

Geometric Layouts

Contact

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[#DOT_Geometric_Design_Support](#) (For internal MnDOT use only)

Purpose

The Staff Approved Layout serves as documentation that the preferred alternative for a project has been selected and approved, and that the final design phase can begin. The Staff Approved Layout is the Final Layout (MINN. STAT. 161.162, Subd. 2), and basis for final design.

Layout Requirement

A Staff Approved Layout is necessary for any project that meets the Level 1 criteria listed below or that requires [Municipal Consent](#) (alters access, change in capacity or permanent ROW acquisition). All Level 1 Layouts require review by the State Geometrics Engineer and approval by the State Design Engineer.

Level 1 Criteria

A Level 1 Layout is required for projects meeting any of the following criteria:

- Any geometric changes to an interchange or connected ramps (excluding minor profile changes related to preservation work)
- New horizontal alignment on MnDOT roadway
- Changes to vertical alignments not related to preservation work
- Reconstruction in urban core/ urban commercial areas (i.e. small town main street)
- Rest area or weigh station work impacting acceleration/deceleration length or exit/entry noses
- Alternative intersections, including:
 - Roundabout
 - Diverging Diamond Interchange ([DDI](#))
 - Continuous Green-T ([CGT](#))
 - Restricted Crossing U-Turns ([RCUT](#))
 - Single-Point Urban Interchange (SPUI)

In cases where a large preservation-type project has a small area that qualifies for Level 1, limit the layout submitted to the area containing the Level1 work.

Level 2 & 3 Criteria

Level 2 and 3 Layout approvals are an internal MnDOT process requirement. They serve as a “*milestone product of reference*” for final design and as a companion product to the project Design Memorandum. These layouts are reviewed and approved at the District level and may serve as the Final Layout for Municipal Consent and other District needs. GDSU is available to provide input or assistance with Level 2 and Level 3 Layouts as requested by District staff. It is MnDOT practice to create Level 2 and 3 Layouts and obtain staff approval for:

- Documentation of approval of the staff approved alternative
- Internal project development processes (coordination with all functional units)
- Public engagement
- Communication with external partners
- Cooperative Agreements

Level 1 Layout Process

Early Coordination (Over-the-Shoulder Review)

GDSU is available to provide assistance during early project alternative analysis. This can include idea/concept development, drafting of complicated elements, design standards guidance, and review of preliminary designs. Provide concept drawings, details, and supporting information sufficient to develop acceptance of the overall concept. Designers are encouraged to interact with GDSU during this phase, regardless of layout level. GDSU can also assist in coordinating with the [FHWA](#).

Preliminary Review and Comment (P6 Task LAY1045, See Appendix A for task description, durations, and owners.)

Once a preferred alternative is chosen, a layout is created that provides all geometric plan and profile information necessary for review, and conforms to [MnDOT CADD Standards](#) (see [Layout Content Review Form](#) and [Creating a Layout](#) for detailed instructions).

All unique or potentially contentious design elements should be discussed and agreed upon at this point so the formal review can focus on conformance to design guidance, standards, and quality of design.

Districts should submit **unsigned** layouts to GDSU for Preliminary Review and Comment, with the following documentation:

- Layout submittal form: [Submittal for Review Memo](#)
- A completed [Layout Content Review Form](#) (Layout Checklist)
- A Preliminary Design Memo (**P6 Task DME 1010, See Appendix A for task description, durations, and owners.**)
- Any additional documentation to describe the project and assist in the review (e.g. ICE Report, Scoping Report, or HSM analysis)

Fifteen (15) working days are scheduled for this task. GDSU strives to reduce this review and comment period when workload allows. Additional review time may be necessary for projects that are large and complex or projects containing roundabouts.

Formal Review and Comment (P6 Task LAY1060, See Appendix A for task description, durations, and owners.)

Districts should submit **unsigned** layouts to GDSU for Formal Review and Comment, with the following documentation:

- Layout submittal memo: [Submittal for Review Memo](#)
- An updated Design Memo
- District Responses to Preliminary Comments (comment resolution)
- Any additional project information documenting design decisions made in the district.

GDSU strives to provide a formal comment letter within 10 working days.

Comment Resolution

A written response to all GDSU comments must be provided by District staff and a consensus must be reached between the project team and GDSU. GDSU will either accept the District's response and request that a signed layout be submitted for approval, or begin a resolution process with the Project Manager/Team. GDSU's goal is to resolve comments in a manner that is appropriate and sensitive to the project schedule and provides continuity to project decisions and agreements. This can be done in email, letters, or meetings, based on the complexity and scope of the issue.

Layout Approval (P6 Task LAY1080, See Appendix A for task description, durations, and owners.)

Once comments are resolved the layout may be submitted for approval with:

- Layout submittal form: [Submittal for Approval Memo](#)
- All District signatures
- A Final Design Memo (**P6 Task DME1030, See Appendix A for task description, durations, and owners.**)

The layout is then reviewed for compliance with agreed upon comments and presented to the State Geometrics Engineer for review and the State Design Engineer for approval.

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This process is normally completed within 5 working days and the layout is returned to the Project Manager, along with an approval letter. When the approval letter identifies required changes, they must be incorporated and included on the Distribution Copy.

Layout Changes after Approval

Project Managers are responsible for recognizing design changes that impact the intent of the design and that require updates to the Staff Approved Layout. These changes require agreement by GDSU. The agreed upon changes can be added to the Staff Approved Layout and all appropriate groups can be notified by reissuing the Distribution Copy.

Study Layout

If a project does not have a programmed letting date or isn't fully funded in the current 4-yr State Transportation Improvement Program (STIP), the layout should be submitted to GDSU as a **Study Layout** for review and approval. Staff Approved **Study Layouts** have a maximum shelf life of 5 years, are useful for creating District "Shelf Projects" and for projects initiated by our local partners when they don't have complete funding and need a Staff Approved Layout for grant applications, city council meetings, county board meetings, etc..

When the project is programmed and/or fully funded, Project Managers should contact GDSU to discuss the revised approval schedule. GDSU staff will walk them through the process for resubmitting the layout to us for a brief targeted review to verify none of our standards and/or guidance have been revised since the **Study Layout** was approved. When we confirm that all layout elements are in conformance with current guidance/standards we will request that the **Study Layout** block & signature block be removed, replaced with updated Layout & signature blocks, routed for District signatures, and sent to CO for final signatures and approval.

GDSU Distribution of Staff Approved Level 1 Layout

- On the Title Block: GDSU staff will mark the staff approval date and color the rectangle red.
- This template provides a list of all offices requiring notification of the Staff Approved Layout and their preferred method of receiving the layout: [Distribution of Approved Layout](#)

Appendix A

Level 1 Layout P6 Activities

Activity	Description	Duration	Owner	Predecessor	Successor
LAY1040	Prepare Preliminary Geometric Layout & Profile	20	District PM	PMM1000	LAY1045
LAY1045	Conduct GDSU Review of Preliminary Layout	15	GDSU	LAY1040	LAY1050
LAY1050	Prepare Final Geometric Layout & Profile	10	District PM	LAY1045	LAY1060
LAY1060	Conduct GDSU Review of Final Layout & Profile	10	GDSU	LAY1050	LAY1075
LAY1075	Revise and Sign Geometric Layout by District	20	District PM	LAY1060	LAY1080
LAY1080	State Design Engineer Approve Geometric Layout	5	GDSU	LAY1075	

Design Exception P6 Activities

Activity	Description	Duration	Owner	Predecessor	Successor
DME1000	Prepare Preliminary Design Memo in District	20	District PM	PMM1000	DME1010 LAY1040
DME1010	Conduct GDSU Review of Preliminary Design Memo	15	GDSU	DME1000 LAY1040	DME1020 LAY1045 LAY1050
DME1020	Revise and Sign Design Memo by District	20	District PM	DME1010 LAY1045	DME1030
DME1030	Approval of Formal Design Exception by State Design Engineer	5	GDSU	DME1020	LAY1080