DISCLAIMER FOR
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APPLICABILITY FOR
Design and Engineering Design Standards Documents

Project teams shall refer to their executed project contracts for applicable document versions/revisions.

SUMMARY OF SIGNIFICANT CHANGES
EP-03 Rev. 5.1

- **Updated References list**

- **Updated Acronyms list**

- **Updated Design-Bid-Build Project Development Matrix:**
  - Added to coordinate ROW requirements with impacted AHJs
  - Add to identify and integrate stormwater facilitates
  - Added to review SEDG defined transit interfaces with AHJs
  - Added to provide passenger Decision Point Mapping Diagrams
  - Added to provide site diagrams of CPTED objectives.

- **Updated Design-Build Project Development Matrix:**
  - Added to coordinate ROW requirements with impacted AHJs
  - Add to identify and integrate stormwater facilitates
  - Added to review SEDG defined transit interfaces with AHJs
  - Added to provide passenger Decision Point Mapping Diagrams
  - Added to provide site diagrams of CPTED objectives.

- **Appendix A: Discipline Specific Checklists**
  - New Acoustics Checklist – 60% Final Design
  - New Acoustics Checklist – 90%+100% Final Design
  - Updated Architectural Checklist – 30% Preliminary Engineering
    - Added to provide Passenger Decision Point Mapping Diagrams
    - Added to coordination of MEP for energy savings
    - Added to performing site context shadow study
    - Added to include utility cabinets on site plans
    - Added to provide locations of planned STart
  - Updated Architectural Checklist – 60% Final Design
    - Added top provide site and station accessibility plans for review
    - Added review of regulatory signage with AHJs
    - Added review for changes against Basis of Design Report
    - Added review of Stations in 3D with ST Operations/Maintenance
    - Added to perform station wind study to inform layouts
    - Added fall protection coordination
    - Added to perform MEP clash detection as part of Gap Analysis
    - Added review of access control locations with ST SMEs
    - Added to coordinate size and type of expansion joints at VT and MEP
    - Added to show station plaza slab joints and finish direction
    - Added to show locations of planned STart
    - Added to show regulatory signage
    - Added to show coordinated metal panel and curtain wall joint patterns
    - Added to show sizes/types of seismic joints
    - Added to show preliminary mounting details for STart
  - Updated Architectural Checklist – 90% + 100% Final Design
    - Added to develop Fire Management Map and preview with AHJ
    - Added to include utility cabinets on site plans
    - Added to show locations of planned STart
    - Added to provide final mounting details for STart
    - Added language to provide reduced and simplified facilities floorplans

- Updated Civil Checklist – 30% Preliminary Engineering
  - Added type, size, and location of stormwater facilities
- Updated Civil Checklist – 60% Final Design
  - Added type, size, and location of stormwater facilities
- Updated Civil Checklist – 90% + 100% Final Design
  - Added to complete stormwater management facilities
- Updated Communications Access Control Checklist – 60% Final Design
  - Added to coordinate placement of card readers, access power supplies, door hardware with Architect
  - Added to coordinate rooms and spaces requiring access control with ST Security and Architect
- Updated Communications PA and VMS Checklist – 60% Final Design
  - Added to coordinate across disciplines speaker, microphone and sensor mounting locations and power supplies
  - Added to coordinate with Architect speaker, microphone and sensor mounting locations with maintenance clearance requirements
  - Added to coordinate with Acoustic designer on PA system design
- Updated Communications Telecommunication Space Checklist – 60% Final Design
  - Added to verify clearances per NEC and BICSI Standards
  - Added to include cable trays and telecom enclosures in clash detection
  - Added to coordinate circulation diagrams for equipment access
- Updated Electrical Checklist – 30% Preliminary Engineering
  - Added requirement for the BOD report to include the methodology for panel schedule calculations and ST's excel template.
- Updated Electrical Checklist – 60% Final Design
  - Added panel schedule calculation native files to be provided
- Updated Electrical Checklist – 90% + 100% Final Design
  - Added panel schedule calculation native files to be provided, including completion of ST's panel schedule excel template and coordination with other disciplines.
- Updated Landscape Checklist – 30% Preliminary Engineering
  - Added to coordinate passenger decision point mapping with Architect
  - Added to integrate stormwater strategies and review with AHJ
  - Added to coordinate ROW requirements for vehicle and pedestrian transportation corridors and interfaces with all impacted AHJs
  - Added to coordinate preliminary stormwater facilities
- Updated Landscape Checklist – 60% Final Design
  - Added to provide site diagrams of CPTED objectives
  - Added to finalize ROW bus/car/bike/pedestrian corridors and interfaces
  - Added to develop landscape interfaces with stormwater facilities
  - Added to provide soil cell and bioretention details for site coordination
- Updated Landscape Checklist – 90% + 100% Final Design
  - Added to coordinate details across Architectural and Civil
  - Added to finalize ROW and site details for vehicular and pedestrian vehicular transportation corridors
  - Added to finalize stormwater and bioretention facilities
  - Added to include final soil cell and bioretention details

Approvals:	ENGINEERING DESIGN PROCEDURES	EP- 03 Rev: 5.1
AO Chief Engineer Director of Technical Standards & Requirements	**Design Development, Submittal, and Review**	
	Original Issue Date: 9/5/07 Current Revision Date: 7/31/24 Current Amendment Date: 12/31/24	

1.0 PURPOSE

This procedure sets forth the responsibilities and methods for design submittal and design review processes to achieve quality design through the following objectives:

- Meet design development expectations for each design milestone.
- Ensure coordination of the design submittal and design review process between project consultants, third-party reviewers, and Sound Transit staff.
- Achieve successful integration and documentation of the design review, comment responses, and verification processes between all involved parties.
- Ensure requirements are verified and traceable.
- Ensure design is constructable.

2.0 APPLICABILITY

This EP-03 applies to any project totaling $20 million or more.

3.0 SCOPE

This procedure defines the development and review process of Sound Transit project design documents from project initiation through design completion.

Projects with complex design elements may require additional procedures, including special aspects of the review process such as independent peer review.

4.0 REFERENCES

- American Society of Civil Engineers 38-02: Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data
- American Society of Civil Engineers 7: Minimum Design Loads for Associated Criteria for Buildings and Other Structures
- Customer Signage Design Manual

- Design Criteria Manual (DCM)
- Design Technology Manual
- Engineering Design Procedures (EP)
- Equipment and Facilities Numbering Standard
- Interface Coordination and Integration Plan
- International Building Code
- Manual on Uniform Traffic Control Devices
- National Environmental Policy Act
- National Fire Protection Association 13: Standard for the Installation of Sprinkler Systems
- National Fire Protection Association 14: Standard for the Installation of Standpipe and Hose Systems
- National Fire Protection Association 130: Standard for Fixed Guideway Transit and Passenger Rail Systems
- Project Integration Implementation Plan (PIIP)
- Program Control Policies & Procedures (PCPP) 01: Work Breakdown Structure
- Program Control Policies & Procedures (PCPP) 02: Cost Estimating
- Program Control Policies & Procedures (PCPP) 03: Scheduling
- Request for Proposal Requirements
- Sound Transit Requirements Manual (STRM)
- Sound Transit Standard and Guidance Drawings
- Sound Transit Standard Specifications
- State Environmental Policy Act
- Station Experience Design Guidelines (SEDG)
- WSDOT Design Manual Division 300
- WSDOT Right-of-Way Acquisition Plan (RAP)
- WSDOT Structural Submittal Expectations Matrix

5.0 ACRONYMS

- ADCS: Asset Data Collection Sheet

- AHJ: Authority Having Jurisdiction
- ATO: Asset Transition Office
- CDM: Corridor Design Manager
- CPTED: Crime Prevention Through Environmental Design
- DBPM: Design-Build Project Manager
- DCM: Design Criteria Manual
- FADCS: Facility Asset Data Collection Sheet
- GEC: General Engineering Consultants
- GC/CM: General Contractor / Construction Manager
- ICIP: Interface Control and Integration Plan
- IFB: Invitation For Bid
- IFC: Issued For Construction
- LADCS: Linear Asset Data Collection Sheet
- MEP: Mechanical Electrical Plumbing
- NTP: Notice to Proceed
- OPS: Operations
- PCPP: Program Control Policies and Procedures
- PE: Preliminary Engineering
- PM: Project Manager
- PMSS: Project Management Support Services
- POC: Proof of Concept
- PX: Passenger Experience
- RFD: Request For Deviation
- RFP: Request for Proposal
- SDM: Senior Design Manager
- SME: Subject Matter Expert
- TOD: Transit Oriented Development
- TSS: Transportation Safety and Security

6.0 DEFINITIONS

- Consultant Design Manager: Design team single point of accountability who oversees the design development to achieve a quality design which meets requirements and standards.
- Project Design Manager: Single point of accountability who performs day-to-day coordination between Sound Transit and design team during design development. The assigned design manager could be either a Sound Transit staff or a GEC/DBPM/PMSS consultant staff. Sound Transit staff could be a systems corridor design manager, infrastructure senior design manager or a project manager on the project.
- Design Reviewer: Project personnel or stakeholders who provides comments to design milestone submittals. The term can be ST SMEs, consultant SMEs or an independent design review consultant.
- Design Consultant Comment Responder: Design consultant subject matter expert who responds to design review comments
- Independent Design Review Consultant: Consultant who performs peer review of design milestone submittals in discipline areas where Sound Transit subject matter experts are not available. The consultant must be independent of the design team such as DBPM, PMSS, etc.
- Basis of Design (BOD) Report: A report developed by design consultants that documents the design assumptions and decisions during design development.
- Concept of Operations: A document that sets out the vision for the service and describes how the operation of the system will meet service delivery and quality goals.
- Environmental Review Process: The environmental review process occurs when a project is reviewed to determine its potential environmental impacts and whether it meets federal, state, and local environmental standards. This process may include preparing an environmental impact statement or other documentation consistent with the National Environmental Policy Act and State Environmental Policy Act.
- Over-the-shoulder reviews: OTS reviews represent informal opportunities to check in with Sound Transit and other stakeholders, between formal deliverable submittals to confirm that the planning and design, as it progresses, fulfills requirements and expectations relative to design criteria and scope.

7.0 RESPONSIBILITIES

7.1 CONSULTANT DESIGN MANAGER

Consultant design manager responsibilities include the following:

- Ensure package submittal is complete and compliant with contract requirements, applicable standards, and criteria.
- Ensure all Sound Transit and third-party design review comments are incorporated and documented in the next milestone submittal.

- The consultant design manager will work with the design consultant comment responder to assign, address, or incorporate disposition of design review comments.
- Conduct and document comment resolution meetings for each Design Milestone submittal and issue meeting minutes with action items and responsibilities.
- Verify all action items from the comment resolution meeting are closed.
- Verify all revisions in response to comments are incorporated and checked in accordance with the project Quality Management Plan.
- Verify all intra-contract discipline-to-discipline interface checklists are satisfactorily completed.
- Verify discipline checklists are completed.
- Verify the requirements of the Link Interface Coordination and Integration Plan (ICIP) as agreed to within the Project Integration Implementation Plan (PIIP) are complete or submitted in support of the appropriate design milestone.
- Verify the Facility Asset Data Collection Sheet (FADCS) is complete.
- Verify the Linear Asset Data Collection Sheet (LADCS) is complete.
- The design-build design manager is responsible for the above tasks during design-build projects.

7.2 PROJECT DESIGN MANAGER

Project design manager responsibilities are included in the design manager service level agreement (contact AO Engineering for copy of design manager service level agreement).

7.3 DESIGN REVIEWER

The design reviewer responsibilities are included in the subject matter expert service level agreement and in the following. The independent reviewer responsibilities may differ based on concurrence between the project and ST engineering.

- Verify compliance of design documents to contract requirements, including the DCM or the Sound Transit Requirements Manual.
- Verify conformance to Design Technology Manual and Design Technology Essential Requirements checklists.
- Verify conformance to contract, applicable standards and codes, consultant's scope of work, and the basis of design.
- Each reviewer must review for their area of expertise only except when performing interface reviews.
- Design reviewers must provide comments with factual basis.
- Design reviewers must make comments within scope of work.

- In the event the design reviewer needs to make an out-of-scope comment, inform the project design manager and provide impact analysis to determine further action.
- Design reviewers must provide comments within the submittal review period.
- In the event the design reviewer is unable to respond within the review period, inform the project design manager to determine a plan of action.

7.4 DESIGN CONSULTANT COMMENT RESPONDER

The design consultant comment responder responsibilities include the following:

- Work on the assigned design review comments to accept and incorporate, propose modified acceptance or require a resolution meeting if comment cannot be resolved.
- Work with the consultant design manager to identify out of scope comments which will impact cost, schedule, and/or budget and review with project design manager for direction.

8.0 QUALITY RECORDS

Quality checks must be implemented throughout the design to ensure a standard of quality for projects. Contract plans, specifications, reports, and estimates must be reviewed for completeness relative to the project scope, adherence to applicable codes and standards, consistency and accuracy with design calculations, clarity and consistency across the drawing set, constructability, operability, and maintainability. Designs must be checked, corrected, and verified. Quality checks on the following from this engineering procedure will be documented as quality records:

- Discipline specific checklists per section 9.1..C
- Identification of design reviewers list per section 9.2.2
- Design submittal and intake form per section 9.2.1
- Comment dispositions per section 9.2.5
- Design submittal verification per section 9.3.1

Each design submittal must follow quality procedures as detailed in the ST Quality approved project-specific Quality Management Plan (QMP) inclusive of visible, traceable, and verifiable design quality checking procedures with resultant Check Prints for design submittal documents (e.g. drawings, specifications, calculations, technical reports, technical memos, etc.).

9.0 PROCEDURES

9.1 REQUIRED DESIGN SUBMITTALS

9.1.1 Design Milestones

This section provides a summary of the design submittal milestones and the milestone purpose. Design milestone packages are submitted for progressive design review on ST projects. Depending on the individual project and project type, design milestone submittals may become combined or presented differently.

- Conceptual Engineering (5% - 10%) – Completed in support of the environmental review process, including the definition, comparison, and assessment of alternatives. This effort includes vetting of any fatal flaws, overall cost comparison, mitigation measures, and right of way needs that will result in the identification of the preferred alternative for recommendation to advance to preliminary engineering.
- Preliminary Engineering (30%) – Advanced design of the preferred alternative. The preliminary engineering submittal is used as the basis to refine project cost and implement any mitigation requirements identified as part of the environmental review process and identifying requirements of AHJs. Sound Transit obtains concurrence of project stakeholders and AHJs of the preliminary engineering for entering into final design or development of the RFP for design-build projects.
- Final Design (Post Award Submittal – project/engineering determines design development % for submittal) *Applies to design-build projects* – Identification of key technical and project elements for design development towards the 60% milestone. The purpose of this submittal is to promote coordination between design disciplines as well as early Sound Transit input. This submittal must be prepared following contract award with the purpose of incorporating any accepted alternative technical concepts and any contract conditions with the RFP requirements.
- Final Design (60%) – Design advanced for all project elements, with additional focus on cost drivers, constructability, and compliance with all criteria, guidelines, and standards, including AHJ requirements. Independent constructability review takes place.
- Final Design (90%) – *Applies to design-bid-build and general contractor/construction manager (GC/CM) projects*. Design is substantially complete and ready for final review and minor project refinements that do not impact scope, schedule, or budget. Independent constructability review takes place.
- Final Design (100%) - Design is complete and submitted for final review. For DBB and GC/CM projects, reviews are limited to confirming all comments have been addressed.
- Invitation For Bid (IFB) – *Applies to design-bid-build and general contractor/construction manager (GC/CM) projects*. Final milestone to confirm contract documents are bid-ready, signed, and sealed.
- Issued for Construction (IFC) – Contract documents are ready for construction, signed, and sealed.

If the design development and submittal review process cannot be followed as described in this document, refer to EP-10: Design Criteria and Standards for instructions on the EP variance process.

9.1.2 Concept of Operations

The Concept of Operations identifies the operational needs of projects and its stakeholders and provides guidance for the development of the programmatic requirements and Proof of Concept (POC) design. It is developed concurrent with the initial Conceptual Engineering design and continues to develop alongside the design.

9.1.3 Project Development and Design Submittal Tools and Expectations

A. Submittal Intake Form

The submittal intake form provides a list of the required submittals that must be included in the design submittal package for each required milestone. The submittal intake form is found in Exhibit EP-03-03.

B. Project Development Matrices

Project Development Matrices specifies project development expectations at each required milestone. These matrices must be used by the project design manager and engineer of record to monitor the project progress against the Project Development Matrices prior to each design submittal. Project Development Matrices for the different project delivery methods are found in Exhibit EP-02-02A/B.

C. Discipline Specific Checklists

Discipline specific checklists outlines the level of content expectations for the drawing plan sets and required deliverables that must be included in the design submittal package for each required milestone. Discipline specific checklists are included in ST Controlled Documents: EP-03 Appendix A - Individual Discipline Specific Checklists.

1. The discipline specific checklists must be completed by the discipline designer of record and checked for accuracy and completeness by the consultant design manager.
2. The design consultant must propose which discipline checklists are applicable to the project. Any changes to the checklist must come as a submittal.
3. The project design manager must review and accept the proposal in advance of the first design submittal.
4. Each item on the discipline specific checklist must have a response of Y, N, or N/A.
5. If a line item has a response of N or N/A, the design consultant must propose which items are not applicable to the project.

6. The project design manager must review and accept the proposal in advance of the design submittal.

9.2 DESIGN SUBMITTAL REVIEW PROCESS

Exhibit EP-03-01 illustrates the Design Review Workflow process.

9.2.1 Design Submittal and Intake Form

Upon receipt of applicable discipline specific checklists, the project design manager will review each discipline specific checklist for accuracy and completeness. The project design manager will document the result of the discipline checklist review, independent cost estimate, and quality records by completing and signing the Submittal Intake Form. The project design manager must also check the design calculations for general components such as objectives, inputs, assumptions, actual calculations, conclusion (summary), and attachments. All calculation sheets must be numbered and dated. The originator, checker, back-checker, corrector and verifier/reviewer of the calculation must be noted.

Any submittal that does not pass will be returned to the design consultant or design builder and will require a design package resubmission.

9.2.2 Identification of Design Reviewers

The project design manager must compile a list of all design reviewers and their discipline of expertise. The project design manager must assign a single point of contact reviewer for each discipline expertise for all project scope. This list must be kept current. The list of design reviewers must include agency subject matter experts for all project scope elements within the seven Core System disciplines, as listed below:

Core System Disciplines

1. Train Control and Signals
2. Traction Electrification
3. Operational Communications
4. Vehicle
5. Track
6. MEP/Fire-Life Safety
7. Structures/Geotech

Other reviewers may be included as necessary such as architecture, quality, PX, OPS, TSS, and ATO.

The project design manager must also compile the list of outside independent consultants (peer reviewers) and third-party reviewers for permitting purposes such

as local, regional and state agencies, and public and private utility companies, collectively referred to as Authorities Having Jurisdiction (AHJ) who will serve as design reviewers for each project.

Design reviewers must be identified by the project design manager and notified by email that a review will occur three weeks prior to the start of the review.

9.2.3 Design Deliverable Checks

A. The project design manager must lead detailed checks for each design deliverable. Initial detailed checks must be checked as appropriate to the level of designs. Subsequent deliverables must be rechecked as all supporting data is accumulated. Responsibilities for the detailed checks are listed in the responsibilities.

B. The consultant design manager must verify all defined pieces of data in the Facility Asset Data Collection Sheet (FADCS), Linear Asset Data Collection Sheet (LADCS), Warranty log, Spare Parts log, and Capital Spare Transfer log are complete. Sound Transit will provide these logs at Notice-to-Proceed.

1. The level of content of each data collection log at each design milestone must be completed as described in the project development matrix and included with the design submittal.

C. Criteria deviations and previous design review comments must be reviewed for relevance and incorporation during the checking process. The Request for Deviation (RFD) process must be followed. All criteria or code deviations must follow EP-10 and the approved process prior to inclusion in a design submittal.

9.2.4 Distribution of Design Milestone Documents for Review

The independent design reviews will be conducted through Bluebeam sessions and performed by the identified reviewers in section 9.2.2 herein. The review period will be open for fifteen (15) business days, after which the Bluebeam session will be closed. The Design Consultant / Design-Builder will not have access to the Bluebeam Session during this period.

The project three-week look-ahead and the monthly schedule updates must indicate the expected design milestone submittals and must include all project delivery methods.

9.2.5 Validation, Disposition, Response, and Verification for Design Review Comments

Following the closure of the Bluebeam session, the project design manager will have a five business day period to validate all comments and resolve any conflicting or incomplete comments. After comment validation, the Bluebeam session is opened to the design consultant / design-builder for the comment resolution period. Comment and response disposition legends are as follows:

A. Design Consultant / Design-Builder Comment Disposition Legend:

- Accepted

The "Accepted" disposition indicates design consultant / design-builder acceptance of the comment as-is.

- Accepted as Modified

The "Accepted as Modified" disposition indicates acceptance of the comment in a form different than it was received. The modification shall be clearly stated.

- No Change Required/Out of Scope

The "No Change Required/Out of Scope" disposition indicates the comment does not require changes to the design document or the comment is out of scope and will be reviewed with the project design manager for direction.

- Requires Resolution Meeting

The "Requires Resolution Meeting" disposition indicates that the comment cannot be resolved and will be addressed at the comment resolution meeting.

B. Design Reviewer Response Disposition Legend:

- Accepted

The "Accepted" disposition indicates the design reviewer acceptance of the design consultant / design-builder's comment disposition. The design consultant / design-builder must incorporate the comment in its entirety in the next milestone submittal.

- Not Accepted

The "Not Accepted" disposition indicates design reviewer has not accepted the design consultant / design-builder's comment disposition. Comments with this disposition will be addressed at the comment resolution meeting.

C. Design Reviewer Verification Disposition Legend (Applies to Basis of Design Submittal for design-build projects):

- Accepted

The "Accepted" disposition indicates the design reviewer has verified the incorporation of the comment response into the design-builder's verification documents. The design-builder may proceed to the next milestone submittal.

- Not Accepted (Resubmit)

The "Not Accepted" disposition indicates the comment has not been incorporated into the design-builder's verification documents. The design-builder must resubmit the verification documents.

D. Sound Transit IFB/IFC Disposition Legend:

- Accepted (Approved for Bid or Construction)

The "Accepted" disposition indicates the IFB or IFC is accepted for bid construction.

- Not Accepted (Resubmit)

The "Not Accepted" disposition indicates the IFB or IFC must be resubmitted to the project design manager for approval.

9.2.6 Comment Resolution Meeting

The Consultant Design Manager must conduct a comment resolution meeting with the ST DM, designer reviewers, and members of the design consultant team. Decisions on comment resolutions must be logged into the Bluebeam session. Meeting minutes, along with action items and due dates for action completion must be documented and distributed by the design consultant project manager to the project design manager. Sound Transit may direct that the comment resolution meeting also include representatives from third-party reviewers.

9.2.7 Over-the-Shoulder (OTS) Reviews

Over-the shoulder reviews may be optionally performed during design development. If projects choose to perform OTS reviews, the following criteria must be met.

- Over-the-shoulder reviews are performed collectively by the design consultant, Sound Transit consultant representatives, Sound Transit, and/or third-party representatives.
- Sound Transit participants for the over-the-shoulder review meetings must include engineering subject matter experts on the project and applicable Sound Transit staff.
- The Decision Log/Matrix must be developed and maintained as part of each over-the-shoulder review. Agreed upon decisions must be reflected in the next interim progress submittal review.
- Over-the-shoulder reviews must address progress of all design elements incorporated into the Work.
- For Design-Build projects:
  a. Over-the-shoulder reviews are performed collectively by the contractor, DBPM, PMSS, and Sound Transit.
  b. The contractor must provide the participation of their applicable design professional, subcontractors, design manager, and construction manager.
  c. The contractor provides interim submittals for over-the-shoulder reviews based on design package or discipline.

d. Interim submittals reviews may be in addition to, or combined with, other related meetings, at Sound Transit's discretion.

9.2.8 Archiving Design Milestone Review Documents

Each Bluebeam session must be exported and saved as part of the project files.

9.3 REQUIREMENTS TRACEABILITY & VERIFICATION

9.3.1 Design Submittal Verification

The project design manager must provide verification of requirements conformance as referenced in NTD DD-1021 Requirements Management. *(The content of this NTD will be included in an upcoming new EP-16).*

9.4 PERMITTING

For permitting expectations at each required milestone, see Permits in Exhibit 03-03-02A/B Project Development Matrix.

9.5 ENVIRONMENTAL REVIEW

For environmental review expectations, see Environmental Review, Permitting, and Documentation in Exhibit 03-03-02A/B Project Development Matrix.

10.0 EXHIBITS

- EP-03-01: Design Review Workflow
- EP-03-02-A: Design-Bid-Build/GC/CM Project Development Matrix
- EP-03-02-B: Design-Bid Project Development Matrix
- EP-03-03: Submittal Intake Form
- Appendix A: Discipline Specific Checklists

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EP-03-01 DESIGN SUBMITTAL REVIEW WORKFLOW

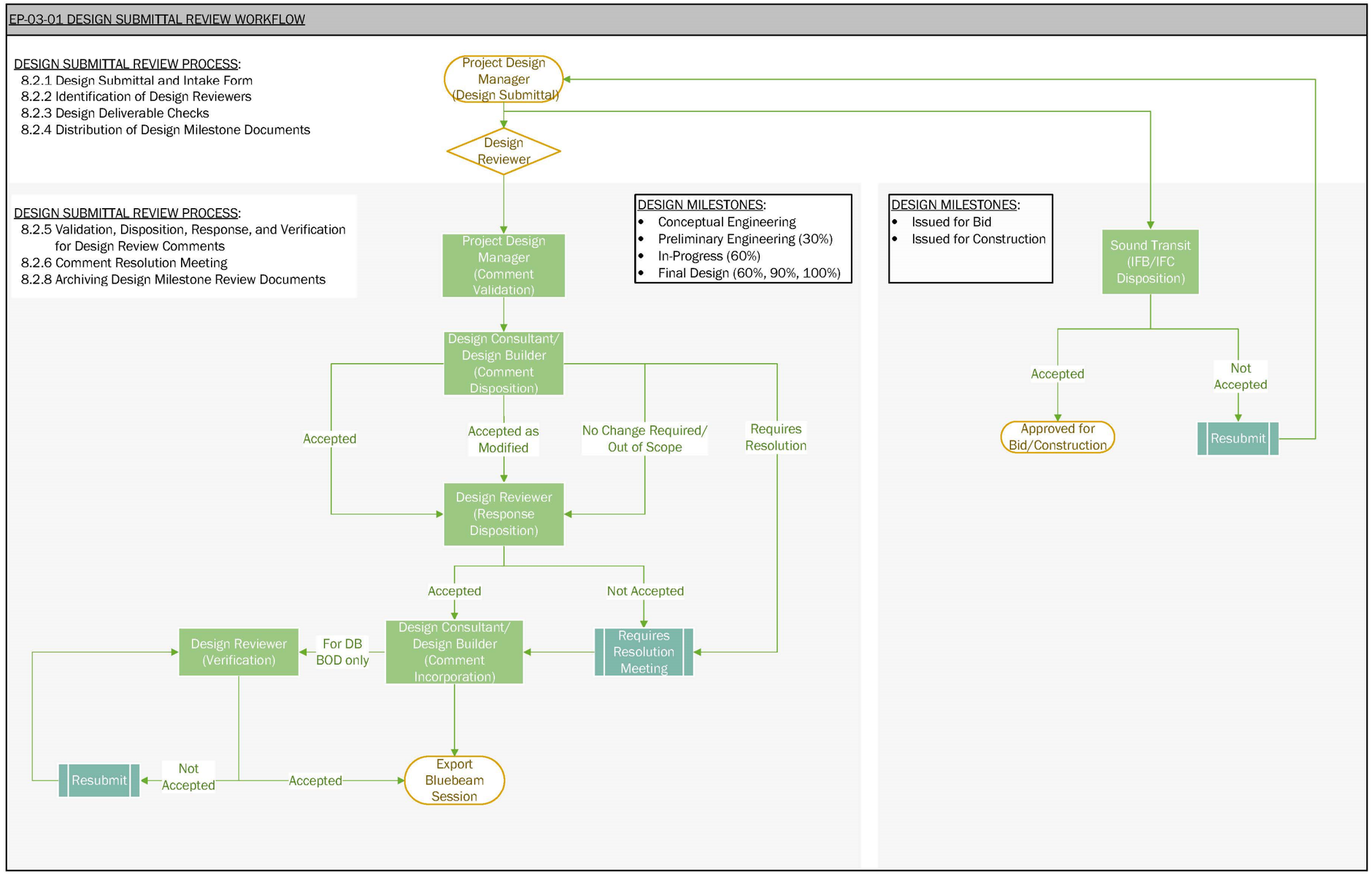

Exhibit EP-03-02-A Design-Bid-Build Project Development Matrix

Design-Bid-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (CE) (5-10% Design)	Preliminary Engineering (PE) (30% Design)	Final Design (FD) (60%)	Final Design (FD) (90%)	Final Design (FD) (100%)	Issue for Bid (IFB)
Decisions Frozen and Milestones Completed (Overview)	✓ Roll plot level design defining footprint for each alternative ✓ Potential environmental impacts for each alternative ✓ Approval to advance to CE ✓ Concept of Operations drafted	✓ Completion of alternative analyses/ studies ✓ Draft environmental documentation ✓ Identify critical items that have significant schedule and cost estimate impacts which take further design than CE to resolve ✓ The Preliminary Hazard Assessment (PHA) and Threat and Vulnerability Assessment (TVA) workshops begin with aim to identify safety or security fatal flaws in the initial designs Identify Right-of-way (ROW) takes for all alternatives ✓ Identify transit time for each alternative ✓ Identify station type for each location based on the Station Experience Design Guidelines (SEDG) ✓ Identify bridge types for each location ✓ Identify operation access points along the guideway ✓ Third- party design mitigation plans finalized	✓ Single preferred alternative approved by the Board ✓ Final environmental documentation and commitment list ✓ Baseline cost estimate and schedule ✓ Contract type selected ✓ Approval to advance to Final Design ✓ Right-of-way (ROW) opinion of probable cost ✓ Value Engineering (VE) workshops completed and ideas list being reviewed ✓ Utilities identified and connection locations identified ✓ Letter of concurrences identified for all impacted Authorities Having Jurisdictions (AHJs) ✓ Special track work identified ✓ Draft Requirements Management Plan ✓ Draft Interface Coordination and Integration Plan (ICIP) ✓ Identify design packaging plan ✓ Concept of Operations finalized ✓ Coordinate ROW requirements with all impacted AHJ's to establish bus, car, bike, and pedestrian transportation corridors and interfaces. ✓ Preliminary stormwater facility type, size, and location identified.	✓ Request for Deviations (RFDs) identified and submitted ✓ Specification Modification Requests (SMRs) identified and submitted ✓ Accepted Interface Coordination and Integration Plan (ICIP) ✓ Approved Requirements Management Plan ✓ Finalize ROW requirements with all impacted AHJ's to establish bus, car, bike, pedestrian transportation corridor layouts, and interfaces. ✓ Finalize stormwater facility type, size, and location.	✓ Detailed review of contract documents including IFB Bid Form to eliminate errors, conflicts, and omissions ✓ 3rd party independent reviews for drawing coordination and constructability secured ✓ Approved Request for Deviations (RFDs) ✓ Approved Specification Modification Request (SMRs) ✓ Accepted Value Engineering (VE) ideas incorporated into design	✓ 3rd party review results incorporated into submittal ✓ Right-of-way (ROW) takes finalized	✓ Plans and Specifications stamped and sealed ✓ Requirements management database approved

Design-Bid-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (CE) (5-10% Design)	Preliminary Engineering (PE) (30% Design)	Final Design (FD) (60%)	Final Design (FD) (90%)	Final Design (FD) (100%)	Issue for Bid (IFB)
Environmental Review, Permitting, and Documentation	• Determine environmental impacts. • Agency and public coordination conducted • Identify authorities having jurisdiction	• Update environmental impacts. • Public Coordination conducted • Identify sustainability goals • Prior to 30% submittal - Meet with the Cascade Water alliance to review irrigation and water conservation strategies and incentives for the project. Incorporate recommendations into 30% submittal	• Final NEPA/SEPA Environmental commitment list • Update sustainability checklist • Detailed Code Study for each discipline • Phase 1 HAZMAT • Phase 1 Archeology • Provide a written summary of all the sustainability goals proposed for the project. • Provide calculations, illustrations and/or other documentation to communicate projected performance. • Provide LEED scorecard and LEED Management Plan • Register Project with USGBC. • Provide final Report from team eco-charrette • Submit initial energy modeling results • Identify and evaluate possible paths to improvement for possible inclusion into the project • Develop integrated landscape and site stormwater management strategies for review with AHJ to reduce size and scope of underground vaults and ponds.	• All environmental commitments identified in the contract documents • Update sustainability checklist and generate report • Draft Environmental commitments matrix • 60% design plans for environmental mitigation elements as provided in Record of Decision • 60% design plans for sustainability and low impact development • 60% Design plans for wetland and sensitive areas • Code compliance diagrams and fish passage structures complete and incorporated into plan set • Provide updated LEED/ENVISION scorecard, credit by credit strategy and progress summary and LEED/ENVISION Management Plan • Provide initial Energy Analysis Report of the building(s). • Establish the energy budget for the building(s). • Provide project specific analysis. • Identify dominant loads, usage patterns etc. • Identify next level of possible energy efficient performance and provide cost benefit analysis for ST consideration. • Establish projected water usage. • Provide detailed breakdown of annual/monthly usage assumptions. • Separate building potable and irrigation uses. • Provide Draft Measurement &Verification (M&V) and Cx Plans if pursuing LEED credits.	• All environmental commitments and sustainability measures identified in the contract documents • Update Environmental commitments matrix • Final design plans for environmental mitigation elements as provided in Record of Decision • Final design plans for sustainability and low impact development • Final design plans for wetland and sensitive areas • Phase II HAZMAT • Phase II Archeology	• Environmental Commitments Matrix complete • Provide a written project sustainability report summarizing strategies addressing facility design, construction and operation. • Include goals and plan to track and document construction related items identified in the Sound Transit Sustainability Checklist. (whole project area) • Provide updated LEED scorecard and LEED Management Plan including documentation for Preliminary design review by GBCI • Finalize Energy Analysis Report and projected annual monthly energy use budgets. Align budget categories with sub metering strategy. • Finalize water budget and document water use reduction strategies. Provide estimated potable water usage reduction. • Finalize M&V Plan	• Coordinate with EAS on selection of an environmental compliance oversight consultant to be included • Coordinate with EAS on review of the RFP and/or RFQ for the construction management team • Submit Design Credits to GBCI for Review

Design-Bid-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (CE) (5-10% Design)	Preliminary Engineering (PE) (30% Design)	Final Design (FD) (60%)	Final Design (FD) (90%)	Final Design (FD) (100%)	Issue for Bid (IFB)
Basis of Design			• Prepare BOD report to accompany the drawings and submittals in support of the 30% design. • Provide an understanding of the design assumptions and include references to technical decisions made during the course of the Work. • Document fundamental design assumptions, criteria, issues encountered, design solutions considered, and design recommendations.	• Submit Updated BOD report • BOD must be accepted by ST Engineering and concurrence obtained from AHJs	• Submit Updated BOD	• Submit Final BOD	
Permits		• Identify authority having jurisdictions • Identify applicable codes and standards	• Prepare draft list of required permits • 30% design meets dimensional standards or code variances identified • AHJ coordination (including permit pre-applications and/or project meetings)	• Energy Code Compliance complete and integrated into design • Identify all permits required; establish submittal schedule • Completed permit applications & supporting documents per AHJ land use code requirements/ permit checklists • Land Use Code compliance complete and integrated into design, including elements not specified in EP-03 60% design drawing checklists • AHJ coordination (including permit pre-applications and/or project meetings)	• List of permits to be obtained by Contractor • Implement permit conditions into 90% design	• Implement permit conditions into 100% design	• Compile issued permits

Design-Bid-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (CE) (5-10% Design)	Preliminary Engineering (PE) (30% Design)	Final Design (FD) (60%)	Final Design (FD) (90%)	Final Design (FD) (100%)	Issue for Bid (IFB)
Estimates (ICE)	• Update project budget through the PE phase • Preliminary estimation of ROW cost	• Develop cost estimates for each alternative	• 30% estimate with allowance for identified geotechnical risks • Opinion of ROW cost	• Construction and ROW cost updated • Baseline estimate • Account for cost impacts associated with specifications (special provisions)	• Finalize construction cost estimate • Update ROW costs based upon purchases	• Final cost estimate • Sign estimate	• Verify that low bid is acceptable when compared to ICE
Asset Data Collection: Facilities		• Sound Transit Facility Asset Data Collection Sheet (FADCS) formatted for project. • Individual ADCS documents are required for: Stations & associated structures, Parking Garages & associated structures, Pedestrian Bridges & associated structures, Operations & Maintenance Facilities & associated structures, Maintenance of Way structures & associated structures, Administration structures & associated structures, Park & Rides & associated structures, and Independent Ancillary Structures and Site Improvements not associated with any of the facility types listed above.	• Complete Tab-Z and adjust ADCS format as necessary to accommodate the to be constructed facility.	• On combined Tab A-Substructure B-Shell, and C-Interiors, and Tabs D-Conveying, E-Plumbing, F-HVAC, G-Fire Protection, H-Electrical, I-Equipment, and J-Site commence provision of data in assigned cells. • For designated projects H.1-Electrical commence provision of data in assigned cells. • Develop preliminary Door Schedule in format provided or agreed. • Develop preliminary Interior Finish Schedule in format provided or agreed.		• Complete provision of data in assigned cells. • Complete Door Schedule. • Complete Interior Finish Schedule.	
Asset Data Collection: Linear		• Sound Transit Linear Asset Data Collection Spreadsheet (LADCS) formatted for project.	• N/A	• Commence provision of data in the tabs provided; Track/Bridge/Tunnel, OCS, Signal, TPSS, SCADA, Communication.		• Complete provision of data in assigned cells.	
Spare Parts				• Identify Spare parts needed in a draft spare parts list • Get ST Operations review and feedback on the draft spare parts list		• Address comments and finalize spare parts list.	
Warranty				• Identify specific product warranties required in a draft list of warranties • Get ST Operations review and feedback on the draft warranty list		• Address comments and finalize product warranties list.	

Design-Bid-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (CE) (5-10% Design)	Preliminary Engineering (PE) (30% Design)	Final Design (FD) (60%)	Final Design (FD) (90%)	Final Design (FD) (100%)	Issue for Bid (IFB)
Right-of-Way (ROW)	• Right-of-entry (ROE) request for environmental investigations, and ALTA survey for protective and early acquisitions of full acquisitions. • Basic high-level ROW requirements should be identified for each alternative and only permanent rights should be identified as full acquisitions • Identify protective and early acquisitions for full acquisitions • Order and review title reports for protective and early acquisitions, and request for ALTA surveys and have ALTA surveys completed and unsigned at appraisal kickoff • Sound Transit ROW Engineer to assign ROW No.	• Right of Entry (ROE) request for discovery activities and advance design. • Develop work plans for invasive ROE requests. • Refine the full acquisition for ROW requirements which include station sites, staging areas, and parking garage sites. • Order and review title reports for protective and early acquisition of full acquisitions, and request for ALTA surveys and have ALTA surveys completed and unsigned • In-progress ROW base mapping from GIS and record information and ROW strip maps at 1" = 200' • Civil Certify the full acquisitions which include certification deliverable schedule, parcel by parcel reviews, Civil Certification letter, parcel list, ROW plans, Letter of Concurrences and ROW Title Report Review Memos completed	• See ROW 30% Checklist	• See ROW 60% Checklist	• Sound Transit ROW Engineer shall be informed of any design/agreement changes impacting the acquisition footprint. The result of this will impact the acquisition schedule • Design support for property acquisitions, condemnations, trials. • Prepare ROW closeout scope	• Sound Transit ROW Engineer shall be informed of any design/agreement changes impacting the acquisition footprint. The result of this will impact the acquisition schedule • Design support for property acquisitions, condemnations, and trials • Finalize ROW closeout scope	• Sound Transit ROW Engineer shall be informed of any design/agreement changes impacting the acquisition footprint. The result of this will impact the acquisition schedule • All property rights in hand 30 calendar days prior to ad • Support ROW closeout
Survey, Mapping, and Subsurface Utility Engineering	• Obtain existing GIS grade or better surveys and basemaps to utilize during CE • Notate survey control details and source documents (meta data) with reports and drawing plan sets • Utilities collection and characterization designated by quality levels per ASCE 38-02 • Survey methodology technical memo	• Project survey requirements identified, and area of impact identified for each alternative • Project survey/mapping Local Datum Plane (LDP) identified or established. (Ground Coordinate System) • Survey Horizontal and Vertical Control sheets developed • Additional utilities data collection and characterization designated by quality levels per ASCE 38-02	• Translate survey and mapping efforts completed in CE to Established LPD Early in PE effort if this was not completed already by the end of CE • Design level existing conditions topographic and cadastral survey complete for preferred alternative, including above ground and underground utilities • Update Survey Control Plan as necessary. • Horizontal and Vertical Control plans updated. • Additional utilities data collection and characterization designated by quality levels per ASCE 38-02	• Update Design level existing conditions topographic and cadastral survey with new facilities, land development changes, or improvements to date • Perform Survey support for Right of Way documents and deliverables included but not limited to Record of Surveys, ALTA, parcel maps, legal descriptions and sketches. • Additional utilities data collection and characterization designated by quality levels per ASCE 38-02 • Initiate power agreements	• Obtain applicable permits from AHJ, (e.g.: DNR, WSDOT, County, City, etc.), for destroying and resetting monuments, as needed. • Horizontal and Vertical Control plans updated, if necessary, to show additional found or set monumentation • Additional utilities data collection and characterization designated by quality levels per ASCE 38-02	• Preliminary construction staking data completed • Finalize power agreements	

Design-Bid-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (CE) (5-10% Design)	Preliminary Engineering (PE) (30% Design)	Final Design (FD) (60%)	Final Design (FD) (90%)	Final Design (FD) (100%)	Issue for Bid (IFB)
Geotechnical	• Scoping level Geotechnical Memo complete. • Regional geology reviewed and risk areas input into alignment alternative study. • Identify probable types of guideway foundations and track support with recommendation for most likely type to be considered. • Foundation type and layout for identified special structures and facilities. • Develop recommendations for future work to support CE. • Identify specific areas for further investigation. • Right of entry requests and Permitting for geotechnical investigations in CE Phase.	• Conceptual Level Geotechnical Reports/Memos submitted. • Geologic hazards identified and impact to project assessed for all alternatives. • Historical and existing Geotechnical data collected and evaluated for all alternatives. • Field Explorations necessary completed to inform risk assessment and cost estimate for geologic hazard, high-risk subsurface conditions, and high-risk or unusual structures or facilities that have the potential to impact preferred selection. • Explorations in support of the DEIS completed and results incorporated into DEIS. • Identify geotechnical high-level risks and potential mitigation strategies for guideway foundations, track support and station facilities. • Develop recommendations for future work to support PE. • Right of entry requests and Permitting for geotechnical investigations in PE Phase.	• See Geotechnical 30% Checklist	• See Geotechnical 60% Checklist	• See Geotechnical 90% Checklist	• See Geotechnical 100% Checklist	
Structures	• Guideway type study report identifying the probable types of elevated guideway superstructure and substructure types with recommendations for the most likely types to be considered. • Structural layouts for identified special structure areas.	• Identification of all existing structures affected by all alternatives. • Identification of impacts to existing structures requiring upgrades. • Identification of locations, lengths, widths, and height of new structures for each alternative.	• See Structural 30% Checklist	• See Structural 60% Checklist	• See Structural 90% Checklist	• See Structural 100% Checklist	
Safety Certification			• Project specific Safety & Security Management Plan • Project specific Safety & Security Certification Plan • Preliminary hazard analysis • Threat and vulnerability assessment	• Updated project specific Safety & Security Management Plan • Updated project specific Safety & Security Certification Plan • Completed CIL list elements • Updated preliminary hazard analysis		• CIL list completed	• Updated project specific Safety & Security Management Plan • Updated project specific Safety & Security Certification Plan • Safety & Security Program Plan system • Integration test plant Pre-revenue operations and start-up plan

Design-Bid-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (CE) (5-10% Design)	Preliminary Engineering (PE) (30% Design)	Final Design (FD) (60%)	Final Design (FD) (90%)	Final Design (FD) (100%)	Issue for Bid (IFB)
				• Updated thread and vulnerability assessment			
Station Experience Design Guidelines (SEDG)	• Deliver comprehensive package of design to be reviewed for SEDG including at minimum: • Basis of Design/Technical Memo • Station area conditions and needs assessment baseline • Station area maps (½ mile radius) and tabular data establishing thresholds for assignment; make initial access assignments; produce initial versions of primary outputs • Conceptual station plan diagram • GIS maps of 10-minute walkshed from center of station area with opening day and X year future land use/urban form • Letter of concurrence/ understanding between ST and relevant agencies with arraying of land use and access types against the matrix in the SEDG • Create Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Operating Scenario and Passenger Journey Mapping for preferred alternative • Static Passenger Model (Spreadsheet) - If there are special conditions associated with a station, such as an event station, terminus station, elevator-only station, etc. • Review initial site and context concepts with impacted AHJ's that depict integrated SEDG illustrations for transit and non-motorized circulation and access into and around project impact zones.	• Update comprehensive package of design to be reviewed for SEDG with minimum additional new documents: • Initial TOD Feasibility Assessment • Draft Station Context Framework Diagram • No-build/ setback envelope • Cross-section confirming necessary horizontal and vertical clearances • Model priority and circulation framework layer • Thematic Layer • Draft Station Planning Report • Updated Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Perform Persona Workshop 1 for preferred alternatives and submit completed Persona Profiles • Decision point / passenger flow diagrams for stations • Show decision points • Establish context • Identify FPZ • Show departure/ transfer/ arrival scenarios • Show elevator journey • Produce Passenger Expectation Management Plan for proposed deviations • Design principles not met • Passenger journey step (#) • Effect on passenger journey • Static Passenger Model (Spreadsheet)	• Deliver comprehensive package of design to be reviewed for SEDG • Updated Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Update Persona Workshop Action Log • Perform Targeted Persona Workshop as outlined in the SEDG and document results • Provide updated Passenger Expectation Management Plan • Signage Plan • Passenger Decision Point Mapping Diagram	• Evaluate design changes impacting passenger experience as outlined in the SEDG • Updated Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Re-perform the Persona Workshop if metric(s) in the Evaluation Matrix are rated 'Does Not Satisfy Guidelines' • Update Persona Workshop Action Log if the Persona Workshop is re-performed • Update Passenger Expectation Management Plan for proposed deviations • Provide diagram illustration of site CPTED design objectives including unobstructed sight lines, no alcoves, etc. to ensure safety and universal accessibility.	• Evaluate design changes impacting passenger experience as outlined in the SEDG • Updated Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Update Persona Workshop Action Log • Produce new or updated Passenger Expectation Management Plan for proposed deviations		

Exhibit EP-03-02-B Design-Build Project Development Matrix

Design-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (5-10%)	Preliminary Engineering (Request for Proposal Development) (30%)	Post-Award Submittal (Project/Engineering determines design development % submittal)	Final Design (60%)	Final Design (100%)	Issue for Construction (IFC)
Decisions Frozen and Milestones Completed (Overview)	✓ Roll plot level design defining footprint for each alternative ✓ Potential environmental impacts for each alternative ✓ Approval to advance to CE ✓ Concept of Operations drafted	✓ Completion of alternative analyses/ studies ✓ Draft environmental documentation ✓ Identify critical items that have significant schedule and cost estimate impacts which take further design than CE to resolve ✓ The Preliminary Hazard Assessment (PHA) and Threat and Vulnerability Assessment (TVA) workshops begin with aim to identify safety or security fatal flaws in the initial designs ✓ Identify ROW takes for all alternatives ✓ Identify transit time for each alternative ✓ Identify station type for each location based on the Station Experience Design Guideline (SEDG) ✓ Identify bridge types for each location ✓ Identify operation access points along the guideway ✓ Third- party design mitigation plans finalized	✓ Single preferred alternative approved by the Board ✓ Request for Proposal (RFP) Project Requirements finalized ✓ Update Schedules ✓ Final environmental documentation and commitment list ✓ Baseline cost estimate and schedule ✓ Contract type selected ✓ Approval to advance to Final Design ✓ Right-of-way (ROW) opinion of probable cost ✓ Value Engineering (VE) workshops completed and ideas list being reviewed ✓ Utilities identified and connection locations identified ✓ Letter of concurrences identified for all impacted Authorities Having Jurisdiction (AHJs) ✓ Special track work identified ✓ Approved Requirements Management Plan ✓ Draft Interface Coordination and Integration Plan (ICIP) ✓ Identify design packaging plan ✓ Concept of Operations finalized ✓ Coordinate ROW requirements with all impacted AHJ's to establish bus, car, bike, and pedestrian transportation corridors and interfaces. ✓ Preliminary stormwater facility type, size, and location identified.	✓ Packaging plan	✓ Request for Deviations (RFDs) identified and submitted ✓ Specification Modification Requests (SMRs) identified and submitted ✓ Accepted Interface Coordination and Integration Plan (ICIP) ✓ Accepted Value Engineering (VE) ideas incorporated into design ✓ Finalize ROW requirements with all impacted AHJ's to establish bus, car, bike, and pedestrian transportation corridor layouts and interfaces. ✓ Finalize stormwater facility type, size, and location.	✓ 3rd party review results incorporated into submittal ✓ Right-of-way (ROW) takes finalized ✓ Approved Requests for Deviations (RFDs) ✓ Approved Specification Modification Request (SMR's) ✓ All review comments resolved and documented ✓ Plans and Specifications are ready to be signed and sealed	✓ Plans and Specifications signed and sealed ✓ Requirements database approved
Environmental Review, Permitting, and Documentation	• Determine environmental impacts • Agency and public coordination conducted • Identify authority having jurisdictions	• Update environmental impacts • Public Coordination conducted • Identify sustainability goals • Meet with the Cascade Water alliance to review irrigation and water conservation strategies and incentives for the project. • Incorporate recommendations into 30% submittal	• Environmental commitment list updated. • Update sustainability checklist to align with Sound Transit expectations for design-builder • Draft code study for each discipline • Draft list of permits to be obtained by the Design Builder	• Refer to 60% requirements • Design Builder to identify all permits required and establish submittal schedule • Summarize project strategies and commitments per the Sound Transit Sustainability Checklist. • Identify other or additional strategies and commitments	• All environmental commitments identified in the contract documents • Update sustainability checklist and generate report. • Environmental commitments matrix update. • Provide final code analysis for each discipline, sealed and	• Environmental commitments matrix complete • Final design plans for environmental mitigation elements as provided in Record of Decision • Final design plans for sustainability and low impact development	• Incorporate all conditions of the approved permit • Permit review comments incorporated • Code compliance memo/Fire Department and AHJ notes integrated in the construction documents • Submit Design Credits to GBCI for review

Design-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (5-10%)	Preliminary Engineering (Request for Proposal Development) (30%)	Post-Award Submittal (Project/Engineering determines design development % submittal)	Final Design (60%)	Final Design (100%)	Issue for Construction (IFC)
			• Provide a written summary of all the sustainability goals proposed for the project. • Provide calculations, illustrations and/or other documentation to communicate projected performance. • Provide LEED scorecard and LEED Management Plan • Register Project with USGBC. • Provide final Report from team eco-charrette • Submit initial energy modeling results • Identify and evaluate possible paths to improvement for possible inclusion into the project • Develop integrated landscape and site stormwater management strategies for review with AHJ to reduce size and scope of underground vaults and ponds.	that will be achieved by the project. (Whole project area.) • Provide updated LEED/ENVISION scorecard, credit by credit strategy and progress summary and LEED/ENVISION Management Plan • Provide initial Energy Analysis Report of the building(s). • Establish the energy budget for the building(s). • Provide project specific analysis. • Identify dominant loads, usage patterns etc. • Identify next level of possible energy efficient performance and provide cost benefit analysis for ST consideration. • Establish projected water usage. • Provide detailed breakdown of annual/monthly usage assumptions. • Separate building potable and irrigation uses. • Provide Draft Measurement &Verification (M&V) and Cx Plans if pursuing LEED credits.	signed by the design professional of record. • 60% design plans for environmental mitigation elements as provided in Record of Decision • 60% design plans for sustainability and low impact development • 60% design plans for wetland and sensitive areas • Code compliance diagrams complete and incorporated into plan set • Final list of permits to be obtained by the design builder • Energy code compliance complete and integrated into design • Seismic performance schedule incorporating ST's RM and ACSE 7 identifying essential systems and assigning importance factors for both attachment and functionality of devices and assemblies.	• Final design plans for wetland and sensitive areas • Letters of concurrence incorporated into sets • Provide a written project sustainability report summarizing strategies addressing facility design, construction and operation. • Include goals and plan to track and document construction related items identified in the Sound Transit Sustainability Checklist. (whole project area) • Provide updated LEED scorecard and LEED Management Plan including documentation for Preliminary design review by GBCI • Finalize Energy Analysis Report and projected annual monthly energy use budgets. Align budget categories with sub metering strategy. • Finalize water budget and document water use reduction strategies. Provide estimated potable water usage reduction. • Finalize M&V Plan	• All seismic details and performance criteria integrated and clearly called out in the documents.
Facility Program Verification			• Room by room Program listing - With each milestone submittal track Program NSF vs. Provided NSF. Indicate NSF on plans • Program confirmation report documenting workshops with Sound Transit confirming final space by space requirements, functional relationships, equipment requirements, etc. as found in the Facility Program reconciled with the Proposer's design solution. • Facility functional work flow diagrams illustrating design fulfills Facility Program requirements		• Update NSF calculations and Building GSF	• Final NSF for all spaces provided and indicated on plans. Validate NSF against code required clearance indicated on drawings. • Workflow diagrams no longer required.	• Construction Documents shall include NSF for each program space on the plans and Contract definition of NSF in the Specifications.

Design-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (5-10%)	Preliminary Engineering (Request for Proposal Development) (30%)	Post-Award Submittal (Project/Engineering determines design development % submittal)	Final Design (60%)	Final Design (100%)	Issue for Construction (IFC)
Basis of Design			• Prepare BOD report to accompany the drawings and submittals in support of the 30% design. • Provide an understanding of the design assumptions and include references to technical decisions made during the course of the Work. • Document fundamental design assumptions, criteria, issues encountered, design solutions considered, and design recommendations. • The BOD is used for the development of the Request for Proposal (RFP).		• Finalize BOD report • BOD must be accepted by ST Engineering and concurrence obtained from AHJs	• Submit Final BOD report	
Permits			• Identify authority having jurisdictions • Prepare draft list of required permits	• Identify all permits required; establish submittal schedule	• Energy Code Compliance complete and integrated into design • Completed permit applications & supporting documents per AHJ land use code requirements/ permit checklists • Draft list of permits to be obtained by contractor	• Implement permit conditions into 100% design	• Compile issued permits
Estimates (ICE)	• Update project budget through the PE phase • Preliminary estimation of ROW cost	• Update ROW costs based upon purchases	• Project baseline set • Final ICE aligns with conformed RFP, inclusive of approved ROW requirements.				
Specifications		• Sound Transit Standard Specification edition selected for project	• Draft index of project Specifications; • Division 00-34 specifications provided by Sound Transit	• Refer to 60% requirements • Construction submittal list – Sound Transit will identify submittals where Sound Transit review is required as part of the RFP	• Draft specifications for all project elements of work • Product cut sheets of any selected materials to be incorporated into the project • Requests for Modifications to Sound Transit Standard Specifications • Construction submittal list • Adoption of Cx Specifications completed by designer	• Complete Specifications for all project elements of work coordinated and complete • Final construction submittal list incorporating Sound Transit review items • Specifications signed and sealed • Adoption of Cx Specifications to be finalized by designer	• Completed, signed, and sealed
Asset Data Collection: Facilities		• Sound Transit Facility Asset Data Collection Sheet (FADCS) formatted for project. • Individual FADCS documents are required for: Stations & associated structures, Parking Garages & associated	• Complete Tab-Z and adjust FADCS format as necessary to accommodate the to be constructed facility.		• On combined Tab A-Substructure B-Shell, and C-Interiors, and Tabs D-Conveying, E-Plumbing, F-HVAC, G-Fire Protection, H-Electrical, I-Equipment, and J-Site commence provision of data in assigned cells.	• Complete provision of data in assigned cells. • Complete Door Schedule. • Complete Interior Finish Schedule.	

Design-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (5-10%)	Preliminary Engineering (Request for Proposal Development) (30%)	Post-Award Submittal (Project/Engineering determines design development % submittal)	Final Design (60%)	Final Design (100%)	Issue for Construction (IFC)
		structures, Pedestrian Bridges & associated structures, Operations & Maintenance Facilities & associated structures, Maintenance of Way structures & associated structures, Administration structures & associated structures, Park & Rides & associated structures, and Independent Ancillary Structures and Site Improvements not associated with any of the facility types listed above.			• For designated projects H.1-Electrical commence provision of data in assigned cells. • Develop preliminary Door Schedule in format provided or agreed. • Develop preliminary Interior Finish Schedule in format provided or agreed.		
Asset Data Collection: Linear		• Sound Transit Linear Asset Data Collection Sheet (LADCS) formatted for project.	• N/A		• Commence provision of data in the tabs provided; Track/Bridge/Tunnel, OCS, Signal, TPSS, SCADA, Communication.	• Complete provision of data in assigned cells.	
Spare Parts					• Identify Spare parts needed in a draft spare parts list • Get ST Operations review and feedback on the draft spare parts list	• Address comments and finalize spare parts list.	
Warranty					• Identify specific product warranties required in a draft list of warranties • Get ST Operations review and feedback on the draft warranty list	• Address comments and finalize product warranties list.	
Right-Of-Way (ROW)	• Right of Entry (Right-of-entry (ROE)) request for environmental investigations, and ALTA survey for protective and early acquisitions of full acquisitions • Basic high-level ROW requirements should be identified for each alternative and only permanent rights should be identified as full or partial acquisitions • Identify protective and early acquisitions for partial and full acquisitions	• Right of Entry (Right-of-entry (ROE)) request for discovery activities and advance design • Develop work plans for invasive ROE requests • Refine the full acquisition for ROW requirements which include station sites, staging areas, and parking garage sites • Order and review title reports for protective and early acquisition of full acquisitions, and request for ALTA surveys	• See ROW 30% Checklist	• Design support for property acquisitions, condemnations, trials	• Design support for property acquisitions, condemnations, trials. • Support ROW closeout	• Design support for property acquisitions, condemnations, trials. • Support ROW closeout	• Support ROW closeout

Design-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (5-10%)	Preliminary Engineering (Request for Proposal Development) (30%)	Post-Award Submittal (Project/Engineering determines design development % submittal)	Final Design (60%)	Final Design (100%)	Issue for Construction (IFC)
	• Order and review title reports for protective and early acquisitions, and request for ALTA surveys and ALTA surveys completed and unsigned at appraisal kickoff • Sound Transit ROW Engineer to assign ROW No.	and have ALTA surveys completed and unsigned. • In-progress ROW base mapping from GIS and record information and ROW strip maps at 1" = 200' • Civil Certify the full acquisitions which include certification deliverable schedule, parcel by parcel reviews, Civil Certification letter, parcel list, ROW plans, Letter of Concurrences – if available, ROW Title Report Review Memos completed					
Survey, Mapping, and Subsurface Utilities Engineering	• Obtain existing GIS grade or better surveys and basemaps to utilize during CE • Notate survey control details and source documents (meta data) with reports and drawing plan sets • Utilities data collection and characterization designated by quality levels per ASCE 38-02 • Survey methodology technical memo	• Project survey requirements identified, and area of impact identified for each alternative • Project survey/mapping Local Datum Plane (LDP) identified or established. (Ground Coordinate System) • Survey Horizontal and Vertical Control sheets developed • Additional utilities data collection and characterization designated by quality levels per ASCE 38-02	• Translate survey and mapping efforts completed in CE to Established LPD Early in PE effort if this was not completed already by the end of CE • Perform Survey support for Right of Way documents and deliverables included but not limited to Record of Surveys, ALTA, parcel maps, legal descriptions and sketches • Design level existing conditions topographic and cadastral survey complete for preferred alternative, including above ground and underground utilities • Update Survey Control Plan as necessary • Horizontal and Vertical Control plans updated • Additional utilities data collection and characterization designated by quality levels per ASCE 38-02	• See Project Requirements	• See Project Requirements	• See Project Requirements	
Work Zone Traffic Control			• Preliminary Traffic Control layouts • Coordination with affected agencies		• Traffic Control plans showing construction sequence and staging	• Final Traffic Control plans completed • Final detour plans complete • Plans stamped and signed	

Design-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (5-10%)	Preliminary Engineering (Request for Proposal Development) (30%)	Post-Award Submittal (Project/Engineering determines design development % submittal)	Final Design (60%)	Final Design (100%)	Issue for Construction (IFC)
Stormwater Management			• Flow control, water quality, and conveyance capacity issues identified • TS&L of stormwater management facilities including ROW needs • Fish passage requirements • Preliminary stormwater management report with supporting hydrologic calculations • Storm water quantity and quality issues identified and documented • Design Criteria identified • Water quality requirements identified • Conceptual storm water report prepared for each alternative • Identify LID strategies • TOD stormwater basis of design report.	• Code analysis to establish deliverables required by authority having jurisdiction • Concurrence letter for vesting of design standard	• Stormwater management facility designs with typical cross sections • Final Stormwater Management Report for preferred alternative • Parcel maps for ROW and easements • Coordination with Local Jurisdiction(s) to confirm connection points and services • Hydraulic and water quality issues identified for each alternative • Draft Final Hydraulic Report for preferred alternative • Preliminary hydraulic report for each alternative • Preliminary storm water management options to identify right-of-way needs • LID strategies maximized and calculated and reviewed with AHJ	• Construction details • Updated drainage report (if changed) • Plans stamped and signed • Hydraulic Report approved by ST and Local Jurisdiction(s) • Hydraulic plans should be complete PS&E • All elements from the 60% plans should be updated • Plans shall include all drainage details in order to construct the drainage system • Final Hydraulic report shall be updated to represent the final design. • LID strategies fully documented.	• As at 100% but finalized with additional details and updates to address 100% ST and 3rd party comments
Sanitary Sewer			• Conceptual sanitary sewer plan	• Existing conditions survey with supplemental as-built record information • Updated conceptual sanitary sewer plan	• Preliminary sanitary sewer plan and profile with pipe diameter and slope • Sanitary service line size and slope		
Municipal Water			• Conceptual water main plan with approximate hydrant locations	• Existing conditions survey with supplemental as-built record information	• Water plan with pipe diameter; fixtures; hydrant locations; service line location		
Roadway/ Traffic Signing		• Inventory completed (include associated electrical for sign lighting or flashing signs) for preferred alternative	• Preliminary layout of light standards and signal poles with signs • Identify location of sign bridge structures (and its foundation) with concurrence on O&M of these sign bridge structures.	• Visual standards for corridor coordinated with Landscape Architect • Sign layout completed including overhead signs • Existing signs to reuse and relocated determined • Conflicts with illumination and/or signal features, drainage, or utilities identified • Service load and line loss calculations completed	• 90% signing plans should be complete PS&E • Signing Plans, notes, sign • specifications completed • Coordination with luminaries on structure/wall identified and mounting or foundation details complete	• Plans stamped and signed	

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				• Potential conflicts between light standards and signal poles with signs identified for preferred alternative			
Geotechnical	• Scoping level Geotechnical Memo complete. • Regional geology reviewed and risk areas input into alignment alternative study. • Identify probable types of guideway foundations and track support with recommendation for most likely type to be considered. • Foundation type and layout for identified special structures and facilities. • Develop recommendations for future work to support CE. • Identify specific areas for further investigation. • Right of entry requests and Permitting for geotechnical investigations in CE Phase.	• Conceptual Level Geotechnical Reports/Memos submitted. • Geologic hazards identified and impact to project assessed for all alternatives. • Historical and existing Geotechnical data collected and evaluated for all alternatives. • Field Explorations necessary completed to inform risk assessment and cost estimate for geologic hazard, high-risk subsurface conditions, and high-risk or unusual structures or facilities that have the potential to impact preferred selection. • Explorations in support of the DEIS completed and results incorporated into DEIS. • Identify geotechnical high-level risks and potential mitigation strategies for guideway foundations, track support and station facilities. • Develop recommendations for future work to support PE. • Right of entry requests and Permitting for geotechnical investigations in PE Phase.	• See Geotechnical 30% Checklist	• See Geotechnical 60% Checklist	• See Geotechnical 60% Checklist	• See Geotechnical 90%/100% Checklist	
Structures	• Guideway type study report identifying the probable types of elevated guideway superstructure and substructure types with recommendations for the most likely types to be considered. • Structural layouts for identified special structure areas.	• Identification of all existing structures affected by all alternatives. • Identifications of impacts to existing structures requiring upgrades. • Identification of locations, lengths, widths, and height of new structures for each alternative.	• See Structural 30% Checklist	See Structural 60% Checklist	See Structural 60% Checklist	See Structural 90%/100% Checklist	

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Subsurface Utilities	• Follow EP-15	• Follow EP-15	• Follow EP-15	• Follow EP-15	• Follow EP-15	• Follow EP-15	• Follow EP-15
System Integration (See Interface Coordination and Integration Plan and General Commissioning Plan for additional detail on submittal requirements.)			• Determine type, size and location for system elements • Narrative of systems infrastructure requirements complete. • Narrative of how "new work" ties into existing work • Communications Rooms located • Point of connection for main service location (manhole/ tunnel access) • Identify impacts on areas to remain in service • Communications/ systems program requirements communicated to design team • Narrative of systems infrastructure requirements complete. Basis of Design • Preliminary cable tray layout/size • Location of door access card readers, ETEL's coordinate with Architecture plans • Location of CCTV devices coordinate with Architecture plans		• Preliminary Communication Room details, elevations and grounding system • Riser diagrams • Preliminary backboard provisioning, penetration, locations and grounding system • Systems related conduit shown • Voice/Data Video utility outlet identified. • Location and size: sleeves, cable tray conduit • Systems coordination drawing • Systems raceways sized and located • Speaker/Sign/ Communication devices located. • Raceway analysis (e.g. what's required) • CCTV locations dimensioned, mounting details provided, pathway strategy communicated. • Device mounting detailed and coordinated with Architecture • Outlet schedule for infrastructure drafted • CCTV locations dimensioned, mounting details provided, pathway strategy communicated. • Device mounting detailed and coordinated with architecture • See Prescriptive Specifications in Divisions 01, 26, 27, 28, and 34.	• Conduit runs to Ticket Vending Machine and all other systems infrastructure shown • All previous submittal comments resolved. • All ICD's resolved. • All details completed. • All Specifications completed. • Plans stamped and signed • Communication systems detailed and coordinated with Facility Design • Systems related conduit shown, with penetration locations dimensioned. • Voice/Data/Video utility outlet locations numbered • Schedules final • Transition details for cable trays/conduit sweeps • Raceway locations dimensioned, and raceways detailed. • Speaker/Sign/Comm devices located and shown on RCP's/Elevations/Plans, and conduit routing shown • Systems related calculations complete and stamped. • CCTV locations finalized and conduit runs (above) shown • See Prescriptive Specifications in Divisions 01, 26, 27, 28, and 34.	• As at 100% but finalized with additional details and updates to address 100% ST and 3rd party comments • Drawings signed, sealed and dated by WA registered design professionals • See Prescriptive Specifications in Divisions 01, 26, 27, 28, and 34. • After the IFC submittal, there are additional submittals required for the Systems Engineering work.

Design-Build Project Development Matrix	Alternatives Identification	Conceptual Engineering (5-10%)	Preliminary Engineering (Request for Proposal Development) (30%)	Post-Award Submittal (Project/Engineering determines design development % submittal)	Final Design (60%)	Final Design (100%)	Issue for Construction (IFC)
Civil / Systems Integration			• Project Integration Implementation Plan (PIIP)		• As required by the PIIP • Final System Schematic Drawings • Final Interface Block Diagrams • Preliminary Equipment Matrix • Interface Control Documents (ICD) (on-going) • 3D models • Clash Detection Reports	• As required by the PIIP • Composite drawings • Combined service drawings • Final Equipment circulation/access drawings • Final Equipment Matrix • Interface Control Documents (ICD) (on-going) • Interface Checklists • 3D models • Clash Detection Reports	• As at 100% but finalized with additional details and updates to address 100% ST and 3rd party comments
Testing & Commissioning			• As required to support ATC. • Commissioning coordinator qualifications		• Preliminary commissioning plan • Preliminary Measurement and Verification Plan (LEED) • Preliminary commissioning specifications • Outline of all Operations and Maintenance Manuals	• Final commissioning specifications • Final M&V Plan • Final commissioning plan • Commissioning schedule • Draft of all Operations and Maintenance Manuals	• As at 100% but finalized with additional details and updates to address 100% ST and 3rd party comments • Implementation of M&V Plan • Final of all Operations and Maintenance Manuals. As at 100% but finalized with additional details and updates to address 100% ST and 3rd party comments
Safety Certification			• Project specific Safety & Security Management Plan • Project specific Safety & Security Certification Plan • Preliminary hazard analysis • Threat and vulnerability assessment	• Updated project specific Safety & Security Management Plan • Updated project specific Safety & Security Certification Plan	• Completed CIL list elements • Updated preliminary hazard analysis • Updated thread and vulnerability assessment	• CIL list completed	• Updated project specific Safety & Security Management Plan • Updated project specific Safety & Security Certification Plan • Safety & Security Program Plan system • Integration test plant • Pre-revenue operations and start-up plan
Station Experience Design Guidelines (SEDG)	• Deliver comprehensive package of design to be reviewed for SEDG including at minimum: • Basis of Design/Technical Memo • Station area conditions and needs assessment baseline • Station area maps (½ mile radius) and tabular data establishing thresholds for assignment; make initial access assignments; produce initial versions of primary outputs • Conceptual station plan diagram	• Update comprehensive package of design to be reviewed for SEDG with minimum additional new documents: a. Initial TOD Feasibility Assessment b. Draft Station Context Framework Diagram • No-build/ setback envelope • Cross-section confirming necessary horizontal and vertical clearances • Model priority and circulation framework layer	• Deliver comprehensive package of design to be reviewed for SEDG • Updated Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Update Persona Workshop Action Log • Perform Targeted Persona Workshop as outlined in the SEDG and document results • Provide updated Passenger Expectation Management Plan • Update Design Decision Log to reflect new or updated		• Evaluate design changes impacting passenger experience as outlined in the SEDG • Updated Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Re-perform the Persona Workshop if metric(s) in the Evaluation Matrix are rated 'Does Not Satisfy Guidelines' • Update Persona Workshop Action Log if the Persona Workshop is re-performed	• Evaluate design changes impacting passenger experience as outlined in the SEDG • Updated Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Update Persona Workshop Action Log • Produce new or updated Passenger Expectation Management Plan for proposed deviations • Update Design Decision Log to reflect new or updated	

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	• GIS maps of 10-minute walkshed from center of station area with opening day and X year future land use/urban form • Letter of concurrence/ understanding between ST and relevant agencies with arraying of land use and access types against the matrix in the SEDG • Create Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Operating Scenario and Passenger Journey Mapping for preferred alternative • Static Passenger Model (Spreadsheet) - If there are special conditions associated with a station, such as an event station, terminus station, elevator-only station, etc. • Review initial site and context concepts with impacted AHJ's that depict integrated SEDG illustrations for transit and non-motorized circulation and access into and around project impact zones.	• Thematic Layer c. Draft Station Planning Report • Updated Evaluation Matrix from the SEDG to reflect passenger experience-related design decisions • Perform Persona Workshop 1 for preferred alternatives and submit completed Persona Profiles • Decision point / passenger flow diagrams for stations a. Show decision points b. Establish context c. Identify FPZ d. Show departure/ transfer/ arrival scenarios e. Show elevator journey • Produce Passenger Expectation Management Plan for proposed deviations a. Design principles not met b. Passenger journey step (#) c. Effect on passenger journey • Static Passenger Model (Spreadsheet)	passenger experience-related design decisions • Signage Plan • Passenger Decision Point Mapping Diagram		• Update Passenger Expectation Management Plan for proposed deviations • Update Design Decision Log to reflect new or updated passenger experience-related design decisions • Provide diagram illustration of site CPTED design objectives including unobstructed sight lines, no alcoves, etc. to ensure safety and universal accessibility.	passenger experience-related design decisions	

EXHIBIT EP-03-03

SUBMITTAL INTAKE FORM

Project Name:

Design Milestone Submittal:

Submission Package includes (stamped and signed for IFB/IFC):

- Complete Discipline Checklist ☐ Yes ☐ No ☐ N/A
- Drawings ☐ Yes ☐ No ☐ N/A
- Specifications ☐ Yes ☐ No ☐ N/A
- Reports ☐ Yes ☐ No ☐ N/A
- Calculations ☐ Yes ☐ No ☐ N/A
- Independent Cost Estimate ☐ Yes ☐ No ☐ N/A
- Quality Records ☐ Yes ☐ No ☐ N/A

Notes:

Any Submission Package missing required components will be returned to the Design Consultant Project Manager for resubmission. Please refer to the Project Development matrices, Exhibit EP-03-02-A and Exhibit EP-03-02-B, to determine completeness of the submittal.

All quality audit issues are resolved:

☐ Yes ☐ No

Bluebeam session for previous design milestone submittal is archived:

☐ Yes ☐ No

Intake is:

☐ Approved ☐ Rejected, resubmission required

Intake Completion Date:

Project Design Manager Signature: