CHAPTER 2: QUANTITIES

Estimated Quantities

The quantities put on the estimate sheet should normally be rounded to the nearest whole number. We should avoid using decimals, if possible. Only in cases of extremely small quantities should decimals be used and then only to the tenth place.

Commas should not be used either. For large numbers either leave a space where the comma would typically go or just continue the number (i.e. 12 345 or 12345 instead of 12,345).

When using small numbers as in the case of prorate items, a zero should be placed before the decimal number. (i.e. 0.5 instead of .5).

Do NOT use zero's or dashes in the estimated quantities table or any tabs. These locations should be left blank.

Tabulation Development

When tabulations are under development it is good practice to leave an open line space every 5 or 6 lines. This practice is desirable when corrections or additions have to be made on the sheets. Some designers are not leaving enough space below the tabulations for the addition of notes if some have to be added after the plan is turned in for processing. A two inch minimum space from the bottom border line of the plan sheet to the lower line on the tabulation is desirable.

Estimated Quantity Table Columns

There has been some confusion regarding the following two sections in the design scene…

Total Quantity Column

Several questions have been raised on whether the Total Quantity Column on the estimate sheet is still required. This column will not be required on the estimate sheet any longer.

Total Estimate Column

The Total Estimate Column should always follow the Unit column on the estimated quantities table. If there is more than one SP or one funding source the Total Estimate Column should come first then the low SP to the high SP.

Hopefully the following re-write will help clear up any confusion…

Estimated Quantity Table Columns

The estimated quantity table will have only one total column. It will not have a final estimate column. The Total Estimate Column should always follow the Unit column on the estimated quantities table. If there is more than one SP or one funding source the Total Estimate Column should come first then the low SP to the high SP. The following is an example of how the headings in the estimate column should be shown…

Tab	Sheet #	Item #	Item Description	Units	Total Estimated Quantity	SP Low # Quantity	SP High # Quantity

If there is only one SP then the following headings are recommended…

Tab	Sheet #	Item #	Item Description	Units	Total Estimated Quantity

The sheet # column (if used) should reference the sheet that the tab is on and/or any special details other than standard plan sheets.

Standard Abbreviations for Pay Items

The item descriptions in the estimated quantities table should follow the transport list. The list shows both a short description and a long description. The designer can use either option (i.e some items can be long description some can be short). But he/she must use the description EXACTLY as it is shown in transport.

The UNITS must also follow the standard abbreviation as follows…

METRIC	ENGLISH
Lump Sum	Lump Sum
Each	Each
m	Lin Ft
m2	Sq Yd
	Sq Yd - In
ha	Acre
L	Gallon
m3	Cu Yd
kg	Pound
t	Ton
Hour	Hour
Day	Day
Week	Week
Unit Day	Unit Day
Structure	Structure
Assembly	Assembly
System	System
Sig Sys	Sig Sys
m2/Day	Sq Ft/Day
	Sq Ft

	Road Sta
	Yard
Dollar	Dollar
	MBM (Thousand Board Feet)
	M Gallon
Tree	Tree
Shrub	Shrub
Vine	Vine
Plant	Plant

Prorata Items

There has been some confusion on which items should be prorated in construction plans which involve more than one SP. Proration distributes the cost of items such as mobilization and field office among the various funding groups and/or SP's so that they all share in the cost of these items. It should be noted that ONLY the following items should be prorated:

Mobilization	Lump sum
Field Office	Each
Field Laboratory	Each
Traffic Control	Lump Sum

The pro-rata percentage assigned to each funding split (including bridge costs, if applicable) shown in the plans is determined by dividing the dollar value of work associated with that split by the total dollar value of the contract (including bridge costs), less the pro-rata items. The prorata percentage for each funding split is to be computed to two decimal places and tabulated on the estimated quantities sheet. The designer is to use estimated quantities and estimated prices to compute the prorata percentages. No other items should be taken to two decimal places. Prorata percentages should be shown on the grading plan only, even when bridge costs are included in calculation,

Special circumstances may justify an exception to these procedures. These situations should be reviewed with the Municipal Agreements Unit and the Plan Review Unit, and the determination of how to handle such exception will be made on a case-by-case basis.

Prorata Items Involving Cooperative Construction

A sample computation of prorata items is shown below for reference.

Sample Computation
of PRORATA ITEMS
for Cooperative Construction
Agreements
Total Contract Cost **(including bridge cost)** = $220,500.00

Prorata Items

Mobilization	$10,000.00
Field Office	$ 3,000.00
Field Laboratory	$ 2,500.00
Traffic Control	$ 5,000.00
Total Cost of Prorata Items	**$20,500.00**

Total Contract Cost Minus Total Cost of Prorata Items

$220,500.00 - $20,500.00 =
$200,000.00

Cost of each Funding Group & Bridge

(Cost for each group does not include cost for prorata items)

Group 1:	100% State	**$101,000.00**
Group 2:	60% State, 40% City	$ 87,200.00
Group 3:	56% State, 44% City	$ 1,000.00
Group 4:	100% City	$ 800.00
Bridge:	**100% State**	**$10,000.00**

Prorata Percentage for each Funding Group

Group 1: **($101,000.00+$10,000.00)** = 0.555 (Use 0.55)
$200,000.00

Group 2: $ 87,200.00 = 0.436 (Use 0.44)
$200,000.00

Group 3: $ 1,000.00 = 0.005 (Use 0.01)
$200,000.00

Group 4: $ 800.00 = 0.004 (Use 0.00)
$200,000.00

STATEMENT OF ESTIMATED QUANTITIES						
ITEM NO.	ITEM	UNITS	GROUP 1	GROUP 2	GROUP 3	GROUP 4
2021.501	MOBILIZATION	LUMP SUM	0.55	0.44	0.01	
2031.501	FIELD OFFICE, TYPE D	EACH	0.55	0.44	0.01	
2031.503	FIELD LABORATORY, TYPE D	EACH	0.55	0.44	0.01	
2563.601	TRAFFIC CONTROL	LUMP SUM	0.55	0.44	0.01	

Prorata items on Tied Plans
There has been some confusion on how to show the prorated items for tied plans.
When the tied plan has the same funding for all the SP's.

			PLAN A			PLAN B			
Item No.	Description	Unit	TOTAL A	SP 1111-11	TOTAL B	SP 2222-22	SP 3333-33		
2021.501	MOBILIZATION	LUMP SUM	1	1				ACCEPTABLE	
2021.501	MOBILIZATION	LUMP SUM	1					ACCEPTABLE	
2021.501	**MOBILIZATION**	**LUMP SUM**						**ACCEPTABLE - PREFERRED**	

When the tied plan has a different funding for at least one of the SP's.

			PLAN A			PLAN B			
Item No.	Description	Unit	TOTAL A	SP 1111-11	TOTAL B	SP 2222-22	SP 3333-33		
2021.501	MOBILIZATION	LUMP SUM	0.25	0.25	0.75	0.35	0.40	ACCEPTABLE	

Lighting & Signal Pay Item Changes
Due to the new 2014 Spec books some of the Lighting (Spec 2545) and Signals (Spec 2565) and their respective removal/salvage pay items have changed.

One of the key changes is that for Spec 2545 Lighting the word BASE is now to be FOUNDATION.

Most of the Spec 2565 Signal item descriptions have been revised. Therefore, please check with the 2014 TRNS*PORT list and do not take the items from previous plans.

Plan Quantities (P)
Plan quantities may be used when the item is computable and defined in the plan by dimensions.

The use of partial plan quantity should be utilized. If it's felt that a portion of a quantity is good for plan quality, it should be shown as plan quantity with a subnote such as:

2105.501 COMMON EXCAVATION (5) Cu.Yd. (m3) 1,289,582 (985 956.4) (P)

(5) This is a partial plan quantity. The quantity is a plan quantity except for the area between Sta. 842 to 851 which shall be re-measured.

The following list is furnished as items to be considered for (P) plan quality designation. It includes 2104 "generic" items and 2232 mill bit. surface items. This is NOT meant to be a complete list. Quantities that are firm and clearly listed in the plans, consider plan quantity for them. For quantities that are Bituminous and Concrete by the SQ YD – IN or SQ YD can be a plan quantity. However, Bituminous and Concrete by the TON can NOT use plan quantities.

2101.501	Clearing
2101.506	Grubbing
2104.501	Remove___Lin. Ft.
2104.503	Remove___Sq.Ft.
2104.505	Remove___Sq.Yd.
2105.501	Common Excavation
2105.503	Rock Excavation
2105.505	Muck Excavation
2105.507	Subgrade Excavation
2105.511	Common Channel Excavation
2105.513	Rock Channel Excavation
2105.515	Unclassified Excavation
2106.607	Excavation – Common
2106.607	Excavation – Subgrade
2106.607	Excavation – Rock
2106.607	Excavation – Muck
2201.501	Concrete Base
2201.502	Concrete Base, Std. Width
2201.503	Concrete Base, Irreg. Width
2201.521	Base Reinforcement, Type____
2201.529	Reinforcement Bars (Epoxy Coated)
2211.503	Aggregate Base (CV), Class _
2211.503	Aggregate Shouldering (CV), Class _
2232.501	Mill Bituminous Surface (__")
2301.501	Concrete Pavement
2301.511	Structural Concrete
2301.513	Structural Concrete (H.E.)
2301.604	Concrete Pavement _"
2301.604	Place Concrete Pavement _"
2301.604	Place Concrete Shoulder _ "
2301.604	Irregular Concrete Pavement _"
2301.529	Reinforcement Bars (Epoxy Coated)
2301.608	Supplemental Pavement Reinforcement
2350.503	Type __#__ Course Mix (_) _" Thick
2350.504	Type _#_ Course Mix (_)
2360.503	Type _# _Course Mix (_) _" Thick
2360.504	Type _#_ Course Mix (_)
2401.501	Structure Concrete (Mix No.)
2401.511	Structure Concrete (Mix No.)
2401.521	Structure Excavation, Class

2401.539	Reinforcement Bars Delivered
2401.540	Reinforcement Bars Placed
2401.541	Reinforcement Bars
2401.541	Reinforcement Bars, Epoxy Coated
2401.542	Steel Fabric
2401.543	Spiral Reinforcement
2401.543	Spiral Reinforcement, (Epoxy Coated)
2402.583	Ornamental Metal Railing
2402.585	Pipe Railing
2411.501	Structural Concrete (Mix No.)
2411.503	Concrete (Type of Structure)
2411.511	Structure Excavation, Class
2411.521	Granular Backfill (CV)
2411.523	Aggregate Backfill (CV)
2411.541	Reinforcement Bars
2411.541	Reinforcement Bars (Epoxy Coated)
2422.501	Structure Excavation, Class
2451.501	Structure Excavation, Class
2451.503	Granular Backfill (CV)
2451.505	Aggregate Backfill (CV)
2451.507	Granular Bedding (CV)
2451.509	Aggregate Bedding (CV)
2451.511	Course Filter Aggregate (CV)
2451.513	Fine Filter Aggregate (CV)
2461.501	Concrete, Mix No.___
2461.502	Concrete, Grade
2501.501	Culvert Excavation, Class
2575.501	Seeding
2575.519	Disk Anchoring

Special Pay Item Numbers

We have standardized our special pay item numbers. All units of measure for special (ie special provisions) specification numbers shall be governed by the following list.

ALL SPECIAL PAY ITEM NUMBERS BEGIN WITH “2” NOT “0”

#	METRIC	ENGLISH
.601	Lump Sum	Lump Sum
.602	Each	Each
.603	m	Lin Ft
.604	m2	Sq Yd
.605	ha	Acre
.606	L	Gallon
.607	m3	Cu Yd

.608	kg	Pound
.609	t	Ton
.610	Hour	Hour
.611	Day	Day
.612	Week	Week
.613	Unit Day	Unit Day
.614	Structure	Structure
.615	Assembly	Assembly
.616	System	System
.617	m2/Day	Sq Ft/Day
.618		Sq Ft
.619		Road Sta
.620		Yard
.621	Dollar	Dollar
.622		MBM (Thousand Board Feet)
.623		M Gallon

Mobilization Item

The item is intended to cover the contractor's costs to mobilize labor and equipment to the project as well as other costs such as performance bond, job superintendent, testing, engineering and miscellaneous costs that have not been assigned to another bid item.

Occasionally, we see a plan without the mobilization item included. Since mobilization is a real cost to contractors, they must add their mobilization cost to the cost of another item(s). This unbalancing of bid items can distort average bid prices generated for the purpose of estimating. In the interests of providing the most accurate historical bid prices for construction, it is important to include a bid item for mobilization in our plans.

On-The Job Trainees

A project must meet the following requirements to be eligible for on-the-job trainees:

1) Federal Funds
2) Project estimate of approximately $1,000,000
3) Completion of 100 working days or more

With this information, a breakdown of the different types of work to be performed, and the location of the project, Mn/DOT's EEO Contract Management Office will determine how many trainees will be assigned to the project.

The pay item 2041.610 TRAINEES by the HOUR will no longer be shown on the statement of estimated quantities on the plans. This is a fixed price item and therefore is not a bidding item. The designer still needs to supply the Special provisions unit with a timeline so that they can include the trainee information in the special provisions as it will be a contract requirement.

Combination Field Laboratory Office
When ever this item is used in the plan it needs to include a note in the estimated quantity table…REQUIRES TYPE ??? SERVICE.

Maintenance and Restoration of Haul Roads
The pay item 2105.501 "Maintenance and Restoration of Haul Roads" Lump Sum should be used on all projects that require raw materials to be hauled to or from the job site. Such as projects that include, but are not limited to, Borrow items, Bituminous materials, Concrete materials.

Stand-alone projects such as crack repairs, landscaping, striping, guardrail would not need the pay item in the SEQ

Haul Salvaged Material
Our specification (Spec. 2104 and 2442) spell out that salvaged materials will be neatly stored within the project limits. The F.H.W.A. won't pay to haul salvaged materials off the construction project. If Maintenance prefers not to handle the material, the item 2104.601 Haul Salvaged Material by the Lump Sum should be added and is state funded.

Bridge Approach Treatments
A reminder to designers that we should pay for the select granular material used for bridge approach treatments as detailed and noted on the standard plan sheets. This material is paid for as:

2105.522 SELECT GRANULAR BORROW ( ) CU YD and
2105.522 SELECT GRANULAR BORROW MOD 10%( ) CU YD
( ) = LV, CV, or EV

If the modified borrow is used it should be noted in the estimated quantities what the modification consists of.

Pay Items for Safety Grates
With the 2005 Standard Specification for construction, payment for light duty and safety grates will be made under a special pay item number.

Pay items should now be:

2501.602 LIGHT DUTY SAFETY GRATE FOR __" (___ mm) (1) APRON ..... Each
2501.602 SAFETY GRATE FOR __" (___ mm) (1) APRON..... Each

(1) Specific Kind---See 2501.2

Trash guards will remain under 2501.602

Plastic Pipe Options for Culverts

Plastic pipes may be used for centerline culverts as long as they meet the following requirements…

The maximum allowable diameter is 48" (1200 mm) for use under unpaved roads or when ADT is less than 3000.

Centerline culverts shall have silt-tight joints unless designated as requiring watertight joints. A note should be in the plan when a watertight joint is required.

In order to make it clear which pipes shall have options, the allowable options shall be noted in the drainage tabulation for each reach of pipe. On the Statement of Estimated Quantities, the listed pay item will be reinforced concrete pipe. A note shall be provided on each appropriate pay item noting that plastic pipe may be used as an option.

ADA Pay Items

The ADA group has set up a location for their project design guide, provisions, pay items and other useful information which can be found on ProjectWise at…

pw:\\PW8i.ad.dot.state.mn.us:cadp\Documents\Operations\ADA-Review\ADA_Provisions\ADA Pay Item Guidance.xlsx

They have also established a new webpage which can be found at MnDOT A to Z under **ADA Design and Construction Tools…**
http://www.dot.state.mn.us/ada/design.html

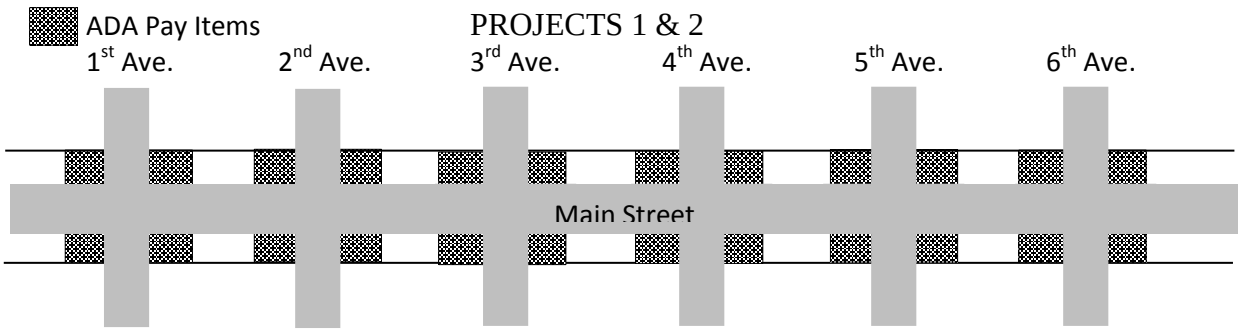
All designers should follow the design guide when working on ADA Improvements. ADA Project Design Guide (version 2).docx This link is presently only available to internal users. External users will need to get the information from the MnDOT project manager.

The details are now approved standard plan sheets which can be found in the standard plan sheet website under standard plan 5-297.250 (1 thru 5).

There has been some confusion on when to use the new ADA pay items and when to use the traditional pay items. The following are basic guidelines on which pay items should be used for which situations….

Project 1 – Standalone Curb Ramp Replacement Project or Standalone Signal Installation/Replacement

- These projects would only use new ADA pay items for roadway/curb ramp work

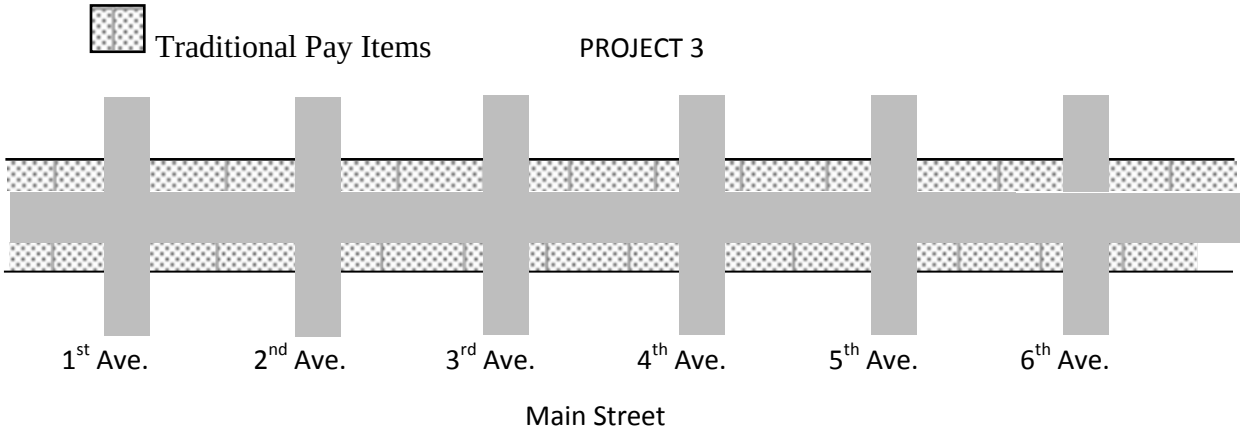


<u>Project 2</u> – Mill & Overlay with Curb Ramp Replacements

- These projects would use ADA pay items for curb ramp work (Concrete Walk, Concrete Curb & Gutter, Site Restoration). Traditional pay items would be used for roadway work unless there are areas with curb ramp replacements beyond the mill & overlay limits, in which case the ADA items for bituminous pavement could be used for bit. removal and replacement in those areas.

<u>Project 3</u> – Reconstruction/Regrade

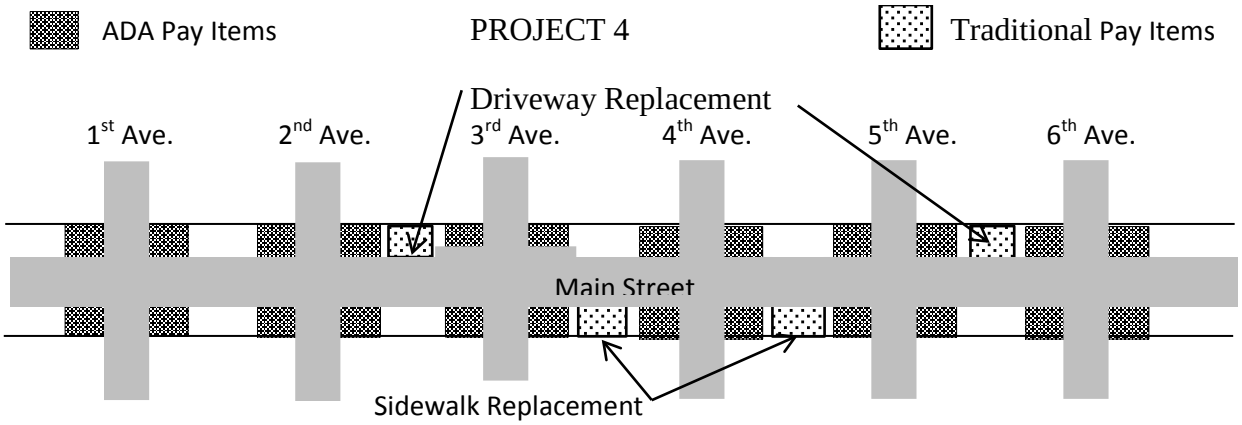
Project is a roadway reconstruction project including replacement of sidewalk, signals, etc. Use all traditional pay items, no incidentals.



<u>Project 4</u> – Mill & Overlay with Curb Ramp, Driveway, and Sidewalk Replacements

Project is a mill and overlay with curb ramp replacements and replacement of sections of sidewalk and some driveways.

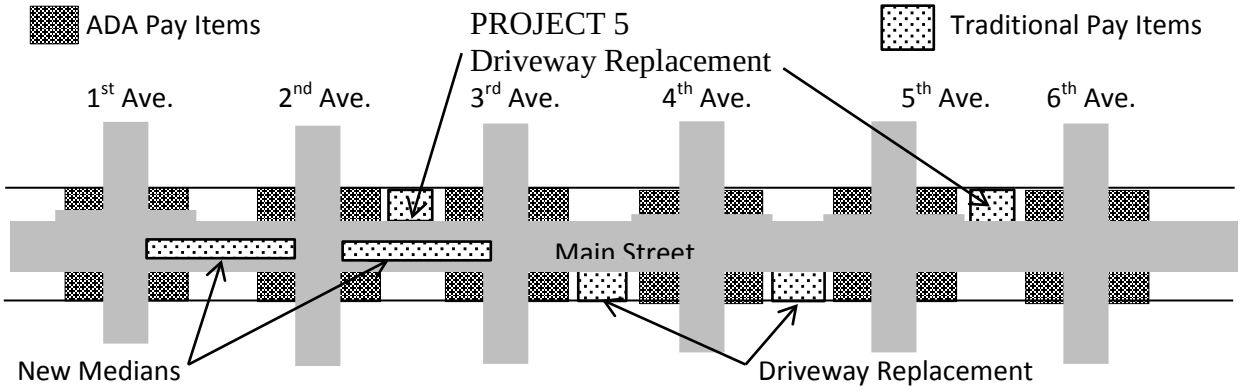
- Sidewalk and driveway replacements would be paid for using traditional pay items.
- Curb ramp replacements would be paid for using ADA pay items.



<u>Project 5</u> – Access Management Project, Mill & Overlay, Median Installations, Driveway Replacements, and Curb Ramp Replacements

Project is an access management project, which includes mill and overlay, installation of concrete medians, removal of some driveways and replacements of others, curb ramp replacements and APS signal upgrades.

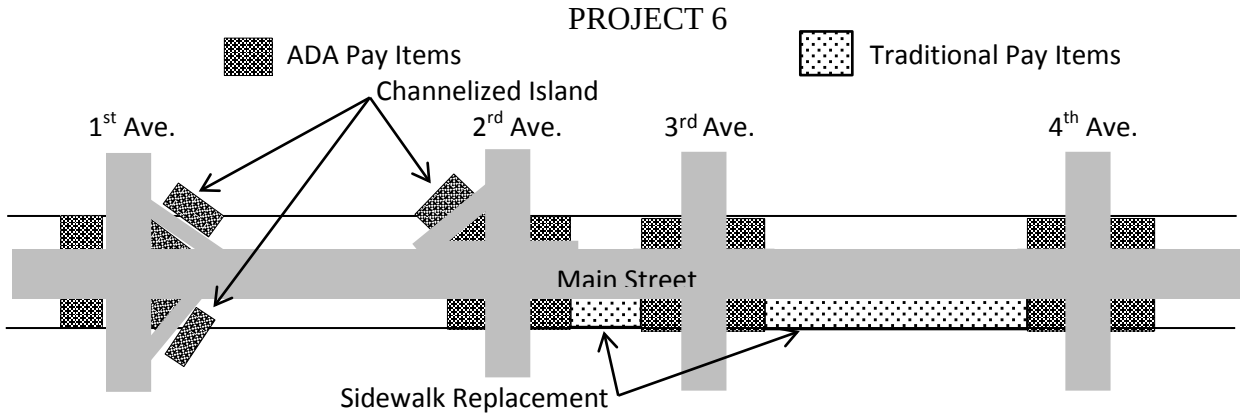
- Installation of medians and driveway replacements would be paid for using traditional pay items.
- Curb ramp replacements would be paid for using ADA pay items.
- If project was replacing all of the sidewalk, only traditional pay items would be used, no ADA pay items.



<u>Project 6</u> – Mill & Overlay, Sidewalk Additions, Replacement of Channelization Islands and Curb Ramps

Project is a mill and overlay with ADA Improvements including porkchop channelization island replacements, curb ramps, and signal upgrades to APS. Project also adds 2 blocks of new sidewalk along the highway.

- Two blocks of new sidewalk would be paid for using traditional pay items. Sidewalks would be 4" concrete walk. Curb Ramps for the new sidewalk would be paid for using the ADA Concrete Walk pay item.
- All curb and gutter, pork chop island replacements, median modifications, and curb ramps would be paid for using ADA pay items: Concrete Walk and Concrete Curb & Gutter with aggregate base and earthwork incidental. Turf establishment and side grading would be paid for using Site Restoration pay item.



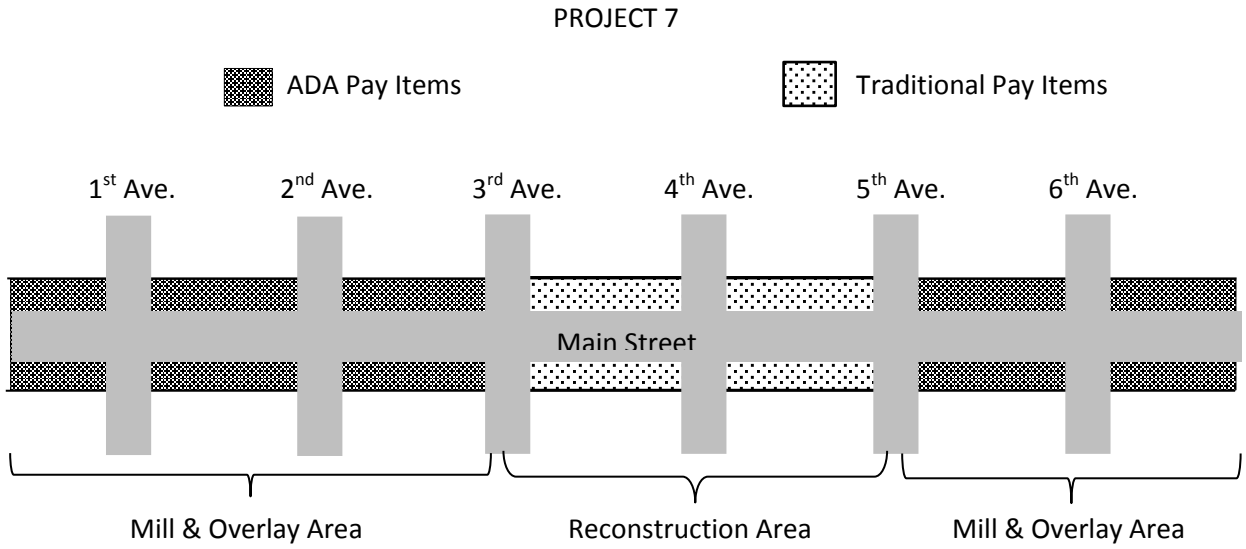
<u>Project 7</u> – Full Regrade and Mill & Overlay with Curb Ramps
Half of the project is highway reconstruction with a subcut including new sidewalks, drainage, lighting, signals, etc.

- On this portion of the project, traditional pay items would be used. Sidewalks would be 4" concrete walk and curb ramps would be 6" concrete walk. Aggregate Base, Earthwork, and Turf Establishment would all have traditional pay items. Curb and gutter payment would be paid for by the type. (B624, etc.)

The other half of the project is a mill and overlay with ADA Improvements including curb ramp replacements and APS signal upgrades.

- On this portion of the project, curb ramp replacements and curb and gutter at curb ramps would be paid for using ADA pay items: Concrete Walk and Concrete Curb & Gutter. Aggregate Base and any earthwork is incidental. Side grading and turf establishment would be paid for using Site Restoration pay item by the EACH. Ideally each site's grading limits would not touch so the limits of each site can be clearly defined.

Clarification: Curb ramp replacement includes all of the walk area necessary to meet existing walk grades, including any transition panels.
Curb Line Changes: In areas where curb lines are moving more than 2 feet, traditional pay items should be used for roadway pavement removal and replacement. ADA pay items would be used for concrete walk and concrete curb & gutter.



The following are the ADA pay items as mentioned in the examples above….

- 2104.501 REMOVE CURB AND GUTTER by LIN FT…note that sawcuts are incidental.
- 2104.503 REMOVE CONCRETE WALK by SQ FT…note that sawcuts are incidental.
- 2104.603 REMOVE AND REPLACE BITUMINOUS PAVEMENT by LIN FT…for bit in poor condition.
- 2232.603 MILL AND PATCH BITUMINOUS PAVEMENT by LIN FT...for bit in good condition
- 2521.618 CONCRETE WALK by SQ FT
- 2531.603 CONCRETE CURB & GUTTER by LIN FT
- 2531.603 CONCRETE CURB DESIGN V by LIN FT
- 2531.618 TRUNCATED DOMES by SQ FT
- 2575.602 SITE RESTORATION by EACH

Measurement of Concrete Median Barrier Design 8334 Type AA

Concrete median barrier (design 8334) should be measured and paid for separately by type. Type A, Type AL and Type transition barrier lengths are measured along the top of the barrier, essentially one foot of barrier for each foot of median. Type AA barrier is also measured along the top of the barrier but each side is measured separately.

Raised Pavement Markers Temporary

When including temporary raised pavement markers in the plan, show only one pay item. "Raised Pavement Markers Temporary" - and add footnote to the item indicating how many are one-way, two-way, and what color. We have a specification to attach to the proposal that only includes this pay item. (There is very little difference in cost for the different types.)

Traffic Control- Tabulation

Traffic control items that are included with the lump sum should not show quantities on the tabulation. This information will be supplied in the current tabulated or listed format via a stand alone document to the Cost Estimating Engineer and the Design Support Engineer only, at the time of project submittal. The Preliminary Estimate and Data Base file (*.mdb) will be located in the specific projects ProjectWise location (a right protected folder), with AD group name of "DxEstimates" and a Folder name of "Estimates_Restricted" which restricts access for anyone except newly established AD group (Ex. Design Engineer, Lead Designer & District Cost Estimating Engineer).

However, the items which are paid for separately (not part of the lump sum) should be shown as a tabulation for traffic control and noted as being paid for separately. Items such as, but not limited to …

2533.507 Portable Precast Conc Barrier Des 8337
2563.602 Tube Delineator
2563.xxx Portable Changeable Message Sign
2563.602 Raised Pavement Marker Temporary

Wet Reflective/Refractive Pay Items

There has been a request to have specific pay items for the wet reflective/refractive pay items so that they can track where these items are used and to obtain historical price data on them. Therefore, when the plan contains wet reflective/refractive pay items the following should be used on the Statement of Estimated Quantities….

2582.602 PAVT MSSG *(usual striping pay item description)*PAINT (WR) by EACH
2582.602 PAVT MSSG *(usual striping pay item description)*EPOXY (WR) by EACH
2582.603 *(usual striping pay item listing size, style, color)* - EPOXY (WR) by LIN FT
2582.603 *(usual striping pay item listing size, style, color)* –PAINT (WR) by LIN FT
2582.618 CROSSWALK MARKING – PAINT (WR) by SQ FT
2582.618 CROSSWALK MARKING – EPOXY (WR) by SQ FT

These liquid wet reflective or wet refractive items are required to be ground-in per Technical Memorandum No. 08-10-T-02. It is suggested that you note on the SEQ or tab if they are NOT ground-in.

For the temporary wet reflective/refractive markings the standard pay items will continue to be used.

Permanent wet reflective/refractive Poly-Preform tape is presently NOT allowed on MnDOT projects.

Erosion Control Blanket
In the 2005 spec. book the erosion control blanket pay item has a note (1) that indicates that the item description should include maintenance.

The intent of the specifications was to include maintenance as a subnote shown on the estimate of quantities sheet rather than as part of the pay item description.

Mulch Material Type 2
This is paid for as 2357 Bituminous Material for Shoulder Tack

Mulch Material Type 4
As stated in the Spec book we do not pay for this as Type 4 but rather as two separate pay items…
2575 Mulch Material Type 1 @ 1.5 tons/acre, and
2575 Type 5 Hydraulic Soil Stabilizer @ 750 lbs/acre

Interim Pavement Marking
The interim pavement marking detail needs to be included in the plan whenever this pay item is used. The estimated quantities table will also need to include a note breaking out the markings (i.e. solid, broken, white, yellow, etc.) if paid for by the Lin Ft in the plan.

Incidental and Lump Sum Items
An internal review of our existing process for the development of engineer's estimates for construction projects identified a number of risk areas and change needs. The following process changes will be made immediately. These adjustments to our process will result in reducing the risk of inadvertent disclosure of nonpublic data prior to project award per Minnesota Statute §13.72, subd. 1.

These new procedures will be applied to all projects that are included in the Mn/DOT letting process.

The INCIDENTAL, FOR INFORMATION ONLY, and LUMP SUM quantities will no longer be supplied in the plan or special provisions. The list of elements and application rates included in the incidental and lump sum items can be listed in the plan and special provisions but not the quantities.

FOR INFORMATION ONLY statement as associated with quantities will no longer be allowed in the plans.

This information will be supplied in the current tabulated or listed format via a stand alone document to the Cost Estimating Engineer and the Design Support Engineer only, at the time of project submittal. The Preliminary Estimate and Data Base file (*.mdb) will be located in the

specific projects ProjectWise location (a right protected folder), with AD group name of "DxEstimates" and a Folder name of "Estimates_Restricted" which restricts access for anyone except newly established AD group (Ex. Design Engineer, Lead Designer & District Cost Estimating Engineer).

Alternate Bid

The Minnesota Department of Transportation (MnDOT) has made a decision to develop alternate bid pavement plans for rehabilitation projects that fall within a certain threshold. See the letter from the Office of Materials and Road Research dated September 1, 2011 at… http://www.dot.state.mn.us/materials/pvmtdesign/docs/Fiinal_Alternative_Bid_Directions_09_01_11.pdf

These alternate bid pavement plans will allow certain rehabilitation projects to be bid by both bituminous and concrete contractors.

A committee was formed to formulate the following guidelines for alternate bid projects….

General Themes

As the committee discussed the sections of the plan two thoughts became prominent. The first was that as much of the plan as possible should be common to both alternates. Having as much of the plan as possible common to both alternates should keep the plan size reduced to nearly the same size as a single alternate rehabilitation project.

The second thought was that all information relating to alternates should be clearly and consistently labeled to provide a contractor as much clarity as possible in distinguishing between alternates. The committee selected to label alternates using numbers rather than letters for statewide consistency. The alternate number should be followed by a description of the alternate. An example would be "**Alternate 1 – Reclamation and Bituminous Surfacing, Alternate 2 – Concrete Overlay**". This labeling should be used consistently throughout the plan wherever alternate paving information is shown.

Recommendations for Plan Format

Title Sheet

The title on the title sheet should clearly state that the plan is an alternate pavement plan, i.e.: CONSTRUCTION PLAN FOR Grading, Alternate Bituminous or Concrete Surfacing, etc

Statement of Estimated Quantities

Pay for the bituminous quantities by the ton and pay for concrete with two items, Sq Yd for Place Concrete Material and cubic yard for the structural concrete. This is consistent with the September 1, 2011 letter from the Office of Materials and Road Research.

1) The alternate bid quantities should be part of the main SEQ and not in separate SEQs. The alternate bid quantities should be at the end of the SEQ. The alternates should be slightly separated from the other items in the SEQ and clearly labeled as discussed under General Themes section of this report. Only those items directly related to the alternate

pavement design should be listed in the alternate sections of the SEQ. In some cases, there may be items such as striping listed in the alternate sections because those items change with the pavement selected.

2) In the case where the milling depth or the reclaim depth may vary between alternates, the removal quantities that the alternates have in common should be shown in the common section of the estimated quantities. For the alternate that requires the removal of extra material, only the quantity of extra material should be shown in the alternate quantity.

General Layout and Construction Plan Sheets
For most rural plans, a General Layout should be sufficient to convey the anticipated construction. Plan details can be added later in the plan to show information that may be required for culvert replacement, superelevation transitions, etc.

1) Construction Plans sheets may be needed if a rural project involves inslope grading over the length of the project due to crown or superelevation correction. In these cases, erosion control, turf establishment, culvert adjustments, etc. may need to be shown on a more detailed Construction Plan type sheet. As much information as possible should be shown on one sheet to minimize the size of the plan set.

2) For urban projects, Construction Plan sheets may be necessary to show locations of storm sewer facilities, ADA improvements, etc.

Profiles
Profiles are generally not needed unless there are intentional corrections to the profile to correct sight distance or bridge clearance.

Typical Sections
Use common typical sections where possible for existing typical and perhaps the milling and/or reclaiming.

1) Clearly label typical sections for alternates with the convention listed under the General Themes section of this report.

2) Each alternate should have its own typical section(s). Do <u>not</u> split a typical section between alternates (show the bituminous alternate left of centerline and the concrete alternate right of centerline).

As per the September 1, 2011 letter from the Office of Materials and Road Research, the pavement widths should be the same if possible. Pavement widths may not be 26 feet, however, due to the width of the underlying pavements upon which the new surface will be constructed.

Tabulated Quantities and Construction Notes
Most tabulated quantities and construction notes should be common to both alternatives. Tabulated quantities and construction notes that pertain to only one alternate should be clearly labeled as described in the General Themes section of this report.

Traffic Control

1) Alternate bid plans requiring reclaiming will typically require a detour for both alternates. The same detour should be used.

2) Alternate bid plans requiring milling may only require a detour for the concrete paving since the bituminous overlay could typically be done under traffic. In the case of milling type projects, several options could be considered by the District:
    a. Require the bituminous contractor use the same detour as the concrete contractor. This would keep consistency between the options and would allow the bituminous contractor the same unobstructed work site as the concrete contractor. If bridge or culvert replacement is part of a project, this may be the natural course of action. Depending upon the length of detour and business impacts, this option may not be desirable from the public's perspective.
    b. Require the bituminous contractor to work under traffic. This could require the traffic control to be considered as part of the alternate bid portion of the estimated quantities since it would be drastically different for the two alternatives. This option could be more desirable from a road user and business perspective. However, the bituminous contractor is not allowed the same unobstructed work site as the concrete contractor and heavy traffic volumes may reduce production rates or require night work.
    c. Design the same detour plan for both options, but allow contractors to work under traffic if they desire. Contractors choosing to work under traffic could not submit the proposal under value engineering. A more formalized way to deal with this option, however, would be to set up an A+B contract where the B portion is determined by the number of days that the contractor would use the detour. This would allow the contractors the greatest flexibility, but would not necessarily be the best way to address user costs and business impacts.

3) The decision on Traffic Control for mill and overlay type projects will need to be addressed on a case by case basis considering other work types in the project that may require a detour, traffic volumes that may hinder productivity, business impacts, and available and reasonable detour routes.

Cross-sections
With many rehabilitation projects, cross-sections will not be needed as part of the plan set.

1) Some rehabilitation projects may require minor inslope work. The inslope work may not be readily visible on cross-sections drawn for the plan. In these cases, the cross-sections

may be omitted from the plan, even though they may need to be developed to calculate quantities.

Other Issues
Other issues affecting project delivery were also discussed.

1) The designer should request a life cycle cost from the pavement engineer at the time of plan turn in. This will allow the pavement engineer sufficient time to develop the life cycle cost adjustment factor for the bidding process.

2) A standard specification for pavement smoothness has been developed for alternate pavement projects. This specification should be incorporated into the special provisions.

3) Alternate bid projects should not be combined with single alternate projects. These combinations could skew the bid of the alternate pavement to the pavement type selected for the other portion of the project.

4) Alternate bid projects should not be combined with other alternate bid projects. If a District desires to combine two alternate bid projects, the District should work with the pavement engineer to see if common typical sections and life cycle costs can be used over the length of both projects.

5) Districts may use A+B bidding in conjunction with alternate pavements. A+B contracts may be desirable when a significant difference in working days between alternates is anticipated.

Use 2301.604 "Concrete Pavement __" " by the SQ YD (m2) pay item when 2360 pay items are Square Yard. Use 2301.604 "Place Concrete Pavement __" " by the SQ YD (m2) and 2301. 51X "Structural Concrete" by CU YD (m3) pay items when 2360 pay items are Tons.

2112 Shoulder Preparation
There has been some confusion on how to determine the quantity for 2112 Shoulder Preparation in the plans.

The boiler plate special provisions section S-107.3 and S-107.4 states…

S-107.3 Measurement will be made by the meter [linear foot] along the centerline of the roadway where shoulder preparation is performed as specified. Payment will be made under Item 2112.603 (Shoulder Preparation) at the Contract bid price per meter [linear foot], which shall be payment in full for all costs of preparing the shoulder subgrade, as specified, except that any expenses incurred in correcting unstable conditions below the top 150 mm [6 inches] will be compensated for separately.

OR

S-107.4 Measurement will be made by length in road stations of 100 feet along the centerline of the roadway where shoulder preparation is performed as specified. Payment will be made under Item 2112.619 (Shoulder Preparation) at the Contract bid price per road station, which shall be payment in full for all costs of preparing the shoulder subgrade, as specified.

This means that the measurement includes both shoulders of the roadway, do NOT double the quantity for this.

Funding

The funding sources (i.e. state, federal, city, county, state aid, etc.) need to be determined early in the process. If there are multiple funding sources then the Statement of Estimated Quantities (SEQ) and the tabulations need to show the funding splits. All tabs need to show the funding splits, even traffic and drainage tabs.

If there are federal funds the SEQ needs to show the funding splits (i.e. 20% state/80% federal).

If there are agreements the SEQ needs to show the following note….SEE LUMP SUM AGREEMENT NO. XXXX.

Cost Share Information in Construction Plans

Cooperative construction cost participation must be identified in the construction plan. Quantities on the estimated quantities sheets must be split into as many columns as there are separate funding groups; the factors that determine funding groups are funding source, project number, and percentage of participation. Specific funding information should be included at the top of each group column in the following manner:
Federal aid participation should be indicated by showing the percentage of federal aid participation for each group. When there is more than one Federal Project Number, each separate federal aid funding source is shown as a separate group and the appropriate Federal Project Number should be indicated.

MnDOT participation should be indicated by showing the percentage of MnDOT participation for each group. When there is more than one State Project Number, each separate state funding source is a separate group and the appropriate State Project Number should be indicated.

Local participation should be indicated by showing the percentage of local participation, and if applicable, the State Aid Project Number. Lump sum agreements should be identified with a note at the top of the column-or noted for the pay items that the lump sum applies to. The notes on the SEQ sheet should state “See Lump Sum Agreement # with local governmental agency”.

The funding percentages must total 100% for each column.

When space is limited at the top of the column, footnotes may be used. These should be lettered notes not numbered and need to stand out from the numbered notes.

The tabulation sheets need to support the quantities for each funding group shown on the estimated quantities sheets.

The Federal Project Number, State Project Number, and State Aid Project Number must be shown on the construction plan title sheet.

If federal funds are applied to the local share, the local federal funds must be identified in the STIP, and the local share needs a federal State Aid project number.

For further information regarding cost participation information required in the construction plan, see the “Metro Sample Plan,” MnDOT Policy for Cost Participation for Cooperative Construction Projects and Maintenance Responsibilities between MnDOT and Local Units of Government, or contact MnDOT’s Design Service Engineer, the Funding Program Coordinator in the MnDOT Office of Transportation System Management, or MnDOT’s Municipal Agreements Engineer.