

# Civil and Exterior Assessment

Rentschler Field at Pratt & Whitney Stadium



Rentschler Field at Pratt & Whitney Stadium

September 7, 2022

**POPULOUS**<sup>™</sup>

**VENUE**  
solutions group

**CRDA** | Capital Region  
Development Authority





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## **Disclaimer**

This report is not a warranty or guarantee of the items noted. The extent of our evaluation was limited and cannot guarantee that the condition assessment discovered or disclosed all possible latent conditions. The evaluation required that certain assumptions be made regarding existing conditions and some of these conditions cannot be verified without expending additional sums of money or destroying otherwise adequate or serviceable portions of the facility. In this study, we did not include inspection of concealed conditions. The assessment also does not provide specific repair details in some cases, construction contract documents, material specifications, details to develop construction cost, or information on means and methods of construction.

Any comment regarding concealed construction or subsurface conditions are our professional opinion, based on our team’s experience and judgment, and derived in accordance with standard of care and professional practice.



## **Overview**

Populous was engaged by the Capital Regional Development Authority (CRDA) to provide a comprehensive building system assessment for Pratt & Whitney Stadium at Rentschler Field that benchmarks the current condition of the facility. As part of the assessment, Venue Solutions Group, in partnership with the consultant team, has developed a 20-year capital expense matrix to assist the CRDA in establishing priorities for major repairs, potential upgrades and maintaining the facility in a professional manner. The ability to plan and maintain the stadium as it transitions from years 19 to 30 is crucial in extending the life of the facility as well as its relevance in the competitive and ever evolving regional and national marketplace.

As the stadium approaches its third decade of operation, its ability to deliver a positive guest experience is crucial for it to remain relevant both locally and nationally. It is important to keep the facility in a first class condition and well maintained for a great experience for fans, staff, and the University of Connecticut.

This volume of the project includes an assessment of the pavements, walkways, and access to Rentschler Field at Pratt and Whitney Stadium. It also includes an ADA code review for access into the stadium from the adjacent accessible parking areas, as well as an assessment of the condition of the storm and sanitary facilities servicing the exterior site areas of the stadium.

The consultant firm performing this work was The BSC Group Consulting Civil Engineers.

### About Pratt & Whitney Stadium at Rentschler Field

Pratt & Whitney Stadium at Rentschler Field is a 38,000-seat, open-air facility located on the site of a former airfield in East Hartford, CT. Opened in 2003, the Stadium serves as the home field of the University of Connecticut Husky football program and hosts other athletic, cultural, entertainment and civic events throughout the year. Currently, the second largest natural grass facility in New England, the stadium has also welcomed a variety of international soccer matches, as well as rugby and lacrosse.

The stadium's upper and lower bowls include 31,700 bench seats and 4,000 premium chair backs. A wide concourse, ringed by 20 concession stands and restroom facilities, separates the two bowls. Locker rooms, as well as the stadium kitchen, administrative offices and storage, are located beneath the southeast side of the facility. The south side of the stadium is framed by the "Tower", a dramatic five-story structure which houses a 650-seat Club Room and 38 luxury suites, as well as press facilities and radio/TV broadcast rooms. The Club Room can seat up to 500 people in a banquet setting and is available year-round for catered events, corporate meetings and other functions.



## Executive Summary

This exterior facility assessment was prepared by The BSC Group Consulting Civil Engineers for the Capital Region Development Authority to determine any deficiencies, both minor and major, with respect to the pavements, walkways, and access to the Rentschler Field at Pratt and Whitney Stadium. These assessments also include an ADA code review for access into the stadium from the adjacent accessible parking areas, as well as an assessment of the condition of the storm and sanitary facilities servicing the exterior site areas of the Stadium.

Over a number of days from the end of March through April of 2022, BSC Group performed field assessments of various portions of the exterior facility, paying particular attention to the following:

- Visual assessment of the condition of paved parking lots and curbing
- Visual assessment and field measurement of compliance with 2018 CT Building Code, ICC/ANSI A177.1- 2009 Standard for Accessible and Usable Buildings and Facilities.
- Closed Circuit Television (CCTV) Inspections of sanitary sewer and storm drainage systems around the exterior portions of the site, outside the stadium.

Utilizing various industry standard assessment criteria, BSC reviewed the facility to determine the condition of the above identified portions of the exterior stadium site and whether repairs or improvements to these facilities are recommended.

### *Parking Lot Pavement*

The parking lot pavement and curbs ranged from fair condition to serious, with many instances of alligator, longitudinal, and transverse cracking. The pavement markings were generally in fair (acceptable) condition with only a few exceptions.

### *Accessibility*

The total count of accessible parking spaces generally meets the required code, with only a few exceptions, and in some cases, exceeds the code. Overall, we have concluded that the stadium facility provides adequate accessible parking spaces in accordance with CT Building Code.

The parking and aisle size and spacing are in compliance with a minor exception in Lot 4, which can be remedied with restriping.

The accessible routes from the parking lots had a variety of issues resulting in non-compliance with code, such as observed openings greater than 1/2", changes in level greater than 1/2", longitudinal slope greater than 5.0%, and cross slope greater than 2.0%.

### *Sanitary Sewer Piping*

There were no deficiencies, blockages, collapses, or any other detrimental issues observed in any of the sanitary piping throughout the inspection.

### *Storm Drainage Piping*

There are 11 locations in the drainage system where deficiencies were observed, including heavy siltation, foreign debris blockage, crushed pipes, and broken pipes

### *Detention/Retention Basins*

All basins appear to be functioning effectively, although there is an overabundance of smaller woody vegetation present.



**Visual Assessment**

BSC personnel performed a site visit on March 11th, 2022 to perform visual assessments and appropriate field measurements of exterior site elements, which included the following:

- Bituminous parking lot pavement and curb condition
- Bituminous parking lot pavement markings and signage condition.
- Compliance with 2018 CT Building Code, ICC/ANSI A177.1.

**Site Element 1 and 2: Bituminous parking lot pavement and curbing condition and pavement marking and signage condition.**

Surrounding the Pratt and Whitney Stadium complex, the existing site contains numerous parking lots that are identified by name, number, or letter. Of these lots, those immediately adjacent to the stadium are constructed out of Bituminous Pavement. These lots include:

- Lot 2
- Lot 3
- Lot 4
- Lot 5
- Portion of Lot 7
- Portion of Lot 8
- Lot 12
- Lot A

Please refer to Figure 1 - "Parking Lot Diagram" on page 21 for a lot identification map.

To document the existing condition of the bituminous pavement, BSC utilized an approach to the assessment that focused on three major deficiency indicators: surface defects, surface deformations, and cracking. The table below summarizes these pavement deficiencies along with the specific nature of each representative defect that was considered:

Deficiency	Representative Defect
Surface Defect	Raveling and/or loss of surface aggregate
	Flushing
Surface Deformation	Rippling and Shoving
	Rutting
	Distortion/Depression
	Potholes
Cracking	Block Cracking
	Fatigue (Alligator) Cracking
	Longitudinal (Linear) Cracking
	Transverse Cracking
	Edge Cracks
	Slippage Cracks
	Joint Reflection Cracks

Please refer to Table 1 on page 16 for definitions and example photos of the pavement deficiencies noted in the above table.



Based on subjective observation and guided by the deficiencies noted above, the bituminous pavements in the surrounding lots were classified into one of five categories, based on the observed conditions:




- "Satisfactory" (functional - no maintenance needed)
- "Fair" (functional - with only minor maintenance needed to achieve "Satisfactory" condition. Maintenance example: crack sealing).
- "Poor" (functional, but basic repairs are needed to restore pavement to "Satisfactory" condition. Repair example: pot-hole subbase replacement and bituminous patching. Without repairs, the pavement will quickly deteriorate to "Serious" condition).
- "Serious" (functional, but generally beyond the point where basic repairs can restore the pavement to "Fair" or "Satisfactory" condition. Repairs will only serve to maintain function over the short term; plan for pavement replacement).
- "Failed" (pavement is considered non-functional).




In addition to the assessment of the pavement condition, BSC also visually assessed the physical condition of the pavement markings and signage throughout the lots. Unlike the pavement condition categories above however, the pavement markings are categorized based only on a "Satisfactory" or "In Need of Replacement" classification.

Utilizing the above deficiency indicators and grading criteria, the table on the following page categorizes the results of the visual assessment for each identified lot for pavement, curb, pavement markings, and signage condition.



Also refer to Figure 2 - "Parking Lot Pavement and Curb Assessment" on page 22 for a visual representation of the items discussed in the table.

Lot	Pavement Condition	Pavement Notes	Curbing Notes	Pavement Marking/Signage Notes	Representative Photograph
Lot 2	Serious	<ul style="list-style-type: none"> <li>- Longitudinal cracking apparent throughout entire lot, spaced approximately 15' apart, apparently at the interface between paving courses. Cracking appears up to 4" wide and 1-2 inches deep</li> <li>- Transverse Cracks throughout entire lot, up to 3" wide and 1-2 inches deep.</li> <li>- There is evidence of previous crack sealing throughout the lot. At this time, however, the cracks are of sufficient width that the crack sealing is no longer functioning effectively.</li> <li>- Minor alligator cracking noted in isolated areas near joint cracks. Due to the loss of pavement integrity at the corners created by the longitudinal and transverse cracks, loading of the pavement in these areas caused the corners to break off. (See representative photo)</li> </ul>	<ul style="list-style-type: none"> <li>- No curbing present in lot.</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement markings are severely faded and in need of replacement.</li> <li>- Original lot striping was sealed over and replaced with accessible parking striping. The pavement sealing has deteriorated overtime and the original striping is now starting to show through, confusing the striping configuration.</li> <li>- Cross walk striping is severely faded.</li> <li>- One section of Striping (4 spaces) have been replaced in the north portion of this lot.</li> <li>- Only the accessible parking immediately adjacent to the stadium contains signage. The signage does not meet code. Refer to the code section of this report for further information.</li> </ul>	 <p><i>Lot 2: Longitudinal and Transverse Cracks greater than 3" wide.</i></p>
Lot 3	Poor	<ul style="list-style-type: none"> <li>- Longitudinal cracking apparent throughout entire lot, apparently at the interface between paving courses. Cracks up to 3" wide and 1" deep</li> <li>- Numerous 2" wide transverse cracks noted along length of handicapped parking area</li> <li>- Transverse cracking, ranging between 2" to 3" in width, noted in several locations of main parking area .</li> <li>- There is evidence of previous crack sealing throughout the lot. At this time, however, the cracks are of sufficient width that the crack sealing is no longer functioning effectively.</li> </ul>	<ul style="list-style-type: none"> <li>- Two areas of fractured curbing noted in the accessible parking area of lot.</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement markings are severely faded in the accessible parking and are in need of replacement</li> <li>- The accessible Parking was sealed over and replaced with new striping. The pavement sealing has deteriorated overtime and the original striping is now starting to show through, confusing the striping configuration.</li> <li>- The remaining portions of lot 3 striping (non-accessible) are in satisfactory condition.</li> <li>- Crosswalk striping is severely faded ns in need of replacement</li> <li>- Only 11 of the accessible spaces include signs. The signage does not meet code. Refer to the code section of this report for further information.</li> </ul>	 <p><i>Lot 3: Longitudinal and Transverse Cracks greater than 2" wide.</i></p>

Lot	Pavement Condition	Pavement Notes	Curbing Notes	Pavement Marking/Signage Notes	Representative Photograph
Lot 4	Serious	<ul style="list-style-type: none"> <li>- Longitudinal cracking apparent throughout entire lot, apparently at the interface between paving courses. Cracks are up to 6" wide in some areas with instances of pavement separation (see representative photo).</li> <li>- Transverse Cracks throughout entire lot, up to 2" wide and 1" deep.</li> <li>- Alligator cracking observed in isolated areas.</li> <li>- There is some evidence of previous crack sealing throughout the lot. At this time, however, the cracks are of sufficient width that the crack sealing is no longer functioning effectively. There is also evidence of new cracking with no sealing.</li> <li>- Minor alligator cracking noted in isolated areas near joint cracks. Due to the loss of pavement integrity at the corners created by the longitudinal and transverse cracks, loading of the pavement in these areas caused the corners to break off. (See representative photo)</li> </ul>	<ul style="list-style-type: none"> <li>- Large section of damaged curbing noted in northeast portion of lot.</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement markings are in satisfactory condition.</li> <li>- Crosswalks are in satisfactory condition.</li> <li>- There are no signs for the accessible spaces.</li> </ul>	 <p data-bbox="1936 808 2620 862"><i>Lot 4: Longitudinal Cracks greater than 6" wide, with evidence of pavement separation.</i></p>  <p data-bbox="1936 1276 2324 1302"><i>Lot 4: Evidence of Alligator Cracking.</i></p>
Lot 5	Poor	<ul style="list-style-type: none"> <li>- Longitudinal cracking apparent throughout entire lot, apparently at the interface between paving courses.</li> <li>- Transverse cracking, 2"-3" wide, is noted in regular intervals of around 20 feet.</li> <li>- There is some evidence of previous crack sealing throughout the lot. At this time, however, the cracks are of sufficient width that the crack sealing is no longer functioning effectively. There is also evidence of new cracking with no sealing.</li> <li>- Minor alligator cracking just starting in select areas.</li> </ul>	<ul style="list-style-type: none"> <li>- Curbing is tending to crack in the same location as the transvers crack locations.</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement markings are severely faded in the accessible parking area and in need of replacement.</li> <li>- Original, non-accessible striping was eradicated and replaced with accessible striping, but the paint is severely faded.</li> <li>- The remaining original striping is in satisfactory condition.</li> <li>- There are signposts erected for accessible signage, but the signs do not exist.</li> </ul>	 <p data-bbox="1936 1770 2635 1824"><i>Lot 5: Evidence of Transverse Cracking and Shrinkage Separation (note translation of parking stripe).</i></p>

Lot	Pavement Condition	Pavement Notes	Curbing Notes	Pavement Marking/Signage Notes	Representative Photograph
Lot 7	Poor	<ul style="list-style-type: none"> <li>- Block cracking apparent throughout the extents of this lot. The separation cracks range anywhere from 0.5" to 2.5" wide and the blocks are approximately 20-30 feet square.</li> <li>- Paving course joint separation noted in some areas as well.</li> <li>- Limited crack sealing has occurred.</li> </ul>	<ul style="list-style-type: none"> <li>- Curbing fractured in multiple locations and beginning to be displaced.</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement markings are in satisfactory condition.</li> <li>- Original, accessible striping was eradicated (painted over) and replaced with new striping in a different orientation.</li> <li>- The accessible spaces include signs, but they do not meet code. Refer to the code section of this report for further information.</li> </ul>	 <p><i>Lot 7: Evidence of Block Cracking.</i></p>
Lot 8	Poor	<ul style="list-style-type: none"> <li>- Longitudinal cracking apparent throughout entire lot, apparently at the interface between paving courses, ranging between 0.5" to 2" in width.</li> <li>- Transverse Cracks throughout entire lot, from 0.5" to 2" wide and up to 1" deep in some areas</li> <li>- There is some evidence of previous crack sealing throughout the lot. At this time, however, the cracks are of sufficient width that the crack sealing is no longer functioning effectively.</li> <li>- The accessible parking space area was sealed entirely with pavement sealer at one point, but that sealer is no longer functioning effectively.</li> <li>- There appears to be some minor evidence of alligator cracking in very select areas.</li> </ul>	<ul style="list-style-type: none"> <li>- Curbing fractured in multiple locations and beginning to be displaced.</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement markings are in satisfactory condition.</li> <li>- Original striping was sealed over and replaced with the new accessible striping.</li> <li>- There are no signs for the accessible spaces.</li> <li>- Crosswalk striping is severely faded and in need of replacement</li> </ul>	 <p><i>Lot 8: Evidence of minor Transverse Cracking.</i></p>
Lot 12	Poor	<ul style="list-style-type: none"> <li>- Longitudinal cracking apparent throughout entire lot, apparently at the interface between paving courses, ranging between 0.5" to 2" in width.</li> <li>- Transverse Cracks throughout entire lot, from 0.5" to 2" wide and up to 1" deep in some areas</li> <li>- Minor alligator cracking noted in some areas. Cracks were sealed at one point, but the sealing has failed, and the cracking continues to worsen.</li> <li>- The accessible parking space area was sealed entirely with pavement sealer at one point, but that sealer is no longer functioning effectively.</li> <li>- Paving course joint separation noted in some areas as well.</li> </ul>	<ul style="list-style-type: none"> <li>- Curbing is tending to crack in the same location as the transvers crack locations.</li> <li>- Section of Curb are also starting to displace.</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement markings are severely faded in the accessible parking area and in need of replacement.</li> <li>- Original striping was sealed over and replaced with the new accessible striping.</li> <li>- There are no signs for the accessible spaces.</li> <li>- There is no crosswalk.</li> </ul>	 <p><i>Lot 12: Evidence of Transverse Cracking.</i></p>



Lot	Pavement Condition	Pavement Notes	Curbing Notes	Pavement Marking/Signage Notes	Representative Photograph
Lot A	Fair	<ul style="list-style-type: none"> <li>- Longitudinal cracking apparent throughout entire lot, apparently at the interface between paving courses and in other random areas, ranging between 1" and 2" in width.</li> <li>- There appears to be a 10' x 10' pavement repair in the center of the lot, however the repair contains a portion of uneven, depressed pavement with evidence of water retention.</li> <li>- Random transverse and diagonal cracking observed throughout the lot with little apparent cause.</li> <li>- There does not appear to be any crack or pavement sealing evident</li> </ul>	<ul style="list-style-type: none"> <li>- No curbing present in lot.</li> </ul>	<ul style="list-style-type: none"> <li>- Pavement markings are in satisfactory condition.</li> </ul>	 <p data-bbox="1951 798 2402 822"><i>Lot A: Longitudinal and Transverse Cracks.</i></p>  <p data-bbox="1951 1247 2551 1272"><i>Lot A: Block Cracking with Depression of pavement noted.</i></p>

Please see the "Recommendations" section later in this report for discussion on the condition of the parking lots observed and the recommendations for their improvement.



**Site Element 3: Compliance with 2018 CT Building Code, ICC/ANSI A117.1 - 2009 Accessible and Usable Buildings and Facilities Code Compliance**

In addition to inspecting the physical condition of the site elements, BSC also performed a compliance review in accordance with the 2018 Connecticut State Building Code and its adopted model codes, in particular the “International Code Council A117.1 - 2009 Standard for Accessible and Usable Buildings and Facilities,” to determine whether the exterior portions of the site meet current standards regarding pedestrian accessibility. Topics that were primarily focused on as part of this review include:

- Compliance with Accessible Parking Space Count.
- Compliance with configuration (size and spacing) of accessible parking spaces and aisle, proper signage, and Proper accessible marking.
- Presence of accessible routes.
- Compliance of Walking Surface Openings, Changes in level, and accessible route running and cross slope.
- Compliance of exterior ramps and staircases.

(Note: Lot A does not contain any accessible parking spaces, therefore, BSC did not include Lot A in the compliance review.)

**Accessible Parking Space Count**

Key code provisions considered during the facilities study relative to the number of accessible parking spaces include:

- 2018 Connecticut State Building Code, 2015 International Building Code, Section 1106: Where more than one parking facility is provided on a site, the number of parking spaces required to be accessible is calculated separately for each parking facility.
- 2018 Connecticut State Building Code, 2015 International Building Code, Section 1106.1: The number of accessible parking spaces required is based on the number of parking spaces provided.
- 2018 Connecticut State Building Code, 2015 International Building Code Section 1106.5, (CT

Amended): For every six or fraction of six accessible parking spaces, at least one shall be a van-accessible parking space.

A table of total and accessible parking spaces is summarized as follows:

**Total Parking and Total Accessible Parking Spaces**

Lot	Total Parking space count	Accessible Parking Spaces Required	Accessible Parking Spaces Provided	Accessible Van Spaces Provided
Lot 2	100	4	76	24
Lot 3	271	7	32	1
Lot 4	134	5	11	0
Lot 5	114	5	4	4
Lot 7	13	1	6	6
Lot 8	16	1	16	0
Lot 12	65	3	65	0

Lot 5 is the only lot that does not strictly meet the code requirement for adequate accessible spots, however, Lot 7 is immediately adjacent to this parking area and contains 11 extra accessible spaces.

Lot 3, 4, 8, and 12 also do not have the adequate number of van spaces, however, Lot 2 and Lot 7 have an overabundance of van spaces that are all grouped together. In all, there is an adequate number of van spaces within reasonable distance to an entrance at this facility.

Therefore, BSC concludes that the stadium facility provides adequate accessible parking spaces in accordance with CT Building Code.

(Note: The non-paved parking areas surrounding the stadium facility are not marked with designated spaces and the gravel and grass surface conditions do not meet the code requirement for smooth floor surfaces for accessible access, therefore, they have not been included in the overall parking count.)

**Configuration (size and spacing) of accessible parking spaces and aisles.**

Key code provisions considered during the facilities study relative to the size and spacing of accessible parking spaces and aisles include:

- 2018 Connecticut State Building Code, ICC A117.1 (Amd) Section 502.2: Pursuant to section 14-253a of the Connecticut General Statutes, car parking spaces shall be 15 feet in width including 5 feet of cross hatch. Van parking spaces shall be 16 feet in width including 8 feet of cross hatch.
- 2018 Connecticut State Building Code, 2015 International Building Code, (Amd) Section 1111.1.1: Pursuant to subsection (h) of section 14-253a of the Connecticut General Statutes, such spaces shall be designated by above-grade signs with white lettering against a blue background and shall bear the words “RESERVED Parking Permit Required” and “Violators will be fined” in addition to the International Symbol of Accessibility. When such a sign is replaced, repaired, or erected, it shall indicate the minimum fine for a violation of subsection (l) of section 14-253a of the Connecticut General Statutes. Such indicator may be in the form of a notice affixed to such sign. Newly installed signs shall be 60 inches (1525 mm) minimum above the floor or ground of the parking space, measured to the bottom of the sign.
- 2018 Connecticut State Building Code, ICC A117.1 (Amd) 703.6.3.1 International Symbol of Accessibility: Pursuant to section 29-269c of the Connecticut General Statutes, references in this code to the International Symbol of Accessibility shall be deemed to mean Connecticut’s symbol of access and shall comply with Figure 703.6.3.1



**Presence of Accessible Routes:**

Key code provisions considered during the facilities study relative to the presence of accessible routes include:

- ICC A117.1, Section 502.4.1 Location: Access aisles shall adjoin an accessible route.

Following the site assessment, Lot 4 is the only lot with accessible parking without a direct accessible path to a main entrance. The 11 accessible spaces in this lot are obstructed by a grassed island and require the user to travel along the vehicle travel aisle to the cross walk adjacent to Lot 3.

Please refer to the recommendations section for further information on providing more code compliant access into the stadium for this area.

**Accessible Routes – Compliance with Walking Surface Openings, Changes in level, and accessible route running and cross slope.**

Key code provisions considered during the facilities study relative to the compliance of accessible routes include:

- ICC A117.1, Section 302.3 Openings: Openings in floor surfaces shall be of a size that does not permit the passage of a ½ inch (13 mm) diameter sphere.
- ICC A117.1, Section 303.2 Changes in Level, Vertical: Changes in level of 1/4 inch (6.4 mm) maximum in height shall be permitted to be vertical.
- ICC A117.1, Section 303.3 Changes in Level, Beveled: Changes in level greater than 1/4 inch (6.4 mm) in height and not more than 1/2 inch (13 mm) maximum in height shall be beveled with a slope not steeper than 1:2.
- ICC A117.1, Section 403.3 Slope: The running slope of walking surfaces shall not be steeper than 1:20 (5.0%). The cross slope of a walking surface shall not be steeper than 1:48 (2.0%).
- ICC A117.1, Section 405.2 Ramp Slope: Ramp runs shall have a running slope greater than 1:20 (5.0%) and not steeper than 1:12 (8.33%).

For the purposes of this examination, as a stadium facility, an accessible route is not only the most direct path from a parking space to a stadium entrance, but also the continuous area of all perimeter walkways surrounding the facility, due to the nature of the activities that occur at said facility (ticket windows, Fanzone entertainment areas, etc.). Therefore, all handicapped parking areas, crosswalks, and perimeter walkways surrounding the stadium were assessed for compliance.

To assess compliance with openings in the surface, deficiencies in the pavement, such as cracks or joints, were inspected and measured to confirm if the opening was greater than ½ inch.

To assess compliance with changes in level, deficiencies in the pavement, such as cracks or joints, were visually inspected to confirm if the change in level was approximately greater than ¼ inch vertical or ½ inch with a bevel.

To assess compliance with longitudinal and cross slope, a representative quantity (sample set) of longitudinal and cross slopes were measured using a 2 foot long digitized level (“Smart Level”) set to record percent slope. Industry standard for assessment of code compliant accessible route slope is a 2-foot smart level with a +/- tolerance of 1.0 percent.

The table on the following page summarizes the above compliance assessment. For clarity, accessible routes and perimeter walkway areas are grouped based on their adjacent lot identification. (Please see Figure 1 on page 21) The information in the table provides only those instances that were observed to be out of compliance.



Accessible Route connecting lot	Observed Openings Greater than ½ inch	Observed Changes in level Greater than ½ inch	Observed measured Longitudinal Slope greater than 5.0% (1:20)	Observed Measured Cross slope greater than 2.0% (1:48)	Other observed compliance issue
Lot 2	<ul style="list-style-type: none"> <li>- Pavement joint between the accessible parking and perimeter walkway.</li> <li>- Transverse cracks across the perimeter walkway.</li> <li>- Transvers and longitudinal cracks throughout Accessible parking area.</li> </ul>	<ul style="list-style-type: none"> <li>- Interface between accessible parking aisle and perimeter walkway.</li> </ul>	<ul style="list-style-type: none"> <li>- Section of stadium walkway in front of the ticket counter.</li> </ul>	<ul style="list-style-type: none"> <li>- Portions of the Perimeter walkway.</li> </ul>	
Lot 3	<ul style="list-style-type: none"> <li>- Transverse cracks across the perimeter walkway.</li> <li>- Transvers and longitudinal cracks throughout Accessible parking area.</li> </ul>			<ul style="list-style-type: none"> <li>- Portions of the Perimeter walkway.</li> </ul>	<ul style="list-style-type: none"> <li>- Interface between accessible parking area and perimeter walk curb ramp exceed 8.3%</li> <li>- Curb Ramp slope at west crosswalk exceeds 2.0% Cross slope.</li> <li>- West curb Ramp does not have a minimum 36" top landing (A117.1§406.7)</li> <li>- Accessible route cannot pass through west ramp</li> </ul>
Lot 4	<ul style="list-style-type: none"> <li>- Transverse cracks across the perimeter walkway.</li> </ul>	<ul style="list-style-type: none"> <li>- Uneven ground surface at main gate.</li> </ul>		<ul style="list-style-type: none"> <li>- Portions of the Perimeter walkway.</li> </ul>	
Lot 5	<ul style="list-style-type: none"> <li>- Pavement joint between the accessible parking and perimeter walkway.</li> <li>- Transverse cracks across the perimeter walkway.</li> <li>- Block cracking around Fanzone area and main gate.</li> </ul>			<ul style="list-style-type: none"> <li>- Portions of the Perimeter walkway.</li> </ul>	



Accessible Route connecting lot	Observed Openings Greater than ½ inch	Observed Changes in level Greater than ½ inch	Observed measured Longitudinal Slope greater than 5.0% (1:20)	- Observed Measured Cross slope greater than 2.0% (1:48)	- Other observed compliance issue
Lot 7	<ul style="list-style-type: none"> <li>- Joints between perimeter walkway and bituminous curb ramp.</li> <li>- Block Cracking throughout accessible parking area.</li> </ul>			<ul style="list-style-type: none"> <li>- Portions of the Perimeter walkway.</li> </ul>	<ul style="list-style-type: none"> <li>- Interface between accessible parking area and perimeter walk curb ramp exceed 8.3%</li> </ul>
Lot 8	<ul style="list-style-type: none"> <li>- Transverse cracks across the perimeter walkway.</li> <li>- Transvers and longitudinal cracks throughout Accessible parking area.</li> </ul>				<ul style="list-style-type: none"> <li>- Curb Ramp slope at east crosswalk exceeds 2.0% Cross slope.</li> <li>- East curb Ramp does not have a minimum 36" top landing (A117.1§406.7)</li> <li>- Accessible route cannot pass through west ramp</li> </ul>
Lot 12	<ul style="list-style-type: none"> <li>- Pavement joint between the accessible parking and perimeter walkway.</li> <li>- Transverse cracks across the perimeter walkway.</li> <li>- Transvers and longitudinal cracks throughout Accessible parking area.</li> </ul>	<ul style="list-style-type: none"> <li>- Interface between accessible parking aisle and perimeter walkway.</li> </ul>			<ul style="list-style-type: none"> <li>- Interface between accessible parking area and perimeter walk curb ramp exceed 8.3%</li> </ul>



For further clarification, a diagram identifying the approximate location of any observed issues is included as Figure 3 - "Accessible Route Assessment" (page 23).

There are a few items associated with this portion of the compliance review that include some additional commentary:

- The entire perimeter walkway is constructed out of bituminous pavement, including the curb ramp areas. Due to flexible nature of bituminous pavement, there are instances where openings, slopes, and changes in level can alternate into compliance and back out of compliance multiple times in a season, most notably due to the weather.
- Representatives from the Stadium facility indicated that portions of the bituminous parking areas are often utilized as plaza areas for events (Craft shows, etc.) and require the entire parking area to function entirely as an accessible route. Therefore, expansive longitudinal or transverse cracks present in all the perimeter lots pose a wheelchair disruption or tripping hazard in many instances.

Compliance of Exterior Ramps and Staircases

Key code provisions considered during the facilities study relative to the compliance of accessible routes include:

- ICC A117.1, Section 405: Ramps (entire code section)
- ICC A117.1, Section 504: Stairways (entire code section)

Within the limits of our exterior facility assessment, there is only one (1) extended pedestrian ramp and two (2) two sets of staircases on the south end of the facility. The Ramp is located immediately east of the electrical transformer area of the facility, and the stairs are immediately east and west of the main stadium tunnel access. (Please see Figure 1 for location.)

Following an ICC A117.1 code review of the pedestrian ramp, the only compliance issue observed was that the running slope

of the ramp exceeded the maximum running slope of 8.3% (1:12). All other compliance criteria were satisfied.

The sets of stairways adjacent to the stadium tunnel were inspected for any deficiencies in their physical condition that can potentially cause issues with code compliance.

The only compliance issue observed with regard to the stairways pertained to the top landing. The top of the stair consists of the topmost concrete tread width before transitioning to a bituminous landing area. This landing is steeper than the code maximum 2.0% (1:48) for a distance of 5 feet. This code deficiency is equal on both stairways. It was also noted that the eastern most stair center railing anchorage is deteriorated and will eventually fail entirely, potentially causing a safety hazard.

**Site Element 4a - Sanitary Sewer System Piping Inspection**

In order to assess the condition of existing sanitary sewer systems located outside of the site, BSC hired a drain inspection subconsultant to perform a Closed-Circuit Television (CCTV) inspection of all sewer system piping.

This CCTV inspection involves the insertion of a wheeled camera vehicle down through a sanitary manhole and subsequently into the invert of the connected sewer pipe for the purposes of investigating the interior of the pipe run. This vehicle is equipped with a 360° camera and the ability to record its measured position from the center of the manhole as it traverses through the piping. This inspection is also capable of being recorded and documented for future reference.

BSC was on site to oversee the CCTV inspections, which occurred over the course of two field days, starting on March 31st, 2022, and completed on April 4th, 2022. In total, approximately 3,300 linear feet of Sanitary Piping was inspected.

Beneficially, there were no deficiencies, blockages, collapses, or any other detrimental issues observed in any of the sanitary piping throughout the inspection.

Reports compiled by the inspection subconsultant, and the CCTV footage will be provided separately. Please see Figure 4 - "Sanitary Sewer Piping Inspection" (page 24) for a graphical representation of the sewer lines that were inspected.

**Site Element 4b - Storm Drainage System Piping Inspection**

Similar to the Sewer investigations and following the same inspection procedure, BSC investigated the storm drainage piping utilizing the same CCTV Drain inspection Subconsultant. Due to the increased number of interconnected lines, inspections were conducted over multiple days, between April 15, 2022, and May 3, 2022.

Upon completion of the inspections, it was determined that there are 11 locations in the drainage system where deficiencies were observed, including heavy siltation, foreign debris blockage, crushed pipes, and broken pipes. Please see Figure 5 - "Storm Drainage System Piping inspection" (page 25), which documents the drainage lines that were inspected and the locations where obstructions or deficiencies were observed.

Reports for the storm drainage system compiled by the inspection subconsultant and the CCTV footage for the storm system will be provided separately.

**Site Element 4c - Detention/Retention Basins**

Following a review of the Detention/Retention areas around the Facility, they all appear to be functioning effectively. There is an overabundance of smaller woody vegetation, with some apparent evidence of invasive species, but the intent of the areas - to retain and treat runoff from the impervious parking areas - appears to be effective.



**Recommendations**

**Site Element 1 and 2: Bituminous parking lot pavement and curbing condition and pavement marking and signage condition recommendations:**

*Pavement and Curb Condition:*

Though there appears to be a substantial amount of longitudinal and transverse cracking throughout all parking areas around the stadium, there is a much smaller amount of the other deterioration factors that were identified earlier in this report. This evidence points less to issues associate with the subbase material failing, but more to the failure of the pavement course due to its age. The pavement, at the end of its useful life, has lost all flexibility and has started to shrink in all directions, causing the observed cracking. Therefore, a reasonable recommendation for the majority of the pavement areas would be a Mill and Overlay.

A mill and overlay would remove the aged pavement either partially, or fully, via mechanical methods, while the subbase would remain relatively intact. The area would then be overlain with new pavement. This is also the cheapest improvement option that were generate a new pavement condition. The curbs surrounding these parking areas would also be replaced.

In those instances where the cracking is excessive and some subgrade may be compromised (Lot 2, lot 4), Reclaim-in-place is a viable option, where the existing pavement is ground directly into the base layer, creating a very stable base layer to overlay new pavement over. This would be the second most affordable improvement option over the mill and overly. Curbs would also be replaced.

We do not feel full depth replacement of any entire parking area would be necessary at this time, with the exception of a few limited areas of substantial alligator cracking. In these areas, selective full depth replacement can be investigated.

Please refer to Figure 2 (page 22) for information on the location of pavement and curb deficiencies.

*Crack Sealing:*

We also do not believe crack sealing would serve a purpose at this point due to the quantity and size of the cracks that were observed.

*Pavement markings:*

Pavement markings are subsequently addressed as a result of the replacement of all the pavement areas recommended above.

*Signage:*

Please refer to the following code recommendation section for recommendations pertaining to signage.

**Site Element 3: Compliance with 2018 CT Building Code, ICC/ANSI A117.1 - 2009 Accessible and Usable Buildings and Facilities Code Compliance Recommendations:**

*Parking count:*

Lot 5 is the only parking area with deficient accessible parking, being 1 space shy of the code compliant 5 spaces. Investigation of the area appears to show an additional 8 feet of striping area (4 feet on either end) not being utilized correctly for parking. We recommend this area be restriped, shifting the spaces down by 4 feet and effectively creating room for a fifth accessible space.

For those parking areas with deficient van spaces, we recommend rearranging and condensing the lot spaces to allow for conversion of standard accessible spaces to the appropriate number of van spaces for each area, to be in accordance with code.

*Accessible parking size and spacing:*

Lot 4 is the only lot out of compliance with regard to size and spacing. We recommend restriping lot 4 to be in compliance.

*Pavement Markings:*

All pavement markings will need to be replaced if our recommendations for pavement replacement are exercised. If the replacement recommendations are not exercised, we recommend, at a minimum, all accessible pavement markings identified as "in need of replacement" shall be restriped in accordance with ICC A117.1, Section 502.3.2 as amended. Also, all accessibility symbols shall be updated in accordance with Figure 703.6.3.1. as amended.

**Presence of Accessible Routes Recommendations:**

To maintain a code compliant accessible route between the accessible spaces of Lot 4 and the main entrance, we recommend removing a section of grassed Island and replacing with a flush section of walkway at least 4 feet wide. This walk would then connect to a new crosswalk that would cross the access road on the south side of the stadium in from of the bus drop-off area.

Please refer to Figure 3 (page 23) for further information on this area.

**Accessible Routes – Compliance with Walking Surface Openings, Changes in level, and accessible route running and cross slope Recommendations:**

*Compliance with walking surface openings:*

We recommend all cracks ½ or larger in opening width be filled to satisfy code compliance, either by replacement of the entire pavement area, whether parking or walkway, or via crack filling and sealer.

*Compliance with changes in level:*

We recommend all changes in level that do not comply with code be reconstructed to be flush, either by replacement of the entire pavement area, whether parking or walkway, or via replacement of the specific deficient area.



*Compliance with longitudinal slope greater than 5.0% (1:20):*

We recommend replacement of the specific deficient area in accordance with ICC A117.1 Sections 302 and 403, as amended and as applicable.

*Compliance with cross slope greater than 2.0% (1:48):*

We recommend replacement of the specific deficient areas in accordance with ICC A117.1 Sections 302 and 403, as amended and as applicable.

*Compliance with curb ramp slope greater than 8.3% (1:12):*

We recommend replacement of the specific deficient areas in accordance with ICC A117.1 Sections 302 and 403, as amended and as applicable. Ideally, the curb ramps are replaced with cast-in-place concrete ramps to better control the variability of bituminous pavement ramps.

*Compliance with curb ramp minimum top landing size:*

We recommend replacing the current ramp style with a style that contains ramps with longitudinal slopes running parallel to the walking path, as opposed to perpendicular, as is currently installed. This will maintain slope compliance with code while preventing the need to increase the size of the walkway or modify the pedestrian flow path.

Please refer to Figure 3 (page 23) for further information on the above compliance areas.

**Compliance of Exterior Ramps and Staircases Recommendations:**

*Pedestrian ramp on south side of building:*

We recommend replacing the bottom landing of the ramp to decrease longitudinal slope or surfacing grinding top of ramp to bring ramp back into compliance.

*Tunnel access stairways:*

We recommend replacing a minimum of five feet of bituminous pavement at the top of each stairway to meet maximum 2.0% (1:48) slope in all directions in accordance with ICC A117.1 Section 52 as amended.

Please refer to Figure 3 (page 23) for further information on the above compliance areas.

**Site Element 4a - Sanitary Sewer System Piping Recommendations:**

*(There are no recommendations proposed for the sanitary piping.)*

Please refer to Figure 4 (page 24) for a graphical representation of the sewer piping that was inspected in this assessment.

**Site Element 4b - Storm Drainage Piping Recommendations**

*Siltation:*

We recommend consulting a storm drainage cleaning service to clean heavily silted piping. These services may also have the ability to clear piping obstructed with foreign debris.

*Crushed, Broken, or otherwise damaged piping:*

We recommend the damaged piping as indicated in the inspection reports be assessed on a case-by-case bases for replacement. These damaged individual sections of piping should be capable of replacement of the immediate pipe section, not the entire piping run.



Please refer to Figure 5 (page 25) for a graphical representation of the Storm piping that was inspected in this assessment, and for the locations of the defects observed.

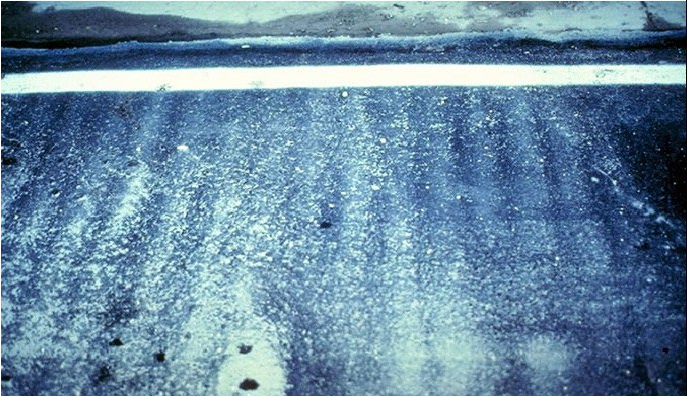


**Site Element 4c - Detention/Retention Basin Recommendations:**




We recommend select removal of minor woody vegetation and invasive species around the perimeter of the basins.






## Tables and Figures

Table 1: Definition of Representative Defects		
Surface Defects		
Raveling	Surface of Hot Mix Asphalt layer begins to disintegrate due to dislodgement of aggregate particles. Potentially caused by loss of bond between aggregate and asphalt binder.	
Flushing	Commonly referred to as bleeding. A film of asphalt binder on pavement surface that creates a shiny, sticky surface. Caused when asphalt binder fills aggregate voids in warm weather, and then expands.	

<p>Rippling/Shoving</p>	<p>Formation of ripples across pavement surface, potentially caused by excess asphalt, excess fine aggregate, rounded aggregate, or weak granular base.</p>	
<p>Rutting</p>	<p>Surface depression or deformation in the wheel path. Either Hot Mix Asphalt deformation to cause a rut or subgrade deformation to cause a rut, or both.</p>	
<p>Distortion/Depression</p>	<p>Pavement surface areas with slightly lower elevations than surrounding pavement areas. Potentially caused by frost heave or subgrade settlement due to inadequate compaction. Can cause localized ponding.</p>	

<p>Pot Hole</p>	<p>Small bowl-shaped depressions in pavement that penetrate through pavement section to base course. Caused by fatigue failure of HMA surface (common end result of alligator cracking). Typically exacerbated by winter heaving and snow plowing.</p>	
<p><b>Cracking</b></p>		
<p>Alligator Crack</p>	<p>Collection of smaller longitudinal and transverse cracks that create sharp-angled pieces caused by to repeated frequent loading/unloading of the pavement cross section. Also potentially caused by loss of load-carrying capacity due to improper subbase drainage or freeze/thaw issues.</p>	
<p>Block Crack</p>	<p>Interconnected cracks that divide pavement into smaller rectangular pieces, potentially caused by hot mix asphalt shrinkage due to asphaltic binder aging (loss of Volatile Organic Compounds that provide pavement elasticity)</p>	

<p>Longitudinal</p>	<p>Cracks parallel to flow of traffic. Often first signs of fatigue cracking and can lead to alligator cracking. Potentially caused by improper joint construction or location.</p>	
<p>Transverse</p>	<p>Cracks perpendicular to flow of traffic, caused by shrinkage of hot mix asphalt surface in low temperatures.</p>	
<p>Edge Crack</p>	<p>Longitudinal cracks that develop within 1-2 feet of outer edge of pavement, Potential causes include lack of support at pavement edge, poor drainage conditions, or heavy vegetation along pavement edge.</p>	

<p>Joint Reflection</p>	<p>Cracks in flexible overlay of rigid pavement, that occur directly over rigid pavement joints.</p>	
<p>Slippage Cracks</p>	<p>Arc-shaped cracks pointed in direction of traffic, caused by braking/turning wheels sliding over low-strength surface mix or poor bonding between first and second layer of pavement</p>	

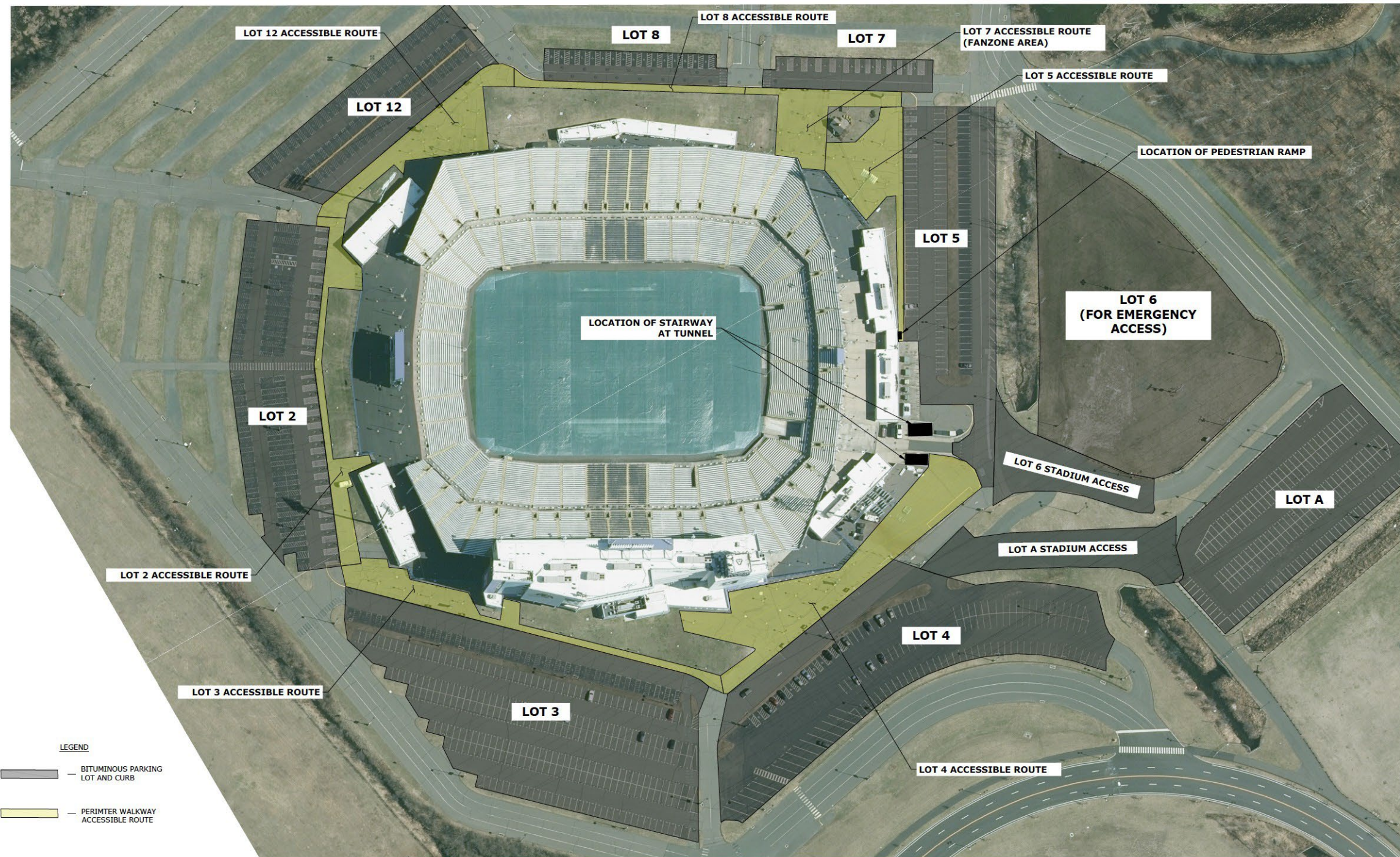
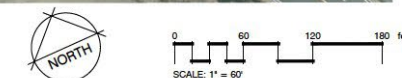


FIGURE 1: PARKING LOT DIAGRAM  
PRATT & WHITNEY STADIUM FACILITY ASSESSMENT

MAY 2022



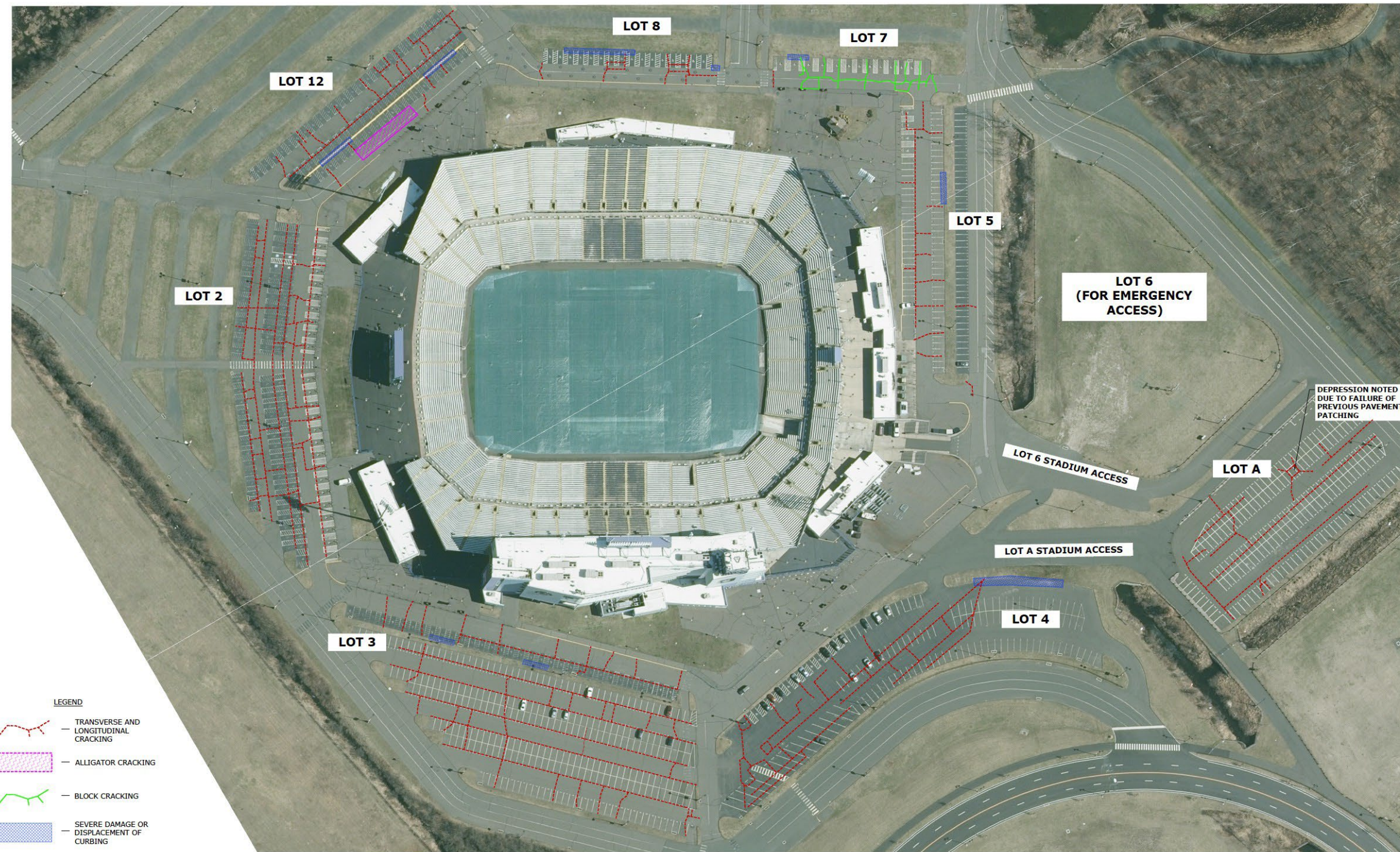
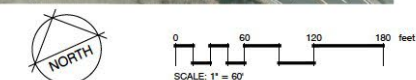


FIGURE 2: PARKING LOT PAVEMENT AND CURB ASSESSMENT  
PRATT & WHITNEY STADIUM FACILITY ASSESSMENT



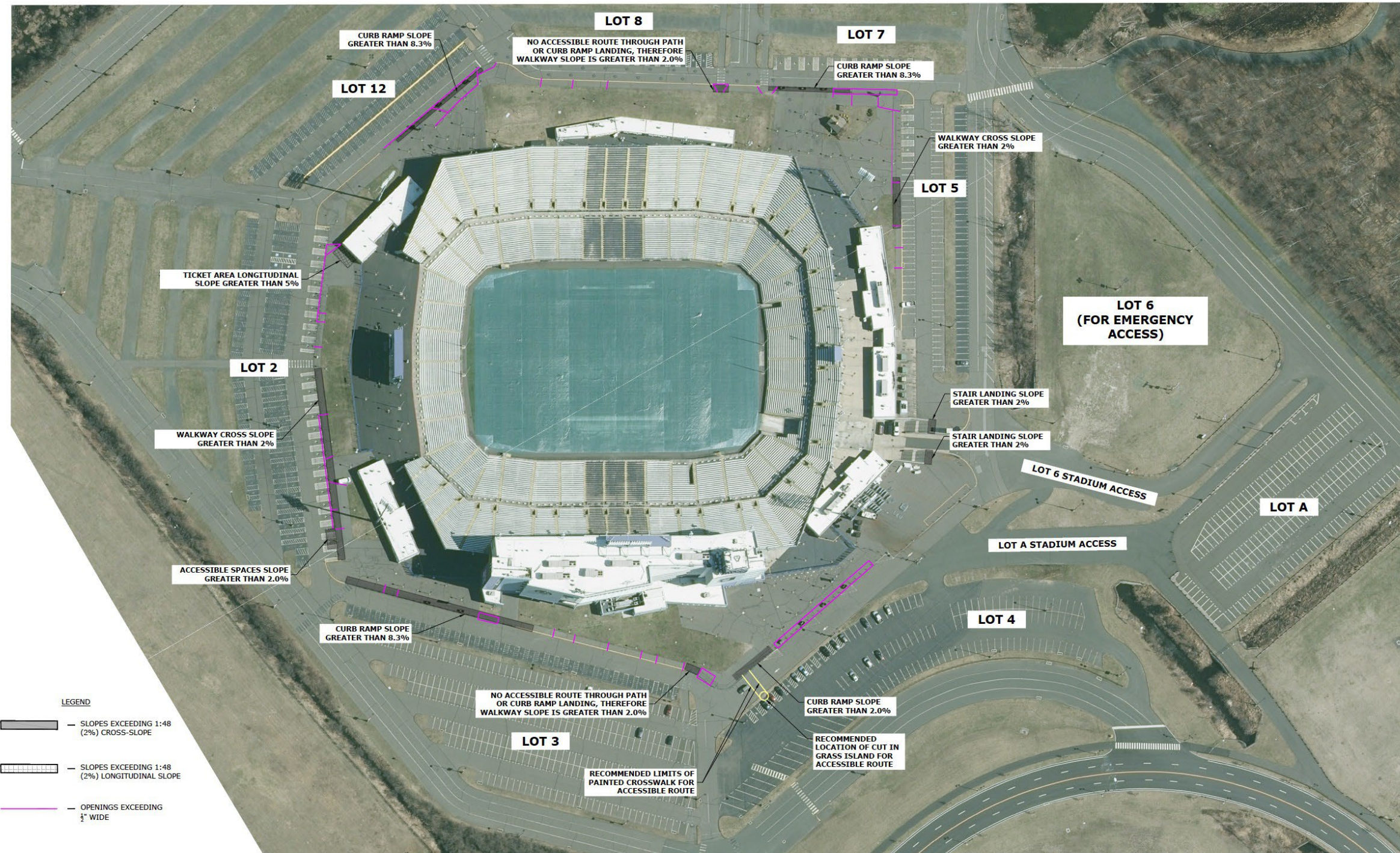
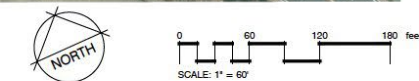
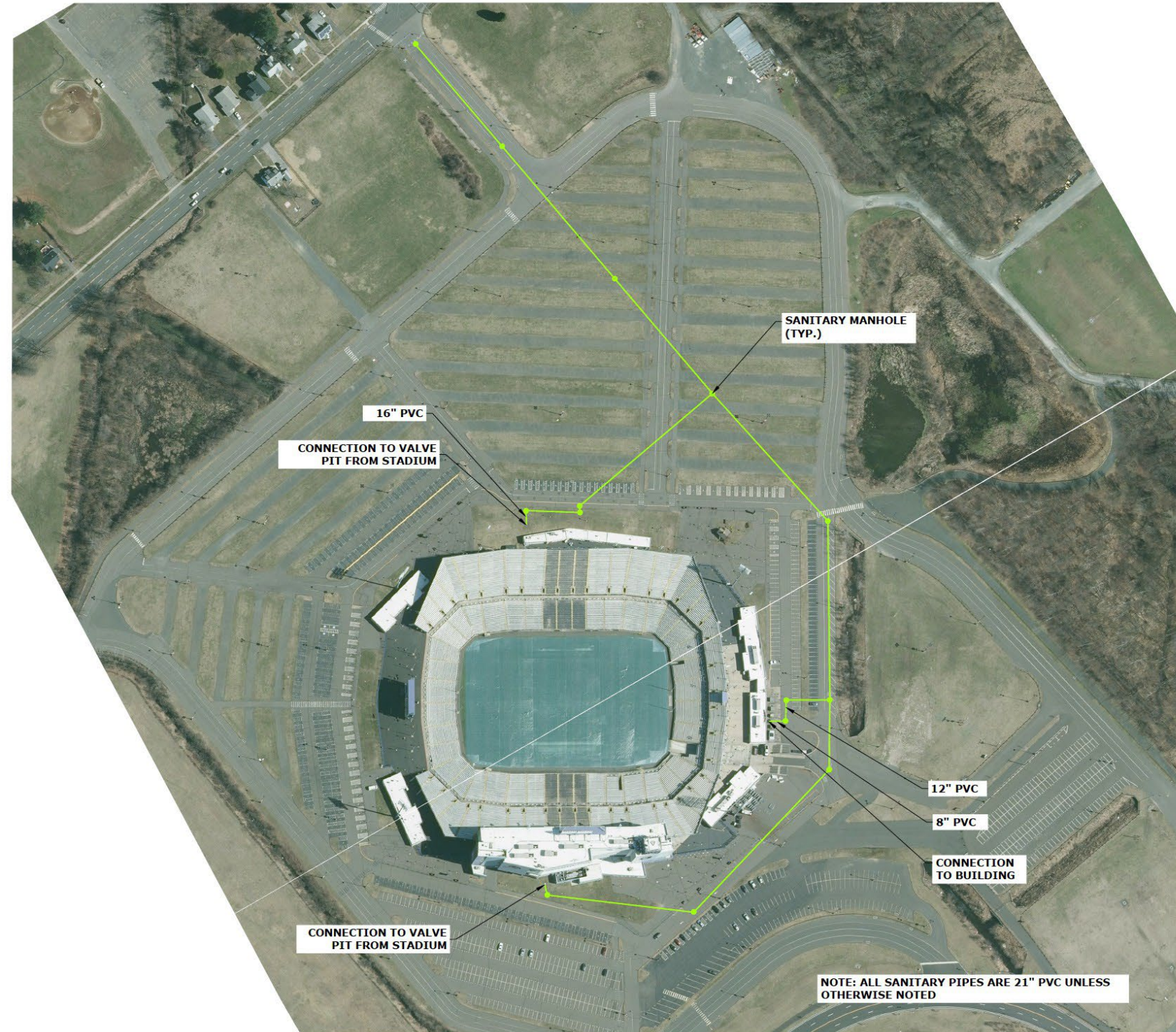


FIGURE 3: ACCESSIBLE ROUTE ASSESSMENT  
PRATT & WHITNEY STADIUM FACILITY ASSESSMENT

MAY 2022







LEGEND  
 — SANITARY SEWER PIPE INSPECTED  
 ● STORM MANHOLE

NOTE: ALL SANITARY PIPES ARE 21" PVC UNLESS OTHERWISE NOTED

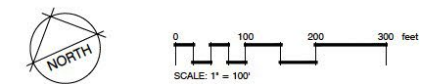


FIGURE 4: SANITARY SEWER SYSTEM PIPING INSPECTION  
 PRATT & WHITNEY STADIUM FACILITY ASSESSMENT

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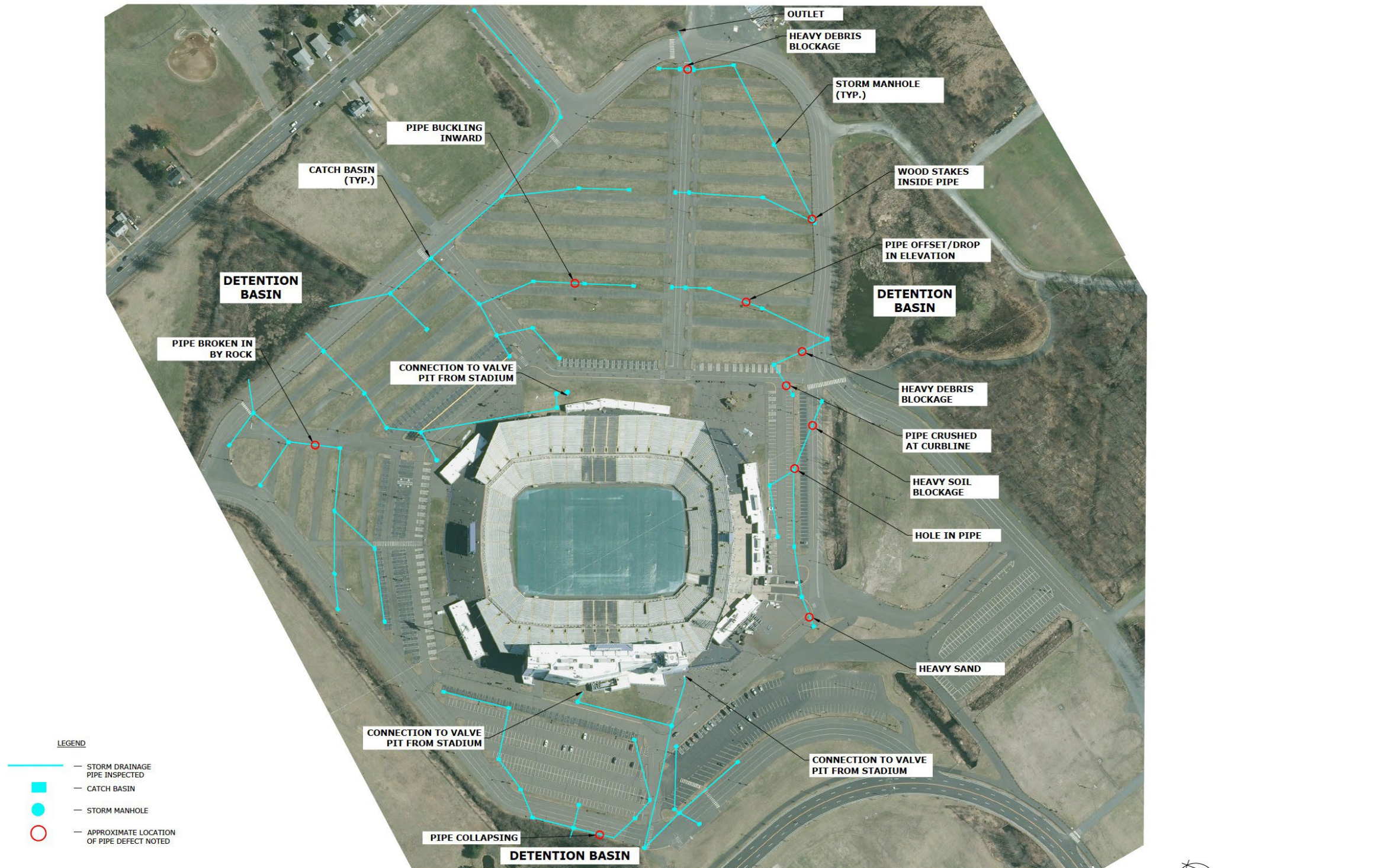


FIGURE 5: STORM DRAINAGE SYSTEM PIPING INSPECTION  
PRATT & WHITNEY STADIUM FACILITY ASSESSMENT

MAY 2022