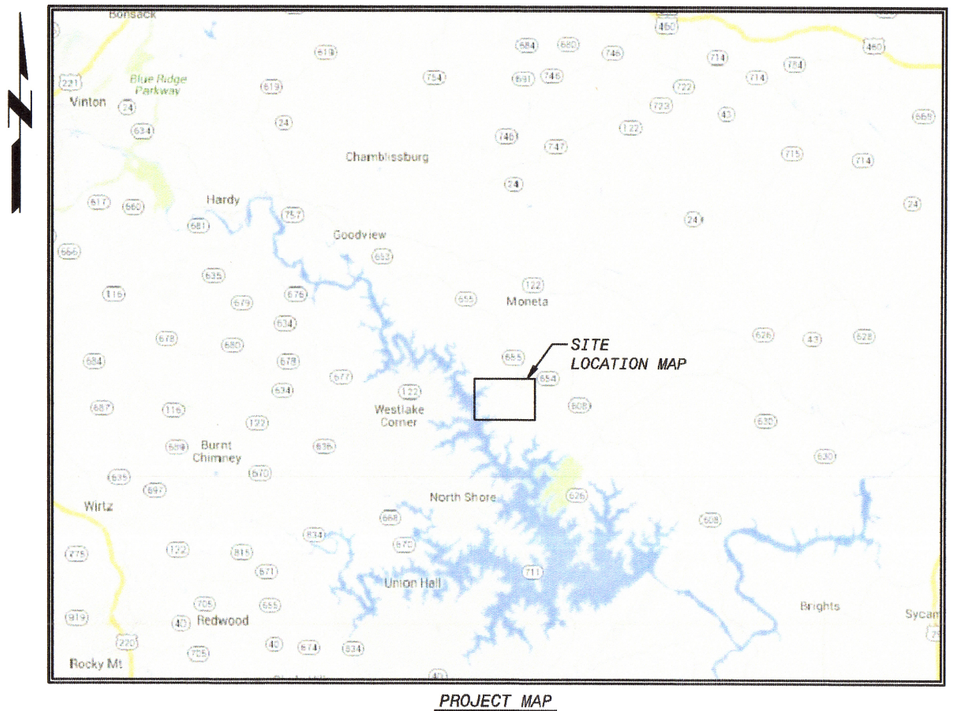
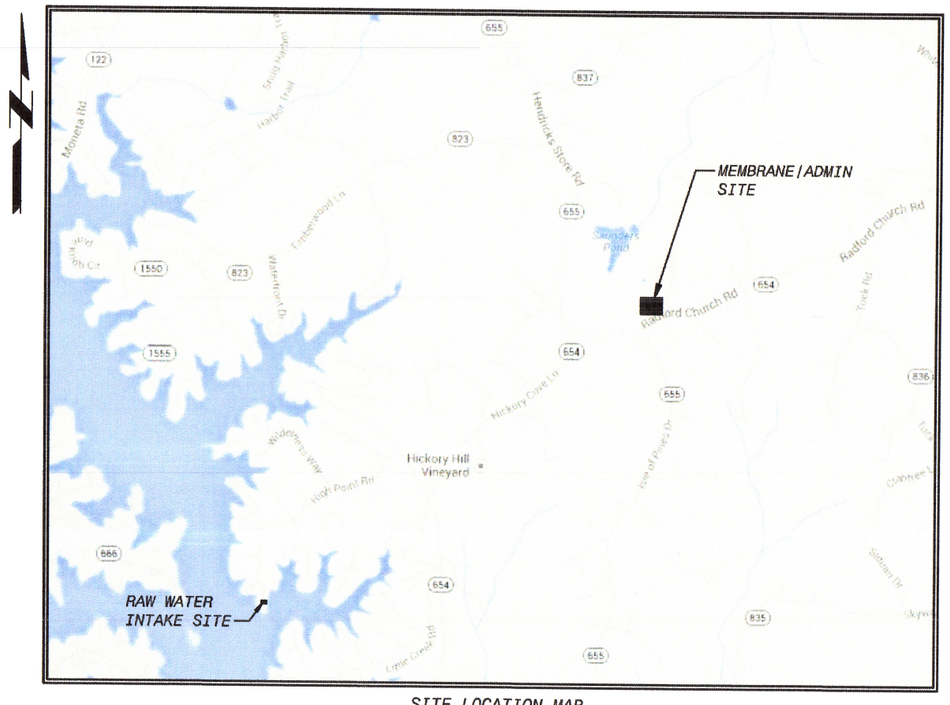
BEDFORD REGIONAL WATER AUTHORITY
BEDFORD, VA

SMITH MOUNTAIN LAKE WTP &
RAW WATER PUMPING STATION / INTAKE



PROJECT MAP
NO SCALE



SITE LOCATION MAP
NO SCALE

PROJECT NO. 182262
ISSUED FOR CONSTRUCTION
JANUARY 2016

GENERAL

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G-00-002	SHEET LIST
G-00-003	LEGEND
G-00-004	GENERAL NOTES
G-00-005	ABBREVIATIONS
G-00-006	CODE INFORMATION
G-00-008	HYDRAULIC PROFILE - MAIN PROCESS
G-00-010	PROCESS FLOW DIAGRAM

DEMOLITION

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CIVIL

C-20-100	PLAT MAP AND ADJACENT PROPERTY
C-20-101	INTAKE STRUCTURE - SITE PLAN
C-20-102	INTAKE STRUCTURE - EROSION AND SEDIMENTATION CONTROL AND GRADING PLAN
C-20-103	INTAKE STRUCTURE - LANDSCAPING PLAN
C-20-104	SPECIAL USE AND VARIANCE CONDITIONS
C-20-105	INTAKE STRUCTURE - PIPING PLAN
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C-20-504	STORMWATER MANAGEMENT PLAN - PROPOSED SITE
C-30-100	WTP PLAT MAP AND ADJACENT PROPERTY
C-30-101	MEMBRANE/ADMIN BUILDING - OVERALL SITE PLAN
C-30-102	MEMBRANE/ADMIN BUILDING - SITE STAKING PLAN
C-30-103	MEMBRANE/ADMIN BUILDING - GRADING PLAN
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C-30-505	STORMWATER RETENTION POND - DETAILS
C-30-506	LANDSCAPING DETAILS
C-30-507	DETAILS
C-30-508	DETAILS
C-30-509	DETAILS
C-30-510	DETAILS
C-30-511	DETAILS
C-30-512	DETAILS
C-30-513	DETAILS

STRUCTURAL

S-20-101	RAW WATER INTAKE PUMP STATION VAULT - PLAN, SECTIONS AND DETAIL
S-20-102	ELECTRICAL BUILDING - FOUNDATION PLAN, SECTIONS AND DETAIL
S-20-103	ELECTRICAL BUILDING - ROOF FRAMING PLANS
2-20-301	ELECTRICAL BUILDING - SECTIONS
S-20-501	DETAILS
S-20-502	MASONRY DETAILS
S-20-503	BALLAST BLOCK DETAIL
S-20-504	H-PILE PIPE SUPPORT DETAIL
S-30-001	GENERAL NOTES AND DESIGN CRITERIA
S-30-102	MEMBRANE/ADMIN BUILDING - FOUNDATION/OPERATING FLOOR PLAN
S-30-301	MEMBRANE/ADMIN BUILDING - FOUNDATION SECTIONS
S-30-501	STANDARD DETAILS
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A-00-002	MEMBRANE/ADMIN BUILDING - ARCHITECTURAL STANDARD DETAILS
A-20-101	ELECTRICAL BUILDING - OPERATING FLOOR PLAN
A-20-201	ELECTRICAL BUILDING - ELEVATIONS
A-20-301	ELECTRICAL BUILDING - WALL SECTIONS
A-30-101	MEMBRANE/ADMIN BUILDING - PARTIAL DETAIL REFERENCES PLAN
A-30-102	MEMBRANE/ADMIN BUILDING - OPERATING FLOOR PLAN
A-30-103	MEMBRANE/ADMIN BUILDING - ROOF PLAN
A-30-104	MEMBRANE/ADMIN BUILDING - REFLECTED CEILING PLAN
A-30-201	MEMBRANE/ADMIN BUILDING - BUILDING ELEVATIONS
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A-30-301	MEMBRANE/ADMIN BUILDING - BUILDING SECTIONS
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A-30-601	MEMBRANE/ADMIN BUILDING - DOOR SCHEDULE AND DETAILS
A-30-602	MEMBRANE/ADMIN BUILDING - SCHEDULES AND DETAILS
A-30-801	MEMBRANE/ADMIN BUILDING - CASEWORK ELEVATIONS AND DETAILS

MECHANICAL

M-20-101	RAW WATER PUMP STATION VAULT - PLAN AND SECTION
M-20-102	ELECTRICAL BUILDING - OPERATING FLOOR PLAN
M-30-001	MEMBRANE/ADMIN BUILDING - OVERALL PERSPECTIVE
M-30-002	MEMBRANE/ADMIN BUILDING - PERSPECTIVES
M-30-101	MEMBRANE/ADMIN BUILDING - OPERATING FLOOR PLAN
M-30-102	MEMBRANE/ADMIN BUILDING - UNDERSLAB PIPING PLAN
M-30-301	MEMBRANE/ADMIN BUILDING - SECTIONS - SHEET 1 OF 5
M-30-302	MEMBRANE/ADMIN BUILDING - SECTIONS - SHEET 2 OF 5
M-30-303	MEMBRANE/ADMIN BUILDING - SECTIONS - SHEET 3 OF 5
M-30-304	MEMBRANE/ADMIN BUILDING - SECTIONS - SHEET 4 OF 5
M-30-305	MEMBRANE/ADMIN BUILDING - SECTIONS - SHEET 5 OF 5
M-30-401	MEMBRANE/ADMIN BUILDING - ENLARGED OPERATING FLOOR PLAN A
M-30-402	MEMBRANE/ADMIN BUILDING - ENLARGED OPERATING FLOOR PLAN B
M-30-403	MEMBRANE/ADMIN BUILDING - ENLARGED OPERATING FLOOR PLAN C
M-30-404	MEMBRANE/ADMIN BUILDING - ENLARGED OPERATING FLOOR PLAN D
M-30-501	NO LONGER USED
M-30-502	DETAILS
M-30-503	DETAILS
M-30-504	DETAILS
M-30-505	DETAILS
M-30-506	DETAILS
M-30-507	DETAILS
M-30-508	DETAILS
M-60-101	GAC CONTACTOR AND PUMP AREA - PLAN
M-60-301	GAC CONTACTOR AND PUMP AREA - SECTIONS
M-80-101	FINISHED WATER STORAGE TANK - PLAN AND SECTION
M-85-101	RAW WATER STORAGE TANK - PLAN AND SECTION
M-90-101	FLOW METER VAULT - PLANS, SECTION AND DETAILS
M-95-101	CHEMICAL VALVE VAULT - PLAN, SECTION AND DETAILS

HVAC

H-00-001	LEGEND, ABBREVIATIONS AND SYMBOLS
H-20-101	ELECTRICAL BUILDING - OPERATING FLOOR PLAN
H-30-101	MEMBRANE/ADMIN BUILDING - FIRST FLOOR DUCTWORK PLAN
H-30-102	CODED NOTES
H-30-501	MEMBRANE/ADMIN BUILDING - DETAILS
H-30-502	MEMBRANE/ADMIN BUILDING - DETAILS
H-30-503	MEMBRANE/ADMIN BUILDING - DIAGRAMS
H-30-601	MEMBRANE/ADMIN BUILDING - SCHEDULES
H-30-602	MEMBRANE/ADMIN BUILDING - SCHEDULES

PLUMBING

P-00-001	LEGEND, DETAILS AND SCHEDULES
P-30-101	ADMIN BUILDING - OPERATING FLOOR DRAINAGE AND VENT PIPING PLAN
P-30-102	MEMBRANE BUILDING - OPERATING FLOOR DRAINAGE AND VENT PIPING PLAN
P-30-103	MEMBRANE/ADMIN BUILDING - OPERATING FLOOR POTABLE PIPING PLAN
P-30-104	MEMBRANE BUILDING - TRENCH FLOOR DRAINAGE PLAN

INSTRUMENTATION

I-00-001	P&ID - LEGEND AND ABBREVIATIONS - SHEET 1 OF 3
I-00-002	P&ID - LEGEND AND ABBREVIATIONS - SHEET 2 OF 3
I-00-003	P&ID - LEGEND AND ABBREVIATIONS - SHEET 3 OF 3
I-00-004	P&ID - CONTROL BLOCK DIAGRAM
I-00-005	P&ID - RAW WATER STORAGE TANK
I-00-006	P&ID - SODIUM HYPOCHLORITE SYSTEM STORAGE TANKS
I-00-007	P&ID - SODIUM HYPOCHLORITE SYSTEM PRE-CLEARWELL FEED
I-00-008	P&ID - SODIUM HYPOCHLORITE SYSTEM POST-CLEARWELL FEED
I-00-009	P&ID - FINISHED WATER CLEARWELL
I-00-010	P&ID - HIGH SERVICE PUMP STATION
I-00-011	P&ID - GAC CONTACTOR
I-00-012	P&ID - FIRST STAGE MEMBRANE BACKWASH TREATMENT SYSTEM
I-00-013	INSTRUMENT INSTALLATION DETAILS - SHEET 1 OF 3
I-00-014	INSTRUMENT INSTALLATION DETAILS - SHEET 2 OF 3
I-00-015	INSTRUMENT INSTALLATION DETAILS - SHEET 3 OF 3
I-01-004	P&ID - RAW WATER PUMP STATION - CONTROL BLOCK DIAGRAM
I-01-005	P&ID - RAW WATER PUMP STATION - PUMP STATION
I-01-006	P&ID - RAW WATER PUMP STATION - INSTALLATION DETAILS
501320-AP-01	PIPING AND INSTRUMENT DIAGRAM - FIRST STAGE FEED FLEX RACK 96-112, 480/3/60
501320-AP-01	PIPING AND INSTRUMENT DIAGRAM - PRE-TREATMENT
501320-AP-02	PIPING AND INSTRUMENT DIAGRAM - BLOWERS
501320-AP-03	PIPING AND INSTRUMENT DIAGRAM - VALVE RACK, FLEX RACK
501320-AP-04	PIPING AND INSTRUMENT DIAGRAM - MEMBRANE, 48M-128M, FLEX RACK
501320-AP-07	PIPING AND INSTRUMENT DIAGRAM - ANCILLARY BACK PULSE FLEX RACK 96-112, 480/3/60
501320-AP-07	PIPING AND INSTRUMENT DIAGRAM - TANK, BACK PULSE, Z-PAK/FLEX RACK
501320-AP-10	PIPING AND INSTRUMENT DIAGRAM - ANCILLARY CIP
501320-AP-10	PIPING AND INSTRUMENT DIAGRAM - TANK, CIP, Z-PAK/FLEX RACK
501320-AP-10	PIPING AND INSTRUMENT DIAGRAM - CIP ANALYZER PANEL
501320-AP-11	PIPING AND INSTRUMENT DIAGRAM - SODIUM HYPOCHLROITE
501320-AP-11	PIPING AND INSTRUMENT DIAGRAM - CITRIC ACID
501320-AP-11	PIPING AND INSTRUMENT DIAGRAM - HYDROCHLORIC ACID
501320-AP-11	PIPING AND INSTRUMENT DIAGRAM - SODIUM HYDROXIDE
501320-AP-11	PIPING AND INSTRUMENT DIAGRAM - SODIUM BISULFITE
501320-AP-12	PIPING AND INSTRUMENT DIAGRAM - COMPRESSED AIR SYSTEM
501320-AP-21	PIPING AND INSTRUMENT DIAGRAM - PERMEATE STORAGE TANK

ELECTRICAL

E-00-001	LEGEND AND ABBREVIATIONS
E-20-101	INTAKE STRUCTURE - SITE PLAN
E-20-401	RAW WATER PUMP STATION - ELECTRICAL BUILDING POWER PLAN
E-20-402	RAW WATER PUMP STATION - ELECTRICAL BUILDING LIGHTING PLAN
E-20-403	RAW WATER INTAKE PUMP STATION VAULT - POWER PLAN
E-20-501	RAW WATER PUMP STATION - LIGHTING FIXTURE & PANELBOARD SCHEDULES AND DETAILS
E-20-701	MAIN SWITCHBOARD & PLC ONE-LINE DIAGRAMS
E-30-101	MEMBRANE/ADMIN BUILDING - SITE PLAN
E-30-102	MEMBRANE/ADMIN BUILDING - SITE LIGHTING PLAN
E-30-401	MEMBRANE/ADMIN BUILDING - LIGHTING PLAN
E-30-402	MEMBRANE/ADMIN BUILDING - CONVENIENCE POWER AND SYSTEMS PLAN
E-30-403	MEMBRANE/ADMIN BUILDING - LIGHTING FIXTURE SCHEDULE
E-30-404	MEMBRANE/ADMIN BUILDING - PARTIAL POWER PLAN
E-30-405	MEMBRANE/ADMIN BUILDING - PARTIAL POWER PLAN
E-30-406	MEMBRANE/ADMIN BUILDING - PARTIAL POWER PLAN
E-30-407	MEMBRANE/ADMIN BUILDING - UNDER SLAB CONDUIT ROUTING POWER PLAN
E-30-501	MEMBRANE/ADMIN BUILDING - DETAILS
E-30-502	MEMBRANE/ADMIN BUILDING - POWER AND LIGHTING PANEL SCHEDULES
E-30-701	MEMBRANE/ADMIN BUILDING - MCC-1 ONE-LINE DIAGRAM
E-30-702	MEMBRANE/ADMIN BUILDING - MCC-1 ONE-LINE DIAGRAM
E-30-703	MEMBRANE/ADMIN BUILDING - PLC-1 ONE-LINE DIAGRAM
E-30-704	MEMBRANE/ADMIN BUILDING - MISCELLANEOUS ONE-LINE DIAGRAM
E-30-705	MEMBRANE/ADMIN BUILDING - MISCELLANEOUS ONE-LINE DIAGRAM
E-30-706	MEMBRANE/ADMIN BUILDING - PLC-2 ONE-LINE DIAGRAM
E-60-101	GAC CONTACTOR AND PUMP AREA - POWER PLAN
E-80-101	FINISHED WATER STORAGE TANK - POWER PLAN
E-85-101	RAW WATER STORAGE TANK - POWER PLAN
E-90-101	FLOW METER VAULTS - POWER PLANS

ISSUED FOR CONSTRUCTION

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NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
0	MAK	MBS	PJD	01/18/16	ISSUED FOR CONSTRUCTION

50.3810 - General and Demo Drawings
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Building a world of difference.
Black & Veatch Corporation
Virginia Beach, VA

BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
RAW WATER PUMPING STATION / INTAKE

GENERAL
SHEET LIST

DESIGNED:	MBS
DETAILED:	MAK
CHECKED:	MBS
APPROVED:	PJD
DATE:	01/18/16

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182262

G-00-002
SHEET
OF

GENERAL LEGEND

- SURFACED STREET, ROAD OR DRIVE
- SURFACED STREET, ROAD OR DRIVE WITH CURBS
- NON-SURFACED STREET, ROAD OR DRIVE
- CONCRETE WALK
- CB — CATCH BASIN
- MANHOLE
- DRAINAGE COURSE OR FLOW LINE
- 326 — EXISTING GROUND CONTOUR
- 326 — FINISH GRADE CONTOUR
- BANK OR SLOPE LINES
- #3 OR T.H.#3 / B3 — TEST HOLE AND NUMBER
- SURVEY LINE WITH PI, PT, OR POT
- CONCRETE ENCASEMENT-PLAN
- CONCRETE REACTION BLOCKING AT BEND, PLUG OR TEE
- DRAINS OR CULVERTS
- TUNNEL CASING - PLAN
- SMALLER THAN 24" / 24" AND LARGER — EXISTING
- GENERAL LAYOUT YARD PIPING
- SMALLER THAN 24" / 24" AND LARGER — NEW
- NEW WATER LINE OR SEWER IN PROFILE
- NON-CONNECTING PIPING
- CE/L — CONSTRUCTION EASEMENT LINE
- E/L — EASEMENT LINE
- R/W — RIGHT-OF-WAY LINE
- PL — PROPERTY LINE
- PE/L — PERMANENT EASEMENT LINE
- TE/L — TEMPORARY EASEMENT LINE
- UE/L — UTILITY EASEMENT LINE
- S/L — SURVEY LINE / SECTION LINE
- W — WATER LINE
- G — GAS LINE
- T — TELEPHONE (UNDERGROUND)
- E — ELECTRICAL (UNDERGROUND)
- P — T — POWER OR TELEPHONE LINES (OVERHEAD)
- (G) / (W) — WATER OR GAS VALVE
- (WM) / (GM) — WATER OR GAS METER
- TELEPHONE OR POWER POLE WITH GUY ANCHOR
- FIRE HYDRANT
- YARD HYDRANT
- STREET LIGHT POLE
- TRAFFIC SIGNAL
- TRAFFIC SIGN
- STOPSIGN
- HEDGE, BRUSH, SHRUBS, WOODS
- 10" — DECIDUOUS TREE AND TRUNK DIAMETER
- 4" — CONIFEROUS TREE AND TRUNK DIAMETER
- SWAMP

- BUILDINGS, STRUCTURES
- STRUCTURES UNDERGROUND
- FUTURE BUILDINGS, STRUCTURES
- CLOTHES LINE
- SWING SET
- FENCE
- FENCE, WOOD
- RAILROAD, EACH TRACK
- CENTERLINE
- 1 / AC45 — SECTION NUMBER OR DETAIL LETTER; DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS; OR WHERE SECTION IS CUT OR DETAIL IS NOTED
- DOOR, WINDOW AND LOUVER SCHEDULE REFERENCE
- 1 / A045 — WALL ELEVATION
- D / 4 — ABBREVIATION; SCHEDULE NUMBER
- F102 — ROOM NUMBER; AREA DESIGNATION
- PV / 10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- PV-10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- EQUIP / CALLOUT — EQUIPMENT REPRESENTATION WITH CALLOUT
- EXISTING FACILITY TO BE DEMOLISHED OR REMOVED

PIPING SYSTEMS

NEW PIPING	CDWR	CONDENSER WATER RETURN	HWR — HEATING SYSTEM WATER RETURN
UNDERGROUND PIPING	CDWS	CONDENSER WATER SUPPLY	HWS — HEATING SYSTEM WATER SUPPLY
EXISTING PIPING	Co2(G)	CARBON DIOXIDE GAS	HW — WATER, POTABLE HOT
FUTURE PIPING	Co2(S)	CARBON DIOXIDE SOLUTION	HWC — HOT WATER CIRCULATING
AIR (COMPRESSED)	CW	WATER, COLD	IA — INSTRUMENT AIR
ALUMINUM SULFATE - (ALUM)	DW	DISTILLED WATER	PERM — POTASSIUM PERMANGANATE
ARGON	FeCl	FERRIC CHLORIDE	LIME — LIME
CHEMICAL RESISTANT ACID WASTE	FeS	FERRIC SULFATE	PG — LP GAS (PROPANE)
CHEMICAL RESISTANT ACID WASTE VENT	F	FIRE PROTECTION WATER SYSTEM	N — NITROGEN
TEMPERED OR BLENDED WATER	FL	FLUORIDE	SA — SODA ASH
CARBON SLURRY	FOR	FUEL OIL RETURN	NaOH — SODIUM HYDROXIDE
ACETYLENE	FOS	FUEL OIL SUPPLY	SP — SODIUM HEXAMETAPHOSPHATE (PHOSPHATE)
CHILLED WATER RETURN	FOV	FUEL OIL VENT	NaOCL — SODIUM HYPOCHLORITE
CHILLED WATER SUPPLY	G	GAS, NATURAL	AMM(G) — AMMONIA GAS
CHLORINE GAS	H	HYDROGEN	AMM(S) — AMMONIA SOLUTION
CHLORINE LIQUID	HE	HELIUM	NO — NITROUS OXIDE
CHLORINE SOLUTION	HP	HYDROGEN PEROXIDE	NPW — WATER, NON-POTABLE
	PA	PHOSPHORIC ACID	NPHW — WATER, NON-POTABLE HOT
			OX — OXYGEN
			OZ — OZONE
			OF — OVERFLOW
			POLY — POLYMER SOLUTION
			RF — REFRIGERANT
			ST — STORM DRAIN
			SG — SLUDGE GAS
			SI — SILICA
			PD — SUMP PUMP DISCHARGE
			SAN — SANITARY SEWER
			V — VENT
			VAC — VACUUM
			W — WATER

PIPING ACCESSORIES LEGEND

- BLIND FLANGE
- CAP OR PLUG
- CO — CLEANOUT
- CROSS
- DIAPHRAGM SEAL
- ELBOW
- ELBOW DOWN
- ELBOW TURNING UP
- SIZE — HOSE CONNECTION
- Q — QUICK COUPLING
- REDUCER
- RUPTURE DISK
- TEE
- TEE LINE DOWN
- TEE LINE UP
- WYE
- S — WYE STRAINER
- S — WYE STRAINER WITH BLOWOFF
- DRAIN OR BELL-UP

- CALIBRATING COLUMN
- TRAP
- UNION
- WALL SLEEVE
- AT — AUTOMATIC DRAIN TRAP
- DT — DRIP TRAP
- S / S — DUPLEX STRAINER
- EXPANSION COMPENSATOR
- F — INLINE FILTER
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE CONNECTOR
- HOSE REEL
- INJECTOR, EDUCTOR, BLENDER
- ORIFICE PLATE
- PIPE GUIDE
- S — SEDIMENT TRAP
- S — STRAINER
- FM — SUCTION DIFFUSER
- PIPE DIFFUSER

- SURGE CHAMBER
- VENT - SCREENED
- VENT
- P — PRESSURE GAUGE W/SNUBBER
- T — SIGHT FLOW INDICATOR
- T — TEMPERATURE INDICATOR
- THERMOMETER
- ELECTROMAGNETIC/ULTRASONIC FLOWMETER
- PITOT TUBE
- ROTAMETER
- TURBINE OR PROPELLOR FLOWMETER
- M — SET STOP METER
- VENTURI
- FM — FLOW METER

MISCELLANEOUS EQUIPMENT

- STATIC MIXER
- VERTICAL MIXER
- SIGHT GLASS
- 6 — CENTRIFUGE
- CHANNEL DIFFUSER
- COMPRESSOR OR BLOWER
- PIPE ANCHOR
- PUMP
- SLUICE GATE
- SLIDE GATE
- STOP PLATE
- BAR SCREEN
- EXPANSION TANK
- SCREW (LIFT) PUMP
- FLUME
- WEIR

MATERIALS LEGEND

- EARTH OR GRADE
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- ROCK
- NEW CONCRETE
- EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE
- BRICK, FACE
- BRICK, COMMON
- CONCRETE MASONRY UNITS (CMU)
- CUT STONE OR SAND FILL, GROUT, MORTAR, AND PLASTER
- WOOD, SHEATHING, PANELING, DECKING, ETC.
- WOOD, STUDS, BEAMS, JOISTS, ETC.
- RIPRAP
- CHECKERED PLATE
- STEEL (FOR 1"SCALE & LARGER)
- STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER)
- BAR GRATING (LINES IN DIRECTION OF SPAN)
- ALUMINUM
- INSULATION (BATT)
- INSULATION (RIGID)

VALVE LEGEND

- PINCH VALVE
- PLUG VALVE, ECCENTRIC
- PLUG VALVE, NON-ECCENTRIC
- BUTTERFLY VALVE
- GATE VALVE
- BALL VALVE
- GLOBE VALVE
- CHECK VALVE
- 3 WAY VALVE
- 4 WAY VALVE

- ANGLE VALVE
- CHLORINE INSTITUTE VALVE
- DIAPHRAGM VALVE
- THROTTLING VALVE
- FLAME ARRESTER OR CHECK
- BACKWATER VALVE
- INLINE PRESSURE RELIEF VALVE
- PRESSURE REGULATING VALVE
- PRESSURE SUSTAINING OR MAINTAINING VALVE
- VACUUM BREAKER

- THERMAL SHUTOFF VALVE
- EXPLOSION RELIEF VALVE
- HOSE FAUCET
- HOSE FAUCET W/VACUUM BREAKER
- HOSE VALVE W/HOSE NIPPLE
- BACKFLOW PREVENTER
- SAFETY RELIEF VALVE
- V — VACUUM RELIEF CHECK VALVE
- PRESSURE VACUUM RELIEF VALVE

ACTUATOR LEGEND

- E — ELECTRIC
- FLOAT
- DIAPHRAGM
- P/O — AIR/OIL TANDEM
- S — SOLENOID
- A — AIR

NOTE :
SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY)

ISSUED FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
0	MAK	MBS	PJD	01/18/16	ISSUED FOR CONSTRUCTION

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BLACK & VEATCH
Building a world of difference.
Black & Veatch Corporation
Virginia Beach, VA

BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
RAW WATER PUMPING STATION / INTAKE

GENERAL LEGEND

DESIGNED:	MBS
DETAILED:	MAK
CHECKED:	MBS
APPROVED:	PJD
DATE:	01/18/16

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182262

G-00-003
SHEET
OF

FD7000_PW
D7000

GENERAL NOTES

1. HORIZONTAL CONTROL: COORDINATES ARE BASED ON (Designer insert the basis of the control datum.). COORDINATES ON STRUCTURES DEPICT THE EXTERIOR FACE OF THE CONCRETE SUBSTRUCTURE FOUNDATION WALL OR FOOTING WALL.

2. VERTICAL CONTROL: ELEVATIONS ARE BASED ON (Designer insert the basis of the control datum.). BENCHMARKS AND/OR STRUCTURE ELEVATIONS FROM EXISTING SURVEYS OR REFERENCE DRAWINGS MAY RESULT IN VARIANCES WITH ELEVATIONS INDICATED ON THE DRAWINGS FOR EXISTING FACILITIES. (Designer should indicate here the example of any known differences between datum basis. include individual benchmark reference information in the project specific notes or at the appropriate location on the drawings.)

3. THE PROJECTED 100 YEAR FLOOD ELEVATION IS (Designer insert data) AND THE PROJECTED 500 YEAR FLOOD ELEVATION IS (Designer to insert data).

4. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR WADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES AND FACILITIES MAY BE INDICATED. OVERHEAD UTILITIES ARE NOT INDICATED IN ARCHITECTURAL ELEVATIONS, PROFILE OR SECTION DRAWINGS. THE ENGINEERING INVESTIGATIONS, LOCATION, AND DESIGNATION OF SUBSURFACE UTILITIES INDICATED IN THESE CONTRACT DOCUMENTS HAS BEEN PERFORMED TO QUALITY LEVEL C IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES AS OUTLINED IN ASCE STANDARD AND GUIDELINE BULLETIN C|ASCE 38-02 UNLESS OTHERWISE DESIGNATED. WHERE SUCH ACTIVITIES HAVE BEEN TO A HIGHER LEVEL OF QUALITY, THE HIGHER QUALITY LEVEL FOR THE AFFECTED AREAS IS INDICATED IN THE CONTRACT DOCUMENTS.

5. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIALS AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.

6. CONTRACTOR'S STAGING, PARKING AND MATERIAL STORAGE SHALL BE LIMITED TO THE SPACE(S) DESIGNATED ON THE DRAWINGS. PROVIDING ADDITIONAL STORAGE OR PARKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

7. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY PRECISE LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STRUCTURES, WHETHER INDICATED ON THE DRAWINGS OR NOT, IN THE FIELD IN ADVANCE OF EXCAVATING, BY CONTACTING ALL UTILITIES AND OTHER AGENCIES, AND BY PROSPECTING. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, DEMOLITION, RECONSTRUCTION, AND RECONNECTION OF EXISTING FACILITIES AS REQUIRED TO COMPLETE THE WORK. IF REQUIRED AFTER FIELD VERIFICATION, CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE ANY NECESSARY MODIFICATIONS TO PROPOSED NEW WORK.

8. BEFORE CONSTRUCTION IS STARTED, CONTRACTOR SHALL COORDINATE WITH THE OWNER OF EACH UTILITY AND DEFINE THE REQUIREMENTS AND METHODS TO ACCOMMODATE THE PROTECTION, TEMPORARY SUPPORT, ADJUSTMENT, OR RELOCATION OF ANY UTILITIES AFFECTED BY THE PROPOSED NEW WORK.

9. CONTRACTOR SHALL COMPLY WITH THE GOVERNING AGENCY NPDES CONSTRUCTION REQUIREMENTS, AND SHALL PROVIDE APPROPRIATE MITIGATION MEASURES OR PROTECTION AND RESTORATION AT ALL LOCATIONS AS REQUIRED BY THEIR OPERATIONS, AND AS DIRECTED BY ENGINEER. SPECIAL CONSTRUCTION REQUIREMENTS, TEMPORARY PROTECTIVE FENCING OR BARRICADES, SHEETING, SHORING, EROSION PROTECTION, AND SURFACE RESTORATION AT CERTAIN LOCATIONS ARE INDICATED ON THE DRAWINGS TO BRING CONTRACTOR'S ATTENTION TO SENSITIVE AREAS.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL PROPERTY CORNER MARKERS. PROPERTY CORNER MARKERS DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REESTABLISHED BY A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF VIRGINA.

11. THE LOCATION OF TEST HOLES INDICATED ON THE DRAWINGS IS APPROXIMATE. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR ACTUAL TEST HOLE LOCATIONS AND THE FINDINGS OF THE GEOTECHNICAL INVESTIGATIONS.

12. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING TREES, SHRUBS, AND PLANTS UNLESS OTHERWISE NOTED.

13. CONTRACTOR SHALL INSTALL ALL PIPELINES, PAVING, WALKWAYS, AND CURB AND GUTTER AT A UNIFORM GRADE BETWEEN ELEVATIONS DEPICTED ON THE DRAWINGS.

14. FOR ALL SITE GRADING, SMOOTH PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE. PARABOLIC ROUNDING SHALL APPLY TO ALL CUT AND FILL SECTIONS.

15. FINISHED GRADE ELEVATION AT THE BUILDING FACE, WHERE NOT ADJACENT TO PAVEMENT, SHALL BE APPROXIMATELY 6 INCHES BELOW FINISHED FLOOR ELEVATION UNLESS OTHERWISE NOTED. FINISHED GRADE ELEVATION ADJACENT TO BASINS SHALL BE APPROXIMATE AS INDICATED BY CONTOURS, OR AS REQUIRED TO MEET STAIR LANDINGS.

16. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.

17. RESTRAINED JOINTS SHALL BE PROVIDED FOR BURIED PIPING AS INDICATED ON THE DRAWINGS AND/OR AS SCHEDULED IN THE SPECIFICATIONS.

18. THE DRAWINGS INDICATE TYPES OF PIPE SUPPORT SYSTEMS AT VARIOUS LOCATIONS. HOWEVER, All PIPE SUPPORTS, HANGERS, BRACKETS, INSERTS OR BRACES ARE NOT SHOWN. CONTRACTOR SHALL REFER TO THE SPECIFICATIONS AND PROVIDE A COMPLETE SUPPORT SYSTEM AS REQUIRED.

19. THE TERM "PROPOSED" AS INDICATED ON THE DRAWINGS MEANS THE ITEM IS DESIGNED OR PLANNED TO BE PROVIDED BY OWNER OR OTHERS SEPARATE FROM THIS CONTRACT. THE TERM "FUTURE" AS INDICATED ON THE DRAWINGS REFERS TO THE ENGINEER'S INTERPRETATION OF THE ITEM FOR THE FUTURE, BASED ON AVAILABLE INFORMATION.

20. THE EXISTING PROCESS FACILITIES SHALL REMAIN IN OPERATION CONTINUOUSLY THROUGHOUT THE CONSTRUCTION ACTIVITIES. INDIVIDUAL PROCESS FACILITIES CAN BE TAKEN OUT OF SERVICE FOR LIMITED PERIODS OF TIME TO FACILITATE CONSTRUCTION AS SPECIFIED IN THE CONTRACT DOCUMENTS.

21. STRUCTURES SUCH AS CURBS AND GUTTERS, CONCRETE AND ASPHALT DRIVES AND WALKWAYS, PAVING BRICKS, FENCING, RETAINING WALLS, ETC., CROSSED BY THE PIPELINE ARE NOT ALL INDICATED IN PROFILE. CONTRACTOR SHALL RESTORE ANY EXISTING STRUCTURES THAT ARE DISTURBED, DAMAGED OR REMOVED BY CONSTRUCTION.

22. CONTRACTOR SHALL REPLACE EXISTING PIPE CULVERTS THAT ARE REMOVED TO INSTALL THE NEW PIPELINE WITH NEW PIPE CULVERTS OF THE SAME SIZE, MATERIAL AND CONSTRUCTION AT THE SAME LOCATION AND INVERT ELEVATION AS THOSE THAT WERE REMOVED, AND SHAPE THE DITCH TO DRAIN WITH THE REPLACED CULVERT. CONTRACTOR SHALL PROVIDE ANY TEMPORARY CULVERTS THAT MAY BE REQUIRED FOR CONTRACTOR'S OPERATIONS. CONTRACTOR SHALL COORDINATE REMOVAL AND REPLACEMENT OF ANY CULVERTS WITHIN PUBLIC RIGHT-OF-WAY WITH THE REGULATING AGENCY.

23. HORIZONTAL STATIONING ALONG ANY PIPELINE ALIGNMENT IS FOR LEVEL LINE MEASUREMENT AND FOR PAYMENT OF THE PIPELINES. CONTRACTOR SHALL PROVIDE THE ACTUAL PIPE LENGTH TO BE DETERMINED BY THE SLOPE OR CURVE ON WHICH THE PIPE IS INSTALLED.

24. UNLESS OTHERWISE SPECIFIED, INDICATED ON THE DRAWINGS, OR DIRECTED BY THE ENGINEER, INSTALL ALL PIPELINES SLOPING DOWNWARD FROM AN AIR VALVE MINIMUM '-' COVER AT MANHOLE OR AT MANUAL ARV TO A BLOWOFF, AND PROVIDE THE SPECIFIED MINIMUM PIPE COVER. MINIMUM PIPE COVER SHALL BE FROM THE EXISTING, PROPOSED, OR FUTURE GROUND SURFACE OR ROAD PROFILE, WHICHEVER GROUND SURFACE OR ROAD PROFILE IS APPLICABLE AS INDICATED ON THE DRAWINGS. IF THE PROPOSED GROUND SURFACE IS ABOVE THE EXISTING GROUND SURFACE INDICATED ON THE DRAWINGS AND IS NOT THE ACTUAL GROUND SURFACE AT THE TIME OF PIPELINE INSTALLATION, INSTALL THE PIPELINE TO PROVIDE MINIMUM PIPE COVER FROM THE ACTUAL GROUND SURFACE IF ACCEPTABLE TO THE ENGINEER. HIGH POINTS IN THE PIPELINE WILL NOT BE PERMITTED EXCEPT AT LOCATIONS OF AIR VALVES AS INDICATED ON THE DRAWINGS. REVIEW THE PIPELINE PROFILE REQUIREMENTS WITH THE ENGINEER PRIOR TO PREPARING LAYING SCHEDULES AND PERFORMING FIELD STAKING.

25. CONTRACTOR SHALL FIELD VERIFY PRECISE LOCATION, ELEVATION, AND ARRANGEMENT OF CONNECTIONS OF NEW PIPELINES WITH EXISTING PIPELINES BASED ON FIELD CONDITIONS, INCLUDING EXPOSING EXISTING PIPING PRIOR TO FABRICATING NEW PIPING. CONTRACTOR SHALL PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVE CLOSURES, AND HARNESSED MECHANICAL COUPLING; ROTATE FITTINGS; DEFLECT JOINTS; AND MODIFY EXISTING PIPING AS APPLICABLE AND AS REQUIRED TO MAKE CONNECTIONS, INCLUDING ADJUSTMENTS FOR ANY OFFSETS IN CENTERLINE ELEVATIONS BETWEEN PIPELINES. CONTRACTOR SHALL PROVIDE TEMPORARY PLUG WITH FACTORY OUTLET SIZED AS REQUIRED FOR CONTRACTOR'S TESTING AND DISINFECTION WORK BEFORE MAKING CONNECTION, WHEN APPLICABLE. CONTRACTOR SHALL COORDINATE MAKING EACH CONNECTION WITH THE OWNER.

ISSUED FOR CONSTRUCTION

NO.	BY	CK	APP
0	MAK	MBS	PJD

01/18/16 ISSUED FOR CONSTRUCTION

DATE REVISIONS AND RECORD OF ISSUE

50.3010 - General and Demo Drawings

G-00-004.dwg

SAVED: KOE49353, 7/29/2015 10:24:50 AM

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BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
RAW WATER PUMPING STATION / INTAKE

GENERAL
GENERAL NOTES

DESIGNED:	MBS
DETAILED:	MAK
CHECKED:	MBS
APPROVED:	PJD
DATE:	01/18/16

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182262

G-00-004
SHEET
OF

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D7000

A	ACID, AMBER INDICATING LIGHT,AMP
AB	ANCHOR BOLT
ABS	ACID BATH SINK
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONER, (ING)
ACP	ASBESTOS CEMENT PIPE
ACST	ACOUSTIC, (AL
AD	ACCESS DOOR, AREA DRAIN, AIR DAMPER, ANODE
ADD	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
ADMIN	ADMINISTRATION
AF	AIR FLOW
AFF	ABOVE FINISH FLOOR
AH	AHEAD
AHU	AIR HANDLING UNIT
AL	ACTIVE LEAF
ALT	ALTERNATE, (IVE)
ALUM	ALUMINUM
AM	AMMETER
AMP	AMPERE
ANOD	ANODIZED
AP	ACCESS PANEL
APPR	APPROACH
APPROX	APPROXIMATE, (LY)
AR	ALARM RELAY
ARCH	ARCHITECTURAL
AS	AMMETER SWITCH
ASSY	ASSEMBLY
AUTO	AUTOMATIC
AUX	AUXILIARY
AVS	AUTOMATIC VALVE STATION
AWG	AMERICAN WIRE GAGE
B	BEAM
B TO B	BACK TO BACK
BA	BEARING AREA
BAL	BALANCE
BAT	BATTERY
BC	BEGIN CURVE
BD	BOARD
BEJ	BRICK EXPANSION JOINT
BF	BLIND FLANGE
BHP	BRAKE HORSEPOWER
BITUM	BITUMINOUS
BKR	BREAKER
BLDG	BUILDING
BLK	BLOCK
BM	BENCHMARK
BOF	BOTTOM OF FOOTING
BOT	BOTTOM
BP	BACK PRESSURE
BPMK NO	BASEPLATE MARK NUMBER
BRG	BEARING
BRK	BRICK
BS	BOTH SIDES
B&S	BELL AND SPIGOT
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT-HOUR
BU	BELL-UP
BUR	BUILT UP ROOFING
BVC	BEGIN VERTICAL CURVE
C	COUNTER
C TO C	CENTER TO CENTER
CB	CATCH BASIN
CD	CEILING DIFFUSER
C/EJ	CONTRACTION/EXPANSION JOINT
CFM	CUBIC FEET PER MINUTE
C&G	CURB AND GUTTER
CHKD	CHECKERED
CI	CAST IRON
CIMH	CAST IRON MANHOLE
CIMHS	CAST IRON MANHOLE STEPS
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CJT	CONTROL JOINT
CKT	CIRCUIT
CL	CLASS
C/L	CENTERLINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR, (ANCE)
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT, COMPANY
COD	CHEMICAL OXYGEN DEMAND
COL	COLUMN
COMB	COMBINATION
COMB SWR	COMBINED SEWER
COMP	COMPRESSOR, (ED)
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION, CONTROL
CONTR	CONTRACTOR
COR	CORNER
CORR	CORRIDOR, CORRUGATED
CP	CONTROL PANEL
CPLG	COUPLING
CPT	CONTROL POWER TRANSFORMER
CRS	COURSES, (ING)
CS	CONTROL SWITCH, CONTROL STATION, CUP SINK
CSK	COUNTERSUNK, (INK)
CT	CERAMIC TILE, CYCLE TIMER
CT	CURRENT TRANSFORMER
CTR(S)	CENTER(S)
CU	CUBIC
CU YD	CUBIC YARD
CW	COLD WATER

D	DOOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DH	DOOR HEIGHT
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DISP	DISPENSER
DIST	DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DM	DAMPER MOTOR
DMJ	DOUBLE MECHANICAL JOINT
DN	DOWN
DO	DOOR OPENING, DISSOLVED OXYGEN
DPDT	DOUBLE POLE DOUBLE THROW
DR	DRAIN
DS	DOWNSPOUT
DT	DISTRIBUTION TRANSFORMER
DV	DRAIN VALVE
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
E	EAST, ELECTRICAL
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	END CURVE
ECC	ECCENTRIC
ECC RED	ECCENTRIC REDUCER
EEW	EMERGENCY EYEWASH
EF	EACH FACE
EFF	EFFLUENT
EJ	EXPANSION JOINT
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRIC, (AL)
ELEV	ELEVATOR
EMER	EMERGENCY
ENC	ENCASEMENT
ENCL	ENCLOSURE
ENT	ENTRANCE
EOL	END OF LINE
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EW	EMERGENCY EYEWASH
EWEF	EACH WAY EACH FACE
EXCH	EXCHANGER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION, EXPOSED
EXP JT	EXPANSION JOINT
EXT	EXTENSION, EXTERIOR, EXTERNAL
F	FAN
F TO F	FACE TO FACE
FB	FACE BRICK
FC	FLEXIBLE CONNECTION, FLOW CONTROL
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDN	FOUNDATION
FDPR	FIRE DAMPER
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FH	FLAT HEAD, FIRE HYDRANT
FHMS	FLAT HEAD MACHINE SCREW
FIG	FIGURE
FIN	FINISH
FIN GR	FINISH GRADE
FL	FLOOR, FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE, FLASHING
FM	FORCE MAIN
FO	FUEL OIL
FOB	FLAT ON BOTTOM
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOT	FLAT ON TOP
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FAR SIDE, FLOOR SLEEVE, FLOAT SWITCH
FT	FOOT
FTG	FOOTING
FURN	FURNISH, FURNISHED
FV	FLAP VALVE
FWD	FORWARD
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC/MS	GAS CHROMATOGRAPH/MASS SPECTROMETER
GEN	GENERAL, GENERATOR
GM	GAS METER
GPM	GALLONS PER MINUTE
GR	GRADE
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
H	HIGH, HOUR, HYDROGEN
HB	HOSE BIBB
HC	HOLLOW CORE
HDR	HEADER
HE	HEAT EXCHANGER
HEX	HEXAGONAL
HF	HOSE FAUCET
HGT	HEIGHT
HH	HANDHOLE
HLS	HIGH LEVEL SWITCH
HMC	HARNESSED MECHANICAL COUPLING
HMD	HOLLOW METAL DOOR
HMJ	HARNESSED MECHANICAL JOINT
HORIZ	HORIZONTAL
HP	HIGH POINT, HORSEPOWER
HR	HOUR, HANDRAIL
HS	HIGH STRENGTH
HV	HOSE VALVE
HVAC	HEATING,VENTILATING AND AIR CONDITIONING
HW	HOT WATER
HWY	HIGHWAY
HYDRO	HYDROPNEUMATIC

I	INDICATOR
ID	INSIDE DIAMETER
IF	INSIDE FACE
I/I	CURRENT TO CURRENT BOOSTER
IN	INCHES
INC	INCORPORATED
INCL	INCLUDING
INCR	INCREASE
INST	INSTRUMENT, (ATION)
INSUL	INSULATE, (ED), (ING)
INT	INTERIOR, INTERNAL
INV	INVERT
IPS	IRON PIPE SIZE
JAN	JANITOR
JB	JUNCTION BOX
JF	JOINT FILLER
JT	JOINT
K	KIPS
KIT	KITCHEN
KO	KNOCK OUT
KS	KITCHEN SINK
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
L	LOUVER
LAB	LABORATORY
LAM	LAMINATE(D)
LAT	LEAVING AIR TEMPERATURE
LAT	LATERAL
LAV	LAVATORY
LB(S)	POUNDS
LG	LENGTH, LONG
LH	LEFT HAND
LIN	LINEAL, LINEAR
LL	LIVE LOAD
LO	LOUVER OPENING
LS	LEVEL SWITCH
LT	LEFT, LAB TABLE
MA	MILLIAMPERE
MACH	MACHINE
MAINT	MAINTENANCE
MAN	MANUAL
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MECHANICAL COUPLING
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MED	MEDIUM
MET	METAL
MEZ	MEZZANINE
MFM	MAGNETIC FLOWMETER
MFR(S)	MANUFACTURER(S)
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MJRG	MECHANICAL JOINT RETAINER GLAND
MJTR	MECHANICAL JOINT WITH TIE ROD
MO	MASONRY OPENING, MOTOR OPERATED
MP	METERING PUMP
MRD	METAL ROOF DECK
MS	MACHINE SCREW
MSL	MEAN SEA LEVEL
MTD	MOUNTED
MTL	MATERIAL
MTR	MOTOR
N	NORTH
N/A	NOT APPLICABLE
NBC	NAIL IN BOTTLE CAP
NC	NORMALLY CLOSED
NEUT	NEUTRAL
NF	NEAR FACE
N.O.	NORMALLY OPEN
NO.(S)	NUMBER(S)
NOM	NOMINAL
NORM	NORMAL
NPT	NATIONAL PIPE THREAD
NPW	NONPOTABLE WATER
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER, ODOR CONTROL
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE, OVERFLOW
OH	OVERHEAD
OL	OVERLOAD
OPER	OPERATING
OPNG	OPENING
OPP	OPPOSITE
OSL	OUTSTANDING LEG
OZ	OUNCE
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVATURE
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PCP	PIER CUTOFF POINT
PD	PLAN DIMENSION
PE	PLAIN END
PG	PRESSURE GAUGE
PH	PIPE HANGER, PENTHOUSE
PI	POINT OF INTERSECTION
PIVC	POINT OF INTERSECTION ON VERTICAL CURVE
PL	PLATE
PLYWD	PLYWOOD
PNL(S)	PANEL(S)
POLY	POLYMER
POT	POINT ON TANGENT
PP	POWER POLE
PR	PAIR
PROJ	PROJECTION
PRS	PRESSURE REDUCING STATION
PRV	POWER ROOF VENTILATOR
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT, POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE, POINT ON VERTICAL CURVE
PVCP	POLYVINYL CHLORIDE PIPE
PVMT	PAVEMENT
PW	POTABLE WATER

R	RADIUS, RISER
RAS	RETURN ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
RCCP	REINFORCED CONCRETE CYLINDER PIPE
RCHEP	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE
RD	ROOF DRAIN, ROAD
RDL	ROOF DRAIN LEADER
RECEP	RECEPTION
RECIRC	RECIRCULATING
RECP	RECEPTACLE
RED	REDUCER, REDUCING
REG	REGULATOR, REGULATING
REF	REFERENCE
REFR	REFRIGERATION, REFRIGERATOR
REINF	REINFORCING
REM	REMOVABLE
REQD	REQUIRED
RET	RETURN
REV	REVISION, REVISED, REVERSED
RFG	ROOFING
RG	RETAINER GLAND
RH	ROOF HOOD, RIGHT HAND, ROUND HEAD, RED HEAD
RHMS	ROUND HEAD MACHINE SCREW
RHWS	ROUND HEAD WOOD SCREW
RM	ROOM
RO	ROUGH OPENING
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RS	RAW SLUDGE, RAW SEWAGE, ROLLED STEEL
RT	RIGHT
R/W	RIGHT OF WAY
S	SOUTH, SPEAKER
SAN SWR	SANITARY SEWER
SCHED	SCHEDULE
SD	STORM DRAIN, SOAP DISH
SEC	SECOND
SECT	SECTION
SER SK	SERVICE SINK
SG	SLUICE GATE, SUPPLY GRILLE
SH	SHEET
SHR	SHOWER
SHD	SHOWER DOOR
SIM	SIMILAR
SKL	SKYLIGHT
SM	SHEET METAL
SP	SUMP PUMP
SPA	SPACING, SPACES
SPEC(S)	SPECIFICATION(S)
SPLY	SUPPLY
SQ	SQUARE
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
SS	SANITARY SEWER
SSK	SERVICE SINK
ST	SELF TAPPING
ST SWR	STORM SEWER
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL
SUP	SUPPLY
SUSP	SUSPENDED
SV	SHUTOFF VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SWS	SEAL WATER SOLENOID
SYM	SYMMETRICAL
SYS	SYSTEM
T	THERMOSTAT, TREAD, TOTALIZER
T	TRANSFORMER, TELEPHONE, TOP
TAN	TANGENT
TB	TERMINAL BOX
T&B	TOP AND BOTTOM
TBE	THREAD BOTH ENDS
TBM	TEMPORARY BENCHMARK
TC	TOWEL CABINET, TOP OF CURB
TC	TERMINAL CABINET
TEL	TELESCOPING
TEMP	TEMPERATURE, TEMPORARY
TERM	TERMINAL
T&G	TONGUE & GROOVE
TH	TEST HOLE
THK	THICK, THICKNESS
THR	THRESHOLD
TI	TOTALIZING INDICATOR, TEMPERATURE INDICATOR
TIR	TOTALIZING INDICATING RECORDER
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TP	TWISTED PAIR COUPLE, TOWEL PIN
TRANS	TRANSFORMER, TRANSMITTER, TRANSFER
TS	TEMPERATURE SWITCH
TV	TELEVISION
TYP	TYPICAL
UDM	ULTRASONIC DENSITY METER
UGND	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
USGS	UNITED STATES GEOLOGICAL SURVEY

V	VALVE, VOLT, VENT
VAC	VACUUM
VAT	VINYL ASBESTOS TILE
VBF	VALVE, AWWA BUTTERFLY
VBI	VALVE, INDUSTRIAL BUTTERFLY
VBL	VALVE, BALL
VBM	VALVE, BALL MISCELLANEOUS
VC	VERTICAL CURVE, VICTAULIC COUPLING
VCD	VERTICAL CONTROL DAMPER
VCK	VALVE, CHECK
VCN	VALVE, CONE
VCP	VITRIFIED CLAY PIPE
VG	VALVE, GATE
VGD	VALVE, DOUBLE DISC GATE
VGL	VALVE, GLOBE
VERT	VERTICAL
VF	VACUUM FILTER
VIB	VIBRATION
VKG	VALVE, KNIFE GATE
VM	VOLT METER
VNR	VENEER
VPC	VALVE, PRESSURE REGULATING
VPG	VALVE, PLUG
VPL	VALVE, ECCENTRIC PLUG
VPR	VALVE, PRESSURE REDUCING
VSP	VALVE, PRESSURE RELIEF
VSPV	VALVE, PRESSURE/VACUUM RELIEF
VSV	VALVE, VACUUM RELIEF
VV	VENT VALVE
VVB	VACUUM BREAKER
W	WEST, WIDE, WINDOW, WATT, WATER
W/	WITH
WAS	WASTE ACTIVATED SLUDGE
WB	WALLBOARD
WC	WATER CLOSET
WD	WOOD, WIDTH
WF	WALL FITTING
WH	WALL HYDRANT
WL	WATER LEVEL
WM	WATER METER, WATTMETER
WO	WINDOW OPENING
W/O	WITHOUT
WOM	WOMEN
WP	WATERPROOF, WORKING POINT
WR	WASTE RECEPTACLE
WS	WATERSTOP
WT	WEIGHT
WW	WETWELL
WWF	WELDED WIRE FABRIC
x	BY,TIMES
YH	YARD HYDRANT
&	AND
@	AT
<	DEFLECTION ANGLE
#	NUMBER
%	PER CENT

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0	MAK	MBS	PJD	01/18/16	ISSUED FOR CONSTRUCTION

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BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
RAW WATER PUMPING STATION / INTAKE

GENERAL
ABBREVIATIONS

DESIGNED: MBS
DETAILED: MAK
CHECKED: MBS
APPROVED: PJD
DATE: 01/18/16

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CODE INFORMATION

APPLICABLE CODES AND STANDARDS

2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (VUSBC)
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN, SEPTEMBER 15, 2010

USE GROUP AND OCCUPANCY CLASSIFICATION (SECTION 302)

B BUSINESS
F-2 UTILITY

CONSTRUCTION CLASSIFICATION (SECTION 602): IIB

SECTION 903: AN AUTOMATIC SPRINKLER SYSTEM IS NOT REQUIRED PER SECTION 903.

SECTION 906: PORTABLE FIRE EXTINGUISHERS ARE REQUIRED AS INDICATED.

SECTION 907 - FIRE ALARM AND DETECTION SYSTEM:
NO AUTOMATIC FIRE ALARM SYSTEM IS TO BE INSTALLED, PER 907.2.2 (GROUP B) AND 907.2.4 (GROUP F)

TABLE 503 - ALLOWABLE BUILDING HEIGHTS AND AREAS (IIB CONST.)

BUILDING AREA	NEW CONSTRUCTION	ALLOWABLE
# OF STORIES	1 STORY/25 FT	3 STORIES/55 FT
PROCESS AREA (F-2, FACTORY)	11,650 SF	69,000 SF
ADMIN AREA (B, BUSINESS)	7,975 SF	69,000 SF
TOTAL NET FLOOR AREA	19,625 SF	

SECTION 506 - BUILDING AREA MODIFICATIONS
NO AREA MODIFICATION NEEDED
NO HEIGHT MODIFICATION NEEDED

508.3: THE OCCUPANCIES ARE NON-SEPARATED

TABLE 1016.1: EXIT ACCESS TRAVEL DISTANCE — B 200 FT; F-2 300 FT
MAXIMUM CALCULATED TRAVEL DISTANCE 110'-9"

TABLE 1018.1: CORRIDOR FIRE-RESISTANCE RATING — B,F-2 — 1 HOUR IF OCCUPANT LOAD GREATER THAN 30

TABLE 1004.1.1: MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

BUSINESS	100 GSF
ACCESSORY STORAGE, MECHANICAL	300 GSF

1004.1.1 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT:

ADMIN (B) OCCUPANCY (100 GROSS)	80
PROCESS (F-2) OCCUPANCY (FAB/MANUF AREA)	39
TOTAL CALCULATED BUILDING OCCUPANCY	119

IPC - TABLE 403.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES:

		WATER CLOSETS	LAVATORIES	DRINK FOUNTAINS	SERVICE SINK
B	BUSINESS	1 PER 25 FIRST 50 1 PER 50 AFTER	1 PER 40 FIRST 80 1 PER 80 AFTER	1 PER 100	1 SERVICE SINK
F-2	FACTORY	1 PER 100	1 PER 100	1 PER 400	1 SERVICE SINK

TABLE 601: FIRE RESISTANCE RATING FOR BUILDING ELEMENTS

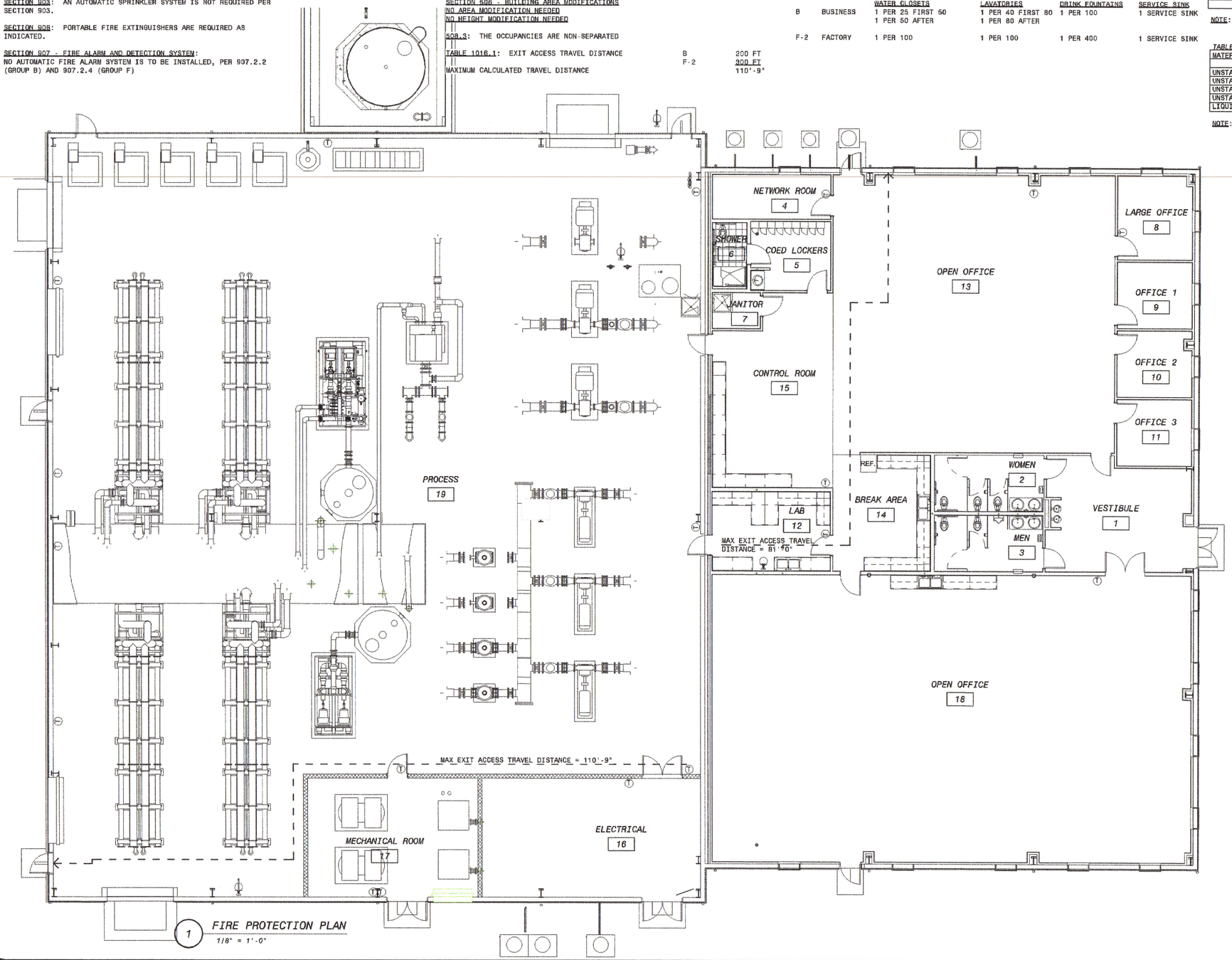
BUILDING ELEMENT		WALLS & STRUCTURE	OPENINGS
PRIMARY STRUCTURAL FRAME		0 HR (TABLE 601)	NR
BEARING WALLS	EXTERIOR	0 HR (TABLE 601)	NR
	INTERIOR	0 HR (TABLE 601)	NR
NONBEARING WALLS	EXTERIOR	0 HR (TABLE 602)	NR
	INTERIOR	0 HR (TABLE 601)	NR
FLOOR CONSTRUCTION		0 HR (TABLE 601)	NR
ROOF CONSTRUCTION		0 HR (TABLE 601)	NR

NOTE: NR = NO REQUIREMENT

TABLE 307.1 (1): MAXIMUM QUANTITY PER CONTROL AREA

MATERIAL	DESCRIPTION	CLASS	STORAGE LIQUID GALLONS
UNSTABLE (REACTIVE)	SODIUM HYPOCHLORITE (12%)	1	NL
UNSTABLE (REACTIVE)	SODIUM BISULFITE (38%)	1	NL
UNSTABLE (REACTIVE)	HYDROGEN CHLORIDE (33%)	1	NL
UNSTABLE (REACTIVE)	SODIUM HYDROXIDE	1	NL
LIQUID	CITRIC ACID (50%)	0	NL

NOTE: NL = NO LIMIT



1 FIRE PROTECTION PLAN
1/8" = 1'-0"

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THE LANE GROUP
124 DEPOT AVENUE
CHILLICOTHE, MO 64601
P: 660.646.2020 F: 660.646.2030

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COMMONWEALTH OF VIRGINIA
9.28.15
DOUGLAS C. COVINGTON, II
Lic. No. 012051
ARCHITECT

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Kansas City, Missouri

BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP & LAKES
TO FOREST WATER LINE EXTENSION
ARCHITECTURAL
MEMBRANE/ADMIN BUILDING
CODE INFORMATION

DESIGNED: DCC
DETAILED: ANH
CHECKED: DCC
APPROVED: Approver
DATE: Issue Date

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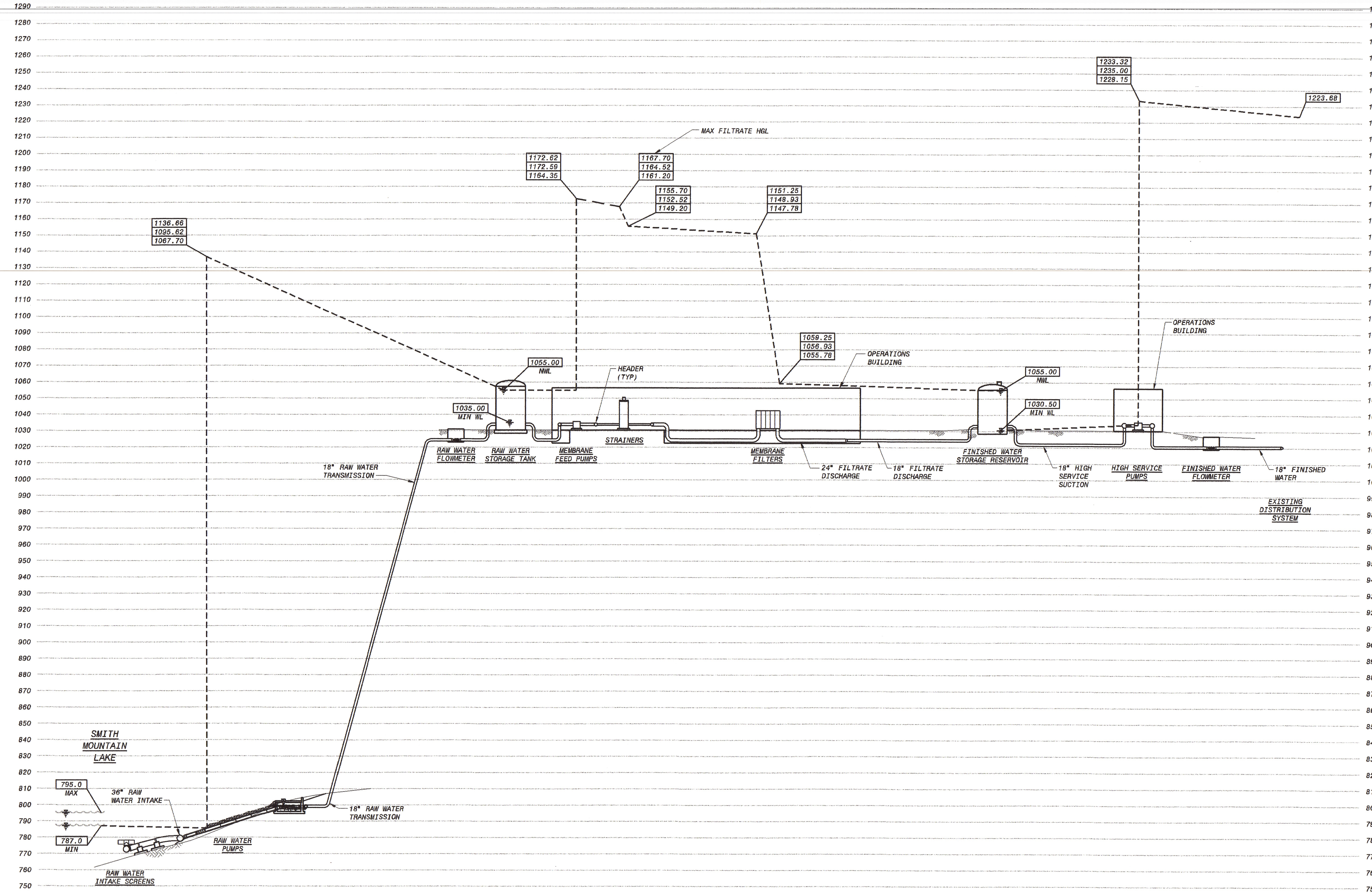

INTAKE AND TREATMENT PROCESS HYDRAULIC PROFILE

VERT.: 1"=30'
HORIZ.: NOT TO SCALE

LEGEND

6.0 MGD FILTRATE*
4.0 MGD FILTRATE
2.5 MGD FILTRATE

* ASSUMES PARALLEL OPERATION OF PUMPS AND STRAINERS
- - - - - MAX. FILTRATE HGL

NOTE:

1. HYDRAULIC GRADIENTS SHOWN IN TERMS OF MGD FILTRATE. FLOWS VARY THROUGH PROCESS.

30' 20' 10' 0 30' 60'
1"=30'

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BEDFORD REGIONAL WATER AUTHORITY SMITH MOUNTAIN LAKE WTP & RAW WATER PUMPING STATION / INTAKE

GENERAL HYDRAULIC PROFILE MAIN PROCESS

DESIGNED: MBS
DETAILED: MAK
CHECKED: MBS
APPROVED: PJD
DATE: 01/18/16

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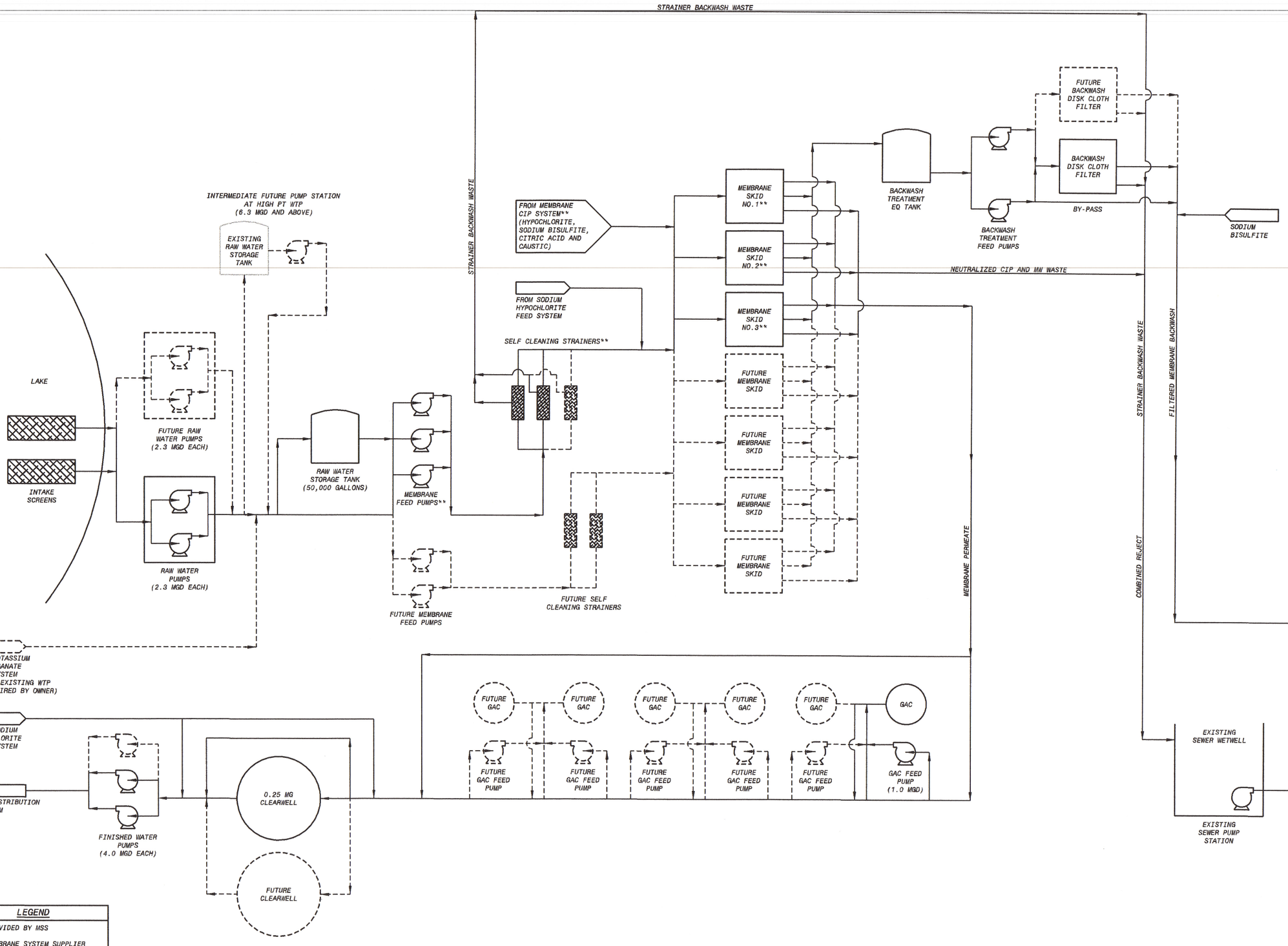

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BEDFORD REGIONAL WATER AUTHORITY
SMITH MOUNTAIN LAKE WTP &
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PROCESS FLOW DIAGRAM

DESIGNED: MBS
DETAILED: MAK
CHECKED: MBS
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