PLAN PREPARATION GUIDE

CHAPTER 5

EXISTING TOPOGRAPHY & PROFILE
PRESENT RIGHT-OF-WAY
PROJECT PREPARATION GUIDELINES AND CRITERIA

1. Existing Topography, Profile & Cross Sections

CADD survey data files come from the survey crews via the Survey Office and finally to the Road Design Group. The files are sent to the Headquarters Office on 3.5" floppy diskettes and are loaded into the CADD System by the Survey Office. The diskettes are then given to the Design Groups with any hand survey field notes. The file naming convention of these files follows guidelines set up by the Survey Office. For secondary projects, the county number is used followed by the "C", then the last 4 digits of the pin number. For primary projects a similar format is used, but the "C" is omitted and the pin number replaces the item number.

Started in **February 1994** the secondary projects file names also began using the pin number, similar as to that used by primary projects, except with a "C" followed by the last 4 digits of the pin number. See example (c) below.

EXAMPLE (A) PIN # 201090 = SURVEY FILE 31c1090.new
EXAMPLE (B) PIN # 7189 = SURVEY FILE 327189.new
EXAMPLE (C) PIN # 14726 = SURVEY FILE 18c4726.new

There are several files that will come in from the survey crew, but we will discuss 3 main files that are loaded by the survey office.

.NEW File. The survey file with a '.new' file extension is the main survey data file. This survey file will include a description of the project, the total length of survey, and an index of point numbers used by the survey crew. It also contains N, E, and Z coordinates of all topography features and cross-section shots. Features are classified as either single shot or lines. Single is defined as a feature whose position can be defined by a single measurement or total station shot. For example, a tree would be in the classification. Lines are defined as a feature shown by a series of connected points. For this type of feature the description, or code, of the first point should end with the letter "a" and the last point to designate the end of the line for the feature should end with the letter "b". If the end of the feature cannot be located, such as an underground pipe, the letter "z" is placed immediately before the "b" to note that the feature continues in the general direction of the shot given. In addition to single or line shots there may be abbreviated descriptions following the code such as the code for tree, "T", followed by 10in oak or the code for Building "BA" followed by HT designating it as a house trailer. It will be the responsibility of the Design Groups to insure that the code descriptions are reflected in any labeling of the topography plans. Cross-section shots are usually included in this file and are coded as CL, XP, X, XR, & XL's. Cross-section shots will be true Northing, Easting and Elevation (N,E,Z) in relation to the surveyed coordinates of the project and can be reformatted later for processing in GEOPAK.

For additional information on electronic survey collection methods and survey codes, refer to the Electronic Survey Data Collection Feature Codes and Procedures 1-11-1990 and any supplement.

.SOE File. The survey file with a .SOE extension is a station, offset and elevation cross-section file. If the .NEW file fails to contain the cross-section shots, then they will be sent as a .SOE file. This file usually contains a brief description of the file and an index for the cross-section points. Cross-sections files of this type were stored from hand level readings with centerline station, centerline offset (+ if right of centerline and – if left of centerline) and the elevation. This file can be converted to the (N,E,Z) format later for use of the CADD System.

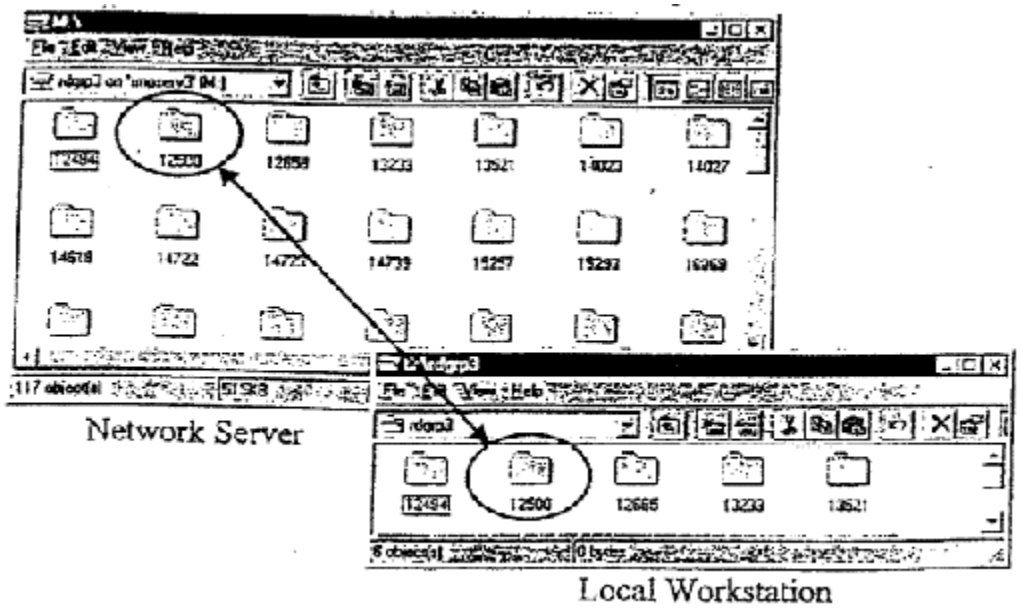
.ALG File. The survey file with the .ALG extension is a file that contains the horizontal alignments beginning station, description and the points that make up the tangent and curve elements of the alignment. This file is generated from the PC versions of SAS that the survey crews use in their field offices. If this file is supplied by surveys, then it will eliminate the Design Group from creating this file in the SAS program. If the file is not supplied by the survey office, then the operators will have to use the SAS program to create this file themselves.

Hand Notes. Besides these survey data files the survey crew will send in additional hand field notes. These may include tax maps, property information, right-of-way, horizontal alignment information, curve data, bearings, reference points, benchmarks, drainage recommendations, utility information and any additional alignment and topo not surveyed electronically. It is the responsibility of the Design Groups to make sure that any pertinent information that is manually taken by the survey crew be shown on the final CADD plans. For examples of existing topo and profiles see figures 5-A and 5-B.

2. Project Data File Storage

All projects are stored on the server (smpserv3). Each Design Group has 14 GB disk space to store every design project in the group. The Road Design CADD Support unit is responsible for creating a project folder (directory) on the server using the pin number and copying all survey data files in. The Design Group will receive a printout of the .NEW file with its smpserv3 directory listed for the Design Group record.

After the Design Group receives notification from the CADD Coordinator of the project folder, they can then begin work on the project. They should first copy the project folder from smpserv3 to their workstation. This folder on the workstation will correspond to the project folder on the smpserv3 with the identical name (PIN number). The tasks to copy and create this folder can be done by using generic Windows NT commands. See figure below.



3. Files Backup

It is the Design Group's responsibility to backup their work to the smpserv3 everyday. Only those files that are changed need to be backed up to the server. Every Design Group user has a login ID assigned to access smpserv3. Passwords for the user ID should not be shared with other users outside of the Design Group.

4. Preparing Project for Field Review

After the operator has created the folders and received the files to their workstation, they are now ready to begin working on the road project. The design files that you will receive were created in the Surveys office and have been checked for accuracy. The Design Group should review the design file in graphics to insure that it meets standard road design norms. The design file could be named for example, r12345.pp.dgn where the "r" stands for Road Design, the "12345" will be the pin number for the project, and "pp" is a description of the design file, such as plan and property. After checking that the design file is correct, then the operator should proceed with breaking the file down into sheets. They should now create a second file named r12345pf.dgn for example, where "pf" would stand for plot file. Using microstation reference files attachments, the user will attach the border sheets and the design file r12345pp.dgn to this new design file, and clip it into the station ranges that the user wants to display on each sheet.

If a property design file was created by the survey office, then it should be merged into the "pp" file so that property lines will be displayed. Also, R/W should be placed into the file and verified. Before merging files together, the user should check to make sure duplication of information would not occur. Example – A second baseline being copied on top of another baseline. Only property information that the user wants to be a part of the "pp" file should be merged.

After the file has been broken down into sheets, the operator is ready to begin texting the plans. The 1st step would be to run the SAS (Survey Automation System) program. An alignment file "05c12345.alg", for example, is usually supplied by the survey office. If it is not supplied, then the operator will have to create it using the SAS program. The program will lead you in the steps for creating the ".alg" file. If the user has any problems with SAS, then they should refer to the SAS documentation. The SAS program will create an ".aln" file, which is necessary for running the next step, SOA.

This step will involve creating the text for describing the various topographic features on the plans. This is done by running the SOA (Station Offset Alignment) program. The program will lead the user through the various menus in generating station and offset text for the various alignments defined earlier in the SAS program. As before, when encountering any problems in SOA, they should refer to the SOA documentation. After creating a text file "05c1234so.dgn", for example, the user should merge the file into the "pf" file and drag it to the appropriate place on the border sheets that correspond to the text for the alignment generated.

The next step for the user is to create the existing profiles and cross-sections using GEOPAK. The survey office should have supplied a "j" statement file in the following format "j123o32.inp" where the "j" stands for the job and "123" would be the last 3 digits of your pin number, "o" stands for operator and "32" stands for the county number. This file should be read into GEOPAK for creation of a database file that will store all horizontal and vertical alignments, cross-section points and property information. This file "job123.gpk" will be created after reading the "j" file. It is very important and should never be deleted unless it has been backed up. The user should now use GEOPAK to create existing profiles and place them on their appropriate border sheets in the "pf" file created earlier.

Next the user will create a design file "r12345dx.dgn, for example, where "dx" stands for design cross-sections. GEOPAK will be used to create and draw these existing cross-sections into this "dx" design file. After this is completed and the user has reviewed the cross-section for accuracy, they should now create another file named r12345fx.dgn, for example, where the "fx" stands for final cross-sections. This file will be where the cross-sections are placed on grid sheets for plotting. Again, the user will run GEOPAK to accomplish this task. The operator should have a good knowledge of GEOPAK before attempting these steps and refer to the user manual for assistance.

If the preliminary design sections have supplied a design for your project, the levels that design is on should be merged into the "pp" file. A Standard Field Review data sheet shall be used as a cover sheet for all projects. In the past, this was called a PS&E Field Review. It is now called a Design Field Review. The data sheet is stored in the g:\rd_std directory as 'dfrts3.dgn'. (See Figure 5-B). After this is done, the Design Group can print the Field Review sheets by using the IPLOT from the CADD system. Changes are often made to the Design Field Review Title Sheet. Please refer to this Guide and the Instructional Bulletins to find the most current sheet.

For **secondary projects**, the Design Group will print two full sized copies and one half sized copy of plan sheets. The Design Group should mark with a green pencil the pipe recommendations, new R/W, beginning and ending notes, and a proposed grade. Field reviews cover sheet with location map. All sets of the field review prints should be forwarded to the Program Development Manager's office for distribution.

For **primary projects**, the Design Group will print a minimum of six half sized copies of plan sheets and 2 half size copies of cross section. The Design Group will mark beginning and ending notes, and any other questionable items on the copy that is to be retained by Road Design. Design Group will be responsible to set up field review and distribute copies as necessary.

5. Design Field Review Plans to Project Web

The Design Field Review (DFR) plans produced by Road Design will be made available to users of the Department's intranet through Project Web. Access to the plans will be from Project Viewer only. Updates to the DFR plans will not be made. The DFR plans represent that phase of project development when the plans are reviewed in the field to verify that its design meets the project scope. After the DFR, the plans are to be scanned again showing all recommendations. Both, the "before" and "after" DFR plans will be published on project viewer.

As plans are made for the Project Development Team to meet and review to the project design in the field, the final DFR plans are taken by the Design Group to Engineering Reproduction Services (ERS) for printing. The Design Group Coordinator will ensure the ERS is advised that the plans are to be scanned and are the DFR plans to be published through Project Web. The Design Group Coordinators or their representatives will be responsible for informing the ERS staff which DFR plans they are. Both the "before" and "after" DFR plans will be taken to the ERS for scanning and printing. The Engineering Reproduction Job Ticket should be filled out as shown in the example below. After placing "DFR", put in parentheses the letter "B" for Before and "A" for After. Add the PIN next to the File Number.

If changes are necessary to the "before" DFR plans, the Design Group should provide only the changed or additional sheets to ERS with instructions on how to modify the original set of DFR plans. "After" DFR plans will be scanned only once with no future changes.

Engineering Reproduction Services will scan the "before" and "after" DFR plans to file during the printing process. Both "before" and "after" plans will be scanned as a CALS file (black and white). ERS will advise CADD Support when the DFR plans are available for linking to Project Web through Project Viewer. A unique icon for each, the "before" and "after" DFR plans, will be located on the task bar on Project Viewer in order to access the DFR plans.

If more than one DFR is held, then only the latest DFR plans will be published. ERS will overwrite the previously scanned DFR plans with each subsequent set of DFR plans.

Those projects that are currently beyond the DFR stage will not have their DFR plans scanned and placed on Project Web. The names of all individuals that are invited to attend the DFR will be placed on the DFR plans Title Sheet in the appropriate location by the Design Group prior to the DFR and prior to having the plans scanned for printing and publishing. Since the "after" DFR plans will be scanned in black and white, the Design Group or whoever records the changes on the official DFR plans are requested to boldly circle the changes to bring attention to those areas of the DFR plans. The DFR Title Sheet will not need to use circles to highlight the information placed on the sheet during the DFR.

6. Present Right-of-Way

Present Right-of-Way will be documented by the SCDOT Right-of-Way Department and shown on the plans. This will take place as plans are plotted from the survey data. The Road Design Group is responsible for this action.

In cases where enclosed property is offset from verified present right-of-way, we claim only to the present right-of-way line and not to the property line.

In cases where no present right-of-way exist and property is shown using property pins (monuments) we then claim to the existing property line. This is labeled as new right-of-way. See Figure 5-C on sheet 5-10. In all cases, tax map information must be shown.

7. Electronic Files for "As-Built" Plans

Electronic files to be sent to contractors or District field offices in order to produce as-built plans will be raster files created by scanning the plan sheets into a file. The raster images will be CALS or TIFF files for use by the contractor or District personnel. Vector design files are not to be provided for Final (As-Built) Plan preparation.

8. Hydrology Data

Hydrology data is required to be placed on the profile sheet in the plans for certain drainage facilities on all projects using federal funds. This hydrology data is to be shown in detail for all box culverts, bridges, and pipe culverts 48" or larger.

The Hydraulic Engineering section is providing data sheets to Road Design and Bridge Design. The data below the heading "HYDROLOGY DATA" should be placed in the profile area of the plan sheet. Please see figure 5-A for an example. To ensure that the correct information is placed for these drainage structures, cells have been created named "HDATBR", "HDATPC", "HDATBC" for the hydrology data required for bridges, pipe and box culverts, and large box culverts, respectively. The cells can be found in the cell library. It should be placed on the plans in the profile area as follows:

1. Place cell
2. Drop cell status
3. Edit text using hydrology data supplied by Hydraulic Engineering
4. Modify rectangle to ensure that text fits rectangle, if needed

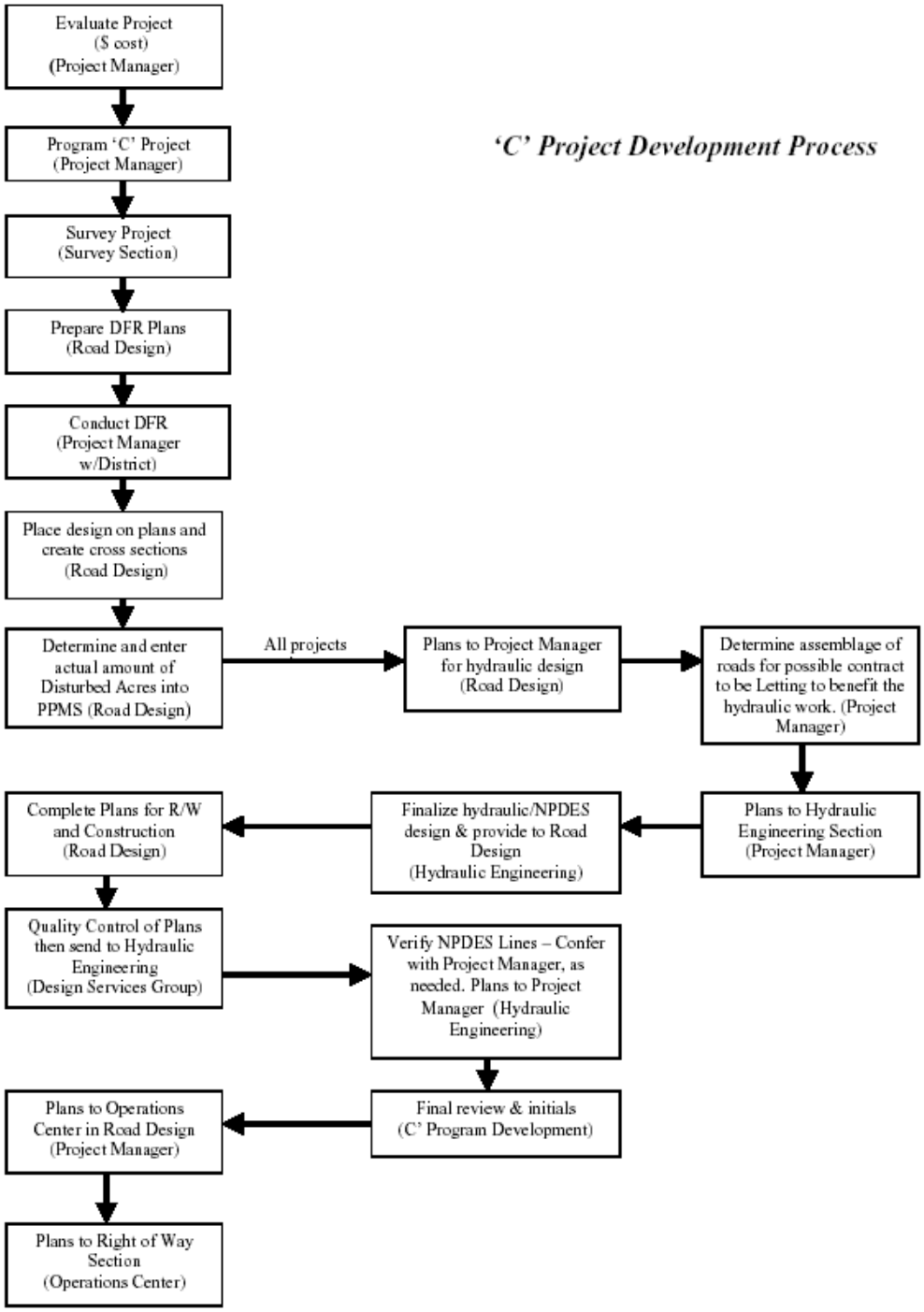
9. Road Design Production Criteria for "C" Projects

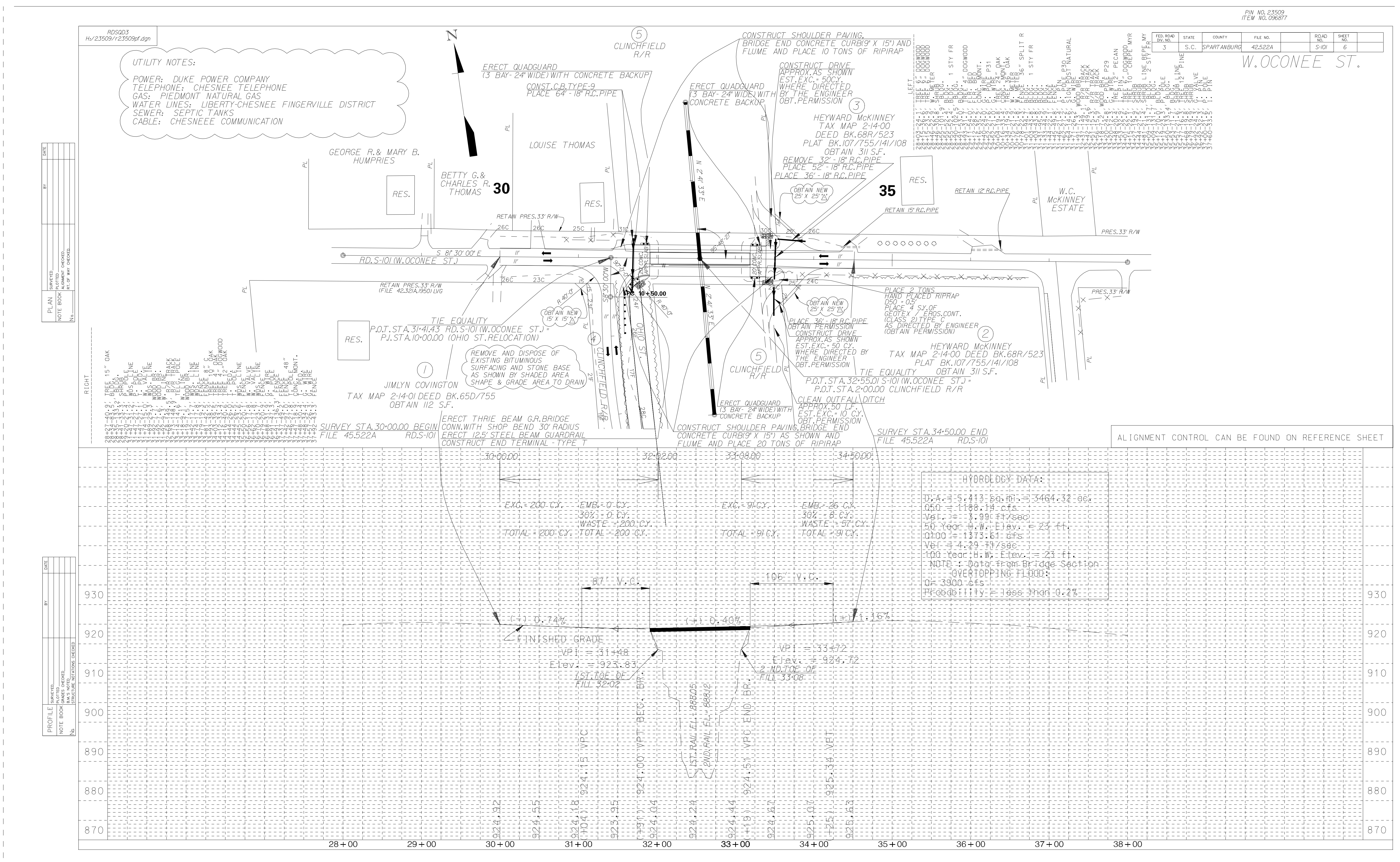
Secondary road projects managed by 'C' Project Development follow the process shown on the flow chart below. The following is Road Design's plan production criteria for 'C' projects:

1. Design Field Review (DFR) prints completed within 28 calendar days after receiving survey.
2. Road Design has a total of 56 calendar days to complete the Final Construction Plans after the return of the DFR prints. When plans are sent to the Project Manager for hydraulic design, the time allotted to Road Design stops. When the Hydraulic Engineer provides the hydraulic design to the design group, Road Design's time starts back up.
3. Projects with 1.0 acre or more of disturbed area will need hydraulic and/or NPDES design. The Road Design Group will send all plans (even those under 0.5 acre disturbed) with design and cross-sections to the Project Manager who will determine the impact of grouping roadway projects to be let together. After determining all roads affected in a possible contract, the Project Manager forwards the plans to the Hydraulic Engineering Section with the grouping information for hydraulic and/or NPDES design. The Hydraulic Engineering Section will provide the design information to the Road Design Group for inclusion into the plans.

4. After Final Construction Plans are completed, quality control performed in the Design Group and performed by the Design Services Group are to be completed within 14 calendar days.

Delays caused by others such as hydrology studies, utilities, traffic engineering design reviews, and additional surveys may change the above anticipated schedule. However, every effort should be made to deliver plans within these guidelines or within an adjusted schedule due to extenuating circumstances and approved by the Project Manager. Our goal, in any case, is to prepare 'C' project plans as expeditiously as practical.





PIN NO. 23509
ITEM NO. 096877
FED. ROAD DIV. NO. 3 | STATE S.C. | COUNTY SPARTANBURG | FILE NO. 42.522A | ROAD NO. S-101 | SHEET NO. 6
W. OCONEE ST.
RDSQD3
H:/23509/r23509pf.dgn
UTILITY NOTES:
POWER: DUKE POWER COMPANY
TELEPHONE: CHESNEE TELEPHONE
GAS: PIEDMONT NATURAL GAS
WATER LINES: LIBERTY-CHESNEE FINGERVILLE DISTRICT
SEWER: SEPTIC TANKS
CABLE: CHESNEEE COMMUNICATION
N
GEORGE R. & MARY B. HUMPRIES
RES.
BETTY G. & CHARLES R. THOMAS
30
LOUISE THOMAS
RES.
35
RES.
5 CLINCHFIELD R/R
ERECT QUADGUARD (3 BAY- 24" WIDE) WITH CONCRETE BACKUP
CONST. C.B. TYPE-9 PLACE 64' - 18" R.C. PIPE
ERECT QUADGUARD (3 BAY- 24" WIDE) WITH CONCRETE BACKUP
CONSTRUCT SHOULDER PAVING, BRIDGE END CONCRETE CURB(9" X 15") AND FLUME AND PLACE 10 TONS OF RIPIRAP
CONSTRUCT DRIVE APPROX. AS SHOWN EST. EXC. = 50C.Y. WHERE DIRECTED BY THE ENGINEER OBT. PERMISSION
3 HEYWARD McKINNEY TAX MAP 2-14-00 DEED BK. 68R/523 PLAT BK. 107/755/141/108 OBTAIN 311 S.F.
REMOVE 32' - 18" R.C. PIPE
PLACE 52' - 18" R.C. PIPE
PLACE 36' - 18" R.C. PIPE
OBTAIN NEW 25' X 25' "△"
RETAIN 12" R.C. PIPE
RETAIN 15" R.C. PIPE
W.C. McKINNEY ESTATE
PRES. 33' R/W
RETAIN PRES. 33' R/W
S 81° 30' 00" E
RD. S-101 (W. OCONEE ST.)
RETAIN PRES. 33' R/W (FILE 42.321A, 1950) LVG
N 2° 41' 33" E
95°-48'-27"
20' CONC. APPR. SLAB
PC 10+50.00
R 40'-0"
OBTAIN NEW 15' X 15' "△"
TIE EQUALITY P.O.T. STA. 31+41.43 RD. S-101 (W. OCONEE ST.) = P.I. STA. 10+00.00 (OHIO ST. RELOCATION)
REMOVE AND DISPOSE OF EXISTING BITUMINOUS SURFACING AND STONE BASE AS SHOWN BY SHADED AREA SHAPE & GRADE AREA TO DRAIN
4 CLINCHFIELD R/R
OHIO ST.
1 JIMLYN COVINGTON TAX MAP 2-14-01 DEED BK. 65D/755 OBTAIN 112 S.F.
OBTAIN NEW 25' X 25' "△"
PLACE 2 TONS HAND PLACED RIPRAP D50 = 0.5' PLACE 4 S.Y. OF GEOTEX / EROS. CONT. (CLASS 2) TYPE C AS DIRECTED BY ENGINEER (OBTAIN PERMISSION)
PLACE 36' - 18" R.C. PIPE OBTAIN PERMISSION
CONSTRUCT DRIVE APPROX. AS SHOWN EST. EXC. = 50 C.Y. WHERE DIRECTED BY THE ENGINEER OBT. PERMISSION
2 HEYWARD McKINNEY TAX MAP 2-14-00 DEED BK. 68R/523 PLAT BK. 107/755/141/108 OBTAIN 311 S.F.
5 CLINCHFIELD R/R
TIE EQUALITY P.O.T. STA. 32+55.01 S-101 (W. OCONEE ST.) = P.O.T. STA. 2+00.00 CLINCHFIELD R/R
ERECT QUADGUARD (3 BAY- 24" WIDE) WITH CONCRETE BACKUP
CLEAN OUTFALL DITCH APPROX. 50 L.F. EST. EXC. = 10 C.Y. OBT. PERMISSION
SURVEY STA. 30+00.00 BEGIN FILE 45.522A RD. S-101
ERECT THRIE BEAM G.R. BRIDGE CONN. WITH SHOP BEND 30' RADIUS
ERECT 12.5' STEEL BEAM GUARDRAIL CONSTRUCT END TERMINAL - TYPE T
CONSTRUCT SHOULDER PAVING, BRIDGE END CONCRETE CURB(9" X 15") AS SHOWN AND FLUME AND PLACE 20 TONS OF RIPIRAP
SURVEY STA. 34+50.00 END FILE 45.522A RD. S-101
ALIGNMENT CONTROL CAN BE FOUND ON REFERENCE SHEET
30+00.00 32+02.00 33+08.00 34+50.00
EXC. = 200 C.Y. EMB. = 0 C.Y. 30% = 0 C.Y. WASTE = 200 C.Y. TOTAL = 200 C.Y. TOTAL = 200 C.Y.
EXC. = 91 C.Y. EMB. = 26 C.Y. 30% = 8 C.Y. WASTE = 57 C.Y. TOTAL = 91 C.Y. TOTAL = 91 C.Y.
HYDROLOGY DATA:
D.A. = 5.413 sq.mi. = 3464.32 ac.
Q50 = 1188.14 cfs
Vel. = 3.99 ft/sec
50 Year H.W. Elev. = 23 ft.
Q100 = 1373.61 cfs
Vel = 4.29 ft/sec
100 Year H.W. Elev. = 23 ft.
NOTE : Data from Bridge Section
OVERTOPPING FLOOD:
Q= 3900 cfs
Probability = less than 0.2%
87' V.C.
106' V.C.
(-) 0.74%
(+) 0.40%
(+) 1.16%
FINISHED GRADE
VPI = 31+48 Elev. = 923.83
VPI = 33+72 Elev. = 924.72
1ST. TOE OF FILL 32+02
2 ND. TOE OF FILL 33+08
1ST. RAIL EL. = 888.05
2ND. RAIL EL. = 888.12
924.15 VPC
924.00 VPT BEG. BR.
924.51 VPC END BR.
925.34 VPT
924.92 924.55 924.18 (+04) 923.95 (+91) 924.04 924.24 924.44 (+19) 924.67 925.07 (+25) 925.63
930 920 910 900 890 880 870
28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00
PLAN NOTE BOOK No. SURVEYED PLOTTED ALIGNMENT CHECKED RT. OF WAY CHECKED BY DATE
PROFILE NOTE BOOK No. SURVEYED PLOTTED GRADES CHECKED B.M.'S NOTED STRUCTURE NOTATIONS CHECKED BY DATE
proline3.dgn

FIGURE 5-A

dfrts3.dgn

SCDOT
South Carolina Department of Transportation

DESIGN FIELD REVIEW

_____ COUNTY

RTE./RD._____

FILE _____ PROJ._____

FROM:_____TO:_____

MAP OF AREA TO BE PLACED HERE

SEEDING:

SEEDING: MULCHED / UNMULCHED
TEMPORARY SEEDING (% OF PERMANENT SEEDING) _____ %
SODDING: Y / N _____SY
PERMANENT VEGETATION _____
TEMPORARY VEGETATION _____ %

INCIDENTAL ITEMS:

FLOWABLE FILL _____C. Y.
REM. & DISPOSAL OF EXISTING PAV'T (CONC. DR., WALKS) _____S. Y.
CONCRETE DRIVEWAYS (6" UNIFORM) _____S. Y.
CONCRETE DRIVEWAYS (8" UNIFORM) _____S. Y.
CONCRETE FOR STRUCTURES-CLASS A _____C. Y.
REINFORCING STEEL _____LBS.
CONCRETE FOR STRUCTURES-CLASS B _____C. Y.
BRICK MASONRY (NONREINFORCED / REINFORCED) _____C. Y.
PAVEMENT MARKINGS : PAINT _____ THERMO _____
RAISED MARKERS _____

CONSTRUCTION STAKES, LINES AND GRADES BY DISTRICT BY CONTRACTOR (CIRCLE ONE)

QUALITY CONTROL BY CONTRACTOR
FOR EARTHWORK Y / N
FOR BASES AND SUBBASES Y / N

BRIDGE REPLACEMENT:

SKETCH ON THE PLANS THE LOCATION OF THE BRIDGE CONSTRUCTION ACCESS LINES (GIVE DIMENSIONS WHERE NEEDED)
ADDITIONAL GEOTECHNICAL WORK REQUIRED: Y / N
PAVING UNDER GUARDRAIL BY SY BY TON (CIRCLE ONE)

NOTES:

REQUESTED TO ATTEND	ORG.	PHONE	VERIFICATION OF ATTENDANCE (INITIALS)

DATE: _____

TRAFFIC DATA
_____ ADT _____
_____ ADT _____
TRUCKS _____ %

WITHIN CITY / TOWN LIMITS ?
YES / NO

RAILROAD INVOLVEMENT ?
YES / NO

FIELD REVIEW PLANS READY: __/__/__
DESIGN GROUP ____ DESIGN GROUP COORDINATOR _____
CHARGE CODE __ ___ ____ ___ ____ ___
PIN NUMBER _____
DIRECTORY NUMBER SMPSAN3/RDGRP /_____
PC NODE NAME rd_4__PC__
FILE NAME _____.DGN
SURVEY LENGTH _____ MI.

FOR SECONDARY "C" ROADS
GROUP 1 2 3 4
(CIRCLE ONE)

TRAFFIC CONTROL: Y / N

CLEARING AND GRUBBING:
WITHIN ROADWAY _____ (NO EXPLANATION NECESSARY)
WITHIN RIGHT OF WAY _____ (IF NO REASON IS GIVEN , THEN C&G MAY BE CHANGED TO "WITHIN ROADWAY")
REASON: _____

RIGHT OF WAY RECOMMENDATIONS:

NEW R/W WIDTH:_____TOTAL SEE PLANS: Y / N
SLOPES OBTAIN PERMISSION: Y / N
SLOPES COVER WITH RIGHT OF WAY: Y / N
CONTROL OF ACCESS Y / N
COMMENTS:_____

DESIGN CRITERIA:

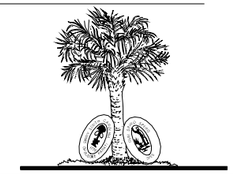
TYPICAL SECTION_____THRUOUT
_____ STA._____TO STA._____
_____ STA._____TO STA._____
SURFACING: WIDTH____MATERIAL____TYPE____RATE
WIDTH____MATERIAL____TYPE____RATE
BASE: WIDTH____MATERIAL____TYPE____RATE/THICKNESS_____
PAVEMENT DESIGN DETERMINED ON DFR BY: _____
MAINTENANCE STONE _____TONS
OBT R/W: Y / N
DESIGN SPEED:_____ MPH GROUP ____ RURAL/URBAN/SUBDIVISION
INTERSECTION "THROAT" WIDTH____FT RADII___FT
CLEARING & GRUBBING DITCHES: ____ ACRES
CONSTRUCTION SIGNS: ____S. F.
SHRINKAGE FACTOR____ % BORROW EXCAVATION: Y / N
MUCKING: STA._____TO STA._____;WIDTH___;DEPTH___; ____C.Y.
MILLING:_____" DEPTH STA._____TO STA._____ _____ S. Y.
FULL DEPTH ASPH. PAV. PATCHING_____" UNIF. _____ S. Y.
DITCH PAVING @ 300 LBS./S. Y. _____ TONS

DRAINAGE:

ADDITIONAL _____" PIPE CULVERT _____L. F.
ADDITIONAL _____" PIPE CULVERT _____L. F.

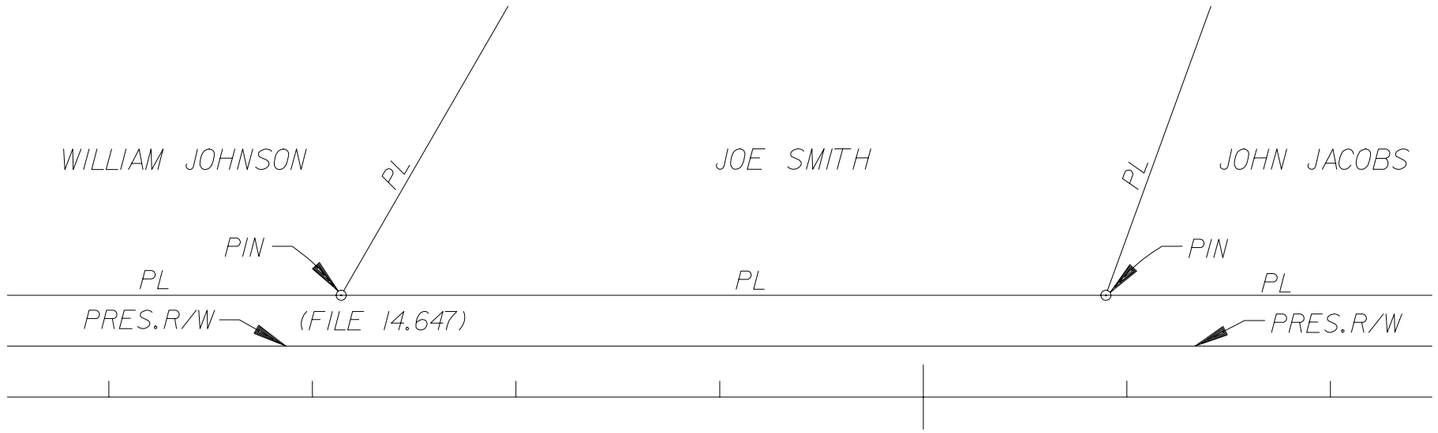
DRAINAGE PIPE MATERIAL: REINFORCED CONCRETE _____
CORR. ALUM. ALLOY _____
H.D. POLYETHYLENE _____
CHECK MORE THAN ONE TO BE BID AS ALTERNATE.

ADDITIONAL CATCH BASINS (EA.):
TYPE 9/MH _____ MANHOLE _____24" x 36" D.I. _____
TYPE 14_____TYPE 16_____TYPE 17_____TYPE 18_____
_____" PERF. PIPE UNDERDRAIN_____L. F.
_____" PERF. PIPE UNDERDRAIN_____L. F.
AGGREGATE UNDERDRAIN FOR SHOULDERS Y / N
HAND PLACED RIPRAP _____TONS
GEOTEXTILE FABRIC (PROTECTED / UNPROTECTED) _____ S. Y.
EROSION CONTROL BLANKET _____S. Y.
SILT BASINS ____C.Y. ;SILT FENCE____L. F.
SEDIMENT TUBES 12"___L. F. ;20"___L. F.
R. C. SLAB FOR CROSSLINE UNDER EXIST. PAV'T Y / N
WILL THE ROAD, ON WHICH THE PIPE TRENCH IS LOCATED, BE RESURFACED IN THE AREA OF THE TRENCH DURING THIS CONSTRUCTION ? Y / N



dfrts3.dgn

FIGURE 5-B


WILLIAM JOHNSON
PL
PIN
PL
PRES. R/W
(FILE 14.647)
JOE SMITH
PL
PL
JOHN JACOBS
PIN
PL
PRES. R/W

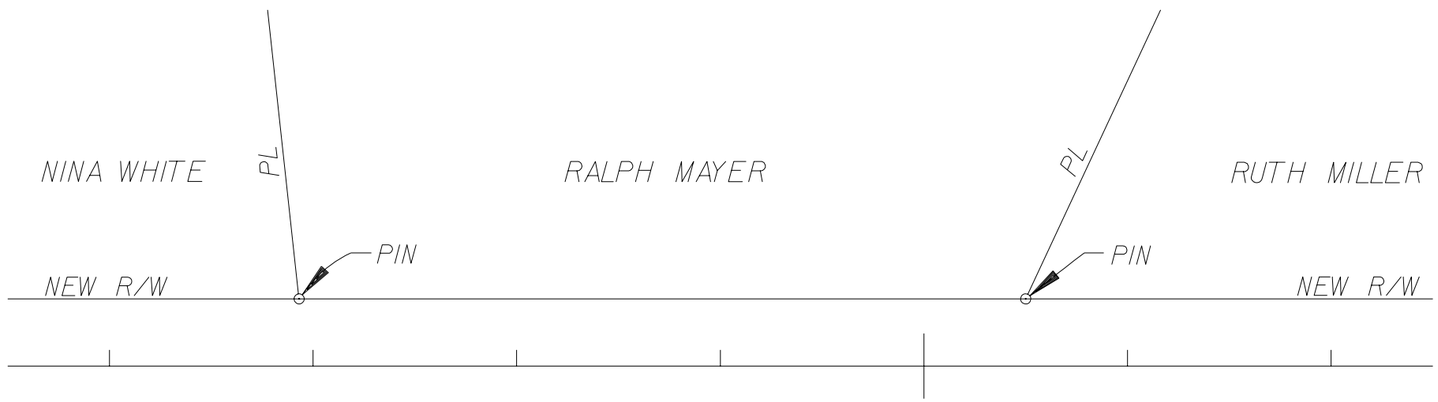

NINA WHITE
PL
PIN
NEW R/W
RALPH MAYER
PL
PIN
RUTH MILLER
NEW R/W

FIGURE 5-C