Appendix D: Castle Bridge Visual Inspection Memorandum

A BSC Structural Engineer conducted a visual inspection of the remnants of Castle Bridge which once carried Old Route 8 over the Naugatuck River. The bridge was originally built in 1927, and was demolished in 1972 by the USACE after Route 8 was relocated up and out of the impoundment for Thomaston Dam. The inspection was conducted to ascertain the condition of the remaining abutments and piers, and the likelihood that those structural elements could be reused to carry a pedestrian span over the River.

The structural engineer's report of findings is presented herein.

BSC GROUP

MEMORANDUM

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To:	Bill Paille, PE	**Date:**	July 13, 2018
From:	David D'Amato, PE	**Proj. No.**	8366102
Re:	Castle Bridge Substructure Visual Inspection Findings		

cc: 8366102 Project File

Background:

BSC performed an onsite visual inspection of the remaining Castle Bridge substructures on July 13, 2018. The primary purpose of the inspection was to assess potential rehabilitation/reuse of the existing substructures for support of a prefabricated pedestrian bridge structure.

The original structure, built in 1927, carried the former Route 8 alignment over the Naugatuck River in a heavily skewed, three span arangement, as follows:

Span 1 (South Abutment to Pier No. 1): 50 foot, simply supported, steel girder/floorbeam/stringer superstructure with a cast-in-place, reinforced concrete deck, which spanned the New York, New Haven and Hartford Railroad.

Span 2 (Pier No. 1 to Pier No. 2): 130 foot, simply supported, steel deck truss/floorbeam superstructure with a cast-in-place, reinforced concrete deck, which spanned the Naugatuck River.

Span 3 (Pier No. 2 to North Abutment): Same as Span 2.

Based on the existing plans, all substructure elements were constructed from cast-in-place, reinforced concrete and were founded on spread footings with portions of the steel sheeting, used for excavation support, left-in-place.

North/South Abutment Inspection Findings:

There were no remains of the original north abutment found during the inspection. A portion of the eastern wingwall is the only remining portion of the original south abutment.

Pier No. 1 Inspection Findings:

In general, Pier No. 1 is in satisfactory condition. Concrete sounding revealed some minor hollow/delaminated areas, with isolated areas of cracking, spalling and efflorescence observed. There was no apparent evidence of settlement, or rotation of Pier No. 1 – accessible portions of the stem were measured to be plumb.

Rehabilitation/reuse of Pier No. 1 is considered feasible.

Pier No. 2. Inspection Findings:

In general, Pier No. 2 is in fair condition, with similar, but more advanced deterioration than was noted at Pier No. 1, with some isolated areas of heavy spalling observed. There was no apparent evidence of settlement, or rotation of Pier No. 2 – accessible portions of the stem were measured to be plumb.

Rehabilitation/reuse of Pier No. 2 is considered feasible.

Photo 1 – Remaining South Abutment Wingwall

Photo 2 – Pier No. 1 North Elevation

Photo 3 – Pier No. 1 South Elevation

Photo 4 – Pier No. 1 Upper Bridge Seat

Photo 5 – Pier No. 1 Concrete Spall

Photo 6 – Pier No. 1 Minor Cracking with Efflorescence

Photo 1 – Pier No. 2 North Elevation

Photo 2 – Pier No. 2 Large Concrete Spall

Photo 3 – Pier No. 2 Spalling with Efflorescence

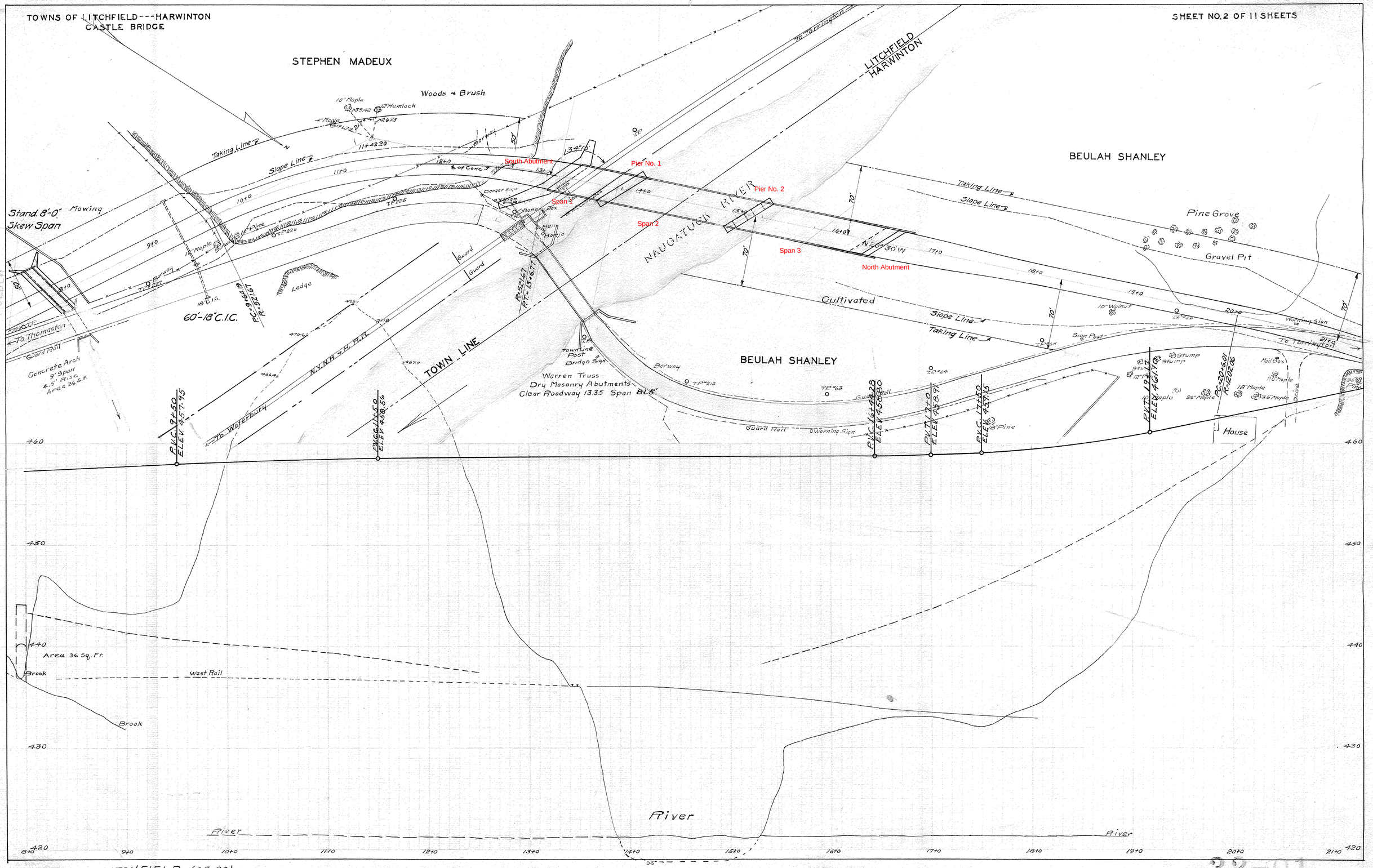
Photo 4 – Pier No. 2 Spalling with Efflorescence

Photo 5 – Pier No. 2 Large Concrete Spall

Photo 6 – Pier No. 2 Sheeting Left-In-Place

TOWNS OF LITCHFIELD---HARWINTON
CASTLE BRIDGE

SHEET NO. 2 OF 11 SHEETS



LITCHFIELD (27-29)

MAP 27 CONT. POCKET FOLDER

-27-

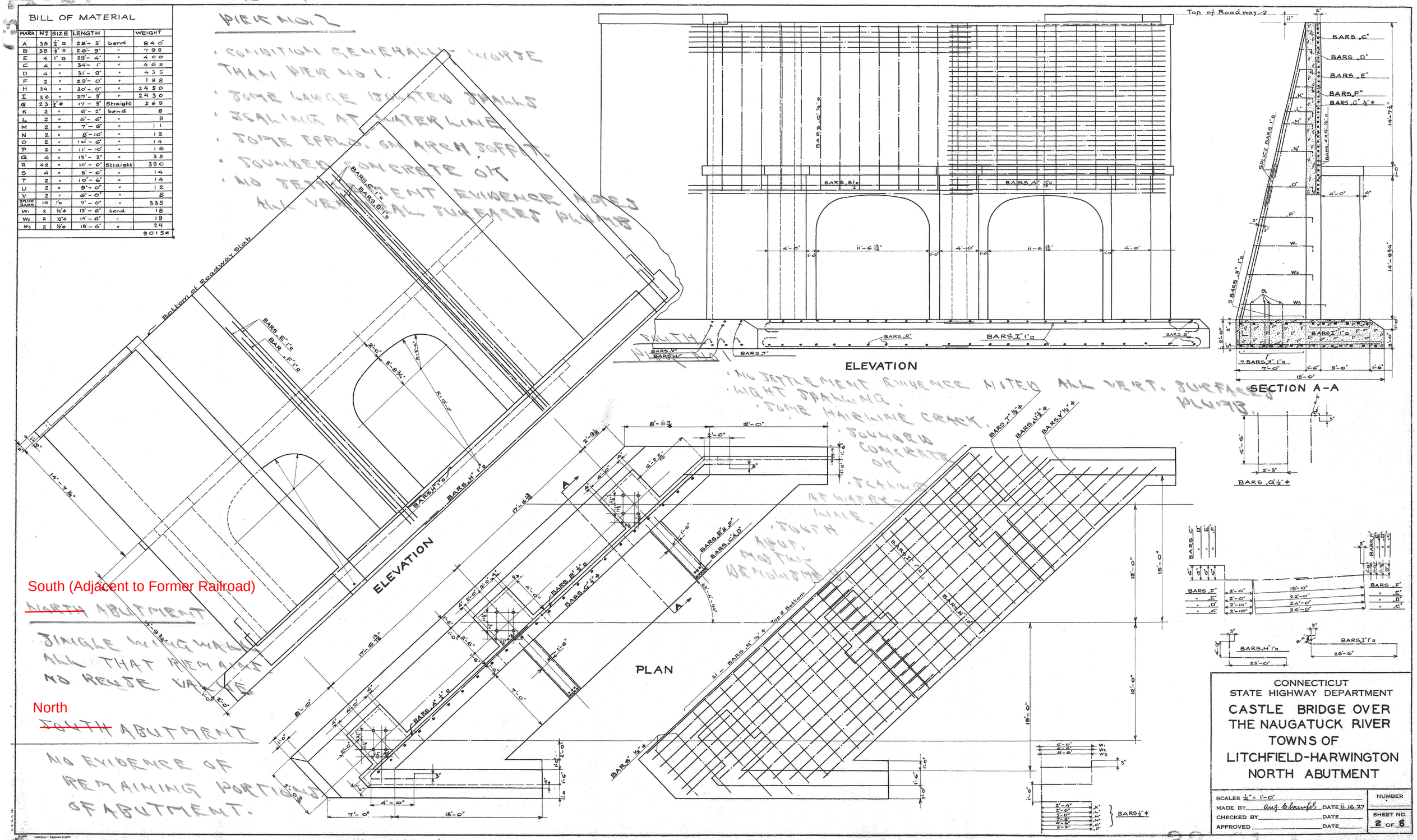
NORTH.

PIER NO. 2

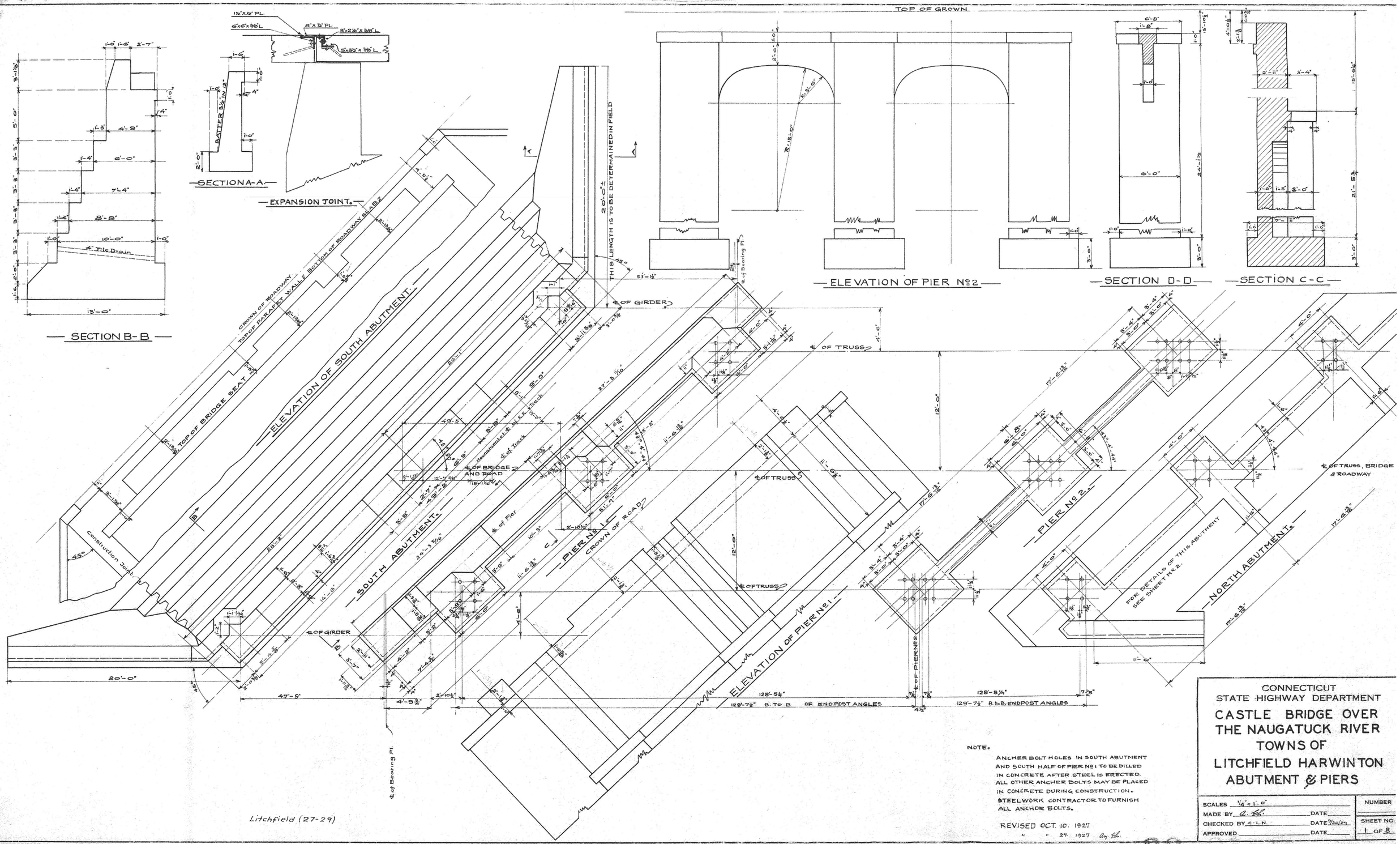
· CONDITION GENERALLY WORSE THAN PIER NO 1.
· SOME LARGE ISOLATED VOIDS
· SCALING AT WATER LINE
· SOME EFFLO. ON ARCH SOFFIT.
· FOUNDED CONCRETE OK
· NO SETTLEMENT EVIDENCE NOTED
ALL VERTICAL SURFACES PLUMB

BILL OF MATERIAL

MARK	No	SIZE	LENGTH		WEIGHT
A	35	½" □	28'- 3"	bend	840
B	35	½" □	26'- 9"	"	795
E	4	1" □	29'- 4"	"	400
C	4	"	34'- 1"	"	465
D	4	"	31'- 9"	"	435
F	2	"	29'- 0"	"	198
H	24	"	30'- 0"	"	2450
I	26	"	27'- 3"	"	2430
G	23	½" ϕ	17'- 3"	Straight	265
K	2	"	6'- 2"	bend	8
L	2	"	6'- 6"	"	9
M	2	"	7'- 6"	"	11
N	2	"	8'- 10"	"	12
O	2	"	10'- 6"	"	14
P	2	"	11'- 10"	"	16
Q	4	"	13'- 3"	"	35
R	42	"	14'- 0"	Straight	390
S	4	"	5'- 0"	"	14
T	2	"	10'- 6"	"	14
U	2	"	9'- 0"	"	12
V	2	"	6'- 0"	"	8
SPLICE BARS	14	1" □	7'- 0"	"	335
W1	2	½" ϕ	13'- 6"	bend	18
W2	2	½" ϕ	14'- 6"	"	19
W3	2	½" ϕ	18'- 6"	"	24
					9015#



Litchfield (27-29)



NOTE.

ANCHER BOLT HOLES IN SOUTH ABUTMENT AND SOUTH HALF OF PIER No 1 TO BE DILLED IN CONCRETE AFTER STEEL IS ERECTED. ALL OTHER ANCHER BOLTS MAY BE PLACED IN CONCRETE DURING CONSTRUCTION. STEELWORK CONTRACTOR TO FURNISH ALL ANCHOR BOLTS.

REVISED OCT. 10. 1927
" " 27. 1927

CONNECTICUT
STATE HIGHWAY DEPARTMENT

CASTLE BRIDGE OVER THE NAUGATUCK RIVER TOWNS OF LITCHFIELD HARWINTON

ABUTMENT & PIERS

SCALES 1/4" = 1'-0"		NUMBER
MADE BY	DATE	
CHECKED BY C.L.N.	DATE 9/20/27	SHEET NO.
APPROVED	DATE	1 OF 8

STANDARD NO.

Litchfield (27-29)