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INTRODUCTION

The Roadway Plans Preparation Manual is intended to be used as a technical guide for the preparation of ALDOT plans. It is to be used as a supplement to various American Association of State Highway and Transportation Officials (AASHTO) manuals, Alabama Department of Transportation (ALDOT) Special and Standard Highway Drawings and the current policies of ALDOT. The Roadway Plans Preparation Manual is not a design guide and any design values shown are merely examples.

This Manual is written to provide assistance to the designer by establishing the content, assembly, and format of roadway plans. The Roadway Plans Preparation Manual shall be used to provide uniformity, clarity, and accuracy to the plans developed by, and for, ALDOT. Every effort has been made to make the documentation complete and accurate in order to address the most common plan presentation situations; however, the Department makes no guarantee to the accuracy or relevancy of the information. Engineers and technicians should follow these guidelines and use judgment in unique circumstances or situations not addressed by these guidelines. Additionally, all engineers and technicians are responsible for ensuring that these guidelines are implemented accurately and that the drawings show the necessary information completely, clearly, and legibly.

This information is provided on an “as is” basis. Updates to these guidelines will be made as needed. The most current Manual with revisions and updates can be viewed on the ALDOT intranet site located on the Design Bureau home page at the ALDOT Roadway Plans Preparation Manual hotlink (see below for intranet address). The most current Manual can also be viewed on the ALDOT internet site on the Design Bureau home page at the ALDOT Roadway Plans Preparation Manual hotlink.

- Internet address: http://www.dot.state.al.us/Docs/Bureaus/Design/Design+Index.htm

As with any documentation or guidelines, additional information may be needed and can be added. Any clarifications or additions that would be beneficial should be brought to the attention of the Department at the following address:

Alabama Department of Transportation
Design Bureau – Plan Presentation Committee
1409 Coliseum Blvd.
Montgomery, AL 36110

New computer aided drafting and design (CADD) standards have been developed to unify the way that MicroStation and InRoads software is used at ALDOT. Compliance with these standards is required. The CADD standards can be found at the ALDOT website.


*Disclaimer: The use of the Roadway Plan Preparation Manual does not relieve the engineer from their professional responsibility for ensuring the accuracy and completeness of the contract plan assembly. This manual is for example only and does not reflect the Department’s design criteria.
CHAPTER 1 – TITLE SHEET

The “Title Sheet” is the first sheet of the plan set. It describes the type of project, the project location within the State, design designation, project location map, responsible individuals, and other general project information.

Title Sheet General Guidelines
(Refer to Figure 1.1)

1. Show State of Alabama map with a callout leader identifying the project location at the upper left hand corner of the Title Sheet.
2. Show project number that identifies funding type, control section, and agreement number centered in the middle of the Title Sheet.
3. Describe the location (mile post shall be included, when possible) and the work description of the project centered directly below the project number. Include in the description any major items that should be included as part of the project such as grade, drain, base, pave, bridge(s), bridge culvert(s), bridge widening, bridge replacement, bridge deck replacement, signing (do not list signing for bridge projects), lighting, signals, planing and resurfacing, concrete rehabilitation, etc. The county(s) in which the project is to be built shall be labeled directly underneath the project description.
4. Complete the project identification box as well as the preliminary project and code numbers. The fiscal year is the letting fiscal year. The preliminary project number will often be similar to the Project Number described above. The code number is the project charge number for the PE project. The contract ID number will be completed by the Office Engineer Bureau.
5. The project vicinity map must include the following:
   - The stations of the begin and end work and the begin and end of the project (to two decimal places).
   - The Section, Township, Range, and County lines together with Section, Township, and Range numbers to make the location clear. The size of the map should be chosen so that it will not interfere with other features on the Title Sheet. Other boundaries that should be shown are national forests, city limits, military bases, etc. County maps typically should be used for rural projects, whereas, city maps may be appropriate for municipal projects. The latest census year population data for incorporated municipalities shall be labeled and the census year listed below (this information is listed on ALDOT county maps).
   - The location of existing and required bridge structures and bridge culverts shall be identified on the map and also labeled on the left side of the title sheet. The bridge structures will be numbered / lettered consecutively from the beginning of the project to the end. The symbols used (using letters for existing and numbers for required) for bridge structures will be placed inside inverted triangles.
   - The location of station equations and exceptions shall be identified on the map and also labeled on the left side of the title sheet. The station equations and exceptions will be numbered consecutively from the beginning of the project to the end. The symbol used shall be a circle and the station equation and exception number shall be placed inside the circle.
   - The project location map must be orientated with a displayed north arrow pointing up.
   - Show the destination and location of major roads.
   - The proposed construction route shall be shown (a reasonable amount of exaggeration is permissible for clarity) with a bold line.
6. Use the bridge identification symbols placed on the project map to provide the following
bridge information on the left side of the title sheet.

- State the roadway, begin and end stations, length, and the Bridge Identification Number
  (BIN) provided by ALDOT. Any new structure requires a new BIN. For existing bridge
  structures the BIN must also be provided and the disposition of the existing bridge
  structure, i.e. “retain”, “remove”, “partial removal”, etc. In addition to these items, all
  existing and required bridge culverts must also include the culvert size, i.e. CD-9’ x 9’,
  CT-14’ x16’.
- Some of the headings required may include Required Bridge, Required Bridge
  Widening, Existing Bridge (Retain), Existing Bridge (Remove), Existing Bridge (Raise),
  Required Bridge Culvert, Required Bridge Culvert Extension, Existing Bridge Culvert
  (Retain), Existing Bridge Culvert (Remove), etc. Under each heading the total length
  should be provided. If the bridge length is not accounted for in the centerline stationing,
  then the total = 0. NOTE: Not all bridges will have an effect on the stationing of the
  project. Only those bridges or bridge culverts located on the mainline will be accounted
  for in the stationing box. Bridges crossing over the mainline on a cross road or ramp
  should be shown with the length total being “no effect”.
- Classify the bridges as a bridge or bridge culvert. When a box culvert length, measured
  along the roadway centerline is 20 feet total span or more, (measured from the extreme
  ends of openings along the centerline) the culvert is classified as a bridge culvert.
- Note which bridges and bridge culverts are not part of the contract.
- Include the statement “Pave Over” for existing bridge culverts.
- When there are no existing and/or required bridges within the project limits, it should be
  noted by inserting “N/A” next to the applicable heading.

7. List the station location of equations and exceptions. Station equations are required
whenever a re-alignment to the existing roadway will result in changes to the existing
stationing. When stationing errors occur, and/or when alignments with different stationing
are connected. In such cases, the station back is shown first and the station ahead next.
For example the example title sheet shown as Figure 1.1 displays the old alignment station
notation as Sta 306+73.80. This is noted as the ahead stationing (AH) and is what will be
used to denote the stationing from this point to the end point of project (EOP). The actual work
done to arrive at this station, however, was performed from the begin project station of
273+17.87 to Sta 315+86.17. At Sta 315+86.17 the station notation will be changed to
306+73.80 resulting in +912.37 ft of work (31586.17 – 30673.80 = 912.37) that is not
apparent from inspecting the begin and end project stations. The lengths of roadways,
bridges, bridge culverts, and the gross length of the project are to be placed in the lower left
corner. Provide the lengths as feet and miles. Provide the mileage to 3 decimal places
with no rounding. The lengths displayed on the example title sheet shown as Figure 1.1
were computed as follows:

- Total Stationing of Project:
  - End project: 38507.00 ft
  - Begin project: -27317.87 ft
  - Total Stationing: 11189.13 ft
- Equations and Exceptions(from item 7): +912.37
- Net Length of Project: 12101.50 ft 2.291 mi

- Net length of bridges
  - Sum of bridge lengths 520.00 ft 0.098 mi
  - NOTE: Use the centerline length in the mileage box for bridge culvert extensions.
- Net length of Roadway (not including bridges and bridge culverts) adjusted for
  Equations.
  - Net length of Project 12101.50 ft
  - Net length of bridges - 520.00 ft
  - Net length of roadway 11581.50 ft 2.193 mi
- The net length of the project must equal the sum of the roadway and the bridge net
  lengths. Length of bridge culverts (culverts exceeding 20 ft of length measured along
  the centerline) are added to the bridge length.
- When there is not a station equation within the project limits, it should be noted by
  inserting “N/A” next to the “Equations and Exceptions” heading.

8. When a project includes different funding types and/or is located within multiple counties,
provide the funding ratios as a percentage. A length is also required when a project is
within multiple counties.

9. The Design Designation includes the information obtained from the Transportation
Planning Bureau. The information to be provided and the order of presentation is as follows:
- ADT (Calendar Year) - the highest two-way direction average daily traffic volume for the
  calendar letting year on the mainline. The year shall be labeled within the parenthesis.
- ADT (Design Year) – the highest two-way direction average daily traffic volume for the
  design year on the mainline. This is usually 20 years beyond the calendar letting year
  of the mainline. The year shall be labeled within the parenthesis.
- K Factor – the percentage of the ADT that is estimated to occur in the peak hour.
- D Factor – the percentage of the hourly traffic that is estimated to travel in one direction.
- TDV – the percentage of truck traffic that will be traveling during the peak hour.
- TADT – the percentage of the average daily traffic that is estimated to be heavy truck
  traffic.
- V (Design Speed) – the speed of the roadway that will govern the degree of curvature,
superelevation, stopping sight distance, and other design parameters.
- Min Stopping Sight Dist. – the minimum stopping sight distance required for the design
  speed. If the minimum stopping sight distance for the design speed of any roadway
  within project limits is not met a design exception should be processed.

10. The statement below the Design Designation box shall include the most current
ALDOT Standard Specifications for Highway Construction: “These plans have been prepared
to conform to the Alabama Department of Transportation Standard Specifications for
Highway Construction, 20__ Edition.”

11. For plans prepared by consultants and submitted to Office Engineer for letting:
The Title Sheet shall be signed, dated, and stamped by the responsible Professional
Engineer that supervised the design and plans preparation. The consultant’s responsible
Professional Engineer is not required to sign, date, and stamp every plan sheet. The
primary consultant’s responsible Professional Engineer is only required to sign, date, and
stamp the Title Sheet unless the “Alabama State Board of Licensure for Professional
Engineer”
Engineers & Land Surveyors” requires otherwise. Other Professional Engineers working with the primary consultant may be required to sign, stamp, and date subsections of the plans to meet ALDOT guidelines and/or professional licensure requirements. The responsible Professional Engineer(s)’ signature, date, and stamp are generally just required on final plans; i.e. plans submitted to Office Engineer for letting, final plans submitted to ALDOT to close out a contract, etc. A consultant logo adjacent to the signature area for the Professional Engineer is optional.

12. Display a north arrow oriented upward, located preferably on the right side of the Title Sheet below the Designation box.

13. The ALDOT seal should appear on the right-hand side of the title sheet, preferable directly above the signature block.

14. If required, the metric symbol should appear near the ALDOT seal. Also, this symbol shall appear on every sheet of the plan assembly in the lower right corner of all other sheets, with the exception of bridge sheets and/or culvert standard sheets. These sheets are currently drawn using only U.S. customary units of measure.

15. Sometimes the project number changes at the last minute before letting and there is limited time to make this change throughout the plan set. If this occurs, the designer has the option to change the project number throughout the plan set (provided there is time) or just change the project number on the title sheet to the correct project number and add the following note on the title sheet: “NOTE: THE PROJECT NO. _______ AS INDICATED ON THIS TITLE SHEET IS THE CORRECT IDENTIFICATION FOR THESE PLANS. IT SHALL BE UNDERSTOOD THAT THIS PROJECT NUMBER SHALL SUPERCEDE ANY OTHER PROJECT NUMBER WHICH MAY APPEAR ON SHEET 1A THROUGH SHEET _______.

16. Sometimes the project gets bumped in the letting and the fiscal year changes. If this occurs, the designer has the option to change the fiscal year throughout the plan set or just change the fiscal year on the title sheet to the correct fiscal year and add the following note on the title sheet: “NOTE: THE FISCAL YEAR _______ AS INDICATED ON THIS TITLE SHEET IS THE CORRECT FISCAL YEAR FOR THESE PLANS. IT SHALL BE UNDERSTOOD THAT THIS FISCAL YEAR SHALL SUPERCEDE ANY OTHER FISCAL YEAR WHICH MAY APPEAR ON SHEET 1A THROUGH SHEET _______.

17. The ALDOT signature box in the lower right-hand corner shall be completed by the State Design Engineer or Division Engineer. The person that signs in the signature box depends on who is the lead on the project. If the Division is the lead, the Division Engineer should sign and the title shown above his signature shall be labeled “Division Engineer.” If the Design Bureau is the lead, the State Design Engineer shall sign the title sheet and the title shown above his signature shall be labeled “State Design Engineer.”

18. If there is a design exception for the project, the design exception shall be noted and described on the right side of the plan sheet above the ALDOT seal.
Figure 1.1 Title Sheet With Bridge Notation

Note: Callouts for #14, #15, and #16 are intentionally not shown.
CHAPTER 1A – INDEX TO SHEETS

The “Index To Sheets” provides a complete organizational system for the plan assembly, outlining the order of sheets within the plan assembly. An “Index to Sheets” is required for all project plans. The assembly and numbering system used for all plan sheets found in the plan assembly shall follow the format provided in Table 1 below.

Table 1 Assembly and Numbering of Plan Sheets in Contract Drawings

<table>
<thead>
<tr>
<th>Plan Sheet Number</th>
<th>Plan Sheet Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Title Sheet</td>
</tr>
<tr>
<td>1A</td>
<td>Index to Sheets</td>
</tr>
<tr>
<td>1_1</td>
<td>Index to Special and Standard Drawings</td>
</tr>
<tr>
<td>1_2</td>
<td>Plans Legend</td>
</tr>
<tr>
<td>1_3</td>
<td>Plans Abbreviations Sheet</td>
</tr>
<tr>
<td>1_4</td>
<td>Primary Survey Control Sheet</td>
</tr>
<tr>
<td>1_5</td>
<td>Geometric Layout Sheet</td>
</tr>
<tr>
<td>2 thru 2_9</td>
<td>Typical Sections</td>
</tr>
<tr>
<td>2_2</td>
<td>Project Notes</td>
</tr>
<tr>
<td>3 thru 3_9</td>
<td>Summary of Quantities</td>
</tr>
<tr>
<td>4 then sequential numbering*</td>
<td>Paving/Stripling/Signing Layout Sheets</td>
</tr>
<tr>
<td>4_2</td>
<td>Sign Layouts</td>
</tr>
<tr>
<td>4_3</td>
<td>Sign Cross Sections</td>
</tr>
<tr>
<td>4S</td>
<td>Utility Sheets</td>
</tr>
<tr>
<td>4X</td>
<td>Specialty Sheets*</td>
</tr>
<tr>
<td>5</td>
<td>Signal Plans</td>
</tr>
<tr>
<td>5</td>
<td>Sequence of Construction</td>
</tr>
<tr>
<td>5</td>
<td>Traffic Control Plan Project Notes</td>
</tr>
<tr>
<td>5</td>
<td>Traffic Control Plans</td>
</tr>
<tr>
<td>5</td>
<td>Traffic Control Details</td>
</tr>
<tr>
<td>5</td>
<td>Erosion Control Plans</td>
</tr>
<tr>
<td>5</td>
<td>Bridge Plans</td>
</tr>
<tr>
<td>5</td>
<td>Special Project Details</td>
</tr>
<tr>
<td>5</td>
<td>Hydraulic Data Sheet</td>
</tr>
<tr>
<td>5</td>
<td>Drainage Sections</td>
</tr>
<tr>
<td>5</td>
<td>Soil Boring Logs</td>
</tr>
<tr>
<td>5</td>
<td>Mainline Cross Sections</td>
</tr>
<tr>
<td>5</td>
<td>Side Road Cross Sections</td>
</tr>
<tr>
<td>6</td>
<td>Earthwork Summary*</td>
</tr>
</tbody>
</table>

Notes:
1. "_" indicates a suffix of the sequential capital letter (e.g. 1A, 1B, ... 1-O, etc.)
2. Profile sheets on separate pages have the same prefix as the plan sheet followed by the suffix ‘A’
3. Specialty sheets can include project information for hazardous materials, retaining walls, streambed mitigation, lighting, site grading, ramp gore profiles, etc., and shall be labeled “Special Project Detail”.
4. The last sheet in the plan assembly shall end in a whole number and shall not be an omitted sheet.

Index to Sheets General Guidelines
(Refer to Figure 1A.1)

1. The title “INDEX TO SHEETS” shall be placed at the top center of each individual Index Sheet.

2. A minimum of two columns shall be created as to provide a proper and adequate description of each individual sheet in the plan set. The first column should be titled “SHEET NO” followed by a second column titled “DESCRIPTION”.

3. A complete list of all plan assembly sheet titles should be provided exactly as they appear on each of the individual plan sheets in the plan set.

4. Provide name of roadway in sheet description for relevant sheets. Possible sheet types may be plan/profile sheets, cross-section sheets, etc.

5. The word “OMITTED” shall be included in the numbering system to identify sheets that are not included in the plan assembly. Several “omitted” sheet ranges shall be included. This allows a place for additional sheets that may be required as the plans are advanced. Including “omitted” sheet ranges often eliminates the necessity of having to renumber the plan assembly when additional plan sheets are required as plan development progresses. When using a numeric / alpha format to identify plan sheets, there should be no “OMITTED” sheets within the letter range listed. For example, if you are using the plan sheet designation “4 through 4E”, this plan sheet group shall include 4, 4A, 4B, 4C, 4D, and 4E. Renumber plan sheets, if needed, to eliminate any skipped letters. Also, if sheet “4E” is the last sheet in the sheet group, and the numeric / alpha sheets 4F through 4Z are not within the plan assembly, 4F through 4Z shall not be shown as “OMITTED”. Only numeric / alpha sheets that are actually in the plan set shall be listed on the Index Sheet. The page reference for all plan sheets shall begin with a number. When a numeric / alpha sheet designation is used, the alpha part of the sheet number shall immediately follow the number; however, there are two exceptions to this rule. When the alpha character is an “O” or “I” a dash shall be inserted between the number and letter, i.e. 30-O, 32-I, etc.

6. When identifying plan sheets and a numeric / alpha format is used, a consistent alpha lettering format shall be used throughout the plan set. For example, do not use AA, BB, CC, DD for one group of sheets and then use AA, AB, AC, AD for another group of sheets within the same plan set.

7. There is no need to list each plan sheet within the plans separately. It is preferred that similar plan sheets be shown on the Index Sheet as a plan sheet group. Utility Sheets, Erosion and Sediment Control Plan Sheets, Paving Layouts, and Plan/Profile Sheets are some examples of index sheet groups.

8. Each special project detail sheet should be listed separately with the appropriate description.

9. Every plan sheet shall be accounted for in the index listing and each shall have a unique numeric or numeric / alpha identification.
10. ALDOT Standard Plan Sheet Border and Required Signatures

For plans prepared by ALDOT personnel and submitted to the Office Engineer for letting: The ALDOT supervising Professional Engineer and design manager responsible for checking the plan sheet, as well as the last designer to work on the plan sheet shall sign and date each sheet, except the Title Sheet, in the appropriate space to acknowledge they physically checked the printed sheet. If the supervising Professional Engineer in charge and the design manager is the same person, then that person shall sign and date the sheet in both areas. Also, the plan inspection and/or review description shall be labeled in the space provided within the standard ALDOT sheet border for all inspections and reviews. The plans do not have to be signed and dated until final plans are submitted to the Office Engineer for letting.

For plans prepared by consultants and submitted to Office Engineer for letting: Neither the consultant or any of his personnel are required to sign and/or date the standard ALDOT sheet border. The consultant is only required to sign, date, and stamp the title sheet of ALDOT plans unless the “Alabama State Board of Licensure for Professional Engineers & Land Surveyors” requires otherwise. Other Professional Engineers working with the primary consultant may be required to stamp and date subsections of the plans to meet ALDOT guidelines and/or professional licensure requirements. If desired, consultants may provide signatures and dates on the standard plan sheet border and/or provide a consultant information box at the bottom right corner of the plan sheet. However, it is mandatory that consultants label the plan inspection the plans are being submitted for underneath the border block titled “PLAN SUBMITTAL”. The consultant shall also replace “DESIGN BUREAU SECTION D-?” located in the block containing the State Seal with their company name.

11. The order of plan/profile sheets by type of roadway should be the following:
   a. Mainline
   b. Side roads
   c. Ramps
   d. Driveways
   e. other

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Note: Callouts for #9 and #11 are intentionally not shown.

Figure 1A.1 Typical Index of Sheets
CHAPTER 1B – SPECIAL & STANDARD HIGHWAY DRAWINGS

The ALDOT publishes a set of drawings containing special and standard drawings to be utilized in ALDOT plan assemblies. The “Index to Special and Standard Drawings” sheet within a plan set shall list all standard special and standard drawings applicable to the work required by that specific set of plans. The listed drawings can be found in the current ALDOT book of Special and Standard Drawings and on the ALDOT website.

Index to Special and Standard Drawings sheet General Guidelines
(Refer to Figure 1B.1)

1. The title “INDEX TO SPECIAL AND STANDARD DRAWINGS” shall be placed at the top center of each individual index sheet.

2. Three columns shall be used to provide a full description of each special and standard drawing in the plan set. The 1st column shall be titled “INDEX NO” followed by a 2nd column titled “DRAWING NO” followed by a 3rd column titled “DESCRIPTION.”

3. A note stating “THE FOLLOWING ARE SPECIAL OR STANDARD DRAWINGS CONTAINED IN THE ALABAMA DEPARTMENT OF TRANSPORTATION SPECIAL and STANDARD HIGHWAY DRAWING BOOK (U.S. CUSTOMARY UNITS (or metric when appropriate) OF MEASUREMENT) DATED (Year of Current Edition) WHICH APPLY TO THIS PROJECT” shall be inserted at the top of the page adjacent to the title described above in item 2.

4. ALDOT Standard Plan Sheet Border and Required Signatures

For plans prepared by ALDOT personnel and submitted to the Office Engineer for letting: The ALDOT supervising Professional Engineer and design manager responsible for checking the plan sheet, as well as the last designer to work on the plan sheet shall sign and date each sheet, except the Title Sheet, in the appropriate space to acknowledge they physically checked the printed sheet. If the supervising Professional Engineer in charge and the design manager is the same person, then that person shall sign and date the sheet in both areas. Also, the plan inspection and/or review description shall be labeled in the space provided within the standard ALDOT sheet border for all inspections and reviews. The plans do not have to be signed and dated until final plans are submitted to the Office Engineer for letting.

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CHAPTER 1C – PLANS LEGEND SHEET

The “Plans Legend Sheet” within a project plan set illustrates the conventions and meaning of different lines, symbols, and common abbreviations, helping readers to interpret the project drawings. The “Plans Legend Sheet” will need to be updated on a project specific basis to incorporate special symbols and abbreviations pertaining to the project. The “Plans Legend Sheet” changes periodically, so designers need to ensure all symbols and abbreviations used throughout the plan set agree with the “Plans Legend”. If a symbol is not on the current “Plans Legend Sheet” standard and used in the plan set it needs to be added to the legend sheet for that particular plan set. If an abbreviation is not listed on the “Plans Legend Sheet (abbreviations)” it should not be abbreviated in the plan set and spelled out.

Plans Legend Sheet General Guidelines
(Refer to Figures 1C.1 and 1C.2)

1. The title “PLANS LEGEND SHEET” shall be placed at the top center of each individual “Plans Legend Sheet” (there are two sheets containing all the standard symbols and abbreviations required for ALDOT projects).
2. The first page of the “Plans Legend Sheet” contains a section titled “ROADWAY”. This section contains all symbols and line types applicable to ALDOT projects.
3. Also, on the first page of the “Plans Legend Sheet”, a second section titled “UTILITIES” shall contain all line types and symbols used within an ALDOT plan set to illustrate utility items.
4. One additional item shown on the first page of the “Plans Legend Sheet” is a section titled “DRAINAGE STRUCTURE INDEX NUMBERS”. This section describes and illustrates the proper notation that shall be used throughout the plan set to reference and display drainage structures encountered within a project. Refer to Figure 1C.1 for all items described on the first “Plans Legend Sheet”.
5. The second page of the “Plans Legend Sheet” lists all the applicable abbreviations for common items labeled within an ALDOT plan set. Refer to Figure 1C.2.
6. ALDOT Standard Plan Sheet Border and Required Signatures

For plans prepared by ALDOT personnel and submitted to the Office Engineer for letting: The ALDOT supervising Professional Engineer and design manager responsible for checking the plan sheet, as well as the last designer to work on the plan sheet shall sign and date each sheet, except the Title Sheet, in the appropriate space to acknowledge they physically checked the printed sheet. If the supervising Professional Engineer in charge and the design manager is the same person, then that person shall sign and date the sheet in both areas. Also, the plan inspection and/or review description shall be labeled in the space provided within the standard ALDOT sheet border for all inspections and reviews. The plans do not have to be signed and dated until final plans are submitted to the Office Engineer for letting.

For plans prepared by consultants and submitted to Office Engineer for letting: Neither the consultant or any of his personnel are required to sign and/or date the standard ALDOT sheet border. The consultant is only required to sign, date, and stamp the title sheet of ALDOT plans unless the “Alabama State Board of Licensure for Professional Engineers & Land Surveyors” requires otherwise. Other Professional Engineers working with the primary consultant may be required to stamp and date subsections of the plans to meet ALDOT guidelines and/or professional licensure requirements. If desired, consultants may provide signatures and dates on the standard plan sheet border and/or provide a consultant information box at the bottom right corner of the plan sheet. However, it is mandatory that consultants label the plan inspection the plans are being submitted for underneath the border block titled “PLAN SUBMITTAL”. The consultant shall also replace “DESIGN BUREAU SECTION D-?” located in the block containing the State Seal with their company name.
Figure 1C.1 Typical Plans Legend Sheet
Figure 1C.2 Standard ALDOT Plans Legend Abbreviations
CHAPTER 1D – PRIMARY SURVEY CONTROL SHEET

The Primary Survey Control Sheet illustrates the locations of all horizontal and vertical control points that have been established on a project. Information within the plans depends on horizontal and vertical control points to determine accurate distances and elevations. This information is obtained from route location surveys and is labeled on the Primary Survey Control Sheet. This survey data will come from ground surveys. Knowledge of surveying concepts and definitions is necessary to understand this type of information within the plans.

**Horizontal Control Point**

A horizontal control point is a survey established monumented control point defined by northing and easting coordinates with approximate elevation data. These northing and easting coordinate values are established using North American Datum (NAD) 83/92 and the approximate elevation is established using North American Vertical Datum (NAVD) 88.

**Vertical Control Point**

A vertical control point is a survey established monumented control point defined by elevations with approximate northing and easting coordinates. The elevation and coordinate values are currently established using North American Datum (NAD) 83/92 and North American Vertical Datum (NAVD) 88. A bench mark is one of the main types of vertical control point types. Bench marks are relatively permanent objects, natural or artificial, having a marked point whose elevation is established by ALDOT and/or National Geodetic Surveys (NGS). Common examples are metal disks set in concrete, reference marks chiseled on large rocks, nonmovable parts of fire hydrants, curbs, etc. Bench marks are established approximately every 1,000 feet along the project. Bench marks are used during construction to establish accurate elevations.

Primary Survey Control Sheet General Guidelines

(Refer to Figures 1D.1 and 1D.2)

1. The title “Primary Survey Control Sheet” shall be placed at the top center of each individual Primary Survey Control Sheet. The subtitle “Horizontal and Vertical Control Points” shall be centered and placed directly underneath this sheet title.

2. Include the following sheet note: “Point coordinates are based on the Horizontal Datum-NAD 83/92 (HPGN) Alabama State Plane, _______ (insert East or West) Zone, Vertical Datum-NAVD 88, and US Survey Foot unit of measure. A combined average scale factor of ______ (insert value) has been calculated using this datum.”

3. Show the centerline of construction alignment for mainline and side roads and the location of primary survey control points. The designer is to determine what scale should be used to clearly show the required information on this sheet. The scale of the Primary Survey Control Sheet does not have to be the same scale used on the Plan/Profile sheets. In most cases, a smaller scale should be used to reduce the number of plan sheets. Generally, the designer should choose the largest scale possible that will show the required survey control data in a legible form without cluttering the sheet excessively.

4. A horizontal control point table shall be provided on this sheet for all horizontal control points within the station limits shown on this sheet. The horizontal control point table shall describe the point number used to identify each horizontal control point shown, northing and easting coordinates (labeled to the nearest thousandth), elevation (labeled to the nearest hundredth), and the type of monument marker used to identify the point in the field.

5. A vertical control point table shall be provided on this sheet for all vertical control points within the stationing limits shown on this sheet. The vertical control point table shall describe the point number used to identify each vertical control point shown, northing and easting coordinates (labeled to the nearest thousandth), elevation (labeled to the nearest hundredth), and a general description to identify the point in the field.

6. A correctly oriented north arrow shall be shown on this sheet.

7. Each roadway alignment shall be labeled with bearing information, curve identifier, PC station, PI station, PT station, alignment type, route type, route number, angle of intersection between mainline and side roads, beginning and ending project stations (only on mainline), beginning and ending work stations for mainline, and end work stations for sideroads.

8. Show tie stations of intersecting centerlines for dedicated roadways.

9. Label Northing and Easting horizontal control point data to the nearest thousandth.

10. Label Northing and Easting vertical control point data to the nearest tenth.

11. The beginning and ending stations on the plan sheet shall be labeled vertically at each end of the alignment outside the plan view area and within the sheet border.

12. ALDOT Standard Plan Sheet Border and Required Signatures
For plans prepared by ALDOT personnel and submitted to the Office Engineer for letting: The ALDOT supervising Professional Engineer and design manager responsible for checking the plan sheet, as well as the last designer to work on the plan sheet shall sign and date each sheet, except the Title Sheet, in the appropriate space to acknowledge they physically checked the printed sheet. If the supervising Professional Engineer in charge and the design manager is the same person, then that person shall sign and date the sheet in both areas. Also, the plan inspection and/or review description shall be labeled in the space provided within the standard ALDOT sheet border for all inspections and reviews. The plans do not have to be signed and dated until final plans are submitted to the Office Engineer for letting.

For plans prepared by consultants and submitted to Office Engineer for letting: Neither the consultant or any of his personnel are required to sign and/or date the standard ALDOT sheet border. The consultant is only required to sign, date, and stamp the title sheet of ALDOT plans unless the "Alabama State Board of Licensure for Professional Engineers & Land Surveyors" requires otherwise. Other Professional Engineers working with the primary consultant may be required to stamp and date subsections of the plans to meet ALDOT guidelines and/or professional licensure requirements. If desired, consultants may provide signatures and dates on the standard plan sheet border and/or provide a consultant information box at the bottom right corner of the plan sheet. However, it is mandatory that consultants label the plan inspection the plans are being submitted for underneath the border block titled “PLAN SUBMITTAL”. The consultant shall also replace “DESIGN BUREAU SECTION D-7” located in the block containing the State Seal with their company name.

13. A bar scale shall be used to denote the plan sheet scale and shall be located in the bottom right corner.
Figure 1D.2 End Station of Primary Survey Control Sheet
CHAPTER 1E – GEOMETRIC LAYOUT SHEET

The Geometric Layout Sheet provides an overall layout of the horizontal alignment for the entire project in greater detail than that provided on the title sheet. The centerline of construction alignment for the mainline and side roads shall be shown. The project layout contained on this sheet can prove to be resourceful for large or complicated projects involving interchanges with a number of diverging routes. For large, complicated projects, more than one sheet may be required to clearly depict all required information. Appropriate match lines shall be shown if more than one sheet is required.

Geometric Layout General Guidelines

Subtype Sheet - Horizontal Alignment Data Illustrated Plan Sheets

1. The title “GEOMETRIC LAYOUT SHEET” shall be placed at the top center of each “Geometric Layout Sheet.” The subtitle “Horizontal Alignment Data Plan View Sheet” shall be centered and placed directly underneath this sheet title.

2. The geometric layout must have a north arrow.

3. All horizontal curves on the geometric layout must be labeled with an identifier.

4. Beginning and Ending stations for the project and work shall be flagged and labeled for mainline alignment. Ending work stations for ramps, side roads, etc. shall be flagged and labeled. Point of Beginning (POB) and Point of Ending (POE) shall be labeled.

5. The centerline of the construction mainline along the geometric layout must be labeled.

6. A bar scale shall be used to denote the plan sheet scale and it shall be located in the bottom right corner. The scale of the Geometric Layout Sheet does not have to be the same scale used on the Plan/Profile sheets. In most cases, a smaller scale should be used to reduce the number of plan sheets. Generally, the designer should choose the largest scale possible that will show the required geometric data in a legible form without cluttering the sheet excessively.

7. Label tie stations for all ties, dimension values, etc. to the nearest hundredth. Label northing and easting coordinates for all ties to the nearest thousandth.

8. Label tie stations of intersecting centerlines for dedicated roadways along with the angle of intersection.

9. Show bearings for all tangent alignment sections.

10. Include the following sheet note: “Point coordinates are based on the Horizontal Datum-NAD 83/92 (HPGN) Alabama State Plane _______ (insert East or West) Zone, Vertical Datum-NAVD 88, and US Survey Foot unit of measure. A combined average scale factor of _______ (insert value) has been calculated using this datum.”

11. For each Geometric Layout Sheet illustrating the mainline centerline of construction alignment, the beginning and ending stations of the plan sheet shall be labeled vertically at each end of the alignment outside of the plan view area and within the sheet border.

12. Label equation stations.

13. The information required on the Geometric Layout Sheet may be added to the Primary Survey Control Sheet to eliminate the need for separate Geometric Layout Sheets, as long as legibility is maintained. If this is done, the title of the plan sheet containing both survey control point data and geometric data shall be “Primary Survey Control and Geometric Layout Sheet. However, the Horizontal Alignment Data Sheet (Figure 1E.3) will still be required.
14. The sheet shall be divided by a dashed vertical line when horizontal alignment data continues to the next column for the same roadway centerline. When there is horizontal alignment data for two or more roadway centerlines listed on the same sheet, solid horizontal and vertical lines shall be used to separate different roadways.

15. The project name, description and the centerline of the horizontal alignment being described on the appropriate section of the “Geometric Layout Sheet” shall be identified.

16. Horizontal alignment elements shall be labeled downward from the top of the sheet in sequence as they are encountered from the beginning of the project to the end of the project, i.e. back tangent, circular element, and ahead tangent. The first horizontal element entry shall be the ELEMENT LINEAR from the POB to the point of curvature (PC). Include the station and coordinates of the POB and PC points and the direction and length of the back tangent. The back tangent ends at the PC and the next data group pertains to the circular curve data. Include station and coordinate data for the curve cardinal points. Include data on the radius, deflection angle, degree of curvature (for U. S. Customary unit projects) and the other data elements shown on Figure 1E.3. The ahead tangent of the previous curve will be the back tangent of the next curve. The next LINEAR ELEMENT will therefore have a point of beginning equal to the coordinates of the previous PT and end at the PC of the next circular curve. The tangent bearing should be the same as the tangent direction of the previous curve and the length of tangent should be the distance from the previous curve PT to the current PC. Continue with LINEAR ELEMENT and ELEMENT CIRCULAR until all of the curves have been described along the centerline of the project mainline.

17. Repeat item 15 for all of the horizontal elements being constructed on the different alignments that are part of the project.

18. Horizontal alignment curve data shall be cross-referenced to the curve identifier labeled on the “Geometric Layout Sheet – Horizontal Alignment Data Plan View Sheet”.

Note: The curve identifier listed for each horizontal curve shall be consistently labeled throughout the plans.

19. ALDOT Standard Plan Sheet Border and Required Signatures

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Figure 1E.1 Begin Project Geometric Layout Sheet

Note: Callouts for #12 is intentionally not shown.
Figure 1E.2 End Project Geometric Layout Sheet
Figure 1E.3 End Project Geometric Layout Sheet
CHAPTER 2 – TYPICAL SECTIONS

Typical sections are detailed cross section sheets depicting the roadway’s principal elements that are standard between certain station or milepost limits. Since these drawings are the basis for construction details they are among the most important steps in developing construction plans. Typical sections should show typical conditions only. Non-standard construction details that exist only for short distances should not be shown as a typical section, except when special conditions exist. Super elevated sections are not normally shown unless the super elevated condition causes a material component change. A new typical section should be provided if a slope or material component changes. Varying roadway widths do not require a new typical section. Dimensions and slopes of the material layers, front slope, ditch bottom, and back slope are measured at right angles to the centerline of construction. The required width of a roadway at any particular location should be determined by the plan sheet, not the typical section.

Typical Sections General Guidelines
(Refer to Figures 2.1 - 2.6)

Since typical cross sections may be one of the most important steps in developing construction plans, and as such, should be developed as complete as possible.

1. The title “Typical Section” shall be placed at the top center of each individual “Typical Sheet.”
2. For base and pave templates show the required build up by material layer. All layers of all materials should be shown as stated in the approved materials report. Identification numbers for required materials shall be displayed within a circle and progress sequentially from top to bottom with the top layer typically identified as 1. Also show the natural ground as a dashed line.
3. For each item the Legend shall include the complete item number (unique number), the complete item description as shown on the Summary of Quantities Sheet, the description of each layer of the materials buildup, and the width for all items paid for by the square yard. Use consistent legend numbers for the same item number throughout all typicals shown in the plan set. Numerical legend numbers (1, 2, 3, 4, ...) are to be used for required items and alphabetical letters (A, B, C, D, ...) for in place items. For in place items, the alpha character shall be within a square. The same material item may be required to be placed at different rates on separate typicals or on the same typical. If this occurs the first reference to this material item shall be a number and subsequent references to this same material item to be applied at different rates shall be referred to using a sequencing numeric / alpha character (1, 1A, 1B, 1C, ...). List only those material items within the “Required Materials Legend” for those material items shown on that plan sheet.
4. Use continuous stationing with no station overlap or gap. When more than one project typical is required, list the station to station that applies to each typical. Ensure the entire project has a designated typical cross section. Show equations and a note stating transition requirements, if needed. Note any bridge exceptions.
5. Show cross slopes as a percent or “e” and display a small circle (O) at slope breaks for each required material layer. NOTE: Ensure that clear zone requirements are met or provide guardrail.
6. Display maximum cut and fill slopes as per Special Drawing GN-2 (Index No. 801) or according to the project slope study.
7. Identify the profile grade line (PG) on each typical. Where more than one profile grade line exists, such as for a bifurcated roadway, identify the profile grade line for each roadway direction.
8. Symbols can be used when required to relate features with project or general notes.
9. Typical sections are not scaled drawings but it is beneficial to provide a drawing scaled horizontal; with an exaggerated vertical scale. “NTS” or “Not to Scale” shall be labeled within the sheet border at the bottom right of the plan sheet (this is where the bar scale is located on a plan view sheet).
10. List only applicable GN-2 notes and Project Notes on a plan sheet that is relevant to the typical(s) on that particular plan sheet. For turn lanes and/or median cross-overs with a materials buildup the same as the mainline, add a note to see paving layout sheets for...
dimensions, tapers, etc. For turn lanes and/or median cross-overs with a different materials build-up than the mainline, a turn lane typical section is required.

11. Provide normal roadway ditch depth and width. If the roadway contains any curb and gutter sections, provide a curb and gutter detail showing material placement and thickness as per Special Drawing 623-XY (Index No. 703); minimum 6"; maximum 10" @ face of gutter are allowable dimensions for a standard curb. A modified curb is defined as a curb with dimensions outside these standard dimension limits.

12. Display normal cut and normal fill sections as a solid line on each typical. For example; left side cut and right side fill.

13. Note all dimensions of roadbed, lanes, and shoulder widths and provide a dimension from the roadway centerline or base line. Decimals should be used when incremental horizontal dimensions need to be denoted, not inches. Examples of proper horizontal dimensioning are 12' not 12.00'; 2.5' not 2' - 6"; 2.67' not 2' - 8". Vertical dimensions are typically in inches (18" not 1" - 6; or 1.5).

14. As was previously mentioned, the normal procedure for labeling the cross-slope on a typical section that contains both tangent sections and horizontal curves that require super elevation is to label the slope as a percent and "or e" and that super elevated sections are not normally shown as separate typical sections. However, any roadway component changes that necessitate a separate typical section and the section is entirely within the limits of a fully super elevated curve, then only the super elevation rate should be shown for the roadway cross-slope. Similarly, if a typical section coverage contains no super elevation sections only the normal roadway cross-slope should be shown and "or e" does not apply.

**NOTE:** Sometimes the super elevation itself will cause a roadway component to change in a manner that necessitates a separate typical section such as is in the case of median barrier in a super elevated section.)

15. Label the approximate pavement thickness of in-place roadway pavement and shoulder pavement that will be removed or retained. This should be done within the "Required Materials Legend" table and to the right of the item description.

16. ALDOT Standard Plan Sheet Border and Required Signatures

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17. The order of typical section sheets by roadway type should be the following:
   a. Mainline
   b. Side roads
   c. Ramps
   d. Driveways
   e. other

**NOTE:** Examples of typical sections for mainline, minor side roads, ramps and service roads, driveways, and widening a state route are presented as Figures 2.1, 2.2, 2.3, 2.4, 2.5, and 2.6 respectively.
Figure 2.1 Project Mainline
Figure 2.2 Project Mainline
Figure 2.3 Minor Side Roads
Figure 2.4 Ramps and Service Roads

2-6

Version Number: 2008.01
Figure 2.5 Driveways
Figure 2.6 Widening State Route
CHAPTER 2A – PROJECT NOTES SHEET

The “Project Notes Sheet” provides a summary of instructions for constructing highways and bridges that are too long or complicated to fit on an individual plan sheets. Under these circumstances, note numbers (e.g. “Note 203”) or symbols (e.g. ●, ○, □) are placed on the plan sheet and the corresponding notes are detailed on the Project Notes Sheet.

In addition, reference may also be made to GN-2 notes. These GN-2 notes are detailed on Index No. 801 in the ALDOT Index to Special and Standard Highway Drawings book. Each plan sheet may reference a multitude of both “project” and GN-2 notes. When the notes are present on a sheet, it is necessary to identify the correct project notes from the “Project Notes Sheet” and/or the GN-2 notes from the Standard Drawings Book. The appropriate instructions provided in these notes shall be followed while constructing the project.

Project notes are often used to state how a required work function will be paid if a pay item is not set up for that function or if the specifications and/or special provisions do not address the payment of the particular work function in a pay item. If a note states that a certain work function is a “subsidiary obligation” of a pay item, there is no additional measurement added to the quantity of the pay item. If a note states that a certain work function is “paid as” a pay item there will be measurement added to the pay item. All work must be clearly addressed for payment.

Generally, project notes should not repeat specifications but can be used to draw attention to a specification article if particular emphasis is needed. Sometimes by mistake, a project note in the plans may contradict a specification and/or a special provision. When this occurs it is important to know the hierarchy of the contract and what note or document should be followed. The hierarchy of the contract is the plans overrule the specifications and a special provision overrides the plans.

Table 1 below provides a schedule outline for project notes types and the note series range that should be used. All notes should be numbered according to the schedule below.

<table>
<thead>
<tr>
<th>NOTE SERIES</th>
<th>NOTE TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>100-199</td>
<td>see Special Drawing No. GN-2 (Index No. 801)</td>
</tr>
<tr>
<td>200-299</td>
<td>Typical Section Notes</td>
</tr>
<tr>
<td>300-399</td>
<td>Summary of Quantity Sheet Notes</td>
</tr>
<tr>
<td>400-499</td>
<td>Plan Sheet Notes</td>
</tr>
<tr>
<td>500-599</td>
<td>Signal Sheet Notes</td>
</tr>
<tr>
<td>600-699</td>
<td>Electrical Sheet Notes</td>
</tr>
<tr>
<td>700-799</td>
<td>Traffic Control Sheet Notes</td>
</tr>
<tr>
<td>800-899</td>
<td>Utility Sheet Notes</td>
</tr>
<tr>
<td>900-999</td>
<td>Any Notes that apply to other specific sheets</td>
</tr>
<tr>
<td>1000 Series</td>
<td>Sign Notes</td>
</tr>
</tbody>
</table>

Project Notes Sheet General Guidelines

(Refer to Figure 2A.1):

1. The title “PROJECT NOTES SHEET” shall be placed at the top center of each individual Project Notes Sheet.

2. The title “NOTE NO” and “NOTES” shall be underlined and placed at the top of each project notes section.

3. The project number note sequence shall be numbered consecutively with no skip(s) in sequence within a project note series. For example, the 200 series project notes, 300 series project notes, 400 series project notes, etc. are all considered separate project series. The beginning number of a separate project note series is divisible by 100.

4. An “OMITTED” designation can be used for project note numbers that are used solely to maintain a consecutive number sequence when a project note has been eliminated due to last minute changes just before letting to the plan set. Otherwise, when there is adequate time, a project note series should be consecutively numbered with no “OMITTED” references used.

5. ALDOT Standard Plan Sheet Border and Required Signatures

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NOTE: Designated symbols used to key notes to specific items in the plan assembly shall be placed on the left side of the corresponding project number note.
Figure 2A.1 Project Notes Sheet
CHAPTER 3 – SUMMARY OF QUANTITIES

Quantity summaries shall be included in the project plans to aid in determining the location and quantities for pay items which are located throughout the plans. Quantities must be calculated for all work that requires a pay item. Summary of quantities shall include three different types of sheets; the Summary of Quantities sheet, Box Sheets, and Earthwork Summary sheets (shown as the final chapter in this manual).

Pay items and quantities listed on the “Summary of Quantities Sheet” are intended to be representative of the work to be performed and are used by the prospective contractor to bid each item of work.

“Summary of Quantities” Summary Sheet(s)
(Refer to Figure 3.1)

1. The title “SUMMARY OF QUANTITIES” shall be placed at the top center of each individual Summary of Quantities sheet.
2. A bridge column is necessary when bridges and/or bridge culverts are required to identify quantities required for bridge construction.
3. A roadway column is necessary for items not associated with bridge construction.
4. For federally funded projects, add another column to identify the quantities for non-federal participating items, if needed. This column shall be inserted between the “Roadway” and “Total” columns.
5. Add the quantities from the bridge, roadway, and any other quantity columns to provide the total project quantity amount in the “Total” column.
6. All pay items have a unique ALDOT item number assigned to them. The unit of measure and description correspond exactly to the current ALDOT Standard Specifications and ALDOT Unique Item Number List.

NOTE: Just because there is a unique item number does not always mean there has already been a specification/special provision created for the item. A specification/special provision describing the defined unique work item is required and the designer must check that there is a specification/special provision for the unique item number.
7. A table with grid lines shall be used to separate columns and pay items.
8. A column titled “Project Notes” shall be on the right side of the “Item Description.” In this column list the relevant project note number from the Project Note Sheet for the pay items a project note has been specified for.
9. ALDOT Standard Plan Sheet Border and Required Signatures

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“Summary of Quantities” Box Sheets

The arrangement of the boxes on the plan sheets is dependent on the size required for each box to contain all of the information. Figures 3.2 and 3.3 are examples of box sheets used to present information regarding roadway pipe and other drainage structures. Figure 3.4 is a box sheet example of information on ditch linings. The example on Figure 3.5 demonstrates fitting box quantities of several items on one sheet. Examples of other box sheets that may be required in the plan assembly are illustrated on Figures 3.6 and 3.7.

Additional Notes:

- Clearing and grubbing, base and pavement, mobilization, grassing, engineering controls, and trainee hours do not require a box schedule.
- Do not place zeros (0) in any column on the box sheets. Decimals may be placed in certain quantity columns, such as minor structure concrete but all total columns shall be whole numbers that have been rounded up. Commas shall not be used to separate numerical digits.
- Provide total in total columns for items that transfer to the summary of quantities sheet (not columns such as concrete collars – this item is paid for using the pay item “minor structure concrete”). There shall not be any columns shown with a total of 0.
- When quantities for an item appear in two or more places throughout the plans, a cross-referencing statement, such as “FOR ADDITIONAL QUANTITIES – SEE SHEETS ___ and ___”, shall be included.
- Box sheets are required for bridges when more than one bridge is required within the project limits.
- The cumulative item total shown on all box sheets throughout the plans for a pay item shall be transferred to the Summary of Quantities sheet(s).
- ALDOT Standard Plan Sheet Border and Required Signatures

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- Ensure a unique number is listed for each pay item. It is preferred that unique numbers be oriented horizontally on the sheet, however if sheet space is limited, the unique numbers may be oriented vertically.

Reminders:

- Place Bridge and Bridge Culvert items in the BRIDGE Column (include structure excavation, foundation backfill, concrete, and steel for bridge culverts).
- Removal of old Bridge is always listed in the Bridge Column on the pay sheet.
- Removal of old Bridge Culvert is always listed in the Bridge Column on the pay sheet.
- Do not set up structure excavation and foundation backfill for sidedrain pipe. It is included in the bid price for sidedrain pipe. This applies to reinforced concrete sidedrain pipe as well.
- Always set up alternates for junction boxes, inlets, manholes, pipe end treatments, and certain culverts unless documented properly.
- If temporary pipe is used under Item 530A, be sure to provide for the removal & disposal of the pipe in the summary box. Structure excavation, foundation backfill quantities, and applicable standard/special drawings shall be included in the box.
- On the “Summary of Quantities” sheet NEVER SHOW DECIMALS OR COMMAS in the columns.
- List required items in numeric / alpha order by ALDOT pay item and unique number (e.g. 210A-000, 210A-002, 210B-001, 610A-010, etc.)

NOTE: Figures 3.6 and 3.7 are examples of standard quantity boxes used by ALDOT. These tables are not shown on completed plan sheets; therefore, a Standard Drawing Legend has not been provided.
<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
<th>Unit</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>206a-001</td>
<td>LUMP SUM</td>
<td>CLEAVING AND GRABBING MAXIMUM ALLOWABLE RIVER BANK PER EIRIT (APPROXIMATELY 150 ACRES)</td>
<td>1</td>
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<tr>
<td>206a-002</td>
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<td>206a-003</td>
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<tr>
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<td>206a-006</td>
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<td>206a-012</td>
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**Figure 3.1 Summary of Quantities Sheet**

Version Number: 2008.01
## SUMMARY OF QUANTITIES

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<th>CLASS 3 RC</th>
<th>CLASS 4 RC</th>
<th>CLASS 5 RC</th>
<th>CIKE</th>
<th>PRIMARY DRAINAGE</th>
<th>CIKE</th>
<th>CLASS 4 DRAINAGE</th>
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<th>UNDERWATER</th>
<th>CIKE</th>
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**Figure 3.2 Summary of Quantities Box Sheet**
# Summary of Quantities

## Required roadway pipe

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## Summary of Quantities Box Sheet

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<td>Box S</td>
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**Figure 3.3 Summary of Quantities Box Sheet**
### Figure 3.4 Summary of Quantities Box Sheet

**SUMMARY OF QUANTITIES**

| REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLOB (A/B) SLOPE (IN/H) | REQUIRED DITCH LININGS | ROADWAY STATION - STATION LENGTH (L/B FT) | SLO
## SUMMARY OF QUANTITIES

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### REQUIRED GUARDRAIL AND GUARDRAIL END ANCHOR

### REQUIRED SPRING BOX

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**Figure 3.5 Summary of Quantities Box Sheet**


**Version Number:** 2008.01

**ROUTE:**

**SHEET TITLE:** Summary of Quantities

**CORRECTION:** 0
Figure 3.6 Summary of Quantity Box Examples

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<td>Example 3</td>
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Note: For a comprehensive view of the Quantity Box Examples, refer to the manual for full details and context.
CHAPTER 4 – PLAN AND PROFILE

The plan/profile sheet displays the project's horizontal and vertical alignments in reference to existing elements and illustrates a majority of the required items of work. The first roadway plan sheet starts with sheet number 4 and, when possible, displays the plan view along the top of the page and the profile view with corresponding station numbers as the plan view on the bottom portion of the same page, as presented in Figure 4.1. When the required scales result in a plan view or profile view that is too big to fit both on the same page, then the sheet number of the profile view will be the plan view sheet number with the suffix of ‘A’. For example, if the plan view of sheet 5 displays the horizontal alignment from 120+00 through station 135+00 then sheet 5A will display the profile view from station 120+00 through station 135+00.

Plotting should typically be performed at a horizontal scale of 1" = 50’ on a full size plan sheet (24” x 36”). A scale of 1" = 100’ can be used on a full size plan sheet if there is little information to display. Place a bar scale, such as that shown below, to enable the estimate of distance in case the scale of the plans has been altered by electronic copying.

Note: Full size plan sheets (24” x 36”) are often reduced and copied to half size plan sheets (12” x 18”). Therefore, all elements shown and labeled on a full size plan sheet must be legible when reduced to half size.
Plan View General Guidelines
(Refer to Figures 4.1 and Figure 4.2)

The preferred method of assembling the plan/profile sheets is on a single sheet with the plan view on the top portion and the profile view, aligned with the stations of the plan view, on the bottom portion of the sheet, as presented in Figure 4.1. If needed plan and profile views may be shown on separate plan sheets to improve legibility (see Figures 4.2 and 4.3). The order of assembling the plan/profile sheets in the plans set shall be: Mainline, Side roads, Ramps.

1. The title "Plan/Profile Sheet" shall be placed at the top center of each individual plan/profile sheet. When the plan view and profile views are broken on two different sheets the title "Plan Sheet" and "Profile Sheet" shall be used as the title on the respective sheet.

2. The baseline survey and/or centerline of construction should be centered in the plan portion of the sheet. For North/South roadways, the roadway shall be stationed from south to north, with the southernmost station beginning on the left side of the plan sheet. For East/West roadways, the roadway shall be stationed from west to east, with the northernmost station beginning on the left side of the plan sheet. For resurfacing projects, simple projects, or sections of a project without a profile view, "stacking" multiple plan views on one sheet is generally permitted if clarity and legibility are maintained. When multiple plan views are shown on a plan sheet, they shall be stacked from top to bottom.

3. A "major tick" mark shall be placed perpendicular and across the centerline at every 500' station. In addition, intermediate ticks shall be placed at 100' stations. Intermediate ticks shall begin at the centerline and be placed perpendicular to it. The intermediate tick marks should be half the length of major tick marks placed at 500' stations.

4. Station numbers should be placed close to tick marks for scales up to and including 1" = 50' and outside the R.O.W. lines for smaller scales. Place station numbers at 500' stations. The letter ‘a’ or ‘b’ preceding a station number usually indicates the project contains a station equation.

5. A north arrow shall be shown at a point of maximum visibility, preferably in the upper right portion of the plan view.

6. PC and PT points of horizontal curves shall be indicated by small circles with short radial lines drawn from these points and identified. Curve data shall be displayed for each horizontal curve using the following format:
   - PI (Station)
   - D (Degree of Curve)
   - Delta (Delta Angle Including LT or RT)
   - R (Radius Length)
   - T (Tangent)
   - L (Length of Curve)
   - e (Superelevation)

Care must be taken in the clipping of plan sheets to properly orient the horizontal curves within the plan view. In cases where the curve extends over more than one sheet, the curve data shall be repeated on each sheet showing the curve.

7. The project construction limits shall be shown and labeled.

8. Label and flag the beginning and ending of the project on the mainline, the beginning and ending of work on mainline, and the end of work on side roads, ramps, etc.

9. The limits of the R.O.W. shall be displayed with notation of the incremental station distance and offset distance from the project centerline when changes to the present ROW and/or acquired ROW transition distances occur. If the R.O.W. distance remains constant for a distance greater than one plan sheet station range, then the R.O.W. distance shall always be shown on each plan/profile sheet regardless if a R.O.W. distance transition occurs or not. When the acquired R.O.W. connects with the present R.O.W. do not label the R.O.W. point as "tie to present R.O.W.". Always use a station and offset distance to describe an acquired R.O.W. point and/or when tying to the existing R.O.W. Except in unusual situations R.O.W. shall be shown as while station (i.e. 12+32) and offsets in whole feet (+52). When not shown as above, the degree of accuracy shall not exceed 1/100.

10. Show property lines and property owners.

11. Show and label construction easements.

12. All existing topography shall be shown. Existing roads, streets, drives, buildings, walls, curbs, pavements, fences, railroads, bridges, drainage structures, control points, and similar items shall be plotted and labeled. Existing topography within the R.O.W. shall be labeled as "existing" or "in place". Label the disposition of existing topography, such as "retain", "remove", "partially remove", etc. Label structures to be removed with appropriate symbol and structure number. Streams, wetlands, ponds, lakes, wooded areas, ditches, and all other physical features shall also be shown. Existing gasoline storage tanks within limits of topographical survey shall be located and illustrated. Hazardous material site(s) shall be shown and labeled. Existing topographic survey data may be used as the basis for new construction, but the required elements are easier to view. Existing pavement shall be shaded appropriately as designated on the "Plans Legend Sheet".

13. Required items shall be shown and labeled as "required".

14. Bearings, in the direction of stationing, shall be shown for all tangent sections.

15. Station equivalencies, angles with mainline centerline and/or bearings in the direction of stationing of the crossroad shall be shown for all roads and streets intersecting or crossing the project.

16. All the survey control points shall be shown.

17. If section lines or city limits are encountered within the limits of the project, the lines or limits shall be tied by station, bearing, and angle of intersection with the centerline.

18. Label the beginning and ending of exceptions and equations.

19. Proposed roadway cross drain pipes, sideward pipes, inlets, manholes, junction boxes, etc., shall be shown. Roadway cross drain pipe sizes and type shall be shown. All required roadway cross drain pipe and storm sewer pipe shall be flagged at each end by a circle with the index number in the top half of the circle and the drainage sheet number that contains the detailed drainage section within the lower half of the circle. The index numbers shall be assigned with the lower number at the inlet and the larger number at the outlet. Side drains pipes shall have the letters SD in the top half of the identification circle with the drainage structure index number in the lower half of the circle.
20. Box culvert size and length shall be shown. Box culverts (single or multiple) of 20 feet total span or more (measured from the extreme ends of openings along the centerline) shall be designated as bridge culverts and shall be identified by both a Bridge Identification Number (BIN) and a drainage structure number. The beginning and ending stations (inside wall to inside wall) shall be flagged and labeled.

21. Proposed bridges and approach bridge end slabs shall be shown by simple outline. Bridges shall be identified by BIN, length of bridge, and the beginning and ending stations noted by station flags. The beginning and ending stations of bridge end slabs shall be labeled.

22. Required special ditches, ditches that deviate geometrically from the typical sections, shall be shown on the plan view. The special ditch shall be shown using the appropriate lining legend that will be presented on the “Erosion and Sediment Control Plans Legend” located within the plan assembly.

23. The begin/end stations and class and type of required guardrail in addition to the required type of end anchor and end treatment can be shown on this sheet. If this information is not shown on this sheet, they shall be shown on the Paving Layout Sheet.

24. Limits of wetlands shall be shown based on permit or regulatory requirements.

25. Bench mark data shall be shown on the plan sheet for all bench marks within the station limits shown on the plan sheet. Bench mark data is normally shown in the top-left corner of the plan sheet.

26. List all of the GN2 and Project Notes that apply to the roadway items that appear on the plan sheet.

27. Every known roadway name shall be labeled. Label the roadway as “unnamed” if it does not have a designated name or road number.

28. ALDOT Standard Plan Sheet Border and Required Signatures

For plans prepared by ALDOT personnel and submitted to the Office Engineer for letting: The ALDOT supervising Professional Engineer and design manager responsible for checking the plan sheet, as well as the last designer to work on the plan sheet shall sign and date each sheet, except the Title Sheet, in the appropriate space to acknowledge they physically checked the printed sheet. If the supervising Professional Engineer in charge and the Design Manager is the same person, then that person shall sign and date the sheet in both areas. Also, the plan inspection and/or review description shall be labeled in the space provided within the border. Plan sheets shall be signed and dated as discussed above for the 30% Inspection, Plan-In-Hand Inspection, PS&E Inspection, Final Backcheck Review, Construction Review, and the final plan submittal to Office Engineer.

29. It is preferred that roadway laneage dots and directional traffic flow arrows be shown when possible. Showing this information may sometimes make the drawing to cluttered and difficult to read. If this is the case, this information should not be shown.

30. The order of plan/profile sheets by roadway type should be the following:
   a. Mainline
   b. Side roads
   c. Ramps
   d. Driveways
   e. Other

31. A bar scale shall be used to denote the plan sheet scale and located in the bottom right corner.

32. Provide a vertical bar scale.
Figure 4.1 Preferred Representation Of Plan And Profile Views On A Single Page.
Figure 4.2 Plan View Presented On a Single Sheet
Profile View General Guidelines
(Refer to Figure 4.3)

1. Provide a horizontal bar scale for the profile portion of the sheet. The scale shall be the same as that used for the plan portion. Station limits of the profile shall correspond to those of the plan portion of each sheet. Station numbers shall be placed across the bottom of the sheet just above the inside sheet border. Intervals for profile stations shall be the same as those in the plan view.

2. Provide a vertical bar scale.

3. Vertical elevation datum selected shall be such that the profile will not crowd either the upper or lower limits of the profile format and allow for labeling of the profile. A general guideline is the vertical scale should be exaggerated using a 10:1 ratio. A vertical scale of 1"=10' should normally be used if the horizontal scale is 1"=100' and a 1"=5' vertical scale should be used if the horizontal scale is 1"=50'. Elevation data shall be shown on both the left and right sides of the profile grid.

4. The existing ground line profile shall be shown and labeled “Existing Ground”.

5. All high water elevations affecting base clearance or roadway grades shall be shown and labeled. Show the most critical minimum distance of bridge girders below and/or above roadway, railroad tracks, vehicle passage way, etc. Label offset distance of minimum vertical clearance from the horizontal grade line from which the profile grade was taken.

6. Station equations and exceptions shall be labeled and flagged.

7. Bridges, bridge culverts, the station of overhead bridge structures, the beginning and ending work stations for the mainline, and the beginning and ending project stations for the mainline shall be labeled and flagged. End work stations for side roads shall also be labeled and flagged.

8. The profile grade line identified on the typical sections shall be drawn with a solid line to represent the elevation of the roadway on the profile grade. The roadway profile grade shall be labeled “Profile Grade”. When 1/2 median superelevation is required, the differing pivot point grade lines for each of the effected roadways shall be labeled and each shown with an unique line symbology. Also, when a bifurcated roadway is in place and/or will be constructed the profile grade of each roadway shall be shown as profile grade lines for each of the effected roadways shall be labeled and flagged. Elevation data shall be shown on both the left and right sides of the profile grid.

9. Vertical curve PVC's and PVT's shall be indicated by small circles and PVI's by a small triangle with short sections of tangent shown on each side of the PVI.

10. Percents of grade to 4 significant digits shall be shown on the tangent line (trailing zeros need not be shown).

11. Vertical lines shall be extended from the PVC and PVT points and a dimension line placed between these lines indicating the length of the vertical curve and the K factor that is a measure of the available sight distance. Normally, the curve length with dimension lines and also profile grade elevations shall be placed and labeled above the grade line for sag vertical curves and below the grade line for crest vertical curves. The PVC and PVT stations and elevations shall be indicated on the vertical lines.

12. The super elevation application stations (NC, RC, “1/2 median super”, “e” at full super elevation station, etc.) should be placed within the profile grid using a short vertical line perpendicular to the profile grid and directly above the location they occur. The appropriate designation, NC, RC, “1/2 median super”, full super elevation percentage, etc., shall be placed vertically adjacent to these short vertical lines and the application station shall be labeled after. Cross-slope transitions and the full super elevation percentage should be placed horizontally above the station or station range they occur.

13. Ditches (special ditches) that deviate geometrically (either horizontally, vertically and/or both) from the ditches represented on the typical section sheets shall be placed on the profile view. These ditches shall be labeled appropriately. The percent grade shall be noted, to 2 significant decimal places, whenever the grade of the special ditch changes. Special ditch PI's shall be labeled with station and elevation information.

14. The location of existing and required bridges, bridge culverts, culverts, and roadway cross drain pipes shall be shown to scale on the profile view. The proper symbol shall be used. The flow line elevation at the centerline shall be calculated (if not provided in survey) and the size and type of drainage structure labeled. Where critical pipe clearance issues exist, label direction (LT or RT) from the horizontal alignment from which the profile grade was taken, the drainage structure invert elevation, and the critical distance(s) from the profile grade (Refer to Figure 4.1 for example).

15. Show PI’s for intersecting roadways.

16. Vertically label existing ground and profile grade elevations at least every 100' station. This is normally done at the bottom of the profile grid. Label the profile grade elevation to the left of station grid line and the existing ground elevation to the right of station grid line.

17. For a 2 lane to 4 lane conversion show the profile of the existing roadway to be retained.

18. ALDOT Standard Plan Sheet Border and Required Signatures

For plans prepared by ALDOT personnel and submitted to the Office Engineer for letting: The ALDOT supervising Professional Engineer and design manager responsible for checking the plan sheet, as well as the last designer to work on the plan sheet shall sign and date each sheet, except the Title Sheet, in the appropriate space to acknowledge they physically checked the printed sheet. If the supervising Professional Engineer in charge and the design manager is the same person, then that person shall sign and date the sheet in both areas. Also, the plan inspection and/or review description shall be labeled in the space provided within the standard ALDOT sheet border for all inspections and reviews. The plans do not have to be signed and dated until final plans are submitted to the Office Engineer for letting.

For plans prepared by consultants and submitted to Office Engineer for letting: Neither the consultant or any of his personnel are required to sign and/or date the standard ALDOT sheet border. The consultant is only required to sign, date, and stamp the title sheet of ALDOT plans unless the “Alabama State Board of Licensure for Professional Engineers & Land Surveyors” requires otherwise. Other Professional Engineers working
with the primary consultant may be required to stamp and date subsections of the plans to meet ALDOT guidelines and/or professional licensure requirements. If desired, consultants may provide signatures and dates on the standard plan sheet border and/or provide a consultant information box at the bottom right corner of the plan sheet. However, it is mandatory that consultants label the plan inspection the plans are being submitted for underneath the border block titled “PLAN SUBMITTAL”. The consultant shall also replace “DESIGN BUREAU SECTION D-7” located in the block containing the State Seal with their company name.

19. Label and flag the name and station of all intersecting roadways.

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Figure 4.3 Profile View Presented On a Single Sheet