IAH APM
CONDITION ASSESSMENT

BUSH INTERCONTINENTAL AIRPORT HOUSTON (IAH)
HOUSTON, HARRIS COUNTY, TEXAS

HOUSTON AIRPORTS

HNTB

In Association with:
B 2 Z Engineering
Connico
C & C Traffic Control
Henderson + Rogers

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NOTICE

HNTB Corporation conducted a visual, non-destructive inspection of the assets included in this report. The report reflects HNTB Corporation observations and opinions of only the accessible features of the asset at the time of inspection. Not all conditions may be apparent at the time of the inspection due to weather conditions, inoperable systems, and/or inaccessibility. HNTB Corporation is not responsible or liable for the non-discovery of any patent or latent defects or other conditions of the asset, or any conditions which may occur or become evident after the time of the inspection. HNTB Corporation is not an insurer and makes no warranty against defects in the asset improvements, systems, or components of the asset. Assessment and prioritization of asset repair items are subjective and only the Houston Airport System, the asset owner, can ultimately determine what observed conditions are acceptable or relevant.

Repair quantities estimated by HNTB Corporation are approximate and based on the same limitations described above. Such quantities are not to be used for construction, permitting, or bidding purposes. Likewise, repair calculated prices represent only the engineer's opinion of probable cost.

There are pictures included in this report to help provide an understanding of what was seen at the time of the inspection. The photos are intended to show examples or illustrations of areas of concern but may not show every occurrence and may not accurately depict the severity of an occurrence. Also, it must be noted that not every area of concern will be pictured. Therefore, the reader should not rely on the pictures alone and is encouraged to read the complete inspection report.

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EXECUTIVE SUMMARY

HNTB Corporation conducted a Structural Condition Assessment of the Automated People Mover (APM) Guideway of the Houston George Bush Intercontinental Airport (IAH) between April 6, 2021 and May 4, 2021. This study was focused on conducting a structural assessment for the guideway located between Terminals A and D/E and the guideway segments leading to the Maintenance and Storage Facility (M&SF). The condition assessment was based on visual observations of the APM guideway structure from both the underside and the top side of the APM. The underside inspections were conducted during daytime and included the bent columns and caps, the prestressed beams as well as the bottom and sides of the deck. Top side inspections were conducted at night and included the top of the deck, running beams and other structural elements. Sections of the APM guideway substructure at the terminal stations were inaccessible for inspection, recommendation is provided for additional inspections of these areas. The current condition of the guideway structure is generally fair in comparison with similar structures for their use and age, with concerning signs of distress observed in several structural elements. Structural deficiencies were mainly related to the widespread cracking of the concrete running beams, significant concrete cracking in bent caps and columns, spalling in deck overhangs, and displaced elastomeric bearing pads. A summary of the typical and the more severe deficiencies found on the visual observation is given below.

ES.1 CONCERNING DEFICIENCIES

1. Delamination and spalling were observed on the underside of several deck overhangs, with some posing the danger of falling on traffic below.

2. Transverse cracking of the concrete running beams at regular spacing was observed in every span of all guideways, sometimes accompanied by spalls. If left unrepaired, these cracks may lead to further damage like deterioration of the APM train running surface, reinforcement corrosion, etc.

3. Cracking of several different types and sometimes severe, were observed in most bent caps. Crack types included diagonal shear cracks on the stem, flexural cracks on the stem, vertical and diagonal cracks in the ledges and diagonal and/or horizontal cracks at the cap end faces originating at the re-entrant corner formed by the ledge and the stem.

4. Some elastomeric bearing pads supporting prestressed beams have displaced in the longitudinal direction and a few pads show permanent deformation in the same direction.

5. Seal joints at all deck expansion joints have failed or are completely missing. Consequently, they were found to be leaking runoff water to the structures and roadway below.

Other Typical Deficiencies:

6. Minor cracks were observed on the exterior faces of the deck, particularly when the deck slab runs continuously on top of bent caps.

7. Prestressed beams had cracks on beam ends and some minor spalls. One beam exhibited minor rotating.

8. Grout pads exhibited scattered locations of delamination and spalls.

9. Minor abrasion of the top surface of the running beams was observed. A few locations showed more significant abrasion, pop-outs or spalls. Additionally, map cracking was observed.

10. Deck slab showed transverse horizontal cracking at or near bent locations where the slabs are continuous.

11. A few clogged superstructure drain inlets were observed.

12. Several missing bolts and spalled grout pads were observed in the guide beam connections.

Based on the methodology described within this report, the Financial Condition Index (FCI), **Figure ES.1**, is considered to be **0.08** and the Actual Condition Index of the facility (ACI), **Figure ES.2**, is considered to be **5.0**.

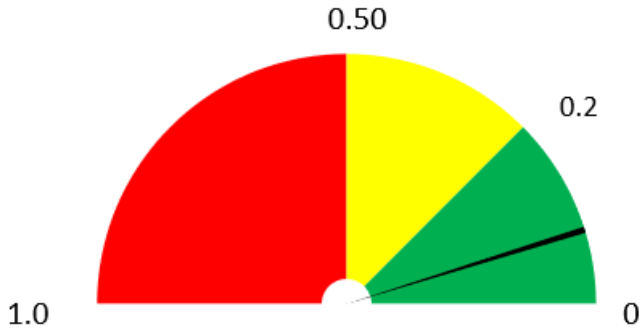


Figure ES.1: FINANCIAL CONDITION INDEX (FCI)

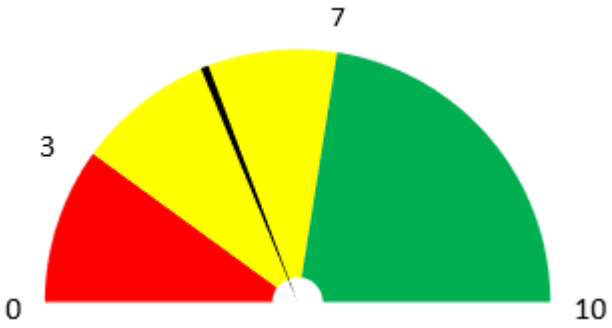


Figure ES.2: ACTUAL CONDITION INDEX (ACI)

Table ES.1 shows deficiencies were rated using the following criteria.

Table ES.1: Deficiency Criteria

RATING	DESCRIPTIVE CRITERIA (1)
10	Fully operational asset, fully meets mission requirements, like new asset, 20+ years remaining service life.
7	Fully operational asset, fully meets mission requirements, 10+ years, remaining service life except for specific components as may be identified.
5	Fully operational asset, fully meets minimum mission requirements, 5+ years, remaining service life except for specific components as may be identified.
3	Reduced operability and/or degraded mission capability, and/or less than 3 years remaining service life for identified conditions, and/or near-term obsolescence of key system components maintainability or repair parts ay impact.
0	Non-operational, and/or the asset does not meet mission requirements, and/or current design needs are not met by this asset's basis of design, and/or the asset cannot be adequately maintained due to obsolescence of key system components or reapir parts.

Table ES.2 below summarizes the deficiencies and associated ratings identified during the inspection of the APM facility. The facility was classified into 3 bridge components with its respective rating and used to determine the ACI of the facility.

Table ES.2: APM Deficiencies

Component List	Deficiencies	Minimum Rating
Guideway	Guideway Abrasion-Wearing	7
	Guideway Cracking	7
	Guideway Missing Anchor Bolts	5
	Guideway Spalling	7
Substructure	Substructure .01" < Cracking < .02"	7
	Substructure Cracking < .01"	7
	Substructure Cracking > 0.02"	5
	Substructure Degraded Coat of Paint	7
	Substructure Delamination	7
	Substructure Displacement	5
	Substructure Honeycombs	7
	Substructure Map Cracking	7
	Substructure Other	7
	Substructure Rusting	7
	Substructure Scaling	7
	Substructure Spalling	7
	Substructure Staining	7
Superstructure	Superstructure Cracking	7
	Superstructure Delamination	7
	Superstructure Displacement	10
	Superstructure Leaking Expansion Joint	5
	Superstructure Spalling	7
	Superstructure Standing Water	7
	Superstructure Water Leaking	7

ES.2 SUSTAINABILITY / RCM RECOMMENDATIONS

Sustainable infrastructure would meet the needs of society without compromising the ability of future generations to meet their needs. This is achieved by minimizing energy use, waste generation and manufacturing cost while maximizing longevity and resiliency. For sustainable concrete structures, the need for extensive repairs during the life cycle should be minimized by using good structural practices in design, construction and along the life of the structure (using a combination of monitoring, inspection, maintenance, and minor repairs).

In the case of the APM structure, which was built in the last 20 years, some maintenance of the concrete components has been done. A few minor cracks and spalls on running beams and columns have been repaired since the last inspection and retrofits have been added in between girders at a few bents.

However, there is still some deterioration in need of repair. Most of the deterioration can be repaired with relatively simple methods. Based on sustainable concrete repair principles, the following recommendations are given:

1. A detailed condition evaluation of the bent caps is recommended to determine the cause of observed deterioration

2. Further inspections of in accessible substructure components at terminal stations is recommended

3. Design the repair to account for maintenance in an extended period of time, to salvage as much existing material as possible and to maximize repair durability

4. Use repair techniques that address the factors causing concrete deterioration

5. Use cracking repair materials that guarantee repair durability and minimize environmental impact (recycled content, local sources, reduced VOC content, etc.)

6. Develop a repair waste management and recycling plan for material removed from the structure and for the packaging of new material

7. Select contractors for the repair construction based on expertise and experience

8. Develop a QA/QC program that involves designer reviews and manufacturer visits

9. Implement a monitoring program to evaluate the condition of the structure after repair is completed

10. Determine if and when preventative maintenance or additional repairs are necessary

The RCM maintenance methodology is based on systematically setting priorities for elements and equipment in a facility according to their importance in processes and safety. It is also based on the fact that failure probability and degradation mechanisms vary among different elements and equipment. The method relies mostly on predictive and preventive maintenance principles but uses a reactive approach for inexpensive or operationally unimportant components. Equipment criticality and cost of down-time must be included in the evaluation of the optimal mix of maintenance approaches.

It is recommended that a formal RCM program should be developed and implemented immediately for the structure supporting the APM Guideway. This program should include regular condition

evaluations, preventive, predictive and reactive maintenance procedures and a quality control and quality assurance plan. The program must be developed gradually following the steps listed below:

1. Create a master list of all structural and non-structural components
2. Prioritize the listed components
3. Develop an information system for the master list
4. For each component, determine the type, number, and periodicity of required maintenance activities
5. Assess the size of the maintenance staff required and identify their tasks. Additionally, determine tasks that require manufacturer involvement and/or external consultants
6. Analyze component failure modes as well as the impact on the system operation. Identify effective maintenance tasks or mitigation strategies
7. Develop and implement a QA/QC plan for the RCM program
8. Conduct reactive maintenance tasks based on condition assessment results and recommendations
9. Develop predictive maintenance and preventive maintenance tasks and priorities
10. Initiate RCM program

ES.3 ADDITIONAL INSPECTIONS

Visual inspection of the APM structures were conducted, however parts of substructure components at terminal stations were inaccessible due to clearance protocol, architectural facades, or terminal structure. It is recommended that a further inspection be conducted for APM substructure components inside the terminal buildings.

ES.4 REMAINING SERVICE LIFE

Guideway structures are normally designed for a 75-year design service life. The APM segment between terminals A and B, as well as the segment between C and D were designed using AASHTO LRFD Specifications. There is no information regarding the design specification used for the segment between Terminals B and C. AASHTO LRFD adopted a 75-year design service life.

Despite the uncertainty of the material selection and construction quality between terminals B and C, the useful service life of the facility is expected to be about 35-40 years. The useful service life is contingent on if a maintenance program is implemented as proposed in **Section 6.11** and the repair recommendations given in the report are followed.

ES.5 COSTS

The minimum construction investment proposed in **Section 6.9** and **Table 6.4** to bring the facility to a rating score of 7 on a priority planning term is approximately **$855,000.**

Probable cost for all repairs is estimated at approximately **$2,290,600**. See **Section 6.3** and **Table 6.2** for more information.

Estimated cost to maximize the service life of APM structure is $8,629,600. See **Section 6.10** and **Table 6.5** for more information.

These cost include an allowance for soft cost, mobilization, and contingency in 2021 dollars.

1. INTRODUCTION

HNTB Corporation conducted a Structural Condition Assessment of the Automated People Mover (APM) Guideway of the Houston George Bush Intercontinental Airport (IAH) between April 6, 2021 and May 4, 2021. This study was focused on conducting a structural assessment for the guideway located between Terminals A and D/E and the guideway segments leading to the Maintenance and Storage Facility (M&SF).

The condition assessment was based on visual observations of the APM guideway structure from both the underside and the top side of the APM. The underside inspections were conducted during daytime using a telescopic lift and included the bent columns and caps, the prestressed beams as well as the bottom and sides of the deck. Top side inspections were conducted at night (when traffic in at least one of the guideways could be interrupted) and included the top of the deck, running beams and other structural elements (curbs, railings, drains, etc.).

1.1 OBJECTIVES

The objectives of the assessment were:

1. To provide an overall condition assessment of the IAH APM Guideway between Terminals A and D/E including the APM segments in the vicinity of the M&SF building (operated by Bombardier) based on visual observations of the topside and underside of the guideway structure;

2. To define the effective remaining service life of the systems; and

3. To provide recommendations for the future course of action for the management and repair of distressed items based on our visual observations.

1.2 DELIVERABLES

The Deliverables included in this report are:

A. Current operability of the infrastructure system to meet mission requirements.

B. Remaining nominal useful service life.

C. Specific, actionable, recommendations for optimizing maintenance policies and procedures, and periodicities to improve sustainable life cycle performance and/or levels of service

D. Numerical Rating of actual system condition (ACI)

E. Prioritized recommended repairs, recapitalization upgrade and/or replacement (Priority, Near term, Long term)

F. Determination of the estimated value of deferred maintenance and the current replacement value (FCI)

G. Completed condition assessment (DO-FORMS)

H. Matrix of performance indicators (ACI and FCI)

I. Minimum estimated investment to bring the facility to a rating score of 7 on a “priority” planning horizon term.

J. Estimated investment to maximize the service life of the APM structure.

K. Cost/Repairs

L. Policies, Maintenance and RCM

M. Sustainability Recommendation

1.3 SUMMARY

The methodology and assessment protocol used for this project are presented and discussed in **Chapter 4** and **Chapter 5.**

The conclusions and recommendations stated in this report are based on and limited to the observations made during the site visits and the information available to the Engineer at the time of the report development. Also, additional deficiencies may exist in the structural elements which were not observed or detected, and which may require additional investigation and/or remedial work which are not included in the report. In particular, no assessment of foundation elements was possible during the site visits.

2. APM GUIDEWAY CONFIGURATION

The IAH APM guideway is used to transport people inside the secured area of the IAH airport between Terminal A at the west end of the airport and Terminals D&E at the east end of the airport, running generally in the east-west direction. The APM is elevated, supported by a concrete structure that is located above or beside North Terminal Road.

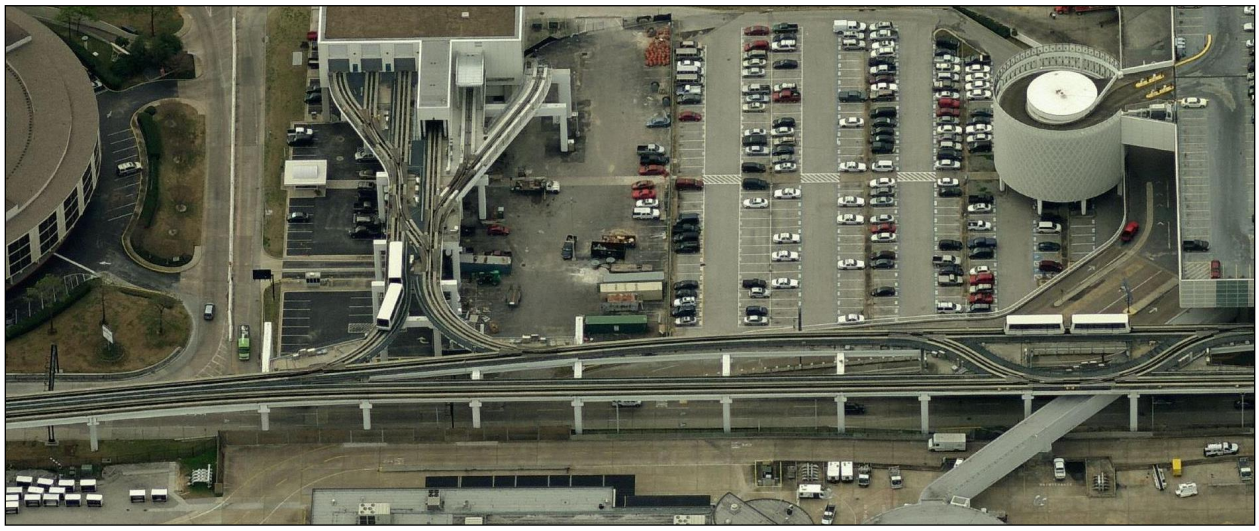


Figure 2.1

The segments between Terminals C and D and at the M&SF building were built in 2003; while the APM guideway between Terminals A and B was built in 2008. **Figure 2.1** shows a partial aerial view of the APM.

There are at least two train guideways that are supported on the cast-in-place deck slab: Guideway A (north side guideway) and Guideway B (south side guideway). Additionally, there are several other short guideways at crossovers between Guideways A and B and at the vicinity of the M&SF building. For the project layout, see **Appendix J.**

2.1 SUPERSTRUCTURE

The superstructure for the APM Guideway consists of a deck slab supported by precast prestressed concrete beams. The deck is a cast-in-place, conventionally reinforced concrete slab with expansion joints typically located at every other supporting bent. Drains are provided at each bent to prevent water ponding on the deck.

Each guideway is composed of a steel guide beam that supports the components that energize the trains and is located along the centerline of the guideway, between two concrete running beams (see **Figure 2.2**). The guide beams are wide flange steel sections fixed to the deck slab every 12 ft using stiffened steel angles fastened with anchor rods. Expansion joints for the guide beams are provided every 40 ft with 1 inch maximum gaps.

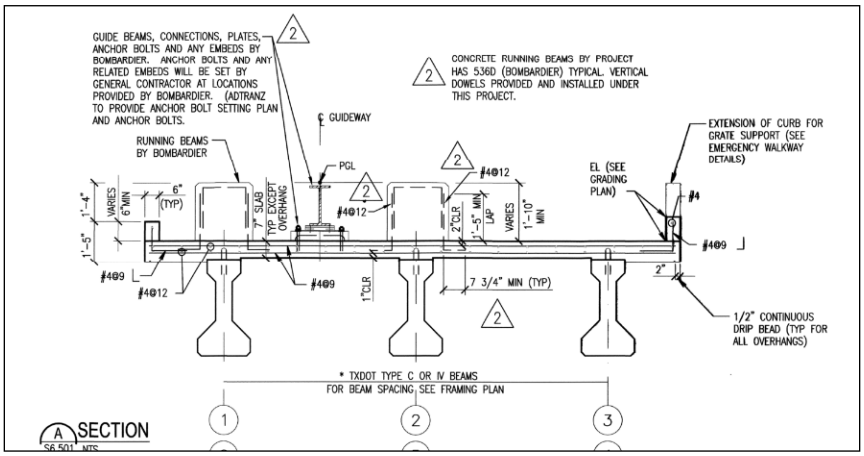


Figure 2.2

The APM trains ride on the two cast-in-place reinforced concrete running beams, one on each side of the guide beam. These running beams serve as the surface on which the train's wheels bear during operation and have expansions joints at the ends of the deck units. Saw cut joints are also present on the concrete running beams at every 20 ft (see **Figure 2.2 and Figure 2.3**).

Figure 2.3

The connections between the steel guide beams and the deck slab consist of steel plates and gussets fastened to the slab below through the use of embedded anchor rods as shown in **Figure 2.4**. These connections are welded to the guide beam, with no means to adjust the horizontal alignment of the guide beam.

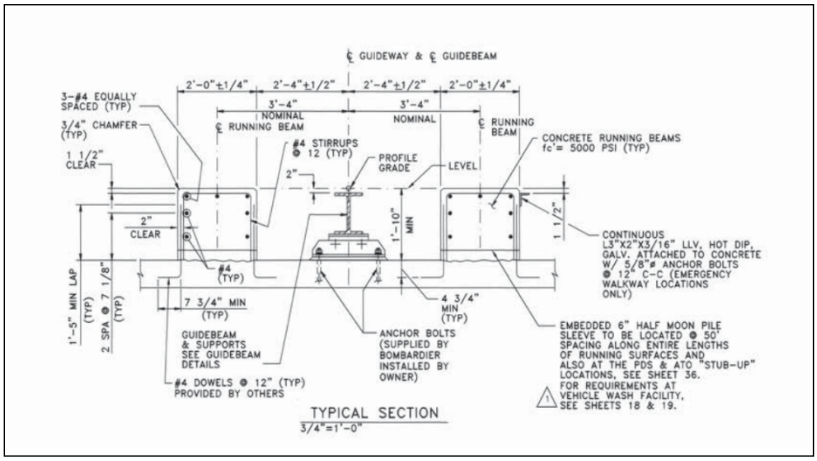


Figure 2.4

2.2 SUBSTRUCTURE

Above ground level, the substructure is comprised of reinforced concrete bents with square or rectangular columns and rectangular or inverted-T bent caps. The dimensions of the bent columns vary, but all column cross sections have a general rectangular shape with reentrant corner block outs at each corner.

Bent caps support the superstructure beams, utilizing the ledges of inverted-T sections. In this type of structure, the beam ends rest on ledges provided at the bottom of the bent caps on both sides of the bent cap stem. At each beam location, built-up concrete beam seats are provided on the ledge top. Elastomeric bearing pads are then installed on the concrete beam seats.

Single-column bents (or hammerhead bents) were used for locations where the column does not conflict with the North Terminal Road or other facilities (see **Figure 2.5 and Figure 2.6**). For these bents, the cap depth can be constant or varying depending on the cap length which in turn depends on the guideway alignments. **Figure 2.5** shows a short bent cap, with constant cap depth, supporting a single deck combining two guideways. **Figure 2.6** shows a long bent cap with varying cap depth, supporting separate guideways.

Figure 2.5

Figure 2.6

When single column bents would conflict with the road below, straddle bents (two-column frames typically without cap overhangs at the ends) were used to support the guideway superstructure. In this case, the bent cap depth is always constant. **Figure 2.7** shows several straddle bents supporting separate guideways.

Figure 2.7

3. STRUCTURAL CONDITION ASSESSMENT – TERMINAL A TO D/E

3.1 VISUAL OBSERVATION AND OVERALL CONDITION ASSESSMENT

3.1.1 GUIDEWAY

This Section presents the most common and the more severe deficiencies noted on the visual observations. These issues, however, do not represent all the deficiencies found during the assessment, but only the typical and most significant ones. For all recorded deficiencies and full descriptions of the issues found on the structural observations, the reader is referred to the HAS Enterprise Asset Management System (EAMS) system and to **Appendix H**.

3.1.1.1 CONCRETE RUNNING BEAMS

In general, the running beams were found in good condition, but evidence of distress was observed. For instance, the top surface of the running beams was generally slightly abraded due to wearing caused by the APM wheels (see **Figure 3.1**). The abrasion was considered minor as very few small spalls or pop-outs in wheel path were observed (see **Figure 3.2**). Abrasion damage was slightly more pronounced near the terminals where APM braking forces wear the concrete surface more quickly.

Figure 3.1

Figure 3.2

Another very common type of damage observed in the running beams was transverse cracking. Cracks were observed along the running beams in every span with spacings varying between 2 and 6 feet. Crack width generally varied between 0.01 inch and 0.05 inch (see **Figure 3.3** and **Figure 3.4**). The pattern and spacing of cracking is consistent with restrained volumetric changes in the concrete beam.

Figure 3.3

Figure 3.4

Additionally, map cracking on top of running beams **(Figure 3.5**) and cracking under the running beams (**Figure 3.6**) was observed. The map cracking ranged from minor to moderate to severe. Cracking under the running beams were found at switches near the MSF facility, and cracks were about 0.01 inches in width and between 4 inches long up to the full height of beam.

Figure 3.5

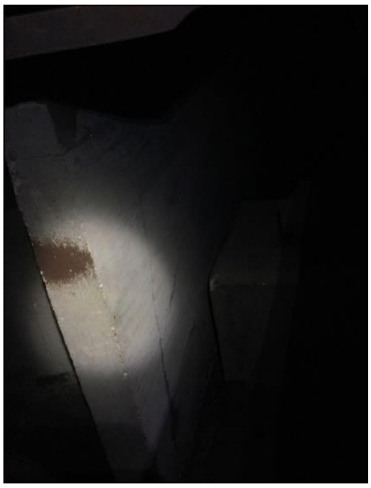


Figure 3.6

Spalling of the running beams and loose concrete were observed at switches in transitions between running beam and metal switch plate (**Figure 3.7** and **Figure 3.8**). Spalls and cracking were also very common at relief joints (**Figure 3.9**) likely from a punctured APM wheel. The depth of spalling varied between 1 and 5 inches, and in one instance the reinforcing steel was exposed. At these locations reinforcement cover is significantly reduced which is an important durability issue.

Figure 3.7

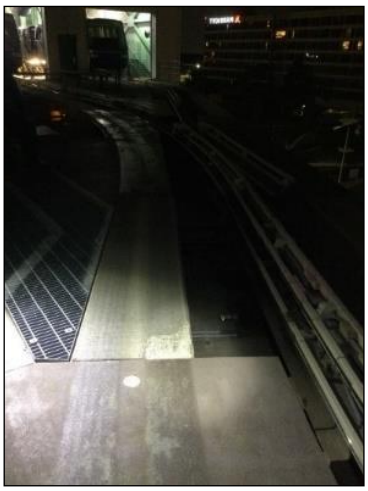


Figure 3.8

Figure 3.9

3.1.1.2 GUIDE BEAM TO DECK CONNECTION

As discussed in **Section 2.1**, the steel guide beams are anchored to the deck slab using anchor rods embedded in the concrete. In most cases, grout pads were placed in the gap between the connection steel angle and the deck slab to provide a uniform bearing surface. These connections were not a focus of the inspection. However, major issues were noted including a spalled grout pad (**Figure 3.10**) and missing bolts (**Figure 3.11**). These damaged grout pads should be retrofitted to avoid further damage and eventual effects on the steel beams.

Figure 3.10

Figure 3.11

3.1.2 SUPERSTRUCTURE

3.1.2.1 PRESTRESSED CONCRETE BEAMS

During the visual observation, the prestressed concrete beam did not display evidence of significant concrete deterioration. Honeycombing, voids during manufacturing, were observed throughout the APM beams as shown in **Figure 3.12**. A few beams showed minor cracking ranging from 0.005 inches to 0.01 inches at beam ends, also shown in **Figure 3.12**. A couple instances of spalling at the beam end was observed during inspection, as shown in **Figure 3.13**. Additionally, a single instance of a minor beam rotation was spotted, illustrated in **Figure 3.14**. This is beam 1 located on span 7 of bent 38 and has rotated in the North direction.

Figure 3.12

Figure 3.13

Figure 3.14

3.1.2.2 DECK SLAB

The deck of the APM Guideway is generally in good condition. A few deficiencies were found which may pose danger to the vehicular traffic on the roadway below. All deck deficiencies are presented in the subsections below.

Critical Delamination

The deck curb over the bents 43, 44, and 45 is severely delaminated. As time passes the delaminated concrete may spall off completely and pose a danger to the traffic below. It is recommended that APM authorities remove the delaminated concrete in a controlled manner as soon as possible. See **Figures 3.16-3.17** for delaminated sections.

Figure 3.15

Figure 3.16

Figure 3.17

Cracking

Vertical cracking was observed in the parapet walls at the edges of the slab along the entire length of the slab, likely due to the restrained concrete shrinkage. Cracks measured widths between 0.01 and 0.02 inches and occurred every 2 to 3 feet (**Figure 3.18**). Over the bent locations, these cracks are more pronounced and extend underneath the deck. Cracks have widths up to 0.04 inches and are closely spaced, between 12 and 18 inches (**Figure 3.19**). These cracks may be caused by negative moment tension stresses.

Figure 3.18

Figure 3.19

Horizontal (longitudinal) cracking was observed on the parapet walls at the edges of slabs throughout the inspection (**Figure 3.20**). Cracks have widths of approximately 0.01 inches. Cracking may be caused by the

casting operation of the exterior curb portion of the slab. Horizontal cracking is also more prominent over the bent caps.

Figure 3.20

Spalling and Deformation

Minor spalling was observed on the deck surface. No instances of exposed reinforcing were observed in the surface spalls. At these locations, reinforcement concrete cover is reduced which may impact the overall durability of the deck.

Spalls and concrete delamination were observed on deck edges all along the APM guideway. These spalls are likely due to stress concentrations and were more common at deck overhang interfaces with other bridge components such as the bent (see **Figures 3.21, 3.22, and 3.23**). Generally, the spalls do not show any evidence of active corrosion.

Figure 3.21

Figure 3.22

Figure 3.23

3.1.2.3 DRAINAGE

At a few of the bent locations, the deck drains were clogged, and the drainage troughs were filled with debris. **Figure 3.24** and **Figure 3.25** show two of the clogged deck drains. Clogging may be due to a combination of lack of grates protecting the drains and lack of maintenance. The observed clogging may be indicative of other drainage issues inside the cap or column. However, this was not inspected as part of the investigation for this report.

Figure 3.24

Figure 3.25

Figure 3.26 shows evidence of standing water (ponding) and **Figure 3.27** shows evidence of algae growth on the deck. It is believed that deck ponding was caused by uneven finishing of the slab top surface. While water alone would not cause damage to the slab, it may eventually lead to reinforcement corrosion.

Figure 3.26

Figure 3.27

Figure 3.28 shows a loose drainage pipe support on the East face of Bent 49 between beams 1 and 2. On the west face in the same location of the same bent, **Figure 3.29** shows a deck drainage pipe. The entire deck drainage pipe saddle support is detached.

Figure 3.28

Figure 3.29

3.1.2.4 EXPANSION JOINTS

Deck expansion joints were typically observed to be in poor condition. Seals and compressible particle boards were generally loose, deteriorating or missing (see **Figure 3.30** and **Figure 3.31**). As a result, it is very common to have water leaking through the expansion joints and subsequent staining of the structure below. These stains are not only unsightly, but leakage can reduce the long term durability of the concrete elements exposed to the wetting and drying cycles. This will eventually trigger deleterious reactions in the concrete or corrosion of reinforcing steel.

Figure 3.30

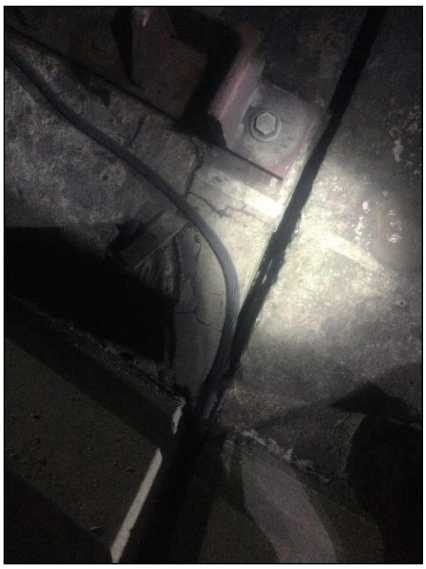


Figure 3.31

3.1.2.5 HANDRAILS

Handrails were noted to be in generally good condition and galvanized. Minor corrosion was observed in some bolts at the connection to the deck curb in a few locations.

3.1.2.6 WALKWAY

In general, the walkway is in good condition and galvanized.

3.1.3 SUBSTRUCTURE

3.1.3.1 BENT CAPS

Bent caps were closely inspected with the help of a telescopic boom lift. A variety of cracks were observed both on the side faces and on the end faces of the caps. A detailed description of the cracks is presented in the following subsections. Additional damage included grout pad delamination, water leaking staining, spalling, etc. No signs of efflorescence were observed.

SIDE DIAGONAL CRACKING

Diagonal shear cracking was observed in caps of both the hammerhead bents and the straddle bents. **Figure 3.32** shows diagonal cracking on a hammerhead bent. **Figure 3.33** shows diagonal cracking on a straddle bent. The number of cracks along the length of the bents varied from 2 to 10 cracks spaced every 2 to 5 feet. The measured lengths of the cracks varied between 2 feet and 8 feet and the measured widths varied from less than 0.01 inches to greater than 0.02 inches. Significant cracking, spalling, delamination, and evidence of active corrosion were observed in a few bent cap structures.

Figure 3.32

Figure 3.33

SIDE VERTICAL CRACKING

Vertical cracking is common on the side faces of the bent cap stem on both the hammerhead and straddle bents. Most of the cracks are located at the bottom of the stem section spaced every foot and can extend to the underside of the cap (**Figure 3.34** and **Figure 3.35**). Some of the vertical cracks also extend through the entire height of the section. Crack widths measured from 0.01 inches to 0.02 inches.

Figure 3.34

Figure 3.35

LEDGE CRACKING

Ledges of the inverted-T bent caps displayed a substantial number of cracks. Cracking was evident on both the face of the ledge of the bent cap and at the interface between the ledge and the stem.

Figure 3.36 shows the typical cracking on the face of the ledge. The height of these vertical cracks varied from 1 foot to the full height of the ledge and then extended down under the cap up to 12 inches. The width of these cracks varied from 0.01 inches to 0.02 inches.

Figure 3.37 shows the typical cracking at the interface between the ledge and the stem. These cracks correspond to a classic shear-friction limit state for the ledge. The width of these cracks varied from 0.01 inches to 0.02 inches.

Figure 3.36

Figure 3.37

CRACKING AT THE END FACE OF INVERTED-T CAPS

Widespread and significant cracking was observed at the end face of the caps of the inverted-T section. Typical cracking observed was diagonal cracking that originated from the corner ledges. **Figure 3.38** shows this typical cracking. **Figure 3.39** shows the diagonal ledge cracking that progressed from both corners of the inverted-T ledge and morphed into one horizontal crack and then wrapped around the face of the stem. Crack widths varied from 0.01 inches to 0.02 inches.

Figure 3.38

Figure 3.39

Another type of crack that was observed on the inverted-T section is shown in **Figure 3.40** and **Figure 3.41.** These large horizontal cracks were located at mid-height of the stem. The cracks extended the full width of the stem and into the length of the cap. The crack widths were measured to be between 0.01 inches and 0.03 inches.

Figure 3.40

Figure 3.41

GROUT PADS (BEARING SEATS)

Several grout pads were moderately to severely delaminated. Grout pads were hollow the full length and from half width up to full width (see **Figure 3.42** and **Figure 3.43**).

Figure 3.42

Figure 3.43

Some grout pads were spalled with loose concrete. In severe cases, the spalls would leave the bearing pad unsupported in sections (see **Figure 3.44** and **Figure 3.45**). **Figure 3.46** shows a grout pad at bent 47 that contains loose concrete and is in danger of falling.

Figure 3.44

Figure 3.45

Figure 3.46

OTHER BENT CAP DAMAGE

In addition to the aforementioned bent cap damage, other damages were observed on the bent caps. Additional issues were corrosion stains, water leakage stains, spalling and delamination, exposed rebar, debris, bird waste on top of the caps, and few pop-outs.

Figure 3.47 shows an instance of exposed rebar. **Figure 3.48** shows delaminated concrete that is close to spalling off. **Figure 3.49** and **Figure 3.50** show two 2.5 foot spalls at the top of the stem.

Figure 3.47

Figure 3.48

Figure 3.49

Figure 3.50

3.1.3.2 BENT COLUMNS

In general, the columns were in relatively good condition although deficiencies were recorded in most columns. Widespread horizontal cracking was observed in most columns as shown in **Figure 3.51** and **Figure 3.52**. Typically, horizontal cracks were regularly spaced at spacings varying from 5 inches to 36 inches. Crack widths ranged from 0.01 inches or less up to 0.04 inches. There were a few instances of minor corrosion stains on the columns. No signs of efflorescence were observed.

Figure 3.51

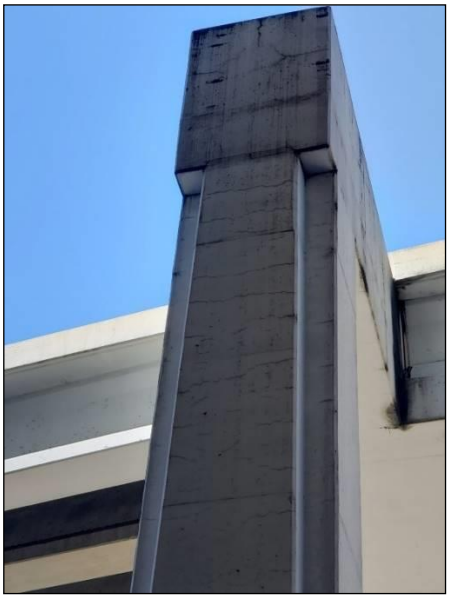


Figure 3.52

Horizontal cracks were also observed in several instances at the top of the column (**Figure 3.53**). The width of the cracks varied between 0.02 and 0.03 inches. In some instances, the crack at the top of column also had minor delamination or spalling (**Figure 3.54**).

Figure 3.53

Figure 3.54

3.1.3.3 ELASTOMERIC BEARING PADS

Most bearing pads were found in adequate conditions. Several pads, however, were noted to have displaced in the longitudinal and transverse direction up to about 2 inches. In some cases, the displacement is so severe that part of the pad has lost support (see **Figure 3.55** and **Figure 3.56**).

Figure 3.55

Figure 3.56

A minor issue that was observed in a few pads is permanent deformation in the longitudinal direction (see **Figure 3.57** and **Figure 3.58**). The typical deformation ranged between 0.25 and 0.50 inches.

Figure 3.57

Figure 3.58

In addition, a minor issue found was that some pads were skewed about 1/4 inch, causing the bearing to not be fully in contact with the beam (see **Figure 3.59** and **Figure 3.60**). The part of the bearing pad not in contact ranged from 2 inches to 8 inches.

Figure 3.59

Figure 3.60

3.1.4 PREVIOUS REPAIRS

Previous repairs were observed in some running beams and columns. The running beams had both patch repairs and larger section repairs (**Figure 3.61** and **Figure 3.62**).

Figure 3.61

Figure 3.62

The columns also had previous small and large section repairs. **Figure 3.63** shows a column with the bottom 1/3rd repaired, and **Figure 3.64** shows a small portion of the column repaired.

Figure 3.63

Figure 3.64

Shear keys have been installed at several bents to provide lateral transverse support to the beams (**Figure 3.65** and **Figure 3.66)**.

Figure 3.65

Figure 3.66

3.2 RECOMMENDATION

Based on the observations listed in **Section 3.1**, HNTB Corporation recommends the following items for repair and maintenance:

3.2.1 CONCERNING DEFICIENCIES RECOMMENDATIONS

1. Provide a waterproofing and sealing coating to all surfaces of the concrete running beams in every span of all guideways to prevent transverse cracking from deteriorating further. Where spalls are found, unsound concrete shall be removed, and the area patched with high strength grout.
2. Provide epoxy injection of cracks at bent caps and columns and repair concrete spalls at top of inverted inverted-T stem elements.
3. A few of the stem shear cracks and some ledge cracks at the cap ends are very wide; therefore, it is recommended to conduct a more in-depth structural analysis of the affected caps to determine if and which measures need to be taken (for instance, cap retrofit and establishing a time frame for it).
4. Adjust (or replace, if necessary) displaced and distorted elastomeric bearing pads supporting prestressed beam.
5. Clean and reseal joints at all deck expansion joints.
6. Repair all locations of the top surface of the concrete running beams where significant abrasion, pop-outs and spalls were found.

3.2.2 NON-CONCERNING DEFICIENCIES RECOMMENDATIONS

1. Provide epoxy injection of cracks at the exterior faces of the deck that run continuously on top of inverted-T caps at straddle bent caps.
2. Remove and replace with epoxy grout material all deteriorated (cracked or spalled) grout bearing pads supporting the guide beam connections.
3. Provide epoxy injection of cracks in the deck slab at bent locations with no expansion joints.
4. Clean all clogged drain inlets in the deck. Investigate if pipes inside bent caps and columns are clogging and clean them if that is the case.

4. VISUAL ASSESSMENT PROTOCOL

The underside observations consisted of a visual review of the columns, bent caps, prestressed concrete beams, bearing pads, and the edges of the slab. Using temporary traffic control, underside observations were conducted via boom lift. A few underside areas were inaccessible by boom lift. These observations did not require any disruption of the operation of the APM and were conducted during daytime hours.

Topside observations consisted of a visual review of the concrete running beams, bridge deck, and the handrails. These topside observations required that the APM tracks be de-energized to make access as safely possible. To minimize the impact of these disruptions, all topside observations were conducted at night.

This protocol was developed to review the condition of the guideway structure. The visual assessment included the following tasks:

4.1 WORK AREA NOTIFICATION

Work Area Notifications were approved by the IAH Operations Management in order to inspect the underside of the APM structure.

4.2 VISUAL ASSESSMENT

Detailed visual assessments of guideway structural components are detailed below.

4.2.1 BENT CAPS AND COLUMNS

- Bent Caps: Look for diagonal, vertical, and horizontal cracking along with spalling at the top of the stems. Also, look for diagonal or horizontal cracks at the end faces of the inverted-T caps. Also, look for delamination, exposed rebar, corrosion stains, water leakage stains, and pop-outs.
- Columns: Look for possible honeycombs, horizontal cracking, map cracking, delamination, spalling, corrosion stains, and efflorescence.

4.2.2 PRESTRESSED CONCRETE BEAMS AND BEARING PADS

- Prestressed Concrete Beams: Look for diagonal cracks at the supports and vertical cracking at the bottom flange of the beam about the middle of the span. Also, look for rotated beams, honeycomb, spalls, and efflorescence.
- Bearing Pads: Look for displacements of the pads on the longitudinal and transversal direction and deformation in the longitudinal direction. Also, look for wear out of the pads and uneven bearing of the beams.

4.2.3 GUIDEWAY SLABS

- Look for cracking, delamination, and spalling at the exterior faces of the slab. Also, look for wearing out at the top of the slab, missing, or deteriorating joint seals, and possible efflorescence.

4.3 OBSERVATIONS

Observations of nonstructural elements related to the guideway are detailed below.

4.3.1 CONCRETE RUNNING BEAMS

- Look for wearing out, abrasion, map cracking and transverse cracking around the running beams. Also, look for spalling at switches at transitions and spalling and cracking at relief joints, and spalls in wheel path.

4.3.2 WALKWAY SYSTEM AND HANDRAILS AND THEIR ASSOCIATED CONNECTIONS TO THE GUIDEWAY SLAB BELOW

- Look for handrail anchor bolts and possible corrosion of assemblies.

4.3.3 DOCUMENTATION OF DRAINAGE AND WATERPROOFING ISSUES IN RELATION TO OBSERVED CONCRETE DISTRESS

- Look for leaking water on the underside and standing water on the top of the deck. Also, look for clogged drains.

5. METHODOLOGY

Given the similarities between a vehicular bridge structure and the APM structure, the general principles established by the Federal Highway Administration (FHWA) were applied to conduct periodical visual bridge inspections. These principles have been followed with some modifications in order to adjust the particularities inherent to the Automated People Mover System characteristics, as well as the assessment parameters given within the scope of the work to determine the Actual Condition Index (ACI) and the Financial Condition Index (FCI).

The System/Component hierarchy has been determined as shown on **Figure 5.1** and can be described as follows:

System: APM guideway structural system between Terminal A and Terminal D

Component:

- Superstructure
- Substructure

Subcomponent:

Superstructure:

- Deck
- Expansion Joints
- Prestressed Beams
- Bearing Pads

Guideway – Running Beams:

- Guidebeams Attachments
- Running Beams

Substructure:

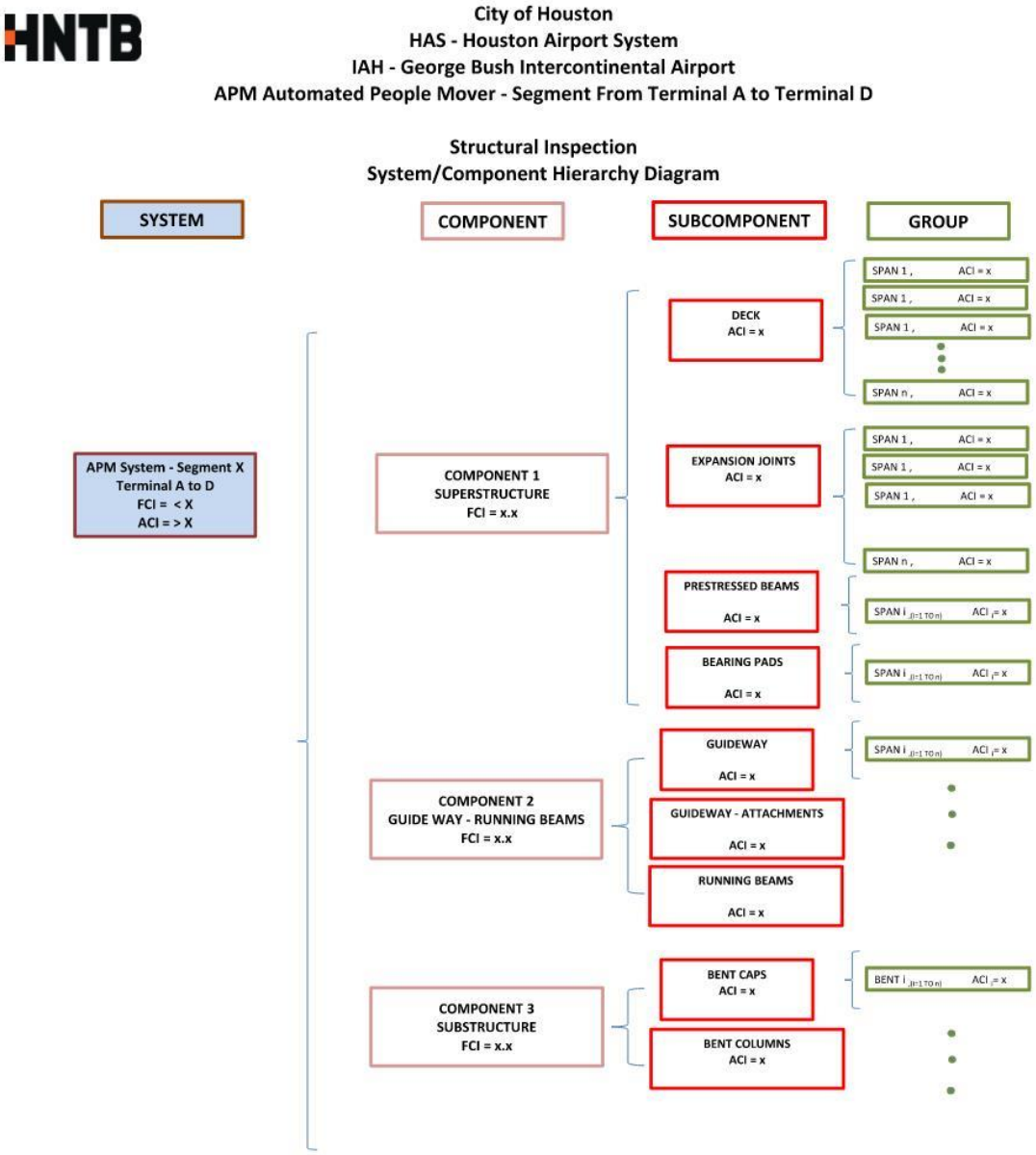
- Bent Caps
- Bent Columns

Element:

Superstructure Subcomponent:

- Span i=1 to n; n = number of spans

Figure 5.1



Based on the visual field observations, the Actual Condition Index (ACI) is evaluated at the element level, applying a numerical value from 0 to 10 as defined on **Appendix C** that represents the element structural condition. Specifically, ACI is used to judge the System element structural visual condition in comparison to its original as-built condition.

The ACI index of a subcomponent is the minimum ACI value from all of its elements. In the same way, the ACI values for Components and for the entire System are evaluated by taking the lowest ACI values of their predecessors in the hierarchy levels.

In contrast, the Financial Condition Index (FCI) is evaluated only at the System level. Its value corresponds to the ratio of the Total Cost of Deferred Maintenance over the Current Replacement value.

The Total Costs of Deferred Maintenance is the summation of all the repairs required to bring the system at an Actual Condition Index (ACI) of 10. The repair costs are calculated based on the type of deficiencies encountered on the inspections, the calculated quantity of repair work measured during the inspection, and the unitary prices. These repair costs are shown later in **Table 6.2**.

The current replacement value has been estimated using unitary prices per square footage for bridge construction. For this case and for year 2021 the unitary price is taken as $260/SF for a total cost of $31,200,000.00. The estimated construction cost does not include the Terminal buildings, nor the Train Systems. Moreover, the estimated cost does not include engineering, procurement, project, nor program management.

The previous Automated People Mover Condition Assessment by HNTB (**Reference 7**) was referenced to determine if deficiencies had been repaired or retrofit and to deduce if deficiencies had significantly deteriorated since they were identified in 2015.

6. DELIVERABLES

6.1 CURRENT OPERABILITY OF THE INFRASTRUCTURE SYSTEM TO MEET MISSION REQUIREMENTS

Currently the facility is operating at the level the design was intended and as of today, the facility is meeting the mission requirements.

6.2 REMAINING NOMINAL USEFUL SERVICE LIFE

The service life of the structure was not specified in the design documentation available at the time of the condition assessment. However, according to ACI 358-1R-92 specification (**Reference 2**), guideway structures are normally designed for a 75-year service life. This is accomplished by improving the durability of the structure by providing adequate material selection, reinforcing detailing, and construction quality control. Most of this information was unavailable at the time of the condition assessment.

The APM segment between Terminals A and B, as well as segment between C and D were designed using the American Association of State Highway and Transportation Officials Load and Resistance Factor Design Specification which has also adopted a 75-year design service life. There is no information regarding the design specification used for the segment between Terminals B and C.

Despite the uncertainty of the material selection and construction quality, a preliminary estimate of the remaining service life of the structure can be determined based on the year of construction (about 25 years ago). If a maintenance program is implemented as proposed in **Section 6.11** and the repair recommendations given in this report are followed, the remaining estimated nominal useful service life of the facility is expected to be about 35-40 years. This is based on reducing the original service life by 25% (due to uncertain material and construction quality as well as the observed early deterioration caused by cracking) and then, subtracting the years that it has been in operation.

On the other hand, if no repairs are done and no maintenance program is implemented, the remaining service life will be reduced as the structure deterioration will continue. Concrete deterioration that reduces the remaining service life of a structure can have many different causes. The main degradation mechanisms are corrosion, freeze-thaw cycles, carbonation, chemical attack (acid and sulfates) and mechanical loads (fatigue, vibration, and overloads).

Out of the causes of further degradation listed above, corrosion is the most likely in this case given the widespread cracking already in place and the abundant sources of moisture in the facility. In fact, some corrosion was already observed in the recent condition inspections. Therefore, the evaluation of the remaining service life of the structure will be based solely on reinforcing steel corrosion. Most corrosion evaluation methods, however, are based on determining moisture and chloride penetration into the concrete cover until moisture reaches the reinforcing bars. Since concrete is already cracked in this case, water can easily reach the reinforcing. Thus, the approach used in this study is based on determining the loss of section in the reinforcement.

The Report ACI 365.1R-00 for service life prediction of concrete structures (**Reference 10**) includes several methods to estimate the remaining service life of new and existing structures. Some of these methods are based on experience or on performance of similar materials. More elaborate methods use accelerated testing results, mathematical modeling of expected degradation processes, or advanced reliability and stochastic concepts.

The method proposed by ACI 365.1R-00 to determine the remaining service life of the structure based on reinforcement loss of section due to corrosion requires measuring bar diameter (using the corrosion current density) to evaluate the corrosion rate. These measurements are out of the scope of this report and therefore, only an approximate estimation can be done. Assuming a relatively low corrosion rate between 0.5 and 2.7 µA/cm2, the remaining service life of the structure will be between 10 and 15 years. However, routine maintenance will extend the remaining service life a significant amount.

6.3 ASSESSMENT OF THE EFFECTIVENESS OF CURRENT MAINTENANCE POLICIES, PROCEDURES AND PERIODICITIES TO IMPROVE.

6.3.1 PROVIDE RECOMMENDATIONS FOR IMPROVEMENT OF MAINTENANCE POLICIES, PROCEDURES AND PERIODICITIES TO IMPROVE LIFE CYCLE PERFORMANCE AND/ OR LEVEL OF SERVICE AS APPLICABLE

Currently, there is no formal inspection and maintenance program or policy for the structural facility of the APM system at the IAH airport. It is recommended to set up a formal program to inspect and maintain the structure, considering the following parameters:

6.3.1.1 STRUCTURAL INSPECTIONS

Based on the recommendations by the FHWA for similar structures on the National Highway System, the facility must be inspected bi-annually following the methodology presented in Chapter 4 of this report. Inspections shall be conducted or directly supervised by a Professional Engineer licensed in the state of Texas with at least five years of experience directing similar tasks.

The guideway, track, and support structure are typically inspected using the following criteria:

1. Visually inspect the guideway for cracks, damage, foreign objects, and debris or deterioration.
2. Check the guideway and track fasteners for looseness or deterioration.
3. Check the vertical and horizontal guide sheave bearings for adequate lubrication, as applicable.
4. Visually inspect the footings and anchor points, as applicable.
5. Check for abnormal wear or contact between the cabin wheels and the guideway.
6. Visually inspect the track rail and pedestal mount for cracks.
7. Check the guideway drain trough access ports and covers.
8. Check the power feed and electrical service to the guideway and track.
9. Inspect the vertical and horizontal guide sheaves and mounts.
10. Check the access platform, walkways, catwalk, and railing.
11. Visually inspect the track expansion joints.
12. Visually inspect the track running surface.
13. Check the overall condition of the guideway.
14. Visually inspect the condition of the isolator bushings.
15. Visually inspect the guideway safety rail.
16. Check all switches for damage.
17. Visually inspect the conductor rail.
18. Visually inspect the track end buffer.
19. Visually inspect all signals.

6.3.1.2 MAINTENANCE RECOMMENDATIONS

The most common deficiencies and their associated maintenance recommendations/repair items that structures of this type present are summarized in the table shown in **Table 6.1**.

Table 6.1: Common Deficiencies and Maintenance Recommendations

DEFICIENCY	MAINTENANCE RECOMMENDATIONS/REPAIR ITEMS
Guideway Abrasion-Wearing	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK
Guideway Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK
Guideway Missing Anchor Bolts	INSTALL MISSING BOLTS
Guideway Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)
Substructure .01" < Cracking < .02"	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)
Substructure Cracking < .01"	CRACK MONITORING INSPECTION
Substructure Cracking > 0.02"	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)
Substructure Degraded Coat of Paint	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS
Substructure Delamination	CRACK MONITORING INSPECTION
Substructure Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)
Substructure Honeycombs	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)
Substructure Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)
Substructure Map Cracking	CRACK MONITORING INSPECTION
Substructure Other	CLEAN AND PAINT EXISTING STRUCTURAL STEEL - GUIDEWAY BEAMS - ENTIRE SEGMENT
Substructure Rusting	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS
Substructure Scaling	CRACK MONITORING INSPECTION
Substructure Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)
Substructure Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)
Substructure Staining	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS
Superstructure Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK
Superstructure Delamination	CRACK MONITORING INSPECTION
Superstructure Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)
Superstructure Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS
Superstructure Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)
Superstructure Standing Water	REPAIR/LEVEL SLAB TOP SURFACE
Superstructure Water Leaking	CLEAN DRAIN INLETS

For each item that represents a typical structural deficiency an Opinion of Probable Cost has been calculated and presented in **Table 6.2**.

These prices need to be reviewed and updated, as applicable, for the year the construction work will take place. All the information gathered from the inspection will be loaded on the HAS Enterprise Asset Management System (EAMS) following instruction from HAS Infrastructure Asset Management / GIS Department.

Table 6.2: Opinion of Probable Cost

MAINTENANCE RECOMMENDATIONS / REPAIR ITEMS	WORK ITEM NO. 1	SUBTOTAL	WORK ITEM NO. 2	SUBTOTAL	TOTAL	MAINTENANCE PRIORITY
COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	$41,434.25			$41,434.25	2 (NEAR TERM)
CLEAN AND PAINT EXISTING STRUCTURAL STEEL - GUIDEWAY BEAMS - ENTIRE SEGMENT	2014-003	$712.50			$712.50	1 (PRIORITY)
INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	$225,000.00	2014-013	$150,000.00	$375,000.00	1 (PRIORITY)
CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	$61,790.90			$61,790.90	2 (NEAR TERM)
CLEAN AND SEAL EXPANSION JOINTS	2014-006	$108,734.40			$108,734.40	1 (PRIORITY)
INSTALL MISSING BOLTS	2014-007	$1,881.30			$1,881.30	1 (PRIORITY)
PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	$1,643.80			$1,643.80	2 (NEAR TERM)
CLEAN DRAIN INLETS	2014-009	$10,725.00			$10,725.00	2 (NEAR TERM)
TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	$200,830.37			$200,830.37	1 (PRIORITY)
CRACK MONITORING INSPECTION	2014-015	$405,280.00			$405,280.00	2 (NEAR TERM)
REPAIR/LEVEL SLAB TOP SURFACE	2014-016	$3,708.00			$3,708.00	2 (NEAR TERM)
CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	$197,837.70			$197,837.70	2 (NEAR TERM)
	SUBTOTAL	**$1,409,578.20**				
	SOFT COST - 30%	**$422,873.46**				
	MOBILIZATION - 10%	**$183,245.17**				
	CONTINGENCY - 15%	**$274,867.75**				
	TOTAL INVESTMENT	**$2,290,564.58**				

NOTES:
1. ENGINEERING IS NOT INCLUDED IN THE OPINION OF PROBABLE COST.
2. IN ORDER TO VERIFY THAT RECOMMENDED REPAIRS ARE WORKING AS INTENDED. IT IS RECOMMENDED THAT 6 MONTHS AFTER WORK ITEM NO.1 IS PERFORMED AN INSPECTION IS CONDUCTED TO EVALUATE DURABILITY OF THE REPAIR. THIS COST HAS NOT BEEN INCLUDED IN THE ESTIMATE.
3. ESTIMATED CONSTRUCTION COSTS ARE BASED ON HISTORICAL RECORDS OF SIMILAR TYPES OF WORK.
4. COST MAY VARY DUE TO THE TIME OF THE YEAR, LOCAL ECONOMY AND OTHER FACTORS.
5. ESTIMATED COST ARE IN BASED ON AUGUST 2021 DOLLARS.
6. CONCRETE STRUCTURE REPAIRS ARE BASED ON AN AVERAGE REPAIR DEPTH OF 2 INCH THICK.
7. UNIT PRICING IS BASED ON THE QUANTITIES PROVIDED. UNIT COSTS MAY BE AFFECTED BY QUANTITY CHANGES.

Ideally, the facility should have an ACI index of at least 7 and a FCI less than 0.2. Therefore, the issues that have been encountered at element level that drive the facility's ACI lower than 7 have to be repaired following the recommendations stated on the inspection report in order to attain the desired minimum level of ACI for the entire facility.

6.4 NUMERICAL RATING OF ACTUAL ASSET SYSTEM CONDITION (ACI)

The Actual Condition Index (ACI) is defined as the lowest rating of the deficiencies encounter during the structure visual assessment. The ACI rating for this facility has been considered to be 5.0. See **Appendix F** for individual component and subcomponent's facility scores.

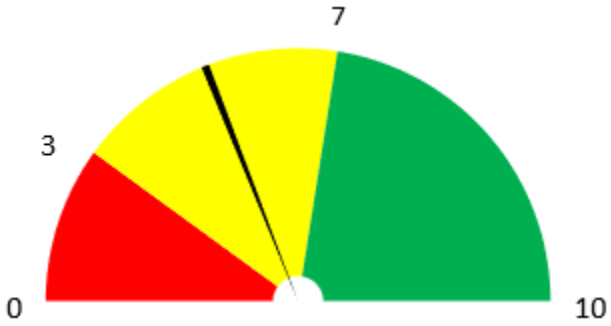


Figure 6.1: ACTUAL CONDITION INDEX (ACI)

6.5 PRIORITIZED RECOMMENDED REPAIRS, RECAPITALIZATION UPGRADE AND/OR REPLACEMENT (PRIORITY, NEAR TERM, LONG TERM)

Table 6.3 represents the recommended repair and the maintenance priority of the repairs that need to be done.

Table 6.3: Recommended Repair and Maintenance Priority of Repairs

MAINTENANCE RECOMMENDATIONS/REPAIR ITEMS	WORK ITEM NO. 1	WORK ITEM NO. 2	MAINTENANCE PRIORITY	MAINTENANCE FREQUENCY
COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002		2 (NEAR TERM)	ONCE
CLEAN AND PAINT EXISTING STRUCTURAL STEEL - GUIDEWAY BEAMS - ENTIRE SEGMENT	2014-003		1 (PRIORITY)	ONCE
INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	2014-013	1 (PRIORITY)	ONCE
CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005		2 (NEAR TERM)	ONCE
CLEAN AND SEAL EXPANSION JOINTS	2014-006		1 (PRIORITY)	5 YEARS
INSTALL MISSING BOLTS	2014-007		1 (PRIORITY)	ONCE
PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008		2 (NEAR TERM)	ONCE
CLEAN DRAIN INLETS	2014-009		2 (NEAR TERM)	5 YEARS
TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011		1 (PRIORITY)	ONCE
CRACK MONITORING INSPECTION	2014-015		2 (NEAR TERM)	5 YEARS
REPAIR/LEVEL SLAB TOP SURFACE	2014-016		2 (NEAR TERM)	ONCE
BRIDGE CLEANING AND SEALING/COATING (SEE NOTE 8)	2014-017		2 (NEAR TERM)	ONCE
CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018		2 (NEAR TERM)	ONCE
NO ACTION DETERMINED. DEFICIENCY COULD NOT BE QUANTIFIED.				
NO ACTION REQUIRED. INFORMATION FOR REFERENCE ONLY				

6.6 DETERMINATION OF THE ESTIMATED VALUE OF DEFERRED MAINTENANCE, AND THE CURRENT REPLACEMENT VALUE (FCI)

The Financial Condition Index (FCI) is defined as the total cost of deferred Maintenance/Current Replacement Value. The FCI value for this facility under the current condition is equal to 0.08. This value

does not account for any retrofit that the APM structure may require based on the recommended structural analysis.

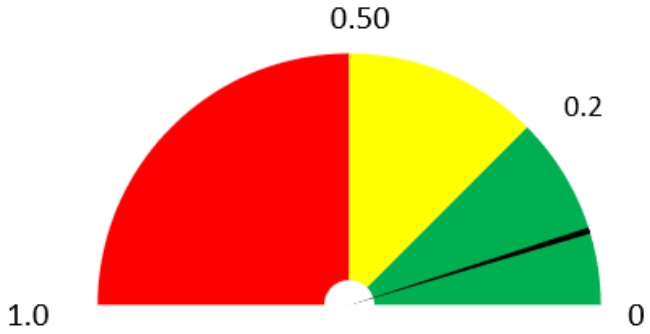


Figure 6.2: FINANCIAL CONDITION INDEX (FCI)

6.7 COMPLETED CONDITION ASSESSMENT (DO-FORMS)

The complete condition assessment will be delivered in excel format according to HAS Infrastructure Asset Management / GIS IT department specifications.

6.8 DEFICIENCIES AND WORK ITEM SPECIFICATIONS

See **Appendix F** and **Appendix G**.

6.9 MINIMUM ESTIMATED INVESTMENT TO BRING THE FACILITY TO RATING SCORE OF 7 ON A "PRIORITY" PLANNING HORIZON TERM

The minimum estimated investment to bring the facility to a rating score of 7 on a priority planning horizon term is shown in Table 6.4. See **Appendix F** for Matrix of Investment Items.

Table 6.4: Minimum Estimated Investment to Bring the Facility to Rating Score of 7 on a "Priority" Planning Horizon Term

OPINION OF PROBABLE COST	WORK ITEM NO. 1		WORK ITEM NO. 2				
	ITEM	SUBTOTAL	ITEM	SUBTOTAL	TOTAL	MAINTENANCE PRIORITY	MAINTENANCE FREQUENCY
INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	$219,375.00	2014-013	$146,250.00	$365,625.00	1 (PRIORITY)	ONCE
CLEAN AND SEAL EXPANSION JOINTS	2014-006	$108,734.40			$108,734.40	1 (PRIORITY)	5 YEARS
INSTALL MISSING BOLTS	2014-007	$1,881.30			$1,881.30	1 (PRIORITY)	ONCE
TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	$49,865.66			$49,865.66	1 (PRIORITY)	ONCE
				SUBTOTAL	**$526,106.36**		
				SOFT COST - 30%	**$157,831.91**		
				MOBILIZATION - 10%	**$68,393.83**		
				CONTINGENCY - 15%	**$102,590.74**		
				TOTAL INITIAL INVESTMENT	**$854,922.84**		

NOTES:
1. ENGINEERING IS NOT INCLUDED IN THE OPINION OF PROBABLE COST.
2. IN ORDER TO VERIFY THAT RECOMMENDED REPAIRS ARE WORKING AS INTENDED. IT IS RECOMMENDED THAT 6 MONTHS AFTER WORK ITEM NO.1 IS PERFORMED AN INSPECTION IS CONDUCTED TO EVALUATE THE DURABILITY OF THE REPAIR. THIS COST HAS NOT BEEN INCLUDED IN THE ESTIMATE.
3. ESTIMATED CONSTRUCTION COSTS ARE BASED ON HISTORICAL RECORDS OF SIMILAR TYPES OF WORK.
4. COST MAY VARY DUE TO THE TIME OF THE YEAR, LOCAL ECONOMY AND OTHER FACTORS.
5. ESTIMATED COST ARE IN BASED ON AUGUST 2021 DOLLARS.
6. CONCRETE STRUCTURE REPAIRS ARE BASED ON AN AVERAGE REPAIR DEPTH OF 2 INCH THICK.
7. UNIT PRICING IS BASED ON THE QUANTITIES PROVIDED. UNIT COSTS MAY BE AFFECTED BY QUANTITY CHANGES.

6.10 ESTIMATE TO MAXIMIZE THE REMAINING SERVICE LIFE OF THE APM STRUCTURE

Assuming impactful maintenance practices are employed, the expected remaining service life of the APM structure is 35-40 years (**Section 6.2**). This section provides an estimate of proactive maintenance work that can maximize the service life of the APM structure. The total estimated cost to maximize the service life of the APM structure is approximately $8,629,600. The estimate includes the cost to perform the following maintenance recommendations, which are also included in **Sections 6.3 and 6.9**.

- Installing diaphragms and shear keys in between prestressed beams to minimize bearing movement
- Repair of spalls and other concrete imperfections
- Cleaning and sealing of expansion joints
- Cleaning drainage inlets
- Leveling slab to reduce ponding
- Epoxy injecting large cracks
- Cleaning and coating the structure to fill small cracks and minimize exposure to future corrosion
- Replace paragraph with:

It is recommended that all repairs be completed prior to cleaning and coating the structure to prevent damage to the coating. The structure should be coated in general accordance to Work Item 2014-017 in

Appendix G by a qualified contractor or vendor. The estimated cost includes the cleaning and coating of the exposed substructure, exterior beams, cast-in-place running beams and deck curbs.

Table 6.5: Estimated Investment to Maximize the Service Life of APM Structure

MAINTENANCE RECOMMENDATIONS / REPAIR ITEMS	OPINION OF PROBABLE COST WORK ITEM NO. 1	SUBTOTAL	WORK ITEM NO. 2	SUBTOTAL	TOTAL	MAINTENANCE PRIORITY
INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	$225,000.00	2014-013	$150,000.00	$375,000.00	1 (PRIORITY)
CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	$61,790.90			$61,790.90	2 (NEAR TERM)
CLEAN AND SEAL EXPANSION JOINTS	2014-006	$108,734.40			$108,734.40	1 (PRIORITY)
INSTALL MISSING BOLTS	2014-007	$1,881.30			$1,881.30	1 (PRIORITY)
CLEAN DRAIN INLETS	2014-009	$10,725.00			$10,725.00	2 (NEAR TERM)
TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	$200,830.37			$200,830.37	1 (PRIORITY)
REPAIR/LEVEL SLAB TOP SURFACE	2014-016	$3,708.00			$3,708.00	2 (NEAR TERM)
BRIDGE CLEANING AND SEALING/COATING (SEE NOTE 8)	2014-017	$4,350,000.00			$4,350,000.00	2 (NEAR TERM)
CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	$197,837.70			$197,837.70	2 (NEAR TERM)
	SUBTOTAL	**$5,310,507.66**				
	SOFT COST - 30%	**$1,593,152.30**				
	MOBILIZATION - 10%	**$690,366.00**				
	CONTINGENCY - 15%	**$1,035,548.99**				
	TOTAL INVESTMENT	**$8,629,574.95**				

NOTES:
1. ENGINEERING IS NOT INCLUDED IN THE OPINION OF PROBABLE COST.
2. IN ORDER TO VERIFY THAT RECOMMENDED REPAIRS ARE WORKING AS INTENDED. IT IS RECOMMENDED THAT 6 MONTHS AFTER WORK ITEM NO. 1 IS PERFORMED AN INSPECTION IS CONDUCTED TO EVALUATE THE DURABILITY OF THE REPAIR. THIS COST HAS NOT BEEN INCLUDED IN THE ESTIMATE.
3. QUANTITY IS BASED ON CLEANING AND SEALING OF SUBSTRUCTURE, EXTERIOR BEAMS, RUNNING BEAMS, AND DECK CURBS.
4. ESTIMATED CONSTRUCTION COSTS ARE BASED ON HISTORICAL RECORDS OF SIMILAR TYPES OF WORK.
5. COST MAY VARY DUE TO THE TIME OF THE YEAR, LOCAL ECONOMY AND OTHER FACTORS.
6. ESTIMATED COST ARE IN BASED ON AUGUST 2021 DOLLARS.
7. CONCRETE STRUCTURE REPAIRS ARE BASED ON AN AVERAGE REPAIR DEPTH OF 2 INCH THICK.
8. UNIT PRICING IS BASED ON THE QUANTITIES PROVIDED. UNIT COSTS MAY BE AFFECTED BY QUANTITY CHANGES.

6.11 POLICIES, MAINTENANCE AND RCM

In the Reliability Centered Maintenance (RCM) methodology, elements and equipment in a facility are classified based on their importance to either the process or the facility safety. Additionally, explicit recognition is made of the fact that failure probability and degradation mechanisms will vary among different elements and equipment. RCM approaches the development of a maintenance program by setting priorities for and optimizing of both financial and personnel resources. Thus, RCM becomes a systematic approach to evaluate a facility's structure, equipment, and resources, combine them in the most efficient manner and result in a high degree of reliability and cost-effectiveness for the facility maintenance.

Although a typical RCM relies heavily on predictive and preventive maintenance principles, it also accounts for the fact that some components are inexpensive or unimportant to the facility operation and therefore may be handled using only a reactive or corrective approach. The table of RCM element hierarchy shown below, provides guidance on the RCM development by equipment application. It is also important to both define the equipment criticality and cost of down-time when determining the optimal

mix of element maintenance approach. Once defined, the equipment can be prioritized in the developing a functional RCM program.

Table 6.6: Maintenance Priority Matrix for RCM Development

REACTIVE ITEMS	PREVENTIVE ITEMS	PREDICTIVE ITEMS
Small part and equipment	Equipment subject to wear	Equipment with random failure patterns
Non-critical equipment	Consumable equipment	Critical equipment
Equipment unlikely to fail	Equipment with known failure patterns	Equipment not subject to wear
Redundant systems	Manufacturer recommendations	Failure caused by incorrect preventive maintenance

Based on the above considerations, it is recommended that a formal RCM program is developed and implemented immediately for the structure supporting the APM Guideway. This program should include regular condition evaluations, preventive, predictive and reactive maintenance procedures, and a quality control and quality assurance plan.

As previously discussed, the RCM program must be developed gradually. The following steps are recommended for the initial development of the RCM program for the APM structure:

1. Create a master list or inventory identifying all structural and non-structural elements and assign these components into logical groupings (for instance superstructure spans, substructure elements and foundations).

2. Prioritize the listed components based on importance or criticality to operation, process, or mission.

3. Develop an information system for the master list which includes their history, previous failures and repairs, actual condition, etc.

4. For each component, determine the type and number of maintenance activities required and periodicity based on manufacturer technical manuals, component history, root cause of deficiencies and good engineering judgment. Add this information to the system developed in Step 3.

5. Assess the size of the maintenance staff required and identify the tasks that may be performed by operations and maintenance personnel. Additionally, determine the tasks that require manufacturer involvement and external consultants.

6. Analyze component and equipment failure modes and impacts on the system operation. Identify effective maintenance tasks or mitigation strategies.

7. Develop and implement a Quality Control and Quality Assurance program for the RCM program.

8. Take care of corrective/reactive maintenance tasks based on recent condition assessment results and recommendations.

9. Develop predictive maintenance and preventive maintenance tasks and priorities. The table below shows a typical priority matrix that can be followed for this purpose.

10. Initiate RCM program based on outcome of Steps 7 and 8.

11. Generalize RCM program and apply other bridge structure type facilities throughout the HAS airports.

Table 6.7: Priority Description and Applications

PRIORITY	DESCRIPTION	APPLICATION
1	Emergency	Preserve life, health, safety and critical mission
2	Urgent	Continuous operation of facility at risk
3	Priority	Mission support/project deadlines
4	Routine	Based on established priorities
5	Discretionary	Desired but not essential for operation
6	Deferred	Accomplished only when resources allow

Reference 9 provides more detailed information for the implementation of an RCM strategy.

6.12 SUSTAINABILITY RECOMMENDATIONS

6.12.1 PRINCIPLES OF SUSTAINABILITY FOR THE REPAIR OF CONCRETE STRUCTURES

Sustainability is typically defined as meeting the needs of society without compromising the ability of future generations to meet their needs. To achieve this objective, the construction of infrastructure must minimize the use of energy, the generation of waste and the cost of manufacture while maximizing its longevity and resiliency. Concrete as a construction material is durable, energy-efficient, and highly versatile compared with many other materials. However, if not properly designed and maintained, deterioration may reduce its potential life cycle.

For concrete structures, the most effective sustainability approach is to minimize the need for extensive repairs during its life cycle. This can be accomplished using good practices in design, during construction and along the life of the structure. The latter is achieved with a combination of monitoring, inspection,

maintenance, and minor repairs when and where necessary. If significant repairs are required, however, these should follow a number of key steps to minimize their environmental impact:

a. Comprehensive structural condition evaluation to identify the cause and extent of the deterioration
b. Repair design that accounts for maintenance in an extended period of time, that salvages as much existing material as possible, maximizes durability of the repair, etc.
c. Develop a plan to deal with waste generated by material removed from the structure and from packaging of new materials, favoring the material recycling whenever possible.
d. Use repair materials that minimize the environmental impact (recycled content, local sources, reduced volatile organic compounds content, etc.).
e. Use repair techniques that address the factors causing the concrete deterioration
f. Select an experienced and competent contractor for the repair construction and establish a comprehensive quality control program that involves the designer and if possible, the manufacturers
g. After repair is complete, regularly monitor the condition of the structure to determine if and when preventative maintenance or additional repairs are necessary

A more detailed discussion of the fundamental principles of sustainability for concrete structures can be found in **Reference 9**.

6.12.2 SUSTAINABILITY RECOMMENDATIONS FOR THE REPAIR OF THE APM CONCRETE STRUCTURE

Section 6.12.1 presented a summary of the basic principles for the sustainability of concrete structures and their repair.

The structures were built very recently, within the last twenty years. It seems that minimal maintenance of the concrete structures has taken place based on the obvious signs of deterioration like water staining, bird waste, etc. It is believed, however, that the structure is still on time to stop most of the deterioration with relatively simple repair methods.

A few signs of damage, however, indicate that some more involved retrofit techniques may be necessary in certain areas like a few ledges and some stems.

Following the principles for sustainable concrete repair listed in **Section 6.12.1**, the following recommendations are given:

a. In addition to the condition assessment presented in **Sections 3** above, it is recommended a more detailed condition evaluation to determine the cause of diagonal cracking
b. Cracking repair should be done with materials that guarantee durability of the repair and at the same time reduce environmental impact
c. HAS to develop a repair waste management plan

d. Careful contractor selection based on expertise in this type of jobs with demonstrated successful experience
e. Develop quality control and quality assurance program that involves designer reviews and manufacturer visits
f. Put in place a monitoring program to regularly evaluate the condition of the structure after repair work is completed

7. COORDINATION OF PHYSICAL ON-SITE ASSIGNMENTS

HNTB Corporation conducted a structural condition assessment of the Houston Intercontinental Airport (IAH) APM Guideway between April 6, 2021 and May 4, 2021. The assessment was focused on conducting a structural assessment for the guideway located between Terminals A and D/E and the guideway segments leading to the Maintenance and Storage Facility (M&SF). In order to perform the activities listed above, HNTB coordinated the underside inspections with HAS operations department for the traffic control and operations of the boom lift on North Terminal Rd. In addition, before performing inspections on the top side of the APM guideway, the HNTB team took a safety training provided by Bombardier personnel. During the top side inspections HNTB as well as Bombardier personnel made sure to execute the described procedure. Moreover, HNTB personnel followed the HNTB Safety Program which is included in **Appendix B**.

8. RECOMMENDED REPAIR COST ESTIMATE

The estimated total construction cost of the recommended repairs is approximately **$2,290,600**. A summary of the calculation of this cost using the individual work items for the recommended repairs is presented in **Appendix I**. The individual costs per work item were estimated using 2021 US dollars and were based on unit prices developed specifically for this project by a professional estimator.

In order to bring the facility to an ACI of at least of 7.0, the estimated investment is approximately **$855,000**. These recommended repairs are within the PRIORITY planning horizon.

The estimated investment to maximize the service life of the APM structure is approximately **$8,629,600.**

The estimated cost above does not reflect the cost of the terminal stations as well as train systems or any cost associated with Engineering. Soft cost, mobilization, and contingency allowances are built into the estimates. Procurement and Project / Program Management may incur additional cost. Cost is estimated in 2021 dollars.

9. RECOMMENDED ADDITIONAL INSPECTIONS

Visual inspection of the APM structures were conducted, however parts of substructure components at terminal stations were inaccessible due to clearance protocol, architectural facades, or terminal structures. Bents 1 through 5 were located inside Terminal B (**Figure 9.1**), and Bents 27 through 31 were located inside Terminal C. These bents were not accessible for inspection of the bent caps and columns.

Bent 50 was partially covered by architectural facades at Terminal D and was inaccessible for inspection of the east side of the column (see **Figure 9.2**). It is recommended that a further inspection of these bents be conducted for APM substructure components from inside the terminal buildings.

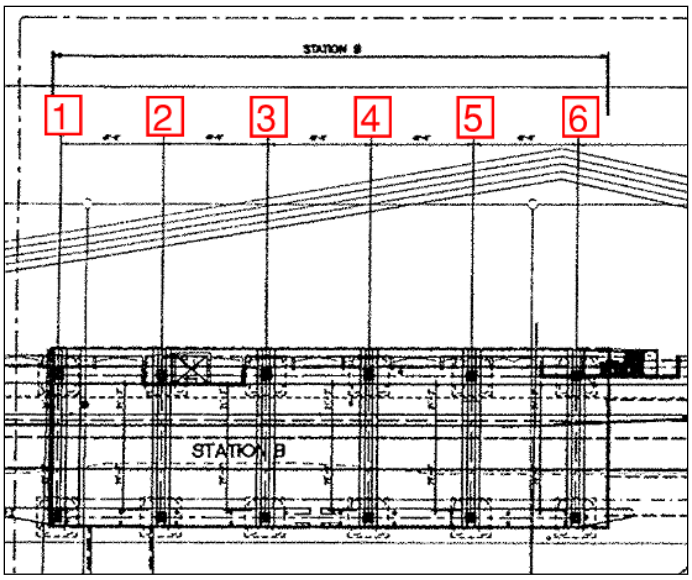


Figure 9.1

Figure 9.2

10. REFERENCES

1. American Concrete Institute (ACI)
   ACI224R_01 Control of Cracking in Concrete Structures, May 16, 2001
2. American Concrete Institute (ACI)
   ACI358-1R_92 Analysis and Design of Reinforced and Prestressed-Concrete Guideway Structures
3. American Society of Civil Engineers (ASCE)
   Automated People Mover Standards ANSI/ASCE/T&DI 21-13
4. American Association of State Highway and Transportation Officials (AASHTO)
   Guide Manual for Condition Evaluation and Load and Resistant Factor Rating (LRFR) of Highway Bridges
5. Bombardier Transportation USA Inc (2010)
   Houston APM System Safety Inspection Audit Report, November 19, 2010.
6. Federal Highway Administration (FHWA)
   Safety Inspection of In-Service-Bridges, National Highway Institute – NHI
7. HNTB (2015)
   Automated People Mover Condition Assessment, IAH, Terminal B to D/E Report, June 30, 2015.
8. TxDOT (2021)
   Concrete Repair Manual, March, 2021
9. U.S. Department of Energy, Operations & Maintenance Best Practices: A Guide to Achieving Operational Efficiency, (August, 2010)
10. American Concrete Institute, ACI 365.1R-00 Service-Life Prediction – State-of-the-Art Report (January, 2000)

APPENDIX A

WORK AREA NOTIFICATIONS (WANS) AND TRAFFIC CONTROL PLANS

HNTB

APM INSPECTION SCHEDULE

HNTB Main Conact: **JT Hall: 281-923-5383**
HNTB Field Contacts: **Patrick Roth: 646-296-3064/ Arish Sajwani : 954-296-1173**

***Tentative schedule subject to change do to assesment pace, weather, and or other factors.

Team: (Patrick Roth/Arish Sajwani/Monica Julian/Kelly Parish)

Time controls: Lanes will be closed and ready to go from 8:30AM-6:00PM
60 ft Articulating Boom Lift rented for April 26 - May 26
See Traffic Control Details

WEEK 4 - April 26 to May 1, 2021		
Monday, April 26, 2021	7:30 AM	Arrive at the site
	8:00 AM	Boom lift to arrive at Storage Site #1 by Terminal A
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal A)
Tuesday, April 27, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal A to B)
Wednesday, April 28, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal B)
Thursday, April 29, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal B to C)

Friday, April 30, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Mariott)

Saturday, May 1, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Maintenance Facility)
WEEK 5 - May 2 to May 7, 2021		
Sunday, May 2, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Maintenance Facility)

Monday, May 3, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal B to C)

Tuesday, May 4, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal C)

Wednesday, May 5, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal C to D/E)

Thursday, May 6, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal D/E)

Friday, May 7, 2021	7:30 AM	Arrive at the site
	7:30-9:00	Coordination/site inspection
Lane Closures	9:00 AM - 6:00 PM	Substructure Inspection w/ Manlift (Terminal D/E)
Saturday, May 8, 2021	**No Crews Working Saturday May 8**	

M = Manlift (substructure)

HOUSTON AIRPORT SYSTEM

IAH AIRPORT OPERATIONS – CONSTRUCTION	
AIRPORT OPERATIONS CENTER (AOC):	(281) 230-1300
LANDSIDE DUTY NUMBER:	(281) 743-4367
AIRSIDE DUTY NUMBER:	(713) 376-0254

If an emergency exists that involves life and safety, please call 911 first and then notify the AOC and the Duty Supervisor

Airport: IAH	Project Title: Loa 64 - Apm Structure Condition Assessment
Date: 4/9/2021	Landside or Airside:
Contractor Company: HNTB CORPORATION	Contractor Contact Name: J.t. Hall
Contractor Contact Email: JTHALL@HNTB.COM	Contractor Contact Office#: 3463525620
Contractor Contact Mobile#: 2819235383	Comments:
General Location: ROAD - TERMINAL ROADS	Location Description: Below Apm Track Route
Project Number: 739A	WAN Number: 739A492021
HAS Project Manager:	HAS Resident Engineer:
Proposed Start Date & Time: 4/12/2021 8:00 AM	Proposed End Date & Time: 4/16/2021 5:00 PM
Scope of Work: VISUAL INSPECTIONS OF EXISTING COLUMNS FOR APM STRUCTURE FROM BELOW TRACKS.	
Impacted Area(s): ALL AREAS BELOW APM STRUCTURE AND OUTSIDE OF ROADWAY PAVEMENT ALONG TRACK ROUTE FROM TERMINAL A TO TERMINALS D/E.	

Onsite Contact

Name: Manny Hernandez	Employer Name: Henderson Rogers Structural Engineers
Phone: 8324517832	Email: EHERNANDEZ@HENDERSONROGERS.COM

Additional Information

Project Manager:	Project Manager Email: OMAR.MENDOZA2@HOUSTONTX.GOV
Project Manager Phone: 2812303119	

HOUSTON AIRPORT SYSTEM

IAH AIRPORT OPERATIONS – CONSTRUCTION	
AIRPORT OPERATIONS CENTER (AOC):	(281) 230-1300
LANDSIDE DUTY NUMBER:	(281) 743-4367
AIRSIDE DUTY NUMBER:	(713) 376-0254

If an emergency exists that involves life and safety, please call 911 first and then notify the AOC and the Duty Supervisor

Airport: IAH	Project Title: Loa 64 - Apm Structure Condition Assessment
Date: 4/16/2021	Landside or Airside:
Contractor Company: HNTB CORPORATION	Contractor Contact Name: Jeffrey Hall
Contractor Contact Email: JTHALL@HNTB.COM	Contractor Contact Office#: 3463525620
Contractor Contact Mobile#: 2819235383	Comments:
General Location: ROAD - TERMINAL ROADS	Location Description: Below Apm From Marriott To Terminals D/e
Project Number: 739A	WAN Number: 739A4232021
HAS Project Manager:	HAS Resident Engineer:
Proposed Start Date & Time: 4/26/2021 8:00 AM	Proposed End Date & Time: 4/30/2021 5:00 PM
Scope of Work: VISUAL INSPECTIONS OF EXISTING COLUMNS FOR APM STRUCTURE FROM GROUND LEVEL.	
Impacted Area(s): ALL AREAS BELOW APM STRUCTURE AND OUTSIDE OF ROADWAY PAVEMENT ALONG TRACK ROUTE FROM MARRIOTT TO TERMINALS D/E.	

Onsite Contact

Name: Manny Hernandez	Employer Name: Henderson Rogers Structural Engineers
Phone: 8324517832	Email: EHERNANDEZ@HENDERSONROGERS.COM

Additional Information

Project Manager:	Project Manager Email: OMAR.MENDOZA2@HOUSTONTX.GOV
Project Manager Phone: 2812303119	

HOUSTON AIRPORT SYSTEM

IAH AIRPORT OPERATIONS – CONSTRUCTION	
AIRPORT OPERATIONS CENTER (AOC):	(281) 230-1300
LANDSIDE DUTY NUMBER:	(281) 743-4367
AIRSIDE DUTY NUMBER:	(713) 376-0254

If an emergency exists that involves life and safety, please call 911 first and then notify the AOC and the Duty Supervisor

Airport: IAH	Project Title: Loa 64 - Apm Structure Condition Assessment
Date: 4/16/2021	Landside or Airside:
Contractor Company: HNTB CORPORATION	Contractor Contact Name: Jeffrey Hall
Contractor Contact Email: JTHALL@HNTB.COM	Contractor Contact Office#: 3463525620
Contractor Contact Mobile#: 2819235383	Comments:
General Location: ROAD - TERMINAL ROADS	Location Description: North Terminal Road From Terminal A To Terminal D/e
Project Number: 739A	WAN Number: 739A4162021
HAS Project Manager:	HAS Resident Engineer:
Proposed Start Date & Time: 4/26/2021 7:00 AM	Proposed End Date & Time: 5/7/2021 6:00 PM
Scope of Work: VISUAL INSPECTIONS OF APM SUPERSTRUCTURE USING MANLIFT VEHICLE FROM APM STATION AT TERMINAL A TO APM STATION AT TERMINAL D. TRAFFIC CONTROL WILL BE IMPLEMENTED (SEE ATTACHED TCPS).	
Impacted Area(s): NORTH TERMINAL ROAD BELOW THE APM STRUCTURE FROM TERMINAL A TO TERMINAL D/E.	

Onsite Contact

Name: Patrick Roth	Employer Name: Hntb Corporation
Phone: 6462963064	Email: PJROTH@HNTB.COM

Additional Information

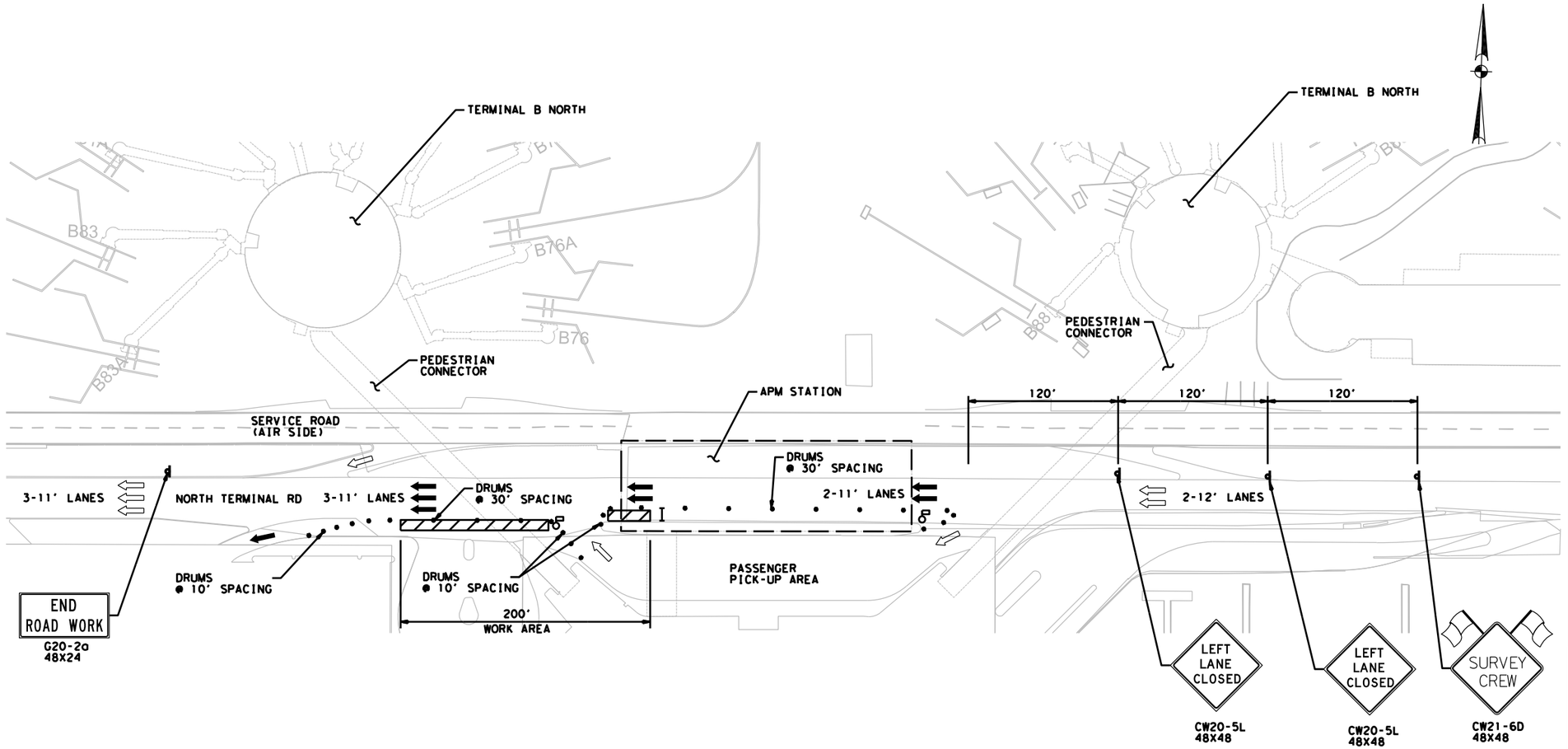
Project Manager:	Project Manager Email: OMAR.MENDOZA2@HOUSTONTX.GOV
Project Manager Phone: 2812303119	

CONDITION ASSESSMENT
AUTOMATED PEOPLE MOVER INSPECTIONS
BETWEEN TERMINAL A & B

TRAFFIC CONTROL PLANS

HNTB

HOUSTON AIRPORTS



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100 (H)

HOUSTON AIRPORTS

HNTB

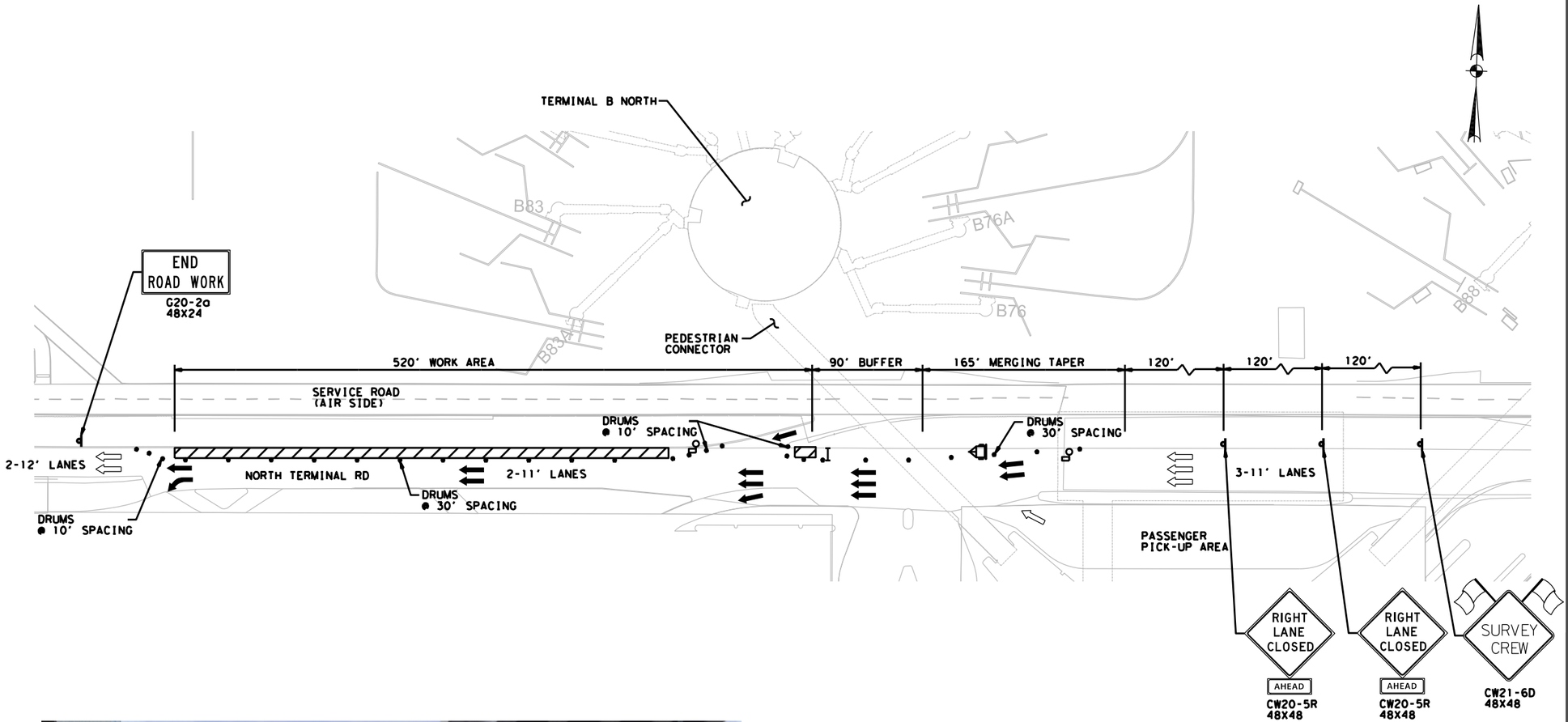
HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN PHASE I

(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 1

DSN: SA	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK: JRS						
DRN: SA	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK: JRS						



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

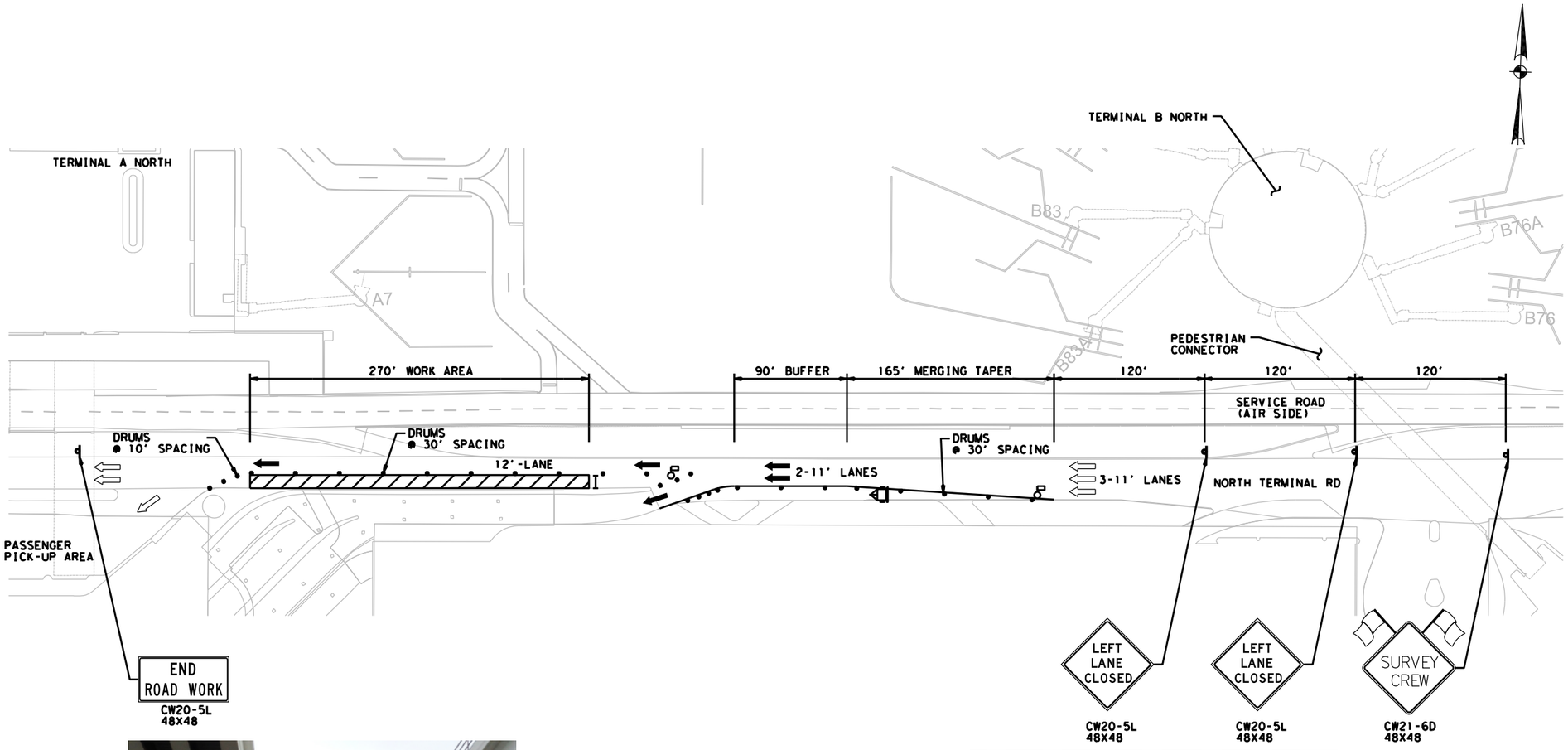
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
PHASE II
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 1

DSN: SA	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: JRS							
DRN: SA	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: JRS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100 (H)

HOUSTON AIRPORTS

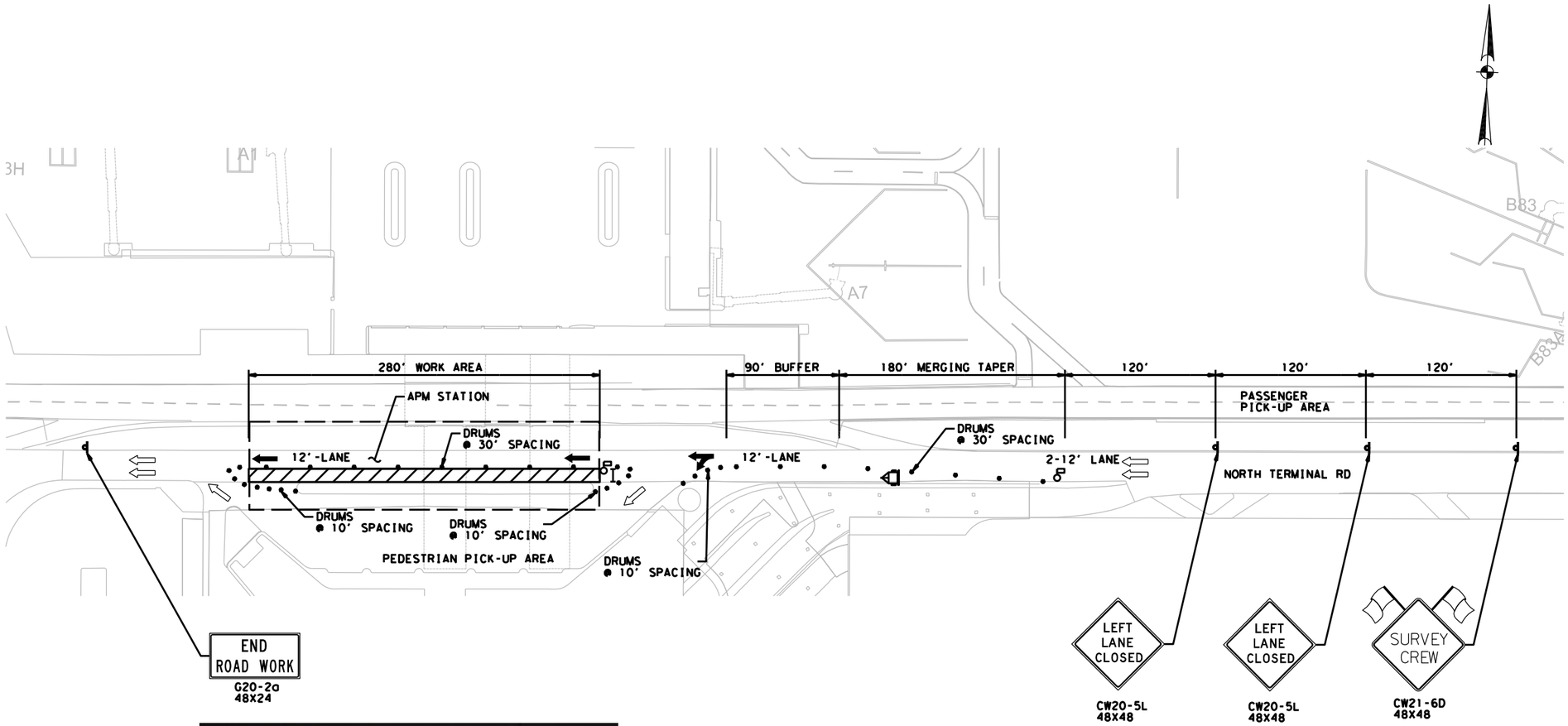
HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN PHASE III

(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 1

DSN: SA	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: JRS							
DRN: SA	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: JRS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

HOUSTON AIRPORTS

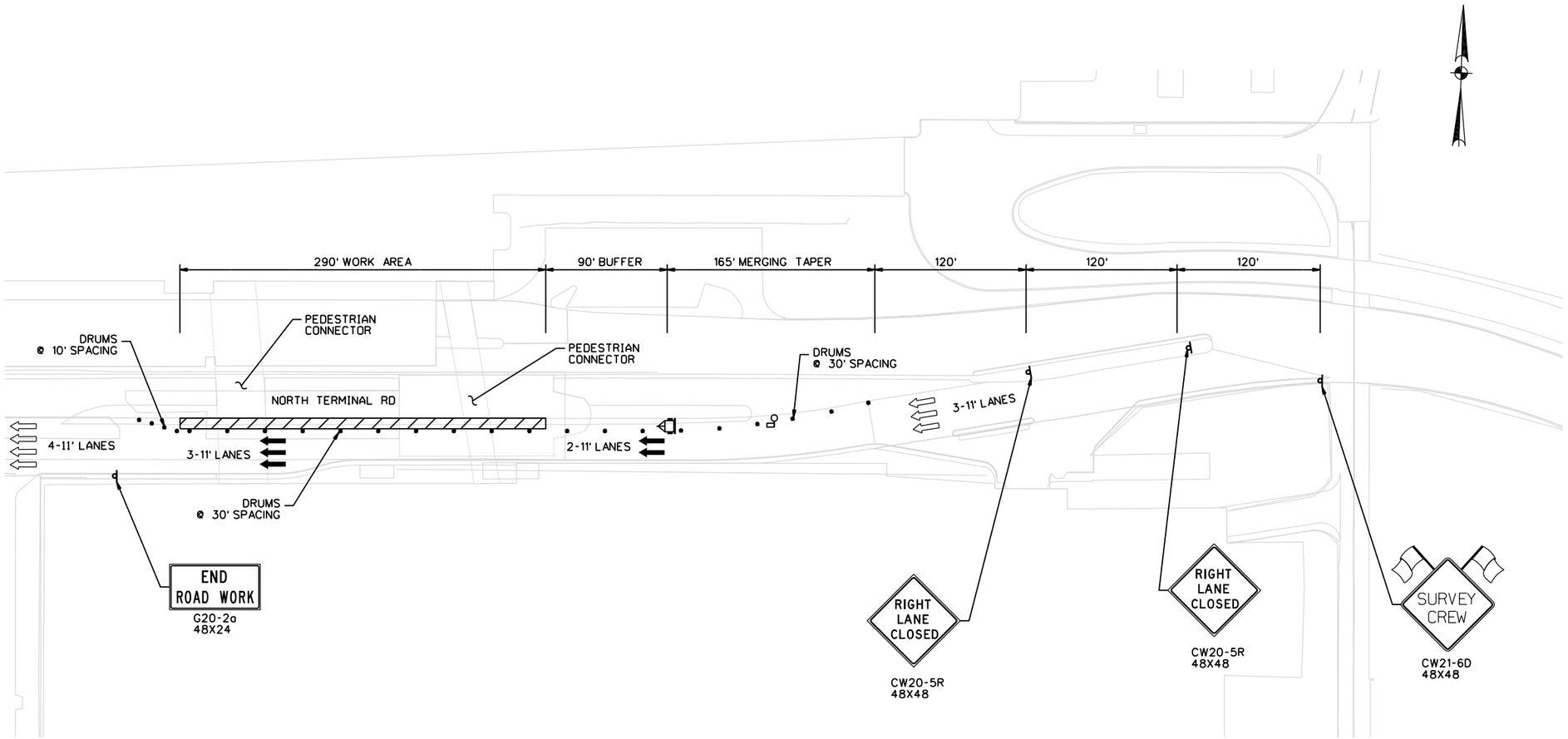
HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN PHASE IV

(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 1

DSN: SA	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: JRS							
DRN: SA	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: JRS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

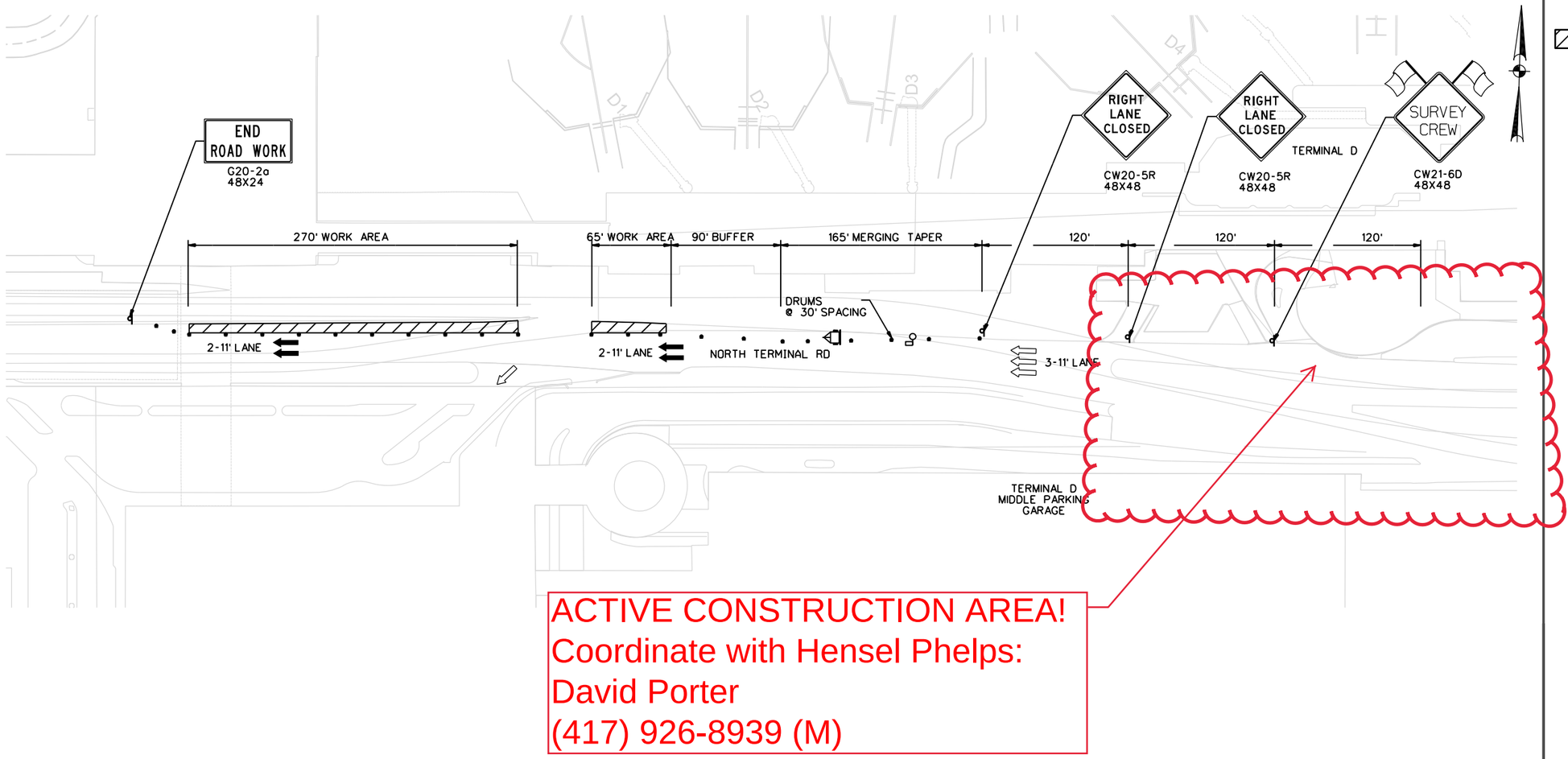
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
RAMP LANE CLOSURE
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 1

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



ACTIVE CONSTRUCTION AREA!
Coordinate with Hensel Phelps:
David Porter
(417) 926-8939 (M)

LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

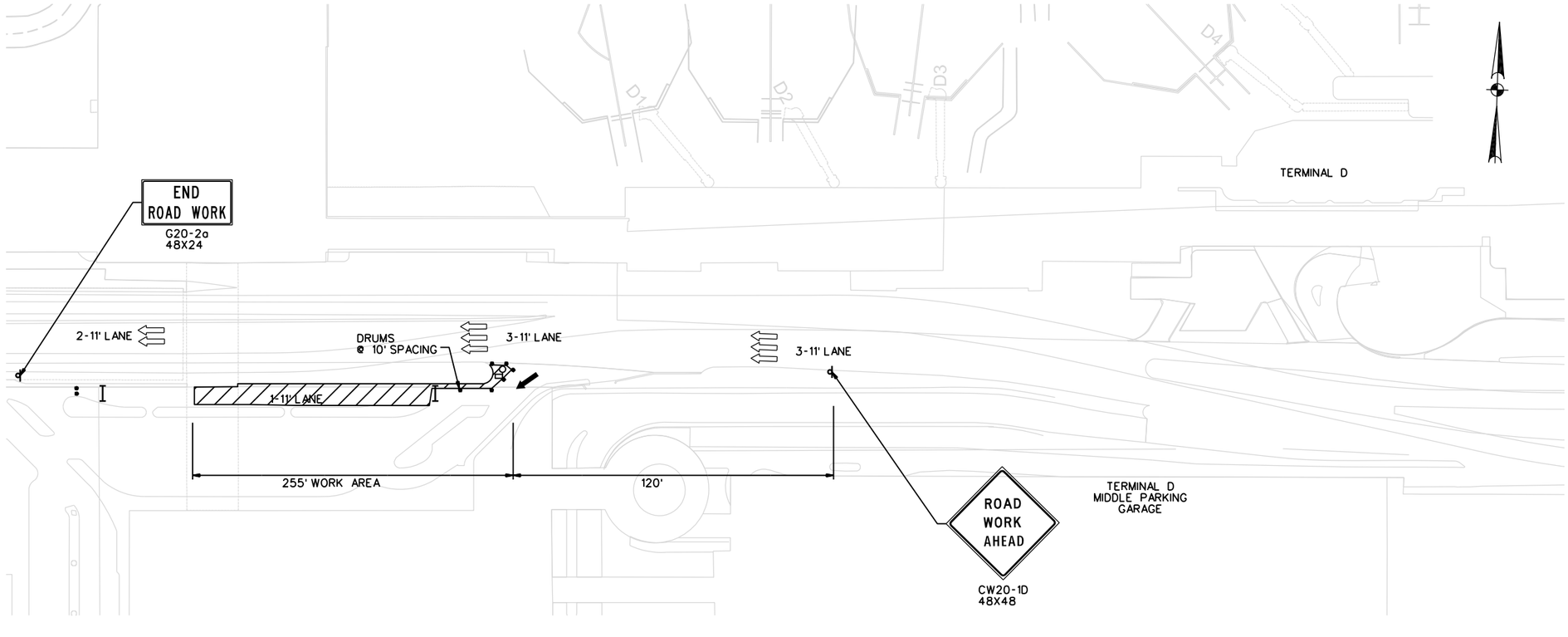
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
BETWEEN TERMINALS C & D
PHASE I
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK: OS						
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK: OS						



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

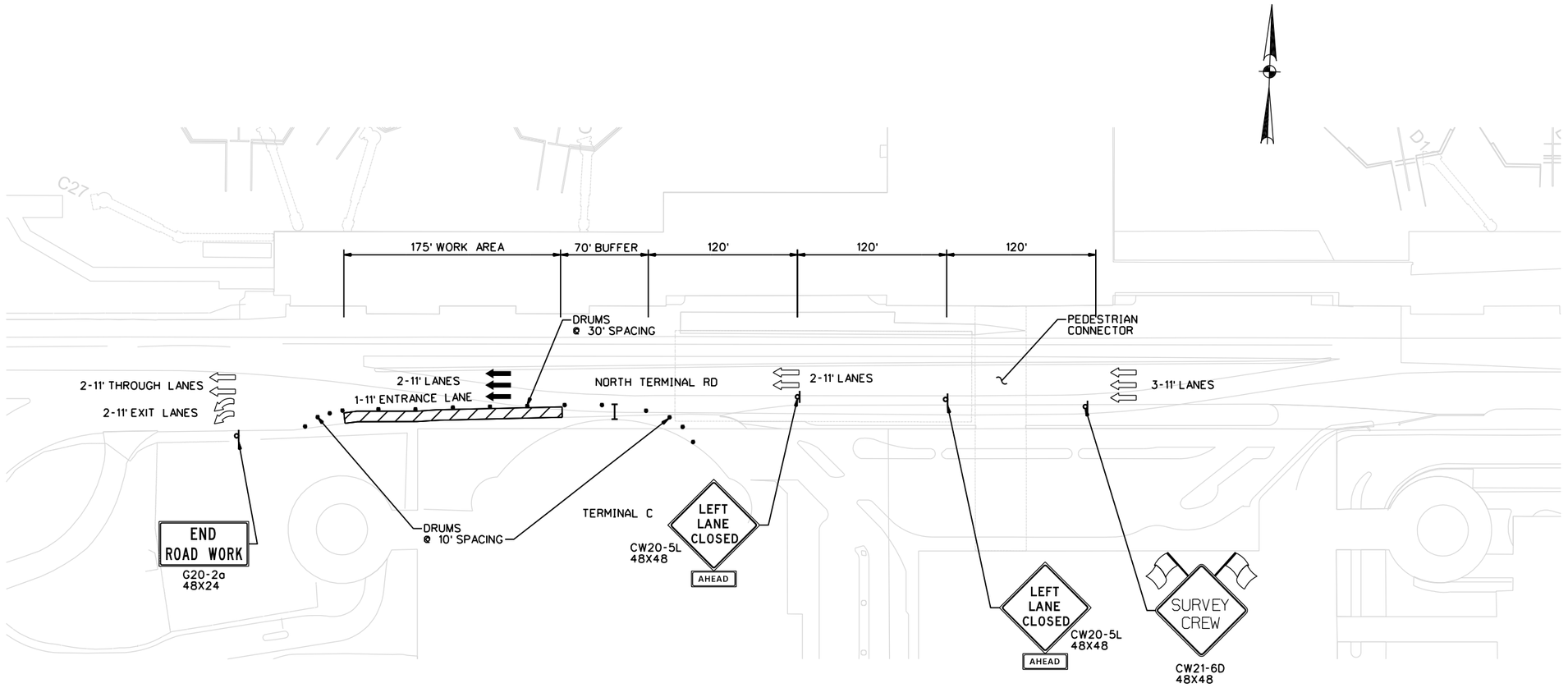
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
BETWEEN TERMINALS C & D
PHASE II
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

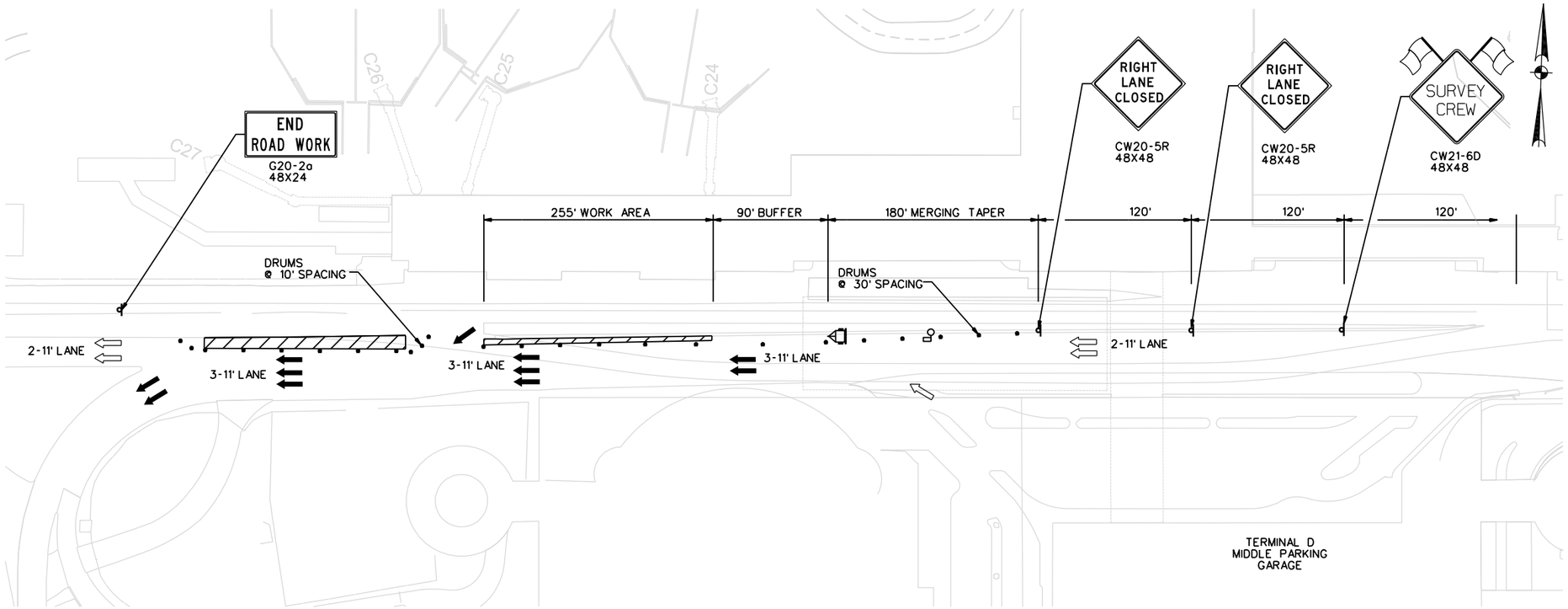
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
TERMINAL C - DAY 1
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 1

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK: OS						
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK: OS						



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

HOUSTON AIRPORTS

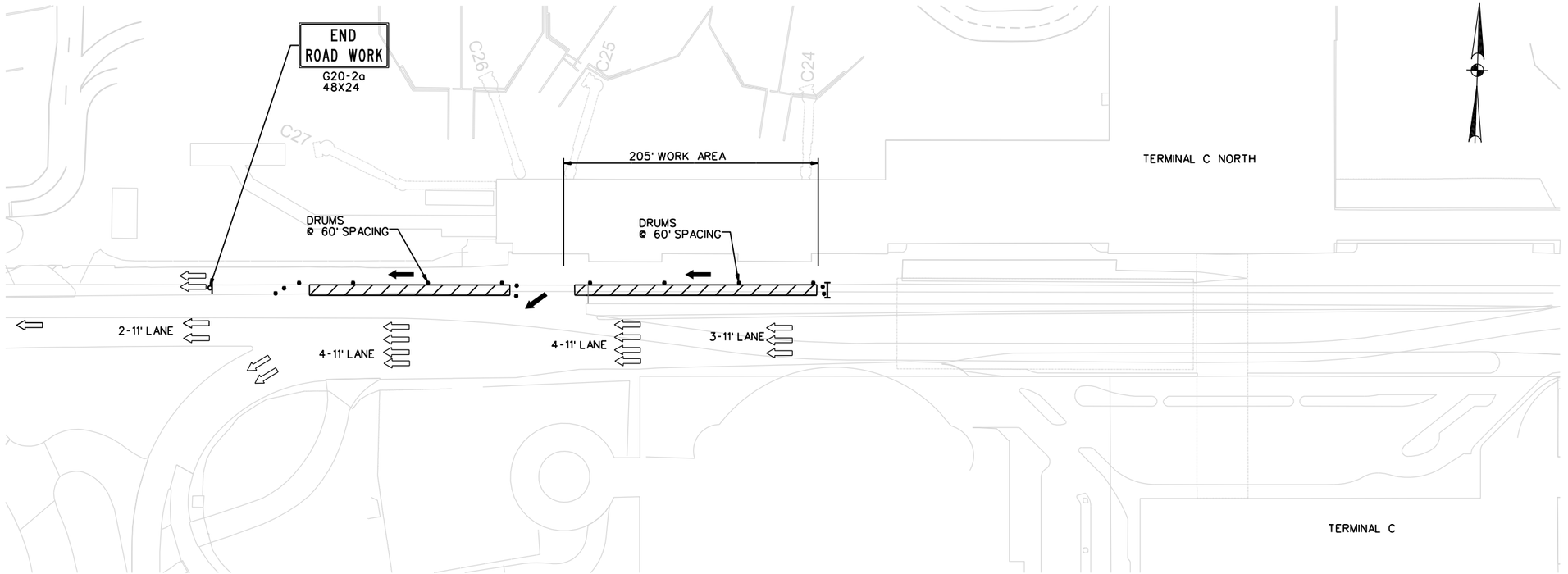
HNTB

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
TERMINAL C - DAY 2
PHASE I
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

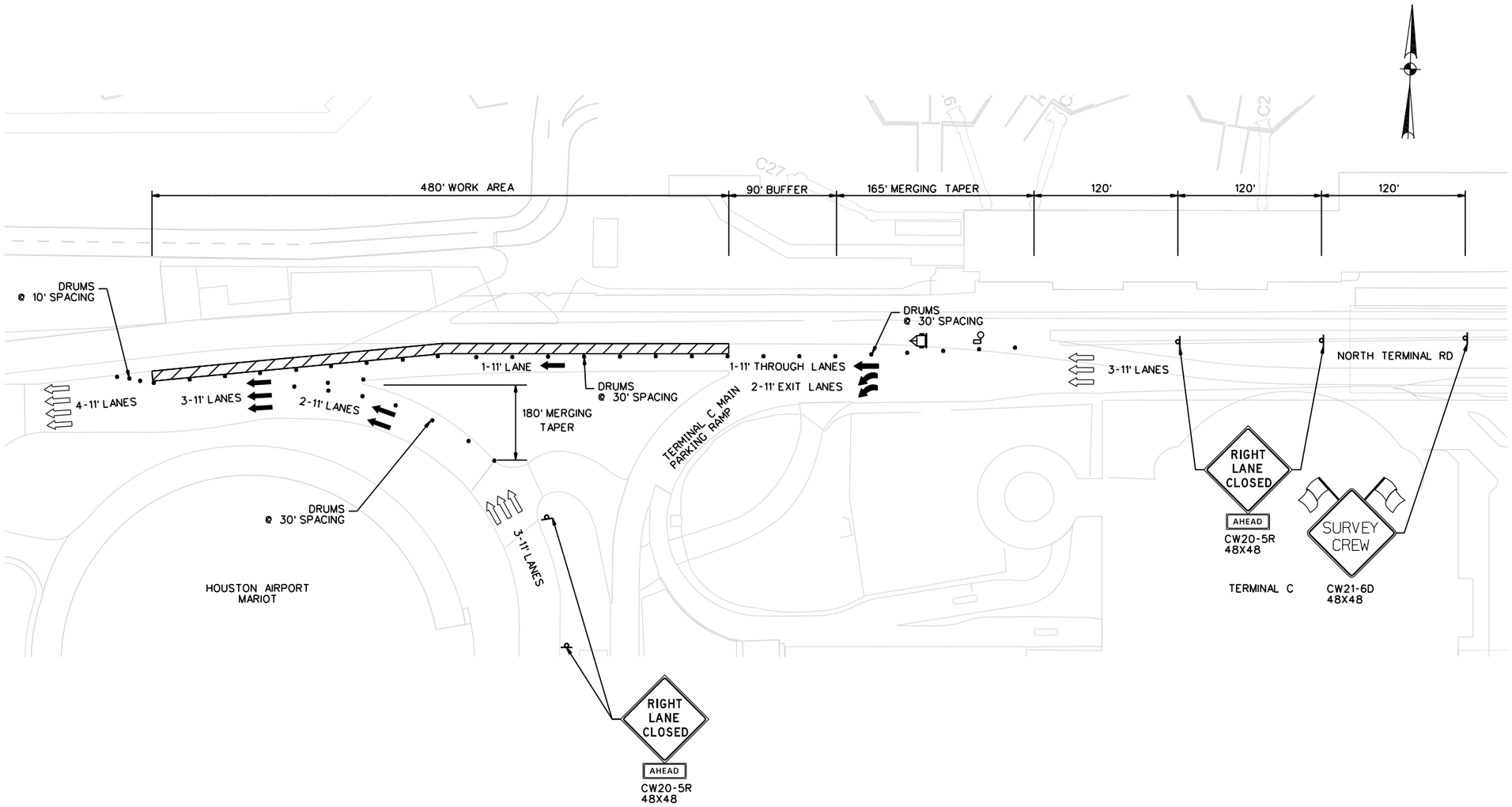
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
TERMINAL C - DAY 2
PHASE II
(ASSET CONDITION ASSESSMENT)

SHEET 2 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

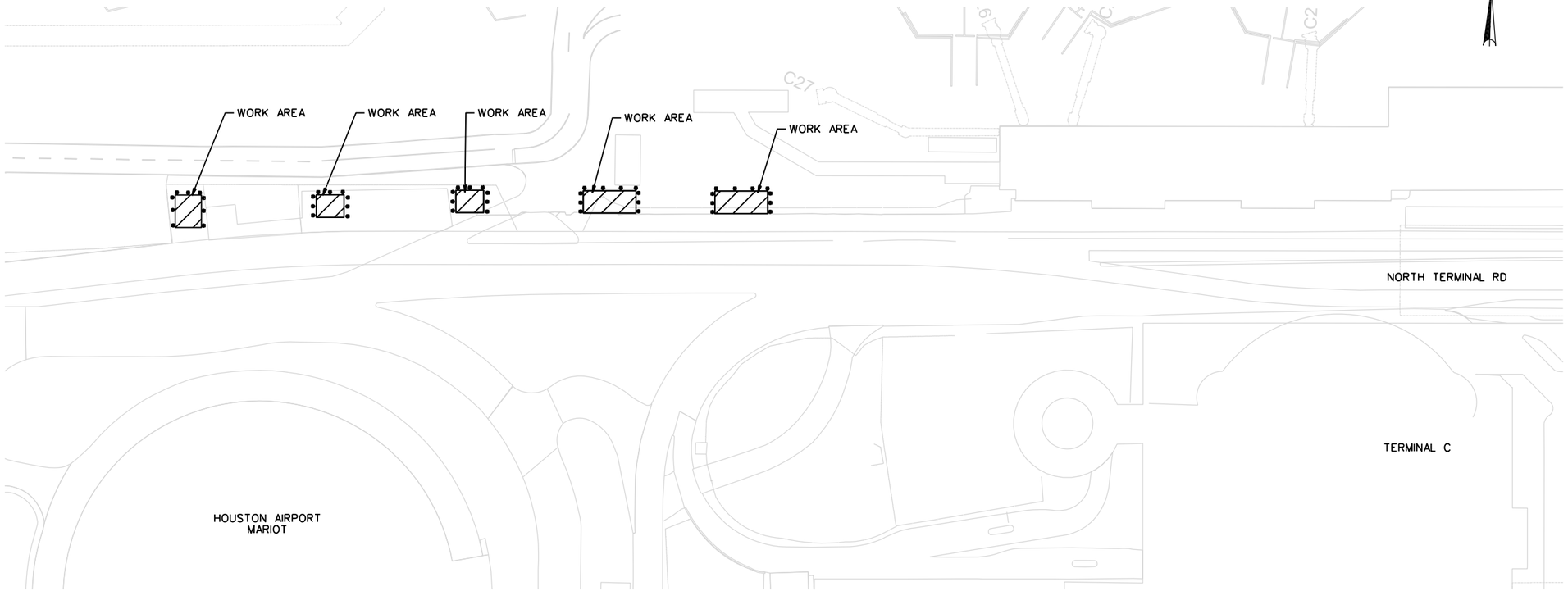
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
MARRIOTT - DAY 1
PHASE I
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
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- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
MARRIOTT - DAY 1
PHASE II
(ASSET CONDITION ASSESSMENT)

SHEET 2 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
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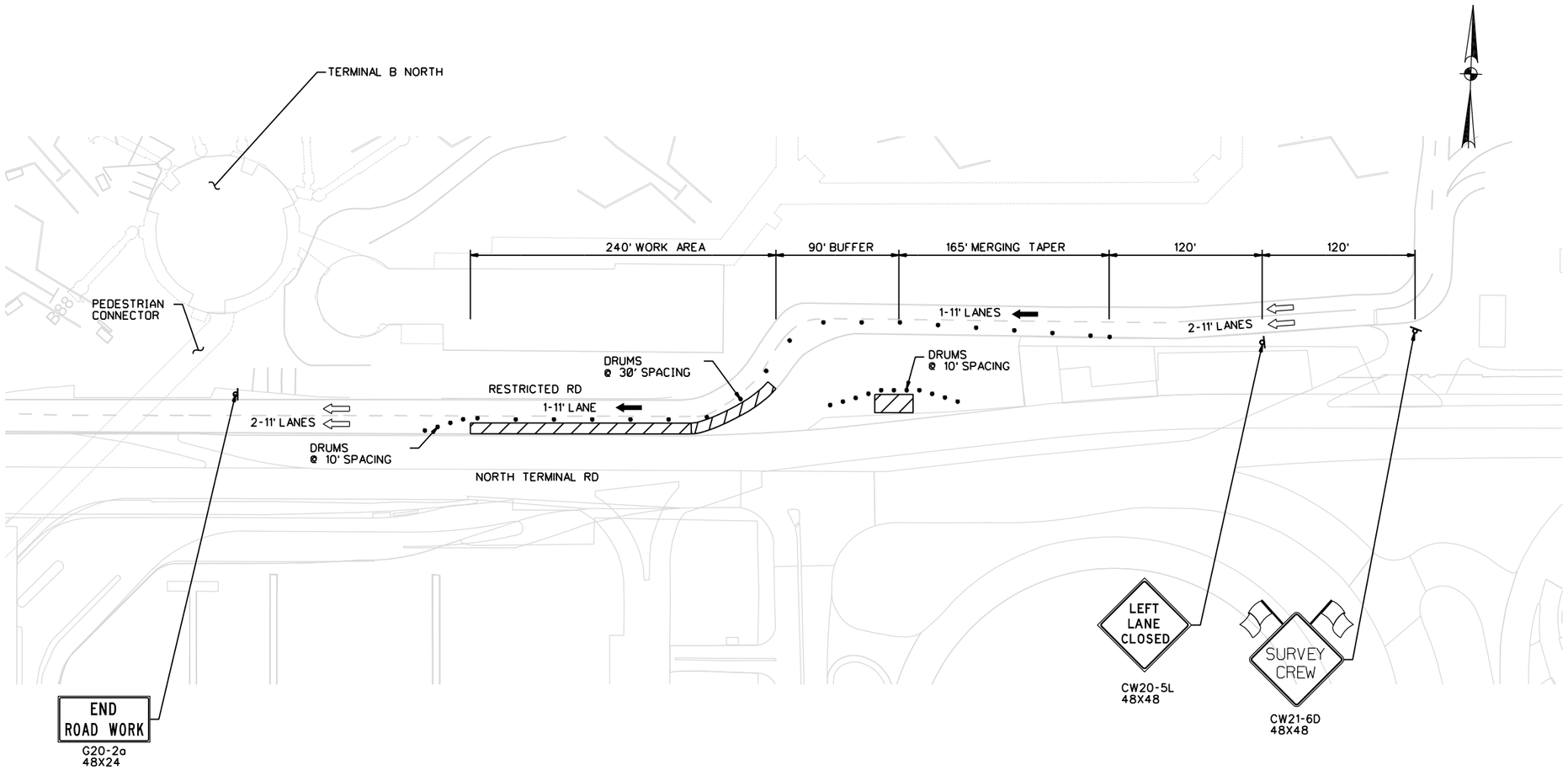

LEGEND

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0 25 50 100(H)

HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
MARRIOTT - DAY 2
PHASE I
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
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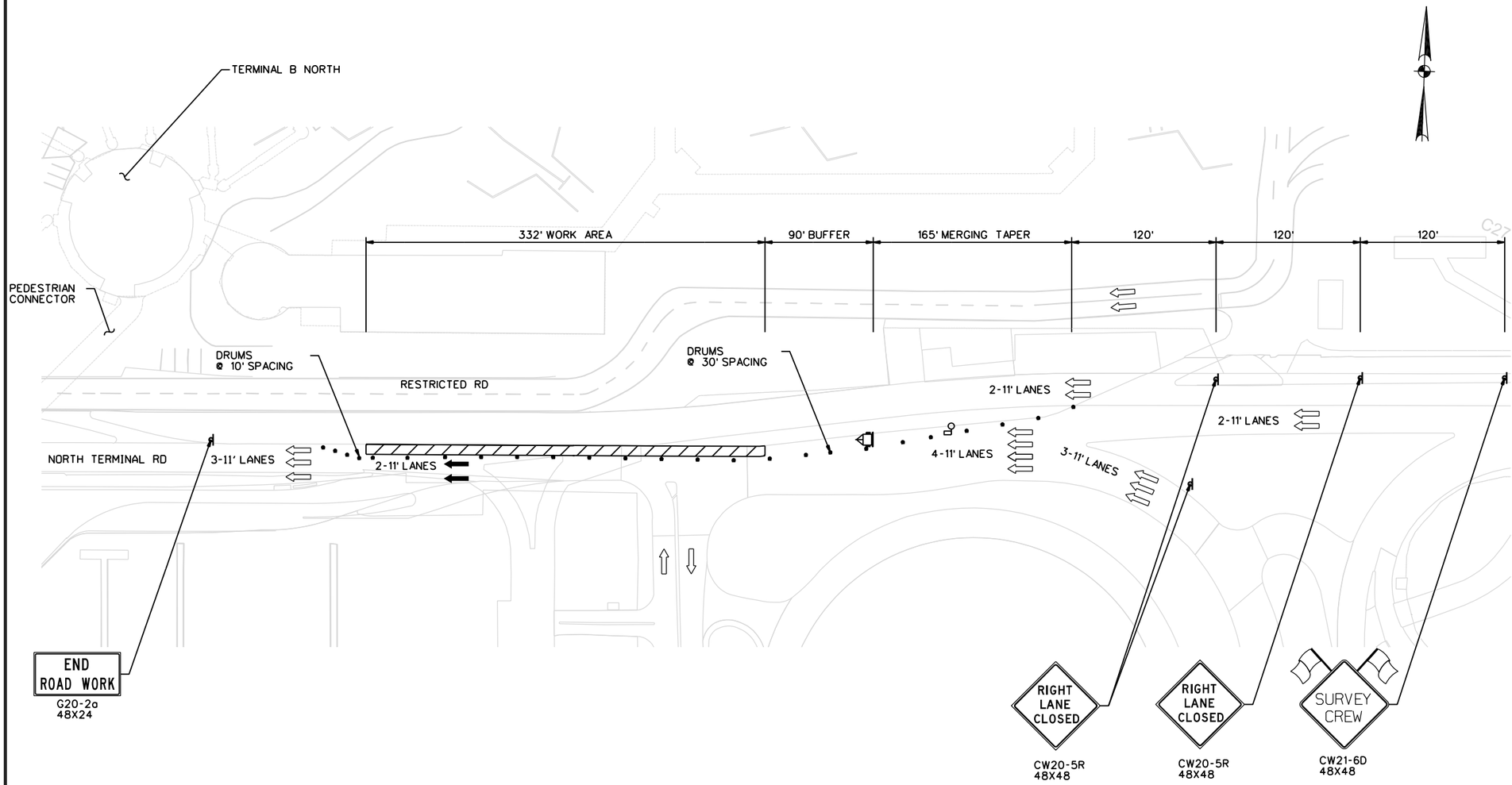

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0 25 50 100(H)

HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
MARRIOTT - DAY 2
PHASE II
(ASSET CONDITION ASSESSMENT)

SHEET 2 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
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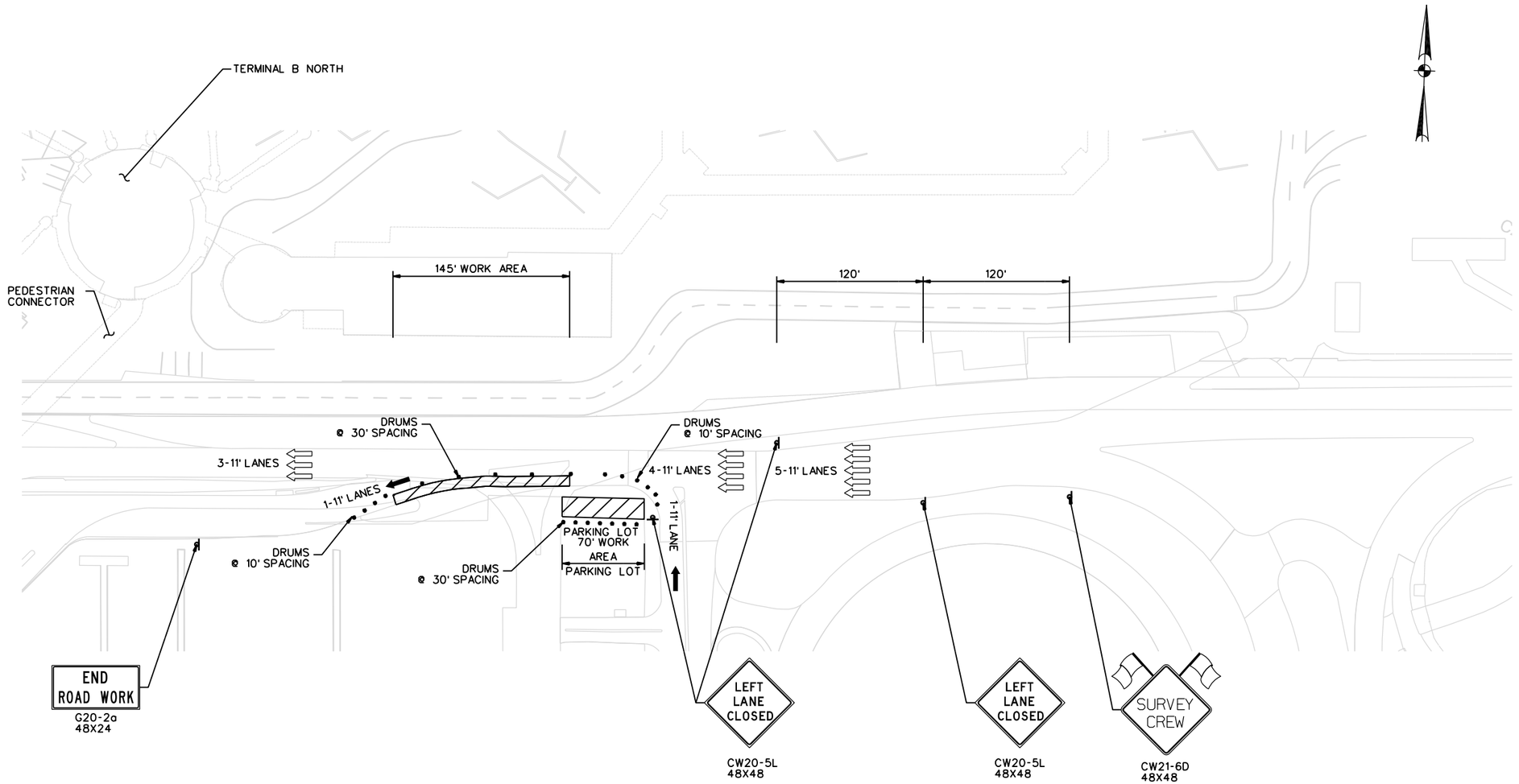

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- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

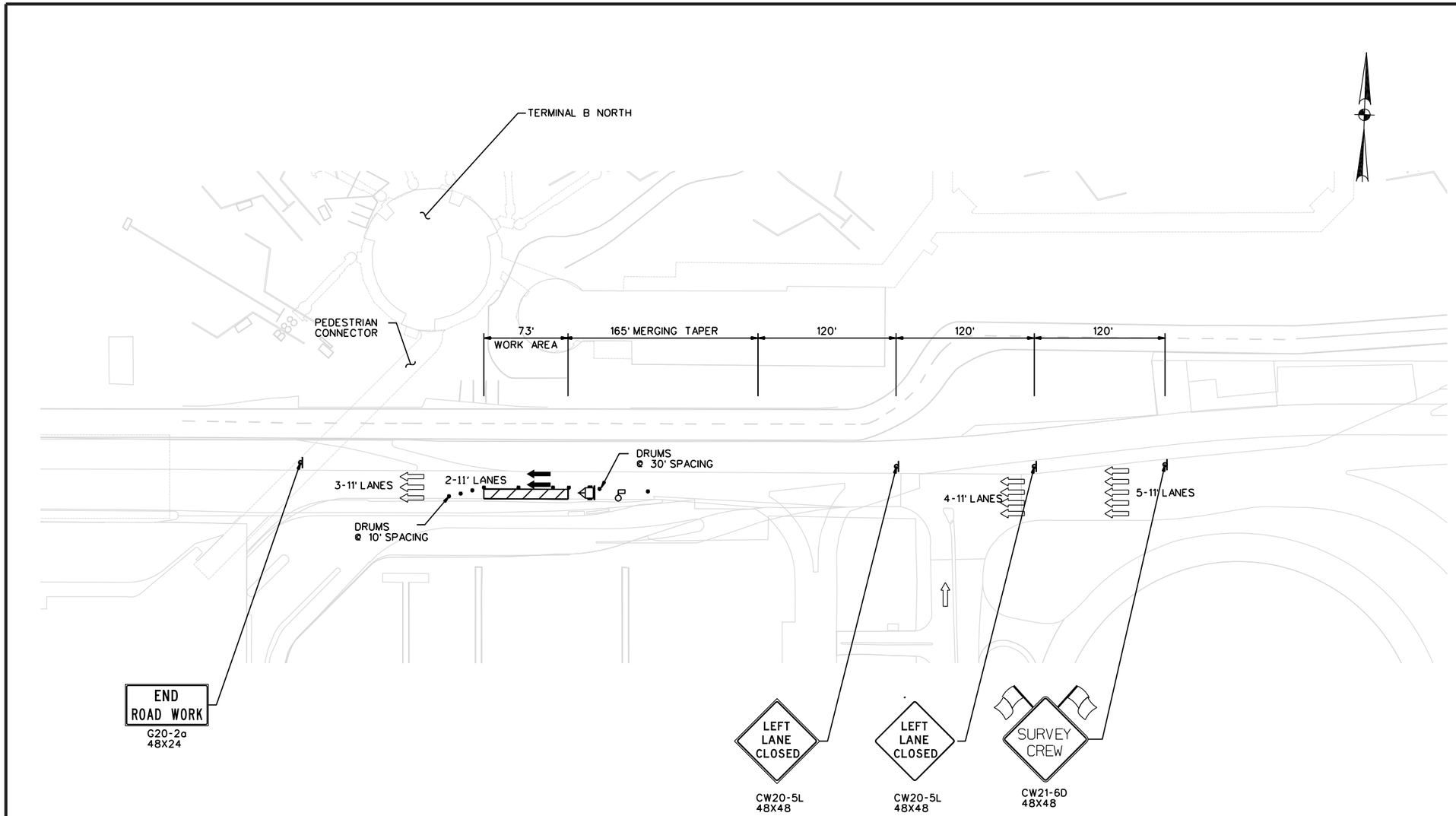
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
MARRIOTT - DAY 3
PHASE I
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

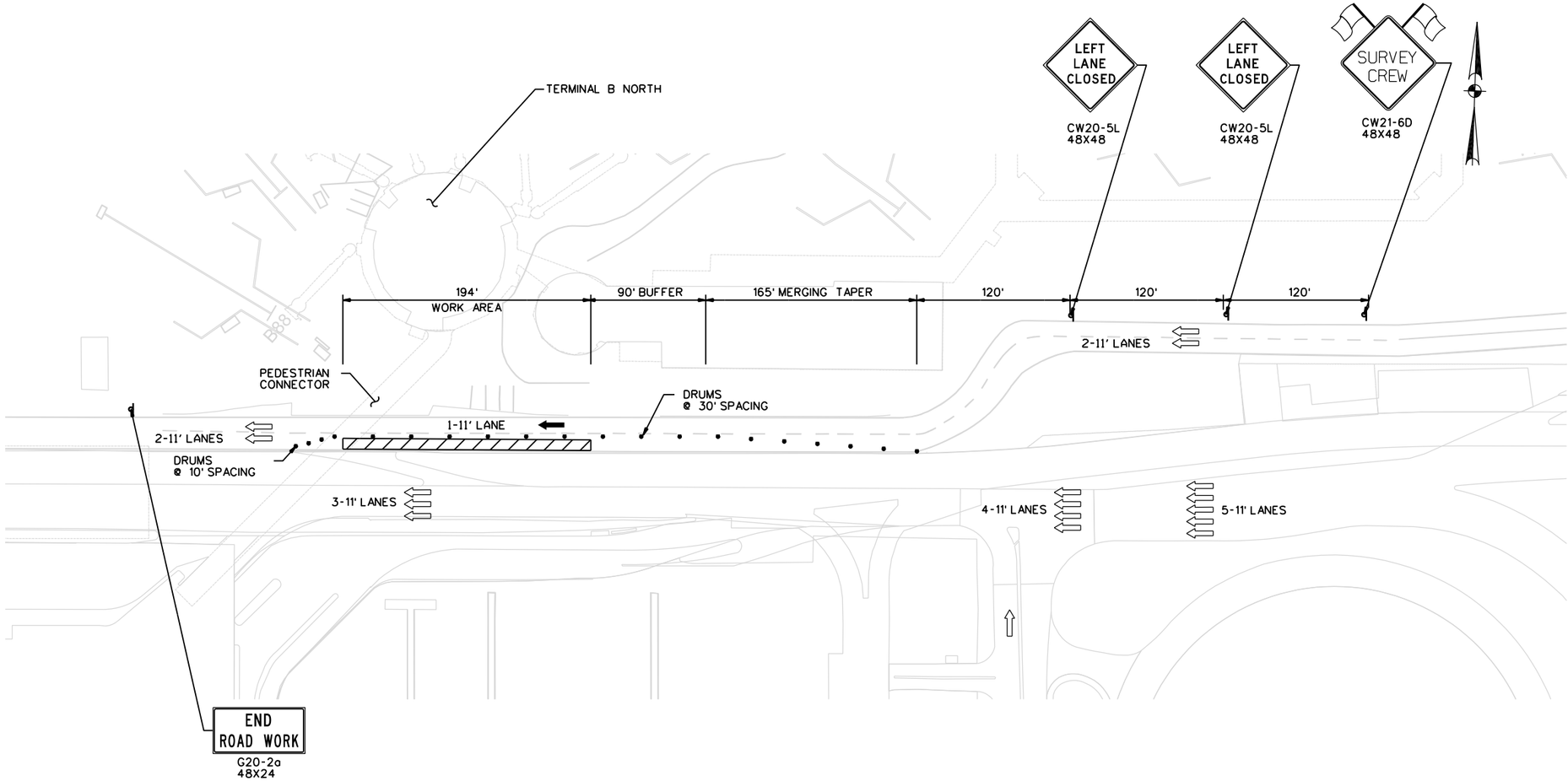
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
MARRIOTT - DAY 3
PHASE II
(ASSET CONDITION ASSESSMENT)

SHEET 2 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

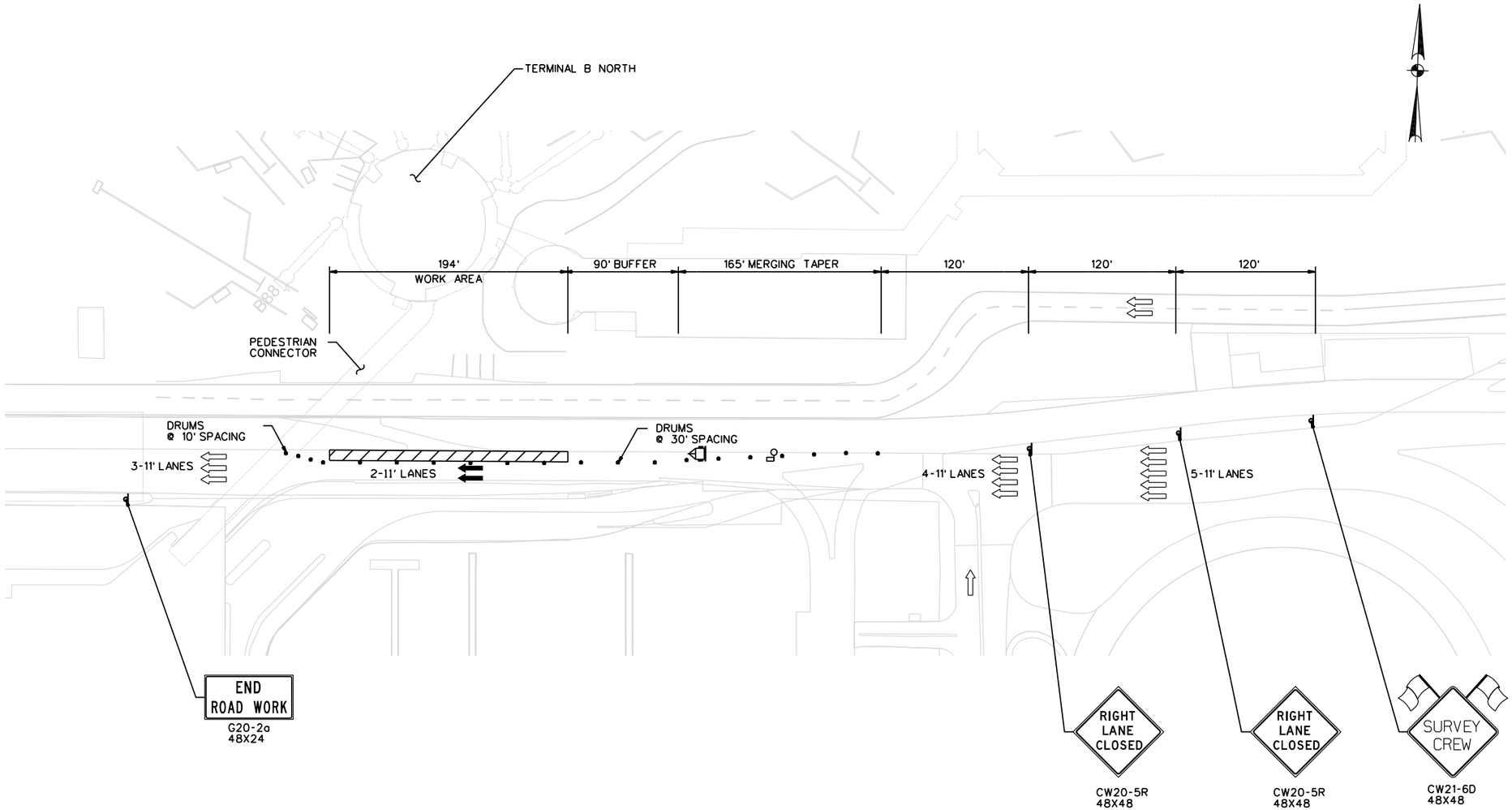
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

TRAFFIC CONTROL PLAN
MAINTENANCE FACILITY
PHASE I
(ASSET CONDITION ASSESSMENT)

SHEET 1 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



LEGEND

- WORK AREA
- PROPOSED DIRECTION OF TRAFFIC
- EXISTING DIRECTION OF TRAFFIC
- BARRELS OR DRUMS
- PORTABLE SIGN/ARROW BOARD
- TYPE III BARRICADE
- TEMPORARY TRAFFIC CONTROL SIGNS
- Flagger

0 25 50 100(H)

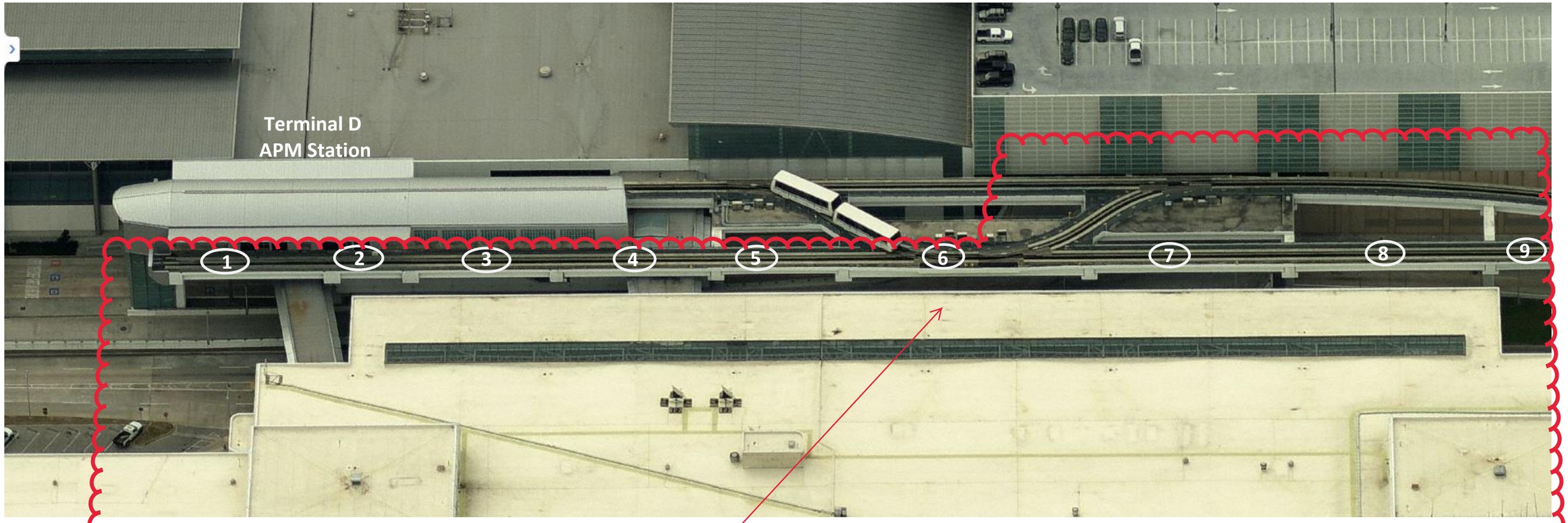
HOUSTON AIRPORTS

HNTB CORPORATION
THE HNTB COMPANIES
TBPE FIRM NO. 420

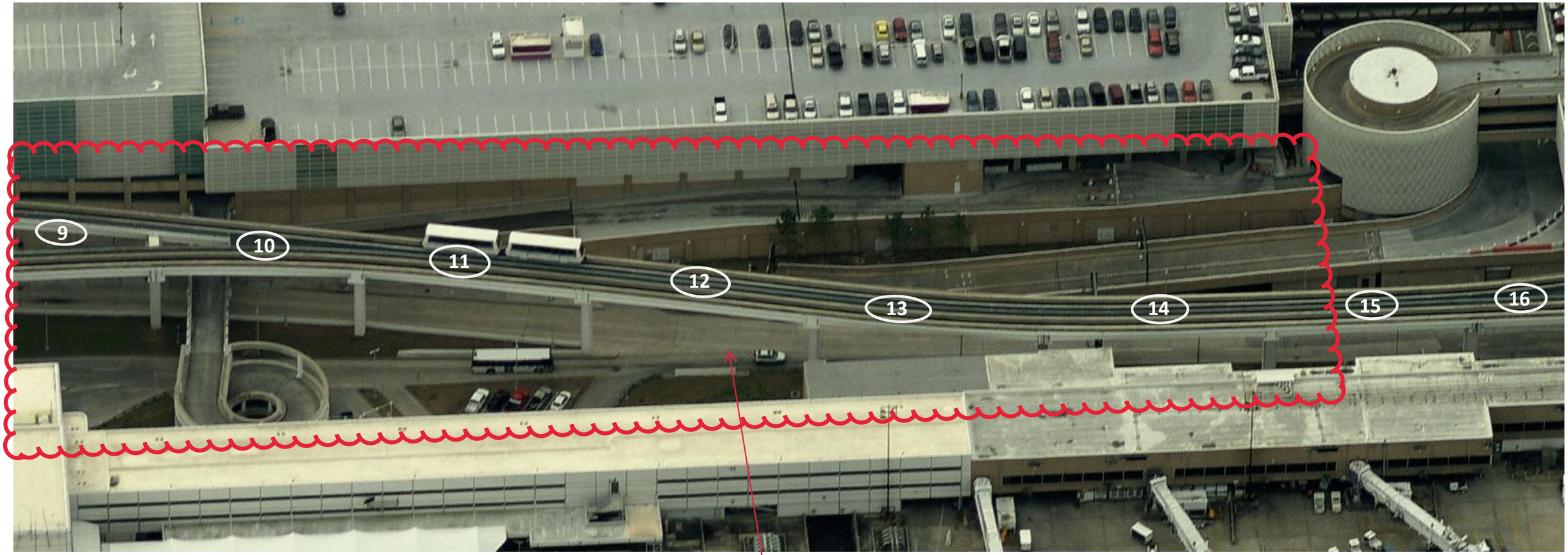
TRAFFIC CONTROL PLAN
MAINTENANCE FACILITY
PHASE II
(ASSET CONDITION ASSESSMENT)

SHEET 2 OF 2

DSN: EG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK: OS							
DRN: EG	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK: OS							



ACTIVE CONSTRUCTION AREA!
Existing Traffic Control measures in place.
Coordinate with Hensel Phelps:
David Porter
(417) 926-8939



ACTIVE CONSTRUCTION AREA!
Existing Traffic Control measures in place.
Coordinate with Hensel Phelps:
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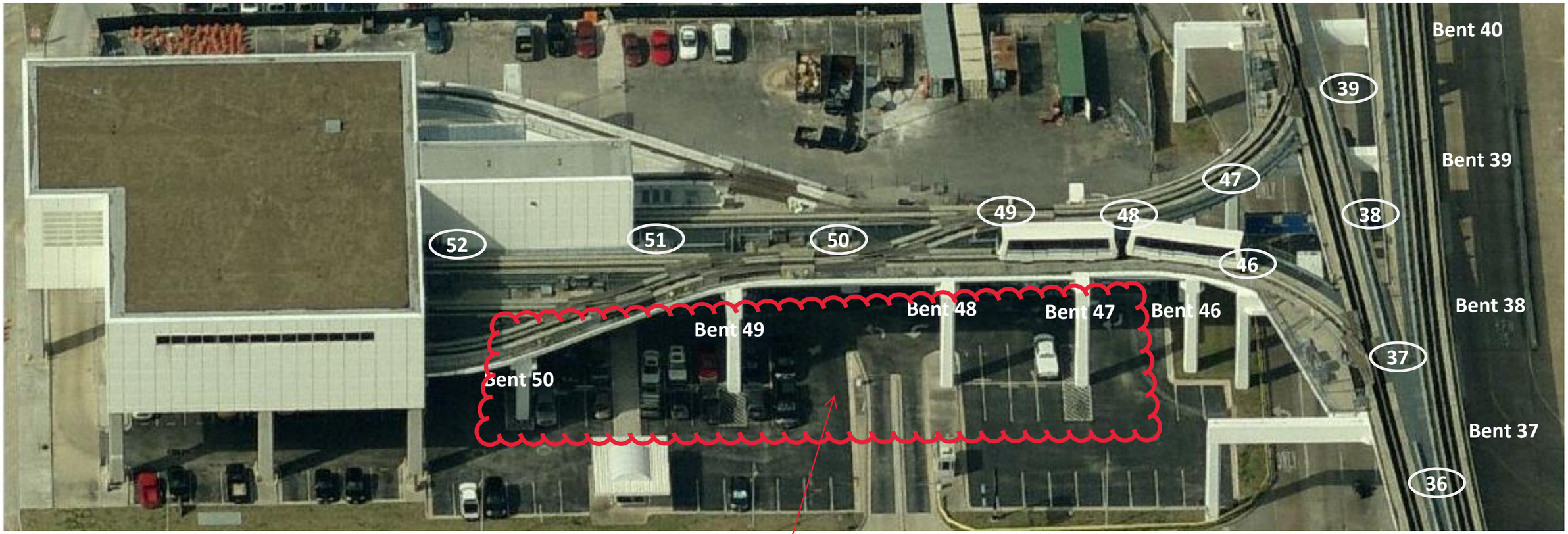
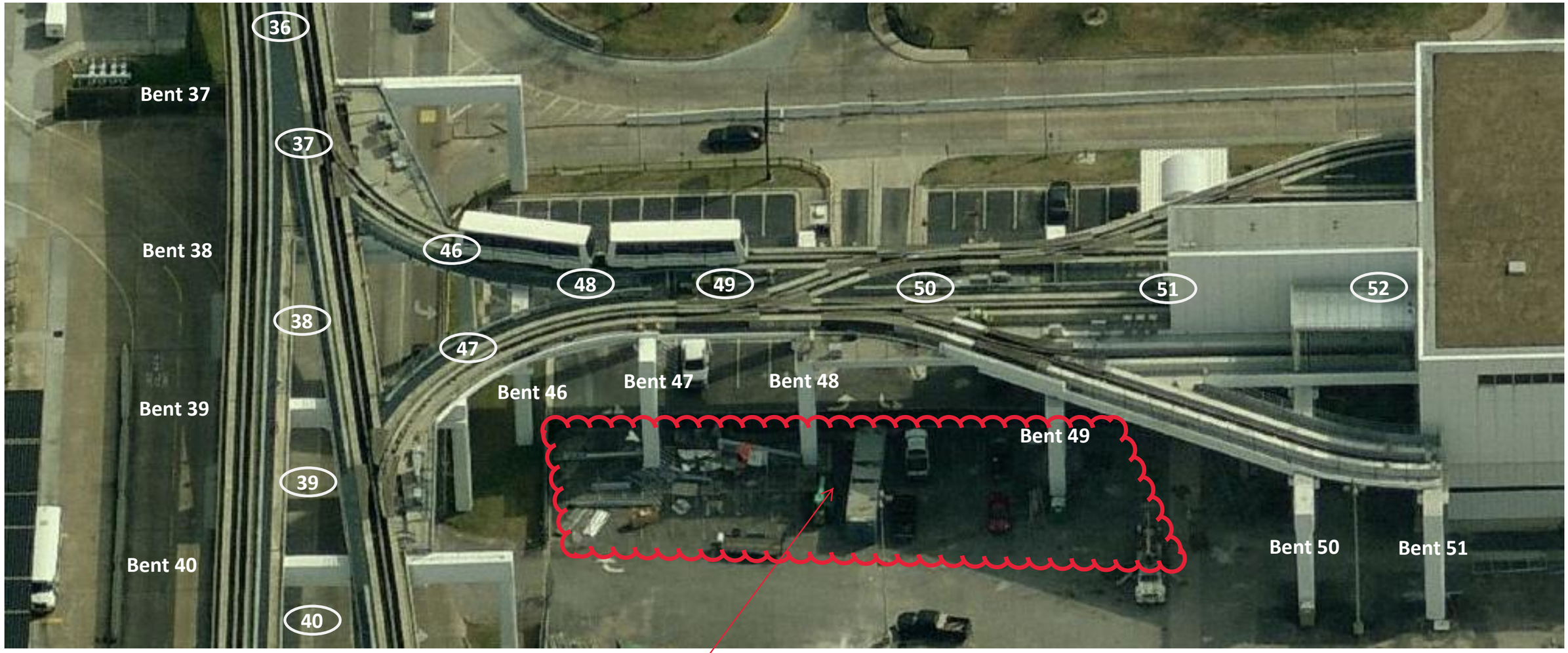
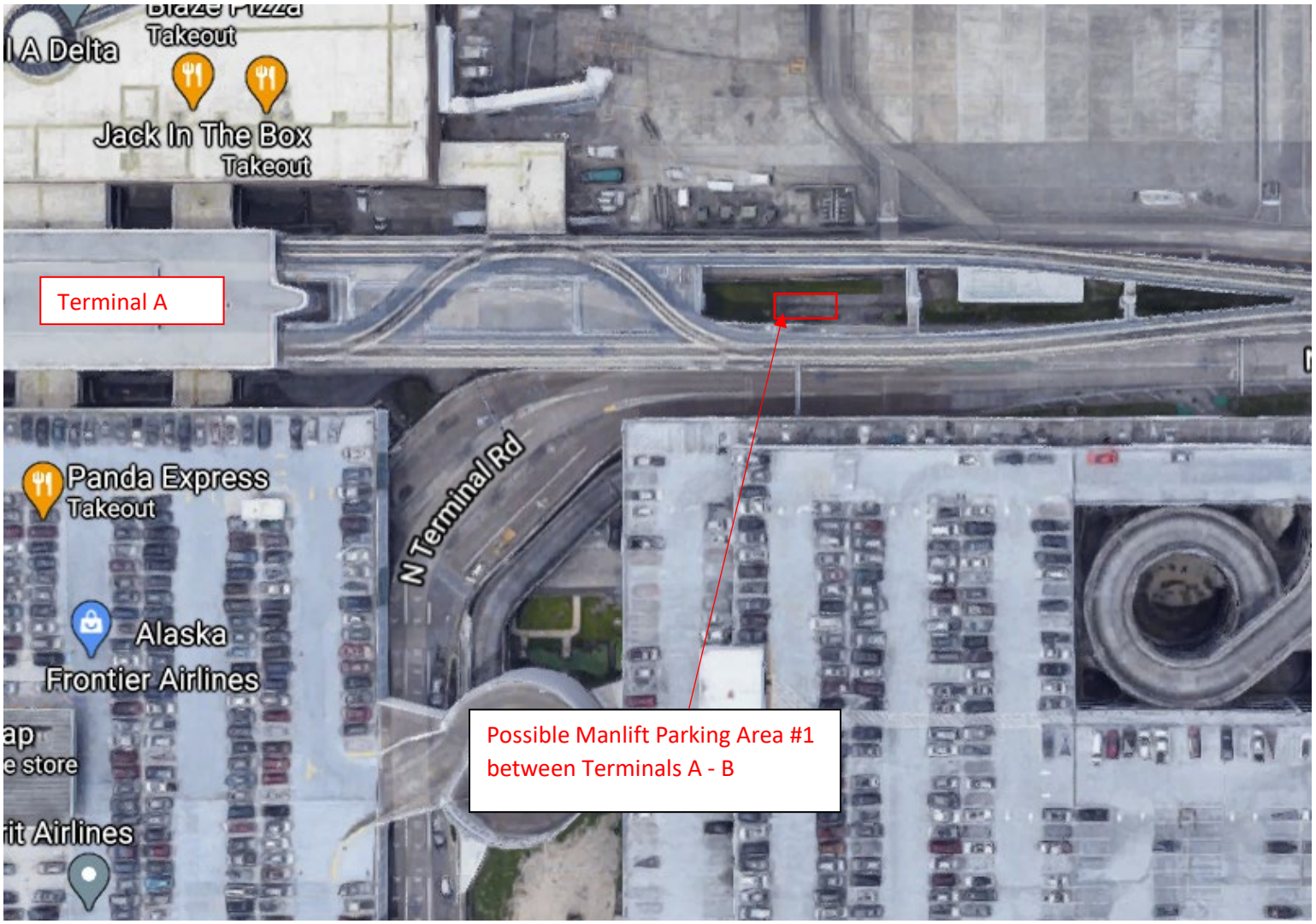
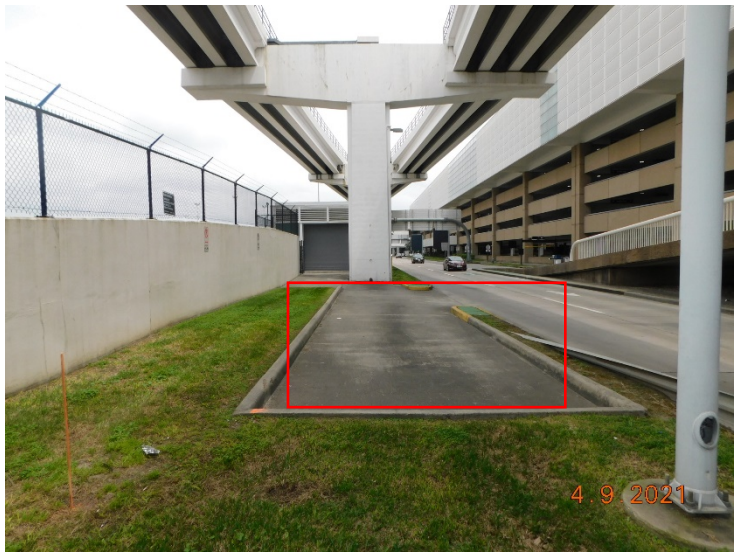


Parking Spaces below APM structure to remain open for manlift access for inspections. Work to occur during weekend of May 1st thru 2nd

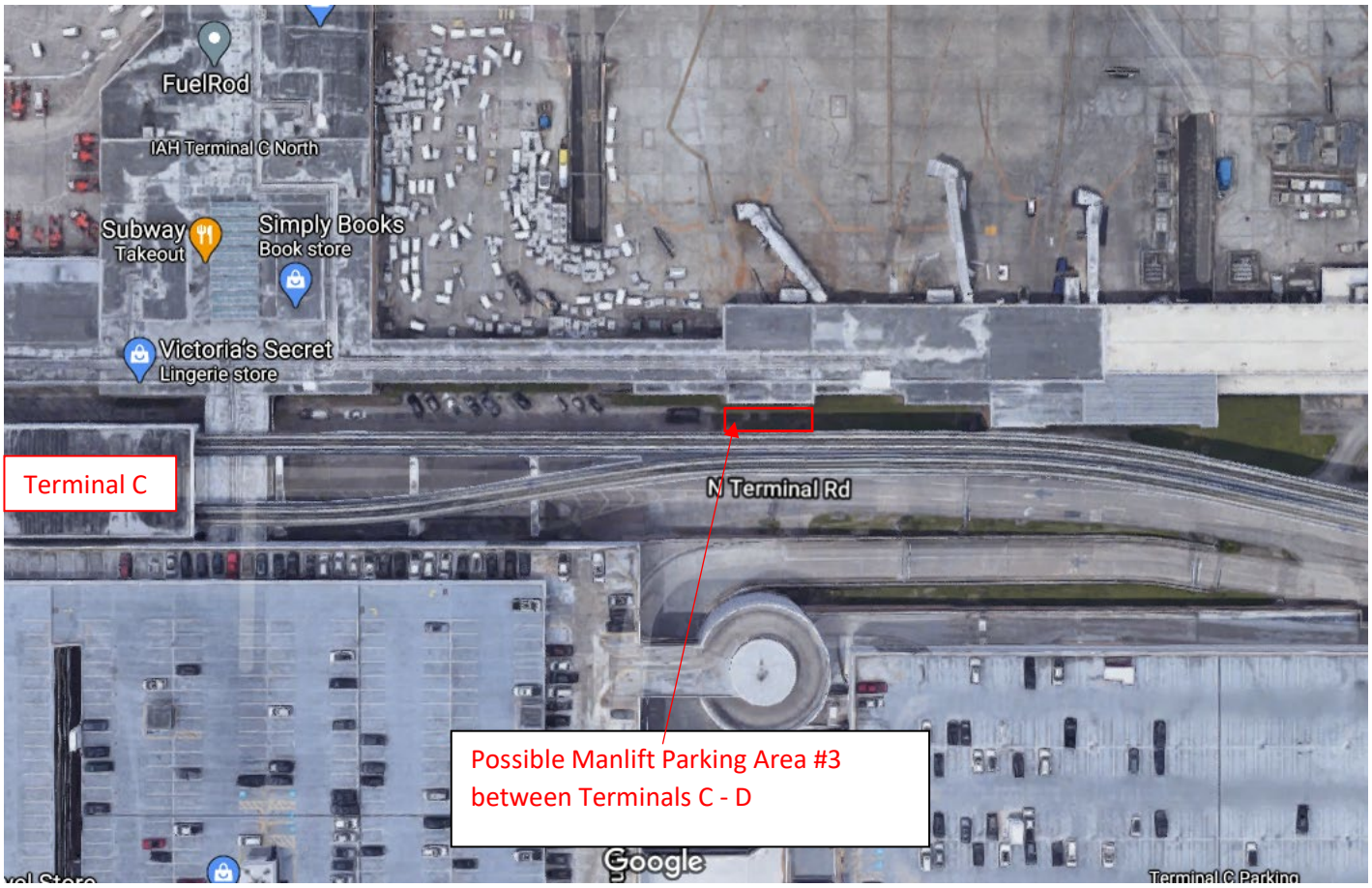


Parking spaces below APM structure to remain open for manlift access for inspections. Work to occur during weekend of May 1st thru 2nd.

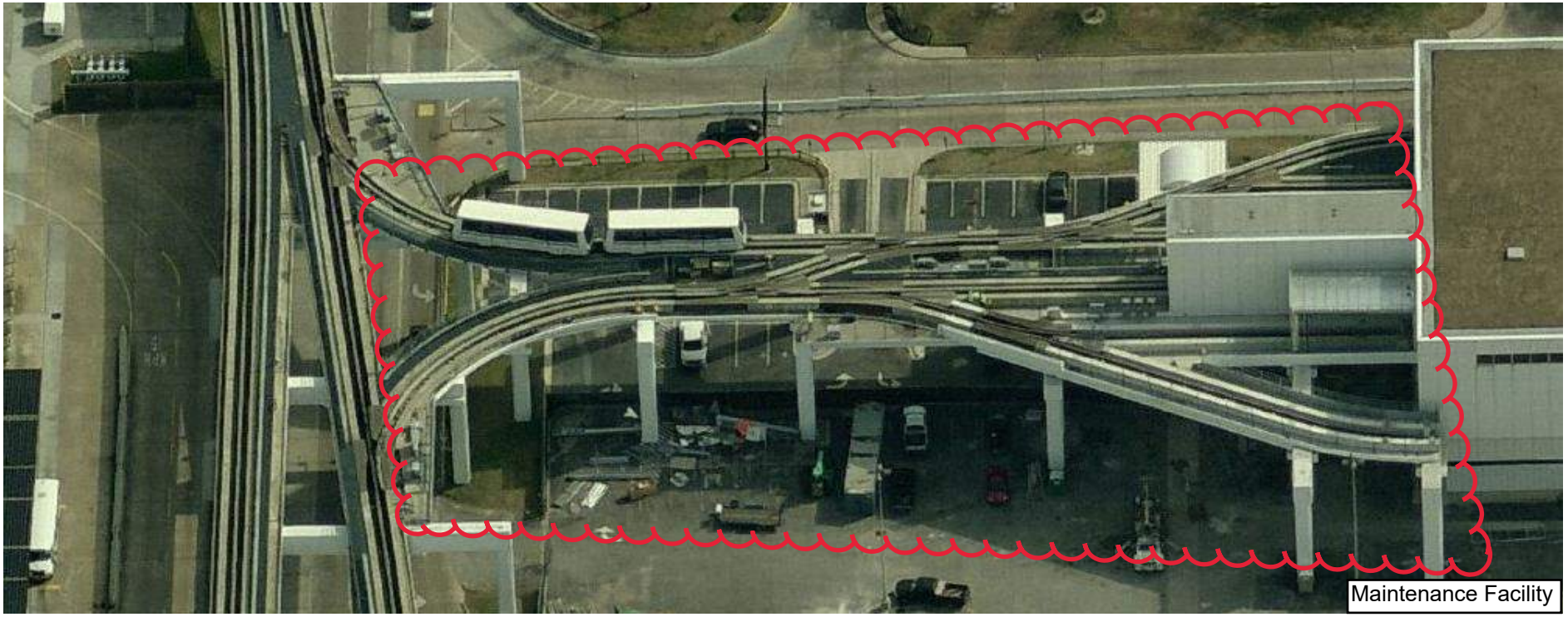

Takeout
Jack In The Box
Takeout
Terminal A
N Terminal Rd
Panda Express
Takeout
Alaska
Frontier Airlines
Possible Manlift Parking Area #1
between Terminals A - B


4.9.2021

We could park the manlift tucked up next to the wall and lift the boom in the air to not take up too much space.

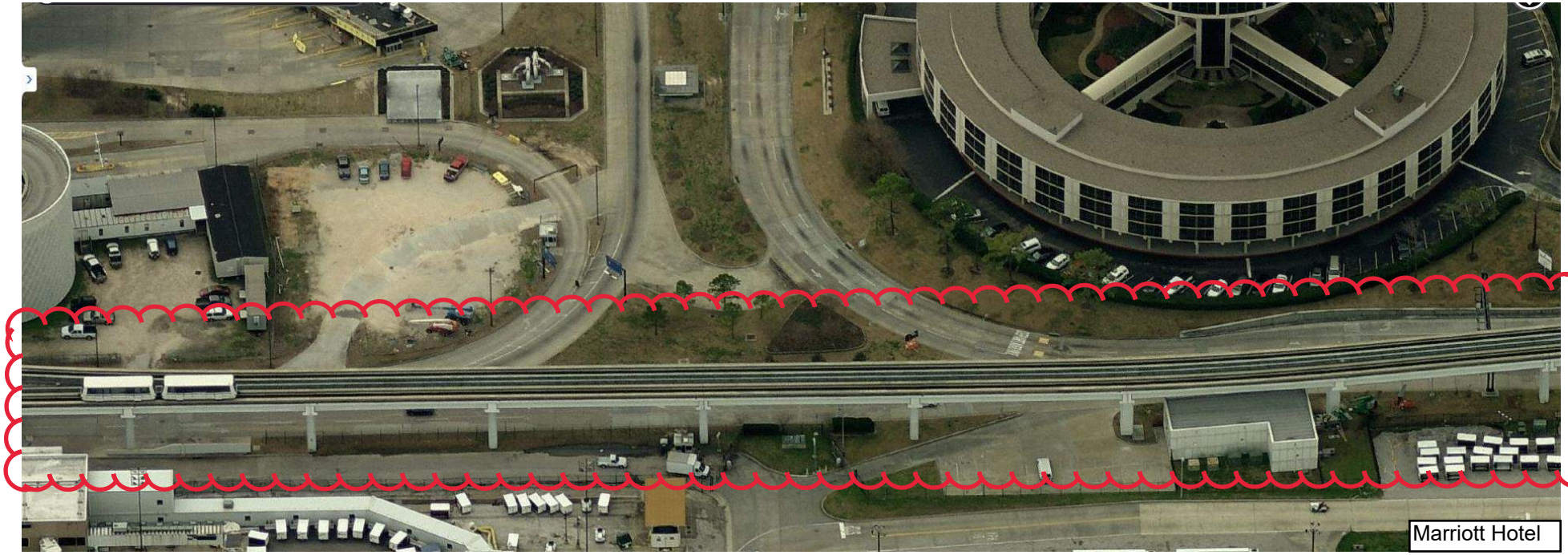


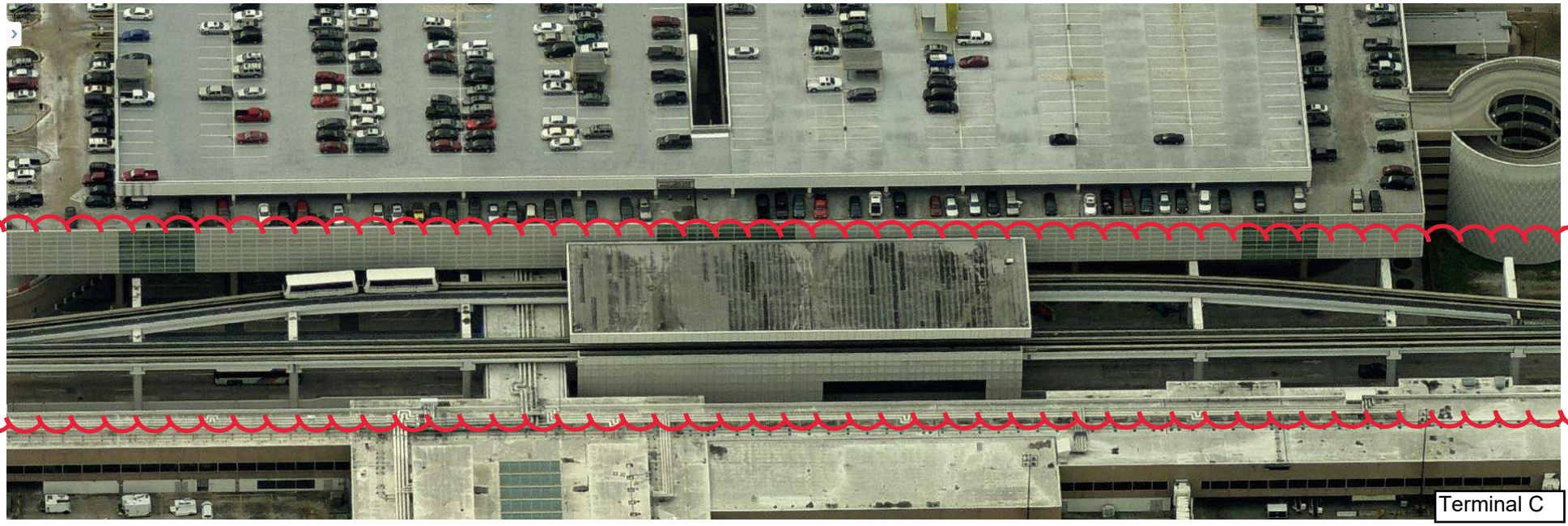
Can we move two of these yellow barriers and park the manlift on the grass area. The barriers are not filled with water.



Work limited to visual inspections of APM columns from ground surface.

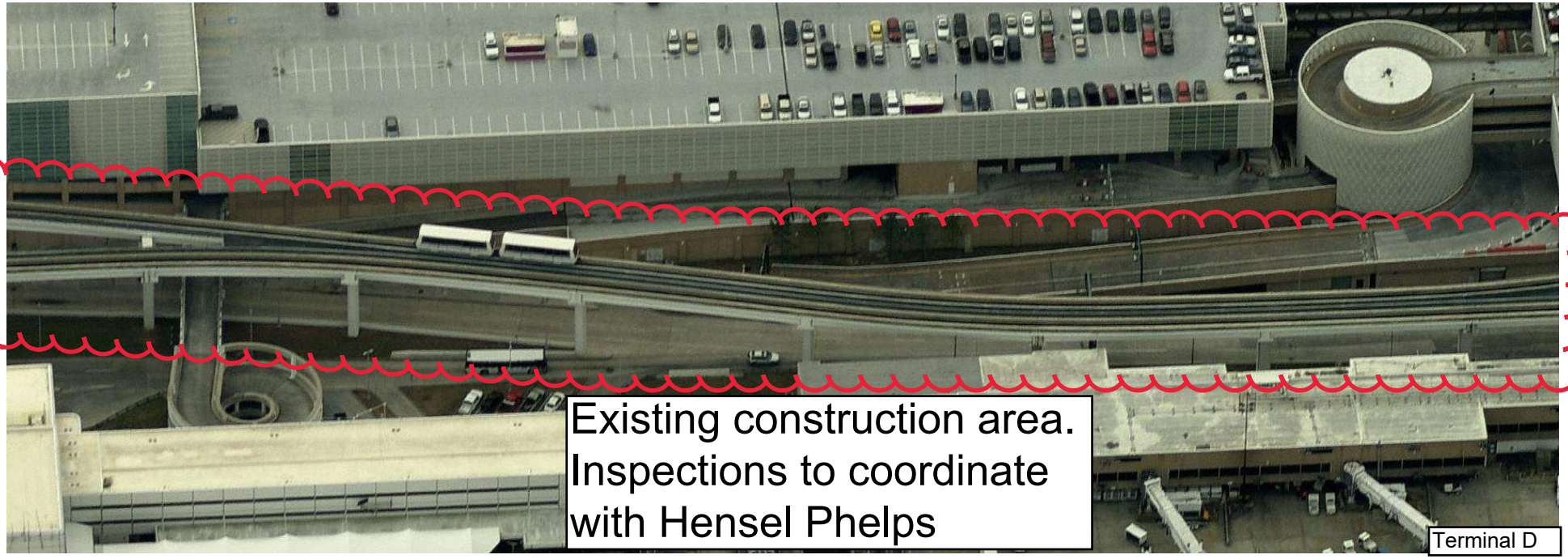
HNTB

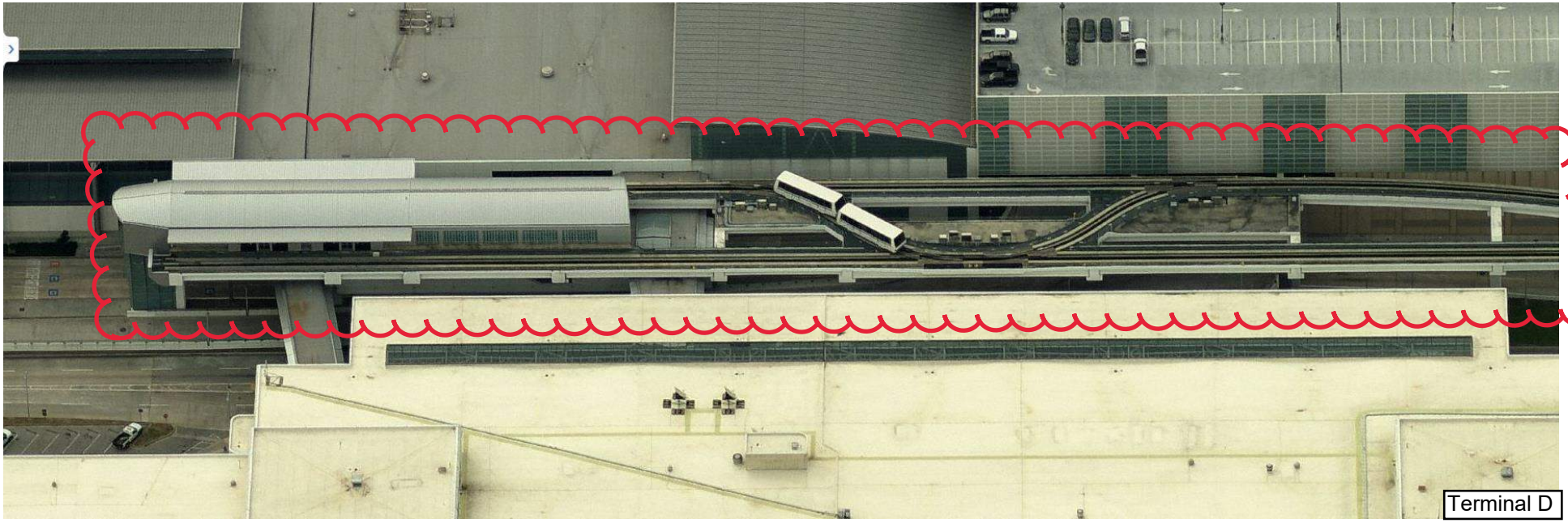




Work limited to visual inspections of APM columns from ground surface.

HNTB





Work limited to visual inspections of APM columns from ground surface.

HNTB

APPENDIX B

HNTB SAFETY PLAN

APM
CONDITIONS ASSESSMENT

HNTB SAFETY PLAN

HNTB

Reflective Vest Program

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

High-visibility safety apparel is critical personal protective equipment around construction machinery and traffic. It is HNTB's policy that all company employees wear a reflective vest when at a construction type job site. The reflective vest provides visibility for construction personnel and public vehicles to see the HNTB employee at the job site. Several agencies and clients dictate the use and type of reflectory garments. HNTB follows the most stringent requirement dictated for the specific job site.

OSHA's Requirements

The Occupational Safety and Health Administration (OSHA) standard provides requirements for flaggers and individuals who are exposed to vehicle traffic. OSHA has published:

> "It is well recognized in the construction industry that construction workers in highway/road construction work zones need to be protected from traffic. The MUTCD reflects industry practice with respect to identifying the types of situations where these workers need high-visibility warning garments. In such cases, Section 5(a) (1) requires the use of such garments."

OSHA has communicated that compliance with the more current Department of Transportation (DOT), American National Standard Institute (ANSI) or other applicable nationally recognized consensus standards is suitable in meeting OSHA compliance.

The OSHA Construction standard indicates that in construction areas (zones), employers have to comply with 1993 or Millennium Edition version of Part VI of the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD).

American National Standard Institute (ANSI)

The "Millennium Edition" of the MUTCD is the most recent ANSI version of traffic control. In that version, employers have the choice of using a variety of reflectorized colors for vests:

> "For daytime work, the flagger's vest, shirt or jacket shall be orange, yellow, strong yellow green or fluorescent versions of these colors. For nighttime work, similar outside garments shall be retroreflective. The retroreflective material shall be orange, yellow, white, silver, strong yellow-green or a fluorescent version of one of these colors and shall be visible at a minimum distance of 1,000 feet. The retroreflective clothing shall be designed to clearly identify the wearer as a person."

American National Standard for High-Visibility Safety Apparel

However, more and more state DOT agencies feel that the MUTCD comes up short for protecting highway workers and requires adherence to ANSI/ISEA 107-1999—American National Standard for High-Visibility Safety Apparel.

The ANSI/ISEA standard goes a step further and describes high visibility clothing as Class I, II and III. The criteria for defining the Classes depend on many parameters, the foremost of which is traffic speed.

If you have any questions or need additional Safety Procedure and Guidelines Fact Sheets, please contact HNTB's Safety Office at 816-527-2013.

New Regulation on High Visibility Garments

The new Federal Highway Administration (FHWA) high visibility garments standard became effective on Nov. 24, 2008. The standard requires the use of high visibility clothing (as defined by ANSI/ISEA 107 standard) when working in the right-of-way on federal-aid highways.

Three levels of conspicuity (or visibility) are in the standard. These levels in ascending order are:

- Class I garments are light-weight vests intended for exposure to slow moving traffic less than 25 mph. Class I vest have a minimal of a 1-inch retroreflective band width and 155 square inches of retroreflective or combined performance with background material. Parking lot workers, delivery personnel and warehouse personnel would require Class I vests.

- Class II garments are intended for exposure to medium traffic speeds, typically under 50 mph. Class II vests have a minimal of a 1 3/8 inch retroreflective band width and 201 square inches of retroreflective or combined performance with background material. This garment should enable workers to be seen in reduced visibility. Workers should be able to accomplish their work without paying excessive attention to traffic.

- Class III garments meet the most stringent requirements. Class III vests have a minimal of a 2-inch retro-reflective band width and 301 square inches of retroreflective or combined performance with background material. This garment is needed when workers are exposed to traffic exceeding 50 mph. Workers should be able to intensely concentrate on their work and be visible at 1,280 feet. They should distinctly look like a person at this distance rather than an inanimate object. This is an ideal garment for emergency response personnel, utility workers and road crews.

The total surface area of reflective tape and fabric varies depends on specifying Class I, II or III.

The HNTB client or agency with jurisdiction of the project may dictate the Class of garment to be worn on their job site. As a minimum requirement, HNTB procedure dictates that HNTB employees will wear a Class II reflective vest on construction type job sites.

Garment Care and Maintenance

Proper maintenance and care will ensure an effective life for the garment and its safety characteristics. Sew-in labels should detail care instructions for the garment.

It is important to recognize that safety vests and safety products in general have a finite life particularly where the working environment is demanding, dirty and dusty. Such situations require more frequent washing. Reflective vests in work situations can deteriorate to a state where the safety factor is negligible, providing no real protection to the wearer. When needed, the reflective vest should be washed in lukewarm or cold water, use no fabric softener and hang to dry in order to protect the reflective material. Do not bleach, industrially wash or industrially dry clean the reflective vest.

Summary

Visibility on a construction type job site is very important in ensuring the safety of HNTB employees. All HNTB employees on construction type job sites will be wearing an ANSI Class II reflective vest. The HNTB client may require Class III garments or a particular garment color. A reflective vest can be procured from the HNTB Company Store or from a safety equipment vendor.

Work Zone Safety

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

Highway and street construction employees are at risk of fatal and serious nonfatal injuries when working in the vicinity of passing motorists, construction vehicles and equipment. Each year, more than 100 workers are killed and more than 20,000 are injured in the highway and street construction industry. Vehicles and equipment operating in and around the work zone are involved in over half of the worker fatalities in this industry.

Historically, efforts to reduce vehicle-related worker injuries in this industry have focused on improving traffic control devices and work zone configurations to minimize confusion of motorists passing through the work zone and to limit collisions involving motorists. The premise has been that by minimizing traffic collisions in work zones, worker injuries are minimized. However, fatality data indicates that workers being struck by a motorist passing through the work zone account for only half the vehicle-related fatalities among highway workers.

Exposures

Workers on foot or in a company vehicle are exposed to the risk of being struck by traffic vehicles or construction equipment if they are not visible to motorists or equipment operators. Conditions that can contribute to an accident are inclement weather, low lighting, low visibility and congested areas with exposure to high traffic volume and speeds.

Traffic Control

HNTB employees who inspect or work in the area of the contractor's traffic control program must be fully aware of the approved traffic control plans and follow the guidelines established below:

- When entering or leaving a work zone adjacent to a public traffic area with a company vehicle, turn on your amber light and proceed with the normal traffic flow. Employees shall not enter into construction zones through traffic control set ups without an amber beacon turned on, visible to all traffic.
- Unless there is a clear reason to do otherwise, employees on foot shall face traffic. Always plan an escape route in the event an errant vehicle enters the work zone. When possible, utilize another employee as a lookout.
- Employee exposure to public traffic shall be kept to the absolute minimum required to complete the task, (i.e., plan the work in advance).
- When possible, employees shall park their vehicle as a barrier between oncoming traffic and their work location, keeping the vehicle several feet away from them while working. Employees will not work on foot at the rear of their vehicle, while adjacent to public traffic, unless shielded by another vehicle.
- When required to cross traffic lanes on foot, each employee shall ensure that

enough time is provided to walk across the lanes safely, and without causing oncoming traffic to slow. Do not run while crossing traffic to avoid tripping.

- Unless inspection duties require otherwise, employees shall remain in their vehicles while in a lane closure. Seat belts shall be utilized at all times while in the vehicle.
- Employees shall not work in the traveled way or within six feet of the edge of traveled way without signing and a lane closure. Exception: Brief operations may be conducted without using a lane closure or signs if the following conditions are met:
    - Traffic volume is light. Employee must be able to walk from the shoulder to the site on the traveled way, do the job and walk back to the shoulder without interfering with traffic.
    - Sight distance is at least 500 feet in each direction. Where 500 feet of sight distance is not available, one or more lookouts must be posted to extend visual coverage.
    - Parking or working within six feet of the traveled way is limited to no more than 20 minutes.
- When authorized, employees will review the proposed traffic control plan in the field with the contractor to determine the layout of the traffic control signs and tapers.
- When authorized, and when contractors have set up traffic control, employees will periodically drive through the closure to be sure that all traffic control devices are in proper working order and in compliance with all contract requirements.
- Employees should always have an escape plan in mind when they are working near traffic.
- Employees shall not engage in the activities of physically installing or taking down contractor's traffic control devices.

- Employees entering into a construction zone within a traffic control setup are required to wear Type II reflective vests at a minimum.
- No employee shall drive into a construction zone traffic control setup unless authorized, familiar with current construction activities within the zone, wearing appropriate personal protection equipment, and driving a vehicle with an approved beacon.
- If employees see a traffic control zone on their job site that does not comply with the approved traffic control plan, and/or other standards set forth by the governing agencies and contract documents, they shall avoid entering through the traffic control zone, and shall immediately notify their supervisor, the resident engineer or the contractor's superintendent.

Summary

Additional HNTB Safety Procedure and Guideline Fact Sheets related to work zone safety should be reviewed if you work in that type of exposure.

If you have any questions or need additional Safety Procedure and Guidelines Fact Sheets, please contact HNTB's Safety Office at 816-527-2013.

Aerial Lifts Safety Awareness

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

Aerial lift devices are commonly referred to as bucket trucks, lift trucks, man lifts, over the side (OTS) vehicles or cherry pickers. An aerial lift is any lift device that has an articulating and/or extension boom. An HNTB employee who may be on an aerial lift to perform a job duty needs to be aware of the safety concerns associated with aerial lifts. Only qualified employees are authorized to operate aerial lift devices. To become qualified to operate the equipment you must:

- Know all safety rules for each job site required by the client or the general contractor.
- Read and understand the equipment's operations manual.
- Understand Occupational Safety and Health Administration (OSHA) regulations pertaining to the equipment and job.
- Completed hands-on training with the aerial equipment that can be requested from the equipment rental company.
- Know employee rescue procedures in case of an emergency.

Greatest Dangers

Failure to observe safety precautions when riding or operating an aerial lift device can result in serious injury or death. The most commonly reported serious accidents are:

- Lift Overturns: Aerial lifts can overturn, causing serious injury or death.
- Falls from Lift: You can be seriously injured or killed if you fall from a lift.
- Contacting Power Lines: You can be seriously injured or killed if you come into contact with an overhead power line.
- Boom Collapse: The boom on a lift can collapse if it has had poor maintenance or is damaged. Employees can be seriously injured or killed during a collapse.
- Stuck By: An aerial lift device can be hit by traffic in congested work zones.

Protective Equipment

Hard hat, safety footwear, close-fitting clothes and fall protection are minimal personal protective equipment required when on an aerial lift. Fall protection involves:

- A body belt (for lanyard no greater than two feet) or safety harness required to keep you from falling to the ground.
- A lanyard connected to the harness or belt and attached to an anchor point on the boom or bucket.
- The use of a safety harness is recommended. If using a body belt, the length of the lanyard cannot be over two feet.

Safety Precautions

When performing a task or work duty on an aerial lift, the HNTB employee needs to follow the safety precautions of the equipment they are working with.

- The operator is maintaining and operating the aerial lift in accordance with the manufacturer's instructions.
- The aerial lift is not damaged and needs repairs.

- The operator does a prestart inspection of the aerial device as recommended by the manufacturer.
- Always perform function tests prior to use.
- The operator's manual is checked for the greatest slope the vehicle can safely be used on.
- The brakes are set and wheels chocked when on an incline.
- The surrounding ground and intended path of operation for deceptive uneven ground and potential sinkholes has been checked.
- Breaks must be set when the employee is elevated.
- Outriggers are being used, if provided.
- The load limits of the equipment are not being exceeded. Allow for the combined weight of the employee, tools, and materials.
- Never move the equipment with employees in an elevated platform unless this is permitted by the manufacturer.
- Employees must stand only on the floor of the basket. No planks, ladders or other means are allowed to gain greater heights. Standing or sitting on the railing is prohibited.
- Always be aware of electrical hazards near the work area and of the path of travel. Employ an equipment spotter when working in close proximity of power lines. Maintain a minimum clearance of 10 feet for power lines rated 50,000 volts or less.
- Always treat power lines, wires and other conductors as energized, even if they are down or appear to be insulated.
- Use a body harness or restraining belt with a lanyard attached to the boom or basket to prevent being ejected or pulled from the basket.
- Never tie the lanyard to an adjacent structure or you may be pulled out of the bucket when the boom moves.
- Do not walk under a boom to gain access to the platform.
- Do not tie the platform off to any structure for any reason.
- Always look in the direction the machine is moving.
- Do not rest the boom or basket on a steel structure of any kind.
- Use traffic control devices in accordance with the *Manual on Uniform Traffic Control Devices* (MUTCD) when operating in traffic areas.
- The operator should avoid jerking the controls with sudden starts and stops when maneuvering the boom.
- Only use the machine as it was intended.

Summary

On construction job sites there is often a need to conduct elevated work. Safe access to this elevated area can be provided by an assortment of aerial lifts. There are many safety concerns when working on an aerial lift to perform work duties. Any person using an aerial lift needs to be trained in the aerial lifts safe usage prior to handling the equipment. Training documentation needs to be maintained and available for inspection upon request. Additional HNTB Safety Procedures and Guidelines Fact Sheets involving Personal Fall Protective Equipment and Electrical Safety, High Voltage need to be reviewed.

If you have any questions or need additional Safety Procedure and Guidelines Fact Sheets, please contact HNTB's Safety Office at 816-527-2013

Falls: Elevated Walking / Working Surfaces

A Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

At HNTB many of our fall hazards from elevated walking and working surface exposures are in our construction-type job sites. In the construction industry, falls are the leading cause of worker fatalities. The Bureau of Labor Statistics reports that in 1999, more than 93,000 workers incurred injuries from falls. The greatest number occurred in the construction industry (more than 22,000) followed by more than 17,000 injuries to workers in service-related industries.

Fall protection is defined as any means used to protect workers from falls during work in areas where fall hazards exist. Fall protection is essentially a system that protects workers who could lose their balance at any given height from falling, usually resulting in injuries.

Duty to Have Fall Protection

The Occupational Safety and Health Administration's (OSHA's) Construction Standards require fall protection for fall exposures of six feet or higher from a work surface. There are exceptions to the six-foot rule, but the safety guidelines for HNTB employees who have construction fall exposures of six foot or greater from a work surface is to have appropriate fall protection in place. Using a ladder is not considered a working surface and the six-foot rule would not apply. The HNTB Fact Sheet, "Ladder Safety," provides safety procedures and guidelines concerning portable and fixed ladders.

The OSHA General Industry Standards requires fall protection for fall exposure of four feet or greater. The General Industry applications could apply to maintenance activities at an HNTB office such as maintenance inspection of bridges. HNTB would follow the four-foot rule where applicable.

At each job site or facility, HNTB needs to determine if fall hazards are present. Where such hazards exist, we must choose the best method to protect and implement a fall protection system. Several fall protection systems can be implemented.

Fall Protection Systems

Fall protection systems either prevent the fall from occurring or reduce the impact of a fall. Fall protection systems include but are limited to:

- Guardrails
- Handrails and stair rails
- Covers (i.e. for small holes on flooring)
- Safety nets
- Personal fall arrest system

Guardrails

Guardrails are the primary means of fall protection used throughout construction and general industry. Guardrail systems consist of top rails, mid rails and toe boards.

According to the OSHA Construction Standards, the top rail may have the height of 39 inches to 45 inches. The mid-rail height should be half the distance of the top rail. The toe board would be used if people are below the work surface area and could have materials fall onto them. The guardrail system is to be able to withstand 200 pounds of force being applied. A "standard toe board" is four inches nominal in

vertical height, with not more than ¼-inch clearance above the floor level.

Handrails and Stair Rails

Handrail and stair rail systems act as support structures for workers who lose their balance while performing work duties. Handrails are usually a single bar or pipe that is supported on brackets from a wall or partition to provide a handhold. Stair rails are vertical barriers erected along exposed sides of a stairway to provide a handhold.

Every flight of stairs with four or more risers or rising more than 30 inches should have standard stair railings or handrails system on the unprotected side or edge. The handrail and stair rail systems must be capable of withstanding at least 200 pounds of force. Employees should always use the handrail and stair rail systems when on stairs.

Covers

Covers can protect an employee from holes on walking/working surfaces. Covers provide protection by preventing:

- Employees falling into or through holes (including skylight openings) six or more feet above the lower levels

- Objects falling through holes

Safety Nets

Safety net systems are conventional arrest systems consisting of mesh nets and other impact-absorbing components designed to catch falling workers, tools or materials and prevent them from striking the ground. Safety nets are installed as close as possible below the surface on which people are working, but never more than 30 feet below the working surface.

Safety nets can be provided when workplaces are more than 25 feet above the ground or water surface or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors or a personal fall arrest system is impractical. Safety nets shall extend outward from the outermost projection and are to be inspected.

Personal Fall Arrest Systems

A personal fall arrest system is used to arrest a worker's fall from a height. Personal fall arrest systems can include the following equipment:

- Full-body harnesses
- Lanyards
- Rope grabs
- Lifelines
- Self-retracting lifelines
- Anchorage points
- Riggings

Body belts (safety belts) are prohibited except for positioning (lanyard not longer than two feet) and restraint systems. If your task requires a personal fall arrest system, you will need to review the HNTB Safety Procedure and Guidelines Fact Sheets on Personal Fall Arrest Systems.

Summary

Systems that prevent workers from falling to lower levels such as guardrails provide the best type of protection. Systems that arrest falls prevent death, but may still cause serious injuries from the arresting force. An emergency rescue plan needs to be in place if fall arrest equipment is being used.

It is essential to assess your workplace for fall hazards and take the appropriate precautions to prevent employee injuries from falls to lower levels. The HNTB Safety Manual, Section 25, addresses Site-Specific Safety Plans that require a job site safety hazard analysis to be preformed.

Personal Fall Arrest Equipment, Wearing and Maintenance

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

If you use personal fall arrest equipment for your job, it is important that you wear and maintain the equipment correctly. Harness styles can vary, so it is important to always refer to the instructions enclosed with your harness. Various manufacturers of personal fall arrest equipment may also vary on how to maintain equipment.

Wearing a Full body Harness

The steps to correctly wear a full body harness are easy to learn. If you are unsure of how to wear a full body harness, contact your supervisor for instructions.

- Hold harness by back D-ring. Shake harness to allow all straps to fall in place.

- If chest, leg and/or waist straps are buckled, release straps and unbuckle at this time.

- Slip straps over shoulders so D-ring is located in middle of back between shoulder blades.

- Pull leg strap between legs and connect to opposite end. Repeat with second leg strap. If belted harness, connect waist strap after leg straps.

- Connect chest strap and position in mid-chest area. Tighten to keep shoulder straps taut. Connect the waist belt.

- After all straps have been buckled, tighten all buckles so that harness fits snug but allows full range of movement. Pass excess strap through loop keepers.

- The shock absorbing lanyard is always attached on the D-ring, on the back side of the harness. The snap hook must be the self-locking type to prevent accidental opening.

Maintenance and Cleaning

Basic care of all safety equipment will prolong the durable life of the unit and will contribute toward the performance of its vital safety function.

The cleaning the equipment can be challenging. Most harnesses can be placed in a washing machine and hung to dry. Machine washing the lanyards is not practical, as the shock absorber may not dry completely after it is washed. The lanyards should be hand washed. Basic rules for cleaning include:

- For nylon and polyester, wipe off all surface dirt with a sponge dampened in plain water. Squeeze the sponge dry. Dip the sponge in a mild solution of water and commercial soap or detergent. Work up a thick lather with a vigorous back and forth motion. Then wipe the belt dry with a clean cloth.

- Harness, belts and other equipment should be dried thoroughly without exposure to heat, steam or long periods of sunlight.
- Housing units should be periodically cleaned using a damp cloth and a mild detergent. Towel dry.

Maintenance and Storage

Proper storage and maintenance after use are as important as cleansing the equipment of dirt, corrosives or contaminants. Storage areas should be clean, dry and free of exposure to fumes or corrosive elements. To help keep you safe, fall-protection equipment must be stored correctly:

- Store the equipment, according to the manufacturer's instructions.
- Store equipment away from heat, light, dampness, oil, chemicals, or other damaging conditions.
- Hang each harness by the back D-ring to help keep the shape when not in use.

Fall Protection Equipment Maintenance

Any fall arrest system involved in a fall must be removed from service. Self-retracting lifelines may be used again once serviced by the manufacturer. Employees should also inspect the components every time they need to use them.

Summary

If your job requires you to use personal fall arrest protection equipment, review the HNTB Safety Procedure and Guidelines Fact Sheets, "Personal Fall Arrest Protection" and "Personal Fall Equipment Inspection". Information on additional fall protection training can be obtained by online training on the HNTB Safety Web site. All fall protection training needs to be documented and maintained by the employee's supervisor.

Lockout/Tagout Program

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

HNTB employees may have job assignments that require equipment to be de-energized. In such cases, if the power on a de-energized motor could be turned on unexpectedly and result in an injury, a lockout/tagout (LOTO) program would be required. The purpose of a LOTO program is to prevent the unexpected energization; start-up of equipment; or the release of stored energy that could cause injury.

If a lockout/tagout program is needed, the HNTB or the client's LOTO program would be implemented to ensure the safety of the task and comply with appropriate regulatory standards and the client's requirements.

Energy Sources

There are many different energy sources that could be involved in a LOTO program. Energy sources take many forms, such as:

- Electrical
- Hydraulic
- Fluid & Gases
- Water under pressure
- Pneumatic
- Mechanical
- Thermal
- Gravity

Energy comes in two types

- Kinetic (Moving) Energy
- Potential (Stored) Energy

An example of potential energy is an electrical capacitor that stores energy, even when the circuit has been de-energized.

Dissipating stored energy once could include the following task:

- Ground electrical circuits and capacitors
- Release spring tension
- Adjust valves to bleed or drain systems

What is Lockout/Tagout?

Lockout is the process of blocking the flow of energy from a power source to a piece of equipment and keeping it blocked out.

Lockout is accomplished by installing a lockout device at the power source so that equipment powered by that source cannot be operated. A lockout device can be a lock, block, or chain that keeps a valve or lever in the off position. Locks that are used for lockout purposes should never be used to lock tool boxes, storage sheds, or other devices.

Tagout is accomplished by placing a tag on the power source. The tag acts as a warning not to restore energy and identifies who installed the lock. It is not a physical restraint. Tags must clearly state: Do not operate or the like, and must be applied by using a non-reusable nylon cable tie (or an equivalent attachment device).

Lockout/Tagout Devices

The basic LOTO devices most likely used at HNTB are locks, hasps and tags. Purchasing information on LOTO devices is on the HNTB Safety Web site under the category "Safety Equipment Specifications". If other LOTO devices are needed, contact the HNTB Safety Office for advice.

Classification of Employee

There are two classifications of employees associated with a LOTO program:

- Authorized Employee: Performs lockout/tagout on machines or equipment in order to provide service or maintenance on that machine or equipment.
- Affected Employee: Job requires him/her to operate or use a machine or equipment under LOTO. Affected employees must be informed when LOTO operations are being performed.

Energy-Control Procedures

Energy-control procedures for placing and removing the appropriate LOTO devices on the energy-isolating devices need to be established.

The *HNTB Energy-Control Procedures* form, available on HNTB Safety Web site under the category "Written Programs", provides a written procedure to be developed.

A written energy-control procedure is not required when there is:

- No potential for stored energy
- Only a single, easily identifiable energy source and it is isolated by a single lockout device
- Isolation results in complete de-energization
- Lockout is under complete control of the employee
- No history of accidents with the particular machine or equipment

Before Service or Maintenance Activities

The following steps must be accomplished in sequence and according to the specific provisions of the energy-control procedure:

- Prepare for shutdown
- Shut down the machine
- Disconnect or isolate the machine from the energy source(s)
- Apply the lockout and/or tagout device(s) to the energy-isolating device(s)
- Release, restrain, or otherwise render safe all potential hazards stored or residual energy
- Verify the isolation and de-energization of the machine

Before Re-energizing Machine

Employees who work on de-energized machinery may be seriously injured or killed if someone removes lockout/tagout devices and re-energizes machinery without their knowledge. It is extremely important that all employees respect LOTO devices and that only the person(s) who applied these devices remove them.

The employee(s) must take the following steps before re-energizing the machine, in accordance with the specific provisions of their energy-control procedure:

- Inspect machines or their components to assure that they are operationally intact and that nonessential items are removed from the area
- Check to assure that everyone is positioned safely and away from machines

Energy Sources That Cannot Be Locked Out

In some cases, an energy source cannot be physically locked out. If an energy isolating device is not capable of being locked out, a tagout system where warning tags are applied to warn individuals not to operate the energy isolating devices would be the next option. If a tagout system is used, the procedures must be reviewed with the authorized and affected individuals. Additional safety measures would be needed. Because a tagout program does not involve positive restraints on energy control devices, it requires extra vigilance to ensure that:

- Tagout devices are properly applied
- They remain affixed throughout the servicing and maintenance period
- No employee violates the tagout devices by re-energizing the machine or equipment before the tagout device(s) is removed

Summary

Additional training on LOTO can be obtained from the HNTB Safety Web site, under the category "Online Safety Training" or the HNTB Safety Office.

Electrical Safety, High Voltage

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

High voltage is extremely dangerous. HNTB employees could be exposed to high voltage when working on a construction type job site. Another possible exposure could involve a vehicle accident or a storm involving a downed overhead power line.

Contact with Power Lines

Overhead power lines can be at a construction type job site, along bridges, pier risers, railroad centenary and signal lines. Power lines are hazardous because they carry high voltage. Electrocution is the main risk, but burns and falls from elevations are also hazards. Being around tools and equipment that can contact power lines increases the risk.

Examples of Equipment That Can Contact Overhead Power Lines

Working around construction personnel, you should be familiar with conditions and equipment that could involve contact with high voltage. Examples are:

- Aluminum paint rollers
- Backhoes
- Concrete pumpers
- Cranes (For additional information, see HNTB Safety Procedure and Guidelines Fact Sheet “Cranes Safety Awareness”)
- Long-handled cement finishing floats
- Metal building materials
- Metal ladders
- Raised dump truck beds
- Scaffolds
- Pressure washing/water blasting operations
- Bucket trucks, man lifts, over the side vehicles

Safety Procedures around Overhead Power Lines

- Carefully observe overhead power lines on the job site before the job begins.
- Keep yourself and equipment at least 10 feet away from overhead power lines rated 50 kV (50,000 volts) or less.
- The OSHA Construction Subpart CC standard lists minimum clearance distances for various voltages and encroachment prevention measurements for energized power lines where a crane could come within 20 feet of power lines rated up to 350 kV and 50 feet for power lines rated over 350 kV to 1,000 kV.
- Unless you know otherwise, assume that overhead lines are energized.
- Confirm power lines are de-energized and grounded when working near them. Other protective measures include guarding or insulating the lines.
- Use non-conductive wood or fiberglass ladders when working near power lines.

If you have any questions or need additional Safety Procedure and Guidelines Fact Sheets, please contact HNTB’s Safety Office at 816-527-2013.

- Never attempt to raise or move live lines.
- Keep difficult-to-maneuver objects well away from power lines. An extended ladder, for example, can topple into a power line.
- Carry long objects such as lumber or extension poles parallel to the ground rather than upright.
- Use lockout/tag out procedures when appropriate.

Downed Overhead Power Lines

High winds, heavy ice or snow, falling trees, mudslides and other weather conditions can knock down electrical lines. No matter what the emergency, you must never touch a fallen line or anything which may be in contact with it. These lines carry enough electricity to kill instantly. People who survive contact with power lines often have to live with painful burns, amputations, brain damage and other traumatic injuries.

Report downed lines immediately to the utility company or the emergency agency in your area such as 911 or the police.

Overhead Power Line on your Vehicle

If a power line falls across the vehicle you are in, stay in the vehicle until help arrives. By staying in your vehicle, you are at the same potential as the power line. This is the same concept of why birds on a power line are not injured.

If you must get out of the vehicle because of fire or another immediate threat, follow this procedure:

- Jump clear so that no part of your body is touching the vehicle when your feet touch the ground
- Keep your feet together
- Shuffle or hop until you are well away from the power line

Energized Soil

The soil that is in contact with a downed power line or equipment that is in a power line can be energized. Moisture in the soil increases the risk. Walking close to the downed power line or the energized equipment could result in an electrical injury due to the voltage gradient in the soil.

Buried Power Lines

Buried power lines can be located anywhere there is digging. Calling before you dig ensures that any publicly-owned underground lines will be marked. Having the utility lines marked not only prevents accidental damage to the lines, but prevents property damage and personal injuries that could result in breaking a line. Underground power lines might be buried as shallow as 18 inches or less. If a shovel cuts a power line, electricity can pass through the shovel to the individual.

All utility companies who have buried electrical power lines will respond to a request to locate and mark any underground lines. The American Public Works Association Uniform Color Code for buried electric power lines, cables or conduits and lighting cables is red.

Summary

Contact with a live power line can cause instant death or disabling injuries. Work safely around overhead and underground power lines and never touch a power line.

Railroad Crossing Awareness

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

More than 229,100 highway-railroad grade crossings are in the United States. In the course of work, HNTB employees will travel through railroad grade crossings or will probably work at a job site near a crossing.

Railroad-highway crossings are a special type of intersection. Public crossings at grade are equipped with signs and may have pavement markings and signals. Since the train cannot swerve from the rails and requires a much longer stopping distance than a highway vehicle, motorists must always yield to trains.

Railroad Crossings Hazard

A railroad crossing can present a dangerous situation. Often drivers are unaware that trains cannot stop as quickly as motor vehicles to avoid collisions. Driver inattention and impatience are the most common factors contributing to collisions. Thousands of people are seriously injured and hundreds are killed at highway-rail grade crossings each year.

Train and pedestrian or motor vehicle crashes are very severe. A motorist is 30 times as likely to die in a collision with a train as in all other types of motor vehicle accidents. Safety precautions can prevent these incidents.

Vehicle Laws

In most states, motor vehicle laws read: "Whenever any person driving a vehicle approaches a railroad grade crossing and signals indicate an approaching train, the driver of such vehicle shall stop within fifteen feet from the nearest rail of such railroad and shall not proceed until he can do so safely."

Safety Tips for Drivers at Railroad Crossings

- Never drive around lowered gates. Driving around lowered gates is illegal and deadly. If you suspect a signal is malfunctioning, call the toll free number posted on or near the crossing signal or your local law enforcement agency.
- Never race a train to the crossing. Even if you tie, you lose.
- Do not get trapped on the tracks. Only proceed through a highway-rail grade crossing if you are sure you can completely clear the crossing without stopping. Remember, the train is three feet wider than the tracks on each side.
- Watch out for a second train. If you are at a multiple track crossing and are waiting for a train to pass, watch out for a second train on the other tracks, approaching in either direction.
- Expect a train on any track at any time. Most trains do not travel on a regular schedule. Be cautious at a highway-rail grade crossing at any time of the day or night.

- Be aware that trains cannot stop quickly. A freight train moving at 55 miles per hour can take a mile or more to stop once the emergency brakes are applied. That is the length of 18 football fields.
- Do not be fooled. The train you see is closer and is moving faster than you think. If you see a train approaching, wait for it to go by before you proceed across the tracks.

If you have any questions or need additional Safety Procedure and Guidelines Fact Sheets, please contact HNTB's Safety Office at 816-527-2013.

- Cross train tracks at a designated crossing only. When you need to cross train tracks, go to a designated crossing, look both ways and cross the tracks quickly without stopping. Remember that it is not safe to stop closer than 15 feet from the rail.

Vehicle Stuck on Tracks

Listed are steps to take if your vehicle stalls or hangs up on the tracks:

- Get out immediately, evacuate your vehicle. Trains traveling at 55 mph may take a mile or more to stop.
- Move away at once. Walk in the direction of the oncoming train and away from the tracks at a 45-degree angle. If your vehicle is hit, debris will spread out from the tracks in the same direction the train is moving.
- When you are safely away from the tracks, find the railroad's emergency phone number and the Department of Transportation's identification number posted near the crossing and call local law enforcement or 911.

Safety Tips for Pedestrians at Railroad Crossings

- Do not walk on or over railroad property. This is trespassing unless you are authorized to be on the property. Railroad tracks, trestles, yards and equipment are private property and trespassers are subject to arrest and fine.
- Cross tracks only at designated pedestrian or roadway crossings. Do not walk, run, cycle or operate all-terrain vehicles (ATVs) on railroad tracks, rights-of-way or through tunnels. The only safe place to cross railroad tracks is at a designated public crossing.
- Beware of the "flange way" being a tripping hazard and possible crossing problem for bicycles, rollerblades and wheel chairs.
- Do not cross the tracks immediately after a train passes. A second train could be blocked by the first. Trains can come from either direction. Wait until you can see clearly around the first train in both directions.
- Never walk around or behind lowered gates at a crossing. Do not cross the tracks until the lights have stopped flashing and it is safe to do so. You can be fined for failure to obey these signals. The more severe penalty could be a serious injury or death.
- Do not hunt, fish or bungee jump from railroad bridges or trestles. There is only enough clearance on the tracks for a train to pass. Trestles are not designed to be used as a pedestrian bridge.
- Do not attempt to hop aboard railroad equipment at any time. A slip of the foot can cost you a limb or your life.
- Never cross over, under or between stopped railroad cars.

Railroad Rules and Special Instructions

The engineer and train crew have responsibilities at crossings which generally include the following: ring the bell; blow the whistle one-quarter mile from all public crossings or as whistle signs indicate; keep the headlight on bright; proceed at rates consistent with timetable speed or the safety of the train; and observe all bulletins and rules.

Note that not all crossings require the engineer to ring the bell or sound the horn (quite zones). Do not be fooled that you will hear the train coming.

Summary

The golden rule is "Expect a train any time, any track, any direction."

Hard Hat Program

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

Protecting employees from potential head injuries is a key element of a safety program. A head injury can impair an employee for life or be fatal.

Wearing a safety helmet or hard hat is one of the easiest ways to protect an employee's head from injury. Hard hats can protect employees from:

- Objects that might fall from above and strike them on the head
- Bumping their heads against fixed objects, such as exposed pipes or beams
- Possibility of accidental head contact with electrical hazards

Personal protective equipment (PPE) training is one of the elements of the HNTB PPE program. As a condition of employment at HNTB, all employees working on construction type job sites are required to wear American National Standards Institute (ANSI) approved hard hats to help prevent head injuries.

Hard Hat Classifications

All hard hats are classified according to the specific impact and electrical performance requirements they are designed to meet. All hard hats in accordance with ANSI Standard Z89.1 meet or exceed either Type 1 or Type 2 impact requirements. In addition to Type classifications, all hard hats are classified as meeting Class G, Class E or Class C electrical requirements.

The types and electrical classes:

- Type 1: Type 1 helmets are intended to reduce the force of impact resulting from a blow only to the top of the head.
- Type 2: Type 2 helmets are intended to reduce the force of impact resulting from a blow that may be received off center or to the top of the head.
- Class G: Class G helmets are intended to reduce the danger of contact exposure to low voltage conductors. Test samples are proof–tested at 2,200 volts (phase to ground).
- Class E: Class E helmets are intended to reduce the danger of exposure to high voltage conductors. Test samples are proof–tested at 20,000 volts (phase to ground).
- Class C: Class C helmets are not intended to provide protection against contact with electrical conductors.

Another class of protective headgear on the market is called a “bump hat" designed for use in areas with low head clearance. They are recommended for areas where protection is needed from head bumps and lacerations. They are not designed to protect against falling or flying objects and are not ANSI approved. Bump hats are not used by HNTB employees.

Hard Hat Inspection

All employees required to wear hard hats must routinely inspect and properly care for their hard hats. All components, shells, suspensions, headbands, sweatbands and any accessories should be visually inspected daily for signs of dents, cracks, penetration or any other damage that might reduce the degree of safety originally provided. If damage is suspected, helmets should be replaced. Extreme temperatures may reduce the margin of safety of the hard hat.

Hard Hat Design

Hard hats must have a hard outer shell and a shock-absorbing lining that incorporates a headband and straps that suspend the shell from 1 to 1 1/4 inches (2.54 cm to 3.18 cm) away from the head. This type of design provides shock absorption during an impact and ventilation during normal wear.

Protective headgear must meet ANSI Standard Z89.1 (Protective Headgear for Industrial Workers) or provide an equivalent level of protection. The ANSI Standard Z89.1 label will be inside the hard hat. HNTB employees will not wear hardhats backwards.

Size Considerations

Employees need to understand the proper adjustment and replacement of the suspension and headband. Head protection that is either too large or too small will be considered inappropriate for use. Protective headgear must fit appropriately on the head size of each individual. Most protective headgear comes in a variety of sizes with adjustable headbands to ensure a proper fit (many adjust in 1/8-inch increments). A proper fit should allow sufficient clearance between the shell and the suspension system for ventilation and distribution of an impact. The hat should not bind, slip, fall off or irritate the skin.

Some protective headgear allows for the use of various accessories to help employees deal with changing environmental conditions, such as slots for earmuffs, face shields and mounted lights. Optional brims may provide additional protection from the sun and some hats have channels that guide rainwater away from the face.

Hard Hat Care

Periodic cleaning and inspection will extend the useful life of protective headgear. A daily inspection of the hard hat shell, suspension system and other accessories for holes, cracks, tears or other damage that might compromise the protective value of the hat is essential. Paints, paint thinners and some cleaning agents can weaken the shells of hard hats and may eliminate electrical resistance. Consult the helmet manufacturer for information on the effects of cleaning materials on their hard hats. Never drill holes, paint or apply excessive labels to protective headgear as this may reduce the integrity of the protection. Do not store protective headgear in direct sunlight, such as on the rear window shelf of a car, since sunlight and extreme heat can damage them. Consult the manufacturer for the useful service life guidelines. The useful service life begins when the helmet is placed in service.

Removal from Service

Hard hats with any of the following defects should be removed from service and replaced:

- Perforation, cracking or deformity of the brim or shell
- Indication of exposure of the brim or shell to heat, chemicals or ultraviolet light and other radiation (in addition to a loss of surface gloss, such signs include chalking or flaking)
- If the helmet sustains an impact, even if damage is not noticeable.

Suspension systems are offered as replacement parts and should be replaced when damaged or when excessive wear is noticed. It is not necessary to replace the entire hard hat when deterioration or tears of the suspension systems are noticed.

Summary

Hard hats can be obtained from the HNTB Company Store. The hard hat should be a Type 1, Classification “E.” A hard hat not only prevents injuries but also identifies our company. Training of PPE such as hard hats is to be documented and maintained by the supervisor. All supervisors and managers are responsible for ensuring employees under their charge are in compliance with HNTB procedures.

Cold Weather Awareness

A Safety Procedure and Guidelines Fact Sheet prepared by the HNTB Safety Office

Many HNTB employees work in outdoor environments where they could be exposed to the cold. Employees need to be especially mindful of the weather, its effects on the body, proper prevention techniques and treatment of cold-related disorders.

The Cold Environment

An individual gains body heat from food and muscular activity and loses it through convection, conduction, radiation and sweating to maintain a constant body temperature. When body temperature drops even a few degrees below its normal temperature of 98.6°F (37°C), the blood vessels constrict, decreasing peripheral blood flow to reduce heat loss from the surface of the skin. Shivering generates heat by increasing the body's metabolic rate.

The four environmental conditions that cause cold-related stress are low temperatures, high/cool winds, dampness and cold water. Wind chill, a combination of temperature and velocity, is a crucial factor to evaluate when working outside. For example, when the actual air temperature of the wind is 40°F (4°C) and its velocity is 35 mph, the exposed skin receives conditions equivalent to the still-air temperature being 11°F (-11°C). A dangerous situation of rapid heat loss may arise for any individual exposed to high winds and cold temperatures.

Major Risk Factors for Cold-Related Stresses

- Wearing inadequate or wet clothing increases the effects of cold on the body.
- Taking certain medications or drugs such as alcohol, nicotine and caffeine can inhibit the body's response to the cold or impairs judgment.
- Having a cold or certain diseases such as diabetes, heart, vascular and thyroid problems may make a person more susceptible to the winter elements.
- Becoming exhausted or immobilized, especially due to injury or entrapment may speed up the effects of cold weather.
- Aging, the elderly are more vulnerable to the effects of harsh winter weather.

Harmful Effects of Cold

- Frostbite occurs when the skin tissue actually freezes, causing ice crystals to form between cells and draw water from them, which leads to cellular dehydration. Although this typically occurs at temperatures below 30°F (-1°C), wind chill effects can cause frostbite at above-freezing temperatures. Initial effects of frostbite include uncomfortable sensations of coldness such as tingling, stinging or aching feeling of the exposed area followed by numbness. Ears, fingers, toes, cheeks and noses are primarily affected. Frostbitten areas appear white and cold to the touch. The appearance of frostbite varies depending on whether re-warming has occurred. Deeper frostbite involves freezing of deeper tissues (e.g. muscles, tendons) causing exposed areas to become numb, painless or hard to the touch.

  If you suspect frostbite, you should seek medical assistance immediately. Frostbitten parts should be covered with dry, sterile gauze or soft, clean cloth bandages. Do not massage frostbitten tissue because this sometimes causes greater injury. Severe cases may require

hospitalization and even amputation of affected tissue.

- General Hypothermia occurs when body temperature falls to a level where normal muscular and cerebral functions are impaired. While hypothermia is generally associated with freezing temperatures, it may occur in any climate where a person's body temperature falls below normal. The first symptoms of hypothermia could include shivering, an inability to do complex motor functions, lethargy and mild confusion. As body temperature continues to fall, hypothermia becomes more severe. The individual falls into a state of dazed consciousness, failing to complete even simple motor functions. The victim's speech becomes slurred and his or her behavior may become irrational.

  Treatment of hypothermia involves conserving the victim's remaining body heat and providing additional heat sources. Seek medical assistance for persons suspected of being moderately or severely hypothermic.

Preventing Cold-Related Disorders

- Personal Protective Clothing is perhaps the most important step in fighting the elements by providing adequate layers of insulation. Wear at least three layers of clothing. Pay special attention to protecting feet, hands, face and head. Footgear should be insulated to protect against cold and dampness.

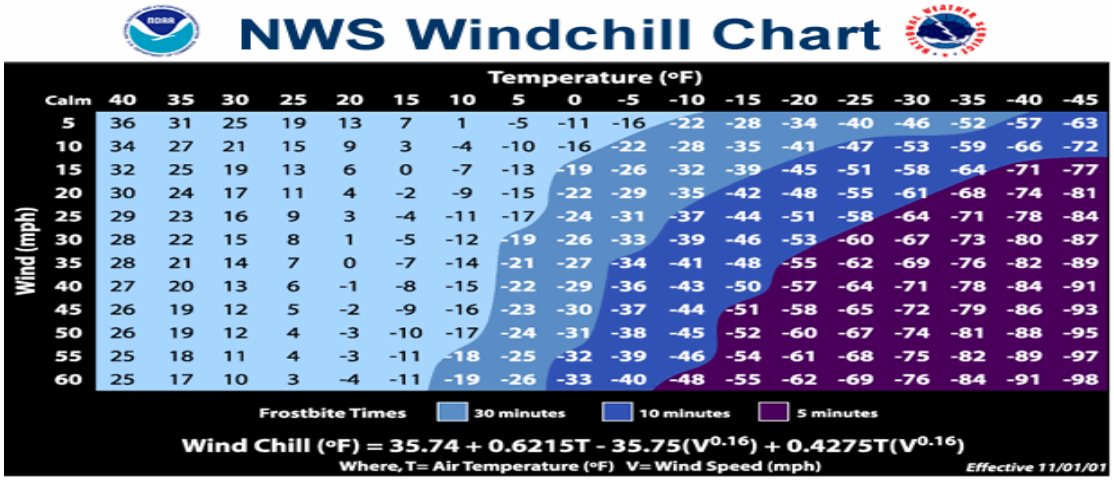
  Keep a change of clothing available in case work garments become wet.

- Engineering Controls in the workplace through a variety of practices help reduce the risk of cold-related injuries. Use an on-site source of heat, such as air jets, radiant heaters or contact warm plates. Shield work areas from drafty or windy conditions. Provide a heated shelter for employees who experience prolonged exposure to equivalent wind-chill temperatures of 20°F (-6°C) or less. Use thermal insulating material on equipment handles when temperatures drop below 30°F (-1°C).

- Safe Work Practices such as changes in work schedules and practices, are necessary to combat the effects of exceedingly cold weather. Allow a period of adjustment to the cold before embarking on a full work schedule. Always permit employees to set their own pace and take extra work breaks when needed. Reduce, as much as possible, the number of activities performed outdoors. When employees must brave the cold, select the warmest hours of the day and minimize activities that reduce circulation. Ensure that employees remain hydrated.

Summary

The quiet symptoms of potentially deadly cold-related ailments often go undetected until the victim's health is endangered. Knowing the facts on cold exposure and following a few simple guidelines can ensure that the cold season is a safe and healthy one.



If you have any questions or need additional Safety Procedure and Guidelines Fact Sheets, please contact HNTB's Safety Office at 816-527-2013

APPENDIX C

CRITERIA TO SUPPORT PERFORMANCE MONITORING (RATING DESCRIPTION)

APPENDIX C

Rating	Descriptive Criteria (1)
10	Fully operational asset, fully meets mission requirements, like new asset, 20+ years remaining service life.
7	Fully operational asset, fully meets mission requirements, 10+ years, remaining service life except for specific components as may be identified.
5	Fully operational asset, meets minimum mission requirements, 5+ years, remaining service life except for specific components as may be identified
3	Reduced operability and/or degraded mission capability, and/or less than 3 years remaining service life for identified conditions, and/or near-term obsolescence of key system components maintainability.or repair parts may impact
0	Non-operational, and/or the asset does not meet mission requirements, and/or current design needs are not met by this asset's basis of design, and/or the asset cannot be adequately maintained due to obsolescence of key system components or repair parts.

(1) HAS Scope of Work, Asset Condition Assessments

APPENDIX D

PLANNING HORIZONS CATEGORIES DEFINITIONS

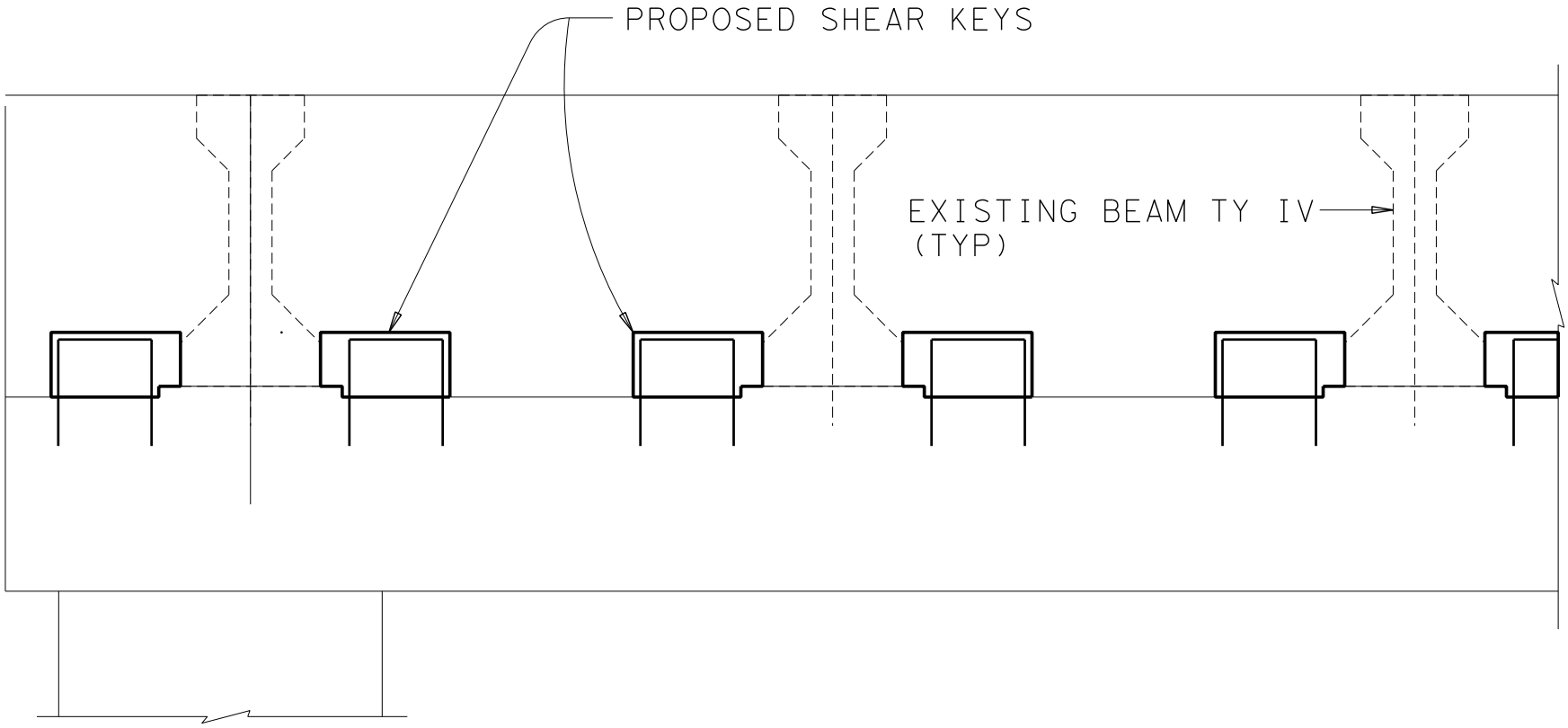
APPENDIX D

Planning Horizons (1)	
1. Priority	Completion recommended in 0-3 years
2. Near Term	Completion recommended in 4-7 years
3. Long Term	Completion recommended in 8+ years

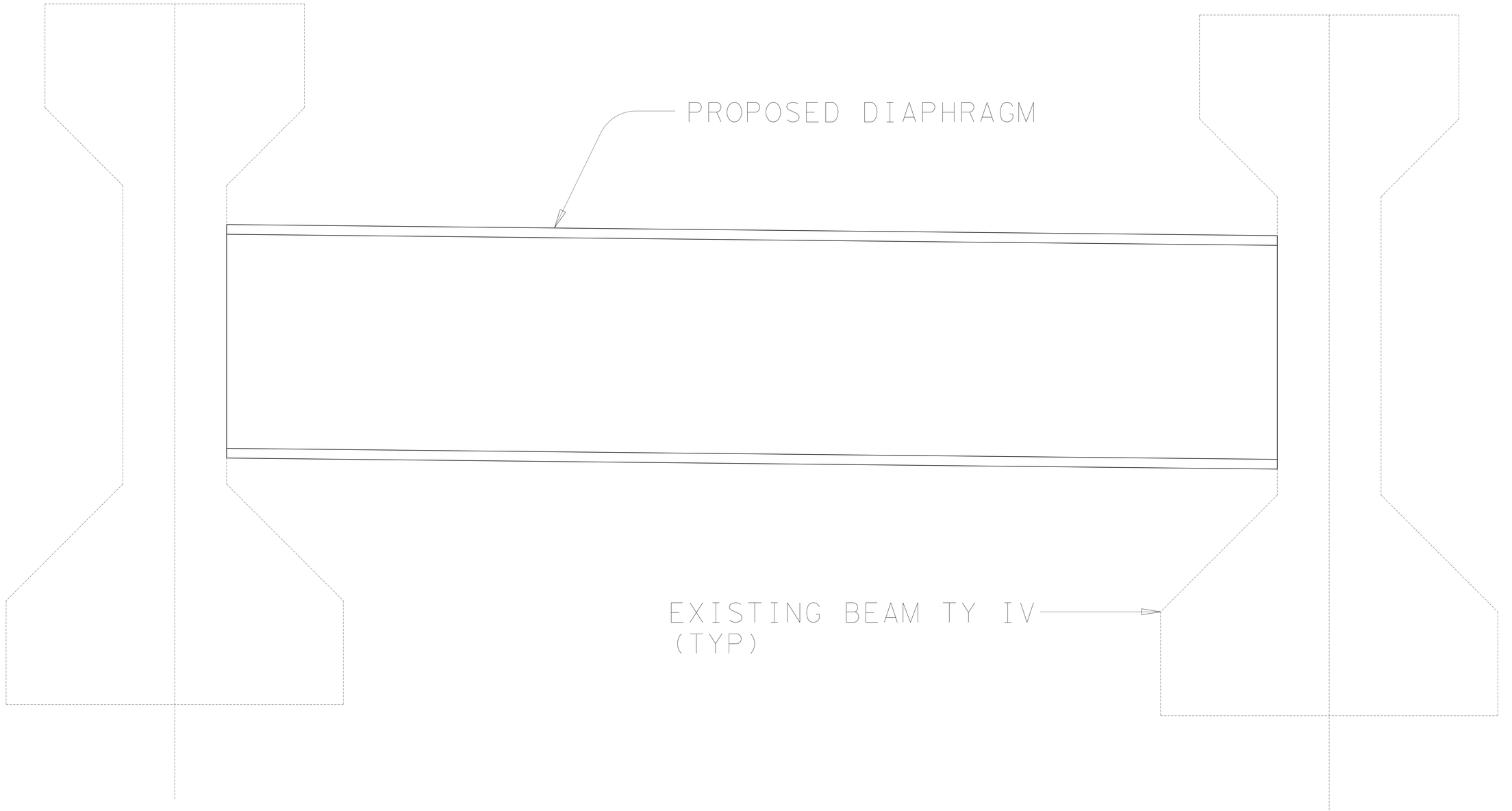
HAS Scope of Work, Asset Condition Assessments

APPENDIX E

BEAM DIAGPHRAGM AND SHEAR KEYS CONCEPT



SHEAR KEY CONCEPT



DIAPHRAGMS CONCEPT

APPENDIX F

MATRIX WITH SCORES AND PLANNING HORIZONS PER FACILITY COMPONENTS

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
SUPS	AA396	Deck	DECK	Bent_44	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA451	Deck	DECK	Bent_36	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA657	Deck	DECK	Bent_08	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA631	Deck	DECK	Bent_11	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA459	Deck	DECK	Bent_34	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA461	Deck	DECK	Bent_34	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA751	Deck	DECK	Bent_11	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA341	Deck	DECK	Bent_50	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA753	Deck	DECK	Bent_11	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA536	Deck	DECK	Bent_22	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA672	Deck	DECK	Bent_M1	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA597	Deck	DECK	Bent_15	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA651	Deck	DECK	Bent_09	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA561	Deck	DECK	Bent_19	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA647	Deck	DECK	Bent_09	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA602	Deck	DECK	Bent_15	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB141	Deck	DECK	Bent_21	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA432	Deck	DECK	Bent_36	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA613	Deck	DECK	Bent_13	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA627	Deck	DECK	Bent_11	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA475	Deck	DECK	Bent_32	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA533	Deck	DECK	Bent_23	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA549	Deck	DECK	Bent_21	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA555	Deck	DECK	Bent_20	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	AA646	Deck	DECK	Bent_09	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA577	Deck	DECK	Bent_17	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA528	Deck	DECK	Bent_23	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA721	Deck	DECK	Bent_56	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA567	Deck	DECK	Bent_19	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA645	Deck	DECK	Bent_09	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA656	Deck	DECK	Bent_08	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA778	Deck	DECK	Bent_14A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB58	Deck	DECK	Bent_06	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB29	Deck	DECK	Bent_38	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA439	Deck	DECK	Bent_38	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA445	Deck	DECK	Bent_37	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA433	Deck	DECK	Bent_38	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB39	Deck	DECK	Bent_23	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB42	Deck	DECK	Bent_21	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA421	Deck	DECK	Bent_43	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA880	Deck	DECK	Bent_05A	Standing Water	REPAIR/LEVEL SLAB TOP SURFACE	2014-016	2 (NEAR TERM)	ONCE	7
	AA882	Deck	DECK	Bent_05A	Standing Water	REPAIR/LEVEL SLAB TOP SURFACE	2014-016	2 (NEAR TERM)	ONCE	7
	AA343	Deck	DECK	Bent_45	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA369	Deck	DECK	Bent_45	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA412	Deck	DECK	Bent_43	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA725	Deck	DECK	Bent_M6	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA354	Deck	DECK	Bent_48	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA375	Deck	DECK	Bent_45	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA318	Deck	DECK	Bent_40	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	BB44	Deck	DECK	Bent_20	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA390	Deck	DECK	Bent_44	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA719	Deck	DECK	Bent_M6	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA688	Deck	DECK	Bent_M2	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA713	Deck	DECK	Bent_M5	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	BB118	Deck	DECK	Bent_50	Standing Water	REPAIR/LEVEL SLAB TOP SURFACE	2014-016	2 (NEAR TERM)	ONCE	7
	BB2	Deck	DECK	Span_02A	Standing Water	REPAIR/LEVEL SLAB TOP SURFACE	2014-016	2 (NEAR TERM)	ONCE	7
	AA894	Deck	DECK	Bent_03A	Standing Water	REPAIR/LEVEL SLAB TOP SURFACE	2014-016	2 (NEAR TERM)	ONCE	7
	AA766	Deck	DECK	Bent_08	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB103	Deck	DECK	Bent_13	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB82	Deck	DECK	Bent_12A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB142	Deck	DECK	Bent_21	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	AA480	Deck	DECK	Bent_32	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA883	Deck	DECK	Bent_05A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA662	Deck	DECK	Bent_08	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA849	Deck	DECK	Bent_07A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA638	Deck	DECK	Bent_10	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA605	Deck	DECK	Bent_14	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA572	Deck	DECK	Bent_18	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA628	Deck	DECK	Bent_11	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA873	Deck	DECK	Bent_06A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA465	Deck	DECK	Bent_33	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA765	Deck	DECK	Bent_08	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB21	Deck	DECK	Bent_46	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB144	Deck	DECK	Bent_M1	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA682	Deck	DECK	Bent_M1	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA681	Deck	DECK	Bent_14	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA448	Deck	DECK	Bent_36	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	BB73	Expansion Joints	DECK	Bent_08A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB117	Drainage	DRNG	Bent_50	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB119	Drainage	DRNG	Bent_49	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB134	Drainage	DRNG	Bent_30	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB135	Drainage	DRNG	Bent_28	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB18	Drainage	DRNG	Bent_50	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB19	Drainage	DRNG	Bent_49	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB36	Drainage	DRNG	Bent_27	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB110	Drainage	DRNG	Bent_17	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB16	Drainage	DRNG	Bent_14A	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB151	Drainage	DRNG	Span_56	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	BB61	Drainage	DRNG	Bent_02A	Water Leaking	CLEAN DRAIN INLETS	2014-009	2 (NEAR TERM)	5 YEARS	7
	AA886	Expansion Joints	EXJT	Bent_05A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB105	Expansion Joints	EXJT	Bent_14	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB108	Expansion Joints	EXJT	Bent_16	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB111	Expansion Joints	EXJT	Bent_18	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB115	Expansion Joints	EXJT	Bent_20	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB120	Expansion Joints	EXJT	Bent_47	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB121	Expansion Joints	EXJT	Bent_46	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB126	Expansion Joints	EXJT	Bent_43	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB127	Expansion Joints	EXJT	Bent_41	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB129	Expansion Joints	EXJT	Bent_39	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB130	Expansion Joints	EXJT	Bent_37	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB131	Expansion Joints	EXJT	Bent_35	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB132	Expansion Joints	EXJT	Bent_33	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB133	Expansion Joints	EXJT	Bent_31	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB137	Expansion Joints	EXJT	Bent_24	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB139	Expansion Joints	EXJT	Bent_22	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB147	Expansion Joints	EXJT	Bent_M2	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB162	Expansion Joints	EXJT	Bent_M6	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB20	Expansion Joints	EXJT	Bent_47	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB23	Expansion Joints	EXJT	Bent_43	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB24	Expansion Joints	EXJT	Bent_41	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB27	Expansion Joints	EXJT	Bent_39	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB30	Expansion Joints	EXJT	Bent_37	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB32	Expansion Joints	EXJT	Bent_35	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB33	Expansion Joints	EXJT	Bent_33	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB34	Expansion Joints	EXJT	Bent_31	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB38	Expansion Joints	EXJT	Bent_24	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB40	Expansion Joints	EXJT	Bent_22	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB43	Expansion Joints	EXJT	Bent_20	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB45	Expansion Joints	EXJT	Bent_18	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB46	Expansion Joints	EXJT	Bent_16	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	BB47	Expansion Joints	EXJT	Bent_14	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB49	Expansion Joints	EXJT	Bent_12	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB5	Expansion Joints	EXJT	Bent_04A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB52	Expansion Joints	EXJT	Bent_10	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB54	Expansion Joints	EXJT	Bent_08	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB57	Expansion Joints	EXJT	Bent_06	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB6	Expansion Joints	EXJT	Bent_06A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB67	Expansion Joints	EXJT	Bent_04A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB69	Expansion Joints	EXJT	Bent_06A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB79	Expansion Joints	EXJT	Bent_10A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB83	Expansion Joints	EXJT	Bent_12A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB96	Expansion Joints	EXJT	Bent_10	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB99	Expansion Joints	EXJT	Bent_12	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB10	Expansion Joints	EXJT	Bent_08A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB13	Expansion Joints	EXJT	Bent_10A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	BB15	Expansion Joints	EXJT	Bent_12A	Leaking Expansion Joint	CLEAN AND SEAL EXPANSION JOINTS	2014-006	1 (PRIORITY)	5 YEARS	5
	AA760	Prestressed Beams	PBMS	Span_10	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA537	Prestressed Beams	PBMS	Span_22	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA520	Prestressed Beams	PBMS	Span_25	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA541	Prestressed Beams	PBMS	Span_21	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA590	Prestressed Beams	PBMS	Span_16	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA659	Prestressed Beams	PBMS	Span_07	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA592	Prestressed Beams	PBMS	Span_15	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA569	Prestressed Beams	PBMS	Span_18	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA546	Prestressed Beams	PBMS	Span_21	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	AA906	Prestressed Beams	PBMS	Span_25	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA441	Prestressed Beams	PBMS	Span_37	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA442	Prestressed Beams	PBMS	Span_37	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	10
	AA485	Prestressed Beams	PBMS	Bent_32	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA791	Prestressed Beams	PBMS	Span_13A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA810	Prestressed Beams	PBMS	Span_12A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7

SUPERSTRUCTURE COMPONENT RATING SCORE	5

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
SUBS	AA312	Bent Cap	BCAP	Bent_41	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA316	Bent Cap	BCAP	Bent_40	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA325	Bent Cap	BCAP	Bent_45	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA326	Bent Cap	BCAP	Bent_46	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA344	Bent Cap	BCAP	Bent_50	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA384	Bent Cap	BCAP	Bent_44	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA416	Bent Cap	BCAP	Bent_43	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA438	Bent Cap	BCAP	Bent_38	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA446	Bent Cap	BCAP	Bent_36	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA454	Bent Cap	BCAP	Bent_35	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA477	Bent Cap	BCAP	Bent_32	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA479	Bent Cap	BCAP	Bent_32	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA482	Bent Cap	BCAP	Bent_32	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA496	Bent Cap	BCAP	Bent_26	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA497	Bent Cap	BCAP	Bent_26	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA498	Bent Cap	BCAP	Bent_26	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA500	Bent Cap	BCAP	Bent_26	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA502	Bent Cap	BCAP	Bent_27	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA527	Bent Cap	BCAP	Bent_23	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA535	Bent Cap	BCAP	Bent_22	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA538	Bent Cap	BCAP	Bent_22	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA542	Bent Cap	BCAP	Bent_22	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA545	Bent Cap	BCAP	Bent_21	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA550	Bent Cap	BCAP	Bent_21	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA551	Bent Cap	BCAP	Bent_20	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA554	Bent Cap	BCAP	Bent_20	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA556	Bent Cap	BCAP	Bent_20	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA558	Bent Cap	BCAP	Bent_20	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA564	Bent Cap	BCAP	Bent_19	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA568	Bent Cap	BCAP	Bent_18	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA573	Bent Cap	BCAP	Bent_18	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA576	Bent Cap	BCAP	Bent_18	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA586	Bent Cap	BCAP	Bent_16	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA587	Bent Cap	BCAP	Bent_16	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA591	Bent Cap	BCAP	Bent_16	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA594	Bent Cap	BCAP	Bent_16	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	AA595	Bent Cap	BCAP	Bent_15	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA598	Bent Cap	BCAP	Bent_15	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA599	Bent Cap	BCAP	Bent_15	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA603	Bent Cap	BCAP	Bent_14	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA604	Bent Cap	BCAP	Bent_14	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA611	Bent Cap	BCAP	Bent_13	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA615	Bent Cap	BCAP	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA616	Bent Cap	BCAP	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA617	Bent Cap	BCAP	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA620	Bent Cap	BCAP	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA621	Bent Cap	BCAP	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA635	Bent Cap	BCAP	Bent_10	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA637	Bent Cap	BCAP	Bent_10	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA642	Bent Cap	BCAP	Bent_10	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA655	Bent Cap	BCAP	Bent_08	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA660	Bent Cap	BCAP	Bent_08	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA663	Bent Cap	BCAP	Bent_08	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA667	Bent Cap	BCAP	Bent_07	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA677	Bent Cap	BCAP	Bent_14	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA679	Bent Cap	BCAP	Bent_14	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA683	Bent Cap	BCAP	Bent_M2	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA692	Bent Cap	BCAP	Bent_M2	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA695	Bent Cap	BCAP	Bent_M3	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA699	Bent Cap	BCAP	Bent_M3	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA703	Bent Cap	BCAP	Bent_M4	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA709	Bent Cap	BCAP	Bent_M5	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA711	Bent Cap	BCAP	Bent_M5	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA714	Bent Cap	BCAP	Bent_M6	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA717	Bent Cap	BCAP	Bent_M5	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA720	Bent Cap	BCAP	Bent_M6	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA722	Bent Cap	BCAP	Bent_M6	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA728	Bent Cap	BCAP	Bent_M6	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA729	Bent Cap	BCAP	Bent_M5	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA732	Bent Cap	BCAP	Bent_15	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA733	Bent Cap	BCAP	Bent_15	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA742	Bent Cap	BCAP	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA747	Bent Cap	BCAP	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	AA758	Bent Cap	BCAP	Bent_10	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA764	Bent Cap	BCAP	Bent_08	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA770	Bent Cap	BCAP	Bent_07	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA775	Bent Cap	BCAP	Bent_07	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA779	Bent Cap	BCAP	Bent_14A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA785	Bent Cap	BCAP	Bent_14A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA788	Bent Cap	BCAP	Bent_13A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA797	Bent Cap	BCAP	Bent_13A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA811	Bent Cap	BCAP	Bent_13A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA814	Bent Cap	BCAP	Bent_12A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA816	Bent Cap	BCAP	Bent_12A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA817	Bent Cap	BCAP	Bent_12A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA831	Bent Cap	BCAP	Bent_10A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA842	Bent Cap	BCAP	Bent_08A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA887	Bent Cap	BCAP	Bent_04A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA890	Bent Cap	BCAP	Bent_04A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA891	Bent Cap	BCAP	Bent_04A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA901	Bent Cap	BCAP	Bent_07	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA798	Bent Cap	BCAP	Bent_13A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA295	Bent Cap	BCAP	Bent_43	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA300	Bent Cap	BCAP	Bent_42	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA310	Bent Cap	BCAP	Bent_41	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA315	Bent Cap	BCAP	Bent_40	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA351	Bent Cap	BCAP	Bent_49	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA356	Bent Cap	BCAP	Bent_48	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA359	Bent Cap	BCAP	Bent_47	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA368	Bent Cap	BCAP	Bent_46	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA393	Bent Cap	BCAP	Bent_44	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA437	Bent Cap	BCAP	Bent_38	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA447	Bent Cap	BCAP	Bent_36	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA455	Bent Cap	BCAP	Bent_35	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA458	Bent Cap	BCAP	Bent_34	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA466	Bent Cap	BCAP	Bent_33	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA474	Bent Cap	BCAP	Bent_32	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA495	Bent Cap	BCAP	Bent_26	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA504	Bent Cap	BCAP	Bent_25	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA509	Bent Cap	BCAP	Bent_24	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA530	Bent Cap	BCAP	Bent_23	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA539	Bent Cap	BCAP	Bent_22	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA544	Bent Cap	BCAP	Bent_21	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA552	Bent Cap	BCAP	Bent_20	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA559	Bent Cap	BCAP	Bent_19	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA57	Bent Cap	BCAP	Bent_13A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA574	Bent Cap	BCAP	Bent_18	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA578	Bent Cap	BCAP	Bent_17	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA589	Bent Cap	BCAP	Bent_16	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA596	Bent Cap	BCAP	Bent_15	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA607	Bent Cap	BCAP	Bent_13	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA608	Bent Cap	BCAP	Bent_14	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA614	Bent Cap	BCAP	Bent_12	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA622	Bent Cap	BCAP	Bent_11	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA634	Bent Cap	BCAP	Bent_10	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA644	Bent Cap	BCAP	Bent_09	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA653	Bent Cap	BCAP	Bent_08	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA665	Bent Cap	BCAP	Bent_07	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	AA673	Bent Cap	BCAP	Bent_M1	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA690	Bent Cap	BCAP	Bent_M2	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA697	Bent Cap	BCAP	Bent_M3	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA698	Bent Cap	BCAP	Bent_M3	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA700	Bent Cap	BCAP	Bent_M3	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA702	Bent Cap	BCAP	Bent_M3	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA704	Bent Cap	BCAP	Bent_M4	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA705	Bent Cap	BCAP	Bent_M4	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA712	Bent Cap	BCAP	Bent_M5	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA715	Bent Cap	BCAP	Bent_M5	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA723	Bent Cap	BCAP	Bent_M5	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA724	Bent Cap	BCAP	Bent_M6	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA727	Bent Cap	BCAP	Bent_M5	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA730	Bent Cap	BCAP	Bent_M5	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA731	Bent Cap	BCAP	Bent_M5	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA776	Bent Cap	BCAP	Bent_14A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA812	Bent Cap	BCAP	Bent_12A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA827	Bent Cap	BCAP	Bent_11A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA832	Bent Cap	BCAP	Bent_10A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA836	Bent Cap	BCAP	Bent_09A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA841	Bent Cap	BCAP	Bent_08A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA851	Bent Cap	BCAP	Bent_07A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA878	Bent Cap	BCAP	Bent_05A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA895	Bent Cap	BCAP	Bent_03A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA898	Bent Cap	BCAP	Bent_02A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA296	Bent Cap	BCAP	Bent_43	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA301	Bent Cap	BCAP	Bent_42	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA303	Bent Cap	BCAP	Bent_42	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA305	Bent Cap	BCAP	Bent_42	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA307	Bent Cap	BCAP	Bent_41	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA309	Bent Cap	BCAP	Bent_41	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA311	Bent Cap	BCAP	Bent_41	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA313	Bent Cap	BCAP	Bent_41	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA314	Bent Cap	BCAP	Bent_41	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA321	Bent Cap	BCAP	Bent_40	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA324	Bent Cap	BCAP	Bent_45	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA327	Bent Cap	BCAP	Bent_45	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA330	Bent Cap	BCAP	Bent_45	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA332	Bent Cap	BCAP	Bent_46	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA340	Bent Cap	BCAP	Bent_50	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA346	Bent Cap	BCAP	Bent_50	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	AA348	Bent Cap	BCAP	Bent_50	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA360	Bent Cap	BCAP	Bent_47	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA377	Bent Cap	BCAP	Bent_45	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA389	Bent Cap	BCAP	Bent_40	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA405	Bent Cap	BCAP	Bent_43	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA410	Bent Cap	BCAP	Bent_43	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA431	Bent Cap	BCAP	Bent_36	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA443	Bent Cap	BCAP	Bent_37	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA444	Bent Cap	BCAP	Bent_37	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA457	Bent Cap	BCAP	Bent_34	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA464	Bent Cap	BCAP	Bent_33	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA513	Bent Cap	BCAP	Bent_26	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA514	Bent Cap	BCAP	Bent_26	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA540	Bent Cap	BCAP	Bent_22	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA571	Bent Cap	BCAP	Bent_18	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA606	Bent Cap	BCAP	Bent_14	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA693	Bent Cap	BCAP	Bent_M2	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA694	Bent Cap	BCAP	Bent_M2	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA701	Bent Cap	BCAP	Bent_M3	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA707	Bent Cap	BCAP	Bent_M4	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA710	Bent Cap	BCAP	Bent_M5	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA716	Bent Cap	BCAP	Bent_M5	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA735	Bent Cap	BCAP	Bent_15	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA762	Bent Cap	BCAP	Bent_09	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	AA813	Bent Cap	BCAP	Bent_12A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA840	Bent Cap	BCAP	Bent_08A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA847	Bent Cap	BCAP	Bent_08A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA850	Bent Cap	BCAP	Bent_07A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA858	Bent Cap	BCAP	Bent_07A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA867	Bent Cap	BCAP	Bent_06A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA870	Bent Cap	BCAP	Bent_06A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA879	Bent Cap	BCAP	Bent_05A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA881	Bent Cap	BCAP	Bent_05A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA889	Bent Cap	BCAP	Bent_04A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA471	Bent Cap	BCAP	Bent_33	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA795	Bent Cap	BCAP	Bent_13A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA807	Bent Cap	BCAP	Bent_13A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA629	Bent Cap	BCAP	Bent_11	Honeycombs	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA801	Bent Cap	BCAP	Bent_01	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA333	Bent Cap	BCAP	Bent_46	Honeycombs	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA298	Bent Cap	BCAP	Bent_43	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA320	Bent Cap	BCAP	Bent_40	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA362	Bent Cap	BCAP	Bent_47	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA363	Bent Cap	BCAP	Bent_47	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA329	Bent Cap	BCAP	Bent_46	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA345	Bent Cap	BCAP	Bent_50	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	10
	AA649	Bent Cap	BCAP	Bent_09	Honeycombs	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA802	Bent Cap	BCAP	Bent_01	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA866	Bent Cap	BCAP	Bent_06A	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA654	Bent Cap	BCAP	Bent_08	Honeycombs	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA322	Bent Cap	BCAP	Bent_45	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA553	Bent Cap	BCAP	Bent_20	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA624	Bent Cap	BCAP	Bent_11	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA641	Bent Cap	BCAP	Bent_10	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA675	Bent Cap	BCAP	Bent_M1	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA869	Bent Cap	BCAP	Bent_06A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA871	Bent Cap	BCAP	Bent_06A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7

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	AA900	Bent Cap	BCAP	Bent_01A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA708	Bent Cap	BCAP	Bent_M4	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	10
	AA825	Bent Cap	BCAP	Bent_12A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA868	Bent Cap	BCAP	Bent_06A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA570	Bent Cap	BCAP	Bent_18	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA581	Bent Cap	BCAP	Bent_17	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA685	Bent Cap	BCAP	Bent_M2	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA872	Bent Cap	BCAP	Bent_06A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA726	Bent Cap	BCAP	Bent_M6	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA718	Bent Cap	BCAP	Bent_M6	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA364	Bent Cap	BCAP	Bent_46	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA582	Bent Cap	BCAP	Bent_17	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA800	Bent Cap	BCAP	Bent_01	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA808	Bent Cap	BCAP	Bent_13A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA854	Bent Cap	BCAP	Bent_07A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA666	Bent Cap	BCAP	Bent_07	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA585	Bent Cap	BCAP	Bent_17	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA529	Bent Cap	BCAP	Bent_23	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA664	Bent Cap	BCAP	Bent_07	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA334	Bent Cap	BCAP	Bent_47	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA643	Bent Cap	BCAP	Bent_09	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA897	Bent Cap	BCAP	Bent_03A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA782	Bent Cap	BCAP	Bent_14A	Rusting	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA787	Bent Cap	BCAP	Bent_13A	Rusting	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA845	Bent Cap	BCAP	Bent_08A	Rusting	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA855	Bent Cap	BCAP	Bent_07A	Rusting	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA865	Bent Cap	BCAP	Bent_06A	Rusting	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA884	Bent Cap	BCAP	Bent_05A	Rusting	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA365	Bent Cap	BCAP	Bent_46	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA366	Bent Cap	BCAP	Bent_46	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	AA1	Bent Columns	BCOL	Bent_01A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA13	Bent Columns	BCOL	Bent_05A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA154	Bent Columns	BCOL	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA165	Bent Columns	BCOL	Bent_14	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA186	Bent Columns	BCOL	Bent_24	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA190	Bent Columns	BCOL	Bent_25	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA200	Bent Columns	BCOL	Bent_26	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7

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	AA216	Bent Columns	BCOL	Bent_33	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA22	Bent Columns	BCOL	Bent_06A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA233	Bent Columns	BCOL	Bent_33	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA238	Bent Columns	BCOL	Bent_34	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA246	Bent Columns	BCOL	Bent_35	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA255	Bent Columns	BCOL	Bent_37	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA274	Bent Columns	BCOL	Bent_50	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA277	Bent Columns	BCOL	Bent_50	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA28	Bent Columns	BCOL	Bent_08A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA281	Bent Columns	BCOL	Bent_49	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA293	Bent Columns	BCOL	Bent_42	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA37	Bent Columns	BCOL	Bent_09A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA41	Bent Columns	BCOL	Bent_10A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA80	Bent Columns	BCOL	Bent_04	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA42	Bent Columns	BCOL	Bent_11A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA5	Bent Columns	BCOL	Bent_01A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA55	Bent Columns	BCOL	Bent_12A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA62	Bent Columns	BCOL	Bent_13A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA696	Bent Columns	BCOL	Bent_M3	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA7	Bent Columns	BCOL	Bent_02A	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA706	Bent Columns	BCOL	Bent_M4	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA734	Bent Columns	BCOL	Bent_15	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA736	Bent Columns	BCOL	Bent_13	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA745	Bent Columns	BCOL	Bent_12	.01<Cracking < .02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	7
	AA119	Bent Columns	BCOL	Bent_07	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA136	Bent Columns	BCOL	Bent_08	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA139	Bent Columns	BCOL	Bent_09	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA20	Bent Columns	BCOL	Bent_06A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA224	Bent Columns	BCOL	Bent_34	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA226	Bent Columns	BCOL	Bent_33	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA259	Bent Columns	BCOL	Bent_38	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA284	Bent Columns	BCOL	Bent_48	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA286	Bent Columns	BCOL	Bent_47	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA29	Bent Columns	BCOL	Bent_08A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA379	Bent Columns	BCOL	Bent_M6	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA386	Bent Columns	BCOL	Bent_M6	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA388	Bent Columns	BCOL	Bent_M5	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA401	Bent Columns	BCOL	Bent_M2	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA403	Bent Columns	BCOL	Bent_M5	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA414	Bent Columns	BCOL	Bent_M4	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA429	Bent Columns	BCOL	Bent_M4	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA430	Bent Columns	BCOL	Bent_M4	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA54	Bent Columns	BCOL	Bent_13A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA64	Bent Columns	BCOL	Bent_13A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA783	Bent Columns	BCOL	Bent_14A	Cracking < .01	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA213	Bent Columns	BCOL	Bent_30	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5

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	AA219	Bent Columns	BCOL	Bent_31	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA269	Bent Columns	BCOL	Bent_43	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA287	Bent Columns	BCOL	Bent_47	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA30	Bent Columns	BCOL	Bent_07A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA397	Bent Columns	BCOL	Bent_M2	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA14	Bent Columns	BCOL	Bent_05A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA69	Bent Columns	BCOL	Bent_14A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA15	Bent Columns	BCOL	Bent_05A	Staining	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA823	Bent Columns	BCOL	Bent_12A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA844	Bent Columns	BCOL	Bent_08A	Cracking > 0.02	TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	1 (PRIORITY)	ONCE	5
	AA161	Bent Columns	BCOL	Bent_13	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA167	Bent Columns	BCOL	Bent_14	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA228	Bent Columns	BCOL	Bent_32	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA26	Bent Columns	BCOL	Bent_08A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA288	Bent Columns	BCOL	Bent_47	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA39	Bent Columns	BCOL	Bent_10A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA225	Bent Columns	BCOL	Bent_33	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA46	Bent Columns	BCOL	Bent_12A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA9	Bent Columns	BCOL	Bent_03A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA86	Bent Columns	BCOL	Bent_06	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA31	Bent Columns	BCOL	Bent_08A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA35	Bent Columns	BCOL	Bent_09A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA135	Bent Columns	BCOL	Bent_10	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA215	Bent Columns	BCOL	Bent_30	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA223	Bent Columns	BCOL	Bent_34	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7

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	AA214	Bent Columns	BCOL	Bent_33	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA395	Bent Columns	BCOL	Bent_M5	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA1137	Bent Columns	BCOL	Bent_08	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA399	Bent Columns	BCOL	Bent_M2	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA140	Bent Columns	BCOL	Bent_16	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA280	Bent Columns	BCOL	Bent_49	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA43	Bent Columns	BCOL	Bent_11A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA59	Bent Columns	BCOL	Bent_14A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA61	Bent Columns	BCOL	Bent_14A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA245	Bent Columns	BCOL	Bent_35	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA249	Bent Columns	BCOL	Bent_36	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA198	Bent Columns	BCOL	Bent_27	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA392	Bent Columns	BCOL	Bent_M5	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA221	Bent Columns	BCOL	Bent_34	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA202	Bent Columns	BCOL	Bent_28	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA159	Bent Columns	BCOL	Bent_19	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA194	Bent Columns	BCOL	Bent_26	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA391	Bent Columns	BCOL	Bent_M5	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA235	Bent Columns	BCOL	Bent_31	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA239	Bent Columns	BCOL	Bent_30	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA243	Bent Columns	BCOL	Bent_29	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA204	Bent Columns	BCOL	Bent_29	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA206	Bent Columns	BCOL	Bent_31	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA163	Bent Columns	BCOL	Bent_14	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7

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	AA145	Bent Columns	BCOL	Bent_17	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA27	Bent Columns	BCOL	Bent_07A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA383	Bent Columns	BCOL	Bent_M2	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA195	Bent Columns	BCOL	Bent_26	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA417	Bent Columns	BCOL	Bent_M4	Scaling	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA50	Bent Columns	BCOL	Bent_13A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA102	Bent Columns	BCOL	Bent_09	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA105	Bent Columns	BCOL	Bent_10	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA108	Bent Columns	BCOL	Bent_11	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA110	Bent Columns	BCOL	Bent_12	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA116	Bent Columns	BCOL	Bent_13	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA125	Bent Columns	BCOL	Bent_14	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA129	Bent Columns	BCOL	Bent_10	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA133	Bent Columns	BCOL	Bent_15	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA138	Bent Columns	BCOL	Bent_16	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA16	Bent Columns	BCOL	Bent_05A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA143	Bent Columns	BCOL	Bent_17	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA144	Bent Columns	BCOL	Bent_10	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA24	Bent Columns	BCOL	Bent_06A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA156	Bent Columns	BCOL	Bent_19	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA158	Bent Columns	BCOL	Bent_13	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA162	Bent Columns	BCOL	Bent_20	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA169	Bent Columns	BCOL	Bent_21	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA171	Bent Columns	BCOL	Bent_15	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA176	Bent Columns	BCOL	Bent_22	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA179	Bent Columns	BCOL	Bent_23	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA183	Bent Columns	BCOL	Bent_24	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA187	Bent Columns	BCOL	Bent_25	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA203	Bent Columns	BCOL	Bent_28	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA205	Bent Columns	BCOL	Bent_30	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA207	Bent Columns	BCOL	Bent_31	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA208	Bent Columns	BCOL	Bent_28	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA211	Bent Columns	BCOL	Bent_29	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA212	Bent Columns	BCOL	Bent_30	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA217	Bent Columns	BCOL	Bent_31	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA232	Bent Columns	BCOL	Bent_32	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA263	Bent Columns	BCOL	Bent_40	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA265	Bent Columns	BCOL	Bent_41	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA271	Bent Columns	BCOL	Bent_44	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA275	Bent Columns	BCOL	Bent_45	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA283	Bent Columns	BCOL	Bent_46	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA370	Bent Columns	BCOL	Bent_M1	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA376	Bent Columns	BCOL	Bent_M1	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA380	Bent Columns	BCOL	Bent_M2	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA4	Bent Columns	BCOL	Bent_01A	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA413	Bent Columns	BCOL	Bent_M3	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA426	Bent Columns	BCOL	Bent_M3	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA47	Bent Columns	BCOL	Bent_12A	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA58	Bent Columns	BCOL	Bent_14A	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA678	Bent Columns	BCOL	Bent_14	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA76	Bent Columns	BCOL	Bent_01	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA85	Bent Columns	BCOL	Bent_05	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA91	Bent Columns	BCOL	Bent_07	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA95	Bent Columns	BCOL	Bent_08	Map Cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA60	Bent Columns	BCOL	Bent_14A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7

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	AA420	Bent Columns	BCOL	Bent_M4	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA124	Bent Columns	BCOL	Bent_14	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA382	Bent Columns	BCOL	Bent_M6	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA387	Bent Columns	BCOL	Bent_M6	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA415	Bent Columns	BCOL	Bent_M3	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA398	Bent Columns	BCOL	Bent_M5	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA270	Bent Columns	BCOL	Bent_44	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA236	Bent Columns	BCOL	Bent_34	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA11	Bent Columns	BCOL	Bent_04A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA130	Bent Columns	BCOL	Bent_15	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA149	Bent Columns	BCOL	Bent_18	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA182	Bent Columns	BCOL	Bent_24	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA168	Bent Columns	BCOL	Bent_21	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA141	Bent Columns	BCOL	Bent_09	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA248	Bent Columns	BCOL	Bent_28	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA409	Bent Columns	BCOL	Bent_M4	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA425	Bent Columns	BCOL	Bent_M4	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA122	Bent Columns	BCOL	Bent_08	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA109	Bent Columns	BCOL	Bent_11	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA147	Bent Columns	BCOL	Bent_11	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA178	Bent Columns	BCOL	Bent_22	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA184	Bent Columns	BCOL	Bent_24	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA188	Bent Columns	BCOL	Bent_25	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA101	Bent Columns	BCOL	Bent_09	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
	AA106	Bent Columns	BCOL	Bent_10	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA251	Bent Columns	BCOL	Bent_37	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA170	Bent Columns	BCOL	Bent_15	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA111	Bent Columns	BCOL	Bent_12	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA157	Bent Columns	BCOL	Bent_12	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA256	Bent Columns	BCOL	Bent_38	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA419	Bent Columns	BCOL	Bent_M3	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA68	Bent Columns	BCOL	Bent_13A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA96	Bent Columns	BCOL	Bent_08	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA230	Bent Columns	BCOL	Bent_33	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA180	Bent Columns	BCOL	Bent_23	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA257	Bent Columns	BCOL	Bent_39	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA114	Bent Columns	BCOL	Bent_13	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA92	Bent Columns	BCOL	Bent_07	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA117	Bent Columns	BCOL	Bent_07	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA77	Bent Columns	BCOL	Bent_01	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA81	Bent Columns	BCOL	Bent_04	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA262	Bent Columns	BCOL	Bent_40	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA264	Bent Columns	BCOL	Bent_41	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA285	Bent Columns	BCOL	Bent_46	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA164	Bent Columns	BCOL	Bent_20	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA266	Bent Columns	BCOL	Bent_42	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA272	Bent Columns	BCOL	Bent_45	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA374	Bent Columns	BCOL	Bent_M1	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7

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	AA227	Bent Columns	BCOL	Bent_32	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA268	Bent Columns	BCOL	Bent_43	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA83	Bent Columns	BCOL	Bent_05	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA3	Bent Columns	BCOL	Bent_01A	Honeycombs	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA90	Bent Columns	BCOL	Bent_06	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA1147	Bent Columns	BCOL	Bent_11	Map cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA1184	Bent Columns	BCOL	Bent_24	Map cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA1188	Bent Columns	BCOL	Bent_25	Map cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA1194	Bent Columns	BCOL	Bent_26	Map cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA1227	Bent Columns	BCOL	Bent_32	Map cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA1230	Bent Columns	BCOL	Bent_33	Map cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA1236	Bent Columns	BCOL	Bent_34	Map cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA1268	Bent Columns	BCOL	Bent_43	Map cracking	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA2	Bent Columns	BCOL	Bent_01A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA6	Bent Columns	BCOL	Bent_02A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA406	Bent Columns	BCOL	Bent_M2	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA371	Bent Columns	BCOL	Bent_M1	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA408	Bent Columns	BCOL	Bent_M2	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA191	Bent Columns	BCOL	Bent_25	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA220	Bent Columns	BCOL	Bent_31	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA244	Bent Columns	BCOL	Bent_29	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA404	Bent Columns	BCOL	Bent_M2	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA229	Bent Columns	BCOL	Bent_32	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA66	Bent Columns	BCOL	Bent_13A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA209	Bent Columns	BCOL	Bent_28	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA166	Bent Columns	BCOL	Bent_20	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA48	Bent Columns	BCOL	Bent_12A	Spalling	CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	2 (NEAR TERM)	ONCE	7
	AA282	Bent Columns	BCOL	Bent_48	Staining	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA424	Bent Columns	BCOL	Bent_M4	Degraded Coat of Paint	PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	2 (NEAR TERM)	ONCE	7
	AA12	Bent Columns	BCOL	Bent_04A	Other	CLEAN AND PAINT EXISTING STRUCTURAL STEEL - GUIDEWAY BEAMS - ENTIRE SEGMENT	2014-003	1 (PRIORITY)	ONCE	7
	AA210	Bent Columns	BCOL	Bent_28	Other	CLEAN AND PAINT EXISTING STRUCTURAL STEEL - GUIDEWAY BEAMS - ENTIRE SEGMENT	2014-003	1 (PRIORITY)	ONCE	7
	AA888	Bearing Pads	BRGP	Bent_04A	Delamination	CRACK MONITORING INSPECTION	2014-015	2 (NEAR TERM)	5 YEARS	7
	AA302	Bearing Pads	BRGP	Bent_42	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5

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	AA308	Bearing Pads	BRGP	Bent_41	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA319	Bearing Pads	BRGP	Bent_40	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA323	Bearing Pads	BRGP	Bent_45	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA328	Bearing Pads	BRGP	Bent_45	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA331	Bearing Pads	BRGP	Bent_46	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA367	Bearing Pads	BRGP	Bent_46	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA378	Bearing Pads	BRGP	Bent_45	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA434	Bearing Pads	BRGP	Bent_38	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA436	Bearing Pads	BRGP	Bent_38	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA452	Bearing Pads	BRGP	Bent_36	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA515	Bearing Pads	BRGP	Bent_25	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA819	Bearing Pads	BRGP	Bent_12A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA828	Bearing Pads	BRGP	Bent_11A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA834	Bearing Pads	BRGP	Bent_10A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA843	Bearing Pads	BRGP	Bent_08A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA846	Bearing Pads	BRGP	Bent_08A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA848	Bearing Pads	BRGP	Bent_08A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA852	Bearing Pads	BRGP	Bent_07A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA861	Bearing Pads	BRGP	Bent_07A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA863	Bearing Pads	BRGP	Bent_07A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA874	Bearing Pads	BRGP	Bent_06A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA892	Bearing Pads	BRGP	Bent_04A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA893	Bearing Pads	BRGP	Bent_04A	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA905	Bearing Pads	BRGP	Bent_26	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5
	AA686	Bearing Pads	BRGP	Bent_M1	Displacement	INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	1 (PRIORITY)	ONCE	5

SUBSTRUCTURE COMPONENT RATING SCORE	5

Component:	Record Number:	Sub Component List:	Sub Component:	Group:	Deficiency Type:	Maintenance Recommendation:	Work Item Number:	Maintenance Priority:	Maintenance Frequency:	Rating:
GDWY	BB128	Guide Beam to Deck Connections	GBDC	Span_40	Missing anchor bolts	INSTALL MISSING BOLTS	2014-007	1 (PRIORITY)	ONCE	5
	BB143	Guide Beam to Deck Connections	GBDC	Span_50	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB104	Cast-in-Place Running Beams	RBMS	Bent_13	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB86	Cast-in-Place Running Beams	RBMS	Bent_13A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB140	Cast-in-Place Running Beams	RBMS	Bent_22	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB37	Cast-in-Place Running Beams	RBMS	Bent_26	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB152	Cast-in-Place Running Beams	RBMS	Span_56	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB161	Cast-in-Place Running Beams	RBMS	Span_56	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB157	Cast-in-Place Running Beams	RBMS	Span_54	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB114	Cast-in-Place Running Beams	RBMS	Bent_18	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB155	Cast-in-Place Running Beams	RBMS	Span_55	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB146	Cast-in-Place Running Beams	RBMS	Span_52	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB123	Cast-in-Place Running Beams	RBMS	Bent_46	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB87	Cast-in-Place Running Beams	RBMS	Bent_14A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB1	Cast-in-Place Running Beams	RBMS	Span_01A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB53	Cast-in-Place Running Beams	RBMS	Bent_10	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB17	Cast-in-Place Running Beams	RBMS	Bent_01	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB77	Cast-in-Place Running Beams	RBMS	Bent_10A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB84	Cast-in-Place Running Beams	RBMS	Bent_12A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
	BB4	Cast-in-Place Running Beams	RBMS	Span_03A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB3	Cast-in-Place Running Beams	RBMS	Span_02A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB158	Cast-in-Place Running Beams	RBMS	Span_50	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB163	Cast-in-Place Running Beams	RBMS	Bent_22	Abrasion-Wearing	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB63	Cast-in-Place Running Beams	RBMS	Span_02A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB165	Cast-in-Place Running Beams	RBMS	Bent_19	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB62	Cast-in-Place Running Beams	RBMS	Span_02A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
	BB76	Cast-in-Place Running Beams	RBMS	Span_09A	Abrasion-Wearing	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7

BB166	Cast-in-Place Running Beams	RBMS	Span_26	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB106	Cast-in-Place Running Beams	RBMS	Unknown	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB12	Cast-in-Place Running Beams	RBMS	Span_09A	Abrasion-Wearing	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB51	Cast-in-Place Running Beams	RBMS	Bent_12	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB9	Cast-in-Place Running Beams	RBMS	Span_07A	Abrasion-Wearing	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB164	Cast-in-Place Running Beams	RBMS	Bent_17	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB11	Cast-in-Place Running Beams	RBMS	Span_08A	Abrasion-Wearing	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB55	Cast-in-Place Running Beams	RBMS	Bent_08	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB78	Cast-in-Place Running Beams	RBMS	Bent_10A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB91	Cast-in-Place Running Beams	RBMS	Span_06	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB64	Cast-in-Place Running Beams	RBMS	Span_02A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB150	Cast-in-Place Running Beams	RBMS	Span_55	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB8	Cast-in-Place Running Beams	RBMS	Bent_07A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB100	Cast-in-Place Running Beams	RBMS	Bent_12	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB101	Cast-in-Place Running Beams	RBMS	Bent_12	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB107	Cast-in-Place Running Beams	RBMS	Bent_14	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB109	Cast-in-Place Running Beams	RBMS	Bent_16	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB112	Cast-in-Place Running Beams	RBMS	Bent_18	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB113	Cast-in-Place Running Beams	RBMS	Bent_18	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB97	Cast-in-Place Running Beams	RBMS	Bent_10	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB122	Cast-in-Place Running Beams	RBMS	Bent_45	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB48	Cast-in-Place Running Beams	RBMS	Bent_14	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB65	Cast-in-Place Running Beams	RBMS	Span_02A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB66	Cast-in-Place Running Beams	RBMS	Span_03A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB70	Cast-in-Place Running Beams	RBMS	Span_05A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB56	Cast-in-Place Running Beams	RBMS	Span_06	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB71	Cast-in-Place Running Beams	RBMS	Span_06A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB7	Cast-in-Place Running Beams	RBMS	Span_06A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB95	Cast-in-Place Running Beams	RBMS	Span_07	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB94	Cast-in-Place Running Beams	RBMS	Span_07	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB93	Cast-in-Place Running Beams	RBMS	Span_07	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB92	Cast-in-Place Running Beams	RBMS	Span_07	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB72	Cast-in-Place Running Beams	RBMS	Span_07A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7

BB74	Cast-in-Place Running Beams	RBMS	Span_08A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB75	Cast-in-Place Running Beams	RBMS	Span_09A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB80	Cast-in-Place Running Beams	RBMS	Span_10A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB81	Cast-in-Place Running Beams	RBMS	Span_11A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB102	Cast-in-Place Running Beams	RBMS	Span_12	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB85	Cast-in-Place Running Beams	RBMS	Span_12A	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB171	Cast-in-Place Running Beams	RBMS	Span_21	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB41	Cast-in-Place Running Beams	RBMS	Span_21	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB170	Cast-in-Place Running Beams	RBMS	Span_22	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB138	Cast-in-Place Running Beams	RBMS	Span_23	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB31	Cast-in-Place Running Beams	RBMS	Span_36	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB28	Cast-in-Place Running Beams	RBMS	Span_38	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB26	Cast-in-Place Running Beams	RBMS	Span_39	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB25	Cast-in-Place Running Beams	RBMS	Span_40	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB125	Cast-in-Place Running Beams	RBMS	Span_44	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB124	Cast-in-Place Running Beams	RBMS	Span_44	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB145	Cast-in-Place Running Beams	RBMS	Span_51	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB148	Cast-in-Place Running Beams	RBMS	Span_53	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB156	Cast-in-Place Running Beams	RBMS	Span_54	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB160	Cast-in-Place Running Beams	RBMS	Span_55	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB149	Cast-in-Place Running Beams	RBMS	Span_56	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB159	Cast-in-Place Running Beams	RBMS	Span_55	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB153	Cast-in-Place Running Beams	RBMS	Span_56	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB154	Cast-in-Place Running Beams	RBMS	Span_56	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB168	Cast-in-Place Running Beams	RBMS	Bent_17	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB169	Cast-in-Place Running Beams	RBMS	Bent_17	Spalling	CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	2 (NEAR TERM)	ONCE	7
BB22	Cast-in-Place Running Beams	RBMS	Span_45	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7
BB68	Cast-in-Place Running Beams	RBMS	Span_05A	Cracking	COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	2 (NEAR TERM)	ONCE	7

GUIDEWAY COMPONENT RATING SCORE	5

APPENDIX G

WORK ITEMS SPECIFICATIONS

WORK ITEM 2014-001
SPOT CLEAN AND PAINT STEEL

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 446**

WORK ITEM 2014-002
COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND BRIDGE DECK

1. A low viscosity methyl methacrylate (MMA) resin, Degadeck CSP manufactured by BASF, shall be used to complete repairs. The contractor may use an equivalent MMA repair material with approval of the Engineer if properties and effectiveness are equivalent to or exceeding those provided by the specified product can be demonstrated.
2. Sand for broadcasting over the MMA shall be selected to meet MMA Manufacturer's recommendations and with a color similar to the natural color of the concrete deck so that the repaired zones will be as inconspicuous as possible. Contractor shall submit samples of sand with documentation and gradation to the engineer for Approval.
3. Repair contractor shall be qualified and experience using low viscosity methyl methacrylates and shall submit qualifications, records of experience and references with bid
4. Contractor shall supply an adequate sized crew to ensure that steps can be accomplished within the MMA working time and repairs can proceed in continuous operation.
5. Contractor shall engage a representative of the MMA Manufacturer to be present on-site during repair operations to provide guidance.
6. Contractor shall schedule the repair work so that the MMA is applied under optimal conditions (Dry, with ambient temperature between 50 to 85 F) and shall provide a minimum of 24 hours' notice to the Engineer
7. Prior to any repair steps, the deck shall be marked to delineate the repair zones indicated. Shot blast preparation on grooved deck may not be feasible; sandblasting is an acceptable alternative. The substrate at all designed areas must be adequately prepared in accordance with manufacturer's recommendations, and cracks completely clean out with oil free compressed air.
8. Deck surfaces beyond the designated bent repair zones shall be neatly and effectively masked to contain the flood coat and to provide a neat finish
9. All individual cracks within the abutment repair zones at approach slabs shall receive a spot treatment. MMA repair product shall be applied directly (using a squeeze bottle or similar method) along the length of individual cracks, followed by a brush roller to work the material into the crack. Broadcast sand on the wet uncured product per manufacturer's recommendations.
10. Approved dry sand shall be broadcast onto the flood coat surface while the product is still wet and uncured to provide the appropriate slip resistance to the deck
11. Contractor shall remove all masking, debris and excess sand upon completion of repair operations and leave the bridge deck and running beams in neat and clean condition and shall be correct any defective work or incidental damages at no cost to the owner.

WORK ITEM 2014-003
CLEAN AND PAINT EXISTING STRUCTURAL STEEL – GUIDEWAY BEAMS – ENTIRE SEGMENT

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 446**

WORK ITEM 2014-004
INSTALL STEEL DIAPHRAGMS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)

Engineering solution still requires to be addressed (see note 1)

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 442**

WORK ITEM 2014-005
CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 429**

WORK ITEM 2014-006
CLEAN AND SEAL EXPANSION JOINTS

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 438**

WORK ITEM 2014-007
INSTALL MISSING BOLTS

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 449**

WORK ITEM 2014-008
PROVIDE FRESH COAT OF PAINT TO BOTTOM FACE OF BENT CAPS

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 427**

WORK ITEM 2014-009
CLEAN DRAIN INLETS

1. All accumulated foreign material shall be removed from bridge deck drain systems, and other locations specified and as directed by the Engineer prior to cleaning with water under pressure. The accumulated foreign material shall be removed by hand brooms, hand shovels, scrapers, vacuum cleaners or other methods acceptable to the Engineer. This removed material shall be collected and disposed of at an approved waste area in accordance with Federal, State, and Local regulations. At no time shall this removed material be allowed to fall or be disposed of in the water or on the land below the bridge.

2. The water under pressure shall be sufficient to remove salt contaminants, dirt, and other detrimental foreign matter without damaging or removing paint from any structural steel. The minimum flow rate of water to clean the bridge shall be 5 gallons (20 L) per minute. The maximum water pressure shall be 1,000 psi (6900 kPa), but not so high that any paint is removed. The cleaning operation shall be stopped if foreign material has not been removed or if removal of or damage to existing paint coverage occurs. In this situation the water under pressure shall be adjusted to remove foreign material without damaging or removing existing paint coverage.
3. All deck drains and scuppers at drains shall be flushed with water under pressure after the accumulated foreign material in them has been properly removed. Drain systems may have to be taken apart to remove large blockages of accumulated foreign material. Should this be necessary, they shall be returned to their original configuration immediately after cleaning. Drain systems shall drain properly after cleaning.
4. The Contractor shall flush out with water under pressure the interior of all truss members. Flushing of the interiors of the truss members shall continue until such time each truss member is draining out clear water.
5. The Contractor shall obtain the source of water used. The Contractor shall use fresh water which is free of sediments and salt contaminants. The Contractor shall be responsible for all expense involved in securing the proper water.
6. All roadway appurtenances damaged by the Contractor during the cleaning operations shall be repaired or replaced at the direction of the Engineer, at the Contractor's expense.
7. The Contractor shall exercise due caution and take precautions during cleaning operations to not soil, or damage private or public property.

WORK ITEM 2014-010
REMOVE AND REPLACE CONNECTION PADS WITH EPOXY MORTAR

1. Work consists of furnishing all labor, materials, equipment, supervision, staging, and incidentals necessary to locate and remove unsound grout pads, prepare cavities, and install patching materials to restore grout to original condition and appearance.
2. Materials for repairs shall be as specified in TxDOT Specifications item 429
3. Contractor shall locate and mark all work areas. Contractor shall identify all critical repair work areas before starting the work.
4. Procedure for delaminated, spalled, and unsound grout removal shall be as specified in TxDOT Specifications item 429
5. Patch installation procedures shall be in accordance with referenced specifications for selected material.

WORK ITEM 2014-011
TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 780**

WORK ITEM 2014-012
REALIGNMENT OF CONNECTION REQUIRED

1. Work consists of furnishing all labor, materials, equipment, supervision, staging, and incidentals necessary to locate misalignment guide beams, install new adjustable guide beam connections, and remove existing connections.
2. Contractor shall conduct an alignment survey of all guide beams to record misalignments not in compliance with automated people mover operational requirements.
3. Contractor shall locate and mark all areas where the guide beam misalignment exceeds the automated people mover manufacturer's guidelines.
4. Realign guide beam to meet manufacturer's alignment guidelines.

WORK ITEM 2014-013
INSTALL SHEAR KEYS IN BETWEEN PRESTRESS BEAMS, USE CLASS C CONCRETE (SEE NOTE 1)

Engineering solution still requires to be addressed (see note 1)

Refer to TXDOT Standard Specifications for Construction and Maintenance of Highway, Streets and Bridges, 2014 edition. **Item 420**

WORK ITEM 2014-015
CRACK MONITORING INSPECTION

Refer to Chapter 3-Structural Condition Assessment and Appendix L for guidelines and crack locations requiring routine inspections.

WORK ITEM 2014-016
REPAIR/LEVEL TOP SURFACE

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 354**

WORK ITEM 2014-017
BRIDGE CLEANING AND SEALING/COATING

This item consists of debris removal, surface cleaning, bent cleaning, and sealer/coating application. All debris (including but not limited to dirt, bird's nests, animal droppings, dislodged joint material, vegetation and other debris on the interior of the inverted tee caps at all girder supports is to be removed by power washing using potable water mixed with cleaning solution. All area to receive sealer/coating as show on the construction documents shall be power washed using potable water mixed with cleaning solution to remove any staining, dirt, oil, and other bond inhibitors prior to the application of the sealer/coating. Apply the sealer/coating in accordance with manufacturer specification and as directed by the Project Engineer.

1. All required epoxy injections of cracks shall be completed cured, and ground as noted in construction documents prior to application of the concrete sealant coating.
2. Apply concrete sealant/coating to a clean, dry concrete surface within 36 hours of cleaning. Verify that the moisture content is below 5% prior to application of concrete sealant/coating.
3. Apply two (2) coats of Sikagard 550W Elastocolor by Sika Corporation (or approved equal) to all areas as shown on the construction plans.

4. Concrete sealant/coating shall be applied following the manufacturer's specifications and in accordance with 2014 TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges **Item 427**, and as directed by Project Engineer. Any primers required by the product manufacturer to ensure proper waterproofing shall be considered incidental to the work item.

WORK ITEM 2014-018
CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)

Refer to TXDOT Standard Specifications for Construction and maintenance of Highway, Streets and Bridges, 2014 edition. **Item 429**

NOTES:

1) Engineering solutions still requires to be detailed. Not in the scope of this assignment

2) In order to verify that recommended repairs are working as intended. It is recommended that 6 months after this work item is performed an inspection is conducted to evaluate durability of the repair.

APPENDIX H

DEFICIENCES AND OBSERVATIONS DESCRIPTIONS

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA000	SUPS	Superstructure Cracking	Bent_11	(blank)	Side of deck and under overhang	Full height and full width transverse cracks at deck overhang 6 cracks on deck curb and deck	South	South
AA1	SUBS	Substructure Cracking > 0.02	Bent_01A	(blank)	Lower third of column, vertical crack	3 Vertical cracks approximate width of 0.02	East	
AA10	SUBS	Substructure Spalling	Bent_03A	(blank)	Middle of column, about 3 feet above ground	Rebar exposed, corrosion	South	
AA100	SUBS	Substructure Spalling	Bent_08	(blank)	Middle of column, 6 feet above ground	Spall has exposed reinforcement and has corrosion	East	
AA101	SUBS	Substructure Honeycombs	Bent_09	(blank)	Full height and full width	From 0.125 up to 2" in width. Full height and full width of column	All Faces	
AA102	SUBS	Substructure Map Cracking	Bent_09	(blank)	Full column height, full width of column	Up to 0.02 in width, full width of column	All Faces	
AA103	SUBS	Substructure Spalling	Bent_09	(blank)	Middle of column, up about 30 feet above ground	Concrete beginning to spall, corrosion stains around the spalled concrete	West	
AA104	SUBS	Substructure Spalling	Bent_09	(blank)	Hitting 6 feet of column, multiple locations	Small Concrete spalling and reinforcement beginning to corrode	South	
AA105	SUBS	Substructure Map Cracking	Bent_10	(blank)	Full height and full width	Up to 0.02" in width, map cracking full height and width	All Faces	
AA106	SUBS	Substructure Honeycombs	Bent_10	(blank)	Full height and full width of column	0.125" up to 1" in honeycomb width	All Faces	
AA107	SUBS	Substructure Delamination	Bent_10	(blank)	Right side and on the corner of the column. About 6 feet above ground	Looks to be a previous repair and now cracking	East	
AA108	SUBS	Substructure Map Cracking	Bent_11	(blank)	Full height and full width on all faces	Up to 0.02" in crack width, looks to be map cracking on all faces	All Faces	
AA109	SUBS	Substructure Honeycombs	Bent_11	(blank)	Looks to be full height and full width of column on all faces	0.125" up to 2" in honeycomb width	All Faces	
AA1094	SUBS	Substructure Spalling	Bent_07	(blank)	all faces of column	Exposed reinforcement on all faces of columns. Looks to be from spalls or honeycombing.	All Faces	
AA11	SUBS	Substructure Spalling	Bent_04A	(blank)	Full height of column on North, South West face.	Size varies from 1/4"-1". Signs of corrosion on east face	All Faces	
AA110	SUBS	Substructure Map Cracking	Bent_12	(blank)	Full height and full width	Up to 0.02 in crack width	All Faces	
AA111	SUBS	Substructure Honeycombs	Bent_12	(blank)	Full height and full width on all faces	0.125" up to 2" in width. Some honeycombs have turned into spalls	All Faces	
AA112	SUBS	Substructure Spalling	Bent_12	(blank)	Multiple locations of spalls. Some spots corroding. One location looks to have been repaired previously and now spalling.		East	
AA113	SUBS	Substructure Spalling	Bent_12	(blank)	Multiple locations on west face Middle of column face about 10 ft above ground, looks to have been previously repaired and now spalling Left side of column about 3 ft above ground	Previously repaired area looks to be spalling. Another location looks like multiple honeycombs caused spalling	West	
AA1137	SUBS	Substructure Spalling	Bent_08	(blank)	Top portion of column (above ramp)	Map cracking. East, South and West side along column height. Substantial density of map cracks on the West face. Exposed rebars with sign of corrosion on West face, 1 in dia x 0.5 in deep	West	
AA114	SUBS	Substructure Honeycombs	Bent_13	(blank)	Can only see 6' of North face. Worst condition on West face. Full width and full height	West face has caused corrosion. Bad honeycombing on right side of west face. Worst and more prominent honeycombing from 6'- 20' above ground on all visible faces	All Faces	
AA1141	SUBS	Substructure Map Cracking	Bent_09	(blank)	Top portion of column (above ramp). Entire column faces area spread along column height	Honeycombs spread throughout column area along height of top portion of the column. Map cracking on all faces along the column height. Increased density (+25%) of map cracking on the South face	North	
AA1147	SUBS	Substructure Map Cracking	Bent_11	(blank)	Along the height of the column	Honeycombs and map cracking spread across all faces of the column throughout column height.	North	
AA115	SUBS	Substructure Map Cracking	Bent_07	(blank)	Map cracking full height of col all faces	Map cracking full height of col all faces	North	
AA116	SUBS	Substructure Map Cracking	Bent_13	(blank)	Can only see 6' of North face. Full width, about half way up column	Up to 0.02" for crack width	All Faces	
AA1163	SUBS	Substructure Map Cracking	Bent_14	(blank)	Along top 2/3 rd of the column height	Honeycombs and map cracking spread along top 2/3 rd of the column. Bottom 1/3rd bear signs of previous repair.	North	
AA117	SUBS	Substructure Spalling	Bent_07	(blank)	6.5 ft above ground north face, 10 ft above ground west face, 20 ft above ground East face	Spalls with exposed reinforcement showing signs of corrosion on north, west face and east face 3 in diameter, 1 in deep	All Faces	
AA1170	SUBS	Substructure Spalling	Bent_15	(blank)	All faces of the column mostly top half of the column height	Exposed rebar with signs of corrosion up to 2 in in diameter found on all faces. 2 to 5 count per face	All Faces	
AA118	SUBS	Substructure Spalling	Bent_13	(blank)	Multiple locations, middle of column about 15' high, looks to be previously repaired and still spalling. Middle of column about 10' high, beginning to corrode and exposed reinforcement. NW corner of column 0-2' above ground.	Corner of column right above ground vertical spall. Possible honeycombing caused corrosion and exposed reinforcement. Previous repair looks to be spalling.	West	
AA1184	SUBS	Substructure Map Cracking	Bent_24	(blank)	Along full height of the column	Map cracking accross the full height of the column on all faces.	All Faces	

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA1188	SUBS	Substructure Map Cracking	Bent_25	(blank)	Along the full column height	Honeycombs along the full height of the column across the faces width. All faces with largest concentration on the West face. Map cracking consistently spread along the column height	All Faces	
AA119	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Along column height	Horizontal cracks at the north-east and North-west column corners propagating towards center ot the col. Spaced 2 ft OC along column height .	North	
AA1194	SUBS	Substructure Map Cracking	Bent_26	(blank)	Along the column height, across the column width	Honeycombs and Map cracking covering column surface along the column height	All Faces	
AA12	SUBS	Substructure Other	Bent_04A	(blank)	10 feet and above to full height of column	Anchors that have been abandoned have begun to corrode	North	
AA120	SUBS	Substructure Map Cracking	Bent_08	(blank)	Column height	Map cracking <0.01 along column height all faces	North	
AA121	SUBS	Substructure Spalling	Bent_13	(blank)	Starting from bottom of column up to a foot	5 circular spalls	North	
AA122	SUBS	Substructure Spalling	Bent_08	(blank)	Along column height	1in diameter.. Spalls with exposed rebar and signs of corrosion spread along the height of the column. North, East and South face	North, East And South Face	(blank)
AA1227	SUBS	Substructure Map Cracking	Bent_32	(blank)	All faces area along column height	Honeycombs on all faces along column height. Largest concentration on South and West face. Map cracking on all surface. Minor on North and East face. More concentrated on South and West face	All Faces	
AA123	SUBS	Substructure Map Cracking	Bent_09	(blank)	Along column height	Map cracking along column height all sides	North	
AA1230	SUBS	Substructure Map Cracking	Bent_33	(blank)	Surface of all faces along the height	Honeycombs and map cracking at all faces along height of the column	All Faces	
AA1236	SUBS	Substructure Map Cracking	Bent_34	(blank)	Along column height	Minor honeycombs and map cracking on all column faces along column height	All Faces	
AA124	SUBS	Substructure Honeycombs	Bent_14	(blank)	Can only see 6' of North face. Full width and full height	0.125" to 1" in width for honeycombs	All Faces	
AA125	SUBS	Substructure Map Cracking	Bent_14	(blank)	Looks to be full height and full width of column	Up to 0.02", full height and width of the column	All Faces	
AA126	SUBS	Substructure Spalling	Bent_09	(blank)	4 ft above ground	Drilled hole presumably for anchorage left un patched 1 diax 1 in depth	North	
AA1268	SUBS	Substructure Map Cracking	Bent_43	(blank)	Along column height	Honeycombs and map cracking across all faces along column height. +30% more honeycombs and map cracking density on East face	All Faces	
AA127	SUBS	Substructure Spalling	Bent_14	(blank)	Middle of column about 12' above ground	Looks to have been previously repaired, cracking and beginning to spall	East and West Faces	
AA128	SUBS	Substructure Spalling	Bent_09	(blank)	Spread along column height	Less then aplrox 1 in in diameter spalls with exposed reinforcement showing signs of corrosion. East and South face of col	East and South Face	
AA129	SUBS	Substructure Map Cracking	Bent_10	(blank)	Along column height	Map cracking along column height. All faces	North	
AA13	SUBS	Substructure .01<Cracking < .02	Bent_05A	(blank)	Vertical cracks full height	Vertical cracks along full height of column	East	
AA130	SUBS	Substructure Honeycombs	Bent_15	(blank)	Can only see 6' of North face. Full width and full height	0.125" up to 2" in width	All Faces	
AA131	SUBS	Substructure Cracking < .01	Bent_10	(blank)	Along column height	Corner cracks propagating towards column center. Spaced 12 in OC, 12 in long	North	
AA132	SUBS	Substructure Spalling	Bent_10	(blank)	40 in above ground	Drilled hole left unmatched. 1.5in diameter x 2 in deep	North	
AA133	SUBS	Substructure Map Cracking	Bent_15	(blank)	Looks to be full height and full width of column. Only 6' of north face visible	Up to 0.02" in width for cracks.	All Faces	
AA134	SUBS	Substructure Spalling	Bent_15	(blank)	Ground to 3' above ground	Multiple circular spalls. Possible honeycombs that spread out and have turned into spalls	North	
AA135	SUBS	Substructure Spalling	Bent_10	(blank)	Bottom half of column	Spalls with exposed reinforcement and signs of corrosion spread across bottom half of column. Less then 1 in diameter and 0.5 in depth	North	
AA136	SUBS	Substructure Cracking < .01	Bent_08	(blank)	Top portion of column (above ramp)	Horizontal cracks propagating from the column corner towards center. Approx. 16in long spaced 12 to 24 in OC	South	
AA137	SUBS	Substructure Map Cracking	Bent_08	(blank)	Top portion of column (above ramp)	Map cracking. East, South and West side along column height. Substantial density of map cracks on the West face. Exposed rebars with sign of corrosion on West face, 1 in dia x 0.5 in deep	East	
AA138	SUBS	Substructure Map Cracking	Bent_16	(blank)	Full height and full width cracks	No more than 0.02" in width, full height and width map cracking	All Faces	
AA139	SUBS	Substructure Cracking < .01	Bent_09	(blank)	Half height of top portion of col (above ramp)	Spider crack at the location of previous repair. Probable patch of previous pipe sleeve. Approx length 12ft to 20 ft. Occurs on east and west face. Typical for top portion (above ramp) for columns 8 through 11	East	
AA14	SUBS	Substructure Spalling	Bent_05A	(blank)	North East corner of column, 2 feet to about 15 feet above ground	5 separate spalls at corner of column.	North	
AA140	SUBS	Substructure Honeycombs	Bent_16	(blank)	Full width and full height of column	0.125" up to 1" in width for honeycombs. At some places honeycombing has caused corrosion	All Faces	

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA141	SUBS	Substructure Honeycombs	Bent_09	(blank)	Top portion of column (above ramp). Entire column faces area spread along column height	Honeycombs spread throughout column area along height of top portion of the column. Map cracking on all faces along the column height. Increased density (+25%) of map cracking on the South face	All Faces	
AA142	SUBS	Substructure Spalling	Bent_09	(blank)	2 ft above ground and 10 ft above ground	Exposed rebar with signs of corrosion. 1in to 3 in in diameter. 6 to 10 count.	South	
AA143	SUBS	Substructure Map Cracking	Bent_17	(blank)	Mid height (cracks too small to see above ~20ft.) and full width. East face is mostly covered with painted steel plates full height.	No more than 0.01" in width map cracking	All Faces	
AA144	SUBS	Substructure Honeycombs	Bent_10	(blank)	Top portion of the column (above the ramp). Spread across all faces of column along column length.	Map cracking and Honeycombs spread across all faces of column along column length. Largest concentration (+25% to 30%) on the East and South face	All Faces	
AA145	SUBS	Substructure Honeycombs	Bent_17	(blank)	All faces, full width and full height. East face is covered in painted steel plates full height	0.125" to 1" in honeycomb width. Some places have become corroded.	North, South and West Faces	
AA146	SUBS	Substructure Spalling	Bent_10	(blank)	Top portion of column (above ramp). 10 feet above deck	Exposed reinforcement showing signs of corrosion. 1 in in diameter x 0.5" deep	East	
AA147	SUBS	Substructure Honeycombs	Bent_11	(blank)	Along the height of the column	Honeycombs and map cracking spread across all faces of the column throughout column height.	All Faces	
AA148	SUBS	Substructure Spalling	Bent_11	(blank)	Along the column height	Exposed rebar with signs of corrosion. 1in to 3 in in diameter and 0.5 in depth. North, South and West face. 5 to 7 count per face excep South face. South face 20-30 count.	North, South and West Faces	
AA149	SUBS	Substructure Honeycombs	Bent_18	(blank)	Full height and full width. West face is covered by steel plates	0.12" up to 1" in honeycomb width. Some places honeycombing has caused corrosion.	North, East And South Faces	
AA15	SUBS	Substructure Staining	Bent_05A	(blank)	Right side of column, 6-8 feet above ground	Signs of corrosion stains on concrete	East	
AA150	SUBS	Substructure Spalling	Bent_18	(blank)	NE corner of column. Occurs on N and E face of column	Vertical spalls at corners of columns	North and East Faces	
AA151	SUBS	Substructure Honeycombs	Bent_12	(blank)	Along height of the column	Honeycombs spread across all faces of the column along entire height	All Faces	
AA152	SUBS	Substructure Spalling	Bent_18	(blank)	3 feet above ground. Left side of column	Spall has exposed reinforcement. Beginning to corrode	South	
AA153	SUBS	Substructure Spalling	Bent_12	(blank)	Top 1/3 rd of column	Exlosed rebar with signs of corrosion. 1 in to 2 in diameter x 1 in depth. East and South face of column	East and South Face	
AA154	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	Half height of the column	Cracks around previous patch. Approx. 10 linear ft.	East	
AA155	SUBS	Substructure Spalling	Bent_12	(blank)	5tf above ground	Corner Spall probably due to impact	East	
AA156	SUBS	Substructure Map Cracking	Bent_19	(blank)	Bottom 12' of column has been painted. Cracks are visible but not as visible as the areas that have not been painted over. Full height and full width map cracking.	Up to 0.01" in crack width. Map cracking more visible 12' above ground. Horizontal cracks at column corners	All Faces	
AA157	SUBS	Substructure Honeycombs	Bent_12	(blank)	Along column height	Minor honeycombs on each face of the column. Approx 25% to 30% of the column's face surface	All Faces	
AA158	SUBS	Substructure Map Cracking	Bent_13	(blank)	Top 2/3rds of column height	Map cracking accross entire face width within top 2/3rd of the South face. Corner map cracks on the East Face	South	
AA159	SUBS	Substructure Honeycombs	Bent_19	(blank)	Full height and full width	0.125" to 1" in honeycomb width. N face honeycomb has caused to expose rebar and begin corroding	All Faces	
AA16	SUBS	Substructure Honeycombs	Bent_05A	(blank)	Multiple locations on column	Honeycombing visible on 3 faces, corrosion present at some locations	East, South and West Faces	
AA160	SUBS	Substructure Spalling	Bent_19	(blank)	4' and 6' above paving. NE corner of column has spalls, N face has spall and exposed reinforcement		North and East Faces	
AA161	SUBS	Substructure Spalling	Bent_13	(blank)	10 ft above ground and 20ft above ground	Exposed rebar with signs of corrosion. 1in to 2 in in diameter x 0.5in deep. Count 5 to 10	West	
AA162	SUBS	Substructure Map Cracking	Bent_20	(blank)	Full height and full width	Up to 0.02" map cracking width. Horizontal, vertical, diagonal cracks all over column	All Faces	
AA163	SUBS	Substructure Honeycombs	Bent_14	(blank)	Along top 2/3 rd of the column height	Honeycombs and map cracking spread along top 2/3 rd of the column. Bottom 1/3rd bear signs of previous repair.	North	
AA164	SUBS	Substructure Honeycombs	Bent_20	(blank)	Full height and full width,	0.125" up to 1" for honeycomb width. Couple locations on S face has exposed reinforcement and caused corrosion	All Faces	
AA165	SUBS	Substructure .01<Cracking < .02	Bent_14	(blank)	Top half of the column height	Horizontal cracks in the South side corner. 8 to 10 in long, spaced at 6 to 12 in on center along top half of the column height	West	
AA166	SUBS	Substructure Spalling	Bent_20	(blank)	At NW and NE corner of column NE corner at 10' above paving and NW corner at 4' above paving	Vertical spalls at corners	North	

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA167	SUBS	Substructure Spalling	Bent_14	(blank)	Half of the column height on the East face. Top 2/3rd of the column height on the South face	Exposed rebar with signs of corrosion. 1 to 2 in in diameter x 0.5 in deep. 1 count in East face. 12 to 20 count on the South face	East and South Face	
AA168	SUBS	Substructure Honeycombs	Bent_21	(blank)	Full width and full height of column. Worst faces are North and South. Some honeycombing has made reinforcement visible and started to corrode	0.125" up to 1" in honeycomb width.	All Faces	
AA169	SUBS	Substructure Map Cracking	Bent_21	(blank)	Full height and full width	Up to 0.02" in map cracking width. Vertical, horizontal and diagonal cracks.	All Faces	
AA17	SUBS	Substructure Not Quantified	Bent_05A	(blank)	Multiple locations along height of column	repairs may have taken place	East	
AA170	SUBS	Substructure Honeycombs	Bent_15	(blank)	All faces of the column mostly top half of the column height	Honeycombs occuring above top height of the column except South face where it covers almost entire face. Exposed rebar with signs of corrosion up to 2 in in diameter found on all faces. 2 to 5 count per face	All Faces	
AA171	SUBS	Substructure Map Cracking	Bent_15	(blank)	Top half of the column height	Map cracks across the column faces width throughout top half of the column height	All Faces	
AA172	SUBS	Substructure Spalling	Bent_21	(blank)	Multiple locations on face	3 spalls at corners of columns 1 exposed reinforcement has begun corroding 1 spall 30 ft above pavement looks to be spalling and corroding	West	
AA173	SUBS	Substructure Spalling	Bent_21	(blank)	Middle of column face, about 10 feet above paving	Result of honeycombing looks like. Exposed tie, has began corroding	South	
AA174	SUBS	Substructure Spalling	Bent_21	(blank)	Multiple locations Middle of column about 4' above paving Middle right of column about 8' above paving Right side of column about 7' above paving	Two has exposed reinforcement and has begun corroding	East	
AA175	SUBS	Substructure Spalling	Bent_21	(blank)	Multiple locations, both NW and NE corners of column Multiple areas on face of column	Corner spalls have no exposed rebar Rest of spalls look like honeycombs with corrosion from exposed reinforcement	North	
AA176	SUBS	Substructure Map Cracking	Bent_22	(blank)	Full height and full width of cracks	Up to 0.02" in crack width. Map cracking and full column width horizontal cracks present on all faces every 2' up the column height	All Faces	
AA177	SUBS	Substructure Spalling	Bent_22	(blank)	Multiple locations SE corner of column about 2' above paving Middle of column about 1' above paving Left side of column about 4' above paving	Two appear honeycombing caused spalling and has exposed reinforcement , corner spalling have no exposed reinforcement	South	
AA178	SUBS	Substructure Honeycombs	Bent_22	(blank)	Full height and full width of column	0.125" up to 1" of honeycomb width	All Faces	
AA179	SUBS	Substructure Map Cracking	Bent_23	(blank)	Full width and full height of column	Up to 0.02" in crack width.	All Faces	
AA18	SUBS	Substructure Spalling	Bent_06A	(blank)	Bottkm12 ft	Several Spalls 1 to 5 in wide with signs of corrosion and exposed rebar	North	
AA180	SUBS	Substructure Honeycombs	Bent_23	(blank)	Full height and full width of column	0.125" up to 2" in honeycomb width. Some places honeycombing has caused reinforcement to get exposed and begun corroding	All Faces	
AA181	SUBS	Substructure Spalling	Bent_23	(blank)	Middle of west face about 6' above paving Middle of south face about 6' above paving	Look like honeycombing has caused reinforcement to become exposed and corrode	South and West Faces	
AA182	SUBS	Substructure Honeycombs	Bent_24	(blank)	Full height and full width honeycombing.	0.125" to 1" in honeycomb width	All Faces	
AA183	SUBS	Substructure Map Cracking	Bent_24	(blank)	Full height and full width map cracking	Up to 0.02" full of map cracking	All Faces	
AA184	SUBS	Substructure Honeycombs	Bent_24	(blank)	Along full height of the column	Honeycombs across the full height is the column on all faces.	All Faces	
AA185	SUBS	Substructure Spalling	Bent_24	(blank)	East face, right side if column about 6' above paving North face, left side of column about 15' above paving West face, right face of column about 20' above paving	Reinforcement looks to be exposed and has begun corroding	North, East And West Faces	
AA186	SUBS	Substructure .01<Cracking < .02	Bent_24	(blank)	Bottom half of column height	Horizontal cracks propagating towards center of column at corners of the column. Approx length 16 to 20 in. Spaced at 12 to 24 in OC	All Faces	
AA187	SUBS	Substructure Map Cracking	Bent_25	(blank)	Full width and full height of column	0.125" to 1" of honeycomb width	All Faces	
AA188	SUBS	Substructure Honeycombs	Bent_25	(blank)	Along the full column height	Honeycombs along the full height of the column across the faces width. All faces with largest concentration on the West face. Map cracking consistently spread along the column height	All Faces	
AA189	SUBS	Substructure Map Cracking	Bent_25	(blank)	Column has been painted for first 6'. Hard to see cracking. Cracking full height and full width of column after first 6'	Up to 0.02" in width. Vertical, horizontal and diagonal cracks	All Faces	
AA19	SUBS	Substructure Map Cracking	Bent_06A	(blank)	Bottom 12 ft	Horizontal map cracking propagating from east corner	North	
AA190	SUBS	Substructure .01<Cracking < .02	Bent_25	(blank)	Horizontal cracks across entire width of the column within top half of the column height.	Horizontal cracks across entire width of the column within top half of the column height. Cracks spaced at 4 to 12 in oc	South	(blank)

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA191	SUBS	Substructure Spalling	Bent_25	(blank)	1 middle of column about 5' above paving 2 right side of column about 7' above paving	One has exposed reinforcement and is corroding Two on NW corner of column circular spalls	North	
AA192	SUBS	Substructure Spalling	Bent_25	(blank)	2 ft from bottom of column South and West face. Mid height of the column at North face	Exposed rebar with signs of corrosion up to 1 in in diameter. 2 to count per face	All Faces	
AA193	SUBS	Substructure Spalling	Bent_25	(blank)	3 ft above ground	Pop out in the column edge. Probably due to impact	South	
AA194	SUBS	Substructure Honeycombs	Bent_26	(blank)	Along the column height, across the column width	Honeycombs and Map cracking covering column surface along the column height	All Faces	
AA195	SUBS	Substructure Honeycombs	Bent_26	(blank)	Full height and full column	.125" up to 2" for honeycomb width	All Faces	
AA196	SUBS	Substructure Spalling	Bent_26	(blank)	Top half of the column height	Un patched holes left after prior anchorage. Occurs at 12 In OC within top half of the column height	East	
AA197	SUBS	Substructure Spalling	Bent_26	(blank)	Bottom, middle and top portion of the column height	Exposed rebar with signs of corrosion. Up to 1 in in diameter x 0.5" deep. Occurs on 3 faces of the column. Count 2 to 4 per face	East, South and West Faces	
AA198	SUBS	Substructure Honeycombs	Bent_27	(blank)	Full height and full width of column. Can only see up to about 20' of column	0.125" up to 1" for honeycomb width	All Faces	
AA199	SUBS	Substructure Spalling	Bent_27	(blank)	Middle of column about 2' above paving	Circular spall	North	
AA2	SUBS	Substructure Spalling	Bent_01A	(blank)	Left side, 10 above ground	Small spall forming, signs of corrosion	East	
AA20	SUBS	Substructure Cracking < .01	Bent_06A	(blank)	Full height	Vertical full column height cracks	West	
AA200	SUBS	Substructure .01<Cracking < .02	Bent_26	(blank)	Top half of the column height	Horizontal cracks across entire width of the column face. Occurs in the top half of the column height. Spaced at 4 to 12 in OC	South	
AA201	SUBS	Substructure None	Bent_27	(blank)		Access to column not available	All Faces	
AA202	SUBS	Substructure Honeycombs	Bent_28	(blank)	Full height and full width. Column only visible for first 20'	0.125" up to 1" in honeycomb width	East, South and West Faces	
AA203	SUBS	Substructure Map Cracking	Bent_28	(blank)	Full height and width, up to 20' of column is visible	Column has been painted, map cracking in paint is visible	East, South and West Faces	
AA204	SUBS	Substructure Honeycombs	Bent_29	(blank)	Full height and full width. Only 20' of column is visible	0.125" up to 1" in honeycomb width	East, South and West Faces	
AA205	SUBS	Substructure Map Cracking	Bent_30	(blank)	Full height and width. First 20' of column is visible	0.125" up to 1" in honeycomb width	East, South and West Faces	
AA206	SUBS	Substructure Honeycombs	Bent_31	(blank)	Full height and width. Only first 20' of column is visible	0.125" up to 1" in honeycomb width	East, South and West Faces	
AA207	SUBS	Substructure Map Cracking	Bent_31	(blank)	Full height and width, only first 20' of column is visible	Columns have been painted over, cracks in paint that look like map cracking is present underneath. Up to 0.01" in crack width	East, South and West Faces	
AA208	SUBS	Substructure Map Cracking	Bent_28	(blank)	Along column height	Substantial map cracking along entire column height on all faces of the column. Crack size >0.02	All Faces	
AA209	SUBS	Substructure Spalling	Bent_28	(blank)	Approx 30in above ground	Spall at location of previous repair	East	
AA21	SUBS	Substructure Spalling	Bent_06A	(blank)	5 ft above ground	Multiple spalls 2 to 8 in wide with exposed rebar and signs of corrosion	East	
AA210	SUBS	Substructure Other	Bent_28	(blank)	10 to 12 ft above ground	Corroded abandoned anchors left in the face of the column	East	
AA211	SUBS	Substructure Map Cracking	Bent_29	(blank)	Along the column height	Map cracking on all column faces along the height of the column. Substantial map cracks on the South face with crack width >0.02"	All Faces	
AA212	SUBS	Substructure Map Cracking	Bent_30	(blank)	Along column height	Map cracking on all column faces along column height. Largest cracking density on South face	All Faces	
AA213	SUBS	Substructure Cracking > 0.02	Bent_30	(blank)	Top half of the column height	Horizontal cracks 12 to 36in long within top half of the column. Spaced 6 to 12 in OC	South	
AA214	SUBS	Substructure Honeycombs	Bent_33	(blank)	Bottom 6' is painted over, honeycombing not visible. 6' to full height and full width of column honeycombing is present	0.125" up to 1" in honeycomb width	East, South and West Faces	
AA215	SUBS	Substructure Honeycombs	Bent_30	(blank)	Top of column	Honeycombs at the top of columns / exposed face of bent beam. Typical for all bents at terminal C (27 through 31)	South	
AA216	SUBS	Substructure .01<Cracking < .02	Bent_33	(blank)	First 6' has been painted, Map cracking not visible. Cracks visible on corners of column.	Occurs at corner of column. Cracks can be seen clearly through paint	East, South and West Faces	
AA217	SUBS	Substructure Map Cracking	Bent_31	(blank)	Along column height	Map cracking along entire column height on East, South and West faces. Most explicit on the South face	East, South and West Faces	
AA218	SUBS	Substructure Map Cracking	Bent_33	(blank)	6'-10' visible map cracking	Up to 0.01" in cracking	East and West Faces	
AA2184	SUBS	Substructure Spalling	Bent_24	(blank)	Along full height of the column	Exposed rebars with signs of corrosion up to 2 in in diameter x 0.5" depth. Count 2 to 4 per each face	All Faces	
AA219	SUBS	Substructure Cracking > 0.02	Bent_31	(blank)	Horizontal and vertical cracks covering entire surface of the South face. Horizontal cracks 40in long spaced at 6 to 12 in OC. Vertical cracks full column height spaced at 12 to 18 in OC		South	

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA22	SUBS	Substructure .01<Cracking < .02	Bent_06A	(blank)	Along the height of the column. Corners Only	Horizontal crack approx 5 to 12 in long propagating at each corner of the column spaced 5 to 8 in on center	All Faces	(blank)
AA220	SUBS	Substructure Spalling	Bent_31	(blank)	3 ft above ground	Spall with exposed rebar showing signs of corrosion.	East	
AA221	SUBS	Substructure Honeycombs	Bent_34	(blank)	Bottom 6' of column has been painted over. Honeycombs not visible. After first 6', full height and full width honeycombing present.		East, South and West Faces	
AA222	SUBS	Substructure Map Cracking	Bent_34	(blank)	Bottom 6' of column is painted, no cracks visible. After bottom 6' map cracking is visible. 6' up to 12' is visible.	Up to 0.01" in map cracking. Vertical, horizontal and diagonal cracks present	East, South and West Faces	
AA223	SUBS	Substructure Honeycombs	Bent_34	(blank)	Column has been painted up to 6' from the bottom.	0.125" up to 1" in honeycomb width	North	
AA224	SUBS	Substructure Cracking < .01	Bent_34	(blank)	Middle of column and NW corner of column. Hard to see after first 12'. Column has been painted so other cracks are hard to see	Vertical crack up the middle and NW corner of column	North	
AA225	SUBS	Substructure Honeycombs	Bent_33	(blank)	Full height and width of column. More present after bottom 6'	0.125" up to 1" in honeycomb width	North	
AA226	SUBS	Substructure Cracking < .01	Bent_33	(blank)	NW and NE corner of columns vertical crack. Difficult to see after bottom 12'	Vertical cracks at corners of column	North	
AA227	SUBS	Substructure Honeycombs	Bent_32	(blank)	All faces area along column height	Honeycombs on all faces along column height. Largest concentration on South and West face. Map cracking on all surface. Minor on North and East face. More concentrated on South and West face	All Faces	
AA228	SUBS	Substructure Honeycombs	Bent_32	(blank)	After bottom 6' honeycombs are more present. Difficult to see after 20'. Full width.	0.125" up to 1" in honeycomb width	North	
AA229	SUBS	Substructure Spalling	Bent_32	(blank)	NW corner of column	Vertical spall	North	
AA23	SUBS	Substructure Spalling	Bent_06A	(blank)	Left side of column, 1 foot above ground	Corner of column, small patch of spalling concrete	West	
AA230	SUBS	Substructure Honeycombs	Bent_33	(blank)	Surface of all faces along the height	Honeycombs and map cracking at all faces along height of the column	All Faces	
AA231	SUBS	Substructure Spalling	Bent_33	(blank)	Approx 18 ft above ground	Spanking with exposed rebar and signs of corrosion.	West	
AA232	SUBS	Substructure Map Cracking	Bent_32	(blank)	Multiple locations on column face. Full width and height up to 8' cracks are visible. Column painted over, difficult to see after 8'.	Up to 0.01" in crack width. Horizontal, vertical, diagonal cracks visible	North	
AA233	SUBS	Substructure .01<Cracking < .02	Bent_33	(blank)	Top 1/3 rd of column height	Horizontal cracks in the top 1/3 rd of column height. Spread across face width, spaced 6 to 18 in OC	South	
AA234	SUBS	Substructure Map Cracking	Bent_31	(blank)	Full height and full width. Partial East and West faces visible and also have map cracking	Up to 0.02" in crack width. Vertical, horizontal and diagonal cracking	North	
AA235	SUBS	Substructure Honeycombs	Bent_31	(blank)	Full height and full width. Only up to 20' of column is visible. Portion of East and West face visible also has honeycombing	0.125" up to 1" of honeycomb width	North	
AA236	SUBS	Substructure Honeycombs	Bent_34	(blank)	Along column height	Minor honeycombs and map cracking on all column faces along column height	All Faces	
AA237	SUBS	Substructure Spalling	Bent_31	(blank)	Multiple locations Left side of face about 2' above paving NW corner of column about 2' and 4' above paving Right side of face about 5' above paving	Circular, horizontal and vertical spalls	North	
AA238	SUBS	Substructure .01<Cracking < .02	Bent_34	(blank)	Top half of column height	Horizontal cracks across column face width within top half of column height. Spaced at 6 to 18 in OC.	South	
AA239	SUBS	Substructure Honeycombs	Bent_30	(blank)	Full height and full width of column. Up to first 20' of column is visible. Portion of east and west face are visible.	0.125" up to 1" for honeycomb width	North	
AA24	SUBS	Substructure Honeycombs	Bent_06A	(blank)	All faces of columns, occurring multiple areas of column	Honey combing at corners, faces up the height of the column. Some areas starting to corrode	All Faces	
AA240	SUBS	Substructure Spalling	Bent_34	(blank)	Approx in the middle of column height	Spall with signs of corrosion	North	
AA241	SUBS	Substructure Map Cracking	Bent_30	(blank)	Full height and full width. Up to 20' of column is visible. Portion of East and West face has map cracking	Up to 0.02" of map cracking width.	North	
AA242	SUBS	Substructure Spalling	Bent_30	(blank)	NE corner of column about 18' above paving	Circular spall at corner of column	North	
AA243	SUBS	Substructure Honeycombs	Bent_29	(blank)	Full height and full width, first 20' of column visible. Portion of East and West face of wall	0.125" up to 1" in honeycomb width	North	
AA244	SUBS	Substructure Spalling	Bent_29	(blank)	Left side of column about 12' above paving and middle of column about 2' above paving	Horizontal spalls	North	
AA245	SUBS	Substructure Honeycombs	Bent_35	(blank)	all faces along column height	Minor honeycombs across all faces along column height. Steel plate covers on East face	North, South and West Faces	
AA246	SUBS	Substructure .01<Cracking < .02	Bent_35	(blank)	Approx 3 ft above ground	Horizontal cracks within area of previous repair. 4 to 10 in long. 4 to 6 count	West	
AA247	SUBS	Substructure Map Cracking	Bent_28	(blank)	Full height and full width, first 20' of column is visible. Portion of East and West face of wall map cracking is visible (bottom 6')	Up to 0.02" in crack width, horizontal, vertical and diagonal cracks	North	

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AA248	SUBS	Substructure Honeycombs	Bent_28	(blank)	Full height and full width, first 20' of column visible. Portion of east and west wall is visible and has honeycombs full height and width	0.125" up to 1" in honeycomb width	North	
AA249	SUBS	Substructure Honeycombs	Bent_36	(blank)	Along column height	Minor honeycombs across all faces area along column height. West face of column covered with steel plates	North, East And South Faces	
AA25	SUBS	Substructure Cracking < .01	Bent_06A	(blank)	Cracking full height and width	Horizontal and vertical cracks across entire face of column	South	
AA250	SUBS	Substructure Spalling	Bent_36	(blank)	Approx 3 ft above ground	2x2 x 1 in deep concrete spall at the north corner of the east face of the column.	East	
AA251	SUBS	Substructure Honeycombs	Bent_37	(blank)	Full width and full height	0.125" to 1" for honeycomb width	All Faces	
AA252	SUBS	Substructure Spalling	Bent_37	(blank)	SE corner. About 1' from the ground	No reinforcement exposed. Circular spall	South	
AA253	SUBS	Substructure Spalling	Bent_37	(blank)	NW corner about 5' from ground	No reinforcement exposed	North	
AA254	SUBS	Substructure Spalling	Bent_37	(blank)	NW corner of column, about 4' off ground	Circular small spalls	West	
AA255	SUBS	Substructure .01<Cracking < .02	Bent_37	(blank)	Multiple locations along faces of column. Difficult to see cracks above 10' of column	Mostly vertical cracks. East and West face have mostly vertical cracks, North has mostly map cracking. South face has no pronounced cracks through paint	All Faces	
AA256	SUBS	Substructure Honeycombs	Bent_38	(blank)	Full height and full width	0.125" up to 0.5" for honeycomb width	All Faces	
AA257	SUBS	Substructure Honeycombs	Bent_39	(blank)	Along column height	Minor honeycombs at all faces, along the height of the column. Overall column in good condition	All Faces	
AA258	SUBS	Substructure Map Cracking	Bent_38	(blank)	Full height and full width.	Map cracking full height and width of column. Horizontal cracks full width ever 2' up the column height	North	
AA259	SUBS	Substructure Cracking < .01	Bent_38	(blank)	Middle of column face. Up to 12' is visible	Vertical cracks on both east and west faces.	East and West Faces	
AA26	SUBS	Substructure Spalling	Bent_08A	(blank)	5ft to 12 ft above ground	Multiple (10 to 20 count) spalls with exposed rebars and signs of corrosion. 1 to 5 inches in diameter	North	
AA260	SUBS	Substructure Spalling	Bent_39	(blank)	Along first 5 ft of col height	Spalls. Probably due to impact	South	
AA261	SUBS	Substructure Spalling	Bent_39	(blank)	12 to 14 in above ground	Large pop out. Probably due to impact at the bottom of column⁰	West	
AA262	SUBS	Substructure Honeycombs	Bent_40	(blank)	Full height and width. Not as present on South face	0.125" to 1" in honeycomb width	All Faces	
AA263	SUBS	Substructure Map Cracking	Bent_40	(blank)	Full width and height up to about 20'. Difficult to see after 20'	Up to 0.01". Vertical and map cracking visible on all faces.	All Faces	
AA264	SUBS	Substructure Honeycombs	Bent_41	(blank)	Full height and full width on all column faces	0.125" up to 1" in honeycomb width	All Faces	
AA265	SUBS	Substructure Map Cracking	Bent_41	(blank)	Full height and full width height	Up to 0.02" for cracks. Mostly vertical cracks for west and east faces. Mostly map cracking for north and south faces	All Faces	
AA266	SUBS	Substructure Honeycombs	Bent_42	(blank)	Full height and full width	0.125" to 0.5" for honeycomb width	All Faces	
AA267	SUBS	Substructure Spalling	Bent_42	(blank)	NE corner of column about 6' above ground	No exposed reinforcement present. Square spall	East	
AA268	SUBS	Substructure Honeycombs	Bent_43	(blank)	Along column height	Honeycombs and map cracking across all faces along column height. +30% more honeycombs and map cracking density on East face	All Faces	
AA269	SUBS	Substructure Cracking > 0.02	Bent_43	(blank)	Along column height	Horizontal cracks across width of the column, spaced 6 to 24 in OC along column height	North	
AA27	SUBS	Substructure Honeycombs	Bent_07A	(blank)	North and West face mostly. South face a few places. East face covered up by steel plates	West face has more honeycombing, some places started corroding. North face honey combing, some places started corroding, fewer honey combing on south face. Ranging 1/4" to 1" wide.	North, South and West Faces	
AA270	SUBS	Substructure Honeycombs	Bent_44	(blank)	All faces, only first 20' visible. Concrete deck separating bottom half of column from rest	0.125" to 1" in honeycomb width	All Faces	
AA271	SUBS	Substructure Map Cracking	Bent_44	(blank)	Various locations on column faces.	Up to 0.02" in crack width North face has the most map cracking visible. West face has second most cracking visible South and east face small cracks are visible under paint.	All Faces	
AA272	SUBS	Substructure Honeycombs	Bent_45	(blank)	Full height and width	0.125" to 1" of honeycomb width. Worst on north face	All Faces	
AA273	SUBS	Substructure Spalling	Bent_45	(blank)	Both NW and NE corners of column. NE corner is about 2' above ground and NW corner spall about 3' above ground	Both are circular in nature, no exposed reinforcement	North	
AA274	SUBS	Substructure .01<Cracking < .02	Bent_50	(blank)	Center of column 3 ft above ground	Radial cracking at the area of previous repair. Approx 2 to 6 linear ft.	West	
AA275	SUBS	Substructure Map Cracking	Bent_45	(blank)	Full width and up to 20' high. Difficult to see past 20'	Map cracking up to 0.01" in width	North and East Faces	
AA276	SUBS	Substructure Spalling	Bent_45	(blank)	Middle of column about 6' from paving	Vertical spall	South	
AA277	SUBS	Substructure .01<Cracking < .02	Bent_50	(blank)	Bottom 1/3 rd of column height	Horizontal crack in the bottom third of column height. Spaced at 16 in OC. Approx length 5 to 10 linear ft	South	
AA278	SUBS	Substructure None	Bent_50	(blank)	Along column height	None. No access to column on the East side	East	
AA279	SUBS	Substructure Not Quantified	Bent_45	(blank)	SW corner, about 6' above paving	Possible spall repair, horizontal crack in it.	South	

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA28	SUBS	Substructure .01<Cracking < .02	Bent_08A	(blank)	Along the column height	Horizontal cracks propagating from the all corners of the column. 3 to 6 inches long. Spaced 5 to 12 inches on center	North	
AA280	SUBS	Substructure Honeycombs	Bent_49	(blank)	Along column height	Minor honeycombs at all faces of the column, along column height	All Faces	
AA281	SUBS	Substructure .01<Cracking < .02	Bent_49	(blank)	20 ft above ground	Vertical cracks approx 10 ft long spaced at 12 in OC across column face width. Damage occurs approx 20 ft above ground	East	
AA282	SUBS	Substructure Staining	Bent_48	(blank)	First 10 ft above ground	Mortar staining.	North	
AA283	SUBS	Substructure Map Cracking	Bent_46	(blank)	Full height and width	Up to 0.01" in crack width.	All Faces	
AA284	SUBS	Substructure Cracking < .01	Bent_48	(blank)	Along column height	Vertical cracks in the proximity of the center of the column running along column height	West	
AA285	SUBS	Substructure Honeycombs	Bent_46	(blank)	Various locations along all 4 faces	0.125" to 1" in width	All Faces	
AA286	SUBS	Substructure Cracking < .01	Bent_47	(blank)	Along column height	Vertical hairline cranking along the height of the column on all faces. Cracks 12 to 36 in long spaced 6 to 12 in OC horizontally	All Faces	
AA287	SUBS	Substructure Cracking > 0.02	Bent_47	(blank)	Along column length	Vertical cracks approx 10 ft long spaced 3 ft OC	West	
AA288	SUBS	Substructure Honeycombs	Bent_47	(blank)	Bottom third of column	Minor honeycombs at all faces. More explicit in West face	All Faces	
AA289	SUBS	Substructure Not Quantified	Bent_46	(blank)	SE corner of column about 6' above paving	Looks to have been previously repaired. Concrete is cracking now	South	
AA29	SUBS	Substructure Cracking < .01	Bent_08A	(blank)	Mid height of the column. Propagating from south side towards middle of column width		East	
AA290	SUBS	Substructure Spalling	Bent_47	(blank)	Bottom of column. Up to 3 ft above ground	Two spalls. One within area of previous repair. 4in x 6inx 0.5 in deep. Other 4in diameter x 0.5 in deep	West	
AA291	SUBS	Substructure Honeycombs	Bent_44	(blank)	Full height and width of column above concrete deck. About 20' visible	0.125" to 0.5" of honeycomb width	All Faces	
AA292	SUBS	Substructure Map Cracking	Bent_44	(blank)	Full height and width.	Up to 0.01" in crack width. Map cracking visible, mostly horizontal cracks visible through paint	South	
AA293	SUBS	Substructure .01<Cracking < .02	Bent_42	(blank)	Horizontal cracks full column width on North face every 2' Vertical and map cracking on south and west face up to about 15'. Horizontal cracks on east face every 2'	Horizontal cracks full column width on North face up the full height of the column Vertical and map cracking on south and west face. Horizontal cracks on east face	All Faces	
AA294	SUBS	Substructure Repair	Bent_43	(blank)	Between beams 8 and 9, and 9 and 10	Shear keys	East	South
AA295	SUBS	Substructure Cracking < .01	Bent_43	(blank)	Between beam 7&8	Crack extending from drainage pipe and stem wall	East	South
AA296	SUBS	Substructure Cracking > 0.02	Bent_43	(blank)	Cap end	2 - 3 foot cracks, each extending from each side of bent cap	South	South
AA297	SUBS	Substructure Repair	Bent_43	(blank)	Between beams 4 & 5 and 5 &6	Shear keys	West	South
AA298	SUBS	Substructure Spalling	Bent_43	(blank)	Above column near top of cap		West	West
AA299	SUBS	Substructure Cracking < .01	Bent_43	(blank)	Diagonal cracks extending from bent caps	Diagonal	West	South
AA3	SUBS	Substructure Honeycombs	Bent_01A	(blank)	About 5 feet above ground	Signs of corrosion, exposed rebar ties	North	
AA30	SUBS	Substructure Cracking > 0.02	Bent_07A	(blank)	About every 24" up the column height	Cracks ranging from 0.02 - 0.04 in width. Edge cracks up to 16 inches in length, about every 24 inches up the column. Longer horizontal cracks spanning from N face to east face of column, about 5 feet long going behind metal panels on east face of column.	All Faces	
AA300	SUBS	Substructure Cracking < .01	Bent_42	(blank)	By beam 3 and 4	Diagonal, 5 cracks extending from beams 3 and 4	East	North and south
AA301	SUBS	Substructure Cracking > 0.02	Bent_42	(blank)	Corners of bent cap		South	South
AA302	SUBS	Substructure Displacement	Bent_42	(blank)	Beam 6	Bearing pad shift 2 in west	West	South
AA303	SUBS	Substructure Cracking > 0.02	Bent_42	(blank)	Next to beams 3 and 4	12 total diagonal cracks between beams 3&4	West	North and south
AA304	SUBS	Substructure Cracking < .01	Bent_42	(blank)	Full width at top of cap	25 vertical cracks	West	North and south
AA305	SUBS	Substructure Cracking > 0.02	Bent_42	(blank)	Bent cap end, diagonal cracks both sides	Diagonal 2 total	North	North
AA306	SUBS	Substructure Cracking < .01	Bent_42	(blank)	Between beams 2&3	Diagonal crack at drainage pipe	West	North
AA307	SUBS	Substructure Cracking > 0.02	Bent_41	(blank)	Bent cap corners	Diagonal cracks from bent corners	South	South
AA308	SUBS	Substructure Displacement	Bent_41	(blank)	Beam 5	Displace north 2 in.	East	South
AA309	SUBS	Substructure Cracking > 0.02	Bent_41	(blank)	Next to girder 4	4 diagonal cracks	East	South
AA31	SUBS	Substructure Spalling	Bent_08A	(blank)	Multiple locations along the height of the column	Multiple (30 to 50 count) spalls with exposed rebar and signs of corrosion along the height of the column. 1 to 3 in wide and 2 to 10 inch long	South	South
AA310	SUBS	Substructure Cracking < .01	Bent_41	(blank)	Horiz. Crack at bent cap, next to beam 4	Horizontal	East	South
AA311	SUBS	Substructure Cracking > 0.02	Bent_41	(blank)	Next to beam 3	Diagonal next to bent 3	East	North
AA312	SUBS	Substructure .01<Cracking < .02	Bent_41	(blank)	Both sides of beam 4	2 diagonal cracks each side of beam 4 (4 total)	West	South
AA313	SUBS	Substructure Cracking > 0.02	Bent_41	(blank)	Beam 3	Diagonal cracks 3	West	North
AA314	SUBS	Substructure Cracking > 0.02	Bent_41	(blank)	Bent cap end	2 diagonal cracks (1 from each corner)	North	North
AA315	SUBS	Substructure Cracking < .01	Bent_40	(blank)	Corner of ledge	Cracking around 1 sf patch on corner	North	North
AA316	SUBS	Substructure .01<Cracking < .02	Bent_40	(blank)	East corner of bent on north face bent cap end		North	North
AA317	SUBS	Substructure Cracking < .01	Bent_40	(blank)	Bent cap end	Scattered Horiz. And vert. Cracks	North	North
AA318	SUPS	Superstructure Delamination	Bent_40	(blank)	Edge of deck	Spall and 18" piece delamiated and loose	North	North
AA319	SUBS	Substructure Displacement	Bent_40	(blank)	Beam 4	Displace 1 in south	East	South

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA32	SUBS	Substructure Spalling	Bent_07A	(blank)	Middle of column about 10 feet above ground. Right side of column, about 2 feet above ground	Two spalls First about 10' above ground, exposed rebar and is corroding. Second is about 2"x1"x0.25"	West	
AA320	SUBS	Substructure Spalling	Bent_40	(blank)	Top right side of bent cap end	1 sq ft	South	South
AA321	SUBS	Substructure Cracking > 0.02	Bent_40	(blank)	Bent cap end, east corner	Diagonal	South	South
AA322	SUBS	Substructure Spalling	Bent_45	(blank)	Top of stem	Spalling at top of stem	West	North and south
AA323	SUBS	Substructure Displacement	Bent_45	(blank)	Bearing pad for beams 7 8 9	0.25 in longitudinal displacement	West	South
AA324	SUBS	Substructure Cracking > 0.02	Bent_45	(blank)	Bent cap end, cracks coming from corners	1 crack each corner (2 total)	South	South
AA325	SUBS	Substructure .01<Cracking < .02	Bent_45	(blank)	Between beams 5 &6	3 vertical cracks	West	North
AA326	SUBS	Substructure .01<Cracking < .02	Bent_46	(blank)	Center	Vertical Cracks	West	South
AA327	SUBS	Substructure Cracking > 0.02	Bent_45	(blank)	Next to beam 4	Horizontal crack with efflorescence	East	South
AA328	SUBS	Substructure Displacement	Bent_45	(blank)	Beam 8	Shifted south 1 in	East	South
AA329	SUBS	Substructure Spalling	Bent_46	(blank)	Underside of cap from beams 6-7	20 Shallow spalls with exposed rebar, insufficient rebar	Underside	South
AA33	SUBS	Substructure Map Cracking	Bent_08A	(blank)	Mid height of the colum	Map cracking occuring in the mid height of the column spread across column width. Covering aprox area 35 to 45 sf	South	
AA330	SUBS	Substructure Cracking > 0.02	Bent_45	(blank)	Beam 6	Diagonal crack by hole	West	South
AA331	SUBS	Substructure Displacement	Bent_46	(blank)	At beam 6	Displace 1 in south	West	South
AA332	SUBS	Substructure Cracking > 0.02	Bent_46	(blank)	Bent cap corners	Diagonal cracks at corners (2 total)	South	South
AA333	SUBS	Substructure Honeycombs	Bent_46	(blank)	Underside of cap	1 sq ft underside	Underside	South
AA334	SUBS	Substructure Spalling	Bent_47	(blank)	Bents 4-7	Rebar exposed; concrete debris on top of cap	West	South
AA335	SUBS	Substructure Delamination	Bent_47	(blank)	Beam 4 grout pad	Entire grout pad is hollow, and cracked and loose concrete. Underlying bearing bad	West	South
AA336	SUBS	Substructure Delamination	Bent_47	(blank)	Beam 4 and 5 grout pads	Hollow on east half	East	South
AA337	SUBS	Substructure Map Cracking	Bent_47	(blank)	End cap	Horizontal and vertical cracking	South	South
AA338	SUBS	Substructure Delamination	Bent_48	(blank)	Beams 4 5 6	West half of grout pads	West	South
AA339	SUBS	Substructure Delamination	Bent_49	(blank)	Entire length from beam 4-6	Hollow full width full length	East	South
AA34	SUBS	Substructure None	Bent_08A	(blank)	Entire column height	No deficiency. For record purposes only. Piping metal sheet covers through entire column height	West	
AA340	SUBS	Substructure Cracking > 0.02	Bent_50	(blank)		Numerous horizontal and diagonal cracks	West	South
AA341	SUPS	Superstructure Cracking	Bent_50	(blank)	Underside of deck next to beam 4	2 longitudinal cracks	West	South
AA342	SUBS	Substructure Not Quantified	Bent_50	(blank)	Entire grout pad along beams 4-6	Entire grout pad is hollow with loose concrete	West	South
AA343	SUPS	Superstructure Spalling	Bent_45	(blank)		Spall on underside of deck	Underside of deck	
AA344	SUBS	Substructure .01<Cracking < .02	Bent_50	(blank)		Diagonal and horizontal scattered cracking	East	South
AA345	SUBS	Substructure Delamination	Bent_50	(blank)	Underside edge		North	North
AA346	SUBS	Substructure Cracking > 0.02	Bent_50	(blank)	Cap end	Horizontal cracks	North	North
AA347	SUBS	Substructure Delamination	Bent_50	(blank)	Under beams 1-3	Entire grout pad under beams 1-3 is delaminates	West	North
AA348	SUBS	Substructure Cracking > 0.02	Bent_50	(blank)	Bent cap stem	3 diagonal cracks	West	North
AA349	SUBS	Substructure Not Quantified	Bent_49	(blank)	Between beams 1&2		East	North
AA35	SUBS	Substructure Honeycombs	Bent_09A	(blank)	Full height and full width on all sides.	Honeycombing ranging from 0.25-0.50 in diameter. Some places honeycombs have begun to corrode.	All Faces	
AA350	SUBS	Substructure Delamination	Bent_49	(blank)	Entire grout pad under beams 1-3	Entire grout pad delaminates	East	North
AA351	SUBS	Substructure Cracking < .01	Bent_49	(blank)	Bent cap end; diagonal at corners and vertical at CL cap	8 in diagonal (2) & 2 ft vertical (1)	North	North
AA352	SUBS	Substructure Delamination	Bent_49	(blank)	Entire grout pad under beams 1-3	Entire grout pad delaminated	North	West
AA353	SUBS	Substructure Not Quantified	Bent_49	(blank)	Deck drainage pipe under beam 1	Entire deck drainage pipe saddle support detached	West	North
AA354	SUPS	Superstructure Spalling	Bent_48	(blank)	Underside of deck south of beam 3	2 sq ft spall	East	North
AA355	SUBS	Substructure Delamination	Bent_48	(blank)	Entire grout pad under beams 1-3	Entire grout pad hollow and delaminated	East	North
AA356	SUBS	Substructure Cracking < .01	Bent_48	(blank)	Bent cap end at corners and CL at top of cap	1 ft diagonal crack at each corner and 24 in vertical crack CL at top	North	North
AA357	SUBS	Substructure Delamination	Bent_48	(blank)	Grout pads under beams 1-3	All grout pads delaminated	West	North
AA358	SUBS	Substructure Delamination	Bent_47	(blank)	Grout pads under beams 1&2	Entire grout pad delaminated beam 1&2; loose concrete from grout pad beam 2	West	North
AA359	SUBS	Substructure Cracking < .01	Bent_47	(blank)	Bent cap end at corners	2 diagonal cracks	North	North
AA36	SUBS	Substructure Spalling	Bent_09A	(blank)	Left side of column about 2 feet above ground	Rebar exposed and beginning to corrode	South	
AA360	SUBS	Substructure Cracking > 0.02	Bent_47	(blank)	Center of stem, full height	Vertical crack full height of stem	North	North
AA361	SUBS	Substructure Not Quantified	Bent_47	(blank)	Grout pads under beams 1-3	Loose concrete, danger of falling on concrete	West	North
AA362	SUBS	Substructure Spalling	Bent_47	(blank)	Bent cap stem by beam 1 below joint		West	North
AA363	SUBS	Substructure Spalling	Bent_47	(blank)	Between beams 2&3 near top of stem; under joint	Spall	East	North
AA364	SUBS	Substructure Spalling	Bent_46	(blank)	Underside face of bent cap	6 spalls in a row; shallow popouts with exposed rebar	West	North
AA365	SUBS	Substructure Spalling	Bent_46	(blank)	North east corner	Spall near corner	North	North
AA366	SUBS	Substructure Spalling	Bent_46	(blank)	North east corner	Spall near corner	East	North
AA367	SUBS	Substructure Displacement	Bent_46	(blank)	Bearing pads under beams 1 and 2	Under beam 1 - shifted 0.5 in south; under beam 2 - shifted 1 in south, overhanging grout pad	West	North
AA368	SUBS	Substructure Cracking < .01	Bent_46	(blank)	Bent cap end, diagonal crack from East corner	Diagonal crack	North	North
AA369	SUPS	Superstructure Spalling	Bent_45	(blank)	Underside of overhang		North	North

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA37	SUBS	Substructure .01<Cracking < .02	Bent_09A	(blank)	Multiple locations of vertical and horizontal cracks	Cracks on multiple faces, ranging 0.01-0.02 inches wide and 2 to 6 feet long	All Faces	
AA370	SUBS	Substructure Map Cracking	Bent_M1	(blank)	Up to 20' from ground visible. 2' long cracks at corners of column every 3' about 0.01" in width.	Map cracking on North and East face. Column has been painted so difficult to see past first 20'.	All Faces	
AA371	SUBS	Substructure Spalling	Bent_M1	(blank)	2 locations Left side of column face about 2' above ground Left side of column face about 15' above ground	Circular spalls, reinforcement visible in higher spall	North	
AA372	SUBS	Substructure Cracking < .01	Bent_46	(blank)	On ledge, below beam 2	2 vertical cracks	West	North
AA373	SUBS	Substructure Not Quantified	Bent_M1	(blank)	About 12' above ground, looks to be previous repair. Cracks still visible	About 1'-2' wide retrofit	All Faces	
AA374	SUBS	Substructure Honeycombs	Bent_M1	(blank)	Full height and width. About 80% of column face has honeycombing.	0.125" up to 1" of honeycomb width	All Faces	
AA375	SUPS	Superstructure Delamination	Bent_45	(blank)	Underside of deck	2 sq ft delaminated patch	North	North
AA376	SUBS	Substructure Map Cracking	Bent_M1	(blank)	Columns have been painted so only Up to about 15' is visible. Vertical cracks on all 4 corners of column.	Up to 0.01" in crack width. Diagonal, straight and horizontal cracks in different locations on all 4 sides	All Faces	
AA377	SUBS	Substructure Cracking > 0.02	Bent_45	(blank)	Corners of bent cap	Diagonal cracks	North	North
AA378	SUBS	Substructure Displacement	Bent_45	(blank)	Beam 2&3	Beam #2 - 1 in north; beam #1 - 1 in south	West	North
AA379	SUBS	Substructure Cracking < .01	Bent_M6	(blank)	Along column height	Horizontal cracks in the corners of the column, on both sides propagating from the corners towards column center line. 12 to 20 in in length. Spaced 6 to 12 in OC along column height.	West	
AA38	SUBS	Substructure Spalling	Bent_09A	(blank)	Right side of column, corner location close to North face	Looks to have been a repair before. In the process of coming spalling	East	
AA380	SUBS	Substructure Map Cracking	Bent_M2	(blank)	Full height and full width. Column has been painted but cracks still visible. Full width of column cracks every 1' on east end from 20' up to full height of column.	Up to 0.01" in crack width. Diagonal, straight and horizontal cracks	All Faces	
AA381	SUBS	Substructure Spalling	Bent_M6	(blank)	Throughout column height	Spalls with exposed rebar showimg signs of corrosion. 1 to 3 in in diameter. Depth 0.5 " to 1 in. Approx estimated 1 spall per 1 sf of column face area. Occurs on North, South and West faces.	North, South and West Faces	
AA382	SUBS	Substructure Honeycombs	Bent_M6	(blank)	all column faces.	Mild honeycombs on all column faces.	All Faces	
AA383	SUBS	Substructure Honeycombs	Bent_M2	(blank)	From 10' up to full height of column	From 0.125" up to 1" for honeycomb width. South face looks to have visible corrosion from honeycombing.	All Faces	
AA384	SUBS	Substructure .01<Cracking < .02	Bent_44	(blank)	By beams 1,2,3,4	3 diagonal cracks	East	North
AA385	SUBS	Substructure Spalling	Bent_M2	(blank)	Left side of column face about 2' from the paving.	Circular spall	East	
AA386	SUBS	Substructure Cracking < .01	Bent_M6	(blank)	First half of column height	Horizontal and vertical cracking within bottom half of the column height. Horizontal cracks all the way across column face spaced 3 ft OC. Vertical crack in proximity of column center line half column height long	South	
AA387	SUBS	Substructure Honeycombs	Bent_M6	(blank)	Throughout column width and height	Minor honeycombs throughout column width and height	All Faces	
AA388	SUBS	Substructure Cracking < .01	Bent_M5	(blank)	Bottom 6 ft	Vertical crack in proximity of column center. Approx 3 to 8 ft long	West	
AA389	SUBS	Substructure Cracking > 0.02	Bent_40	(blank)	Bent cap end at corners	1 diagonal crack each corner, 2 total cracks	North	North
AA39	SUBS	Substructure Honeycombs	Bent_10A	(blank)	Honeycombing at all faces and varying heights	Up to 1/4" diameter honeycombs. Some rebar corrosion present due to honeycombing	All Faces	
AA390	SUPS	Superstructure Delamination	Bent_44	(blank)	Underside of deck overhang (over roadway)	Large spall in danger of falling on traffic	North	North
AA391	SUBS	Substructure Honeycombs	Bent_M5	(blank)	Throughout column width and height on all faces.	Honeycombs across column width and height on all column faces. Substantial honeycombs within first 10 ft of a column height on North, South and West faces	All Faces	
AA392	SUBS	Substructure Spalling	Bent_M5	(blank)	Approx 10 ft above ground	Spall with exposed rebar showing signs of corrosion. Up to 1 in in diameter, 0.5 in deep	South	
AA393	SUBS	Substructure Cracking < .01	Bent_44	(blank)	Bent cap, south of beam 3	2 diagonal cracks	East	North
AA394	SUBS	Substructure Map Cracking	Bent_M2	(blank)	Full width of column and full height of column on North, South and East face. Least visible on West face, map cracking visible up to 15'.	Diagonal, vertical and horizontal cracks up to 0.02" in width	All Faces	
AA395	SUBS	Substructure Spalling	Bent_M5	(blank)	Throughout column height	Spalls with exposed rebar showing signs of corrosion. Concentrate on the West side of North face. Up to 1 in in diameter and 0.5 in depth	North	
AA396	SUPS	Superstructure Cracking	Bent_44	(blank)	Underside of deck	Diagonal crack	West	South
AA397	SUBS	Substructure Cracking > 0.02	Bent_M2	(blank)	NE corner of column. Spanning from East and North face. About 12' from paving	Horizontal, and vertical cracks	North and East Faces	
AA398	SUBS	Substructure Honeycombs	Bent_M5	(blank)	Throughout column width and height	Honeycombs across column width and height on all faces.	All Faces	

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AA399	SUBS	Substructure Honeycombs	Bent_M2	(blank)	Full width up to about 6' from paving	0.125" to 0.5" in width	North	
AA4	SUBS	Substructure Map Cracking	Bent_01A	(blank)	Lower third of column	Map cracking full width of column up to 10 feet off the ground	North	
AA40	SUBS	Substructure Spalling	Bent_10A	(blank)	Left side of column face about 10 feet above ground	Looks like exposed reinforcement that has become corroded	North	
AA400	SUBS	Substructure Spalling	Bent_M5	(blank)	Throughout column height	Spalls with exposed rebar showing signs of corrosion. 1 to 3 in in diameter and 0.5 in to 1 in in depth. 15 to 20 count on this face.	East	
AA401	SUBS	Substructure Cracking < .01	Bent_M2	(blank)	About 6' above paving, horizontal crack spanning all around column	Horizontal crack	All Faces	
AA402	SUBS	Substructure Repair	Bent_43	(blank)	Shear keys between beams 1&2 and 2&3	Shear keys	East	North
AA403	SUBS	Substructure Cracking < .01	Bent_M5	(blank)	Along column height	Vertical cracks in the proximity of column center line. Occurs along column height in 12 to 36 in increments.	All Faces	
AA404	SUBS	Substructure Spalling	Bent_M2	(blank)	Two locations Left side of column about 1' from paving Right side of column about 12' from paving	Vertical and horizontal spalls	East	
AA405	SUBS	Substructure Cracking > 0.02	Bent_43	(blank)	Bent cap (vertical cracks near top) (diagonal cracks in bottom)	6 vertical and 5 diagonal	East	North and south
AA406	SUBS	Substructure Spalling	Bent_M2	(blank)	Left side of column face about 12' above paving	Horizontal spall	North	
AA407	SUBS	Substructure Spalling	Bent_M5	(blank)	Approx 20 to 25 ft above ground	Spalls with exposed rebar and signs of corrosion. Within corner indent on each side of the column face. 1 in diameter , 0.5 in depths. Spaced regularly 4 to 12 in OC. Approx count 20 to 30	West	
AA408	SUBS	Substructure Spalling	Bent_M2	(blank)	2 locations on East face about 6'-7' South face about 5' above paving	Circular spalls that have begun to corrode on west and south face.	East and South Face	
AA409	SUBS	Substructure Honeycombs	Bent_M4	(blank)	Along column width and height	Honeycombs across column width and height on column faces. Approx 20%to 40% of each column face area.	All Faces	
AA41	SUBS	Substructure .01<Cracking < .02	Bent_10A	(blank)	All four corners of the column along the height of the column	Horizontal cracks at all four corners of the column propagating towards column's center Length from 5 to 12 inches. Spaced at 12 to 24 inches on center	South	
AA410	SUBS	Substructure Cracking > 0.02	Bent_43	(blank)	1 diagonal across length from corner to corner, 1 vert full height	1 diagonal and 1 vertical	North	North
AA411	SUBS	Substructure Spalling	Bent_M4	(blank)	5 ft above ground	Spalling with exposed rebar with signs of corrosion.Up to 1 in in diameter 0.5 in deep	South	
AA412	SUPS	Superstructure Spalling	Bent_43	(blank)	Underside of deck overhang	Spall with 1 sq ft delaminated	North	North
AA413	SUBS	Substructure Map Cracking	Bent_M3	(blank)	Full width of column up to about 20' from paving.	Up to 0.02" in crack width	All Faces	
AA414	SUBS	Substructure Cracking < .01	Bent_M4	(blank)	Bottom of column. First 1/3rd of column height	Vertical cracks in proximity of column center. Spaced 12 to 24in OC horizontally throughout first 1/3 rd of column height	All Faces	
AA415	SUBS	Substructure Honeycombs	Bent_M3	(blank)	Full height and width honeycombing visible.	0.125" up to 0.5" visible honeycomb width.	All Faces	
AA416	SUBS	Substructure .01<Cracking < .02	Bent_43	(blank)		3 diagonal cracks	East	North
AA417	SUBS	Substructure Scaling	Bent_M4	(blank)	within first 5 ft of column height. West face most severe	Scaling of paint within first 5 ft of column height. West face most severe	East, South and West Faces	
AA418	SUBS	Substructure Repair	Bent_43	(blank)	Between beams 1&2 and 2&3	Shear keys	East	North
AA419	SUBS	Substructure Spalling	Bent_M3	(blank)	Full width and full height about 50% of column	0.125" up to 0.5" in width	All Faces	
AA42	SUBS	Substructure .01<Cracking < .02	Bent_11A	(blank)	Along the height if the columns	Horizontal cracks along the height of the column propagating towards the center of the column 5 to 10 in long spaced at 2 ft oc	East	
AA420	SUBS	Substructure Honeycombs	Bent_M4	(blank)	Throughout column height and width	Minor honeycombs across area of column faces. 20 to 30 % of each face area	All Faces	
AA421	SUPS	Superstructure Spalling	Bent_43	(blank)	Underside of deck, north of beam 4		East	South
AA422	SUBS	Substructure Spalling	Bent_M3	(blank)	Right side of column up to 2' from paving	Corner spalls	East	
AA423	SUBS	Substructure Spalling	Bent_M4	(blank)	Along column height	Spalls within column center and at corners. 2 to 5 in diameter, 0.5 to 1 in deep. 6 to 12 count.	East	
AA424	SUBS	Substructure Degraded Coat of Paint	Bent_M4	(blank)	First bottom 3 ft of column height	Degraded paint at first 3 ft of the column height across column width	All Faces	
AA425	SUBS	Substructure Honeycombs	Bent_M4	(blank)	Along column height, across column width	Minor honeycombs across area of all column faces. 30 to 40b% of each column face	All Faces	
AA426	SUBS	Substructure Map Cracking	Bent_M3	(blank)	Full width of column up to a height of 15'. Cracks not as visible past that.	Up to 0.01" in crack width. Horizontal, vertical and diagonal cracks.	All Faces	
AA427	SUBS	Substructure Spalling	Bent_M4	(blank)	Along column height	Spalls with exposed rebar, showing signs of corrosion. 1 to 2 in diameter and 0.5 in depth. Scattered across column face . 3 to 5 count per face	All Faces	
AA428	SUBS	Substructure Spalling	Bent_M3	(blank)	Left side of column about 8' above paving	Horizontal spall	North	

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AA429	SUBS	Substructure Cracking < .01	Bent_M4	(blank)	Along column height	Vertical crack in proximity of column center. Along column height in 3 to 6 ft long parts.	All Faces	
AA43	SUBS	Substructure Honeycombs	Bent_11A	(blank)	Various locations along width and height of column faces.	Up to 1/2" in diameter. Honeycombs have started to cause corrosion	All Faces	
AA430	SUBS	Substructure Cracking < .01	Bent_M4	(blank)	Along column height	Horizontal crack within column corners and spreading from corners towards the center. 6 to 16 in long spaced 12 to 36 in OC along column height	East	
AA431	SUBS	Substructure Cracking > 0.02	Bent_36	(blank)	Bent cap end, cracks starting at corners	2 diagonal cracks	North	North
AA432	SUPS	Superstructure Cracking	Bent_36	(blank)	Underside of deck and vertical up deck side	5 cracks		
AA433	SUPS	Superstructure Spalling	Bent_38	(blank)	Underside of deck	Spall with loose concrete (danger of falling)	North	North
AA434	SUBS	Substructure Displacement	Bent_38	(blank)		2 in east side is not under girder	North	North
AA435	SUPS	Superstructure Not Quantified	Bent_38	Span_37	Beam 1 is rotated towards the north	Picture 4687-89 (photo log)		
AA436	SUBS	Substructure Displacement	Bent_38	(blank)	Bearing pad under beam 2	Displaced 2 in south	East	North
AA437	SUBS	Substructure Cracking < .01	Bent_38	(blank)	Bt beams 4-5	Diagonal results from both outlets	West	South
AA438	SUBS	Substructure .01<Cracking < .02	Bent_38	(blank)	Entire width of cap	Crack whole width of cap	South	South
AA439	SUPS	Superstructure Spalling	Bent_38	(blank)	small popouts	3 in by 3 in and 2in by 5 in	South	South
AA44	SUBS	Substructure Spalling	Bent_11A	(blank)	Along the height of the column	Occurs at East, South and West face. Spalls with exposed rebars and signs of corrosion. 1 to 5 inches long spaced 5 in to 1.5 feet on center	East, South and West Faces	
AA440	SUBS	Substructure Repair	Bent_37	(blank)	Between every beam	Shear keys	East	North and south
AA441	SUPS	Superstructure Delamination	Bent_37	Span_37	Underside of beam 1	Repair		
AA442	SUPS	Superstructure Displacement	Bent_38	Span_37	Rotated North	sliding 2" towards west	West	South
AA443	SUBS	Substructure Cracking > 0.02	Bent_37	(blank)	Bent cap end at corners	Diagonal crack coming from each corner (2 total)	North	North
AA444	SUBS	Substructure Cracking > 0.02	Bent_37	(blank)		Extending from east face mid height	North	North
AA445	SUPS	Superstructure Spalling	Bent_37	(blank)	Side of deck near bottom	Spall, vertical crack; at the construction joint	South	South
AA446	SUBS	Substructure .01<Cracking < .02	Bent_36	(blank)	Cap end	Diagonal cracks coming from corners	South	South
AA447	SUBS	Substructure Cracking < .01	Bent_36	(blank)		2 horiz and 1 vert	South	South
AA448	SUPS	Superstructure Delamination	Bent_36	(blank)	Underside of decal overhang	0.5 sq ft delaminated	South	South
AA449	SUBS	Substructure Repair	Bent_36	(blank)	Between every beam	Shear keys	West	North and south
AA45	SUBS	Substructure Honeycombs	Bent_12A	(blank)	Middle of column, 12 feet above ground	Horizontal Honeycomb appears like a widened crack	West	
AA450	SUBS	Substructure Cracking < .01	Bent_36	(blank)	Bent cap end	1 horiz and 1 diagonal	South	South
AA451	SUPS	Superstructure Cracking	Bent_36	(blank)	Side of deck	3 vertical cracks	South	South
AA452	SUBS	Substructure Displacement	Bent_36	(blank)	Bearing pads under beams 2&3	Bearing pads shifted 1 in north	West	North
AA453	SUBS	Substructure Repair	Bent_35	(blank)	Between every beam	Shear keys	East	North and south
AA454	SUBS	Substructure .01<Cracking < .02	Bent_35	(blank)	Bent cap end	2 diagonal cracks from corners and 1 horizontal	North	North
AA455	SUBS	Substructure Cracking < .01	Bent_35	(blank)		2 diagonal cracks from cap corners and 1 horizontal	South	South
AA456	SUBS	Substructure Repair	Bent_35	(blank)	Between every beam	Shear keys	East	North and south
AA457	SUBS	Substructure Cracking > 0.02	Bent_34	(blank)	Bent cap end	Diagonal cracks from corners	North	North
AA458	SUBS	Substructure Cracking < .01	Bent_34	(blank)	Bent cap end	Horizontal	North	North
AA459	SUPS	Superstructure Cracking	Bent_34	(blank)	Side of deck	3 vertical cracks	North	North
AA46	SUBS	Substructure Honeycombs	Bent_12A	(blank)	Occurring full width and full height.	Up to 1 inch in length, a couple locations beginning to corrode	West	
AA460	SUBS	Substructure Cracking < .01	Bent_34	(blank)	Between	10 diagonal cracks spaced every 5 ft	East	Between North abd south
AA461	SUPS	Superstructure Cracking	Bent_34	(blank)	At girder 4; south side, north face	Vertical crack	North	South
AA462	SUBS	Substructure Cracking < .01	Bent_34	(blank)	Between beams 3&4	8 diagonal and vertical cracks	West	North amd south
AA463	SUBS	Substructure Cracking < .01	Bent_34	(blank)	Underside of cap between beams 3&4	Vertical cracks are extending 4-6 to the underside of cap	Underside of cap	South
AA464	SUBS	Substructure Cracking > 0.02	Bent_33	(blank)	Bent cap end	Diagonal crack coming from corners	North	North
AA465	SUPS	Superstructure Spalling	Bent_33	(blank)	Underside of deck overhang		North	North
AA466	SUBS	Substructure Cracking < .01	Bent_33	(blank)		Horizontal with diagonal extending		
AA467	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Bent cap ledge between beams 2&3	Vertical crack extending south from top of ledge	East	North
AA468	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Between beams 3&4	Horizontal crack	East	North abd south
AA469	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Between beams 3&4	Numerous vertical cracks that extend to horizontal crack	East	North and south
AA47	SUBS	Substructure Map Cracking	Bent_12A	(blank)	Cracks from bottom up to top of column	Map cracking up to 0.02 width. Horizontal cracks from the corners of the column up to 5 feet long. Vertical cracks going full height of column	West	
AA470	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Between beams 2&3, 18 in above ledge	Horizontal crack	West	North
AA471	SUBS	Substructure Spalling	Bent_33	(blank)	South west corner	Rotten wood left in formwork	West	North
AA472	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Between beams 3&4	Diagonal cracks (vertical at top and bottom) extending into underside and topside of cap	West	North abd south
AA473	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Extending north from beam 4		West	South
AA474	SUBS	Substructure Cracking < .01	Bent_32	(blank)	Bent cap end	Diagonal cracks from corners	North	North
AA475	SUPS	Superstructure Cracking	Bent_32	(blank)	Underside of deck overhang and side of deck	Vertical cracks extending into transverse cracks, and horizontal crack	North	North
AA476	SUBS	Substructure Cracking < .01	Bent_32	(blank)	Between beams 3&4	Horizontal crack full length	West	North and south
AA477	SUBS	Substructure .01<Cracking < .02	Bent_32	(blank)	Between beams 3&4	Horizontal crack, and vertical cracks full height every 2 ft	East	North and south
AA478	SUBS	Substructure Cracking < .01	Bent_32	(blank)	Under beam 4 and under beam 5	Diagonal crack under beam 5 and vertical under beam 4	East	South

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA479	SUBS	Substructure .01<Cracking < .02	Bent_32	(blank)	Bent cap stem	Diagonal cracks	East	South
AA48	SUBS	Substructure Spalling	Bent_12A	(blank)	SW corner of column, ground up to 15 feet vertically up the column	Corner spall up the edge of column	West	
AA480	SUPS	Superstructure Spalling	Bent_32	(blank)	Underside of deck overhang	Spall	East	South
AA481	SUBS	Substructure Cracking < .01	Bent_32	(blank)	Bent cap ledge between beams 5&6	Vertical crack; 44"	East	South
AA482	SUBS	Substructure .01<Cracking < .02	Bent_32	(blank)	South of beam 6 on bent cap stem	4 vertical cracks spaced every 1 ft	West	South
AA483	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Bent cap ledge under beams 4&5	3 vertical cracks	West	South
AA484	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Between beams 4&5 on ledge	2 diagonal cracks	West	South
AA485	SUPS	Superstructure Spalling	Bent_32	Bent_32	End of beam 6, south east corner	Spall at end of beam with exposed prestressing strands	West	South
AA486	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Bent cap ledge south of beam 6	Numerous horizontal vertical and diagonal cracks	West	South
AA487	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Bent cap end	Vertical at top of cap and splits into 2 diagonal cracks, horizontal mid height of cap	South	South
AA488	SUBS	Substructure Cracking < .01	Bent_33	(blank)	Diagonal at beam 5, horizontal 1 ft above ledge from beams 4-6, vertical crack 24 in high in ledge below beam 5	Diagonal 5 ft long, horizontal 10 ft, vertical 24 in	East	South
AA489	SUBS	Substructure Cracking < .01	Bent_33	(blank)	South of beam 6 on bent cap ledge	Numerous vertical and diagonal cracks and horizontal crack	East	South
AA49	SUBS	Substructure Map Cracking	Bent_12A	(blank)	Full width and full height of column	Up to 0.02" width of crack. Full height and full width. Cracking on N face is different from other faces of column	North	
AA490	SUBS	Substructure Cracking < .01	Bent_34	(blank)	Between beams 4-6 on ledge	8 vertical cracks	West	South
AA491	SUBS	Substructure Cracking < .01	Bent_34	(blank)	From beam 6 to south column,	20 Vertical cracks spaced every foot, and 20 ft horizontal crack	West	South
AA492	SUBS	Substructure Cracking < .01	Bent_34	(blank)	Bent cap end	4 horizontal cracks	South	South
AA493	SUBS	Substructure Cracking < .01	Bent_34	(blank)	South of beam 6 on bent cap ledge	Diagonal cracks every 2 ft from beam 6 to south column	East	South
AA494	SUBS	Substructure Cracking < .01	Bent_34	(blank)	Under beam 6 on cap ledge	2 vertical cracks	East	South
AA495	SUBS	Substructure Cracking < .01	Bent_26	(blank)	Underside of bent cap	Longitudinal cracks every 8 in	East	South
AA496	SUBS	Substructure .01<Cracking < .02	Bent_26	(blank)	Bent cap stem, south of beam 6	Multiple diagonal cracks	East	South
AA497	SUBS	Substructure .01<Cracking < .02	Bent_26	(blank)	Below beams 4-6 on cap ledge	6 Vertical cracks (2 below each beam 4-6)	East	South
AA498	SUBS	Substructure .01<Cracking < .02	Bent_26	(blank)	Bent cap between beams 3&4	Numerous vertical and diagonal cracks	East	South
AA499	SUBS	Substructure Cracking < .01	Bent_26	(blank)	Bent cap ledge under beams 4-6	5 vertical cracks	West	South
AA5	SUBS	Substructure .01<Cracking < .02	Bent_01A	(blank)	Bottom 6 feet of column	Typical cracking	South	
AA50	SUBS	Substructure Honeycombs	Bent_13A	(blank)	Along column height	Honeycomb occuring along column height on all four column faces. Largest concentration occurs within first half of the column height.	All Faces	
AA500	SUBS	Substructure .01<Cracking < .02	Bent_26	(blank)	Side of bent cap between beams 3&4	Numerous vertical cracks at bottom of bent cap and extending to underside of cap	West	South
AA501	SUBS	Substructure Cracking < .01	Bent_26	(blank)	Between beams 3&4	5 diagonal cracks	West	South
AA502	SUBS	Substructure .01<Cracking < .02	Bent_27	(blank)	Between beam 6 and south column	Several diagonal cracks	West	South
AA503	SUBS	Substructure Cracking < .01	Bent_26	(blank)	Bent cap end	Horizontal cracks, 1 - 1 ft and 2 - 4 ft	South	South
AA504	SUBS	Substructure Cracking < .01	Bent_25	(blank)	Bent cap stem, south of beam 6	8 diagonal cracks	East	South
AA505	SUBS	Substructure Cracking < .01	Bent_25	(blank)	Under beams 4-6	6 vertical cracks extending to underside	East	South
AA506	SUBS	Substructure Cracking < .01	Bent_25	(blank)	Cap ledge under beams 4-6	6 Vertical cracks	West	South
AA507	SUBS	Substructure Cracking < .01	Bent_25	(blank)		Vertical every 8 in and two diagonal cracks at mid height	West	South
AA508	SUBS	Substructure Cracking < .01	Bent_25	(blank)	Bent cap end	2 horizontal cracks	South	South
AA509	SUBS	Substructure Cracking < .01	Bent_24	(blank)	Bent cap end	Horizontal crack mid height of cap	South	South
AA51	SUBS	Substructure Map Cracking	Bent_12A	(blank)	Vertical cracks full height and horizontal cracks mostly on right side of column face	Up to 0.02" in width, full height cracks and horizontal cracks about 6' spaced at about every 12" full height of column	East	
AA510	SUBS	Substructure Cracking < .01	Bent_24	(blank)		Fine map cracking and one vertical	East	South
AA511	SUBS	Substructure Cracking < .01	Bent_24	(blank)	From beam 6 to south column	Scattered hairline vertical and horizontal cracks along 30 ft	West	
AA512	SUBS	Substructure Cracking < .01	Bent_26	(blank)	Between beams 1&2	Diagonal crack	East	North
AA513	SUBS	Substructure Cracking > 0.02	Bent_26	(blank)	Bent cap end	Diagonal from corners meeting in middle horizontally	North	North
AA514	SUBS	Substructure Cracking > 0.02	Bent_26	(blank)	Deck overhang	Vertical and transverse cracks on side and underside of deck	North	North
AA515	SUBS	Substructure Displacement	Bent_25	(blank)	Bearing pad under beam 1	Skewed 1/4" west	East	North
AA516	SUBS	Substructure Cracking < .01	Bent_26	(blank)	Between beams 3&4	Scattered vertical horizontal and diagonal thru out 25 ft length	East	North and south
AA517	SUBS	Substructure Cracking < .01	Bent_26	(blank)	Beam 3 south side, cracks on web	5 Hairline diagonal cracks	South	North
AA518	SUBS	Substructure Cracking < .01	Bent_25	(blank)	Between beams 3&4	5 diagonal cracks	East	North
AA519	SUBS	Substructure Cracking < .01	Bent_25	(blank)	Bent cap end, diagonal from east corner, horizontal at mid height	1 horizontal and 1 diagonal	North	North
AA52	SUBS	Substructure Spalling	Bent_13A	(blank)	Small spalls with signs of corrosion up to 1 inch in diameter scattered along all four faces of the column		All Faces	
AA520	SUPS	Superstructure Cracking	Bent_25	Span_25	Beam 1 north face	6 horizontal cracks	East	North

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AA522	SUBS	Substructure Cracking < .01	Bent_25	(blank)	Between beams 3&4	3 diagonal, 2 vertical, 1 horizontal	West	North
AA523	SUBS	Substructure Cracking < .01	Bent_24	(blank)	Between beams 3&4	1 diagonal and 3 vertical	East	North
AA524	SUBS	Substructure Cracking < .01	Bent_24	(blank)	Underneath beams 4-6	7 vertical cracks under beams 4-6	East	South
AA525	SUBS	Substructure Cracking < .01	Bent_24	(blank)	Bent cap end, diagonal from corners	1 horizontal and 2 diagonal	North	North
AA526	SUBS	Substructure Cracking < .01	Bent_24	(blank)	Under beams 3-6 in bent cap ledge	7 Vertical cracks	West	South
AA527	SUBS	Substructure .01<Cracking < .02	Bent_23	(blank)	Diagonal cracks at corners of ledge	Diagonals cracks at corners of ledges. Cracks protruding to center of stem.	North	North
AA528	SUPS	Superstructure Cracking	Bent_23	(blank)	Full height and full width transverse cracks at deck overhang.	5 cracks on deck curb and overhang.	North	North
AA529	SUBS	Substructure Spalling	Bent_23	(blank)	1 ft below top of stem wall.	Spalling on stem face, with exposed rebar, signs of corrosion.	North	North
AA53	SUBS	Substructure Spalling	Bent_12A	(blank)	Multiple locations. 1 foot above ground in middle of column. 8 foot above ground on right side of column face. Halfway up column in right side of the column	Exposed rebar has been corroded on right side of column face. Middle of column spall, 1' above ground appears to have been scraped/scratched away	East	
AA530	SUBS	Substructure Cracking < .01	Bent_23	(blank)	Diagonal cracks on stem between beam 1-2, 2-3, 4-5	Diagonal cracking in stem. Approximately full height. Starting at conduit hole between beams 1-2. Typical between beams 2-3 and 4-5	East	North
AA531	SUBS	Substructure Cracking < .01	Bent_23	(blank)	On cap ledge face over column, extending from top of ledge	2 cracks on face of ledge over columns.	East	North
AA532	SUBS	Substructure Cracking < .01	Bent_23	(blank)	Diagonal cracks on stem between beam 1-5	4 total cracks, cracks starting from conduit holes between beams 1-2 and 4-5. Typical diagonal cracks between beams 2-4	West	North
AA533	SUPS	Superstructure Cracking	Bent_23	(blank)	Full height and full width transverse cracks at deck overhang.	4 cracks on deck curb and deck.	South	South
AA534	SUBS	Substructure Cracking < .01	Bent_23	(blank)	Diagonal cracks at corners of ledge and full width horizontal crack center of stem face	Diagonal cracks starting at ledge corners- 2 in total. horizontal crack full width and wrapping around face of stem.	South	South
AA535	SUBS	Substructure .01<Cracking < .02	Bent_22	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack enter of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack. . horizontal crack full width and wrapping around face of stem.	South	South
AA536	SUPS	Superstructure Cracking	Bent_22	(blank)	Full height and full width transverse cracks at deck overhang.	1 crack on deck and curb, 1 on curb blockout.	South	South
AA537	SUPS	Superstructure Cracking	Bent_22	Span_22	hairline longitudinal cracks on beam web on all beams.	4 Small hairline cracks protruding from edge of beam at web. Typical on each side. Lengths vary from 3 to 8 in	East	South
AA538	SUBS	Substructure .01<Cracking < .02	Bent_22	(blank)	Diagonal cracks on stem between beam 1–5	Full height diagonal cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 4-5.	East	North
AA539	SUBS	Substructure Cracking < .01	Bent_22	(blank)	Cracks Bearing seat edges into ledge face	2 vertical cracks at the edge of bearing seat	East	North
AA54	SUBS	Substructure Cracking < .01	Bent_13A	(blank)	3 ft above ground	Diagonal crack in south-east corner. 1/32th crack width. Total combined crack length 2 ft	South	
AA540	SUBS	Substructure Cracking > 0.02	Bent_22	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width	Diagonal cracks starting at ledge corners connected into 1 large crack.	North	North
AA541	SUPS	Superstructure Cracking	Bent_22	Span_21	hairline longitudinal cracks at end of beams on web and bottom flange. Typical all beams.	Small hairline cracks protruding from edge of beam at web. Typical on each side. Lengths vary from 4 to 8 inches. Some minor spalling visible.		
AA542	SUBS	Substructure .01<Cracking < .02	Bent_22	(blank)	Diagonal cracks on stem between beam 2-4	Full height diagonal cracks on face of stem. Starting at conduit hole between beams 2-3. Typical cracking between beams 2-4. Total of 4 cracks.	West	North
AA543	SUBS	Substructure Cracking < .01	Bent_22	(blank)	Vertical cracks on bent face under bearing seat.	Cracks on face of ledge. Full height. At center beam bearing seat.	West	North
AA544	SUBS	Substructure Cracking < .01	Bent_21	(blank)	Diagonal cracks at corners of ledge and full width horizontal crack enter of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack.	North	North
AA545	SUBS	Substructure .01<Cracking < .02	Bent_21	(blank)	Diagonal cracks on stem between beam 1-5	Full height diagonal cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 1-2 and 4-5.	East	North
AA546	SUPS	Superstructure Cracking	Bent_21	Span_21	hairline longitudinal cracks at end of beams on web	hairline longitudinal cracks at end of beams on web and bottom flange		
AA547	SUBS	Substructure Cracking < .01	Bent_21	(blank)	Diagonal cracks at corners of ledge into a horizontal	Diagonal cracks starting at ledge corners connected into 1 large crack.	South	South
AA548	SUBS	Substructure Delamination	Bent_21	(blank)	Small delamination at top of stem	Small Delamination about to pop off	South	South
AA549	SUPS	Superstructure Cracking	Bent_21	(blank)	Full height and full width transverse cracks at deck overhang.	4 cracks on deck curb and deck.	South	South
AA55	SUBS	Substructure .01<Cracking < .02	Bent_12A	(blank)	Vertical cracks up full height of column	Full height cracks up to 0.02” in width	South	
AA550	SUBS	Substructure .01<Cracking < .02	Bent_21	(blank)	Diagonal cracks on stem between beam 1-5	Full height diagonal cracks on face of stem. Typical between beams 2-3. And starting at conduit hole between beams 1-3 and 4-5.	West	North

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AA551	SUBS	Substructure .01<Cracking < .02	Bent_20	(blank)	Diagonal cracks on stem between beam 1-5	Full height diagonal cracks on face of stem. Typical between beams 3-4. And starting at conduit hole between beams 1-3 and 4-5. Total of 5 cracks.	East	North
AA552	SUBS	Substructure Cracking < .01	Bent_20	(blank)	2 Vertical cracks on corners of bearing seat at beam 2	2 Vertical cracks on corners of bearing seat at beam 2	East	East
AA553	SUBS	Substructure Spalling	Bent_20	(blank)	North face of stem mid height	Spall with exposed rebar	North	North
AA554	SUBS	Substructure .01<Cracking < .02	Bent_20	(blank)	Diagonal cracks at corners of ledge into a horizontal	Diagonal cracks starting at ledge corners connected into 1 large crack.	North	North
AA555	SUPS	Superstructure Cracking	Bent_20	(blank)	Full height and full width transverse cracks at deck overhang.	4 cracks on deck curb and deck.		North
AA556	SUBS	Substructure .01<Cracking < .02	Bent_20	(blank)	Diagonal cracks on stem between beam 1-5	Full height diagonal cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 1-2 and 4-5.	West	North
AA557	SUBS	Substructure Cracking < .01	Bent_20	(blank)	Vertical cracks in ledge below beam 3. 2 at corners of bearing seat. 1 north of beam 3		West	North
AA558	SUBS	Substructure .01<Cracking < .02	Bent_20	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack center of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack.. horizontal crack full width and wrapping around face of stem.	South	South
AA559	SUBS	Substructure Cracking < .01	Bent_19	(blank)	Diagonal cracks on stem between beam 1-2 and 2-3	Full height diagonal cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 1-2 and 4-5.	East	North
AA56	SUBS	Substructure Spalling	Bent_12A	(blank)	Right side of column face about 3 feet high	Spall beginning to form on SE corner of column	South	
AA560	SUBS	Substructure Cracking < .01	Bent_19	(blank)	Cracks at bearing pedestal below beam 3	Vertical	East	
AA561	SUPS	Superstructure Cracking	Bent_19	(blank)	Full height and full width transverse cracks at deck overhang. 5 cracks on deck curb and deck.		South	South
AA562	SUBS	Substructure Cracking < .01	Bent_19	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack center of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack. horizontal crack full width and wrapping around face of stem.	South	South
AA563	SUBS	Substructure Cracking < .01	Bent_19	(blank)	Vertical cracks at corners of bearing pedestal below beam 3	Vertical	West	
AA564	SUBS	Substructure .01<Cracking < .02	Bent_19	(blank)	Diagonal cracks on stem between beam 1-5	Full height diagonal cracks on face of stem. Typical between beams 2-3. And starting at conduit hole between beams 1-2 and 3-5. Total of 45	West	North
AA565	SUBS	Substructure Cracking < .01	Bent_19	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack on stem face		North	North
AA566	SUBS	Substructure Delamination	Bent_19	(blank)	Northeast bottom corner	Delaminated concrete that is close to spalling off	North	North
AA567	SUPS	Superstructure Cracking	Bent_19	(blank)	Full height and full width transverse cracks at deck overhang.	6 cracks on deck curb and deck		
AA568	SUBS	Substructure .01<Cracking < .02	Bent_18	(blank)	Diagonal cracks on stem between beam 1-2 and 2-3	Full height diagonal cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 1-2 and 4-5. Total of 4.	East	North
AA569	SUPS	Superstructure Cracking	Bent_18	Span_18	Small hairline cracks protruding from end of beam at web and bottom flange. Typical on each side. Lengths vary from 3 to 10 in			
AA57	SUBS	Substructure Cracking < .01	Bent_13A	(blank)	Center of column along first half of the column height	Vertical cracks in proximity of column center. 10 to 20 ft in total length	East	
AA570	SUBS	Substructure Spalling	Bent_18	(blank)	On ledge face over column. Between beams 3 and 4.	Pop-out with exposed rebar, signs of corrosion.	East	North
AA571	SUBS	Substructure Cracking > 0.02	Bent_18	(blank)	Bottom side of bent cap, 6inchea from south edge	Cracking leading to pop-outs. Several small pop-outs ranging from 1 to 2 inches in diameter.	South	South
AA572	SUPS	Superstructure Spalling	Bent_18	(blank)	Spall on underside of deck overhang at joint		South	South
AA573	SUBS	Substructure .01<Cracking < .02	Bent_18	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack center of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack. horizontal crack full width and wrapping around face of stem.	South	South
AA574	SUBS	Substructure Cracking < .01	Bent_18	(blank)	Cracks below beams 1, 2, and 3 at corners of bearing pedestal	4 vertical cracks	West	North
AA575	SUBS	Substructure Cracking < .01	Bent_18	(blank)	On stem face between beams 2-5	Scattered map cracking on stem wall between beams. Diagonal cracks typical between beams 2-5. Vertical cracks between beam 3-4.	West	North
AA576	SUBS	Substructure .01<Cracking < .02	Bent_18	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack center of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack. horizontal crack full width and wrapping around face of stem.	North	North
AA577	SUPS	Superstructure Cracking	Bent_17	(blank)	Full height and full width transverse cracks at deck overhang. 5 cracks on deck curb and deck.		South	South
AA578	SUBS	Substructure Cracking < .01	Bent_17	(blank)	Diagonal cracks at corners of ledge	Diagonal cracks starting at ledge corners- 2 in total.	South	South

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AA579	SUBS	Substructure Cracking < .01	Bent_17	(blank)	Diagonal cracks on stem between beam 1-5	Full height diagonal cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 1-2 and 4-5. Vertical cracks at conduit between beams 3-4. Total of 5	West	North
AA58	SUBS	Substructure Map Cracking	Bent_14A	(blank)	Full height and full width of column	Up to 0.03" width cracks. Widths coming from NE and SE corners of column. Occurs every 12" up the height of the column. Horizontal cracks go into vertical cracks up the height of the column	East	
AA580	SUPS	Superstructure Not Quantified	Bent_17	Span_16	South face of beam 3 web and top flange	Portion of girder web and top flange removed to fit drain pipe		
AA581	SUBS	Substructure Spalling	Bent_17	(blank)	On stem face between beams 3-4	Small pop out with exposed rebar, signs of corrosion.	West	North
AA582	SUBS	Substructure Spalling	Bent_17	(blank)	Bearing pedestal below beams 2 and 4	1 small corner spall at beam 2 and 2 small spalls	West	
AA583	SUBS	Substructure Cracking < .01	Bent_17	(blank)	Diagonal cracks at corners of ledge into a horizontal		North	North
AA584	SUBS	Substructure Cracking < .01	Bent_17	(blank)	Diagonal cracks on stem between beam 1-2 and 2-3	Full height diagonal cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 1-2 and 4-5. Total of 4.	East	North
AA585	SUBS	Substructure Spalling	Bent_17	(blank)	Spall on south face, top edge of conduit guideway over column		East	North
AA586	SUBS	Substructure .01<Cracking < .02	Bent_16	(blank)	Diagonal and vertical cracks on stem between beam 1-5	Full height diagonal and vertical cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 1-2 and 4-5. Total of 8.	East	North
AA587	SUBS	Substructure .01<Cracking < .02	Bent_16	(blank)	Diagonal and vertical cracks on stem between beam '	Full height diagonal and vertical cracks on face of stem. Ty	East	North
AA588	SUBS	Substructure Delamination	Bent_16	(blank)	Bearing pedestal below beam 3	Delamination	East	
AA589	SUBS	Substructure Cracking < .01	Bent_16	(blank)	Diagonal cracks at corners of ledge into a horizontal	Diagonal cracks starting at ledge corners connected into 1 large crack.	North	North
AA59	SUBS	Substructure Honeycombs	Bent_14A	(blank)	Occurs all along face of column, full width and height	Up to inch of length. Some honeycombing has caused corrosion	North, East And South Faces	
AA590	SUPS	Superstructure Cracking	Bent_16	Span_16	Small hairline cracks protruding from edge of beam at web and bottom flange. At beam 5. Typical on each face. Lengths vary from 3 to 6 in	hairline cracks		
AA591	SUBS	Substructure .01<Cracking < .02	Bent_16	(blank)	Horizontal cracks at stem and ledge intersection. And full width horizontal crack at center of stem.	horizontal cracks starting at ledge corners connected into 1 large crack. horizontal crack full width and wrapping around face of stem. 5 vertical cracks of approximately 18 inches.	South	South
AA592	SUPS	Superstructure Cracking	Bent_16	Span_15	cracks protruding from edge of beam at web and bottom flange at beam 5	Small hairline cracks protruding from edge of beam at web and bottom flange. At beam 5. Typical on each face. Lengths vary from 3 to 6 in		
AA593	SUBS	Substructure Cracking < .01	Bent_16	(blank)	Vertical cracks at corners of bearing pedestal below beam 3, 4, and 5	6 total vertical cracks	East	East
AA594	SUBS	Substructure .01<Cracking < .02	Bent_16	(blank)	Diagonal, vertical, and horizontal cracks on stem between beam 1-5	Full height diagonal and vertical cracks on face of stem. Typical between beams 2-4. And starting at conduit hole between beams 1-2 and 4-5. Total of 4. Horizontal cracks between beams 3-4. Total of 2	West	West
AA595	SUBS	Substructure .01<Cracking < .02	Bent_15	(blank)	9 vertical cracks full height of cap below girders 4 to 6		East	South
AA596	SUBS	Substructure Cracking < .01	Bent_15	(blank)	Diagonal cracks on stem between beam 1-6	Full height diagonal cracks on face of stem. Typical between beams 2-3 and 4-6. And starting at conduit hole between beams 1-2 and 2-3. Total of 4.	East	North
AA597	SUPS	Superstructure Cracking	Bent_15	(blank)	Full height and full width transverse cracks at deck overhang.2 cracks on deck curb and deck.	15" vertical and 15" transverse for each crack	South	South
AA598	SUBS	Substructure .01<Cracking < .02	Bent_15	(blank)	40 ft section of straddle bent south of beams. Typical vertical cracks every 1ft. 1ft long horizontal crack at half height of cap.	Typical cracking midspan to south end of cap. Vertical cracks from bottom of cap to about center of cap. Long horizontal crack at half height of cap.	East	South
AA599	SUBS	Substructure .01<Cracking < .02	Bent_15	(blank)	11 Vertical cracks in face of ledge below girders 4 to 9 extending to the underside of the cap	Vertical extending to the underside of the cap	West	South
AA6	SUBS	Substructure Spalling	Bent_02A	(blank)	Center of column, 3 feet above ground	Several small spalls	West	
AA60	SUBS	Substructure Spalling	Bent_14A	(blank)	Mostly corners of column. West face of column has most spalling	Corrosion has caused spalling on West face of column. All 4 corners have spalling	All Faces	
AA600	SUBS	Substructure Cracking < .01	Bent_15	(blank)	40 ft section of straddle bent south of beams. Typical vertical cracks every 1ft. 1ft long horizontal crack at half height of cap.	Typical cracking midspan to south end of cap. Vertical cracks from bottom of cap to about center of cap. Long horizontal crack at half height of cap.	West	South
AA601	SUBS	Substructure Cracking < .01	Bent_15	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack of stem face	Diagonal cracks starting at ledge corners connected into. horizontal crack full width and wrapping around face of stem.	North	North
AA602	SUPS	Superstructure Cracking	Bent_15	(blank)	Full height and full width transverse cracks at deck overhang.	4 cracks on deck curb and deck.	North	North

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AA603	SUBS	Substructure .01<Cracking < .02	Bent_14	(blank)	Full height of ledge from beams 2 to 7.	12 vertical cracks that extend to the underside of the cap. 24" vertical Into 12" longitudinal	East	North
AA604	SUBS	Substructure .01<Cracking < .02	Bent_14	(blank)	Face of ledge full height extending to the underside of the cap from 2 to 7.	19 vertical cracks 36" L extending into the underside of cap for 24"	West	North
AA605	SUPS	Superstructure Spalling	Bent_14	Span_13	South overhang of north section of bridge or overhang next to beam 6. Spalling of curb at bent	Spalls and cracking of curb at bent on the south overhang of the north portion of bridge next to beam six. Horizontal cracks of 24in 0.02 in in width.	South	West
AA606	SUBS	Substructure Cracking > 0.02	Bent_14	(blank)	Horizontal cracks at corners of ledge into the center. Additional horizontal cracks on cap face. Vertical crack bottom half of cap face	2 horizontal cracks and 1 vertical crack.	North	North
AA607	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Between guideways beams 3-4	7 - 2' to 3' vertical cracks that extend 6" to the underside	East	East
AA608	SUBS	Substructure Cracking < .01	Bent_14	(blank)	Cap leader between beams 4 and 7.	Vertical cracks distributes every 24 in between beams 4 and 7. Approximately 20 ft.	South	South
AA609	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Cap leader between beams 4 and 7.	Vertical cracks distributes every 24 in between beams 4 an	South	South
AA61	SUBS	Substructure Honeycombs	Bent_14A	(blank)	Across full width and height of column at different locations	Up to 2" in length. Some areas have began to spall and corrode on North face	All Faces	
AA610	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Between Beams 3 and 4	Between guideways vertical cracks extending to the underside of the cap	West	North
AA611	SUBS	Substructure .01<Cracking < .02	Bent_13	(blank)	End of ledges between beams 3 and 4. Both the north and south side.	Cracks rounding the ends of ledges on the side and top. Extends a few inches under bent.	West	West
AA612	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack center of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack. horizontal crack full width and wrapping around face of stem.	North	North
AA613	SUPS	Superstructure Cracking	Bent_13	(blank)	Deck overhang above cap	Full height and full width transverse cracks at deck overhang. 4 cracks on deck curb and deck. 15" vertical, 15" transverse	North	North
AA614	SUBS	Substructure Cracking < .01	Bent_12	(blank)	From conduit to top of ledge between beams 1 and 2	Vertical	East	North
AA615	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	Full height under beam 3, 12in crack under beam 2, 12 in crack between beams 1 and 2.	2- 1ft cracks between beams 1-2 and under beam two. Full height crack extending under cap under the right edge of beam 3.	East	North
AA616	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	Between guideways A and B		East	North
AA617	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	North end of ledge supporting the south apm.	Crack on the end of ledge extends on top of ledge. And extending a couple inches underneath.	East	South
AA618	SUBS	Substructure Cracking < .01	Bent_12	(blank)	2 cracks. 1.5 ft from end of each ledge between guideways.	2 vertical cracks in between guideways approximately 1.5 ft from end of ledge. Vertical cracks starting at the bottom of cap about half way up. Extend couple inches to the underside of cap.	East	
AA619	SUBS	Substructure Map Cracking	Bent_12	(blank)	Stem face between beams 1-3	Consistent map cracking on face of stem between beams 1-3. Coving 80percent of area. Additional cracking protruding from conduit hole between beam 1 and 2.	West	North
AA62	SUBS	Substructure .01<Cracking < .02	Bent_13A	(blank)	All column corners along the height of the column	Horizontal cracks propagating from column corner towards the center of the column face. Occurs at corner of each column face. 5 to 15 inches in length spaced at 12 to 24 in on center along column height.	North	
AA620	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	1 full height crack between beams 1 and 2 about 1.5 ft from beam 1. 2 full height cracks between beams 2-3. 1 full height crack under beam 3.	4 Vertical full height cracks. Between beams 1-3. Spall 1in. dameter pop out between beams 2 and 3 on full height vertical crack.	West	North
AA621	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	Between north and south apm, approximately 2-5ft from north apm.	2 diagonal cracks and 1 horizontal crack, signs of repair.	West	North
AA622	SUBS	Substructure Cracking < .01	Bent_11	(blank)	3 vertical cracks on ledge: 2 under beam 2 and 3 each. And 1 between beams 2 and 3. 1 diagonal crack on tapered ledge end.	Thin vertical cracks on ledge between beams 1-3. 1 diagonal on tapered end of ledge.	East	North
AA623	SUBS	Substructure Cracking < .01	Bent_11	(blank)	Between guideways	Numerous vertical cracks spaced 18" at lower half of cap. Map cracking on entire upper half of bent	East	East
AA624	SUBS	Substructure Spalling	Bent_11	(blank)	Top of stem at northeast corner		East	North
AA625	SUBS	Substructure Cracking < .01	Bent_12	(blank)	Diagonal cracks at corners of ledge into a horizontal on east side and a diagonal crack from corner of ledge on west side.	East end diagonal into horizontal. West end diagonal.	North	North
AA626	SUBS	Substructure Cracking < .01	Bent_11	(blank)	Diagonal cracks at corners of ledge into a horizontal	East end diagonal into horizontal. West end diagonal.	North	North
AA627	SUPS	Superstructure Cracking	Bent_11	(blank)	Deck overhang above cap	Full height and full width transverse cracks at deck overhang. 4 cracks on deck curb and deck.	North	North
AA628	SUPS	Superstructure Spalling	Bent_11	(blank)	Bottom of deck curb above east end of cap stem	Longitudinal spall along track on deck curb.	North	North

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA629	SUBS	Substructure Honeycombs	Bent_11	(blank)	Lower stem between beams 1&2		West	North
AA63	SUBS	Substructure Spalling	Bent_14A	(blank)	Ground to 3 feet high.	Couple of spalled concrete, rebar becoming exposed	North	
AA630	SUBS	Substructure Cracking < .01	Bent_11	(blank)	1 between beam 1-2. 1 between beam 2-3. 2 under beam 3. All on ledge.	All vertical crack, starting at bottom of ledge.	West	North
AA631	SUPS	Superstructure Cracking	Bent_11	(blank)	Near bent east faces, 3 total	Vertical cracks.	North	South
AA632	SUBS	Substructure Cracking < .01	Bent_11	(blank)	Between guideways	Vertical cracks for 20' Wide every 12" to 24". 10 total	North	West
AA633	SUBS	Substructure Map Cracking	Bent_10	(blank)	Stem face between beams 1-3. Map cracking between beams 1-2. Horizontal me vertical cracks between 2-3.	Map cracking in 80 percent of area between beams 1-2.	East	North
AA634	SUBS	Substructure Cracking < .01	Bent_10	(blank)	3 vertical cracks between beams 1-2 on ledge. 1 underneath beam 3.	Vertical Cracks	East	North
AA635	SUBS	Substructure .01<Cracking < .02	Bent_10	(blank)	Between guideways	Vertical cracks spaced at 18" to 24" for 20' wide	East	North
AA636	SUBS	Substructure Cracking < .01	Bent_10	(blank)	South end of north apm ledge	Vertical crack on the end of ledge to the top of ledge. Extends couple inches underneath.	East	North
AA637	SUBS	Substructure .01<Cracking < .02	Bent_10	(blank)	Between guideways	10 vertical cracks spaced 12" to 24" for 10'	West	North
AA638	SUPS	Superstructure Spalling	Bent_10	Span_09	Deputy face of north apm deck, adjacent to stem.	Spalling at deck	West	North
AA639	SUBS	Substructure Cracking < .01	Bent_10	(blank)	Between guideways	Several horizontal cracks 2' from top of cap	West	North
AA64	SUBS	Substructure Spalling	Bent_13A	(blank)	Mid height of the column	Concrete spall with signs of corrosion	West	
AA640	SUBS	Substructure Cracking < .01	Bent_10	(blank)	Ledge face below beams. 4 cracks: 1 below beams 2 and 3 each, one between beams 2-3, and 1 between beams 1-2.	Vertical from bottom of ledge	West	North
AA641	SUBS	Substructure Delamination	Bent_10	(blank)	Bottom edge of cap	60" L x 2" H x 1" D delaminated and spalling	North	North
		Substructure Spalling	Bent_10	(blank)	Bottom edge of cap	60" L x 2" H x 1" D delaminated and spalling	North	North
AA642	SUBS	Substructure .01<Cracking < .02	Bent_10	(blank)	1 horizontal crack crack full width 48in. 1 vertical 36in. 2 horizontal 24in one above ledge and one below. 2 vertical 24in vertical cracks.	Horizontal and vertical.	North	North
AA643	SUBS	Substructure Spalling	Bent_09	(blank)	Lower half of cap between guideways. Numerous locations.	Numerous pop-outs of various sizes ranging from 1-2in in diameter. Exposed rebar/rebar ties. Signs of corrosion. May create spalling.	East	East
AA644	SUBS	Substructure Cracking < .01	Bent_09	(blank)	Between guideways	Vertical cracks spaced 8" to 15" for 20' at lower half of cap	East	East
AA645	SUPS	Superstructure Cracking	Bent_09	Span_09	Intersection between decks of South side of north apm deck and middle connection deck.	Intersection of decks	East	North
AA646	SUPS	Superstructure Cracking	Bent_09	(blank)	Deck between guideways	One 20' horizontal crack and three vertical cracks	East	East
AA647	SUPS	Superstructure Cracking	Bent_09	Span_09	Intersection between decks of north side of south apm deck and middle connection deck.	Intersection of decks horizontal and diagonal cracking.	East	South
AA648	SUBS	Substructure Cracking < .01	Bent_09	(blank)	1 below beam 3. 1 between beams 2-3.	Hairline vertical cracks from bottom of ledge.	East	North
AA649	SUBS	Substructure Honeycombs	Bent_09	(blank)	Stem face entire bent	Stem face, entire bent.	West	West
AA65	SUBS	Substructure Spalling	Bent_14A	(blank)	Left face of column about 5 feet above paving	Spalled concrete on NE corner. No exposed rebar yet	North	
AA650	SUBS	Substructure Cracking < .01	Bent_09	(blank)	Between and under beams 3 & 4	Vertical from bottom of cap	West	North
AA651	SUPS	Superstructure Cracking	Bent_09	(blank)	Full height and full width transverse cracks at deck overhang.	4 cracks on deck curb and deck.	North	North
AA652	SUBS	Substructure Delamination	Bent_09	(blank)	Bottom northeast corner	30" spalling and delaminated on the bottom edge	North	North
AA653	SUBS	Substructure Cracking < .01	Bent_08	(blank)	8 full height racks between beams 2-5 on ledge.	Vertical full height of ledge.	East	North
AA654	SUBS	Substructure Honeycombs	Bent_08	(blank)	The entire Stem face	Full stem.	East	East
AA655	SUBS	Substructure .01<Cracking < .02	Bent_08	(blank)	Edge of west stem	Diagonal crack	North	North
AA656	SUPS	Superstructure Cracking	Bent_08	Span_07	About 8 inches from bottom of deck on north deck face. Longitudinal joint full span.	Longitudinal crack	North	North
AA657	SUPS	Superstructure Cracking	Bent_08	(blank)	1' from face of cap on overhang	Full height and full width transverse cracks at deck overhang.	North	North
AA658	SUBS	Substructure Not Quantified	Bent_08	(blank)	Bottom north corner of stem above ledge	Wood form left in place. There is a large void behind the wood in the stem	East	North
AA659	SUPS	Superstructure Cracking	Bent_08	Span_07	hairline longitudinal cracks at end of beams on web and bottom flange. Typical beams 1-4	Small hairline cracks protruding from edge of beam at web. Typical on each side. Lengths vary from 3 to 6 in	West	North
AA66	SUBS	Substructure Spalling	Bent_13A	(blank)	6 ft and 15 ft above the ground	Spalls with exposed rebar and signs of corrosion. Multiple locations along the face . Approx count 20 to 30. 0.5 to 1.5 in in diameter	East	
AA660	SUBS	Substructure .01<Cracking < .02	Bent_08	(blank)	9 vertical cracks on ledge face between beams 2-4. 5 cracks extend to the underside about halfway.	5 cracks full height on ledge face extending to bottom of cap. Rest are on ledge face.	West	North
AA661	SUBS	Substructure Cracking < .01	Bent_08	(blank)	Between guideways	Vertical cracks 36" at bottom of cap spaced every 12" for 20'	West	West
AA662	SUPS	Superstructure Spalling	Bent_08	Span_07	3 spalls between beams 2-3 and beams 3-4 and south overhang. Adjacent to deck joint. Bottom side of deck	Spalls at deck joint on bottom side of deck.	West	North
AA663	SUBS	Substructure .01<Cracking < .02	Bent_08	(blank)	South end of ledge	Vertical crack on end of cap ledge	West	North
AA664	SUBS	Substructure Spalling	Bent_07	(blank)	Top of ledge between beams 3-4.	Top of ledge	East	North
AA665	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Below beams 1-4 on ledge	11 vertical cracks on face of ledge	East	North
AA666	SUBS	Substructure Spalling	Bent_07	(blank)	Between beams 2 & 3 at top of stem	Spall with exposed rebar	East	North

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AA667	SUBS	Substructure .01<Cracking < .02	Bent_07	(blank)	Behind beams 2, 3, 4.	Concrete depression, with section loss, and exposed rebar. Signs of corps soon. Multiple diagonal cracks	East	North
AA668	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Diagonal cracks at corners of ledge into a horizontal	Diagonal cracks starting at ledge corners connected into 1 large crack.	North	North
AA669	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Stem face between beams 1-4. 2 between adjacent beams.	Diagonal cracks approximately full height.	West	North
AA67	SUBS	Substructure Not Quantified	Bent_14A	(blank)	NE corner of column	6" x 2" concrete area on column has been patched	East	
AA670	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Below and between beams 1-4	15 vertical cracks in ledge	West	North
AA671	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Between and below beams 5-8	Several vertical cracks on face of ledge	West	South
AA672	SUPS	Superstructure Cracking	Bent_M1	(blank)	12in. vertical and 12. width transverse cracks at deck overhang.	3 cracks on deck curb and deck.	West	West
AA673	SUBS	Substructure Cracking < .01	Bent_M1	(blank)	Bent cap between beams 3&4	3 hairline vertical cracks	South	South
AA674	SUBS	Substructure Cracking < .01	Bent_M1	(blank)	3 cracks. Cap face between guideways. Mid height of stem.	Horizontal cracks at mid height of stem	South	South
AA675	SUBS	Substructure Spalling	Bent_M1	(blank)	Bearing seat under beam 4	Spall on bearing seat	North	West
AA676	SUBS	Substructure Cracking < .01	Bent_M1	(blank)	5 vertical cracks on Cap between guideways.2 on ends of ledge on each side.	Vertical cracks extend to the underside a couple inches.	North	North
AA677	SUBS	Substructure .01<Cracking < .02	Bent_14	(blank)	Full height ledge cracks between beams 8-9.	Vertical.	West	South
AA678	SUBS	Substructure Map Cracking	Bent_14	(blank)	South column, top 1/3	Numerous horizontal cracks full width	South	South
AA679	SUBS	Substructure .01<Cracking < .02	Bent_14	(blank)	Face of bent, 1 vertical at ledge end. 1 horizontal at half cap height. 1 1.5ft above bottom of cap.	Vertical is full height. One of horizontals is full width.	South	South
AA68	SUBS	Substructure Honeycombs	Bent_13A	(blank)	Along the height of the column	Honeycombs on all column faces . Approx 50 to 70 sf per face	North	
AA680	SUBS	Substructure Cracking < .01	Bent_14	(blank)	Over south column	1 vertical and 1 horizontal	East	South
AA681	SUPS	Superstructure Spalling	Bent_14	(blank)	Deck overhang over bent 4	Large spall at deck overhang. With two transverse cracks of full height and full width. Cracks 36in to 48in. 0.015 in width.	East	South
AA682	SUPS	Superstructure Spalling	Bent_M1	Span_52	Curb face	Pop out 3in diameter.	East	East
AA683	SUBS	Substructure .01<Cracking < .02	Bent_M2	(blank)	Entire ledge approximately every 24in. Entire ledge approx 24in	Vertical full height cracks. Extending 8-10 inches underneath cap.	North	North
AA684	SUBS	Substructure Cracking < .01	Bent_M1	(blank)	Full width	Cracks full width of underside of beam every 12 in	Underside of bent cap	Underside of bent cap
AA685	SUBS	Substructure Spalling	Bent_M2	(blank)	Bottom of ledge mid span.	Concrete is deteriorating.	North	North
AA686	SUBS	Substructure Displacement	Bent_M1	(blank)	Bearing pad under beam 6	West side compressed, east side beam is not resting on bearing for 7 in	North	West
AA687	SUBS	Substructure Map Cracking	Bent_M2	(blank)	West end of cap between ledge and end of cap. Approximately 10ft long.	Map cracking in 90percent of surface.	North	North
AA688	SUPS	Superstructure Delamination	Bent_M2	Span_52	Deck overhang adjacent to bent face	Delaminations with spall of 10"x5"x1"	West	West
AA689	SUBS	Substructure Cracking < .01	Bent_M1	(blank)	Bent cap end	4 horizontal cracks	West	West
AA69	SUBS	Substructure Cracking > 0.02	Bent_14A	(blank)	Corners of column mostly. Some interior vertical cracks on East face	Multiple cracks on corners of column mostly. Some map cracks on East face of column	All Faces	
AA690	SUBS	Substructure Cracking < .01	Bent_M2	(blank)	Every 24" on face of ledge entire ledge of approximately 25 ft.	Vertical	South	South
AA691	SUBS	Substructure Cracking < .01	Bent_M2	(blank)	Bent cap end	2 horizontal cracks	East	East
AA692	SUBS	Substructure .01<Cracking < .02	Bent_M2	(blank)	Cap face between ledge and end of cap. 3 cracks: 1 vert, 1 diagonal, 1 horizontal		South	East
AA693	SUBS	Substructure Cracking > 0.02	Bent_M2	(blank)	Southeast corner of ledge	1 vertical crack at end of ledge	South	East
AA694	SUBS	Substructure Cracking > 0.02	Bent_M2	(blank)	Bent cap west of beam 6	Diagonal crack	South	West
AA695	SUBS	Substructure .01<Cracking < .02	Bent_M3	(blank)	1.5 feet from end of cap.	Vertical.	North	North
AA696	SUBS	Substructure .01<Cracking < .02	Bent_M3	(blank)	Horizontal cracking top 8ft of columns every 12 inches.		West	West
AA697	SUBS	Substructure Cracking < .01	Bent_M3	(blank)	Bent cap end, with one horizontal crack	1 diagonal crack from bent cap corner and 2 horizontal with one extending to north side	West	West
AA698	SUBS	Substructure Cracking < .01	Bent_M3	(blank)	Vertical cracks every 18 inches. On the entire ledge approximately 30ft long.	Verifical cracks full height extending few inches to the underside.	North	North
AA699	SUBS	Substructure .01<Cracking < .02	Bent_M3	(blank)	2 horizontal center height of cap. 1 horizontal on bottom of cap	2 horizontal cracks at mid height extend to cap faces on the north and south side. 1 horizontal at cap and columns Interface	East	East
AA7	SUBS	Substructure .01<Cracking < .02	Bent_02A	(blank)	Right side of column, about 2 feet above ground	Horizontal crack	West	
AA70	SUBS	Substructure None	Bent_01	(blank)		No deficiencies found	All Faces	
AA700	SUBS	Substructure Cracking < .01	Bent_M3	(blank)	Bent cap stem east of beam 1	3 diagonal and 1 vertical	South	East
AA701	SUBS	Substructure Cracking > 0.02	Bent_M3	(blank)	Behind beam 1	Diagonal crack	South	East
AA702	SUBS	Substructure Cracking < .01	Bent_M3	(blank)	Vertical crack every 24in in on entire ledge face approximately 45 ft long.	Vertical cracks extending to underside for various lengths.	South	South
AA703	SUBS	Substructure .01<Cracking < .02	Bent_M4	(blank)	Vertical crack every 12in in on entire ledge face and bent face underneath ledge and under cap. Crack wrap around the cap to the south bent face and ledge. approximately 45 ft long ledge.	Crack full height of ledge, cap under ledge, and underneath cap.	North	North

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA704	SUBS	Substructure Cracking < .01	Bent_M4	(blank)	Bent cap stem east of beam 1	2 vertical cracks	North	East
AA705	SUBS	Substructure Cracking < .01	Bent_M4	(blank)	3 cracks: 2 horizontal mid height of cap. 1 at bottom of cap.		North	North
AA706	SUBS	Substructure .01<Cracking < .02	Bent_M4	(blank)	Several cracks @ 18in top 5 ft of columns.	Horizontal.	East	East
AA707	SUBS	Substructure Cracking > 0.02	Bent_M4	(blank)	Bent cap stem east of beam 1	2 diagonal cracks	South	East
AA708	SUBS	Substructure Delamination	Bent_M4	(blank)	Bent cap ledge under beam 11	Delaminated area under beam 11	South	West
AA709	SUBS	Substructure .01<Cracking < .02	Bent_M5	(blank)	Bent cap stem between beams 13&14	Horizontal crack with vertical cracks every 12in	North	West
AA71	SUBS	Substructure None	Bent_02	(blank)		No deficiencies	All Faces	
AA710	SUBS	Substructure Cracking > 0.02	Bent_M5	(blank)	over center columns.	Wide Vertical crack through ledge and cap below ledge. Full height below ledge. Wide crack on stem face above ledge.	North	North
AA711	SUBS	Substructure .01<Cracking < .02	Bent_M5	(blank)	Below beam 9 towards column	Diagonal crack	North	West
AA712	SUBS	Substructure Cracking < .01	Bent_M5	(blank)	Vertical crack every 24in on east span of cap	Vertical cracks extending to underside for various lengths.	North	North
AA713	SUPS	Superstructure Delamination	Bent_M5	(blank)	Deck above north side corner of bent M5	Delaminated and about to spall off	East	East
AA714	SUBS	Substructure .01<Cracking < .02	Bent_M6	(blank)	Vertical crack on ledge below beams 2-9	Vertical	North	North
AA715	SUBS	Substructure Cracking < .01	Bent_M5	(blank)	Between columns 1&2	Vertical cracks full height of bent ledge and lower cap, every foot	South	South
AA716	SUBS	Substructure Cracking > 0.02	Bent_M5	(blank)	Cap and stem above center columns. Vertical cracks in construction joint.	Large vertical crack full height of stem and ledge.	South	South
AA717	SUBS	Substructure .01<Cracking < .02	Bent_M5	(blank)	Bent cap stem between beams 14&15	One horizontal and vertical every 12 in	South	West
AA718	SUBS	Substructure Spalling	Bent_M6	(blank)	East face of cantilever. Mid height of ledge.	Shallow spall. Exposed rebar. And signs of corrosion.	East	East
AA719	SUPS	Superstructure Spalling	Bent_M6	(blank)	Deck side above bent M6	Large spall	East	East
AA72	SUBS	Substructure None	Bent_03	(blank)		No deficiencies	All Faces	
AA720	SUBS	Substructure .01<Cracking < .02	Bent_M6	(blank)	East face of cantilever. 2 horizontal cracks and 2 vertical cracks. Horizontal at ledges top and bottom. Vertical at ledge edges.	2 horizontal cracks and 2 vertical cracks.	East	East
AA721	SUPS	Superstructure Cracking	Bent_56	Span_56	Along side of deck	Horizontal crack along span	East	North and south
AA722	SUBS	Substructure .01<Cracking < .02	Bent_M6	(blank)	Cap face over cantilever column. 2 full height vertical. 3 horizontal.		North	North
AA723	SUBS	Substructure Cracking < .01	Bent_M5	(blank)	Bent cap west of beams	One horizontal and one vertical full height	South	West
AA724	SUBS	Substructure Cracking < .01	Bent_M6	(blank)	Bent cap ledge	4 vertical cracks full height of ledge	South	West
AA725	SUPS	Superstructure Spalling	Bent_M6	(blank)	Deck over cantilever on south side. 6 spalls.	6 spalls of varying sizes on deck edge.	South	South
AA726	SUBS	Substructure Spalling	Bent_M6	(blank)	East face of cantilever on the south side of face near ledge edge.	Small spall with exposed rebar. Signs of corrosion.	East	East
AA727	SUBS	Substructure Cracking < .01	Bent_M5	(blank)	Bent cap stem	2 vertical full height and 5 vertical at top of cap	South	West
AA728	SUBS	Substructure .01<Cracking < .02	Bent_M6	(blank)	4 horizontal wrap around to cap. 1 vertical,		West	West
AA729	SUBS	Substructure .01<Cracking < .02	Bent_M5	(blank)	3 horizontal cracks: 2 on cap wrap around to cap north and south faces. 1 at column and cap interface.	Horizontal cracks	West	West
AA73	SUBS	Substructure None	Bent_04	(blank)		No deficiencies	All Faces	
AA730	SUBS	Substructure Cracking < .01	Bent_M5	(blank)	Bent cap stem west of beams	2 vertical, 2 horizontal and 3 diagonal	North	West
AA731	SUBS	Substructure Cracking < .01	Bent_M5	(blank)	6 vertical cracks full height on ledge under 3 west most beams.		North	West
AA732	SUBS	Substructure .01<Cracking < .02	Bent_15	(blank)	Cap face over south column.	Multiple diagonal and 1 vertical full height cracks. Diagonal crack wraps around to south face of cap.	West	South
AA733	SUBS	Substructure .01<Cracking < .02	Bent_15	(blank)	South bent face at the top half.	2 horizontal and 2 diagonal crack.	South	South
AA734	SUBS	Substructure .01<Cracking < .02	Bent_15	(blank)	Top 20ft of column below cap. Every 12 inches.	Wrap around column to east and west face. Horizontal cracks.	South	South
AA735	SUBS	Substructure Cracking > 0.02	Bent_15	(blank)	Cap face over south column.	3 diagonal cracks.2 wrap around to south face of column.	East	South
AA736	SUBS	Substructure .01<Cracking < .02	Bent_13	(blank)	Top 12 ft of column every 12inches.	Horizontal cracks wrap around to column east and west face.	South	South
AA737	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Bent cap end	Horizontal crack and 3 vertical at bottom of cap	South	South
AA738	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Vertical cracks stem face between beams 6-7	7 Full height vertical between beams 6-7	East	South
AA739	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Bearing seats for beams 7-9	Horizontal cracks at bottom of bearing seats	East	South
AA74	SUBS	Substructure None	Bent_04	(blank)		No deficiencies	All Faces	
AA740	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Stem face between beams 7-8	2 diagonal crack	West	South
AA741	SUBS	Substructure Cracking < .01	Bent_13	(blank)	Bent cap ledge between beams 7&8, extending under cap	Vertical cracks- 4	West	South
AA742	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	Over columns.	Diagonal crack wrapping around into south face of cap.	East	South
AA743	SUBS	Substructure Cracking < .01	Bent_08	(blank)	Bent cap south of beam 8, vert cracks at bottom extending underneath cap	3 diagonal cracks and vertical cracks every 12 in	East	South
AA744	SUBS	Substructure Cracking < .01	Bent_12	(blank)	Ledge face between beams 4-8. Spaced approximately every 18in for a total of 18ft.	Full height vertical cracks extend to the underside	East	South
AA745	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	Every 12inches for top 15ft of column.	Horizontal cracks.	South	South
AA746	SUBS	Substructure Cracking < .01	Bent_12	(blank)	Bent cap end, one full width and 1 on east side and 1 on west side	3 Horizontal cracks, 2 shorter cracks extend to side	South	South

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA747	SUBS	Substructure .01<Cracking < .02	Bent_12	(blank)	Cap face over south column.	2 diagonal cracks. Cracks wrap around to baking end of cap.	West	South
AA748	SUBS	Substructure Cracking < .01	Bent_12	(blank)	Bent cap south of beams	6 diagonal cracks	West	South
AA749	SUBS	Substructure Cracking < .01	Bent_12	(blank)	Between beams 4-6	13 vertical cracks extending to the underside.	West	South
AA75	SUBS	Substructure None	Bent_06	(blank)		No deficiencies	All Faces	
AA750	SUBS	Substructure Cracking < .01	Bent_11	(blank)	Ledge face between beams 4-7	4 full height vertical cracks extend few inches underneath bent.	East	South
AA751	SUPS	Superstructure Cracking	Bent_11	(blank)	North of beam 4 on underside of deck and up side of deck	Full height and full width transverse cracks at deck overhang	North	South
AA752	SUBS	Substructure Cracking < .01	Bent_11	(blank)	Ledge face between beams 5-8	5 full height vertical cracks extend few inches underneath bent.	West	South
AA753	SUPS	Superstructure Cracking	Bent_11	(blank)	Underside and side of deck north of beam 4	Two Full height and full width transverse cracks at deck overhang and two vertical cracks	West	South
AA754	SUBS	Substructure Cracking < .01	Bent_11	(blank)	Diagonal cracks at corners of ledge on each edge and full width horizontal crack center of stem face		South	South
AA756	SUBS	Substructure Cracking < .01	Bent_10	(blank)	Vertical cracks on ledge face below beams 4-7	7 full height vertical cracks. Extend couple inches underneath cap.	East	South
AA757	SUBS	Substructure Cracking < .01	Bent_10	(blank)	Between beams 4&5 and 5&6	Horizontal cracks (2)	East	South
AA758	SUBS	Substructure .01<Cracking < .02	Bent_10	(blank)	Diagonal cracks starting at ledge corners- 2 in total. horizontal crack full width and wrapping around face of stem.		South	South
AA759	SUBS	Substructure Cracking < .01	Bent_10	(blank)	Ledge face between beams 4-7.	6 full height vertical cracks extend couple inches underneath bent.	West	South
AA76	SUBS	Substructure Map Cracking	Bent_01	(blank)	Map cracking on all faces	Up to 0.02" map cracking full height and width of column	All Faces	
AA760	SUPS	Superstructure Cracking	Bent_10	Span_10	Beam 4 bottom flange north corner, west end of beam	Diagonal crack on beam corner	West	South
AA761	SUBS	Substructure Cracking < .01	Bent_09	(blank)	Ledge face between beams 5-8	8 full height vertical cracks extend couple inches underneath bent.	West	South
AA762	SUBS	Substructure Cracking > 0.02	Bent_09	(blank)	Bent cap end extending down from top of cap	Vertical crack	South	South
AA763	SUBS	Substructure Cracking < .01	Bent_09	(blank)	Stem face 1 at mid height. One at edge of ledge.	2 full width cracks.	South	South
AA764	SUBS	Substructure .01<Cracking < .02	Bent_08	(blank)	Stem face edge of ledge.	Diagonal crack from edge of west ledge.	South	South
AA765	SUPS	Superstructure Spalling	Bent_08	(blank)	deck joint between beams 2&3, 3&4, and overhang	2 spalls	West	North
AA766	SUPS	Superstructure Spalling	Bent_08	(blank)	underside at southeast corner	minor spall	East	South
AA767	SUBS	Substructure Cracking < .01	Bent_08	(blank)	Bent cap ledge and extending to underside	7 Vertical cracks extend full width underside of cap	East	South
AA768	SUBS	Substructure Cracking < .01	Bent_08	(blank)	Bent cap stem between beams 4&5	Horizontal crack	West	South
AA769	SUBS	Substructure Cracking < .01	Bent_08	(blank)	Ledge face between 4-6.	6 full height vertical cracks. Between beams 4-6. Extend couple inches below cap.	West	South
AA77	SUBS	Substructure Honeycombs	Bent_01	(blank)	Various areas on column	Up to 2" long. Full height and full width on all sides. Some honeycombing have become spalls	All Faces	
AA770	SUBS	Substructure .01<Cracking < .02	Bent_07	(blank)	Diagonal cracks starting at ledge corners- 2 in total. horizontal crack full width and wrapping around face of stem.		South	South
AA771	SUBS	Substructure Delamination	Bent_07	(blank)	Top of bent cap	1 sq ft delaminated	South	South
AA772	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Ledge face between beams 4-6	5 vertical cracks on face of ledge.	East	South
AA773	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Bent cap stem between beams 5&6	Diagonal crack	East	South
AA774	SUBS	Substructure Cracking < .01	Bent_07	(blank)	Between beams 3&4	Horizontal crack and vertical cracks every 12 in	East	North and south
AA775	SUBS	Substructure .01<Cracking < .02	Bent_07	(blank)	Taper on south end of ledge.	3 diagonal cracks on ledge end.	East	North
AA776	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Bent cap stem between beams 3&4	1 horizontal crack and vertical cracks every 12in	East	North and south
AA777	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Ledge face between beams 4-6.	4 Vertical cracks full height.	East	South
AA778	SUPS	Superstructure Cracking	Bent_14A	(blank)	Guideway 1 deck, south face	Vertical cracks every 12 in on side of deck	East	North
AA779	SUBS	Substructure .01<Cracking < .02	Bent_14A	(blank)	On cap adjacent to south face of ledge.	Diagonal crack ends sing 12-18 in below cap.	East	South
AA78	SUBS	Substructure None	Bent_02	(blank)		Column not visible	All Faces	
AA780	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Mid height of bent cap, south of beam 6	Horizontal crack	East	South
AA781	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Face of cap. 2 horizontal at his height. 1 about 1.5 feet above the column.	2 horizontal at mod height wrap around cap to east and west face. 1 horizontal in middle of cap.	South	South
AA782	SUBS	Substructure Rusting	Bent_14A	(blank)	Underside of cap	Rusting rebar chairs	Underside of cap	South
AA783	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Every 12 inches top 20 ft of columns.	Horizontal.	South	South
AA784	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Bent cap ledge under beams 4-6	Vertical Cracks	West	South
AA785	SUBS	Substructure .01<Cracking < .02	Bent_14A	(blank)	Cap face between south end of ledge and end of cap	4 diagonal cracks full height extending from column. 2 wrap a couple inches below cap.	West	South
AA786	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Bent cap between beams 4&5	1 horizontal crack and vertical cracks every 12in extending to underside	West	North and south
AA787	SUBS	Substructure Rusting	Bent_13A	(blank)	Side and underside of bent cap	Rusting rebar chairs	East	South
AA788	SUBS	Substructure .01<Cracking < .02	Bent_13A	(blank)	East face of cap between south ledge and end of cap.	3 long 20ft horizontal cracks at middle and top of cap face. Vertical cracks bottom of cap face approximately every 12 in for 24ft. 18 in each vertical.	East	South

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA789	SUBS	Substructure Cracking < .01	Bent_13A	(blank)	Bent cap ledge under beams 4-6	4 vertical cracks	East	South
AA79	SUBS	Substructure None	Bent_03	(blank)		Column not visible	All Faces	
AA791	SUPS	Superstructure Spalling	Bent_13A	Span_13A	Beam bottom flange south face a beam end.	Exposed stirrups. Beam in contact with cap face probable cause of spall. If a if corrosion.	South	South
AA792	SUBS	Substructure Cracking < .01	Bent_13A	(blank)	South cap face. 2 horizontal cracks at hud height.	Horizontal.	South	South
AA793	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Bent cap between beams 3&4	3 horizontal cracks and vertical cracks spaced every 12 in	East	North and south
AA794	SUBS	Substructure Delamination	Bent_13A	(blank)	3 feet north of beam 3 on cap face.	Delamination may spall and impact traffic.	East	South
AA795	SUBS	Substructure Spalling	Bent_13A	(blank)	Top of cap between beams 4&5	Spall	East	South
AA796	SUBS	Substructure Cracking < .01	Bent_13A	(blank)	Bent cap ledge under beams 4-6	3 vertical cracks	West	South
AA797	SUBS	Substructure .01<Cracking < .02	Bent_13A	(blank)	At face between south ledge and end of cap.	4 long horizontal cracks 22ft long each. Vertical cracking every 12 in pm the top and bottom edge of cap for about 25ft. 24in each. Vertical cracks on bottom edge extend couple inches underneath cap.	West	South
AA798	SUBS	Substructure Spalling	Bent_13A	(blank)	On ledge face below beam 4	2 spots of exposed rebar underneath beam. Signs of corrosion.	West	South
AA799	SUBS	Substructure Cracking < .01	Bent_13A	(blank)	Bent cap between beams 3&4	2 30 ft horizontal crack, 2 15 ft horizontal crack, vertical cracks spaced every 12 in and extending underneath cap	West	North and south
AA8	SUBS	Substructure Spalling	Bent_03A	(blank)	Left side of column, about 1.5 feet above ground	Rebar exposed, corrosion	West	
AA80	SUBS	Substructure Map Cracking	Bent_04	(blank)	Map cracking along entire face of column on all sides	Up to 0.02" width of cracks around full width and height of column	All Faces	
AA800	SUBS	Substructure Spalling	Bent_01	(blank)	Stem face below bearing seat at beam 2	Spall below bearing seat	West	North
AA801	SUBS	Substructure Spalling	Bent_01	(blank)	Bearing seat under beam 1	Spall on bearing seat	West	North
AA802	SUBS	Substructure Map Cracking	Bent_01	(blank)	Ledge face of north apm	Entire face approximately 12 ft wide.	West	North
AA803	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Bent cap end at corners	2 diagonal cracks	North	North
AA804	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Entire north ledge face	4 vertical cracks	East	North
AA805	SUBS	Substructure Cracking < .01	Bent_14A	(blank)	Bent cap ledge under beams 1&2	2 vertical cracks	West	North
AA806	SUBS	Substructure Cracking < .01	Bent_13A	(blank)	Entire ledge face	3 vertical cracks.	East	North
AA807	SUBS	Substructure Spalling	Bent_13A	(blank)	Bent cap top of ledge above south face of beam 3	Spall with 0.5 sq ft delaminated	East	North
AA808	SUBS	Substructure Spalling	Bent_13A	(blank)	At column and cap interface.	Spall at column send cap interface. Form work was left behind during construction. Exposed wood form work.	East	North
AA809	SUBS	Substructure Cracking < .01	Bent_13A	(blank)	Bent cap end	2 horizontal cracks, and 2 diagonal cracks, one from each corner	North	North
AA81	SUBS	Substructure Honeycombs	Bent_04	(blank)	Full height and full width of column	Up to 2" in width, honeycombing across all faces and full height and width of column	All Faces	
AA810	SUPS	Superstructure Spalling	Bent_13A	Span_12A	Top flange adjacent to bent	Seems to have occurred before the paint.	South	East
AA811	SUBS	Substructure .01<Cracking < .02	Bent_13A	(blank)	Entire north ledge face	4 vertical full height cracks.	West	North
AA812	SUBS	Substructure Cracking < .01	Bent_12A	(blank)	Bottom edge of cap cantilever below ledge.	7 vertical cracks.	East	South
AA813	SUBS	Substructure Cracking > 0.02	Bent_12A	(blank)	Bent cap between beams 3&4	3 diagonal cracks	East	North and south
AA814	SUBS	Substructure .01<Cracking < .02	Bent_12A	(blank)	South ledge	2 Vertical cracks.	East	North
AA815	SUBS	Substructure Cracking < .01	Bent_12A	(blank)	Bent cap between beams 3&4	1 horizontal crack and vertical cracks spaced every 12 in	East	North and south
AA816	SUBS	Substructure .01<Cracking < .02	Bent_12A	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack center of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack. horizontal crack full width and wrapping around face of stem.	South	South
AA817	SUBS	Substructure .01<Cracking < .02	Bent_12A	(blank)	Entire north ledge face.	4 vertical cracks.	East	North
AA818	SUBS	Substructure Delamination	Bent_12A	(blank)	Bottom of Bent cap, above column on south side	1 sq ft delaminated, and 8 ft crack	East	North
AA819	SUBS	Substructure Displacement	Bent_12A	Span_11A	Bearing for beam 5	Bearing has displaced about 2 in to the south. South end of beam not fully in contact with bearing. Only in contact about half way.		
AA82	SUBS	Substructure Spalling	Bent_04	(blank)	SW corner of column, 2 feet above ground	Spall on corner of column, about half inch deep	South	
AA820	SUBS	Substructure Cracking < .01	Bent_12A	(blank)	Bent cap between beams 3&4	2 diagonal cracks, 4 horizontal	West	North and south
AA821	SUBS	Substructure Cracking < .01	Bent_12A	(blank)	South ledge face	4 vertical full height crack.	West	South
AA822	SUBS	Substructure Spalling	Bent_12A	(blank)	South west corner of column to cap interface	Spall on crack at interface.	South	West
AA823	SUBS	Substructure Cracking > 0.02	Bent_12A	(blank)	Joint at top of column and bottom of bent cap	Crack all the way around column		
AA824	SUBS	Substructure Cracking < .01	Bent_12A	(blank)		3 vertical cracks.	West	North
AA825	SUBS	Substructure Spalling	Bent_12A	(blank)	On ledge left of beam 1	2 small spalls. With exposed rebar. Signs of corrosion.	West	North
AA826	SUBS	Substructure Cracking < .01	Bent_12A	(blank)	Bent cap end	2 diagonal cracks, one from each corner	North	North
AA827	SUBS	Substructure Cracking < .01	Bent_11A	(blank)	Diagonal cracks at corners of ledge and full width horizontal crack enter of stem face	Diagonals at edges. Horizontal at center.	South	South
AA828	SUBS	Substructure Displacement	Bent_11A	(blank)	Bearing seats under beams 1&3&5	Bearing seats 1, 3 &5 skewed east and 1&5 skewed in towards column	West	North and south

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AA829	SUBS	Substructure Cracking < .01	Bent_11A	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack center of stem face		North	North
AA83	SUBS	Substructure Honeycombs	Bent_05	(blank)	Along the height of the column	Honeycombs present on the 80% of the column surface on all 4 sides	All Faces	
AA830	SUPS	Superstructure Spalling	Bent_11A	(blank)	Bottom of side of deck above bent cap	Spall	North	North
AA831	SUBS	Substructure .01<Cracking < .02	Bent_10A	(blank)	Diagonal cracks at corners of ledge into a horizontal and full width horizontal crack center of stem face	Diagonal cracks starting at ledge corners connected into 1 large crack. horizontal crack full width and wrapping around face of stem.	South	South
AA832	SUBS	Substructure Cracking < .01	Bent_10A	(blank)	Face of Bent cap ledge extending underneath cap	5 vertical cracks	East	North and south
AA833	SUBS	Substructure Cracking < .01	Bent_10A	(blank)	Bent cap ledge	4 vertical cracks	West	North and south
AA834	SUBS	Substructure Displacement	Bent_10A	Span_09A	Bearing pad for beam 3	Beam not sitting on bearing properly. Northeast corner not in contact. Approximately 0.25in gap.	North	West
AA835	SUBS	Substructure Cracking < .01	Bent_10A	(blank)	Diagonal cracks starting at ledge corners- 2 in total. horizontal crack full width and wrapping around face of stem.		North	North
AA836	SUBS	Substructure Cracking < .01	Bent_09A	(blank)	Diagonal cracks starting at ledge corners- 2 in total. H		North	North
AA837	SUBS	Substructure Cracking < .01	Bent_09A	(blank)	Bent cap ledge	5 vertical cracks	West	North and south
AA838	SUBS	Substructure Not Quantified	Bent_09A	Span_08A	Bearing seats for beams 1 and 2 on pier 9A	Bearing seats were not cast correctly. Bearing hang of the edge of bearing seats. Additional concrete was poured to support bearing not on bearing seat.	West	
AA839	SUBS	Substructure Cracking < .01	Bent_09A	(blank)	North cap face.	5 horizontal cracks: 1 on ledges about 100in long wraps around to east and west face about 3 ft. 4 horizontal crack of 24in.	North	North
AA84	SUBS	Substructure Spalling	Bent_06	(blank)	2 feet above ground, SW corner of column	Multiple spalls on SW corner of column	South	
AA840	SUBS	Substructure Cracking > 0.02	Bent_08A	(blank)	Bent cap between beams 3&4	6 diagonal cracks	East	North and south
AA841	SUBS	Substructure Cracking < .01	Bent_08A	(blank)	Ledge face	3 vertical cracks	East	South
AA842	SUBS	Substructure .01<Cracking < .02	Bent_08A	(blank)	South cap face. Diagonal cracks from ledge edge. 2 on west side 1 on east side.	Diagonal cracks.	South	South
AA843	SUBS	Substructure Displacement	Bent_08A	(blank)	Bearing pad under beam 6	Bearing pad #6 overhanging pedestal 1/2in west, bearing pad #4&5 front half skewed south	East	South
AA844	SUBS	Substructure Cracking > 0.02	Bent_08A	(blank)	Column and cap interface.	Crack all around column at interface with intermittent spalling.	All Faces	
AA845	SUBS	Substructure Rusting	Bent_08A	(blank)	Bent cap sides and underside	Rusting rebar chairs		
AA846	SUBS	Substructure Displacement	Bent_08A	Span_07A	Bearing pads for beams 4-6	Displaced 0.25in longitudinal and 0.25in transversely	West	South
AA847	SUBS	Substructure Cracking > 0.02	Bent_08A	(blank)	Bent cap between beams 3&4	9 diagonal cracks extending into vertical at top	West	North
AA848	SUBS	Substructure Displacement	Bent_08A	Span_07A	Bearing pads beams 1-3	Bearings pads are shifted 1/4in in the transversal direction. Beam 2 is not making full contact with wearing on the north side.		
AA849	SUPS	Superstructure Spalling	Bent_07A	Span_07A	Apm walkway deck over bent cap. Spall at interface.	Transverse spall.	North	South
AA85	SUBS	Substructure Map Cracking	Bent_05	(blank)	Along the column height	Map cracking present on the 80 % of column surface on all 4 sides	North	
AA850	SUBS	Substructure Cracking > 0.02	Bent_07A	(blank)	Between beams 3&4	9 Diagonal cracks extending toward column	East	North and south
AA851	SUBS	Substructure Cracking < .01	Bent_07A	(blank)	Ledge under beams 4-6	5 vertical cracks.	East	South
AA852	SUBS	Substructure Displacement	Bent_07A	(blank)	Bearing pad for beams 4&5	Bearing seats 4&5 skewed 1/4in south; bearing seat 4 not in contact with beam on north side	West	South
AA853	SUBS	Substructure Cracking < .01	Bent_07A	(blank)	Top of bent cap	Vertical cracks every 12 in	East	North and south
AA854	SUBS	Substructure Spalling	Bent_07A	(blank)	Top of stem between beams 4-5 and 5-6.	2 spalls	East	South
AA855	SUBS	Substructure Rusting	Bent_07A	(blank)		Rusting rebar chairs		
AA856	SUBS	Substructure Cracking < .01	Bent_07A	(blank)	South diagonals cracks from ledge edges.	Two diagonal cracks from edge of ledges.	South	South
AA857	SUBS	Substructure Cracking < .01	Bent_07A	(blank)	Ledge below beams 5-7	4 vertical cracks	West	South
AA858	SUBS	Substructure Cracking > 0.02	Bent_07A	(blank)	Bent cap between beams 3&4	10 diagonal cracks extending into vertical cracks at top	West	North and south
AA859	SUBS	Substructure Cracking < .01	Bent_07A	(blank)	Top of bent cap	Vertical cracks spaced every 6 in	West	North and south
AA86	SUBS	Substructure Honeycombs	Bent_06	(blank)	Ground to 6' honeycombing. South face only visible face.	Up to 1" in width of honeycombs. Occurs up to bottom third of visible column	South	
AA860	SUBS	Substructure Cracking < .01	Bent_07A	(blank)	Ledge face	5 vertical and 3 horizontal cracks.	West	North
AA861	SUBS	Substructure Displacement	Bent_07A	Span_07A	Bearing pad 3	Bearing pad #3 skewed north 1/4in	West	North
AA862	SUBS	Substructure Cracking < .01	Bent_07A	(blank)	North face of cap.	2 diagonal cracks,2 horizontal cracks. And map cracking on 50percent of face.	North	North
AA863	SUBS	Substructure Displacement	Bent_07A	Span_07A	Bearing pad	Bearing skewed 0.25 inches towards the north.	East	North
AA864	SUBS	Substructure Cracking < .01	Bent_07A	(blank)	Under beams 1-3	4 vertical cracks	East	North
AA865	SUBS	Substructure Rusting	Bent_06A	(blank)	Underside of bent cap	Rusting rebar chairs		North
AA866	SUBS	Substructure Map Cracking	Bent_06A	(blank)	Ledge face at north apm	Map cracking covering 50% of ledge face.	East	North
AA867	SUBS	Substructure Cracking > 0.02	Bent_06A	(blank)	Between beams 3&4	10 diagonal cracks extending into vertical cracks at top	East	North and south
AA868	SUBS	Substructure Spalling	Bent_06A	(blank)	Below beam 1	Small spall with exposed rebar. Signs of corrosion. Other small popouts of 0.5in diameter.	East	North

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA869	SUBS	Substructure Spalling	Bent_06A	(blank)	Between beams 3&4	From south to north, sizes of spalls are 1 - 2 sq ft, 3 - 1 sq ft, and 6 - 0.25 sq ft	East	North and south
AA87	SUBS	Substructure None	Bent_05	(blank)	Along column height	No deficiencies found on the North, East and West faces	North	
AA870	SUBS	Substructure Cracking > 0.02	Bent_06A	(blank)	Top of cap between north and south APM	Every 12 inches between guideways for approximately 30ft.	East	East
AA871	SUBS	Substructure Spalling	Bent_06A	(blank)	Edge face between beams 4-7	15 shallow spalls with exposed rebar and signs of corrosion. 4 spalls 6-8in by 1.5 in by 0.25 in.	East	South
AA872	SUBS	Substructure Spalling	Bent_06A	(blank)	Under cap on east end	3 small popouts with exposed rebar and signs of corrosion	South	South
AA873	SUPS	Superstructure Spalling	Bent_06A	(blank)	Bottom of deck, extending into top of cap	Spall	South	South
AA874	SUBS	Substructure Displacement	Bent_06A	Span_05A	Bearing pad for beam 12(south most beam)	Bearing skewed slightly to the north and not in contact with beam.	West	South
AA875	SUBS	Substructure Cracking < .01	Bent_06A	(blank)	Bent cap has cracks extending down from each side of bearing seat on every bearing seat	Vertical cracks extending down	West	North and south
AA876	SUBS	Substructure Cracking < .01	Bent_06A	(blank)	Between beams 5&6 on cap stem	3 diagonal cracks	West	North
AA877	SUBS	Substructure Cracking < .01	Bent_06A	(blank)	Bent cap stem between beams 2&3 and 3&4	Diagonal crack	West	North
AA878	SUBS	Substructure Cracking < .01	Bent_05A	(blank)	Below beams 8, 9, 10	Vertical cracks starting at the corners of bearing seats	East	South
AA879	SUBS	Substructure Cracking > 0.02	Bent_05A	(blank)	Bent cap end, diagonal coming from west corner, horizontal full width	Horizontal crack full width and diagonal crack	South	South
AA88	SUBS	Substructure Not Quantified	Bent_05	(blank)	2ft above the ground	Paint spall. 12in by 12 in area		
AA880	SUPS	Superstructure Standing Water	Bent_05A	Span_04A	Underside of deck between beams 4&5	Several transverse cracks for 20' long with heavy efflorescence	Underside	Between beams 4&5
AA881	SUBS	Substructure Cracking > 0.02	Bent_05A	(blank)	Between beams 5&6 going towards column	4 diagonal cracks, 2 each side	West	North and south
AA882	SUPS	Superstructure Standing Water	Bent_05A	Span_04A	Underside of deck between beams 5&6	Several transverse cracks for 20' long with heavy efflorescence	Underside	Between beams 5&6
AA883	SUPS	Superstructure Spalling	Bent_05A	Span_04A	Underside of deck at bays 2,4,& 5 from bent 5	6" popout in bay 2&3. 2 - 4sf patches in bays 3&4		
AA884	SUBS	Substructure Rusting	Bent_05A	(blank)	Under bent cap	Rusting rebar chairs	Underside	North
AA885	SUBS	Substructure Cracking < .01	Bent_05A	(blank)	On ledge between beams 5&6	Vertical cracks at face of ledge	East	North
AA886	SUPS	Superstructure Leaking Expansion Joint	Bent_05A	(blank)	Between beams 1-4	Leaking from joint	East	North
AA887	SUBS	Substructure .01<Cracking < .02	Bent_04A	(blank)	In stem between beams 3&4 and 4&5	Diagonal cracking from top of stem towards column	East	North
AA888	SUBS	Substructure Delamination	Bent_04A	Span_04A	Bent cap bearing seats	Bearing seats delaminated	East	North
AA889	SUBS	Substructure Cracking > 0.02	Bent_04A	(blank)	Bent cap between beams 5&6, extends behind staircase	4 diagonal cracks, 2 each side	East	North and south
AA89	SUBS	Substructure Not Quantified	Bent_06	(blank)	From ground to mid height of column	Painted over cracks has began to chip away	South	
AA890	SUBS	Substructure .01<Cracking < .02	Bent_04A	(blank)	Stem between beam 6&7	Diagonal cracking on stem towards column	East	South
AA891	SUBS	Substructure .01<Cracking < .02	Bent_04A	(blank)	Bent cap between beams 4&5	4 diagonal cracks towards column (2 each side of column)	West	North
AA892	SUBS	Substructure Displacement	Bent_04A	Span_03A	Bearing pad under beam 2	South side is more compressed and north side is not in contact for 6"	West	North
AA893	SUBS	Substructure Displacement	Bent_04A	(blank)	Bearing pads under beams 4 and 6	North side of bearing pads compressed and south side not touching for 2 in wide	West	South
AA894	SUPS	Superstructure Standing Water	Bent_03A	Span_03A	North side of beam 5, closer to bent 4a side of span	Water leaking from metal deck		
AA895	SUBS	Substructure Cracking < .01	Bent_03A	(blank)	Bent cap end	Horizontal crack each side, extending on east and west side of cap	South	South
AA896	SUBS	Substructure Cracking < .01	Bent_03A	(blank)	Bent cap stem, south of beam 3, extending towards column	Diagonal crack	West	North
AA897	SUBS	Substructure Spalling	Bent_03A	(blank)	Top of stem between beams 2&3	Spalling on the stem	West	North
AA898	SUBS	Substructure Cracking < .01	Bent_02A	(blank)	Bent cap corner	Diagonal crack on east corner	South	South
AA899	SUBS	Substructure Cracking < .01	Bent_03A	(blank)	Diagonal cracks extending toward north and south corners of column		East	East
AA9	SUBS	Substructure Spalling	Bent_03A	(blank)	Bottom 5 feet, all faces	Bottom 5 feet, all faces, about 1-1.5 inches in diameter	All Faces	
AA90	SUBS	Substructure Delamination	Bent_06	(blank)	Top of column	Delaminated paint. Approx 5 to 6 sf. Probable cause is concrete crack and or spall causing paint swelling.	South	
AA900	SUBS	Substructure Spalling	Bent_01A	(blank)	Spall at top of cap and bottom of deck		West	South
AA901	SUBS	Substructure .01<Cracking < .02	Bent_07	(blank)	45 dg to horizontal crack from top of ledge into stem	(blank)	North	North
AA902	SUBS	Substructure Not Quantified	Bent_07	(blank)	Between beams 3&4	(blank)	East	North
AA903	SUBS	Substructure Not Quantified	Bent_09	(blank)	bottom of cap	several small pop outs	East	North
AA904	SUBS	Substructure Cracking < .01	Bent_10	(blank)	about 24" form top of stem, between beams 4&5 and 6&7	(blank)	East	South
AA905	SUBS	Substructure Displacement	Bent_26	(blank)	Displacement towards the east	1/4" deformation towards the stem	(blank)	(blank)
AA906	SUPS	Superstructure Spalling	Bent_33	Span_25	(blank)	3 exposed prestressed strands. End of beam is in contact with concrete overpour, affecting expansion	West	South
AA907	SUPS	Superstructure Not Quantified	Bent_08	Bent_08	beams 1-4	cracking in webb and back face	West	North
AA91	SUBS	Substructure Map Cracking	Bent_07	(blank)	Full height and full width	Map cracking full height and full width. Size of crack no more than 0.02	All Faces	

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
AA92	SUBS	Substructure Honeycombs	Bent_07	(blank)	Full height and full width	0.125" up to 1" in width.	All Faces	
AA93	SUBS	Substructure Spalling	Bent_07	(blank)	Left side of column, 6" above ground		East	
AA94	SUBS	Substructure Honeycombs	Bent_07	(blank)	all faces of column	Exposed reinforcement on all faces of columns. Looks to be from spalls or honeycombing.	All Faces	
AA95	SUBS	Substructure Map Cracking	Bent_08	(blank)	Full height and full width of column faces	Map cracking full height and full width of column on all faces. Up to 0.02 in crack width	All Faces	
AA96	SUBS	Substructure Honeycombs	Bent_08	(blank)	Full height and full width.	Honeycombing 0.125" up to 1" in width.	All Faces	
AA97	SUBS	Substructure Spalling	Bent_08	(blank)	Middle of column, 9ft above ground	Exposed reinforcement corroding	West	
AA98	SUBS	Substructure Spalling	Bent_08	(blank)	Left side of column, multiple locations along height of column	Vertical spalls up the height of the column	East	
AA99	SUBS	Substructure Spalling	Bent_08	(blank)	Right side of column, 2 feet above ground		North	
BB1	GDWY	Guideway Cracking	(blank)	Span_01A	Span 1	Scattered on sides and top of south guide beam EVERY 4 to 6 feet		South
BB10	SUPS	Superstructure Leaking Expansion Joint	Bent_08A		At bent	Missing seal, leaking,edge spalling		
BB100	GDWY	Guideway Spalling	Bent_12	Bent_12	At expansion joint of north running beam	2 spalls at north runningbeam expansion joint at bent 12, quantity includes both spalls		0
BB101	GDWY	Guideway Spalling	Bent_12	Bent_12	South running beam expansion joint at bent 12	Spall on south running beam expansion joint at bent 12		0
BB102	GDWY	Guideway Spalling	Bent_12	Span_12	East of bent 12 by 30ft on south running beam.	Pop out on running beam east of bent 12 by 30 ft		30 South
BB103	SUPS	Superstructure Spalling	Bent_13		North curb	Spall at north curb of guideway, exposed rebar.		0
BB104	GDWY	Guideway Spalling	Bent_13	Bent_13	1 foot east of bent 13.	2 small spalls with transverse cracking.		1
BB105	SUPS	Superstructure Leaking Expansion Joint	Bent_14		At bent	Missing joint seal		0
BB106	GDWY	Guideway Cracking	(blank)	Unknown	All spans	typical cracking and scattered mapcracking on top of North and South running beams	(blank)	
BB107	GDWY	Guideway Spalling	Bent_14	Bent_14	Expansion joint north running beam at bent 14	2 spalls at expansion joint of north running beam, quantity includes both spall		0
BB108	SUPS	Superstructure Leaking Expansion Joint	Bent_16		At bent	Missing joint seal		0
BB109	GDWY	Guideway Spalling	Bent_16	Bent_16	North running beam expansion joint at bent	2 spalls at expansion joint of north running beam, quantity includes both spall		0
BB11	GDWY	Guideway Abrasion-Wearing	(blank)	Span_08A	Full span	Abrasion on top of both running beams		
BB110	SUPS	Superstructure Water Leaking	Bent_17		Drainage trough at bent	Drainage trough at bent is filled with debris		0
BB111	SUPS	Superstructure Leaking Expansion Joint	Bent_18		At bent	Missing joint seal		0
BB112	GDWY	Guideway Spalling	Bent_18	Bent_18	North running beam expansion joint at bent.	2 spalls at expansion joint of north running beam, quantity includes both spall		0
BB113	GDWY	Guideway Spalling	Bent_18	Bent_18	South running beam expansion joint at bent	Spall at expansion joint of south runningbeam		0
BB114	GDWY	Guideway Spalling	Bent_18	Bent_18	South face of north running beam	Severe Spalling		10 South
BB115	SUPS	Superstructure Leaking Expansion Joint	Bent_20		At bent	Missing joint seal		0
BB117	SUPS	Superstructure Water Leaking	Bent_50		At bent	Clogged drain and drainage trough		0 North
BB118	SUPS	Superstructure Standing Water	Bent_50	Span_49	Span 49 near bent 50	Standing water on deck between running beams, and on north curb		-10 North
BB119	SUPS	Superstructure Water Leaking	Bent_49		At bent	Clogged drain and drainage trough.		0 North
BB12	GDWY	Guideway Abrasion-Wearing	Bent_10	Span_09A	All throughout span	48"L x 24W Abrasion on both running beams and small spalls on north running beam. 7 locations 1in diameter 1/4" deep spalls.		10
BB120	SUPS	Superstructure Leaking Expansion Joint	Bent_47		At bent	Missing joint seal		0
BB121	SUPS	Superstructure Leaking Expansion Joint	Bent_46		At bent	Missing expansion joint.		0
BB122	GDWY	Guideway Spalling	Bent_45	Bent_45	Switch 31 west running beam.	Large cracks progressing into spalls		-10
BB123	GDWY	Guideway Cracking	Bent_46	Bent_46	Switch 31 west running beam.	Crack greater than 0.05 in		-10
BB124	GDWY	Guideway Spalling	Bent_44	Span_44	South running beam between switches.	Large spall at expansion joint on south running beam between switches.		60 South
BB125	GDWY	Guideway Spalling	Bent_44	Span_44	South running beam between switches	Spalling on south running beam between switches.		60 South
BB126	SUPS	Superstructure Leaking Expansion Joint	Bent_43		At bent	Missuing joint seal		0
BB127	SUPS	Superstructure Leaking Expansion Joint	Bent_41		At bent	Missing joint seal, debris in joint.		0
BB128	GDWY	Guideway Missing anchor bolts	Bent_41	Span_40	West of bent 41, connection of guide rail to deck	3 of 6 missing bolts and 1 lose bolt. Deteriorating grout pad		-30
BB129	SUPS	Superstructure Leaking Expansion Joint	Bent_39		At bent	Missing joint seal		0
BB13	SUPS	Superstructure Leaking Expansion Joint	Bent_10A		At bent			0
BB130	SUPS	Superstructure Leaking Expansion Joint	Bent_37		At bent	Missing joint seal		0
BB131	SUPS	Superstructure Leaking Expansion Joint	Bent_35		At bent	Missing joint seal		0
BB132	SUPS	Superstructure Leaking Expansion Joint	Bent_33		At bent	Missing joint seal		0
BB133	SUPS	Superstructure Leaking Expansion Joint	Bent_31		At bent	Missing joint seal		0
BB134	SUPS	Superstructure Water Leaking	Bent_30		At bent	Clogged drain		0
BB135	SUPS	Superstructure Water Leaking	Bent_28		At bent	Clogged drain		0
BB136	SUPS	Superstructure Not Quantified	Bent_28	Span_27	West of bent 28	Grease from train on deck and guide rail.		-10
BB137	SUPS	Superstructure Leaking Expansion Joint	Bent_24		At bent	Missing joint seal		0
BB138	GDWY	Guideway Spalling	Bent_24	Span_23	Top of north running beam	Small spall in middle of top running beam.		-20 North
BB139	SUPS	Superstructure Leaking Expansion Joint	Bent_22		At bent	Missing joint seal		0
BB14	GDWY	Guideway Repair	Bent_12A	Bent_12A	At bent	Repair of running beam, 41" long, 2' wide, 17" high		0 South
BB140	GDWY	Guideway Spalling	Bent_22	Bent_22	South running beam at expansion joint	Large spall with exposed rebar.		0 South

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
BB141	SUPS	Superstructure Cracking	Bent_21		Vert and transverse cracks on deck overhang	Full height and full width transverse cracks at deck overhang. 6 cracks on deck curb and deck. And a 3"w x2"L x1" D spall on west crack		North
BB142	SUPS	Superstructure Spalling	Bent_21		(blank)	Minor spalling on south side deck drain, 10" rebar exposed		(blank)
BB143	GDWY	Guideway Spalling	Bent_M1	Span_50	Grout pad	Broken grout pad		-5 West
BB144	SUPS	Superstructure Spalling	Bent_M1	Span_51	Block 1C11 between west running beam and curb.	Spall on top of deck.		-10 West
BB145	GDWY	Guideway Spalling	Bent_M1	Span_51	On 1c11 near 1C12 between west running beam and curb.	Spall on top of deck.		-2 West
BB146	GDWY	Guideway Cracking	(blank)	Span_52	Top of running beam	Transverse cracks every 4 ft. On top of running beam		West
BB147	SUPS	Superstructure Leaking Expansion Joint	Bent_M2		At bent	Missing joint seal		0 East and west
BB148	GDWY	Guideway Spalling	Bent_M3	Span_53	Switch 102. Under metal portion of the running beam at the north point of switch.	Spall at the corner of metal connection.		-5 West
BB149	GDWY	Guideway Cracking	(blank)	Span_56	Block 1C18	Map cracking on top of both running beams.		0 West
BB15	SUPS	Superstructure Leaking Expansion Joint	Bent_12A		At bent	Leak, spall,		0
BB150	GDWY	Guideway Cracking	(blank)	Span_55	1C17. Top of running beams.	Top of running beams.		
BB151	SUPS	Superstructure Water Leaking	Span_56	Span_56	Block 1c15, car wash, between walls and running beams.	Large amounts of standing water.		
BB152	GDWY	Guideway Cracking	(blank)	Span_56	1c15 car wash. Top of running beams.	Cracks every 10ft.		
BB153	GDWY	Guideway Spalling	Bent_M6	Span_56	At joint on top of running beaming coming into station.			0
BB154	GDWY	Guideway Spalling	Bent_M6	Span_56	Top of running beam at joint into garage. Block 1C21	Top of running beam.		0
BB155	GDWY	Guideway Cracking	(blank)	Span_55	Metal running beam at point of switch 104. Vertical and diagonal crack on west face. Mirrored in east face. Full height and full width	1 vertical and diagonal on each side. Full width.		East
BB156	GDWY	Guideway Spalling	Bent_M4	Span_54	Running beams at joint block 1C22.			-10 East
BB157	GDWY	Guideway Cracking	Bent_M3	Span_54	Under metal running beam plate at the point of switch 103.	3 full height vertical cracks and on east face. And a 4 in crack in the point.		15 South
BB158	GDWY	Guideway Cracking	(blank)	Span_50	Top of running beams. Span F/ 1C25	Transverse cracks every 4 feet.		
BB159	GDWY	Guideway Spalling	(blank)	Span_55	Switch 105. Intersection of block 1C22 and 1c42	Spall at top running beam.		
BB16	SUPS	Superstructure Water Leaking	Bent_14A		At bent	Clogged drainage trough		0 South
BB160	GDWY	Guideway Spalling	(blank)	Span_55	West running beam near the intersection of block 1c21/22	Spall at running beam joint.		East
BB161	GDWY	Guideway Cracking	(blank)	Span_56	Under metal running beam plate at the point of switch 105. 2 vertical cracks on each face full height.			
BB162	SUPS	Superstructure Leaking Expansion Joint	Bent_M6		Missing joint seal full width of joint At bent.	Leaking joints.		0
BB163	GDWY	Guideway Abrasion-Wearing	Bent_22	Bent_22	(blank)	abrasion on running beam, typical at bents	(blank)	(blank)
BB164	GDWY	Guideway Cracking	Bent_17	Bent_17	(blank)	transverse cracks on both running beams typical		0 (blank)
BB165	GDWY	Guideway Cracking	Bent_19	Bent_19	(blank)	Map cracking on north running beam (3 ft x 2ft), ~70ft from bent 19		0 (blank)
BB166	GDWY	Guideway Cracking	Bent_26	Span_26	(blank)	Map cracking on running beams	(blank)	(blank)
BB167	GDWY	Guideway Not Quantified	Bent_13	Span 13	(blank)	Typical transverse cracking throughout running beam.	(blank)	(blank)
BB168	GDWY	Guideway Spalling	Bent_17	Bent_17	(blank)	spalls on running beams (2"x1/2"x1/2")		0 (blank)
BB169	GDWY	Guideway Spalling	Bent_17	Bent_17	(blank)	Running beam spall at joint (similar to previous), 3"x 1"x 1" max		-10 (blank)
BB17	GDWY	Guideway Cracking	Bent_01	Bent_01	Typical throughout	Typical transverse cracking throughout running beam.		
BB170	GDWY	Guideway Spalling	Bent_22	Span_22	(blank)	similar spall at joint of running beam (always on north beam)		45 (blank)
BB171	GDWY	Guideway Spalling	Bent_22	Span_21	(blank)	minor spalls/popouts on running beam (~20ft from bent 22)		-20 (blank)
BB18	SUPS	Superstructure Water Leaking	Bent_50		At bent	Clogged drain		0 South
BB19	SUPS	Superstructure Water Leaking	Bent_49		At bent	Clogged drain		0 South
BB2	SUPS	Superstructure Standing Water	Span_02A	Span_02A	All through out span 2 under covered area	Ponding at several locations in between and south of guidebeams.		South
BB20	SUPS	Superstructure Leaking Expansion Joint	Bent_47		Expansion joint at bent	No joint seal at expansion joint		0 South
BB21	SUPS	Superstructure Spalling	Bent_46	Span_46	Spall / delaminates on south side at expansion joint			
BB22	GDWY	Guideway Cracking	Bent_46	Span_45	Running beam at bent, small section of running beam with metal walls	Severe map cracking at running beams, patch repairs can be seen. Estimated quantity for both.		0 South
BB23	SUPS	Superstructure Leaking Expansion Joint	Bent_43		At expansion joint	Missing joint seal		0 South
BB24	SUPS	Superstructure Leaking Expansion Joint	Bent_41		At bent expansion joint	Missing joint seal		0 South
BB25	GDWY	Guideway Spalling	Bent_40	Span_40	12 ft east of bent 40	Signs of spalling at transverse cracks of both running beams		12
BB26	GDWY	Guideway Spalling	Bent_39	Span_39	Top of north running beam, north edge	Patch is cracked and not flush with surface on north running beam		70 North
BB27	SUPS	Superstructure Leaking Expansion Joint	Bent_39		At bent	Missing joint seal		0 South

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
BB28	GDWY	Guideway Spalling	Bent_38	Span_38	6 feet east of bent 38	Pop out on south edge of south running beam in wheel path	6	South
BB29	SUPS	Superstructure Cracking	Bent_38	Span_37	10 west of bent 37	Transverse cracking with scattered map cracking up to .04 in width	-10	South
BB3	GDWY	Guideway Cracking	(blank)	Span_02A	All throughout span	Cracks on top and side of both guideway beams every 4 to 6 ft.		South
BB30	SUPS	Superstructure Leaking Expansion Joint	Bent_37		At bent	Missing joint seal	0	South
BB31	GDWY	Guideway Spalling	Bent_37	Span_36	Near expansion joint of bent 37	2 pop outs of 1 in and 1.5 in diameter	-5	South
BB32	SUPS	Superstructure Leaking Expansion Joint	Bent_35		At bent	Missing joint seal	0	South
BB33	SUPS	Superstructure Leaking Expansion Joint	Bent_33		At bent	Missing joint seal	0	South
BB34	SUPS	Superstructure Leaking Expansion Joint	Bent_31		At bent	Missing joint seal	0	South
BB35	SUPS	Superstructure Not Quantified	Bent_27	Span_27	Span 27 in station	Grease along guidebeam and deck all along span 27		South
BB36	SUPS	Superstructure Water Leaking	Bent_27		At bent	Drain is clogged	0	South
BB37	GDWY	Guideway Cracking	Bent_26	Bent_26		Transverse cracking with edge spalling up to 0.5 deep	0	
BB38	SUPS	Superstructure Leaking Expansion Joint	Bent_24		At bent	Missing joint seal	0	South
BB39	SUPS	Superstructure Spalling	Bent_23		South curb of deck	Exposed rebar in curb	0	South
BB4	GDWY	Guideway Cracking	(blank)	Span_03A	All throughout span	Cracks on top and side of both guideway beams every 4 to 6 ft.		South
BB40	SUPS	Superstructure Leaking Expansion Joint	Bent_22		At bent	Missing joint seal	0	South
BB41	GDWY	Guideway Spalling	Bent_21	Span_21	North running beam, near north end	Pop out, north running beam	50	North
BB42	SUPS	Superstructure Spalling	Bent_21		Located on south curb of bridge	Minor spall, south curb, exposed rebar	0	South
BB43	SUPS	Superstructure Leaking Expansion Joint	Bent_20		At bent	Missing joint seal	0	South
BB44	SUPS	Superstructure Spalling	Bent_20		South curb	Shallow spall, south curb, exposed rebar on south curb deck drain	0	South
BB45	SUPS	Superstructure Leaking Expansion Joint	Bent_18		At bent	Missing joint seal	0	South
BB46	SUPS	Superstructure Leaking Expansion Joint	Bent_16		At bent	Missing joint seal	0	South
BB47	SUPS	Superstructure Leaking Expansion Joint	Bent_14		At bent	Missing joint seal	0	South
BB48	GDWY	Guideway Spalling	Bent_14	Bent_14	South running beam at joint	Full depth spall of south running beam at expansion joint	0	South
BB49	SUPS	Superstructure Leaking Expansion Joint	Bent_12		At bent	Missing joint seal and edge cracking	0	South
BB5	SUPS	Superstructure Leaking Expansion Joint	Bent_04A		At expansion joint	Missing joint seal, edge spalls, leaking joints	0	South
BB51	GDWY	Guideway Spalling	Bent_12	Bent_12	North running beam at joint	Spalls at north running beam expansion joint	0	
BB52	SUPS	Superstructure Leaking Expansion Joint	Bent_10		At bent	Missing joint seal	0	North
BB53	GDWY	Guideway Spalling	Bent_10	Bent_10	North running beam at expansion joint	Spall at north running beam expansion joint	0	North
BB54	SUPS	Superstructure Leaking Expansion Joint	Bent_08		At bent	Missing joint seal	0	
BB55	GDWY	Guideway Spalling	Bent_08	Bent_08	North running beam expansion joint	Spall at north running beam expansion joint.	0	
BB56	GDWY	Guideway Spalling	Bent_06	Span_06		Spall and loose concrete at north running beam adjacent to metal plate 12"x4"x1"	100	
BB57	SUPS	Superstructure Leaking Expansion Joint	Bent_06			Missing joint seal		
BB58	SUPS	Superstructure Cracking	Bent_06	Span_06		Map cracking on outside curb	40	South
BB59	GDWY	Guideway None	Bent_08	Span_08	Depression on top of guide beam	Depression on top of guide beam at XO2 west guide beam at switch 24	80	
BB6	SUPS	Superstructure Leaking Expansion Joint	Bent_06A		At expansion joint	Missing joint seal, leaking, edge spalling	0	South
BB60	GDWY	Guideway None	Bent_08	Span_08		Depression on top of guide beam at XO2 west guide beam at switch 24	80	
BB61	SUPS	Superstructure Water Leaking	Bent_02A	Span_02A	East of bent 2	Evidence of standing water, algae growth.	5	North
BB62	GDWY	Guideway Cracking	Bent_02A	Span_02A	30 feet east of bent 2 on north running beam	0.3in transverse crack at north running beam	30	North
BB63	GDWY	Guideway Cracking	Bent_02A	Span_02A	Ever 4-6ft on span two running beams	Transversal cracking 0.1 to 0.3 in every 4-6 ft on span 2. Both running beams.		North
BB64	GDWY	Guideway Cracking	Bent_02A	Span_02A	Both running beams on span 2	Map cracking on top of both running beam for 25% of area.		North
BB65	GDWY	Guideway Spalling	Bent_03A	Span_02A	At last two relief joints of running beam on span two	Minor spalling.		
BB66	GDWY	Guideway Spalling	Bent_03A	Span_03A	At relief joints of south running beam	Spalling at relief joints on south running beam on span 3		North
BB67	SUPS	Superstructure Leaking Expansion Joint	Bent_04A		At bent	Missing joint seal	0	North
BB68	GDWY	Guideway Cracking	Bent_05A	Span_05A	North running beam span 5 between metal switch	10 ft north running beam with heavy map cracking.	30	North
BB69	SUPS	Superstructure Leaking Expansion Joint	Bent_06A		At bent	Missing joint seal	0	North
BB7	GDWY	Guideway Spalling	Bent_07A	Span_06A	20 ft west of pier 7	Spalling at expansion joint	-20	
BB70	GDWY	Guideway Spalling	Bent_05A	Span_05A	Relief joints at running beams	Small spalls at at relief joints on both running beams.		North
BB71	GDWY	Guideway Spalling	Bent_06A	Span_06A	Relief joints of both running beams.	Small spalls at relief joints of both running beam.		North
BB72	GDWY	Guideway Spalling	Bent_07A	Span_07A	Running beam relief joints	Small spalling at both running beams relief joints.		North
BB73	SUPS	Superstructure Leaking Expansion Joint	Bent_08A		At bent	Missing joint seal	0	North
BB74	GDWY	Guideway Spalling	Bent_08A	Span_08A	Relief joints of running beam	Small spalling at relief joints on both running beams.		North
BB75	GDWY	Guideway Spalling	Bent_09A	Span_09A	Running beam relief joints	SmL spalling on both running beams relief joints		
BB76	GDWY	Guideway Abrasion-Wearing	Bent_10A	Span_09A	Scattered 10ft before bent 5	48in by 24in area of Scattered 0.25 in spalls.	-10	North
BB77	GDWY	Guideway Spalling	Bent_10A	Bent_10A	Running beam expansion joint.	Spalling at running beam expansion joint.	0	North
BB78	GDWY	Guideway Spalling	Bent_10A	Bent_10A	At south running beam expansion joint	Spalling at expansion joint of south running beam.	0	North
BB79	SUPS	Superstructure Leaking Expansion Joint	Bent_10A		At bent	Missing joint seal	0	

Record_No	Component	RECOMMENDATION_Cells	BentID	SpanID	Deficiency_Location_Description	Comment_1	Deficiency Face Location	Deficiency Side Location
BB8	**GDWY**	Guideway Spalling	**Bent_07A**	Bent_07A	**Expansion joint over bent**	Spalling at expansion joint	**0**	North
BB80	**GDWY**	Guideway Spalling	**Bent_10A**	Span_10A	**At south running beam relief joints**	Small spalling at south running beam relief joints.		North
BB81	**GDWY**	Guideway Spalling	**Bent_11A**	Span_11A	**At south running beam relief joints typical**	Small spalls at relief south running beam relief joints, typical.		
BB82	**SUPS**	Superstructure Spalling	**Bent_12A**		**North curb at expansion joint**	Large spall at north expansion joint curb.	**0**	North
BB83	**SUPS**	Superstructure Leaking Expansion Joint	**Bent_12A**		**At bent**	Missing joint seal	**0**	
BB84	**GDWY**	Guideway Spalling	**Bent_12A**	Bent_12A	**South running beam at bent expansion joint**	Large spall at south running beam expansion joint at bent.	**0**	South
BB85	**GDWY**	Guideway Spalling	**Bent_12A**	Span_12A	**South running beam relief joints.**	Small spalls at relief south running beam relief joints, typical.		
BB86	**GDWY**	Guideway Spalling	**Bent_13A**	Bent_13A	**South running beam relief joints.**	Small spalls at relief south running beam relief joints, typica		South
BB87	**GDWY**	Guideway Cracking	**Bent_14A**	Bent_14A	**South running beam over bent**	0.03 in crack with with edge spalling at south running beam over bent.	**0**	
BB88	**GDWY**	Guideway Repair	**Bent_01**	Span_01	**Running beams at bent**	North and south running beam repairs at bent	**0**	
BB9	**GDWY**	Guideway Abrasion-Wearing	**(blank)**	Span_07A	**Starting 50 ft before pier 8**	Abrasion on top of running beams starting 50ft long. Up to 1/16 in deep. On both running beams.		South
BB91	**GDWY**	Guideway Cracking	**Bent_06**	Span_06	**Every 2 to 4 ft on each running beam**	Large 0.05 in transverse cracks every 2 to 4 ft on each running beam.		North
BB92	**GDWY**	Guideway Spalling	**Bent_07**	Span_07	**Switch 22, north running beam next to metal switch plate**	Large spall at north running beam on switch 22 next to metal switch plate.	**10**	
BB93	**GDWY**	Guideway Spalling	**Bent_07**	Span_07	**North running beam between metal switch**	Spalling at expansion joint between north concrete running beam and metal switch plate	**50**	North
BB94	**GDWY**	Guideway Spalling	**Bent_07**	Span_07	**North running beam between metal switch plates**	Spalling at expansion joint between north concrete running	**50**	North
BB95	**GDWY**	Guideway Spalling	**Bent_07**	Span_07	**North running beam between metal switch plates**	Several small popouts approximately 1 in in diameter scattered on north running beam between switch plates.	**50**	North
BB96	**SUPS**	Superstructure Leaking Expansion Joint	**Bent_10**		**At bent**	Missing joint seal	**0**	North
BB97	**GDWY**	Guideway Spalling	**Bent_10**	Bent_10	**North running beam expansion joint at bent**	Spall at north running beam expansion joint at bent 10	**0**	North
BB98	**GDWY**	Guideway Repair	**Bent_11**	Span_10	**South running beam, 5ft before bent 11**	Repair	**-5**	
BB99	**SUPS**	Superstructure Leaking Expansion Joint	**Bent_12**		**At bent**	Missing joint seal	**0**	

APPENDIX I

RECOMMENDED REPAIRS COST ESTIMATE SUMMARY

OPINION OF PROBABLE COST INCLUDING UNIT PRICES ADDRESSING ALL OBSERVED DEFICIENCIES

OPINION OF PROBABLE COST													
	WORK ITEM No1					WORK ITEM No2					TOTAL	MAINTENANCE PRIORITY	MAINTENANCE FREQUENCY
MAINTENANCE RECOMMENDATIONS / REPAIR ITEMS	WORK ITEM No1	UNIT	UNIT COST	QUANTITIES	SUBTOTAL	WORK ITEM No.2	UNIT	UNIT COST	QUANTITIES	SUBTOTAL			
COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND DECK	2014-002	SF	$ 25.50	1,624.87	$ 41,434.25					$ -	$ 41,434.25	2 (NEAR TERM)	ONCE
CLEAN AND PAINT EXISTING STRUCTURAL STEEL - GUIDEWAY BEAMS - ENTIRE SEGMENT	2014-003	SF	$ 23.75	30.00	$ 712.50					$ -	$ 712.50	1 (PRIORITY)	ONCE
INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	EA	$ 5,625.00	40.00	$225,000.00	2014-013	EA	$3,750.00	40.00	$ 150,000.00	$ 375,000.00	1 (PRIORITY)	ONCE
CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	SF	$ 175.80	351.48	$ 61,790.90					$ -	$ 61,790.90	2 (NEAR TERM)	ONCE
CLEAN AND SEAL EXPANSION JOINTS	2014-006	LF	$ 129.60	839.00	$108,734.40					$ -	$ 108,734.40	1 (PRIORITY)	5 YEARS
INSTALL MISSING BOLTS	2014-007	EA	$ 627.10	3.00	$ 1,881.30					$ -	$ 1,881.30	1 (PRIORITY)	ONCE
PROVIDE FRESH COAT OF PAINT TO BOTTOM OF BENT CAPS	2014-008	SF	$ 26.60	61.80	$ 1,643.80					$ -	$ 1,643.80	2 (NEAR TERM)	ONCE
CLEAN DRAIN INLETS	2014-009	EA	$ 975.00	11.00	$ 10,725.00					$ -	$ 10,725.00	2 (NEAR TERM)	5 YEARS
TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	LF	$ 21.90	9,170.34	$200,830.37					$ -	$ 200,830.37	1 (PRIORITY)	ONCE
CRACK MONITORING INSPECTION	2014-015	EA	$ 2,720.00	149.00	$405,280.00					$ -	$ 405,280.00	2 (NEAR TERM)	5 YEARS
REPAIR/LEVEL SLAB TOP SURFACE	2014-016	SY	$ 30.90	120.00	$ 3,708.00					$ -	$ 3,708.00	2 (NEAR TERM)	ONCE
CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	SF	$ 11.00	17,985.25	$197,837.70					$ -	$ 197,837.70	2 (NEAR TERM)	ONCE
SOFT COST - 30%											$ 422,873.46		
MOBILIZATION - 10%											$ 183,245.17		
CONTINGENCY - 15%											$ 274,867.75		
										TOTAL INVESTMENT	**$ 2,290,564.58**		

NOTES:

1. ENGINEERING IS NOT INCLUDED IN THE OPINION OF PROBABLE COST.
2. IN ORDER TO VERIFY THAT RECOMMENDED REPAIRS ARE WORKING AS INTENDED. IT IS RECOMMENDED THAT 6 MONTHS AFTER WORK ITEM NO.1 IS PERFORMED AN INSPECTION IS CONDUCTED TO EVALUATE DURABILITY OF THE REPAIR. THIS COST HAS NOT BEEN INCLUDED IN THE ESTIMATE.
3. ESTIMATED CONSTRUCTION COSTS ARE BASED ON HISTORICAL RECORDS OF SIMILAR TYPES OF WORK.
4. COST MAY VARY DUE TO THE TIME OF THE YEAR, LOCAL ECONOMY AND OTHER FACTORS.
5. ESTIMATED COST ARE IN BASED ON AUGUST 2021 DOLLARS.
6. CONCRETE STRUCTURE REPAIRS ARE BASED ON AN AVERAGE REPAIR DEPTH OF 2 INCH THICK.
7. UNIT PRICING IS BASED ON THE QUANTITIES PROVIDED. UNIT COSTS MAY BE AFFECTED BY QUANTITY CHANGES.

OPINION OF PROBABLE COST INCLUDING UNIT PRICES ADDRESSING ALL DEFICIENCIES TO BRING THE FACILITY RATING SCORE TO A 7

Minimum Estimated Investment to Bring the Facility to Rating Score of 7 on a "Priority" Planning Horizon Term

	WORK ITEM No1					WORK ITEM No2							
MAINTENANCE RECOMMENDATIONS / REPAIR ITEMS	WORK ITEM No1	UNIT	UNIT COST	QUANTITIES	SUBTOTAL	WORK ITEM No.2	UNIT	UNIT COST	QUANTITIES	SUBTOTAL	TOTAL	MAINTENANCE PRIORITY	MAINTENANCE FREQUENCY
COATING SYSTEM OF A CRACK BRIDGING AND WATERPROOFING PRODUCT ON RUNNING BEAMS AND	2014-002	SF		-	$ -					$ -	$ -	2 (NEAR TERM)	ONCE
CLEAN AND PAINT EXISTING STRUCTURAL STEEL - GUIDEWAY BEAMS - ENTIRE SEGMENT	2014-003	SF		-	$ -					$ -	$ -	1 (PRIORITY)	ONCE
INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	EA	$ 5,625.00	39.00	$219,375.00	2014-013	EA	$3,750.00	39.00	$146,250.00	$ 365,625.00	1 (PRIORITY)	ONCE
CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	SF		-	$ -					$ -	$ -	2 (NEAR TERM)	ONCE
CLEAN AND SEAL EXPANSION JOINTS	2014-006	LF	$ 129.60	839.00	$108,734.40					$ -	$ 108,734.40	1 (PRIORITY)	5 YEARS
INSTALL MISSING BOLTS	2014-007	EA	$ 627.10	3.00	$ 1,881.30					$ -	$ 1,881.30	1 (PRIORITY)	ONCE
TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	LF	$ 21.90	2,276.97	$ 49,865.66					$ -	$ 49,865.66	1 (PRIORITY)	ONCE
SOFT COST - 30%											$ 157,831.91		
MOBILIZATION - 10%											$ 68,393.83		
CONTINGENCY - 15%											$ 102,590.74		
										TOTAL INVESTMENT	**$ 854,922.84**		

NOTES:

1. ENGINEERING IS NOT INCLUDED IN THE OPINION OF PROBABLE COST.
2. IN ORDER TO VERIFY THAT RECOMMENDED REPAIRS ARE WORKING AS INTENDED. IT IS RECOMMENDED THAT 6 MONTHS AFTER WORK ITEM NO.1 IS PERFORMED AN INSPECTION IS PREFORMED TO EVALUATE THE DURABILITY OF THE REPAIR. THIS COST HAS NOT BEEN INCLUDED IN THE ESTIMATE.
3. ESTIMATED CONSTRUCTION COSTS ARE BASED ON HISTORICAL RECORDS OF SIMILAR TYPES OF WORK.
4. COST MAY VARY DUE TO THE TIME OF THE YEAR, LOCAL ECONOMY AND OTHER FACTORS.
5. ESTIMATED COST ARE IN BASED ON AUGUST 2021 DOLLARS.
6. CONCRETE STRUCTURE REPAIRS ARE BASED ON AN AVERAGE REPAIR DEPTH OF 2 INCH THICK.
7. UNIT PRICING IS BASED ON THE QUANTITIES PROVIDED. UNIT COSTS MAY BE AFFECTED BY QUANTITY CHANGES.

OPINION OF PROBABLE COST INCLUDING UNIT PRICES ADDRESSING TO MAXIMIZE SERVICE LIFE OF APM STRUCTURE

OPINION OF PROBABLE COST

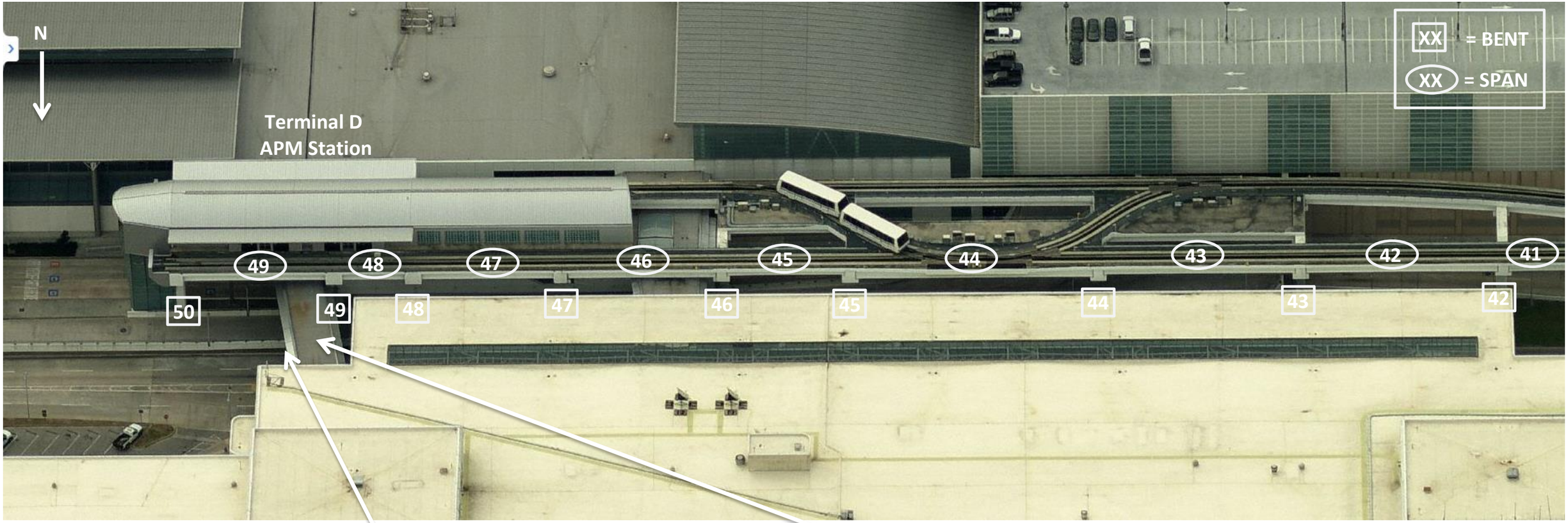
MAINTENANCE RECOMMENDATIONS / REPAIR ITEMS	WORK ITEM No1					WORK ITEM No2					TOTAL	MAINTENANCE PRIORITY	MAINTENANCE FREQUENCY
	WORK ITEM No1	UNIT	UNIT COST	QUANTITIES	SUBTOTAL	WORK ITEM No.2	UNIT	UNIT COST	QUANTITIES	SUBTOTAL			
INSTALL STEEL DIAPHRAGMS AND SHEAR KEYS IN BETWEEN PRESTRESS BEAMS (SEE NOTE 1)	2014-004	EA	$ 5,625.00	40.00	$ 225,000.00	2014-013	EA	$3,750.00	40.00	$150,000.00	$ 375,000.00	1 (PRIORITY)	ONCE
CONCRETE STRUCTURE REPAIR - A (REPAIRS BETWEEN 1 AND 6 INCH THICK)	2014-005	SF	$ 175.80	351.48	$ 61,790.90					$ -	$ 61,790.90	2 (NEAR TERM)	ONCE
CLEAN AND SEAL EXPANSION JOINTS	2014-006	LF	$ 129.60	839.00	$ 108,734.40					$ -	$ 108,734.40	1 (PRIORITY)	5 YEARS
INSTALL MISSING BOLTS	2014-007	EA	$ 627.10	3.00	$ 1,881.30					$ -	$ 1,881.30	1 (PRIORITY)	ONCE
CLEAN DRAIN INLETS	2014-009	EA	$ 975.00	11.00	$ 10,725.00					$ -	$ 10,725.00	2 (NEAR TERM)	5 YEARS
TYPE IX EPOXY FOR CRACK INJECTION FOR BENT CAPS (SEE NOTE 2)	2014-011	LF	$ 21.90	9,170.34	$ 200,830.37					$ -	$ 200,830.37	1 (PRIORITY)	ONCE
REPAIR/LEVEL SLAB TOP SURFACE	2014-016	SY	$ 30.90	120.00	$ 3,708.00					$ -	$ 3,708.00	2 (NEAR TERM)	ONCE
BRIDGE CLEANING AND SEALING/COATING (SEE NOTE 8)	2014-017	SF	$ 6.00	725,000.00	$4,350,000.00					$ -	$4,350,000.00	2 (NEAR TERM)	ONCE
CONCRETE STRUCTURE REPAIR - A (LARGE AREAS W/ SCATTERED POP-OUTS LESS THAN 1.5-IN IN DIAMATER)	2014-018	SF	$ 11.00	17,985.25	$ 197,837.70					$ -	$ 197,837.70	2 (NEAR TERM)	ONCE
SOFT COST - 30%											$1,593,152.30		
MOBILIZATION - 10%											$ 690,366.00		
CONTINGENCY - 15%											$1,035,548.99		
										TOTAL INVESTMENT	**$ 8,629,574.95**		

NOTES:

1. ENGINEERING IS NOT INCLUDED IN THE OPINION OF PROBABLE COST.
2. IN ORDER TO VERIFY THAT RECOMMENDED REPAIRS ARE WORKING AS INTENDED. IT IS RECOMMENDED THAT 6 MONTHS AFTER WORK ITEM NO.1 IS PERFORMED AN INSPECTION IS CONDUCTED TO EVALUATE THE DURABILITY OF THE REPAIR. THIS COST HAS NOT BEEN INCLUDED IN THE ESTIMATE.
3. QUANTITY IS BASED ON CLEANING AND SEALING OF SUBSTRUCTURE, EXTERIOR BEAMS, RUNNING BEAMS, AND DECK CURBS.
4. ESTIMATED CONSTRUCTION COSTS ARE BASED ON HISTORICAL RECORDS OF SIMILAR TYPES OF WORK.
5. COST MAY VARY DUE TO THE TIME OF THE YEAR, LOCAL ECONOMY AND OTHER FACTORS.
6. ESTIMATED COST ARE IN BASED ON AUGUST 2021 DOLLARS.
7. CONCRETE STRUCTURE REPAIRS ARE BASED ON AN AVERAGE REPAIR DEPTH OF 2 INCH THICK.
8. UNIT PRICING IS BASED ON THE QUANTITIES PROVIDED. UNIT COSTS MAY BE AFFECTED BY QUANTITY CHANGES.

APPENDIX J

PROJECT LAYOUT SHEETS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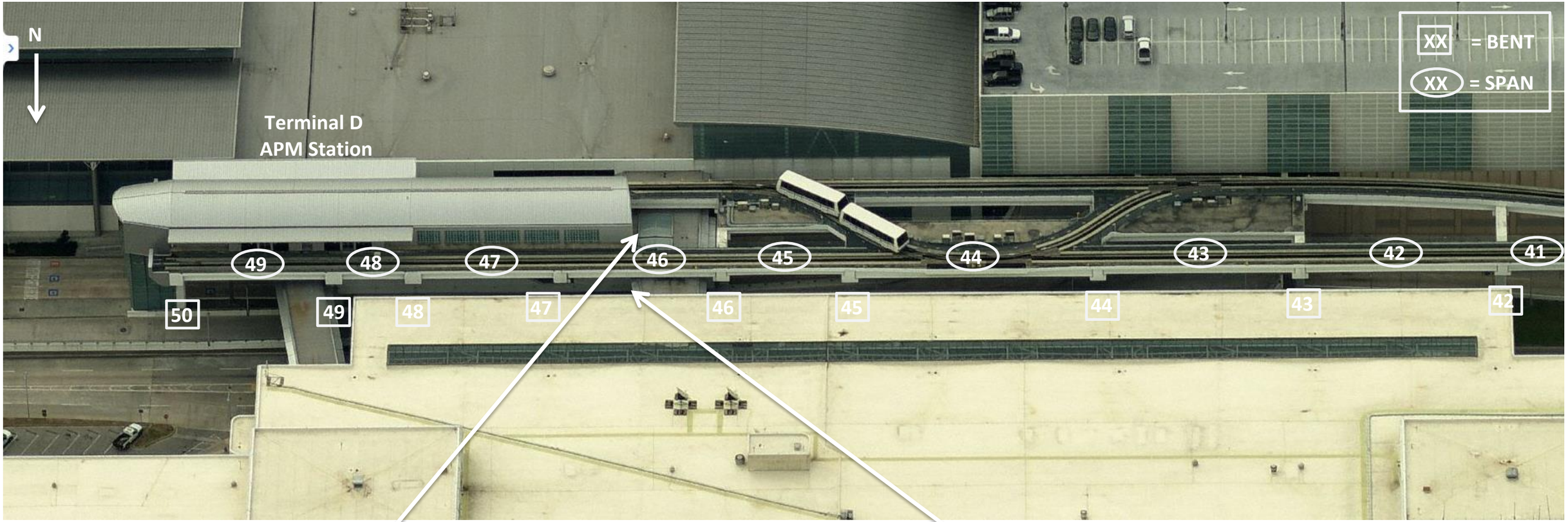
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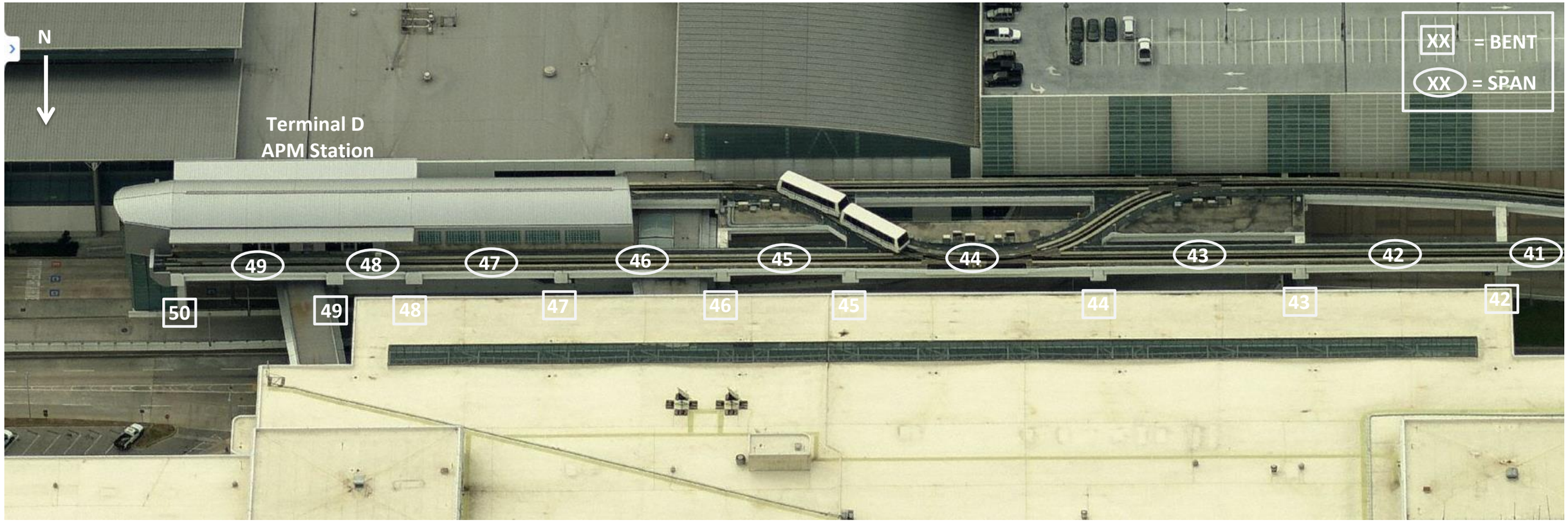
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Street View - Nov 2007
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Airport
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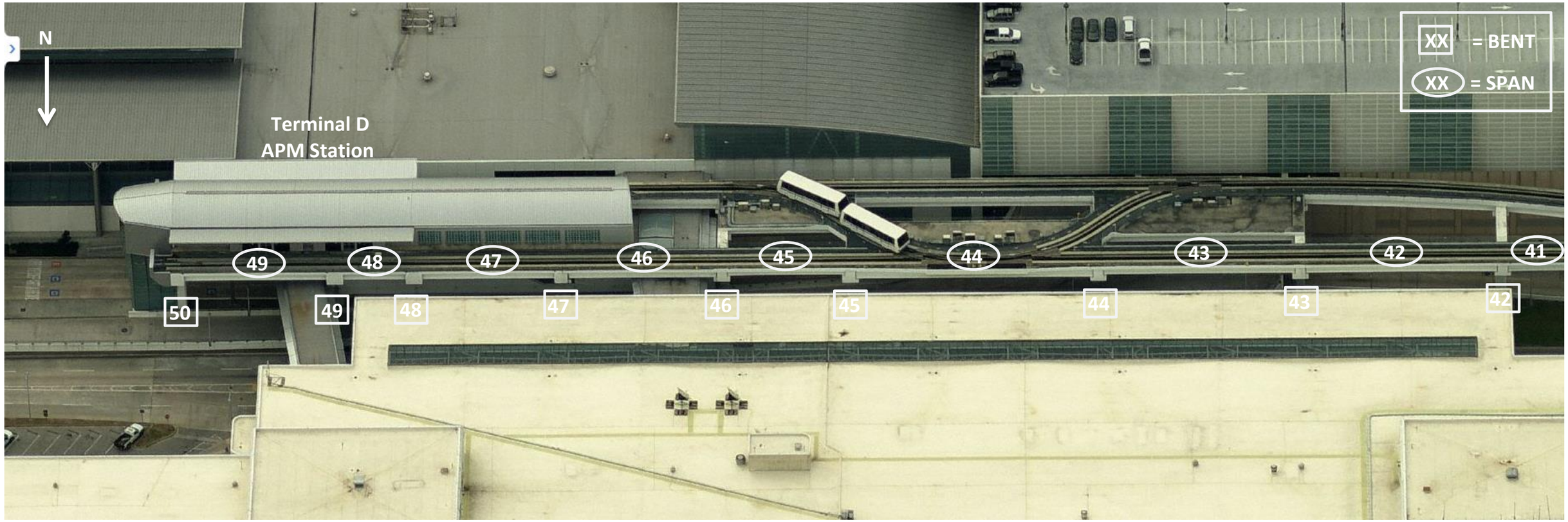
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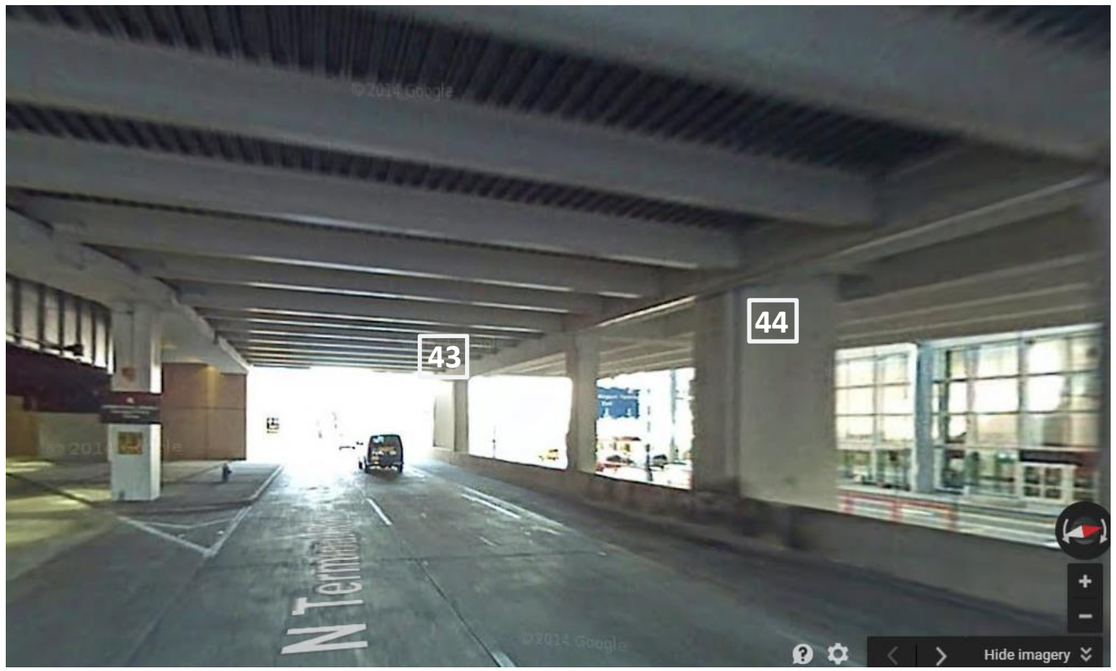
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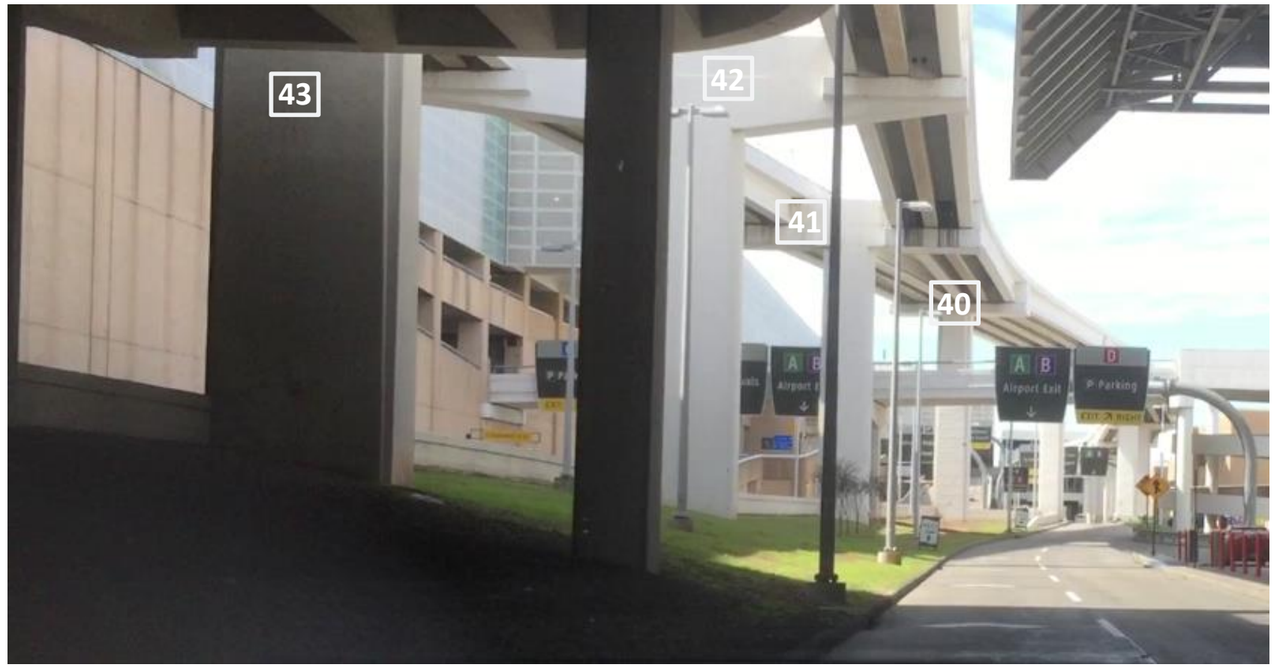
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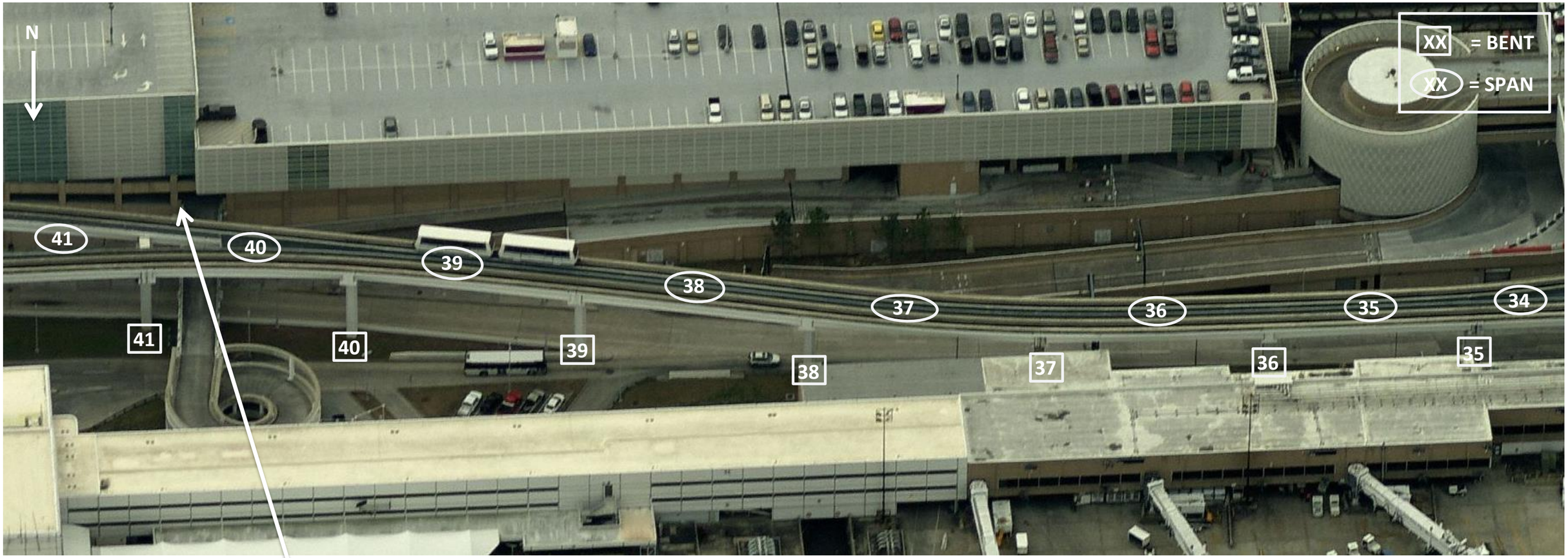
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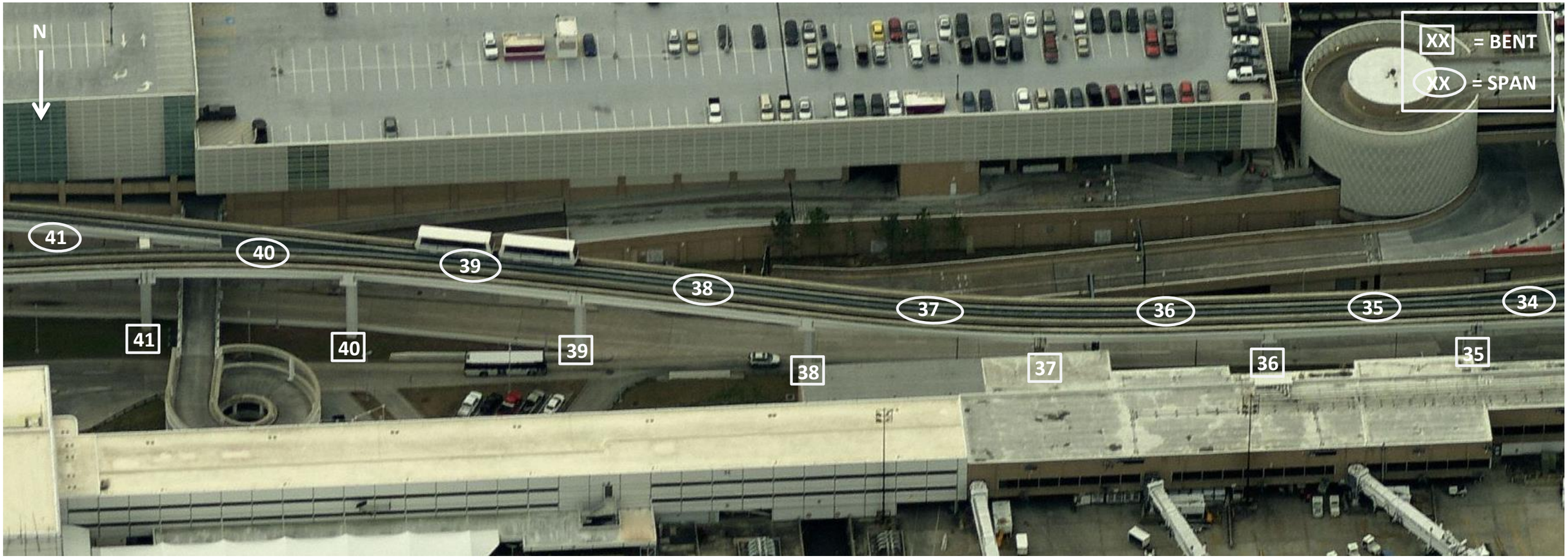
Terminal D
VALET
PARKING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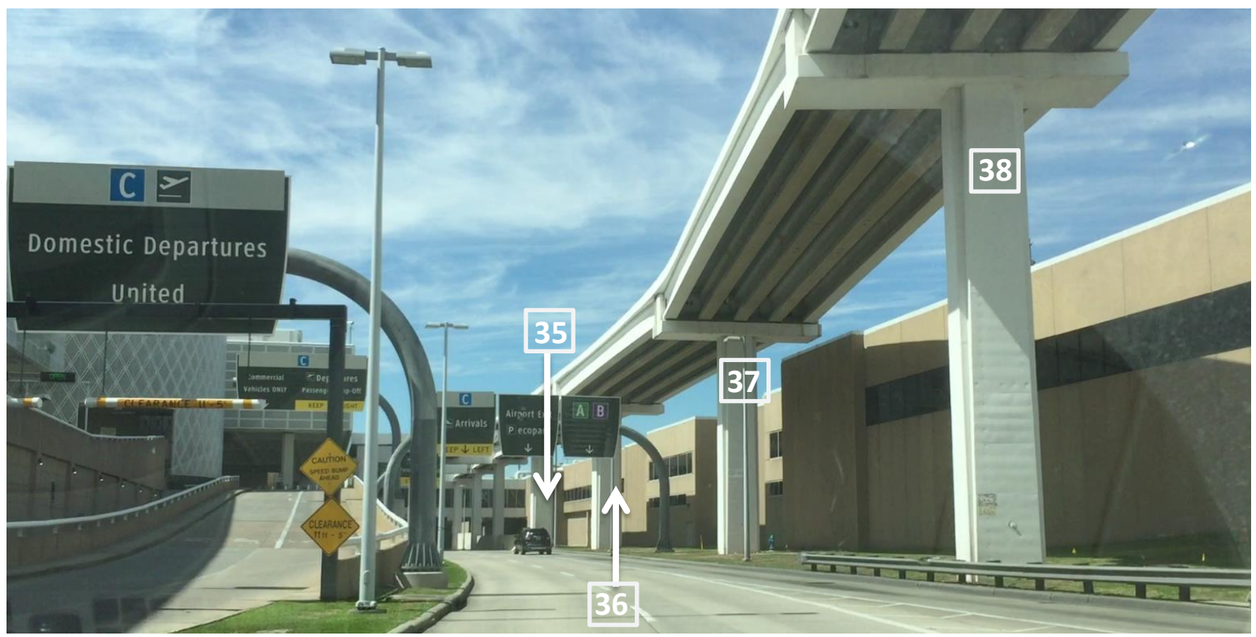
Domestic Departures
United
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Departures
Passenger Drop-Off
KEEP RIGHT
Arrivals
KEEP LEFT
Airport Exit
Ecopark
A B
37
36
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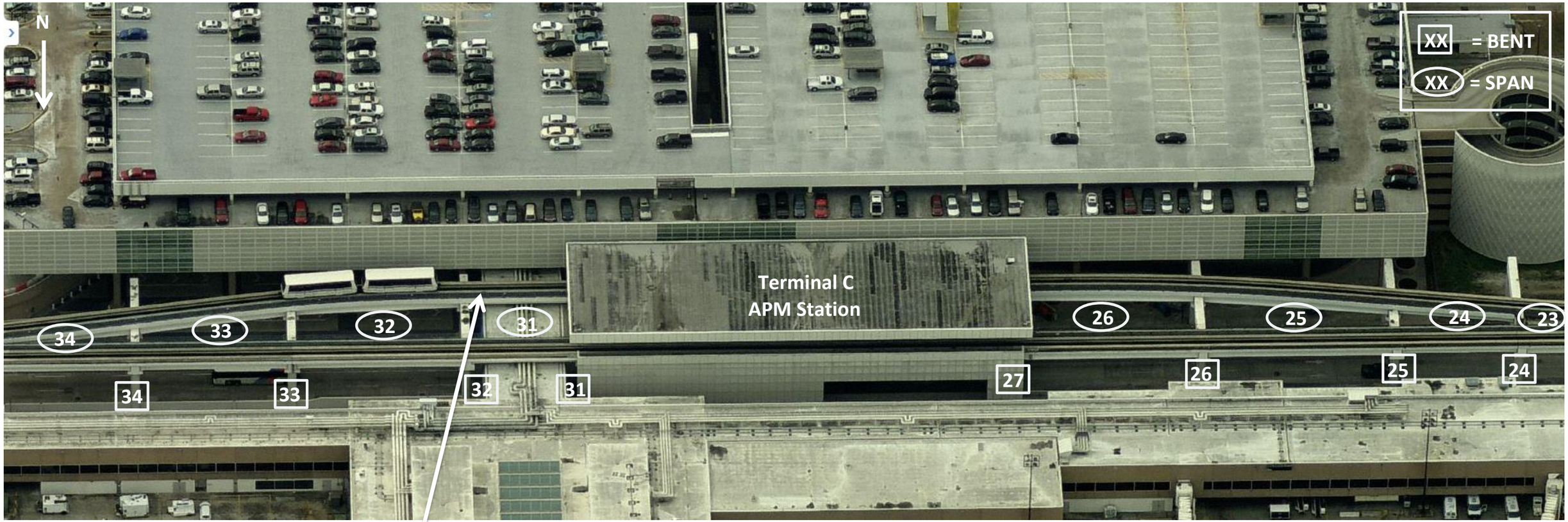
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C
P Parking
Airport Exit
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C
P Parking
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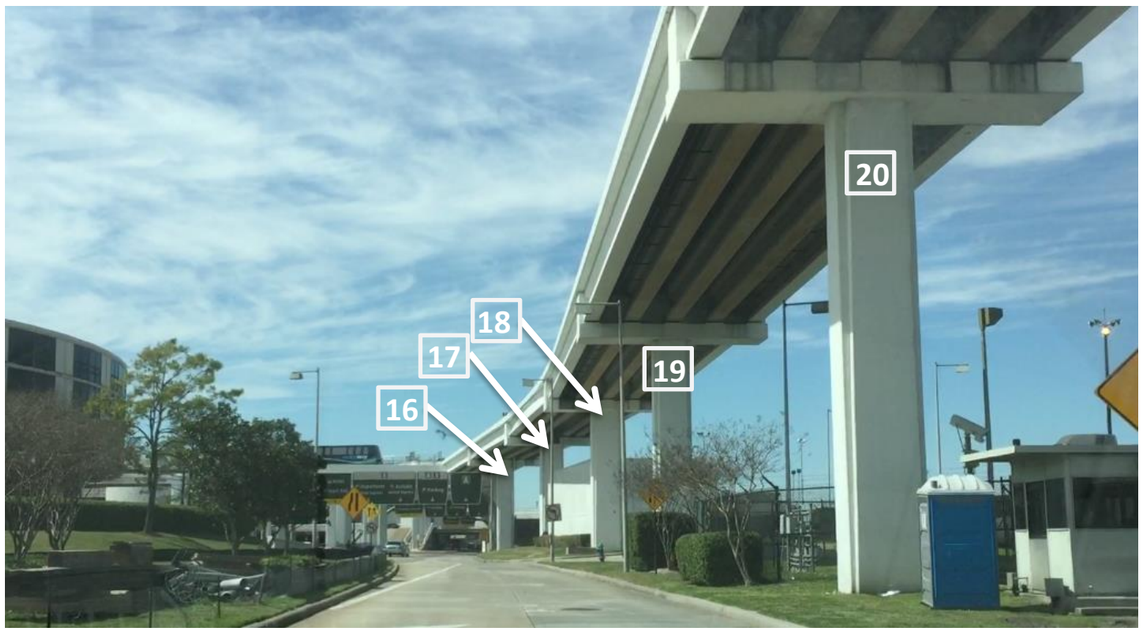
Airport Exit
P ecopark
EXIT K LEFT
A B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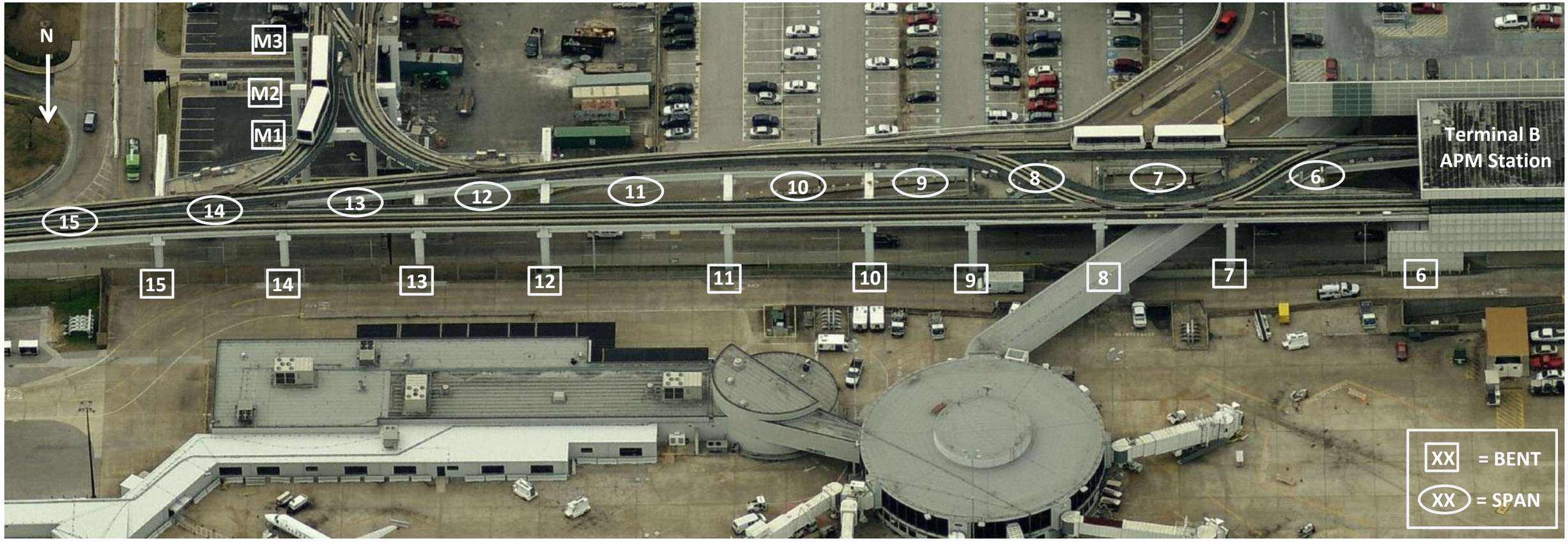
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M1
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APM Station
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XX = BENT
XX = SPAN


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skyway
LANE ENDS
MERGE
LEFT
Departures
Passenger Drop-Off
Arrivals
Parking


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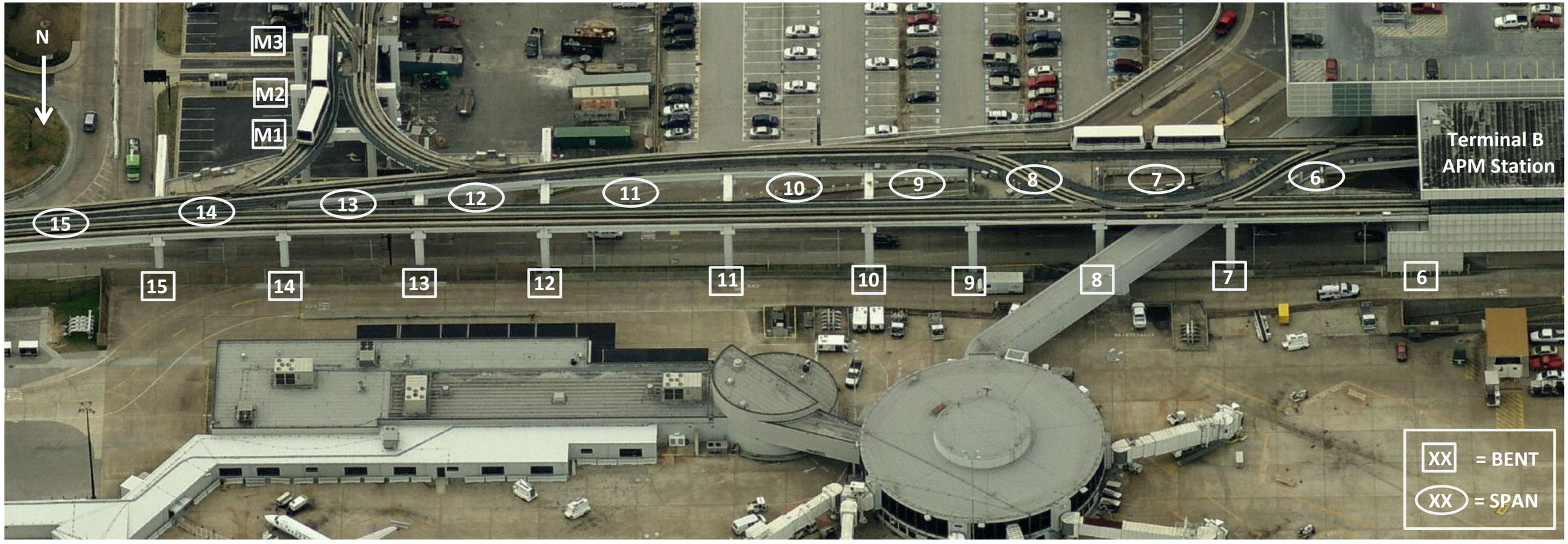
12
Departures
Passenger Drop-Off
EXIT LEFT
Arrivals
Parking

HNTB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Terminal B
APM Station
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XX = BENT
XX = SPAN


11
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B
Departures
ssenger Drop-Off
KEEP RIGHT
Commercial Vehicles ONLY
Arrivals
Passenger Pick-Up
P Parking


9
8
7
Commercial Vehicles ONLY
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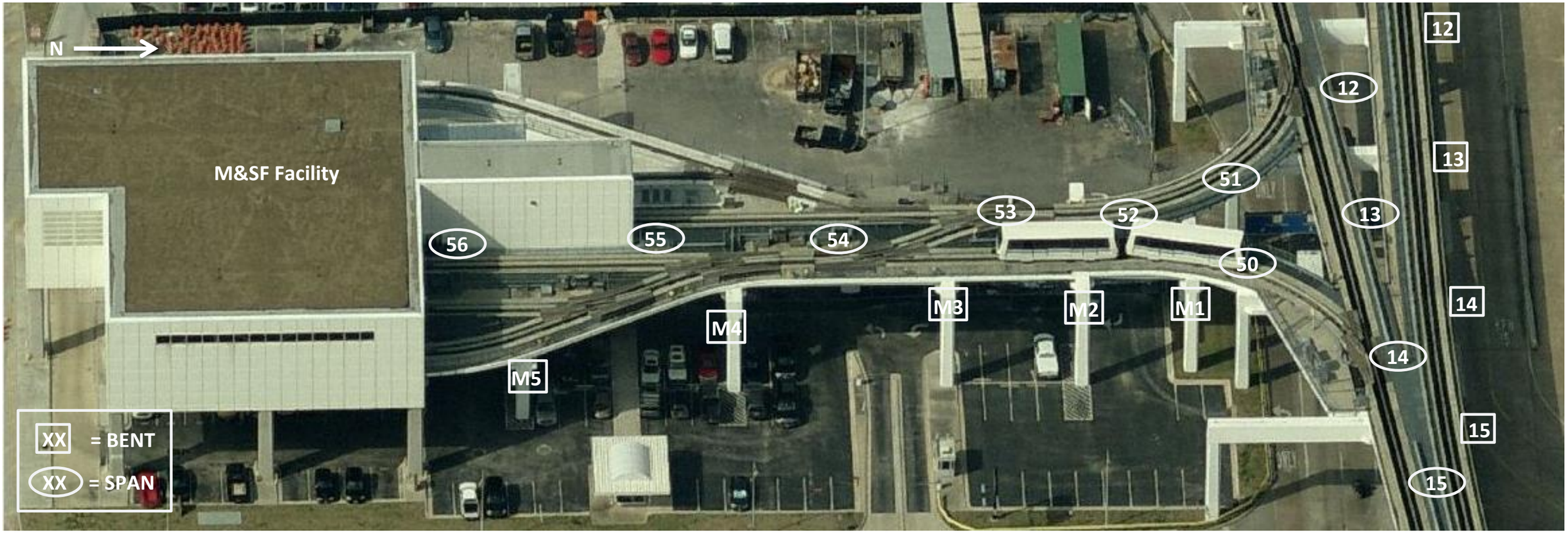
B
Arrivals
Passenger Pick-Up
EXIT LEFT
A B
P Parking
NEXT LEFT
30

HNTB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M5
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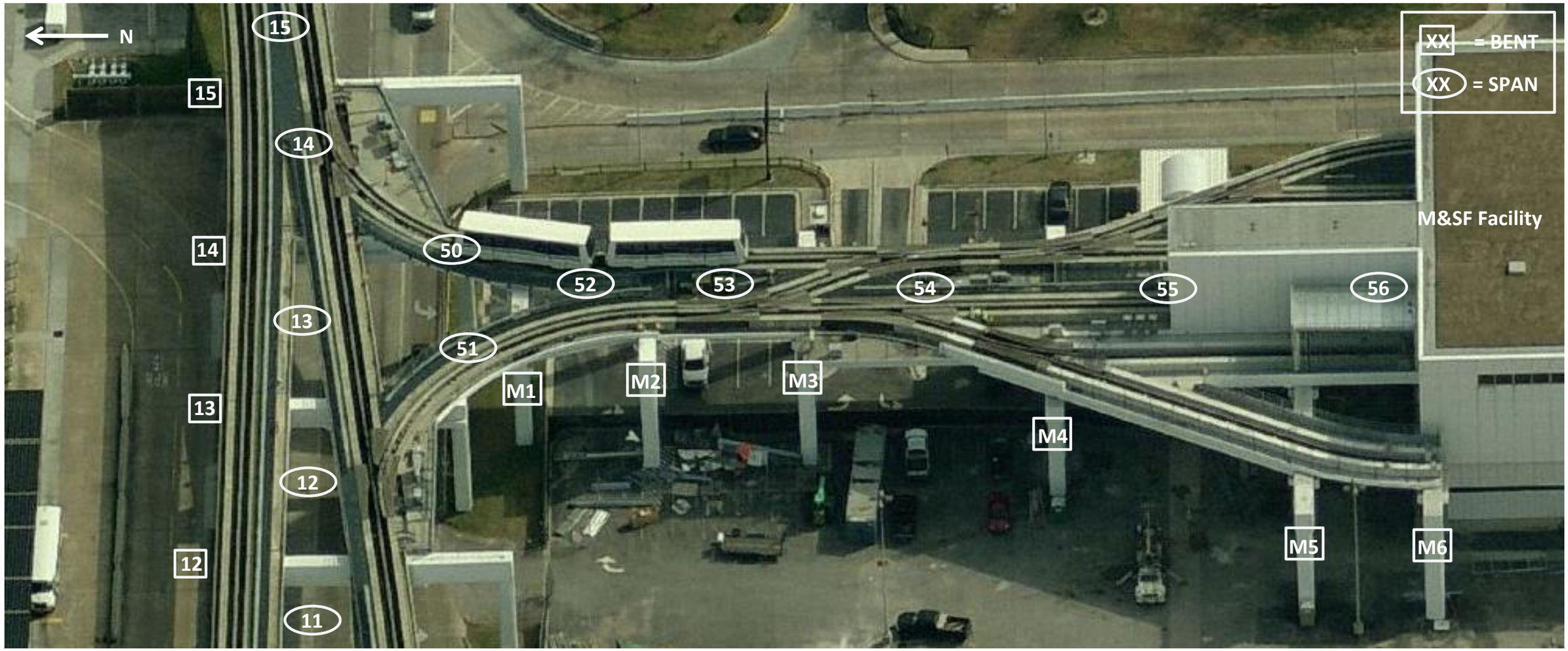
XX = BENT
XX = SPAN

HNTB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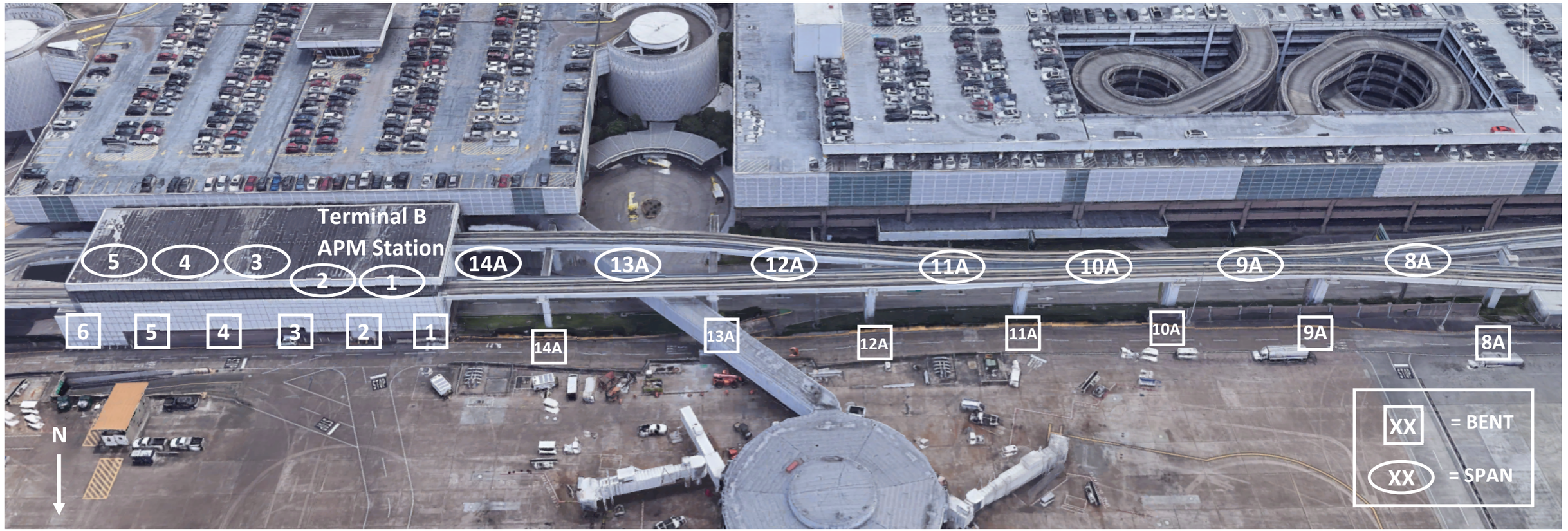
XX = SPAN
M&SF Facility

HNTB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APM Station
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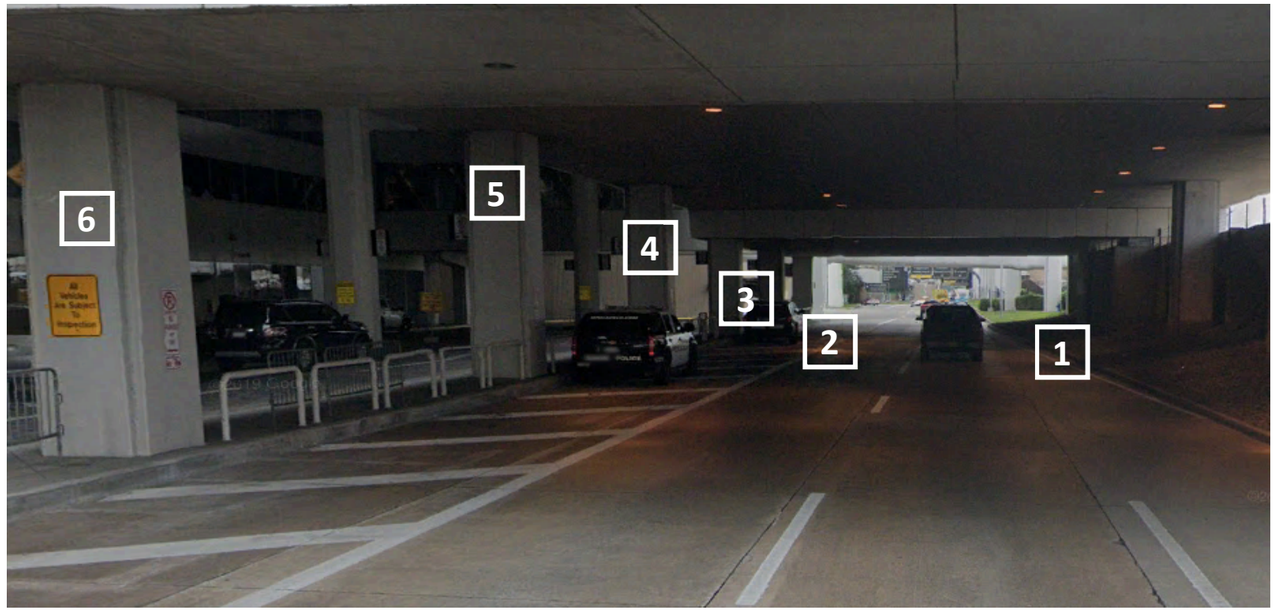
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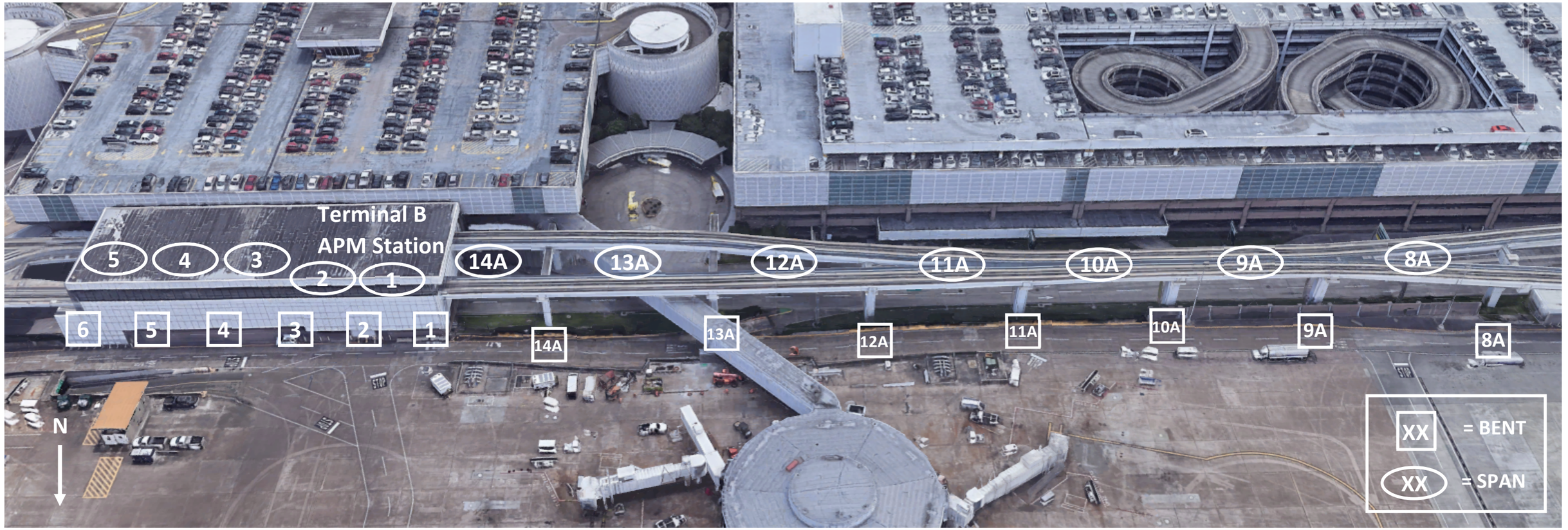
1


14A

HNTB


Terminal B
APM Station
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4
3
2
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14A
13A
12A
11A
10A
9A
8A
6
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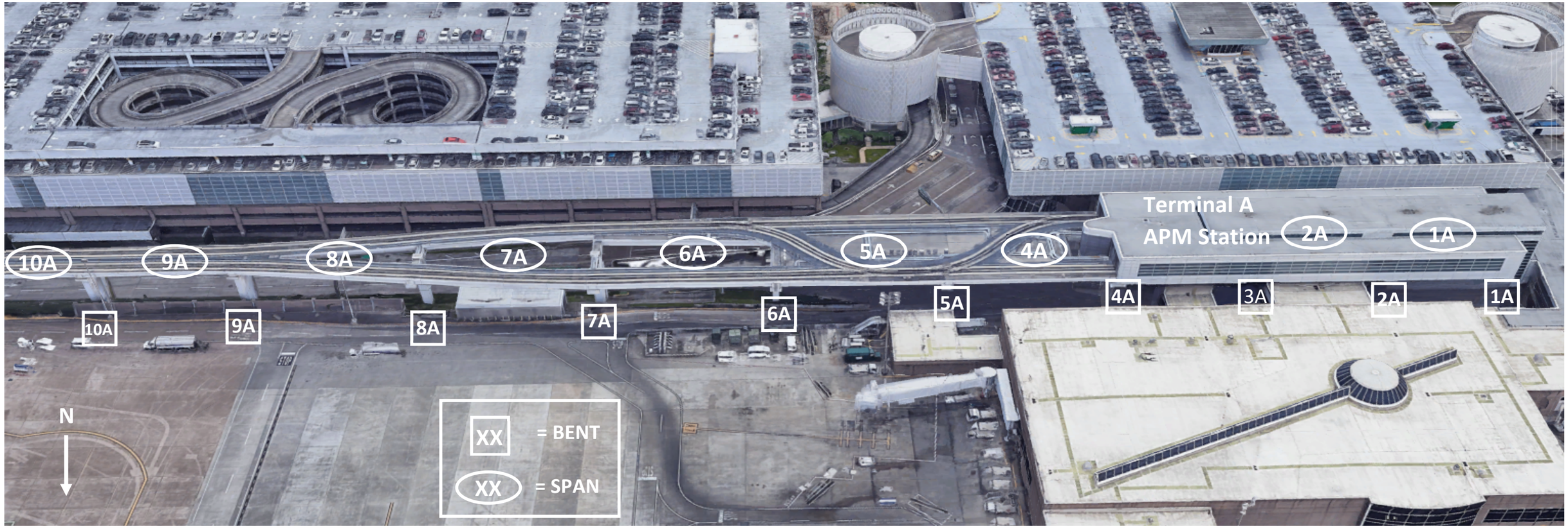
4
3
2
1
14A
13A
12A
11A
10A
9A
8A
N
XX = BENT
XX = SPAN


13A
A B
P Parking
EXIT LEFT
A
Departures
Arrivals
Airport Exit
P ecopark


11A
12A
DEPART
ARRIVE

HNTB


Terminal A
APM Station
10A
9A
8A
7A
6A
5A
4A
2A
1A
10A
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7A
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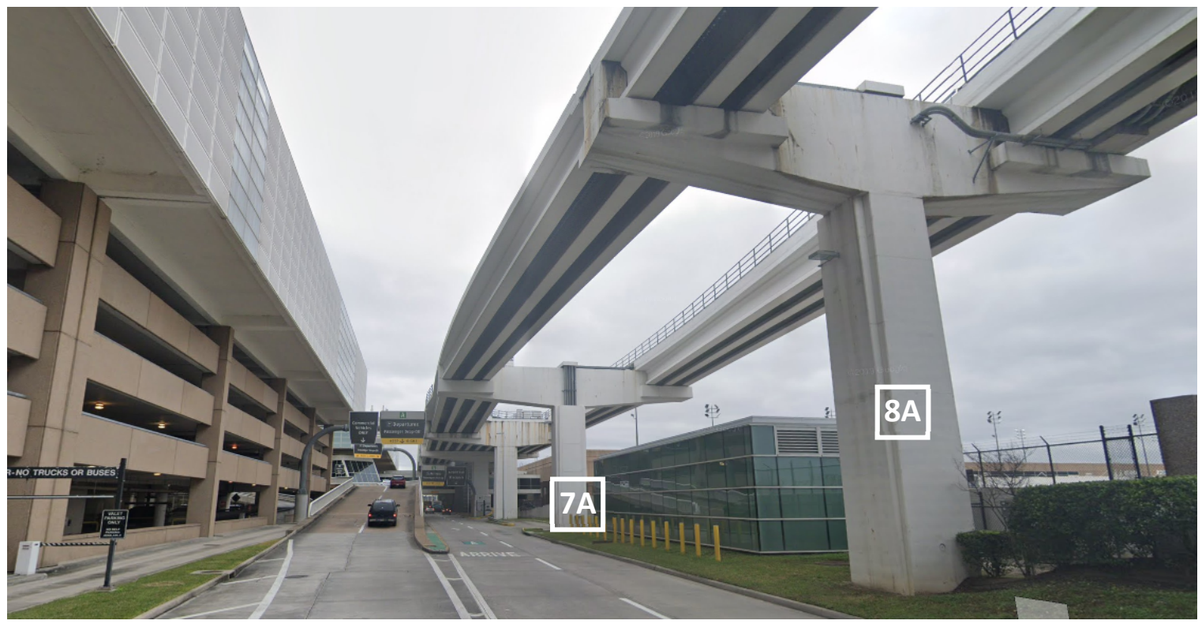
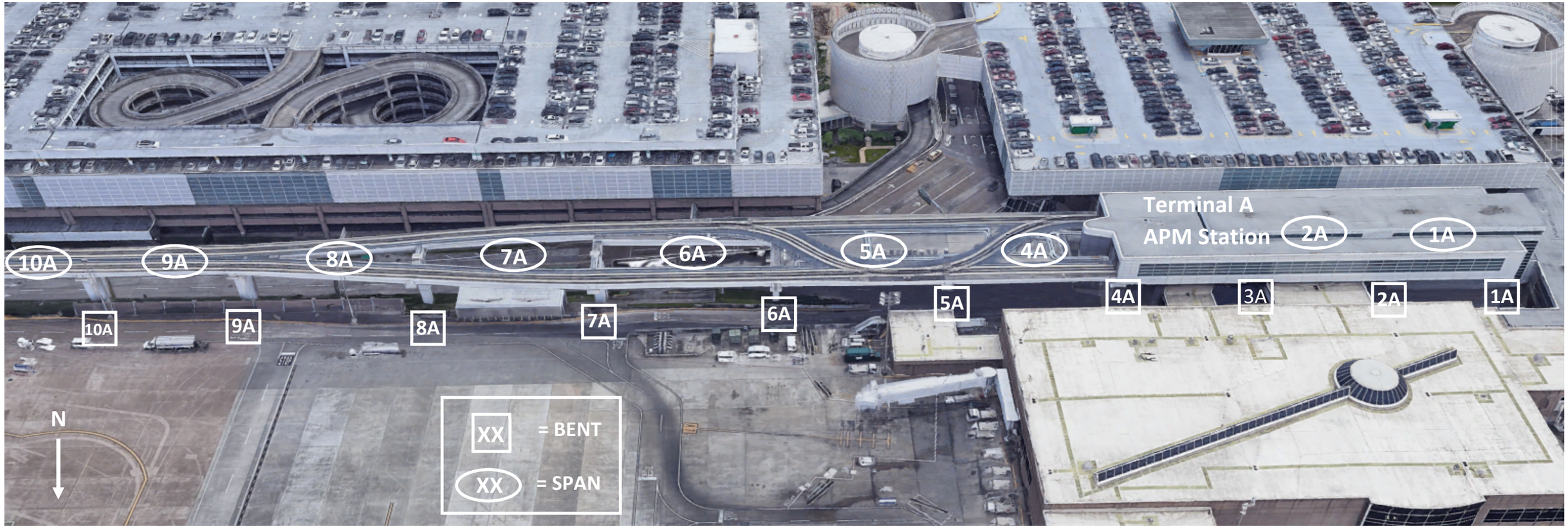
N
XX = BENT
XX = SPAN


9A
10A


7A
8A

HNTB


Terminal A
APM Station
10A
9A
8A
7A
6A
5A
4A
2A
1A
10A
9A
8A
7A
6A
5A
4A
3A
2A
1A
N
XX = BENT
XX = SPAN


6A
5A
Departures
Passenger drop-off
Arrivals
Passenger Pick-Up
Airport Exit
P ecopark


4A
3A


1A
2A

HNTB

APPENDIX K

UNIT COST BACKUP CALCULATIONS

Project Title	IAH APM CONDITION ASSESSMENT		
Location	BUSH INTERCONTINENTAL AIRPORT HOUSTON (IAH)		
Submittal Stage	ROM Estimate		
Client Name	HNTB		
Client Project No.		**Revision**	3
Original Date	2021-08-04	**Revision Date**	2021-10-15
Assumed Bid Opening Date		**CI Project No.**	4093.19.11
Project Manager	CJN	**Checked by**	IDK

IAH APM CONDITION ASSESSMENT

OPTIONS SUMMARY

DESCRIPTION			TOTAL
APM Bridge Structure		$	**517,736**
UNIT COSTS			
APM Bridge Structure	sf	$	**260.00**
Coating System Of A Crack Bridging And Waterproofing Product On Running Beams And Deck	sf	$	**25.50**
Clean And Paint Existing Structural Steel - Guideway Beams - Entire Segment	sf	$	**23.75**
Install Steel Diaphragms In Between Prestress Beams (See Note 1)	ea	$	**5,625.00**
Install Shear Keys In Between Prestress Beams (See Note 1)	ea	$	**3,750.38**
Concrete Structure Repair - A (Repairs Between 1 And 6 Inch Thick)	sf	$	**175.80**
Clean And Seal Expansion Joints	lf	$	**129.60**
Install Missing Bolts	ea	$	**627.10**
Provide Fresh Coat Of Paint To Bottom Of Bent Caps	sf	$	**26.60**
Clean Drain Inlets	ea	$	**975.00**
Type IX Epoxy For Crack Injection For Bent Caps (See Note 2)	lf	$	**21.90**
Crack Monitoring Inspection	ea	$	**2,720.00**
Repair/Level Slab Top Surface	sy	$	**30.90**
Bridge Cleaning and Sealing/Coating	sf	$	**6.00**
Concrete Structure Repair - A (Large Areas with Small Spalls Less Than 1.5-IN in Diameter)	sf	$	**10.80**

Project Title	IAH APM CONDITION ASSESSMENT		
Location	BUSH INTERCONTINENTAL AIRPORT HOUSTON (IAH)		
Submittal Stage	ROM Estimate		
Client Name	HNTB		
Client Project No.		**Revision**	3
Original Date	2021-08-04	**Revision Date**	2021-10-15
Assumed Bid Opening Date		**CI Project No.**	4093.19.11
Project Manager	CJN	**Checked by**	IDK

APM Bridge Structure

SUMMARY

	DESCRIPTION			COST PER SQUARE FOOT	TOTAL
G	**Building Sitework**			$ 207.09	$ 414,188
	General Construction Items	$	38,900		
	Site Preparation	$	1,500		
	Site Improvements	$	373,788		
	Subtotal			***$ 207.09***	***$ 414,188***
25.0%	Estimating Design Evolution				$ 103,547
	Subtotal - Cost of Work			***$ 258.87***	***$ 517,736***

Project Title	IAH APM CONDITION ASSESSMENT		
Location	BUSH INTERCONTINENTAL AIRPORT HOUSTON (IAH)		
Submittal Stage	ROM Estimate		
Client Name	HNTB		
Client Project No.		**Revision**	3
Original Date	2021-08-04	**Revision Date**	2021-10-15
Assumed Bid Opening Date		**CI Project No.**	4093.19.11
Project Manager	CJN	**Checked by**	IDK

APM Bridge Structure

DETAIL

	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
	APM Bridge Structure	2,000	sf		
	APM Bridge (100 LF Section)			2,000	sf
	Total Area	**2,000**	**sf**	**2,000**	**sf**

G BUILDING SITEWORK

G10 General Construction Items

G1010	General Construction Items				
G1011	Safety and Security (3%)	1	ls	$ 12,100.00	$ 12,100
G1012	Project Phasing and Temporary Construction Items (5%)	1	ls	$ 19,200.00	$ 19,200
G1013	Temporary Erosion Control (1%)	1	ls	$ 3,800.00	$ 3,800
G1014	Stormwater Drainage and Utility Allowance	1	alw	$ 3,800.00	$ 3,800

G20 Site Preparation

G2010	Site Demolition				
G2011	Site Demolition				Excluded
G2030	Site Earthwork				
G2031	Clearing and Grubbing	1	alw	$ 1,000.00	$ 1,000
G2032	Site Grading	1	alw	$ 500.00	$ 500

G30 Site Improvements

A1010	Standard Foundations				
A1011	Column Footing (10' X 12' x 6' Deep)	27	cy	$ 700.00	$ 18,667
A1015	Dewatering (Allowance)	1	ls	$ 500.00	$ 500
A1030	Special Foundations				
A1031	Pile Foundations	1	ls	$ 120,000.00	$ 120,000
A1032	Dewatering	1	ls	$ 5,000.00	$ 5,000
A1050	Slab on Grade				
A1031	Slab on Grade				No Required

APM Bridge Structure

DETAIL

		DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
B10	**Superstructure**					
	B1030	Superstructure				
		B1031 Bridge Columns (6' x 4' x 40' Hi)	36	cy	$ 1,550.00	$ 55,111
		B1032 Reinforced Concrete Bent (6' x 2' x 24' long)	21	cy	$ 800.00	$ 17,067
		B1033 AMP Bridge Deck - 12" Thick Concrete Slab	2,000	sf	$ 40.00	$ 80,000
		B1034 Concrete Running Beams (2 off)	30	cy	$ 150.00	$ 4,444
		B1035 Prestressed Concrete Beams	300	lf	$ 200.00	$ 60,000
		B1036 Concrete Curb (6" - 2' hi)	200	lf	$ 65.00	$ 13,000
Subtotal - Building Sitework						***$ 414,188***
Subtotal					***$ 207.09***	***$ 414,188***
25.0%		Estimating Design Evolution				$ 103,547
Subtotal - Cost of Work					***$ 258.87***	***$ 517,736***

Project Title	IAH APM CONDITION ASSESSMENT		
Location	BUSH INTERCONTINENTAL AIRPORT HOUSTON (IAH)		
Submittal Stage	ROM Estimate		
Client Name	HNTB		
Client Project No.		**Revision**	3
Original Date	2021-08-04	**Revision Date**	2021-10-15
Assumed Bid Opening Date		**CI Project No.**	4093.19.11
Project Manager	CJN	**Checked by**	IDK

UNIT COSTS

DETAIL

DESCRIPTION		UNIT		UNIT COST
APM Bridge Structure				
Replacement Cost For AMP Structure (No Equipment Etc.)		sf	$	260.00
	Total	**sf**	**$**	**260.00**
Coating System Of A Crack Bridging And Waterproofing Product On Running Beams And Deck				
	Labor	sf	$	16.00
	Material	sf	$	2.15
	Equipment (lift)	sf	$	2.25
	Subtotal		$	20.40
	Markups	25%	$	5.10
	Total	**sf**	**$**	**25.50**
Clean And Paint Existing Structural Steel - Guideway Beams - Entire Segment				
	Labor	sf	$	5.00
	Material	sf	$	3.00
	Equipment (lift)	sf	$	11.00
	Subtotal		$	19.00
	Markups	25%	$	4.75
	Total	**sf**	**$**	**23.75**

UNIT COSTS

DETAIL

DESCRIPTION			UNIT		UNIT COST
Install Steel Diaphragms And Shear Keys In Between Prestress Beams (See Note 1)					
Steel Diaphragms					
Steel Beam, Incl. Connection plates, Drilling and Grouting of Holding Down Bolts	0.45	ton	$ 10,000.00	$	4,500.00
		Subtotal		$	4,500.00
		Markups	25%	$	1,125.00
		Total	**ea**	**$**	**5,625.00**
Shear Keys					
Shear Keys (Chanel Steel) Between Prestressed Beams, Incl. Connection plates, Drilling and Grouting of Holding Down Bolts	0.3	ton	$ 10,001.00	$	3,000.30
		Subtotal		$	3,000.30
		Markups	25%	$	750.08
		Total	**ea**	**$**	**3,750.38**
Concrete Structure Repair - A (Repairs Between 1 And 6 Inch Thick)					
		Labor	sf	$	66.67
		Material	sf	$	57.31
		Equipment (lift)	sf	$	16.67
		Subtotal		$	140.65
		Markups	25%	$	35.16
		Total	**sf**	**$**	**175.80**

UNIT COSTS

DETAIL

DESCRIPTION		UNIT		UNIT COST
Clean And Seal Expansion Joints				
	Labor/Material/Equipment (lift)	lf	$	103.68
	Subtotal		$	103.68
	Markups	25%		25.921
	Total	**lf**		129.6
Install Missing Bolts				
	Labor/Material/Equipment (lift)	ea	$	501.67
	Subtotal		$	501.67
	Markups	25%	$	125.42
	Total	**ea**	**$**	**627.10**
Provide Fresh Coat Of Paint To Bottom Of Bent Caps				
	Labor	sf	$	12.95
	Material	sf	$	3.00
	Equipment (lift)	sf	$	5.34
	Subtotal		$	21.29
	Markups	25%	$	5.32
	Total	**sf**	**$**	**26.60**

UNIT COSTS

DETAIL

DESCRIPTION		UNIT		UNIT COST
Clean Drain Inlets				
	Labor/Material/Equipment (lift)	ea	$	780.00
	Subtotal		$	780.00
	Markups	25%	$	195.00
	Total	**ea**	**$**	**975.00**
Type IX Epoxy For Crack Injection For Bent Caps (See Note 2)				
	Labor/Material/Equipment (lift)	lf	$	17.50
	Subtotal		$	17.50
	Markups	25%	$	4.38
	Total	**lf**	**$**	**21.90**
Crack Monitoring Inspection				
	Labor/Material/Equipment (lift)	ea	$	2,175.97
	Subtotal		$	2,175.97
	Markups	25%	$	543.99
	Total	**ea**	**$**	**2,720.00**
Repair/Level Slab Top Surface				
	Labor/Material/Equipment (lift)	sy	$	24.75
	Subtotal		$	24.75
	Markups	25%	$	6.19
	Total	**sy**	**$**	**30.90**

UNIT COSTS

DETAIL

DESCRIPTION		UNIT	UNIT COST
Bridge Cleaning and Sealing/Coating			
	Labor/Material/Equipment (lift)	sf	$ 4.83
	Subtotal		$ 4.83
	Markups	25%	$ 1.21
	Total	**sy**	**$ 6.00**
Concrete Structure Repair - A (Large Areas with Small Spalls Less Than 1.5-IN in Diameter)	Labor	sf	$ 5.71
	Material	sf	$ 1.53
	Equipment (lift)	sf	$ 1.43
	Subtotal		$ 8.67
	Markups	25%	$ 2.17
	Total	**sf**	**$ 10.80**