SKANSKA

December 23, 2025

Letter No. 306
BY-CRE-04303

Evelyn Pao, P.E., Project Director
Washington State Department of Transportation
18911 N Creek Pkwy S, Suite 150
Bothell, WA 98011

Project: I-405/Brickyard to SR 527 – Improvement Project
Contract No.: 009727

Subject: Supplemental Notice of Protest 009 –SR522 Transit Hub Lighting

Dear Ms. Pao:

Pursuant to General Provisions Section 1-04.5 (Procedure, Protest, and Dispute), Skanska hereby supplements its Notice of Protest dated December 1, 2025 (Skanska Serial Letter No. 285) concerning the issuance of a WSDOT Initiated Change that provides the Design-Builder compensation for additional design efforts.

a. The date and nature of the protested order, direction, instruction, interpretation, determination:

Per WSDOT Serial Letter No. 9727-199 (WSDOT SL-199), dated November 17, 2025, the Engineer provided determination there was no merit for Skanska's request for the issuance of an OIC with the following justification:

> Regarding the additional design effort by Concord described in the letter, WSDOT does not find merit for an Owner-Initiated Change (OIC).
>
> Based on the information provided, it is WSDOT's understanding that lighting ownership is not in dispute. The primary issue appears to stem from the RFI question and response. It is WSDOT's position that the proposed light fixture is acceptable provided it can be mounted in accordance with the Sound Transit Design Criteria Manual (DCM). The RFI neither referenced nor inquired about mounting height.
>
> As noted in Serial Letter No. 255, the Sound Transit DCM requires luminaires to be mounted no higher than 16 feet and directs the lighting designer to propose fixtures that meet the DCM requirements. The Design-Builder submitted a fixture for consideration; however, the RFI did not indicate that the proposed fixture would not comply with these requirements.
>
> While the fixture itself is acceptable, mounting height must comply with the DCM. Sound Transit has agreed to allow an increased mounting height of up to 24 feet to assist with the lighting design challenges identified.
>
> To advance the discussion, WSDOT and Sound Transit have determined that the illumination design can support the requested fixture with a 24-foot mounting height, which results in a revised light loss factor that Sound Transit is willing to accept.

b. A full discussion of the circumstances which caused the protest, including names of Persons involved, time, duration and nature of the Work involved, and a review of the Contract Documents/Design Documents referenced to support the protest.

WSDOT and ST created a change to the contract requirements by:

- Approving the 400 W Lumec fixture via RFI 00034 without any mounting-height limitation, after the DB Team had indicated a 40–50 ft design basis, leading the team to proceed with 40 ft poles consistent with project documents and adjacent roadway standards.
- Introducing a maintenance-based mounting-height constraint (16–25 ft) during final review, despite no such provision in the RFP, effectively mandating redesign of the Transit Hub roadway lighting and changing the agreed design basis.
- Asserting that mounting height must comply with the ST DCM and directing a maximum 24 ft pole height, reversing earlier coordination and approvals, and tying acceptance to a revised light loss factor (LLF), which alters specified performance criteria.
- Requiring a revised LLF to "support" the lower mounting height—an owner-driven standards change—while failing to provide an AGi32 model at 24–25 ft that meets ST DCM lighting requirements, demonstrating the need for substantive redesign beyond the original RFP terms.

Collectively, these actions modify the contractual performance criteria (mounting height and LLF) and force a redesign of an already approved design approach, constituting an Owner-Initiated Change rather than a clarification.

Please see the attached AECOM protest supplemental, PCN 00124, dated 12/19/25 for additional information and details.

c. The estimated dollar cost, if any, of the protested Work and a detailed breakdown showing how that estimate was determined.

The current design related costs are $332,468.00 per the cost estimate & breakdown in the attached AECOM protest letter.

Skanska anticipates construction cost impacts; however, the extent of these impacts will not be known until the revised design is complete.

d. An analysis of the progress schedule showing the schedule change or disruption if the Design-Builder is asserting a schedule change or disruption.

Please refer to AECOM's supplemental protest letter (attached) for descriptions of the schedule impacts from a design perspective.

From a construction standpoint, this work was originally scheduled for July 2024 but has not progressed as planned due to the ongoing design dispute.

The conduits in question cross the 522 transit hub roadways, which must be completed before Milestone B — the Charging Yard Handover — can be achieved. Given the immediate risk to Milestone B, Skanska has taken proactive measures to mitigate delays, including coordinating with the design team on conduit sizes, quantities, and crossing locations in case a redesign becomes necessary. While these actions help maintain progress toward Milestone B, Milestone C — the Platform Handover — will also be impacted if the dispute is not resolved promptly.

SKANSKA

Reservation of Rights

Skanska reserves all rights under General Provisions Section 1-04.5 (Protest Procedures) and Section 1-09.11 (Extra Work) to seek equitable adjustment for all costs and schedule impacts resulting from WSDOT's determination.

Additionally, Skanska's design consultant AECOM has provided its own supplemental documentation addressing the technical and contractual issues raised by WSDOT SL-199. AECOM's letter dated December 19, 2025, is incorporated by reference into this protest.

This letter is without prejudice to, and with full reservation of, Skanska's rights, remedies, causes of action, and defenses under the Contract, at law, in equity, or otherwise. Nothing in this letter shall be interpreted as a modification or waiver, or an estoppel of Skanska's right to assert the same.
If you have any questions or concerns, please feel free to contact me.

Sincerely,

Patrick Prendergast, Vice President

Skanska USA Civil
18911 N Creek Parkway S, Suite 300
Bothell, WA 98011

Attachment

AECOM: 2025.12.19-PCN-00124 - HUB Lighting - Notice of Protest Supp Info

AECOM USA, Inc.
1111 Third Ave., Suite 1600
Seattle, WA 98101, USA
aecom.com

December 19, 2025

Via E-mail
Patrick Prendergast
Contractor's Representative
Skanska USA Civil West California
District Inc.
18911 N Creek Pkwy, Suite 300
Bothell, WA 98011
Patrick.Prendergast@skanska.com

Re: I-405/Brickyard to SR 527 Improvement Project (the "Project")
AECOM Project No. 60713342
Notice of Protest - Supplement Letter for Notice of Protest 009: SR-522 Transit Hub Lighting

Dear Mr. Prendergast:

I am writing on behalf of AECOM in response to WSDOT's Serial Letter No. 9727-199 entitled "RE: WSDOT-Initiated Change Notification: SE522 Transit Hub Lighting" and dated November 17, 2025 and WSDOT Serial No. 9727-214 entitled "RE: Notice of Protest – Protest 009, SR522 Transit Hub Lighting (Issue 256)" and dated December 9, 2025. In accordance with the protest procedures outlined in Section 1-04.5 of the RFP: Procedure, Protest, and Dispute by the Design-Builder, AECOM hereby disputes WSDOT's denial stating that the additional Work by AECOM's subconsultant, Concord Engineering (a small business and certified WMDBE firm), to instate a new mounting height and variance to the Sound Transit (ST) standard for light loss factor is not an Owner Initiated Change. **As required by the agreement between Skanska USA Civil West California District Inc. ("Skanska") and AECOM Technical Services, Inc. ("AECOM"), dated October 25, 2022 (the "Design Subcontract"), please forward this to WSDOT as soon as possible, but no later than the WSDOT provided deadline December 23, 2025.**

As a supplement to AECOM's Notice of Protest, dated December 1, 2025, entitled, "Response to WSDOT SL No. 9727-199, and Notice of Protest per RFP Section 1-04.5" AECOM provides additional information as requested by WSDOT, as follows:

a. The date and nature of the protested order, direction, instruction, interpretation, determination:

Date of Protested Order: November 17, 2025

Nature of Protested Order: On November 17, 2025, WSDOT advised in Serial Letter No. 9727-139 that "Regarding the additional design effort by Concord described in the letter [Skanska serial letter No. 255] WSDOT does not find merit for an Owner Initiated Change (OIC)."

In February 2024 via task force meetings, the design team notified WSDOT that WSDOT's suggested light fixture and corresponding mounting height would not meet lighting requirements. On March 7, 2024, the design team submitted RFI 00034 requesting confirmation it was acceptable to utilize a light fixture on the pre-approved WSDOT list, "400W Lumec brand head manufactured by Signify." This fixture was to be mounted 40-feet above ground. On March 20, 2024, WSDOT provided an amicable response stating, "The 400 W Lumec brand luminaire head manufactured by Signify, as proposed by the WSDOT DB, is acceptable for use on ST BRT Roadways." AECOM progressed design with this information. Sound Transit (ST) provided a comment during Final design review stating the light poles

must be between 16 and 25ft. WSDOT has since agreed with ST and is requesting the design team revise the design.

ST Design Criteria 21.4.1.B.9 states, “Luminaires shall be placed no more than 16 feet above the finished floor or surface, unless coordinated otherwise with Sound Transit.” The design team’s position is that because the design team submitted an RFI and received confirmation the light fixture requested to be used is acceptable, the design team has coordinated with ST and therefore meets design requirements. If WSDOT / ST requires the design team to make amendments to the design, this constitutes an Owner Initiated Change for which the design team should be compensated.

b. A full discussion of the circumstances which caused the protest, including names of Persons involved, time, duration and nature of the Work involved, and a review of the Contract Documents/Design Documents referenced to support the protest.

Please see the attached memo from AECOM’s subcontractor Concord for discussion of the circumstances which caused the protest, nature of the Work involved, and review of the Contract Documents.

In the illumination task force meetings (TFM) in February 2024, Concord and AECOM requested input from WSDOT and ST on which luminaire should be used in designing the lighting at the Transit Hub. WSDOT representative Sonia Berriz sent an email Feb 8, 2024 providing the ST specified luminaire and pole, which included the Mirada light fixture with a mounting height of 14-feet in the pedestrian area. Sonia’s email also indicated the roadway lighting was still being discussed.

In the TFM held Feb 28, 2024, it was discussed that the Mirada fixture provided by ST was adequate for pedestrian areas but had a lower wattage and lumen output than required for roadway lighting at the Transit Hub. It was specifically noted that the roadway lighting mounting height would need to be set higher than 14-feet to achieve these requirements. The design team proposed using WSDOT pre-approved LED luminaires and poles for lighting of ST bus and roadways. It was noted that this fixture matched adjacent roadways and provide consistent lighting; the adjacent roadway lighting is mounted at 40 feet. The WSDOT approved LED luminaires and the WSDOT pole and arm data were provided in the meeting. The WSDOT pole data shows mounting heights between 30 feet and 50 feet, whereas the project specifies to use a mounting height of either 40 feet or 50 feet. WSDOT was agreeable to this fixture.

To memorialize a path forward, WSDOT requested the design team suggest the previously discussed fixture via a RFI so they could formally respond. The design team submitted RFI 00034 on March 7, 2024 requesting to utilize the WSDOT approved luminaire to maintain project consistency. This fixture would have a 40-foot mounting height as stated in the previously discussed WSDOT data. WSDOT responded on March 20, 2024, in favor of utilizing this fixture for ST BRT Roadways at the Transit Hub and the design team progressed the lighting design.

The illumination team progressed design from Preliminary through Final using the 40-foot mounting that had been previously approved by WSDOT. The design team requested ST attend the task force meetings but they did not attend. To accommodate ST, an additional meeting was held May 14, 2024 with Skanska, AECOM, Concord, and ST, where the lighting design was discussed and an optimized layout was reviewed. Traffic TFM minutes note that ST liked the proposed design. However, during final design review, the design team received an RCSR comment from ST mandating the team redesign all lighting for the roadway BRT Transit Hub per ST Design Criteria 21.4.1.B.9.

The ST Design Criteria 21.4.1.B.9 states, “Luminaires shall be placed no more than 16 feet above the finished floor or surface, unless coordinated otherwise with Sound Transit.” The approving response in RFI 00034 from WSDOT however, solidified the coordination with ST / WSDOT, and established that 14-foot Mirada light was too low for roadway design. The new fixture would need to be mounted higher. The Final design used the mounting height provided in the project documents (2.16.3.4.4.2 - Luminaires) which indicate either a 40-foot or 50-foot mounting height, as agreed to in the RFI response.

In addition to impacts to Concord, AECOM has also been affected by this OIC. AECOM has utilized additional resources to coordinate the design and requirements with Sound Transit and WSDOT that previously would not have been necessary if WSDOT hadn't requested a preferential change to lower the mounting height. AECOM has spent time and effort to help WSDOT achieve an alternative solution to their preference of a shorter mounting height. Additionally, future design changes for light foundation locations and quantities may also impact other AECOM disciplines, including Roadway and Drainage. These additional services are due to potential conflicts with utilities and required interdisciplinary coordination. This request for additional work to redesign lights with a lower mounting height is the cause of WSDOT and therefore the design team should be compensated appropriately. AECOM's position is the design team coordinated with ST by submitting an RFI to the owner and receiving an agreeable response as well as scheduling a specific meeting to coordinate with ST to review the proposed lighting design, and therefore the request to lower the light fixture mounting height now constitutes an Owner Initiated Change.

Additionally, in WSDOT Serial Letter 9727-199, WSDOT states, "WSDOT and Sound Transit have determined that the illumination design can support the requested fixture with a 24-foot mounting height, which results in a revised light loss factor that Sound Transit is willing to accept." This statement acknowledges the conflict in the contract requirements (light loss factor standard revision) and thus also acknowledges the need for an Owner Initiated Change.

c. **The estimated dollar cost, if any, of the protested Work and a detailed breakdown showing how that estimate was determined**

AECOM's additional cost to implement the changes stemming from this additional effort for Transit Hub Lighting is as follows:

I-405 Brickyard DB Project

PCN / CN #: PCN00124
Name of PCN/CO: SR522 Transit Hub Lighting
Date Updated: 12/19/2025

Discipline	Hours	Fee
Section 2.1 General / Management	96	$37,889
Section 2.5 Survey		$0
Section 2.6 Geotechnical		$0
Section 2.7 Pavement		$0
Section 2.8 Environmental		$0
Section 2.10 Utilities		$0
Section 2.11 Roadway	40	$9,610
Section 2.12 Project Documentation		$0
Section 2.13 Bridges and Structures		$0
Section 2.14 Stormwater	50	$11,675
Section 2.15 Roadside Restoration		$0
Section 2.16 Illumination	970	$223,713
Section 2.17 Traffic Signals		$0
Section 2.18 ITS		$0
Section 2.19 Signing		$0
Section 2.20 Pavement Marking		$0
Section 2.21 Traffic Operations		$0
Section 2.22 MOT		$0
Section 2.26 Toll Infrastructure		$0
Section 2.27 Transit		$0
Section 2.28 Design Quality Management	24	$6,216
Section 2.30 Water Crossings		$0
Section 2.31 Vertical Construction		$0
Totals	1180	$289,103

AECOM

d. An analysis of the progress schedule showing the schedule change or disruption if the Design-Builder is asserting a schedule change or disruption.

AECOM has requested additional time to evaluate the impact of these issues. At this time, AECOM roughly estimates the additional work required to change the mounting height of the fixtures at Transit Hub will take approximately 19 weeks from NTP to submit RFC. AECOM is currently developing a delay analysis that will determine the actual delay. Upon completion, AECOM will revise this request to reflect actual delay, corresponding cost and a request for a time extension. This design will be worked through concurrently with other contractual design plan sets and will cause delay to the contractual submittals. Actual delay is currently being evaluated and will be provided once full delay is assessed.

Note that the foregoing estimates are preliminary, based only on the information available to AECOM at this time. As more information becomes available, additional impacts may be discovered which are unknown as of today, and which are specifically excluded from the cost and schedule impact estimates. The above estimates should not be considered binding, and they may need to be revised as additional information is gathered. This letter is without prejudice to, and with a full reservation of, AECOM's rights, remedies, causes of action, and defenses under the Subcontract, at law, in equity, or otherwise. Nothing in this letter shall be interpreted as a modification or waiver, or an estoppel of AECOM's right to assert the same.

I appreciate your prompt attention to this matter. If you have any questions, please do not hesitate to contact me directly. Again, **please promptly provide this notice of protest to WSDOT per the Design Subcontract and Design-Build Contract by no later than December 23, 2025.**

Yours sincerely,

AECOM Technical Services, Inc.

Ryan Abraham, PE
Vice President
T: 303-807-5730
E: ryan.abraham@aecom.com

cc: Jon Guerrero, PE (AECOM)
Evan Grant (AECOM)

Enclosure: Concord Engineering Supplemental Information

December 18, 2025

Via E-mail
Ryan Abraham, PE, DBIA
Vice President
AECOM USA, Inc.
111 Third Ave., Suite 1600
Seattle, WA 98101, USA
ryan.abraham@aecom.com

Reference: Contract No. 9727, I-405 Brickyard to SR 527 Improvement Project (the "Project"). SR522 Transit Hub Lighting to WSDOT's Serial Letter No. 9727-199. WSDOT-Initiated Change Notification.

Subject: Concord's Rejection of WSDOT's denial of change request.

Dear Mr. Abraham:

Concord Engineering is in receipt of and takes exception to the Washington State Department of Transportation (WSDOT) serial letter 9727-199 dated November 17, 2025. In accordance with Section 1-04.5 of the RFP: Procedure, Protest, and Dispute by the Design-Builder, Concord hereby disputes WSDOT's denial of its request for an Owner Initiated Change (OIC).

WSDOT Serial Letter 9727-199 incorrectly asserts that WSDOT's acceptance of the light fixture proposed in RFI 00034 was contingent on the mounting criteria contained in the Sound Transit (ST) Design Criteria Manual (DCM). No such notation was provided in the WSDOT response to the RFI, the response is completely silent as to mounting height even though the RFI clearly implies that the light mounting height is intended for 40' or 50' installations. And, to the contrary of WSDOT's assertion, WSDOT later provided lighting analysis showing lights mounted at 25' which is in and of itself a departure from the ST DCM.

WSDOT Serial Letter 9727-199 is flawed in its statement regarding the 16' maximum mounting height limitation contained in the ST DCM. The RFP requires the design to be compliant with the ST DCM, which includes the required light levels for the bus roadway. The ST DCM also has a requirement for the pole light fixture mounting height to be between 12 and 16 feet, but as stated in the reference letter and discussed with WSDOT in traffic task force meetings #12 and #13, this is infeasible since the light mounting heights are too low to achieve the required lighting levels. In conclusion, the RFP is flawed or conflicted and the reason for the discussion with WSDOT in the first place. Where the ST DCM requirement for light pole fixture mounting height is applicable to stations and bus stops, it is not entirely applicable to roadway lighting. For a roadway bus hub such as the one called for on this project the light fixture mounting height needs to be more consistent with roadway lighting in order to achieve the required lighting levels. Further, this point is emphasized or confirmed by the lighting layout shown in the RFP Appendix M1-11 concept plans (Exhibit 10).

WSDOT Serial Letter 9727-199 goes on to state that to advance the discussion, WSDOT and ST have determined that the design can support the proposed fixture at a mounting height of 24 feet. The Design-Builder (DB) Team has yet to be provided with the supporting data that shows a

24ft mounting height meeting requirements. The last data provided by WSDOT showed a 25ft mounting height and did not meet light level requirements.

This issue is not about an RFI question and response, but rather a conflict or incorrect application of the intent in the RFP. Both the WSDOT and the DB Team were attempting to resolve this issue through Task force meetings, emails and RFI processes, all of which included Sound Transit. The RFP clearly encourages this type of resolution under RFP Appendix S31 ST DCM section 21.4.1.B.9 where it states: "Luminaires shall be placed no more than 16 feet above the finished floor or surface, **unless coordinated otherwise with Sound Transit**." Sound Transit chose not to participate in the process; but instead, it chose to comment only at the very end of the design phase causing delays, additional work, and additional costs for which the DB Team is entitled to recover.

In accordance with Section 1-04.5, Concord provides the following supplemental information for this dispute:

a. The date and nature of the protested order, direction, instruction, interpretation, determination:

Date of Protested Order: November 17, 2025

Nature of Protested Order: The DB Team protests WSDOT denial to DB Team's request of Owner-Initiated Change (OIC) compensation for additional design efforts resulting from Sound Transit comment.

Direction: Conflicted. ST comments "Lights for roadways must be 16-feet to 25-feet maximum height. ST maintenance crews cannot access and maintain lights poles with heights greater than 25-feet in height at any ST facility.", WSDOT direction in serial letter 9727-199 dated November 17, 2025 "ST bus roadway light pole no more than 24 feet".

Instruction: WSDOT requests the DB Team to address this new ST requirement at no additional cost.

Interpretation: WSDOT interprets the ST bus roadway light pole must be between 12 and 16 feet per ST DCM requirement, and this new requirement is to accommodate the design challenges

Determination: WSDOT rejected DB's request for an Owner-Initiated Change (OIC).

b. A full discussion of the circumstances which caused the protest, including names of Persons involved, time, duration and nature of the Work involved, and a review of the Contract Documents/Design Documents referenced to support the protest.

Chronological Sequence of the Events:

- 02/08/2024 - WSDOT directed DB to omit Segment 2 illumination preliminary submittal for ST bus roadway lighting since the bus roadway light fixture is under discussion between WSDOT and ST (Exhibit 1)
- 02/23/2024 - Segment 2 illumination preliminary submittal sent to WSDOT for review without ST bus roadway lighting
- 02/28/2024 - During Traffic Task Force Meeting #12, WSDOT was informed that the ST provided Mirada pedestrian-scale light fixture is insufficient for bus roadway and the bus

roadway light fixture needs to be mounted higher than 14ft (Exhibit 2); WSDOT agreed to use the WSDOT pre-approved light pole standards for ST bus roadway (Exhibits 2 and 3).

- 03/05/2024 - WSDOT agrees that AECOM should submit a proposed fixture for ST bus roadway via RFI (Exhibit 4)
- 03/07/2024 - AECOM submitted RFI 00034 with a fixture for approval (Exhibit 5)
- 03/20/2024 - WSDOT approved the RFI 00034 and selected fixture (Exhibit 6)
- 06/18/2024 - AECOM submitted final submittal to WSDOT, including ST bus roadway lighting at 40ft mounting height
- 07/22/2024 – ST commented the light pole must be between 16 and 25ft (Exhibit 7)
- 06/17/2025 – WSDOT provided an AGi32 model using 25ft that failed to meet the ST bus roadway area light level requirements (Exhibit 8)
- 11/17/2025 – WSDOT provided a letter directing DB to use 24ft light pole (Exhibit 9)

During the design process, it became abundantly clear that the Mirada pedestrian-scale light fixture and 14 ft pole provided by ST was inadequate to provide the required lighting in the bus roadway section of the SR 522 transit hub. RFP Appendix S31 ST DCM section 21.4.1.B.9 states: "Luminaires shall be placed no more than 16 feet above the finished floor or surface, **unless coordinated otherwise with Sound Transit**.", clearly encouraging the DB Team to coordinate with the Owner's team to resolve criteria in the RFP that do not work. Both teams proceeded in good faith to resolve this issue.

During the Traffic Task Force Meeting in early February 2024, the DB Team lighting designer asked WSDOT/ST if there were any preferred or approved luminaires to use for ST-owned lighting for the Project, including the SR522 Transit Hub. An email response from WSDOT Sonia Berriz dated February 8, 2024 (Exhibit 1), specified the Mirada fixture with 14 feet mounting height to be used for the pedestrian area. It further stated that the roadway lighting fixture was still under discussion between WSDOT and ST. Consequently, WSDOT and ST no longer expected the ST bus roadway lighting design to be included in the Segment 2 preliminary submittal but would expect final submittal to incorporate the ST bus roadway lighting. The DB Team submitted preliminary illumination design for the Segment 2 Package, without the ST Transit Hub lighting design, on February 23, 2024 accordingly, per WSDOT's directions.

In the Traffic Task Force Meeting #12 on February 28, 2024, The DB Team and WSDOT had additional discussions about the required lighting fixture for ST. The DB Team reiterated that the Mirada pedestrian fixtures approved and provided by ST would be ineffective for SR 522 transit hub bus roadway lighting due to 1) low lumen output, and 2) only 14 feet mounting height. The DB Team, with the intent of advancing the design, recommended selecting a fixture from the WSDOT approved cobra head LED list to match adjacent WSDOT roadway lights and to provide adequate lighting. WSDOT acknowledged that the bus roadway lighting required a roadway-scale light fixture, with a higher mounting height than that of the pedestrian-scale light fixture. Additionally, WSDOT agreed to use the WSDOT pre-approved light pole standards for ST bus roadway to be consistent with other poles used on the project (Exhibits 2 and 3).

In Traffic Task Force Meeting #13 on March 5, 2024, WSDOT/ST agreed that the DB Team should select and submit a proposed fixture for ST roadway lights for approval via RFI.

Based on discussions during Traffic Task Force Meetings #12 and #13, WSDOT, on behalf of ST, recognized a 14-feet mounting height would be insufficient for roadway lighting. Therefore, the

DB Team moved forward with the understanding that the 12- to 16-feet requirement in the ST DCM no longer applied to roadway lighting, and a higher mounting height luminaire would be necessary.

On March 7, 2024, DB Team submitted RFI 00034, summarizing again that Mirada fixture at 14ft mounting height would not provide adequate roadway lighting. The RFI proposed the 400-watt Lumec fixture from approved WSDOT LED luminaire list Table 1.4 and provided light fixture and mounting height information (Exhibit 5). The RFI requested confirmation that the proposed fixture is acceptable for use on Sound Transit BRT roadways.

On March 20, 2024, WSDOT accepted the 400-watt light fixture as proposed by WSDOT DB in RFI00034 (Exhibit 6). Even though RFI00034 contained foot-candle information and mounting height information that could leave no misunderstanding as to the intended mounting height (40ft or 50ft), WSDOT/ST did not provide any comments regarding the mounting height limitations. It was the DB Team's position that since all parties had agreed that the ST proposed light fixture mounted at 14ft was clearly ill-suited and inappropriate for bus roadway applications, and neither WSDOT or ST provided any height limitation comments at the time of RFI review, ST DCM 12- to 16-ft mounting height requirement had been abandoned for bus roadway applications. Additionally, discussions about which poles to use referenced using the same poles in the transit hub that are being used on the adjacent roadway, which are mounted at 40-feet. As a result, the DB Team submitted the final design for the ST Transit Hub lighting using 40-feet mounting height poles and the approved luminaire consistent with the approved RFI 00034.

The DB Team was transparent through the entire process, and ST was invited to participate at every stage of the design development of Segment 2 illumination final submittal from February to June 2024. The DB Team requested WSDOT to invite ST to the traffic task force meetings and/or set up additional meetings to have direct discussion with ST regarding the illumination design; ST chose not to participate in these meetings or even attend task force meeting #27 on June 12, 2024, wherein the DB Team provided a complete page-turn of Segment 2 illumination final submittal. This included a presentation of the 40-ft tall ST light pole within the SR522 transit hub area. No comments were provided to the DB Team regarding any ST light pole height limitation, so the DB Team subsequently submitted the final review package to WSDOT on June 18, 2024.

On July 22, 2024, a Final Review comment received from the ST reviewer Mike Balash stated that roadway lights must be between 16 feet and 25 feet for maintenance purposes. The RFP contains no indication of the 16- to 25-ft maintenance provisions, making this late comment a change to the RFP. And at this stage of the design, this comment represents significant redesign and impact to the project schedule.

On June 17, 2025, WSDOT provided the DB Team with an AGi32 lighting analysis file asserting that the current lighting design layout would meet lighting requirements if the mounting height were lowered from 40 feet to 25 feet. The DB Team, in good faith, reviewed the provided AGi32 lighting analysis file and found several lighting calculation areas not meeting lighting requirements defined by the ST DCM.

Despite continued discussion with WSDOT throughout June, July, and August 2025, the DB Team never received an updated AGi32 lighting analysis model from WSDOT, using a 25-feet mounting height and meeting the RFP requirements. WSDOT Serial Letter No.9727-199 determines that a revised light loss factor (LLF) is necessary to support the lower mounting height. This determination in and of itself is yet another change to the RFP and requires an owner-initiated change to revise the design.

The DB Team coordinated with WSDOT throughout the entire design process and has produced a design for the SR 522 transit hub bus roadway lighting that is fully compliant with the RFP. It is the DB Team's position that any changes to this design constitute a change requiring an Owner-Initiated Change. We are hereby requesting directions on how to proceed.

c. The estimated dollar cost, if any, of the protested Work and a detailed breakdown showing how that estimate was determined.

Concord has provided AECOM with the costs incurred to date and our estimated costs to complete the design/redesign of all affected elements. Skanska will compile and reconcile the Concord and AECOM cost estimates, together with the reconstruction costs resulting from this issue, into a single consolidated cost summary. This consolidated summary will be included in Skanska's cover letter transmitting both this Concord letter and AECOM's letter to WSDOT.

d. An analysis of the progress schedule showing the schedule change or disruption if the Design-Builder is asserting a schedule change or disruption.

Concord has provided AECOM with our analysis of the schedule impacts to date and our estimated schedule for completing the redesign of all affected elements. Skanska will consolidate the schedule analyses prepared by Concord and AECOM, along with Skanska's own assessment of reconstruction-related impacts resulting from this issue and will present this consolidated schedule summary in its cover letter transmitting both this Concord letter and AECOM's letter to WSDOT.

I appreciate your prompt attention to this matter. If you have any questions, please do not hesitate to contact me directly.

Yours sincerely,
Concord Engineering, Inc.

Yuan Wen, PE, PTOE
Project Manager
M: 206.390.6166
E: yuan.wen@concordengr.com

Enclosures (10):

1. Exhibit 1 – WSDOT Direction on ST Light Fixture and Skip Preliminary Submittal
2. Exhibit 2 – Traffic Task Force Meeting Minutes #12
3. Exhibit 3 – WSDOT Pre-Approved Light Pole Shop Drawings
4. Exhibit 4 – Traffic Task Force Meeting Minutes #13
5. Exhibit 5 – RFI00034 Document
6. Exhibit 6 – RFI00034 WSDOT Approval
7. Exhibit 7 – ST Comment on Light Pole Height Limitation
8. Exhibit 8 - WSDOT AGi32 Lighting Analysis Model with 25feet Pole Not Meeting Requirement
9. Exhibit 9 - SL9727 - 199 - RE Skanska SL No. 255 - SR522 Transit Hub Lighting
10. Exhibit 10 – RFP Appendix M1-11 Concept Plans

Exhibit 1 - WSDOT Direction on ST Light Fixture and Skip Preliminary Submittal

Exhibit 1: WSDOT Direction on ST Fixture and Skip Preliminary Submittal

From: Berriz, Sonia (Consultant) <BerrizS@consultant.wsdot.wa.gov>
Sent: Thursday, February 8, 2024 7:06 AM
To: Salumae, Kertu-Lilli <Kertu-Lilli.Salumae@skanska.com>; Shea, Scott <scott.shea@aecom.com>
Cc: Lovering, Janka (Consultant) <LoverinJ@consultant.wsdot.wa.gov>
Subject: ST Light Pole and Fixture

Hi,

The ST luminaire (Mirada) is attached and their proposed poles. Within the pedestrian area, the mounting height would be 14'. ST has an issue with the base plate bolt pattern dimensions on what is attached and is looking into this.

The roadway lighting is still being discussed. I want to mention that we DO NOT expect anything to be updated in your pending preliminary submittal but would expect the final analysis to incorporate this.

Thanks!

-Sonia

Sonia Berriz, P.E.
WSDOT Design Manager
(425) 876-6283 (cell)

Exhibit 2 - Traffic Task Force Meeting Minutes #12

Skanska USA Civil
1995 Agua Mansa Road
Riverside, California 92509

Project: 90009590 I-405 - Brickyard to SR527
Bothell, Washington 98011

C9727 BY to 527: Traffic Task Force Meeting Minutes: Meeting #12

Meeting Date	Feb 28, 2024	**Meeting Time**	02:00 pm - 03:00 pm Pacific Time (US & Canada)
Meeting Location	SCOUT	**Video Conferencing Link**	Join Meeting

Overview

Agenda:

- Seg 2 Signal Plans - Comment Review
- Seg 3 Off Ramp at NE195th Signal Loops
- ST Lighting Near SR522 Hub
- SR522 Elec As-Builts
- Temp Signs on Skids

Notes Finalized meeting minutes were uploaded to CFI.

Attachments WSDOT-Traffic-LT1-Valmont-DB01164-RevB.pdf, WSDOT-Traffic-Materials-Approved-LED-CH-Luminaires.pdf

Scheduled Attendees

Name	Company	Phone Number	Email	Attendance
Ryan Abraham	AECOM (Seattle)		ryan.abraham@aecom.com	Present
Imanuel Aswandi	AECOM (Seattle)		imanuel.aswandi@aecom.com	Absent
Jon Guerrero	AECOM (Seattle)		jon.guerrero@aecom.com	Present
Scott Shea	AECOM (Seattle)		scott.shea@aecom.com	Present
Jeremy Michel	ERW Lighting		jeremym@erwlighting.com	Absent
Jim Grohs	Liberty Electric		jgrohs@libelectric.com	Present
Brandon Judge	Liberty Electric		bjudge@libelectric.com	Present
Kendall Skaggs	Liberty Electric		kskaggs@libelectric.com	Present
Kyle Taylor	Liberty Electric		ktaylor@libelectric.com	Absent
Richard Vedaa	Liberty Electric		rvedaa@libelectric.com	Present
Ryan Gulick	Perteet		ryan.gulick@perteet.com	Present
Document Control - Skanska	Skanska USA Civil West		brickyarddoccontrol@skanska.com	For Distribution Only
Michelle Petterson	Skanska USA Civil West		michelle.petterson@skanska.com	Present
Kertu-Lilli Salumae	Skanska USA Civil West		kertu-lilli.salumae@skanska.com	Present
Kyle Sharrer	Skanska USA Civil West	P: (909) 721-9753	kyle.sharrer@skanska.com	Absent
Sonia Berriz	Washington State Department of Transportation		berrizs@consultant.wsdot.wa.gov	Present
Rachel Gehrlein	Washington State Department of Transportation		gehrlra@wsdot.wa.gov	For Distribution Only

Name	Company	Phone Number	Email	Attendance
John Granillo-Dodds	Washington State Department of Transportation		john.granillo-dodds@wsdot.wa.gov	Absent
Ron Haukom	Washington State Department of Transportation		ron.haukom@wsdot.wa.gov	For Distribution Only
Huyen Huynh	Washington State Department of Transportation		huynhu@wsdot.wa.gov	Absent
Janka Lovering	Washington State Department of Transportation		loverinj@consultant.wsdot.wa.gov	Present
Sokha Men	Washington State Department of Transportation		mens@wsdot.wa.gov	For Distribution Only
Rachel Waitt	Washington State Department of Transportation		rachel.waitt@wsdot.wa.gov	For Distribution Only

Traffic Signals

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
2.1	8	RRFB Near East Plaza of Bothell BRT	Scott Shea (AECOM (Seattle))	Feb 21, 2024		On Hold

Description

- City lighting
- Beaconed crosswalk specifications
- Potential impacts by moving the crosswalk closer to the BRT

Related RFI
RFI #00015: BY-CRE-00187_009727_RFI_00015_16.03_Lighting Design at 155th Street
https://app.procore.com/2556789/project/rfi/show/18832305

2/12/24: AECOM is working on potential solutions and will submit a follow-up RFI next week.

Previous Meeting Minutes
Feb 21, 2024
(None)

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
2.2	11	Seg 2 Signal Plans - Comment Review	Scott Shea (AECOM (Seattle))	Feb 21, 2024		Open

Description
AECOM wants to discuss the comments #1, #2, #5, #12, and #17. See the attached comment sheet.

Attachments
38.01_Segment-2-Preliminary-Signal-Plan-RCSR.xlsx

Official Documented Meeting Minutes
Comment#12: AECOM is still working on getting the profile drawings.

Previous Meeting Minutes
Feb 21, 2024
#1 The construction note 21 simplifies notes. AECOM will send a confirming email to WSDOT (Dave C.).

#2 Warkaa agrees with installing one PB and one SCV at that location.

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
	WSDOT: What if PSE could add a transformer closer to the service cabinets? Could 240V be used then instead? Or, if you would work backward, see what is needed to achieve 240V and coordinate with PSE to accommodate that. AECOM will reach out to the utility design group to see where the PSE agreement is at and see if any changes can be made to accommodate the 240V service.					

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
3.6	12	ST Lighting Near SR522 Hub	Scott Shea (AECOM (Seattle))	Feb 28, 2024		Open

Description
Additional discussion for the preferred lighting fixture for Sound Transit.

Fixtures provided by Sound Transit (forwarded by Sonia) for pedestrian lighting (Mirada small head set at 14 feet, picture below)
Mirada is a lower watt and lumen output and is therefore inefficient for roadway area lighting. Roadway lighting also needs to be set higher than 14 feet.
Recommend using WSDOT approved cobra head LED luminaires and poles for lighting of ST bus only roadways (BRT stations, etc). This will match adjacent roadways and provide consistent lighting.
https://wsdot.wa.gov/sites/default/files/2022-01/WSDOT-Traffic-Materials-Approved-LED-CH-Luminaires.pdf
https://wsdot.wa.gov/sites/default/files/2021-09/WSDOT-Traffic-LT1-Valmont-DB01164-RevB.pdf

WSDOT approved cobra heads: Table 1.1: 200W Class, 120V/240V Systems
WSDOT approved pole profile: See attached email.

Attachments
I405 WSDOT Traffic TFM Agenda items for 2_28 meeting.msg

Official Documented Meeting Minutes
AECOM asked if they could use the light standards from the WSDOT preapproved table. WSDOT was okay with it.
ST provided the type of lighting they wanted, but this light is not sufficient for the roadway in the SR522 transit hub. 400W will be needed for the roadway lighting, Mirada has only half of the wattage, also, the fixture head is not compatible with the mounting on the WSDOT light poles. Mirada lights are good for plazas and pedestrian pathways.
AECOM needs a direction for which light can be used for the SR522 transit.

Sonia will ask ST tomorrow and let Skanska know if an additional meeting is needed to resolve the question.

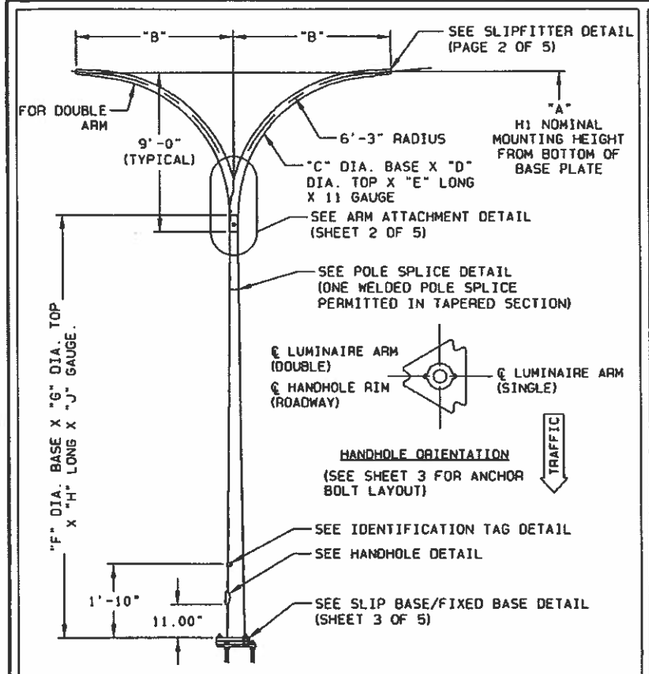
No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
3.7	12	SR522 Elec As-Builts	Scott Shea (AECOM (Seattle))	Feb 28, 2024		Open

Description
Requesting as-builts, or WSDOT power locations, along 522 from the east end of the project going further east up to the 131st Ave NE interchange.
Toll rate sign on 522 will need power, will require 480V transformer to run power from the transformer at the transit hub. Looking for an alternative WSDOT power source/location to tie into.

Official Documented Meeting Minutes
AECOM is looking for information about the nearby electrical service. This TRS is far from I405, which constrains service to be 480V. If this TRS can be connected to another source closer it could be 240V. Liberty noted that the next closest elec service is as far as the I405 interchange, 131st Ave NE. Skanska added that this is outside of the project limit, which will pose other challenges. We are better off feeding service from the I405 interchange area.
WSDOT noted, if PSE can run power closer to TRS, the 240V might be feasible.
AECOM said that they still need to coordinate with PSE regarding the service size and area. Everything starts with the Service Agreement, once that is done, the coordination can start.

Concord said that we still need the as-built for existing lighting and power feeds for those. Skanska will reach out to Manish to get the as-builts for this area.

Exhibit 3 - WSDOT Pre-Approved Shop Drawings



S = SINGLE ARM (D) = DOUBLE ARM

POLE AND ARM DATA

QTY.	CATALOG DESCRIPTION	H1 NOMINAL MOUNTING HEIGHT (±0'-6") "A"	ARM DESCRIPTION				POLE DESCRIPTION			
			ARM LENGTH "B"	ARM SHAFT BASE O.D. "C"	ARM SHAFT TOP O.D. "D"	ARM SHAFT LENGTH "E"	BASE O.D. "E"	TOP O.D. "F"	SHAFT LENGTH "H"	WALL GAUGE "G"
	DS90-WA-6S (D) -30	30'-0"	6'-0"	5.41"	3.77"	11'-8"	8.05"	4.94"	22'-3"	11
	DS90-WA-8S (D) -30	30'-0"	8'-0"	5.41"	3.52"	13'-6"	8.05"	4.94"	22'-3"	11
	DS90-WA-10S (D) -30	30'-0"	10'-0"	5.41"	3.26"	15'-4"	8.05"	4.94"	22'-3"	11
	DS90-WA-12S (D) -30	30'-0"	12'-0"	5.41"	3.00"	17'-2"	8.05"	4.94"	22'-3"	11
	DS90-WA-14S (D) -30	30'-0"	14'-0"	5.41"	2.75"	19'-0"	8.05"	4.94"	22'-3"	11
	DS90-WA-16S (D) -30	30'-0"	16'-0"	5.41"	2.40"	21'-6"	8.05"	4.94"	22'-3"	11
	DS90-WA-6S (D) -35	35'-0"	6'-0"	5.41"	3.77"	11'-8"	8.75"	4.94"	27'-3"	11
	DS90-WA-8S (D) -35	35'-0"	8'-0"	5.41"	3.52"	13'-6"	8.75"	4.94"	27'-3"	11
	DS90-WA-10S (D) -35	35'-0"	10'-0"	5.41"	3.26"	15'-4"	8.75"	4.94"	27'-3"	11
	DS90-WA-12S (D) -35	35'-0"	12'-0"	5.41"	3.00"	17'-2"	8.75"	4.94"	27'-3"	11
	DS90-WA-14S (D) -35	35'-0"	14'-0"	5.41"	2.75"	19'-0"	8.75"	4.94"	27'-3"	11
	DS90-WA-16S (D) -35	35'-0"	16'-0"	5.41"	2.40"	21'-6"	8.75"	4.94"	27'-3"	11
	DS90-WA-6S (D) -40	40'-0"	6'-0"	5.41"	3.77"	11'-8"	9.45"	4.94"	32'-3"	11
	DS90-WA-8S (D) -40	40'-0"	8'-0"	5.41"	3.52"	13'-6"	9.45"	4.94"	32'-3"	11
	DS90-WA-10S (D) -40	40'-0"	10'-0"	5.41"	3.26"	15'-4"	9.45"	4.94"	32'-3"	11
	DS90-WA-12S (D) -40	40'-0"	12'-0"	5.41"	3.00"	17'-2"	9.45"	4.94"	32'-3"	11
	DS90-WA-14S (D) -40	40'-0"	14'-0"	5.41"	2.75"	19'-0"	9.45"	4.94"	32'-3"	11
	DS90-WA-16S (D) -40	40'-0"	16'-0"	5.41"	2.40"	21'-6"	9.45"	4.94"	32'-3"	11
	DS90-WA-6S (D) -50	50'-0"	6'-0"	5.41"	3.77"	11'-8"	10.85"	4.94"	42'-3"	10
	DS90-WA-8S (D) -50	50'-0"	8'-0"	5.41"	3.52"	13'-6"	10.85"	4.94"	42'-3"	10
	DS90-WA-10S (D) -50	50'-0"	10'-0"	5.41"	3.26"	15'-4"	10.85"	4.94"	42'-3"	10
	DS90-WA-12S (D) -50	50'-0"	12'-0"	5.41"	3.00"	17'-2"	10.85"	4.94"	42'-3"	10
	DS90-WA-14S (D) -50	50'-0"	14'-0"	5.41"	2.75"	19'-0"	10.85"	4.94"	42'-3"	10
	DS90-WA-16S (D) -50	50'-0"	16'-0"	5.41"	2.40"	21'-6"	10.85"	4.94"	42'-3"	10

MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
POLE & ARM SHAFTS	A595 GR.A	55
BASE PLATE	A572 GR.50	50
BOTTOM SLIP PLATE	A572 GR.50	50
ANCHOR PLATE	A572 GR.50	50
PLATE WASHERS	A36 OR A572 GR.50 OR 55	36 50
KEEPER PLT-G90 COATING	A653 GR.33	
HANDHOLE RIM	A500 GR.B	42
STRUCTURAL CONN. HDWE	F3125, A325 TYPE 1	
ANCHOR BOLTS NUTS WASHERS	F1554 A563 GR.DH F436	105
BANG PLT & STRAPS	A36 OR A572 GR.50 OR 55	36 50
MISC. HARDWARE-SERIES 300 STAINLESS		
OTHER PLATES	A36 OR A572 GR 50 OR 55	36 50
PIPE / TUBING	A501	36
	A513 GR.1015	35
	A618	50
	A500 GR.B	42
	A53 GR.B	35
GALVANIZING - STRUCTURE GALVANIZING - HARDWARE	A123 F2329	
ARM ELBOW	A513 TYPE 5 GR.1026	45

DESIGN INFORMATION

DESIGN CRITERIA:
THE LIGHTING STRUCTURES SHOWN ON THIS DRAWING HAVE BEEN DESIGNED IN ACCORDANCE WITH THE LOADING AND NOMINAL STRENGTH REQUIREMENTS OF THE 2015 AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, FIRST EDITION" SLTS-1 INCLUDING LATEST INTERIMS. THE WIND LOADS WERE CALCULATED FROM AN ULTIMATE WIND VELOCITY OF 115 MPH WITH A MEAN RECURRENCE INTERVAL OF 1700 YEARS.

LONGITUDINAL WELD SEAM:
WELDING PROCESS:
HIGH FREQUENCY ELECTRIC RESISTANCE WELD.

WELD INSPECTION:

1. WELDING INSPECTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF WASHINGTON STATE DEPARTMENT STANDARD SPECIFICATION 6-03.3(25) AND 2015 AASHTO WELD INSPECTION SECTION 14.5.3.
2. ALL LONGITUDINAL SEAM WELDS SHALL BE INSPECTED BY MAGENETIC PARTICLE METHOD FOR 30% OF LENGTH EXCEPT FOR SHAFT THICKNESSES 0.3125" AND GREATER SHALL BE ULTRASONIC METHOD. MAGNETIC PARTICLE TESTING SHALL BE PERFORMED ON BOTH SIDES OF 100% PENETRATION SEAM WELD WHEN BACKING IS NOT USED EXCEPT FOR TUBES LESS THAN 10.5 INCHES. FOR TUBES 6 TO 10.5 INCHES, 2" SHALL BE INSPECTED BY THE TEST METHOD BASED ON THICKNESS. FOR TUBES LESS THAN 6", VT ONLY PRIOR TO GALV.

WELDING:
WELDING OF STRUCTURES SHALL BE IN ACCORDANCE WITH 2015 EDITION OF THE AWS STRUCTURAL WELDING CODE D1.1-STEEL. 60% PENETRATION REQUIRED FOR ALL SEAM WELDS EXCEPT FOR THE FOLLOWING LOCATIONS REQUIRE 100% PENETRATION:

1. 6 INCHES ADJACENT TO BASEPLATE, FLANGE AND BUTT WELDED SHAFTS; EXCEPT FOR TUBES LESS THAN 5 INCH DIAMETER
2. FOR FEMALE SECTION OF SLIP JOINTED TUBES 10" AND GREATER: 1.5 X FEMALE SECTION INSIDE DIAMETER + 6 INCHES
3. FOR FEMALE SECTION OF SLIP JOINTED TUBES LESS THAN 10": FEMALE SECTION NOMINAL DIAMETER

GENERAL NOTE:

1. 3.3 SQ. FT./50 LBS. - DESIGN LUMINAIRE PA/WT
2. IN THE POLE AND ARM DATA, WALL GAUGE "G" WILL CHANGE WHEN THE MOUNTING HEIGHT REQUIRED ADJUSTS THE BASE O.D. "E" TO THE FOLLOWING:
   A. 10.00" OR LESS - WALL GAUGE WILL BE 11 GA.
   B. 10.01" THRU 11.00" - WALL GAUGE WILL BE 10 GA.
   THE WALL GAUGE "G" WILL REMAIN THE SAME FOR BOTH THE SINGLE AND DOUBLE ARM CONDITIONS.
3. THE ALLOWABLE MAXIMUM SIGN AREA LOCATED 7'-0" ABOVE THE POLE BASE WILL BE 20 SQ. FT. FOR ALL ARMS AND ALL MOUNTING HEIGHTS REQUIRED EXCEPT THE FOLLOWING:
   A. IF DOUBLE 16'-0" ARMS ARE REQUIRED FOR 40'-0" MOUNTING HEIGHT WHICH WOULD ADJUST THE BASE O.D. "E" TO 10.00" OR LESS WITH 11 GAUGE WALL.
4. THE H1 DIMENSION SHALL NOT EXCEED 50'-0".
5. SLIP BASES SHALL NOT BE INSTALLED ON POLES WEIGHING MORE THAN 1000 LBS.
6. FINAL ASSEMBLIES TO HAVE 0.06" RADIUS ON ALL EXPOSED EDGES.

2015 AASHTO NOTES

THE FOLLOWING 2015 AASHTO REQUIREMENT IS BEING FOLLOWED:

1. SECTION 5.6.6 FOR HANDHOLE CLEAR DISTANCE AND 40% OF POLE WIDTH REQUIREMENT. STRESSES ARE REVIEWED AT EACH HANDHOLE FOR STRUCTURAL ADEQUACY IN THE CALCULATIONS.

APPROVED
Manufacturer's Pole Plan
Approved For Listing As A
Pre-Approved Drawing
WSDOT Bridge & Structures Office
By GB Date 10-22-2018

BARRY N. SLADEK
STATE OF WASHINGTON
42225
REGISTERED
PROFESSIONAL ENGINEER
10/5/18

EXPIRES 8/2/20

REV	DRAWN BY-DATE	CHECK BY-DATE	DESCRIPTION
B	GC7 10/01/18	ABC2 10/03/18	WELD INSPECTION, WELDING & 2015 AASHTO NOTE
A	BDB3 02/07/17	BDB3 05/12/17	REVISED WELD INSPECTION NOTE
—	BDB3 08/22/16	BDB3 08/29/16	— —

TITLE
STATE OF WASHINGTON
TYPE 1 LIGHTING STRUCTURES
2015 AASHTO

valmont
Valley, NE 68064
(402) 359-2201

PAGE NUMBER: 1 OF 5
DRAWING NUMBER DB01164
REV B

Exhibit 4 - Traffic Task Force Meeting Minutes #13

Skanska USA Civil
1995 Agua Mansa Road
Riverside, California 92509

Project: 90009590 I-405 - Brickyard to SR527
Bothell, Washington 98011

C9727 BY to 527: Traffic Task Force Meeting Minutes: Meeting #13

Meeting Date	Mar 6, 2024	**Meeting Time**	02:00 pm - 03:00 pm Pacific Time (US & Canada)
Meeting Location	SCOUT	**Video Conferencing Link**	Join Meeting

Overview Agenda:

- RRFB Near East Plaza of Bothell BRT (5 min)
- Seg 2 Signal Plans - Comment Review (1 min)
- Seg 3 Off Ramp at NE195th Signal Loops (2 min) - See attached diagram.
- Lighting at the Median (2 min) - See attached email.
- Temp. Electrical Design Near Woodinville Drive (30 min) - **See attached drawings.**
- Temp Signs on Skids (10 min)

Notes Finalized meeting minutes were uploaded to CFI.

Attachments C9727_PS_SG1-1.pdf, I405 BRICKYARD-FINAL-ILL TEMP-1BWOODINVILLE-IDR-CLEAN.pdf, RE_ I-405 Brickyard_ BY-CRE-00257_009727_RFI_00025_16_03_Lighting in the Median.msg

Scheduled Attendees

Name	Company	Phone Number	Email	Attendance
Ryan Abraham	AECOM (Seattle)		ryan.abraham@aecom.com	Absent
Imanuel Aswandi	AECOM (Seattle)		imanuel.aswandi@aecom.com	Present
Jon Guerrero	AECOM (Seattle)		jon.guerrero@aecom.com	Absent
Scott Shea	AECOM (Seattle)		scott.shea@aecom.com	Present
Jeremy Michel	ERW Lighting		jeremym@erwlighting.com	Present
Jim Grohs	Liberty Electric		jgrohs@libelectric.com	Absent
Brandon Judge	Liberty Electric		bjudge@libelectric.com	Present
Kendall Skaggs	Liberty Electric		kskaggs@libelectric.com	Present
Kyle Taylor	Liberty Electric		ktaylor@libelectric.com	Absent
Richard Vedaa	Liberty Electric		rvedaa@libelectric.com	Present
Ryan Gulick	Perteet		ryan.gulick@perteet.com	Present
Document Control - Skanska	Skanska USA Civil West		brickyarddoccontrol@skanska.com	For Distribution Only
Michelle Petterson	Skanska USA Civil West		michelle.petterson@skanska.com	Present
Kertu-Lilli Salumae	Skanska USA Civil West		kertu-lilli.salumae@skanska.com	Present
Kyle Sharrer	Skanska USA Civil West	P: (909) 721-9753	kyle.sharrer@skanska.com	Absent
Sonia Berriz	Washington State Department of Transportation		berrizs@consultant.wsdot.wa.gov	Absent

Name	Company	Phone Number	Email	Attendance
Rachel Gehrlein	Washington State Department of Transportation		gehrlra@wsdot.wa.gov	For Distribution Only
John Granillo-Dodds	Washington State Department of Transportation		john.granillo-dodds@wsdot.wa.gov	For Distribution Only
Ron Haukom	Washington State Department of Transportation		ron.haukom@wsdot.wa.gov	For Distribution Only
Huyen Huynh	Washington State Department of Transportation		huynhu@wsdot.wa.gov	Absent
Janka Lovering	Washington State Department of Transportation		loverinj@consultant.wsdot.wa.gov	Present
Sokha Men	Washington State Department of Transportation		mens@wsdot.wa.gov	For Distribution Only
Rachel Waitt	Washington State Department of Transportation		rachel.waitt@wsdot.wa.gov	For Distribution Only

Traffic Signals

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
2.1	8	RRFB Near East Plaza of Bothell BRT	Scott Shea (AECOM (Seattle))	Mar 6, 2024		Closed

Description

- City lighting
- Beaconed crosswalk specifications
- Potential impacts by moving the crosswalk closer to the BRT

Related RFI
RFI #00015: BY-CRE-00187_009727_RFI_00015_16.03_Lighting Design at 155th Street
https://app.procore.com/2556789/project/rfi/show/18832305

AECOM will present the new proposed design for this area.

Attachments
image (1).png

Official Documented Meeting Minutes
AECOM was tasked with checking the BRT footprint and the roadway requirements in this area to determine how close we could move the crosswalk without causing any problems to the surrounding area. The move of this crosswalk was triggered by the location of underground 60" water lines that could clash with the light pole foundations; also, it simplifies the selection of light fixtures if they are all installed within the same city limit.
AECOM accounted for the worst-case scenario of BRT footprint, which could extend the stairway far out; there were no issues found with the crosswalk sift, and there is still enough space between these two. AECOM also checked on the line of sight on the curve and confirmed there is a sufficient distance.
The only thing that may change anything in this plan is the location of the wall from the road and how that would further impact the BRT station. Michelle will verify the scope of impact.
This crosswalk will be sifted just enough to clear from clashes with the 60" water lines and stay in within the City of Kirkland city limit. There is no need to send an RFI for this as long as all contract requirements are met; AECOM will show the design change in the final design package.

Previous Meeting Minutes
Feb 28, 2024
(None)

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
	We will provide a roll plot with voltage drop calculations to show the 480V justification in our prelim for seg 2. In that analysis we will start with 120/240V service and see if the voltage drop works. If it doesn't then we can justify using 240/480V.					
	Attachments 2.16.3.5.3 Electrical Service Transformer and Cabinets.jpg					
	Previous Meeting Minutes **Feb 28, 2024** AECOM still needs to coordinate with the utilities group and PSE. We need the service agreement completed first, which allows us to discuss the details with PSE.					

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
3.6	12	ST Lighting Near SR522 Hub	Scott Shea (AECOM (Seattle))	Feb 28, 2024		On Hold
	Description Additional discussion for the preferred lighting fixture for Sound Transit. Fixtures provided by Sound Transit (forwarded by Sonia) for pedestrian lighting (Mirada small head set at 14 feet, picture below) Mirada is a lower watt and lumen output and is therefore inefficient for roadway area lighting. Roadway lighting also needs to be set higher than 14 feet. Recommend using WSDOT approved cobra head LED luminaires and poles for lighting of ST bus only roadways (BRT stations, etc). This will match adjacent roadways and provide consistent lighting. https://wsdot.wa.gov/sites/default/files/2022-01/WSDOT-Traffic-Materials-Approved-LED-CH-Luminaires.pdf https://wsdot.wa.gov/sites/default/files/2021-09/WSDOT-Traffic-LT1-Valmont-DB01164-RevB.pdf WSDOT approved cobra heads: Table 1.1: 200W Class, 120V/240V Systems WSDOT approved pole profile: See attached email. 3/5/24 - AECOM will submit an RFI with the proposed lighting.					
	Attachments I405 WSDOT Traffic TFM Agenda items for 2_28 meeting.msg					
	Previous Meeting Minutes **Feb 28, 2024** AECOM asked if they could use the light standards from the WSDOT preapproved table. WSDOT was okay with it. ST provided the type of lighting they wanted, but this light is not sufficient for the roadway in the SR522 transit hub. 400W will be needed for the roadway lighting, Mirada has only half of the wattage, also, the fixture head is not compatible with the mounting on the WSDOT light poles. Mirada lights are good for plazas and pedestrian pathways. AECOM needs a direction for which light can be used for the SR522 transit. Sonia will ask ST tomorrow and let Skanska know if an additional meeting is needed to resolve the question.					

No.	Mtg Origin	Title	Assignment	Due Date	Priority	Status
3.7	12	SR522 Elec As-Builts	Scott Shea (AECOM (Seattle))	Feb 28, 2024		On Hold
	Description Requesting as-builts, or WSDOT power locations, along 522 from the east end of the project going further east up to the 131st Ave NE interchange. Toll rate sign on 522 will need power, will require 480V transformer to run power from the transformer at the transit hub. Looking for an alternative WSDOT power source/location to tie into. 3/5/24 - WSDOT (Manish) is looking for the as-builts.					

Exhibit 5 - RFI 00034 Document

Exhibit 5 - RFI00034 Document

SKANSKA	Washington State Department of Transportation I-405, Brickyard to SR 527 Improvement Project Contract No. 009727	Doc Type: RFI REV#: 0 SPEC SECTION: 2.16.3.4.4.2 DATE: 03/07/2024 CRE #: BY-CRE-00354

To:	From:
Washington State Dept. of Transportation 18911 N Creek Pkwy S Suite 150 Bothell, WA 98011	Skanska USA Civil West 1995 Agua Mansa Road Riverside, CA 92509

Submittal: BY-CRE-00354_009727_RFI_00034_16.03_Roadway Lighting for BRT Stations

SKA REFERENCE DOCUMENTS

Subcontractor/Supplier: AECOM

SKA Title and Description: Roadway Lighting for BRT Stations

Due Date: 03/21/2024

QUESTION

See page 2.

SKANSKA

RFP Section 2.16.3.4.4.2 Luminaires indicate that luminaires installed on Transit Agency facilities shall follow the Transit Agencies' standards unless specified otherwise in the RFP. The Sound Transit Design Criteria Manual provides specifications for lighting areas for pedestrian areas (the Mirada luminaire head mounted at 14 feet; wattage 41-196) but does not provide specific standards for luminaires for roadway lighting.

For project consistency, and to follow the RFP, AECOM proposes using the same luminaires for roadways in the transit area that will be used in other areas of the project. RFP Section 2.16.3.4.4.2 which indicates "All luminaires of a particular form (cobra head, wall mount, etc.) supplied for the Project shall be from the same manufacturer and shall be the same model."

The WSDOT Approved LED Luminaires for Roadway Lighting document provides Table 1.4 for 400 Watt LED heads. AECOM proposes using the **400 W Lumec brand luminaire head manufactured by Signify** identified in Table 1.4. Please see the attached spec sheet for that luminaire head for reference.

Please confirm if the proposed luminaire head is acceptable for use on ST BRT roadways.

Attached are:

- 2.16.3.4.4.2 Luminaires
- Table 1.4 WSDOT Approved list - Signify Lumec
- RoadFocus-LED-Cobra-Head---Large--RFL--Spec-Sheet

AHJ: WSDOT, FHWA, ST

- National Electrical Manufacturers Association (NEMA) seven-pin photocell receptacle with a shorting cap installed.
- Die-cast aluminum housing
- Minimum 70 CRI
- 3,000K CCT
- Support 120, 240, 277, and 480V input voltages
- Type III roadway distribution
- Tool-less entry
- 10-year warranty

LED luminaires shall be capable of delivering the following light outputs as measured over a grid sized as listed below, using 5- by 5-foot point spacing and a light loss factor of 0.765, with the luminaire LED array centered over the midpoint of one of the long edges of the grid.

40-foot Mounting Height

- Evaluation grid size: 200 feet long by 65 feet wide
- Minimum total lumens: 23,249 at 204 watts input
- Average foot-candles (fc): 0.79
- Minimum fc: 0.22
- Uniformity (avg. fc/min. fc): 3.59

50-foot Mounting Height

- Evaluation grid size: 220 feet long by 80 feet wide
- Minimum total lumens: 25,954 at 214 watts input
- Average fc: 0.62
- Minimum fc: 0.20
- Uniformity (avg. fc/min. fc): 3.10

All luminaires of a particular form (cobra head, wall mount, etc.) supplied for the Project shall be from the same manufacturer and shall be the same model.

Luminaires designed for mounting under decks or to walls shall not be mounted on light standards or poles.

Luminaires owned and operated by ST shall be in accordance with the *Sound Transit Design Criteria Manual*, with finished coat in Cascade Green in accordance with the *I-405 Urban Design Criteria* (Appendix L).

If existing light standards are used, the lighting shall be upgraded to LED using the same series of luminaires as new installations of the same type.

2.16.3.4.5 *Equipment Provided by WSDOT*

The Design-Builder shall supply all equipment.

2.16.3.5 Permanent Illumination Construction Requirements

Illumination systems shall remain operational at all times during construction unless a temporary illumination system is provided to cover the affected area. All damage to illumination systems shall be repaired prior to hours of darkness on the following day.

Existing illumination systems to be replaced on the Project shall remain operational until new or temporary illumination systems are installed, tested, and fully-operational. The Design-Builder shall notify WSDOT 14 Calendar Days prior to removing existing illumination systems or disrupting power to any illumination system.

All lighting conductors shall be installed using conduits containing only electrical conductors. New conduit and junction box systems shall be separated from traffic signal conduits and ITS communication conduits. A shared trench, shared power source, and shared cabinet foundations may be used.

Each ramp lighting system shall be assigned a separate lighting circuit. A minimum of two lighting circuits shall be assigned to each ramp terminal lighting system. Ramp lighting circuits may be used for ramp terminal lighting as long as a minimum of two circuits are provided for ramp terminal lighting.

Light standards shall be installed a minimum of 50 feet from sign bridge structures and other structures that might impede or distort the light distribution on the highway. Existing light standards located within 50 feet from a new sign structure or other structure that impedes or distorts the lighting on the traveled way shall be removed and a new light standard shall be installed at a location that meets all lighting requirements for light levels, uniformity, and veiling luminance.

The Design-Builder shall coordinate with the Utility company to determine the separation between overhead Utilities and new or existing illumination structures. A minimum of 10 feet of circumferential clearance to all power lines including the neutral shall be maintained. A greater clearance may be required for higher voltages in accordance with the local Utility company requirements.

The Design-Builder shall perform the required testing for temporary and permanent illumination and electrical systems in accordance with the Special Provisions and the Standard Specifications. The Design-Builder shall incorporate all testing into the Baseline Contract Schedule and Monthly Contract Schedule Updates for submittal to WSDOT. The Design-Builder shall submit all testing procedures, pass/fail requirements, manufacturer's certification of compliances, and equipment documentation to WSDOT for Review and Comment and resolve all WSDOT comments a minimum of 14 Calendar Days prior to any testing. The Design-Builder shall submit test reports upon completion of each test in accordance with this Section and Section 2.28*, Quality Management Plan*. WSDOT may observe any tests and will audit test results. The Design-Builder shall notify WSDOT when all illumination and electrical requirements have been met in accordance with the Contract, including training, documentation, testing, and field installations. WSDOT will perform the final electrical inspection and

Table 1.4: 400W Class, 120V/240V Systems

Wattage Class	Manufacturer	Brand	Model	Power Use (Watts)	Order Code	Approval Date
400W	Acuity	American Electric Lighting (AEL)	Autobahn ATB2	187	ATB2-P4XX-MVOLT-R3-3K-MP-NL-NR-RFD337541 -or- ATB2-P4XX-MVOLT-R3-3K-MP-NL-NR-BAA-RFD337593*	**2023-04-10**
400W	Acuity	American Electric Lighting (AEL)	Autobahn ATB2	196	ATB2-P602-MVOLT-R3-3K-MP-NL-NR-RFD336872 -or- ATB2-P602-MVOLT-R3-3K-MP-NL-NR-BAA-RFD337591*	**2023-04-10**
400W	SolarMAX		SMX-LL5	190	SMX-190WiE-NV-LL5-NR-3070-T302-AP-10-CUL(WS)	2021-08-16
400W	Cree		Traveyo Extra Large (TRVXL)	219	TRVXL-A-HT-3ME-30L-30K7-UL-GY-4BLT-W10	2020-09-15
400W	Cooper	Streetworks	Archeon Large (ARCH-L)	222	ARCH-L-PA3-220-730-U-T3-AP-10K-U103215	2020-09-15
400W	Signify	Lumec	RoadFocus Large (RFL)	224	RFL-225W100LED3K-G2-R3M-UNIV-NRC-GY3	2020-02-18
400W	Cooper	Streetworks	Navion (NVN)	225	NVN-SA4C-730-U-T3-AP-10K-U125870	2022-01-25
400W	Leotek		Green Cobra 2 (GC2)	242	GC2-96G-MV-WW-3R-GY-800-LPCR-DSC-WL40E	2020-09-15
400W	GE		Evolve (ERL2)	251	ERL2-0-28-C3-30-1-GRAY-A-B-I-L-041	2020-09-15

* Contact HwyLighting@wsdot.wa.gov for special color order codes.

LUMEC by signify

Roadway

RoadFocus

RFL Cobra head (large)

Lumec RoadFocus LED Cobra head luminaires feature a sleek design that provides seamless replacement of existing HID luminaires. RoadFocus is available in three sizes, offers multiple lumen packages, and a complete array of optical distributions, making it an outstanding solution for all types of roadway applications. Includes Service Tag, innovative way to provide assistance throughout the life of the product.

Project:

Location:

Cat.No:

Type:

Lumens: Qty:

Notes:

Ordering guide

example: RFL-215W96LED4K-G2-R3M-UNV-DMG-RCD7-GY3

Series	LED module	CCT	Generation	Distribution	Voltage	Controls [4]	Options	Finish
RFL			G2					
RFL RoadFocus large	**145W64LED** **135W80LED** **180W80LED** **270W80LED** **215W96LED** **85W100LED**[14] **105W100LED**[14] **165W100LED**[14] **225W100LED**[14] **305W100LED**[14] **190W112LED** **241W112LED** **350W112LED** **130W120LED**[14] **200W120LED**[14] **270W120LED**[14] **155W140LED**[14] **230W140LED**[14] **310W140LED**[14]	**4K** 4000K **3K** 3000K **2.7K**[11] 2700K	**G2** Generation 2	**Type 2** **R2S** Type II short (ASYM) **R2M** Type II Medium (ASYM) **Type 3** **R3S** Type III short (ASYM) **R3M** Type III Medium (ASYM) **Type 4** **4** Type IV (ASYM) **Type 5** **5** Type V (SYMM)	**UNV** 120-277V **HVU** 347-480V	**D4I**[16] Zhaga-D4i certified **DALI**[1] Digitally addressable lighting interface **DMG**[5] 0-10V **SRD**[1] Sensor ready driver, standard configuration **SRD1**[1] Sensor ready driver, alternate configuration	**API** Factory installed NEMA label, ANSI C136.15-2015 compliant **FAWS**[7] Field adjustable wattage selector **CSS**[2,15] Cul-de-Sac Shield **FSS**[2,15] Front Side Shield **HS**[2,15] House Side Shield **LSS**[2,15] Left Side Shield **RSS**[2,15] Right Side Shield **NRC**[8] No receptacle **NYBC** 4 - position terminal block **OMS**[17] Outdoor Multisensor **PH8**[1,10] Twist-lock photoelectric cell, UNV (120-277VAC) **PH8/347**[10,13] Twist-lock photoelectric cell (347VAC) **PH8/480**[10,13] Twist-lock photoelectric cell (480VAC) **PHXL**[1,10] Twist-lock photoelectric cell, extended life, UNV (120-277VAC) **PH9**[10] Shorting cap **RCD**[3,9] Receptacle for twist-lock photocell or shorting cap, 5-pin (optional) **RCD7**[3,5] Receptacle for twist-lock photocell or shorting cap, 7-pin (standard) **SP2** 20kV / 10kA Surge protector **TLRSR**[6] SR receptacle **BAC**[18] Meets the requirements of the Buy American Act of 1933 (BAA)	**BK** Black **BR** Bronze **GY3** Gray **WH** White

1 Not available with **HVU**.
2 Refer to Accessories section to confirm compatibility of shields with optical distribution.
3 Use of photoelectric cell or shorting cap is required to ensure proper illumination.
4 Select either **DALI** or **DMG** or **SRD** or **SRD1** mandatory option.
5 Please note this integrated feature come standard with RoadFocus.
6 Only available with **SRD** or **SRD1** Driver Options.
7 Only available with **DMG** Driver Options
8 Not available with **PH8**, **PH8/347**, **PH8/480**, **PHXL**, **PH9**, **DALI**, **SRD** or **SRD1** Driver Options.
9 Not available with **SRD** Driver Options.
10 Either **RCD** or **RCD7** must be selected for this option.
11 Extended lead-time may apply. Consult factory.
12 **FAWS** table accuracy +/- 15% on these models.
13 Not available with **UNV**.
14 Only available with **R2M** or **R3M** distributions.
15 1 shield provided per LED light engine.
16 **TLRSR** must be selected with **D4I**
17 **TLRSR** and **D4I** must be selected with **OMS**
18 Failure to properly select the "**BAC**" suffix could result in you receiving product that is not BAA compliant product with no recourse for an RMA or refund. This BAC designation hereunder does not address (i) the applicability of, or availability of a waiver under, the Trade Agreements Act, or (ii) the "Buy America" domestic content requirements imposed on states, localities, and other non-federal entities as a condition of receiving funds administered by the Department of Transportation or other federal agencies.
19 Consult Signify to confirm whether specific accessories are BAA-compliant.

Accessories[19] (must be ordered as separate line items - quickly and easily installed in the field)

Interact City Connector node (Contact the factory for additional support when connected lighting or additional services are desired.)

Shielding accessories

Description	Luminaire Option Code	Accessory Ordering Code		Shield vs Distribution Compatibility					
		12/16 LED version*	20 LED version*	R2M	R2S	R3M	R3S	4	5
Cul-de-sac shield	CSS	ACC-LG66V16LED-CSS	ACC-LG66V20LED-CSS	Yes	Yes	Yes	Yes	Yes	Yes
Front side shield	FSS	ACC-LG66V16LED-FSS	ACC-LG66V20LED-FSS	Yes	Yes	Yes	Yes	No	Yes
House side shield	HS	ACC-LG66V16LED-HS	ACC-LG66V20LED-HS	Yes	Yes	Yes	Yes	Yes	No
Left side shield	LSS	ACC-LG66V16LED-LSS	ACC-LG66V20LED-LSS	Yes	Yes	Yes	Yes	Yes	Yes
Right side shield	RSS	ACC-LG66V16LED-RSS	ACC-LG66V20LED-RSS	Yes	Yes	Yes	Yes	Yes	Yes

*Refer to Wattage table to confirm light engine configuration. Example, if configuration is 2x16LED, 2 of the desired shields must be ordered per luminaire.

RFL RoadFocus

LED Cobra head (large)

Predicted Lumen Depreciation Data

Predicted performance derived from LED manufacturer's data and engineering design estimates, based on IESNA LM-80 methodology. Actual experience may vary due to field application conditions. L_{70} is the predicted time when LED performance depreciates to 70% of initial lumen output. Calculated per IESNA TM21-11 Addendum B. Published L_{70} hours limited to 6 times actual LED test hours.

Ambient Temperature °C	L_{70} per TM-21	Lumen Maintenance % at 60,000 hrs
25°C	>60,000 hours	>97.6%

LED Wattage values

Ordering Code	Total LEDs	Light Engine Configuration	Average System Watts[16]	Wattage label[17]
RFL-145W64LED	64	4x16LED	137	140
RFL-135W80LED	80	5x16LED	136	140
RFL-180W80LED	80	5x16LED	174	170
RFL-270W80LED	80	5x16LED	268	270
RFL-215W96LED	96	6x16LED	207	210
RFL-85W100LED	100	5x20LED	88	90
RFL-105W100LED	100	5x20LED	106	110
RFL-165W100LED	100	5x20LED	165	170
RFL-225W100LED	100	5x20LED	224	220
RFL-305W100LED	100	5x20LED	306	310

Ordering Code	Total LEDs	Light Engine Configuration	Average System Watts[16]	Wattage label[17]
RFL-190W112LED	112	7x16LED	188	190
RFL-241W112LED	112	7x16LED	243	240
RFL-350W112LED[18]	112	7x16LED	340	340
RFL-130W120LED	120	6x20LED	133	130
RFL-200W120LED	120	6x20LED	196	200
RFL-270W120LED	120	6x20LED	269	270
RFL-155W140LED	140	7x20LED	154	150
RFL-230W140LED	140	7x20LED	229	230
RFL-310W140LED	140	7x20LED	311	310

16. Typical values, rounded.
17. As per ANSI C136.15-2015. Consult factory for other labeling needs.
18. Rated for +40°C / +104°F.

4000K LED Lumen values

		Type R2M			Type R2S			Type R3M			Type R3S			Type 4			Type 5		
Ordering Code	Color Temp.	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFL-145W64LED	4000	19,162	140	B3-U0-G3	19,841	145	B3-U0-G2	19,102	139	B3-U0-G2	19,358	141	B2-U0-G3	19,012	139	B2-U0-G3	19,777	144	B4-U0-G2
RFL-135W80LED	4000	18,819	138	B3-U0-G3	19,486	143	B3-U0-G2	18,761	137	B3-U0-G2	19,012	139	B2-U0-G3	18,673	137	B2-U0-G3	19,423	142	B4-U0-G2
RFL-180W80LED	4000	23,952	138	B3-U0-G3	24,800	143	B3-U0-G2	23,877	137	B3-U0-G3	24,197	139	B3-U0-G3	23,765	137	B3-U0-G4	24,721	142	B5-U0-G3
RFL-270W80LED	4000	32,506	121	B3-U0-G3	33,658	126	B4-U0-G3	32,405	121	B3-U0-G3	32,839	122	B3-U0-G4	32,254	120	B3-U0-G4	33,549	125	B5-U0-G3
RFL-215W96LED	4000	28,742	139	B3-U0-G3	29,760	144	B3-U0-G2	28,653	138	B3-U0-G3	29,037	140	B3-U0-G4	28,519	138	B3-U0-G4	29,664	143	B5-U0-G3
RFL-85W100LED	4000	13,504	154	B3-U0-G3	N/A	N/A	N/A	13,576	155	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-105W100LED	4000	16,168	153	B3-U0-G3	N/A	N/A	N/A	16,255	153	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-165W100LED	4000	22,561	137	B3-U0-G3	N/A	N/A	N/A	22,683	137	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-225W100LED	4000	28,600	128	B4-U0-G4	N/A	N/A	N/A	28,753	128	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-305W100LED	4000	37,480	122	B4-U0-G4	N/A	N/A	N/A	37,681	123	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-190W112LED	4000	26,347	140	B3-U0-G3	27,280	145	B3-U0-G2	26,265	140	B3-U0-G3	26,617	142	B3-U0-G3	26,143	139	B3-U0-G4	27,192	145	B5-U0-G3
RFL-241W112LED	4000	32,955	136	B4-U0-G3	34,122	140	B4-U0-G3	32,853	135	B3-U0-G3	33,293	137	B3-U0-G4	32,699	135	B3-U0-G4	34,012	140	B5-U0-G3
RFL-350W112LED	4000	42,515	125	B4-U0-G4	44,021	130	B4-U0-G3	42,382	125	B4-U0-G4	42,950	127	B3-U0-G4	42,184	124	B3-U0-G5	43,879	129	B5-U0-G4
RFL-130W120LED	4000	19,401	146	B3-U0-G3	N/A	N/A	N/A	19,505	147	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-200W120LED	4000	27,073	138	B4-U0-G3	N/A	N/A	N/A	27,219	139	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-270W120LED	4000	34,319	128	B4-U0-G4	N/A	N/A	N/A	34,504	128	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-155W140LED	4000	22,635	147	B3-U0-G3	N/A	N/A	N/A	22,756	148	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-230W140LED	4000	31,586	138	B4-U0-G4	N/A	N/A	N/A	31,756	139	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-310W140LED	4000	40,039	129	B4-U0-G4	N/A	N/A	N/A	40,255	129	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at signify.com/outdoorluminaires. Consult DLC QPL to confirm your specific fixture selection is DLC approved.

Note: Some data may be scaled based on tests of similar but not identical luminaries.

RFL RoadFocus

LED Cobra head (large)

3000K LED Lumen values

Ordering Code	Color Temp.	Type R2M			Type R2S			Type R3M			Type R3S			Type 4			Type 5		
		Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFL-145W64LED	3000	17,976	131	B3-U0-G3	18,613	136	B3-U0-G2	17,920	131	B3-U0-G2	18,160	133	B2-U0-G3	17,836	130	B2-U0-G3	18,553	135	B4-U0-G2
RFL-135W80LED	3000	17,655	129	B3-U0-G3	18,280	134	B3-U0-G2	17,600	129	B3-U0-G2	17,836	131	B2-U0-G3	17,518	128	B2-U0-G3	18,221	134	B4-U0-G2
RFL-180W80LED	3000	22,470	129	B3-U0-G3	23,266	134	B3-U0-G2	22,400	129	B3-U0-G3	22,700	130	B3-U0-G3	22,295	128	B3-U0-G4	23,191	133	B5-U0-G3
RFL-270W80LED	3000	30,495	114	B3-U0-G3	31,575	118	B4-U0-G3	30,400	113	B3-U0-G3	30,807	115	B3-U0-G4	30,258	113	B3-U0-G4	31,473	117	B5-U0-G3
RFL-215W96LED	3000	26,964	130	B3-U0-G3	27,919	135	B3-U0-G2	26,880	130	B3-U0-G3	27,240	132	B3-U0-G4	26,754	129	B3-U0-G4	27,829	134	B5-U0-G3
RFL-85W100LED	3000	12,839	147	B3-U0-G3	N/A	N/A	N/A	12,908	147	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-105W100LED	3000	15,372	145	B3-U0-G3	N/A	N/A	N/A	15,455	146	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-165W100LED	3000	21,451	130	B3-U0-G3	N/A	N/A	N/A	21,566	131	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-225W100LED	3000	27,192	121	B4-U0-G3	N/A	N/A	N/A	27,338	122	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-305W100LED	3000	35,636	116	B4-U0-G4	N/A	N/A	N/A	35,828	117	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-190W112LED	3000	24,717	132	B3-U0-G3	25,592	136	B3-U0-G2	24,640	131	B3-U0-G3	24,970	133	B3-U0-G3	24,525	131	B3-U0-G4	25,510	136	B5-U0-G3
RFL-241W112LED	3000	30,916	127	B4-U0-G3	32,011	132	B4-U0-G3	30,820	127	B3-U0-G3	31,233	129	B3-U0-G4	30,676	126	B3-U0-G4	31,908	131	B5-U0-G3
RFL-350W112LED	3000	39,884	117	B4-U0-G4	41,297	122	B4-U0-G3	39,760	117	B4-U0-G4	40,293	119	B3-U0-G4	39,574	117	B3-U0-G5	41,164	121	B5-U0-G4
RFL-130W120LED	3000	18,446	139	B3-U0-G3	N/A	N/A	N/A	18,545	139	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-200W120LED	3000	25,741	131	B3-U0-G3	N/A	N/A	N/A	25,880	132	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-270W120LED	3000	32,631	121	B4-U0-G4	N/A	N/A	N/A	32,807	122	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-155W140LED	3000	21,521	140	B3-U0-G3	N/A	N/A	N/A	21,637	141	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-230W140LED	3000	30,032	131	B4-U0-G3	N/A	N/A	N/A	30,194	132	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-310W140LED	3000	38,069	122	B4-U0-G4	N/A	N/A	N/A	38,274	123	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

2700K LED Lumen values

Ordering Code	Color Temp.	Type R2M			Type R2S			Type R3M			Type R3S			Type 4			Type 5		
		Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating	Lumen Output	Efficacy (LPW)	BUG Rating
RFL-145W64LED	2700	16,484	120	B3-U0-G3	17,068	125	B3-U0-G2	16,433	120	B3-U0-G2	16,653	122	B2-U0-G3	16,356	119	B2-U0-G3	17,013	124	B4-U0-G2
RFL-135W80LED	2700	16,190	119	B3-U0-G3	16,763	123	B3-U0-G2	16,140	118	B3-U0-G2	16,356	120	B2-U0-G3	16,064	118	B2-U0-G3	16,709	122	B4-U0-G2
RFL-180W80LED	2700	20,605	118	B3-U0-G3	21,335	123	B3-U0-G2	20,541	118	B3-U0-G3	20,816	120	B3-U0-G3	20,445	118	B3-U0-G4	21,267	122	B5-U0-G3
RFL-270W80LED	2700	27,965	104	B3-U0-G3	28,955	108	B4-U0-G3	27,877	104	B3-U0-G3	28,251	105	B3-U0-G4	27,747	103	B3-U0-G4	28,861	108	B5-U0-G3
RFL-215W96LED	2700	24,727	119	B3-U0-G3	25,602	124	B3-U0-G2	24,649	119	B3-U0-G3	24,980	121	B3-U0-G4	24,534	119	B3-U0-G4	25,520	123	B5-U0-G3
RFL-85W100LED	2700	11,731	134	B3-U0-G2	N/A	N/A	N/A	11,794	135	B2-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-105W100LED	2700	14,046	133	B3-U0-G3	N/A	N/A	N/A	14,122	133	B3-U0-G2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-165W100LED	2700	19,600	119	B3-U0-G3	N/A	N/A	N/A	19,705	119	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-225W100LED	2700	24,846	111	B3-U0-G3	N/A	N/A	N/A	24,980	112	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-305W100LED	2700	32,561	106	B4-U0-G4	N/A	N/A	N/A	32,736	107	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-190W112LED	2700	22,666	121	B3-U0-G3	23,468	125	B3-U0-G2	22,595	120	B3-U0-G3	22,898	122	B3-U0-G3	22,490	120	B3-U0-G4	23,393	125	B5-U0-G3
RFL-241W112LED	2700	28,351	117	B4-U0-G3	29,355	121	B4-U0-G3	28,263	116	B3-U0-G3	28,641	118	B3-U0-G4	28,130	116	B3-U0-G4	29,260	120	B5-U0-G3
RFL-350W112LED	2700	36,574	108	B4-U0-G4	37,870	112	B4-U0-G3	36,461	107	B4-U0-G4	36,949	109	B3-U0-G4	36,290	107	B3-U0-G5	37,748	111	B5-U0-G4
RFL-130W120LED	2700	16,855	127	B3-U0-G3	N/A	N/A	N/A	16,946	127	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-200W120LED	2700	23,520	120	B3-U0-G3	N/A	N/A	N/A	23,647	121	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-270W120LED	2700	29,815	111	B4-U0-G4	N/A	N/A	N/A	29,975	111	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-155W140LED	2700	19,664	128	B3-U0-G3	N/A	N/A	N/A	19,770	128	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-230W140LED	2700	27,440	120	B4-U0-G3	N/A	N/A	N/A	27,588	120	B3-U0-G3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
RFL-310W140LED	2700	34,784	112	B4-U0-G4	N/A	N/A	N/A	34,971	112	B4-U0-G4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Actual performance may vary due to installation variables including optics, mounting/ceiling height, dirt depreciation, light loss factor, etc.; highly recommended to confirm performance with a layout - contact Applications at signify.com/outdoorluminaires. Consult DLC QPL to confirm your specific fixture selection is DLC approved.

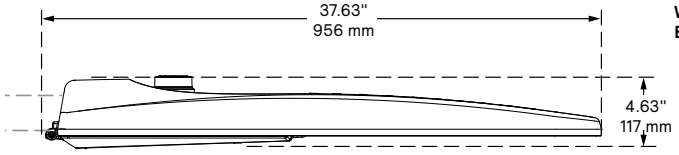
Note: Some data may be scaled based on tests of similar but not identical luminaries.

RFL RoadFocus

LED Cobra head (large)

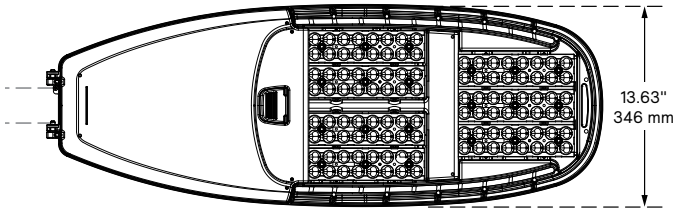
Dimensions

Side View



Weight: 27.3 Lbs
EPA: 0.92 sq. ft.

Bottom View



Field Adjustable Wattage (FAWS) Multiplier Chart

FAWS Position	Typical Delivered Lumens Multiplier	Typical System wattage
1	0.31	0.28
2	0.53	0.50
3	0.62	0.58
4	0.70	0.67
5	0.78	0.75
6	0.83	0.81
7	0.89	0.87
8	0.92	0.91
9	0.96	0.95
10	1.00	1.00

Note: Typical value accuracy +/- 5%

Specifications

Housing

Made of a low copper die cast Aluminum alloy (A360), 0.100" (2.5mm) minimum thickness. Fits on a 1.66" (42mm) O.D. (1.25" NPS), 1.9" (48mm) O.D. (1.5" NPS) or 2 3/8" (60mm) O.D. (2" NPS) by 5 1/2" (140mm) minimum long tenon. Comes with 2 zinc plated clamps fixed by 4 zinc plated hexagonal bolts 3/8 16 UNC for ease of installation. Provides an easy step adjustment of +/- 5° tilt in 2.5° increments. Includes integral bubble level standard (always included). A quick release, tool less entry, single latch, hinged, removable door opens downward to provide access to electronic components and to a terminal block. Door is secured to prevent accidental dropping or disengagement. A clearance of 13" (330mm) at the rear is required in order to remove the door. Complete with a bird guard protecting against birds and similar intruders and an ANSI label as per C136.15-2015 to identify wattage and source (both included in box). Housing (including electrical compartment) rated IP54 per ANSI C136.37.

Light Engine

Composed of 4 main components: LED Module / Optical System / Heat Sink / Driver.

Electrical components are RoHS compliant, IP66 sealed light engine LEDs tested by ISO 17025-2005 accredited lab in accordance with IESNA LM-80 guidelines in compliance with EPA ENERGY STAR, extrapolations in accordance with IESNA TM-21. Metal core board ensures greater heat transfer and longer lifespan.

LED Module: Composed of high-performance white LEDs. Color temperature as per ANSI/NEMA bin 2700 Kelvin nominal (2725 ±145K), 3000 Kelvin nominal (3045K +/- 175K) or 4000 Kelvin nominal (3985K +/- 275K), CRI 70 Min. 75 Typical. Other CCT/CRI also available, consult factory.

Optical System: Composed of high performance UV stabilized optical grade polymer refractor lenses to achieve desired distribution optimized to get maximum spacing, target lumens and a superior lighting uniformity. System is rated IP66. Performance shall be tested per LM-63, LM-79 and TM-15 (IESNA) certifying its photometric performance. 0% uplight and U0 per IESNA TM-15.

Heat Sink: Built in the housing, designed to ensure high efficacy and superior cooling by natural vertical convection air flow pattern always close to LEDs and driver optimising their efficiency and life. Product does not use any cooling device with moving parts (only passive cooling). Wide openings enable natural cleaning and removal of dirt and debris. Entire luminaire is rated for operation in ambient temperature of -40°C / -40°F up to +50°C / +122°F unless otherwise specified, refer to LED Wattages Values Table.

Driver: High power factor of 90% min. Electronic driver, operating range 50/60 Hz. Auto adjusting universal voltage input from 120 to 277 or 347 to 480 VAC rated for both application line to line or line to neutral, Class I, THD of 20% max. 1 driver (64 LED); 2 drivers (all others).

DMG: Dimming compatible 0-10 volts. The current supplying the LEDs will be reduced by the driver if the driver experiences internal overheating as a protection to the LEDs and the electrical components. Output is protected from short circuits, voltage overload and current overload. Automatic recovery after correction. Standard built in driver surge protection of 2.5kV (min). Integrated Features

RCD7*: Receptacle with 7 pins enabling dimming and additional functionality (to be determined), can be used with a twist lock Interact City node or photoelectric cell or a shorting cap.

SP1: Surge protection device tested in accordance with ANSI/IEEE C62.45 per ANSI/IEEE C62.41.2 Scenario I Category C High Exposure 10kV/10kA waveforms for Line-Ground, Line-Neutral and Neutral-Ground, and in accordance with DOE MSSLC Model Specification for LED Roadway Luminaires Appendix D Electrical Immunity High test level 10kV/10kA.

Please note that these integrated features always come with RoadFocus luminaire.

* Use of photoelectric cell or shorting cap is required to ensure proper illumination.

Driver and Luminaire Options

D4I: Zhaga-D4i certified fixture

DALI*: Pre-set driver compatible with the DALI control system.

SRD: Sensor Ready Driver including SR communication (used for dimming and other functionalities), 24V auxiliary supply and a logical signal input (LSI) connected to the top NEMA twist lock receptacle and bottom TLRSR receptacle, if this option included/ chosen. This configuration is compatible with Interact City controllers.

SRD1: Sensor Ready Driver including SR communication (used for dimming and other functionalities) but with 24V auxiliary supply and a logical signal input (LSI) not connected to the top NEMA twist lock. If TLRSR receptacle option included, standard SR communication, 24V auxiliary supply and LSI are connected to the TLRSR receptacle.

OMS: Outdoor Multisensor

FAWS: Field Adjustable Wattage Selector, pre-set to the highest position, can be easily switched in the field to the required position. This reduces total luminaire wattage consumption and reduces the light level – see the FAWS multiplier chart for more details.

Note: It is not recommended to use FAWS with other dimming or controls; if you do, set the switch to position 10 (maximum output) to enable the other dimming or controls. Switching FAWS to any position other than 10 will disable the other dimming or controls.

SP2: 20kV / 10kA surge protection device that provides extra protection beyond the SP1 10kV/10kA level.

NRC: No receptacle. Fixture is shipped with a cap instead of a receptacle.

NYBC: 4 - position terminal block.

RCD*: Receptacle with 5 pins enabling dimming, can be used with a twist lock Interact City or photoelectric cell or a shorting cap.

TLRSR: SR Sensor connector, installed in fixture door. Shipped with protective cover.

PH8: Twist-lock photoelectric cell, UNV (120-277VAC).

PH8/347: Twist-lock photoelectric cell, HVU (347VAC).

PH8/480: Twist-lock photoelectric cell, HVU (480VAC).

RFL RoadFocus

LED Cobra head (large)

Specifications (continued)

PHXL: Twist-lock photoelectric cell, extended life, UNV (120-277VAC).

PH9: Shorting cap.

API: Factory Installed NEMA label, ANSI C136.15-2015 compliant. Consult factory for other labeling needs.

* Use of photoelectric cell or shorting cap is required to ensure proper illumination.

Factory Installed Shield Options

(One per Light Engine)

CSS: Cul-de-Sac Shield. Shields light output on the left and right side of fixture.

FSS: Front Side Shield. Shields light output on the front side of fixture.

HS: House Side Shield. Shields light output to the back side of fixture.

LSS: Left Side Shield. Shields light output on the left side of fixture.

RSS: Right Side Shield. Shields light output on the right side of fixture.

Luminaire Useful Life

Refer to IES files for energy consumption and delivered lumens for each option. Based on ISTMT in situ thermal testing in accordance with UL1598 and UL8750, System Reliability Tool, Advance data and LED manufacturer LM-80/TM-21 data, expected to reach 100,000 + hours with >L70 lumen maintenance @ 25°C. Luminaire Useful Life accounts for LED lumen maintenance AND all of these additional factors including: LED life, driver life, PCB substrate, solder joints, on/off cycles, burning hours and corrosion.

Wiring

The connection of the luminaire is done using a terminal block connector 600V, 85A for use with #2 14 AWG. wires from the primary circuit, located inside the housing. Due to the inrush current that occurs with electronic drivers, recommend using a 10Amp time-delay fuse to avoid unwanted fuse blowing (false tripping) that can occur with normal or fast acting fuses.

Hardware

All exposed screws shall be complete with Ceramic primer seal to reduce seizing of the parts, also offers a high resistance to corrosion. All seals and sealing devices are made and/or lined with EPDM and/or silicone and/or rubber.

Finish

Color in accordance with the AAMA 2603 standard. Application of polyester powder coat paint (4 mils/100 microns) with ± 1 mils/24 microns of tolerance. The Thermosetting resins provides a discoloration resistant finish in accordance with the ASTM D2244 standard, as well as luster retention in keeping with the ASTM D523 standard and humidity proof in accordance with the ASTM D2247 standard.

The surface treatment achieves a minimum of 5000 hours for salt spray resistant finish in accordance with testing performed and per ASTM B117 standard.

LED products manufacturing standard

The electronic components sensitive to electrostatic discharge (ESD) such as light emitting diodes (LEDs) are assembled in compliance with IEC61340-5-1 and ANSI/ESD S20.20 standards so as to eliminate ESD events that could decrease the useful life of the product.

Vibration Resistance

The RFL meets the ANSI C136.31-2018, American National Standard for Roadway Luminaire Vibration specifications for Bridge/overpass applications. (Tested for 3G over 100,000 cycles by independent lab)

Certifications and Compliance

cULus Listed for Canada and USA. Luminaire meets DOE and MSSLC Model Specification for LED Roadway Luminaires. Most versions of RoadFocus LED Cobrahead luminaires are DesignLights Consortium qualified, consult DLC QPL to confirm your specific fixture selection is approved. CCTs 3000K and warmer are Dark Sky Approved. Luminaire complies with or exceeds the following ANSI C136 standards: .2, .3, .10, .14, .15, .22, .25, .31, .37, .41.

Service Tag

Each individual luminaire is uniquely identifiable, thanks to the Service tag application. With a simple scan of a QR code, placed on the inside of the mast door, you gain instant access to the luminaire configuration, making installation and maintenance operations faster and easier, no matter what stage of the luminaire's lifetime. Just download the APP and register your product right away.

For more details visit: philips.com/servicetag

Limited Warranty

10-year limited warranty.
See signify.com/warranties for details and restrictions.

Brackets/Arms

For brackets / arms available with this luminaire, see Lumec 3D for details.

Signify North America Corporation
400 Crossing Blvd, Suite 600
Bridgewater, NJ 08807
Telephone: 800-555-0050

Signify Canada Ltd.
281 Hillmount Road,
Markham, ON, Canada L6C 2S3
Telephone: 800-668-9008

Exhibit 6 - RFI 00034 Approval

Exhibit 6 - RFI 00034 WSDOT Approval

SKANSKA

RFI #00034

Skanska USA Civil
1995 Agua Mansa Road
Riverside, California 92509

Project: 90009590 - I-405 - Brickyard to SR527
Bothell, Washington 98011

BY-CRE-00354_009727_RFI_00034_16.03_Roadway Lighting for BRT Stations

TO:	John Granillo-Dodds **(Washington State Department of Transportation)** Rachel Gehrlein **(Washington State Department of Transportation)** Rachel Waitt **(Washington State Department of Transportation)** Ron Haukom **(Washington State Department of Transportation)** Sokha Men **(Washington State Department of Transportation)**	**FROM:**	Scott Shea **(AECOM (Seattle))**
DATE INITIATED:	03/07/2024	**STATUS:**	Closed on 03/20/24
LOCATION:	Contract Wide	**DUE DATE:**	03/21/2024
COST CODE:	16-500 - Lighting	**REFERENCE:**	
COST IMPACT:	TBD	**SCHEDULE IMPACT:**	TBD
DRAWING NUMBER:		**SPEC SECTION:**	2.16 - Illumination
PRIORITY:			
LINKED DRAWINGS:			
RECEIVED FROM:	Scott Shea **(AECOM (Seattle))**		

COPIES TO:
Ryan Abraham **(AECOM (Seattle))**, I405 AECOM **(AECOM (Seattle))**, Imanuel Aswandi **(AECOM (Seattle))**, Sonia Berriz **(Washington State Department of Transpor)**, Kristal Buster **(AECOM (Seattle))**, Marisa Chong **(Washington State Department of Transpor)**, Document Control - Skanska **(Skanska USA Civil West)**, Rachel Gehrlein **(Washington State Department of Transpor)**, John Granillo-Dodds **(Washington State Department of Transpor)**, Jon Guerrero **(AECOM (Seattle))**, Ron Haukom **(Washington State Department of Transpor)**, Janka Lovering **(Washington State Department of Transpor)**, Michelle McDowell **(AECOM (Seattle))**, Sokha Men **(Washington State Department of Transpor)**, Evelyn Pao **(Washington State Department of Transpor)**, Michelle Petterson **(Skanska USA Civil West)**, Kertu-Lilli Salumae **(Skanska USA Civil West)**, Kyle Sharrer **(Skanska USA Civil West)**, Scott Shea **(AECOM (Seattle))**, Kendall Skaggs **(Liberty Electric)**, Sharath Kumar Somalraju **(AECOM (Seattle))**, Kyle Taylor **(Liberty Electric)**, Richard Vedaa **(Liberty Electric)**, Rachel Waitt **(Washington State Department of Transpor)**, Ivan Yordanov **(AECOM (Seattle))**

RFI Response Date	03/13/24	**Estimated Hours**	
RFI Priority	Important	**RFI Type**	

Question from Scott Shea (AECOM (Seattle)) at 11:25 AM on 03/06/2024

RFP Section 2.16.3.4.4.2 Luminaires indicate that luminaires installed on Transit Agency facilities shall follow the Transit Agencies' standards unless specified otherwise in the RFP. The Sound Transit Design Criteria Manual provides specifications for lighting areas for pedestrian areas (the Mirada luminaire head mounted at 14 feet; wattage 41-196) but does not provide specific standards for luminaires for roadway lighting.

For project consistency, and to follow the RFP, AECOM proposes using the same luminaires for roadways in the transit area that will be used in other areas of the project. RFP Section 2.16.3.4.4.2 which indicates "All luminaires of a particular form (cobra head, wall mount, etc.) supplied for the Project shall be from the same manufacturer and shall be the same model."

The WSDOT Approved LED Luminaires for Roadway Lighting document provides Table 1.4 for 400 Watt LED heads. AECOM proposes using the **400 W Lumec brand luminaire head manufactured by Signify** identified in Table 1.4. Please see the attached spec sheet for that luminaire head for reference.

Please confirm if the proposed luminaire head is acceptable for use on ST BRT roadways.

Attached are:

- 2.16.3.4.4.2 Luminaires
- Table 1.4 WSDOT Approved list - Signify Lumec
- RoadFocus-LED-Cobra-Head---Large--RFL--Spec-Sheet

AHJ: WSDOT, FHWA, ST

Attachments:
BY-CRE-00354_009727_RFI_00034_16.03_Roadway Lighting for BRT Stations.pdf

Official Response: **Rachel Gehrlein (Washington State Department of Transportation)** *responded on Wednesday, March 20th, 2024 at 9:50AM PDT*

The 400 W Lumec brand luminaire head manufactured by Signify, as proposed by the WSDOT DB, is acceptable for use on ST BRT Roadways.

Attachments:

BY **DATE** **COPIES TO**

Exhibit 7 - ST Comment on Light Pole Height Limitation

Exhibit 7: ST Comments on Light Pole Height Limitation (See item No. 2)

Project:	**C9727 - I-405, Brickyard to SR 527 Improvement Project**
Document Name:	**BY-CRE-00770_009727_SUB_17.02_Segment 2 Final Remaining Elements Illumination**
Submittal Date:	**6/18/2024**
Due Date:	**COB**
Reviewer:	**Mike Balash (ST), Jason Pang (JP), Tom Steckel (TWTS), Manmith Kunduru (MK), Carlos Perez (CP), Nicole Duesterhaus (ND)**
Document Lead:	

Formal Design Review
Form RCSR (Review Comment Summary and Resolution)

CODES
A = Accept Comment - Correct, Add to, or Clarify document
D = Dismiss Comment - no change needed on document
C = Clarify / Discuss and resolve before next design phase
R = Resolve comment in the next submittal phase
T = Transfer to a different submittal

COMMENT (WSDOT, City, Checker)					RESPONSE TO COMMENT (Skanska, Originator of Document)			RESPONSE TO RESPONSE (WSDOT, City, Checker)		Skanska CLOSE
No.	Report or Sheet No.	Comment By	TR/Spec Section	Comment	Disposition Code	Response By	ACTION TAKEN / Remarks	WSDOT Disposition Code	Comments / Action Items	Final Disposition Code
1	Illumination Plans	ST - LDS		Light poles and bases adjacent to roadways must be offset 2-feet minimum from back of curb, 3-feet desirable.						
2	Illumination Plans	ST - ES		Lights for roadways must be 16-feet to 25-feet maximum height. ST maintenance crews cannot access and maintain lights poles with heights greater than 25-feet in height at any ST facility.						
3	Illumination Plans	ST - LDS		Electrical plans were not included with the lighting plans. If there are conflicts between the lighting and the electrical design, how will the WSDOT DB reconcile them? ST requires the most current electrical design to see that it aligns with the lighting design that was submitted for review.						
4	Illumination Plans	ST - LDS	2.27.6.4 Electrical and Data Conduits and Stub-outs	Communication conduit plans were not included with the lighting plans. Electrical and Communication conduit to each of the lights poles is required.						
5	Illumination Plans	ST - ES		Boot fuses must be provide in the base of the light poles to isolate the poles from the system.						
6	Illumination Plans	ST - YL		Sound Transit customer signage requires additional lighting based on the type of sign designed by the WSDOT DB. How has the WSDOT DB coordinated the customer signage design with the lighting design?						
7	Illumination Plans	ST - LDS		Light poles procured and installed by the WSDOT DB need to provide for ST to install (make penetrations into light pole) future CCTV cameras by ST contractor without voiding the warranty of the light pole.						
8	Illumination Plans	ST - LDS		Interface for lighting controls must have manual interface.						
9	Illumination Plans	ST - LDS		Provide information on type of lighting controls to be used at the Transit Hub.						
10	Illumination Plans	ST - LDS		Centralized Photocell and photocell controls must be at the Comfort Station.						
11	Illumination Plans	ST - LDS		Where is the ST lighting control cabinet located?						
12	Illumination Plans	ST - LDS		Light pole foundations near vehicle movements in the Transit Hub must have at least 36-inches of exposed foundation from finished surface to protect light pole from vehicles						
13	Illumination Plans	ST - LDS		Ensure that there are 400W light fixtures in the Sound Transit Service T circuit diagram on page ILD13. Additionally, if these lights will be powered through UPS and using the UPS integral circuit breakers, the designer must account for the current draw for these light fixtures. The electrical panel or the integral panel must have balanced loads, other UPS warranty will be voided.						
14	Illumination Calculations	ST - LDS		All lights used within Sound Transit facilities must provide 4000 Kelvin light color temperature.						
15	Illumination Calculations	ST - LDS	2.31.3.9.12 Lighting Systems	Light fixtures must have a BUG rating based on this section.						
16	ILD32	TWTS		Please show anticipated environmental loads on breaker schedule for 405xf02351						
17	ILD33	TWTS		Please show anticipated environmental loads on breaker schedule for 405xf02383						
18	IL10, ILD04	JP		Submit lighting attachment/support, conduit routing/connections, etc design and details for review for lighting on bridges. There were none in the bridge submittals.						
19	ILN04	MK		General Comment: Confirm the H1 and mounting height are the same. AGI32 uses Mounting height as 40 and H1 in the luminaire schedule says 40'. With H1 as 40' the mounting height would be different for each location based on the typical cross-section. Include the cross section with the mounting height.						
20	ILN05	MK		Per lighting analysis luminaire K4 has mast arm of 10' but the luminaire schedule says 12'. Please address the discrepancy.						
21	ILN06	MK		General Comment: For luminaires T1-12 include the actual luminaire part number unless there are going to be specs for these luminaires where the exact part number will be listed. Currently cannot verify the luminaire part numbers.						
22	ILN07	MK		Luminaire M20A & 9 in the lighting calculation shows approx. 400W HMLED_P3 but the luminaire schedule shows as 750W. Since the lighting analysis for this area was performed based on specific LED luminaire, need to specify exact luminaire part number used in the lighting analysis unless the AGI32 lighting analysis would be revised to show 750W HPS equivalent. Also confirm these have shield then indicate in the luminaire schedule.						
23	ILN07	MK		Luminaire M23B - per lighting analysis the mounting height is 48' but the cross-section 13 noted in luminaire schedule seems to show the mounting height would be much less.						
24	ILN07	MK		Luminaire M22B - it is hard to tell the mouthing height from typical cross-section if mounting height of 43.5 used in the lighting analysis is correct. Similar comment applies to luminaire M21B and M20B.						
25	ILN13	MK		Wiring Schedule - Conduit run no. T6 & T7, shouldn't the minimum ground conductor needs to be #8 per WSDOT REES standard.						
26	ILD04	MK		General Comment: Cross-sections should be drawn to scale so that mounting height can be verified against the AGI32 lighting calculation. Currently with typical sections it is not possible to verify the mounting height. Example Typical Section 13 which shows cross-section but no way to verify.						
27	ILD32	MK		General Comment: For all transformer breaker schedule include how the load is distributed such as Load on line L1 and L2.						
28	ILD32	MK		Actual load for 522xf01072 says 5.5kVA instead of 7.5kVA.						
29	ILD33	MK		Missing actual load calculation for 405xf02383 & 405xf02351						

Print Date: 12/17/2025; 2:28 PM

Exhibit 8 - WSDOT AGi32 Lighting Analysis Model with 25 feet Pole Not Meeting Requirement

Exhibit 8: WSDOT AGi32 Lighting Analysis Model with 25feet Pole Not Meeting Requirement

From: Yuan Wen <yuan.wen@concordengr.com>
Sent: Tuesday, July 1, 2025 4:03 PM
To: Guerrero, Jon <Jon.Guerrero@aecom.com>; Shea, Scott <Scott.Shea@aecom.com>
Cc: Abraham, Ryan <ryan.abraham@aecom.com>
Subject: RE: RE: RE: SR 522 AGi File

Hi Jon,

A few observations of the model:

- WSDOT used 0.765 LLF for ST pedestrian scale fixtures, which should be 0.65 instead
- There are a few calculation areas in WSDOT model that do not meet the ST requirement:

Calculation Area	Calculated Light Levels (FC)	Required Light Levels (FC)
26_ROUNDABOUT_BUS_STATION	AVG: 3.70	AVG: 4.00-4.40
3_INNER_SOUND_TRANSIT_LOOP	AVG: 4.69	AVG: 4.00-4.40

- We do not agree with WSDOT's position on the landscaping area light level comments. Our understanding for the landscaping area light level requirement is that the 2fc refers to the minimum average, not the absolute minimum. The current lighting design meet the requirements.

Thanks,
Yuan

Yuan Wen, PE (WA, OR), PTOE, Senior Engineer
M: 206.390.6166
2285 116th Ave NE, Bellevue, WA 98004
Yuan.Wen@concordengr.com
http://concordengr.com

From: Guerrero, Jon <Jon.Guerrero@aecom.com>
Sent: Tuesday, July 1, 2025 8:44 AM
To: Yuan Wen <yuan.wen@concordengr.com>; Shea, Scott <Scott.Shea@aecom.com>
Cc: Abraham, Ryan <ryan.abraham@aecom.com>
Subject: FW: RE: RE: SR 522 AGi File

Yuan,
Let us know what you think. Thanks.

From: Lovering, Janka (Consultant) <Janka.Lovering@consultant.wsdot.wa.gov>
Sent: Tuesday, July 1, 2025 8:37 AM
To: Guerrero, Jon <Jon.Guerrero@aecom.com>; Berriz, Sonia (Consultant) <Sonia.Berriz@consultant.wsdot.wa.gov>
Cc: I405-Seattle <I405@aecom.com>; Abraham, Ryan <ryan.abraham@aecom.com>; Sharrer, Kyle <kyle.sharrer@skanska.com>
Subject: RE: RE: RE: SR 522 AGi File

Hi Jon,

Please see attached for updated lighting analysis that WSDOT used to analyze the LLF of 0.765 (RFP) and 0.65 (ST). Of note, previous contractual landscaping lighting requirements that were not met in the previously submitted packages has not been addressed with this model and it would require the attention of your team to ensure lighting is sufficient.

Thanks,
Janka

Exhibit 9 - SL 9727 -199 - RE Skanska SL No.255 - SR522 Transit Hub Lighting

Exhibit 9 - SL9727-199

Washington State Department of Transportation

I-405/SR 167 Program
777 108th Avenue NE, Ste. 800
Bellevue, WA 98004
206-410-0400
www.wsdot.wa.gov

November 17, 2025

Patrick Prendergast, P.E.
Vice President
Skanska USA Civil
18911 North Creek Parkway, Suite 300
Bothell, WA 98011

WSDOT SL No. 9727-199

Reference: **Contract No. 9727**
I-405, Brickyard to SR 527 Improvement Project

Subject: **RE: WSDOT-Initiated Change Notification: SR522 Transit Hub Lighting**

Mr. Prendergast:

WSDOT is in receipt of Skanska serial letter No. 255, WSDOT-Initiated-Change Notification: SR522 Transit Hub Lighting, dated October 17, 2025.

Regarding the additional design effort by Concord described in the letter, WSDOT does not find merit for an Owner-Initiated Change (OIC).

Based on the information provided, it is WSDOT's understanding that lighting ownership is not in dispute. The primary issue appears to stem from the RFI question and response. It is WSDOT's position that the proposed light fixture is acceptable provided it can be mounted in accordance with the Sound Transit Design Criteria Manual (DCM). The RFI neither referenced nor inquired about mounting height.

As noted in Serial Letter No. 255, the Sound Transit DCM requires luminaires to be mounted no higher than 16 feet and directs the lighting designer to propose fixtures that meet the DCM requirements. The Design-Builder submitted a fixture for consideration; however, the RFI did not indicate that the proposed fixture would not comply with these requirements.

While the fixture itself is acceptable, mounting height must comply with the DCM. Sound Transit has agreed to allow an increased mounting height of up to 24 feet to assist with the lighting design challenges identified.

To advance the discussion, WSDOT and Sound Transit have determined that the illumination design can support the requested fixture with a 24-foot mounting height, which results in a revised light loss factor that Sound Transit is willing to accept.

WSDOT appreciates the ongoing collaboration with Skanska and remains confident that, through continued partnership, we can maintain progress toward a successful project outcome.

If you have any questions, please contact me at (425) 495-1577.

Sincerely,

Evelyn Pao, P.E.
Project Director
EP:sb

cc: D. Case, D. Holmquist, J. Slavicek, S. Berriz, B. Kane, N. Bergeman, R. Gehrlein, E-File

Exhibit 10 - Illumination Concept Plans

Exhibit 10 - Illumination Conceptual Plans

T.26N.R.5E.W.M.

I-405 & 522 I/C

MATCH LINE NB405 5405+00 SEE SHEET ITS04

MATCH LINE SR522 100+77 SEE SHEET ITS15

MATCH LINE NB405 5434+00 SEE SHEET ITS06

MATCH LINE SR522 118+30 SEE SHEET ITS12

SAMMAMISH RIVER

NORTH CREEK

NE WOODINVILLE DR

WOODCREST DR NE

SR 522

SR522 LINE

NB405 LINE

SB405 LINE

SB405 ETL LINE

NB405-EB522 LINE

NB405-522 DA LINE

522-SB405 DA LINE

SB405-EB522 LINE

SB405-522 DA LINE

522-NB405 DA LINE

SB405-WB522 LINE

WB522-NB405 LINE

NB405-WB522 LINE

EB522-NB405 LINE

INSTALL NEW CCTV AND CCTV CABINETS

PROPOSED WSDOT MAINLINE AND DISTRIBUTION FIBER AND CONDUIT

INSTALL NEW SOUND TRANSIT PEDESTRIAN LIGHTING (TYP)

INSTALL NEW TRAFFIC SIGNAL SYSTEM AND NEW TRAFFIC SIGNAL CABINETS SEE TRAFFIC SIGNAL EXHIBITS

INSTALL NEW CCTV AND CCTV CABINETS

CONSTRUCT NEW WSDOT 480V SERVICE

CONSTRUCT NEW SOUND TRANSIT 480V SERVICE CABINET

INSTALL SOUND TRANSIT LIGHTING ALONG TRANSIT AND DROPOFF ROADWAYS

INSTALL NEW TOLL RATE SIGNS AND TOLL RATE SIGN CABINETS

INSTALL ELECTRICAL AND COMMUNICATION CONDUIT TO SOUND TRANSIT BUS PLATFORMS SEE APPENDIX S FOR SOUND TRANSIT ELEMENTS

INSTALL WSDOT LIGHTING ON RAMP AND ROADWAY, INSTALL SOUND TRANSIT PEDESTRIAN LIGHTING AT TRANSIT LOADING AREAS.

INSTALL NEW TRAFFIC SIGNAL SYSTEM AND NEW TRAFFIC SIGNAL CABINETS SEE TRAFFIC SIGNAL EXHIBITS

INSTALL NEW DOUBLE-ARM LIGHT STANDARDS (TYP)

INSTALL NEW TOLL CABINETS

INSTALL NEW WIDE LOOP

INSTALL NEW CCTV AND CCTV CABINETS

INSTALL NEW TOLL GANTRIES

INSTALL NEW WIDE LOOP

INSTALL NEW TOLL RATE SIGNS AND TOLL RATE SIGN CABINETS

INSTALL NEW CCTV AND CCTV CABINETS

CONSTRUCT NEW WSDOT 480V SERVICE

INSTALL NEW WIDE LOOP

INSTALL NEW TRAFFIC SIGNAL SYSTEM AND NEW TRAFFIC SIGNAL CABINETS SEE TRAFFIC SIGNAL EXHIBITS

REMOVE AND REPLACE EXISTING WEATHER STATION AND CABINET 405ws02388

REMOVE EXISTING CCTV 405vc02337

EXISTING WSDOT MAINLINE AND DISTRIBUTION FIBER AND CONDUIT

PROPOSED WSDOT MAINLINE AND DISTRIBUTION FIBER AND CONDUIT

INSTALL WIDE LOOP

INSTALL NEW LOOPS

REMOVE EXISTING ITS CABINET 405ht02359

REPLACE EXISTING ITS CABINET 405es02351

REPLACE EXISTING RAMP METER WITH NEW RAMP METER

INSTALL NEW TOLL GANTRIES AND TOLL CABINETS

INSTALL NEW SINGLE-ARM LIGHT STANDARDS (TYP)

REPLACE EXISTING 405vc02371 CABINET AND CCTV CAMERA

INSTALL NEW WIDE LOOP

INSTALL NEW LOOPS

INSTALL NEW CCTV AND CCTV CABINET

INSTALL NEW DATA STATION CABINET

INSTALL NEW LOOPS

REMOVE EXISTING ITS CABINET 405es02369

PROPOSED WSDOT MAINLINE AND DISTRIBUTION FIBER AND CONDUIT

INSTALL NEW WIDE LOOPS

NOTE:
1. FOR ITS LEGEND, SEE SHEET ITD01.
2. SEE APPENDIX T FOR CONCEPTUAL SIGNAL PLANS.

0 100 200
SCALE IN FEET

FILE NAME	c:\users\bungerk\pw_wsdot\d0143594\XL5446_PS_ITS_05_REV1.dgn				REGION NO.	STATE	FED.AID PROJ.NO.
TIME	10:29:51 AM				10	WASH	
DATE	3/22/2023				JOB NUMBER		
PLOTTED BY	BungerK						
DESIGNED BY	E. ANDERS						
ENTERED BY	S. TAYLOR						
CHECKED BY	J. PRZYCHODZEN				CONTRACT NO.	LOCATION NO.	
PROJ. ENGR.	C. BARNETT	⚠1 REVISED ITS LAYOUT	2/13/2023	CC		XL5446	
REGIONAL ADM.	L. HODGSON	REVISION	DATE	BY			

REVIEW COPY
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Washington State Department of Transportation

I-405
BRICKYARD TO SR527
IMPROVEMENT PROJECT

ITS AND ILLUMINATION PLAN

PLAN REF NO
ITS05

SHEET
172
OF
212
SHEETS