County of Roanoke

FINANCE DEPARTMENT
PURCHASING DIVISION

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May 11, 2018

IFB #2018-95

Explore Park Lift Station & Gravity Sewer Line

ADDENDUM NO. 3

Bidders Questions

Due Date & Time:
May 24, 2018 2:00PM
(Local Prevailing Time)

IFB #2018-95

Explore Park Lift Station & Gravity Sewer Line

ADDENDUM NO. 3

1) On your Invitation to Bid cover page (and also on the cover of your Addenda #1): It is stated that the due date & time is "May 23, 2018 2:00PM". This contradicts page 2 "Invitation to Bid #2018-095" of same document, which states "sealed bid will be accepted at and until **2:00 PM (EDT) on May 24, 2018**". Please clarify the correct bid submission date.
   Answer: Addressed in Addendum No. 1

2) Attachment A to Invitation to Bid #2018-095, Page 20: General Condition Paragraph #15.1 states "CONTRACT TIME to FINAL COMPLETION for this project is 90 **consecutive calendar days**". After discussion with the Gorman-Rupp pump representative, Tencarva Municipal, the 90 days will not be nearly enough time to cover the delivery of the pumps system. Please consider adjusting the final completion days to reflect actual delivery of the pump system with time to perform all the required installation (precast building, electrical, HVAC, etc…).
   Answer: Addressed in Addendum No. 1

3) Plan Sheet Nos. C7, C8 & E1.1: There is no specification for the new 6" Magnetic Flow Meter. Also, the electrical drawings do not show the meter being wired into the system. Please clarify.
   Answer: Attachment 2 and Attachment 4

4) Can a pavement patch detail be provided?
   Answer: Now shown on Gravity S.S. Extension sheet C3.

5) Can a stone patch detail be provided?
   Answer: Now shown on Gravity S.S. Extension sheet C3.

6) What Local, State and Federal permits will be required?
   Answer: The local permits will be required for the project: Land disturbance, Building Permit, Electrical Permit and Plumbing Permit. State and Federal permits are not known but the Contractor is responsible for ensuring all required permits are pulled.

7) Will any type of Parkway usage permit be provided for commercial vehicles used on this project?
Answer: Access to Explore Park should be scheduled through the Service Entrance on Rutrough Road. If the Service Entrance cannot be used due to the size of the vehicle/delivery then coordination with the Blue Ridge Parkway will conducted through Roanoke County.

8) Will blasting of rock be permitted?
Answer: Roanoke County requires a blasting permit through the Roanoke County Fire Marshall's office.

9) Can a rock removal (by hoe-ram or blasting) per cubic yard pay item be added?
Answer: Will be handled by change order only.

10) The plans refer to “blanket matting” on steep slopes. Can these areas be identified? Can type of matting be identified?
Answer: Now shown on Lift Station sheet C3. Matting to be VDOT Std. EC-2.

11) Are there any park, local, state of federal restrictions on what times of year trees can or cannot be removed?
Answer: There are no time of year restrictions for tree cutting.

12) Can logs and stumps be disposed on explore park property?
Answer: Logs can be disposed of on Explore Park property with the approval of Roanoke County. Stumps cannot be disposed of on Explore Park property.

13) Can limbs and small diameter laps be chipped and left on right of way?
Answer: Limbs and laps may be moved to a different location on Explore Park property with Roanoke County's approval and chipped.

14) Will the engineer be providing stake out on this project? If not, can information be provided for accurate stakeout?
Answer: The engineer not be providing a stakeout of the site as a part of their services to Roanoke County. This cost needs to be addressed in the contractor's bid.

15) Can the excavated trench spoils from the sewer line work be wasted on the pump station site?
Answer: Yes with prior approval from County of Roanoke

16) Can you provide a paved walkway detail?
Answer: Now shown on Gravity S.S. Extension sheet C3.

17) The drawings indicate an acid resistant liner for the concrete wetwell. I did not see any specifications, please clarify.
Answer: Per WVWA specs, "line interior of precast wet well with an epoxy coating system. Approved manufacturers are Raven, Tnemec, Belzona, Sika, and Carboline. Alternatively, a high-density polyethylene (HDPE) and Polypropylene Copolymer (PPR) thermal plastic liner installed at the foundry as an integral part of the concrete casting process, as manufactured by AGRU Sure Grip is also approved."

18) Would the County consider a high density polyethylene (HDPE) wetwell in leiu of the shown concrete wetwell with acid resistant liner, such as Spirolite by Plasson or Weholite by Uponor? A copy of the product info was left with the engineer from Balzer.
Answer: No, per WVWA specs, "Construct precast wells with a monolithic base structure. The minimum wall thickness must be eight inches (8") for all wet wells. The minimum base thickness must be twelve inches (12"). The precast top slab must have a minimum thickness of ten inches (10"). Fiberglass wet wells may be used contingent to prior approval by WVWA."

19) Can you tell me what the specification is for the acid resistant liner in the wetwell that you require?
Answer: Construct precast wells with a monolithic base structure. The minimum wall thickness must be eight inches (8") for all wet wells. The minimum base thickness must be twelve inches (12'). The precast top slab must have a minimum thickness of ten inches (10'). Fiberglass wet wells may be used contingent to prior approval by Roanoke County.
Line interior of precast wet well with an epoxy coating system. Approved manufacturers are Raven, Tnemec, Belzona, Sika, and Carboline. Alternatively, a high-density polyethylene (HDPE) and Polypropylene Cololymer (PPR) thermal plastic liner installed at the foundry as an integral part of the concrete casting process, as manufactured by AGRU Sure Grip is also approved.

20) What Diameter and material type is the proposed water main by WVWA?
Answer: 12" ductile iron

21) Is it correct to assume that water meters will be installed by the participating utility, not the contractor?
Answer: Contractor will install the meter setter, WVWA will set the actual meter.

22) Are road crossings, roadways, parking lots and walkways 100% stone backfill?
Answer: Yes, stone backfill to consist of crusher run aggregate size No. 25 or 26 or aggregate base material size 21A or 21B.

23) Magnetic flow meter in the lift station.
Answer: Please see attachment 4

24) Is there any additional information for the fence at the lift station for the project?
Answer: Page 2 of plans. 6' Wooden slat fence. Page 2 also contains the gate detail.

25) Please see new BID FORM. This must be used in place of the original.

BID FORM

INVITATION for BID (IFB) #2018-095 Explore Park Lift Station & Gravity Sewer Line

IN COMPLIANCE WITH THIS INVITATION FOR BID AND SUBJECT TO ALL CONDITIONS THEREOF, THE UNDERSIGNED OFFERS AND AGREES TO PROVIDE ALL PERMITS, LICENSES, EQUIPMENT, LABOR, AND MATERIAL NECESSARY TO EXECUTE AND COMPLETE THE WORK REQUIRED FOR THE PROJECT IN ACCORDANCE WITH ATTACHMENTS, GENERAL TERMS AND CONDITIONS AND SPECIAL TERMS AND CONDITIONS.

Item No.	Description	Unit	Bid Price
1	Gravity Sewer Line		$_____
2	Lift Station		$_____

Total Bid Price_____

NOTE: Bid award will based on the Total Bid Price. This solicitation will not be split to multiple Vendors.

*****Optional comparable building only if approved by County of Roanoke

_____deduction/addition amount. Please describe in your submittal. Must be same dimensions.

Attachment 1

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	VOLTS	VOLT-AMPS	FIXT EFF	LAMPS QTY	LAMPS TYPE	DESCRIPTION	REMARKS
A	METALUX	4VT2-LD4-4-DR-UNV-L840-CD-1 WL	120/277	38		N/A	LED	4' SURFACE MOUNTED, SEALED AND GASKETED FIXTURE SUITABLE FOR WET LOCATIONS	PROVIDE WITH STAINLESS STEEL MOUNTING BRACKETS CAT# VT2-SS-MBK
B	SPAULDING LIGHTING	LCC-12LU-2-PC1	120/277	12.8		N/A	LED	WALL MOUNTED FULL CUT-OFF EXTERIOR LED FIXTURE WITH 820 NOMINAL LUMENS. FIXTURE IS CONTROLLED BY INTEGRAL PHOTO-EYE	

1. CONTRACTOR SHALL VERIFY THAT FIXTURES SPECIFIED ARE SUITABLE FOR CEILING TYPE AND REVISE IF NECESSARY PRIOR TO ORDERING
2. CONTRACTOR SHALL USE 4100K COLOR CHARACTERISTICS FOR LIGHTING OR CLOSEST EQUIVALENT
3. ALL FIXTURES ARE BASIS FOR DESIGN EQUIVALENT FIXTURES MAY BE USED. CONTRACTOR SHALL SUBMIT ALTERNATE FIXTURES TO ENGINEER SO EQUIVALENCY CAN BE VERIFIED

PANEL PSH SCHEDULE

PANELBOARD CHARACTERISTICS
VOLTS: 480/277V
PHASES: 3
WIRES: 4
SOLID NEUTRAL, GROUND BAR

PHASE TO PHASE VOLTS: 480
PHASE TO NEUT VOLTS: 277
MAIN LUGS: 600A
MINIMUM SHORT CIRCUIT RATING: 65K RMS SYM AMPS
SERIES RATED WITH UPSTREAM DEVICE

CKT NO.	POLE NO.	DESCRIPTION	LOAD TYPE	CONN. KVA	CONN. AMPS A	CONN. AMPS B	CONN. AMPS C	BREAKER P	BREAKER AT	NO. & WIRE SIZE PHASE	NO. & WIRE SIZE NEUT	NO. & WIRE SIZE GND	COND SIZE
	1				52.0								
3	3	PUMP #1, STAGE 1 VIA CONTROL PANEL	E	43.23		52.0		3	90	3#6		#8	1"
	5						52.0						
	7				96.0								
9	9	PUMP #1, STAGE 2 VIA CONTROL PANEL	E	79.81		96.0		3	125	3#2		#6	1-1/2"
	11						96.0						
	13				3.6								
15	15	PSL VIA 30 KVA XFMR		2.98		3.6		3	60	SEE RISER DIAGRAM			
	17						3.6						
	19				9.0								
21	21	UH-1	E	7.5		9.0		3	20	3#12	#12	#12	3/4"
	23						9.0						
	25				0.0								
27	27	TVSS				0.0		3	60	3#6	#6	#6	3/4"
	29						0.0						
31	31	SPACE			0.0								
33	33	SPACE				0.0							
35	35	SPACE					0.0						
37	37	SPACE			0.0								
39	39	SPACE				0.0							
41	41	SPACE					0.0						
	2				52.0								
4	4	PUMP #2, STAGE 1 VIA CONTROL PANEL	E	43.23		52.0		3	90	3#6		#8	1"
	6						52.0						
	8				96.0								
10	10	PUMP #2, STAGE 2 VIA CONTROL PANEL	E	79.81		96.0		3	125	3#2		#6	1-1/2"
	12						96.0						
14	14	SPACE			0.0								
16	16	SPACE				0.0							
18	18	SPACE					0.0						
20	20	SPACE			0.0								
22	22	SPACE				0.0							
24	24	SPACE					0.0						
26	26	SPACE			0.0								
28	28	SPACE				0.0							
30	30	SPACE					0.0						
32	32	SPACE			0.0								
34	34	SPACE				0.0							
36	36	SPACE					0.0						
38	38	SPACE			0.0								
40	40	SPACE				0.0							
42	42	SPACE					0.0						
		TOTALS		256.56	308.6	308.6	308.6						

SIZING CALCULATIONS

CONNECTED LOADS		DEMAND FACTOR	
RECEPTACLE	0.90	FIRST 10 KVA @ 100%, REMAINDER@50%	0.9
LIGHTING	0.27	100%	0.27
MECHANICAL	0.5	100%	0.51
EQUIPMENT	254.9	100%	254.88
TOTAL KVA CONNECTED	256.6	TOTAL KVA DEMAND	256.56
FEEDER DEMAND AMPS	308.6	AMPS	
FEEDER SIZE AT 80%	385.8	AMPS	
25% SPARE CAPACITY	482.3	AMPS	

⚠ 1

PANEL PSL SCHEDULE

PANELBOARD CHARACTERISTICS:
VOLTS: 120/208
PHASES: 3
WIRES: 4
SOLID NEUTRAL, GROUND BAR

PHASE TO PHASE VOLTS: 208
PHASE TO NEUT VOLTS: 120
MAIN CIRCUIT BREAKER: 100A
MINIMUM SHORT CIRCUIT RATING: 65K RMS SYM AMPS
SERIES RATED WITH UPSTREAM DEVICE

CKT NO	POLE NO	DESCRIPTION	LOAD TYPE	CONN KVA	CONN. AMPS A	CONN. AMPS B	CONN. AMPS C	BREAKER P	BREAKER AT	NO. & WIRE SIZE PHASE	NO. & WIRE SIZE NEUT	NO. & WIRE SIZE GND	COND SIZE
1	1	BLOCK HEATER	E	1	8.3			1	20	1#12	#12	#12	
3	3	BATTERY CHARGER	E	0.1		0.8		1	20	1#12	#12	#12	
5	5	CONTROL PANEL	E	0.1			0.8	1	20	1#12	#12	#12	
7	7	RECEPTACLES	R	0.36	3.0			1	20	1#12	#12	#12	
9	9	RECEPTACLES	R	0.54		4.5		1	20	1#12	#12	#12	
11	11	MOTORIZED LOUVER	M	0.1			0.8	1	20	1#12	#12	#12	
13	13	EXHAUST FAN EF-1	M	0.41	3.4			1	20	1#12	#12	#12	
15	15	LIGHTING	L	0.27		2.3		1	20	1#12	#12	#12	
17	17	FLOW METER	E	0.1			0.8	1	20	1#12	#12	#12	
19	19	SPACE											
21	21	SPACE											
23	23	SPACE											
2	2	SPACE											
4	4	SPACE											
6	6	SPACE											
8	8	SPACE											
10	10	SPACE											
12	12	SPACE											
14	14	SPACE											
16	16	SPACE											
18	18	SPACE											
20	20	SPACE											
22	22	SPACE											
24	24	SPACE											
		TOTALS		2.98	14.8	7.6	2.5						

⚠ 1

ELECTRIC LEGEND

- 1"X4' LED LIGHT FIXTURE. UPPERCASE LETTER INDICATES TYPE. LOWERCASE LETTER INDICATES SWITCHING.
- INCANDESCENT, HID, FLUORESCENT OR LED FIXTURE, WALL MOUNTED. LETTER INDICATES TYPE.
- 120/208V / 480/277V — SURFACE PANELBOARDS
- DISCONNECT — VOLTAGE, POLES, AMP RATING / FUSE SIZE, ENCLOSURE TYPE / "NF" = NON FUSED (e.g. 480V,3P,60A / NF, NEMA 4X)
- S_1 — SINGLE POLE, SNAP-STYLE DISCONNECT
- S — SWITCH, SINGLE POLE, MOUNT 48" AFF, UON.
- OS — OCCUPANCY SENSOR. DUAL TECHNOLOGY, INFRARED AND ULTRASONIC
- WP — RECEPTACLE, DUPLEX, NEMA 5-20R, WALL MOUNTED 18" AFF, UON. AC= MOUNT 6" ABOVE COUNTER, WP=WEATHERPROOF, IG=ISOLATED GROUND, CTR=COUNTER LEVEL xx"AFF=MOUNTING HEIGHT, EWC=ELECTRIC WATER COOLER T=TAMPER RESISTANT
- GFI — 18" AFF, UON. PROVIDE A DEVICE WITH INTEGRAL GROUND FAULT INTERRUPTER.
- QUAD RECEPTACLE, NEMA 5-20R, UON. 18" AFF UON.
- GROUND FAULT INTERRUPTER RECEPTACLE, NEMA 5-20R, UON.
- EF-1 — MOTOR CONNECTION
- EQUIPMENT CONNECTION
- TVSS — TRANSIENT VOLTAGE SURGE SUPPRESSOR
- HOMERUN
- PARTIAL HOMERUN, INDICATES MORE THAN 1 CIRCUIT OFF BRANCH BREAKER
- THERMOSTAT
- MAGNETIC STARTER. NEMA SIZE AS INDICATED.

ABBREVIATIONS

A	AMPERES
AC	ABOVE COUNTER
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
BKR	BREAKER
C	CONDUIT
CAB	CABINET
CAT	CATALOG
CKT(S)	CIRCUIT(S)
COND	CONDITION
CONN	CONNECTION
OFIC	OWNER FURNISHED, INSTALLED BY CONTRACTOR
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
IG	ISOLATED GROUND
KVA	KILOVOLT-AMPERES
KW	KILOWATT
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUG ONLY
NEUT	NEUTRAL
NF	NON-FUSED
NIC	NOT IN CONTRACT
NO	NUMBER
PNL	PANEL
RMS	ROOT MEAN SQUARE
SYM	SYSTEM
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESOR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT-AMPERES
VP	VAPOR PROOF
W	WATTS
WP	WEATHER PROOF
XFER	TRANSFER

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COMMONWEALTH OF VIRGINIA
WILLIAM R. JENNINGS JR.
Lic. No.22775
08/09/2017
PROFESSIONAL ENGINEER

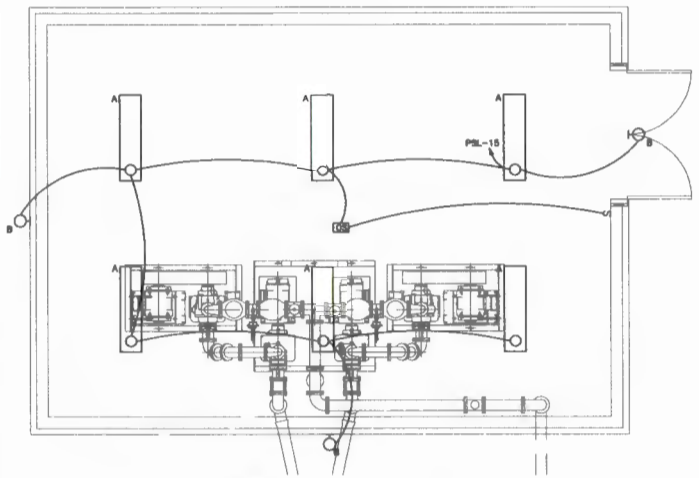
EXPLORE PARK LIFT STATION
EXPLORE PARK
LEGEND, NOTES & SCHEDULES
VINTON DISTRICT
ROANOKE COUNTY, VIRGINIA

DRAWN BY: JTP
DESIGNED BY: WRJ
CHECKED BY: WRJ
DATE: 08/08/2017
SCALE: AS NOTED
REVISIONS:
⚠ 1 06/14/18 - EQUIP CONNECTION ADDED

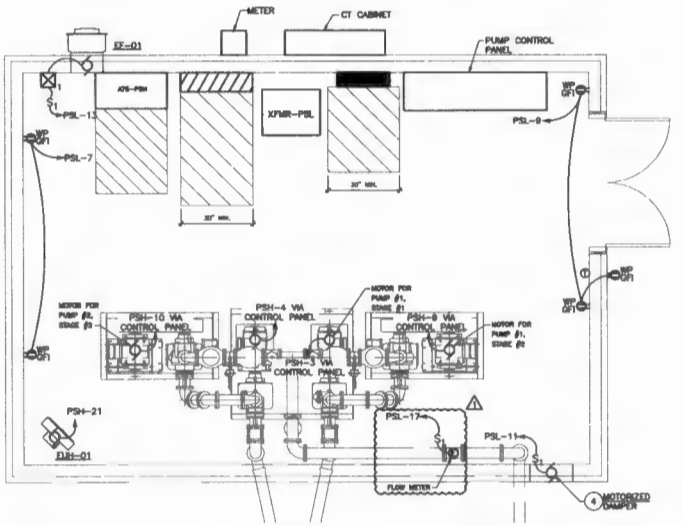
William R Jennings, Jr.
Consulting Engineering, PC
316 Brook Park Place, Suite A3
Forest, VA 24551

SHEET NO.
E1.0
JOB NO. 04170002.0

Attachment 2



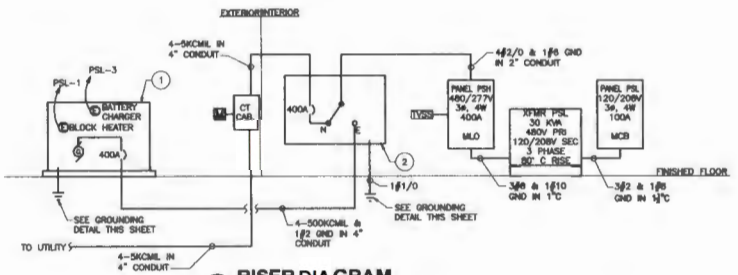
1 FLOOR PLAN - LIGHTING
E1.1 SCALE = 3/8"=1'-0"



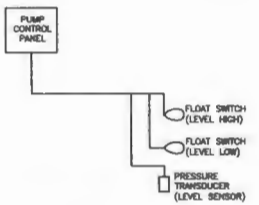
2 FLOOR PLAN - POWER
E1.1 SCALE = 3/8"=1'-0"

SPECIFIC NOTES:

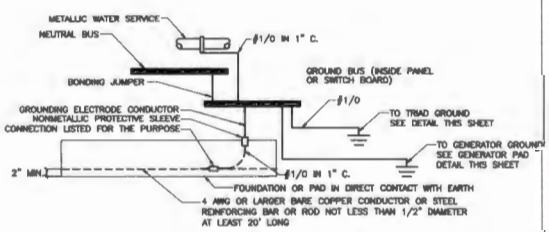
1. 480V, 3ø, 250KW(300KVA) LIQUID COOLED DIESEL GENERATOR WITH BLOCK HEATER AND BATTERY CHARGER. GENERATOR BREAKER SHALL SELECTIVELY COORDINATE WITH PUMP CIRCUIT BREAKERS IN PANEL PSH. SEE CIVIL DRAWINGS FOR GENERATOR LOCATION. SEE GENERATOR PAD DETAIL THIS SHEET.
2. 480V, 3ø, 400A, 4-POLE, SERVICE ENTRANCE RATED AUTOMATIC TRANSFER SWITCH WITH 100% RATED 480V, 3ø, 400A MAIN CIRCUIT BREAKER.
3. CIRCUIT BREAKER COORDINATION FOR LEGALLY REQUIRED STANDBY SYSTEM IS BASED ON GE FG RECORD PLUS PREMEON BREAKERS FOR THE SERVICE AND GENERATOR BREAKERS AND GE FE RECORD PLUS PREMEON FOR THE PUMPS. CIRCUIT BREAKERS OF OTHER MANUFACTURERS WILL BE ACCEPTABLE IF THEY MEET THE SAME LEVEL OF COORDINATION AND ALL OTHER PERTINENT REQUIREMENTS OF THE DOCUMENTS.
4. PROVIDE NORMALLY CLOSED MOTORIZED DAMPER INTERLOCKED WITH EXHAUST FAN TO SERVE INTAKE LOUVER. PROVIDE LINE VOLTAGE RELAY SUCH THAT MOTORIZED DAMPER SHALL OPEN WHEN FAN RECEIVES SIGNAL TO ENERGIZE FROM FAN/THERMOSTAT. DAMPER SHALL BE CLOSED IF FAN IS OFF.



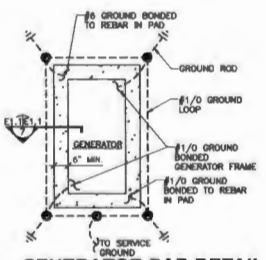
3 RISER DIAGRAM
E1.1 NOT TO SCALE



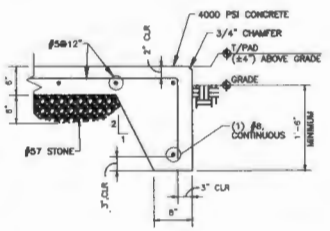
4 PUMP CONTROL SCHEME
E1.1 NOT TO SCALE



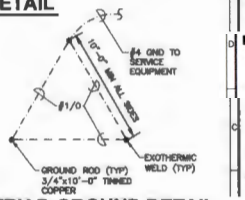
5 GROUNDING DETAIL
E1.1 NOT TO SCALE



6 GENERATOR PAD DETAIL
E1.1 NOT TO SCALE



7 GENERATOR PAD SECTION
E1.1 SCALE: 1"=1'-0"



8 TRIAD GROUND DETAIL
E1.1 NOT TO SCALE

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Richmond
Roanoke
Shenandoah Valley
Balzer and Associates, Inc.
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540-381-4290
FAX 540-381-4291

COMMONWEALTH OF VIRGINIA
WILLIAM R. JENNINGS JR.
Lic. No.22775
08/09/2017
PROFESSIONAL ENGINEER

EXPLORE PARK LIFT STATION
EXPLORE PARK
FLOOR PLAN - ELECTRICAL
VINTON DISTRICT
ROANOKE COUNTY, VIRGINIA

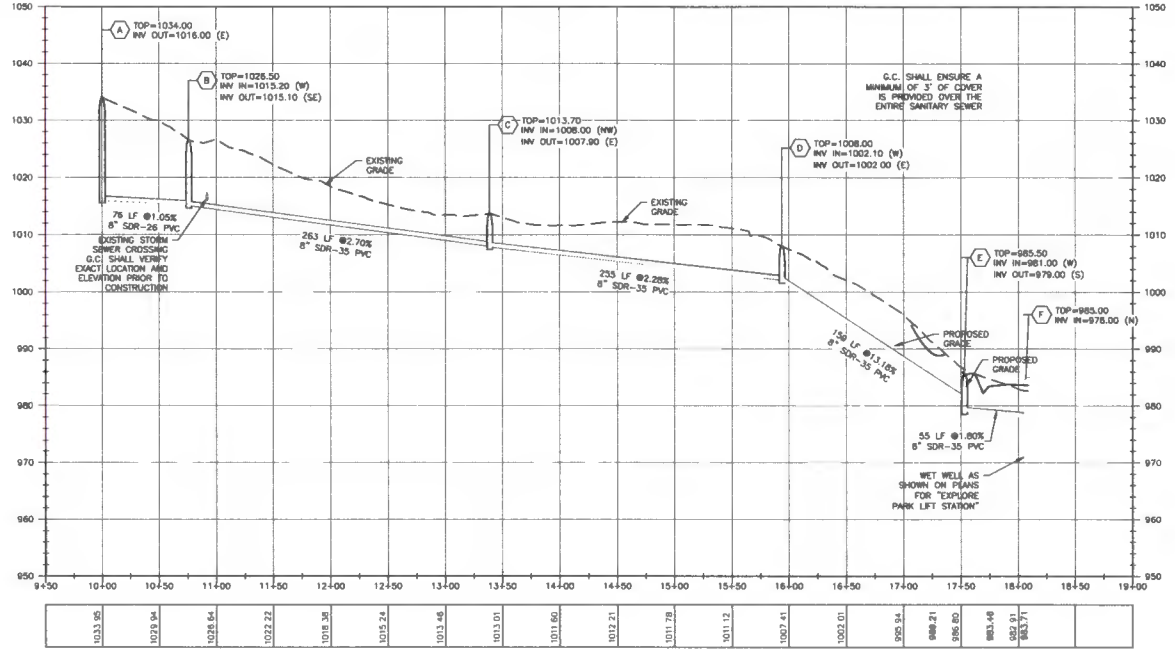
DRAWN BY	JEP
DESIGNED BY	WRJ
CHECKED BY	WRJ
DATE	08/09/2017
SCALE	AS NOTED

REVISIONS:
1 05/14/18 - EQUIP CONNECTION ADDED

SHEET NO. E1.1
JOB NO. 04170002.0

Attachment 3

SANITARY SEWER PROFILE



PROFILE SCALES:

(HORIZONTAL)

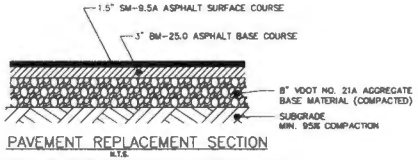
50 0 50 100 150

SCALE: 1" = 50'

(VERTICAL)

10 0 10 20 30

SCALE: 1" = 10'



PAVEMENT REPLACEMENT SECTION

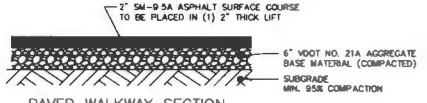
N.T.S.

1. 8" STONE BASE MUST BE PLACED IN TWO LIFTS OF NO MORE THAN 4" EACH.
2. A TACK COAT SHALL BE APPLIED BETWEEN ASPHALT PAVEMENT LAYERS
3. G.C. TO ENSURE A MINIMUM OF 95% COMPACTION OF THE SUBGRADE PRIOR TO STONE/ASPHALT PLACEMENT.

GRAVEL PAVEMENT REPLACEMENT SECTION

N.T.S.

1. 10" STONE BASE MUST BE PLACED IN THREE LIFTS OF NO MORE THAN 4" EACH.
2. G.C. TO ENSURE A MINIMUM OF 95% COMPACTION OF THE SUBGRADE PRIOR TO STONE/ASPHALT PLACEMENT.



PAVED WALKWAY SECTION

N.T.S.

1. 8" STONE BASE MUST BE PLACED IN TWO LIFTS OF NO MORE THAN 4" EACH.
2. A TACK COAT SHALL BE APPLIED BETWEEN ASPHALT PAVEMENT LAYERS
3. G.C. TO ENSURE A MINIMUM OF 95% COMPACTION OF THE SUBGRADE PRIOR TO STONE/ASPHALT PLACEMENT.

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COMMONWEALTH OF VIRGINIA
CHRISTOPHER P. BURNS
Lic. No.047338
5/15/18
PROFESSIONAL ENGINEER

EXPLORE PARK
GRAVITY S.S. EXTENSION
PROFILE & S.S. DETAILS
VINTON DISTRICT
ROANOKE COUNTY, VIRGINIA

DRAWN BY CPB
DESIGNED BY CPB
CHECKED BY SMH
DATE 11/9/2017
SCALE AS SHOWN

REVISIONS:
12/18/2017
1/24/2018
4/25/2018
5/15/2018

SHEET NO. C3

JOB NO. 04170086.00

Attachment 4
SECTION 13783
MAGNETIC FLOWMETER

1. GENERAL

1.01 This Section of the Specifications covers the magnetic flowmeter and the accompanying signal converter.

1.02 In addition to manufacturer's catalog data sheets, submit:

A. Detailed electrical and control diagrams.

B. Certified test results for the unit to be installed.

2. PRODUCTS

2.01 The magnetic flow meter (magmeter) shall be of the low frequency electromagnetic induction type and shall produce a pulsed DC signal directly proportional to and linear with the liquid flowrate. The magmeter shall be designed for operation on 120V AC +/-10%, 60 Hz +/-5% which is obtained from the remote mounted signal converter.

A. The metering tube shall be constructed of 304 stainless steel.

B. The magmeter shall be designed to mount directly in the pipe between AWWA Class B flanges.

C. Magmeter shall be the welded flange design. Screw-on flanges will not be acceptable.

D. The magmeter length-to-diameter dimensional ratio shall be a minimum of 1.5 in order to minimize inaccuracies generated by the effects of inner wall conductivity of adjacent piping.

E. The magmeter shall be housed in an epoxy-coated NEMA 4X enclosure and shall be capable of continuous submergence in up to 30 feet of water without damage to the instrument or interruption of the flow measurement.

F. The magmeter shall be lined with polyurethane and supplied with 316 stainless steel electrodes.

G. Where insulated or non-conductive pipe is used, the use of two orifice plate type stainless steel grounding rings per magmeter shall be required. In order to ensure integrity of the magmeter liner, grounding electrodes which penetrate the liner will not be acceptable.

2.02 The signal converter (converter) portion of the magmeter shall include both a magnet driver and the converter electronics.

A. The converter shall be remotely mounted. Interconnection cable shall be supplied with the converter in sufficient length and gauge to prevent splicing.

B. Converters shall be interchangeable without affecting meter accuracy or the need for recalibration for all meter sizes.

C. The converter shall be housed in an polypropylene NEMA 4X enclosure.

D. The converter shall include a separate customer connection compartment to isolate the electronics from power connections and to protect the electronics from environmental hazards.

E. The converter electronics shall be of the solid state, feed back type, utilize integrated circuitry and be microprocessor controlled. All operational parameters shall be user configurable locally via an integral push button/display arrangement.

F. An integral display to the converter electronics shall maintain two rows of 16 alpha-numeric characters for simultaneous view of both instantaneous rate of flow readings in percent or direct engineering units and totalization. The display shall be backlighted with a matrix-type liquid crystal (LCD) for easy viewing.

G. The converter shall have input impedance of 10 billion Ohms or greater and shall not be affected by quadrature noise. Input and output signals shall be fully isolated.

H. The converter output signal shall be 4 to 20 mA DC into 0 to 750 Ohms and shall be capable of accommodating bidirectional flow.

I. The converter shall incorporate an integral zero return circuit to provide a constant zero output signal in response to an external dry contact closure or automatic empty pipe detection circuit to minimize totalizer inaccuracies caused by empty pipe conditions.

2.03 The magmeter shall be constructed in a facility operating under a total quality system to provide assurance of product quality. To ensure this, the facility must be certified to be in compliance with the quality requirements of ISO Standard 9001.

2.04 The magmeter shall be hydraulically calibrated and the calibration shall be traceable to the National Institute of Science and Technology (NIST). The accuracy of the magmeter shall be +/-1/2% of rate from 0.65 feet per second (fps) to 33 fps without the need for system calibration.

The magnetic flowmeter transmitter shall have on board ability for a service technician to verify the operation of the sensor and transmitter in-situ, without the removal of, or access to, the sensor. The system verification shall enable the printing of a certificate stating the metering system is in or out of original factory specification or tolerances. The system check shall be performed via connection to a diagnostic interface, operating through a lap top computer.

2.05 The magmeter shall be provided by ABB.

3. EXECUTION

3.01 Comply fully with manufacturer's recommendations for handling, storage and, installation of the equipment supplied under this Section.

Attachment 5

CONSTRUCTION SEQUENCING NOTES:

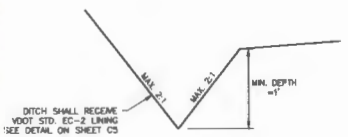
1. THE ENTRANCE CULVERT AND CONSTRUCTION ENTRANCE SHALL BE INSTALLED AS THE FIRST STEPS. G.C. SHALL PAY SPECIAL ATTENTION TO ENSURE THERE IS NO MUD 'TRACKING' FROM THE CONSTRUCTION AREA ONTO THE ROADWAY. THE ENTRANCE CULVERT SHALL RECEIVE CULVERT INLET PROTECTION AND OUTLET PROTECTION AS INDICATED ON THE PLAN.
2. PERIMETER DIVERSION DIKES SHALL BE INSTALLED WITH CHECK DAM TO CONVEY UPSTREAM RUNOFF AROUND THE CONSTRUCTION AREA.
3. SILT FENCE SHALL BE INSTALLED WHERE APPLICABLE AROUND THE PERIMETER OF THE SITE AND MAINTAINED THROUGHOUT THE PROJECT.
4. EXISTING TREES MAY BE REMOVED AT THIS TIME AND TOPSOIL STOCKPILED ON-SITE.
5. MAJOR GRADING OPERATIONS AND SITE CONSTRUCTION SHALL TAKE PLACE AT THIS TIME. THE SWALES SHALL BE ESTABLISHED TO PROVIDE POSITIVE DRAINAGE AROUND THE PROPOSED BUILDING AND GRAVEL ACCESS AREA. OUTLET PROTECTION SHALL BE INSTALLED WHERE APPLICABLE.
6. THE CONCRETE WASHOUT SHALL BE INSTALLED AND MADE FUNCTIONAL PRIOR TO ANY CONCRETE IMPROVEMENTS ON-SITE. IT SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT
7. ALL SLOPES THAT ARE 3:1 OR GREATER SHALL RECEIVE BLANKET MATTING AND PERMANENT STABILIZATION AS SOON AS POSSIBLE AFTER REACHING FINAL GRADE.
8. CONSTRUCTION OF THE LIFT STATION AND OTHER SITE IMPROVEMENTS SHALL TAKE PLACE AT THIS TIME.
9. AFTER LIFT STATION CONSTRUCTION IS COMPLETE, THE GRAVEL PAVEMENT SHALL BE INSTALLED AND THE CONSTRUCTION ENTRANCE REMOVED.
10. FENCING AND LANDSCAPING SHALL BE INSTALLED ANY REMAINING AREAS OF THE SITE SHALL RECEIVE PERMANENT STABILIZATION.
11. AFTER PERMANENT STABILIZATION OF THE SITE, THE DIVERSION DIKES, CHECK DAM, AND SILT FENCE MAY BE REMOVED.

    *NOTE: ROANOKE COUNTY INSPECTION AND APPROVAL IS REQUIRED PRIOR TO THE REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES.
12. G.C. SHALL ENSURE THAT THE LIMITS OF DISTURBANCE ARE STRICTLY ADHERED TO DURING THE PROJECT.
13. NO DEVIATIONS TO THE PLANS SHALL TAKE PLACE UNLESS PRIOR APPROVAL FROM THE OWNER, PROJECT ENGINEER, AND THE APPROPRIATE REVIEW AGENCIES.

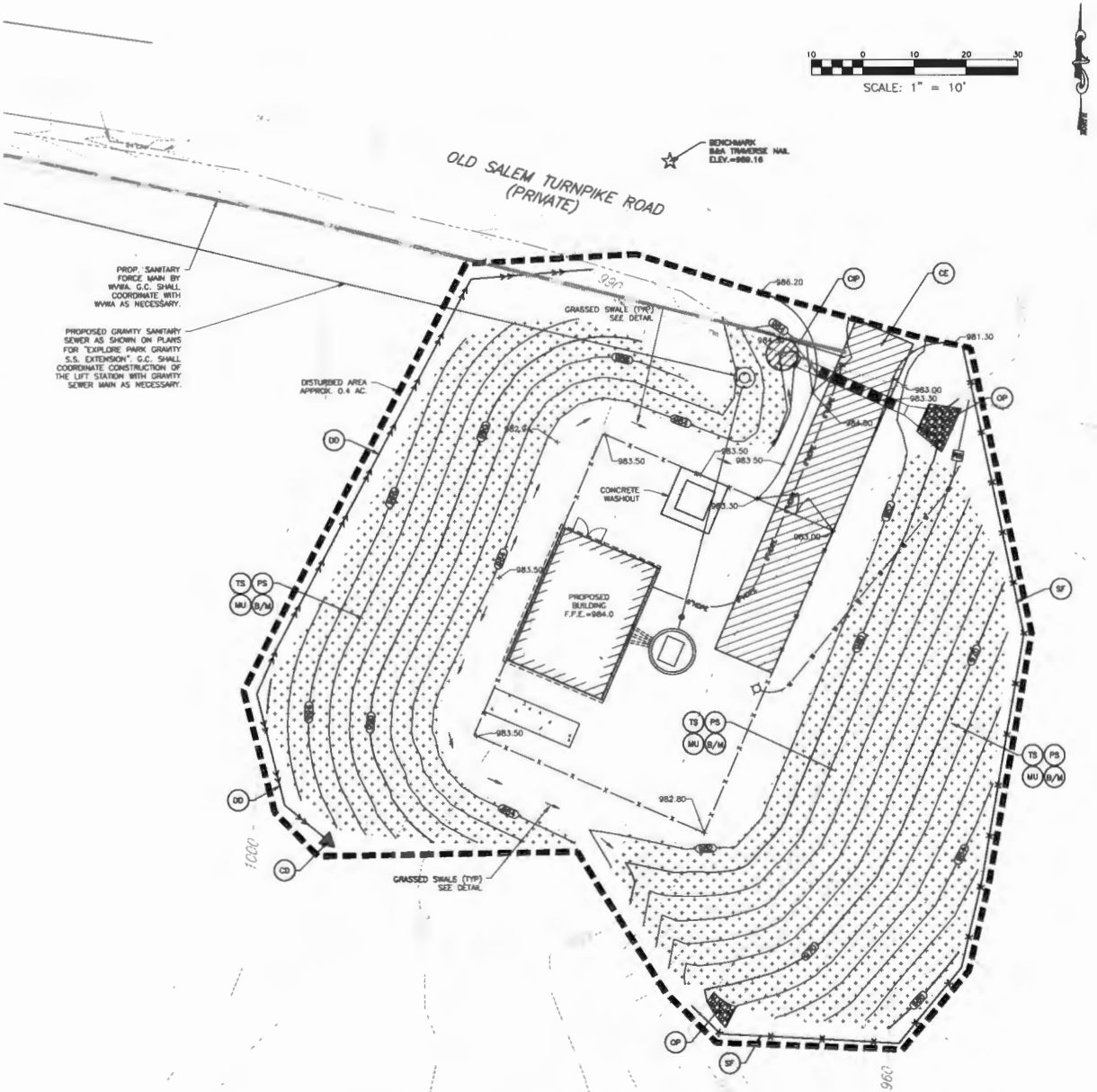
ESC LEGEND:

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	3.20	ROCK CHECK DAM	CD
3.05	SILT FENCE	SF	3.31	TEMPORARY SEEDING	TS
3.08	CULVERT INLET PROTECTION	CIP	3.32	PERMANENT SEEDING	PS
3.09	TEMPORARY DIVERSION DIKE	DD	3.35	MULCHING	MU
3.18	OUTLET PROTECTION	OP	3.36	SOIL STABILIZATION BLANKETS & MATTING	B/M

PROP. BLANKET MATTING (VDOT STD. EC-2)



GRASSED SWALE DETAIL
N.T.S.



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COMMONWEALTH OF VIRGINIA
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EXPLORE PARK LIFT STATION
EXPLORE PARK
ESC PLAN
VINTON DISTRICT
ROANOKE COUNTY, VIRGINIA

DRAWN BY CPB
DESIGNED BY CPB
CHECKED BY SMH
DATE 4/14/2017
SCALE 1"=10'

REVISIONS:
3/3/2017
5/12/2017
8/9/2017
4/25/2018
5/15/2018

SHEET NO.
C3
JOB NO. 04170002.00

IFB #2018-095

Explore Park Lift Station & Gravity Sewer Line

REQUIRED

********Must sign and return with your bid package********

_____ _____

Sign Name: Print Name:

_____

Date:

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK