



2020 PHYSICAL CONDITION ELEMENT LEVEL INSPECTION REPORT

Bridge CUY-176-1334

SFN 1805436

S.R. 176 NB (Jennings Freeway) under I-71 NB

Dates of Inspection: May 8-10, and May 21, 2020

**ODOT, DISTRICT 12
5500 TRANSPORTATION BOULEVARD
GARFIELD HEIGHTS, OHIO 44125
DECEMBER 16, 2020**

2020 PHYSICAL CONDITION ELEMENT LEVEL INSPECTION REPORT

**ODOT BRIDGE NO. CUY-176-1334
S.R. 176 NB (Jennings Freeway) under I-71 NB
SFN 1805436**

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Inspected between May 8–10, and May 21, 2020

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Prepared for

Ohio Department of Transportation
District 12



EXECUTIVE SUMMARY

The Jennings Freeway bridge carrying northbound State Route 176 under I-71 northbound serves as a critical part of the Greater Cleveland area commuter system carrying an estimated 77,850 vehicles per day. The bridge is situated immediately west of the Steelyard Commons and is owned and maintained by the Ohio Department of Transportation (ODOT). The annual bridge inspection is performed by ODOT or consultants to confirm the condition state of the bridge. DLZ Ohio, Inc. (DLZ) was contracted by ODOT to perform element level inspection services on this bridge for year 2020.

The overall condition of the Jennings Freeway bridge (SFN 1805436) is rated a **5**, meaning that it is in **fair** condition. **Items highlighted in red in this inspection report are new items that were not noted during previous inspections.** Significant findings justifying the general appraisal rating include the following results:

1. The underside of the deck floor has some locations of large spalls with deteriorated rebar. In span 21BE, the floor exhibits a deep, 16'x12' spall with 27 exposed and deteriorated rebar located south of Pier 21BE.
2. The bridge wearing surface has extensive hairline map cracks, but the rideability is good and not many of the map cracks were chipping or spalling. In span 24BE, there is a 3'x8' partial patch with map cracks and settlement. In span 29BE, there is a 3'x3'x2.5" deep pothole.
3. At Expansion Joints 1B, 2BW, 2BE, and 3BW, the joint seal is broken, detached, or coming out of the joint.
4. Most of the scupper grates are partially filled with dirt and debris. A total of five scuppers are completely filled in spans 8, 14, and 16. **Scupper downspouts are missing in spans 19BW and 25BE.**
5. There are cross frames that are detached or have significant deterioration with a hole in spans 13, 18BW, 18BE, 19BW, and 24BE.
6. Multiple abutment and pier bearings are rocked forward to the maximum rotation of the bearing.
7. The right columns of Piers 13-16 have multiple deep spalls with deteriorated rebar.
8. There are multiple pier caps with significant deterioration, consisting of map cracks, deep spalls, and deteriorated reinforcing steel at **Piers 8, 9, 10, 13, 16, and 18BW.**
9. The slope protection in front of the right side of the South Abutment has significant erosion with an approximately 10' wide by 5' deep rut below the downspouts of the deck scuppers.

10. There is a 2'x6'x4" deep pothole near the left edge line of north approach slab BE.

Inspection findings were documented with field notes, sketches, pictures, and measurements. Detailed discussion of all related issues can be found in the pertinent sections of this inspection report.

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1.0 Bridge Description

ODOT Bridge No. CUY-176-1334 (northbound Jennings Freeway) is located at the merger of I-71 and S.R. 176 (Jennings Freeway) in the city of Cleveland in Cuyahoga County, Ohio. This bridge overlaps the bridge above it, Bridge No. CUY-71-1791R that carries northbound I-71 traffic. Piers 8 through 16 support both bridges.

The overall bridge length is 1,073'. The superstructure consists of a reinforced concrete deck with retrofitted concrete barriers. The deck is supported on multiple, continuous steel girders and beams. The structural steel members are ASTM A36 steel. Pile foundations support the reinforced concrete cap and column and wall type piers.

The CUY-176-1334 Bridge carries three lanes of northbound S.R. 176 (Jennings Freeway) traffic under the I-71 NB bridge. At the north end, the bridge splits into a wye configuration. The west leg is designated for I-71 northbound and I-490 and the east leg is designated for the West 14th Street ramp. The 2010 estimated average daily traffic (ADT) is 77,850 with 2.8% trucks.

2.0 Bridge History

The bridge was originally constructed from 1965 to 1969. Work was delayed due to slope failures that damaged several of the piers supporting both bridges. The original pile caps and pilings were isolated (separate) from the pier columns and replaced the caissons and new pile caps. The foundations of Piers 14, 15, 16, 17A, and 17B were modified during construction as a result of the damage caused by the slope failure. The lower half of Pier 14, 15, and 16 columns were reinforced with a supplementary concrete jacket and shear walls were constructed to connect the pier columns.

In 1991, the structure, along with the I-71 northbound bridge above, received a minor rehabilitation, as the following repairs were performed:

- The original safety curb with aluminum railings were modified to the deflector shape parapets.
 - The deck received a super plasticized dense concrete (SDC) overlay.
 - All deck expansion joints were retrofit with elastomeric strip seals.
 - The existing drainage systems were replaced.
 - All substructure units were patched and sealed.
 - The structural steel was cleaned and painted.
-

3.0 General

The data for this Physical Condition Inspection Report was obtained on May 8-10 and 21, 2020. The bridge inspection was performed by inspectors from DLZ. The bridge inspection was performed in accordance with the following documents:

Version	Document
2014	Manual of Bridge Inspection, Ohio Department of Transportation (ODOT)
2010	Manual for Bridge Evaluation, American Association of State Highway and Transportation Officials (AASHTO)
2012	Bridge Inspector's Reference Manual, Federal Highway Association
1988	National Bridge Inspection Standards, U.S. Department of Transportation

The Scope of Services directed DLZ to perform a routine element level inspection and report the findings in a formal report. The inspectors used several different access methods for the superstructure, including walking the deck and using snooters. Sofis Company, Inc. provided a snooter truck and traffic control on May 8-10, 2020. The substructure was visually inspected from the ground and from the snooter. DLZ collected photographs, field notes, measurements, and sketches while performing the bridge inspection. No destructive testing was performed.

Items highlighted in red in this inspection report are new items that were not noted during previous inspections.

The Condition Ratings used in this report are based on the 2014 ODOT Manual of Bridge Inspection Condition Rating Guidelines.

Condition Rating Guide			
1-4 Individual Component	9-0 NBIS Summary		Inspector Guidelines (Quantitative comments include the Location, Extent & Severity of the deficiency)
1-GOOD	9 - Excellent	No problems noted: no section loss, general deterioration.	Make brief comments as necessary. Communicate the predominant deficiency.
	8 - Very Good		
7 - Good	Some minor problems (ex. extent of concrete deterioration is up to 1% spalling or up to 5% saturation)		
2-FAIR	6 - Satisfactory	Structural elements show some minor deterioration (ex. extent of concrete deterioration is up to 5% spalling or up to 10% saturation)	
	5 -Fair	Structural elements show deterioration but are sound (ex. extent of concrete deterioration is up to 10% spalling or up to 20% saturation)	Document deficiencies quantitatively. Consider taking photos or making sketches.
3-POOR	4 - Poor	Advanced* (ex. extent of concrete deterioration is more than 10% spalling or more than 20% saturation). Usually the load path appears to be affected for primary members or there are obvious structural changes since the as-built condition that are advanced.	Candidate to establish monitoring benchmarks to track the rate-of -change. Take photos, make sketches and document quantitatively in order to determine if a re-load rating is possible. Include in-service conditions to verify capacity
	3 - Serious	4-Poor. . . And local failures possible.	<i>Above. . . And</i> discuss the deficiency immediately with Control Authority.
4-CRITICAL	2 - Critical	3-Serious. . . And Unless closely monitored it may be necessary to close the bridge until corrective action is taken.	<i>Above. . . And</i> the bridge is a candidate to dispatch road closure and/or immediate repairs and/or increased monitoring (Interim Inspections). Confirm in writing, critical finding.
	1 -Imminent Failure	2-Critical. . . And Major deterioration is affecting stability. Bridge or lane(s) shall be closed to traffic but corrective action may put bridge back into light service.	<i>Above. . . And</i> Dispatch immediate lane or bridge closure. Contact the Control Authority. Stay at the bridge until the safety of the traveling public is achieved. Confirm in writing.
	0 - Failed	1-Imm Failure. . . And Out of service - beyond corrective action.	

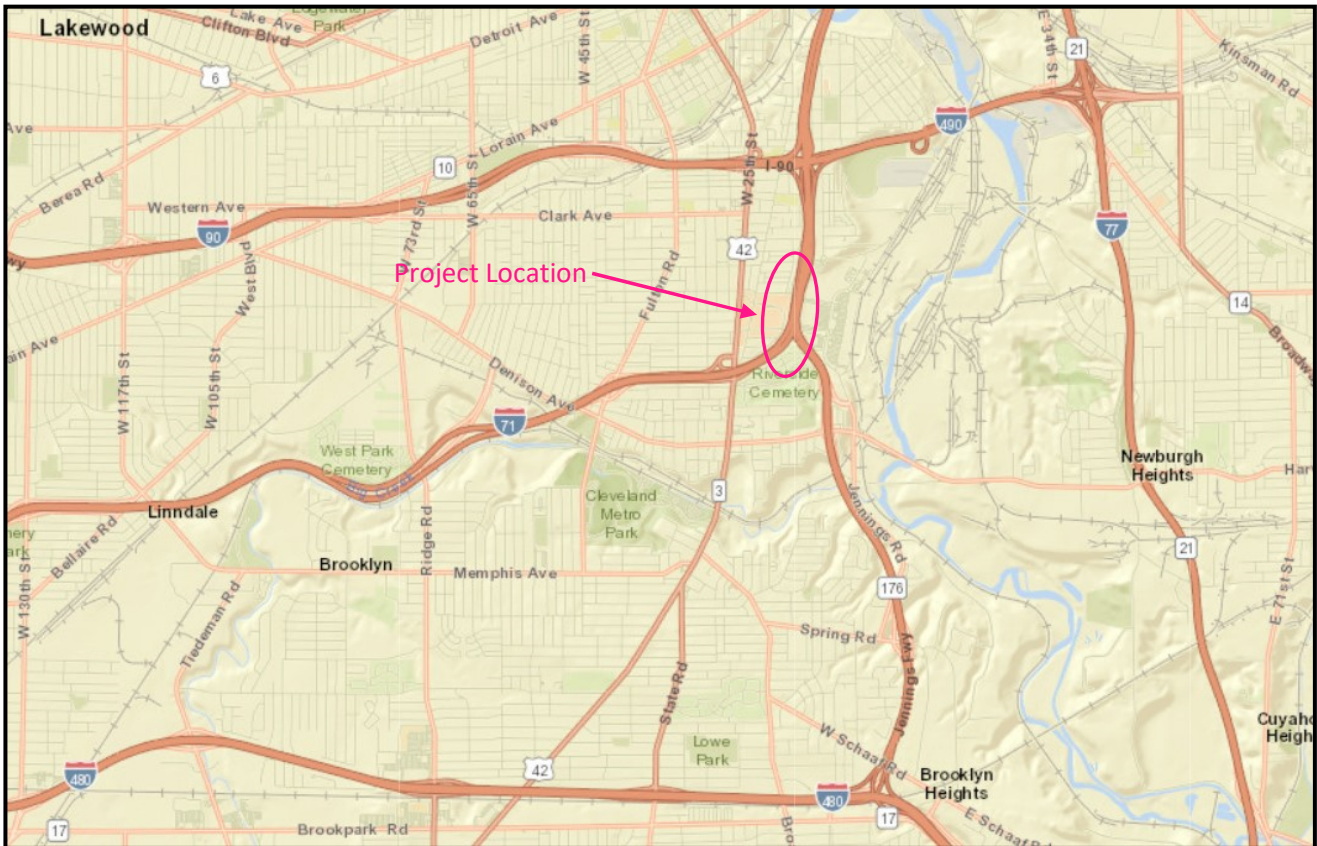
Poor
Structurally Deficient**

* **Advanced** –widespread deficiencies **or** a likely reduction to capacity (**more examples on following page**).

** **Structurally Deficient (SD)** –Bridge Deck, Superstructure, or Substructure Summary rated 4-Poor or below.

A bridge can also be classified as structurally deficient if its load carrying capacity is significantly below current design standards or if a waterway below frequently overtops the bridge during floods.

4.0 Location Map



5.0 General Appraisal and Operating Status

The overall condition rating of the bridge is **5A [A]**, indicating that it is in **fair** condition and is open with no restrictions.

The following is a summary of the field inspection performed on May 8-10 and 21, 2020:

Item	Rating
Deck Summary	6
Superstructure Summary	5
Substructure Summary	6

5.1 Deck

The overall deck rating is a **6**, indicating that it is in **satisfactory** condition. Condition findings of individual deck items are as follows:

5.1.1 FLOOR/SLAB

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
12 - Reinforced Concrete Deck	67,032	sq. ft.	62,819	1,171	2,850	192

The floor is in **satisfactory** condition. The floor exhibits typical transverse cracks with efflorescence (Photo 1), spalls, closely spaced cracks, and map cracks. There are multiple locations of poorly consolidated concrete with cracks and efflorescence at locations like span 26BE.

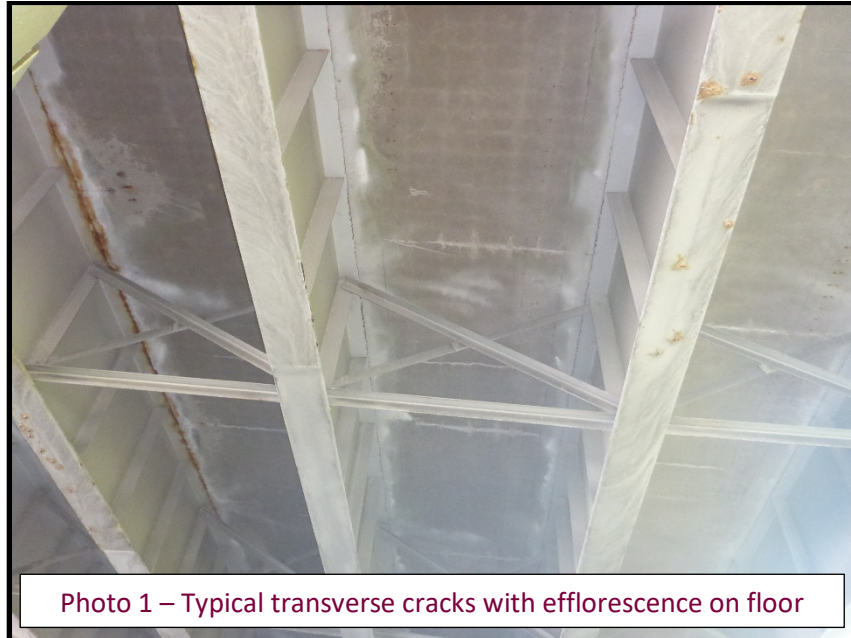


Photo 1 – Typical transverse cracks with efflorescence on floor

In span 21BE, the floor exhibits a deep, 16'x12' spall with 27 exposed and deteriorated rebar located south of Pier 21BE (Photo 2). There is concern that there is minimal remaining structural floor at this location. In span 27BE, the concrete floor exhibits a large 20'x8' damp area (Photo 3).



Photo 2 – Large and deep spall on floor in span 21BE



5.1.2 EDGE OF FLOOR/SLAB

The edge of floor/slab is in **good** condition. The edge of deck exhibits some locations of minor cracks and spalls (Photo 4).

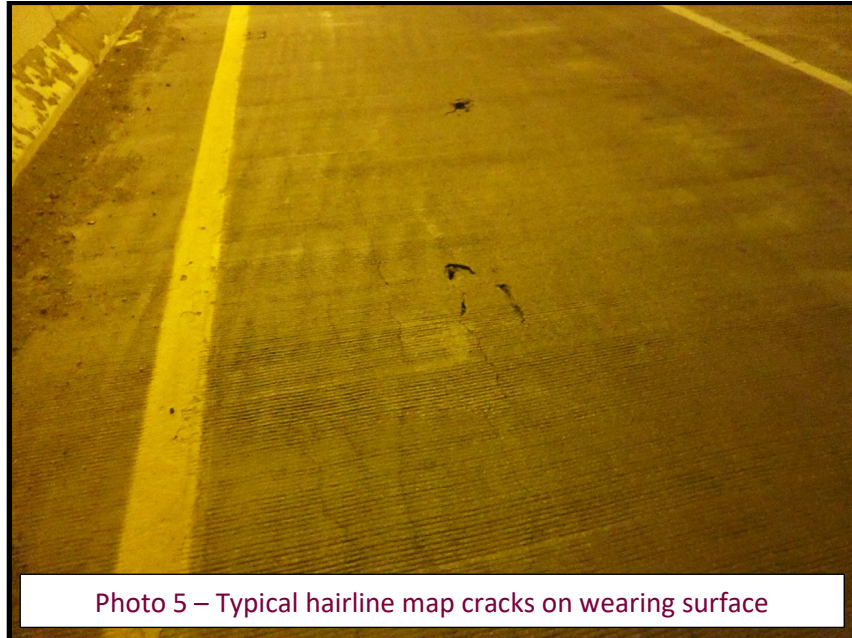


Photo 4 – Typical minor cracks on edge of floor

5.1.3 BRIDGE WEARING SURFACE

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
805 - Wearing Surface - Monolithic Concrete	68,951	sq. ft.	60,329	8,317	305	0

The bridge wearing surface is in **good** condition. The wearing surface exhibits many hairline map cracks along the bridge (Photo 5). Although there were multiple hairline map cracks, the rideability was good, and few map cracks were chipping or spalling. Otherwise, the wearing surface exhibits some small potholes, minor cracks, minor abrasion, missing reflectors, and patches. Multiple patches on the wearing surface are deteriorated.



In span 19BW, there are multiple areas of gouging on the wearing surface (Photo 6). In span 24BE, there is a 3'x8' partial patch with map cracks and settlement (Photo 7). In span 29BE, there is a 3'x3'x2.5" deep pothole (Photo 8).





Photo 7 – Cracks and partial patch on span 24BE wearing surface



Photo 8 – Deep pothole on span 29BE wearing surface

5.1.4 EXPANSION JOINTS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
300 - Strip Seal Expansion Joint	267	ft.	0	199	45	23

The expansion joints are in **poor** condition. All of the expansion joints are elastomeric strip seals. At all of the expansion joints, the steel is rusting and the joints are completely filled for most of the joint on the shoulders. At the expansion joints not at the abutments, there is minor section loss of the joint armor below the deck and the x-frames, hinges, and ends of beams at the expansion joints exhibit rust. For example, there are many cross frame and protective coating system issues below Expansion Joint 2BW.

At Expansion Joint 1B, the joint seal is broken and coming out of the joint on the left shoulder. At Expansion Joint 2BW, the seal is coming out of the joint on both shoulders and **cars driving in the right lane make a sound when driving over the joint that seem to indicate a portion of the joint was loose**. At Expansion Joint 2BE, the joint seal is broken and coming out of the joint on the left side (Photo 9) and **the joint metal is sticking above the wearing surface on the left side**. At Expansion Joint 3BE, the entire joint seal is becoming detached and appears wavy (Photo 10).



Photo 9 – Joint seal coming out of Expansion Joint 2BE



Photo 10 – Detached joint seal at Expansion Joint 3BE

The following table summarized the expansion joint measurements taken during inspection:

Joint Location	Opening Width	Temperature
South Abutment B	2"	35°F
Expansion Joint 1B	3"	35°F
Expansion Joint 2BW	3"	45°F
North Abutment BW	3"	45°F
Expansion Joint 2BE	3"	35°F
Expansion Joint 3BE	3½"	35°F
North Abutment BE	3"	35°F

5.1.5 BRIDGE RAILING

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
331 - Reinforced Concrete Bridge Railing	3,838	ft.	2,583	729	526	0

The bridge railing is in **satisfactory** condition. In general, the railings exhibit typical concrete deterioration of minor cracks, spalls, and map cracks.

5.1.6 DECK DRAINAGE

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
815 - Drainage	18	each	6	4	6	2

The drainage system is in **fair** condition. Most scupper grates on the bridge are 25-75% filled with dirt and debris, but the downspouts are visible and are not clogged. There are a total of 5 clogged scuppers with grates that are completely filled with dirt and debris and are located on the right side of spans 8, 14, and 16. Multiple scupper downspouts exhibit minor section loss and are located on the right side of spans 14 and 25BE and the left side of span 27BE. **There are scuppers with downspouts missing on the left side of span 19BW (Photo 11) and the right side of span 25BE.**



Photo 11 – Missing scupper downspout in span 19BW

5.1.7 SIGNS

The signs are in **good** condition. No deterioration or other significant deficiencies were noted for the signs.

5.1.8 SIGN SUPPORTS

The sign supports are in **good** condition. No deterioration or other significant deficiencies were noted for the sign supports.

5.1.9 UTILITIES

The utilities are in **good** condition. No deterioration or other significant deficiencies were noted for the utilities.

5.2 Superstructure

The overall superstructure rating is a **5**, indicating that it is in **fair** condition. Condition findings of individual superstructure items are as follows:

5.2.1 SUPERSTRUCTURE ALIGNMENT

The alignment is in **good** condition. The superstructure elements were aligned as intended at the time of inspection.

5.2.2 BEAMS/GIRDERS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
107 - Steel Open Girder/Beam	11,371	ft.	10,806	565	0	0

The beams are in **good** condition. The beams have isolated areas of minor rust or minor section loss, but no significant issues. In span 13, there is bottom flange deterioration on beam 7. In spans 18BW and 19BW, beam 6 exhibits minor section loss on each side of Expansion Joint 2BW. In span 24BE, there is minor section loss on all four beams for 2' on both sides of Expansion Joint 3BE.

5.2.3 FATIGUE

The fatigue details are in **good** condition. The beam partial length welded moment plates are Category E' details. No cracks or other significant deficiencies were found in these connections.

Photos of the fatigue prone details can be found in Appendix VI.

5.2.4 PROTECTIVE COATING SYSTEM

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
515 - Steel Protective Coating	127,657	sq. ft.	117,537	9,036	1,084	0

The protective coating system is in **good** condition. The majority of the protective coating on the beams is in good condition, but the protective coating exhibits locations of peeling, bubbling, rust staining, and chalking. The beam rust is mainly on the bottom flange and the corners of the top flange. There are more locations of deterioration near the expansion joints than at other locations on the beams.

5.2.5 DIAPHRAGMS/X-FRAMES

The cross frames are in **satisfactory** condition. Multiple cross frames exhibit minor rust. Cross frames near expansion joints exhibit more rust and section loss. The following cross frame locations have significant deterioration:

Span	Bay	Cross Frame Deterioration
13	6	Detached
18BW	2	Detached
18BE	1	Detached (Photo 12)
18BE	3	Hole
19BW	1	Hole (Photo 13)
24BE	2	Hole



5.2.6 BEARING DEVICES

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
311 - Movable Bearing	160	each	86	57	17	0

The bearings are in **fair** condition. Multiple bearings at the abutments and piers exhibit minor to moderate rust and multiple rocker bearings are at their maximum rotation (Photo 14). Pack rust at multiple bearings, including at the North Abutment BW, is limiting the movement of the bearings.



Photo 14 – Rotated bearing at beam 1 on North Abutment BE

5.2.7 PINS/HINGES/HANGERS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
820 - Steel Seated-Hinge Assembly	21	each	1	19	1	0

The hinges are in **fair** condition. Almost all of the hinges have rust and deterioration. **At Expansion Joint 2BW, the bottom hinge tooth is chipped**, pack rust has started, and there is significant debris at beam 6 (Photo 15). At Expansion Joint 3BE, there is section loss on the web of the support under the hinges.



Photo 15 – Hinge tooth at beam 6 of Expansion Joint 2BW

5.3 Substructure

The overall substructure rating is a **6**, indicating that it is in **satisfactory** condition. Condition findings of individual substructure items are as follows:

5.3.1 PIER COLUMNS/BENTS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
205 - Reinforced Concrete Column	47	each	41	2	4	0

The pier columns are in **satisfactory** condition. The right columns of Piers 11 and 19BW have a minor delamination for half the column height and a minor spall, respectively. The right columns of Piers 13-16 have deep spalls with deteriorated spiral rebar (Photos 16, 17, & 18).



Photo 16 – Spall with deteriorated rebar on Pier 13 right column



Photo 17 – Spall with deteriorated rebar on Pier 14 right column



Photo 18 – Spall with deteriorated rebar on Pier 15 right column

5.3.2 PIER WALLS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
210 - Reinforced Concrete Pier Wall	157	ft.	70	87	0	0

The pier walls are in **satisfactory** condition. Pier walls are located at Piers 14-16. All pier walls exhibit minor cracks and spalls. Piers 14 and 16 have minor diagonal cracks that are reflected on both sides of the pier (Photo 19).



5.3.3 ABUTMENT WALLS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
215 - Reinforced Concrete Abutment	126	ft.	71	21	34	0

The abutment walls are in **satisfactory** condition. **The South Abutment has a couple of minor spalls and is rust stained from the expansion joint.** The North Abutment BW exhibits a large spall below bay 1 and **longitudinal cracks that are wider near the middle bays.** The North Abutment BE has a few minor spalls and vertical cracks and **is rust stained from the expansion joint.** **All three abutments have minor to significant debris on the beam seats.**

5.3.4 PIER CAPS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
234 - Reinforced Concrete Pier Cap	771	ft.	507	202	62	0

The pier caps are in **satisfactory** condition. Multiple pier caps have minor cracks, spalls, and delaminations. Some of the pier caps have significant deterioration, consisting of map cracks, deep spalls, and deteriorated

reinforcing steel, that are mainly located at the pier columns. The following significant pier cap deficiencies are noted:

Pier	Cap End	Cap Side	Comments
8	Right	South	Deep spall with deteriorated rebar (Photo 20)
9	Left	South	Map cracks and deep spall
9	Right	South	Map cracks and deep spall
10	Right	South	Deep spall with deteriorated rebar
13	Right	North & South	Deep spalls with significantly deteriorated rebar and gaps below rebar on both sides of cap (Photos 21 & 22)
16	Right	South	Deep spall with deteriorated rebar (Photo 23)
18BW	Right	South	Map cracks and deep delamination





Photo 21 – Spalls with deteriorated rebar near end of Pier 13 cap



Photo 22 – Spalls with deteriorated rebar on bottom of Pier 13



Photo 23 – Spall with deteriorated rebar on Pier 16

5.3.5 BACKWALLS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
830 - Abutment Backwall	126	ft.	106	20	0	0

The backwalls are in **good** condition with few vertical cracks. The South Abutment backwall exhibits minor vertical cracks. The North Abutment AW exhibits rust staining from the deteriorating expansion joint above. The North Abutment BW exhibits minor vertical cracks in each bay and is also rust stained from the deteriorating expansion joint.

5.3.6 WINGWALLS

The wingwalls are in **good** condition. No deterioration or other significant deficiencies were noted on the wingwalls.

5.3.7 SLOPE PROTECTION

The slope protection is in **fair** condition. There is significant erosion in front of the right side of the South Abutment with an approximately 10' wide by 5' deep rut below the downspouts of the deck scuppers (Photo 24). Due to the significant erosion, the front of the concrete splash pad below the scuppers is visible.



Photo 24 – Slope protection erosion at the South Abutment

5.4 Approach Roadway

Condition findings of individual approach roadway items are as follows:

5.4.1 APPROACH WEARING SURFACE

The approach wearing surface is in **good** condition. The south approach BW wearing surface exhibits minor cracks.

5.4.2 APPROACH SLABS

Item Name	Total Quantity	Units	CS1	CS2	CS3	CS4
321 - Reinforced Concrete Approach Slab	2,259	sq. ft.	2,024	24	199	12

The approach slabs are in **good** condition. **The north approach slab BW has map cracks along the entire expansion joint, a large patch, and a wide crack on the left shoulder. The north approach slab BE has wide map cracks on the right shoulder and the middle lane line, minor map cracks in the right lane, and a 2'x6'x4" deep pothole near the left edge line (Photo 25).**



5.4.3 APPROACH RELIEF JOINTS

The approach relief joints are in **good** condition. **The north approach BE relief joint has minor potholes in the left lane (Photo 26).**



Photo 26 – Minor potholes on approach BE relief joint

5.4.4 APPROACH EMBANKMENT

The approach embankments are in **good** condition. No settlement, erosion, or other significant deficiencies were noted in the approach embankments.

5.4.5 APPROACH GUARDRAIL

The approach guardrail is in **good** condition. No deficiencies were noted in the approach guardrail.

5.5 Summary & Recommendations

The Jennings Freeway bridge is in **fair** condition, or **5** on the 2014 ODOT Manual of Bridge Inspection Condition Rating Guidelines (page 7).

DLZ has determined the following recommendations for this bridge. Based on the level of urgency, recommendations have been divided into three categories: Priority, Maintenance, and Monitor.

5.5.1 PRIORITY

The following recommendations are priority repairs which should be completed as soon as possible to address an immediate safety concern:

1. Perform full depth deck repair on the large and deep spall with many deteriorated rebar on the underside of the floor in span 21BE
2. Patch 4" deep pothole near the left edge line of north approach slab BE

5.5.2 MAINTENANCE

The following recommendations are on-going repairs which are intended to maintain the current level of service for the bridge:

1. Patch spalls or perform full depth deck repair on deteriorated areas of the floor
2. Patch potholes on the wearing surface
3. Patch and reseal concrete spalls on the railings
4. Clean all scuppers and downspouts that are filled with dirt and debris
5. Replace missing scupper downspouts in spans 19BW and 25BE
6. Repair broken or wavy expansion joint seal at Expansion Joints 2BW, 2BE, and 3BE
7. Replace detached cross frames or cross frames with holes in spans 13, 18BW, 18BE, 19BW, and 24BE
8. Reset bearings that are excessively rotated at abutments and piers
9. Clean and repaint deteriorated locations of the superstructure protective coating system, including at the expansion joints
10. Patch and reseal large concrete spall on North Abutment BW
11. Remove debris from all three abutment beam seats
12. Patch and reseal concrete spalls on pier walls, caps, and columns
13. Repair significant slope protection erosion at the South Abutment

5.5.3 MONITOR

The following items should be investigated and recorded with each annual bridge inspection:

1. Monitor the structural steel under the expansion joints for further deterioration
 2. Monitor the rotation of the bearings for excessive rotation
 3. Monitor the rotation of the hinges for excessive rotation
-



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

Physical Condition Element Level Inspection Report
CUY-176-1334, SFN 1805436

APPENDIX I – Bridge Inspection Field Report



Ohio Bridge Inspection Summary Report

CUY-00176-1334 (1805436)

2: District 12 16000 - CLEVELAND (CUY county)
 21: Major Maint A/B 01 - State Highway Agency /
 225 Routine Main A/B 01 - State Highway Agency /
 221 Inspection A/B 01 - State Highway Agency /
 220: Inv. Location CUY

5A: Inventory Route 1 00176
 7: Facility On SR 176 NB
 6: Feature Ints IR-71NB (CUY-71-1791R)
 9: Location APPROX 1 MI S I-90

Condition

58: Deck **6 - Satisfactory Condition**
 58.01 Wearing Surface 7 - Good (1% distress)
 58.02 Joint 4- Poor (heavy leaking)
59: Superstructure **5 - Fair Condition**
 59.01 Paint & PCS 7 - Good (1-5% corr.)
60: Substructure **6 - Satisfactory Condition**
61: Channel **N**
61.01 Scour **N - Not Applicable**
62: Culverts **N - Not Applicable**

67.01 GA **5**

Appraisal

36: Rail, Tr, Gd, Term Std 1 1 1 1
 72: Approach Alignment 8 - Equal to present desirable criteria
 113: Scour Critical N - Not over waterway
 71: Waterway Adequacy N - Not Applicable

Geometric

48: Max Span Length (ft) 79.0
 49: Structure Length (ft) 1073.0
 52: Deck Width, Out-To-Out (ft) 54.0
 424: Deck Area (sf) 57942.0
 32: Appr Roadway Width (ft) 50.0
 51: Road Width, Curb-Curb (ft) 50.0
 50A: Curb/SW Width: Left (ft) 0
 50A: Curb/SW Width: Right (ft) 0
 34: Skew (deg) 0
 33: Bridge Median 0 - No median
 54B: Min Vert Underclearance (ft) 16.25
 336A: Min Vert Clrnce IR Cardinal (ft) 99
 336B: Min V Clr IR Non-Cardinal (ft) 0
 578: Culvert Length (ft) 0

Load Posting

41: Op/Post/Closed A - Open
 70: Posting 5 - Equal to or above legal loads
 70.01: Date
 70.02: Sign Type
 734: Percent Legal (%) 150
 704: Analysis Date 07/01/2013
 63: Analysis Method 6 - Load Factor (LF) rating reported by rating factor (RF) method using MS18 loading.

Structure Type

43: Bridge Type 4 - Steel continuous
 02 - Stringer/Multi-beam or Girder
 N- Not Applicable
 45: Spans Main / Approach 18 / 0
 107: Deck Type 1 - Concrete Cast-in-Place
 408: Composite Deck N - Non-composite Construction
 414A Joint Type 1 8 - Elastomeric Strip Seal
 414B: Joint Type 2 N - None
 108A: Wearing Surface 1 - Monolithic Concrete (concurrently placed with structural deck)
 N- Not Applicable

422: WS Date
 423: WS Thick (in) 1.2
 482: Protective Coating 0 - Other Paint
 483: PCS Date 01/01/1991
 453: Bearing Type 1 2 - Rockers & Bolsters
 455: Bearing Type 2 N - None
 528: Foundn: Abut Fwd 1 - Steel H Piles (Other size)
 533: Foundn: Abut Rear 1 - Steel H Piles (Other Size)
 536: Foundn: Pier 1 1 - Steel H Piles (Other size)
 539: Foundn: Pier 2 0 - Other

Age and Service

27: Year Built/ 106 Rehab 1968 /
 42A: Service On 1 - Highway
 42B: Service Under 0 - Other
 28A: Lanes on 03
 28B: Lanes Under 00
 19: Bypass Length 1
 29: ADT 75259
 109: % Trucks (%) 3

Inspections

		Months	
90: Routine Insp.		12	05/08/2020
92A: FCM Insp.	N	24	
92B: Dive Insp.	N	0	
92C: Special Insp.	N	0	
92D: UBIT Insp.	Y	24	05/08/2020
92E: Drone Insp.			
Inspector	Miller,Jeff		

Inspector: Jeff Miller

Structure Number: 1805436

Inspection Date: 05/08/2020

Facility Carried: SR 176 NB

Bridge Inspection Report

Element Inspection

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12 - Reinforced Concrete Deck	3 - Mod.	67032	sq. ft.	62819	1171	2850	192
805 - Wearing Surface - Monolithic Concrete		68951	sq. ft.	60329	8317	305	0
107 - Steel Open Girder/Beam	3 - Mod.	11371	ft.	10806	565	0	0
515 - Steel Protective Coating		127657	sq. ft.	117537	9036	1084	0
205 - Reinforced Concrete Column	3 - Mod.	47	each	41	2	4	0
210 - Reinforced Concrete Pier Wall	3 - Mod.	157	ft.	70	87	0	0
215 - Reinforced Concrete Abutment	3 - Mod.	126	ft.	71	21	34	0
234 - Reinforced Concrete Pier Cap	3 - Mod.	771	ft.	507	202	62	0
300 - Strip Seal Expansion Joint	3 - Mod.	267	ft.	0	199	45	23
311 - Movable Bearing	3 - Mod.	160	each	86	57	17	0
321 - Reinforced Concrete Approach Slab	3 - Mod.	2259	sq. ft.	2024	24	199	12
331 - Reinforced Concrete Bridge Railing	3 - Mod.	3838	ft.	2583	729	526	0
815 - Drainage	3 - Mod.	18	each	6	4	6	2
820 - Steel Seated-Hinge Assembly	3 - Mod.	21	each	1	19	1	0
830 - Abutment Backwall	3 - Mod.	126	ft.	106	20	0	0

ODOT District: 12

CUY-00176-1334_(1805436)

Date Built: 07/01/1968

Major Maint: 01 - State Highway Agency

Facility Carried: SR 176 NB

Traffic On: 1 - Highway

Rehab Date:

Routine Maint: 01 - State Highway Agency

Feature Inters: IR-71NB (CUY-71-1791R)

Traffic Under: 0 - Other

Insp. 01 - State Highway Agency

FIPS Code: 16000 - CLEVELAND (CUY county)

Location: CUY

APPROX 1 MI S I-90

Resp A:

Insp

Resp B:

Inspector

Miller, Jeff

Inspection Date 05/08/2020

Reviewer

Inspector Comments - Deck and Approach

Deck

Floor/Slab (SF)

The floor exhibits widespread transverse cracking with and without efflorescence. Full Width x 2' L spalling along joints headers were noted over Pier 13. Other areas of spalling appears were noted between beams. In Unit 4BE, widespread areas of poor consolidation with and without efflorescence are common. Some areas have exposed reinforcement chairs, others have exposed reinforcement. In span 21BE, the floor exhibits a 16'x12' deep spall with 27 exposed and deteriorated rebar located south of Pier 21BE. In span 27BE, the concrete floor exhibits is a large 20'x8' damp area.

Edge of Floor/Slab (LF)

The edge of the floor typically exhibits spalling at the expansion joints. Poor consolidation noted along the floor also expands out towards the edge the floor as well.

Bridge Wearing Surface (SF)

The wearing surface is in overall good condition. A few small potholes were noted at random locations. In span 19BW, there are multiple areas of abrasion on the wearing surface. In span 24BE, there is a 3'x8' partial patch with map cracks and settlement. In span 29BE, there is a 3'x3'x2.5" deep pothole.

Expansion Joint (LF)

At all of the expansion joints, the metal is rusting and the joints are completely filled for most of the joint on the shoulders. At Expansion Joint 1B, the joint seal is broken and coming out of the joint on the left shoulder. At Expansion Joint 2BW, the seal is coming out of the joint on both shoulders and cars driving in the right lane make a sound when driving over the joint. At Expansion Joint 2BE, the joint seal is broken and coming out of the joint on the left side and the metal is sticking above the wearing surface on the left side. At Expansion Joint 3BE, the entire joint seal is wavy.

Bridge Railing (LF)

Longitudinal, vertical, and areas of map cracking are common throughout the entire length of the bridge parapets. Discoloration along the cracks is evidence of water infiltration into the concrete parapet. At some of the joints, spalling at the bottom portions of the parapet were noted.

Deck Drainage (EA)

Most scupper grates on the bridge are 25-75% filled with dirt and debris, but the downspouts are visible and are not clogged. There are a total of 5 clogged scuppers with grates that are completely filled with dirt and debris and are located on the right side of spans 8, 14, and 16. Multiple scupper downspouts exhibit minor section loss and are located on the right side of spans 14 and 25BE and the left side of span 27BE. There are scuppers with downspouts missing on the left side of span 19BW and the right side of span 25BE.

Signs (EA)

A small director sign is mounted on the east side of the east parapet on the north side of Pier 12. One exit sign is mounted within the divide of the West 14th Street exit. In Unit 3BE, there are roundabout warning signs mounted on the parapets. In Unit 4BE, there are yield warning signs mounted on the parapets. The

existing overhead signs are mounted to pier caps supporting the overhead bridge CUY-71-1791.

Sign Supports (EA)

No deficiencies were noted along the sign mounts.

Utilities (LF)

The conduit running along the bridge runs up the columns for I-71 (CUY-71-1791) to provide lighting along Jennings Highway. Multiple lights were not working during the inspection. Due to spalling along the columns for I-71 (CUY-71-1791) the conduit has become detached.

Approach

Approach Wearing Surface (EA)

The north approach for ramp BE exhibits longitudinal cracking along the pavement seams. Bituminous patch work along the steel joint header were also noted. Along the right shoulder, a 5' W x 3' L area of dense map cracking is evidence of minor settlement. The north approach for BW appears to be fairly new bituminous with minor cracks and minor debris accumulations along the shoulders. At the joint header, a 1' W x 1' L x 4" D pothole exists in the right wheel path of the right lane. Also, a 2' L x 2' W patch exists in the left wheel path. In the left lane, a 4' L x 2' W patch exists in the left wheel path, just north of the joint. The south approach wearing surface has a 3' W x 1' L depressed area along the joint header.

Approach Slab (SF)

The approach slabs are covered in a bituminous wearing surface and therefore not visible. The deterioration in the wearing surface is assumed to be reflected into the concrete approach slabs. The north approach slab BW has map cracks along the entire expansion joint, a large patch, and a wide crack on the left shoulder. The north approach slab BE has wide map cracks on the right shoulder and the middle lane line, minor map cracks in the right lane, and a 2'x6'x4" deep pothole near the left edge line.

Approach Relief Joint (LF)

The approach relief joints are covered in a bituminous wearing surface and therefore not visible. Any deterioration in the wearing surface is assumed to be reflected into the approach relief joints. The north approach BE relief joint has minor potholes in the left lane.

Approach Embankment (EA)

The south embankment is fairly level on the west side, and steep on the east. Both are in good condition. At the North Abutment BW, the embankment is fairly level and in good condition. At the North Abutment BE, the west side is moderately level, and the east side is steep but well vegetated.

Approach Guardrail (EA)

The guardrails are in overall good condition. There is no guardrail on the northwest of the BE approach due to slow speeds and right hand turns only into the roundabout.

Inspector Comments - General Appraisal

Superstructure

Superstructure Alignment (EA)

The alignment of the primary superstructure members is Good. The superstructure elements were aligned as intended at the time of inspection.

Beams/Girders (LF)

Steel beams typically exhibit freckling and surface corrosion at random. Due to failed expansion joints and improper drainage, the beam ends below exhibit more significant corrosion and section loss. In span 13, there is bottom flange deterioration on beam 7. In spans 18BW and 19BW, beam 6 exhibits minor section loss on each side of Expansion Joint 2BW. In span 24BE, there is minor section loss on all four beams for 2' on both sides of Expansion Joint 3BE.

Fatigue (LF)

Other fatigue prone details are the welded cover plate ends along the beam bottom flanges. No significant deficiencies were noted at these locations. No significant deficiencies were noted along the bolted splice connections.

Protective Coating System (SF)

Freckling corrosion is prevalent throughout the beams and steel pier caps. Below the leaking joints, beams exhibit increasing deterioration of the protective coating system. Overspray from past painting is evident along the concrete soffit.

Diaphragms/X-Frames (EA)

Steel cross diaphragms between the steel beams exhibit light surface corrosion. Due to failed deck joints and improper drainage, the cross frames below exhibit more significant corrosion and section loss. Bottom bracing struts in spans 13, 18BW, 18BE, 19BW, and 24BE were noted to have holes or become detached due to section loss.

Bearing Devices (EA)

The steel fixed and rocker bearings atop the concrete piers are in overall good condition. Multiple bearing measurements did not agree with the ambient temperature averaging around 32 degrees Fahrenheit. Other bearings exhibited significant rotation, almost beyond the limits of expansion. The fascia bearings typically exhibit the heaviest corrosion and deterioration. Pack rust at multiple bearings, including at the North Abutment BW, is limiting the movement of the bearings.

Pins/Hangers/Hinges (EA)

Due to failed joint material and debris filled troughs, the hinges are constantly exposed to water and deicers. Some of the rolling hinge bearings exhibit excessive rotation compared to the ambient temperature at the time of the inspection. At Expansion Joint 2BW, the bottom hinge tooth is chipped.

Substructure

Pier Columns/Bents (EA)

The reinforced concrete pier column exhibit cracking, or delamination and spalled areas. The north face of the east column at Pier 11 has a combination of delaminated and spalling concrete along the full length. Pier 13, 14, and 16 have similar spalling with exposed stirrups. The east column at Pier 15 is spalled at the top 10' H x 6' W x up to 4" D with exposed reinforcing. This deterioration was noted on the north and south faces.

Pier Walls (LF)

The reinforced concrete pier walls exhibit widespread cracking, spalls, and delaminations. Pier 14 has three diagonal cracks that cover the full length of the south face of the wall. These same cracks are reflected onto the north face as well. Piers 15 and 16 exhibited similar diagonal cracks. Pier 15 also has a full length longitudinal crack along the interface of the wall and the top cap.

Abutment Walls (LF)

The South Abutment has a couple of minor spalls and is rust stained from the expansion joint. The North

Abutment BW wall has a large 6' L x 2' H x 4" D spall below bay 1 and longitudinal cracks that are wider near the middle bays. The North Abutment BE has a few superficial spalls and vertical cracks is rust stained from the expansion joint. All three abutments have minor to significant debris on the beam seats.

Pier Caps (LF)

The reinforced concrete pier caps typically exhibit spalling along the ends and above the reinforced concrete columns. Pier 8 has spalling on both ends and also has vertical cracking along the mid-span. Very similar spalling and cracking was noted along Pier 9. At Pier 11, cracking along the south face appears to be mirrored onto the north face. On the south face of Pier 13, the full height of the end is spalled with exposed reinforcing. The spalling continues under the cap and up the north face as well. Pier 18BW has map cracks and deep delamination.

Backwalls (LF)

The North Abutment BW backwall has multiple vertical cracks with associated diagonal cracking up to 1/8" wide. Both North Abutment backwalls exhibit staining and discoloration due to the leaking/failing expansion joint above. The South Abutment backwall has minor vertical cracks. The erosion ditch below the east corner of the abutment does not appear to be affecting the foundation at this time.

Wingwalls (EA)

No significant deficiencies were noted during the inspection.

Slope Protection (EA)

The slope protection at the north abutments are in overall good condition. The South Abutment slope protection is in good for the most part aside from below the east corner is a 10'W x 5' deep erosion rut.

Culvert

Inspector Comments - Waterway

Waterway Adequacy

Channel

Scour Critical



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

Physical Condition Element Level Inspection Report
CUY-176-1334, SFN 1805436
Page 2 of 6

APPENDIX II – Existing Site Plans



CUYAHOGA COUNTY
 CUY-71-17.83
 CUY-176-12.76

CURVE DATA

RAMP 14-S.B.O.R.	SOUTHBOUND OUTER ROADWAY
P.C. Sta. 4+04.41	P.C. Sta. 32+30.74
P.I. Sta. 7+77.18	P.I. Sta. 36+22.27
P.T. Sta. 11+08.42	P.T. Sta. 39+61.14
$\Delta = 46^{\circ}34'54''$	$\Delta = 51^{\circ}07'41''$
$D = 6^{\circ}37'00''$ Lt.	$D = 7^{\circ}00'00''$ Lt.
$R = 865.93'$	$R = 818.51'$
$T = 372.76'$	$T = 391.53'$
$L = 704.00'$	$L = 730.40'$
$E = 76.83'$	$E = 88.82'$

LANE M-J	RAMP N.B.O.R.-14
P.C. Sta. 2+70.62	P.C. Sta. 0+00.00
P.I. Sta. 7+79.42	P.I. Sta. 0+59.81
P.T. Sta. 12+17.23	P.T. Sta. 1+19.60
$\Delta = 52^{\circ}03'49''$	$\Delta = 2^{\circ}59'24''$
$D = 5^{\circ}30'00''$ Lt.	$D = 2^{\circ}30'00''$ Rt.
$R = 1041.74'$	$R = 2,291.83'$
$T = 508.81'$	$T = 59.81'$
$L = 946.61'$	$L = 119.60'$
$E = 117.62'$	$E = 0.78'$

NORTHBOUND I-71

NORTHBOUND I-71	NORTHBOUND OUTER ROADWAY
P.C.C. Sta. 910+45.18	P.C.C. Sta. 919+38.10
P.I. Sta. 915+06.49	P.I. Sta. 921+59.77
P.C.C. Sta. 919+38.10	P.T. Sta. 923+80.96
$\Delta = 35^{\circ}43'01''$	$\Delta = 6^{\circ}29'43''$
$D = 4^{\circ}00'00''$ Lt.	$D = 1^{\circ}28'00''$ Lt.
$R = 1,432.39'$	$R = 3,906.53'$
$T = 461.50'$	$T = 221.66'$
$L = 892.92'$	$L = 442.86'$
$E = 72.52'$	$E = 6.28'$

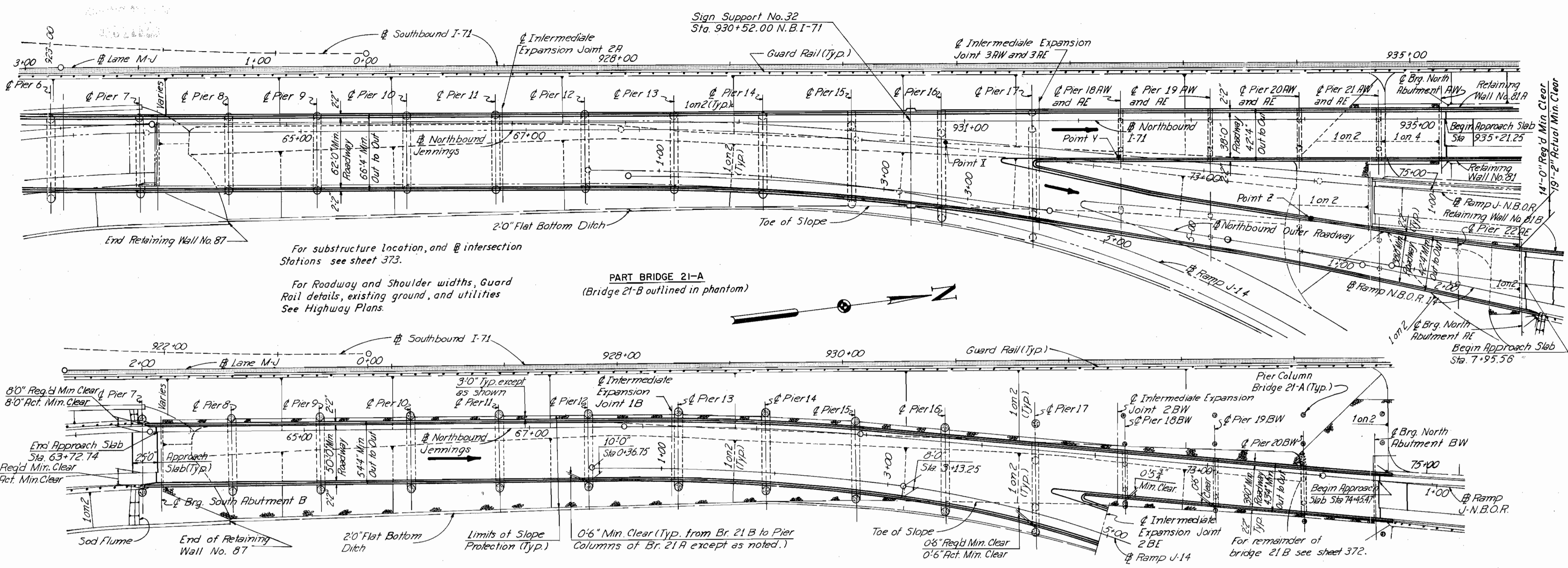
SOUTHBOUND I-71

SOUTHBOUND I-71	NORTHBOUND JENNINGS
P.C.C. Sta. 910+65.79	P.C.C. Sta. 920+56.64
P.I. Sta. 915+72.64	P.I. Sta. 923+17.93
P.C.C. Sta. 920+56.64	P.T. Sta. 925+78.44
$\Delta = 29^{\circ}43'32''$	$\Delta = 7^{\circ}39'11''$
$D = 3^{\circ}00'00''$ Lt.	$D = 1^{\circ}28'00''$ Lt.
$R = 1,909.86'$	$R = 3,906.52'$
$T = 506.84'$	$T = 261.28'$
$L = 990.85'$	$L = 521.80'$
$E = 66.11'$	$E = 8.73'$

NORTHBOUND JENNINGS

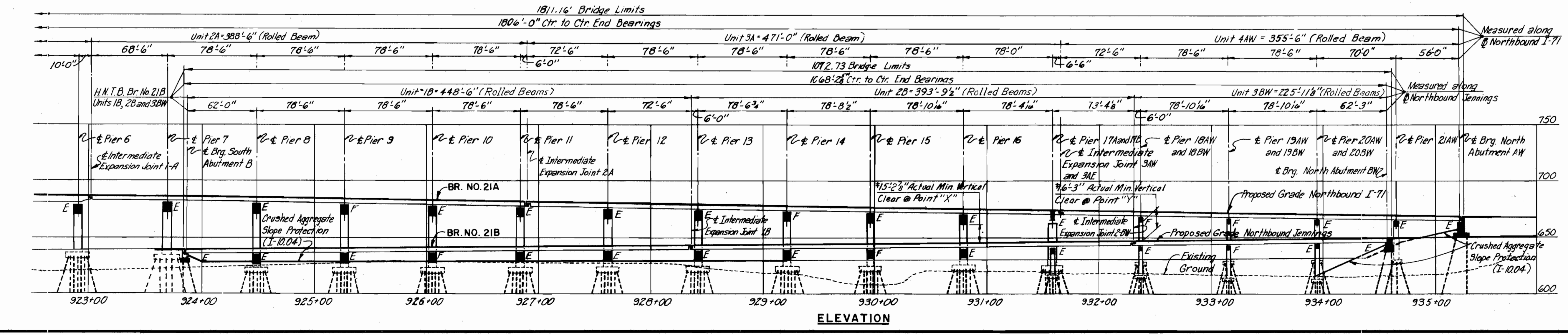
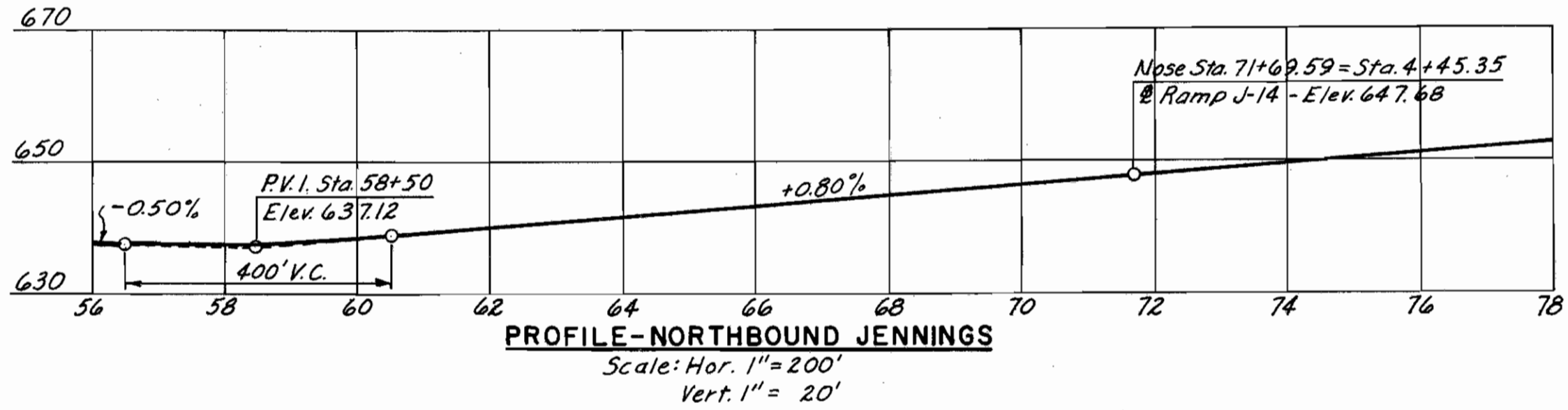
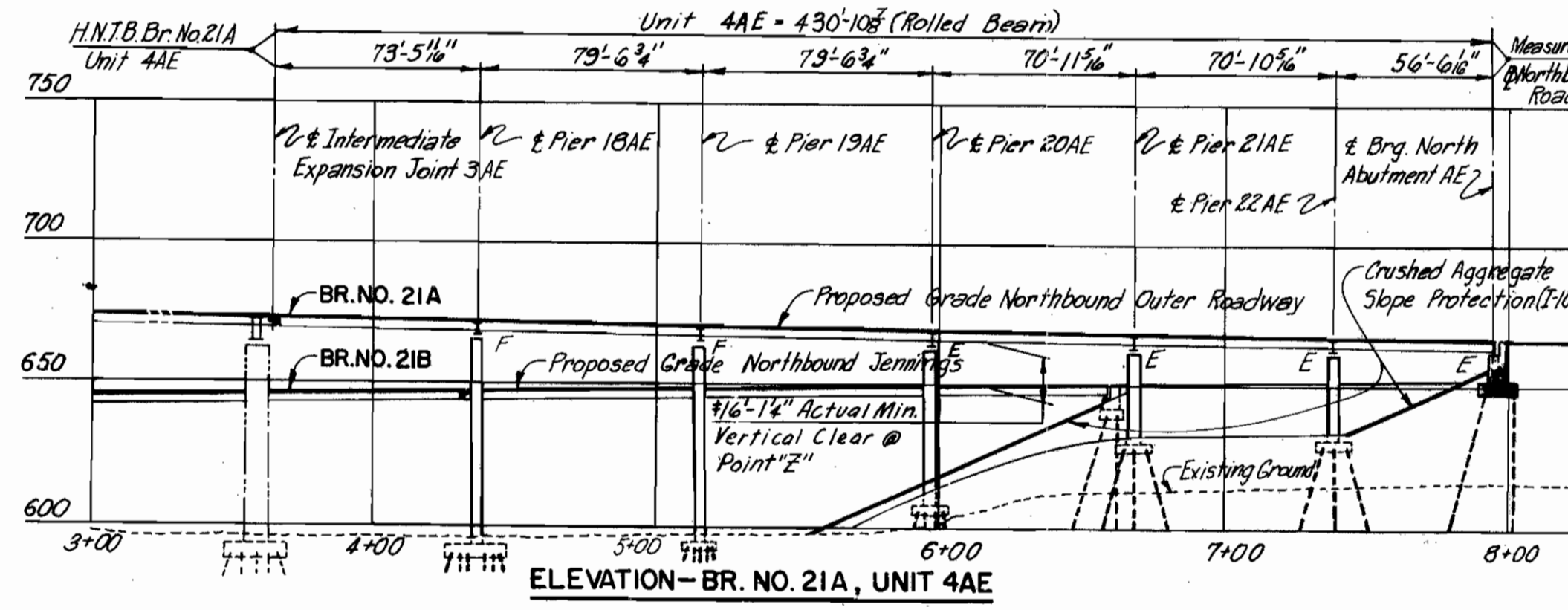
NORTHBOUND JENNINGS	NORTHBOUND I-71
P.C. Sta. 53+60.26	P.C. Sta. 67+82.31
P.I. Sta. 58+95.43	P.I. Sta. 68+88.97
P.T. Sta. 63+61.93	P.T. Sta. 69+95.47
$\Delta = 50^{\circ}05'01''$	$\Delta = 5^{\circ}19'44''$
$D = 5^{\circ}00'00''$ Rt.	$D = 2^{\circ}30'00''$ Rt.
$R = 1,145.92'$	$R = 2,291.83'$
$T = 535.37'$	$T = 106.66'$
$L = 1,001.67'$	$L = 213.16'$
$E = 118.89'$	$E = 2.48'$

*Note: 15'-0" Design vertical clearance
 Point "X" occurs at north bottom edge of Pier 16 cap beam and west curb line of Br. No. 21 B.
 Point "Y" occurs at south bottom edge of Pier 18 AW cap beam and west curb line of Br. No. 21 B.
 Point "Z" occurs at west edge of west exterior beam and east curb line of Northbound Jennings Br. No. 21 B.



PART BRIDGE 21-B

PART PLAN
 Section taken below Bridge 21-A



H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

SITE PLAN

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

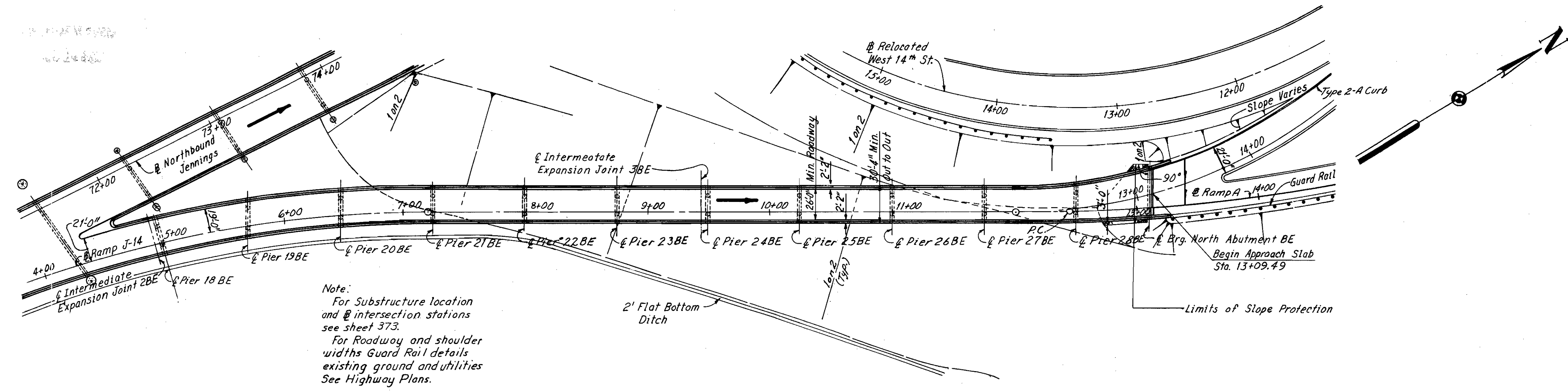
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN/R.A.B.	TRACED	CHECKED	REVIEWED/W.P.
DATE/1-8-64	DATE	DATE/11-12-64	DATE/12-22-64

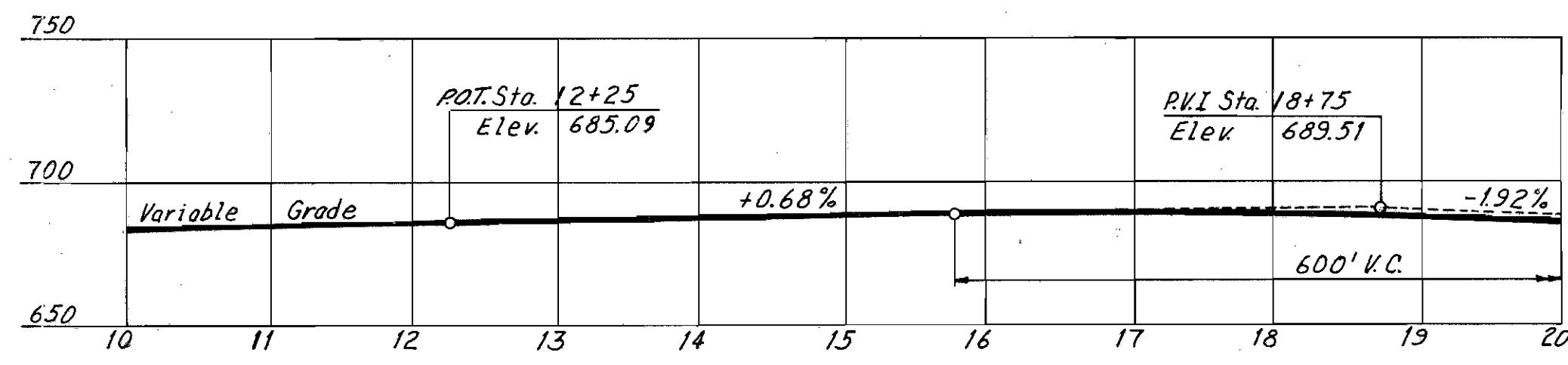
SHEET 371

CUYAHOGA COUNTY
CUY-71-17.83
CUY-176-12.76

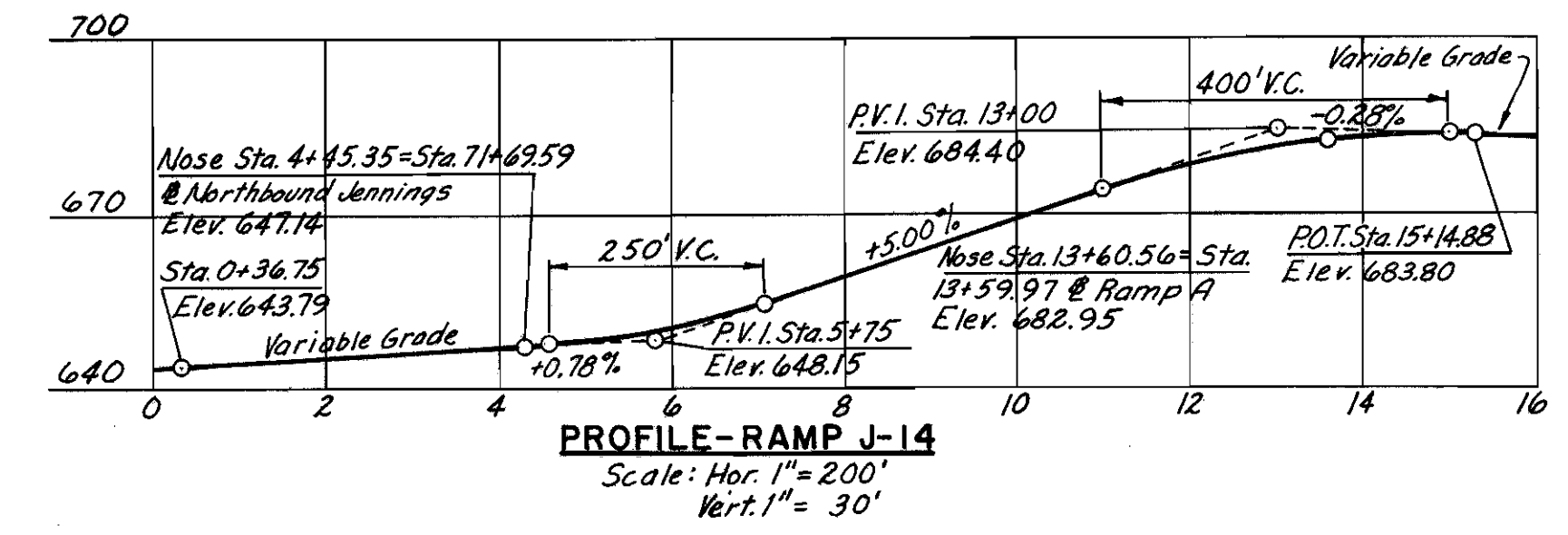
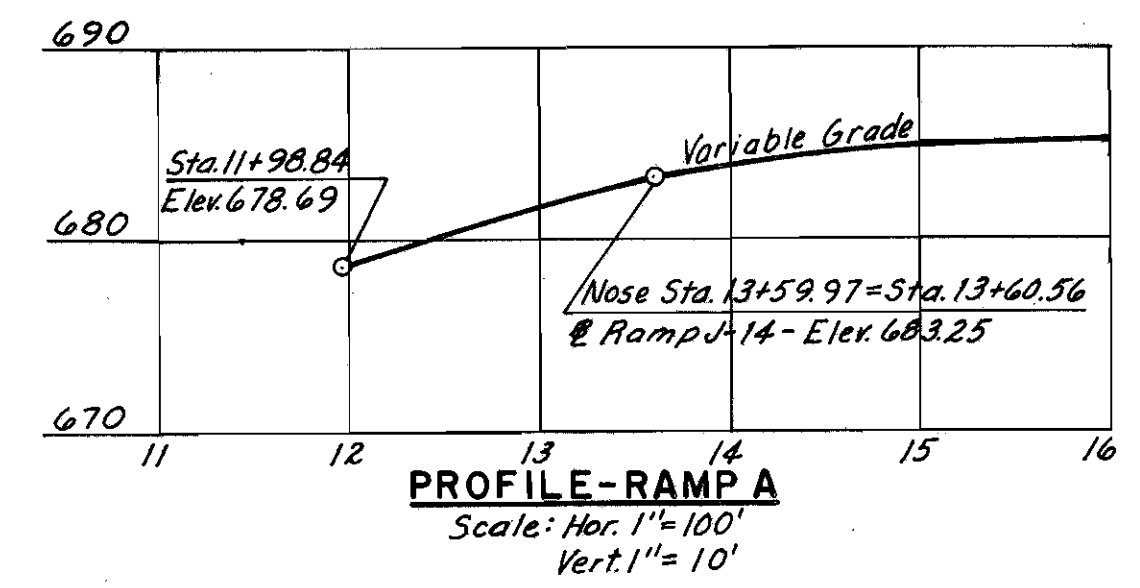
Note: For pile data see tabulated results below.



PART PLAN
(Bridge 21A not shown)

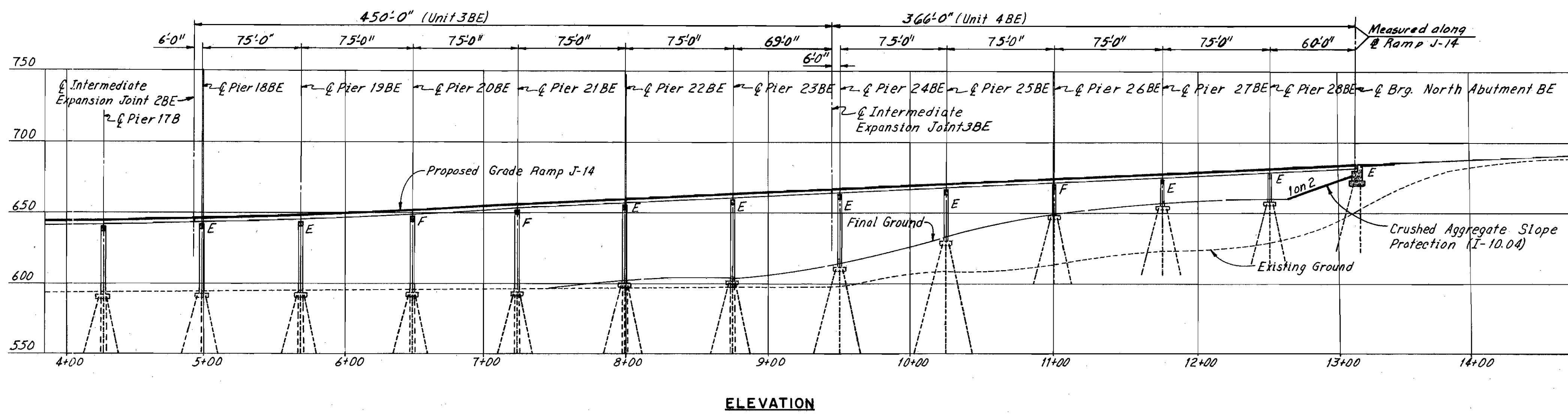


RAMP J-14			RAMP A		
P.C. Sta. 0+36.75	P.C.C. Sta. 3+13.25	P.C. Sta. 11+98.84	P.C. Sta. 12+41.14		
P.I. Sta. 1+75.24	P.I. Sta. 5+20.11	P.I. Sta. 13+65.21	P.I. Sta. 13+52.97		
P.C.C. Sta. 3+13.25	P.T. Sta. 7+20.67	P.T. Sta. 15+14.88	P.C.C. Sta. 14+64.34		
$\Delta = 8^{\circ}17'42''$	$\Delta = 24^{\circ}26'43''$	$\Delta = 44^{\circ}14'42''$	$\Delta = 8^{\circ}55'41''$		
$D = 3^{\circ}00'00''$ RT.	$D = 6^{\circ}00'00''$ RT.	$D = 14^{\circ}00'00''$ LT.	$D = 4^{\circ}00'00''$ LT.		
$R = 1909.86'$	$R = 954.93'$	$R = 409.26'$	$R = 1432.39'$		
$T = 138.49'$	$T = 206.86'$	$T = 166.37'$	$T = 111.83'$		
$L = 276.50'$	$L = 407.42'$	$L = 316.04'$	$L = 223.20'$		
$E = 5.02'$	$E = 22.15'$	$E = 32.52'$	$E = 4.36'$		



SUBSTRUCTURE UNIT	PILE TYPE	EST. AVE. VERTICAL PILE LENGTH (FT.)
So. Abut. A	12" C.I.P.C.	65'
Pier 1	12" C.I.P.C.	65'
Pier 2	12" C.I.P.C.	65'
Pier 3	12" C.I.P.C.	55'
Pier 4	12" B.P. 53	68'
Pier 5	12" B.P. 53	73' (W), 64' (E)
Pier 6	12" B.P. 53	76' (W), 68' (E)
Pier 7	12" B.P. 53	77' (W), 71' (E)
Pier 8	12 B.P. 53	67' (W), 48' (E)
Pier 9	12 B.P. 53	68' (W), 48' (E)
Pier 10	12 B.P. 53	69' (W), 47' (E)
Pier 11	12 B.P. 53	69' (W), 47' (E)
Pier 12	12 B.P. 53	74' (W), 52' (E)
Pier 13	12 B.P. 53	72' (W), 46' (E)
Pier 14	12 B.P. 53	70' (W), 44' (E)
Pier 15	12 B.P. 53	63' (W), 44' (E)
Pier 16	12 B.P. 53	66' (W), 42' (E)
Pier 17A	12 B.P. 53	77' (W), 50' (E)
Pier 18AW	12 B.P. 53	80' (W), 70' (E)
Pier 19AW	12 B.P. 53	80' (W), 70' (E)
Pier 20AW	12 B.P. 53	81' (W), 71' (E)
Pier 21AW	12 B.P. 53	102'
No. Abut. AW	12 B.P. 53	115'
Pier 18AE	12 B.P. 53	52'
Pier 19AE	12 B.P. 53	51'
Pier 20AE	12 B.P. 53	63'
Pier 21AE	12 B.P. 53	97' (W), 87' (E)
Pier 22AE	12 B.P. 53	104' (W), 103' (E)
No. Abut. AE	12 B.P. 53	112'
So. Abut. B	12 B.P. 53	81'
Pier 17B	12 B.P. 53	66' (W), 52' (E)
Pier 18BW	12 B.P. 53	70' (W), 52' (E)
Pier 19BW	12 B.P. 53	70' (W), 57' (E)
Pier 20BW	12 B.P. 53	70' (W), 69' (E)
No. Abut. BW	12 B.P. 53	100'
Pier 18BE	12 B.P. 53	52'
Pier 19BE	12 B.P. 53	52'
Pier 20BE	12 B.P. 53	52'
Pier 21BE	12 B.P. 53	56'
Pier 22BE	12 B.P. 53	56'
Pier 23BE	12 B.P. 53	66'
Pier 24BE	12 B.P. 53	79'
Pier 25BE	12 B.P. 53	92'
Pier 26BE	12 B.P. 53	104'
Pier 27BE	12 B.P. 53	116'
Pier 28BE	12 B.P. 53	117'
No. Abut. BE	12 B.P. 53	134'

Note:
(W) denotes West footing of Pier.
(E) denotes East footing of Pier.



H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SITE PLAN
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS
BR. NO. CUY-71-1789 R STA. 917+10.09
STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A.B. TRACED C.H.B. CHECKED W.J.F. REVISIONS
DATE 11-8-64 DATE 11-12-64 DATE 12-22-64 SHEET 372



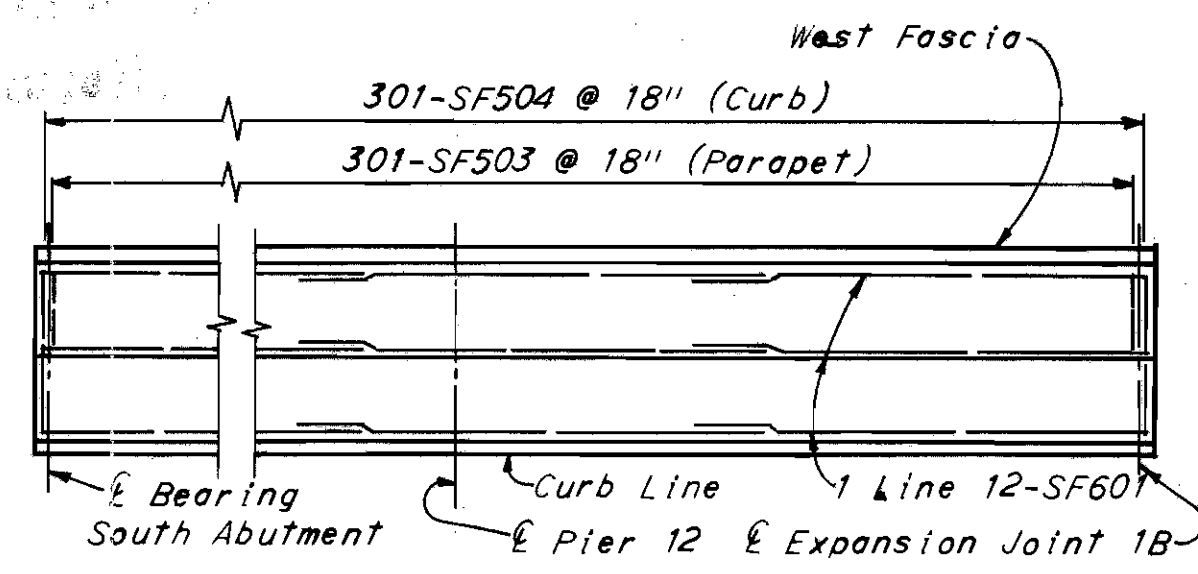
INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

Physical Condition Element Level Inspection Report
CUY-176-1334, SFN 1805436
Page 3 of 6

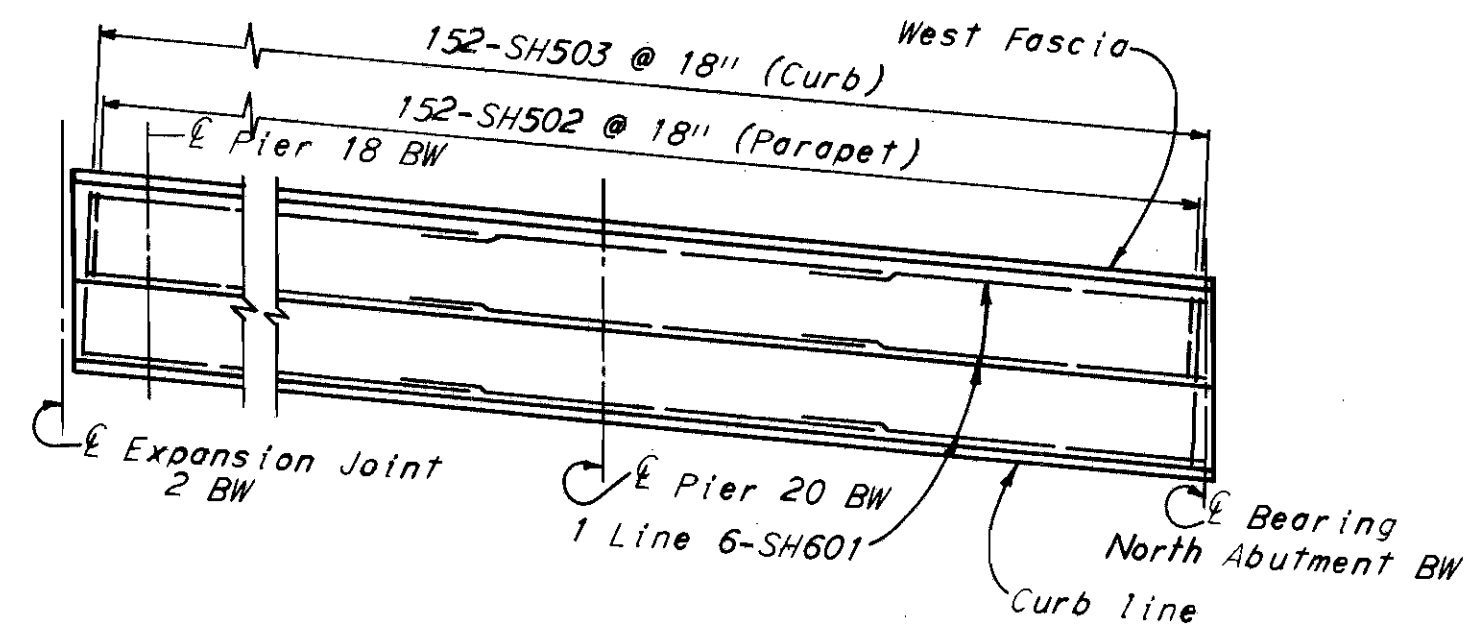
APPENDIX III – Existing Transverse Sections



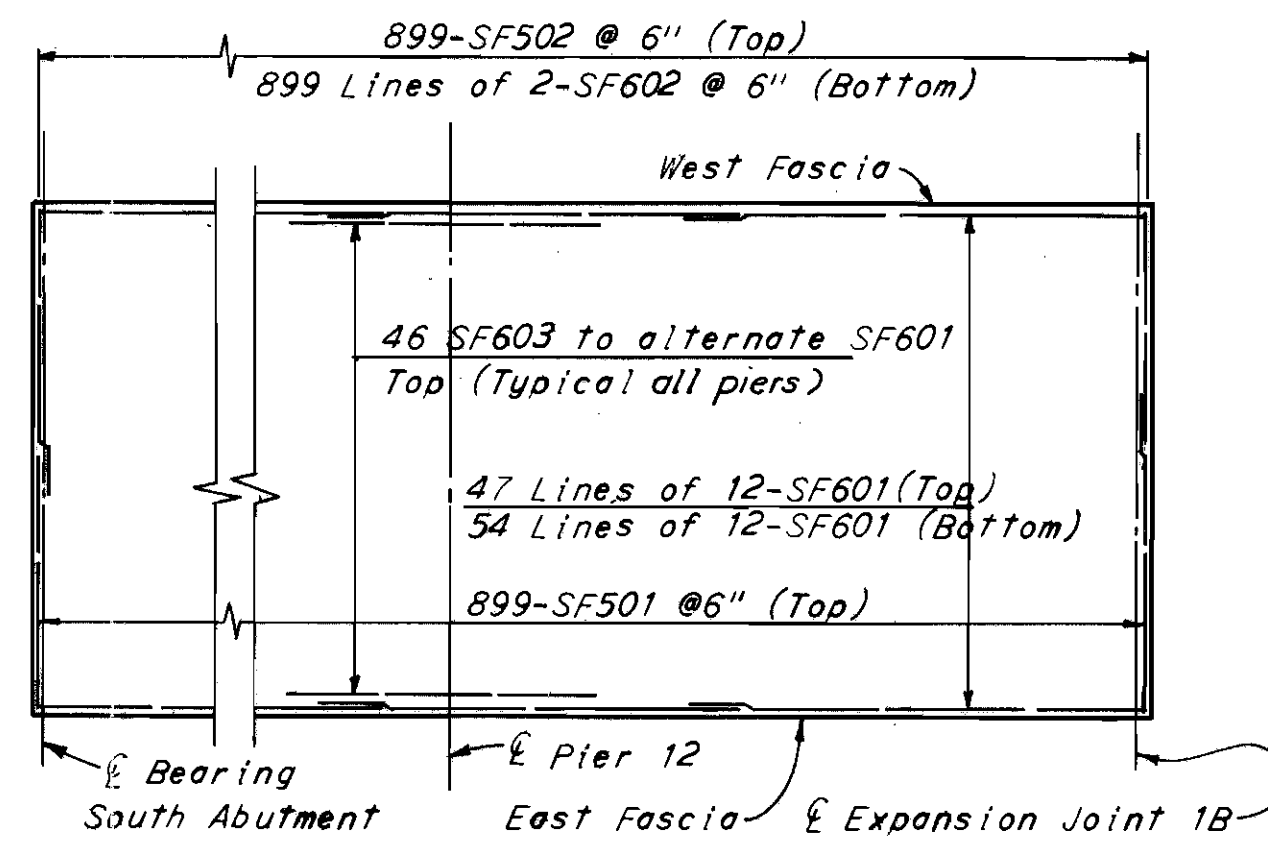
CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



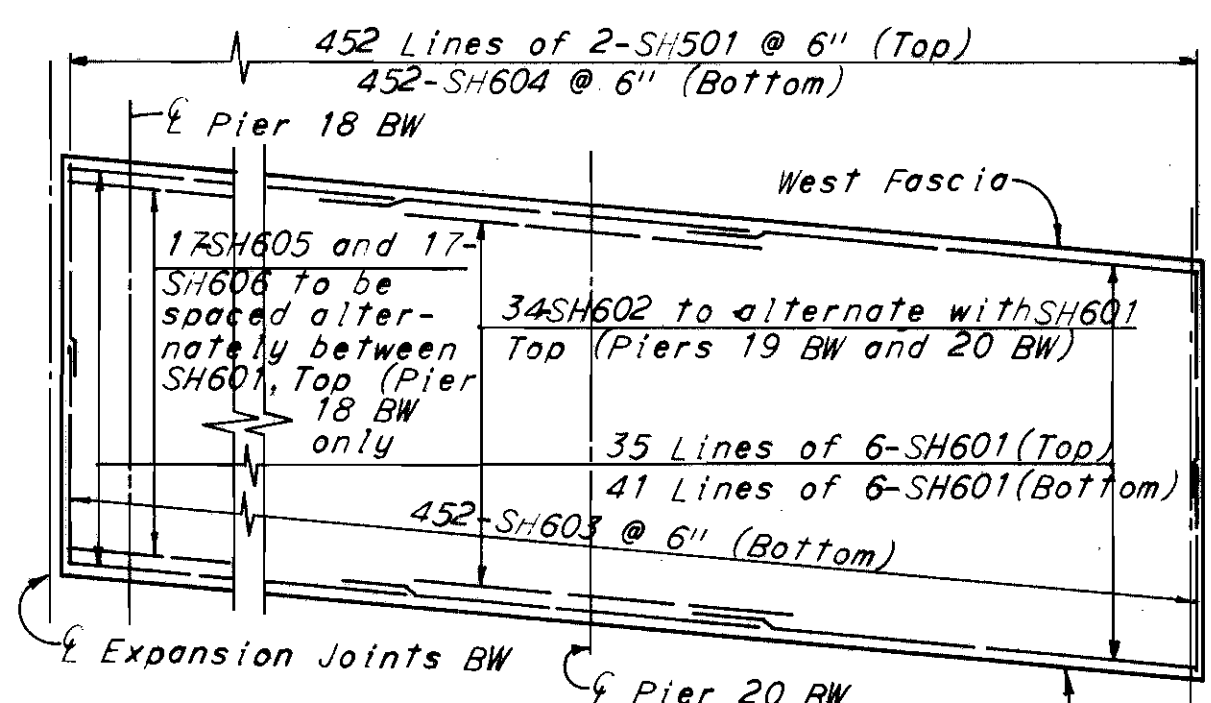
WEST CURB AND PARAPET



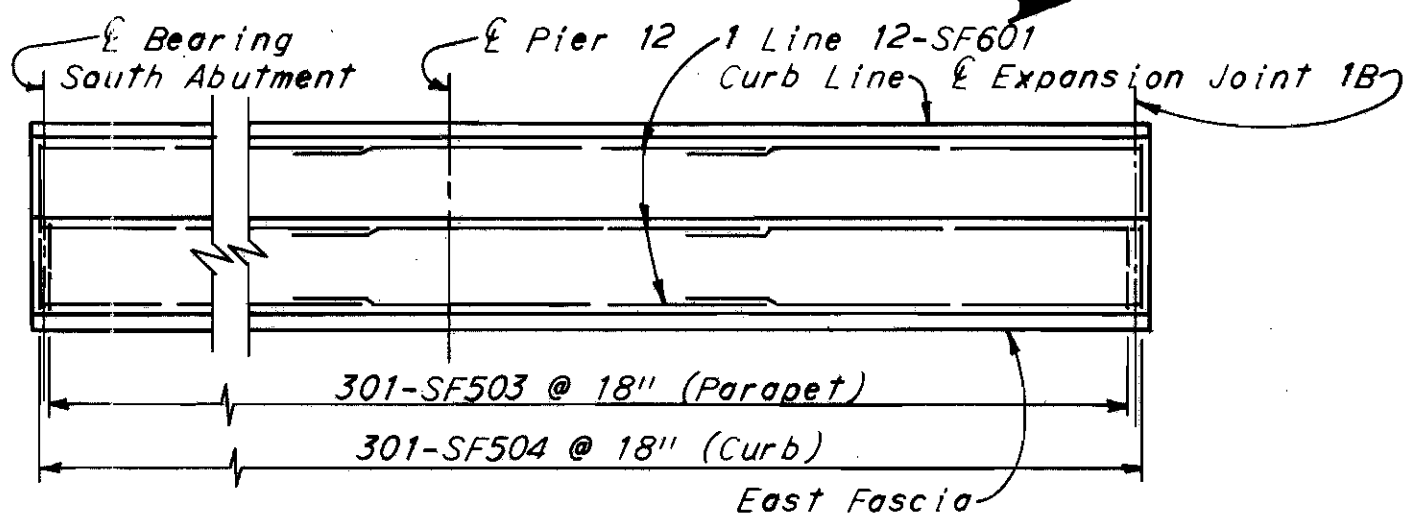
WEST CURB AND PARAPET



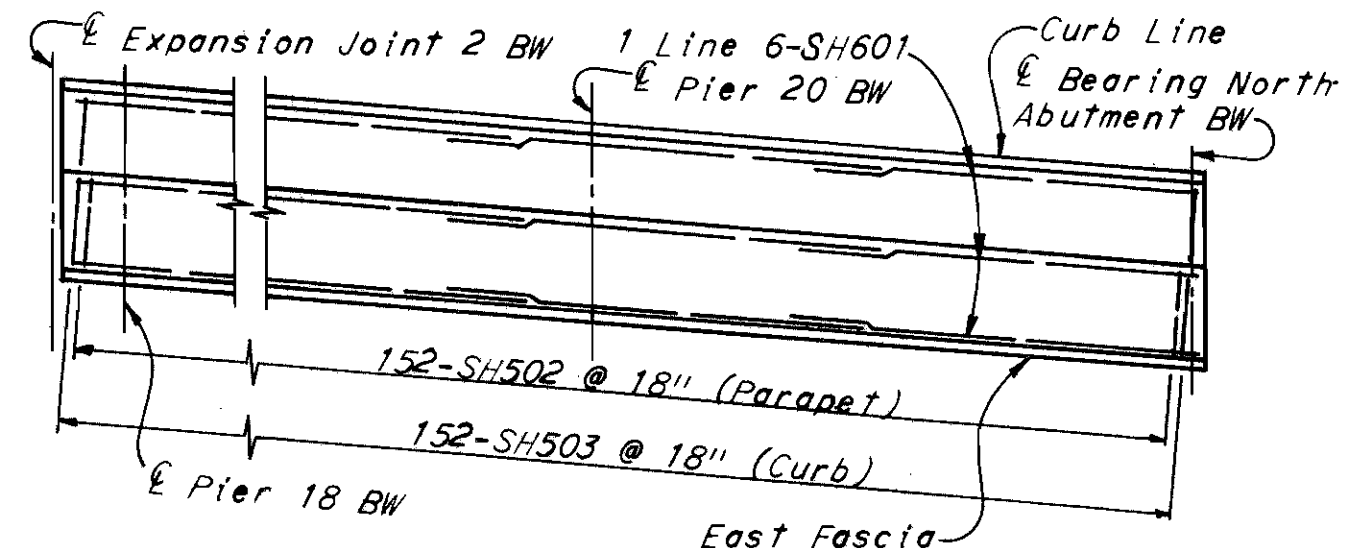
SLAB PLAN



SLAB PLAN



EAST CURB AND PARAPET



EAST CURB AND PARAPET

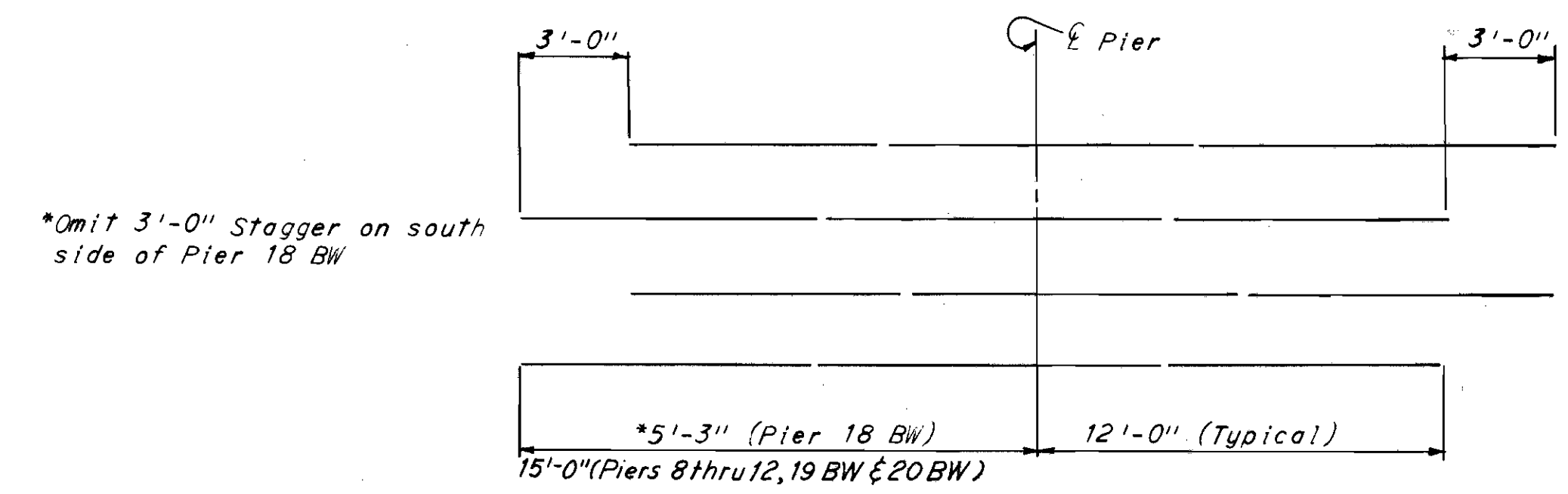
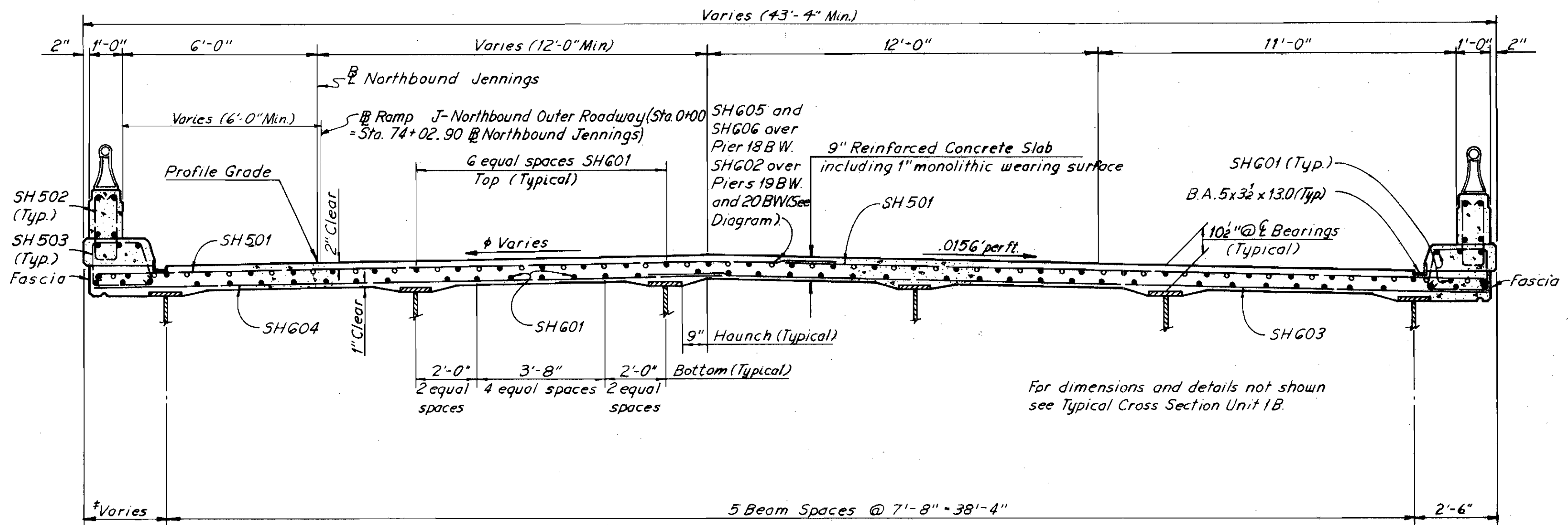
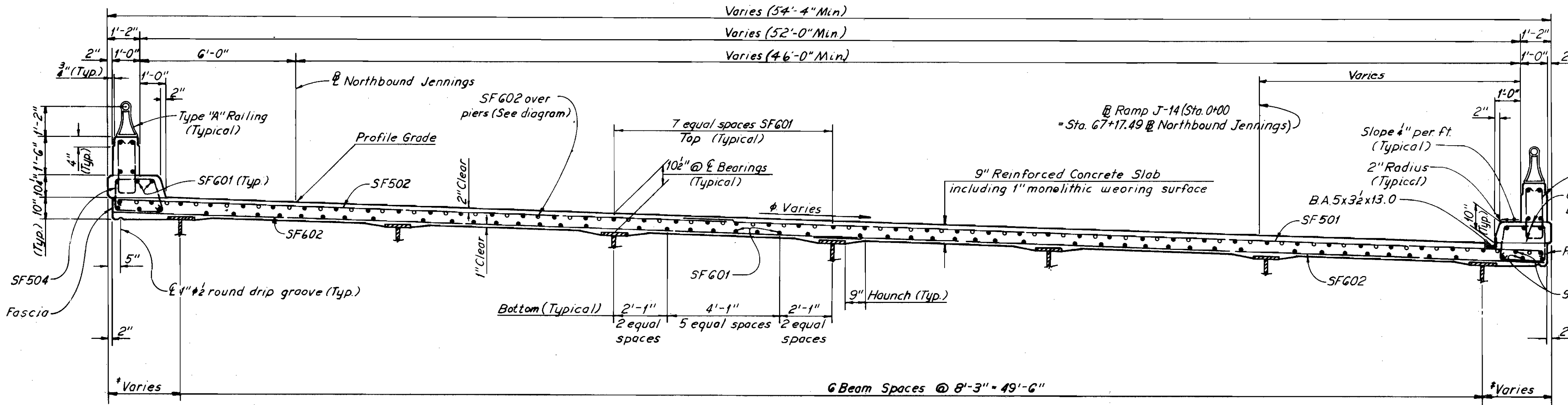


DIAGRAM SHOWING PLACEMENT OF ADDITIONAL LONGITUDINAL BARS OVER PIERS



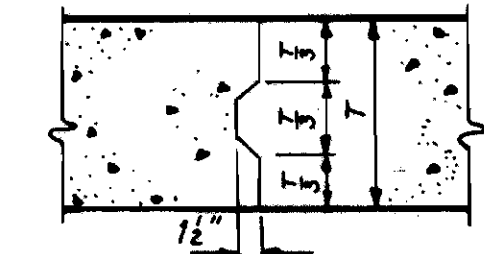
TYPICAL CROSS SECTION (UNIT 3BW)

*See Framing Plan, Sheet 433.
 *See Superelevation Transition Diagrams Sheet 442.



TYPICAL CROSS SECTION (UNIT 1-B)

Notes:
 For longitudinal reinforcement in the parapet see sheet 445. 445.
 For railing post spacing and parapet joint spacing see sheet 445.
 For additional railing details see Ohio Standard Drawing AP-1-57.
 For Reinforcement Schedule and Bending Diagrams see sheet 455.



OPTIONAL TRANSVERSE SLAB CONSTRUCTION JOINT

H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 CLEVELAND NEW YORK

DECK REINFORCEMENT
UNIT 1-B AND 3-BW
 NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

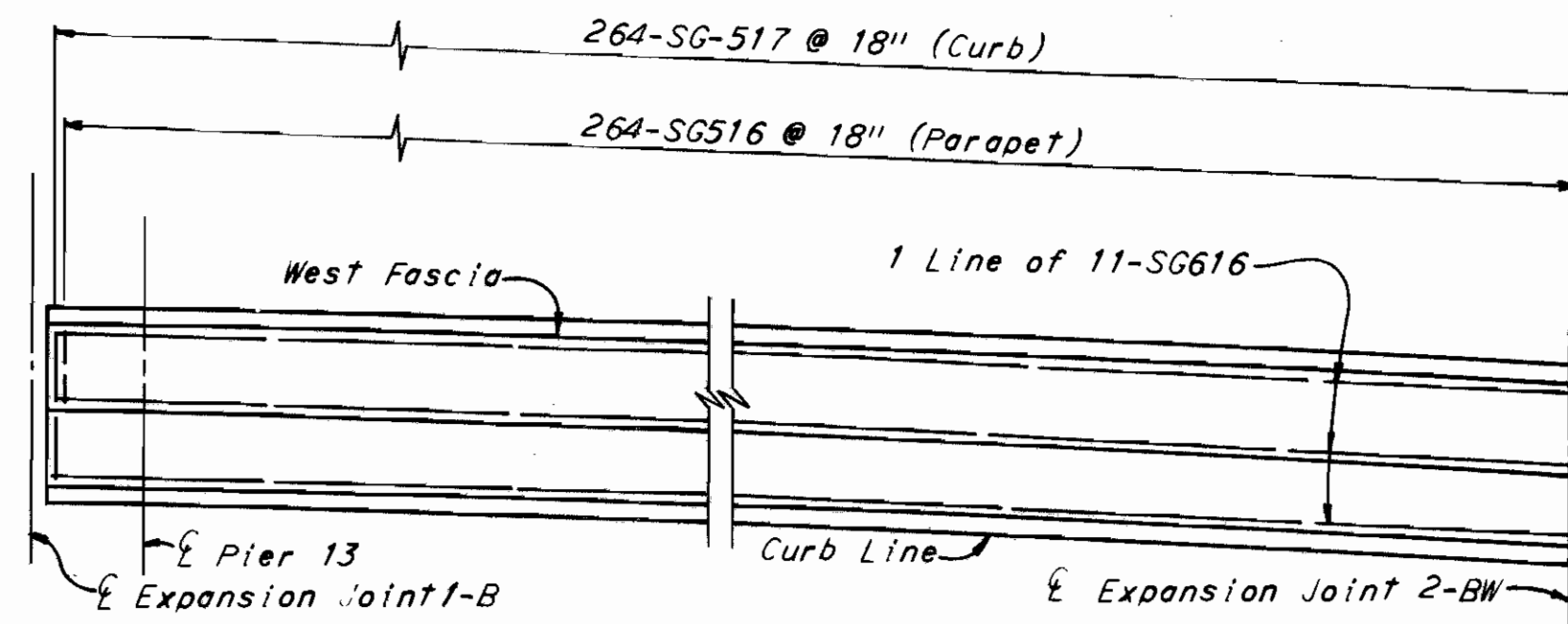
BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

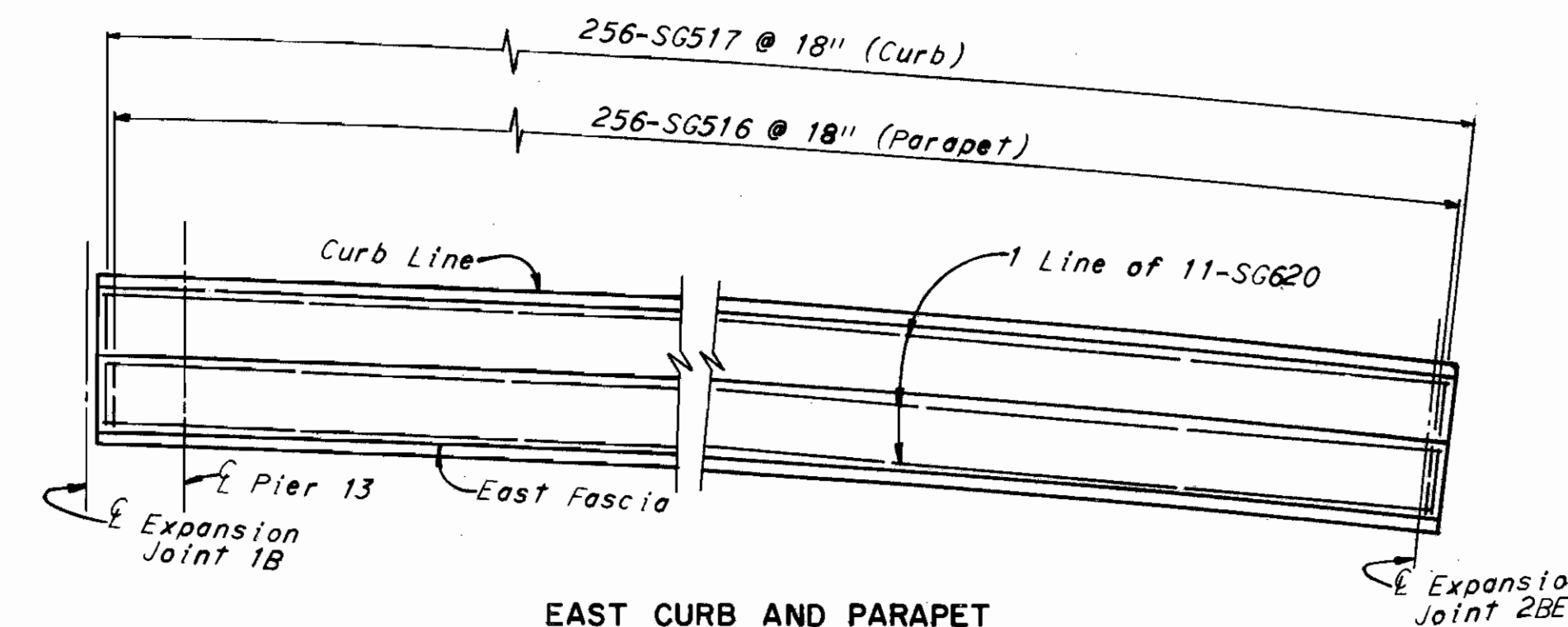
DRAWN	W/D	TRACED	CHECKED	DATE	DATE	DATE	DATE
				7-8-64	12-21-64	12-22-64	

SHEET 441

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



WEST CURB AND PARAPET



EAST CURB AND PARAPET

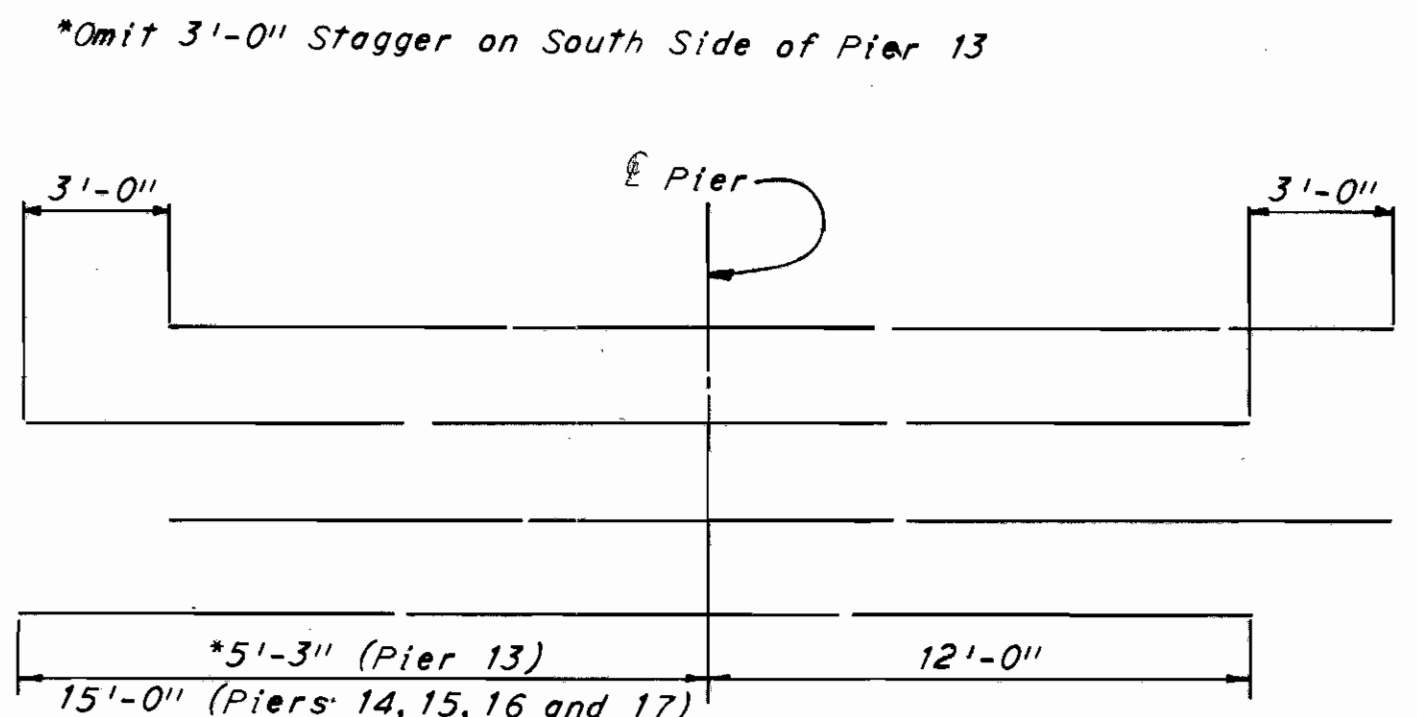
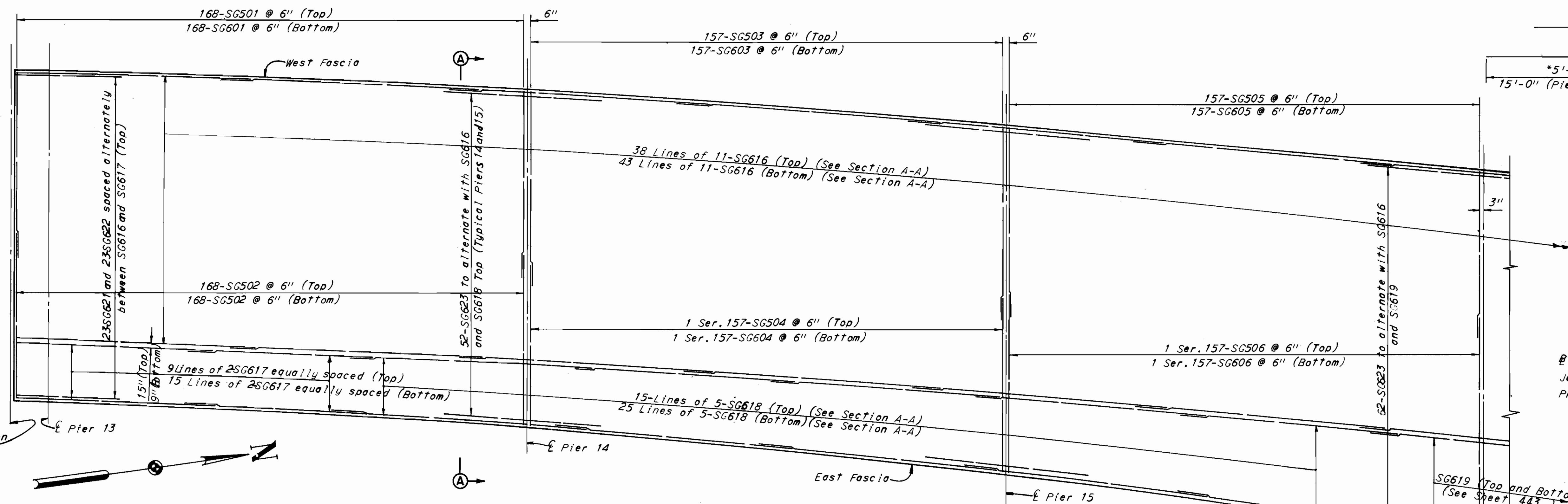
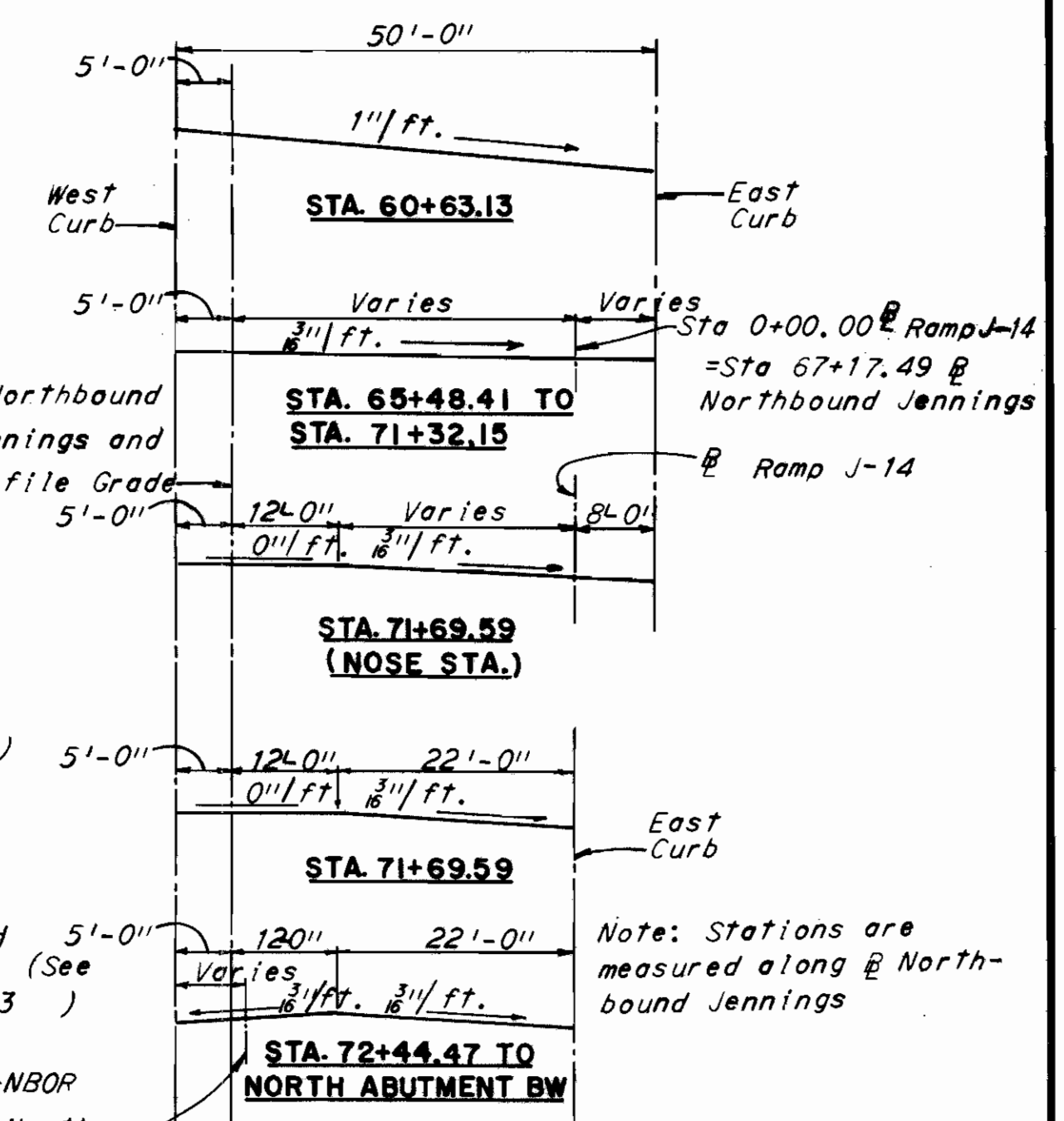


DIAGRAM SHOWING PLACEMENT OF ADDITIONAL LONGITUDINAL BARS OVER PIERS

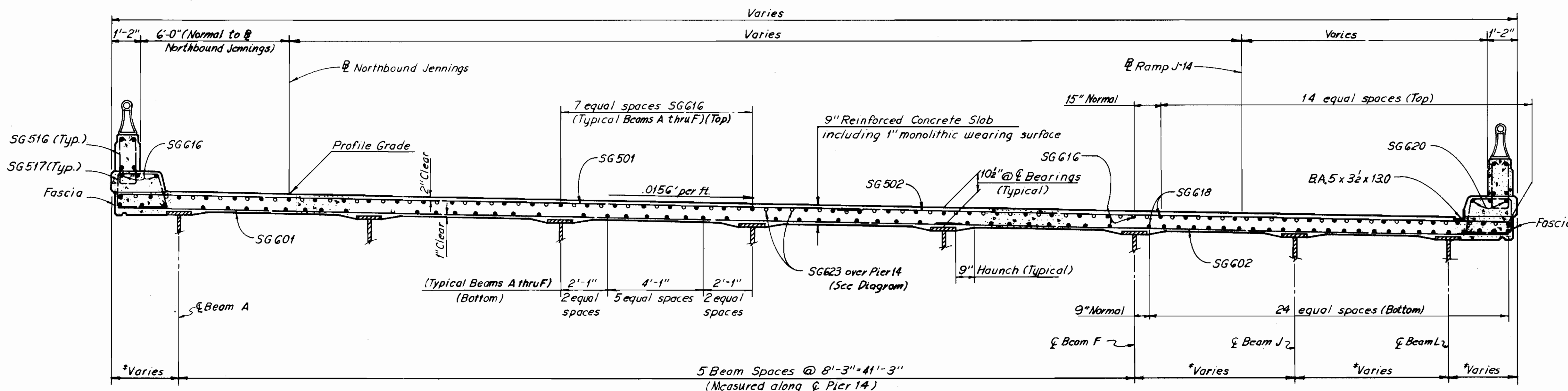


PART SLAB PLAN (UNIT 2B)



SUPERELEVATION TRANSITION DIAGRAMS (UNITS 1B, 2B TO NOSE, AND 3BW)

Note: Rate of transition between stations shown above is uniform.



SECTION A-A

*See Framing Plan, Sheet 434.

Notes:
 For additional Slab Plan details of Unit 2B see sheet 443.
 For cross section details and dimensions not shown see Typical Cross Section Unit 1B
 For additional notes see sheet 441.

H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

DECK REINFORCEMENT UNIT 2-B
 NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND NORTHBOUND JENNINGS

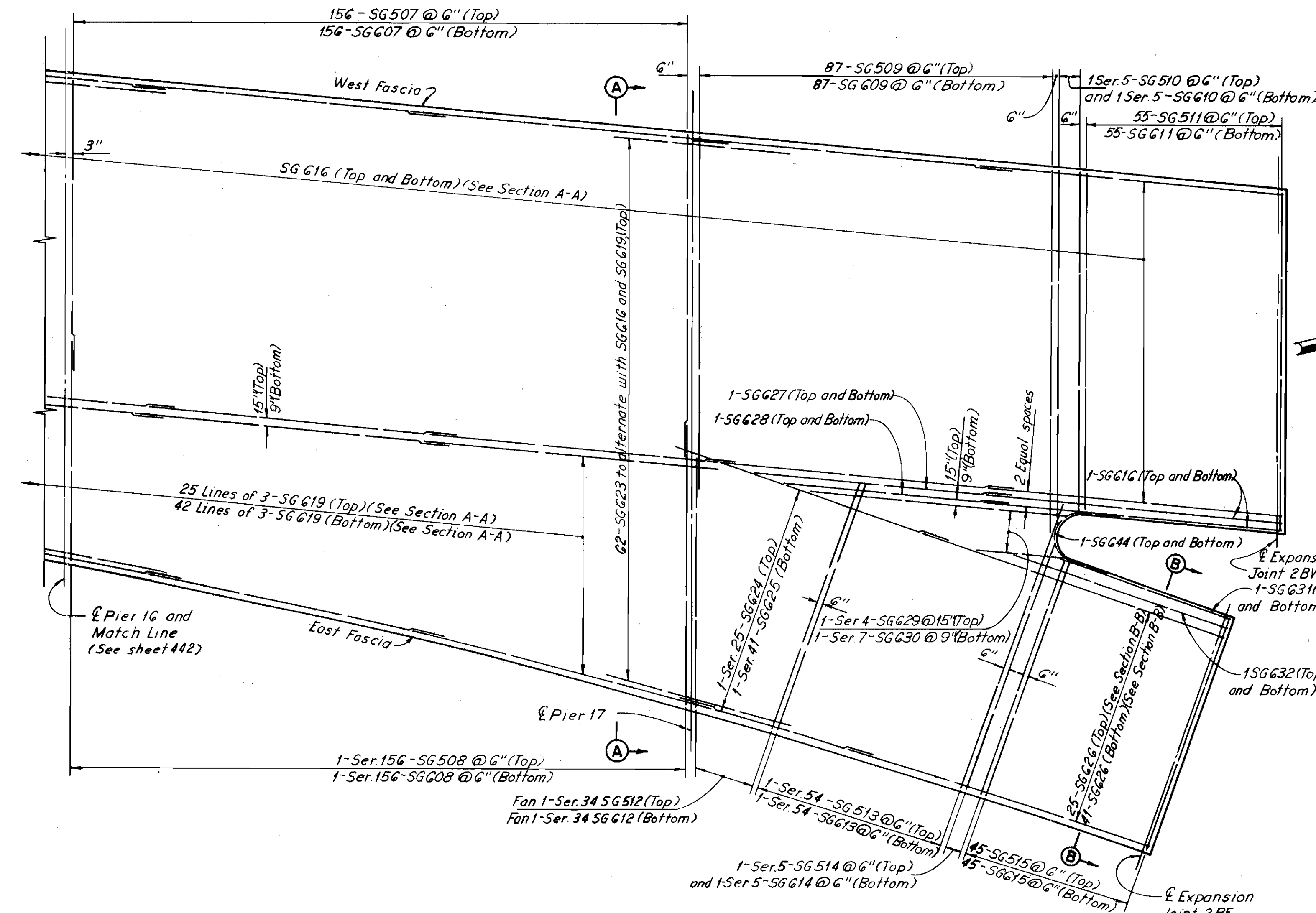
BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

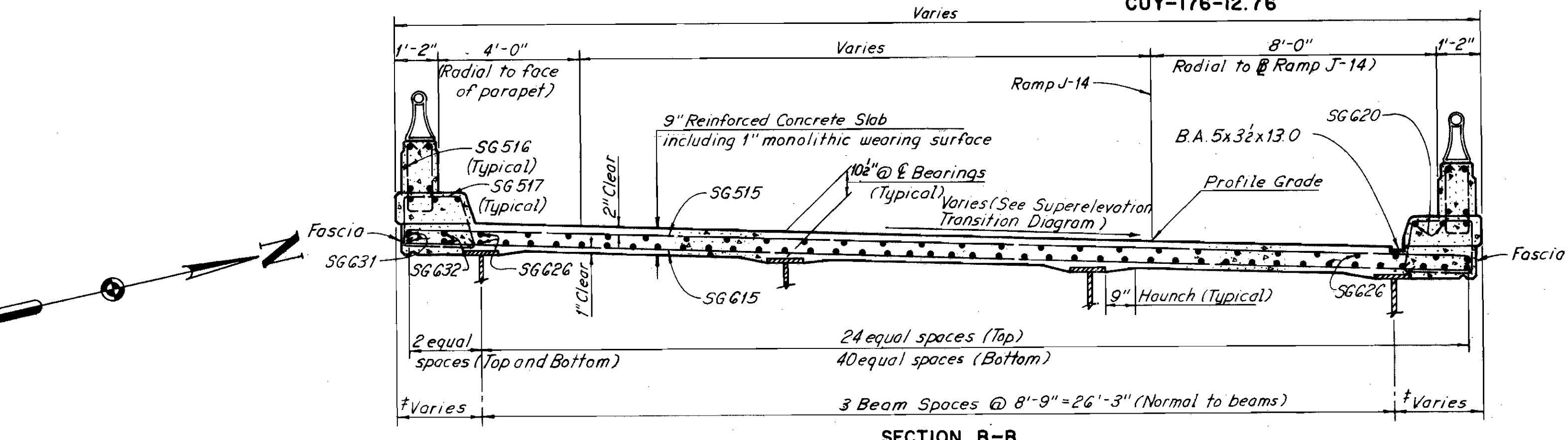
DRAWN	TRACED	CHECKED	REVIEWED
DATE 7-10-64	DATE	DATE 12-23-64	DATE 12-23-64

SHEET 442

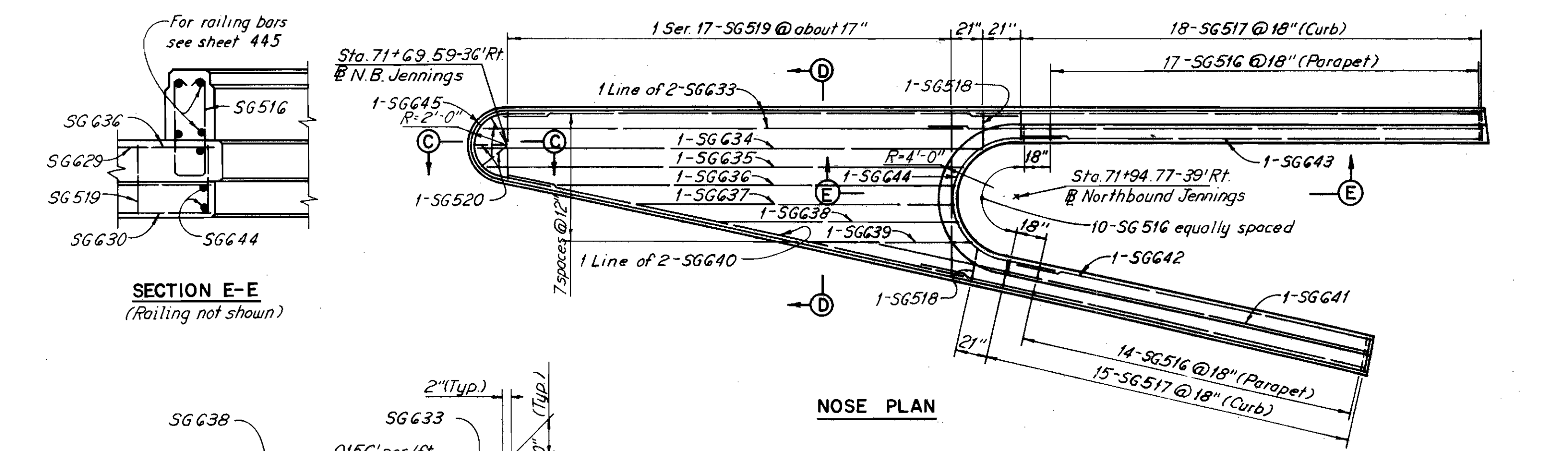
CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



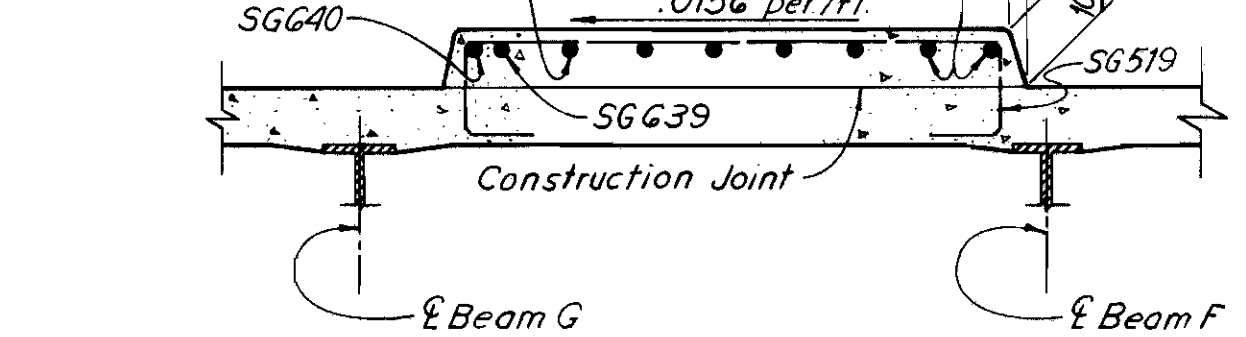
PART SLAB PLAN (UNIT 2B)



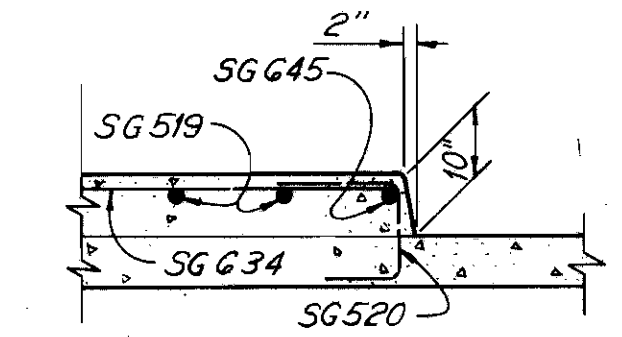
SECTION B-B



NOSE PLAN

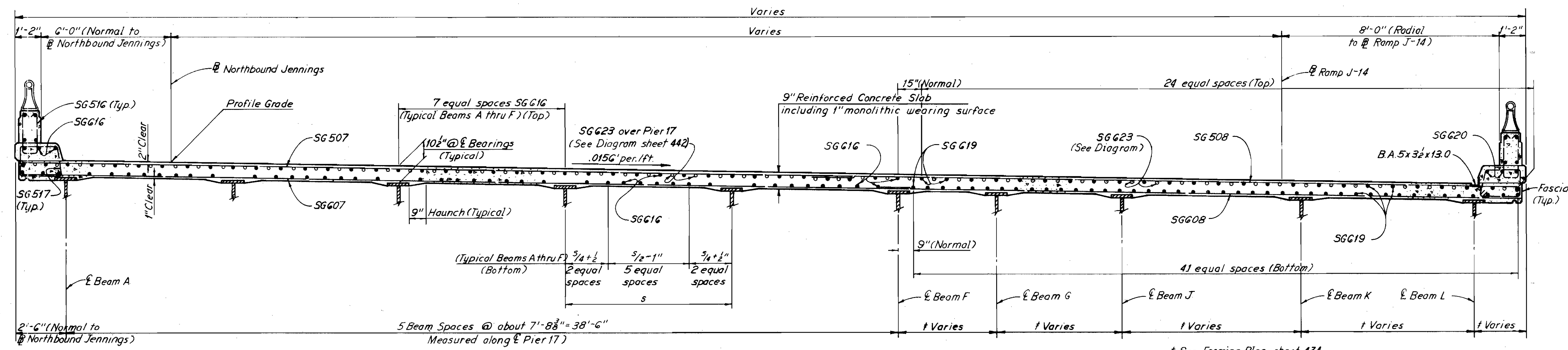


SECTION D-D



SECTION C-C

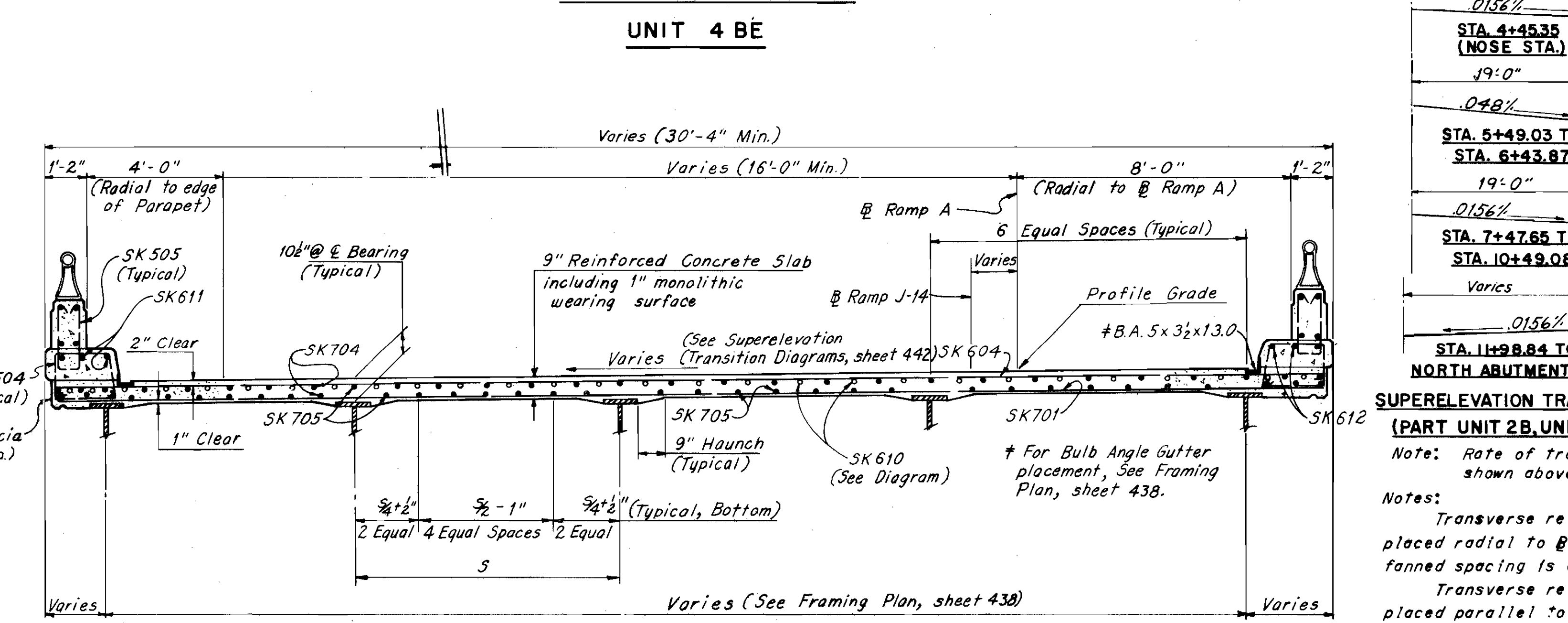
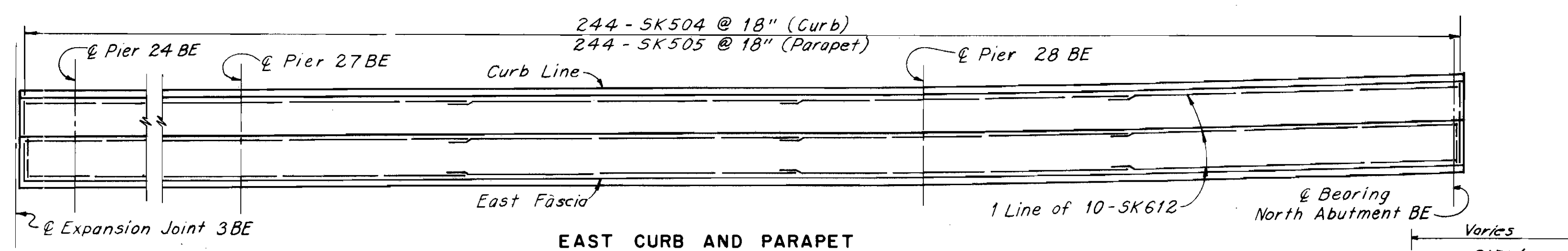
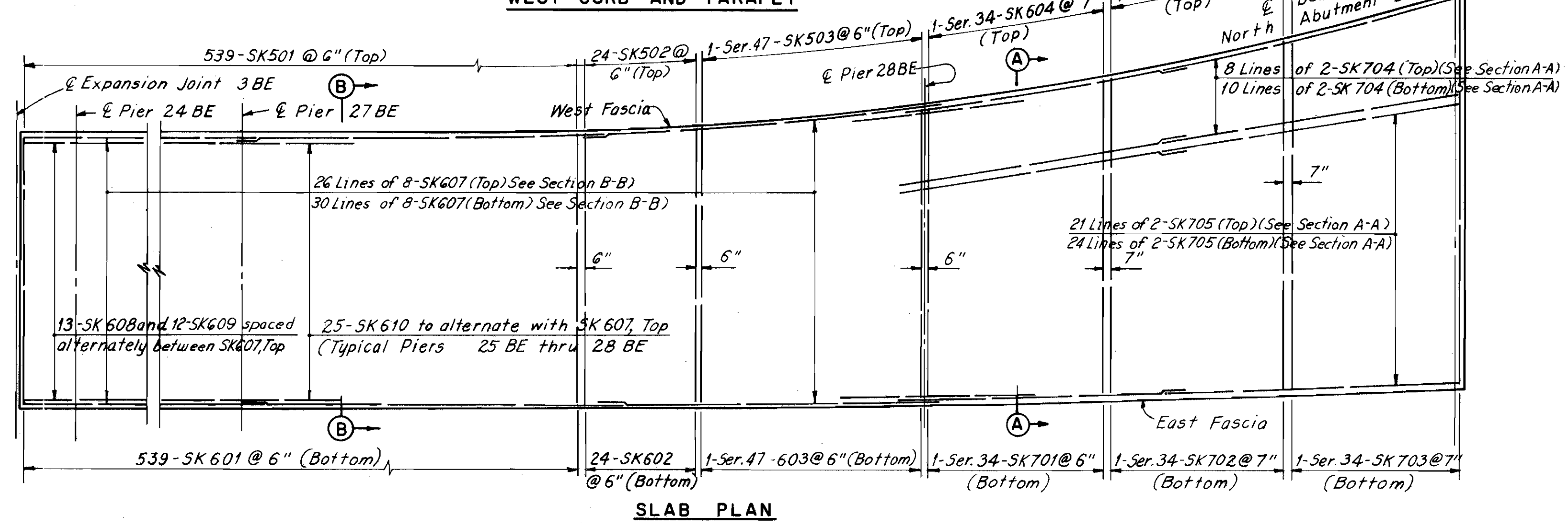
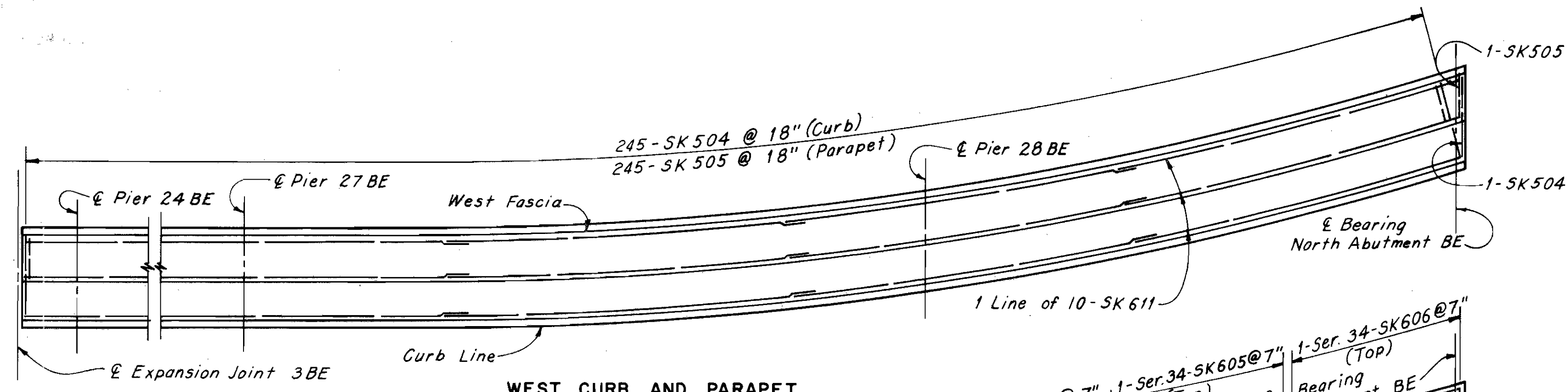
Notes:
For additional Slab Plan details of Unit 2B, see sheet 442.
For placement of additional reinforcement over Pier 17 see sheet 442.
For additional notes see sheet 441.



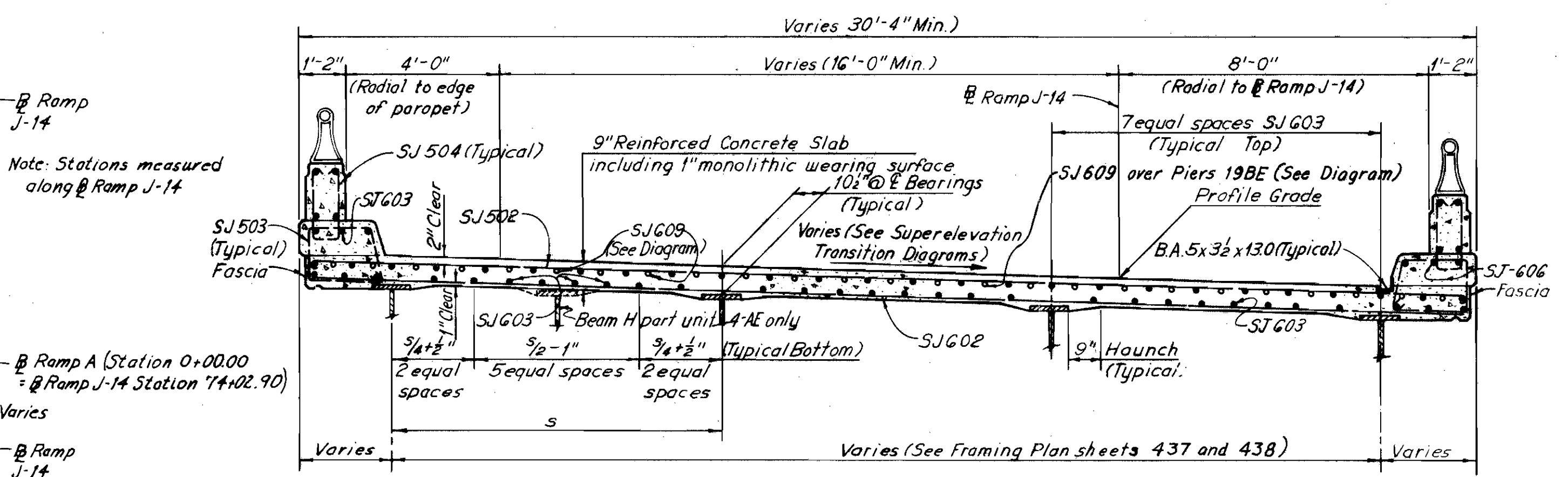
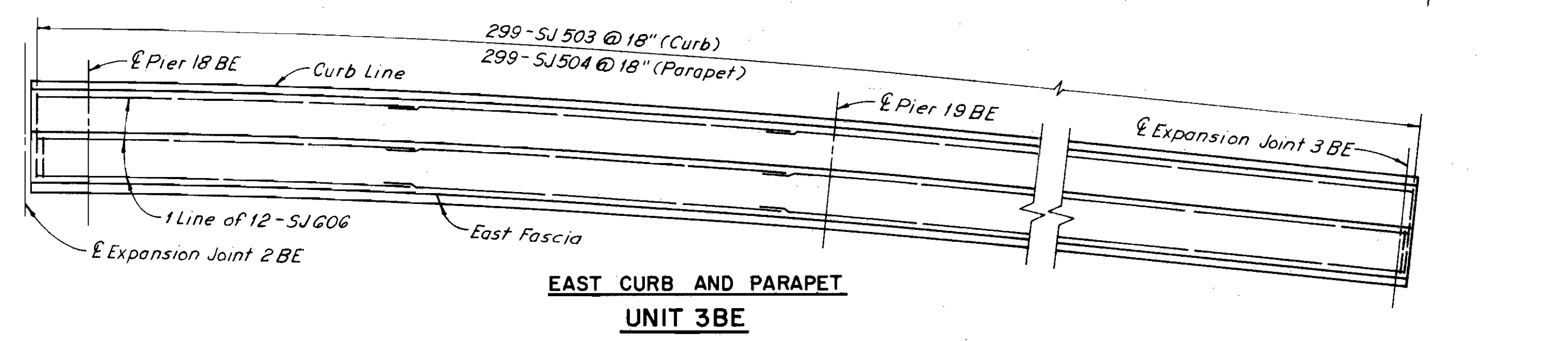
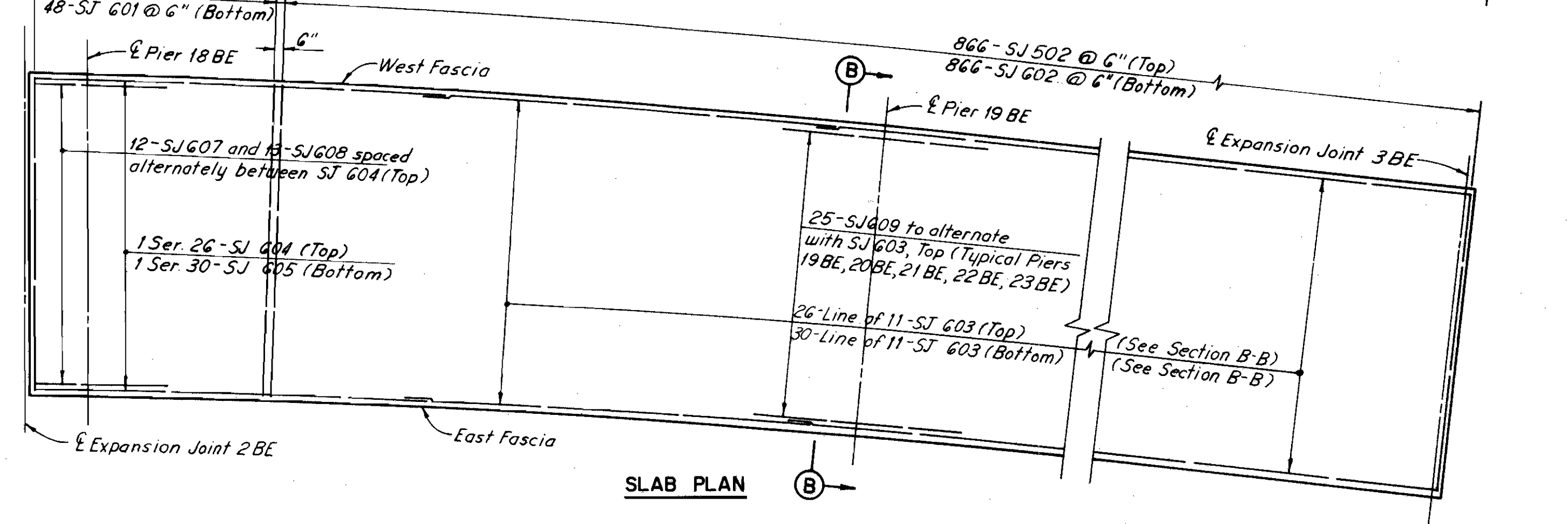
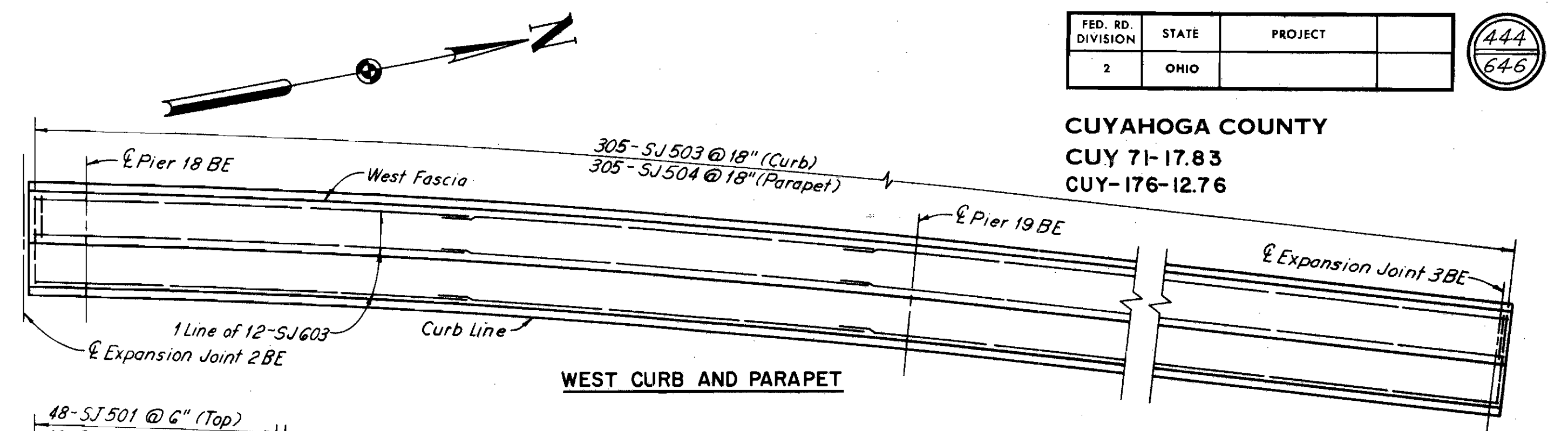
SECTION A-A

H.N.T.B BRIDGE NOS. 21A & 21B			
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
DECK REINFORCEMENT UNIT-2B			
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND NORTHBOUND JENNINGS			
BR. NO. CUY-71-1789 R		STA. 917+10.09 STA. 935+21.25	
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE
WJD 7-14-64		J.M. 12-23-64	W.F. 12-28-64
			REVIS SHEET 443

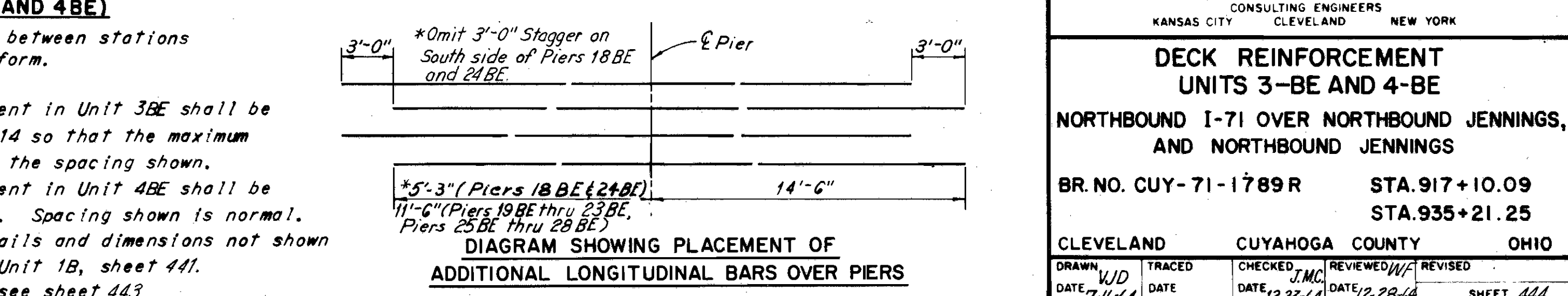
CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



SECTION A-A



SECTION B-B
 (Bar marks shown are for Unit 3-BE only)



SUPERELEVATION TRANSITION DIAGRAMS (PART UNIT 2B, UNITS 3BE, AND 4BE)

Note: Stations measured along @ Ramp J-14

Varies	8'-0"
0.156%	
STA. 4+45.35 (NOSE STA.)	
9'-0"	8'-0"
0.48%	
STA. 5+49.03 TO STA. 6+43.87	
19'-0"	8'-0"
0.156%	
STA. 7+47.65 TO STA. 10+49.08	
Varies	8'-0"
0.156%	
STA. 11+98.84 TO NORTH ABUTMENT BE	

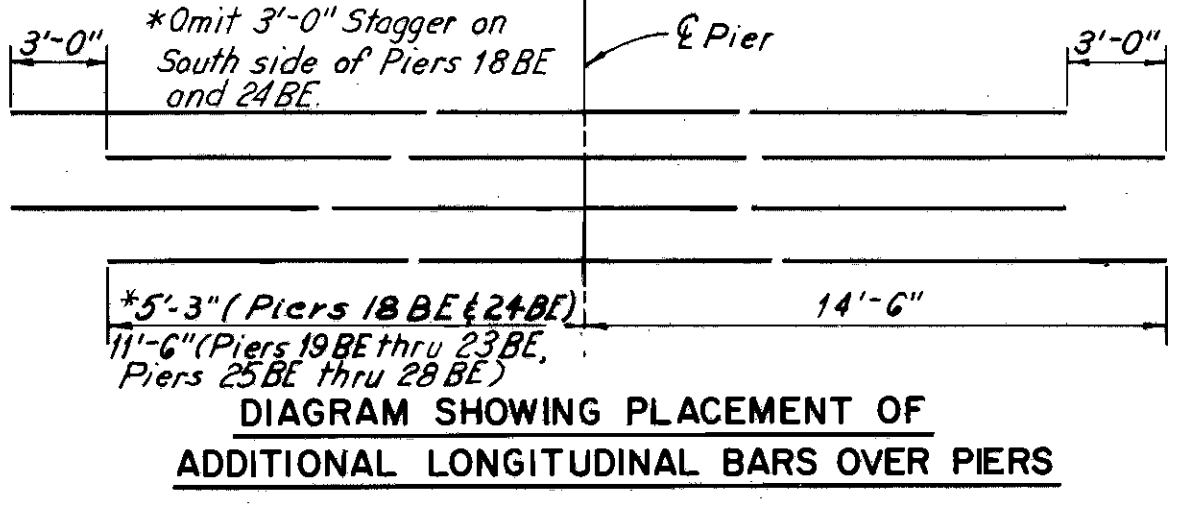
Notes:

Transverse reinforcement in Unit 3BE shall be placed radial to @ Ramp J-14 so that the maximum fanned spacing is equal to the spacing shown.

Transverse reinforcement in Unit 4BE shall be placed parallel to @ Piers. Spacing shown is normal.

For cross section details and dimensions not shown see Typical Cross Section Unit 1B, sheet 441.

For additional notes see sheet 443.



M.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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 KANSAS CITY CLEVELAND NEW YORK

DECK REINFORCEMENT UNITS 3-BE AND 4-BE

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND SOUTHBOUND JENNINGS

BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN: JLD TRACED: JMC CHECKED: JMC REVIEWED: JMC REVISION: JMC
 DATE: 7-16-64 DATE: 12-23-64 DATE: 12-28-64

SHEET 444



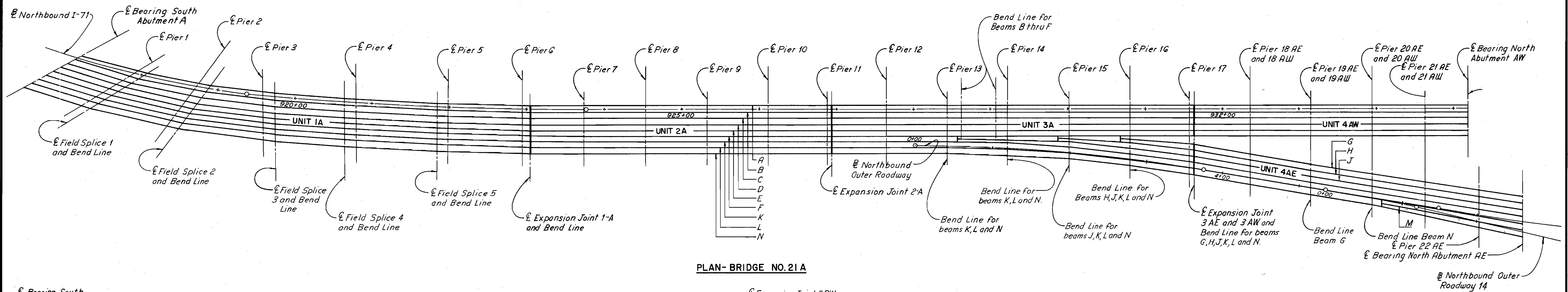
INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

APPENDIX IV – Existing Framing Plans

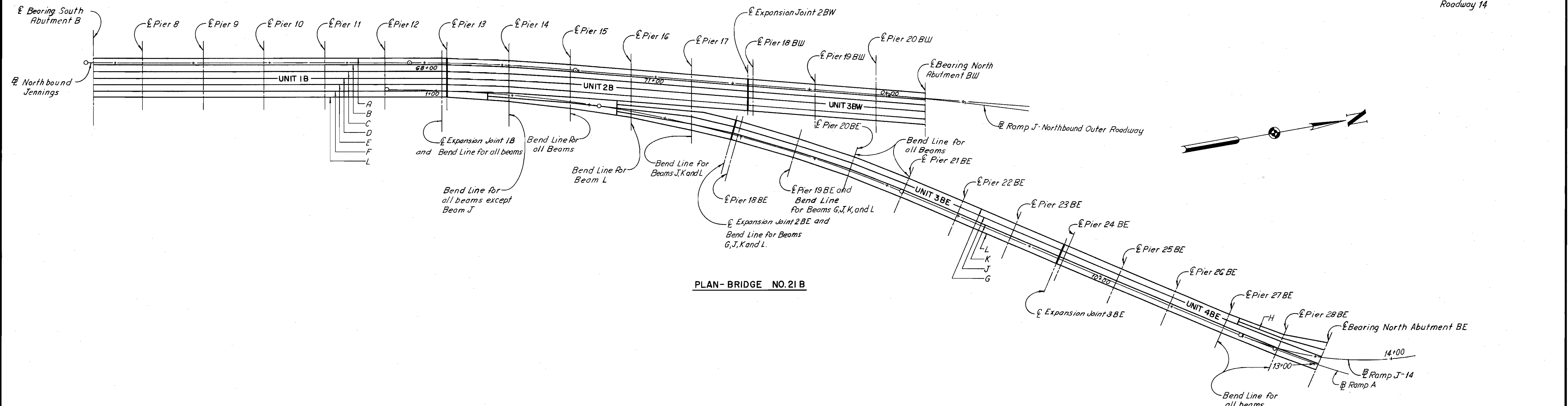
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

408
646

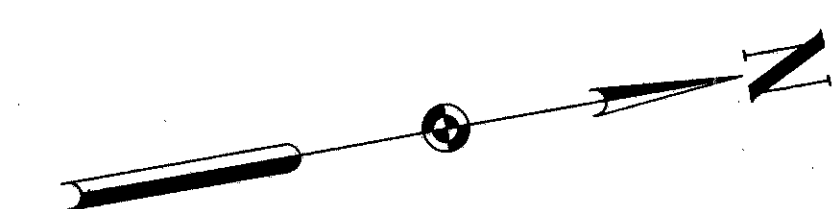
CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



PLAN-BRIDGE NO. 21A

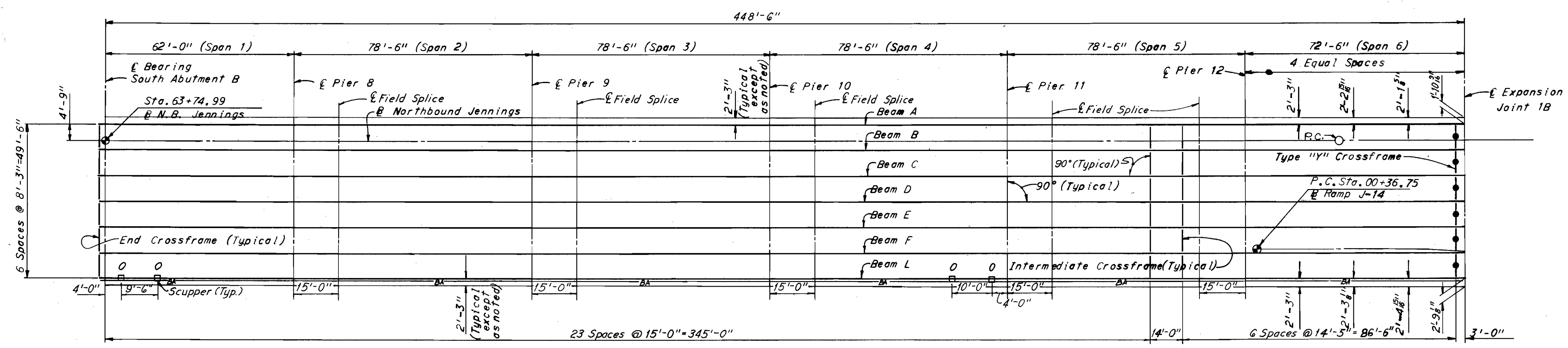
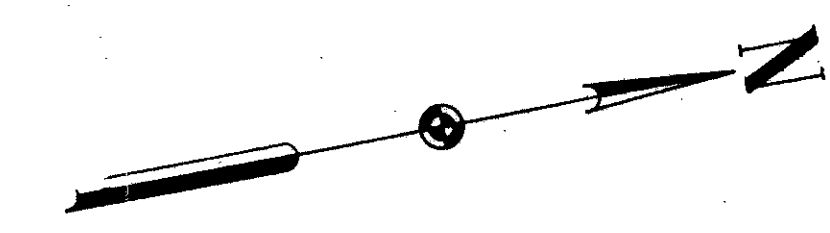


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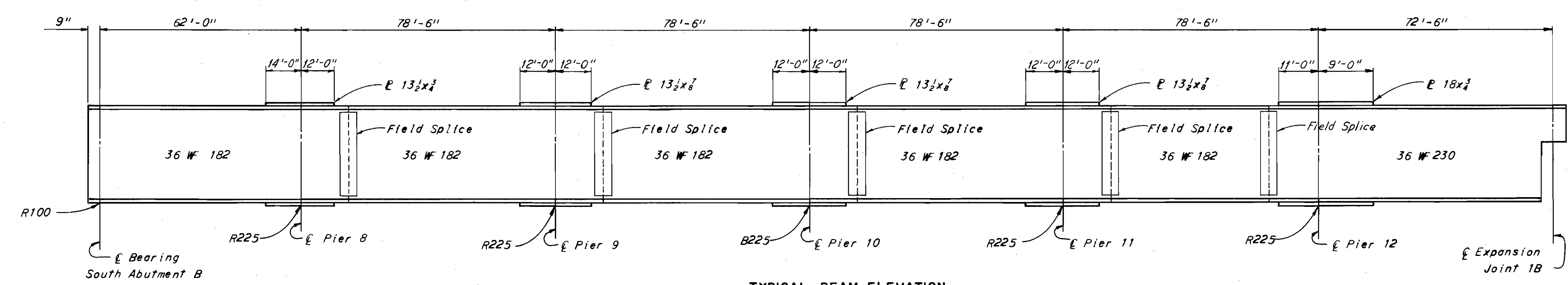


H.N.T.B. BRIDGE NOS. 21A & 21B				
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK				
SCHEMATIC FRAMING PLAN				
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND NORTHBOUND JENNINGS				
BR. NO. CUY-71-1789R			STA. 917+10.09	
			STA. 935+21.25	
CLEVELAND		CUYAHOGA COUNTY		OHIO
DRAWN J.M.C.	TRACED	CHECKED	REVIEWED	REVISED
DATE 12-11-64	DATE	DATE 12-13-64	DATE 12-22-64	
				SHEET 408

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76

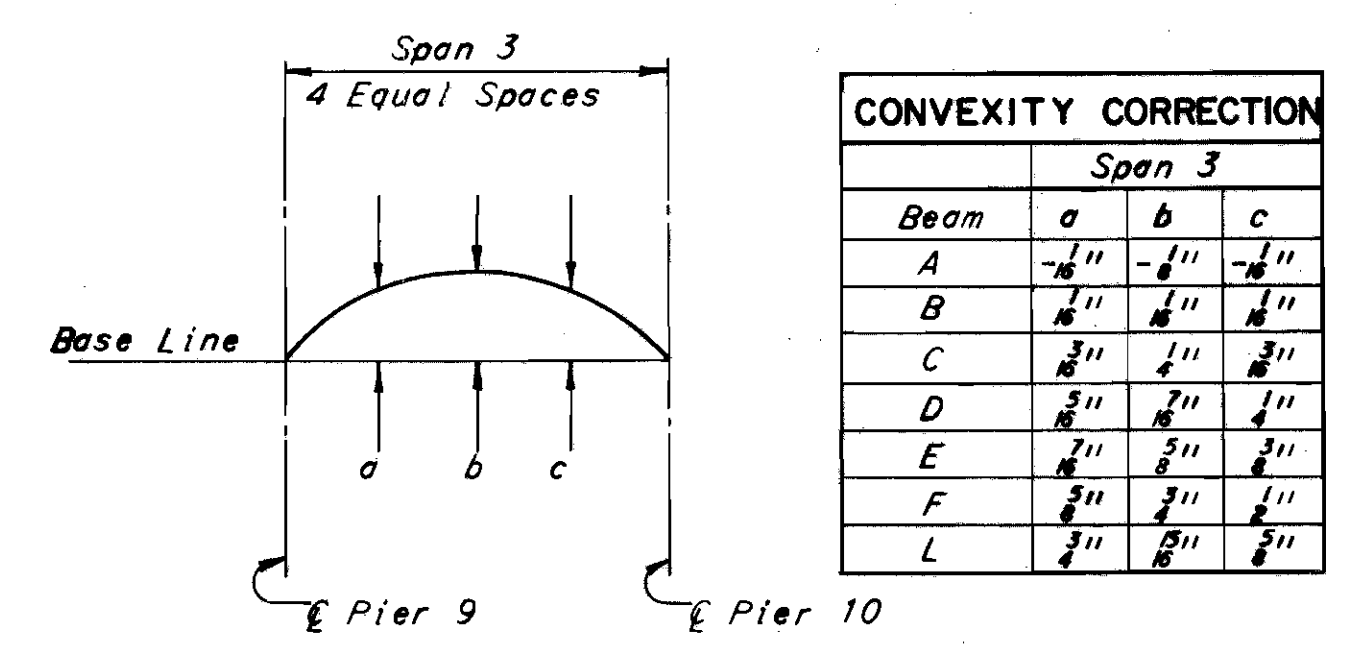


FRAMING PLAN



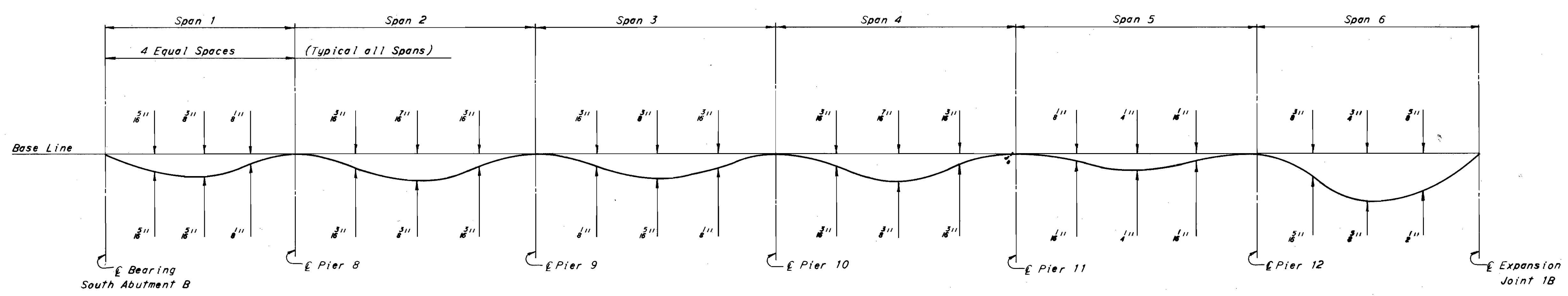
TYPICAL BEAM ELEVATION

Note. Cover Plate lengths and sizes shown are typical top and bottom.



CONVEXITY DIAGRAM

Notes:
 Convexity corrections in Spans 1, 2, 4, 5 and 6 are equal to zero.
 Negative values for convexity indicate convexity below base line.



DEAD LOAD DEFLECTION DIAGRAM

Note: Values shown above base line are total deflections due to steel and concrete.
 Values shown below base line are for deflections due to concrete only.
 Deflections are measured to nearest 1/16 inch.

BEAM CAMBER NOTE

Where the combined effects of dead load deflection and convexity is 3/8" or more, the required camber shall be the same as this sum.
 Where the combined effects are less than 3/8", no camber is required but the beams shall be fabricated so that any curved beam will be placed with the convex flange up.

Notes:
 For details of beam field splices see sheet 447.
 For end crossframe, end dam and curb plate details at the abutment see Ohio Standard Drawing SD-1-63, sheets 2 of 4 and 4 of 4.
 The supporting angle shown in the "Roadway End Dam Table" shall be increased from 6x4x3/4 to 8x4x3/4.
 For crossframe and cover plate details see sheet 414.
 For rocker and bolster details see Ohio Standard Drawing RB-1-55.

H.N.T.B BRIDGE NOS. 21A & 21B

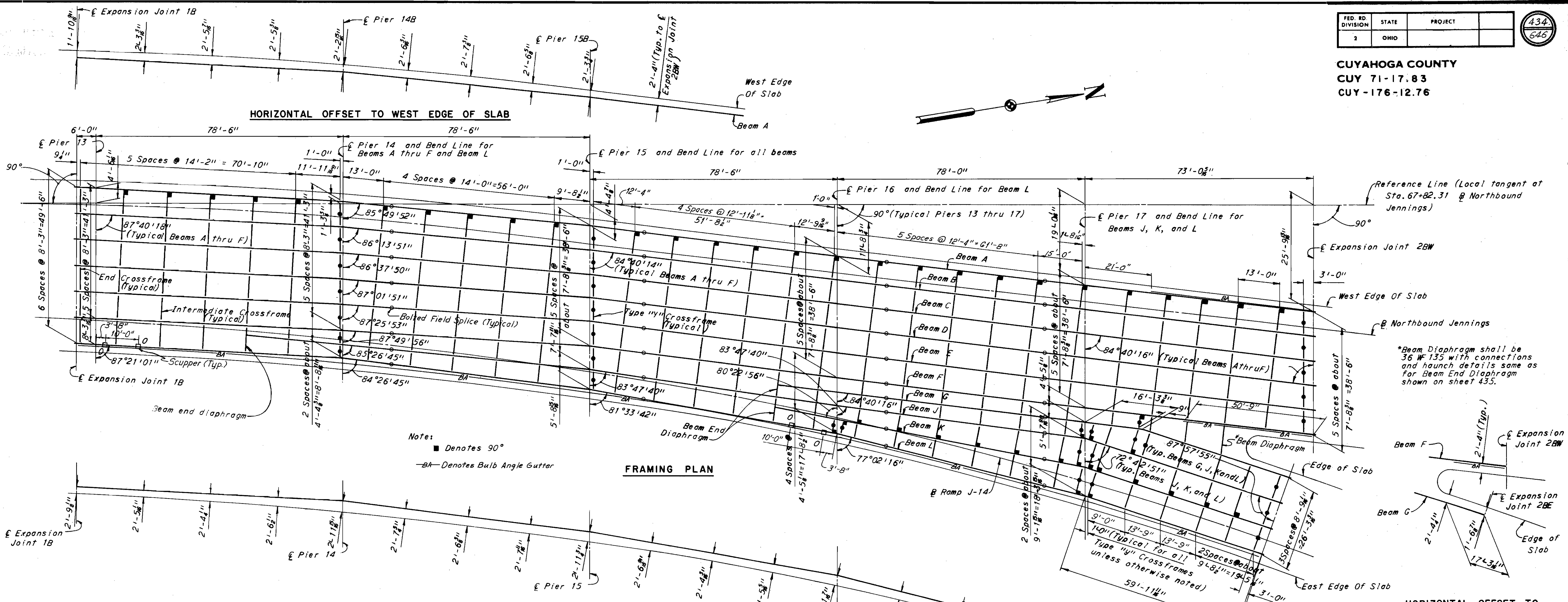
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN UNIT I-B
 NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS
 BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

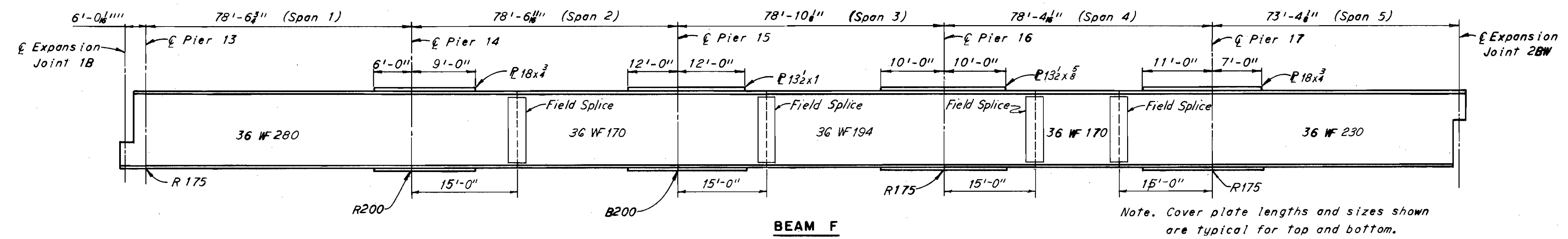
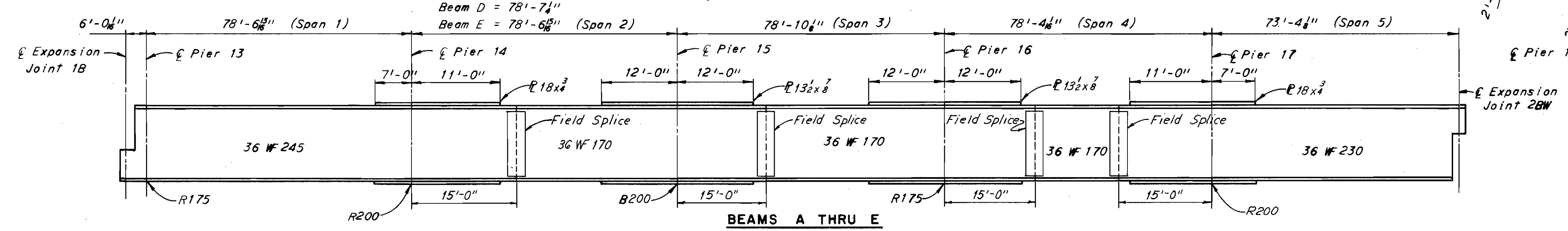
CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN J.M.C.	TRACED J.L.H.	CHECKED J.L.H.
DATE 7-31-64	DATE 7-23-64	DATE 12-23-64

SHEET 433

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



Beam A = 78'-8 1/2"
 Beam B = 78'-8 1/2"
 Beam C = 78'-7 3/4"
 Beam D = 78'-7 1/4"
 Beam E = 78'-6 3/4" (Span 2)



Note. Cover plate lengths and sizes shown are typical for top and bottom.

Notes:
 For Beam End Diaphragm details see sheet 435
 For Dead Load Deflection and Convexity Diagrams see sheet 435
 For details of beam field splices see sheet 447.
 Beams with bend points at pier shall be shop spliced in accordance with the procedure as outlined on Ohio Standard Drawing SD-1-63, sheet 1 of 4.
 For additional notes see sheet 433

H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN UNIT 2-B

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

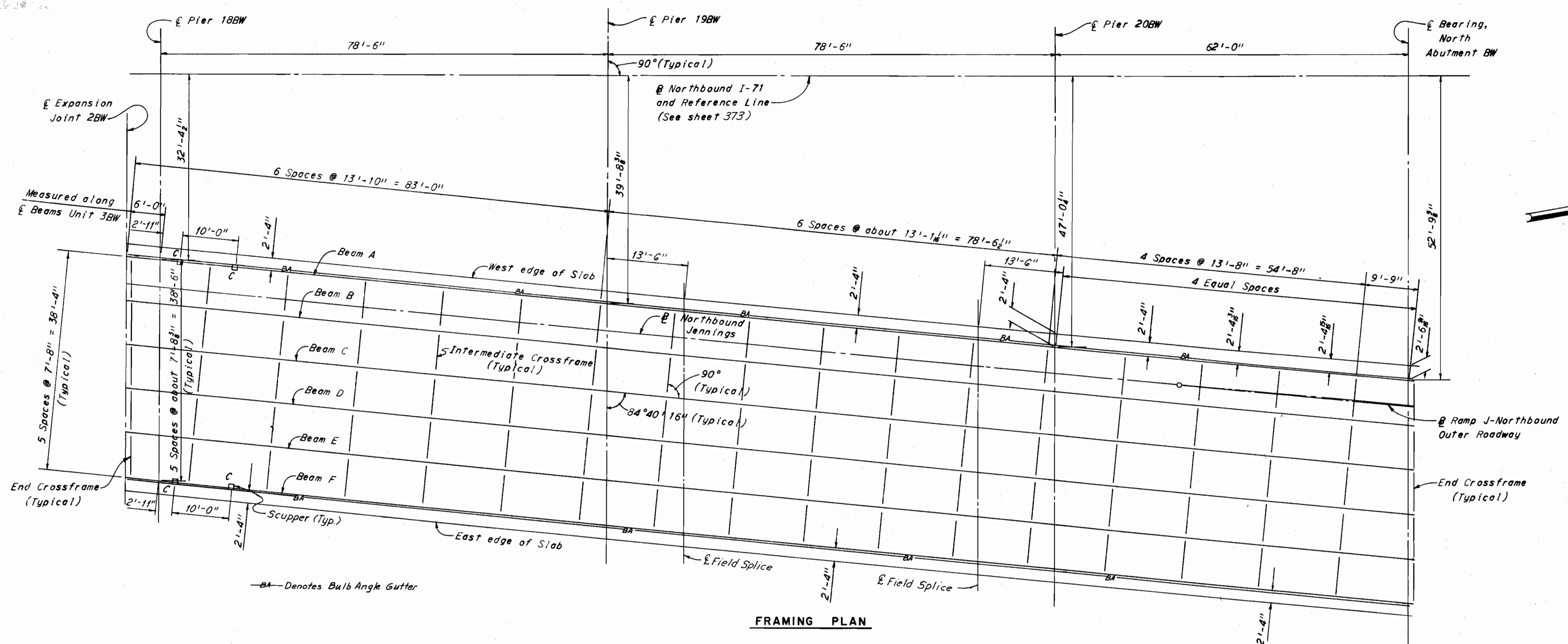
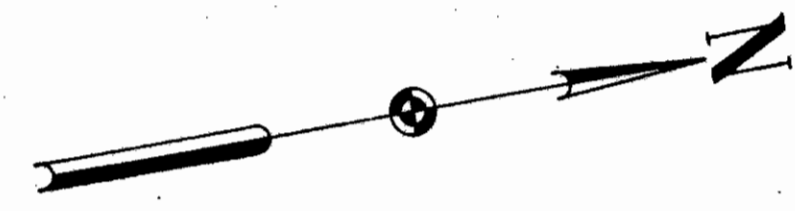
BR. NO. CUY-71-1789 R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

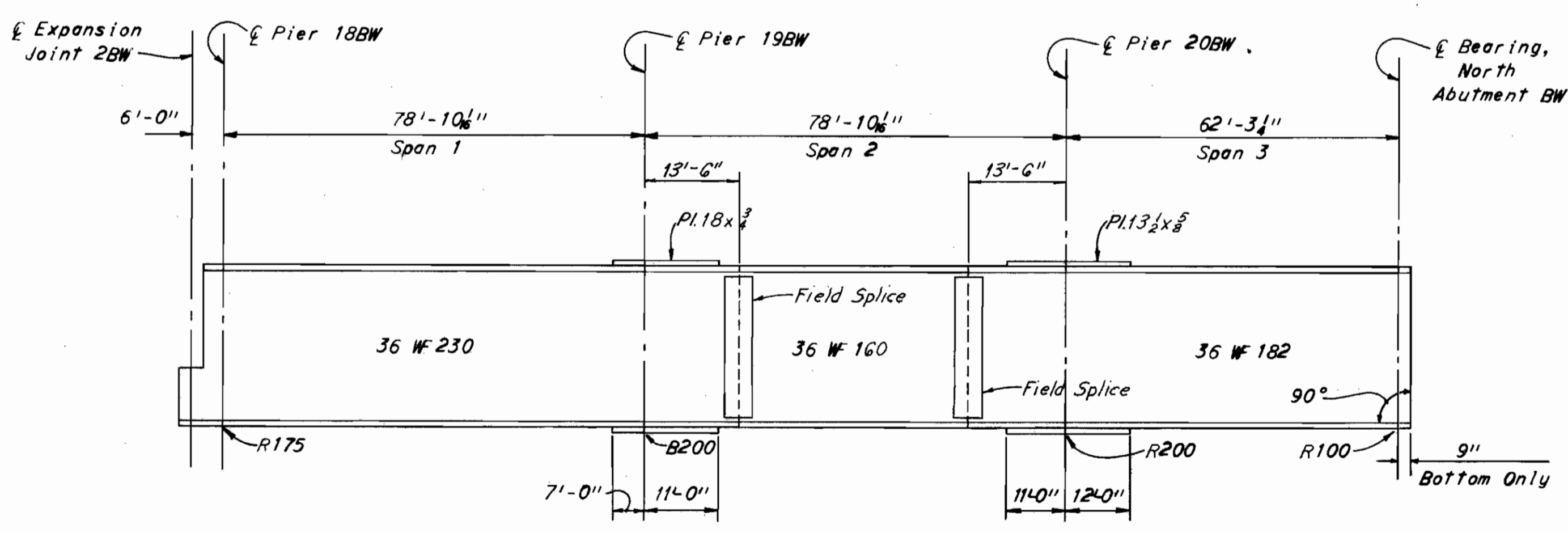
DRAWN J.M.C.	TRACED	CHECKED J.K.M.	REVIEWED W.F.	REVISED
DATE 7-2-64	DATE	DATE 7-2-64	DATE 12-28-64	

SHEET 434

CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



FRAMING PLAN



BEAMS A THRU F

Note: Cover plate lengths and sizes shown are typical top and bottom.

	Pier 18BW			Pier 19BW			Pier 20BW			
	a	b	c	a	b	c	a	b	c	
Typical-Beams	-3/8"	+5/8"	+7/8"	0	+1/4"	+1/8"	+3/8"	+7/8"	+3/8"	Deflections due to Concrete and Steel
A thru F	-1/4"	+1/2"	+5/8"	0	+1/4"	+1/8"	+3/8"	+5/8"	+3/8"	Deflections due to Concrete Only
Beam A	-1/8"	-1/8"	-1/8"	0	0	0	0	0	0	Convexity
Beam B	-1/8"	-1/8"	-1/8"	0	0	0	0	0	0	Convexity
Beams C thru F	+3/8"	+1/4"	+1/4"	0	0	0	0	0	0	Convexity

Note: Dead load deflections and convexity are measured to the nearest 1/16 inch. Negative values for deflection indicate deflection above the base line. Negative values for convexity indicate convexity below the base line.

DEAD LOAD DEFLECTION & CONVEXITY DIAGRAM

BEAM CAMBER NOTE:

Where the combined effects of dead load deflection and convexity are 1/4 inch or more, the required camber shall be the same as this amount. If the combined effects are less than 1/4 inch, no camber is required, but the beams shall be fabricated so that any curved beam will be placed with the convex flange up.

SCUPPER LEGEND
C = Outlets at ground level
O = Outlets just below superstructure

Notes: For notes see sheet 433.

H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN UNIT 3-BW

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

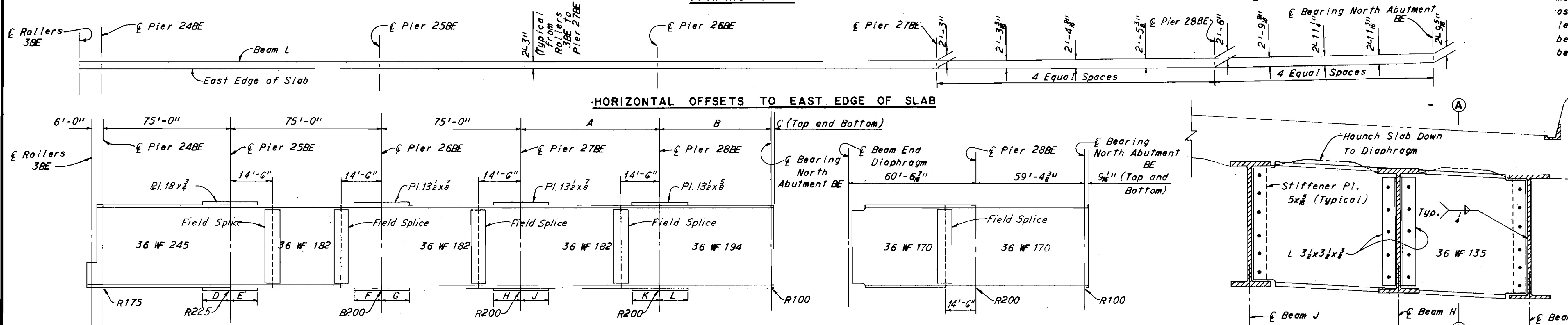
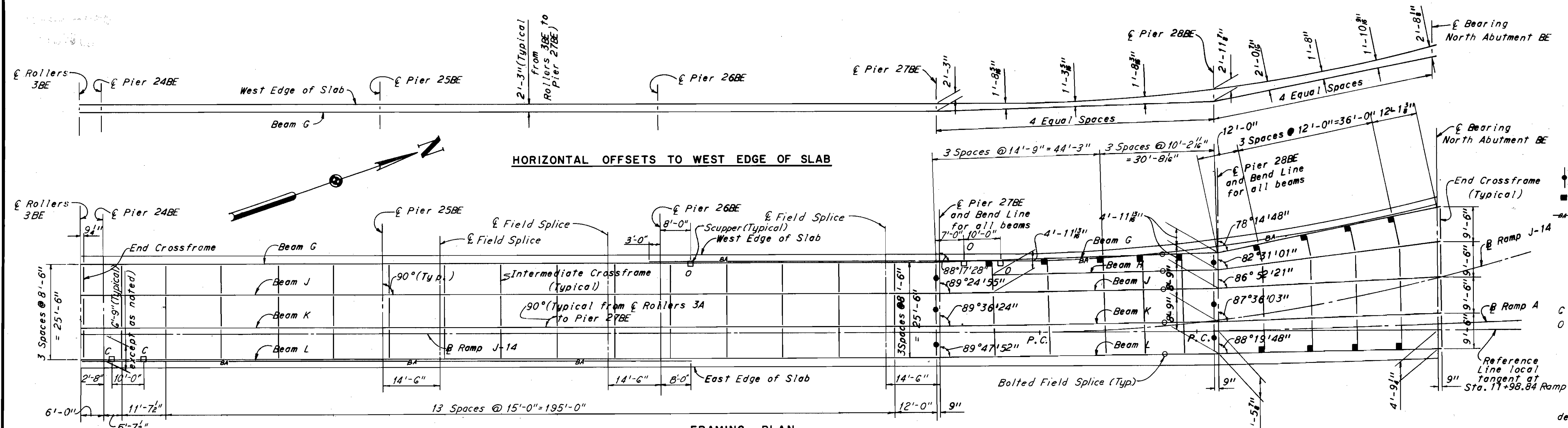
BR. NO. CUY-71-1789R STA. 917+10.09
STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 7-13-64	DATE	DATE 8-21-64	DATE 12-22-64	

SHEET 436

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



Denotes Type "y" Crossframe
 Denotes 90°
 Denotes Bulb Angle Gutter

SCUPPER LEGEND
 C - Outlets at ground level
 O - Outlets just below superstructure

BEAM CAMBER NOTE
 Where the combined effects of the total dead load deflection and convexity is $\frac{3}{4}$ " or more, the required camber shall be the same as this sum. Where the combined effects are less than $\frac{3}{4}$ " no camber is required but the beams shall be fabricated so that any curved beam will be placed with the convex flange up.

ELEVATION BEAMS G, J, K AND L

BEAM H

BEAM END DIAPHRAGM

SECTION A-A

TABLE OF DIMENSIONS

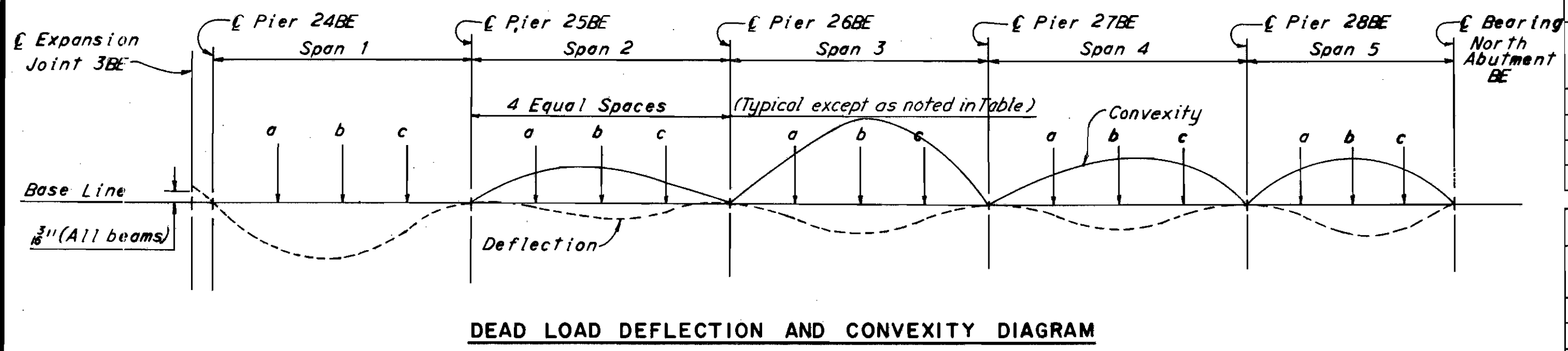
Beams	A	B	C	D	E	F	G	H	J	K	L
G	74'-11 $\frac{1}{8}$ "	60'-1 $\frac{3}{8}$ "	9 $\frac{3}{8}$ "	7'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	11'-0"
J	74'-10 $\frac{3}{4}$ "	58'-11 $\frac{3}{8}$ "	9"	7'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	11'-0"
K	74'-10 $\frac{3}{4}$ "	58'-10 $\frac{3}{8}$ "	9"	7'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	11'-0"
L	74'-10 $\frac{3}{4}$ "	58'-10 $\frac{3}{8}$ "	9"	7'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	11'-0"

DEAD LOAD DEFLECTION TABLE

Beam	Span 1			Span 2			Span 3			Span 4			Span 5		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
	T	C	T	T	C	T	T	C	T	T	C	T	T	C	T
G	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
H	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
J	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
K	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
L	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16

CONVEXITY

Beam	Span 1			Span 2			Span 3			Span 4			Span 5		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
G	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
H	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
J	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
K	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
L	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16



DEAD LOAD DEFLECTION AND CONVEXITY DIAGRAM

* At beam end diaphragm in Span 4

Deflections and convexity given for Beam H in Span 4 are at 1/4 points from beam end diaphragm to Pier 28BE.

Notes:
 Deflections and Convexities are given to nearest 1/16 inch.
 Negative values for convexity indicate displacement below the base line.
 T indicates deflection due to both concrete and steel.
 C indicates deflection due to concrete only.

Notes:
 For end crossframe, end dam, and curb plate details at the abutment see Ohio Standard Drawing SD-1-63, sheets 2 of 4 and 4 of 4. The main angle shown in the End Dam Data table shall be 8x6x1.
 For additional notes see sheet 433.

H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN UNIT 4-BE

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789 R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN: G.R.D. TRACED: CHECKED: REVIEWED: REVISIONS:
 DATE: 7-15-64 DATE: DATE: 12-23-64 DATE: SHEET 438



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

APPENDIX V – Fatigue Prone Details



Photo 1 – Partial length moment plate weld to beam



INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

APPENDIX VI – Element Level Inspection Data

Deck Items:		condition state			
		QTY.	1	2	3
12 - Reinforced Concrete Deck (sq. ft.)	67,032	62,819	1,171	2,850	192
805 - Wearing Surface - Monolithic Concrete (sq. ft.)	68,951	60,329	8,317	305	0
300 - Strip Seal Expansion Joint (ft.)	267	0	199	45	23
331 - Reinforced Concrete Bridge Railing (ft.)	3,838	2,583	729	526	0
815 - Drainage (each)	18	6	4	6	2

Superstructure Items:		condition state			
		QTY.	1	2	3
107 - Steel Open Girder/Beam (ft.)	11,371	10,806	565	0	0
515 - Steel Protective Coating (sq. ft.)	127,657	117,537	9,036	1,084	0
311 - Movable Bearing (each)	160	86	57	17	0
820 - Steel Seated-Hinge Assembly (each)	21	1	19	1	0

Substructure Items:		condition state			
		QTY.	1	2	3
205 - Reinforced Concrete Column (each)	47	41	2	4	0
210 - Reinforced Concrete Pier Wall (ft.)	157	70	87	0	0
215 - Reinforced Concrete Abutment (ft.)	126	71	21	34	0
234 - Reinforced Concrete Pier Cap (ft.)	771	507	202	62	0
830 - Abutment Backwall (ft.)	126	106	20	0	0

Approach Roadway Items:		condition state			
		QTY.	1	2	3
321 - Reinforced Concrete Approach Slab (sq. ft.)	2,259	2,024	24	199	12

Deck TOTALS:	condition state				
	QTY.	1	2	3	4
12 - Reinforced Concrete Deck (sq. ft.)	67,032	62,819	1,171	2,850	192
805 - Wearing Surface - Monolithic Concrete (sq. ft.)	68,951	60,329	8,317	305	0
300 - Strip Seal Expansion Joint (ft.)	267	0	199	45	23
331 - Reinforced Concrete Bridge Railing (ft.)	3,838	2,583	729	526	0
815 - Drainage (each)	18	6	4	6	2

Deck Subtotals:

Span 8:

12 - Reinforced Concrete Deck (sq. ft.)
805 - Wearing Surface - Monolithic Concrete (sq. ft.)
300 - Strip Seal Expansion Joint (ft.)
331 - Reinforced Concrete Bridge Railing (ft.)
815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		16		
		37	5	
		38	12	
		26	6	
			2	

Span 9:

12 - Reinforced Concrete Deck (sq. ft.)
805 - Wearing Surface - Monolithic Concrete (sq. ft.)
300 - Strip Seal Expansion Joint (ft.)
331 - Reinforced Concrete Bridge Railing (ft.)
815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		40		
		275		
		39	18	

Span 10:

12 - Reinforced Concrete Deck (sq. ft.)
805 - Wearing Surface - Monolithic Concrete (sq. ft.)
300 - Strip Seal Expansion Joint (ft.)
331 - Reinforced Concrete Bridge Railing (ft.)
815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		32		
		87	1	
		24	27	

Span 11:

12 - Reinforced Concrete Deck (sq. ft.)
805 - Wearing Surface - Monolithic Concrete (sq. ft.)
300 - Strip Seal Expansion Joint (ft.)
331 - Reinforced Concrete Bridge Railing (ft.)
815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		56		
		202		
		28	24	

Span 12:

12 - Reinforced Concrete Deck (sq. ft.)
805 - Wearing Surface - Monolithic Concrete (sq. ft.)
300 - Strip Seal Expansion Joint (ft.)
331 - Reinforced Concrete Bridge Railing (ft.)
815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		96	2	
		3		
		19	35	

Span 13:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		8	50	
		112		
		41	4	5
		33	3	

Span 14:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		48	4	
		552	62	
		32	48	
		1	1	

Span 15:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		48	50	
		552	1	
		24	45	

Span 16:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		421	15	
		28	30	
			2	

Span 17:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		64	10	
		548		
		16	17	

Span 18BW:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		8	15	
		9	15	

Span 19BW:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		16		
		41	13	
		22		16
		20	26	
			1	1

Span 20BW:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		16		
		2	1	
		18	52	

Span 21BW:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		8	4	
		24	14	
		23	22	

Span 18BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		30	153	
		48		
		17	7	2
		9		

Span 19BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		24	360	
		515	8	
		23	1	

Span 20BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		10	20	
		375		
		12	15	

Span 21BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		60	440	192
		451		
		37	16	
		1		

Span 22BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		148	480	
		753		
		28	26	

Span 23BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		122	420	
		75	10	
		50	18	

Span 24BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		16	180	
		389	174	
		25	1	
		57	13	

Span 25BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		24	340	
		398	4	
		31	30	
				1

Span 26BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		60	320	
		750	2	
		73	12	

Span 27BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		205		
		975		
		32	8	
		1		

Span 28BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		6		
		650		
		15	15	
		1		

Span 29BE:

- 12 - Reinforced Concrete Deck (sq. ft.)
- 805 - Wearing Surface - Monolithic Concrete (sq. ft.)
- 300 - Strip Seal Expansion Joint (ft.)
- 331 - Reinforced Concrete Bridge Railing (ft.)
- 815 - Drainage (each)

QTY.	condition state			
	1	2	3	4
		10	2	
		105	9	
		32	7	
		23	4	

Superstructure TOTALS:	condition state				
	QTY.	1	2	3	4
107 - Steel Open Girder/Beam (ft.)	11,371	10,806	565	0	0
515 - Steel Protective Coating (sq. ft.)	127,657	117,537	9,036	1,084	0
311 - Movable Bearing (each)	160	86	57	17	0
820 - Steel Seated-Hinge Assembly (each)	21	1	19	1	0

Superstructure Subtotals:

Beam Span 8:

107 - Steel Open Girder/Beam (ft.)
 515 - Steel Protective Coating (sq. ft.)
 311 - Movable Bearing (each)
 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		2		
		44		
		6	2	

Beam Span 9:

107 - Steel Open Girder/Beam (ft.)
 515 - Steel Protective Coating (sq. ft.)
 311 - Movable Bearing (each)
 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		17		
		305		

Beam Span 10:

107 - Steel Open Girder/Beam (ft.)
 515 - Steel Protective Coating (sq. ft.)
 311 - Movable Bearing (each)
 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		12		
		218		
		1		

Beam Span 11:

107 - Steel Open Girder/Beam (ft.)
 515 - Steel Protective Coating (sq. ft.)
 311 - Movable Bearing (each)
 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		16		
		299		
		2		

Beam Span 12:

107 - Steel Open Girder/Beam (ft.)
 515 - Steel Protective Coating (sq. ft.)
 311 - Movable Bearing (each)
 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		16		
		299		
		3		

Beam Span 13:

107 - Steel Open Girder/Beam (ft.)
 515 - Steel Protective Coating (sq. ft.)
 311 - Movable Bearing (each)
 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		19		
		308		
		2	2	
		7		

Beam Span 14:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		16		
		335		
		4		

Beam Span 15:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		19		
		341		

Beam Span 16:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		19		
		342		
		6	2	

Beam Span 17:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		71		
		1,274		
		6		

Beam Span 18BW:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		51		
		926		
		5		

Beam Span 19BW:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		62		
		582	573	
		4	1	

Beam Span 20BW:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		28		
			511	

Beam Span 21BW:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		1	5	

Beam Span 18BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		4		
		73		
		4		

Beam Span 19BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		26		
		535		
		4		

Beam Span 20BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		18		
		325		

Beam Span 21BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		18		
		327		
		3		

Beam Span 22BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		18		
		327		

Beam Span 23BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		18		
		325		
		3		

Beam Span 24BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		44		
		557		
		3		
		4		

Beam Span 25BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		18		
		365		
		2		

Beam Span 26BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		9		
		163		
		2		

Beam Span 27BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		10		
		185		
		2		

Beam Span 28BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		23		
		419		
		1	2	

Beam Span 29BE:

- 107 - Steel Open Girder/Beam (ft.)
- 515 - Steel Protective Coating (sq. ft.)
- 311 - Movable Bearing (each)
- 820 - Steel Seated-Hinge Assembly (each)

QTY.	condition state			
	1	2	3	4
		9		
		164		
		1	4	

Substructure Totals:	condition state				
	QTY.	1	2	3	4
205 - Reinforced Concrete Column (each)	47	41	2	4	0
210 - Reinforced Concrete Pier Wall (ft.)	157	70	87	0	0
215 - Reinforced Concrete Abutment (ft.)	126	71	21	34	0
234 - Reinforced Concrete Pier Cap (ft.)	771	507	202	62	0
830 - Abutment Backwall (ft.)	126	106	20	0	0

Substructure Subtotals:

Rear (South) Abutment B:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
		1		
		5		

Pier 8:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
		49	6	

Pier 9:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
		26	8	

Pier 10:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
			6	

Pier 11:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
		1		
		36		

Pier 12:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
		2		

Pier 13:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
			1	
		30	25	

Pier 14:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
			1	
		28		

Pier 15:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
			1	
		27		

Pier 16:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
			1	
		32		
			8	

Pier 17:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

QTY.	condition state			
	1	2	3	4
			3	

Pier 18BW:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4
		2	6	

Pier 19BW:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4
		1		

Pier 20BW:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4

Forward (North Mainline)

Abutment BW:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4
		9	34	
		12		

Pier 18BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4

Pier 19BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4

Pier 20BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4
		2		

Pier 21BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4

Pier 22BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4

Pier 23BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4

Pier 24BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4
		12		

Pier 25BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

condition state				
QTY.	1	2	3	4
		20		

Pier 26BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

	condition state			
QTY.	1	2	3	4
		2		

Pier 27BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

	condition state			
QTY.	1	2	3	4
		3		

Pier 28BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

	condition state			
QTY.	1	2	3	4
		18		

Forward (North Ramp) Abutment BE:

- 205 - Reinforced Concrete Column (each)
- 210 - Reinforced Concrete Pier Wall (ft.)
- 215 - Reinforced Concrete Abutment (ft.)
- 234 - Reinforced Concrete Pier Cap (ft.)
- 830 - Abutment Backwall (ft.)

	condition state			
QTY.	1	2	3	4
		11		
		3		

Approach Roadway TOTALS:	condition state				
	QTY.	1	2	3	4
321 - Reinforced Concrete Approach Slab (sq. ft.)	2,259	2,024	24	199	12

Approach Roadway Subtotals:

Rear (South) Approach B:

321 - Reinforced Concrete Approach Slab (sq. ft.)

QTY.	condition state			
	1	2	3	4

Forward (North Mainline) Approach

BW:

321 - Reinforced Concrete Approach Slab (sq. ft.)

QTY.	condition state			
	1	2	3	4
		12	99	

Forward (North Ramp) Approach

BE:

321 - Reinforced Concrete Approach Slab (sq. ft.)

QTY.	condition state			
	1	2	3	4
		12	100	12