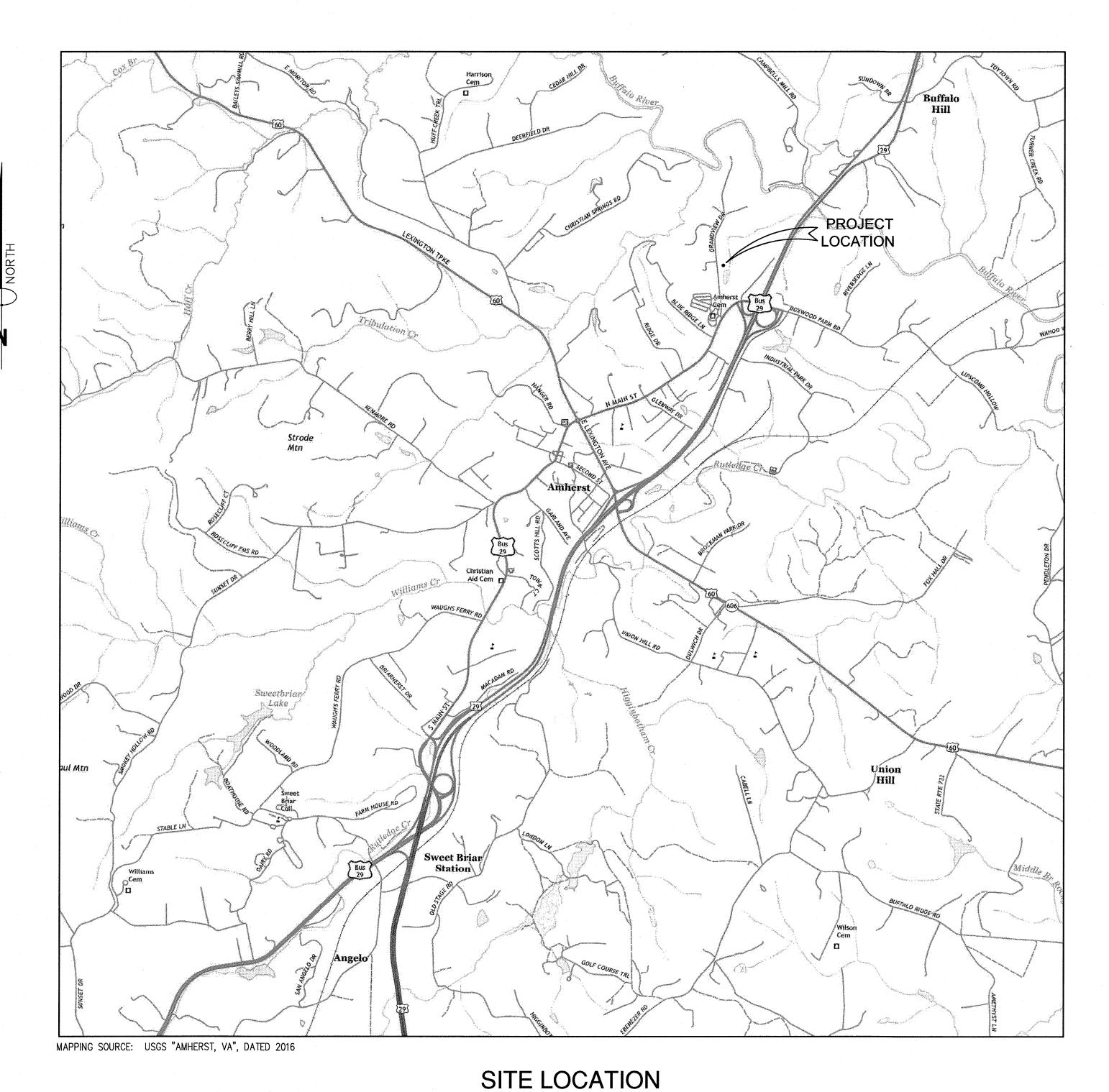
## **GENERAL NOTES**

- THIS PROJECT INCLUDES THE INSTALLATION OF TWO SLUDGE COLLECTION SYSTEMS, MODIFICATION OF THE DISINFECTANT INJECTION SYSTEM, AND MODIFICATION TO THE SEDIMENTATION BASINS WITH THE INSTALLATION OF BAFFLE WALLS.
- . ALL CONSTRUCTION OF THIS SYSTEM SHALL BE IN ACCORDANCE WITH THE VIRGINIA DEPARTMENT OF HEALTH WATERWORKS REGULATIONS.
- CONTRACTOR SHALL CONTACT THE TOWN OF AMHERST BEFORE STARTING CONSTRUCTION FOR A PRE-CONSTRUCTION CONFERENCE.
- 4. ANY DEVIATION FROM THIS DESIGN MUST BE APPROVED PRIOR TO INSTALLATION BY THE TOWN. THE TOWN'S CONSTRUCTION COORDINATOR WILL PROCESS REQUESTS FOR DEVIATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING, PROTECTING, AND RESOLVING ANY CONFLICTS WITH EXISTING UTILITIES AND SHALL REPAIR, AT HIS OWN EXPENSE, ALL UTILITIES TO BE RELOCATED OR DAMAGED BY THE CONTRACTOR.
- 6. BEFORE DIGGING, CALL "MISS UTILITIES" OF VIRGINIA AT 811.
- INSPECTION AND APPROVAL OF ALL WORK AND MATERIALS PERTAINING TO WATER AND SEWER SHALL BE UNDER THE JURISDICTION OF THE TOWN OF AMHERST, VIRGINIA.
- 8. WATER CONSTRUCTION PERMITS MUST BE OBTAINED FROM THE TOWN OF AMHERST DEPARTMENT OF UTILITIES AT LEAST 48 HOURS PRIOR TO THE START OF WATER
- 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING OUT/REMOVING SLUDGE IN EACH BASIN PRIOR TO INSTALLATION.

# TOWN OF AMHERST WTP SEDIMENTATION BASIN IMPROVEMENTS - BOWMAN - 2018

AMHERST COUNTY



## SHEET INDEX

- **COVER SHEET**
- SITE PLAN

NOTE: THESE PLANS AND SPECIFICATIONS INCLUDE PROPRIETARY INFORMATION. REPRODUCTION OF THESE PLANS AND SPECIFICATIONS IS NOT AUTHORIZED WITHOUT THE WRITTEN CONSENT OF BOWMAN CONSULTING GROUP, LTD.

- SPECIFICATIONS 1 OF 2
- SPECIFICATIONS 2 OF 2
- OVERALL PLANT LAYOUT
- SEDIMENTATION BASIN UPGRADES
- WTP SECTION & DETAILS
- WTP BASEMENT FLOOR PLAN
- **ELECTRICAL NOTES, DIAGRAM & SPECIFICATIONS**

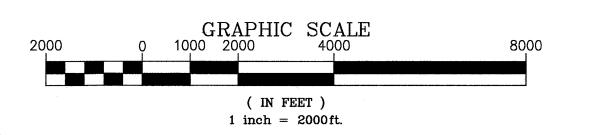
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**OWNER** 

TOWN OF AMHERST C/O MR. JACK HOBBS, P.E. P.O. BOX 280 AMHERST, VA 24521 PH: (434) 946-7885



SCALE: 1" = 2000'

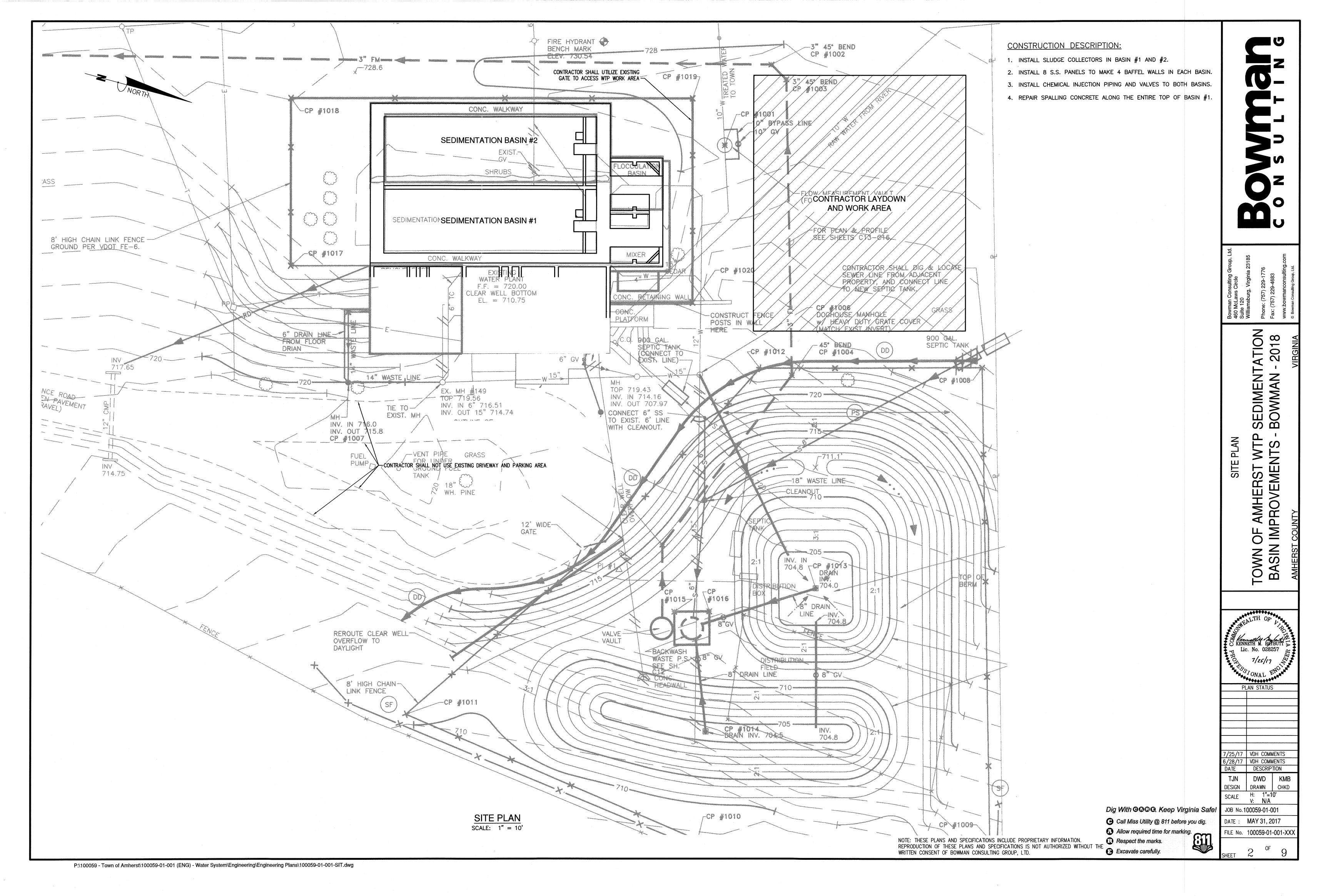
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7/25/17 VDH COMMENTS DWD KMB

JOB No.100059-01-001 DATE: MAY 31, 2017 FILE No. 100059-01-001-XXX



ACTUATOR OUTPUT. TORQUE SETTING: 40% TO 100% RATED TORQUE. TORQUE SENSING MUST BE AFFECTED DIRECTLY ELECTRICALLY OR ELECTRONICALLY. EXTRAPOLATING TORQUE FROM MECHANICALLY MEASURED MOTOR SPEED IS NOT ACCEPTABLE DUE TO RESPONSE TIME. TORQUE MEASUREMENT SHALL BE INDEPENDENT OF VARIATIONS IN FREQUENCY, VOLTAGE OR TEMPERATURE. "LATCHING" TO BE PROVIDED FOR THE TORQUE SENSING SYSTEM TO INHIBIT TORQUE OFF DURING UNSEATING OR DURING STARTING IN MID-TRAVEL AGAINST HIGH INERTIA LOADS, THE ELECTRIC CIRCUIT DIAGRAM OF THE ACTUATOR SHOULD NOT VARY WITH VALVE TYPE REMAINING IDENTICAL REGARDLESS OF WHETHER THE VALVE IS TO OPEN OR CLOSE ON TORQUE OR POSITION LIMIT. AN INEXPENSIVE SETTING TOOL IS REQUIRED FOR NON-INTRUSIVE CALIBRATION AND INTERROGATION OF THE ACTUATOR. THIS SETTING TOOL WILL PROVIDE SPEEDY INTERROGATION CAPABILITIES AS WELL AS SECURITY IN A NON-INTRUSIVE INTRINSICALLY SAFE WATERTIGHT CASING.

H. REMOTE ACTUATOR CONTROL, STATUS AND ALARM INDICATION: THE NECESSARY WIRING AND TERMINALS SHALL BE PROVIDED IN THE ACTUATOR FOR THE FOLLOWING CONTROL FUNCTIONS: 1. REMOVABLE LINKS FOR SUBSTITUTION BY EXTERNAL INTERLOCKS TO INHIBIT VALVE OPENING AND/OR CLOSING.

2. FOR ON/OFF DUTY SUPPLY CONNECTIONS FOR EXTERNAL REMOTE CONTROLS FED FROM AN INTERNAL 24V DC SUPPLY AND/OR FROM AN EXTERNAL SUPPLY OF (MIN. 12V, MAX. 120V) TO BE SUITABLE FOR ONE OF THE FOLLOWING METHODS OF CONTROL: i. OPEN, CLOSE, AND STOP OPEN AND CLOSE OVERRIDING EMERGENCY, SHUTDOWN TO CLOSE (OR OPEN) VALVE FROM A "MAKE" CONTACT.

3. SELECTION OF MAINTAINED OR PUSH-TO-RUN CONTROL FOR MODES ABOVE SHALL BE PROVIDED AND IT SHALL BE POSSIBLE TO REVERSE VALVE TRAVEL WITHOUT THE NECESSITY OF STOPPING THE ACTUATOR. THE STARTER CONTACTORS SHALL BE PROTECTED FROM EXCESSIVE CURRENT SURGES DURING TRAVEL REVERSAL BY AN AUTOMATIC TIME DELAY ON ENERGIZATION OF APPROXIMATELY 300 MS.

4. PROVIDE A MONITOR (AVAILABILITY) RELAY, HAVING ONE CHANGE-OVER CONTACT, THE RELAY BEING ENERGIZED FROM THE CONTROL TRANSFORMER ONLY WHEN:

LOCAL/OFF/REMOTE SELECTOR IS IN THE "REMOTE" POSITION.

MOTOR THERMOSTAT HAS NOT TRIPPED. iii. INTERNAL POWER SUPPLY IS PRESENT

WHEN ALL THREE CONDITIONS ARE MET, THE MONITOR RELAY SHALL INDICATE THAT THE ACTUATOR IS AVAILABLE FOR REMOTE (CONTROL ROOM) OPERATION. EIGHT CONTACTS SHALL BE PROVIDED WHICH CAN BE SELECTED TO INDICATE ANY POSITION OF THE VALVE WITH EACH CONTACT EXTERNALLY SELECTABLE AS NORMALLY OPEN OR NORMALLY CLOSED. THE CONTACTS SHALL BE RATED AT 5A, 250V AC, 30V DC. AS AN ALTERNATIVE TO PROVIDING VALVE POSITION, ANY OF THE EIGHT ABOVE CONTACTS SHALL BE SELECTABLE TO SIGNAL ONE OF THE

 a. VALVE FULLY OPEN b. VALVE FULLY CLOSED

c. VALVE OPENING OR CLOSING VALVE MOVING (CONTINUOUS OR PULSING) d. LOCAL STOP SELECTED

e. LOCAL SELECTED REMOTE SELECTED f. OPEN OR CLOSE INTERLOCK ACTIVE ESD ACTIVE ALARMS MOTOR TRIPPED ON TORQUE IN MID-TRAVEL

CUSTOMER 24V DC OR 120V AC SUPPLY LOST BATTERY LOW INTERNAL FAILURE DETECTED g. MOTOR TRIPPED ON TORQUE GOING OPEN THERMOSTAT TRIPPED h. MOTOR TRIPPED ON TORQUE GOING CLOSED

VALVE JAMMED

LOST MAIN POWER PHASE

ACTUATOR BEING OPERATED BY HANDWHEEL

5. IN THE EVENT OF A MAIN POWER SUPPLY LOSS OR FAILURE, A BACKUP POWER SOURCE MUST BE PROVIDED IN THE ACTUATOR TO ENSURE CORRECT REMOTE INDICATION FROM THE POSITION LIMIT CONTACTS ONLY AS WELL AS MAINTAIN INTERLOCK CAPABILITIES SHOULD THE ACTUATOR BE MOVED MANUALLY. 6. THE INTERNAL CIRCUITS ASSOCIATED WITH THE REMOTE CONTROL AND MONITORING FUNCTIONS ARE TO BE DESIGNED TO WITHSTAND SIMULATED LIGHTNING IMPULSES OF UP TO 2.0 KV.

I. LOCAL ACTUATOR CONTROL, STATUS AND ALARM INDICATION:

1. THE FOLLOWING CONTROL, STATUS AND ALARM INDICATION SHALL BE AVAILABLE LOCALLY AT THE ACTUATOR

 b. OPEN/STOP/CLOSE PERCENTAGE TORQUE DESIRED VALVE POSITION CONTROL 0-100% COMMUNICATIONS FAILURE ACTUATOR ALARM e. MOTOR RUNNING OPEN DIRECTION VALVE ALARM

f. MOTOR RUNNING CLOSED DIRECTION g. FULLY OPEN h. FULLY CLOSED

2. THE ACTUATOR MUST PROVIDE A LOCAL DISPLAY OF THE POSITION OF THE VALVE, EVEN WHEN THE POWER SUPPLY IS NOT PRESENT. THE DISPLAY SHALL BE ABLE TO BE ROTATED IN 90 DEGREE INCREMENTS SO AS TO PROVIDE EASY VIEWING REGARDLESS OF MOUNTING POSITION.

3. THE ACTUATOR SHALL INCLUDE A DIGITAL POSITION INDICATOR WITH A DISPLAY FROM FULLY OPEN TO FULLY CLOSED IN 1% INCREMENTS WITH +/- 1/2% ACCURACY. RED, GREEN, AND YELLOW LIGHTS CORRESPONDING TO OPEN, CLOSED, AND INTERMEDIATE POSITIONS SHALL BE INCLUDED ON THE ACTUATOR. THE DIGITAL DISPLAY SHALL BE MAINTAINED EVEN WHEN THE POWER TO THE ACTUATOR IS ISOLATED. 4. THE LOCAL DISPLAY SHOULD BE LARGE ENOUGH TO BE VIEWED FROM A DISTANCE OF SIX FEET (6') WHEN THE ACTUATOR IS POWERED UP.

1. THE REVERSING STARTER, CONTROL TRANSFORMER, AND LOCAL CONTROLS SHALL BE INTEGRAL WITH THE VALVE ACTUATOR, SUITABLY HOUSED TO PREVENT BREATHING AND

BATTERY LOW ALARM

2. FOR ON/OFF SERVICE, THIS STARTER SHALL BE AN ELECTRO-MECHANICAL TYPE SUITABLE FOR 60 STARTS PER HOUR AND OF RATING APPROPRIATE TO MOTOR SIZE. 3. FOR MODULATING DUTY, THE STARTER SHALL BE A SOLID-STATE TYPE SUITABLE FOR UP TO A MAXIMUM OF 1,200 STARTS PER HOUR.

4. THE CONTROLS SUPPLY TRANSFORMER SHALL BE FED FROM TWO OF THE INCOMING THREE PHASES. IT SHALL HAVE THE NECESSARY TAPINGS AND BE ADEQUATELY RATED TO PROVIDE

POWER FOR THE FOLLOWING FUNCTIONS:

a. 120V AC ENERGIZATION OF THE CONTACTOR COILS b. 24V DC OUTPUT WHERE REQUIRED FOR REMOTE CONTROLS

c. SUPPLY FOR ALL THE INTERNAL ELECTRICAL CIRCUITS

d. THE PRIMARY AND SECONDARY WINDINGS SHALL BE PROTECTED BY EASILY REPLACEABLE FUSES. K. INTEGRAL PUSH BUTTONS AND SELECTOR:

1. INTEGRAL TO THE ACTUATOR SHALL BE LOCAL CONTROLS FOR OPEN, CLOSE, AND STOP, AND A LOCAL/REMOTE SELECTOR SWITCH, PADLOCKABLE IN ANY ONE OF THE FOLLOWING THREE

a. LOCAL CONTROL ONLY b. OFF (NO ELECTRICAL OPERATION)

J. INTEGRAL STARTER AND TRANSFORMER:

c. REMOTE CONTROL PLUS LOCAL STOP ONLY.

2. IT SHALL BE POSSIBLE TO SELECT MAINTAINED OR NON-MAINTAINED LOCAL CONTROL. SELECTION OF MAINTAINED OR PUSH-TO-RUN CONTROL FOR (A) ABOVE SHALL BE PROVIDED. IT SHALL BE POSSIBLE TO REVERSE VALVE TRAVEL WITHOUT THE NECESSITY OF STOPPING THE ACTUATOR. THE STARTER CONTACTORS SHALL BE PROTECTED FROM EXCESSIVE CURRENT SURGES DURING TRAVEL REVERSAL BY AN AUTOMATIC TIME DELAY ON ENERGIZATION OF APPROXIMATELY 300 MS.

DIAGNOSTICS FACILITIES: 1. ACTUATORS SHALL INCLUDE A DIAGNOSTIC MODULE, WHICH WILL STORE AND ENABLE DOWNLOAD OF HISTORICAL ACTUATOR DATA TO PERMIT ANALYSIS OF CHANGES IN ACTUATOR OR VALVE PERFORMANCE, A NON-INTRUSIVE HAND-HELD WINDOWS CE BASED 'PERSONAL DIGITAL ASSISTANT (PDA)' CAPABLE OF DUPLEX IRDA COMMUNICATIONS AND LOADED WITH APPROPRIATE DIAGNOSTIC SOFTWARE SHALL BE AVAILABLE TO ALLOW CONFIGURATION AND DIAGNOSTIC INFORMATION TO BE REVIEWED, ANALYZED AND RECONFIGURED.

2. THE DIAGNOSTIC SOFTWARE SHALL ALLOW TORQUE VS. TRAVEL PROFILES OF THE ACTUATOR UNDER NORMAL OPERATING CONDITIONS TO BE DISPLAYED AND SAVED USING UTILITIES

PROVIDED WITH THE SOFTWARE. 3. DIAGNOSTIC STATUS SCREENS MUST BE PROVIDED TO SHOW MULTIPLE FUNCTIONS SIMULTANEOUSLY SO TROUBLESHOOTING CAN BE AFFECTED RAPIDLY AND EFFICIENTLY. ALL DIAGNOSTIC INFORMATION SHOULD BE CONTAINED ON NO MORE THAN EIGHT (8) SCREENS SO MULTIPLE FUNCTIONS CAN BE CHECKED SIMULTANEOUSLY.

4. PROVISION SHALL BE MADE TO DISPLAY VALVE TORQUE DEMAND AS A PERCENT OF RATED ACTUATOR TORQUE AND POSITION SIMULTANEOUSLY, SO AS TO FACILITATE VALVE TROUBLESHOOTING AND DIAGNOSTICS.

M. WRING AND TERMINALS INTERNAL WIRING SHALL BE OF TROPICAL GRADE PVC INSULATED STRANDED CABLE OF APPROPRIATE SIZE FOR THE CONTROL AND THREE- PHASE POWER. EACH WIRE SHALL BE CLEARLY IDENTIFIED AT EACH END.

2. THE TERMINALS SHALL BE EMBEDDED IN A TERMINAL BLOCK OF HIGH TRACKING RESISTANCE COMPOUND. THE TERMINAL COMPARTMENT SHALL BE SEPARATED FROM THE INNER ELECTRICAL COMPONENTS OF THE ACTUATOR BY MEANS OF A WATERTIGHT SEAL. 3. THE TERMINAL COMPARTMENT OF THE ACTUATOR SHALL BE PROVIDED WITH A MINIMUM OF THREE THREADED CABLE ENTRIES. WHEN REQUIRED, A FORTH CABLE ENTRY SHALL BE

4. ALL WIRING SUPPLIED AS PART OF THE ACTUATOR TO BE CONTAINED WITHIN THE MAIN ENCLOSURE FOR PHYSICAL AND ENVIRONMENTAL PROTECTION. EXTERNAL CONDUIT CONNECTIONS BETWEEN COMPONENTS IS NOT ACCEPTABLE.

5. CONTROL LOGIC CIRCUIT BOARDS AND RELAY BOARDS MUST BE MOUNTED ON PLASTIC MOUNTS TO COMPLY WITH DOUBLE INSULATED STANDARDS. NO MORE THAN A SINGLE PRIMARY

SIZE FUSE SHALL BE PROVIDED TO MINIMIZE THE NEED TO REMOVE SINGLE COVERS FOR REPLACEMENT. 6. A DURABLE TERMINAL IDENTIFICATION CARD SHOWING PLAN OF TERMINALS SHALL BE PROVIDED ATTACHED TO THE INSIDE OF THE TERMINAL BOX COVER INDICATING:

a. SERIAL NUMBER

EXTERNAL VOLTAGE VALUES

e. This must be suitable for the contractor to inscribe cable core identification beside terminal numbers.

WRING DIAGRAM NUMBER

d. TERMINAL LAYOUT

1. ACTUATORS SHALL BE 'O' RING SEALED, WATERTIGHT TO NEMA 6, AND SHALL AT THE SAME TIME HAVE AN INNER WATERTIGHT AND DUSTPROOF 'O' RING SEAL BETWEEN THE TERMINAL

COMPARTMENT AND THE INTERNAL ELECTRICAL ELEMENTS OF THE ACTUATOR FULLY PROTECTING THE MOTOR AND ALL OTHER INTERNAL ELECTRICAL ELEMENTS OF THE ACTUATOR FROM INGRESS OF MOISTURE AND DUST WHEN THE TERMINAL COVER IS REMOVED ON SITE FOR CABLING. 2. ENCLOSURE MUST ALLOW FOR TEMPORARY SITE STORAGE WITHOUT THE NEED FOR ELECTRICAL SUPPLY CONNECTION.

3. ALL EXTERNAL FASTENERS SHOULD BE OF STAINLESS STEEL.

4. ACTUATORS FOR EXPLOSION/HAZARDOUS APPLICATIONS SHALL IN ADDITION BE CERTIFIED FLAMEPROOF FOR ZONES 1 AND 2 (DIVISIONS 1 AND 2) GROUP GASES.

EACH ACTUATOR SHALL BE SUPPLIED WITH A STARTUP KIT COMPRISING INSTALLATION INSTRUCTION, ELECTRICAL WIRING DIAGRAM, AND SUFFICIENT SPARE COVER SCREWS AND SEALS TO MAKE GOOD ANY SITE LOSSES DURING THE COMMISSIONING PERIOD. P. PERFORMANCE TEST CERTIFICATE:

1. EACH ACTUATOR MUST BE PERFORMANCE TESTED AND INDIVIDUAL TEST CERTIFICATES SHALL BE SUPPLIED FREE-OF-CHARGE. THE TEST EQUIPMENT SHOULD SIMULATE A TYPICAL VALVE LOAD AND THE FOLLOWING PARAMETERS SHOULD BE RECORDED:

 CURRENT AT MAXIMUM TORQUE SETTING TORQUE AT MAXIMUM TORQUE SETTING

c. FLASH TEST VOLTAGE

d. ACTUATOR OUTPUT SPEED OR OPERATING TIME

2. IN ADDITION, THE TEST CERTIFICATE SHOULD RECORD DETAILS OF SPECIFICATION, SUCH AS GEAR RATIOS FOR BOTH MANUAL AND AUTOMATIC DRIVE, CLOSING DIRECTION, AND WIRING DIAGRAM CODE NUMBER.

Q. WARRANTY: EACH ACTUATOR SHALL BE WARRANTED FOR A MINIMUM OF 24 MONTHS OF OPERATION UP TO A MAXIMUM OF 36 MONTHS FROM SHIPMENT. R. EXPERIENCE: ALL TECHNOLOGIES AND DEVICES USED IN THE ACTUATOR MUST HAVE A MINIMUM OF FOUR YEARS OF COMMERCIAL OPERATING EXPERIENCE FOR THAT SPECIFIC MANUFACTURER, INCLUDING TORQUE AND POSITION SENSING, LUBRICATION, AND ELECTRICAL COMPARTMENT DESIGN.

NOTE: THESE PLANS AND SPECIFICATIONS INCLUDE PROPRIETARY INFORMATION.

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7/25/17	VDH COMMENTS	
6/28/17	VDH COMMENTS	
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TJN	DWD	KMB
DESIGN	DRAWN	CHKD
SCALE	H: 1/4"=1' V: <b>N</b> /A	
JOB No.1	00059-01-0	01
DATE :	MAY 31, 2	017
FILE No.	100059-01	-001-XXX

SECTION 01700 PROJECT CLOSEOUT REQUIREMENTS

PROJECT CLOSEOUT REQUIREMENTS ARE DEFINED TO INCLUDE THOSE GENERAL REQUIREMENTS IN PREPARATION FOR SUBSTANTIAL COMPLETION, FINAL ACCEPTANCE: E.G., FINAL PAYMENT, FINAL COMPLETION, AND NORMAL TERMINATION OF THE CONTRACT, AND SIMILAR ACTIONS EVIDENCING COMPLETION OF THE WORK. SPECIFIC REQUIREMENTS FOR INDIVIDUAL UNITS OF WORK ARE SPECIFIED IN THE TECHNICAL SPECIFICATIONS.

A. THE REQUIREMENTS HEREINAFTER SPECIFIED ARE IN ADDITION TO THE GENERAL CONDITIONS.

1.02 PREREQUISITES FOR SUBSTANTIAL COMPLETION B. PRIOR TO REQUESTING INSPECTION FOR CERTIFICATION OF SUBSTANTIAL COMPLETION, COMPLETE THE FOLLOWING AND LIST KNOWN EXCEPTIONS IN THE REQUEST: PROVIDE SUBSTANTIAL COMPLETION NOTIFICATION WITH LIST OF ITEMS YET TO BE COMPLETED OR CORRECTED.

SUBMIT FINAL CERTIFICATIONS AND SIMILAR DOCUMENTS. DISCONTINUE AND REMOVE FROM THE PROJECT SITE TEMPORARY FACILITIES AND SERVICES, ALONG WITH CONSTRUCTION TOOLS AND FACILITIES, MOCKUPS AND SIMILAR ELEMENTS.

SUBMIT A LIST OF DEVIATIONS OR NONCONFORMANCE CURRENTLY IN EFFECT FOR WHICH CLOSEOUT ACTION IS REQUIRED. PREPARE AND SUBMIT A DETAILED PLAN TO CLOSE OUT OPEN CERTIFIED TABULATION OF TESTS SPECIFIED.

1.03 FINAL ACCEPTANCE A. THE REQUIREMENTS HEREINAFTER SPECIFIED ARE IN ADDITION TO THE GENERAL CONDITIONS. B. THE WARRANTY PERIOD SPECIFIED HEREINAFTER SHALL COMMENCE WITH ISSUANCE OF THE CERTIFICATE OF SUBSTANTIAL COMPLETION.

C. PRIOR TO REQUESTING FINAL INSPECTION FOR CERTIFICATION OF FINAL ACCEPTANCE AND FINAL PAYMENT, COMPLETE THE FOLLOWING AND LIST KNOWN EXCEPTIONS IN REQUEST: SUBMIT LAST PROGRESS PAYMENT REQUEST, COMPLETE WITH ASSOCIATED RELEASES, CONSENTS, AND SUPPORTS, STATING THAT EACH ITEM HAS BEEN COMPLETED OR OTHERWISE RESOLVED FOR ACCEPTANCE.

SUBMIT FINAL PUNCH LIST OF ITEMIZED WORK TO BE COMPLETED OR CORRECTED, STATING THAT EACH ITEM HAS BEEN COMPLETED OR OTHERWISE RESOLVED FOR ACCEPTANCE. SUBMIT FINAL METER READINGS FOR UTILITIES, AND SIMILAR DATA AS OF THE TIME OF FINAL ACCEPTANCE.

COMPLETE SUBMITTAL OF RECORD DOCUMENTS. 5. COMPLETE SUBMITTAL OF OPERATION AND MAINTENANCE MANUALS.

COMPLETE FINAL CLEANING AS SPECIFIED HEREINAFTER. D. WITHIN A REASONABLE TIME AFTER REQUEST OF THE CERTIFICATE, THE OWNER, THE CONTRACTOR AND THE ENGINEER WILL MAKE AN INSPECTION OF THE WORK TO DETERMINE THE STATUS OF COMPLETION. IF THE OWNER AND THE ENGINEER DO NOT CONSIDER THE WORK TO BE COMPLETE, THE OWNER WILL NOTIFY THE CONTRACTOR IN WRITING OF THIS FACT, AND WILL INCLUDE THE REASONS WHY THE PROJECT IS NOT CONSIDERED COMPLETE.

E. IF THE OWNER AND THE ENGINEER CONSIDER THE WORK TO BE COMPLETE, THE OWNER WILL PREPARE AND DELIVER TO THE CONTRACTOR A CERTIFICATE OF FINAL ACCEPTANCE. AFTER THE DATE OF SUBSTANTIAL COMPLETION, THE OWNER OR THE TOWN WILL OPERATE THE WORK COMPLETED IN ACCORDANCE WITH OPERATING INSTRUCTIONS PROVIDED BY THE

REASONABLE ACCESS TO PERFORM PUNCH LIST WORK AND WORK REQUIRED BY THE GUARANTEE. INSPECTION OF THE WORK LEADING TO FINAL ACCEPTANCE AND COMMENCEMENT OF THE GUARANTEE HEREIN STIPULATED WILL NOT BE MADE ON ANY INTERIM OR PARTIAL BASIS, NOR WILL GUARANTEE OBLIGATIONS OF THE CONTRACTOR RELATE TO, OR BEAR UPON IN ANY MANNER, THE WARRANTY OR WARRANTY LIMITS ARRANGED BETWEEN THE CONTRACTOR AND HIS SUPPLIERS. THE OWNER WILL NOT COMMENCE MAINTENANCE OF THE WORK UNTIL FINAL ACCEPTANCE OF THE ENTIRE WORK HAS BEEN MADE. IT IS, THEREFORE, INCUMBENT UPON THE

INTERESTS THROUGH THE DATE OF FINAL COMPLETION AND TO INCLUDE THE COST OF THE SAME IN THE PRICE BID UNDER THIS CONTRACT. 1.04 FINAL COMPLETION PRIOR TO THE END OF THE WARRANTY AND GUARANTEE PERIOD SPECIFIED BELOW, THE OWNER AND THE ENGINEER WILL MAKE A FINAL INSPECTION OF THE ENTIRE WORK, TO DETERMINE THE STATUS OF ALL WORK IN REGARDS TO WARRANTY AND GUARANTEE PROVISIONS. THE CONTRACTOR WILL BE NOTIFIED IN WRITING OF ALL REPAIRS, AND RENEWALS REQUIRED, AND WILL BE GIVEN

A SPECIFIED TIME IN WHICH TO PERFORM SUCH WORK. UPON SUCCESSFUL COMPLETION OF ALL SUCH REPAIRS AND RENEWALS, AS DETERMINED BY THE ENGINEER, THE OWNER WILL ISSUE A CERTIFICATE OF FINAL COMPLETION OF THE ENTIRE WORK. 1.05 FINAL CLEANING

PROTECT PREVIOUSLY COMPLETED WORK DURING THE REMAINDER OF THE CONSTRUCTION PERIOD. B. COMPLY WITH SAFETY STANDARDS AND GOVERNING REGULATIONS FOR CLEANING OPERATIONS. DO NOT BURN WASTE MATERIALS AT THE SITE, NOR BURY DEBRIS OR EXCESS MATERIALS ON THE PROPERTY, OR DISCHARGE VOLATILE OR OTHER HARMFUL OR DANGEROUS MATERIALS INTO DRAINAGE SYSTEMS. REMOVE WASTE MATERIALS FROM THE SITE AND DISPOSE.

A. THE CONTRACTOR WARRANTS AND GUARANTEES TO THE OWNER FOR A PERIOD OF ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE THE FOLLOWING: 1. THAT THE GUARANTEE OBLIGATIONS ASSUMED BY THE CONTRACTOR UNDER THESE CONTRACT DOCUMENTS SHALL NOT BE HELD OR TAKEN TO BE IMPAIRED BECAUSE OF THE SPECIFICATIONS, INDICATION OR APPROVAL BY OR ON BEHALF OF THE OWNER OF ANY ARTICLES, MATERIALS, MEANS, COMBINATIONS OR THINGS USED OR TO BE USED IN THE CONSTRUCTION, PERFORMANCE AND COMPLETION OF THE WORK, OR ANY PART THEREOF.

OBLIGATIONS ASSUMED BY THE CONTRACT OR UNDER THESE CONTRACT DOCUMENTS. B. IF THE CONTRACTOR NEGLECTS TO MAKE SUCH REPAIRS DURING THE GUARANTEE PERIOD, THE OWNER MAY CAUSE SUCH DAMAGE OR DEFECTIVE WORK TO BE REPAIRED AND MADE GOOD AT THE COST AND EXPENSE OF THE CONTRACTOR, INCLUDING COMPENSATION REQUIRED FOR ADDITIONAL PROFESSIONAL SERVICES. THE CONTRACTOR SHALL ALSO BEAR THE EXPENSES OF

THE CONTRACTOR SHALL MAINTAIN THE PERFORMANCE BOND FOR THE PROJECT IN FULL FORCE THROUGHOUT THE ENTIRE GUARANTEE PERIOD, UNTIL THE CERTIFICATE OF FINAL COMPLETION

SECTION 03999 CONCRETE SPALL REPAIR

THIS WORK CONSISTS OF SAWING, CLEANING, AND REPAIR OF SPALLED AREAS OF BASIN #1.

A. GENERAL: JOINTS ON WHICH SEAL REMOVAL OR SPALL REPAIR HAS BEGUN SHALL BE COMPLETED AND SEALED DURING THE SAME CONSTRUCTION SEASON, SEAL REMOVAL OR SPALL REPAIR WILL NOT BE PERMITTED AFTER OCTOBER 15. SEALING WILL NOT BE PERMITTED WHEN THE AMBIENT AIR OR PAVEMENT TEMPERATURE FALLS BELOW 40°F (4° C). THE PAVEMENT SHALL BE DRY WHEN PLACING THE CONCRETE PATCH. IN PLACE SEALANT SHALL BE REMOVED FROM TRANSVERSE JOINTS PRIOR TO SPALL REMOVAL.

1. TYPE A SPALLS ARE OVER 0.2 FOOT (60 MM) WIDE.

B. TYPE A SPALLS: EDGES OF AREAS TO BE REPAIRED SHALL BE SAWED TO A DEPTH NECESSARY, MINIMUM OF 1- 1/2 INCH (38 MM), TO ENSURE THE AREA CAN BE CHIPPED DOWN TO SOUND CONCRETE WITHOUT DAMAGE TO THE VERTICAL WALLS OR CORNERS. AREAS TO BE REPAIRED SHALL BE CHIPPED DOWN TO SOUND CONCRETE, MINIMUM OF 1-1/2-INCH (38 MM WITH JACK HAMMERS, 30 LBS, (14 KG) MAXIMUM, AND CHIPPING HAMMERS, 15 LBS, (7 KG) MAXIMUM, VERTICAL EDGES AND CORNERS SHALL BE MAINTAINED. THE BOTTOM OF CHIPPED AREAS SHALL BE LEFT ROUGH TO OBTAIN A GOOD BOND BETWEEN THE PATCH AND THE OLD CONCRETE. THE AREA SHALL THEN BE SANDBLASTED, AND THE SAND BLOWN FROM THE JOINT AND THE PATCH AREA. PARTIALLY EXPOSED DOWEL BARS SHALL BE COATED OR COVERED WITH AN APPROVED BOND BREAKER, IMPROPERLY ALIGNED BARS SHALL BE REMOVED. DOWEL BARS, WITH THE FULL LENGTH TOTALLY EXPOSED TO THE REMOVAL SIDE OF THE JOINT AND BELOW THE CENTER OF THE DOWEL. SHALL BE CUT OFF FLUSH WITH THE CONCRETE. DOWEL BARS WITH MORE THAN 50 PERCENT OF THE LENGTH EXPOSED ON BOTH SIDES OF THE EXISTING JOINT AND HAS CONCRETE REMOVAL BELOW THE CENTER OF THE BAR SHALL BE REMOVED. PRIOR TO PLACING THE PATCH, THE JOINT SHALL BE FORMED TO A WIDTH LESS THAN THE FINAL OPENING. THE AREA SHALL BE CHIPPED TO A UNIFORM DEPTH, TO FACILITATE FORMING TO THE DEPTH OF REMOVAL OR DEPTH OF DOWEL BARS, WHICHEVER IS LESS. JOINTS THAT ARE OPEN AT TIME OF POURING DUE TO THERMAL CONTRACTION SHALL BE FORMED THE FULL REPAIR DEPTH. FORMING MATERIAL SHALL BE ONE UNIT FOR THE LENGTH OF THE SPALL REPAIR AREA. A LAYER OF BONDING MORTAR SHALL BE BROOMED INTO AND OVER THE SURFACES TO BE PATCHED. THE PATCH SHALL BE PLACED BEFORE THE BONDING MORTAR DRIES AND CONSOLIDATED BY VIBRATION. THE PATCH SHALL BE SCREEDED AND FLOATED FROM EXISTING PAVEMENT TO EXISTING PAVEMENT. THE ENTIRE WIDTH SHALL BE STRAIGHTEDGED. GROUT SHALL BE WORKED INTO THE SAW CUTS EXTENDING PAST THE CORNERS OF THE SPALLED AREA. THE SURFACES OF THE PATCH SHALL BE GIVEN A BROOMED FINISH. AT PLACEMENT, THE PATCH MATERIAL SHALL BE BETWEEN 50°F AND 90°F (10°C AND 32°C) AND SHALL BE MAINTAINED ABOVE 40 °F (4 °C) FOR 72 HOURS. TRAFFIC WILL NOT BE PERMITTED OVER THE AREA DURING THIS PERIOD. THE PATCHED AREA SHALL BE SPRAYED WITH CURING COMPOUND AT A MINIMUM RATE OF ONE GALLON PER 150 SQUARE FEET (ONE LITER PER 4 SQUARE METERS). JOINT FORMING MATERIAL SHALL NOT BE REMOVED FOR 72 HOURS. UPON

C. TYPE B SPALLS: THE SPALLED CONCRETE SHALL BE REMOVED AND THE AREAS CHIPPED DOWN TO SOUND CONCRETE, THE RESULTING AREAS SHALL BE LEFT ROUGH TO OBTAIN A GOOD BOND BETWEEN PATCH AND CONCRETE. THE AREA SHALL THEN BE SANDBLASTED AND THE JOINT FORMED AS SPECIFIED FOR TYPE A SPALLS. THE ENTIRE AREA SHALL BE GIVEN A COAT OF STRAIGHT EPOXY RESIN (WITHOUT AGGREGATES). EPOXY RESIN MORTAR SHALL IMMEDIATELY BE TAMPED IN PLACE AND TROWELED OFF. PLACEMENT OF EPOXY WILL BE PERMITTED ONLY WITHIN THE TEMPERATURE RANGE RECOMMENDED IN AASHTO M 235, FOR THE CLASS OF EPOXY USED. FORM REMOVAL, JOINT SAWING, AND TRAFFIC OVER THE PATCH AREA WILL NOT BE

SECTION 02560 PIPING SYSTEMS

1.01 SUMMARY

THE DRAWINGS SHOW THE GENERAL LAYOUT AND DO NOT NECESSARILY REFLECT THE EXACT LOCATION OF THE VARIOUS ITEMS. ACCORDINGLY, THE CONTRACTOR SHALL NOT SCALE THE PLANS, BUT SHALL ACQUAINT HIMSELF WITH THE EXTENT AND CHARACTER OF THE WORK REQUIRED AND ITS RELATION TO THE WORK UNDER OTHER ITEMS. IT IS THE INTENTION OF THE DRAWINGS AND SPECIFICATIONS TO PROVIDE COMPLETE AND WORKABLE PIPING SYSTEMS; ANY MISCELLANEOUS VALVES AND FITTINGS REQUIRED FOR PROPER COMPLETION OF THE WORK SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER. ALL WORK SHALL BE DONE TO THE TOWN OF AMHERST DEPARTMENT OF UTILITIES WATER AND SEWER DESIGN AND CONSTRUCTION STANDARDS.

1.03 PIPE LABELING

ALL PIPING SHALL BE LABELED WITH SETON OPTI-CODETM PIPE MARKERS OR AN APPROVED EQUAL. PIPE MARKERS SHALL MEET ANSI/OSHA STANDARDS AND SHALL BE ANSI DESIGNATED COLORS.

THE PIPING SYSTEMS SHALL BE AS FOLLOWS: A. ALL GRAVITY SEWERAGE PIPING SHALL BE DUCTILE IRON PIPE TO MATCH EXISTING TYPE AT TIE-IN.

B. ALL PVC SHALL BE SCHEDULE 80 SERIES AND SHALL BE MANUFACTURED FROM A TYPE I, GRADE I POLYVINYL CHLORIDE (PVC) COMPOUND WITH A CELL CLASSIFICATION OF 12454 PER ASTM D1784. THE PIPE SHALL BE MANUFACTURED IN COMPLIANCE TO ASTM D2241.

2.02 VALVE ACTUATOR

A. GENERAL: ROTORK CONTROLS, INCORPORATED MODEL 1QT500 OR APPROVED EQUAL. THE ACTUATORS SHALL BE SUITABLE FOR USE ON A NOMINAL 120/230 VOLT THREE-PHASE 60 HERTZ CONTACTS WITHOUT THE NECESSITY TO REMOVE ANY ELECTRICAL COMPARTMENT COVERS. WHERE ACTUATORS ARE COUPLED WITH SEPARATE GEARBOXES FOR EITHER QUARTER-TURN OR RISING STEM APPLICATIONS, BOTH ACTUATOR AND SECONDARY GEARBOX WILL BE SUPPLIED BY THE SAME MANUFACTURE. SEPARATE VENDORS ARE NOT ACCEPTABLE. B. ACTUATOR SIZING: THE ACTUATOR SHALL BE SIZED TO GUARANTEE VALVE CLOSURE AT THE SPECIFIED DIFFERENTIAL PRESSURE, THE SAFETY MARGIN OF MOTOR POWER AVAILABLE FOR

SPEED SHALL BE SUCH AS TO GIVE VALVE CLOSING AND OPENING AT APPROXIMATELY 10-12 INCHES PER MINUTE UNLESS OTHERWISE STATED IN THE JOB SPECIFICATION. C. AMBIENT TEMPERATURE: THE ACTUATOR SHALL BE CAPABLE OF FUNCTIONING IN AN AMBIENT TEMPERATURE RANGING FROM MINUS -22°F (-30°C) TO + 158°F (+70°C). D. MOTOR: FOR MODULATING DUTY, THE ELECTRIC MOTOR SHALL BE SUITABLE FOR UP TO 1200 STARTS PER HOUR WITH A DUTY IN ACCORDANCE WITH IEC 34-1 TO S4 50%. ELECTRICAL AND MECHANICAL DISCONNECTION OF THE MOTOR SHOULD BE POSSIBLE WITHOUT DRAINING THE LUBRICANT FROM THE ACTUATOR GEAR CASE. PLUGS AND SOCKETS ARE NOT ACCEPTABLE AS A

JAMMED VALVE. MOTOR TEMPERATURE SHALL BE SENSED BY A THERMOSTAT TO PROTECT AGAINST OVERHEATING. SINGLE PHASING PROTECTION. 2. GEARING: THE ACTUATOR GEARING SHALL BE TOTALLY ENCLOSED IN AN OIL- FILLED GEARCASE SUITABLE FOR OPERATION AT ANY ANGLE. ALL MAIN DRIVE GEARING MUST BE OF METAL CONSTRUCTION. WHERE THE ACTUATOR OPERATES GATE VALVES OR LARGE DIAMETER BALL OR PLUG VALVES, THE DRIVE SHALL INCORPORATE A LOST-MOTION HAMMERBLOW FEATURE. FOR RISING SPINDLE VALVE S, THE OUTPUT SHAFT SHALL BE HOLLOW TO ACCEPT A RISING STEM AND INCORPORATE THRUST BEARINGS OF THE BALL OR ROLLER TYPE AT THE BASE OF THE ACTUATOR, AND THE DESIGN SHOULD BE SUCH AS TO PERMIT THE GEARCASE TO BE OPENED FOR INSPECTION OR DISASSEMBLED WITHOUT RELEASING THE STEM THRUST OR TAKING

1. MOTOR PROTECTION: PROTECTION SHALL BE PROVIDED FOR THE MOTOR AS FOLLOWS: THE MOTOR SHALL BE DE-ENERGIZED IN THE EVENT OF STALL WHEN ATTEMPTING TO UNSEAT A

E. HAND OPERATION: A HANDWHEEL SHALL BE PROVIDED FOR EMERGENCY OPERATION ENGAGED WHEN THE MOTOR IS DECLUTCHED BY A LEVER OR SIMILAR MEANS; THE DRIVE BEING RESTORED TO POWER AUTOMATICALLY BY STARTING THE MOTOR. THE HAND/AUTO SELECTION LEVER SHOULD BE PADLOCKABLE IN BOTH "HAND" AND "AUTO" POSITIONS. IT SHOULD BE POSSIBLE TO

A. ABBREVIATED WRITTEN SUMMARY: BRIEFLY, AND WITHOUT FORCE AND EFFECT UPON CONTRACT DOCUMENTS, THE WORK OF CONTRACT CAN BE SUMMARIZED AS FOLLOWS: SPALL REPAIR OF SEDIMENTATION BASIN #1. MODIFICATION OF TWO SEDIMENTATION BASINS WITH THE INSTALLATION INTO EACH BASIN OF A CHEMICAL FEED PIPELINE, BAFFLE WALLS, AND A SLUDGE COLLECTION SYSTEM ALONG WITH ALL ASSOCIATED ELECTRICAL EQUIPMENT, PIPING, AND VALVES.

SECTION 01010

1.01 SECTION INCLUDES

1.02 PROJECT SUMMARY

SUMMARY OF WORK

A. PROJECT SUMMARY.

C. CONTRACTOR USE OF SITE.

B. PROJECT LOCATION AND GENERAL INFORMATION.

A. THE PROJECT IS THE EXISTING TOWN OF AMHERST WATER TREATMENT PLANT (WTP) LOCATED OFF OF GRANDVIEW DRIVE IN AMHERST COUNTY, VIRGINIA. B. THE EXTENT OF THE PROJECT SITE IS SHOWN ON THE DRAWINGS. 1.04 TIME OF COMPLETION

THE PROJECT SHALL BE COMPLETED WITHIN THE SCHEDULE SPECIFIED IN THE BID FORM. 1.05 CONTRACTOR USE OF SITE A. THE CONTRACTOR SHALL LIMIT THE USE OF PREMISES FOR WORK AND STORAGE. THE CONTRACTOR SHALL LIMIT THE STAGING AREA WITHIN THE LIMITS OF DISTURBANCE, AS INDICATED ON

FORMAL SITE PLAN DRAWINGS. B. THE CONTRACTOR SHALL COORDINATE THE USE OF PREMISES UNDER DIRECTION OF THE TOWN.

C. THE CONTRACTOR SHALL PROVIDE SITE SAFETY AND SECURITY FOR PROJECT SITE, INCLUDING OWNER-FURNISHED EQUIPMENT THAT MAY BE STORED AT SITE.

D. THE CONTRACTOR SHALL OBTAIN AND PAY FOR USE OF ANY ADDITIONAL STORAGE OR WORK AREAS REQUIRED.

E. CONTRACTOR SHALL SUPPLY A PORTA JON. WTP RESTROOM FACILITIES WILL NOT BE AVAILABLE FOR CONTRACTOR AND CREW USE.

THE GENERAL CHARACTER AND SCOPE OF THE WORK IS ILLUSTRATED BY THE DRAWINGS LISTED ON SHEET 1, DATED 2017. ANY ADDITIONAL DETAIL DRAWINGS AND OTHER INFORMATION DEEMED NECESSARY BY THE ENGINEER WILL BE FURNISHED TO THE CONTRACTOR WHEN REQUIRED.

SECTION 01204 PROGRESS SCHEDULES

A. SECTION INCLUDES: CONTENT 3. REVISIONS TO SCHEDULES.

1.01 DESCRIPTION

SUBMITTALS. 1.02 FORMAT A. PREPARE BAR CHART SCHEDULE USING THE CRITICAL PATH METHOD. B. SEQUENCE OF LISTINGS: GROUP ITEMS BY DIVISION AND SPECIFICATION SECTION.

C. SCALE AND SPACING: PROVIDE ADEQUATE SPACE FOR NOTATIONS AND REVISIONS. 1.03 CONTENT

A. SHOW COMPLETE SEQUENCE OF CONSTRUCTION BY ACTIVITY, WITH DATES FOR BEGINNING AND COMPLETION OF EACH ELEMENT OF CONSTRUCTION. B. IDENTIFY WORK OF SEPARATE STAGES AND OTHER LOGICALLY GROUPED ACTIVITIES.

PROVIDE SUB-SCHEDULES TO DEFINE CRITICAL PORTIONS OF THE ENTIRE SCHEDUL D. SHOW ACCUMULATED PERCENTAGE OF COMPLETION OF EACH ITEM, AND TOTAL PERCENTAGE OF WORK COMPLETED, AS OF THE FIRST DAY OF EACH MONTH.

E. SHOW SCHEDULE OF SUBMITTAL DATES FOR SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, AND DATES REVIEWED SUBMITTALS WILL BE REQUIRED FROM OWNER. A. INDICATE PROGRESS OF EACH ACTIVITY TO DATE OF SUBMITTAL, AND PROJECTED COMPLETION DATE OF EACH ACTIVITY. IDENTIFY ACTIVITIES MODIFIED SINCE PREVIOUS SUBMITTAL, MAJOR CHANGES IN SCOPE, AND OTHER IDENTIFIABLE CHANGES.

PROVIDE NARRATIVE REPORT TO DEFINE PROBLEM AREAS, ANTICIPATED DELAYS, AND IMPACT ON SCHEDULE. REPORT CORRECTIVE ACTION TAKEN, OR PROPOSED, AND ITS EFFECT, INCLUDING THE EFFECT OF CHANGES ON SCHEDULES OF SEPARATE CONTRACTORS. D. FLOAT OR SLACK IS DEFINED AS THE AMOUNT OF TIME BETWEEN THE EARLY START DATE AND THE LATE START DATE OR THE EARLY FINISH DATE AND THE LATE FINISH DATE OF ANY OF THE ACTIVITIES IN THE CONSTRUCTION SCHEDULE. FLOAT OR SLACK IS NOT TIME FOR THE EXCLUSIVE USE OR BENEFIT OF THE CONTRACTOR. EXTENSIONS OF TIME FOR PERFORMANCE AS DESCRIBED IN THE CONTRACT DOCUMENTS SHALL BE GRANTED ONLY TO THE EXTENT THAT TIME ADJUSTMENTS FOR THE ACTIVITY OR ACTIVITIES AFFECTED EXCEED THE TOTAL FLOAT OR

SLACK ALONG THE PATH OF ACTIVITIES AFFECTED AT THE TIME OF NOTICE TO PROCEED OF A CHANGE ORDER OR THE COMMENCEMENT OF ANY DELAY OR CONDITION FOR WHICH AND ADJUSTMENT IS WARRANTED UNDER THE CONTRACT DOCUMENTS. A. SUBMIT INITIAL SCHEDULES WITHIN 15 DAYS AFTER NOTICE TO PROCEED. AFTER REVIEW, RESUBMIT REQUIRED REVISED DATA WITHIN 5 DAYS. NO PROGRESS PAYMENTS WILL BE MADE UNTIL

A. SEDIMENTATION BASIN SHUTDOWN SCHEDULE SHALL BE COORDINATED DURING A CONSTRUCTION MEETING TWO (2) WEEKS IN ADVANCE OF A PROPOSED SHUTDOWN. B. SEDIMENTATION BASIN SHUTDOWNS SHALL BE LIMITED TO ONE AT A TIME TO ENSURE WTP OPERATIONS AT 50% OF CAPACITY.

C. SEDIMENTATION BASIN SHUTDOWNS SHALL BE LIMITED TO SEVEN (7) CONSECUTIVE DAYS. D. WTP SHUTDOWNS OF MORE THAN ONE HOUR MUST BE SUBMITTED AT LEAST 24 HOURS IN ADVANCE, BOTH THE TIME AND FREQUENCY OF SHUTDOWNS WILL BE AT THE DISCRETION OF THE WTP OPERATOR.

B. SUBMIT REVISED PROGRESS SCHEDULES WITH EACH APPLICATION FOR PAYMENT.

SECTION 01300 SHOP DRAWING AND PRODUCT DATA SUBMITTALS

THE OWNER HAS APPROVED THE SCHEDULE.

THIS SECTION SPECIFIES THE REQUIREMENTS FOR SUBMITTAL OF SHOP DRAWINGS AND CATALOG DATA. A. SHOP DRAWINGS AND PRODUCT DATA: SUBMIT TWO (2) COPIES OF ALL SHOP DRAWINGS AND PRODUCT DATA TO THE ENGINEER FOR APPROVAL BY THE OWNER AND THE ENGINEER. ALL

SUBMITTALS SHALL ALSO BE SUBMITTED IN ADOBE PDF FORMAT. ONE COPY WILL BE RETURNED TO CONTRACTOR. AT A PRE-CONSTRICTION MEETING, AGREEMENT CAN BE REACHED BETWEEN THE OWNER, THE ENGINEER AND THE CONTRACTOR TO SUBMIT AND ACCEPT SHOP DRAWINGS IN DIGITAL FORM (ADOBE PDF FORMAT). 1. SHOP FABRICATION DRAWINGS SHALL BE PROVIDED FOR THE FOLLOWING: SLUDGE COLLECTION SYSTEM AND ASSOCIATED CONTROL PANEL

d. CHEMICAL INJECTION MODIFICATION TO INCLUDE HANGER SUPPORTS, PIPE CHANNEL, AND VALVE BOX. 2. PRODUCT DATA SHALL BE SUBMITTED FOR ALL MATERIAL AND EQUIPMENT. B. MANUFACTURER'S SHOP TEST: THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH MANUFACTURER'S CERTIFICATE THAT THE FOLLOWING EQUIPMENT HAS BEEN SHOP TESTED AND

1.01 PRECONSTRUCTION CONFERENCE

1.02 PROTECTION OF PROPERTY

b. BAFFLE WALL

c. SKIMMER BRACKET

PROCEDURES AND QUALITY CONTROL

SLUDGE COLLECTION SYSTEM

OPERATES WITHIN THE REQUIREMENTS SPECIFIED HEREIN:

A. FOLLOWING THE AWARD OF CONTRACT, BUT PRIOR TO START OF CONSTRUCTION, A PRECONSTRUCTION CONFERENCE WILL BE HELD AT THE TOWN OF AMHERST UTILITIES ADMINISTRATION OFFICES, 174 S. MAIN ST., AMHERST VA, FOR THE PURPOSE OF REVIEWING THE CONTRACT DRAWINGS AND SPECIFICATIONS AND ADMINISTRATIVE PROCEDURES. B. THE CONTRACTOR SHALL BE REPRESENTED AT THE CONFERENCE BY A RESPONSIBLE OFFICER OF THE FIRM, THE FIELD REPRESENTATIVE, SUBCONTRACTORS, MATERIALS AND TESTING FIRM AND SUCH OTHER PERSONNEL AS THE CONTRACTOR AND OWNER MAY DEEM NECESSARY.

ARE NOT PRESENT. UNLESS OTHERWISE SPECIFICALLY PROVIDED, PROTECT UTILITY FACILITIES FROM DAMAGE AND CAUSE NO INTERRUPTION OF SERVICE.

A. EXISTING SURFACES AND FACILITIES: TAKE POSITIVE ACTION TO PROTECT EXISTING SURFACES AND FACILITIES FROM ANY DAMAGE RESULTING FROM CONSTRUCTION OPERATIONS. 2. PROTECT PAVING, LANDSCAPING, AND UTILITY FACILITIES FROM DAMAGE CAUSED BY MOBILE AND STATIONARY EQUIPMENT, INCLUDING VEHICLES DELIVERING MATERIALS TO THE SITE. B. UTILITIES: 1. KNOWN UTILITY FACILITIES ARE SHOWN ON THE DRAWINGS. THE LOCATIONS OF THESE FACILITIES ARE NOT GUARANTEED, NOR IS THERE ANY GUARANTEE THAT OTHER UTILITY FACILITIES

2. ESTABLISH AND MAINTAIN DIRECT CONTACT WITH THE OWNER OR OPERATOR OF EACH UTILITY FACILITY THAT MAY BE AFFECTED BY THE WORK, AND PROCEED WITH WORK THAT MAY AFFECT A UTILITY FACILITY ONLY WITH THE COOPERATION AND APPROVAL OF THE OPERATOR OF THE UTILITY. IMMEDIATELY INFORM THE OWNER OF ANY AGREEMENT WITH THE UTILITY OPERATOR CONCERNING THE WORK UNDER THIS CONTRACT. 3. BEFORE COMMENCING CONSTRUCTION, VERIFY THE LOCATION OF ALL UTILITY FACILITIES IN THE VICINITY OF THE WORK. PRIOR TO BEGINNING CONSTRUCTION AFFECTING ANY UTILITY FACILITY, SUBMIT TO THE OWNER FOR APPROVAL A PLAN FOR PERFORMING THE WORK, WITH EVIDENCE OF APPROVAL BY THE UTILITY OPERATOR.

C. REPAIR OF DAMAGES: 1. REPLACE IN KIND SIGNIFICANTLY DAMAGED SHRUBS, CULTIVATED VEGETATION, AND TREES OUTSIDE THE CLEARING LIMITS THAT ARE DAMAGED BY CONSTRUCTION OPERATIONS. REPLACE TREES LARGER THAN 3 INCHES CALIPER SIZE MEASURED AT A HEIGHT 3 FEET ABOVE GROUND SWELL WITH TREES OF 3 INCHES CALIPER SIZE. REPLACE ALL OTHER VEGETATION WITH THE SAME SPECIES AND SIZE AS THAT DAMAGED, UNLESS OTHERWISE APPROVED BY THE ENGINEER. 1.03 SAFETY AND FIRE PROTECTION ASSURANCE

A. THE CONTRACTOR SHALL COMPLY WITH FEDERAL, STATE, AND LOCAL SAFETY AND FIRE CODES AND REGULATIONS AND THE APPLICABLE PROVISIONS OF THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS ISSUED BY THE SECRETARY OF LABOR PURSUANT TO THE WILLIAMS\_STEIGER OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 AND AS AMENDED. B. THE REQUIREMENTS SPECIFIED APPLY ONLY TO WORK WITHIN THE STAGING AREA AND THE PROJECT SITE.

C. THE CONTRACTOR SHALL TAKE OTHER PRECAUTIONS DIRECTED BY THE ENGINEER THAT ARE NECESSARY TO PROTECT PERSONS AND PROPERTY AGAINST INJURY AND FIRE AT THE SITE OF D. WHERE THERE MAY BE CONFLICTING REQUIREMENTS, THE MORE STRINGENT ONE WILL APPLY.

1.04 STORAGE AND PROTECTION OF MATERIALS AND EQUIPMENT A. ALL MATERIALS PROVIDED AND WORK PERFORMED UNDER THIS CONTRACT SHALL BE PROTECTED FROM DAMAGE BEFORE AND AFTER INSTALLATION. THE CONTRACTOR SHALL BE RESPONSIBLE

FOR WORK, AND MATERIALS UNTIL INSPECTED, TESTED, AND FINALLY ACCEPTED. B. DURING CONSTRUCTION, THE OPEN ENDS WORK, SUCH AS PIPE AND VALVES, SHALL BE EFFECTIVELY CLOSED WITH TEMPORARY COVERS OR PLUGS TO PREVENT THE ENTRY OF FOREIGN C. STORE AND PROTECT PRODUCTS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND THE REQUIREMENTS SPECIFIED HEREIN AND THE GENERAL CONDITIONS. D. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND PROVISIONS NECESSARY FOR THE STORAGE OF MATERIALS AND EQUIPMENT. ALL EXCAVATED MATERIALS, CONSTRUCTION EQUIPMENT,

AND MATERIALS AND EQUIPMENT TO BE INCORPORATED INTO THE WORK SHALL BE PLACED SO AS NOT TO INJURE ANY PART OF THE WORK OR EXISTING FACILITIES, AND SO THAT FREE ACCESS CAN BE ACHIEVED AT ALL TIMES TO ALL PARTS OF THE WORK AND TO ALL PUBLIC UTILITY INSTALLATIONS IN THE VICINITY OF THE WORK. MATERIALS AND EQUIPMENT SHALL BE KEPT NEATLY AND COMPACTLY STORED IN LOCATIONS THAT WILL CAUSE A MINIMUM OF INCONVENIENCE TO OTHER CONTRACTORS, PUBLIC TRAVEL, ADJOINING OWNERS, TENANTS, OCCUPANTS AREAS AVAILABLE ON THE JOB SITE FOR STORAGE OF MATERIALS AND EQUIPMENT SHALL BE AS DESIGNATED AND APPROVED BY THE OWNER. ALL MATERIALS AND EQUIPMENT MUST BE

CONSIGNED TO THE CONTRACTOR DIRECTLY. NO DELIVERY OF MATERIALS AND EQUIPMENT WILL BE ACCEPTED BY THE OWNER AND ALL EXPENSES INCURRED BY THE OWNER IN HANDLING MATERIALS OR EQUIPMENT WHICH HAVE BEEN CONSIGNED OR DIRECTED TO THE OWNER, WILL BE CHARGED TO THE CONTRACTOR. MATERIALS AND EQUIPMENT WHICH ARE TO BECOME THE PROPERTY OF THE OWNER SHALL BE STORED TO FACILITATE THEIR INSPECTION AND ENSURE PRESERVATION OF THE QUALITY AND FITNESS OF THE WORK, INCLUDING PROPER PROTECTION AGAINST DAMAGE BY FREEZING AND MOISTURE. THEY SHALL BE PLACED INSIDE STORAGE AREAS, UNLESS OTHERWISE SHOWN,

SPECIFIED OR ACCEPTED TO THE OWNER. G. MATERIALS AND EQUIPMENT WHETHER INSTALLED OR BEING STORED PRIOR TO INSTALLATION SHALL BE PROTECTED IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR SAFEGUARDING THE ITEMS. UPON DELIVERY OF EQUIPMENT, THE CONTRACTOR SHALL FURNISH THE OWNER A COPY OF THE MANUFACTURER'S RECOMMENDATIONS FOR THE PROPER STORAGE AND PROTECTION OF THE EQUIPMENT.

EQUIPMENT AND TOOLS USED IN THE PERFORMANCE OF THE WORK SHALL BE IN A SAFE OPERATING CONDITION AND SHALL BE SUITABLE FOR THE INTENDED USE. MOBILE EQUIPMENT SHALL BE

H. LAWNS, GRASS PLOTS OR OTHER PRIVATE PROPERTY SHALL NOT BE USED FOR STORAGE PURPOSES WITHOUT WRITTEN PERMISSION OF THE TOWN OR OTHER PERSON IN POSSESSION OR

CONTROL OF SUCH PREMISES. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR LOSS OR DAMAGE TO STORED MATERIALS. 1.05 EQUIPMENT

PROMINENTLY MARKED WITH THE CONTRACTOR'S NAME AND A UNIQUE VEHICLE NUMBER.

CONTRACTOR. UNLESS STATED OTHERWISE IN THE CERTIFICATE OF FINAL ACCEPTANCE, THE OWNER WILL PERFORM MAINTENANCE WORK.

G. THE OWNER SHALL HAVE THE RIGHT TO EXCLUDE THE CONTRACTOR FROM THE PROJECT AFTER THE DATE OF FINAL ACCEPTANCE, BUT THE OWNER WILL ALLOW THE CONTRACTOR CONTRACTOR TO ARRANGE FOR SERVICE CONTRACTS AND EXTENDED WARRANTIES OR GUARANTEES OF THE EXTENT AND DURATION HE DEEMS NECESSARY AND REQUISITE, TO PROTECT HIS

A. EXCEPT AS OTHERWISE INDICATED OR REQUESTED BY THE ENGINEER, REMOVE TEMPORARY PROTECTIVE DEVICES AND FACILITIES THAT WERE INSTALLED DURING THE COURSE OF THE WORK TO

2. THAT NO USE OR ACCEPTANCE BY THE OWNER OF THE WORK OR ANY PART THEREOF, NOR ANY FAILURE TO USE THE SAME, NOR ANY REPAIRS, ADJUSTMENTS OR CORRECTIONS MADE BY THE OWNER DUE TO THE CONTRACTOR'S FAILURE TO COMPLY WITH ANY OF HIS OBLIGATIONS UNDER THE CONTRACT DOCUMENTS, SHALL IMPAIR IN ANY WAY THE GUARANTEE

MAKING GOOD ALL WORK OF OTHERS DESTROYED OR DAMAGED BY HIS CORRECTION, REMOVAL OR REPLACEMENT OF HIS DEFECTIVE WORK. IS ISSUED. THE CONTRACTOR SHALL FURNISH PROOF UPON REQUEST OF THE OWNER THAT THE BOND IS IN FULL FORCE, INCLUDING PROOF OF PREMIUM PAYMENTS.

1. DESCRIPTION

2. TYPE B ARE SPALLS 0.2 FOOT (60 MM) WIDE OR LESS.

REMOVAL OF THE FORMING MATERIAL, THE JOINT SHALL BE SAWED, CLEANED, AND SEALED.

PERMITTED FOR EIGHT HOURS AFTER PLACEMENT.

PART 1 - GENERAL

THIS SECTION SPECIFIES THE REQUIREMENTS FOR ALL PIPING SYSTEMS TO BE INSTALLED AS PART OF THIS PROJECT. 1.02 GENERAL REQUIREMENTS

2.01 ALL MATERIAL SHALL BE TO THE TOWN OF AMHERST DEPARTMENT OF UTILITIES WATER AND SEWER DESIGN AND CONSTRUCTION STANDARDS. WITH THE EXCEPTION OF THROUGH FLOOR PIPING,

POWER SUPPLY AND ARE TO INCORPORATE MOTOR, INTEGRAL REVERSING STARTER, LOCAL CONTROL FACILITIES, AND TERMINALS FOR REMOTE CONTROL AND INDICATION CONNECTIONS. THE ACTUATOR SHALL INCLUDE A DEVICE TO ENSURE THAT THE MOTOR RUNS WITH THE CORRECT ROTATION FOR THE REQUIRED DIRECTION OF VALVE TRAVEL WITH EITHER PHASE SEQUENCE OF THE THREE-PHASE POWER SUPPLY CONNECTED TO THE ACTUATOR. IT SHALL BE POSSIBLE TO CARRY OUT THE SETTING OF THE TORQUE, TURNS, AND CONFIGURATION OF THE INDICATION

SEATING AND UNSEATING THE VALVE SHALL BE SUFFICIENT TO ENSURE TORQUE SWITCH TRIP AT MAXIMUM VALVE TORQUE WITH THE SUPPLY VOLTAGE 10% BELOW NOMINAL. THE OPERATING MEANS OF ELECTRICAL CONNECTION FOR THE MOTOR.

THE VALVE OUT OF SERVICE. STANDARD SAE80EP GEAR OIL SHALL BE USED TO LUBRICATE THE GEARCASE. SPECIAL OR EXOTIC LUBRICANTS SHALL NOT BE USED AS THEY MAY BE DIFFICULT TO SOURCE IN REMOTE LOCATIONS.

SELECT HAND OPERATION WHILE THE ACTUATOR IS RUNNING OR START THE ACTUATOR MOTOR WHILE THE HAND/AUTO SELECTION LEVER IS LOCKED IN "HAND" WITHOUT DAMAGE TO THE

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Allow required time for marking. REPRODUCTION OF THESE PLANS AND SPECIFICATIONS IS NOT AUTHORIZED WITHOUT

NOTE: THESE PLANS AND SPECIFICATIONS INCLUDE PROPRIETARY INFORMATION.

WRITTEN CONSENT OF BOWMAN CONSULTING GROUP, LTD.

PLAN STATUS /25/17 | VDH COMMENTS /28/17 | VDH COMMENTS TJN DWD KMB DESIGN DRAWN CHKD SCALE DATE: **MAY 31, 2017** FILE No. 100059-01-001-XXX

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4. ANY ALTERNATE MANUFACTURER WHO DOES NOT HAVE WRITTEN ACCEPTANCE BY THE ENGINEER PRIOR TO BID WILL NOT BE CONSIDERED AFTER THE BID.

EQUIPMENT SPECIFICATION PRIOR TO THE BID. INCLUDE A WRITTEN INDEMNIFICATION AGAINST PATENT INFRINGEMENT TO THE OWNER.

3. ALTERNATE MANUFACTURERS MUST BE APPROVED BY THE ENGINEER AT LEAST TWENTY (20) DAYS PRIOR TO BID OPENING TO BE CONSIDERED. SUBMIT A COMPLETE DESCRIPTIVE

ALL THE REQUIREMENTS DETAILED IN THE SPECIFICATION. PROVIDE INSTALLATION REFERENCES AND A SUMMARY OF COMPANY EXPERIENCE AS SPECIFIED UNDER SECTION 1.8 OF THE

INFORMATION PACKAGE OF ALTERNATE EQUIPMENT FOR PRE-APPROVAL CONTAINING ALL INFORMATION NECESSARY TO SHOW THAT THE SUBSTITUTE EQUIPMENT OR MATERIAL OFFERED MEETS

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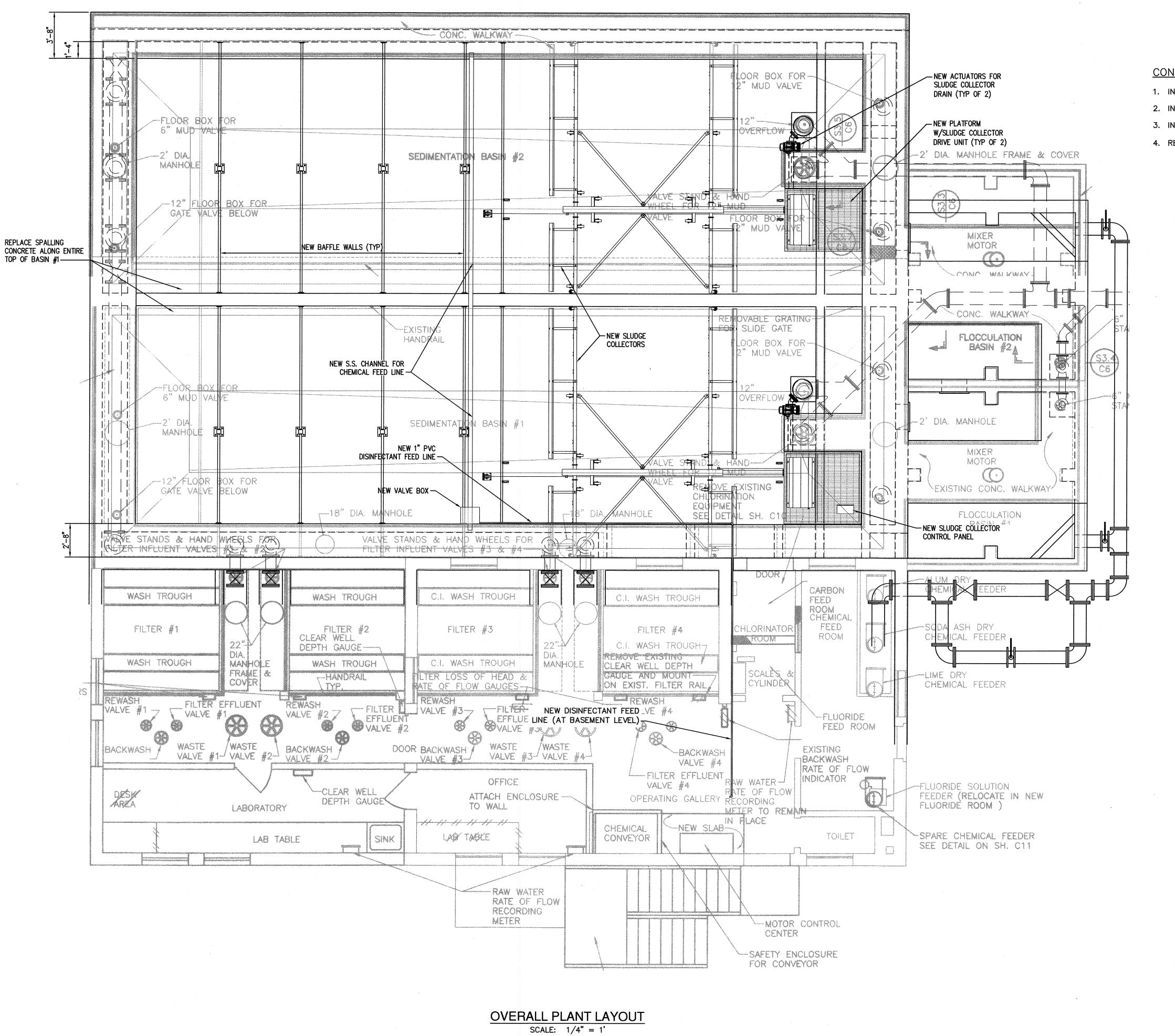
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KENNETH M. BAYBU Lic. No. 028257 7/25/17 ONAI

DATE | DESCRIPTION

Dig With GGG. Keep Virginia Safe! JOB No.100059-01-001



**CONSTRUCTION DESCRIPTION:** 

- 1. INSTALL SLUDGE COLLECTORS IN BASIN #1 AND #2.
- 2. INSTALL 8 S.S. PANELS TO MAKE 4 BAFFEL WALLS IN EACH BASIN.
- 3. INSTALL CHEMICAL INJECTION PIPING AND VALVES TO BOTH BASINS.
- 4. REPAIR SPALLING CONCRETE ALONG THE ENTIRE TOP OF BASIN #1.

TOWN OF AMHERST BASIN IMPROVEMEN OVERALL

SEDIMENTATION BOWMAN - 2018

PLAN STATUS

7/25/17 VDH COMMENTS 6/28/17 VDH COMMENTS
DATE DESCRIPTION DWD KMB DESIGN DRAWN CHKD SCALE H: 1/4"=1' V: N/A

JOB No. 100059-01-001

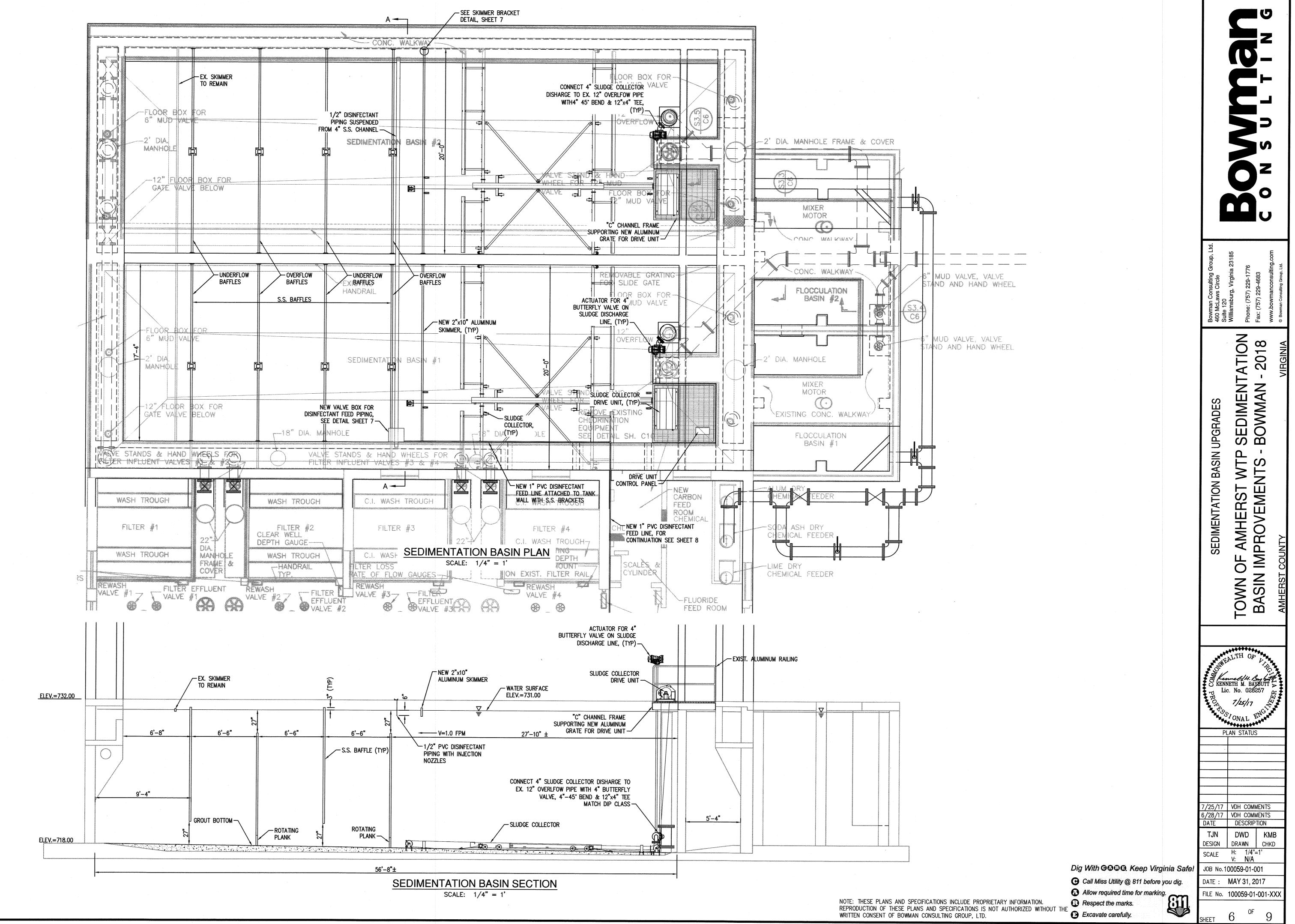
DATE: MAY 31, 2017

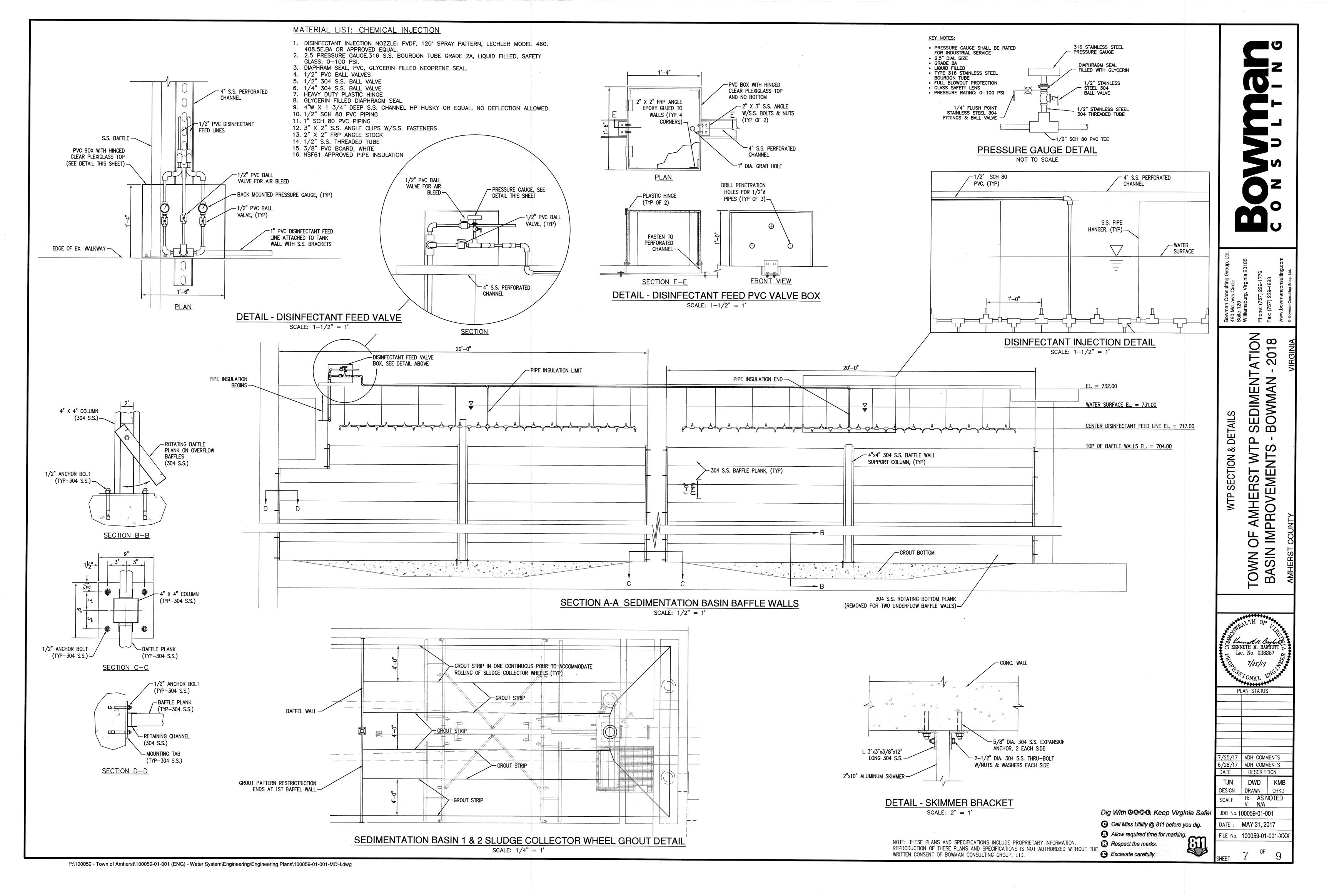
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- Call Miss Utility @ 811 200

FILE No. 100059-01-001-XXX SHEET 5

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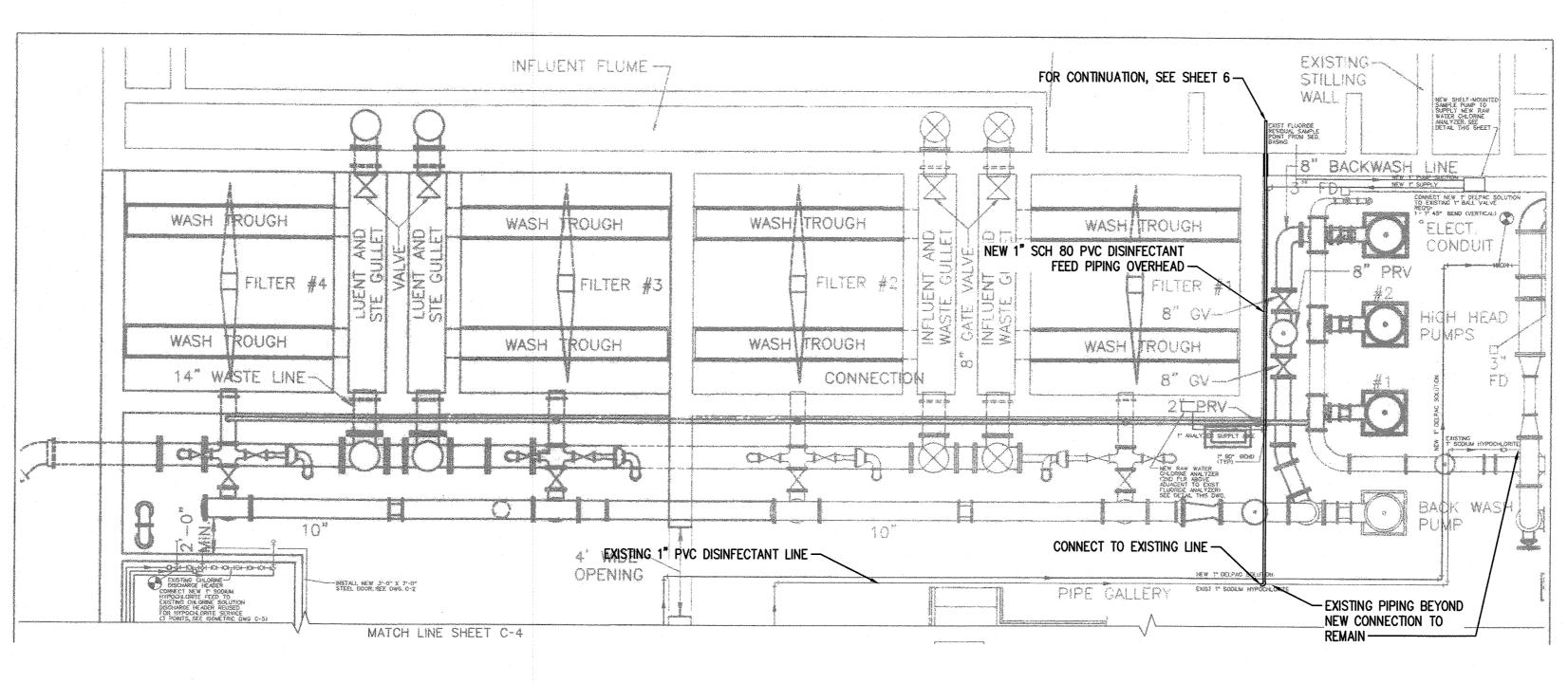
WTP BASEMEN

PLAN STATUS

7/25/17 VDH COMMENTS 6/28/17 VDH COMMENTS DATE DESCRIPTION

TJN DWD KMB
DESIGN DRAWN CHKD
SCALE H: 1/4"=1'
V: N/A

DATE: MAY 31, 2017 FILE No. 100059-01-001-XXX



WTP BASEMENT FLOOR PLAN SCALE: 1/4" = 1'

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Call Miss Utility @ 811 DOL.

Allow required time for marking.

Pacnect the marks. Excavate carefully.

- 3. WIRE SIZES AND CONDUIT SIZES SHOWN ARE BASED ON COPPER.
- 4. PROVIDE CONDUIT AND WIRE FROM CONTROL AND COMMUNICATIONS DEVICES AS REQUIRED FOR SYSTEM OPERATION.
- 5. REVIEW DRAWINGS AND SPECIFICATIONS BEFORE BIDDING. SUBMIT QUESTIONS REGARDING ANY DEFICIENCIES OR DISCREPANCIES BEFORE BIDS. FAILURE TO ASK FOR CLARIFICATION WILL NOT BE CONSIDERED AS JUSTIFICATION FOR A CHANGE ORDER.
- 6. PROVIDE A GROUND CONDUCTOR IN ALL BRANCH CIRCUITS SIZED ACCORDING TO THE OVERCURRENT PROTECTION DEVICE. GROUND CONDUCTOR SHALL BE GREEN OR SHALL BE IDENTIFIED WITH GREEN TAPE.
- 7. LIGHT EQUIPMENT MOUNTED INDOORS AND OUTDOORS SHALL BE MOUNTED ON STAINLESS STEEL, KINDORF OR UNISTRUT. HEAVY EQUIPMENT MOUNTED OUTDOORS SHALL BE MOUNTED ON A WELDED STEEL FRAME CONSTRUCTED OF A-36, 6" x 2" x 1/4" CHANNEL STEEL. HOT DIP GALVANIZE THE FABRICATED FRAME PRIOR TO INSTALLATION. INSTALL THE FRAME EMBEDDED IN 18" DIA. x 3' DEEP BORED POST HOLES FILLED WITH CONCRETE.
- 8. CONDUIT, WIRE AND CABLE SIZES SHOWN FOR CONTROL AND COMMUNICATIONS EQUIPMENT ARE FOR BIDDING PURPOSES ONLY. PROVIDE WIRE SIZES AND TYPES AS REQUIRED BY EQUIPMENT MANUFACTURERS. COORDINATE CONDUIT SIZES WITH WIRE NUMBER AND SIZE REQUIREMENTS. PROVIDE CONDUIT AND WIRE AS REQUIRED FOR SYSTEM OPERATION.
- 9. LABEL ALL MEANS OF DISCONNECT INDICATING THE SOURCE CIRCUIT AND EQUIPMENT THEY SERVE. INCLUDE THIS INFORMATION ON LABELS FOR ENCLOSED CIRCUIT BREAKERS, PANELBOARDS, CONTROLLERS, MOTOR CONTROLLERS AND AUTOMATIC TRANSFER SWITCHES.
- 10. ITEMS SHOWN ON DRAWINGS ARE RATED BASED ON TYPICAL UNITS. COORDINATE EXACT CIRCUIT BREAKER RATINGS (MOCP) AND BRANCH CIRCUIT REQUIREMENTS (MCA) WITH EQUIPMENT ACTUALLY PROVIDED AND APPROVED.
- 11. SEAL ALL PENETRATIONS THROUGH WALLS WITH CAULK OR GROUT AS APPROPRIATE.
- 12. ALL WORK IN PANEL L1 SHALL BE DONE WITH THE PANEL DE-ENERGIZED. NO WORK ON ENERGIZED EQUIPMENT, EXCEPT FOR DIAGNOSTICS, IS APPROVED. COORDINATE OUTAGES WITH SYSTEM OPERATOR.
- 13. PANEL L1 IS LOCATED AT THE 2ND FLOOR ENTRANCE TO THE WATER PLANT. SPACES EXIST IN PANEL L1. PROVIDE CIRCUIT BREAKERS AS REQUIRED FOR SYSTEM OPERATION.
- 14. POWER TO DRIVE UNITS IS SHOWN COMING FROM THE CONTROL PANEL AND DIRECTLY FROM PANEL L1. PROVIDE AS REQUIRED BY MANUFACTURER.

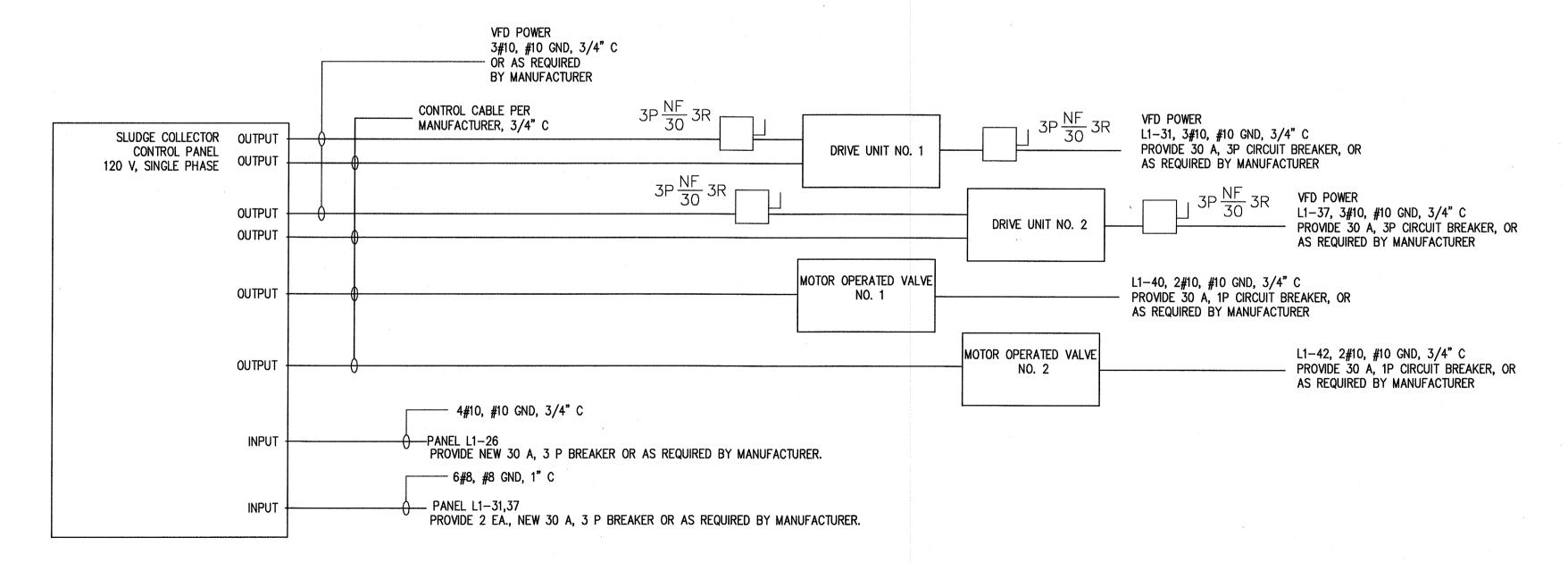
## SYMBOLS

BRANCH CIRCUIT WIRING. 2 #12 THHN, #12 GROUND, 3/4" CONDUIT UNLESS OTHERWISE NOTED. TICK MARKS, WHEN USED, INDICATE NUMBER OF GROUNDED AND UNGROUNDED CONDUCTORS IF OTHER THAN 2

GROUND CONNECTION

MOTOR. HORSEPOWER, "X," AS INDICATED. SEE DETAIL THIS SHEET

DISCONNECT SWITCH - PLAN VIEW EXAMPLE "XP" INDICATES NUMBER OF POLES, "ZZ" INDICATES SWITCH RATING AND "YY" INDICATES FUSE RATING AS INDICATED. "NF" INDICATES NON-FUSED. 3R INDICATES NEMA 3R ENCLOSURE.



# **ABBREVIATIONS:**

AMPS ABOVE FINISHED FLOOR BLDG BUILDING CONDUIT CLEARWELL COMB COMBINATION CONTROL, CONTROLLER, CONTROL PANEL DISC SW DISCONNECT SWITCH DISTRIBUTION EXISTING TO REMAIN ENCLOSED CIRCUIT BREAKER EQUIPMENT GROUND **EQPT EQUIPMENT** EXISTING - MODIFY AS REQUIRED GROUND ELECTRODE CONDUCTOR GROUND FAULT CURRENT INTERRUPTING GFCI GND GROUND MAIN ENCLOSED CIRCUIT BREAKER MINIMUM PANELBOARD

SERVICE ENTRANCE

WEATHERPROOF

TRANSFORMER

NEMA 3R

WITHSTAND AND CLOSE RATING

**TYPICAL** 

TYP

## **ELECTRICAL SPECIFICATIONS**

#### SECTION 16100

- 1. PROVIDE NECESSARY LABOR, EQUIPMENT, ETC. FOR WORK INDICATED AND REQUIRED FOR A COMPLETE INSTALLATION. MATERIALS SHALL BE NEW, APPROVED & LABELED BY U.L. WHEREVER STANDARDS HAVE BEEN ESTABLISHED BY THAT AGENCY.
- 2. WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, APPLICABLE LOCAL CODES AND ORDINANCES.
- 3. VISIT THE SITE PRIOR TO BID TO DETERMINE THE EXTENT OF WORK. LACK OF KNOWLEDGE OF EXISTING CONDITIONS WILL NOT BE CONSIDERED A BASIS FOR CHANGE OR RELIEVE THE CONTRACTOR OF ANY OBLIGATION TO FULFILL THE CONTRACT.
- 4. COORDINATE WORK UNDER THIS SECTION WITH OTHER TRADES INVOLVED. COORDINATE ALL REQUIRED CONNECTIONS AND CIRCUITS WITH EQUIPMENT REQUIREMENTS. FAILURE TO INCLUDE REQUIREMENTS FOR EQUIPMENT FURNISHED BY OTHERS WILL NOT BE CONSIDERED AS JUSTIFICATION FOR A CHANGE ORDER. WHERE ITEMS OR COMPONENTS REQUIREMENTS ARE NOT CLEAR, ASK FOR CLARIFICATION BEFORE SUBMITTING BID. FAILURE TO SEEK CLARIFICATION WILL NOT BE CONSIDERED AS JUSTIFICATION FOR CONTRACT PRICE ADJUSTMENT.
- 5. SUBMIT PRODUCT DATA, SHOP DRAWINGS AND SCALED EQUIPMENT LAYOUT DRAWINGS FOR APPROVAL BEFORE ORDERING EQUIPMENT OR ROUGHING IN CONDUIT.
- 6. PROVIDE EQUIPMENT FROM MANUFACTURERS AS INDICATED ON DRAWINGS. WHERE EQUIPMENT IS NOT SPECIFICALLY IDENTIFIED, CONTRACTOR MAY SUBMIT SUITABLE EQUIPMENT FROM A MANUFACTURER THAT MEETS THE FUNCTION AND IS RATED FOR THE APPLICATION AND LOCATION.

### SECTION 16110

- 1. WORK SHALL BE IN CONDUIT, RUN CONDUIT EXPOSED.
- 2. CONDUIT SHALL BE GALVANIZED STEEL CONDUIT. MINIMUM SIZE CONDUIT SHALL BE 3/4" WITH LARGER SIZES AS REQUIRED BY THE N.E.C. RUN EXPOSED CONDUITS PARALLEL & PREPENDICULAR TO THE STRUCTURE & PROVIDE ADEQUATE SUPPORTS. FITTINGS SHALL BE THREADED TYPE.

## SECTION 16120

WIRE AND CABLE SHALL BE 600 VOLT, MINIMUM AWG NO. 12, WIRE SHALL BE COPPER TYPE "THWN". TERMINATIONS AND CONNECTIONS SHALL BE RATED FOR THE TYPE WIRE USED. WHERE ALUMINUM CONDUCTORS ARE PERMITTED TO BE SUBSTITUTED FOR COPPER CONDUCTORS, INCREASE SIZE OF CONDUIT IN ACCORDANCE WITH NEC.

## SECTION 16142

- 1. EQUIPMENT CONNECTIONS:
- A. PROVIDE WIRING & CONNECTIONS FOR POWER AND CONTROL CIRCUITS REQUIRED FOR EQUIPMENT INSTALLED AS PART OF THIS SUBCONTRACT.
- B. PROVIDE LIQUIDTIGHTFLEXIBLE CONDUIT FOR FINAL CONNECTIONS TO MOTORS OR OTHER VIBRATING EQUIPMENT.

## SECTION 16452

- 1. PROVIDE GROUNDING FOR MOTOR FRAMES, METAL CASINGS, ETC.. RESISTANCE TO GROUND SHALL NOT EXCEED 25 OHMS. PROVIDE SEPARATE GREEN GROUNDING CONDUCTOR IN ALL CIRCUITS (WHETHER SHOWN OR NOT) FOR NEW WORK.
- 2. PAINT EXPOSED METAL ENCLOSURES, CONDUIT, ETC. TO MATCH ADJACENT SURROUNDING
- 3. PROVIDE STAINLESS STEEL SUPPORTS TO ATTACH EQUIPMENT TO EXISTING MASONRY WALLS OR STEEL HANDRAILS.

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EDIMENTAL SWMAN - 2 ШО S : AMHERST \
IPROVEMEN  $\mathbf{\underline{\leq}}$ OF P

COUNTY PROJECT NUMBER PAUL L. POWERS Lic. No. 20620 PLAN STATUS

7/25/17 VDH COMMENTS DATE DESCRIPTION PLPPLP PLP

DESIGN DRAWN

CHKD

Respect the marks. Excavate carefully.

DATE: MAY 31, 2017 FILE No. 100059-01-001-XXX

SCALE

**Tidewater** Engineering Chesapeake, VA 23322 248 Unser Dr. P: 757.876.1780 email: powersp@verizon.net

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P:\100059 - Town of Amherst\100059-01-001 (ENG) - Water System\Engineering\Engineering Plans\100059-01-001-ELEC.dwg

NOT TO SCALE

WIRING DIAGRAM - SLUDGE COLLECTOR CONTROLLER

GRAM DIA ELECTRICAL NOTES, SIN TOWN