ADDENDUM No. 3

Walnut Street Bridge Repair and Rehabilitation
TDOT PIN: 128099.00
Federal Project Number: STP-M-9202(134)
State Project Number: 33LPLM-F3-229
Chattanooga Department of Public Works

This Addendum #3, is being issued to provide:

1. Plan Holder List
2. Asbestos Survey Report
3. Permit Guidance
4. Original Walnut Street Bridge Plans
5. Walnut Street Bridge Repair Plans 2009, 2016
6. Walnut Street Bridge Inspection 2008, 2015
7. Supplemental Electrical Information
8. Partial list of Questions and Answers (more answers to questions to come in Addendum 4)

Should you require additional clarification or need additional information please contact City of Chattanooga Purchasing (423. 643.7230), or by emailing bidinfo@chattanooga.gov. Please include the title 'Walnut Street Bridge Repair and Rehabilitation' with your request for information.

Bidder Must Acknowledge Receipt of this Addendum on Bid Form

July 12, 2024 /s/ William C. Payne, P.E., City Engineer

PLANS

WALNUT STREET PEDESTRAIN BRIDGE REPAIR & REHABILITATION

TDOT PIN: 128099.00

COMPANY NAME	EMAIL
Not Bidding	
~~J Brennan Construction~~	~~bert@jbrennan.com~~
Shimmick/2 copies	patty.dixon@shimmick.com
Southern Road + Bridge	kbeglan@southernrb.com
Bell + Associates	cmaxwell@bellconstruction
Wright Brothers	Drewmer@wbcci.com company.com jdavis@wbcci.com
Celco	mkontovich@gmail.com
Builders Exhange	heather@bvtn.org
Simpson Construction	aaron@summerstaylor.com
Adams Contracting	sarggins@adamscontracting.ky.com
Abbe + Svoboda	darrell.hauck@abbeonline.com
Royal Bridge	nick@royalbridgeinc.com
Centurion Stone + Exteriors	~~elif~~ ctant1045@gmail.com

January 25, 2023

Volkert, Inc.
1428 Chestnut Street, Suite 118
Chattanooga, Tennessee 37402

Attention: Mr. Dennis Bouton, P.E.

Reference: **Report of Limited Asbestos Evaluation**
Walnut Street Pedestrian Bridge
Chattanooga, Hamilton County, Tennessee
S&ME Project No. 22810310

Dear Mr. Bouton:

S&ME, Inc. (S&ME) is pleased to provide this report of limited asbestos evaluation to Volkert, Inc. at the request of the Tennessee Department of Transportation (TDOT) for the existing pedestrian bridge structure at Walnut Street over the Tennessee River (TDOT Bridge No. 33-03544-00.12) located in Chattanooga, Hamilton County, Tennessee.

One material in this report was identified as an asbestos-containing material (ACM). This material is a pipe wrap coating that exists along a waterline owned and operated by Tennessee American Water Company (TAWC). S&ME understand that TAWC has communicated to Volkert, Inc. that they intend to replace this waterline (including the abatement of the identified ACM) prior to the commencement of the bridge rehabilitation project. If you have any questions concerning the project or if you would like to discuss the services performed, please contact us by telephone or electronic mail.

Sincerely,
S&ME, Inc.

Joshua R. Wilson
Environmental Scientist

James R. Bruce, P.G., CHMM
Senior Reviewer

Attachment: Asbestos Survey Report

TENNESSEE DEPARTMENT OF TRANSPORTATION
ASBESTOS SURVEY REPORT

Bridge Number: 33-03544-00.12
Walnut Street Pedestrian Bridge over Tennessee River
TDOT Const: 33LPM-F3-229, PIN: 128099.00
Hamilton County, Tennessee



PREPARED BY:
S&ME, Inc. on behalf of Volkert, Inc.

25 January 2023

Joshua R. Wilson
Tennessee Asbestos Inspector Accreditation No: 170576-122101

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1.0 INTRODUCTION

This report presents the findings of an inspection for asbestos-containing materials (ACM) completed on the bridge identified in Section 1.1. The inspection was completed by S&ME, Inc. (S&ME) in accordance with the State of Tennessee, Department of Transportation Environmental Division, Social and Cultural Resources Office, Hazardous Materials Section requirements and in general accordance with National Emissions Standards for Hazardous Air Pollutants (NESHAP) and the sampling protocol described in the Asbestos Hazard Emergency Response Act (AHERA) to provide representative samples of each suspect ACM.

1.1 TDOT Bridge Identification

The bridge is identified in the TDOT Project System/Bridge Management System as:

Bridge: 33-03544-00.12
Termini: Walnut Street Pedestrian Bridge
County: Hamilton
TDOT Const: 33LPLM-F3-229
TDOT PIN: 128099.00

1.2 General Description

Bridge Number 33-03544-00.12 (Walnut Street Pedestrian Bridge) is located over the Tennessee River in Chattanooga, Hamilton County, Tennessee. The metal truss bridge contains six pin-connected through modified Camelback trusses and 39 steel stringer spans. The existing bridge is approximately 34.8 feet wide, 2,370 feet long, and was constructed in 1891 and widened in 1989. The bridge was constructed with two 210-foot trusses approximately 38 feet in height at their highest point, three 320-foot channel spans which are approximately 48 feet in height at their highest points, and one 210-foot span with a height of 38 feet. The bridge is scheduled for rehabilitation. Volkert provided S&ME with Final Construction Plans for the Walnut Street Pedestrian Bridge prepared by Volkert and Maffett Loftis Engineering, LLC, dated July 11, 2022. The Final Construction Plans outline the full extent of the rehabilitation project from start to completion including structural and electrical components to be reconfigured. The scope of work indicates that all defective steel elements of the bridge will be repaired; all steel elements will be sandblasted and repainted; all electrical and lighting components on the bridge will be replaced; and deteriorated timber deck boards that make up the walking surface of the bridge will be replaced.

2.0 INSPECTION

The identification of ACM is performed by collecting bulk samples of suspect materials and having those samples analyzed by a laboratory. ACM are those materials found to contain greater than one percent asbestos by calibrated visual area estimation by Polarized Light Microscopy (PLM).

Bulk sampling is a procedure in which representative homogeneous sampling areas in a structure are identified and then sampled. A homogeneous sampling area is defined as an area that contains material of the same type (uniform in color and texture) and was applied during the same general time period. Once the homogeneous sampling areas are identified, bulk samples of suspect materials were obtained from the homogeneous areas (HAs) at the discretion of our inspectors, based on site conditions and past experience.

S&ME made a reasonable attempt to access areas included in the referenced areas at the time of the assessment. Several areas were inaccessible due to safety concerns related to this project. Tops of each individual piers were accessed through access panels located on the bridge deck. Abutments were accessed from the ground. If additional materials are encountered during the bridge rehabilitation projects, they should be presumed to contain asbestos until sampled for asbestos.

2.1 Personnel and Date(s) of Inspection

The sampling and field activities were performed on December 1 and 2, 2023, by Joshua R. Wilson (S&ME), an Accredited State of Tennessee Asbestos Inspector, and James R. Bruce (S&ME). Copies of the inspector and S&ME's current accreditations from the State of Tennessee are included in Appendix A.

2.2 Visual Survey

The survey began with a walk-through and visual survey of the structures located on the property. The visual survey consisted of:

- Sketching the structure and/or verifying the plans provided (TDOT/Federal Highway Administration (FHWA) Tennessee Division)
- Locating and identifying HAs of suspect materials that may contain asbestos minerals
- Determining applicable sampling locations

2.3 Access to Bridge Components

Individual bridge components were accessed by the following methods:

2.3.1 Top of Bridge Deck (Homogenous Area 5 & 6)

The top of the bridge is constructed of timber planking on steel stringers. Areas of patched concrete (Homogeneous Area 5) were observed between sections of timber that had been deteriorated through weathering over time. The original concrete bridge deck construction was completed by 1891 and renovated/rehabilitated in 1993. Foam insulation material was observed between electric boxes and steel I-beams (Homogeneous Area 6). Three samples of the cementitious concrete patching from the deck were collected from Homogenous Area 5. Three samples of the foam insulation material were collected from Homogenous Area 6. Samples were obtained using hammers and chisels and placed in sampling bags.

2.3.2 Underside of Bridge Deck

The bridge was constructed with a steel stringer deck overlain with a timber surface. The underside of the bridge deck is discussed further in Section 2.3.1. No samples were collected from the underside of the bridge deck.

2.3.3 Bridge Beams (Homogeneous Area 8)

The bridge is constructed with steel and iron joint I-beams and with diagonal shear connectors between the longitudinal steel I-beams and the orthotropic steel deck. No samples were collected from the steel connectors or steel I-beams.

2.3.4 Bridge Piers/Bents and Support (Homogeneous Areas 3, 4, and 10-14)

The bridge was constructed with six piers constructed from grouted limestone masonry resting on bedrock with concrete caps. A total of 38 bents constructed on the north bank (bents 7 – 44) were constructed from steel I-beam columns. The bents are stabilized on the north shore with concrete footers. The original pier system construction was completed in 1891 with grouted limestone column piers.

Three samples of cementitious surfacing observed on concrete footers on the north bank were sampled from Homogeneous Area 3. Three samples of blue paint and concrete coating within the steel footing above the concrete footer were sampled from Homogeneous Area 4. Three samples of a canvas material protecting a climbing wall cable were sampled form Homogeneous Area 10 at the top of the pier located on the north bank of the river. Three samples were collected from a concrete patch located on the northernmost pier in the river from Homogeneous Area 11. Three samples were collected from a coating material with a

black mastic located on the pier on the north bank from Homogeneous Area 12. Four samples were collected from a porous thicker pier coating from several of the pier tops where the material was present from Homogeneous Area 13. Six samples were collected from a thinner pier coating from several of the pier tops where the material was present from Homogeneous Area 14.

2.3.5 Bridge Rails

The bridge was constructed with steel handrails. The steel handrails are discussed further in Section 2.3.1. No samples were collected from the steel handrails.

2.3.6 Abutments (Homogeneous Areas 1 and 7)

The bridge abutments consisted of a concrete substrate material. Fibrous bearing pads (Homogeneous Area 1) were observed between steel I-beams and the concrete substrate. A rubbery fibrous material was observed at the south abutment (Homogeneous Area 7). Three samples were collected from the fibrous bearing pad material on the north abutment as Homogenous Area 1. Three samples were collected from the fibrous material on the south abutment from Homogenous Area 7. The samples were obtained using hammers, chisels, and razors, and placed in sampling bags.

2.3.7 Bridge Drainage

No drainage systems were observed on the bridge structure. Drainage occurs by flowing off either west or east side of the bridge structure.

2.3.8 Utilities (Homogenous Areas 2, 9, and 15)

Presumed electrical conduit piping was observed at both the north and south abutment walls. A municipal water utility line was observed at the northernmost pier, where it is affixed from the ground up to the underside of the bridge deck where it extends along the underside of the bridge deck to the south abutment. Six total samples of the waterline pipe wrap material were sampled; three were collected from the north end of the bridge and three were collected from the south end of the bridge as Homogeneous Area 15. Electrical conduit pipe samples were sampled at the north and south ends of the bridge where the materials were safely accessible. Three samples of a pipe connection observed at the north end of the bridge were sampled as Homogeneous Area 2. Three samples of the pipe observed at the south end of the bridge were sampled as Homogeneous Area 9. It is important to note that HA-15 was determined through laboratory analysis to contain asbestos. This utility line is owned by Tennessee American Water Company (TAWC). TAWC has communicated to Volkert that they plan to replace this pipe,

which would include abating the ACM material prior to the commencement of the bridge rehabilitation project.

2.3.9 Other Environmental Concerns

No environmental concerns were observed at the bridge structure.

3.0 ANALYTICAL PROCEDURES

3.1 Asbestos Analysis Procedures

The bulk samples are analyzed in the laboratory using PLM coupled with dispersion staining (EPA Method 600/R-93/116). PLM is an analytical method for asbestos identification, which identifies the specific asbestos minerals by their unique optical properties. The optical properties are a result of the mineral's chemical composition, physical atomic structure, and visual morphology. This is the U.S. Environmental Protection Agency (EPA) recommended method of analysis for asbestos identification in bulk samples.

Samples which contain multiple layers, or that have associated mastic or adhesive backing, are analyzed as two or more separate samples when possible.

3.2 Laboratory Name and Accreditation

The bulk samples collected for this inspection were analyzed by S&ME, Inc., an American Industrial Hygiene Association's (AIHA) National Voluntary Laboratory Accreditation Program (NVLAP) certified laboratory (accreditation number 102075-0).

4.0 REGULATORY OVERVIEW

4.1 National Emission Standards for Hazardous Air Pollutants

The EPA's NESHAP regulations (40 CFR 61, Subpart B) requires that all regulated asbestos-containing materials (RACM) be properly removed prior to any renovation or demolition activities that will disturb them. These regulations define RACM as:

- Friable ACM.
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that will be or has been subject to sanding, grinding, cutting, or abrading.

- Category II non-friable ACM that has a high probability of becoming, or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

4.1.1 Definitions

Significant definitions related to regulation of asbestos under NESHAPS regulations include:

Friable asbestos-containing material (ACM) is defined by the Asbestos NESHAP, as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. (Sec. 61.141).

Non-friable ACM is any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. EPA also defines two categories of non-friable ACM, Category I and Category II non-friable ACM, which are described as follows:

Category I non-friable ACM is any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product which contains more than one percent (1%) asbestos as determined using polarized light microscopy (PLM) according to the method specified in Appendix A, Subpart F, 40 CFR Part 763. (Sec. 61.141).

Category II non-friable ACM is any material, excluding Category I non-friable ACM, containing more than one percent (1%) asbestos as determined using polarized light microscopy according to the methods specified in Appendix A, Subpart F, 40 CFR Part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. (Sec. 61.141).

"Regulated Asbestos-Containing Material" (RACM) is (a) friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Friable materials are defined as those which can be crumbled, pulverized, or reduced to powder by hand pressure when dry. The NESHAP regulations also establish specific notification and control requirements for renovation and demolition work.

5.0 RESULTS

The results of the asbestos inspection are presented in the following sections.

5.1 Results of Asbestos Bulk Sample Analysis

A total of 48 samples were obtained from the Bridge 33-03544-00.12. Multiple samples of each HA were collected in accordance with State of Tennessee, Department of Transportation Environmental Division, Social and Cultural Resources Office, Hazardous Materials Section requirement and in general accordance with NESHAP and the sampling protocol described in the AHERA to provide representative samples of each suspect ACM and delivered to the laboratory for visual observation and microscopic analysis. The samples were selected based on HAs of suspect materials, as described in Section 2.2.

Table 1 details the summary of HAs sampled. Table 2 details the summary of materials which were determined to contain asbestos. The analytical results of all the samples collected from the structure, along with the chain-of-custody records, are included in Appendix C.

6.0 QUALIFICATIONS

The information presented herein is based on information obtained during the site visit(s) and from previous experience. If additional information becomes available, which might impact our conclusions or recommendations, S&ME requests the opportunity to review the information, reassess the potential concerns, and modify opinions, if warranted.

This report has been prepared on behalf of the Tennessee Department of Transportation. This document is not a Bid Document or a Contract Document. Use of this report or reliance upon information contained in this report by any other party implies an agreement by that party to the same terms and conditions under which service was provided. Furthermore, any party, other than our Client, relying on this document is cautioned that all conclusions made or decisions arrived at based on their review of this document are those solely of the third party, without warranty, guarantee or promise by the author. These findings are relevant to the dates of our services and should not be relied upon to represent conditions at substantially earlier or later dates.

Tables

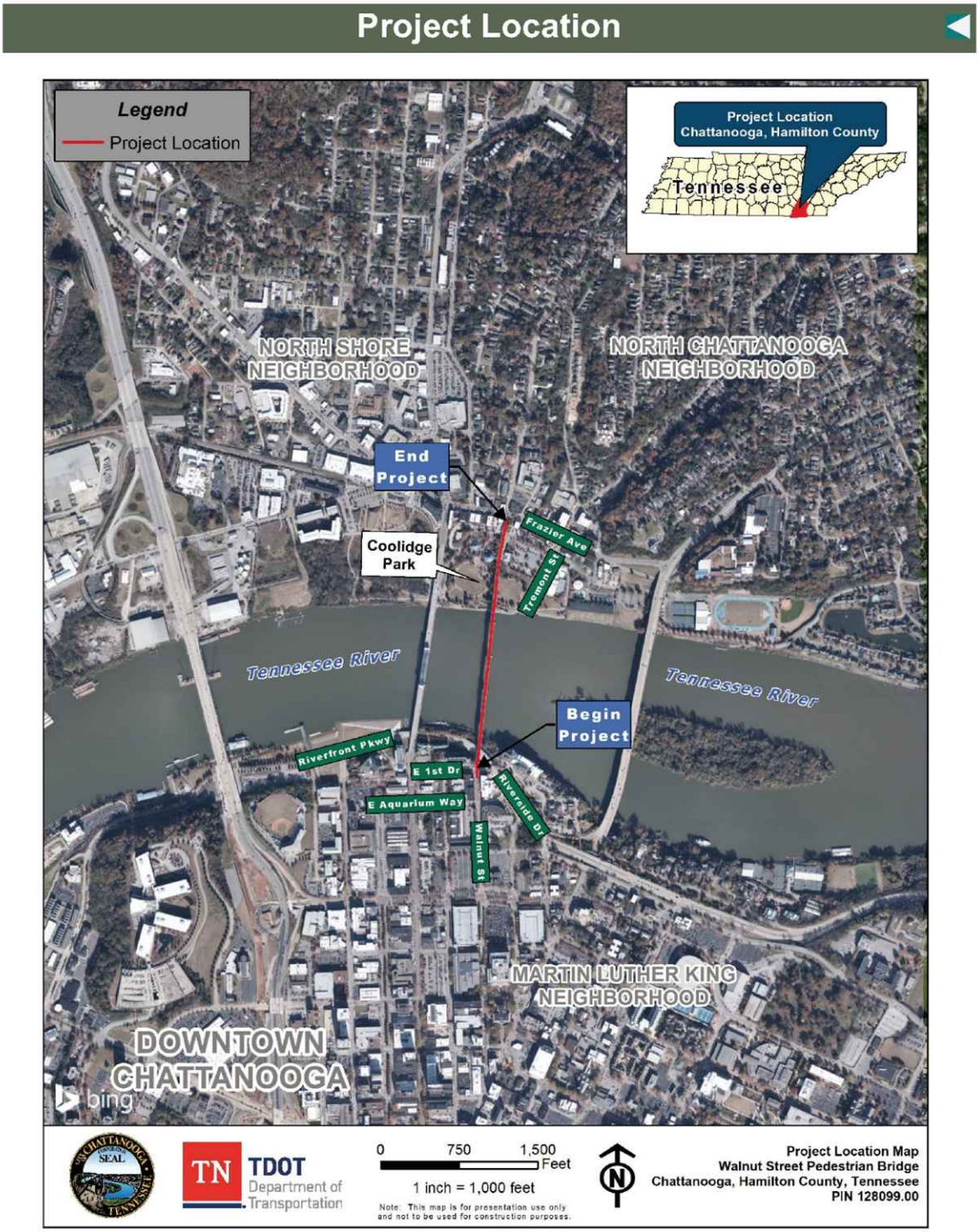
TABLE 1- Summary of Homogeneous Areas		
Homogenous Area	**Material Type**	**Sample Numbers**
1	Rubber/Fibrous bearing pad (below deck -affixed to north abutment)	1A
		1B
		1C
2	Gray sealant on black pipe (subdeck)	2A
		2B
		2C
3	Cementitious surfacing over concrete substrate (northern footer)	3A
		3B
		3C
4	Blue paint and gray coating within the steel footing (northern footer)	4A
		4B
		4C
5	Concrete patch on decking (patched area on deck surface)	5A
		5B
		5C
6	Foam insulation (electric boxes above deck)	6A
		6B
		6C
7	Rubbery/Fibrous material south abutment (abutment wall)	7A
		7B
		7C
8	Blue paint (south abutment and above bridge piers underneath deck)	8A
		8B
		8C
		8D
		8E
9	Black fibrous pipe (beneath deck near south abutment)	9A
		9B
		9C
10	Canvas material protecting climbing wall cable (north pier)	10A
		10B
		10C
11	Concrete patch on pier surface (north river pier)	11A
		11B
		11C
12	Gray cementitious surfacing around perimeter of pipe penetration (breast abutment wall)	12A
		12B
		12C

TABLE 1- Summary of Homogeneous Areas		
Homogenous Area	**Material Type**	**Sample Numbers**
13	Porous, thicker pier surface coating (bridge pier surfaces)	13A
		13B
		13C
		13D
14	Thin pier coating (bridge pier surfaces)	14A
		14B
		14C
		14D
		14E
		14F
15	Pipe wrap material	N-A
		N-B
		N-C
		S-A
		S-B
		S-C

Table 2 – Materials Containing Asbestos						
Sample No.	**Material Type**	**Location**	**Quantity (Estimated)**	**NESHAP Cat.**	**Condition**	**% Asbestos and Type**
N-A	**Pipe Wrap Material**	**HA-15 North End of Bridge**	**1,600 Linear Feet**	**II**	**Poor**	**15% Chrysotile**
N-B						
N-C						
S-A		**HA-15 South End of Bridge**				**65% Chrysotile**
S-B						
S-C						

Figures

FIGURE 1: Bridge Location Map

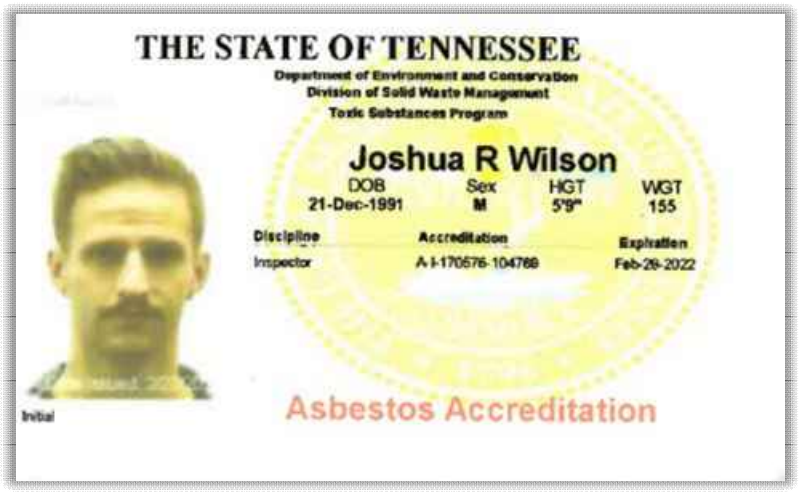


128099.00 10/19/2021 Version 7.20.18 Page 3

FIGURE 2: Bridge Profile and Sample Locations



Appendix A:
Asbestos Inspection Credentials


THE STATE OF TENNESSEE
Department of Environment and Conservation
Division of Solid Waste Management
Toxic Substances Program
Joshua R Wilson
DOB 21-Dec-1991
Sex M
HGT 5'9"
WGT 155
Discipline Inspector
Accreditation A-I-170576-104768
Expiration Feb-28-2022
Initial
Asbestos Accreditation

THE STATE OF TENNESSEE

Department of Environment and Conservation Division of Solid Waste Management
Toxic Substances Program
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 14th Floor Nashville TN 37243

By virtue of the authority vested by the Division of Solid Waste Management, the Company named below is hereby accreditted to offer and/or conduct Asbestos activities pursuant to Rule 1200-01-20:

S&ME Inc.

6815 Nightingale Lane Knoxville TN, 37909

to conduct ASBESTOS ACTIVITIES in schools or public and commercial buildings in Tennessee. This firm is responsible for compliance with the applicable requirements of Rule 1200-01-20.

Discipline	Type	Accreditation Number	Effective Date	Expiration Date
Accreditation	Re-Accreditation	A-F-68-113550	August 09, 2021	September 30, 2022

Given under the Seal of the State of Tennessee in Nashville.

This 9th Day of August 2021

Division of Solid Waste Management
Toxic Substance Program

CN-1324 (Rev 6/13) RDA-3020

Appendix B:
Photographs

Photographer:
Rick Bruce

Date:
12-01-2022

Description:

Photograph 1 –

Walnut Street
Pedestrian Bridge



Photographer:
Josh Wilson

Date:
12-01-2022

Description:
Photographs 2, 3, & 4 –

Homogeneous Area 1-
Rubber/fibrous bearing pad on the north abutment

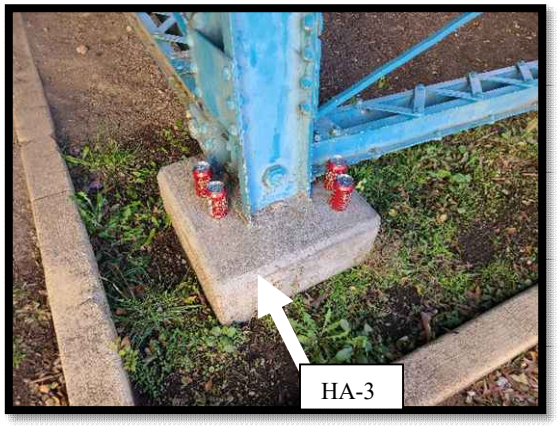
Homogeneous Area 2-
Gray sealant on black pipe by north abutment

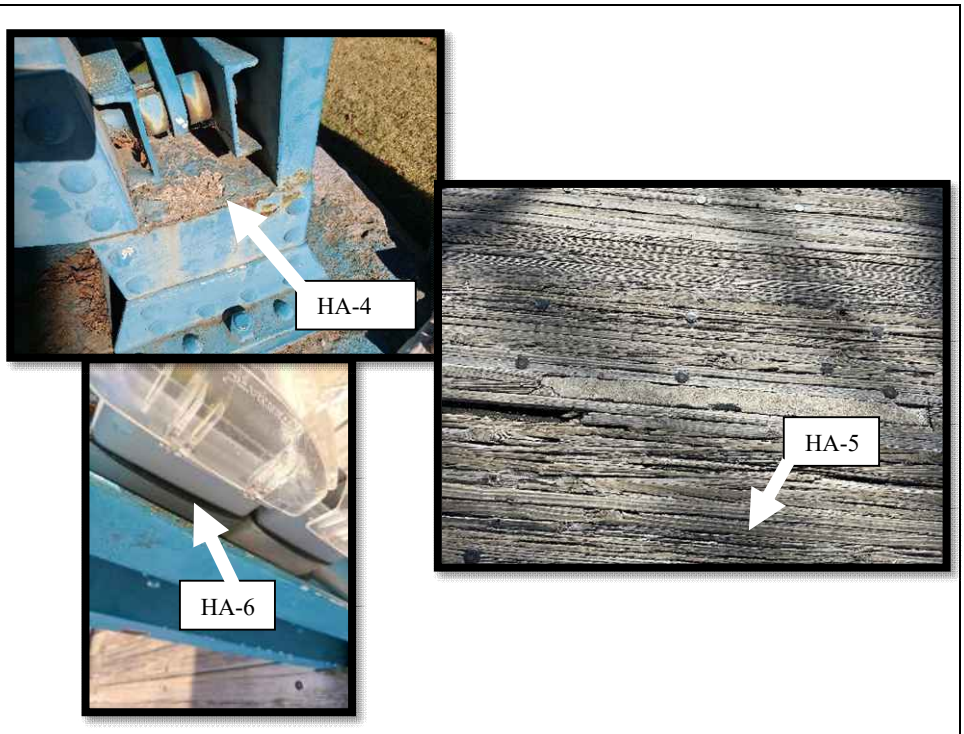
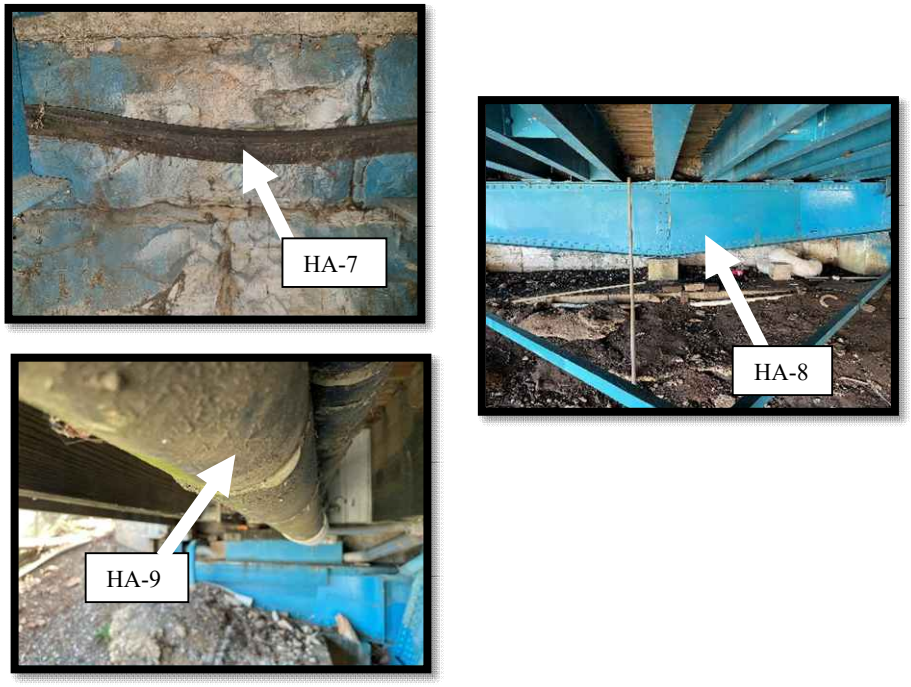
Homogeneous Area 3-
Gray cementitious surfacing over concrete footer by north abutment

Sample Locations-
1A, 1B, 1C
2A, 2B, 2C
3A, 3B, 3C







Photographer: Josh Wilson **Date:** 12-01-2022 **Description:** Photographs 5, 6, 7 – Homogeneous Area 4- Blue paint and concrete coating within steel footing Homogenous Area 5- Concrete patch on wooden deck Homogenous Area 6- Foam insulation on electric boxes on the bridge deck Sample Locations- 4A, 4B, 4C 5A, 5B, 5C 6A, 6B, 6C	
Photographer: Josh Wilson and Rick Bruce **Date:** 12-01-2022 **Description:** Photograph 8, 9, 10 – Homogeneous Area 7- Rubbery/fibrous material on south abutment Homogenous Area 8- Blue paint Homogenous Area 9- Black fibrous pipe material Sample Locations- 7A, 7B, 7C 8A, 8B, 8C, 8D, 8E 9A, 9B, 9C	

Photographer:
Josh Wilson and Rick Bruce

Date:
12-02-2022

Description:

Photographs 11, 12, 13–

Homogeneous Area 10- Canvas material protecting climbing wall cable

Homogenous Area 11- Concrete patch on pier

Homogenous Area 12- Pier coating with black mastic

Sample Locations-
10A, 10B, 10C
11A, 11B, 11C,
12A, 12B, 12C







Photographer:
Josh Wilson

Date:
12-02-2022

Description:

Photographs 14 & 15 –

Homogeneous Area 13- Porous, thicker pier coating

Homogeneous Area 14- Thin pier coating

Sample Locations-
13A, 13B, 13C, 13D
14A, 14B, 14C, 14D,
14E, 14F





Photographer:
Josh Wilson

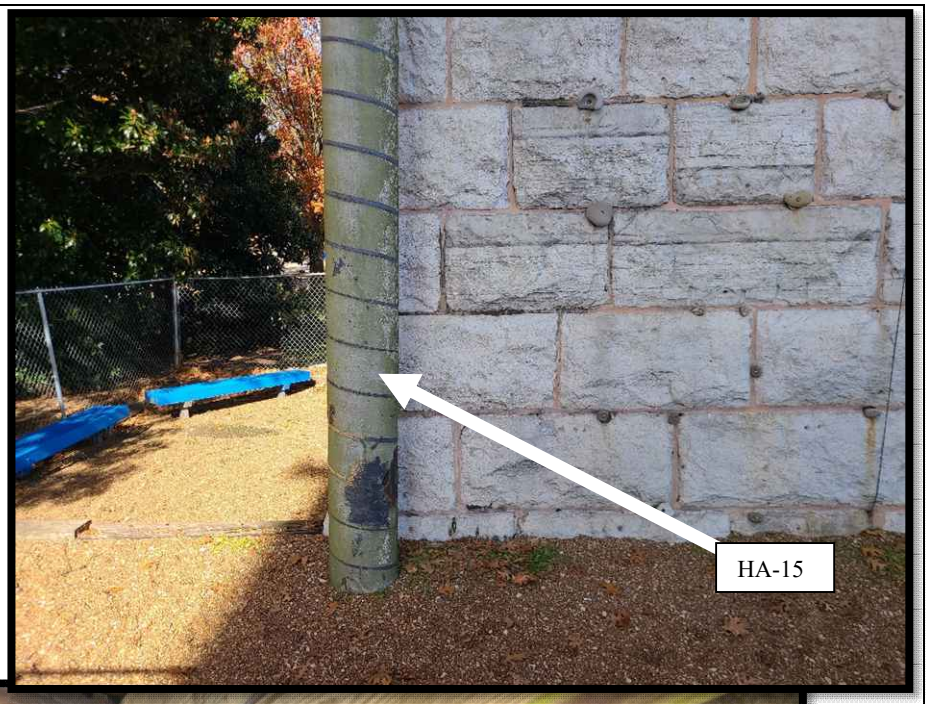
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12-01-2022

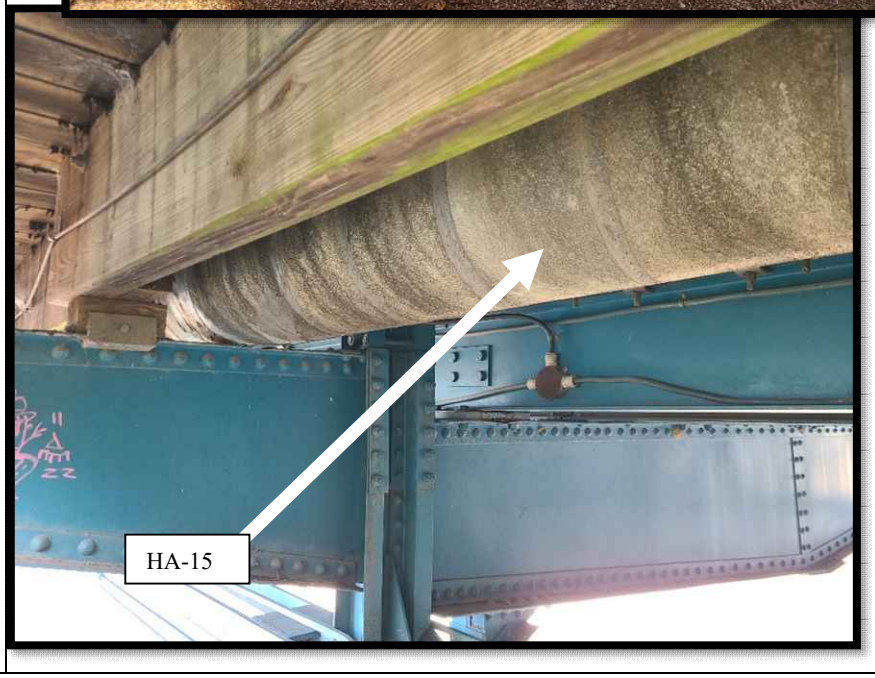
Description:

Photographs 16 & 17 –

Homogeneous Area 15-
Pipe Wrap Coating

Sample Locations-
N-A, N-B, N-C
S-A, S-B, S-C





Appendix C:
Asbestos Sample Laboratory Analysis Data

9751 Southern Pine Boulevard
Charlotte, NC 28273
704-940-1830 Fax 704-565-4929
NVLAP Lab Code 102075-0

POLARIZED LIGHT MICROSCOPY
Performed by EPA 600/R-93/116 Method

Asbestos Analysis Summary

Client Name Chattanooga Office
Client Job Walnut St Bridge Volkert

4291 Hwy 58 Suite 101
Chattanooga TN 37379

Date Received 12/5/2022
Date Analyzed 12/6/2022

Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14501	1A	BLACK PLIABLE		ND		100 OTHER
22-14502	1B	BLACK PLIABLE		ND		100 OTHER
22-14503	1C	BLACK PLIABLE		ND		100 OTHER
22-14504	2A	GREY FIBROUS		ND	3 WOLLASTONITE	97 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

For heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. ND = None Detected (Asbestos Not Present In Representative Sample). RCF= (Refractory Ceramic Fiber) The results relate only to the items tested.
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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14505	2B	GREY FIBROUS		ND	3 WOLLASTONITE	97 OTHER
22-14506	2C	GREY FIBROUS		ND	3 WOLLASTONITE	97 OTHER
22-14507	3A	GREY CEMENTITIOUS		ND		100 OTHER
22-14508	3B	GREY CEMENTITIOUS		ND		100 OTHER
22-14509	3C	GREY CEMENTITIOUS		ND		100 OTHER
22-14510	4A	AQUA NONFIBROUS		ND		100 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14511	4B	AQUA NONFIBROUS		ND		100 OTHER
22-14512	4C	AQUA NONFIBROUS		ND		100 OTHER
22-14513	5A	GREY CEMENTITIOUS		ND		100 OTHER
22-14514	5B	GREY CEMENTITIOUS		ND		100 OTHER
22-14515	5C	GREY CEMENTITIOUS		ND		100 OTHER
22-14516	6A	BLACK SPONGY		ND		100 FOAM

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14517	6B	BLACK SPONGY		ND		100 FOAM
22-14518	6C	BLACK SPONGY		ND		100 FOAM
22-14519	7A	BLACK PLIABLE		ND		100 OTHER
22-14520	7B	BLACK PLIABLE		ND		100 OTHER
22-14521	7C	BLACK PLIABLE		ND		100 OTHER
22-14522	8A	BLUE NONFIBROUS		ND		100 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14523	8B	BLUE NONFIBROUS		ND		100 OTHER
22-14524	8C	BLUE NONFIBROUS		ND		100 OTHER
22-14525	9A	GREY FIBROUS		ND	90 GLASS	10 OTHER
22-14526	9B	GREY FIBROUS		ND	90 GLASS	10 OTHER
22-14527	9C	GREY FIBROUS		ND	90 GLASS	10 OTHER
22-14528	8D	BLUE NONFIBROUS		ND		100 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14529	8E	BLUE NONFIBROUS		ND		100 OTHER
22-14530	10A	GREEN FIBROUS		ND	100 SYNTHETIC	
22-14531	10B	GREEN FIBROUS		ND	100 SYNTHETIC	
22-14532	10C	GREEN FIBROUS		ND	100 SYNTHETIC	
22-14533	11A	GREY CEMENTITIOUS		ND		100 OTHER
22-14534	11B	GREY CEMENTITIOUS		ND		100 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14535	11C	GREY CEMENTITIOUS		ND		100 OTHER
22-14536	12A	BLACK/GREY GRANULAR		ND		100 OTHER
22-14537	12B	BLACK/GREY GRANULAR		ND		100 OTHER
22-14538	12C	BLACK/GREY GRANULAR		ND		100 OTHER
22-14539	13A	GREY NONFIBROUS		ND		100 OTHER
22-14540	13B	SLVR/GRY NONFIBROUS		ND		100 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14541	13C	GREY NONFIBROUS		ND		100 OTHER
22-14542	13D	GREY NONFIBROUS		ND		100 OTHER
22-14543	14A	GREY NONFIBROUS		ND		100 OTHER
22-14544	14B	GREY NONFIBROUS		ND		100 OTHER
22-14545	14C	SLVR/GRY NONFIBROUS		ND		100 OTHER
22-14546	14D	SLVR/GRY NONFIBROUS		ND		100 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

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Laboratory Manager

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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14547	14E	GREY NONFIBROUS		ND		100 OTHER
22-14548	14F	GREY NONFIBROUS		ND		100 OTHER
22-14549	N-A	BLACK FIBROUS		15 CHRYSOTILE	1 HAIR	84 OTHER
22-14550	N-B	BLACK FIBROUS		15 CHRYSOTILE	1 HAIR	84 OTHER
22-14551	N-C	BLACK FIBROUS		15 CHRYSOTILE	1 HAIR	84 OTHER
22-14552	S-A	GREY/BLACK FIBROUS		65 CHRYSOTILE	2 HAIR	33 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

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Job Number 22810310

Lab ID:	*Sample #:*	*Appearance*	*Comments*	*Asbestos %/Type*	*Non-Asbestos Fibrous %/Type*	*Non-Fibrous %/Type*
22-14553	S-B	GREY/BLACK FIBROUS		65 CHRYSOTILE	2 HAIR	33 OTHER
22-14554	S-C	GREY/BLACK FIBROUS		65 CHRYSOTILE	2 HAIR	33 OTHER

Analyzed by: Jane Wasilewski

Additional Comments: Initial issue 12/7/22, 2nd issued 1/20/23 added additional samples from same project pages 9-10.

Jane Wasilewski
Laboratory Manager

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BULK SAMPLE
CHAIN OF CUSTODY RECORD

Project No.	Project Name	Relinquished By:	Date	Time	Received By:
22810310	Walnut St Bridge		12/2/22	1630	12/5/22 11:00
Facility: 0		Relinquished By:	Date	Time	Received By:
Sampler(s): Josh Wilson	Date Taken: 12/1-2/22 ~~12/1000~~	Relinquished By:	Date	Time	Received By:

☐Same Day | ☐24 Hour | ☐48 Hour | ☐3 Day | ☑5 Day | ☐TEM, Std TAT | ☐Positive Stop

SAMPLE NUMBER	LAB NUMBER
1A	22-14501
1B	02
1C	03
2A	04
2B	05
2C	06
3A	07
3B	08
3C	09
4A	10
4B	11
4C	12
5A	13
5B	14
5C	15
6A	16
6B	17
6C	18
7A	19
7B	20
7C	21
8A	22
8B	23
8C	24
9A	25
9B	26
9C	14527

SAMPLE NUMBER	LAB NUMBER
8D	22-14528
8E	29
10A	30
10B	31
10C	32
11A	33
11B	34
11C	35
12A	36
12B	37
12C	38
13A	39
13B	40
13C	41
13D	42
14A	43
14B	44
14C	45
14D	46
14E	47
14F	14548
N-A	22-14549
N-B	50
N-C	51
S-A	52
S-B	53
S-C	14554

Special Instructions / Comments:

Appendix D:
Health and Safety Plan

Site Specific Health & Safety Plan

Project Name: **Walnut Street Bridge Volkert**	S&ME Project No.: **22810310**	Project City, State: **Chattanooga, TN**
S&ME Project Manager: **Drew Reed**	Phone No.: **(423) 580-6480**	
Local Regional Safety Coordinator: **Debbie Thomas**	Phone No.: **(865) 804-3180**	
WorkCare™ **(888)449-7787**		
Address for 911 Response: **975 E 3rd St., Chattanooga TN 37403**	Nearest Medical Facility: **Erlanger Hospital**	
Project Start Date: **12/1/2022**	Estimated Project Duration: **1 - 2 days**	

Project Contact List

Name	Phone Number	Project Role
Drew Reed	**(423) 580-6480**	S&ME Project Manager
Rick Bruce	**(865) 804-4340**	S&ME Site Manager
Josh Wilson	**(717) 683-3444**	S&ME Site Safety Officer
Rick Bruce	**(865) 804-4340**	First Aid Attendant

Subcontractor Information

Only complete this section if subcontractors will be working for S&ME on the project.

Company Name	
Contact Name	Contact Phone No.

Job Safety Analysis

Review the following information carefully and check all known hazards for the project. Review with on-site staff.

Personal Protective Equipment
- ☐ Level A PPE
- ☐ Level B PPE
- ☐ Level C PPE
- ☑ Level D PPE

General
- ☐ Confined Space Entry
- ☐ Fatigue
- ☐ Hazardous Chemicals
- ☑ In, Around or On Water
- ☐ Lock Out/Tag Out
- ☑ Overhead Work
- ☐ Pinch Points
- ☐ Rotating Equipment
- ☐ Struck-By
- ☐ Trenching and Excavations
- ☑ Working From Heights

Site Conditions
- ☑ Biological Hazards
  - ☐ Poison Ivy/Oak
  - ☑ Snakes, Animals, Insects, Birds
- ☐ Lone Worker
- ☑ Terrain Hazards
- ☑ Weather Hazards
  - ☐ Heat Stress
  - ☑ Cold Stress

ATTACHMENTS

A. **Proposal**
B. **Project Location Map**
C. **Directions to Nearest Medical Facility**
D. **Work Site Roster and Compliance Dates**
E. **Daily JSA Form**
F. **General Information**
G. **Health and Safety Plan Acknowledgement**
H. **Confined Space Entry Procedures (if applicable)**

Attachment A

Proposal

AGREEMENT FOR PROFESSIONAL SERVICES BETWEEN CONSULTANT AND SUBCONSULTANT

This Agreement made and entered into this _____ day of **November, 2022**, by and between **Volkert, Inc.**, hereafter referred to as the Consultant, and **S&ME**, hereinafter referred to as the Subconsultant; WITNESSETH THAT:

WHEREAS, the Consultant has entered into a professional services agreement with the City of Chattanooga ("Owner") dated **July 1, 2017** ("Prime Agreement") pertaining to the Project identified as **Walnut Street Bridge Rehabilitation – Phases 2, 3, and 4** ("Project");

And WHEREAS, the Prime Agreement (exclusive of compensation and other confidential terms) is hereby incorporated into this Agreement as if fully set out herein;

And WHEREAS, the Consultant desires to retain the Subconsultant to perform certain professional services as outlined in the Scope of Services;

And WHEREAS, the Subconsultant desires to perform said professional services for the Consultant;

And WHEREAS the Subconsultant is an independent contractor and is not an employee of, partner of, or joint-venturer with Consultant,

NOW, THEREFORE, for and in consideration of the mutual covenants hereinafter stipulated to be kept and performed, the parties hereto agree as follows:

ARTICLE 1
DEFINITIONS

Wherever used in this Agreement (including the Exhibits hereto) terms (including the singular and plural forms) printed with initial capital letters have the meanings indicated in the text above, in the exhibits, or in the following definitions:

1.1 PROJECT or PROJECTS. The total undertaking to be accomplished for Owner by the Consultant, other engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the services to be performed or furnished by Subconsultant under this Agreement are a part.

1.2 AGREEMENT. This written contract for professional services between Consultant and Subconsultant including any and all its attachments, exhibits, amendments, or addenda, as well as the Prime Agreement and any other agreements or other documents that are incorporated herein by reference or otherwise.

1.3 EFFECTIVE DATE. The date indicated in this Agreement on which it becomes effective, but if no such date is indicated, the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

1.4 BASIC SERVICES. The services to be performed for or furnished to Consultant by Subconsultant as set out in Article 2 and as described in the "Basic Services" of Attachment A. Referred to herein as "Services".

1.5 ADDITIONAL SERVICES. Any services beyond Basic Services as described in Article 2 and the "Basic Services" of Attachment A, as mutually agreed to in writing between Consultant and Subconsultant. Also referred to herein as "Services" as circumstances dictate.

1.6 CONSTRUCTION CONTRACT. The entire and integrated written agreement, or agreements, between Owner and Contractor concerning the Work.

1.7 CONSTRUCTION CONTRACT DOCUMENTS. Those items designated as "Contract Documents" in the Construction Contract, and which together comprise the Construction Contract.

1.8 DOCUMENTS. Data, reports, Drawings, Specifications, Record Drawings, building information models, civil integrated management models, and other deliverables, whether in printed or electronic media format, provided or furnished by Consultant to Consultant pursuant to this Agreement.

1.9 DRAWINGS. The part of the Construction Contract Documents that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

1.10 SPECIFICATIONS. The part of the Construction Contract Documents that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

1.11 SHOP DRAWINGS. All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Construction Contract Documents.

1.12 RECORD DRAWINGS. Also referred to as "As-Builts" and "As-Built Plans," Record Drawings shall mean Drawings depicting the completed Project, or a specific portion of the completed Project, prepared by Subconsultant, based on Contractor's record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and

written interpretations and clarifications, as delivered to Consultant (and subsequently by Consultant to Subconsultant), and annotated by Contractor to show changes made during construction.

1.13 CONSTRUCTION OBSERVER. The authorized representative of Subconsultant, assigned to assist Subconsultant at the Site during the Construction Phase. The Construction Observer will be Subconsultant's agent or employee and under Subconsultant's supervision. As used herein, the term Construction Observer includes any assistants of the Construction Observer agreed to by Consultant. The duties and responsibilities of the Construction Observer, if any, are as set forth in the "Basic Services" of Attachment A.

1.14 CONTRACTOR. An individual or entity (not including the Consultant, its employees, officers, or directors) with which Owner enters into a Construction Contract to perform or support construction activities relating to the Project, including but not limited to subcontractors and suppliers and the employees, agents, and representatives of any or all of them.

1.15 APPLICABLE LAWS AND REGULATIONS/LAWS OR REGULATIONS. Applicable Laws and Regulations/Laws or Regulations, as used herein, shall mean the law of the State of Tennessee as well as applicable regulations, statutes, codes and licenses promulgated or issued by any board, commission or agency having authority and jurisdiction over this Agreement.

ARTICLE 2
SCOPE OF SERVICES

2.1 Subconsultant shall provide, or cause to be provided, Subconsultant's Services as set forth herein and in Exhibit A.

2.2 To the extent the terms of the Prime Agreement apply to Subconsultant's Services, the Subconsultant assumes toward Consultant all the same obligations, duties, and responsibilities that Consultant has assumed toward the Owner. If there is an inconsistency between the Prime Agreement and this Agreement, the Prime Agreement's terms and conditions shall govern. Additionally, if the Prime Agreement states that a specific provision must be included in any subagreement, or that a specific provision cannot be waived in a subagreement, the provision as set forth in the Prime Agreement shall govern.

2.3 Subconsultant shall collaborate with Consultant and perform the Services under this Agreement for Consultant in the same manner and extent that Consultant is bound by the Prime Agreement to perform services for Owner, with primary emphasis on services related to the portion of the Project specifically assigned to Subconsultant, or within Subconsultant's area of professional specialization.

2.4 Subconsultant shall communicate with Owner, other Consultant's consultants, Contractors, subcontractors, and suppliers through Consultant, or as authorized by Consultant.

ARTICLE 3
SCHEDULE FOR RENDERING SERVICES

3.1 Consultant is authorized to begin rendering services as of the Effective Date.

3.2 Subconsultant shall complete its obligations within a reasonable time, and shall make decisions and carry out its other responsibilities in a timely manner so as not to delay the Consultant's performance of its services under the Prime Agreement. Specific periods of time for rendering services or specific dates by which services are to be completed are provided in Exhibit A, and are hereby agreed to be reasonable.

ARTICLE 4
COMPENSATION, PAYMENT, and INVOICES

4.1 As compensation for satisfactory performance of the work contemplated under ARTICLE 2 above, and as full and complete compensation therefore, including all expenditures made and all expenses incurred by the Subconsultant in connection with this Agreement, the Consultant will pay the Subconsultant on a monthly basis an amount not to exceed **fourteen thousand and four hundred dollars ($14,400.00).**

4.2 Preparation and Submittal of Invoices. Subconsultant shall prepare invoices in accordance with the invoicing procedures outlined in the Prime Agreement. Subconsultant shall submit its invoices to Consultant on a monthly basis. Consultant shall submit such invoices to Owner and shall take reasonable steps to collect prompt payment from Owner.

4.3 Time for Consultant's Payment of Invoices. Invoices are due and payable within ten calendar days of receipt by Consultant of payment from Owner for Subconsultant's Services. Consultant's receipt of payment for Subconsultant's Services shall be a condition precedent to any obligation to pay Subconsultant.

4.4 Disputed Invoices. If Consultant disputes an invoice, either as to amount or entitlement, then Consultant shall advise Subconsultant of the specific basis for doing so, may withhold the portion so disputed from forwarding to Owner for payment and from payment to Subconsultant, but shall pay the undisputed portion subject to the terms of Section 4.1.

4.5 Sales or Use Taxes. If after the Effective Date any governmental entity takes a legislative or regulatory action that imposes additional sales or use taxes on Subconsultant's Services or compensation under this Agreement, then Subconsultant may invoice such additional sales or use taxes requesting reimbursement. If Consultant obtains reimbursement for the cost of such invoiced additional sales or use taxes from Owner, then Consultant shall reimburse

Subconsultant; such reimbursement of Subconsultant shall be in addition to the compensation to which Subconsultant is entitled.

ARTICLE 5
INSURANCE and INDEMNIFICATION

5.1 Indemnification. To the fullest extent permitted by law, Subconsultant shall indemnify Consultant and Consultant's officers, directors, and employees for costs, losses, judgments, damages and expenses (including reasonable attorneys' fees) to the extent caused by the negligent acts, errors, and omissions of Subconsultant in the performance of its professional Services hereunder, whether performed by Subconsultant and/or its subconsultants or other agents.

5.2 Insurance. Subconsultant shall carry or acquire, prior to the commencement of the rendering of Services hereunder, the types and minimum limits of liability insurance that are required of the Consultant in the Prime Agreement, which shall flow-down to the Subconsultant.

In the event that the Prime Agreement is silent as to liability insurance or if the Parties hereto agree otherwise in writing, Subconsultant shall furnish Consultant with a Certificate of Insurance (in generally accepted Acord™ format) confirming that Subconsultant has in full force and effect the following types and minimum limits of insurance:

TYPE OF COVERAGE			LIMITS
I.	Commercial General Liability		
	(a)	Each Occurrence:	$1,000,000
	(b)	General Aggregate:	$2,000,000
II.	Automobile Liability (Combined Single Limit BI/PD)		
	(a)	Each Accident:	$1,000,000
	(b)	Aggregate:	$2,000,000
III.	Workers' Compensation:		Statutory
IV.	Employers' Liability		
	(a)	Each Accident:	$1,000,000
	(b)	Disease, Each Employee:	$1,000,000
	(c)	Disease, Policy Limit:	$1,000,000
V.	Professional Liability		

(a)	Each Claim:	$2,000,000
(b)	Annual Aggregate:	$2,000,000

Subconsultant shall cause Consultant, Owner, and anyone else required by the Prime Agreement to be named an Additional Insured ("Additional Insureds") on Subconsultant's Commercial General Liability and Automobile Liability policies of insurance, and shall supply to Consultant either (1) separate written endorsements amending Subconsultant's said policies of insurance to that effect, or (2) any and all policy language or endorsement(s) which provide automatic or "blanket" additional insured coverage to anyone who Subconsultant must, by contact, name as an additional insured. A Certificate of Insurance indicating Additional Insureds to be "Certificate Holders" or "additional insureds" is not sufficient and will not be accepted without separate written endorsements provided by Subconsultant's Commercial General Liability insurer(s) and Automobile insurer(s) amending those policies to include Additional Insureds as additional insureds.

If any policy of property insurance relating to the Project, including but not limited to any builder's risk policy, allows for waiver of subrogation rights and contains provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insured thereunder or against Consultant or its Subconsultants, then Consultant and Subconsultant hereby waive all rights against each other, Owner, Contractor, other Consultant's subconsultants, and the respective officers, directors, members, partners, employees, subconsultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such builder's risk policy or other property insurance policy relating to the Project.

SUBCONSULTANT shall maintain in full force and effect for a period of four (4) years following either the completion of the Subconsultant's Services hereunder or the termination of this Agreement, whichever occurs later, the foregoing types and minimum limits of insurance.

ARTICLE 6
GENERAL CONSIDERATIONS

6.1 Standard of Care. Subconsultant represents that all Services shall be performed in a manner consistent with that degree of skill and care exercised by practicing professionals performing similar services under the same or similar circumstances and conditions and shall strictly conform to the requirements of the Agreement. Furthermore, Subconsultant and its subconsultants shall perform all professional Services in accordance with all Legal Requirements, satisfying the requirements called for in the Prime Agreement and this Agreement. If the Prime Agreement contains performance standards for aspects of the Subconsultant's Services that are more stringent than the standard of care set out herein, the Subconsultant agrees that it will exercise its professional skill and care consistent with the Prime Agreement. Upon receipt of written notice of a defect or deficiency in the Services, Subconsultant shall, at no cost to Consultant, promptly reperform such defective or deficient Services so that it conforms to the requirements of the Agreement.

6.2 Technical Accuracy. Neither Consultant nor Owner shall be responsible for discovering deficiencies in the technical accuracy of Subconsultant's Services. Subconsultant shall correct deficiencies in technical accuracy without additional compensation unless such corrective action is directly attributable to deficiencies in Consultant-furnished or Owner-furnished information.

6.3 Subconsultants. Subconsultant may retain such subconsultants as Subconsultant deems necessary to assist in the performance or furnishing of the Services. Subconsultant shall receive prior written approval of Consultant prior to subcontracting any portion of the Services or entering into any subconsultant agreements.

6.4 Subconsultant shall comply with all Applicable Laws and Regulations.

6.5 Subconsultant shall comply with any and all policies, procedures, and instructions of Owner and Consultant that are applicable to Subconsultant's performance of Services under this Agreement, subject to the standard of care set forth herein, and to the extent compliance is not inconsistent with professional practice requirements.

6.6 Subconsultant shall not at any time supervise, direct, control, or have authority over any Contractor's work, nor shall Subconsultant have authority over or be responsible for the means, methods, techniques, sequences, or procedures of construction selected or used by any Contractor, or the safety precautions and programs incidental thereto, for security or safety at the Site, nor for any failure of a Contractor to comply with Laws and Regulations applicable to that Contractor's furnishing and performing of its work.

6.7 Subconsultant and its employees shall comply with all requirements of Contractor's, Owner's, and/or other safety programs. Subconsultant shall also communicate all requirements of Contractor's, Owner's, and/or other safety programs to its lower-tier subconsultants, licensees, and invitees, and shall require their compliance. Subconsultant shall also provide its own safety plan and/or safe work practices commensurate with Subconsultant's scope of work. Subconsultant shall provide its employees with the appropriate personal protective equipment (PPE) and shall train them in its safe use and maintenance. Subconsultant shall be solely responsible for the safety of its employees and for providing them with a safe working environment and shall release, remise, acquit, defend, indemnify, save, and hold harmless Consultant and its officers, directors, employees, insurers, parents, successors, affiliates, and assigns for any and all responsibility, liability, damages, claims, actions, and expenses arising out of or in any way related to on-the-job injury or death to subconsultant's employees and those of its lower-tier subconsultants.

6.8 Subconsultant shall be responsible for any professional opinions and interpretations provided by Subconsultant to Consultant, Owner, or others during the construction phase or post-construction phase, including interpretations or clarifications of the Construction Contract Documents, and shall remain responsible for all other services performed or furnished under this Agreement.

6.9 Ownership of Documents; Reuse of Documents.

6.9.1 All Documents are instruments of service, and unless the Prime Agreement provides otherwise, Subconsultant shall retain an ownership and property interest therein (including the copyright and the right of reuse at the discretion of the Subconsultant) whether or not the Project is completed. If Subconsultant is terminated for cause, the Owner and/or Consultant shall be permitted to use Subconsultant's Documents to complete the work, so long as the work is under the supervision of a licensed professional.

6.9.2 If Subconsultant is required to prepare or furnish Drawings or Specifications under this Agreement, Subconsultant shall deliver to Consultant at least one original printed record version of such Drawings and Specifications, signed and sealed according to applicable Laws and Regulations.

6.9.3 Consultant and Owner may make and retain copies of all Documents for information and reference in connection with the use of the Documents on the Project. Subconsultant grants Consultant and Owner a limited license to use the Documents on the Project, extensions of the Project, and for related uses of Owner. In the event of a conflict between the Prime Agreement and this Section 6.9.3 with respect to the issue of ownership and use/reuse of Documents, the terms of the Prime Agreement shall govern.

6.10 Unless the Prime Agreement provides otherwise, Consultant and Subconsultant may transmit, and shall accept, Project-related correspondence, Documents, text, data, Drawings, information, and graphics, in electronic media or digital format, either directly, or through access to a secure Project website.

6.11 Electronic Transmittals.

6.11.1 The Consultant and Subconsultant may transmit, and shall accept, Project-related correspondence, Documents, text, data, drawings, information, and graphics, in electronic media or digital format, either directly, or through access to a secure Project website, in accordance with a mutually agreeable protocol.

6.11.2 If this Agreement does not establish protocols for electronic or digital transmittals, then Consultant and Subconsultant shall jointly develop such protocols.

6.11.3 When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

6.12 Suspension

Consultant may suspend Subconsultant's services for up to 90 days upon seven days written notice to Subconsultant.

6.13 Termination. The obligation to provide further services under this Agreement may be terminated:

6.13.1 For cause,

6.13.1(a) By either party upon thirty (30) days' written notice in the event of substantial failure by the other party to perform in accordance with the terms of this Agreement through no fault of the terminating party.

6.13.1(b) By Subconsultant: upon seven (7) days' written notice if Subconsultant's services are delayed or suspended for more than ninety (90) days for reasons beyond Subconsultant's control.

6.13.1(c) Notwithstanding the foregoing, this Agreement will not terminate under Paragraph 6.13.1(a) if, within seven (7) days of receipt of a notice to cure to correct a substantial failure to perform, the party receiving such notice proceeds diligently to cure such failure within no more than thirty (30) days of receipt thereof; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 30 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but not exceed, sixty (60) days after the date of receipt of the notice.

6.13.2 For convenience, by Consultant effective upon Subconsultant's receipt of such notice from Consultant.

6.13.3 Effective Date of Termination: The terminating party under Section 6.13 may set the effective date of termination at a time up to thirty (30) days later than otherwise provided to allow Subconsultant to demobilize personnel and equipment from the site, to complete tasks whose value would otherwise be lost, to prepare notes as to the status of completed and uncompleted tasks, and to assemble Project materials in orderly files.

6.13.4 Payments Upon Termination

6.13.4(a) In the event of any termination under Section 6.13, and subject to the payment terms of Article 4, Subconsultant will be entitled to invoice Consultant and to receive payment due and owing for all services satisfactorily performed or furnished in accordance with this Agreement through the effective date of termination. Upon complying with such payment obligations, Consultant shall have the right to the use of Documents, subject to the provisions of Section 6.9. If this Agreement is terminated in whole or in part by the Consultant due to default on the part of the Subconsultant, the

Consultant may procure upon such terms and in such manner as the Consultant may deem appropriate, services similar to those terminated and deduct from Subconsultant any fees due in offsetting the costs of procurement of replacement services

6.13.4(b) Consultant shall pay a convenience termination payment to Subconsultant, which shall be equal to the sum of payment for all Services performed and unpaid to the date of the termination and all direct costs reasonably incurred by Subconsultant in connection with the termination. The convenience termination payment shall be Subconsultant's sole and exclusive remedy for the termination and in no event shall Subconsultant be entitled to recover any future lost profit or overhead on terminated Services. Subconsultant shall submit and Consultant shall process Subconsultant's convenience termination payment estimate in the same manner as Subconsultant's estimates for payment under Article 4, and Subconsultant's entitlement to that payment shall be subject to the same conditions as provided therein, including Owner's payment of the corresponding amount to Consultant.

6.14 Successors and Assigns.

6.14.1 Subconsultant and Consultant are hereby bound and the successors, executors, administrators, and legal representatives of Subconsultant and Consultant (and to the extent permitted by Section 6.14.2 the assigns of Subconsultant and Consultant) are hereby bound to the other party to this Agreement and to the successors, executors, administrators, and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.

6.14.2 Subconsultant shall not assign, sublet, or transfer any rights under or interest (including, but without limitation, monies that are due or may become due) in this Agreement without the written consent of Consultant, except to the extent that any assignment, subletting, or transfer is mandated by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge Subconsultant from any duty or responsibility under this Agreement.

6.15 Third-Party Beneficiaries.

Nothing in this Agreement shall be construed to create, impose, or give rise to any duty owed by Consultant or Subconsultant to the Owner, any Contractor, or any other third-party individual or entity, or to any surety for or employee of any of them. Consultant and Subconsultant expressly disclaim any and all third-party beneficiaries hereunder, and no one not a Party to this Agreement shall be entitled to seek enforcement against Consultant and/or Subconsultant of any provision herein, or to otherwise seek damages from either Party for the alleged breach of any provision contained herein or purported duty or standard created or conferred hereunder. It is specifically agreed between the Parties executing this Agreement that it is not intended by any of the provisions of any part of the Agreement to create in the public or any member thereof a third-party beneficiary hereunder, or to authorize anyone not a party to this Agreement to maintain a

claim, cause of action, lien or any other damages or any relief of any kind pursuant to the terms and provisions of this Agreement.

6.16 Mutual Waiver of Subrogation.

Consultant and Subconsultant hereby waive all rights against each other and their respective, officers, directors, members, partners, employees, agents, Consultants and subconsultants or each and any of them for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by their respective and collective insurance policies, and any other property insurance applicable to the Project. None of the foregoing shall extend to the rights that any party making such waiver may have to the proceeds of insurance payable under any applicable policy of insurance.

6.17 Alternative Dispute Resolution.

6.17.1 Direct Discussions and Mediation. If a dispute arises out of or relates to this Agreement or its alleged breach, the Consultant and the Subconsultant shall direct their representatives to endeavor to settle the dispute first through direct discussions. If the dispute cannot be resolved through direct discussions, the Consultant and the Subconsultant shall participate in mediation before recourse to litigation. The Consultant's and the Subconsultant's representatives shall attend all mediation sessions.

6.17.2 Condition Precedent to Litigation.

Engaging in the alternative dispute resolution mandated by this Section 6.17 is a CONDITION PRECEDENT to filing any litigation. Only after the Parties have exhausted direct discussions AND mediation in accordance with the foregoing, and only after a court of competent jurisdiction has held that litigation may be had on any dispute, shall either Party be entitled to initiate litigation. In any such litigation, the Consultant and Subconsultant hereby waive their rights to jury trial and mutually agree that any disputes between them arising out of this Agreement that are subject to litigation shall be tried to the Bench only.

Should either Party initiate litigation prior to engaging in direct discussions, good faith mediation, that Party shall pay all attorneys' fees and expenses and other costs incurred by the other party in responding to and participating in said litigation.

6.18 Percentage Share of Negligence. To the fullest extent permitted by Laws and Regulations, a party's total liability to the other party and anyone claiming by, through, or under the other party for any costs, losses, or damages caused in part by the negligence of the party and in part by the negligence of the other party or any other negligent entity or individual, shall not exceed the percentage share that the party's negligence bears to the total negligence of Consultant, Subconsultant, and all other negligent entities and individuals.

6.19 Mutual Waiver of Consequential Damages. To the fullest extent permitted by Laws and Regulations, Consultant and Subconsultant waive against each other, and each other's officers, directors, members, partners, agents, insurers, consultants, and employees, any and all claims for or entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to this Agreement or the Project, from any cause or causes.

6.20 Records Retention. Subconsultant shall maintain on file in legible form, for a period of five years following completion or termination of its services, or for a longer time if required by the Prime Agreement, all Documents, records (including cost records), and design calculations related to Subconsultant's Services or pertinent to Subconsultant's performance under this Agreement. Upon Consultant's request, Subconsultant shall provide a copy of any such item to Consultant at cost.

6.21 Notices. Any notice required under this Agreement shall be in writing, addressed to the appropriate party at its address on the signature page and given personally, by registered or certified mail postage prepaid, or by a commercial courier service. All notices shall be effective upon the date of receipt.

6.22 Jurisdiction/Venue. This Agreement shall be governed by the laws of the State of Alabama, exclusive of its choice of law provisions, and any disputes related to or arising out of this Agreement or its alleged breach shall be brought in the appropriate court in the Thirteenth Judicial Circuit of the State of Alabama (Mobile, Alabama).

6.23 Survival. All express representations, waivers, indemnifications, and limitations of liability included in this Agreement will survive its completion or termination for any reason.

6.24 Severability. Any provision or part of the Agreement held to be void or unenforceable under any Laws or Regulations shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Consultant and Subconsultant, which agree that this Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

6.25 Waiver. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

6.26 Accrual of Claims. To the fullest extent permitted by Laws and Regulations, all causes of action arising under this Agreement shall be deemed to have accrued, and all statutory periods of limitation shall commence, no later than the date of Substantial Completion.

6.27 Total Agreement. This Agreement, together with any and all attachments and anything incorporated herein by reference, constitutes the entire agreement between Consultant and Subconsultant, and supersedes all prior written or oral understandings. This Agreement may only

be amended, supplemented, modified, or canceled by a written instrument duly executed by both parties.

6.28 Designated Representative. With the signing of this Agreement, Consultant and Subconsultant shall designate specific individuals to act as their respective representatives with respect to the Services to be performed or furnished by Subconsultant and responsibilities of Consultant under this Agreement. Such an individual shall have authority to transmit instructions, receive information, and render decisions relative to this Agreement on behalf of the respective party whom the individual represents.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

VOLKERT (CONSULTANT):	SUBCONSULTANT:
By: (signature)	By: (signature)
Print name:	Print name:
Title:	Title:
Date Signed:	Date Signed:

September 30, 2022

Volkert, Inc.
1428 Chestnut Street, Suite 118
Chattanooga, Tennessee 37402

Attention: Mr. Dennis Bouton, P.E.

Reference: **Proposal for Limited Asbestos Evaluation**
Walnut Street Pedestrian Bridge
Chattanooga, Hamilton County, Tennessee
S&ME Proposal No. 22810310

Dear Mr. Bouton:

S&ME, Inc. (S&ME) is pleased to provide this proposal for limited asbestos evaluation sampling services to Volkert, Inc. at the request of the City of Chattanooga (TDOT) for the existing pedestrian bridge structure at Walnut Street over the Tennessee River (TDOT Bridge No. 33-03544-00.12) located in Chattanooga, Hamilton County, Tennessee. This proposal describes our understanding of the work, our proposed Scope of Services, our terms and conditions, and fees. The attached Form AS-071, Agreement for Services, is incorporated into this proposal by reference.

♦ Background

Mr. Dennis Bouton, P.E. (Volkert, Inc.) contacted Mr. Drew Reed (S&ME) via email on August 15, 2022, requesting S&ME provide a proposal to conduct an asbestos evaluation of the Walnut Street Pedestrian Bridge over the Tennessee River in Chattanooga, Hamilton County, Tennessee as a Tennessee Department of Transportation (TDOT)-requirement prior to the disturbance of materials that will be affected by the renovation project scheduled for the bridge. Mr. Bouton provided The Walnut Street Pedestrian Bridge Final Construction Plans, dated July 11, 2022, prepared by Volkert, Inc. in addition to photographs taken from prior bridge inspections, and the appendices to for the Walnut Street Pedestrian Bridge Repair and Rehabilitation. The existing bridge is approximately 34.8 feet wide, 2,370 feet long, and was constructed in 1891 and widened in 1989. The bridge was constructed with two 210-foot trusses approximately 38 feet in height at their highest point, three 320-foot channel spans which are approximately 48 feet in height at their highest points, and one 210-foot span with a height of 38 feet. A determination of asbestos-containing materials (ACM) is needed before the renovation/demolition of the bridge can take place. Therefore, the purpose of the requested asbestos sampling is to confirm the presence or absence of ACM in the bridge building materials. Lead-based paint sampling of bridge materials is also included in this proposal as an optional service.

The Environmental Protection Agency (EPA) and the State of Tennessee require asbestos assessments to be conducted by accredited individuals prior to renovation or demolition projects or prior to the disturbance of suspect ACM. The samples collected during such assessments must be analyzed using Polarized Light Microscopy (PLM). The applicable EPA regulations enforced include Code 40, part 61, subpart M, Final Rule National Emissions Standards for Hazardous Air Pollutants (NESHAP) and the Asbestos Hazard Emergency Response Act (AHERA).

The project information and assumptions detailed above should be reviewed and confirmed by the appropriate team members. Modifications to our proposed Scope of Services may be required if the actual conditions vary from the project information and assumptions described herein.

♦ Scope of Services

S&ME proposes to provide the following Scope of Services:

Task 1 – Limited Asbestos Evaluation at TDOT Bridge Structure No. 33-03544-00.12

S&ME will perform a limited asbestos assessment at the referenced bridge structure. The asbestos assessment will include all components of the bridge structure with the exception of the stone piers, and only includes bridge materials that are readily accessible. The underside components of the bridge will be assessed via existing access panels within the wooden deck and accessible while standing on top of the bridge piers, and sections of bridge spans via scissor lift beneath piers from the north and south riverbanks. The components of the bridge above the deck that will be assessed will be limited to those components accessible while standing on the wooden deck. A visual assessment and sampling strategy will be developed in general accordance with NESHAP and the sampling protocol described in the AHERA to provide representative samples of each suspect ACM. We estimate collection and analysis of up to 60 asbestos sample layers with analysis by PLM. The number of samples collected will be in general accordance with the requirements of state and federal regulations with the exception that three samples of each homogenous area (HA) will be collected.

The bulk samples will be collected and submitted to a laboratory for identification of asbestos type and content. The analytical laboratory that will be used is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). For PLM analytical results that indicate levels between "trace" and 10 percent asbestos, the Client has the option to analyze the samples further by Point Count analysis to better quantify the asbestos content. Materials having asbestos results less than or equal to one percent are not regulated by EPA or State of Tennessee; however, if a sample of friable material is found to contain less than 1% asbestos and the result is not verified by Point Count, it must be presumed to be an ACM. If the Client chooses Point Count analysis, there will be an additional cost. In addition, if the first sample analyzed from a specific HA of suspect ACM is identified as asbestos-containing, S&ME may elect to not analyze additional samples from that particular HA.

Upon completion of the fieldwork and analysis, a report will be prepared. The report will include the project background, assessment procedures, findings and results, sample location figure(s), and photographs of the HAs sampled.

Safe Access. S&ME will sample representative suspected asbestos materials that can be safely accessed. Unless included as part of this proposal, the following site conditions may require a Change Order to this proposal for use of an aerial lift or installation of an acceptable anchorage designed for personal fall protection:

- Sampling materials near unguarded edges or openings without safe access to appropriate fall protection tie-ins and anchor points; or
- Sampling materials on fragile, brittle, or structurally unsafe surfaces.

Task 2 – Lead-based Paint Assessment (Optional)

EPA and the TDEC define lead paint as containing greater than 0.5% lead by weight for child occupied/residential applications. Lead paint is also regulated to prevent occupational exposures in accordance with the Occupational Safety and Health Administration (OSHA) regulation found in 29 CFR 1926.62. OSHA does not define lead paint and requires worker protection controls for disturbance of materials containing any detectable level of lead. TDEC also regulates lead paint for commercial applications from a disposal standpoint. Due to the proposed disturbance of building materials and painted surfaces, S&ME recommends laboratory analysis of painted surfaces for lead content to comply with OSHA worker protections.

S&ME will observe and document paint color and condition for the structure. Up to 10 bulk paint samples will also be collected for laboratory analysis. Bulk paint samples will be approximately one gram, in order to achieve a detection limit below 0.01%. The samples will be collected by color and will be analyzed for total lead. A National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory will be utilized for the laboratory analysis of the sampled materials. The submitted paint chip samples will be analyzed via EPA Method SW846 to detect lead concentration by weight. The assessment report will include information detailing painted surface color, lead content, location, and current condition.

Extensive destructive techniques will not be performed, and lead paints or other potential hazardous materials that are not visible and readily accessible may not be included in this assessment. The results of the lead paint assessment will be provided in a written report to include laboratory results and a discussion of the results.

Health and Safety

S&ME proposes to develop and implement a written site-specific health and safety plan (HASP) that will address the safety and health hazards of each phase of site operations and will include the requirements and procedures for employee protection. The plan will include information pertaining to identifying hazards, training employees, and selecting and ensuring the use of appropriate personal protective equipment. S&ME will develop a HASP that will anticipate applicability for investigative activities involving hazardous/toxic materials. This plan will designate responsibility, establish mandatory operating procedures, and provide for contingencies, which may arise while operations are being conducted at the site. Activities covered by this plan will include site investigations, site sampling, and activities undertaken on-site, which may be affected by site contamination.

Given the nature of the Walnut Street Pedestrian Bridge, and the logistics of accessing materials beneath the decking for the purposes of the asbestos assessment, S&ME and Volkert discussed options suitable for performing a survey of the bridge structure in a cost-effective manner. In order to observe as much of the bridge structure beneath the decking as safely possible, S&ME proposes using a scissor lift to observe sections of bridge spans beneath piers from the north and south riverbanks, in addition to observing portions accessible from the ground or with a 6-foot stepladder. Please note that while this serves as a method to view portions of the bridge structure safely, S&ME cannot guarantee consistency in construction materials throughout the entire length of the bridge, where our staff is unable to access to physically touch and observe materials (i.e., bridge spans across piers over the river).

♦ Client Responsibilities

The Client must provide safe and ready access to all areas of the bridge structure to be assessed for asbestos. Third-party training safety training will be sourced by S&ME for necessary safe means of access and the equipment/skillset involved for performing the work.

In addition, the Client must provide the following:

- Signed Agreement for Services (attached Form AS-071);
- Any additional electronic bridge drawings or figures, if available;
- Safe and timely access to all subject areas of the bridge structure during the assessment period;
- Information relative to any previous asbestos sampling data; and
- All applicable names and addresses for report distribution.

♦ Limitations

Limited destructive testing will be performed on bridge structure materials and finishes, however S&ME will not repair sample locations. Extensive destructive techniques will not be performed, and ACMs that are not visible and readily accessible may not be included in this assessment. Any suspect ACM uncovered during renovation or demolition activities should be immediately sampled and analyzed for the presence of asbestos prior to disturbance.

Although PLM is the specified method for analysis of bulk material samples for asbestos by EPA, there have been reports that this method may not identify asbestos when fiber sizes are extremely small or if they are bound in a resinous material. EPA recommends analyzing such materials (floor tiles, mastics, and asphaltic roofing) using transmission electron microscopy (TEM) when PLM analysis does not detect asbestos in quantities greater than 1%. Current EPA regulations do not require this additional analysis and TEM analysis is not proposed as part of this assessment.

S&ME will make a reasonable attempt to access areas included in the referenced areas at the time of the assessment. Areas that are inaccessible due to safety concerns and/or access limitations will not be included in the assessment and this limitation will be documented in our report. The underside of the bridge decking will be observed via access panels to assess materials on top of the bridge piers and materials beneath bridge decking accessible from the tops of the piers. S&ME will utilize safety protocols provided to S&ME through Volkert from the City of Chattanooga in order to safely access materials. S&ME's sampling strategy is limited in nature due to the safety concerns regarding this project. If suspect materials are observed which cannot be sampled due to safety concerns and/or limited access, the material will be documented and presumed to contain asbestos. Additional mobilizations required to access these bridge structures will be performed upon request as a Change Order to this proposal.

This proposal is solely intended for the Basic Services as described in the Scope of Services. The Scope of Services may not be modified or amended, unless the changes are first agreed to by the Client and S&ME. Use of this proposal and resulting documents, including the final report, are limited to the referenced project and Client. No other use is authorized by S&ME. This service will be performed exercising the ordinary skill and competence of consulting professionals in relevant disciplines in this region.

♦ Exclusions

Without attempting to be a complete list or description of all services or potential services excluded from this proposal and not performed by S&ME, the following services are specifically excluded:

- Equipment that may contain asbestos but would require dismantling or other disassembly to access it unless such equipment is identified and disassembled by the Client;
- Repairs to sampled architectural finishes;
- Services related to hazardous or potentially hazardous materials, other than those specifically identified in this proposal;
- Traffic control;
- Design services or consultation related to design services;
- Abatement cost estimating or abatement related services; and
- Any wetland, environmental, contaminant (soil, water, or vapor), drainage, or existing structure assessments; and
- Assessment of bridge components beneath the wooden deck and between piers are specifically excluded except for those portions on the north and south river banks accessible via scissor lift and those accessible while standing on bridge piers.

If any of the above excluded services are required, please contact us so that we can modify this proposal, or provide an additional proposal, for these services.

♦ Fees

S&ME proposes to provide these services outlined as shown below:

Task 1 – Limited Asbestos Evaluation for a lump sum fee of **$14,400** which includes collection and analysis of up to 60 sample layers at the bridge structure and receiving the training necessary to perform the work. If additional samples are approved by the Client, they will be billed at $10 per additional sample layer. Point Count Analysis, if approved by the Client, will require an additional $40 per sample layer.

Task 2 – S&ME can provide the limited Lead-based Paint Evaluation for a lump sum fee of **$500** which includes collection of up to 10 lead-based paint samples at the bridge structure. If additional samples are approved by the Client, they will be billed at $10 per additional sample layer.

Our invoices will be submitted for services rendered on a four-week basis.

Any additional services required or requested, beyond the scope of these proposed services, will be performed according to our standard Fee Schedule. We will not perform additional work without prior authorization.

The technical and pricing information contained in this proposal or in any correspondence submitted by S&ME is considered confidential and proprietary and should not be released or otherwise be made available to any third party without express written consent of S&ME.

♦ Schedule

S&ME will negotiate a start date for the asbestos services following receipt of your written authorization to proceed. Field work will require up to two business days to complete for the asbestos sampling at the bridge structure. PLM results (and lead-paint samples, if approved) will be provided approximately five working days following receipt of samples by the laboratory; however, some laboratory services are proposed to be performed by other entities, over which S&ME does not have direct control. The written asbestos report will be provided approximately five workdays following the receipt of the laboratory results.

♦ Authorization

Our Agreement for Services, Form Number AS-071, is attached and is incorporated as a part of this proposal. Please indicate your acceptance of our proposal by signing the form and returning it to our office. We will then proceed with the performance of services. If you elect to accept our proposal by issuing a purchase order, then please reference this proposal number and date. Your purchase order will be an acceptance of our Agreement of Services and an authorization to proceed with the performance of our services. The terms and conditions included in any purchase order shall not apply, as our agreement is for services that are not compatible with purchase order agreements. If this proposal is transmitted to you via email, and if you choose to accept this proposal by email, your reply email acceptance will serve as your representation to S&ME that you have reviewed the proposal and the associated Agreement for Services (AS-071) and hereby accept both as written.

♦ Closing

S&ME, Inc. appreciates the opportunity to submit this proposal to provide asbestos and lead paint assessment services for the above referenced project. If you have any questions concerning the proposal or if you would like to schedule these services, please contact us by telephone or electronic mail.

Sincerely,

S&ME, Inc.

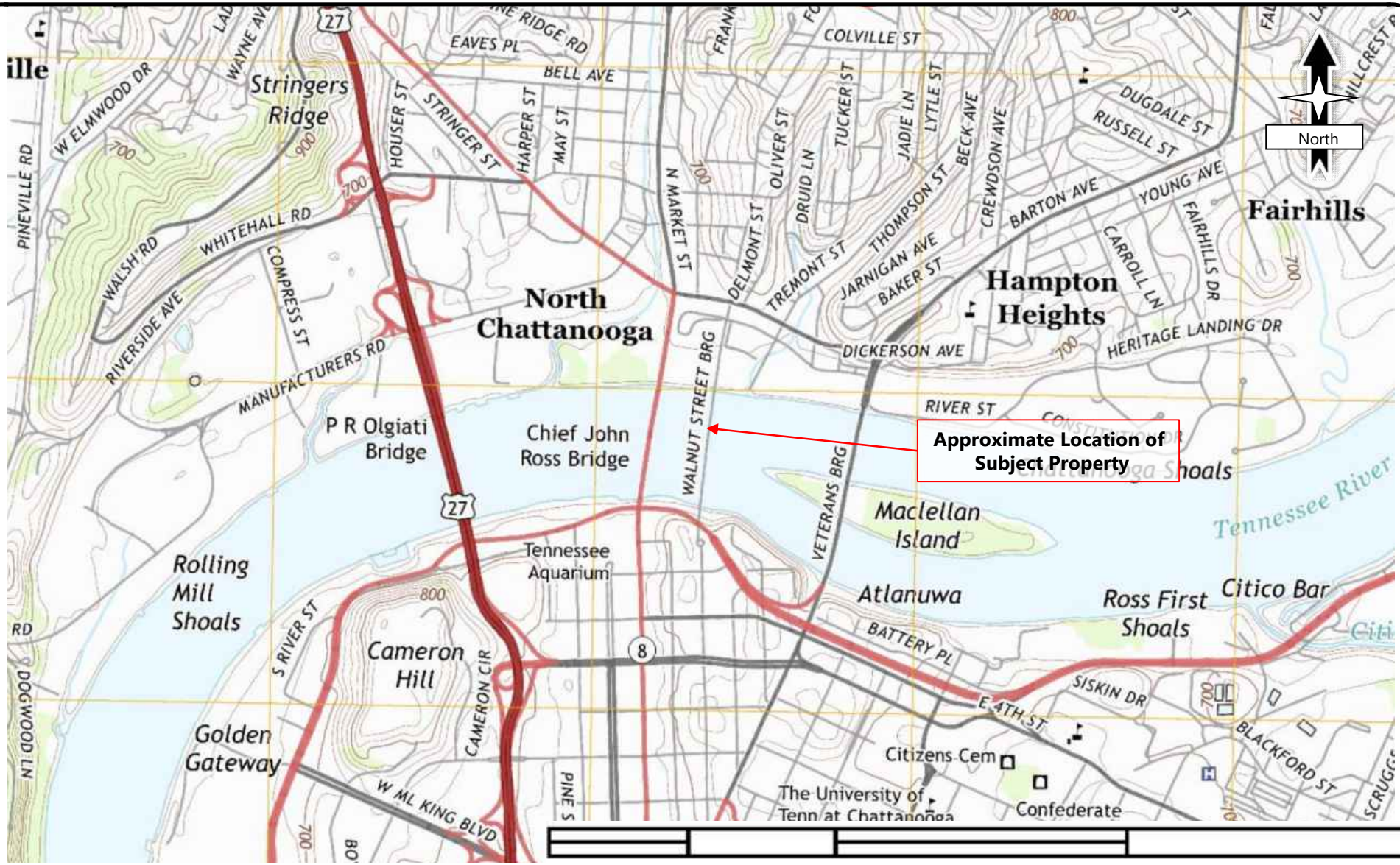
Joshua R. Wilson
Environmental Scientist

James R. Bruce, P.G., CHMM
Senior Reviewer

Attachments: S&ME Agreement for Services (Form AS-071)

Attachment B

Figures



REFERENCE:
U.S. Geological Survey Chattanooga, Tennessee topographic quadrangle map, dated 2013

Topographic Site Vicinity Map

Walnut Street Bridge
Chattanooga, Hamilton County, Tennessee

SCALE:	FIGURE NO.
AS SHOWN	1
DATE: 11/28/2022	
PROJECT NUMBER 22810310	

Attachment C

Directions to Nearest
Medical Facility

from Walnut Street Bridge, 1 Walnut St, Chattanoo...
to Erlanger Hospital

7 min (1.9 miles)

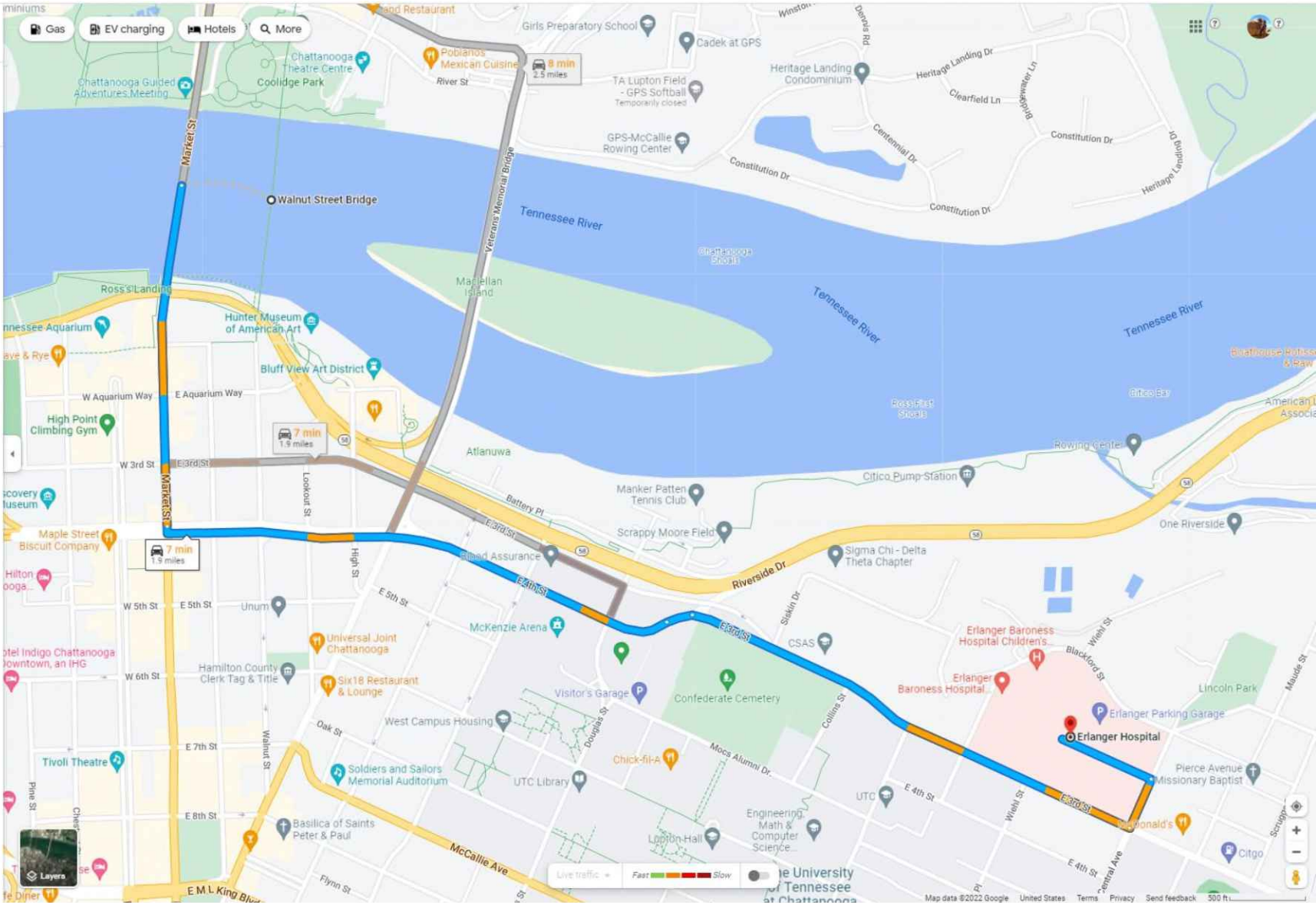
via E 4th St and E 3rd St

Fastest route now due to traffic conditions

Walnut Street Bridge
1 Walnut St, Chattanooga, TN 37403

- Head south on John Ross Bridge/Market St toward E 1st St
  - Continue to follow Market St
  - 0.4 mi
- Turn left onto E 4th St
  - 0.7 mi
- Continue onto Lansing
  - 177 ft
- Use the right 2 lanes to turn right onto E 3rd St
  - 0.6 mi
- Turn left onto Central Ave
  - 354 ft
- Turn left
  - Destination will be on the right
  - 0.1 mi

Erlanger Hospital
975 E 3rd St, Chattanooga, TN 37403



Attachment D

Worksite Roster and
Compliance Dates

WORK SITE ROSTER AND COMPLIANCE DATES

Name	Date	Date of Compliance Training	Signature
Josh Wilson	12/1/2022	5/24/2021	
Rick Brock	12/1/2022	1/7/14	

Attachment E

Daily JSA Form

Daily Job Safety Analysis Form

Date: 12/1/22	Led By: Rick Bruce	Project: Walnut St. Bridge-Volker	Project Manager: Drew Reed

Work to be performed:
Limited Asbestos Inspection of Pedestrian Bridge

Have conditions changed since last time on site or pre-project planning? Yes (No) **If yes, explain:**

Review the following information carefully and check all items that apply to your work activity and review with all on-site field staff.

Personal Protective Equipment
- ☑ Normal PPE
  - Hard Hat
  - Safety Glasses
  - Safety Toed boots
- ☑ Gloves
  - ☐ Leather
  - ☐ Cut Resistant
  - ☐ Chemical
  - ☐ Other
- ☐ Hearing Protection
- ☑ Class _____ Hi-Viz Clothing
  - ☑ Yellow/Green
  - ☐ Orange

Life Critical
- ☐ Confined Space Entry
- ☑ Working from Heights
- ☑ In, Around or On Water
- ☐ Struck-By
- ☐ Working In or Along Roadway(s)

Site Conditions
- ☐ Adequate Lighting Provided
- ☑ Weather Hazards
  - ☐ Heat Stress
  - ☑ Cold Stress
  - ☐ Inclement Weather
  - ☐ Humidity
- ☐ Remote Location
- ☐ High Crime Area

General
- ☐ Struck-By
- ☐ Pinch Points
- ☐ Snagging
- ☐ Fatigue

Walking/Working Surfaces
- ☑ Walkways Clear/Slips & Trips
- ☑ Uneven Terrain
- ☑ Loose Surface Conditions
- ☐ Wet Surface Conditions
- ☑ Uneven Surfaces

Ergonomics
- ☐ Repetition of Movements
- ☐ Awkward Postures
- ☐ Sustained/Static Postures
- ☐ Vibration
- ☐ Proper Lifting Techniques
- ☐ Help Required or Large/Awkward Loads

Plants and Animals
- ☐ Poison Ivy/Oak
- ☑ Snakes, Animals, Insects, Birds
- ☐ Other _____

Temporary Traffic Control Info
- ☐ Work Zone Project Form Provided and Available
- ☐ Temporary Traffic Control Performed by Subcontractor
  - ☐ Temporary Traffic Control Plan Provided
- ☐ Temporary Traffic Control Performed by S&ME

IN THE EVENT OF AN EMERGENCY

Primary (on site) Rally Point:	Secondary (off site) Rally Point:	In the event of a non-life threatening injury or illness, contact:
Coolidge Park	North Bank Bridge Entrance	WorkCare (888)449-7787

Printed Name	Signature	Time In	Time Out	Time In	Time Out
Rick Bruce		10:00	3:00		
Josh Wilson		10:00	3:00		

Daily Job Safety Analysis Form

Date: 12/2/22	Led By: Rick Bruce	Project: Walnut St. Bridge - Valkert	Project Manager: Drew Reed

Work to be performed: Limited Asbestos Inspection of Pedestrian Bridge

Have conditions changed since last time on site or pre-project planning? Yes (No) **If yes, explain:**

Review the following information carefully and check all items that apply to your work activity and review with all on-site field staff.

Personal Protective Equipment
- ☑ Normal PPE
  - • Hard Hat
  - • Safety Glasses
  - • Safety Toed boots
- ☑ Gloves
  - ☐ Leather
  - ☐ Cut Resistant
  - ☐ Chemical
  - ☐ Other
- ☐ Hearing Protection
- ☑ Class _____ Hi-Viz Clothing
  - ☑ Yellow/Green
  - ☐ Orange

Life Critical
- ☐ Confined Space Entry
- ☑ Working from Heights
- ☑ In, Around or On Water
- ☐ Struck-By
- ☐ Working In or Along Roadway(s)

Site Conditions
- ☐ Adequate Lighting Provided
- ☑ Weather Hazards
  - ☐ Heat Stress
  - ☑ Cold Stress
  - ☐ Inclement Weather
  - ☐ Humidity
- ☐ Remote Location
- ☐ High Crime Area

General
- ☐ Struck-By
- ☐ Pinch Points
- ☐ Snagging
- ☐ Fatigue

Walking/Working Surfaces
- ☑ Walkways Clear/Slips & Trips
- ☑ Uneven Terrain
- ☑ Loose Surface Conditions
- ☐ Wet Surface Conditions
- ☑ Uneven Surfaces

Ergonomics
- ☐ Repetition of Movements
- ☐ Awkward Postures
- ☐ Sustained/Static Postures
- ☐ Vibration
- ☐ Proper Lifting Techniques
- ☐ Help Required or Large/Awkward Loads

Plants and Animals
- ☐ Poison Ivy/Oak
- ☑ Snakes, Animals, Insects, Birds
- ☐ Other _____

Temporary Traffic Control Info
- ☐ Work Zone Project Form Provided and Available
- ☐ Temporary Traffic Control Performed by Subcontractor
  - ☐ Temporary Traffic Control Plan Provided
- ☐ Temporary Traffic Control Performed by S&ME

IN THE EVENT OF AN EMERGENCY

Primary (on site) Rally Point:	Secondary (off site) Rally Point:	In the event of a non-life threatening injury or illness, contact:
Coolidge Park	North Bank Bridge Entrance	WorkCare (888)449-7787

Printed Name	Signature	Time In	Time Out	Time In	Time Out
Josh Wilson		10:00	1:00		
Rick Bruce		10:00	1:00		

Attachment F

General Information

1.0 Project Organization and Responsibilities

The project contact list found on the cover page identifies project personnel, contact information and project-specific role. S&ME will have site safety and health oversight and coordination responsibilities for S&ME personnel only. The roles and responsibilities are described below.

A. Project Manager (PM)

The Project Manager (PM) is responsible for the design, administration and implementation of the site activities. The PM consults with the site personnel regarding all field operations and must obtain approval of alteration(s) of the scheduled site activities. The (PM) is ultimately responsible for implementation of this HASP. The PM shall direct S&ME on-site operations and may delegate all or part of these duties to a properly qualified S&ME employee such as the Site Safety Officer (SSO) while still maintaining responsibility for the effectiveness of this HASP. In the event of an incident, near miss, or safety observation, the PM will direct and complete S&ME and client required reports as required elsewhere in this document.

The PM has primary responsibility for the following:

- Development and revision of this HASP and any other safety plans required for the project. Work scope development to ensure EHS performance and training requirements are addressed.

B. Site Manager (SM)

The Site Manager (SM) reports to the Project Manager has primary responsibility for the following:

- Assist Project Manager with development and revision of this HASP and any other safety plans required for the project.
- Providing PPE and monitoring equipment and ensuring it is properly utilized by all on-site S&ME employees.
- Establishing S&ME personnel are aware of the provisions of this HASP, are instructed in the practices necessary to work safely, and are familiar with planned procedures for dealing with emergencies.
- Ensuring S&ME personnel are aware of the potential hazards associated with site operations.
- Monitoring the safety performance of all S&ME personnel to ensure the required work practices are employed.
- Correcting any S&ME work practices or conditions which may result in injury or exposure to hazardous substances.
- Preparing any incident reports for S&ME activities and immediately notifying the Project Manager and Regional Safety Coordinator of any accident, incident, or near miss.
- Halting S&ME work tasks, if necessary, in the event of an emergency or to correct observed unsafe work practices.
- Ensuring utility clearances are obtained and documented prior to the commencement of work, if needed.
- Coordinate emergency response activities for on-site personnel and with emergency support groups in the community.

C. Regional Safety Coordinator

The Regional Safety Coordinator (RSC) has the primary responsibility for the following:

- Providing health and safety support as requested by the SSO, SM and PM.
- Removal and replacement of personnel working in an unsafe manner in conjunction with the PM.
- Determining the need for periodic audits of the operation to evaluate compliance with this HASP.
- Assisting PM and SM with any addendum or alterations of this HASP, as needed.

D. Corporate Safety Director

The Corporate Safety Director will be a resource to the PM and SSO, providing health and safety support as requested. The Corporate Safety Director is critical in maintaining communication between the site, the office and the client during, and following, an incident. S&ME's Corporate Safety Director and can be reached at 919-872-2600.

E. Site Safety Officer (SSO)

The Site Safety Officer (SSO) has full authority over all aspects of environmental, safety, and health on this project and will ensure implementation of all aspects of this HASP as well as compliance with other provisions of OSHA, EPA, DOT, State, and client environmental, health and safety requirements. The Site Safety Officer shall ensure that all training required by this HASP is conducted prior to any personnel entering the site, including visitors and vendors. They will also provide technical support and assistance to the Project Manager and technicians, to ensure optimum health and safety performance on the project. The Site Safety Officer has primary responsibility for the following:

- Have the authority to stop the job in order to correct safety and or health deficiencies;
- Be on site and readily available any time work is being done on the site;
- Obtain and interpret instrument readings to determine the degree of hazard present;
- Determine personal protection levels necessary to ensure personnel safety;
- Monitor decontamination procedures;
- Evaluate environmental, physical, and chemical hazards, and recommend to the site manager modifications to the Work Plan or the protection levels necessary to ensure personnel safety;
- Review and revise, if necessary, Job Hazards Analyses (JHAs) for each task to be performed on the project;
- Report any deviations from the anticipated conditions described in this HASP to the SM, and, if necessary, the RSC;
- For permitted activities, confirm S&ME personnel have required S&ME training.
- Ensure that all injuries, property damage, and near misses are reported to the SM after occurrence.
- Assist in the coordination of emergency response activities for on-site personnel and with emergency support groups in the community.
- Conduct any other operations necessary to implement this HASP as requested by and under the direction of the SM.

F. Subcontractors

S&ME Subcontractors performing work will be in compliance with training requirements set forth by S&ME. Subcontractors should abide by all applicable safety policies and procedures as set forth in this documents as well as Federal, State, and local requirements. Subcontractors shall establish drug testing programs, driver safety programs and other programs, as required by this contract. In addition, all subcontractors are responsible for:

- Taking all reasonable precautions to prevent injury to themselves and to their fellow employees.
- Adhering to the site health and safety requirements set forth in this HASP.

- Performing only those tasks that they believe they can do safely, and immediately reporting any incidents and/or unsafe conditions to the S&ME Site Safety Officer.
- Notifying the S&ME Site Safety Officer of any incidents, special medical problems (e.g., allergies) and seeing that all on-site S&ME personnel are aware of such problems.
- Providing the S&ME Project Manager with their own HASP plan for review prior to the commencement of work.
- Halting all Site operations, if necessary, in the event of an emergency or to correct unsafe work practices.

2.0 Personnel Training

2.1 General

Project personnel shall complete hazardous waste operations and emergency response training (HAZWOPER), as required by the OSHA Standard 29 CFR 1926.65. Project personnel shall also initially receive a minimum of 3 days of actual field experience under the direct supervision of a trained, experienced supervisor. Personnel who completed their training more than 12 months prior to the start of this project shall have also completed an 8-hour HAZWOPER refresher course within the past 12 months. The SM shall complete the additional 8 hours of training that is required for managers and/or supervisors along with any "competent persons" training that may be needed for required work.

Additional safety training for specific tasks/activities may include safety training for soil borehole drilling and sampling, and leachate/groundwater sampling. Further safety training may also be required based on the scheduled scope of work. This safety training is to be conducted and documented before any tasks that require additional training are initiated.

2.2 Safety Meetings

Daily safety meetings will be held to cover the work that is anticipated to be accomplished each day, the associated hazards, the protective clothing and procedures required to minimize exposure to these hazards, and the required emergency response procedures. The SSO will present these meetings prior to beginning the day's fieldwork. Additional safety meetings shall also be held prior to initiating new tasks, and repeated if new hazards are encountered.

2.3 First Aid and CPR

At least one individual current in First Aid/CPR will be assigned to the project site and will be immediately available during all field activities to provide assistance as necessary. Refresher training in First Aid and CPR is required to keep the certificate current. These individuals must also receive training regarding the precautions and protective equipment necessary to protect against exposure to blood-borne pathogens. Blood-borne pathogen training should be included as part of the First Aid/CPR training course delivered by the training provider

3.0 Medical Surveillance

S&ME has established a Medical Monitoring Program for employees who:

- Are involved in the evaluation and cleanup of hazardous waste sites.
- Are required to wear a respirator to perform the functions of their job.
- Have possible exposure to substances or physical agents for which OSHA has developed a Standard.

The Medical Monitoring Program Includes:

- A baseline physical examination, when required.
- The review of each Site-Specific Health and Safety Plan and potential exposure list to determine the need for specific biological and medical monitoring.
- Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent, including personal, area, grab, wipe, or other form of sampling, as well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained.
- Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine, breath, hair, fingernails, etc.) but not including results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs.
- Medical evaluation after known or suspected hazardous exposures.
- Annual (when required) and exit physical examinations with attention given to specific exposures and/or symptoms.

Reference S&ME HSPM 4 for further information on Medical Surveillance.

4.0 Personal Protection Equipment

PPE will be required to safeguard project personnel from various hazards. Varying levels of protection may be used depending on the level of contaminants and the degree of any physical hazard. This section presents the various levels of personal protection and defines the conditions of use for each level.

4.1 Levels of Protection

Protection levels are determined based upon chemical and physical hazards present in the work area. Protection levels provided by PPE selection are upgraded or downgraded based upon a change in site conditions, or the review of the results of air monitoring, or the initial exposure assessment monitoring program, if one was conducted.

4.1.1 Level A

Work will not be done is Level A PPE is required.

4.1.2 Level B

Level B protection is not expected to be worn but would be required if sustained airborne concentrations of suspended organic vapors are greater than 50 ppm or if it is determined that vinyl chloride is present at concentrations 1 ppm or higher. The action level necessitating Level B protection may be revised subject to determination of the compounds triggering the Level B protection requirement.

The following equipment will be used for Level B protection:

- Supplied air respirator (NIOSH-approved). Respirators may be positive pressure-demand self-contained breathing apparatus (SCBA), or positive pressure-demand airline respirator (with 5-minute escape bottle for immediately dangerous to life and health (IDLH) situations).
- Polyethylene coated Tyvek® or Saranex® hooded coverall with ankles and cuffs taped to boots and gloves.
- Nitrile over gloves, as manufactured by Best or equivalent.

- Inner nitrile disposable gloves
- Safety toe work boots, ANSI approved.
- Chemical resistant neoprene or rubber boots with steel toes, or latex/PVC booties over safety toe shoes.
- Hard hat, ANSI approved.
- Hearing protection (if necessary).
- A high visibility safety vest (Class II) if exposed to moving heavy equipment.

4.1.3 Level C

Level C protection will be required when the airborne concentration of suspected contaminants are present in the worker's breathing zone at sustained levels of greater than 1 part per million (ppm) of organic vapor as measured with a photoionization detector (PID) and 2.5 milligrams per cubic meter (mg/m3) of particulate as measured by a particulate monitor.

The following equipment will be used for Level C protection:

- Full-face air purifying respirator (APR) with organic vapor cartridges in combination with particulate filters (P-100) which are NIOSH approved
- Polyethylene coated Tyvek® hooded suit (if liquids/splash hazards are present) or Tyvek® coveralls, ankles, and cuffs taped to boots and gloves
- nitrile over glove
- inner nitrile disposable gloves
- safety toe work boots, ANSI approved
- chemical resistant neoprene or rubber boots with steel toes, or latex/PVC booties over safety toe shoes
- hard hat, ANSI approved
- hearing protection (if necessary)
- high visibility safety vest(Class II)

4.1.4 Modified Level D

Modified Level D will be worn when airborne contaminants are not present at levels where respiratory protection is required, but where project activities present an increased potential for skin contact with hazardous substances. The following equipment is to be worn as Modified Level D:

- Tyvek® coveralls or polyethylene coated Tyvek® coveralls (if liquids/splash hazards are present)
- Safety toe work boots
- Neoprene, or polyvinyl chloride (PVC) overboots
- Safety glasses or goggles
- Hard hat
- Face shield in addition to safety glasses or goggles when projectiles and/or splashing liquids pose a hazard
- Disposable nitrile inner gloves
- Nitrile over gloves
- Hearing protection (if necessary)
- A high visibility safety vest (Class II) when working near moving equipment

4.1.5 Level D

The minimum level of protection that will be required for all project personnel will be Level D. Level D will only be used in clean areas where there is no potential for exposure to the COCs. The following equipment is to be worn as Level D PPE:

- Work clothing as prescribed by the weather.
- Safety toe work boots
- Safety glasses or goggles, meeting ANSI Z87.
- Leather work gloves.
- High visibility safety vest (Class II) when working near moving equipment.
- Hard hat
- Hearing protection shall be worn in all noise hazardous areas (within 25 feet of the drill rig). A noise hazardous area is any area where 85 dBs or higher noise is present. Proper PPE for such conditions includes ear plugs or over-ear earmuffs.

4.2 Reassessment of PPE

If additional chemicals or hazards are found to be present on site, or if the PPE chosen does not function properly, then the site health and safety officer will reassess the type of PPE that is being used.

4.3 Respiratory Protection

Respiratory protection is an integral part of personnel health and safety at sites with potential airborne contamination.

The Site respiratory protection program will consist of the following:

- All project personnel who may use respiratory protection will have an assigned respirator.
- All project personnel who may use respiratory protection will have been fit tested and trained in the use of a full-face piece APR within the past 12 months.
- All project personnel who may use respiratory protection must, within the past year, have been medically certified as being capable of wearing a respirator. Documentation of the medical certification must be provided to the SSO prior to commencement of Site work.
- Only cleaned, maintained, NIOSH approved respirators are to be used on this Site.
- If respirators are used, then the respirator cartridge is to be properly disposed of at the end of each work shift, prior to expected breakthrough or when breathing becomes labored (filter load-up occurs).
- Contact lenses may be worn with a full-face respirator.
- All project personnel who may use respiratory protection must be clean-shaven. Mustaches and sideburns are permitted, but they must not interfere with the sealing surface of the respirator.
- Respirators will be inspected and a negative pressure test performed prior to each use.
- After each use, the respirator will be wiped with a disinfectant cleansing wipe or washed during a formal respirator cleaning procedure. When used, the respirator will be thoroughly cleaned at the end of the work shift. The respirator will be allowed to air-dry before it is stored in a clean plastic bag, away from direct sunlight in a clean, dry location, in a manner that will not distort the face piece.

Respiratory protection may be required during some of the project activities. This is to ensure worker protection from volatile organic compounds (VOCs) and/or other hazardous atmospheric conditions (carbon monoxide, low oxygen, etc.). It is expected that Modified Level D personal protection will be worn during the majority of the project activities involving the handling of impacted materials. However, the SSO will make the determination of the acceptable level of protection

based upon a review of the results of the initial exposure assessment monitoring and the on-going air-monitoring program.

Action levels to determine the level of respiratory protection necessary for organic vapors are based on the sustained (15-minute) concentration of Site contaminants measured within the breathing zone. Respiratory action levels are presented in Table 1. The PID action level of 1 ppm has been set based on the presence of the known VOCs, which have been identified at the Site. However, if the ambient concentrations of organic vapors are due to identifiable substances, then the level of respiratory protection may be altered by the SSO.

A PID with a 10.6 or greater eV lamp will be used to determine if organic vapors are present. A background reading will be established prior to commencing work activities at each active work area. When sustained levels of VOCs are detected in the worker breathing zones at concentrations greater than or equal to 1 ppm, colorimetric tubes will be used to determine if benzene and/or vinyl chloride are present. If benzene and/or vinyl chloride are present, then project personnel shall be monitored for their potential exposure to these chemical compounds in accordance with the OSHA Standards, and the work activities will be continued only in accordance with protocols presented in Table 1. In case of sustained air monitoring readings, greater than 5 ppm for longer than 15 minutes (see Table 1), work activities will be discontinued immediately and the SSO and SS will be notified. SSO and SM will discuss additional engineering controls.

4.4 Using PPE

Depending upon the level of protection selected for this project, specific donning and doffing procedures may be required. The procedures presented in this section are mandatory if Level B or Level C PPE is used.

All personnel entering the EZ must put on the required PPE in accordance with the requirements of this HASP. When leaving the EZ, PPE will be removed in accordance with the procedures listed, to minimize the spread of contamination.

4.4.1 Donning Procedures

These procedures are mandatory only if Level B or Level C PPE is used on the project:

- Remove bulky outerwear. Remove street clothes and store in clean location.
- Put on work clothes or coveralls.
- Put on the required chemical protective coveralls.
- Put on the required chemical protective boots or boot covers.
- Tape the legs of the coveralls to the boots with duct tape.
- Put on the required chemical protective gloves.
- Tape the wrists of the protective coveralls to the gloves.
- Don the required respirator and perform appropriate fit check.
- Put hood or head covering overhead and respirator straps and tape hood to face piece.
- Check and secure all seams.
- Don remaining PPE, such as hard hat.
- When these procedures are instituted, one person (bottle watch/decon attendant) must remain outside the work area to ensure that each person entering has the proper protective equipment.

4.4.2 Doffing Procedures

The following procedures are only mandatory if Level B or C PPE is required for this project. Whenever a person leaves a Level B or C work site, the following decontamination sequence will be followed:

- Upon entering the Contamination Reduction Zone (CRZ), rinse contaminated materials from the boots or remove contaminated boot covers.
- Clean reusable protective equipment.
- Remove protective garments, equipment, and respirator. All disposable clothing should be placed in a covered container, which is labeled.
- Clean the respirator using the appropriate method as determined by the SSO.
- Wash hands, face, and neck and shower as soon as possible at the end of the day.
- Proceed to clean area and dress in clean clothing.
- Clean and disinfect respirator for next use.

All disposable equipment garments and PPE must be placed in covered containers and labeled for disposal. See Section 7 for detailed information on decontamination procedures.

4.5 Duration of Work Tasks

The duration of activities involving the usage of PPE will be established by the SSO based upon ambient temperature and weather conditions, the capacity of personnel to work in the designated level of PPE (heat stress), and the limitations of the protective equipment (i.e., ensemble permeation rates, life expectancy of APR cartridges, etc.).

All rest breaks will be taken in the Support Zone (SZ) after full decontamination and PPE removal.

4.6 Limitations of Protective Clothing

PPE ensembles have been selected to provide protection against contaminants at anticipated concentrations. However, no protective garment, glove, or boot is chemical-proof, nor will it afford protection against all chemical types. Permeation of a given chemical through PPE is a complex process governed by contaminant concentrations, environmental conditions, physical condition of the protection garment, and the resistance of a garment to a specific contaminant. Chemical permeation may continue even after the source of contamination has been removed from the garment.

In order to obtain optimum usage from PPE, the following procedures are to be followed by all Site personnel using PPE:

i. When using disposable coveralls, don a clean, new garment after each rest break or at the beginning of each shift
ii. Inspect all clothing, gloves, and boots both prior to and during use for:
    a. Imperfect seams
    b. Non-uniform coatings
    c. Tears
    d. Poorly functioning closures
iii. Inspect reusable garments, boots, and gloves both prior to and during use for:
    a. Visible signs of chemical permeation
    b. Swelling
    c. Discoloration
    d. Stiffness
    e. Brittleness
    f. Cracks
    g. Any sign of puncture
    h. Any sign of abrasion

Reusable gloves, boots, or coveralls exhibiting any of the characteristics listed above will be discarded. PPE used in areas known or suspected to exhibit elevated concentrations of contaminants will not be reused.

Project personnel also carry certain responsibilities for their own health and safety, and are required to observe the following safe work practices:

i. Familiarize themselves with this HASP.
ii. Use the "buddy system" when working in EZs.
iii. Use the safety equipment in accordance with training received, labeling instructions, and common sense.
iv. Maintain safety equipment in good condition and proper working order.
v. Refrain from activities that would create additional hazards (e.g., smoking, eating, etc., in restricted areas, leaning against dirty, contaminated surfaces).
vi. Eating and drinking will be prohibited except in designated areas. These designated areas may change during the duration of the project to maintain adequate separation from the active work area(s). Designation of these areas will be the responsibility of the SSO. Smoking is not allowed on Site.
vii. Soiled disposable outerwear shall be removed and placed into a covered container prior to washing hands and face, eating, using lavatory facilities, or leaving the Site.

5.0 Site Control

Site control is provided by the implementation of the following measures:

i. The PM, SSO, or SM are to be advised of the dates and purpose of all field activities.
ii. All visitors must sign in and sign out each time they enter and exit the site.
iii. Approved pedestrian and vehicle traffic paths will be determined during daily safety meetings.
iv. All controlled areas will have the appropriate signage posted.
v. Warning signs will be placed to warn personnel of potential hazards.
vi. Site security shall be maintained outside of the actual work area(s) to prevent unauthorized entry into the work area(s). The general public are to be protected from Site hazards.

5.1 Authorization to Enter

All personnel working in EZs must have completed hazardous waste operations initial training as defined under OSHA Regulation 29 CFR 1926.65. They shall also have completed their training or refresher training within the past 12 months, and have been certified by a physician as fit for hazardous waste operations in order to enter a Site area designated as an EZ or CRZ. Personnel without such training or medical certification may enter the designated SZ only. The SSO will maintain a list of authorized persons and only personnel on the authorized list will be allowed within the EZ or CRZ.

5.2 Site Orientation and Hazard Briefing

No person will be allowed in the general work area during project activities without first being given a Site orientation and hazard briefing. This orientation will be presented by the SSO, and will consist of attending an initial safety meeting. This training will cover the chemical, physical, and biological hazards, protective equipment, safe work procedures, and emergency procedures for the project. A HASP Acknowledgment Sheet for documentation purposes is presented in Attachment F.

In addition to this meeting, daily safety meetings will be held each day before work begins. All individuals on Site, including visitors, must document their attendance to this briefing as well as to each daily safety meeting on the form that is also included in Attachment E.

5.3 Certification Documents

A review of required training and medical certifications will be completed prior to the start of project activities to ensure that each worker is in compliance with the safety standards. The 40-hour training, update, and respirator fit test certificates, as well as current medical clearance for all project field personnel will be reviewed prior to allowing personnel to work at the Site. Subcontractor personnel will provide a copy of their training, respirator fit test, and medical certification to the selected subcontractor's SSO prior to the start of fieldwork.

5.4 Entry Requirements

In addition to the authorization, hazard briefing and certification requirements listed above, no person will be allowed to enter the Site unless he/she is wearing the minimum SZ PPE as described in Section 4. Personnel entering the EZ or CRZ must wear the required PPE for those locations as identified on each JHA.

5.5 Emergency Entry and Exit

Individuals who must enter the Site on an emergency basis will be briefed of the hazards by the SSO. All hazardous activities will cease in the event of an emergency and any sources of emissions will be controlled, if possible.

Individuals exiting the Site because of an emergency will gather in a safe area, as determined by the SSO for a head count. The SSO is responsible for ensuring that all individuals who entered the work area have exited in the event of an emergency. See Section 8 of this HASP for additional information.

5.6 Contamination Control Zones

Contamination control zones are maintained to prevent the spread of contamination and to prevent unauthorized people from entering hazardous areas.

5.6.1 Exclusion Zone (EZ)

The EZ consists of the specific work area, or may be the entire area of suspected contamination. All employees entering the EZ must use the required PPE, and must have the appropriate training and medical clearance for hazardous waste work. The EZ is the defined area where there is a possible respiratory and/or contact health hazard.

5.6.2 Contamination Reduction Zone (CRZ)

The CRZ or transition area will be established to perform decontamination of personnel and equipment and to provide a buffer zone around the EZ. All personnel entering or leaving the EZ will pass through this area to prevent any cross-contamination. Tools, equipment, and machinery will be decontaminated in the CRZ (or a separate CRZ decontamination area) that may be set up to better address equipment decontamination. The decontamination of all personnel will be performed on Site in the CRZ that is adjacent to each EZ. Personal protective outer garments and respiratory protection will be removed in the CRZ and prepared for cleaning or disposal. This zone is the only appropriate corridor between the EZ and the SZ.

5.6.3 Support Zone (SZ)

The SZ is a clean area outside of the CRZ located to prevent project personnel from exposure to hazardous substances. Eating and drinking will be permitted in the support area only after proper decontamination. Smoking will not be allowed in any portion of the SZ. The SZ will be located upwind of Site operations if possible, and will be used as a potential evacuation point if appropriate.

6.0 Air Monitoring Program

This section of the HASP presents the requirements for conducting air monitoring at the Site. The air-monitoring program is designed to ensure protection for personnel working on Site as well as the surrounding community. The on-Site monitoring program will be conducted by the SSO or a fully trained technician, and will consist of monitoring project personnel exposures to VOCs and other air quality hazards. In addition, a combination combustible gas, oxygen, carbon monoxide, and hydrogen sulfide meter (Multi Gas meter) may also be used during borehole installation work.

Inhalation hazards are caused from the intake of vapors and contaminated dust. Air monitoring shall be performed during ground intrusive activities and during the handling and movement of all soils (both potentially impacted and clean). The purpose of air monitoring is to identify and quantify airborne contaminants in order to determine the level of worker protection needed. Initial screening for identification is often qualitative, but the determination of its concentration (quantification) must wait subsequent testing. Two principle approaches are available for identifying and/or quantifying airborne contaminants:

i. The use of real-time (on-Site) reading instruments (i.e., PID)
ii. Laboratory analysis of air samples obtained by the use of various sampling equipment and methods

Direct reading instruments may be used to rapidly detect VOCs and other inhalation hazards. They are the primary tools of initial site characterization. The information provided by direct reading instruments could be used to institute appropriate measures (i.e., PPE, evacuation), and determine the most appropriate equipment for future monitoring. All direct reading instruments have inherent constraints in their ability to detect hazards. It is imperative that direct reading instruments are operated, and the data are interpreted by qualified individuals who are thoroughly familiar with the particular devices, operating principles and limitations. At hazardous waste sites, where unknown and multiple contaminants are the rule rather than the exception, instrument readings should be interpreted conservatively. The following guidelines may facilitate accurate recording and interpretation:

i. Calibrate instruments according to the manufacturer's instruction before and after each use.

ii. Correction factors have been determined by the air monitoring equipment manufacturers that enable the user to quantify a large number of chemicals using only a single calibration gas, typically isobutylene for PIDs and methane for LELs. Response curves/response factors are necessary to adapt PID action levels to actual PID readings when a specific COC is detected via air sampling and/or colorimetric evaluation. These Correction Factors and how to apply them can be found in the air monitoring instrument operating manual or online from the manufacturers website under "Technical Notes".

iii. Remember that the instrument readings have limited value where contaminants are unknown. When reading unknown contaminants, report them as "needle deflection", or "positive instruments response", or "units", rather than a specific concentration (i.e., ppm).

iv. Conduct additional monitoring at any location where a positive response occurs.

v. A reading of zero should be reported as "no instrument response" rather than "clean" because quantities of the chemicals may be present that are not detectable by the instrument.

vi. The survey should be repeated with several detection systems to maximize the number of chemicals detected.

The data collected throughout the monitoring effort shall be used to determine the appropriate levels of protection.

The SSO or fully trained technician will perform air monitoring to evaluate the exposure of project personnel to chemical and physical hazards, verify the effectiveness of engineering controls, evaluate the effectiveness of any Site control measures, and to determine the proper level of PPE. During the progress of project activities, the SSO will monitor the levels of VOCs and other air quality hazards (LEL, low oxygen, etc.) on an hourly basis, or more frequently as necessary based on Site conditions. The following monitoring equipment will be used for this purpose:

i. A PID equipped with a 10.6 eV lamp or greater
ii. A combination oxygen, combustible gas, carbon monoxide, and hydrogen sulfide instrument (for any gases issuing from boreholes, and for working in any low-lying topographic areas) When air monitoring is required, the workers breathing zone(s) will be monitored and the results recorded. Additionally, when necessary, area samples at the following locations will be taken daily.

When monitoring is required, record time, location, and results of monitoring and actions taken based on the readings:

i. Upwind of the EZ to establish background concentrations
ii. In the SZ to check for contamination or migration of emissions
iii. Downwind of EZ to track any contaminants/emissions leaving the Site

The data collected throughout the monitoring effort shall be used to determine the appropriate levels of protection. Action levels for upgrading or downgrading of PPE have been established in Table 1.

All instruments will be calibrated on a daily basis in accordance with the manufacturer's guidelines.

Records of all calibrations and real-time measurements will be kept in a bound field logbook or documented via air monitoring and calibration log sheets. All air monitoring data collected by SSO will be filed and made available upon request.

6.1 Real-Time VOC Monitoring

The SSO or designee will continuously monitor when required for the presence of VOCs during the handling of impacted materials and drilling activities. PID readings will be taken in and around all EZs, including drillers' breathing zone. If the results of the first hour of monitoring indicates contaminant concentrations are non-detect, and no differing Site conditions are observed, then the monitoring frequency may be decreased.

Action levels for the chemical hazards and for upgrading/downgrading PPE have been established and are presented in Table 1.

An action level is a point at which increased protection or cessation of activities is required due to the concentration of contaminants in the work area. Most activities shall be initiated in Modified Level D. The appropriate actions will be taken at designated action levels. In addition to the action levels, an upgrade to Level C or evacuation of the immediate area is required if:

i. Any symptoms occur
ii. Sustained readings (15 minutes or greater) occur in the worker's breathing zone that are above the applicable action levels
iii. Requested by an individual performing the task
iv. Any irritation to eye, nose, throat, or skin occurs

6.2 Oxygen, Combustible Gas, Carbon Monoxide, and Hydrogen Sulfide Monitoring

Air monitoring for combustible gas, oxygen and carbon monoxide will also be conducted continuously during borehole installation and during other activities where oxygen deficient, elevated carbon monoxide readings, and/or flammable atmospheres may be encountered. At the open borehole, in the driller's breathing zone, and in the immediate work area around these activities, the air quality must be monitored to ensure that an adequate level of oxygen is present, and to determine if a flammable atmosphere exists. All work activity must stop where monitoring indicates the flammable vapor concentration is 10 percent of the LEL at a location with a potential ignition source. Such an area must be ventilated to reduce the concentration to an acceptable level.

If the results of the first hour of monitoring indicates contaminant concentrations are non-detect, and no differing Site conditions are observed, then the monitoring frequency may be decreased. Action levels for combustible gases, oxygen, carbon monoxide, and hydrogen sulfide are presented in Table 1.

In addition to the action levels, an upgrade to Level C or evacuation of the immediate area is required if:

i. Any symptoms occur
ii. Sustained readings (15 minutes or greater) occur in the worker's breathing zone that are above the applicable action levels
iii. Requested by an individual performing the task
iv. Any irritation to eye, nose, throat, or skin occurs

7.0 Decontamination Procedures

In general, everything that enters the EZ at this Site must either be decontaminated or properly discarded upon exit from the EZ. All personnel, including any State and local officials must enter and exit the EZ through the CRZ. Prior to demobilization, potentially contaminated equipment will be decontaminated on a wash pad (decontamination pad) and the equipment will be inspected by the SSO before it is moved into the clean zone. If necessary, a decontamination facility complete with water supply and sump for collection of wash water will be constructed at the Site. Any material that is generated by decontamination procedures will be collected and stored in a designated area in the EZ until disposal arrangements are made.

The type of decontamination solution to be used is dependent on the type of chemical hazards. The decontamination solution for heavy equipment and for any reusable PPE is Alconox/Liquinox soap. The SDSs for Liquinox and any other chemical-containing products brought to the Site will be maintained on Site by the SSO.

7.1 Equipment Decontamination Procedures

All equipment that comes in contact with waste material must be decontaminated within the CRZ by high-pressure water cleaner upon exit from the EZ. Decontamination procedures will include knocking soil/mud from machines; water brush scrubbing using a solution of water and Liquinox; and a final water rinse. Personnel shall wear Level C or Modified Level D protection, as determined by the SSO, when decontaminating equipment. All decontamination wash water and residues

will be carefully collected and disposed of in accordance with the appropriate environmental regulations. Following decontamination and prior to exiting from the EZ, the SSO shall be responsible for ensuring that the item has been sufficiently decontaminated. This inspection shall be included in the Site log book.

7.2 Personnel Decontamination Procedures

Procedures for decontamination must be followed to prevent the spread of contamination and to eliminate the potential for chemical exposure. Personnel decontamination will be completed in accordance with the procedures that are presented below. Potentially contaminated PPE and trash will be stored in covered and labeled containers until disposal arrangements are made. It will be kept separate from trash generated in clean areas of the Site.

All disposable equipment shall be doffed before meal breaks and at the conclusion of the workday and replaced with new equipment prior to commencing work. Spent PPE will be kept in covered containers.

Personnel - Decontamination will take place upon exiting the contaminated work area in the CRZ.

Modified Level D decontamination procedures are as follows:

Step 1 - Remove all visible contamination and loose debris by washing with clean water.

Step 2 - Remove all outer clothing that came in contact with the contamination (i.e., boot covers and outer gloves) and either dispose of in disposable container or wash in detergent solution and rinse.

Step 3 - Remove protective clothing; dispose of in disposable container.

Step 4 - Remove inner gloves, dispose of in disposable container.

Step 5 - Wash and rinse hands.

Level C decontamination procedures to be utilized as follows:

Step 1 - Remove all visible contamination and loose debris by washing with clean water.

Step 2 - Remove all outer clothing that came in contact with the contamination (i.e., boot covers and outer gloves) and either dispose of in disposable container or wash in detergent solution and rinse.

Step 3 - Remove protective clothing; dispose of in disposable container.

Step 4 - Remove respirator, sanitize prior to reuse.

Step 5 - Remove inner gloves; dispose of in disposable container.

Step 6 - Wash and rinse hands with soap and water.

7.3 General Safety and Personal Hygiene

i. Eating at the Site is prohibited, except in specifically designated areas. Designation of eating areas will be identified to each employee. The location of these areas may change over the duration of the project to maintain adequate separation from the active work area(s).

ii. Smoking at the Site is prohibited.
iii. Individuals getting wet to the skin with effluent from the washing operation must wash the affected area immediately. If clothes in contact with skin are wet, then these must be changed.
iv. Hands, face, neck, and other expose areas must be washed with soap and water before eating, drinking, smoking, before using toilets, and before leaving the Site.
v. All disposable coveralls and soiled gloves will be placed in covered containers at the end of every shift or sooner, if deemed necessary by the SSO. Wastes will be stored until proper disposal arrangements have been made.
vi. Personnel working on Site will not be permitted to wear facial hair that interferes with the mask-to-face seal on.
vii. All personnel performing or supervising work within the EZ must wear appropriate PPE, observe, and adhere to the personal hygiene related provisions of this section.
viii. Personnel found to be disregarding the personal hygiene provisions of this HASP will, at the discretion of the SSO, be barred from the Site.

8.0 Emergency Response and Contingency Procedures

It is essential that project personnel be prepared in the event of an emergency. Emergencies can take many forms; illnesses or injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather. The following sections outline the general procedures for emergencies.

The cover sheet of the HASP lists the hospital location, government agency phone numbers, and emergency phone numbers. Directions to the hospital can be found in Attachment C. Emergency information should be posted as appropriate. Site personnel will use their cell phones/smart phones for contact purposes. All emergencies will be reported to the appropriate emergency responders. They may give the selected subcontractor further direction as to the responsibilities during any emergency situation. In general, project personnel will shut down equipment and evacuate to a safe pre-determined meeting area (rally point) during Site emergencies.

The SM or SSO will contact and meet on-Site with local emergency response agencies (e.g., fire department, police department, etc.) prior to initiating project activities. The purpose of this meeting is to inform these local authorities of the nature of the work and potential risks, to ensure that these responders are equipped to respond to a Site emergency, and to identify and resolve any potential problems, concerns, or conflicts.

The SM and SSO will be fully informed of the potential hazards at the Site prior to initiation of project activities so those emergency situations can be handled most efficiently. A meeting to discuss emergency response procedures will be held with all project personnel prior to initiating project activities.

Field employees will identify the primary (on site) and secondary (off site) evacuation routes to rally points prior to initiating work.

In case of an emergency, an evacuation alarm will be sounded, which means that all the personnel should evacuate the area and proceed to a rally point for further instruction. If an adjacent facility's alarm is activated, then work will stop immediately, equipment will be de-energized and/or secured as necessary for safety reasons, and personnel will go immediately to the secondary rally point as indicated in pre-start and daily safety meetings.

Emergency evacuation drills will be conducted as deemed necessary by the SSO, and documentation of the drills will be maintained by the SSO in project filing.

The SSO will notify all project personnel of the emergency through verbal or cell phone/smart phone communications. Cell phones/smart phones will be taken to the rally point to enable further receipt of instruction(s) from the SSO.

The following signals shall be established for use with auto or compressed air-type horns:

- 3 Blasts: evacuate EZs and meet at the designated evacuation area
- An "All Clear" will be conveyed by radio communication

8.1 Accident, Injury and Illness Reporting

Any work-related incident, accident, injury, illness, exposure, or property loss shall be reported within four hours of occurrence, but no later than the end of the shift, to your supervisor, the SSO and the SM. Motor vehicle accidents must also be reported. The SM and/or SSO will report the accident details and submit a completed Incident Report Form to the RSC. Subcontractors may use their own company-specific form if they so choose. The report must be filed for the following circumstances:

i. Accident, injury, illness, or exposure to project personnel
ii. Injury to any subcontractor personnel
iii. Damage, loss, or theft of property; and/or
iv. Any motor vehicle accident regardless of fault, which involves a company vehicle, rental vehicle, or personal vehicle while the individual is acting in the course of employment

The SSO and PM will investigate occupational accidents resulting in employee injury or illness. This investigation will focus on determining the cause of the accident and modifying future work activities to eliminate the hazard.

All project personnel have the obligation and right to report unsafe work conditions, previously unrecognized safety hazards, or safety violations of others. If you wish to make such a report, then it may be made orally to your supervisor or other member or management, or you may submit your concern in writing, either signed or anonymously.

8.2 Project Personnel Responsibilities during Emergencies

Site Safety Officer (SSO)

As the administrator of the HASP, the SSO has primary responsibility for responding to and correcting emergency situations. The SSO will:

i. Take appropriate measures to protect personnel including: posting of acceptable Site evacuation routes, withdrawal from the EZ, total evacuation and securing of the Site or upgrading or downgrading the level of protective clothing and respiratory protection.
ii. Take appropriate measures to protect the public and the environment including isolating and securing the Site, preventing runoff to surface waters, and ending or controlling the emergency to the extent possible.
iii. Ensure that appropriate Federal, State, and local agencies are informed, and emergency response plans are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. In the event of an air release of toxic materials, the local authorities should be informed in order to assess the need for evacuation. In the event of a spill, sanitary districts and drinking water systems may need to be alerted.
iv. Ensure that appropriate decontamination treatment or testing for exposed or injured personnel is obtained.
v. Determine the cause of the incident and make recommendations to prevent the reoccurrence.
vi. Ensure that all required reports have been prepared.

8.3 Medical Emergencies

Any person who becomes ill or injured in the EZ must be decontaminated to the maximum extent possible. If the injury or illness is minor, then full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, then at least partial decontamination should be completed as much as possible without causing further harm to the patient. First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the SSO, SM, and PM.

Decontaminated should be conducted in the CRZ before administering first aid, without causing further harm to the patient.

i. Skin Contact: Remove contaminated clothing, wash immediately with water, and use soap, if available.

ii. Inhalation: Remove victim from contaminated atmosphere. Remove any respiratory protection equipment. Initiate artificial respiration, if necessary. Transport to the hospital.

iii. Ingestion: Remove from the contaminated atmosphere. Do not induce vomiting if victim is unconscious. Never induce vomiting when acids, alkalis, or petroleum products are suspected. Transport to the hospital, if necessary.

Any person transporting an injured/exposed person to a clinic or hospital for treatment should take with them directions to the hospital and a copy of the identified chemicals on Site to which they may have been exposed.

Any vehicle used to transport contaminated personnel, will be cleaned or decontaminated as necessary.

8.4 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the SSO or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on Site.

If it is safe to do so, then Site personnel should:

i. Report to the PM
ii. Use fire-fighting equipment available on Site
iii. Remove or isolate flammable or other hazardous materials, which may contribute to the fire

8.5 Spill Control and Countermeasures

If a spill has occurred, then the first step is personal safety, then controlling the spread of contamination if possible. Project personnel will immediately contact Site management to inform them of the spill and activate emergency spill procedures.

General Spill Response Procedures

If a spill occurs, then the following general procedures will be followed:

i. Notify the SSO, SM and PM
ii. Evacuate immediate area of spill
iii. Determine the needed level of PPE

iv. Don required levels of PPE and prepare to make entry to apply spill containment and control procedures
v. After obtaining the proper spill response tools (shovels, booms and pads, absorbent socks, etc.) and PPE, personnel will attempt to contain the spill so that it does not enter any conveyance (sewer, drainage ditch, etc.) that eventually discharges to surface water
vi. Locate and abate source of spill
vii. Absorb or otherwise clean up the spill and containerize the material, sorbent, and affected soils
viii. Clean and decontaminate the affected area(s)
ix. Replace used/spent spill kit contents

All spill material and debris will be managed in a manner that complies with applicable federal, state, and local environmental rules regarding recycling or disposal of wastes. The SSO and SM have the authority to commit resources as needed to contain and control released material and to prevent its spread to off-Site areas.

8.6 Site Evacuations

In the event of an emergency situation such as fire, explosion, or significant release of toxic gases, project personnel in the field will be notified by established communications to evacuate the area. In the event of an emergency, S&ME personnel and subcontractors will gather at their primary mustering point for a head count. The SM will determine a primary and secondary muster point to be used as an assembly area in the event of an emergency. The secondary muster point will be located at least 90 degrees from the primary. These locations will be communicated to the work crew(s) during the site specific training prior to commencement of work activities, weekly thereafter, and prior to the advent of potentially threatening weather. Muster points will be identified on the Daily JSA form.

Table 1

Air Monitoring Program Action Levels
Health and Safety Plan

Monitoring Device	Action Level	Action
Photoionization Detector (PID) [(1)]	**VOCs present in the Breathing Zone:**	
10.6 eV lamp	<1 ppm or Background	No action required - continue monitoring.
	≥1 ppm	Perform detector tube sampling to determine presence of vinyl chloride (VC) and benzene (BZ).
	<10 ppm or Background, VC and BZ <1 ppm	Full-face respirator available.
	≥10 ppm and <50 ppm	Wear full-face respirator - Level C PPE.
	≥50 ppm and <1,000 ppm	Wear supplied air respirator - Level B PPE, implement additional engineering controls.
	≥1,000 ppm	Shut down activities. Notify SSO. Implement additional engineering controls.
VC and BZ Detector Tubes [(1)]	≥1 ppm	Air purifying respirator - Level C PPE.
Multi-Gas Meter		
Combustible Gas Indicator	>5 Percent LEL Note: typical LEL is 10% but due to methane present reduced to 5% LEL safety factor	Shut down activities. Notify SSO. Implement additional engineering controls.
Oxygen Meter	<19.5 Percent or >23.5 Percent **Note When oxygen levels are outside this range, percent LEL readings are not reliable.**	Cease operations and move to a safe place. Notify SSO. Do not continue working until oxygen levels are between 19.5 and 23.5 percent.
Hydrogen Sulfide	>5 ppm	No action required.
	>5 and <10 ppm	Communicate to project team.
	>10 ppm	Shut down activities. Notify SSO. Implement additional engineering controls.
Carbon Monoxide	>35 ppm	Shut down activities. Notify SSO. Implement additional engineering controls.

Notes:

(1) If PID reading is greater than 1ppm in the breathing zone, then determine presence of vinyl chloride (VC) and benzene (BZ) using chemical-specific detector tubes.
If the contaminants are unknown or indeterminate, then air purifying respirators (APR) are required until proven.
If PID readings subside, then workers may downgrade as appropriate.

SSO Site Safety Officer
LEL Lower explosive limit
PPE Personal protective equipment
ppm parts per million

HSPM 23 – FALL PROTECTION PROGRAM

Revision Date: 10/29/2018

1.0 PURPOSE AND SCOPE

1.1 The purpose of this fall protection program is to establish guidelines to protect all employees engaged in outdoor and indoor work activities that expose them to potential falls from elevations.

1.2 The scope of this Fall Protection Program includes all company owned or leased buildings and S&ME, Inc. employees whose duties may expose them to falls of 4 feet or more to a surface below in general industry situations; 6 feet or more in construction or construction-related activities; or to dangerous machinery from any height on sites governed by MSHA.

2.0 OBJECTIVE

2.1 The objective of this Fall Protection Program is to prevent falls from heights. Falls from heights are the leading cause of death and debilitating injury in the construction industry, and our company performs a number of tasks that expose employees to potential falls. This objective will be accomplished through effective education, engineering and administrative controls, use of fall protection systems, and enforcement of the program. This Fall Protection Program will be reviewed periodically and updated as necessary.

3.0 DEFINITIONS

3.1 *Anchor Point*. A secure point of attachment for lifelines, lanyards, or deceleration devices. An anchor point must be capable of supporting at least 5,000 pounds per person and must be independent of any anchor point being used to support or suspend platforms.

3.2 *Authorized Person*. An individual approved or assigned by the USGS to perform a specific type of duty or duties or to be at a specific location or job site (e.g., building maintenance, roof repair, etc.).

3.3 *Carabiner*. A metal loop (D ring) with a spring-hinged side that can quickly and reversibly connect components in safety-critical systems.

3.4 *Clearance*. The distance required to prevent the employee from striking the next level or any other obstruction below.

3.5 *Competent Person*. An individual who is capable of identifying existing or potential hazards in the surroundings or work areas and has the authority to take prompt corrective action to eliminate such hazards.

3.6 *Connector*. A device which is used to couple (connect) parts of the personal fall arrest system.

3.7 *Deceleration Device*. Any mechanism, such as a rope grab, rip-stitch lanyard, a specially woven lanyard, tearing or deforming lanyard, automatic self-retracting lifeline/ lanyard, etc., which serves to dissipate a substantial amount of energy during a fall arrest.

3.8 *Deceleration Distance*. The additional vertical distance a falling employee travels, excluding lifeline elongation and free-fall distance, before stopping and from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body harness attachment point at the moment of activation of the deceleration device during a fall and the location of that attachment point after the employee comes to a full stop.

3.9 *Free Fall*. The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

3.10 *Free-Fall Distance*. The vertical displacement of the fall arrest attachment point on the employee's body harness between the onset of the fall and just before the system begins to apply force to arrest the fall. (The distance that a worker falls before engaging the fall arrest system.) Free-fall distance must not exceed 6 feet.

3.11 *Full Body Harness*. Webbing/straps which are secured about an employee's body in a manner that will distribute the fall arrest forces over the thighs, pelvis, waist, chest, and shoulders. Having means for attaching it to other components of a personal fall arrest system, preferably at the shoulders and/or middle of the back.

3.12 *Guardrail System*. A barrier erected to prevent employees from falling to lower levels. This system includes a toe board, midrail able to withstand 150 pounds of force applied in a downward or outward direction, and top rail able to withstand 200 pounds of force applied in any direction.

3.13 *Lanyard*. A flexible line of rope or strap that has self-locking snap hook connectors at each end for connecting to body harnesses, deceleration devices, and anchor points.

3.14 *Leading Edge*. The edge of a floor, roof, or other walking/working surface which changes location as an additional floor, roof, etc., is placed or constructed. A leading edge is considered an unprotected side or edge when not under active construction.

3.15 *Lifeline*. A flexible line for connecting to an anchor point at one end to hang vertically (vertical lifeline) or for connecting to anchor points at both ends to stretch horizontally (horizontal lifeline). Serves as a means for connecting other components of a personal fall arrest system to the anchor point.

3.16 *Low Slope Roof*. A roof having a slope of less than or equal to 4 in 12 (vertical to horizontal). A roof with approximately a 19.5 degree slope or less.

3.17 *Personal Fall Arrest System*. A system used to arrest (catch) an employee in a fall from a working level. It consists of an anchor point location, connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or any combination thereof.

3.18 *Qualified Person*. An individual, who, by possession of a recognized degree, certificate, or professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, work, or project.

3.19 *Rope Grab*. A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest the fall of an employee.

3.20 *Roof Work*. The hoisting, storage, installation, repair, and removal of materials or equipment on the roof.

3.21 *Safety Monitoring System*. A safety system in which a competent person is responsible for recognizing and warning employees of potential fall hazards. All other fall protection systems must be deemed "infeasible" (through a study or review) before selecting or using a safety monitoring system.

3.22 *Snap Hook*. A connector comprised of a hook-shaped member with a closed keeper which may be opened to permit the hook to receive an object and when released, automatically closes to retain the object. Snap hooks must be self-closing with a self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection, thus preventing the opportunity for the object to "rollout" of the snap hook.

3.23 *Steep Slope Roof*. A roof having a slope greater than 4 in 12 (vertical to horizontal). A roof with a slope greater than 19.5 degrees.

3.24 *Toe Board*. A low protective barrier that will prevent the fall of materials and equipment to lower levels, usually 4 inches or greater in height.

3.25 *Total Fall Distance*. The maximum vertical change in distance from the bottom of an individual's feet at the onset of a fall, to the position of the feet after the fall is arrested. This includes the free-fall and deceleration distances.

3.26 *Unprotected Sides and Edges*. Any side or edge of a walking or working surface (e.g., floor, roof, ramp, runway, etc.) where there is no guardrail at least 39 inches high.

3.27 *Warning Line System*. A barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge and designates an area in which work can be conducted without the use of guardrails, personal fall arrest systems, or safety nets to protect employees in the area. This will be utilized on any roof greater than 50 feet wide and in conjunction with a safety monitor and only where the other forms of fall protection have been deemed infeasible to use.

4.0 FALL PREVENTION

4.1 Ideally, it is best to totally eliminate any hazard. Full elimination of a fall hazard would mean not putting any workers at heights. Using engineering controls, the work environment and the job itself should be designed to eliminate hazards or significantly reduce exposure to hazards. An example of an engineered solution is a guardrail system including handrails, mid rails, and toe boards.

4.2 Since elimination is often not possible, other measures such as the wearing of personal protective equipment (PPE) are required. There are also ways to minimize exposures to falls. Having a concrete pump truck lower the hose from an elevated pour to the ground to attain a sample instead of having an employee leave the ground is an example of minimizing the exposure to a fall hazard.

4.3 Each employee on a walkway/working surface (horizontal and vertical surface) with an unprotected side or edge which is 4 feet or more to a surface below in general industry situations; 6 feet or more in construction or construction-related activities; or to dangerous machinery from any height on sites governed by MSHA, above a lower level shall be protected from falling by use of either:

- 4.3.1 Guardrail system
- 4.3.2 Warning line system
- 4.3.3 Safety net systems
- 4.3.4 Personal fall arrest system

4.4 Employees working over any operating machinery, open spaces, hazardous substances, unguarded heights, steep slopes or otherwise subjected to falls 4 feet or more to a surface below in general industry situations; 6 feet or more in construction or construction-related activities; or to dangerous machinery from any height on sites governed by MSHA (and not protected by fixed scaffolding, guard rails or safety nets shall be secured by safety harness, a lanyard and/or a lifeline.

4.5 A personal fall arrest system is designed to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, and a body harness and may include a lanyard, deceleration device, lifeline, or a suitable combination of these. All fall protection systems selected for each application will be installed before an employee is allowed to go to work in an area that necessitates the protection. When selecting and purchasing fall protection equipment and supplies, they shall be approved for the purpose for which they are intended. Such fall protection equipment shall bear appropriate labels clearly indicating that the equipment meets or exceeds applicable ANSI and ASTM requirements.

4.6 Safety harnesses, lanyards, and lifelines shall be used only for safeguarding employees and for no other purposes.

4.7 Safety harnesses, lanyards and lifelines shall be inspected and maintained in safe condition. Before use, they shall be visually inspected for any signs of damage or deterioration such as wear,

fraying, cuts, tears, or damage caused by heat (melting, charring, and burning). Safety harnesses shall also be inspected for stitch failures in the fabric and/or worn, cracked or deformed buckle and D-rings. Lanyards found to have one or more damaged areas which exceed 0.25 by 0.25 by 0.03 inch deep, or eight or more damaged areas which exceed 0.20 by 0.20 by 0.01 inch deep, and any other fall protection equipment which is found to be damaged, shall be removed from service.

4.8 Safety harnesses, lanyards, and lifelines shall be inspected visually before each use by the user and at least once per year by a competent fall protection equipment inspector.

4.9 Safety harnesses, lanyards, and lifelines shall be removed from service and replaced upon evidence of defects, damage or deterioration; once it has been subjected to impact loading; or upon expiration of the manufacturer's specified service life, whichever comes first. Prior to discarding these items they shall be rendered unusable but cutting them into pieces.

4.10 Any safety harness, lanyard, or lifeline, subjected to in-service loading because of a fall shall be removed from service.

4.11 Lifelines, lanyards and safety straps shall be free of knots or splices except at their terminals.

4.12 The safety harness, lifeline, and lanyard shall be so arranged that the worker cannot fall more than 6 feet.

4.13 All safety harness and lanyard hardware shall be drop forged or pressed steel, cadmium plated in accordance with type 1, Class B plating specified in Federal Specification Q-P-416. Surface shall be smooth and free of sharp edges.

4.14 All safety harness and lanyard hardware, except rivets, shall be capable of withstanding a tensile loading of 5,000 pounds without cracking, breaking, or becoming permanently deformed.

4.15 One of the most important aspects of personal fall protection systems is fully planning the system before it is put into use. Probably the most overlooked component is planning for suitable anchorage points. All anchorage points should hold 5,000 pounds of force per person.

4.16 Anytime fall protection is required there shall be a plan that provides prompt rescue of employees in the event of a fall, or shall assure the employees are able to rescue themselves.

5.0 SAFETY HARNESS

5.1 A safety harness is a design of straps which are secured about the employee in a manner to distribute the fall arresting forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

5.2 Employees shall be provided with and be required to use an approved safety harness, adjusted to the correct size to properly fit them.

5.3 The safety harness shall be attached by means of a lanyard to either a fixed anchor or a lifeline.

5.4 Where the employee must be lifted through a manhole or other opening of such size as to necessitate lifting him in a vertical manner, that worker shall wear a harness, which will permit lifting him in such a way.

5.5 Each employee will wear a safety harness with a safety lanyard secured to a separate lifeline while working from swing scaffolds, boson chairs or other suspended work platforms where a falling hazard is present.

5.6 Every harness must have a legible tag to identify the harness, model, date of manufacture, name of manufacturer, limitations and warnings. If tagging system is missing or not legible remove harness from service.

6.0 LANYARDS

6.1 "Lanyard" means a rope, suitable for supporting one person. One end is fastened to a safety harness and the other end is secured to a substantial object or a safety line capable of holding 5,000 pounds of impact force.

6.2 The safety lanyard will have a maximum length to provide for a fall of no greater than 6 feet.

6.3 When axes or other tools are used which are likely to sever, abrade or burn the lifeline, lanyard or safety strap, wire rope of equivalent strength or four strand wire-cored manila rope of not less than 7/8 inch (16 mm) diameter and having a breaking point of not less than 5,000 pounds shall be used.

6.4 Where a hook is used to attach a lanyard to a fixed anchor it shall be an approved safety hook.

6.5 All lanyards shall have a locking mechanism to help prevent roll out (snap hook detaching from harness D-ring).

6.6 Where workers are engaged in work in proximity to energized electrical circuits or in other work where conductive safety straps cannot be used, two non-conductive safety straps shall be worn to provide two additional protections as required.

6.7 Self-Retracting

6.7.1 Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

6.7.2 Self-retracting lifelines and lanyards which do not limit free fall distance to 2 feet or less, rip-stitch lanyards, and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000 pounds applied to the device with the lifeline or lanyard in the fully extended position.

7.0 LIFELINE

7.1 A lifeline is a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting a lanyard or safety harness to the anchorage.

7.2 Secure attachment points shall be used and each shall be visually inspected for damage or deterioration immediately prior to use. Any visual damage or deterioration will be considered adequate reason for replacement or repair of the questionable attachment point.

7.3 Each employee must have a separate lifeline when the lifeline is vertical, such as when working from swing scaffolds, boson chairs or other suspended work platforms where a falling hazard is present, or when required to work on stored materials in tanks and similar storage areas.

7.4 The design of systems using horizontal lifelines must be done by qualified persons.

7.5 Extreme care should be taken in considering a horizontal lifeline for multiple tie-offs. Horizontal lifeline and anchorages strength should be increased accordingly for each additional employee to be tied-off.

7.6 Each anchorage serving as an attach point for lifelines or lanyards shall be load tested before first use and after rework.

7.7 Lifelines used shall be of sufficient length to reach the bottom of the potential drops and fastened to approved attach points located above the personnel being protected.

7.8 Thimbles shall be installed to protect ropes from chafing at points of connection to eyes, rings and snaps.

7.9 Lifelines shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum dead weight of 5,000 pounds.

7.10 Lifelines used on rock-scaling operations, or in areas where the lifeline may be subjected to cutting or abrasion, shall be a minimum of 7/8 inch wire core manila rope. For all other lifeline applications, synthetic fiber rope shall be used, with a minimum breaking strength of 5,000 pounds.

7.11 When a worker is employed under circumstances where he might become entrapped by material, or be overcome by any other cause, he shall wear a safety harness attached to a lifeline or other device, attended by another person who shall be stationed, equipped and capable of immediately implementing a rescue.

8.0 HARDWARE

8.1 Connectors shall be drop forger, pressed or formed steel, or made of equivalent materials.

8.2 Connectors shall have corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system.

8.3 Dee-rings and snap-hooks shall have a minimum tensile strength of 5,000 pounds.

8.4 Dee-rings and snap-hooks shall be proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.

8.5 The gate hook strength of snap-hooks and carabiners must be at least 3,600 pounds.

8.6 Snap-hooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snap-hook by depression of the snap-hook keeper by the connected member, or shall be a locking type snap-hook designed and used to prevent disengagement of the snap-hook by the contact of the snap-hook keeper by the connected member.

8.7 Unless the snap-hook is a locking type and designed for the following connections, snap-hooks shall not be engaged:

- 8.7.1 Directly to webbing, rope, or wire rope;
- 8.7.2 To each other;
- 8.7.3 To a dee-ring to which another snap-hook or other connector is attached;
- 8.7.4 To a horizontal lifeline; or
- 8.7.5 To any object which is incompatibly shaped or dimensioned in relation to the snap-hook such that unintentional disengagement could occur by the connected objects being able to depress the snap-hook keeper and release itself.

9.0 MAINTENANCE AND STORAGE OF EQUIPMENT

9.1 Maintenance and storage of equipment shall be conducted by the user in accordance with the manufacturer's instructions. Unique issues, which may arise due to conditions of use, shall be addressed with the manufacturers. The manufacturer's instructions shall be retained for reference.

9.2 Equipment which is in need of or scheduled for maintenance shall be tagged as "unusable" and removed from service.

9.3 Equipment shall be stored in a manner as to preclude damage from environmental factors such as heat, light, excessive moisture, oil, chemicals and their vapors or other degrading elements.

10.0 EQUIPMENT INSPECTION

10.1 It is important that all components of a personal fall arrest system (PFAS) be inspected. Inspections shall occur:

- 10.1.1 Prior to each use of the PFAS, and
- 10.1.2 Yearly or more by a trained and competent person.

10.2 A written record of such inspection and approval for continued use should be retained (**Appendix A**).

10.3 The decision to retire a full body harness, lanyard, lifeline, or any other component used in an employee's PFAS should be based on one of the following criteria:

10.3.1 Any unit that has arrested a fall or has had the fall arrest indicator activated should be removed from service immediately.

10.3.2 Manufacturer's recommendations.

10.3.3 Inspection by a trained and competent person.

10.3.4 Doubt about the reliability of the full body harness.

11.0 SAFETY NETS

11.1 Refer to 29 CFR 1926.502(c) for all requirements on safety net usage.

12.0 CONTROLLED ACCESS ZONES

12.1 When conventional fall protection is not used these locations must be identified and classified as controlled access zones. Controlled access zone means an area designated and clearly marked in which leading edge work may take place without the use of guardrail, safety net or personal fall arrest systems to protect the employees in the area. Controlled access zones shall conform to the following provisions:

12.1.1 When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access.

12.1.2 When control lines are used, they shall be erected no less than 6 feet from an unprotected edge nor more than 25 feet from an unprotected edge, except when erecting precast concrete members.

12.1.2.1 When erecting precast concrete members, the control line shall be erected no less than 6 feet from an unprotected edge nor more than 60 feet or half the length of the member being erected, whichever is less, from the leading edge.

12.1.3 The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.

12.1.4 The control line shall be connected on each side to a guardrail system or wall.

12.1.5 Control lines shall consist or ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

12.1.5.1 Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.

12.1.5.2 Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the walking/working surface and its highest point is not more than 45 inches from the walking/working surface.

12.1.5.3 Each line shall have a minimum breaking strength of 200 pounds.

13.0 SAFETY MONITORING SYSTEM

13.1 Before any safety monitoring system will be utilized, the Corporate Safety Director or Corporate Safety Professional shall be contacted to advise and evaluate the system before use. Safety monitoring systems may be utilized as alternative protection in accordance with the requirements of 1926.502(h).

13.2 When safety monitoring systems are used, the Corporate Safety Professional will serve as the safety monitor or he/she shall designate an individual adequately trained under this program to serve as the safety monitor. The safety monitor has the authority to take prompt action to remove employees from fall hazards should he/she identify or predict any that employees may be exposed to.

13.3 Duties of the safety monitor shall be:

13.3.1 To recognize fall hazards.

13.3.2 Warn employees if they are unaware of a fall hazard or are acting in an unsafe manner.

13.3.3 Be on the same working surface and in visual sight of employees.

13.3.4 Stay within a distance that verbal communication can be heard and understood.

13.3.5 Shall not assume any other duties or assignments which may interfere with performing the duties of the safety monitor.

14.0 ROOF WORK

14.1 Each employee engaged in roof access work activities on low-slope roofs (4 in 12 or less, vertical to horizontal pitch) with unprotected sides and edges six feet or more above lower levels will be protected from falling by requiring the use of covers, guardrails, safety nets, personal fall arrest system, warning line system, or safety monitoring systems, and must comply with the requirement of HSPM 46 of S&ME's Health and Safety Protocol Manual.

14.1.1 Guidelines in Appendix A of Subpart M will be followed to determine how to correctly measure a roof that is not rectangle.

14.2 Employees on roofs with slopes greater than 4 in 12, vertical to horizontal pitch (steep roofs); with unprotected edges more than 6 feet above lower levels will be protected by the use of guardrail systems, safety net systems, or personal fall arrest systems.

15.0 FALL PROTECTION PLAN

Because of the trauma a fall can have on the body, it is important to have a plan in place in the event of a fall. When work is to be performed from heights greater than 6 feet, S&ME employees must develop a plan that will enable quick rescue prior to beginning work. This does not always have to be documented, but when necessary employees may use the Fall Protection Plan Form in Appendix B of this program.

16.0 TRAINING GUIDELINES

16.1 Fall Protection training will be scheduled throughout the year on an as needed basis. Fall Protection training shall be performed prior to an employee working in areas requiring fall protection devices.

16.2 The following are general training topics that should be covered:

16.2.1 Fall hazard recognition and how to minimize the hazards;

16.2.2 Correct procedures for maintaining and inspecting the fall protection systems to be used;

16.2.3 The use of guardrail systems, fall arrest systems, safety net systems, warning line systems, controlled access zones, and other protection possibly used;

16.2.4 All applicable standards in 29 CFR 1926, Subpart M; and

16.2.5 The need and/or reason for retraining such as;

16.2.5.1 Deficiencies in training

16.2.5.2 Work place changes

16.2.5.3 Fall protection system changes that render previous training obsolete

16.2.6 A certification record will be kept containing (at a minimum):

16.2.6.1 Employee name with signature

16.2.6.2 Date trained; and
16.2.6.3 Trainers' name
16.2.6.4 Training topics

17.0 ACCIDENT INVESTIGATIONS

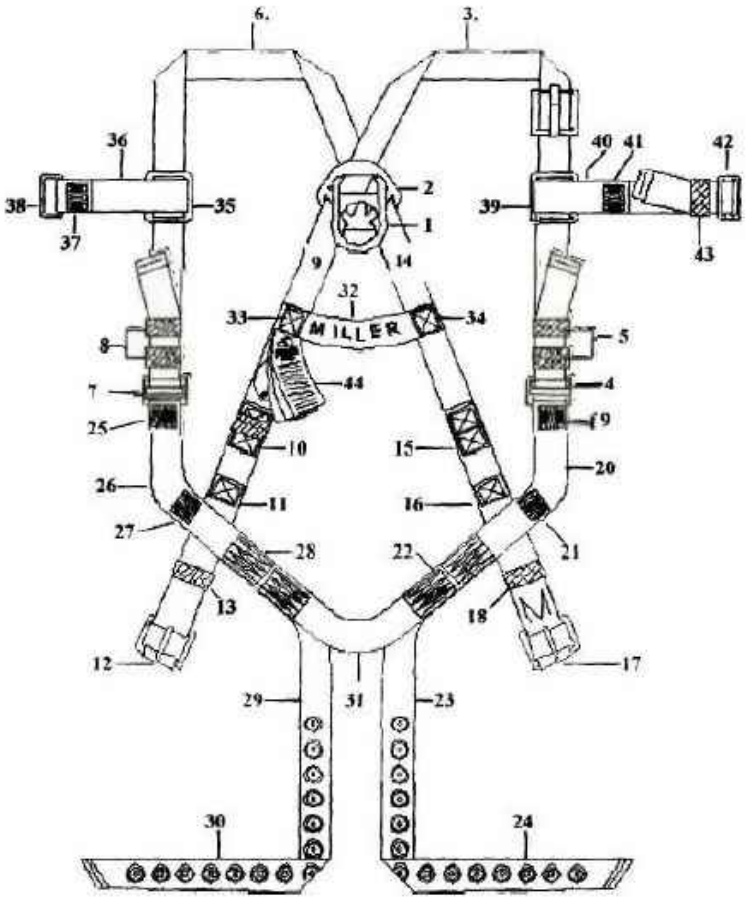
17.1 All injuries and near misses shall be investigated its root cause. If the root cause is due to a weakness in this program, the program shall be changed to address the weakness.

APPENDIX A

INSPECTION CHECKLIST - HARNESS

ITEM DESCRIPTION

1. X ✓ Dee Ring
2. X ✓ Dee Pad
3. X ✓ Nylon Webbing
4. X ✓ Spring Loaded Friction Buckles
5. X ✓ Elastic Keepers (2)
6. X ✓ Nylon Webbing
7. X ✓ Spring Loaded Friction Buckles
8. X ✓ Elastic Keepers (2)
9. X ✓ Nylon Webbing
10. X ✓ Stitching
11. X ✓ Stitching
12. X ✓ Tongue Buckle
13. X ✓ Elastic Keeper (1)
14. X ✓ Nylon Webbing
15. X ✓ Stitching
16. X ✓ Stitching
17. X ✓ Tongue Buckle
18. X ✓ Elastic Keeper (1)
19. X ✓ Stitching
20. X ✓ Nylon Webbing
21. X ✓ Stitching
22. X ✓ Stitching
23. X ✓ Nylon Webbing
24. X ✓ Grommets
25. X ✓ Stitching
26. X ✓ Nylon Webbing
27. X ✓ Stitching
28. X ✓ Stitching
29. X ✓ Nylon Webbing
30. X ✓ Grommets
31. X ✓ Sub-Pelvic Strap
32. X ✓ Back Strap
33. X ✓ Stitching - Back Strap
34. X ✓ Stitching - Back Strap
35. X ✓ Chest Strap Pad
36. X ✓ Nylon Webbing
37. X ✓ Stitching
38. X ✓ Mating Link
39. X ✓ Chest Strap Pad
40. X ✓ Nylon Webbing
41. X ✓ Stitching
42. X ✓ 3 Bar Mating Buckle
43. X ✓ Elastic Keeper (1)
44. X ✓ Tagging/Label System



CRITERIA X = FAIL
✓= PASS

Inspection Checklist – Fall Protection Equipment

Employee Name:	Employee ID #:
Department #:	Description:
Serial #:	Model #:
Inspector:	Date of Manufacture:
Inspector Signature:	Date Inspected:

FAIL: Initial_____
REMOVE FROM SERVICE

PASS: Initial_____
RETURN TO SERVICE

ITEM #	DESCRIPTION	FAIL	PASS	COMMENTS

APPENDIX B
FALL PROTECTION PLAN

Site: _____ Job Number: _____
Work Date(s) _____
Site Description: _____
Proposed Activity(s): _____
_____

Work to be conducted on or near:

_____
_____

METHOD OF FALL PROTECTION (See Attachment – Approved Fall Protection Systems):

Personal Fall Protection: _____ Applicable _____ Not Applicable

Anchorage Points _____ Applicable _____ Not Applicable

_____ Are anchorage points available and can with 5,000 lbs?
_____ Are all anchorage points stable, substantial, and have sufficient strength to withstand twice the potential impact energy of the free-fall?
_____ Are anchorage points for self-retracting lifeline systems located overhead?
_____ Can a worker move from one station to another or climb up and down without exposure to a fall?
_____ If the lifeline, lanyard, or self-retracting lifeline is not permanently attached to an anchorage point at the elevated work area, is the first worker up or the last worker down protected while climbing and traversing?

Comments: _____

Snap Hooks _____ Applicable _____ Not Applicable

_____ Have double-locking snap hooks been used?
_____ Is the snap hook attached to the D-ring, eyebolt, or other hardware in a manner approved by the manufacturer of the snap hook?
_____ Are snap hooks inspected regularly for stress, wear, distortion, and spring failure?
_____ Are snap hooks arranged so they are never connected to each other? (They should NOT be connected to each other.)

Comments: _____

Body Harnesses _____ Applicable _____ Not Applicable

_____ Are full-body harnesses selected for a particular job quipped with all necessary attachment points? (for fall arresting, work positioning, descent control, rescue, or ladder fall-protection systems)
_____ Are body harnesses inspected regularly for wear, abrasion, broken stitching, and missing hardware?
_____ Do harness of the double lanyard type (have two D rings) or are Y lanyards used?
_____ Is the Velcro type of closure prohibited from all load-bearing connections
_____ Have workers been instructed in the use and care of body harnesses/body belts

Comments: _____

Other Considerations _____ Applicable _____ Not Applicable

_____ Has the free-fall distance been considered, so that a worker will not strike a lower surface or object before the fall is arrested?
_____ Have pendulum-swing fall hazards been eliminated?
_____ Have safe methods to retrieve fallen workers been planned?
_____ Is all fall-arrest equipment free of potential damage from welding, chemical corrosion, or sandblasts?

_____ Are all components of the system compatible according to the manufacture's instruction?
_____ Have employees been properly trained in the following issues?
  _____ Manufacturer's recommendations, restrictions, instructions, and warnings
  _____ Location of appropriate anchorage points and attachment techniques
  _____ Problems associated with elongation, deceleration distance, method of use, inspection, and storage

Comments: _____

Rescue plan:
List methods and equipment to be used to rescue workers who are subjected to a fall while wearing a harness and lifeline or workers and/or equipment that fall into the Safety net.

_____
_____
_____
_____

Prepared by:

_____ _____
Name Date

Reviewed by:

_____ _____
Name Date

_____
Name Date

REVISION RECORD

Revision/Review	Date	Remarks	Approval
1.00	2/6/2018	Rebranding release.	DRD
1.01	10/29/2018	Added section 15 and Appendix B.	WEM

Attachment G

Health and Safety Plan

Acknowledgement

Attachment G

Site Health and Safety Plan Acknowledgement

By signing below, I certify that I have read this Health & Safety Plan and am familiar with its provisions and my own proposed activities and responsibilities on site.

Print Name	Signature	Date
Rick Bruce		12/1/22
Josh Wilson		12/1/22
Rick Bruce		12/2/22
Josh Wilson		12/2/22

Permit Guidance

Contractor is responsible for acquiring all required permits for this project and for all permit and review fees, which may include, but is not limited to:

- Land Disturbing Permit (Cost would be $265)
- Tree Ordinance Permit (Cost would be $515)
- Air Pollution Control Bureau Demolition Permit
- All Hauling Permits
- All Landfill Permits
- TDOT Utility Permits
- Utility Road Cut Permits
- All Special Waste Permits
- Building Permits (See below)
- Electrical Permits (Included in the building permit fee)
- Plumbing Permits (Included in the building permit fee)
- Work Zone Permit (No Charge)

Building permit is calculated based off the following

Total construction building value is determined based off the bid. The first 500,000 is determined to cost the permit $2044.25. Any additional value for the building over the 500,000 must be calculated using the following Method.

Overall building value -500,000 = x
X / 1,000 = Y
Y * $2.75 =Z

X = the difference from the base permit that you paid for the $2044.25
Y = how many thousands of dollars
Z = the remainder of any building value over 500,000.

Building permit
Building permit would be based on the value $2044.25 plus Z for the building permit over 500,000.

Review fee for building permit
Review fee for building permit is half the cost of the building permit fee. (additional cost)

Note: The information provided above is for guidance only. It is the contractor's responsibility to follow all the laws and rules set out by the jurisdiction. City of Chattanooga ordinance no. 13929 is provided on the next page for reference.

First Reading: December 13, 2022
Second Reading: December 20, 2022

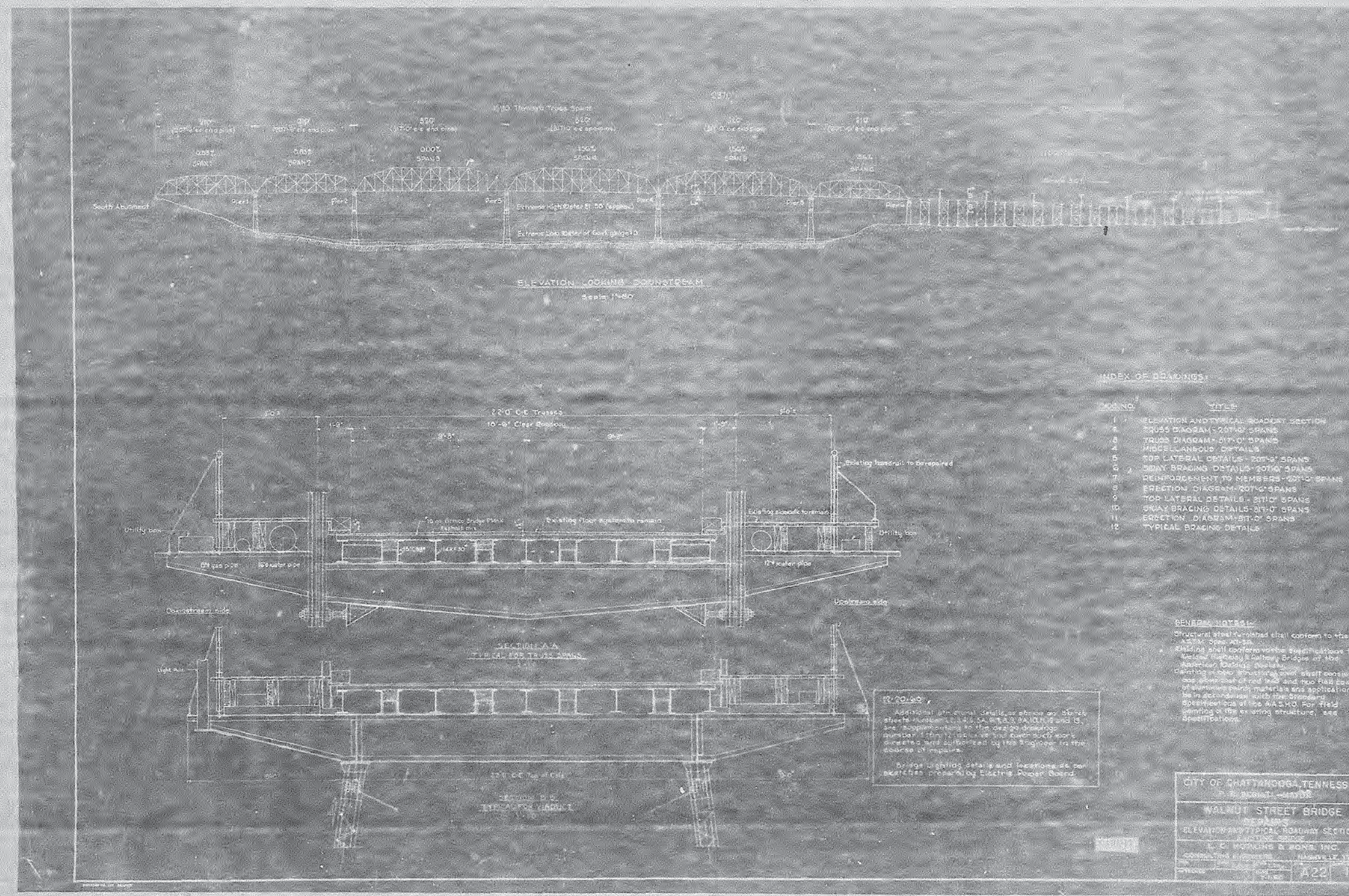
ORDINANCE NO. 13929

AN ORDINANCE TO AMEND CHATTANOOGA CITY CODE PART II, CHAPTER 10, SECTION 10-3(J)(F), SECTIONS 109.2, 109.2.1, 109.2.2, 109.2.3, AND 109.2.4 REGARDING FEE SCHEDULES FOR NON-REFUNDABLE PERMITS, MOVING, DEMOLITION, AND OTHER FEES AND SECTION 10-32 REGARDING THE FEE SCHEDULE FOR ENGINEERING PLANS REVIEW.

SECTION 1. BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CHATTANOOGA, TENNESSEE, that Chattanooga City Code, Part II, Chapter 10, Section 10-3(j)(f), Sections 109.2, 109.2.1, 109.2.2, 109.2.3, and 109.24, be and the same are hereby amended by deleting said Sections in their entirety and substituting in lieu thereof with the following:

j. (f) Section 109.2 is amended by adopting a non-refundable fee schedule for all building permits which shall be as follows:

Total Valuation	**Fee**
$1,000.00 and less	No fee, unless inspection is required, in which case a $40.00 fee for each inspection shall be charged.
$1,001.00 to $50,000.00	$25.00 for the first $1,000.00 plus $5.75 for each additional thousand or fraction thereof, to and including $50,000.00
$50,001.00 to $100,000.00	$295.00 for the first $50,000.00 plus $4.75 for each additional thousand or fraction thereof, to and including $100,000.00
$100,000.00 to $500,000.00	$525.00 for the first $100,000.00 plus $3.75 for each additional thousand or fraction thereof, to and including $500,000.00
$500,001.00 and up	$1,925.00 for the first $500,000.00 plus $2.75 for each additional thousand or fraction thereof



INDEX OF DRAWINGS

DRWG.	TITLE
1	ELEVATION AND TYPICAL ROADWAY SECTION
2	EQUES DIAGRAM - 207'-0" SPANS
3	TRUSS DIAGRAM - 217'-0" SPANS
4	MISCELLANEOUS DETAILS
5	TOP LATERAL DETAILS - 207'-0" SPANS
6	SWAY BRACING DETAILS - 207'-0" SPANS
7	REINFORCEMENT TO MEMBERS - 207'-0" SPANS
8	ERECTION DIAGRAM - 207'-0" SPANS
9	TOP LATERAL DETAILS - 217'-0" SPANS
10	SWAY BRACING DETAILS - 217'-0" SPANS
11	ERECTION DIAGRAM - 217'-0" SPANS
12	TYPICAL BRACING DETAILS

GENERAL NOTES:

Structural steel furnished steel conform to the A.S.T.M. spec. A-36.

Rivet or shall conform to the Specifications for Railway Bridges of the American Railway Engineering Association.

Painting of new structural steel shall consist of one shop coat of red lead and two field coats of aluminum paint; materials and application to be in accordance with the Standard Specifications of the A.A.S.H.O. For field painting of the existing structure, see specifications.

Additional structural details or shop drawings sheets numbered S-1, S-2, S-3, S-4, S-5, S-6, and S-7, are supplementary to the design drawings number 1 thru 12 inclusive and even such work is to be executed and supervised by the Engineer in charge of inspection.

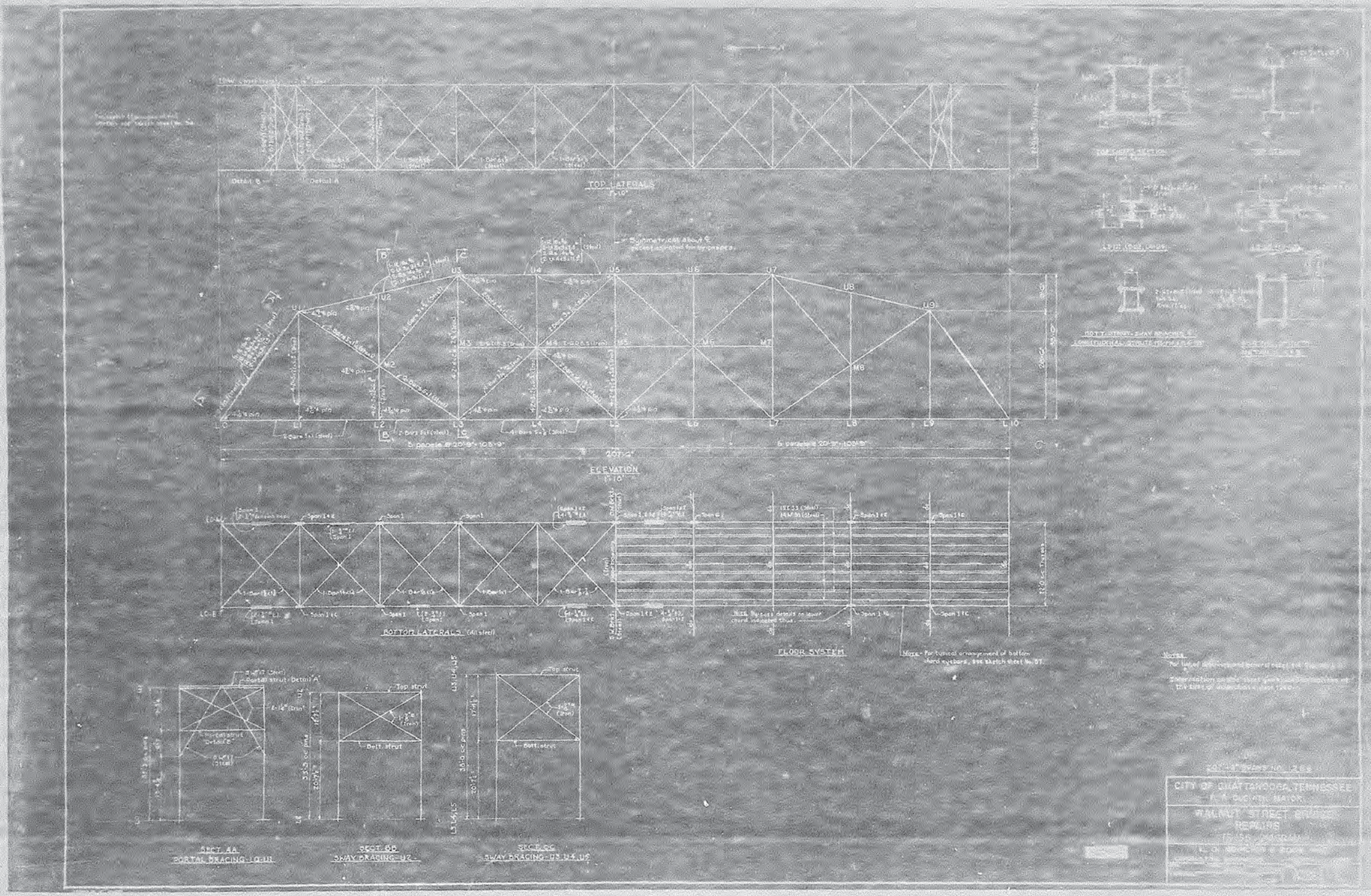
Bridge lighting details and locations as per sketches prepared by Electric Power Board.

CITY OF CHATTANOOGA, TENNESSEE
P. E. BOGLE, MAYOR
WALNUT STREET BRIDGE
OVER N.S.
ELEVATION AND TYPICAL ROADWAY SECTION
L. E. MOORE & HOOD, INC.
CONSULTING ENGINEERS NASHVILLE, TENN.
DESIGNED — DRAWN — TRACED — CHECKED — A22 — 1

7-1-60

FILE IN DRAWER SD #83

Orig file G-12


TOP LATERALS
ELEVATION
BOTTOM LATERALS (All steel)
FLOOR SYSTEM
SECT AA
PORTAL BRACING U0-U1
SECT BB
SWAY BRACING U2
SECT CC
SWAY BRACING U3 U4 U5
CITY OF CHATTANOOGA, TENNESSEE
WALNUT STREET BRIDGE
REPAIRS

ELEVATION

BOTTOM LATERALS

FLOOR SYSTEM

CITY OF CHATTANOOGA, TENNESSEE
P. R. OLGIATI, MAYOR

WALNUT STREET BRIDGE
REPAIRS
TRUSS DIAGRAM

H. D. HOPKINS & BOND, INC.

Only file c-11

PLAN
1"=10'

ELEVATION
1"=10'

NEW CURB & RETAINING WALL
SOUTH ABUTMENT

SECT. AA
1"=5'

SECT. BB
1"=5'

DETAIL OF 16" WATER MAIN
EAST SIDEWALK BRACKETS
1"=5'

SECTION-WEST SIDEWALK OF TRUSS SPANS
1"=5'

Note:
Furnish new rod bracing where missing at all panel points or intermediate points & repair or replace all damaged members as required and make bolted connection at bottom and welded connection at top similar to existing details.

CITY OF CHATTANOOGA
WALNUT STREET BRIDGE
REPAIRS
MISCELLANEOUS DETAILS

NOTE TO CONTRACTOR:-
Erect members with piece marks at end as shown on diagram.
Note direction marks on Lateral Purlins (PSK.Lat).
All holes, gusset plates to chord must be reamed to size in field.

PLAN OF TOP

10 panels @ 20'-0" = 200'-0"

ELEVATION
SCALE

FLOOR SYSTEM

DETAIL A

SECTION AT PANEL POINT 2 X-X

SECTION AT PANEL POINTS 3-4-5-6-7

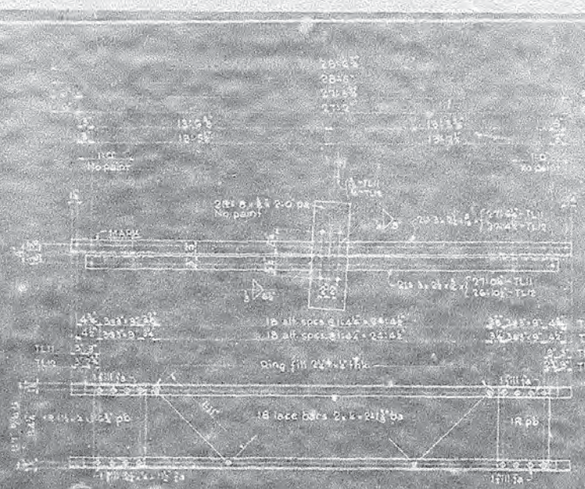
NOTES:-
For list of drawings and general notes see Designer's Work sheet, Drawings No. S-1 & 2.

207'-6" SPANS - NO. 1-2 S.S.

CITY OF CHATTANOOGA, TENNESSEE
P. R. OLGIATI, MAYOR

WALNUT STREET BRIDGE
REPAIRS
ERECTION DIAGRAM
L. O. HOPKINS & SONS, INC.
CONSULTING ENGINEERS

Orig file G-12

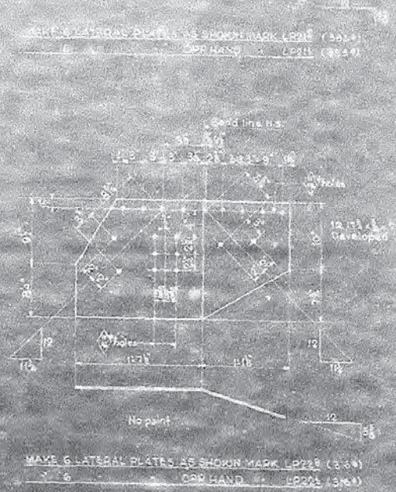


MAKE 6 TOP LATERALS MARK TL11 (4,556#)
6 " " TL12 (4,567#)

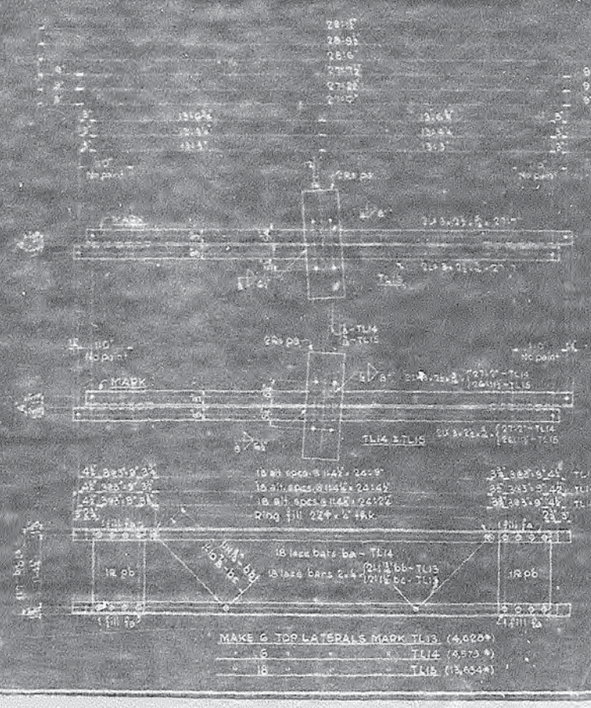


MAKE 6 TOP LATERALS MARK TL13 (12,240#)

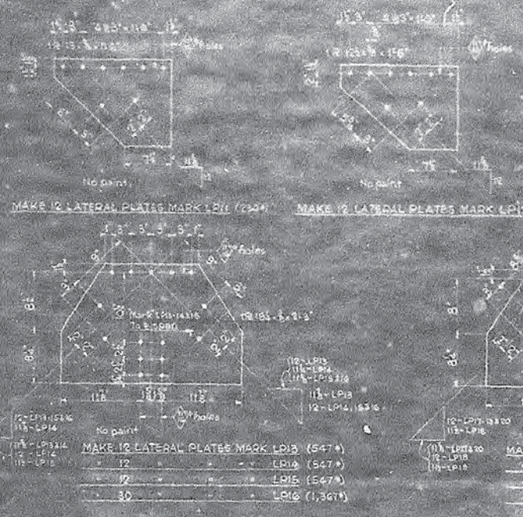
6	TL13	(8,215#)
12	TL14	(4,540#)
12	TL15	(4,548#)
6	TL16	(2,537#)
6	TL17	(2,554#)
36	TL18	(15,260#)



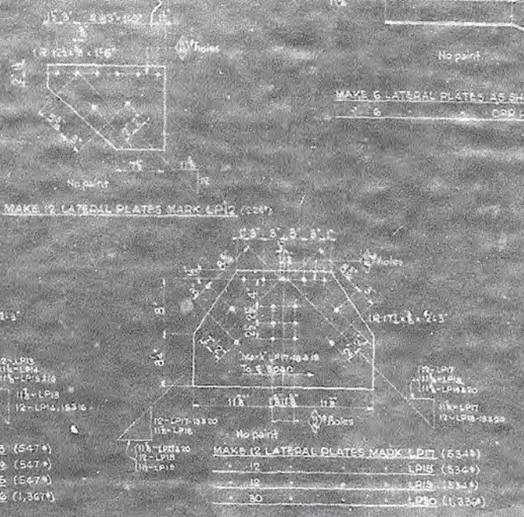
MAKE 6 LATERAL PLATES AS SHOWN MARK LP11 (3,54#)
OPP HAND " LP12 (3,54#)



MAKE 6 TOP LATERALS MARK TL13 (4,020#)
6 " " TL14 (4,573#)
18 " " TL15 (13,654#)



MAKE 12 LATERAL PLATES MARK LP13 (547#)
12 " " LP14 (547#)
12 " " LP15 (547#)
30 " " LP16 (1,367#)



MAKE 12 LATERAL PLATES MARK LP17 (534#)
12 " " LP18 (534#)
12 " " LP19 (534#)
30 " " LP20 (1,335#)

MAKE 6 LATERAL PLATES AS SHOWN MARK LP21 (3,54#)
OPP HAND " LP22 (3,54#)

NOTES:—
Material A7
Rivets 7/8" except as noted
Holes 15/16" except as noted
Edge distances 1½" unless noted
Shop paint—One coat of red lead except as noted

Estimated net weights = 10,205 #

For list of drawings and general notes see Dwg. No. 1

312'-0" SPANS - NO. 3-4 #8

CITY OF CHATTANOOGA, TENNESSEE
P. R. OLGIATI, MAYOR
WALNUT STREET BRIDGE
REPAIRS
TOP LATERAL DETAILS
L. O. HOPKINS & SONS, INC.
CONSULTING ENGINEERS NASHVILLE, TENN.

A22

Orig file 6-12

NOTE: FOR CONSTRUCTION

ELEVATION

FLOOR SYSTEM

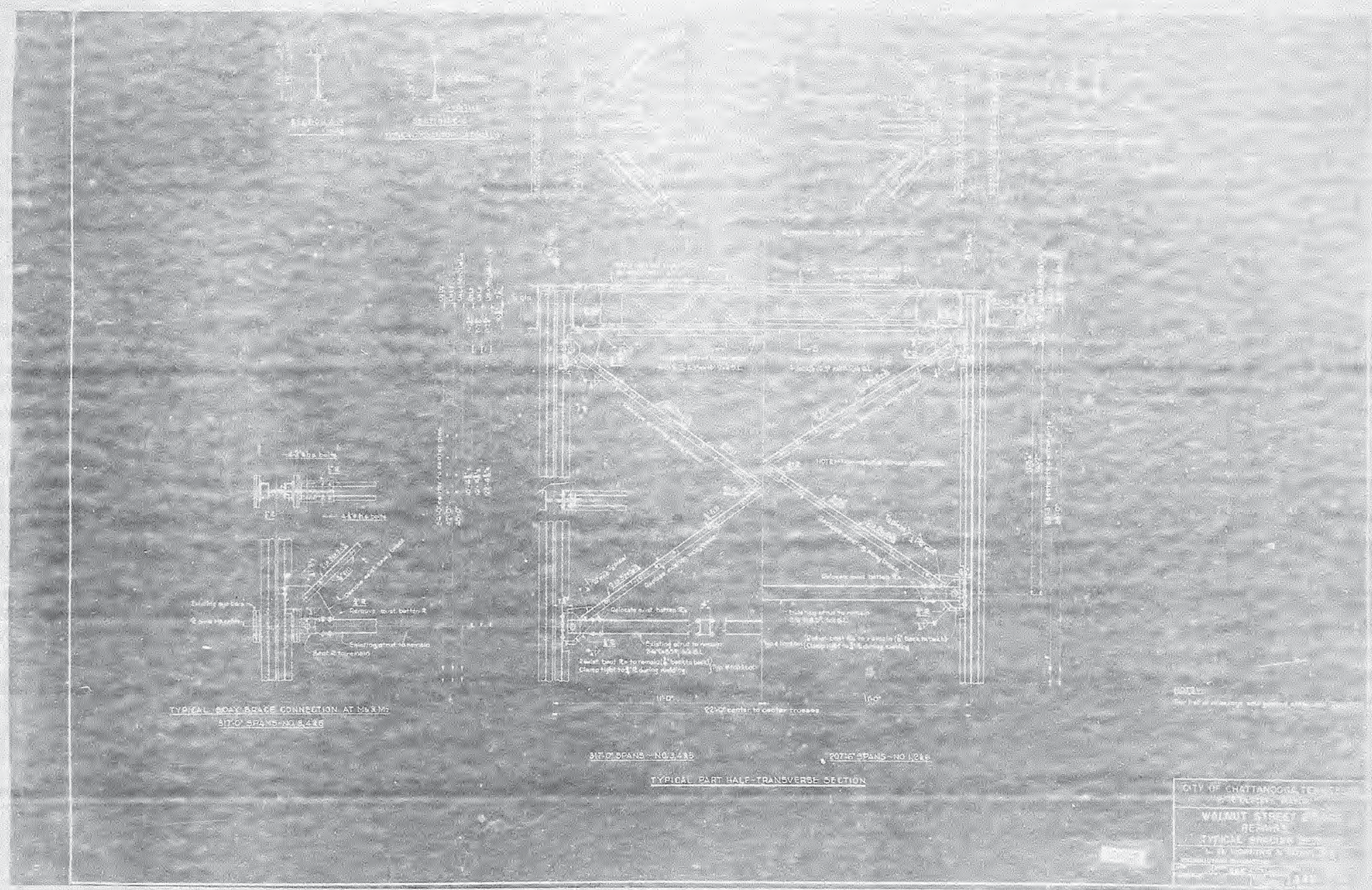
SECTION AT PANEL POINTS 0 & 14

SECTION AT PANEL POINTS 1 & 13

SECTION AT PANEL POINTS 2 & 12

SECTION AT PANEL POINTS 3 & 11

DETAIL 'A'


TYPICAL SWAY BRACE CONNECTION AT M5 & M7
317'-0" SPANS - NO. 3, 4 & 5
317'-0" SPANS - NO. 3, 4 & 5
207'-6" SPANS - NO. 1 & 6
TYPICAL PART HALF-TRANSVERSE SECTION
CITY OF CHATTANOOGA, TENN.
WALNUT STREET BRIDGE
REPAIRS
TYPICAL SECTIONS

SECTION THROUGH MAIN STRUCTURE SHOWING REINFORCEMENT IN BOTTOM AND FLOOR SLABS

SECTION A-A

SECTION THROUGH EXPANSION JOINTS

DUBAI

PEDERSEN & HEDMAN

PLAN
DOWNSTREAM

NORTH ELEVATION PIER NO.1
(SHOWING TYPICAL REINF. SHOWN)

Crack at Joint

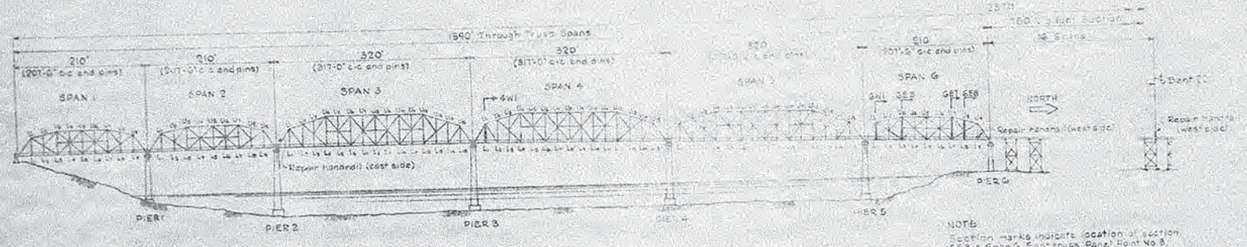
DETAIL 'A'

SECTION B-B
SHOWING 24" THICK FOOTING

PEERSON & HEDMAN
ENGINEERS
CHATTANOOGA TENNESSEE

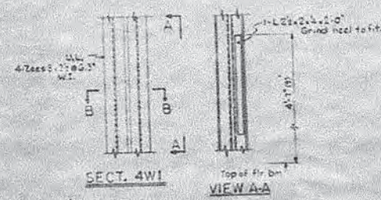
PROJECT WALNUT STREET BRIDGE
LOCATION OVER TENNESSEE RIVER
CHATTANOOGA, TENNESSEE

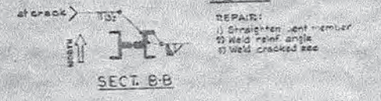
DRN.	CITY OF CHATTANOOGA	STEEL
CHK.	TENNESSEE	STRUC.
APP.		
DATE	U.S. HIGHWAY	SHEET
12-27-45		7

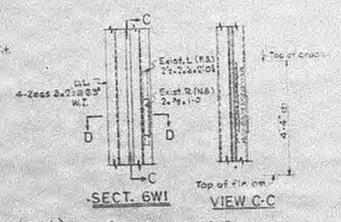


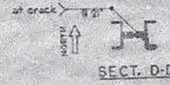
ELEVATION LOOKING WEST

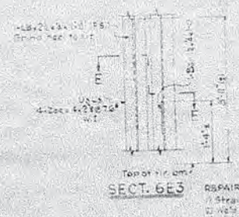
NOTE:
Section marks indicate location of section GE3.1 Span 6, East truss, Panel Point No. 3.

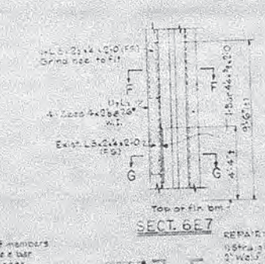


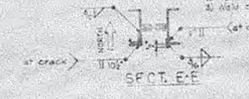


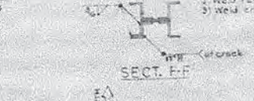


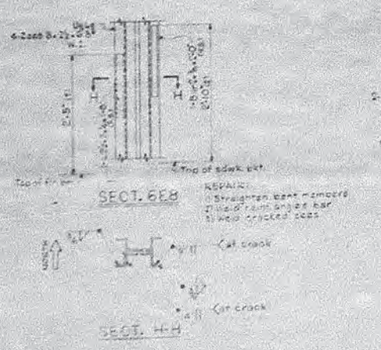


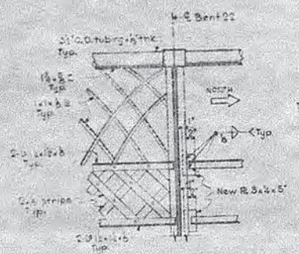


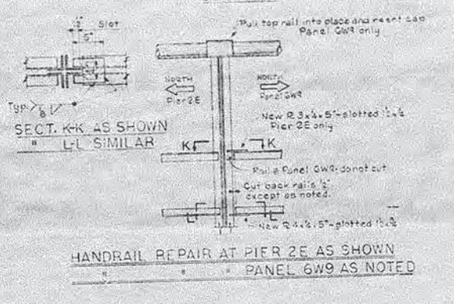


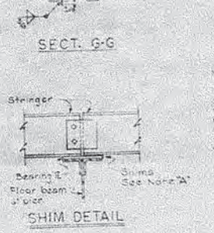












NOTE "A"

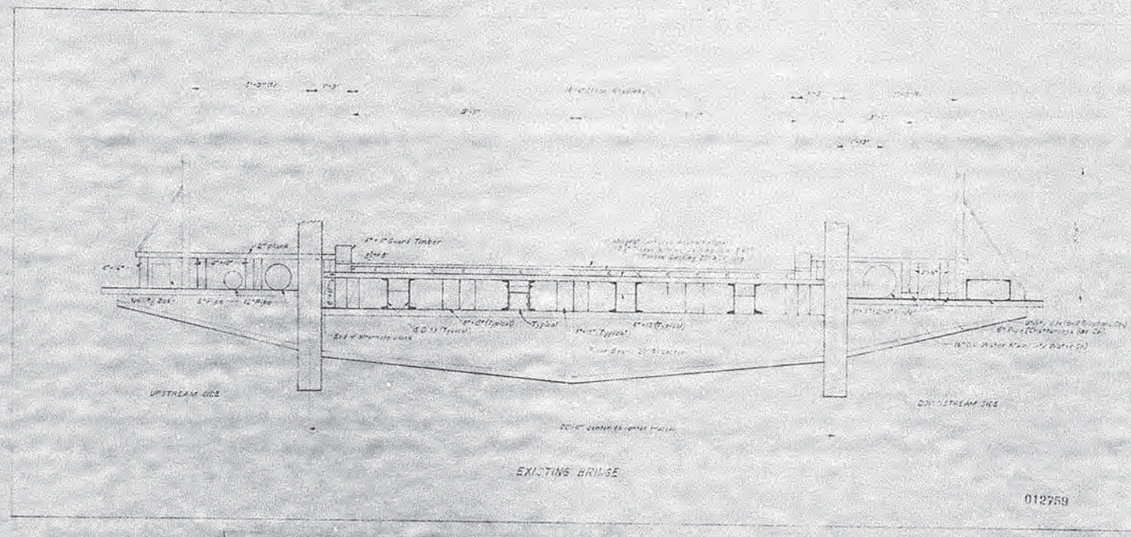
012488

CITY OF CHATTANOOGA, TENNESSEE
WALNUT STREET BRIDGE
L. O. HOPKINS & SONS, INC.

DATE 8-26-55

FILE IN DRAWER SD# 83

Orig file L-3-75



CITY OF CHATTANOOGA
TENNESSEE
PAT. WILCOX, COMMISSIONER — EDWARD BARRY, CITY ENGINEER

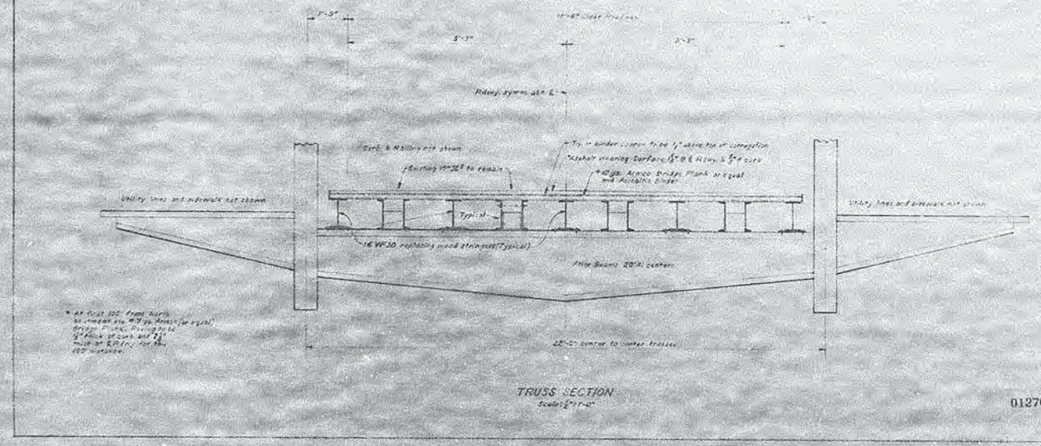
WALNUT STREET BRIDGE
ACROSS TENNESSEE RIVER

TYPICAL CROSS SECTION
EXISTING BRIDGE

Designed	Drawn	Checked	Date
COMMISSIONER	AAKE P. HEDMAN, CONSULTING ENGINEER, CHATTANOOGA, TENNESSEE		Sheet No.

012759

Orig file G-12



TRUSS SECTION
Scale: 1/8"=1'-0"

012760

VIADUCT SECTION.
Scale: 1/8"=1'-0"

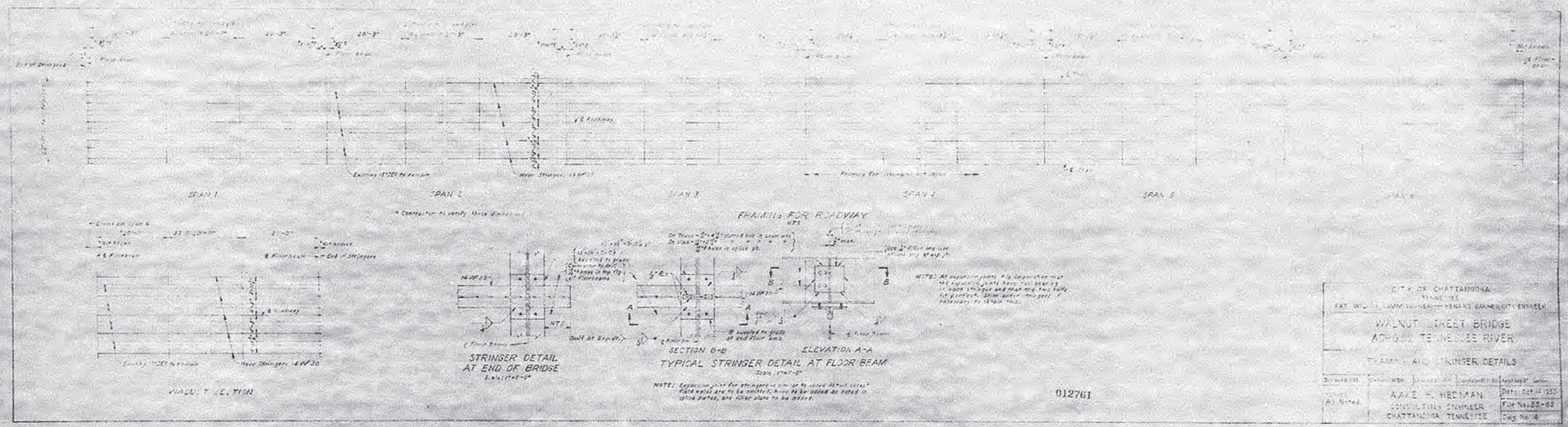
CITY OF CHATTANOOGA
TENNESSEE
PAT WILCOX, COMMISSIONER — BENARD BARNES, CITY ENGINEER

WALNUT STREET BRIDGE
ACROSS TENNESSEE RIVER

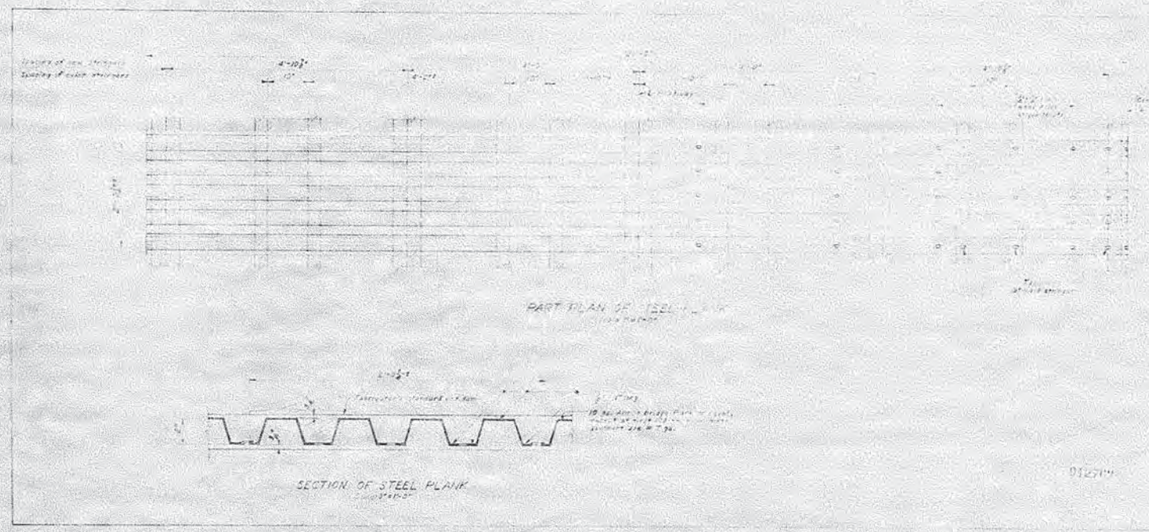
TYPICAL CROSS SECTIONS
PROPOSED ROADWAY STRUCTURE AND DECK

Designed:	Drawn: WBB	Checked:	Quantities by:	Approved:
Scale: As Noted	AAKE F. HEDMAN CONSULTING ENGINEER CHATTANOOGA, TENNESSEE			Date: 8-26-35
				File No. 35-A1
				Dwg. No. 8

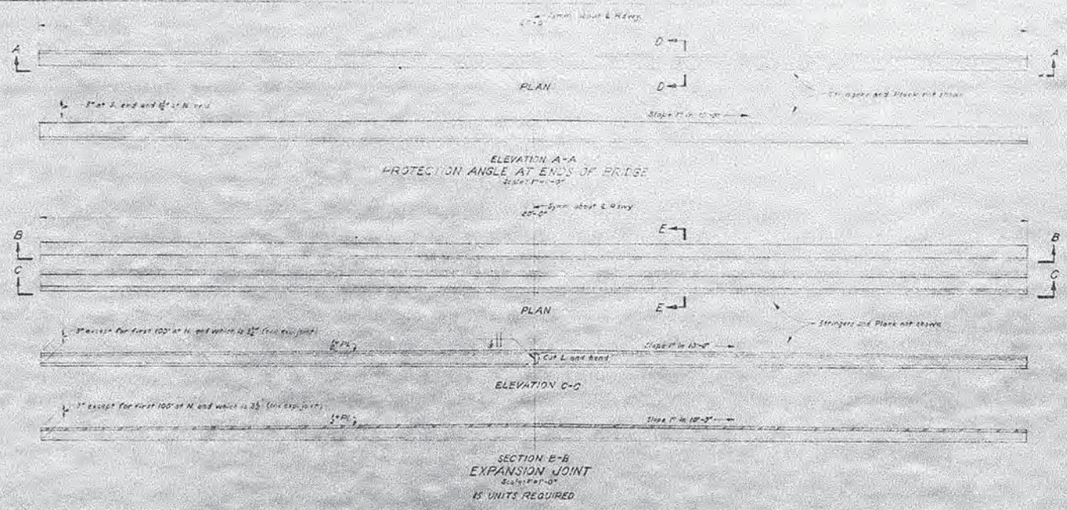
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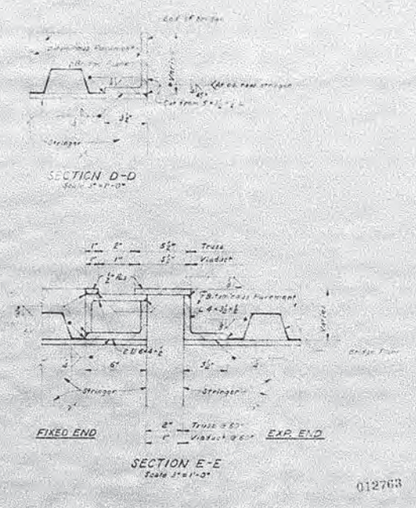


Orig file G-12



Orig file G-12





012763

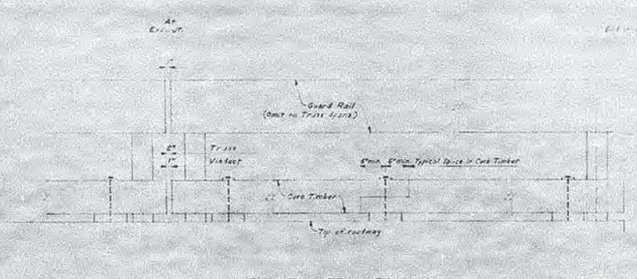
CITY OF CHATTANOOGA
TENNESSEE
PAT WILCOX, COMMISSIONER — BENARD BARNES, CITY ENGINEER

WALNUT STREET BRIDGE
ACROSS TENNESSEE RIVER

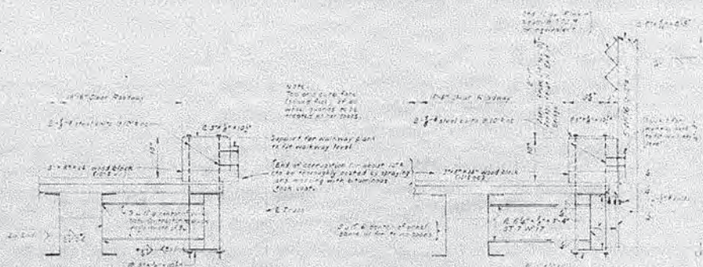
PROTECTION ANGLE AND EXPANSION JOINT

Designed WED	Drawn ASB	Checked	Supervised	Approved
Scale As Noted	AAKE F. HEDMAN CONSULTING ENGINEER CHATTANOOGA, TENNESSEE	Date	File No. 55-63	Dwg. No. 6

Orig file G-12

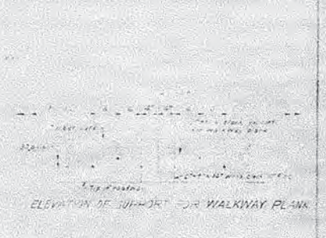


ELEVATION FROM ROADWAY



FOR TRUSS SPANS

FOR VIADUCT SPANS



ELEVATION OF SUPPORT FOR WALKWAY PLANK

CITY OF CHATTANOOGA
TENNESSEE
VIADUCT
CURB AND GUARD RAIL

012764

Orig file G-12



WALNUT STREET HIGHWAY.

OVER TENNESSEE RIVER AT CHATTANOOGA, TENN.

TOTAL LENGTH 2310 FT.

Built in 1891-2.
By Smith Bridge Co,
Toledo, Ohio.
(Merged with American Bridge Co.)
Reconstruction in 1914.
L. B. Bryan, Engineer for Committee.
J. M. Johnson, Consulting Engineer.
March. 28. 1914

012765

Knoxville, Tenn. March 19th, 1914

[illegible]

[illegible]

Chattanooga, Tenn.

[illegible]-Walnut Street Highway Bridge-

As instructed by the Committee on March 16th 1914, I have examined the floor reconstruction plans prepared by Mr. Brown, and computed the stress in the various trusses and viaduct members, due:

1st. To the increased floor load.

2nd. To the increased live loads in wagons at the present time, and for leave to submit the following report:

Description of Structure.

The bridge across the Tennessee River at the foot of Walnut Street, and about as per the following, is now extending from the Chattanooga side:

[illegible] Deck = 20'-0" through truss, on 0.5% Grade ascending,

" " - [illegible]'-0" " " " " "

" " - [illegible]'-0" " (Channel) level Grade,

" " - [illegible]'-0" " on 1.5% Grade, descending,

" " - [illegible]'-0" " " " "

" " - [illegible]'-0" " on 3.6% Grade, descending

Total [illegible]'-0" through trusses.

Viaduct,

[illegible] Deck, on 3.6% Grade, descending,

Total [illegible]'-0" lineal feet from abutment to abutment.

(Measures are from c.to c. of piers).

Knoxville, Tenn. No. 2.

Width of Bridge.

Trusses 22'-0" c.to c.

" 20'-0" Clear between members.

Roadway 18'-0" between curb timbers.

Sidewalks, (2) 2'-0" (from center line of trusses to face of railing carried on outside steel brackets.

The decking has two car tracks 5'-0" (5'6" gauge) = 9'-0" c.to c. tracks.

All, under the plan of reconstruction, consist of:

2 lines of creosoted joists 6" X 12",

4 Steel stringers under rails,

3" Creosoted deck,

5/16" Patent roofing,

2 1/2" Creosoted paving blocks.

Sidewalks,

Both, as follows, as per plans of reconstruction:

1 line (outside) 3" X 12" Creosoted joist,

2 lines 4" X 12" " "

Floor 2" heart pine, untreated.

The structure was built in 1891-2 from plans and specifications prepared by Edwin Thacher, Civil Engineer, and is in good structural condition now.

The only criticisms I would make upon these specifications, are:

1. Ten (10) pounds all per cubic foot was specified for creosoted timber.

Experience has demonstrated this amount to be insufficient for

J. M. Johnson
Consulting Engineer
Chattanooga, Tenn.

Knoxville, Tenn. No. 3.

-Drawings and Tables Attached-

1. General profile of Bridge.
2. Diagram of 300 ft. span showing sections of members and stress percentages.
3. Tabular statement for 300 ft. span giving stresses, both dead and live allowed stress per square inch lbs.
4. Diagram of 210 ft. span showing sections of members and stress percentages.
5. Tabular statement for 210 ft. span giving stresses, both dead and live allowed stress per square inch lbs.
6. Cross section of floor.
7. Cross section of Truss.
8. Specification requirements and Loading.

Knoxville, Tenn. No. 4.

[illegible] cars on the machine or same should not be operated with trailers, and should care of these types, should have intervals

[illegible] as 10 or 12 feet.

[illegible] cars can be operated with or without trailers, with one car interval, [illegible] to 60 feet).

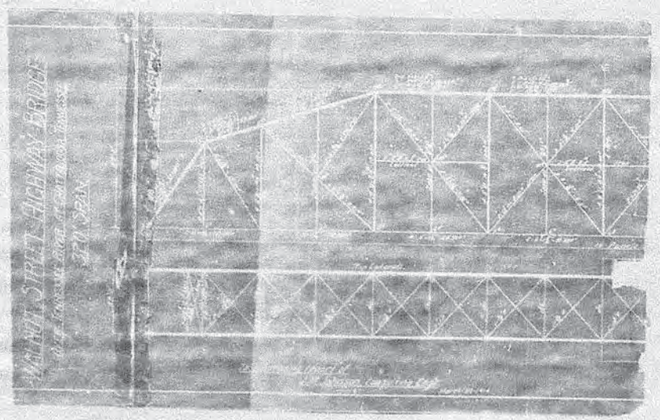
[illegible] bridge floor is in good condition, except column bases, which are somewhat rusted.

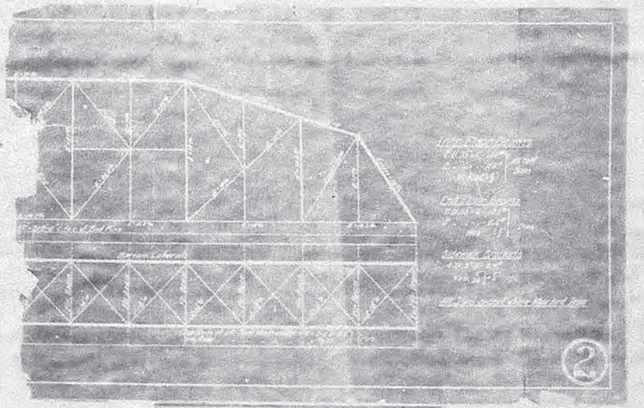
[illegible] condition can be remedied by concrete jackets, at a small cost.

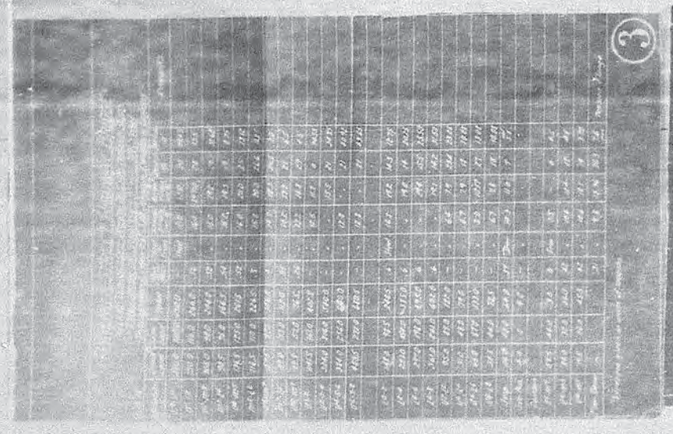
In conclusion, I take pleasure in reiterating that this is a good structure, and when contemplated improvements are made, should give good and satisfactory service.

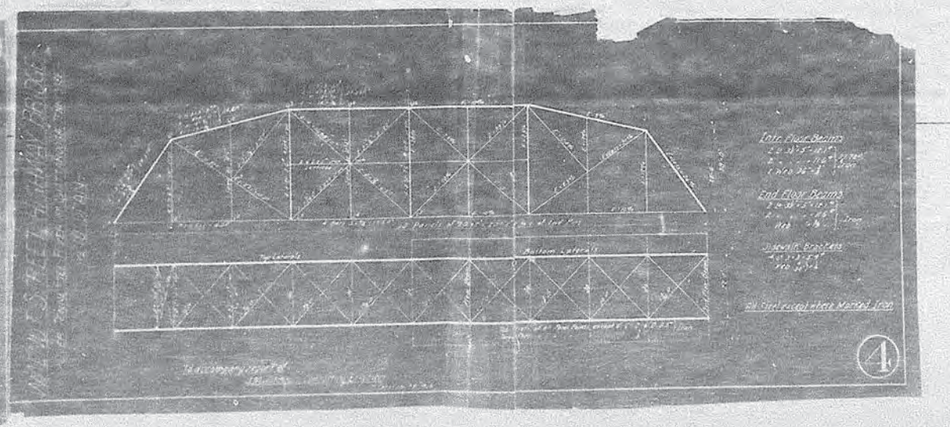
Respectfully,

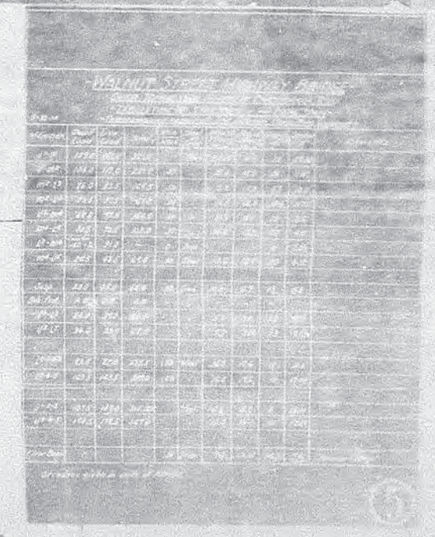
Consulting Engineer.



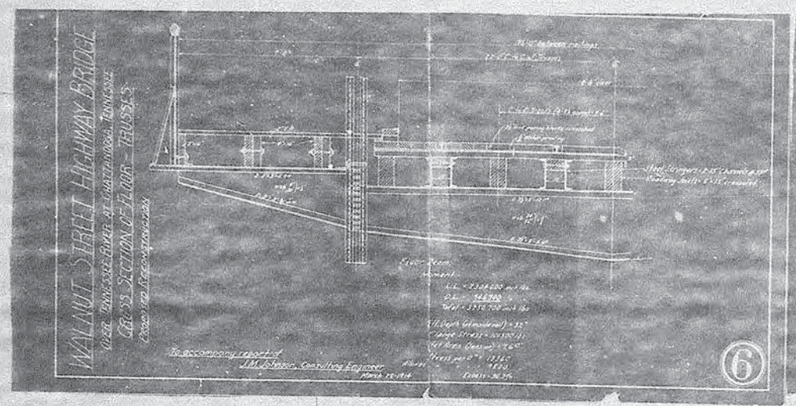


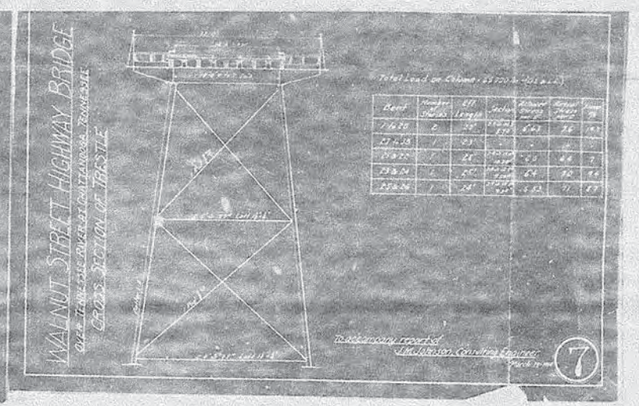


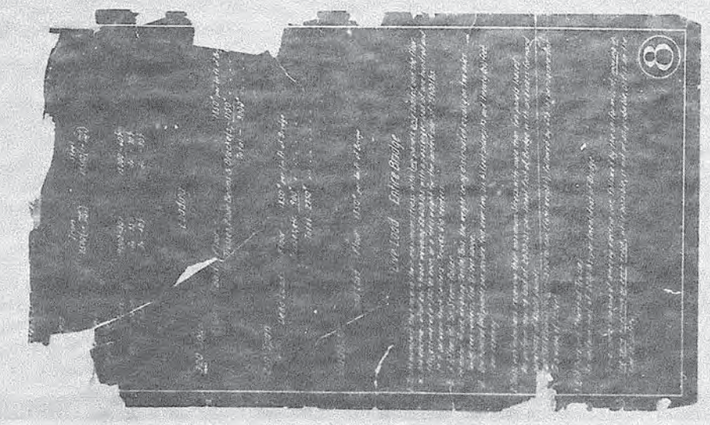




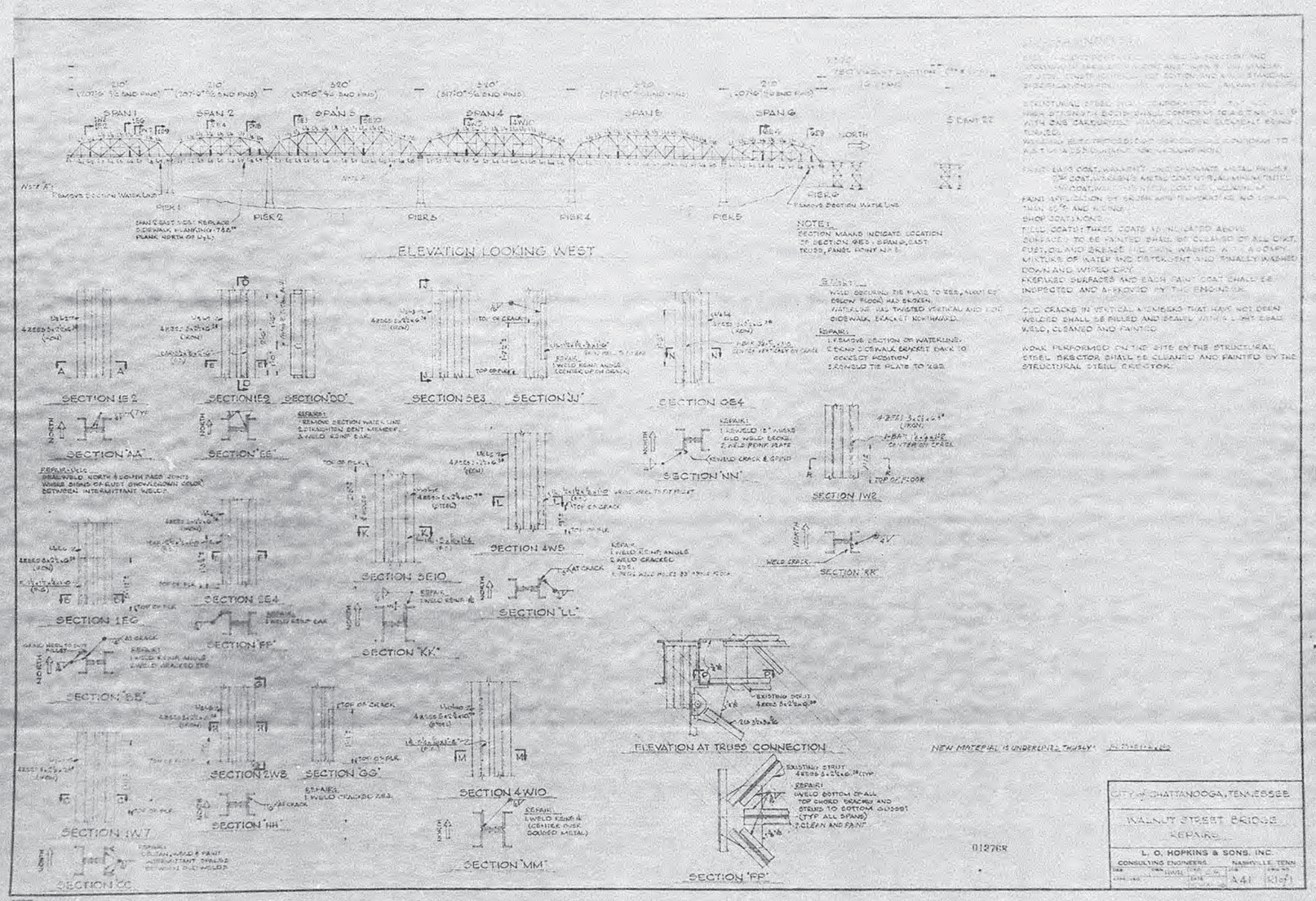
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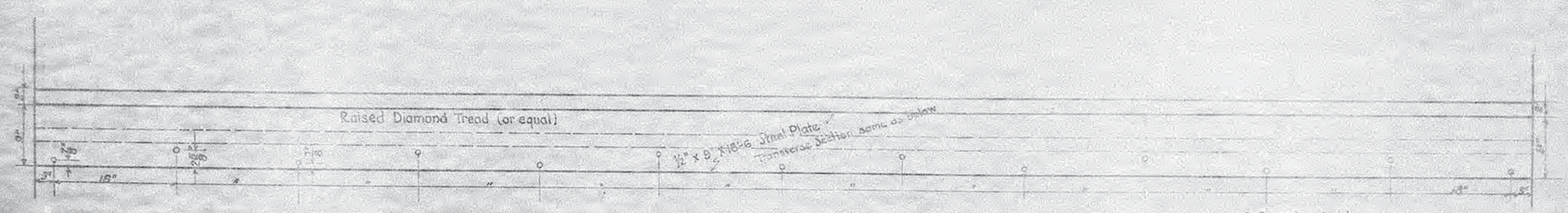




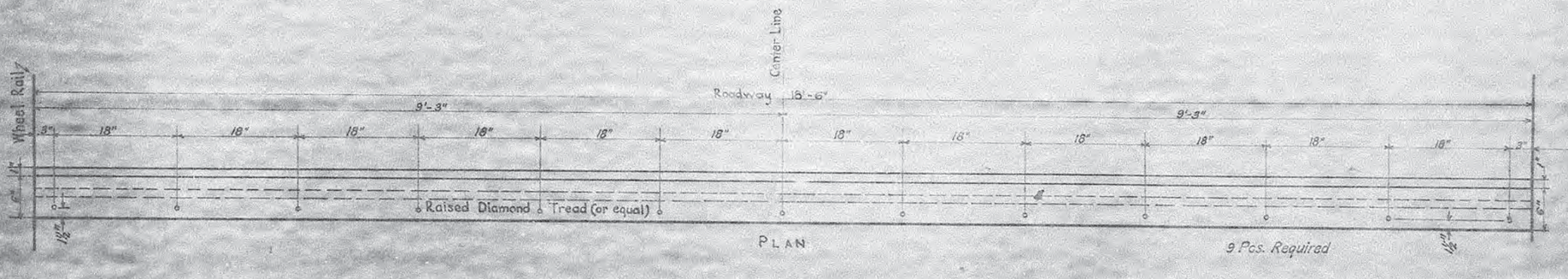
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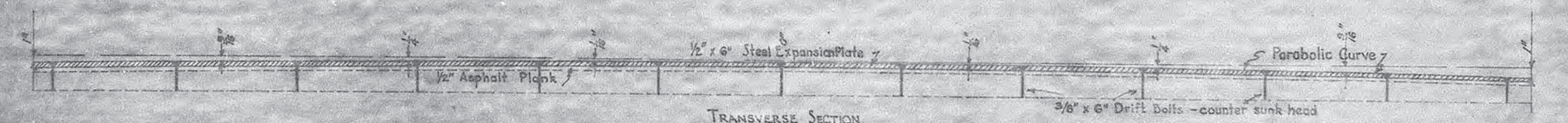


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DETAIL OF EXPANSION JOINT
AT END OF TRUSSES





TRANSVERSE SECTION

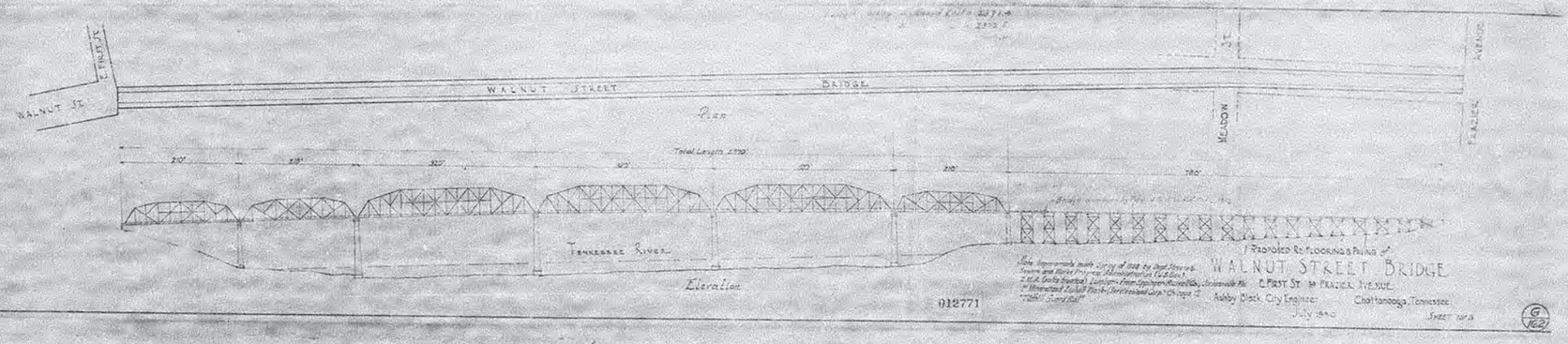
DETAIL EXPANSION JOINTS
ON APPROACH

012770

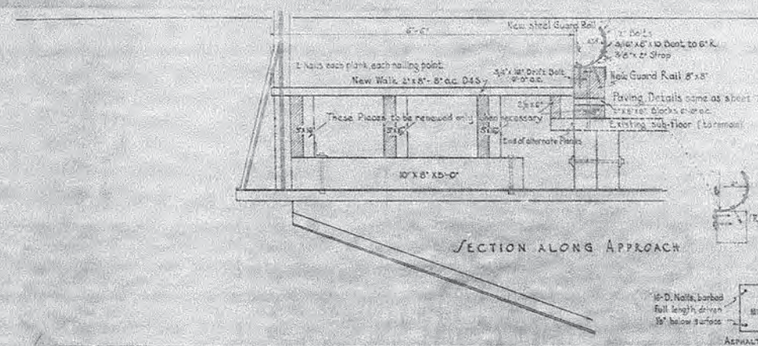
PROPOSED IMPROVING of
WALNUT STREET BRIDGE
Detail of Expansion Joint Plates
ASHBY BLACK 4, B.E. CITY ENGINEER
Chattanooga, Tenn. 2/9/35

G-12

Orig file G-12



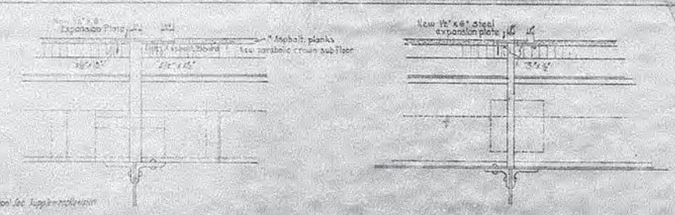
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SECTION ALONG APPROACH



DETAIL OF EXPANSION JOINT at end of Trusses



DETAIL OF EXPANSION JOINT EVERY BOTH ON APPROACH

ASPHALT PLANK NAILING DETAIL

SUBFLOOR NAILING DETAIL

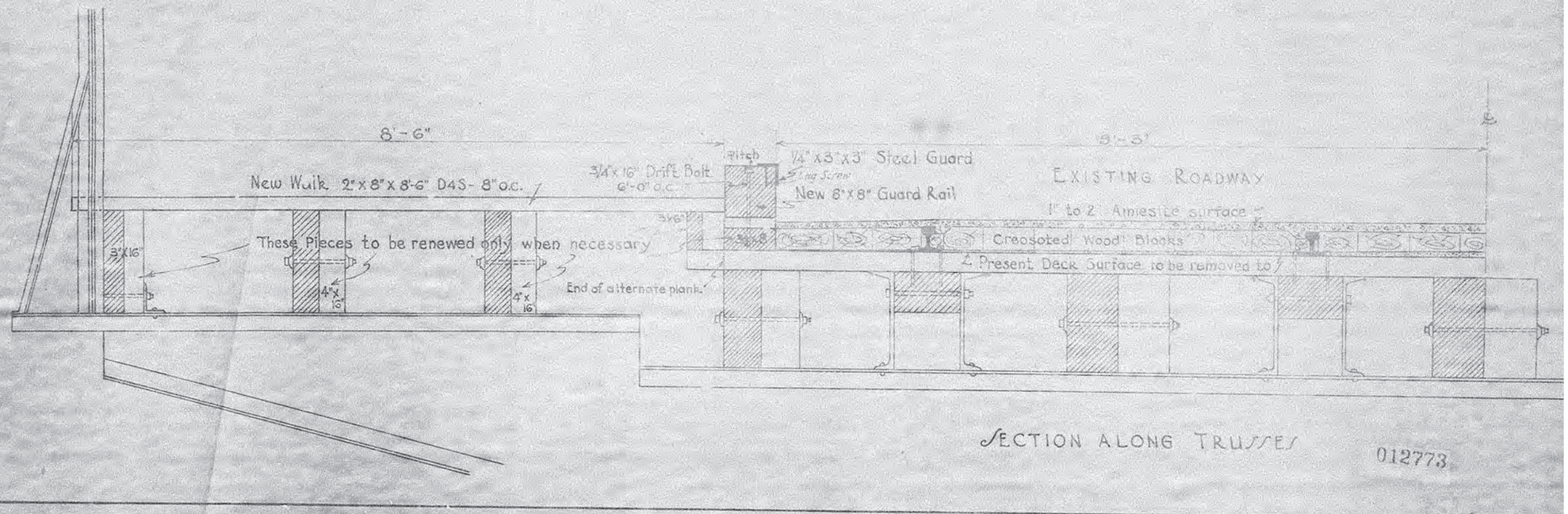
PROPOSED REFLOORING & PAVING OF
WALNUT STREET BRIDGE.
FIRST STREET to FRAZIER AVENUE.

Ashby Block, City Engineer Chattanooga, Tennessee

012772

Sept. 1937 Sheet 3 of 3

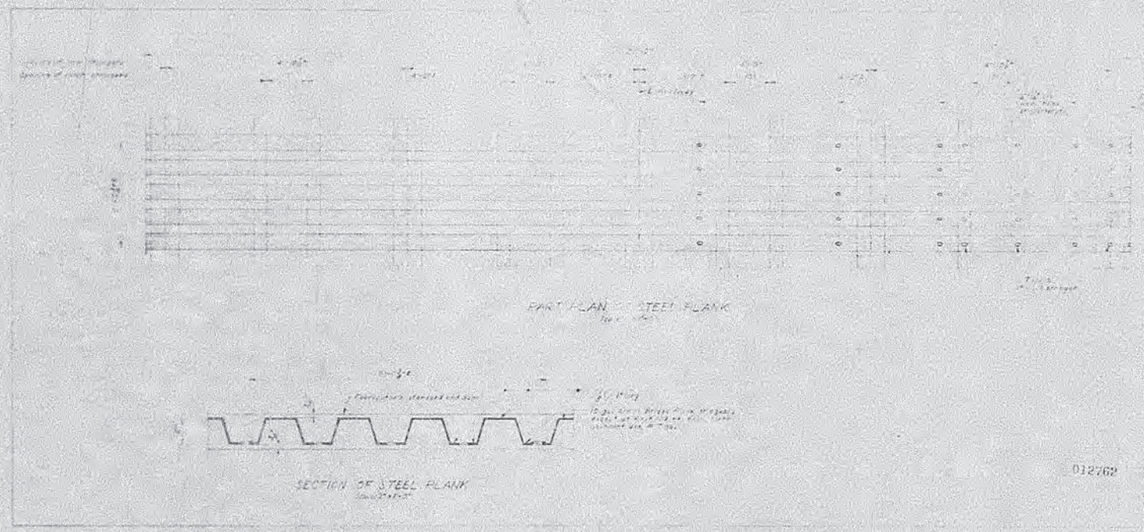
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SECTION ALONG TRUSSES

012773

Orig file G -162



Orig file G-12

S.D. # 83

RE-FLOORING PLAN
WALNUT STREET BRIDGE

012274

Orig file G -162

CITY OF CHATTANOOGA, TENNESSEE

CONTRACT NO. E-07-007-201
WALNUT STREET BRIDGE
NORTH VIADUCT REHABILITATION

TITLE	DRAWING NUMBER
COVER SHEET	0
GENERAL NOTES AND QUANTITIES	1
GENERAL PLAN AND ELEVATION - SHEET 1	2
GENERAL PLAN AND ELEVATION - SHEET 2	3
TYPICAL DECK PLAN	4
TYPICAL CROSS SECTIONS	5
CONSTRUCTION STAGING	6
DECK DETAILS	7
STEEL REPAIRS - I	8
STEEL REPAIRS - II	9
REPAIR DETAILS	10
WEST SIDEWALK RAILING - REPAIR DETAILS	11
INFRASTRUCTURE PROTECTION PLAN	12

JOSEPH J. PULLARO, P.E. DATE
TRANSYSTEMS CORPORATION
STATE LICENSE NO. 021160

APPROVED FOR RELEASE DATE
WILLIAM PAYNE, P.E.
CITY ENGINEER

MAYOR
RON LITTLEFIELD

CITY COUNCIL
DISTRICT 1 - DEBORAH SCOTT
DISTRICT 2 - SALLY ROBINSON
DISTRICT 3 - PAM LADD
DISTRICT 4 - JACK BENSON, CHAIRMAN
DISTRICT 5 - RUSSEL GILBERT
DISTRICT 6 - CAROL B. BERZ
DISTRICT 7 - MANUEL RICO, VICE CHAIRMAN
DISTRICT 8 - ANDRA'E McGARY
DISTRICT 9 - PETER MURPHY

DEPARTMENT OF PUBLIC WORKS
STEVE LEACH, ADMINISTRATOR

GENERAL NOTES

DESIGN SPECIFICATIONS

AASHTO – STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION.

CONSTRUCTION SPECIFICATIONS

TENNESSEE DOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (MARCH 2006 EDITION) WITH REVISIONS AND SPECIAL PROVISIONS.

DESIGN LIVE LOAD

A) EVERYDAY USE: PEDESTRIAN LOAD – IN ACCORDANCE WITH AASHTO SECTION 3.14.1

B) FESTIVAL USE: PEDESTRIAN LOAD – 85 PSF, ROADWAY WIDTH RESTRICTED TO 9' ON TRUSS SPANS.

MATERIALS

A) STRUCTURAL STEEL SHAPES AND PLATES – ASTM A36 UNLESS NOTED OTHERWISE HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM A325, FRICTION TYPE CONNECTION.

B) TIMBER CURBS AND BLOCKS – TREATED SOUTHERN YELLOW PINE, YARD LUMBER, C FINISH.

C) STRUCTURAL GLUED LAMINATED TIMBER PANELS SHALL CONFORM TO NBS VOLUNTARY PRODUCT STANDARD PS 56 AND AITC STANDARD SERIES 100.

D) ALL TIMBER, EXCEPT GLUED LAMINATED MEMBERS, SHALL BE PRESSURE TREATED WITH 0.6 PCF RETENTION USING EITHER PENTACHLOROPHENOL IN OIL OR CHROMATED COPPER ARSENATE (CCA). FOR PRESSURE TREATMENT OF GLUED LAMINATED MEMBERS, SEE SUBSECTION 601.02 OF THE SPECIAL PROVISIONS. ALL MEMBERS TREATED WITH CCA SHALL HAVE AN APPROVED WATER REPELLENT ADDITIVE INCLUDED IN THE PRESERVATIVE.

E) TIMBER SIDEWALK PLANKS – TREATED SOUTHERN YELLOW PINE, STRESS GRADES FOR STRUCTURAL PURPOSES, NO. 2 DENSE.

f_b = 1,200 PSI FOR DECK MEMBERS AND SIDEWALK PLANKS

F) CONCRETE–CLASS A, f'c = 3000 PSI

FABRICATION AND ERECTION

A) THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CLEARANCES AND MEMBER SIZES BEFORE SUBMITTING SHOP DRAWINGS. COST TO BE INCLUDED IN THE VARIOUS ITEMS OF WORK.

B) SHOP DRAWINGS – SEE SPECIAL PROVISION NO 105A.

C) WELDING SHALL CONFORM TO AWS D1.5–88. ALSO SEE SPECIAL PROVISION NO 602.

D) GALVANIZING SHALL CONFORM TO ASTM A123 AND A153.

TRAFFIC

A) NORTH VIADUCT TO REMAIN OPEN TO PEDESTRIAN TRAFFIC DURING CONSTRUCTION. STAGE CONSTRUCTION WILL BE USED FOR THE MAINTENANCE OF PEDESTRIAN TRAFFIC.

B) RIVER STREET TO REMAIN OPEN TO VEHICULAR TRAFFIC DURING CONSTRUCTION.

PLANS

A) FOR ADDITIONAL DETAILS. DIMENSIONS AND MEMBER SIZES OF THE EXIST. BRIDGE. THE CONTRACTOR IS REFERRED TO THE FOLLOWING PLANS. (PLANS PROVIDED UPON REQUEST) – RESTORATION/REHABILITATION OF THE WALNUT STREET BRIDGE–1990

UTILITIES

A) MAINTAIN EXISTING UTILITIES DURING CONSTRUCTION. COORDINATE WORK WITH UTILITY COMPANIES AS NEEDED.

CLEANING AND PAINTING

A) ALL EXISTING STEEL SURFACES AT REPAIR LOCATIONS SHALL BE POWER TOOLED CLEANED (SSPC–SP6) FOR A DISTANCE OF 6" FROM THE EDGE(S) OF THE CONTACT SURFACE(S). (1)

B) ALL EXISTING AND PROPOSED STEEL METAL SURFACES SHALL BE COATED USING AN ORGANIC ZINC THREE COAT SYSTEM. THE CONTRACTOR SHALL PROVIDE TARPS/BARRIERS TO CATCH ALL LOOSE MATERIAL. THE CONTRACTOR SHALL PROVIDE TARPS/BARRIERS TO CATCH ALL DEBRIS DURING DEMOLITION PHASES.

C) FINISH COAT COLOR: GUN METAL BLUE – PAINT CHIP FOR COLOR MATCHING TO BE PROVIDED BY THE CONTRACTOR.

P.E. 9/16/09

SUGGESTED CONSTRUCTION SEQUENCE

STAGE 1

- INSTALL TEMPORARY SHIELDING AND CHAIN LINK FENCE UNDER THE NORTH VIADUCT.
- INSTALL 6'–0" HIGH TEMPORARY CHAIN LINK FENCES ON THE VIADUCT, PARALLEL TO THE CURBLINES TO MAINTAIN ONE(1) MINIMUM 5'–0" WIDE SIDEWALK FOR PEDESTRIAN TRAFFIC DURING CONSTRUCTION (SHEET 6 OF 12).
- CLOSE NORTH VIADUCT ROADWAY AND ONE(1) SIDEWALK TO PEDESTRIAN TRAFFIC.
- REMOVE EXISTING 4"x4" TIMBER BLOCKS AND 16"x8" TIMBER CURBS FROM BOTH CURBLINES.
- REMOVE EXISTING ASPHALT FILLED STEEL PANS.
- REPAIR ANY DETERIORATED STRINGER FLANGES AS DIRECTED BY THE ENGINEER.
- INSTALL NEW LAMINATED TIMBER DECKING AND CURBS.
- INSTALL NEW TIMBER BLOCKINGS.
- REMOVE & REPLACE SIDEWALK TIMBER PLANKS.

STAGE 2

- RELOCATE 6'–0" HIGH TEMPORARY CHAIN LINK FENCE ON THE VIADUCT, PARALLEL TO THE CURB LINE TO RESTRICT PEDESTRIAN TRAFFIC ON THE OTHER SIDEWALK
- REMOVE & REPLACE SIDEWALK TIMBER PLANKS.
- PERFORM STEEL HANDRAIL AND PARAPET REPAIRS AT THE NORTH ABUTMENT.
- REMOVE TEMPORARY SHIELDING UNDER THE VIADUCT.

NOTE: STRUCTURAL STEEL REPAIRS AT THE SUBSTRUCTURE BENTS. CAN BE DONE DURING ANY OF THE ABOVE STAGES.

NOTES ON PAY ITEMS

A) QUANTITIES MARKED WITH AN ASTERISK (*) MAY BE INCREASED OR DECREASED AT THE DISCRETION OF AND AS DIRECTED BY THE ENGINEER DURING CONSTRUCTION.

B) ONLY ITEMS SHOWN ON THE PROPOSAL AS PAY ITEMS WILL BE PAID FOR. COMPENSATION FOR ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, AND INCIDENTALS FOR THE ENTIRE CONTRACT SHALL BE INCLUDED IN THE PRICE BID FOR THE PAY ITEMS.

ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY	AS BUILT QUANTITY
202–01	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1	
601–10.10	TREATED TIMBER (LAMINATED DECKING)	MBM	50	
601–10.11	TREATED TIMBER (SIDEWALK PLANKS & CURBS)	MBM	55	
601–11.01	BRIDGE DECK AND SIDEWALK POWER WASHING AND SEALING	LS	1	
602–10.02	PORTAL REPAIRS	LS	1	
602–10.08	STEEL HANDRAIL AND PARAPET REPAIRS	LS	1	
602–10.32	STRUCTURAL STEEL REPAIRS (SUBSTRUCTURE)	LS	1	
602–10.34	STRUCTURAL STEEL REPAIRS (STRINGERS AND DECK SHIMS AS DIRECTED)	LB	2000	
602–11.01	MISSING BOLLARD REPLACEMENT	LS	1	
602–11.02	TRUSS BEARING LUBRICATION	LS	1	
602–11.03	TRUSS MEMBER POWER WASHING AND BIRD NETTING	LS	1	
603–02.20	POST–TENSIONING STRAND EPOXY COATING	LS	1	
604–10.01	RETAINING WALL REINFORCEMENT	LS	1	
621–01.01	TEMPORARY STRUCTURES (SHIELDING OVER PARK AND ROADWAY)	LS	1	
707–01.11	TEMPORARY CHAIN LINK FENCE (6 FOOT)	LF	1600	
717–01	MOBILIZATION	LS	1	
920–02.36	FIELD OFFICE	LS	1	

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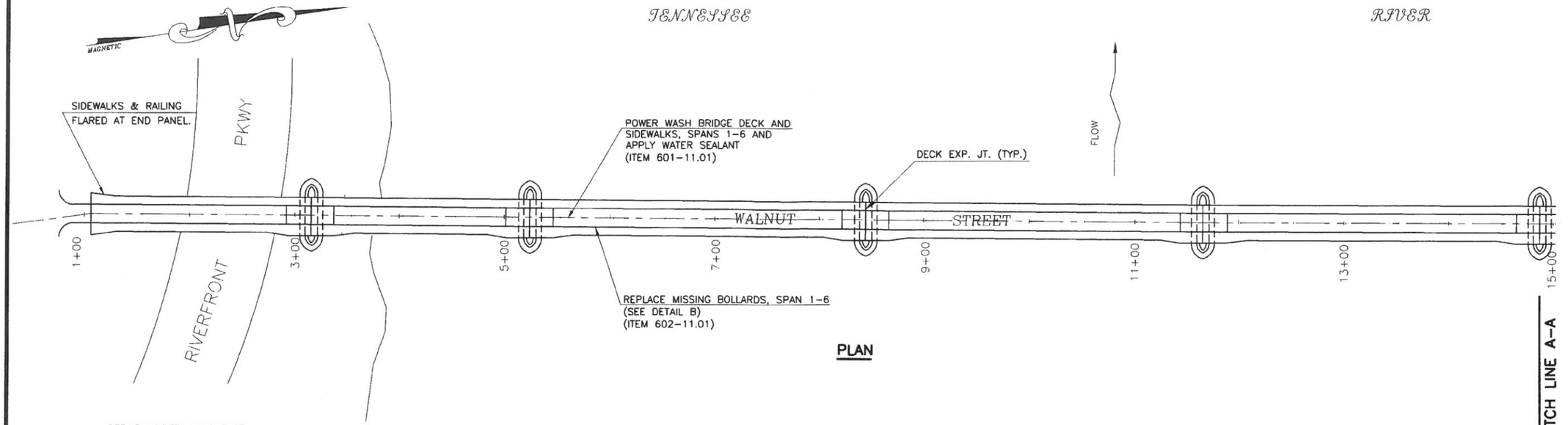
NO.	DATE	REVISION DESCRIPTION	SIG.
1	9/16/09	CHANGE NOTE	W.C.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

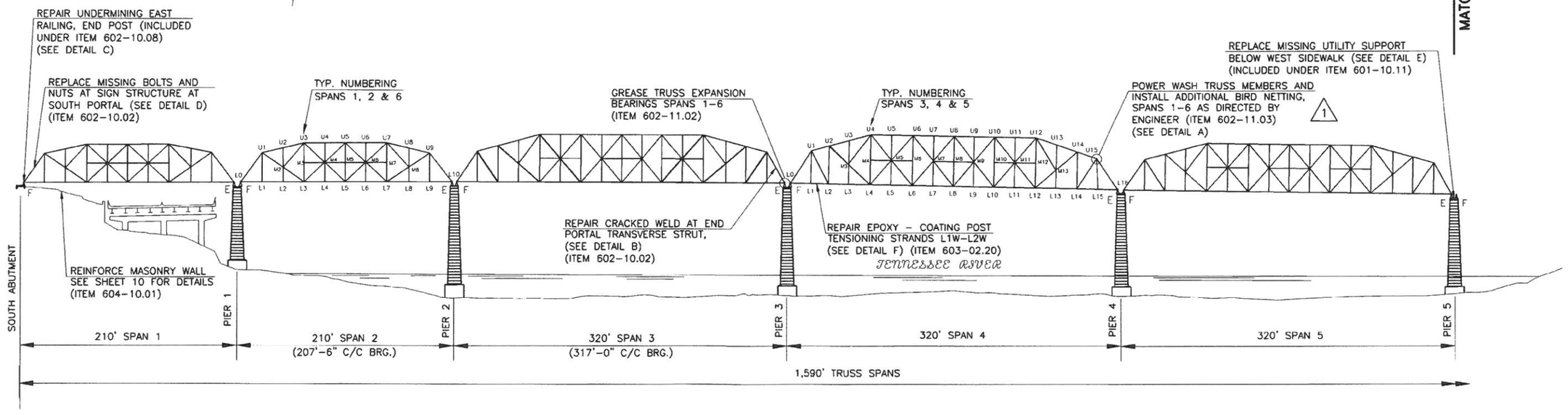
DRAWN:	M.S.L	3/29/09
DESIGNED:	M.H.A	3/31/09
CHECKED:	W.C	4/2/09

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION
GENERAL NOTES AND QUANTITIES

CONTRACT# E-07-007-201
Engineering Order N/A
FILE NO. N/A
SHEET 1 OF 12



PLAN



EAST ELEVATION

NOTES:

1. REFERENCE SHEET 10 FOR DETAILS

JPE 9/16/09

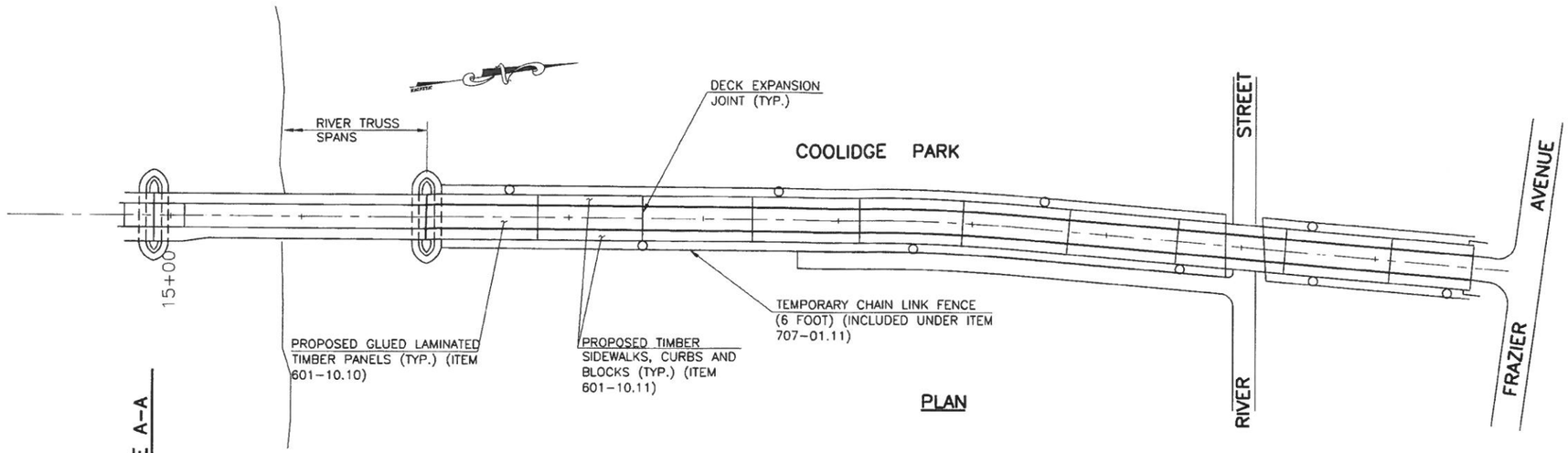
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1	9/16/09	REVISED NOTE	W.C.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.
DRAWN:
DESIGNED:
CHECKED: W.C. 4/2/09

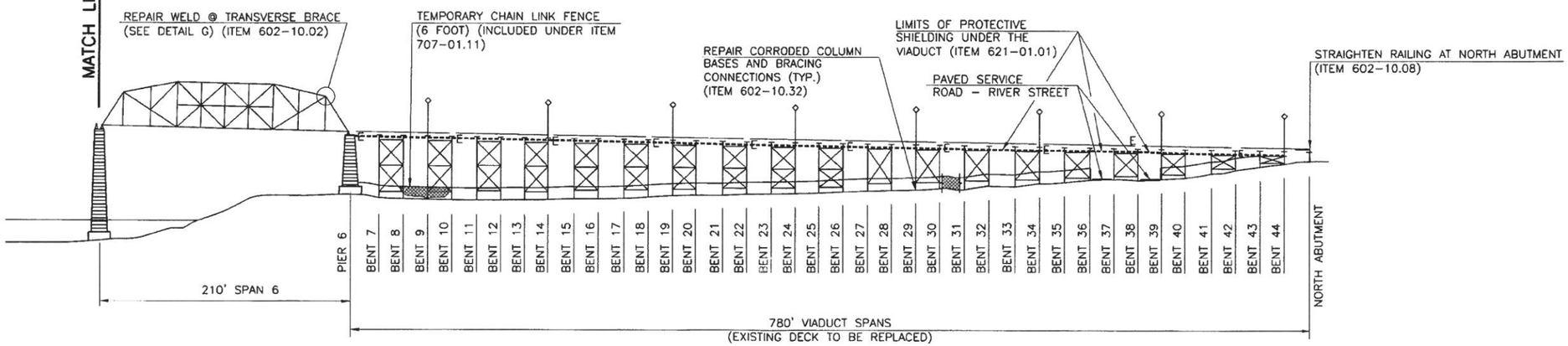
TranSystems

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION
GENERAL PLAN AND ELEVATION - SHEET 1

CONTRACT# E-07-007-201
Engineering Order N/A
FILE NO. N/A
SHEET 2 OF 12



PLAN



EAST ELEVATION

NOTE:

1. PAVED SERVICE ROAD AT SPANS 37, 39, AND COOLIDGE PARK UNDERNEATH THE VIADUCT SHALL REMAIN OPEN DURING CONSTRUCTION. USE PROTECTIVE SHIELDING AND NETTING.
2. THE CONTRACTOR WILL NOT BE PERMITTED TO STORE EQUIPMENT OR MATERIAL ON THE TRUSS SPANS OR OUTSIDE OF THE WORK AREA ON THE VIADUCT SPANS.

TranSystems

JOSEPH J. PULA JR. TENNESSEE REGISTERED PROFESSIONAL ENGINEER STATE OF TENNESSEE — PE — 8/7/09

NO.	DATE	REVISION DESCRIPTION	SIG.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

DRAWN:	M.S.L.	3/29/09
DESIGNED:	M.H.A.	3/31/09
CHECKED:	W.C.	4/2/09

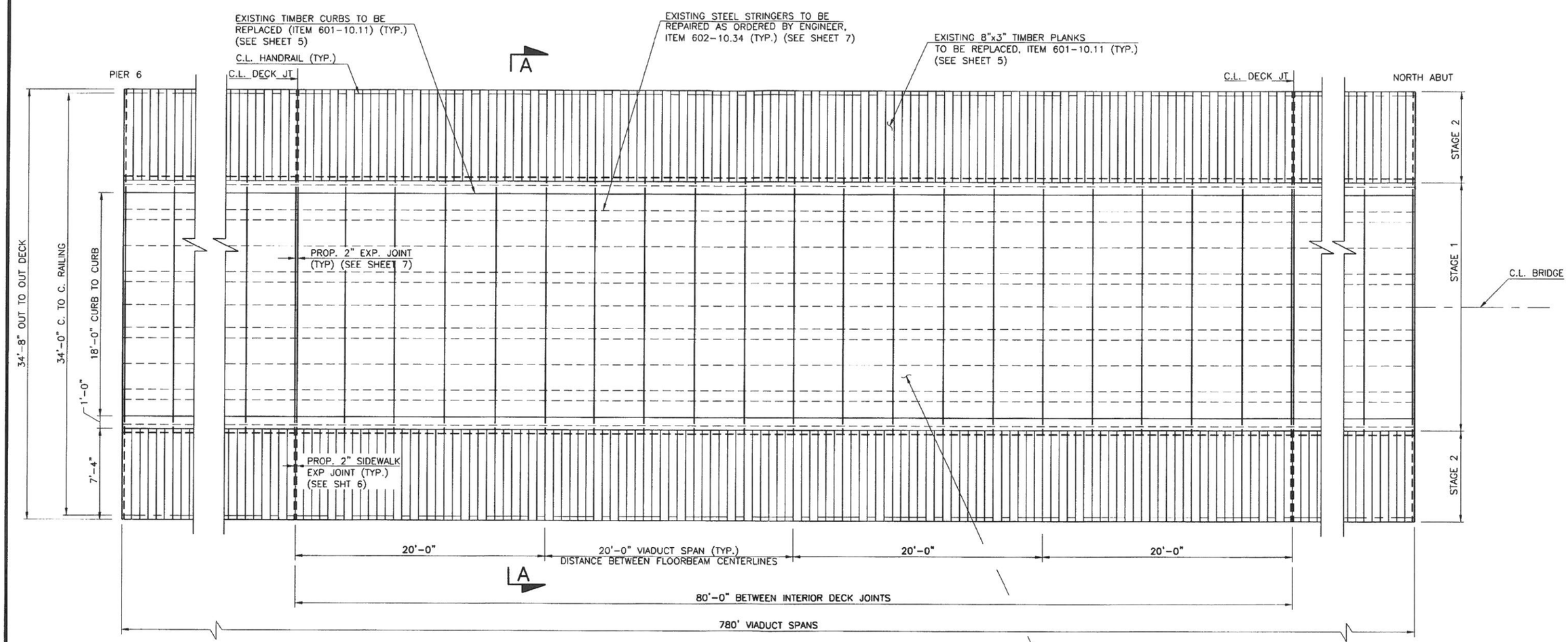
CITY OF CHATTANOOGA CORPORATION SEAL TENNESSEE

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS

WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION

GENERAL PLAN AND ELEVATION - SHEET 2

CONTRACT# E-07-007-201
Engineering Order N/A
FILE NO. N/A
SHEET 3 OF 12



NOTE:
PROPOSED DECK JOINT @ PIER 6, AND BENTS 10, 14, 18, 22, 26, 30, 34, 38, 42 AND NORTH ABUTMENT

DECK PLAN
SCALE: 1/8"=1'-0"

NOTES:

1. SEE SHEET 5 FOR SECTION A-A.
2. SEE SHEET 1 FOR CONSTRUCTION SEQUENCING.
3. FOR DECK DETAILS SEE SHEET 7 OF 12.

TranSystems

JOSEPH J. PULVANO — REGISTERED ENGINEER — STATE OF TENNESSEE — PE — 8/12/09

NO.	DATE	REVISION DESCRIPTION	SIG.

ADMINISTRATOR: STEVE LEACH		
CITY ENGINEER: WILLIAM PAYNE, P.E.		
DRAWN:	M.S.L	3/29/09
DESIGNED:	M.H.A	3/31/09
CHECKED:	W.C	4/2/09

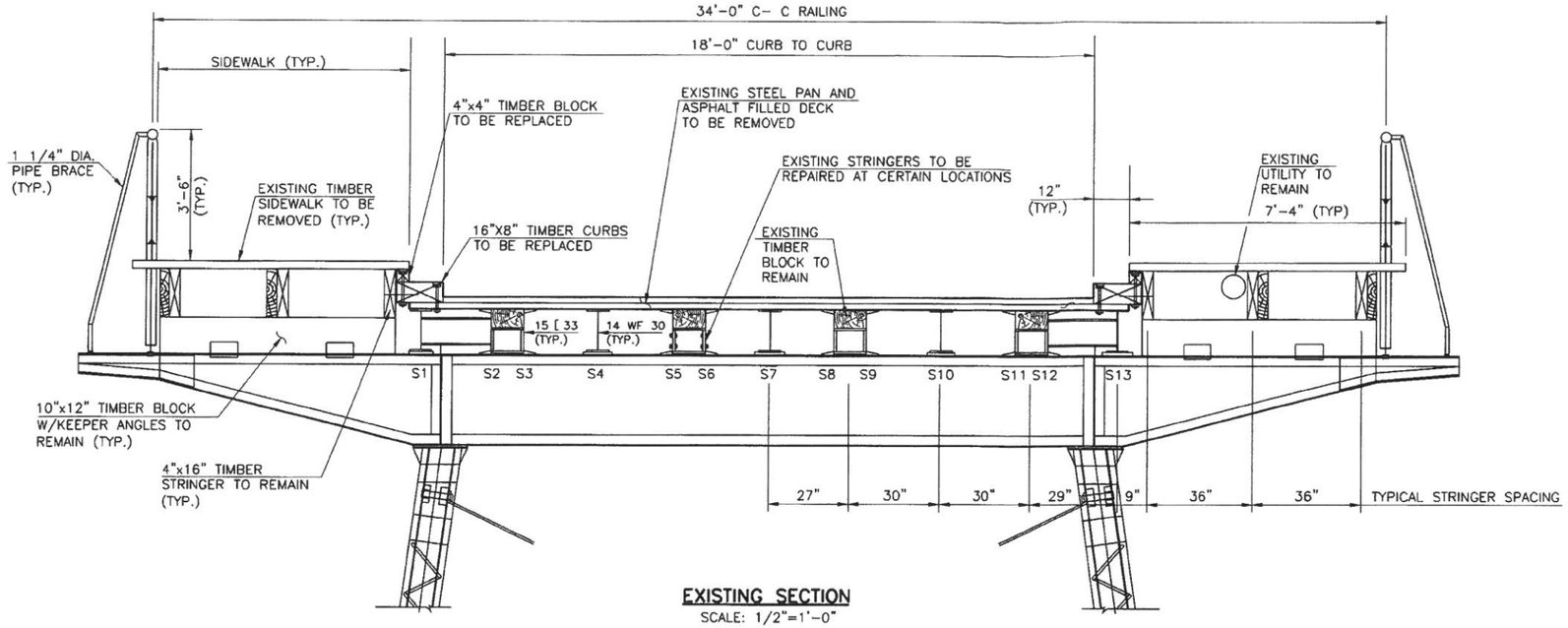
CITY OF CHATTANOOGA CORPORATION SEAL TENNESSEE

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS

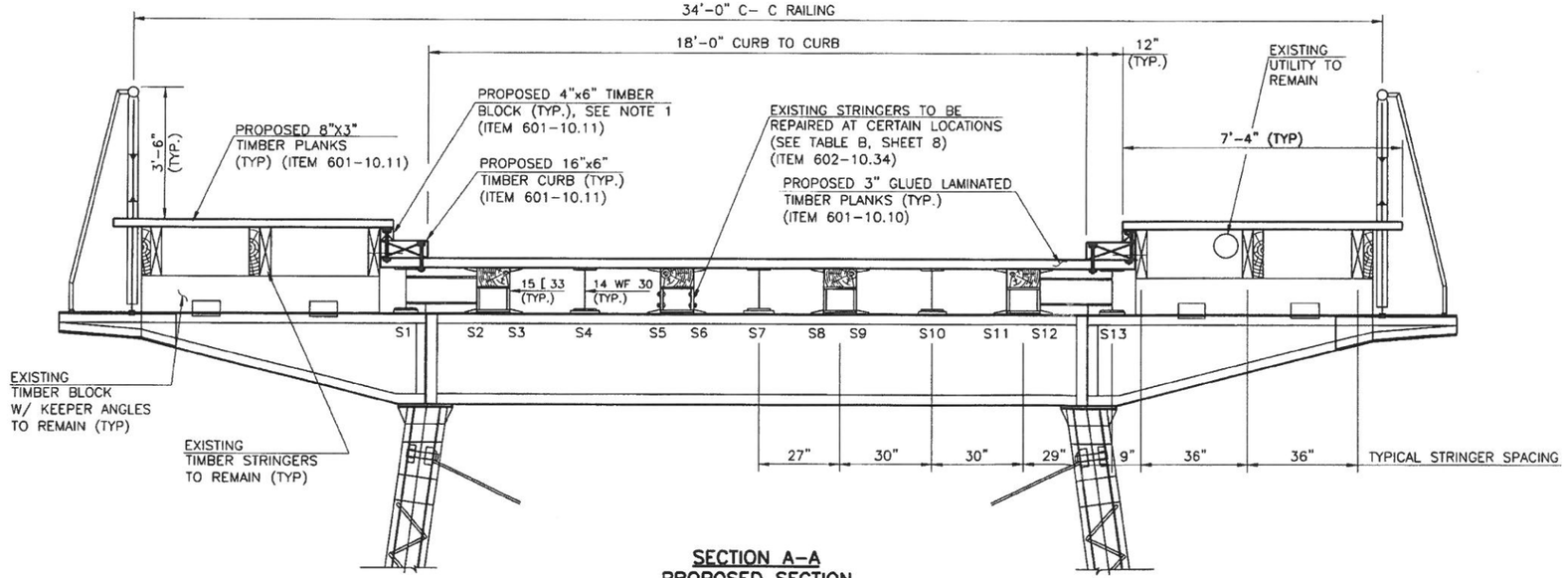
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION

TYPICAL DECK PLAN

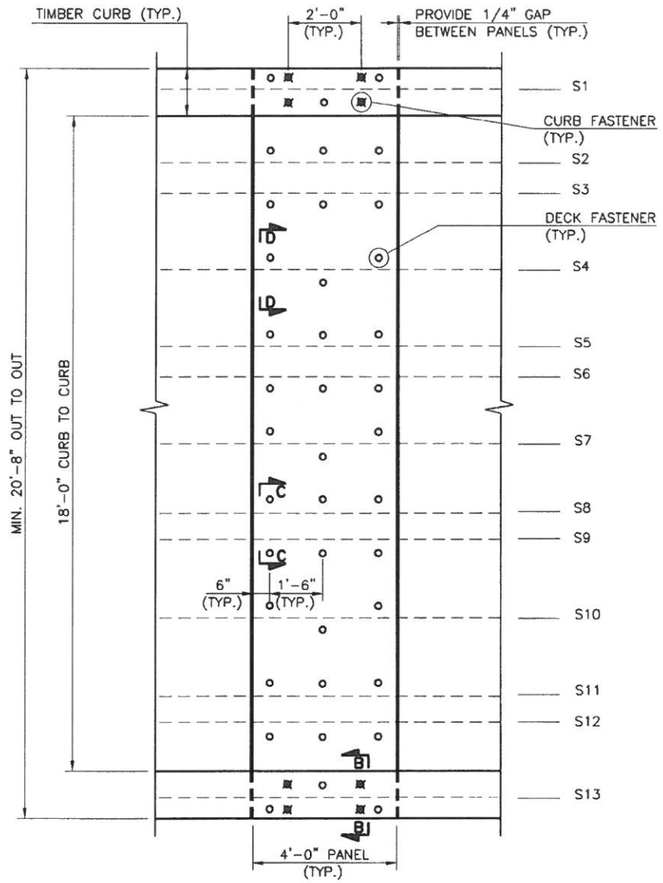
CONTRACT#	E-07-007-201
Engineering Order	N/A
FILE NO.	N/A
SHEET	4 OF 12



EXISTING SECTION
SCALE: 1/2"=1'-0"



SECTION A-A
PROPOSED SECTION
SCALE: 1/2"=1'-0"



TYPICAL GLUED LAMINATED DECK PANEL
(ITEM 601-10.10)
SCALE: 1/2"=1'-0"

NOTES

1. REQUIRED DEPTH OF 4"x6" TIMBER BLOCK SHALL BE FIELD MEASURED BY THE CONTRACTOR. CUT TIMBER BLOCK TO FIT AS REQUIRED,
2. SEE SHEET 7 FOR SECTIONS B-B, C-C AND D-D AND ADDITIONAL DECK REPAIR DETAILS.
3. ALL ROADWAY DECK AND CURB FASTENERS SHALL BE CSK 5/8" DIA. THROUGH BOLTS W/STEEL WASHERS AND NUTS. (A 307)
4. FASTEN SIDEWALK PLANKS WITH 3/8" DIA. CSK LAG SCREWS, 6" MINIMUM LENGTH TWO PER STRINGER/CURB. SIDEWALK PLANKS AND CURBS SHALL BE SURFACED ON ALL FOUR SIDES (S4S).
5. ALL FASTENERS, STEEL PLATES, ANGLES AND CLIPS SHALL BE GALVANIZED.
6. CHAMFER EXPOSED EDGES OF DECK JOINT STEEL PLATES.
7. SEAL CSK. BOLT HOLES AFTER INSTALLATION.
8. COST OF STEEL DECK JOINTS AND SEALER INCLUDED IN ITEMS 601-10.10.
9. CONTRACTOR TO ADJUST WIDTH OF DECK PANELS TO FIT DIMENSIONS BETWEEN DECK JOINTS.

TranSystems

JOSEPH J. PURVIS — LICENSED PROFESSIONAL ENGINEER — STATE OF TENNESSEE

NO.	DATE	REVISION DESCRIPTION	SIG.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

DRAWN:	M.S.L	3/29/09
DESIGNED:	M.H.A	3/31/09
CHECKED:	W.C	4/2/09

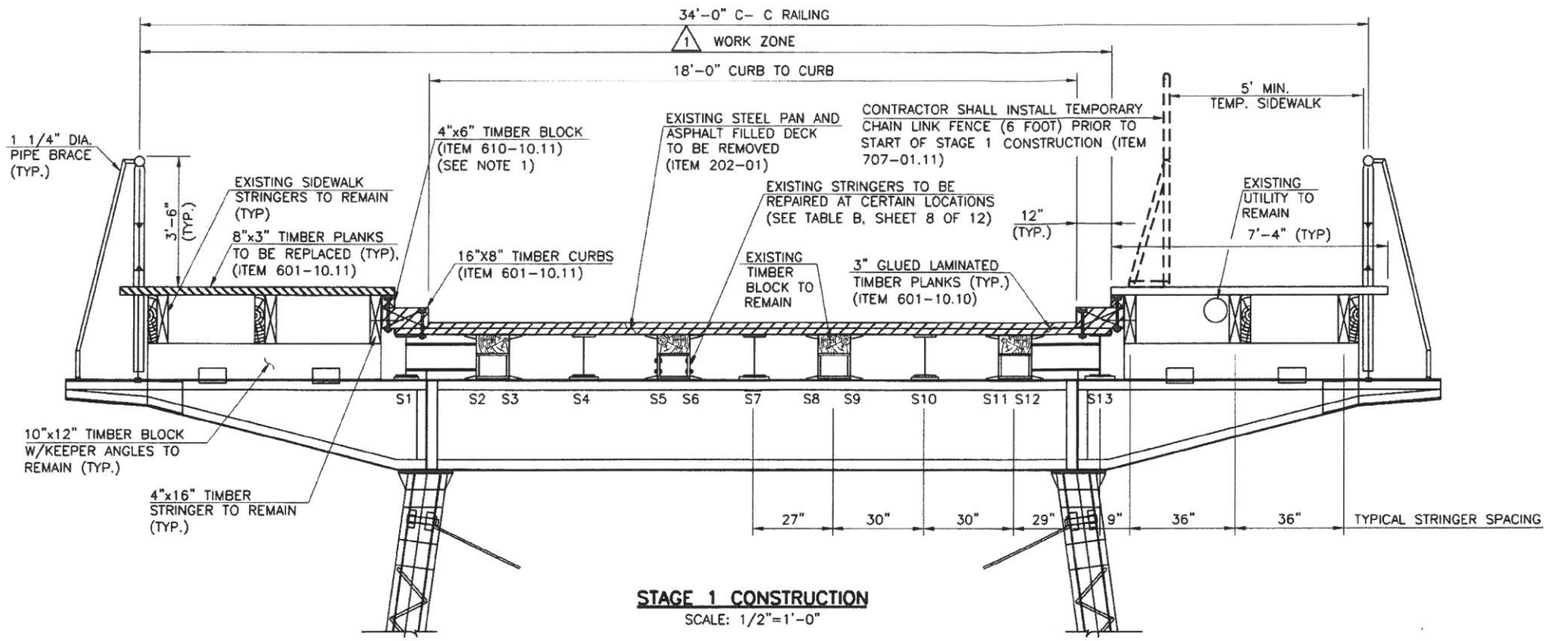
CITY OF CHATTANOOGA SEAL — INCORPORATED — TENNESSEE

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS

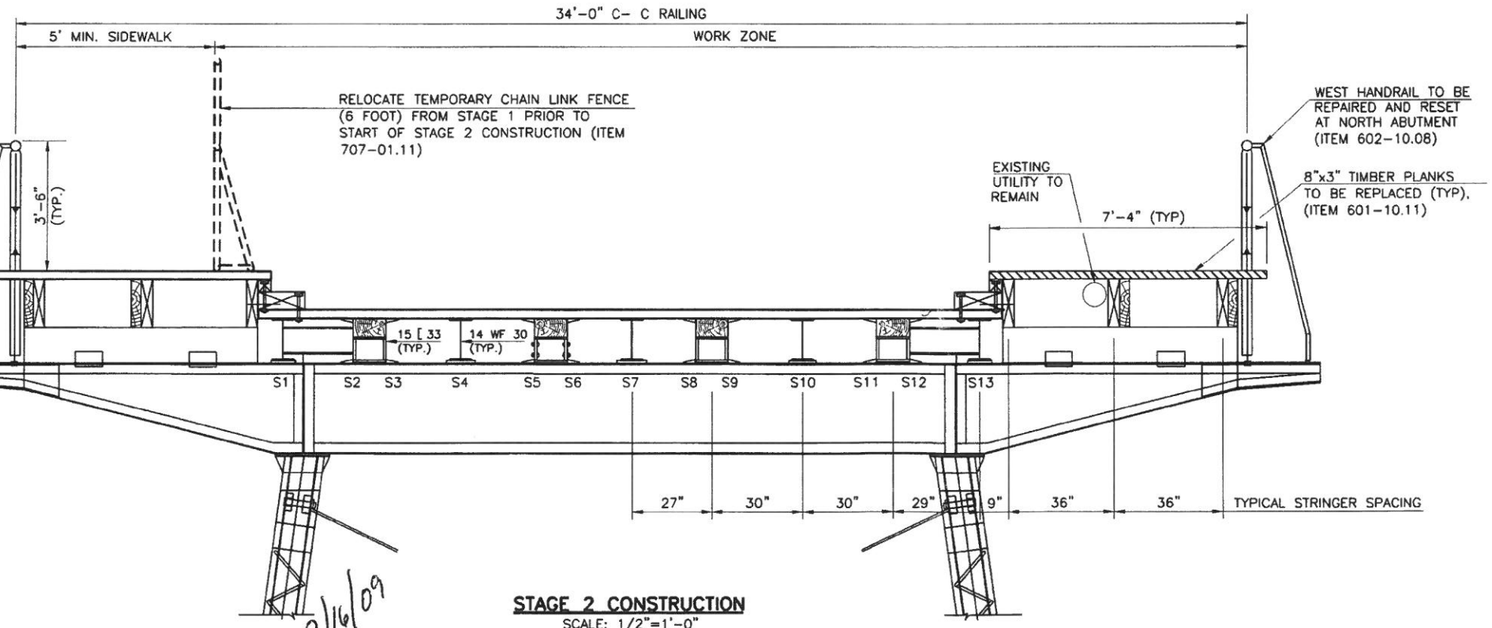
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION

TYPICAL CROSS SECTIONS

CONTRACT#	E-07-007-201
Engineering Order	N/A
FILE NO.	N/A
SHEET	5 OF 12



STAGE 1 CONSTRUCTION
SCALE: 1/2"=1'-0"



STAGE 2 CONSTRUCTION
SCALE: 1/2"=1'-0"

NOTES:

1. REQUIRED DEPTH OF 4"x6" TIMBER BLOCK SHALL BE FIELD MEASURED BY THE CONTRACTOR. CUT TIMBER BLOCK TO FIT AS REQUIRED.

JP PE 9/16/09

TranSystems

NO.	DATE	REVISION DESCRIPTION	SIG.
1	9/16/09	REVISED WORK ZONE	W.C.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

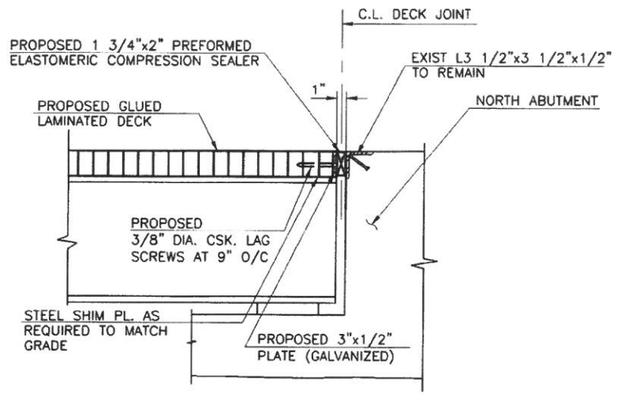
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DESIGNED:	M.H.A	3/31/09
CHECKED:	W.C	4/2/09

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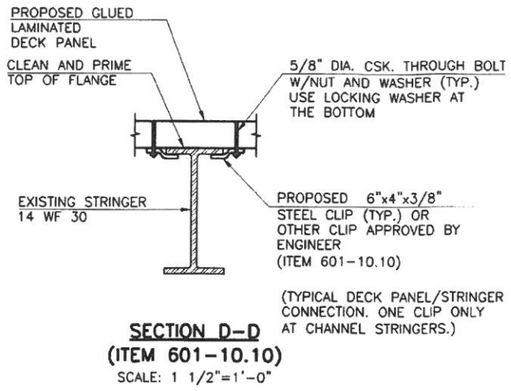
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION

CONSTRUCTION STAGING

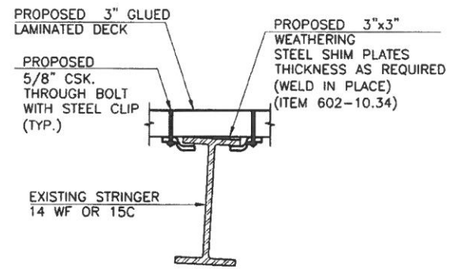
CONTRACT# E-07-007-201
Engineering Order N/A
FILE NO. N/A
SHEET 6 OF 12



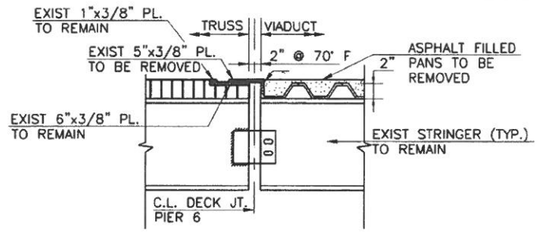
DECK JOINT AT NORTH ABUTMENT
(ITEM 601-10.10)
SCALE: 1 1/2"=1'-0"



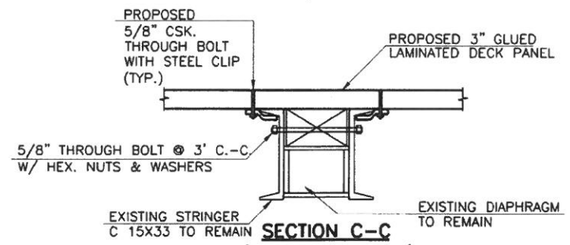
SECTION D-D
(ITEM 601-10.10)
SCALE: 1 1/2"=1'-0"



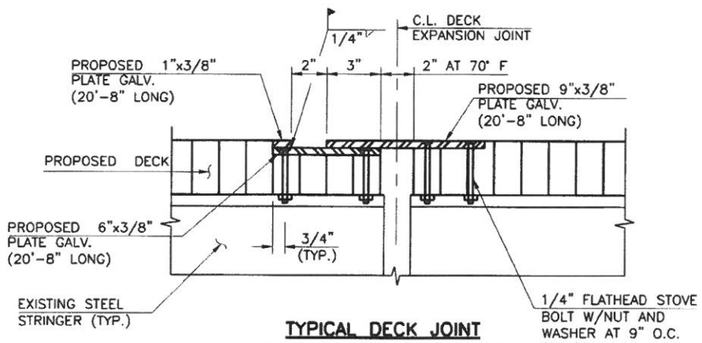
STEEL SHIM DETAIL
(ITEM 602-10.34) (AS DIRECTED)
SCALE: 1 1/2"=1'-0"



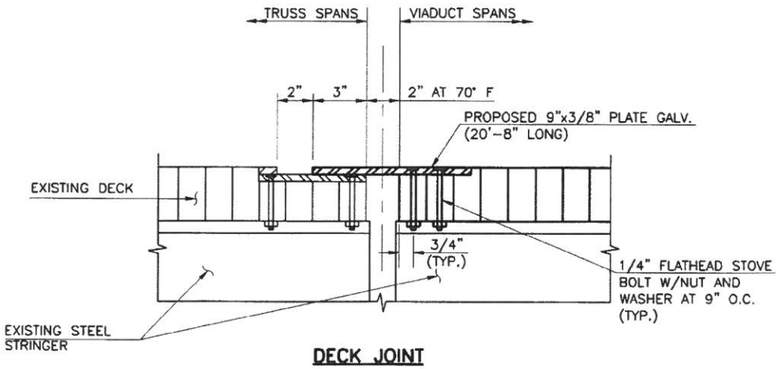
EXISTING DECK JOINT @ PIER 6
SCALE: 1 1/2"=1'-0"



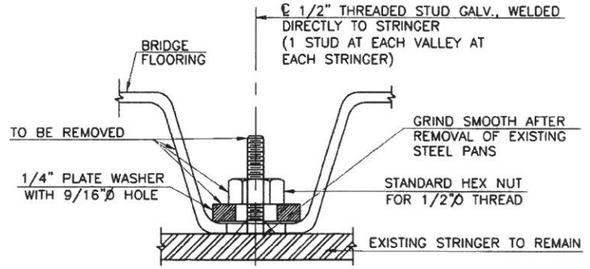
SECTION C-C
(ITEM 601-10.10)
SCALE: 1 1/2"=1'-0"



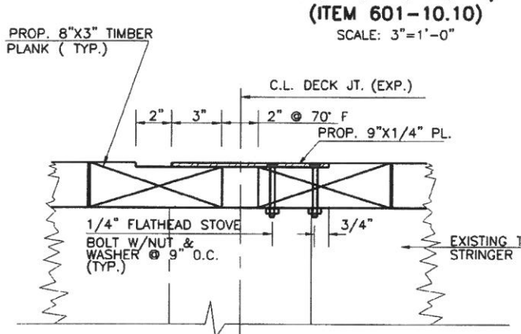
TYPICAL DECK JOINT
(AT BENTS 10, 14, 18, 22, 26, 30, 34, 38, 42)
(ITEM 601-10.10)
SCALE: 3"=1'-0"



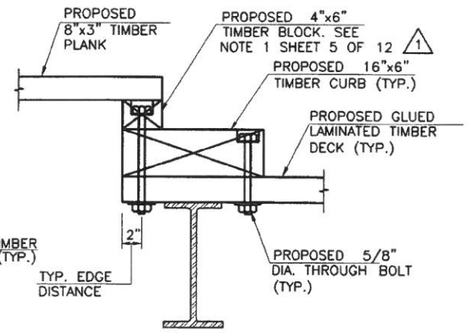
DECK JOINT
(AT PIER 6)
(ITEM 601-10.10)
SCALE: 3"=1'-0"



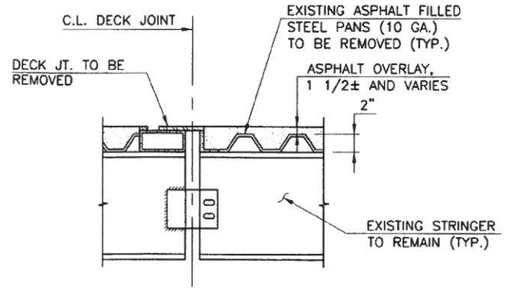
EXISTING STEEL FLOORING CONNECTION DETAIL
(REMOVAL INCLUDED IN ITEM 202-01)
NTS



TYPICAL SIDEWALK DECK JOINT
(AT PIER 6, BENTS 6, 10, 14, 18, 22, 26, 30, 34, 38, 42)
(ITEM 601-10.11)
SCALE: 3"=1'-0"



SECTION B-B
(ITEM 601-10.11)
SCALE: 1 1/2"=1'-0"



EXISTING DECK SECTION @ INTERIOR BENTS
SCALE: 1 1/2"=1'-0"

NOTES

1. FOR TYPICAL GLUED LAMINATED DECK PANEL SEE SHT 6.
2. ALL ROADWAY DECK AND CURB FASTENERS SHALL BE CSK 5/8" DIA. THROUGH BOLTS W/STEEL WASHERS AND NUTS. (A 307)
3. FASTEN SIDEWALK PLANKS WITH 3/8" DIA. CSK LAG SCREWS, 6" MINIMUM LENGTH TWO PER STRINGER/CURB. SIDEWALK PLANKS AND CURBS SHALL BE SURFACED ON ALL FOUR SIDES (S4S).
4. ALL FASTENERS, STEEL PLATES, ANGLES AND CLIPS SHALL BE GALVANIZED.
5. CHAMFER EXPOSED EDGES OF DECK JOINT STEEL PLATES.
6. SEAL CSK. BOLT HOLES AFTER INSTALLATION.
7. 3"x3" STEEL SHIM PLATES MAY BE REQUIRED UNDER THE DECK PANELS AT THE FASTENER LOCATIONS IF STRINGERS ARE NOT LEVEL. PAID UNDER ITEM 602-10.34.
8. COST OF STEEL DECK JOINTS AND SEALER INCLUDED IN ITEMS 601-10.10.
9. CONTRACTOR TO ADJUST WIDTH OF DECK PANELS TO FIT DIMENSIONS BETWEEN DECK JOINTS.
10. TOP FLANGE OF STRINGER TO BE CLEANED AND PRIMED ONLY IN ACCORDANCE WITH 603, TO BE PAID UNDER ITEM 601-10.10.

PE 9/16/09

TranSystems

NO.	DATE	REVISION DESCRIPTION	SIG.
1	9/16/09	REVISED NOTE	W.C.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

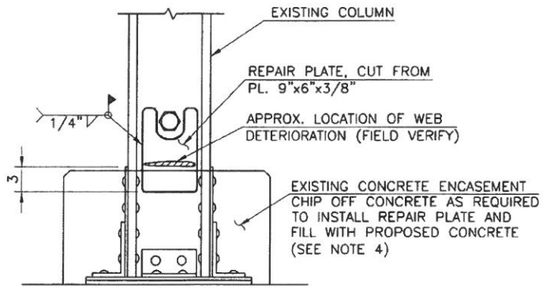
DRAWN:	M.S.L	3/29/09
DESIGNED:	M.H.A	3/31/09
CHECKED:	W.C	4/2/09

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS

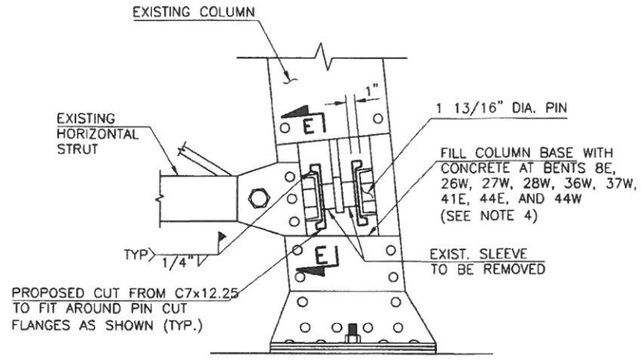
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION

DECK DETAILS

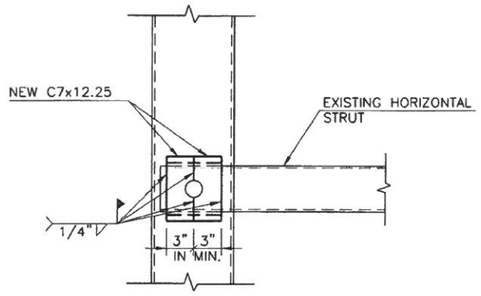
CONTRACT# E-07-007-201
Engineering Order N/A
FILE NO. N/A
SHEET 7 OF 12



COLUMN WEB REPAIRS (TABLE 1)
SCALE: 1"=1 1/2"



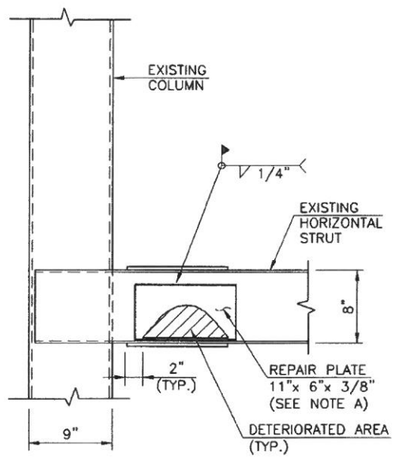
HORIZONTAL STRUT REPAIRS AT PIN (TABLE 2)
SCALE: 1"=1 1/2"



SECTION E-E
SCALE: 1"=1 1/2"

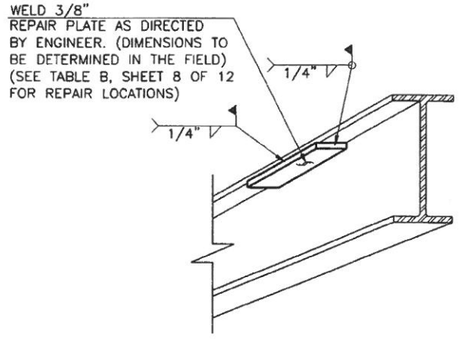
TABLE 1		
COLUMN WEBS TO BE REPAIRED		
COLUMN	EAST [	WEST [
13W	*	
14W	*	
17E		*
17W	*	

TABLE 2
HORIZONTAL STRUTS TO BE REPAIRED AT PINS
LOWER TRANSVERSE STRUT AT BENT 19E
LOWER LONGITUDINAL STRUT AT BENT 24E
LOWER TRANSVERSE STRUT AT BENT 26W
LOWER TRANSVERSE STRUT AT BENT 31E
LOWER TRANSVERSE STRUT AT BENT 33E
LOWER TRANSVERSE STRUT AT BENT 34W
LOWER LONGITUDINAL STRUT AT BENT 35E
LOWER LONGITUDINAL STRUT AT BENT 36E
LOWER TRANSVERSE STRUT AT BENT 38E
LOWER TRANSVERSE STRUT AT BENT 38W
LOWER LONGITUDINAL STRUT AT BENT 38W
LOWER TRANSVERSE STRUT AT BENT 39W



HORIZONTAL STRUT REPAIRS AT WEB (TABLE 3)
BENTS 10E, 13W, 14W, 15W, 20W, 31W, 32W, 38W, 41W AND 42E
SCALE: 1"=1 1/2"

NOTE A: ADJUST REPAIR PLATE SIZE AS DIRECTED BY ENGINEER



STRINGER REPAIR DETAIL
(ITEM 602-10.34) (AS DIRECTED)
SCALE: 1 1/2"=1'-0"

NOTES:

REPAIRED PLATE WIDTH TO EXTEND 1/2" MIN BEYOND FLANGE EDGE.

TABLE B: STRINGER REPAIRS	
SPAN	STRINGER
13	13
15	7
17	1
18	4, 13
19	12, 13
20	1, 3
21	1, 13
22	7
23	4, 10-12
24	3, 4, 7, 10, 12
28	4, 7, 10, 12
33	7
34	3, 4, 7
35	7
37	7
38	7
39	7
40	1, 7
41	7

TABLE 3
HORIZONTAL STRUTS TO BE REPAIRED AT WEB
LOWER LONGITUDINAL STRUT AT BENT 10E
LOWER LONGITUDINAL STRUT AT BENT 13W
LOWER LONGITUDINAL STRUT AT BENT 14W
LOWER LONGITUDINAL STRUT AT BENT 15W
LOWER LONGITUDINAL STRUT AT BENT 20W
TOP LONGITUDINAL STRUT AT BENT 31W
TOP LONGITUDINAL STRUT AT BENT 32W
LOWER LONGITUDINAL STRUT AT BENT 38W
LOWER LONGITUDINAL STRUT AT BENT 41W
TOP LONGITUDINAL STRUT AT BENT 42E

NOTES:

1. ALL REPAIR STEEL - ASTM A36.
2. ADDITIONAL REPAIRS TO THE VIADUCT MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.
3. ALL STEEL REPAIRS SHOWN ON THIS DRAWING SHALL BE PAID UNDER ITEM 602-10.32 UNLESS OTHERWISE NOTED. NO SEPARATE PAYMENT WILL BE MADE FOR CLEANING, PAINTING AND WELDING. COSTS SHALL BE INCLUDED IN THE VARIOUS BID ITEMS.
4. ANY CONCRETE REPLACEMENT OR REPAIRS AT THE COLUMN BASES SHALL BE PAID FOR UNDER ITEM 602-10.32. SEE GENERAL NOTES ON SHEET 1 FOR STRENGTH AND MIX DESIGN.

TranSystems

JOSEPH J. PURLARD REGISTERED ENGINEER STATE OF TENNESSEE

NO.	DATE	REVISION DESCRIPTION	SIG.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

DRAWN:	M.S.L	3/29/09
DESIGNED:	M.H.A	3/31/09
CHECKED:	W.C	4/2/09

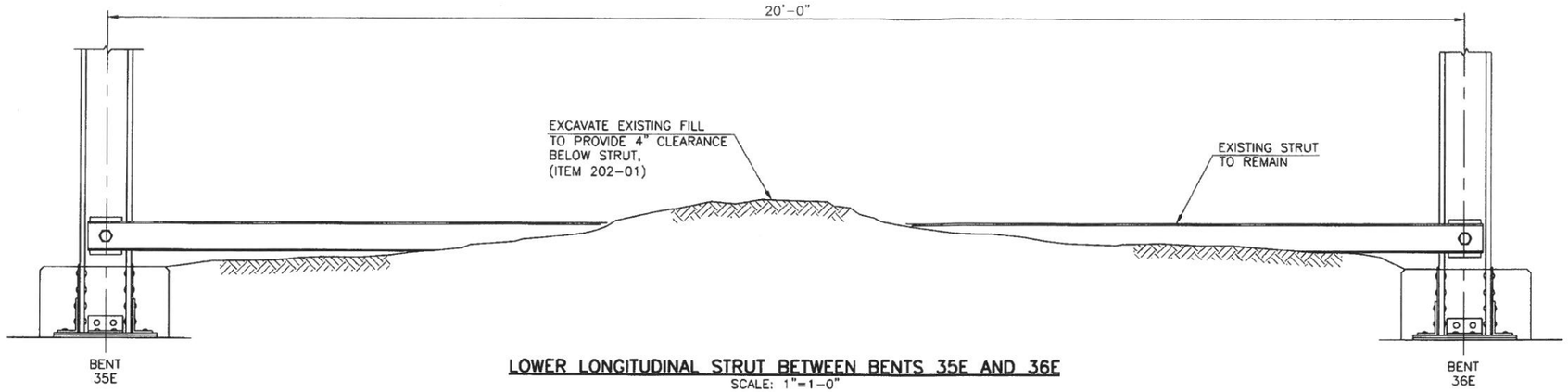
CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS

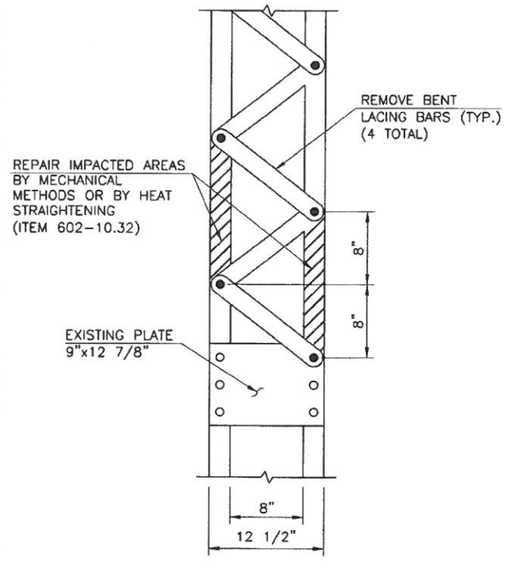
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION

STEEL REPAIRS - I

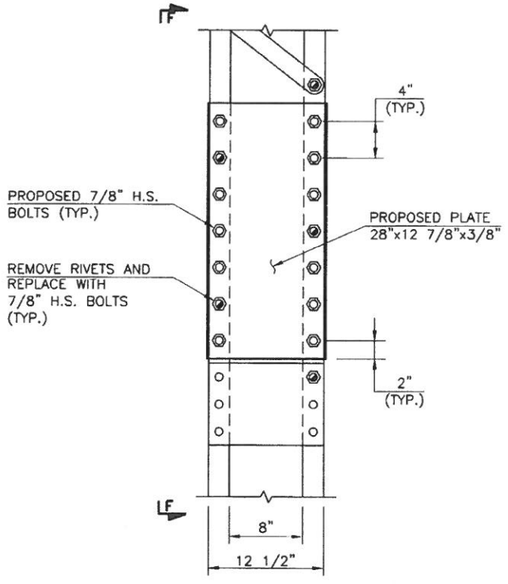
CONTRACT# E-07-007-201
Engineering Order N/A
FILE NO. N/A
SHEET 8 OF 12



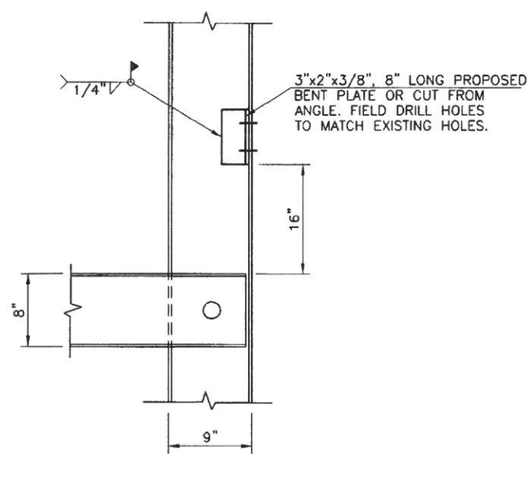
LOWER LONGITUDINAL STRUT BETWEEN BENTS 35E AND 36E
SCALE: 1"=1-0"



EXISTING ELEVATION AT BENT 10E AND 40W
SCALE: 1"=1 1/2"



PROPOSED ELEVATION AT BENTS 10E AND 40W
SCALE: 1"=1 1/2"



SECTION F-F (AT BENT 10E ONLY)
SCALE: 1"=1 1/2"

LEGEND:

- ○ EXISTING RIVET TO REMAIN
- ● EXISTING RIVET TO BE REMOVED
- ⊘ REMOVAL OF RIVETS – REPLACEMENT WITH HIGH STRENGTH BOLT
- ◎ FIELD DRILL 24 (15/16") DIA. HOLES IN EXISTING STRUCTURAL STEEL TO INSTALL 24 (7/8") DIA. H.S. BOLT.

NOTES:

1. ALL REPAIR STEEL – ASTM A36.
2. ADDITIONAL REPAIRS TO THE VIADUCT MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.
3. ALL STEEL REPAIRS SHOWN ON THIS DRAWING SHALL BE PAID UNDER ITEM 602-10.32. ALL COSTS FOR WELDING AND PAINTING SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 602-10.32.
4. ANY CONCRETE REPLACEMENT OR REPAIRS AT THE COLUMN BASES SHALL BE PAID FOR UNDER ITEM 602-10.32.
5. STRAIGHTENING BENT COLUMNS AT 10E AND 40W SHALL BE IN ACCORDANCE WITH TDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 602.43. (ITEM 602-10.32)

TranSystems

JOSEPH J. MILANO — LICENSED PROFESSIONAL ENGINEER — STATE OF TENNESSEE

NO.	DATE	REVISION DESCRIPTION	SIG.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

DRAWN:	M.S.L	3/29/09
DESIGNED:	M.H.A	3/31/09
CHECKED:	W.C	4/2/09

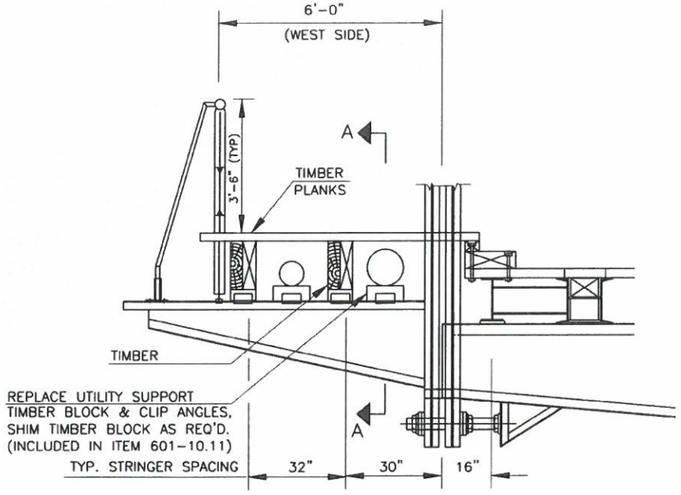
CITY OF CHATTANOOGA CORPORATION SEAL — TENNESSEE

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS

WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION

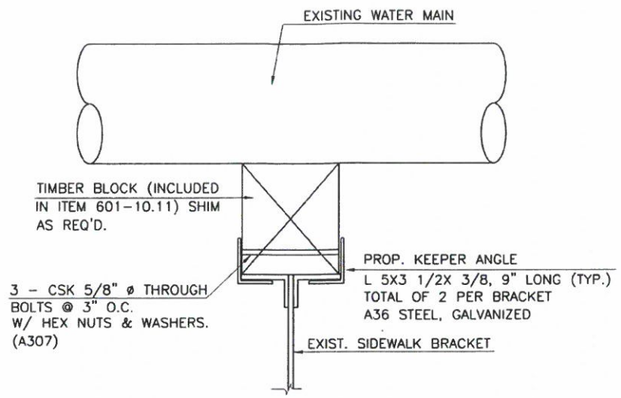
STEEL REPAIRS - II

CONTRACT#	E-07-007-201
Engineering Order	N/A
FILE NO.	N/A
SHEET	9 OF 12



PROPOSED SECTION – TRUSS SPANS

SCALE: 1/2"=1'-0"



SECTION A–A

SCALE: 1 1/2"=1'-0"



POWER WASH TRUSS MEMBERS AND INSTALL ADDITIONAL BIRD NETTING

SPAN 4, U15 TYPICAL BIRD DEBRIS AND MISSING BIRD NETTING

DETAIL A

(ITEM 602-11.03)



END PORTAL TRANSVERSE STRUT, CRACKED WELD SEE TABLE 1 FOR LOCATION

REPLACE MISSING BOLLARDS (ITEM 602-11.01)

TABLE 1:

SPAN 3	NORTH PORTAL, EAST END
SPAN 4	NORTH PORTAL, WEST END
SPAN 5	SOUTH PORTAL, EAST END

DETAIL B

(ITEM 602-10.02)



REPAIR WELD AT TRANSVERSE BRACE

DETAIL G

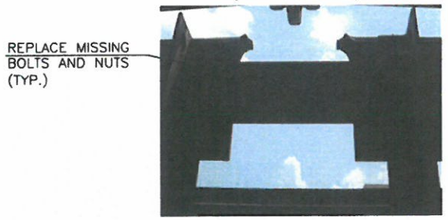
(ITEM 602-10.02)



UNDERMINED POST SOUTH ABUTMENT, EAST RAILING END POST

DETAIL C

(INCLUDED IN ITEM 602-10.08)

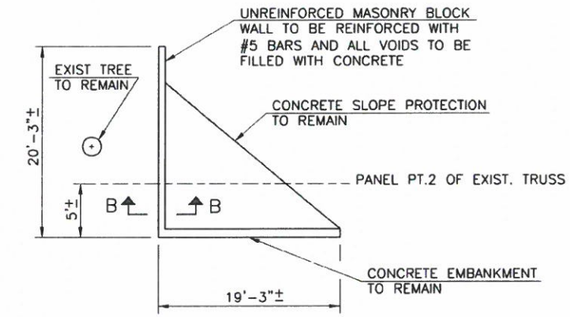


REPLACE MISSING BOLTS AND NUTS (TYP.)

SOUTH PORTAL SIGN STRUCTURE, SPAN 1

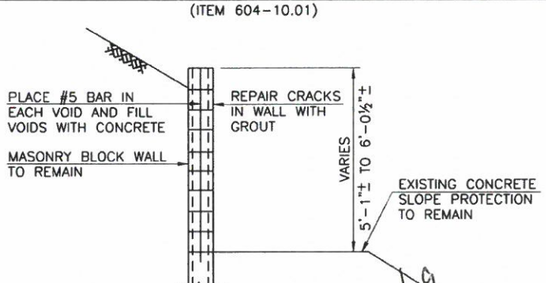
DETAIL D

(ITEM 602-10.02)



PLAN – RETAINING WALL AT SOUTH ABUTMENT

(ITEM 604-10.01)



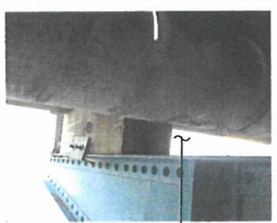
SECTION B–B

9/16/09

NOTE:

1. REINFORCERMENT SHALL BE ASTM A615 (GRADE 60) F_S =24000 PSI
2. GROUT SHALL BE TYPE II
3. CONCRETE SHALL BE CLASS A F'c =3000 PSI

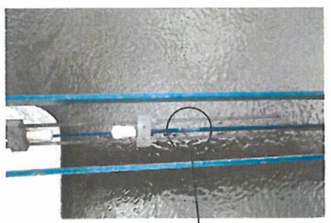
1



MISSING UTILITY SUPPORT AT PIER 5, WEST SIDEWALK

DETAIL E

(INCLUDED IN ITEM 601-10.11)



REPAIR EPOXY-COATING – POST TENSINING STRANDS SPAN 4, WEST TRUSS L1L2

DETAIL F

(ITEM 603-02.20)

TranSystems

NO.	DATE	REVISION DESCRIPTION	SIG.
1	9/16/09	COLOR PHOTOS	W.C.

ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

DRAWN:	A.L.	8/14/09
DESIGNED:	A.F.G	8/13/09
CHECKED:	W.C	8/14/09

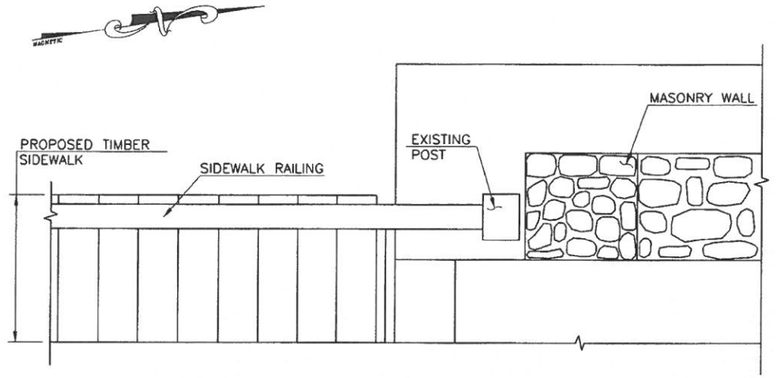
CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS

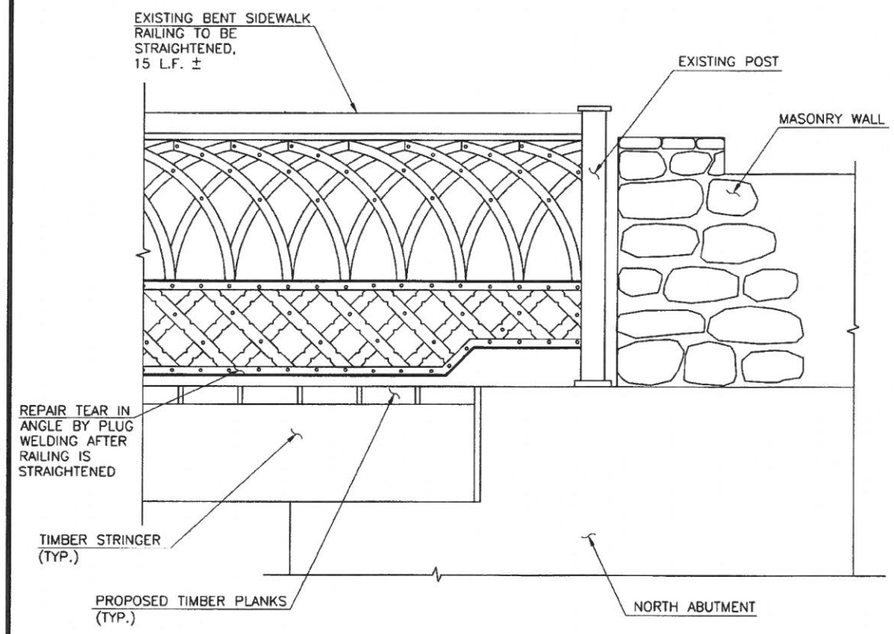
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION

REPAIR DETAILS

CONTRACT# E-07-007-201
Engineering Order N/A
FILE NO. N/A
SHEET 10 OF 12



EXISTING PLAN – NORTHWEST CORNER
SCALE: 1"=1'-0"



EXISTING ELEVATION – NORTHWEST CORNER (ITEM 602-10.08)
SCALE: 1"=1'-0"

HANDRAIL REPAIRS

1) STRAIGHTEN BY MECHANICAL METHODS OR BY HEATING, A 15 FT. LENGTH OF BENT WEST RAILING IN SPAN 45 (NORTH ABUTMENT).
2) REPAIR BY WELDING AND AS DIRECTED BY ENGINEER ALL RAILING ANGLES WITH TEARS. (ESTIMATED NO. = 2 LOCATIONS)
3) ALL REPAIRS TO EXIST. RAILING SHALL BE DONE UNDER ITEM 602-10.08 THIS SHALL INCLUDE STRAIGHTENING BENT MEMBERS & WELDING TEAR IN THE ANGLES AS NOTED ABOVE AND AS DIRECTED BY THE ENGINEER.

TranSystems

JOSEPH J. PULLANO REGISTERED ENGINEER STATE OF TENNESSEE

NO.	DATE	REVISION DESCRIPTION	SIG.

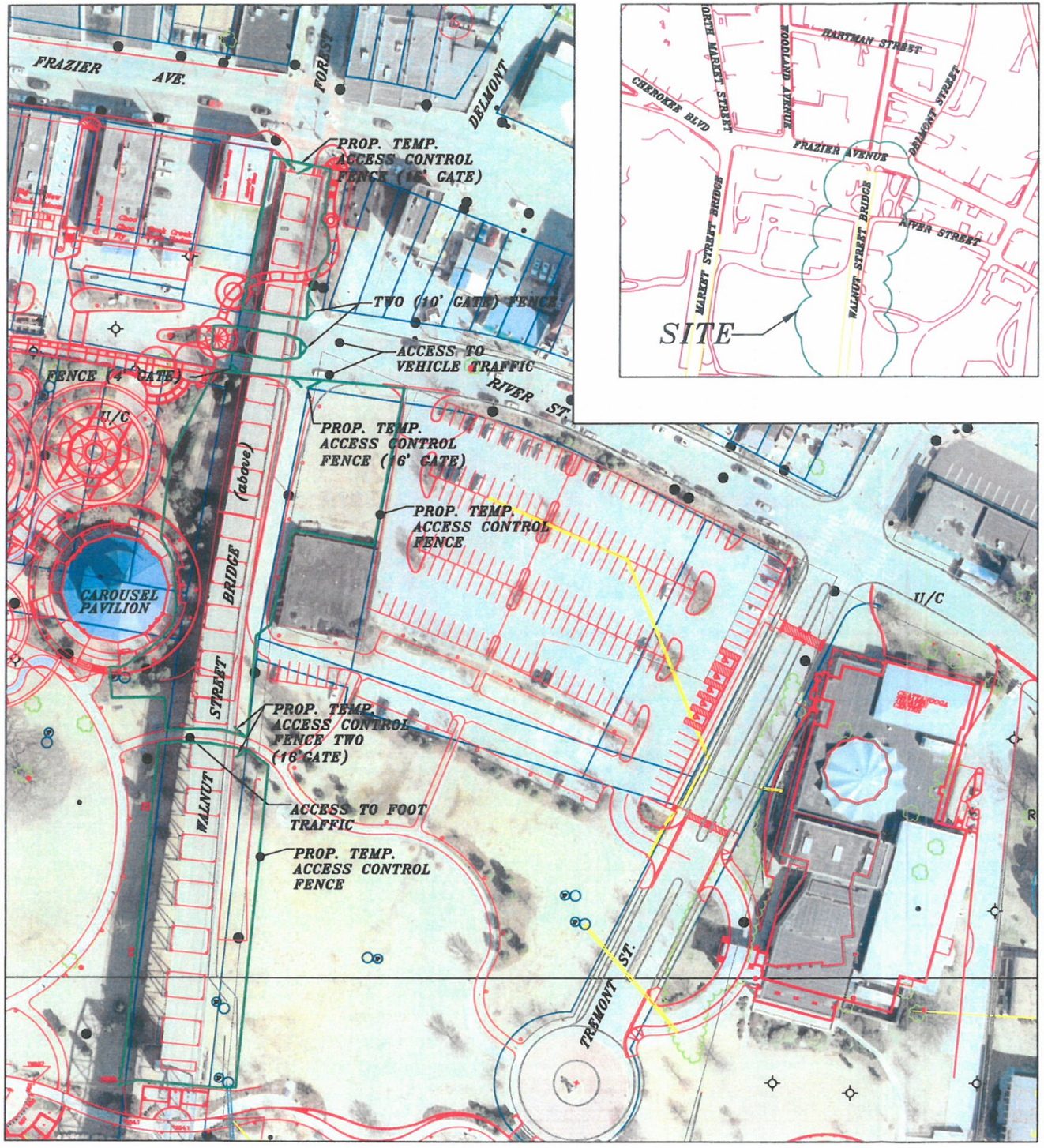
ADMINISTRATOR: STEVE LEACH
CITY ENGINEER: WILLIAM PAYNE, P.E.

DRAWN:	M.S.L	3/29/09
DESIGNED:	M.H.A	3/31/09
CHECKED:	W.C	4/2/09

CHATTANOOGA CORPORATION SEAL TENNESSEE

CITY OF CHATTANOOGA DEPARTMENT OF PUBLIC WORKS
WALNUT STREET BRIDGE - NORTH VIADUCT REHABILITATION
WEST SIDEWALK RAILING - REPAIR DETAILS

CONTRACT# E-07-007-201
Engineering Order N/A
FILE NO. N/A
SHEET 11 OF 12



GENERAL NOTES PERTAINING TO EXISTING TREES

PROTECTIONS: PROVIDE PROTECTION AS REQUIRED TO DESIGNATED LANDSCAPE IMPROVEMENTS TO AVOID DAMAGE CAUSED BY FALLING BRIDGE MATERIALS OR THE REMOVAL OF MATERIALS RESULTING FROM EITHER CONSTRUCTION OR DEMOLITION OPERATIONS.

EXISTING TREES AND OTHER PLANTINGS DESIGNATED TO REMAIN IN PLACE, SHALL BE PROTECTED FROM UNNECESSARY CUTTING, BREAKING, OR SKINNING OF ROOTS; SKINNING AND BRUISING OF BARK; SMOTHERING OF TREES BY STOCKPILING MATERIALS OF ANY KIND WITHIN THE DRIP LINE; AND FROM EXCESS FOOT OR VEHICULAR TRAFFIC OR PARKING OF VEHICLES WITHIN THE DRIP LINE. PROVIDE TEMPORARY GUARDS TO PROTECT TREES AND PLANTINGS TO BE LEFT STANDING.

TREE PROTECTION: INSTALL A SHIELD OF 1" X 4" WOODEN PLANKS COMPLETELY AROUND EACH TREE TRUNK FROM GROUND LEVEL TO WHERE THE TRUNK BEGINS TO "BRANCH OUT". ATTACH SUCH PROTECTION WITH 12 GAUGE GALVANIZED WIRE AROUND TREE TRUNK AT THE TOP, BOTTOM, AND MIDDLE OF THE PLANKING.

TREE REPAIRS: TREES AND/OR VEGETATION THAT HAVE BEEN DESIGNATED TO REMAIN AND THAT HAVE BEEN DAMAGED BY DEMOLITION OPERATIONS, ARE TO BE REPLACED OR REPAIRED IN A MANNER ACCEPTABLE TO THE **URBAN FORESTER**.

TREE REPLACEMENT: "TREE REPLACEMENT" IS DEFINED AS THE COMPLETE EXCAVATION OF AN EXISTING TREE AND ITS ROOT SYSTEM AND THE SUBSEQUENT PLANTING, BACKFILLING, AND ADEQUATE FERTILIZATION AND WATERING OF ITS REPLACEMENT TREE FOR A PERIOD OF **ONE YEAR** AFTER PLANTING.

THE **CONTRACTOR** SHALL, AT HIS OWN EXPENSE, REPLACE TREES THAT CANNOT BE REPAIRED OR RESTORED TO A HEALTHY STATUS, AS DETERMINED BY THE **URBAN FORESTER**. REPLACEMENT TREES SHALL BE IN GOOD HEALTH AND SHALL BE EQUAL IN SPECIES, HEIGHT, SHAPE, AND CALIPER TO THE TREE(S) BEING REPLACED.

CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE DURING THE CONTRACT THAT OCCURS TO THE EXISTING SOD, OR THE EXISTING IRRIGATION SYSTEM. CONTRACTOR WILL MAKE ANY AND ALL REPAIRS / REPLACMENTS AT CONTRACTOR'S EXPENSE.

CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING, REPAIRING, AND / OR REPLACING VIDEO CAMERA SYSTEM (INCLUDING HARDWARE, WIRING, ECT.) IF DAMAGE OCCURS. CONTRACTOR WILL ALSO PROTECT AND / OR REPAIR / REPLACE IF NEEDED THE OTHER EXISTING UTILITIES IF ANY DAMAGE OCCURS. CONTRACTOR WILL COORDINATE WITH EXISTING UTILITIES PRESENT AT AND AROUND THE WALNUT STREET BRIDGE.

NOTES:

1. ALL STREET TREES INSIDE CONSTRUCTION FENCE SHALL BE PROTECTED AS SHOWN IN GENERAL NOTES. COORDINATE FENCE PLACEMENT WITH **URBAN FORESTER**.
2. BRICK PAVERS SHALL BE REMOVED AT LOCATIONS WHERE CONSTRUCTION FENCE POSTS ARE INSTALLED. ANY BRICKS DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED.
3. CONTRACTOR WILL NEED TO PROTECT OUTDOOR CHATTANOOGA SIGN AND LIGHTS
4. ALL SIDEWALK, CURB, LIGHT POLES, TRAFFIC SIGNALS, TRASH RECEPTACLES, BUS SHELTER, AND UTILITIES DAMAGED DURING CONSTRUCTION ACTIVITIES SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
5. CONTACT ALL UTILITY COMPANIES WHOSE FACILITIES MAY BE IMPACTED BY CONSTRUCTION ACTIVITIES A MINIMUM OF 72 HOURS PRIOR TO ANY PLANNED CONSTRUCTION OR DEMOLITION.
6. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL ACCORDING TO TRAFFIC CONTROL PLANS PROVIDED BY THE CITY TRAFFIC ENGINEER'S OFFICE. THE SIGNS USED SHALL BE REFLECTIVE ORANGE WITH BLACK LETTERING IN SIZES SPECIFIED ON THE TRAFFIC CONTROL PLANS.
7. CONTRACTOR SHALL REMOVE LIGHT POLES INSIDE CONSTRUCTION FENCE AS NOTED, AND REINSTALL AFTER COMPLETION OF CONSTRUCTION. CONTRACTOR SHALL PROTECT POLE BASES PER DETAIL THIS SHEET.
8. NO DRILLING OF CURB AND GUTTER OR STAMPED CONCRETE SHALL BE ALLOWED.
9. CONSTRUCTION FENCE SHALL BE 6' (MIN.) HIGH CHAIN LINK FENCE WITH SCREEN FABRIC.
10. EXISTING SIDEWALK PAVERS SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES WITH A LAYER OF NON-WOVEN GEOTEXTILE TOPPED BY PLYWOOD, MASONITE, OR OSB, NEED SKID RESISTANT COATING.

PHOTOS AND DOCUMENTATION OF EXISTING SITE PERIMETER CONDITIONS SHALL BE AGREED UPON BY CITY OF CHATTANOOGA AND GENERAL CONTRACTOR PRIOR TO START OF CONSTRUCTION. DAMAGE TO PUBLIC WAYS, INCLUDING BUT NOT LIMITED TO STREETS, CURBS, GUTTERS, SIDEWALKS, AND AMENITIES, CAUSED BY CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED TO CITY STANDARDS BY GENERAL CONTRACTOR.

CALL BEFORE YOU DIG
DIG – DRILL – BLAST – BORE
(800) 351-1111
TENNESSEE – ONE CALL CENTER

The Location of existing underground utilities are shown at approximate locations only and are based upon the field location of visible utility apparatus and information provided by utility companies.

UTILITY CONTACTS:

COMCAST CABLE COMMUNICATIONS, INC.
2030 EAST POLYMER DRIVE, P.O. BOX 182249
CHATTANOOGA, TN 37422
423.855.3900

BELLSOUTH TELEPHONE
SALES, BILLING, AND SERVICE
BUSINESS: 557.6000
REPAIR BUSINESS: 557.6123

TENNESSEE AMERICAN WATER COMPANY
1101 BROAD STREET
CHATTANOOGA, TN 37402
423.765.7629

ELECTRIC POWER BOARD
CHATTANOOGA, TN 37422
423.648.3439

CHATTANOOGA GAS COMPANY
2207 OLIN MILLS DRIVE
CHATTANOOGA, TN 37421
423.490.4315

PROTECTION MEANS:

LIGHT POLE ANCHOR BOLTS (A.B.S) & BASES TO BE PROTECTED WITH METAL PLATE (DIAGRAMMED BELOW) AND COVERED WITH WOOD BOXES FILLED WITH SAND.

4' SQUARE STEEL PLATES SHALL BE PLACED OVER MANHOLES, METER COVERS, VALVE COVERS, AND ELECTRIC PULL BOXES, AND MARKED WITH "E", "S", "W", ETC.

A.B. PROTECTION PLATE SIZE AS REQUIRED

CITY OF CHATTANOOGA CORPORATION SEAL TENNESSEE

CITY OF CHATTANOOGA

DEPARTMENT OF PUBLIC WORKS

ADMINISTRATOR:
STEVE LEACH

CITY ENGINEER:
WILLIAM C. PAYNE, P.E.

NO.	DATE	REVISION DES	SIG.
0			

INFRASTRUCTURE PROTECTION PLAN

CONTRACT#	E-07-007
SCALE:	1" = 100'
DRAWN:	ELB
DESIGN:	ELB
CHECKED:	APS

ARIEL SORIANO
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
NO. 109935
STATE OF TENNESSEE
09/03/2009

TN REGISTRATION NO. 109935

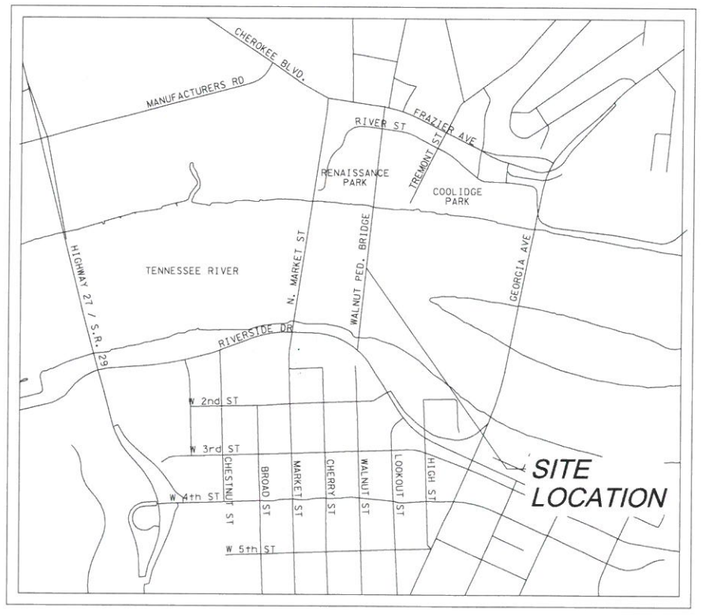
SHEET: 12 OF 12

CITY OF CHATTANOOGA, TENNESSEE
CONTRACT #E-13-002-201

WALNUT STREET PEDESTRIAN BRIDGE
REPAIR AND CONSTRUCTION
PHASE I

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N

LOCATION MAP

NTS

BRIDGE LENGTH	0.449 MILES
PROJECT LENGTH	0.449 MILES

MAYOR

ANDY BERKE

CITY COUNCIL

DISTRICT 1 - CHIP HENDERSON
DISTRICT 2 - JERRY MITCHELL
DISTRICT 3 - KEN SMITH
DISTRICT 4 - LARRY GROHN
DISTRICT 5 - RUSSELL GILBERT
DISTRICT 6 - CAROL B. BERZ
DISTRICT 7 - CHRIS ANDERSON
DISTRICT 8 - MOSES FREEMAN
DISTRICT 9 - YUSUF HAKEEM

DEPARTMENT OF PUBLIC WORKS

JUSTIN C. HOLLAND, ADMINISTRATOR

FOR 4/25/16
APPROVED FOR RELEASE — DATE
WILLIAM C. PAYNE, P.E.
CITY ENGINEER

Adam S. Davidson 4-25-16
ENGINEER-OF-RECORD — DATE
ADAM S. DAVIDSON, P.E.
STATE LICENSE NO. 110436

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

TITLE SHEET

NO.	REVISION	DATE	SIG.

SCALE	NO SCALE
DRAWN	D. HOWARD
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

VOLKERT

ADAM S. DAVIDSON — TENNESSEE — 110436 — STATE OF TENNESSEE
Adam S. Davidson 4-25-16

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 1
FILE NO.

25-APR-2016 11:55
457000_Walnut Street Bridge\457001_Walnut Repair Plans 2016\DGN\Bridge\001_TITLE.dgn

GENERAL NOTES

SPECIFICATIONS: STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION (JAN. 1, 2015 EDITION).

LOADING: AASHTO SEC. 3.14.1 PEDESTRIAN LOADING FOR EVERYDAY USE; 85 PSF PEDESTRIAN LOADING WITH ROADWAY WIDTH RESTRICTED TO 9 FT ON THE TRUSS SPANS FOR FESTIVAL USE

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NOTE: THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CLEARANCES AND MEMBERS SIZES BEFORE SUBMITTING SHOP DRAWINGS. COST TO BE INCLUDED IN THE VARIOUS ITEMS OF WORK.

FALSEWORK OVER TRAFFIC: SEE SECTION 604.06 OF THE STANDARD SPECIFICATIONS.

NOTE: THE CONTRACTOR SHALL PROVIDE 100% CONVENTIONAL FALL PROTECTION FOR WORKERS INSTALLING DECKING ABOVE 15 FEET.

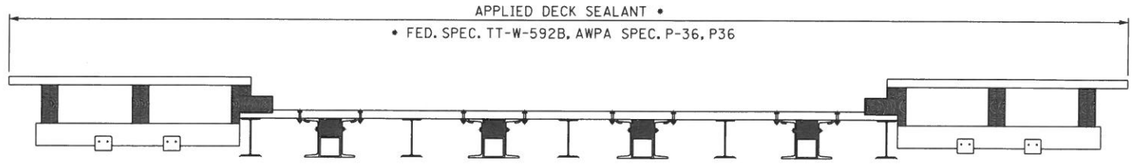
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TIMBER DECK SEALANT DETAILS

DECK SEALANT: QNAP2 OR TENINO COPPER NAPHTHENATE 2% OR AWPA APPROVED EQUAL.

NOTE: APPLY TO ALL EXPOSED SURFACES OF THE TIMBER SIDEWALK AND THE DECK OF THE NORTH VIADUCT. AS PER PRODUCT MANUFACTURER REQUIREMENTS. DECK/SIDEWALK SHALL BE CLEANED BY POWER WASHING PRIOR TO SEALING.

⚠1 NOTE: COST OF DECK SEALANT SHALL BE INCLUDED IN ITEM NO. 601-11.01.

TIMBER DECK SEALANT NOTES

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NOTE: THE WASTE WATER FROM THE PRESSURE WASHING OPERATION SHALL BE COLLECTED AND FILTERED. THE COLLECTED WASTE WATER SHALL NOT BE RELEASED INTO THE ENVIRONMENT UNTIL IT IS CLEAR. ALL SOLID DEBRIS FROM THE PRESSURE WASHING OPERATION SHALL BE COLLECTED AND DISPOSED OF IN AN APPROPRIATE MANNER.

CLEANING AND PAINTING OF STEEL COMPONENTS REPAIRS

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CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

GENERAL NOTES

NO.	REVISION	DATE	SIG.
1	REV. NOTE	5/16	ASD

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

VOLKERT

ADAM S. DAVIDSON — REGISTERED ENGINEER — No. 110436 — STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 2
FILE NO.

24-MAY-2016 12:12
457000_Walnut Street Bridge\457001.17_Walnut Repair Plans 2016\DGN\Bridge\002_Gen Notes.dgn

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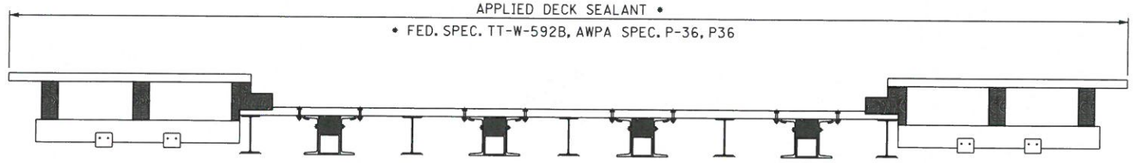
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NOTE: COST OF DECK SEALANT SHALL BE INCLUDED IN ITEM NO. 601-11.01 ~~AND INCLUDES TOP AND INSIDE FACE OF PARAPETS AND ENDPOSTS.~~

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CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
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ADAM S. DAVIDSON REGISTERED ENGINEER 9-29-16 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
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FILE NO.

28-APR-2016 12:28
457000_Walnut Street Bridge\457001.17_Walnut Repair Plans 2016\DGN\Bridge\002_Gen Notes.dgn

ESTIMATED QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY	AS-BUILT QUANTITY
(1)	204-06.01	FLOWABLE FILL (GENERAL)	C.Y.	12.5	
(2)	204-09.01	COFFERDAM (PIER NOS. 2 THRU 5)	LS	1	
(3)	209-99.91	EROSION CONTROL	LS	1	
(4)	601-10.10	TREATED TIMBER LAMINATED DECKING	MBFM	10.0	
(5)	601-10.11	TREATED TIMBER (SIDEWALK PLANKS AND CURBS)	MBFM	1.5	
(6)	601-10.12	TREATED TIMBER ABUTMENT REPAIRS	EACH	1	
(7)	601-11.01	BRIDGE DECK AND SIDEWALK POWER WASHING AND SEALING	LS	1	
(8)	602-10.02	PORTAL REPAIRS	LS	1	
(9)	602-10.12	BEARING DEVICE (REPAIR)	LS	1	
(10)	602-10.26	STRUCTURAL STEEL STRINGER REPAIRS	EACH	5	
(11)	602-10.51	STRUCTURAL STEEL REPAIR(PACK RUST REPAIR)	EACH	85	
(12)	602-10.52	STRUCTURAL STEEL REPAIR(STIFFENER REPAIR)	EACH	3	
(13)	602-10.53	STRUCTURAL STEEL REPAIR(SECTION LOSS REPAIR)	EACH	13	
(14)	602-10.54	STRUCTURAL STEEL REPAIR(REMOVE CORROSION AND REPAINT)	EACH	7	
(15)	602-10.55	STRUCTURAL STEEL REPAIR(ABUTMENT CAP REPAIR)	EACH	1	
(16)	602-10.70	STRUCTURAL STEEL CRACK REPAIR	EACH	4	
(17)	602-10.71	STRUCTURAL STEEL WELD REPAIR	EACH	4	
(18)	603-02.20	POST-TENSIONING STRAND EPOXY COATING	LS	1	
(19)	612-06.01	REPOINTING OF STONE MASONRY JOINTS (ABOVE WATER LINE)	L.F.	9000	
(24)	612-06.02	REPOINTING OF STONE MASONRY JOINTS (BELOW WATER LINE)	L.F.	3000	
(20)	712-01.52	MAINTENANCE OF TRAFFIC	LS	1	
	717-01	MOBILIZATION	LS	1	
	722-01.01	FIELD OFFICE (TYPE 1)	LS	1	
(21)	735-20.05	MISC ELECTRICAL REPAIRS	LS	1	
	801-03	WATER (SEEDING & SODDING)	M.G.	35	
(22)	803-01	SODDING (NEW SOD)	SY	3470	
(23)	920-10.04	FOUNDATION REPAIRS	EACH	56	

NOTE: ALL QUANTITIES SHALL BE BID WITH THE CONTENGENCY THAT THEY MAY BE INCREASED, DECREASED OR ELIMINATED AT THE DESCRETION OF THE ENGINEER.

FOOTNOTES:

(1.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO ENCAPSULATE THE BENT FOUNDATIONS WITH FLOWABLE FILL AS IDENTIFIED AND DETAILED IN THE BURIED FOUNDATION REPAIR DETAIL ON SHEET 33.

(2.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO INSTALL, DEWATER, MAINTAIN AND REMOVE THE TEMPORARY COFERDAMS AROUND PIERS 2 THRU 5 TO SUPPORT THE STONE PIER MASONRY AND MORTAR JOINT REPAIR DETAIL OPERATIONS ON SHEET 38.

(3.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO INSTALL, MAINTAIN AND REMOVE ALL EROSION CONTROL MEASURES ITDENTIFIED ON SHEET 4 TO INCLUDED TURBIDITY CURTAINS, SILT FENCE WITH WIRE BACKING, INLET PROTECTION, SEEDING, WATER AND OTHER MISCELLANOUS EROSION CONTROL ITEMS AS IDENTIFIED AND DEEMED NECESSARY BY THE ENGINEER.

(4.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE TIMBER GLUE LAMINATED DECK PANEL REPAIRS AS IDENTIFIED AND DETAILED ON SHEETS 7 THRU 16.

(5.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO REPLACE IN-KIND THE SIDEWALK TIMBER PLANKS AS IDENTIFIED IN THE FIELD BY THE ENGINEER.

(6.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE SIDEWALK STRINGER TIMBER BEARING REPAIR AT THE NORTH ABUTMENT AS IDENTIFIED AND DETAILED ON SHEET 39.

(7.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE BRIDGE TIMBER DECK SEALING AS IDENTIFIED AND DETAILED ON SHEET 2.

(8.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL REPAIRS ON THE TRUSS PORTAL COMPONENTS AS IDENTIFIED ON SHEETS 17 THRU 22 AND DETAILED IN THE TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON SHEET 35.

(9.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL BEARING REPAIRS AS IDENTIFIED ON SHEET 7 AND DETAILED IN THE TRUSS BEARING REPAIR DETAIL ON SHEET 37.

(10.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL STRINGER REPAIRS AS IDENTIFIED ON SHEETS 7 THRU 15 AND 23 THRU 28 AND DETAILED IN THE STRINGER END REPAIR DETAIL ON SHEET 34.

(11.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL PACK RUST REPAIRS AS IDENTIFIED ON SHEETS 17 THRU 32 AND DETAILED IN THE STEEL PACK RUST REPAIR DETAIL ON SHEET 37.

(12.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL FLOOR BEAM/CAP STIFFENER REPAIRS AS IDENTIFIED ON SHEETS 23 THRU 32 AND DETAILED IN THE STEEL FLOOR BEAM/CAP STIFFENER REPAIR DETAIL ON SHEET 34.

(13.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL SECTION LOSS REPAIRS AS IDENTIFIED ON SHEETS 7 THRU 32 AND DETAILED IN THE STEEL SECTION LOSS REPAIR DETAILS BY PAD WELDING ON SHEET 37.

(14.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL CORROSION REPAIRS AS IDENTIFIED ON SHEETS 17 THRU 32 AND DETAILED IN THE CLEANING AND PAINTING OF STEEL COMPONENTS REPAIR DETAIL ON SHEET 2.

(15.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE SOUTH ABUTMENT CAP REPAIRS AS IDENTIFIED ON SHEET 40 AND DETAILED IN THE STEEL SECTION LOSS REPAIR DETAILS BY PAD WELDING ON SHEET 37 AND BY REPLACING THE BOTTOM FLANGE IN-KIND.

(16.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL CRACK REPAIRS AS IDENTIFIED ON SHEETS 17 THRU 32 AND DETAILED IN THE STEEL CRACK REPAIR DETAILS ON SHEET 36.

(17.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE STEEL WELD REPAIRS AS IDENTIFIED ON SHEETS 17 THRU 32 AND DETAILED IN THE STEEL CRACKED OR BROKEN WELD REPAIR DETAILS ON SHEET 36.

(18.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE POST TENSIONING CABLE REPAIRS AS IDENTIFIED ON SHEET 19 BY CLEANING CORROSION PER THE CLEANING AND PAINTING OF STEEL COMPONENTS REPAIR DETAIL ON SHEET 2 AND THE APPLYING A PROTECTIVE EPOXY COATING TO THE STRAND.

(19.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE PIER STONE MASONRY REPAIRS AND MORTAR JOINT REPAIRS AS IDENTIFIED AND DETAILED ON SHEET 38.

(20.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PROVIDE A MAINTENANCE OF TRAFFIC PLAN, FOR APPROVAL BY THE ENGINEER, AND FULL IMPLEMENTATION FOR THE BRIDGE PEDESTRIAN TRAFFIC AS WELL AS THE PEDESTRIAN TRAFFIC IN COOLIGE PARK AND VEHICULAR TRAFFIC ON RIVER STREET UNDER THE BRIDGE AND SHALL BE IN ACCORDANCE WITH MAINTENANCE OF TRAFFIC NOTES ON SHEET 2. THIS IS TO INCLUDE ANY ADA COMPLIANT RAMPS, FENCING, BARRICADES, SIGNAGE, ETC. AS REQUIRED BY THE ENGINEER AND THE CITY.

(21.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO REPLACE THE ELECTRICAL JUNCTION BOX COVER AS IDENTIFIED AND DETAILED ON SHEET 28.

(22.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO INSTALL NEW SODDING IN COOLAGE PARK IN AREAS DISTURBED BY CONSTRUCTION OPERATIONS.

(23.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY, EXCLUDING THE FLOWABLE FILL, TO PERFORM THE FOUNDATION REPAIRS AS IDENTIFIED AND DETAILED ON SHEET 33. SHALL ALSO INCLUDE REMOVAL OF EXCAVATED MATERIAL FROM THE PROJECT SITE.

(24.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE PIER STONE MASONRY REPAIRS AND MORTAR JOINT REPAIRS AS IDENTIFIED AND DETAILED ON SHEET 38 OR PER MANUFACTURER'S RECOMMENDATIONS.

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

ESTIMATED QUANTITIES

NO.	REVISION	DATE	SIG.
1	REV. 612-06.01	5/16	ASD
	ADD. 612-06.02		

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER AGRICULTURE No. 115 STATE OF TENNESSEE 5/16/16

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 3
FILE NO.

23-MAY-2016 12:42
457000_Walnut Street Bridge\457001.17_Walnut Street Repair Plans 2016\DGN\Bridge\003_Estimated Quant..dgn

ESTIMATED QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY	AS-BUILT QUANTITY
(1)	204-06.01	FLOWABLE FILL (GENERAL)	C.Y.	12.5	
(2)	204-09.01	COFFERDAM (PIER NOS. 2 THRU 5)	LS	1	
(3)	209-99.91	EROSION CONTROL	LS	1	
(4)	601-10.10	TREATED TIMBER LAMINATED DECKING	MBFM	10.0	
(5)	601-10.11	TREATED TIMBER (SIDEWALK PLANKS AND CURBS)	MBFM	1.5	
(6)	601-10.12	TREATED TIMBER ABUTMENT REPAIRS	EACH	1	
(7)	601-11.01	BRIDGE DECK AND SIDEWALK POWER WASHING AND SEALING	LS	1	
(8)	602-10.02	PORTAL REPAIRS	LS	1	
(9)	602-10.12	BEARING DEVICE (REPAIR)	LS	1	
(10)	602-10.26	STRUCTURAL STEEL STRINGER REPAIRS	EACH	5	
(11)	602-10.51	STRUCTURAL STEEL REPAIR(PACK RUST REPAIR)	EACH	85	
(12)	602-10.52	STRUCTURAL STEEL REPAIR(STIFFENER REPAIR)	EACH	3	
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(16)	602-10.70	STRUCTURAL STEEL CRACK REPAIR	EACH	4	
(17)	602-10.71	STRUCTURAL STEEL WELD REPAIR	EACH	4	
(18)	603-02.20	POST-TENSIONING STRAND EPOXY COATING	LS	1	
(19)	612-06.01	REPOINTING OF STONE MASONRY JOINTS	L.F.	12000	
(20)	712-01.52	MAINTENANCE OF TRAFFIC	LS	1	
	717-01	MOBILIZATION	LS	1	
	722-01.01	FIELD OFFICE (TYPE 1)	LS	1	
(21)	735-20.05	MISC ELECTRICAL REPAIRS	LS	1	
	801-03	WATER (SEEDING & SODDING)	M.G.	35	
(22)	803-01	SODDING (NEW SOD)	SY	3470	
(23)	920-10.04	FOUNDATION REPAIRS	EACH	56	

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FOOTNOTES:

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(6.) INCLUDES ALL LABOR, MATERIALS AND INCIDENTALS NECESSARY TO PERFORM THE SIDEWALK STRINGER TIMBER BEARING REPAIR AT THE NORTH ABUTMENT AS IDENTIFIED AND DETAILED ON SHEET 39.

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CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

ESTIMATED QUANTITIES

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

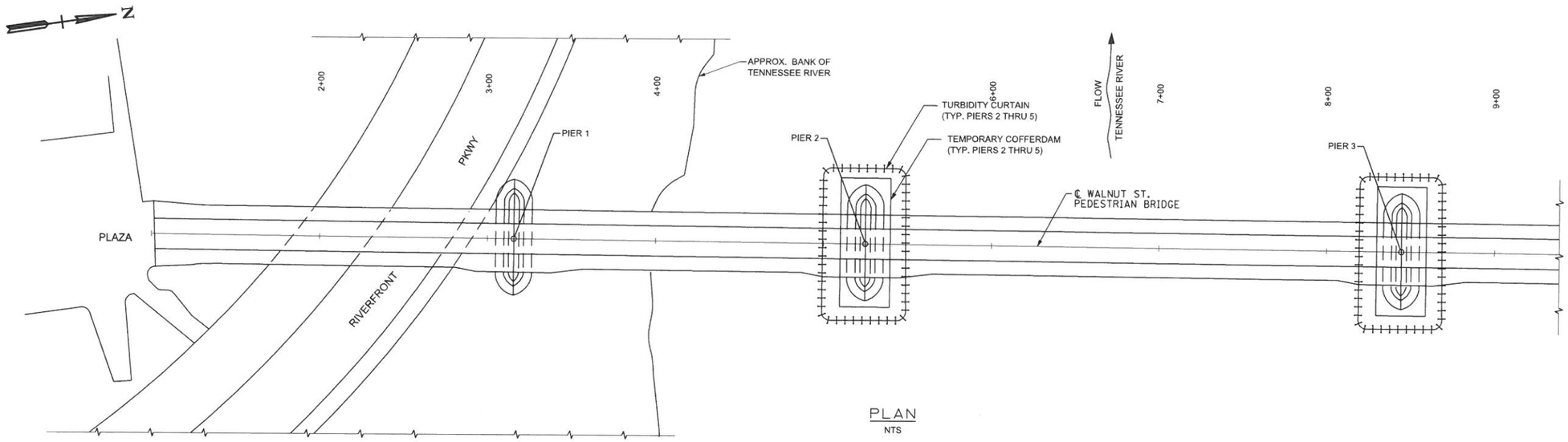
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110251 STATE OF TENNESSEE 4-29-16

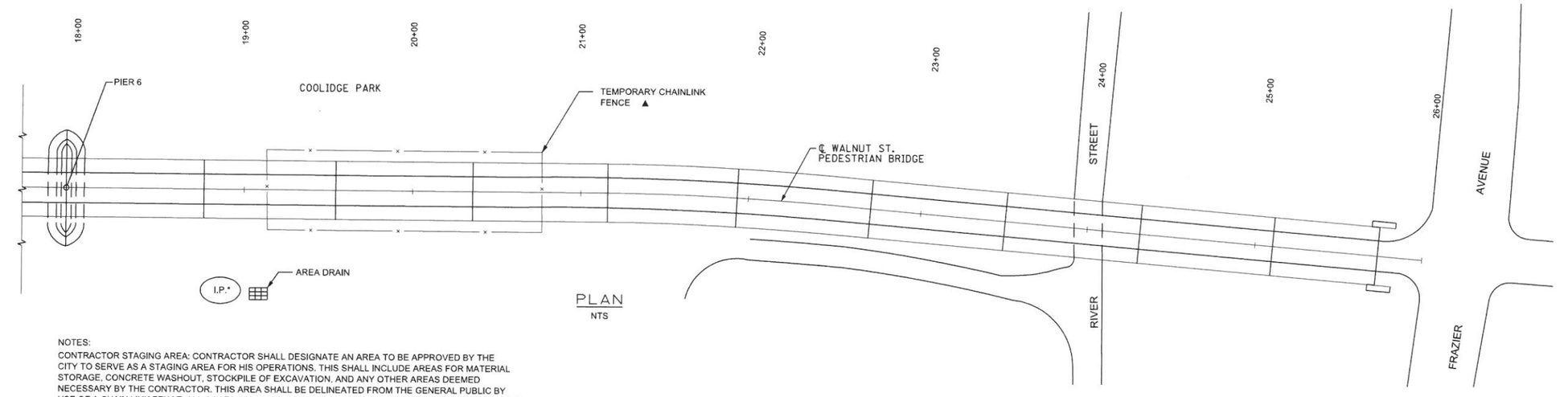
APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 3
FILE NO.

28-APR-2016 14:31
457000_Walnut Street Bridge\457001.17_Walnut Repair Plans 2016\DGN\Bridge\003_Estimated Quant..dgn



PLAN
NTS



PLAN
NTS

NOTES:

CONTRACTOR STAGING AREA: CONTRACTOR SHALL DESIGNATE AN AREA TO BE APPROVED BY THE CITY TO SERVE AS A STAGING AREA FOR HIS OPERATIONS. THIS SHALL INCLUDE AREAS FOR MATERIAL STORAGE, CONCRETE WASHOUT, STOCKPILE OF EXCAVATION, AND ANY OTHER AREAS DEEMED NECESSARY BY THE CONTRACTOR. THIS AREA SHALL BE DELINEATED FROM THE GENERAL PUBLIC BY USE OF A CHAIN LINK FENCE. ALL COSTS ASSOCIATED WITH SET UP AND MAINTAINANCE OF THE STAGING AREA SHALL BE INCLUDED IN THE COST OF ITEMS 209-99.91 AND 712-01.52 AS APPROPRIATE.

WASH DOWN OR WASTE DISCHARGE OF CONCRETE TRUCKS WILL NOT BE PERMITTED ON-SITE UNLESS PROPER SETTLEMENT AREAS HAVE BEEN PROVIDED IN ACCORDANCE WITH BOTH STATE AND FEDERAL REGULATIONS. CONTRACTORS WILL PROVIDE DESIGNATED TRUCK WASHOUT AREAS ON SITE. THESE AREAS MUST BE SELF CONTAINED AND NOT CONNECTED TO ANY STORMWATER OUTLET OF THE SITE. UPON COMPLETION OF CONSTRUCTION WASHOUT AREAS WILL BE PROPERLY STABILIZED.

▲ SEE MAINTENANCE OF TRAFFIC NOTES ON SHEET 2.

ALL SEDIMENT EXCAVATED FROM THE RIVER CHANNEL DURING CONSTRUCTION ACTIVITIES IS TO REMAIN BELOW EXISTING WATER LEVEL AT ALL TIMES. IN ADDITION, SEDIMENT IS TO REMAIN AS CLOSE TO THE BOTTOM OF THE CHANNEL BED AS POSSIBLE AND AS NEAR TO THE LOCATION OF THE EXCAVATION AS IS FEASIBLE. AT NO TIME SHALL THE CONTRACTOR BE ALLOWED TO BREACH THE WATER SURFACE WITH SEDIMENT AND DEPOSIT THE SEDIMENT ON THE SHORELINE OR IN A MORE SHALLOW AREA OF THE RIVER.

AN APPROPORIATE METHOD SHALL BE IDENTIFIED BY THE CONTRACTOR TO SACK OR LIFT FINE MATERIALS OR DEBRIS FROM INSIDE THE COFFERDAM AND TO REDEPOSIT THIS MATERIAL BACK DIRECTLY ONTO THE FLOOR OF THE RESERVOIR. THIS METHOD SHALL REQUIRE APPROVAL BY THE ENGINEER. A TURBIDITY CURTAIN SHALL BE PLACED ON THE WATER SURFACE DOWNSTREAM OF THE EXCAVATION AREA A SUFFICIENT DISTANCE TO CONTAIN MATERIALS PROPELLED TO THE WATER SURFACE BY EXCAVATION.

TO KEEP DISTURBANCE OF SEDIMENTS TO A MINIMUM, THE RATE OF EXCAVATION WITHIN TENNESSEE RIVER SHALL NOT EXCEED 1,080 CUBIC FEET PER MINUTE (40 CUBIC YARDS PER MINUTE).

EROSION PREVENTION AND SEDIMENT CONTROL LEGEND TDOT STANDARDS

SYMBOL	ITEM	STD. DWG.
++++	FLOATING TURBIDITY CURTAIN	EC-STR-38

I.P.* * INLET PROTECTION SHALL BE SILT -SAVERS, SILTSACK, GUTTERBUDDY, AS DIRECTED BY THE CITY OF CHATTANOOGA STORM WATER DEPT.

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I

JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

EROSION AND SEDIMENT CONTROL PLAN

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

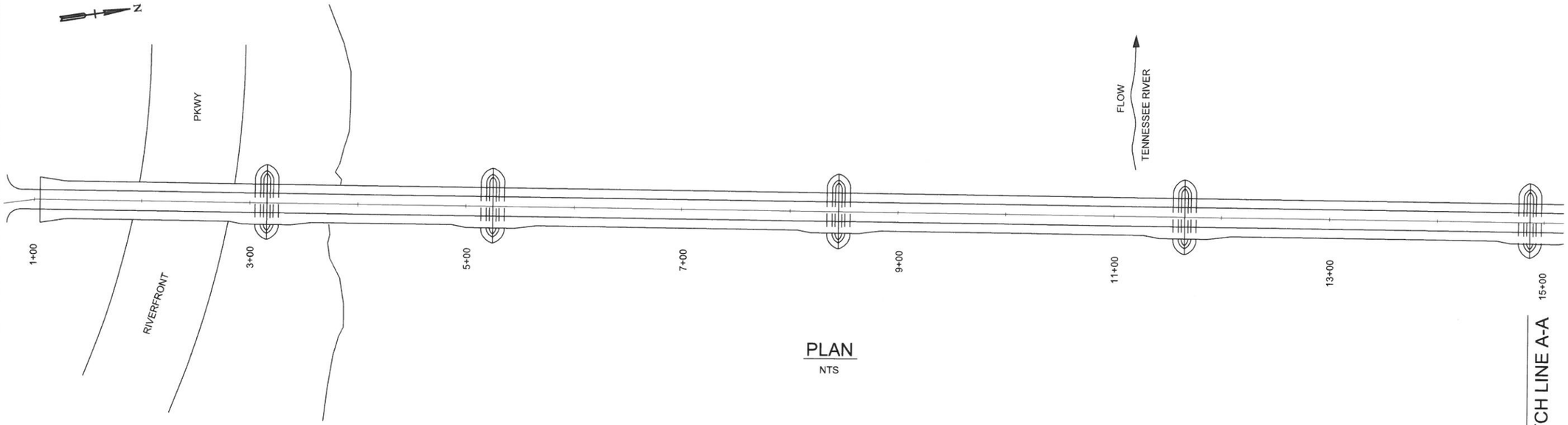
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110438 STATE OF TENNESSEE

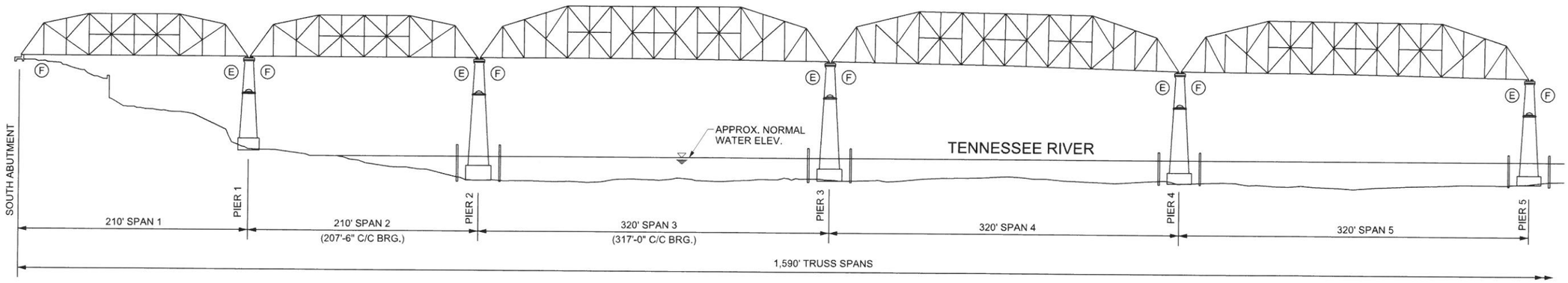
APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 4
FILE NO.

28-APR-2016 12:29
457000_Walnut Street Bridge\457001.17_Walnut Repair Plans 2016\DGN\Bridge\004_EPSC.dgn



PLAN
NTS



ELEVATION
NTS

SCOPE OF WORK

1. MISCELLANEOUS DECK SURFACE REPAIRS.
2. MISCELLANEOUS BELOW DECK TRUSS REPAIR.
3. MISCELLANEOUS ABOVE DECK TRUSS REPAIR.
4. MISCELLANEOUS NORTH VIADUCT BELOW DECK REPAIRS.
5. MISCELLANEOUS PIER REPAIRS.
6. MISCELLANEOUS ABUTMENT REPAIRS.
7. APPLY WEATHER SEALANT TO ALL DECK AND SIDEWALKS.

(E) DENOTES EXPANSION JOINT
(F) DENOTES FIXED JOINT

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER JUSTIN C. HOLLAND, ADMINISTRATOR

PLAN & ELEVATION (1)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

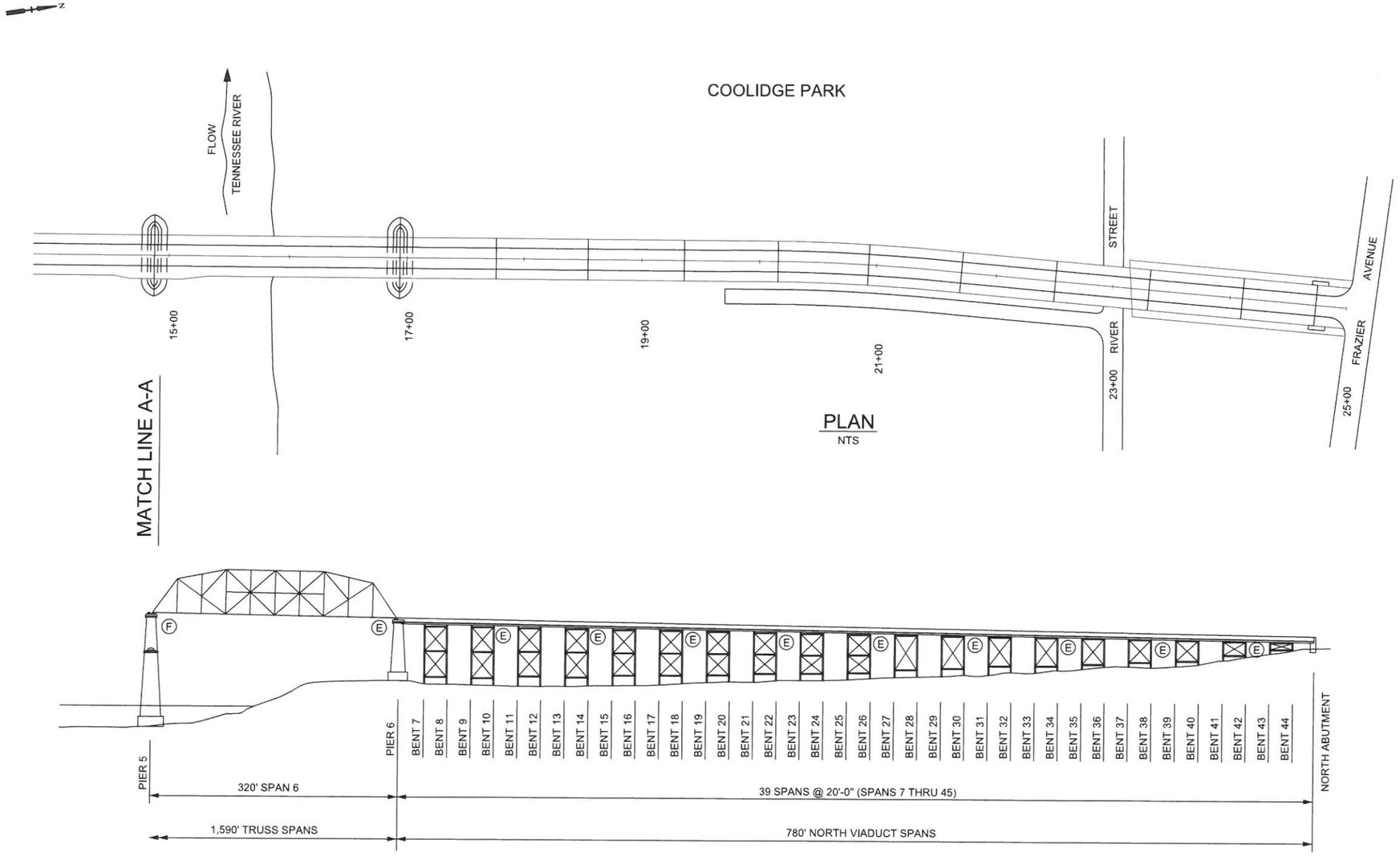
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110438 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 5
FILE NO.

28-APR-2016 12:29
457000_Walnut Street Bridge\457001_Walnut Repair Plans 2016\DGN\Bridge\005_GP&E (1).dgn



SCOPE OF WORK

1. MISCELLANEOUS DECK SURFACE REPAIRS.
2. MISCELLANEOUS BELOW DECK TRUSS REPAIR.
3. MISCELLANEOUS ABOVE DECK TRUSS REPAIR.
4. MISCELLANEOUS NORTH VIADUCT BELOW DECK REPAIRS.
5. MISCELLANEOUS PIER REPAIRS.
6. MISCELLANEOUS ABUTMENT REPAIRS.
7. APPLY WEATHER SEALANT TO ALL DECK AND SIDEWALKS.

ELEVATION
NTS

(E) DENOTES EXPANSION JOINT
(F) DENOTES FIXED JOINT

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

PLAN & ELEVATION (2)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

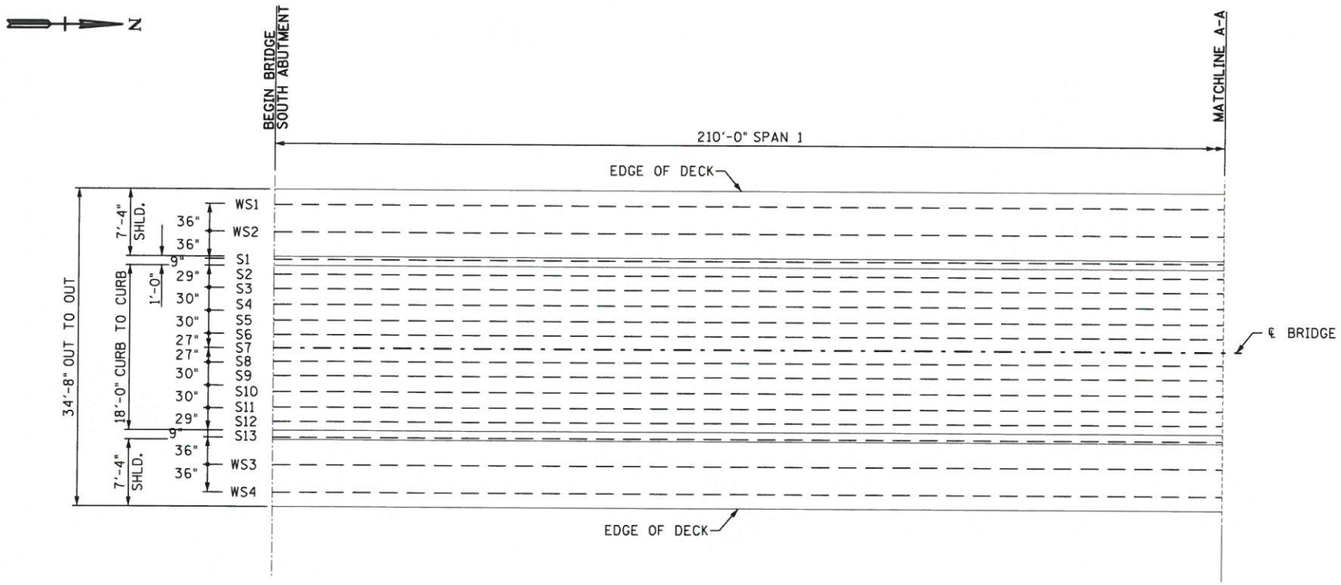
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 119430 STATE OF TENNESSEE

APPROVED

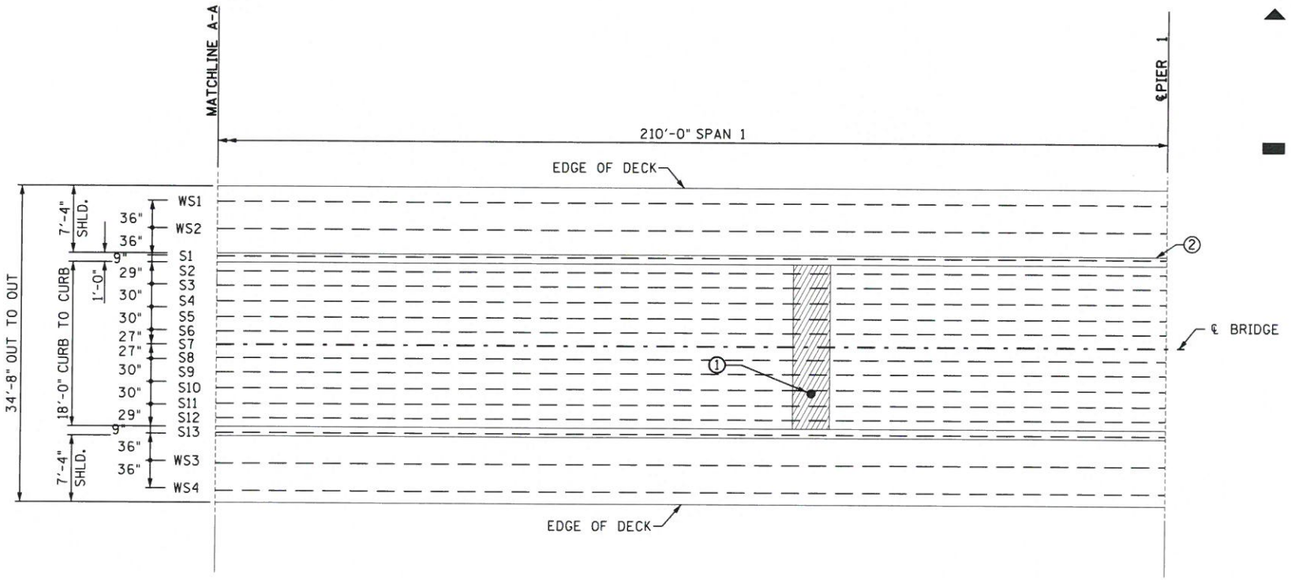
JOB NO. 457001.17
DATE 2/29/16
SHEET 6
FILE NO.

28-APR-2016 12:28
457000_Walnut Street Bridge\457001_Walnut Repair Plans 2016\DGN\Bridge\006_GP&E (2).dgn



PLAN VIEW DECK - SPAN 1

NTS



PLAN VIEW DECK - SPAN 1

NTS

DEFICIENCIES

DEF. NO.	LOCATION/ COMPONENT•	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
① ▲	SPAN 1 @ 160' GLUE LAMINATED TIMBER DECK PANELS	SECTION LOSS		REPLACE DECK PANELS PER TYPICAL GLUE LAMINATED DECK PANELS DETAILS ON BRIDGE SHEET NO. 16
② ▬	SPAN 1 @ PIER 1 LEFT TRUSS BEARING TIMBER DECK PANELS	BEARING PLATE SECTION LOSS		REPAIR SECTION LOSS BY TRUSS BEARING REPAIR DETAILS ON SHEET NO. 37

• LOCATION DESIGNATION FROM BEGINNING OF SPAN

▲ TO BE PAID UNDER ITEM NO. 601-10.10

▬ TO BE PAID UNDER ITEM NO. 602-10.12

INDICATES 4'-0" PANEL TO BE REMOVED

— — INDICATES CENTERLINE OF GIRDER. SEE BRIDGE SHT. 16.

CITY OF CHATTANOOGA SEAL TENNESSEE

CITY OF CHATTANOOGA

DEPARTMENT OF TRANSPORTATION

CONTRACT #E-13-002-201

WALNUT STREET PEDESTRIAN BRIDGE

BRIDGE REPAIRS - PHASE I

JUSTIN C. HOLLAND, ADMINISTRATOR

WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS SPAN 1

NO.	REVISION	DATE	SIG.

SCALE	NO SCALE
DRAWN	C. DIXON
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110451 STATE OF TENNESSEE

APPROVED

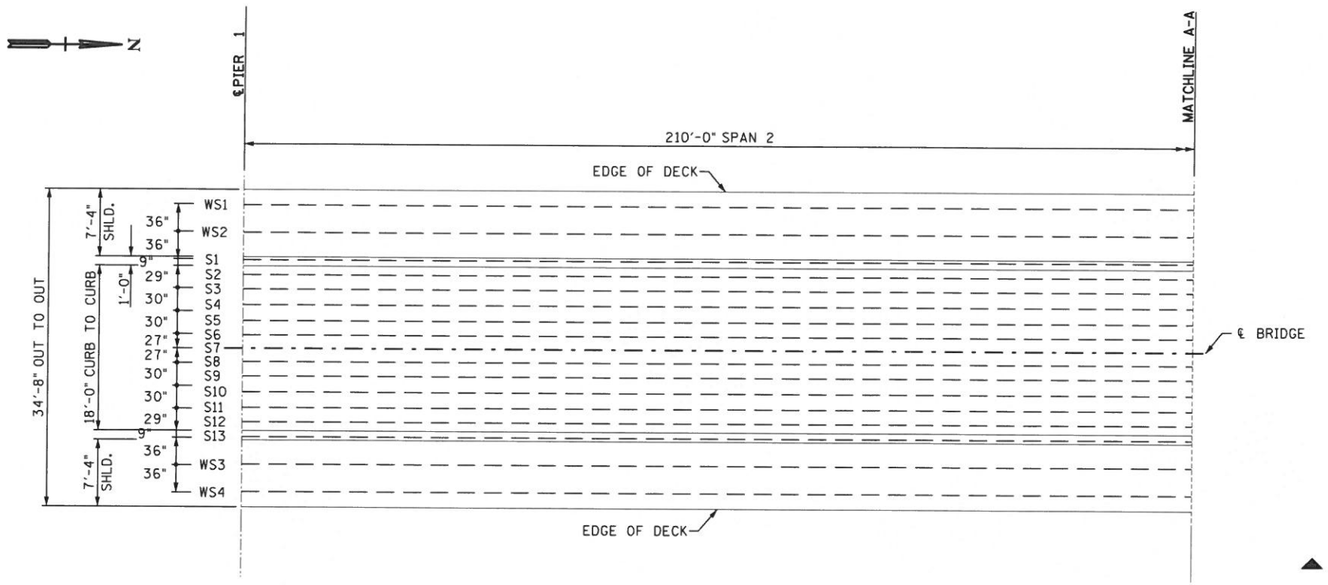
JOB NO. 457001.17

DATE 2/29/16

SHEET 7

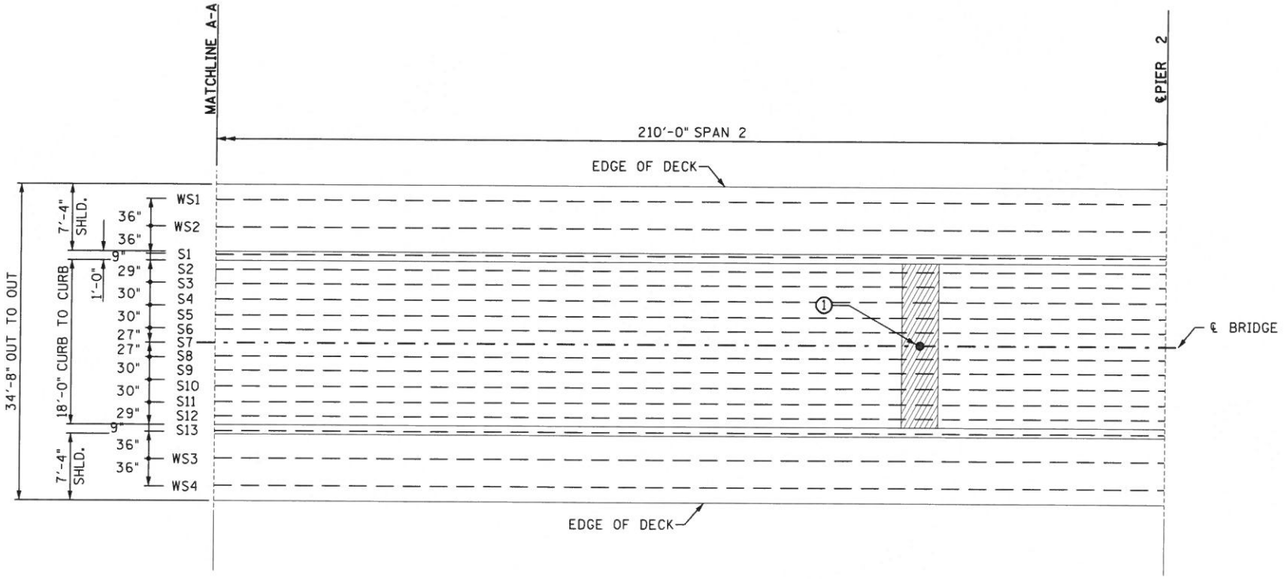
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28-APR-2016 12:27
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PLAN VIEW DECK - SPAN 2

NTS



PLAN VIEW DECK - SPAN 2

NTS

DEFICIENCIES

DEF. NO.	LOCATION/ COMPONENT•	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	SPAN 2 ℄ 175' GLUE LAMINATED TIMBER DECK PANELS	SECTION LOSS		REPLACE DECK PANELS PER TYPICAL GLUE LAMINATED DECK PANELS DETAILS ON BRIDGE SHEET NO. 16

• LOCATION DESIGNATION FROM BEGINNING OF SPAN

▲ TO BE PAID UNDER ITEM NO. 601-10.10

INDICATES 4'-0" PANEL TO BE REMOVED

— — INDICATES CENTERLINE OF GIRDER. SEE BRIDGE SHT. 16.

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS SPAN 2

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

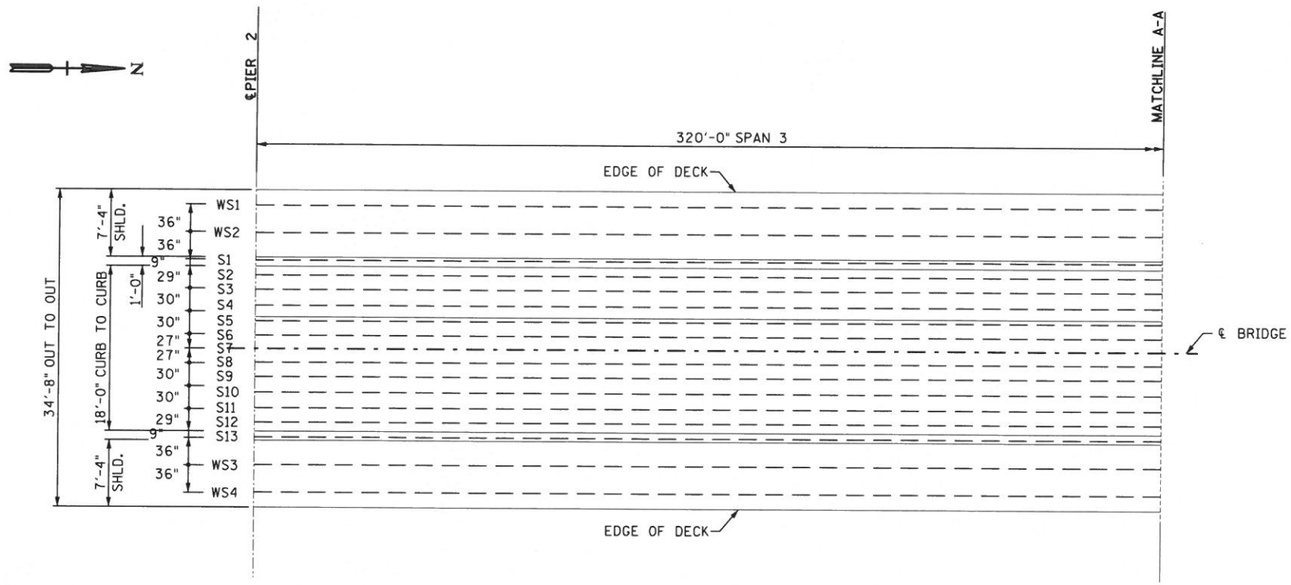
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 119478 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 8
FILE NO.

28-APR-2016 12:28
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PLAN VIEW DECK - SPAN 3

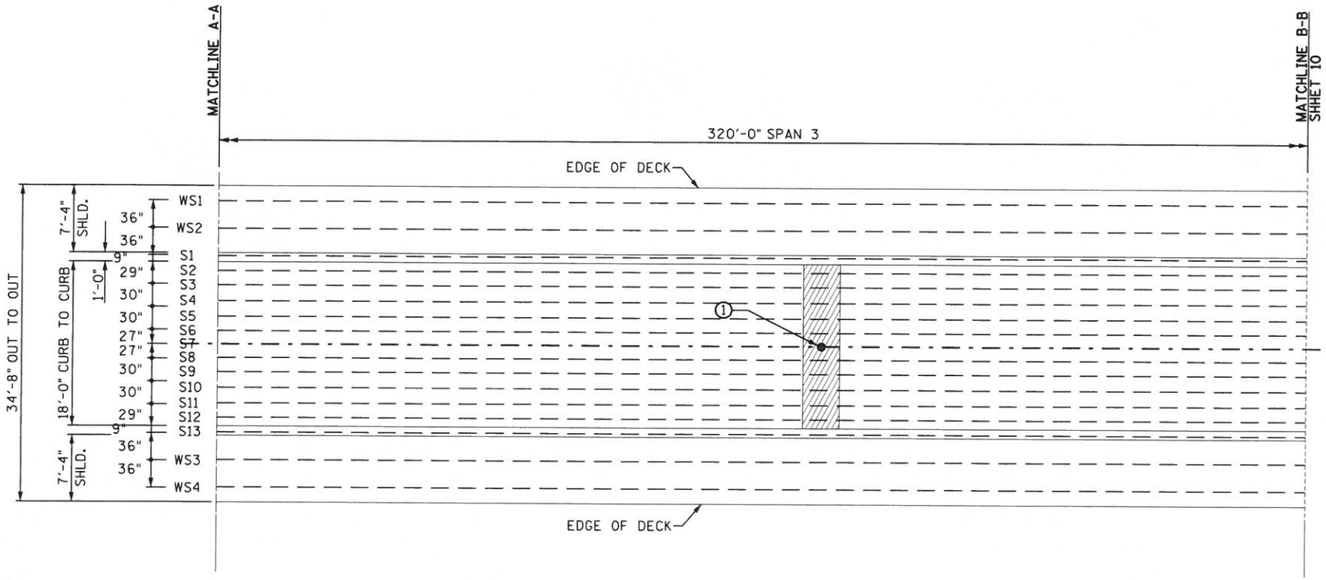
NTS

DEFICIENCIES

DEF. NO.	LOCATION/ COMPONENT•	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
①	SPAN 3 @ 165' GLUE LAMINATED TIMBER DECK PANELS	SECTION LOSS		REPLACE DECK PANELS PER TYPICAL GLUE LAMINATED DECK PANELS DETAILS ON BRIDGE SHEET NO. 16

• LOCATION DESIGNATION FROM BEGINNING OF SPAN

▲ TO BE PAID UNDER ITEM NO. 601-10.10



PLAN VIEW DECK - SPAN 3

NTS

▨ INDICATES 4'-0" PANEL TO BE REMOVED

— — INDICATES CENTERLINE OF GIRDER. SEE BRIDGE SHT. 16.

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS SPAN 3 (1)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

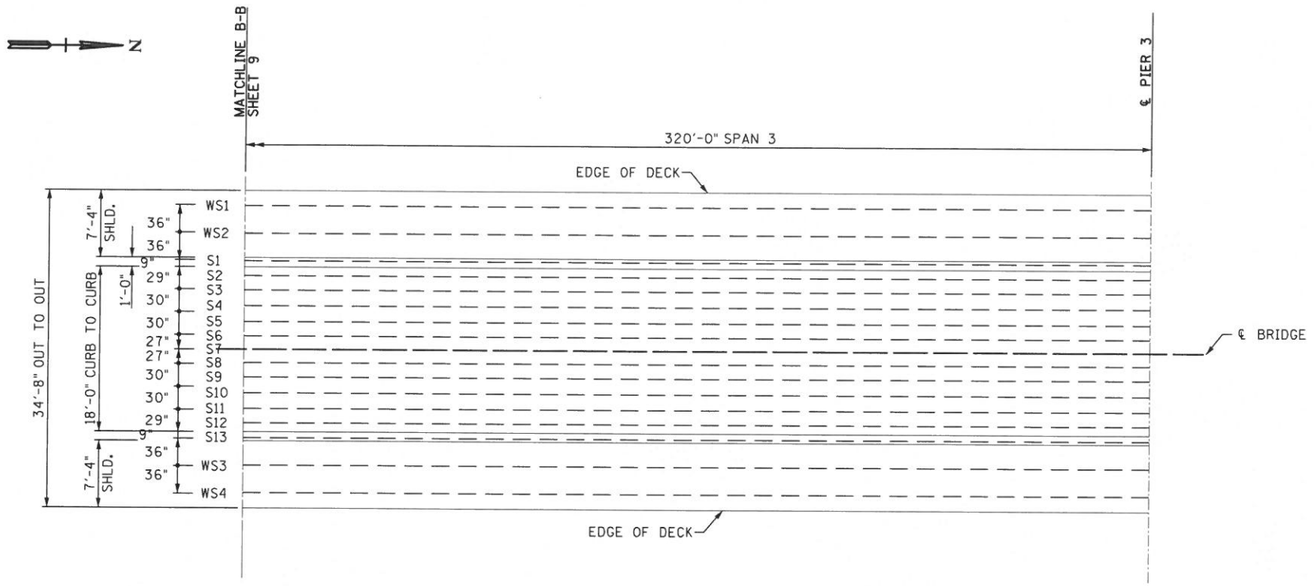
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110471 STATE OF TENNESSEE 4-28-16

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 9
FILE NO.

28-APR-2016 12:27
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PLAN VIEW DECK - SPAN 3

NTS

— — INDICATES CENTERLINE OF GIRDER.
SEE BRIDGE SHT. 16.

CITY OF CHATTANOOGA SEAL TENNESSEE

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE 1
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS
SPAN 3 (2)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

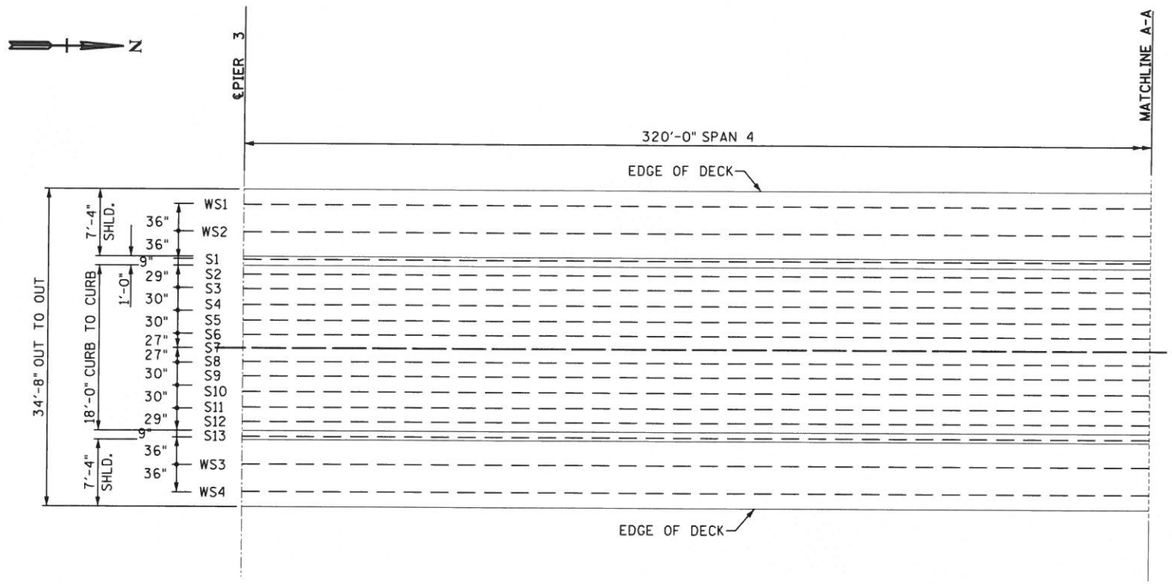
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 119481 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 10
FILE NO.

28-APR-2016 12:28
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PLAN VIEW DECK - SPAN 4

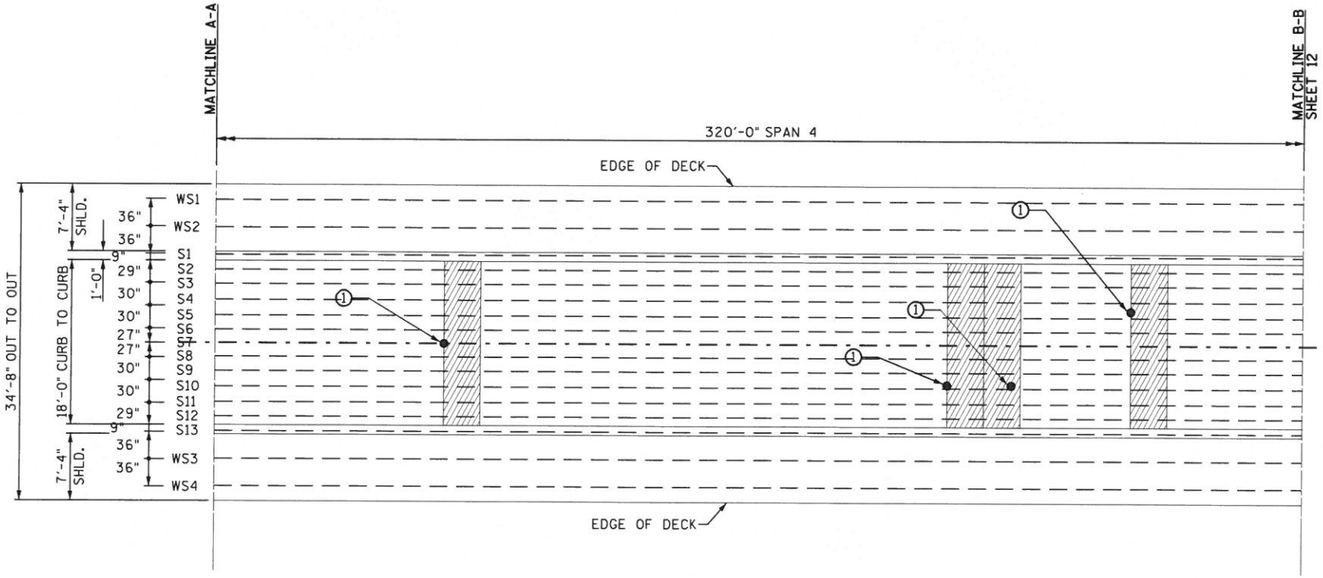
NTS

DEFICIENCIES

DEF. NO.	LOCATION/ COMPONENT•	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
①	SPAN 4 @ 125', 180', 190', & 200' GLUE LAMINATED TIMBER DECK PANELS	SECTION LOSS		REPLACE DECK PANELS PER TYPICAL GLUE LAMINATED DECK PANELS DETAILS ON BRIDGE SHEET NO. 16

• LOCATION DESIGNATION FROM BEGINNING OF SPAN

▲ TO BE PAID UNDER ITEM NO. 601-10.10



PLAN VIEW DECK - SPAN 4

NTS

INDICATES 4'-0" PANEL TO BE REMOVED

INDICATES CENTERLINE OF GIRDER. SEE BRIDGE SHT. 16.

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS SPAN 4 (1)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

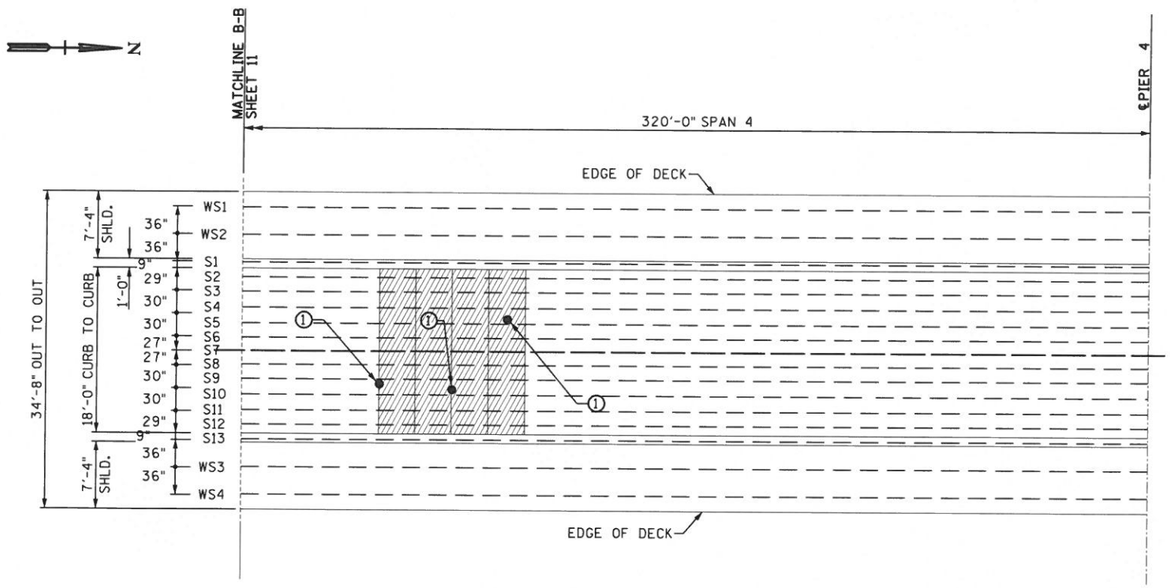
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110439 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 11
FILE NO.

28-APR-2016 12:27
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PLAN VIEW DECK - SPAN 4

NTS

DEFICIENCIES				
DEF. NO.	LOCATION/ COMPONENT•	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
①	SPAN 4 @ 235', 240', 250' GLUE LAMINATED TIMBER DECK PANELS	SECTION LOSS		REPLACE DECK PANELS PER TYPICAL GLUE LAMINATED DECK PANELS DETAILS ON BRIDGE SHEET NO. 16

• LOCATION DESIGNATION FROM BEGINNING OF SPAN

▲ TO BE PAID UNDER ITEM NO. 601-10.10

INDICATES 4'-0" PANEL TO BE REMOVED

— — INDICATES CENTERLINE OF GIRDER. SEE BRIDGE SHT. 16.

CITY OF CHATTANOOGA, TENNESSEE SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I

JUSTIN C. HOLLAND, ADMINISTRATOR

WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS
SPAN 4 (2)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

VOLKERT

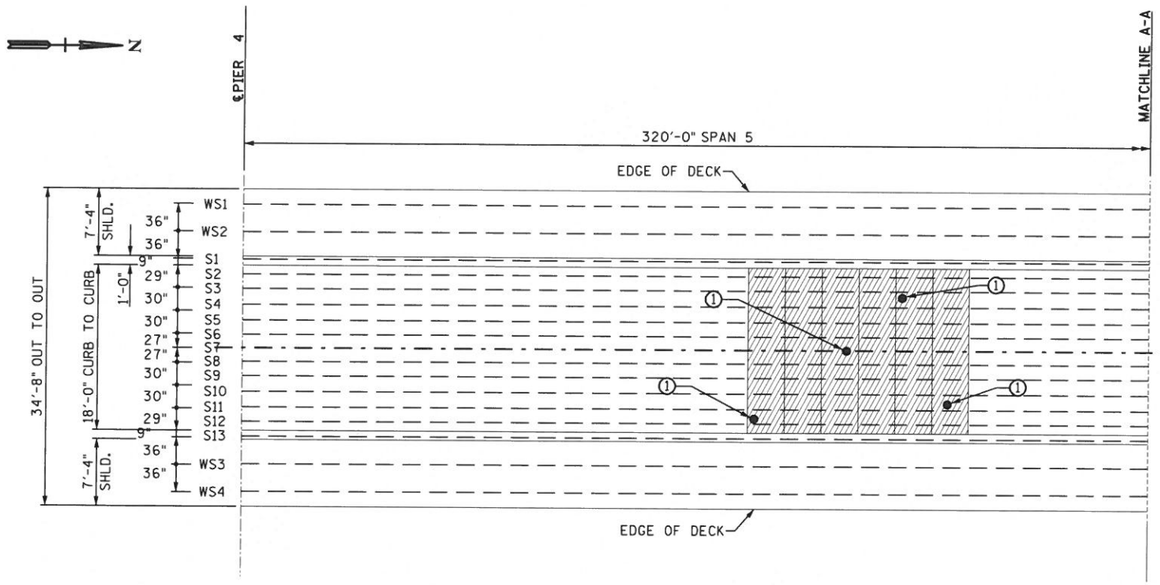
ADAM S. DAVIDSON, REGISTERED ENGINEER, AGRICULTURE, No. 115001, STATE OF TENNESSEE

4-25-16

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 12
FILE NO.

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PLAN VIEW DECK - SPAN 5

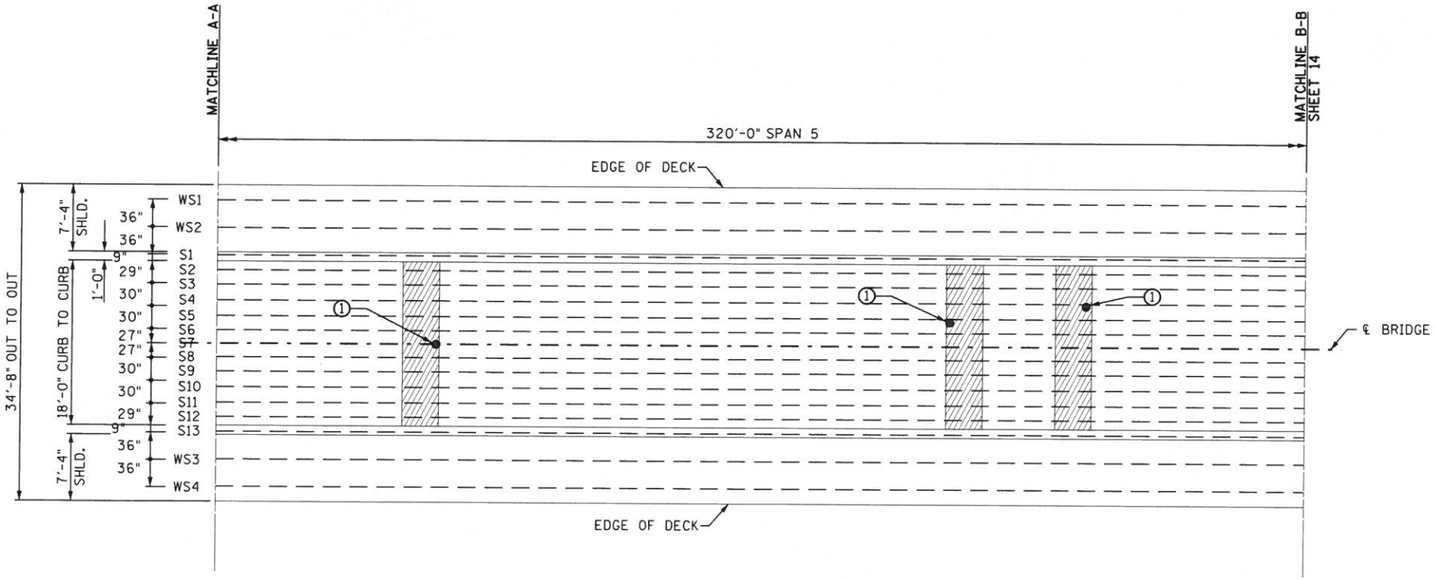
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DEFICIENCIES

DEF. NO.	LOCATION/ COMPONENT•	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
①	SPAN 5 @ 55', 65' 70', 75', 125', 180', & 195' GLUE LAMINATED TIMBER DECK PANELS	SECTION LOSS		REPLACE DECK PANELS PER TYPICAL GLUE LAMINATED DECK PANELS DETAILS ON BRIDGE SHEET NO. 16

• LOCATION DESIGNATION FROM BEGINNING OF SPAN

▲ TO BE PAID UNDER ITEM NO. 601-10.10



PLAN VIEW DECK - SPAN 5

NTS

▨ INDICATES 4'-0" PANEL TO BE REMOVED

— — INDICATES CENTERLINE OF GIRDER. SEE BRIDGE SHT. 16.

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS SPAN 5 (1)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTJEL

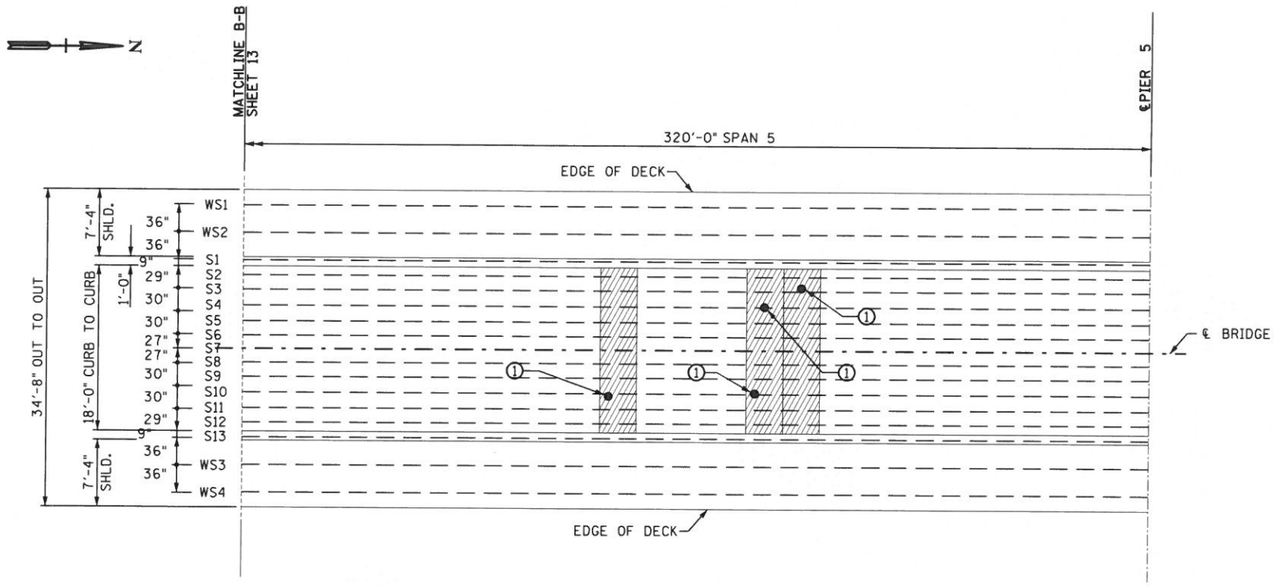
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER 110439 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 13
FILE NO.

28-APR-2016 12:27
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PLAN VIEW DECK - SPAN 5

NTS

INDICATES 4'-0" PANEL TO BE REMOVED

— — INDICATES CENTERLINE OF GIRDER. SEE BRIDGE SHT. 16.

DEFICIENCIES

DEF. NO.	LOCATION/ COMPONENT•	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	SPAN 5 @ 260', 275', 275' ℄ 280' GLUE LAMINATED TIMBER DECK PANELS	SECTION LOSS		REPLACE DECK PANELS PER TYPICAL GLUE LAMINATED DECK PANELS DETAILS ON BRIDGE SHEET NO. 16

• LOCATION DESIGNATION FROM BEGINNING OF SPAN

▲ TO BE PAID UNDER ITEM NO. 601-10.10

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS SPAN 5 (2)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

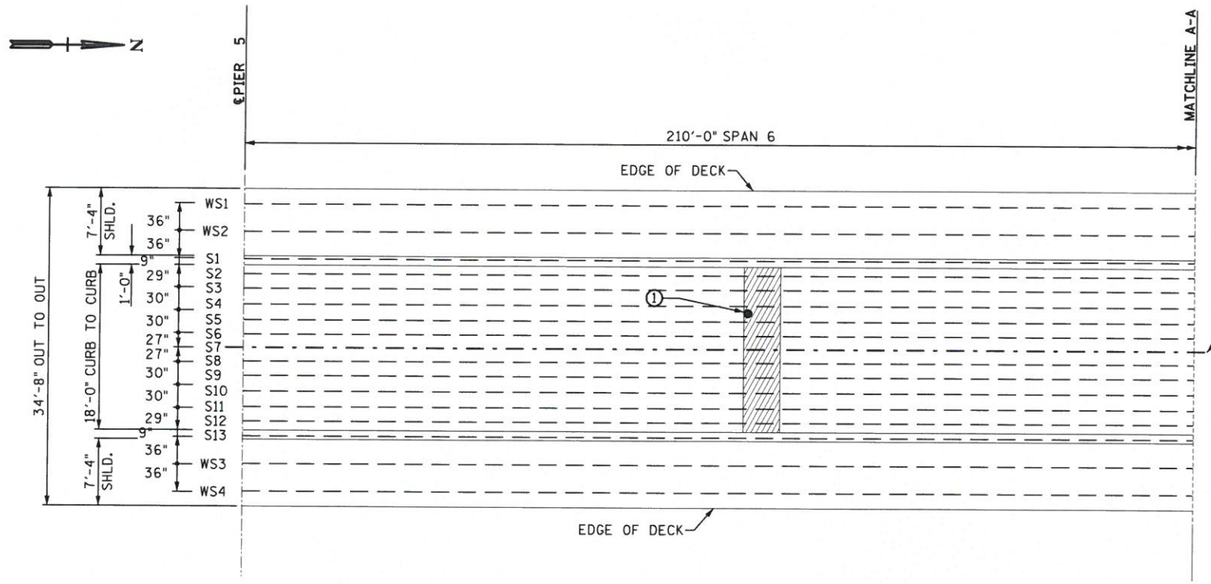
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER STRUCTURES No. 110430 STATE OF TENNESSEE

APPROVED

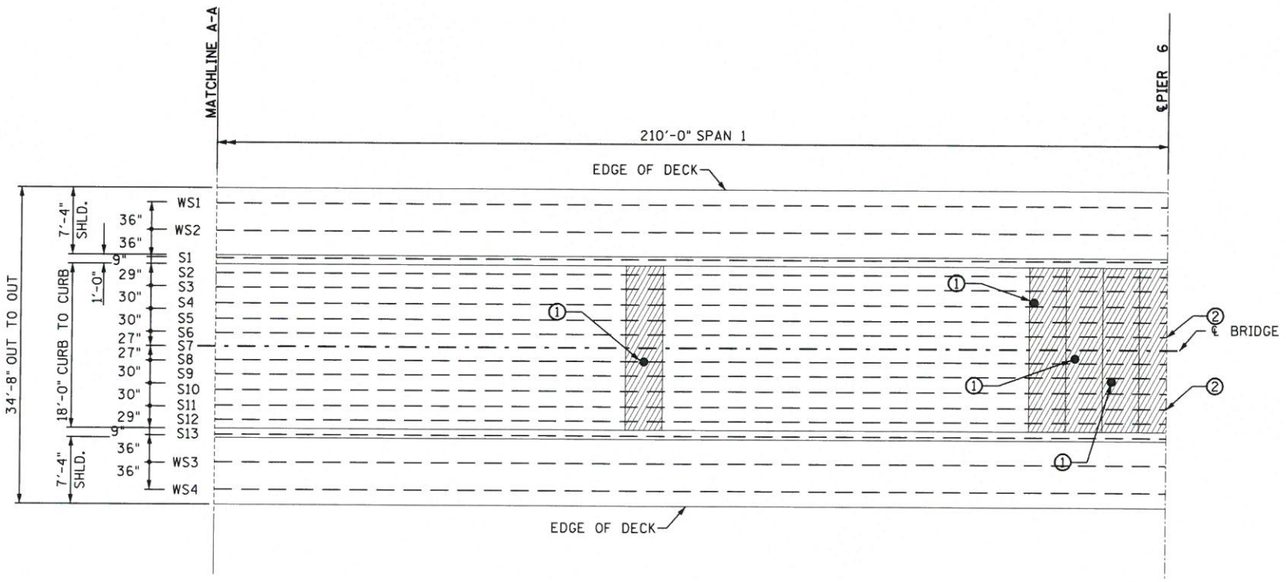
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DATE 2/29/16
SHEET 14
FILE NO.

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PLAN VIEW DECK - SPAN 6

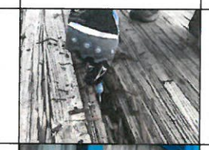
NTS



PLAN VIEW DECK - SPAN 6

NTS

DEFICIENCIES

DEF. NO.	LOCATION/ COMPONENT•	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
①	SPAN 6 @ 55', 155', 195', 200' & 205' GLUE LAMINATED TIMBER DECK PANELS	SECTION LOSS		REPLACE DECK PANELS PER TYPICAL GLUE LAMINATED DECK PANELS DETAILS ON SHEET NO. 16
②	SPAN 6 @ PIER 6/ STRINGER S6 & S12	CRACKED FLANGE		REPAIR STRINGER END USING STRINGER END REPAIR DETAIL ON BRIDGE SHEET NO. 34

• LOCATION DESIGNATION FROM BEGINNING OF SPAN

▲ TO BE PAID UNDER ITEM NO. 601-10.10

▬ TO BE PAID UNDER ITEM NO. 602-10.26

INDICATES 4'-0" PANEL TO BE REMOVED

— — INDICATES CENTERLINE OF GIRDER. SEE BRIDGE SHT. 16.

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA

DEPARTMENT OF TRANSPORTATION

CONTRACT #E-13-002-201

WALNUT STREET PEDESTRIAN BRIDGE

BRIDGE REPAIRS - PHASE I

JUSTIN C. HOLLAND, ADMINISTRATOR

WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS SPAN 6

NO.	REVISION	DATE	SIG.

SCALE NO SCALE

DRAWN C. DIXON

DESIGN A. DAVIDSON

CHECKED T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER ARCHITECTURE & ENGINEERING No. 110436 STATE OF TENNESSEE

APPROVED

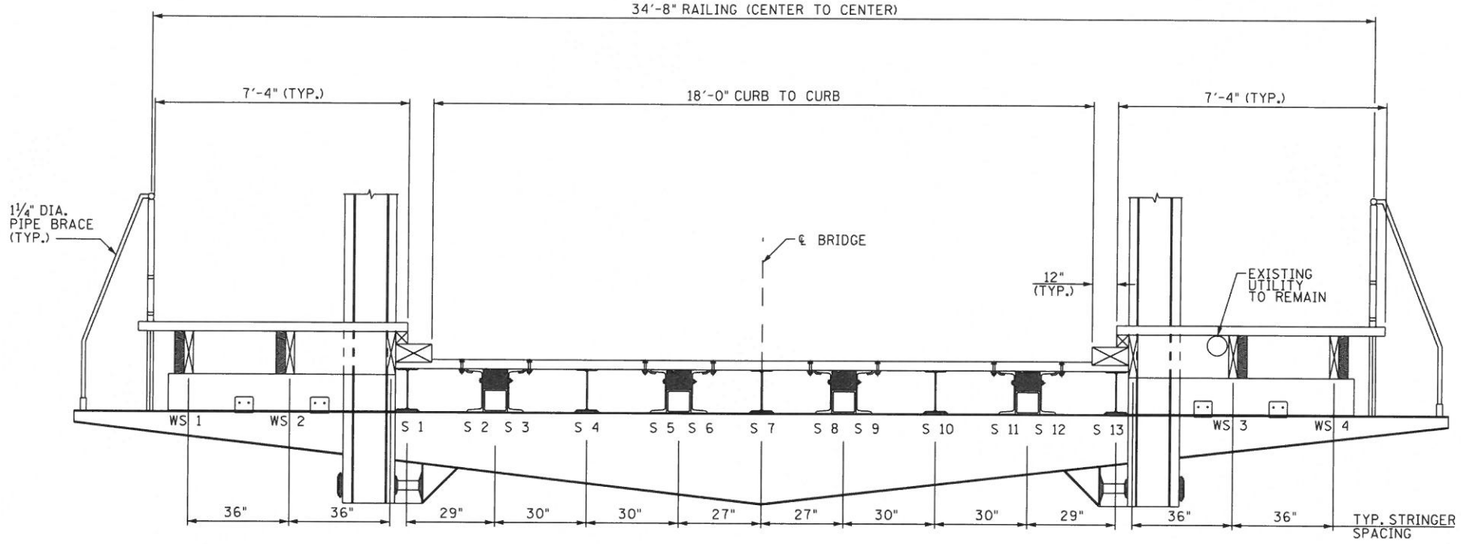
JOB NO. 457001.17

DATE 2/29/16

SHEET 15

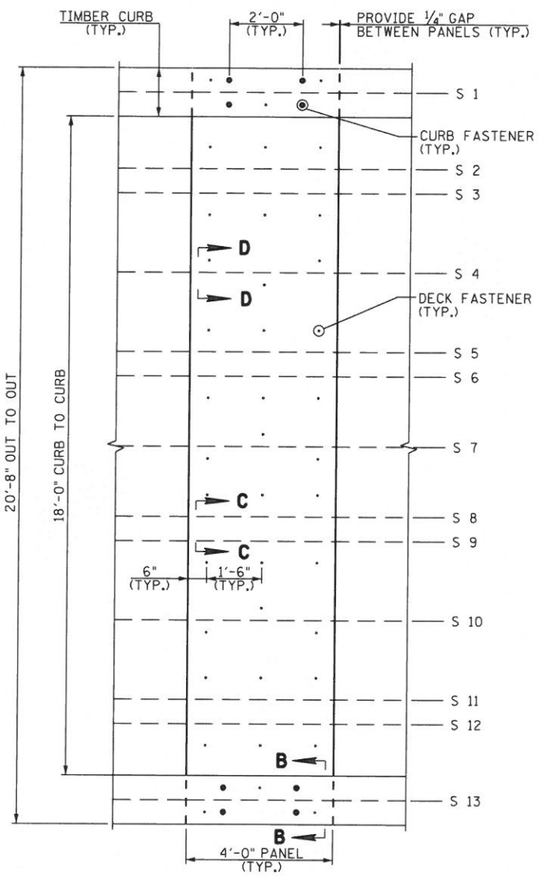
FILE NO.

28-APR-2016 12:28
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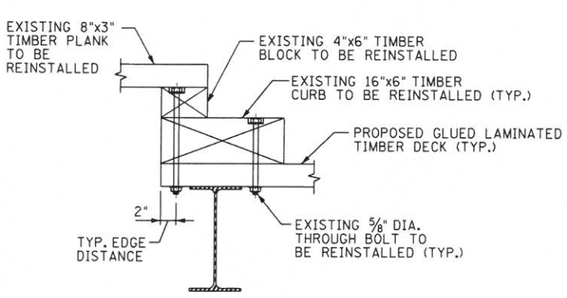
EXISTING TYPICAL CROSS SECTION

NTS

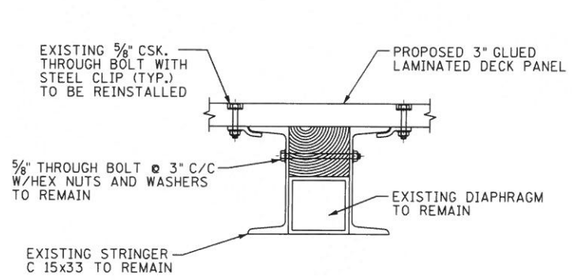


TYPICAL GLUED LAMINATED DECK PANEL

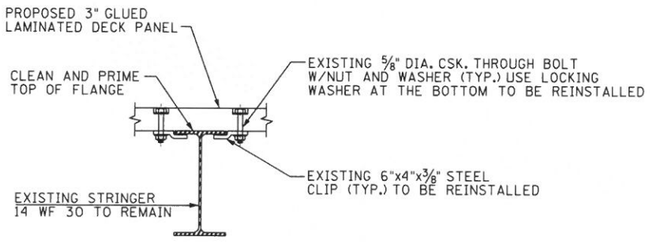
NOTE:
CONTRACTOR TO PROVIDE CONSTRUCTION PLAN FOR REPLACEMENT OF PANELS FOR APPROVAL PRIOR TO CONSTRUCTION. A PHASED CONSTRUCTION APPROACH WILL BE REQUIRED AS A COMPLETE BRIDGE CLOSURE IS NOT PERMITTED. THIS REPAIR IS TO BE COORDINATED AROUND THE DATES SPECIFIED IN THE MAINTENANCE OF TRAFFIC NOTES ON SHEET 2 AND THE CONSTRUCTION SPECIFICATIONS IN WHICH THE BRIDGE DECK MUST BE FULLY OPEN AND ACCESSABLE.



SECTION B-B



SECTION C-C



SECTION D-D

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I

JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TYPICAL CROSS SECTION AND DECK REPAIR DETAILS

NO.	REVISION	DATE	SIG.

SCALE	NO SCALE
DRAWN	C. DIXON
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

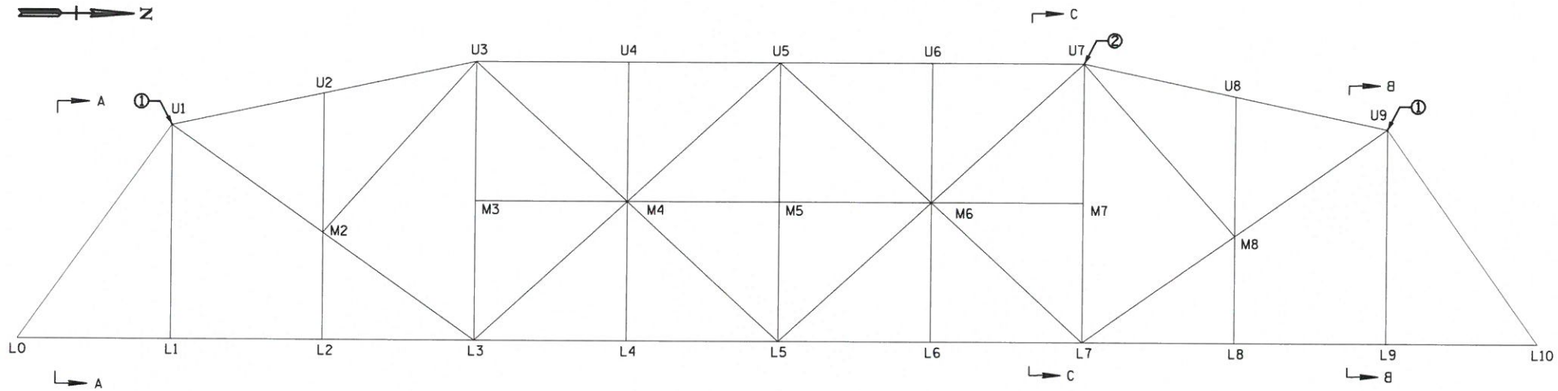
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110481 STATE OF TENNESSEE 4-29-16

APPROVED

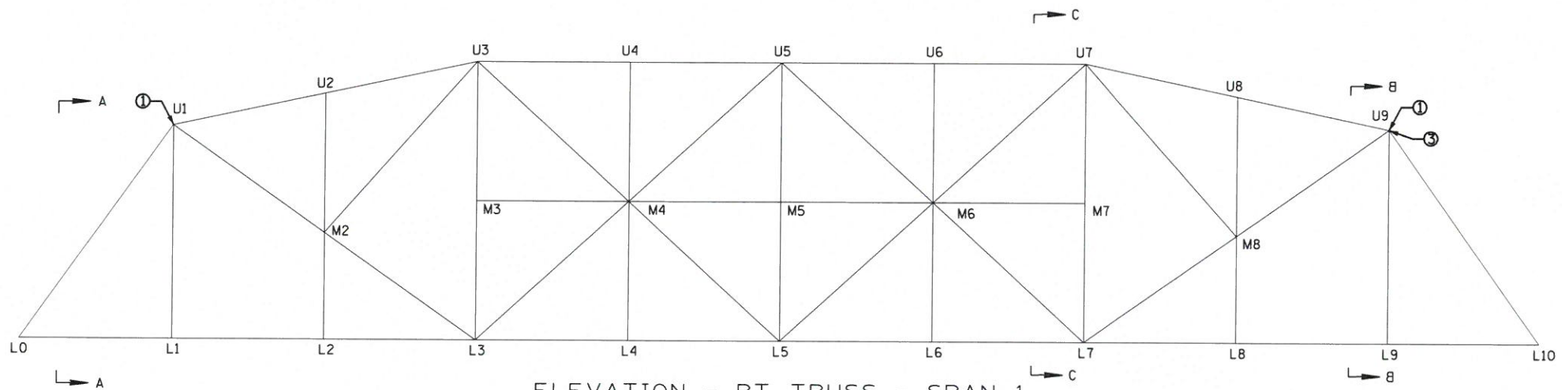
JOB NO. 457001.17
DATE 2/29/16
SHEET 16
FILE NO.

28-APR-2016 12:28
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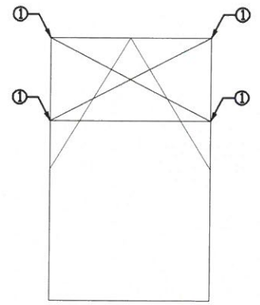
ELEVATION - LT. TRUSS - SPAN 1

NTS



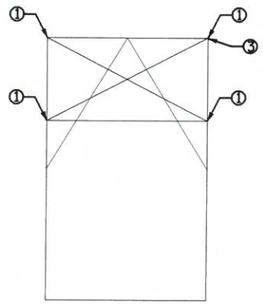
ELEVATION - RT. TRUSS - SPAN 1

NTS



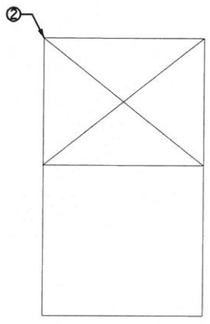
SECTION A-A

NTS



SECTION B-B

NTS



SECTION C-C

NTS

DEFICIENCIES

	DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲	①	ALL ENDS OF UPPER AND LOWER STRUTS ON PORTALS TOP CHORD CONNECTION IN PORTALS, MULTIPLE LOCATIONS	ACCUMULATED PIGEON DROPPINGS AND NEST CAUSING ACTIVE CORROSION WITH UP TO 3/16" OF SECTION LOSS		REPAIR PER TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON SHEET NO. 35
● ▬	②	TOP WEST PLATE OF U7	2 CRACKS UP TO 6" LONG CAUSED BY PACK CORROSION		REPAIR PER PACK RUST REPAIR DETAIL ON SHEET NO. 37 AND CRACK REPAIR DETAIL ON SHEET 36
▲	③	DECORATIVE PIN WASHER U9, NORTH PORTAL	PACK CORROSION BETWEEN DECORATIVE PIN WASHER AND DIAGONAL TENSIONING BAR HAS CAUSED SEVERAL CRACKS IN THE WASHER		REPAIR PER TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON SHEET NO. 35

▲ TO BE PAID UNDER ITEM NO. 602-10.02

▬ TO BE PAID UNDER ITEM NO. 602-10.51

● TO BE PAID UNDER ITEM NO. 602-10.70

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

TRUSS REPAIR SCHEMATIC (SPAN 1)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

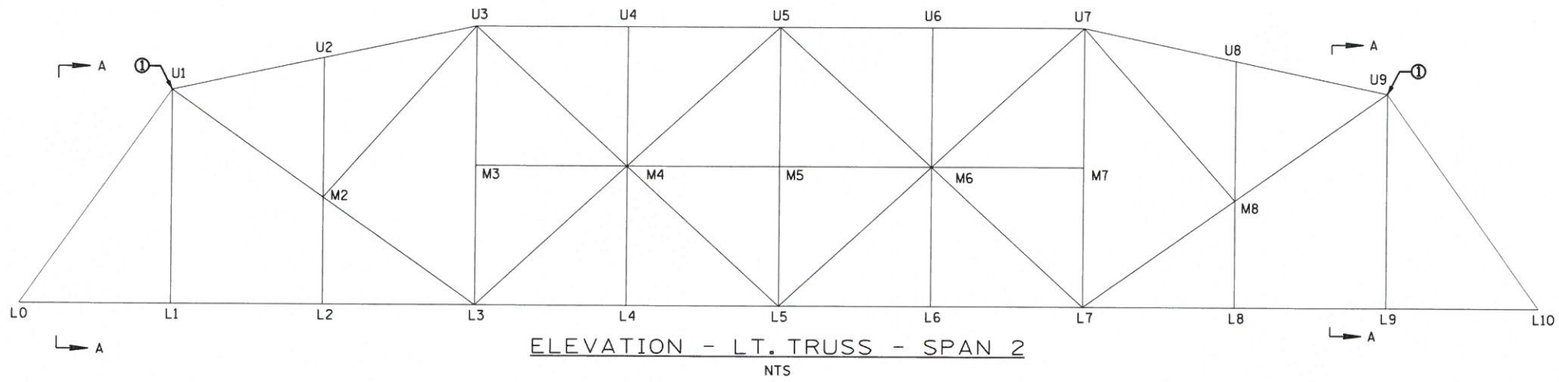
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 119436 STATE OF TENNESSEE

APPROVED

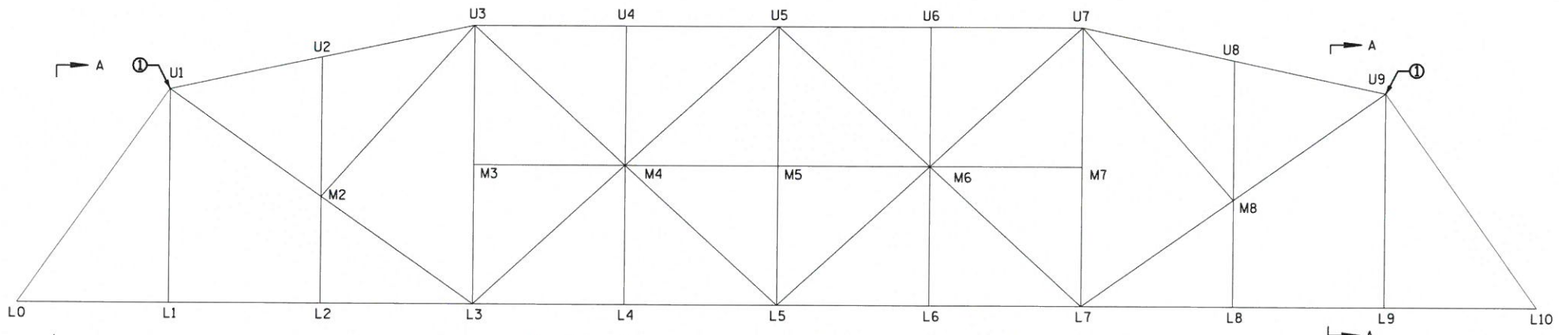
JOB NO. 457001.17
DATE 2/29/16
SHEET 17
FILE NO.

28-APR-2016 12:29
457000_Walnut Street Bridge\457001.17_Walnut Repair Plans 2016\DGN\Bridge\017_Truss Repair Schematic(1).dgn



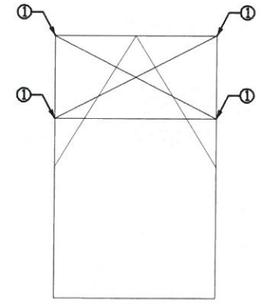
ELEVATION - LT. TRUSS - SPAN 2

NTS



ELEVATION - RT. TRUSS - SPAN 2

NTS



SECTION A-A

NTS

DEFICIENCIES				
DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	ALL ENDS OF UPPER AND LOWER STRUTS ON PORTALS TOP CHORD CONNECTION IN PORTALS, MULTIPLE LOCATIONS	ACCUMULATED PIGEON DROPPINGS AND NEST CAUSING ACTIVE CORROSION WITH UP TO 3/16" OF SECTION LOSS		REPAIR PER TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON SHEET NO. 35

▲ TO BE PAID UNDER ITEM NO. 602-10.02

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS REPAIR SCHEMATIC (SPAN 2)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

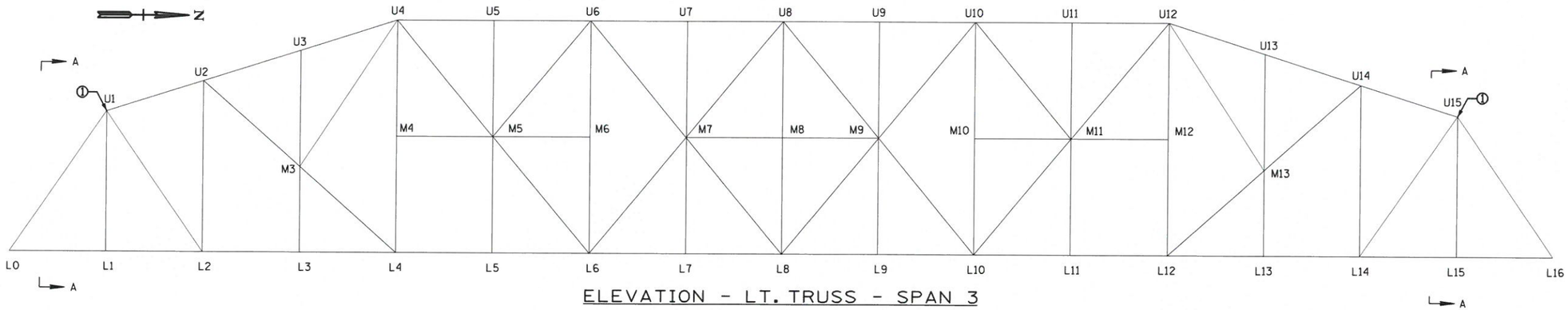
VOLKERT

ADAM S. DAVIDSON
REGISTERED ENGINEER
AGRICULTURE
No. 119401
STATE OF TENNESSEE

APPROVED

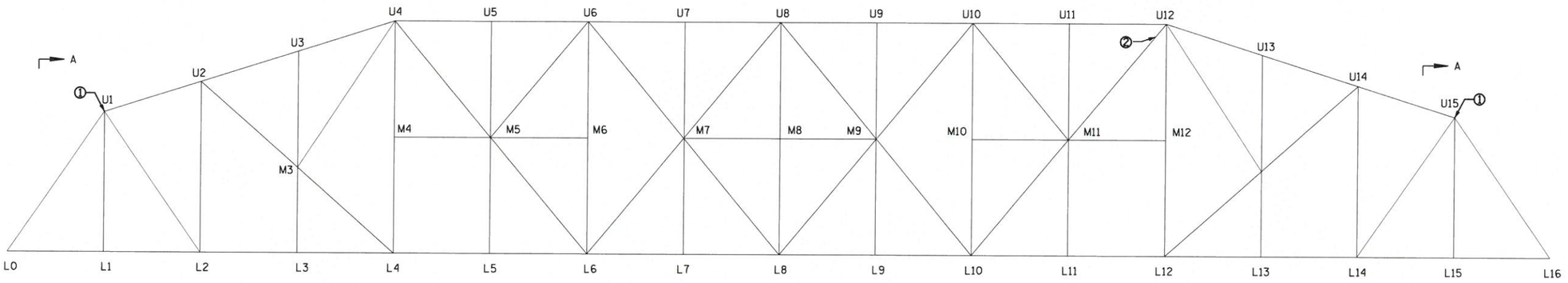
JOB NO. 457001.17
DATE 2/29/16
SHEET 18
FILE NO.

28-APR-2016 12:29
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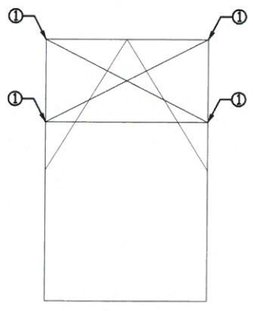
ELEVATION - LT. TRUSS - SPAN 3

NTS



ELEVATION - RT. TRUSS - SPAN 3

NTS



SECTION A-A

NTS

DEFICIENCIES				
DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	ALL, ENDS OF UPPER AND LOWER STRUTS ON PORTALS TOP CHORD CONNECTION IN PORTALS, MULTIPLE LOCATIONS	ACCUMULATED PIGEON DROPPINGS AND NEST CAUSING ACTIVE CORROSION WITH UP TO 3/16" OF SECTION LOSS		REPAIR PER TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON SHEET NO. 35
▬ ②	DIAGONAL M11-U12 POST TENSIONING CABLE NEAR U12	POST TENSIONING CABLE HAS AREA OF CORROSION AND CHIPPED COATING		CLEAN CORROSION AND APPLY A PROTECTIVE EPOXY COATING TO POST-TENSIONING CABLE

▲ TO BE PAID UNDER ITEM NO. 602-10.02

▬ TO BE PAID UNDER ITEM NO. 603-02.20

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA

DEPARTMENT OF TRANSPORTATION

CONTRACT #E-13-002-201

WALNUT STREET PEDESTRIAN BRIDGE

BRIDGE REPAIRS - PHASE I

WILLIAM C. PAYNE, P.E., CITY ENGINEER

JUSTIN C. HOLLAND, ADMINISTRATOR

TRUSS REPAIR SCHEMATIC (SPAN 3)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE

DRAWN C. DIXON

DESIGN A. DAVIDSON

CHECKED T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110478 STATE OF TENNESSEE

APPROVED

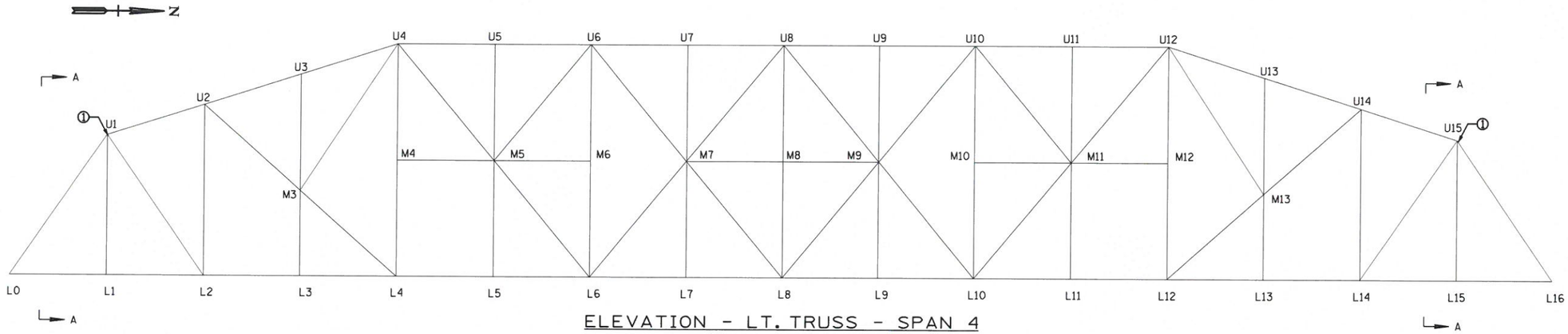
JOB NO. 457001.17

DATE 2/29/16

SHEET 19

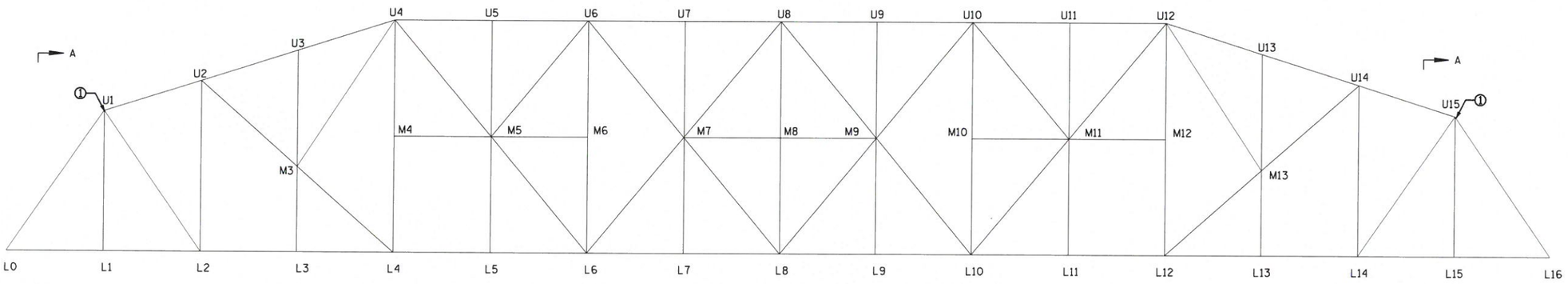
FILE NO.

28-APR-2016 12:30
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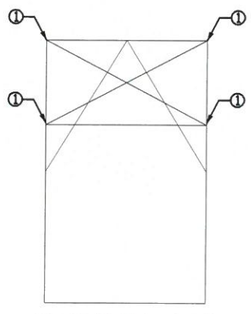
ELEVATION - LT. TRUSS - SPAN 4

NTS



ELEVATION - RT. TRUSS - SPAN 4

NTS



SECTION A-A

NTS

DEFICIENCIES				
DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
①	ALL, ENDS OF UPPER AND LOWER STRUTS ON PORTALS TOP CHORD CONNECTION IN PORTALS, MULTIPLE LOCATIONS	ACCUMULATED PIGEON DROPPINGS AND NEST CAUSING ACTIVE CORROSION WITH UP TO 3/16" OF SECTION LOSS		REPAIR PER TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON SHEET NO. 35

▲ TO BE PAID UNDER ITEM NO. 602-10.02

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

TRUSS REPAIR SCHEMATIC (SPAN 4)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

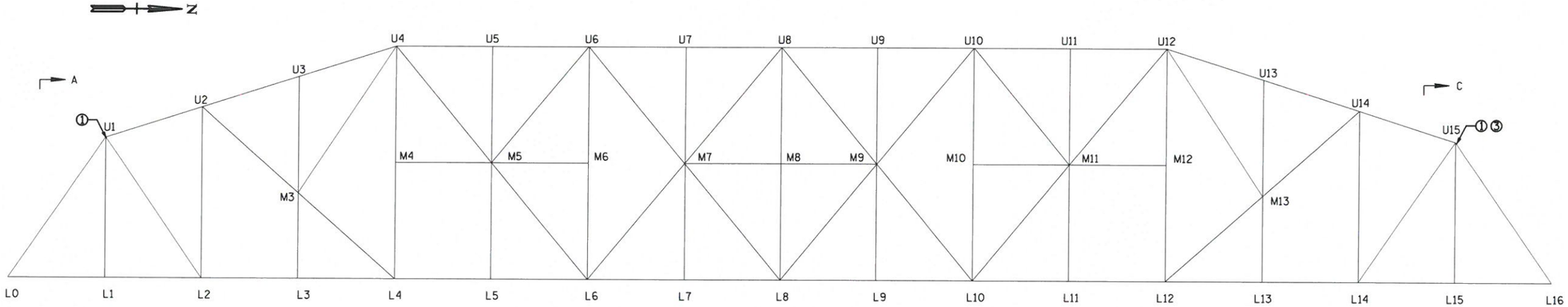
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110436 STATE OF TENNESSEE

APPROVED

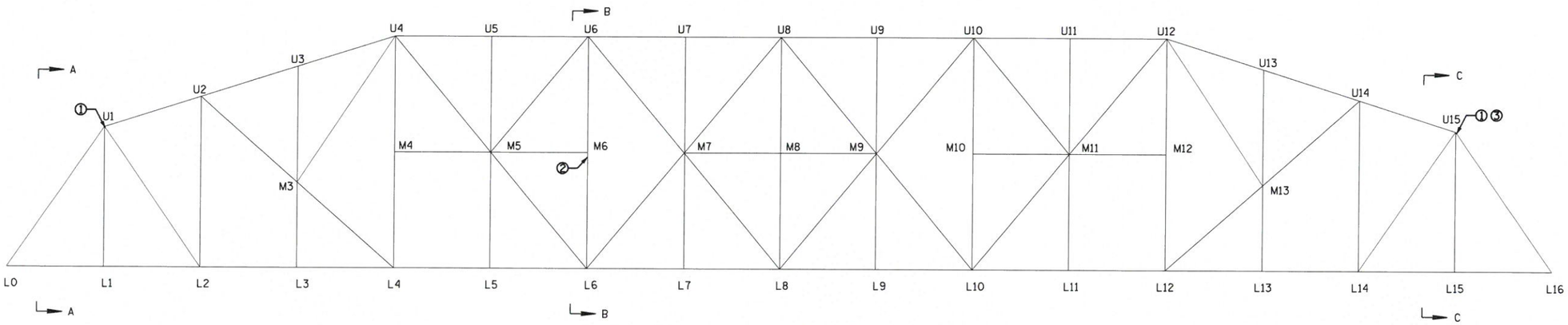
JOB NO. 457001.17
DATE 2/29/16
SHEET 20
FILE NO.

28-APR-2016 12:29
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ELEVATION - LT. TRUSS - SPAN 4

NTS

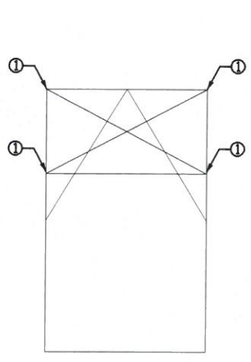


ELEVATION - RT. TRUSS - SPAN 4

NTS

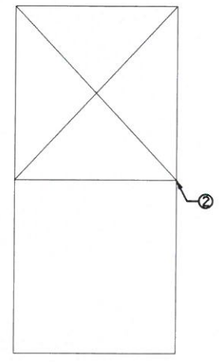
▲ TO BE PAID UNDER ITEM NO. 602-10.02

■ TO BE PAID UNDER ITEM NO. 602-10.70



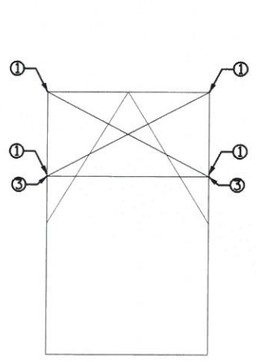
SECTION A-A

NTS



SECTION B-B

(PANEL 5)
NTS



SECTION C-C

NTS

DEFICIENCIES

	DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲	①	ALL, ENDS OF UPPER AND LOWER STRUTS ON PORTALS TOP CHORD CONNECTION IN PORTALS, MULTIPLE LOCATIONS	ACCUMULATED PIGEON DROPPINGS AND NEST CAUSING ACTIVE CORROSION WITH UP TO 3/16" OF SECTION LOSS		REPAIR PER TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON BRIDGE SHEET NO. 35
■	②	VERTICAL L6-U6 SOUTHEAST CORNER UNDER M6	4" HORIZONTAL CRACK		REPAIR PER STEEL CRACK WELDED REPAIR DETAIL ON BRIDGE SHEET NO. 36
▲	③	END PANEL LOWER STRUT AT WEST AND EAST ENDS	SEVERE SECTION LOSS WITH A CORROSION HOLE		REPAIR PER TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON BRIDGE SHEET NO. 35

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS REPAIR SCHEMATIC (SPAN 5)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

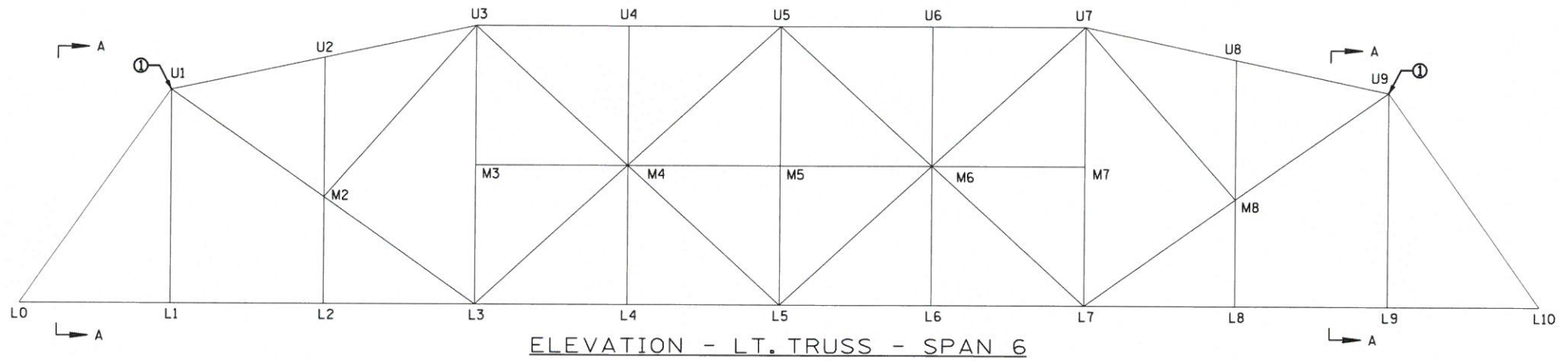
VOLKERT

ADAM S. DAVIDSON
REGISTERED ENGINEER
No. 110436
STATE OF TENNESSEE

APPROVED

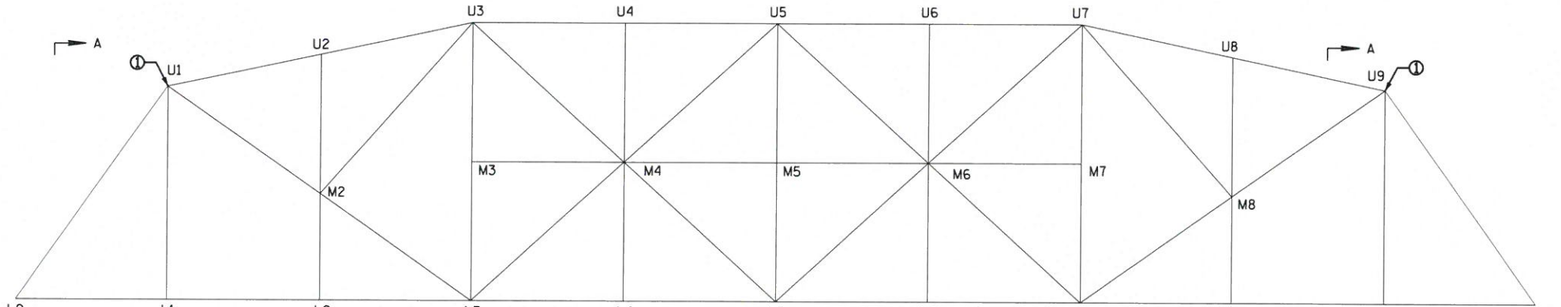
JOB NO. 457001.17
DATE 2/29/16
SHEET 21
FILE NO.

28-APR-2016 12:30
457000_Walnut Street Bridge\457001.7_Walnut Repair Plans 2016\DGN\Bridge\02_Truss Repair Schematic(5).dgn



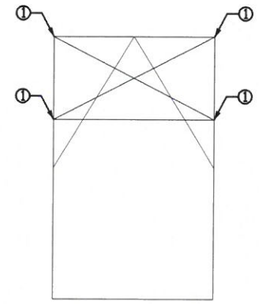
ELEVATION - LT. TRUSS - SPAN 6

NTS



ELEVATION - RT. TRUSS - SPAN 6

NTS



SECTION A-A

NTS

DEFICIENCIES				
DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
①	ALL, ENDS OF UPPER AND LOWER STRUTS ON PORTALS TOP CHORD CONNECTION IN PORTALS, MULTIPLE LOCATIONS	ACCUMULATED PIGEON DROPPINGS AND NEST CAUSING ACTIVE CORROSION WITH UP TO 3/16" OF SECTION LOSS		REPAIR PER TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL ON SHEET NO. 35

▲ TO BE PAID UNDER ITEM NO. 602-10.02

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

TRUSS REPAIR SCHEMATIC (SPAN 6)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

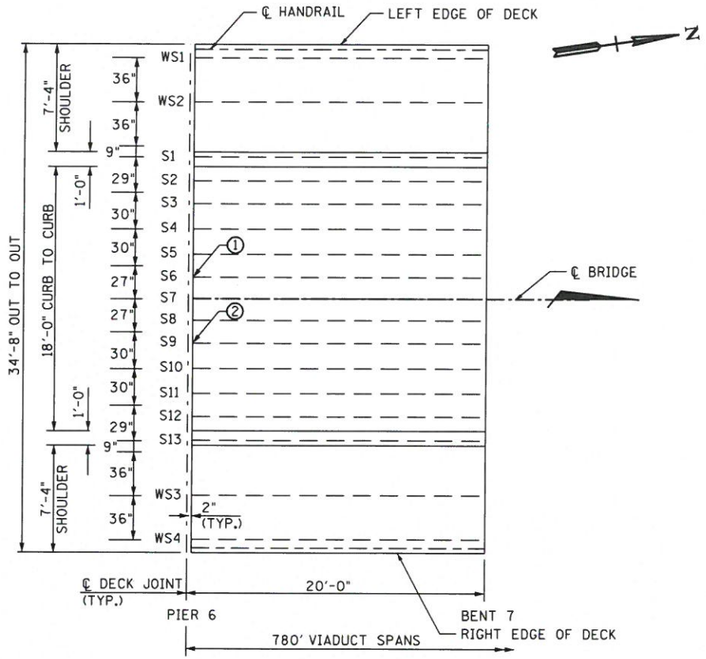
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110438 STATE OF TENNESSEE
4-28-2016

APPROVED

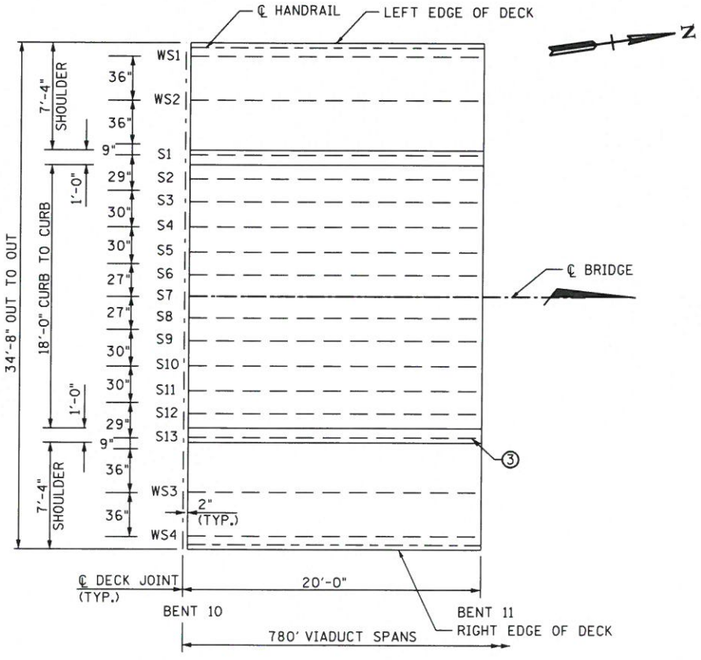
JOB NO. 457001.17
DATE 2/29/16
SHEET 22
FILE NO.

28-APR-2016 12:30
457000_Walnut Street Bridge\457001.17_Walnut Repair Plans 2016\DGN\Bridge\022_Truss Repair Schematic(6).dgn



FRAMING PLAN - SPAN 7

SCALE: 1/8" = 1'-0"



FRAMING PLAN - SPAN 11

SCALE: 1/8" = 1'-0"

DEFICIENCIES

	DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲	①	BEARING BLOCK STRINGERS 7-6	FAILED WELD, FULL WIDTH 4.5"		CRACKED OR BROKEN WELD REPAIR PROCEDURE ON SHEET 36
▲	②	BEARING BLOCK STRINGERS 7-9	FAILED WELD, FULL WIDTH 4.5"		CRACKED OR BROKEN WELD REPAIR PROCEDURE ON SHEET 36
●	③	STRINGER 11-13 BEARING BLOCK	ACTIVE PACK RUST		REPAIR PER PACK RUST REPAIR DETAIL ON SHEET 37

▲ TO BE PAID UNDER ITEM NO. 602-10.71

● TO BE PAID UNDER ITEM NO. 602-10.51

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

VIADUCT REPAIR SCHEMATIC SPANS 7 & 11

NO.	REVISION	DATE	SIG.

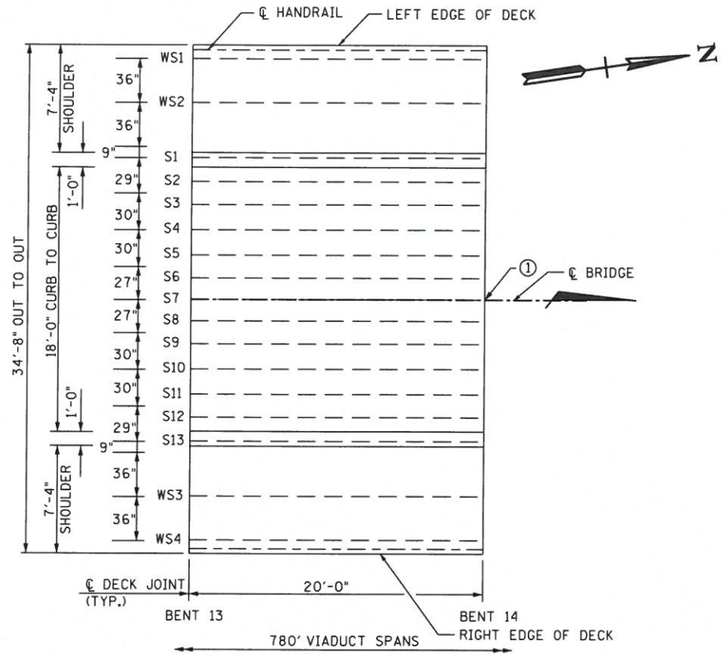
SCALE	1/4" = 1'-0"
DRAWN	D. HOWARD
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110436 STATE OF TENNESSEE

APPROVED	
JOB NO.	457001.17
DATE	2/29/16
SHEET	23
FILE NO.	

28-APR-2016 12:27
457000_Walnut Street Bridge\457001.17_Walnut Repair Plans 2016\DGN\Bridge\023_Viaduct Repair Schematic (1).dgn



FRAMING PLAN - SPAN 14

SCALE: ⅛" = 1'-0"

DEFICIENCIES

DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	STINGER 14-7 WEB	PREVIOUSLY REPORTED CRACK HAS GROWN 10" AND INCLUDES 100% SECTION LOSS		REPAIR PER CRACK REPAIR DETAIL ON SHEET NO. 36

▲ TO BE PAID UNDER ITEM NO. 602-10.70

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

VIADUCT REPAIR SCHEMATIC SPAN 14

NO.	REVISION	DATE	SIG.

SCALE ⅛" = 1'-0"
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

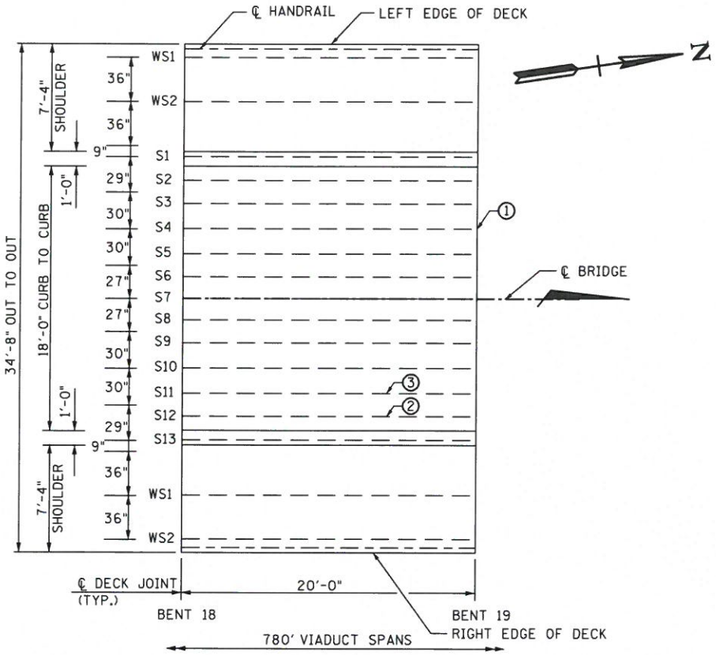
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110436 STATE OF TENNESSEE

APPROVED

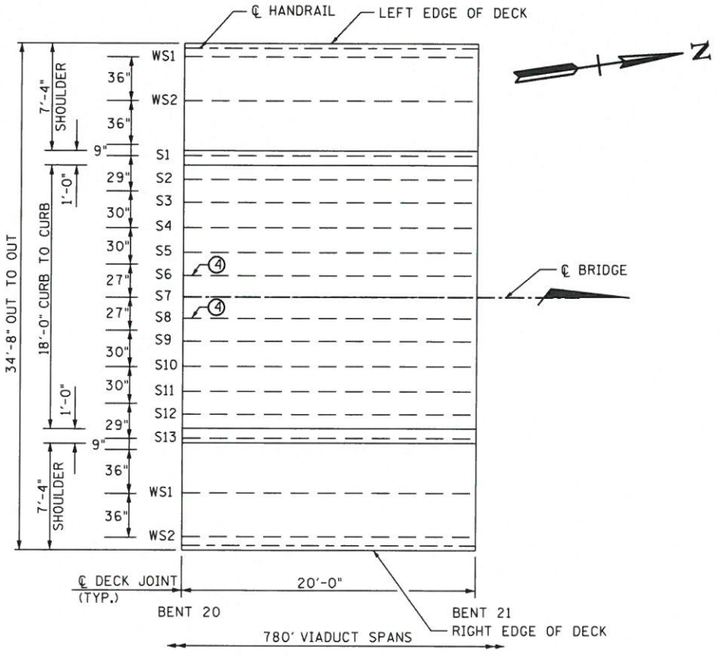
JOB NO. 457001.17
DATE 2/29/16
SHEET 24
FILE NO.

28-APR-2016 12:27
457000_Walnut Street Bridge\457001.17_Walnut Repair Plans 2016\DGN\Bridge\024_Viaduct Repair Schematic (3).dgn



FRAMING PLAN - SPAN 19

SCALE: 1/8" = 1'-0"



FRAMING PLAN - SPAN 21

SCALE: 1/8" = 1'-0"

DEFICIENCIES

	DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲	①	SPAN 19 ALL BEARINGS/ STRINGER 19-4	ACTIVE PACK CORROSION WITH DEFORMITY IN STRINGER 4		REPAIR PER PACK RUST REPAIR DETAIL ON SHEET NO. 37
▬	②	SPAN 19/STRINGER 12 TOP FLANGE	1/16" TO 1/8" SECTION LOSS THROUGHOUT, SOME ACTIVE SOME INACTIVE		REPAIR PER PAD WELDING DETAIL ON SHEET NO. 37
▬	③	SPAN 19/STRINGER 11 TOP PORTION OF WEST	1/16" SECTION LOSS, FAILING PAINT DUE TO NO PREP. (FULL LENGTH 6"X1/16")		REPAIR PER PAD WELDING DETAIL ON SHEET NO. 37
▲	④	STRINGER 21-6, 21-8 AT BEARING	2" TO 3½" DUE TO PACK CORROSION	NO PHOTO AVAILABLE	REPAIR PER PACK RUST REPAIR DETAIL ON SHEET NO. 37

▲ TO BE PAID UNDER ITEM NO. 602-10.51

▬ TO BE PAID UNDER ITEM NO. 602-10.53

CITY OF CHATTANOOGA SEAL CORPORATION TENNESSEE

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I

JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

VIADUCT REPAIR SCHEMATIC SPANS 19 & 21

NO.	REVISION	DATE	SIG.

SCALE 1/4" = 1'-0"
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

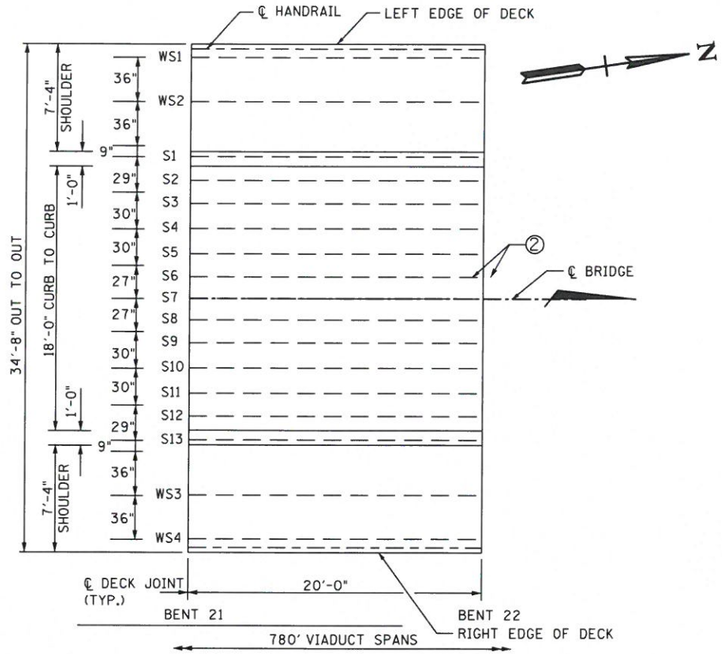
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER AGRICULTURE No. 110436 STATE OF TENNESSEE

APPROVED

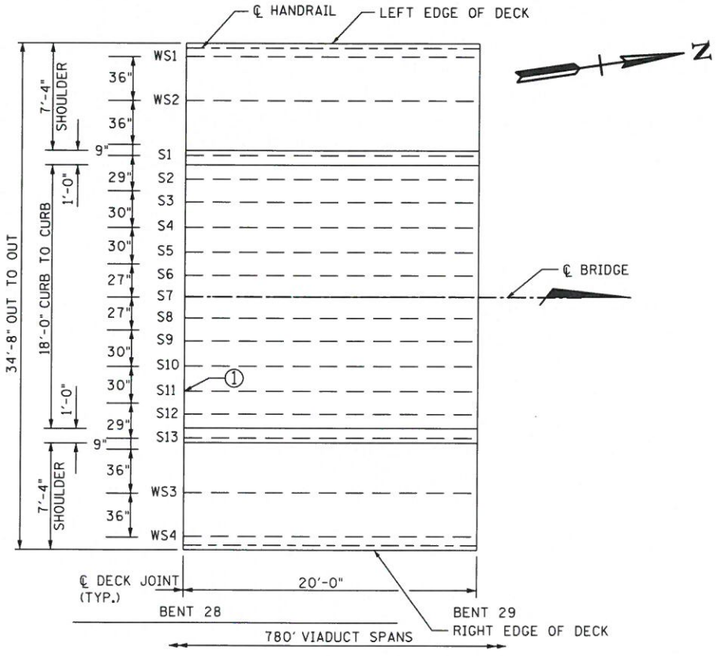
JOB NO. 457001.17
DATE 2/29/16
SHEET 25
FILE NO.

28-APR-2016 12:29
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FRAMING PLAN - SPAN 22

SCALE: 1/8" = 1'-0"



FRAMING PLAN - SPAN 29

SCALE: 1/8" = 1'-0"

DEFICIENCIES

	DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲	①	STRINGER 29-11 LOWER RIGHT FACE OF WEB AT BEARING	1/4" IN ACTIVE SECTION LOSS, (3 1/2"X1 1/2"X1/4")		REPAIR PER STRINGER END REPAIR DETAIL ON BRIDGE SHEET NO. 34
▬	②	STRINGERS 22-6, 23-6 LOWER LEFT FACE OF WEB AND BOTTOM FLANGE AT BEARING	1/4" ACTIVE SECTION LOSS, (5"X1 1/2"X1/4")		REPAIR PER PAD WELDING DETAIL ON SHEET NO. 37

▲ TO BE PAID UNDER ITEM NO. 602-10.26

▬ TO BE PAID UNDER ITEM NO. 602-10.53

CITY OF CHATTANOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

VIADUCT REPAIR SCHEMATIC SPANS 25 & 27

NO.	REVISION	DATE	SIG.

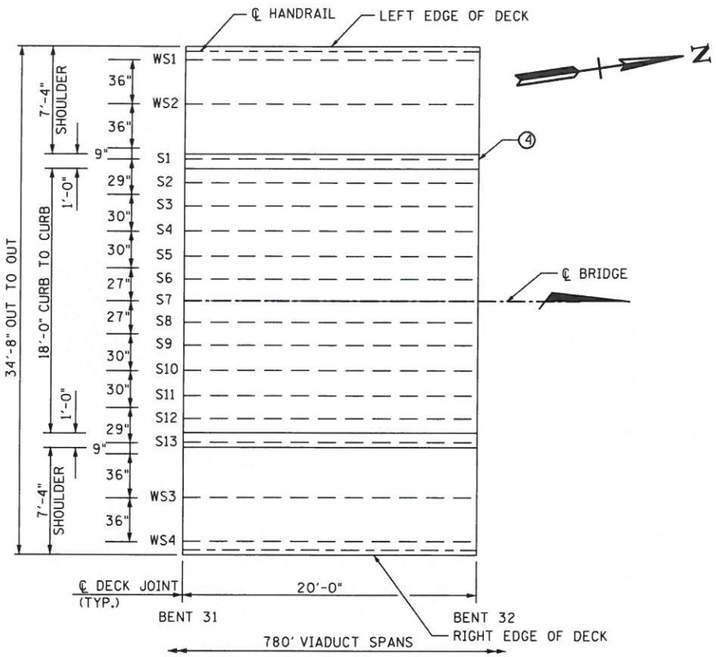
SCALE	1/4" = 1'-0"
DRAWN	D. HOWARD
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110436 STATE OF TENNESSEE

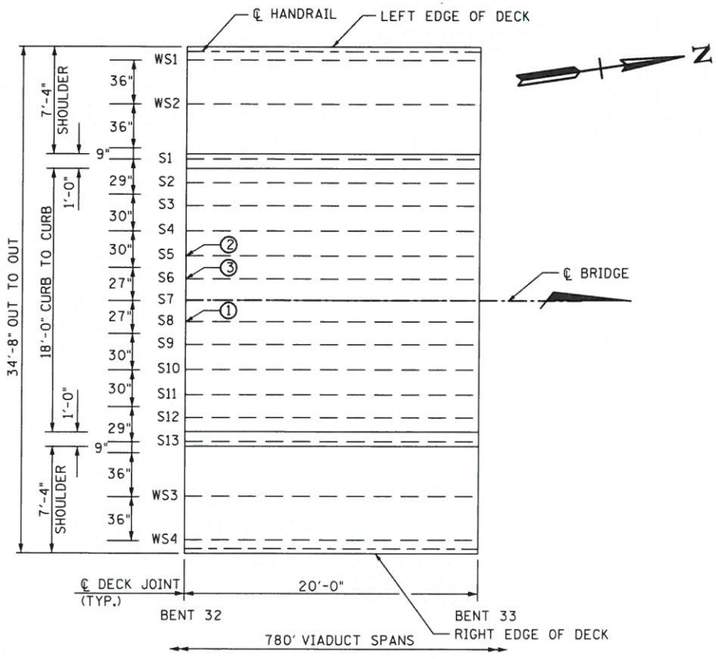
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JOB NO.	457001.17
DATE	2/29/16
SHEET	26
FILE NO.	

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FRAMING PLAN - SPAN 32

SCALE: ⅛" = 1'-0"



FRAMING PLAN - SPAN 33

SCALE: ⅛" = 1'-0"

DEFICIENCIES

	DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲	①	STRINGER 33-8 RIGHT FACE OF LOWER WEB	⅛" ACTIVE SECTION LOSS, (3"X1"X⅛")		REMOVE CORROSION AND REPAINT. SEE BRIDGE SHEETS NOS. 34-37.
■	②	STRINGER 33-5 AND TOP FLANGE OF CAP RIGHT FACE OF LOWER WEB AND TOP FLANGE OF CAP AT BEARING	⅛" ACTIVE SECTION LOSS, (5"X1½"X⅛")		REPAIR PER PAD WELDING DETAIL ON BRIDGE SHEET NO. 37
■	③	STRINGERS 33-6 LEFT FACE OF LOWER WEB AT BEARING	1/16" ACTIVE SECTION LOSS, (5"X1"X1/16")		REPAIR PER PAD WELDING DETAIL ON BRIDGE SHEET NO. 37
■	④	STRINGERS 32-1 BOTTOM FLANGE AT BEARING	¼" ACTIVE SECTION LOSS, (3½"X8"X¼")		REPAIR PER PAD WELDING DETAIL ON BRIDGE SHEET NO. 37

▲ TO BE PAID UNDER ITEM NO. 602-10.54

■ TO BE PAID UNDER ITEM NO. 602-10.53

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I

JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

VIADUCT REPAIR SCHEMATIC SPANS 29 & 33

NO.	REVISION	DATE	SIG.

SCALE ⅛" = 1'-0"
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

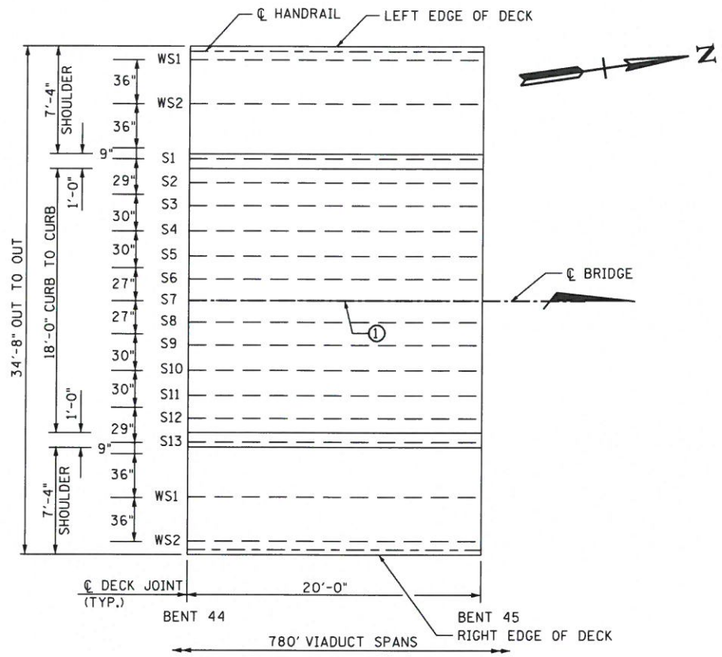
VOLKERT

ADAM S. DAVIDSON
REGISTERED ENGINEER
AGRICULTURE
STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 27
FILE NO.

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FRAMING PLAN - SPAN 45

SCALE: ⅛" = 1'-0"

DEFICIENCIES

DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	STRINGER 45-7 MIDSPAN	OPEN JUNCTION BOX WITH EXPOSED WIRES IS ACCESSIBLE FROM THE GROUND. THIS SHOULD BE FIXED TO AVOID SOMEONE FROM TAMPERING WITH IT. IT'S A POTENTIAL LIABILITY.		ADD JUNCTION BOX COVER TO CONCEAL EXPOSED WIRES

▲ TO BE PAID UNDER ITEM NO. 735-20.05

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

VIADUCT REPAIR SCHEMATIC SPANS 39 & 45

NO.	REVISION	DATE	SIG.

SCALE ⅛" = 1'-0"
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

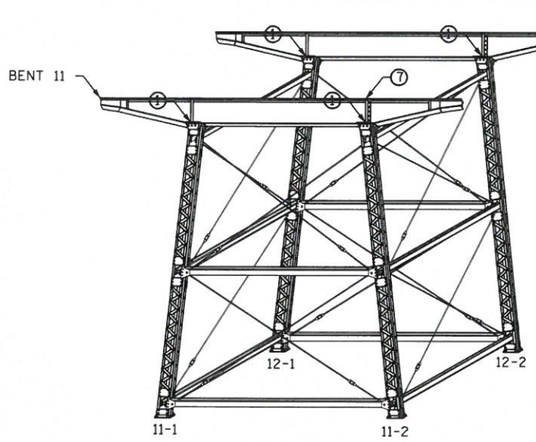
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER AGRICULTURE No. 110439 STATE OF TENNESSEE
4-28-16

APPROVED

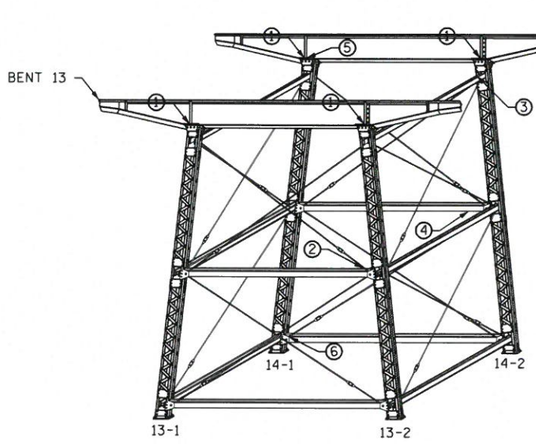
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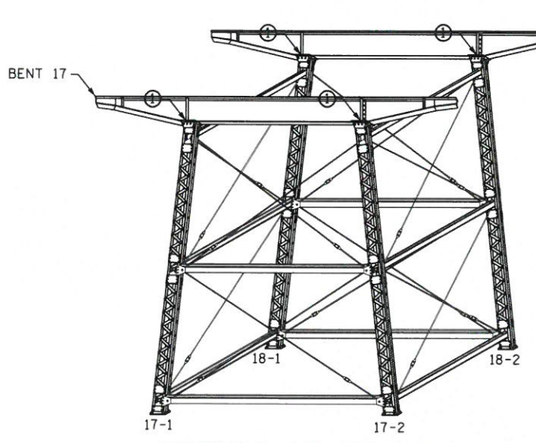
TOWERS AT BENTS 11-12

SCALE: NTS



TOWERS AT BENTS 13-14

SCALE: NTS



TOWERS AT BENTS 17-18

SCALE: NTS

DEFICIENCIES

DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
① ▲	CAP BEARING BOTTOM FLANGE (ALL BENTS, BOTH COLUMNS)• •SHOWN HERE AS REPRESENTATIVE OF ALL BENTS IN NORTH VIADUCT (BENTS 7 - 44)	PACK CORROSION WITH SOME DEFORMITY IS TYPICAL, SOME ACTIVE SOME INACTIVE		TECHNIQUE 2 & 3 REPAIR PER PACK RUST REPAIR DETAIL ON BRIDGE SHEET NO. 37.
② ▬	PIN MIDDLE TRANSVERSE STRUT, EAST END	CORROSION WITH SOME SECTION LOSS, ACTIVE CORROSION/MOST PINS HAVE INACTIVE SECTION LOSS		REPAIR PER PAD WELDING REPAIR DETAILS ON BRIDGE SHEET NO. 37.
③ •▲	UPPER LONG STRUT AT BENT 14 TOP BATTEN PLATE	ACTIVE PACK CORROSION WITH BROKEN WELD, 7.5" LONG		TECHNIQUE 1 REPAIR PER PACK RUST REPAIR DETAIL ON BRIDGE SHEET NO. 37 AND BROKEN WELD REPAIR DETAILS ON BRIDGE SHEET NO. 36
④ ▬	MIDDLE TRAVERSE STRUT BOTTOM FLANGE AND STIFFENER PLATE	MISSING RIVET AND BROKEN FLANGE		REPAIR PER PAD WELDING REPAIR DETAILS ON BRIDGE SHEET NO. 37.
⑤ ●	CAP ON BOTH SIDES WEST STIFFENER AND CONNECTION PLATE	HOLE IN BOTTOM; PITTING WITH SECTION LOSS IN CONNECTION PLATE. HOLE IS RUSTED PITTING IS PAINTED (3"X2"X¼")		REPAIR PER FLOOR BEAM STIFFENER REPAIR DETAIL ON BRIDGE SHEET NO. 34
⑥ ▬	LOWER TRANSVERSE STRUT, WEST END/PIN	¼" SECTION LOSS AND IN DIRT, INACTIVE (3"X3"X¼")		REPAIR PER PAD WELDING REPAIR DETAILS ON BRIDGE SHEET NO. 37.
⑦ ●	CAP EAST STIFFENER AND CONNECT. PLATE	HOLE IN BOTTOM; PITTING WITH SECTION LOSS IN CONNECTION. PLATE		REPLACE BOTTOM SECTION OF CONNECTION PLATE. SEE BRIDGE SHEET NO. 34.

▲ TO BE PAID UNDER ITEM NO. 602-10.51

▬ TO BE PAID UNDER ITEM NO. 602-10.53

● TO BE PAID UNDER ITEM NO. 602-10.52

• TO BE PAID UNDER ITEM NO. 602-10.71

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I

WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

REPAIRS AT BENTS 13-14 & BENTS 17-18

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

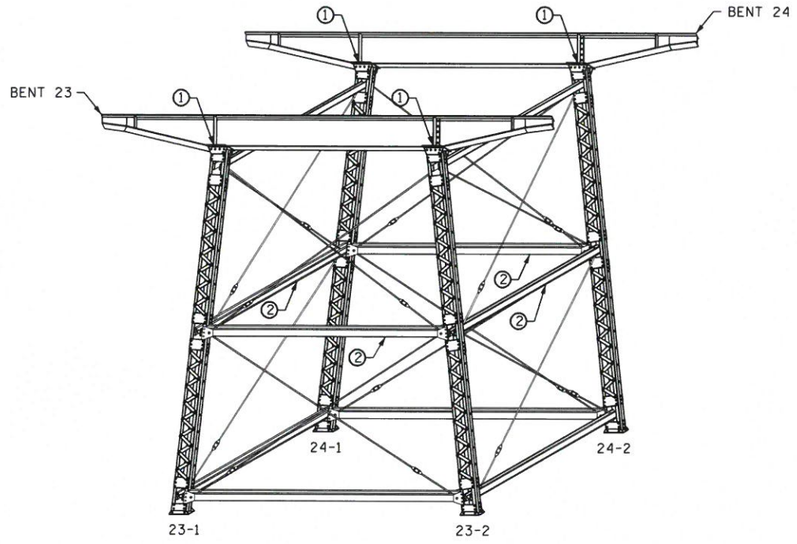
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER STATE OF TENNESSEE No. 110436

APPROVED

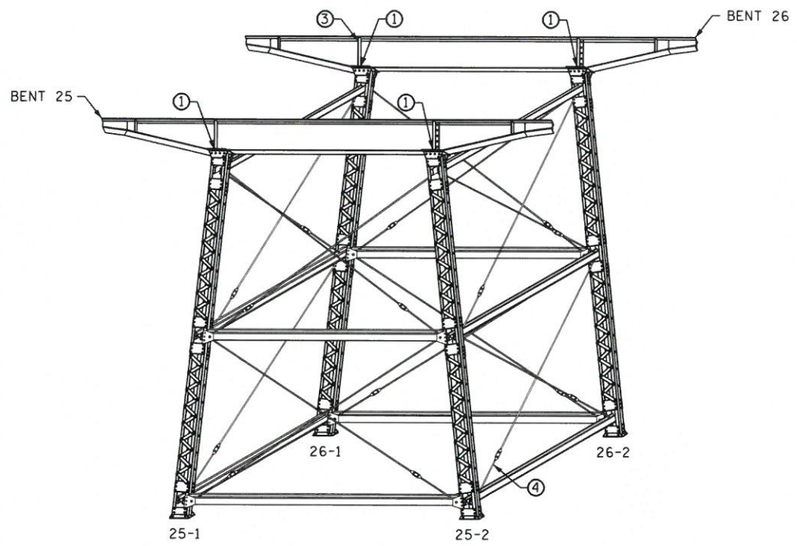
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DATE 2/29/16
SHEET 29
FILE NO.

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TOWERS AT BENTS 23-24

SCALE: NTS



TOWERS AT BENTS 25-26

SCALE: NTS

DEFICIENCIES

DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	CAP BEARING BOTTOM FLANGE	PACK CORROSION WITH SOME DEFORMITY IS TYPICAL, SOME ACTIVE SOME INACTIVE		TECHNIQUE 2 & 3 REPAIR PER PACK RUST REPAIR DETAIL ON BRIDGE SHEET NO. 37.
▬ ②	MIDDLE LONGITUDINAL AND TRANSVERSE STRUTS	PAINT FAILURE/CORROSION	NO PHOTO AVAILABLE	REMOVE CORROSION & REPAINT. SEE CLEANING & PAINTING NOTES ON BRIDGE SHEET NO. 2
▬ ③	TOP OF CAP BETWEEN STINGER 1 AND UTILITY PLATE	DIRT AND DEBRIS COLLECTS IN THIS SPACE, TYPICAL AT BENTS WHERE UTILITY PLATE IS LOCATED OVER CAP		REMOVE DEBRIS AND CORROSION AND REPAINT. SEE CLEANING AND PAINTING NOTES ON BRIDGE SHEET NO. 2
▬ ④	EAST LONGITUDINAL EXTERIOR AT BENT 25 PIN	ACTIVE CORROSION	NO PHOTO AVAILABLE	REMOVE CORROSION & REPAINT. SEE CLEANING & PAINTING NOTES ON BRIDGE SHEET NO. 2

▲ TO BE PAID UNDER ITEM NO. 602-10.51

▬ TO BE PAID UNDER ITEM NO. 602-10.54

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

REPAIRS AT BENTS 23-26

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN D. HOWARD
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

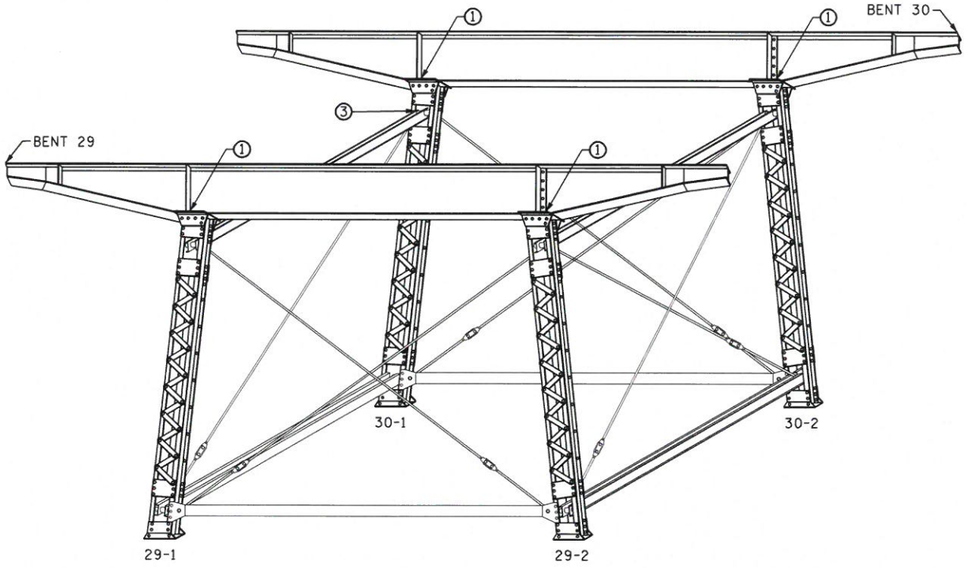
VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER NUMBER 119838 STATE OF TENNESSEE

APPROVED

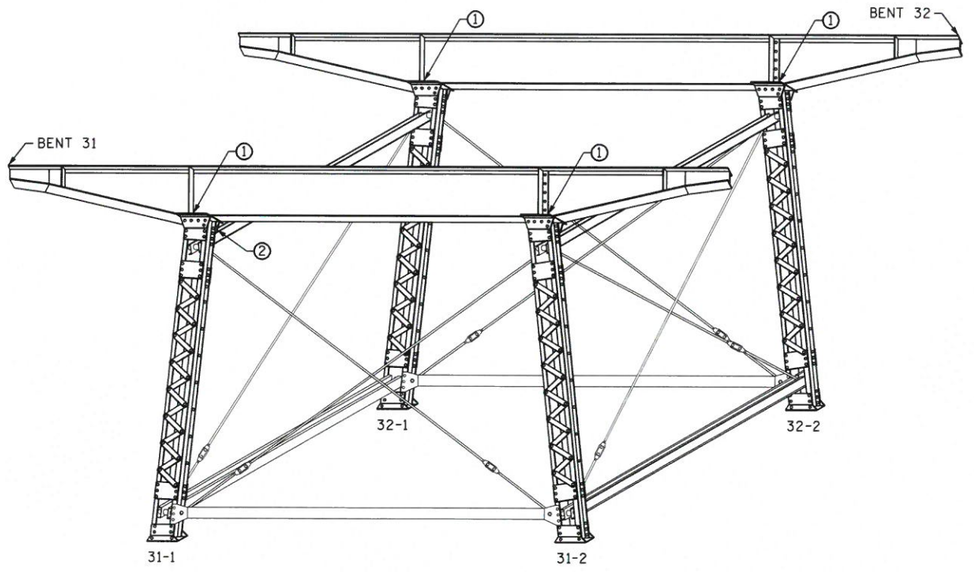
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TOWERS AT BENTS 29-30

SCALE: NTS



TOWERS AT BENTS 31-32

SCALE: NTS

DEFICIENCIES

DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	CAP BEARING BOTTOM FLANGE	PACK CORROSION WITH SOME DEFORMITY IS TYPICAL, SOME ACTIVE SOME INACTIVE		TECHNIQUE 2 & 3 REPAIR PER PACK RUST REPAIR DETAIL ON SHEET NO. 37.
▬ ②	UPPER WEST LONGITUDINAL STRUT WEST WEB (OUTSIDE FACE)	HOLE, 100% SECTION LOSS WITH NO REPLACEMENT STUT, (2"X½")		REPAIR PER PAD WELDING REPAIR DETAILS ON SHEET NO. 37.
● ③	UPPER WEST LONGITUDINAL STRUT/ TOP BATTON PLATE	CRACKED WELD, 3"		REPAIR PER BROKEN OR CRACKED WELD REPAIR DETAILS ON SHEET NO. 36.

▲ TO BE PAID UNDER ITEM NO. 602-10.51

▬ TO BE PAID UNDER ITEM NO. 602-10.53

● TO BE PAID UNDER ITEM NO. 602-10.71

CITY OF CHATTANOOGA

DEPARTMENT OF TRANSPORTATION

CONTRACT #E-13-002-201

WALNUT STREET PEDESTRIAN BRIDGE

BRIDGE REPAIRS - PHASE I

WILLIAM C. PAYNE, P.E., CITY ENGINEER

JUSTIN C. HOLLAND, ADMINISTRATOR

REPAIRS AT BENTS 29-32

NO.	REVISION	DATE	SIG.

SCALE NO SCALE

DRAWN D. HOWARD

DESIGN A. DAVIDSON

CHECKED T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110436 STATE OF TENNESSEE

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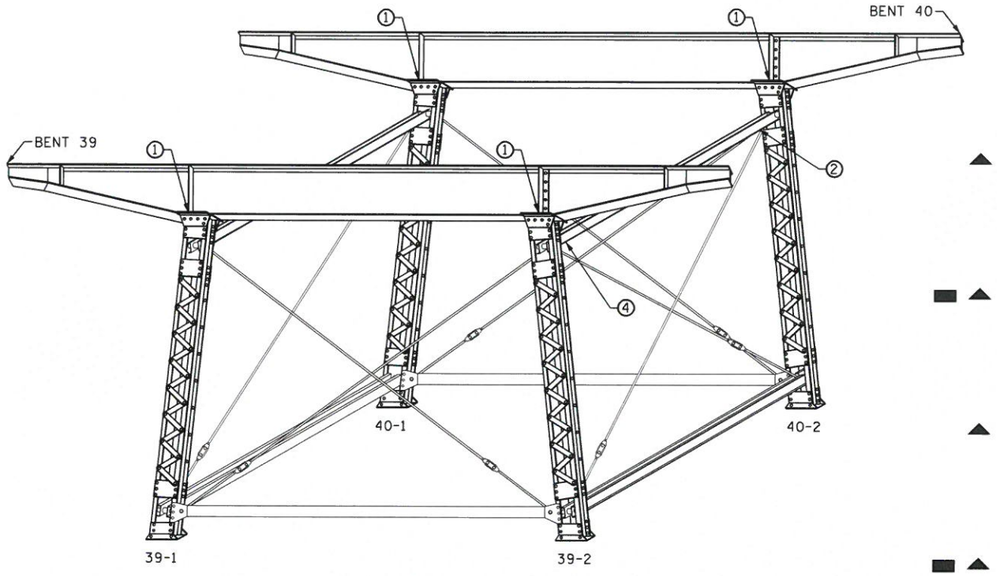
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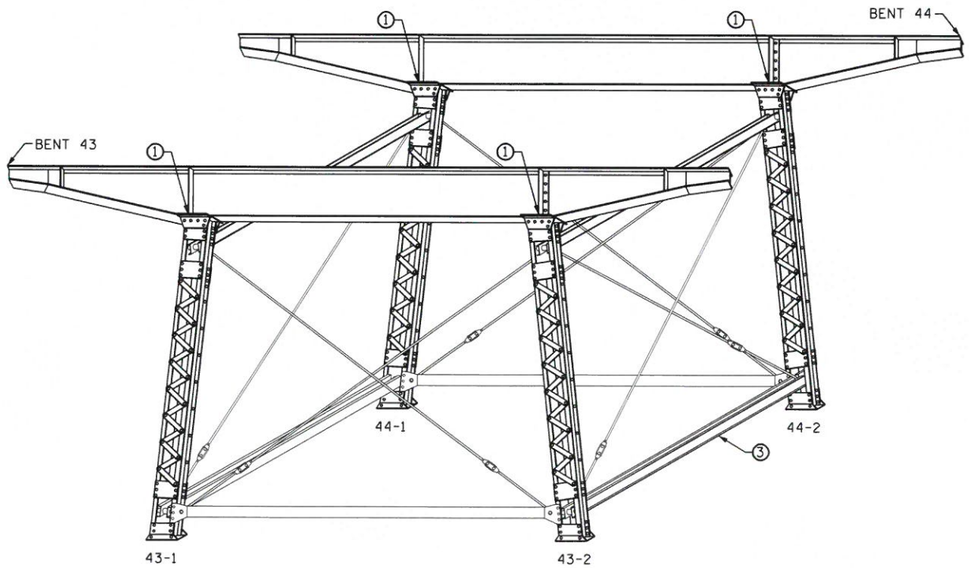
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TOWERS AT BENTS 39-40

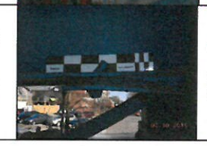
SCALE: NTS



TOWERS AT BENTS 43-44

SCALE: NTS

DEFICIENCIES

DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ ①	CAP BEARING BOTTOM FLANGE (ALL)	PACK CORROSION WITH SOME DEFORMITY IS TYPICAL, SOME ACTIVE SOME INACTIVE		TECHNIQUE 2 & 3 REPAIR PER PACK RUST REPAIR DETAIL ON BRIDGE SHEET NO. 37.
▬▲ ②	EAST UPPER LONGITUDINAL STRUT BOTTOM BATTEN PLATE AT COLUMN 40-2	PACK CORROSION BETWEEN BOTTOM BATTEN PLATE AND STRUT, WHICH HAS SEVERED RIVETS. THE BOTTOM FLANGE OF THE STRUT IS ALSO KNIFE EDGED		TECHNIQUE 1 REPAIR PER PACK RUST REPAIR DETAIL ON SHEET NO. 37 AND BROKEN WELD REPAIR DETAILS ON BRIDGE SHEET NO. 36
▲ ③	LOWER RETROFIT LONGITUDINAL STRUT	PACK CORROSION		TECHNIQUE 1 REPAIR PER PACK RUST DETAIL ON SHEET NO. 37
▬▲ ④	EAST UPPER LONGITUDINAL STRUT BOTTOM BATTEN PLATE AT COLUMN 39-2	PACK CORROSION BETWEEN BATTEN PLATE AND STRUT, WHICH HAS SEVERED OR SEVERLY BENT ALL 4 RIVETS. THE BOTTOM FLANGE OF THE STRUT IS ALSO KNIFE EDGED		TECHNIQUE 1 REPAIR PER PACK RUST DETAIL ON SHEET NO. 37 AND REPAIR STRUT END BY STRINGER END DETAILS ON SHEET NO. 34

▲ TO BE PAID UNDER ITEM NO. 602-10.51

▬ TO BE PAID UNDER ITEM NO. 602-10.26

CITY OF CHATTANOOGA CORPORATION SEAL TENNESSEE

CITY OF CHATTANOOGA

DEPARTMENT OF TRANSPORTATION

CONTRACT #E-13-002-201

WALNUT STREET PEDESTRIAN BRIDGE

BRIDGE REPAIRS - PHASE I

WILLIAM C. PAYNE, P.E., CITY ENGINEER

JUSTIN C. HOLLAND, ADMINISTRATOR

REPAIRS AT BENTS 39-40 & 43-44

NO.	REVISION	DATE	SIG.

SCALE NO SCALE

DRAWN D. HOWARD

DESIGN A. DAVIDSON

CHECKED T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER AGRICULTURE No. 110439 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17

DATE 2/29/16

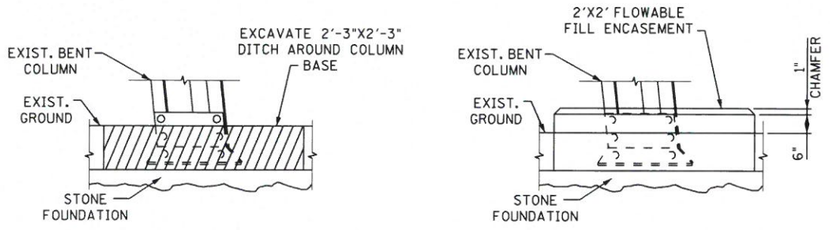
SHEET 32

FILE NO.

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FOUNDATION REPAIR LOCATIONS	
BENT	COLUMN
7	1 & 2
8	1 & 2
10	1
12	1 & 2
13	1 & 2
14	2
15	1 & 2
16	2
17	1 & 2
18	1 & 2
19	1
20	1
21	1 & 2
22	1 & 2
23	1 & 2
24	1 & 2

FOUNDATION REPAIR LOCATIONS	
BENT	COLUMN
27	1 & 2
28	1 & 2
30	2
31	1 & 2
32	1 & 2
33	1 & 2
34	1 & 2
35	1 & 2
36	1 & 2
37	1 & 2
38	1 & 2
39	1 & 2
41	1 & 2
42	1 & 2
43	2
44	2



BURIED FOUNDATION REPAIR DETAIL

SCALE: NTS

NOTE:
DEPTH VARIES PER LOCATION. ENG. EST. AVG. DEPTH OF 1'-6"

DEFICIENCIES

LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▲ COLUMN BASE CONNECTIONS (SEE TABLES THIS SHEET FOR LOCATIONS)	BURIED, NO ACCESS		REPAIR PER BURIED FOUNDATION REPAIR DETAIL ON THIS SHEET

▲ TO BE PAID UNDER ITEM NOS. 204-06.01 & 920-10.04.

CITY OF CHATTANOOGA SEAL CORPORATION TENNESSEE

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

BENT REPAIR

NO.	REVISION	DATE	SIG.

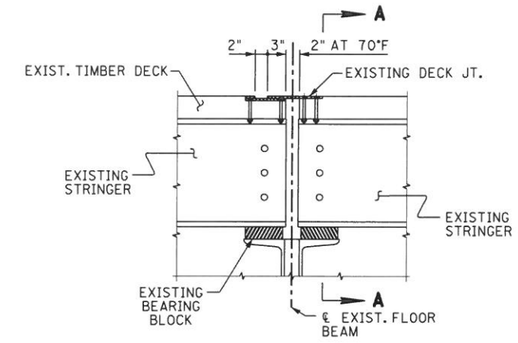
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DRAWN	C. DIXON
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

VOLKERT

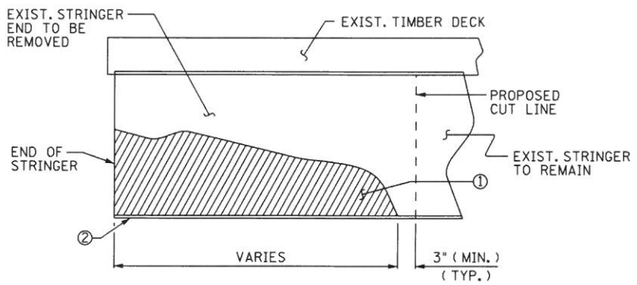
ADAM S. DAVIDSON REGISTERED ENGINEER AGRICULTURE No. 110438 STATE OF TENNESSEE

APPROVED	
JOB NO.	457001.17
DATE	2/29/16
SHEET	33
FILE NO.	

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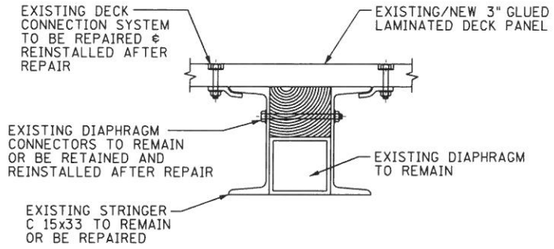


ELEVATION - STRINGER @ END SPAN
(SHOWING EXIST. JT.; OTHER END SPANS SIMILAR)



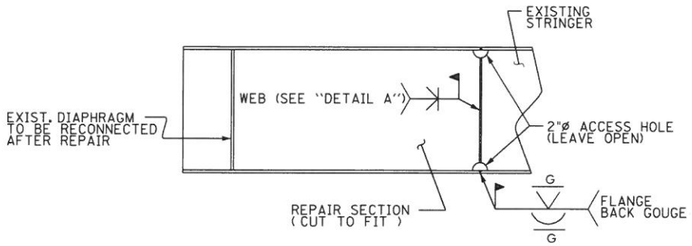
ELEVATION - STRINGER LOSS REMOVAL

① SECTION LOSS
② CRACK IN BOTTOM FLANGE



SECTION A-A

(AT STRINGERS 3/3, 5/6, 8/9, 11/12)



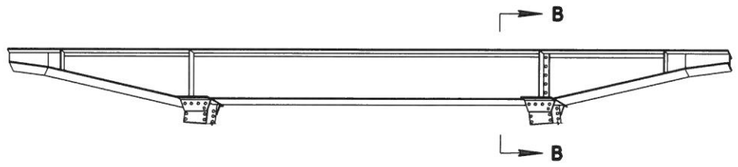
ELEVATION - STRINGER REPAIR

NOTES:
STEEL FOR BEAM REPAIR SECTION SHALL EQUAL OR EXCEED THE YIELD STRENGTH OF EXISTING BEAM. USE NEW OR SALVAGED "LIKE NEW" STEEL ONLY
NEW REPAIR SECTION TO MATCH ANGLE, PLATE AND SIZE OF BEARING STIFFNER.
NEW STRINGER SECTION TO BE A C 15X33.

STEEL REPLACEMENT REPAIR PROCEDURE

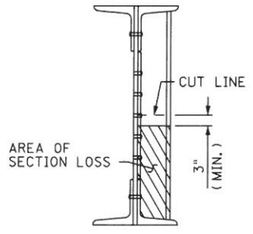
1. COORDINATE SCHEDULE WITH WELD INSPECTOR AT LEAST FOUR DAYS PRIOR TO ANTICIPATED WORK.
2. REMOVE TRAFFIC LOAD FROM REPAIR AREA BY CLOSING BRIDGE TO TRAFFIC.
3. JACK BEAM AND SUPPORT WITH BLOCKING TO FREE COMPONENT FROM BEARING. LIMIT DIFFERENTIAL JACKING BETWEEN ADJACENT COMPONENTS TO 1/8".
4. STEEL DIAPHRAGMS MAY BE TEMPORARILY REMOVED, IF NECESSARY, AND REPLACED AFTER BEAM REPAIR.
5. CUT OUT BY APPROPRIATE MEANS, THE DAMAGED AREA.
6. MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.
7. INSTALL THE CUT-TO-FIT SECTION, FULLY WELD ALONG TOP AND SIDES OF PLATE AS SHOWN.
8. ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND TDOT STANDARD SPECIFICATION.
9. ALL WELDING SHALL BE INSPECTED AND TESTED IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE AND TDOT STANDARD SPECIFICATIONS.
10. ONCE THE REPAIR IS COMPLETE, GRIND ALL WELDS FLUSH, ANY GOUGES OR INDENTIONS FROM IMPACT ON COMPONENTS SHALL BE GROUND SMOOTH. CLEAN AREA TO REMOVE DEBRIS AND OILS FROM REPAIR PROCESS PRIOR TO CLEANING AND PAINTING.
11. LOWER SPAN TO BEAR; CHECK FOR DISTRESS.
12. REMOVE JACKING EQUIPMENT AND TEMPORARY SUPPORTS.
13. CLEAN AND PAINT REPAIRED STRUCTURAL STEEL.

STRINGER END REPAIR

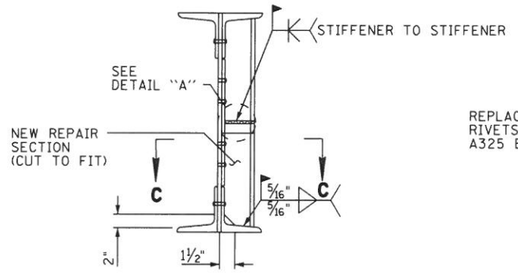


ELEVATION FLOOR BEAM

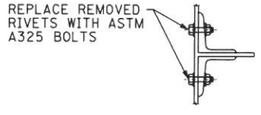
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SECTION B-B - STIFFNER/CONN. @ REMOVAL



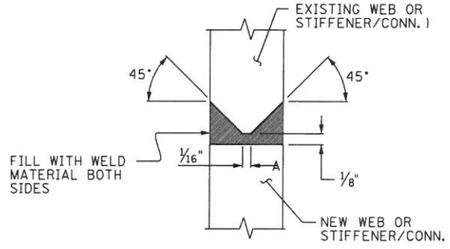
SECTION B-B - ELEVATION - STRINGER LOSS REMOVAL



SECTION C-C

FLOOR BEAM STIFFNER REPAIR

NTS



DETAIL A

NTS

CITY OF CHATTANOOGA
SEAL
CITY OF CHATTANOOGA
TENNESSEE

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

STEEL REPAIR DETAIL (1)

NO.	REVISION	DATE	SIG.

SCALE	NO SCALE
DRAWN	C. DIXON
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

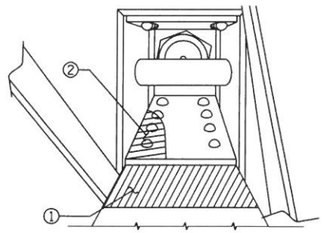
VOLKERT

ADAM S. DAVIDSON
REGISTERED ENGINEER
No. 110436
STATE OF TENNESSEE

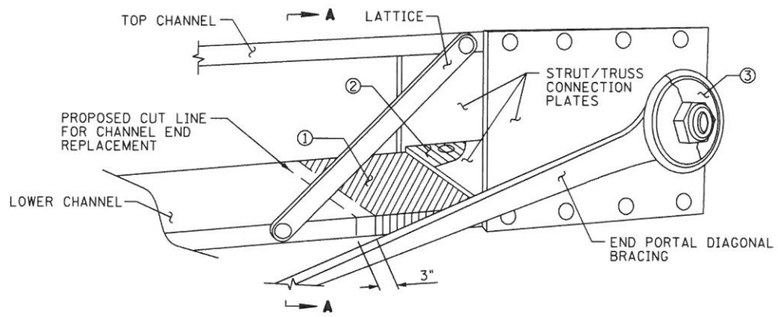
APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 34
FILE NO.

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SECTION A-A
NTS



TRUSS END PORTAL HORIZONTAL STRUT REPAIR DETAIL
NTS

NOTES:

1. LOCALIZED SECTION LOSS ON THE WEB OF THE LOWER CHANNEL OF THE BUILT-UP STRUT SECTION, AT THE CONNECTION TO THE TRUSSES. LOCALIZED SECTION LOSS VARIES FROM 1/16" PITTING TO 100% SECTION LOSS.

   FOR REPAIR OF THE AREAS WITH LESS THAN 100% SECTION LOSS, THE CHANNEL WEB SHALL BE RESTORED BACK TO FULL SECTION THICKNESS USING THE PAD WELDING REPAIR PROCEDURES DETAILED ON SHEET 36.

   FOR REPAIR OF THE AREAS WITH 100% SECTION LOSS, THE END SECTION OF THE CHANNEL WILL BE REPLACED PER THE FOLLOWING PROCEDURES AND SIMILAR TO THE BEAM END REPAIR DETAILS LOCATED ON SHEET 34.
   - THE LOWER CHANNEL OF THE BUILT-UP STRUT SECTION SHALL BE UNFASTENED FROM THE TRUSS CONNECTION PLATES AND FROM THE LATTICE OF THE BUILT-UP STRUT SECTION. MINIMIZE THE UNFASTENING OF THE LATTICE ONLY TO WHAT IS REQUIRED TO PERFORM THE REPAIR. UNDER NO CIRCUMSTANCE SHALL MORE THAN 2/3 OF THE LATTICE BE DISCONNECT TO THE LOWER CHANNEL. THE TOP CHANNEL OF THE STRUT AND THE END PORTAL DIAGONAL BRACING SHALL REMAIN CONNECTED AT ALL TIMES DURING THE REPAIR OPERATIONS.
   - ONCE THE LOWER CHANNEL HAS BEEN UNFASTENED AND IS FREE FROM LOCALIZED SUPPORT, THE END OF THE CHANNEL SHALL BE REMOVED BY TORCH CUTTING. THE LOCATION OF THE CUT SHALL BE MADE 3" PAST THE AREA OF 100% SECTION LOSS.
   - A NEW CHANNEL SECTION SHALL REPLACE, IN KIND, THE PORTION REMOVED IN THE PREVIOUS STEP. THE NEW CHANNEL SECTION TO BE THE EXACT SAME SIZE AND LENGTH AS WHAT WAS REMOVED. THE REPLACEMENT SECTION SHALL BE WELDED ON TO THE REMAINING STRUT BOTTOM CHANNEL. THE CONNECTION OF THE NEW SECTION SHALL FOLLOW THE PROCEDURES DETAILED IN THE BEAM END REPAIR DETAIL ON SHEET 34.
   - THE STRUT BOTTOM CHANNEL SHALL THEN BE RECONNECTED TO THE TRUSS CONNECTION PLATES AND STRUT LATTICE USING ASTM A325 HIGH STRENGTH BOLTS OF SIMILAR SIZE TO THE RIVETS THAT HAD TO BE REMOVED.
   - THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE STABILITY OF THE STRUCTURE DURING THE REPAIR OPERATIONS.
   - ONLY ONE PORTAL STRUT CAN BE REPAIRED AT A TIME. ADDITIONALLY, ONLY ONE END OF THE STRUT CAN BE REPAIRED AT A TIME.

2. LOCALIZED SECTION LOSS ON THE LOWER CONNECTION PLATE OF THE LOWER CHANNEL OF THE BUILT-UP STRUT SECTION TO THE TRUSSES. LOCALIZED SECTION LOSS VARIES FROM APPROXIMATELY 1/16" TO 1/4" PITTING. THE CONNECTION PLATE SHALL BE RESTORED BACK TO FULL SECTION THICKNESS USING THE PAD WELDING REPAIR PROCEDURES DETAILED ON SHEET 36. RIVETS IN THE AREA OF THE REPAIR THAT HAVE TO BE REMOVED OR THAT HAVE SIGNIFICANT SECTION LOSS SHALL BE REPLACED WITH ASTM A325 HIGH STRENGTH BOLTS.

3. CRACK IN THE DECORATIVE WASHER OF THE TRUSS END PORTAL DIAGONAL BRACING DUE TO PACK RUST. THE WASHER IS APPROXIMATELY 10" DIAMETER AND 9/16" THICK. THE WASHER IS TO BE REPLACED IN-KIND. THE PACK RUST IS TO BE REMOVED PER THE STEEL PACK RUST REPAIR PROCEDURES DETAILED ON SHEET 36. TO ENSURE STRUCTURAL STABILITY DURING THIS REPAIR THE STRUT/TRUSS CONNECTION SHALL NOT BE REMOVED UNDER ANY CIRCUMSTANCE. ONLY ONE WASHER TO BE REPLACED AT A TIME.

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

STEEL REPAIR DETAIL (2)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110478 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 35
FILE NO.

28-APR-2016 12:30
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STEEL CRACK WELDED REPAIR DETAILS:

ACCESS HOLE DETAIL

(ONLY REQUIRED AS NEEDED TO ADEQUATELY PERFORM THE WELDED CRACK REPAIR)

ACCESS HOLE PROCEDURES:

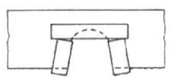
1. PREHEAT PLATE LOCALLY TO 100°F BELOW THE PREHEAT TEMPERATURE PER AASHTO GUIDELINES.
2. REMOVE ANY FILLET WELDS PRESENT IN THE AREA OF THE ACCESS HOLE IN 2" TO 3" LENGTHS BY AIR CARBON ARC GOUGING
3. CUT 2" LONG BY 1" HIGH ACCESS HOLE AND PROVIDE BEVELED EDGES.
4. AFTER THE CRACK REPAIR HAS BEEN COMPLETED, A BRACING SHOULD BE TACK WELDED TO THE COMPONENT WITH THE ACCESS HOLE.
5. WITH THE AASHTO PRESCRIBED PREHEAT MAINTAINED, FILL THE ACCESS HOLE WITH WELD METAL BY DEPOSITING STRINGER BEADS. CHECK EACH PASS VISUALLY TO ENSURE THE ABSENCE OF CRACKS OR OTHER DEFECTS. WHEN THE ACCESS HOLE IS FILLED, DEPOSIT FILLETS WELDS BACK IN PLACE FROM WHAT WAS REMOVED IN STEP 2.
6. INCREASE TEMPERATURE OF JOINT REGIONS FOR POST-HEATING AS REQUIRED BY AASHTO GUIDELINES.
7. GRIND ACCESS HOLE WELD FLUSH WITH COMPONENT SURFACE.
8. INSPECT THE ACCESS HOLE WELD AND REPLACED FILLET WELDS BY MAGNETIC PARTICLE OR DYE PENETRANT EXAMINATION TO CHECK FREEDOM FROM DEFECTS.
9. CARRY OUT A FINAL INSPECTION BY ULTRASONIC TESTING OR RADIOGRAPHIC TESTING.



CRACKED STEEL COMPONENT



CRACK REMOVED BY GOUGING

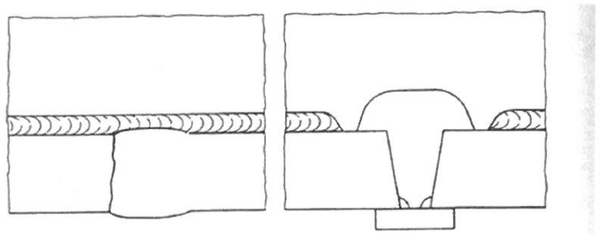


RUN-OFF TABS TACKED IN PLACE

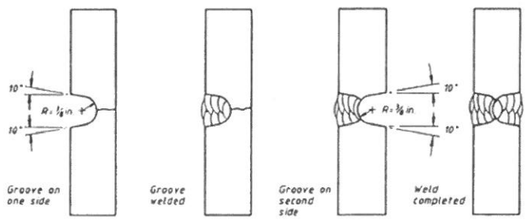
PARTIAL DEPTH CRACK REPAIR DETAILS

PARTIAL DEPTH CRACK REPAIR PROCEDURES:

1. CHECK CRACK LENGTH BY MAGNETIC PARTICLE OR DYE PENETRANT TESTING.
2. CUT OUT THE CRACK TO FORM A GROOVE BY AIR CARBON ARC GOUGING. AFTER AIR CARBON ARC GOUGING, GRIND THE SURFACE SMOOTH TO REMOVE ANY DEPOSITS.
3. CHECK THE GROOVE BY MAGNETIC PARTICLE TESTING TO ENSURE COMPLETE REMOVAL OF THE CRACK.
4. PREHEAT COMPONENT TO THE REQUIRED TEMPERATURE PER AASHTO GUIDELINES AND MAINTAIN THIS LEVEL UNTIL THE REPAIR IS COMPLETE.
5. TACK WELD RUN-OFF TABS IN POSITION. THE RUN-OFF TABS CONSIST OF THREE MILD STEEL STRIPS APPROXIMATELY ¼" THICK, 2" LONG AND WIDE ENOUGH TO REACH THE SURFACE OF THE COMPONENT.
6. GRIND RUN-OFF TABS WHERE THEY ARE IN CONTACT WITH THE COMPONENT SO THEY MATCH THE PROFILE OF THE GROOVE.
7. WELD GROOVE WITH LOW HYDROGEN ELECTRODES DRIED AT 700°F TO 800°F FOR ONE HOUR. REPLACE ANY FILLET WELDS THAT HAD TO BE REMOVED TO COMPLETE THE REPAIR.
8. INCREASE TEMPERATURE OF THE JOINT REGION FOR POST HEATING AS REQUIRED BY AASHTO GUIDELINES.
9. REMOVE RUN-OFF TABS AND GRIND REPAIR WELD FLUSH WITH COMPONENT SURFACE.
10. INSPECT THE REPAIR WELD AND ANY REPLACED FILLET WELDS BY MAGNETIC PARTICLE OR DYE PENETRANT EXAMINATION TO CHECK FREEDOM FROM DEFECTS.
11. CARRY OUT A FINAL INSPECTION BY ULTRASONIC TESTING OR RADIOGRAPHIC TESTING.



VERTICALLY CRACKED STEEL COMPONENT
NTS



HORIZONTALLY CRACKED STEEL COMPONENT
NTS

FULL DEPTH CRACK REPAIR DETAILS

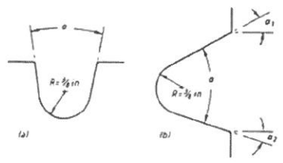
FULL DEPTH CRACK REPAIR PROCEDURES:

1. REMOVE ANY INTERFERING FILLET WELDS FOR A DISTANCE OF 3". THE BASE METAL SHOULD BE PREHEATED LOCALLY TO A TEMPERATURE 100°F BELOW THE TEMPERATURE USED FOR WELDING AS SPECIFIED BY THE AASHTO GUIDELINES.
2. CUT OUT ACCESS HOLE REQUIRED FOR ACCESSIBILITY, PER ACCESS HOLE DETAIL PROCEDURES.
3. CUT OUT THE CRACK TO FORM A GROOVE BY AIR CARBON ARC GOUGING. THE GROOVE ANGLE SHOULD BE 20° MINIMUM. AFTER AIR CARBON ARC GOUGING, GRIND THE SURFACE SMOOTH TO REMOVE ANY DEPOSITS.
4. CHECK THE GROOVE BY MAGNETIC PARTICLE TESTING TO ENSURE COMPLETE REMOVAL OF THE CRACK.
5. PREHEAT COMPONENT TO THE REQUIRED TEMPERATURE PER AASHTO GUIDELINES AND MAINTAIN THIS LEVEL UNTIL THE REPAIR IS COMPLETE.
6. TACK WELD BACKING AND RUN-OFF TABS IN POSITION, AS NEEDED. THE RUN-OFF TABS CONSIST OF THREE MILD STEEL STRIPS APPROXIMATELY ¼" THICK, 2" LONG AND WIDE ENOUGH TO REACH THE SURFACE OF THE COMPONENT.
7. GRIND RUN-OFF TABS WHERE THEY ARE IN CONTACT WITH THE COMPONENT SO THEY MATCH THE PROFILE OF THE GROOVE.
8. WELD GROOVE WITH LOW HYDROGEN ELECTRODES DRIED AT 700°F TO 800°F FOR ONE HOUR. FILL THE ACCESS HOLE PER DETAIL PROCEDURES AND REPLACE ANY FILLET WELDS THAT HAD TO BE REMOVED TO COMPLETE THE REPAIR. CHECK EACH PASS TO ENSURE FREEDOM FROM CRACKS AND OTHER DEFECTS.
9. INCREASE TEMPERATURE OF THE JOINT REGION FOR POST HEATING AS REQUIRED BY AASHTO GUIDELINES.
10. REMOVE RUN-OFF TABS AND GRIND REPAIR WELD FLUSH WITH COMPONENT SURFACE.
11. INSPECT THE REPAIR WELD AND ANY REPLACED FILLET WELDS BY MAGNETIC PARTICLE OR DYE PENETRANT EXAMINATION TO CHECK FREEDOM FROM DEFECTS.
12. CARRY OUT A FINAL INSPECTION BY ULTRASONIC TESTING OR RADIOGRAPHIC TESTING.

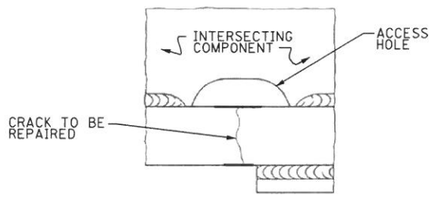
CRACKED OR BROKEN WELD REPAIR PROCEDURES

1. PREHEAT PLATE LOCALLY TO 100°F BELOW THE PREHEAT TEMPERATURE PER AASHTO GUIDELINES.
2. REMOVE CRACKED OR BROKEN FILLET WELDS IN 2" TO 3" LENGTHS BY AIR CARBON ARC GOUGING.
3. WITH THE AASHTO PRESCRIBED PREHEAT MAINTAINED, DEPOSIT NEW FILLET WELDS BACK IN PLACE FROM WHAT WAS REMOVED. CHECK EACH PASS VISUALLY TO ENSURE THE ABSENCE OF CRACKS OR OTHER DEFECTS.
4. INCREASE TEMPERATURE OF JOINT REGIONS FOR POST-HEATING AS REQUIRED BY AASHTO GUIDELINES.
5. INSPECT THE FINAL REPLACED FILLET WELD BY MAGNETIC PARTICLE OR DYE PENETRANT EXAMINATION TO CHECK FREEDOM FROM DEFECTS.
6. CARRY OUT A FINAL INSPECTION BY ULTRASONIC TESTING OR RADIOGRAPHIC TESTING.

Welding position	Groove angle α°	Bevel angles α'1, α'2
Flat	20 min	– –
Vertical	20 min	– –
Overhead	20 min	– –
Horizontal	40 min	30-45 0-15



AIR CARBON ARC GOUGING GROOVE DETAILS



CITY OF CHATTANOOGA
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CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
WILLIAM C. PAYNE, P.E., CITY ENGINEER
JUSTIN C. HOLLAND, ADMINISTRATOR

STEEL REPAIR DETAIL (3)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

VOLKERT

ADAM S. DAVIDSON REGISTERED ENGINEER No. 110438 STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 36
FILE NO.

28-APR-2016 12:29
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STEEL PACK RUST REPAIR DETAILS:

DESCRIPTION:

THIS WORK SHALL CONSIST OF REPAIRING BUILT-UP STEEL MEMBERS THAT HAVE BEEN DEFORMED BY PACK RUST (RUST BUILD-UP) AT LOCATIONS INDICATED ON THE CONTRACT PLANS AND OTHER LOCATIONS DIRECTED BY THE FIELD ENGINEER IN ACCORDANCE WITH THE REPAIR PROCEDURES DESCRIBED BELOW.

MATERIALS:

MATERIALS FOR THIS WORK SHALL CONFORM TO THE FOLLOWING:

1. TERMARUST 2000 SERIES HIGH RATIO CALCIUM SULFONATE SYSTEM BY TERMARUST TECHNOLOGIES, MONTREAL CANADA OR AN APPROVED EQUAL:

GENERAL PACK RUST REPAIR PROCEDURES:

1. THE FIELD ENGINEER SHALL DETERMINE THE AREAS REQUIRING REPAIR. THE FIELD ENGINEER WILL IDENTIFY THE LOCATIONS AND LIMITS AND SHALL INCLUDE ALL AREAS SHOWN ON THE CONTRACT PLANS AND OTHER LOCATIONS WHERE BUILT-UP STEEL PLATE SECTIONS ARE DEFORMED OVER 3/8" AND, WHICH IN THE OPINION OF THE FIELD ENGINEER REQUIRE REPAIR.
2. REMOVE THE EXISTING PAINT A MINIMUM OF 6" ON EITHER SIDE OF THE REPAIR AREA AND IN ACCORDANCE WITH THE PARAMETERS OF TDOT SPEC 603.05B.
3. RIVETS THAT INTERFERE WITH THE WORK OR ARE DETERIORATED, DEFORMED, OR FAILED SHALL BE REMOVED AS DETERMINED BY THE FIELD ENGINEER. REMOVAL OF RIVETS ALONG A GAGE LINE SHALL BE STAGGERED SUCH THAT TWO ADJACENT RIVETS ARE NOT REMOVED AT THE SAME TIME. RIVETS SHALL BE REMOVED BY ONE OF THE FOLLOWING METHODS: (1) SHEAR RIVET HEAD USING A PNEUMATIC RIVET BREAKER (HELLDOG), AND DRIVE OUT RIVET SHANK WITH A PNEUMATIC PUNCH OR (2) FLAME CUT RIVET HEAD ABOVE THE BASE METAL USING A RIVET SCARFING TIP WITHOUT DAMAGING THE BASE METAL, AND DRIVE OUT THE SHANK USING A PNEUMATIC PUNCH. IF PUNCHING WILL DAMAGE THE BASE METAL, THE SHANK SHALL BE REMOVED BY DRILLING. ANY DAMAGE TO THE BASE METAL SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE CITY.
4. REMOVE PACK RUST BASED ON THE UNIQUE CONDITIONS FOUND AT EACH SPECIFICALLY IDENTIFIED REPAIR LOCATIONS BY ONE OF THE FOLLOWING REMOVAL TECHNIQUES TO BE DETERMINED BY THE FIELD ENGINEER. THE TECHNIQUE SELECTION SHOULD BE THE BEST VALUE SOLUTION TAKING INTO CONSIDERATION THE FOLLOWING PARAMETERS SUCH AS STRUCTURAL COMPONENT AND SYSTEM STABILITY, ABILITY TO PERFORM THE WORK IN THE FIELD, AND REMOVAL OF THE MAXIMUM AMOUNT OF PACK RUST AS FEASIBLY POSSIBLE.

PACK RUST REMOVAL TECHNIQUE 1 - "PARTIAL DISASSEMBLY TECHNIQUE"
PARTIALLY DISASSEMBLE COMPONENT PIECES ADJACENT TO PACK RUST BUILD-UP TO THE EXTENT REQUIRED TO COMPLETELY REMOVE ALL THE PACK RUST BY MEANS OF POWER TOOL CLEANING.
ONLY TO BE USED IN CASES WHERE STABILITY IS NOT A CONCERN AND WHERE COMPLETED DISASSEMBLY OF THE COMPONENT OR STRUCTURAL SYSTEM IS NOT REQUIRED. (I.E. BATON PLATES OR LATTICE OF BUILT-UP MEMBERS.)

PACK RUST REMOVAL TECHNIQUE 2 - "TRADITIONAL TECHNIQUE"
PACK RUST IN THE DEFORMED AREA SHALL BE REMOVED BY POWER TOOL CLEANING TO THE DEPTH OF SEPARATION BETWEEN THE PLIES, BUT NOT LESS THAN A MINIMUM DEPTH OF ONE INCH. THE FIELD ENGINEER MAY SPECIFY A DEPTH OF LESS THAN ONE INCH, BUT IN NO CASE SHALL THE REMOVAL DEPTH BE LESS THAN ONE-HALF INCH.

PACK RUST REMOVAL TECHNIQUE 3 - "HEAT AND HAMMER TECHNIQUE"
HEAT A SMALL AREA OF AN ACCESSIBLE STEEL PLY OF THE BUILT-UP MEMBER ADJACENT TO THE PACK RUST USING AN OXYGEN FUEL TORCH FITTED WITH A ROSEBUD TIP. THE STEEL SHOULD BE HEATED TO A TEMPERATURE IN THE RANGE OF 800°F TO 1000°F.
IN ORDER TO AVOID DISTORTION OF THE STEEL BY CONCENTRATING TOO MUCH HEAT IN ONE AREA, ONLY PERFORM THIS OPERATION IN 1 SQ. FT. SECTIONS.
PLACE A BUFFER PLATE DIRECTLY ON TOP THE HEATED PLY. THE BUFFER PLATE NEEDS A HANDLE TO ALLOW A WORKER TO HOLD THE PLATE IN PLACE TO ENSURE THAT IT DOES NOT MOVE DURING HAMMERING OPERATIONS.
USING A RIVET HAMMER WITH A MODIFIED SNAP, PERFORM A HAMMERING ACTION ON THE BUFFER PLATE TO DRIVE OUT THE PACK RUST AND FLATTEN THE BUCKLED PLY SECTION BELOW THE BUFFER PLATE.
MOVE TO A NEW AREA AND REPEAT THE PROCESS.
DEMONSTRATION OF THIS PROCESS CAN BE OBSERVED BY VIDEO AT THE FOLLOWING LINK: HTTP://NCPTT.NPS.GOV/WP-CONTENT/UPLOADS/2010-04.PDF

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE OSHA WORKER PROTECTION REQUIREMENTS.

ANY STABILITY CALCULATIONS AND/OR TEMPORARY SHORING DESIGNS REQUIRED FOR THE REPAIRS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND CALCULATIONS AND PLANS SEALED BY A LICENSED PROFESSIONAL ENGINEER SHALL BE SUBMITTED TO THE FIELD ENGINEER FOR REVIEW AND APPROVAL. PRIOR TO START OF WORK.

5. PRESSURE WASHING BETWEEN STEEL PLIES WHERE PACK RUST IS PRESENT IS PROHIBITED.
6. WITH THE PACK RUST REMOVED, THE REPAIR AREAS SHALL BE DRIED BY APPLYING ARTIFICIAL HEAT UNTIL THE SURFACE TEMPERATURE REACHES 250°F. THE METHOD OF APPLYING ARTIFICIAL HEAT SHALL BE APPROVED BY THE FIELD ENGINEER. IF TORCHES ARE USED THE CONTRACTOR SHALL DEMONSTRATE TO THE FIELD ENGINEER THAT THE AREA CAN BE DRIED WITHOUT DAMAGING THE STEEL, OR COATING THAT IS TO REMAIN.
7. IMMEDIATELY AFTER THE SURFACE HAS BEEN DRIED, APPLY THE TERMARUST 2000 SYSTEM PENETRANT/SEALER. THE PACK RUST TREATMENT SYSTEM SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER S INSTRUCTIONS.
8. AFTER THE SEALER HAS DRIED, THE EMPTY RIVET HOLES SHALL BE FILLED ASTM A325 HIGH STRENGTH BOLTS. ALL HIGH STRENGTH BOLTS SHALL BE THE SAME DIAMETER AS THE RIVETS THEY REPLACE. HIGH STRENGTH BOLTS SHALL BE INSTALLED AFTER THE NICKS, BURRS AND FOREIGN SUBSTANCES THAT MIGHT INTERFERE WITH SEATING OF THE BOLT HEAD AND NUT WASHERS ARE REMOVED. LIGHT GRINDING MAY BE REQUIRED. INSTALLATION AND INSPECTION OF HIGH STRENGTH BOLTS SHALL BE PERFORMED IN ACCORDANCE WITH THE STEEL CONSTRUCTION MANUAL. IF IT BECOMES NECESSARY TO DISCONNECT, OR ADJUST, STEEL REMAINING AS PART OF THE STRUCTURE TO COMPLETE THE WORK, THE CONTRACTOR SHALL OBTAIN THE FIELD ENGINEERS APPROVAL PRIOR TO PERFORMING DISCONNECTIONS OR ADJUSTMENTS. IF THE BOLT WILL NOT FIT THE RIVET HOLE, THE HOLE MAY BE REAMED SUFFICIENTLY TO ACCOMMODATE THE BOLT. THE TORQUEING AND SEQUENCING OF BOLT INSTALLATIONS SHALL BE PERFORMED IN SUCH A MANNER THAT SEPARATED AND DEFORMED PLIES OF PLATE MAY BE SEQUENTIALLY DRAWN TOGETHER.
9. AFTER THE BOLTING HAS BEEN COMPLETED THE TERMARUST 2000 TOPCOAT MATERIAL SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. THE AREAS TO BE SEALED SHALL BE FREE OF DIRT, DUST, RUST OR LOOSE PAINT, AND OTHER MATERIAL THAT WOULD INTERFERE WITH THE ADHESION OF THE SEALANT. SEALED AREAS OF PACK RUST REPAIR SHALL BE FILLED FLUSH WITH THE VERTICAL EDGES OF STEEL FLANGES AND WITHOUT VOIDS OR AIR POCKETS.

STEEL SECTION LOSS REPAIR DETAILS USING PAD WELDING:

DESCRIPTION:

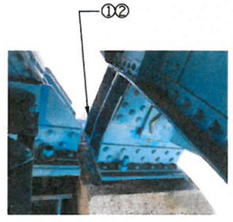
THIS WORK SHALL CONSIST OF REPAIRING STEEL MEMBERS THAT HAVE EXPERIENCED PITTING OR MINOR SECTION LOSS AT LOCATIONS INDICATED ON THE CONTRACT PLANS AND OTHER LOCATIONS DIRECTED BY THE FIELD ENGINEER IN ACCORDANCE WITH THE REPAIR PROCEDURES DESCRIBED BELOW.

MATERIALS:
MATERIALS FOR THIS WORK SHALL CONFORM TO THE FOLLOWING:

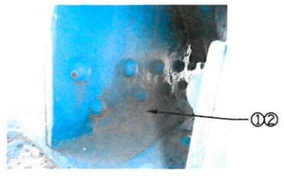
1. AWS SMAW LOW HYDROGEN ELECTRODE E7018 WELD.

GENERAL PACK RUST REPAIR PROCEDURES:

1. THE FIELD ENGINEER SHALL DETERMINE THE AREAS REQUIRING REPAIR. THE FIELD ENGINEER WILL IDENTIFY THE LOCATIONS AND LIMITS AND SHALL INCLUDE ALL AREAS SHOWN ON THE CONTRACT PLANS AND OTHER LOCATIONS OF STEEL COMPONENTS WITH PITTING OR MINOR SECTION LOSS, WHICH IN THE OPINION OF THE FIELD ENGINEER REQUIRE REPAIR.
2. REMOVE THE EXISTING PAINT A MINIMUM OF 6" ON EITHER SIDE OF THE REPAIR AREA AND IN ACCORDANCE WITH THE PARAMETERS OF TDOT SPEC 603.05B.
3. RIVETS THAT INTERFERE WITH THE WORK OR ARE DETERIORATED, DEFORMED, OR FAILED SHALL BE REMOVED AS DETERMINED BY THE FIELD ENGINEER. REMOVAL OF RIVETS ALONG A GAGE LINE SHALL BE STAGGERED SUCH THAT TWO ADJACENT RIVETS ARE NOT REMOVED AT THE SAME TIME. RIVETS SHALL BE REMOVED BY ONE OF THE FOLLOWING METHODS: (1) SHEAR RIVET HEAD USING A PNEUMATIC RIVET BREAKER (HELLDOG), AND DRIVE OUT RIVET SHANK WITH A PNEUMATIC PUNCH OR (2) FLAME CUT RIVET HEAD ABOVE THE BASE METAL USING A RIVET SCARFING TIP WITHOUT DAMAGING THE BASE METAL, AND DRIVE OUT THE SHANK USING A PNEUMATIC PUNCH. IF PUNCHING WILL DAMAGE THE BASE METAL, THE SHANK SHALL BE REMOVED BY DRILLING. ANY DAMAGE TO THE BASE METAL SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE CITY.
4. PREPARE THE SURFACE AREA USING A HAND HELD POWER WIRE BRUSH TO CLEAN THE AREA OF ALL CORROSION.
5. REPAIR ALL PITTING AND SECTION LOSS BY FILLING THE DETERIORATED AREAS WITH PADDING WELDS BACK TO THE ORIGINAL LIMITS OF THE COMPONENT USING AN AWS SMAW LOW HYDROGEN ELECTRODE E7018 WELD.
6. USING A HAND HELD POWER GRINDER, SMOOTH OUT THE WELDED SURFACE. ALWAYS GRIND IN ONE DIRECTION PERPENDICULAR TO THE WELD.
7. DEMONSTRATION OF THIS PROCESS CAN BE OBSERVED BY VIDEO AT THE FOLLOWING LINK: HTTP://WWW.LCC.EDU/MANUFACTURING/WELDING/VIDEOS/PAD_WELDING.ASPX
8. REPAINT THE REPAIRED SECTION AREA IN ACCORDANCE WITH TDOT SPECIFICATIONS 603.



GENERAL BEARING OVERVIEW



BEARING SECTION LOSS DETAIL

TRUSS BEARING REPAIR

NOTES:
1. SECTION LOSS IS AT BASE OF EXTERIOR VERTICAL BEARING PLATES.
2. REPAIR USING PAD WELDING DETAILS.

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WILLIAM C. PAYNE, P.E., CITY ENGINEER

STEEL REPAIR DETAIL (4)

NO.	REVISION	DATE	SIG.

SCALE	NO SCALE
DRAWN	C. DIXON
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

VOLKERT

ADAM S. DAVIDSON, REGISTERED ENGINEER, No. 110436, STATE OF TENNESSEE

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 37
FILE NO.

28-APR-2016 12:31
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STONE PIER





STONE PIER MASONRY REPAIR

NOTES:
PIERS NOS. 1 & 6 HAVE ROCK CLIMBING HAND HOLDS INSTALLED. IF THESE HAVE TO BE REMOVED TO PERFORM MORTAR JOINT REPAIRS, HOLDS MUST BE REPLACED ONCE WORK HAS BEEN COMPETED. DAMAGED HOLDS MUST BE REPLACED IN-KIND. CONTRACTOR TO COORDINATE THIS WORK WITH CITY OF CHATTANOOGA PARK DEPARTMENT.

COFFERDAMS WILL BE REQUIRED TO COMPLETE MASONRY MORTAR JOINT REPAIR AND SHOULD BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 204.09 OF THE TDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

STONE MASONRY BLOCKS IN THE DIRECT VICINITY OF THE MORTAR JOINT REPAIR LOCATIONS SHOULD BE SOUNDED FOR SPALLS AND DELAMINATIONS. IN ADDITION, STONE MASONRY BLOCKS ELSEWHERE IN THE PIER WITH VISIBLE SIGNS OF DETERIORATION SHOULD BE SOUNDED. ANY UNSOUND MATERIAL DISCOVERED SHALL BE REMOVED UNTIL SOUND MATERIAL IS REACHED. LIMITS OF REMOVAL SHALL BE MINIMIZED TO AVOID REMOVING SOUND MATERIAL. STONE BLOCK DETERIORATION REMOVAL AREAS AND LIMITS TO BE APPROVED BY THE FIELD ENGINEER AND MAY BE INCREASED OR DECREASED AT HIS DISCRETION. NOTIFY THE FIELD ENGINEER IMMEDIATELY IF THE DETERIORATION EXCEEDS A DEPTH OF 6 INCHES. COST OF THIS REPAIR TO BE INCLUDED IN THE UNIT BID PRICE OF THE MORTAR JOINT REPAIR.

STONE PIER MASONRY MORTAR JOINT REPAIR *

REPAIR GENERAL GUIDELINES:

1. IN GENERAL, THE REPAIRS SHOULD BE UNDERTAKEN USING THE LEAST OBTRUSIVE MEANS POSSIBLE, WITH A PLAN TO DISTURB THE LEAST AMOUNT OF ORIGINAL MATERIAL. UNNECESSARY REPAIRS AND REPLACEMENTS SHOULD BE AVOIDED.
2. THE REPAIR SHOULD ADDRESS ONLY THOSE AREAS OF THE BRIDGE PIER WHERE DETERIORATION IS PRESENT. SOUND MORTAR THAT IS WELL BONDED TO THE ADJACENT MASONRY SHOULD NOT BE REMOVED.
3. REPAIR MORTAR (REPOINT) ONLY WHEN THERE IS EVIDENCE OF DETERIORATION SUCH AS DISINTEGRATING MORTAR, CRACKS IN MORTAR JOINTS, GAPS AT THE MORTAR/STONE INTERFACE, LOOSE STONES, OR DAMP WALLS. THESE AREAS ARE TO BE DESIGNATED BY THE FIELD ENGINEER PRIOR TO THE START OF THE REPAIR WORK.
4. ALL REPAIR WORK SHOULD BE SUPERVISED BY A MASON EXPERIENCED IN STONE WORK AND IN THE USE AND MIXTURE OF MORTAR, PER REQUIREMENTS DETAILED BELOW.
5. REPAIR WITH CONCRETE OR GUNITE/SHOTCRETE IS NOT PERMITTED.

REPOINTING MORTAR MIX GUIDELINES:

1. THE CONTRACTOR IS RESPONSIBLE TO SUBMIT A MASON DESIGNED POINTING MORTAR MIX, COMPLIANT WITH THESE GUIDELINES, FOR APPROVAL BY THE ENGINEER.
2. THE REPOINTING MORTAR USED FOR THE JOINT REPAIR SHALL BE COMPATIBLE WITH THE HISTORIC MORTAR AND WHICH MATCHES THE HISTORIC MORTAR COLOR, TEXTURE, AND FINISH. THE EXACT PHYSICAL CONDITIONS AND CHEMICAL PROPERTIES OF THE HISTORIC MORTAR ARE NOT OF MAJOR SIGNIFICANCE AS LONG AS THE REPAIR MORTAR CAN COEXIST WITH THE HISTORIC MORTAR IN A SYMPATHETIC AND SUPPORTIVE CAPACITY AND IT IS COMPATIBLE WITH THE TYPE OF STONE USED IN THE BRIDGE PIER, THE CURRENT SITE CONDITIONS AND THE CHARACTERISTICS OF THE HISTORIC MORTAR.
3. TO DETERMINE THE PROPER MORTAR MIX, IT MAY BE NECESSARY TO ANALYZE THE COMPOSITION OF THE EXISTING HISTORIC POINTING MORTAR BY MEANS OF PETROGRAPHIC EXAMINATION OF SAMPLES OF THE EXISTING POINTING MORTAR.
4. MORTAR MIXES WITH HIGH PORTLAND CEMENT RATIOS ARE NOT PERMITTED.
5. MORTAR MIXES MUST HAVE A LOWER COMPRESSIVE STRENGTH AND GREATER VAPOR PERMEABILITY THAN THE EXISTING MASONRY UNITS OF THE BRIDGE PIER.
6. MEASURE AND MIX MORTAR COMPONENTS CAREFULLY TO ASSURE UNIFORMITY OF VISUAL AND PHYSICAL CHARACTERISTICS. MEASURE DRY INGREDIENTS BY VOLUME AND THOROUGHLY MIX THEM BEFORE ADDING WATER. AFTER DRY MIXING, ADD HALF THE NEEDED WATER AND MIX FOR APPROXIMATELY FIVE MINUTES. THEN ADD THE REMAINING WATER IN SMALL PORTIONS UNTIL THE DESIRED CONSISTENCY IS REACHED.
7. MORTAR SHOULD BE STIFF TO LIMIT SHRINKAGE AND OF THE CONSISTENCY THAT IF SQUEEZED BY HAND, IT DOES NOT RUN OUT.
8. MORTAR SHOULD NOT BE ALLOWED TO DRY OUT DURING USE AND SHOULD BE REWORKED AT INTERVALS BEFORE BEING PLACED IN JOINTS. RETEMPERING, OR ADDING MORE WATER, SHALL NOT BE PERMITTED.

REPOINTING PROCEDURES:

1. REMOVE ALL DETERIORATED AND LOOSE MORTAR, AS DIRECTED BY THE FIELD ENGINEER, TO A MINIMUM DEPTH OF 2 TO 2 ½ TIMES THE WIDTH OF THE JOINT TO ENSURE AN ADEQUATE BOND. REMOVAL TO A GREATER DEPTH MAY BE REQUIRED TO REACH SOUND MORTAR. SAW CUTTING OR GRINDING OF THE MORTAR JOINTS IS NOT A PERMITTED METHOD FOR MORTAR JOINT REMOVAL DUE TO RISK OF DAMAGING EXISTING STONE. ADDITIONALLY, REMOVING NON-DETERIORATED MORTAR FROM SOUND JOINTS IS NOT PERMITTED.
2. CLEAN MORTAR JOINTS USING HAND TOOLS SUCH AS A TROWEL, HAND CHISEL, AND HAMMER OR A SMALL PNEUMATIC CHISEL. REMOVE MORTAR CLEANLY, MAKING EVERY EFFORT TO LEAVE SQUARE CUTS AT THE REAR OF THE JOINT.
3. RAKE OUT LOOSE MATERIAL USING NATURAL BRISTLE, NYLON BRUSH, OR LOW-PRESSURE COMPRESSED AIR (40-60 PSI). LOW PRESSURE WATER (MAXIMUM PRESSURE 400PSI) MAY ALSO BE USED, ALTHOUGH CARE SHOULD BE TAKEN NOT TO SCOUR ADDITIONAL SOUND BEDDING MORTAR OUT OF THE JOINTS. USING METAL SCRAPERS OR BRUSHES OR ACID AND ALKALI CLEANING AGENTS ARE NOT PERMITTED.
4. ANY LOOSE STONES ENCOUNTERED SHOULD BE CAREFULLY REMOVED TO AVOID DAMAGE TO THE ADJOINING MASONRY. REMOVE ALL LOOSE MORTAR, THOROUGHLY CLEAN THE STONE AND THE RECEIVING SURFACE USING LOW WATER PRESSURE (MAXIMUM PRESSURE 400 PSI), APPLY A LINING OF BEDDING MORTAR TO THE SURFACE OF THE HOLE TO BE FILLED, CAREFULLY RESET THE EXISTING STONE IN ITS ORIGINAL POSITION SO THAT THE NATURAL STRATIFICATION IS PARALLEL TO THE BEDDING PLANE, ENSURE IT IS WELL-BEDDED AND EXISTING IN PLACE MASONRY IS NOT JARRED.
5. STONES ADJACENT TO JOINTS TO BE REPOINTED, SHOULD BE THOROUGHLY SATURATED WITH CLEAN WATER PRIOR TO BEGINNING REPOINTING WORK TO PREVENT THE STONE FROM DRAWING OUT THE MOISTURE IN THE NEW MORTAR JOINT AND CAUSING IT TO DRY OUT AND CRACK. HOWEVER, NO STANDING WATER SHOULD BE PRESENT AT THE TIME OF REPOINTING.
6. REPOINT ONLY WHEN THE AMBIENT TEMPERATURE IS BETWEEN 41 AND 86 DEGREES F, AND EXPECTED TO REMAIN ABOVE 41 DEGREES FOR SEVERAL DAYS FOLLOWING REPOINTING. IN ADDITION, THE STONE SHOULD BE FREE OF FROST.
7. REPOINT USING A MORTAR PER REQUIREMENTS DETAILED IN THE PREVIOUS SECTION OF THIS REPAIR PROCEDURE.
8. BEFORE PLACING THE REPOINTING MORTAR, DAMPEN THE REMAINING PORTION OF THE EXISTING SOUND MORTAR JOINT WITH A SPRAY BOTTLE TO CONTROL SUCTION AND EVAPORATION. NO STANDING WATER SHOULD BE PRESENT IN THE JOINT TO BE REPOINTED.
9. PLACE NEW MORTAR TO WITHIN 1½" OF THE FACE OF THE STONE. MORTAR SHOULD BE COMPACTED IN SUCCESSIVE LAYERS, WITH EACH LAYER PERMITTED TO REACH THUMB-PRINT HARDNESS BEFORE THE NEXT LAYER IS APPLIED. DURING THIS STEP, HAND POINTING IS THE PREFERRED METHOD, HOWEVER A PRESSURE GUN MAY BE USED BY EXPERIENCED OPERATORS.
10. FINISH POINTING THE REMAINING 1½" OF THE JOINT. FINISH POINTING SHOULD NOT BE DONE BY HAND, BUT RATHER WITH A HAND POINTING TOOL. FOR THE OUTER ¾", INSTALL MORTAR IN ¼" LIFTS, COMPACTING EACH LAYER. PERMIT EACH LAYER TO REACH THUMBPRINT HARDNESS BEFORE THE NEXT LAYER IS APPLIED. UPON COMPLETION, THE NEW POINTING SHOULD MATCH THE HISTORIC FINISH AND TOOLING AS THE REST OF THE BRIDGE PIER. THE FINISH SHOULD MATCH THE STONE FACE OR BE SLIGHTLY CONCAVE, TO CHANNEL WATER OUT OF THE WALL AND TO AVOID WATER POOLING. THE REPOINTED MORTAR JOINTS SHOULD MATCH THE WIDTH OF THE HISTORIC MORTAR JOINTS THROUGHOUT THE REST OF THE EXISTING BRIDGE PIER.
11. IMMEDIATELY AFTER REPOINTING, CLEAN EXCESS MORTAR FROM ADJACENT MASONRY, TAKING CARE NOT TO DAMAGE NEWLY POINTED JOINTS. USE ONLY NATURAL BRISTLE OR NYLON BRUSHES AND WOOD OR PLASTIC TOOLS TO REMOVE EXCESS MORTAR.
12. AFTER MORTAR HAS BEGUN HARDENING (ABOUT 12 HOURS), TAMP BACK WITH A STIFF BRUSH TO FURTHER COMPACT THE MATERIAL.
13. PROTECT THE FINISHED WORK FROM DIRECT SUN AND RAIN UNTIL THE FACE HAS CURED AND HARDENED, APPROXIMATELY 48 HOURS.
14. AFTER MORTAR HAS BEEN ALLOWED TO CURE FOR 7 TO 14 DAYS, CLEAN EXPOSED MASONRY SURFACES USING STIFF NYLON OR NATURAL BRISTLE BRUSHES AND CLEAN WATER SPRAYED AT LOW PRESSURE (MAXIMUM PRESSURE 400 PSI).

*AS ADOPTED FROM THE PENNDOT HISTORIC STONE ARCH BRIDGE MAINTENANCE MANUAL, OCTOBER 2007

CITY OF CHATTANOOGA SEAL
CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
WALNUT STREET PEDESTRIAN BRIDGE
BRIDGE REPAIRS - PHASE I
JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

STONE PIER REPAIR DETAILS

NO.	REVISION	DATE	SIG.

SCALE	NO SCALE
DRAWN	C. DIXON
DESIGN	A. DAVIDSON
CHECKED	T. MONTIEL

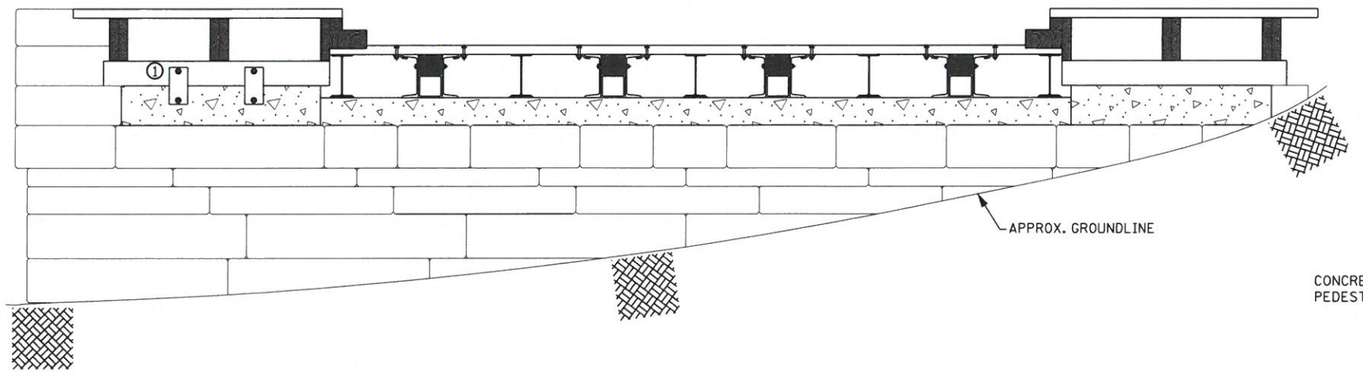
VOLKERT

ADAM S. DAVIDSON, REGISTERED ENGINEER, GEOTECHNICAL, DOMICILE NO. 110436, STATE OF TENNESSEE

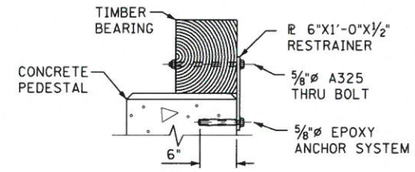
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JOB NO. 457001.17
DATE 2/29/16
SHEET 38
FILE NO.

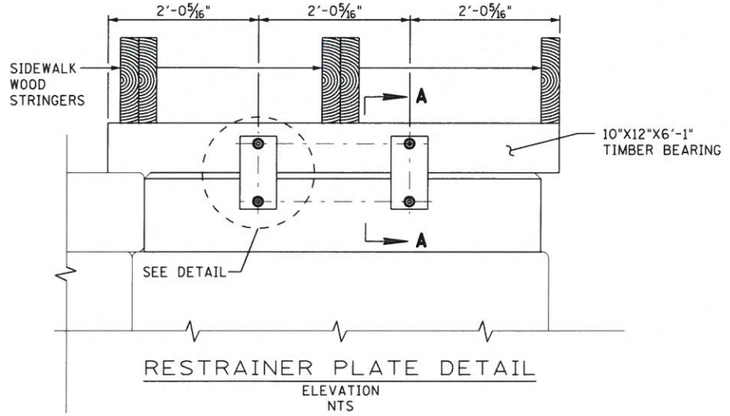
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ELEVATION - NORTH ABUTMENT
(LOOKING FORWARD ON SURVEY)
NTS

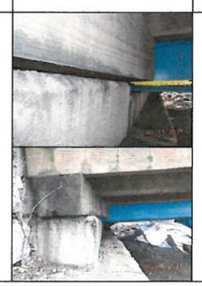


SECTION A-A

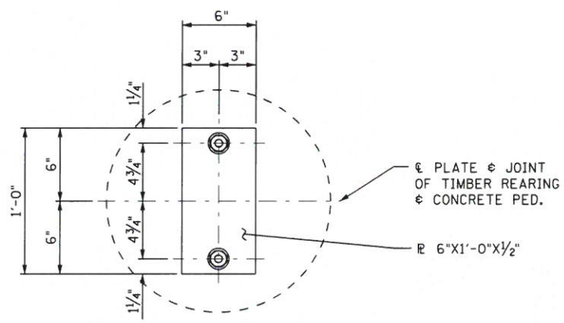


RESTRAINER PLATE DETAIL
ELEVATION
NTS

DEFICIENCIES

DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
①	NORTH ABUTMENT UNDER WEST SIDEWALK/ BEARING	WOODEN BEARING HAS ROTATED AND IS OVERHANGING ABUTMENT CAP BY UP TO 5"		RESET WOODEN BEARING AND WOODEN STRINGERS. INSTALL RESTRAINER PLATES PER RESTRIANER PLATE DETAIL.

■ TO BE PAID UNDER ITEM NO. 601-10.12



DETAIL

NOTE:
REALIGN TIMBER BEARING PRIOR TO INSTALLATION OF RESTRAINER PLATE

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JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

ABUTMENT REPAIR DETAIL (NORTH)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

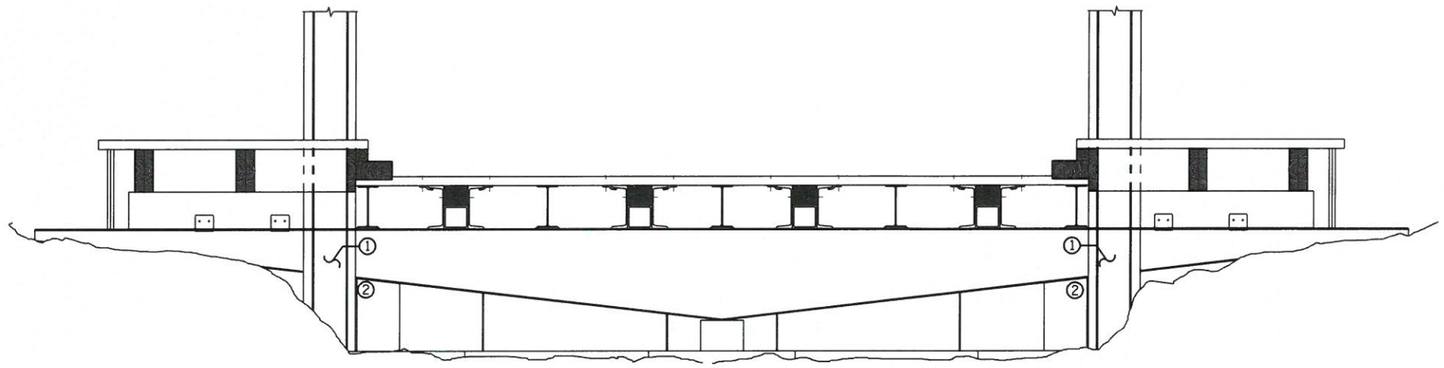
VOLKERT

ADAM S. DAVIDSON
REGISTERED ENGINEER
No. 110436
STATE OF TENNESSEE
2-29-16

APPROVED

JOB NO. 457001.17
DATE 2/29/16
SHEET 39
FILE NO.

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ELEVATION - SOUTH ABUTMENT

(LOOKING BACK ON SURVEY)

NOTE:
CONTRACTOR TO CLEAR VEGETATION AND REMOVE SOIL AROUND BEARINGS. COST TO BE INCLUDED IN OTHER ITEMS BID ON.

DEFICIENCIES

DEF. NO.	LOCATION/COMPONENT	DEF. DESCRIPTION	PHOTO	DEF. REPAIR
▬ ▲ ①	SOUTH ABUTMENT CAP/FLOOR BEAM, BOTTOM FLANGE AND LOWER WEB NORTH FACE AT WEST AND EAST BEARING	PAINTED OVER SECTION LOSS UP TO 100% (12"X4")		REPLACE BOTTOM FLANGE BETWEEN FLOOR BEAM VERTICAL STIFFNERS, IN-KIND. REPAIR WEB SECTION LOSS BY PAD WELDING TECHNIQUE AS DETAILED ON BRIDGE SHEET NO. 37.
▲ ②	SOUTH ABUTMENT EAST AND WEST FIXED BEARING, WEB PLATES AND STIFFENERS	50% PAINTED OVER SECTION LOSS ¼" PLATE REMAINING		REPAIR SECTION LOSS USING PAD WELDING REPAIR DETAILS ON BRIDGE SHEET NO. 37.

▲ TO BE PAID UNDER ITEM NO. 602-10.53

▬ TO BE PAID UNDER ITEM NO. 602-10.55

CITY OF CHATTANOOGA SEAL

CITY OF CHATTANOOGA
DEPARTMENT OF TRANSPORTATION
CONTRACT #E-13-002-201
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JUSTIN C. HOLLAND, ADMINISTRATOR
WILLIAM C. PAYNE, P.E., CITY ENGINEER

ABUTMENT REPAIR DETAILS (SOUTH)

NO.	REVISION	DATE	SIG.

SCALE NO SCALE
DRAWN C. DIXON
DESIGN A. DAVIDSON
CHECKED T. MONTIEL

VOLKERT

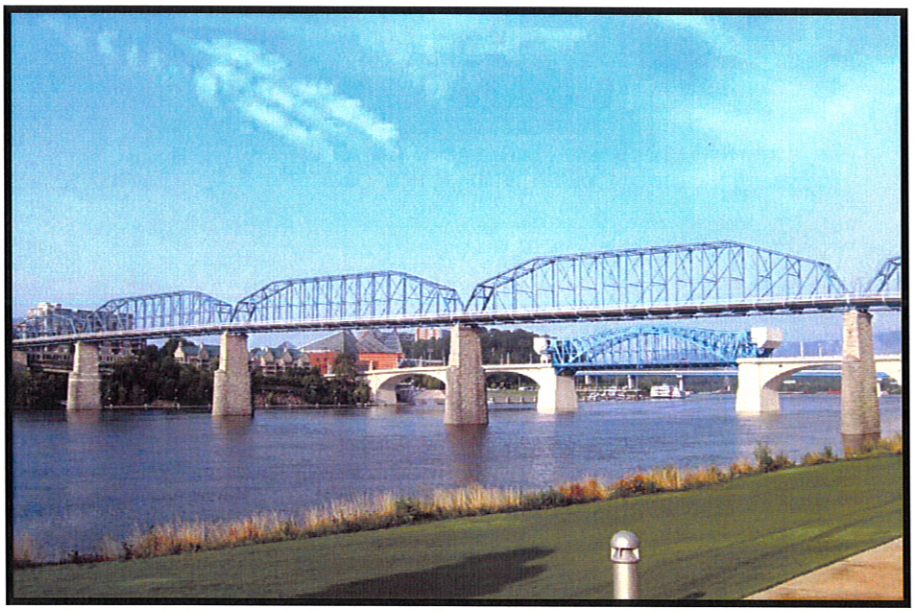
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Walnut Street Bridge
City of Chattanooga, Tennessee



2008 Biennial Inspection Report

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EXECUTIVE SUMMARY

TranSystems Corporation completed the 2008 Biennial Inspection of the Walnut Street Bridge on August 1, 2008. The scope of work included the inspection of the six main truss spans and the north viaduct trestle spans. The purpose of this inspection was to determine the structural integrity of primary and secondary bridge members and to identify structural and non-structural deficiencies which may compromise the structural integrity of the bridge or create safety hazards.

The Walnut Street Bridge is in fair condition with 2 immediate repair items, 8 priority repair items, 10 routine repair items, 9 north viaduct rehabilitation items and 7 items for monitoring.

The 2 immediate repair items consist of a deteriorated unreinforced masonry wall at the embankment adjacent to the south abutment and a missing timber support for the water main pipe at Pier 5. The unreinforced masonry wall exhibits widespread cracks and evidence of movement. Although located directly underneath panel 2 of Span 1, this wall is not directly connected to the bridge substructure.

The 8 priority repair items include damaged epoxy coating at post tensioning strands, section losses at fixed and expansion bearings, cracked welds and a deteriorated sign structure.

A full deck replacement and rehabilitation is recommended for the North Viaduct (Spans 7 thru 45) consisting of 9 repair items. These items include demolition of deck, installation of temporary shielding, full deck replacement, railing repairs, steel repairs and removal of dirt and debris from column bases.

The total estimated cost for rehabilitating the North Viaduct is $789,600. The total estimated cost for addressing all other repair items is $105,100.

Inspection of the main truss spans was limited to the top of deck and piers. It is recommended that an in-depth inspection of the main truss spans, including the bottom deck elements and piers, be performed in the next inspection cycle.

This report contains conclusions concerning the causes of the noted deterioration and recommendations for the rehabilitation of the structure. The repair procedures contained in the recommendation section of the report outline the general extent of the required rehabilitation work. The presentation of these conceptual repairs does not preclude the necessity of performing further investigation and preliminary design work for the purpose of establishing the complete scope of work and the final rehabilitation design.

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I. BRIDGE DESCRIPTION

BRIDGE DESCRIPTION

Construction of the Walnut Street Bridge was completed in 1891. The structure is composed of six steel camelback truss spans (main spans) and thirty-nine steel trestle spans (north viaduct approach). In 1978, the bridge was closed because of its poor condition. In 1993, the bridge was re-opened following extensive renovation and restoration as a pedestrian bridge.

Main Spans
(Spans 1 thru 6)

The main spans consist of three 210 ft. (Spans 1, 2 and 6) and three 320 ft. (Spans 3, 4 and 5) steel camelback truss spans with stone masonry piers, laminated timber deck panels, timber curbs and sidewalks **(See Photo No. 1)**. The 210 ft. and 320 ft. truss spans are constructed with 10 and 16 panel points respectively. Each steel truss is reinforced with a post tensioning system installed in 1993. The 7 ft. wide sidewalks border an 18 ft. wide deck measured from curb to curb.

North Viaduct Approach
(Spans 7 thru 45)

The north viaduct approach consists of a steel trestle system with steel deck pans filled with asphalt overlay and timber curbs and sidewalks **(See Photo No. 2)**. The viaduct is 780 ft. with each span measuring 20 ft. in length. Similar to the main spans, the sidewalks measure 7 ft. wide bordering an 18 ft. wide deck measured from curb to curb.

II. SCOPE OF WORK AND INSPECTION PROCEDURES

SCOPE OF WORK AND INSPECTION PROCEDURES

Scope of Work

This project consisted of performing the 2008 Biennial Inspection of the Walnut Street Bridge in Chattanooga, Tennessee. The purpose of this survey was to determine the structural integrity of primary and secondary bridge members and to identify structural and non-structural deficiencies which may compromise the structural integrity of the bridge or create safety hazards. The inspection was performed by TranSystems Corporation and completed on August 1, 2008.

Inspection Procedures and Access

Chattanooga Department of Public Works (DPW) personnel, under the direction of Mark Wiggins, provided assistance for the 2008 inspection of the Walnut Street Bridge.

Main Spans
(Spans 1 thru 6)

The inspection was performed by a two-person team. A 90' manlift was used to inspect the truss members above deck **(See Photo No. 21)**. 100% hands-on inspection was performed on all truss members above deck.

DPW removed sidewalk timber planks at jacking stations and saddle areas in each span to assist TranSystems in the inspection of the post-tensioning system. DPW also provided strain gauge readings for the post tensioning system in the main spans.

The top of Piers 1 thru 6 was accessed using trap doors installed at deck level at every pier.

North Viaduct Approach
(Spans 7 thru 45)

The inspection was performed by a two-person team. A 90' manlift was used to inspect the structural members below deck **(See Photo No. 22)**. 100% hands-on inspection was performed on all structural members below deck.

DPW provided plywood panels for the manlift to travel on to protect the grass at Coolidge Park.

III. CONDITION SURVEY DEFINITIONS AND TERMINOLOGY

CONDITION SURVEY DEFINITIONS AND TERMINOLOGY

A) Definitions of Recommendation Categories

Hands-on Inspection	Close-up inspection from no further away than an arm's length where the member or element can be physically touched.
Visual Inspection	The inspection from a reasonable distance of a member or element where initial determination of the condition can be made.

Four categories of recommendations are identified and defined as follows:

Immediate	Requires immediate action including possible closing of the structure or areas affected for safety reasons until interim remedial measures, such as shoring or removal of potentially unsafe structures (or elements), can be implemented. These closings or interim remedial actions, if any, always require immediate action upon discovery.
Priority	Conditions for which no immediate action may be required or for which immediate action has been completed, but further investigations, design and implementation of interim or long-term repairs should be undertaken on a priority basis, i.e., taking precedence over all other scheduled work.
Routine	Conditions requiring further investigation or remedial work, which can be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance, depending on the action required.
Monitoring	Deficiencies requiring monitoring of possible advancement in deteriorating condition.

B) Rating Criteria

Terms used to describe the condition of a bridge structural system or component are listed and defined below. When the term is applied to an overall structure or system, this does not indicate that all elements of the structure or system are in the same condition.

Excellent	"As New" Condition.
Good	The structure system is sound and performing its function, although it shows signs of wear and may require some minor repairs, mostly routine.
Fair	The structure system is still performing adequately at this time, but needs "priority" and/or "routine" repairs to prevent future deterioration and to restore it to good condition.
Poor	The structure system cannot be relied upon to continue to perform its original function without "immediate" and/or "priority" repairs.

C) Inspection Terminology

The following terms may be used during inspection to describe the condition of structural members.

1) Steel Members

a) Corrosion

- Minor (Light) – A light surface rust.
- Moderate – Rust that is loose and flaking with some pitting. This scaling, or exfoliation, can be removed with some effort by use of a scraper or chipping hammer. Element exhibits measurable but not significant loss of section.
- Severe – Heavy, stratified rust or rust scales with extensive pitting. Removal requires exerted effort and may require mechanical means. Significant loss of section.

b) Impacted Rust – Rust collected between two interfacing surfaces, usually two steel plates. Impacted rust can be minor, moderate, or severe as described above. Impacted rust can severely deform the steel members due to the expansive nature of rust.

c) Pitting – Formation of cavities due to corrosion. Minor, moderate, and severe pitting categories are used based upon depth and density of cavities.

- Minor – Typically less than ¼ inch diameter and $^1/_{32}$ inch deep.
- Moderate – ¼ inch to ½ inch diameter and up to $^1/_8$ inch deep.
- Severe – Greater than ½ inch diameter and over $^1/_8$ inch deep.

2) Concrete Members

a) Cracking – A separation into two or more parts with a space between the fractured concrete surfaces.

- Hairline – Crack width less than $^1/_{32}$ inch.
- Fine – Crack width between $^1/_{32}$ inch and $^1/_{16}$ inch.
- Medium – Crack width between $^1/_{16}$ inch and $^1/_8$ inch.
- Wide – Crack width greater than $^1/_8$ inch.

The above definitions for cracks can be modified, depending on the type of structural element. Other terminology, such as map cracking, pattern cracking, etc., may be used as appropriate.

b) Efflorescence – A white deposit caused by crystallization of soluble salts brought to the surface by moisture leaching through concrete.

c) Delamination – A layered separation of the concrete. When a delaminated area of concrete is struck (sounded) with a hammer, a hollow sound will be emitted.

d) Leaching – The dissolution and washing away of the calcium hydroxide in concrete. The moisture enters the concrete through exposed cracks in the surface.

e) Spall – A roughly circular, oval, or elongated depression in the surface of a concrete element caused by separation of a portion of the surface concrete.

- Small (Pop-out) – Less than 6 inches in diameter and 1 inch deep.
- Medium – Between 6 inches and 12 inches in diameter and up to 2 inches deep.
- Large – Over 12 inches in diameter and any depth.

f) Scaling – The gradual loss of surface mortar and aggregates.

- Light Scaling – Loss of surface mortar up to ¼ inch deep.
- Medium Scaling – Loss of surface mortar between ¼ inch and ½ inch deep, including loss between large aggregate.
- Heavy Scaling – Loss of mortar greater than ½ inch in depth significantly exposing large aggregate.

g) Hollow area – An area of concrete that emits a hollow sound when struck with a hammer and indicates the existence of a fracture plane beneath the surface.

h) Honeycomb – Typically small pocket voids formed by the entrapment of air during the placement of the concrete.

IV. INSPECTION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

INSPECTION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The Walnut Street Bridge is in fair condition with 2 immediate repair items, 8 priority repair items, 10 routine repair items, 9 north viaduct rehabilitation items and 7 items for monitoring.

The 2 immediate repair items consist of a deteriorated unreinforced masonry wall at the embankment adjacent to the south abutment and a missing timber support for the water main pipe at Pier 5. The unreinforced masonry wall exhibits widespread cracks and evidence of movement. Although located directly underneath panel 2 of Span 1, this wall is not directly connected to the bridge substructure. For further details, see "Table 1 – Immediate Repair Recommendations" on page 7.

The 8 priority repair items include damaged epoxy coating at post tensioning strands, section losses at fixed and expansion bearings, cracked welds and a deteriorated sign structure. For further details, see "Table 2 – Priority Repair Recommendations" on page 8.

The 10 routine repair items include bird debris accumulation, deteriorated truss bearing lubrication, a missing sidewalk bench, an undermined railing post, missing and damaged lighting covers and missing bollards. For further details, see "Table 3 – Routine Repair Recommendations" on page 9.

A full deck replacement and rehabilitation is recommended for the North Viaduct (Spans 7 thru 45) consisting of 9 repair items. These items include demolition of deck, installation of temporary shielding, full deck replacement, railing repairs, steel repairs and removal of dirt and debris from column bases. For further details, see "Table 4 – North Viaduct Rehabilitation" on page 10.

The 7 items to be monitored include rotated post tensioning strand saddles, bent flanges and lacing bars and cracked steel members. For further details, see "Table 5 – Monitoring List" on page 11.

Table 1 – Immediate Repair Recommendations

TABLE 1 – IMMEDIATE REPAIR RECOMMENDATIONS

ITEM NO.	LOCATION	DESCRIPTION OF CONDITION	2008 REPAIR RECOMMENDATION	TYPICAL PHOTO NO.
VIADUCT AND TRUSS SUBSTRUCTURE				
1	Span 1 embankment below panel point 2	Masonry retaining wall shows full height cracks and movement	Replace deteriorated masonry wall	34
SITE FURNISHINGS, LIGHTING AND UTILITIES				
2	Pier 5 below west sidewalk	Missing timber utility support	Replace missing timber support	36

Table 2 – Priority Repair Recommendations

TABLE 2 – PRIORITY REPAIR RECOMMENDATIONS

ITEM NO.	LOCATION	DESCRIPTION OF CONDITION	2008 REPAIR RECOMMENDATION	TYPICAL PHOTO NO.
POST TENSIONING SYSTEM				
1	Span 4 post tensioning strands at L1L2W	Damaged epoxy coating	Re-coat epoxy	48
TRUSSES				
2	South abutment fixed bearings	50% section loss at bearing web plates and stiffeners ($^1/_4$" remaining)	Install reinforcing plates at bearing web plates and stiffeners	39
3	Pier 1 west fixed bearing	40% section loss around east pin gusset plate	Reinforce gusset plate	--
	Pier 2 east fixed bearing	40% section loss around west pin gusset plate	Reinforce gusset plate	--
4	Pier 3 east expansion bearing	50% section loss at vertical stiffener plates	Install reinforcing plates at vertical stiffener plates	38
5	Piers 1, 3, 4 and 5 fixed and expansion bearings	Up to 40% section loss on the inside face of bearing web plates (25% at exp., 40% at fixed)	Install reinforcing plates on inside faces of bearing web plates	38, 39
	Pier 2 fixed and expansion bearings	10% - 25% section loss on the inside face of bearing web plates	Install reinforcing plates on inside faces of bearing web plates	38, 39
6	Span 3, east end of north portal, transverse strut at mid height	Cracked weld	Re-weld	57
	Span 4, west end of north portal, transverse strut at mid height	Cracked weld	Re-weld	57
	Span 6, south portal, transverse strut at mid height	Cracked weld	Re-weld	57
7	Span 6, U9	2 cracked welds at transverse brace connection to W-beam	Re-weld	57
SITE FURNISHINGS, LIGHTING AND UTILITIES				
8	Span 1, south portal, sign structure	Section loss at anchorage angles, 3 sheared bolts, 3 missing nuts and 1 missing bolt	Repair section loss and replace missing bolts and nuts	54, 55, 56

PANEL POINT LEGEND: U = Upper Truss; M = Middle Truss; L = Lower Truss; E = East; W = West

Table 3 – Routine Repair Recommendations

TABLE 3 – ROUTINE REPAIR RECOMMENDATIONS

ITEM NO.	LOCATION	DESCRIPTION OF CONDITION	2008 REPAIR RECOMMENDATION	TYPICAL PHOTO NO.
		TRUSSES		
1	Spans 1 thru 6, truss members	Isolated areas of bird debris	Power wash truss members and install additional bird netting	51
2	Spans 1 thru 6, truss bearings	Isolated areas of deteriorated lubricating grease	Grease truss bearings	16
		DECK AND SIDEWALKS		
3	Spans 1 thru 6, timber deck and sidewalks	Isolated areas of bird debris	Power wash bridge deck and sidewalks	--
4	Spans 1 thru 6, timber deck and sidewalks	Isolated areas of deterioration due to water infiltration	Apply water sealant to bridge deck and sidewalks	5
5	East sidewalk adjacent to Pier 9	Missing sidewalk bench	Replace missing bench	58
		RAILINGS		
6	East railing end post at south abutment	Undermined railing end post	Repair undermining	35
		SITE FURNISHINGS, LIGHTING AND UTILITIES		
7	Spans 1 thru 6, walkway and sidewalk lighting	Lighting glass covers are partially filled with water at several locations	Drain water from covers and seal	--
8	Spans 1 thru 6, walkway and sidewalk lighting	Lighting glass covers are missing at several locations	Replace missing covers	60
9	Spans 1 thru 6, top chord lighting	Damaged lighting covers at several locations	Replace damaged covers	61
10	Spans 1 thru 6, walkway	Missing bollards at several locations	Replace missing bollards	59

Table 4 – North Viaduct Rehabilitation

Table 5 – Monitoring List

TABLE 4 – NORTH VIADUCT REHABILITATION

ITEM NO.	LOCATION	DESCRIPTION OF CONDITION	2008 REPAIR RECOMMENDATION	TYPICAL PHOTO NO.
		VIADUCT		
1	Viaduct spans (7 thru 45)	--	Demolition of deck	--
2	Viaduct spans (7 thru 45)	--	Install temporary structures (shielding over park and roadway)	--
3	Viaduct spans (7 thru 45), steel deck pans	Deteriorated weep holes and seams	Deck replacement	43
4	Viaduct spans (7 thru 45), asphalt overlay	Wide mapcracking throughout	Deck replacement	67
5	Viaduct spans (7 thru 45), timber sidewalks	Timber sidewalk plank deterioration	Sidewalk replacement	64, 66
6	Viaduct spans (7 thru 45), timber curbs	Timber curb deterioration	Curb replacement	65
7	Span 7 at Pier 6, west railing	Bent railing section with crack at bottom angle	Repair bent and cracked railing sections	62
	Span 45 at north abutment, west railing	Bent railing section with crack at bottom angle	Repair bent and cracked railing sections	63
8	Bent 14W, 17W and 27E	100% section loss at column base	Install reinforcing plates	--
	Bent 10E, 13W, 15W, 24E, 25W, 33W, 35E, 36E, 38W and 41W	100% section loss at lower longitudinal strut	Install reinforcing plates	28, 29
	Bent 19E, 26W, 31E, 33E, 34W and 38W	100% section loss at lower transverse strut	Install reinforcing plates	30
	Bent 31W, 32W and 42E	100% section loss at top longitudinal strut	Install reinforcing plates	42
9	Viaduct bents	Buried column bases at several locations	Remove dirt around column bases	25, 26, 27

PANEL POINT LEGEND: E = East; W = West

TABLE 5 – MONITORING LIST

ITEM NO.	LOCATION	DESCRIPTION OF CONDITION	TYPICAL PHOTO NO.
1	Span 4, L6W and L10W	East strand saddles rotated 2" north and 2 ¼" south respectively	--
	Span 4, L10E	West strand saddle rotated 1" south	--
	Span 5, L6E	East strand saddle rotated $^{3}/_{8}$" north	--
2	Span 3, L2W	East strand saddle is twisted out of plane 5 degrees	--
3	Span 2, M5E	15" crack in web with bent flange	52
4	Bent 10E	Bent flange and lacing bars with 4 ½" web crack at column base	33
5	Bent 40W	Bent flange and lacing bars	--
6	Bent 19 floorbeam below stringer 6	¾" crack at the top flange	44
7	Span 14, stringer 7	Hole/corrosion crack in web	45

PANEL POINT LEGEND: U = Upper Truss; M = Middle Truss; L = Lower Truss; E = East; W = West

V. PHOTOGRAPHS

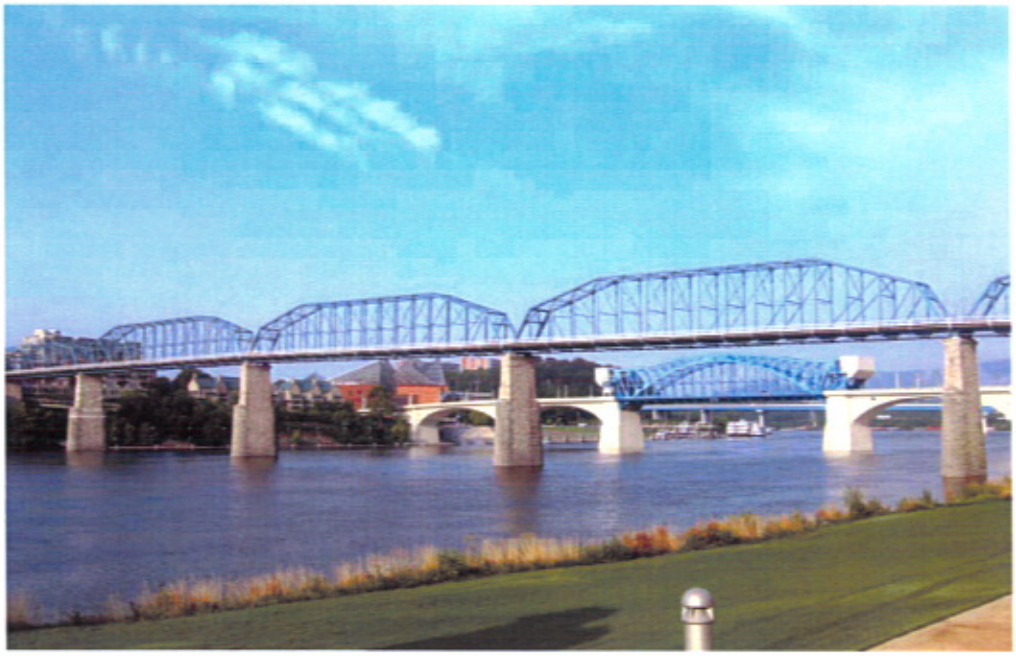


PHOTO NO. 1

EAST ELEVATION OF THE TRUSS SPANS, LOOKING SOUTHWEST.



PHOTO NO. 2

EAST ELEVATION OF THE VIADUCT SPANS, LOOKING NORTHWEST.



PHOTO NO. 3

SOUTH APPROACH, LOOKING NORTH.



PHOTO NO. 4

NORTH APPROACH, LOOKING SOUTH.

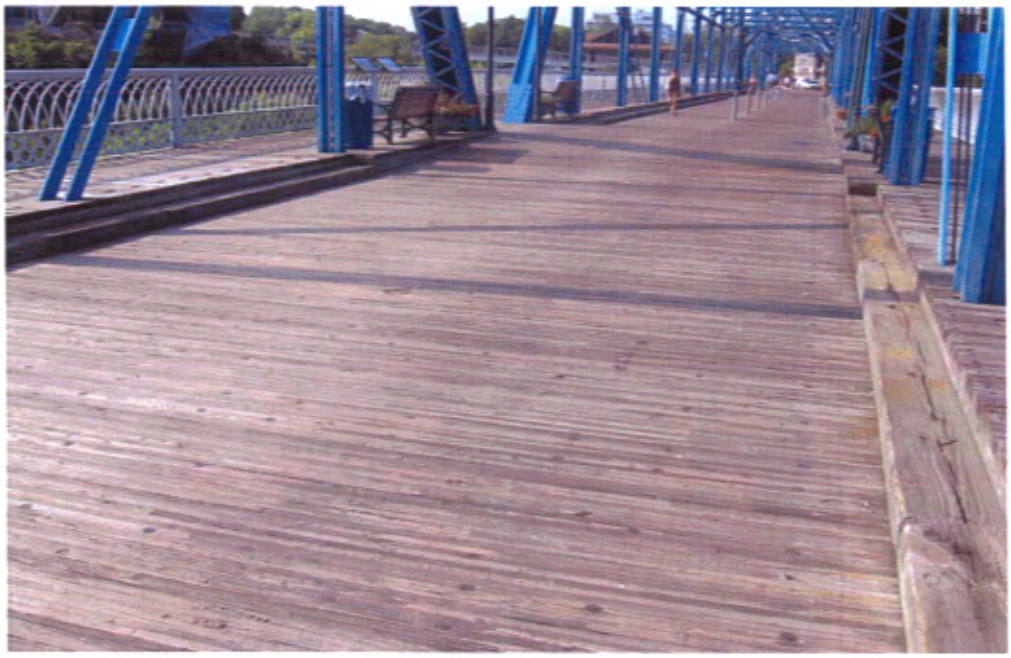


PHOTO NO. 5

TYPICAL TOP OF DECK (SPANS 2 AND 3 SHOWN),
LOOKING SOUTHEAST.



PHOTO NO. 6

TYPICAL TOP OF DECK (VIADUCT SPANS SHOWN),
LOOKING SOUTH.



PHOTO NO. 7

GENERAL VIEW OF THE WEST TRUSS SIDEWALK (EAST SIDEWALK SIMILAR), LOOKING NORTHEAST.



PHOTO NO. 8

GENERAL VIEW OF THE EAST VIADUCT SIDEWALK (WEST SIDEWALK SIMILAR), LOOKING SOUTH.



PHOTO NO. 9

GENERAL VIEW OF THE NORTH ABUTMENT DECK JOINT
(SOUTH ABUTMENT SIMILAR), LOOKING WEST.



PHOTO NO. 10

GENERAL VIEW OF THE BENT 42 DECK JOINT (REMAINING BENTS SIMILAR),
LOOKING WEST.



PHOTO NO. 11

GENERAL VIEW OF THE PIER 4 DECK JOINT (REMAINING PIERS SIMILAR), LOOKING WEST.



PHOTO NO. 12

GENERAL VIEW OF THE TOP CHORD (SPAN 3 SHOWN), LOOKING SOUTH.



PHOTO NO. 13

GENERAL VIEW OF THE SWAY BRACING (SPAN 5 SHOWN), LOOKING NORTH.



PHOTO NO. 14

TYPICAL SUPERSTRUCTURE OF SPAN 6 (SPANS 1-5 SIMILAR), LOOKING SOUTH.



PHOTO NO. 15

TYPICAL SUPERSTRUCTURE OF SPANS 9-12
(REMAINING VIADUCT SPANS SIMILAR), LOOKING NORTH.



PHOTO NO. 16

GENERAL VIEW OF THE WEST TRUSS BEARING AT PIER 6
(REMAINING TRUSS BEARINGS SIMILAR), LOOKING WEST.

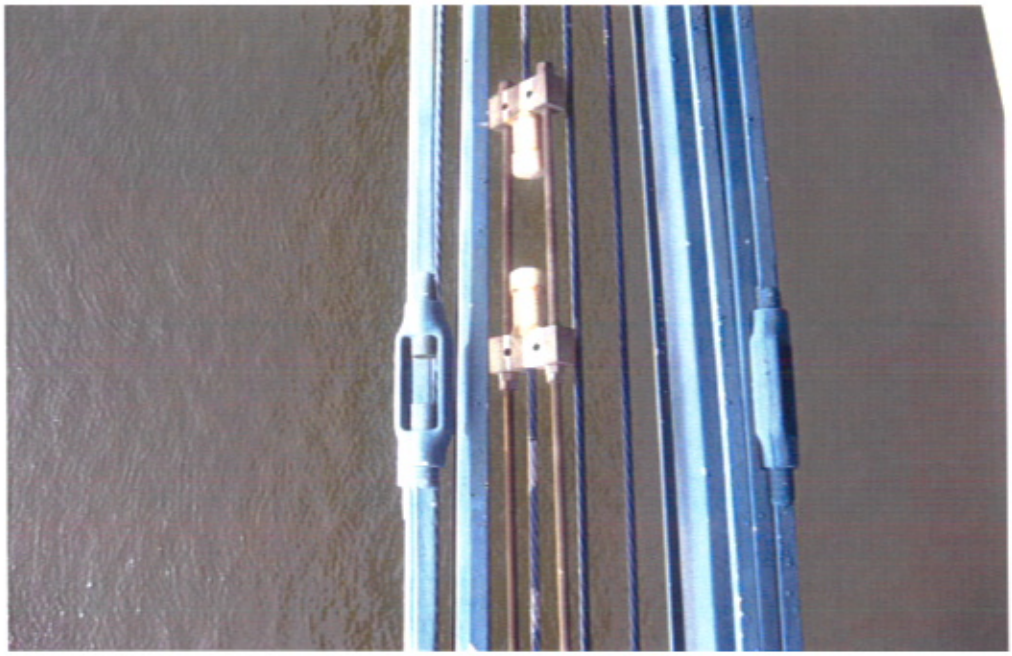


PHOTO NO. 17

GENERAL VIEW OF THE JACKING STATION AT L7L8 OF THE EAST TRUSS IN SPAN 3 (REMAINING JACKING STATIONS SIMILAR), LOOKING SOUTH.

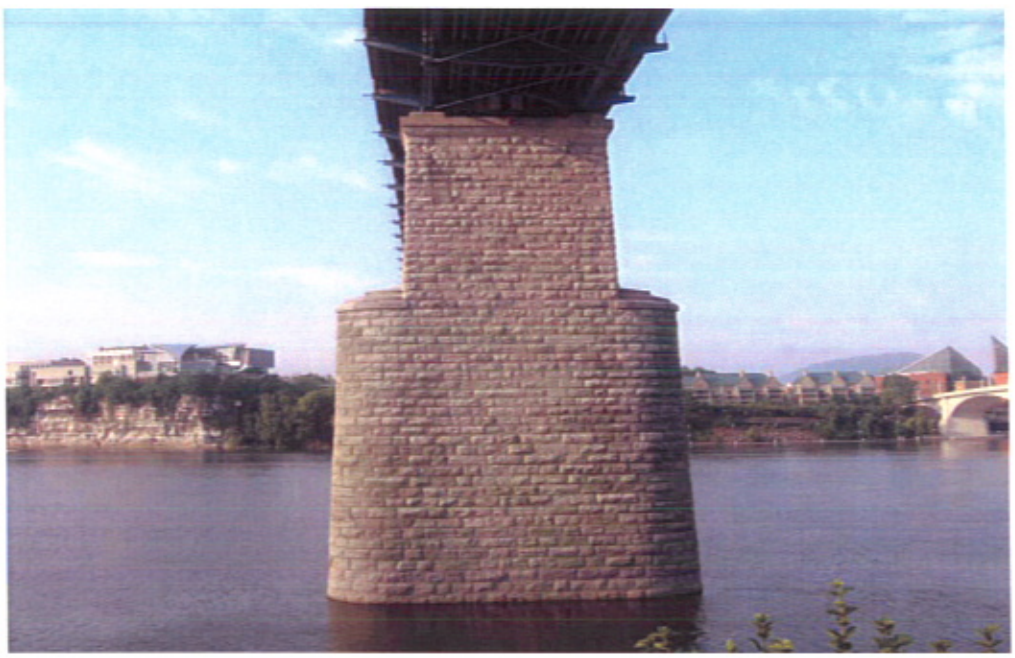


PHOTO NO. 18

GENERAL VIEW OF PIER 5 (PIERS 2-4 SIMILAR), LOOKING SOUTH.



PHOTO NO. 19

GENERAL VIEW OF PIER 6 (PIER 1 SIMILAR), LOOKING NORTH.



PHOTO NO. 20

GENERAL VIEW OF THE VIADUCT BENTS, LOOKING NORTH.



PHOTO NO. 21

GENERAL VIEW OF THE LIFT TRUCK AT THE TRUSS SPANS,
LOOKING NORTHWEST.



PHOTO NO. 22

GENERAL VIEW OF THE LIFT TRUCK AT THE VIADUCT SPANS,
LOOKING NORTHWEST.



PHOTO NO. 23

ACCESS TO THE JACKING STATIONS, LOOKING NORTHWEST.



PHOTO NO. 24

WORK DONE: SOUTHWEST APPROACH COLUMN HAS BEEN REPAIRED, LOOKING WEST.



PHOTO NO. 25

BURIED BASE AT THE BENT 17W COLUMN (TYPICAL CONDITION), LOOKING NORTH.



PHOTO NO. 26

BURIED BASE AT THE BENT 43W COLUMN (TYPICAL CONDITION), LOOKING SOUTHWEST.



PHOTO NO. 27

WATER PONDING AT THE BENT 15W COLUMN BASE (TYPICAL CONDITION), LOOKING NORTHWEST.



PHOTO NO. 28

HOLES AT THE WEST FACE OF BENT 10E LOWER LONGITUDINAL STRUT (TYPICAL CONDITION), LOOKING EAST.



PHOTO NO. 29

HOLE AT THE WEST FACE OF BENT 41W LOWER LONGITUDINAL STRUT (TYPICAL CONDITION), LOOKING EAST.



PHOTO NO. 30

100% SECTION LOSS AT THE BENT 39W LOWER TRANSVERSE STRUT (TYPICAL CONDITION), LOOKING NORTH.

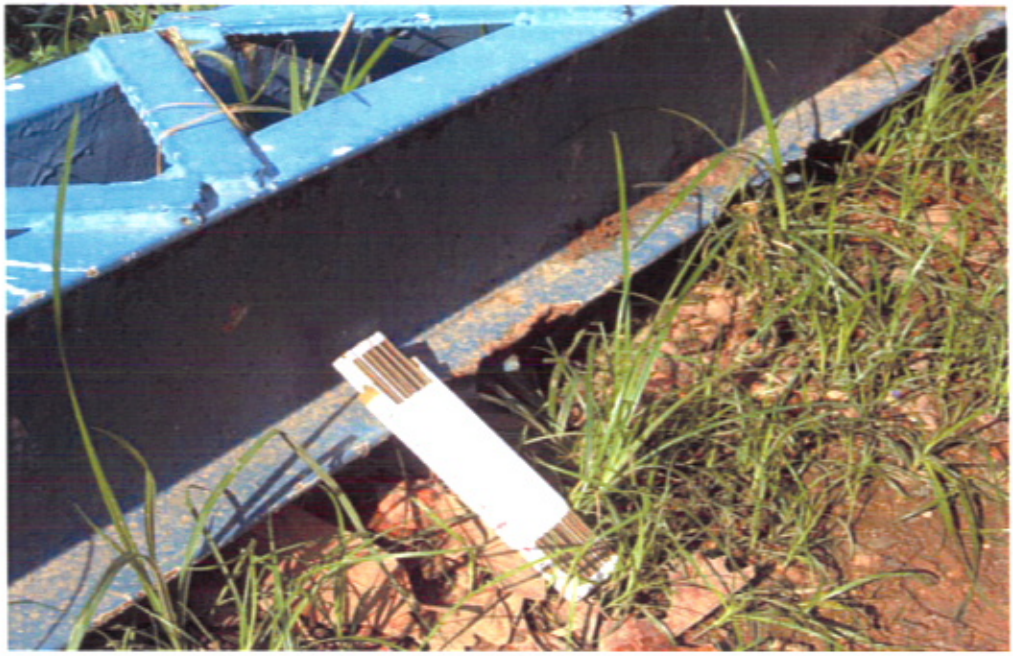


PHOTO NO. 31

BOTTOM FLANGE SECTION LOSS AT THE BENT 18 TRANSVERSE STRUT (TYPICAL CONDITION), LOOKING SOUTHWEST.



PHOTO NO. 32

PITTING AND DEBRIS ACCUMULATION AT THE BENT 17E LONGITUDINAL STRUT (TYPICAL CONDITION), LOOKING SOUTH.



PHOTO NO. 33

CRACK, BENT CHANNEL FLANGE AND LACING BARS AT THE BENT 10E COLUMN BASE, LOOKING WEST.



PHOTO NO. 34

CRACKS IN THE MASONRY RETAINING WALL AT SPAN 1 ALONG THE WEST FASCIA, LOOKING WEST.



PHOTO NO. 35

UNDERMINED EAST RAILING END POST AT THE SOUTH ABUTMENT, LOOKING SOUTH.

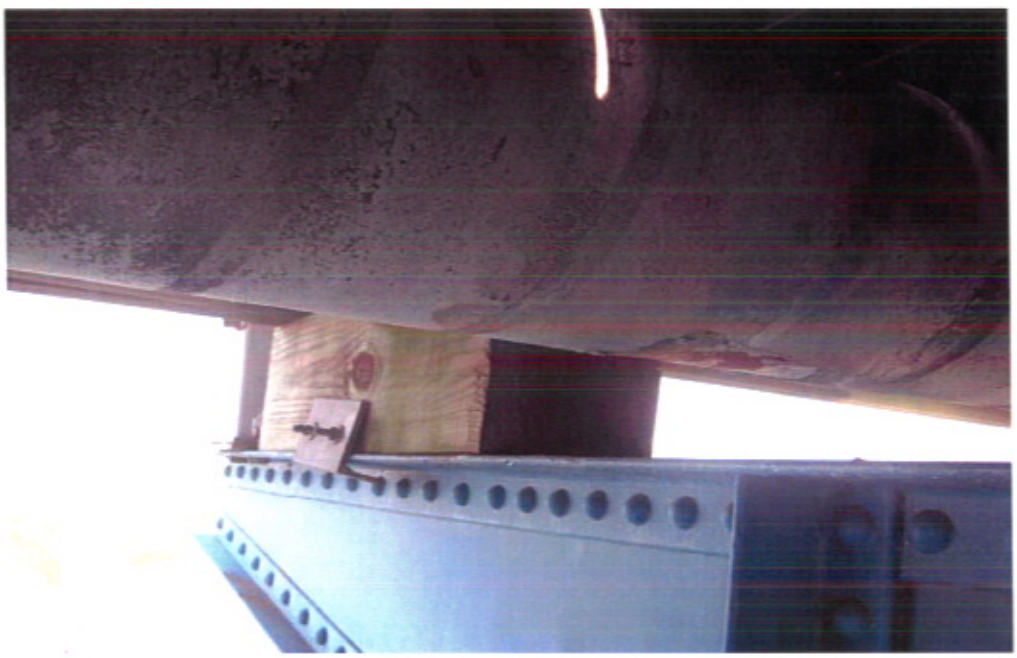


PHOTO NO. 36

MISSING UTILITY SUPPORT AT PIER 5 BELOW THE WEST SIDEWALK, LOOKING NORTHWEST.

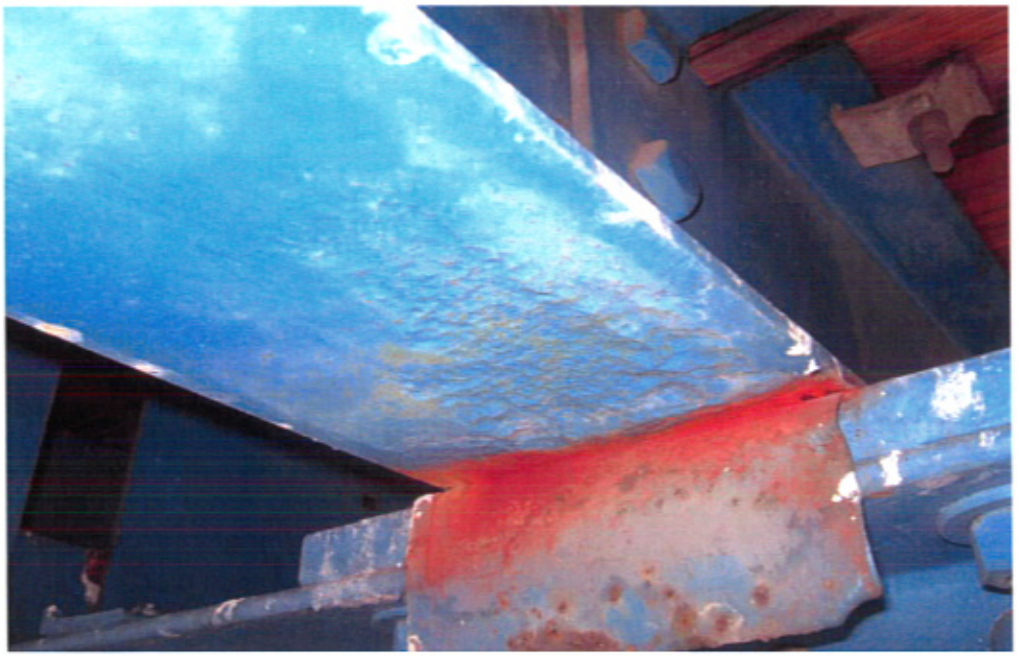


PHOTO NO. 37

PITTING AT THE BOTTOM FLANGE OF STRINGER 10 AT PIER 5 (TYPICAL CONDITION), LOOKING NORTH.

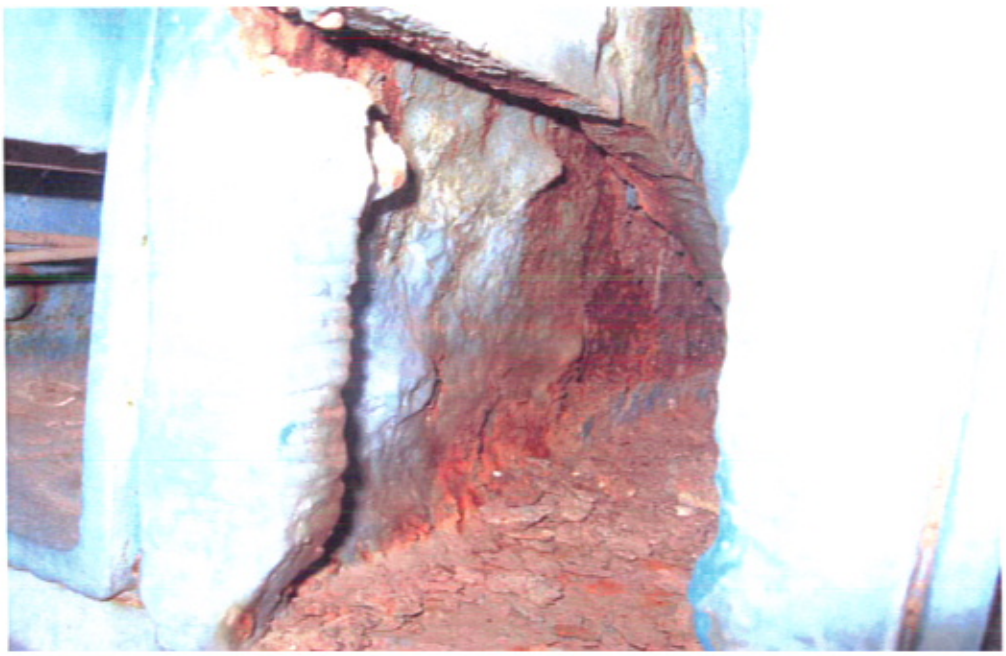


PHOTO NO. 38

25% SECTION LOSS TO THE BEARING PLATES AT THE PIER 5 EAST TRUSS EXPANSION BEARING, LOOKING NORTHWEST.



PHOTO NO. 39

50% SECTION LOSS TO THE BEARING PLATES AT THE SOUTH ABUTMENT EAST TRUSS BEARING (SOUTH ABUTMENT WEST TRUSS BEARING SIMILAR), LOOKING SOUTH.

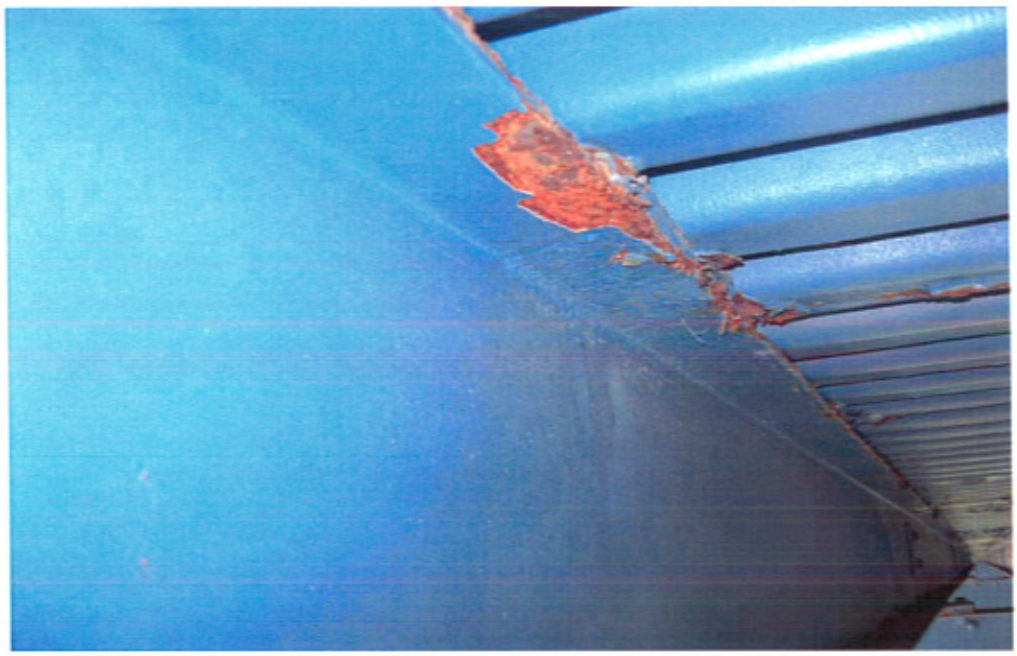


PHOTO NO. 40

UP TO 25% SECTION LOSS TO THE TOP FLANGE OF STRINGER 7 BETWEEN BENTS 34 AND 35 (TYPICAL CONDITION), LOOKING SOUTH.



PHOTO NO. 41

WIDE SPLIT AT THE BENT 32 EAST SIDEWALK TIMBER STRINGER SUPPORT (TYPICAL CONDITION), LOOKING SOUTH.

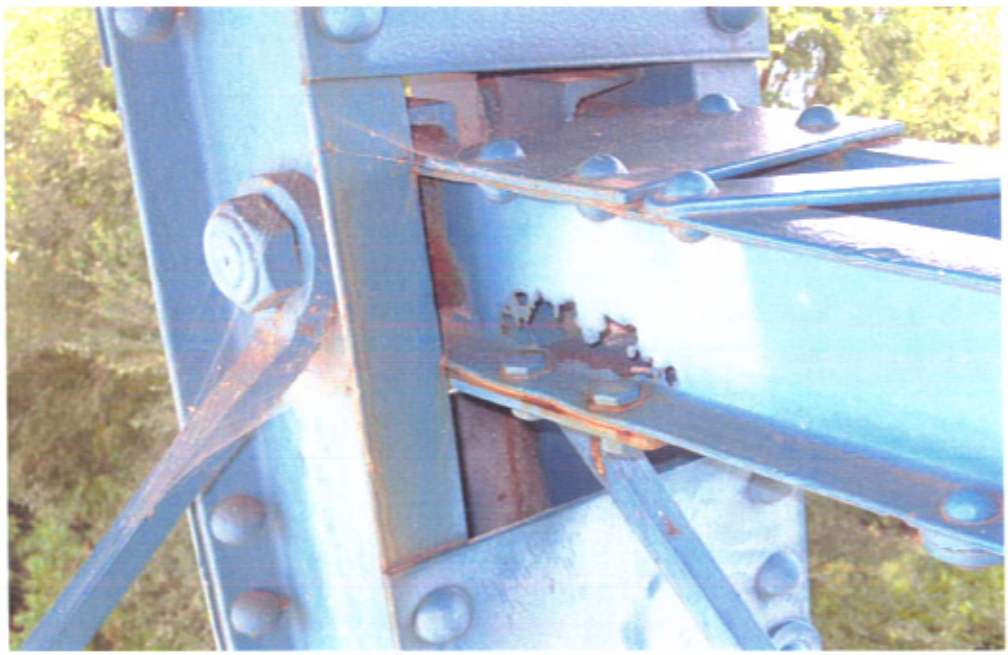


PHOTO NO. 42

HOLE IN THE UPPER LONGITUDINAL STRUT AT BENT 31W (TYPICAL CONDITION), LOOKING SOUTH.



PHOTO NO. 43

DETERIORATED DECK PANS AT SPAN 27 BETWEEN STRINGER 3 AND 4 (TYPICAL CONDITION), LOOKING NORTH.



PHOTO NO. 44

¾" CRACK AT THE TOP FLANGE OF THE BENT 19 FLOORBEAM BELOW STRINGER 6, LOOKING EAST.

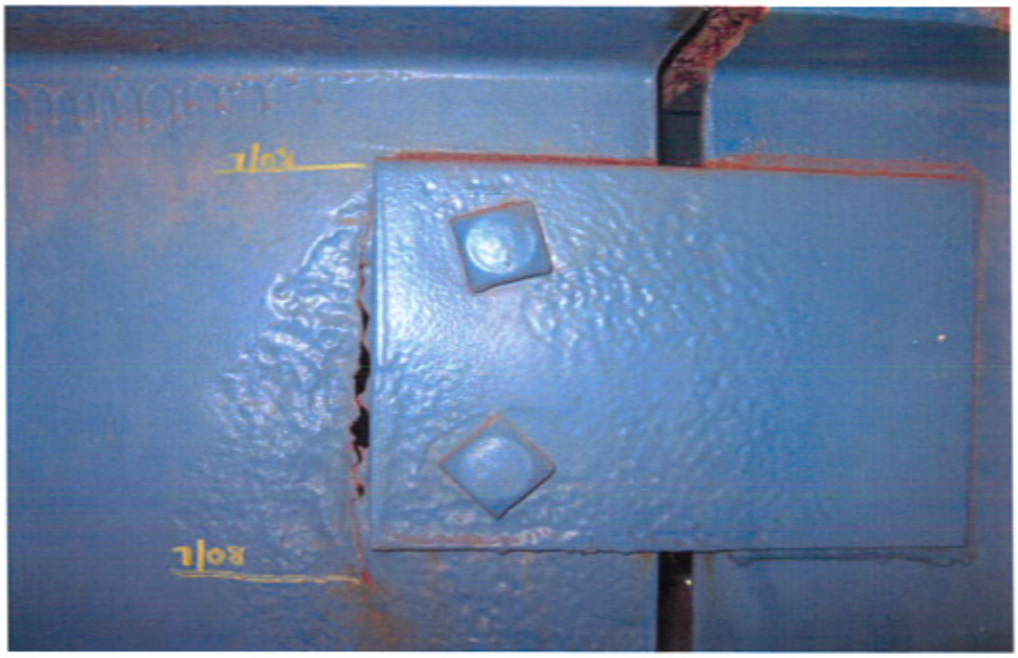


PHOTO NO. 45

HOLE/CORROSION CRACK AT STRINGER 7 IN SPAN 14,
LOOKING WEST.

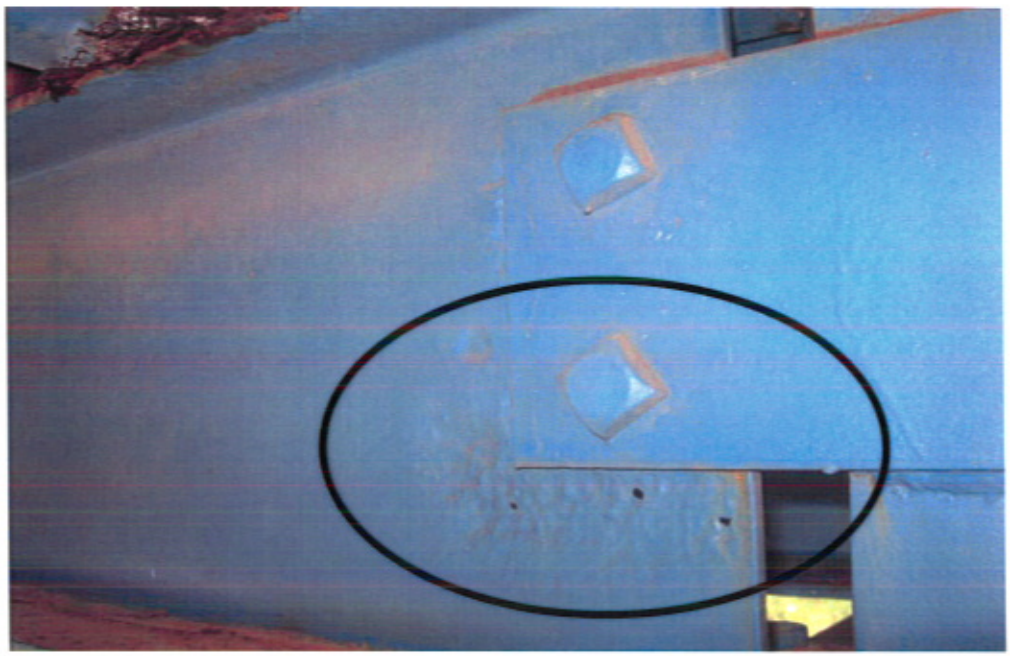


PHOTO NO. 46

PITTING WITH SMALL PIN HOLES AT STRINGER 7 IN SPAN 10
(TYPICAL CONDITION), LOOKING SOUTH.

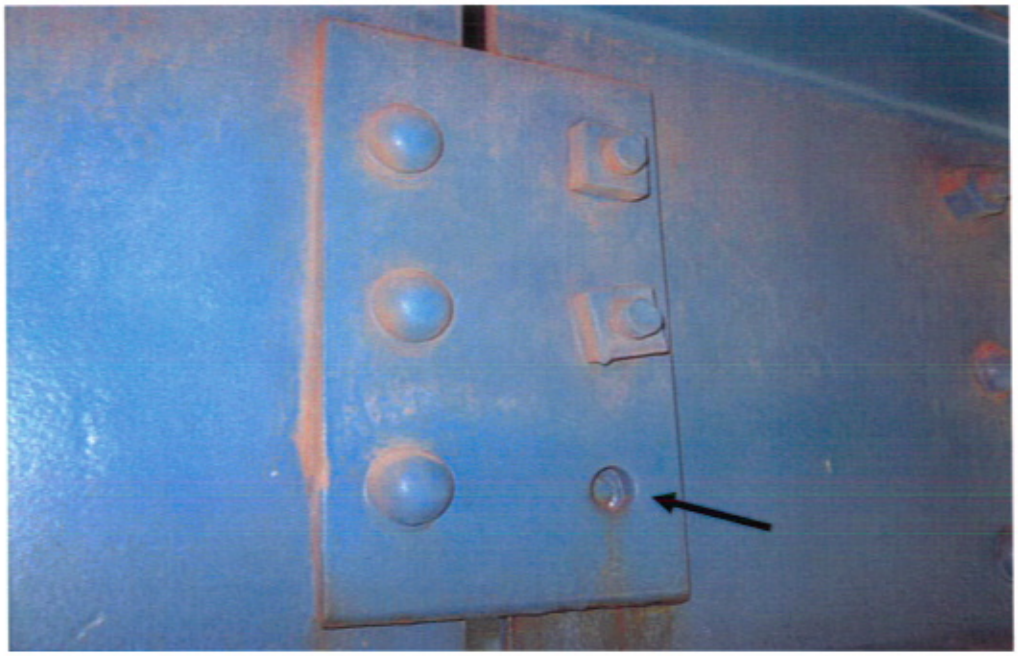


PHOTO NO. 47

SHEARED RIVET AT THE STRINGER 6 CONNECTION ADJACENT TO BENT 9 (TYPICAL CONDITION), LOOKING NORTHWEST.

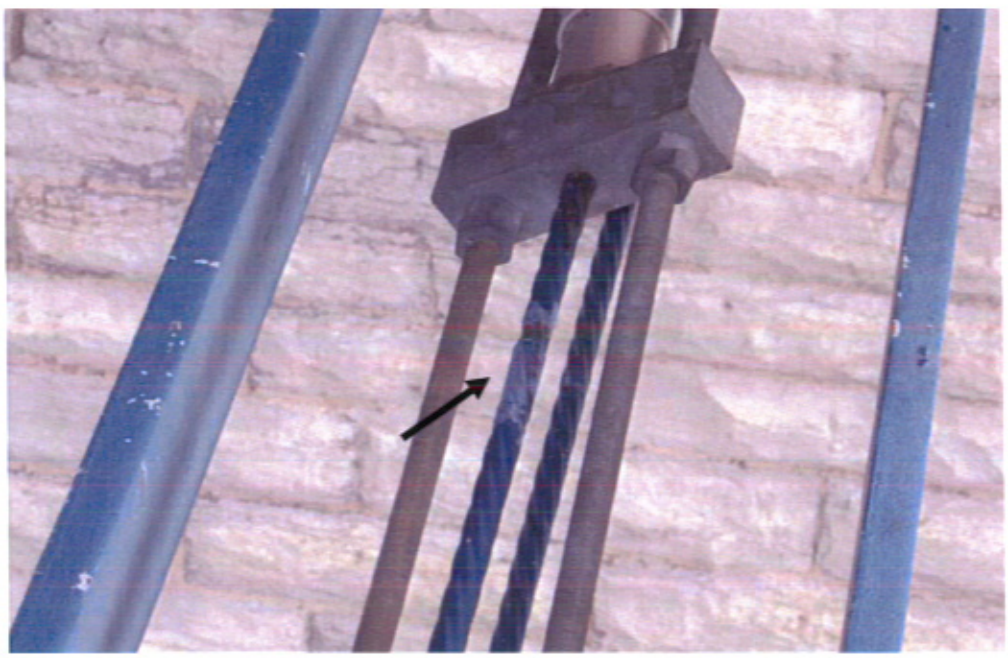


PHOTO NO. 48

DAMAGED EPOXY COATING AT THE WEST TRUSS L1L2 IN SPAN 4 (TYPICAL CONDITION), LOOKING SOUTH.



PHOTO NO. 49

UP TO 50% SECTION LOSS TO THE OUTBOARD EYEBAR AT THE EAST TRUSS PANEL POINT L16 IN SPAN 4, LOOKING NORTH.



PHOTO NO. 50

PEELING OF PAINT AND LIGHT SPOT RUST AT THE EAST TRUSS M6M5 IN SPAN 6 (TYPICAL CONDITION), LOOKING WEST.



PHOTO NO. 51

BIRD DEBRIS ACCUMULATION AT THE NORTH PORTAL IN SPAN 4
(TYPICAL CONDITION), LOOKING WEST.

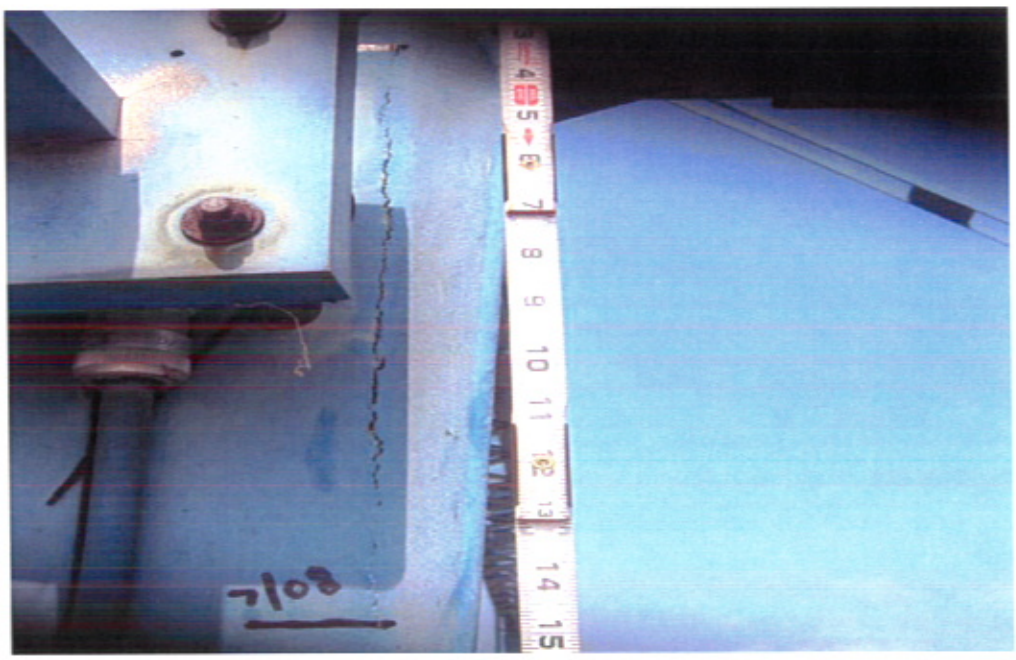


PHOTO NO. 52

15" CRACK AT THE EAST TRUSS PANEL POINT M5 IN SPAN 2,
LOOKING WEST.



PHOTO NO. 53

CRACK THROUGH THE DECORATIVE PIN WASHER AT THE WEST TRUSS PANEL POINT U9 IN SPAN 1 (TYPICAL CONDITION), LOOKING NORTH.

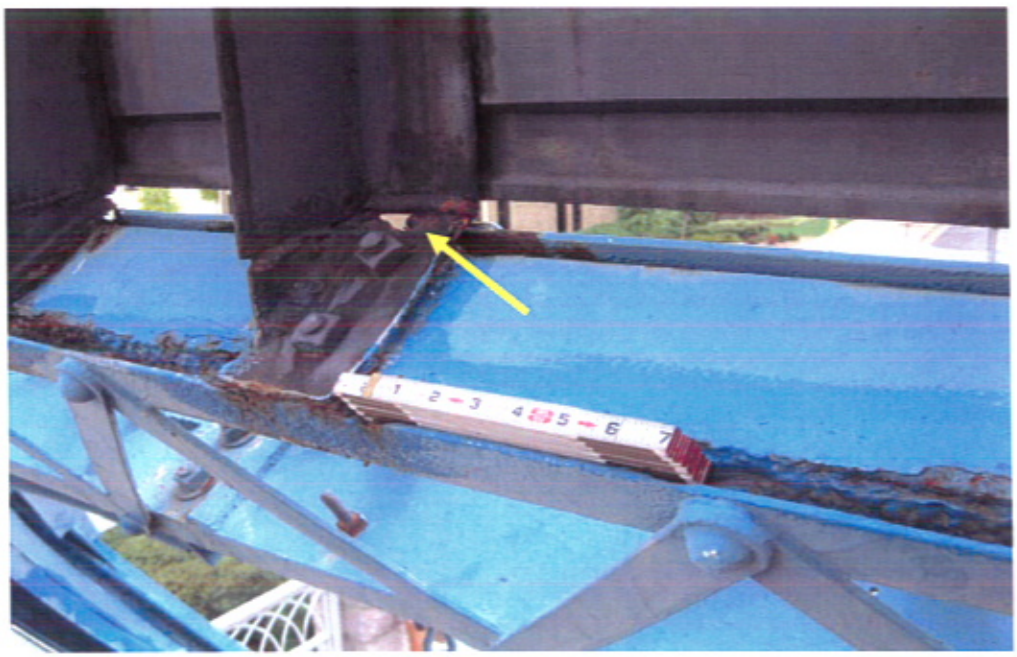


PHOTO NO. 54

HOLE AT THE ANCHORAGE ANGLE AT THE SOUTH PORTAL SIGN IN SPAN 1, LOOKING SOUTHEAST.

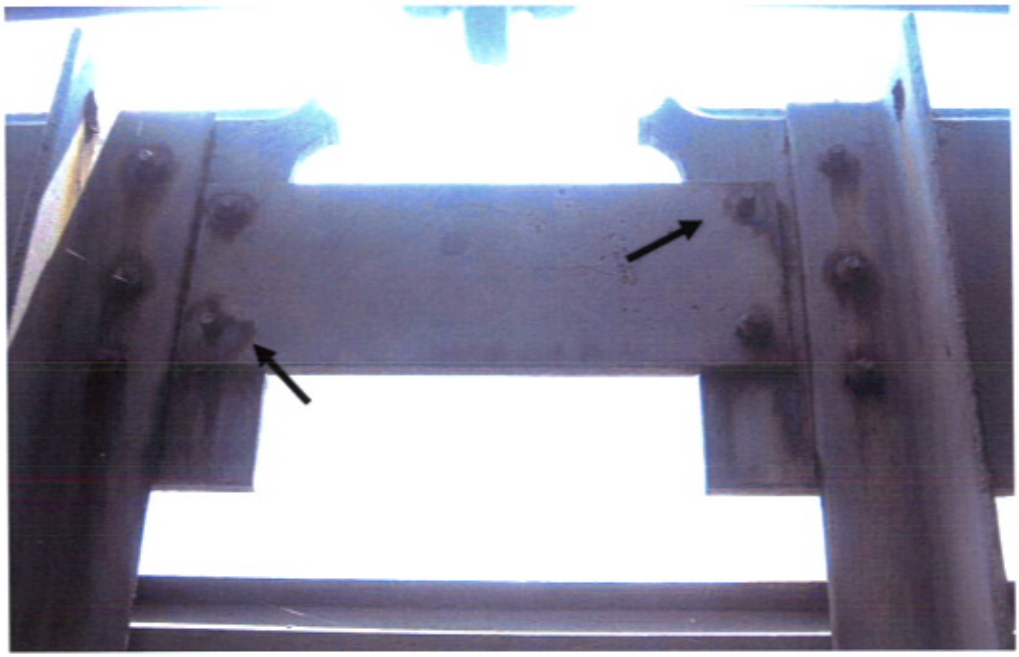


PHOTO NO. 55

MISSING BOLT NUTS AT THE SOUTH PORTAL SIGN IN SPAN 1, LOOKING SOUTH.

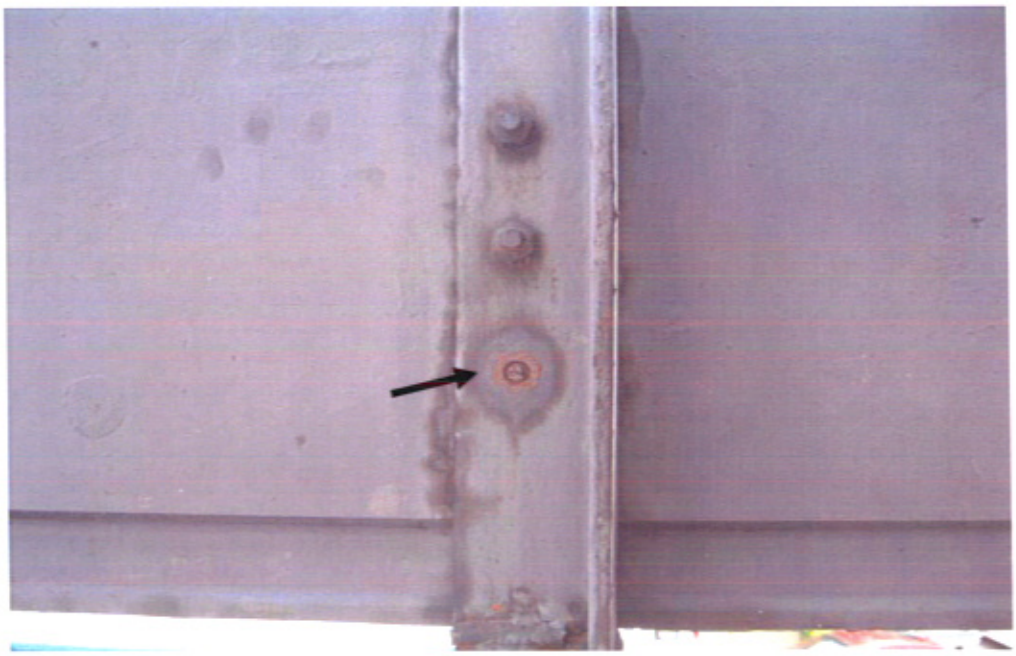


PHOTO NO. 56

SHEARED BOLT AT THE SOUTH PORTAL SIGN IN SPAN 1, LOOKING SOUTH.

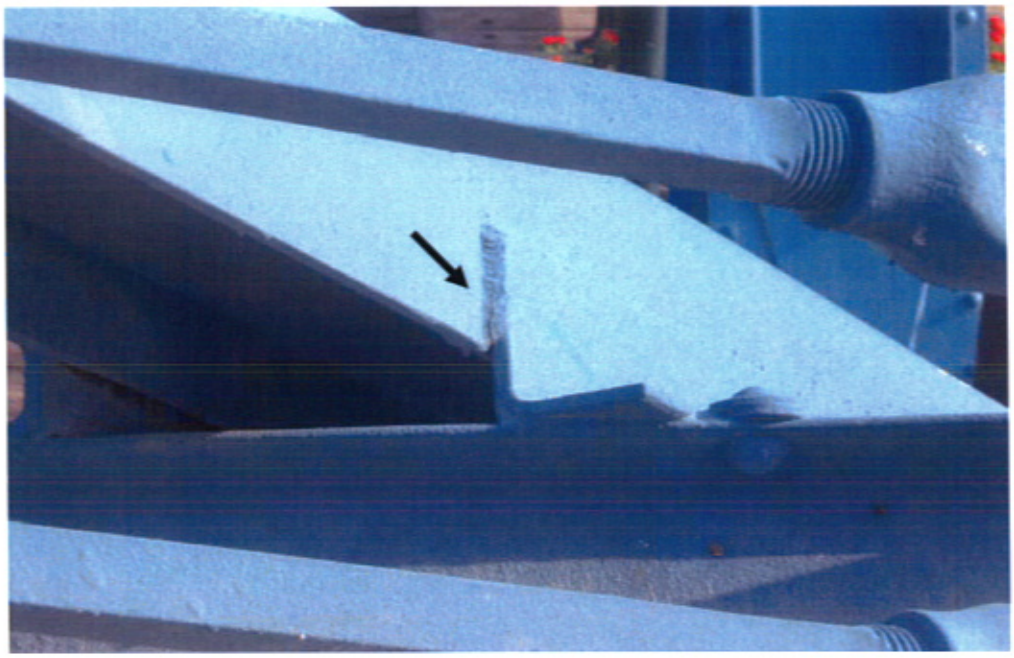


PHOTO NO. 57

CRACKED WELD AT THE NORTH PORTAL TRANSVERSE STRUT IN SPAN 4 (TYPICAL CONDITION), LOOKING NORTH.



PHOTO NO. 58

MISSING BENCH AT THE EAST SIDEWALK ADJACENT TO PIER 5, LOOKING SOUTHEAST.



PHOTO NO. 59

MISSING BOLLARD AT SPAN 6 (TYPICAL CONDITION),
LOOKING SOUTHWEST.



PHOTO NO. 60

MISSING LIGHT COVER AT THE WEST TRUSS L1U1 IN SPAN 5
(TYPICAL CONDITION), LOOKING NORTH.

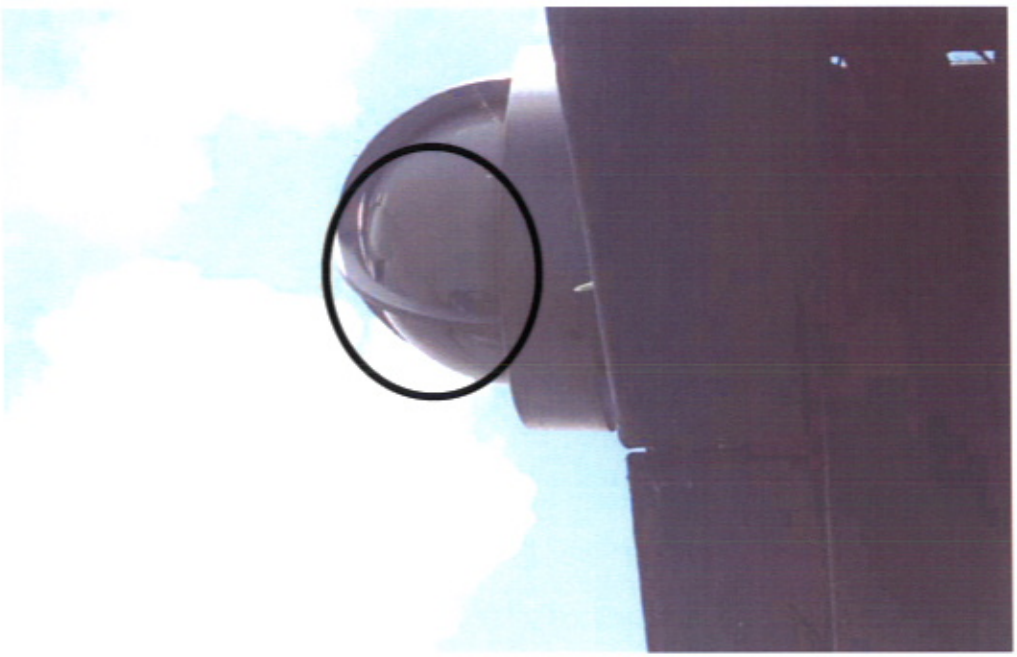


PHOTO NO. 61

DAMAGED LIGHT COVER AT THE WEST TRUSS U3 IN SPAN 1
(TYPICAL CONDITION), LOOKING NORTH.



PHOTO NO. 62

BENT WEST RAILING ADJACENT TO PIER 6
(NOTE: LIGHT TO MODERATE SPOT RUST), LOOKING SOUTHWEST.



PHOTO NO. 63

BENT WEST RAILING ADJACENT TO THE NORTH ABUTMENT,
LOOKING SOUTHWEST.



PHOTO NO. 64

UPLIFTED AND SPLIT SIDEWALK PLANK AT THE WEST SIDE OF SPAN 30
(TYPICAL CONDITION), LOOKING WEST.



PHOTO NO. 65

TYPICAL DETERIORATED CURB (EAST CURB OF VIADUCT SPANS SHOWN), LOOKING SOUTHEAST.



PHOTO NO. 66

DETERIORATED EAST SIDEWALK PLANK IN SPAN 19 (TYPICAL CONDITION), LOOKING EAST.

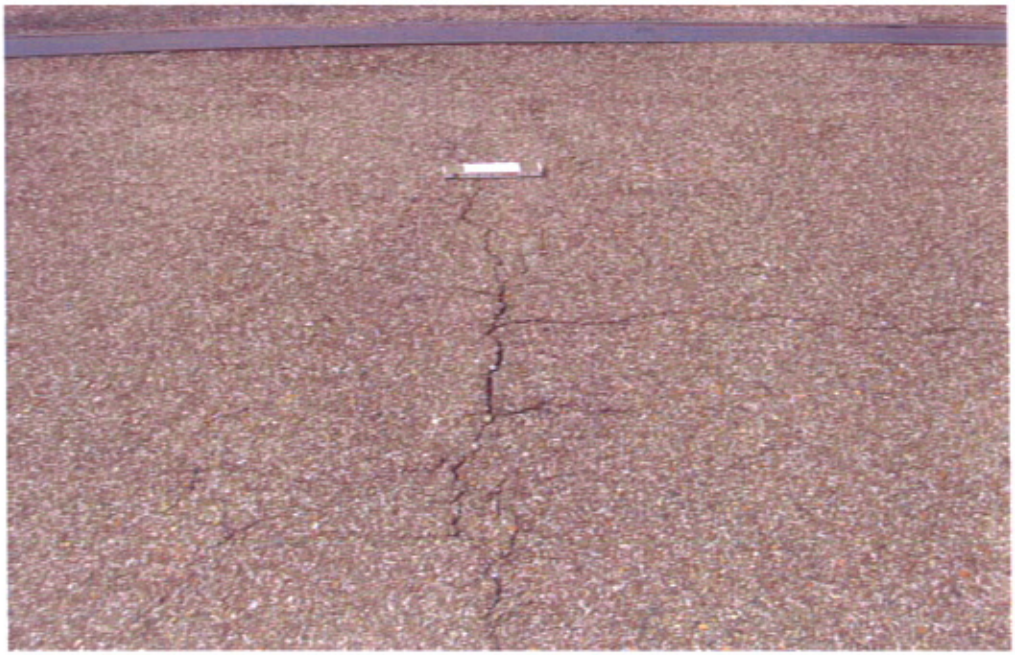


PHOTO NO. 67

TYPICAL MAPCRACKING IN THE VIADUCT WEARING SURFACE,
LOOKING SOUTH.

VI. APPENDIX A – REPAIR COST ESTIMATES

TranSystems Corporation
Walnut Street Bridge
2008 Biennial Inspection

REPAIR COST ESTIMATES

ITEM NO.	LOCATION	2008 REPAIR RECOMMENDATION	UNIT	UNIT PRICE	APPROX. QUANTITY	COST	REFERENCE
IMMEDIATE REPAIR RECOMMENDATIONS							
1	Span 1 embankment below panel point 2	Replace deteriorated masonry wall	SF	$70	300	$21,000	RSMeans Heavy Construction Cost Data 2007
2	Pier 5 below west sidewalk	Replace missing timber support	LS	$2,500	1	$2,500	2005 Biennial Inspection Report
PRIORITY REPAIR RECOMMENDATIONS							
1	Span 4 post tensioning strands at L1L2W	Re-coat epoxy	LS	$1,000	1	$1,000	2005 Biennial Inspection Report
2	South abutment fixed bearings	Install reinforcing plates at bearing web plates and stiffeners	LS	$10,000	1	$10,000	2005 Biennial Inspection Report
3	Pier 1 west fixed bearing; Pier 2 east fixed bearing	Reinforce gusset plate					
4	Pier 3 east expansion bearing	Install reinforcing plates at vertical stiffener plates					
5	Piers 1, 3, 4 and 5 fixed and expansion bearings; Pier 2 fixed and expansion bearings	Install reinforcing plates on inside faces of bearing web plates					
6	Span 3 north portal, Span 4 north portal and Span 6 south portal transverse strut at midheight	Re-weld	LS	$2,200	1	$2,200	2005 Biennial Inspection Report
7	Span 6, U9, transverse brace						
8	Span 1 sign structure at south portal	Repair section loss and replace missing bolts and nuts	LS	$1,000	1	$1,000	2005 Biennial Inspection Report
ROUTINE REPAIR RECOMMENDATIONS							
1	Spans 1 thru 6, truss members	Power wash truss members and install additional bird netting	DAY	$1,800	5	$9,000	RSMeans Heavy Construction Cost Data 2007
2	Spans 1 thru 6, truss bearings	Grease truss bearings	DAY	$1,800	7	$12,600	RSMeans Heavy Construction Cost Data 2007
3	Spans 1 thru 6, timber deck and sidewalks	Power wash bridge deck and sidewalks	DAY	$1,800	5	$9,000	RSMeans Heavy Construction Cost Data 2007
4	Spans 1 thru 6, timber deck and sidewalks	Apply water sealant to bridge deck and sidewalks	LS	$25,000	1	$25,000	2005 Biennial Inspection Report
5	East sidewalk adjacent to Pier 9	Replace missing sidewalk bench	LS	$1,000	1	$1,000	2005 Biennial Inspection Report
6	East railing end post at south abutment	Repair undermining	DAY	$1,800	1	$1,800	RSMeans Heavy Construction Cost Data 2007
7	Spans 1 thru 6, walkway and sidewalk lighting	Drain water from lighting covers and seal	DAY	$1,800	2	$3,600	RSMeans Heavy Construction Cost Data 2007
8	Spans 1 thru 6, walkway and sidewalk lighting	Replace missing lighting covers	DAY	$1,800	1	$1,800	RSMeans Heavy Construction Cost Data 2007
9	Spans 1 thru 6, top chord lighting	Replace damaged lighting covers	DAY	$1,800	1	$1,800	RSMeans Heavy Construction Cost Data 2007
10	Spans 1 thru 6, walkway	Replace missing bollards	DAY	$1,800	1	$1,800	RSMeans Heavy Construction Cost Data 2007
NORTH VIADUCT REHABILITATION							
1	Viaduct spans (7 thru 45)	Demolition of deck	LS	$156,000	1	$156,000	2005 Biennial Inspection Report
2	Viaduct spans (7 thru 45)	Temporary structures (shielding over park and roadway)	LS	$103,200	1	$103,200	2005 Biennial Inspection Report
3	Viaduct spans (7 thru 45), steel deck pans	Deck replacement (timber deck)	LS	$271,450	1	$325,750	RSMeans & 2005 Biennial Inspection Report
4	Viaduct spans (7 thru 45), asphalt overlay						
5	Viaduct spans (7 thru 45), timber sidewalks	Complete sidewalk replacement	LS	$103,350	1	$115,700	RSMeans Heavy Construction Cost Data 2007
6	Viaduct spans (7 thru 45), timber curbs	Complete curb replacement	LS	$51,600	1	$56,750	RSMeans Heavy Construction Cost Data 2007
7	Span 7 at Pier 6, west railing; Span 45 at north abutment, west railing	Repair bent and cracked railing sections	LS	$6,000	1	$6,000	2005 Biennial Inspection Report
8	Bent 14W, 17W and 27E column bases Bent 10E, 13W, 15W, 24E, 25W, 33W, 35E, 36E, 38W and 41W lower longitudinal struts Bent 19E, 26W, 31E, 33E, 34W and 38W lower transverse struts Bent 31W, 32W and 42E upper longitudinal struts	Install reinforcing plates	LS	$19,200	1	$19,200	2005 Biennial Inspection Report
9	Viaduct bents	Remove dirt around column bases	DAY	$1,800	5	$9,000	RSMeans Heavy Construction Cost Data 2007

REPAIR COST = $105,100

REHABILITATION COST = $789,600

TOTAL COST = $894,700

VII. APPENDIX B – STRAIN GAUGE READINGS

STRAIN GAUGE READINGS

SPAN 1

STRAIN GAUGE		READINGS							
		DATE	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**
		6-12-95	**10-26-95**	**3-20-96**	**3-14-97**	**11-1-99**	**11-4-02**	**8-9-05**	**8-2-08**
		Temp F	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**
		68°	44°	36°	61°	61°	54°	91°	90°
Wire No.	Location								
1	U1EA	17.2K	16.9K	17.2K	17.2K	16.8K	17.0K	17.2K	17.2K
2	U1EB	17.7K	17.5K	17.8K	17.6K	17.3K	17.5K	17.6K	17.6K
3	U1WA	15.6K	15.5K	15.8K	15.4K	15.1K	-	-	-
4	U1WB	16.7K	16.6K	16.8K	16.6K	16.5K	-	-	-
5	L0EA	19.2K	19.2K	19.5K	18.9K	18.7K	19.0K	18.8K	18.8K
6	L0EB	18.3K	18.3K	18.6K	18.0K	17.8K	17.9K	17.5K	17.3K
7	L0WA	19.4K	19.5K	19.5K	19.2K	19.1K	18.9K	18.6K	18.9K
8	L0WB	18.4K	18.5K	18.5K	17.8K	17.6K	17.5K	16.9K	16.8K

STRAIN GAUGE READINGS

SPAN 2

STRAIN GAUGE		READINGS							
		DATE	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**
		6-12-95	**10-26-95**	**3-20-96**	**3-14-97**	**11-1-99**	**11-4-02**	**8-9-05**	**8-2-08**
		Temp F	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**
		69°	47°	36°	65°	61°	54°	94°	90°
Wire No.	Location								
1	U1EA	15.8K	15.9K	15.6K	15.5K	15.5K	15.2K	15.1K	15.4K
2	U1EB	17.0K	16.5K	16.6K	16.6K	16.6K	16.5K	16.3K	16.5K
3	U1WA	17.3K	17.2K	17.2K	17.8K	17.1K	16.8K	16.8K	16.9K
4	U1WB	16.8K	16.7K	16.8K	16.6K	16.6K	16.7K	16.4K	16.6K
5	L0EA	17.9K	18.2K	18.4K	18.2K	18.1K	18.1K	17.8K	18.1K
6	L0EB	19.1K	18.6K	18.8K	18.6K	18.2K	18.2K	17.7K	17.9K
7	L0WA	18.8K	18.9K	18.7K	18.8K	18.7K	18.7K	18.3K	19.3K
8	L0WB	19.1K	19.3K	19.3K	18.9K	18.9K	18.9K	18.6K	18.8K

STRAIN GAUGE READINGS

SPAN 3

STRAIN GAUGE		READINGS							
		DATE	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**
		6-12-95	**10-26-95**	**3-20-96**	**3-13-97**	**11-6-99**	**11-4-02**	**8-11-05**	**8-2-08**
		Temp F	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**
		69°	50°	36°	59°	64°	52°	89°	93°
Wire No.	Location								
1	U4EA	22.9K	23.2K	23.0K	22.9K	22.9K	22.8K	23.0K	22.8K
2	U4EB	24.7K	24.9K	24.8K	24.8K	24.7K	24.6K	24.8K	24.7K
3	U4WA	24.4K	24.5K	24.5K	24.4K	24.3K	24.3K	24.4K	24.5K
4	U4WB	24.2K	24.2K	24.3K	24.2K	24.1K	24.1K	24.2K	24.1K
5	U2EA	19.8K	20.2K	20.0K	19.9K	20.0K	19.9K	20.2K	20.0K
6	U2EB	19.8K	20.0K	19.8K	19.8K	19.8K	19.8K	20.1K	20.0K
7	U2WA	19.2K	19.2K	19.2K	19.1K	18.9K	19.1K	19.1K	19.2K
8	U2WB	19.5K	19.7K	19.7K	19.5K	19.3K	19.4K	19.5K	19.4K
9	U1EA	29.1K	29.4K	29.2K	29.0K	29.0K	28.6K	29.1K	28.9K
10	U1EB	29.1K	29.6K	29.5K	29.5K	29.4K	29.3K	29.3K	29.2K
11	U1WA	31.5K	31.6K	31.6K	31.5K	31.3K	31.4K	31.7K	31.5K
12	U1WB	29.2K	29.2K	29.2K	29.1K	28.9K	29.0K	29.2K	29.0K
13	L0EA	26.2K	26.3K	26.6K	26.1K	26.1K	26.3K	26.5K	26.1K
14	L0EB	27.1K	27.6K	27.8K	27.3K	27.0K	27.2K	26.5K	26.5K
15	L0WA	27.2K	27.4K	27.4K	26.8K	26.5K	26.4K	26.2K	25.9K
16	L0WB	27.9K	28.3K	28.2K	27.8K	27.9K	27.9K	27.7K	27.6K

STRAIN GAUGE READINGS

SPAN 4

STRAIN GAUGE		READINGS							
		DATE	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**
		6-13-95	**10-27-95**	**3-21-96**	**3-13-97**	**11-1-99**	**11-4-02**	**8-11-05**	**8-2-08**
		Temp F	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**
		64°	62°	38°	59°	65°	52°	92°	94°
Wire No.	Location								
1	U4EA	24.2K	23.8K	23.8K	23.6K	23.4K	23.4K	23.2K	23.4K
2	U4EB	25.9K	25.5K	25.5K	-	-	-	-	-
3	U4WA	23.5K	23.3K	23.4K	23.1K	23.0K	-	22.9K	22.5K
4	U4WB	23.8K	23.3K	23.4K	23.2K	22.8K	22.7K	22.6K	22.3K
5	U2EA	19.9K	19.4K	19.5K	19.4K	19.2K	19.2K	19.6K	19.7K
6	U2EB	20.4K	19.8K	20.0K	19.9K	19.8K	19.8K	19.8K	19.9K
7	U2WA	19.8K	-	-	-	-	-	-	-
8	U2WB	18.8K	-	-	-	-	-	-	-
9	U1EA	29.1K	28.6K	28.7K	-	-	-	-	-
10	U1EB	29.4K	-	-	-	-	-	-	-
11	U1WA	27.5K	27.2K	27.4K	27.2K	27.0K	26.6K	26.7K	26.8K
12	U1WB	28.4K	26.4K	26.6K	26.4K	26.3K	26.2K	26.3K	25.8K
13	L0EA	26.7K	-	-	-	-	-	-	-
14	L0EB	27.2K	27.2K	27.2K	27.0K	27.1K	26.9K	26.4K	26.4K
15	L0WA	27.0K	-	-	-	-	-	-	-
16	L0WB	29.1K	-	-	-	-	-	-	-
17	L16EA	27.4K	27.8K	28.0K	27.8K	28.0K	27.9K	-	-
18	L16EB	28.4K	27.8K	27.8K	27.8K	27.5K	27.6K		-
19	L16WA	27.3K	-	-	-	-	-	-	-
20	L16WB	28.8K	28.8K	29.1K	28.6K	28.3K	28.5K	-	-

STRAIN GAUGE READINGS

SPAN 5

STRAIN GAUGE		READINGS							
		DATE	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**
		6-13-95	**10-27-95**	**3-21-96**	**3-13-97**	**11-3-99**	**11-4-02**	**8-12-05**	**8-2-08**
		Temp F	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**
		66°	66°	38°	56°	32°	57°	90°	97°
Wire No.	Location								
1	U4EA	23.8K	23.5K	23.4K	23.2K	23.4K	23.2K	23.3K	23.6K
2	U4EB	25.1K	24.5K	24.5K	24.2K	24.3K	24.1K	23.8K	23.9K
3	U4WA	24.5K	24.2K	24.2K	23.8K	24.0K	23.8K	23.6K	23.9K
4	U4WB	24.5K	24.2K	24.3K	24.2K	24.2K	24.2K	23.9K	24.2K
5	U2EA	-	-	-	-	18.9K	-	-	-
6	U2EB	19.9K	19.5K	19.5K	-	19.2K	18.9K	18.2K	-
7	U2WA	19.4K	19.0K	19.0K	18.8K	18.9K	18.8K	18.5K	18.8K
8	U2WB	19.5K	18.8K	19.0K	18.9K	18.9K	18.7K	-	18.7K
9	U1EA	29.2K	28.8K	28.8K	-	-	-	-	-
10	U1EB	28.9K	28.3K	28.4K	28.2K	28.3K	28.2K	28.1K	28.2K
11	U1WA	29.1K	28.7K	28.8K	28.8K	28.9K	28.8K	28.7K	28.8K
12	U1WB	29.9K	29.7K	29.8K	29.4K	29.5K	29.5K	28.8K	28.9K
13	L0EA	29.5K	29.7K	29.8K	29.5K	29.2K	29.3K	30.1K	30.1K
14	L0EB	6.4K	-	-	-	-	-	-	-
15	L0WA	28.8K	-	-	-	-	-	-	-
16	L0WB	27.1K	-	-	-	-	-	-	-
17	L16EA	28.3K	28.3K	28.4K	-	-	-	-	-
18	L16EB	28.3K	25.4K	25.6K	-	-	-	-	-
19	L16WA	28.0K	-	-	-	-	-	-	-
20	L16WB	28.6K	-	-	-	-	-	-	-

STRAIN GAUGE READINGS

SPAN 6

STRAIN GAUGE		READINGS							
		DATE	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**	**DATE**
		6-13-95	**10-27-95**	**3-21-96**	**3-13-97**	**11-3-99**	**11-4-02**	**8-12-05**	**8-2-08**
		Temp F	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**	**Temp F**
		70°	56°	39°	56°	36°	51°	93°	97°
Wire No.	Location								
1	U1EA	17.8K	17.6K	17.5K	17.6K	17.8K	17.8K	17.6K	17.9K
2	U1EB	17.5K	17.2K	17.2K	16.8K	17.1K	16.8K	16.6K	17.2K
3	U1WA	17.9K	17.7K	17.7K	-	-	-	-	-
4	U1WB	17.5K	17.3K	17.3K	17.2K	17.4K	17.3K	17.2K	-
5	L0EH	19.4K	19.5K	19.6K	19.9K	19.6K	19.6K	19.5K	19.7K
6	L0EB	18.6K	18.9K	18.9K	18.8K	18.4K	18.5K	18.3K	18.2K
7	L0WA	21.0K	21.6K	21.6K	-	-	-	-	-
8	L0WB	19.6K	19.7K	19.7K	19.6K	19.8K	19.8K	19.7K	19.8K
9									
10									
11									
12									
13									
14									
15									
16									
17	L16EA	28.6K	-	-	-	-	-	-	-
18	L16EB	27.5K	28.1K	28.0K	28.0K	-	-	-	-
19	L16WA	26.7K	27.1K	27.2K	27.1K	27.5K	27.3K	27.2K	27.3K
20	L16WB	29.9K	-	-	-	-	-	-	-

Walnut Street Bridge
City of Chattanooga, Tennessee



2015 Bridge Inspection Report

Prepared by

VOLKERT

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EXECUTIVE SUMMARY

Volkert, Inc. completed the 2015 Bridge Inspection of the Walnut Street Bridge from February 9 – 13, 2015. The scope of work included a visual inspection of the six main truss spans, north viaduct trestle spans, and of the six stone piers from top of pier down to the water surface; and a hands-on underwater inspection on four of the six stone piers, from the water surface to the river bottom. The purpose of this inspection was to determine the structural condition of primary and secondary bridge members and to identify both structural and non-structural deficiencies which may compromise the structural integrity of the bridge.

The inspection was divided into the seven key elements on the bridge: Wood Deck, Above Deck Truss, North Viaduct under Deck, Below Deck Truss, Piers, Abutments, and Electrical. The Walnut Street Bridge is in fair conditions with 2 immediate repair items, 22 priority repair items, 88 routine repair items, and 36 items for monitoring.

The 2 immediate repair items involved exposed electrical wires in Span 1 and 45. These two items are relatively low cost repairs, but should be addressed to avoid the potential of electrical shock to pedestrian and/or maintenance personal.

The 22 priority repair items consist of section loss of the wood deck in the truss spans and excessive corrosion with section loss in various steel members across the bridge. Several of these locations will require a hands-on inspection to determine the amount of section loss for accurate repair plan development.

The 88 routine repair items include heavy surface wear to the wood deck on over 2/3 of the truss spans and moderate corrosion with paint loss at connecting steel elements pretty consistent throughout the bridge. We recommend replacing the entire wood deck curb to curb for the truss spans, similar to what was done in 2010 for the north viaduct trestle spans. The estimated cost is $828,000. We also recommend after the priority and routine repairs are completed to blast clean to bear metal and repaint. The estimated cost is $5 Million and should last the City between 25 to 30 years.

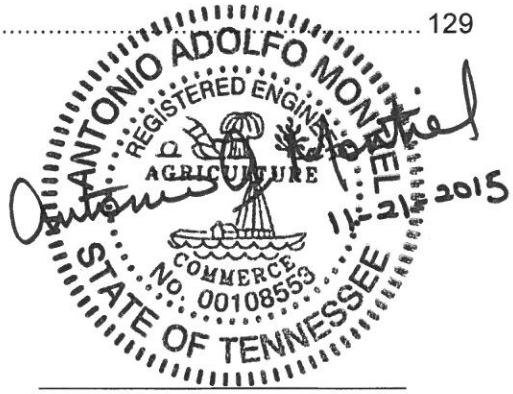
The total estimated cost to repair all of the deficiencies found during our inspection, not including the recommendation to replace the deck in the truss spans and repaint the entire bridge structure, is $6.4 Million. This includes a 25% contingency to account for the varying nature of steel repair work.

To minimize cost for this inspections, we recommended the City do a visual inspection of the six key elements involved in this inspection, with the option of conducting hands-on inspection for those areas identified in the visual inspection that would require additional inspection

This report contains a summary of the deficiencies found during our inspection, recommendations for rehabilitation, and estimated cost for repairs. The cost of repairs were developed with the assistance of several Tennessee Bridge Contractors.

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Antonio Montiel, PE, CBI
Volkert, Inc.

I. BRIDGE DESCRIPTION

BRIDGE DESCRIPTION

Bridge Description

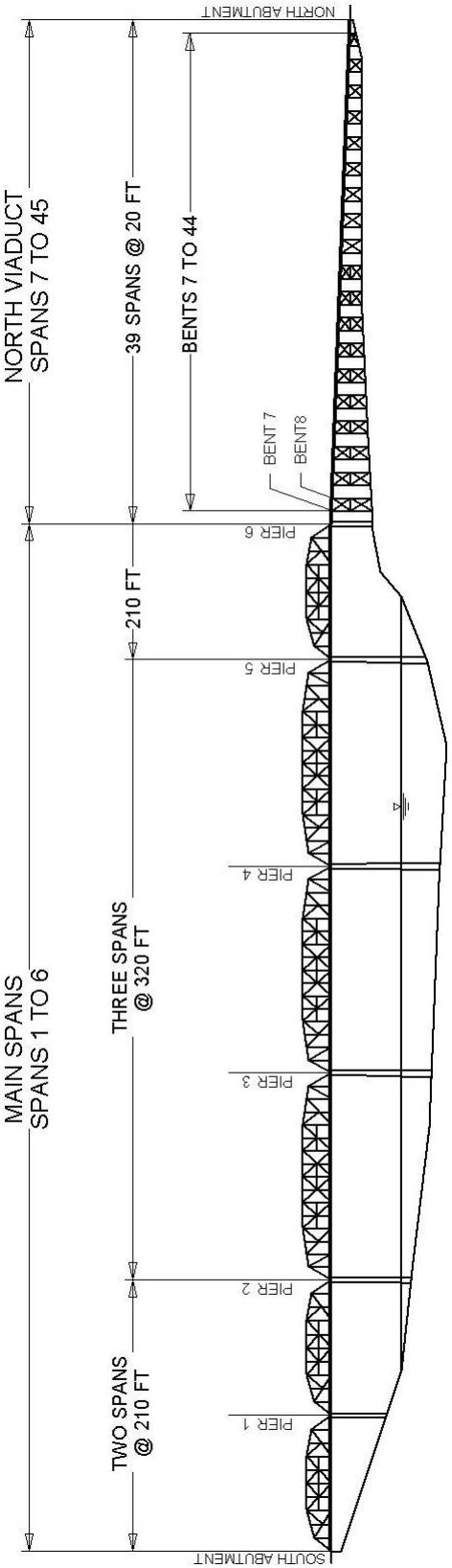
Construction of the Walnut Street Bridge was completed in 1891. The structure is composed of six steel camelback spans (Main Spans over the Tennessee River) and thirty-nine steel trestle spans (North Viaduct). In 1978, the bridge was closed because of its poor condition. In 1993, the bridge was re-opened following extensive renovation and restoration as a pedestrian bridge. In 2009, additional repairs were performed, including changing the deck in the North Viaduct from steel deck pans filled with asphalt to laminated timber deck panels.

Main Spans (Spans 1 thru 6)

Refer to the diagram on the following page. The main spans consist of three 210ft. (Span 1, 2 and 6) and three 320 ft. (Spans 3, 4, and 5) steel camelback truss spans on masonry piers with laminated timber deck panels, timber curbs and sidewalks, supported on stone masonry piers. The 210 ft. and 320 ft. truss spans are constructed with 10 and 16 panels respectively. Each steel truss is reinforced with a post tensioning system installed in 1993. The 7 ft. wide sidewalks border an 18 ft. deck measured from curb to curb.

North Viaduct (Spans 7 thru 45)

Refer to the Diagram on the following page. The North Viaduct consists of a steel trestle on steel bents system with laminated timber deck panels, timber curbs and sidewalks. The viaduct is 780 ft. in length, with each span measuring 20 ft.. Similar to the main spans, the sidewalks measure 7ft wide bordering an 18 ft. wide deck measured from curb to curb.



Walnut Street Bridge
Elevation View
Main Components

II. SCOPE OF WORK AND INSPECTION PROCEDURES

SCOPE OF WORK AND INSPECTION PROCEDURES

Scope of Work

This project consisted of performing the 2015 Inspection of the Walnut Street Pedestrian Bridge in Chattanooga, Tennessee. The purpose of this inspection was to determine the structural integrity of primary and secondary bridge members and to identify structural and non-structural deficiencies using a visual inspection approach, except for the underwater inspection which used a hands-on inspection. The Inspection was performed by Volkert, Inc. and completed on February 13, 2015.

Inspection Procedures

The Volkert Inspection Teams were supervised by Edward Rucks, C.B.I. under the direction of Antonio (Tony) Montiel, P.E., and C.B.I. Project Manager. The Inspection Team consisted of one Inspection Supervisor (Team Leader), five – 2 Man Teams, and a 4 Man Dive Team. Mr. Montiel coordinated with Eric Booker, Project Manager with City of Chattanooga Public Works Department.

The Inspection Team met the day before starting on the inspection, to walk the bridge, familiarize with the surroundings, and finalize procedures for each team. Once the inspection started, the inspection teams met daily with the Project Manager and Inspection Supervisor to discuss findings and cover the anticipated inspection sequence for the next day until inspection was complete.

The inspection was broken down into various elements of the bridge, to simultaneously work together to minimize the inspection time. Those elements are listed here: Wood Deck, Above Deck Truss, Below Deck Truss, Ultrasonic Testing of Structural Pins, North Viaduct (under deck and bents), Piers (both above and below water), Abutments, and Electrical. The bridge was closed to pedestrians during most of the inspection; pedestrians were detoured to the Market Street Bridge.

Inspection Teams and Equipment

Truss - 2 Man Team utilizing a 90ft Manlift, Refer to photo A.

Pin Ultrasonic Testing - 2 Man Team utilizing a 90ft Scissor Lift and a 2.25 MHz Utrasonic Flaw Detector.

Deck, handrails, sidewalks and over hangs 2 Man Team on foot and also utilizing a Light Weight under Bridge Inspection Vehicle. Refer to photo S.

Truss (below deck) and Piers (above water) 2 Man climbing Team using Rope Access Equipment. The climbers used hatches in the deck over Piers 1 through 6 to access the elements below the deck. Refer to photos 3, 4 and 5.

North Viaduct Spans - 2 Man Team with a 120ft Manlift, Refer to photo 6.

Underwater Inspection - 4 Man Team using 2 Divers, 1 Standby Diver, Boat Operator, Fathometer, and Diving Equipment with Communications, on a 20ft Dive Boat.

Inspection Vehicles - 3 Pickup Trucks, 2 SUVs and a boat trailer.



Photo 1

Description:
Truss access using Manlift.

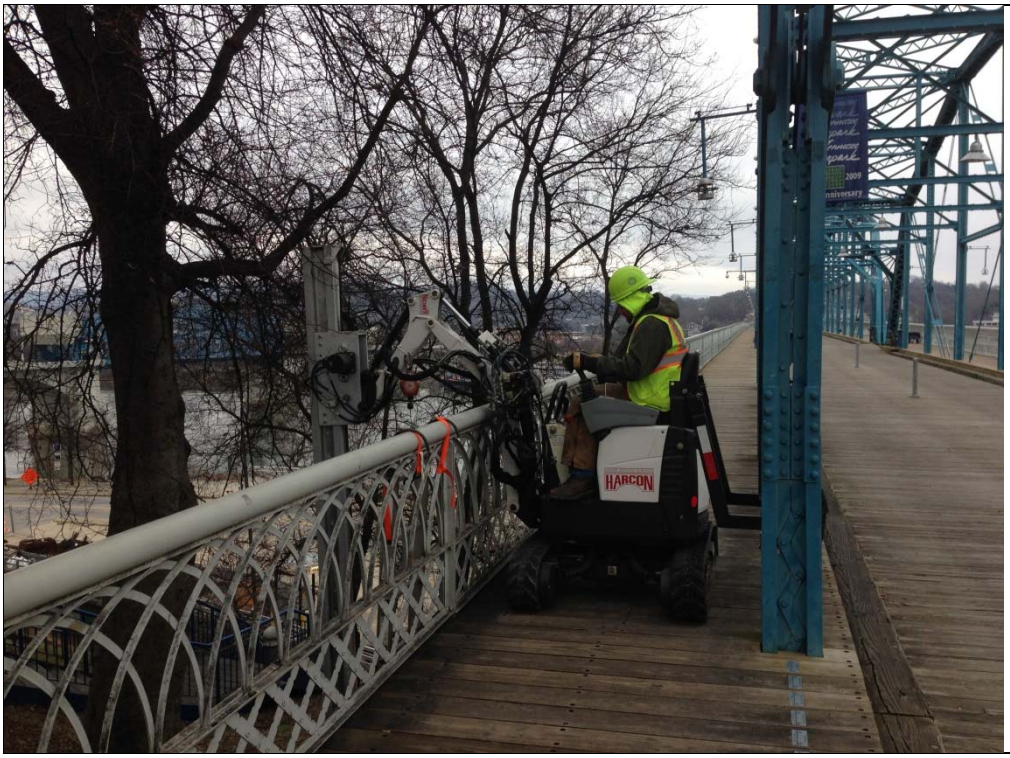


Photo 2

Description:
Light weight under bridge access vehicle.

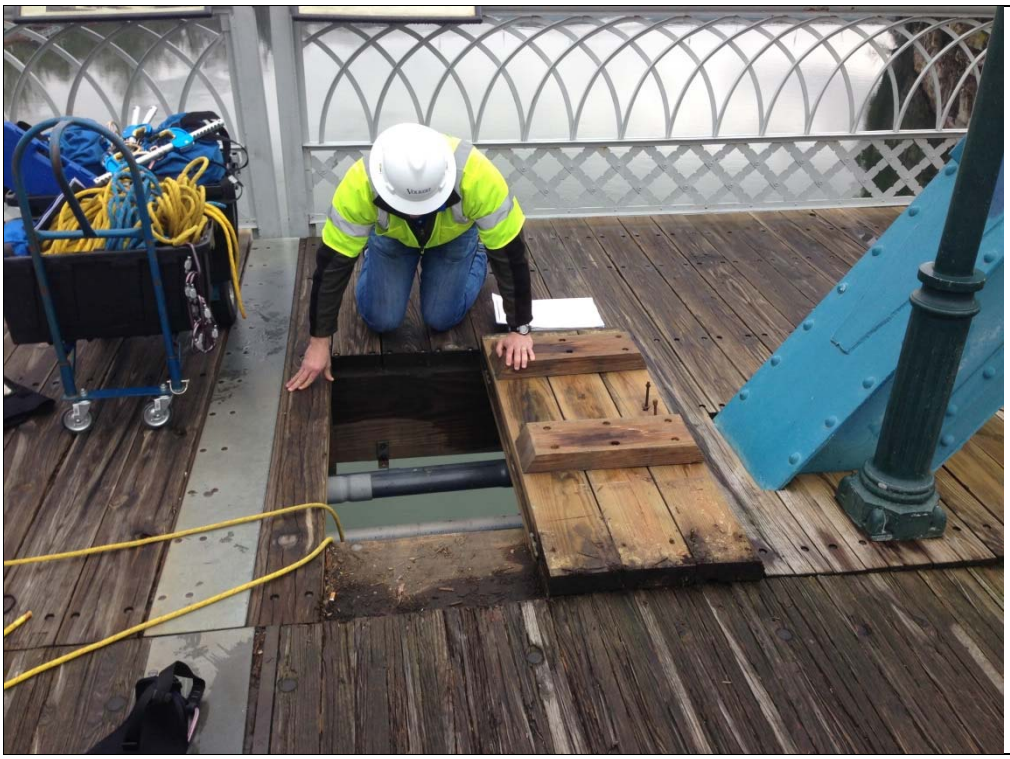


Photo 3

Description:
Climbers going below deck.



Photo 4

Description:
Climber rigged under truss deck.

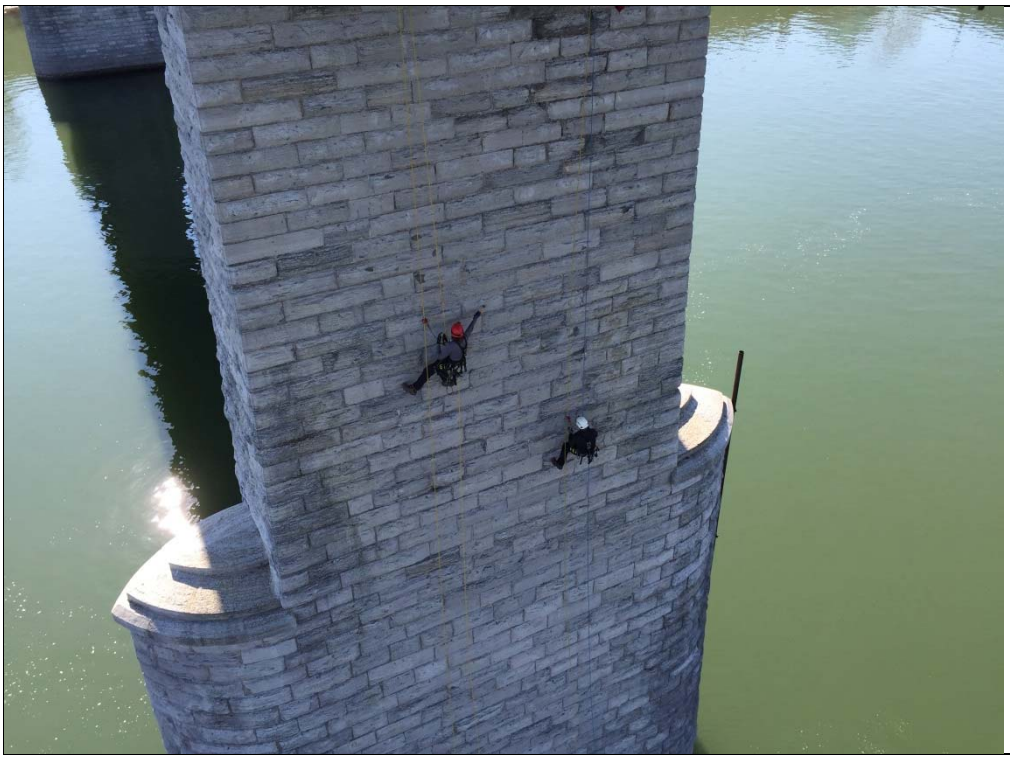


Photo 5

Description:
Climber on masonry pier.



Photo 6

Description:
Manlift accessing north viaduct.

III. CONDITION SURVEY DEFINITIONS AND TERMINOLOGY

CONDITION SURVEY DEFINITIONS AND TERMINOLOGY

A) Definitions of Recommendation Categories

Hands-on Inspection Close-up inspection from no further away than an arm's length where the member or element can be physically touched.

Visual Inspection The inspection from a reasonable distance of a member or element where initial determination of the condition can be made.

Four categories of recommendations are identified and defined as follows:

1 **Immediate** - Requires immediate action including possible closing of the structure or areas affected for safety reasons until interim remedial measures, such as shoring or removal of potentially unsafe structures (or elements), can be implemented. These closings or interim remedial actions, if any, always require immediate action upon discovery.

2 **Urgent** - Conditions for which no immediate action may be required or for which immediate action has been completed, but further investigations, design and implementation of interim or long- term repairs should be undertaken on a priority basis, i.e., taking precedence over all other scheduled work.

3 **Routine** - Conditions requiring further investigation or remedial work, which can be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance, depending on the action required.

4 **Informational** - Deficiencies requiring monitoring of possible advancement in deteriorating condition.

B) Rating Criteria

Terms used to describe the condition of a bridge structural system or component are listed and defined below. When the term is applied to an overall structure or system, this does not indicate that all elements of the structure or system are in the same condition.

Excellent	"As New" Condition.
Good	The structure system is sound and performing its function, although it shows signs of wear and may require some minor repairs, mostly routine.
Fair	The structure system is still performing adequately at this time, but needs "priority" and/or "routine" repairs to prevent future deterioration and to restore it to good condition.
Poor	The structure system cannot be relied upon to continue to perform its original function without "immediate" and/or "priority" repairs.

C) Inspection Terminology

The following terms may be used during inspection to describe the condition of structural members.

1) Steel Members

a) Corrosion

- Minor (Light) - A light surface rust.
- Moderate - Rust that is loose and flaking with some pitting. This scaling, or exfoliation, can be removed with some effort by use of a scraper or chipping hammer. Element exhibits measurable but not significant loss of section.
- Severe - Heavy, stratified rust or rust scales with extensive pitting. Removal requires exerted effort and may require mechanical means. Significant loss of section.

b) Impacted Rust - Rust collected between two interfacing surfaces, usually two steel plates. Impacted rust can be minor, moderate, or severe as described above. Impacted rust can severely deform the steel members due to the expansive nature of rust.

c) Pitting - Formation of cavities due to corrosion. Minor, moderate, and severe pitting categories are used based upon depth and density of cavities.

- Minor -Typically less than ¼ inch diameter and 1/32 inch deep
- Moderate – ¼ inch to ½ inch diameter and up to 1/8 inch deep.
- Severe – Greater than ½ inch diameter and over 1/8 inch deep.

2) Concrete Members

a) Cracking - A separation into two or more parts with a space between the fractured concrete surfaces.

- Hairline – Crack width less than ½ inch.
- Fine – Crack width between 1/32 inch and 1/16 inch
- Medium – Crack width between 1/16 inch and 1/8 inch
- Wide – Crack width greater than 1/8 inch.

The above definitions for cracks can be modified, depending on the type of structural element. Other terminology, such as map cracking, pattern cracking, etc., may be used as appropriate.

b) Efflorescence - A white deposit caused by crystallization of soluble salts brought to the surface by moisture leaching through concrete.

c) Delamination - A layered separation of the concrete. When a delaminated area of concrete is struck (sounded) with a hammer, a hollow sound will be emitted.

d) Leaching - The dissolution and washing away of the calcium hydroxide in concrete. The moisture enters the concrete through exposed cracks in the surface.

e) Spall - A roughly circular, oval, or elongated depression in the surface of a concrete element caused by separation of a portion of the surface concrete.

- Small (Pop-out) -Less than 6 inches in diameter and 1 inch deep.
- Medium - Between 6 inches and 12 inches in diameter and up to 2 inches deep.
- Large - Over 12 inches in diameter and any depth.

f) Scaling -The gradual loss of surface mortar and aggregates.

g) Hollow area -An area of concrete that emits a hollow sound when struck with a hammer and indicates the existence of a fracture plane beneath the surface.

h) Honeycomb - Typically small pocket voids formed by the entrapment of air during the placement of the concrete.

IV. INSPECTION FINDINGS AND CONCLUSIONS

A. WOOD DECK

Walnut St. Bridge Inspection - Wood Deck Deficiency Sheet				
ITEM NO.	**Component**	**Description**	**Location**	**Priority**
A1	Bollard	Rotted wood at bollard Locations	**Span 1** at (5,20,35,65,85,105,125,170)ft **Span 2** at(40,145,165)ft **Span 3** at (40,60,100,120,165,180)ft **Span 4** at (40,60,120,160,200,220,240,280)ft **Span 5** at (60,80,140,180)ft **Span 6** at (45,170,190)ft	**3**
A2	Deck Surface	Heavy surface wear (multiple locations)	**Heavy Surface Wear At These Locations:** **Span 1:** 0-10, 35-50,70-80,105-115,130-145,165-185,195-207 **Span 2:** 0-20, 30-45,55-60,110-125,130-145,155-165,185-195,200-207 **Span 3:** 0-15,50-60,70-85,105-115,120-130,180-185,190-200,225-235,240-245,250-260,295-300,310-320 **Span 4:** 0-10,40-55,65-70,80-85,90-100,155-160,170-185,190-195,200-250,260-265,280-290,305-310,315-320 **Span 5:** 0-20,30-50,55-120,125-135,140-150,185-215,230-275,285-320 **Span 6:** 0-60,65-70,80-85,100-105,110-130,135-145,150-185,195-210 **Span 27:** 10-15	**3**
A3	Sidewalk Boards	Shake	**Span 1** Left Side at 20ft Right Side at (10,60,120,205)ft **Span 2** Right Side at (20,85,100)ft **Span 3** Right Side at (10,15)ft **Span 4** Right Side at 215ft **Span 36** Left Side at 2 ft	**3**
A4	Sidewalk Boards	Split	**Span 1** Right Side at (20,40,60,200,205)ft **Several Locations Span 7 to 44**	**3**
A5	Wood Curb	Curb Shake or Split	**Span 1** Left Side at (5,65,90,160)ft Right Side at (35, 150)ft **Span 3** Left Side at (140)ft **Span 7 to N Abut** 80 ft total	**3**

Walnut St. Bridge Inspection - Wood Deck Deficiency Sheet				
ITEM NO.	**Component**	**Description**	**Location**	**Priority**
A6	Deck Surface	Section Loss	**Span 1** (48"x12") at 160ft **Span 2** (24"x12"x2") at 175ft **Span 3** (3"x3") at 165ft **Span 4** (24"x6"x2") at 125ft (96"x12"x2") at 180 and 190 (18"x96"x2") at 200ft (48"x8"x2.25") at 235ft (5"x1.5"x3") at 240ft (84"x9"x2.5") at 250ft **Span 5** (36"x6"x2") at 55ft (24"x6"x2") at 65ft (60"x6"x2") at 70ft (48"x12"x3") at 75ft (108"x9"x2") at 125ft (48"x6"x2.5") at 180ft (60"x8"x2") at 195ft (42"x24"x2.5") at 260ft (84"x12"x2.5") at 275ft (96"x12"x2.5") at 275ft (24"x6"x2") at 280ft **Span 6** (24"x6"x2") at 55ft (24"x6"x2") at 155ft (96"x6"x2") at 195ft (24"x6"x2") at 200ft (36"x6"x2.5") at 205ft	**2**
A7	Slider Plate	Non-uniform opening	Pier 2, 3, 4, 5, and 6	**4**
A8	Rail	Paint peeling off with surface corrosion	Several locations throughout, both east and west rails.	**4**

Please Note:

Since more than half of the truss deck is showing heavy wear on the surface, we recommend replacing the entire deck curb to curb for the truss spans, similar to what the City did in 2010 with the North Viaduct. The estimated cost would be **$828,000**, which includes a 15% contingency.

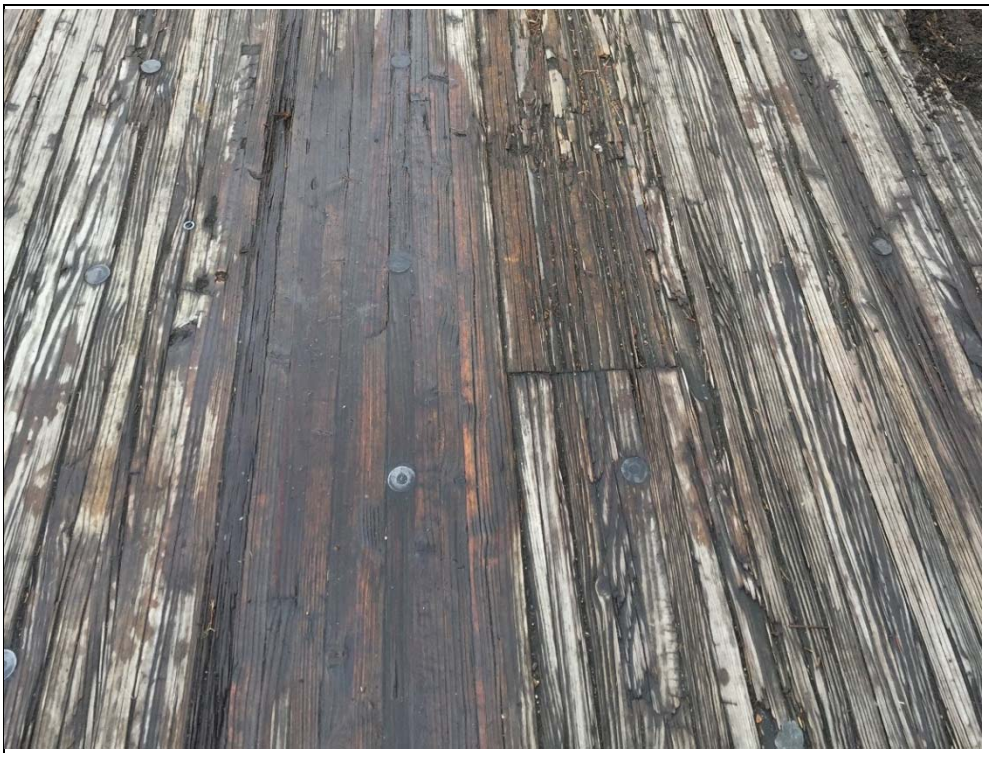


A1

Description:
Rotted wood.

Location: Multiple locations throughout bridge deck, especially below bollards. 32 locations.

Repair Recommendation:
Replace damage panels with new everywhere that does not coincide with heavy surface wear locations.



A2

Description:
Heavy surface wear.

Location: Multiple, 36% of Bridge deck surface, 850LF in total.

Repair Recommendation:
Replace damage panels with new.

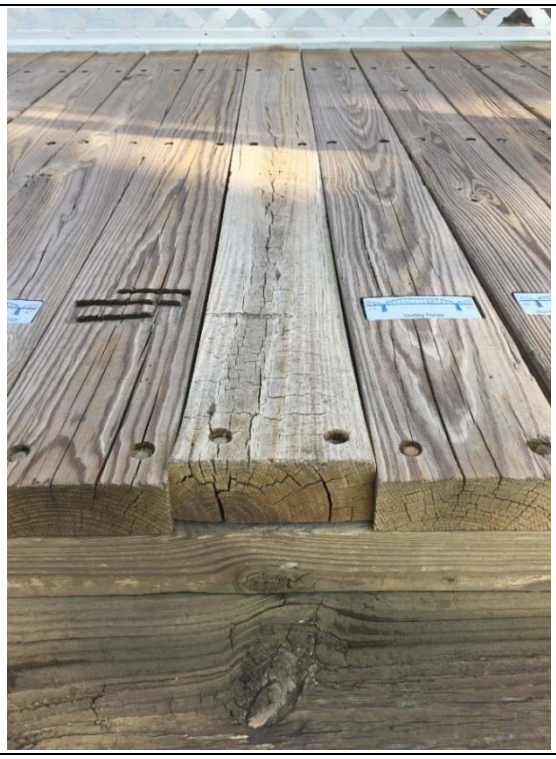


A3

Description:
Splinters, shakes, and checks in sidewalk boards and curbs.

Location: Multiple, 23 locations throughout bridge deck.
Example of typical splintering

Repair Recommendation:
Replace damage boards with new.

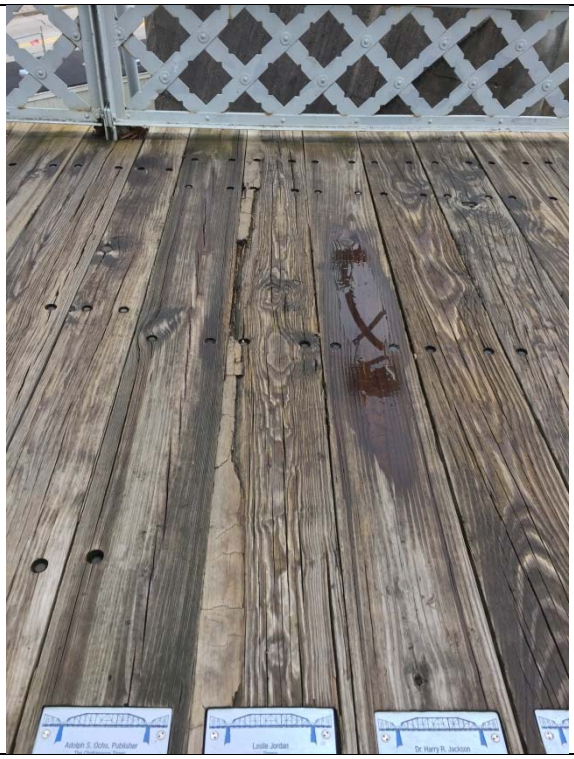


A3

Example of typical shake.

Description:
Shake in sidewalk board

Repair Recommendation:
Replace damage boards with new.

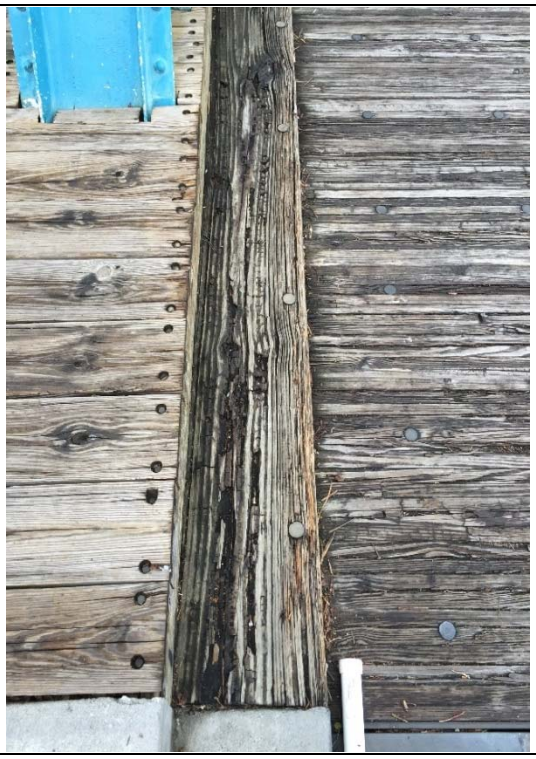


A4

Example of typical Split

Description: Split in sidewalk board

Repair Recommendation: Replace damage boards with new.



A5

Example of typical check

Description: Check in curb.

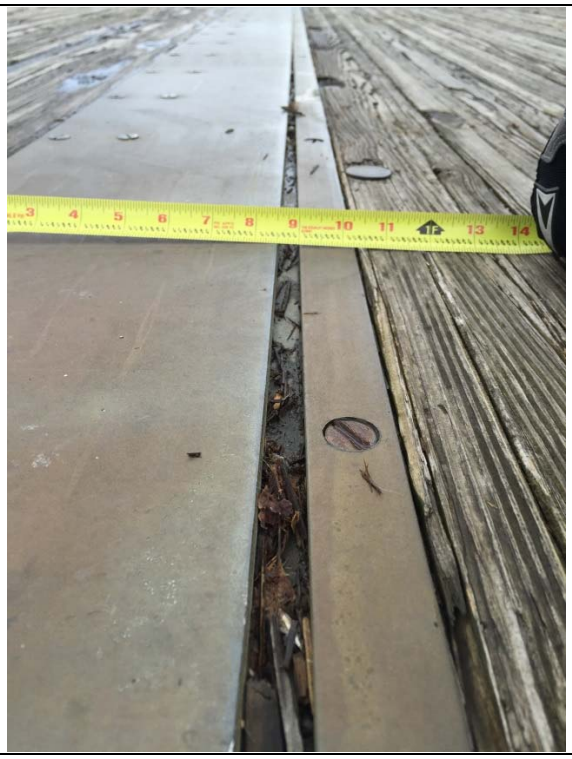
Repair Recommendation: Replace damage boards with new.



A6

Description: Section loss. Areas vary in size. 25 locations, loss in some spans more than others.
Locations
Span 1: 1
Span 2: 1
Span 3: 1
Span 4: 6
Span 5: 11
Span 6: 5

Repair Recommendation: Replace damage panels with new everywhere that does not coincide with heavy surface wear locations.



A7

Description: Non-uniform opening.

Locations
Piers 2, 3, 4, 5, and 6.

Repair Recommendation: Replace slider plate and reset.



A8

Description: Paint peeling off with surface corrosion.

Locations
Several locations throughout, both east and west rails.

Repair Recommendation:
Hand tool clean areas and repaint.

B. ABOVE DECK TRUSS

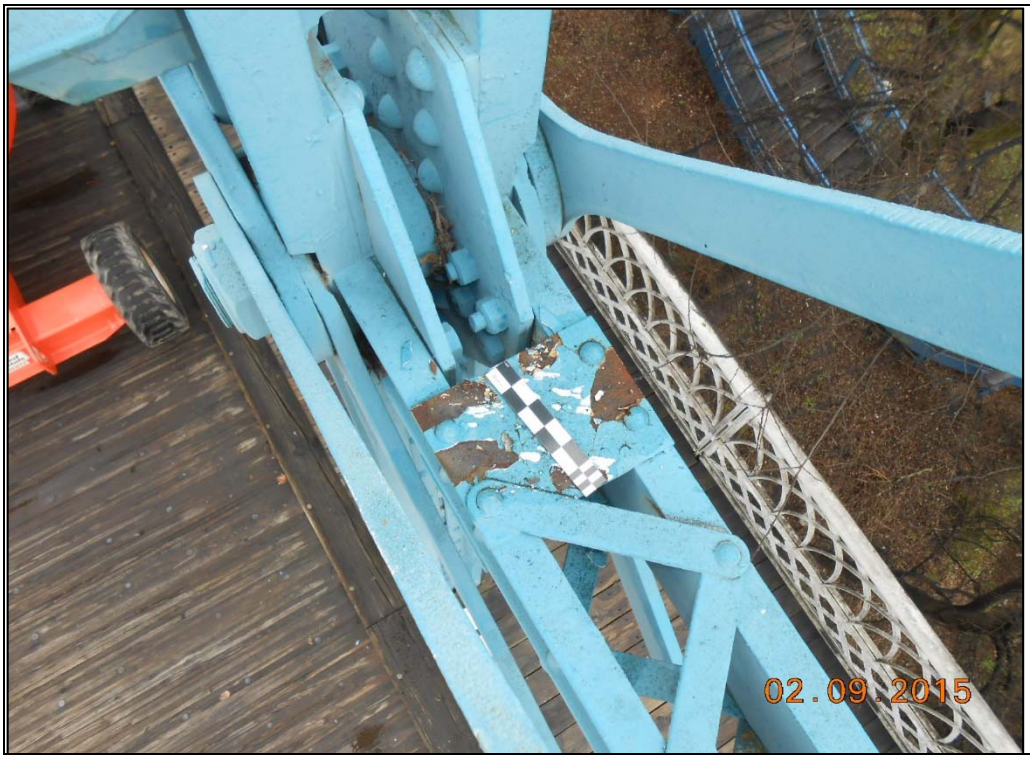
Walnut St. Bridge Inspection – Above Deck Truss Deficiency Sheet					
ITEM NO.	**Span**	**Truss**	**Component**	**Description**	**Priority**
B1	All	NA	All truss members above deck	Small to Moderate sized areas of light to heavy corrosion	3
B2	All	NA	All, Ends of Upper and Lower Struts on Portals	Accumulated pigeon droppings and nests causing active corrosion with up to 3/16in of section loss	2
B3	All	NA	Portals	Pack Corrosion (Reoccurring) in areas with 3/16in section loss	3
B4	1,2	NA	Top Chord Spans 1 -2, Approx 70 LF	Isolated Areas of Reoccurring light pack corrosion	3
B5	All	NA	Sway Bracing Gusset Plates	Light Pack Corrosion starting to reactivate	3
B6	All	NA	Diagonal eye-bars	Reoccurring light pack corrosion between eyes	3
B7	1	NA	Beginning Panel South Portal	Active corrosion and section loss, 3 Sheared fasteners and 1 missing nut for sign	3
B8	1	NA	Beginning Panel	Cracked decorative washers	3
B9	1	Left	Diagonal L5-M6	Twisted 2" Clockwise	4
B10	1	Left	Vertical L7-U7	Top west plate of U7 has 2 cracks up to 6" long caused by pack corrosion	2
B11	1	Right	Decorative pin Washer	Pack corrosion between decorative pin washer and diagonal tensioning bar has caused several cracks in the washer	2
B12	2	Right	Vertical L5-U5	Bent flange and 15" vertical tear	3
B13	3	NA	Sway brace 8	Top flange bent upward causing a 1.5" horizontal tear in the web	3
B14	3	Right	Diagonal M11-U12	Post tensioning cable has area of corrosion and chipped coating	2
B15	4	NA	North Portal (End Panel)	2.5" crack in weld	3
B16	5	Left	Vertical L6-U6	4" horizontal crack	2
B17	5	NA	End panel	Severe section loss with a corrosion hole	2

Walnut St. Bridge Inspection – Above Deck Truss Deficiency Sheet					
ITEM NO.	**Span**	**Truss**	**Component**	**Description**	**Priority**
B18	5	NA	End panel	1 missing and 1 loose fastener at point of attachment to strut	3
B19	6	NA	Beginning and End Panel	Up to 2 in crack in welds	3

Please Note:

1. Option 1: Consider tool cleaning the areas of light to moderate corrosion for Deficiency B1, instead of spot painting, a complete new application of paint would cost approximately $1.4 Million for all 6 truss spans and would last about 10 years.

2. Option 2: Paint failure exposing underlying primer with light to moderate corrosion occurring in numerous areas throughout the 6 truss spans, we recommend blast cleaning to bear metal and repainting. The estimated cost will be $3.4 Million and should last 25 to 30 years.



B1

Description:
Heavy surface corrosion on batten plate at Panel Point M4 Left on Span 1.

Repair Recommendation:
Clean corrosion and spot paint approximately 150SF on the truss members in Spans 1 through 6.



B2

Description:
Bird nest inside top chord in Span 1 at U3 Left.

Repair Recommendation:
Remove bird nest in top chord of Span 1 at U3 Left and Span 3 U1 Left.

Further investigation to determine the extent of section loss after the nest and droppings have been removed



B2

Description:
Bird droppings, nest and severe section loss with a corrosion hole in lower strut on Span 5 End Panel, left side. This condition is typical at all the end and beginning panels; however this is the worst seen without removing the bird nests and droppings.

Repair Recommendation:
Remove all bird nests and droppings in the struts of all beginning and end panels. Perform hands on inspection to determine the amount of section loss in these areas.



B2

Description:
Bird droppings and up to 3/16in section loss in upper strut on Span 2 Beginning Panel.

Repair Recommendation:
Remove bird droppings and nests in upper and lower struts on all beginning and end panels. Perform a hands on inspection to determine section loss after droppings and nests have been removed.



B3

Description:
Reoccurring pack corrosion starting to form between lower strut and top chord U9-L10 Right on Span 1 End Panel.

Repair Recommendation:
Remove pack corrosion and paint 75% of the strut to top chord connections on the beginning and end panels in Spans 1 through 6.



B4

Description:
Peeling paint and light surface corrosion on Span 2 Top Chord U2-U3 Left.

Repair Recommendation:
Remove pack corrosion and spot paint approximately 70LF of top chords in Spans 1 and 2.



B4

Description:
Light pack corrosion starting to form on Top Chord U5-U6 Left.

Repair Recommendation
Remove pack corrosion and spot paint approximately 70LF of top chords in Spans 1 and 2.



B5

Description:
Pack corrosion between Lateral Brace U2Left-U3Right and gusset plate at Panel Point U3 Right in Span 4.

Repair Recommendation:
Remove pack corrosion on 5% of the gusset plates for the sway bracing throughout the truss spans.



B5

Description:
Peeling paint and moderate surface corrosion on diagonal for Sway Brace 9 in Span 3.

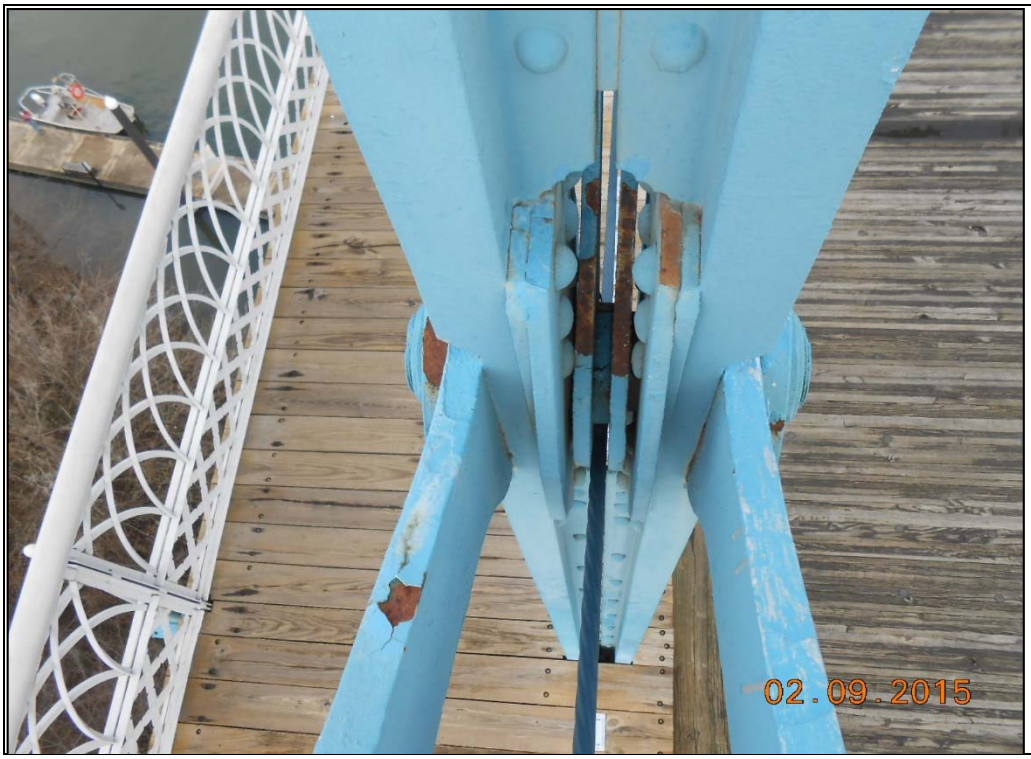
Repair Recommendation:
Remove pack corrosion on 5% of the gusset plates for the sway bracing throughout the truss spans.



B6

Description:
Reoccurring pack corrosion between eye-bars at Span 3 at Panel Point M7 Left pin connection.

Repair Recommendation:
Remove pack corrosion between eye-bars at all spans.



B6

Description:
Surface corrosion on Span 2 Diagonal Eye-Bar U1-M2.

Repair Recommendation:
Remove pack corrosion between eye-bars at all spans.



B7

Description:
Severe corrosion and section loss to the channel beam used for attaching Span 1 Beginning Panel (South Portal).

Repair Recommendation:
Replace channel beam attached to lower strut for sign on Span 1 Beginning Panel.



B7

Description:
Sheared off fasteners on sign attached to Span 1 Beginning Panel.

Repair Recommendation:
Replace 3 sheared fasteners and 1 missing nut on sign attached to Span 1 Beginning Panel.



B8

Description:
Cracks in decorative washer due to pack corrosion on Span 1 End Panel at U9 Right

Repair Recommendation:
Weld or replace decorative washers at end of struts, 3 on Beginning Panel and 1 on End Panel of Span 1.



B8

Description:
Cracked decorative washer on upper strut, Span 1 Beginning Panel at U1 Right

Repair Recommendation:
Weld or replace decorative washers at end of struts, 3 on Beginning Panel and 1 on End Panel of Span 1.



B9

Description:
Twist in Diagonal L5-M6 Left in Span 1

Repair Recommendation:
None.



B10

Description:
Cracks in tie-plate caused by pack corrosion between tie plate and vertical 7 Left at U7 Left in Span 1

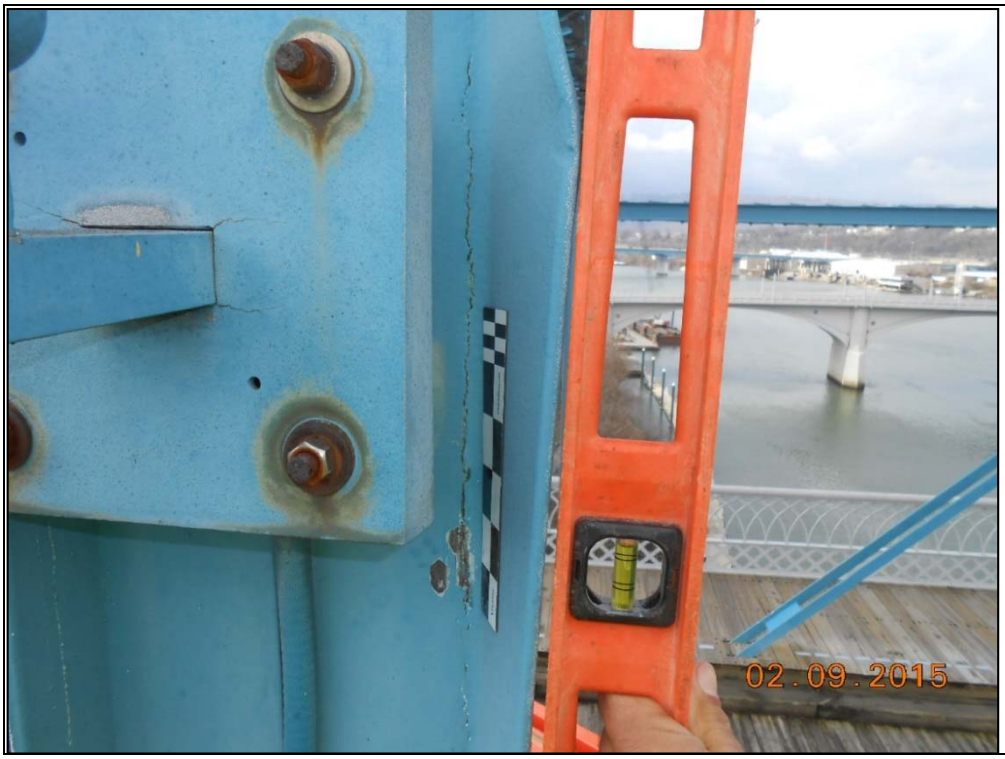
Repair Recommendation:
Remove pack corrosion and install new tie-plate on Vertical 7 Left outside face at U7 Left in Span 1.



B11

Description:
Pack corrosion between decorative washer and top strut on Span 1 End Panel at U9 Right.

Repair Recommendation:
Remove pack corrosion and replace decorative pin washer on Span 1 End Panel at U9 Right.



B12

Description:
Bent flange and tear in east web of Vertical 5 Right in Span 2 below panel point M5

Repair Recommendation:
Repair tear in east web/flange interface on Vertical 5 at Panel Point M5 Right.



B13

Description:
Peeling paint and light surface corrosion on Sway Brace Strut 5 and eye-bar in Span 3.

Repair Recommendation:
Repair tear in south web/flange interface in top strut near centerline on Sway Brace 8 in Span 3.



B13

Description:
Bent flange and tear in south web of top strut on Sway Brace 8 in Span 3.

Repair Recommendation:
Repair tear in south web/flange interface in top strut near centerline on Sway Brace 8 in Span 3.



B14

Description:
Chipped coating and light surface corrosion on post-tensioning cable at Diagonal M11-U12 Right near U12 Right.

Repair Recommendation:
Clean off corrosion and apply a protective coating to post-tensioning cable at Diagonal M11-U12 Right near U12 Right.



B15

Description:
Crack in weld on angle attaching lower strut to west diagonal on Span 4 End Panel (North Portal).

Repair Recommendation:
Repair cracked welds on angle attaching lower strut to west diagonal on end panels in Spans 4 and 6, and west and east diagonal on beginning panel in Span 6.



B16

Description:
Crack in Vertical 6 Left of Span 5, at the southeast corner below Panel Point M6 Left.

Repair Recommendation:
Repair crack in Vertical 6 Left of Span 5, at the southeast corner below Panel Point M6 Left.



B17

Description:
Heavy surface corrosion on top strut on Span 5 End Panel.

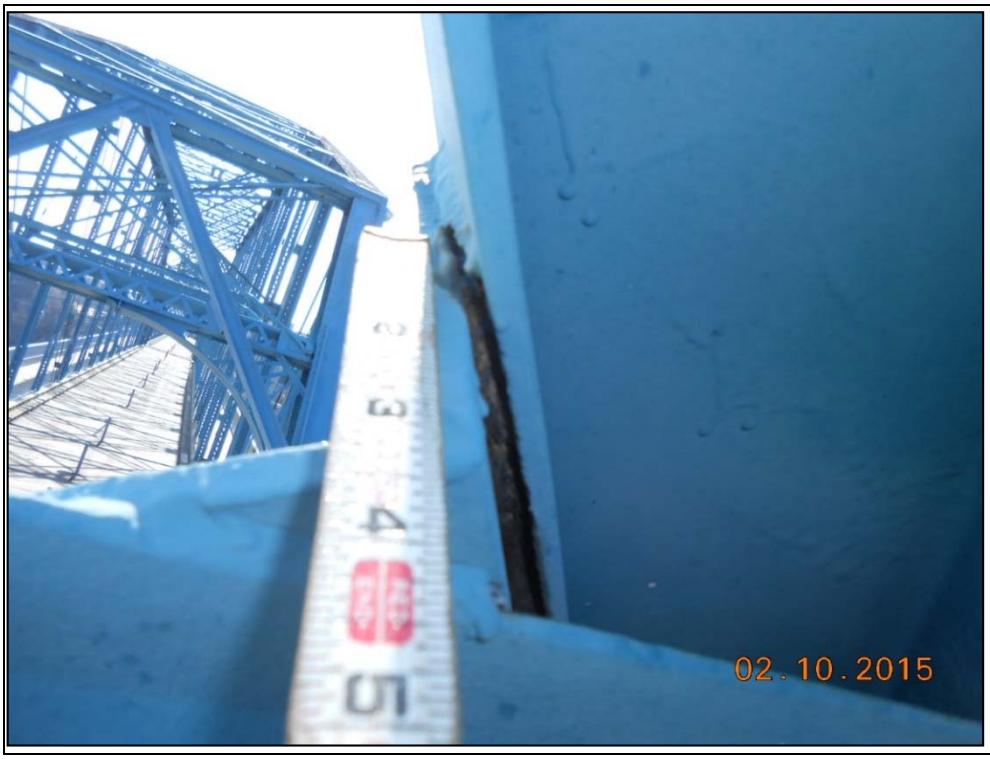
Repair Recommendation:
Included in the spot paint repair recommendation.



B18

Description:
Missing and loose fastener for decorative arch under east end of lower strut on Span 5 End Panel

Repair Recommendation:
Replace 2 fasteners for decorative arch under east end of lower strut on Span 5 End Panel.



B19

Description:
Crack in weld on angle attaching lower strut to west diagonal on Span 6 Beginning Panel.

Repair Recommendation:
Repair cracks.

C. NORTH VIADUCT UNDER DECK

Walnut St. Bridge Inspection - North Viaduct under Deck Deficiency Sheet					
ITEM NO.	**Bent**	**Component**	**Description**	**Location**	**Priority**
C1	Pier 6	Bearing block	Failed weld, full width 4.5in	Stringers 7-6 and 7-9	2
C2	11	Cap	Hole in bottom; pitting with section loss in connection plate	East stiffener and connect. Plate Typical	3
C3	11	Stringer 11-13	Active pack corrosion/corrosion	Bearing block Typical	3
C4	11	Stringer 12-13 & 12-9	Inactive section loss, painted (4in x 1/2in x 1/16in)	Bottom flange at bearing Random areas throughout	4
C5	All	Cap Bearing	Pack corrosion with some deformity is typical, Some active some inactive	Bottom flange, multiple locations Typical	3
C6	13	Middle transverse strut, East end	Corrosion with some section loss, active corrosion/most pins have inactive section loss	Pin	3
C7	14	Upper long strut at Bent 14	Active pack corrosion with broken weld, 7.5in long	Top batten plate	2
C8	14	Stringer 14-7	Previously reported crack has grown to 10in and includes 100% section loss	Web	2
C9	14	Middle transverse strut	Missing rivet and broken bottom flange	Bottom flange and stiffener plate	3
C10	15	All stringers/bearings	Active pack corrosion	Between stringer and bearing Random areas throughout bridge	4
C11	15	Old lower east longitudinal strut	100% section loss (2in x 1in)	Lower flange of West channel	4
C12	14	Old Longitudinal Strut	Sagging	West Side	4
C13	14	Cap on both sides	Hole in bottom; pitting with section loss in connection plate. Hole is rusted pitting is painted (3in x 2in x 1/4in)	West stiffener and connection plate	2
C14	14W	Lower transverse strut, west end	1/4 in section loss and in dirt, Inactive (3in x 3in x 1/4in)	Pin	3

Walnut St. Bridge Inspection - North Viaduct under Deck Deficiency Sheet					
ITEM NO.	**Bent**	**Component**	**Description**	**Location**	**Priority**
C15	All	Column base	Buried, no access	Base Connections Typical	2
C16	19	Span 19	Active pack corrosion with deformity in Stringer 4,	All bearings/Stringer 19-4	2
C17	19	Stringer 12	1/16in to 1/8in section loss throughout, some active some inactive	Top flange Random areas throughout bridge	3
C18	19	Stringer 11	1/16in section loss, failing paint due to no prep, (full length x 6in x 1/16in)	top portion of West web Random spans throughout, mostly stringers 11 & 12	2
C19	20	Stringer 21-6, 21-8	2 to 3.5in no bearing due to pack corrosion (no photo)	At bearing	2
C20	22	Upper west longitudinal strut	100% loss around pin, not active	East face at pin	4
C21	22	Stringers 22-6, 23-6	1/4in active section loss, (5in x 1.5in x 1/4in)	Lower left face of web and bottom flange at bearing	2
C22	23 & 24	Middle longitudinal & transverse struts	Paint failure corrosion (no photo)	Top face Random areas throughout	3
C23	26	East longitudinal eyebar down to bent 25 column base	Active corrosion, (4in x 1in) (no photo)	Lower eye at pin	3
C24	26W	Top of cap	Dirt and debris collects in this space, typical at bents where utility plate is located over cap	Between Stringer 1 & utility plate Typical	3
C25	28	Stringer 29-11	1/4 in active section loss, (3.5in x 1.5in x 1/4in)	Lower right face of web at bearing	3
C26	30	All stringers, Span 31	1in movement consistent with expansion/light corrosion	South end	4
C27	30	Upper west longitudinal strut	Cracked weld, 3in	Top batten plate, East side	3
C28	31 & 32	Upper west longitudinal strut	Hole, 100% section loss with no replacement strut, (2in x 1/2in)	West web (outside face)	3
C29	All	Wood blocking	Checks	Typical	4

Walnut St. Bridge Inspection - North Viaduct under Deck Deficiency Sheet					
ITEM NO.	**Bent**	**Component**	**Description**	**Location**	**Priority**
C30	32	Stringer 33-8	1/8in active section loss, (3in x 1in x 1/8in)	Right face of lower web	3
C31	32	Str 33-5 & top flange of cap	1/8in active section loss, (5in x 1.5in x 1/8in)	Right face of lower web and top flange of cap at bearing	2
C32	32	Stringer 33-6	1/16in active section loss, (5in x 1in x 1/16in)	Lt face of lower web at bearing	2
C33	32	Stringer 32-1	1/4in active section loss (3.5in x 8 in x 1/4in)	Bottom flange at bearing	2
C34	Several	Bottom struts	Pack corrosion / some deformity (no photo)	Batten plates Typical	3
C35	16	Column base	Vegetation beginning to grow (no photo)	Column 2	4
C36	18	Column base	Pic of column base uncovered shows active corrosion below ground level	Column 2	3
C37	22	Lower transverse strut	100% section loss with bottom lattices popping loose (3in x 1in)	Bottom flanges	4
C38	38	Cap	Bird nest on top of bearings	Bearings 38-1 & 38-13	4
C39	Span 40	East upper longitudinal strut	Pack corrosion between bottom batten plate and strut, which has severed or severely bent all 4 rivets. The bottom flange of the strut is also knife edged	Bottom batten plate at Column 39-2	3
C40	Span 40	East upper longitudinal strut	Pack corrosion between bottom batten plate and strut, which has severed 2 rivets. The bottom flange of the strut is also knife edged	Bottom batten plate at Column 40-2	3
C41	40	Cap	Graffiti	North face of web	4
C42	Span 45	Stringer 45-7	Open junction box with exposed wires is accessible from the ground. This should be fixed to avoid someone from tampering with it. It's a potential liability.	Midspan	2
C43	Span 44	Longitudinal strut	Pack Corrosion	Lower retrofit	3

Walnut St. Bridge Inspection - North Viaduct under Deck Deficiency Sheet					
ITEM NO.	**Bent**	**Component**	**Description**	**Location**	**Priority**

Please Note:

1. Option 1: Consider tool cleaning the areas of light to moderate corrosion listed above, but instead of spot painting provide a new application of paint. This would cost approximately $600,000 for the steel superstructure and bents of North Viaduct and last about 10 years.

2. Option 2: Paint failure exposing underlying primer with light to moderate corrosion occurring in numerous listed above, we recommend blast cleaning to bear metal and repainting. The estimated cost will be $1.6 Million for steel superstructure and bents of North Viaduct and should last 25 to 30 years.



C1

Description:
Failed weld, bearing block.

Location:
Pier 6.

Repair Recommendation:
Repair weld.



C2

Description:
Hole in bottom; pitting w/ section loss in connection plate.

Location:
Multiple locations 3+, typical.

Repair Recommendation:
Remove corrosion and repaint.



C3

Description:
Pack corrosion between stringer, bearing block, and cap.

Location:
6+ locations, typical

Repair Recommendation:
Remove pack corrosion and repaint.



C4

Description:
Inactive section loss, painted.

Location:
Bent 11.

Repair Recommendation:
Monitor in future inspection, to see if section loss increases.

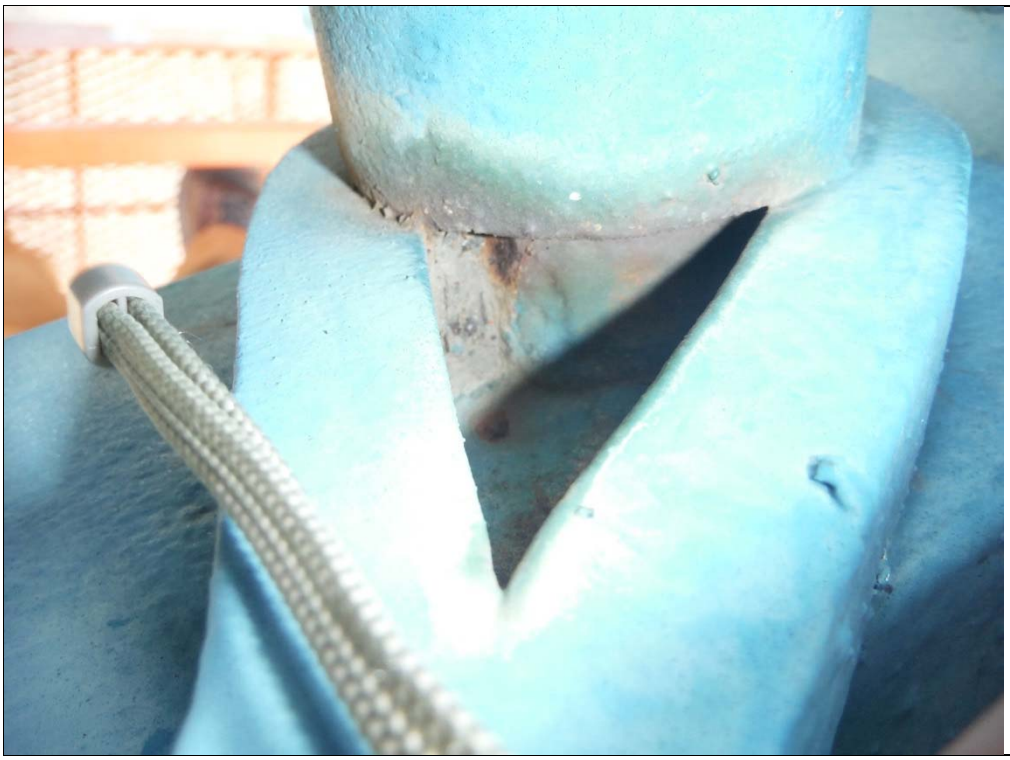


C5

Description:
Pack corrosion w/ some deformity is typical.

Location:
Multiple locations, typical.

Repair Recommendation:
Remove pack corrosion and repaint.



C6

Description:
Corrosion with some section loss.

Location:
Bent 13.

Repair Recommendation:
Remove pack corrosion and repaint.



C7

Description:
Active pack corrosion with broken weld.

Location:
Bent 14.

Repair Recommendation:
Remove pack corrosion, repair weld, and repaint.



C8

Description:
Previously reported crack that has grown to 10in and includes 100% section loss.

Location:
Bent 14.

Repair Recommendation:
Add cover plates to web to strengthen.



C9

Description:
Missing rivet and broken bottom flange.

Location:
Middle transverse strut.

Repair Recommendation:
Supplemental strut has been added.



C10

Description:
Active pack corrosion.

Location:
Bent 15.

Repair Recommendation:
Remove pack corrosion and repaint.



C11

Description:
100%.section loss.

Location:
Bent 15.

Repair Recommendation:
Supplemental strut has been added.



C12

Description:
Sagging.

Location:
Bent 14.

Repair Recommendation:
Monitor in future inspection cycles.



C13

Description:
Hole in bottom, pitting with section loss.

Location:
Bent 14.

Repair Recommendation:
Replace bottom section of connection plate and repaint.



C14

Description:
1/4in section loss and in dirt.

Location:
Bent 14W.

Repair Recommendation:
Remove corrosion and dirt around pin.



C15

Description:
Column base buried, no access.

Location:
All bents.

Repair Recommendation:
Remove dirt around connections.



C16

Description:
Active pack corrosion with deformity.

Location:
Bent 1.

Repair Recommendation:
Remove pack corrosion and repaint.



C17

Description:
Section loss, some active some inactive.

Location:
Bent 19.

Repair Recommendation:
Remove corrosion and repaint.



C18

Description:
Corrosion due to inadequate paint on stringers 11 and 12.

Location:
Multiple, random spans throughout, mostly stringers 11 and 12.

Repair Recommendation:
Remove paint and corrosion to bear metal and repaint.



C20

Description:
100% loss around pin, not active.

Location:
Bent 22.

Repair Recommendation:
Supplemental strut has been added.



C21

Description:
Section loss. 1/16” to 1/8”. Affects stringers mainly.

Location:
13 + locations, typical. Webs and or Flanges of stringers.

Repair Recommendation:
Remove corrosion and repaint.



C24

Description:
Dirt and debris collects in this space.

Location:
Between stringer 1 and utility plate, top of cap. (typical)

Repair Recommendation:
Remove dirt and debris and check for any signs of corrosion.



C25

Description:
Active section loss.

Location:
Bent 28.

Repair Recommendation:
Remove corrosion and repaint.

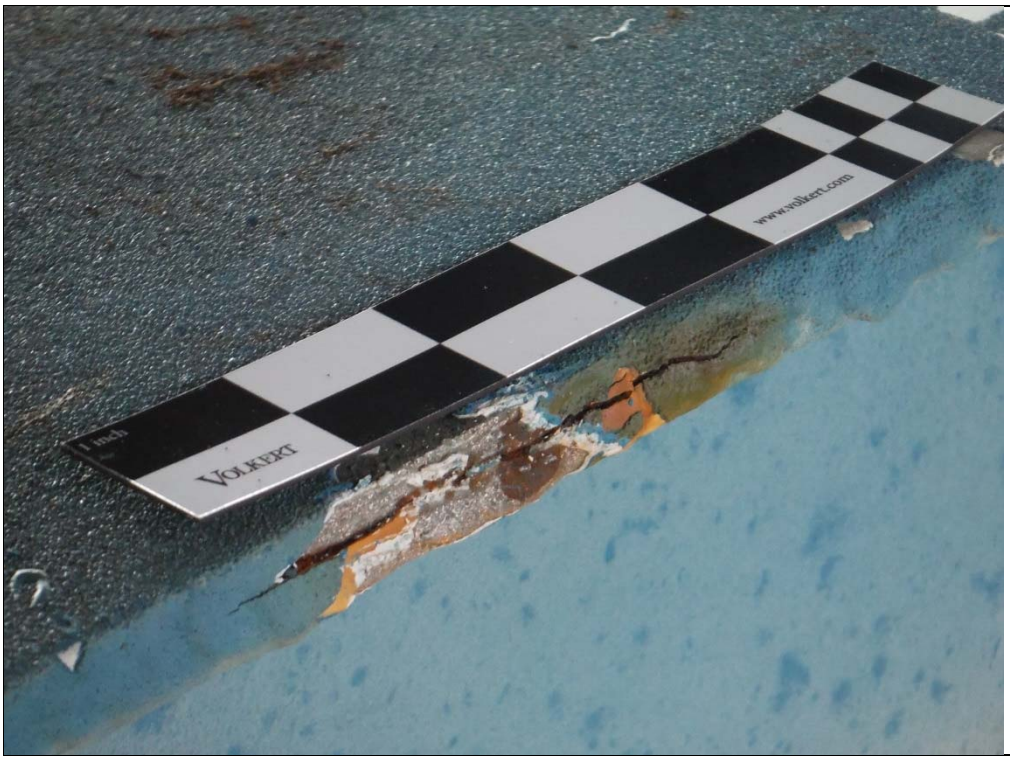


C26

Description:
1in movement consistent with expansion/light corrosion.

Location:
Bent 30.

Repair Recommendation:
Monitor movement in future inspection cycles



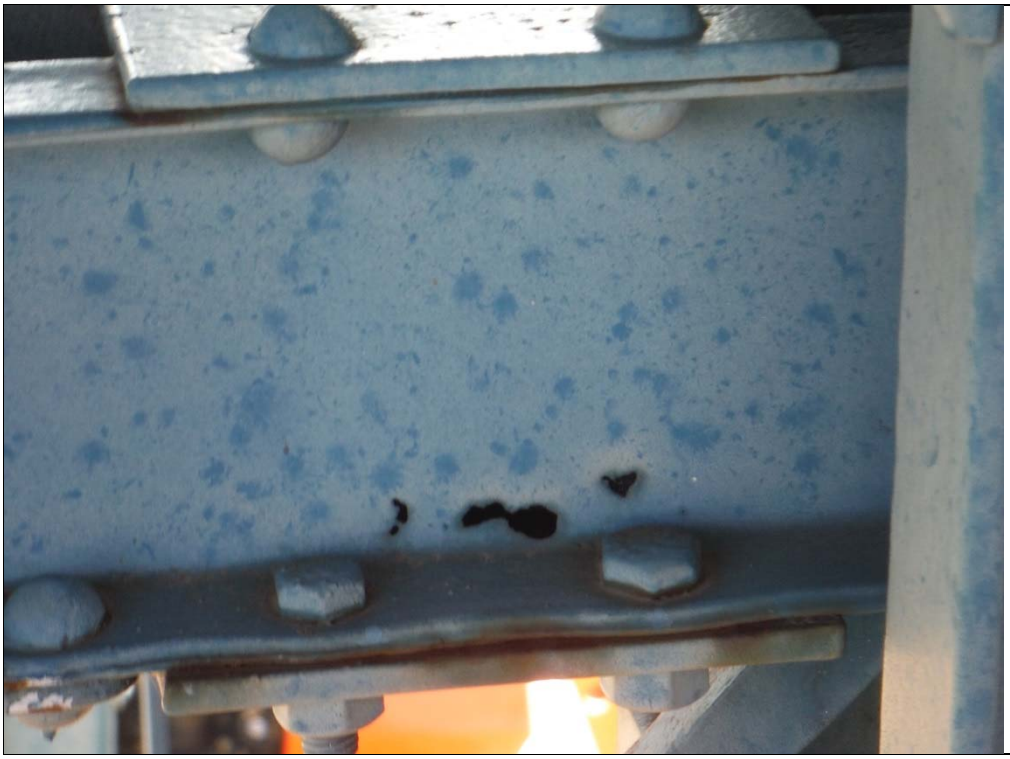
C27

Description:
Cracked weld.

Location:
Bent 30.

Repair Recommendation:
Clean and repair weld.

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C28

Description:
Section loss with no replacement strut.

Location:
Bent 31 and 32, typical.

Repair Recommendation:
Weld cover plates onto the web.



C29

Description: Checks in wooden blocking

Location: Typical, all bents

Repair Recommendation:
Monitor in future inspection cycles.



C30

Description:
Active section loss.

Location:
Bent 32.

Repair Recommendation:
Remove corrosion and repaint.



C31

Description:
Active section loss.

Location:
Bent 32.

Repair Recommendation:
More in depth inspection is needed.



C32

Description:
Active section loss.

Location:
Bent 32.

Repair Recommendation:
More in depth inspection is needed.



C33

Description:
Active section loss.

Location:
Bent 32.

Repair Recommendation:
More in depth inspection is needed.



C36

Description:
Column bases buried, no means of visual inspection below ground level.

Location:
All bents.

Repair Recommendation:
Remove dirt and corrosion around column base and repaint.



C37

Description:
Section loss with bottom lattices popping loose..

Location:
Bent 22.

Repair Recommendation:
Add cover plates to flange to strengthen.



C38

Description:
Bird nest on top of bearings.

Location:
Bent 38.

Repair Recommendation:
Remove bird nest, clean area, and repaint.



C39

Description:
Pack corrosion between bottom batten plate and strut.

Location:
Span 40.

Repair Recommendation:
Remove pack corrosion, add cover plate, and repaint.



C40

Description:
Pack corrosion between bottom batten plate and strut.

Location:
Span 40.

Repair Recommendation:
Remove pack corrosion, add cover plate, and repaint.



C41

Description:
Graffiti.

Location:
Bent 40.

Repair Recommendation:
Remove graffiti.



C42

Description:
Open junction box with exposed wires, accessible from ground.

Location:
Span 45.

Repair Recommendation:
Fix junction to conceal exposed wires.



C43

Description:
Pack corrosion.

Location:
Span 44.

Repair Recommendation:
Remove pack corrosion and repaint.

D. BELOW DECK TRUSS

Walnut St. Bridge Inspection - Below Deck Truss Deficiency Sheet					
ITEM NO.	**Span**	**Component**	**Description**	**Location**	**Priority**
D1	2	S1 Stringer	Knife edge corrosion with pitting under paint	Top flange	3
D2	2	West stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D3	2	East stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D4	2	Cap web	26 small holes in a cluster	Web L10	4
D5	2	Rivet	Loose		3
D6	2	Stringer L8-1, L9-1	Section loss at member ends under paint	Above Cap L8	3
D7	2	Stringer web	Paint loss	L7, Stringer 1	3
D8	2	Cap	Paint loss with corrosion	Multiple, In cap top flange or bottom flange (L2, L8, L9)	3
D9	2	Deck bracket	Bracket is not holding deck to stringer	Locations: Near cap L1, cap L5. West of bridge centerline. Bracket fallen onto bottom cap flange L9	4
D10	2	Eye-bar, bottom chord member	Paintloss with corrosion	Multiple, L5W, L6W, L7W, L9W	3
D11	2	Angle at connection	Paintloss with corrosion	L9 East	3
D12	2	Diagonal bar	Paint loss, white primer visible, probable light corrosion	L4 East - L5 West, L6 East - L7 West, L7 East - L8 West	3
D13	2	Steel cap	Paint loss, peeling, chipping	Bottom flange	3

Walnut St. Bridge Inspection - Below Deck Truss Deficiency Sheet					
ITEM NO.	**Span**	**Component**	**Description**	**Location**	**Priority**
D14	2	Plate welded to eyebars	Paint loss and corrosion (peeling) to top plate, some on bottom plate	At L7, L6, L8-L9E	3
D15	2	Fixed bearing	Pitting in gusset plate (painted), rust trail from pin connection	Span 2 South West	3
D16	2	Fixed bearing, bearing plate	Extensive pitting (to bottom of gusset plate and between member in the pin connection), painted. Corrosion to top of bearing plate, unpainted. Some Rivet heads have section loss and are deformed. Possible crack in gusset at 2nd row of rivets leading toward bottom of plate.	Pier 1 Left L0 Connector	2
D17	2	Deck boards	2 boards are splintered, protruding downward from deck	Midspan L4	4
D18	2	Stringer	Pack corrosion and paint failure	Floor Beam L0	3
D19	3	Turnbuckle	Turnbuckle is bent slightly	L3 East side	4
D20	3	Eyebars, L4 West	Paint failed, active corrosion with pitting up to 1/8"	L4 West	3
D21	3	West stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D22	3	East stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D23	3	Bottom chord members, cap webs, bottom flange of stringers	Paint failing in some locations with corrosion	Multiple locations, mostly bottom chord members (diagonals and eyebars), cap webs, bottom flanges of stringer	3

Walnut St. Bridge Inspection - Below Deck Truss Deficiency Sheet					
ITEM NO.	**Span**	**Component**	**Description**	**Location**	**Priority**
D24	3	Cap, top flange	Corner of flange bent down	Multiple locations throughout bridge	4
D25	3	Rivet	Loose	Multiple Location	4
D26	3	Diaphragm	Member is deformed and shows discoloration in local area		4
D27	4	Rivet	Rivet head popped off	Two rivets connecting channel stringers with cap flange	3
D28	4	Bottom chord members, cap webs, bottom flange of stringers	Paint failing in spots with corrosion	Multiple locations, mostly bottom chord members (diagonals and eyebars), cap webs, bottom flanges of stringer	3
D29	4	West stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active, some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D30	4	East stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active, some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D31	5	West stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active, some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D32	5	East stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active, some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D33	5	Bottom chord members, cap webs, bottom flange of stringers	Paint failing in spots with corrosion	Multiple locations, mostly bottom chord members (diagonals and eyebars), cap webs, bottom flanges of stringer	3

Walnut St. Bridge Inspection - Below Deck Truss Deficiency Sheet					
ITEM NO.	**Span**	**Component**	**Description**	**Location**	**Priority**
D34	6	Bottom chord members, cap webs, bottom flange of stringers	Paint failing in spots with corrosion	Multiple locations, mostly bottom chord members (diagonals and eyebars), cap webs, bottom flanges of stringer	3
D35	6	Broken weld	Stringer bearing plate weld to cab, broken	S11 at L8, S10 at L9	3
D36	6	Channel	Crack in channel iron	End of S2 at Pier 6 and End of S12 at Pier 6	2
D37	6	Turnbuckle	Turnbuckle is loose	L5East - L6West	4
D38	6	Bottom chord members, cap webs, bottom flange of stringers	Paint failing in spots and or corrosion in some locations (no photo)	Multiple locations, mostly bottom chord members (diagonals and eyebars), cap webs, bottom flanges of stringer	3
D39	6	West stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active, some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D40	6	East stringer bearings, stringers, top cap flange	Pack corrosion between stringers and caps, some active some inactive, some with slight deformity/bulging	Multiple locations, occurs between stringer and bearing	3
D41	6	Weld connecting stringer bearing to cap	Pack corrosion causing failure in weld	Multiple	3
D42	6	Angle at connection	Hole and section loss in angle leg	L7	4



D1

Description:
Knife edge corrosion with pitting under paint.

Location:
Span 2.

Repair Recommendation:
Remove paint, corrosion and repaint.

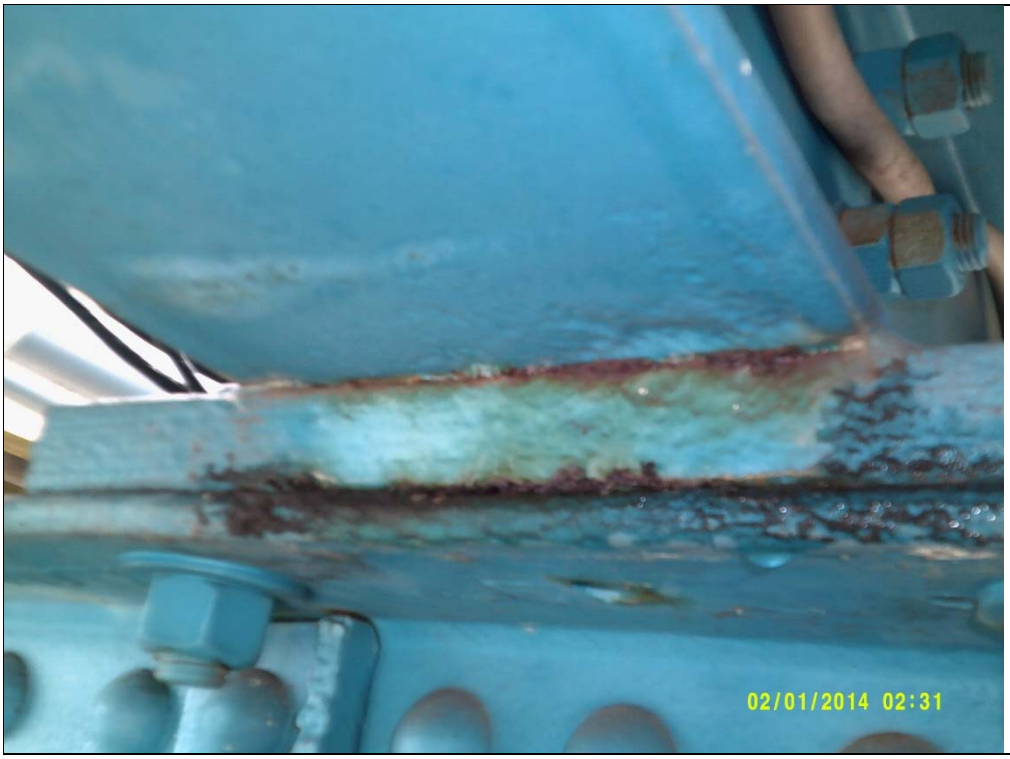


D2

Description:
Pack corrosion between stringer, bearing plate and upper cap flange. Severely varies, see photos.

Location:
15 instances moderate corrosion 31 instances of light corrosion.

Repair Recommendation:
Remove pack corrosion and repaint.



D3

Description:
Pack corrosion between stringers and caps.

Location:
Span 2.

Repair Recommendation:
Remove paint, corrosion and repaint.



D4

Description:
36 small holes in a cluster.

Location:
Span 2.

Repair Recommendation:
Monitor in future inspection cycles.



D5

Description:
Loose rivet.

Location:
Span 2.

Repair Recommendation:
Replace loose rivet with bolt.



D6

Description:
Section loss at member ends under paint.

Location:
Bent 2.

Repair Recommendation:
Remove paint, corrosion and repaint.



D7

Description:
Paint loss.

Location:
Span 2.

Repair Recommendation:
Remove corrosion and repaint.



D8

Description:
Paint loss with corrosion.

Location:
Span 2.

Repair Recommendation:
Remove corrosion and repaint.



D9

Description:
Bracket is not holding deck to stringer.

Location:
Span 2.

Repair Recommendation:
Reset bracket to deck.



D10

Description:
Paint loss with corrosion.

Location:
Span 2.

Repair Recommendation:
Remove corrosion and repaint.



D11

Description:
Paint loss with corrosion.

Location:
Span 2.

Repair Recommendation:
Remove corrosion and repaint.



D12

Description:
Paint loss, white primer visible.

Location:
Span 2.

Repair Recommendation:
Remove corrosion and repaint.



D13

Description:
Paint loss, peeling chipping.

Location:
Span 2.

Repair Recommendation:
Remove corrosion and repaint.



D14

Description:
Paint loss/failing and/or corrosion typical to bottom chord members, caps and stringers.

Location:
23 spots of paint loss with corrosion. 7 spots of paint wearing out/fading.
L7 West shows paint loss and corrosion.

Repair Recommendation:
Remove failure paint to bear metal and repaint.



D15

Description:
Pitting in gusset plate (painted).

Location:
Span 2.

Repair Recommendation:
Remove paint, corrosion and repaint.



D16

Description:
Extensive pitting to bottom of gusset pate and between member in the pin connection.

Location:
Span 2.

Repair Recommendation:
More in-depth inspection required to determined the amount of section loss.



D17

Description:
2 boards are splintered and protruding downward.

Location:
Span 2.

Repair Recommendation:
Monitor in future inspection cycles.



D18

Description:
Pack corrosion and paint failure.

Location:
Span 2.

Repair Recommendation:
Remove paint, corrosion and repaint.



D19

Description:
Turnbuckle is bent slightly.

Location:
Span 3.

Repair Recommendation:
Monitor in future inspection cycles.



D20

Description:
Paint loss and/or corrosion on bottom chord members, cap webs and stringers.

Location:
Multiple locations, 14 spots of paint fading into primer and 5 occurrences of chipped pain with corrosion. In photo: Eye-bars L4-L5. Paint loss with corrosion and pitting.

Repair Recommendation:
Remove failure paint to bear metal and repaint.



D21

Description:
Pack corrosion between stringers and caps.

Location:
Span 3.

Repair Recommendation:
Remove paint, corrosion and repaint.



D22

Description:
Pack corrosion between stringer, bearing plate and flange of cap. Typical, but light pack corrosion is more common. White primer visible on bearing plate.

Location:
Multiple, 16 locations of moderate and 53 locations light pack corrosion.

Repair Recommendation:
Remove pack corrosion and repaint.



D23

Description:
Paint failing in some locations with corrosion.

Location:
Span 3.

Repair Recommendation:
Remove paint, corrosion and repaint.



D24

Description:
Corner of flange bent down.

Location:
Span 3

Repair Recommendation:
No action is required.



D25

Description:
Loose rivet.

Location:
Span 3.

Repair Recommendation:
No action is required.



D26

Description:
Member is deformed and shows discoloration in local area.

Location:
Span 3.

Repair Recommendation:
No action is required.



D27

Description:
Rivet head popped off.

Location:
Span 4.

Repair Recommendation:
Replace loose rivet with bolt.

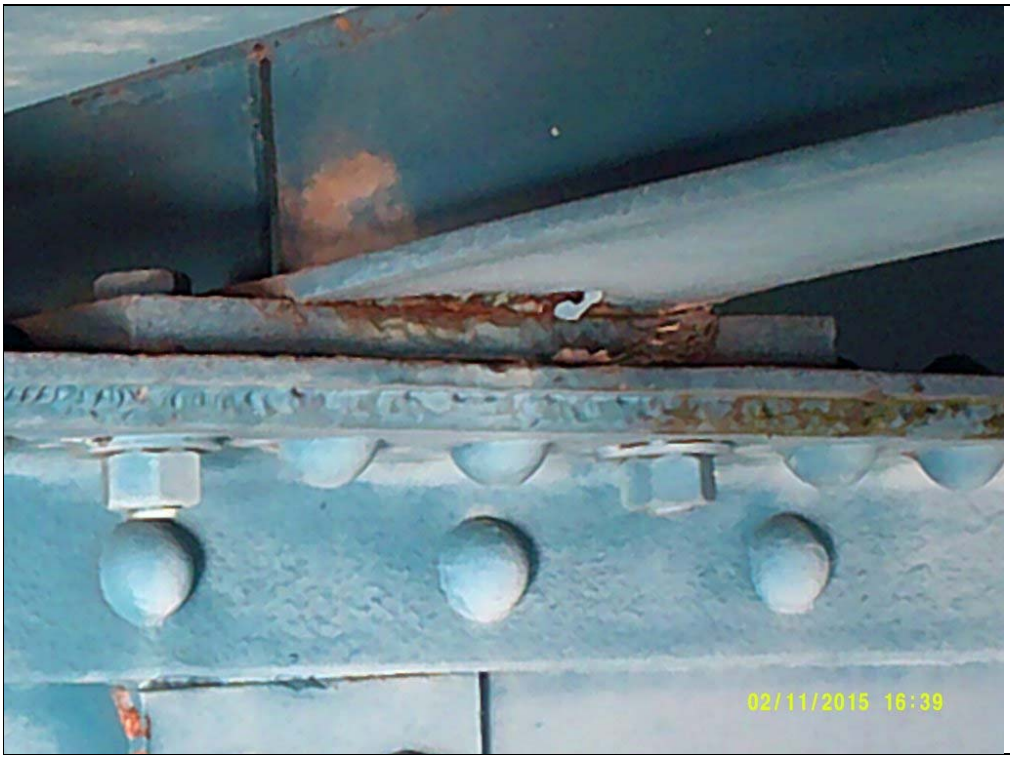


D28

Description:
Paint faded revealing white primer beneath. Predominant on cap webs, stringer flanges, and eye-bars. Typical of all caps.

Location:
25 locations, Cap L15 show.

Repair Recommendation:
Remove failure paint to bear metal and repaint.



D29

Description:
Pack corrosion between stringer, bearing plate and upper cap flange. In some places the flange of the cap is deformed slightly. Severity varies, see photos.

Location:
Multiple, 8 locations of moderate and 66 locations of light pack corrosion.

Repair Recommendation:
Remove pack corrosion and repaint.



D30

Description:
Pack corrosion between stringers and caps.

Location:
Span 4.

Repair Recommendation:
Remove paint, corrosion and repaint.



D31

Description:
Pack corrosion between stringers and caps.

Location:
Span 5.

Repair Recommendation:
Remove paint, corrosion and repaint.



D32

Description:
Pack corrosion between stringer, bearing plate and upper cap flange. In some places the flange of the cap is deformed slightly. Severity varies, see photos.

Location:
Multiple, 5 locations of moderate and 33 locations of light pack corrosion.

Repair Recommendation:
Remove pack corrosion and repaint.



D33

Description:
Paint loss and/or corrosion. Typical on cap webs, bottom flanges of stringers, pin connections and eye bars/bottom chord members.

Location:
Multiple, 28 locations throughout span.

Repair Recommendation:
Remove corrosion and repaint.



D34

Description:
Paint failing in spots with corrosion.

Location:
Span 6.

Repair Recommendation:
Remove paint, corrosion and repaint.



D35

Description:
Stinger bearing plate weld to cap broken.

Location:
Span 6.

Repair Recommendation:
Remove corrosion and repair weld.



D36

Description:
Crack in channel iron.

Location:
Span 6.

Repair Recommendation:
Cut out crack flange and weld new section.

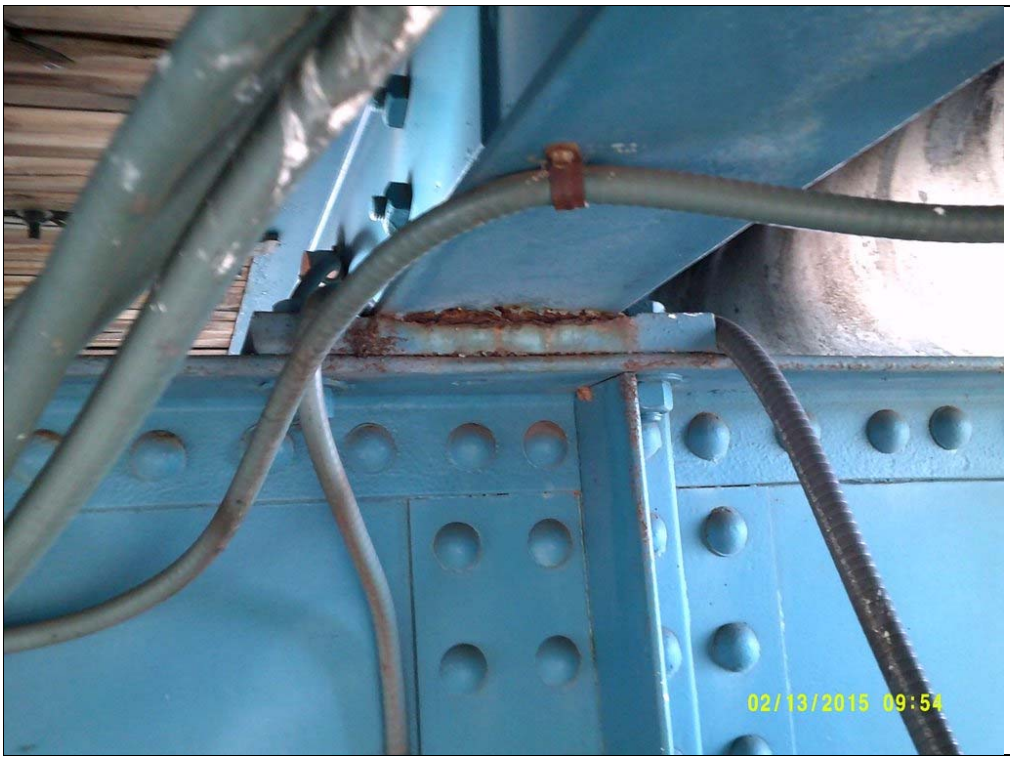


D38

Description:
Paint loss and/or corrosion. Typical on cap webs, bottom flanges of stringers, pin connections and eye bars/bottom chord members.

Location:
Multiple, 14 locations throughout span.

Repair Recommendation:
Remove corrosion and repaint.



D39

Description:
Pack corrosion between stringer, bearing plate and upper cap flange. In some places the flange of the cap is deformed slightly. Severity varies, see photos.

Location:
Multiple, 5 locations of moderate and 19 locations of light pack corrosion.

Repair Recommendation:
Remove pack corrosion and repaint.



D40

Description:
Pack corrosion between stringers.

Location:
Span 6.

Repair Recommendation:
Remove paint, corrosion and repaint.



D41

Description:
Pack corrosion causing failure in weld.

Location:
Span 6.

Repair Recommendation:
Remove paint, corrosion and repaint.



D42

Description:
Hole and section loss in angle leg.

Location:
Span 6.

Repair Recommendation:
Replace that portion of angle.

E. PIERS

Walnut St. Bridge Inspection - Pier Deficiency Sheet				
ITEM NO	**Pier**	**Component**	**Description**	**Priority**
E1	1	South side	20% of tested area has weathered stone to 5cm	4
E2	1	North side	20% of tested area has weathered stone to 5cm	4
E3	2	Both	Grout broken and cracked on approximately 50% of area seen	3
E4	2	Both	20% of tested area has weathered stone to 5cm	4
E5	3	Both	Grout broken and cracked on approximately 20% of area seen	3
E6	3	Both	20% of tested area has weathered stone to 5cm	4
E7	4	Both	Grout broken and cracked on approximately 10% of area seen, refer to photo	3
E8	4	South side	20% of area tested had stone weathered to 5cm	4
E9	4	North side	40% of area tested has stone weathered to 5cm	4
E10	5	Both	Grout broken and cracked on approximately 10% of area seen	3
E11	5	South side	20% of area tested had stone weathered to 5cm	4
E12	5	North side	40% of area tested has stone weathered to 5cm, refer to photo	4
E13	6	Both	Grout broken and cracked on approximately 10% of area seen, refer to photo	3
E14	6	South side	5% of area tested has stone weathered to 5cm	4
E15	6	North side	5% of area tested has stone weathered to 2cm	4
E16	All		Moderate to severe loss of masonry mortar joints on all piers, typical, refer to photo	3
E17	All		Moderate to severe loss of masonry mortar joints with large gaps (up to 6in) between stones, typical	3
E18	All		Fractured stones, refer to photo	3
E19	3	East side	Appeared to have settled up to 0.7ft	4
E20	4	West side	Missing section of old utility pipe (12ft long, 6ft above and below waterline)	4
E21	All		Moderate debris and excess stones at groundline Typical	3



E7

Description:
Cracked stones.

Location:
Random, throughout bridge

Repair Recommendation:
Repair factures in stone.



E12

Description:
Stone weathered to depths of up to 5cm. Amount of weathered stone varies (From 5% to 40% of surface).

Location:
Pier 5, Weathering typical to all piers.

Repair Recommendation:
Repair mortar joints.



E13

Description:
Deteriorated mortar joints. Grout cracked and broken. Varies from 10% to 50% of surface area.

Location:
Pier 5, Cracked mortar typical to all piers**.**

Repair Recommendation:
Repair mortar joints.



E16

Description:
Moderate to severe loss of masonry mortar joints on all piers.

Location:
All piers.

Repair Recommendation:
Repair mortar joints.



E18

Description:
Fractured stones near waterline.

Location:
Randomly located.

Repair Recommendation:
Repair factures in stone.

F. ABUTMENTS

Walnut St. Bridge Inspection - Abutment Deficiency Sheet				
ITEM NO.	**Abut**	**Component**	**Description**	**Priority**
1	S	South abutment cap, bottom flange and lower web North face	Painted over section loss up to 100%, (12in x 4in) South abutment, West bearing	3
2	S	South abutment cap, bottom flange and lower web North face	Painted over section loss up to 100% and pitting up to 1/8in deep, (12in x 4in) South abutment, East Bearing	3
3	S	North abutment	Wooden bearing has rotated is overhanging abutment cap by up to 5in Under West sidewalk	3
4	S	South abutment fixed bearing, web plates and stiffeners	50% painted over section loss 1/4in plate remaining East and West	3
5	N	Abutment cap	Painted over section loss lower flange of abutment cap at bearing area	3
6	N	Bearing	Rotated bearing North abutment under West sidewalk	3
7	S	Fixed bearing	South abutment east fixed bearing painted over section loss-web plate stiffener	3



F1

Description:
Painted over section loss up to 100%, west bearing.

Location:
Abutment 5.

Repair Recommendation:
Add cover plates to connection.



F2 and F5

Description:
Painted over section loss.

Location:
Abutment 5.

Repair Recommendation:
Add cover plates to connection.

Repair section loss of lower flange of South abutment cap at east and west bearings.



F3

Description:
Wooden bearing has rotated and is overhanging abutment cap.

Location:
Abutment 5.

Repair Recommendation:
Replace wooden bearing and reset wooden stringers.



F4 and F7

Description:
Painted over section loss.

Location:
Abutment 5.

Repair Recommendation:
Add cover plates to connection.

Reinforce or repair web plate stiffeners of east and west fixed bearings at south abutment



F6

Description:
Rotated bearing north abutment under west sidewalk.

Location:
North bearing.

Repair Recommendation:
Realign bearing on North abutment cap under west sidewalk and install a retainer to prevent future rotation.

G. ELECTRICAL

Walnut St. Bridge Inspection - Electrical Deficiency Sheet					
ITEM NO.	**Span**	**Component**	**Description**	**Location**	**Priority**
G1	1 thru 6	Lighting	Majority of the lenses are broken or missing and 75% of the lights are not working	Attached to exterior face of the top chords	4
G2	1 thru 6	Lighting	Removed lens on light attached to outside face of vertical.	Attached to outside face of the vertical members for Left and Right Sidewalk	NA
G3	1	Wiring	Exposed wiring	Attached to Vertical 1 Left	3
G4	2	Outlet Cover	Pulled away from box and hanging by wires	Vertical 8 Left	1
G5	2 thru 6	Lighting	None of the lights except for the lights attached to Sway Brace 12 in Span 4 are on at night.	Attached to the upper strut on sway bracing	3
G6	5	Lighting	Not working	Light attached to lower strut on Sway Brace 14 in Span 5 is not working	3
G7	5	Lighting	None of the lights are on at night	Attached to outside face of the vertical members for Left and Right Sidewalks	3
G8	6	Lighting	Missing Light	Attached to lower strut on Sway Brace 4	3
G9	45	Junction Box	Junction Box missing cover exposing electrical wires	East Face of Beam 45-7	1



G1

Description:
Majority of the lights attached to the Top Right Chord not working.

Repair Recommendation:
Replace all lights attached to the outside face of both top chords.



G1

Description:
Typical broken lens attached to top chord.

Repair Recommendation:
Replace all lights attached to the outside face of both top chords.



G2

Description:
Removed lens on light attached to outside face of vertical.

Repair Recommendation:
None.



G3

Description:
Exposed electrical wiring and unsecured junction box cover attached to Vertical 1 Left, in Span 1.

Repair Recommendation:
Properly terminate exposed wiring and secure junction box cover attached to Vertical 1 in Span 1.



G4

Description:
Unsecured outlet cover attached to Vertical 1 Left in Span 1

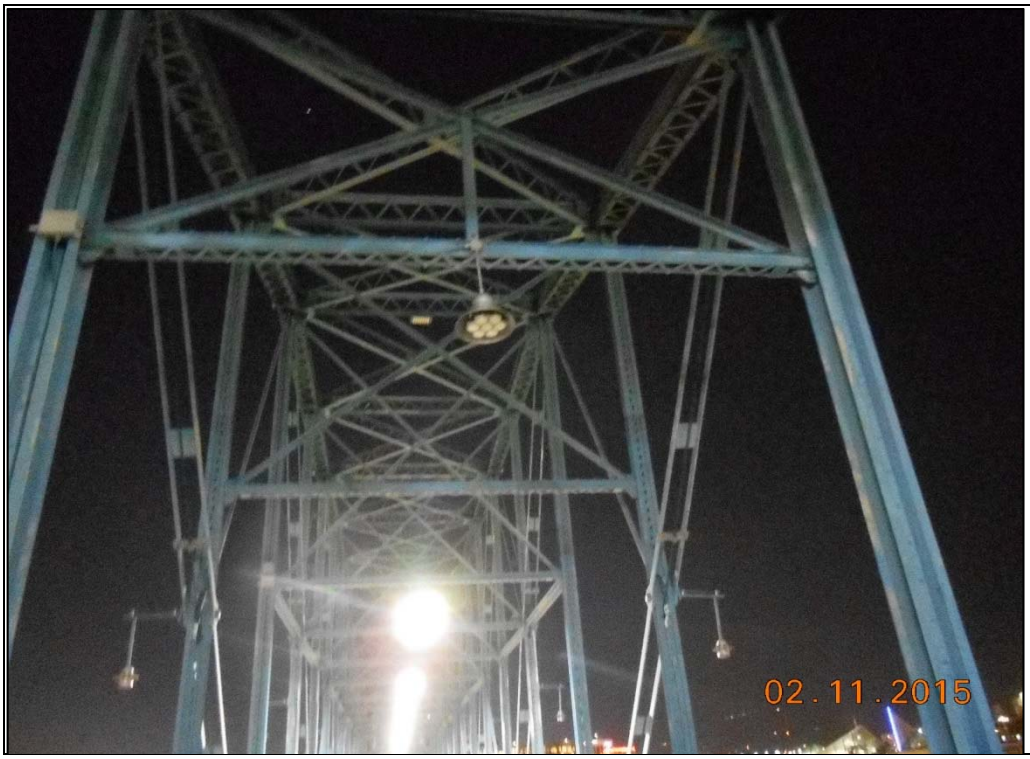
Repair Recommendation:
Secure electrical outlet cover attached to Vertical 8 in Span 2.



G5

Description:
LED light attached to top strut on Sway Brace is not coming on at night.

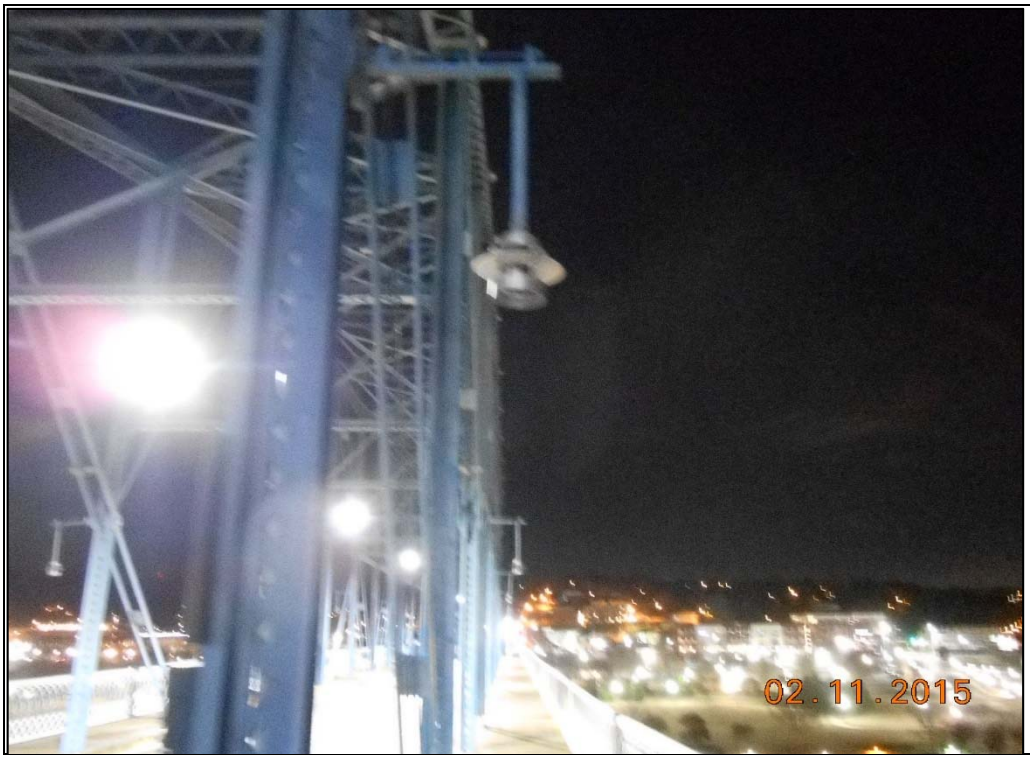
Repair Recommendation:
Investigate why none of the LED lights attached to the top strut on the sway bracing, in all truss spans is not coming on at night, except for one in Span 4.



G6

Description:
Light attached to lower strut on Sway Brace 14 in Span 5 is not working.

Repair Recommendation:
Investigate why LED light attached to lower strut on Sway Brace 14 in Span 5 is not working and repair.



G7

Description:
Light attached to the outside face of the verticals in Span 5 are not coming on at night**.**

Repair Recommendation:
Investigate why none of the lights attached to the outside faces of the verticals in Span 5 are not coming on at night and repair.



G8

Description:
Missing Light attached to the lower strut on Sway Brace 4, in Span 6.

Repair Recommendation:
Replace missing LED light fixture on lower strut on Sway Brace 4, in Span 6.



G9

Description:
Exposed electrical wiring and missing junction box cover on east face of Beam 45-7

Repair Recommendation:
Secure exposed electrical wiring and replace junction box cover on east face of Beam 45-7

V. MAINTENANCE RECOMMENDATIONS AND COST ESTIMATES

COST ESTIMATE SUMMARY

ELEMENT	PRIORITY				TOTAL
	1	2	3	4	
WOOD DECK	$0.00	$24,840.00	$488,750.00	$19,550.00	**$533,140.00**
ABOVE DECK TRUSS	$0.00	$90,000.00	$874,687.50	$0.00	**$964,687.50**
NORTH VIADUCT UNDER DECK	$0.00	$121,250.00	$192,500.00	$85,625.00	**$399,375.00**
BELOW DECK TRUSS	$0.00	$56,250.00	$1,525,000.00	$24,750.00	**$1,606,000.00**
PIERS	$0.00	$0.00	$638,750.00	$0.00	**$638,750.00**
ABUTMENTS	$0.00	$0.00	$75,000.00	$0.00	**$75,000.00**
ELECTRICAL	$2,500.00	$0.00	$304,687.50	$811,250.00	**$1,118,437.50**
PAINTING (2)	$0.00	$0.00	$0.00	$5,000,000.00	**$5,000,000.00**
TOTAL =	**$2,500.00**	**$292,340.00**	**$4,099,375.00**	**$5,941,175.00**	**$10,335,390.00**

REPAIR PRIORITIES

1	Repair Now (Immediate)
2	Repair should be performed within 120 days (Priority Repair)
3	Repair should be performed within 1 Year (Routine Repair)
4	Information Only (Monitor)

Please Note:

1. Unit prices shown in this estimate were developed with the assistance of Bell & Associates and Britton Bridge for steel and deck repairs, Planet Inc. for the painting, and Stansell Electric Company for the electrical items. They include a contingency of either 15% or 25% demanding on the type of bridge element.

2. We recommend after all steel repairs are completed to blast clean to bear metal and repaint. The estimated cost will be $5.0 Million and should last the City approximately 25 to 30 years.

Walnut St. Bridge Inspection – Wood Deck Maintenance Recommendations								
ITEM NO.	**MAINTENANCE RECOMMEND -ATIONS**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
A1	Replace damage panels with new everywhere that does not coincide with heavy surface wear locations.	60 LF	$450	**$27,000**	**$0**	**$0**	**$27,000**	**$0**
A2	Replace damage panels with new.	840 LF	$450	**$378,000**	**$0**	**$0**	**$378,000**	**$0**
A3	Replace damage boards with new.	100 LF	$15	**$1,500**	**$0**	**$0**	**$1,500**	**$0**
A4	Replace damage boards with new.	800 LF	$15	**$12,000**	**$0**	**$0**	**$12,000**	**$0**
A5	Replace damage boards with new.	130 LF	$50	**$6,500**	**$0**	**$0**	**$6,500**	**$0**
A6	Replace damage panels with new everywhere that does not coincide with heavy surface wear locations.	48 LF	$450	**$21,600**	**$0**	**$21,600**	**$0**	**$0**
A7	Replace slider plate and reset	100 LF	$50	**$5,000**	**$0**	**$0**	**$0**	**$5,000**
A8	Hand Tool clean areas and repaint	200 LF	$60	**$12,000**	**$0**	**$0**	**$0**	**$12,000**
				TOTAL:	0.00	21,600.00	425,000.00	17,000.00
				Contingency (15%) =	$0.00	$3,240.00	$63,750.00	$2,550.00
				Total =	**$0.00**	**$24,840.00**	**$488,750.00**	**$19,550.00**

Please Note:

Since more than half of the truss deck is showing heavy wear on the surface, we recommend replacing the entire deck curb to curb for the truss spans, similar to what the City did in 2010 with the North Viaduct. The estimated cost would be $828,000, which includes a 15% contingency.

Walnut St. Bridge Inspection – Above Deck Truss Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
B1	Clean corrosion and spot paint areas on the truss members in Spans 1 through 6	3	**175 SF**	$150	**$26,250**	$0	$0	$26,250	0
B2	Further investigation to determine the extent of section loss after the nest and droppings have been removed	2	**24 Each**	$2,000	**$48,000**	$0	$48,000	$0	0
B3	Remove pack corrosion and paint 75% of the strut to the top chord connections on the beginning and end panels in Spans 1 through 6	3	**9 Each**	$10,000	**$90,000**	$0	$0	$90,000	0
B4	Remove pack corrosion and spot paint approximately 70 LF of top chords in Spans 1 and 2	3	**70 LF**	$500	**$35,000**	$0	$0	$35,000	0
B5	Remove pack corrosion on 5% of gusset plates for sway bracing system throughout the truss spans	3	**25 Each**	$10,000	**$250,000**	$0	$0	$250,000	0
B6	Remove pack corrosion between eye-bars at all spans	3	**15 Each**	$10,000	**$150,000**	$0	$0	$150,000	0
B7	Replace channel beam attached to lower strut for sign on span 1 portal	3	**1 Each**	$50,000	**$50,000**	$0	$0	$50,000	0
B8	Weld or replace decorative washers at end of struts, 3 on South portal and 1 on North portal of Span 1	3		$20,000	**$20,000**	$0	$0	$20,000	0
B9	None	4			**$0**	$0	$0	$0	0
B10	Remove pack corrosion and install new tie-plate on Vertical 7 Left outside face at U7 Left in Span 1	2		$8,000	**$8,000**	$0	$8,000	$0	0
B11	Remove pack corrosion and replace decorative pin washer on Span 1 End panel at U9 Right	2		$8,000	**$8,000**	$0	$8,000	$0	0

Walnut St. Bridge Inspection – Above Deck Truss Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
B12	Repair tear in East web/flange interface on Vertical 5 at panel point M5 Right	3		$10,000	**$10,000**	$0	$0	$10,000	0
B13	Repair tear in South web/flange interface in top strut near centerline on Sway Brace 8 in Span 3	3		$10,000	**$10,000**	$0	$0	$10,000	0
B14	Clean of corrosion and apply a protective coating to post-tensioning cable at Diagonal M11-U12 Right near U12 Right	2		$2,000	**$2,000**	$0	$2,000	$0	0
B15	Repair cracked welds on angle attaching lower strut to East diagonal on end panels in Spans 4 and 6, and West and East diagonal on beginning panel in Span 6	3		$8,000	**$56,000**	$0	$0	$56,000	0
B16	Repair crack in Vertical 6 Left of Span 5, at the Southeast corner below panel point M6 Left	2		$2,000	**$2,000**	$0	$2,000	$0	0
B17	Remove all bird nests and droppings in the struts of all beginning and end panels. Perform hands on inspection to determine the amount of section loss in these areas.	2		$2,000	**$4,000**	$0	$4,000	$0	0
B18	Replace 2 fasteners for decorative arch under East end of lower strut on Span 5 End panel.	3		$500	**$500**	$0	$0	$500	0
B19	Repair Cracks	3		$2,000	**$2,000**	$0	$0	$2,000	0
					TOTAL:	**0.00**	**72,000.00**	**699,750.00**	**0.00**
					Contingency (25%) =	$0.00	$18,000.00	$174,937.50	$0.00
					Total =	**$0.00**	**$90,000.00**	**$874,687.50**	**$0.00**

Walnut St. Bridge Inspection – Above Deck Truss Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**

Please Note:

1. Option 1: Consider tool cleaning the areas of light to moderate corrosion for Deficiency No 1, instead of spot painting a complete new application of paint would cost approximately $1.4 Million for all 6 truss spans and would last about 10 years.

2. Option 2: Paint failure exposing underlying primer with light to moderate corrosion occurring in numerous areas throughout the 6 truss spans, we recommend blast cleaning to bear metal and repainting. The estimated cost will be $3.4 Million and should last 25 to 30 years.

Walnut St. Bridge Inspection - North Viaduct under Deck Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
C1	Repair Weld	2	1 Each	$2,500	**$2,500**	**$0**	**$2,500**	**$0**	**$0**
C2	Replace bottom section of connection plate	3	24 Each	$2,000	**$48,000**	**$0**	**$0**	**$48,000**	**$0**
C3	Remove pack corrosion and repaint	3	7 Each	$2,000	**$14,000**	**$0**	**$0**	**$14,000**	**$0**
C4	Monitor in future inspection, to see if section loss increases	4	NA			**$0**	**$0**	**$0**	**$0**
C5	Remove pack corrosion and repaint	3	10 Each	$1,000	**$10,000**	**$0**	**$0**	**$10,000**	**$0**
C6	Remove corrosion and repaint	3	1 Each	$500	**$500**	**$0**	**$0**	**$500**	**$0**
C7	Remove pack corrosion, repair weld, and repaint	2	1 Each	$2,000	**$2,000**	**$0**	**$2,000**	**$0**	**$0**
C8	Add cover plates to web to strengthen	2	1 Each	$5,000	**$5,000**	**$0**	**$5,000**	**$0**	**$0**
C9	Supplemental strut has been added	3	1 Each	$7,500	**$7,500**	**$0**	**$0**	**$7,500**	**$0**
C10	Remove pack corrosion and repaint	4	26 Each	$1,500	**$39,000**	**$0**	**$0**	**$0**	**$39,000**
C11	Supplemental strut has been added	4	NA			**$0**	**$0**	**$0**	**$0**
C12	Monitor in future inspection cycles	4	1 Each	$18,000	**$18,000**	**$0**	**$0**	**$0**	**$18,000**
C13	Replace bottom section of connection plate and repaint	2	1 Each	$4,000	**$4,000**	**$0**	**$4,000**	**$0**	**$0**
C14	Remove corrosion and dirt around pin	3	1 Each	$2,500	**$2,500**	**$0**	**$0**	**$2,500**	**$0**
C15	Remove dirt around connections	2	20 Each	$1,500	**$30,000**	**$0**	**$30,000**	**$0**	**$0**
C16	Remove pack corrosion and repaint	2	1 Each	$3,000	**$3,000**	**$0**	**$3,000**	**$0**	**$0**
C17	Remove corrosion and repaint	3	5 Each	$2,000	**$10,000**	**$0**	**$0**	**$10,000**	**$0**
C18	Remove corrosion and repaint	2	10 Each	$2,000	**$20,000**	**$0**	**$20,000**	**$0**	**$0**
C19	Remove pack corrosion and reset stringer	2	1 Each	$5,000	**$5,000**	**$0**	**$5,000**	**$0**	**$0**
C20	Supplemental strut has been added	4	NA			**$0**	**$0**	**$0**	**$0**
C21	Remove corrosion and repaint	2	1 Each	$5,000	**$5,000**	**$0**	**$5,000**	**$0**	**$0**
C22	Remove corrosion and repaint	3	5 Each	$2,000	**$10,000**	**$0**	**$0**	**$10,000**	**$0**

Walnut St. Bridge Inspection - North Viaduct under Deck Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
C23	Remove corrosion and repaint	3	1 Each	$2,500	**$2,500**	**$0**	**$0**	**$2,500**	**$0**
C24	Remove Debris and corrosion if present and repaint	3	6 Each	$2,000	**$12,000**	**$0**	**$0**	**$12,000**	**$0**
C25	Remove corrosion and repaint	3	1 Each	$2,000	**$2,000**	**$0**	**$0**	**$2,000**	**$0**
C26	Monitor movement in future inspection cycles	4	1 Each	$1,000	**$1,000**	**$0**	**$0**	**$0**	**$1,000**
C27	Clean and repair weld	3	1 Each	$2,000	**$2,000**	**$0**	**$0**	**$2,000**	**$0**
C28	Weld cover plates onto the web	3	1 Each	$7,000	**$7,000**	**$0**	**$0**	**$7,000**	**$0**
C29	Monitor for twisting in future inspection cycles	4	NA			**$0**	**$0**	**$0**	**$0**
C30	Remove corrosion and repaint	3	1 Each	$2,000	**$2,000**	**$0**	**$0**	**$2,000**	**$0**
C31	More in depth inspection is needed	2	1 Each	$5,000	**$5,000**	**$0**	**$5,000**	**$0**	**$0**
C32	More in depth inspection is needed	2	1 Each	$5,000	**$5,000**	**$0**	**$5,000**	**$0**	**$0**
C33	More in depth inspection is needed	2	2 Each	$5,000	**$10,000**	**$0**	**$10,000**	**$0**	**$0**
C34	Remove pack corrosion and repaint	3	5 Each	$2,000	**$10,000**	**$0**	**$0**	**$10,000**	**$0**
C35	Remove vegetation	4	1 Each	$500	**$500**	**$0**	**$0**	**$0**	**$500**
C36	Remove dirt and corrosion around connection and repaint	3	1 Each	$2,000	**$2,000**	**$0**	**$0**	**$2,000**	**$0**
C37	Add cover plates to flange to strengthen	4	1 Each	$5,000	**$5,000**	**$0**	**$0**	**$0**	**$5,000**
C38	Remove bird nest, clean area, and repaint	4	1 Each	$4,000	**$4,000**	**$0**	**$0**	**$0**	**$4,000**
C39	Remove pack corrosion, add cover plate, and repaint	3	1 Each	$5,000	**$5,000**	**$0**	**$0**	**$5,000**	**$0**
C40	Remove pack corrosion, add cover plate, and repaint	3	1 Each	$5,000	**$5,000**	**$0**	**$0**	**$5,000**	**$0**
C41	Remove graffiti	4	1 Each	$1,000	**$1,000**	**$0**	**$0**	**$0**	**$1,000**
C42	Fix junction to conceal exposed wires	2	1 Each	$500	**$500**	**$0**	**$500**	**$0**	**$0**
C43	Remove pack corrosion and repaint	3	1 Each	$2,000	**$2,000**	**$0**	**$0**	**$2,000**	**$0**
					TOTAL:	**$0.00**	**$97,000.00**	**$154,000.00**	**$68,500.00**

Walnut St. Bridge Inspection - North Viaduct under Deck Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
					Contingency (25%) =	$0.00	$24,250.00	$38,500.00	$17,125.00
					Total=	**$0.00**	**$121,250.00**	**$192,500.00**	**$85,625.00**

Please Note:

1. Option 1: Consider tool cleaning the areas of light to moderate corrosion listed above, but instead of spot painting provide a new application of paint. This would cost approximately $600,000 for the steel superstructure and bents of North Viaduct and last about 10 years.
2. Option 2: Paint failure exposing underlying primer with light to moderate corrosion occurring in numerous listed above, we recommend blast cleaning to bear metal and repainting. The estimated cost will be $1.6 Million for steel superstructure and bents of North Viaduct and should last 25 to 30 years.

Walnut St. Bridge Inspection - Below Deck Truss Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
D1	Remove paint, corrosion and repaint	3	1 Each	$3,000	$3,000	$0	$0	$3,000	$0
D2	Remove paint, corrosion and repaint	3	25 Each	$3,000	$75,000	$0	$0	$75,000	$0
D3	Remove paint, corrosion and repaint	3	22 Each	$3,000	$66,000	$0	$0	$66,000	$0
D4	Monitor in future inspection cycles	4			$0	$0	$0	$0	$0
D5	Replace loose rivet with bolt	3	1 Each	$1,000	$1,000	$0	$0	$1,000	$0
D6	Remove paint, corrosion and repaint	3	2 Each	$3,000	$6,000	$0	$0	$6,000	$0
D7	Remove corrosion and repaint	3	1 Each	$3,000	$3,000	$0	$0	$3,000	$0
D8	Remove corrosion and repaint	3		$3,000	$9,000	$0	$0	$9,000	$0
D9	Reset bracket to deck	4		$3,000	$9,000	$0	$0	$0	$9,000
D10	Remove corrosion and repaint	3		$3,000	$18,000	$0	$0	$18,000	$0
D11	Remove corrosion and repaint	3		$3,000	$3,000	$0	$0	$3,000	$0
D12	Remove corrosion and repaint	3		$3,000	$15,000	$0	$0	$15,000	$0
D13	Remove paint, corrosion and repaint	3		$3,000	$3,000	$0	$0	$3,000	$0
D14	Remove paint, corrosion and repaint	3		$3,000	$12,000	$0	$0	$12,000	$0
D15	Remove paint, corrosion and repaint	3		$3,000	$3,000	$0	$0	$3,000	$0
D16	More in-depth inspection required to determined the amount of section loss	2		$15,000	$15,000	$0	$15,000	$0	$0
D17	Monitor in future inspection cycles	4		$1,800	$1,800	$0	$0	$0	$1,800
D18	Remove paint, corrosion and repaint	3		$3,000	$3,000	$0	$0	$3,000	$0
D19	Monitor in future inspection cycles	4			$0	$0	$0	$0	$0
D20	Remove paint, corrosion and	3		$3,000	$3,000	$0	$0	$3,000	$0

Walnut St. Bridge Inspection - Below Deck Truss Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
	repaint								
D21	Remove paint, corrosion and repaint	3		$3,000	$144,000	$0	$0	$144,000	$0
D22	Remove paint, corrosion and repaint	3		$3,000	$114,000	$0	$0	$114,000	$0
D23	Remove paint, corrosion and repaint	3		$3,000	$42,000	$0	$0	$42,000	$0
D24	No action is required	4			$0	$0	$0	$0	$0
D25	No action is required	4			$0	$0	$0	$0	$0
D26	No action is required	4			$0	$0	$0	$0	$0
D27	Replace loose rivet with bolt	3		$500	$1,000	$0	$0	$1,000	$0
D28	Remove paint, corrosion and repaint	3		$3,000	$75,000	$0	$0	$75,000	$0
D29	Remove paint, corrosion and repaint	3		$3,000	$135,000	$0	$0	$135,000	$0
D30	Remove paint, corrosion and repaint	3		$3,000	$93,000	$0	$0	$93,000	$0
D31	Remove paint, corrosion and repaint	3		$3,000	$69,000	$0	$0	$69,000	$0
D32	Remove paint, corrosion and repaint	3		$3,000	$45,000	$0	$0	$45,000	$0
D33	Remove paint, corrosion and repaint	3		$3,000	$84,000	$0	$0	$84,000	$0
D34	Remove paint, corrosion and repaint	3		$3,000	$72,000	$0	$0	$72,000	$0
D35	Remove corrosion and repair weld	3		$1,500	$3,000	$0	$0	$3,000	$0
D36	Cut out crack flange and weld new section	2		$15,000	$30,000	$0	$30,000	$0	$0
D37	Readjust turnbuckle	4		$1,000	$1,000	$0	$0	$0	$1,000
D38	Remove paint, corrosion and repaint	3		$3,000	$42,000	$0	$0	$42,000	$0
D39	Remove paint, corrosion and repaint	3		$3,000	$42,000	$0	$0	$42,000	$0
D40	Remove paint, corrosion and	3		$3,000	$30,000	$0	$0	$30,000	$0

Walnut St. Bridge Inspection - Below Deck Truss Maintenance Recommendations									
ITEM NO.	**MAINTENANCE RECOMMEND-ATIONS**	**Pr**	**QTY**	**UNIT COST**	**Prelim. Cost Estimate**	**P-1**	**P-2**	**P-3**	**P-4**
	repaint								
D41	Remove paint, corrosion and repaint	3		$3,000	$6,000	$0	$0	$6,000	$0
D42	Replace that portion of angle	4		$4,000	$8,000	$0	$0	$0	$8,000
					TOTAL:	$0.00	$45,000.00	$1,220,000.00	$19,800.00
					Contingency (25%) =	$0.00	$11,250.00	$305,000.00	$4,950.00
					Total =	$0.00	$56,250.00	$1,525,000.00	$24,750.00

Walnut St. Bridge Inspection - Pier Maintenance Recommendations									
ITEM NO	MAINTENANCE RECOMMENDATIONS	Pr	QTY	UNIT COST	Prelim. Cost Estimate	P-1	P-2	P-3	P-4
E1	No action needed	4				$0	$0	$0	$0
E2	No action needed	4				$0	$0	$0	$0
E3	Repoint masonry mortar joints as needed	3	700 SF	$190	$133,000	$0	$0	$133,000	$0
E4	No action needed	4				$0	$0	$0	$0
E5	Repoint masonry mortar joints as needed	3	700 SF	$190	$133,000	$0	$0	$133,000	$0
E6	No action needed	4				$0	$0	$0	$0
E7	Repoint masonry mortar joints as needed	3	350 SF	$190	$66,500	$0	$0	$66,500	$0
E8	No action needed	4				$0	$0	$0	$0
E9	No action needed	4				$0	$0	$0	$0
E10	Repoint masonry mortar joints as needed	3	350 SF	$190	$66,500	$0	$0	$66,500	$0
E11	No action needed	4				$0	$0	$0	$0
E12	No action needed	4				$0	$0	$0	$0
E13	Repoint masonry mortar joints as needed	3	300 SF	$190	$57,000	$0	$0	$57,000	$0
E14	No action needed	4				$0	$0	$0	$0
E15	No action needed	4				$0	$0	$0	$0
E16	Repoint masonry mortar joints as needed	3	1 LS	$100,000	$100,000	$0	$0	$100,000	$0
E17	Repoint masonry mortar joints as needed	3	1 LS	$25,000	$25,000	$0	$0	$25,000	$0
E18	Repair Stones	3	1 LS	$25,000	$25,000	$0	$0	$25,000	$0
E19	Monitor in future inspection cycles	4				$0	$0	$0	$0
E20	No action needed	4				$0	$0	$0	$0
E21	Remove debris	3	1 Each	$1,000	$1,000	$0	$0	$1,000	$0
					TOTAL:	$0.00	$0.00	$607,000.00	$0.00
					Contingency (25%) =	$0.00	$0.00	$127,750.00	$0.00
					Total =	$0.00	$0.00	$638,750.00	$0.00

Walnut St. Bridge Inspection - Abutment Maintenance Recommendations									
ITEM NO.	MAINTENANCE RECOMMEND-ATIONS	Pr	QTY	UNIT COST	Prelim. Cost Estimate	P-1	P-2	P-3	P-4
1	Add cover plates to connection	3	1 Each	$10,000	$10,000	$0	$0	$10,000	$0
2	Add cover plates to connection	3	1 Each	$10,000	$10,000	$0	$0	$10,000	$0
3	Replace wooden bearing and reset wooden stringers	3	1 Each	$2,000	$2,000	$0	$0	$2,000	$0
4	Add cover plates to connection	3	2 Each	$10,000	$20,000	$0	$0	$20,000	$0
5	Repair section loss of lower flange of South abutment cap at east and west bearings	3	1 Each	$2,000	$2,000	$0	$0	$2,000	$0
6	Realign bearing on North abutment cap under west sidewalk and install a retainer to prevent future rotation	3	1 Each	$6,000	$6,000	$0	$0	$6,000	$0
7	Reinforce or repair web plate stiffeners of east and west fixed bearings at south abutment	3	1 Each	$10,000	$10,000	$0	$0	$10,000	$0
					Total:	$0.00	$0.00	$60,000.00	$0.00
					Contingency (25%) =	$0.00	$0.00	$15,000.00	$0.00
					Total =	$0.00	$0.00	$75,000.00	$0.00

Walnut St. Bridge Inspection - Electrical Maintenance Recommendations									
ITEM NO.	MAINTENANCE RECOMMEND-ATIONS	Pr	QTY	UNIT COST	Prelim. Cost Estimate	P-1	P-2	P-3	P-4
G1	Replace all lights attached to the	4	110 LS	$5,900	$649,000	$0	$0	$0	$649,000
G2	None	NA			$0	$0	$0	$0	$0
G3	Properly terminate exposed wiring and secure junction box cover attached to Vertical 1	3	50 LF	$55	$2,750	$0	$0	$2,750	$0
G4	Secure electrical outlet cover attached to vertical 8	1	1 Each	$1,000	$1,000	$1,000	$0	$0	$0
G5	Investigate why LED light attached to lower strut on Sway Brace 14 in Span 4 is not working and repair.	3	25 Each	$5,700	$142,500	$0	$0	$142,500	$0
G6	Investigate why LED light attached to lower strut on Sway Brace 14 in Span 5 is not working and repair.	3	5 Each	$4,400	$22,000	$0	$0	$22,000	$0
G7	Investigate why none of the lights attached to the outside faces of the verticals in Span 5 are not coming on at night and repair.	3	12 Each	$5,900	$70,800	$0	$0	$70,800	$0
G8	Replace missing LED light fixture on lower strut on Sway Brace 4, Span 6.	3	1 Each	$5,700	$5,700	$0	$0	$5,700	$0
G9	Secure exposed electrical wiring and replace junction box cover on east face of Beam 45-7	1	1 Each	$1,000	$1,000	$1,000	$0	$0	$0
					TOTAL:	$2,000.00	$0.00	$243,750.00	$649,000.00
					Contingency (25%) =	$500.00	$0.00	$60,937.50	$162,250.00
					Total =	$2,500.00	$0.00	$304,687.50	$811,250.00

VI. Appendix A – Ultrasonic Inspection

ISO/IEC 17025:2005
MME Testing

METALLURGY
LABORATORY TESTING
CORROSION TESTING
NONDESTRUCTIVE TESTING

February 13th, 2015

Tony Montiel, PE
Volkert, Inc.
330 Mallory Station Road, Suite A-1
Franklin, TN 37067

Subject: Ultrasonic Inspection of Elevated Shear Pins on the Walnut Street Pedestrian Bridge in Chattanooga, Tennessee

Mr. Montiel,

We appreciate the opportunity to provide ultrasonic testing services on the Walnut Street Pedestrian Bridge in Chattanooga, Tennessee. This report describes the findings of this nondestructive testing on the shear pins identified by Volkert, Inc.

Background

The Walnut Street Bridge was built in 1890 to connect Chattanooga with the North Shore as the first non-military bridge to make the span. The bridge is a pin-connected camelback design that serves as one of the longest pedestrian bridges in the world.

Ultrasonic Inspection:

Selected pins were identified along the bridge's span for inspection of possible defects per the ultrasonic criteria given in AWS D1.5. These pins were inspected with a USN 58L with a 2.25 MHz transducer in the longitudinal direction.

All the main bridge spans were available for inspection above the deck as accessed by a scissor lift. The pins were inspected on all available surfaces with the understanding that any indications were assessed against the accept/reject criteria given in AWS D1.5.

Results:

The ultrasonic test report is included in the attachment section of this report – the provided locations are based upon nomenclature contained in the drawings provided by Volkert, Inc. These images are shown in Figures 1-3. The reinforcement pattern was found to be similar in all of the structures examined.

MME Testing appreciates the opportunity to submit this report. Should you have any questions or comments, please feel free to contact us at your convenience.

Scott Lowrie
Project Manager, NDT Level III

Daniel Collazo
NDT Level III

1039 Industrial Court
Suwanee, Georgia 30024
www.mmetesting.com

(678) 730 2000 (Office)
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Attachments

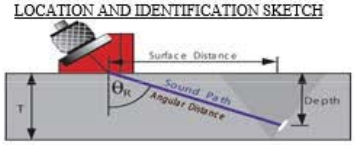
TRANSDUCER SIZE: 0.625 x 0.625 Inch
FREQUENCY: 2.25 MHz
ANGLE: 0 Degrees
MATERIAL DIMENSIONS: 3" diameter pin Inches

CALIBRATION STANDARD: DSC Block
INSPECTION PROCEDURE: AWS D1.5
ACCEPT/REJECT CRITERIA: AWS D1.5
PIECE MARK: See Below

TRANSDUCER AND SCAN DATA

Angle	0	45	60	70
Frequency	2.25	---	---	---
S/N	01YF44	---	---	---
Scan db	60	---	---	---

LOCATION AND IDENTIFICATION SKETCH



							DATA DESCRIBED IN AWS D 1.1									
							DECIBELS				DEFECT					
ITEM	Piece Mark & Test Location	ACCEPT	REJECT	ANGLE	LEG	FROM FACE	Defect Level	Reference Level	Attenuation Factor	Defect Rating	Sound Path	Length	Distance From "X"	Distance From "Y"	Depth from Surface	REMARKS
	Span 1 West Truss															
1	**M2**-16"	✓		0	1	A		46								
2	**M4**-16"	✓		0	1	A		46								
3	**M6**-16"	✓		0	1	A		46								
4	**M8**-16"	✓		0	1	A		46								
5	**L0**-20"	✓		0	1	A		46								
6	**L1**-24"	✓		0	1	A		46								
	Span 1 East Truss															
7	**M2**-16"	✓		0	1	A		46								
8	**M4**-16"	✓		0	1	A		46								
9	**M6**-16"	✓		0	1	A		46								
10	**L9**-25"	✓		0	1	A		46								
11	**L10**-25"	✓		0	1	A		46								
12	**L0**-20"	✓		0	1	A		46								
13	**L1**-24"	✓		0	1	A		46								
	Span 2 West Truss															
14	**M2**-16"	✓		0	1	A		46								
15	**M4**-16"	✓		0	1	A		46								
16	**M6**-18"	✓		0	1	A		46								
17	**M8**-16"	✓		0	1	A		46								
	Span 2 East Truss															
18	**M2**-16"	✓		0	1	A		46								
19	**M4**-16"	✓		0	1	A		46								
20	**M6**-16"	✓		0	1	A		46								

Ultrasonic Inspection report – page 1

MME Testing

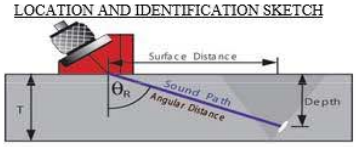
Inspection Services – Walnut Street Bridge *February 23, 2015*
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TRANSDUCER SIZE:	0.625 x 0.625 Inch	CALIBRATION STANDARD:	DSC Block
FREQUENCY:	2.25 MHz	INSPECTION PROCEDURE:	AWS D1.5
ANGLE:	0 Degrees	ACCEPT/REJECT CRITERIA:	AWS D1.5
MATERIAL DIMENSIONS:	3" diameter pin Inches	PIECE MARK:	See Below

TRANSDUCER AND SCAN DATA

Angle	**0**	**45**	**60**	**70**
Frequency	**2.25**	---	---	---
S/N	**01YF44**	---	---	---
Scan db	**60**	---	---	---

LOCATION AND IDENTIFICATION SKETCH



ITEM	Piece Mark & Test Location	ACCEPT	REJECT	ANGLE	LEG	FROM FACE	DATA DESCRIBED IN AWS D 1.1 DECIBELS Defect Level	Reference Level	Attenuation Factor	Defect Rating	DEFECT Sound Path	Length	Distance From "X"	Distance From "Y"	Depth from Surface	REMARKS
	Span 3 West Truss															
21	**M3**-20"	✓		0	1	A		46								
22	**M5**-22"	✓		0	1	A		46								
23	**M7**-22"	✓		0	1	A		46								
24	**M9**-22"	✓		0	1	A		46								
25	**M11**-22"	✓		0	1	A		46								
26	**M13**-20"	✓		0	1	A		46								
	Span 3 East Truss															
27	**M3**-20"	✓		0	1	A		46								
28	**M5**-22"	✓		0	1	A		46								
29	**M7**-22"	✓		0	1	A		46								
30	**M9**-22"	✓		0	1	A		46								
31	**M11**-22"	✓		0	1	A		46								
32	**M13**-20"	✓		0	1	A		46								
	Span 4 West Truss															
33	**M3**-20"	✓		0	1	A		46								
34	**M5**-22"	✓		0	1	A		46								
35	**M7**-22"	✓		0	1	A		46								
36	**M9**-22"	✓		0	1	A		46								
37	**M11**-22"	✓		0	1	A		46								
38	**M13**-19"	✓		0	1	A		46								

Ultrasonic Inspection report – page 2

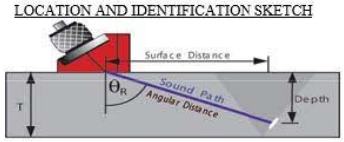
Inspection Services – Walnut Street Bridge *February 23, 2015*
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TRANSDUCER SIZE:	0.625 x 0.625	Inch	CALIBRATION STANDARD:	DSC Block
FREQUENCY:	2.25	MHz	INSPECTION PROCEDURE:	AWS D1.5
ANGLE:	0	Degrees	ACCEPT/REJECT CRITERIA:	AWS D1.5
MATERIAL DIMENSIONS:	3" diameter pin	Inches	PIECE MARK:	See Below

TRANSDUCER AND SCAN DATA

Angle	**0**	**45**	**60**	**70**
Frequency	**2.25**	---	---	---
S/N	**01YF44**	---	---	---
Scan db	**60**	---	---	---

LOCATION AND IDENTIFICATION SKETCH



ITEM	Piece Mark & Test Location	ACCEPT	REJECT	ANGLE	LEG	FROM FACE	DATA DESCRIBED IN AWS D 1.1 DECIBELS Defect Level	Reference Level	Attenuation Factor	Defect Rating	DEFECT Sound Path	Length	Distance From "X"	Distance From "Y"	Depth from Surface	REMARKS
	Span 4 East Truss															
39	**M3**-20"	✓		0	1	A		46								
40	**M5**-22"	✓		0	1	A		46								
41	**M7**-22"	✓		0	1	A		46								
42	**M9**-22"	✓		0	1	A		46								
43	**M11**-22"	✓		0	1	A		46								
	Span 5 West Truss															
44	**M3**-18"	✓		0	1	A		46								
45	**M5**-22"	✓		0	1	A		46								
46	**M7**-22"	✓		0	1	A		46								
47	**M9**-22"	✓		0	1	A		46								
48	**M11**-22"	✓		0	1	A		46								
	Span 5 East Truss															
49	**M3**-18"	✓		0	1	A		46								
50	**M5**-22"	✓		0	1	A		46								
51	**M7**-22"	✓		0	1	A		46								
52	**M9**-22"	✓		0	1	A		46								
53	**M11**-22"	✓		0	1	A		46								
54	**M13**-20"	✓		0	1	A		46								

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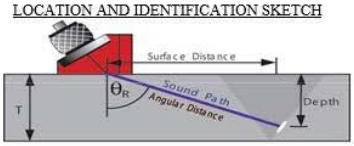
Inspection Services – Walnut Street Bridge *February 23, 2015*
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TRANSDUCER SIZE:	0.625 x 0.625 Inch	CALIBRATION STANDARD:	DSC Block
FREQUENCY:	2.25 MHz	INSPECTION PROCEDURE:	AWS D1.5
ANGLE:	0 Degrees	ACCEPT/REJECT CRITERIA:	AWS D1.5
MATERIAL DIMENSIONS:	3" diameter pin Inches	PIECE MARK:	See Below

TRANSDUCER AND SCAN DATA

Angle	**0**	**45**	**60**	**70**
Frequency	**2.25**	---	---	---
S/N	**01YF44**	---	---	---
Scan db	**60**	---	---	---

LOCATION AND IDENTIFICATION SKETCH



ITEM	Piece Mark & Test Location	ACCEPT	REJECT	ANGLE	LEG	FROM FACE	DATA DESCRIBED IN AWS D 1.1 – DECIBELS: Defect Level	Reference Level	Attenuation Factor	Defect Rating	DEFECT: Sound Path	Length	Distance From "X"	Distance From "Y"	Depth from Surface	REMARKS
	Span 6 West Truss															
55	**M2**-16"	✓		0	1	A		46								
56	**M4**-18"	✓		0	1	A		46								
57	**M6**-18"	✓		0	1	A		46								
58	**M8**-16"	✓		0	1	A		46								
	Span 6 East Truss															
59	**M2**-16"	✓		0	1	A		46								
60	**M4**-18"	✓		0	1	A		46								
61	**M6**-18"	✓		0	1	A		46								
62	**M8**-16"	✓		0	1	A		46								

Ultrasonic Inspection report – page 4



Figure 1: Image of the Walnut Street Bridge in Chattanooga, TN



Figure 2: Closer image of a shear pin subjected to ultrasonic inspection

VII. Appendix ix B – Phase II Repair Options

WALNUT STREET PHASE II REPAIR OPTIONS

ALTERNATIVE =>	A	B	C	D
BUDGET	$2,200,000	$2,200,000	$2,200,000	$2,200,000
MOBILIZATION (5%)	$105,980	$101,730	$112,238	$88,648
ENGINEERING AND CEI (10%)	$220,000	$220,000	$220,000	$220,000
ABOVE DECK TRUSS		$90,000		$90,000
UNDER DECK TRUSS REPAIR (PRIORITIES 2 THRU 4)	$1,606,000	$1,606,000	$1,606,000	
WOOD DECK REPAIR (PRIORITIES 2 & 3)	$513,590			$513,590
WOOD DECK REPAIR (PRIORITY 2)		$24,840		
NORTH VIADUCT UNDER DECK REPAIRS (PRIORITY 2)		$121,250		$121,250
NORTH VIADUCT UNDER DECK REPAIRS (PRIORITY 3)		$192,500		$192,500
REPAIR PIERS			$638,750	$638,750
REPAIR ABUTMENTS				$75,000
NORTH VIADUCT UNDER DECK REPAIRS (PRIORITY 4)				$85,625
UNDER DECK TRUSS REPAIR (PRIORITY 2)				$56,250
BRIDGE ITEM SUBTOTAL	$2,119,590	$2,034,590	$2,244,750	$1,772,965
TOTAL	**$2,445,570**	**$2,356,320**	**$2,576,988**	**$2,081,613**
REMAINDER	**($245,570)**	**($156,320)**	**($376,988)**	**$118,387**
PERCENT OF BUDGET	**111.2%**	**107.1%**	**117.1%**	**94.6%**

A	PRIORITIZE DECK + UNDER DECK TRUSS REPAIR
B	PRIORITIZE PRIORITY 2 ITEMS + ADDITIONAL STEEL REPAIR
C	PRIORITIZE WORK OVER WATER
D	PRIORITIZE PRIORITY 2 ITEMS + DECK REPAIR + SUBSTRUCTURES

Supplemental Electrical Information

Per field observations, there appear to be (2) #3/0 AWG 15kV cables routed in 4” conduits from the existing 480V transformer (Existing Transformer A) located at the bottom of the hill near Riverfront Pkwy to the pull box located at the existing equipment pad. There also appears to be (1) run of #350MCM 600V conductors from Transformer A that runs up the hill to feed the electrical equipment adjacent to the bridge.

Per EPB, the electrical contractor shall be responsible for providing and installing the new conduit route and new 15kV conductors, in accordance with EPB standards and specifications, from Existing Transformer A to the existing pull box via the new conduit pathways. EPB shall terminate those conductors.

These observations are not absolute, and the contractor is still responsible for verifying any existing underground utilities that would conflict with the project scope. The contractor shall coordinate all work with EPB and nearby utilities prior to beginning excavation. Contractor is responsible for any fees or charges from EPB for this work.

Below are images of the existing EPB equipment and enclosures for clarification.

Existing Transformer A





Existing Transformer / Pull box

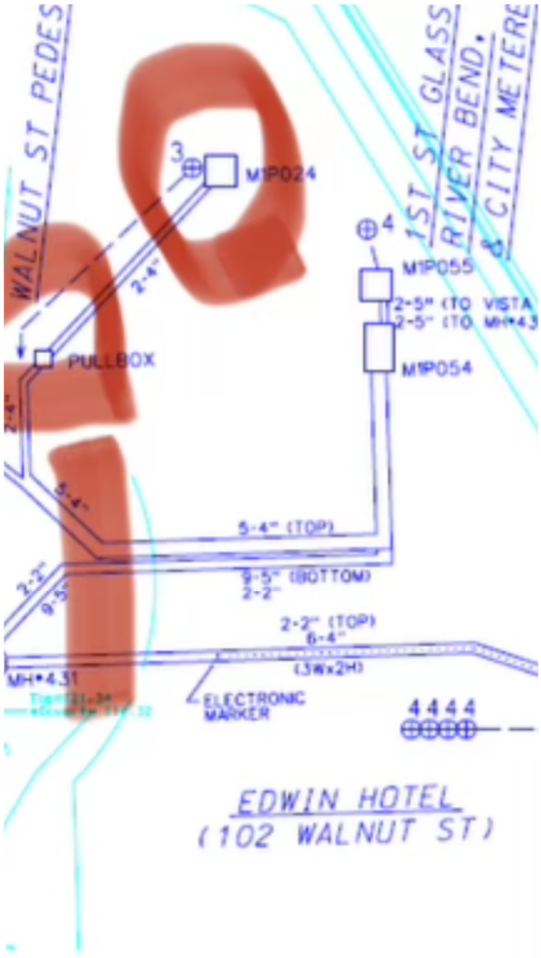





FEET:
BICC® BRAND MA 2004



EPB Diagram showing existing layout



Perra

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7-12-24 Partial listing of Questions/Answers

Question	Answer
Sheet 2C demolition notes reference SP202ACM but is not included in the specifications is it available or not applicable? It also states asbestos abatement is the responsibility of the contractor. What items require asbestos abatement?	Added in Addendum 2
Please provide the reference documents mentioned on sheet 4 note 16.	Added in Addendum 3
When is the completion date for this project?	Addendum 2 provided a schedule
Does the City anticipate the bid date being pushed?	Addendum 2 provided a schedule with some updated dates.
Please confirm number of fixed bearings.	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
Please confirm number of expansion bearings.	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
Please include bearing detail with measurements.	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
Please confirm stringer S1 size is 14WF30	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
Please confirm stringer S2 and S3 sizes are C15x33.	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
Please confirm WS1-WS3,WS4-WS6 stringers are not structural steel. If they are structural steel, provide dimensions.	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
What are the floor beam dimensions including flange thickness?	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
What is the steel sizes of the diagonal lateral bracing below stringers? (Highlighted in two pictures below)	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
All steel sizes and lengths must be known for accurate takeoffs. Please provide this. Including all steel used on the truss sections. Example highlighted below.	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
Please confirm total height of truss.	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
Please provide steel sizes, dimensions and lengths of the below pertaining to viaducts spans.	As-built plans/shop drawings are not available and the contractor is responsible for verifying structural members. The original plans and repair plans are provided in addendum 3.
Good afternoon. We are interested in obtaining a copy of the list of June 14th pre-bid meeting attendees. Any information you can share would be helpful. I realize the meeting was not mandatory.	Attendee list was sent in Addendum 2
Can contractor stage equipment on either side of bridge?	Contractor has to stay within the limits of construction
Can the owner provide the location of staging areas available referenced on sheet 4 note 14.	Contractor has to stay within the limits of construction
What is the the road closure fees the contractor is to include in their bid ?	Free, Contractor just has to apply for through CDOT
Item 722-01.01 FIELD OFFICE (TYPE 1) Where will the Field Office for the City's Dept. staff be located?	Inside the construction fence near Philip Grymes Outdoor Chattanooga Center
Can the first quantity note on sheet 2 "Work for which no pay item is provided will not be paid for directly and shall be considered aborbed." be eliminated as is too broad placing too much risk on the contractor.	Note removed in Addendum 2
What is the coatings spec was and what they have came up with as prep/prime/intermediate/topcoat system ?	See notes on plan sheet 4A
What paint system is to be used? i.e. Tennessee DOT spec, Sherwin-Williams approved system?	See notes on plan sheet 4A
Does this bridge contain lead?	See notes on plan sheet 4A (38)
What is the load rating of the bridge?	The bridge has not been load rated.
Does bridge have constraints on the containment the contractor can install? i.e. wind, weight.	The contractor is required to have an approved work plan developed by an engineer before construction begins. All containment systems to be utilized should be noted in the work plan.
Does bridge have weight limit on the equipment the contractor can put on the deck?	The contractor is required to have an approved work plan developed by an engineer before construction begins. All equipment that is to be utilized should be noted in the work plan.
What does L# stand for? (i.e. L2 and L3 highlighted in blue above.)	This is a location identifier for the Truss main member connection points. L stands for Lower U stands for Upper. The number is the span number.
Waiver request to use a different wood species.	This type of request will not be evaluated at this time.
Is the timber deck replacement scope replacing all the timber decking on the truss spans and replacement the sidewalk decking on the entire bridge? If not please clarify.	Yes execept timber stringers may be reused if acceptable.
Can you also provide an updated planholder's list?	Yes, included in Addendum 3