SUMMARY REPORT

FY25 TRAFFIC CONTROL DEVICES INSPECTION REPORT

DRD045 PWS Section 3.2.13.5-2



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Attachments:

1) Attachment 1 - FY25 Traffic Control Sign Inventory with Recorded Attributes
2) Attachment 2 - FY25 Traffic Signal PM & Repairs WONs
3) Attachment 3 – FY25 Job Plan PSTC21A Traffic Signal Annual
4) Attachment 4 - FY25 Pavement Markings and Turf Shoulder Inspection Results
5) Attachment 5 - FY25 Helipad PM & Repair WONs
6) Attachment 6 – FY25 Job Plan BSM002A Annual Helipad Inspection
7) Attachment 7 – FY25 Channel Marker Signage Condition Evaluation

A. INTRODUCTION

1) In accordance with Data Requirements Description (DRD) 045 (PWS Section 3.2.13.5-2) of the Base Operations and Spaceport Services Contract (BOSS) 80KSC018C0017 and Sections 3.2.13.2-5 and 3.2.13.2-6 of the Performance Work Statement (PWS) of the Contract, this FY25 annual "*Traffic Control Devices Inspection Report"* has been developed. The following tasks have been completed:

   a) Traffic control signage Manual of Uniform Traffic Control Devices (MUTCD) retroreflectivity standards visual inspection, pavement marking and turf shoulder drop-offs and build-ups assessment, sign inventory with sign attributes, helipad markings/windsock/lighting assessment, and applicable notes in accordance with PWS Section 3.2.13.2-5. Included in the FY25 inspection reports, are inspection records for the channel marker signs along the Banana River Channel.

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b) For traffic control signs, **Attachment 1** is a list of FY25 inspection results. For roadway pavement markings and turf shoulder drop-offs and build-ups, **Attachment 4** contains the results of the required FY24 inspections.

c) Traffic signal assessment with applicable notes in accordance with PWS Section 3.2.13.2- 6.

d) **Attachment 3** and **Attachment 6** are the Job Plans utilized for the performance of traffic signal and helipad Preventive Maintenance Inspections.

2) Details of the Work Performed, Inspection Findings and Corrective Actions are included in this report and **Attachments 1 through 7** that are listed in the table of contents and referenced throughout this report.

B. EXECUTIVE SUMMARY

1) The traffic control devices at the Kennedy Space Center are generally considered to be in fair to good condition.

2) Throughout the report, Traffic Control Signage are rated based on a condition code system. The condition code is a rating from 1 to 5 assigned to each asset and based upon engineering judgement: a rating of 5 being the best with no further repairs/replacements required for approximately 3-4 years and 1 being the worst with repairs/replacement required within 6-12 months.

3) The following is a summary of the observations made during the inspection of each of the traffic control devices listed in Section A and described in more detail in Sections C through F of this report:

a) *Traffic Control Signage*: BOSS surveyed a total of 1,780 traffic control signs with a complete inventory compiled by an inspection performed. After this year's FY25 inspection, it was found that, based on reflectivity observations, 71% of the signs were "ACCEPTABLE", 25% of the signs were "UNACCEPTABLE", and 4% were removed due to new construction or road widening. The overall condition of the signage and posts range from fair to good. In Section C of this report, a detailed breakdown can be found analyzing the various condition ratings.

b) *inspection of Traffic Signals*: There are 22 signalized traffic intersections at Kennedy Space Center that are included in the BOSS contract for operations and maintenance. The traffic control equipment at these intersections is thoroughly inspected for any

deficiencies on an annual basis under variations of master generic job plan PSTC21A, **Attachment 3**. The inspection includes the verification of control system functionality, the condition of structural components, and the removal of dust, debris, and insects if they are present within the traffic cabinet. The cabinet fan and thermostat are tested, and the cabinet air filter is replaced as these steps are critical to keep cabinet temperatures within the operational range of the traffic control electronics. Intersections equipped with camera systems, and/or UPS systems, have additional maintenance plans for those additional components. See the included traffic maintenance spreadsheet for recent preventative maintenance performed and next maintenance due dates. There are many assets that do not show a "Last Completion Date" on the spreadsheet.

c) *Inspection of Pavement Markings and Turf Shoulder Drop-Offs and Build-Ups*: The pavement markings at KSC paved roadways in the main areas are generally in good condition. The pavement markings in outlying areas are generally in poor to fair condition. Approximately 150 miles of pavement markings on paved roadways were inspected in FY25 by BOSS. A condition code rating was assigned to each defined segment of roadway. The breakdown of the percentages of each condition code with respect to the total mileage of inspected roadway pavement markings is presented in Table 3 in Section E of this report.

d) Relatively few locations of significant turf shoulder drop-offs were observed, however build-up of sediment and vegetation was observed frequently at KSC. The build-up of vegetation appears to be more of a prevalent condition than turf shoulder drop-offs in the more densely populated areas. EWRs will be submitted to repair the identified areas.

e) *Inspection of Helipads*: The 10 helipads being maintained at KSC are in fair to good condition. BOSS Shops performed the FY25 Preventive Maintenance Inspection of these helipads and observed the common deficiencies of fading pavement markings, minor cracks and spalls in the pavement, deteriorated or missing windsocks and overgrowth of vegetation along the perimeter of the helipad. Baseline WONs were created to address the deficiencies.

f) *Inspection of Channel Marker Signage*: The 110 navigational aid signage along the Banana River Channel was inspected in the first quarter of calendar year 2025. The condition assessment examined the condition of the sign itself, legibility, and structural integrity of the pile. Overall, the signage condition was found to be in poor to fair condition. Corrective actions and a detailed analysis are listed in Section F.

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C. INSPECTION OF TRAFFIC CONTROL SIGNAGE

1) Work Performed – Traffic Control Signage

a) In accordance with PWS Section 3.2.13.2-5, BOSS has performed traffic control signage inspections during the last quarter of Calendar Year 2025. All traffic control signs that are included in the current issue of the Manual of Uniform Traffic Control Devices (MUTCD) have been checked visually for general compliance with MUTCD retro-reflectivity standards. An inventory of 1,611 traffic control signs were assessed indicating all sign attributes including the following:

- An assigned asset number
- Date of the current inspection
- Global Positioning System (GPS) location coordinates
- Wording or description of the image that is on the sign
- MUTCD sign type designation
- Sign panel dimensions
- Sign orientation
- Placement within the roadway cross section
- Sign condition code
- Acceptability of sign retro-reflectivity based on a visual inspection only
- Post type
- Post condition
- Sign Text

All collected data has been stored as GIS geodatabase features, utilizing ArcGIS software that is compatible with the KSC/GIS system.

All collected sign inventory data and attributes have been imported into a Microsoft Excel spreadsheet - see **Attachment 1** of this report, "Traffic Control Sign Inventory with Recorded Attributes".

b) There are photographs of each sign. The photos are imbedded in the ArcGIS geodatabase.

2) Inspection Findings – Traffic Control Signage

a) Referring to **Attachment 1** of this report, of the 1611 signs that were inspected, 71 percent were rated as having an "ACCEPTABLE" retro-reflectivity rating, 21 percent were rated as "UNACCEPTABLE", and 4 percent were rated as N/A due to the sign being missing/excessed.

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b) Condition Codes were recorded primarily to represent the physical condition of the sign. The following is the percentage distribution of the Condition Code values with respect to the total number of signs in **Table 1** below:

Table 1: Percentage of Reflectivity

Reflectivity	Acceptable	Unacceptable	N/A
Total Amount of Signs (of 1,611 total signs)	1143	338	64
Percentage (%) of all signs	71%	21%	4%

Table 2: Percentage of Condition Code

Condition Code	1	2	3	4	5
Total Amount of Signs (of 1,611 total signs)	165	180	240	704	322
Percentage (%) of All Signs	10.2%	11.2%	14.9%	43.7	20%

3) Corrective Actions – Traffic Control Signage

a) Starting the first quarter in Calendar Year 2025, BOSS QSE will submit a monthly sign replacement work request to address problem areas that have several damaged or deteriorated traffic signage as determined in **Attachment 1**. Higher priority areas include high-speed highways, flight hardware paths, and high traffic roadway segments.

b) As a general note, the signs that are determined to require replacement that do not have a standard cylindrical post per FDOT 700-010 will need a post replacement regardless of post condition. This will bring the sign to current state standards.

D. INSPECTION OF TRAFFIC SIGNALS

1) General Maintenance Information

a) There are 22 signalized traffic intersections at Kennedy Space Center that are included in the BOSS contract for operations and maintenance. The traffic control equipment at these intersections is thoroughly inspected for any deficiencies on an annual basis under variations of master generic job plan PSTC21A.

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b) The inspection includes the verification of control system functionality, the condition of structural components, and the removal of dust, debris, and insects if they are present within the traffic cabinet. The cabinet fan and thermostat are tested, and the cabinet air filter is replaced as these steps are critical to keep cabinet temperatures within the operational range of the traffic control electronics. Intersections equipped with camera systems, and/or UPS systems, have additional maintenance plans for those additional components. See the included traffic maintenance spreadsheet for recent preventative maintenance performed and next maintenance due dates. There are many assets that do not show a "Last Completion Date" on the spreadsheet. They are newly installed assets/equipment that will receive a first maintenance visit next year (see Recently Completed Upgrades/Modifications below).

2) Equipment Information

All twenty-two (22) traffic cabinets are equipped with PEEK ATC-1000 Advanced Traffic Controllers, and Eberle MMU2-16LE Malfunction Management Units. 5 of our 22 intersections employ camera-based vehicle detection systems using PEEK Video Trak-I.Q. camera systems. 17 of our 22 intersections detect vehicle presence with standard inductive loops. 18 of our signalized intersections are supported with a traffic UPS system capable of continuing normal traffic control operation for 6-8 hours if power to the control cabinet is interrupted. Those cabinets are monitored for power loss and low battery conditions via a radio connected to our CRMS mesh radio network.

3) Work In Progress

Recently Completed Upgrades/Modifications: The 12 oldest traffic cabinets at KSC were replaced in FY24 under WON 10175164. In addition to the cabinets, supporting infrastructure such as transformers, disconnects, and related electrical conduits were also refreshed. All the new traffic cabinets are equipped with battery backup systems and CRMS radio monitoring of power status for increased safety in the event of power outages.

Current Traffic Upgrades/Modifications: Space Commerce Way (S.C.W.) is being widened to 4 lanes under a NASA project in cooperation with the Florida D.O.T. This road leads to the new entrance of the K.S.C. Visitors Center and connects state roads SR-3 (Merritt Island) and SR-405 (Titusville). The three traffic cabinets on this roadway are being replaced under that effort. The transformation of S.C.W. to a 4-Lane divided highway connecting SR-3 and SR-405 has prompted the Florida D.O.T. to absorb S.C.W. as part of a hurricane evacuation route. Upon completion of the roadwork in early 2025, these three intersections will be transitioned to the responsibility of the Florida D.O.T.

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E. INSPECTION OF PAVEMENT MARKINGS AND TURF SHOULDER DROP-OFFS AND BUILD-UPS

1) Work Performed – Inspection of Pavement Markings and Turf Shoulder Drop-Offs and Build-Ups

a) In accordance with the requirements of PWS 3.2.13.2-5, pavement markings and turf shoulder drop-offs and build-ups on all accessible KSC paved roads were visually inspected and a qualitative assessment was made. The inspections were performed during the last quarter of Calendar Year 2024. **Attachment 4** documents the engineer assessment with regards to condition and other attributes associated with several segments of each roadway at Kennedy Space Center. The inspections, and data collection and reporting, were divided into the following seven (7) areas:

1) NASA Causeway.
2) Kennedy Parkway.
3) Industrial Area.
4) Launch Complex 39 Area.
5) Miscellaneous Roads South of the Industrial Area. 6) Miscellaneous Roads North of the Industrial Area. 7) Pads and Beaches.

b) **Attachment 4**, "FY25 Pavement Markings and Turf Shoulder Inspection Results", is a spreadsheet that includes the aforementioned seven areas. The assigned condition code and any pertinent comments for the pavement markings for each road segment has been recorded. In addition, the following information was pre-loaded into the spreadsheet for each roadway segment: Roadway Segment Number, Roadway Name, Roadway Segment Limits, Estimated Length of Roadway Segment (miles), Number of Travel Lanes, Estimated Roadway Width (ft), Pavement Marking Condition Code (1-5), and Significant Turf Shoulder Drop-off or Build-Up Observed.

c) The condition of pavement markings was determined utilizing a condition code rating system with assigned condition codes per the definitions detailed in the footnotes of **Attachment 4**.

d) Per PWS 3.2.13.2-5, turf shoulder drop-offs and sediment or vegetation build-up on all accessible KSC paved roads were visually inspected and a qualitative assessment, by roadway segment, was made. If drop-offs were observed that were approximately 3 inches or greater in depth or appeared to be a safety concern, and if significant sediment or vegetation buildup was observed – then these conditions were noted in **Attachment 4** of this report. Additional comments were included when deemed necessary.

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2) Inspection Findings – Pavement Markings and Turf Shoulder Drop-Offs and Build-Ups

a) The following Table 3 summarizes the condition of the pavement markings in each of the seven (7) areas of inspection that indicated in **Attachment 4** of this report:

Table 3 Summary of Road Conditions and Lengths

Inspection Area	Miles of Condition Code 1	Miles of Condition Code 2	Miles of Condition Code 3	Miles of Condition Code 4	Miles of Condition Code 5	Total Miles per Area
NASA Causeway/Nasa Parkway	0.00	15.39	10.61	0.00	0.00	26.00
Kennedy Parkway	0.00	0.40	28.87	11.71	0.00	40.98
Industrial Area	5.21	1.92	4.96	2.91	0.00	15.00
Launch Complex 39 Area	0.46	2.75	3.10	4.20	0.00	10.51
Miscellaneous - South of Industrial Area	2.58	0.00	0.16	2.88	4.10	9.72
Miscellaneous - North of Industrial Area	19.84	5.20	0.00	4.48	0.00	29.52
Pads and Beaches	4.51	0.98	1.90	7.16	0.74	15.29
Total Miles Per Code	**32.60**	**26.64**	**49.60**	**33.34**	**4.84**	**147.02**
Percentage (%) of Each Code	**22.2**	**18.1**	**33.7**	**22.7**	**3.3**	

b) Referring to Table 3 above, the following is the breakdown of the approximate percentage of the total inspected pavement marking mileage that has been rated as Condition Codes 1 through 5:

- Condition Code 1: 22.2%
- Condition Code 2: 18.1%
- Condition Code 3: 33.7%
- Condition Code 4: 22.7%
- Condition Code 5: 3.3%

c) Several locations of significant turf shoulder drop-offs or build-up of sediment or vegetation were observed at KSC with most of the observed conditions being in outlying areas away from the more heavily traveled roadways. The build-up of vegetation appears to be more of a prevalent condition than turf shoulder drop-offs.

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Refer to all tabs of the spreadsheet of **Attachment 4** for the road segment locations of these findings.

3) <u>Corrective Actions – Pavement Markings and Turf Shoulder Drop-Offs and Build-Ups</u>

a) Throughout Calendar Year 2026, an evaluation and subsequent work requests will be submitted for restriping and vegetation mitigation for various roadway segments as deemed necessary in **Attachment 4**. During these periods, if a roadway segment is determined to be a life safety concern, the repair will be discussed with the Civil SHARP team during the respective month's meeting.

F. INSPECTION OF HELIPADS

1) Work Performed – Inspection of Helipads

a) The helipads at KSC are for emergency and security operations. In accordance with the requirements of PWS 3.2.13.2-5, annual Preventive Maintenance (PM) Inspections are performed by BOSS Shops on ten (10) helipads at the Kennedy Space Center, three of which have lights. The PM inspections for FY25 have been completed and were performed in accordance with the instructions contained in Job Plan BSM002A, "Inspection, Helipads - Annual" – see **Attachment 6**. Inspection of the lighting at three (3) helipads were performed by BOSS Electrical System Engineering.

b) The PM inspection of helipads includes a qualitative assessment of the pad surface, markings, windsocks, overgrowth of vegetation, mold or soil coverage, anything that would inhibit a pilot's ability to see the helipad clearly and other tasks defined in Job Plan BSM002A.

c) See **Attachment 5**, "FY25 Helipad PM & Repair WONs", for a comprehensive list of helipad PM and repair work orders and associated data. Inspection notes are included in the "LOG" tab of the Maximo work orders.

d) The 10 helipads that receive annual PM inspections by BOSS include the following:

1) Helipad 1 – located on the Towway near the south end of the SLF.

2) Helipad 2 – located between Crawlerway tracks near the Mobile Service Structure Bypass Road.

3) Helipad 4 – located just south of the Pad 39B gate.

4) Helipad 5 – located adjacent to North Beach Road near Playalinda Road.

5) Helipad 6 – located on South Beach Road – a little less than a mile south of the intersection of the Pad A Bypass Road and South Beach Road.

6) Helipad 7 – located near M6-0495A, Dispensary – on the east side of C Avenue SE. There are lights at this helipad.

7) Helipad 8 – located at the Crawlerway - west of J7-1388 (Industrial Water Pumping Station)

8) Helipad 9 – located northwest of Pad B on Titusville Beach Road.

9) Helipad 11 – located adjacent to the NASA Causeway East (north side of road), approximately one mile southeast of the Banana River Bridge. There are lights at this helipad.
10) Helipad P – located at the Press Site off Saturn Causeway, there are lights at this helipad.

NOTES:

1) Helipad 3, previously located near the Pad A gate, has been removed as part of the SpaceX site modifications.
2) Helipad 10 has been discontinued.

2) Inspection Findings - Helipads

a) Most of the discrepancies noted included the following:

1) Torn, damaged or missing windsocks
2) Fading or failed pavement markings
3) Cracked or spalled concrete
4) Mold or soil build-up on the helipad and vegetation overgrowth along the perimeter of the helipad or growing through pavement cracks.

b) The following is a summary of the evaluation findings and repairs performed helipads:

1) Helipad 1 – Annual PM effort was completed. No notable concerns were flagged by BOSS shops. The helipad and windsock are in good condition.
2) Helipad 2 – Annual PM effort was completed. No notable concerns were flagged by BOSS shops. The helipad and windsock are in good condition.
3) Helipad 4 – Annual PM effort was completed. No notable concerns were flagged by BOSS shops. The helipad and windsock are in good condition.
4) Helipad 5 – Annual PM effort was completed. No notable concerns were flagged by BOSS shops. The helipad and windsock are in good condition.
5) Helipad 7 – The helipad was pressure washed and painted with two coats of black and white traffic paint. Glass beads were added to the white for reflectivity purposes. Building number was re-stenciled. WON 10241354 was generated to address the damage to the windsock.

6) Helipad 8 –WON10248095 was generated to replace the windsock. The helipad is in overall good condition.

7) Helipad 9 – WON10248095 currently open to replace the rope and patch concrete pad as needed. Windsock was replaced and rope installed. Waiting on pavement markings to be repainted. The helipad is in overall good condition.

8) Helipad 11 – The helipad is in overall good condition. SC Jones to be deployed to herbicide around the helipad as vegetation overgrowth is present (SRV89003). There are palm trees growing on all three sides of the helipad.

9) Helipad P – Annual PM effort was completed. No notable concerns were flagged by BOSS shops. The helipad and windsock are in good condition.

3) Corrective Actions - Helipads

There are no work orders to repair any noted damage based on the annual PM inspection, all others have been closed.

F. INSPECTION OF Channel Marker Signage

1) Work Performed – Inspection of Channel Marker Signage

Per NASA request, BOSS has performed a visual inspection of the channel marker navigation signage located within the Banana River Channel during the second quarter of Calendar Year

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2025. An inventory of 115 navigational aid signs were assessed indicating all sign attributes including the following:

- An assigned asset number
- Date of the current inspection
- Global Positioning System (GPS) location coordinates
- Wording or description of the image that is on the sign
- Channel Marker Type • Channel Marker ID
- Asset Condition Code

All collected data has been stored as GIS geodatabase features, utilizing ArcGIS software that is compatible with the KSC/GIS system.

All collected sign inventory data and attributes have been imported into a Microsoft Excel spreadsheet - see **Attachment 7** of this report, "FY25 Channel Marker Signage Condition Evaluation".

There are photographs of each sign. The photos are imbedded in the ArcGIS geodatabase.

2) Inspection Findings - Channel Marker Signage

Condition Codes were recorded primarily to represent the physical condition of the sign. The following is the percentage distribution of the Condition Code values with respect to the total number of signs in **Table 4** below:

Table 4: Percentage of Condition Code

Condition Code	0	1	2	3	4	5
Total Amount of Signs (of 110 total signs)	0	50	42	12	10	1
Percentage (%) of All Signs	0	43.5%	36.5%	10.4%	.09%	.01%

*Condition Code 0 refers to a sign that is missing or inaccessible where no evaluation was applicable. **3) Corrective Actions - Channel Marker Signage**

There are currently one (1) open work order to replace several channel marker signs along the Banana River Channel. WON10084394 is currently on hold due to ownership designation determination not concluded. Once resolved and a responsible party is allocated, repair and/or replacement work requests will be implemented.