

REHABILITATION STUDY REPORT

State Project No. 63-703
Bridge No. 02555 in Hartford
Interstate 91 over Clark Dike Service Road

Prepared For:
State of Connecticut
Department of Transportation
Newington, Connecticut

Submitted: February 2016



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Approved Repair Code

Recommended Primary Repair Code

EXECUTIVE SUMMARY

Scope of Rehabilitation Work

Based upon the inspection and evaluation of Bridge No. 02555, we recommend Alternate 1 consisting of the following:

- Modifying east embankment slope.
- Patching the existing culvert and wingwalls.

Reasons for the recommended rehabilitation work:

- The Interstate 91/84 Interchange and Charter Oak Bridge Project requires widening of the northbound roadway above.
- The existing structure has deterioration that will be addressed and repaired to extend the service life of the bridge.

Maintenance and Protection of Traffic

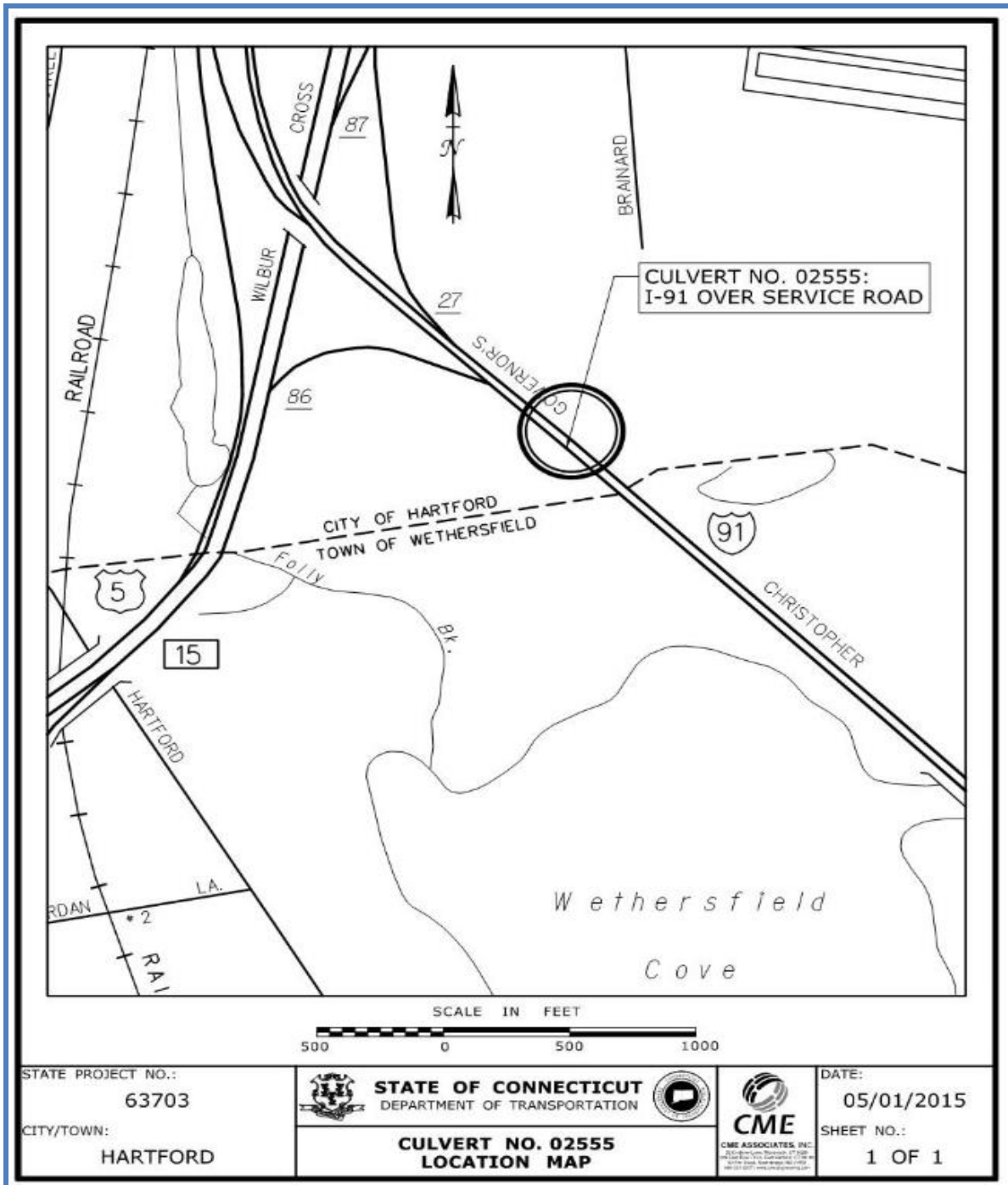
Maintenance and Protection of Traffic on I-91 for the rehabilitation required at this location will be part of a project-wide traffic staging and control plan. The work outlined in this report will be performed when the I-91 NB corridor is widened and the duration of the traffic staging will take into account the selected rehabilitation.

Clark Dike Service Road will be closed for the duration of rehabilitation at this site. Provisions for periodic passage of service vehicles can be accommodated.

Notable Facts

| | |
|------------------------------|--|
| Estimated Construction Cost: | \$ 386,000 |
| ROW Involvement: | None Anticipated |
| Utilities Impacted: | Potentially - 42" R.C.P sewer pipe 8" water main (2) 3" Iron Conduits for Frontier Communications (3) 4" Iron Conduits for Eversource |
| Potential Design Exceptions: | Vertical Clearance of 12'-4" Substandard Lateral Clearance |
| Sufficiency Rating: | 73.2% (Per 2013 ConnDOT Inspection Report) |
| Load Rating after Repairs: | HS-20 |
| Estimated 2013 ADT: | 128,400 |

LOCATION MAP



INTRODUCTION

CME Associates, Inc. has been retained by the Connecticut Department of Transportation (ConnDOT) to perform the rehabilitation evaluation for this bridge as part of State Project No. 63-703. Field inspections were conducted during April 2015.

This report describes the findings of the comprehensive inspection of this bridge and presents our recommendations for rehabilitation to ensure its structural and functional adequacy, as well as extend its service life.

DESCRIPTION

General

The Interstate 91/84 Interchange and Charter Oak Bridge Project includes widening Interstate 91 northbound south of the Charter Oak Bridge. This widening impacts eight structures, including culverts and bridges. The roadway above Bridge No. 02555 will be widened approximately 2'-5" to accommodate widening of I-91 northbound.

Bridge No. 02555 is an approximately 217' long reinforced concrete box culvert that carries Clark Dike Service Road and utilities under Interstate 91 in the City of Hartford to the Metropolitan District Hartford Water Pollution Control Facility. Clark Dike Service Road is within the Rights-of-Way of the City of Hartford Public Works west of I-91 and The Metropolitan District east of I-91 Right. The bridge was originally constructed in 1964 and consists of a 14' x 21'-6" culvert with a 14' x 14' clear opening below approximately 16' of fill. There are reinforced concrete headwalls and wingwalls at both sides of the culvert. The concrete box culvert is supported on spread footings.

On Interstate 91 there are metal beam rails along the right shoulders with a reinforced concrete median barrier between bounds. Interstate 91 was rehabilitated in 1992. The rehabilitation work included removing median metal beam rail, installing a new concrete median barrier, and replacing metal beam rails along right shoulders on the northbound and southbound roadways. The roadway above the bridge has a minimum curb-to-curb width of 67' for I-91 northbound and 67' for I-91 southbound.

Highway Geometrics

The Bridge No. 02555 passes under Interstate 91 with no skew angle. The bridge is located within a horizontal tangent, I-91 northbound is located within a +1.000% vertical tangent, and I-91 southbound is located within a +1.148% vertical tangent. The roadway has a varying cross slope in the lanes and 1/2" per foot cross slope in the shoulders. The roadway profiles are labeled in the direction of station numbering, south to north.

Interstate 91 Northbound and Southbound

Interstate 91 is classified as an Urban Principal Arterial-Interstate according to the functional classification maps but in Connecticut, all interstates are considered Freeways, despite their functional classification. The bridge is on the National Highway System (NHS) and is part of the Strategic Highway Network (STRAHNET). Interstate 91 northbound has a posted speed limit of 55 mph approximately 0.2 miles before and approximately 0.2 miles after the bridge. Interstate 91 Southbound has a posted speed limit of 55 mph approximately 0.8 miles before and approximately 0.2 miles after the bridge. The design speed for an Urban Freeway in a built-up area ranges from 50-55 mph, according to the ConnDOT Highway Design Manual.

The curb-to-curb roadway width over the culvert is 67' in the northbound and southbound directions, which is consistent with the approach roadway widths. Based on the Federal Highway Administration (FHWA) Coding Manual, the minimum curb-to-curb width for four lanes of traffic to avoid functional obsolescence is 56' in the northbound direction and 56' for four lanes of traffic in the southbound direction. Current ConnDOT Multi-Lane Principal Urban Arterial-Interstate design criteria specify a minimum paved width of 54', comprised of 12' lanes with 2' to 4' left shoulder and 4' to 8' right shoulder. Again Connecticut considers all interstates as Freeways, despite their functional classification. Accordingly, current ConnDOT Urban Freeway design criteria (where truck volumes exceed 250 DDHV) specifies a minimum northbound paved width of 72' and a minimum southbound paved width of 72', comprised of 12' lanes with 12' left and right shoulders; therefore, the curb-to-curb width for northbound and southbound meets the FHWA Coding Manual criteria, and ConnDOT Urban Principal Arterial-Interstate design standards, but does not meet ConnDOT Urban Freeway design standards.

Clark Dike Service Road

The roadway under Bridge No. 02555 is a service road providing access to the MDC Hartford Water Pollution Control Facility. According to FHWA, an under passing roadway not on a Federal-aid system is assumed to be a major or minor collector or a local road for considering functional obsolescence due to vertical and horizontal clearances.

The minimum vertical underclearance, 12'-4" at Joint No. 10, is less than the current ConnDOT design criteria of 14'-3" for existing bridges. Based on FHWA Coding Manual, the minimum vertical clearance to avoid functional obsolescence is 14'-0". Therefore the vertical clearance does not meet FHWA Coding Manual criteria or ConnDOT design standards.

The total lateral underclearance is 14'. Based on FHWA Coding Manual, the minimum lateral clearance to avoid functional obsolescence is 8' from the shoulder line to culvert wall. In order to obtain minimum lateral clearances, it would need a 16' plus roadway width. Therefore the lateral clearance does not meet FHWA Coding Manual criteria.

Based on the current NBIS appraisal rating for structure evaluation is a "6", and vertical and horizontal underclearance is a "3", the bridge is considered functionally obsolete.

Traffic

According to the most recent inspection report dated June 11, 2014, the estimated 2013 Average Daily Traffic (ADT) on the bridge is approximately 128,400 vehicles with 9% truck traffic.

FIELD OBSERVATIONS

The NBIS condition rating for Item 62, culvert was found to be in satisfactory condition (rating = 6); therefore, the bridge is not considered structurally deficient.

Pavement

In the travel lanes there is 5.5" of bituminous concrete, 9" of reinforced concrete pavement, and 6" of subbase. In the right shoulders there is 5.5" of bituminous concrete with 6.5" of processed aggregate base and in the left shoulders there is 12" bituminous concrete with 10" of processed aggregate. There is a precast concrete median barrier between northbound and southbound.

The bituminous concrete pavement is in very good condition (rating = 8) with isolated transverse cracks.

Culvert

The culvert is a 14' x 21'-6" reinforced concrete box culvert below approximately 16' of fill. The culvert is approximately 217' long with a 1'-6" thick top slab, 1'-8" thick walls, and a 2' thick bottom slab. The 23' long wingwalls are supported by a 2'-6" thick slab along with the first section of the culvert at inlet and outlet, approximately 9'.

The concrete is in satisfactory condition (rating = 6) and exhibits the following conditions:

- Light honey combing throughout.
- Missing joint filler between panels up to full height.
- Gaps up to 3/4" wide between panels.
- A few popouts up to 6" diameter and potential spalls from shallow rebar in the walls.
- A few isolated spalls with exposed rusted rebar up to 6' high x 6" wide x 3" deep with adjacent hollow areas.
- Exposed rebar typically exhibiting laminar rust with minor section loss.
- Scrapes, map cracking, bleeding through of the deck chairs, and between some units there is misalignment up to 3-3/4" at the roof.

The reinforced concrete headwalls are in good condition (rating = 7) and the east headwall shows areas of light to medium scale with a shallow exposed rebar at the north end.

The vertical retaining wall is in good condition (rating = 7) and exhibits vertical cracks and potential spalls.

Approaches

There is a Type R-I metal beam rail along I-91 northbound and southbound right shoulders.

The metal beam approach guiderail is in good condition (rating = 7) and exhibits, weak posts, minor scrapes, and a dented rail at the northeast trailing end.

The approach pavement and approach embankment are in very good condition (rating = 8). The approach pavement exhibits no deterioration and the embankment exhibits heavy vegetation growth.

Drainage

There are basins north of the structure along the curb lines which drain northwest of the structure.

Utilities

The following utilities are located in the culvert below Clark Dike Service Road:

- 42" R.C.P sewer pipe
- 8" water main
- (2) 3" Iron Conduits for Frontier Communications
- (3) 4" Iron Conduits for Eversource

There is also a buried fiber optics cable along the west embankment.

There are four drainage basins on I-91 just north of the bridge, one in each shoulder. There is also a light pole on I-91 to the north of the culvert on the southbound fascia.

There are high voltage aerial power lines that cross I-91 approximately 150' north of the bridge with transmission towers east and west of the culvert.

Property

Considering the width of the existing right-of-way, approximately 480' east from center of I-91, takings or easements are not anticipated. Noise impacts to commercial and private property owners in the immediate vicinity surrounding the bridge are anticipated to be minimal and the noise level is not anticipated to exceed ambient noise generated by current highway traffic.

Cultural Resources

Developed commercial areas are present to the north of the bridge. Brainard Airport is approximately 0.5 miles to the northeast. To the west approximately 0.3 miles, the Providence & Worcester Railroad provides freight service to the Wethersfield Secondary.

Environmental Resources

The Connecticut River is located approximately 0.6 miles east of the bridge with access at Charter Oak Landing approximately 1.7 miles to the north. Wethersfield Cove is approximately 0.2 miles to the south.

LOAD RATING

The existing bridge is not posted for live load restriction. No independent load rating analyses were performed. In addition, ConnDOT's latest inspection report dated June 11, 2014 denotes that no rating analysis was performed; however, the report lists values for Item 64, Operating Rating and Item 66 Inventory rating as follows:

- Inventory Rating 36.0 Tons
- Operating Rating 99.0 Tons

Additionally, Items 63 and 65 in the latest inspect report denote that no rating analysis was performed. The load rating may be based on judgment since the existing culvert structure is below approximately 16' of fill resulting in minimal contribution from live load effects.

SEISMIC CONSIDERATIONS

According to AASHTO LRFD Bridge Design Specifications in Section 3.10 Earthquake Effects, seismic effects for buried structures need not be considered, except where they cross active faults. Connecticut does not cross any active fault lines; however, AASHTO states that the potential for soil liquefaction and slope movements shall be considered for these structures.

REHABILITATION ALTERNATES

Based on field inspections, engineering analysis, and a review of ConnDOT's Bridge Inspection Reports, Bridge No. 02555 was found to be functionally obsolete. Obsolescence is a result of inadequate vertical and horizontal clearance. CME has evaluated two possible rehabilitation options to ensure its structural adequacy, extend its service life, and accommodate I-91 northbound widening as part of the I-91 corridor project.

Cost Considerations

Appendix B contains an itemized cost estimate for all of the alternatives. The table below provides a summary of the total costs.

| Rehabilitation Alternates | Cost of Bridge Only | Additional Costs | Rounded Total Costs |
|---|----------------------------|-------------------------|----------------------------|
| 1 – Steepen Slope, Structure Repairs | \$ 223,000 | \$ 163,000 | \$ 386,000 |
| 2 – Remove Existing Headwall, Construct New Headwall, and Structure Repairs | \$ 390,000 | \$ 295,000 | \$ 685,000 |

| Additional Costs – Breakdown | Alternate 1 | Alternate 2 |
|--|--------------------|--------------------|
| Clearing and Grubbing | \$ 3,700 | \$6,500 |
| Maintenance and Protection of Traffic | \$ 1,300 | \$ 2,200 |
| Mobilization | \$ 18,400 | \$ 32,200 |
| Construction Staking | \$ 2,500 | \$ 4,300 |
| Minor Items | \$ 22,300 | \$ 39,000 |
| Incidentals and Contingencies | \$ 81,500 | \$ 142,400 |
| Non-Contract Items | \$ 0 | \$ 10,000 |
| Escalation to Year of Construction | \$ 32,800 | \$ 58,200 |
| Rounded Total Additional Costs: | \$ 163,000 | \$ 295,000 |

Alternate 1 – Steepen Embankment Slope

This alternative consists of modifying the east embankment slope due to widening of the roadway while maintaining a slope between 1.5 to 1 and the existing slope of 2 to 1. It also includes patching the existing culvert and wingwalls. These structural repairs are estimated to extend the service life of Bridge No. 02555 approximately 25 years at which time the culvert will likely need rehabilitation.

| Advantages Alternate 1 | Disadvantages Alternate 1 |
|-------------------------------------|---|
| + Less added fill than Alternate 2 | – A slope of 2 to 1 cannot be achieved, however at slope between 1.5 to 1 and existing 2 to 1 can using modified rock fill or similar type of slope protection. |
| + Cost is less than Alternate 2 | – Compressive soils at utilities should be checked with added fill on culvert |
| + No culvert modifications required | |

Alternate 2 – Add Headwall

This alternative consists of removing the existing stub headwall, constructing a new taller and wider headwall to retain the additional soil that results from widening the roadway and maintaining a 2 to 1 slope, and patching the existing culvert and wingwalls. The headwall will extend beyond the limits of the existing structure supported on spread footings. These structural repairs are estimated to extend the service life of Bridge No. 02555 approximately 25 years at which time the culvert will likely need rehabilitation.

| Advantages Alternate 2 | Disadvantages Alternate 2 |
|--|--|
| + A 2 to 1 slope can be achieved and no slope protection is required | – Temporary Earth Retaining System may be necessary to retain the existing embankment and allow construction of the headwall and spread footings outside the limits of the existing culvert. |
| + | – Cost is more than Alternate 1 |
| | – More fill added than Alternate 1 |
| | – Compressive soils at utilities should be checked with added fill on culvert |
| | – Retaining wall would have to extend beyond the culvert to maintain soil behind existing wingwall |

RECOMMENDATIONS FOR REHABILITATION

Based on work performed to date and the observations in the field, we recommend Alternate 1 as the preferred alternative for the rehabilitation of Bridge No. 02555. It is the lowest cost alternate and addresses the scope of widening I-91 NB and repairs the deterioration of the existing structure without impacting the utilities below Clark Dike Service Road.

UTILITY IMPACTS

The following utilities are located in the culvert below Clark Dike Service Road may be effected by the compressive soils added on the culvert:

- 42” R.C.P sewer pipe
- 8” water main
- (2) 3” Iron Conduits for Frontier Communications
- (3) 4” Iron Conduits for Eversource

One of the four drainage basins on I-91 will need relocation due to widening.

SUBSTANDARD FEATURES AND POTENTIAL EXCEPTIONS

Based on a review of the controlling design criteria identified in the Connecticut Department of Transportation Highway Design Manual for a 4R freeway project, a design exception will be required for the following:

Bridge No. 02555
Location: Hartford, CT
February 8, 2016

- Vertical Clearance of 12'-4"
- Substandard Lateral Clearance

APPENDICES

- Appendix A – Photographs
- Appendix B – Cost Comparisons
- Appendix C – Existing Bridge Plans
- Appendix D – Proposed Bridge Plans
- Appendix E – Substructure Deterioration Quantities
- Appendix F – ConnDOT Inspection and Maintenance Reports



Appendix A: Photographs





East Elevation of Bridge No. 02555



West Elevation of Bridge No. 02555



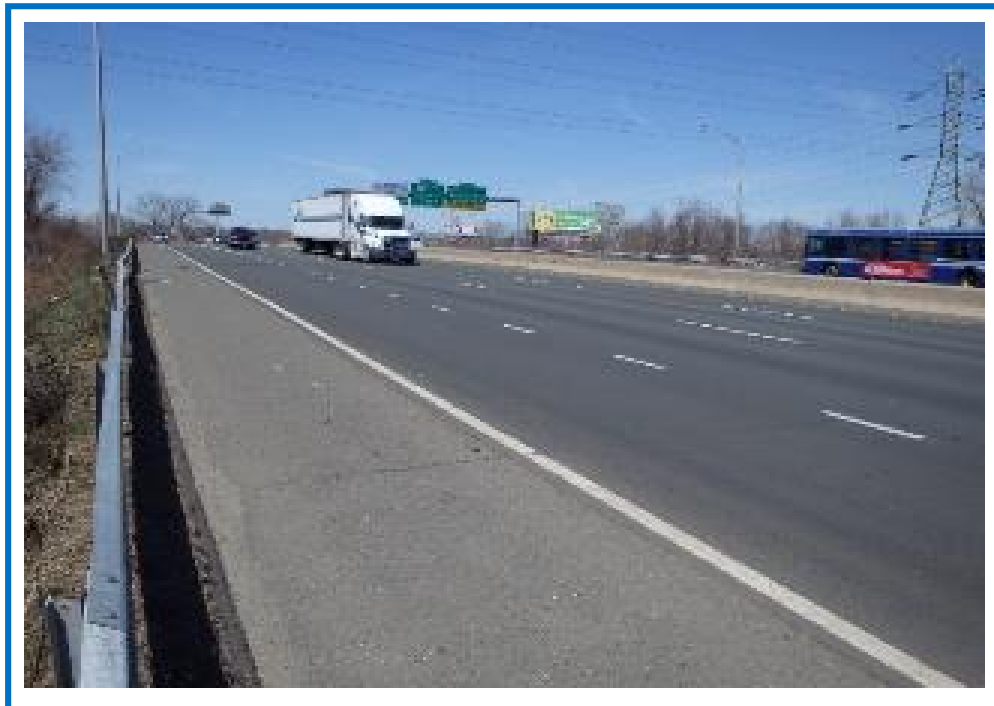
Looking East from Bridge (Note: Water and sewer manholes in roadway)



Bridge from South Approach (Note: Interstate 91 Northbound)



Looking East from Bridge (Note: Water and sewer manholes in roadway)



Bridge from South Approach (Note: Interstate 91 Southbound)





Looking West from Bridge



Typical Overlay Condition (Note: New pavement in lanes)



Catch Basin at NW Corner



Southeast Wingwall



Northeast Wingwall



Northeast Wingwall (Note: Area of erosion behind)



Southeast Wingwall (Note: Area of erosion behind)



Northwest Wingwall



Southwest Wingwall



Inside Frame Looking East from West End



Panel 1 Southwall (Note: Spall with exposed reinforcement)



Panels 1 thru 4 North Wall





Joint at Roof Panels 1 & 2 (Note: Misalignment typical in first and last four spans)



Panel 6 South Wall



Typical Vertical Joint with Gap
(Note: Joint between panels 6 and 7 south wall shown)



Panel 8 at Joint 8 South Wall
(Note: Spalls and gap in joint)



Panel 9 North Wall at Joint 8 with Spall and Exposed Reinforcement



Vertical Misalignment between Panels 10 & 11 up to 3”



Service Cabinet at Northeast Corner



East Roadway Leading up to Bridge (Note: Drainage structure and aerial electrical feed for billboard)



High Tension Wires over Roadway Just North of Bridge



Drainage Channel East of Bridge Looking South



Drainage Channel East of Bridge Looking North



Drainage Structure to East of Bridge



Drainage Structure Channel Looking West from Bridge



Wetlands Southeast of Bridge



Appendix B: Cost Comparisons





| | | | |
|--------------------------------------|------------------|--------------------------------|---------|
| COMPUTATION BY JLS | DATE 11/12/15 | SHEET 1 | OF 1 |
| CHECKED BY TEG | DATE 11/13/15 | CME PROJECT NO. | |
| CLIENT Charter Oak Bridge Project | | CLIENT PROJECT NO. 063-0703 | |

ITEM
Bridge # 02555 Alternate 1 - Steepen Embankment Slope

Alternate 1: Steepen Embankment Slope

1. Steepen Slope of Northbound Embankment
2. Patch the existing culvert and wingwalls

STRUCTURE ITEMS

| <u>ITEM NO.</u> | <u>ITEM DESCRIPTION</u> | <u>UNIT</u> | <u>QUANTITY</u> | <u>UNIT PRICE</u> | <u>TOTAL</u> |
|------------------|------------------------------------|-------------|-----------------|-------------------|--------------|
| 0213100 | GRANULAR FILL | CY | 30 | \$33.20 | \$1,000 |
| 0520907 | REPLACE JOINT SEAL | LF | 310 | \$52.40 | \$17,000 |
| 0601070 | CLASS "S" CONCRETE | CY | 20 | \$9,546.20 | \$191,000 |
| 0602000 | DEFORMED STEEL BARS | LB | 2,400 | \$1.20 | \$3,000 |
| 0728001 | CRUSHED STONE FOR SLOPE PROTECTION | TON | 56 | \$58.20 | \$4,000 |
| 0913014 | 5' CHAIN LINK FENCE (BRIDGE) | LF | 70 | \$95.00 | \$7,000 |
| STRUCTURE TOTAL: | | | | | \$223,000 |

STRUCTURE PLUS ROADWAY SUBTOTAL 1: \$223,000

MINOR ITEMS

| | <u>UNIT</u> | <u>QUANTITY</u> | <u>UNIT PRICE</u> | <u>TOTAL</u> |
|---------------------------------|-------------|-----------------|-------------------|--------------|
| Minor Items (10% of Subtotal 1) | LS | 1 | \$22,300.00 | \$22,300 |
| SUBTOTAL 2 | | | | \$22,300 |

LUMP SUM ITEMS

| | <u>UNIT</u> | <u>QUANTITY</u> | <u>UNIT PRICE</u> | <u>TOTAL</u> |
|---|-------------|-----------------|-------------------|--------------|
| Clearing & Grubbing (1.5% of Subtotal 1 and 2) | LS | 1 | \$3,679.50 | \$3,700 |
| M & P of Traffic (0.5% of Subtotal 1 and 2) | LS | 1 | \$1,226.50 | \$1,300 |
| Mobilization (7.5% of Subtotal 1 and 2) | LS | 1 | \$18,397.50 | \$18,400 |
| Construction Staking (1.0% of Subtotal 1 and 2) | LS | 1 | \$2,453.00 | \$2,500 |
| SUBTOTAL 3 | | | | \$25,900 |

ENGINEERING PERCENTAGES

| | <u>TOTAL</u> | |
|---|--------------------------|----------|
| Incidentals (10% of Subtotal 1, 2, and 3) | 10% INCIDENTALS \$27,200 | |
| Contingency (20% of Subtotal 1, 2, and 3) | 20% CONTINGENCY \$54,300 | |
| SUBTOTAL 4 | | \$81,500 |

ESCALATION TO YEAR OF CONSTRUCTION

| | | |
|-------------------------|------------|----------|
| Say 3% per Year to 2018 | SUBTOTAL 5 | \$32,800 |
|-------------------------|------------|----------|

TOTAL \$385,500

| | |
|--------------------|------------------|
| GRAND TOTAL | \$386,000 |
|--------------------|------------------|



| | | | |
|--------------------------------------|------------------|--------------------------------|---------|
| COMPUTATION BY JLS | DATE 11/12/15 | SHEET 1 | OF 1 |
| CHECKED BY TEG | DATE 11/13/15 | CME PROJECT NO. | |
| CLIENT Charter Oak Bridge Project | | CLIENT PROJECT NO. 063-0703 | |

ITEM
Bridge # 02555 Alternate 2 - Add Headwall

Alternate 2: Add Headwall

1. Drive temporary sheet piling
2. Remove current stub headwall
3. Construct new headwall
4. Fill with pervious structure backfill
5. Patch the existing culvert and wingwalls

STRUCTURE ITEMS

| <u>ITEM NO.</u> | <u>ITEM DESCRIPTION</u> | <u>UNIT</u> | <u>QUANTITY</u> | <u>UNIT PRICE</u> | <u>TOTAL</u> |
|------------------|---|-------------|-----------------|-------------------|--------------|
| 0203000 | STRUCTURE EXCAVATION - EARTH (COMPLETE) | CY | 790 | \$23.40 | \$19,000 |
| 0213000 | GRAVEL FILL | CY | 20 | \$45.00 | \$1,000 |
| 0216000 | PERVIOUS STRUCTURE BACKFILL | CY | 390 | \$45.80 | \$18,000 |
| 0520907 | REPLACE JOINT SEAL | LF | 310 | \$52.40 | \$17,000 |
| 0601000 | CLASS "A" CONCRETE | CY | 150 | \$546.20 | \$82,000 |
| 0601070 | CLASS "S" CONCRETE | CY | 20 | \$9,546.20 | \$191,000 |
| 0602000 | DEFORMED STEEL BARS | LB | 20,400 | \$1.20 | \$25,000 |
| 0714020 | TEMPORARY SHEET PILING | SF | 4,600 | \$6.20 | \$29,000 |
| 0913014 | 5' CHAIN LINK FENCE (BRIDGE) | LF | 60 | \$95.00 | \$6,000 |
| 0974001 | REMOVAL OF EXISTING MASONRY | CY | 5 | \$238.20 | \$2,000 |
| STRUCTURE TOTAL: | | | | | \$390,000 |

STRUCTURE PLUS ROADWAY SUBTOTAL 1: \$390,000

MINOR ITEMS

| | <u>UNIT</u> | <u>QUANTITY</u> | <u>UNIT PRICE</u> | <u>TOTAL</u> |
|---------------------------------|-------------|-----------------|-------------------|--------------|
| Minor Items (10% of Subtotal 1) | LS | 1 | \$39,000.00 | \$39,000 |
| SUBTOTAL 2 | | | | \$39,000 |

LUMP SUM ITEMS

| | <u>UNIT</u> | <u>QUANTITY</u> | <u>UNIT PRICE</u> | <u>TOTAL</u> |
|--|-------------|-----------------|-------------------|--------------|
| Clearing & Grubbing (1.5% of Subtotal 1 and 2) | LS | 1 | \$6,435.00 | \$6,500 |
| M & P of Traffic (Service Road) (0.5% of Subtotal 1 and 2) | LS | 1 | \$2,145.00 | \$2,200 |
| Mobilization (7.5% of Subtotal 1 and 2) | LS | 1 | \$32,175.00 | \$32,200 |
| Construction Staking (1% of Subtotal 1 and 2) | LS | 1 | \$4,290.00 | \$4,300 |
| SUBTOTAL 3 | | | | \$45,200 |

ENGINEERING PERCENTAGES

| | <u>TOTAL</u> | |
|---|--------------------------|-----------|
| Incidentals (10% of Subtotal 1, 2, and 3) | 10% INCIDENTALS \$47,500 | |
| Contingency (20% of Subtotal 1, 2, and 3) | 20% CONTINGENCY \$94,900 | |
| SUBTOTAL 4 | | \$142,400 |

NON-CONTRACT ITEMS

| | <u>UNIT</u> | <u>QUANTITY</u> | <u>UNIT PRICE</u> | <u>TOTAL</u> |
|--------------------|-------------|-----------------|-------------------|--------------|
| Utility Relocation | LS | 1 | \$10,000.00 | \$10,000 |
| SUBTOTAL 5 | | | | \$10,000 |

ESCALATION TO YEAR OF CONSTRUCTION

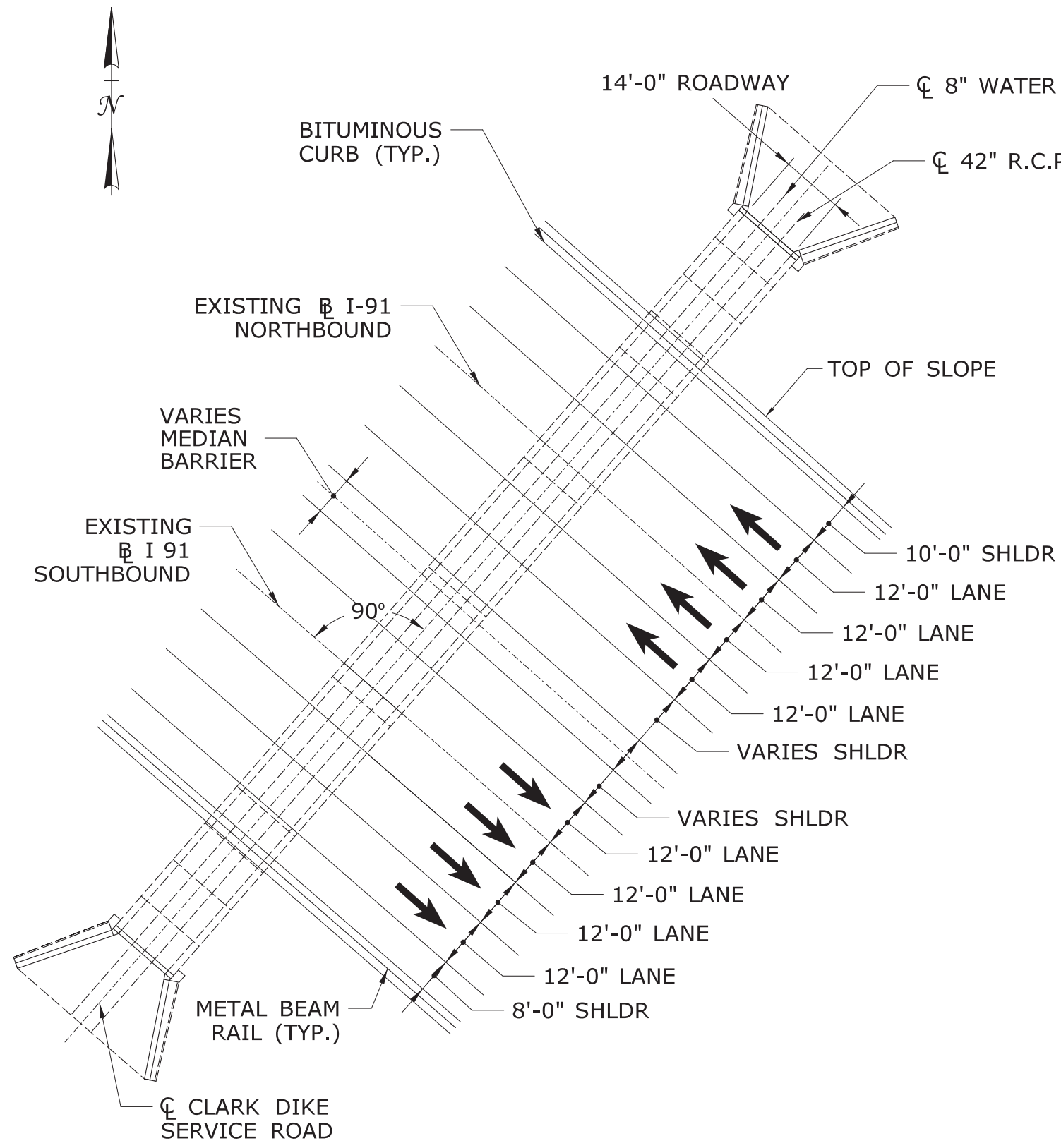
| | | | | | |
|-------------------------|--|--|--|------------|----------|
| Say 3% per Year to 2018 | | | | SUBTOTAL 6 | \$58,200 |
|-------------------------|--|--|--|------------|----------|

TOTAL \$684,800

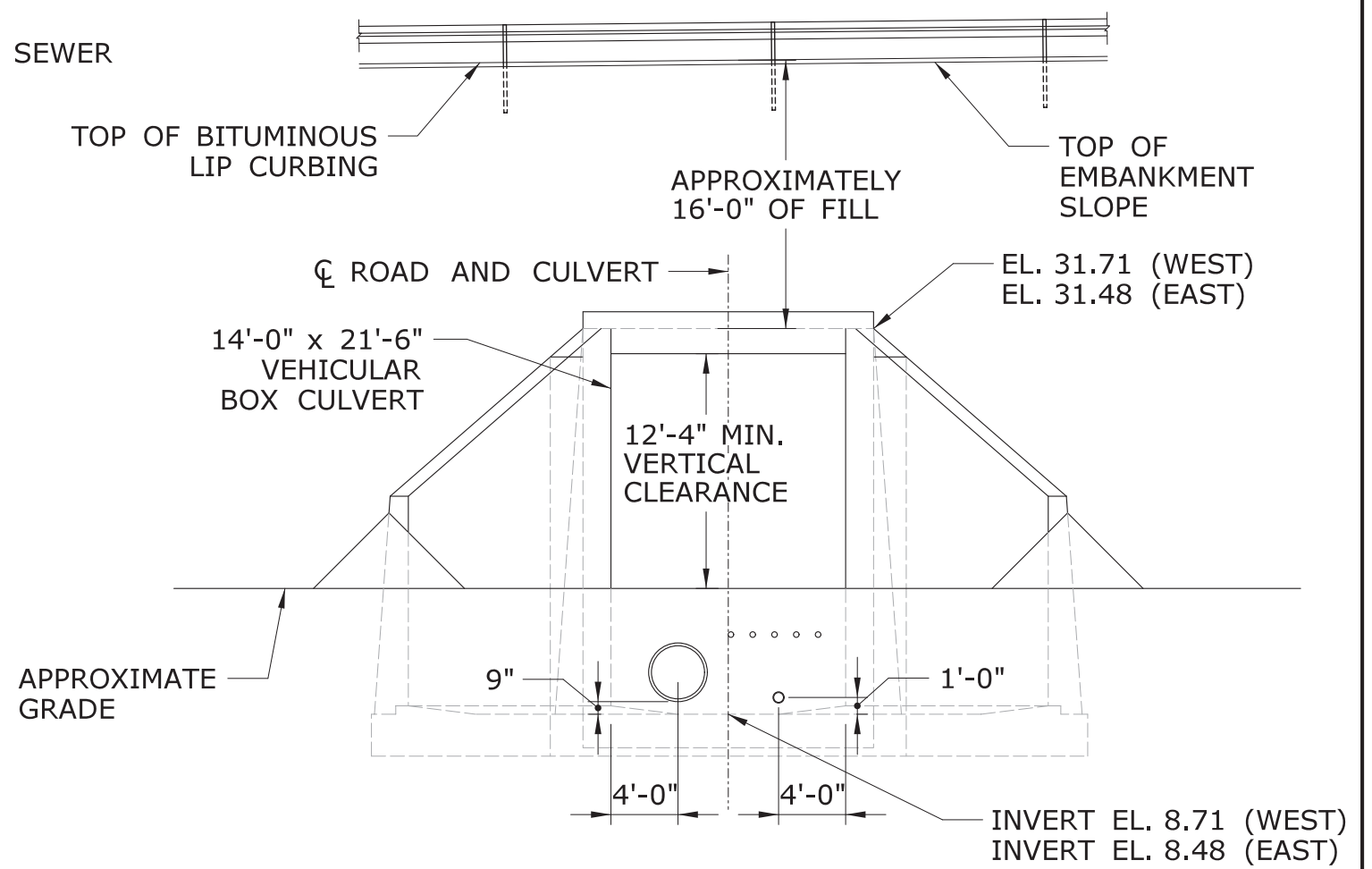
| | |
|--------------------|------------------|
| GRAND TOTAL | \$685,000 |
|--------------------|------------------|

Appendix C: Existing Bridge Plans



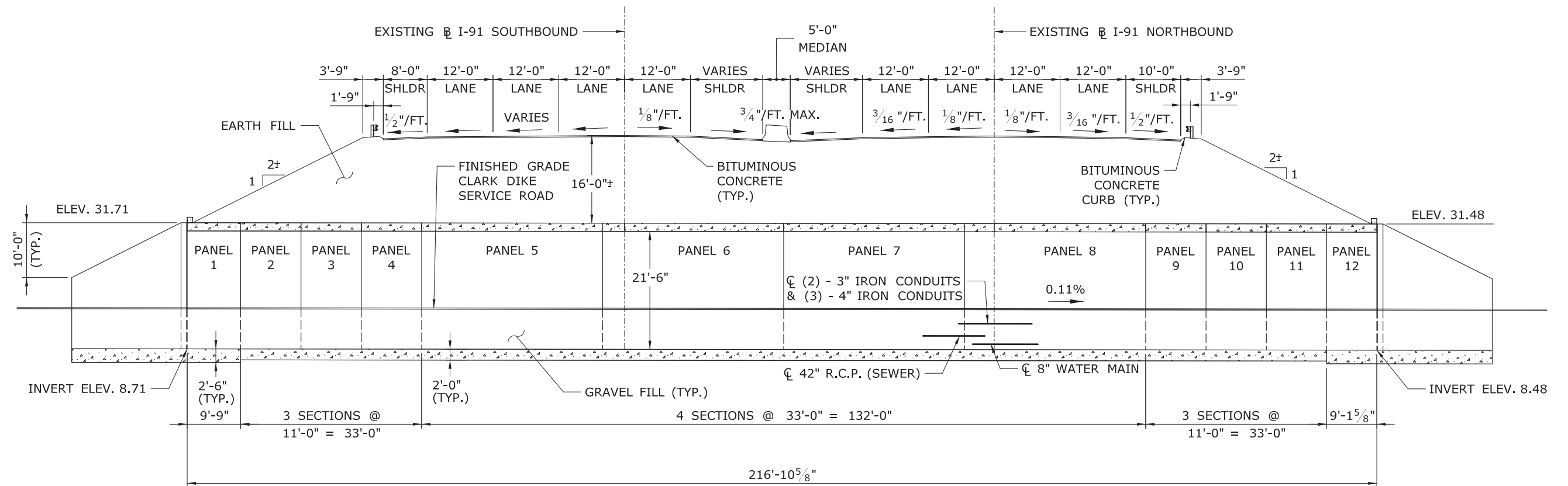


EXISTING PLAN
SCALE: 1" = 30'





EXISTING EAST ELEVATION
(LOOKING WEST)
SCALE: 1" = 10'

| | | | | | |
|-----------------|---|--|--|-------------------|------------------------------------|
| | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION | | | DRAWING TITLE: | STATE PROJECT NO.: |
| | CITY/TOWN: HARTFORD | | | BRIDGE NO.: 02555 | EXISTING PLAN AND ELEVATION |
| SCALE: AS NOTED | | <small>CME ASSOCIATES, INC. 32 Cranford Lane, Woodstock, CT 06091 50 Elm Street, South Kingfield, MA 01550 860-261-0221 www.cmeinc.com</small> | | DATE: | SHEET NO.: |
| | | | | 12/09/2015 | 1 OF 2 |

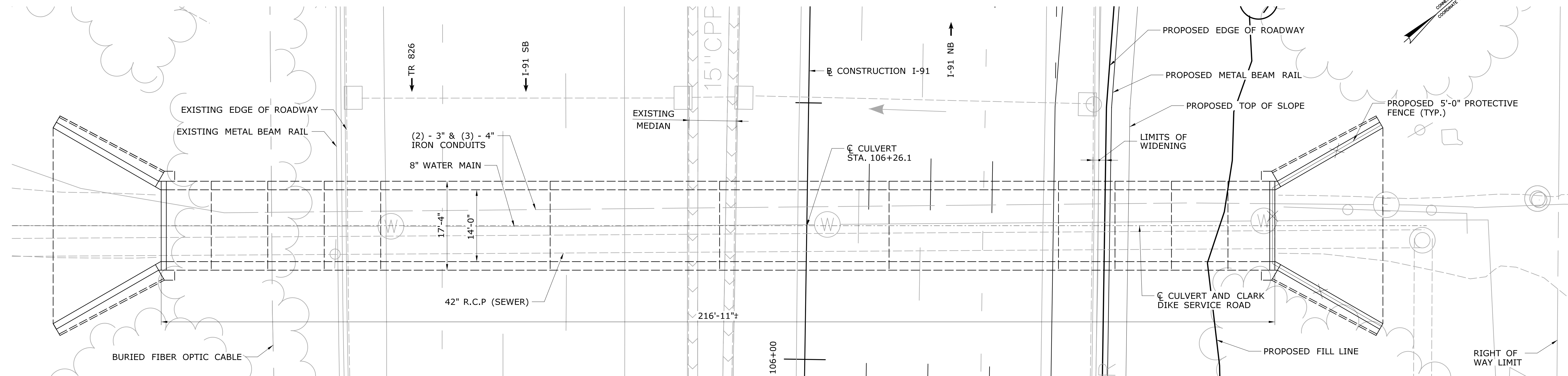


EXISTING SECTION
 (LOOKING NORTH)
 SCALE: 1" = 20'

| | | | | | | |
|------------|--|--|--------------------------------------|--|--------------------|------------|
| |  STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION |  CME <small>CME ASSOCIATES, INC. 32 Cranford Lane, Woodstock, CT 06091 80 Elm Street, South Kingfield, MA 01550 888-261-2021 www.cmeinc.com</small> | DRAWING TITLE: | | STATE PROJECT NO.: | |
| | | | EXISTING LONGITUDINAL SECTION | | 63703 | |
| | | | | | DATE: | 12/09/2015 |
| CITY/TOWN: | BRIDGE NO.: | SCALE: | SHEET NO.: | | | |
| HARTFORD | 02555 | 1" = 20' | 2 OF 2 | | | |

Appendix D: Proposed Bridge Plans



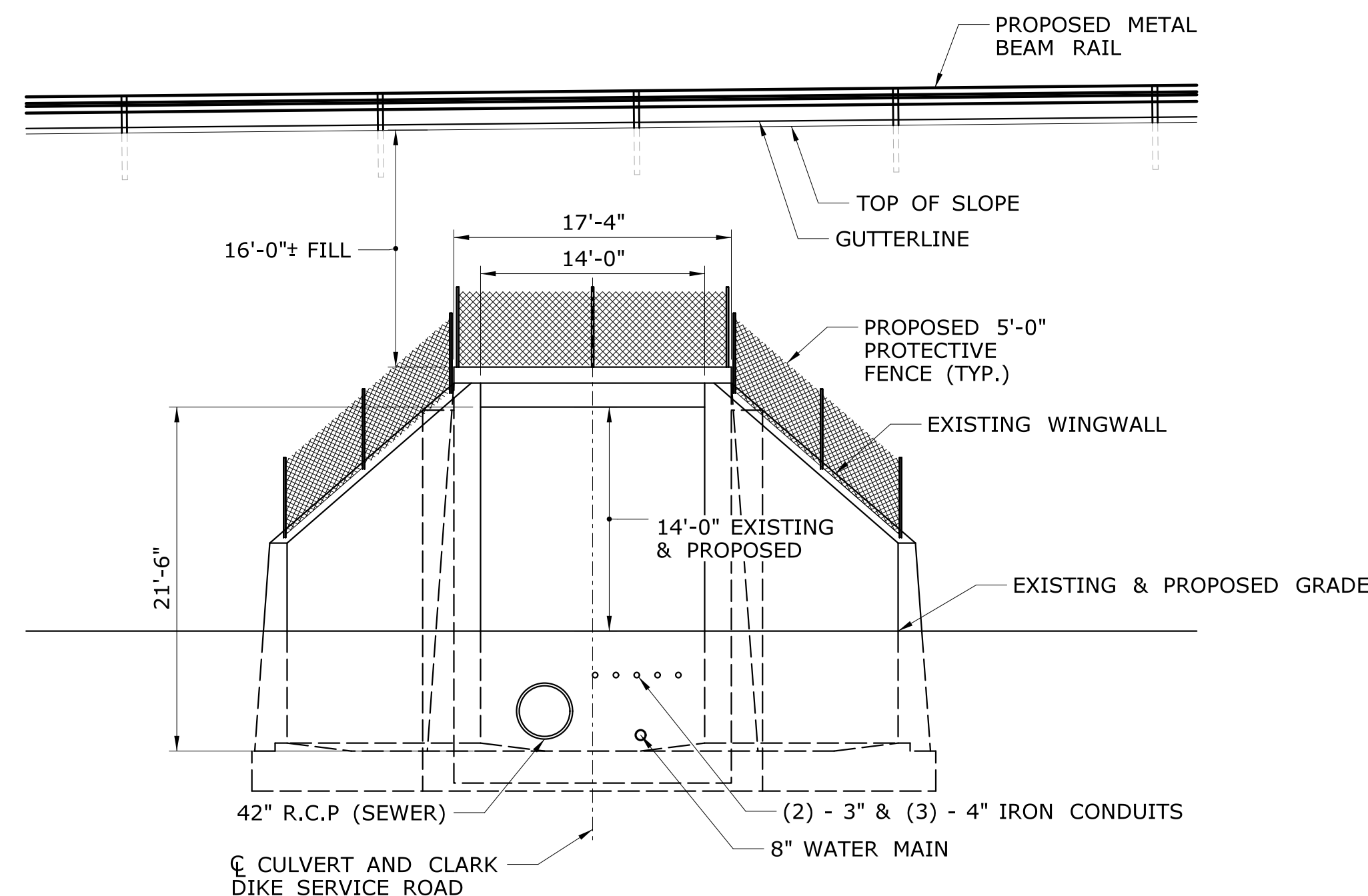


GENERAL PLAN
SCALE: 1" = 10'-0"

SCOPE OF WORK

IMPROVEMENTS TO BRIDGE NO. 02555 INCLUDE THE FOLLOWING:

1. PATCH CULVERT AND WINGWALLS
2. MODIFY EAST EMBANKMENT SLOPE DUE TO WIDENING EXISTING ROADWAY

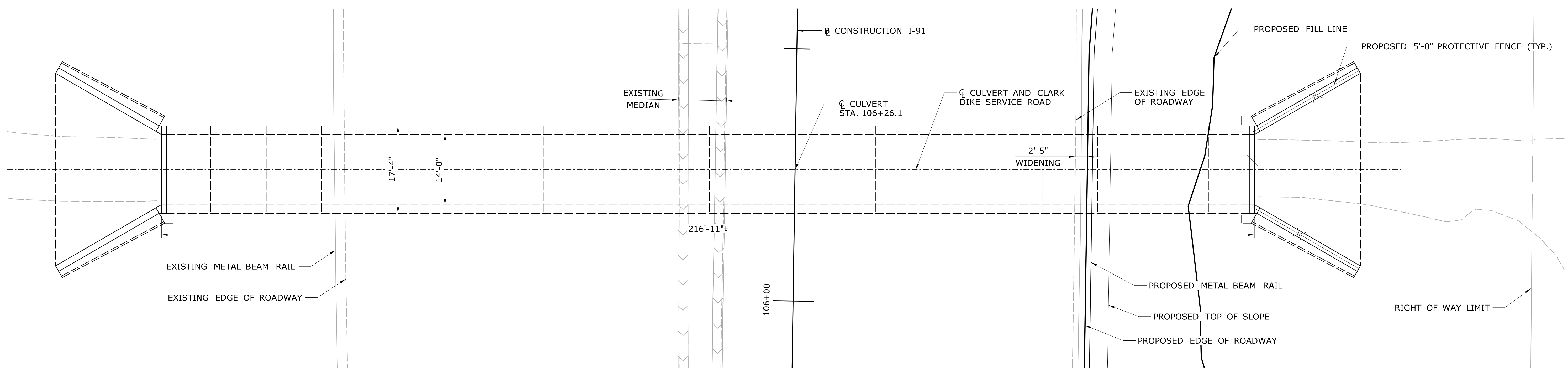
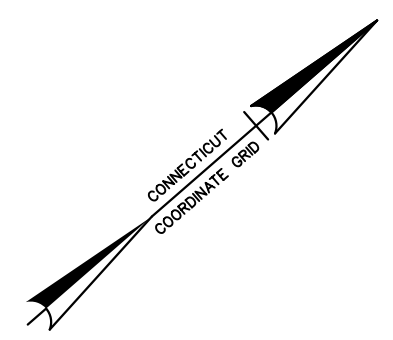


EAST ELEVATION
SCALE: 1/8" = 1'-0"

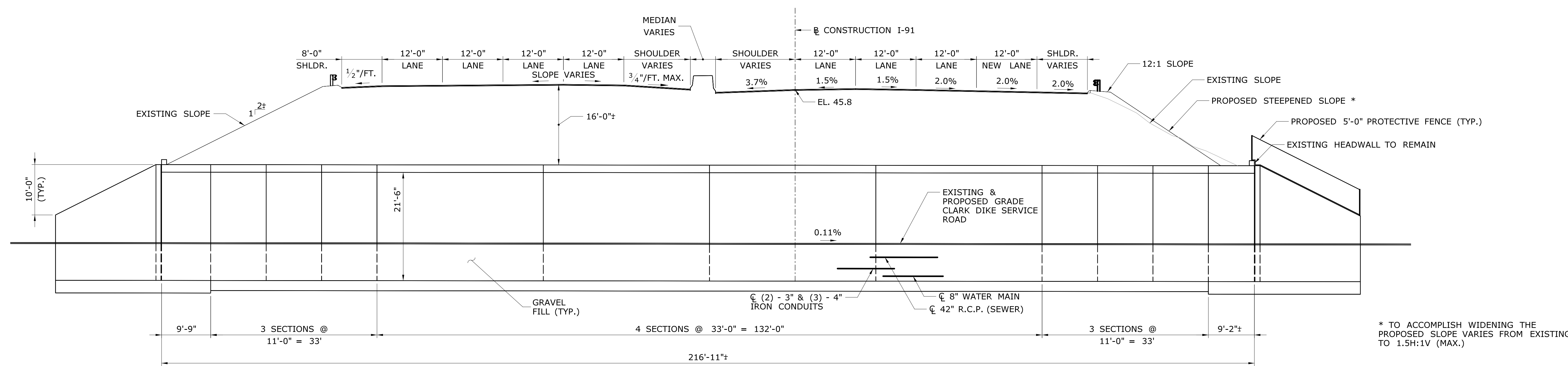
**REHABILITATION OF BRIDGE NO. 02555
I-91 OVER CLARK DIKE SERVICE ROAD**

PRELIMINARY DESIGN REVIEW

| | | | | | | | |
|---|------|--|---|------------------------|--|--------------------------------------|---|
| THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED. | | DESIGNER/DRAFTER: JLS CHECKED BY: BLB SCALE AS NOTED | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ...SB_MSH_Br02555_S.01_Gen_Plan.dgn | SIGNATURE/ BLOCK: | PROJECT TITLE: RELOCATION OF I-91 NB INTERCHANGE 29 AND WIDENING OF I-91 NB AND ROUTE 15 NB TO I-84 EB | TOWN: CITY OF HARTFORD | PROJECT NO. 63-703 DRAWING NO. GENERAL PLAN & ELEVATION SHEET NO. |
| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | Plotted Date: 2/1/2016 | | | |



LAYOUT PLAN
SCALE: 1" = 10'-0"



PROPOSED SECTION
(LOOKING NORTH)
SCALE: 1" = 10'-0"

**REHABILITATION OF BRIDGE NO. 02555
I-91 OVER CLARK DIKE SERVICE ROAD**

PRELIMINARY DESIGN REVIEW

| | | | | | | | |
|---|------|--|--|------------------------|--|--------------------------------------|---|
| THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED. | | DESIGNER/DRAFTER: JLS CHECKED BY: BLB SCALE AS NOTED | STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION Filename: ..._SB_MSH_Br02555_S_02_Layout.dgn | SIGNATURE/ BLOCK: | PROJECT TITLE: RELOCATION OF I-91 NB INTERCHANGE 29 AND WIDENING OF I-91 NB AND ROUTE 15 NB TO I-84 EB | TOWN: CITY OF HARTFORD | PROJECT NO. 63-703 DRAWING NO. LAYOUT AND TYPICAL CROSS SECTION SHEET NO. |
| REV. | DATE | REVISION DESCRIPTION | SHEET NO. | Plotted Date: 2/1/2016 | | | |

Appendix E: Substructure Deterioration Quantities



CONCRETE DETERIORATION LOCATIONS

| LOCATION | UNIT | QUANTITY |
|-----------|------------|----------|
| CULVERT | CUBIC FEET | 2.4 |
| WINGWALLS | CUBIC FEET | 0.01 |
| | | |
| SUBTOTAL | CUBIC FEET | 2.4 |
| TOTAL | CUBIC YARD | 0.1 |
| SAY | CUBIC YARD | 20 |



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION



CITY/TOWN:

HARTFORD

BRIDGE NO.:

03244

SCALE:

N.T.S.



CME ASSOCIATES, INC.
32 Crabtree Lane, Woodstock, CT 06281
131 East River Drive, East Hartford, CT 06108
50 Elm Street, Southbridge, MA 01550
888-271-2277 www.cmeassoc.com

DRAWING TITLE:

**CULVERT AND
WINGWALL
DETERIORATION**

STATE PROJECT NO.:

63703

DATE:

6/4/2015

SHEET NO.:

1 OF 1

Appendix F: ConnDOT Inspection and Maintenance Reports



STRUCTURE NO. 02555

INTERSTATE-91
over
SERVICE ROAD
HARTFORD

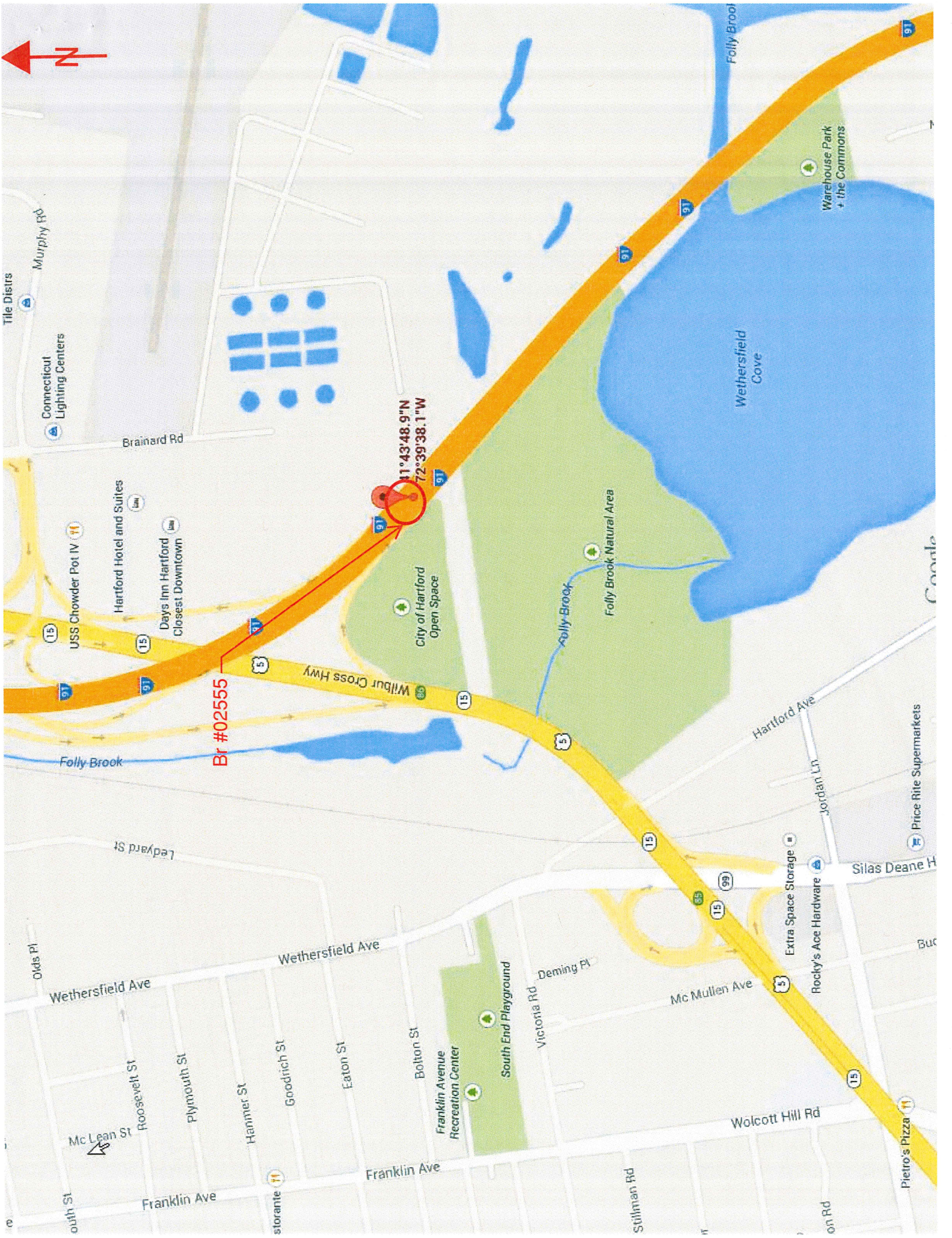
Routine Inspection
on
6/11/2014

Inspected by Team 2
for Area 6

| | | | | |
|--------------------|------------------------------------|--------------------------|--------------|-----------|
| TEAM: | Forwarded to TE3 | Armin Kamali | Date | 6/11/2014 |
| TE3: | Reviewed by TE3 | Armin Kamali | Date | 7/9/2014 |
| | BMM Required | | No | |
| | Town Bridge | | No | |
| | Rating <= 5 (Items 58,59,60 or 62) | | No | |
| | Rating Change 2 or More Values | | No | |
| | Forwarded to Supervisor | Leo Cain Jr. | Date | 7/14/2014 |
| | Forwarded to "To Be Copied Drawer" | <input type="checkbox"/> | Date | |
| | Date BRI-19 Entered | 7/9/14 | | |
| SUPERVISOR: | Reviewed by Supervisor | Leo Cain Jr. | Date | 7/16/14 |
| SUPPORT: | Date Copies Made | 7/17/14 | BMM No | |
| | Scanned By: | mze | Date Scanned | 7/17/14 |
| | | | PDF Box No | |

NBI: No

NHS: Yes



41°43'48.9"N
72°39'38.1"W

Br #02555

Map labels and landmarks include:

- Murphy Rd
- Tile Distrs
- Connecticut Lighting Centers
- Brainard Rd
- Wethersfield Cove
- Warehouse Park + the Commons
- City of Hartford Open Space
- City of Hartford
- Folly Brook
- Folly Brook Natural Area
- Wilbur Cross Hwy
- USS Chowder Pot IV
- Hartford Hotel and Suites
- Days Inn Hartford Closest Downtown
- Hartford Ave
- Jordan Ln
- Price Rite Supermarkets
- Silas Deane H
- Wethersfield Ave
- Wolcott Hill Rd
- Franklin Ave
- Mc Mullen Ave
- Deming Pl
- Victoria Rd
- South End Playground
- Franklin Avenue Recreation Center
- Franklin Ave
- Stillman Rd
- Storante
- Hammer St
- Goodrich St
- Eaton St
- Bolton St
- Mc Lean St
- Roosevelt St
- Plymouth St
- Olds Pl
- Wethersfield Ave
- Franklin Ave
- Extra Space Storage
- Rocky's Ace Hardware
- Pietro's Pizza
- Wolcott Hill Rd
- Wethersfield Ave
- Wolcott Hill Rd
- Wethersfield Ave
- Wolcott Hill Rd

| | | | |
|-----------------|--|------------|---------------------------------------|
| Structure No. | <input type="text" value="02555"/> | Town | <input type="text" value="HARTFORD"/> |
| Inspection Date | <input type="text" value="6/11/2014"/> | Inspectors | <input type="text" value="TEAM 2"/> |

TABLE OF CONTENTS

Loose Forms (not bound in report)

Number of
Sheets Enclosed

| | | |
|-------------------------------------|--|--------------------------------|
| Maintenance Memo | | <input type="text" value="0"/> |
| Flagging Memos | | <input type="text" value="0"/> |
| PONTIS Element Data Collection Form | | <input type="text" value="1"/> |
| Plan Sheets | Already on File <input type="checkbox"/> | <input type="text" value="0"/> |

Bound Report Pages

| | | |
|-------------------|----------------------------|---------------------------------|
| Title Cover Sheet | | <input type="text" value="1"/> |
| Table of Contents | | <input type="text" value="1"/> |
| Executive Summary | | <input type="text" value="0"/> |
| Field Notes | | <input type="text" value="0"/> |
| Calculations: | Load Rating Evaluation | <input type="text" value="0"/> |
| | Quantities & Cost Estimate | <input type="text" value="0"/> |
| Photo Sheets | | <input type="text" value="6"/> |
| Photo Images | | <input type="text" value="11"/> |

Forms

| | |
|--------------------------------------|--------------------------------|
| BRI-18 Bridge Inspection Report Form | <input type="text" value="5"/> |
| BRI-19 Highway Bridge Inventory Form | <input type="text" value="2"/> |

Comments:

1 ATTACHED SHEET

02555

Bridge Number

Inspected By: J. Jones & J. Brndiar

Sufficiency Rating 26-00 80-21

Previous Inspection Date 6/19/2012

BS&E Received

Copies Made

Data Entry By: A. Kamali

Data Entry Date: 07/09/14

IDENTIFICATION

Bridge Name HARTFORD

Town Name HARTFORD

Town Code 37070

Inventory Route: 1

A) Record Type 1

B) Signing Prefix 1

C) Level of Service 1

Feature Intersected

Facility Carried: INTERSTATE-91

Location 0.1 MI. N. WETHERSFIELD TL

Milepoint 35.49 Miles

Latitude 41deg 43 min 48.00 sec

Longitude 72deg 39 min 36.00 sec

Border Bridge: A) State Code B) Percent Responsibility %

Border Town Name

Border Bridge Structure No

STRUCTURE TYPE AND MATERIAL

Structure Type, Main: A) Material 1 Concrete

Structure Type, Approach: A) Material 0 Other

Number of Spans, Main Unit 1

Number of Approach Spans 0

Deck Structure Type N Not Applicable

Wearing Surface/Protective System: A) Type of Wearing Surface N Not Applicable

Type of Membrane N Not Applicable

Type of Deck Protection N Not Applicable

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

BRIDGE SAFETY & EVALUATION

STRUCTURE EVALUATION

SHEET 1 OF 2 FORM BRI-19 REV 10/00

SHEET 1 OF 15

Inspection Date 06/11/14

Inspection Team 202

Frequency Class: 24 01

Indepth Insp Deck Survey Access 0

Flagman

CRITICAL FEATURE INSPECTIONS

Type Frequency Team Date

Fracture:

Uwater:

Special:

AGE AND SERVICE

27) Year Built 1964

42) Type of Service: 106) Year Reconstructed

A) On 1 Highway B) Under 1 HIGHWAY

28) Number of Lanes: 7

A) On 7 B) Under 1

29) Average Daily Traffic 132000

109) Percent Truck 9%

30) Year of ADT 2009

19) Bypass, Detour Length 2miles

GEOMETRIC DATA

48) Length of Max Span 14ft

49) Structure Length 14ft

50) Curb or Sidewalk Widths: A) Left 0.0ft B) Right 0.0ft

51) Brg Rdwy width, curb-curb 0.0ft

52) Deck Width, Out-Out 0.0ft

32) Approach Roadway Width 145ft

33) Bridge Median 0 No Median

Deck Area 3038 sqft

34) Skew Angle 0deg

35) Structure Flared 0

10) Inv. Rte. Min. Vert Clearance 99ft

47) Log Inv. Rte. Total Horiz Clr.: 50.0ft

47) RLog Inv. Rte. Total Horiz. Clr.: 0ft

53) Min Vert Clearance Over Bridge 99ft

54) Min Vert Under Clearance H Ref 12ft

55) Min Lat Under Clearance on Right H Ref 1.0ft

56) Min Lat Under Clearance on Left 0.0ft

BRIDGE COMMENTS

B#02555 and #2164 are 1/4 mile apart on the service road so inspections should be done together. -

NTS

RED FLAG

STRUCTURE EVALUATION

SHEET 2 OF 2 FORM BRI-19 REV 10/00

SHEET 2 OF 15

| | | | |
|------------------|---------------|-------------|----|
| Bridge Number | 02555 | NBIS Length | |
| Town Name | HARTFORD | No | 14 |
| Facility Carried | INTERSTATE-91 | | |
| Feature Crossed | SERVICE ROAD | | |

Inspected By: Jones & Bradley

LOAD RATING AND POSTING

| | | | |
|---------------------------|------|----------------------|------|
| 31) Design Load | 0 | Evaluation Code | J |
| 63) Operating Rating Type | 0 | Year of Evaluation | 2000 |
| 64) Operating Rating | 99.0 | 70) Bridge Posting | 5 |
| 65) Inventory Rating Type | 0 | 41) Structure Status | A |
| 66) Inventory Rating | 36.0 | | |

CONDITION

| | | | |
|--------------------------------|---|--------|----|
| 58) Deck | N | Rating | By |
| 59) Superstructure | N | | |
| 60) Substructure | N | | |
| 61) Channel & Chan. Protection | N | | |
| 62) Culverts | 6 | | |

APPRAISALS

| | | | |
|------------------------------|---|--------|----|
| 67) Structure Evaluation | 6 | Rating | By |
| 68) Deck Geometry | N | | |
| 69) Under Clear Vert & Horiz | 2 | | |
| 71) Waterway Adequacy | N | | |
| 72) Approach Rdwy Alignment | 8 | | |
| 113) Scour Critical | | | |

Items 58 Thru 72 Checked By: A. Kamali

36) Traffic Safety Features:

| | |
|---------------------------|---|
| A) Bridge Railings | N |
| B) Transitions | N |
| C) Approach Guardrail | N |
| D) Approach Guardrail End | N |

OTHER FEATURES

| | | | |
|----------------|----|---------------------------|-----|
| Fence Required | No | Barrel Ladder | No |
| Fence Present | No | Stand Pipes | No |
| Fence Height | ft | Cat Walks | No |
| Fence Type | | Movable Inspection System | No |
| Fence Material | | Loose Concrete Checked? | Yes |
| Fence Top Type | | | |

INSPECTION COMMENTS

Proposed Next Indepth Insp Year 9999
 Senior Krys Kowalski
 Supervisor Steve Keedy

REVIEWED BY: A. Kamali Date 07/9/14

CLASSIFICATION

| | |
|----------------------------------|----|
| 112) NBIS Bridge Length | No |
| 104) Highway System | |
| 26) Functional Class | |
| 100) Defense Highway | |
| 101) Parallel Structure | |
| 102) Direction of Traffic | |
| 103) Temporary Structure | |
| 110) Designated National Network | |
| 20) Toll | |
| 21) Maintain | |
| 22) Owner | |
| Report Class | |
| 37) Historical Significance | |

WATERWAY

| | |
|-------------------------------|--|
| Drainage Basin Code | |
| 38) Navigation Control | |
| 39) Navigation Vert Ctr. | |
| 116) Vert-Lift Brg Nav Min | |
| 111) Pier Abutment Protection | |
| 40) Navigation Horiz Ctr. | |

PROPOSED IMPROVEMENTS

| | |
|-----------------------------------|----|
| 75A) Type of Work Proposed | |
| 75B) Work Done By | |
| 76) Length of Struct. Improvement | ft |
| 94) Bridge Improvement Cost | \$ |
| 95) Roadway Improvement Cost | \$ |
| 96) Total Project Cost | \$ |
| 97) Year of Improvement | |
| 114) Future ADT | |
| 115) Year Future ADT | |

POSTED SIGNS & UTILITIES

| | |
|---------------------------------|------|
| Other Posted Signs 1 | |
| Other Posted Signs 2 | |
| Actual P.L. Single Unit Truck | tons |
| Rec. P.L. Single Unit Truck | tons |
| Actual P.L. Semi-Trailer Truck | tons |
| Rec. P.L. Semi-Trailer Truck | tons |
| Actual P.L. All Vehicles | tons |
| Rec. P.L. All Vehicles | tons |
| Posted Vert Clearance On Bridge | ft |
| Posted Vert Under Clearance | ft |
| Posted Speed Limit | mph |
| Utility | |

Connecticut Department of Transportation

Bridge Inspection Report BRI-18

Bridge #: 02555

Inspection Date: 6/11/2014

| | | | | | |
|---------------------------------|------------------------------|----------------------------------|-----------------------------------|--------------------------|------|
| Inspection Type: | Routine | Previous Inspection Date: | 6/19/2014 | Snooper Required: | No |
| Inspection Performed By: | Team 2 | Feature Carried: | INTERSTATE-91 | Snooper Used: | No |
| Town: | HARTFORD | Feature Intersected: | SERVICE ROAD | Year Built: | 1964 |
| Location: | 0.1 MI N. WETHERSFIELD TL | Main Design: | Culvert (includes frame culverts) | Year Rebuilt: | - |
| Main Material: | Concrete | | | | |

Visits

Inspectors:

| Visit Date: | Temp: | Start Time: | End Time: | Inspector: | Task: |
|-------------|-------|-------------|-------------|------------|----------------|
| 6/11/2014 | 70 | 9:30:00 AM | 10:30:00 AM | J. Brndiar | Inspector |
| | | | | J. Jones | Lead Inspector |

DECK: - **Overall Rating:** P

Rating

| | | |
|-----------------------------|---|---|
| OVERLAY: | 8 | New overlay (2inches) was just installed a few weeks ago due to large pot holes over the winter. ✓ |
| DECK-STR. CONDITION: | N | - |
| CURBS: | N | - |
| MEDIAN: | N | - |
| SIDEWALKS: | N | - |
| PARAPET: | N | - |
| RAILING: | N | - |
| PAINT: | N | - |
| FENCE: | N | - |
| DRAINS: | N | - |
| LIGHTING STANDARD: | N | - |
| UTILITIES TYPE/SIZE: | N | - |
| CONSTR JOINTS: | N | - |
| EXPANSION JOINTS: | N | - |

59. SUPERSTRUCTURE:

Overall Rating:

60. SUBSTRUCTURE:

Overall Rating:

Rating

61. CHANNEL & CHANNEL PROTECTION:

Overall Rating:

62. CULVERTS & RETAINING WALL:

Overall Rating:

Rating

| | | |
|-----------|--------------------------------|---|
| BARREL: | <input type="text" value="N"/> | <input type="text" value="-"/> |
| CONCRETE: | <input type="text" value="6"/> | <p>Walls:</p> <p>Joint #1, section #2, south wall has a spall with exposed rusted rebar, 5.5ft. long x 6" wide with adjacent 3ft. x 6 inch hollow area.</p> <p>Numerous popouts and potential shallow popouts / spalls from shallow rebar mainly in section #7, southwall, totaling approximately 30 sq. ft. +/-.</p> <p>Laminar rust on with minor section loss on exposed steel.</p> <p>Joint spall 15" x 8" by 3" deep at joint #8 northwall.</p> <p>Roof</p> <p>Scrapes and has random misalignment of roof joints at most units, ranging from 0" to 3-3/8", worse condition is joint #1. Very or little change since 1996.</p> <p>Deck Chairs bleeding through.</p> <p>Areas of honeycombing and map cracking.</p> |
| STEEL: | <input type="text" value="N"/> | <input type="text" value="-"/> |
| TIMBER: | <input type="text" value="N"/> | <input type="text" value="-"/> |
| HEADWALL: | <input type="text" value=""/> | <input type="text" value=""/> |

| | | |
|----------------------|---|---|
| | 7 | East headwall shows areas of light to medium scale with a shallow exposed rebar at north end. |
| CUTOFF WALL: | N | - |
| DEBRIS: | 7 | Heavy vegetation overgrowth at east and west elevations. |
| RETAINING WALL STEM: | 7 | Vertical hairline cracks and potential spalls. |
| FOOTING: | N | - |

65. APPROACH CONDITION

-

Overall Rating: 6

Rating

| | | |
|----------------------|---|--|
| APPROACH SLAB: | N | - |
| RELIEF JOINTS: | N | - |
| APPROACH GUIDE RAIL: | 7 | Metal beam rail on weak posts, minor scrapes. Dented rail at northeast trailing end. |
| APPROACH PAVEMENT: | 8 | New overlay. |
| APPROACH EMBANKMENT: | 8 | Heavy vegetation growth. |

TRAFFIC SAFETY FEATURES

Rating

| | | |
|-----------------------|-------------------------------------|---|
| BRIDGE RAILINGS: | Last Inspection: N Current: - | - |
| TRANSITIONS: | Last Inspection: N Current: - | - |
| APPROACH GUARDRAILS: | Last Inspection: N Current: - | - |
| APPR. GUARDRAIL ENDS: | Last Inspection: N Current: - | - |

66. LOAD POSTING

- Posted

| Loading - | |
|------------------------|----------------------------------|
| SINGLE UNIT (TONS): | Last Inspection: - Current: - |
| SEMI TRAILER (TONS): | Last Inspection: - Current: - |
| 4 AXLE (TONS): | Last Inspection: - Current: - |
| 3S2 (TONS): | Last Inspection: - Current: - |
| ADVANCE WARNING (Y/N): | N |
| LEGIBILITY: | N |
| VISIBILITY/LOCATION: | N |

67. MISCELLANEOUS

Rating

| | | |
|----------------------------|---|---|
| MIN. VERT. UNDERCLEARANCE: | Last Inspection: 12' 4" Current: 12' 4" <i>12' 4"</i> | Joint #10, with misalignment is 12'-04". This is now the minimum. |
| POSTED CLR. UNDER BRIDGE: | Last Inspection: 12' 1" <i>12' 1"</i> Current: 12' 1" <i>12' 1"</i> | At Bridge. Posting sign located at northeast is leaning into the vegetation growth. |
| POSTED CLR. ON BRIDGE: | Last Inspection: -' -" Current: -' -" | - |
| ADVANCED WARNING (YES/NO): | No | - |
| SPEED LIMIT (IF ANY): | Last Inspection: - Current: - | - |
| CHARACTER OF TRAFFIC: | | - |
| ADDITIONAL NOTES: | This bridge was done in conjunction with Br # 02164. | |
| ADDITIONAL COMMENTS: | - | |

Inspectors' Signatures:

1)

Janis Flores

Date: 6/11/14

2)

John C. Sinclair

Date: 06/11/2014
NIJCT COT 08/1734
EXP. 2-2017

3)

Date: ---/---/---

4)

Date: ---/---/---

P.E. Signature:

Date: ---/---/---

P.E. #:

Date: ---/---/---

Reviewed by:

[Signature] conndot

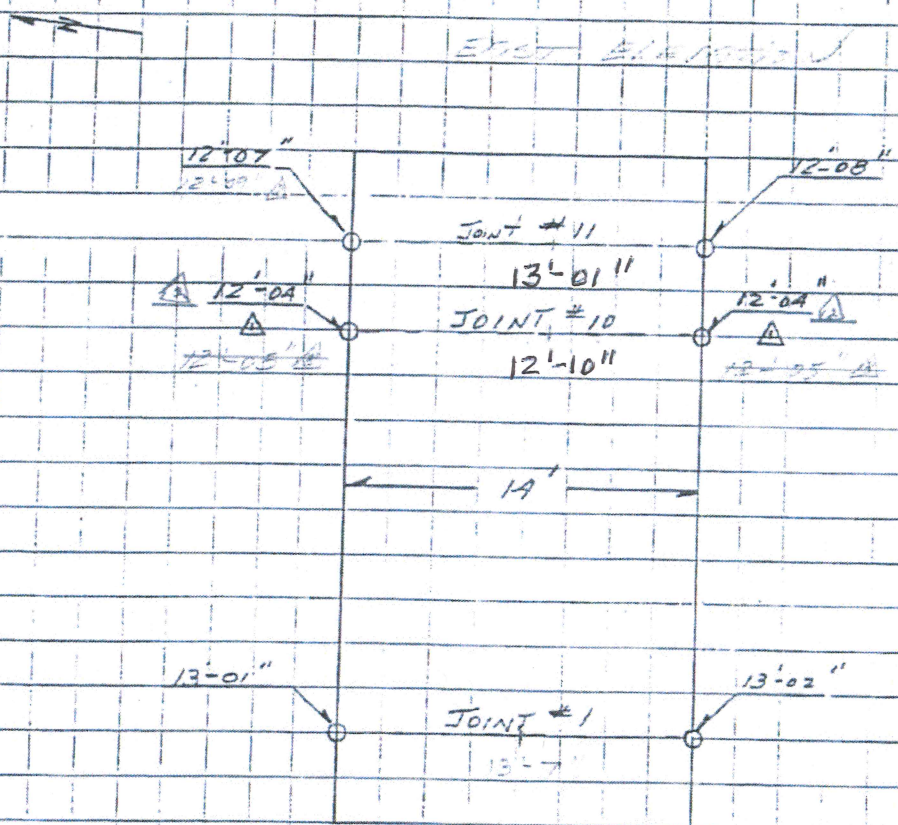
Date: 07/9/14

8/15
 10/18

| | | | | |
|---------------------------|----------------------------|--|-----------------------|----------------|
| DATE PREPARED 10.19.00 | PREPARED BY S. JAPONCEK | State of Connecticut Department of Transportation Bureau of Engineering & Highway Operations DES-003 REV 1-93 (302-06-0225) COMPUTATION SHEET | ORGANIZATION UNIT NO. | WORK ORDER NO. |
| DATE CHECKED | CHECKED BY | | | SHEET NO. 6/8 |

SUBJECT: BR # 2555 I-91 - CLARK DIKE SERVICE ROAD, HARTFORD

"VERTICAL CLEARANCE"
 N.T.S.



WEST ELEVATION

| NO. | DATE | DESCRIPTION |
|-----|---------|-------------|
| 1 | 8/15/00 | REVISION |
| 2 | 9/13/00 | NONE |
| 3 | 1/21/01 | NONE |
| 4 | 7/20/01 | REVISED |

REVISIONS

| | | |
|---|---------|--------------|
| 1 | 6/30/00 | NO REVISIONS |
| 2 | 6/11/01 | NO CHANGES |
| 3 | 6/11/01 | NO CHANGES |

Your Agency Name

Your Office Name
Your Department Name

9/15

Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 02555 Agency ID: 02555 SR: 73.2 SD/FO: NA

IDENTIFICATION

State 1: 09 Connecticut Struc Num 8: 02555
 Facility Carried 7: INTERSTATE-91 Location 9: .04 MI N OF WETHERSFIELD
 Rte.(On/Under) 5A: Route On Structure Rte. Signing Prefix 5B: 1 Interstate Hwy
 Level of Service 5C: 1 Mainline Route Number 5D: 00091
 Directional Suffix 5E: 0 N/A (NBI) % Responsibility: 0.00
 SHD District 2: 01 County Code 3: Hartford
 Place Code 4: HARTFORD Mile Post 11: 35.403 mi
 Feature Intersected 6: CLARK DIKE SERVICE ROAD
 Latitude 16: 41° 43' 48" Longitude 17: 072° 39' 36"
 Border Bridge Code 98: Unknown (P)
 Border Bridge Number 99: NA

INSPECTION

Frequency 91: 24 months Inspection Date 90: 6/11/2014 Next Inspection: 6/11/2016
 FC Frequency 92A: NA FC Inspection Date 93A: NA Next FC Inspection: NA
 UW Frequency 92B: NA UW Inspection Date 93B: NA Next UW Inspection: NA
 SI Frequency 92C: NA SI Date 93C: NA Next SI: NA
 Element Frequency: 24 months Element Insp. Date: 6/19/2012 Next Elem. Insp.: 6/11/2016

CLASSIFICATION

Defense Highway 100: 1 STRAHNET hwy Parallel Structure 101: No || bridge exists
 Direction of Traffic 102: 2 2-way traffic Temporary Structure 103: Unknown (NBI)
 Highway System 104: 1 On the NHS NBIS Length 112: Too Short
 Toll Facility 20: 3 On free road Functional Class 26: 11 Urban Interstate
 Defense Hwy 110: 1 STRAHNET hwy Historical Significance 37: 5 Not eligible for NRHP
 Owner 22: 01 State Highway Agency
 Custodian 21: 01 State Highway Agency

STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 46: 0 Number of Spans Main Unit 45: 1
 1 Concrete 19 Culvert
 Deck Type 107: N N/A (NBI)
 Wearing Surface 108A: N N/A (no deck (NBI))
 Membrane 108B: N N/A (no deck (NBI))
 Deck protection 108C: N N/A (no deck (NBI))

CONDITION

Deck 58: N N/A (NBI) Super 59: N N/A (NBI) Sub 60: N N/A (NBI)
 Culvert 62: 6 Deterioration Channel/Channel Protection 61: N N/A (NBI)

AGE AND SERVICE

Year Built 27: 1964 Year Reconstructed 106: -1
 Type of Service on 42A: 1 Highway
 Type of Service under 42B: 1 Highway
 Lanes on 28A: 7 Lanes under 28B: 0 Detour Length 19: 1.9 mi
 ADT 29: 112,400 Truck ADT 109: 9% Year of ADT 30: 1999

LOAD RATING AND POSTING

Inventory Rating Method 65: 5 No rating Operating Rating Method 63: 5 No rating
 Inventory Rating 66: HS19.8 Operating Rating 64: HS54.5
 Design Load 31: Unknown (NBI) Posting 70: 5 At/Above Legal Loads
 Posting Status 41: A Open, no restriction

GEOMETRIC DATA

Length Max Span 48: 14.11 ft Structure Length 49: 14.11 ft
 Curb/Sdwk Width L 50A: 0.00 ft Curb/Sidewalk Width R 50B: 0.00 ft
 Width Curb to Curb 51: 0.00 ft Width Out to Out 52: 0.00 ft
 Approach Roadway width 32: (w/ shoulders) 145.01 ft Median 33: 0 No median
 Deck Area: 0.00 sq. ft
 Skew 34: 0.00° Structure Flared 35: 0 No flare
 Vertical Clearance 10: 328.05 ft Horizontal Clearance 47: 49.87 ft
 Minimum Vertical Clearance Over Bridge 53: 328.05 ft
 Minimum Vertical Underclearance Reference 54A: H Hwy beneath struct
 Minimum Vertical Underclearance 54B: 12.66 ft
 Minimum Lateral Underclearance Reference R 55A: H Hwy beneath struct
 Minimum Lateral Underclearance R 55: 0.98 ft
 Minimum Lateral Underclearance L 56: 0.00 ft

APPRAISAL

Bridge Rail 36A: N N/A or not required Approach Rail 36C: N N/A or not required
 Transition 36B: N N/A or not required Approach Rail Ends 36D: N N/A or not required
 Str Evaluation 67: 7 Above Min Criteria Deck Geometry 68: N Not applicable (NBI)
 Underclearance, Vertical and Horizontal 69: 3 Intolerable - Correct
 Waterway Adequacy 71: N Not applicable Approach Alignment 72: 8 Equal Desirable Crit
 Scour Critical 113: N Not Over Waterway

PROPOSED IMPROVEMENTS

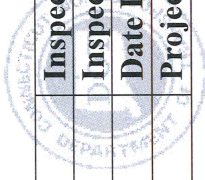
Bridge Cost 94: \$1,000 Type of Work 75: 38 Other Structural
 Roadway Cost 95: \$1,000 Length of Improvement 76: 0.3 ft
 Total Cost 96: \$2,000 Future ADT 114: 56,200
 Year of Cost Estimate 97: 2000 Year of Future ADT 115: 2019

NAVIGATION DATA

Navigation Control 38: NA-no waterway
 Vertical Clearance 39: 0.0 ft Horizontal Clearance 40: 0.0 ft
 Pier Protection 111: Unknown (NBI) Lift Bridge Vertical Clearance 116

ELEMENT CONDITION STATE DATA

| Str Unit | Elm/Env | Description | Units | Total Qty | % in 1 | Qty. St. 1 | % in 2 | Qty. St. 2 | % in 3 | Qty. St. 3 | % in 4 | Qty. St. 4 | % in 5 | Qty. St. 5 |
|----------|---------|----------------------|-------|-----------|--------|------------|--------|------------|--------|------------|--------|------------|--------|------------|
| UNIT0 | 212/3 | Reinforced Conc wing | (LF) | 56 | 100% | 56 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 |
| UNIT0 | 241/3 | Concrete Culvert | (LF) | 217 | 86% | 186 | 14% | 30 | 0% | 0 | 0% | 0 | 0% | 0 |



| | | | |
|-------------------------|---------------|------------------------|-----------------|
| Bridge No. | 02555 | Inspected by: | JOHN G. BRNDIAR |
| Town: | HARTFORD | Inspected by: | JAMES JONES |
| Feature Carried: | INTERSTATE 91 | Date Inspected: | JUNE 11, 2014 |
| Feature Crossed: | SERVICE ROAD | Project No.: | |



Photo # 1 APPROACH VIEW LOOKING I-91 SOUTH OVER THE STRUCTURE.



Photo # 2 NEW WEARING SURFACE, I-91 SOUTHBOUND LANES OVER THE STRUCTURE.

10/15

| | | | |
|-------------------------|---------------|------------------------|-----------------|
| Bridge No. | 02555 | Inspected by: | JOHN G. BRNDIAR |
| Town: | HARTFORD | Inspected by: | JAMES JONES |
| Feature Carried: | INTERSTATE 91 | Date Inspected: | JUNE 11, 2014 |
| Feature Crossed: | SERVICE ROAD | Project No.: | |

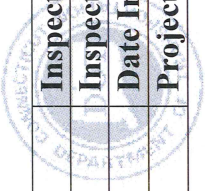


Photo # 3 APPROACH VIEW LOOKING I-91 NORTH OVER THE STRUCTURE.



Photo # 4 NEW WEARING SURFACE, I-91 NORTHBOUND LANES OVER THE STRUCTURE.

11/15

| | | | |
|-------------------------|---------------|------------------------|-----------------|
| Bridge No. | 02555 | Inspected by: | JOHN G. BRNDIAR |
| Town: | HARTFORD | Inspected by: | JAMES JONES |
| Feature Carried: | INTERSTATE 91 | Date Inspected: | JUNE 11, 2014 |
| Feature Crossed: | SERVICE ROAD | Project No.: | |

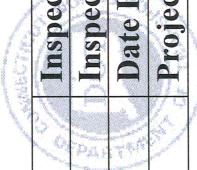
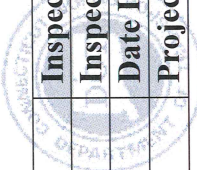


Photo # 5 WESTERLY ELEVATION.



Photo # 6 A VIEW THRU THE STRUCTURE.

18/15



| | | | |
|-------------------------|---------------|------------------------|-----------------|
| Bridge No. | 02555 | Inspected by: | JOHN G. BRNDIAR |
| Town: | HARTFORD | Inspected by: | JAMES JONES |
| Feature Carried: | INTERSTATE 91 | Date Inspected: | JUNE 11, 2014 |
| Feature Crossed: | SERVICE ROAD | Project No.: | |



Photo # 7 EASTERLY ELEVATION.

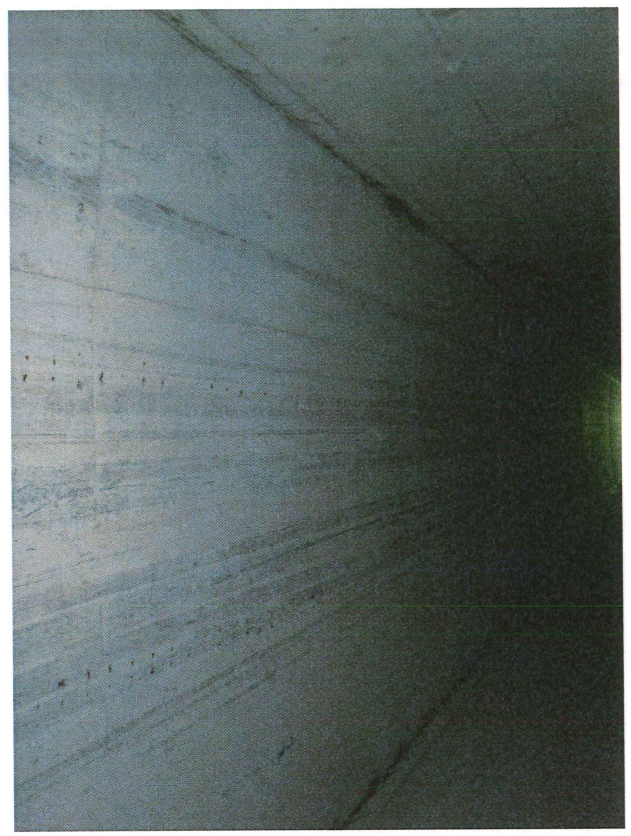
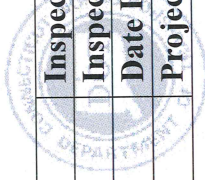




Photo # 8 TYPICAL SOFFIT CONDITIONS.

13/15

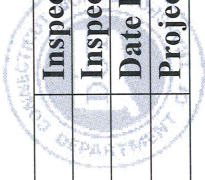


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|-------------------------|---------------|------------------------|-----------------|
| Bridge No. | 02555 | Inspected by: | JOHN G. BRNDIAR |
| Town: | HARTFORD | Inspected by: | JAMES JONES |
| Feature Carried: | INTERSTATE 91 | Date Inspected: | JUNE 11, 2014 |
| Feature Crossed: | SERVICE ROAD | Project No.: | |

| | |
|--|---|
|  |  |
| Photo # 9 SOUTHERLY STEM. | Photo # 10 SHALLOW RE-BARS OF THE SOUTHERLY STEM. |

14/15

| | | | |
|-------------------------|---------------|------------------------|-----------------|
| Bridge No. | 02555 | Inspected by: | JOHN G. BRNDIAR |
| Town: | HARTFORD | Inspected by: | JAMES JONES |
| Feature Carried: | INTERSTATE 91 | Date Inspected: | JUNE 11, 2014 |
| Feature Crossed: | SERVICE ROAD | Project No.: | |



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|---|--|
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| <p>Photo # 11 JOINT SPALL OF THE NORTHERLY STEM.</p> | |

15/15



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