CHAPTER 18: GENERAL NOTES and MISCELLANEOUS

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. (e.g. 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" (e.g. Sheet No. 62R of 62). If an "R" sheet is revised by a second addendum it should be labelled as "RR".

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.

Designers need to check that the work and limits outlined on the plan match the STIP. The STIP may be updated periodically throughout the course of the year for project additions, advancements, changes in scope, cost, and other types of changes. These changes are accomplished either by a Formal STIP Amendment or an Administrative STIP Modification. Every effort should be made to keep Formal STIP Amendments and Administrative STIP Modifications to a minimum.

For guidance on the type of amendment and the process please check out the STIP Guidance website at:

FHWA/FTA & MnDOT STIP Amendment Guidance (pdf)

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 cannot 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.

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.

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:

- 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.
- 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.

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 Office of Civil Rights.

DRAFTING STANDARDS

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.

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

- Uniformity
- Large open lettering
- High density of drafted lines
- 4 Good contrast

A general resource for drafting standards to use/adhere to would be…

- MnDOT CADD Data Standards (PDF) http://www.dot.state.mn.us/caes/files/pdf/mndot-caddstandardsdocumentation.pdf
  - Text Sizing on page 12-13 for English based on Annotation Scaling in 11X 17 output. (Annotation scaling of 1:20 equates to 1" = 20')

1. MnDOT CADD Data Standards (resource files)…

MnDOT CADD Standards (Downloadable DGN files)

- External partners that do not have MicroStation/GEOPAK may download Bentley View
- Compressed Bentley MicroStation and Bentley GEOPAK resources

- GEOPAK drafting databases contain information on text labels for size/scale. May require Bentley GEOPAK software to open/read.
  - MnDOT.DDB = Design drafting standards for GEOPAK automated drafting tools.
  - MNDOT.SMD = Surveys/Mapping drafting standards for GEOPAK Automated drafting tools
  - RWTEXT.LSF = Right of Ways Labeling Style file (font an size preset)
- MicroStation
  - Fonts – Mondotfont.rsc contains the fonts approved for use in MnDOT files
  - Cell Libraries – some contain text labels that are built to MnDOT standard when placed correctly.

A large percentage of our plans do have these qualities, but improvement is needed in the remainder. Many plans have been coming in with extremely small print that is almost unreadable.

There has also been some issues with the line weights being too light. When this is the case the lines do NOT show up when scanned. Make sure that the line weights are dark enough for scanning/copying.

GRAMMAR TIPS

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

- **affect versus 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. versus 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.

Assure versus Ensure

These two words both mean *to make a person sure,* and when they are used in situations to indicate the inevitability of an outcome they can be interchangeable. The subtle differences between these two words comes from how they indicate or describe that inevitable outcome.

Assure is used as an influencing statement and can be defined as more of a concept *"I can assure you, you'll be safe."* while Ensure implies actual physical steps *"I have ensured your safety by doing A, B, and C."*

IDIQ PAY ITEMS

IDIQ plans should never include a LUMP SUM pay item. These are too difficult to manage for IDIQ plans as the work will be variable depending on available funds.

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.

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 an 18 in. 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	DESCRIPTION	UNIT	QUANTITY
2104.502	REMOVE PIPE APRONS	EACH	78
2104.502	REMOVE STAIRS	EACH	2
2104.503	REMOVE PIPE CULVERTS	LIN FT	432
2104.503	SALVAGE SPRINKLER SYSTEM	LIN FT	325
2104.503	SALVAGE CHAIN LINK FENCE	LIN FT	765
2501.503	18" CS PIPE CULVERT ①	LIN FT	256
2503.503	30" RC PIPE SEWER	LIN FT	13
	① **Length of pipe includes 45 degree elbow.**		

The Method of Measurement of the pipe length defined by the Specifications for the pay item 2501.503 __" CS PIPE CULVERT includes the length of the elbow. Therefore, the elbow is included in the specific pay item 18" 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. 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	DESCRIPTION	UNIT	QUANTITY
2104.502	REMOVE PIPE APRONS	EACH	78
2104.502	REMOVE STAIRS	EACH	2
2104.503	REMOVE PIPE CULVERTS	LIN FT	432
2104.503	SALVAGE SPRINKLER SYSTEM	LIN FT	325
2104.503	SALVAGE CHAIN LINK FENCE	LIN FT	765
2501.503	18" CS PIPE CULVERT ①	LIN FT	256
2503.503	30" RC PIPE SEWER ②	LIN FT	13
①	Length of pipe includes 45 degree elbow.		
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 2503.503 __" 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	DESCRIPTION	UNIT	QUANTITY
2104.502	REMOVE PIPE APRONS	EACH	78
2104.502	REMOVE STAIRS	EACH	2
2104.503	REMOVE PIPE CULVERTS	LIN FT	432
2104.503	SALVAGE SPRINKLER SYSTEM ③	LIN FT	325
2104.503	SALVAGE CHAIN LINK FENCE	LIN FT	765
2501.503	18" CS PIPE CULVERT ①	LIN FT	256
2503.503	30" RC PIPE SEWER ②	LIN FT	13
①	Length of pipe includes 45 degree elbow.		
②	Removal of inplace bulkhead and connecting pipe to inplace pipe shall be incidental.		
③	**At Bridge Office Center (13100 CROCKER BLVD). Trees and shrubs which are removed shall be replaced with equal size and type (incidental).**		

LOCAL FEDERAL AID ON MnDOT LET PROJECTS

When a construction project is identified in the STIP for Federal Funding, MnDOT 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:

MnDOT State Transportation Improvement Program (STIP) Webpage

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 MnDOT 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.

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 themselves 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."

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.

A Complete agreement submittal consists of the agreement submittal checklist, estimated quantities and estimate for the local participation (or computations that summarize the lump sum amount for the agreement), the maintenance responsibilities for the local government listed in the checklist, sufficient plan sheets depicting this information; such as layouts, tabs, construction details etc., the plan title sheet, and a summary of any correspondence or computations identifying the costs. The Project manager is responsible for coordinating with other functional areas regarding cost shares and maintenances for all elements of the project. If more than one agency is a party to the agreement, increase the local execution time according to the city council/county board meeting dates.

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.

NON-MnDOT LET PROJECTS

When a project is NOT being let by MnDOT but is within MnDOT Right-of-Way and/or using MnDOT funds it requires MnDOT approval. These plans need to follow MnDOT safety guidelines, be clear how items are being paid for, and be consistent with MnDOT let plans.

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.

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 (e.g. 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:

1. Alphanumeric sheet numbering – this will be tried as a pilot.
2. Standardized erosion control sheets.
3. Reduce cross section details.
4. Reference standard plan sheets – like we do with standard plates.
5. Simplify earthwork.
6. Eliminate staging detail.
7. 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 (e.g., 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 (e.g. 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.

PLAN SHEET SIGNATURES

Each sheet in the plan must be signed with the exception of the cross sections, proprietary items, standard plan sheets, and a select few other sheets.

The design engineers' signature must include his/her printed name and date of the signature as required by the Minnesota Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design (AELSLAGID). See MN Statute 326.12 Subd. 3 for signature requirements.

When the sheets are revised the signature date should be revised to reflect the date it was signed, not the original plan signature date.

An example can be found at Minnesota Board of AELSLAGID Stamp Info

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.

PROPRIETARY ITEMS IN PLANS

As you are aware, proprietary items are those items where a specific supplier or part is cited in the plan. In the past this was allowed if three manufacturers or suppliers were listed. That has now been changed to 2 known manufacturers or suppliers.

Whenever a proprietary item is specified, the Project Manager is to write a request for certification request to the State Design Engineer requesting Certification or a PIF for proprietary items 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 an 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). For questions regarding the appropriate request (PIF or Certification) please contact the Special Provisions Engineer.

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
FINAL PLANS CHECKLIST

S.P. _____ DATE: _____

LOCATION: _____

E-DESIGN REVIEW

- ☐ Correspondence
- ☐ Design Study Report
- ☐ Design Layout
- ☐ Soils Recommendations
- ☐ All Agreements
- ☐ Funding Reports

ALL SHEETS

- ☐ AELSLAGID Board Signature Block
- ☐ Prime SP Number
- ☐ State Aid Number
- ☐ Total Sheet Number agrees with Index
- ☐ Warning: Natural Gas Pipe Line (if applicable)

TITLE SHEET

- ☐ Beginning/End of Project(s)
- ☐ All SP/SAP numbers, including State Aid
- ☐ Length Block for Each SP number
- ☐ Length of Project Based on __ Roadway
- ☐ Equations
- ☐ Scales
- ☐ County
- ☐ Township and Range
- ☐ Gravel Pits & Pit Data (optional)
- ☐ Design Designation
- ☐ Project Location Map
- ☐ Signature Block (Correct Signatures)
- ☐ Governing Spec. Note
- ☐ Federal Project No. (Funding)
- ☐ Work Description
- ☐ Sheet Index
- ☐ Exceptions
- ☐ Bridge Numbers (on mainline)
- ☐ North Arrow
- ☐ State Aid No.
- ☐ Legislative Route No.
- ☐ Reference Points
- ☐ Index Map

GENERAL LAYOUT SHEETS

- ☐ Signal Systems
- ☐ Beginning/End of Project
- ☐ Beginning/End of Exceptions
- ☐ Beginning/End Construction
- ☐ Traffic Counts
- ☐ Legend
- ☐ Equations
- ☐ Turn Lanes (optional)
- ☐ Road Labels
- ☐ Reference Points
- ☐ North Arrow
- ☐ Cities & Corporate Limits
- ☐ All Bridge Numbers
- ☐ Gravel & Borrow Pits (optional)
- ☐ Stockpile Sites
- ☐ Ponds
- ☐ Railroad Crossings
- ☐ Temporary Bypasses/Connections

ESTIMATE SHEETS

- ☐ Item No. against TRNS*PRT list
- ☐ Use correct item according to Spec Book and Special Provisions
- ☐ Coordinate Special Provisions & Plan Pay Items
- ☐ Check Footnotes for Applicability
- ☐ Quantities & Pay items against Tabulations, Typicals, and Plan sheets
- ☐ Cost Splits, Funding Notes.
- ☐ Plan Quantity Items (P)

- ☐ Tabulation Letter & Sheet Numbers
- ☐ Plastic Pipe tab (if applicable) or Notes
- ☐ Check notes against tabulations (not in both places)
- ☐ Special & Modified items need Cross Reference note to detail or construction note if not covered by Special Provisions.
- ☐ Items with option footnoted, if necessary with applicable notes

STANDARD PLATE TABULATION

- ☐ Most recent Plate
- ☐ Plates referenced in plan
- ☐ Check Footnotes for Applicability

SOILS & CONSTRUCTION NOTES

- ☐ Complete and Consistent
- ☐ Tack Coat note

TABULATED QUANTITIES

- ☐ Surfacing Tabulations
- ☐ Earthwork Tabulations
  - ☐ 2105
  - ☐ 2106
- ☐ Clearing and Grubbing Tabulations
- ☐ Erosion Control Tabulations
- ☐ Turf Establishment Tabulations
- ☐ Removals
- ☐ Guardrail
- ☐ Miscellaneous Tabulations
- ☐ Other _____

TYPICAL SECTIONS

- ☐ Check against MDR
- ☐ All Stationing is Covered
- ☐ Check notes for applicability
- ☐ Ditch Depths & Slopes
- ☐ Soils Note
- ☐ Subcut & Subgrade Treatments
- ☐ Shoulder Typicals
- ☐ Swamp Treatments
- ☐ Turn Lanes
- ☐ Future Lanes
- ☐ Check for Minor Misc. Typicals
- ☐ Bituminous Mix Designations consistent with Pay Items
- ☐ Proposed Minimum Slope Dressing
- ☐ Dimensions to P.I.
- ☐ Profile Grade Locations
- ☐ Muck, Rock, Excavation, Structure, etc.
- ☐ Horizontal Dimensions
- ☐ Label Centerlines
- ☐ Pavement Cross Slopes & Units
- ☐ Temporary Construction Typicals
- ☐ Bypass Typicals

STANDARD PLAN SHEETS & DETAIL SHEETS

- ☐ Check Pay Items for Appropriate Details Needed

- ☐ Note Incidental Work/Items Which Applies to Special/Mod
- ☐ Makes sure latest versions are used
- ☐ Sign & Show Modifications of Modified Standard Plan Sheets

PLAN SHEETS

- ☐ Topography
- ☐ Alignments (shown & labeled)
- ☐ Begin/End Project
- ☐ Begin/End Construction
- ☐ Begin/End Exception (Required on Construction Sheets)
- ☐ Removals
- ☐ Equations (required on Construction Sheets)
- ☐ North Arrow
- ☐ Bar Scale (NO numeric scales)
- ☐ Borrow Pits, Stockpile Areas
- ☐ Right of Way, Land Lines, Easements & "B" Points Coordinates
- ☐ Tapers, Roadway Dimensions
- ☐ Traffic Barrier (shown & labeled)
- ☐ Drainage Arrows
- ☐ Temporary Conditions
- ☐ Ditch Blocks
- ☐ Culverts & Direction of Flow
- ☐ Road & Entrance Radii
- ☐ Utilities
- ☐ Wetlands (Identify by Type)
- ☐ Road Designations
- ☐ Road Intersection Data (Stations & Label)
- ☐ Horizontal Control Notes
- ☐ Noxious Weeds
- ☐ Wetlands
- ☐ Area of Environmental Sensitivity

PROFILE SHEETS

- ☐ Rock Excavation
- ☐ Equations
- ☐ Check Grade Against Cross-Sections
- ☐ Check Subcuts, Swamp Depths Against Cross-Sections
- ☐ Check Vertical Curves
- ☐ Bridges & Approach Treatments
- ☐ Vertical Control Note (1st Sheet)
- ☐ Bench marks
- ☐ High/Low Points
- ☐ Vertical Curve Data
- ☐ Run Profile Grades & Check Gradients
- ☐ Culverts with Inlets/Outlets
- ☐ Subcuts & Subgrade Treatments with Depths
- ☐ Road Profiles & Entrances
- ☐ Profile Grade Top of Whatever
- ☐ Buried Utility Crossings (Power, Tele., Toll Cables, etc.)
- ☐ Swamp Excavation Areas (CU YD & Treatment No___)
- ☐ Check Special Ditches against
  - ❑ Plan Sheets
  - ❑ Profile Sheets
  - ❑ Cross-Sections

PUBLIC UTILITIES SHEETS

- ☐ Check tab against plan view
- ☐ Show utility ownership
- ☐ Transmission/distribution lines
- ☐ Power poles
- ☐ Existing/proposed sewer
- ☐ Existing/proposed watermain
- ☐ Bridges & Approach Treatments
- ☐ Vertical Curve Data
- ☐ Run Profile Grades & Check Gradients
- ☐ Culverts with Inlets/Outlets
- ☐ Buried Utility Crossings (Power, Tele., Toll Cables, etc.)

☐ Swamp Excavation Areas (CU YD & Treatment No___)

DRAINAGE SHEETS (Use on Estimated Quantities Sheet-Plan must stand on these quantities)

- ☐ Check Design Computations
- ☐ Check Drainage Against
  - ❑ Estimate Sheets
  - ❑ Plan Sheets
  - ❑ Profile Sheets
  - ❑ Cross-Sections
- ☐ Culvert Treatments
- ☐ Pipe Sewer Backfill
- ☐ Casting Assembly Schedule
- ☐ Flumes
- ☐ Pipe Tie Note
- ☐ Plastic Pipe (Options & Details)
- ☐ Check Storm Sewer Computations
- ☐ Check Storm Sewer Against
  - ❑ Estimate Sheets
  - ❑ Plan Sheets
  - ❑ Profile Sheets
  - ❑ Cross-Sections

CROSS-SECTION SHEETS

- ☐ Equations
- ☐ Excavation Computed to This Line
- ☐ Slopes
- ☐ Entrances
- ☐ EXC, EMB, CL, Stamping
- ☐ Grid elevations & Distances
- ☐ Right of Way & Easements
- ☐ Earthwork Quantities for Culvert, Ditch Blocks, Entrances
- ☐ Balance & Quantity between Sections
- ☐ Utilities
- ☐ Label Regions, Survey & Const. Centerline (1st Sheet)
- ☐ Matchlines
- ☐ Check Earthwork Tabulations Against Tabulation Sheets
- ☐ Edge of Wetlands
- ☐ General Notes (1st Sheet)
- ☐ Begin/End SP & Construction
- ☐ Show Bldgs, Foundations, Inplace Drainage

OTHER (Sections prepared by other functional groups)

- ☐ Tabulations
- ☐ Notes
- ☐ Details
- ☐ Plan Sheets

Revised 11-22-17

ROADWAY LABELS

When labeling trunk highways within a plan (tabulations, plan views, etc.) be sure to use the precursor "TH" not "I" or "MN" or "US". This is the standard way we label our trunk highways in all MnDOT plans.

STATE AID PROJECT NUMBERS

In the State Aid Manual dated May 2015, Chapter 5.4 Plans and Proposals Section II.A.2 states …*Show all SP and SAP numbers in the lower right corner of all sheets.*… therefore, when you have a state aid number on your plan make sure that it is included in the bottom right corner of EVERY sheet.

The designer should also be sure to use the correct precursor for this project number. For state aid projects that are using federal funds be sure to use SP (SP = State Aid Project with federal funds). If no federal funds are being used then the project should start with SAP (State Aid Project). When either of these is being used the title sheet should include the signature block(s) for state aid as well.

FOR STATE AID PLANS

_____ 20_____

DISTRICT STATE AID ENGINEER: REVIEWED FOR
COMPLIANCE WITH STATE AID RULES/POLICY

_____ 20_____

APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER

FOR LOCAL AGENCY SOLICITED FEDERAL AID PLANS

_____ 20_____

DISTRICT STATE AID ENGINEER: REVIEWED FOR
COMPLIANCE WITH STATE AID AND/OR FEDERAL AID RULES/POLICY (*)

_____ 20_____

APPROVED FOR STATE AID AND/OR FEDERAL AID FUNDING: STATE AID ENGINEER (*)

(*) **This portion will be modified when State Aid and/or Federal Aid funds are used for part of the local match.** For plans that contain ***both*** *Federal Aid and State Aid funding*, use the required Federal Aid signatures shown above.

State Aid project numbers consist of 3 sets of 3 numbers (###-###-###) adding leading zeros as necessary.

The first set of number relates to the Agency Number (e.g. city, county, other). These can be found at MnDOT A to Z, "State Aid (WWW)" …

- "Project Delivery"…."Project Number Format Guidance"
- "CSAH"…"County Numbers by District"
- "MSAS"…."Municipal Information List & Maps"…choose the option you want.

The second set of numbers relates to the route/system number. The third set of numbers relate to the project number assigned for the previous six numbers (e.g. next project on the list).

For example a project using state funds only on MSAS 132 in St. Cloud would read something like….SAP 162-132-004.

SUPPLEMENTAL AGREEMENTS

A review of the recent listings of supplemental agreements reveals that a fair number of them could possibly have 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:

- Conflicts with utilities - storm sewers intercepting underground utilities. This is a common occurrence.
- Borrow item for select granular material behind a retaining wall was inadvertently left out.
- Topsoil borrow item missing. This happens in municipal areas where topsoil is scarce within the project limits.
- 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 possibly have been considered.
- 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.

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 SP 2016 or SP2018. *The Special Provisions Unit **will not** be accepting provisions copied from prior spec books unless no current alternative exists and the specification has been brought into conformance with the current spec year.*

(A) If you want to use a C.O. SP 2016 or C.O. SP 2018 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
SP2018-50

Just show the Section Name and Number. When you leave the SP2016 or SP2018-Number intact, this will indicate to the Special Provisions Unit that you have not changed the section and want the most current write-up.

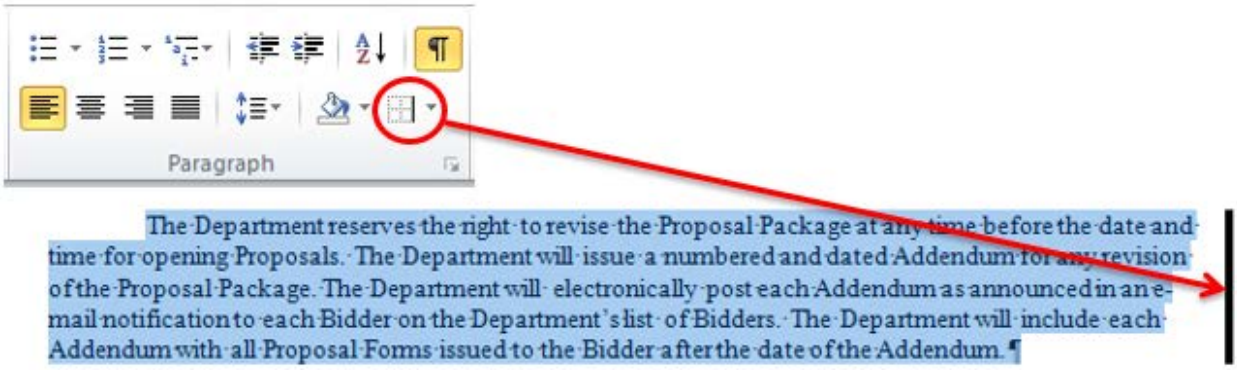
(B) If you want to use a C.O. SP 2016 or C.O. SP 2018 write-up, but WILL be making changes within the write-up, then do the following prior to sending us your file:

Show Section Name and SP 2016 or SP 2018 number, followed by "modified".

Example:

S-X (1910) FUEL ESCALATION CLAUSE
SP2018-50 - MODIFIED

Show entire special provision, including your revisions. Make it as easy as possible for the Special Provisions Unit to recognize your changes. Highlight changes to the provisions in yellow so they are easily identified. In addition, select the paragraph and add a right border where the modifications were made as shown below.



If you DO NOT show the sections as "modified", the Special Provision Unit will most likely assume you want the current section from the SP 2018. So, you may not get what you want.