CHAPTER 18: GENERAL NOTES and MISCELLANEOUS

Design Guidance & Information

The Design Support Unit recently gave a presentation to the Metro Division titled "Guidance and Information for Designers". As directed by the district it began with general information. Then it covered the two most common areas of confusion for designers…Drainage and Guardrail. The second portion of the presentation covered common errors in the areas of the plan that are rated. Followed by some general areas of misunderstandings.
There were several handouts at the presentation as well…Drainage Checklist, Guardrail Checklist, and Review Checklist. These handouts are the guidance that the Design Support unit gives to its rotating graduate engineers to assist them with what to look for when checking plans. The PowerPoint presentation and three supporting handouts can be found at …
http://ihub/projectdelivery/design/index.html

Tracking changes to Special Provisions

Because of problems in the field of modifications to the Special Provisions by both contractors and field personnel, we will now start identifying those changes in the proposals.

When preparing and submitting draft special provisions please follow the following process:

Start by downloading the most current SP2014.

(A) If you want to use a C.O. SP2014 write-up of an item but WILL NOT be making any changes within the write-up, then do the following:

Show Section Name and number

Example:

S-X (1910) FUEL ESCALATION CLAUSE
SP2014-50

You may either show all of the words or just show the Section Name and Number. When you leave the SP2014-Number intact, this will indicate to the Special Provisions Unit that you have not changed the section and want the most current write-up.

(B) If you want to use a C.O. SP 2014 write-up, but WILL be making changes within the write-up, then do the following prior to sending us your file:

Show Section Name and SP2014 number, followed by "modified".

Example:

S-X (1910) FUEL ESCALATION CLAUSE
SP2014-50 - modified

Show all the words, including your revisions. Make it as easy as possible for the Special Provisions Unit to recognize your changes. You may choose to show your revisions in italics, a different color, or highlight. Or you may use "Track Changes" (Please add a note to the header indicating your chosen method).

If you DO NOT show the sections as "modified", the Special Provision Unit will most likely assume you want the current section from the SP2014. So, you may not get what you want.

How these changes will be shown in the final proposal is still being studied.

Proprietary Items In Plans

As you are aware, proprietary items are those items specified that have less than 3 known manufacturers. Whenever a proprietary item is specified, Mn/DOT is to write a letter to the FHWA (PS&E Projects) or the file (all other projects) stating why it is in the public interest to use that brand name item. It is very difficult for us in the Central Office to know why a proprietary item must be used. We therefore request that when designers specify a proprietary item, they prepare a memo indicating why this product was chosen. Reasons may be to match and existing system or design constraints.

Send the memo to the Special Provisions Engineer as soon as possible. The Special Provisions Engineer will work with the FHWA on the Public Interest Finding (PIF).

Definition of Install

There has been some confusion recently on the definition of "Install". Whenever the word "install" (or variation thereof) is used it implies that the materials are being supplied (or are from salvaged items). If this is the case then using the word "install" by itself is correct.

If however, the materials are not being supplied (or are not from salvaged items) then one of the following words (and/or their variation) should be used…. place, construct, furnish & install.

Incidental Work vs. Included In Work

Because of conditions unique to a project, a pay item may include work that is not described by the standard specifications. Designers must anticipate these conditions and provide for them in the plans with a note. Additional work might be considered included in the cost of an existing pay item and can be provided for with a note if the scope of the work is directly related to an existing pay item, and is short in duration or low in cost.

"Directly related" to an existing pay item generally means either the work is performed on that item or is a direct result of the work on that item.

"Low in cost" frequently is assumed to mean less than $1000.

For example, if the plans require a new sewer pipe to be tied into an existing pipe, the cost of tying in the pipe could be considered incidental

When bidding, a contractor must be made aware of pay items involving incidental work so that the bid price for the item can be adjusted to compensate for the additional cost. Therefore, it is desirable to include all notes for incidental work in the footnotes of the Statement of Estimated Quantities.

Work for which *no direct payment* is to be made is included for payment in one of two ways:

1. If the Method of Measurement or Basis of Payment defined in the Standard Specifications for Construction for the pay item *describes the work as included*, the work *is* included in a specific pay item. Then a note is written as a footnote to the Statement of Estimated Quantities for the pay item that describes the work, so it can be estimated accurately, and uses the word "included or includes." For example, the placement of a 45˚ elbow with the construction of a 18 in. (450 mm) CS Pipe Culvert is included for payment as illustrated by the next Statement of Estimated Quantities and the note provided as a footnote to that tabulation.

STATEMENT OF ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
2104.501	REMOVE PIPE CULVERTS	Lin Ft (m)	432
2104.509	REMOVE PIPE APRONS	EACH	78
2104.509	REMOVE STAIRS	EACH	2
2104.521	SALVAGE SPRINKLER SYSTEM	Lin Ft (m)	325
2104.521	SALVAGE CHAIN LINK FENCE		765
2501.511	18" (450 mm) CS PIPE CULVERT (1)	Lin Ft (m)	256
2503.541	30" (750 mm) RC PIPE SEWER	Lin Ft (m)	13

(1) LENGTH OF PIPE INCLUDES 1 - 45˚ ELBOW

The Method of Measurement of the pipe length defined by the Specifications for the pay item 2501.511 __" (__ mm) CS PIPE CULVERT *includes* the length of the elbow. Therefore, the elbow *is* included in the specific pay item 18" (450 mm) CS PIPE CULVERT," but the contractor needs to know the dimensions of the elbow in order to prepare a bid.

2. If the work *is not described* as included by the Method of Measurement or Basis of Payment defined in the Standard Specifications for a pay item, the work may be *made* incidental. Then a note is written as a footnote to the Statement of Estimated Quantities for the pay item that describes the work, so it can be estimated accurately, *and* uses the words "this shall be considered incidental." Or just "incidental" For example: the removal of a bulkhead from an existing pipe sewer and the connection of a 30 in. (750 mm) RC Pipe sewer to the existing pipe is included for payment by placing a note as a footnote to the statement of Estimated Quantities:

STATEMENT OF ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
2104.501	REMOVE PIPE CULVERTS	Lin Ft (m)	432
2104.509	REMOVE PIPE APRONS	EACH	78
2104.509	REMOVE STAIRS	EACH	2
2104.521	SALVAGE SPRINKLER SYSTEM	Lin Ft (m)	325
2104.521	SALVAGE CHAIN LINK FENCE	Lin Ft (m)	765
2501.511	18" (450 mm) CS PIPE CULVERT (1)	Lin Ft (m)	256
2503.541	30" (750 mm) RC PIPE SEWER (2)	Lin Ft (m)	13

(2) REMOVAL OF INPLACE BULKHEAD AND CONNECTING PIPE TO INPLACE PIPE SHALL BE INCIDENTAL.

The removal of the bulkhead and the connection to the inplace pipe is *not* described in either the Method of Measurement or in the Basis of Payment for the pay item 2503.541 __" (__ mm) RC PIPE SEWER.

Another example of indicating Incidental work this way on the Statement of Estimated Quantities is a small amount of work directly caused by completing other work that is a pay item, such as the replacement of a few trees and shrubs disturbed only by the salvaging of a sprinkler system (a pay item).

STATEMENT OF ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
2104.501	REMOVE PIPE CULVERTS	m (Lin Ft)	432
2104.509	REMOVE PIPE APRONS	EACH	78
2104.509	REMOVE STAIRS	EACH	2
2104.521	SALVAGE SPRINKLER SYSTEM (3)	m (Lin Ft)	325
2104.521	SALVAGE CHAIN LINK FENCE		765
2501.511	450 mm (18") CS PIPE CULVERT (1)	m (Lin Ft)	256
2503.541	750 mm (30") RC PIPE SEWER (2)	m (Lin Ft)	13

(3) AT BRIDGE OFFICE CENTER (13100 JESSICA BLVD.). TREES AND SHRUBS WHICH ARE REMOVED SHALL BE REPLACED WITH EQUAL SIZE AND TYPE. THIS WORK SHALL BE CONSIDERED INCIDENTAL.

Lump Sum Items

The term, "lump sum," when used as a unit of measurement for payment, means complete payment for that item of work *as described by the contract.* A description of the work to be paid for as a “lump sum” is included in the plans so that contractors bidding on the project will know exactly what work and materials are included in the pay item. These “lump sum” items usually include work items that are used on many projects. Either a bill of materials has been developed

for them (such as standardized traffic control or traffic control interconnection systems) or they are routine work items that do not vary significantly from project to project (such as maintenance or restoration of haul roads).

Clear definition in the plan of what is expected in each case contributes to harmony and better results at less cost during construction. More accurate estimates are promoted as well. If the estimated quantity of an item is such that it cannot be determined at the design stage an item and quantity should be set up in the estimate and proposal to establish a contract bid price. However, there is no good substitute for careful research and determination of reasonably accurate quantities. Pursuing this a bit further - occasionally a plan provides for direct payment for certain items yet advises bidders that certain like items of unknown quantity required to be furnished by the contractor as included in one thing or another will not be measured for payment. This can only be disadvantageous to the state. The bidder must again include a sufficient sum somewhere in his proposal to cover the costs of the unknown quantity to protect themself and then still demand direct payment of the engineer. How can direct payment be justified for the known quantity but not for the unknown. Better to provide that the unknown quantities will be paid for at the appropriate contract price. Gives estimators a break, too. The preceding cases are even more confusing when the extent of the unknown quantities is subject to "as direct (or ordered) by the engineer."

Disadvantaged Business Enterprises and Targeted Group Business

All State funded Construction Contracts have Veterans Preference and Veterans Goals.
-For further information regarding these requirements, please contact Mn/DOT's Rights Office.

Unacceptable Plans

There are complaints that some plans are sent in with white out and/or stick up material on the originals. These materials cause problems with our reproduction procedures and plans processing. The use of these materials should not be used on the originals that are sent to the Central Office.

Supplemental Agreements

A review of the recent listings of supplemental agreements reveals that a fair number of them could possibly been avoided if the designers would have given additional consideration of possible field conflicts when the roadway and roadway structures are under construction. It is difficult under the design stage to consider all of the problems that construction may encounter when the designer is under pressure to get the "plan out". However it is also difficult and costly for the construction engineer and contractor to negotiate an agreement to re-design parts of the project when it is under construction. If time permits it would be beneficial if the plan was reviewed by the construction engineer before it is completed.

Examples of some of the problems:

1. Conflicts with utilities - storm sewers intercepting underground utilities. This is a common occurrence.

2. Borrow item for select granular material behind a retaining wall was inadvertently left out.
3. Topsoil borrow item missing. This happens in municipal areas where topsoil is scarce within the project limits.
4. During construction there was unanticipated encounters with building foundations, floors, septic tanks, etc. This usually happens in municipal areas. An item such as excavation special could possible have been considered.
5. There seems to be excessive use of removable tape for traffic control. This material is expensive and the designers should be aware of its utilization.

Addendum Signature Block

A signature block is required on a plan sheet that is added or revised by an addendum. When a new plan sheet is added to the plan by addendum, the sheet shall be numbered with "A", "B", "C" etc. (i.e. Sheet No. 63A of 63). Revised plan sheets: When a plan sheet is deleted and a revised plan sheet substituted by an addendum, the revised sheet shall be numbered with a "R" (i.e. Sheet No. 62R of 62).

Drafting Standards

In order to produce a copy, which when microfilmed, would be at the highest possible clarity and resolution, the designer should keep in mind the following requirements for good reproduction.

1. Uniformity
2. Large open lettering
3. High density of drafted lines
4 Good contrast

A large percentage of our plans do have these qualities, but improvement is needed in the remainder.

Contractors Crossing of Railroads

The following article was written by the Railroad Negotiations Section to provide additional guidance to designers for contractors crossing of railroad tracks.

"The designer should review the need for a contractor to cross the railroad tracks. This information must be passed on to the Railroad Administration Office in order that agreements or other arrangements can be made. Please note that the agreement process can take three to six months. When proper notice is not provided, lettings can be delayed."

When a highway contractor works on railroad property, such as where bridge construction would involve equipment working on or crossing railroad property, the contractor can not trespass on railroad property or any other private property without meeting some special requirements.

It is the designer's responsibility to determine whether or not the contractor will be required to work on railroad property - (which is outside the right-of-way) and to notify the Land

Management and Administration Office of the potential problem so that agreements, if necessary, can be executed prior to bid letting.

Changing Project Scope

Projects are usually reviewed in the preliminary design stage for effects on historical or archaeological properties. If the project design has been modified since that review such that project limits or areas of construction have been expanded, the project should be submitted for re-review. Contact you District Preliminary Design Engineer at least several months in advance of the letting date in order to avoid last minute problems, which could delay the letting.

Municipal Agreements for State-Let Projects

A municipal agreement (or cooperative construction agreement) is prepared in advance of the advertisement for a letting. In order to meet the letting and award date, the agreement submittal must be turned in to the Municipal Agreements Unit preferably 12 to 14 weeks prior to letting, and no later than 9 weeks. This timeline is essential so that the local agency can have sufficient time to approve the agreement at their council or board meeting, and to allow Contract Management and Department of Administration time to approve and execute the agreement prior to the award of the construction contract.

The agreement submittal consists of the estimated quantities and estimate for the local participation, sufficient plan sheets depicting this information; such as layouts, tabs, construction details etc., the plan title sheet, and any correspondence or computations identifying the costs and the maintenance. The agreement may consist of a schedule "I", a lump sum on bids, a lump sum, a composite percentage, or a combination of any of these.

Road Design Plans Final Checklist

The following checklist was created to help designers when they produce their plans to ensure they don't miss anything….

Road Design Plans Final Checklist

ROAD DESIGN
PLANS FINAL CHECKLIST

S.P._____ Date_____

LOCATION_____

PRE-DESIGN REVIEW

___1. Correspondence
___2. Design Study Report
___3. Design Layout
___4. Correspondence
___5. Soils Recommendations
___6. Cooperative Agreements

TITLE SHEET

___1. Beginning and End of Project
___2. Length of Project Based on _____Roadway
___3. Equations
___4. Scales
___5. County, Township and Range
___6. Gravel Pits and Pit Data
___7. Design Speed
___8. Tier Standard
___9. Title Block (Correct Signature)
___10. Spec. Note
___11. Federal Project No.
___12. Work Description
___13. Index
___14. Exceptions
___15. Temporary Connections
___16. North Arrow
___17. State Aid No.
___18. Legislative No.

GENERAL LAYOUT SHEET

___1. Section Corners
___2. Beginning & End of Project & Exceptions
___3. Sheet No., Station to Station
___4. Balance Points
___5. Traffic Counts
___6. Legend
___7. Equations
___8. Typical Sections
___9. Turn Lanes
___10. Earthwork Tabulations
___ 11. Road Designations
___12. Reference Points
___13. North Arrow
___14. Cities and Corporate Limits
___15. Bridge Numbers
___16. Gravel Pits & Borrow Pits
___17. Stockpile Sites
___18. Mitigation Ponds
___19. At Grade Railroad Crossings
___20. Temporary Bypasses
___21. Temporary Connections
____ 22. Beginning & Ending Construction

ESTIMATE SHEET

___1. Item No. Against Computer Printout
___2. Construction Notes for Applicability
___3. Quantities Against Computations, Item Sheets & Plan Sheets
___4. Tabulated Quantities & Plan Sheets
___5. Standard Plates – Nomenclature and Applicability
___6. Plan Quantity Items (P)
___7. Not Plan Quantity Items (X)
___8. Pit Data
___9. _____

Road Design Plans Final Checklist (continued)

TABULATED QUANTITIES (Use on Estimated Sheet – plan must stand on these quantities)

___1. Surfacing Tabulations
___2. Earthwork Tabulations
___3. Clearing & Grubbing
___4. Sodding & Mulching
___5. Miscellaneous Tabulated Quantities
___6. _____

TYPICAL SECTIONS

___1. Check Against Recommendations (Soils, etc.) (Corrected Letter)
___2. Check Notes for Applicability
___3. Ditch Depths and Slopes
___4. Soils Note (1st Type Sec. Sheet)
___5. Compaction Subcut & Subgrade Treatments
___6. Shoulder Typicals
___7. Swamp Treatments
___8. Turn Lanes
___9. Future Lanes
___10. Check for Minor Misc. Typicals
___11. Bituminous Mix Designations

DETAIL SHEETS

___1. Check Pay Items for Appropriate Special Details Needed
___2. Note Incidental Work Which Applies to Special
___3. Make sure latest version of Standard plan sheets
___4. Sign & show Modifications of Modifed Standard plan sheets.

PLAN SHEETS

___1. Topography
___2. Alignment (Plan Sheet or Tabulations)
___3. Begin & End Project
___4. Begin & End Construction
___5. Construction Centerline
___6. Equations
___7. North Arrow
___8. Borrow Pits, Stockpile areas
___9. Right of Way, Land Lines. Easements & "B" Points
___10. Section, Township and Range
___11. Azimuths or Bearings
___12. Drainage Arrows
___13. Temporary Conditions
___14. Ditch Blocks
___15. Culverts & Direction of Flow
___16. Road & Entrance Radii
___17. Curve No.
___18. Utilities
___19. Wetlands (Identify by Type)
___20. Road Designations
___21. Road Intersection Data (Sta. & Coordinates)
___22. Horizontal control Notes (First Plan Sheet)

PUBLIC UTILITIES SHEET

___1. Check Against Roll & Notes
___2. Check Against Plan Sheets
___3. Check Against Cross-Sections
___4. Utility Ownership
___5. Road Tabulations
___6. Level D Note

Road Design Plans Final Checklist (continued)

PROFILE SHEETS

___1. Super Diagram (Non-Standard)
___2. Equations
___3. Check Special Ditches Against
___ a. Plan Sheets
___ b. Profile Sheets
___ c. Cross-Sections
___4. Check Grade Against Cross-Section
___5. Check Subcuts, Swamp Depths Against Cross-Sections
___6. Check Vertical Curves
___7. Line Designation
___8. Vertical Control Note 1st Sheet
___9. Bench Marks
___10. Conventions
___11. Balance Points
___12. Run Profile Grades & Check Gradients
___13. Swamp Excavation Areas, Cu. Yd. & Treatment No._____
___14. Culverts with Inlets and Outlets
___15. Subcuts & Subgrades Treatments with Depths
___16. Road Profiles & Entrances
___17. Profile Grade Top of Whatever
___18. Buried Crossings – Gas, Oil, Elec., Power, Tele., & Toll Cables
___19. Gas Line Crossings
___20. Telephone Toll Cable Crossings

DRAINAGE SHEET (Use on Estimate Sheet – plan must stand on these quantities)

___1. Check Design Computations
___2. Check Drainage Against
___ a. Estimate Sheets
___ b. Plan Sheets
___ c. Profile Sheets
___ d. Cross-Sections
___3. Check Storm Sewer Computations
___4. Check Storm Sewer Against:
___ a. Estimate Sheets
b. Plan Sheets
c. Profile Sheets
d. Cross-Sections
___5. Culvert Treatments
___6. Pipe Sewer Backfill
___7. Casting Assembly Schedule
___8. Flumes
___9. Pipe Tie Note
___10. Type "B" Bedding

CROSS SECTION

___1. Equations
___2. Excav. Computed to This Line
___3. Slopes
___4. Entrances
___5. EXC, EMB, Centerline, Stamping
___6. Stationing on Curves
___7. Right of Way
___8 Earthwork Quant. For Culv., Ditch Blocks & Entrances
___9. Balance & Quant. Between Secvt. SG Exc., Reg. & Gran. Fil
___10. Show Bldgs., Foundation & Drainage Inplace
___11. Utilities
___12. Label Regions, Survey & Const. Centerline – 1st Sheet
___13. Label Natural Ground, Profile Grade, Pitch Elev. – 1st Sheet
___14. Check Earthwork Tabs. Against Tab. Sheets

Plan Review – Bidability , Standards, & Consistancy Checklist

The following checklist is a guideline used by the Design Support unit for checking for bidability, standards, and consistency statewide.

"must do" changes

1. __ TITLE SHEET
   - __ Funding
   - __ Correct project numbers?
   - __ Check for omissions and general appearance.(Index map, project length etc…)
   - __ Does it make sense from an outside perspective?
   - __ Is work type appropriate?
   - __ Check signature block for appropriate signatures.

2. __ GENERAL LAYOUT
   - __ Check general appearance. (RR Crossings, Interchanges, Bridges ,City and County limits etc…)
   - __ Does it include appropriate information. (Plan sheet index, Sta. Etc…)

3. __ ESTIMATED QUANTITIES SHEET
   - __ Are pay item numbers, names and units correct?
   - __ Make sure pay items are used correctly according to spec. book and spec. prov.
   - __ Are there adequate/appropriate footnotes and do they make sense?
   - __ Are there references to tabulation sheets shown?
   - __ Cross check tabulated quantities with estimated quantities.
   - __ Coordinate plan changes with special provisions.
   - __ Coordinate with municipal agreements unit for correct column headings (funding).

4. __ STANDARD PLATE TABULATION
   - __ Are plate numbers the most recent?
   - __ Are appropriate plates included?
   - __ Are footnotes appropriate?

5. __ GENERAL OMISSIONS CHECK
   - __ Is there adequate information in the plan to cover all pay items, especially non-standard pay items or items rarely used.
   - __ Check soils letter vs plan

6. __ COORDINATION WITH FUNCTIONAL UNITS
   - __ Check plan sheets prepared by other functional units (such as signals, signing, lighting, TMS) to assure the plan sheets have been incorporated into the main plan correctly and that the functional areas have reviewed the plan sheets.

"should do" changes

1. __ EARTHWORK TABULATION AND SUMMARY
   - __ Review to assure all the items are covered as shown on the typical sections and soils notes. Cross check with pay items.
   - __ Review methodology.

2. __ SOILS AND CONSTRUCTION NOTES
   - __ Review for completeness and consistency

3. __ TABULATION OF QUANTITIES
   - __ Review to the extent that appropriate quantities are tabulated. Do not review actual quantities unless the quantity look high or low.

4. __ TYPICAL SECTIONS
   - __ General review for completeness and consistency.
   - __ Are all construction areas covered?
   - __ Drawn according to latest standards.
   - __ As per soils letter.

5. __ DETAIL SHEETS
   - __ General review for completeness and consistency (is enough info shown?)
   - __ Is bill of material shown for lump sum items?
   - __ Are all details shown in plan or provisions?
   - __ Following appropriate standards?
   - __ Correct guardrail standards are being followed?

6. __ STANDARD PLAN SHEETS
   - __ Are all appropriate sheets included?
   - __ Are the sheets in the plan the latest version?
   - __ If the sheet is modified have the correct procedures been followed?

7. __ CONSTRUCTION PLAN SHEETS
   - __ General review for completeness and readability.

8. __ CONCRETE PAVING PLANS
   - __ General review for latest standards.

1/28/2002

Heads Up

Just a reminder. When designing around or close to an airport, remember that we should be considering vertical clearances. Some things to keep in mind while in the design process should be vertical curves, lighting heights and signing heights.

Process A Plans (RX Maintenance Type Plans)

There seems to be some confusion regarding Process "A" plans. Hopefully the following will help to clear some of that up.

- Generally State funded projects
- No utilities involvement
- All Right of Way requirements have been met (non-encroachment certificates.)
- No new Right of Way required
- No cost share agreements required
- No permits required (except NPDES)
- Three week advertising period
- 8½" x 11" plans preferred
- Typically 20 pay items or less
- 50 plan sheets or less
- State Pre-letting, Land Management, and State Design Engineer's signature not required. The designer's signature is the only required signature on the Title Sheet
  - It would be very helpful if entire plan was submitted in vellum paper.
  - Plan appearance should resemble how Process B plans appear. Please refer to implementation plan.
  - If possible have a design squad review the plan prior to its submittal for processing.

Design Exceptions

A design exception occurs when a highway project design includes geometric design elements that fail to satisfy criteria set forth as policy by MnDOT and/or the Federal Highway Administration (FHWA). Failure of the design to meet the standard for any of the **13 Critical Design Elements** requires approval of a ***formal design exception***.

It is expected that …

- There will be early coordination
- The design exception does not duly degrade the safety and operational performance of the roadway
- The compatibility with the adjacent roadway segments will be maintained
- The design exception will exercise good design practice and engineering judgment.

The Design Exception submittal package should be sent to the C.O. Geometrics Unit for approval by the State Design Engineer. It should include, but not be limited to…

- A general description of the project background
- An evaluation of the design exception
- An explanation of justification
- Review and approval from…
  - The State Bridge Engineer for bridge related projects

- The FHWA on Full Federal Oversight Projects

This taken into consideration when determining approval of a design exception include, but are not limited to…

- Consideration of Safety and Operations
- Consideration of Crash History and Roadway Character
- Cost to Attain Full Standard and Impact on Environmental Features
- Degree of Reduction
  - Impact on other Standards
  - Mitigation

A rule of thumb for successful design exception justification is that two conditions are successfully asserted:

1. No reasonable, feasible, and practical solution to provide standard values, OR non-standard value is advantageous in some ways and results in an overall superior design.
2. Use of non-standard values for the elements in question will not be expected to unduly degrade the safety or operational performance of the proposed facility.

Cost by itself is NOT a good justification.

Remember to keep design exception information with the design file.

Plan Reduction Report (Phase 1)

A task force was formed to recommend ways to reduce the complexity and size of construction plans using Metro's Wakota project as a pilot. The task force was made up of several functional areas. There was also a sub-group made up of many functional areas including several consultants and contractors. Plan content information has also been gathered through a survey of contractors this past spring (2001). This information will be compiled this summer (2001) and place in a design scene fall of 2001. It was determined that Mn/DOT would not only use these recommendations on Wakota but implement several of them as an option to designers statewide.

These are recommendations only and are not required on projects. It is up to the individual districts to determine which recommendations to use on each project.

The following are elements of the plan that were discussed for reduction or elimination and the consensus the task force reached about each issue.

Drainage

Implement the idea of providing drainage tabulations and drainage profiles generated directly through GeoPak Drainage instead of hand/CADD drawn.

Concrete Pavement

It was decided to simplify the concrete paving plan rather than eliminate it all together due to potential contractor bidding issues. The following are items to reduce plan preparation time.

- Quantities should be tabulated
- Plan expansion joints such as E-1, E2-1, E4-1 and all contraction and longitudinal joints do not need to be tabulated or paid for because these are considered incidental.
- Payment for joints should be limited to the following expansion joints E1D-2, E2D-2, E3D-3, E4D-1 and E8H.
- Lane width column on tabulation is not necessary.
- Should provide joint layout detail for non-standard areas. Not necessary to provide joint layout sheets for standard joint layouts.
- Reduce the number of station to station splits in the tabulations. Sections may be combined into larger groupings (i.e. ramp A, ramp B, mainline between interchanges, etc.).
- For further information see Design Scene Chapter 10.

Typical Sections

Typical sections are getting too complicated and too numerous. There should be close coordination between the designers and the materials office in an effort to reduce the number of typical sections. The following are items to help reduce the number of typical sections.

- Use insets as a form of showing depths and to show them only once.
- Use variable sections for minor geometric changes.
- Fewer pavement sections.

Permanent Turf Establishment

The number of various permanent turf establishments combined with the detail provided in the plans has been determined not to be necessary. The following are items to help reduce plan preparation time.

- There will be an effort from the Office of Environmental Services to reduce the number of seed mixtures to 2 or 3 and to simplify the turf establishment within projects.
- Permanent turf establishment tabulations will not be required.
- Plan sheets will still be required. The plan sheets should provide totals of quantities on each sheet.
- Any application rates not shown in the spec. book should be shown either on the estimate, soil and construction notes or tabulation sheet within the plan.
- 10% should be added to each quantity for field adjustments and overruns.

Cross Sections

Every effort should be made to reduce the number of cross sections. This can be done by increasing the intervals between sections where there are minimal changes in geometrics and quantity calculations are not affected. In most cases, 100 foot (30 m) spacing should be considered as the minimum distance between sections for plan information. Other sections may be necessary for design, but need not be included in the plan except to portray complex grading situations.

General Layout

It was determined that the general layout is not necessary. Caution should be used when eliminating these sheets. The general layout is still a good way of showing the overall picture of the project and can be helpful on complicated projects.

Superelevation Diagrams
It was determined that superelevation diagrams were no longer necessary. Superelevations do need to be shown in the plan. The preferred way is to show the superelevations in plan view on the drainage sheets.

Striping Plan
Effort should be made to minimize striping shown in the plans. Standard striping sheets can be used to cover most striping situations in the plan. Plan views would only be necessary on non-standard situations.

Right of Way
Right of Way should be shown on construction plan sheets and cross section sheets only.

The following items were discussed. However, for various reasons, it was determined these plan sections would be retained in their current format:

- Alphanumeric sheet numbering – this will be tried as a pilot.
- Standardized erosion control sheets.
- Reduce cross section details.
- Reference standard plan sheets – like we do with standard plates.
- Simplify earthwork.
- Eliminate staging detail.
- Eliminate traffic control associated with staging.

Plan Reduction Report (Phase 2)
There has been a thorough study of bridge and roadway construction plan content requirements in an effort to reduce the time it takes to develop plans and the sheets included in the plans. URS consultants were hired to do the study, which was part of an ongoing effort to streamline program delivery processes. An earlier related study for the I-494 & TH 61 Wakota Bridge Project (Phase 1) was completed in April, 2001 and led to this in-depth analysis.

The time and sheet savings will only occur if the accepted recommendations are actually implemented by designers! Please make sure all the appropriate people on your staff are made aware of the information in this summary or see the complete report. Some of the accepted recommendations require good judgment as to when they do or do not make sense on a given plan (i.e., will there be too much "clutter"?). We expect more streamlined plan sets will be the end result!

The following is a summary of the Matrix that was in the full report.

Title Sheet
Use of alphanumeric numbering system is acceptable.

Estimated Quantities
Automate the process for statement of estimated quantities generation, incorporating data into Trans*port.

Typical Sections
No changes should be made in the typical section component content of the plan set preparation at this time, however, the number of typical sections should be minimized. There should be close coordination between the designers and the materials office in an effort to reduce the number of typical sections. The following are items to help reduce the number of typical sections. Use insets as a form for showing depths and to show them only once. Use variable sections for minor geometric changes. Fewer pavement sections.

Proposed Utilities Information requested by Local Agencies Tabulation and Plan
Utilities for the local agencies to be constructed with the Mn/DOT contract. Information should be displayed with the drainage plans if plan sheet clutter is not a problem. No changes should be made in the proposed utility tabulation component of the plan set preparation at this time.

Staging Plans/Traffic Control Plans
Decisions should be on a project-by-project basis regarding the degree of detail in its traffic control and construction staging plans. Combining the traffic control and staging layouts on the plan sheets should also be considered.

Bypass Plan
Show the bypass plan for complex projects. Combine the bypass plans with the staging and traffic control plans for simple projects where applicable and sheets will not become too cluttered.

Inplace Topography
Combine the inplace topography, inplace utilities, inplace drainage, or removals together into one plan section where applicable and sheets will not become too cluttered.

Removal Plan
Combine the inplace utility and drainage plans, inplace topography plans, and the removal plans where applicable and sheets will not become too cluttered.

Construction Plans
No changes should be made in the construction plan component of the plan set preparation for complex projects at this time. For simple projects construction plan content may be modified by combining other plan sections with the construction plans where applicable and sheets will not become too cluttered.

Concrete Paving Plan and Details
Show construction plan details for non-standard concrete paving joints. Remove incidental items from the tabulation. Reduce the number of station to station splits by separating the roadway into areas (i.e.. Ramps, mainline, etc.)

Bituminous Paving Plans and Details
Eliminate the bituminous paving plan and details by presenting the information in the typical sections, construction plans, or construction details.

Superelevation Plans
Present the superelevation information in plan view and combine the superelevation plans with the drainage plans where applicable and sheets will not become too cluttered.

Drainage Plan, Profile and Tabulation
Combine the drainage profiles with the drainage tabulation sheets. Maintain the drainage plan as a separate sheet and include information such as superelevation, turf establishment and erosion control. Do not redraw the GEOPAK drainage profiles for cosmetic purposes only. Eliminate redundant information between the drainage plans, profiles, and tabulations. Drainage profiles should be provided with the tabulation sheets. Also there was no need, besides cosmetics, to redraw drainage profiles from GEOPAK (stick figures). Erosion control information must be provided separately to meet NPDES requirements.

Water Resources Notes
Combine the water resources notes with the drainage details.

Impact Attenuator Plan and Details
Show impact attenuator locations on the construction or staging and traffic control plans where applicable and sheets will not become too cluttered. Details are to be inserted as standard plans.

Traffic Barrier Plans and Details
Combine the traffic barrier plans with the construction plans where applicable and sheets will not become too cluttered. Details are to be inserted as standard plans or tabulated as standard plates.

Fencing Plans
Include the fencing plan on the construction plan where applicable and sheets will not become too cluttered.

Striping Plans
Combine the signing and striping plan sheets except in those instances where it clearly will result in a cluttered plan set

Cross Section Matchline Layout
Remove the cross section matchline layout from the plan set unless the complexity of the project warrants the inclusion of the sheet.

Cross Sections
Display cross sections at 100 foot (30 meter) increments with supplemental cross sections in critical areas. Utilize software (GEOPAK) to automate drawing of inplace and proposed utilities and drainage on the cross sections.

Local Federal Aid on Mn/DOT Let Projects

When a construction project is identified in the STIP for Federal Funding, Mn/DOT encourages local agencies to obtain Federal Dollars to help fund their share of eligible cooperative construction project costs through the ATP (Area Transportation Partnership) process. Information on the ATP process can be found in the STIP (State Transportation Improvement Program) Guidance at the following link:

http://www.dot.state.mn.us/planning/program/atps.html

The ATP solicits for projects that are eligible for federal funding. The resulting project lists are reviewed and integrated into the Area Transportation Improvement Program which is then sent to MnDOT's Office Capital Programs and Performance Measures to be included in the STIP. The final STIP is forwarded to the Federal Highway Administration/Federal Transit Administration for approval.

The federal aid dollars that have been approved for local use through the ATP process must be included in the STIP as a separate line item listing both the federal aid and local funds to be used on the project.

For cooperative construction projects, an agreement and "Schedule I" will be prepared to identify the total local liability, which includes both the federal aid funds and the local funds. The local agency will be invoiced for the local share of the project and Mn/DOT will collect the federal share from the federal government on behalf of the local unit of government.

In the unlikely event that federal aid became unavailable for the local portion of the cooperative construction project; the local unit of government would be responsible for the total local cost liability.

If the State makes changes in the contract construction which affects the local cost portion of construction, the State will inform the local officials of any proposed addenda, change orders and supplemental agreements to the construction contract and any associated local cost changes.

If the local unit of government requests additional work or changes to the work and the State determines that the requested additional work or plan changes are necessary or desirable, the State perform the additional work or plan changes and bill the locals for the additional costs associated with the change.

At completion of the contract and with the determination of final costs, the State will prepare a Final "Schedule I" which will identify the total final local obligation, which includes the local and local federal aid cost shares.

NPDES Permit Application

When filling out the NPDES permit applications be sure to list ALL the SP numbers in the application. There have been some situations in the past where an SP number has been left off the application. When this happens it could result in the contractor having to perform extra paperwork and obtain additional permits to cover the missing SP numbers.

This typically happens when a project becomes tied to another project late in the process. Make sure that when your projects are tied that the permits get updated with the additional SP numbers to avoid complications later in the process.

Grammar Tips

There has been some confusion regarding which words to use in which cases. Therefore, I will attempt to explain this…

affect vs. effect

What's the difference between affect and effect? Well the majority of the time (English is such a funny language), you use affect as a verb and effect as a noun. Affect can be thought of as something that was an influencing action, while effect is known as the result.

- The bridge replacement on Highway 59 near Plummer has affected motorists for three months with its detour.
    - Verb (conveys an action or occurrence): Affected motorists describes the action of what happened.
- The bridge replacement on Highway 59 near Plummer has had an effect on motorists for three months with its detour.
    - Noun (person, place, thing or idea/concept/experience)- Effect on motorists describes the idea/concept/experience of what happened.

So what are those rare instances in which affect can be a noun and effect is a verb? Well, when the influencing nature of affect is an abstract concept it turns into a noun. As in, "Motorists displayed a happy affect after the bridge replacement on Highway 59." Conversely, effect can be a verb when it's used as an action, like "to bring about." "MnDOT hoped to effect change with the bridge replacement on Highway 59."

i.e. vs. e.g.

These two abbreviations are commonly misused by writers and typically folks tend to use i.e. when e.g would be more appropriate, how can you remember the difference? Well first it helps to define them; i.e. is Latin for id est, which means "that is" and is used to further explain something. E.g. is short for exempli gratia, which means "for example," and is used when you are giving an example to help illustrate your point. An easy way to remember the difference is to visualize that i.e. means "in essence" and e.g. stands for eg zample (example).

- I need fifty-two folding protractors (i.e., like the ones we bought last year).
- Insert literary elements (e.g., alliteration, similes, metaphors) to make your writing more interesting.

To further define the differences think of it this way. Use i.e. (in essence) to specifically clarify what you're actually talking about: MnDOT received extra funding (i.e., Corridors of Commerce) to improve safety along the Highway 2 corridor and intersections.

On the other hand, e.g. allows you to introduce a few examples to help emphasize your point, but it isn't a finite list of all possibilities. It's just a few examples: MnDOT receives extra funding (e.g., HSIP, CIMS) to improve safety along corridors and intersections.