



**Letter of Transmittal**

2400 Pershing Road  
Suite 400  
Kansas City, MO 64108  
Tel 816 329 8600  
Fax 816 329 8602

www.transystems.com

**To:** Oklahoma City Public Works  
Attn: ~~Ron Cardwell~~ *JARED NORRIS*  
420 West Main  
Oklahoma City, OK 73102

**From:** Jay Hyland  
**Phone:** 813-329-8735  
**Date:** April 13, 2015

**Client Project No.:**

**Phone:** (405) 297-2494

**TranSystems Project No.:** P101120103.DFAULT.REIMB0

**Subject:** FCM Inspection Reports – Bridge No. 03024

**Delivery Via:**

- Mail
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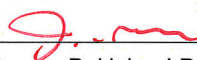
- URGENT!
- For Your Approval
- Please Comment
- For Your Use
- For Your Review
- Reply ASAP
- Confirm Receipt
- As Requested
- 
- 

Copies	Date	Description
1		Bridge No. 03024 FCM Inspection Report

**Comments:**

**Copy To:**

**By:**



James P. Hyland P.E.





**TranSystems**  
2400 Pershing Road  
Suite 400  
Kansas City, MO 64108  
Tel 816 329 8600  
Fax 816 329 8601  
[www.transystems.com](http://www.transystems.com)

**To:** Oklahoma City Public Works  
**From:** Jay Hyland, P.E.  
**Date:** 03/31/2015  
**Subject:** Off-System Routine/Fracture Critical Bridge Inspection  
NBI 03024, Structure 14N3160E1170001, N3160/Local ID: O-127

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On 01/18/2015 TranSystems inspected N3160 over Creek in Cleveland County as part of the off-system routine/fracture critical bridge inspection program. The structure is a 1 span structure with the following configuration (South to North):

Span 1 – 61’ Pony Truss

The inspection was performed by the following TranSystems Personnel:

Robert Blackmore, PE – Team Leader  
Tom Allen – Bridge Inspector

The bridge is currently restricted to legal traffic and posted 7 tons.

The current NBI ratings for this structure versus the last inspection are as follows:

NBI Item	2014 Rating	2015 Rating
58 Deck	6	6
59 Super	5	5
60 Sub	4	4
61 Channel	4	4
Sufficiency	17.5	17.5

In order of decreasing priority, the recommended action for this structure is as follows:

PX – Monitor the south stone masonry abutment.

In addition to these recommendations it is recommended that this structure remain on a 24 month Routine and Fracture Critical inspection frequency alternating with 24 month Other Special inspection frequency.



Jay P. Hyland, PE  
Project Manager

JPH

CC: Wes Kellogg, Bridge Division  
Shelley Williams, Division III Field Engineer



3-31-2015



**NBI Item 36** – Traffic Safety – W-Beam Guard Rail in place across full length of bridge and past ends. Ends of guard turned down and buried. The Bridge end markers are in place. The North posting sign is in place but the South end it is missing at time of inspection. The Owner was notified and a new sign was installed.

**NBI Item 58** – Deck (6, Satisfactory Condition) – The deck has minor to moderate wear to the wood runners with some minor cracking. The transverse planks have minor cracking at random locations. Some of the edge runners are warped and bowed with random cracks. All wood members are sound with no evidence of decay.

**NBI Item 59 - Superstructure**

<b>Fracture Critical Member Summary</b>	
<b>Floor Beams</b>	6
<b>Truss Lower Chord</b>	5
<b>Truss Web Members</b>	5

**Stringers** (5, Fair Condition) – All the stringers have minor freckled surface rust and some pitting up to 1/16” throughout. Stringers 4 & 5 ends at the N. Pier Cap (Abutment) have 10% and 30% section loss to the bottom flange respectively where they set on top of the abutment beam. Stringer 4 has minor section loss to bottom flange at FB5, Stringers 2, 6 & 8 have 30% to 10% section loss to bottom flange at FB4 and Stringers 2, 3 & 7 has up to 10% section loss to bottom flange at FB2.

**[FCM] Floor Beams** (6, Satisfactory Condition) - Floor beams have minor freckled surface rust over 90 percent of the member surfaces. Floor beam FB2 and FB4 connections to the E. truss have negative threads on half of the bolts.

**Floor Bracing System** (6, Satisfactory Condition) - The floor bracing system have minor surface corrosion and the bracing rod between FB4 west truss and FB6 east truss is bent downward.

**Truss Upper Chord** (6, Satisfactory Condition) – The upper chord has minor pitting with freckled rust throughout on all surfaces.

**[FCM] Truss Lower Chord** (5, Fair Condition) - The lower chord has minor pitting with freckled rust throughout on all surfaces. The lower chord L-channels have been replaced from L0 to L2 on the W. truss. The batten plates are welded to the L-channels and at L0 the leg of the L-channel is welded to the gusset plate.

**[FCM] Truss Web Members** (5, Fair Condition) - Members exhibit minor pitting with freckled rust throughout on all surfaces. U3-L4 of W. Truss has minor impact damage and U3 gusset plate is slightly warped on W. Truss. Members U1-L2, U2-L2 and L2-U3 have been replaced on the W. Truss. The bridge railing has been welded to each web member of both trusses.

**Truss End Posts** (6, Satisfactory Condition) End Posts have minor pitting (up to 1/16'') with freckled rust throughout on all surfaces. The west truss end post L0-U2 has a repair to the top plate welded into place.

**Member Alignment** (6, Satisfactory Condition) Overall truss alignment is satisfactory.

**Paint/Coating System** (0, Failed Condition) – The paint has failed throughout the trusses. Corrosion is bleeding through the coating of the floor beams and stringers with numerous areas of coating failure.

**Load Deflection** (6, Satisfactory Condition) – No heavy loads used the structure during the inspection. Load deflection noted with normal traffic was minor.

## **NBI Item 60 - Substructure**

**Abutments** (5, Fair Condition) - PX – The steel pile and cap pier with masonry breast wall abutments are in fair condition. The steel piles and caps have freckled surface corrosion and minor pitting less than a 1/16''. There is section loss at the ground line of pile 2 of 15% and pile 3 of 20% due to laminated rust on front flanges of the North Abutment. The North and South stone masonry abutments are stable with minor soil piping occurring due to no mortar is present. The east stone wing wall has gaps of up to approximately 2 inches between stones. There are no wings at the north abutment. There has been a new retaining wall constructed on the NE corner and repairs of previous erosion completed.

**Bearings** (5, Fair Condition) –All bearings have freckled rust and minor pitting on the plate surfaces.

## **NBI Item 61 – Channel and Channel Protection**

**Channel Scour** (4, Poor Condition) – Upstream and downstream banks are severely slumping along the channel. Debris exists downstream within the channel. There has been rip rap placed along the front edge of the bottom of the old north abutment beneath the bridge and the new retaining wall to stabilize the embankment in front of the North abutment.

**Embankment Erosion** (4, Poor Condition) – Erosion is occurring around the west wing and across the front slope of the south abutment. The north abutment has erosion around the west end of the abutment which has no wing walls.

**Debris** (6, Satisfactory Condition) – Dead trees have collected downstream of the bridge.

**Vegetation** (4, Poor Condition) – The channel banks have substantial vegetation growing along the bank tops but channel scour is causing slumping exposing large areas of channel.

## **Approaches**

**Approach Roadway Condition** (7, Good Condition) – Paved approaches are in good condition with random minor cracking located along the edge of pavement at guardrails and at the north abutment.

**Approach Roadway Settlement** (8, Very Good Condition) Roadway approaches has no settlement with smooth transitions on to the bridge.

**NBI Item 113** – Scour Rating (4, Stable within limits of piles) – No change in item 113 is warranted.



NBI #: 03024  
Structure #: 14N3160E1170001  
County: Cleveland

Facility Carried: N3160  
Feature Intersected: Creek  
Date: January 18, 2015



Figure 1: Bridge from North Approach



Figure 2: East Elevation



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Figure 3: North Posting Sign



Figure 4: South Posting Sign

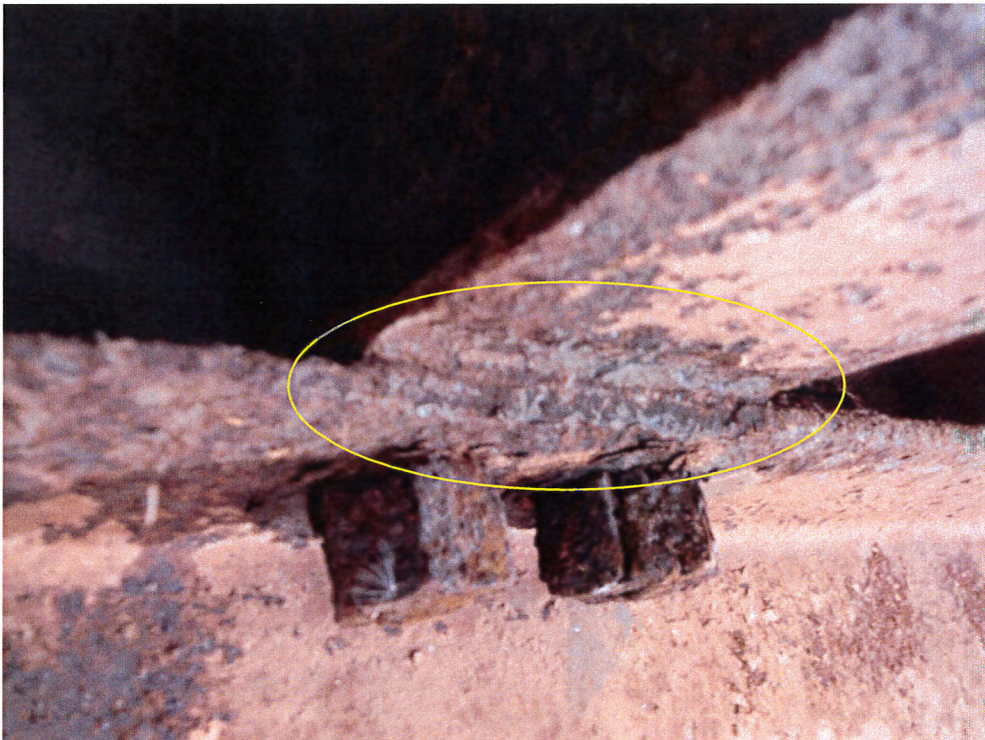


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**Figure 5: Typical Cracking in Runners**



**Figure 6: Section Loss to Bottom Flange of S5 at North Pier Cap**



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**Figure 7: Floor Beam 4 Overall Surface Corrosion**



**Figure 8: Typical Condition of Truss**



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**Figure 9: New Members of LC West Truss**



**Figure 10: Repair of West Truss End Post at South Abutment**



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Figure 11: Warped Gusset Plate at U3, West Truss (From previous impact damage)



Figure 12: Bridge Rail welded to Truss Members



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**Figure 13: Typical Corrosion of Steel Cap North Abutment**



**Figure 14: Typical up to 15% Section Loss of Pile 2, South Abutment**



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**Figure 15: Stone Masonry with Open Gaps South Abutment**



**Figure 16: Old North Abutment and New Retaining Wall**

# OKLAHOMA DEPARTMENT OF TRANSPORTATION - Bridge Inspection Report

Suff. Rating: 17.5

Health Index :

NBI No.: 03024

Structure No.: 14N3160E1170001

Local ID: O-127

ND

35.1

IDENTIFICATION			INSPECTION																																																																				
Description: 61' PONY TRUSS SPAN 1. State: Oklahoma      2. SHD District: Division 3 3. County Code: CLEVELAND      4. Place Code: OKLA. CITY Admin. Area: Unknown 5. Inventory Route (Route On Structure): 1 - 5 - 1 - N3160 - 0 6. Feature Intersected: CREEK 7. Facility Carried: DOUGLAS BLVD.      DOUGLAS BLVD. (1408C) 9. Location: .1S OF 149TH ON DOUGLAS      11. Mile Post: 0.100 mi 13. LRS Inv. Route./ Subroute.: -1      -1 16. Latitude: 35 19 06.08      17. Longitude: 097 22 14.23 98. Border Br. Code: Jknown (P) % Resp.: 0      99. Border Br. #: Unknown			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Type</th> <th>Insp Req.</th> <th>Insp Done</th> <th>Freq:</th> <th>Insp. Date:</th> <th>Next Insp.:</th> </tr> </thead> <tbody> <tr> <td>NBI:</td> <td></td> <td>Y</td> <td>24</td> <td>1/18/2015</td> <td>1/18/2017</td> </tr> <tr> <td>FC Freq.:</td> <td>Y</td> <td>Y</td> <td>24</td> <td>1/18/2015</td> <td>1/18/2017</td> </tr> <tr> <td>UW Freq.:</td> <td>N</td> <td>N</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>OS Freq.:</td> <td>Y</td> <td>N</td> <td>24</td> <td>1/23/2014</td> <td>1/23/2016</td> </tr> </tbody> </table>						Type	Insp Req.	Insp Done	Freq:	Insp. Date:	Next Insp.:	NBI:		Y	24	1/18/2015	1/18/2017	FC Freq.:	Y	Y	24	1/18/2015	1/18/2017	UW Freq.:	N	N	NA	NA	NA	OS Freq.:	Y	N	24	1/23/2014	1/23/2016																																	
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55A/55B. Minimum Lateral Underclearance R: N Feature not hwy or RR 0.0 ft																																																																							
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31. Design Load: 0 Unknown	41. Posting status: P Posted for load																																																																						
63. Op. Rating Method: 1 LF Load Factor-Ton	Alt. Op. Rating Meth.: 1 LF Load Factor-To																																																																						
64. Operating Rating (H / HS / 3-3):	12.3	22.2      -1.1																																																																					
66. Inventory Rating (H / HS / 3-3):	7.4	13.3      -1.1																																																																					
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70. Posting: 4 0.1-9.9%below	Date Rated: 4/18/2013																																																																						
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# OKLAHOMA DEPARTMENT OF TRANSPORTATION - Bridge Inspection Report

NBI No.: **03024**    Structure No.: 14N3160E1170001    Local ID: O-127

Suff. Rating: 17.5  
ND

Health Index :  
35.1

Inspection Date: 1/18/2015    Reported By: BBLACKMORE  
 Invoice No.: 0    Inspected With: Tom Allen  
 Agency :



### Structure / Inspection Notes

1/2013 - bridge repaired and reopened  
 OS Inspection 1/22/14: There is no change of the South stone masonry abutment wall or east wing. No wings have been installed at the North abutment. Old North abutment East wing wall collapsed and channel bank eroded to edge of roadway and new abutment. The bridge owner was contacted on 1-22-2014 and they closed the bridge due to the collapsed wingwall and channel bank erosion threatening the roadway and new abutment. After the bridge owner was contacted, they closed until the repairs were completed. The Old North abutment East wingwall was repaired and backfilled to fix the collapsed wingwall. Photos of the replaced wingwall have been included with this report. After repairs were completed, the bridge was reopened to traffic.

PX – Monitor the south stone masonry abutment.

Elm.	Env.	Description	Un.	Qty.	Qty.St. 1	% 1	Qty.St. 2	% 2	Qty.St. 3	% 3	Qty.St. 4	% 4	Qty.St. 5	% 5
31	4	Timber Deck	(SF)	1,098	1,098	100 %	0	0 %	0	0 %	0	0 %	0	0 %
113	1	Steel Stringer/Floorbeam	(LF)	438	0	0 %	0	0 %	438	100 %	0	0 %	0	0 %
120	1	Steel Truss (Pony)	(LF)	122	0	0 %	0	0 %	122	100 %	0	0 %	0	0 %
152	1	Steel Floor Beam	(LF)	100	0	0 %	0	0 %	100	100 %	0	0 %	0	0 %
162	1	Steel Gusset Plate	(EA)	24	0	0 %	0	0 %	24	100 %	0	0 %	0	0 %
202	1	Steel Column or Pile Extension	(EA)	10	0	0 %	0	0 %	10	100 %	0	0 %	0	0 %
217	4	Masonry Abutment	(LF)	40	0	0 %	0	0 %	40	100 %	0	0 %	0	0 %
231	4	Steel Pier Cap	(LF)	36	0	0 %	0	0 %	36	100 %	0	0 %	0	0 %
313	1	Fixed Bearing	(EA)	4	4	100 %	0	0 %	0	0 %	0	0 %	0	0 %
330	1	Metal Bridge Railing	(LF)	244	244	100 %	0	0 %	0	0 %	0	0 %	0	0 %
515	1	Steel (Superstructure) Protective Coating	(SF)	3,500	0	0 %	0	0 %	3,500	100 %	0	0 %	0	0 %
877	1	Steel Stringer End (5 Ft.)	(LF)	50	0	0 %	50	100 %	0	0 %	0	0 %	0	0 %
918	1	Steel (Substructure) Protective Coating	(SF)	172	0	0 %	0	0 %	172	100 %	0	0 %	0	0 %
919	1	Steel (Railing) Protective Coating	(SF)	801	801	100 %	0	0 %	0	0 %	0	0 %	0	0 %
957	4	Pack Rust	(EA)	1	0	0 %	1	100 %	0	0 %	0	0 %	0	0 %
962	1	Superstructure Traffic Impact	(EA)	1	0	0 %	1	100 %	0	0 %	0	0 %	0	0 %
963	4	Steel Section Loss	(EA)	1	0	0 %	1	100 %	0	0 %	0	0 %	0	0 %
965	1	Debris	(EA)	1	0	0 %	1	100 %	0	0 %	0	0 %	0	0 %
968	1	Erosion	(EA)	1	0	0 %	1	100 %	0	0 %	0	0 %	0	0 %
970	1	Wing	(EA)	2	0	0 %	1	50 %	1	50 %	0	0 %	0	0 %

Additional Elements

Elem.	Element Notes (Include Size and Location of Deterioration)
31	Minor to moderate wear. The transverse planks and longitudinal runners have minor cracking at random locations.
113	Minor to moderate surface corrosion with pitting and section loss up to 30% at random stringer bottom flange locations and minor pitting. Flaking paint is common throughout with random failed locations.
120	Members exhibit minor pitting with freckled rust throughout on all surfaces.
152	Minor surface corrosion over 90% of member surface area.
162	West truss U3 gusset plate is slightly warped due to impact damage.
202	Minor surface corrosion with pitting and localized section loss of 10% and 20% at south abutment pile no. 2 and 3 at the base of the piles.
217	PX - Minor soil piping occurring due to extensive loss of joint mortar. Stones slope downward from west to east at the south abutment with stair step gaps between piles.
231	Cap has freckled surface corrosion with minor pitting.
313	Freckled rust with minor pitting exists on surfaces.
330	W-Beam Guard Rail in place across full length of bridge and past ends. Ends of guard turned down and buried.
515	The paint has failed throughout the trusses. Corrosion is bleeding through the coating of the floor beams and stringers with numerous areas of coating failure.
877	Minor to moderate surface corrosion with pitting and section loss up to 30% at random stringer bottom flange locations and minor pitting. Flaking paint is common throughout with random failed locations.
918	The paint has failed throughout the pier cap.
919	Galvanized surface in very good condition.
957	Minor pack rust at connections of floor beams / truss web verticals and at stringers / floor beams.
962	Gusset plate deformed from previous impact damage. Other sections repaired from previous impact damage.
963	Minor section loss (<10 %) exists at lower portions of piles. Stringers have minor pitting and section loss at random locations of the bottom flanges from 10% to 30%.

**OKLAHOMA DEPARTMENT OF TRANSPORTATION -**

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Elem.	Element Notes (Include Size and Location of Deterioration)
965	Debris build up exists downstream of bridge.
968	Erosion exists at south abutment east and west wings and at the west end of the north abutment.
970	PX - The east wing at the south abutment is settling resulting in open gaps between the stones.