CHAPTER 2G - CONSTRUCTION PLANS

LIST OF FIGURES AND TABLES

CHAPTER 2G - CONSTRUCTION PLANS

SECTION 2G-1-FINALIZING PLANS

REVIEWING REPORTS – INTEGRATED PROJECT MANAGEMENT

A thorough review of all correspondence and reports relative to summaries must be made to insure incorporation of applicable items into the plans. Usually, appreciable time has elapsed between the date of the Field Inspection and incorporation of the recommendations into the plans. Therefore, current nomenclature, basis of payment, and items affected by Instructional & Informational Memoranda are to be checked. Type code number(s), federal numbers (for federally funded projects), bridge plan numbers, etc., on the title sheet should be verified.

If a change is made in the latter stages of plan development that affects the limits of a construction project or projects within the original right of way project termini, it can affect right of way acquisition, utility adjustments or railroad agreements. The Right of Way Division should be advised accordingly, as soon as possible, in order that they can arrange to clear the desired segment and subsequently can certify to the Construction Division that a project is clear for advertisement. The methods of required notification (Plan Revision or Memorandum) are outlined in Section 2F-5-RIGHT OF WAY REVISIONS.

The designer should review the parameters of the project's functional* classification, size, and geographic location as shown in Integrated Project Manager (iPM). The correct project length, numbers, and elements of work should be reviewed for correctness.

RESOLUTION OF PENDING CONSTRUCTION DETAILS

Few problems occur during construction of standard items. When special design or modified items are called for in the plans, it would be prudent to review these with the Construction Division for inclusion of proper notes or special provisions. Minor construction problems resolved at this stage may prevent the need for major revisions later.

On complex projects, a sequence of construction plan is required to guide the contractor (See Section 2E-10-SAFETY ITEMS AND SEQUENCE OF CONSTRUCTION and *Road Design Manual*, Section A-8). Safety devices and/or barriers must be provided for the protection of the traveling public and construction personnel during the life of the project. "Safety Guidelines for Construction Zones" (See IIM-LD-93) delineate fully the warrants and treatment of potentially unsafe areas.

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* Rev. 1/16

SPECIAL DESIGN DRAWING REQUEST PROCEDURES

When road plans have been developed to the stage of right of way acquisition, requests shall be made to the Standards/Special Design Section, by memorandum, to prepare the required special design drawings for minor structures and roadside appurtenances not included in the standard drawings for inclusion in the plan assembly. Exceptions to this procedure are requests for special design box culverts and special wing details, which are to be made to the Structure and Bridge Division.

All requests are to be made a minimum of nine (9) months to one (1) year prior to the date of Advertisement Quality Control Review of the project. The Hydraulics Engineer shall submit all requests for required special design drainage drawings to the Standards/Special Design Section and copy the road designer*. Completed special design drainage drawings will be furnished to the Hydraulics Engineer for their review and approval. The Hydraulics Engineer will submit the final drawing to the road designer for insertion in the plan assembly. Non-drainage drawing requests shall be made by the Road Designer. All requests shall include the scheduled advertisement date, complete project charge number, pertinent plan sheets and the name and telephone number of the Road Designer. Requests under specific time restraints should include a date desired. Special Design drainage structure drawing requests shall include the following:

1. Structure number, height, length, width, top elevation, invert elevation
2. Pipe size entering and exiting the structure
3. Prints of the pertinent plan, profile and x-sect sheets with structure clearly located

Retaining Wall drawing requests are made to the Geotechnical Section, Central Office Structure & Bridge Division. When appropriate, standard walls will be recommended. The Structure and Bridge Division will respond directly to the original road designer. Retaining Wall drawing requests shall include the following:

1. Plans depicting the horizontal and vertical location of the wall
2. Road station for wall beginning and end
3. Boring log data for foundation design
4. Retaining wall and boring locations should be marked clearly on plan sheets

* Rev. 1/19

Impact Attenuator requests shall include the following:

1. Design speed/Posted speed for temporary M.O.T. designs.*
2. Propose location of the required attenuator, profile, and cross-section sheets with structure clearly located.
3. UPC Number.

The Road Designer shall furnish the Standards/Special Design Section any additional data or information necessary for the design and preparation of the special design drawings. Special Design drawings must be in sufficient detail to construct the item and contain the basis of payment, reference to specifications and materials required for construction. Special design drawings normally follow the typical section sheets in the plan assembly.

Sound Barrier Wall requirements for location and profile elevations are determined by the Environmental Division who will provide the roadway designer with the requirements. The roadway designer will coordinate with the Environmental Division and include horizontal locations and profiles of the walls in the roadway plans and cross sections. When sound barrier wall locations are determined, the roadway designer will immediately request foundation data from the Materials Division. A Boring Log Data Sheet is required for all projects having retaining walls and sound barrier walls whenever boring log data is available. Boring Log Data Sheet (in MicroStation format) will be furnished to the project designer by the Materials Division. The District Material Section will prepare these sheets or they will forward a request to the Geologist Supervisor at Elko. The project contractor is responsible for the design and construction of the wall based on Special Provisions. These Special Provisions contain design and construction requirements, which become part of the roadway project specifications.

The request for special provisions should have the following information:
“Subject: Order No: A12 Project No. U000-1000-101, C501, AD Feb 2016, UPC No. XXXX PS&E-YES”.

Special Provisions for sound barrier walls (designed by VDOT) are prepared by the Construction Division. The Lead Design Engineer will request the Noise Section of Environmental Division to provide the Construction Division with a suggested draft of the provisions.

When sound barrier walls are designed by a consultant, the Engineering Development and Project Management Section will advise the consultant to contact the Noise Section of Environmental Division for input and direction prior to initiating the development of Special Provisions. When the Noise Section of Environmental Division is made aware of the need for a Special Provision, it will coordinate with the Construction Division and provide Engineering Development and Project Management a suggested draft of the provisions.

* Rev. 1/15

RAILROAD FORCE ACCOUNT WORK - RAILWAY FLAGGING AND WATCHMAN SERVICE*

The Department of Rail and Public Transportation will furnish estimated cost for:

"Railroad Force Account Work"

"Railway Flagging and Watchperson Service"

Designate work appropriately

Type Project	Railroad Force Account Work	Railway Flagging & Watchperson Service
Federally Funded	Participating Item	Participating Item
State Funded	Participating or Non-Participating	Participating Or Non-Participating

Show on Incidental Summary Sheet

Railroad Names and Computer Estimate Numbers

Railroad Force Account – Total Estimated Cost (TEC)

ITEM CODE	PAY ITEM	PAY UNIT
Non-standard Item Code	# R/R Force Account	TEC
Standard Item Code	Railway Flagging and Watchperson Service	LS

Fill in the name of the R/R on the second line of the description.

Items on railroad force account should always be coded under group code 6, column 12.

* Added 7/14

PLANS PREPARED BY OTHER DIVISIONS

Plans prepared by other divisions are to be available approximately seven months prior to the scheduled advertisement date in accordance with the "Contract Document and Processing Cut-Off Dates for Advertisement" and are to follow the last roadway profile sheet in the plan assembly (See Section 2E-6-PREPARATION OF SUPPLEMENTAL SHEETS)*.

* Rev.7/06

SECTION 2G-2-SUMMARY SHEETS

GENERAL

The names and phone numbers, including area code, and District, if applicable, of the following persons are to be shown in the upper left corner: Project Manager: (VDOT), Surveyed By: (L&D Survey Office Manager or Consultant Survey Project Manager), Design Supervised By: (Responsible Person) and Designed By: (Designer).

Normal roadway construction projects prepared by the Location and Design Division are summarized into five categories: Grading , Drainage, Incidental, Pavement and Roadside Development/Temporary Erosion and Siltation Control. Each category must be separated with individual totals for each project and contract number. Projects with more than one type of financing will require separate totals for applicable items. These summaries are usually shown in tabular form.

An example of this is the case of a storm sewer system in an urban area wherein financing responsibilities are based on the run-off ratio, to be shared jointly with city, state, and/or federal funds.

Small projects or those of less complexity may be summarized in a list or "Streamline" summary. These projects will generally be limited to Minimum, No Plan, Safety, and Plant Mix Projects.

The items shown in summaries must agree with the description and pay unit shown in VDOT'S *Road and Bridge Specifications* as amended by contract provisions and plans. To alleviate the inconsistencies in denoting the use of Regular and Alternate Designs or Design Options on the plans, the following policy is to be adhered to:

1. When more than one design is shown on plans and it is practical to establish the same units of measurement to provide equitable payment for construction of either design, such designs are not to be designated as Regular, Alternate, or Option. The successful bidder will then be permitted to select the design he prefers, without having to designate which design he has selected at the time of bidding. As an example: separate designs are shown for guardrail consisting of concrete posts, and wood posts; however, one bid price is furnished for guardrail on a Linear Feet basis and the successful bidder constructs the design he prefers.

2. When more than one design is shown on the plans and it is not practical to establish the same units of measurement to provide equitable payment for construction of either design, such designs are to be designated as Design Option A, Design Option B, etc. The Construction* Division will then incorporate a provision in the proposal, which advises that bidders have the option of bidding on any one of the design options and that award will be made on the basis of the lowest bid submitted.

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* Rev. 7/14

3. Designs are not to be designated as “Regular” and “Alternate” except on those occasions when such designs are not considered to be equal or one is considered to be questionable, either from a performance standpoint or from a competitive cost standpoint. In such an event, the designation of Regular and Alternate designs must be approved by the State Construction Engineer well in advance of plans being sent to the Construction Division for advertisement. When the “Regular” and “Alternate” design concepts are approved, the Construction Division will incorporate a provision in the proposal which advises that the Department will, at its option, award to the bidder submitting the lowest “Regular” and “Alternate” total bid, whichever is in the best interest of the State.

Pay item totals in summaries shall be shown to the nearest whole number, except in the following situation:

1. Concrete to be measured for payment by the cubic yards, in which case the concrete total shall be computed to two decimal places and shown to one decimal in the summaries.

Summarization of work to be performed by State Forces and Railroad Forces are typically included in the Incidental Summary. For instructions on showing State Force work for providing construction signs, see IIM-LD-93. IIM-LD-93 should also serve as a guide for the method of showing State Force work for Construction Surveying when approved by the State Location and Design Engineer (see VDOT *Survey Manual*, Chapter 8*).

* Rev. 1/15

COMPUTATION AND SUMMARIZATION OF EARTHWORK QUANTITIES

Projects containing Regular Excavation and Borrow as pay items shall have compaction (shrinkage or swell) factors, as furnished by the Materials Division, applied to Regular Excavation and Borrow quantities. See LD-252*.

When Regular Excavation is to be paid for on a plan quantity basis, and Embankment is a pay item, the contractor shall be responsible for determining the effect of the shrinkage or swell of the material. Reference VDOT's *Road and Bridge Specifications*, Section 303.

The Materials Division will generally estimate the shrinkage or swell in each cut and recommend an average shrinkage or swell factor to be used throughout the project. On a project having differing soil types, the Materials Division may recommend more than one factor to be applied to the applicable areas of the project. The Materials Division will recommend a compaction factor for borrow based on average shrinkage or swell for the general vicinity.

In the event that the shrinkage or swell factor is not received from the Materials Division by Preliminary Field Inspection Stage, an estimated factor (as provided by Materials Division) shall be used in the interim.

This procedure has been developed to apply shrinkage or swell to excavation quantities in lieu of fill quantities and should prevent large overruns of Borrow quantities during construction.

PLAN SUMMARY NOTES

The notes shown in the legend should be used to clarify the method of arriving at the individual earthwork totals.

For projects with a pay item for Borrow, the following note is to be shown on the Grading Summary sheet:

> "The borrow quantity shown was computed on the basis of the estimated average shrinkage or swell factor for the general vicinity of the project. The contractor will be responsible for determining the actual factor for the site(s) from which he proposes to secure borrow material and shall determine the actual quantity of borrow material needed to complete this project."

For projects with a pay item for Embankment, the following note is to be shown on the Grading Summary sheet:

> "The embankment quantity shown has not been adjusted for shrinkage or swell factors. The contractor will be responsible for determining the effect of the shrinkage or swell factor of the embankment material, and no adjustment will be made in pay quantities for this factor. The contractor shall determine the actual quantity of embankment material needed for complete this project."

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* Rev. 7/22

GRADING DIAGRAM AND SUMMARY*(See Chapter 2H, Figure 2H-25)

In development of the Grading Diagram and Summary it is essential that the project sequence of construction be taken into consideration to avoid specifying use of material which may not be available until a later phase of construction. On complex projects, it may be necessary for the designer to develop rough grading diagrams and summaries for each phase of work to accurately determine the grading effort required. This may include making provision for stockpiling material for phased construction, protecting stockpiled material from moisture, provisions for second hauls, timing of excavation for stormwater management/erosion and sediment control, etc.

The Grading Diagram is to be on a scale that enables the entire limits of the project to be shown on a single sheet, if practicable. Straight line alignment is to be used to graphically depict all baselines on this sheet. List all earthwork quantities (computer, manual, or estimated quantities) on the GRADING DIAGRAM AND SUMMARY Sheet. Cut and fill quantities should be adjusted (for compaction factor, root mat and unsuitable material to be removed) on a print or rough draft. Adjusted cut and fill quantities are not to be shown on the final Grading Diagram.

Symbols shall be used to identify quantities shown in the grading diagram. Notes and formulas (with corresponding letters applied to grading items) shall be shown with the grading summary to demonstrate how earthwork quantity totals were derived. If any of the notes or symbols on the GRADING DIAGRAM AND SUMMARY insertable sheet are not applicable for a particular project they should be deleted or lined through. The same applies for any column in the Grading Summary. If any of the columns are deleted the formulas on the bottom of the sheet should be revised.

In several locations on the insertable sheet (specify material) appears. The designer must fill in the appropriate material in these locations.

The Designer should modify notes as necessary to reflect different conditions applying to his/her particular project.

Pay items shall be designated in accordance with the Engineer's Estimate Item Code Listings.

The plan quantity symbol is to be shown for "Roadway Cut" and other appropriate cut quantities. The "Total Regular Excavation" quantity is subject to change during construction and may include some non-plan quantity items. Therefore, do not show the plan quantity symbol for "Total Regular Excavation" in the Grading Summary. The plan quantity symbol should not be shown on the "Regular Excavation" quantity in the engineer's estimate if any part of the total includes non-plan quantity items.

* Added 7/14

Fill Quantities*

Material removed from locations in fill (root mat, unsuitable material, demolition of pavement) is to be backfilled with Regular Excavation, Borrow material, Embankment, etc.

Include the quantity for backfill with the quantity for roadway fill (if same type material) to obtain the fill quantity needed for applicable locations.

CLEARING AND GRUBBING

Clearing and grubbing as covered in the current *Road and Bridge Specifications* can be measured and paid for on either of the following:

- lump sum basis
- unit basis

Lump Sum

Unlike previous Specifications for this method of payment, this method now necessitates a work order for any change in the limits of clearing and grubbing.

Unit

Payment by this method is applicable to removal of isolated tress, stumps or structures on very small projects or urban projects. The number of units paid for will be determined by the actual count of trees, stumps, structures, etc. to be removed.

Summarize units of Clearing and Grubbing with description as shown below.

UNITS OF CLEARING AND GRUBBING		
PLAN SHEET	LOCATION	DESCRIPTION
3	Sta. 30 + 00, 20’ Rt.	36” Oak Tree
4	Sta. 39 + 25, 10’ Lt.	12” Pine Tree
5	Sta. 41 + 50, 15’ Rt.	24” Pipe

Usable Cut Quantities

To obtain usable cut to make fills, subtract root mat and/or unsuitable material above subgrade from individual cut quantities. Then, for borrow projects, apply shrinkage or swell factor received from Materials Division. The resulting quantity will be usable cut.

* Added 7/14

Earthwork Hauls*

In diagramming earthwork hauls, care must be taken to specify only usable materials, which are available for use in the same stage of construction, and not materials, which will be needed in a different phase of work.

Usable excavation should be hauled the shortest distance possible to make fills. Balance points should be established and locations that require additional material (Borrow or Embankment) should be held to a minimum.

Haul material shown in grading diagram is C.Y. of non-compacted material.

EARTHWORK COMPUTATIONS (PAY ITEM FOR BORROW)

Example Roadway #1: Compaction Factor of 20% Shrinkage

Fill (Measured) =	5,000 C.Y.
Cut (Measured) =	5,000 C.Y.
Cut (Adjusted) = (5,000 C.Y. x 80%) =	- 4,000 C.Y.
*Borrow (Measured) =	1,000 C.Y.

* To comply with the plan note for borrow material this quantity must be converted to measured cut to meet borrow requirements. The compaction factor as furnished by the Material Division must be applied to determine the computed borrow as follows:

Sample Borrow Site: Compaction Factor of 20% Shrinkage

Borrow (Measured) = 1,000 C.Y.

Borrow (Computed) = (1,000 C.Y. ÷ 80%) = 1,250 C.Y.**

-or-

Sample Borrow Site: Compaction Factor of 20% Swell

Borrow (Measured) = 1,000 C.Y.
Borrow (Computed) = (1,000 C.Y. ÷ 120%) = 833 C.Y.**

** This is the measured cut required to meet borrow requirements.

Example Roadway #2: Compaction Factor of 20% Swell

Fill (Measured) =	5,000 C.Y.
Cut (Measured) =	5,000 C.Y.
Cut (Adjusted) = (5,000 C.Y. x 120%)	- 6,000 C.Y.
Surplus (Adjusted) =	1,000 C.Y.

* Added 7/14

EARTHWORK COMPUTATIONS (PAY ITEM OF EMBANKMENT)*

Fill	10,000 C.Y.
Cut (usable)	- 4,000 C.Y.
Embankment	6,000 C.Y.

Fill quantity includes mainline, connections, entrances, etc., plus any area such as material removed from below fill that needs to be replaced.

Cut (usable) includes plan and non-plan quantity minus any unsuitable material.

COMPUTATIONS FOR GRADING DIAGRAM:

Example: Compaction Factor of 18% Shrinkage

Right Side of Roadway

3679 C.Y. cut (measured)
- 561 C.Y. rootmat in cut (unusable material)
3118 C.Y. usable excavation (measured)
x 0.82 (18% Shrinkage factor)
2557 C.Y. usable excavation (adjusted)

395 C.Y. fill (measured)
+141 C.Y. rootmat in fill (to be backfilled)
536 C.Y. fill (measured)

2557 C.Y. usable excavation (adjusted)
-536 C.Y. fill (measured)
2021 C.Y. extra usable excavation (adjusted)

2021 C.Y. usable excavation (adjusted) = 2465 C.Y. haul (measured)
0.82

* Added 7/14

Left Side of Roadway

177 C.Y cut (measured)
-177 C.Y. rootmat in cut (unusable material)
0 C.Y. usable excavation

4093 C.Y. fill (measured)
+198 C.Y. rootmat in fill (to be backfilled)
4291 C.Y. fill (measured)

2465 C.Y. haul (measured)
x 0.82
2021 C.Y. haul (adjusted)

4291 C.Y. fill (measured)
-2021 C.Y. haul (adjusted)
2270 C.Y. Borrow (measured)

Computation Factor for Borrow Site = 18%

$$\frac{2270 \text{ C.Y.}}{0.82} = 2768 \text{ C.Y. Borrow Material (computed)}$$

INSERTABLE SHEET

See Insertable sheet number A-71 GRADING DIAGRAM AND SUMMARY. This sheet contains standardized notes, formulas and symbols applicable to a typical Grading Summary. Designers should use only notes, which are applicable to their project.

The insertable sheets are available in ProjectWise, Central Office*, eng-ser, file name "minsert" (Metric) or "insert" (Imperial) for insertion into applicable plan assemblies.

DRAFTING FINAL GRADING DIAGRAM & SUMMARY

A base Grading Diagram and Summary Sheet is available as a CADD file. This sheet has all the applicable notes and symbols for a typical Grading Diagram and Summary. Designers should use only notes, which are applicable to their project.

* Rev. 7/18

PLAN QUANTITIES- DETERMINATION OF PLAN QUANTITIES*

Plan quantities are items that are not likely to vary as a result of field conditions.

In accordance with Section 109.02 of the *Road and Bridge Specifications*, items designated in the Contract as plan quantity will not be field measured, but will be paid as the quantity shown on the plans. Therefore, quantities shown as plan quantities should be carefully selected.

Attached is a list of items that, under normal design and project conditions are commonly considered for designation as plan quantity items. Any item, whether on the example list or not, may be designated as a plan quantity item only after consultation with the District Construction Engineer or his designee.

Plan quantity items are paid for based on the exact quantities shown on the plan summaries as plan quantities, whereas other items shown in the summary are estimated quantities and are paid for as measured in the field.

If the Contractor believes there is an error in a plan quantity figure, he may request that the Department check the computations by furnishing evidence and computations supporting his belief along with a written request for review (See Section 109.02 of the *Road and Bridge Specifications.*)

Should the Department determine at any time that an actual measurement is warranted, the Department will make the necessary measurements in the field. Payment will then be based on the measured quantity instead of the plan quantity originally shown on the summary.

If during the design of a project, and after consultation with the District Construction Engineer or his designee, it is determined that conditions vary too much to pay for an item by plan quantity, then the plan quantity symbol should not be used indicating the plan summary reflects estimated quantities and payment would be based on actual quantities measured in the field.

Plan Summaries

All plan summaries are to show a symbol (⊗) by the appropriate plan quantity totals with the following note:

> "Denotes item(s) to be paid for on the basis of plan quantities in accordance with the applicable provisions of the current Road and Bridge Specifications."

Note to designers: It will no longer be necessary to designate and code plan quantity items when preparing the Engineer's estimate. The plan quantity symbol will not appear as a margin code in the Schedule of Items in the bid proposal.

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* Added 7/14

Example Plan Quantity Items

Any item, whether on the example list or not, should be designated as a plan quantity item only after consultation with the District Construction Engineer.

ITEM	SPEC	ITEM DESCRIPTION	UNITS
00120	303	REGULAR EXCAVATION *	C.Y.
00111	301	CLEARING AND GRUBBING	ACRE
00211	303	MINOR STRUCTURE EXCAVATION PIPE CULVERT	C.Y.
00212	303	MINOR STRUCTURE EXCAVATION BOX CULVERT	C.Y.
00490	302	CLASS I BACKFILL MATERIAL	TON
00491	302	CLASS I BACKFILL MATERIAL	CY
00492	302	CLASS II BACKFILL MATERIAL	TON
00493	302	CLASS II BACKFILL MATERIAL	CY
00500	302	BEDDING MATERIAL FINE AGGREGATE.	TON
00502	302	BEDDING MATERIAL FINE AGGREGATE OR AGGREGATE NO. 10	TON
00504	302	BEDDING MATERIAL FINE AGGREGATE OR AGGREGATE NO. 8	TON
00505	302	BEDDING MATERIAL AGGREGATE NO. 25 OR 26	TON
00522	302	CONCRETE CLASS A4 BOX CULVERT	C.Y.
00540	302/406	REINFORCED STEEL	LB.
11020	316	CONCRETE CLASS A4 BRIDGE APPROACH SLAB	C.Y.
11030	316	REINFORCED STEEL BRIDGE APPROACH SLAB	LB.
13250	504	BEDDING MATERIAL.	TON
13251	504	BEDDING MATERIAL.	C.Y.
13545	406	REINFORCED STEEL	LB.
13561	401	POROUS BACKFILL	C.Y.
13565	506	RETAINING WALL EXCAVATION	506
13580	417	DAMPPROOFING	S.Y.
13750	519	SOUND WALL COLOR COATING	S.F.
13753	ATTD	SOUND BARRIER WALL	S.F.
13754	519	PRECAST SOUND BARRIER WALL	S.F.
13755	519	PRECAST SOUND BARRIER WALL ABSORTIVE	S.F.
24400	508	OBSCURING ROADWAY	UNIT
24410	508	DEMOLITION OF PAVEMENT	S.Y.
24420	508	DEMOLITION OF PAVEMENT (RIGID)	S.Y.
24430	508	DEMOLITION OF PAVEMENT (FLEXIBLE)	S.Y.
69805	416	WATERPROOFING	L.F.
69810	417	DAMPROOFING	S.Y.

*Regular Excavation is listed per VDOT *Road and Bridge Specifications*, Section 303.06(c).*

* Added 7/14

PAVEMENT SUMMARY (See Chapter 2H, Figure 2H-24)

The Pavement Summary is usually prepared with identifying stations and lane down the left column, the description of the item and pay unit across the top, and a "Remarks" column down the right side (where necessary).

Instructional and Informational Memoranda must be checked for inclusion of all pertinent notes relative to pavement designs.

PUG MILL MIX AGGREGATES

The following criteria must be observed when summarizing quantities:

Imperial Projects:

1. Aggregate base or subbase materials:
   The pavement recommendation will show an in-place dry weight of aggregate to be used in pounds per cubic foot.

   For example: 145 lbs. per cubic foot

   $$\frac{145 \times \text{Volume (Cu. Ft.)}}{2000} = \text{tons of Aggregate (dry weight)}$$

   Add 6% to tons of aggregate for moisture correction.

2. If cement stabilized:
   To determine the amount of cement required (tons): Compute *4% of the total dry weight of the aggregate in pounds and divide by 2000.

   *4% cement by weight is the usual rate but should another rate be recommended in the pavement design, it is to be used.

Deleted Information*

* Rev. 7/16

CRUSHER RUN AGGREGATE

Where either No. 25 or 26 aggregate is recommended, both gradations shall be shown on the plans and summaries.

AGGREGATE BASE MATERIAL

Whenever a material usually used as a base course is used in the subbase position (reference Section 101 of VDOT's *Road and Bridge Specifications* for definitions of "Base Course" and "Subbase"), it must be noted on the typical sections, summaries, and estimate as follows:

Aggregate Base Material Type (used as subbase)

If there is any question about the usage of nomenclature of a material, the designer is to contact the Materials and Construction* Divisions for clarification.

WEIGHTS OF ASPHALT CONCRETE

In computing weights of asphalt concrete, the weights in pounds per sq. yd. per inch of depth shall be used unless otherwise directed by the Materials Division. (Use rate provided by the Materials Division, when available.) See IIM-LD-158 for specific weights used by each district.

COAL TAR PITCH EMULSION

Due to damage done to asphalt concrete parking areas, it is necessary to provide a protective coating resistant to the deteriorating effect of gasoline and oil. The parking and maneuvering area of all rest areas and weigh stations being constructed with asphalt concrete surface are to receive this treatment. The plan portion of the facility is to have a line drawn delineating the limits of the coating as in the example below. It is not to include exit and entrance roadways. This item is to be entered into the pavement summary under the heading of "Coal Tar Pitch Emulsion" in square yards. A special provision will be included in the project assembly by the Construction Division.

* Rev. 7/14

INCIDENTAL SUMMARY (See Chapter 2H, Figure 2H-26)

The Incidental Summary is usually prepared with identifying stations and lane down the left column, the description of the item and pay unit across the top, and a remarks column down the right side.

SPECIALTY SUMMARIES

ROADSIDE DEVELOPMENT (See Chapter 2H, Figure 2H-19)

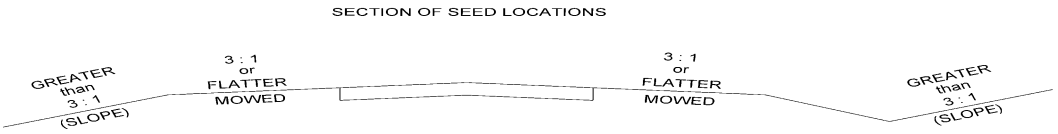
Seeded Area

The approximate area to receive Regular Seed and Temporary Seed in acres will be shown under "Notes" on the Roadside Development Sheet. This area is not to be expanded for estimating purposes.

The Designer shall determine and provide the following to the District Roadside Manager: *

1. Determine the disturbed area to receive Regular Seed.
   a. Determine the mowed areas on the project (slopes 3:1 or flatter) and provide the most severe gradient in the calculated mowed area to be used to select Hydraulic Erosion Control Product (HECP) mulches.
   b. Determine non-mowed areas (slopes greater than 3:1) and provide the most severe gradient in the calculated mowed area to be used to select Hydraulic Erosion Control Product (HECP) mulches.
2. Determine the disturbed area to receive Temporary Seed.
3. Determine the area to receive Overseeding or Legume Overseeding is assumed to be equal to the area to receive Regular Seeding.

* Rev. 1/17



4 Determine the area of the project designated to receive Topsoil (Class A, B and Depth).

Note: Upon completion of the spreadsheet inputs, the District Roadside Manager (DRM) will send the designer the PDF output file generated from excel file, and then the designer will enter the data into the Roadside Development Sheet that will be included in the plan set. The designer will send the DRM a PDF of the final Roadside Development Sheet as it will be shown in the plan set, for final review.

PAY ITEMS

PAY ITEM	UNIT	**ITEM CODE*
• Lime	TON	
• Fertilizer (N – Nitrogen)	LB.	
• Fertilizer (P – Phosphoric Acid)	LB.	
• Fertilizer (K – Potassium)	LB.	
• Regular Seed	LB.	
• Overseeding	LB.	
• Legume Seed	LB.	
• Legume Overseeding	LB.	
• Temporary Seed	LB.	
• Topsoil Class A	AC.	
• Topsoil Class B	AC	
• HECP Type 1	S.Y.	
• HECP Type 2	S.Y.	
• HECP Type 3	S.Y.	
• HECP Type 4	S.Y.	

** Item Codes can be found on the following webpage:
https://www.virginiadot.org/business/const/resource.asp

* Rev. 7/23

For additional information on Roadside Development, see IIM-Maint-2016.8.0.

INSERTABLE SHEETS

The Roadside Development Sheet may be accessed from the sheet2015.cel library in MicroStation.*

- A-4 Roadside Development Sheet (RDSDEV)

The Erosion Control Summary Sheet may be accessed from the sheet2015.cel library in MicroStation.

- A-5 Erosion Control Summary Sheet (ECSUM)

STORMWATER MANAGEMENT (See Chapter 2H, Figure 2H-23)

Quantities relative to stormwater management facilities are to be summarized in the appropriate summary or for the particular pay item (e.g.) drainage items in the Drainage Summary, earthwork items in the Grading Summary, erosion and sediment control items in the Erosion and Sediment Control Summary, etc.

DEMOLITION OF BUILDINGS AND CLEARING OF PARCELS

A Building Data Report lists buildings to be removed and parcels to be cleared and is furnished by the Right of Way Division, when applicable, for inclusion in the contract. Appropriate identification and description of the buildings are to be included in the summary. These summaries may be combined (See Figure 2G-2).

* Rev. 8/16

UTILITY ADJUSTMENTS

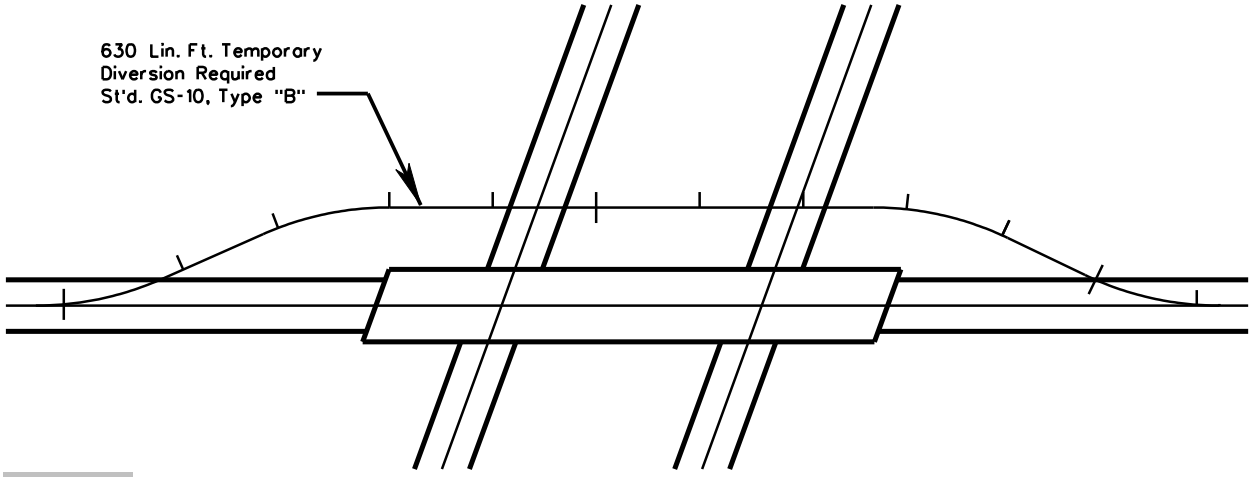
Sewer, water, or other utility adjustments which are not included in Utility Plans (Section 2G-1-PLANS PREPARED BY OTHERS) are summarized separately.

SPECIAL DESIGN BRIDGES

All special design bridges applicable to the contract are to be listed. This will include project number, description, plan number, sheet number, clear roadway, and minimum vertical clearance, where applicable. Although this is not a summary of quantities, it helps to define the scope of the project. Bridge approach slabs are included in road plans with quantities summarized on the detail sheets. Beginning with the September 1, 2008 Advertisement Date the bridge approach slab detail sheet and quantities will be the responsibility of the bridge designer and will no longer be included in the roadway plan assembly.

TEMPORARY DIVERSION*

Each Standard GS-10 Diversion, Type "A" and Type "B" is to be shown on the plans by means of a construction baseline as noted below:



Diversion on crossroads carrying over 750 ADT should have the complete alignment, grades, typical sections, drainage, etc., shown on the plans. Additional temporary construction easement lines should also be shown, if necessary.

If a type "A" or "B" Diversion can be constructed within existing right of way, it will be necessary to only show the baseline of the Diversion.

If a type "A" or "B" Diversion cannot be constructed entirely within the existing right of way, it will be necessary to show both baseline and grade of the diversion, together with the temporary construction easement lines necessary to construct it.

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* Rev. 7/14

The Diversion * are to be set up in separate summaries as follows:

Type A and B

Temporary Diversion, Standard GS-10

Location	Type "A" (Feet)	Type "B" (Feet)
Route 601 (Sta. 100+00)	550’	
Route 602 (Sta. 150+00)		625’
Route 604 (Sta. 250+00)	655’	
Route 605 (Sta. 300+00)	560’	
Totals	1765’	625’

Type C through F

Temporary Diversion St'd. GS-10 Type "E"
Route 606 (Sta. 350+00)

1233 Cu. Yds.	Regular Excavation
* 223 Lin. Ft.	18” Pipe
* 112 Lin. Ft.	30” Pipe
222 Cu. Yds.	Aggregate Base Mat'l. Ty. I No. 21 or 21A (6” Depth)
100 Tons	Asphalt Concrete Type SM-2A @ 165 lbs/yd^2

*Set up pipes for payment only when recommended by the Drainage Section.

The quantities for a Type "C", "D", "E", or "F" Diversion are to be shown separately, as above, but are to be combined with the mainline quantities on the estimate and bidding proposal.

* Rev. 7/14

SECTION 2G-3-REVIEW OF PLANS

CHECK FOR ACCURACY AND COMPLETENESS

When the summaries have been completed, the computations are to be checked for accuracy and completeness. If conflicts in quantities are discovered, they are not to be changed until the discrepancies have been mutually resolved by compiler and checker.

Check plans for most recent insertable sheets. Review items on Quality Control Checklist (LD-436)

The Hydrologic Data Sheet is to be reviewed to determine if all information contained thereon is up-to-date.

The traffic data on the title sheet should be reviewed and if it is over two years old, an update should be requested. (See Section 2A-4-REQUEST FOR TRAFFIC DATA and Section 2E-6-Functional Classification - Traffic Data.)

Computer Listings must be reviewed in accordance with *CADD Manual, Chapter 8.*[*]

INTEGRATED PROJECT MANAGER

By this stage, most entries on the Integrated Project Manager (iPM) have been completed. A review is to be made to assure that the project limits shown in iPM are in agreement with those shown on the title sheet. After final submission of the project to the Construction Division, forward a copy of the Activity Report from iPM.

RIGHT OF WAY NOTE ON TITLE SHEET

In some instances, the proposed construction will be within existing Right of Way, this includes all easements. Such is the case with some intersection improvements for the addition of turning lanes or on safety projects. When this situation occurs, the following note is to be shown on the title sheet in the area adjacent to the Right of Way Approval signature block:

"All construction is to be performed within existing right of way."

[*] Rev. 7/16

SECTION 2G-4-COST ESTIMATE

PREPARATION OF CONSTRUCTION COST ESTIMATE

A Project Cost Estimate is required for each project to be advertised for construction. Each project must be coded separately, just as the summaries were split, e.g., C-501, C-502, D-601 (Box Culvert).

The Location and Design Division has the responsibility of compiling all project estimates. Prior to final submission to the Construction* Division, estimates furnished to anyone outside of the Department are to be taken from the current Six Year Improvement Program (SYIP). Exceptions are projects such as, but not limited to, roadway bridge maintenance, sign, signal, lighting, landscape, etc., developed exclusively by other divisions.

All estimates furnished outside of Location and Design prior to final submission to the Construction Division are to be approved estimates for the applicable stage of project development. (See Section 2E-7-CONSTRUCTION COST ESTIMATE)

After final submission of the plans has been made to the State Construction Engineer for project advertisement, any request for estimate information or any inquiries regarding project estimates from the press or others outside the department are to be referred to the Construction Division's Estimate Engineer.

The final construction estimate, prepared by the Construction Division for the purpose of determining whether or not acceptable bids are received, is not provided to anyone.

* Rev. 7/14

SECTION 2G-5-CONSTRUCTABILITY QUALITY REVIEW

CONSTRUCTABILITY QUALITY REVIEW

Constructability review is defined as the review of plans, specifications, and contract documents from a construction perspective to assure the documents propose an operation that is efficient, cost effective, and buildable. Its emphasis is primarily focused on “how” the documents propose the operation to be built and not on “what” gets built.

AASHTO defines constructability review as “a process that utilizes construction personnel with extensive construction knowledge early in the design stages of projects to ensure that the projects are buildable, while also being cost-effective, biddable, and maintainable”.

This analysis is normally performed at the Preliminary Field Inspection, Public Hearing, Field Inspection and Pre-Advertisement stage of plan development. Additional reviews can be performed as needed when the plans are further developed.

The constructability review includes the report of findings, a completed checklist, and cost savings report. This report is a detailed tabulation of any anticipated savings identified during the review.

SECTION 2G-6-QUALITY CONTROL CHECKING

QUALITY CONTROL CHECKING PROCEDURE

This review of the completed construction plans is conducted when all items have been checked in the Advertisement column of the checklist (approximately 10 days prior to the Pre-Advertisement Conference*). This review will be conducted by the Design Section Manager. There may be situations in which the Design Section Manager's peers will conduct this review.

It is the Project Manager's responsibility to coordinate with other disciplines involved (Structure and Bridge, Traffic Engineering, etc.) to ensure complete plan assemblies for checking. It will be the other disciplines' responsibility to conduct their own internal plan reviews before submitting plans to the Project Manager for review.

See Chapter 1E for Quality Control Checking Procedures.

* Rev. 7/07

SECTION 2G-7-PRE-ADVERTISEMENT CONFERENCE

See Project Management Online Guide*

* Rev. 7/08

SECTION 2G-8-PREPARATION OF PLAN ASSEMBLY FOR CONSTRUCTION

PREPARATION OF PLANS FOR CONSTRUCTION

See Project Management Online Guide

DATA REQUIRED FOR PLAN COORDINATION REVIEW

See Project Management Online Guide

BRIDGE ONLY CONTRACT

When a bridge contract is to be let separately from the road contract, sufficient road plans must be included to establish the line and grade of the bridge. In some instances, such as widening of an existing bridge, road plans may not be necessary.

The road plan designer should coordinate the submission of the plan assembly with the Bridge Engineer according to the guidelines in the section on "DATA REQUIRED FOR PLAN SUBMISSION".

GOVERNMENT STREAM GAGING STATIONS

If U.S. Geological Survey, Weather Bureau, Virginia Department of Conservation and Development, or other government stream gaging stations are located within the limits of construction, or will be destroyed or disturbed by construction, arrangements must be made to have these gaging stations moved before construction is started.

When plans have been submitted to the Construction* Division for advertisement on which government stream gaging stations will be disturbed by construction, the Hydraulics Section must be notified by memorandum. The memorandum, accompanied by a print of each plan sheet on which such a gaging station occurs, shall give the description and location of each gaging station that has to be adjusted. Upon receipt of this data, the Hydraulics Section will notify the appropriate governmental agencies of the pending highway construction and of the necessity for the adjustment of the stream gaging stations.

POST-CERTIFICATION PLAN CHANGES

During the review of the plans by the Construction Division after the Project Manager has certified the plans and prior to Advertisement Submission, "changes" may be made to the plans (with no formal revision) as long as the designer receives concurrence from the Construction Division and there is sufficient time to make the changes and furnish prints of the sheets involved to the Construction Division prior to Advertisement Submission.

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* Rev. 7/14

SECTION 2G-9-PROJECT APPROVAL

APPROVAL

See Electronic Plan Submission Process Flow Chart.

BID PROPOSAL

The Construction* Division will check the cost estimate, prepare a Bid Proposal and review, with the designer, any discrepancies discovered during their review of the plans to insure total agreement between plans and specifications. The designer will make the changes on the plans requested by the Construction Division and revise the original computerized estimate in the Construction Division to indicate the revised quantity or material correction(s).

* Rev. 7/14

SECTION 2G-10-BIDDABILITY REVIEW

BIDDABILITY REVIEW

The Biddability Review is conducted after the draft contract documents have been completed*. This review looks at the details of the drawings and the quantities for the major cost items. The quantities stated in the summaries will be compared to the project contract documents and cost estimate to ensure that payment for all required work is addressed.

The goal is to ensure that the project can be constructed for the bid amount by ensuring through biddability analysis that complete and accurate contract line items contain sufficient quantities to construct the project, thus preventing work orders and overruns. An estimate of the required quantities to perform the work is made from the Construction Plans. The plan quantities are then compared to the contract quantities to ensure accuracy.

The Specifications, Standards, Special Designs and Special Provisions are also reviewed to make sure they are appropriate and correct for the work to be performed.

A report is created after the review. It summarizes the review findings and gives recommendations as to adding or rewording notes to clarify pay items, working hours, specifications, etc.

* Rev. 7/07

SECTION 2G-11-ADVERTISEMENT SUBMISSION OF APPROVED PLANS

See Project Management Online Guide*

* Rev. 7/08

SECTION 2G-12- CONTACT WITH CONSTRUCTION PERSONNEL

CONTACT WITH CONSTRUCTION PERSONNEL

Communication between the Project Designer* and construction personnel should promote a superior product. Therefore, to avoid conflicts during construction, it is recommended that the project designer/coordinator contact the residency soon after the project is awarded to determine a field contact person. On large projects, an onsite meeting held prior to construction may be beneficial in answering questions regarding design intent that may prevent future revisions.

* Rev. 7/07

SECTION 2G-13-CONSTRUCTION PLAN REVISIONS

FORMAL CONSTRUCTION REVISIONS

After prints of approved plans have been made available at advertisement submission, any change on the plans will require a formal revision and approval of Construction* Division. When a proposed revision involves a change in quantities and the project has been turned in to the Construction Division but has not been advertised, the Construction Division may agree that the changes or revisions can be made before advertisement. If so, the summary sheet and estimate should be changed to reflect the revised quantity. Do not show a change in quantity on the Revision Data Sheet.

The designer or Project Manager will coordinate all changes in the estimate with the Construction Division.

The Contract Engineer must always be notified of any proposed plan revision that is required between the time plans are received in the Construction Division (advertisement submission) and the award of the project.

After advertisement of the project, and prior to bids being received, a "project showing" will be held. Any plan revisions requested at this time must be approved by the Construction Division, prior to incorporation into the plans.

After the contract has been awarded, the estimate or summaries will not be changed. The addition of new items and increases or decreases of current contract items are to be shown on the Revision Data Sheet only, with the revision data as shown in Figure 2G-3.

Electronic plan submission of formal construction revisions must follow the Electronic Plan Submission Process. See diagram on the web at:
http://www.extranet.vdot.state.va.us/locdes/reference-guides/ElectronicPlan_Submission.pdf

All revisions submitted will be accompanied by the Revision Data sheet and Revision Data Form LD-36. The appropriate blanks on Form LD-36 must be marked in the lower left corner to designate who is to receive notification of the revised plans.

*Rev. 7/14

The "Reason for Revision" part of the form should state: "See Revision Data Sheet No ____. The person responsible for making the revision is to sign the form and show his/her telephone extension at the bottom. Revisions should be submitted electronically in accordance with the Electronic Plan Submission Process Flow Chart.

Revisions are updated electronically in the ProjectWise* Plan File Room.

The changes must be described clearly and fully on the Revision Data Sheet. State and Federal Project numbers (including P.E. numbers), project descriptions, and UPC numbers are to be shown at the top of the sheet. For each revision, list the following information:

1. Revision date
2. State Project number
3. Sheets revised (excluding Bridge sheets)
4. Description of change to each sheet
5. Authorization for making the revision

For illustration, see Figure 2G-1.

In addition to the above, all instructions noted in Section 2F-5-FORMAL REVISIONS-MAJOR CHANGES relating to utilities are applicable to this section.

During the life of a construction project, all construction revisions that will affect the final contract cost must be approved by the Construction Division before revising the plans.

In order to avoid plan revisions to work already under construction, the project designer/coordinator should contact the project engineer or inspector prior to making any formal plan revisions. Advance copies of revisions may be beneficial to field personnel and should be provided.

* Rev. 7/18

SECTION 2G-14-PROJECT ROUTE FILES AND DESIGN FILES

ROUTE FILES AND CORRESPONDENCE

One year after acceptance of a completed construction project, the route file may be discarded, except for original survey data.

For applicable projects:
All field books, electronic survey plan base and certified drawings are to be delivered to the District L&D Survey Manager to be prepared for warehouse storage.

All electronic and paper correspondence shall be stored in ProjectWise*.

RETENTION OF DESIGN FILES

From the preliminary to the final stages of a roadway design project, it is not unusual to have several design schemes developed utilizing the computer. Only one design scheme may be retained in computer storage. Alternate design schemes and studies will not be permanently stored, but may be reprocessed for the desired computer listing.

If or when it is necessary to use one of the alternate design schemes in lieu of the stored data or another copy of a listing is needed, the file can be retrieved and the desired output recreated to replace the existing data on file. If multiple design schemes, such as alternate sub-grade designs, must be considered at construction advertisement stage, the alternate design files will be retained.

The designer will be notified on Form C-5 when construction of the project has been completed.

Correspondence, computations, reports, etc. are to be retained in accordance with the table shown in Table 2G-1.

* Rev.7/18

FINAL NOTEBOOK AND PROJECT RECORDS RETENTION

The District Location and Design Engineer will retain all source documents, "project inspector" notebooks and/or project records for a period of five years, following payment of the final voucher, on all Federally funded, State, and Revenue Bond financed projects.
If no audits, litigation or claims are in progress, all source documents, notebooks and/or project records can be disposed of after the five-year retention period. Otherwise, the retention period should be extended until such cases are resolved.

AS-BUILT PLANS

Right of way and design changes made during construction should be captured through the formal revision process. However, if design changes made during construction (that do **not** impact right of way) are **not** captured through the formal revision process, the Area Construction Engineer shall send all “As-Built” plans to the District Location and Design Engineer. The naming convention of the plan file name is to add “ab” following the plan sheet number. For example, plan sheet number 03 would be renamed 03ab. The District Location and Design Engineer or Design Engineer shall send the electronic “As-Built” plans in pdf format (only the plan sheet(s) revised and not captured through the formal plan revision process developed during construction) to the C.O. CADD Support Section with a request that the plans be stored in ProjectWise. *

As-Built revisions are not to be shown on the Revision Data Sheets, but are to be shown in red on all applicable plan sheets.

* Rev. 7/18

SECTION 2G-15-PREPARATION OF FINAL ESTIMATE

PROCEDURE

The review and preparation of final estimates, while requiring the coordinated effort of many divisions in the Central Office, is basically a responsibility of the District *Engineer/Administrator utilizing the District Design Units as focal points in fulfilling this obligation.

The primary objective during the review and preparation of the final estimate is to determine that the final records present a factual representation of the work performed by the contractor on the project.

Guidelines for review and preparation of final estimates may be found in the Post Construction Operations manual.

Completed final estimates are kept on file at the District Headquarters.

* Rev. 7/15

SECTION 2G-16-POST CONSTRUCTION REVIEW
(Design Quality Index Report)*

POLICY

A Design Quality Review will be conducted on completed projects to evaluate the completeness, accuracy, clarity, and constructability of the design. The Design Quality Index form LD-433 will be used on all projects completed and accepted by VDOT. The form is to be submitted as a routine part of the final record submission process.

SCOPE

The review process shall include the major component items of the project selected. The normal components are:

A. Constructability
B. Drainage
C. Subsurface Investigation
D. Utilities
E. Maintenance of Traffic
F. Document Clarity
G. Survey

REPORTS

The Design Quality Index, form LD-433, shall be completed by the Project Inspector, in conjunction with Project Engineer. Where applicable, data to be used in the evaluation should be collected by all persons involved in the project (including those outside of VDOT), throughout the life of the project.

EVALUATION

The rating value for each factor is to be given in whole numbers. The Inspector will also provide a brief explanation as to why the rating with specific examples, if available, that supports the rating given. To arrive at the Project Index, all of the ratings are added together, and then divided by the number of factors used. The number is rounded to the nearest tenth. For other design related concerns which occurred on the project, but cannot be included in one of the seven factors, comments shall be made in the ”Additional Comments” section on back of the form. If more space is needed in any of the comments sections, additional paper may be used and attached to the form.

Each of the seven factors will be rated using the following scale:

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* Rev. 7/07

RATING*

4 – No design problems – Minor deviations or field adjustments, no plan revisions or work orders processed.

Example: "Two additional entrances were installed to match existing farm entrance".

"The power source for the signals was shown 1250' from the controller when in reality; power was available only 225' away. This saved almost $2500."

3 – Some design problems – Minor plan revision, minor work order or time extension processed.

Example: "An abandoned lighting standard foundation that was shown on the old as-built plans was discovered during pipe excavation. The abandoned lighting system was not shown on the new plans even though it was in conflict. The obstruction was removed by work order during the pipe work."

"The new ditch line was deep enough that when field reviewed, necessitated guardrail to be installed."

2 – Numerous design problems – Plan revision(s) processed, work order or time extension required to construct.

Example: "Many of the culvert tie-ins were shown to be concrete pipe. All were found to be CMP. Because of the deteriorated state of the CMP all had to relined before the new pipe could on a attached. The project was delayed while the Dept. decided on a repair method and secured prices to do the work."

"Even though the gas line is evident by the above ground markers, it was not indicated on the plans as being in conflict."

* Rev. 7/07

1 – Major design problems – Major design change required or major time impact to construction.

Example: "The proposed west bound storm drain system was found to be in conflict with a 12" high pressure gas main. Since the cost to relocate the gas main was prohibitively expensive, the entire WB storm system was redesigned. This added considerable cost due to disposal of DI's and lost time and production."

Sequence of construction indicated a center lane closure, which is not permitted by Traffic Engineering."

Each factor is to be evaluated; however, if a factor does not apply to a particular project, do not enter a score for that factor. Write "N/A" for all non-applicable factors.

After the Inspector and Project Engineer have completed the form, the Resident *Engineer/Administrator will hold a Post Construction Meeting for the purpose of discussing the ratings provided on the form. The attendees at the Post Construction Meeting will be at least the Resident Engineer/Administrator, Project Inspector, Project Engineer, Location and Design designer/coordinator and consultants and other designers/coordinators involved in the project (Structure & Bridge, Right of Way, Traffic Engineering, Materials, and Construction). If for some reason the Post Construction Meeting cannot be attended by all parties, the latest technology can be used to accomplish the objectives of the meeting.

At the Post Construction Meeting, at least the following items will be discussed:

- How the evaluator arrived at each rating
- Review of each comment (ensuring that each section has a comment)
- General discussion regarding the overall design
- How effectively changes were made
- Other design concerns noticed by the Inspector that did not fall under one of the seven criteria listed on the form
- Feedback for improvement regarding the design (or the evaluation process)

If any difference of opinion occurs as to whether design issues are errors, omissions, unforeseen or changed conditions, and cannot be resolved at this meeting, the designer may attach a written statement as to why the rating is not appropriate with specific comments. The designer should also indicate what rating is more appropriate with specific reasons. The form will be signed by the Project Inspector, Project Engineer, and the Resident Engineer/Administrator and distributed within 30 days of the Post Construction Meeting.

* Rev.7/15

The original signed form and all attachments will be sent to the State Location and Design Engineer. If a difference of opinion exists regarding a rating between the inspector and the designer, the State Location and Design Engineer (or other appropriate designer) to review the information and decide what the appropriate rating should be. This will then be recorded as the final rating.*

* Rev. 7/07

REVISION DATA SHEET

State Project: 0625-042-348, RW-201, C-501
Federal Project: BR-5A27( )
From: 0.055 MI. East of Henrico County
To: 0.048 MI. West of Hanover County
UPC Number: 82399

R1 Date: August 11, 2015 Project 0625-042-348, RW-201

Sheet 1B: Updated to reflect revisions to Sheet 3RW.

Sheet 3: Removed D-700 from Parcel 006. Sign to be removed intact and restored at project completion. Parcel 002 and 005.

Sheet 3RW: Added quit claim take for Parcel 004.
Added Prescriptive Right-Of-Way for Parcel 002 and 005.

This revision was made in accordance with a request from Mr. Winston Phillips, PMP, Richmond District Location and Design Division, dated July 22, 2015.

R2 Date: December 2, 2015 Project 0625-042-348, RW-201

Sheet 1B: Updated to reflect revisions to Sheet 3RW.

Sheet 3: Property line added to Parcel 001 along the south bank of the Chickahominy River.

Sheet 3RW: Property line added to Parcel 001 along the south bank of the Chickahominy River.
Added quit claim take for Parcel 001.

This revision was made in accordance with a request from Mr. Winston Phillips, PMP, Richmond District Location and Design Division, dated December 2, 2015.

THIS IS A PORTION OF A SAMPLE SHEET, FOR A CURRENT VERSION, ACCESS THE CELL LIBRARY Sheet2000.cel.

FIGURE 2G-1 REVISION DATA SHEET (RIGHT OF WAY)*

* Rev. 4/16

DEMOLITION OF BUILDINGS / CLEARING OF PARCEL / CLOSING WELL / UNDERGROUND STORAGE TANK REMOVAL SUMMARY											
0058-070-103,RW-201											
Sheet Number	Parcel Number	Demolition Number	Landowner	Station Rt. or Lt.	Description	INCLUDED IN CONTRACT					NOT IN CONTRACT
						Demolition of Buildings	Clearing of Parcel	Closing Well	Underground Storage Tank Removal		Items To Be Removed By Others
									Type A	Type B	
						Lump Sum	Lump Sum	Each	Each	Each	
3	001	D-1	Vaxy, Tom Q.	103+40 Lt.	2 Story Frame Dwelling	L.S.					
3	001	D-2	"	104+58 Lt.	1 Story Frame Garage	L.S.					
3	001	D-3	"	104+71 Lt.	Well - 30" X 40'			1			
3	001	D-4	"	104+71 Lt.	Well House	L.S.					
3	001	D-5	"	105+05 Lt.	Shed		L.S.				
4	002	D-6	Tiger Oil Co.	109+62 Rt.	1 Story Brick Building	L.S.					
4	002	D700	"	109+68 RT.	Sign						1
4	002	D500	"	109+72 Rt.	Underground Tank -700 Gal.				1		
4	002	D900	"	109+75 Rt.	2 Lights						1
4	002	D-7	"	109+84 Rt.	10' X 20' Metal Sign	L.S.					
4	002	D-8	"	109+95 Rt.	Well			1			
4	002	D701	"	110+14 Rt.	2' X 2' Sign		L.S.				
4	002	D501	"	110+72 Rt.	Underground Tank - 1000 Gal.					1	
0008-070-106,RW-201											
7	019	D-9	Roe, Roger L.	138+94 Lt.	1 Story Stucco Dwelling	L.S.					
7	019	D901	"	139+02 Lt.	Fence						1
7	019	D902	"	140+14 Lt.	Mobile Home		L.S.				
7	019	D-10	"	140+16 Lt.	Well - 30" X 55'			1			
TOTALS						LUMP SUM	LUMP SUM	3	1	1	(N.I.C.)

FIGURE 2G-2* DEMOLITION OF BUILDINGS/CLEARING OF PARCEL/CLOSING WELL/UNDERGROUND STORAGE TANK REMOVAL SUMMARY

* Rev. 1/15

(R10) Date: September 23, 2013 Proj.: 0360-964-120, RW-201, C-501
Changes in quantities as a result of revision dated September 23, 2013
Changes in Quantities:
Increase:
36 TONS Asphalt Concrete Type SM-12.5D
26 TONS Asphalt Concrete Type IM-19.0D (T)
23 TONS Aggr. Base Material Type I No. 21B
Decrease:
265 SY Median Strip St'd. MS-1
89 LF Storm Sewer Pipe 15"
64 LF Storm Sewer Pipe 18"
16 LF 15" Conc. Pipe
3.7 LF Manhole MH 1 or 2
Add:
74 TONS Crusher Run Aggr. 25 or 26
1 EA Drop Inlet DI-3B, L=10'
1 EA Drop Inlet DI-3B, L=14'
Remove:
1 EA Drop Inlet DI-1
1 EA Drop Inlet DI-3B, L=12
1 EA Inlet Protection, Type A
This revision was made in accordance to memorandum from Mr. John Kennedy
(Project Manager) and Mr. Sam Hayes (Asst. Dist. Admin. PE) dated August 9, 2013.
THIS IS A PORTION OF A SAMPLE SHEET, FOR A CURRENT VERSION, ACCESS THE CELL LIBRARY Sheet2000.cel.

FIGURE 2G-3 REVISION DATA SHEET (CONSTRUCTION)*

* Rev. 4/16

RECORDS RETENTION						
	Until Revised Or Voided	1 Year	2 Years	3 Years	Time Frame	Comments
		After Completion of Project Construction				
SURVEY						
Aerial Photography					Forever	
Aerial Survey Records					10 Yrs. Min.	Retained until audit or 10 yrs., whichever is longer
Airport Clearance Files					20 Yrs. Min.	Retained longer if needed
Contour Mapping					Forever	
Flight Records					6 Yrs. Min	Retained longer if needed
Photo. Mosaics	X					
Subsurface Utility Requests				X		
Survey Books/Control Files/Disks	X					Retain as long as Administratively necessary
Survey Files					Forever	
Survey Progress Reports		X				
Survey Requests			X			
Survey Rolls / U.S.G.S. Mapping	X					
DESIGN						
Design Route Files	X					
IGAES Testing Material	X					
Preliminary Field Rev. / F.I. Plans					5 Yrs.	In accordance with ProjectWise.
Paper Plan Files					Forever	Paper copies may be destroyed after scanning
Project CADD Files					Forever	
Project Computations		X				Retained until project is Route Filed
ESTIMATES						
Appalachian Cost Estimates					Forever	
Appalachian Estimate Backup	X					
Interstate Cost Estimates					Forever	
Interstate Estimates Backup	X					
Project Estimates					Forever	Originals retained in PCES
CORRESPONDENCE						
Non-Project Correspondence			X			
Project Correspondence					Forever	Originals retained in iPM, See Sec. 2G-14
RECORDS/FORMS						
Engineering Publications		X				
Budget Reports					3 Yrs. Min	Retained 3 years beyond applicable biennium
Committee minutes	X					
Consultant Files				X		Non-short-listed Expressions of Interest-30 days
Consultant Perform. Reports				X		
Consultant Vouchers/Invoices	X					Most recent three
Leave Records					Forever	Retained in Cardinal
Personnel Files		X			50 Yrs. Min	Retained 50 years after termination
Publications/Photo Sales Records				X		
Training Records				X		
MANUALS						
CADD/Survey Man./Support Data	X					
IIM / RDM/Support Data					Forever	
ST'D/SPEC. DESIGN						
Special Designs / Shop Drawings					Forever	
St'd. /Insert. Sheets/Backup Data					Forever	

TABLE 2G-1*

* Rev. 7/18