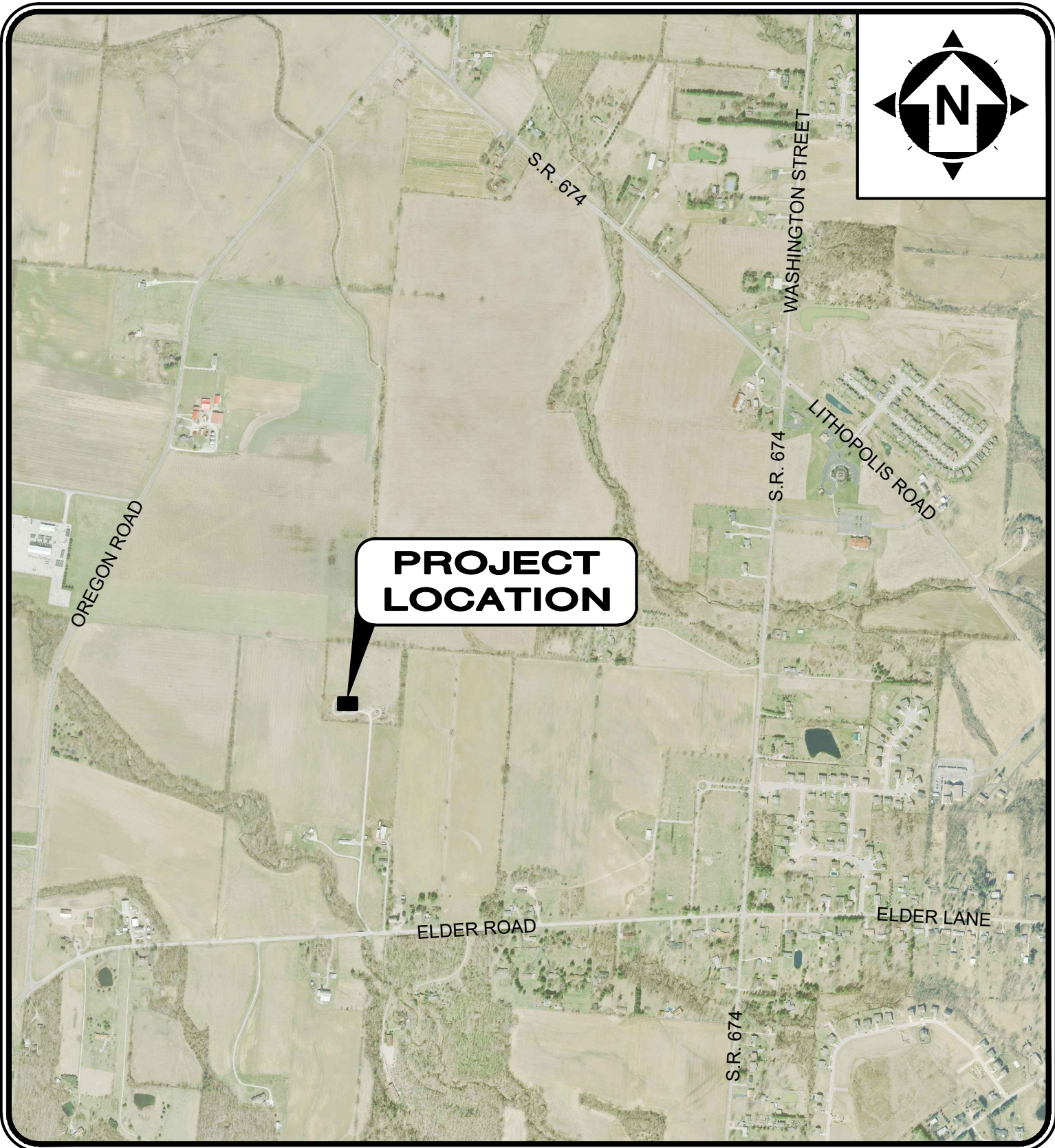
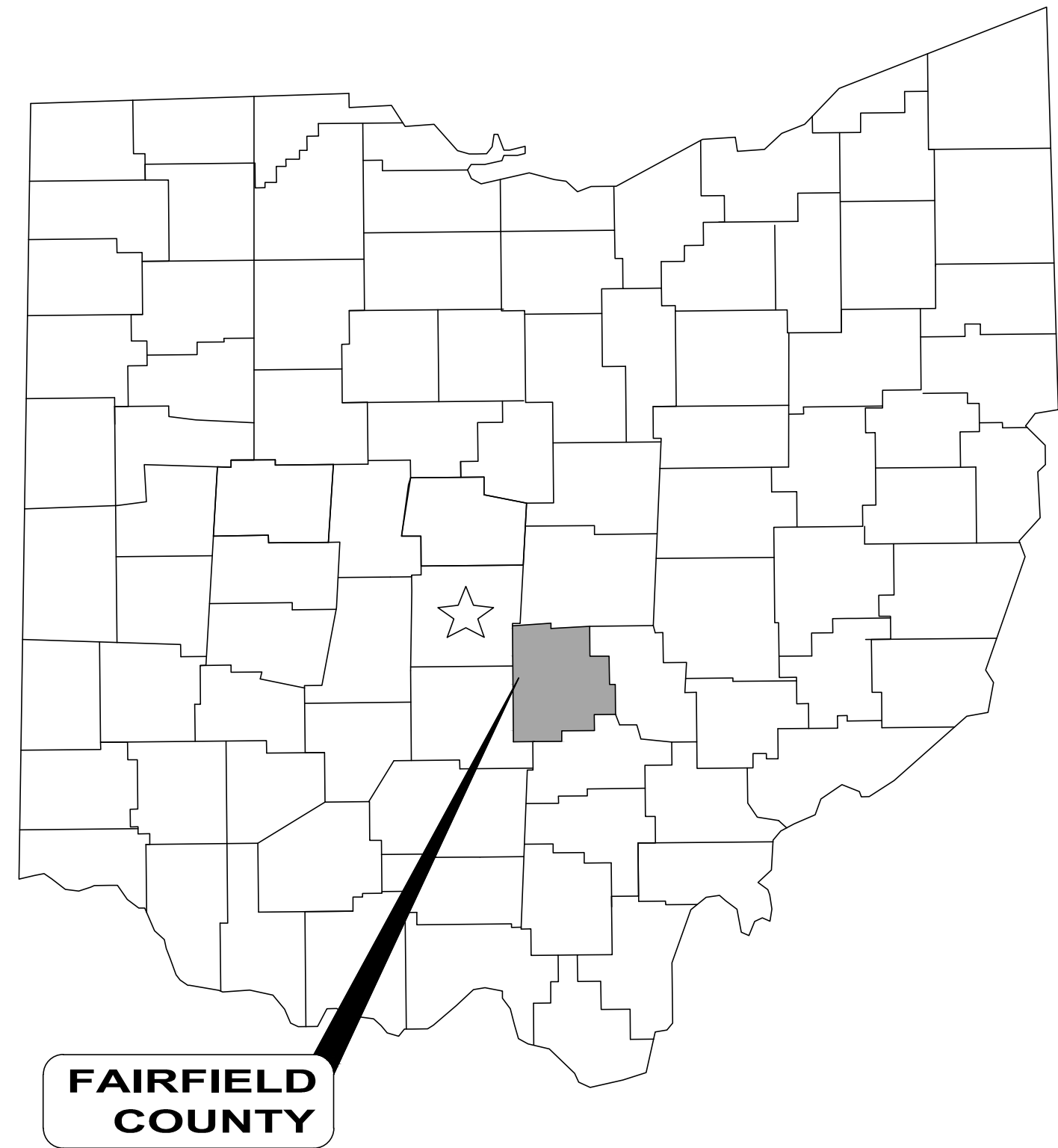


VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION
FAIRFIELD COUNTY, OHIO

FEBRUARY 2025



LOCATION MAP
NOT TO SCALE

OWNER:

VILLAGE OF LITHOPOLIS
11820 LITHOPOLIS ROAD NW
LITHOPOLIS, OH 43136

(614) 837-2031 PHONE
(614) 837-2722 FAX

[Signature]
ERIC SANDINE, MAYOR

3/19/25
DATE

AMANDA WOLIN, VILLAGE ADMINISTRATOR

DATE

ENGINEER:

VERDANTAS
6397 EMERALD PARKWAY, SUITE 200
DUBLIN, OH 43016

(614) 793-8777 PHONE

[Signature]
BARBARA R. ANDERSON

OHIO No. E-51761

3/19/2025
DATE

STATE OF OHIO
BARBARA RAE ANDERSON
51761
REGISTERED PROFESSIONAL ENGINEER

1. UNDERGROUND BUILDING SERVICE UTILITY LINES ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, MAINTAINING AND REPLACING AS NECESSARY TO ENSURE CONTINUAL SERVICE TO BUILDINGS.
2. THE CONTRACTOR IS RESPONSIBLE TO CALL OHIO UTILITIES PROTECTION SERVICE @ 1-800-362-2764, THREE WORKING DAYS PRIOR TO CONSTRUCTION.

ENGINEER'S PROJECT No. 232055

BID SET

verdantas

NO	REVISION	DATE
1	REVISED PER OEPA COMMENTS	1/6/2026
2	REVISED PER OEPA COMMENTS	3/4/2026
3	REVISED PER OEPA COMMENTS	4/6/2026
4	REVISED FOR CONSTRUCTION	7/22/2026

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

GENERAL - 00 SERIES
COVER SHEET

PROJECT NO.	DISCIPLINE	SHEET NAME	SHEET	OF
232055	GENERAL	00G-01	1	19

1. THIS IS A STANDARD SHEET SHOWING COMMONLY USED SYMBOLOGY.
2. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
3. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE NEW IMPROVEMENTS SO AS TO HIGHLIGHT SPECIFIC TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
4. SYMBOLOGY OR DIAGRAMMATICAL LEGENDS MAY BE SHOWN ON INDIVIDUAL SHEETS FOR SCHEDULES, DIAGRAMS, DETAILS, SCHEMATICS OR EQUIPMENT.

1. VERDANTAS CONTRACTUAL NOTES ARE DEPICTED WITH A HEXAGON, SQUARE, CIRCLE OR TRIANGLE. ALL OTHER EXISTING WRITTEN CALLOUTS SHOWN ON THE REUSED SCANNED PLANS, SECTIONS & DETAILS ARE FOR EXISTING CONDITIONS AND REFERENCE ONLY, MANY OF THOSE NOTES FROM THE SCANNED DRAWINGS PERTAIN TO PREVIOUS WORK DONE.

REVISION	REVISION DESCRIPTION
A	REVISION DESCRIPTION
B	REVISION DESCRIPTION

1	DEMOLITION DESCRIPTION
2	DEMOLITION DESCRIPTION

12'-4" (REF.)

REFERENCE DIMENSIONS ARE GIVEN FOR INFORMATION ONLY. THEY ARE CALCULATED DIMENSIONS NOT INTENDED TO BE USED WITHOUT FIELD VERIFICATION AND ARE USEFUL IN SHOWING INTENDED DESIGN.

Figure 10: Symbols and Abbreviations. The diagram illustrates various symbols and abbreviations used in the drawings. It includes a section path symbol, a section location symbol (a circle with a letter and '23'), and a section location symbol (a diamond with a letter and '23'). The section path symbol is labeled 'SECTION PATH'. The section location symbols are labeled 'SECTION LOCATION' and 'LETTER OR NUMBER'. The abbreviations are listed on the right side of the diagram:

- MJ PIPING
- FLEXIBLE CONNECTOR
- PIPE THROUGH SECTION
- PIPE CONTINUOUS BREAK
- PIPE BASE SUPPORT
- CONCRETE PIPE SUPPORT

The diagrams illustrate various double-flange connection configurations:

- F-F-F:** Three flanges connected in a row.
- F-F-MJ:** Two flanges connected by a manhole (MJ).
- MJ-F-MJ:** Two manholes (MJ) connected by a flange (F).
- MJ-F-PE:** A manhole (MJ) connected to a pipe end (PE) via a flange (F).
- F-F-PE:** Two flanges (F) connected to a pipe end (PE).
- PE-F-PE:** A pipe end (PE) connected to another pipe end (PE) via a flange (F).

Each diagram includes dimension lines for L (total length) and $1/2L$ (half-length).

WALL CASTINGS REQUIRING BELL ENDS IN LIEU OF MJ SHALL BE NOTED AS "B", ALL FLANGED (F) AND MECHANICAL JOINT (MJ) FLUSH WITH WALL ARE TO BE DRILLED, AND TAPPED FOR STUDS.

The diagram illustrates five methods for pipe penetration through an existing wall or floor:

- CORE & SEAL:** Shows a pipe passing through a wall with a core and seal.
- WALL SLEEVE:** Shows a pipe passing through a wall with a sleeve, featuring a SEEP RING and PIPE WEIGHT.
- SINGLE MECHANICAL LINK SEAL:** Shows a pipe passing through a wall with a single mechanical link seal.
- DOUBLE MECHANICAL LINK SEAL:** Shows a pipe passing through a wall with a double mechanical link seal.
- EMBEDDED:** Shows a pipe embedded in a wall, featuring a WATERSTOP STRIP and FABRICATE WALL PIPE TAPPED FOR WATERSTOP STRIP.

CH = CHAIN
EM = ELECTRIC MOTOR
ES = EXTENSION STEM
FB = FLOOR BOX
FS = FLOOR STAND
GE = GEAR
HC = HYDRAULIC CYLINDER
HW = HANDWHEEL
LE = LEVER
LW = "L" WRENCH
MO = MANUAL OPERATOR
ON = OPERATING NUT
PC = PNEUMATIC CYLINDER
PD = PNEUMATIC DIAPHRAGM
TW = "T" WRENCH
VB = VALVE BOX

BE = BELL
CM = COMPRESSION
F = FLARED
FL = FLANGED
GR = GROOVED
LU = LUG
MJ = MECHANICAL JOINT
NPT = NATIONAL PIPE THREAD
RJ = RESTRAINED JOINT
S = SOLDERED
SJ = SLIP JOINT (PUSH ON)
SW = SOLVENT WELDED
TH = THREADED
WE = WELDED

BR = BRASS
BS = BLACK STEEL
BZ = BRONZE
CI = GRAY CAST IRON
CU = COPPER
CS = CAST IRON
CT = CARBON STEEL TUBING
DIP = DUCTILE IRON PIPE
DR = DIAMETER RATIO
FRP = FIBERGLASS REINFORCED PLASTIC
GS = GALVANIZED STEEL
HDPE = HIGH-DENSITY POLYETHYLENE PIPE
PVC = POLYVINYL CHLORIDE PIPE
SS = STAINLESS STEEL
STL = STEEL PIPE
SDR = STANDARD DIAMETER RATIO

AC = AIR CHECK VALVE
AN = ANGLE VALVE
AR = AIR RELEASE VALVE
AV = AIR & VACUUM VALVE
BA = BALL VALVE
BFV = BUTTERFLY VALVE
BK = BACKPRESSURE VALVE
BP = BACKFLOW PREVENTER
CNV= CONTROL VALVE
CV = CHECK VALVE
GV = GATE VALVE
GL = GLOBE VALVE
KG = KNIFE GATE VALVE
KN = KNIFE VALVE
MV = MUD VALVE
PD = PLUG DRAIN VALVE
PF = PRESSURE RELIEF
PG = PRESSURE REGULATOR
PI = PINCH VALVE
PV = PLUG VALVE
PRV= PRESSURE REDUCING VALVE
PT = PRESSURE TEMPERATURE RELIEF
RF = RATE-OF-FLOW CONTROLLER
SV = SOLENOID VALVE
SU = SURGE VALVE
TE = TELESCOPING VALVE
TM = TEMPERATURE CONTROL VALVE

AC = AIR COMPRESSOR
AER = AERATOR
B = BLOWER
BFP = BELT FILTER PRESS
CLS = CLASSIFIER
C = COMMUNICATOR
CMP = COMPACTOR
CFD = CHEMICAL FEEDER
CNT = CENTRIFUGE
CC = COLLECTION CYLINDER
CFD = CHEMICAL FEEDER
CP = CONTROL PANEL
CR = CRANE
D = DECANTER
DR = DRIVE
DFL = DISC FILTER
F = FAN
FLT = FILTER
GBT = GRAVITY BELT THICKENER
GR = GRINDER
GEN = GENERATOR
HB = HOSE BIB
M = MOTOR
MM = MAG METER
MX = MIXER
P = PUMP
PS = PUMP STATION
SMP = SAMPLER
SCR = SCREEN
UM = ULTRASONIC METER

SG - SLUICE / SLIDE GATE
SP - STOP PLATE
WG - WEIR GATE
SHG - SHEAR GATE
ALUM - ALUMINUM
SS - STAINLESS STEEL
CI - CAST IRON
POLY - POLYMER
B/C - BOTTOM OF CHANNEL
T/C - TOP OF CHANNEL

	SANITARY MANHOLE
	SANITARY MANHOLE, ADJUST
	SANITARY CLEANOUT
	SANITARY LINE CAP
	SANITARY STRUCTURE NUMBER
	SANITARY VENT PIPE
	STORM MANHOLE (SOLID GRATE)
	STORM MANHOLE (OPEN GRATE)
	STORM MANHOLE, ADJUST
	CURB INLET
	CURB INLET (DOUBLE)
	CURB INLET, ADJUST
	CURB INLET (DOUBLE), ADJUST
	CATCH BASIN
	CATCH BASIN (SOLID)
	CATCH BASIN, ADJUST
	CATCH BASIN (SIDE INLET)
	DRAIN
	DOWNSPOUT
	STORM CLEANOUT
	STORM LINE CAP
	STORM HEADWALL
	STORM STRUCTURE NUMBER
	ROCK CHANNEL PROTECTION
	SURFACE DRAINAGE FLOW
	SURFACE DRAINAGE FLOW
	STORM FLOOD ROUTING ARROW
	FIRE HYDRANT
	FIRE HYDRANT, ADJUST
	WATER SIAMESE CONNECTION
	WATER VALVE
	WATER VALVE BOX
	WATER METER
	WATER LINE REDUCER
	WATER LINE CAP
	WATER LINE PLUG
	POST INDICATOR VALVE
	WATER MANHOLE
	WATER CORPORATION STOP
	WATER FLUSHING ASSEMBLY
	WATER METER

	WATER SERVICE LINE (POTABLE)
	NON-POTABLE WATER LINE
	GAS SERVICE LINE
	STORM SEWER LINE
	GRAVITY SANITARY SEWER LINE
	SANITARY SEWER FORCE MAIN LINE
	MAJOR CONTOUR
	MINOR CONTOUR
	STATIONING
	CONSTRUCTION FENCE
	SILT FENCE
	FILTER FENCE
	FILTER SOCK

NEW SIDEWALK

NEW PAVEMENT AREA

UTILITY LINE OR OBJECT TO BE
REMOVED OR ABANDONED AS
SHOWN ON THE DRAWINGS

TREE REMOVAL

The diagram illustrates a 3x3 grid table structure. The table is titled "Sheet List Table" in the center of the top row. The columns are labeled "DISCIPLINE" (above the first column), "Sheet Title" (above the second column), and "SheetName" (above the third column). The rows are labeled "GENERAL - 00" (left of the first row), "1" (left of the second row), "2" (left of the third row), and "3" (left of the fourth row). The table content is as follows:

	DISCIPLINE	Sheet Title	SheetName
SERIES TITLE	GENERAL - 00	SERIES: GENERAL	
	1	TITLE	00G-01
	2	SHEET INDEX	00G-02
	3	GENERAL NOTES	00G-03

Annotations with arrows point to the following elements:

- DISCIPLINE**: Points to the header of the first column.
- SERIES TITLE**: Points to the first row label "GENERAL - 00".
- SHEET TITLE**: Points to the second column header "Sheet Title".
- SERIES IDENTIFIER No.**: Points to the first row content "GENERAL - 00".
- DISCIPLINE IDENTIFIER LETTER**: Points to the first row content "GENERAL - 00".
- SHEET NUMBER ORDER**: Points to the first row content "GENERAL - 00".

GENERAL - 00 SERIES
SITE IMPROVEMENTS - 01 SERIES
WATER TREATMENT PLANT - 10 SERIES
STANDARD DETAILS - 20 SERIES
ELECTRICAL - E SERIES

IDENTIFIER:	DISCIPLINE:
G	GENERAL
C	CIVIL
X	DEMOLITION
S	STRUCTURAL
A	ARCHITECTURAL
D	PROCESS
M	MECHANICAL
P	PLUMBING
E	ELECTRICAL
Y	INSTRUMENTATION

Sheet List Table		
Sheet Number	Sheet Title	Sheet Name
1	COVER SHEET	00G-01
2	SYMBOLLOGY & SHEET INDEX	00G-02
3	GENERAL NOTES	00G-03
4	DESIGN CRITERIA & PROCESS SCHEMATIC	00G-04
5	SITE PLAN	01C-01
6	PARTIAL FLOOR PLAN	01C-02
7	FILTER PAD PLAN	10S-01
8	FILTER PAD SECTIONS	10S-02
9	NEW FILTER & PIPING PLAN	10D-01
10	NEW FILTER & PIPING SECTIONS	10D-02
11	CHEM FEED SCHEMATIC & DETAILS	10D-03
12	CONSTRUCTION DETAILS	20C-01
13	STRUCTURAL GENERAL NOTES	20S-01
14	TYPICAL DETAILS	20S-02
15	PROCESS DETAILS - 1	20D-01
16	PROCESS DETAILS - 2	20D-02
17	ELECTRICAL LEGEND & GENERAL NOTES	E-01
18	ELECTRICAL FLOOR PLAN	E-02
19	ELECTRICAL DIAGRAMS	E-03

VILLAGE OF LITHOPOLIS

WATER TREATMENT PLANT NEW FILTER ADDITION

GENERAL - 00 SERIES
SYMBOLS & SHEET INDEX

BID SET

verdantas

ISSUED FOR:	BID SET	NO	REVISION	DATE
ISSUE DATE:	7/22/2026	1	REVISED PER OEPA COMMENTS	1/6/2026
SCALE:	AS NOTED	2	REVISED PER OEPA COMMENTS	3/4/2026
DESIGNED BY:	JLM	3	REVISED PER OEPA COMMENTS	4/6/2026
DRAWN BY:	AGD	4	REVISED FOR CONSTRUCTION	7/22/2026
CHECKED BY:	BRA			

VILLAGE OF LITHOPOLIS WATER TREATMENT PLANT NEW FILTER ADDITION		GENERAL - 00 SERIES SYMBOLGY & SHEET INDEX
PROJECT NO.		
232055		
DISCIPLINE		
GENERAL		
SHEET NAME		
00G-02		
SHEET	OF	
2	19	

GENERAL NOTES

CONTRACTOR:
THE TERM CONTRACTOR IN THESE DOCUMENTS REFERS TO THE GENERAL CONTRACTOR, ALL SUB-CONTRACTORS, SUPPLIERS AND SERVICE SUPPLIERS PROVIDING SERVICES, MATERIAL OR LABOR DIRECTLY OR INDIRECTLY TO THIS PROJECT.

BY SUBMITTING A BID OR STARTING CONSTRUCTION THE CONTRACTOR CERTIFIES THAT:

THE CONTRACTOR HAS VISITED THE SITE AND IS SATISFIED THAT HE UNDERSTANDS ALL SITE CONDITIONS THAT MAY HAVE AN EFFECT ON THE BID PRICE AND CONSTRUCTION SCHEDULE.

THE CONTRACTOR FULLY UNDERSTANDS THE MAKE-UP, CONSTRUCTION, AND OPERATION OF ALL SYSTEMS AND EQUIPMENT HE IS CONSTRUCTING AND THAT HE HAS INCLUDED IN HIS PRICE ALL MATERIALS, SUPPLIES, ACCESSORIES, AND SERVICES NECESSARY TO MAKE THESE SYSTEMS COMPLETE AND OPERATIONAL WHETHER SUCH MATERIALS, SUPPLIES, AND SERVICES ARE EXPLICITLY SHOWN ON THE DRAWINGS OR INCLUDED IN THESE SPECIFICATIONS OR ONLY IMPLIED BY THE CLEAR INTENT OF THESE DOCUMENTS FOR THE CONTRACTORS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL SYSTEM AS PART OF THE SCOPE OF WORK UNDERTAKEN BY THIS CONTRACTOR.

RESPONSIBILITY:
THE OWNER DOES NOT SUPERVISE, NOR ARE THEY ENGAGED IN CONSTRUCTION. THE OWNER HAS NO CONTROL OVER OR CHARGE OF, AND THEREFORE IS NOT RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THESE ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY UNDER THE CONTRACT FOR CONSTRUCTION.

PROJECT SAFETY:
THE CONTRACTOR AND SUBCONTRACTORS SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE AND LOCAL SAFETY REQUIREMENTS, INCLUDING THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS ALSO THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR SHALL ALSO ABIDE BY ALL ORDINANCES OF THE GOVERNING MUNICIPALITY.

BACKFILLING SHALL FOLLOW IMMEDIATELY BEHIND PIPE CONSTRUCTION AND ONLY THE MINIMUM LENGTH OF TRENCH REQUIRED FOR CONSTRUCTION SHALL BE OPEN AT ANY GIVEN TIME.

PERMITS:
THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION EXCEPT OHIO EPA PERMIT TO INSTALL. OEPA PERMIT TO INSTALL SHALL BE OBTAINED BY THE OWNER.

SDS SHEETS:
SAFETY DATA SHEETS (SDS'S) FOR ALL PRODUCTS AND/OR BUILDING MATERIALS THAT MAY CONTAIN HAZARDOUS OR TOXIC CHEMICALS SHALL BE MADE READILY AVAILABLE TO CONTRACTOR, EMPLOYEES AND OWNER'S PERSONNEL DURING CONSTRUCTION.

MAINTAINING TRAFFIC:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND CONTROLLING TRAFFIC ON ALL STREETS AND ROADS AFFECTED BY CONSTRUCTION AND SHALL, PRIOR TO ANY CONSTRUCTION, SUBMIT A CONSTRUCTION SCHEDULE TO THE OWNER FOR APPROVAL INDICATING DATES AND DURATION OF EACH PHASE OF CONSTRUCTION.

ALL CONSTRUCTION SIGNS AND TEMPORARY TRAFFIC CONTROL AND PROTECTION DEVICES SHALL BE ERECTED AND MAINTAINED IN ACCORDANCE WITH "OHIO DEPARTMENT OF TRANSPORTATION MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND O.D.O.T. ITEM 614 - MAINTAINING TRAFFIC.

MAINTENANCE OF TRAFFIC OPERATIONS MUST ADHERE TO ALL REGULATIONS AND/OR MANDATES BY THE APPROPRIATE MAINTAINING AUTHORITY OF THE ROADWAY.

CHANGES TO WORK:
ANY MODIFICATIONS AND CHANGES TO THE WORK AS SHOWN ON THE DRAWINGS MUST HAVE THE PRIOR WRITTEN APPROVAL OF THE OWNER AND ENGINEER.

SITE INVESTIGATION:
THE CONTRACTOR SHALL INVESTIGATE THE SITE PRIOR TO BIDDING. THE CONTRACTOR SHALL EXAMINE IN THE FIELD THE ACCESS PROBLEMS, AVAILABLE WORK AREAS, WATER CONDITIONS, NEARBY STRUCTURES, TREES, GROUND CONDITIONS AND FILL MATERIALS. FIELD VISITS SHALL BE COORDINATED WITH THE OWNER.

UNDERGROUND UTILITIES:
THE IDENTITY AND LOCATION OF THE EXISTING UNDERGROUND UTILITY FACILITIES KNOWN TO BE LOCATED IN THE CONSTRUCTION AREA HAVE BEEN SHOWN ON THE PLANS AS ACCURATELY AS PROVIDED BY THE OWNER OF THE UNDERGROUND UTILITY. THE ENGINEER ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY OR THE DEPTH OF THE UNDERGROUND FACILITIES SHOWN ON THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR THE INVESTIGATION, LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES, WHETHER SHOWN ON THESE DRAWINGS OR NOT. THE CONTRACTOR SHALL EXPOSE ALL UTILITIES OR STRUCTURES PRIOR TO CONSTRUCTION TO VERIFY THE VERTICAL AND HORIZONTAL EFFECT ON THE PROPOSED CONSTRUCTION.

THE FOLLOWING IS A PARTIAL LIST OF UTILITY OWNERS AND RELATED ENTITIES WHO MUST BE NOTIFIED. THE CONTRACTOR SHALL COMPLY WITH THE REGULATIONS SET FORTH BY THE RESPECTIVE PUBLIC SERVICE CORPORATIONS AS LISTED:

OHIO UTILITIES PROTECTION SERVICE (800) 362-2764	OGPUPS (614) 715-2984	SPECTRUM (614) 827-7971
AT&T (614) 237-7276	VILLAGE OF LITHOPOLIS (614) 837-2031	SOUTH CENTRAL POWER (740) 422-6166

NOTIFICATION OF UTILITIES:
THE CONTRACTOR SHALL CAUSE NOTICE TO BE GIVEN TO THE OHIO UTILITIES PROTECTION SERVICE (TELEPHONE 614-715-2984 - TOLL FREE), TO THE OIL AND GAS PRODUCERS UNDERGROUND PROTECTION SERVICE (TELEPHONE 1-800-925-0988 - TOLL FREE) AND TO THE OWNERS OF UNDERGROUND UTILITY FACILITIES SHOWN ON THE DRAWINGS WHO ARE NOT MEMBERS OF A REGISTERED PROTECTION SERVICE IN ACCORDANCE WITH SECTION 153.64 OF THE OHIO REVISED CODE. THE ABOVE MENTIONED NOTICE SHALL BE GIVEN AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION.

COOPERATION WITH UTILITIES:
THE CONTRACTOR SHALL MAINTAIN AND PROTECT ALL PUBLIC OR PRIVATE UTILITY FACILITIES DURING CONSTRUCTION. SHOULD IT BECOME NECESSARY TO MOVE, ADJUST, OR TEMPORARILY RELOCATE ANY SUCH FACILITY, THE WORK SHALL BE DONE BY THE OWNER OF THE UTILITY FACILITY. ANY DAMAGE TO UTILITY FACILITIES BY THE CONTRACTOR OR HIS SUBCONTRACTORS WILL BE REPAIRED BY THE OWNER OF SAID UTILITY, AND THE COST OF SAID REPAIRS WILL BE PAID BY THE CONTRACTOR, THE CONTRACTOR TO SEND PROOF OF PAYMENT TO THE UTILITY FOR THE REPAIR TO THE OWNER, PRIOR TO FINAL PAYMENT.

IT IS UNDERSTOOD AND AGREED THAT THE CONTRACTOR HAS CONSIDERED IN HIS BID ALL OF THE PERMANENT AND TEMPORARY UTILITY APPURTENANCES IN THEIR PRESENT OR RELOCATED POSITIONS AND THAT NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ANY DELAYS, INCONVENIENCE, OR DAMAGE SUSTAINED BY HIM DUE TO ANY INTERFERENCE FROM THE SAID UTILITY APPURTENANCES OR THE OPERATION OF MOVING THEM.

SUPPORT OF EXISTING UTILITIES:
CONTRACTOR SHALL ENSURE ALL POWER POLES, ELECTRICAL SERVICES AND ANY OTHER UTILITIES ARE SUPPORTED AS NECESSARY WHILE CONSTRUCTING THE PROPOSED IMPROVEMENTS. COST FOR THIS WORK SHALL BE INCLUDED IN THE THE PRICES BID FOR RELATED ITEMS FOR PAYMENT.

SUBSURFACE CONDITIONS:
IT IS THE OBLIGATION AND RESPONSIBILITY OF THE CONTRACTOR TO MAKE HIS OWN INVESTIGATIONS OF SUBSURFACE CONDITIONS PRIOR TO SUBMITTING HIS PROPOSAL. THE CONTRACTOR MAY EXAMINE ANY EXISTING RECORDS OF BORINGS, TEST EXCAVATIONS AND OTHER SUBSURFACE INVESTIGATIONS, FOR HIS OWN INFORMATION. ANY AVAILABLE RECORDS OF BORINGS, TEST EXCAVATIONS OR OTHER SUBSURFACE INVESTIGATIONS ARE CONSIDERED INCOMPLETE AND ARE NOT A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR AGREES THAT HE WILL MAKE NO CLAIM AGAINST THE OWNER OR THE ENGINEER, IF IN CARRYING OUT THE WORK, HE FINDS THAT THE ACTUAL SUBSURFACE CONDITIONS ENCOUNTERED DO NOT CONFORM TO THOSE INDICATED BY TEST EXCAVATIONS OR OTHER SUBSURFACE INVESTIGATIONS.

DEWATERING:
THE CONTRACTOR SHALL, AT ALL TIMES DURING CONSTRUCTION, PROVIDE PROPER AND SATISFACTORY MEANS AND DEVICES FOR THE REMOVAL OF ALL WATER ENTERING THE EXCAVATIONS AND SHALL REMOVE ALL SUCH WATER AS FAST AS IT MAY COLLECT IN SUCH A MANNER AS SHALL NOT INTERFERE WITH THE PROSECUTION OF THE WORK OR THE PROPER PLACING MASONRY OR OTHER WORK.

SURVEY MONUMENTS:
ALL PROPERTY LINE MARKERS (IRON PINS, SPIKES, CONCRETE MONUMENTS, ETC.) THAT ARE LIABLE TO BE DISTURBED BY THE CONSTRUCTION OPERATIONS SHALL BE REFERENCED AND PROPERLY RESET AT THE CONTRACTOR'S EXPENSE FOLLOWING CONSTRUCTION UNDER THE SUPERVISION OF A SURVEYOR REGISTERED IN THE STATE OF OHIO.

DISPOSAL OF WASTE CONSTRUCTION MATERIALS:
THE CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS FOR THE DISPOSAL OF SURPLUS EXCAVATED MATERIAL AND WASTE CONSTRUCTION MATERIALS. TREES, LIMBS, BRUSH AND STUMPS REMOVED BY THE CONTRACTOR'S OPERATION SHALL BE REMOVED FROM THE CONSTRUCTION SITE AND DISPOSED OF BY THE CONTRACTOR FOLLOWING OEPA REGULATIONS.

ITEMS TO BE INCLUDED:
THE CONTRACTOR SHALL FURNISH ALL TOOLS, MATERIAL, LABOR AND INCIDENTALS AND APPURTENANCES TO COMPLETE IN EVERY DETAIL AND LEAVE IN WORKING ORDER ALL ITEMS OF WORK CALLED FOR AND/OR SHOWN IN THE DRAWINGS. MATERIAL OR WORK NOT SPECIFICALLY MENTIONED OR SHOWN IN THE DRAWINGS, BUT NECESSARY TO COMPLETE THE WORK SHALL BE FURNISHED.

DRAINAGE TILE:
FIELD DRAINAGE TILE, STORM DRAINS, UNDER DRAINS, DRIVE CULVERTS AND FIELD TILE MAY BE ENCOUNTERED DURING THE COURSE OF EXCAVATION UNDER THIS CONTRACT. THE CONTRACTOR SHALL REPAIR, REPLACE OR REROUTE THE AFFECTED TILE SO AS TO LEAVE THE DRAINAGE SYSTEM IN ORIGINAL CONDITION OR BETTER AND THE SYSTEM IN GOOD WORKING ORDER. THE COST OF WORK THIS SHALL BE INCLUDED IN THE RELATED BID ITEMS.

INCIDENTAL RESTORATION:
ALL SIGNS, MAILBOXES, FENCES, GUARDRAILS, ROADSIDE DITCHES, OR OTHER PHYSICAL FEATURES DISTURBED OR DAMAGED DURING WORK UNDER THIS CONTRACT SHALL BE RESTORED TO THEIR ORIGINAL CONDITION BY THE CONTRACTOR. THE COST OF ALL SUCH WORK SHALL BE INCLUDED IN BID.

GENERAL RESTORATION:
ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND ELEVATION. THESE AREAS SHALL BE SEEDED AND MULCHED. THE CONTRACTOR SHALL PROVIDE A SEED BED FREE OF STONES AND OTHER DELETERIOUS MATERIALS. NINETY PERCENT OF THE SEED BED SHALL CONSIST OF GROWTH SUPPORTING MATERIAL. IF ANY QUESTION ARISES ON THE AMOUNT OF STONES OR OTHER DELETERIOUS MATERIAL THAT MAY BE CONTAINED IN THE SEED BED, THE ENGINEER MAY ORDER THAT ONE OR MORE TWO SQUARE FOOT BY FIVE INCH DEEP TEST SECTIONS BE EXCAVATED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER. THIS EXCAVATED MATERIAL SHALL BE PASSED THROUGH A NUMBER 10 SIEVE. IF IT IS FOUND THAT 10 PERCENT OF THE VOLUME, BY WEIGHT, OF THE TEST SECTION CONSISTS OF STONES OR OTHER DELETERIOUS MATERIAL, THE SEED BED SHALL BE REJECTED. IF THE EQUIPMENT USED TO PREPARE THE SEED BED IS NOT CAPABLE OF REMOVING THE STONES OR DELETERIOUS MATERIAL, THE CONTRACTOR SHALL HAND RAKE THE SEED BED. IF THIS DOES NOT REMOVE ADEQUATE DELETERIOUS MATERIAL FROM THE SEED BED, THE CONTRACTOR SHALL BE REQUIRED TO SUPPLEMENT THE SEED BED WITH SUITABLE MATERIAL TO PROVIDE THE PROPER SEED BED.

SEEDING:
ALL AREAS SHALL BE SEEDED AS PER THE PROJECT SPECIFICATIONS UNLESS AN ALTERNATE FORM OF SURFACE RESTORATION HAS BEEN IDENTIFIED WITHIN THE PROJECT DOCUMENTATION.

FITTINGS REQUIRED FOR CONSTRUCTION:
THE CONTRACTOR SHALL FURNISH ALL FITTINGS, WHETHER SHOWN ON THE DRAWINGS OR NOT, NECESSARY TO ACHIEVE THE DESIRED HORIZONTAL/VERTICAL ALIGNMENT AND COMPLETE CONSTRUCTION. COST FOR THE REQUIRED FITTINGS SHALL BE INCLUDED IN THE VARIOUS RELATED ITEMS BID.

WATER LINE DEPTH:
WATER MAINS SHALL BE LAID WITH A MINIMUM OF 4'-0" COVER FROM THE TOP OF FINISHED GRADE TO THE TOP OF THE WATER MAIN UNLESS OTHERWISE NOTED.

PIPE GRADE CONFLICT:
IN CASE OF CONFLICT IN GRADE BETWEEN WATER MAINS AND SEWERS, THE WATER MAINS SHALL BE LOWERED DURING CONSTRUCTION.

REQUIRED SEPARATION:
MINIMUM CLEARANCE BETWEEN SEWERS AND WATER LINES SHALL BE 10' HORIZONTAL OR 1'-6" VERTICAL TO OUTSIDE OF EACH PIPE.

VALVE OPERATORS:
IF THE TOP OF THE OPERATING NUT FOR ANY VALVE IS MORE THAN 36" BELOW FINISHED GRADE, AN EXTENSION STEM SHALL BE PROVIDED TO PLACE THE OPERATING NUT BETWEEN 24" AND 36" OF THE FINISHED GRADE.

OPERATION OF EXISTING VALVES:
OPERATION OF EXISTING VALVES SHALL ONLY BE DONE BY OWNER PERSONNEL.

MATERIAL STANDARDS:
ALL MATERIALS AND CHEMICALS UTILIZED IN THE CONSTRUCTION OF THIS PROJECT THAT WILL COME IN CONTACT WITH POTABLE WATER SHALL BE AWWA AND/OR NSF 60/61 APPROVED. PIPE AND MATERIALS INCORPORATED INTO THIS PROJECT SHALL ALSO CONFORM TO THE LATEST REVISION OF THE APPROPRIATE STANDARDS AS FOLLOWS:

PIPE:	AWWA C-151
FITTINGS:	AWWA C-153/AWWA C-110
FLANGES:	AWWA C-115
GATE VALVES:	AWWA C-509
APPURTENANCES:	AWWA/NSF STANDARDS AS APPLICABLE

HYDROSTATIC TESTING:
HYDROSTATIC TESTING OF THE WATERLINE SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF AWWA C600 OR AWWA C605 FOR DUCTILE IRON AND PVC WATERLINES, RESPECTIVELY.

DISINFECTION:
DISINFECTION OF THE INSTALLED FACILITIES SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF AWWA C651 FOR WATER LINES & AWWA C653 FOR WATER TREATMENT EQUIPMENT.

WATER FOR CONSTRUCTION:
WATER USED FOR FILLING, FLUSHING, AND TESTING WILL BE COORDINATED WITH AND SUPPLIED BY THE OWNER. IF THE CONTRACTOR REQUESTS WATER FROM A HYDRANT, THE CONTRACTOR MUST COORDINATE THAT WITH THE OWNER AND PROVIDE THE REQUIRED BACKFLOW PREVENTION DEVICE. THE OWNER SHALL PROVIDE A QUANTITY OF WATER THAT IS DEEMED REASONABLE FOR COMPLETION OF THE WORK AND MAY ADJUST THE POINT WHERE WATER IS MADE AVAILABLE AT THEIR DISCRETION.

SURVEYS:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING ALL DETAIL SURVEYS NEEDED FOR CONSTRUCTION.

ELEVATION DATUM:
ALL ELEVATIONS ARE BASED ON U.S.G.S. 1988 DATUM.

WORK LIMITS:
THE CONTRACTOR SHALL CONFINE HIS ACTIVITIES TO THE PROJECT SITE UNDER DEVELOPMENT, THE EXISTING RIGHTS-OF-WAY, OR CONSTRUCTION AND PERMANENT EASEMENTS AND SHALL NOT TRESPASS UPON OTHER PRIVATE PROPERTY WITHOUT WRITTEN CONSENT OF THE OWNER. EXISTING PROPERTY LINES AND RIGHTS OF WAY SHOWN ON THE DRAWINGS ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY EXACT LOCATION IN ADVANCE OF CONSTRUCTION OPERATIONS.

EROSION CONTROL DEVICES AND MEASURES:
THE CONTRACTOR SHALL PROVIDE EROSION AND SEDIMENT CONTROL DEVICES AND MEASURES SO THAT THE SITE COMPLIES WITH THE REQUIREMENTS AND RECOMMENDATIONS OF THE OHIO DEPARTMENT OF NATURAL RESOURCES; RAINWATER AND LAND DEVELOPMENT; OHIO STANDARDS FOR STORM WATER MANAGEMENT AND LAND DEVELOPMENT AND URBAN STREAM PROTECTION.

DUST CONTROL:
THE CONTRACTOR SHALL RESTRICT THE EMISSION OF ALL FUGITIVE DUST AND PARTICULATE, AIRBORNE OR OTHERWISE, THAT ARIES FROM HIS OPERATION AND ACTIVITIES RELATIVE TO THIS PROJECT. DUST CONTROL MEASURES SHALL BE IMPLEMENTED AND MAINTAINED PURSUANT TO THE APPLICABLE REQUIREMENTS OF THE OHIO ADMINISTRATIVE CODE (OAC) SECTION 3745-17-08 IN EFFECT AT THE TIME OF THE CONTRACT. SUCH MEASURES SHALL APPLY TO ACTIVITIES ON-SITE AS WELL AS OFF-SITE.

GRANULAR BACKFILL:
EXCAVATIONS AT ALL DRIVES, WALKS, PARKING AREAS AND OTHER ROADWAYS SHALL BE BACKFILLED AND COMPACTED WITH GRANULAR MATERIAL CONFORMING TO O.D.O.T. SPECIFICATION ITEM 304 - AGGREGATE BASE. ADDITIONAL GRANULAR MATERIAL SHALL BE STOCKPILED AT SELECT LOCATIONS (APPROVED BY OWNER) FOR USE WHEN SETTLEMENT OCCURS. ALL GRANULAR MATERIAL SHALL BE MECHANICALLY COMPACTED IN SIX (6) INCH LAYERS. THE COST OF ALL GRANULAR BACKFILL AND PLACEMENT SHALL BE INCLUDED IN THE PRICE BID FOR RELATED ITEMS SEPARATE PAYMENT WILL NOT BE MADE.

ESTIMATED QUANTITIES:
ALL ITEMS OF WORK CALLED FOR ON THE DRAWINGS FOR WHICH NO SPECIFIC METHOD OF PAYMENT IS PROVIDED, SHALL BE PERFORMED BY THE CONTRACTOR AND THE COST OF THE SAME SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR MISCELLANEOUS SITE WORK.

MISCELLANEOUS STORM SEWERS:
THE CONTRACTOR SHALL CONNECT OR REPAIR ANY DRAIN PIPE AFFECTED BY THE EXECUTION OF THIS CONTRACT.

CONCRETE BACKING:
ALL BENDS, JOINT DEFLECTIONS AND FITTINGS SHALL BE BACKED WITH CONCRETE IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS.

COORDINATION:
THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE OWNER TO AVOID DELAYS AND CONFLICTS.

SEQUENCE OF CONSTRUCTION:
CONTRACTOR SHALL NOTE THE SEQUENCE OF CONSTRUCTION REQUIRED FOR THIS PROJECT AS OUTLINED IN THE PROJECT SPECIFICATIONS.

UTILITY SHUTDOWN:
THE CONTRACTOR SHALL COORDINATE ALL UTILITY SHUTDOWNS WITH THE OWNER 72 HOURS IN ADVANCE OF PROPOSED SHUTDOWN. WITH COORDINATION FROM THE OWNER, THE CONTRACTOR SHALL BE PERMITTED TO TAKE EXISTING EQUIPMENT OUT OF SERVICE FOR A MAXIMUM OF 48 HOURS. CONTRACTOR SHALL BE LIMITED TO ONE 48 HOUR SHUTDOWN PERIOD PER WEEK. SHUTDOWN PERIODS MAY NOT INCORPORATED MONDAY OR FRIDAY. DURING THE MONTHS OF APRIL, MAY AND JUNE, SHUTDOWN DURATION SHALL BE LIMITED TO A MAXIMUM DURATION OF 48 HOURS.

PROCESS NOTES:

- THE CONTRACTOR SHALL FURNISH ALL TOOLS, MATERIAL, LABOR, INCIDENTALS AND APPURTENANCES TO COMPLETE IN EVERY DETAIL AND LEAVE IN WORKING ORDER ALL ITEMS OF WORK CALLED FOR AND/OR SHOWN IN THE DRAWINGS. MATERIAL OR WORK NOT SPECIFICALLY MENTIONED OR SHOWN IN THE DRAWINGS, BUT NECESSARY TO COMPLETE THE WORK SHALL BE FURNISHED.
- ALL DIMENSIONS SHOWN ARE SUBJECT TO NORMAL CONSTRUCTION TOLERANCES FOR FABRICATIONS OF THIS SIZE.
- ANY MODIFICATIONS OR CHANGES TO THE WORK AS SHOWN ON THE DRAWINGS MUST HAVE THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.
- NOT ALL EXISTING PIPING, CONDUIT, OR THE LIKE MAY BE SHOWN. CARE SHALL BE TAKEN WHEN INSTALLING ANY COMPONENT OF THE PROJECT AND AVOIDING CONFLICTS. IF A CONFLICT ARISES, NOTIFY ENGINEER AND OWNER IMMEDIATELY.
- ALL EXISTING COMPONENTS OR NEW COMPONENTS ALREADY INSTALLED IN A WORK AREA SHALL BE ADEQUATELY PROTECTED FROM DAMAGE. DO NOT DISTURB OR OTHERWISE HINDER THE NORMAL OPERATION OF THE PLANT.
- EXISTING PIPE TYPE, LOCATION, SIZE AND ELEVATION SHALL BE FIELD VERIFIED PRIOR TO CONNECTING TO NEW PIPE.
- PIPE HANGERS AND SUPPORTS MAY NOT BE SHOWN FOR CLARITY. ALL PIPING, VALVES AND FITTINGS SHALL BE SUPPORTED PROPERLY PER MANUFACTURER'S RECOMMENDATIONS AND NOT BY EQUIPMENT.
- THE CONTRACTOR SHALL REPAIR ANY DAMAGE DONE TO ASPHALT ROADS, GRAVEL ROADS, CONCRETE SURFACES OR GRASS AREAS DURING CONSTRUCTION.
- ALL MATERIALS HAVING CONTACT WITH POTABLE WATER SHALL MEET N.S.F. STANDARDS 60 AND 61.
- ALL PIPING IS CLASS 52 (MIN) DIP UNLESS OTHERWISE STATED OR LISTED IN THE SPECIFICATIONS. SHOULD ANY DISCREPANCIES ARISE, THE SPECIFICATIONS SHALL GOVERN FOR THE INTENDED SERVICE SHOWN ON THE PLANS.
- VERIFY SIZES BEFORE ORDERING VALVES, FITTINGS, ETC.
- PIPE ELEVATIONS AND CONNECTIONS SHALL BE COORDINATED WITH EQUIPMENT MANUFACTURER.
- EQUIPMENT MAY NOT NECESSARILY BE SHOWN IN TRUE ORIENTATION SO AS TO PROVIDE CLARITY.
- ALL CHEMICAL FEED SYSTEM MATERIALS SHALL BE COMPATIBLE WITH CHEMICAL SPECIFIED.

BID SET



ISSUED FOR:	BID SET	NO	REVISION	DATE
ISSUE DATE:	7/22/2026	1	REVISED PER OEPA COMMENTS	1/6/2026
SCALE:	AS NOTED	2	REVISED PER OEPA COMMENTS	3/4/2026
DESIGNED BY:	JJM	3	REVISED PER OEPA COMMENTS	4/6/2026
DRAWN BY:	AGD	4	REVISED FOR CONSTRUCTION	7/22/2026
CHECKED BY:	BRA			

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

GENERAL - 00 SERIES
GENERAL NOTES

PROJECT NO. 232055	
DISCIPLINE GENERAL	
SHEET NAME 00G-03	
SHEET 3	OF 19

BASIS OF DESIGN

RATED CAPACITY: 350 GPM (0.504 MGD)

WELL CAPACITY RATINGS:

- WELL NO. 2 - 150 GPM
- WELL NO. 3 - 296 GPM
- WELL NO. 4 - 306 GPM

RAW WATER QUALITY

- HARDNESS: 444 MG/L (AS CaCO3)
- IRON: 1.18 MG/L (AS FE)
- MANGANESE: 0.080 MG/L (TOTAL)
- ARSENIC: ND uG/L
- PH: 7.35

EXISTING CHEMICAL FEED

- SODIUM HYPOCHLORITE (FOR ALL FEED LOCATIONS)
- CHEMICAL FORM: LIQUID CHLORINE (12.5% NaOCl)
- CHEMICAL CONCENTRATION: 1.19 LB/GALLON (12.5% SOLUTION)
- FEED LOCATIONS: STATIC MIXER @ BASE OF AERATOR - #1
PRE-CLEARWELL - #2
PRIOR TO DISTRIBUTION - #3

DISINFECTION (PRIMARY)

- CHEMICAL USAGE AT DESIGN FLOW (350 GPM): 10.19 GAL/DAY
- REQUIRED STORAGE (AT ADDF): 306 GALLONS
- STORAGE PROVIDED (AT ADDF): 350 GALLONS
- METERING PUMP FEED RATE, MAX: 0.42 GALLONS/HOUR @ ADDF
- CHLORINE DOSAGE: 3.0 MG/L
- OXIDATION (SECONDARY)
- PURPOSE: IRON AND MANGANESE OXIDATION AND CONTINUOUS GREENSAND FILTER REGENERATION

- LOCATION: PRIOR TO FILTRATION
- CHEMICAL USAGE AT DESIGN FLOW (350 GPM): 1.9 GAL/DAY ADDF
- REQUIRED STORAGE (AT ADDF): 8 GAL
- STORAGE PROVIDED: 350 GAL. TANK
- METERING PUMP FEED RATE, MAX: 0.237 GALLONS/HOUR @ ADDF
- CHLORINE DOSAGE: 0.24 MG/L

- PERMANGANATE
- CHEMICAL FORM: LIQUID (2% KMnO4)
- CHEMICAL CONCENTRATION: 0.41 MG/L
- FEED LOCATIONS: STATIC MIXER @ BASE OF AERATOR - #1
- STORAGE PROVIDED: 55 GALLONS
- CHEMICAL USAGE AT DESIGN FLOW (350 GPM): 10 GAL/DAY ADDF
- METERING PUMP FEED RATE: 0.42 GAL/HR (SOLUTION)

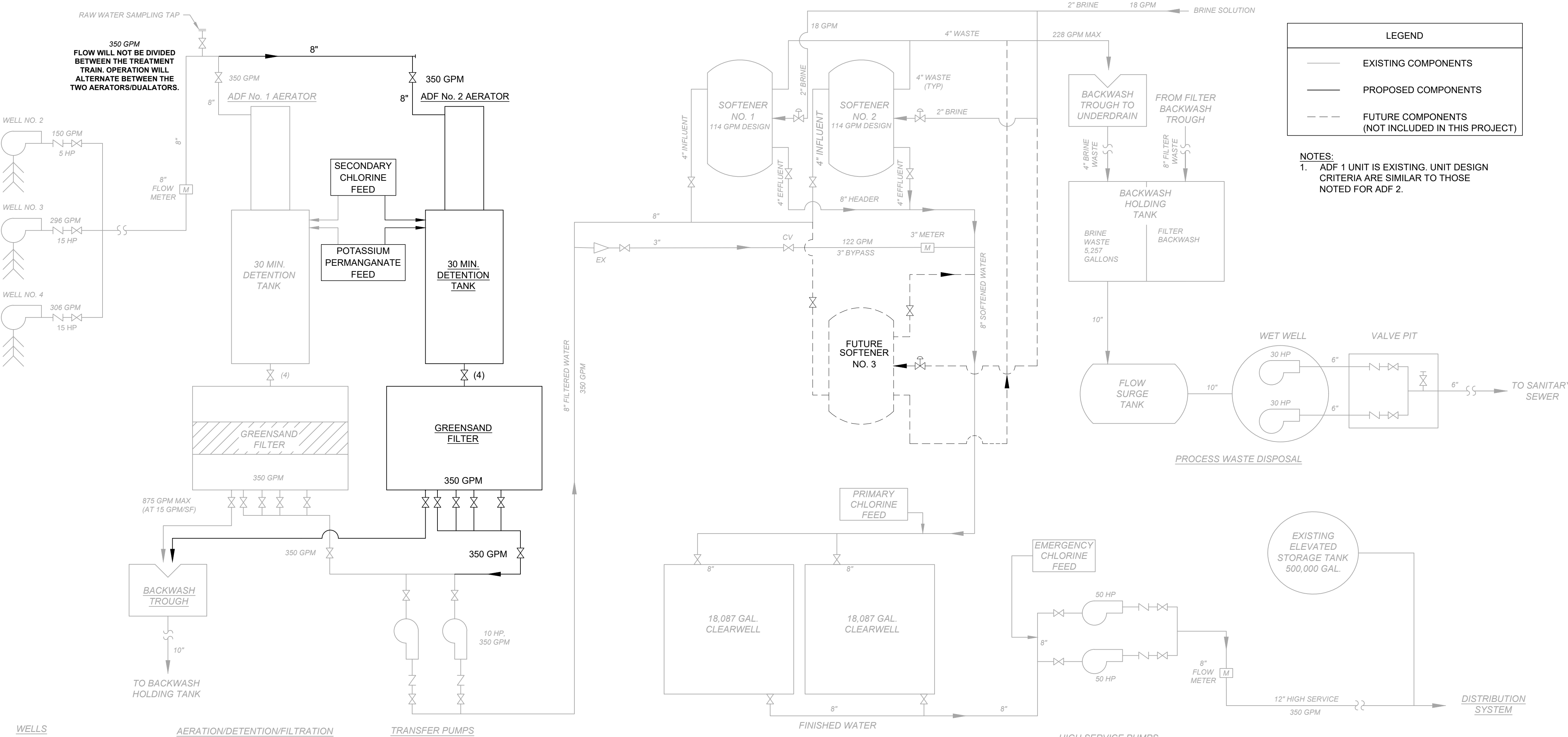
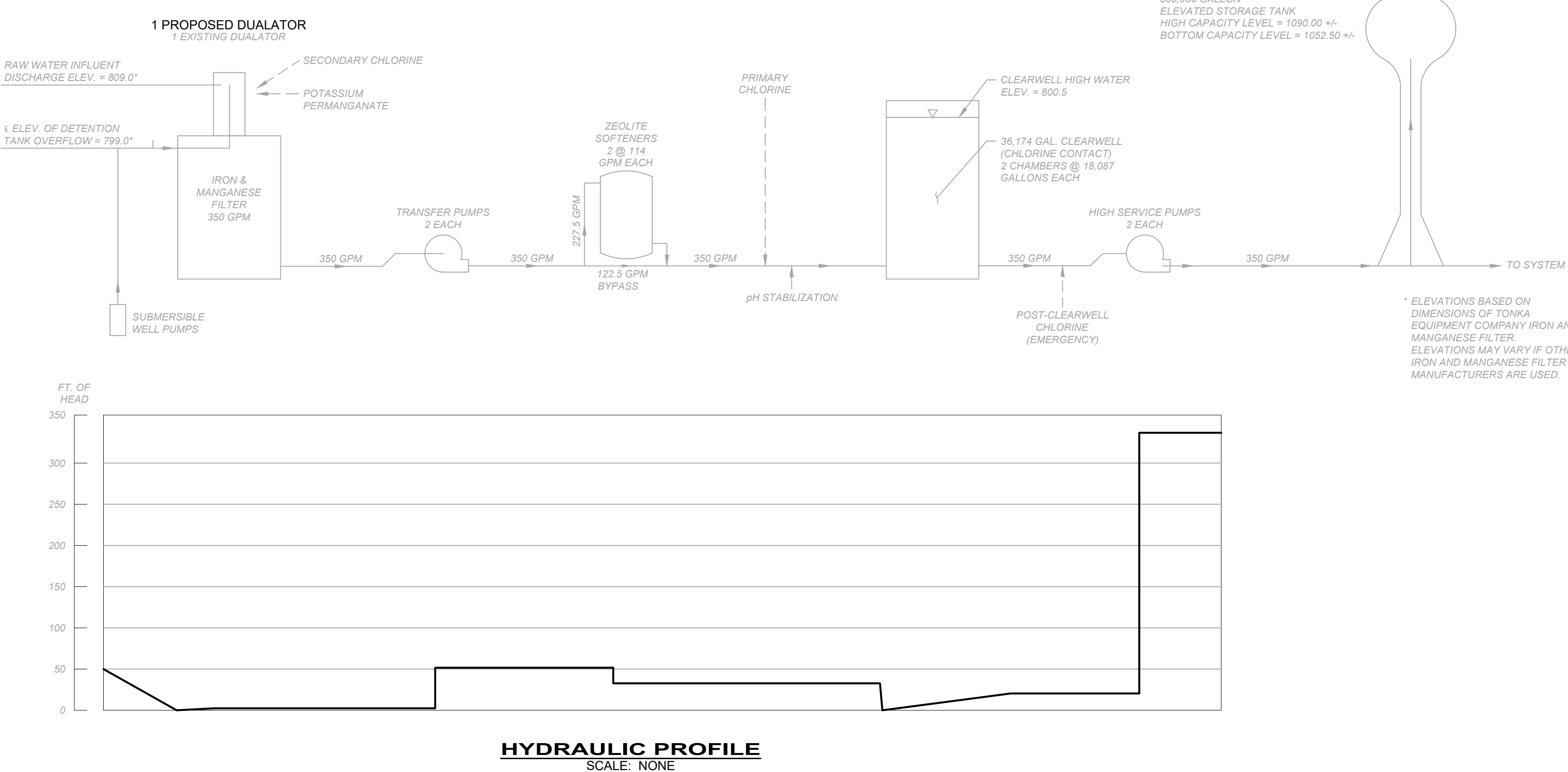
PROCESS EQUIPMENT

PACKAGED AERATOR/DETENTION/FILTER (ADF 2) SEE NOTE 1

- APPLICATION: IRON AND MANGANESE REMOVAL
- DESIGN FLOW (EA): 350 GPM
- NUMBER OF UNITS: ONE (1) EXISTING @ 12'-6" DIA.
ONE (1) PROPOSED @ 12'-6" DIA.
- OPERATION: ALTERNATE BETWEEN UNITS
- AERATION RATE: 1400 CFM @ 3/8" S.P.
- DETENTION TIME: 30 MIN. @ 350 GPM
- FILTER CELLS: FOUR (4) - ISOLATED
- FILTRATION AREA: 122.72 SQ. FT. (30.68 SQ. FT./CELL)
- FILTRATION RATE: 350 GPM (2.85 GPM/SQ. FT.)
- FILTER MEDIA: 18" GREENSAND PLUS,
EFFECTIVE SIZE 0.30 - 0.35 mm;
UNIFORMITY COEFFICIENT LESS THAN 1.6
12" ANTHRACITE, EFFECTIVE SIZE 0.60 - .80 mm;
UNIFORMITY COEFFICIENT LESS THAN 1.6
- SUPPORT GRAVEL: 4" - 3/4" x 1/2" GRADED GRAVEL
4" - 1/2" x 1/4" GRADED GRAVEL
4" - 1/4" x 1/8" GRADED GRAVEL
3" - 0.8 - 1.2 mm TORPEDO SAND
UNIFORMITY COEFFICIENT LESS THAN 1.6
- UNDERDRAIN: HEADER - LATERAL DESIGN, STRUCTURALLY - SUPPORTED,
PVC CONSTRUCTION WITH CONCRETE SUB-FILL AND NON-METALLIC
DIFFUSER NOZZLES.
- BACKWASH RATES: WATER & AIR SCOUR - 3-5 GPM/SQ. FT./CELL, TIME: 10 MIN.
WATER ONLY/AIR PURGE - 3 GPM/SQ. FT./CELL, TIME: 2 MIN.
WATER ONLY (RESTRATIFICATION) - 10GPM/SQ. FT./CELL, TIME: 3 MIN.
AIRWASH RATE - 3 CFM/SQ. FT./CELL
- CONSTRUCTION: CARBON STEEL; DETENTION TANK TOP, SIDEWALLS,
CELL PARTITIONS - 1/4" PLATE; FILTER AND BOTTOM - 3/8" STEEL
AERATOR 3/16" ALUMINUM
- BLOWER: INDUCED DRAFT, 460V, 3 PH, 1/2 HP, 1400 SCFM
- TANK FLANGES: 150 LB. FLAT FACE, WELDED ON SPLIT CENTERS.
- HEADER PIPE: WATER - SCH. 40 CARBON STEEL
AIR - 304 STAINLESS STEEL
- AIRWASH BLOWER: 92 CFM @ 5 PSI; 5 HP (EXISTING)

EXISTING SOFTENER

- NUMBER OF UNITS: TWO (2) EXISTING
- CONSTRUCTION: 8'-6" DIA. x 7'-0" STRAIGHT SIDE
ASME CODE (STAMPED)
WORKING PRESSURE - 100 PSI
HYDROSTATIC TEST PRESSURE - 130 PSI
- ION EX. RESIN: 42" BED DEPTH HIGH CAPACITY CATION
RESIN (199 CU. FT.) /SOFTENER
- BED AREA: 56.75 SQ. FT./SOFTENER
- SOFTENING RATE: 350 GPM (2 UNITS)
- BACKWASH RATE: 4 GPM/SQ. FT. (10 MIN)
- BRINE RATE: 36 GPM 100% BRINE BLENDED W/ 18 GPM CLEAN
WATER /SOFTENER (0.64 GPM/SF @ 25 MIN)
- SLOW RINSE: 36 GPM/SOFTENER (0.64 GPM/SF @ 25 MIN)
- FAST RINSE: 114 GPM/SOFTENER (2 GPM/SF @ 10 MIN)
- SUPPORT GRAVEL: 4" DEPTH - 3/4" x 1/2" GRADED GRAVEL
4" DEPTH - 1/2" x 1/4" GRADED GRAVEL
4" DEPTH - 1/4" x 1/8" GRADED GRAVEL
4" DEPTH - 0.80 TO 1.20mm TORPEDO SAND
UNIFORMITY COEFFICIENT LESS THAN 1.70
- PIPE: INTERIOR BRINE PIPING - SCH. 80 PVC
INTERIOR PIPING - SCH. 40 STEEL
EXTERIOR FACE PIPING - SCH. 40 STEEL
- UNDERDRAIN: STANDARD FALSE BOTTOM WITH HIGH IMPACT
ABS DIFFUSER NOZZLES
LOCATED ON APPROXIMATELY 12" CENTERS



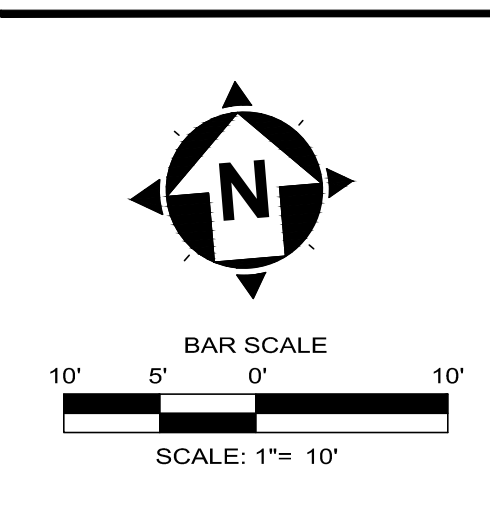
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VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

GENERAL - 00 SERIES
DESIGN CRITERIA & PROCESS SCHEMATIC

PROJECT NO.	232055
DISCIPLINE	GENERAL
SHEET NAME	00G-04
SHEET	OF
4	19



- EXISTING SITE PIPING**

1. 6" RAW WATER LINE
2. 10" SOFTENER BACKWASH WASTE LINE
3. 10" FILTER BACKWASH WASTE LINE
4. 10" BACKWASH WASTE LINE COMBINED
5. 4" SANITARY LINE
6. 6" SANITARY FORCE MAIN
7. 12" FINISHED WATER LINE
8. 8" BLENDED WATER LINE
9. 8" FINISHED WATER LINE
10. 6" STORM SEWER LINE
11. 8" STORM SEWER LINE
12. 6" PVC FOUNDATION DRAIN OUTLET

BENCHMARKS:

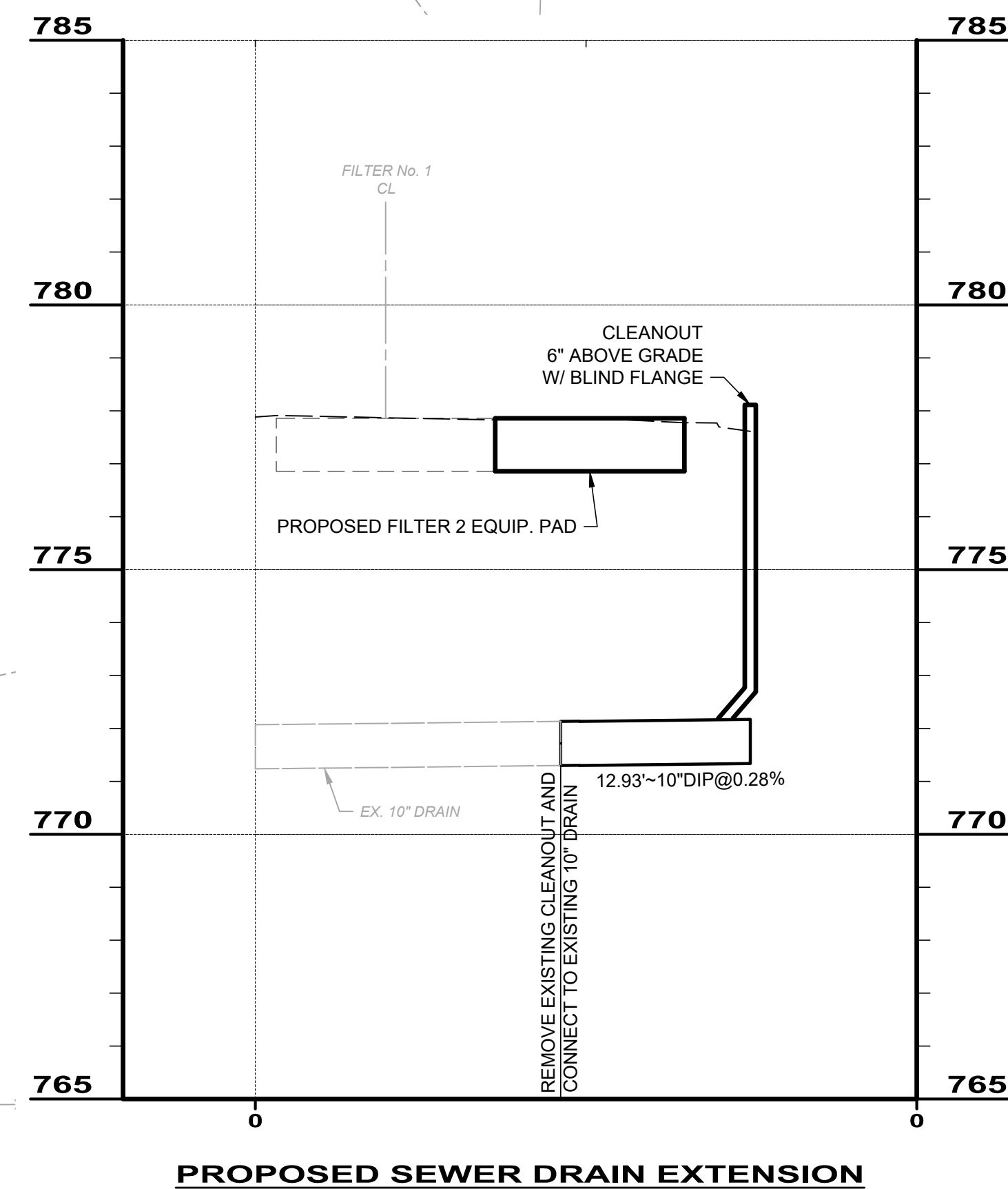
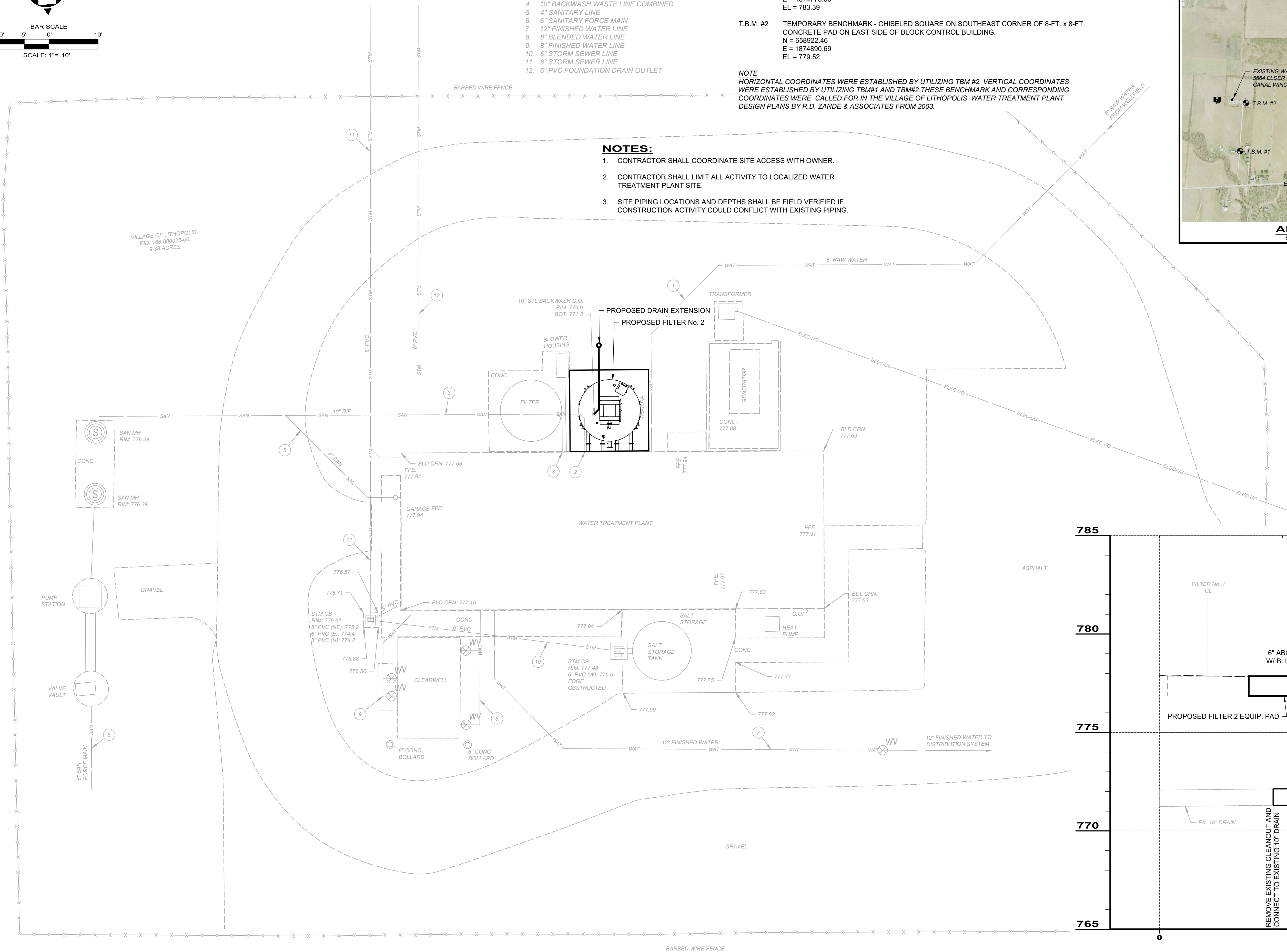
T.B.M. #1 TEMPORARY BENCHMARK - RAILROAD SPIKE FOUND WEST SIDE OF POLE (#43/1W/58/3),
EAST SIDE OF GRAVEL DRIVE, 500 FEET NORTH OF ELDER ROAD ENTRANCE.
N = 657944.20
E = 1874773.50
EL = 783.39

T.B.M. #2 TEMPORARY BENCHMARK - CHISELED SQUARE ON SOUTHEAST CORNER OF 8-FT. x 8-FT.
CONCRETE PAD ON EAST SIDE OF BLOCK CONTROL BUILDING.
N = 658922.46
E = 1874890.69
EL = 779.52

NOTE
HORIZONTAL COORDINATES WERE ESTABLISHED BY UTILIZING TBM #2. VERTICAL COORDINATES WERE ESTABLISHED BY UTILIZING TBM#1 AND TBM#2.THESE BENCHMARK AND CORRESPONDING COORDINATES WERE CALLED FOR IN THE VILLAGE OF LITHOLPOLIS WATER TREATMENT PLANT DESIGN PLANS BY R.D. ZANDE & ASSOCIATES FROM 2003.

NOTES:

1. CONTRACTOR SHALL COORDINATE SITE ACCESS WITH OWNER.
2. CONTRACTOR SHALL LIMIT ALL ACTIVITY TO LOCALIZED WATER TREATMENT PLANT SITE.
3. SITE PIPING LOCATIONS AND DEPTHS SHALL BE FIELD VERIFIED IF CONSTRUCTION ACTIVITY COULD CONFLICT WITH EXISTING PIPING.

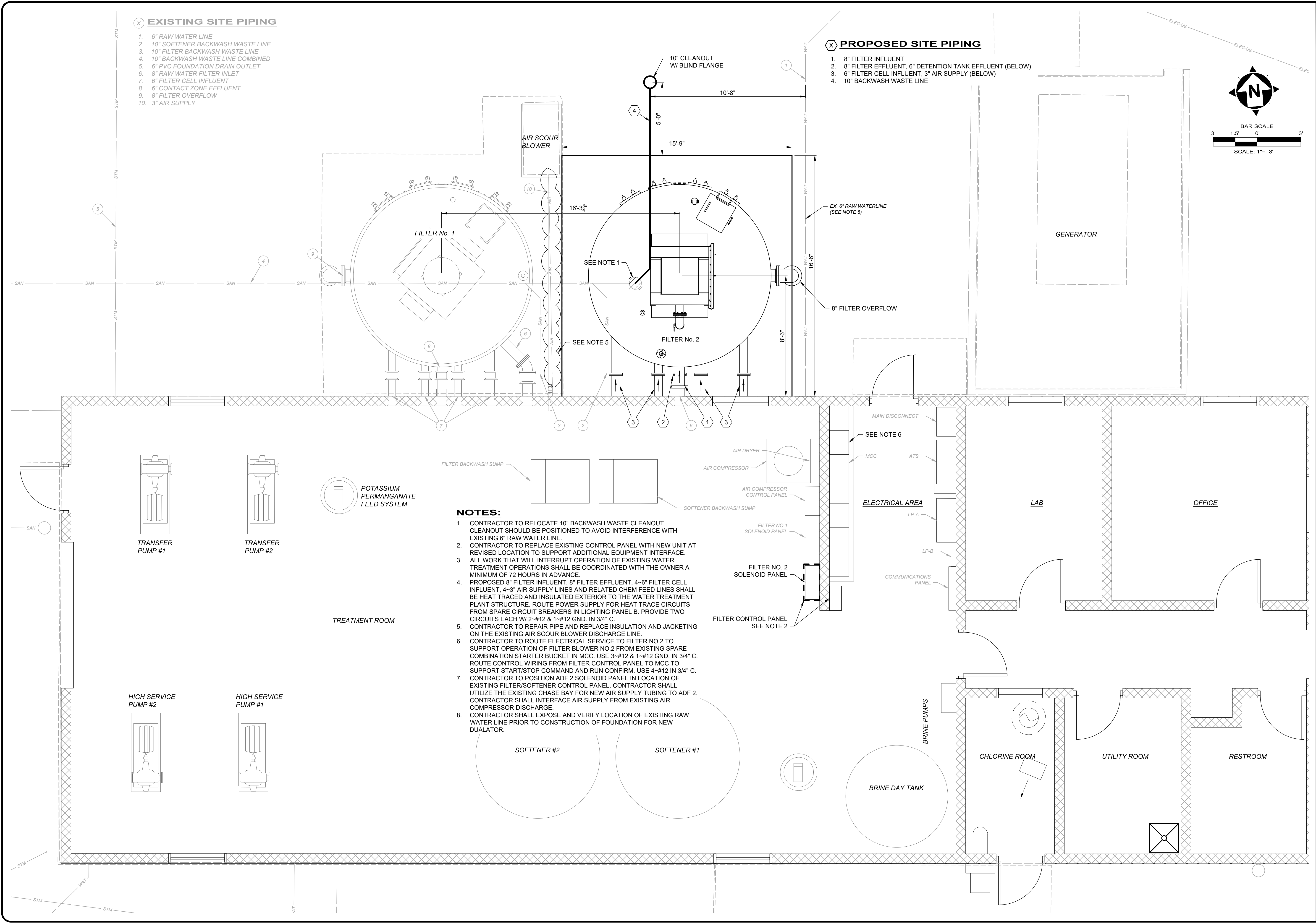


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PROJECT NO.		232055	
DISCIPLINE		CIVIL	
SHEET NAME		01C-01	
SHEET	OF	5	19

VILLAGE OF LITHOPOLIS WATER TREATMENT PLANT NEW FILTER ADDITION				ISSUED FOR:	BID SET	NO	REVISION	DATE
				ISSUE DATE:	7/22/2026	1	REVISED PER CEPA COMMENTS	16/2/2026
				SCALE:	AS NOTED	2	REVISED PER CEPA COMMENTS	34/2/2026
				DESIGNED BY:	JJM	3	REVISED PER CEPA COMMENTS	46/2/2026
				DRAWN BY:	AGD	4	REVISED FOR CONSTRUCTION	7/22/2026
				CHECKED BY:	BRA			
				SITE IMPROVEMENTS - 01 SERIES				
				SITE PLAN				



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VILLAGE OF LITHOPOLIS

WATER TREATMENT PLANT

NEW FILTER ADDITION

SITE IMPROVEMENTS - 01 SERIES

PARTIAL FLOOR PLAN

PROJECT NO.

232055

DISCIPLINE

CIVIL

SHEET NAME

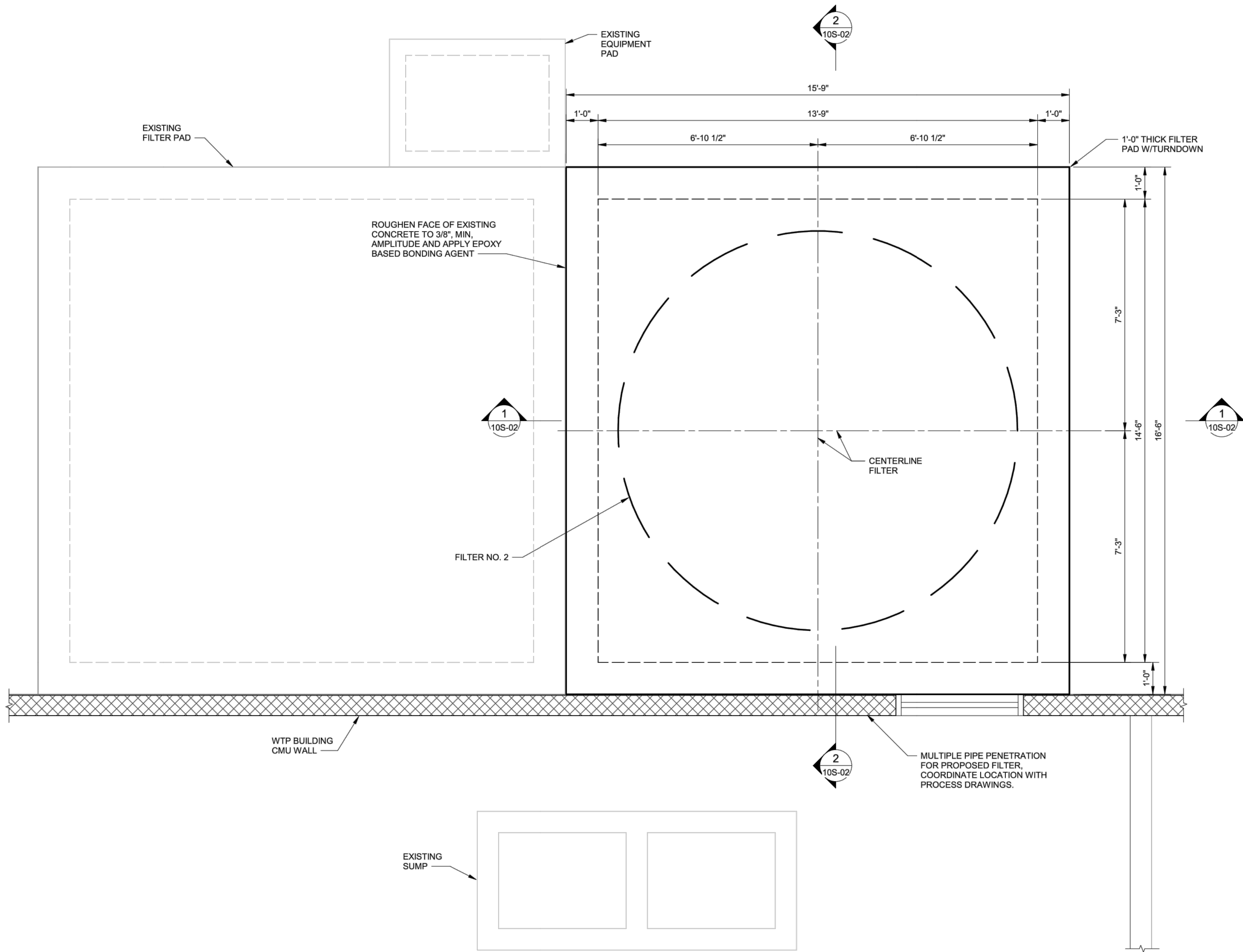
01C-02

SHEET

6

OF

19



FILTER PAD PLAN
1/2" = 1'-0"

FILTER PAD PLAN NOTES:

- CORE DRILL MASONRY WALL FOR PROPOSED PIPE PENETRATION. COORDINATE SIZE AND LOCATION WITH PROCESS DRAWINGS.
- PREFORMED JOINT FILLER SHALL BE AN ASPHALT EXPANSION JOINT COMPOSED OF A BLEND OF ASPHALTS AND MINERAL FILLERS FORMED. PREFORMED JOINT FILLER SHALL BE WATERPROOF, PERMANENT, FLEXIBLE, AND SELF-SEALING. PREFORMED JOINT FILLER SHALL BE FULL HEIGHT. ACCEPTABLE PRODUCT MANUFACTURE ARE W. R. MEADOWS, INC., FORM TECH CONCRETE FORMS INC., SIKA, INC., OR EQUAL.
- VOID FORM: MANUFACTURED CORRUGATED PAPER, MOLDED PULP, WOOD COMPOSITE, OR OTHER ACCEPTABLE TYPE OF FORM MATERIALS, TO PROVIDE CONTINUOUS, STRAIGHT, AND SMOOTH SURFACES. VOID FORM SHALL BE DESIGNED TO SUPPORT THE WEIGHT OF FRESH CONCRETE. FORM SHALL CRUSH 20% TO 25% OF ITS ORIGINAL SIZE AFTER THE CONCRETE IS CURED. FORMS CAN BE DEGRADABLE.
 - FORM SHALL BE DESIGNED TO SUPPORT THE WEIGHT OF THE CONCRETE PLUS 40 PSF.
 - FORMS SHALL DEFORM OR NOT SUPPORT THE WEIGHT OF THE CONCRETE PLUS 750 PSF.

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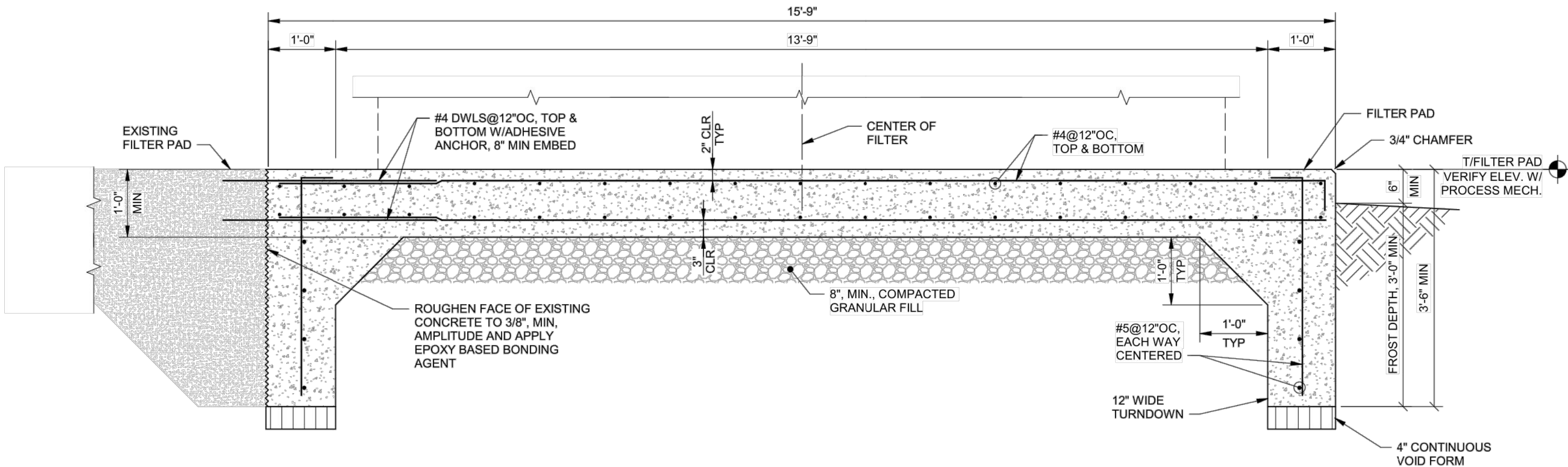
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SCALE:	AS NOTED	2	REVISED PER OEPA COMMENTS	3/4/2026
DESIGNED BY:	BAS	3	REVISED PER OEPA COMMENTS	4/6/2026
DRAWN BY:	BAS	4	REVISED FOR CONSTRUCTION	7/22/2026
CHECKED BY:	BAS			

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

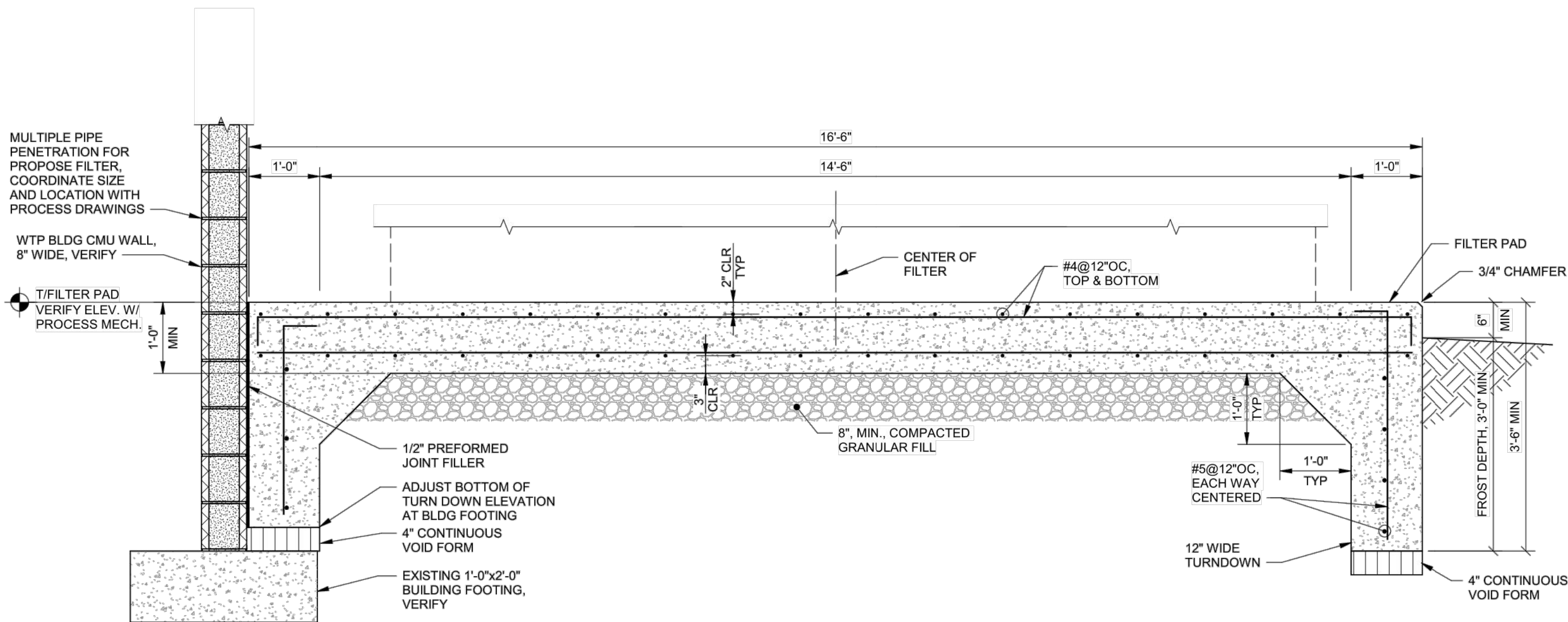
WATER TREATMENT PLANT - 10 SERIES
FILTER PAD PLAN

PROJECT NO. 232055	
DISCIPLINE STRUCTURAL	
SHEET NAME 10S-01	
SHEET 7	OF 19



1 SECTION

10S-02 3/4" = 1'-0"



2 SECTION

10S-02 3/4" = 1'-0"

FILTER PAD PLAN NOTES:

- CORE DRILL MASONRY WALL FOR PROPOSED PIPE PENETRATION. COORDINATE SIZE AND LOCATION WITH PROCESS DRAWINGS.
- PREFORMED JOINT FILLER SHALL BE AN ASPHALT EXPANSION JOINT COMPOSED OF A BLEND OF ASPHALTS AND MINERAL FILLERS FORMED. PREFORMED JOINT FILLER SHALL BE WATERPROOF, PERMANENT, FLEXIBLE, AND SELF-SEALING. PREFORMED JOINT FILLER SHALL BE FULL HEIGHT. ACCEPTABLE PRODUCT MANUFACTURE ARE W. R. MEADOWS, INC., FORM TECH CONCRETE FORMS INC., SIKA, INC., OR EQUAL.
- VOID FORM: MANUFACTURED CORRUGATED PAPER, MOLDED PULP, WOOD COMPOSITE, OR OTHER ACCEPTABLE TYPE OF FORM MATERIALS, TO PROVIDE CONTINUOUS, STRAIGHT, AND SMOOTH SURFACES. VOID FORM SHALL BE DESIGNED TO SUPPORT THE WEIGHT OF FRESH CONCRETE. FORM SHALL CRUSH 20% TO 25% OF ITS ORIGINAL SIZE AFTER THE CONCRETE IS CURED. FORMS CAN BE DEGRADABLE.
 - FORM SHALL BE DESIGNED TO SUPPORT THE WEIGHT OF THE CONCRETE PLUS 40 PSF.
 - FORMS SHALL DEFORM OR NOT SUPPORT THE WEIGHT OF THE CONCRETE PLUS 750 PSF.

BID SET

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CHECKED BY:	BAS			

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

WATER TREATMENT PLANT - 10 SERIES
FILTER PAD SECTIONS

PROJECT NO.	232055
DISCIPLINE	STRUCTURAL
SHEET NAME	10S-02
SHEET	8
OF	19



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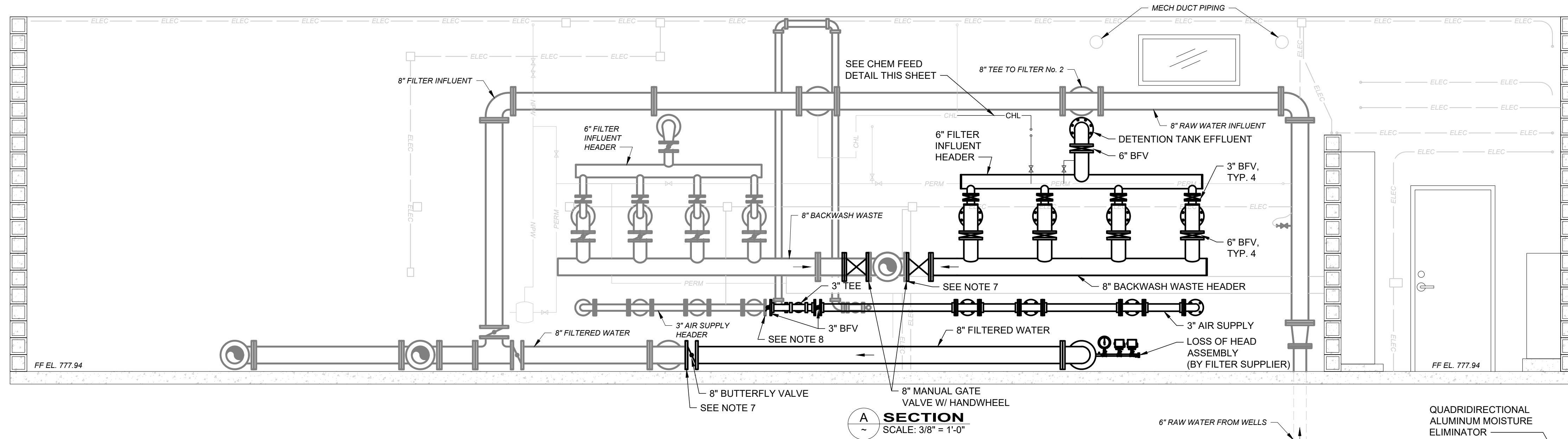
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DESIGNED BY:	JJM	3	REVISED PER OEPA COMMENTS	4/6/2026
DRAWN BY:	AGD	4	REVISED FOR CONSTRUCTION	7/22/2026
CHECKED BY:	BRA			

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

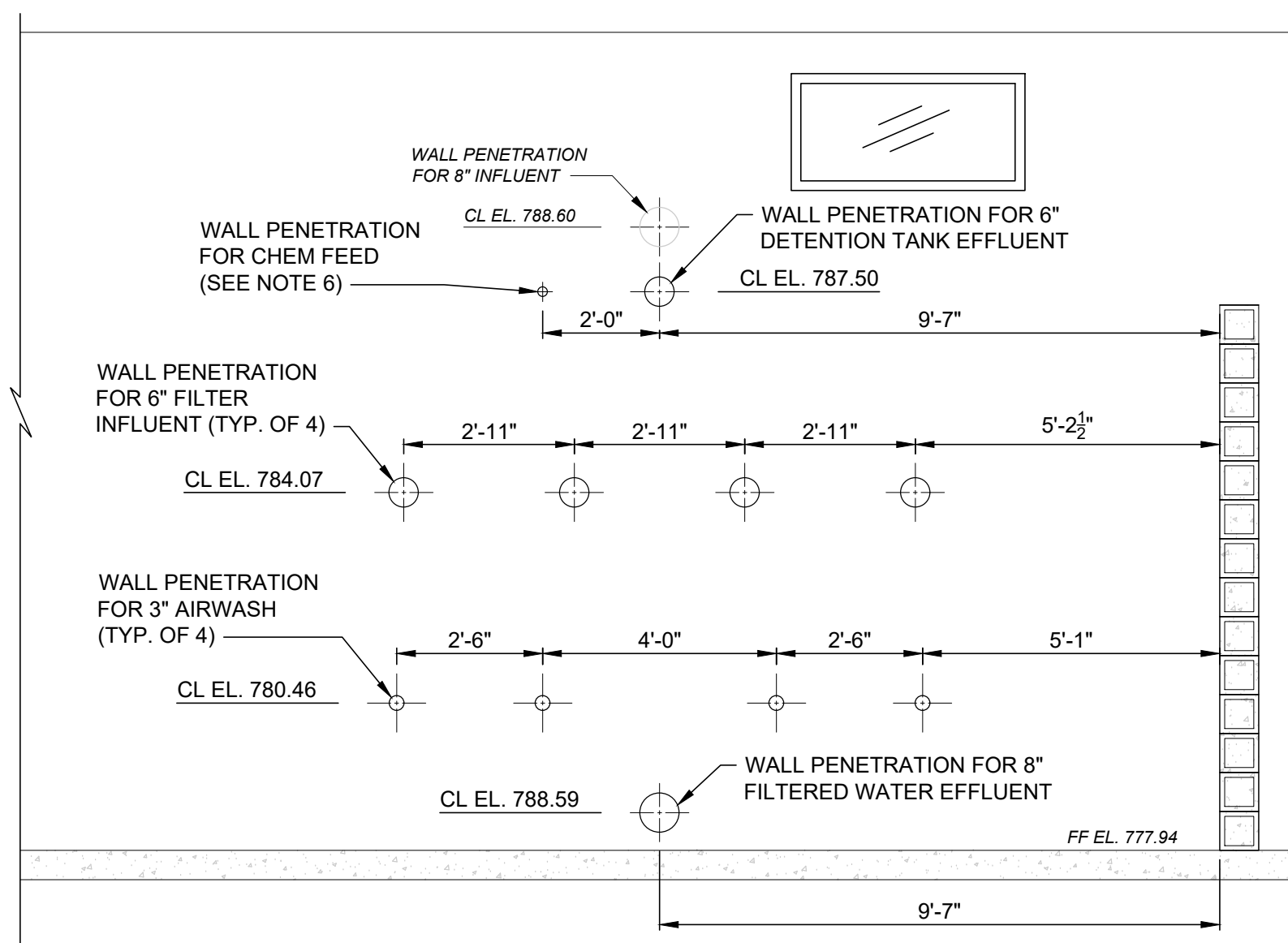
WATER TREATMENT PLANT - 10 SERIES
NEW FILTER & PIPING SECTIONS

PROJECT NO.	2320055
DISCIPLINE	PROCESS
SHEET NAME	10D-02
SHEET	OF
10	19

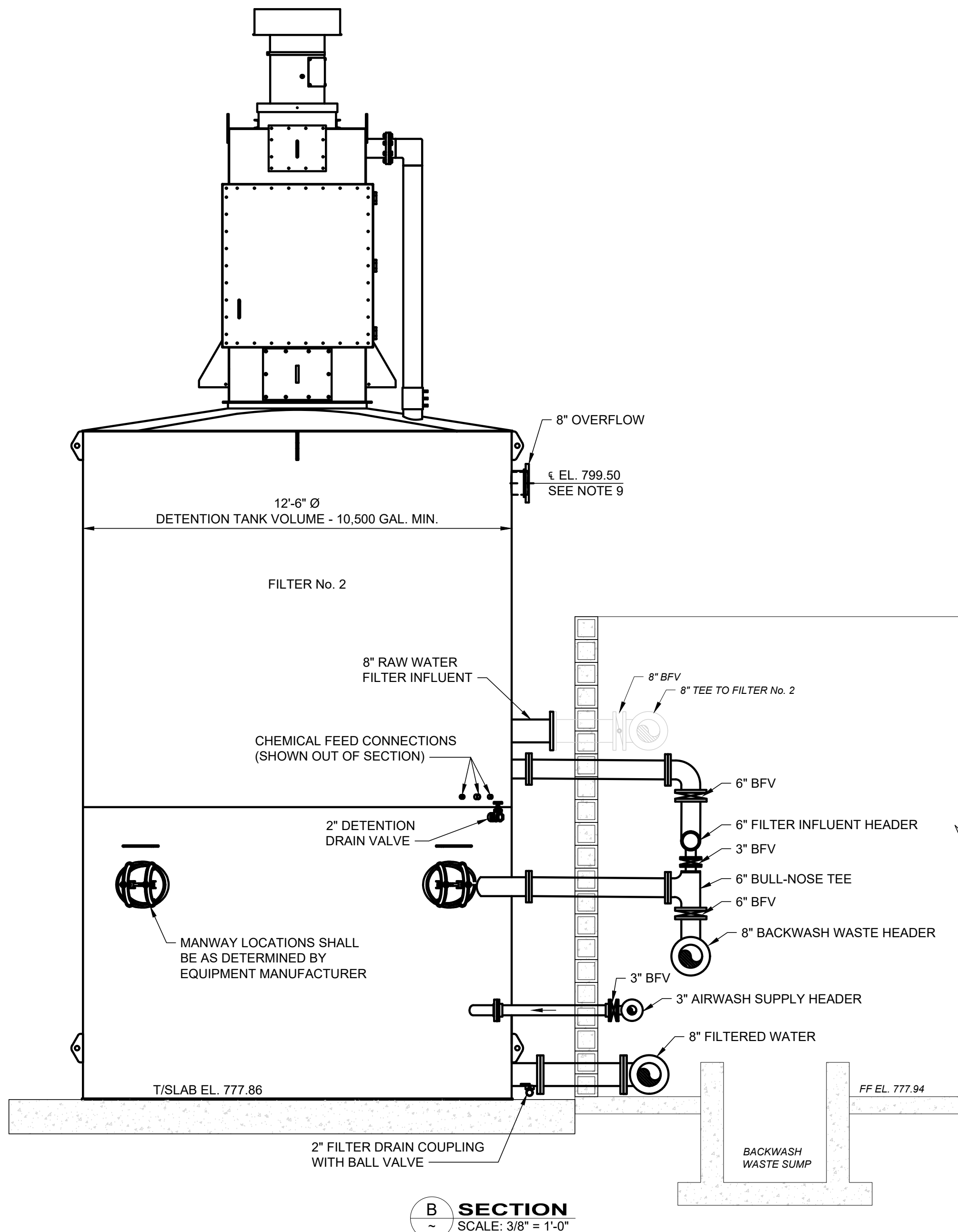


NOTES:

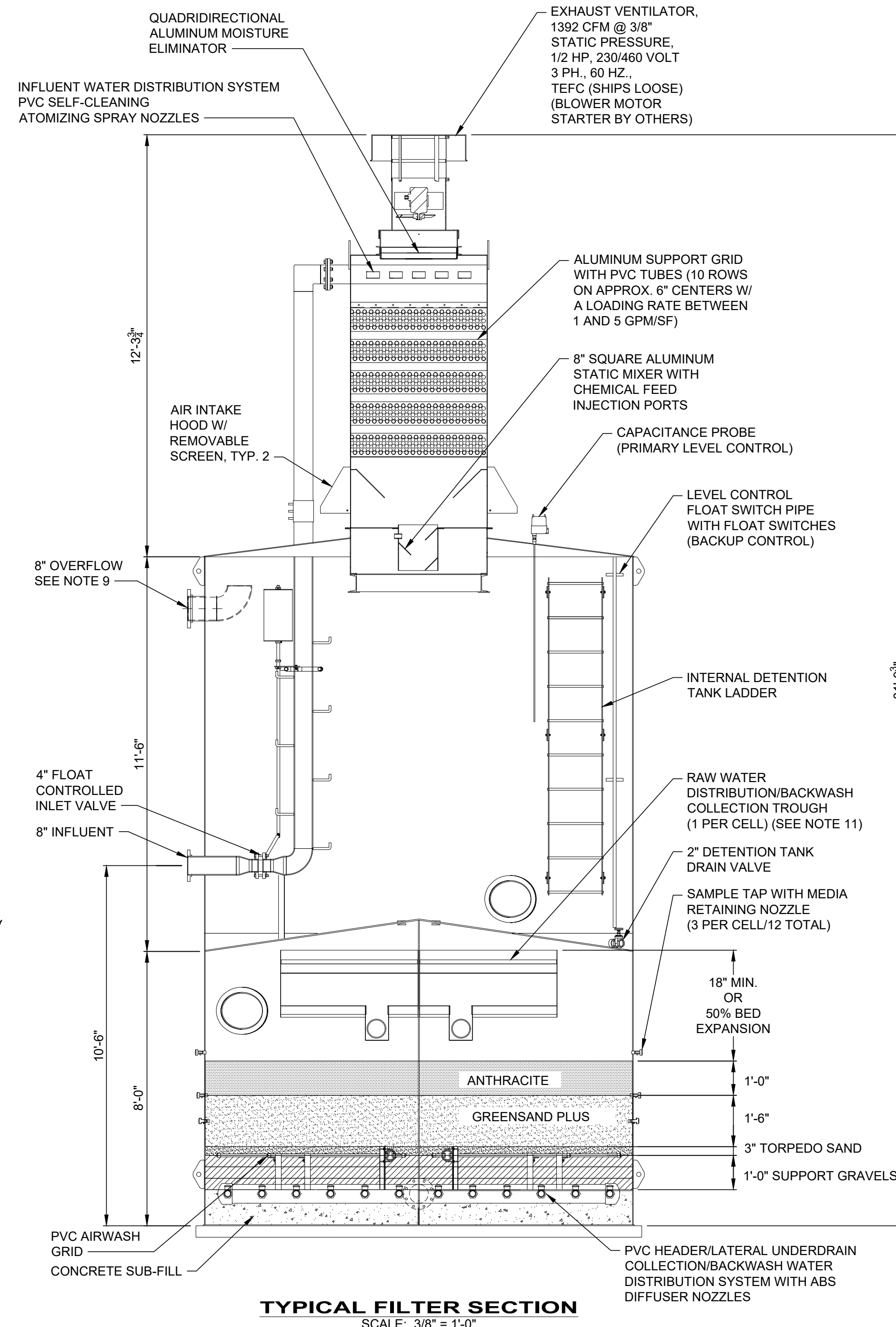
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPING ELEVATIONS AND COORDINATE WITH EQUIPMENT MANUFACTURER.
- CONTRACTOR SHALL PROVIDE ALL PIPING, VALVES AND FITTINGS, AS DETAILED ON DRAWINGS. PROVIDE PIPING SUPPORTS AS REQUIRED.
- CONTRACTOR SHALL PROVIDE AND INSTALL DOUBLE LINK SEALS FOR ALL PIPING PENETRATIONS THROUGH THE EXISTING WALL.
- ALL NEW PIPING INSTALLED OUTSIDE SHALL BE HEAT TRACED AND INSULATED.
- ALL NEW PIPING SHALL BE MINIMUM CL 52 DIP UNLESS OTHERWISE STATED ON THE DRAWING OR IN SPECIFICATIONS.
- CONTRACTOR SHALL COORDINATE PIPE PENETRATION LOCATIONS WITH FILTER MANUFACTURER.
- REMOVE BLIND FLANGE FOR CONNECTION OF NEW PIPING.
- DISCONNECT 3" AIR SCOUR PIPING BETWEEN HEADER TEE AND 90° BEND. ADD 3" ISOLATION BUTTERFLY VALVE. ROTATE EXISTING 90° BENDS TO ALLOW FOR NEW 3" TEE TO PROVIDE AIR PIPING TO FILTER NO.2. ADD 3" ISOLATION BUTTERFLY VALVE ON FILTER NO.2 AIR PIPING.
- OVERFLOW SHOWN OUT OF SECTION. CONTRACTOR TO PROVIDE 8" 90° BEND AND DOWN PIPE TO END 24" ABOVE FILTER SLAB. CONTRACTOR TO COORDINATE WITH FILTER MANUFACTURER ON OVERFLOW CONNECTION AT FILTER. OVERFLOW PIPE DISCHARGE OPENING SHALL BE PROTECTED BY A NON-CORRODIBLE #24 MESH SCREEN.
- HEAT TRACE AND INSULATION ON EXTERIOR PIPING BETWEEN WTP STRUCTURE AND FILTER IS NOT SHOWN. REFER TO SHEET 16 FOR DETAILS.
- RAW WATER DISTRIBUTION/BACKWASH COLLECTION TROUGHS MAY BE SHOWN OUT OF SECTION.



SECTION A
SCALE: 3/8" = 1'-0"



SECTION B
SCALE: 3/8" = 1'-0"



SECTION C
SCALE: 3/8" = 1'-0"

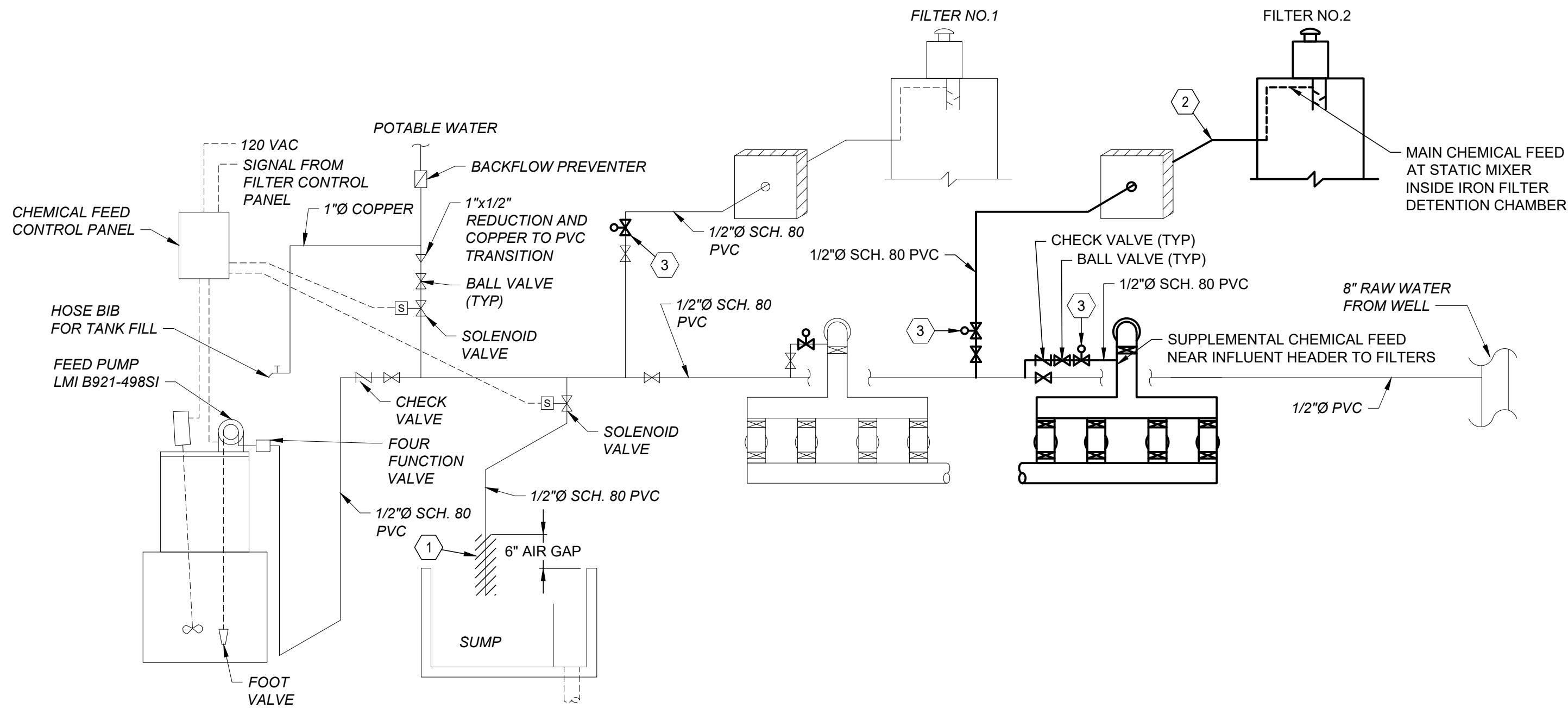
ISSUED FOR:	BID SET	NO	REVISION	DATE
ISSUE DATE:	7/22/2026	1	REVISED PER OEPA COMMENTS	1/6/2026
SCALE:	AS NOTED	2	REVISED PER OEPA COMMENTS	3/4/2026
DESIGNED BY:	JJM	3	REVISED PER OEPA COMMENTS	4/6/2026
DRAWN BY:	AGD	4	REVISED FOR CONSTRUCTION	7/22/2026
CHECKED BY:	BRA			

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

WATER TREATMENT PLANT - 10 SERIES

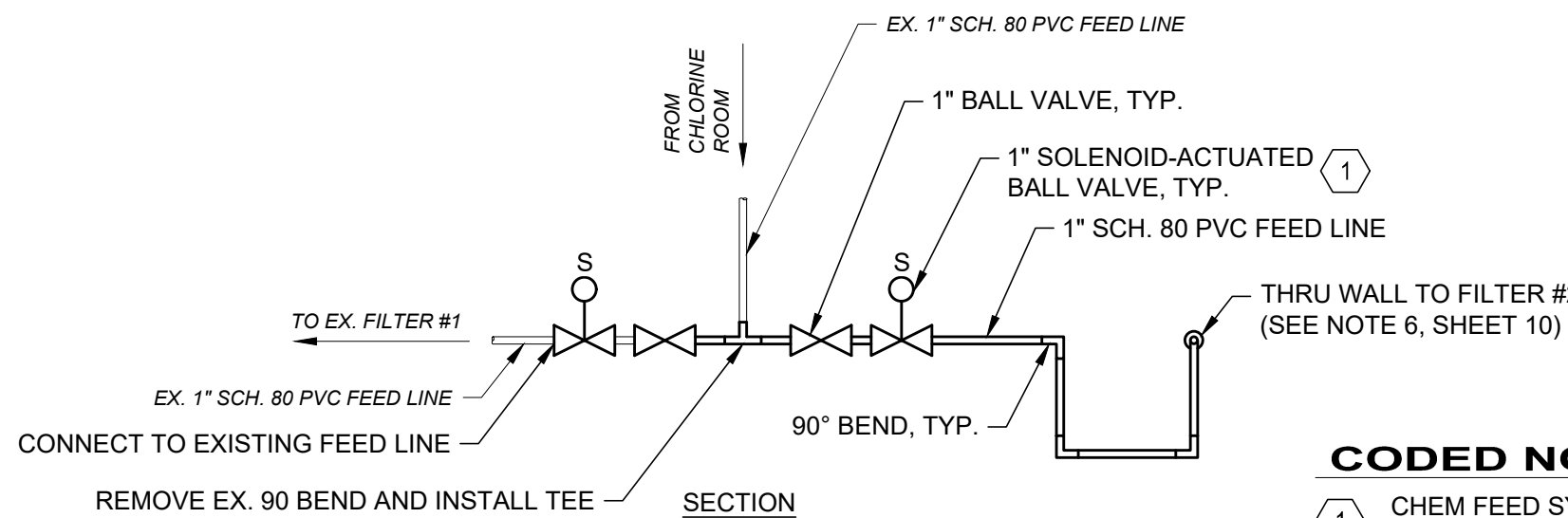
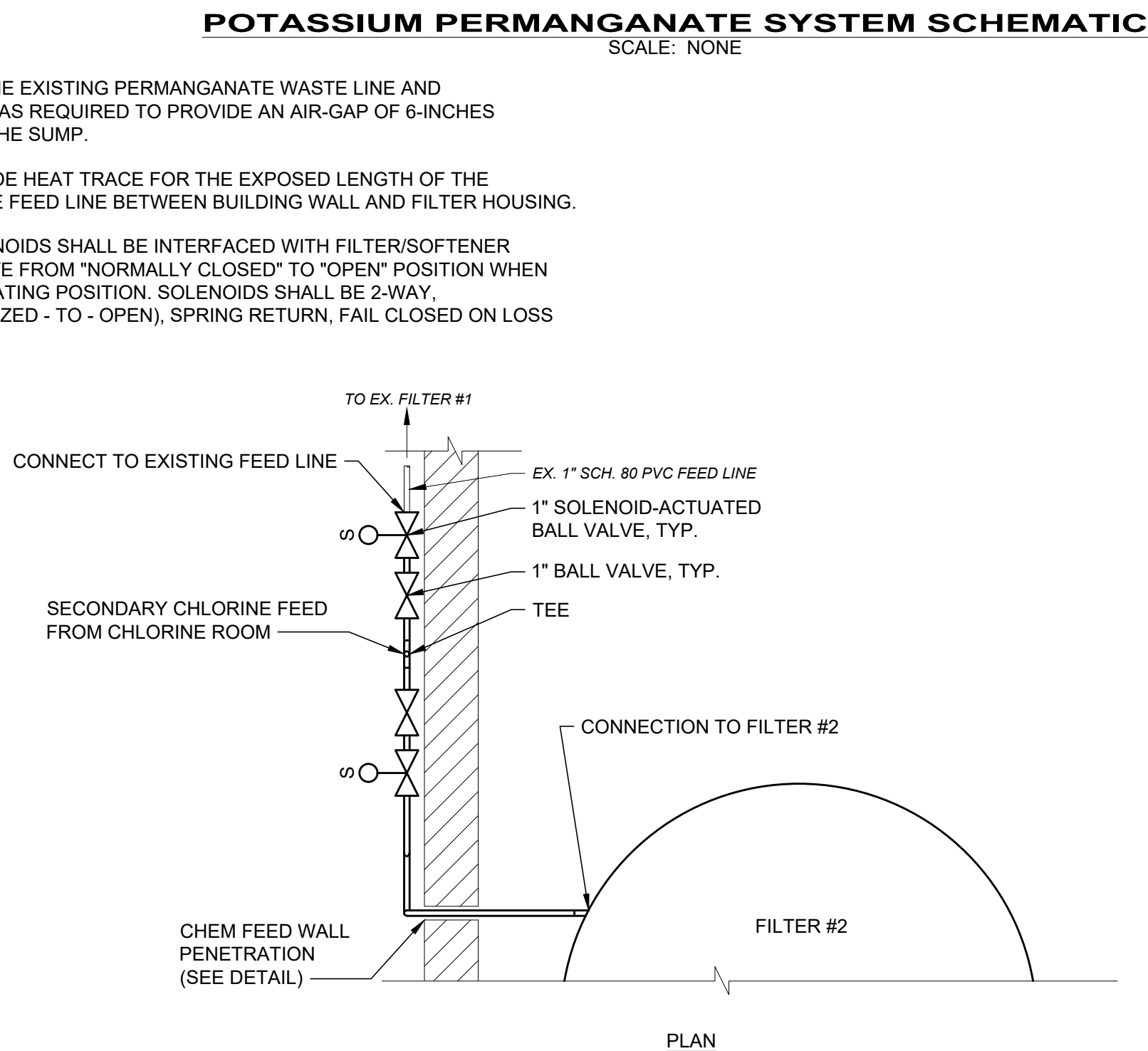
CHEM FEED SCHEMATIC & DETAILS

PROJECT NO.	232055
DISCIPLINE	PROCESS
SHEET NAME	10D-03
SHEET	OF
11	19



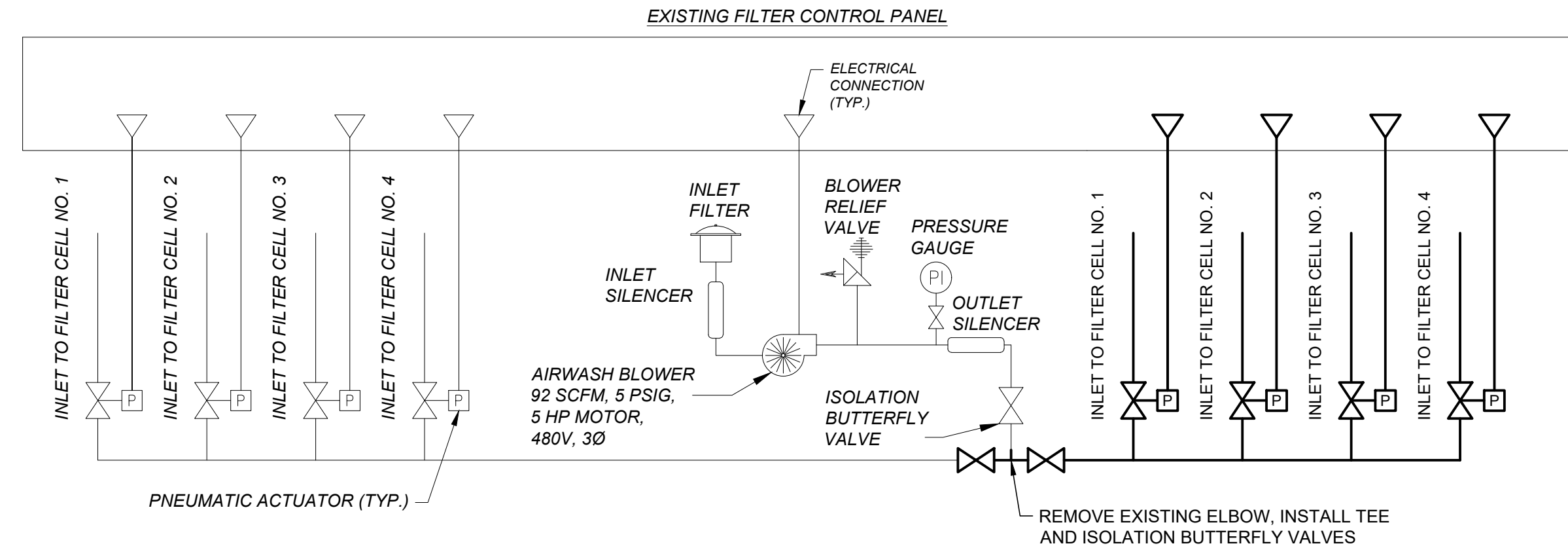
CODED NOTES:

- CONTRACTOR SHALL CUT THE EXISTING PERMANGANATE WASTE LINE AND RECONNECT WITH FITTINGS AS REQUIRED TO PROVIDE AN AIR-GAP OF 6-INCHES ABOVE THE FLOOD RIM OF THE SUMP.
- CONTRACTOR SHALL PROVIDE HEAT TRACE FOR THE EXPOSED LENGTH OF THE POTASSIUM PERMANGANATE FEED LINE BETWEEN BUILDING WALL AND FILTER HOUSING.
- CHEM FEED SYSTEMS SOLENOIDS SHALL BE INTERFACED WITH FILTER/SOFTENER CONTROL PANEL TO ACTUATE FROM "NORMALLY CLOSED" TO "OPEN" POSITION WHEN RELATED FILTER IS IN OPERATING POSITION. SOLENOIDS SHALL BE 2-WAY, NORMALLY-CLOSED (ENERGIZED - TO - OPEN), SPRING RETURN, FAIL CLOSED ON LOSS OF POWER.



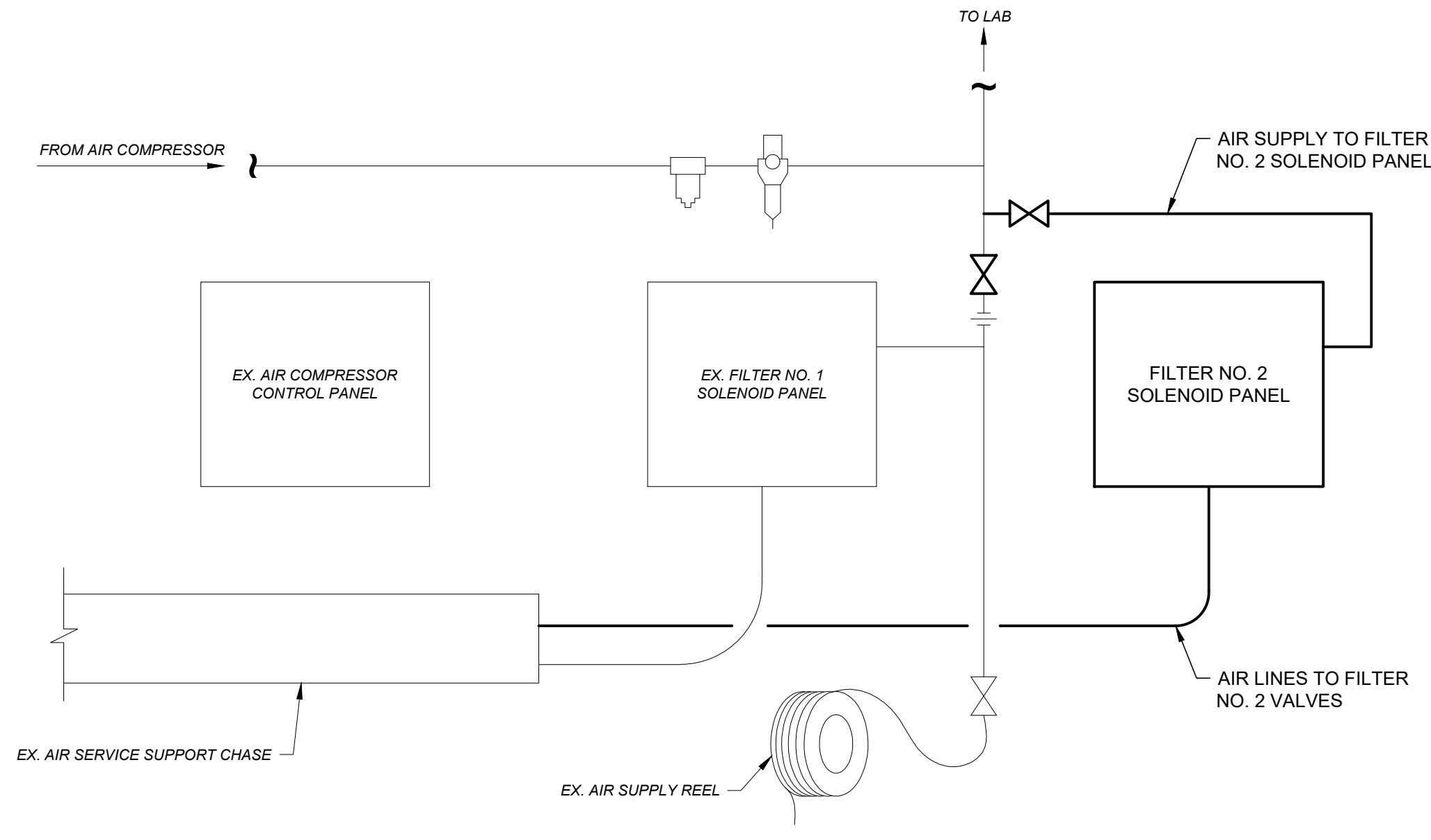
CODED NOTES:

- CHEM FEED SYSTEMS SOLENOIDS SHALL BE INTERFACED WITH FILTER/SOFTENER CONTROL PANEL TO ACTUATE FROM "NORMALLY CLOSED" TO "OPEN" POSITION WHEN RELATED FILTER IS IN OPERATING POSITION. SOLENOIDS SHALL BE 2-WAY, NORMALLY-CLOSED (ENERGIZED - TO - OPEN), SPRING RETURN, FAIL CLOSED ON LOSS OF POWER.



AIR SCOUR BLOWER SCHEMATIC

SCALE: NONE

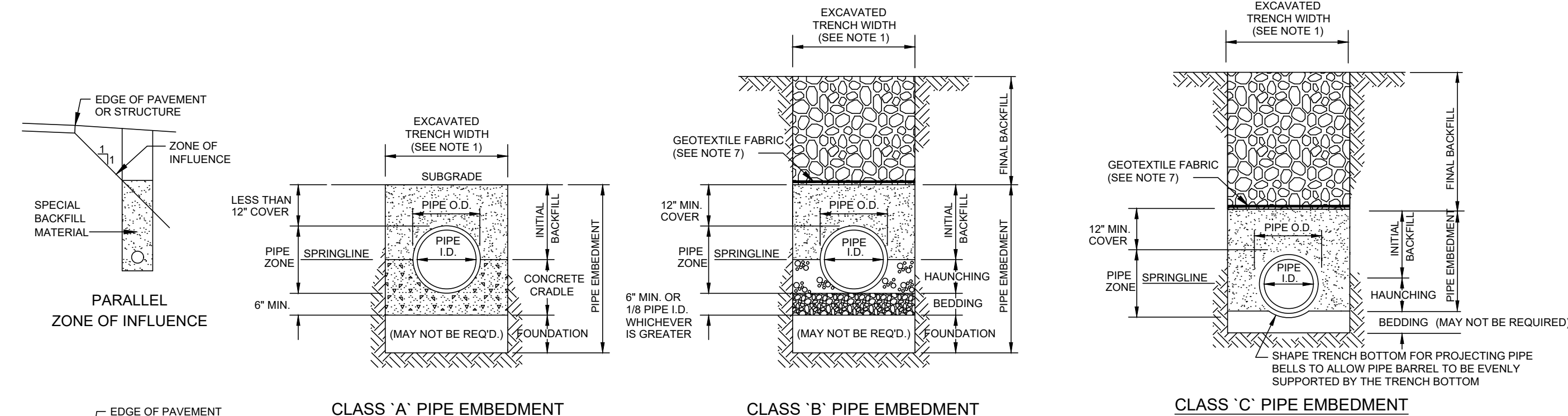


FILTER SOLENOID PANEL ELEVATION

SCALE: NONE

NOTES:

- CONTRACTOR SHALL FIELD VERIFY EXISTING AIR SUPPLY PIPING FOR SIZE AND MATERIAL. PROVIDE CONNECTION TO EXISTING SUPPLY LINE, PROVIDE VALVES TO SUPPORT ISOLATION.
- FILTER NO. 2 SOLENOID PANEL INSTALLATION SHALL NOT BE COMPLETED UNTIL REPLACEMENT FILTER/SOFTENER CONTROL PANEL HAS BEEN INSTALLED AND PLACED INTO OPERATION TO ALLOW FOR REMOVAL OF EXISTING FILTER/SOFTENER CONTROL PANEL AT THIS LOCATION.



CLASS 'A' PIPE EMBEDMENT

CLASS 'B' PIPE EMBEDMENT

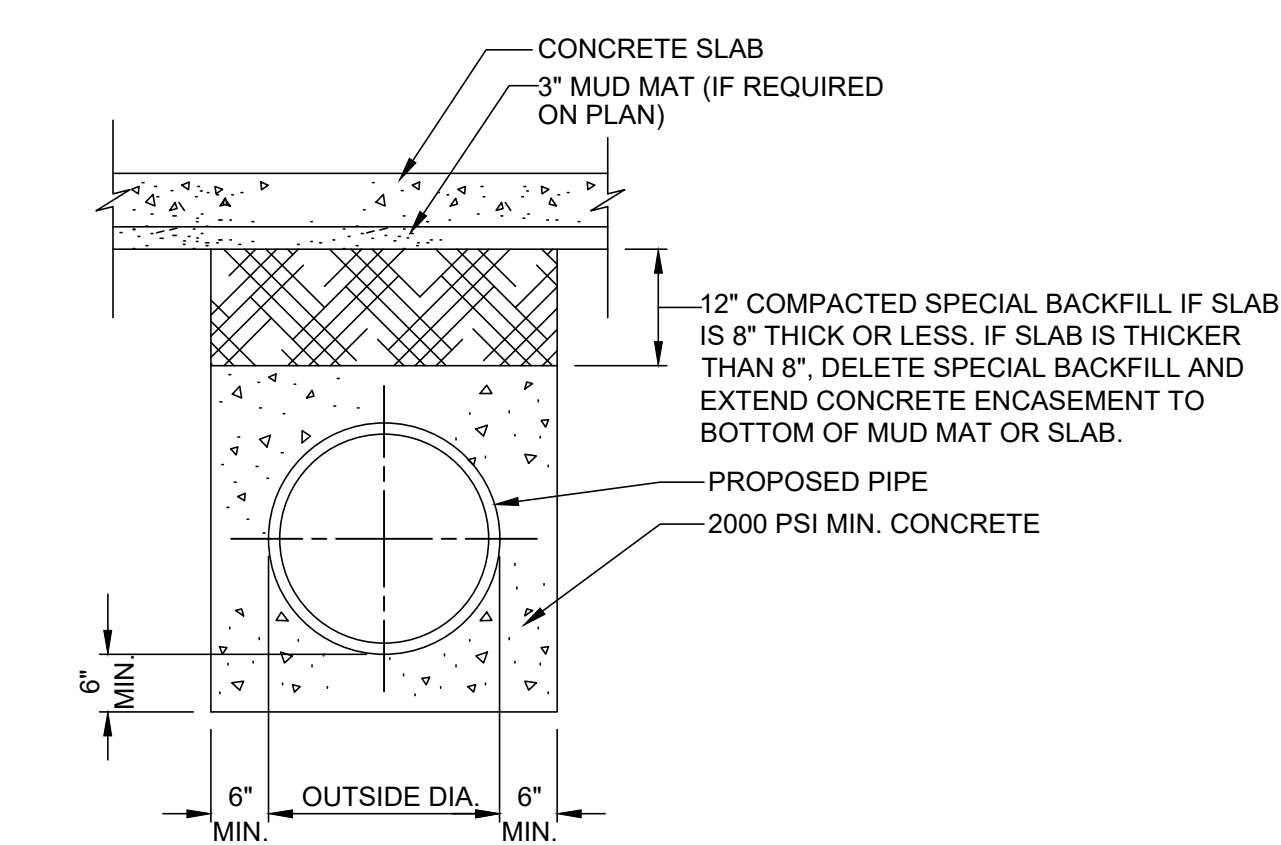
CLASS 'C' PIPE EMBEDMENT

NOTES:

1. MAXIMUM EXCAVATED TRENCH WIDTH: THE MAXIMUM EXCAVATED TRENCH WIDTH FROM THE BOTTOM OF THE TRENCH TO 12" OVER THE TOP OF THE PIPE (WITHIN PIPE EMBEDMENT) SHALL BE O.D. + 24" FOR ALL PIPES UP TO AND INCLUDING 24" I.D. + 30" FOR PIPE FROM 24" I.D. TO 54" I.D. AND O.D. + 48" FOR PIPES SIZES 60" I.D. AND OVER.
2. FOUNDATION: WHERE AN UNSTABLE TRENCH BOTTOM CONDITION IS ENCOUNTERED, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH MATERIAL AS DIRECTED BY THE ENGINEER.
3. PIPE EMBEDMENT:
CLASS A: CLASS A PIPE EMBEDMENT SHALL BE USED FOR ALL PIPING UNDER PAVEMENT OR STRUCTURES WITH LESS THAN 12 INCHES OF PIPE COVER TO THE SUBGRADE. THE CONCRETE CRADLE SHALL BE IN ACCORDANCE WITH ODOT ITEM 499, CLASS "C". THE INITIAL BACKFILL SHALL BE AASHTO NO. 57 OR NO. 67 GRANULAR PIPE EMBEDMENT.
CLASS B: CLASS B PIPE EMBEDMENT SHALL BE USED FOR ALL PIPING UNLESS OTHERWISE NOTED ON THE PLANS OR AUTHORIZED BY THE ENGINEER. THE BEDDING AND HAUNCHING SHALL BE AASHTO NO. 57 OR NO. 67 GRANULAR PIPE EMBEDMENT. IN ALL AREAS UNDER PAVEMENT, STRUCTURES OR WITHIN THE ZONE OF INFLUENCE, THE INITIAL BACKFILL SHALL BE AASHTO NO. 57 OR NO. 67 STONE GRANULAR PIPE EMBEDMENT. IN ALL AREAS OUTSIDE OF PAVEMENT, STRUCTURES OR THE ZONE OF INFLUENCE, THE INITIAL BACKFILL SHALL BE SUITABLE ON-SITE MATERIAL APPROVED BY THE ENGINEER FOR ONLY REINFORCED CONCRETE PIPE AND DUCTILE IRON PIPE. THE INITIAL BACKFILL FOR ALL OTHER PIPES SHALL BE AASHTO NO. 57 OR NO. 67 GRANULAR PIPE EMBEDMENT.
CLASS C: CLASS C PIPE EMBEDMENT SHALL ONLY BE USED FOR DUCTILE IRON WATER MAIN, DUCTILE IRON FORCE MAINS OR AS AUTHORIZED BY THE ENGINEER. THE PIPE EMBEDMENT SHALL BE AASHTO NO. 57 OR NO. 67 GRANULAR PIPE EMBEDMENT IN ALL AREAS UNDER PAVEMENT, STRUCTURES OR WITHIN THE ZONE OF INFLUENCE. THE PIPE EMBEDMENT SHALL BE SUITABLE ON-SITE MATERIAL APPROVED BY THE ENGINEER IN ALL AREAS OUTSIDE OF PAVEMENT, STRUCTURES OR THE ZONE OF INFLUENCE. WHERE ROCK OR SHALE IS ENCOUNTERED, A MINIMUM 6-INCHES OF AASHTO NO. 57 OR NO. 67 GRANULAR PIPE BEDDING OR SAND BEDDING SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
4. FINAL BACKFILL: IN ALL AREAS UNDER PAVEMENT, STRUCTURES OR WITHIN THE ZONE OF INFLUENCE THE FINAL BACKFILL SHALL BE SPECIAL BACKFILL MATERIAL. IN ALL AREAS OUTSIDE OF PAVEMENT, STRUCTURES OR THE ZONE OF INFLUENCE, THE FINAL BACKFILL SHALL BE SUITABLE ON-SITE MATERIAL APPROVED BY THE ENGINEER.
5. SPECIFICATIONS: ALL TRENCHING, PIPE EMBEDMENT AND BACKFILL MATERIALS SHALL BE IN ACCORDANCE WITH SPECIFICATION 310000CT - EARTHWORK.
6. CLAY TRENCH DAMS: CLAY TRENCH DAMS SHALL BE REQUIRED AS SHOWN ON PLANS OR WHEN AND WHERE NECESSARY AS DIRECTED BY THE ENGINEER.
7. GEOTEXTILE FABRIC: INSTALL A GEOTEXTILE FABRIC IN ACCORDANCE WITH ODOT 712.09, TYPE A, AFTER ALL INITIAL BACKFILL CONSISTING OF AASHTO NO. 57 OR NO. 67 GRANULAR PIPE EMBEDMENT.
8. DETECTOR TAPE: IF REQUIRED IN THE SPECIFICATIONS, INSTALL DETECTABLE WARNING TAPE ABOVE UTILITIES, 12" BELOW FINISHED GRADE, EXCEPT 6 INCHES BELOW SUBGRADE UNDER PAVEMENT AND SLABS.

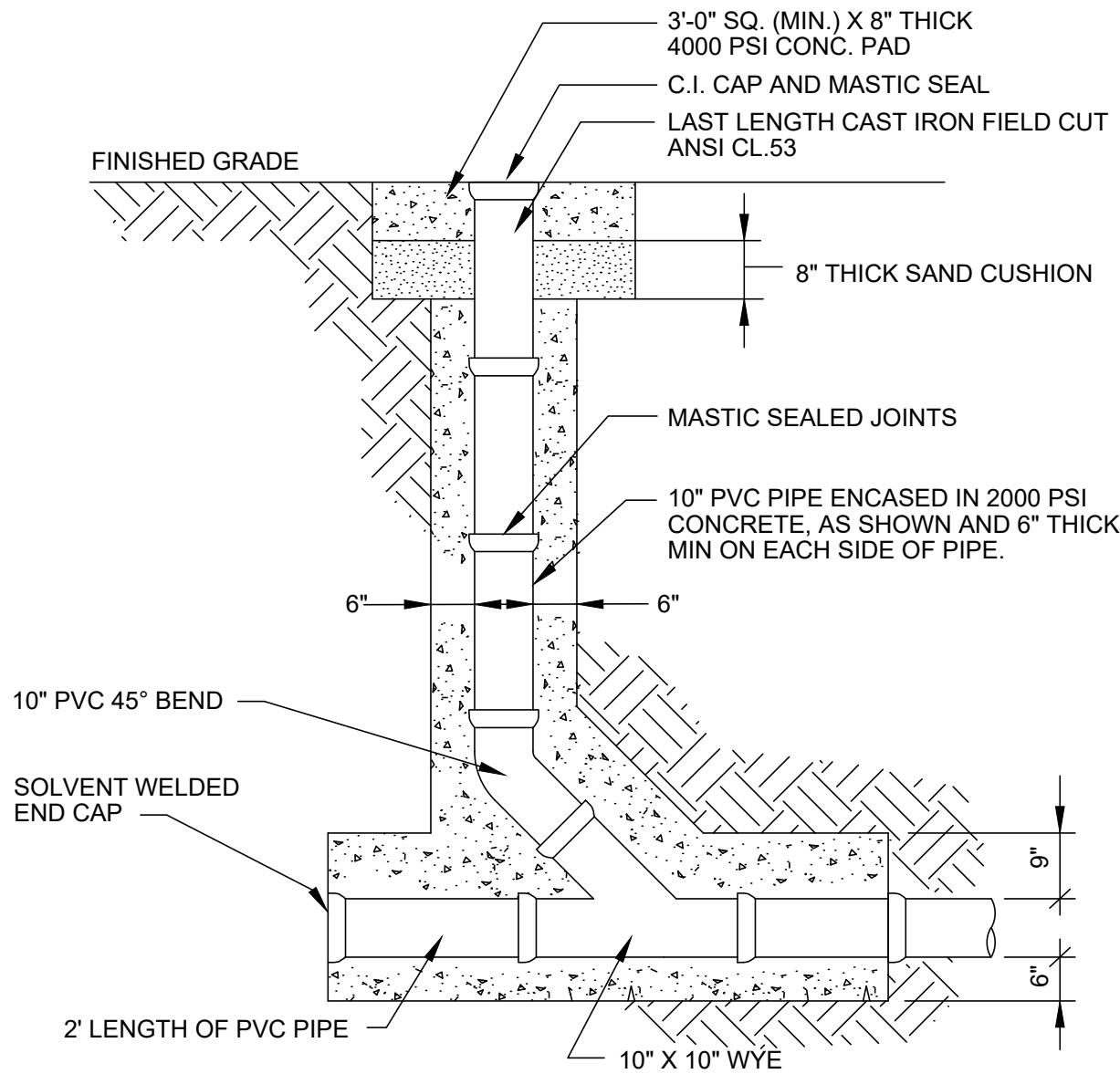
TRENCHING, EMBEDMENT AND BACKFILL DETAIL

SCALE: NONE



TYPICAL PIPE ENCASEMENT UNDER STRUCTURES

SCALE: NONE



CLEANOUT DETAIL

SCALE: NONE

BID SET

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ISSUED FOR:	BID SET	NO	REVISION	DATE
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CHECKED BY:	BRA			

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

STANDARD DETAILS - 20 SERIES
CONSTRUCTION DETAILS

PROJECT NO.

232055

DISCIPLINE

CIVIL

SHEET NAME

20C-01

SHEET

12

OF

19

GENERAL:

1. THE GENERAL NOTES AND TYPICAL DETAILS ARE GENERAL AND APPLY TO THE ENTIRE PROJECT EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY. THE WORK SHALL BE IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS, CONSTRUCTION SPECIFICATIONS AND THE LATEST EDITION OF THE APPLICABLE LOCAL AND STATE BUILDING CODES.
- A. WHERE CONFLICT IS FOUND TO EXIST BETWEEN THE SPECIFICATIONS AND THESE NOTES, THE REQUIREMENTS OF THE SPECIFICATIONS SHALL GOVERN.
- B. ALL WORK SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF THE OHIO BUILDING CODE (LATEST EDITION) OR THESE DOCUMENTS - WHICHEVER IS MORE STRINGENT.
2. TYPICAL DETAILS MAY NOT NECESSARILY BE CUT ON THE PLANS BUT APPLY UNLESS NOTED OTHERWISE.
3. SHOP DRAWINGS PREPARED BY SUPPLIERS AND SUBCONTRACTORS SHALL BE REVIEWED AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION TO THE ENGINEER/ARCHITECT.
4. SHOP DRAWINGS PREPARED BY THE CONTRACTORS, SUPPLIERS, ETC., WILL BE REVIEWED BY THE ENGINEER/ARCHITECT ONLY FOR CONFORMANCE WITH DESIGN CONCEPT. NO WORK AFFECTED BY THE SHOP DRAWINGS SHALL BE STARTED WITHOUT SUCH REVIEW.
5. THE GENERAL CONTRACTOR SHALL COORDINATE ALL REVISIONS, CORRECTIONS, AND COMMENTS INDICATED ON THE SHOP DRAWINGS BY THE ARCHITECT/ENGINEER.
6. ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR AND SHALL CONFORM TO THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS. DIMENSIONS AND ELEVATIONS MARKED "REF" ARE FOR REFERENCE ONLY AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO USING THEM FOR ANY CONSTRUCTION.
7. THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE ENGINEER SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
8. ALL REQUIRED MATERIAL TESTING SHALL BE PERFORMED AT THE EXPENSE OF CONTRACTOR AND PERFORMED BY AN APPROVED TESTING AGENCY OR LABORATORY. TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
9. THE OWNER SHALL EMPLOY A TESTING AGENCY TO PERFORM SPECIAL INSPECTIONS. CONTRACTOR SHALL ADHERE TO THE STRUCTURAL QUALITY ASSURANCE PLAN AS PER SECTION 17 OF THE IBC 2018. THE CONTRACTOR SHALL COORDINATE WITH THE SPECIAL INSPECTOR.
10. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY WORK THAT IS DAMAGED OR IS NON-COMPLIANT IN ACCORDANCE WITH THE GOVERNING CODE OR AS INDICATED IN THE CONTRACT DOCUMENTS OR AS DEMEANED BY THE BUILDING OFFICIAL, ARCHITECT OR ENGINEER OF RECORD.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
12. COORDINATE WITH CIVIL, MECHANICAL, PROCESS, AND ELECTRICAL DRAWINGS FOR PIPE SLEEVES, FLOOR DRAINS, ROOF DRAINS, INSERTS, HANGERS, TRENCHES, PITS, WALL AND SLAB OPENINGS, CONDUIT RUNS IN WALLS AND SLABS, SIZE AND LOCATION OF MACHINE OR EQUIPMENT SUPPORTS, BASE AND ANCHOR BOLTS, RAILING, ETC. THE CONTRACTOR SHALL PROVIDE THESE OPENINGS IN ACCORDANCE WITH THE OTHER CONTRACT DRAWINGS. REINFORCEMENT AROUND OPENINGS FOR NEW WALLS AND SLABS SHALL BE PER THE STANDARD DETAILS. UNLESS OTHERWISE SHOWN, SEE STANDARD DETAILS FOR CONSTRUCTION OF OPENINGS IN EXISTING WALLS AND SLABS.
13. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE OWNER TO AVOID SYSTEM/OPERATION INTERRUPTIONS.
14. MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHALL BE STORED AT OWNER'S DESIGNATED LOCATIONS.
15. THE CONTRACTOR SHALL AT ALL TIMES KEEP THE WORK AREA AND SURROUNDING PREMISES FREE OF WASTE, SURPLUS MATERIALS, RUBBISH, AND DEBRIS RESULTING FROM THE WORK.
16. ALL CONTRACTORS SHALL CONFORM TO THE SAFETY REQUIREMENTS OF THE OWNER, AIA DOCUMENTS A201, OSHA SAFETY AND HEALTH STANDARDS, OWNERS SAFETY REGULATIONS, AND ANY OTHER LOCAL AUTHORITY IN CONNECTION WITH THE PROJECT. ALL EXCAVATIONS SHALL BE PROPERLY SHORED IN ACCORDANCE WITH OSHA STANDARDS AND REQUIREMENTS. ENGINEER DOES NOT ASSUME ANY RESPONSIBILITY FOR CONSTRUCTION SITE SAFETY.
17. SLOPE DRAINAGE SURFACES UNIFORMLY TO DRAIN. SLOPE SHALL BE 1/8" TO 1/4" PER FOOT EXCEPT WHERE NOTED OTHERWISE ON THE PLANS .
18. NO SUBSTITUTIONS OF MATERIAL WILL BE ALLOWED WITHOUT WRITTEN PERMISSION FROM THE ENGINEER.

GOVERNING CODES AND STANDARDS:

THE FOLLOWING CODES AND STANDARDS SHALL BE UTILIZED BY THE CONTRACTOR TO ESTABLISH MINIMUM LEVELS OF QUALITY AND CONSTRUCTION TECHNIQUES. UNLESS NOTED OTHERWISE, REFERENCE THE BUILDING CODE AND/OR ASCE FOR THE REFERENCED STANDARD'S EDITION.

OBC	- OHIO BUILDING CODE, 2018 EDITION (OBC) AND THE INTERNATIONAL BUILDING CODE, (IBC) 2018 EDITION, LOCALLY AMENDED. THE ABOVE SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR CONTRACT PROVISIONS ARE MORE RESTRICTIVE.
IEBC	- INTERNATIONAL EXISTING BUILDING CODE, 2018 EDITION
ASCE 7	- MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, 2016 EDITION
ACI 318	- BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ACI 301	- SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
ACI 302	- RECOMMENDED PRACTICE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION
ACI 544	- GUIDE FOR SPECIFYING, PROPORTIONING, MIXING, PLACING, AND FINISHING STEEL FIBER REINFORCED CONCRETE
ACI 347	- GUIDE TO FORMWORK FOR CONCRETE
ACI 345R	- HOT WEATHER CONCRETING
ACI 306R	- COLD WEATHER CONCRETING
ACI 207	- GUIDE TO MASS CONCRETE
ACI 211.1	- SELECTING PROPORTIONS FOR NORMAL, HEAVY WEIGHT AND MASS CONCRETE
ACI 217.4R	- COOLING AND INSULATING SYSTEMS FOR MASS
ACI SP-66	- ACI DETAILING MANUAL
PCA	- DESIGN AND CONTROL OF CONCRETE MIXTURES
MSP-2	- MANUAL OF STANDARD PRACTICE

SUBMITTALS

1. SHOP DRAWINGS AND SUBMITTALS
- A. REPRODUCTION OF STRUCTURAL DRAWINGS FOR SHOP DRAWINGS IS NOT PERMITTED.
- B. ELECTRONIC DRAWING FILES WILL NOT BE PROVIDED TO THE CONTRACTOR.
- C. REVIEW OF SHOP DRAWINGS WILL BE FOR CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS REGARDING ARRANGEMENT AND SIZES OF MEMBERS AND THE CONTRACTOR'S INTERPRETATION OF THE DESIGN LOADS, IF APPLICABLE, AND CONSTRUCTION DOCUMENT DETAILS. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THE FULL RESPONSIBILITY TO COMPLY WITH THE CONSTRUCTION DOCUMENTS.
2. SUBMITTALS
- THE STRUCTURAL QUALITY ASSURANCE PLAN AND SPECIFICATIONS IDENTIFY THE REQUIRED SUBMITTALS. PRIOR TO (OR WITH) THE FIRST SUBMITTAL, CONTRACTOR SHALL SUBMIT A LIST OF ALL REQUIRED SUBMITTALS FOR ENGINEER'S REVIEW.

DESIGN LOADS:

1. LIVE LOADS: (REDUCIBLE PER GOVERNING CODE)	UNIFORM (PSF)	CONCENTRATED (LBS)
A. PROCESS AREA		
1. SLAB-ON-GRADE	150	2,000
2. SNOW LOADS:		
RISK CATEGORY	III	
GROUND SNOW LOAD, P _s	20 PSF	
3. WIND LOADS		
ULTIMATE DESIGN WIND SPEED (3-SECOND GUST), MPH	114	
RISK CATEGORY	III	
WIND EXPOSURE	C	

4. EARTHQUAKE DESIGN DATA:	
OCCUPANCY RISK CATEGORY	III
SEISMIC IMPORTANCE FACTOR, I _p	1.25
MAPPED SPECTRAL RESPONSE ACCELERATIONS	S _s = 0.115 S ₁ = 0.060
SITE CLASS	D
DESIGN SPECTRAL RESPONSE ACCELERATIONS	S _{DS} = 0.123 S _{1D} = 0.095
SEISMIC DESIGN CATEGORY	B
BASIC SEISMIC REINFORCING SYSTEM:	FLAT-BOTTOMS GROUND SUPPORTED TANKS, STEEL, MECHANICALLY ANCHORED
SEISMIC RESPONSE COEFFICIENT	C _s = TO BE DETERMINED*
RESPONSE MODIFICATION COEFFICIENT	R = 3
ANALYSIS PROCEDURE USED:	EQUIVALENT LATERAL FORCE (ASSUMED)*
* TO BE DETERMINED BY DELEGATED DESIGN ENGINEER	

FOUNDATIONS:

1. THE FOUNDATION AND/OR EQUIPMENT PAD DESIGN IS BASED ON AN ASSUMED BEARING CAPACITY OF 2000 PSF WITH A MAXIMUM TOTAL SETTLEMENT OF 3/4 INCH AND A MAXIMUM DIFFERENTIAL SETTLEMENT OF 1/2 INCH. THE FOUNDATION AND/OR EQUIPMENT PAD SHALL BEAR ON UNDISTURBED NATURAL SOILS OR PROPERLY COMPACTED ENGINEERED FILL. PROVIDE 8 INCHES, MINIMUM, OF COMPACTED AASHTO #57 AGGREGATE BELOW EQUIPMENT PAD.
2. THE CONTRACTOR SHALL EMPLOY A GEOTECHNICAL ENGINEER TO VERIFY ASSUMPTIONS. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A COPY OF THE SIGNED AND SEALED GEOTECHNICAL REPORT. FOUNDATION SYSTEM MAY BE MODIFIED BASED ON THE GEOTECHNICAL REPORT.
3. TOPSOIL, FILL, AND/OR OTHER DELETERIOUS MATERIALS ENCOUNTERED DURING THE SITE PREPARATION MUST BE REMOVED AND REPLACED WITH SELECT ENGINEERED FILL COMPACTED TO 95% PER ASTM D698 (STANDARD PROCTOR) AND MEETING THE SPECIFIED DESIGN BEARING CAPACITY.
4. OWNER SHALL EMPLOY A SOILS TESTING LABORATORY APPROVED BY THE ENGINEER TO PERFORM TESTING SERVICES AS REQUIRED BY THE SPECIFICATIONS AND TO INSPECT ALL BEARING SURFACES OF SLABS AND FOUNDATIONS.
5. EXCAVATIONS FOR FOUNDATIONS SHOULD BE OBSERVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE. UNDERCUT UNSUITABLE SOILS AND BACKFILL AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
6. BACKFILL AND BACKFILL PLACEMENT SHALL BE AS PER THE GEOTECHNICAL ENGINEERS RECOMMENDATIONS. IN LIEU OF GEOTECHNICAL ENGINEERS RECOMMENDATIONS BACKFILL SHALL BE CLEAN, CRUSHED STONE (#57 STONE) OR SELECT ENGINEERED FILL AND SHALL BE PLACED IN MAXIMUM 8" LIFTS AND COMPACT AS PER THE GEOTECHNICAL.
7. CONTRACTOR SHALL KEEP ALL FREE-STANDING WATER OUT OF EXCAVATIONS. CONTRACTOR SHALL PROVIDE DEWATERING MEASURES AS NECESSARY PRIOR TO PLACING CONCRETE. WATER SHOULD BE REMOVED FROM THE FOUNDATION BOTTOMS BEFORE CONCRETE OR REINFORCING STEEL IS PLACE.
8. THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL PROVIDE TEMPORARY SHORING, BRACING, UNDERPINNING, AND OTHER MEASURES NECESSARY TO INSURE STABILITY AND SAFETY DURING ERECTION AND CONSTRUCTION AND TO PREVENT MOVEMENT OF SOIL THAT COULD DAMAGE EXISTING STRUCTURES, PAVEMENT, UTILITIES, ETC.
9. UNLESS NOTED OTHERWISE ON THE CIVIL/SITE DRAWINGS, PROVIDE A MINIMUM 2% GRADE WITHIN 10-FEET OF THE PERIMETER OF THE FOUNDATION SYSTEM TO ALLOW SURFACE WATER TO DRAIN AWAY.
10. DO NOT PLACE FILL OR CONCRETE ON FROZEN GROUND.

REINFORCEMENT

1. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED SHALL BE IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI-315, LATEST EDITION) AND MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (CRS), LATEST EDITION). REINFORCING STEEL SHALL NOT BE HEATED OR WELDED AND MUST BE DRY AND FREE OF CONTAMINANTS SUCH AS RUST, DIRT, GREASE, AND PROTECTIVE COATINGS.
2. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60. ALL REINFORCING USED IN SEISMIC DESIGN CATEGORY (SDC) D AND HIGHER OR REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706 GRADE 60. REINFORCING STEEL SHALL NOT BE HEATED OR WELDED AND MUST BE DRY AND FREE OF CONTAMINANTS SUCH AS RUST, DIRT, GREASE, AND PROTECTIVE COATINGS.
3. WHERE GRADE BEAMS OR STRIP FOOTINGS INTERSECT COLUMN FOUNDATIONS, EXTEND GRADE BEAM OR STRIP FOOTING REINFORCEMENT CONTINUOUSLY THROUGH THE COLUMN FOUNDATION.
4. ALL WELDED WIRE REINFORCING SHALL CONFORM TO ASTM A185, A1064 PROVIDED IN FLAT SHEETS OR ROLLS.
5. PROVIDE ADEQUATE BOLSTERS, HI-CHAIRS, SUPPORT BARS, ETC., TO MAINTAIN SPECIFIED CLEARANCES FOR THE ENTIRE LENGTH OF ALL REINFORCING BARS. SUPPORTS THAT BEAR DIRECTLY ON EXPOSED SURFACES SHALL BE A CRSI CLASS 1. STRUCTURAL SLABS SHALL UTILIZE A CRSI CLASS 2 SUPPORTS.
6. ALL DEVELOPMENT AND SPLICE LENGTHS SHALL BE PER ACI 318 WITH CLEAR SPACING GREATER OR EQUAL TO 3 BAR DIAMETER. PROVIDE CLASS "B" TENSION LAP SPLICE OR FULL MECHANICAL SPLICE (ACI 318, SECT. 25.4.2) FOR ALL REINFORCING STEEL IN WALLS, COLUMNS, AND SLABS. SEE LAP SCHEDULE ON SHEET SD-S-02 FOR LAP LENGTHS, UNO.
7. A TOP BAR IS A HORIZONTAL BAR WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST DIRECTLY BELOW THE BAR.
8. SUBMIT REINFORCING SHOP DRAWINGS FOR REVIEW. AT A MINIMUM, THESE DRAWINGS SHALL SHOW THE GENERAL PLACEMENT OF REINFORCING, CONSTRUCTION JOINTS, CONTROL JOINTS, EXPANSION JOINTS, CONCRETE MEMBER DIMENSIONS, DOWELS, BAR LENGTHS, SPLICE LENGTH, AND REINFORCING BEND TABLES.
9. TACK WELDING OR WELDING OF REBAR SHALL NOT BE PERMITTED UNLESS OTHERWISE CALLED FOR OR APPROVED BY THE ENGINEER. IF APPROVED, REINFORCING MAY BE WELDED IN ACCORDANCE WITH AWS SPECIFICATION D1.4. ALL REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706.
10. ALL HOOKS SHALL BE ACI STANDARD HOOKS UNLESS DIMENSIONED OTHERWISE. BARS ENDING IN RIGHT ANGLE BENDS OR HOOKS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, SECT. 25.3. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS REQUIRED TO PROVIDE SPECIFIED DEVELOPMENT LENGTH DUE TO AN ADJACENT STRUCTURE, EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.
11. LAP SPLICE WELDED WIRE FABRIC ONE SPACE PLUS 2 INCHES AT EDGES AND ENDS AND PROVIDE ADDITIONAL REINFORCING WHERE SHOWN ON DRAWINGS. PLACE MESH 2 INCHES FROM TOP OF SLAB FOR SLABS ON GROUND AND 1 INCH FROM TOP OF SUPPORTED SLABS UNLESS NOTED OTHERWISE.

CAST-IN-PLACE CONCRETE:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 318 AND ACI 350.
2. CONCRETE SHALL HAVE THE FOLLOWING 28-DAY COMPRESSIVE STRENGTHS: CAST-IN-PLACE CONCRETE: 4,500 PSI
FILL CONCRETE: 1,500 PSI
3. USE 6% ±1.5%, ENTRAINED AIR PER ASTM C260 FOR ALL CONCRETE EXPOSED TO WEATHER.
4. MATERIALS
- A. PORTLAND CEMENT SHALL BE ASTM C150, TYPE II OR TYPE V, LOW ALKALI, CONTAINING LESS THAN 0.80 PERCENT ALKALIS. PORTLAND-POZZOLAN CEMENT SHALL BE ASTM C695, TYPE IP(MS), INTERGROUND, LOW ALKALI.
- B. FINE AND COARSE AGGREGATES SHALL CONFORM TO ASTM C33. FINE AND COARSE AGGREGATES SHALL BE REGARDED AS SEPARATE INGREDIENTS. AGGREGATES SHALL BE NON-REACTIVE AND SHALL BE WASHED BEFORE USE. TESTS FOR SIZE AND GRADING OF FINE AND COARSE AGGREGATES SHALL BE IN ACCORDANCE WITH ASTM C136. COMBINED AGGREGATES SHALL BE WELL AND UNIFORMLY GRADED FROM COARSE TO FINE SIZES TO PRODUCE A CONCRETE THAT HAS OPTIMUM WORKABILITY AND CONSOLIDATION CHARACTERISTICS. THE FINAL COMBINED AGGREGATE GRADATION SHALL BE ESTABLISHED DURING THE DESIGN MIX.

- C. FINE AGGREGATE: FINE AGGREGATE SHALL BE HARD, DENSE, DURABLE PARTICLES OF EITHER SAND OR CRUSHED STONE REGULARLY GRADED FROM COARSE TO FINE. GRADATION SHALL CONFORM TO ASTM C33.
- D. COARSE AGGREGATE: COARSE AGGREGATE SHALL BE HARD, ANGULAR (NOT RIVER WASHED), DENSE AND DURABLE GRAVEL OR CRUSHED ROCK FREE FROM INJURIOUS AMOUNTS OF SOFT AND FRABLE PARTICLES, ALKALI, AND ORGANIC MATTER. OTHER DELETERIOUS SUBSTANCES SHALL NOT EXCEED THE LIMITS LISTED IN ASTM C33, TABLE 3. GRADATION OF EACH COARSE AGGREGATE SHALL CONFORM TO ASTM C33, TABLE 2.
- E. POZZOLAN SHALL BE CLASS N, NATURAL POZZOLAN, OR CLASS F, FLY ASH, CONFORMING TO ASTM C618. FLY ASH POZZOLAN SHALL CONTAIN LESS THAN 1 PERCENT BY WEIGHT CARBON AND LESS THAN 3 PERCENT BY WEIGHT SULFUR TRIOXIDE. POZZOLAN SUPPLIED DURING THE LIFE OF THE PROJECT SHALL HAVE BEEN FORMED AT THE SAME SINGLE SOURCE. THE POZZOLAN COLOR SHALL NOT SUBSTANTIALLY ALTER THE RESULTING CONCRETE FROM THE NORMAL GRAY COLOR AND APPEARANCE.
- F. ADMIXTURES SHALL BE COMPATIBLE WITH THE CONCRETE AND WITH EACH OTHER. CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE ARE NOT ACCEPTABLE. ADMIXTURES SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL BE ADDED SEPARATELY TO THE CONCRETE MIX.
- G. WATER REDUCING ADMIXTURES AND RETARDERS: WATER REDUCING RETARDERS SHALL CONFORM TO ASTM C494, TYPE C. CANDIDATE MANUFACTURERS INCLUDE DEGUSSA ADMIXTURE SYSTEMS, POZZOLTM 300R; SIKA CHEMICAL CORP., PLASTIMET; EUCLID CHEMICAL CO., EUCON RETARDER 75; OR EQUAL.
- H. WATER REDUCING ADMIXTURES SHALL CONFORM TO ASTM C494, TYPE A. CANDIDATE MANUFACTURERS INCLUDE DEGUSSA ADMIXTURE SYSTEMS, POZZOLTM 322N; SIKA CHEMICAL CORP., PLASTOCRETE 161; EUCLID CHEMICAL CO., EUCON WR89; OR EQUAL.
- I. THE WATER REDUCING RETARDERS AND ADMIXTURES SHALL REDUCE THE WATER REQUIRED BY AT LEAST 11 PERCENT FOR A GIVEN CONCRETE CONSISTENCY AND SHALL COMPLY WITH THE WATER/CEMENT RATIO STANDARDS OF ACI 211.1.
- J. AIR ENTRAINING AGENT: AIR ENTRAINING AGENT SHALL CONFORM TO ASTM C260. CANDIDATE MANUFACTURERS INCLUDE DEGUSSA ADMIXTURE SYSTEMS, MB-AE 90; SIKA CHEMICAL CORP., AEA-15; EUCLID CHEMICAL CO., AEA-92 OR EQUAL. THE AIR ENTRAINING AGENT ADDED SHALL PRODUCE, IN ACCORDANCE WITH ASTM C260.
5. CONCRETE SHALL BE PROPORTIONED, BATCHED, MIXED, PLACED, CONSOLIDATED, AND CURED IN ACCORDANCE WITH ACI 301, 304,308,309 AND 318. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED IN ACCORDANCE WITH ACI 304 AND ACI 309.
6. CONTRACTOR SHALL KEEP A COPY OF "FIELD REFERENCE MANUAL: STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE ACI 301 WITH SELECTED ACI REFERENCES", (ACI PUBLICATION SP-15) AT THE PROJECT FIELD OFFICE.
7. ALL REINFORCING DETAILS SHALL CONFORM TO THE ACI DETAILING MANUAL, SP-66, UNLESS DETAILED OTHERWISE ON THE STRUCTURAL DRAWINGS.
8. SUBMIT FOR APPROVAL CONCRETE MIX DESIGN AND CERTIFICATION OF CONCRETE MATERIALS CONFORMING TO THE FOLLOWING EXPOSURE CATEGORIES:

CATEGORY	FOOTINGS, INTERIOR SLAB-ON-GRADE	PIERS, WALLS, EXTERIOR SLABS
	NON-AIR ENTRAINED CLASS:	AIR ENTRAINED CLASS:
FREEZE AND THAWING	F0	F3
SULFATE	S1	S1
IN CONTACT WITH WATER	W1	W1
CORROSION PROTECTION	C2	C2

9. THE CONTRACTOR SHALL EMPLOY A TESTING LABORATORY APPROVED BY THE ENGINEER/ARCHITECT TO PERFORM THE TESTING SPECIFIED PER PARAGRAPH 1.6.4 OF ACI 301. THE TESTING LABORATORY SHALL MEET THE REQUIREMENTS OF ASTM E329. TESTING SHALL BE MADE BY AN ACI CONCRETE FIELD-TESTING TECHNICIAN GRADE 1 OR APPROVED EQUIVALENT. A TECHNICIAN GRADE 1 SHALL BE PRESENT DURING ALL CONCRETE PLACEMENT.
10. ALL SLABS SHALL BE POURED MONOLITHICALLY, EXCEPT FOR THE REQUIRED CONSTRUCTION JOINTS, CONTROL JOINTS, AND/OR EXPANSION JOINTS.
11. REMOVED
12. PROVIDE 3/4 INCH CHAMFER ON ALL EXPOSED CORNERS OF SLABS UNLESS OTHERWISE INDICATED ON THE ARCHITECTURAL DRAWINGS. MINIMUM CLEARANCES FOR REINFORCING STEEL SHALL BE MAINTAINED. CHAMFERS SHALL EXTEND 2'-0", MINIMUM, BELOW GRADE.
13. CURE ALL CONCRETE FOR A MINIMUM 7-DAYS. APPLY CURING COMPOUND AT THE MAXIMUM COVERAGE RATE OF 300 SQUARE FEET PER GALLON. USE PRODUCT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SEE SPECIFICATIONS.
14. REMOVED
15. CONTRACTOR SHALL PROVIDE BONDING AGENT TO ALL SURFACES BETWEEN EXISTING AND FRESH CONCRETE. BONDING AGENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. PRIOR TO APPLICATION OF BONDING AGENT, THE EXISTING CONCRETE BASE SURFACE SHALL BE THOROUGHLY CLEANED TO REMOVE ANY GREASE, OIL OR OTHER CONTAMINANTS THAT MAY PREVENT ADEQUATE BOND TO THE EXISTING CONCRETE. REMOVE WEAK OR DETERIORATED CONCRETE.
16. THE CONCRETE INTERFACE OF ALL CONSTRUCTION JOINTS SHALL BE ROUGHEN TO 1/4", MINIMUM, AMPLITUDE. PRIOR TO CASTING AGAINST THE GREEN CONCRETE, APPLY BONDING AGENT (OR GREEN CONCRETE SHALL BE SATURATED SURFACE DRY. WET GREEN CONCRETE FOR A MINIMUM OF 8". REMOVE ANY STANDING WATER).
17. CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS OF CONSTRUCTION JOINTS NOT INDICATED ON THE DRAWINGS FOR REVIEW BY THE ENGINEER/ARCHITECT.
18. ALUMINUM OR DISSIMILAR METALS IN CONTACT WITH CONCRETE SHALL BE COATED WITH GRAY EPOXY PRIMER. EPOXY PRIMER SHALL BE PRE-APPROVED BY THE ENGINEER.
19. FORMWORK, FOR ALL CONCRETE THAT WILL BE EXPOSED IN THE COMPLETED STRUCTURE, SHALL BE CONSTRUCTED FROM A METAL OR SUITABLE SURFACE PLYWOOD THAT WILL PRODUCE AN ACCEPTABLY SMOOTH SURFACE. SEE SPECIFICATIONS.
20. SLOPE EXPOSED EXTERIOR SLABS TO SHED WATER.

21. FORM TIES SHALL BE FACTORY-FABRICATED SNAP-OFF GLASS-FIBER-REINFORCED PLASTIC OR METAL FORM TIES DESIGNED TO RESIST LATERAL PRESSURE DURING CONCRETE PLACEMENT. FORM TIES SHALL HAVE PLASTIC CONE AND, WHEN USED IN AN ENVIRONMENTAL STRUCTURE, HAVE A WATERSTOP LOCATED AT THE CENTER. FORM TIE UNITS, AFTER BREAKBACK, SHALL BE AT LEAST 1 INCH FROM THE FACE OF THE CONCRETE SURFACE.
22. CONCRETE EMBEDS AND PENETRATIONS - PIPES AND CONDUITS EMBEDDED IN OR PASSING THROUGH STRUCTURAL ELEMENTS SHALL CONFORM TO ACI 318-6.3
23. CONCRETE PROTECTION (CLEAR COVER) FOR REINFORCEMENT BARS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
- A. FOOTINGS AND FOUNDATION MATS CAST ON GROUND:
- 3 INCHES, BOTTOM AND UNIFORM EDGES
 - 2 INCHES, FORMED EDGES
 - 2 INCHES, EXPOSED TO EARTH, WATER OR WEATHER
 - 2 INCHES, BOTTOM, ON CONCRETE MUDMAT
- B. REMOVED:
- CONCRETE IN CONTACT WITH GROUND OR WEATHER:
 - 2 INCHES

24. ANCHOR BOLTS SHALL BE ASTM F1554-55 UNLESS OTHERWISE NOTED. EMBEDMENT, EDGE DISTANCES AND ALLOWABLE LOADS SHALL CONFORM TO IBC TABLE 1912.2
25. PROVIDE A MASS CONCRETE TEMPERATURE CONTROL PLANS. THE PROGRAM SHALL MANAGE CURING HEAT FROM HYDRATION FOR MASS CONCRETE THAT WILL MINIMIZE VOLUME AND PROVIDE ACCEPTABLE STRENGTH AND CRACK CONTROL. THE PLAN SHALL INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
- A. A COPY OF THE APPROVED MIX DESIGN AND PROPOSED MODIFICATIONS TO MIXES IF FIELD TEMPERATURES EXCEED ALLOWABLE LIMITS.
- B. PROPORTIONS OF FINE AND COARSE AGGREGATES MAY BE ADJUSTED TO PRODUCE THE DESIRED WORKABILITY WITH A SOMEWHAT HIGHER PROPORTION OF FINE AGGREGATE THAN WOULD BE USED FOR NORMAL CONDITIONS.
- C. IDENTIFYING THE MASS CONCRETE ELEMENTS AND SHOWING THE LOCATIONS OF TEMPERATURE MONITORING DEVICES.
- D. CORRECTIVE ACTION, IN THE FIELD, IF THE TEMPERATURE DIFFERENTIAL EXCEEDS THE MASS PLAN PREVENTATIVE TEMPERATURE

POST-INSTALLED FASTENERS:

1. POST-INSTALLED ANCHORS SHALL BE USED ONLY WHERE SPECIFIED ON THE STRUCTURAL DRAWINGS.
2. ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION IS REQUIRED FOR ALL INSTALLERS OF ADHESIVE ANCHORS IN HORIZONTAL OR UPWARDLY INCLINED ORIENTATION. THIS CERTIFICATION CAN BE OBTAINED THROUGH ACI OR APPROVED EQUIVALENT.
3. FASTENERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING IN COORDINATION WITH INFORMATION HEREIN. THE STRUCTURAL ENGINEER SHALL BE NOTIFIED IF CONFLICTS EXIST BETWEEN THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AND THE REQUIREMENTS HEREIN.
4. REINFORCEMENT STEEL SHALL NOT BE CUT. PRIOR TO DRILLING THE CONCRETE, THE CONTRACTOR SHALL BE LOCATED WITH A MAGNETIC BAR LOCATOR. POST-INSTALLED BOLTS AND FASTENERS SHALL BE INSTALLED TO MISS REINFORCEMENT STEEL IN CONCRETE. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS.
5. DRILL HOLES USING ROTARY PERCUSSION DRILL WITH A DEPTH GAGE. DO NOT DRILL THROUGH FULL THICKNESS OF CONCRETE. USE OF A DIAMOND CORE BIT WITH ROUGHENING TOOL FOR ANCHOR HOLES MUST BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO DRILLING. UNLESS OTHERWISE SHOWN IN THE DRAWINGS, ALL HOLES SHALL BE DRILLED PERPENDICULAR TO THE CONCRETE SURFACE. CLEAN HOLES IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. IF CONCRETE IS DAMP, BLOW DRY HOLE WITH OIL-FREE COMPRESSED AIR. CLEAN HOLE WITH WATER ONLY IF RECOMMENDED BY MANUFACTURER. ADHESIVE ANCHORS MAY NOT BE SET IF WATER IS SEEPING INTO HOLE AND THE STRUCTURAL ENGINEER, OF RECORD SHALL BE NOTIFIED.
6. ANCHOR SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE SUBMITTED AND APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE DOCUMENTATION DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF MEETING THE PERFORMANCE OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR ITS USE, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE, INSTALLATION TEMPERATURE, MOISTURE CONDITION OF CONCRETE, AND DRILLING METHODS.
7. THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL ANCHOR PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF ANCHOR INSTALLATION.
8. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS. CONTRACTOR SHALL CONTACT STRUCTURAL ENGINEER SHOULD THE LAYOUT OF THE ANCHOR, EMBEDMENT, SPACING OR EDGE DISTANCES, IS MODIFIED.
9. EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES:

- ANCHORAGE TO CONCRETE:
 - ADHESIVE ANCHORS:
 - 1. HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HIT-Z ROD
 - 2. HILTI HIT-HY 200 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH HAS-V-36 GRADE 36 THREADED ROD
 - 3. HILTI HIT-RE 800V3 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH HAS THREADED ROD
 - 4. SIMPSON SET-XP WITH ASTM A36 THREADED ROD
 - 5. SIMPSON SET-XP INSTALLED USING SIMPSON SPEED CLEAN DXS SYSTEM WITH ASTM A36 THREADED ROD
 - 6. APPROVED EQUAL
 - MECHANICAL ANCHORS:
 - 1. HILTI KWIK HUS-EZ (KH-EZ), KH-EZ CRC, KH-EZ SS316, KH-EZ C, KH-EZ E, KH-EZ I, AND KH-EZ P SCREW ANCHOR SAFE SET SYSTEM INSTALLED USING HOLLOW DRILL BIT AND VACUUM
 - 2. HILTI KWIK BOLT-1 EXPANSION ANCHOR
 - 3. HILTI KWIK BOLT-T22 EXPANSION ANCHOR
 - 4. SIMPSON TITEN HD SCREW ANCHOR
 - 5. SIMPSON STRONG-BOLT 2 WEDGE ANCHOR
 - 6. APPROVED EQUAL
 - REBAR DOWELING INTO CONCRETE:
 - 1. HILTI HIT-HY 200 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH CONTINUOUSLY DEFORMED REBAR
 - 2. HILTI HIT-HY 500V3 SAFE SET SYSTEM INSTALLED USING HILTI HOLLOW DRILL BIT AND VACUUM WITH CONTINUOUSLY DEFORMED REBAR
 - 3. SIMPSON SET-XP WITH CONTINUOUSLY DEFORMED REBAR
 - 4. SIMPSON SET-XP INSTALLED USING SIMPSON SPEED CLEAN DXS SYSTEM WITH CONTINUOUSLY DEFORMED REBAR
 - 5. APPROVED EQUAL

SPECIAL INSPECTIONS:

PER THE IBC SECTION 1705, SPECIAL INSPECTIONS ARE REQUIRED FOR THE FOLLOWING ITEMS:

1. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR:
- a. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK DESIGNATED TO ASSURE IT IS CONSTRUCTED IN CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS.
- b. THE SPECIAL INSPECTOR SHALL SUBMIT INSPECTION REPORTS AND TESTS TO THE BUILDING OFFICIAL AND REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.
- c. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK.
- d. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND TESTS, AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS OR TESTS, SHALL BE SUBMITTED WITHIN THE AGREED UPON TIME TO THE BUILDING OFFICIAL PRIOR TO THE START ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
1. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A STATEMENT OF RESPONSIBILITY ACKNOWLEDGING THE AWARENESS OF THE SPECIAL INSPECTION REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.
- a. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT. (PERIODIC)
- b. REINFORCING BAR WELDING:
- VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706. (PERIODIC)
 - INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16" (PERIODIC)
 - INSPECT ALL OTHER WELDS (CONTINUOUS)
- c. INSPECT ANCHORS CAST IN CONCRETE (PERIODIC)
- d. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS:
- ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. (CONTINUOUS)
 - MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED ABOVE. (PERIODIC)
- e. VERIFY USE OF REQUIRED MIX DESIGN. (PERIODIC)
- f. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE. (CONTINUOUS)
- g. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES. (CONTINUOUS)
- h. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES. (PERIODIC)
- i. INSPECT PRESTRESSED CONCRETE FOR:
- APPLICATION OF PRESTRESSING FORCES. (CONTINUOUS)
 - GROUTING OF BONDED PRESTRESSING TENDONS. (CONTINUOUS)
- j. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS. (PERIODIC)
- k. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS. (PERIODIC)
- l. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED. (PERIODIC)
- m. NO INSPECTION IS REQUIRED FOR SLABS-ON-GRADE.

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

STRUCTURAL GENERAL NOTES

DATE		REVISION		NO		ISSUED FOR:		BID SET		PROJECT NO.	
1/6/2026		REVISED PER OEPA COMMENTS	1	7/22/2026	AS NOTED	DESIGNED BY:	BAS	7/22/2026	1	232055	
3/4/2026		REVISED PER OEPA COMMENTS	2			SCALE:				DISCIPLINE	
4/6/2026		REVISED PER OEPA COMMENTS	3			DRAWN BY:	BAS			STRUCTURAL	
7/22/2026		REVISED FOR CONSTRUCTION	4			CHECKED BY:	BAS			SHEET NAME	
										20S-01	
										SHEET	OF
										13	19

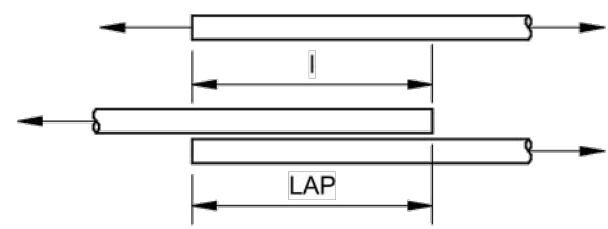
BID SET

verdantas

3. SOILS:
a. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY. (PERIODIC)
b. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL. (PERIODIC)
c. PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS. (PERIODIC)
d. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL. (CONTINUOUS)
e. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT THE SITE HAS BEEN PROPERLY PREPARED. (PERIODIC)

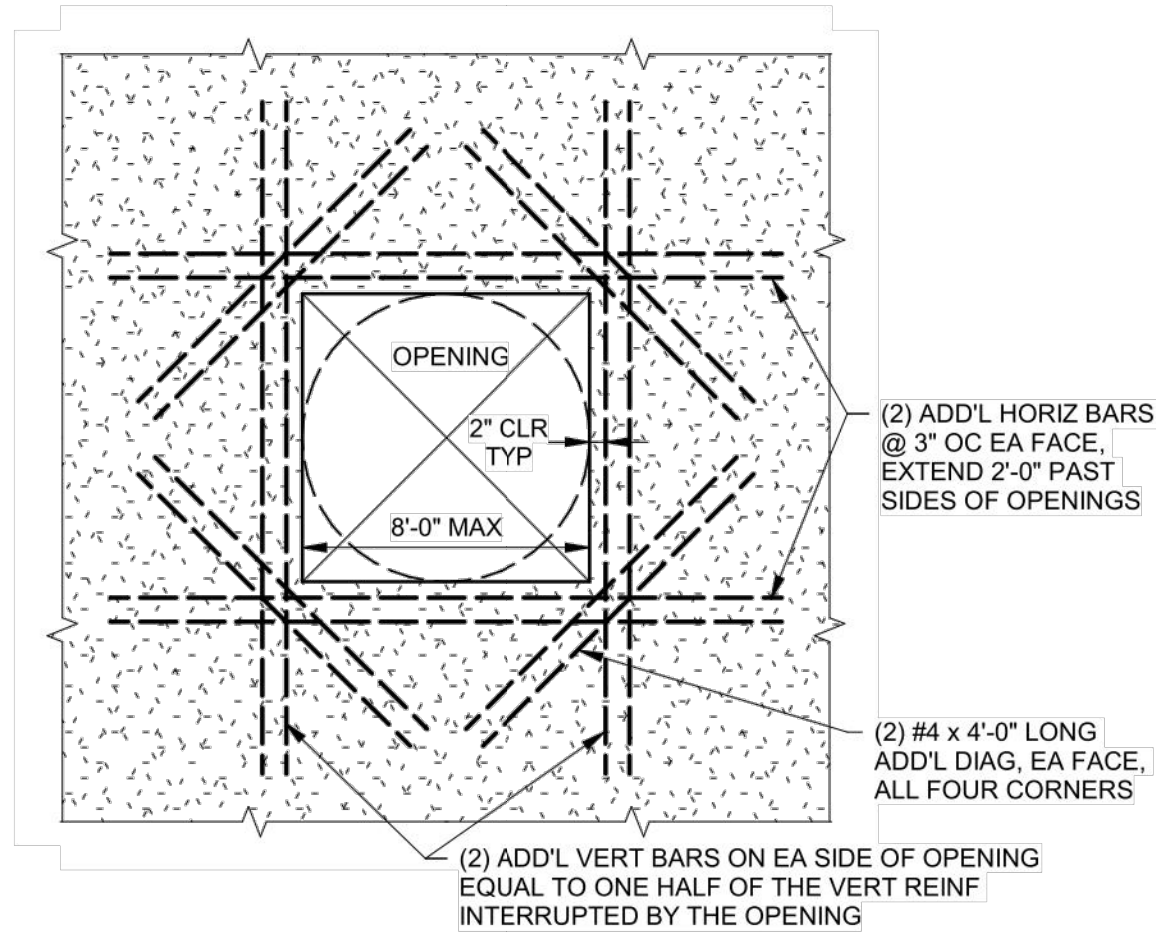
STRUCTURAL DRAWING ABBREVIATIONS

ADDL	ADDITIONAL	GA	GAGE	QL	SEISMIC LOAD
ADJ	ADJACENT	GALV	GALVANIZED	QTY	QUANTITY
AESS	ARCH EXPOSED STRUCTURAL STEEL	GC	GENERAL CONTRACTOR	RAD	RADIUS
ALT	ALTERNATE	GEN	GENERAL	REF	REFERENCE
&	AND	GLB	GLUE LAMINATED BEAM	REINF	REINFORCEMENT,
APPROX	APPROXIMATELY	GR	GRADE		REINFORCING, REINFORCED
ARCH	ARCHITECT or ARCHITECTURAL	GYP BD	GYP SUM BOARD	REQD	REQUIRED
@	AT or SPACING	HC	HOLLOW CORE	SCHED	SCHEDULE
B/	BOTTOM OF	HORIZ	HORIZONTAL	SECT	SECTION
BL	BUILDING LINE	HP	HIGH POINT	SER	STRUCTURAL ENGINEER
BLDG	BUILDING	HS	HIGH STRENGTH		OF RECORD
BLKG	BLOCKING	HT	HEIGHT	SF	SQUARE FOOT
BM	BEAM	HY	HEAVY	SHT	SHEET
BRDG	BRIDGING	ID	INSIDE DIAMETER	SIM	SIMILAR
BRG	BEARING	IF	INSIDE FACE	SOG	SLAB-ON-GRADE
BTWN	BETWEEN	IN	INCH	SPA	SPACING
BOT	BOTTOM	INFO	INFORMATION	SPEC(S)	SPECIFICATION(S)
CANT	CANTILEVER	INT	INTERIOR	SPF	SPRUCE PINE FIR
CL	CENTERLINE	INV	INVERT	SQ	SQUARE
CLR	CLEAR	JST	JOIST	SS	STAINLESS STEEL
CLSM	CONTROLLED LOW STRENGTH MATERIAL	JT	JOINT	STD	STANDARD
		K	KIPS	STIFF	STIFFENER
CTR	CENTER	KSF	KIPS PER SQUARE FOOT	STL	STEEL
COL	COLUMN	KSI	KIPS PER SQUARE INCH	STR	STRUCTURAL
CONC	CONCRETE	L	ANGLE	STRUCT	STRUCTURAL
CONN	CONNECTION	LBS	POUNDS	SUP	SUPPORT
CONST	CONSTRUCTION	LF	LINEAL FEET	SYM	SYMMETRICAL
CONT	CONTINUOUS	LG	LONG	SYP	SOUTHERN YELLOW PINE
CJ	CONTROL/CONSTRUCTION JOINT	LL	LIVE LOAD	T	TOP
CMU	CONCRETE MASONRY UNIT	LLH	LONG LEG HORIZONTAL	T/	TOP OF
CONT	CONTINUOUS	LLV	LONG LEG VERTICAL	T&B	TOP AND BOTTOM
COORD	COORDINATE	LOC	LOCATION	T&G	TONGUE AND GROOVE
CUFT	CUBIC FEET	LONG	LONGITUDINAL	TEMP	TEMPERATURE STEEL
CY	CUBIC YARDS	LP	LOW POINT	THD	THREAD
DBL	DOUBLE	LSH	LONG SIDE HORIZONTAL	THK	THICK
DBA	DEFORMED BAR ANCHOR	LSV	LONG SIDE VERTICAL	THRU	THROUGH
DEG or °	DEGREE	LT WT	LIGHT WEIGHT	TOL	TOLERANCE
DEMO	DEMOLITION	MANUF	MANUFACTURER	TRANS	TRANSVERSE
DET	DETAIL	MAS	MASONRY	TYP	TYPICAL
DF	DOUGLAS FIR LARCH	MATL	MATERIAL	UN or UNO	UNLESS NOTED (OTHERWISE)
DIAG	DIAGONAL	MAX	MAXIMUM	VERT	VERTICAL
DIA or ø	DIAMETER	MECH	MECHANICAL	VIF	VERIFY IN FIELD
DIM	DIMENSION	MEZZ	MEZZANINE	w/	WITH
DO	DITTO	MFR	MANUFACTURER	w/o	WITHOUT
DN	DOWN	MIN	MINIMUM	WD	WOOD
DP	DEEP	MISC	MISCELLANEOUS	WP	WORKPOINT
DWG	DRAWING	MK	MARK	WT	WEIGHT
DWL	DOWEL	MO	MASONRY OPENING	WWF	WELDED WIRE FABRIC
EA	EACH	MTL	METAL		
EF	EACH FACE	NO or #	NUMBER		
EJ	EXPANSION JOINT	NOM	NOMINAL		
EL	ELEVATION	NS	NEARSIDE		
ELEC	ELECTRICAL	NTS	NOT TO SCALE		
EMBED	EMBEDDED, EMBEDMENT	OC	ON CENTER		
EQ	EQUAL	OD	OUTSIDE DIAMETER		
EQUIP	EQUIPMENT	OF	OUTSIDE FACE		
ES	EACH SIDE	O/O	OUT TO OUT		
EW	EACH WAY	OPNG	OPENING		
EX	EXISTING	OPP	OPPOSITE		
EXIST	EXISTING	PAF	POWDER ACTUATED FASTENERS		
(E)	EXISTING	PAR	PARALLEL		
EXP	EXPANSION	PC	PRECAST		
EXT	EXTERIOR	PERP	PERPENDICULAR		
FAB	FABRICATE	PL	PLATE		
FDN	FOUNDATION	PLF	POUNDS PER LINEAL FOOT		
FV	FIELD VERIFY	PLYWD	PLY WOOD		
FIN	FINISH	PREFAB	PREFABRICATED		
FLG	FLANGE	PSF	POUNDS PER SQUARE FOOT		
FLR	FLOOR	PSI	POUNDS PER SQUARE INCH		
FS	FARSIDE	PT	POST TENSIONED		
FT	FOOT, FEET	PTFE	POLYTETRAFLUOROETHYLENE		
FTG	FOOTING	PTR	PRESSURE TREATED		



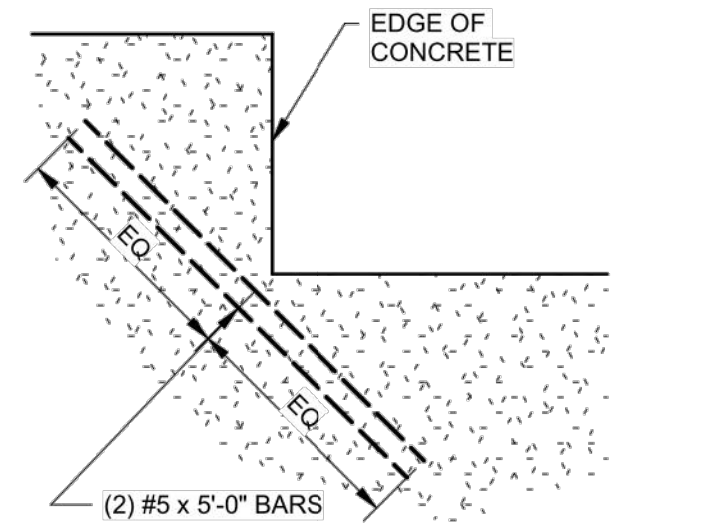
LAP TABLE (f'c = 4,500 PSI)					
BAR SIZE	LAP CLASS	UNCOATED BARS			
		TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2
#3	A	18	26	14	20
	B	23	34	18	26
#4	A	23	35	18	27
	B	30	45	23	35
#5	A	29	44	23	34
	B	38	56	29	44
#6	A	35	53	27	40
	B	45	68	35	53
#7	A	51	87	39	59
	B	66	100	51	77
#8	A	58	88	45	67
	B	76	114	58	88

- NOTES:**
1. TABULATED VALUES ARE BASED ON A MINIMUM YIELD STRENGTH OF 60,000 PSI. LENGTHS ARE IN INCHES.
2. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL MEMBER, CONCRETE COVER, AND OC SPACING OF THE BARS ARE DEFINED AS:
 BEAMS AND COLUMNS
 • CASE 1: CONCRETE COVER AT LEAST 1.0d_s AND OC SPACING AT LEAST 2.0 d_s
 • CASE 2: CONCRETE COVER LESS THAN 1.0d_s OR OC SPACING AT LESS THAN 2.0 d_s
 OTHER BARS
 • CASE 1: CONCRETE COVER AT LEAST 1.0d_s AND OC SPACING AT LEAST 3.0 d_s
 • CASE 2: CONCRETE COVER LESS THAN 1.0d_s OR OC SPACING AT LESS THAN 3.0 d_s
3. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.



1 REINFORCING AT WALL OPENING

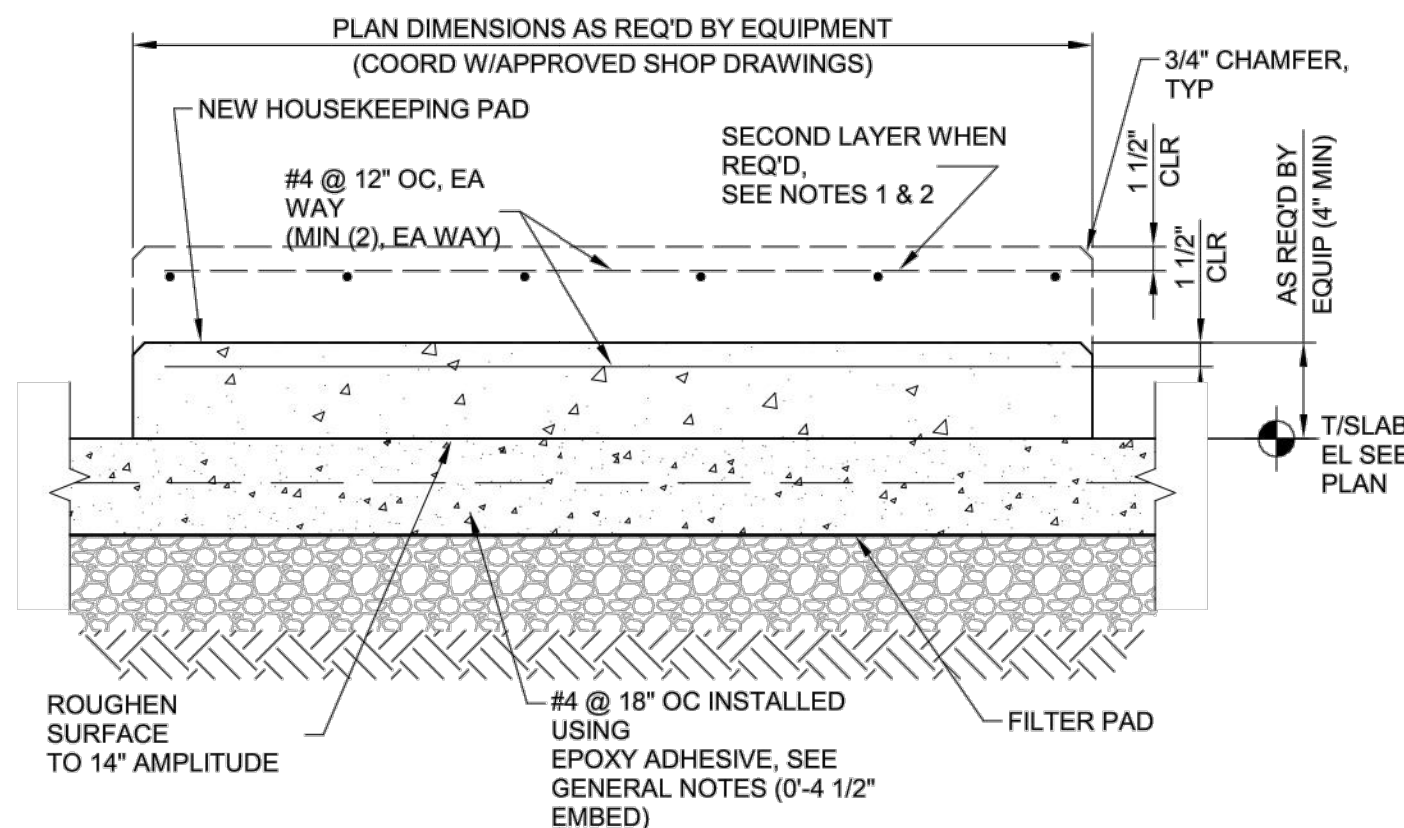
20S-02 NTS



NOTE:
TYPICAL OF ANY AND ALL RE-ENTRY CORNER NOT LIMITED TO OPENINGS.

3 REINFORCING AT RE-ENTRY CORNER

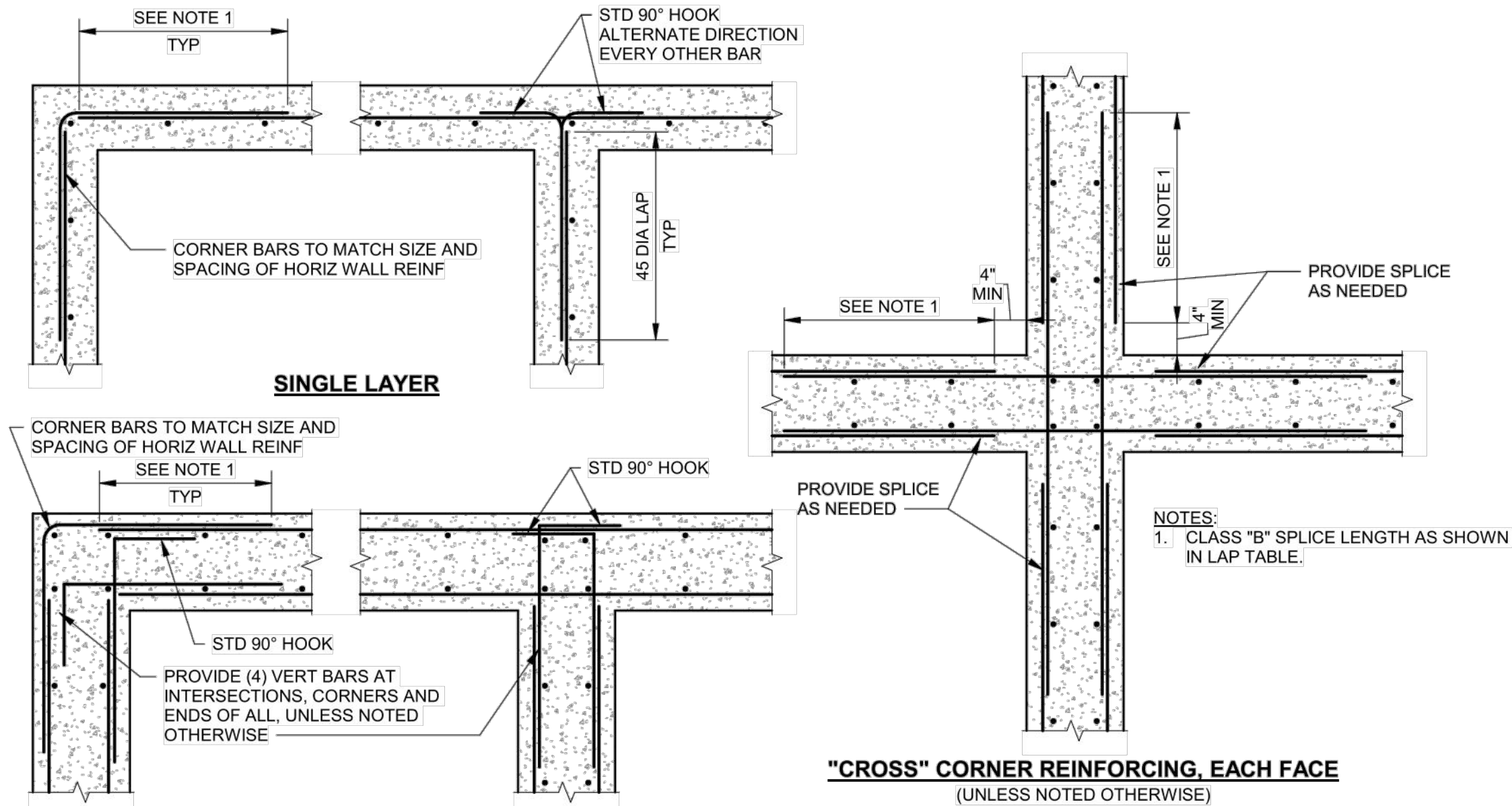
20S-02 NTS



- NOTES:**
1. CONTRACTOR SHALL PROVIDE 2 LAYERS OF REINFORCING WHEN PAD THICKNESS EXCEEDS 8".
2. IF SECOND LAYER OF REINFORCING IS REQ'D, SPACING BETWEEN LAYERS SHALL NOT EXCEED 8".
3. SEE PLUMBING, MECH & ELECTRICAL DRAWINGS FOR SIZE, LOCATION & QUANTITY OF PADS.
4. COORDINATE SIZE, LOCATION & QUANTITY OF EQUIP ANCHOR BOLTS IF REQ'D, WITH APPROVED SHOP DWGS.

5 HOUSEKEEPING PAD

20S-02 NTS

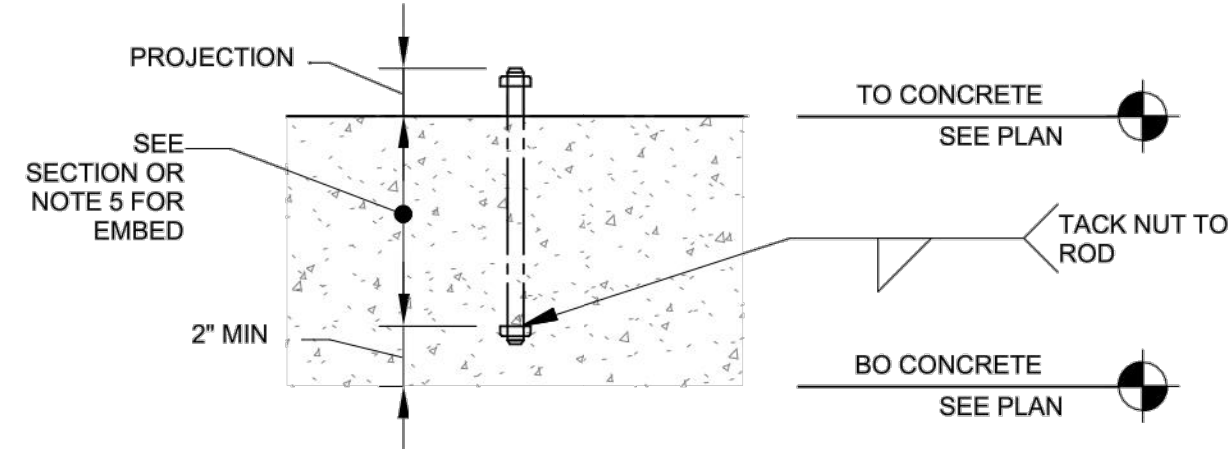


DOUBLE LAYER

20S-02 NTS

2 REINFORCING AT RE-ENTRY CORNER

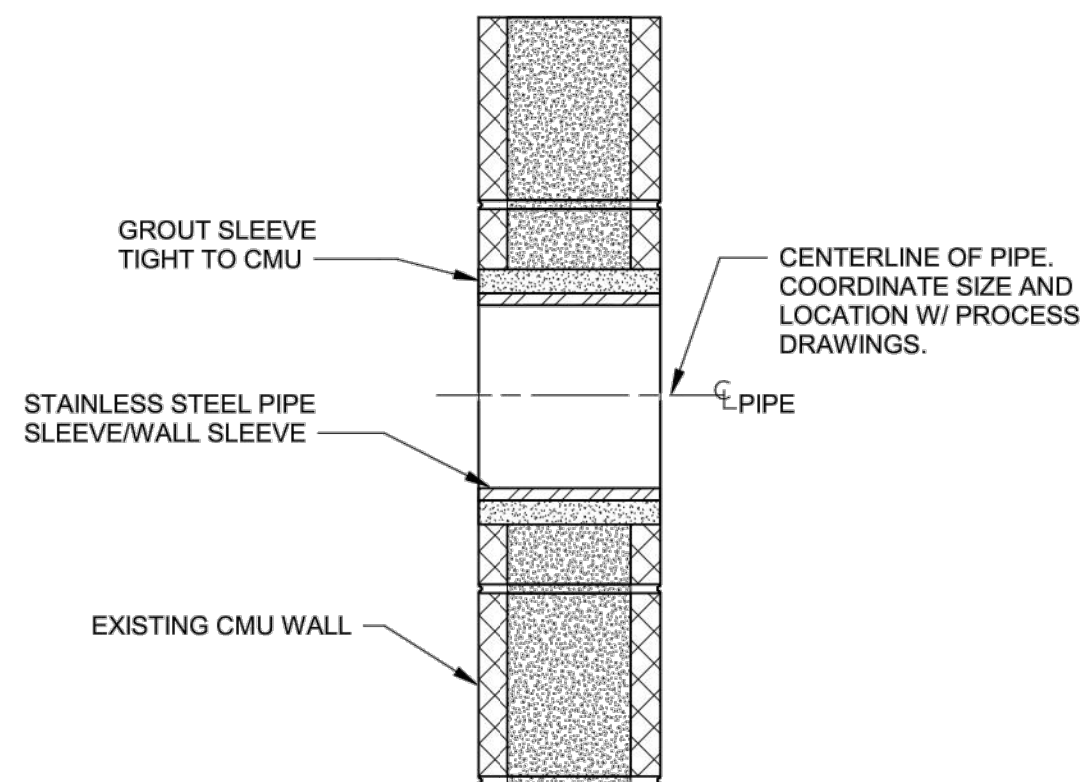
20S-02 NTS



- NOTES:**
1. USE HEAD BOLTS OR TACK WELD.
2. COORDINATE PROJECTION WITH EQUIPMENT SUPPLIER UNLESS NOTED OTHERWISE.
3. DO NOT USE 'J' BOLTS. 'J' BOLTS ARE NOT ACCEPTABLE.
4. ANCHOR BOLTS TO BE STAINLESS STEEL UNLESS NOTED OTHERWISE.

4 ANCHOR BOLT

20S-02 NTS



- NOTES:**
1. CORE DRILL MASONRY WALL FOR PROPOSED PIPE PENETRATION. COORDINATE SIZE AND LOCATION WITH PROCESS DRAWINGS. OVERSIZE HOLE TO PROVIDE 1" GAP ON ALL SIDES OF STAINLESS STEEL SLEEVE.
2. STAINLESS STEEL PIPE SLEEVE/WALL SLEEVE SHALL BE ASTM A304 AND HAVE A MINIMUM THICKNESS OF 3/8". COORDINATE INSIDE DIAMETER SLEEVE WITH SEAL MFG.
3. FILL INTERSTITIAL SPACE BETWEEN SLEEVE AND CMU WITH A NON-SHRINK, NON-METALLIC HIGH STRENGTH REPAIR MORTAR, GROUT SOLID. MIX AND INSTALL PER MFG INSTRUCTION. ACCEPTABLE PRODUCT ARE PAC-IT EXPANSIVE DRY PACK GROUT BY W. R. MEADOWS, INC., NS GROUT BY THE EUCLID CHEMICAL CO., FIVE STAR GROUT BY FIVE STAR PRODUCTS, INC., OR EQUAL.

6 PIPE SLEEVE AT EXISTING CMU WALL

20S-02 NTS

BID SET

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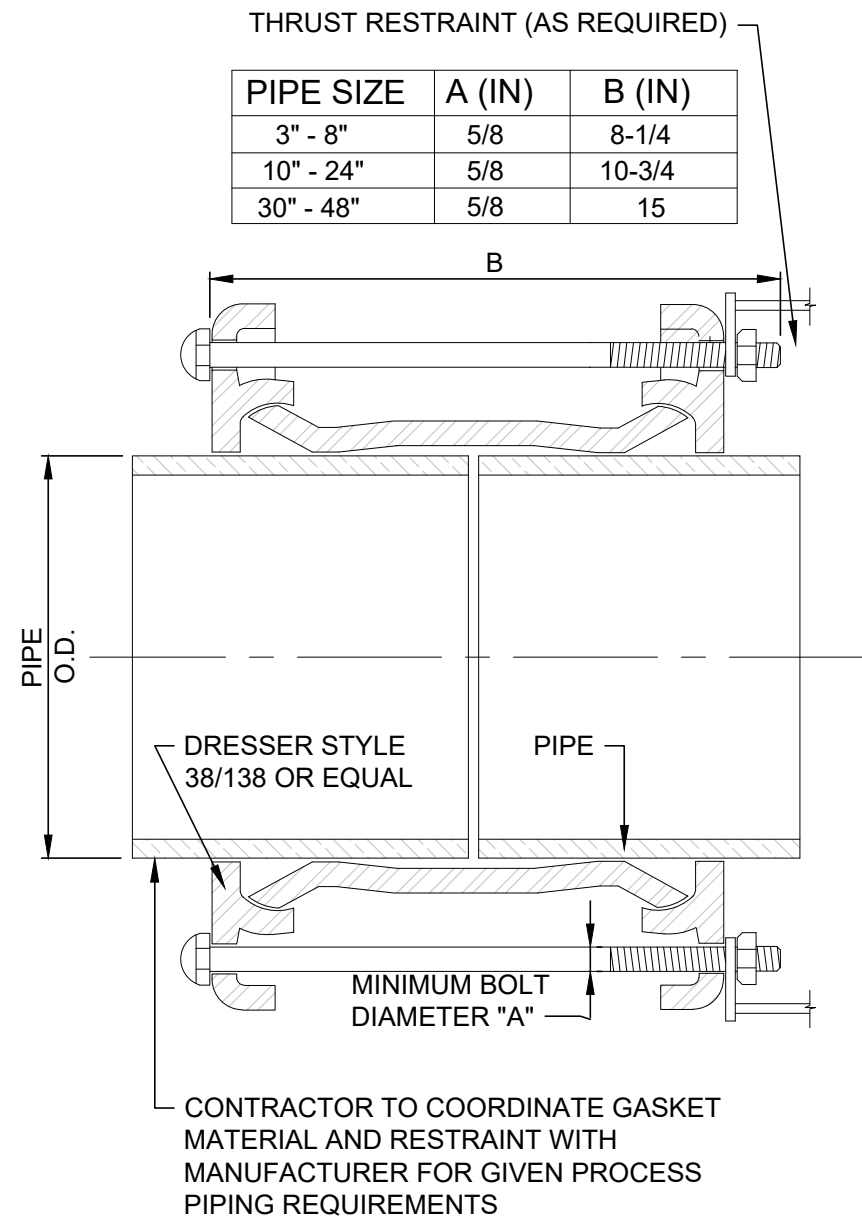
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SCALE:	AS NOTED	2	REVISED PER OEPA COMMENTS	3/4/2026
DESIGNED BY:	BAS	3	REVISED PER OEPA COMMENTS	4/6/2026
DRAWN BY:	BAS	4	REVISED FOR CONSTRUCTION	7/22/2026
CHECKED BY:	BAS			

VILLAGE OF LITHOPOLIS WATER TREATMENT PLANT NEW FILTER ADDITION

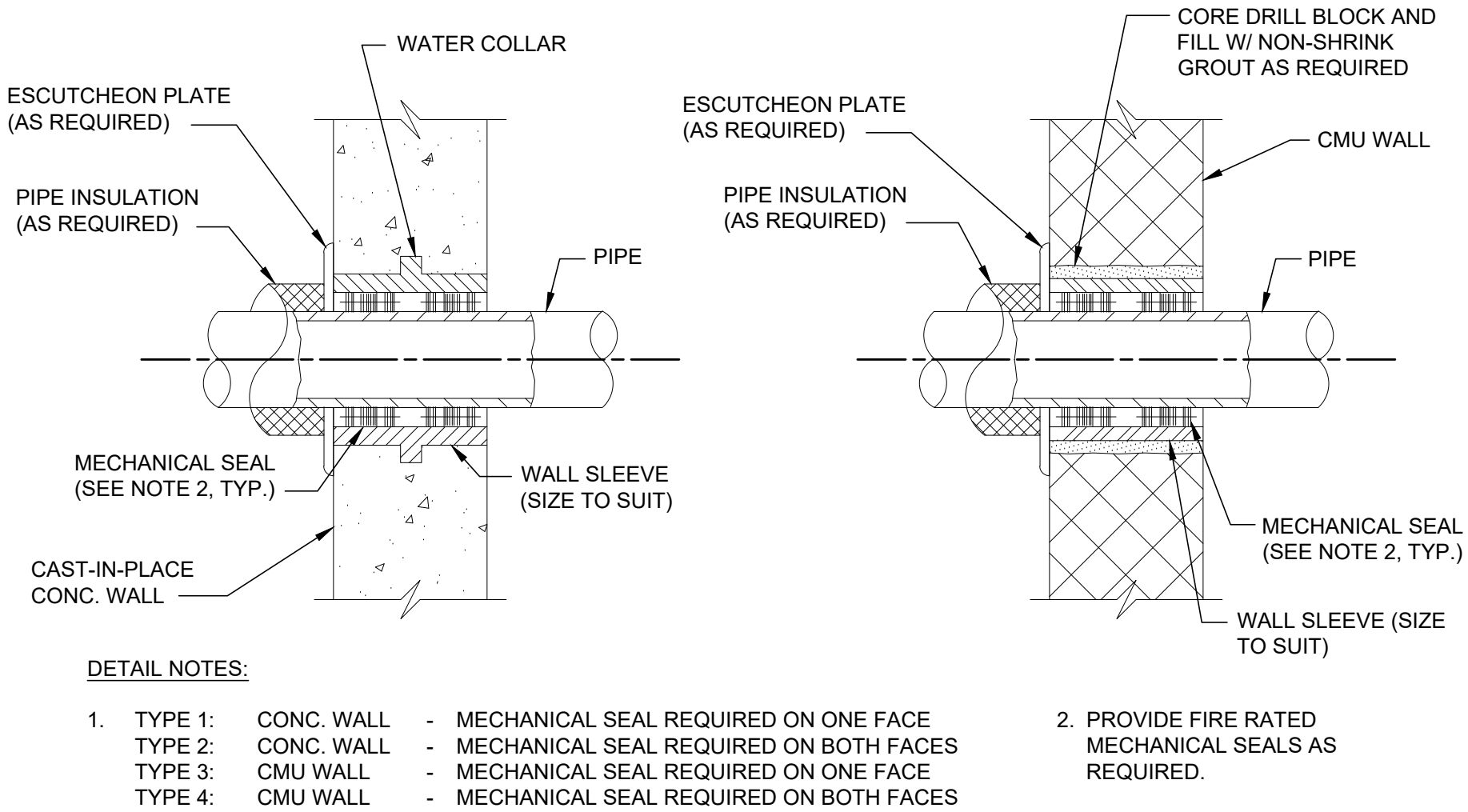
WATER TREATMENT PLANT - 10 SERIES
TYPICAL DETAILS

PROJECT NO.	2320555
DISCIPLINE	STRUCTURAL
SHEET NAME	20S-02
SHEET	14
OF	19

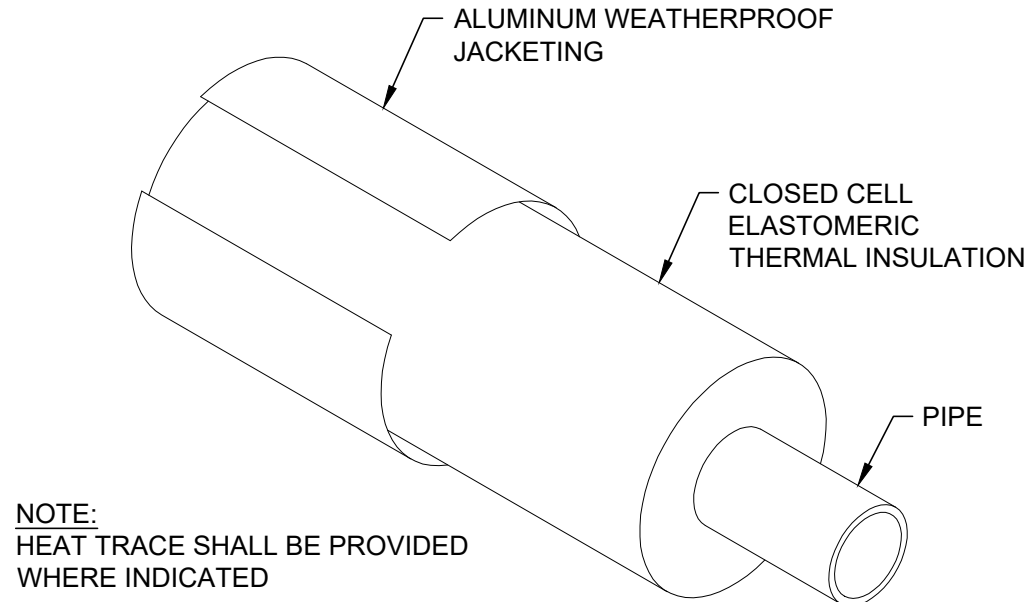




FLEXIBLE CONNECTOR DETAIL
NOT TO SCALE

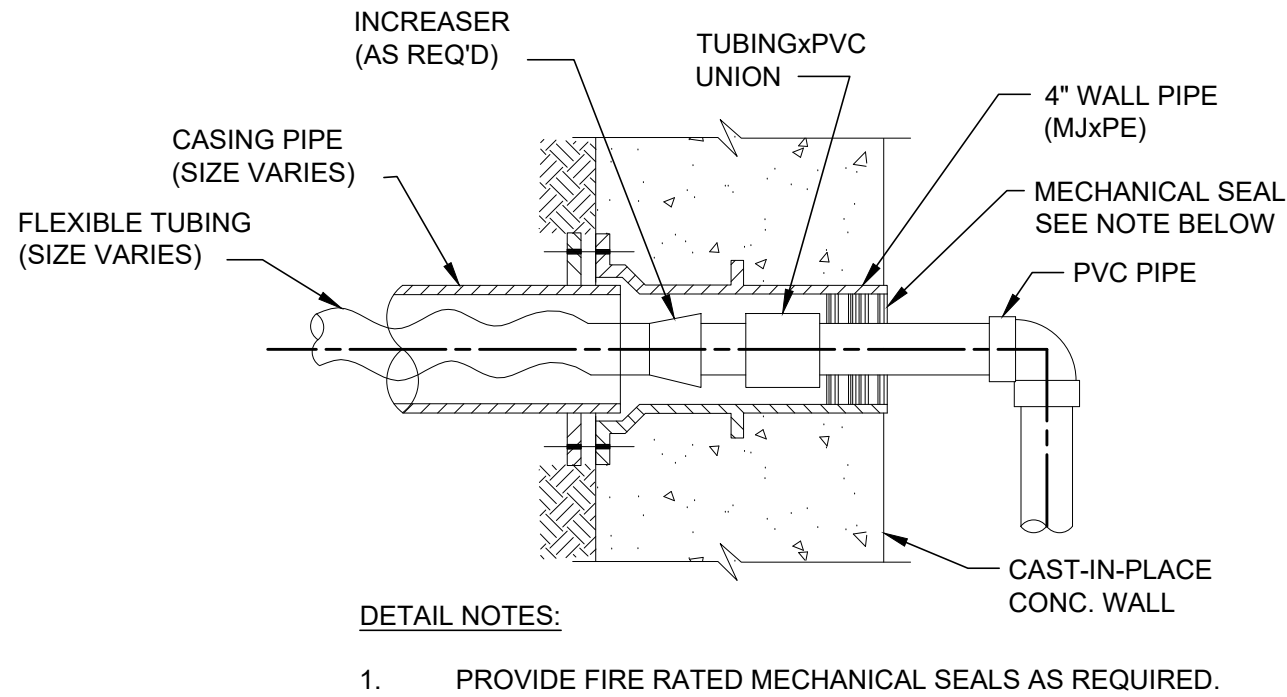


TYPICAL WALL SLEEVE DETAILS
NOT TO SCALE

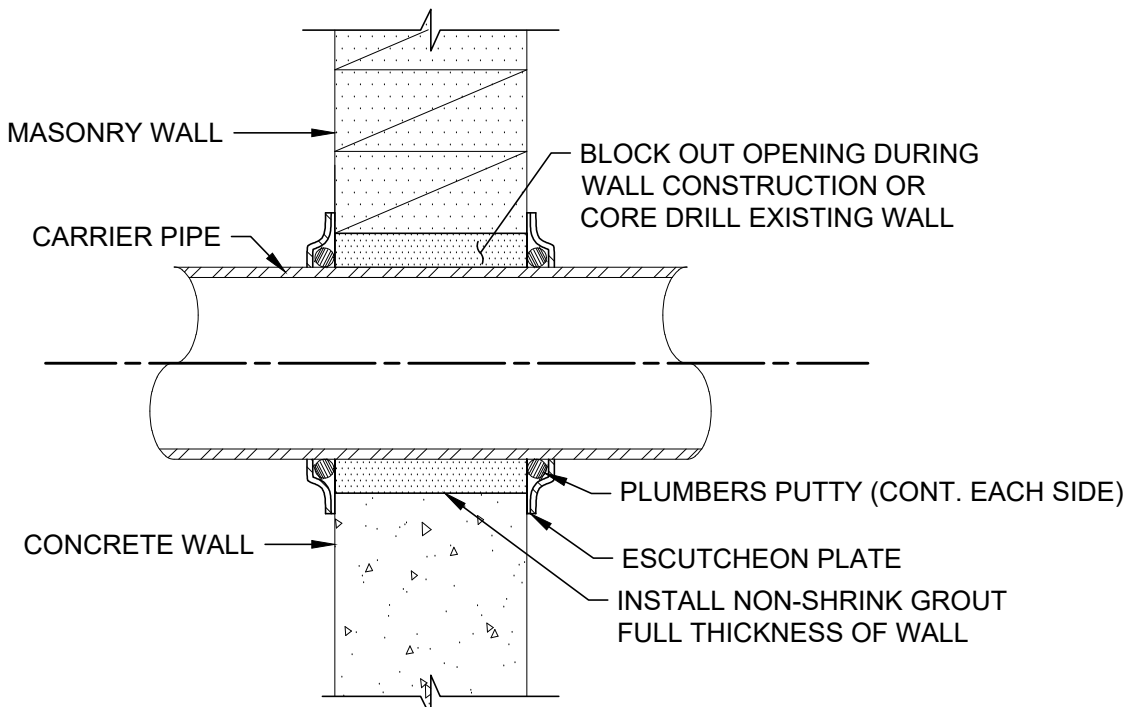


TYPICAL ABOVE GROUND PIPE INSTALLATION
NOT TO SCALE

- NOTES:
- HEAT TRACE CABLE IS REQUIRED FOR THE FOLLOWING EXTERIOR SYSTEMS:
 - ALL EXTERIOR WATER PIPING BETWEEN STRUCTURE AND FILTER.
 - ALL EXPOSED WATER PIPING BETWEEN FILTER SECTIONS.
 - ALL EXTERIOR CHEM FEED PIPING SYSTEMS BETWEEN STRUCTURE AND FILTER.

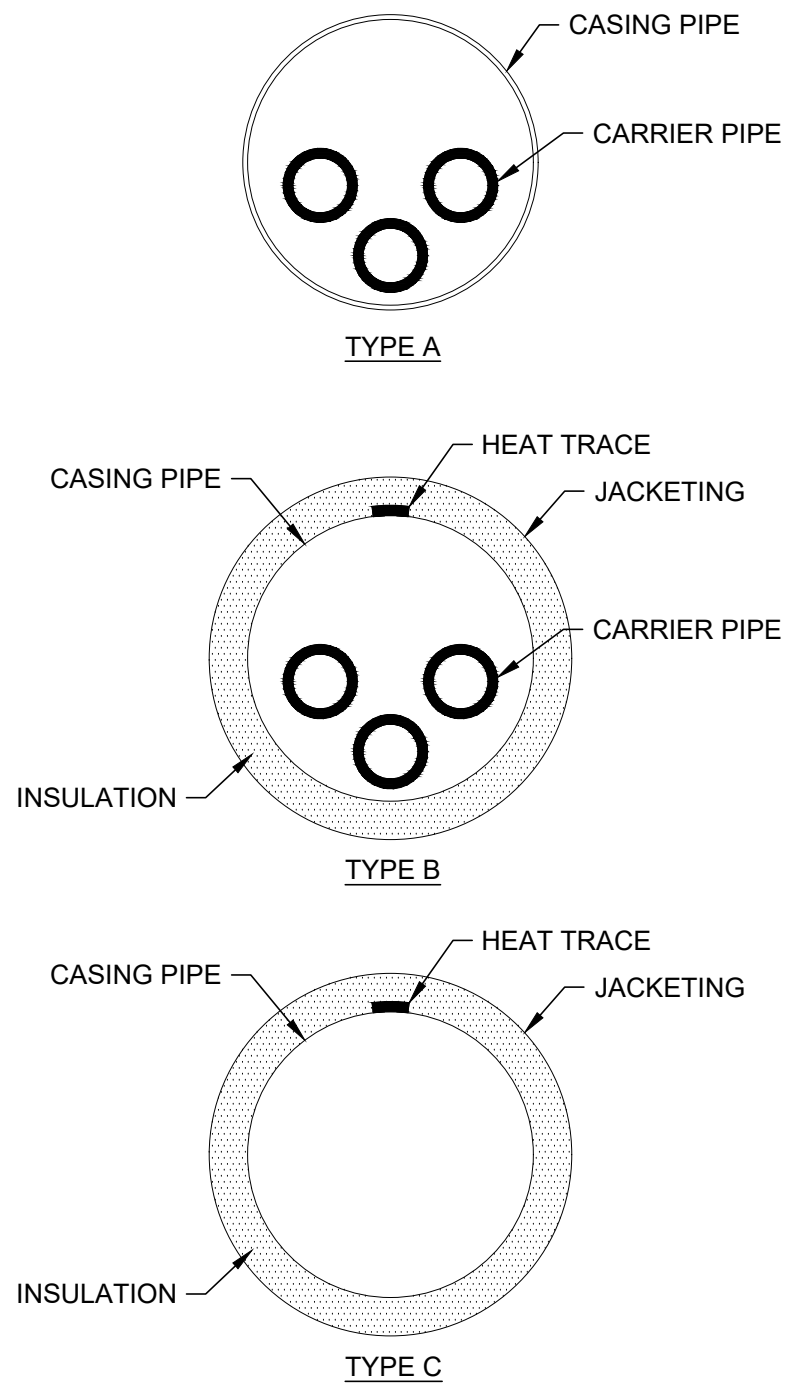


CHEMICAL FEED AND SAMPLE CASING PIPE WALL PENETRATION DETAIL
NOT TO SCALE



- NOTES:
- ESCUTCHEON PLATE REQUIRED ON PIPING EXPOSED ON THE FINISHED WORK EACH SIDE UNLESS BELOW FINISHED GRADE.

EXPOSED PIPE PENETRATION DETAIL
SCALE: NONE



- NOTES:
- REFER TO CHEM FEED SYSTEM NOTES FOR SPECIFICS FOR SYSTEM CARRIER PIPE QUANTITY, MATERIALS AND LIMITS.
 - ALL EXPOSED SYSTEMS REQUIRE THAT THE CASING PIPE BE SUPPORT BY MOUNTING TO AN ADJACENT SURFACE OR STRUCTURE (WALL, RAILING, ETC.).
 - ALL EXTERIOR ABOVE GRADE AND NON-SUBMERGED CHEM FEED LINES REQUIRE A "TYPE A" INSTALLATION.
 - SPARE CARRIER PIPES (WHERE DESIGNATED) SHALL BE LABELED AT TERMINAL POINTS AND FITTED WITH REMOVABLE CAPS.

CHEM FEED SYSTEM DETAIL
NOT TO SCALE

BID SET

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ISSUED FOR:	BID SET	NO	REVISION	DATE
ISSUE DATE:	7/22/2026	1	REVISED PER OEPA COMMENTS	1/6/2026
SCALE:	AS NOTED	2	REVISED PER OEPA COMMENTS	3/4/2026
DESIGNED BY:	JJM	3	REVISED PER OEPA COMMENTS	4/6/2026
DRAWN BY:	AGD	4	REVISED FOR CONSTRUCTION	7/22/2026
CHECKED BY:	BRA			

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

STANDARD DETAILS - 20 SERIES
PROCESS DETAILS - 2

PROJECT NO. 232055	
DISCIPLINE PROCESS	
SHEET NAME 20D-02	
SHEET 16	OF 19

ELECTRICAL SYMBOLS - PLAN:

	HOME RUN TO PANEL
	MOTOR
	MOTOR CONTROLLER
	FUSIBLE SAFETY SWITCH
	NON-FUSIBLE DISCONNECT SWITCH
	SIMPLEX RECEPTACLE, EXPLOSION PROOF
	DUPLEX RECEPTACLE
	QUADPLEX RECEPTACLE
	DATA PORT, RJ45
	SPECIAL RECEPTACLE, NEMA TYPE NOTED
	SINGLE-POLE SWITCH, "3" INDICATES 3-WAY, "OS" INDICATES OCCUPANCY SENSING
	DRY-TYPE TRANSFORMER
	PUSHBUTTON STATION
	LOUVER OPERATOR
	JUNCTION BOX
	SOLENOID VALVE
	LIMIT SWITCH
	FS FE FIT FLOW: SWITCH, SENSOR, TRANSMITTER W / DISPLAY
	LS LE LIT LEVEL: SWITCH, SENSOR, TRANSMITTER W / DISPLAY
	PS PE PIT PRESSURE: SWITCH, SENSOR, TRANSMITTER W / DISPLAY
	TS TE TIT TEMPERATURE: SWITCH, SENSOR, TRANSMITTER W / DISPLAY
	AE AIT OTHER SENSOR / INDICATING TRANSMITTER AS NOTED
	A HAZARDOUS AREA LIGHT FIXTURE
	B OUTDOOR CANOPY LIGHT FIXTURE
	C EXTERIOR WALL-PACK LIGHT FIXTURE
	D HIGH BAY LIGHT FIXTURE
	E LINEAR LED LIGHT FIXTURE
	EXIT SIGN
	EMERGENCY REMOTE HEAD
	EMERGENCY WALL-PACK
	F F FIRE ALARM PULL STATION, STROBE, HORN-STROBE
	SD FIRE ALARM AREA SMOKE DETECTOR

ELECTRIC SYMBOLS - UTILITIES:

EX:	PR:	
		AIR CONDITIONING UNIT
		ELECTRIC CONTROL BOX
		ELECTRIC JUNCTION BOX
		ELECTRIC PULL BOX
		ELECTRIC RISER BOX
		ELECTRIC VAULT BOX
		ELECTRIC LIGHT - GROUND
		ELECTRIC LIGHT - POST
		ELECTRIC MARKER POST
		ELECTRIC METER
		ELECTRIC MANHOLE - 48"
		ELECTRIC MANHOLE - 48" - ADJUST
		ELECTRIC MANHOLE - LID
		ELECTRIC PAINT MARK
		ELECTRIC PEDESTAL
		ELECTRIC TRANSFORMER

SINGLE LINE, ELEMENTARY, & INTERCONNECTION DIAGRAMS (ONLY) SYMBOLOGY:

	DISCONNECT SWITCH - AMP RATING		N.O. LIMIT SWITCH		CONTACT - NORMALLY OPEN
	FUSE - AMP RATING		N.O. FLOW SWITCH		CONTACT - NORMALLY CLOSED
	CIRCUIT BREAKER - AMP RATING		N.O. LEVEL SWITCH		SOLENOID COIL
	TRANSFORMER		N.O. PRESSURE SWITCH		PILOT LIGHT - PUSH TO TEST (COLOR)
	RELAY COIL		N.O. TEMPERATURE SWITCH		GROUND
	TIMING RELAY COIL		N.O. TIME DELAY AFTER ENERGIZATION		CAPACITOR
	MOTOR STARTER COIL		N.C. TIME DELAY AFTER ENERGIZATION		2 POSITION SELECTOR SWITCH
	ELAPSED TIME TOTALIZER		N.C. TIME DELAY AFTER DE-ENERGIZATION		3 POSITION SELECTOR SWITCH
	GROUNDING BUS		N.O. TIME DELAY AFTER DE-ENERGIZATION		EQUIPMENT FIELD TERMINAL
	TRANSIENT VOLTAGE SURGE SUPPRESSOR		N.O. SWITCH (GENERAL)		LOCAL PANEL / BLDG WIRING
			START PUSHBUTTON NORMALLY OPEN		EXTERNAL / FIELD WIRING
			STOP PUSHBUTTON NORMALLY CLOSED		

ABBREVIATIONS:

x-CSC	x-CONDUCTOR SHIELDED CABLE	IAW	IN ACCORDANCE WITH
A	AMPS	ICP	INSTRUMENTATION & CONTROL PANEL
AF	AMPERE FRAME	IPP	INSTRUMENT POWER PANEL
AI	ANALOG INPUT (PLC)	JB	JUNCTION BOX
AL	ALUMINUM	JBC	JUNCTION BOX-CONTROL
AM	AMMETER	JBM	JUNCTION BOX-METERING
AO	ANALOG OUTPUT (PLC)	JBP	JUNCTION BOX-POWER
AP	ALARM PANEL	KCM	KILO (1000) CIRCULAR MILL
AT	AMPERE TRIP	kVA	KILOVOLT AMPERES
AWG	AMERICAN WIRE GAUGE	KVAR	KILOVOLT AMPERES-REACTIVE
C	CONDUIT	kW	KILOWATT
CAP	CAPACITOR	LA	LIGHTING ARRESTOR
CB	CIRCUIT BREAKER	LGT	LIGHT
CJB	CONTROL JUNCTION BOX	LOR	LOCAL/OFF/REMOTE SELECTOR SWITCH
CP	CONTROL PANEL	LP	LIGHTING PANEL
CPT	CONTROL POWER TRANSFORMER	LS	LEVEL SWITCH
CR	CORROSION RESISTANT	MCC	MOTOR CONTROL CENTER
CS	CONTROL STATION	MCP	MOTOR CIRCUIT PROTECTOR
CT	CURRENT TRANSFORMER	MDP	MAIN DISTRIBUTION PANEL
CU	COPPER	MJB	METERING JUNCTION BOX
DB	DUCT BANK	NEC	NATIONAL ELECTRICAL CODE
DI	DIGITAL INPUT (PLC)	NEMA	NATIONAL ELECTRICAL MFR ASSOC.
DO	DIGITAL OUTPUT (PLC)	NEU	NEUTRAL
EAG	ELECTRICALLY ACTIVATED GATE	NFDS	NON-FUSED DISCONNECT SWITCH
EAV	ELECTRICALLY ACTIVATED VALVE	OCSS	OPEN/CLOSE SELECTOR SWITCH
EF	EXHAUST FAN	OL	OVERLOAD
ESPB	EMERGENCY STOP PUSHBUTTON (MAINTAINED)	OOSS	ON/OFF SELECTOR SWITCH
ETT	ELAPSED TIME TOTALIZER	OS	OCCUPANCY SENSING
EWD	ELEMENTARY WIRING DIAGRAM	OT	OVER TORQUE SWITCH
FDS	FUSED DISCONNECT SWITCH	P	POLE
FLA	FULL LOAD AMPERES	PB	PUSHBUTTON
FS	FLOW SWITCH	PBC	PULLBOX-CONTROL
FVC	FULL VOLTAGE CONTACTOR	PBM	PULLBOX-METERING
FVNR-1	FULL VOLTAGE NON-REVERSING STARTER SIZE 1	PBP	PULLBOX-POWER
GFI	GROUND FAULT INTERRUPTER	PC	PHOTO CONTROL
GND	GROUND	PF	POWER FACTOR
GFR	GROUND FAULT RELAY	PH	PHASE
HOA	HAND/OFF/AUTO SELECTOR SWITCH	PLC	PROGRAMMABLE LOGIC CONTROLLER
HP	HORSEPOWER	PJB	POWER JUNCTION BOX
HT	HIGH TORQUE SWITCH	PP	POWER PANEL
HTR	HEATER	PRI	PRIMARY
HZ	HERTZ	PS	PRESSURE SWITCH
		PT	POTENTIAL TRANSFORMER

ELECTRICAL LINE SYMBOLOGY:

PROPOSED:

_____	_____	CONDUIT AND WIRE RUN EXPOSED
_____	_____	CONDUIT AND WIRE BELOW GRADE
_____ELEC_____	_____ELEC_____	ELECTRIC LINE
_____ELEC-OH_____	_____ELEC-OH_____	ELECTRIC LINE - OVERHEAD
_____ELEC-UG_____	_____ELEC-UG_____	ELECTRIC LINE - UNDERGROUND
_____ELEC_____	_____ELEC_____	ELEC SERVICE
_____ELEC-OH_____	_____ELEC-OH_____	ELEC SERVICE - OVERHEAD
_____ELEC-UG_____	_____ELEC-UG_____	ELEC SERVICE - UNDERGROUND
_____LIGHT-OH_____	_____LIGHT-OH_____	ELEC LIGHTING - OVERHEAD
_____LIGHT-UG_____	_____LIGHT-UG_____	ELEC LIGHTING - UNDERGROUND

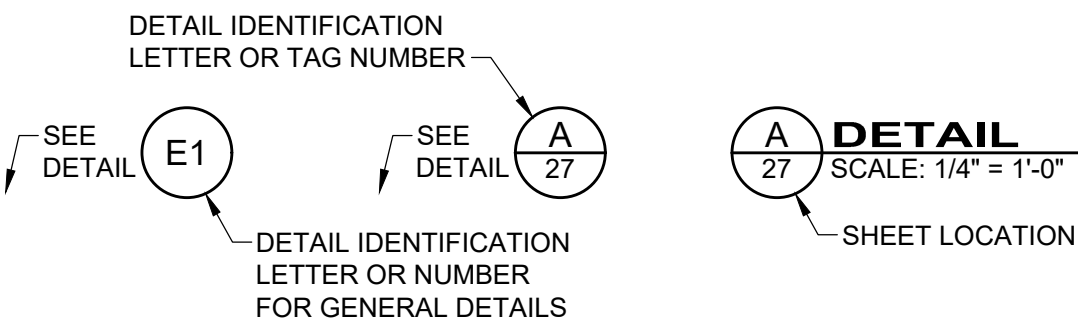
EXISTING:

_____ELEC_____	_____ELEC_____	ELECTRIC LINE
_____ELEC-ABAN_____	_____ELEC-ABAN_____	ELECTRIC LINE - ABANDONED
_____ELEC-OH_____	_____ELEC-OH_____	ELECTRIC LINE - OVERHEAD
_____ELEC-UG_____	_____ELEC-UG_____	ELECTRIC LINE - UNDERGROUND
_____ELEC_____	_____ELEC_____	ELECTRIC SERVICE
_____ELEC-OH_____	_____ELEC-OH_____	ELECTRIC SERVICE - OVERHEAD
_____ELEC-UG_____	_____ELEC-UG_____	ELECTRIC SERVICE - UNDERGROUND
_____LIGHT-OH_____	_____LIGHT-OH_____	ELECTRIC LIGHTING - OVERHEAD
_____LIGHT-UG_____	_____LIGHT-UG_____	ELECTRIC LIGHTING - UNDERGROUND
_____	_____	ELECTRIC DUCT

ELECTRICAL CODED NOTES:

	NEW WORK - NOTE 1		DEMOLITION - NOTE 1		REVISION - NOTE 1
	NEW WORK - NOTE 1		DEMOLITION - NOTE 2		REVISION - NOTE 2
	NEW WORK - NOTE 1		DEMOLITION - NOTE 3		REVISION - NOTE 3

ELECTRICAL DETAIL REFERENCE:



ELECTRICAL GENERAL NOTES:

- ALL ELECTRICAL EQUIPMENT AND MATERIALS WILL BE SELECTED AND INSTALLED IN COMPLIANCE WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL FIRE CODES, INCLUDING BUT NOT LIMITED TO ALL PERTINENT NFPA REGULATIONS. IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO ENSURE COMPLIANCE WITH THESE CODES.
- DO NOT INSTALL DEVICES SCALED FROM THESE DRAWINGS. ALL DEVICES SHALL BE INSTALLED AT LOCATIONS SHOWN IN THE APPROVED CONDUIT/DEVICE LAYOUT DRAWINGS AND WITH DIMENSIONS TAKEN IN THE FIELD.
- ELECTRICIAN TO VISIT SITE AND VERIFY ALL EXISTING CONDITIONS PRIOR TO BID.
- NO DUCTWORK OR PIPING TO BE RUN ABOVE ELECTRICAL PANELS OR THROUGH ELECTRICAL EQUIPMENT ROOMS. ELECTRICIAN SHALL COORDINATE WITH ALL TRADES FOR EQUIPMENT LAYOUTS PRIOR TO ROUGH-IN OF ALL SYSTEMS.
- MANUFACTURERS AND CATALOG NUMBERS SHOWN IN THE LIGHT FIXTURE SCHEDULE ARE PROVIDED TO INDICATE DESIRED LIGHT FIXTURE CHARACTERISTICS. IT IS THE INTENT OF THE DOCUMENTS TO ALLOW ALTERNATE MANUFACTURERS TO PROVIDE LIGHTING PRODUCTS FOR THE PROJECT, AS LONG AS PROPOSED ALTERNATES PROVIDE THE SAME GENERAL DESIGN AND LIGHTING CHARACTERISTICS AS NOTED IN THE LIGHT FIXTURE DESCRIPTION.
- ELECTRICIAN TO CONFIRM LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ELECTRICAL CHARACTERISTICS OF PROCESS EQUIPMENT PROVIDED BY OTHER TRADES PRIOR TO INSTALLING ROUGH-INS AS SHOWN ON THE ELECTRICAL PLANS. ALL SHOP DRAWING REQUIREMENTS WILL BE CONSIDERED AS THE MEANS AND METHODS OF INSTALLATION.
- THIS PROJECT INVOLVES WORK AT AN INDUSTRIAL FACILITY AND THE CONTRACTOR IS EXPECTED TO PROVIDE CRAFTSMANSHIP REFLECTING THE NATURE OF THE FACILITY. CONDUITS IN PROCESS AREAS ARE TO BE SURFACE MOUNTED RIGID GALVANIZED STEEL (RGS). IN CLASSIFIED AREAS SEAL ALL CONDUITS TO RESTRICT THE PASSAGE OF GASSES AND VAPORS, AND ARRANGE SEALING FITTING DRAINS IN CONDUIT SYSTEMS TO PREVENT ACCUMULATION OF CONDENSATE ABOVE SEALS. ALL CONDUITS ENTERING OR LEAVING A MOTOR CONTROL CENTER, CONTROL PANEL, VALVE ACTUATOR, INSTRUMENT, A BUILDING, OR A PANELBOARD SHALL BE MADE WATERTIGHT USING AN INFLATABLE SEALED BLADDER DUCT SEALING SYSTEM, RAYCHEM 'RAYFLATE' DUCT SEALING SYSTEM RDSS OR APPROVED EQUAL. ALL HARDWARE IS TO BE STAINLESS STEEL UNLESS OTHERWISE DIRECTED.

ALL ENCLOSURES ARE TO BE RATED AS FOLLOWS (UON):

- OUTDOORS: NEMA 4X (STAINLESS STEEL)
 - CLASSIFIED AREAS: NEMA 7
 - INDOORS (CORROSIVE AREAS): NEMA 4X (STAINLESS STEEL)
 - INDOORS (CONTROLLED ENVIRONMENT) NEMA 12
- ELECTRICIAN SHALL REVIEW ALL OTHER TRADES' CONSTRUCTION DOCUMENTS AND/OR COORDINATE WITH OTHER TRADES AND VERIFY IF THERE ARE ANY ADDITIONAL ELECTRICAL REQUIREMENTS NOT SHOWN ON ELECTRICAL DRAWINGS. COST FOR WORK SHOWN ON OTHER TRADES' DRAWINGS SHALL BE INCLUDED IN BASE BID. ALL FIELD WIRING AND TERMINATIONS OF PROCESS EQUIPMENT AND INSTRUMENTATION AND CONTROLS SHALL BE THE RESPONSIBILITY OF THE ELECTRICIAN. ALL CABLES AND WIRES PROVIDED BY VENDORS SHALL BE INSTALLED AND TERMINATED BY THE ELECTRICIAN. WIRE ALL MISCELLANEOUS POWER AND CONTROLS AS REQUIRED TO PROVIDE A COMPLETE FUNCTIONING SYSTEM.
 - A 4-20mA SIGNAL IS AN ANALOG SIGNAL USED TO TRANSMIT DATA (LEVEL, FLOW, ETC.) FOR PROCESS CONTROLS. THE ELECTRICIAN SHALL PROVIDE, INSTALL, AND TERMINATE SHIELDED TWISTED PAIRS (STP) WIRING IN RIGID GALVANIZED STEEL CONDUIT (RGS). RGS IS USED IN AN ATTEMPT TO REDUCE THE DISTORTION AFFECT FROM EMI AND RFI. BELOW GRADE CONDUITS SHALL BE PVC SCHED-40. PARALLEL RUNS OF DATA CONDUITS AND POWER CONDUITS SHALL BE SEPARATED BY 2 FEET. THE STP SHIELD SHALL BE GROUNDED AT THE CONTROL PANEL ONLY (DO NOT GROUND AT BOTH ENDS).
 - THE ELECTRICIAN SHALL BE RESPONSIBLE FOR LAYOUT AND COORDINATION OF OPENINGS AND CHASES AND SHALL PERFORM ALL CUTTING AND PATCHING AS REQUIRED TO INSTALL THEIR WORK. ALL CONCRETE HOUSE KEEPING PADS SHALL BE FRAMED AND POURED BY THE ELECTRICIAN. PADS SHALL HAVE A 45 DEGREE, 1" CHAMFER AROUND UPPER EDGE.
 - THE ELECTRICIAN SHALL INSTALL & DISTRIBUTE TEMPORARY POWER SERVICE FOR THE DURATION OF THIS PROJECT AS DEFINED IN DIVISION 1 SPECIFICATIONS. ALL COSTS ASSOCIATED WITH THE INSTALLATION, DISTRIBUTION AND MAINTENANCE OF THE TEMPORARY POWER IS THE RESPONSIBILITY OF THE ELECTRICIAN. THERE SHALL BE 480/277V, 3PH, 4W; 208/120V, 3PH, 4W; AND 120/240V, 1PH, 3W POWER AVAILABLE AT ALL LOCATIONS OF CONSTRUCTION AS DIRECTED IN FIELD AND AS SPECIFIED. ALL TEMPORARY EQUIPMENT, CONDUITS & CONDUCTORS SHALL BE COMPLETELY REMOVED AT COMPLETION OF PROJECT.
 - ALL ELECTRICAL EQUIPMENT, DEVICES, LIGHTING FIXTURES, CONDUIT, AND WIRING SHOWN ON THE ELECTRICAL DRAWINGS IS NEW UNLESS CLEARLY CALLED OUT AS EXISTING. ALL EXISTING ELECTRICAL EQUIPMENT THAT IS CALLED OUT TO BE REUSED SHALL BE INSPECTED IN THE FIELD BY THE ELECTRICIAN AND THE CONSTRUCTION MANAGER TO DETERMINE ITS CONDITION PRIOR TO STARTING ANY WORK. PROVIDE DOCUMENTATION TO OWNER INDICATING CONDITION OF THE EXISTING EQUIPMENT, AND REUSE EXISTING EQUIPMENT ONLY IF ALL PARTIES AGREE THE CONDITION IS ACCEPTABLE. ALL EXISTING EQUIPMENT DETERMINED TO BE UNUSABLE SHALL BE REPLACED WITH LIKE KIND AS DIRECTED BY THE OWNER. ANY OF THE OWNERS EQUIPMENT DETERMINED TO BE REUSED THAT IS DAMAGED BY ANY CONTRACTOR DURING SWITCHOVER SHALL BE REPLACED BY THAT CONTRACTOR. ALL EXISTING EQUIPMENT IS THE PROPERTY OF THE OWNER (NOT THE CONTRACTOR) AND SHALL BE TREATED ACCORDINGLY.
 - THE ELECTRICIAN SHALL BE HELD RESPONSIBLE TO ENSURE ALL CONTROLLERS TO BE INSTALLED ARE CAPABLE OF LOCKOUT / TAGOUT PRIOR TO INSTALLATION.
 - CONFORM TO THE NEC, OSHA, FIRE MARSHAL, BUILDING DEPARTMENT AND OTHER APPLICABLE CODES AND REGULATIONS. OBTAIN PERMITS, PAY ALL FEES, AND ARRANGE FOR REQUIRED INSPECTIONS.
 - ALL LIGHTING AND RECEPTACLE WIRING TO BE #12 XHHW WITH EQUIPMENT GROUND IN 3/4" C UNLESS OTHERWISE NOTED.
 - DO NOT MOUNT ANY LIGHT FIXTURE DIRECTLY OVER PIPING OR EQUIPMENT THAT WILL INTERFERE WITH NORMAL LIGHTING DISTRIBUTION.
 - SIZE JUNCTION BOXES AS REQUIRED PER NEC. PROVIDE BARRIER TYPE TERMINAL STRIPS, AND ALL WIRING TO BE IN CONDUIT.
 - SIZE PULL BOXES (PB) AS REQUIRED PER NEC.
 - PROVIDE SEPARATE PB'S FOR CONTROL AND POWER.
 - MOTOR OVERLOAD SETTING SHALL BE FIELD SELECTED PER MOTOR NAME PLATE CURRENT AND INSTALLED ACCORDINGLY.
 - MOUNT LOCAL CONTROLS AND SERVICE DISCONNECTS ON WALL NEAREST EQUIPMENT WHERE POSSIBLE. (MAXIMUM 60" ABOVE FINISHED FLOOR OR FINAL GRADE, MAXIMUM LATERAL DISTANCE FROM WALL TO EQUIPMENT - 10 FEET).
 - ALL FEEDERS RUN BELOW GRADE SHALL BE RUN IN PVC CONDUIT AT MINIMUM 3'-0" BELOW FINISHED GRADE. TRANSITION TO ABOVE GRADE SHALL BE MADE USING FACTORY PVC COATED RIGID STEEL CONDUIT SWEEPS.

BID SET

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VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

ELECTRICAL - E SERIES
ELECTRICAL LEGEND & GENERAL NOTES

PROJECT NO.	
232055	
DISCIPLINE	
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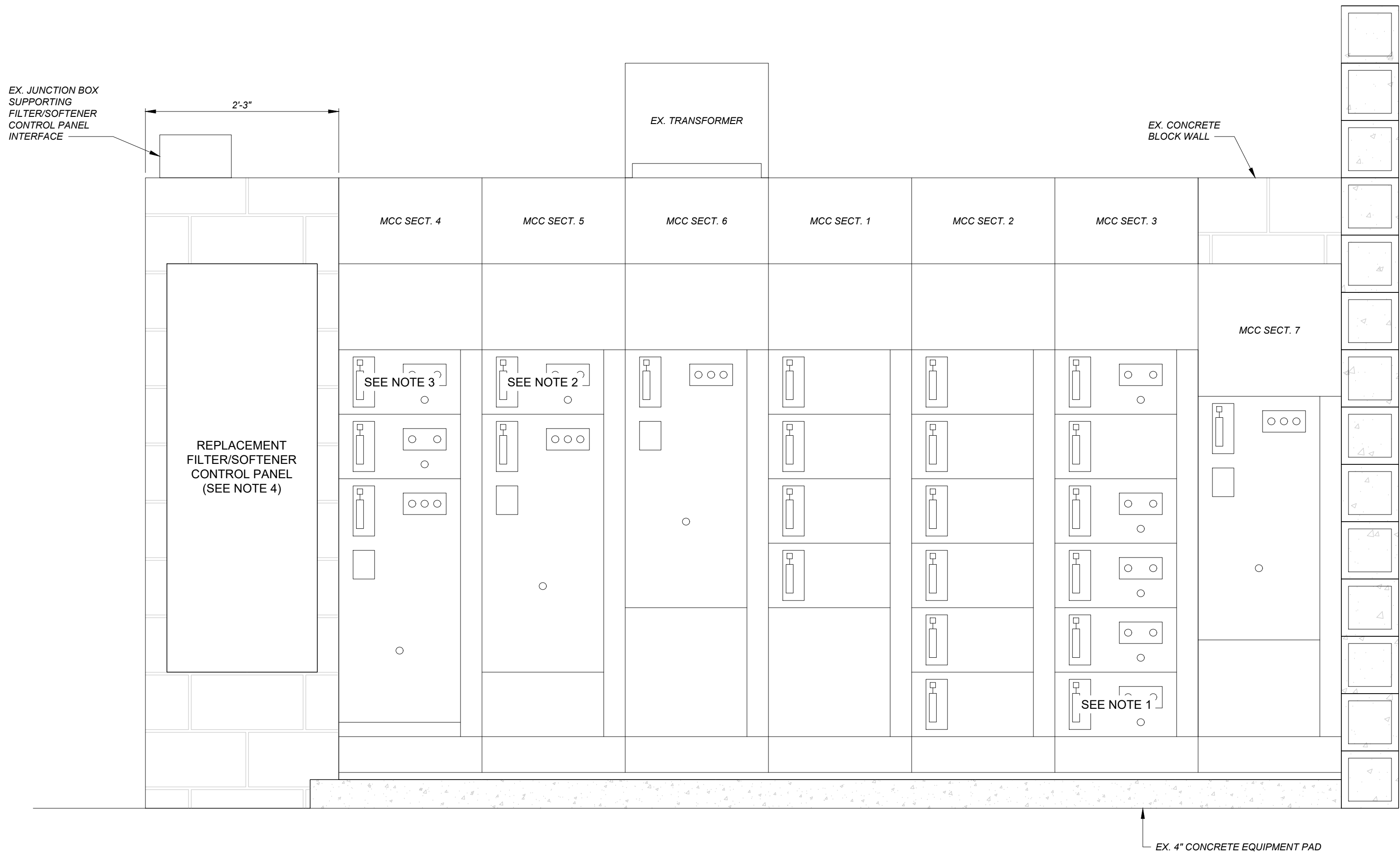
1. CONTRACTOR TO FURNISH & INSTALL CONDUIT RUN (1 1/4") BETWEEN LOCATION OF PROPOSED ADF-2 UNIT AND TREATMENT ROOM TO SUPPORT INSTALLATION OF CONDUCTORS BETWEEN ADF-2 BLOWER AND MCC. CONTRACTOR TO FURNISH AND INSTALL CONDUCTORS IN CONDUIT RUN AND SHALL EXTEND CONDUIT RUN AND CONDUCTORS TO MCC FOR INTERFACE WITH ADF-2 BLOWER MOUNTED ON TOP OF ADF-2 UNIT. CONDUCTORS SHALL BE 3-#12 WITH #12G. SUPPLY LOCAL NEMA 4X NON-FUSED DISCONNECT AT ADF BLOWER LOCATION.
2. CONTRACTOR TO FURNISH & INSTALL CONDUIT RUN (1 1/4") BETWEEN NEW FILTER CONTROL PANEL ENCLOSURE AND THE PROPOSED ADF-2. INSTALLATION OF CONDUCTORS BETWEEN THE CONTROL PANEL AND THE PROPOSED SOLENOID PANEL FOR ADF-2, ARE BY CONTRACTOR. CONTRACTOR TO FURNISH AND INSTALL CONDUCTORS IN CONDUIT RUN AND SHALL ROUTE CONDUIT AND CONDUCTORS FOR INTERFACE WITH ADF-2 SOLENOID PANEL. CONDUCTORS SHALL BE AS REQUIRED FOR INTERFACE OF ADF.
3. CONTRACTOR TO FURNISH & INSTALL HEAT TRACE CONTROLLER AND RELATED EQUIPMENT FOR ADF-2. THE CONTROL PANEL SHALL BE MOUNTED INTERIOR TO THE WTP STRUCTURE. COORDINATE LOCATION OF PANEL WITH OWNER. CONTRACTOR SHALL PROVIDE CONDUIT AND CONDUCTORS FROM LOCATION OF ADF-2 HEAT TRACE CONTROL PANEL TO EX LP-B (120/208V, 3 PH) LOCATED IN ELECTRICAL AREA. CONDUIT SHALL BE 1" MINIMUM. CONDUCTORS SHALL BE AS REQUIRED TO SUPPORT HEAT TRACE EQUIPMENT (MINIMUM 2-#12 WITH #12G). PROVIDE GFCI CIRCUIT BREAKERS IN LP AS REQUIRED TO SUPPORT HEAT TRACE EQUIPMENT INSTALLATION THAT ARE SUITABLE FOR INTERFACE WITH EXISTING LP.
4. CONTRACTOR SHALL FURNISH & INSTALL CONDUIT AND CONDUCTORS TO INTERFACE BACK-UP LEVEL SENSORS (FLOATS) INSTALLED AT ADF-2 ROOF LEVEL WITH FILTER CONTROL PANEL. CONDUIT SHALL BE 1" MINIMUM. CONDUCTORS SHALL BE AS REQUIRED FOR INTERFACE OF ADF. LEVEL SENSORS SHALL BE SUPPLIED BY ADF MANUFACTURER AND INSTALLED PER THEIR INSTRUCTIONS.
5. CONTRACTOR SHALL FURNISH & INSTALL CONDUIT & CONDUCTORS TO INTERFACE PRIMARY LEVEL SENSOR (CAPACITANCE LEVEL SENSOR) MOUNTED IN DETENTION TANK WITH FILTER CONTROL PANEL. PROVIDE SHIELDED CABLE IN 3/4" MINIMUM CONDUIT. CONTRACTOR SHALL UTILIZE EXISTING CONDUIT TO ROUTE CONDUCTORS TO CONTROL PANEL WHERE AVAILABLE.
6. COMBINATION MOTOR STARTER/OCP UNIT TO SUPPORT ADF-2 AERATOR FAN IS EXISTING WITHIN MCC. CONTRACTOR TO COORDINATE WITH OWNER FOR ACCESS TO MCC AND INSTALLATION OF CONDUCTORS REQUIRED FOR INTERFACE TO AERATOR FAN AND TO SCADA SYSTEM/CONTROL PANEL. EXISTING COMBINATION MOTOR STARTER/OCP IS IDENTIFIED AS THE FOLLOWING: SIZE 1 FVNR STARTER, 5HP, 30A DISCONNECT. CONTRACTOR TO COORDINATE MODIFICATIONS TO EXISTING EQUIPMENT FOR USE WITH PROPOSED ADF-2 AERATOR FAN.



- 1 EXISTING FILTER/SOFTENER CONTROL PANEL SHALL REMAIN IN SERVICE UNTIL REPLACEMENT FILTER/SOFTENER CONTROL PANEL HAS BEEN INSTALLED AND IS CAPABLE OF SUPPORTING ADF NO. 1 AND SOFTENER OPERATIONS.
- 2 REPLACEMENT FILTER/SOFTENER CONTROL PANEL TO BE LOCATED THIS AREA. PANEL MAY BE EITHER FLOOR MOUNTED OR WALL MOUNTED AT FILTER MANUFACTURER'S DISCRETION. CONDUIT ENTRY FOR POWER AND CONTROL SHALL BE FROM THE TOP. SEE DETAIL SHEET 19.
- 3 FOLLOWING REMOVAL OF EXISTING FILTER/SOFTENER CONTROL PANEL, PROPOSED FILTER NO. 2 SOLENOID PANEL TO BE LOCATED THIS AREA. ALIGN PANEL AT HEIGHT COMPARABLE TO ADJACENT EXISTING SOLENOID PANEL.
- 4 LOCAL NEMA 4X NON-FUSED DISCONNECT IS NOT SHOWN.
- 5 ROUTE CONDUIT AND CONDUCTORS TO FILTER CONTROL PANEL TO SUPPORT INTERFACE OF LEVEL TRANSMITTER.
- 6 FLOAT SWITCH ENTRANCE TO SUPPORT BACKUP LEVEL CONTROL. CONTRACTOR TO SUPPLY JUNCTION BOX TO SUPPORT CONNECTION AND ROUTING OF CONDUCTORS TO FILTER CONTROL PANEL.
- 7 HEAT TRACE EQUIPMENT FOR FILTER NO. 2 IS NOT SHOWN. REFER TO NOTES FOR REQUIREMENTS.
- 8 EXISTING HEAT TRACE INSULATION AND JACKETING TO BE REMOVED AND REPLACED TO FACILITATE PAINTING OF EXISTING IRON FILTER AND PIPING. PROTECT HEAT TRACE CABLEING FROM DAMAGE.

1. NOT ALL CONTROL AND OPERATIONAL INTERFACE HAS BEEN SHOWN. FILTER CONTROL SYSTEM SHALL SUPPORT SELECTION OF OPERATING FILTER. INTERFACE SHALL INCLUDE CONTROL OF CHEM FEED SYSTEM SOLENOID VALVES.

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EXISTING MCC ELEVATION

- NOTES:
- EXISTING COMBINATION MOTOR STARTER/OCB UNIT TO BE UTILIZED TO SUPPORT PROPOSED ADF-2 AERATOR FAN. CONTRACTOR TO COORDINATE MODIFICATIONS TO EXISTING UNIT TO SUPPORT COMPATIBILITY. CONTRACTOR TO COORDINATE UPDATE OF UNIT NAMEPLATE.
 - CONTRACTOR TO COORDINATE WITH OWNER TO UPDATE UNIT NAMEPLATE TO REFLECT SUPPLIED EQUIPMENT.
 - CONTRACTOR TO REPAIR EXISTING "RED" RUN LIGHT LENS FOR UNIT SUPPORTING WELL PUMP 2.
 - CONTRACTOR TO COORDINATE WITH FILTER MANUFACTURER TO SIZE REPLACEMENT FILTER/SOFTENER CONTROL PANEL FOR THIS LOCATION. PROPOSED PANEL SHALL BE WALL-MOUNTED OR FLOOR-MOUNTED AT CONTRACTOR/FILTER MANUFACTURER'S DISCRETION. IF PANEL IS TO BE FLOOR-MOUNTED, EXISTING 4" CONCRETE EQUIPMENT PAD SUPPORTING MCC SHALL BE EXTENDED TO END OF EXISTING CONCRETE BLOCK WALL. REPLACEMENT FILTER/SOFTENER CONTROL PANEL DEPTH SHALL NOT EXCEED 20" MCC DEPTH AND SHALL NOT IN ANY WAY INTERFACE WITH MCC COMPONENTS.

BID SET

verdantas

ISSUED FOR:	BID SET	NO	REVISION	DATE
ISSUE DATE:	7/22/2026	1	REVISED PER OEPA COMMENTS	1/6/2026
SCALE:	AS NOTED	2	REVISED PER OEPA COMMENTS	3/4/2026
DESIGNED BY:	BRA	3	REVISED PER OEPA COMMENTS	4/6/2026
DRAWN BY:	AGO	4	REVISED FOR CONSTRUCTION	7/22/2026
CHECKED BY:	BRA			

VILLAGE OF LITHOPOLIS
WATER TREATMENT PLANT
NEW FILTER ADDITION

WATER TREATMENT PLANT - 10 SERIES
ELECTRICAL DIAGRAMS

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