



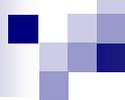
Design and Plan Reviews

Iowa DOT Lettings

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Local Systems Bureau

Iowa Department of Transportation



Project Development Take Aways

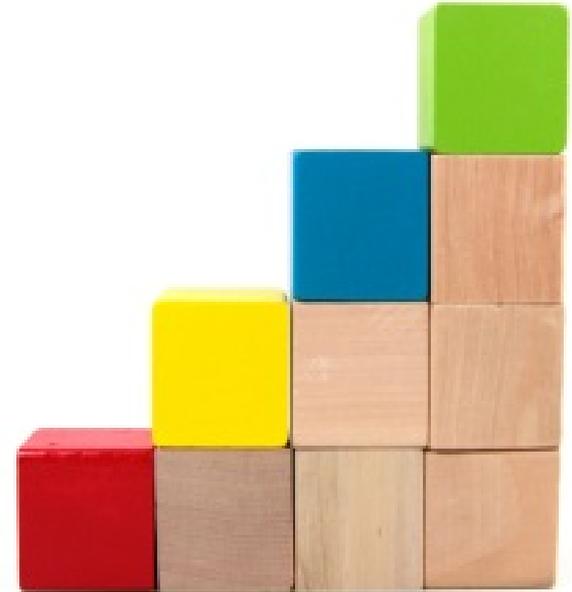
- Communication – call, email, talk to us!
- Use TPMS for communication, submittals
- Tag Joe and Christy in all correspondence

Project Development Take Aways

- Instructional Memorandums to Local Public Agencies (I.M.s)
- Read/understand/use the I.M. Checklists in preparing your submittals!
- Use I.M. 3.010 for submittal dates – call us if you cannot make a deadline.

4 Key Stages in Project Development

- ✓ Concept Statement
- ✓ Preliminary plans
- ✓ Check plans
- ✓ Final plans and contract items



Concept Statement

- First or Revised concept?
- STIP Year
- Project location/STIP description
- Letting date
- Project costs
- Easements
- Borrow



Concept Statement

- Structures > 50 years old?
- Archaeological Survey



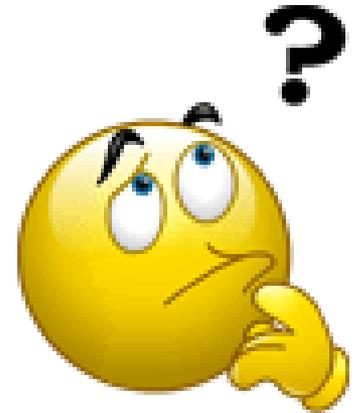
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Concept Statement



- USACE 404 Permit (bridge projects- I.M. 4.130)
- Environmental Data Sheet (park land)
- Determination of Effect (DOE) form – I.M. 4.110
- Railroads – I.M.s 3.670 and 3.680
- Project design elements – I.M. 3.210

Design Guidelines

New Rural Construction or Complete Reconstruction

- Design Aids Tables (Aids) – I.M. 3.210
 - Use to determine initial design parameters
 - Values below those in the Aids table will be considered if explanation is provided

- AASHTO Guidelines Tables (Guides)- I.M. 3.210
 - Use if Aids Table design values cannot be met
 - Design exception (I.M. 3.260) is required if Guidelines Table values cannot be met

Design Guidelines

New Urban Construction or Complete Reconstruction

- Statewide Urban Design and Specifications (SUDAS) Chapter 5 Roadway Design
 - Section 5C-1 Geometric Design Tables provides design element values based on classification, land use, and design speed
 - Use “Preferred” tables to determine initial design values; “Acceptable” tables may be used if explanation is provided
 - Design exception (I.M. 3.260) is needed if “Acceptable” values cannot be met

Design Guidelines

Resurfacing, Restoration, or Rehabilitation (3R) Projects

- 3R Tables for Rural Collectors and Urban Arterials and Collectors – I.M. 3.220
 - Rural Table design values based on project impact and design volume ADT
 - Urban Table design values based on roadway classification and number of lanes
 - 7 Safety Considerations must be addressed for all 3R projects (including urban projects)
 - Design exception is needed for values below those in the 3R table

Design Guidelines

All Highway Projects

■ Additional Information

I.M. 3.230 Traffic Barriers (Guardrail & Bridge Rail)

- Provides guidelines to determine the need for guardrail at roadway bridges and culverts and upgrading bridge barrier rails.
- For Federal-aid projects, the FHWA will participate in guardrail, including all 4 corners of a bridge, if desired by the LPA.
- Guardrail should be upgraded when bridge barrier rail is upgraded.

Design Guidelines

All Highway Projects

■ Additional Information

I.M. 3.230 Traffic Barriers (Guardrail & Bridge Rail)

□ Guardrail should be installed/upgraded:

- 4 corners – New bridge construction/rehabilitation, roadway construction on FM system or collector roads
- Approach corner – both directions – Federal aid projects on local roads
- Culverts with openings in the clear zone, greater than 6' span

Design Guidelines

All Highway Projects

■ Additional Information (cont'd)

I.M. 3.230 Traffic Barriers (Guardrail & Bridge Rail)

□ Bridge Barrier Rail - should be installed/upgraded:

- Iowa DOT MASH TL-4 - New bridge construction > 400 vpd
- At least MASH TL-1 crashworthy < 400 vpd

Certain conditions may apply – review I.M. 3.230 to confirm

Design Guidelines

All Highway Projects

- Additional Information (cont'd)
 - I.M. 3.240 Clear Zone Guidelines provides values for rural roadways based on design speed, traffic volume and sideslopes
 - Clear Zone Tables in SUDAS Chapter 5, Section 5C-1 provide preferred / acceptable values for urban roadways based on design speed, traffic volume, and sideslopes

Design Guidelines

Bicycle and Pedestrian Facilities

- AASHTO Guide for the Design of Bicycle Facilities
 - Chapter 12 in both DOT Design Manual and SUDAS Urban Design Standards, contain the same guidance
 - Plans should include signing and pavement markings per MUTCD Part 9 “Traffic Control for Bicycle Facilities”
 - Be aware of ADA requirements affecting shared use facilities

- Accessibility Exceptions Certification
 - Required if the AASHTO design values are not met
 - Certification Form 517118 must be prepared and submitted
 - Include supporting documentation as appropriate

Design Exception Process – I.M. 3.260

- Request as soon as the need is discovered
 1. Determine the type of improvement
 2. Does improvement meet current design guidelines?
 3. Analyze crash data
 - Use crash analysis tools provided by the Traffic and Safety Bureau
<https://iowadot.gov/crashanalysis/cmatmain.aspx>
 4. Calculate additional cost needed to bring project up to minimum recommended design values
 5. I.M. 3.250 - Calculate benefit / cost (B/C) ratio
 - B/C under 0.8 = improvement not required
 - B/C = 0.8 to 1.2 = further review required
 - B/C over 1.2 = improvement should be made

Design Exception Process

6. Send request to Project Development:
 - Written justification
 - Proposed mitigation
 - B/C calculations
 - Crash data and other supporting documentation

- For more information:
 - Section 5.4 of the Federal-aid Project Development Guide
 - I.M. 3.260 Design Exception Process
 - I.M. 3.250 Economic Analysis (Benefit-to-Cost Ratio)

Preliminary Plans

■ Purpose

- Present proposed design
- Provide information for possible further environmental review
- Indicate anticipated right-of-way needs

■ Guidelines

- Required for Federal-aid projects and certain State-aid projects
- Not required for local, Farm-to-Market, SWAP projects
- If not required, may still be submitted and reviewed upon request

Preliminary Plans

- Preparation – All Projects
 - Can review without NEPA/SHPO clearances
 - Apply I.M. 3.400 Preliminary Plans
 - Use I.M. 3.400 Attachment B (Preliminary Plan Checklist)
 - Iowa DOT plan format is recommended
 - Iowa DOT standard road, bridge, and culvert plans may be referenced; modified standards must be included in the plan set
 - Use of Iowa DOT design details (typical sections, tabulations, etc.) is strongly recommended

Preliminary Plans

I.M. 3.400 Attachment B (checklist) - helps address key items, including:

- Project Limits: STIP description and location, NEPA clearance, etc.
- Letting date: Programming “window of confusion”
- Typical Sections: Design elements, clear zone, etc.
- Right of Way: Existing/proposed, TCE
- Designer’s certification block
- Sheet Index



Preliminary Plans

I.M. 3.400 Attachment B checklist items (cont'd)

- Vertical profile data
- Horizontal alignment data
- Sidewalk/trail access
- Utilities



Preliminary Plans

- Preparation – Structural Projects

- Also apply I.M. 3.500 Bridge or Culvert Plans

- Design Guidelines

- Design year flood
 - Clearances for bridges and roadways above flood elevations

- Hydraulic Review Criteria

- Flood Insurance Study area
 - Reduced structure opening
 - Proposed culvert replacing an existing bridge

Preliminary Plans

■ Submittal

- All projects submit per I.M. 3.400 Preliminary Plans:
 - Transmittal letter
 - Preliminary plans

- Structure projects requiring hydraulic review per I.M. 3.500 Bridge or Culvert Plans:
 - Hydraulic calculations
 - Form 517002 – Hydraulic Design for Bridges

Preliminary Plans

- Review – DOT
 - Project Development Local Systems staff – compare to STIP and Concept Statement
 - Bridges and Structures – hydraulic review
 - Location and Environment – further environmental review
 - Traffic and Safety, Design, District design/permit staff – primary system impacts

Preliminary Plans

- Review – Other Agencies, as needed
 - Iowa Department of Natural Resources (DNR)
 - State Historical Preservation Office (SHPO)
 - US Army Corps of Engineers (COE)
 - Private utilities
 - Railroads

Check Plans

■ Purpose

- Obtain an acceptable set of plans for letting through the Iowa DOT
- Check Plans should be **100% complete**

■ Guidelines

- Both check and final plans are required for all projects let through the DOT
- DOT specifications must be used
 - Limited opportunity for editing
 - Bid items

Check Plans

- Should be **100% COMPLETE** and address all comments from the preliminary plan review.
- Are they **BIDDABLE** and **CONSTRUCTABLE**?
- Cannot review without NEPA/SHPO clearances!!
- **BETTER PLANS = BETTER BIDS**



Check Plans

- Preparation – All Projects

- Apply I.M. 3.700 Check and Final Plans

- Use I.M. 3.700 Attachment B (Check and Final Plan Checklist) in plan development

- DOT plan format

- STIP Description and location

- Letting date

- Federal Aid programming amount

- Current Design Details and Road Standards

- Sheet Index

- Environmental Clearances



Check Plans (Cont'd)

- Preparation – All Projects

- I.M. 3.700 Attachment B items

- Certified plant inspection
 - Bid items: Codes, estimate reference information, method of measurement/basis of payment, etc.
 - Typical sections (existing and proposed)
 - Salvaged items
 - Tabulations
 - Permits: Floodplain, NPDES storm water



Check plans

- Topsoil and NPDES Permits
 - If a general NPDES permit is required, project must provide for at least four inches (4”) of topsoil on “non-surfaced” disturbed areas
 - Individual NPDES permits may have other requirements
 - Default strip and placement thicknesses are included in specs for the available bid items:
 - Strip/Salvage/Spread: common, easily applied
 - Furnish/Spread: contractor-provided
 - Spread: from existing stockpile
 - Review the site - bid items for temporary erosion control

Check Plans (Cont'd)

- Preparation – All Projects
 - I.M. 3.700 Attachment B items
 - Pollution Prevention Plan
 - Pavement removals
 - Existing and proposed right-of-way
 - Vertical profile data
 - Traffic control
 - Utilities
 - Sidewalks



Check plans

- Pedestrian Facilities During Construction
 - Pedestrian traffic must be addressed in the project traffic control plan and/or staging
 - Design activities include:
 - Determine the current level of accessibility
 - Evaluate the project impact on pedestrian facilities
 - Develop pedestrian accommodations to provide the best accessibility practical during all stages of work
 - Consider local input where additional needs should be addressed (transit stops, schools, medical facilities, public facilities, etc.)

Check plans

- Pedestrian Facilities During Construction (cont.)
 - Consider the following options:
 - Keep facility open with “on-site detour”; safety and accessibility must be addressed
 - Close facility and provide “off-site detour” consistent with accessibility present in the route being closed
 - Provide alternate means (e.g. accessible shuttles or other forms of assistance)
 - Close the pedestrian facility
 - Temporary pedestrian facilities must be firm, stable, and slip resistant.
 - For more information, see DOT Design Manual Ch. 12, Section 12A-4

Check plans

- Preparation – Structural Projects
 - Apply I.M. 3.500 Bridge or Culvert Plans
 - Use I.M. 3.500 Attachment A, Bridge or Culvert Supplementary Checklist
 - Standard Design – DOT Bridge/Culvert Standards
 - Non-Standard Design – modified standards or custom details
 - Bridge fund participation limits, shop drawings, etc.
 - Centerline section, situation plan, sounding data, etc.
 - Existing Structure: materials, disposal, etc.

Check Plans

■ Submittal

- All projects - I.M. 3.700 Check and Final Plans
 - Transmittal letter/email
 - Check plans
 - Detailed project cost estimate
- Structure projects –I.M. 3.500 Bridge or Culvert Plans
 - Structural review required if:
 - Structure is on National Highway System (NHS) – structural calculations for in-depth review
 - Non-standard design is used – plans only for cursory review

Check Plans



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■ Review

□ Local Systems Staff

- Preliminary plan comments
- Current bid items
- Acceptable estimate reference information notes
- Date-sensitive details (standards, typicals, etc.)

□ Bridges and Structures

- Structural review, if required

□ Location and Environment

- NEPA/SHPO clearance conditions, if required

□ LPA revises and resubmits plans as necessary

Final Plan Submittal

■ SUBMITTAL ITEMS:

- Final Plan set (fully signed)
- FM Worksheet (if applicable)
- Cost estimate
- Project Development Certification form (signed)
- ACOE permit (bridge projects)
- Cover letter - contract time, tied projects
- Special Provisions (if applicable)
- Public Interest Finding (if applicable)
- Bid Item Application

Final Plan Submittal

- Should be 100% complete and address all comments from check plan review
- What do we check for?
 - Check plan comments
 - Plan quantities = Bid Item Application
 - STIP and CFYP programming
 - HSIP and HBP cost estimates
 - FM worksheet
 - Public Interest Finding



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Final Plan Submittal

- Project Development Certificate (PDC) - required
 - Confirms letting process may begin for project
 - LPA certifies railroad, utility, work on primary roadway, and right of way clearances
 - Right of Way Bureau review may be needed
 - Fully executed PDC must be on file with Contracts before advertising for bids
 - For more information, see I.M. 5.050, Project Development Certification Instructions

Final Plan Submittal

- US Army Corps of Engineers (COE) Permit
- IDNR Floodplain Permit– as needed
 - If COE 404/401 and/or IDNR permit is required, a copy must be on file with DOT for use by bidders
 - Submit with check plans if possible, final plans if necessary; otherwise, PIF is required
- National Pollution Discharge Elimination System (NPDES) Permit – as needed
 - If individual NPDES permit is required, a copy must be on file with DOT for use by bidders
 - Need is determined by Iowa DNR
 - e.g. Outstanding Iowa Waters locations

Final Plan Submittal

- Special Provisions (SP) – as needed
 - Used to modify existing or create new specifications
 - SP number is assigned in Bid Item Application
 - Must address five areas of interest
 - Description of work
 - Material requirements
 - Construction methods/procedures
 - Method of measurement
 - Basis of Payment
 - For more information:

<https://www.iowadot.gov/specifications/requirements/RequirementsforSubmittingSpecialProvisions.pdf>

Final Plan Submittal

- Public Interest Finding (PIF) – as needed
 - Grants an exception for an established policy or rule
 - May only be used for certain conditions
 - Condition may be temporary (e.g. required project clearance is missing) or permanent (e.g. proprietary items are specified)
 - Temporary conditions must be resolved before project will be advertised for letting
 - For more information, see I.M. 5.060 Public Interest Findings

Final Plan Submittal

- Bid Item Application (BIA) File – required
 - Web-based process for submitting bid item data for letting
 - LPAs or their consultants must have an **Enterprise A&A** account using their exact email address used in TPMS
 - BIA file is created on-line and automatically retrieved by the Contracts and Specifications Bureau
 - For more information, I.M. 3.720 Electronic Bid Item Information

Final Plan Submittal

- Railroad Agreement – as needed
 - Railroad agreement is required when work is performed within a railroad's right-of-way
 - Submit when available, with final plans if necessary; otherwise, PIF is required
 - Contracts uses information to assemble railroad data for bidders
 - Railroad insurance and/or flaggers bid items may or may not apply
 - For more information, see I.M. 3.670 Work on Railroad Right-of-Way

Project Turn In/Bid Phase

If all final plan submittal items are deemed acceptable, these materials are submitted to Contracts for the requested Iowa DOT letting.

Bid X Questions

- Answer questions in timely manner
- Reply all to all tagged in the email
- Better information = better bids

Design/Plan Review Take Aways

- Communication – call, email, talk to us!
- Use TPMS for communication, submittals
- Tag Joe and Christy in all correspondence

Design/Plan Review Take Aways

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Questions?



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