

Draft Appendix E

How to Complete the Selection Matrix Workshop

Appendix E – How to Complete the Selection Matrix Workshop

Part 1 – Using the Selection Matrix Workshop to Determine Final PDM

The Project Engineer will use the Selection Matrix Workshop to determine the Final PDM if any of the following is true:

- The Project cost is \$100 Million or more;
- The Project Engineer was unable to determine the Final PDM using the Selection Matrix;
- The Project Engineer decides to complete the Selection Matrix Workshop to provide a more in-depth evaluation for the determination of Final PDM.

The Project Engineer will perform all of the pre-work for the project utilizing current information developed for the project. Information on the pre-work is located in Appendix B with additional information included in this Appendix.

The Selection Matrix Workshop utilizes the Selection Matrix, completed by a team rather than individually by the Project Engineer. The process is more detailed and time consuming than that used in Appendix D, although the mechanics and steps are almost identical. There is additional pre-work and steps within the workshop to gain consensus from the participants on the information that is used within the Selection Matrix to determine Final PDM. The workshop is only used to determine Final PDM.

Review Appendix D – How to Complete the Selection Matrix, for detailed information and examples on the steps to complete the matrix. These steps will be referred to but not duplicated in this Appendix.

A facilitator is recommended for the Workshop to allow the Project Engineer/Manager responsible for determining the Final PDM to participate fully, to minimize bias in the process, to evenly engage the participants and to insure that the process steps are documented as backup for the result.

The purpose of the Selection Matrix Workshop is to provide a more in-depth process for determining the Final PDM for projects that are more complex or larger.

As part of the workshop, participants will:

- Identify the Project Delivery Goals in the Matrix that apply to the project,
- Determine or modify ratings of Goals provided in the Matrix'
- Identify any Project Delivery Goals that are actually Constraints,
- Refine or add Project Delivery Goals if needed (with associated ratings),
- Apply Weights to the Project Delivery Goals in accordance with their importance, and
- Multiply ratings with weights for scores to be total at the bottom of the Matrix.

The participants in the Workshop will use the Selection Matrix developed for determining Probable PDM for the project. As you complete each step of the process, detail the justification and backup for each step. This documentation will be part of the backup for the Selection Matrix Workshop.

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I. Additional Pre-Work for the Selection Matrix Workshop

- a. Workshop Participants - Identify the team members that will participate in the Selection Matrix Workshop. Make sure key stakeholders are represented and there is balanced representation. Keep the Workshop participation as small as possible – 10- to 12 participants are optimal. Mega projects may need to have greater participation than the optimal range. In these cases, thorough pre-work and participant review of the project information is even more critical.

Identifying the key project stakeholders is important to determining the right participants for the Selection Matrix Workshop. Make sure that one group does not have excessive representation as that may skew the results of the workshop. One way to balance the representation of each group in the Workshop is to have each group consolidate their input into the process and provide it to their representative or representatives for the pre-meetings and Workshop.

Include the ASCE and ASDE in pre-work meetings and participation. Also make sure that project leadership is represented and support the Project Goals and priorities developed in the Pre-work meetings. On Mega projects, a facilitator for developing and prioritizing the Project Goals in the Pre-Work is recommended. Resolve any issues that may arise before the workshop and coordinate this with the participants.

Schedule the resources necessary to support the facilitator during the workshop. A note taker is needed to make sure that the discussions and justification for each portion of the Workshop is documented for backup. Depending on the facility where the Workshop occurs, the facilitator may need help from a time keeper or someone to operate the presentation and documents needed for the workshop.

- b. Before the PDMSG Selection Workshop, the Team should be familiar with:
 - PDMSG Guidance and Appendices
 - PDM Attribute Comparison Spreadsheet (Appendix A.5)
 - Project Summary Package
 - Project Limitations, Decisions and Assumptions
 - Project Attributes developed during Project Design
 - Changes since Probable PDM Determined

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Before proceeding, the Team should be familiar with the PDMSG and project specific information. Each Team Member should spend time going through the PDM Attribute Comparison Spreadsheet to gain an understanding on how project attributes are affected by each PDM. Appendix B gives an overview of the pre-work and the steps needed to identify goals and constraints. Appendix E explains how to complete the Selection Matrix Workshop including the additional pre-work. The step by step instructions for filling out the Selection Matrix are provided in Appendix D. Section 6 of Appendix D includes an example project delivery description worksheet and filled out Selection Matrix for Final PDM.

c. The Workshop Leader should:

- Provide a package of information on the Project and PDMSG for the participants prior to Pre-Work Meeting(s).
- Schedule the Pre-Work Meeting(s) so participants have enough time to review the information package at least one week before the Workshop.

The Workshop leader should provide a project specific information package to the participants for their review prior to pre-work meetings. The package is intended to provide all participants a fundamental understanding of the project that needs to be considered during the Workshop.

It's important that the participants have appropriate time to review the project information. The Workshop Leader should schedule the pre-work meetings so that there is plenty of time for the participants and the results of the pre-work can be documented and provided to the Workshop Facilitator.

d. Before the PDMSG Selection Workshop, the Workshop Leader shall schedule a Pre-Work Meeting with Participants to:

- Review the Probable PDM determination documentation and update information.
- Validate or Update Project Goals.
- Re-Prioritize Project Goals.
- Identify Constraints.
- Relate Project Goals to Project Development Goals.
- Review the current Risk Analysis.

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In the pre-work meetings, the participants will work with the Leader to validate or update the commitments, limitations, decisions, assumptions and Project Goals, based on those used in the Probable PDM determination.

Next the Goal priorities will be validated, updated or added, as needed. Constraints will also be reassessed.

Using the updated Goals and the Probable PDM Matrix, the participants will start determining the Project Delivery Goals by validating, updating, adding or deleting Goals on the Matrix. The Project Delivery Goals will be finalized in the Workshop.

The team will revise or update the project information summarized on the Project Delivery Description Worksheet, provided in Appendix A, or a similar document. If changes are substantial, the Workshop leader may create a new Project Delivery Description Worksheet.

In preparation for the Workshop, the Workshop Leader should update the Matrix as much as possible based on the pre-work information that is developed.

The Workshop Leader should send copies of the updated matrix, Project Delivery Description Worksheet and current risk analysis to the participants so they can review the updated information before the Workshop.

Updates to the information package may include revising or updating the Project commitments, decisions and assumptions with changes since the determination of the Probable PDM.

Project Commitments: Know commitments to the project that may affect project scope, risks, budget or schedule.

Project Decisions: Decisions that cannot be changed due to funding source, project approval, legislative mandate or other sources that may affect project scope, risks, budget or schedule.

Project Assumptions: A deduction based on incomplete project information that may affect project scope, risks, budget or schedule if incorrect.

The Workshop Leader shall review all of the project commitments, decisions and assumptions provided in the backup of the Probable PDM determination of the Project

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and revise and update the assumptions based on current project information and provide this in the information package to the participants. These will be reviewed in the pre-work meetings and modified if needed with the participants' input.

Project commitments, decisions and assumptions will be clearly documented to provide a transparent backup with a clear connection between the project information and assumptions, and the completed Matrix and justifications.

e. Project Goals

Project Goals are goals that are important to be achieved for the project to be successful. These Goals are typically high level and may be somewhat general. In the pre-work meetings, participants will verify or update the goals identified in the Probable PDM determination, and add any new goals identified for the project.

- What additional Project Goals (if any) are needed on the Project Delivery Description Worksheet?
- What goals would contribute to project success?

f. Prioritizing Goals

Once the Project Goals have been validated or changed, participants will prioritize the updated Project Goals in the pre-work meeting using this process provided in Appendix B – Pre-work. After prioritizing, the Project Goals will be separated into primary and secondary.

- Use scores from 1 to 10, with 1 as the lowest priority and 10 as the highest, to prioritize the Project Goals.
- Pick out the Goal considered highest and assign it a 10.
- Validate, revise or evaluate each Goal priority by comparing it to the highest priority Goal.
- Continue until all Goals are prioritized.
- Prioritizing in this way can be used as the “weights” in the Matrix that show the relative importance of each Goal.

g. Project Delivery Goals - Project Delivery Goals are goals related to the characteristics of the PDMs. In many cases, Project Goals may be identical with or very similar to the

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generic Project Delivery Goals listed in the Selection Matrix or it may have a related goal determined by the Project Goal specifics, causes or risks. Project Delivery Goals are a refinement of the Project Goals and are used to evaluate the ability of the PDMs to meet the Project Goals based on the characteristics of the PDMs. Project Delivery Goals are goals that are affected by the PDM.

The project may have a Goal or Goals that require a new Project Delivery Goal to be developed and rated for the matrix, or a significant modification to a generic Goal provided in the Matrix.

The Workshop Leader will have the participants validate and update the Project Delivery Goals that are easily determined in preparation for the workshop. Project Delivery Goals will be reviewed and finalized in the Workshop.

- h. Some Goals may be considered neutral. A Neutral Goal is a Project Goal that has the same rating for each proposed PDM in the Selection Matrix. These would be goals that have the same relative ability to be achieved, regardless of the PDM. The matrix has several goals in the cost/funding category that typically will have the same rating, regardless of the PDM.

In the Pre-work meeting, the participants will evaluate and discard neutral goals where easily determined in preparation for the Workshop.

- i. Project Constraints - Constraints differ from Project Goals in that they MUST be accomplished for project success.
 - Evaluate the Highest Priority Project Goals (“10’s”) to determine if any are constraints.
 - Project Commitments and Decisions may create “Constraints”.
 - Constraints are not scored, they are Pass/Fail when evaluation the optimal PDM for the Project.
 - Constraints are rare in this process.

In the pre-work meetings, participants will attempt to validate any constraint from the Probable PDM determination or remove it and evaluate each of the high priority goals to see if any are a constraint.

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It is possible to have a constraint that is “neutral”, or can be achieved regardless of the PDM. In Appendix D Section 6 – Example Selection Matrix for Determining Final PDM, the constraint “Environmental Area A may not be impacted” is achievable by any of the three PDM’s and is therefore not included as a constraint in this example as noted.

Constraints tend to be rare in the PDMSG process. Avoid the tendency to make every high priority goal a Constraint. If uncertain, leave it as a high priority goal. Possible constraints will be reviewed in the Workshop with the assistance of the facilitator.

- j. Project Risks – Validate or Update a Qualitative Risk Analysis or if you have developed a more detailed Risk Analysis, it may be used for the Workshop as long as it’s current. Preliminary Risks should be identified in the Project Summary Package and may be further developed as part of the PMP. Utilize the resources on the WSDOT Risk Assessment webpage <http://www.wsdot.wa.gov/Projects/ProjectMgmt/RiskAssessment/> and/or Appendix A.6- Typical Transportation Project Risks List, General Project Risks Matrix;
- k. Project Delivery Description Worksheet - The Workshop Leader will incorporate all of the additional information developed in the pre-work meetings into the information package and send it to the participants and the Facilitator and develop an agenda with the Facilitator for the Workshop. Example documents, and lists for Workshop logistics are included in Part 2 – Workshop Logistics.

II. Selection Matrix Workshop

Using a Facilitator, the Team will:

- Finalize the Selection Matrix
- Score the Project Delivery Goals
- Identify the optimal PDM
- Document the Process

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In summary, the goal of the Workshop is to determine the Final PDM. The Facilitator will assist the group in finalizing the Project Delivery Goals for the Matrix using the pre-work information, score the goals with respect to the PDMs, and determine the optimal PDM.

- a. Final PDM Determination Selection Matrix - The Participants shall identify Project Delivery Goals in the matrix.

- Eliminate provided Goals that do not apply to the project, secondary, or neutral.
- Clarify the language of the provided Project Delivery Goals that apply
- Add Project Delivery Goals, if needed

The Facilitator will assist the group in finalizing the Project Delivery Goals for the Matrix. As a group, review the pre-work and validate the proposed Project Delivery Goals that are part of the Probable PDM Selection Matrix and confirm any deletions. Verify that any generic Project Delivery Goals added back into the Matrix in the pre-work. If this was not covered in the pre-work, check all of the crossed out generic Goals on the Matrix to confirm that they are not valid Goals.

Verify the language of any modified Project Delivery Goals. If this was not done in the pre-work, clarify the language of any provided Goals to be specific to your project.

Verify or add any new Project Delivery Goals that are needed.

Some methods for gaining group consensus through these steps are described in Part 2 – Workshop Logistics.

Typically, the team will have 4 to 6 Project Delivery Goals identified on the Matrix.

If the group is not able to determine a Final PDM using the Primary Goals, the Workshop Leader may decide to come back to this step and add the Secondary Goals to the Matrix with the assistance of the Facilitator.

- b. Project Constraints - Identify Project Constraints, if any, and evaluate possible methods as pass/fail. Cross out columns for PDM's that fail Constraints, and do not consider further

Review any constraints identified in the Pre-work. If this was not completed in the Pre-work, evaluate the highest weight Project Delivery Goals or "10's" to determine if any are actually Constraints.

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The Facilitator will lead the group through the process to validate, identify and determine if constraints are neutral. A Constraint not impacted by the PDM will be neutral, and may be eliminated and noted in the backup. If the group is unsure if a constraint is neutral, the facilitator will go through the process. If a Constraint cannot be met by one or more of the PDMs, then these columns will be crossed out and will not need to be considered in the process.

Constraints are rare in the PDMSG process, but they can occur so do not skip this step.

c. Weigh Project Delivery Goals

- Relative importance to a successful project.
- Use established weights or priorities, 10 (highest) – 1 (lowest), for an initial Weight
- Select the Goal that is most important and make the weight a “10”
- Compare each Goal to the most important Goal and assign it a Weight, either validating or updating any existing Weights.

Once Project Delivery Goals have been identified in the Matrix, Determine the weight of each Goal.

Although Weights may exist for most of the Project Delivery Goals from the Probable PDM determination Matrix, the group will need to validate the relative importance of the Goals to each other.

Starting with the Goal the group considers most important, make the weight a “10”.

Validate or revise the weights for each Project Delivery Goals remaining by comparing their relative importance to the most important Goal.

d. Create or adjust Ratings - Rate each PDM's relative ability to achieve the Project Delivery Goal, with 10 as the highest and 1 as the lowest.

- Review and adjust the rating for provided Project Delivery Goals or Goals from the Probable PDM Selection Matrix.
- Develop ratings for PDM's relating to new or revised Project Delivery Goals.

In the next step, the participants, led by the facilitator, will rate each of the Project Delivery Methods' relative ability to achieve each Goal, using 10 as the highest and 1 as the lowest rating. This is not the same as the “weights”.

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Weight is the relative importance of a Goal to project success. PDM ratings reflect the relative ability of the PDM to achieve the Goal.

As a refresher, the Facilitator may use the PDM Attribute Comparison Spreadsheet in Appendix A to review the pros and cons of the three project delivery methods as they relate each Goal. This will assist the participants in evaluating the relative ability of each PDM to achieving the Goal.

e. Scoring

- Score each PDM by multiplying each Goal Weight by PDM Rating.
- Add up the score in each Column.

Determine the PDM scores by multiplying the Goal Weights by the PDM Ratings and total up each Column. The highest score PDM will likely be the Final PDM for your project.

To see how a Probable PDM Selection Matrix is marked up to determine the Final PDM, refer to the example Matrix provided in Appendix D, Section 6.

If the completed Matrix indicates there is a clear choice of Final PDM, then perform an initial risk assessment for the selected PDM. If the highest scored PDM has unacceptable risks, the reject that PDM and evaluate the next highest scored PDM.

If there is not a clear choice of Final PDM, then perform an initial risk assessment on all remaining Project Delivery Methods.

- ### f. Risk Assessment - Utilizing the updated Qualitative Risk Analysis, or other current Risk Analysis developed in the PMP, evaluate the Project risks assuming the highest score PDM selected for the project, indicating the results as an additional note in the analysis. Also be sure that there are no additional risks that are unacceptable due to the selected Final PDM. If there are none, you have determined the Final PDM. See Appendix D, Section 3 for an example of a qualitative risk analysis with annotations in red.

If the highest scored PDM has unacceptable risks, document the risks and then reject that PDM and evaluate the next highest scored PDM.

If there is not a clear choice of Final PDM, then evaluate each PDM utilizing your Risk Assessment. You may also go back and add Secondary Goals to your Matrix to narrow your focus in choosing the Final PDM.

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If the previous steps do not result in a clear determination of the Final PDM then perform a more rigorous evaluation of all goals and risks against the three potential methods of delivery (DBB, DB and GCCM).

- Are Project Goals clearly defined and weighed appropriately?
 - Are all risks identified?
 - Are all Constraints identified?
- g. Final PDM Approval Process - If the Project contract cost is \$100 Million or more; then
- The Regional Administrator Approves the Final PDM and submits it to HQ for endorsement; and
 - The Assistant State Design Engineer and Assistant State Construction Engineer endorse the Final PDM. If they do not endorse the Final PDM, the Regional Administrator will provide the additional justification and modifications as necessary to gain the ASCE and ASDE endorsement.

For most projects utilizing the Selection Matrix Workshop the RA will approve the Final PDM with endorsements from the ASCE and ASDE. The participation of the ASCE and ASDE in the Selection Matrix Workshop promotes support of the Final PDM determination and insures that no issues should occur with their endorsement.

If an exception to the guidance is requested for the Final PDM or the original Final PDM is changed after 30% design; then

- The Regional Administrator endorses the Final PDM and recommends approval to HQ;
- The Assistant State Design Engineer and Assistant State Construction Engineer review and endorse the Final PDM; and
- The Chief Engineer reviews and approves the Final PDM. (delegated to the Deputy Chief Engineer in the 10/28/2015 PDMSG memo from the Chief Engineer)

Coordinate with your ASCE and ASDE as early as possible if you will be requesting an exception to insure that they are familiar with the justification. This will allow you to answer questions and resolve any issues they may have in advance of the request for their endorsement.

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- h. Basis of Design (BOD) - The Project Engineer will include the Final PDM in the Basis of Design, or BOD. If the current form for approval of the BOD does not yet have a fill in area for the approved Final PDM, add this information to the bottom of the form and attach a copy of the Selection Matrix.

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Part 2 – Selection Matrix Workshop Logistics

The following section has example documents and lists of resources to facilitate setting up a Selection Matrix Workshop. It also has some methods for gaining consensus within a group during a workshop.

This are provided for the convenience of the Workshop Leader and Facilitator and may be used at their option.

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Sample AGENDA

Meeting: PDMSG Selection Matrix Work Shop

Date:

Time:

Location:

Time	Topic	Who
8:00AM	Safety and Sign-In a. Safety b. Facilities c. Participant introduction and sign-in	Facilitator/Workshop Leader
8:15AM	Introduction to Workshop	Workshop Leader/Leadership
8:30AM	Background a. Workshop Ground Rules b. Roles and Responsibilities of Participants and Facilitator c. Overview of Process and Agenda	Facilitator
9:00AM	<i>Name of Project</i> a. Review Project Information b. Assumptions/limitations/Decisions c. Review and Modify Goals (if needed)	Project Engineer/Workshop Leader/Facilitator
10:00AM	BREAK – 15 minutes	
10:15AM	d. Identify Constraints e. Identify Delivery Goals/Constraints f. Prioritize Delivery Goals	Facilitator/Participants
12:00PM	LUNCH BREAK – 30 minutes	
12:30PM	g. Fill in the Matrix during the break h. Adjust/Develop Ratings i. Adjust/Develop Weights	Facilitator/Participants
2:00PM	BREAK – 15 minutes	
2:15PM	j. Score Matrix k. Risk Analysis l. Finalize and document	Facilitator/Participants
3:30PM	Action Items, Questions and Follow-up	Facilitator/Workshop Leader

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4:00PM	Adjourned	
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Resource Checklist for Selection Matrix Workshop

The following items are needed for the workshop:

Supplies

- 2 flip charts (self-sticking tops would be best) with easels (plus tape if not self-sticking)
- Markers
- 4 to 5 post-it pads 3"x3" split up so all of the participants have at least 20 post-its
- 2 small pads (about 1" x 1") of brightly colored (florescent) post-its or self-adhesive colored rounds, enough so each participant has at least 3 or 4
- A pointer might be helpful – although not critical
- A copy of your emergency evacuation plan for the safety briefing at the beginning of the meeting
- If you have a plotter, large printouts of some of the pre-work lists (goals, risks, assumptions, etc.) may be helpful for reference by the group during the process.

Project Information

- Facilitator will need an electronic copy of the project info several days before the Workshop.
- Provide a notebook for each participant with Project information, PDMSG, PDMSG Appendices B, D and E and blank Selection Matrix Forms for the pre-work meetings/workshop.

Meeting Room

- Plenty of room for the number of participants
- Projector and screen with a clear view for all of the participants
- laptop
- Room for two easels and flip charts
- White board(s) or at least a blank wall

Staff Support

- A note taker is important – justification of the process must be documented as the workshop progresses.
- A timekeeper/computer operator to put the documents on the screen as needed and track time (note taker will be too busy for this).

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Simple Methods for Gaining Consensus

There are several simple methods to gain consensus during the process briefly described here. The Workshop Facilitator will already be aware of these or have other methods they may prefer. These may also be used by the Workshop Leader for the pre-work meetings if a facilitator is not used.

Brainstorming

Flip Chart – Brainstorm ideas utilizing the flip chart, documenting suggestions as you go. This may be used for expanding on Goals or risks.

Post-it notes on wall or whiteboard - give participants 5 to 10 minutes, without speaking, to write out all of the areas of concern or goals for success for the project on Post-its and stick on a wall or whiteboard. Once a Post-it is on the wall, participants can move and group statements that relate, again without speaking, moving each other's Post-it's until the process is done or time runs out.

The facilitator will review these with the group and create a statement that covers each group of Post-its. Each statement will be considered to see if it should be a goal for the project. This is most likely to be used in the pre-work to develop project goals.

Prioritizing

Each participant will have three bright colored post-its or round sticker and will place one on each of the top three goals they consider most important. If project goals were developed prior to the meeting but not prioritized, or need additional prioritization, this will quickly identify the most critical goals for the project. Use Goals Brainstormed on the flipchart, written on a whiteboard, printed out as poster size in advance or projected on a screen.

Project the Selection Matrix on the screen and add notations with Post-its on Weights and Ratings determined by the participants. Add these to the matrix during a break.

Use a show of hands once the weight or rating is narrowed down to finalize it. Ask how many think the rating is higher or lower to narrow it down. Allow discussion on why some think it should be higher, etc. but keep the process moving.

End of Appendix E