September 30, 2020

Mr. Samuel Summerville
Thornton Tomasetti, Inc.
40 Wall Street
New York, NY 10005
USA

Dear Mr. Summerville:

This letter is in response to your June 12, 2020 request for the Federal Highway Administration (FHWA) to review a roadside safety device, hardware, or system for eligibility for reimbursement under the Federal-aid highway program. This FHWA letter of eligibility is assigned FHWA control number B-349 and is valid until a subsequent letter is issued by FHWA that expressly references this device.

**Decision**

The following device is eligible within the length-of-need, with details provided in the form which is attached as an integral part of this letter:

- Throgs Neck Bridge Rail

**Scope of this Letter**

To be found eligible for Federal-aid funding, new roadside safety devices should meet the crash test and evaluation criteria contained in the American Association of State Highway and Transportation Officials’ (AASHTO) Manual for Assessing Safety Hardware (MASH). However, the FHWA, the Department of Transportation, and the United States Government do not regulate the manufacture of roadside safety devices. Eligibility for reimbursement under the Federal-aid highway program does not establish approval, certification or endorsement of the device for any particular purpose or use.

This letter is not a determination by the FHWA, the Department of Transportation, or the United States Government that a vehicle crash involving the device will result in any particular outcome, nor is it a guarantee of the in-service performance of this device. Proper manufacturing, installation, and maintenance are required in order for this device to function as tested.

This finding of eligibility is limited to the crashworthiness of the system and does not cover other structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
**Eligibility for Reimbursement**

Based solely on a review of crash test results and certifications submitted by the manufacturer, and the crash test laboratory, FHWA agrees that the device described herein meets the crash test and evaluation criteria of the AASHTO’s MASH. Therefore, the device is eligible for reimbursement under the Federal-aid highway program if installed under the range of tested conditions.

- Name of system: Throgs Neck Bridge Rail
- Type of system: Longitudinal Barrier
- Test Level: MASH Test Level 5 (TL5)
- Testing conducted by: Texas A&M Transportation Institute (TTI)
- Date of request: June 12, 2020

FHWA concurs with the recommendation of the accredited crash testing laboratory on the attached form.

**Full Description of the Eligible Device**

The device and supporting documentation, including reports of the crash tests or other testing done, videos of any crash testing, and/or drawings of the device, are described in the attached form.

**Notice**

This eligibility letter is issued for the subject device as tested. Modifications made to the device are not covered by this letter. Any modifications to this device should be submitted to the user (i.e., state DOT) as per their requirements.

You are expected to supply potential users with sufficient information on design, installation and maintenance requirements to ensure proper performance.

You are expected to certify to potential users that the hardware furnished has the same chemistry, mechanical properties, and geometry as that submitted for review, and that it will meet the test and evaluation criteria of AASHTO’s MASH.

Issuance of this letter does not convey property rights of any sort or any exclusive privilege. This letter is based on the premise that information and reports submitted by you are accurate and correct. We reserve the right to modify or revoke this letter if: (1) there are any inaccuracies in the information submitted in support of your request for this letter, (2) the qualification testing was flawed, (3) in-service performance or other information reveals safety problems, (4) the system is significantly different from the version that was crash tested, or (5) any other information indicates that the letter was issued in error or otherwise does not reflect full and complete information about the crashworthiness of the system.
**Standard Provisions**

- To prevent misunderstanding by others, this letter of eligibility designated as FHWA control number B-349 shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed upon request.

- This letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder.

- This FHWA eligibility letter is not an expression of any Agency view, position, or determination of validity, scope, or ownership of any intellectual property rights to a specific device or design. Further, this letter does not impute any distribution or licensing rights to the requester. This FHWA eligibility letter determination is made based solely on the crash-testing information submitted by the requester. The FHWA reserves the right to review and revoke an earlier eligibility determination after receipt of subsequent information related to crash testing.

Sincerely,

Michael S. Griffith
Director, Office of Safety Technologies
Office of Safety

Enclosures
Request for Federal Aid Reimbursement Eligibility of Highway Safety Hardware

Date of Request: June 12, 2020

Name: Samuel Summerville
Company: Thornton Tomasetti, Inc.
Address: 40 Wall Street, New York, NY 10005
Country: USA

To: Michael S. Griffith, Director
FHWA, Office of Safety Technologies

I request the following devices be considered eligible for reimbursement under the Federal-aid highway program.

Device & Testing Criterion - Enter from right to left starting with Test Level:

<table>
<thead>
<tr>
<th>System Type</th>
<th>Submission Type</th>
<th>Device Name / Variant</th>
<th>Testing Criterion</th>
<th>Test Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>'B': Rigid/Semi-Rigid Barriers (Roadside, Median, Bridge Railings)</td>
<td>⭕ Physical Crash Testing</td>
<td>Throgs Neck Bridge Rail</td>
<td>AASHTO MASH</td>
<td>TL5</td>
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</tbody>
</table>

By submitting this request for review and evaluation by the Federal Highway Administration, I certify that the product(s) was (were) tested in conformity with the AASHTO Manual for Assessing Safety Hardware and that the evaluation results meet the appropriate evaluation criteria in the MASH.

Individual or Organization responsible for the product:

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<tr>
<th>Contact Name:</th>
<th>Company:</th>
<th>Address:</th>
<th>Country:</th>
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</thead>
<tbody>
<tr>
<td>Edmond Knightly</td>
<td>MTA Bridges and Tunnels</td>
<td>4260 Throgs Neck Expressway, Bronx, NY 10465</td>
<td>USA</td>
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</tbody>
</table>

Enter below all disclosures of financial interests as required by the FHWA `Federal-Aid Reimbursement Eligibility Process for Safety Hardware Devices' document.

Texas A&M Transportation Institute (TTI) was contracted by MTA Bridges and Tunnels and Thornton Tomasetti, Inc. to perform full-scale crash testing of the Throgs Neck Bridge Rail. There are no shared financial interests in the Throgs Neck Bridge Rail by TTI, or between/among MTA Bridges and Tunnels and Thornton Tomasetti, Inc. and TTI, other than compensation of costs involved in the actual crash tests and reports for this submission to FHWA. Thornton Tomasetti holds no financial interests in the testing of the Throgs Neck Bridge Rail. Thornton Tomasetti does not benefit from the Throgs Neck Bridge Rail manufacture or future use, and will be compensated for their work by MTA Bridges and Tunnels regardless of acceptance by FHWA.
**PRODUCT DESCRIPTION**

<table>
<thead>
<tr>
<th>New Hardware or Significant Modification</th>
<th>Modification to Existing Hardware</th>
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</table>

The test installation was a bridge rail, comprised of four HSS tubular rails, with the top and bottom rail each being $5 \times 3 \times \frac{1}{2}$ inch and the two middle rails each being $6 \times 6 \times \frac{3}{8}$ inch. The top of the uppermost of the four rails was 3 ft-6 inches from the top of the asphalt overlay, with 6-inch vertical spacings between the rails. The rails were supported by 29 posts, of which, 11 were installed on a 50 ft-10 inches long orthotropic steel deck, 4 were installed on a concrete beam foundation adjacent to the steel deck on the upstream side, and 14 were installed on a concrete beam foundation adjacent to the downstream side of the steel deck. The posts were spaced at 4 ft-11¼ inches on the steel deck, with some variations in spacing for the posts at either end on the concrete beam foundations. Total installation length was 136 ft 3 inches. The orthotropic steel deck was overlaid with a 2-inch thick lift of asphalt.

**CRASH TESTING**

By signature below, the Engineer affiliated with the testing laboratory, agrees in support of this submission that all of the critical and relevant crash tests for this device listed above were conducted to meet the MASH test criteria. The Engineer has determined that no other crash tests are necessary to determine the device meets the MASH criteria.

<table>
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<tr>
<th>Engineer Name:</th>
<th>Nauman Sheikh</th>
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<tbody>
<tr>
<td>Engineer Signature:</td>
<td>Nauman Sheikh</td>
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<tr>
<td>Address:</td>
<td>1254 Avenue A, Bldg 7091, Bryan, Texas 77807</td>
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<tr>
<td>Country:</td>
<td>USA</td>
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</table>

A brief description of each crash test and its result:
<table>
<thead>
<tr>
<th>Required Test Number</th>
<th>Narrative Description</th>
<th>Evaluation Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-10 (1100C)</td>
<td>Test 5-10 involves an 1100C vehicle impacting the test article at a target impact speed of 62 mi/h and target angle of 25°. The target CIP for the right corner of the front bumper was 3.6 ft upstream of the splice between Posts 7 &amp; 8. The results of the test conducted on February 3, 2020, are found in TTI Test Report No. 610921-01. The test vehicle was traveling at a speed of 63.4 mi/h as it made contact with the Throgs Neck Bridge Rail 3.3 ft upstream of the splice between Posts 7 &amp; 8 and at an impact angle of 25.1°. After loss of contact with the bridge rail, the vehicle came to rest 201 ft downstream of the impact point and 16 ft toward the field side. The Throgs Neck Bridge Rail contained and redirected the 1100C vehicle. The vehicle did not penetrate, underride, or override the installation. The vehicle exited within the exit box criteria defined in MASH. Maximum dynamic deflection of the rail during the test was 0.7 inch. No permanent deformation was observed. Working width was 16 inches. No detached elements, fragments, or other debris were present to penetrate, or to show potential for penetrating, the occupant compartment, or to present undue hazard for others in the area. The 1100C vehicle remained upright during and after the collision event. Maximum roll and pitch angles were 9° and 16°, respectively. Longitudinal OIV was 21.3 ft/s and lateral OIV was 35.1 ft/s. Maximum longitudinal occupant ridedown acceleration was 4.1 g, and maximum lateral occupant ridedown acceleration was 13.3 g. Occupant risk factors were within the maximum limits specified in MASH. Maximum exterior crush to the vehicle was 12.0 inches in the side plane in the front plane at the left front corner at bumper height. Maximum occupant compartment deformation was 2.25 inches in the right front floor pan area. The Throgs Neck Bridge Rail performed acceptably for MASH test 5-10.</td>
<td>PASS</td>
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<tr>
<td>Required Test Number</td>
<td>Narrative Description</td>
<td>Evaluation Results</td>
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<tr>
<td>5-11 (2270P)</td>
<td>Test 5-11 involves a 2270P vehicle impacting the test article at a target impact speed of 62 mi/h and target angle of 25°. The target CIP for the right corner of the front bumper was 4.3 ft upstream of the splice between Posts 7 &amp; 8.</td>
<td>PASS</td>
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<td>The results of the test conducted on February 7, 2020, are found in TTI Test Report No. 610921-01. The test vehicle was traveling at a speed of 63.8 mi/h as it made contact with the Throgs Neck Bridge Rail 4.2 ft upstream of the splice between Posts 7 &amp; 8 and at an impact angle of 25.5°. After loss of contact with the bridge rail, the vehicle came to rest 206 ft downstream of the impact point and 5 ft toward the field side.</td>
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<td>The Throgs Neck Bridge Rail contained and redirected the 2270P vehicle. The vehicle did not penetrate, underride, or override the installation. The vehicle exited within the exit box criteria defined in MASH.</td>
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<td>Maximum dynamic deflection during the test was 1.45 inches. No permanent deformation was observed. Working width was 16 inches.</td>
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<td>No detached elements, fragments, or other debris were present to penetrate, or to show potential for penetrating, the occupant compartment, or to present undue hazard for others in the area.</td>
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<td>The 2270P vehicle remained upright during and after the collision event. Maximum roll and pitch angles were 18° and 10°, respectively. Longitudinal OIV was 24.3 ft/s and lateral OIV was 33.5 ft/s. Maximum longitudinal occupant ridedown acceleration was 5.9 g and maximum lateral occupant ridedown acceleration was 12.0 g. Occupant risk factors were within the maximum limits specified in MASH.</td>
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<td>Maximum exterior crush to the vehicle was 16.0 inches in the side plane at the right front corner at bumper height. Maximum occupant compartment deformation was 3.25 inch in the right side firewall area.</td>
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<td>The Throgs Neck Bridge Rail performed acceptably for MASH test 5-11.</td>
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</table>
Test 5-12 involves a 36000V vehicle impacting the test article at a target impact speed of 50 mi/h and target angle of 15°. The target CIP for the right corner of the front bumper was 1.0 ft downstream of splice between Posts 7 & 8.

The results of the test conducted on March 2, 2020, are found in TTI Test Report No. 610921-01. The test vehicle was traveling at a speed of 50.8 mi/h as it made contact with the Throgs Neck Bridge Rail 4.3 inches downstream of the splice between Posts 7 & 8 at an impact angle of 14.1°. After loss of contact with the bridge rail, the vehicle came to rest 288 ft downstream of the impact point and 28 ft toward the traffic lanes side.

The Throgs Neck Bridge Rail contained and redirected the 36000V vehicle. The vehicle did not penetrate, underride, or override the installation. The vehicle exited within the exit box criteria defined in MASH.

Maximum dynamic deflection during the test was 1.4 inches. Maximum permanent deformation was 1.25 inches. Working width was 41.3 inches.

No detached elements, fragments, or other debris were present to penetrate or to show potential for penetrating the occupant compartment, or to present undue hazard for others in the area.

The 36000V vehicle remained upright during and after the collision event. Maximum roll and pitch angles were 10° and 50°, respectively.

Longitudinal OIV was 2.3 ft/s, and lateral OIV was 9.8 ft/s. Maximum longitudinal occupant ridedown acceleration was 9.5 g, and maximum lateral occupant ridedown acceleration was 29.4 g.

Maximum exterior crush to the vehicle was 16.0 inches in the side plane at the right front corner at bumper height. No occupant compartment deformation was observed.

The Throgs Neck Bridge Rail performed acceptably for MASH test 5-12.
| Tests for transition is not applicable for this bridge rail barrier system | Non-Relevant Test, not conducted |
| Tests for transition is not applicable for this bridge rail barrier system | Non-Relevant Test, not conducted |
| Tests for transition is not applicable for this bridge rail barrier system | Non-Relevant Test, not conducted |

| Laboratory Name: | Texas A&M Transportation Institute |
| Laboratory Signature: | Digitally signed by Darrell L. Kuhn |
| Date: | 2020.06.11 13:41:48 -05'00' |
| Address: | 1254 Avenue A, Bldg 7091, Bryan, Texas 77807 |
| Country: | USA |
| Accreditation Certificate Number and Dates of current Accreditation period: | ISO 17025-2017 Laboratory A2LA Certificate Number: 2821.01 Valid To: April 30, 2021 |

| Submit Form |

ATTACHMENTS

Attach to this form:

1) Additional disclosures of related financial interest as indicated above.

2) A copy of the full test report, video, and a Test Data Summary Sheet for each test conducted in support of this request.

3) A drawing or drawings of the device(s) that conform to the Task Force-13 Drawing Specifications [Hardware Guide Drawing Standards]. For proprietary products, a single isometric line drawing is usually acceptable to illustrate the product, with detailed specifications, intended use, and contact information provided on the reverse. Additional drawings (not in TF-13 format) showing details that are relevant to understanding the dimensions and performance of the device should also be submitted to facilitate our review.

FHWA Official Business Only:

<p>| Eligibility Letter |</p>
<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Key Words</th>
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<tr>
<td>General Information</td>
<td>Impact Conditions</td>
<td>Post-Impact Trajectory</td>
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Figure 6.6. Summary of Results for MASH Test 5-11 on Throgs Neck Bridge Rail.
Figure 7.6. Summary of Results for MASH Test 5-12 on Throgs Neck Bridge Rail.
GENERAL:

1. The scope of work in the project consists of the following:
   A. Fabrication of deck panel and 4 rail steel barrier.
   B. Obtain services of a shop inspection agency, accepted by the engineer, to witness, inspect, and certify that all structural steel furnished has been fabricated in accordance with requirements stipulated by contract documents and specifications.
   C. Delivery of orthotropic deck and supports, 4 rail steel barrier, bolts, anchors, and plates to testing facility.
   D. All the contractor shall become familiar with the testing facility for access, possible obstructions, and staging areas before fabrication of deck panels and supporting frames.

2. If the contractor damages any equipment and materials which are to remain in place or are the property of the testing facility, damaged material shall be repaired or replaced in a manner satisfactory to the testing facility at the expense of the contractor.

3. The contractor shall promptly remove all excess materials, consumables, and tools from the testing facility after completion of the work.

4. The contractor shall become familiar with the testing facility for access, possible obstructions, and staging areas before fabrication of deck panels and supporting frames.

5. Design specifications:
   A. AASHTO/LFD bridge design specifications with all provisions in effect as of October 2014.
   B. NY State steel construction manual (revision and addendums October 2013).
   D. AASHTO/AWS AWS D1.5-2015 bridge welding code.

6. Structural steel:
   1. Materials shall conform with the following, unless otherwise noted:
      A. Orthotropic deck steel ASTM A709, grade 50, zone 2 CVN toughness.
      B. Structural tubes steel ASTM A500, grade 46B.
      C. Barrier tubes steel ASTM A500, grade 46B, galvanized.
      D. Barrier posts steel ASTM A509, grade 50, galvanized.
      E. All other structural steel ASTM A509, grade 50.
      F. M.S. bolts ASTM F3125 or F3125. Type 1, galvanized.
      C. Nuts ASTM A563 washers ASTM F436, galvanized.

7. Handles and storage materials:
   1. The testing facility and contractor are responsible for the handling and storage of all construction materials, including all steel pieces supplied by the steel fabricator.
   2. All steel pieces shall be kept covered, clean, and dry while stored.
FIELD DRILLS HOLES FOR 1" DIA. H.S. BOLTS. MATCH EXISTING BOLT SPACING IN BUILT UP SUPPORT BEAM (OSL ONLY)

DECK PLATE

EXISTING BUILT UP SUPPORT BEAM (TO REMAIN)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

R=2"

R=2"

RIB

PLATE

RIB PLATE

R=2"

R=2"

R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

R=2"

R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

R=2"

R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

R=2"

R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

R=2"

R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

R=2"

R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

R=2"

R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

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DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

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SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

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DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

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R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"

PPGW + FILLET

OVERLAY (TYP)

PLATE

M24x96 (CUT)

R=1"

R=2"

R=2"

DECK PLATE

DETAIL

SIMILAR (TYP)

EDGE OF DECK PLATE

EDGE OF DECK PLATE

SECTION

SCALE: 1"=1'-0"
END DIAPHRAGM DETAIL
SCALE: 1"=1'-0"

SECTION
SCALE: 3"=1'-0"

SUPPORT BEAM TO REMAIN EXISTING BUILT-UP AS TEMPLATE

FIELD DRILL HOLE IN ANGLE FOR 1" DIA. H.S. BOLT USING EXISTING HOLES IN SUPPORT BEAM AS TEMPLATE

EXISTING CONCRETE TO BE REPLACED EXISTING CONCRETE 2'-6" (BY OTHERS)

INSTALL 6x8x1/2" (TYP)

5/8" DIAPHRAGM

FILE PLATE AS REQUIRED

EXISTING BUILT-UP SUPPORT BEAM TO REMAIN

DIAPHRAGM DETAILS - 2

SECTION
SCALE: 3"=1'-0"
1/2" STAINLESS STEEL
SHIELD PLATE

BOLT (TYP)

RAILING ANGLE

CURB PLATE

BASE PLATE

BOLT (TYP)

STEEL SHIELD PLATE

STEEL RAILING DETAILS - 2

SCALE: 1"=1'-0"

SECTION

AS NOTED
TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

PROJECT GFM–520N, WORK ORDER #14
TEST PIT DETAILS FOR PROJECT TN–49

JULY 6, 2018

THROGS NECK BRIDGE

LOCATION PLAN

KEY PLAN

PREPARED BY:
Thornton Tomasetti
40 WALL STREET, NEW YORK, NY 10005

SAMUEL SUMMERS, P.E.
PRINCIPAL - THORNTON TOMASETTI

DATE: 7-26-18
NOTE:
1. USE THESE DRAWINGS WITH "BARRIER CRASH TESTING FOR PROJECT TN-49".
2. THE SCOPE OF WORK FOR THIS PROJECT CONSISTS OF FABRICATION (BY OTHERS), ERUCTION, AND CRASH TESTING OF STRUCTURAL STEEL.
3. IF THE CONTRACTOR DAMAGES ANY EQUIPMENT OR MATERIALS, THE CONTRACTOR SHALL PROMPTLY REMOVE ALL EXCESS MATERIALS, CONSUMERABLES, AND TOOLS FROM THE TESTING FACILITY. DAMAGED MATERIALS SHALL BE REPAIRED OR REPLACED IN A MANNER SATISFACTORY TO THE TESTING FACILITY.
4. THE CONTRACTOR SHALL PROMPTLY REMOVE ALL EXCESS MATERIALS, CONSUMERABLES, AND TOOLS FROM THE TESTING FACILITY AFTER COMPLETION OF THE WORK.
5. THE CONTRACTOR SHALL PROVIDE WORK PLATFORMS AND SUPPORTS AS REQUIRED FOR THE EJCTION OF THE SUPPORT, HOISTERS AND DECK PANEL, THE COST OF ALL PLATFORMS AND SUPPORTS SHALL BE INCLUDED IN THE 950 UNIT PRICES. ALL ENGINEERING DESIGN WORK SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER CURRENTLY LICENSED IN THE STATE OF TEXAS AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

STANDARD DETAILS:
1. ALL STRUCTURAL STEEL, BOLTS, ANCHORS, AND PLATES SHALL BE FABRICATED BY THE STEEL FABRICATOR.
2. UNLESS OTHERWISE NOTED, ALL EXISTING STEEL SHALL BE REMOVED. SEE DEMOLITION DRAWINGS FOR DETAILS.

SCALE: NONE
NOTES:
1. REBAR NOT SHOWN FOR CLARITY; SEE DRAWINGS P-6 AND P-7 FOR DETAILS.

NEW CONCRETE (SEE NOTE 1)
ROADBASE

22'-6" 2'-0"

SCALE: 1"=1'-0"

EXISTING SUPPORT WALL

BUILT-UP SUPPORT GIRDER

PORTION OF EXISTING

ANCHORS (BY OTHERS)

4" DIA. EXPANSION
ANCHORS (TYP)

10"

4" EMBED (TYP)

ORTHOTROPIC DECK
(BY OTHERS)

2" ASPHALT OVERLAY

2'-0"

SCALE: 1"=1'-0"

EXISTING REINFORCED
CONCRETE SLAB

3'-9"

2" ASPHALT OVERLAY
(BY OTHERS)

STEEL RAILING AND
POST (BY OTHERS)

4" EMBED. (TYP)

FLOOR TRUSS
(BY OTHERS)

SECTION AT FLOOR TRUSS

SCALE: 1"=1'-0"

4" EMBED. (TYP)
NEW CONCRETE (SEE NOTE 1)
ROADBASE

1'-8"

ORTHOTROPIC DECK (BY OTHERS)
2" ASPHALT OVERLAY

FIELD INSTALL 1" DIA H.S. BOLT (PROVIDED BY OTHERS)
MATCH EXISTING SPACING

DETAIL B

EXISTING SUPPORT BEAM TO REMAIN

5'-10"

EXISTING SUPPORT WALL

EXISTING REINFORCED CONCRETE SLAB

ROADBASE BEHIND EXISTING WINGWALL

2" ASPHALT OVERLAY (BY OTHERS)

ORTHOTROPIC DECK (BY OTHERS)

SECTION AT END DIAPHRAGM

SCALE: 1"=1'-0"

INTERMEDIATE DIAPHRAGM SIMILAR

NOTES:
1. DRAWING NOT SHOWN FOR CLARITY, SEE DRAWINGS P-6 AND P-7 FOR DETAILS.
NOTES:
1. REBAR NOT SHOWN FOR CLARITY; SEE DRAWINGS P-6 AND P-7 FOR DETAILS.
NOTES:
1. CONCRETE SHALL BE IN ACCORDANCE WITH MINIMUM 28 DAY COMpressive STRENGTH OF F'_C = 4000 psi.  
2. REINFORCING STEEL SHALL BE EPOXY COATED AND CONFORM TO ASTM A615. GRADE 60.  
3. MINIMUM CLEAR COVER TO REINFORCING STEEL SHALL BE 2", UNLESS NOTED OTHERWISE.
REINFORCEMENT PLAN

NOTES:

1. CONCRETE SHALL BE IN ACCORDANCE WITH THE SPECIFIED MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3'000 PSI (6000 PSF).

2. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 (ASTM A615) GRADE 60.

3. MINIMUM CLEAR COVER TO REINFORCING STEEL SHALL BE 2" UNLESS NOTED OTHERWISE.
### TABLE 1 - POST INSTALLATION

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### NOTES:

1. CONCRETE SHALL BE IN ACCORDANCE WITH MINIMUM 28 DAY COMpressive STRENGTH OF 3000 psi.

2. REINFORCING STEEL SHALL BE EPOXY COATED AND CONFORM TO ASTM A615, GRADE 60.

3. MINIMUM CLEAR COVER TO REINFORCING STEEL SHALL BE 2", UNLESS NOTED OTHERWISE.
TEST PIT DEMOLITION PLAN

NOTES:
1. SECTIONS OF EXISTING SUPPORT GIRDER SHALL BE REMOVED TO FACILITATE THE INSTALLATION OF NEW FLOOR TRUSS SUPPORT. SEE DWG NO D-2 AND D-5 FOR DETAILS.
EXISTING STEEL RAILING & POST ASSEMBLY TO BE REMOVED

EXISTING 2" OVERLAY TO BE REMOVED

EXISTING REBAR TO BE REMOVED

EXISTING REINFORCED CONCRETE SLAB TO REMAIN

EXISTING WINGWALL HOLDING TO REMAIN

EXISTING SUPPORT WALL TO REMAIN

EXISTING SUPPORT BEAM TO REMAIN

EXISTING W36x302 TO BE REMOVED (TYP)

EXISTING REBAR TO BE REMOVED

EXISTING CONCRETE TO BE REMOVED

EXISTING HORIZONTAL REBAR TO BE REMOVED (TYP)

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EXISTING HORIZONTAL REBAR TO BE REMOVED
EXISTING CONCRETE TO BE REMOVED

EXISTING 2" OVERLAY TO BE REMOVED

EXISTING ORTHOTROPIC DECK TO BE REMOVED

PORTION OF EXISTING SUPPORT GIRDERS TO BE REMOVED

EXISTING SUPPORT BEAM TO REMAIN

EXISTING BUILT-UP SUPPORT GIRDERS TO REMAIN

EXISTING SUPPORT WALL TO REMAIN

EXISTING HORIZONTAL HEAR TO BE REMOVED

EXISTING VERTICAL HEAR TO REMAIN

EXISTING BUILT-UP SUPPORT BEAM TO REMAIN

EXISTING REBAR TO REMAIN

EXISTING VERTICAL REBAR TO REMAIN

EXISTING HORIZONTAL REBAR TO REMAIN

EXISTING REINFORCED CONCRETE TO REMAIN

EXISTING REBAR TO BE REMOVED

EXISTING VERTICAL REBAR TO BE REMOVED

EXISTING HORIZONTAL REBAR TO BE REMOVED

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