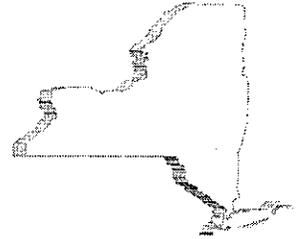




STATE OF NEW YORK  
OFFICE OF GENERAL SERVICES  
DESIGN AND CONSTRUCTION GROUP  
THE GOVERNOR NELSON A. ROCKEFELLER  
EMPIRE STATE PLAZA  
ALBANY, NY 12242



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**ADDENDUM NO. 3 TO PROJECT NO. 44027**

**CONSTRUCTION WORK, HVAC WORK, PLUMBING WORK, ELECTRIC WORK  
SANITARY SEWER PUMP STATION REPLACEMENT  
AND INFILTRATION AND INFLOW REDUCTION  
COXSACKIE CORRECTIONAL FACILITY  
11260 ROUTE 9W, BOX 200  
WEST COXSACKIE, NEW YORK 12051-0200**

January 28, 2015

**NOTE:** This Addendum forms a part of the Contract Documents. Insert it in the Project Manual.  
Acknowledge receipt of this Addendum in the space provided on the Bid Form.

**C CONTRACT  
SPECIFICATIONS:**

1. SECTION 003132 GEOTECHNICAL DATA: **Add** subsurface logs from this addendum.
2. SECTION 042200 CONCRETE UNIT MASONRY: 2.08 to be **deleted**;
3. SECTION 061753 SHOP-FABRICATED WOOD TRUSSES: 2.02 A to be **deleted**;
4. SECTION 089119 FIXED LOUVERS: **Add** specification from this addendum;
5. SECTION 113320 CHANNEL GRINDER: **Add** specification from this addendum;
6. SECTION 113330 CHANNEL GATES: **Add** specification from this addendum;
7. SECTION 113110 SUBMERSIBLE SEWAGE PUMPS:
  - a. **1.01: Add B** With the exception of the pumps, the electrical contractor will provide all electrical controls, starters, disconnects and VFDS's;
8. **2.03 K: Add** a. Control level to be compatible with float switches;
9. SECTION 330132 SEWER BYPASS PUMPING:
  - a. 1.04 A: **Remove**;
  - b. 1.03 C: **Remove** primary set ups schedule;
  - c. 1.03 C: **Add** a. Contractor to expect to bypass pump a maximum rate of 200 GPM. The flow can be reintroduced to the sewer main immediately downstream from the work area.

**C, H, P, E CONTRACT  
DRAWINGS:**

10. C-101: **Add** General Note 15. It will take approximately 250 cubic yards of flowable fill to fill the existing pump station and force main piping;
11. C-103: **Add** Note 1. Sanitary sewer flow to be discharged into the sanitary sewer system immediately downstream of work area;
12. C-103 – Detail A: **Add** Note 1. Lining course to be subbase course type 2;
13. C-103: **Add** Note 2. All force main piping to be class 52 ductile iron. The 4" water main is to be class 52 ductile iron. The 12" and 8" sanitary sewer line is to be class 52 ductile iron with the exception of the 12" sanitary sewer from existing manhole to sanitary manhole 1 which is to be SDR=35;
14. C-103: **Add** Note 3. Detail for pipe lining on sheet C-501;
15. C-105 - Plan @ House Sewage Pump Station: **Add** Note 1. Expect maximum peak flow from the pump station to be 20 gallons per minute with peak daily discharge being 150 gallons per day;
16. C-501: **Change** 8'-0" dimension to 6'-0" and **Add** three strands of barb wire;
17. C-503 – Section A: **Add** Note 8. A 12'x17' ID rectangular structure is acceptable in lieu of 16' diameter ID wet well if large fillets utilized in the corners of the structure.
18. C-503 – Section A: **Add** Note 9. Basis of design for the Jib Crane was the Gorbel ½ ton base plate mounted crane with 12' span with motorized controls;
19. C-503 – Section A: **Add** Note 10. Kennedy and Clow valves can be used for the sanitary sewer system;
20. C-503 – Section A: **Add** Note 11. Pipe to be ½ of a 48" held pipe;
21. C-504 – Section A: **Add** Note 1. The expected volume anticipated is 14,000 gallons. The sludge must be removed and hauled to one of the Albany County Waste Water Plants.
22. A-101: **Label** block on Detail 4 & 5 as 4 Rib;

**E CONTRACT  
DRAWINGS:**

23. E-601: **Add** Note 2. Floats and float guides to be provided and installed under Electrical Contract.
24. E-601: **Add** Note 3. Boulay Fabrications, Inc (315- 677-5247) is one acceptable Manufacturer for Control Panel 1.
25. E-601: **Add** Note 4. Panel PP-1 to have be Meter Section type set-up.

26. E-601: **Remove** reference to specification 2651100 on Master Luminaire Schedule.

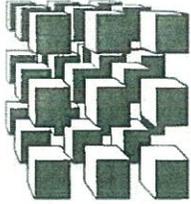
**P CONTRACT  
DRAWINGS:**

27. P-101: **Add** Note 2. The plumber is expected to connect to the curb box;

28. P-101: **Add** Note 3. A test kit is not required for the RPZ.

**END OF ADDENDUM**

Margaret F. Larkin  
Executive Director



**CME**  
Associates, Inc.

6035 Corporate Drive  
East Syracuse, New York 13057  
(315) 701-0522  
(315) 701-0526 (Fax)

[www.cmeassociates.com](http://www.cmeassociates.com)

## Transmittal

December 30, 2013

C&S Engineers, Inc.  
499 Col. Eileen Collins Boulevard  
Syracuse, NY 13212

Attn: Mr. Mark Chambers, P.E., Project Manager

**Re: Cossackie Correctional Facility  
Cossackie, New York  
CME Project No.: 26863-05**

Gentlepeople:

Enclosed you will find....

<u>Number of Copies</u>	<u>Description</u>
3	Test Boring Logs B-1 & B-2
3	Boring Location Sketch, BLS-1

These CME Subsurface Exploration- Test Boring Logs and BLS were emailed to Mr. Mark Chambers, P.E. at [mchambers@cscos.com](mailto:mchambers@cscos.com) on 12/30/13.

Respectfully submitted,  
**CME Associates, Inc.**

Melissa McConnell  
Drilling Division Administrator

**SUBSURFACE EXPLORATION - TEST BORING LOG**

**Project:** Coxsackie Correctional Facility, Coxsackie, New York  
**Client:** C&S Engineers, Inc.  
**Location of Boring:** See Boring Location Sketch

**Report No.:** 26863B-01-1213  
**Date Started:** 12/05/13 **Finished:** 12/05/13  
**Elevation of Surface of Boring:**

**METHODS OF INVESTIGATION**

**Casing:** 3-1/4" ID H. Stem Auger **Driller:** Jeff Wood  
**Casing Hammer:** **Driller:** Gary Richards  
**Other:** **Inspector:** Thom DiCaprio  
**Soil Sampler:** 2" OD Split Barrel **Rod Size:** AWJ  
**Sampler Hammer:** Wt. 140 lbs. **Fall:** 30 in.  
**Make & Model of Drill Rig:** Diedrich D120 Truck-Mounted

**GROUND WATER OBSERVATIONS**

Date	Time	Depth	Casing At
12/06/13	While drilling	None Noted	58.5'
12/06/13	Before casing removed	None Noted	80.0'
12/06/13	After casing removed	None Noted	out
12/06/13	After casing removed	caved @ 6.0'	out

**LOG OF BORING SAMPLES**

**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c - coarse m - medium f - fine	and - 35 to 50 % some - 20 to 35 % little - 10 to 20 % trace - 0 to 10 %	SPT "N" or RQD
			From	To						
0	XXX	1a	0.0	0.3	SS/8	WH-2-4-4	0.3	Topsoil (moist)		
	H	1b	0.3	2.0				Brown CLAY, trace SILT, trace ORGANICS (moist, medium stiff) ~ CL ~	6	
	O	2	2.0	4.0	SS/8	3-6-7-8		Similar Soil (moist, stiff) ~ CL ~	13	
5	L	3	4.0	6.0	SS/14	5-7-10-10		Brown CLAY, trace SILT (moist, very stiff) ~CL~	17	
	L	4	6.0	8.0	SS/18	10-10-12-13		Similar Soil (moist, very stiff) ~ CL ~	22	
	O									
	W	5	8.0	10.0	SS/24	5-6-8-9		Greyish-Brown SILT (moist, stiff) ~ ML ~	14	
10		6	10.0	12.0	SS/24	7-10-11-12		Similar Soil (moist, very stiff) ~ ML ~	21	
	S									
	T	7	12.0	14.0	SS/24	5-8-10-13		Brown CLAY (moist, very stiff) ~ CL ~	18	
	E	8	14.0	16.0	SS/24	10-13-14-14		Similar Soil (moist, very stiff) ~ CL ~	27	
15	M									
		9	16.0	18.0	SS/24	5-7-9-11		Brown to Greyish-Brown Similar Soil (moist, very stiff) ~ CL ~	16	
	A									
	U	10	18.0	20.0	SS/24	10-11-11-11		Similar Soil (moist, very stiff) ~ CL ~	22	
20	G									
	E									
	R	11	22.0	24.0	SS/24	2-3-3-4		Similar Soil (moist, medium stiff) ~ CL ~	6	
25	XXX									

Continued on page 2

\*SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer & Rods

Remarks:

LOG OF BORING SAMPLES							CLASSIFICATION OF MATERIAL			
Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c - coarse m - medium f - fine	and - 35 to 50 % some - 20 to 35 % little - 10 to 20 % trace - 0 to 10 %	SPT "N" or RQD
			From	To						
25	XXX							Continued from page 1		
	H									
	O	12	28.5	30.0	SS/18	4-4-5		Brown to Greyish-Brown CLAY (moist, stiff) ~ CL ~		9
30	L									
	L									
	O	13	33.5	35.0	SS/18	3-4-4		Grey Similar Soil (moist, stiff) ~ CL ~		8
35	W									
	S									
	T	14	38.5	40.0	SS/18	3-3-3		Similar Soil (wet, medium stiff) ~ CL ~		6
40	E									
	M									
	A	15	43.5	45.0	SS/18	2-3-2		Similar Soil (wet, medium stiff) ~ CL ~		5
45	U									
	G									
	E	16	48.5	50.0	SS/18	1-2-1		Similar Soil (saturated, soft) ~ CL ~		3
50	R									
	XXX							Continued on page 3		

\*SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer & Rods

Remarks:

LOG OF BORING SAMPLES							CLASSIFICATION OF MATERIAL			
Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	e - coarse m - medium f - fine	and - 35 to 50 % some - 20 to 35 % little - 10 to 20 % trace - 0 to 10 %	SPT "N" or RQD
			From	To						
50	XXX							Continued from page 2		
	H									
	O	17	53.5	55.0	SS/18	WH-WH-2		Grey CLAY (saturated, soft) ~ CL ~		2
55	L									
	L									
	O	18	58.5	60.0	SS/18	3-3-3		Similar Soil (saturated, medium stiff) - CL ~		6
	W									
60	S									
	T	19	63.5	65.0	SS/18	3-4-3		Similar Soil (saturated, medium stiff) ~ CL ~		7
	E									
65	M									
	A	20	68.5	70.0	SS/18	WH-WH-WH		Similar Soil (saturated, very soft) ~ CL ~		WH
70	U									
	G									
	E	21	73.5	75.0	SS/18	1-4-3		Similar Soil (saturated, medium stiff) ~ CL ~		7
	R									
75	XXX							Continued on page 4		

\*SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer & Rods

Remarks:

LOG OF BORING SAMPLES						CLASSIFICATION OF MATERIAL				
Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c - coarse m - medium f - fine	and - 35 to 50 % some - 20 to 35 % little - 10 to 20 % trace - 0 to 10 %	SPT "N" or RQD
			From	To						
75	XXX									
	H									
	S									
	A									
80	XXX									
85										
90										
95										
100										

Continued from page 3

Augered to 80.0'

Bottom of Boring @ 80.0

\*SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer & Rods  
 Remarks:

**SUBSURFACE EXPLORATION – TEST BORING LOG**

Project: Cossackie Correctional Facility, Cossackie, New York  
 Client: C&S Engineers, Inc.  
 Location of Boring: See Boring Location Sketch

Report No.: 26863B-01-1213  
 Date Started: 12/06/13 Finished: 12/09/13  
 Elevation of Surface of Boring:

**METHODS OF INVESTIGATION**

Casing: 3-1/4" ID H. Stem Auger Driller: Jeff Wood  
 Casing Hammer: Driller: Gary Richards  
 Other: Inspector: Thom DiCaprio  
 Soil Sampler: 2" OD Split Barrel Rod Size: AWJ  
 Sampler Hammer: Wt. 140 lbs. Fall: 30 in.  
 Make & Model of Drill Rig: Diedrich D120 Truck-Mounted

**GROUND WATER OBSERVATIONS**

Date	Time	Depth	Casing At
12/09/13	While drilling	16.2'	18.0'
12/09/13	Before casing removed	None Noted	48.5'
12/09/13	After casing removed	None Noted	out

**LOG OF BORING SAMPLES**

**CLASSIFICATION OF MATERIAL**

Depth Scale (Feet)	Casing Blows/Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c - coarse m - medium f - fine	and - 35 to 50 % some - 20 to 35 % little - 10 to 20 % trace - 0 to 10 %	SPT "N" or RQD
			From	To						
0    5	XXX H	1a	0.0	0.3	SS/12	2-3-4-5	0.3	Topsoil (moist)		
	O	1b	0.3	2.0			2.0	Light Brown cmf SAND, some cmf GRAVEL, little SILT (moist, loose) ~ SM ~		7
	L	2	2.0	4.0	SS/20	3-6-9-11		Brown CLAY (moist, very stiff) ~ CL ~		15
	L	3	4.0	6.0	SS/24	6-8-10-12		Similar Soil (moist, very stiff) ~ CL ~		18
	O W	4	6.0	8.0	SS/24	8-10-11-13		Similar Soil (moist, very stiff) ~ CL ~		21
10   15		5	8.0	10.0	SS/24	6-7-7-8		Similar Soil (moist, stiff) ~ CL ~		14
	S T E	6	13.5	15.0	SS/18	5-8-8		Similar Soil (moist, very stiff) ~ CL ~		16
	M	7	18.5	20.0	SS/18	7-7-8		Greyish-Brown Similar Soil (wet, stiff) ~ CL ~		15
20  25	A U G E R	8	20.0	22.0	U/24	Shelby Tube		Similar Soil (wet, stiff) ~ CL ~		
		9	22.0	24.0	SS/18	2-4-4		Similar Soil (wet, stiff) ~ CL ~		8

Continued on page 2

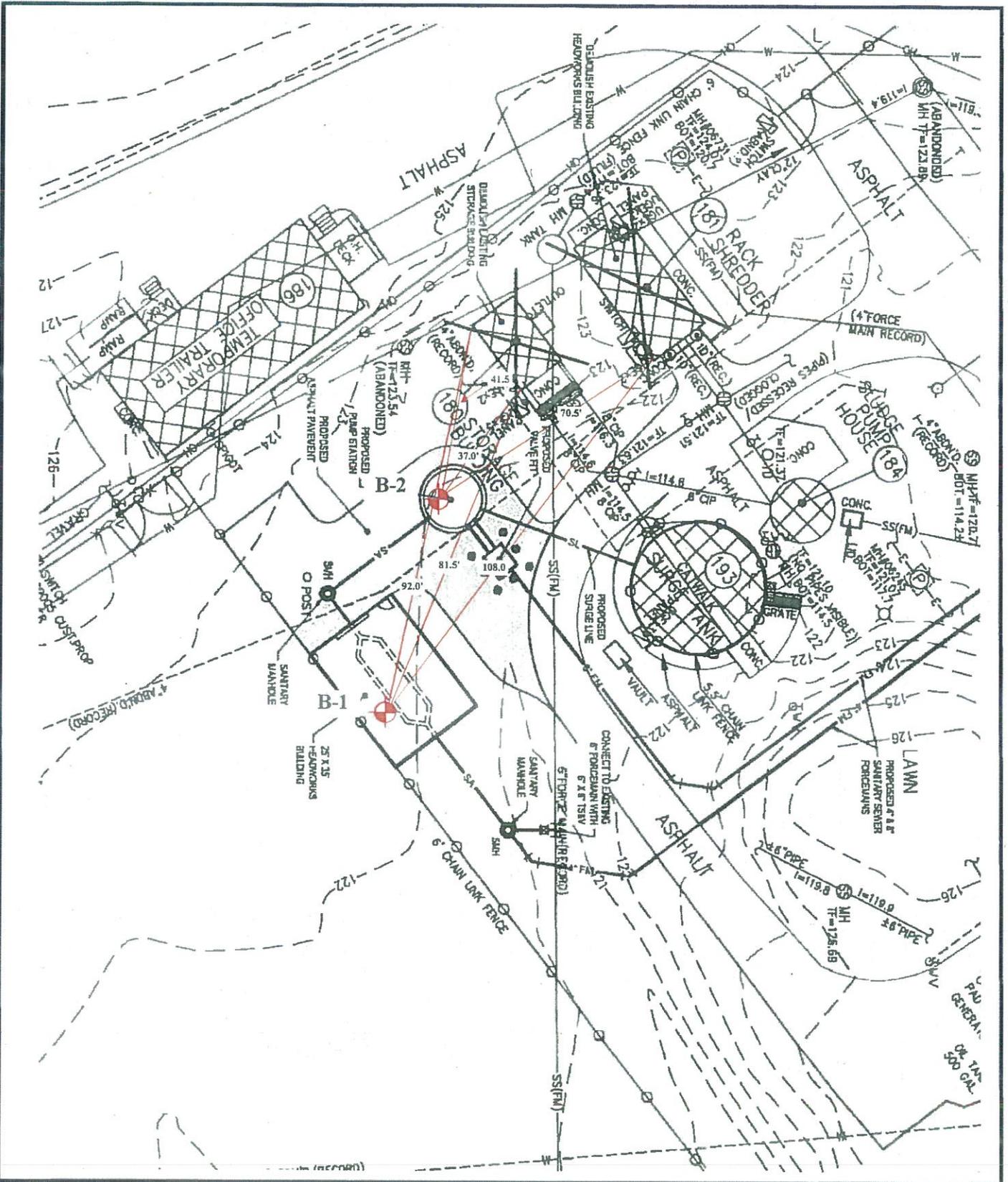
\*SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer & Rods

Remarks:

LOG OF BORING SAMPLES							CLASSIFICATION OF MATERIAL			
Depth Scale (Feet)	Casing Blows/ Foot	Sample I.D.	Depth of Sample (Feet)		Sample Type/ Recovery (Inches)	Blows On Sampler Per 6 inches	Depth Of Change (feet)	c - coarse m - medium f - fine	and - 35 to 50 % some - 20 to 35 % little - 10 to 20 % trace - 0 to 10 %	SPT "N" or RQD
			From	To						
25	XXX H							Continued from page 1		
	O	10	28.5	30.0	SS/18	3-3-3		Grey CLAY (saturated, medium stiff)	- CL -	6
30	L									
	O									
	W	11	33.5	35.0	SS/18	3-4-3		Similar Soil (saturated, medium stiff)	- CL ~	7
35										
	S	12	38.5	40.0	SS/18	3-3-3		Similar Soil (saturated, medium stiff)	- CL ~	6
	T									
40	E									
	M									
		13	43.5	45.0	SS/18	3-3-3		Similar Soil (saturated, medium stiff)	- CL -	6
	A									
45	U									
	G									
	E	14	48.5	50.0	SS/18	3-4-4		Similar Soil (saturated, stiff)	- CL ~	8
	R									
50	XXX							Bottom of Boring @ 50.0'		

\*SS - Split Spoon, U - Undisturbed Tube, C - Core, WH - Weight of Hammer & Rods

Remarks:



**CME Associates, Inc.**  
 4435 CORPORATE DRIVE  
 EAST SYRACUSE, NEW YORK 13057  
 TEL: (315) 781-4522  
 FAX: (315) 781-4524  
 www.cmeassociates.com

Boring locations shown on proposed site plan provided by C&S Engineers

**Cossackie Correctional Facility**  
**Cossackie, New York**  
**CME Report No.: 26863B-01-1213**

Sketch Notes  
 B-# - Indicates Approximate Soil Boring Location

Scale As Provided

Date: 12/12/13  
 Revised:

**BLS-1**  
 SHEET NUMBER

## GENERAL INFORMATION & KEY TO TEST BORING LOGS

The **Subsurface Exploration - Test Boring Logs** produced by CME Associates, Inc. present the observations and mechanical data collected by the driller while at the site, supplemented, at times, by classification of the materials removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. The data presented on the Exploration Logs together with the recovered samples will provide a basis for evaluating the character of the subsurface conditions relative to the proposed construction. The evaluation must consider all the recorded details and their significance relative to each other. Often, analyses of standard boring data indicate the need for additional testing and sampling procedures to more accurately evaluate the subsurface conditions. Any evaluations of the contents of CME's report and the recovered samples must be performed by Licensed Professionals having experience in Soil Mechanics and Foundation Engineering. The information presented in this Key defines some of the procedures and terms used on the CME Exploration Logs to describe the conditions encountered. Refer to the Log on page 3 for key number.

Key No.

Description

1. The figures in the **DEPTH SCALE** column define the vertical scale of the Boring Log.
2. **CASING BLOWS/FOOT** - shows the number of blows required to advance the casing a distance of 12 inches. The casing size, the hammer weight and the length of drop are noted under the **Methods of Investigation**. If the casing is advanced by means other than driving, the method of advancement will be indicated under **Methods of Investigation** at the top of the Log. If Hollow Stem Augers or Coring is used, it will be so noted in this column.
3. The **SAMPLE I.D.** is used for identification on the sample containers and in the Laboratory Test Report or Summary.
4. The **DEPTH OF SAMPLE** column gives the exact depth range from which a sample was recovered.
5. The **SAMPLE TYPE/RECOVERY** column is used to signify the various type of sample attempt. "SS" is Split Spoon, "P" is piston tube, "U" is Undisturbed tube. For soil samples, the recovered length of the sample is also indicated, in inches. If a rock core sample is taken, the core bit size designation is given here.
6. **BLOWS ON SAMPLER** - shows the results of the "Standard Penetration Test (SPT) ASTM D1586", recording the number of blows required to drive a split spoon sampler into the soil beneath the casing. The number of blows required for each six inches of penetration is recorded. The total number of blows required for the 6 inch to 18 inch interval is summarized in the **SPT "N"** column and represents the "Standard Penetration Number". The outside diameter of the sampler, the hammer weight and the length of drop are noted in the **Methods of Investigation** portion of the log. A "WH" or "WR" in this column indicates that the sample spoon advanced the 6 inch interval under **Weight of Hammer** or **Weight of Rods**, respectively.
7. The **DEPTH OF CHANGE** column designates the depth (in feet) that the driller noted a compactness or stratum change. In soft materials or soil strata exhibiting a consistent relative density, it is difficult for the driller to determine the exact change from one stratum to the next. In addition, a grading or gradual change may exist. In such cases the depth noted is approximate or estimated only and may be represented by a dashed line.
8. **CLASSIFICATION OF MATERIAL** - Soil materials encountered and sampled are described by the driller on the original log. Notes of driller observations are also placed in this column. Recovered samples may also be visually classified by a Soil Technician upon receipt in the Laboratory. Visual sample classification is by **Burmister System** and strata may be classified additionally by the **Unified System**. The **Burmister System** is a type of visual-manual textural classification estimated by the Driller or Technician on the basis of weight-fraction of the recovered soil. See Table 1 "**Classification of Materials**". The description of the relative soil compactness or consistency is based upon the standard penetration number as defined in Table 2. The description of the soil moisture condition is described as dry, moist, wet, or saturated. Water used to advance the boring may have affected the in-situ moisture content of the sample. Special terms are used as required to describe materials in greater detail, such terms are listed in ASTM D653. When sampling gravelly soils with a standard two-inch O.D. Split Spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders, cobbles, and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.

**8. CLASSIFICATION OF MATERIAL (continued)**

The Description of Rock is based upon the recovered rock core. Terms frequently used in the description are included in Table 3. The length of core run is defined as length of penetration between retrievals of the corebarrel from the bore hole, expressed in inches. The core recovery expresses the length of core recovered from the core barrel per core run, in percent. The size core barrel used is noted in Column 5. The more commonly used sizes of core barrels are denoted "AX" and "NX". An "NX" core, being larger in diameter than "AX" core, often produces better recovery, and is frequently utilized where accurate information regarding the geologic conditions and engineering properties is needed. A better estimate of in-situ rock quality is provided by a *modified core recovery ratio* known as the "Rock Quality Designation" (RQD). This ratio is determined by considering only pieces of core that are at least 4 inches long and are hard and sound. Breaks obviously caused by drilling are ignored. The diameter of the core should preferably be not less than 2 inches (NX). The percentage ratio between the total length of such core recovered and the length of core drilled on a given run is the RQD. Table 4 gives the rock quality description as related to the RQD.

9. The SPT "N" or RQD is given in this column as applicable to the specific sample taken. In Very Compact coarse grained soils the N-value may be indicated as 50+, and in Hard fine-grained soils the N-value may be indicated as 30+. This typically means that the blow count was achieved prior to driving the sampler the entire 6 inch interval or the sampler refused further penetration. For "NX" rock cores, the RQD is reported here, expressed in percent.

10. GROUND WATER OBSERVATIONS and timing noted by the driller are shown in this section. It is important to realize that the reliability of the water level observations depend upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that drill water used to advance the borings may have influenced the observations. Ground water levels typically fluctuate seasonally so those noted on the log are only representative of that exhibited during the period of time noted on the log. One or more perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or ground water observation well installations.

<b>TABLE 1 - VISUAL CLASSIFICATION OF MATERIALS (BURMISTER)</b>			
<b>GROUP</b>		<b>TEXTURAL CLASSIFICATION SIZES</b>	
BOULDERS		larger than 12" diameter	
COBBLES		12" diameter to 3" sieve	
GRAVEL		3" - coarse - 1" - medium - 1/2" - fine - #4 sieve	
SAND		#4 - coarse - #10 - medium - #40 - fine - #200 sieve	
SILT		#200 sieve (0.074mm) to 0.005mm size (see below *)	
CLAY		0.005mm size to 0.001mm size (see below *)	
<b>ABBREVIATIONS</b>		<b>PERCENT OF TOTAL SAMPLE BY WEIGHT</b>	
f - fine		and	35 to 50%
m - medium		some	20 to 35%
c - coarse		little	10 to 20%
		trace	0 to 10%
<b>*PLASTICITY DESCRIPTIONS</b>			
<b>TERM</b>	<b>PLASTICITY INDEX</b>	<b>DRY STRENGTH</b>	<b>FIELD TEST</b>
Non-plastic	0 - 3	Very low	falls apart easily
Slightly plastic	4 - 15	Slight	easily crushed by fingers
Plastic	15 - 30	Medium	difficult to crush
Highly plastic	31 or more	High	impossible to crush with fingers

**CME Associates, Inc.**

General Information and Key to the Test Boring Logs

<b>TABLE 2 - DESCRIPTION OF SOIL COMPACTNESS OR CONSISTENCY based on SPT "N"*</b>		
<b>Primary Soil Type</b>	<b>Descriptive Term of Compactness</b>	<b>Range of Standard Penetration Resistance (N)</b>
<b>COARSE GRAINED SOILS</b>	Very loose	less than 4 blows per foot
(More than half of Material is larger than No. 200 sieve size.)	Loose	4 to 10
	Medium compact	10 to 30
	Compact	30 to 50
	Very compact	Greater than 50
<b>FINE GRAINED SOILS</b>	<b>Descriptive Term of Consistency</b>	<b>Range of Standard Penetration Resistance (N)</b>
(More than half of material is smaller than No. 200 sieve size.)	Very soft	less than 2 blows per foot
	Soft	2 to 4
	Medium stiff	4 to 8
	Stiff	8 to 15
	Very stiff	15 to 30
	Hard	Greater than 30

\*The number of blows of 140 pound weight falling 30 inches to drive 2 inch O.D., 1-3/8 inch I.D. sampler 12 inches is defined as the Standard Penetration Resistance designated "N".

<b>TABLE 3 - ROCK CLASSIFICATION TERMS</b>		
<b>Rock Classification Terms</b>		<b>Field Test or Meaning of Term</b>
<b>Hardness</b>	Soft	Scratched by fingernail
	Medium Hard	Scratched easily by penknife
	Hard	Scratched with difficulty by penknife
	Very Hard	Cannot be scratched by penknife
<b>Weathering</b>	Very Weathered Weathered Sound	Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc.
<b>Bedding</b> (Natural Breaks in Rock Layers)	Laminated Thinly bedded Bedded Thickly bedded Massive	less than 1 inch 1 inch to 4 inches 4 inches to 12 inches 12 inches to 36 inches greater than 36 inches

RQD (%)	Rock Quality Term Used
90 to 100	Excellent
75 to 90	Good
50 to 75	Fair
25 to 50	Poor
0 to 25	Very Poor

BORING NO.: B-1

Page 1 of 1

<b>SUBSURFACE EXPLORATION - TEST BORING LOG</b>									
<b>Project:</b>					<b>Report No.:</b>				
<b>Client:</b>					<b>Date Started:</b>			<b>Finished:</b>	
<b>Location of Boring:</b>					<b>Elevation of Surface of Boring:</b>				
<b>METHODS OF INVESTIGATION</b>					<b>GROUND WATER OBSERVATIONS</b>				
<b>Casing:</b> 3-1/4" I.D. Hollow Stem Auger <b>Hammer:</b> <b>Other:</b> <b>Soil Sampler:</b> 2" O.D. Split Barrel <b>Rod Size:</b> <b>Sampler Hammer:</b> Wt. 140 lbs. <b>Fall:</b> 30 in. <b>Make &amp; Model of Drill Rig:</b>					Date	Time	Depth	Casing At	
						While drilling			
						Before casing removed			
						After casing removed			
<b>LOG OF BORING SAMPLES</b>					<b>CLASSIFICATION OF MATERIAL</b>				
Depth Casing Scale Blows/ (Feet) Foot	Sample I.D.	Depth of Sample (Feet) From	Depth of Sample (Feet) To	Sample Type/ Recovery (inches)	Blows on Sampler Per 6 inches	Depth of Change (feet)	f - fine m - medium c - coarse	and - 35 to 50% some - 20 to 35% little - 10 to 20% trace - 0 to 10%	STP "N" or RQD
1	2	3	4	4	5	6	7	8	9

Denotes Key Number (see page 1) ———→

## SECTION 089119 - FIXED LOUVERS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes fixed, extruded-aluminum louvers.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
- B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
- C. Samples: For each type of metal finish required.

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on tests performed according to AMCA 500-L.
- B. Windborne-debris-impact-resistance test reports.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

#### 2.2 FIXED, EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal, Drainable-Blade Louver:
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Ruskin Company, Model # ELF635oDMP, extruded aluminum, drainable w/ anodized finish, or comparable product:
  - 2. Louver Depth: **6 inches (150 mm)**.

3. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

## 2.3 LOUVER SCREENS

- A. General: Provide screen at louvers indicated on drawings.
  1. Screen Location for Fixed Louvers: Interior face.
  2. Screening Type: Bird screening.
- B. Louver Screen Frames: Same type and form of metal as indicated for louver to which screens are attached.
- C. Louver Screening for Aluminum Louvers:
  1. Bird Screening: Galvanized stainless steel, 1/4-inch square mesh, 0.047-inch (1.19-mm) wire.

## 2.4 MATERIALS

- A. Aluminum Extrusions: ASTM B 221, Alloy 6063-T5, T-52, or T6.
- B. Fasteners: Use types and sizes to suit unit installation conditions.
  1. Use hex-head or Phillips pan-head screws for exposed fasteners unless otherwise indicated.
  2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.
  3. For fastening galvanized steel, use hot-dip-galvanized steel or 300 series stainless-steel fasteners.
- C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

## 2.5 FABRICATION

- A. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
- B. Join frame members to each other and to fixed louver blades with fillet welds, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

## 2.6 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, or thicker.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- D. Protect unpainted galvanized and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

### 3.2 ADJUSTING

- A. Restore louvers damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

END OF SECTION 089119

## SECTION 113320

### CHANNEL GRINDER

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

- A. Provision of an operative channel grinder complete with control panel. Provide additional spare parts as specified herein.

##### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Refer to contract documents

##### 1.03 QUALITY ASSURANCE

- A. Equipment and controls shall meet the requirements of the following industry standards:
  1. ISO9001 Certified Quality Management Systems.
  2. AISI A48-30B or 40B: Standard Specification for Grey Iron Castings.
  3. AISI 4140 Heat Treated Hexagon Steel.
  4. AISI 4150 Heat Treated Alloy Steel.
  5. National Electrical Manufacturer's Association (NEMA) Standards.

##### 1.04 SUBMITTALS

- A. Submit shop drawings, catalog cuts, wiring diagrams, spare parts list, and specifications for items provided under this Section.

#### PART 2 PRODUCTS

##### 2.01 GRINDER

- A. General:
  1. The channel grinder shall be two-shaft design and be capable of continuous operation, processing wet or dry. Single shaft devices utilizing a single rotating cutter bar with stationary cutters will not be acceptable.
  2. Two-shaft design shall consist of two parallel shafts alternately double stacked with intermeshing cutters and spacers positioned on the shaft to form an offset or helical pattern. The two shafts shall counter-rotate with the driven shaft operating at approximately two-thirds (2/3) the speed of the drive shaft.
  3. The entire machine assembly shall be finished with three coats of chlorinated rubber based surface coating to provide long term effective surface protection from the environment.
  4. Equipment shall be identified with a corrosion resistant nameplate, securely affixed in a conspicuous place. Nameplate information shall

- include equipment model number, serial number, manufacturer's name and address.
5. The channel grinder be designed to handle a peak instantaneous flow rate of 500GPM (0.72MGD). The channel grinder shall be equal to Monoflo Inc., Model No. CA 206AJT7B2/528
  6. Provide a Type 304 stainless steel framework for positioning the grinder within the flow channel.
  7. Provide one (1) grinder complete with reducer and drive motor.

**B. Components:**

1. Grinder:

- a. The grinder shall include end housings, covers, shafts, side rails, flow deflector, installation framework, reducer, motor, cutter, spacers, bearings, and seals.
- b. Grinder end housing shall be cast of AISI A48-30B or 40B grey iron and designed to protect the seals while guiding particles directly into the cutter chamber. The cutting chamber shall be a nominal height of 39.3 inches and the opening to the chamber shall be a minimum of 8 ½ inches in width.
- c. Top and bottom covers shall be cast iron AISI A48-30B or 40B. d. Grinder drive and driven shafts shall be made of AISI 4140 Heat Treated Hexagon Steel with a tensile-strength rating of not less than 149,000 PSI. Each shaft diameter shall be a maximum of 2 inches. The minimum speed of the drive shaft shall be 66 rpm. The maximum speed of the drive shaft shall be 83 rpm.

2. Hi-Flow Side Rails for In-Channel Grinders:

- a. The inside profile of the side rail shall be concave to follow the radial arc of the cutters. The side rails shall be affixed to the grinder and maintain a clearance not to exceed 1/8 inch between the major diameter of the cutter and the concave arc of the side rail. Keeping this clearance directs larger particles towards the cutter to assure fineness of grind. Hi-Flow side rails when used shall have evenly spaced angled slots which cross the horizontal axis of at least two cutters to ensure the best grinding efficiency. Side rails shall be cast of AISI A48-30B or 40B grey iron.

3. Side rails having slots parallel with the cutters shall not be used.

4. Reducer:

- a. The gear speed reducer shall be grease filled helical gear type of reducer with "Heavy Shock" load classification. The reduction ratio shall be 25:1. The high-speed shaft of the grinder shall be directly coupled with the reducer using a two-piece coupling. The gear reducer shall be of submersible design.

5. Motor:

- a. The motor shall be totally enclosed, explosion-proof design, 5 HP, 1800 rpm, 230 volt, 60Hz, 1-phase. Motor service factor shall be 1.15, the efficiency factor not less than 81% at full load and the power factor not less than 68% at full load.

6. Required Running Torque Per Horsepower:

- a. Continuously: 1000 in-lbs. Minimum.
- b. At Momentary Load Peaks: 3300 in-lbs.

7. Cutters and Spacers:
  - a. The inside configuration of both cutters and spacers shall be hexagonal so as to fit the shafts with a total clearance not to exceed 0.010 inch across at least two pairs of flats to assure positive drive and increase the compressive strength of the spacers.
  - b. Cutters and spacers shall be AISI 4150 Heat Treated Alloy Steel, surface ground for uniformity and through-hardened to a minimum 46 Rockwell C. Double stack the cutters and spacers.
  - c. Standard cutters shall be designed to have 7 teeth 0.31 inches thick dependent on fineness of grinding required. The cutter tooth profile shall be of the single direction cutting design. Cutters on both the drive and driven shafts shall be identical to reduce spare components to a minimum.
  - d. The cutter shall exert a minimum force of 450 lbs. per HP continuously and 1430 lbs. per HP at momentary load peaks at the tooth tip.
  - e. Cutters shall be double stacked in a spiral configuration to maximized particle removal by the downstream screen.
8. Bearings and Seals:
  - a. The radial and axial loads of the shafts shall be borne by four sealed oversize Conrad-type ball bearings. The bearings shall be protected by a combination of a tortuous path device and end face mechanical seals. Face materials must be a minimum of tungsten carbide to another compatible material designed to give the best life, not requiring an external flush or any type of lubrication. The mechanical seal shall be rated for a 90 PSI continuous duty by the seal manufacturer. The seal face loading shall be maintained by the use of a multi-spring design concept using a minimum of 12 springs. The bearings and seals shall be housed in a replacement cartridge that supports and aligns the bearings and seals, as well as protects the shafts and end housings. O-rings and boots shall be made of Buna-N elastomers.
  - b. Product requiring continuous or occasional lubrication or flushing shall not be accepted.
9. Operation and Maintenance Manuals:
  - a. Provide three copies of operation and maintenance manuals for the equipment and controls.

C. Controls:

1. Provide all necessary controls for the automatic operation of the channel grinder. The panel shall also include, main power circuit breaker or fused disconnect switch; control circuitry; control transformer; reversing motor starter; lightning and phase protection; operation controller; elapsed time meter; hand-off-auto switch; forward-off-reverse switch. LED's (white - power, green - running, red - stop, red - power failure, red - trouble/jam); two (2) cabinet heaters with thermostats; flashing alarm light and 90 db alarm horn for a trouble condition (flashing red alarm light and alarm horn shall be installed on the exterior of the panel); a set of normally open and a

normally closed contacts for remote alarm panel, silence/test/reset button for alarm system, and all necessary appurtenances required for proper operation of the channel grinder.

- a. The operation controller shall in the event of a jam, stop the grinder, reverse the rotation to clear the obstruction, and return the grinder to normal operation if the jam is cleared. If a total of 6 reversing cycles occurs within a 60 second period, the grinder shall be stopped and an alarm (audio/visual) condition shall be activated.
2. Provide signal/control wiring including but not limited to conduit, conductors, boxes, seals, etc. and connections between equipment and appurtenances and the control panel. The mounting of the control panel and power to the control panel shall be provided by the electrical contractor.
- D. Spare Parts:
1. Three fuses.
  2. One complete set (gaskets).
  3. Three cutters.
  4. Three spacers.
  5. Spare parts shall be packaged for long term storage and labeled for contract and use.

### **PART 3 EXECUTION**

#### **3.01 FACTORY TEST**

- A. The channel grinder and controls shall be factory tested to ensure satisfactory operation.

#### **3.02 INSTALLATION**

- A. Install the channel grinder and controls in accordance with the Contract drawings, approved shop drawings, and manufacturer's installation instructions.
  1. Attach stainless steel cables to grinders for installation/removal from channel.

#### **3.03 FIELD QUALITY CONTROL**

- A. Provide the services of a Company Field Advisor to check initial installation and to place the grinder in service. The Company Field Advisor shall inspect the final

Installation and supervise a start-up test of the equipment.

- B. Provide the services of a Company Field Advisor to instruct operating personnel on the proper operation and maintenance of the equipment and controls.

#### **3.04 TURNOVERS**

- A. Turnover spare parts and operation manuals to the OGS Representative.

**END OF SECTION**

## SECTION 113330

### CHANNEL GATES

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

- A. The equipment provided under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with the drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer unless exceptions are noted by the engineer.
- B. Gates and operators shall be supplied with all the necessary parts and accessories indicated on the drawings, specified or otherwise required for a complete, properly operating installation and shall be the latest standard product of a manufacturer regularly engaged in the production of water control gates.

Gates supplied under this section shall be Series 25 Stainless Steel Channel Gates as manufactured by H.Fontaine Ltd. or approved equal.

##### 1.02 GOVERNING STANDARDS

- A. Except as modified or supplemented herein, all gates and operators shall conform to the applicable requirements of AWWA C513, latest edition.

##### 1.03 QUALITY ASSURANCE

- A. The manufacturer shall have experience in the production of substantially similar equipment, and shall show evidence of satisfactory operation in at least 50 installations. The manufacturer's shop welds, welding procedures and welders shall be qualified and certified in accordance with the requirement of the latest edition of ASME, Section IX.
- B. Gates shall be shop inspected for proper operation before shipping.

##### 1.04 SUBMITTALS

- A. The contractor shall submit, for approval by the engineer, drawings showing the main dimensions, general construction and materials used in the gate and lift mechanism.

## 1.05 PERFORMANCE

- A. **LEAKAGE.** Channel gates shall be substantially watertight under the design head conditions. Leakage shall not exceed 0.05 U.S. gallon per minute per foot (0.60 l/min per meter) of seal periphery under the design seating head and unseating head.
- B. **DESIGN HEAD.** The slide gates shall be designed to withstand the maximum design head (maximum design head shall be 10 feet).
- C. **SEAL PERFORMANCE TEST.** The gate's sealing system should have been tested through a cycle test in an abrasive environment and should show that the leakage requirements are still obtained after 25,000 cycles with a minimum deterioration.

## PART 2 PRODUCTS

### 2.01 CHANNEL GATES

- A. **GENERAL DESIGN.** Gates shall be either self-contained or non-self-contained and of the rising stem or non-rising stem configuration, as indicated on the gate schedule.
- B. **FRAME.** The gate frame shall be constructed of structural members or formed plate. The frame shall be suitable for mounting on a concrete wall (CW) at the end of a channel, embedded inside a channel (FE) or mounted on the channel surface (EC). The guide slot shall be of UHMWPE (ultra high molecular weight polyethylene). The frame configuration shall be of the flush-bottom type.
- C. **SLIDE.** The slide shall consist of a flat plate reinforced with formed plates or structural members to limit its deflection to 1/720 of the gate's span under the design head.
- D. **GUIDES AND SEALS.** Guides shall be made of UHMWPE (ultra high molecular weight polyethylene) and shall be of such length as to retain and support at least two thirds (2/3) of the vertical height of the slide in the fully open position.

Side seals shall be made of UHMWPE (ultra high molecular weight polyethylene) of the self-adjusting type. A compression cord shall ensure contact between the UHMWPE guide and the gate in all positions. The sealing system shall maintain efficient sealing in any position of the slide and let the water flow only in the open part of the gate.

Seals shall maintain the specified leakage rate in both seating and unseating conditions. The bottom seal shall be made of resilient neoprene set into the bottom member of the frame and shall form a flush-bottom.

## 2.02 OPERATORS AND STEM

- A. **STEM AND COUPLINGS.** The operating stem shall be of stainless steel designed to transmit in compression at least two (2) times the rated output of the operating manual mechanism with a 40 lbs effort on the crank or handwheel.

The stem shall have a slenderness ratio ( $L/r$ ) less than 200. The threaded portion of the stem shall have machine cut threads of the Acme type.

Where a hydraulic, pneumatic or electric operator is used, the stem design force shall not be less than 1.25 times the output thrust of the hydraulic or pneumatic cylinder with a pressure equal to the maximum working pressure of the supply, or 1.25 times the output thrust of the electric motor in the stalled condition.

1. For stems in more than one piece and with a diameter of  $1\frac{3}{4}$  inches and larger, the different sections shall be joined together by solid bronze couplings. Stem with a diameter smaller than  $1\frac{3}{4}$  inches shall be pinned to an extension tube.

The couplings shall be grooved and keyed and shall be of greater strength than the stem.

2. Gates having width equal to or greater than two times their height shall be provided with two lifting mechanisms connected by a tandem shaft.
- B. **STEM GUIDES.** Stem guides shall be fabricated from type 316L stainless steel. The guide shall be equipped with a UHMWPE bushing. Guides shall be adjustable and spaced in accordance with the manufacturer's recommendation. The  $L/r$  ratio shall not be greater than 200.
- C. **STEM COVER.** Rising stem gates shall be provided with a clear polycarbonate stem cover. The stem cover shall have a cap and condensation vents as well as a clear mylar position indicating tape. The tape shall be field applied to the stem cover after the gate has been installed and positioned.
- D. **LIFTING MECHANISM.** Manual operators of the types listed in the schedule shall be provided by the gate manufacturer.

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All bearings and gears shall be totally enclosed in a weather-tight housing. The pinion shaft of crank-operated mechanisms shall be constructed of stainless steel and supported by roller or needle bearings.

Each manual operator shall be designed to operate the gate under the maximum specified seating and unseating heads by using a maximum effort of 40 lbs on the crank or handwheel and shall be able to withstand, without damage, an effort of 80 lbs.

The crank shall be removable and fitted with a corrosion resistant rotating handle. The maximum crank radius shall be 15 inches and the maximum handwheel diameter shall be 24 inches.

- E. **YOKE.** Self-contained gates shall be provided with a yoke made of structural members or formed plates. The maximum deflection shall be 1/360 of the gate's span.

#### F. MATERIALS

PART	MATERIAL
Frame, yoke, stem guides, slide, stem extension	Stainless steel ASTM A-240 type 304L or 316L
Guides, side seals, stem guide liner	Ultra high molecular weight polyethylene (UHMWPE) ASTM D-4020
Compression cord	Nitrile ASTM D2000 M6BG 708, A14, B14, E014, E034
Bottom seal	Neoprene ASTM D2000 Grade 2 BC-510
Threaded stem	Stainless steel ASTM A-276 type 303 MX or 316
Fasteners	ASTM F593 and F594 GR1 for type 304 and GR2 for type 316
Pedestal, handwheel and crank	Tenzaloy aluminum
Gasket (between frame and wall)	EPDM ASTM 1056
Stem cover	Polycarbonate ASTM D-3935
Lift nut, couplings	Manganese bronze ASTM B584 UNS-C86500

### PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Gates and appurtenances shall be handled and installed in accordance with the manufacturer's recommendations.

### **3.2 FIELD TESTS**

- A.** Following the completion of each gate installation, the gates shall be operated through at least two complete open/close cycles.
- B.** Gates should be checked for leakage by the contractor.

**END OF SECTION**