

APPENDIX C – WELL INSTALLATION LOGS

APPENDIX C.1

TEMPORARY WELLS

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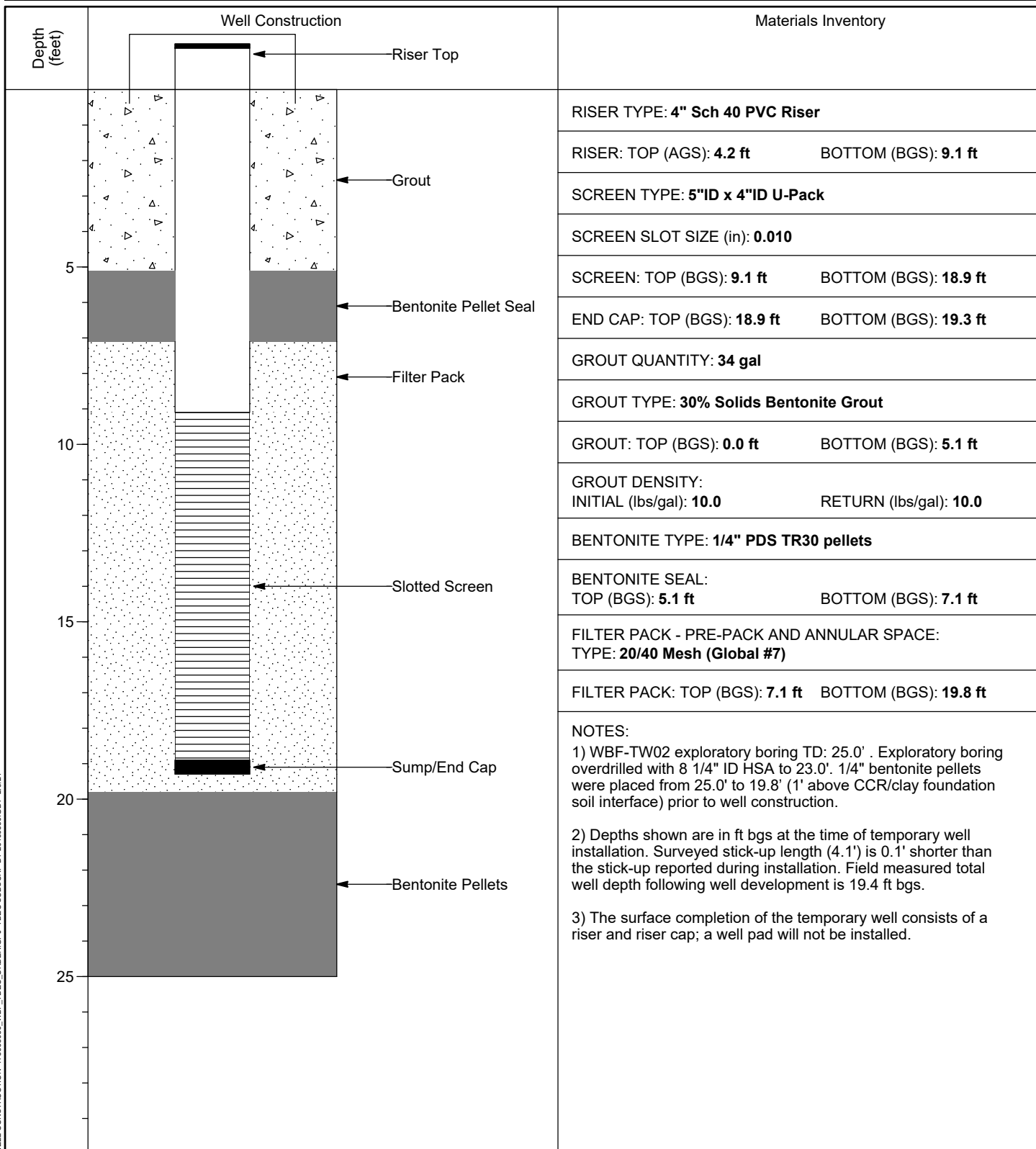
WBF-TW05 4



WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-TW02 (Boring WBF-TW02)PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **8-1/4" HSA overdrill of boring**SAMPLING METHOD: **4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **G. Budd**REVIEWED BY: **C. Millhollin**APPROVED BY: **P. Dunne**INSTALLATION: STARTED: **7/12/19**COMPLETED: **7/15/19**LOCATION: **443,688.39 N; 2,362,820.92 E**DATUM: **NAD27 Plant Local**LOC. DESCRIP: **Ash Pond**LATITUDE: **35° 36' 17.11"**LONGITUDE: **-84° 46' 46.13"**GROUND ELEV (ft): **714.3**TOC ELEV (ft): **718.34**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **25.0**WELL DEPTH (ft, bgs): **19.3**DTW AT COMPLETION (ft, bgs): **N/A**BOREHOLE DIA. (in): **13.0**WELL DIA. (in): **4.0**

WELL CONSTRUCTION 175668050_WBF_TDEC ORDER GPJ_TDEC SUBSURF DT 20190330.GDT 2/9/21

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)



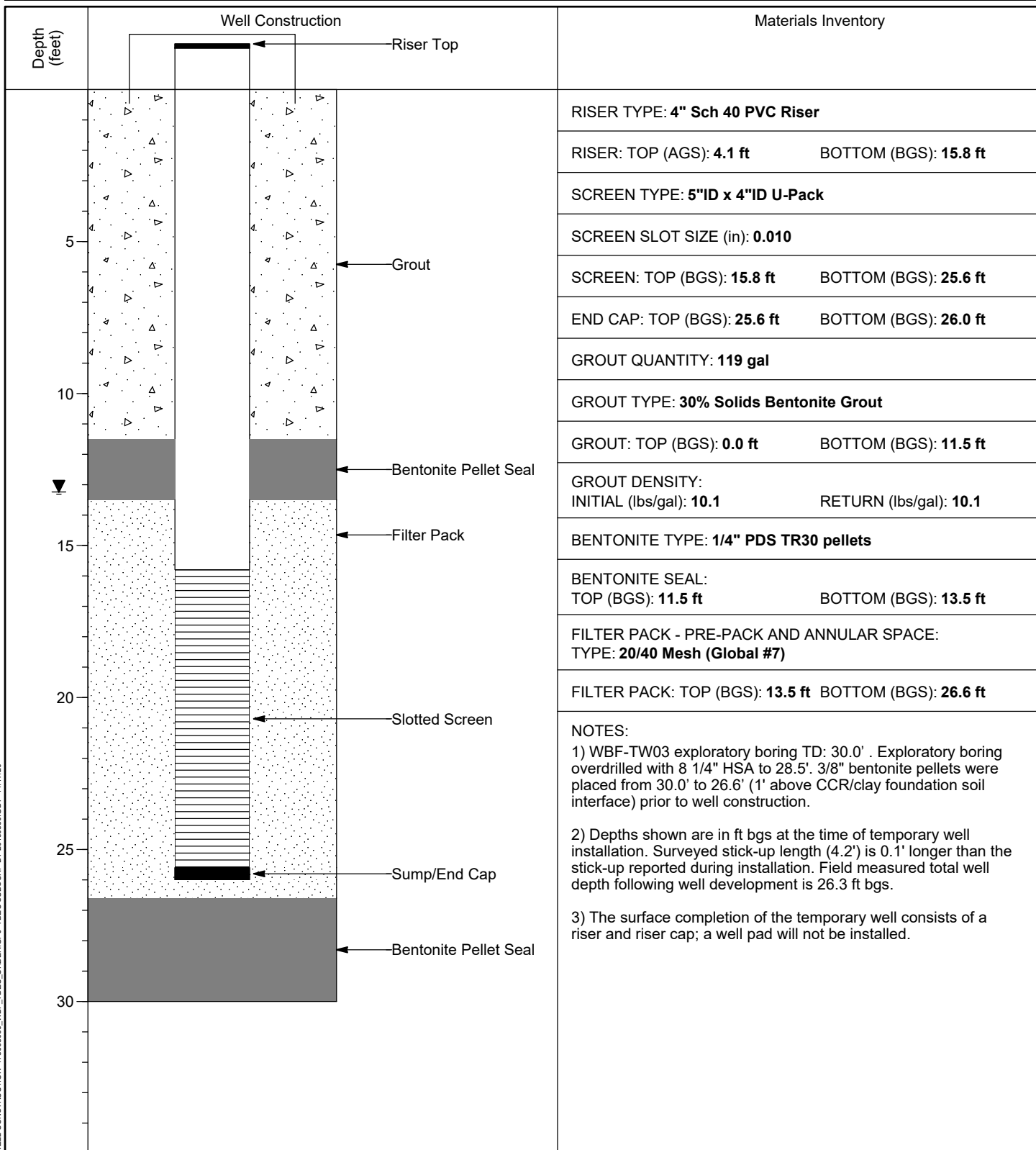
PAGE 1 OF 1

WBF-TW03 (Boring WBF-TW03)

APPROVED BY: **P. Dunne**

BOREHOLE DIA. (in): **13.0**

WELL DIA. (in): **4.0**

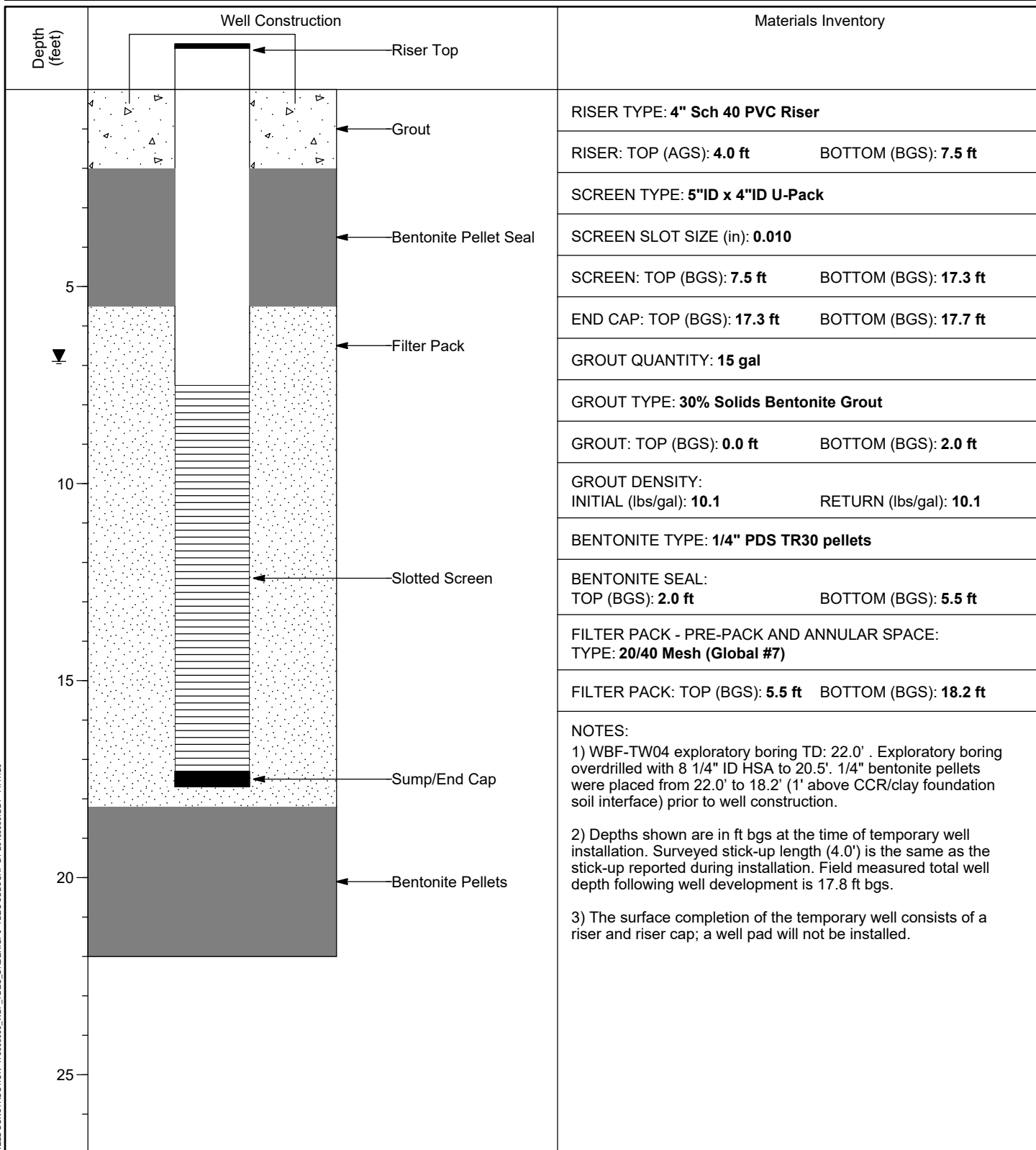




WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-TW04 (Boring WBF-TW04)PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **8-1/4" HSA overdrill of boring**SAMPLING METHOD: **4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **G. Budd**REVIEWED BY: **C. Kocka**APPROVED BY: **P. Dunne**INSTALLATION: STARTED: **7/11/19**COMPLETED: **7/12/19**LOCATION: **444,739.38 N; 2,362,524.31 E**DATUM: **NAD27 Plant Local**LOC. DESCRIP: **Slag Disposal Area**LATITUDE: **35° 36' 27.54"**LONGITUDE: **-84° 46' 49.56"**GROUND ELEV (ft): **715.3**TOC ELEV (ft): **719.27**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **22.0**WELL DEPTH (ft, bgs): **17.7**DTW AT COMPLETION (ft, bgs): **6.9**BOREHOLE DIA. (in): **13.0**WELL DIA. (in): **4.0**

WELL CONSTRUCTION 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF.DT 20190830.GDT 11/17/20

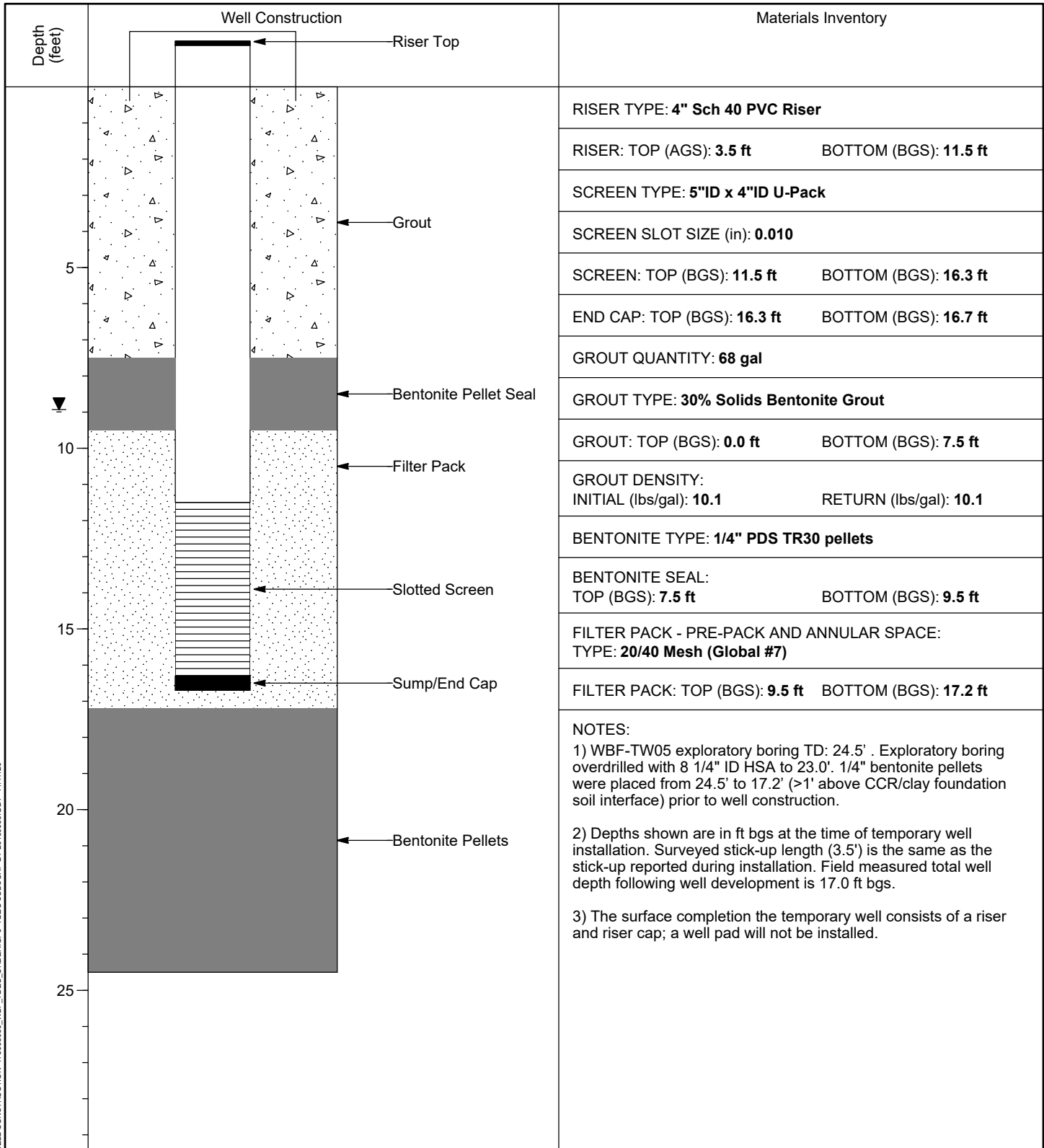
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WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-TW05 (Boring WBF-TW05)PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **8-1/4" HSA overdrill of boring**SAMPLING METHOD: **4-1/4" HSA, 3" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **G. Budd**REVIEWED BY: **C. Kocka**APPROVED BY: **C. Millhollin**INSTALLATION: STARTED: **7/16/19**COMPLETED: **7/17/19**LOCATION: **445,258.05 N; 2,362,872.96 E**DATUM: **NAD27 Plant Local**LOC. DESCRIP: **Slag Disposal Area**LATITUDE: **35° 36' 32.62"**LONGITUDE: **-84° 46' 45.26"**GROUND ELEV (ft): **714.5**TOC ELEV (ft): **717.97**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **24.5**WELL DEPTH (ft, bgs): **16.7**DTW AT COMPLETION (ft, bgs): **8.9**BOREHOLE DIA. (in): **13.0**WELL DIA. (in): **4.0**

WELL CONSTRUCTION 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF.DT 20190830.GDT 11/17/20

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

APPENDIX C.2

PIEZOMETERS

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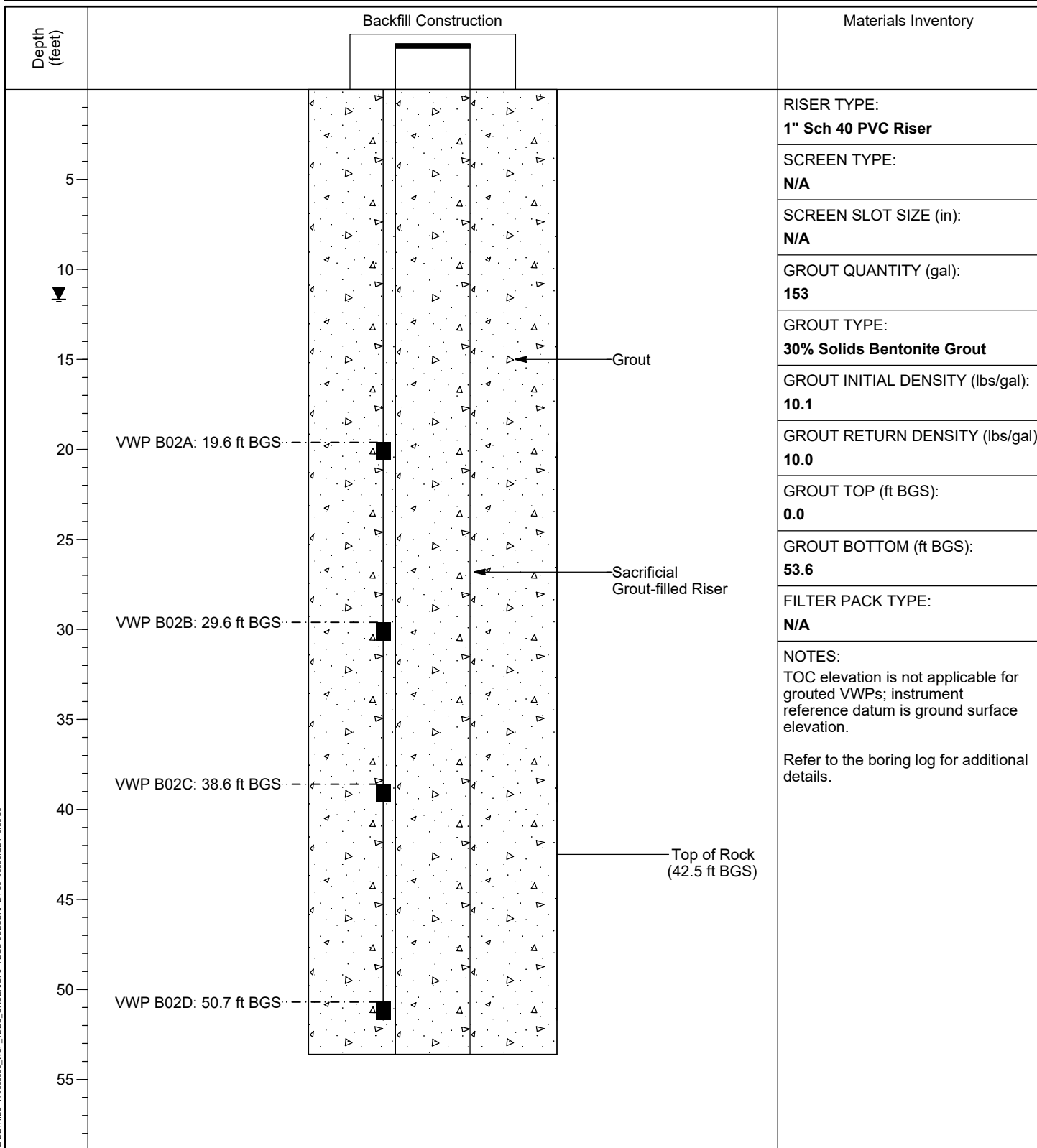
WBF-B2810



PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-B02PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **G. Budd**REVIEWED BY: **K. Blakley**APPROVED BY: **A. Welshans**INSTALLATION: STARTED: **8/5/19**COMPLETED: **8/5/19**LOCATION: **444,557.61 N; 2,362,444.29 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Slag Disposal Area**LATITUDE: **35° 36' 25.49"**LONGITUDE: **-84° 46' 50.56"**GROUND ELEV (ft): **719.1**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **54.0**RISER DEPTH (ft): **53.6**DTW AT COMPLETION (ft, bgs): **11.7**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 6/30/20

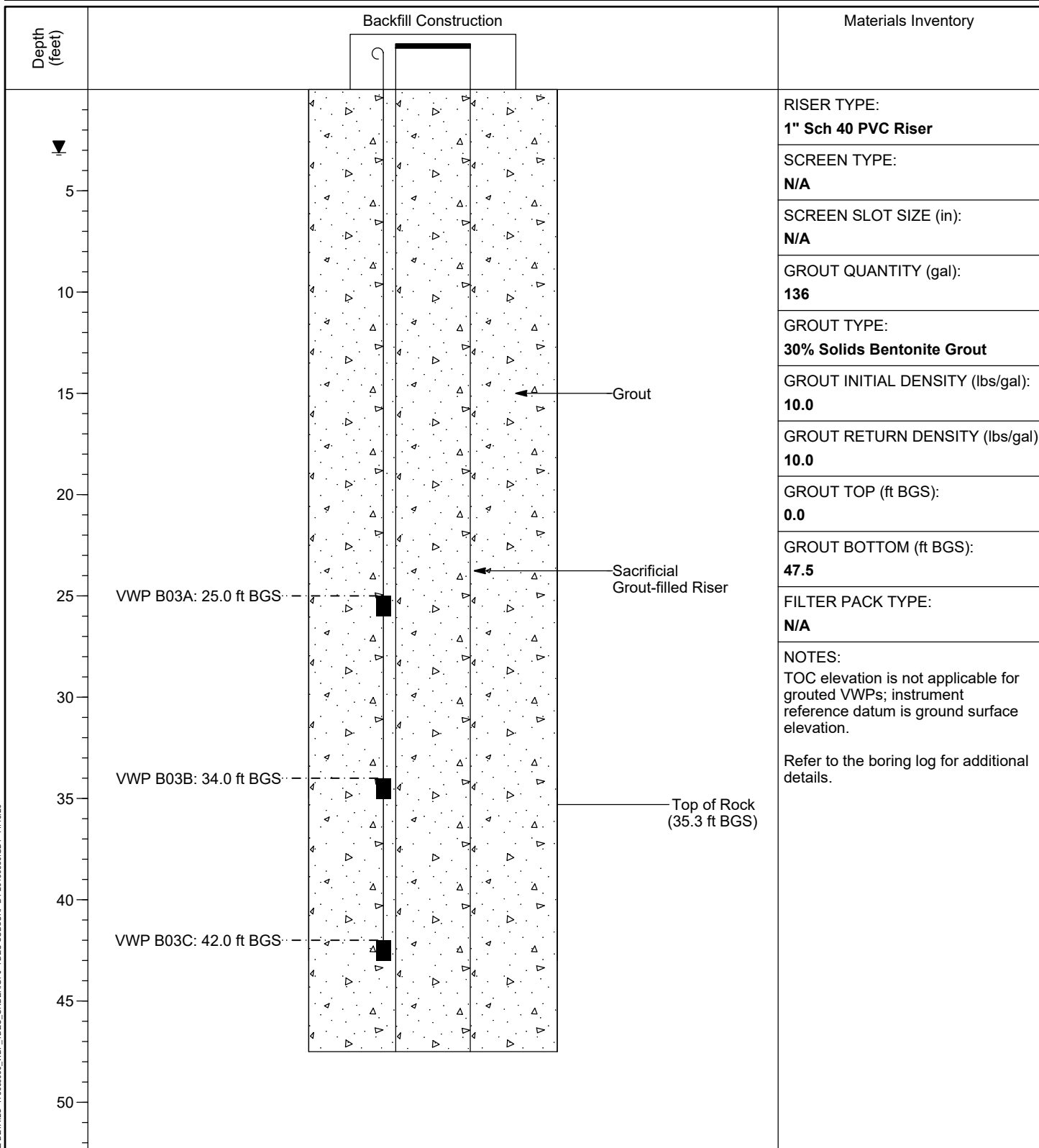
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PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-B03PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **G. Budd**REVIEWED BY: **K. Blakley**APPROVED BY: **T. Greenwell**INSTALLATION: STARTED: **8/29/19**COMPLETED: **8/29/19**LOCATION: **444,612.30 N; 2,363,046.92 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Slag Disposal Area**LATITUDE: **35° 36' 25.96"**LONGITUDE: **-84° 46' 43.25"**GROUND ELEV (ft): **699.9**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **47.5**RISER DEPTH (ft): **47.5**DTW AT COMPLETION (ft, bgs): **3.1**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/16/20

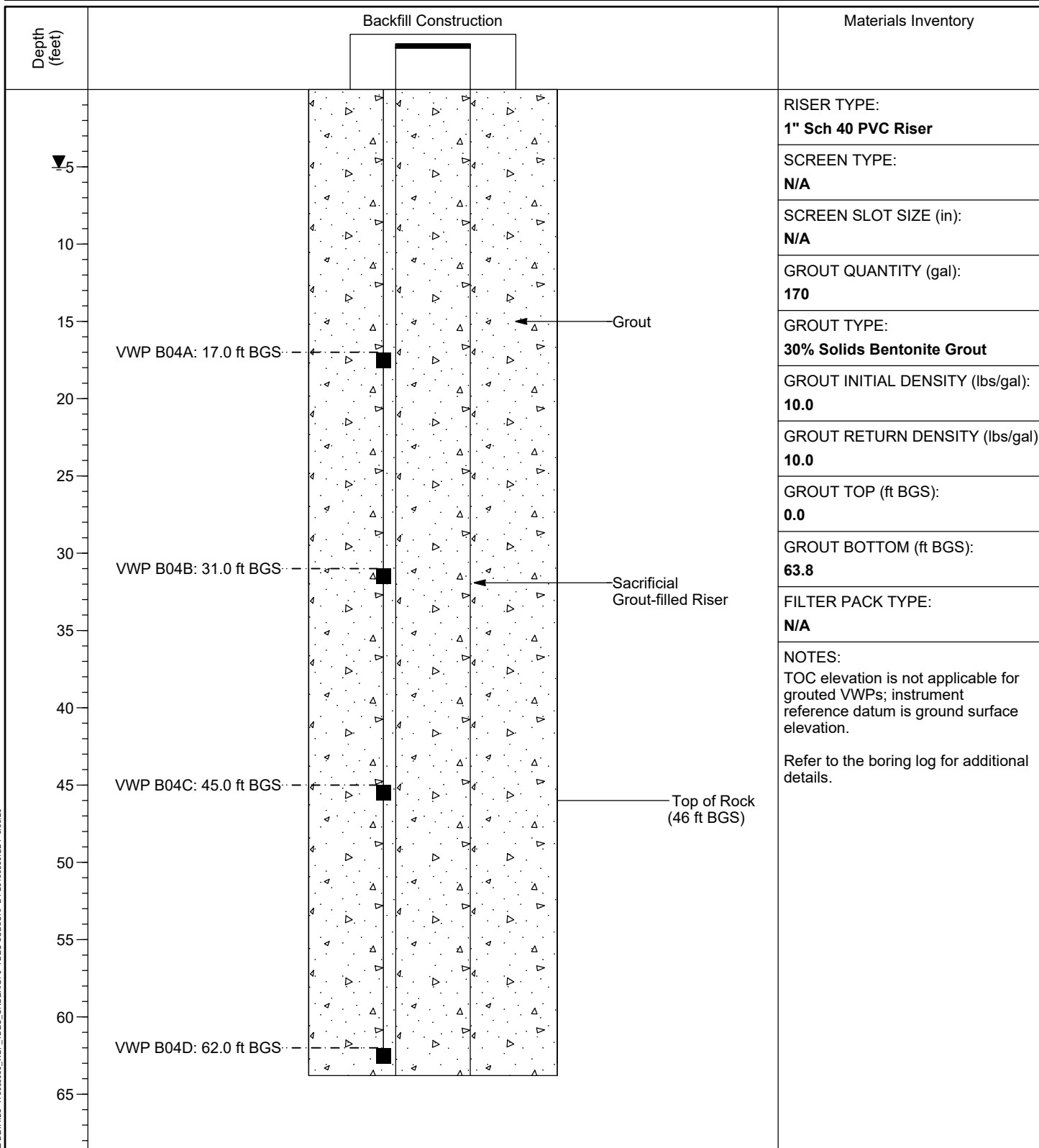
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PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-B04PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **G. Budd**REVIEWED BY: **K. Blakley**APPROVED BY: **A. Welshans**INSTALLATION: STARTED: **8/13/19**COMPLETED: **8/13/19**LOCATION: **444,821.39 N; 2,362,922.46 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Slag Disposal Area**LATITUDE: **35° 36' 28.04"**LONGITUDE: **-84° 46' 44.73"**GROUND ELEV (ft): **713.4**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **63.8**RISER DEPTH (ft): **63.8**DTW AT COMPLETION (ft, bgs): **5.1**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 6/30/20

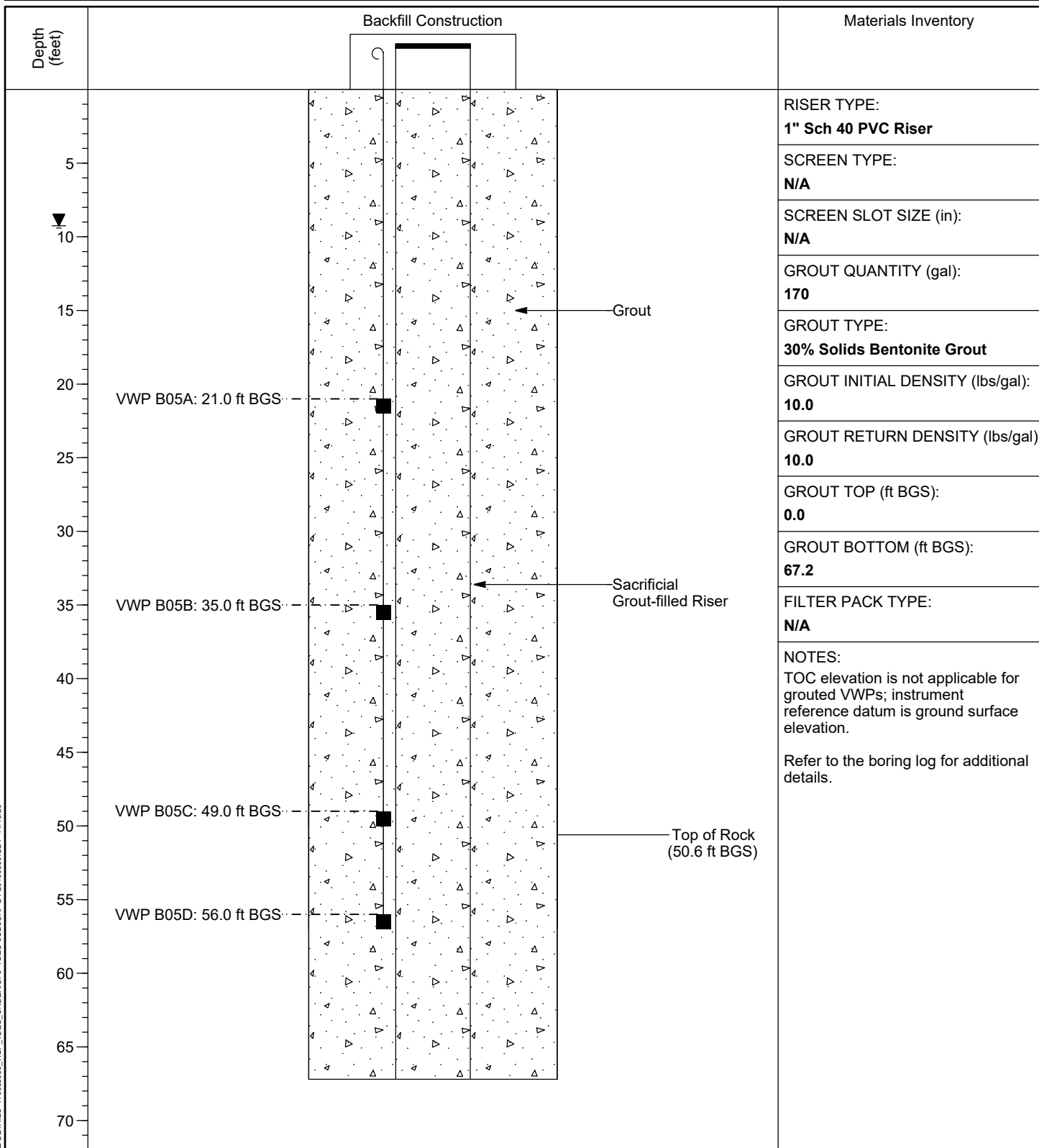
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PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-B05PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **G. Budd**REVIEWED BY: **K. Blakley**APPROVED BY: **T. Greenwell**INSTALLATION: STARTED: **8/16/19**COMPLETED: **8/16/19**LOCATION: **444,830.68 N; 2,362,709.29 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Slag Disposal Area**LATITUDE: **35° 36' 28.16"**LONGITUDE: **-84° 46' 47.31"**GROUND ELEV (ft): **717.2**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **67.2**RISER DEPTH (ft): **67.2**DTW AT COMPLETION (ft, bgs): **9.3**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 11/16/20

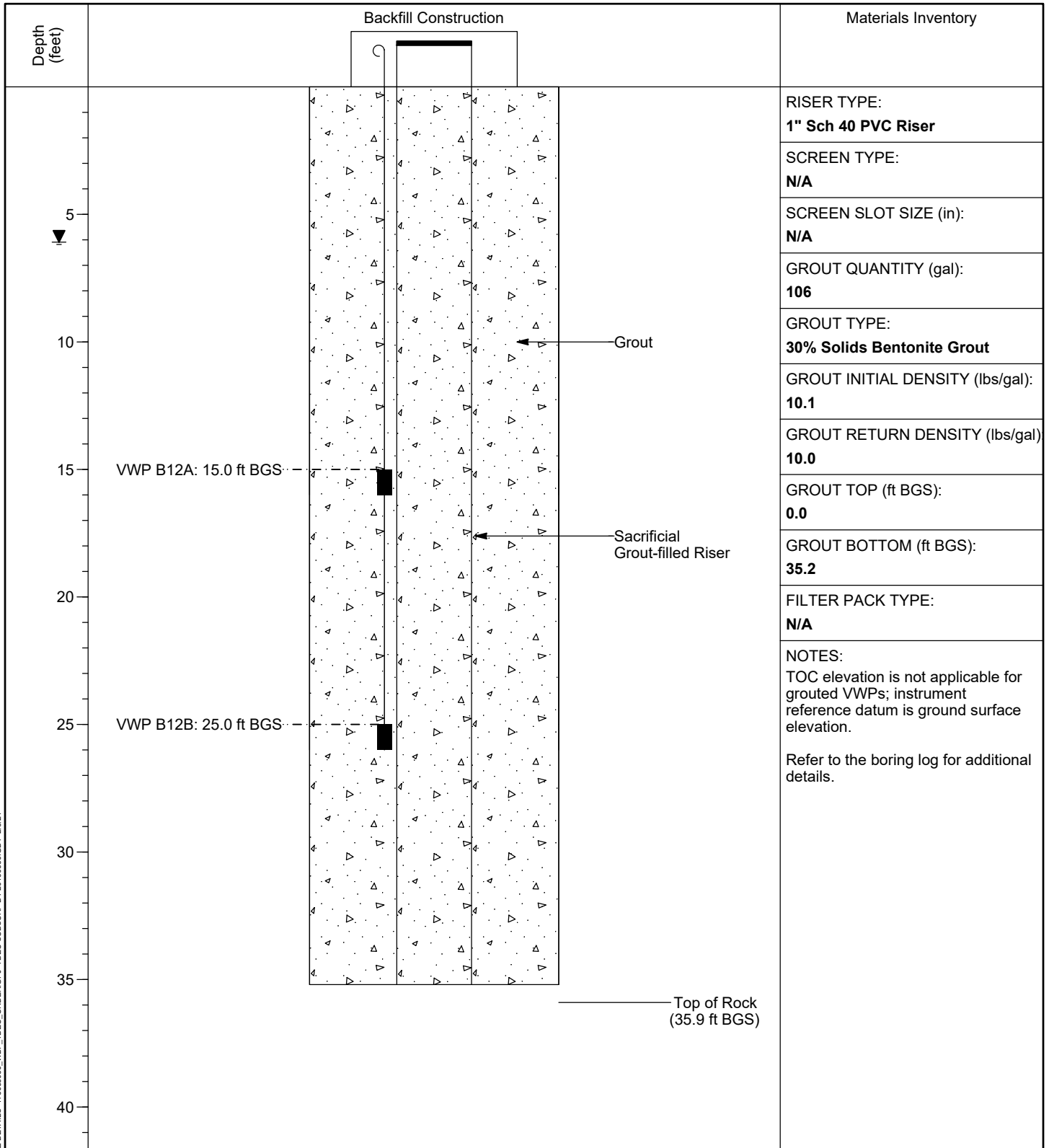
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PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-B12PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 55#4, #713**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **T. Greenwell**REVIEWED BY: **K. Blakley**APPROVED BY: **A. Welshans**INSTALLATION: STARTED: **6/11/20**COMPLETED: **6/11/20**LOCATION: **444,505.64 N; 2,363,054.94 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Slag Disposal Area**LATITUDE: **35° 36' 24.91"**LONGITUDE: **-84° 46' 43.17"**GROUND ELEV (ft): **699.4**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **36.8**RISER DEPTH (ft): **35.2**DTW AT COMPLETION (ft, bgs): **6.1**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 2/8/21

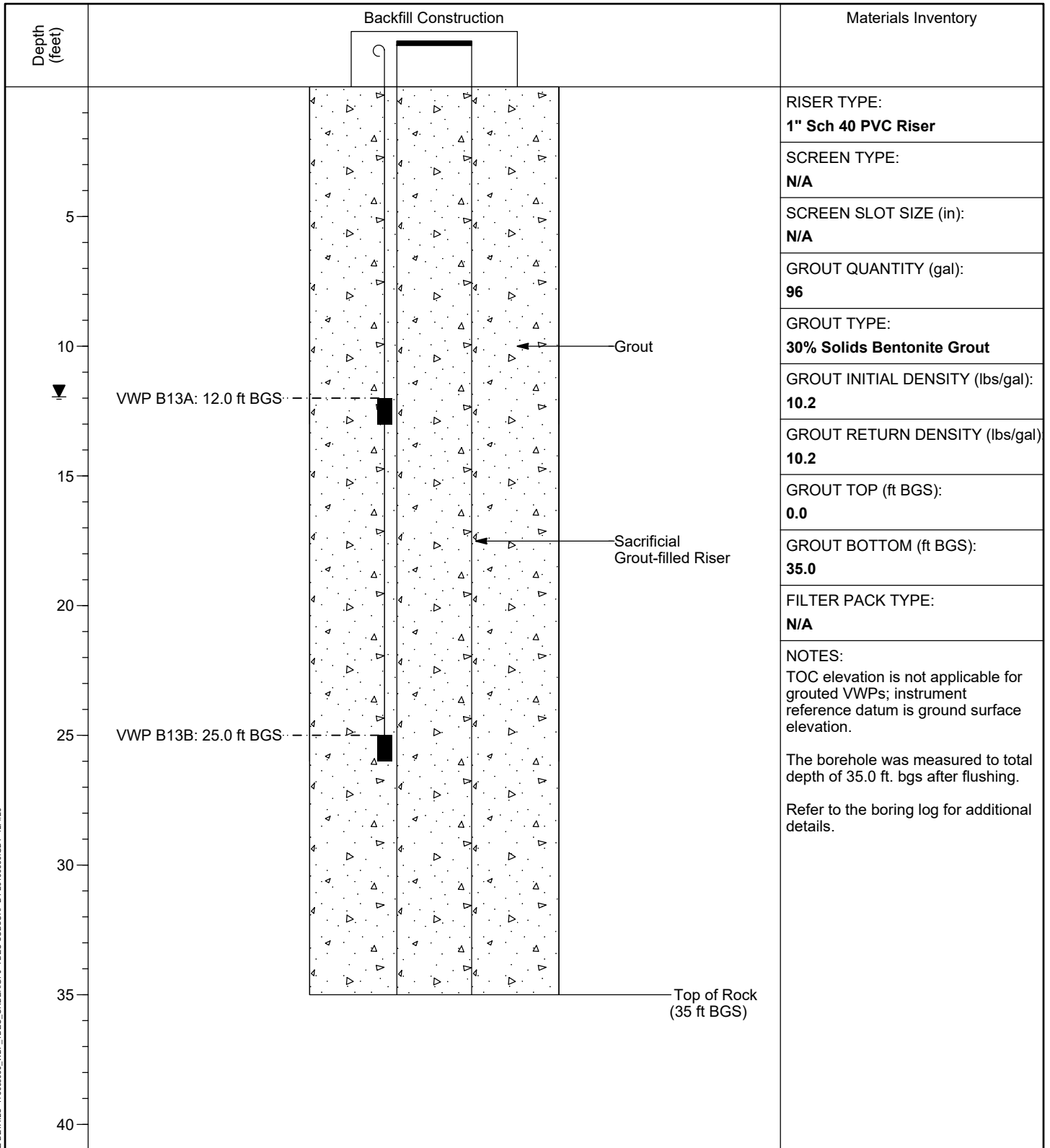
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PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-B13PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 55#4, #713**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners, 3" Shelby Tubes**OBSERVED BY: **T. Greenwell**REVIEWED BY: **K. Blakley**APPROVED BY: **A. Welshans**INSTALLATION: STARTED: **6/15/20**COMPLETED: **6/15/20**LOCATION: **444,836.96 N; 2,363,057.56 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Slag Disposal Area**LATITUDE: **35° 36' 28.18"**LONGITUDE: **-84° 46' 43.09"**GROUND ELEV (ft): **699.6**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **36.1**RISER DEPTH (ft): **35.0**DTW AT COMPLETION (ft, bgs): **12.0**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 12/4/20

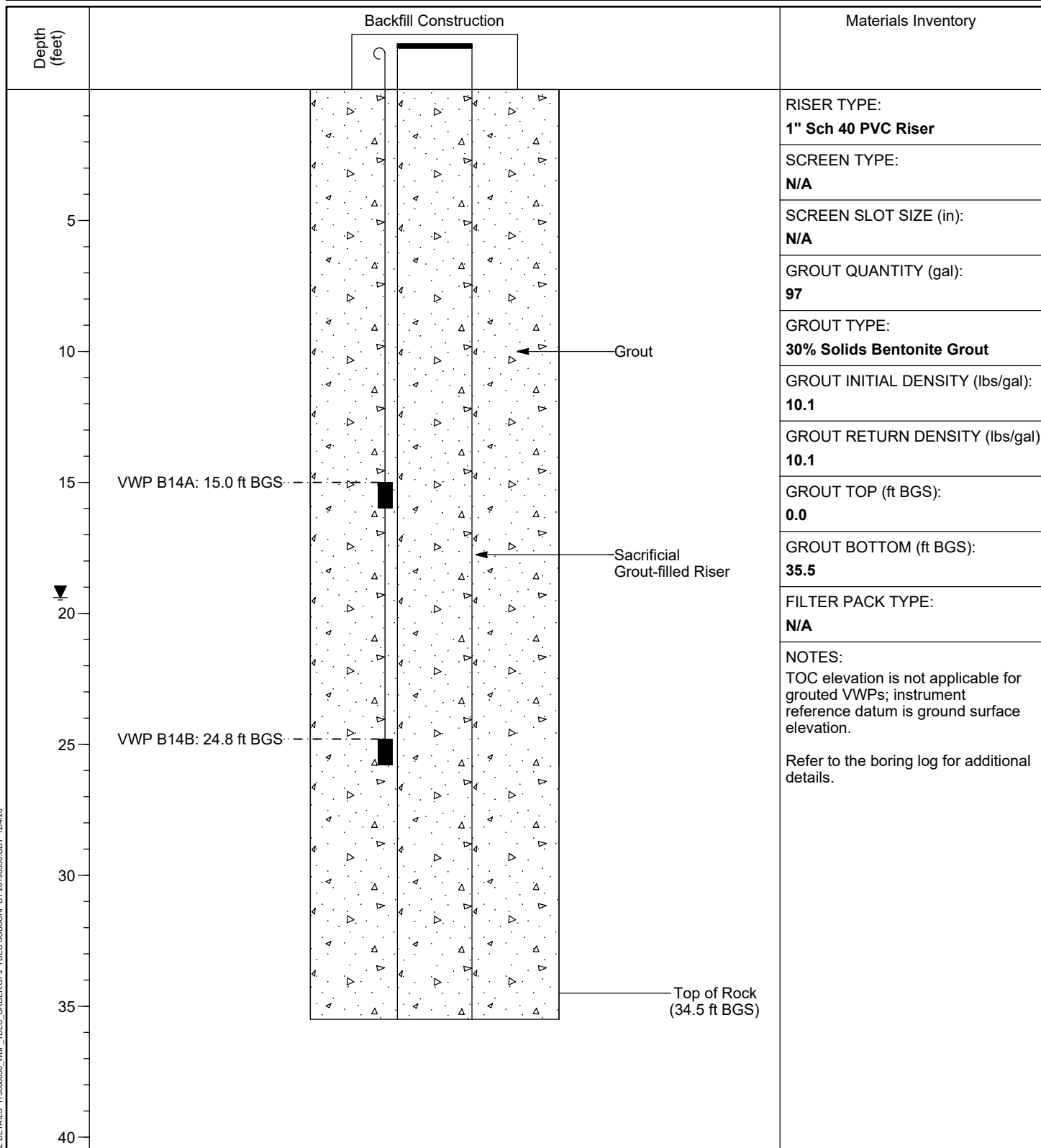
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PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-B14PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 55#4, #713**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**OBSERVED BY: **T. Greenwell**REVIEWED BY: **K. Blakley**APPROVED BY: **A. Welshans**INSTALLATION: STARTED: **6/16/20**COMPLETED: **6/16/20**LOCATION: **445,034.59 N; 2,363,044.22 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Slag Disposal Area**LATITUDE: **35° 36' 30.14"**LONGITUDE: **-84° 46' 43.22"**GROUND ELEV (ft): **700.9**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **35.6**RISER DEPTH (ft): **35.5**DTW AT COMPLETION (ft, bgs): **19.4**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 12/4/20

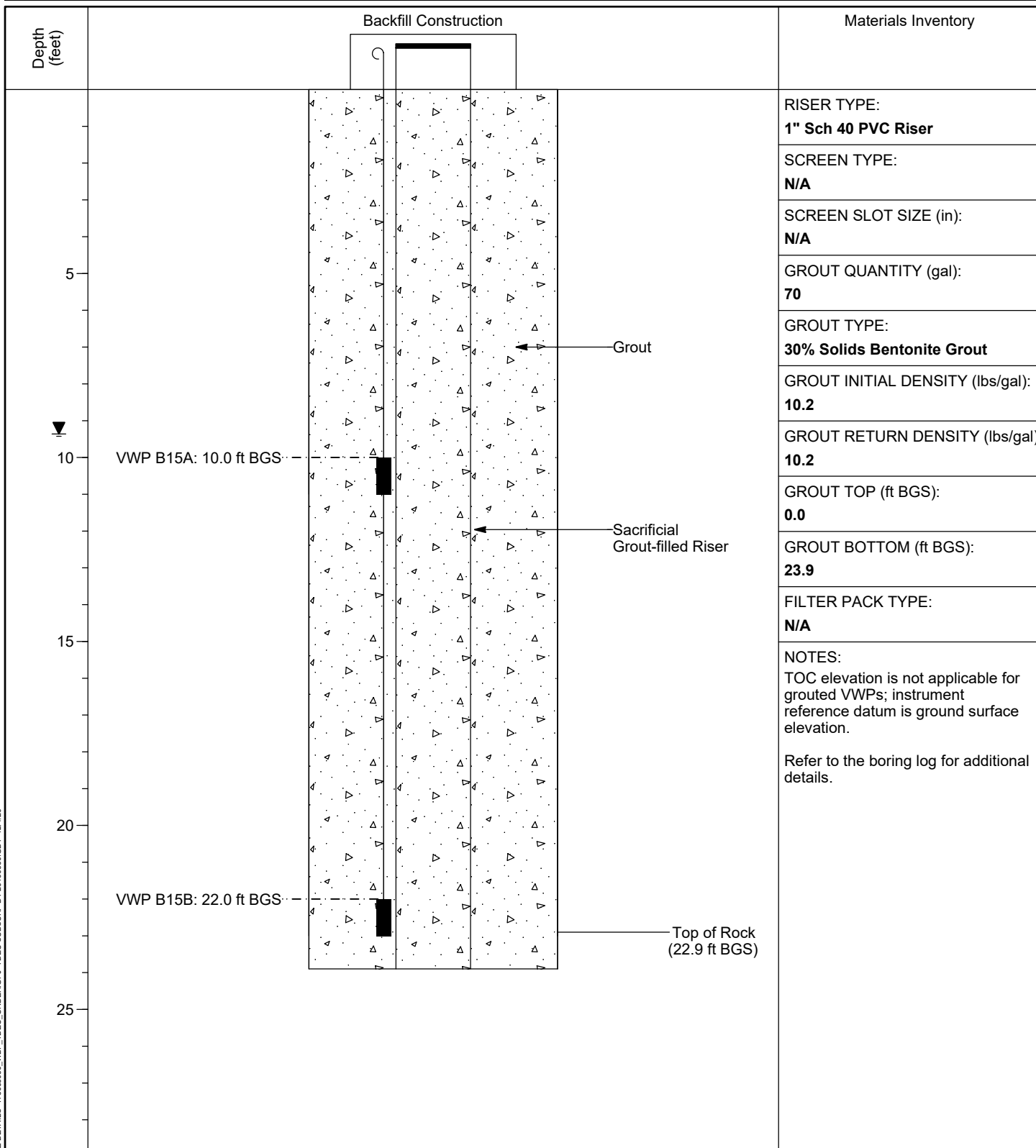
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PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

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WBF-B15PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 55#4, #713**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**OBSERVED BY: **T. Greenwell**REVIEWED BY: **K. Blakley**APPROVED BY: **A. Welshans**INSTALLATION: STARTED: **6/18/20**COMPLETED: **6/18/20**LOCATION: **444,684.49 N; 2,362,031.93 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Drainage Improvement Area**LATITUDE: **35° 36' 26.80"**LONGITUDE: **-84° 46' 55.53"**GROUND ELEV (ft): **714.7**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **23.9**RISER DEPTH (ft): **23.9**DTW AT COMPLETION (ft, bgs): **9.4**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 12/4/20

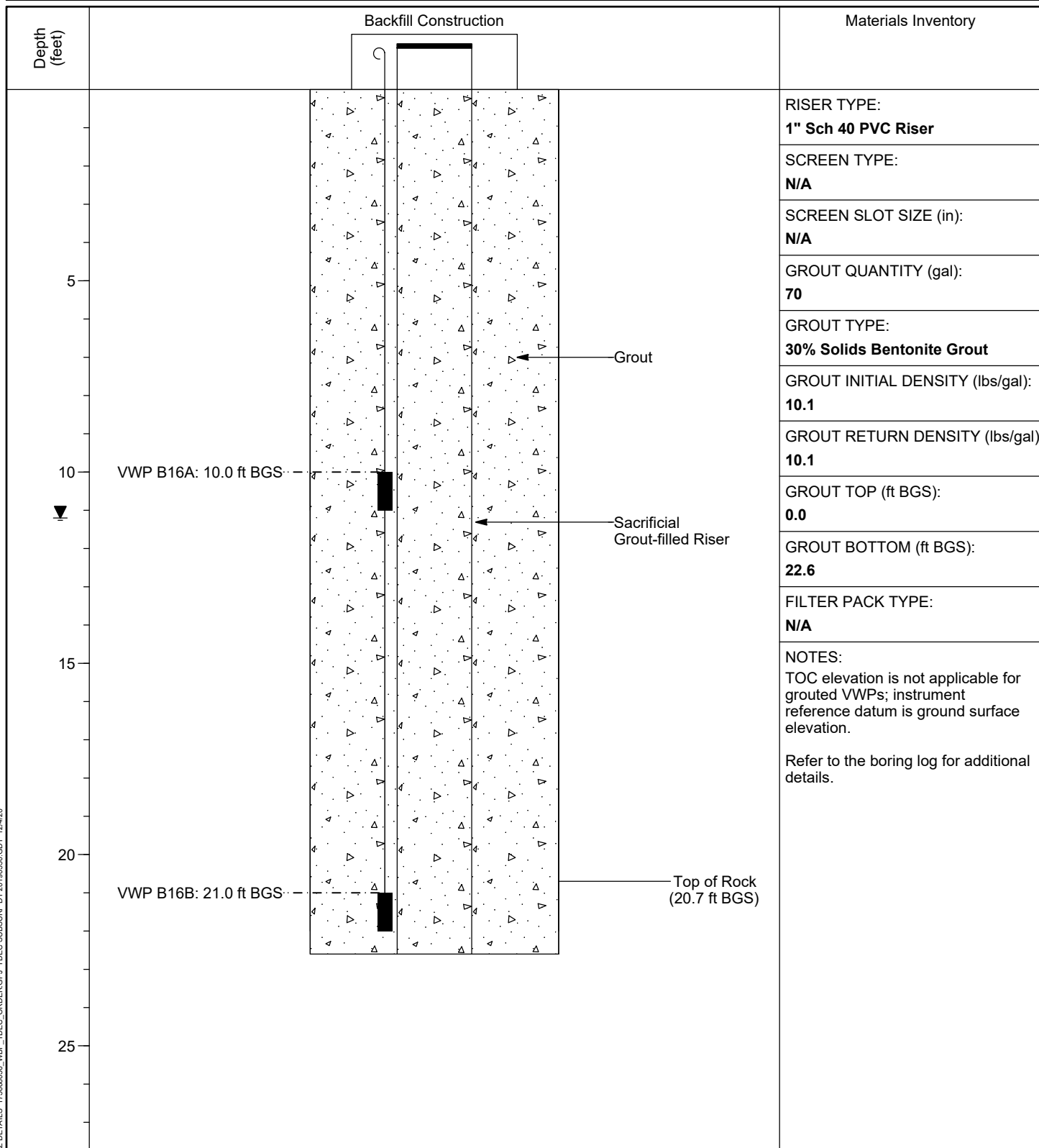
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PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-B16 (Boring WBF-B16A)PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 55#4, #713**DRILLING METHOD: **4-1/4" HSA, 2" SS w/o liners**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**OBSERVED BY: **T. Greenwell**REVIEWED BY: **K. Blakley**APPROVED BY: **A. Welshans**INSTALLATION: STARTED: **6/17/20**COMPLETED: **6/17/20**LOCATION: **444,673.23 N; 2,362,147.89 E** DATUM: **NAD27 Plant Local**LOC. DESCRIPTION: **Slag Disposal Area**LATITUDE: **35° 36' 26.67"**LONGITUDE: **-84° 46' 54.13"**GROUND ELEV (ft): **713.6**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **22.8**RISER DEPTH (ft): **22.6**DTW AT COMPLETION (ft, bgs): **11.2**BOREHOLE DIA. (in): **9.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 12/4/20

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

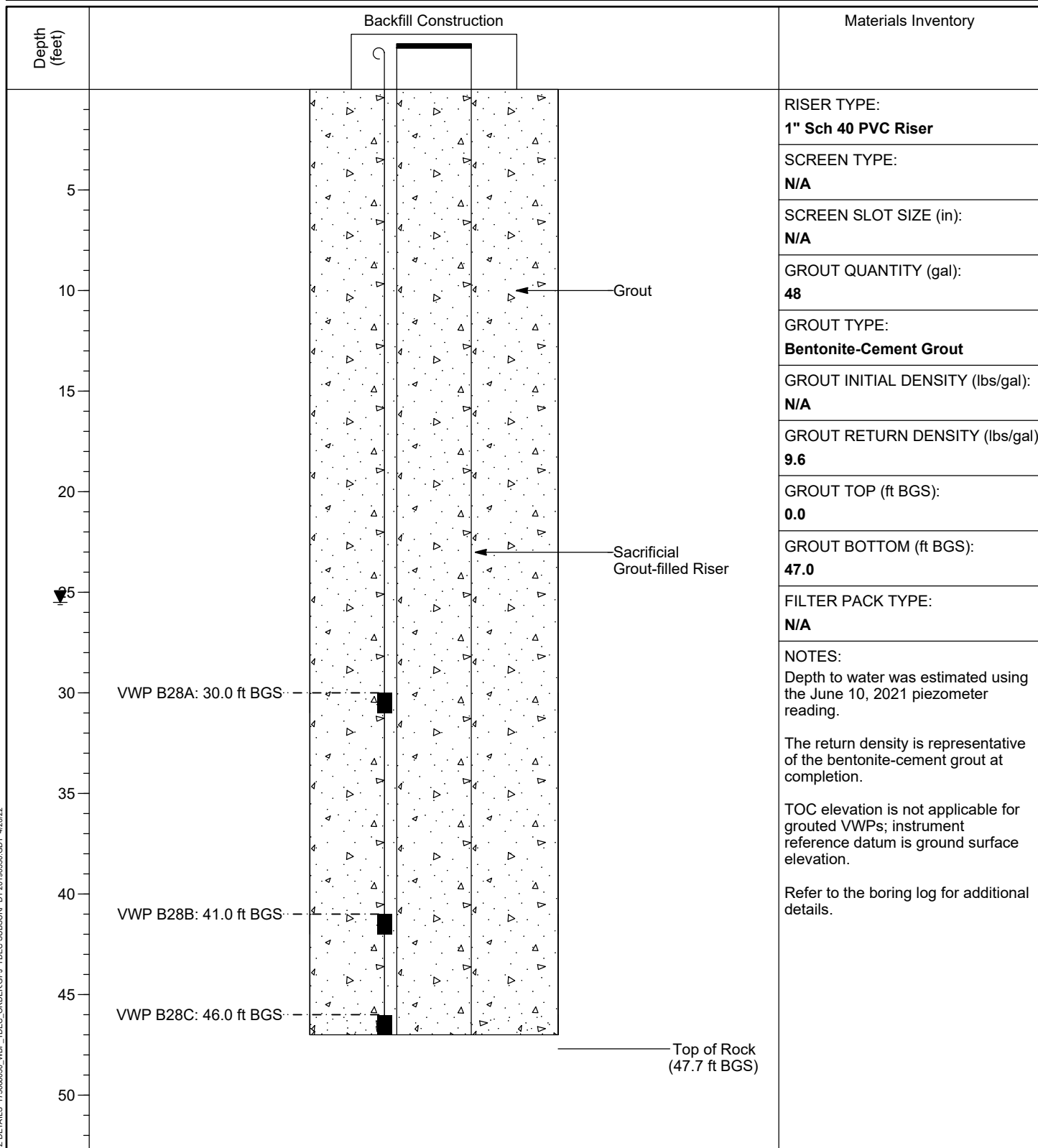


PIEZOMETER INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-B28 (Boring WBF-B28)

PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 85#2, #951**DRILLING METHOD: **5-7/8" 3-Wing Updraft Bit, 2" SS w/o liners, 3" ST**SAMPLING METHOD: **5-7/8" 3-Wing Updraft Bit, 2" SS w/o liners, 3" ST**OBSERVED BY: **B. Herries**REVIEWED BY: **M. McDonald**APPROVED BY: **A. Welshans**INSTALLATION: STARTED: **6/9/21**COMPLETED: **6/9/21**LOCATION: **443,683.09 N; 2,362,976.13 E DATUM: NAD27 Plant Local**LOC. DESCRIPTION: **Ash Pond Perimeter Road**LATITUDE: **35° 36' 16.78"**LONGITUDE: **-84° 46' 44.25"**GROUND ELEV (ft): **711.3**TOC ELEV (ft): **N/A**ELEVATION DATUM: **NGVD29**BOREHOLE DEPTH (ft): **47.8**RISER DEPTH (ft): **47.0**DTW AT COMPLETION (ft, bgs): **25.5**BOREHOLE DIA. (in): **6.0**RISER DIA. (in): **1.0**

PZ DETAILS 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF DT 20190530.GDT 4/2022

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

APPENDIX C.3

PERMANENT WELLS

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**CLIENT: Wright Brothers Construction Company
Charleston, TN**

GRAPHIC LOG	LOCATION: See Exhibit A-2	STANTEC SURVEY 02/28/2017	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
	Latitude: 35.60561° Longitude: 84.78114°	N35 36 20.05, W84 46 52.26 (NAD83) Top of Well Casing Elev. - 711.92' Ground Surface Elev. - 709.4	2.5' above surface			
DEPTH						
0.5	TOPSOIL					
0.7	GRAVEL , (limestone)					
	LEAN CLAY (CL) , reddish-brown, limestone fragments, slightly moist					
7.5	FAT CLAY (CH) , reddish-brown					
9.0	LEAN CLAY (CL) , brown, with rock fragments - sandy below 10'	Surge blocked 40-45 minutes during development 8/21/14 Initial water level 9.22' during development 8/21/14 Water level 11' at 20 gallons purged Water level at 11.15' at 13.5 gallons purged Water level 12' at 9 gallons purged	2" diameter Sch. 40 well riser			
	- moist below 15.3'					
	- watertable at 16'		4 bags of Bentonite was used			
			7 bags of Filter Sand was used			

Hammer Type: Automatic

Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-WELL E2144503 WATTS BAR MONITORING WELL INSTALLATION.GPJ TEMPLATE UPDATE 3-31-14.GPJ 8/26/14

WELL LOG NO. MW-1

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PROJECT: Watts Bar Monitoring Well Installation

CLIENT: Wright Brothers Construction Company
Charleston, TN

SITE: 6868 Watts Bar Highway
Spring City, Tennessee

GRAPHIC LOG	LOCATION: See Exhibit A-2	Stantec Survey 02/28/2017 N35 36 20.05, W84 46 52.26 (NAD83) Top of Well Casing Elev. - 711.92' Ground Surface Elev. - 709.4		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
	Latitude: 35.60561° Longitude: 84.78114°					
	DEPTH					

LEAN CLAY (CL), brown, with rock fragments *(continued)*

2" diameter
Sch. 40 well
screen

30

1' sand filter
below well
base

33.4

Boring Terminated at 33.37 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Augers

Abandonment Method:
Monitoring Well Installed

Notes:

WATER LEVEL OBSERVATIONS

- Encountered groundwater at 16'
- Water level during development activities 8/21/14

Terracon
51 Lost Mound Drive, Suite 135
Chattanooga, Tennessee

Well Started: 7/25/2014

Well Completed: 7/25/2014

Drill Rig: D009-Simco

Driller: C. Penton

Project No.: E2144503

Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-WELL E2144503 WATTS BAR MONITORING WELL INSTALLATION.GPJ TEMPLATE UPDATE 3-31-14.GPJ 8/26/14

BORING LOG NO. MW-2

Page 1 of 2

PROJECT: Watts Bar Monitoring Well Installation

CLIENT: Wright Brothers Construction Company
Charleston, TN

SITE: 6868 Watts Bar Highway
Spring City, Tennessee

GRAPHIC LOG	LOCATION: See Exhibit A-2 Latitude: 35.60325° Longitude: 84.77917°	Stantec Survey 02/28/2017 N35 36 15.01, W84 46 43.71 (NAD83) Top of Well Casing Elev. - 696.22 Ground Surface Elev. - 693.2	INSTALLATION DETAILS	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
	DEPTH					
	0.5	GRAVEL				
		LEAN CLAY (CL) , dark brown to medium brown, slightly moist with rock fragments, sandy				
		medium brown, below 8.5'				
		Surge blocked 30 minutes during development 8/21/14 Initial water level 20.27' during development 8/21/14 Water level 21.4' at 4.5 gallons purged Water level at 21.5' at 9 gallons purged Water level 21.25' at 20 gallons purged				
	15.5	- higher sand content below 15'				
		CLAYEY SAND (SC)				
		- wet below 20'				
			2" diameter Sch. 40 well riser			
			4 bags of Bentonite was used			
			8 bags of Filter Sand was used			
				25		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Augers

Abandonment Method:
Monitoring Well Installed

Notes:

Start Time 11:30am
Finish Time (Drilling) 12:00pm
Surface completion includes 4" square aluminum covers
extending 3' into boring, 5'X5' square reinforced concrete pads,
and 4" steel bollards as pad corners.

WATER LEVEL OBSERVATIONS

No Free Water Encountered During Drilling

Water level during development activities 8/21/14

Terracon
51 Lost Mound Drive, Suite 135
Chattanooga, Tennessee

Boring Started: 7/25/2014

Boring Completed: 7/25/2014

Drill Rig: D009-Simco

Driller: C. Penton

Project No.: E2144503

Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-WELL E2144503 WATTS BAR MONITORING WELL INSTALLATION.GPJ TEMPLATE UPDATE 3-31-14.GPJ 8/26/14

BORING LOG NO. MW-2

Page 2 of 2

PROJECT: Watts Bar Monitoring Well Installation

CLIENT: Wright Brothers Construction Company
Charleston, TN

SITE: 6868 Watts Bar Highway
Spring City, Tennessee

GRAPHIC LOG	LOCATION: See Exhibit A-2 Latitude: 35.60325° Longitude: 84.77917° DEPTH	Stantec Survey 02/28/2017 N35 36 15.01, W84 46 43.71 (NAD83) Top of Well Casing Elev. - 696.22 Ground Surface Elev. - 693.2		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
-------------	--	--	--	-------------	-----------------------------	-------------

CLAYEY SAND (SC) (continued)

- very moist below 27'

2" diameter
Sch. 40 well
screen

1' sand filter
below well
base

30

33.8

Boring Terminated at 33.82 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Augers

Abandonment Method:
Monitoring Well Installed

Notes:

WATER LEVEL OBSERVATIONS

No Free Water Encountered During Drilling

Water level during development activities 8/21/14

Terracon
51 Lost Mound Drive, Suite 135
Chattanooga, Tennessee

Boring Started: 7/25/2014

Drill Rig: D009-Simco

Project No.: E2144503

Boring Completed: 7/25/2014

Driller: C. Penton

Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-WELL E2144503 WATTS BAR MONITORING WELL INSTALLATION.GPJ TEMPLATE UPDATE 3-31-14.GPJ 8/26/14

BORING LOG NO. MW-3

Page 2 of 2

PROJECT: Watts Bar Monitoring Well Installation

CLIENT: Wright Brothers Construction Company
Charleston, TN

SITE: 6868 Watts Bar Highway
Spring City, Tennessee

GRAPHIC LOG	LOCATION: See Exhibit A-2	Stantec Survey 02/28/2017 N35 36 11.66, W84 46 44.88 (NAD83) Top of Well Casing Elev. - 704.29 Ground Surface Elev. - 701.3		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE
	Latitude: 35.60406° Longitude: 84.77872°					
	DEPTH					
	CLAYEY SAND (SC) , brown (continued) light brown, below 25'		-8 bags of Filter Sand was used 2" diameter Sch. 40 well screen 1' sand filter below well base	30		
	32.8					
	Boring Terminated at 32.78 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Augers

Notes:

Abandonment Method:
Monitoring Well Installed

WATER LEVEL OBSERVATIONS

No Free Water Encountered During Drilling

Water level during development activities 8/21/14

Terracon
51 Lost Mound Drive, Suite 135
Chattanooga, Tennessee

Boring Started: 7/25/2014

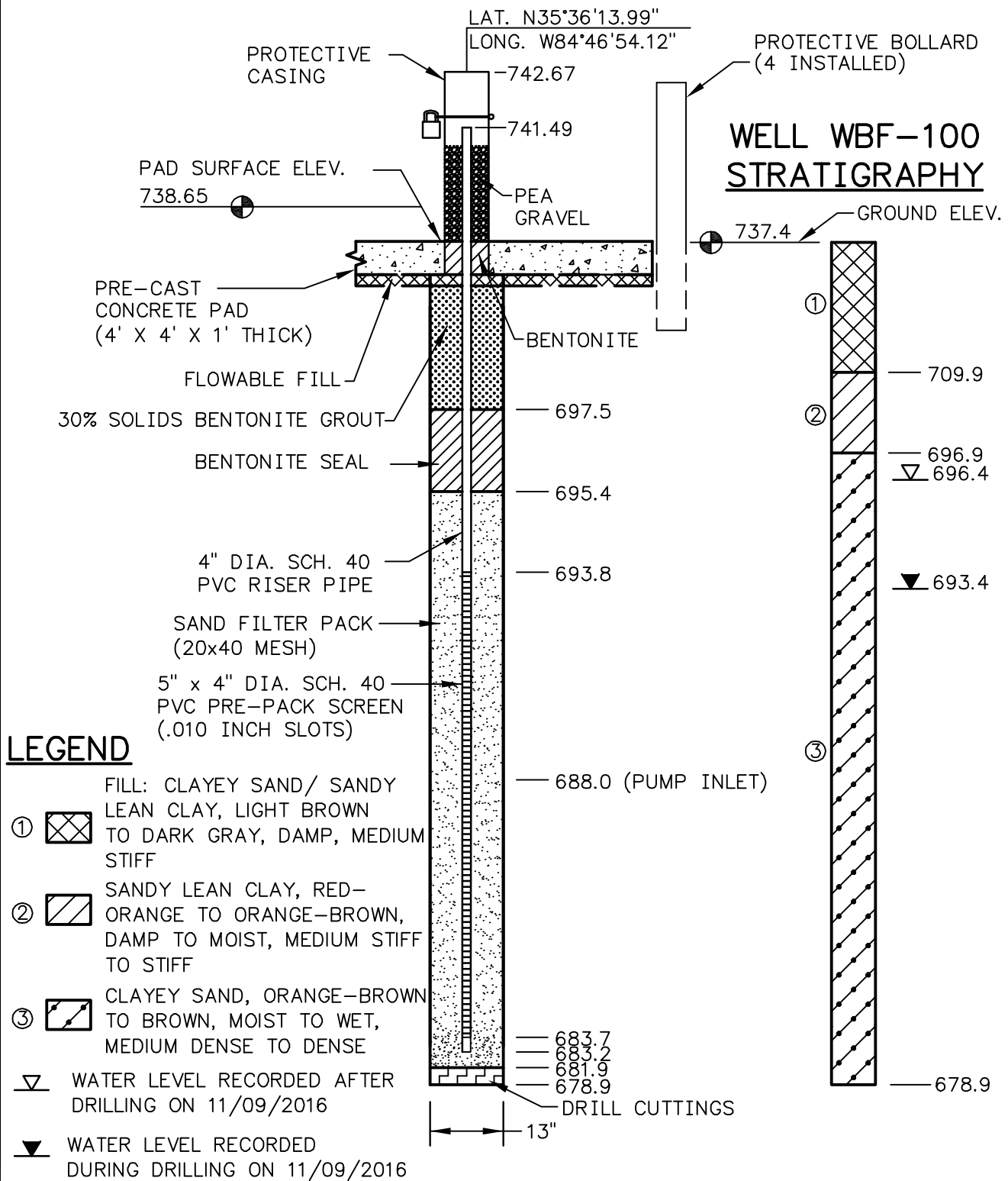
Boring Completed: 7/25/2014

Drill Rig: Geoprobe

Driller: C. Penton

Project No.: E2144503

Exhibit: A-6



NOTES:

- SUBSURFACE STRATIGRAPHY BASED ON BORING LOG WBF-100 BY STANTEC (11/09/2016).
- SURVEY INFORMATION PROVIDED BY STANTEC (NAD83/NGVD29 SHOWN).
- WELL INSTALLED ON 11/10/2016 BY STANTEC.
- SCREEN INTERVAL AND WELL DEPTH BASED ON VIDEO LOGGING (STANTEC, 11/11/2016).

WBF-100 MONITORING WELL INSTALLATION DETAIL TVA WATTS BAR FOSSIL PLANT SPRING CITY, RHEA COUNTY, TN



Stantec

Stantec Consulting
Services Inc.
3052 Beaumont Centre Circle
Lexington, Kentucky
40513

www.stantec.com

DRAWN BY	MSJ	DATE	MARCH, 2017	REVISED	
CHECKED BY	DRP	PROJ. NO.	175565303	1.	3.
CHECKED BY	BLB	SCALE	NTS	2.	4.

SHEET

1 of 1

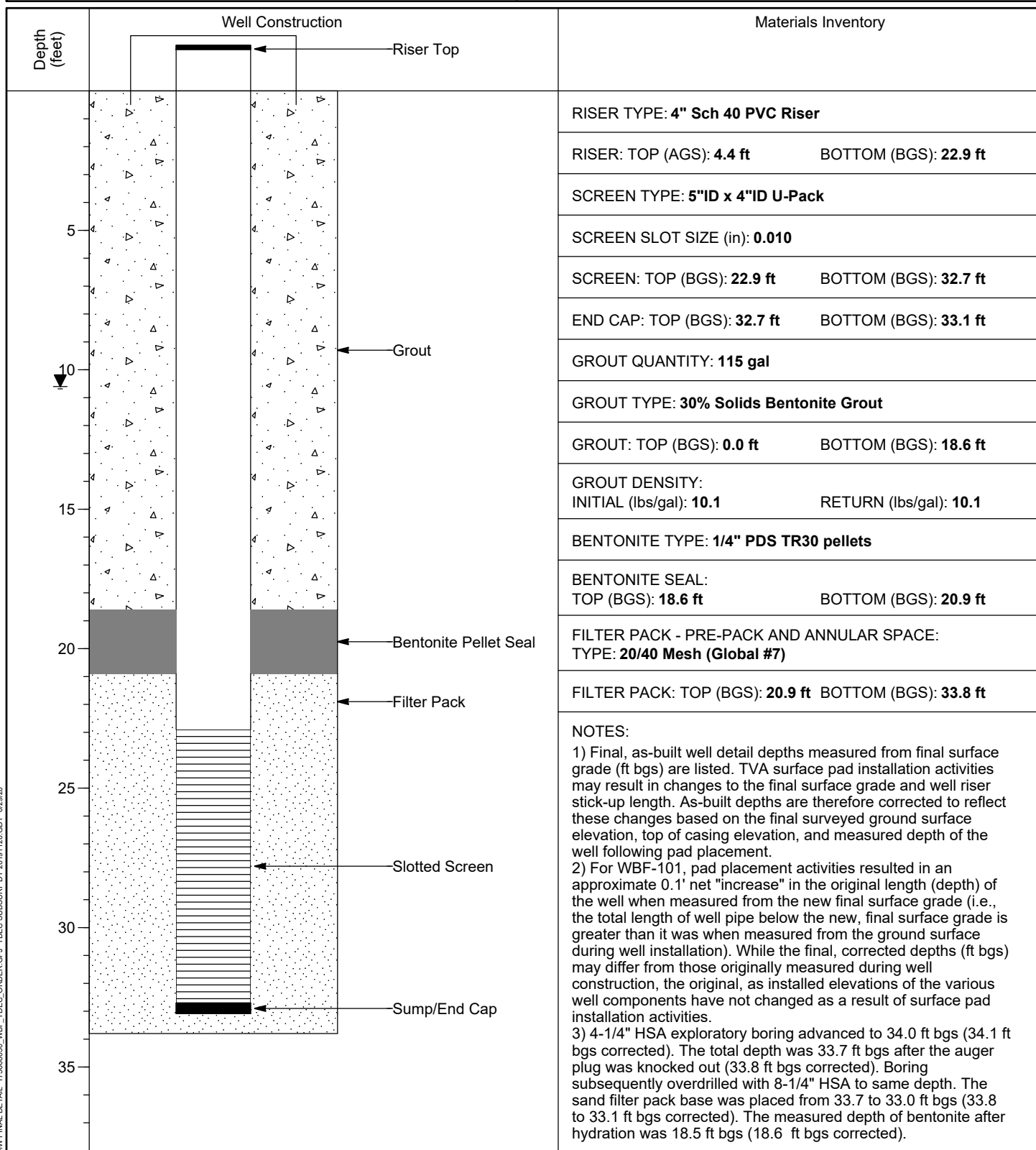
PLOT DATE: 03/02/2017 USER: JENNINGS, MATTHEW
U:\1755\TVA GW MONITORING WELLS - CADD\WBF\175565303 - INSTALL\WELL LOGS\65303-MWELL-WBF-100.DWG



WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-101 (Boring WBF-101)PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **8-1/4" HSA overdrill of boring**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**OBSERVED BY: **G. Budd**REVIEWED BY: **J. Snider**APPROVED BY: **L. Price**INSTALLATION: STARTED: **6/12/19**COMPLETED: **6/12/19**LOCATION: **443,876.99 N; 2,362,987.15 E**DATUM: **NAD27 Plant Local**LOC. DESCRIP: **As Staked**LATITUDE: **35° 36' 18.70"**LONGITUDE: **-84° 46' 44.09"**GROUND ELEV (ft): **698.7**TOC ELEV (ft): **703.15**ELEVATION DATUM: **NGVD29**WELL DEPTH (ft, bgs): **33.1**DTW AT COMPLETION (ft, bgs): **10.6**BOREHOLE DIA. (in): **13.0**WELL DIA. (in): **4.0**

MW FINAL DETAIL 175668050_WBF_TDEC_ORDER.GPJ TDEC SUBSURF.DT 20191120.GDT 6/29/20

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)



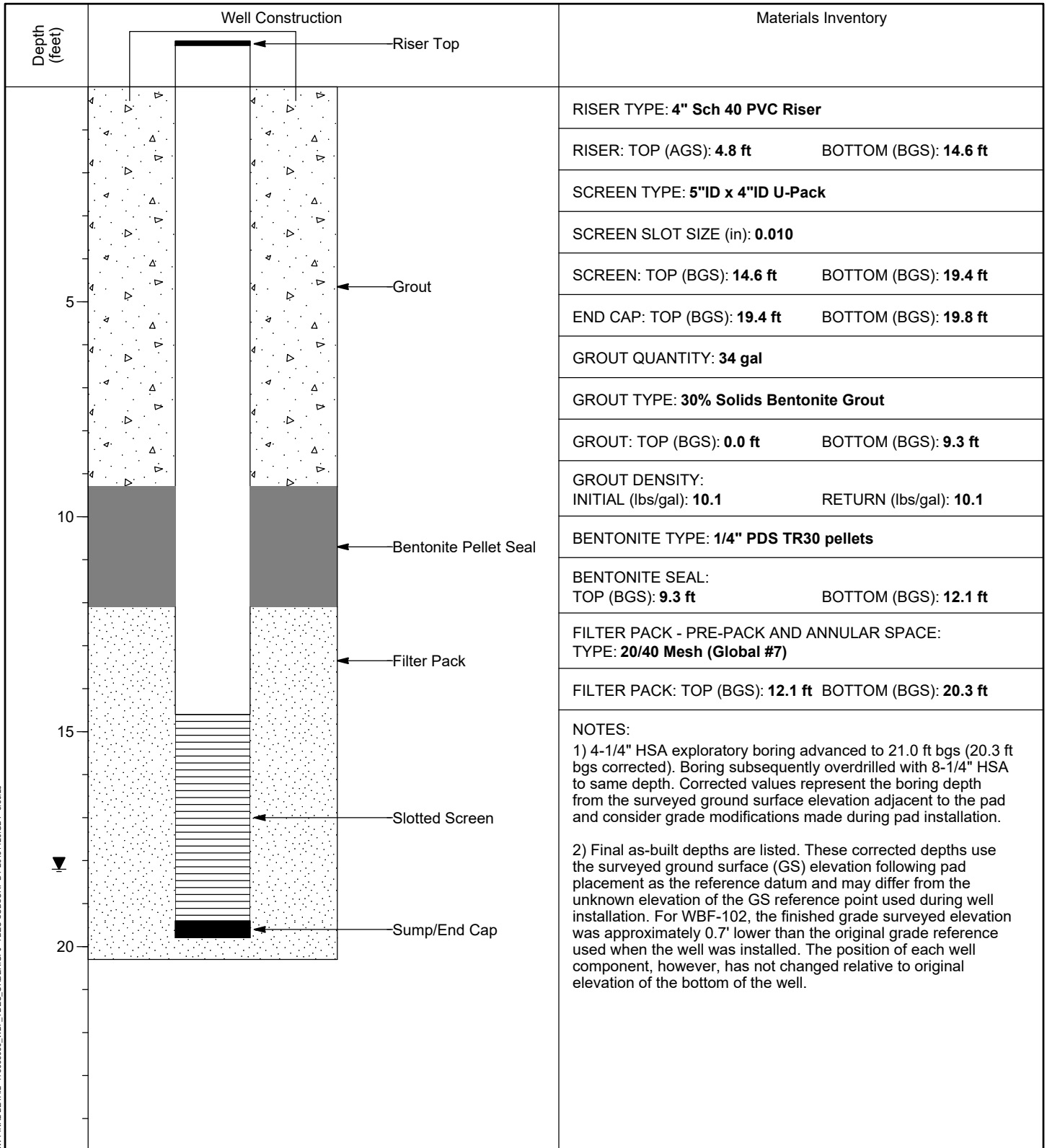
WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-102 (Boring WBF-102Alt2 (Sonic))PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **Geoprobe GV5 Sonic**DRILLING METHOD: **Sonic 6" Core Barrel, 8" Steel Casing**SAMPLING METHOD: **Sonic 6" Core Barrel, 8" Steel Casing**OBSERVED BY: **G. Budd**REVIEWED BY: **C. Kocka**APPROVED BY: **L. Price**INSTALLATION: STARTED: **7/9/19**COMPLETED: **7/10/19**LOCATION: **443,745.53 N; 2,362,237.49 E**DATUM: **NAD27 Plant Local**

LOC. DESCRIP:

LATITUDE: **35° 36' 17.49"**LONGITUDE: **-84° 46' 53.19"**GROUND ELEV (ft): **719.2**TOC ELEV (ft): **723.98**ELEVATION DATUM: **NGVD29**WELL DEPTH (ft, bgs): **19.8**DTW AT COMPLETION (ft, bgs): **18.2**BOREHOLE DIA. (in): **8.0**WELL DIA. (in): **4.0**

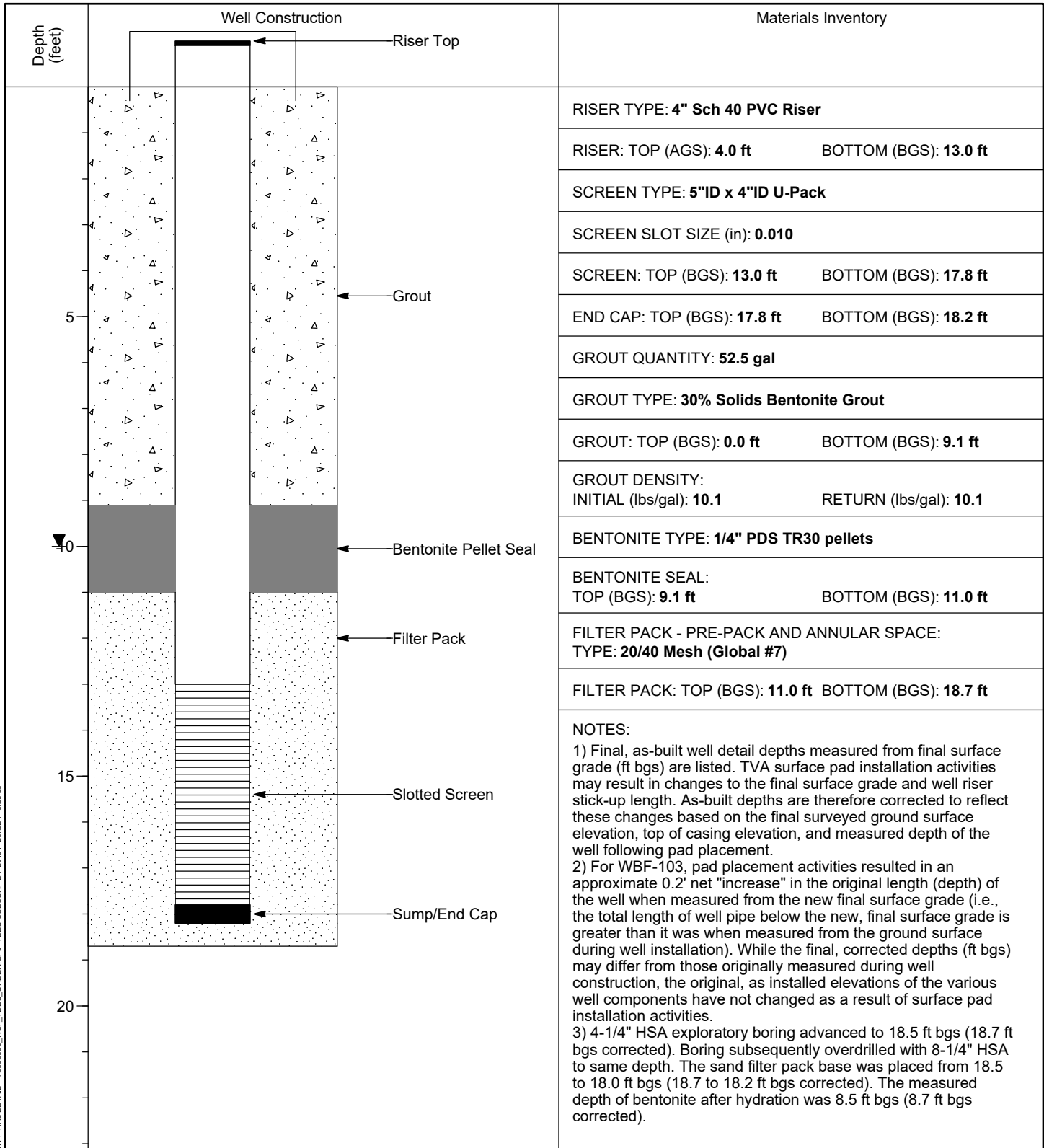
VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)



WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-103 (Boring WBF-103)PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **8-1/4" HSA overdrill of boring**SAMPLING METHOD: **4-1/4" HSA, 3" SS w/o liners**OBSERVED BY: **G. Budd**REVIEWED BY: **J. Snider**APPROVED BY: **L. Price**INSTALLATION: STARTED: **6/10/19**COMPLETED: **6/11/19**LOCATION: **444,765.49 N; 2,361,678.22 E**DATUM: **NAD27 Plant Local**LOC. DESCRIP: **As Staked**LATITUDE: **35° 36' 27.64"**LONGITUDE: **-84° 46' 59.80"**GROUND ELEV (ft): **721.1**TOC ELEV (ft): **725.09**ELEVATION DATUM: **NGVD29**WELL DEPTH (ft, bgs): **18.2**DTW AT COMPLETION (ft, bgs): **10.0**BOREHOLE DIA. (in): **13.0**WELL DIA. (in): **4.0**

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

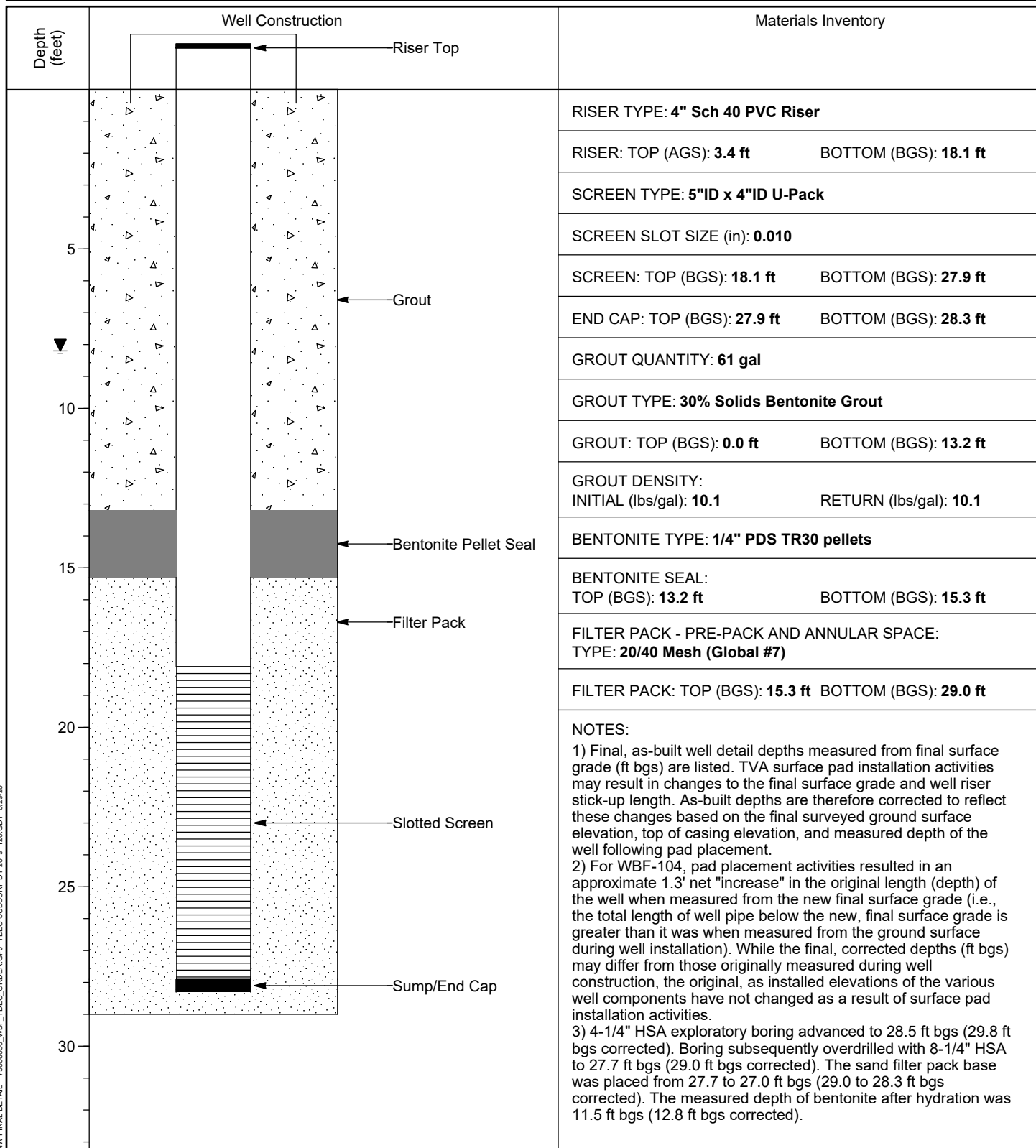


WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-104 (Boring WBF-104)

PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **8-1/4" HSA overdrill of boring**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**OBSERVED BY: **G. Budd**REVIEWED BY: **J. Snider**APPROVED BY: **L. Price**INSTALLATION: STARTED: **6/13/19**COMPLETED: **6/14/19**LOCATION: **444,336.57 N; 2,363,103.76 E**DATUM: **NAD27 Plant Local**LOC. DESCRIP: **As Staked**LATITUDE: **35° 36' 23.23"**LONGITUDE: **-84° 46' 42.61"**GROUND ELEV (ft): **694.1**TOC ELEV (ft): **697.45**ELEVATION DATUM: **NGVD29**WELL DEPTH (ft, bgs): **28.3**DTW AT COMPLETION (ft, bgs): **8.2**BOREHOLE DIA. (in): **13.0**WELL DIA. (in): **4.0**

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)



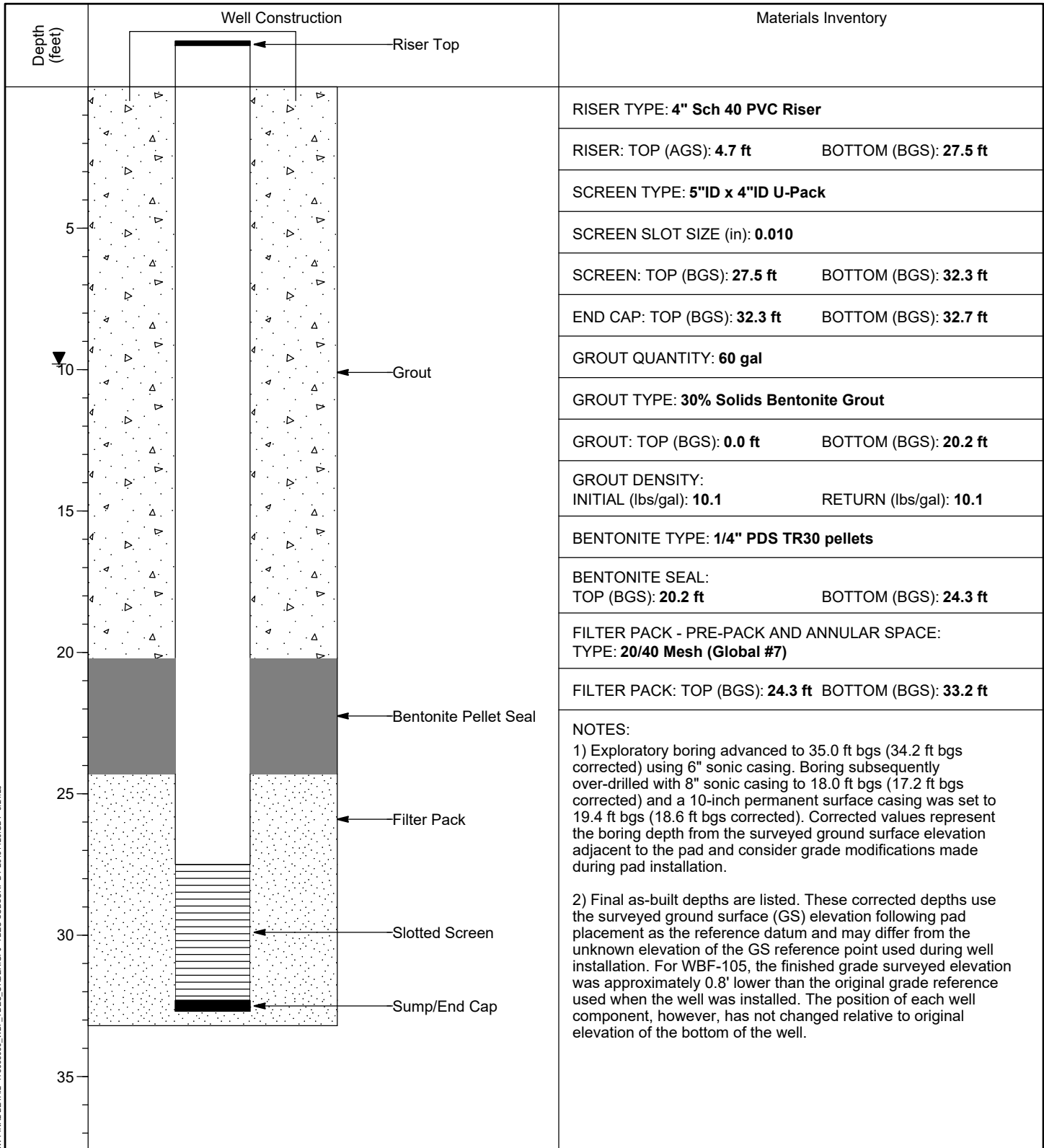
WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-105 (Boring WBF-105 (sonic))PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **Geoprobe GV5 Sonic**DRILLING METHOD: **Sonic 6" Core Barrel, 8" Steel Casing**SAMPLING METHOD: **Sonic 6" Core Barrel, 8" Steel Casing**OBSERVED BY: **G. Budd**REVIEWED BY: **C. Kocka**APPROVED BY: **P. Dunne**INSTALLATION: STARTED: **7/9/19**COMPLETED: **7/10/19**LOCATION: **445,050.70 N; 2,363,041.85 E**DATUM: **NAD27 Plant Local**

LOC. DESCRIP:

LATITUDE: **35° 36' 30.30"**LONGITUDE: **-84° 46' 43.25"**GROUND ELEV (ft): **699.8**TOC ELEV (ft): **704.50**ELEVATION DATUM: **NGVD29**WELL DEPTH (ft, bgs): **32.7**DTW AT COMPLETION (ft, bgs): **9.8**BOREHOLE DIA. (in): **8.0**WELL DIA. (in): **4.0**

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)

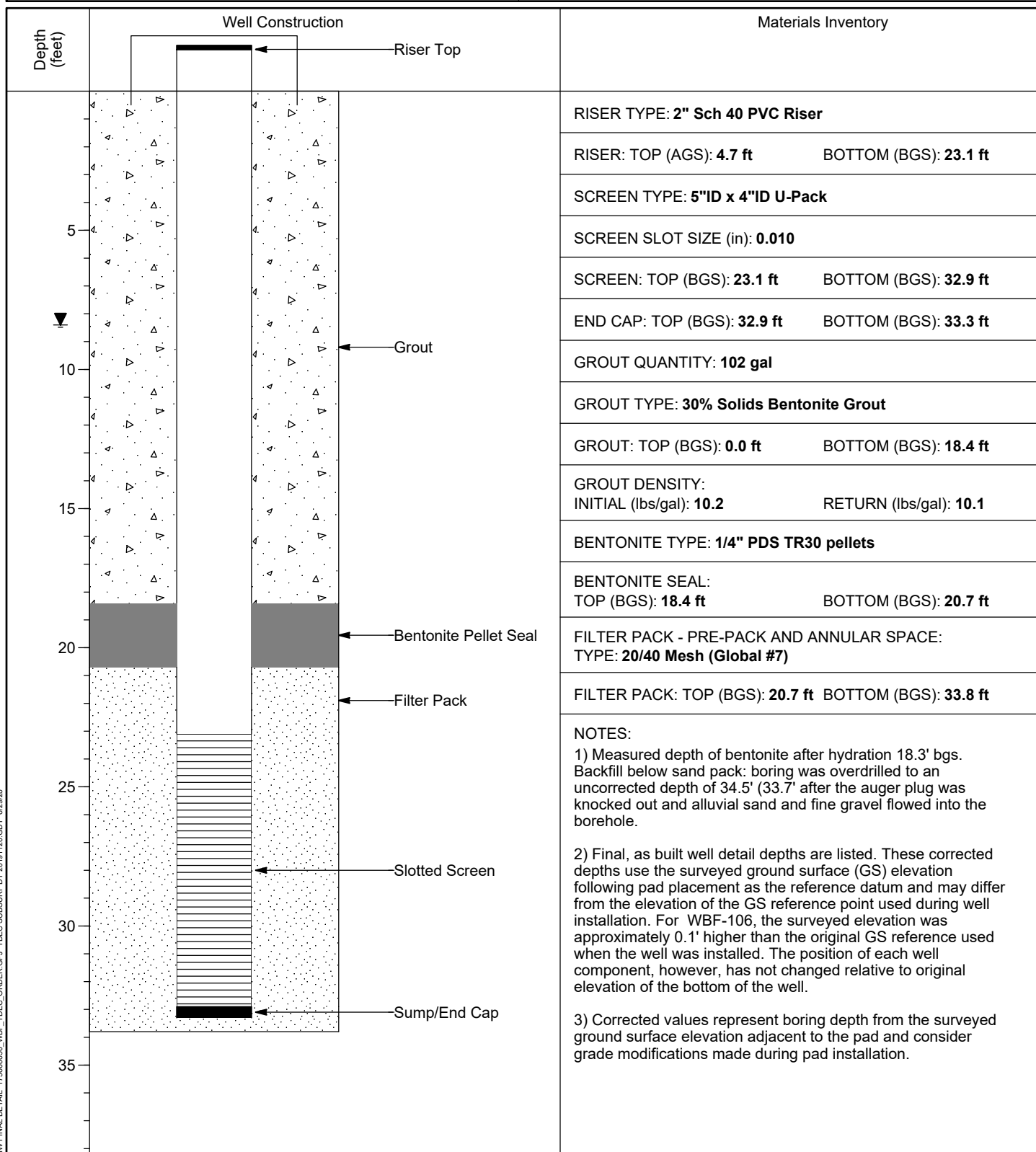


WELL INSTALLATION DETAIL

WELL / PROBEHOLE / BOREHOLE NO:

PAGE 1 OF 1

WBF-106 (Boring WBF-106)

PROJECT: **WBF TDEC Order**PROJECT NUMBER: **175668050**DRILLING COMPANY: **Stantec Consulting Services Inc.**DRILLING EQUIPMENT: **CME 850XR, #953**DRILLING METHOD: **8-1/4" HSA overdrill of boring**SAMPLING METHOD: **4-1/4" HSA, 2" SS w/o liners**OBSERVED BY: **G. Budd**REVIEWED BY: **C. Kocka**APPROVED BY: **P. Dunne**INSTALLATION: STARTED: **6/26/19**COMPLETED: **6/27/19**LOCATION: **445,872.50 N; 2,362,862.26 E**DATUM: **NAD27 Plant Local**LOC. DESCRIP: **Adjacent to boring WBF - 106B**LATITUDE: **35° 36' 38.45"**LONGITUDE: **-84° 46' 45.30"**GROUND ELEV (ft): **701.7**TOC ELEV (ft): **706.34**ELEVATION DATUM: **NGVD29**WELL DEPTH (ft, bgs): **33.3**DTW AT COMPLETION (ft, bgs): **8.4**BOREHOLE DIA. (in): **13.0**WELL DIA. (in): **4.0**

VERTICAL SCALE: AS SHOWN. HORIZONTAL SCALE: NOT TO SCALE (EXAGGERATED TO SHOW DETAIL)