Re-Evaluation Bridge Inspection Report

- 2014 -

Piedmont & Northern Railway

Mt. Holly Subdivision

Mt. Holly, NC to Gastonia, NC

Osmose Railroad Services, Inc.

Piedmont & Northern Railway

Monitoring Report

Line: Mt. Holly Subdivision

Bridge Number	Mile Post	Section Number	Inspection Date	Bridge Member	Finding Notes	Priority	Recommendations	Monitor Frequency	Date Monitored/ Initials	Date Monitored/ Initials	Date Monitored/ Initials	Date Monitored/ Initials
19.30	19.30	2	08/11/2014	General Section		3	Perform an Underwater Inspection of Substructure	180				

Piedmont & Northern Railway

BRIDGE LIST

LINE: Mt. Holly Subdivision — Mt. Holly, NC - Gastonia, NC

Bridge NO.	Location	ST	Mile Post	SEC NO.	Spans	Type	Timber/ Steel Bents	Timber Piers	Concrete/ Steel Piers	Abutments	Year Const	SEC Length	AVG Span Length	MAX Height EST
19.30	Ranlo	NC	19.30	1	1	DPG				1		81	81	90
19.30	Ranlo	NC	19.30	2	2	Deck Truss			3			296	148	90
19.30	Ranlo	NC	19.30	3	1	DPG				1		81	81	90
21.50	Gastonia	NC	21.50	1	5	Beam Span			4	2		264	53	20

Piedmont & Northern Railway

Bridge Inventory

Line/Subdivision	Bridge Number	Section Number	Mile Post	Town/Station	State	County	Type	NO Spans	NO Tracks	Section Length	Avg. Span Length	Max. Height Est.	Deck Type	Year Const.	Feature Crossed	Latitude	Longitude
Mt. Holly Subdivision	19.30	1	19.30	Ranlo	NC	Gaston	DPG	1	1	81	81	90	Open		South Fork River	N 35 16.105	W 81 5.079
Mt. Holly Subdivision	19.30	2	19.30	Ranlo	NC	Gaston	Deck Truss	2	1	296	148	90	Open		South Fork River	N 35 16.105	W 81 5.079
Mt. Holly Subdivision	19.30	3	19.30	Ranlo	NC	Gaston	DPG	1	1	81	81	90	Open		South Fork River	N 35 16.105	W 81 5.079
Mt. Holly Subdivision	21.50	1	21.50	Gastonia	NC	Gaston	Beam Span	5	1	264	53	20	Ballast		Interstate 85	N 35 16.365	W 81 9.796

Span Lengths and Detailed Superstructure and Substructure information are located in individual bridge reports.

RECOMMENDATIONS

The following is a summary of our recommendations for repairs. These repair recommendations have been made to most economically correct the existing bridge problems. Although not all deficiencies require immediate attention to maintain the structural integrity of the bridges, we do feel that these recommendations should be carried out before failure occurs.

A priority rating for repairs has been established, which will help you to focus on the most critical situations first.

An inspection sheet has been included for the structure inspected, summarizing the defects found, repair recommendations and priorities for implementing repairs. The priority rating is a measure of the level of importance associated with repairing defective members or conditions found at the time of the inspection. All high priority conditions should be repaired in a timely fashion, since the seriousness of a particular defect can become greater over time, and with it, the structure's repair priority. Railroad Bridge components are interactive with each other structurally; therefore, substandard members can affect the overall structural integrity of a Railroad Bridge. **Priority 1 repairs must be made before running trains and Priority 2 repairs should be made as soon as possible.**

The priority ratings are as follows:

PRIORITY 1 - **Emergency**. Stop operation over Railroad Bridge and perform repairs immediately.

PRIORITY 2 - Condition is structurally unsound and could cause failure at any time. Repair as soon as possible. Condition must be monitored by Railroad personnel every ninety days or at a frequency determined by the Railroad Bridge Engineer until repairs have been completed.

PRIORITY 3 - Condition could become structurally unsound and should be monitored by Railroad personnel every six months or at a frequency determined by the Railroad Bridge Engineer. Condition may need repair in the near future.

PRIORITY 4 - Condition is substandard and may require repairs in the future.

PRIORITY 5 - Condition found that does not affect the safety of the Railroad Bridge at this time.

All recommendations and priority ratings are the result of good faith subjective judgments of Inspectors based on conditions present at the time of this inspection, utilizing industry standards and procedures as well as information made available to Osmose by the Railroad. Recommendations and priority ratings are based on defects found that may limit or adversely affect the original capacity or structural integrity of the Railroad Bridge. Due to the potential for inaccessible or hidden conditions, not all defective members or conditions will be found. No capacity or load rating of the Railroad Bridge has been performed. Conditions and standards can and do change, so frequent re-inspection and evaluation is recommended. Railroad Bridge components are interactive with each other structurally; therefore, substandard members can affect the overall structural integrity of a Railroad Bridge. Osmose makes no warranty or guarantee, express or implied, as to structural integrity and Osmose assumes no responsibility or liability whatsoever for any loss or damage incurred as a result of any performance failure of any Railroad Bridge or structure.

Piedmont & Northern Railway

Recommendations Listed By Bridge

Line: Mt. Holly Subdivision — Mt. Holly, NC - Gastonia, NC

Bridge Number: 19.30 **Mile Post: 19.30** **Section #: 1**

Item	Recommended Work	Who Fixes	Priority
1	No previous priorities were noted, continue to inspect bridge on a regular railroad inspection schedule	Railroad	5

Bridge Number: 19.30 **Mile Post: 19.30** **Section #: 2**

Item	Recommended Work	Who Fixes	Priority
1	Perform an Underwater Inspection of Substructure	Railroad	3

Bridge Number: 19.30 **Mile Post: 19.30** **Section #: 3**

Item	Recommended Work	Who Fixes	Priority
1	Add ballast and tamp up approach	Railroad	4

Bridge Number: 21.50 **Mile Post: 21.50** **Section #: 1**

Item	Recommended Work	Who Fixes	Priority
1	Continue to inspect bridge on a regular railroad inspection schedule	Railroad	5

RECOMMENDATIONS

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Piedmont & Northern Railway

Recommendations Listed By Priority

Line: Mt. Holly Subdivision — Mt. Holly, NC - Gastonia, NC

Priority: 3

Bridge Number	Mile Post	Section #	Recommended Work	Who Fixes
19.30	19.30	2	Perform an Underwater Inspection of Substructure	Railroad

Piedmont & Northern Railway

Recommendations Listed By Priority

Line: Mt. Holly Subdivision — Mt. Holly, NC - Gastonia, NC

Priority: 4

Bridge Number	Mile Post	Section #	Recommended Work	Who Fixes
19.30	19.30	3	Add ballast and tamp up approach	Railroad

Piedmont & Northern Railway

Recommendations Listed By Priority

Line: Mt. Holly Subdivision — Mt. Holly, NC - Gastonia, NC

Priority: 5

Bridge Number	Mile Post	Section #	Recommended Work	Who Fixes
19.30	19.30	1	No previous priorities were noted, continue to inspect bridge on a regular railroad inspection schedule	Railroad
21.50	21.50	1	Continue to inspect bridge on a regular railroad inspection schedule	Railroad

RECOMMENDATIONS

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Piedmont & Northern Railway

(2014) Re-Evaluation Inspection

Bridge 19.30 Section 1

Location

Town/Station: Ranlo	State: NC
Latitude: N 35 16.105	Longitude: W 81 5.079

Access:

Notes:

Description

Type: DPG	Deck Type: Open
Number of Spans: 1	Number of Tracks: 1
Height: 90'	Length: 81'
Year Constructed:	Feature Crossed: South Fork River
Bents/Piers/Abutments in Water: 0	Max Water Depth: 0
Scour Susceptible: No	Skewed: No
Tangent/Curve: Tangent	Super Elevation Direction:
Super Elevation: No	Walkway: No
Fiber Optics/Other: No/No	GuardRail: No
Mileage Increases: North to South	Members Numbered: East to West

Lead Inspector: S. Radlinger

Date Approved: 09/25/2014

Piedmont & Northern Railway

Inspection Summary

Line: Mt. Holly Subdivision

Bridge # 19.30

Milepost: 19.30

Section: 1

Type: DPG

Location: Ranlo, NC

Inspection Date(s): 08/11/2014

Inspector: S. Radlinger

Inspection Type: Re-Evaluation

Critical Review By RBE: No

Findings:	Finding Notes:
Abutment 1	
Bearings	Bearings are extended to the North
Approach	OK
Ties	OK
Parapet Ties	OK
Guard Timber	OK
Wingwalls	OK
Platform	OK
Other	Limited access to bridge due to repairs at the time of inspection

Recommended Work:

Item#	Priority	Who Fixes	Repair Description
1	5	Railroad	No previous priorities were noted, continue to inspect bridge on a regular railroad inspection schedule

Completed Work:

Date	Item#	Who Fixed	Repair Description

Bridge 19.30 Section 1 Deck View

Bridge 19.30 Section 1 - New Paint on Girder

Bridge 19.30 Section 1 Typical Abutment Bearing

Piedmont & Northern Railway

Line: Mt. Holly Subdivision

Structure Report

Bridge # 19.30

Milepost: 19.30 | **Section: 1**

Type: DPG | **Location: Ranlo, NC**

Inspection Date(s): 08/11/2014 | **Inspector: S. Radlinger**

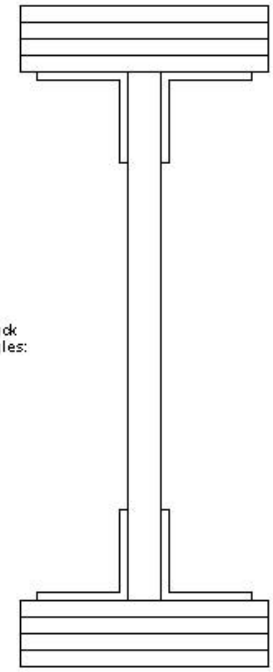
Inspection Type: Re-Evaluation | **Critical Review By RBE: N**

Structure	Member	Status	Remarks	Dimensions (WxDxL)
Abutment 1				
	Bearings		Bearings are extended to the North	
	Sleeper Timber			12"x9.5"x19'-4"
Span 1		OK		80'-9"
	Bracing	OK		
	Girders	OK		
Approach		OK		
Ties		OK	Tie Count: 95, Various Sizes OK	
Parapet Ties		OK		
Guard Timber		OK		
Wingwalls		OK		
Platform		OK		
Other			Limited access to bridge due to repairs at the time of inspection	

CN - Cornering	G/L - Groundline Area	P/W - Heavy Duty Pile Wrap	SR - Shell Rot	Mileage Increases from: North
CR- Crushing	H - Heart	PE - Possible Exception	ST - Shell Thickness	
D/P - Drift Pin	HS - (Cap) Heart Separation	PP - Previously Posted	V - Void	Members are Numbered From: East
DP - Decay Pocket	HS - (Stringer) Horizontal Shear	RS - Ring Separation	VE - Visual Exception	
DR - Decay Ring	MD - Mechanical Damage	S - Min. or Max Shell	VS - Vertical Split	
E - Exception	O/W - OsmoWeld	SLCR - Slight Crushing	WPH - Wood Pecker Hole	*(Railroad Directions)*

Piedmont & Northern Railway

Bridge Number: 19.30, Section Number: 1, DPG



Back - to - Back of Flange Angles: 95.5"

Coverplate 4: 16" width x 0.625" thickness x 47' length

Coverplate 3: 16" width x 0.625" thickness x 32' length

Coverplate 2: 16" width x 0.625" thickness x 21' length

Coverplate 1: 16" width x 0.625" thickness x 11' length

Top Flange Angles: 6" x 6" x 0.5" (vertical leg x horizontal leg x thickness)

Web Thickness: 0.25"

Centerline To Centerline: 7'

Girder Spacing:

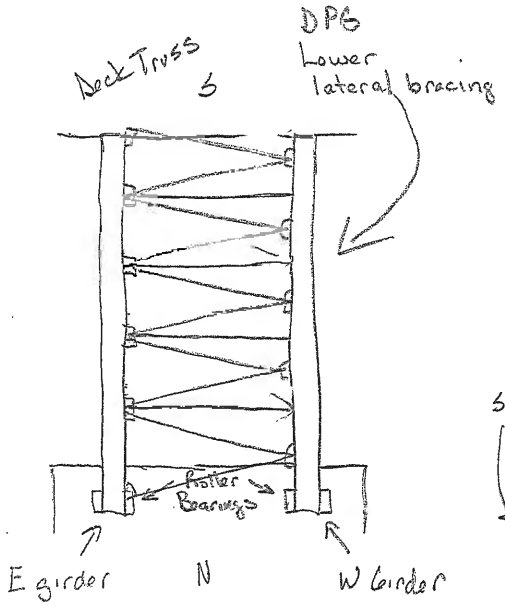
Bottom Flange Angles: 6" x 6" x 0.5" (vertical leg x horizontal leg x thickness)

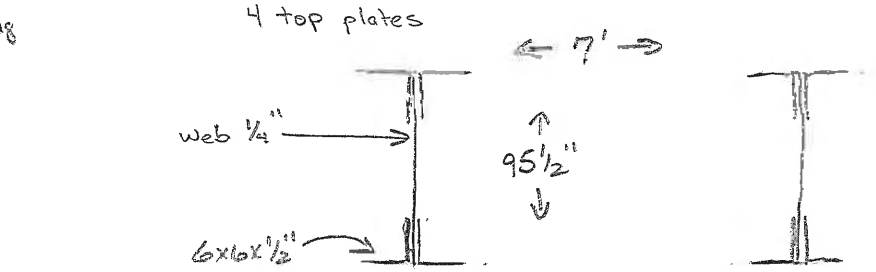
Coverplate 1: 16" width x 0.625" thickness x 69'-9" length

Coverplate 2: 16" width x 0.625" thickness x 59'-9" length

Coverplate 3: 16" width x 0.625" thickness x 48'-8" length

Coverplate 4: 16" width x 0.625" thickness x 33'-9" length





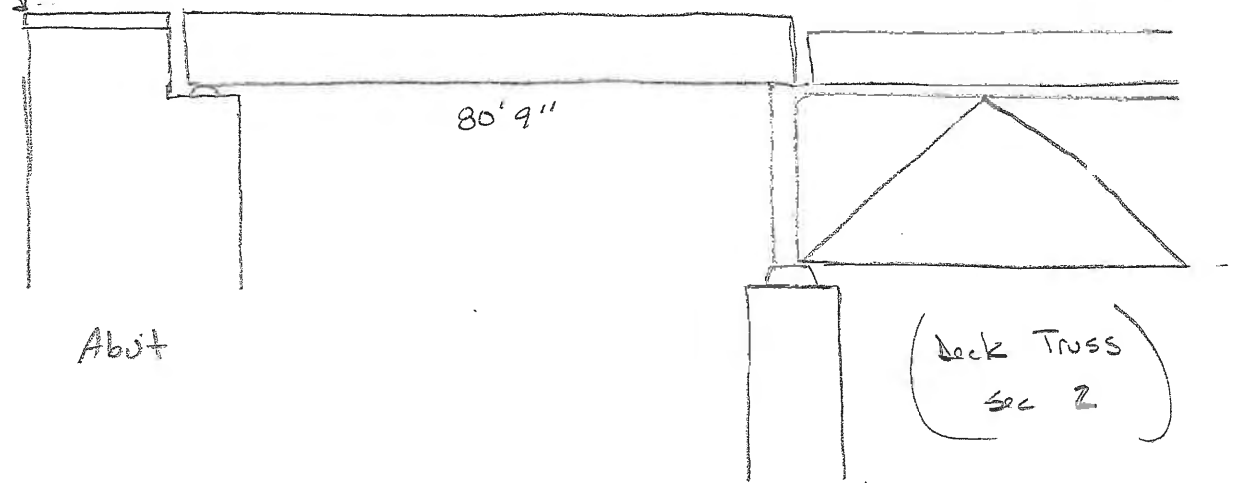
4 bot plates 5/8"T x 16"w x 69'9"
x 59'9"
x 48'8"
x 33'9"

DP6

Br 19.30 Sec 1

1 Abut
1 span

Cover plates #1 (-11')
#2 (-21')
#3 (-32')
#4 (-47')



Line Runs N to S

CUSTOMER	STRUCTURE 19.30 sec 1
LOCATION	JOB NO.
DESCRIPTION	DATE
	CALCULATED BY
	APPROVED BY

Osmose®
RAILROAD SERVICES, INC.

Piedmont & Northern Railway

(2014) Re-Evaluation Inspection

Bridge 19.30 Section 2

Location

Town/Station: Ranlo	State: NC
Latitude: N 35 16.105	Longitude: W 81 5.079

Access:

Notes:

Description

Type: Deck Truss	Deck Type: Open
Number of Spans: 2	Number of Tracks: 1
Height: 90'	Length: 296'
Year Constructed:	Feature Crossed: South Fork River
Bents/Piers/Abutments in Water: 1	Max Water Depth: 0
Scour Susceptible: Yes	Skewed: No
Tangent/Curve: Tangent	Super Elevation Direction:
Super Elevation: No	Walkway: No
Fiber Optics/Other: No/No	GuardRail: No
Mileage Increases: North to South	Members Numbered: East to West

Lead Inspector: S. Radlinger

Date Approved: 09/25/2014

Piedmont & Northern Railway

Inspection Summary

Line: Mt. Holly Subdivision

Bridge # 19.30

Milepost: 19.30

Section: 2

Type: Deck Truss

Location: Ranlo, NC

Inspection Date(s): 08/11/2014

Inspector: S. Radlinger

Inspection Type: Re-Evaluation

Critical Review By RBE: No

Findings:	Finding Notes:
Span 1	Minor corrosion to all Steel throughout
Floor System	Minor pitting to Top and Bottom Flange Angles of Stringers
Span 2	Minor corrosion to all Steel throughout
Floor System	Minor pitting to Top and Bottom Flange Angles of Stringers
Ties	OK
Guard Timber	OK
Walkout Platforms	OK
Other	Limited access to bridge due to repairs at the time of inspection

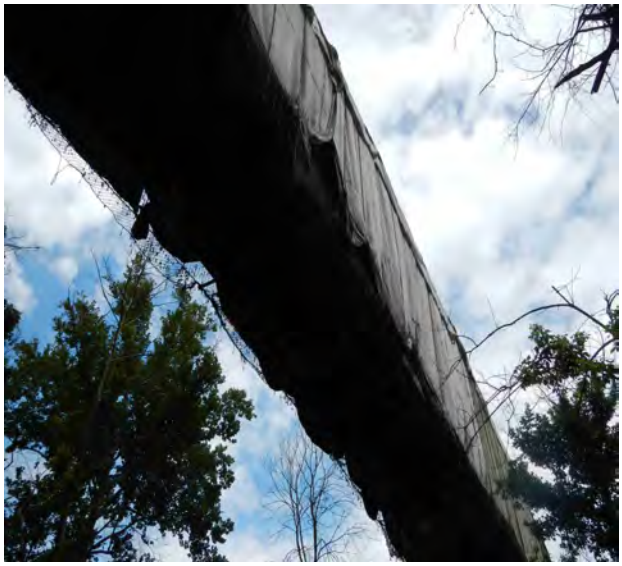
Recommended Work:

Item#	Priority	Who Fixes	Repair Description
1	3	Railroad	Perform an Underwater Inspection of Substructure

Completed Work:

Date	Item#	Who Fixed	Repair Description

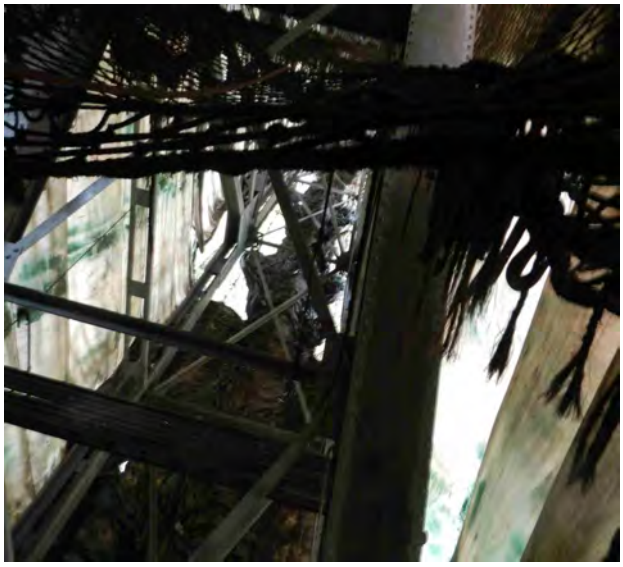
Bridge 19.30 Section 2 Deck View



Bridge 19.30 Section 2 View from Below

Bridge 19.30 Section 2 View of Stringer Top Lateral Bracing

Bridge 19.30 Section 2 View Inside Canvas



Bridge 19.30 Section 2 View Inside Canvas

Bridge 19.30 Section 2 Typical Refuge Platform

Bridge 19.30 Section 2 Typical Pier

Piedmont & Northern Railway

Line: Mt. Holly Subdivision

Structure Report

Bridge # 19.30

Milepost: 19.30 | **Section: 2**

Type: Deck Truss | **Location: Ranlo, NC**

Inspection Date(s): 08/11/2014 | **Inspector: S. Radlinger**

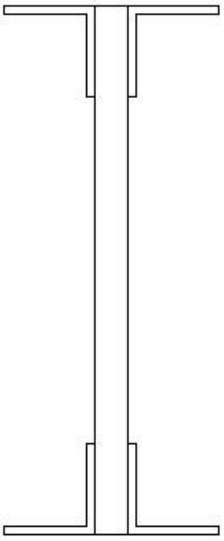
Inspection Type: Re-Evaluation | **Critical Review By RBE: N**

Structure	Member	Status	Remarks	Dimensions (WxDxL)
Concrete Pier 1		OK		
	Bearings	OK		
Concrete Pier 2		OK	H2O	
	Bearings	OK		
Concrete Pier 3		OK		
	Bearings	OK		
Span 1			Minor corrosion to all Steel throughout	
	Bracing	OK		
	Chords	OK		
	Diagonals	OK		
	Floor System		6 Panels - 24'-8" Each Minor pitting to Top and Bottom Flange Angles of Stringers	
	Verticals	OK		
Span 2			Minor corrosion to all Steel throughout	
	Bracing	OK		
	Chords	OK		
	Diagonals	OK		
	Floor System		6 Panels - 24'-8" Each Minor pitting to Top and Bottom Flange Angles of Stringers	
	Verticals	OK		
Ties		OK	Tie Count: 276, 23 Ties Per Panel OK	8"x12.5"x12'
Guard Timber		OK		
Walkout Platforms		OK	3 Total OK	
Other			Limited access to bridge due to repairs at the time of inspection	

CN - Cornering	G/L - Groundline Area	P/W - Heavy Duty Pile Wrap	SR - Shell Rot	Mileage Increases from: North
CR- Crushing	H - Heart	PE - Possible Exception	ST - Shell Thickness	
D/P - Drift Pin	HS - (Cap) Heart Separation	PP - Previously Posted	V - Void	Members are Numbered From: East
DP - Decay Pocket	HS - (Stringer) Horizontal Shear	RS - Ring Separation	VE - Visual Exception	
DR - Decay Ring	MD - Mechanical Damage	S - Min. or Max Shell	VS - Vertical Split	
E - Exception	O/W - OsmoWeld	SLCR - Slight Crushing	WPH - Wood Pecker Hole	*(Railroad Directions)*

Piedmont & Northern Railway

Bridge Number: 19.30, Section Number: 2, Stringers



Back - to - Back of Flange Angles: 4'

Top Flange Angles: 6" x 6" x 0.25" (vertical leg x horizontal leg x thickness)

Web Thickness: 0.5"
Centerline To Centerline: 7'
Girder Spacing:

Bottom Flange Angles: 6" x 6" x 0.25" (vertical leg x horizontal leg x thickness)

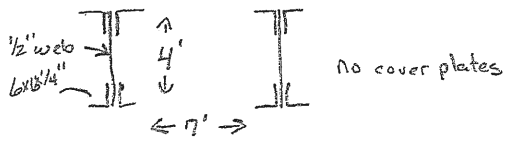
Br 19.30 Sec 2

2 spans

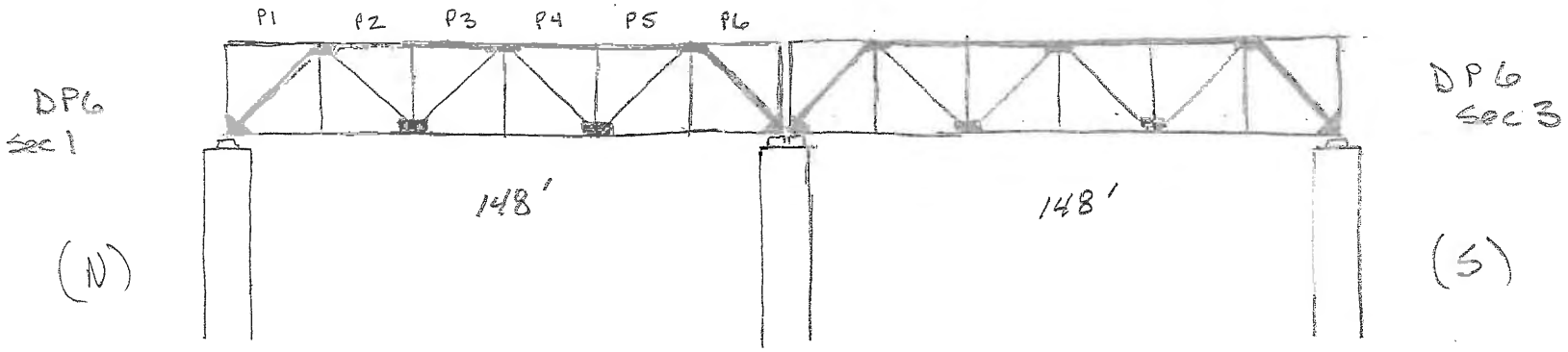
3 piers

(Pier 2 in water)

(strs are DP6's)



6 panels @ 24' 8"



90' Tall

Pier 1

Pier 2

(looking East)

3 walk out platforms

South Fork River

River flows from W to E

Osmose®
RAILROAD SERVICES, INC.

CUSTOMER _____ STRUCTURE 19.30 Sec 2

LOCATION _____ JOB NO. _____

DESCRIPTION _____ DATE _____

_____ CALCULATED BY _____

_____ APPROVED BY _____

Piedmont & Northern Railway

(2014) Re-Evaluation Inspection

Bridge 19.30 Section 3

Location

Town/Station: Ranlo
State: NC
Latitude: N 35 16.105
Longitude: W 81 5.079

Access:

Notes:

Description

Type: DPG
Deck Type: Open
Number of Spans: 1
Number of Tracks: 1
Height: 90'
Length: 81'
Year Constructed:
Feature Crossed: South Fork River
Bents/Piers/Abutments in Water: 0
Max Water Depth: 0
Scour Susceptible: No
Skewed: No
Tangent/Curve: Tangent
Super Elevation Direction:
Super Elevation: No
Walkway: No
Fiber Optics/Other: No/No
GuardRail: No
Mileage Increases: North to South
Members Numbered: East to West
Lead Inspector: S. Radlinger
Date Approved: 09/25/2014

Piedmont & Northern Railway

Inspection Summary

Line: Mt. Holly Subdivision

Bridge # 19.30

Milepost: 19.30

Section: 3

Type: DPG

Location: Ranlo, NC

Inspection Date(s): 08/11/2014

Inspector: S. Radlinger

Inspection Type: Re-Evaluation

Critical Review By RBE: No

Findings:	Finding Notes:
Abutment 1	Backwall - Losing fill on West side
Bearings	Minor corrosion
Approach	Low
Ties	OK
Guard Timber	OK
East Wingwall	OK
West Wingwall	Losing Fill
Platform	OK
Other	Limited access to bridge due to repairs at the time of inspection

Recommended Work:

Item#	Priority	Who Fixes	Repair Description
1	4	Railroad	Add ballast and tamp up approach

Completed Work:

Date	Item#	Who Fixed	Repair Description

Bridge 19.30 Section 3 - New Paint on Girder

Bridge 19.30 Section 3 Abutment

Bridge 19.30 Section 3 Abutment Bearings

Piedmont & Northern Railway

Line: Mt. Holly Subdivision

Structure Report

Bridge # 19.30

Milepost: 19.30 | **Section: 3**

Type: DPG | **Location: Ranlo, NC**

Inspection Date(s): 08/11/2014 | **Inspector: S. Radlinger**

Inspection Type: Re-Evaluation | **Critical Review By RBE: N**

Structure	Member	Status	Remarks	Dimensions (WxDxL)
Abutment 1			Backwall - Losing fill on West side	
	Bearings		Minor corrosion	
	Sleeper Timber			12"x11.5"x19'-4"
Span 1		OK		80'-9"
	Bracing	OK		
	Girders	OK		
Approach		Low		
Ties		OK	Tie Count: 95, Various Sizes OK	
Guard Timber		OK		
East Wingwall		OK		
West Wingwall			Losing Fill	
Platform		OK		
Other			Limited access to bridge due to repairs at the time of inspection	

CN - Cornering	G/L - Groundline Area	P/W - Heavy Duty Pile Wrap	SR - Shell Rot	Mileage Increases from: North
CR- Crushing	H - Heart	PE - Possible Exception	ST - Shell Thickness	
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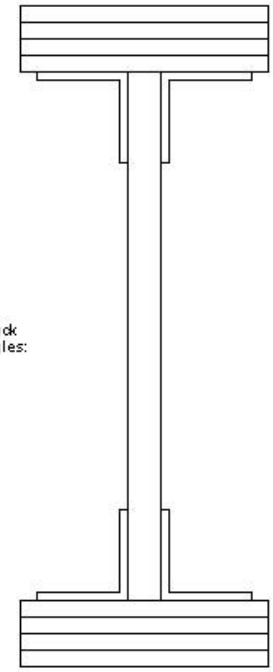
DP - Decay Pocket	HS - (Stringer) Horizontal Shear	RS - Ring Separation	VE - Visual Exception	
DR - Decay Ring	MD - Mechanical Damage	S - Min. or Max Shell	VS - Vertical Split	
E - Exception	O/W - OsmoWeld	SLCR - Slight Crushing	WPH - Wood Pecker Hole	*(Railroad Directions)*

Piedmont & Northern Railway

Bridge Number: 19.30, Section Number: 3, DPG



Back - to - Back of Flange Angles: 95.5"

Coverplate 4: 16" width x 0.625" thickness x 47' length

Coverplate 3: 16" width x 0.625" thickness x 32' length

Coverplate 2: 16" width x 0.625" thickness x 21' length

Coverplate 1: 16" width x 0.625" thickness x 11' length

Top Flange Angles: 6" x 6" x 0.5" (vertical leg x horizontal leg x thickness)

Web Thickness: 0.25"

Centerline To Centerline: 7'

Girder Spacing:

Bottom Flange Angles: 6" x 6" x 0.5" (vertical leg x horizontal leg x thickness)

Coverplate 1: 16" width x 0.625" thickness x 69'-9" length

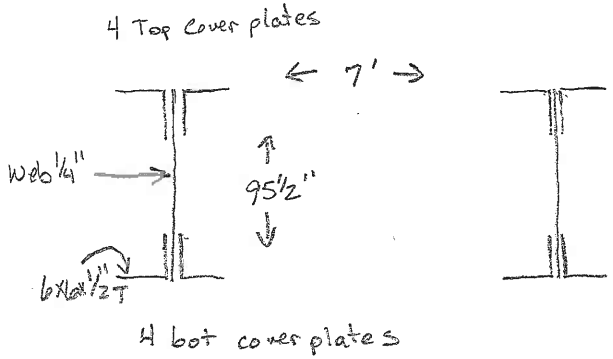
Coverplate 2: 16" width x 0.625" thickness x 59'-9" length

Coverplate 3: 16" width x 0.625" thickness x 48'-8" length

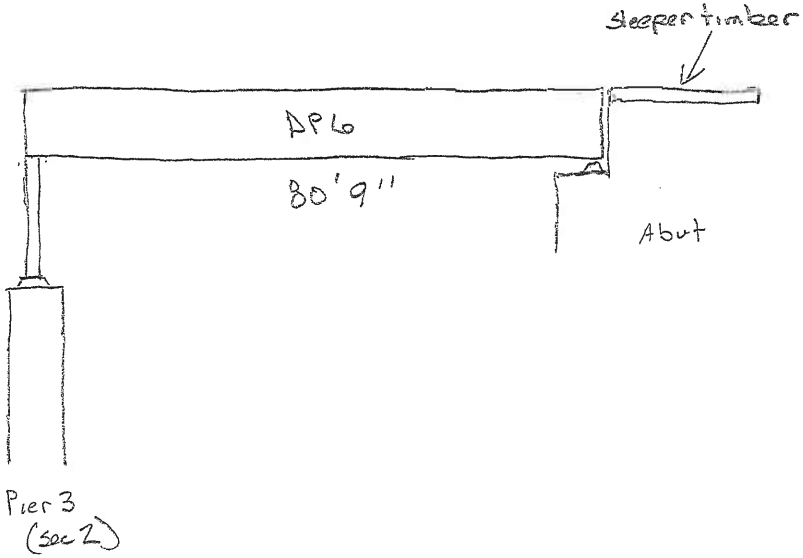
Coverplate 4: 16" width x 0.625" thickness x 33'-9" length

Br 19.30 Sec 3

1 Abut
1 span
DPG
(same as ~~Sec~~ 1)



Cover plates
- 5/8" T x 16" w x 69'9"
- 5/8" T x 16" w x 59'9"
- 5/8" T x 16" w x 48'8"
- 5/8" T x 16" w x 33'9"



SLEEPER TIMBER - 11 1/2"D x 12"w x 19'4"

CUSTOMER	STRUCTURE 19.30 sec 3
LOCATION	JOB NO.
DESCRIPTION	DATE
	CALCULATED BY
	APPROVED BY

Osmose®
RAILROAD SERVICES, INC.

Piedmont & Northern Railway

(2014) Re-Evaluation Inspection

Bridge 21.50

Location

Town/Station: Gastonia	State: NC
Latitude: N 35 16.365	Longitude: W 81 9.796

Access:

Notes:

Description

Type: Beam Span	Deck Type: Ballast
Number of Spans: 5	Number of Tracks: 1
Height: 20'	Length: 264'
Year Constructed:	Feature Crossed: Interstate 85
Bents/Piers/Abutments in Water: 0	Max Water Depth: 0
Scour Susceptible: No	Skewed: No
Tangent/Curve: Tangent	Super Elevation Direction:
Super Elevation: No	Walkway: No
Fiber Optics/Other: No/No	GuardRail: No
Mileage Increases: North to South	Members Numbered: East to West

Lead Inspector: S. Radlinger

Date Approved: 09/25/2014

Piedmont & Northern Railway

Inspection Summary

Line: Mt. Holly Subdivision

Bridge # 21.50

Milepost: 21.50
Section: 1
Type: Beam Span
Location: Gastonia, NC
Inspection Date(s): 08/11/2014
Inspector: S. Radlinger
Inspection Type: Re-Evaluation
Critical Review By RBE: No

Findings:	Finding Notes:
Abutment 1	
Bearings	Minor corrosion to bearings
Span 1	
Beams	Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles
Span 2	
Beams	Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles
Span 3	
Beams	Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles
Span 4	
Beams	Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles
Span 5	
Beams	Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles
Approaches	OK
Line and Surface	OK
Handrail	OK
Other	No significant defects located at the time of this inspection

Recommended Work:

Item#	Priority	Who Fixes	Repair Description
1	5	Railroad	Continue to inspect bridge on a regular railroad inspection schedule

Completed Work:

Date	Item#	Who Fixed	Repair Description
06/2014	1	State	Repaired: Void under South Apron

Bridge 21.50 Deck View

Bridge 21.50 View from Below

Bridge 21.50 Minor Corrosion to Beam Web at Bottom Flange Angle

Bridge 21.50 Typical Abutment

Piedmont & Northern Railway

Bridge 21.50 Typical Pier

Bridge 21.50 Typical Span

Piedmont & Northern Railway

Line: Mt. Holly Subdivision

Structure Report

Bridge # 21.50

Milepost: 21.50 | **Section: 1**

Type: Beam Span | **Location: Gastonia, NC**

Inspection Date(s): 08/11/2014 | **Inspector: S. Radlinger**

Inspection Type: Re-Evaluation | **Critical Review By RBE: N**

Structure	Member	Status	Remarks	Dimensions (WxDxL)
Abutment 1				
	Bearings		Minor corrosion to bearings	
Abutment 2		OK		
	Bearings	OK		
Concrete Pier 1		OK	Concrete Pier with Concrete Cap and 3 Concrete Columns	
	Bearings	OK		
Concrete Pier 2		OK	Concrete Pier with Concrete Cap and 3 Concrete Columns	
	Bearings	OK		
Concrete Pier 3		OK	Concrete Pier with Concrete Cap and 3 Concrete Columns	
	Bearings	OK		
Concrete Pier 4		OK	Concrete Pier with Concrete Cap and 3 Concrete Columns	
	Bearings	OK		
Span 1				44'-3"
	Beams		5 Beams Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles	
	Bracing	OK		
Span 2				53'-4"
	Beams		6 Beams Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles	
	Bracing	OK		
Span 3				66'-7"
	Beams		6 Beams Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles	
	Bracing	OK		
Span 4				66'-4"

CN - Cornering	G/L - Groundline Area	P/W - Heavy Duty Pile Wrap	SR - Shell Rot	Mileage Increases from: North
CR- Crushing	H - Heart	PE - Possible Exception	ST - Shell Thickness	
D/P - Drift Pin	HS - (Cap) Heart Separation	PP - Previously Posted	V - Void	Members are Numbered From: East
DP - Decay Pocket	HS - (Stringer) Horizontal Shear	RS - Ring Separation	VE - Visual Exception	
DR - Decay Ring	MD - Mechanical Damage	S - Min. or Max Shell	VS - Vertical Split	
E - Exception	O/W - OsmoWeld	SLCR - Slight Crushing	WPH - Wood Pecker Hole	*(Railroad Directions)*

Piedmont & Northern Railway

Line: Mt. Holly Subdivision

Structure Report

Bridge # 21.50

Milepost: 21.50 | **Section: 1**

Type: Beam Span | **Location: Gastonia, NC**

Inspection Date(s): 08/11/2014 | **Inspector: S. Radlinger**

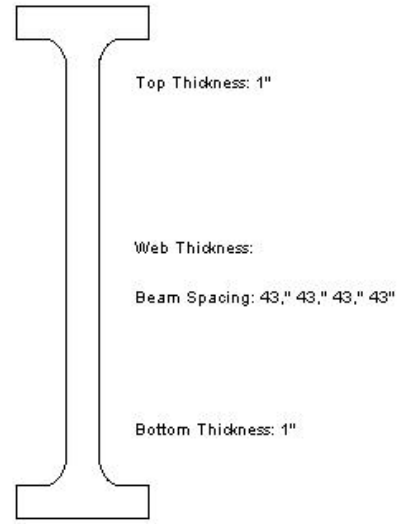
Inspection Type: Re-Evaluation | **Critical Review By RBE: N**

Structure	Member	Status	Remarks	Dimensions (WxDxL)
	Beams		6 Beams Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles	
	Bracing	OK		
Span 5				36'-0"
	Beams		5 Beams Minor corrosion to Top Flange Angles at Concrete Slab Interface Minor paint peeling to Beams near Bottom Flange Angles	
	Bracing	OK		
Approaches		OK		
Line and Surface		OK		
Handrail		OK		
Other			No significant defects located at the time of this inspection	

CN - Cornering	G/L - Groundline Area	P/W - Heavy Duty Pile Wrap	SR - Shell Rot	Mileage Increases from: North
CR- Crushing	H - Heart	PE - Possible Exception	ST - Shell Thickness	
D/P - Drift Pin	HS - (Cap) Heart Separation	PP - Previously Posted	V - Void	Members are Numbered From: East
DP - Decay Pocket	HS - (Stringer) Horizontal Shear	RS - Ring Separation	VE - Visual Exception	
DR - Decay Ring	MD - Mechanical Damage	S - Min. or Max Shell	VS - Vertical Split	
E - Exception	O/W - OsmoWeld	SLCR - Slight Crushing	WPH - Wood Pecker Hole	*(Railroad Directions)*

Piedmont & Northern Railway

Bridge Number: 21.50, Section Number: 1, Beams in Spans 1 & 5 (5 beams)



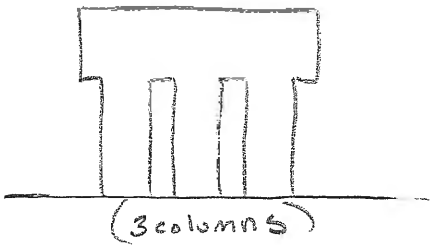
Br 21.50

Beam span w/ conc slab deck

2 Abuts
4 Piers
5 spans
Ballast Deck
(Tangent Track)

20' Tall

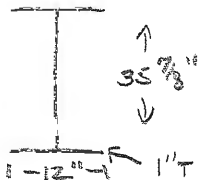
Typical Piers



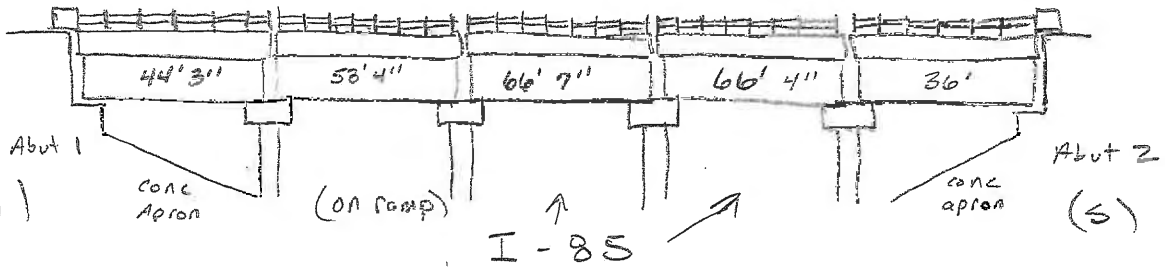
Abut 1 & All Piers are skewed

Abut 2 is not skewed

Beams in spans 1+5



5 beams spans 1 + 5
(6 beams spans 2-4 unable to access)



Osmose®
RAILROAD SERVICES, INC.

CUSTOMER _____ STRUCTURE 21.50
LOCATION _____ JOB NO. _____
DESCRIPTION _____ DATE _____
_____ CALCULATED BY _____
_____ APPROVED BY _____

TERMINOLOGY

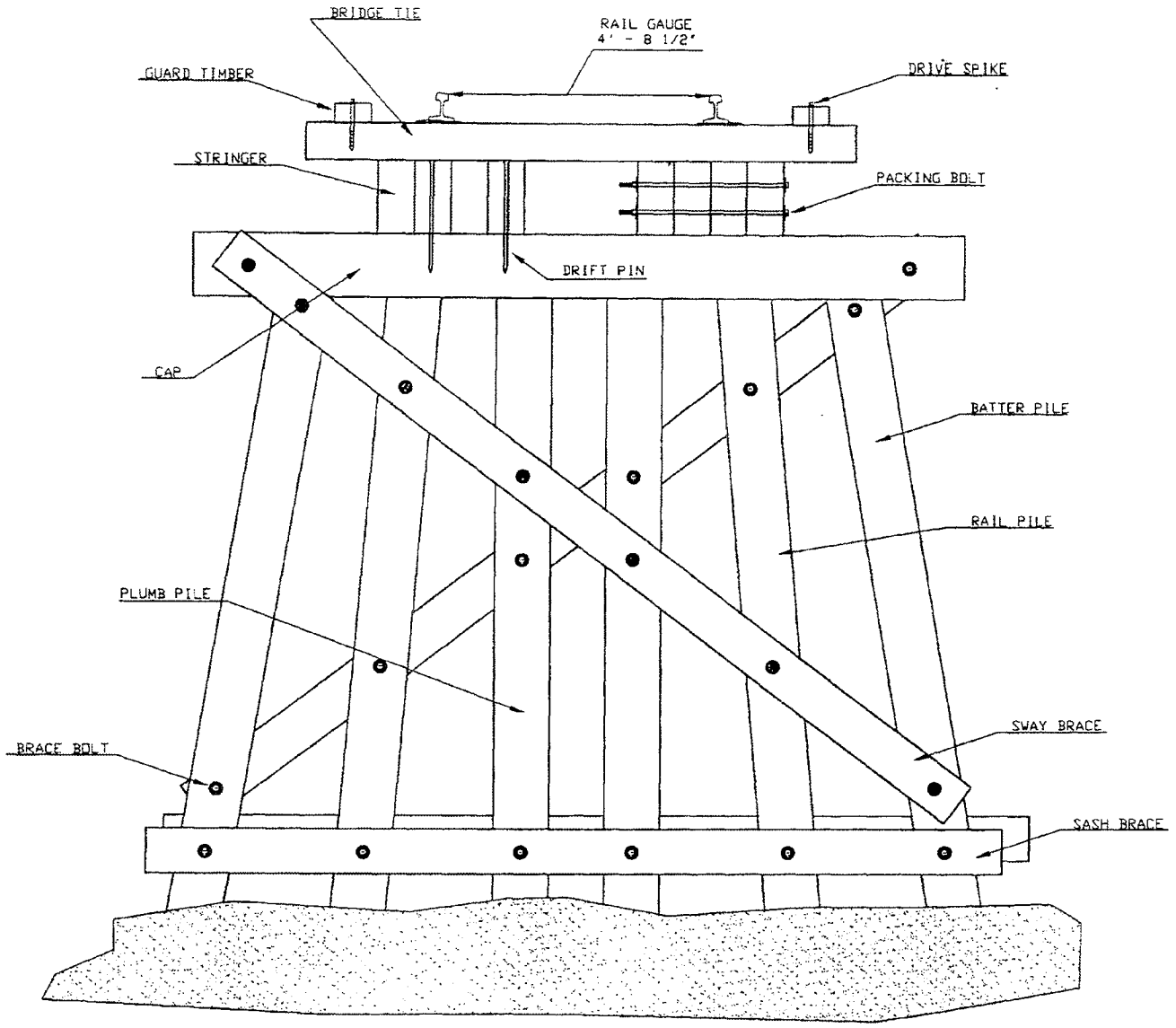
Bent	A supporting unit of a trestle made up of vertical members connected at the top by a cap.
Dump Bent	The end bent of a bridge. There is usually a retaining wall or backwall next to the dump bent.
Cap	The top, horizontal member of a bent. It holds the vertical members in their proper place and distributes the superstructure load to them.
Defer Treatment	Bridge timbers that do not contain enough decay at this time to warrant treatment, but should be considered for re-cruising in 5-10 years.
Drift	Brush, logs and other debris carried by high water. If it accumulates against a bridge, it should be removed to reduce fire hazards and pressure against the bridge.
Groundline (G/L)	In bridge piling, the portion from 2-3 feet below the ground level to 1-2 feet above. An area where rapid decay growth can take place.
Longitudinal Bracing (Santa Fe)	Horizontal structural members which span from bent to bent and are usually fastened to a sash brace near the top of the piles or posts.
Girt Bracing	A horizontal member which spans from bent to bent and is usually fastened above the sash brace, normally 11 to 15 feet down from the cap.
Pile (P)	A vertical structure member that has been driven into the ground.
Possible Exception (PE or PX)	Refers to members not decayed or damaged sufficiently to be classified as exceptions, but are deteriorated enough to be considered for replacement.
Post (Posting)	Replace a defective portion of a pile with a new section.
Exception (E or X)	A member that is severely decayed or damaged.
Riprap	Large stones, boulders, blocks of concrete, etc. placed around piles or piers to prevent scour.
Sash Brace	Horizontal member fastened to piles or posts of a bent to provide rigidity.
Sway Brace	Diagonal member fastened to piles or posts of a bent to provide rigidity.
Sill	Horizontal member supporting the posts of the bent.

EXPLANATION OF COLUMN HEADINGS

COLUMN HEADINGS	*EXPLANATION*
BRIDGE	Bridge Number.
LOCATION	Nearest town.
MILE POST	Mile Post number (or same as bridge number if not stated)
BENTS	Number of bents in structure.
PIERS	Number of timber piers in structure.
SUBJ	Y - Candidate for inspection & in-place treatment or retreatment. R - Recommended for replacement. D - In-place treatment can be delayed. N/C - Not Cruised.
MAX HGT	Maximum height of bridge piling.
TYPE	BDPT - Ballast Deck Pile Trestle BDFT - Ballast Deck Frame Trestle ODPT - Open Deck Pile Trestle ODFT - Open Deck Frame Trestle OHH - Overhead Highway
CRSD	Letter designation of Inspector followed by year of cruising.
PLNG YR	Year that bridge was constructed.
DATE COMP	Completed date of inspection & in-place treatment, if applicable.
PLNG A DK	Derived from inspection & in-place treatment.
PLNG E DK	Estimated percent of piling with internal decay. Derived at time of cruising.
PLNG A X	The actual percent of piling classified as **"Exception"**. Derived from inspection & in-place treatment.
PLNG E X	Estimated percent of piling classified as **"Exception"**. Derived at time of cruising.
PLNG A GL	Actual number of piling with external groundline decay. Derived from inspection & in-place treatment.
PLNG E GL	Estimated number of piling with external decay at groundline. Derived at time of cruising.
STR SPANS	Number of timber stringer spans in structure.
STR DATA	Stringer data: Y: Recommend stringers to be inspected and in-place treated. Omit: Omit stringers. TR 1990: The year stringers were inspected and in-place treated.
ACC	Osmose vehicle needed to access bridge.
REMARKS	Additional information noted.

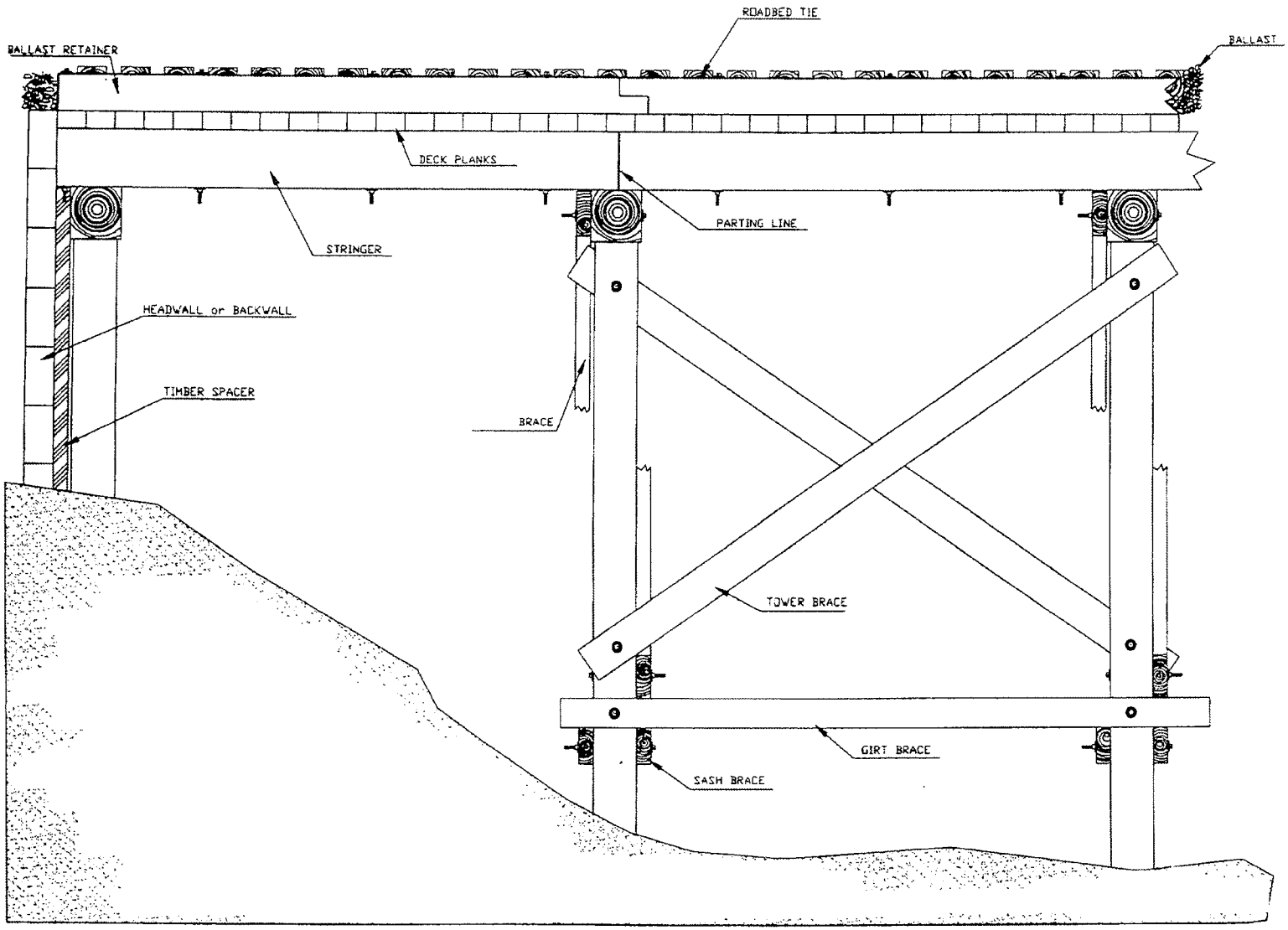
Osmose Railroad Services, Inc.

Timber Pile Bent Schematic



Osmose Railroad Services, Inc.

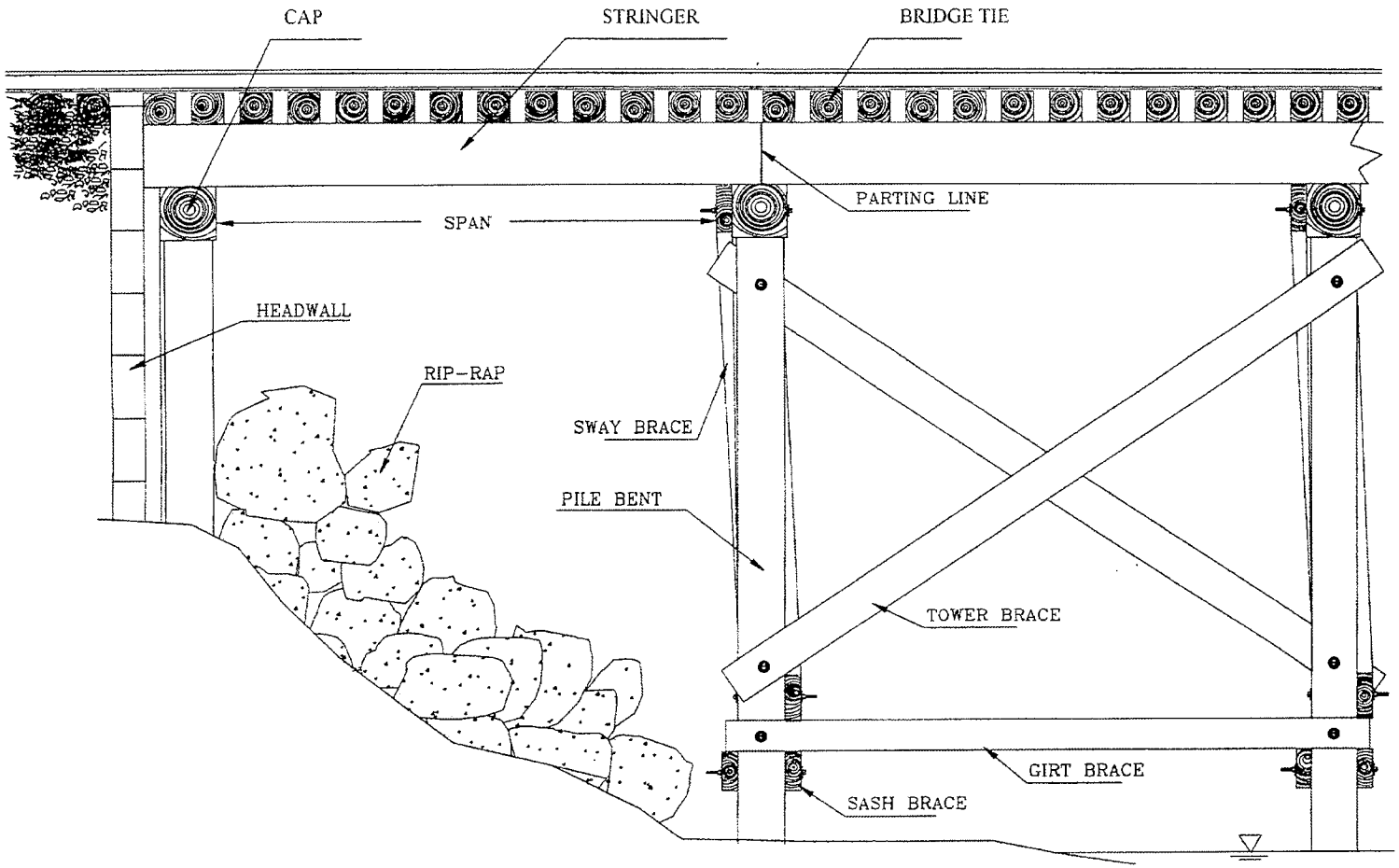
Ballast Deck Bridge Profile



Osmose Railroad Services, Inc.

BRIDGE DIAGRAM

OPEN DECK PILE TRESTLE



Osmose Railroad Services, Inc.

Bridge Terminology - Steel and Concrete Structures

Structural Crack
A crack that has progressed in magnitude, either in width, depth, or both, to the point that the structural integrity of the member is in jeopardy.

Surface Crack
A crack that extends only a few inches into the member, but not of sufficient magnitude to be of immediate concern. Without repair, though, a surface crack could progress into a structural crack.

Settlement Crack
A crack in a structure caused by differential settlement, or movement of various portions of the substructure. Repairs to these cracks should not be performed until the settlement problem has been corrected.

Working Crack
A structural crack that has divided the member into two or more components in which movement can be detected when load is applied, and could possibly permit differential settlement.

Efflorescence
Lime deposits on the surface of concrete caused by water leaching through cracks and porous concrete.

Spalling
General deterioration and breaking up of the surface of the concrete due to age, reactive aggregates, water damage, freeze-thaw action, abrasion, or impact damage.

Telescoping Bearing
Bearing plate has beaten down into the concrete or stone bridge seat causing damage to the concrete or stone.

Pumping Bearing
Bearing is moving up and down under load.

Drift
Brush, logs, and other debris carried by high water. The accumulation of drift against a bridge may increase the danger of fire and does increase the lateral load against the bridge substructure.

Rip Rap
Large Stones, boulders, blocks of concrete that are properly graded and placed to prevent scour.

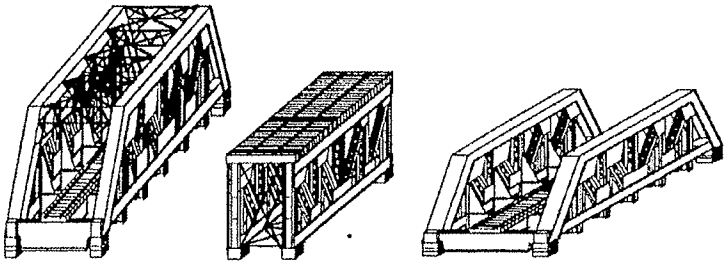
Pack Rust
Corrosion that has occurred between two joined pieces of steel. This corrosion expands and deforms the two adjoining pieces of steel apart.

Delamination
Delamination is the separation and flaking off of the grain on a heavy corroded piece of steel. Delamination can lead to very heavy section loss to the member because as one section of corroded steel flakes off, it exposes the underlying steel to further corrosion.

Surface Corrosion
Surface corrosion is corrosion to just the upper surface of the steel. It is usually minor and in most cases does not result in very heavy section loss.

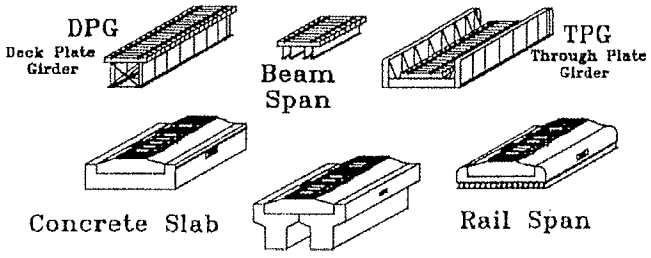
Common Types of Railroad Bridges

TRUSS BRIDGES

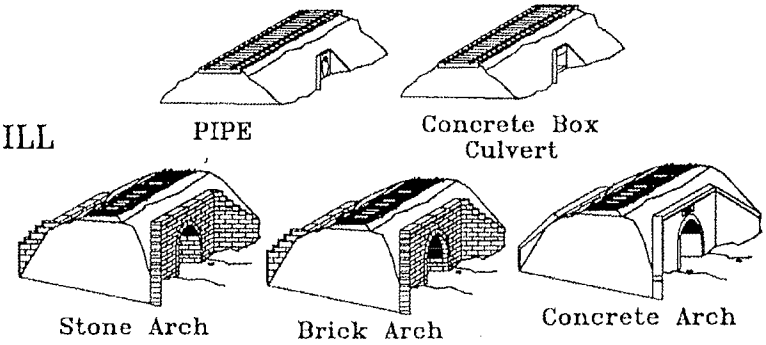


Through Truss | Deck Truss | Pony Truss

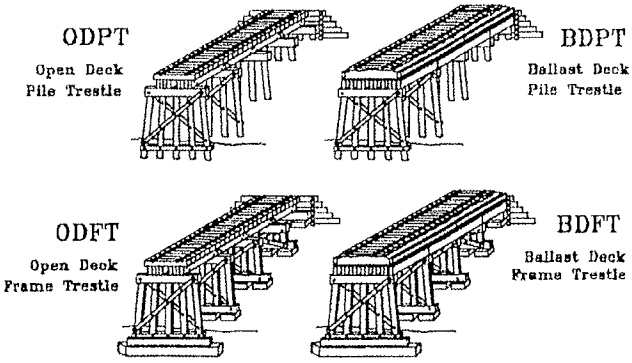
STEEL & CONCRETE BRIDGES



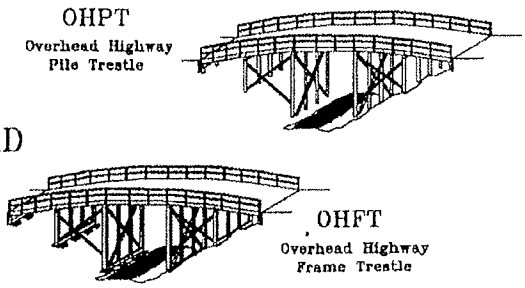
EARTH FILL BRIDGES



TIMBER RAILROAD BRIDGES



TIMBER OVERHEAD BRIDGES



North Carolina Department of Transportation
Division of Highways
Materials and Tests Unit
Raleigh, NC 27611

Field Inspection Report

August 29, 2014

Contract / Project Number:	WBS 45361	**Resident / Project Engineer:**	Eric Connor
County:	Gaston	**Contractor:**	Adelphi, Inc.
Division:	12	**M & T Coating Inspector:**	Aaron Dacey
Project Inspectors	Tim Greene & James Stobaugh	**Coating Material Supplier**	Carboline

Reason for Inspection:

- ☐ Initial Inspection
- ☐ Intermediate Inspection
- X Final Inspection
- ☐ Other (explain):

Inspection Start Time: 9:30 am
Inspection End Time: 12:00 pm

Personnel Present During Inspection (if any)	Company	Title
Eric Connor	NCDOT, Division 12	Assistant Resident Engineer
Blake Guffey	NCDOT, Division 12	Transportation Associate
Bill Bartosh	Patriot Rail	Railway Engineer
James Stobaugh	S&ME	Quality Assurance Inspector
Anthony Gialousis	Adelphi Inc.	Project Manager
Leo Gialousis	Adelphi, Inc.	Project Foreman
Kirk Gialousis	Adelphi, Inc.	Quality Control Inspector

INSPECTION SCOPE

The contract specified removing the existing coating system of aluminum over red lead and replaced it with NCDOT paint system which consists of inorganic zinc and acrylic top coats. The final dry film thickness measurement range of 8-14 mils and or 80% of the minimum DFT is required and to demonstrate an adhesion rating of 3A or greater when performed in accordance with ASTM D-3359.

The bridge on Piedmont & Northern Corridor Rail line at MP SFT 16.3 carries a single track over the South Fork of the Catawba River. The track is supported by an open timber deck consisting of ties resting on the superstructure. The bridge, constructed in 1911, is a combination of steel deck plate girders and trusses having a total length of 460 feet. The approach spans, 80 feet each, are steel deck plate girders while the two spans are steel deck trusses with length of 150 feet each. Both the plate girders and trusses are riveted built-up sections. Floor beams and stringers are also riveted built-up members. Top and bottom lateral bracing and sway bracing are steel angle sections or built up from angle sections. The estimated area to be cleaned and painted is 10, 500 square feet see picture #1. This

bridge is located at approximately N 35 16.145, W 081 04.574 at the intersection of Hickory Grove Road and Riverside Drive.

INSPECTION DETAILS

These are the inspection details for the cleaning and painting of the P&N Railroad Bridge in Gaston County.

The contractor provided a DFT gage adjustment plate that was a railroad spike plate. I performed a two point gauge adjustment using the blast profile as one point and a 10.1 mil shim as the other point see picture #2. We started our inspection and found multiple DFT readings that were not in accordance with the contract requirements for acceptable dry film thickness requirements. Then Contractor cited the DFT adjustment plate did not represent the blast profile or the magnetic properties of the structure. I then asked where is the gage adjustment standard that is required by the contract in which he stated that he thought that paragraph in the contract referred to a visual blast comparison. I offered the Contractor the option to re-adjust our gages on a blasted plate that I possess, in which he agreed. I again performed a two point gage adjustment using the blast profile as one point and a 9.9 mil shim as the other point see picture #3.

Bridge # MP SFT 16.3

A. **Inspection Details**
   a. **Span 1- Dry film thickness readings were taken which consisted of 159 gage readings that resulted in mils 7.37 mils DFT (Average), 22.6 mils DFT (High) and 2.8 mils DFT (Low)**

   b. **Span 2- Dry film thickness readings were taken which consisted of 145 gage readings that resulted in mils 6.5 mils DFT (Average), 13.8 mils DFT (High) and 2.8 mils DFT (Low).**

   c. **Span 3- Dry film thickness readings were taken which consisted of 84 gage readings that resulted in mils 8.0 mils DFT (Average), 15.9 mils DFT (High) and 4.1 mils DFT (Low).**

B. **Items Noted for Correction**
   a. **Span 1 & Span 3**
      i. **DFT areas that were below the 80% minimum on girder web panels, angle cross members and bottom of top flange members see picture #4, #5 & #6 respectively.**

   b. **Span 2**
      i. **DFT areas that were below the 80% minimum on the inside of vertical chord members shown in picture #7, bottom of horizontal angle bracing shown in picture #8, inside sway bracing plates shown in picture #9 and vertical bracing angles as shown in picture #10.**

   c. **All Spans**
      i. **Perform touch up on all areas where rigging was attached and or damage painted during containment assembly removal. All bare steel areas are to be cleaned touched up with a zinc rich paint and apply remaining top coats as needed see picture set #11.**

C. Items Noted for Clarification

a. **Contractor had questions regarding the lubrication of the bearing assemblies as shown in picture # and if those bearings are required to be top coated see picture set #12.**

PROJECT REREFERENCE PICTURES

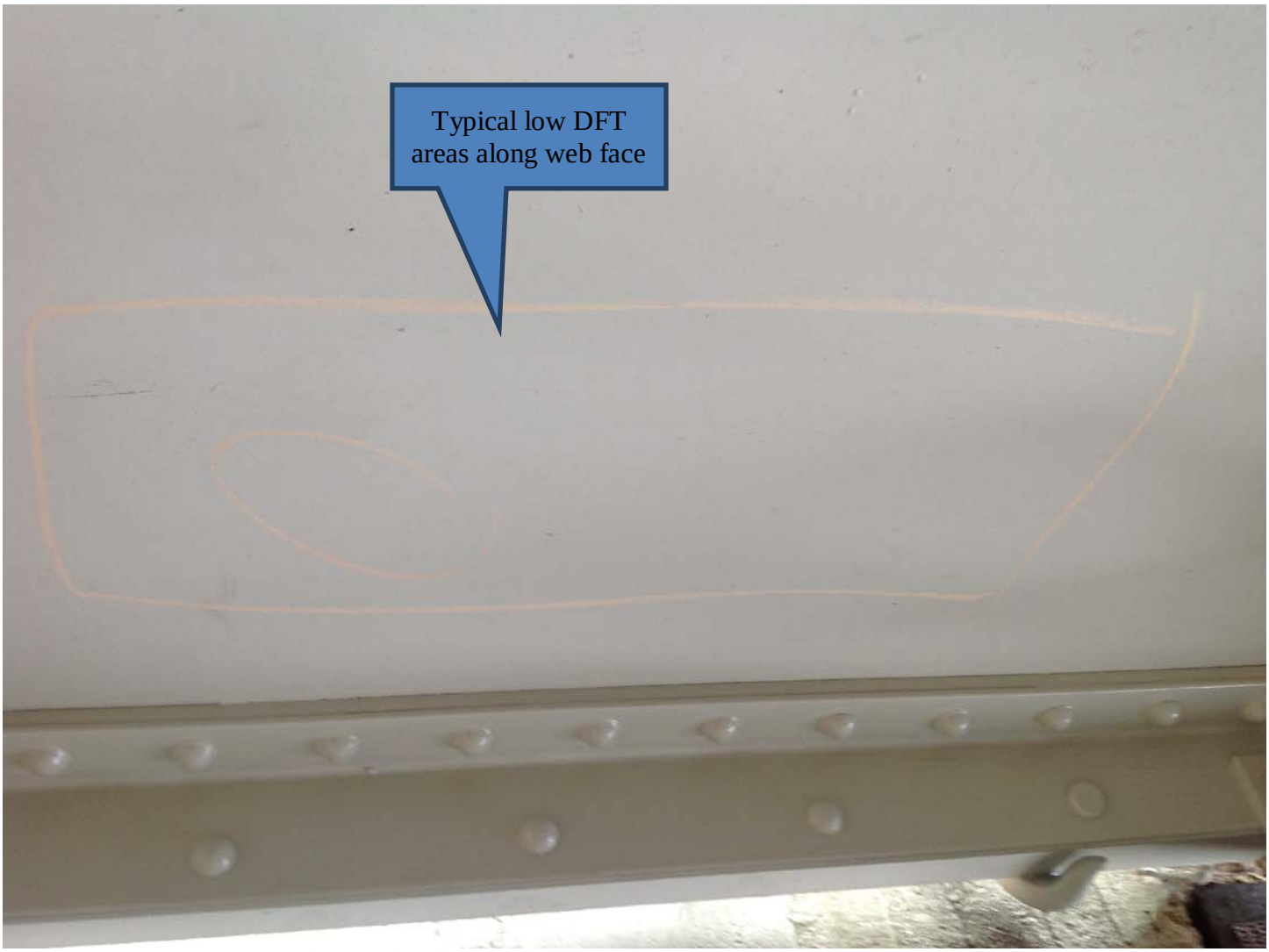
Picture #1

Picture #2

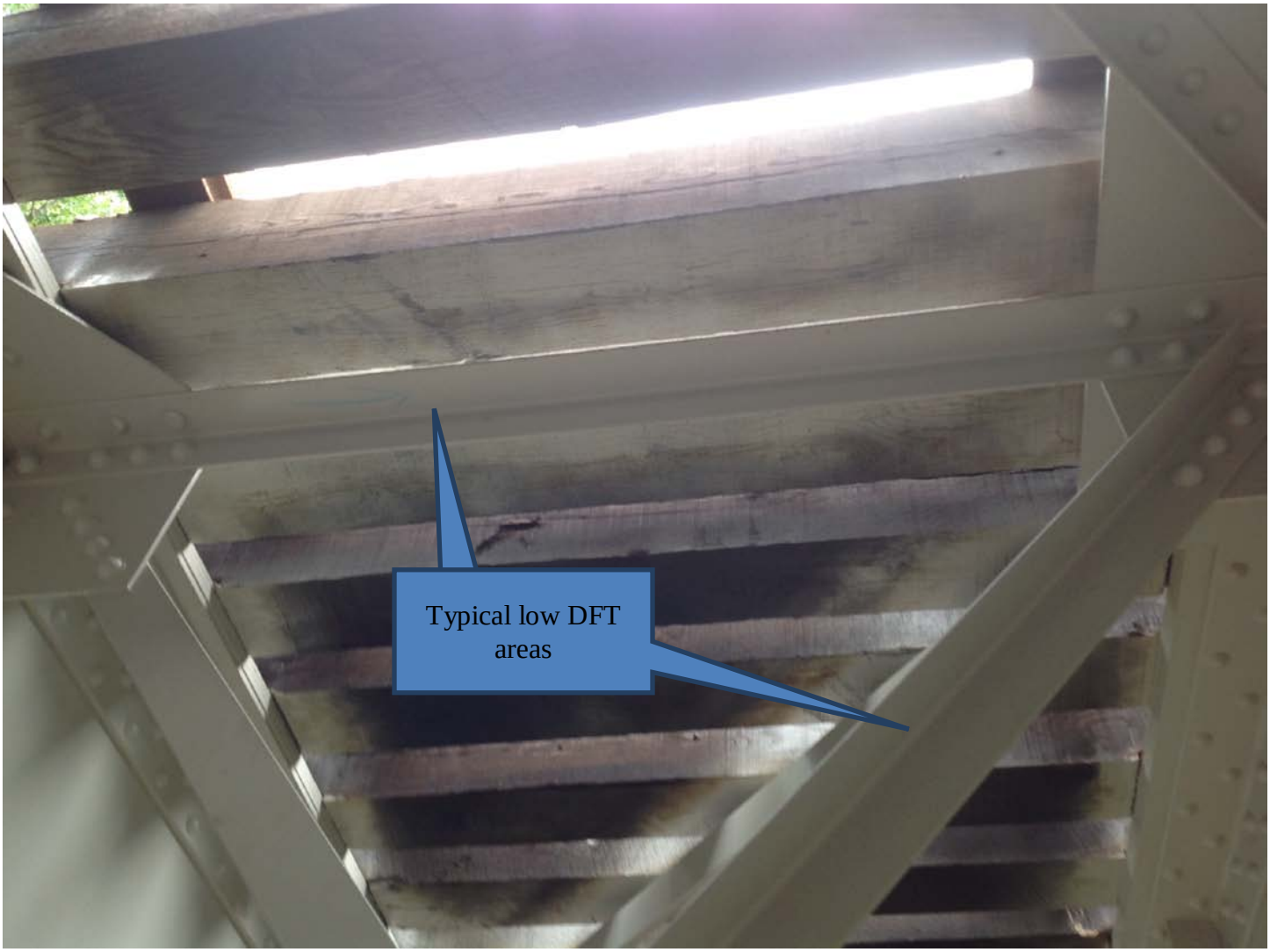
Picture #3


PosiTector®
9.9
Cancel
PRESS-O-FILM™
Testex, Inc.
Newark DE 19715
X COARSE (1.5-4.5)
DeFelsko
mils
9.9
micron
252
KEY ENVELOPE

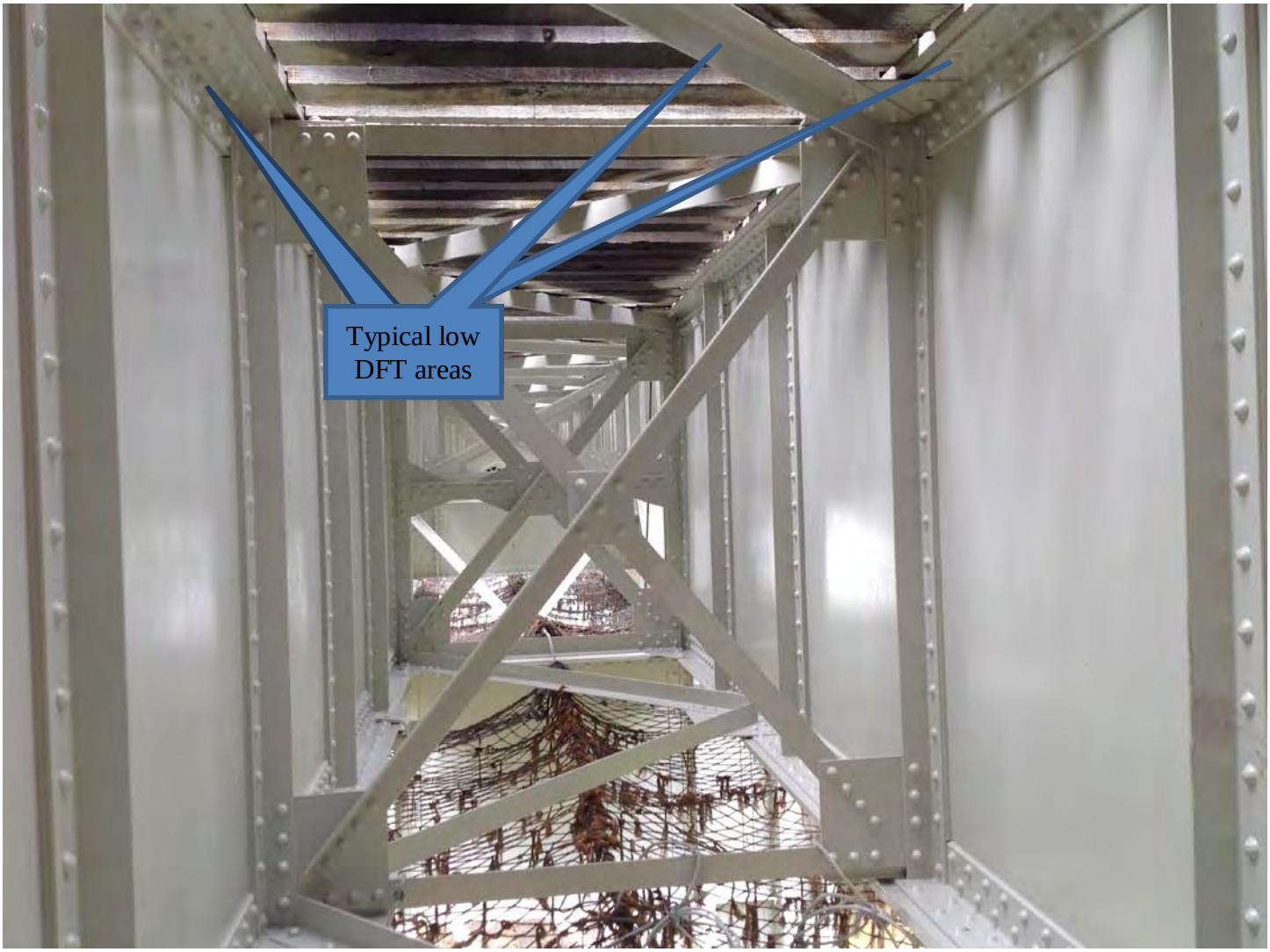
Picture #4



Picture #5

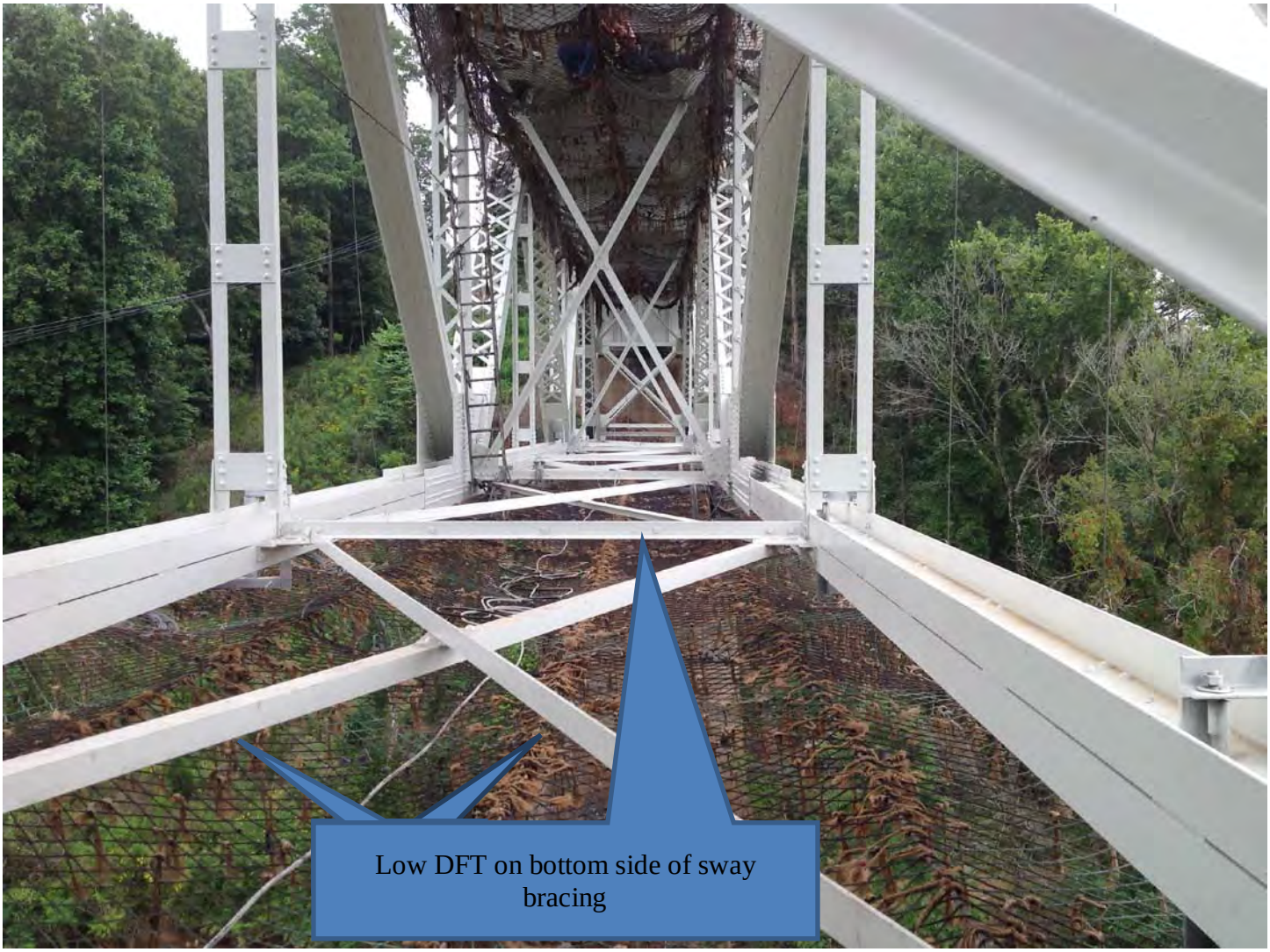


Picture #6



Picture #7

Picture #8



Picture #9

Picture #10

Picture Set #11

Picture Set #11 cont.

Picture Set #12

Picture Set #12 cont.

NOTHING FOLLOWS