



SITE DEVELOPMENT, EXCAVATION, DEMOLITION  
 WATER AND SEWER SYSTEMS  
 AGGREGATE OPERATIONS

**Solid Waste Management  
 Landfill Sitework and Closures**  
 8 U.S. ROUTE 4 EAST, MENDON, VERMONT 05701 802/773-0052  
 FAX 802/747-7992

*Submittal*

To: State of Vermont Agency of Transportation  
 Southwest Regional Construction Office  
 61 Valley View  
 Mendon, VT 05701

Date: April 24, 2015  
 Project: Shrewsbury STP 1443 (44)

Contract: Shrewsbury STP 1443 (44)

Attention: Tim Pockette (RE), Bill Farley (Asst CEE)

From: Jacob Robinson

Copies	CCI Submittal Number	Specification Section	Description
Electronic	10	540.10	Precast Erection Plan

Contractors Review and Comments

Reviewed By: Jacob Robinson/Jeff Chase

Comments:

The attached is an erection plan for the precast concrete culvert sections.

This plan was prepared by Nathan Sicard, PE.

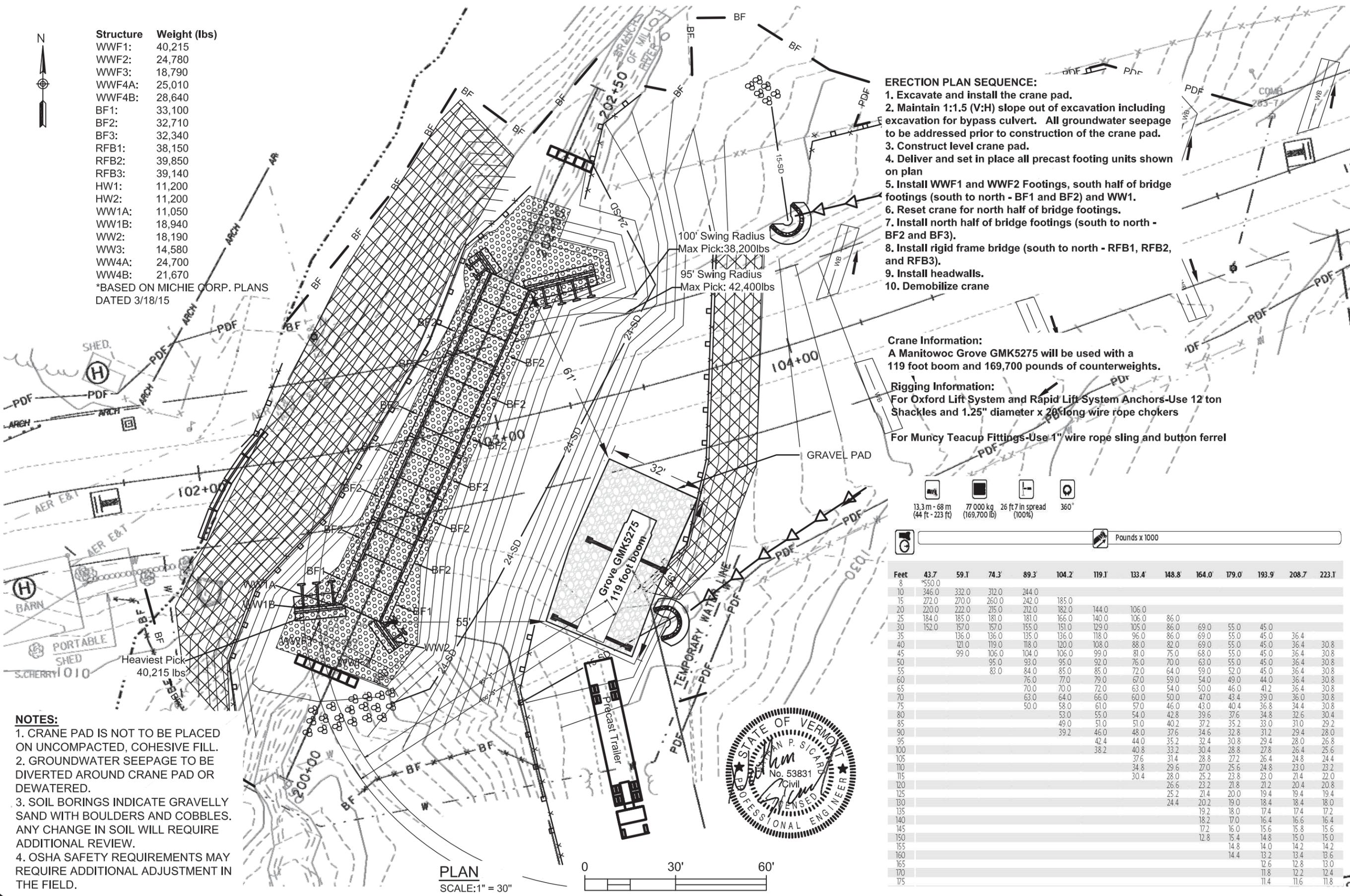
Engineers Review Stamp and Comments

C:\Users\Sicard\Desktop\Projects\Casella Inc\Shrewsbury STP 1443(44)\Erection Plan\RES - Phase 1.dwg - 2015/04/23



Structure	Weight (lbs)
WWF1:	40,215
WWF2:	24,780
WWF3:	18,790
WWF4A:	25,010
WWF4B:	28,640
BF1:	33,100
BF2:	32,710
BF3:	32,340
RFB1:	38,150
RFB2:	39,850
RFB3:	39,140
HW1:	11,200
HW2:	11,200
WW1A:	11,050
WW1B:	18,940
WW2:	18,190
WW3:	14,580
WW4A:	24,700
WW4B:	21,670

\*BASED ON MICHIE CORP. PLANS DATED 3/18/15



- ERECTION PLAN SEQUENCE:**
1. Excavate and install the crane pad.
  2. Maintain 1:1.5 (V:H) slope out of excavation including excavation for bypass culvert. All groundwater seepage to be addressed prior to construction of the crane pad.
  3. Construct level crane pad.
  4. Deliver and set in place all precast footing units shown on plan
  5. Install WWF1 and WWF2 Footings, south half of bridge footings (south to north - BF1 and BF2) and WW1.
  6. Reset crane for north half of bridge footings.
  7. Install north half of bridge footings (south to north - BF2 and BF3).
  8. Install rigid frame bridge (south to north - RFB1, RFB2, and RFB3).
  9. Install headwalls.
  10. Demobilize crane

**Crane Information:**  
 A Manitowoc Grove GMK5275 will be used with a 119 foot boom and 169,700 pounds of counterweights.

**Rigging Information:**  
 For Oxford Lift System and Rapid Lift System Anchors-Use 12 ton Shackles and 1.25" diameter x 20' long wire rope chokers  
 For Muncy Teacup Fittings-Use 1" wire rope sling and button ferrel

13.3 m - 68 m (44 ft - 223 ft)	77 000 kg (169,700 lb)	26 ft 7 in spread (100%)	360°

Pounds x 1000

Feet	43.7	59.1	74.3	89.3	104.2	119.1	133.4	148.8	164.0	179.0	193.9	208.7	223.1		
8	*550.0														
10	346.0	332.0	312.0	244.0											
15	272.0	270.0	260.0	242.0	185.0										
20	220.0	222.0	215.0	212.0	182.0	144.0									
25	184.0	185.0	181.0	181.0	166.0	140.0	106.0	86.0							
30	152.0	157.0	157.0	155.0	151.0	129.0	105.0	86.0	69.0	55.0	45.0				
35		136.0	136.0	135.0	136.0	118.0	96.0	86.0	69.0	55.0	45.0	36.4			
40		121.0	119.0	118.0	120.0	108.0	88.0	82.0	69.0	55.0	45.0	36.4	30.8		
45		99.0	106.0	104.0	106.0	99.0	81.0	75.0	68.0	55.0	45.0	36.4	30.8		
50			95.0	93.0	95.0	92.0	76.0	70.0	63.0	55.0	45.0	36.4	30.8		
55				83.0	84.0	85.0	85.0	72.0	64.0	59.0	52.0	45.0	36.4	30.8	
60					76.0	77.0	79.0	67.0	59.0	54.0	49.0	44.0	36.4	30.8	
65					70.0	70.0	72.0	63.0	54.0	50.0	46.0	41.2	36.4	30.8	
70					63.0	64.0	66.0	60.0	50.0	47.0	43.4	39.0	36.0	30.8	
75					50.0	58.0	61.0	57.0	46.0	43.0	40.4	36.8	34.4	30.8	
80						53.0	55.0	54.0	42.8	39.6	37.6	34.8	32.6	30.4	
85						49.0	51.0	51.0	40.2	37.2	35.2	33.0	31.0	29.2	
90						39.2	46.0	48.0	37.6	34.6	32.8	31.2	29.4	28.0	
95							42.4	44.0	35.2	32.4	30.8	29.4	28.0	26.8	
100								38.2	40.8	33.2	30.4	28.8	27.8	26.4	25.6
105									37.6	31.4	28.8	27.2	26.4	24.8	24.4
110									34.8	29.6	27.0	25.6	24.8	23.0	23.2
115									30.4	28.0	25.2	23.8	23.0	21.4	22.0
120									26.6	23.2	21.8	21.2	20.4	20.8	
125									25.2	21.4	20.0	19.4	19.4	19.4	
130									24.4	20.2	19.0	18.4	18.4	18.0	
135										19.2	18.0	17.4	17.4	17.2	
140										18.2	17.0	16.4	16.6	16.4	
145										17.2	16.0	15.6	15.8	15.6	
150										12.8	15.4	14.8	15.0	15.0	
155											14.8	14.0	14.2	14.2	
160											14.4	13.2	13.4	13.6	
165												12.6	12.8	13.0	
170												11.8	12.2	12.4	
175												11.4	11.6	11.8	

- NOTES:**
1. CRANE PAD IS NOT TO BE PLACED ON UNCOMPACTED, COHESIVE FILL.
  2. GROUNDWATER SEEPAGE TO BE DIVERTED AROUND CRANE PAD OR DEWATERED.
  3. SOIL BORINGS INDICATE GRAVELLY SAND WITH BOULDERS AND COBBLES. ANY CHANGE IN SOIL WILL REQUIRE ADDITIONAL REVIEW.
  4. OSHA SAFETY REQUIREMENTS MAY REQUIRE ADDITIONAL ADJUSTMENT IN THE FIELD.

**PLAN**  
 SCALE: 1" = 30"



**RUGGLES ENGINEERING SERVICES, INC.**  
 4860 MEMORIAL DRIVE, ST. JOHNSBURY, VT 05819  
 Civil Engineering - Site Permitting  
 Water, Sewer and Stormwater System Designs  
 802-748-5898  
 JOB No. 15007

**CASELLA CONSTRUCTION, INC.**  
 25 INDUSTRIAL LANE, MENDON, VT 05701

**PHASE I ERECTION PLAN**  
**SHREWSBURY STP 1443(44)**

PREPARED FOR: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Date: \_\_\_\_\_

No.	Description	Date

Designed: \_\_\_\_\_  
 Drawn: NPS  
 Checked: \_\_\_\_\_  
 DATE: 4/23/2015

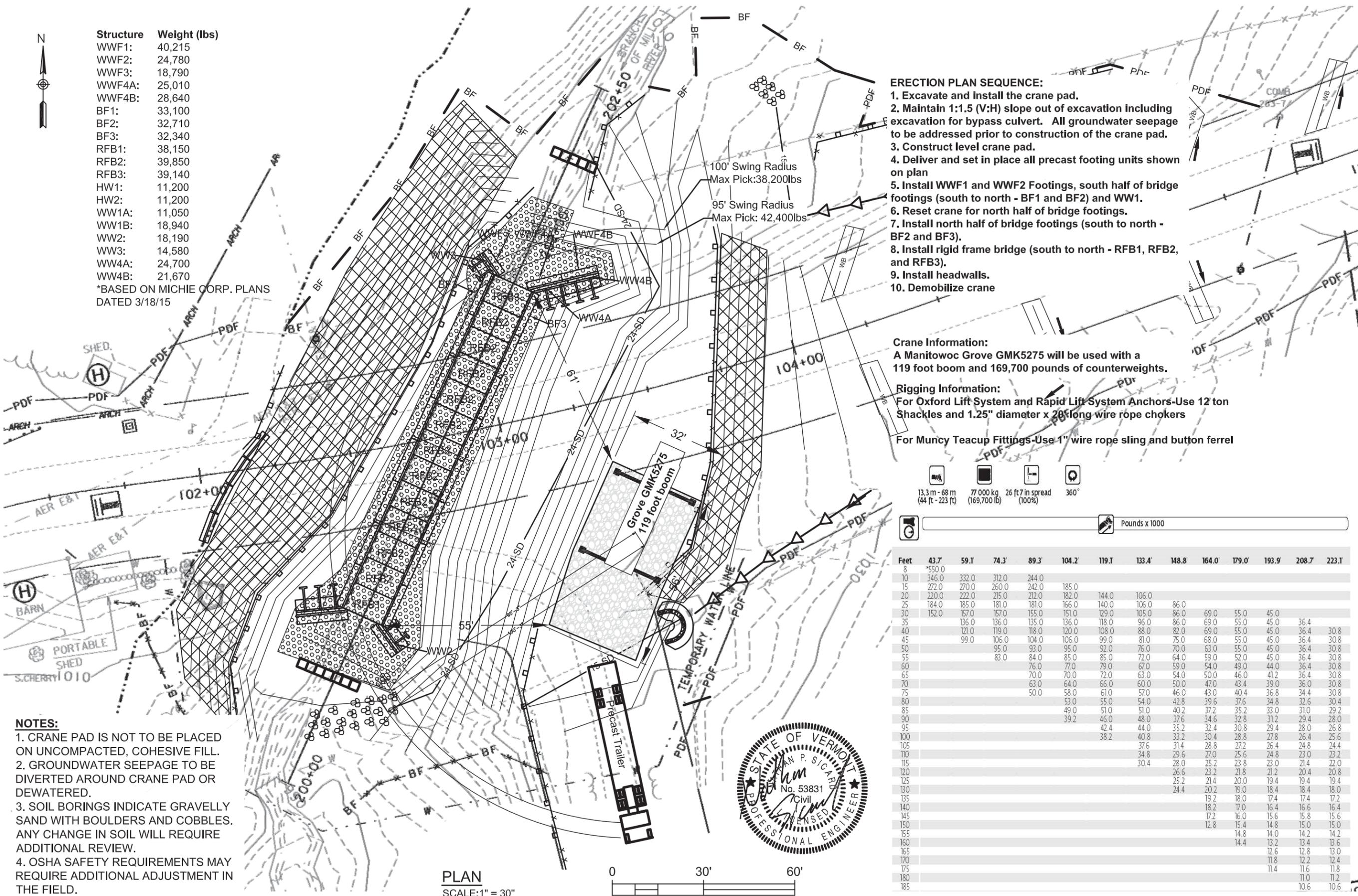
**PICK1**  
 Sheet of -

C:\Users\Sicard\Desktop\Projects\Casella Inc\Shrewsbury STP 1443(44)\Erection Plan\RES - Phase 2.dwg-2015/04/23



Structure	Weight (lbs)
WWF1:	40,215
WWF2:	24,780
WWF3:	18,790
WWF4A:	25,010
WWF4B:	28,640
BF1:	33,100
BF2:	32,710
BF3:	32,340
RFB1:	38,150
RFB2:	39,850
RFB3:	39,140
HW1:	11,200
HW2:	11,200
WW1A:	11,050
WW1B:	18,940
WW2:	18,190
WW3:	14,580
WW4A:	24,700
WW4B:	21,670

\*BASED ON MICHIE CORP. PLANS DATED 3/18/15



- ERECTION PLAN SEQUENCE:**
1. Excavate and install the crane pad.
  2. Maintain 1:1.5 (V:H) slope out of excavation including excavation for bypass culvert. All groundwater seepage to be addressed prior to construction of the crane pad.
  3. Construct level crane pad.
  4. Deliver and set in place all precast footing units shown on plan
  5. Install WWF1 and WWF2 Footings, south half of bridge footings (south to north - BF1 and BF2) and WW1.
  6. Reset crane for north half of bridge footings.
  7. Install north half of bridge footings (south to north - BF2 and BF3).
  8. Install rigid frame bridge (south to north - RFB1, RFB2, and RFB3).
  9. Install headwalls.
  10. Demobilize crane

**Crane Information:**  
 A Manitowoc Grove GMK5275 will be used with a 119 foot boom and 169,700 pounds of counterweights.

**Rigging Information:**  
 For Oxford Lift System and Rapid Lift System Anchors-Use 12 ton Shackles and 1.25" diameter x 20' long wire rope chokers  
 For Muncy Teacup Fittings-Use 1" wire rope sling and button ferrel

	13.3 m - 68 m (44 ft - 223 ft)		77,000 kg (169,700 lb)		26 ft 7 in spread (100%)		360°
--	-----------------------------------	--	---------------------------	--	-----------------------------	--	------

Pounds x 1000

Feet	43.7	59.1	74.3	89.3	104.2	119.1	133.4	148.8	164.0	179.0	193.9	208.7	223.1		
8	550.0														
10	346.0	332.0	312.0	244.0											
15	272.0	270.0	260.0	242.0	185.0										
20	220.0	222.0	215.0	212.0	182.0	144.0									
25	184.0	185.0	181.0	181.0	166.0	140.0	106.0								
30	152.0	157.0	157.0	155.0	151.0	129.0	105.0	86.0	69.0	55.0	45.0				
35		136.0	136.0	135.0	136.0	118.0	96.0	86.0	69.0	55.0	45.0	36.4			
40		121.0	119.0	118.0	120.0	108.0	88.0	82.0	69.0	55.0	45.0	36.4	30.8		
45		99.0	106.0	104.0	106.0	99.0	81.0	75.0	68.0	55.0	45.0	36.4	30.8		
50			95.0	93.0	95.0	92.0	76.0	70.0	63.0	55.0	45.0	36.4	30.8		
55				83.0	84.0	85.0	72.0	64.0	59.0	52.0	45.0	36.4	30.8		
60					76.0	77.0	79.0	67.0	59.0	54.0	49.0	44.0	36.4	30.8	
65					70.0	70.0	72.0	63.0	54.0	50.0	46.0	41.2	36.4	30.8	
70					63.0	64.0	66.0	60.0	50.0	47.0	43.4	39.0	36.0	30.8	
75					58.0	58.0	61.0	57.0	46.0	43.0	40.4	36.8	34.4	30.8	
80					53.0	55.0	54.0	42.8	39.6	37.6	34.8	32.6	30.4		
85					49.0	51.0	51.0	40.2	37.2	35.2	33.0	31.0	29.2		
90					39.2	46.0	48.0	37.6	34.6	32.8	31.2	29.4	28.0		
95						42.4	44.0	35.2	32.4	30.8	29.4	28.0	26.8		
100							38.2	40.8	33.2	30.4	28.8	27.8	26.4	25.6	
105								37.6	31.4	28.8	27.2	26.4	24.8	24.4	
110								34.8	29.6	27.0	25.6	24.8	23.0	23.2	
115									28.0	25.2	23.8	23.0	21.4	22.0	
120									26.6	23.2	21.8	21.2	20.4	20.8	
125									25.2	21.4	20.0	19.4	19.4	19.4	
130									24.4	20.2	19.0	18.4	18.4	18.0	
135										19.2	18.0	17.4	17.4	17.2	
140										18.2	17.0	16.4	16.6	16.4	
145										17.2	16.0	15.6	15.8	15.6	
150										12.8	15.4	14.8	15.0	15.0	
155											14.8	14.0	14.2	14.2	
160												14.4	13.2	13.4	13.6
165													12.6	12.8	13.0
170														11.8	12.4
175															11.8
180															11.2
185															10.6

- NOTES:**
1. CRANE PAD IS NOT TO BE PLACED ON UNCOMPACTED, COHESIVE FILL.
  2. GROUNDWATER SEEPAGE TO BE DIVERTED AROUND CRANE PAD OR DEWATERED.
  3. SOIL BORINGS INDICATE GRAVELLY SAND WITH BOULDERS AND COBBLES. ANY CHANGE IN SOIL WILL REQUIRE ADDITIONAL REVIEW.
  4. OSHA SAFETY REQUIREMENTS MAY REQUIRE ADDITIONAL ADJUSTMENT IN THE FIELD.

**PLAN**  
 SCALE: 1" = 30"



**RUGGLES ENGINEERING SERVICES, INC.**  
 4860 MEMORIAL DRIVE, ST. JOHNSBURY, VT 05819  
 Civil Engineering - Site Permitting  
 Water, Sewer and Stormwater System Designs  
 JOB No. 15007

**CASELLA CONSTRUCTION, INC.**  
 25 INDUSTRIAL LANE, MENDON, VT 05701  
**PHASE II ERECTION PLAN**  
**SHREWSBURY STP 1443(44)**

PREPARED FOR: \_\_\_\_\_

No.	Date	Description

DESIGNED: \_\_\_\_\_  
 DRAWN: NPS  
 CHECKED: \_\_\_\_\_  
 DATE: 4/23/15

**PICK2**  
 Sheet of \_\_\_\_\_