

**NOTES:**

1. PILES TO BE DRIVEN TO ACHIEVE AN ALLOWABLE CAPACITY OF 325 KIPS / PILE. CONTRACTOR SHALL PROVE TEMPORARY PILES TO 1.5 TIMES THE ALLOWABLE CAPACITY. PILES TO BE DRIVEN PLUMB WITHIN A TOLERANCE OF 5/8" IN 10' AND 2 1/2" CUMULATIVE FINAL POSITION.
2. TRESTLE DESIGN ASSUMES UNSUPPORTED LENGTH OF PILE FROM TOP (EL. 9.5) TO POINT OF FIXITY NO GREATER THAN 29'-0". CONTRACTOR'S GEOTECHNICAL ENGINEER SHALL CONFIRM THESE ASSUMPTIONS PRIOR TO TRESTLE INSTALLATION. PILE CAPACITY, DRIVING CRITERIA, AND MINIMUM PILE TIP ELEVATION ARE BY OTHERS.
3. THE CONTRACTOR SHALL DEVELOP, IMPLEMENT, AND FOLLOW PROCEDURES FOR THE SAFE HANDLING OF WORK SHOWN. THE CONTRACTOR IS SOLELY RESPONSIBLE TO ENSURE JOBSITE SAFETY AND TO PROVIDE SAFE ACCESS TO WORK SHOWN DURING NORMAL USE, ASSEMBLY, AND DISASSEMBLY OPERATIONS IN ACCORDANCE WITH PROJECT AND OSHA REQUIREMENTS.
4. LIFTING ON THE TRESTLE IS PROHIBITED IN WIND SPEEDS HIGHER THAN ALLOWED BY CRANE MANUFACTURER SPECIFICATIONS.
5. PILE SPLICES, IF REQUIRED, SHALL BE FULL PENETRATION SPLICES.

**FABRICATION NOTES:**

1. MATERIAL PROPERTIES:
  - STRUCTURAL STEEL (SHAPES): A992 GRADE 50 (Fy = 50KSI) OR EQUAL.
  - STRUCTURAL STEEL (CHANNELS/ANGLES): A36 (Fy = 36KSI) OR EQUAL, UNLESS NOTED OTHERWISE.
  - STRUCTURAL STEEL (PLATES): A572 GRADE 50 (Fy = 50KSI) OR EQUAL, UNLESS NOTED OTHERWISE.
  - PIPE PILE: A572 GRADE 50 (Fy = 50 ksi) OR EQUAL.
  - WELDS: E70XX
  - BOLTS: A325-X, MECHANICALLY GALVANIZED ("SNUG-TIGHTENED" UNLESS INDICATED OTHERWISE.)
  - TIMBER CRANE MATS: MIXED HARDWOOD (Fb = 1,400PSI MIN).
2. FABRICATION TO COMPLY WITH THE LATEST EDITIONS OF:
  - AISC CODE OF STANDARD PRACTICE FOR STEEL BRIDGES AND BUILDINGS
  - AISC MANUAL OF STEEL CONSTRUCTION
  - AWS D1.1 STRUCTURAL WELDING CODE

**DESIGN LOADS:**

1. THE FOLLOWING MAXIMUM EQUIPMENT LOADS WERE ASSUMED FOR DESIGN:
  - CRANE PLATFORM 1 MANITOWOC 16000 SERIES 3 w/ 236' #58HL BOOM  
452,000 LBS COUNTERWEIGHT  
175,000 LBS @ 60' RADIUS
  - CRANE PLATFORM 2 MANITOWOC 2250 SERIES 1 w/ 190' #44 BOOM  
169,200 LBS COUNTERWEIGHT  
50,000 LBS @ 85' RADIUS


DESIGN CRANE LOAD INCLUDES 5% VERTICAL IMPACT AND 3.5% LATERAL IN EACH OF THE LONGITUDINAL AND TRANSVERSE DIRECTIONS.

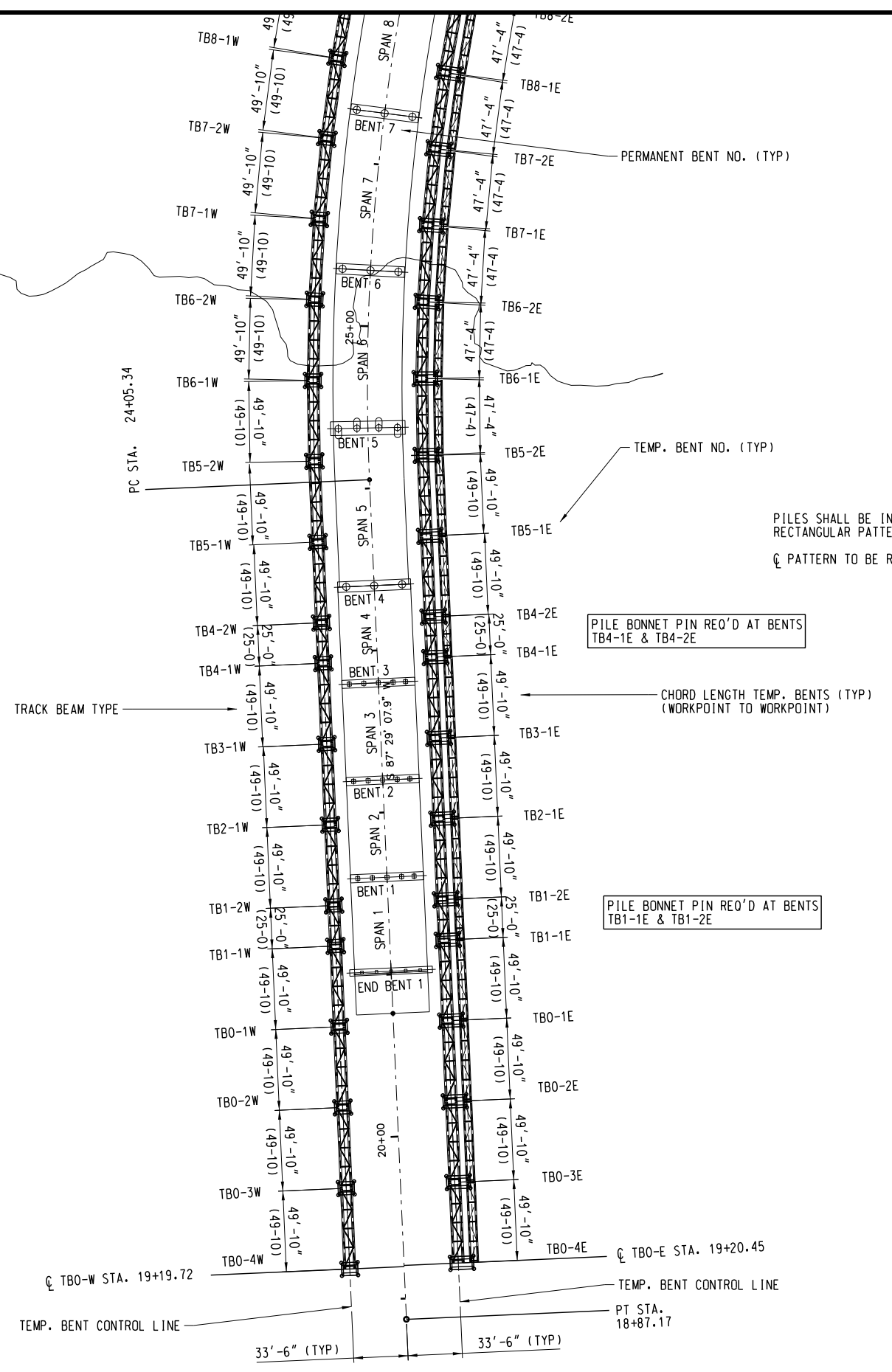
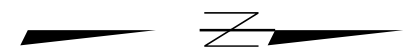
  - MATERIAL PLATFORM 100 US TONS TOTAL SELF-WEIGHT OF PLATFORM  
110 US TONS TOTAL MATERIAL LOAD DISTRIBUTED OVER FULL PLATFORM AREA
  - GANTRY CRANES 85 US TON CAPACITY  
190,000 LBS SELF-WEIGHT
  - 70 US TON CAPACITY  
165,000 LBS SELF-WEIGHT

DESIGN GANTRY LOAD INCLUDES 10% VERTICAL IMPACT AND 5% LATERAL IN EACH OF THE LONGITUDINAL AND TRANSVERSE DIRECTIONS.

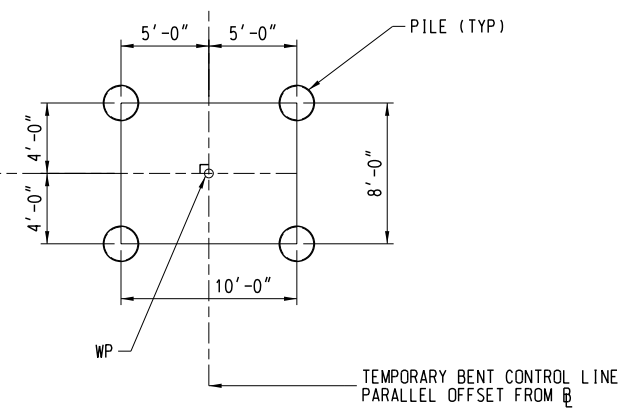
  - 3rd RAIL CAR 20,000 LBS YARD MOVER  
90' FLATCAR GROSS WT. 220,000 LBS  
(OPERATE AT WALKING SPEED)

DESIGN RAIL CAR LOAD INCLUDES 25% VERTICAL IMPACT AND 5% LATERAL IN EACH OF THE LONGITUDINAL AND TRANSVERSE DIRECTIONS.
2. CRANE LOADING SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL CONFIRM CRANE CAPACITY WITH ACTUAL CHART POSTED IN CRANE.
3. DESIGN WIND SPEED: CONSTRUCTION ACTIVE = 40 mph  
CONSTRUCTION IN-ACTIVE = 110 mph
4. PERSONNEL WALKWAY LIVE LOAD = 50 psf.

0	FOR CONSTRUCTION	02-09-18
NO.	REVISION	DATE
		
CRANE TRESTLE GENERAL NOTES		
NC12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: GN-1	

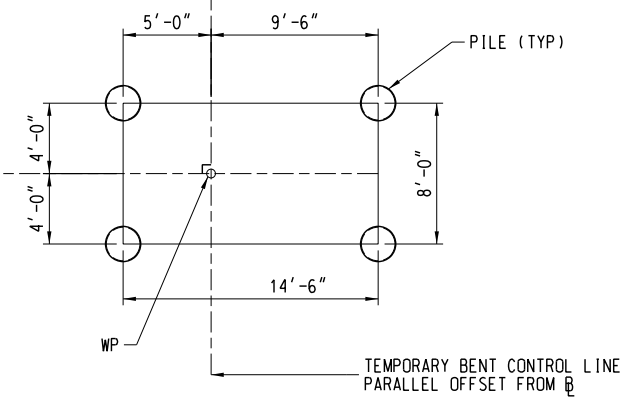


PILES SHALL BE INSTALLED ON RECTANGULAR PATTERN  
 ☉ PATTERN TO BE RADIAL TO ☉



WEST TEMPORARY BENT PILE LAYOUT

PILES SHALL BE INSTALLED ON RECTANGULAR PATTERN  
 ☉ PATTERN TO BE RADIAL TO ☉



EAST TEMPORARY BENT PILE LAYOUT

PILE BONNET PIN REQ'D AT BENTS  
 TB4-1E & TB4-2E

PILE BONNET PIN REQ'D AT BENTS  
 TB1-1E & TB1-2E

CHORD LENGTH TEMP. BENTS (TYP)  
 (WORKPOINT TO WORKPOINT)

NOTES:

1. SEE SHEET GN-1 FOR GENERAL NOTES.
2. SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
3. TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

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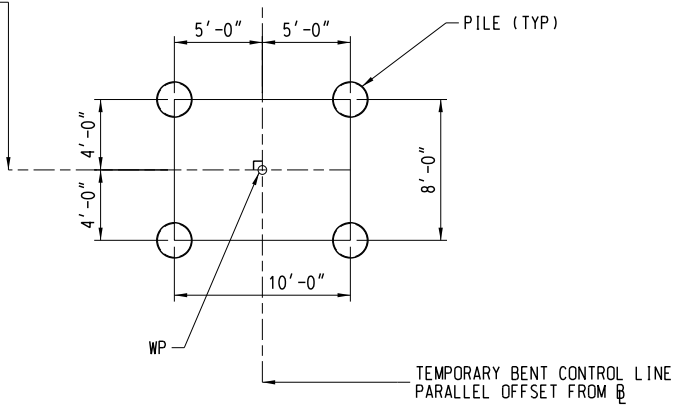


CRANE TRESTLE  
 PLAN LAYOUT - 1

NC12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)			
CONTRACTOR: FLATIRON CONSTRUCTORS			
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW	
DATE: 11-17-17	SHEET: PL-1		

PILES SHALL BE INSTALLED ON RECTANGULAR PATTERN

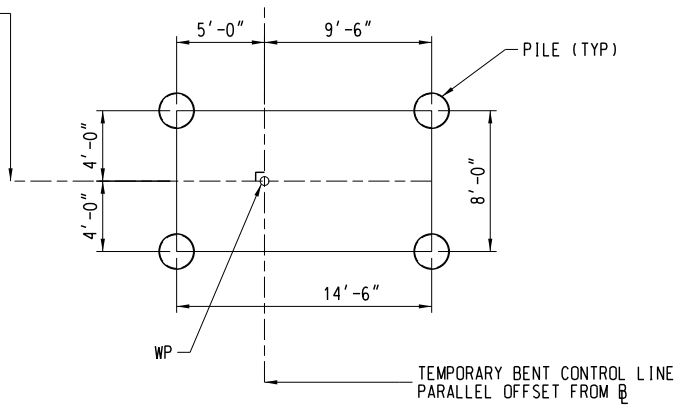
☉ PATTERN TO BE RADIAL TO ☉



WEST TEMPORARY BENT PILE LAYOUT

PILES SHALL BE INSTALLED ON RECTANGULAR PATTERN

☉ PATTERN TO BE RADIAL TO ☉



EAST TEMPORARY BENT PILE LAYOUT

CHORD LENGTH TEMP. BENTS (TYP)  
(WORKPOINT TO WORKPOINT)

TEMP. BENT NO. (TYP)

TEMP. BENT CONTROL LINE

TEMP. BENT CONTROL LINE

PERMANENT BENT NO. (TYP)

NOTES:

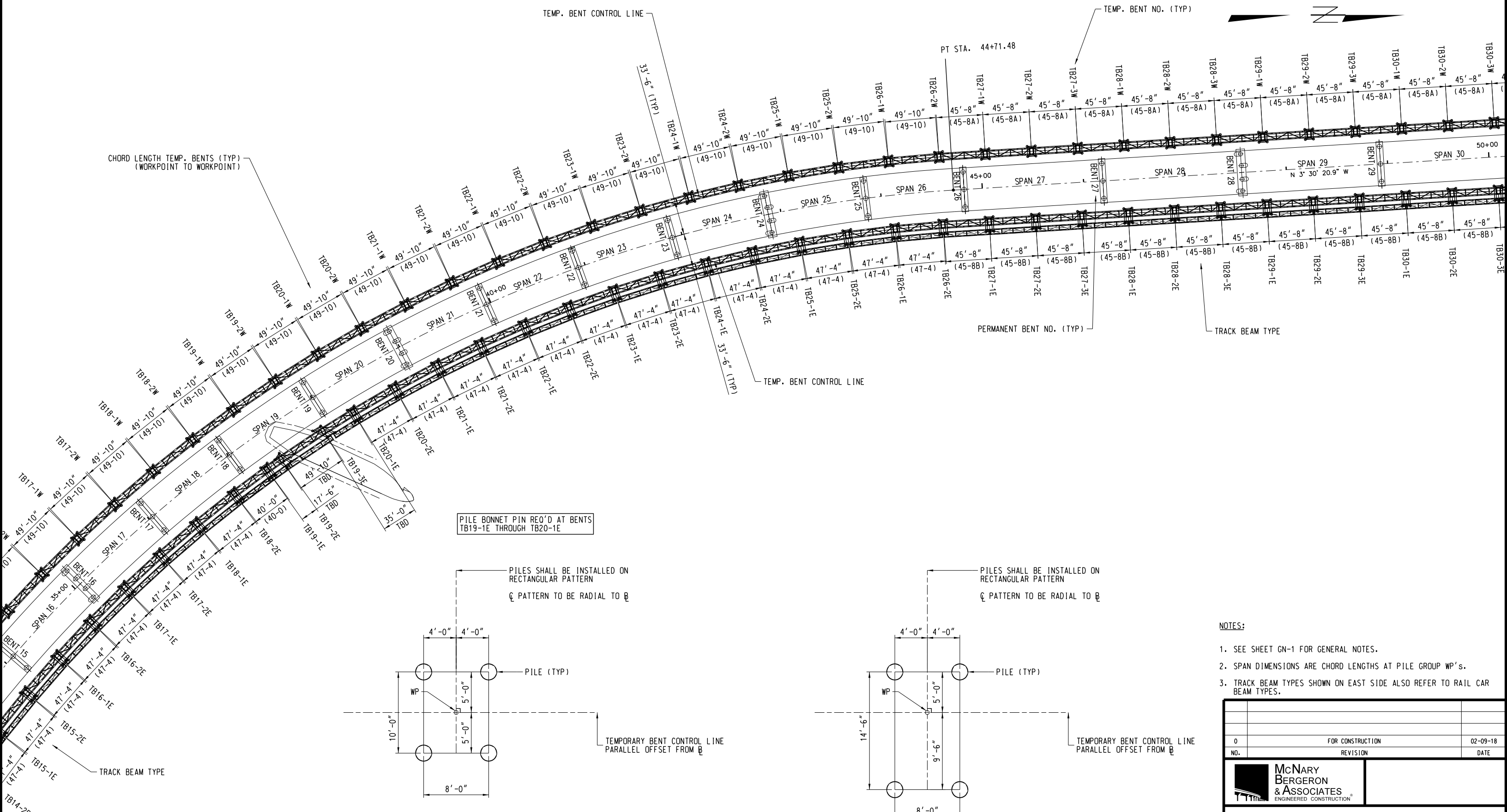
1. SEE SHEET GN-1 FOR GENERAL NOTES.
2. SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
3. TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

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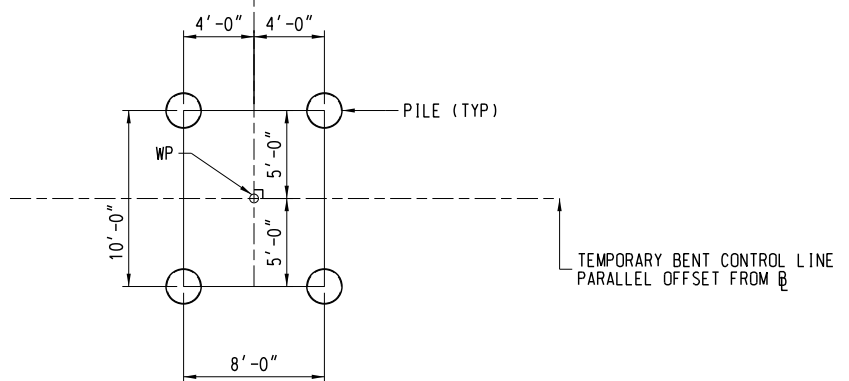
CRANE TRESTLE  
PLAN LAYOUT - 2

NC12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)			
CONTRACTOR: FLATIRON CONSTRUCTORS			
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW	
DATE: 11-17-17	SHEET: PL-2		



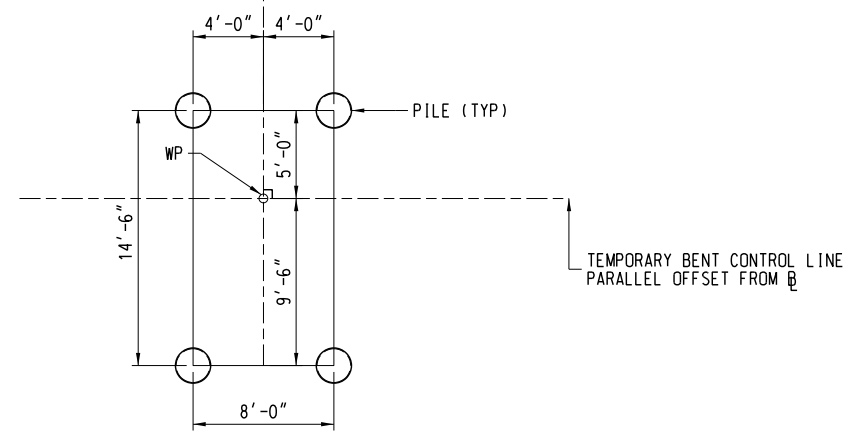
PILE BONNET PIN REQ'D AT BENTS TB19-1E THROUGH TB20-1E

PILES SHALL BE INSTALLED ON RECTANGULAR PATTERN  
 ☉ PATTERN TO BE RADIAL TO ☉



WEST TEMPORARY BENT PILE LAYOUT

PILES SHALL BE INSTALLED ON RECTANGULAR PATTERN  
 ☉ PATTERN TO BE RADIAL TO ☉



EAST TEMPORARY BENT PILE LAYOUT

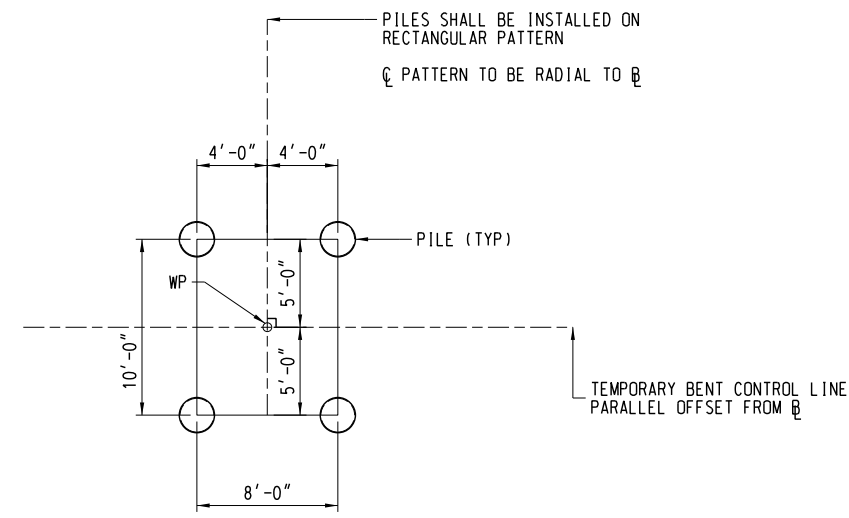
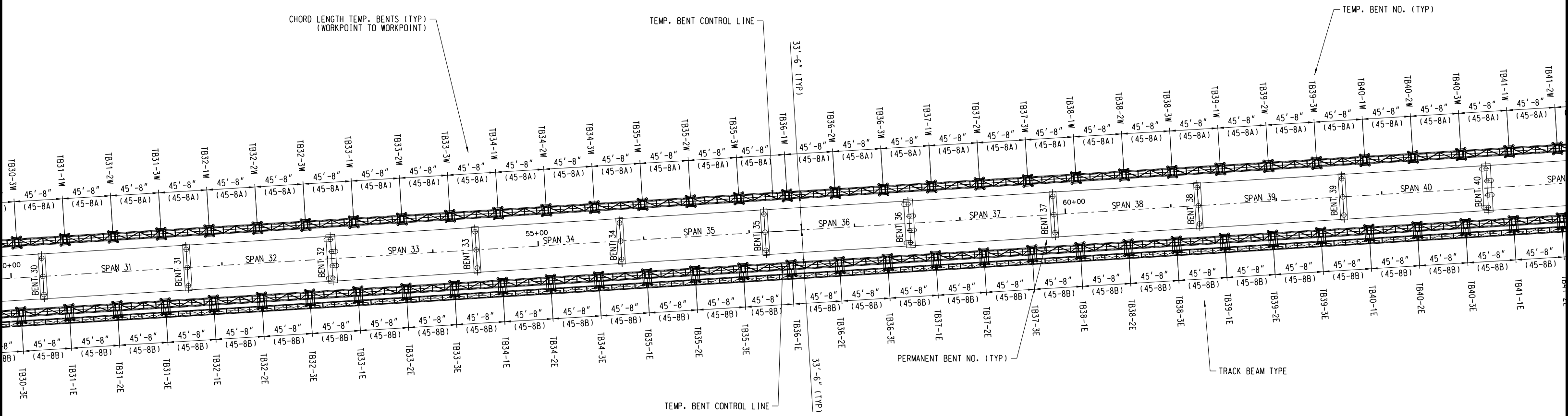
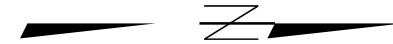
- NOTES:
1. SEE SHEET GN-1 FOR GENERAL NOTES.
  2. SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
  3. TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

0	FOR CONSTRUCTION	02-09-18
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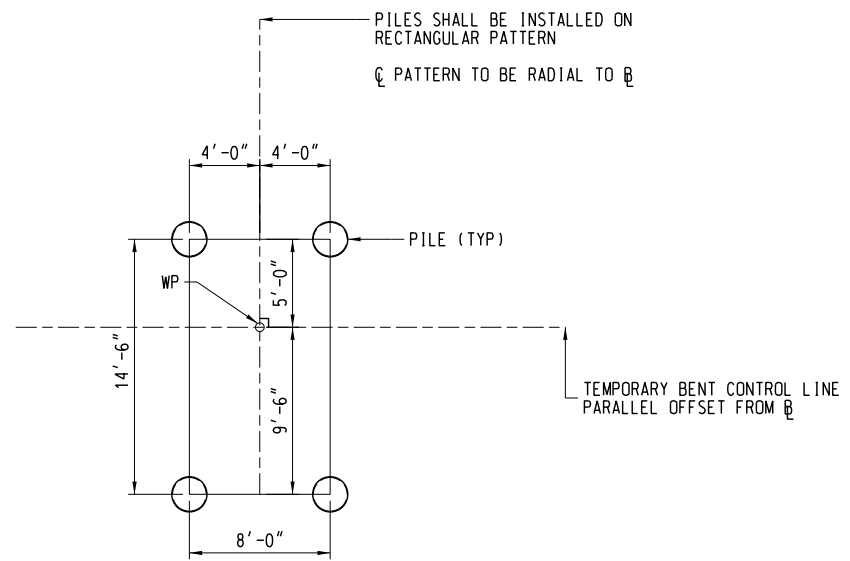


CRANE TRESTLE  
 PLAN LAYOUT - 3

NC12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: PL-3	



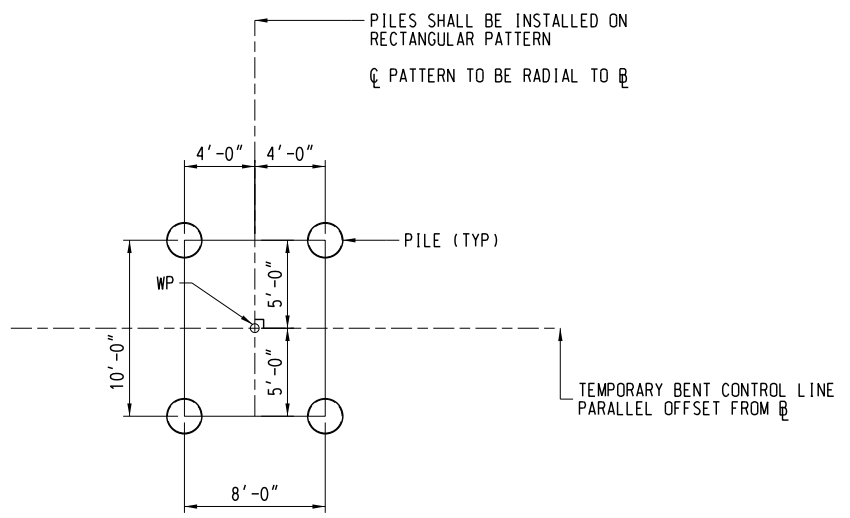
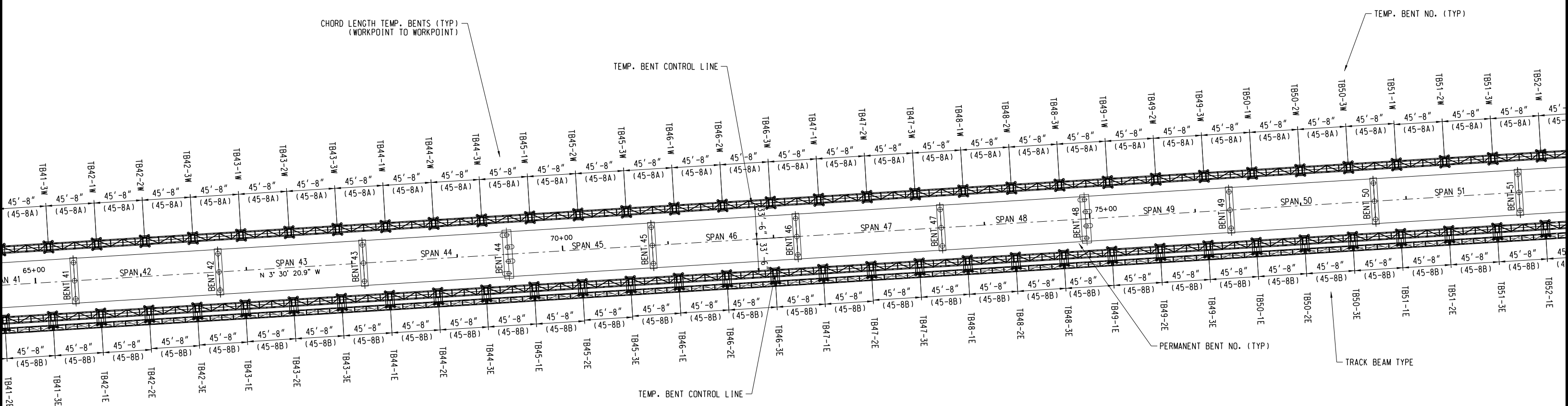
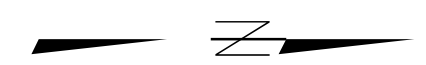
WEST TEMPORARY BENT PILE LAYOUT



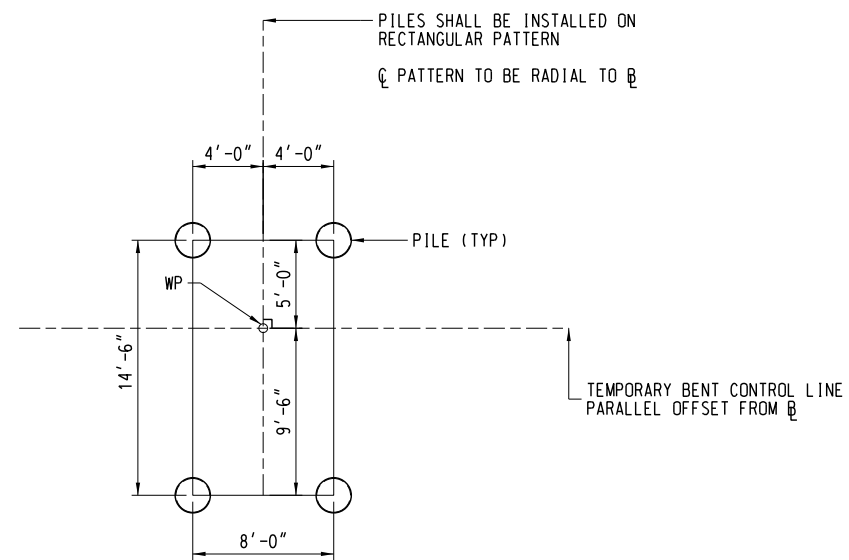
EAST TEMPORARY BENT PILE LAYOUT

- NOTES:
- SEE SHEET GN-1 FOR GENERAL NOTES.
  - SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
  - TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

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 <b>McNARY BERGERON &amp; ASSOCIATES</b> ENGINEERED CONSTRUCTION		
<b>CRANE TRESTLE          PLAN LAYOUT - 4</b>		
NC12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: PL-4	



WEST TEMPORARY BENT PILE LAYOUT



EAST TEMPORARY BENT PILE LAYOUT

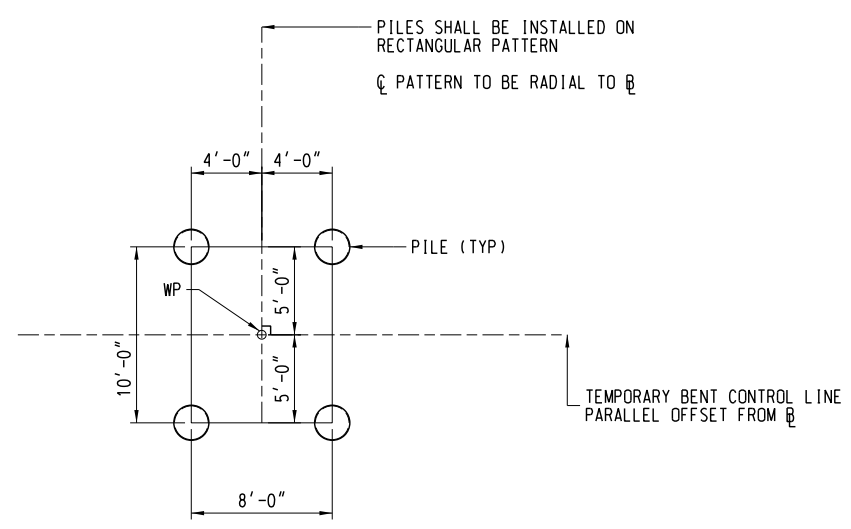
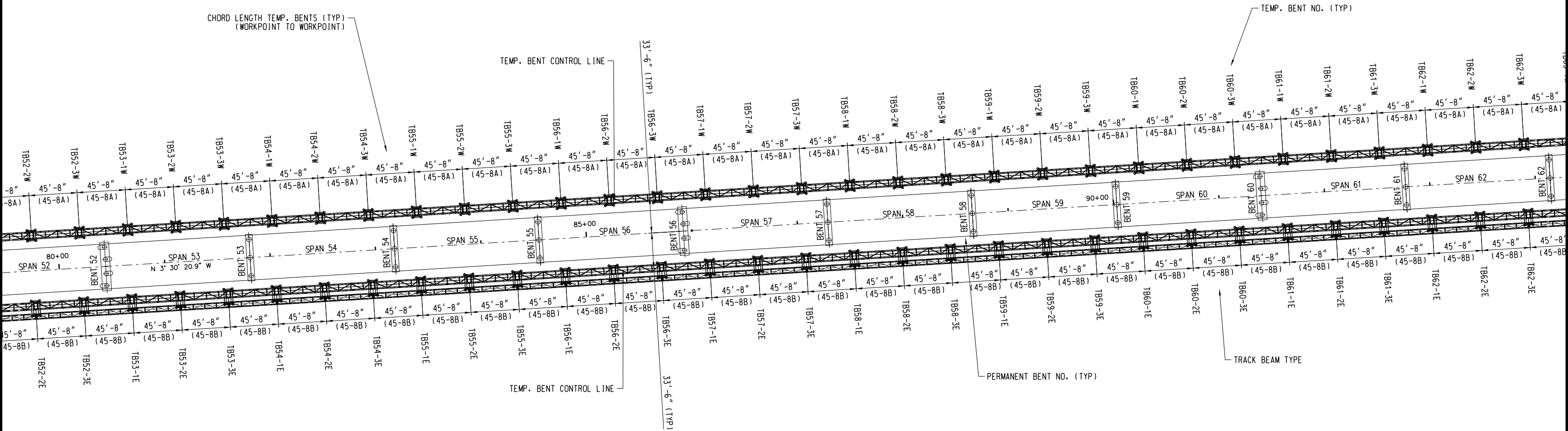
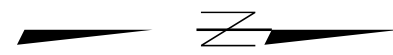
- NOTES:
1. SEE SHEET GN-1 FOR GENERAL NOTES.
  2. SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
  3. TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

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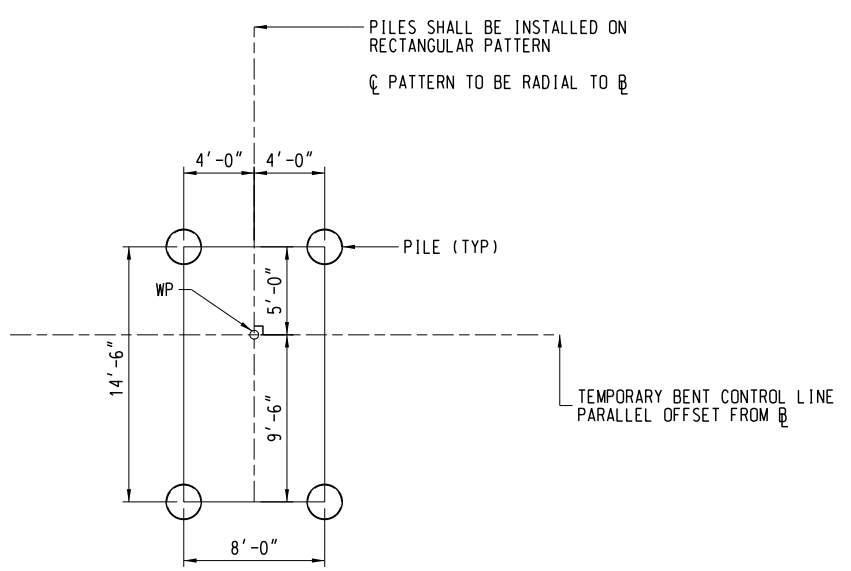


CRANE TRESTLE  
PLAN LAYOUT - 5

NC12 - RODAN THE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: PL-5	



WEST TEMPORARY BENT PILE LAYOUT



EAST TEMPORARY BENT PILE LAYOUT

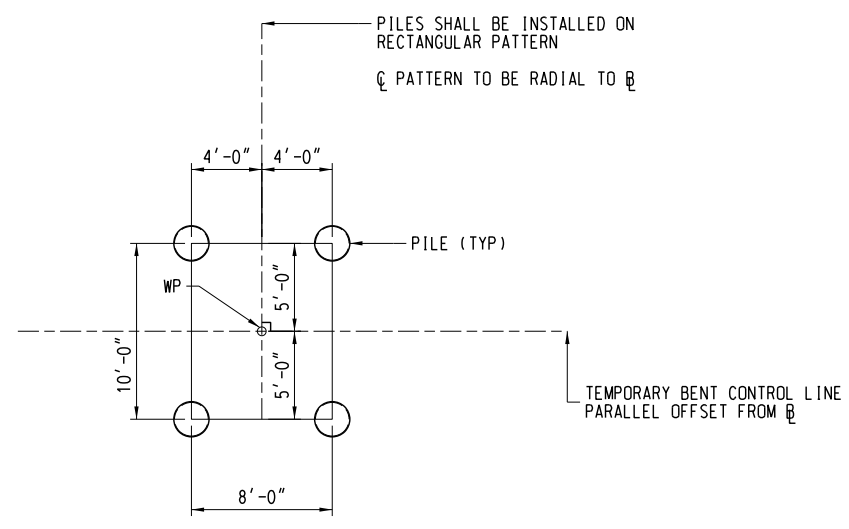
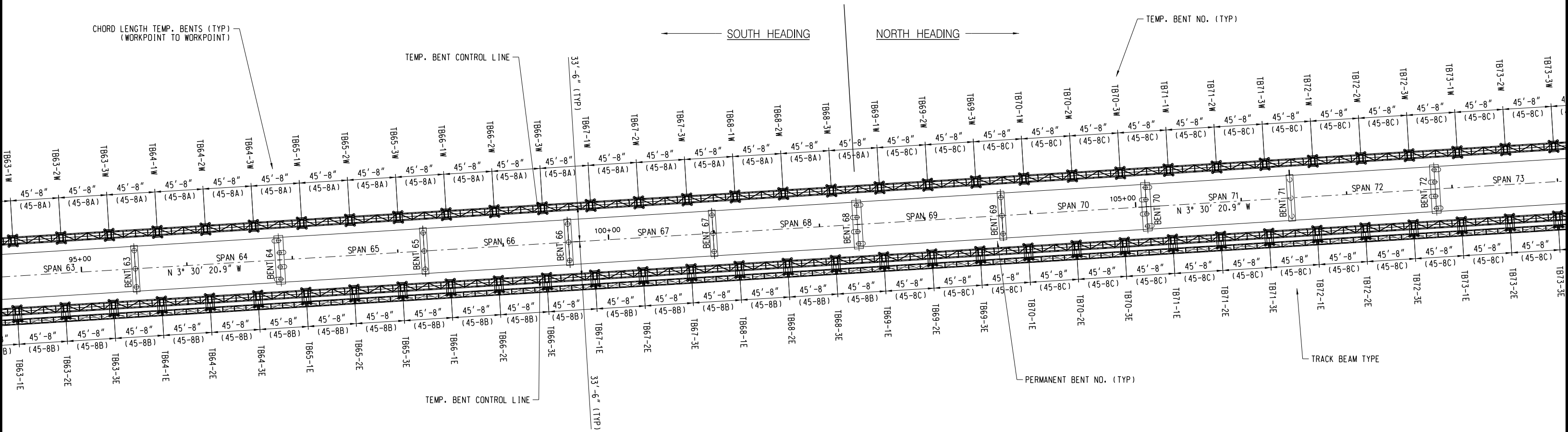
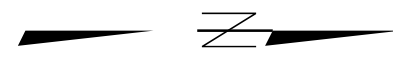
- NOTES:
1. SEE SHEET GN-1 FOR GENERAL NOTES.
  2. SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
  3. TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

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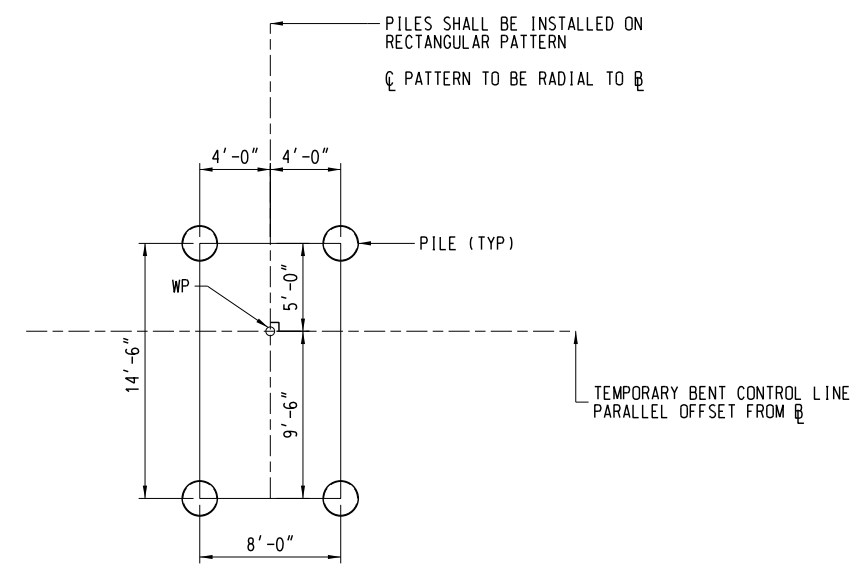


CRANE TRESTLE  
PLAN LAYOUT - 6

NC12 - RODAN THE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: PL-6	



WEST TEMPORARY BENT PILE LAYOUT

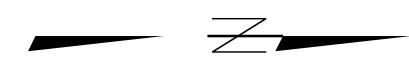
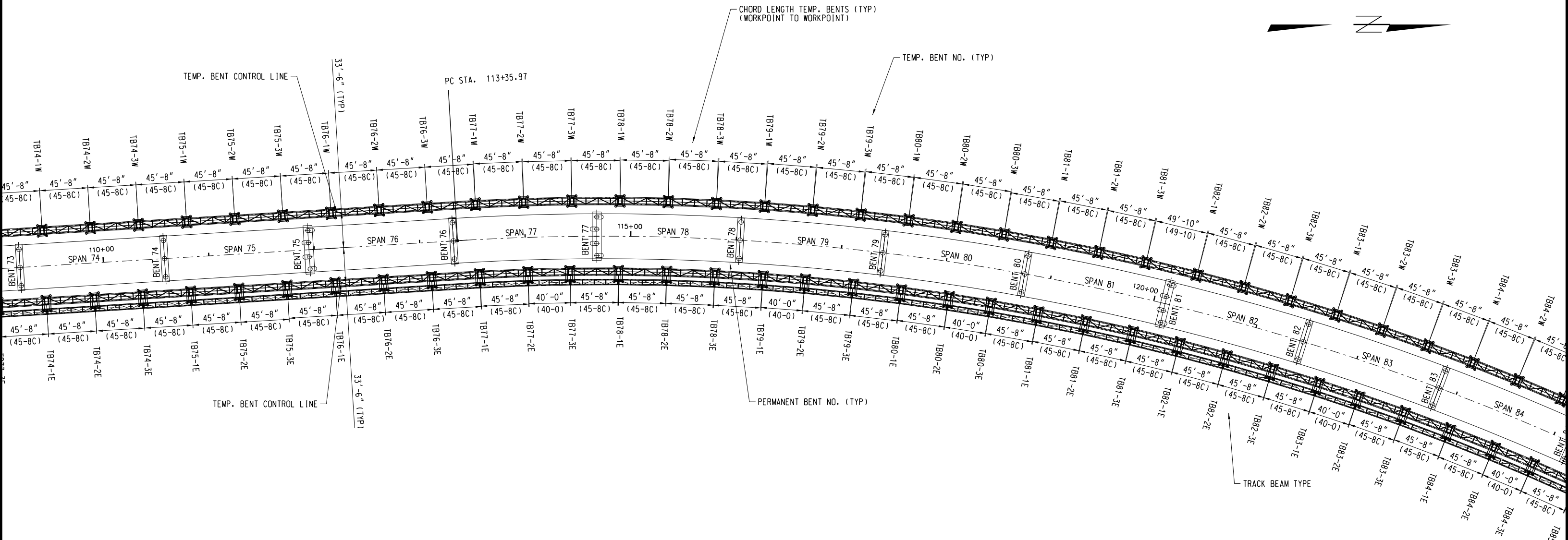


EAST TEMPORARY BENT PILE LAYOUT

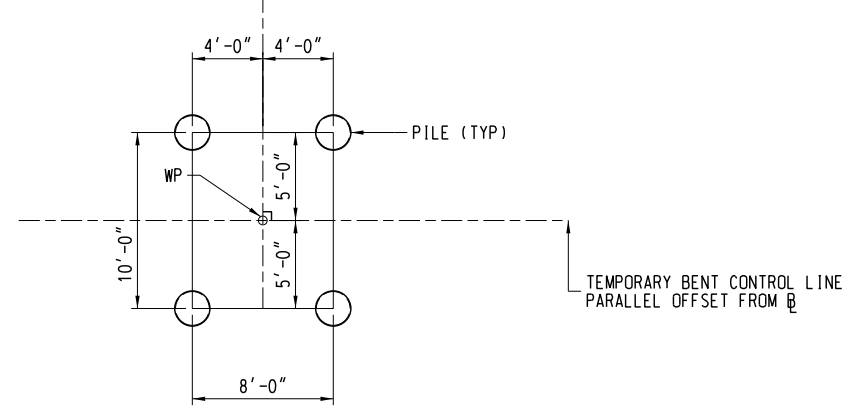
- NOTES:
- SEE SHEET GN-1 FOR GENERAL NOTES.
  - SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
  - TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

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 <b>McNARY BERGERON &amp; ASSOCIATES</b> ENGINEERED CONSTRUCTION		
<b>CRANE TRESTLE PLAN LAYOUT - 7</b>		
NC12 - RODAN THE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: PL-7	



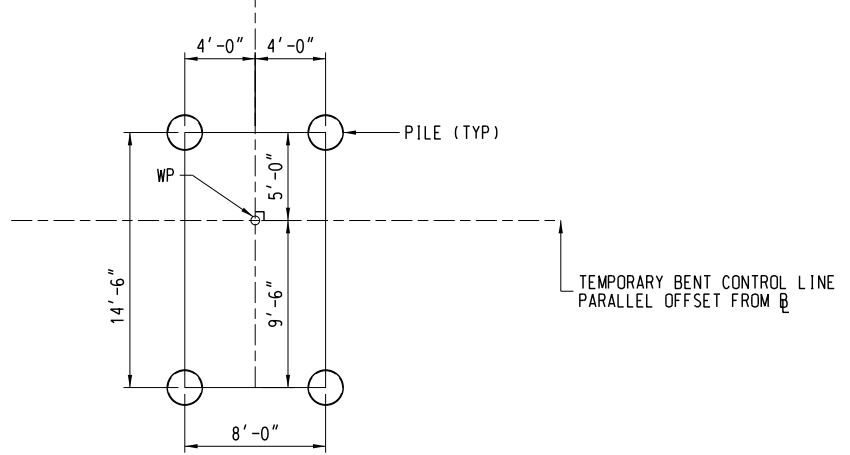


PILES SHALL BE INSTALLED ON RECTANGULAR PATTERN  
 C<sub>P</sub> PATTERN TO BE RADIAL TO B



WEST TEMPORARY BENT PILE LAYOUT

PILES SHALL BE INSTALLED ON RECTANGULAR PATTERN  
 C<sub>P</sub> PATTERN TO BE RADIAL TO B



EAST TEMPORARY BENT PILE LAYOUT

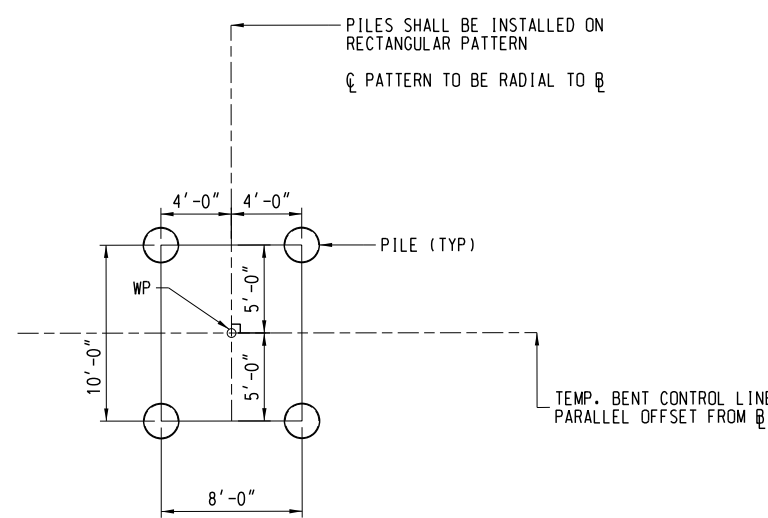
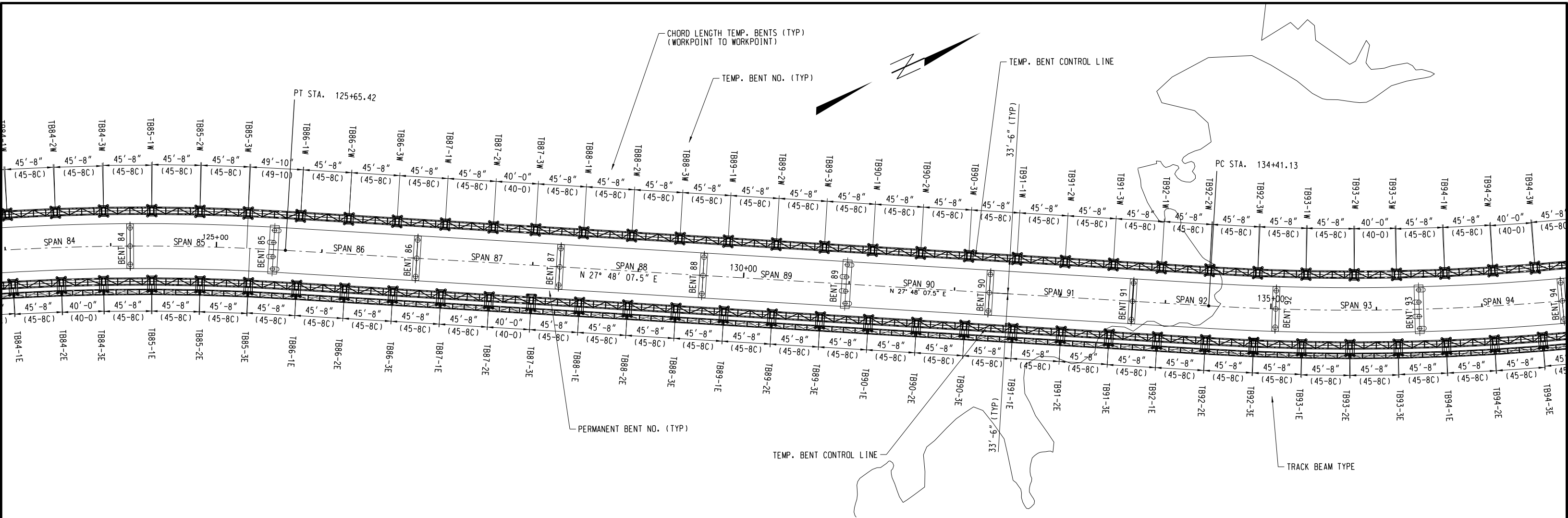
- NOTES:
1. SEE SHEET GN-1 FOR GENERAL NOTES.
  2. SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
  3. TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

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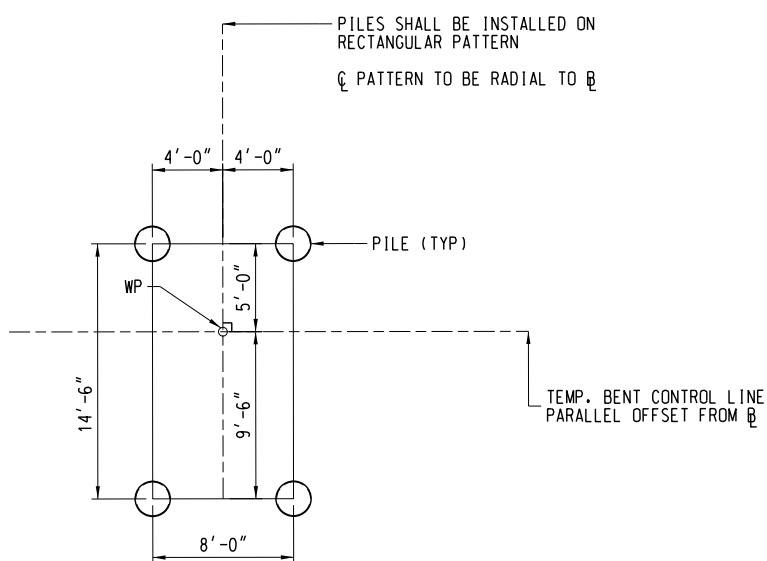


CRANE TRESTLE  
 PLAN LAYOUT - 8

NC12 - RODAN THE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: PL-8	



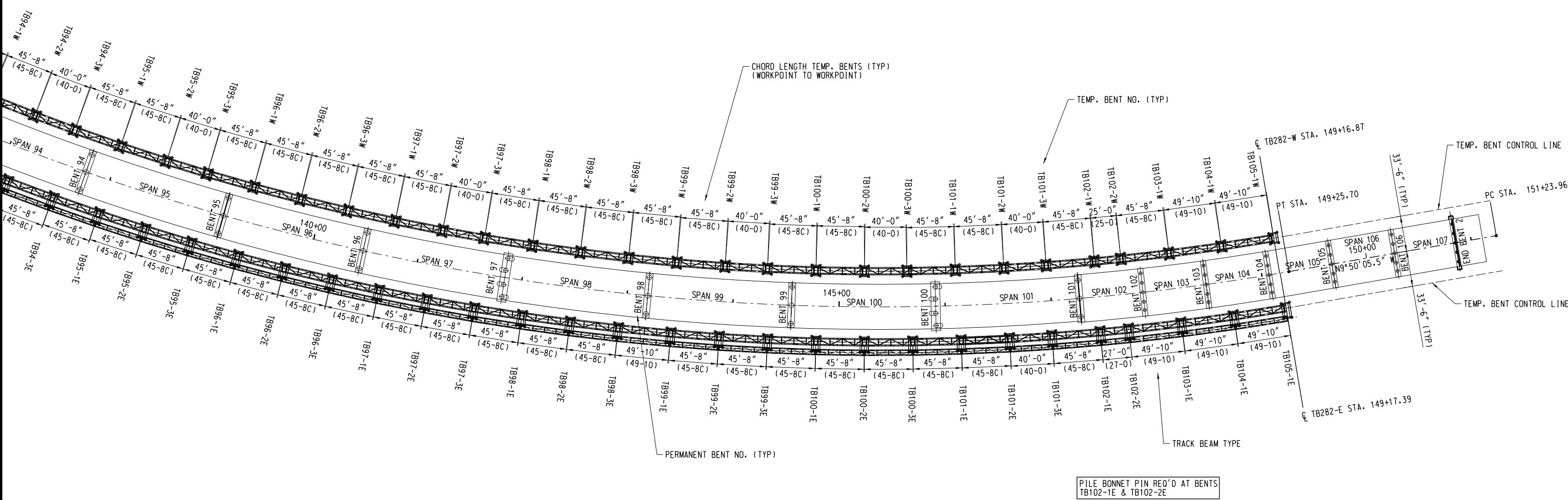
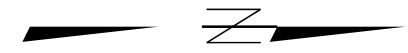
WEST TEMPORARY BENT PILE LAYOUT



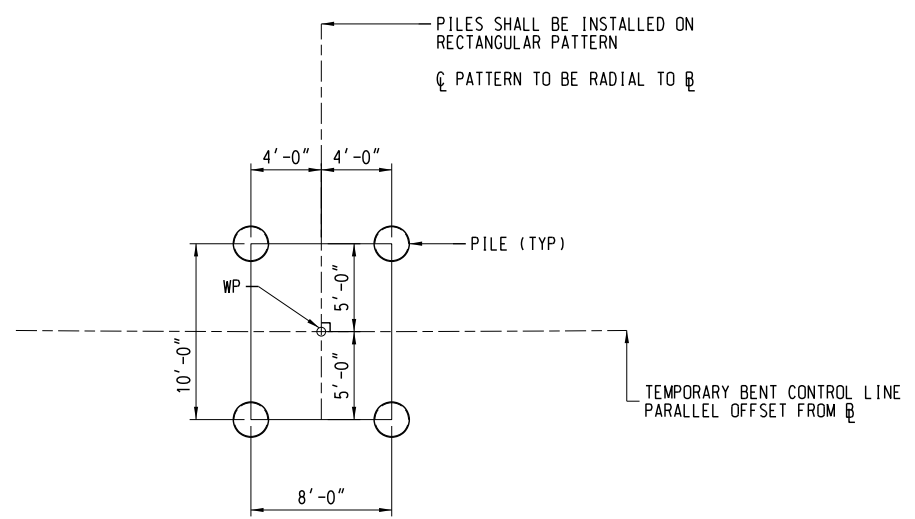
EAST TEMPORARY BENT PILE LAYOUT

- NOTES:
- SEE SHEET GN-1 FOR GENERAL NOTES.
  - SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
  - TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

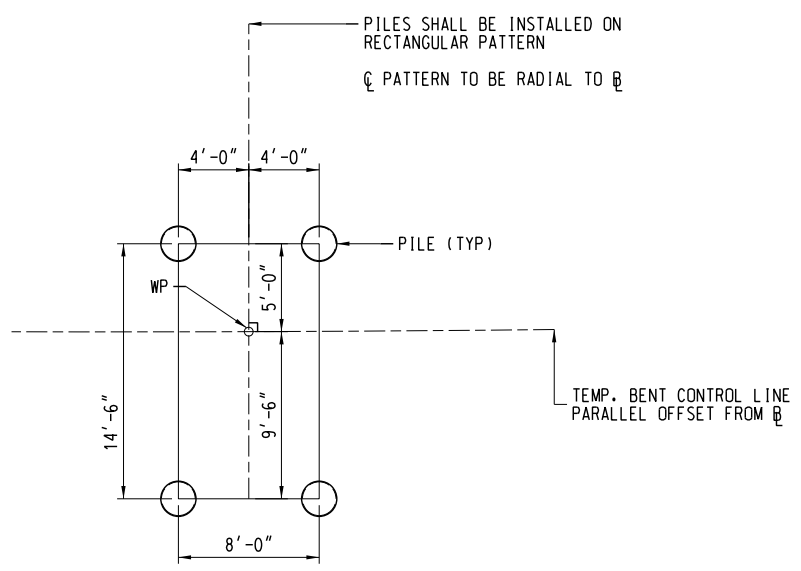
0	FOR CONSTRUCTION	02-09-18
NO.	REVISION	DATE
 <b>McNARY BERGERON &amp; ASSOCIATES</b> ENGINEERED CONSTRUCTION		
<b>CRANE TRESTLE PLAN LAYOUT - 9</b>		
NC12 - RODAN THE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: PL-9	



PILE BONNET PIN REQ'D AT BENTS  
TB102-1E & TB102-2E



WEST TEMPORARY BENT PILE LAYOUT



EAST TEMPORARY BENT PILE LAYOUT

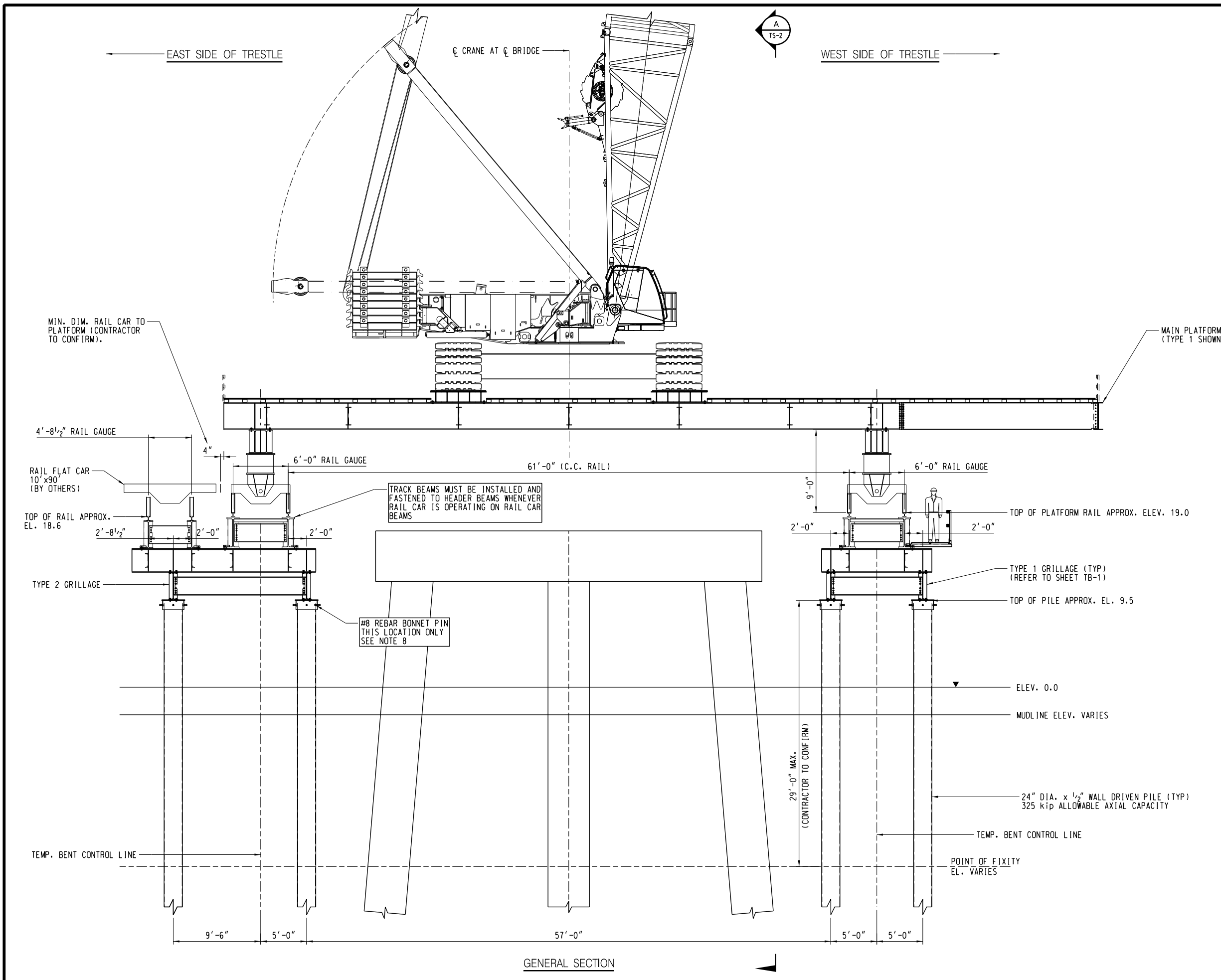
- NOTES:
1. SEE SHEET GN-1 FOR GENERAL NOTES.
  2. SPAN DIMENSIONS ARE CHORD LENGTHS AT PILE GROUP WP'S.
  3. TRACK BEAM TYPES SHOWN ON EAST SIDE ALSO REFER TO RAIL CAR BEAM TYPES.

0	FOR CONSTRUCTION	02-09-18
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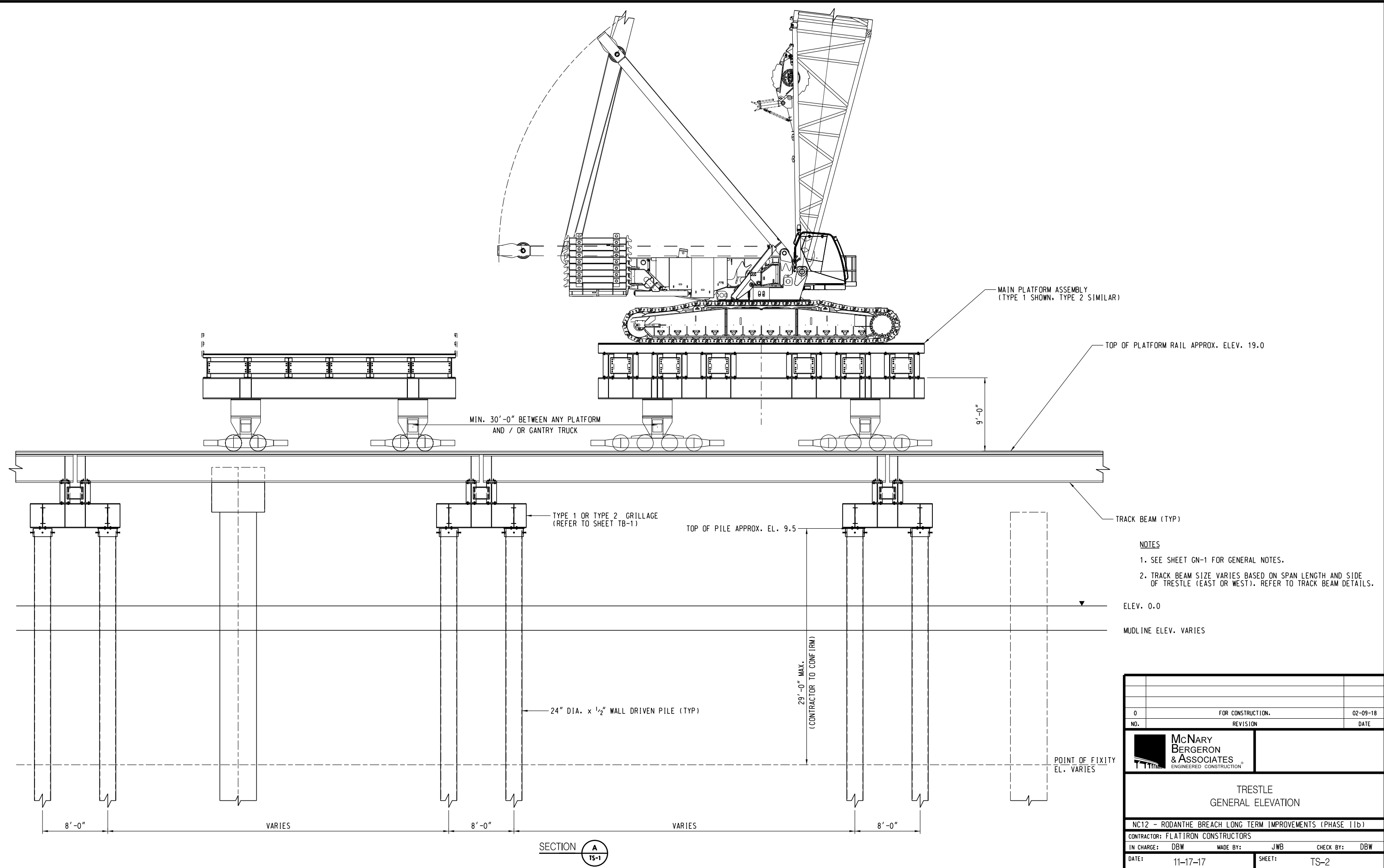
CRANE TRESTLE  
PLAN LAYOUT - 10

NC12 - RODAN THE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: PL-10	



- NOTES**
1. ESTIMATED PILE POINT OF FIXITY BASED ON INFORMATION FROM KLEINFELDER, DATED 12/22/17. CONTRACTOR TO CONFIRM.
  2. CONTRACTOR TO CONFIRM FLAT CAR RAIL GAUGE.
  3. CRANE PLATFORM CANTILEVER MUST BE INSTALLED ON WEST SIDE OF TRESTLE (OPPOSITE OF RAIL CAR).
  4. TYPE 1 GRILLAGE IS ALWAYS INSTALLED ON WEST SIDE OF TRESTLE FOR ALL SPANS. TYPE 2 GRILLAGE IS ALWAYS INSTALLED ON EAST SIDE OF TRESTLE FOR ALL SPANS (REFER TO PLAN LAYOUT).
  5. TRACK BEAM SIZE VARIES BASED ON SPAN LENGTH AND SIDE OF TRESTLE (EAST OR WEST). REFER TO TRACK BEAM DETAILS.
  6. RAIL CAR BEAM SIZE VARIES BASED ON SPAN LENGTH. REFER TO RAIL CAR BEAM DETAILS.
  7. SEE SHEET GN-1 FOR GENERAL NOTES.
  8. INSTALL BONNET PIN COMPLETELY THROUGH BONNET AND PILE AT TWO PILES OF BENT THAT ARE OPPOSITE THE RAIL CAR BEAMS, AS SHOWN. THIS DETAIL APPLIES TO ANY BENT WITH ADJACENT SPAN LENGTH LESS THAN 40'-0", WHICH INCLUDES THE FOLLOWING:
    - TB1-1E & TB1-2E
    - TB4-1E & TB4-2E
    - TB19-1E & TB19-2E, TB19-3E, TB20-1E
    - TB102-1E & TB102-2E

0	FOR CONSTRUCTION	02-09-18
NO.	REVISION	DATE
 <b>McNARY BERGERON &amp; ASSOCIATES</b> ENGINEERED CONSTRUCTION		
<b>TRESTLE GENERAL SECTION</b>		
NC12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 11-17-17	SHEET: TS-1	



- NOTES**
1. SEE SHEET GN-1 FOR GENERAL NOTES.
  2. TRACK BEAM SIZE VARIES BASED ON SPAN LENGTH AND SIDE OF TRESTLE (EAST OR WEST). REFER TO TRACK BEAM DETAILS.

ELEV. 0.0  
 MUDLINE ELEV. VARIES

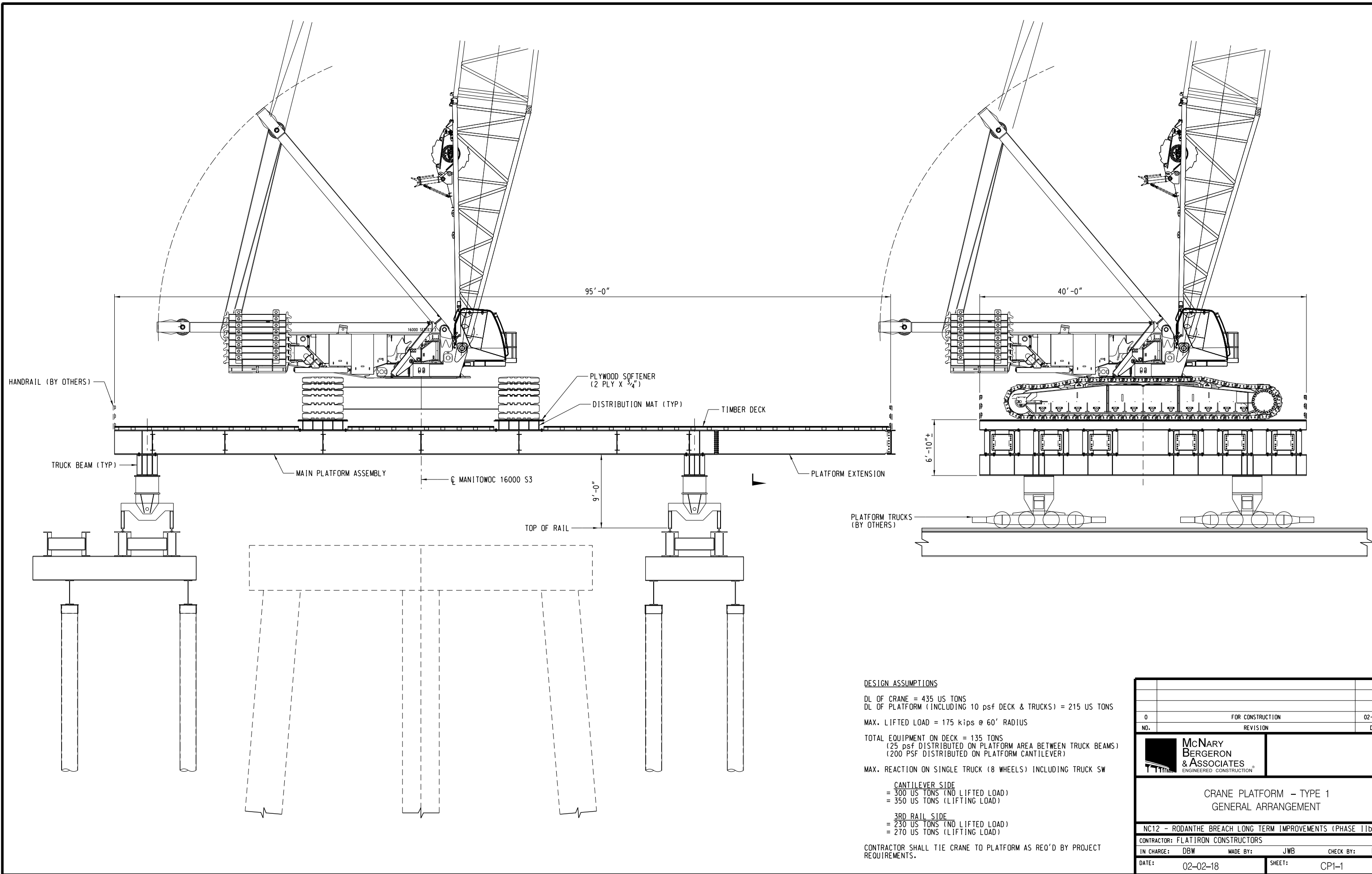
0	FOR CONSTRUCTION.	02-09-18
NO.	REVISION	DATE

**McNARY BERGERON & ASSOCIATES**  
 ENGINEERED CONSTRUCTION


**TRESTLE GENERAL ELEVATION**

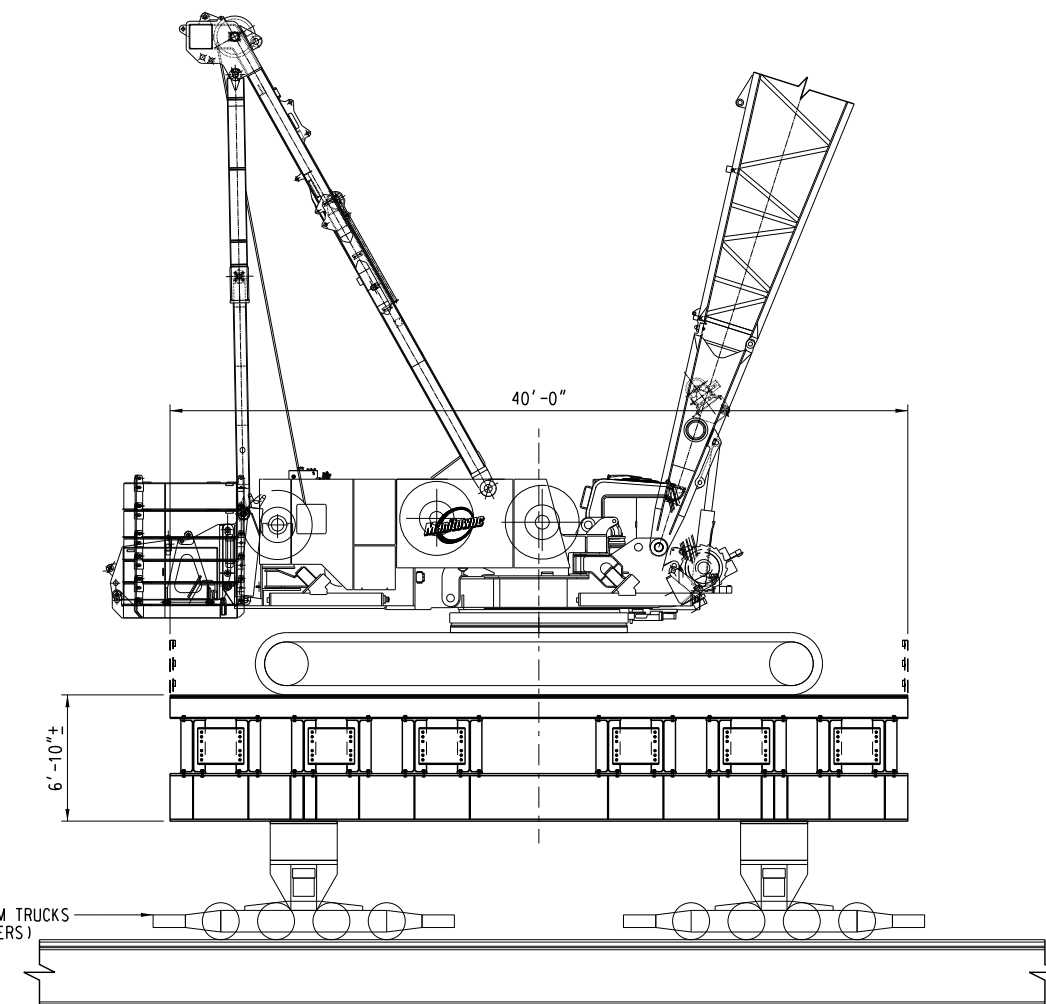
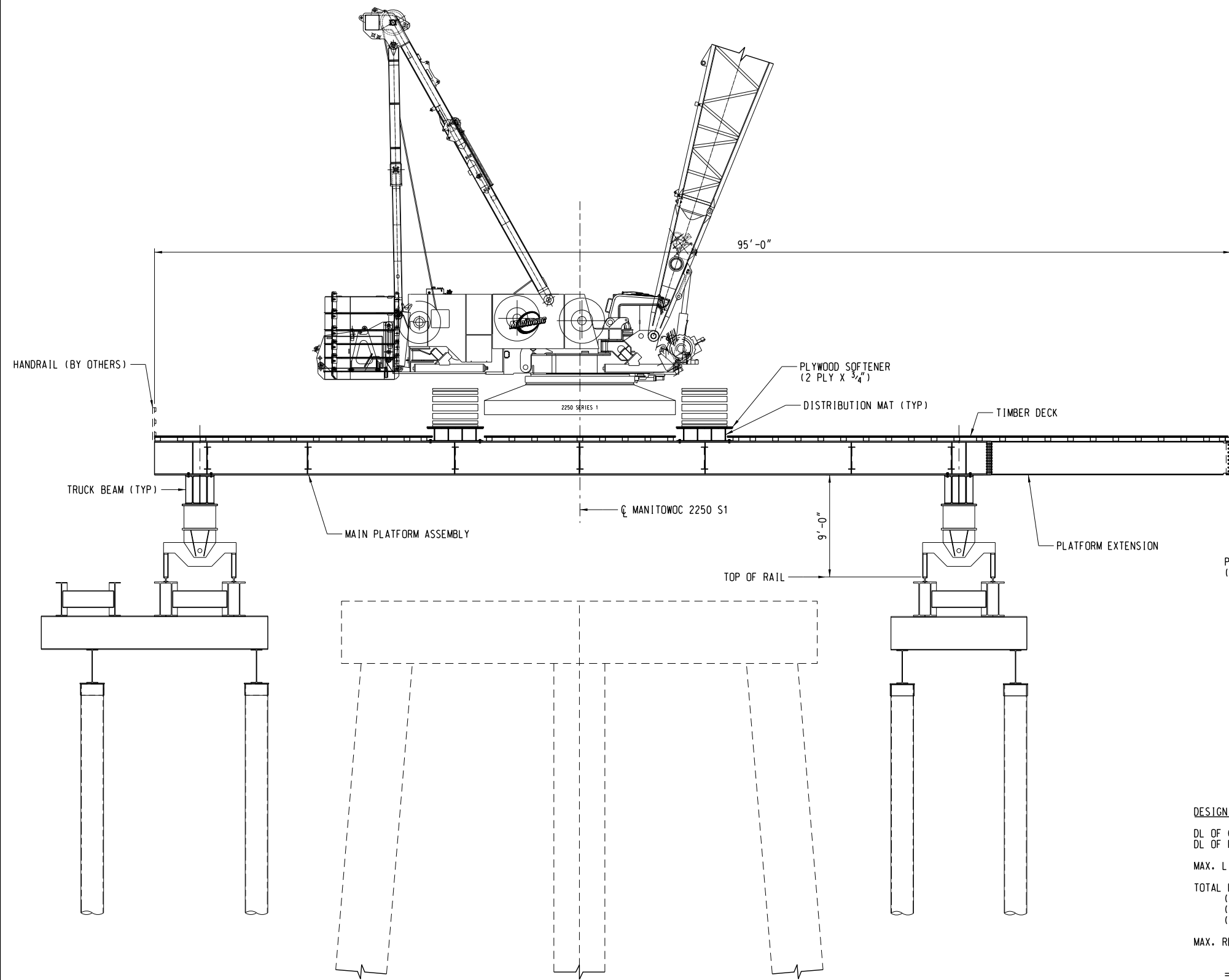
NC12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)			
CONTRACTOR: FLATIRON CONSTRUCTORS			
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW	
DATE: 11-17-17	SHEET: TS-2		

SECTION **A**  
 TS-1




**DESIGN ASSUMPTIONS**  
 DL OF CRANE = 435 US TONS  
 DL OF PLATFORM (INCLUDING 10 psf DECK & TRUCKS) = 215 US TONS  
 MAX. LIFTED LOAD = 175 kips @ 60' RADIUS  
 TOTAL EQUIPMENT ON DECK = 135 TONS  
 (25 psf DISTRIBUTED ON PLATFORM AREA BETWEEN TRUCK BEAMS)  
 (200 PSF DISTRIBUTED ON PLATFORM CANTILEVER)  
 MAX. REACTION ON SINGLE TRUCK (8 WHEELS) INCLUDING TRUCK SW  
 CANTILEVER SIDE  
 = 300 US TONS (NO LIFTED LOAD)  
 = 350 US TONS (LIFTING LOAD)  
 3RD RAIL SIDE  
 = 230 US TONS (NO LIFTED LOAD)  
 = 270 US TONS (LIFTING LOAD)  
 CONTRACTOR SHALL TIE CRANE TO PLATFORM AS REQ'D BY PROJECT REQUIREMENTS.

0	FOR CONSTRUCTION	02-09-18
NO.	REVISION	DATE
 <b>McNARY BERGERON &amp; ASSOCIATES</b> ENGINEERED CONSTRUCTION		
<b>CRANE PLATFORM - TYPE 1</b> <b>GENERAL ARRANGEMENT</b>		
NC12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE 11b)		
CONTRACTOR: FLATIRON CONSTRUCTORS		
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW
DATE: 02-02-18	SHEET: CP1-1	



**DESIGN ASSUMPTIONS**

- DL OF CRANE = 245 US TONS
  - DL OF PLATFORM (INCLUDING 10 psf DECK & TRUCKS) = 195 US TONS
  - MAX. LIFTED LOAD = 50 kips @ 85' RADIUS
  - TOTAL EQUIPMENT ON DECK = 97.5 TONS  
(25 psf DISTRIBUTED ON PLATFORM AREA BETWEEN TRUCK BEAMS)  
(100 psf DISTRIBUTED ON PLATFORM CANTILEVER)  
(25 kips PILE DRIVING TEMPLATE)
  - MAX. REACTION ON SINGLE TRUCK (8 WHEELS) INCLUDING TRUCK SW
    - CANTILEVER SIDE
    - = 195 US TONS (NO LIFTED LOAD)
    - = 210 US TONS (LIFTING LOAD)
    - 3rd RAIL SIDE
    - = 150 US TONS (NO LIFTED LOAD)
    - = 170 US TONS (LIFTING LOAD)
- CONTRACTOR SHALL TIE CRANE TO PLATFORM AS REQ'D BY PROJECT REQUIREMENTS.

0	FOR CONSTRUCTION	02-09-18	
NO.	REVISION	DATE	
 <b>McNARY BERGERON &amp; ASSOCIATES</b> ENGINEERED CONSTRUCTION		<b>CRANE PLATFORM - TYPE 2</b> <b>GENERAL ARRANGEMENT</b>	
CONTRACTOR: FLATIRON CONSTRUCTORS			
IN CHARGE: DBW	MADE BY: JWB	CHECK BY: DBW	
DATE: 02-02-18	SHEET: CP2-1		