTE: TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BARS.



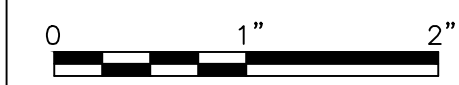
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| DATE | APRIL 2014 |
| PROJECT NUMBER | 227513 |



**TARTAN FIELDS WRF
FILTER REPLACEMENT**

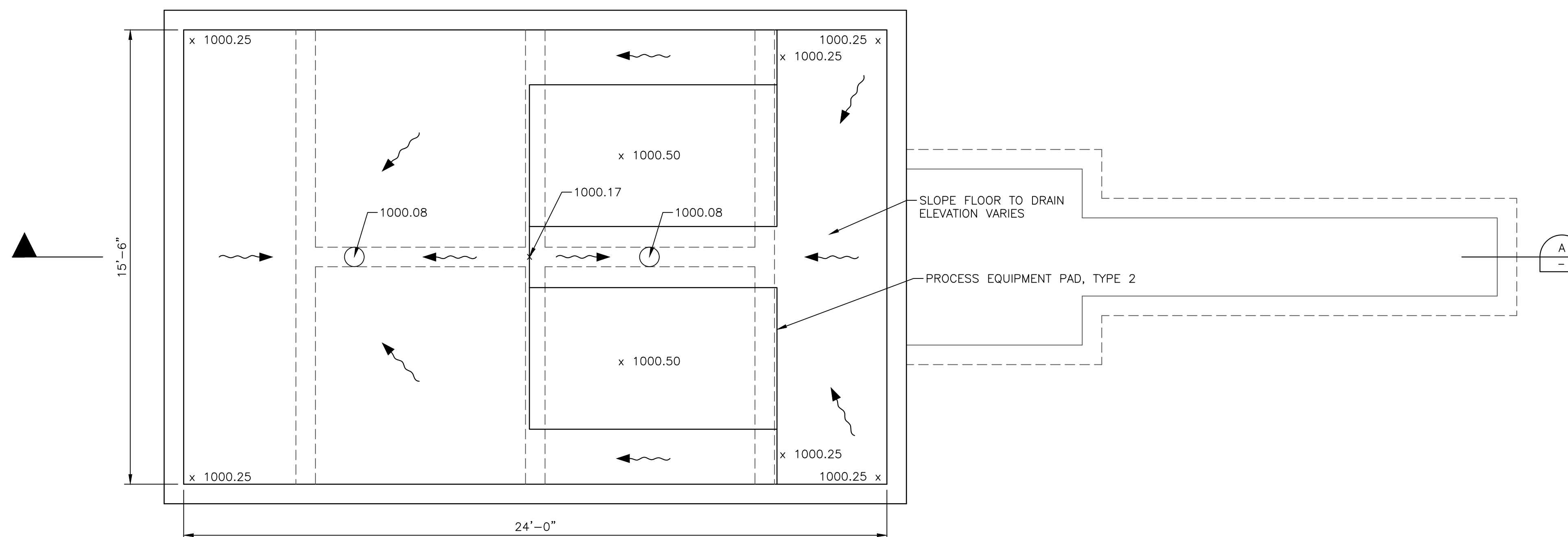
GENERAL NOTES AND DETAILS



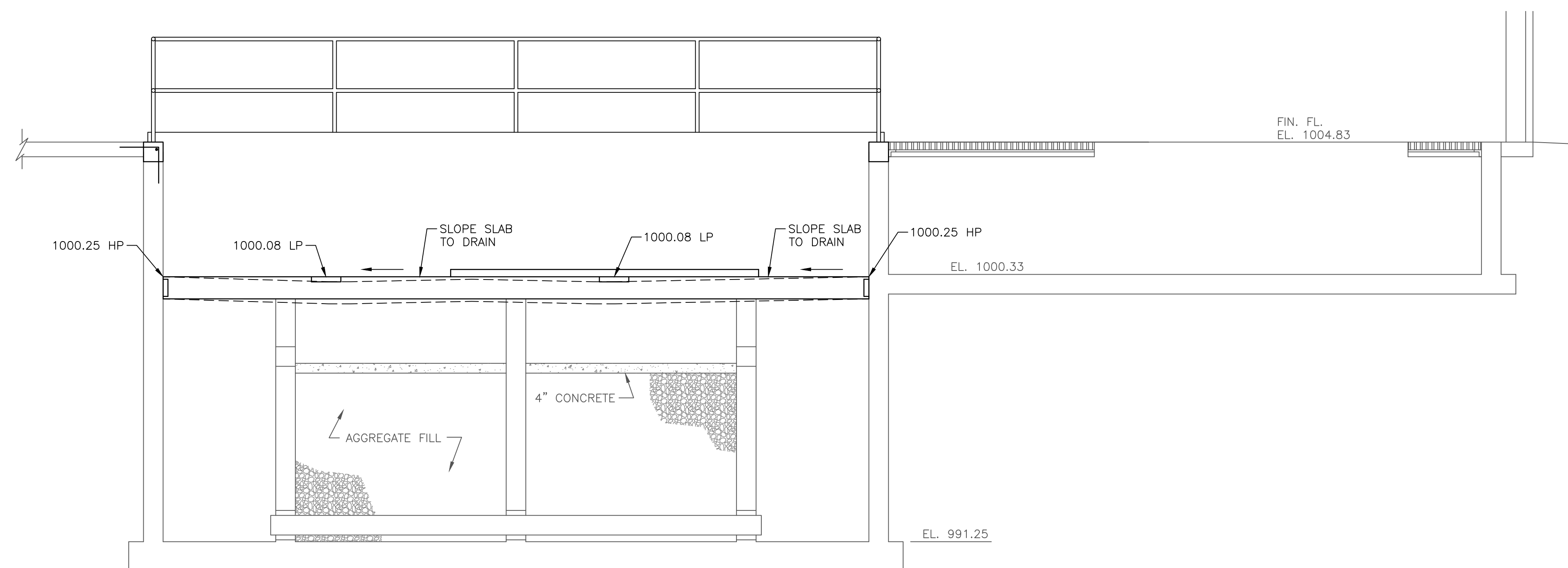
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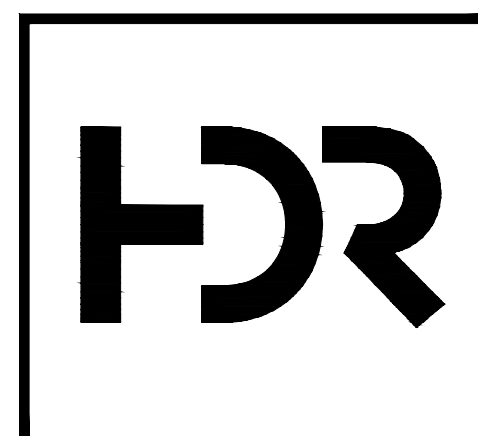
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STRUCTURAL PLAN
3/8"=1'-0"



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| DATE | APRIL 2014 |
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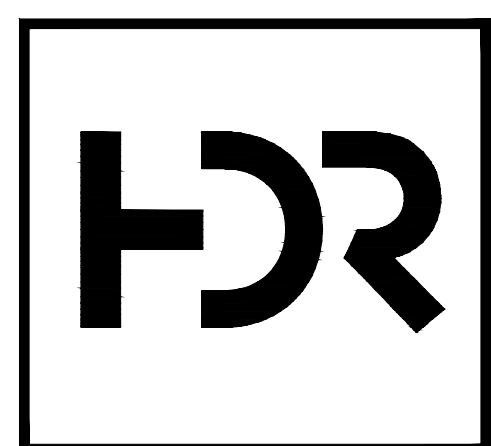
TARTAN FIELDS WRF
FILTER REPLACEMENT

STRUCTURAL - PLAN AND SECTION

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| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | LIGHT FIXTURE SCHEDULE | | | | ABBREVIATION | DESCRIPTION |
|--------|---|--------|--|--|--------------|----------------|-------------|---|--|
| | | | | TYPE | MANUFACTURER | CATALOG NUMBER | DESCRIPTION | | |
| | EMERGENCY LIGHT FIXTURE (ADJUSTABLE, DOUBLE-HEAD) | | INDICATES TERMINALS FOR REMOTE WIRING | <p style="text-align: center;">GENERAL NOTES</p> <ol style="list-style-type: none"> ALL DISCONNECT SWITCHES SHALL BE MOUNTED ON 1" UNISTRUT TO PROVIDE AN AIR SPACE AT THE REAR. ALL RUNS OF NON-METALLIC CONDUIT SHALL HAVE AN EXTRA WIRE PULLED FOR GROUNDING. ALL INSTRUMENT CASES AND PANELS SHALL BE GROUNDED. BOND ALL CONDUITS, ENCLOSURES, AND GROUND WIRE TO FORM A CONTINUOUS GROUND. ALL CONDUITS ENTERING AND LEAVING INSTRUMENT CASES SHALL BE SEALED WITH SILICONE AROUND THE WIRES TO PRECLUDE THE ENTRANCE OF WATER CONDENSATION. WHERE ALUMINUM IS IN CONTACT WITH CONCRETE, THE CONTRACTOR SHALL PAINT THE ALUMINUM WITH BITUMASTIC #50 COATING, OR EQUIVALENT. SOME OF THE CONTROL WIRING IS NOT SHOWN ON THE PLANS, HOWEVER THIS DOES NOT RELIEVE THE CONTRACTOR FROM INSTALLING THE CONDUIT AND WIRE FROM DEVICE TO DEVICE, OR FROM DEVICE TO CONTROLLER AS REQUIRED BY THE SPECIFICATIONS. ALL FINAL CONNECTIONS TO MOTORS TO BE IN PVC COATED FLEXIBLE CONDUIT UNLESS OTHERWISE NOTED. | | | | AFF AFG CKT DISC DN EF EOP EOS EUH EWH EXP FOR FVNR FVR GFI GND HOA HOR HP JB LF LP MCC MH MLO NC NO OC OH OHP OL PP PS PSH PSL RGS SW TOL UG UGP UGS W/ WP | ABOVE FINISHED FLOOR TO CENTERLINE ABOVE FINISHED GRADE TO CENTERLINE CIRCUIT DISCONNECT DOWN EXHAUST FAN EXISTING OVERHEAD PRIMARY EXISTING OVERHEAD SECONDARY ELECTRIC UNIT HEATER ELECTRIC WALL HEATER OR ELECTRIC WATER HEATER EXPLOSION PROOF FORWARD-OFF-REVERSE FULL VOLTAGE, NON-REVERSING FULL VOLTAGE, REVERSING GROUND FAULT INTERRUPTING GROUND HAND-OFF-AUTOMATIC SELECTOR SWITCH HAND-OFF-REMOTE SELECTOR SWITCH HORSEPOWER JUNCTION BOX LIGHTING FIXTURE (LUMINAIRE) LIGHTING PANEL MOTOR CONTROL CENTER MANHOLE MAIN LUGS ONLY NORMALLY CLOSED NORMALLY OPEN OPEN CONDUIT WITH PULL WIRE OVERHEAD OVERHEAD PRIMARY OVERLOAD OR OUTSIDE LIGHTING AS APPLICABLE POWER PANEL PRESSURE SWITCH PRESSURE SWITCH HIGH PRESSURE SWITCH LOW RIGID GALVANIZED STEEL SWITCH TORQUE OVERLOAD UNDERGROUND UNDERGROUND PRIMARY UNDERGROUND SECONDARY WITH WEATHERPROOF |
| | LIGHTING FIXTURE, ENCLOSED 2'x4' FLUORESCENT, RECESSED MOUNTED. DARK CENTER INDICATES EMERGENCY BATTERY AND BALLAST IN FIXTURE. | | DOT INDICATES A CONNECTION | | | | | | |
| | LIGHTING FIXTURE, FLUORESCENT, WALL MOUNTED | | AUDIBLE ALARM | | | | | | |
| | LIGHTING FIXTURE, FLUORESCENT, SURFACE OR PENDENT MOUNTED | | MOTOR STARTER COIL | | | | | | |
| | LIGHTING FIXTURE, WALL MOUNTED INCANDESCENT OR HID | | INDICATING LIGHT (R=RED, G=GREEN, A=AMBER) | | | | | | |
| | LIGHTING FIXTURE, CEILING MOUNT INCANDESCENT OR HID | | ELAPSED TIME METER | | | | | | |
| | LIGHTING FIXTURE, POLE MOUNTED INCANDESCENT OR HID | | SURGE SUPPRESSER (FOR STARTER COIL SURGE) | | | | | | |
| | EXIT LIGHT, WALL MOUNTED, SINGLE FACE, ARROW INDICATES DIRECTION. | | LIMIT SWITCH | | | | | | |
| | EXIT LIGHT, CEILING MOUNTED, DOUBLE FACE, ARROWS INDICATE DIRECTION | | TEMPERATURE SWITCH | | | | | | |
| | WALL SWITCH, 120-VOLT, 20-AMPERE, SINGLE POLE | | PRESSURE SWITCH | | | | | | |
| | WALL SWITCH, 120-VOLT, 20-AMPERE, 3-WAY | | FLOAT SWITCH | | | | | | |
| | 4-WAY LIGHT SWITCH. | | CAPACITOR | | | | | | |
| | WEATHERPROOF SWITCH | | THERMAL SENSOR | | | | | | |
| | OCCUPANCY SENSOR | | MOISTURE SENSOR | | | | | | |
| | POWER PACK | | SEAL ALARM | | | | | | |
| | CONDUIT CONCEALED IN WALL OR CEILING WHERE POSSIBLE, NUMBER AND SIZE OF WIRE AS INDICATED. 2-#12, 1-#12GND, 3/4" C. IF NOT NOTED. | | SOLENOID VALVE | | | | | | |
| | CONDUIT RUN BELOW FLOOR SLAB | | PRESSURE SWITCH | | | | | | |
| | HOME RUN TO PANEL LP. INDICATED AS CIRCUITS 4 | | FLOW INSTRUMENT TRANSMITTER | | | | | | |
| | CONDUIT TURNED UP | | PSL-PRESSURE SWITCH LOW; PSH-PRESSURE SWITCH HIGH | | | | | | |
| | CONDUIT TURNED DOWN | | TIME DELAY RELAY | | | | | | |
| | GROUND CONNECTION | | CONTROL RELAY (NO. 1 INDICATED) | | | | | | |
| | GROUND ROD. 10-FOOT LENGTH AND 3/4" DIA. UNLESS OTHERWISE NOTED | | DUPLEX RECEPTACLE, 20 AMP, 3-WIRE GROUNDING TYPE, NEMA 5-20R MOUNTED 16" AFF TO TOP OF BOX UNLESS OTHERWISE NOTED. GFI INDICATES GROUND FAULT INTERRUPTER TYPE RECEPTACLE. | | | | | | |
| | THERMOSTAT | | DUPLEX RECEPTACLE, 20 AMP, 3-WIRE GROUNDING TYPE, NEMA 5-20R MOUNTED 16" AFF TO TOP OF BOX UNLESS OTHERWISE NOTED. WP INDICATES WEATHERPROOF TYPE RECEPTACLE. | | | | | | |
| | HVAC CONTROL SWITCH | | 240V RECEPTACLE 16" AFF TO TOP OF BOX UNLESS OTHERWISE NOTED. | | | | | | |
| | TELEPHONE OUTLET, WALL MOUNTED FLUSH 16" AFF TO TOP OF BOX UNLESS OTHERWISE NOTED WITH 0" CONDUIT AND 4-PAIR CABLE TO TELEPHONE BACKBOARD | | 240V 30A DRYER RECEPTACLE 16" AFF TO TOP OF BOX UNLESS OTHERWISE NOTED. | | | | | | |
| | DATA OUTLET, WALL MOUNTED FLUSH 16" AFF TO TOP OF BOX UNLESS OTHERWISE NOTED WITH 0" CONDUIT AND 4-PAIR CAT 5E CABLE TO PLC-0B | | UTILITY POLE | | | | | | |
| | SELECTOR SWITCH | | JUNCTION BOX MOUNTED IN CEILING OR STRUCTURE SIZED PER NEC 370-6 | | | | | | |
| | PUSHBUTTON STATION | | MOTOR (5 HP INDICATED) | | | | | | |
| | UNDERGROUND CONDUIT AND WIRE | | MANUAL MOTOR STARTER, FRACTIONAL HORSEPOWER TYPE, WITH OVERLOAD PROTECTION. "XP" DENOTES EXPLOSION PROOF. | | | | | | |
| | DISCONNECT SWITCH | | GENERATOR | | | | | | |
| | FUSED DISCONNECT SWITCH | | COMBINATION MOTOR STARTER DISCONNECT SWITCH (FUSIBLE OR NON-FUSIBLE) | | | | | | |
| | THERMAL OVERLOAD PROTECTION | | ENCLOSURE NOTED WHEN OTHER THAN NEMA 1 | | | | | | |
| | RELAY CONTACTS (NORMALLY CLOSED) | | FUSE RATING | | | | | | |
| | RELAY CONTACTS (NORMALLY OPEN) | | STARTER SIZE - NEMA 00, 0, 1, 2, ETC. | | | | | | |
| | CIRCUIT BREAKER (MC-MOLDED CASE, MCP-MOTOR CIRCUIT PROTECTOR) | | POLES | | | | | | |
| | TRANSFORMER | | DISCONNECT SWITCH (FUSIBLE OR NON-FUSIBLE) | | | | | | |
| | GROUND | | ENCLOSURE NOTED WHEN OTHER THAN NEMA 1. | | | | | | |
| | CAPACITOR | | FUSE SIZE WHERE USED.* | | | | | | |
| | | | SWITCH AMP RATING 1-30A 4-200A 2-60A 5-400A 3-100A 6-600A | | | | | | |
| | | | VOLTAGE RATING 2-240V 6-600V | | | | | | |
| | | | POLES *WHEN NON-FUSED, DESIGNATION SHOWN AS 361//3R | | | | | | |

CIRCUIT CALLOUTS



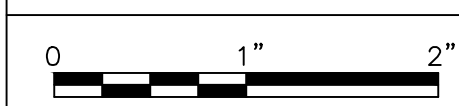
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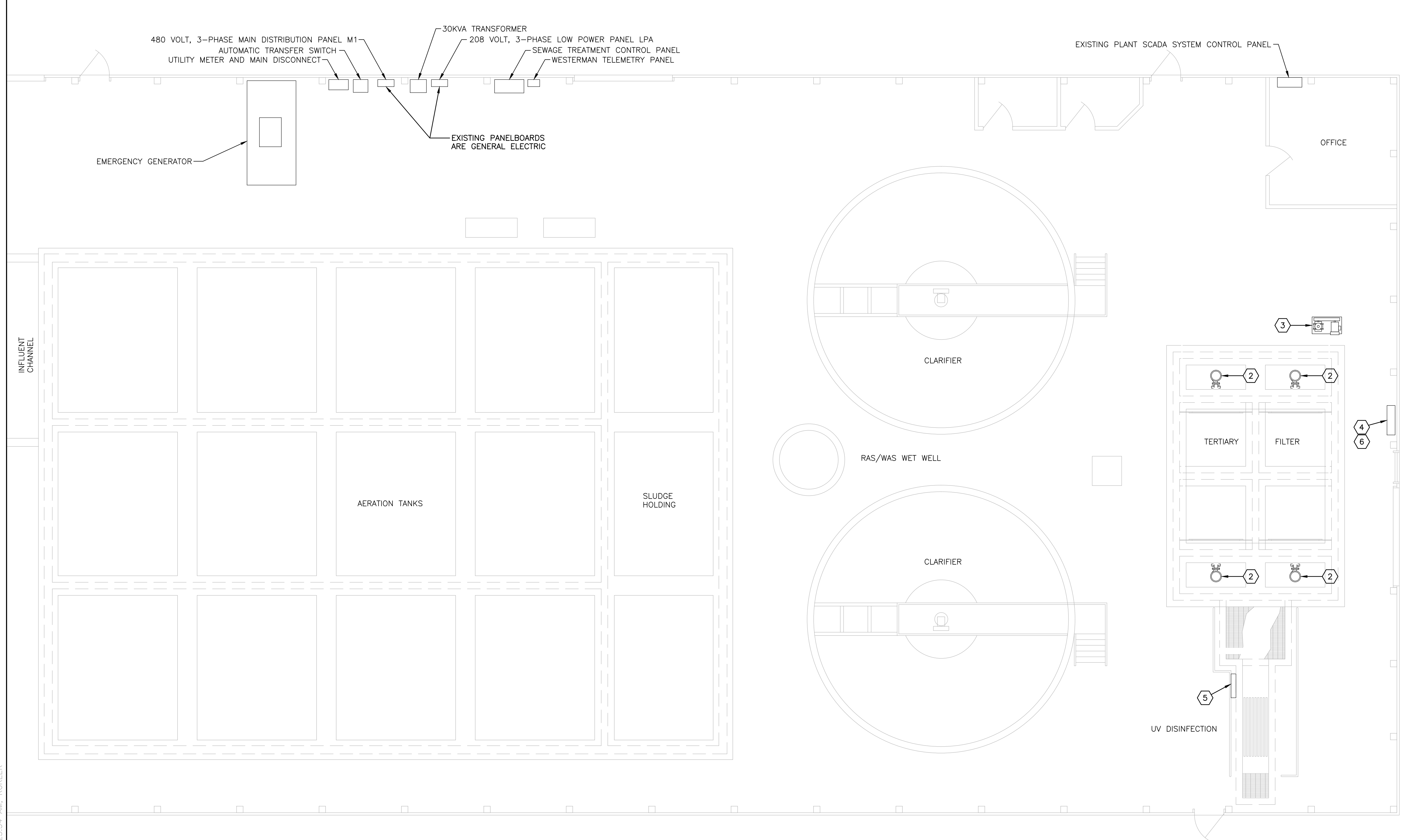
**TARTAN FIELDS WRF
FILTER REPLACEMENT**

**ELECTRICAL - SYMBOL LEGEND
AND LIGHT FIXTURE SCHEDULE**



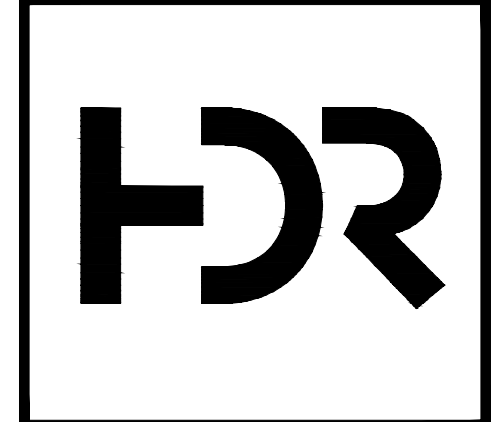
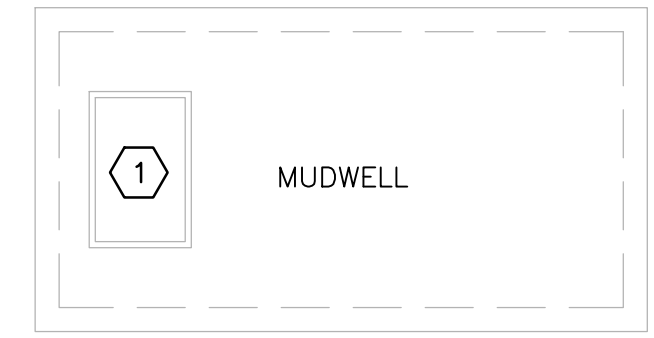
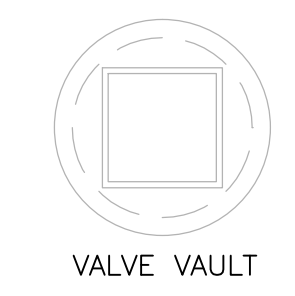
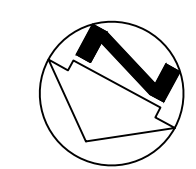
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- KEY NOTES**
- 1 EXISTING SUBMERSIBLE MUD PUMPS TO BE REMOVED. DISCONNECT FEEDERS FROM FILTER CONTROL PANEL, SEE NOTE 4 BELOW, AND PULL OUT CONDUCTORS. REMOVE ALL EXPOSED CONDUIT AND ABANDON CONCEALED CONDUIT IN PLACE. DISCONNECT PUMP AND FLOAT CABLES AND REMOVE TWO DISCONNECT SWITCHES, AND CONTROL JUNCTION BOX COMPLETE.
 - 2 EXISTING SUBMERSIBLE RAS PUMP TO BE REMOVED, TYPICAL OF FOUR. DISCONNECT FEEDERS FROM FILTER CONTROL PANEL, SEE NOTE 4 BELOW, AND PULL OUT CONDUCTORS. REMOVE ALL EXPOSED CONDUIT AND ABANDON CONCEALED CONDUIT IN PLACE. DISCONNECT PUMP POWER AND CONTROL CABLES AND REMOVE JUNCTION BOXES COMPLETE.
 - 3 EXISTING AIR SCOUR BLOWER TO BE REMOVED. DISCONNECT FEEDER FROM FILTER CONTROL PANEL, SEE NOTE 4 BELOW, AND PULL OUT CONDUCTORS. REMOVE ALL EXPOSED CONDUIT AND ABANDON CONCEALED CONDUIT IN PLACE.
 - 4 EXISTING FILTER CONTROL PANEL TO BE REMOVED COMPLETE. DISCONNECT FEEDER FROM EXISTING MAIN DISTRIBUTION PANEL M1 AND PULL OUT CONDUCTORS. REMOVE ALL STATUS AND CONTROL WIRING TO PLANT SCADA SYSTEM PANEL COMPLETE. REMOVE ALL EXPOSED CONDUIT AND ABANDON CONCEALED CONDUIT IN PLACE. RE-LABEL CIRCUIT BREAKER IN PANEL M1 AS SPARE.
 - 5 REMOVE EXISTING FLOW METER AND UV SYSTEM COMPLETE. DISCONNECT FEEDERS FROM EXISTING PANEL LPA AND PULL OUT CONDUCTORS. REMOVE ALL EXPOSED CONDUIT AND ABANDON CONCEALED CONDUIT IN PLACE.
 - 6 SALVAGE EQUIPMENT AND DELIVER TO OWNER.

ELECTRICAL DEMO PLAN
3/16"=1'-0"



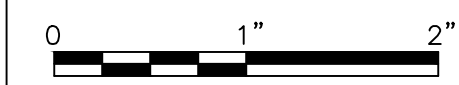
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| DATE | APRIL 2014 |
| PROJECT NUMBER | 227513 |



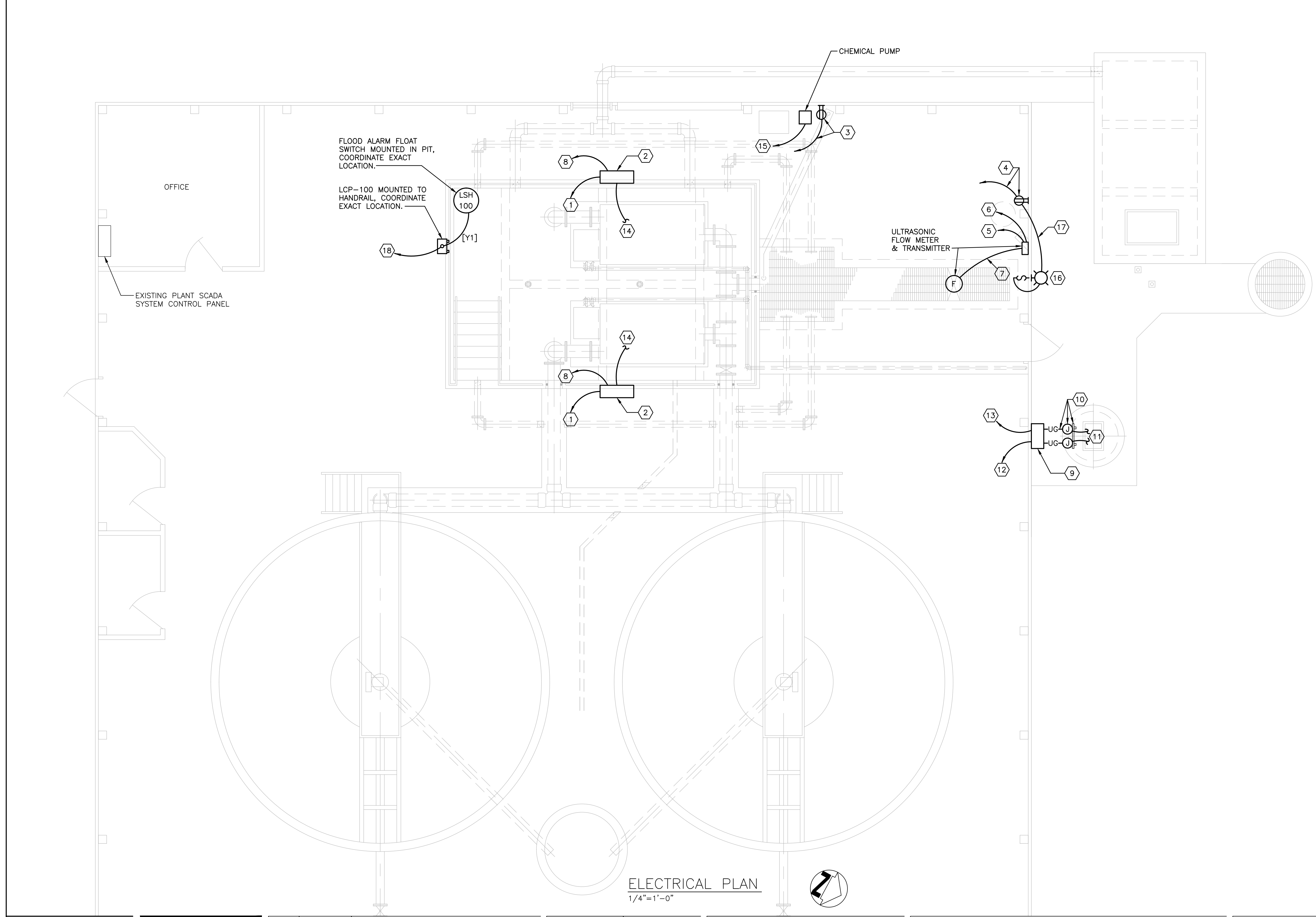
**TARTAN FIELDS WRF
FILTER REPLACEMENT**

ELECTRICAL - DEMO PLAN



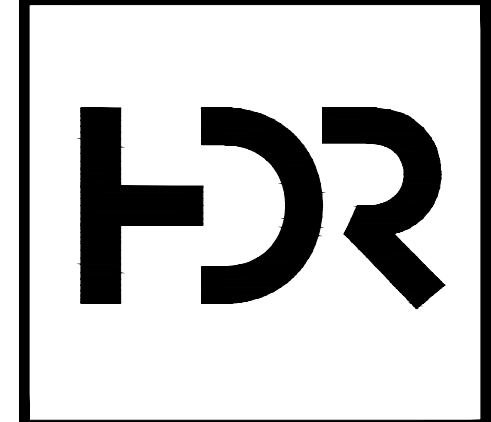
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| SCALE | 3/16" = 1'-0" |

SHEET
E-2



- KEY NOTES**
- 1 3-#10, 1-#10 GROUND IN 3/4" CONDUIT TO A 30 AMP, 3-POLE, 480 VOLT CIRCUIT BREAKER INSTALLED IN EXISTING MAIN DISTRIBUTION PANEL M1, SEE SHEET E-1 FOR LOCATION.
 - 2 FILTER CONTROL PANEL PROVIDED WITH EQUIPMENT, INSTALLED BY CONTRACTOR. MOUNT PANEL ON STAINLESS STEEL UNISTRUT TYPE FRAME ATTACHED TO HANDRAIL. USE ALL STAINLESS STEEL HARDWARE FOR MOUNTING PANEL.
 - 3 DUPLEX RECEPTACLE WITH WEATHERPROOF WHILE IN USE COVER FOR CHEMICAL PUMP. COORDINATE EXACT LOCATION WITH INSTALLED EQUIPMENT. ROUTE 2-#12, 1-#12 GROUND IN 3/4" CONDUIT TO A 1-POLE, 20 AMP CIRCUIT BREAKER INSTALLED IN PANEL LPA, SEE SHEET E-1 FOR LOCATION.
 - 4 DUPLEX RECEPTACLE WITH WEATHERPROOF WHILE IN USE COVER FOR SAMPLER. COORDINATE EXACT LOCATION WITH INSTALLED EQUIPMENT. ROUTE 2-#12, 1-#12 GROUND IN 3/4" CONDUIT TO A 1-POLE, 20 AMP CIRCUIT BREAKER INSTALLED IN PANEL LPA, SEE SHEET E-1 FOR LOCATION.
 - 5 2-#12, 1-#12 GROUND IN 3/4" CONDUIT TO A 1-POLE, 20 AMP CIRCUIT BREAKER INSTALLED IN PANEL LPA, SEE SHEET E-1 FOR LOCATION.
 - 6 3/4" CONDUIT WITH 1-2/C SHIELDED CABLE TO EXISTING PLANT SCADA PANEL LOCATED IN THE OFFICE.
 - 7 CABLE PROVIDED WITH EQUIPMENT Routed IN 3/4" CONDUIT.
 - 8 2-#14, 1-#14 GROUND IN 3/4" CONDUIT TO EXISTING PLANT SCADA PANEL LOCATED IN THE OFFICE FOR COMMON ALARM.
 - 9 DRAIN PUMP CONTROL PANEL PROVIDED WITH EQUIPMENT, INSTALLED BY CONTRACTOR. MOUNT ON EXTERIOR WALL OF BUILDING, COORDINATE EXACT LOCATION.
 - 10 STAINLESS STEEL UNISTRUT FRAME BACKBOARD, SIZE AS REQUIRED, MOUNTED TO TOP OF CONCRETE STRUCTURE. INSTALL NEMA 4X JUNCTION BOXES WITH TERMINAL STRIPS FOR CONNECTION OF PUMP POWER AND CONTROL CORDS ON BACKBOARD. EXTEND POWER AND CONTROL WIRING IN CONDUIT UNDERGROUND TO CONTROL PANEL.
 - 11 PUMP POWER AND CONTROL CABLES DOWN INTO WETWELL. USE STAINLESS STEEL WIRE MESH CORD GRIPS TO SUPPORT CABLES.
 - 12 3-#12, 1-#12 GROUND IN 3/4" CONDUIT TO A 20 AMP, 3-POLE, 480 VOLT CIRCUIT BREAKER INSTALLED IN EXISTING MAIN DISTRIBUTION PANEL M1, SEE SHEET E-1 FOR LOCATION.
 - 13 2-#14, 1-#14 GROUND IN 3/4" CONDUIT TO EXISTING PLANT SCADA PANEL LOCATED IN THE OFFICE FOR ALARM.
 - 14 WIRING IN CONDUIT TO DEVICES ON FILTER, SEE CONTROL DIAGRAM SHEET E-3 FOR REQUIRED WIRING. COORDINATE WITH MANUFACTURERS SHOP DRAWINGS FOR EXACT LOCATION OF DEVICES.
 - 15 3/4" CONDUIT WITH 1-2/C SHIELDED CABLE TO EXISTING PLANT SCADA PANEL FOR EFFLUENT FLOW PACING SIGNAL.
 - 16 WALL MOUNTED LED WALLPACK LIGHT FIXTURE WITH PRISMATIC GLASS REFRACTOR, DIE-CAST ALUMINUM HOUSING, BLACK FINISH, WET LOCATION LISTED. FIXTURE TO BE AS MANUFACTURED BY HOLOPHANE CATALOG NUMBER W4G-LED-30C-1000-40K-T3M-120-SF-BK OR APPROVED EQUAL.
 - 17 2-#12, 1-#12 GROUND IN 3/4" CONDUIT.
 - 18 2-#14, 1-#14 GROUND IN 3/4" CONDUIT TO EXISTING PLANT SCADA PANEL LOCATED IN THE OFFICE FOR HIGH LEVEL ALARM.

ELECTRICAL PLAN
1/4"=1'-0"

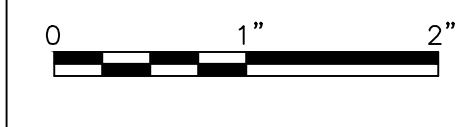


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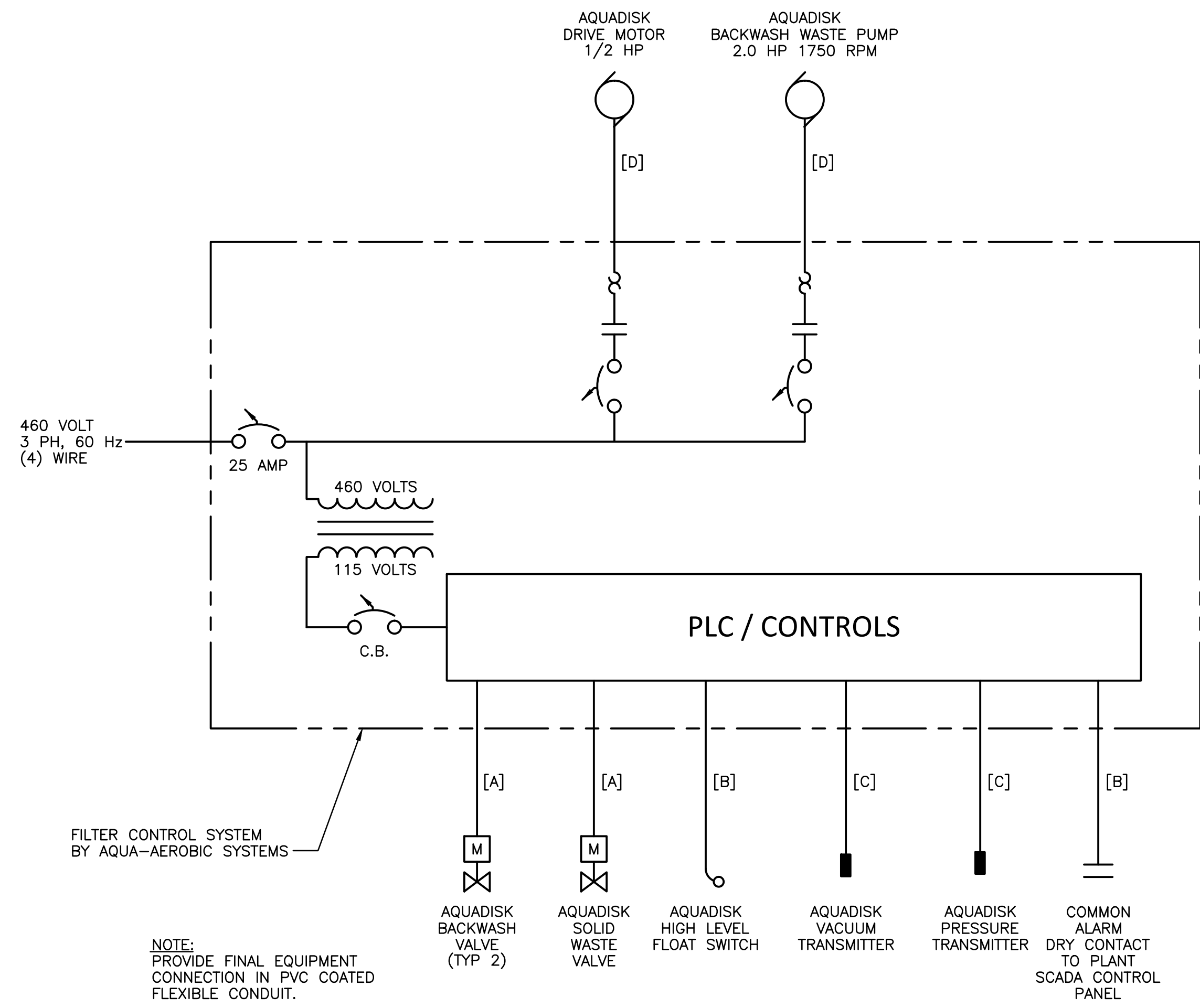
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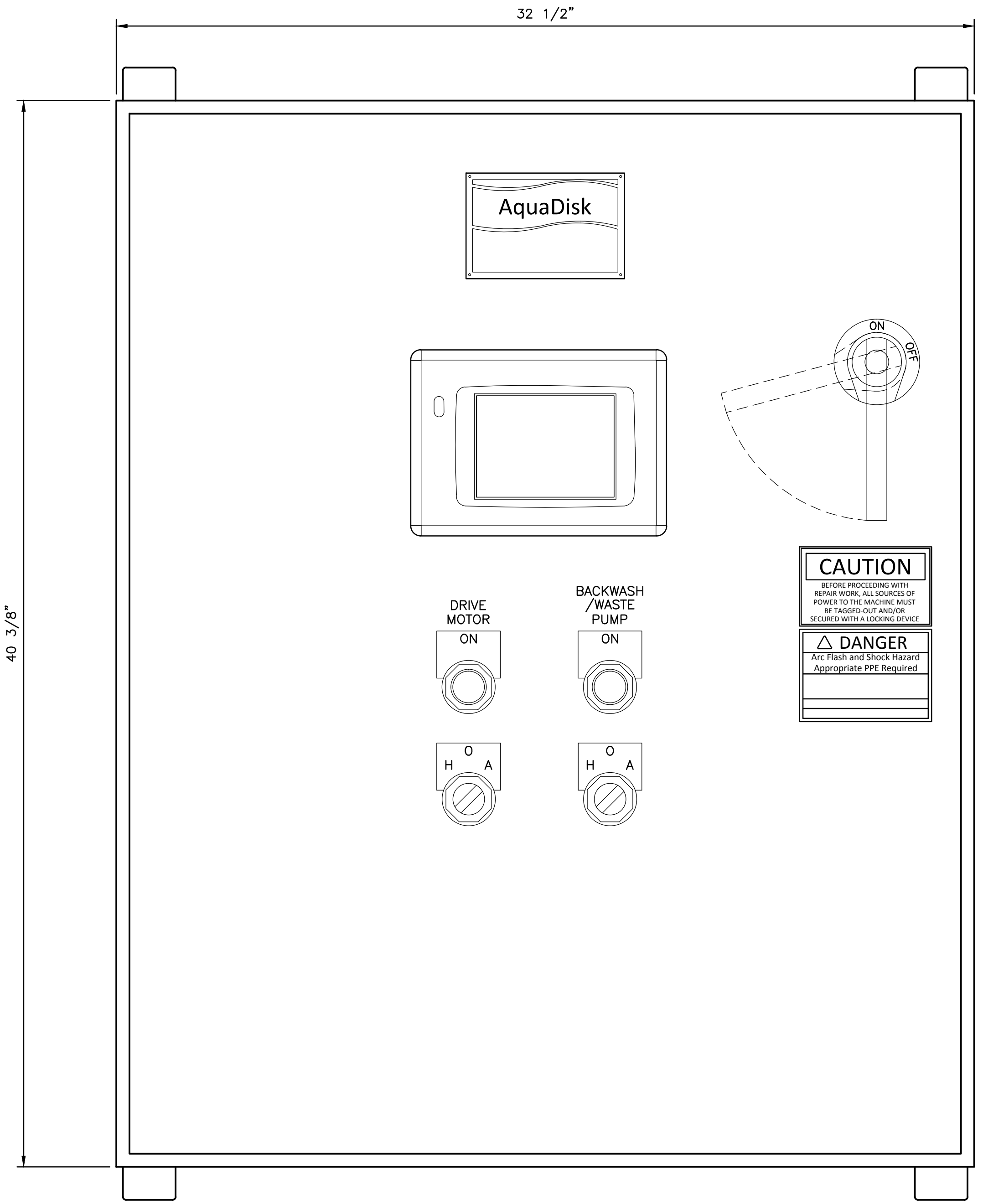
SHEET
E-3

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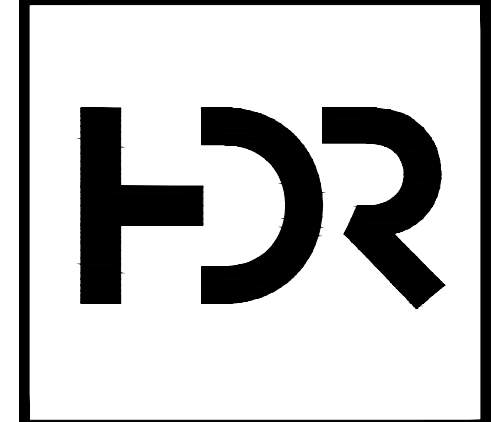
ONE-LINE DIAGRAM
NONE

- CONDUIT AND WIRE SCHEDULE
- [A] = [3/4" CONDUIT WITH 8-#14]
 - [B] = [3/4" CONDUIT WITH 3-#14]
 - [C] = [3/4" CONDUIT WITH 1-2/C TWISTED SHIELDED CABLE]
 - [D] = [3/4" CONDUIT WITH 3-#12, 1-#12 GROUND]



CONTROL PANEL ELEVATION
NONE

- 1 CONTROL PANEL ENCLOSURE NEMA 4X WALL MOUNTED TYPE FIBERGLASS FACTORY ASSEMBLED AND SHIPPED LOOSE, INSTALLED BY OTHERS. MUST BE LOCATED WITHIN 50 FEET OF THE PRESSURE TRANSMITTER. FACING NORTH TO LIMIT THE H.M.I. EXPOSURE TO DIRECT SUNLIGHT. FLOOR MOUNTING IS AVAILABLE WITH STEEL OR STAINLESS STEEL ENCLOSURES.
- 2 STANDARD CONTROL PANEL SIZE 40" HEIGHT x 32" WIDE x 12" DEEP



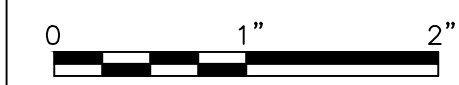
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| PROJECT MANAGER | PLE |
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| DRAWN | RDG |
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**TARTAN FIELDS WRF
FILTER REPLACEMENT**

FILTER CONTROL PANEL



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| SCALE | NONE |

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