Cover letter/Summary – Practical Design
2007 Awards for excellence

Project Description:

Route: 60
County: Carter
Length: 4.7 miles
Type: 4-Lanes divided highway
Letting Date: November 2005
Contract Estimate: $10,193,000
Award: $11,315,260

This is a 4-lane divided highway project consisting of adding two new lanes to the existing lanes as well as a small section of all new 4-lane construction. This project was submitted and award 1.1 million dollars above budget.

Thought Process:

Practical design was still being developed and implemented during the growth of this project but well underway by letting (November 2005). After the award came in over budget, the core team sat back and evaluated possible savings, utilizing practical design, to bring this project within STIP estimate.

After careful consideration and combined efforts, the team decided to modify 2 major components:

- Eliminate the 1.2-mile section of new construction where we were replacing the existing roadbed due to two sub-standard hills.

- Re-evaluated drainage design.

Considerations Given:

Culverts:
In the past, our culvert design has been tied to our hydraulics software, which almost always increase the size of the culverts. In our design plans (awarded), we removed existing culverts and replaced them with all new, bigger structures. In our re-evaluation, we chose to extend existing structures that had no previous history of flooding and were not in close proximity of residences/businesses.

Utilization of existing roadbed for east-bound lanes:

Our final plans submittal proposed removing 1.2 miles of existing roadbed for new east bound lane construction. Original reasoning for removing the roadway was due to two existing crests that did not meet current design standards.

The core team decided that we would now utilize these two crests and eliminate 1.2 miles of new construction. The end product would still be an improvement from existing conditions. Traffic would now utilize these hills but only in one direction (east bound) as apposed to previous existing condition (two-way traffic).

Other reasons that helped sway our decisions were that there were no major/minor intersections, median openings or private entrances through these crests.

Since utilizing the existing lanes (east bound) and constructing new westbound lanes to new profile standards, there developed a 17' (at extreme) elevation difference between opposing lanes. Guardrail was implemented through these sections.

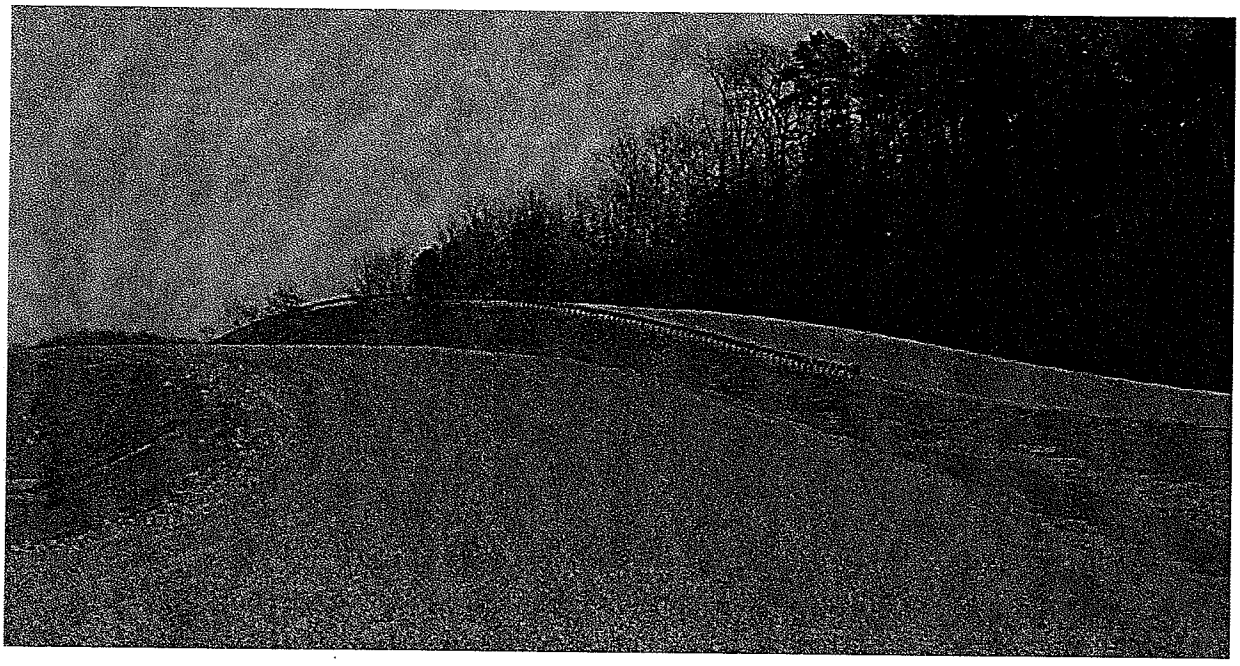
Summary:

The final product is aesthetically pleasing and although not the Cadillac design, still a much safer roadway prior to the implementation of this project. As well as saving money, hindrance to the traveling public was lessened by utilizing the existing lanes and eliminating and entire stage of construction. The project should benefit from an early completion date due to these changes.

Total savings was just over **1 million dollars** (1.2 million contract savings – $190,000 for contractor compensation). Commitment

Crest # 1 (Station 503+00)

Crest # 2 (Station 545+00)



2007 APPLICATION FORM

(required for each entry)

Job No. J9P0359D **Route** 60 **County** Carter

STIP Description (Scoping or Construction, state which STIP) 05-09 ☐ 06-10 ☑ 07-11 ☐

Grading and Paving for dual divided highway from 3.1 miles east of Route J to 1.0 mile west of Route M (Admendment 3)

Project Manager (could have both)

MoDOT Mike Wake **Consultant**

Active core team members as approved by the MoDOT PM (may include consultants)

Ed Hess	Dan Sherbo	
Henry Haggard	Steve Shelton	
Curt Woolsey	Jeff Johnson	
Audie Pulliam	Tom Stehn	

Project Contacts (will have both for consultant entry)

District: Mike Wake **Consultant** $

STIP budget $ 10,193,000 or **Award cost** $ 11,315,260

Value Engineering study during design? yes ☐ no ☒ (if yes) **Project Stage**

VE Contact person

Construction-stage VE (VECP)? yes ☒ no ☐ (if yes) **Explain**

- Contractor - Proposed changing A2 Shoulders to Aggregate Shoulders
- Core team - Eliminate New E.B. Construction

Total VECP savings $ **VECP Contact Person**

Why is this entry the "poster" image for MoDOT's practical design philosophy?

(In layman's terms - 100 words or fewer – attach additional sheet if necessary)

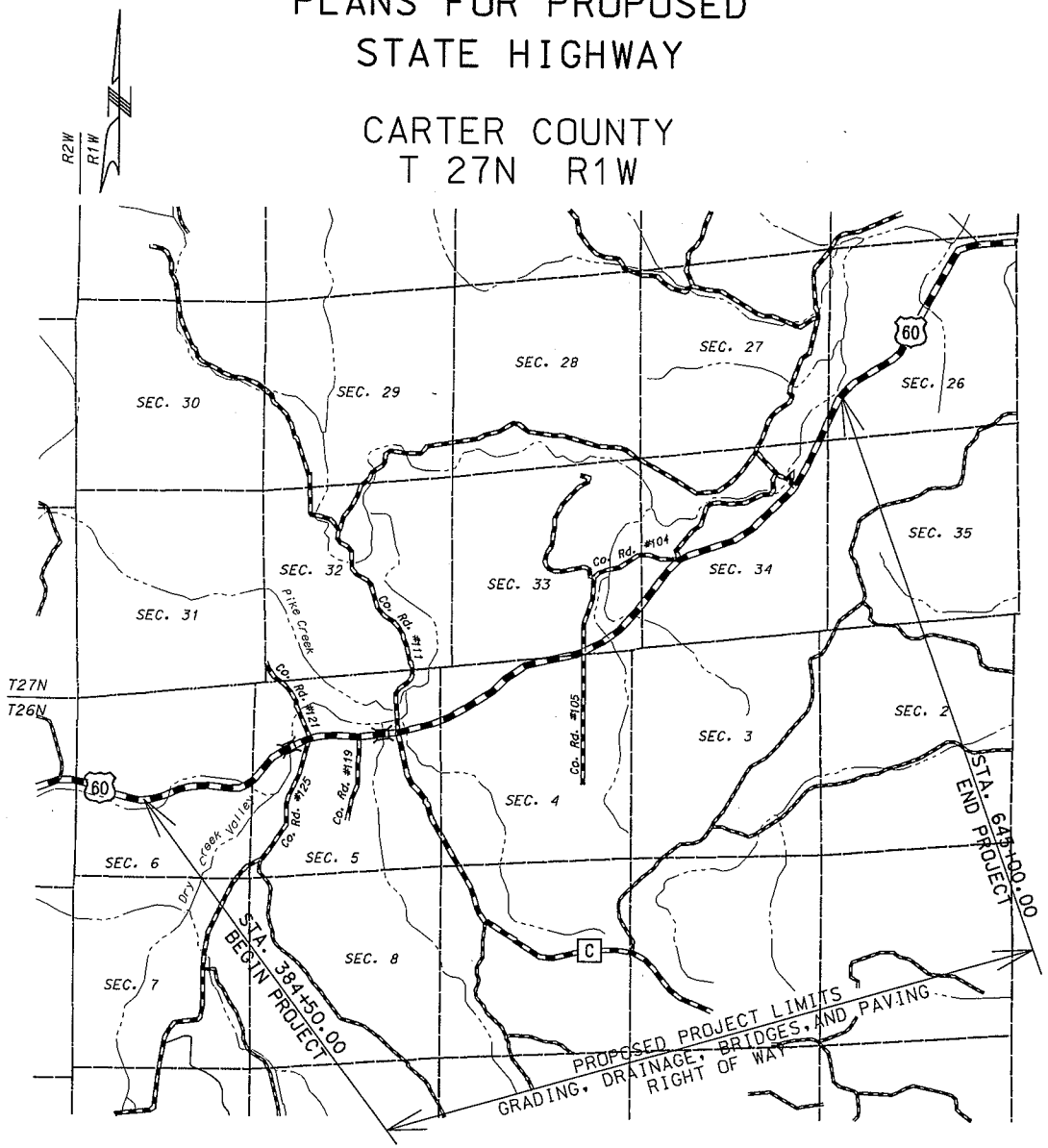
This project symbolizes our commitment to saving Missourian tax dollars while fulfilling our promise.

Send entries to: MoDOT Design Division, ATTN: Jay Bestgen
1320 Creek Trail Dr.
Jefferson City, Missouri 65109

All entries must be received no later than close of business on February 1, 2007

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION
PLANS FOR PROPOSED
STATE HIGHWAY

CARTER COUNTY
T 27N R1W



DESIGN DESIGNATION

A.D.T. - 2000 = 6,000
A.D.T. - 2028 = 11,560
T = 18%
V = 60 M.P.H.

CONTROLLED ACCESS HIGHWAY

THIS SHALL BE A CONTROLLED ACCESS HIGHWAY, BETWEEN STA. 407+47.65 AND 645+00 EXCEPT AT LOCATIONS AND AS OTHERWISE SPECIFICALLY SHOWN ON THESE PLANS. NO ABUTTER'S RIGHTS IN OR OF DIRECT ACCESS TO, FROM, OR ACROSS THE HIGHWAY OR ITS RIGHT-OF-WAY SHALL ATTACH OR BELONG TO ANY PROPERTY ABUTTING ON SAID SECTION OF HIGHWAY; OR TO ANY PERSON MERELY BECAUSE OF OWNERSHIP OF SUCH ABUTTING PROPERTY. THERE SHALL BE THE USUAL RIGHT OF ACCESS OVER ANY LOCATION SHOWN ON THESE PLANS EITHER AS (1) AN ENTRANCE OR (2) A PRIVATE UNDERPASS. WHEREVER AN ADJACENT OUTER ROADWAY OR SERVICE ROAD IS SHOWN, THERE SHALL BE THE USUAL RIGHT OF DIRECT ACCESS BETWEEN THE ABUTTING PROPERTY AND SUCH OUTER ROADWAY OR SERVICE ROAD (EXCEPT WHERE ACCESS IS SPECIFICALLY PROHIBITED BY THE SPECIAL SYMBOL DENOTING NO RIGHT OF ACCESS) AND ALONG IT TO AND FROM THE NEAREST LANE OF THE THROUGHWAY OF A PUBLIC HIGHWAY. OUTER ROADWAYS AND SERVICE ROADS, AS THE CASE MAY BE, ARE SO DESIGNATED ON THE PLANS.

- BEGINNING AND ENDING OF CONTROLLED ACCESS
- CONTROLLED ACCESS
- NO RIGHT OF ACCESS OR CROSSING OF LINES BEARING THIS SYMBOL WILL BE PERMITTED UNDER ANY CIRCUMSTANCES.

CONVENTIONAL SYMBOLS
(USED IN PLANS)

- BUILDINGS AND STRUCTURES
- GUARD RAIL
- CONCRETE RIGHT-OF-WAY MARKER
- STEEL RIGHT-OF-WAY MARKER
- FENCE
  - CHAIN LINK
  - WOVEN WIRE
  - GATE
- UTILITIES
  - TELEPHONE
  - POWER
  - GAS
  - WATER
- EXIST. MANHOLE (MH)
- EXIST. FIRE HYDRANT (HYD)
- EXIST. WATER VALVE (WV)
- EXIST. WATER METER (WM)
- EXIST. DROP INLET (DI)
- DITCH BLOCK
- EXIST. GROUND MOUNTED SIGN
- EXIST. LIGHT POLE
- EXIST. H-FRAME POWER POLE

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

ROUTE	STATE	DISTRICT
60	MO	9

JOB NO J9P0359D
PROJECT NO
COUNTY CARTER

INDEX OF SHEETS

DESCRIPTION	SHEET NUMBER
TITLE SHEET	1
TYPICAL SECTIONS (2 SHEETS)	2
SUMMARY (SHEETS)	2-A
SUMMARY (9 SHEETS)	2-B
PLAN-PROFILE	3-16
REFERENCE POINTS	17
COORDINATE POINTS	18
SPECIAL SHEETS	19-23
TRAFFIC CONTROL SHEETS	24-27
EROSION CONTROL	28-32
LIGHTING	-
SIGNALS	-
SIGNING	-
PAVEMENT MARKING	33-37
CULVERT SECTIONS	38-64
BRIDGE DRAWINGS	-
STANDARD PLANS INDEX	-
CROSS SECTIONS	1-98
COMPUTER DATA	-

LENGTH OF PROJECT

END OF PROJECT	STA.	645+00.00
BEGINNING OF PROJECT	STA.	384+50.00
APPARENT LENGTH		26,050.00 FEET
EQUATIONS AND EXCEPTIONS		
393+31.22 BK. = 406+20.00 AH.		-1,288.78 FEET
TOTAL CORRECTIONS		-1,288.78 FEET
NET LENGTH OF PROJECT		24,761.22 FEET
STATE LENGTH		4.690 MILES

DATE

REV.

GENERAL NOTES:

1. ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.
2. RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STATION 407+47.85 TO STATION 616+50, A DISTANCE OF 3.959 MILES.
3. ALL BEARINGS BASED ON STATE PLANE BEARINGS CENTRAL ZONE.
4. ENTRANCES CONSTRUCTED THROUGH CONTROLLED ACCESS RIGHT OF WAY MAY BE WIDENED BY PERMIT TO A MAXIMUM WIDTH OF 60 FEET UNLESS OTHER WISE NOTED.

ROUTE	STATE	DISTRICT	SHEET NO.
60	MO	9	3

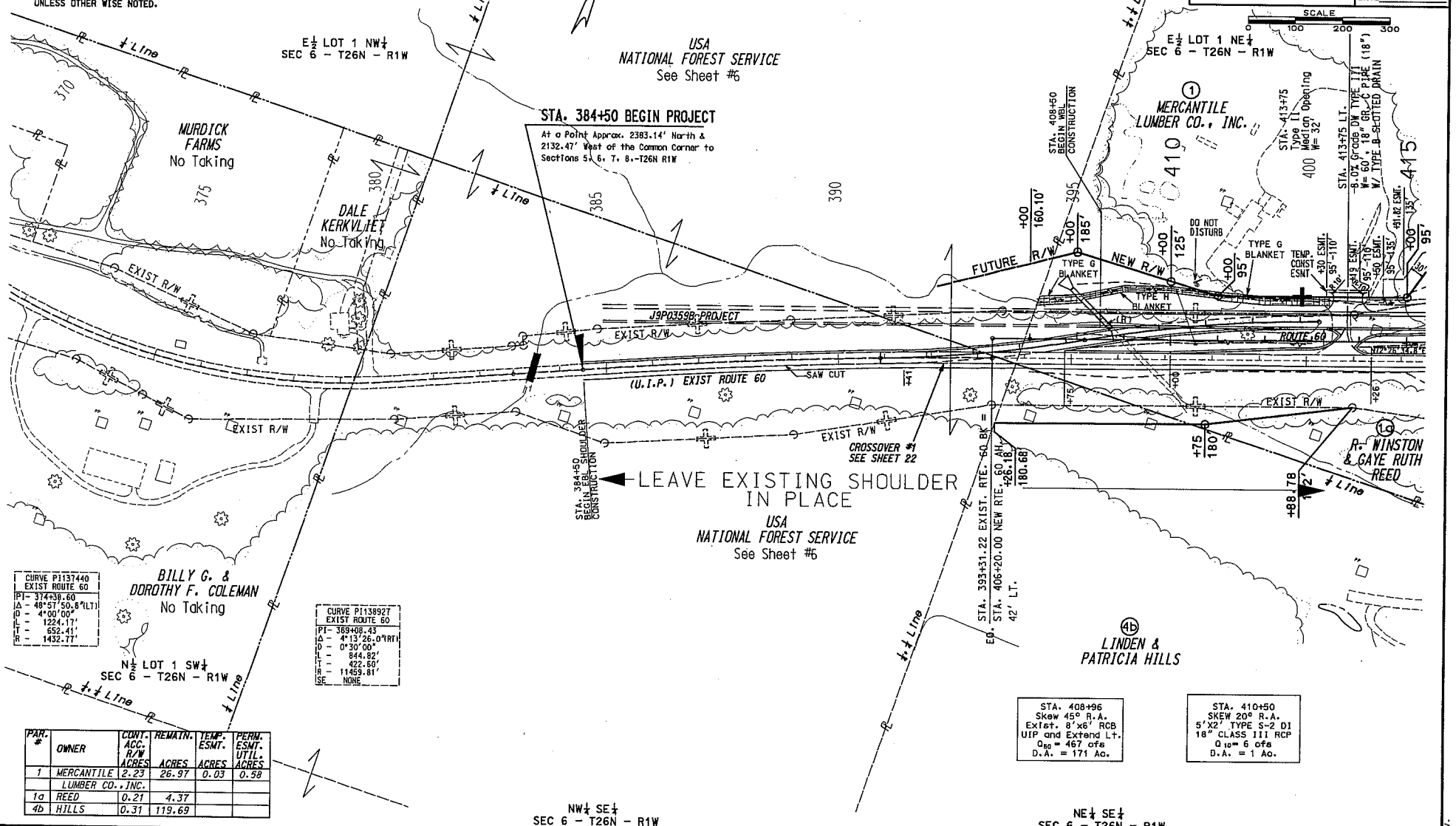
JOB NO. J9P0359D

CONTRACT ID.

PROJECT NO.

COUNTY CARTER

DATE



CURVE PI137440 EXIST ROUTE 60
PI- 374+38.60
Δ - 48°57'50.8"(LT)
D - 4°00'00"
L - 1224.17'
T - 652.41'
R - 1432.77'

CURVE PI138927 EXIST ROUTE 60
PI- 389+08.43
Δ - 4°13'26.0"(RT)
D - 0°30'00"
L - 844.82'
T - 422.60'
R - 11459.81'
SE NONE

PAR. #	OWNER	CONT. ACC. R/W ACRES	REMAIN. ACRES	TEMP. ESMT. ACRES	PERM. ESMT. UTIL. ACRES
1	MERCANTILE	2.23	26.97	0.03	0.58
	LUMBER CO., INC.				
1a	REED	0.21	4.37		
4b	HILLS	0.31	119.69		

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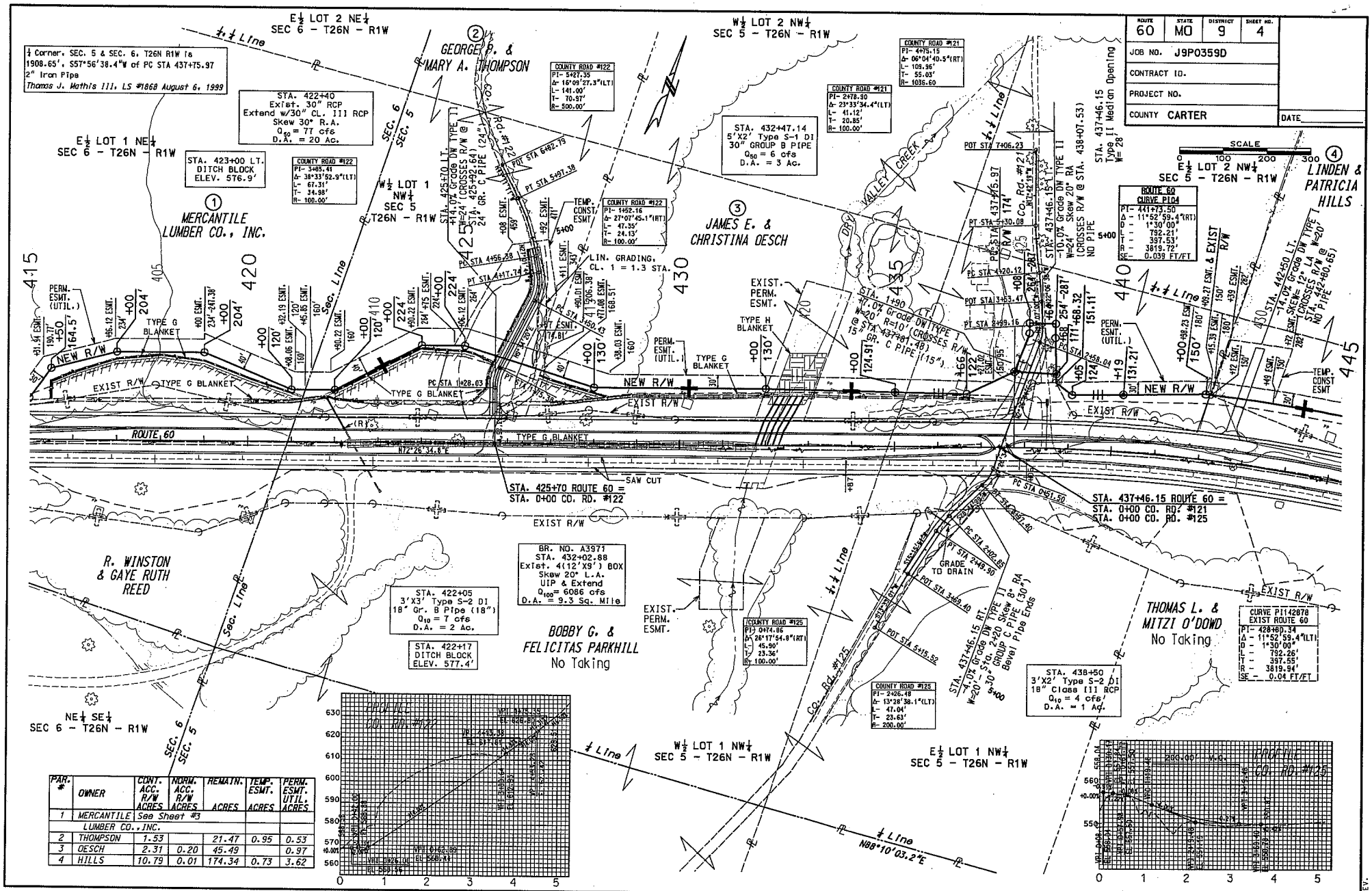

PAR. #	OWNER	CONT. ACC. R/W ACRES	NORM. ACC. R/W ACRES	REMAIN. ACRES	TEMP. ESMT. ACRES	PERM. ESMT. UTIL. ACRES
1	MERCANTILE	See Sheet #3				
	LUMBER CO., INC.					
2	THOMPSON	1.53		21.47	0.95	0.53
3	OESCH	2.31	0.20	45.49		0.97
4	HILLS	10.79	0.01	174.34	0.73	3.62

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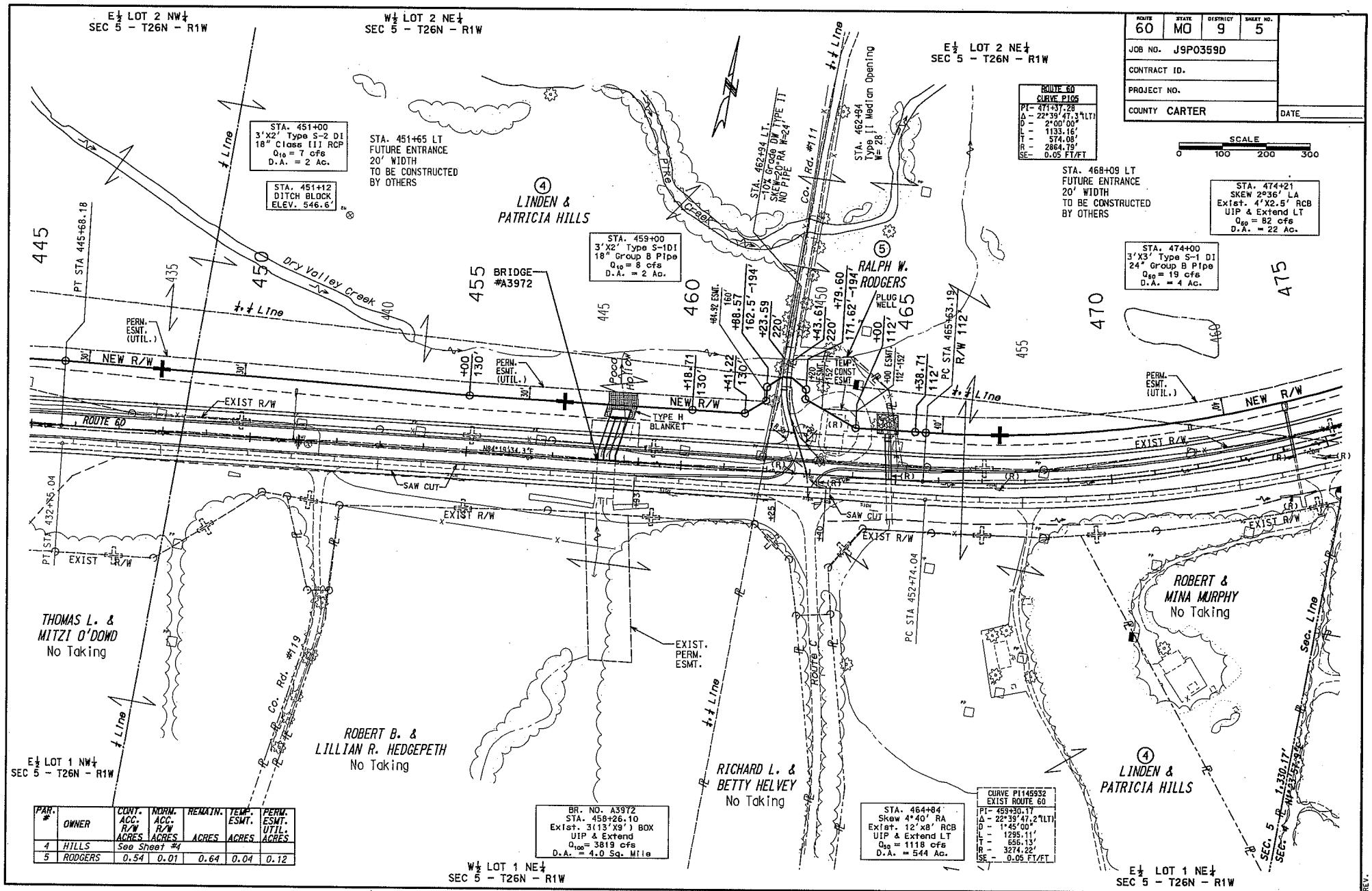

PAR. #	OWNER	CONT. ACC. R/W ACRES	NORM. ACC. R/W ACRES	REMAIN. ACRES	TEMP. ESMT. ACRES	PERM. ESMT. UTIL. ACRES
4	HILLS	See Sheet #4				
5	RODGERS	0.54	0.01	0.64	0.04	0.12

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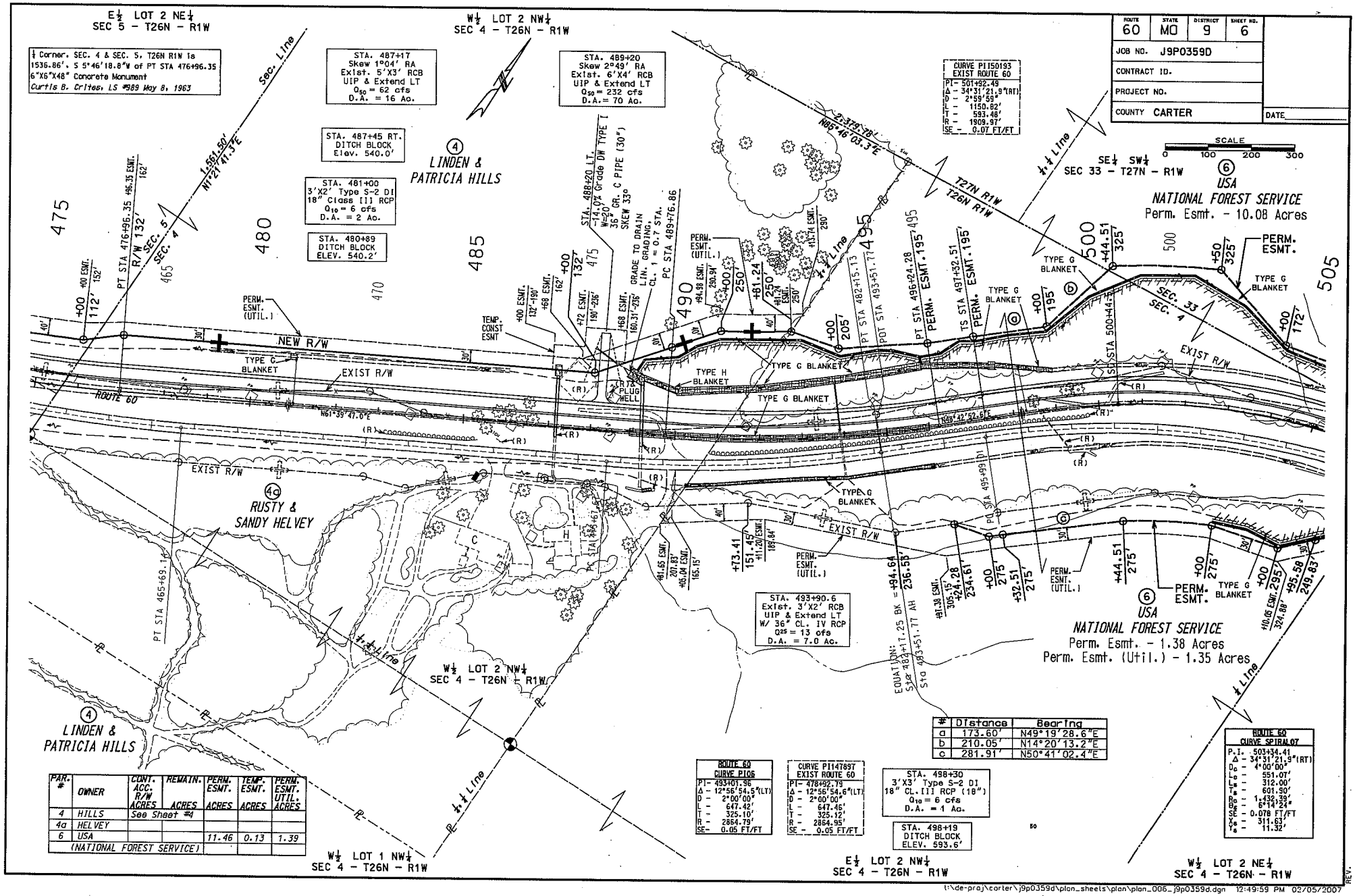

PAR. #	OWNER	CONT. ACC. R/W ACRES	REMAIN. ACRES	PERM. ESMT. ACRES	TEMP. ESMT. ACRES	PERM. ESMT. UTIL. ACRES
4	HILLS	See Sheet #4				
4a	HELVEY					
6	USA			11.46	0.13	1.39
	(NATIONAL FOREST SERVICE)					

#	Distance	Bearing
a	173.60'	N49°19'28.6"E
b	210.05'	N14°20'13.2"E
c	281.91'	N50°41'02.4"E

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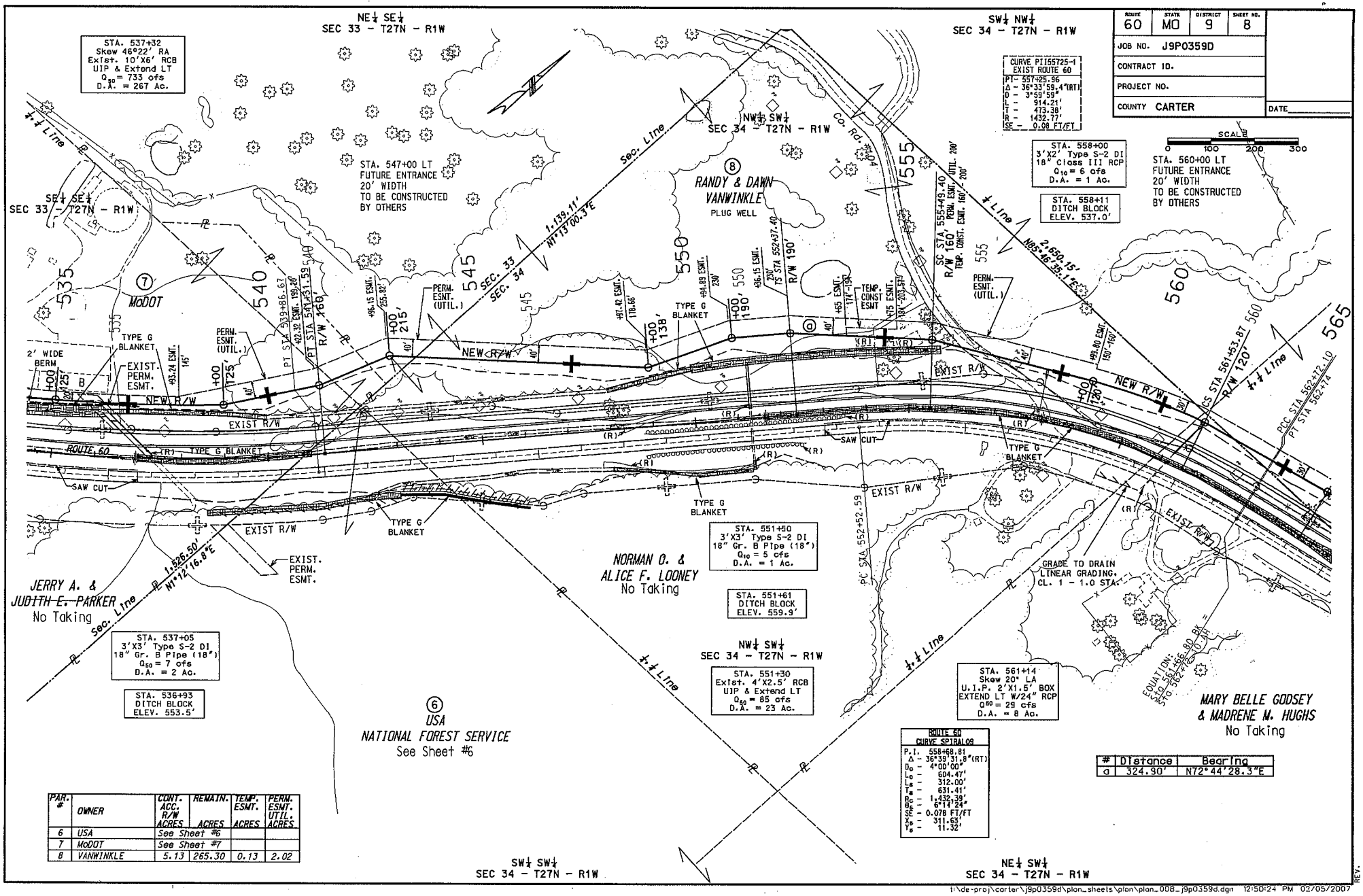

#	Distance	Bearing
a	324.90'	N72°44'28.3"E

PAR. #	OWNER	CONT. ACC. R/W ACRES	REMAIN. ACRES	TEMP. ESMT. ACRES	PERM. ESMT. UTIL. ACRES
6	USA	See Sheet #6			
7	MoDOT	See Sheet #7			
8	VANWINKLE	5.13	265.30	0.13	2.02

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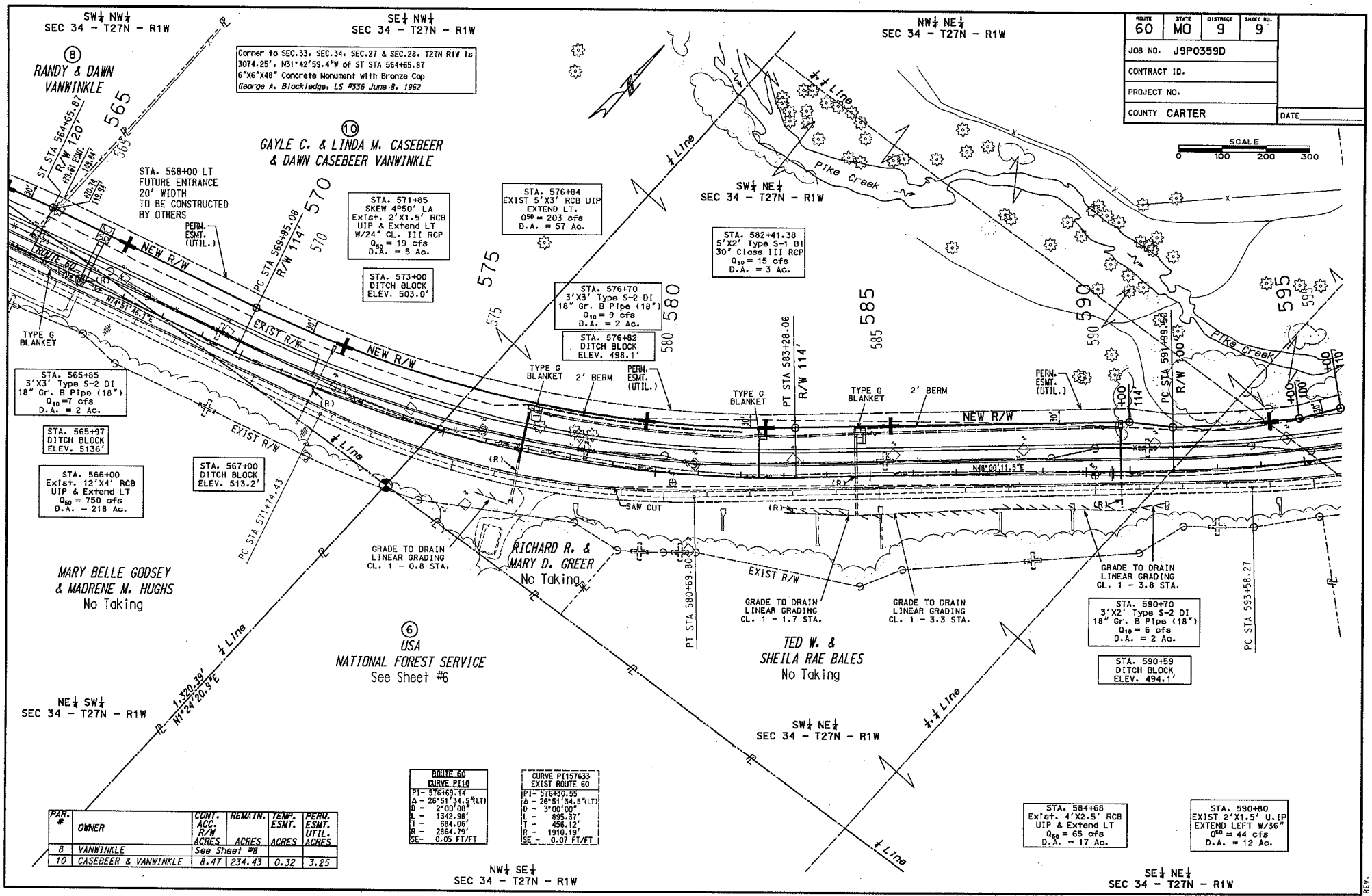

PAR. #	OWNER	CONT. ACC. R/W ACRES	REMAIN. ACRES	TEMP. ESMT. ACRES	PERM. ESMT. UTIL. ACRES
8	VANWINKLE	See Sheet #8			
10	CASEBEER & VANWINKLE	8.47	234.43	0.32	3.25

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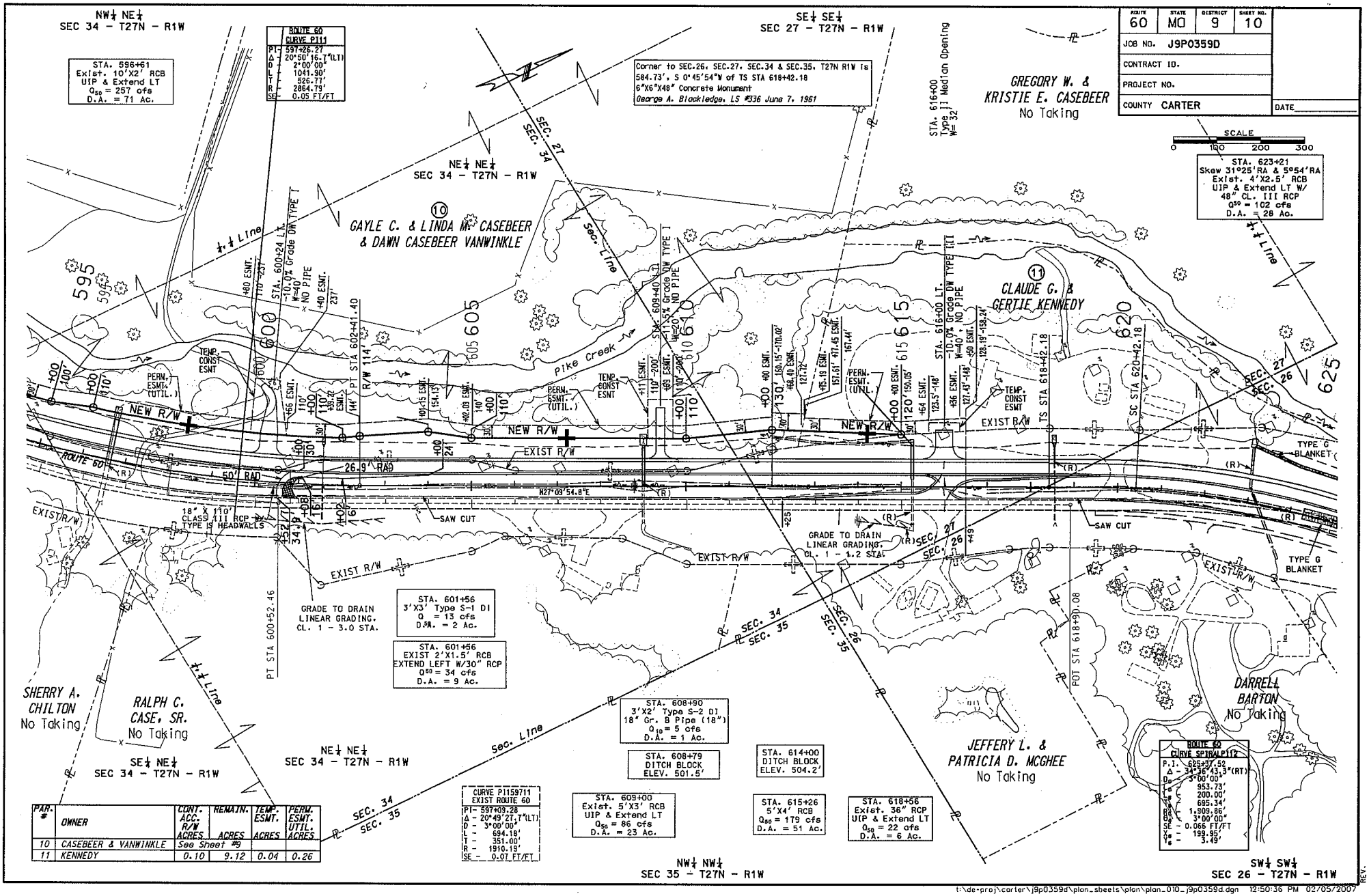
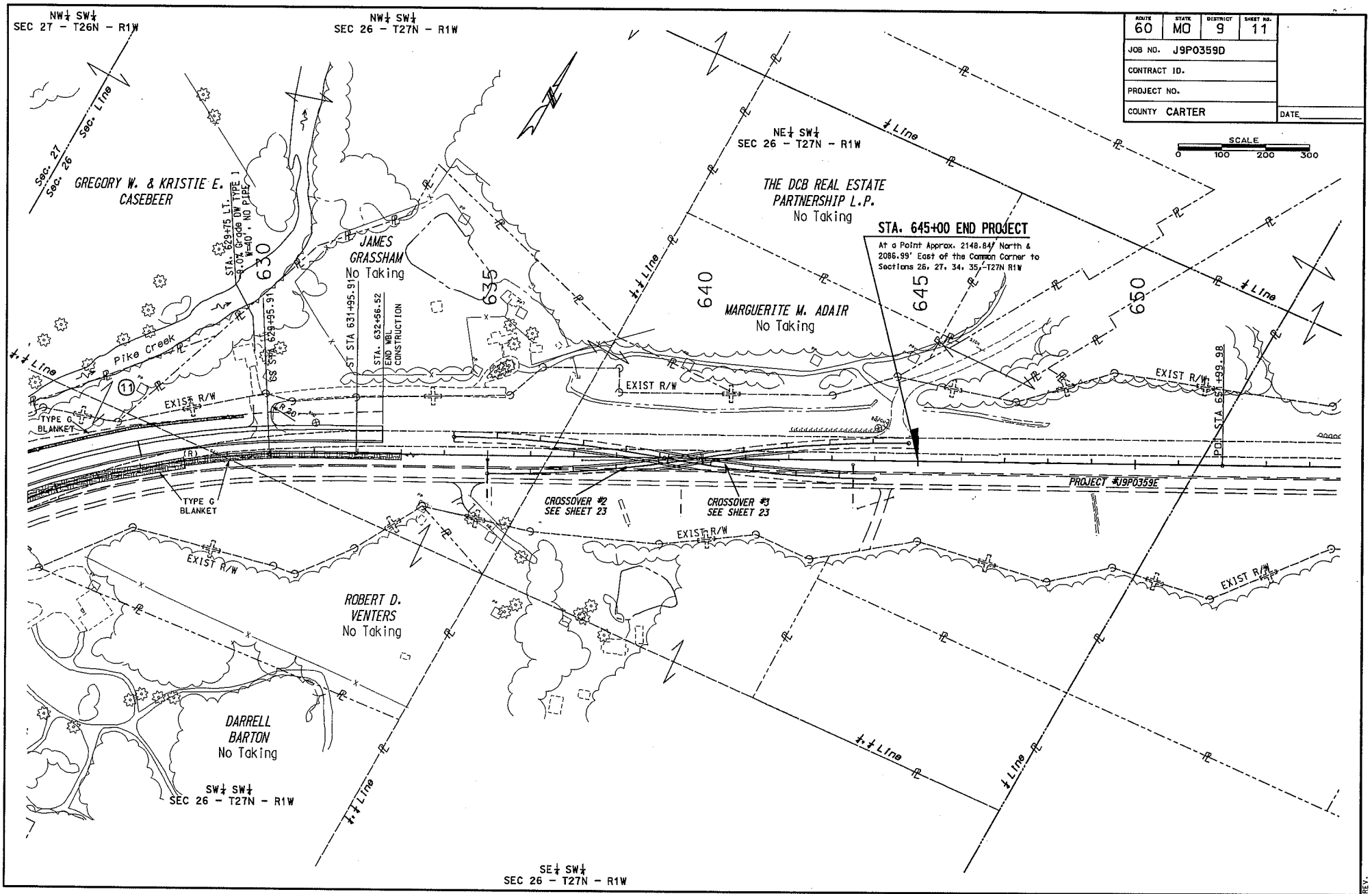


PAR. #	OWNER	CONT. ACC. R/W ACRES	REMAIN. ACRES	TEMP. ESMT. ACRES	PERM. ESMT. UTIL. ACRES
10	CASEBEER & VANWINKLE	See Sheet #9			
11	KENNEDY	0.10	9.12	0.04	0.26



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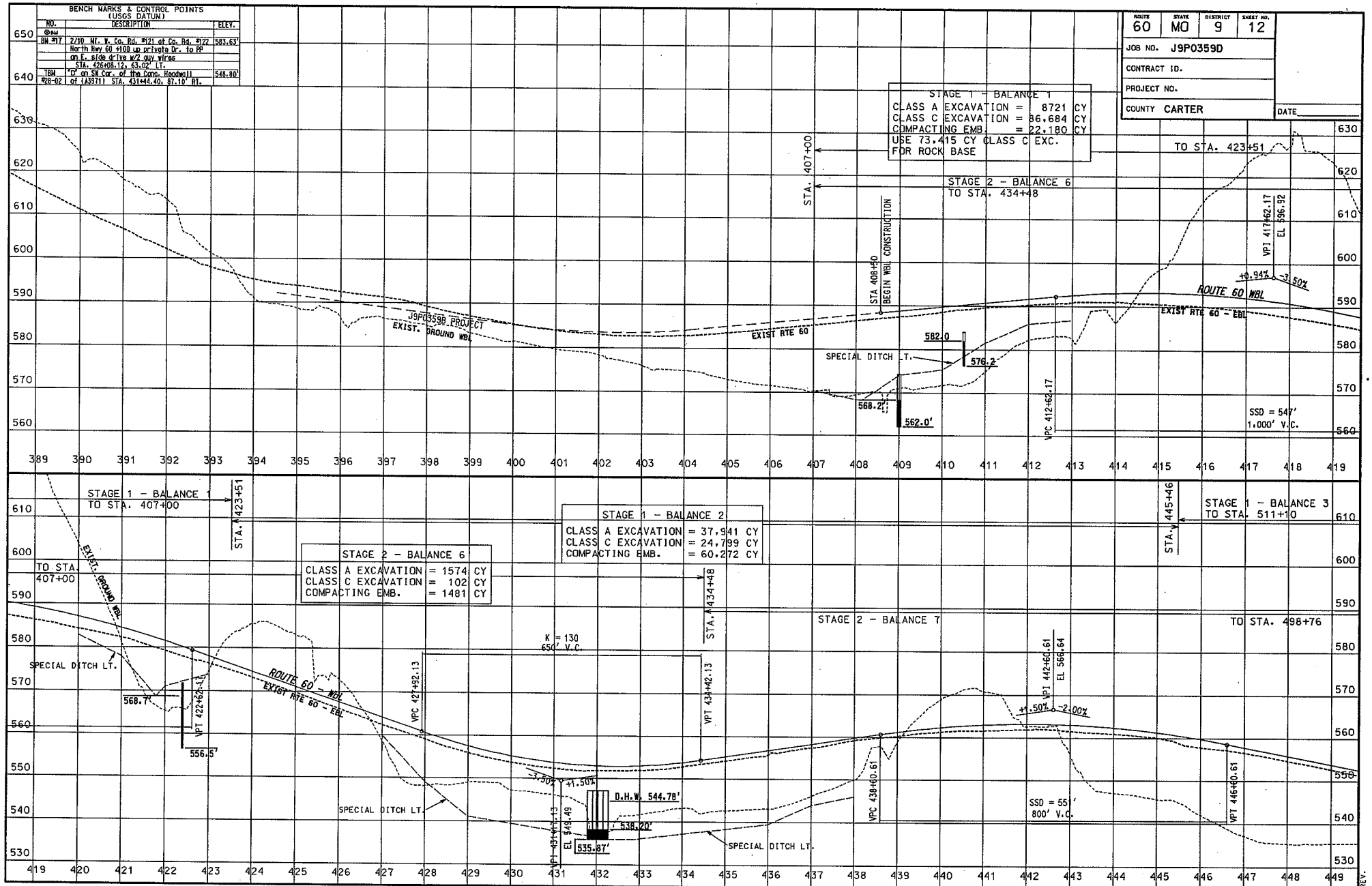
BENCH MARKS & CONTROL POINTS (USGS DATUM)
NO. | DESCRIPTION | ELEV.
BM #17 | 2/10 Mi. W. Co. Rd. #121 at Co. Rd. #122 North Hwy 60 +100 up private Dr. to PP on E. side drive w/2 guy w/rise STA. 426+08.12, 63.02' Lt. | 583.63'
TBM #28-02 | "D" on SW Cor. of the Conc. Headwall of (A3911) STA. 431+44.40, 87.10' RT. | 546.80'
ROUTE 60 | STATE MO | DISTRICT 9 | SHEET NO. 12
JOB NO. J9P0359D
CONTRACT ID.
PROJECT NO.
COUNTY CARTER
DATE
STAGE 1 - BALANCE 1
CLASS A EXCAVATION = 8721 CY
CLASS C EXCAVATION = 86,684 CY
COMPACTING EMB. = 22,180 CY
USE 73,415 CY CLASS C EXC. FOR ROCK BASE
STA. 407+00
STAGE 2 - BALANCE 6
TO STA. 434+48
TO STA. 423+51
J9P0359B PROJECT
EXIST. GROUND WBL
EXIST RTE 60
STA 408+50 BEGIN WBL CONSTRUCTION
VPI 417+62.17 EL 596.92
+0.94%
-3.50%
ROUTE 60 WBL
EXIST RTE 60 - EBL
582.0
SPECIAL DITCH LT.
576.2
568.2'
562.0'
VPC 412+62.17
SSD = 547'
1,000' V.C.
STAGE 1 - BALANCE 1
TO STA. 407+00
STA. 423+51
TO STA. 407+00
EXIST. GROUND WBL
SPECIAL DITCH LT.
568.7'
VPT 422+62.17
556.5'
ROUTE 60 - WBL
EXIST RTE 60 - EBL
STAGE 2 - BALANCE 6
CLASS A EXCAVATION = 1574 CY
CLASS C EXCAVATION = 102 CY
COMPACTING EMB. = 1481 CY
STAGE 1 - BALANCE 2
CLASS A EXCAVATION = 37,941 CY
CLASS C EXCAVATION = 24,799 CY
COMPACTING EMB. = 60,272 CY
K = 130
650' V.C.
VPC 427+92.13
VPT 434+92.13
STA. 434+48
STA. 445+46
STAGE 1 - BALANCE 3
TO STA. 511+10
STAGE 2 - BALANCE 7
TO STA. 498+76
VPI 442+60.61 EL 566.64
+1.50%
-2.00%
VPC 438+60.61
VPT 446+60.61
SSD = 551'
800' V.C.
-3.50%
+1.50%
D.H.W. 544.78'
538.20'
535.87'
EL 549.49
SPECIAL DITCH LT.
SPECIAL DITCH LT.
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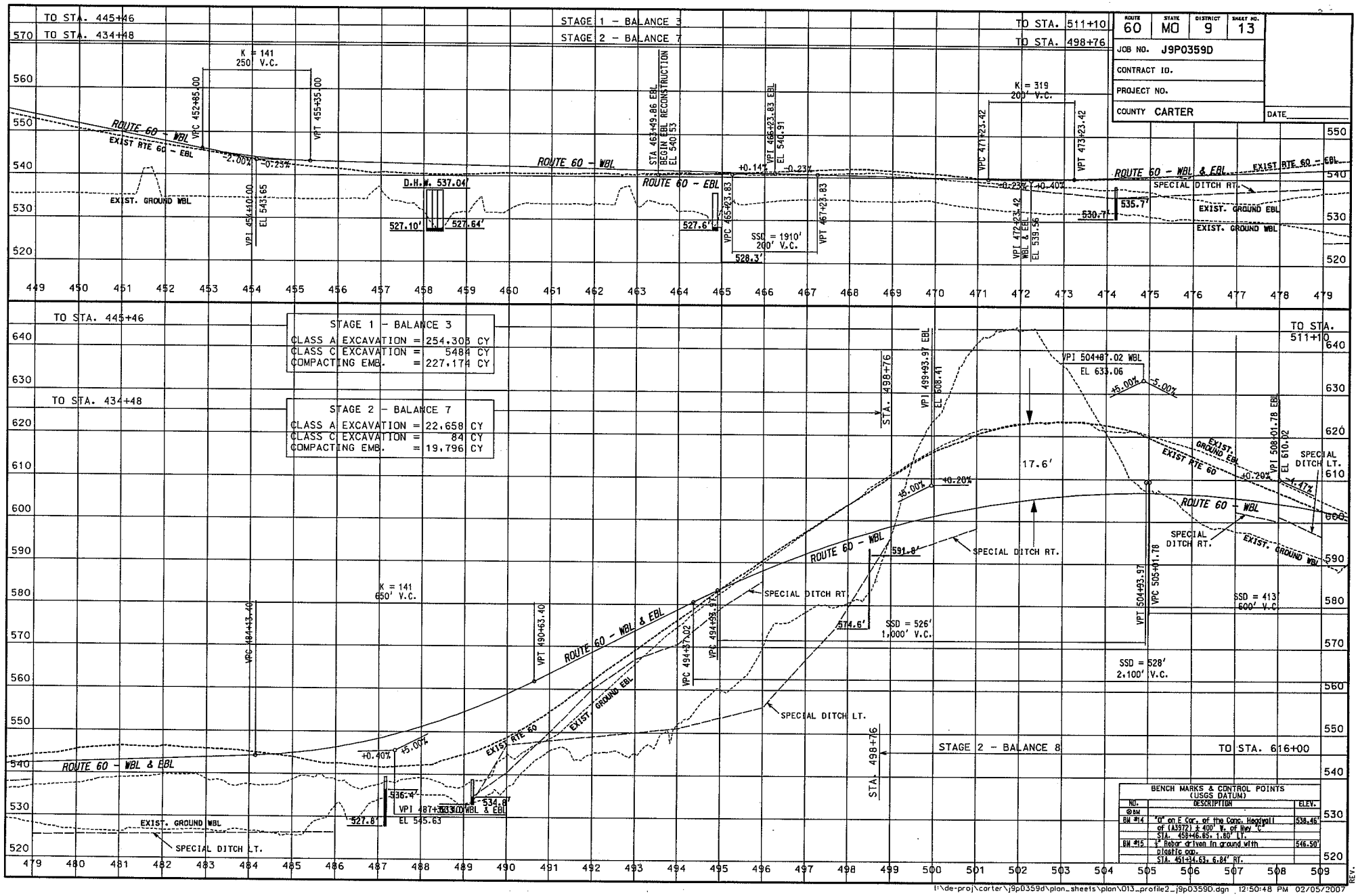
TO STA. 445+46
TO STA. 434+48
STAGE 1 – BALANCE 3
STAGE 2 – BALANCE 7
TO STA. 511+10
TO STA. 498+76
ROUTE 60 – WBL
EXIST RTE 60 – EBL
EXIST. GROUND WBL
ROUTE 60 – WBL & EBL
EXIST RTE 60 – EBL
EXIST. GROUND EBL
SPECIAL DITCH RT.
SPECIAL DITCH LT.
D.H.W. 537.04'
527.10'
527.64'
527.6'
528.3'
535.7'
530.7'
591.8'
574.6'
536.4'
534.8'
527.8'
17.6'
K = 141
250' V.C.
K = 319
200' V.C.
K = 141
650' V.C.
SSD = 1910'
200' V.C.
SSD = 526'
1,000' V.C.
SSD = 413'
600' V.C.
SSD = 528'
2,100' V.C.
VPC 452+85.00
VPT 455+35.00
VPI 454+10.00
EL 543.65
STA 463+49.86 EBL
BEGIN EBL RECONSTRUCTION
EL 540.53
VPC 465+23.83
VPT 467+23.83
EL 540.91
VPC 471+23.42
VPT 473+23.42
VPC 472+23.42
WBL & EBL
EL 539.56
VPI 487+33.00 WBL & EBL
EL 545.63
VPC 484+43.40
VPT 490+63.40
VPC 494+87.02
VPT 494+93.97
VPI 499+93.97 EBL
EL 608.41
STA. 498+76
VPI 504+87.02 WBL
EL 633.06
VPC 504+93.97
VPT 505+01.78
VPI 508+01.78 EBL
EL 610.02
+0.14%
-0.23%
-2.00%
+0.40%
+5.00%
-5.00%
+0.20%
-1.47%
STAGE 1 – BALANCE 3
CLASS A EXCAVATION = 254,308 CY
CLASS C EXCAVATION = 5484 CY
COMPACTING EMB. = 227,174 CY
STAGE 2 – BALANCE 7
CLASS A EXCAVATION = 22,658 CY
CLASS C EXCAVATION = 84 CY
COMPACTING EMB. = 19,796 CY
STAGE 2 – BALANCE 8
TO STA. 616+00
BENCH MARKS & CONTROL POINTS (USGS DATUM)
NO. DESCRIPTION ELEV.
⊙BM
BM #14 "O" on E Cor. of the Conc. Headwall of (A3972) ± 400' W. of Hwy "C" STA. 456+46.85, 1.80' LT. 538.46'
BM #15 ½" Rebar driven in ground with plastic cap. STA. 451+34.63, 6.84' RT. 546.50'
ROUTE 60 | STATE MO | DISTRICT 9 | SHEET NO. 13
JOB NO. J9P0359D
CONTRACT ID.
PROJECT NO.
COUNTY CARTER
DATE
REV.
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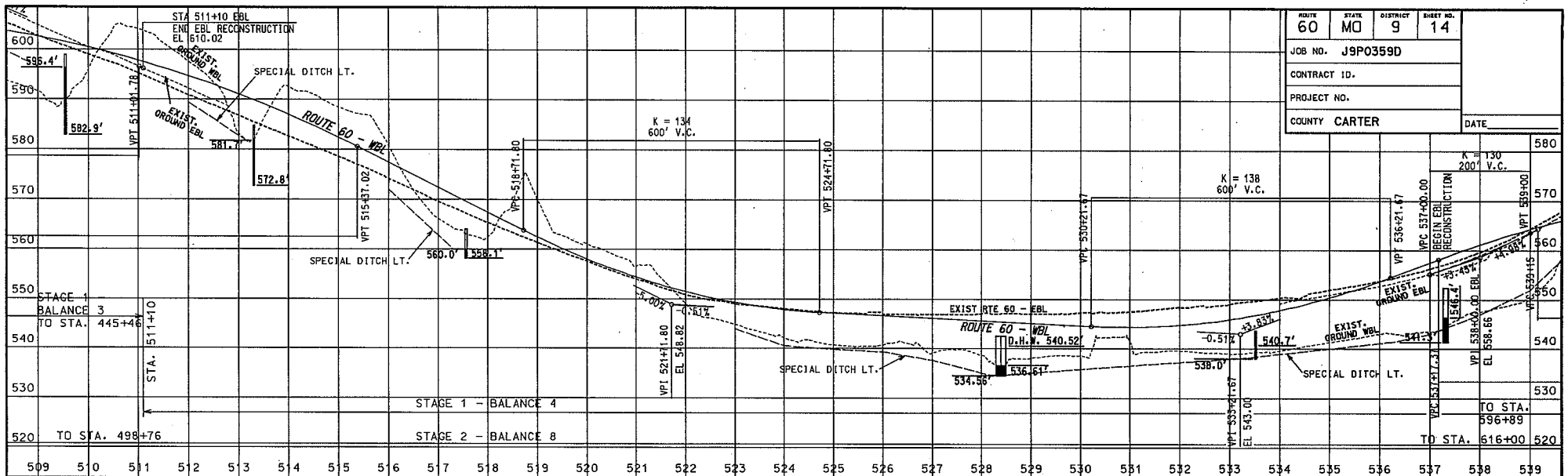


ROUTE	STATE	DISTRICT	SHEET NO.
60	MO	9	14

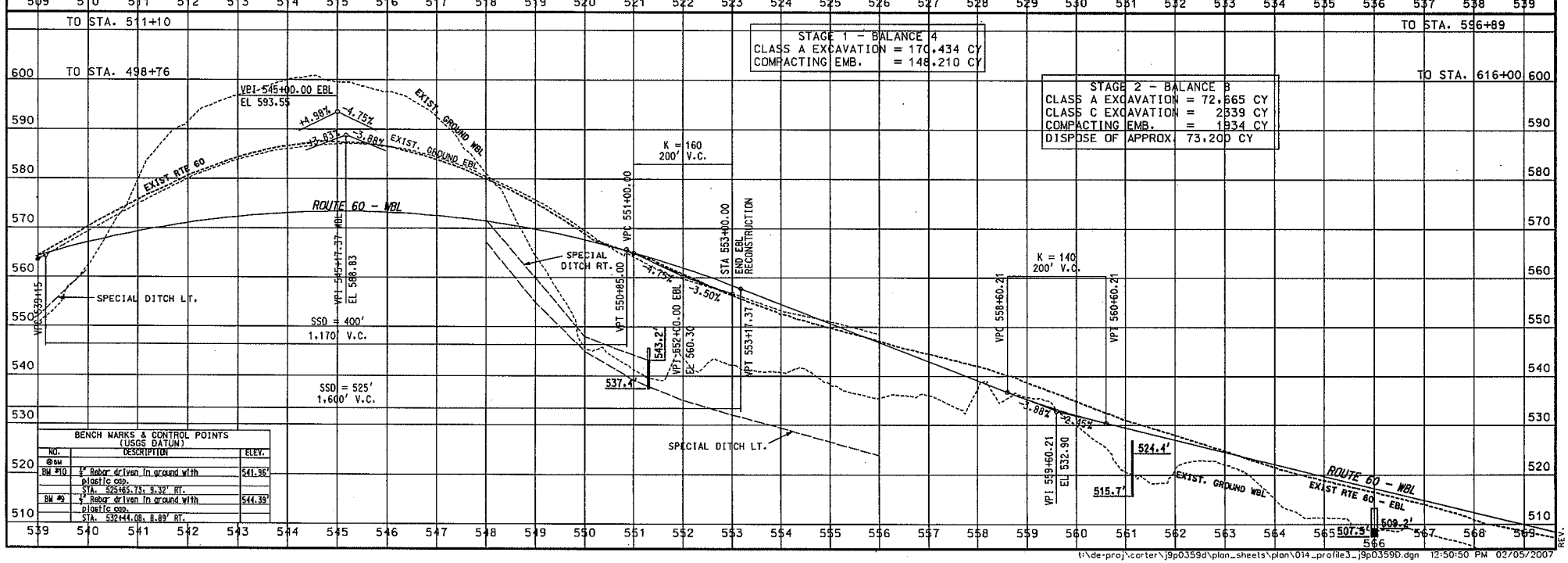
JOB NO. J9P0359D

CONTRACT ID.

PROJECT NO.

COUNTY CARTER

DATE



BENCH MARKS & CONTROL POINTS
(USGS DATUM)

NO.	DESCRIPTION	ELEV.
⊗BM		
BM #10	½" Rebar driven in ground with plastic cap. STA. 525+65.73, 9.32' RT.	541.96'
BM #9	½" Rebar driven in ground with plastic cap. STA. 532+44.08, 8.89' RT.	544.39'

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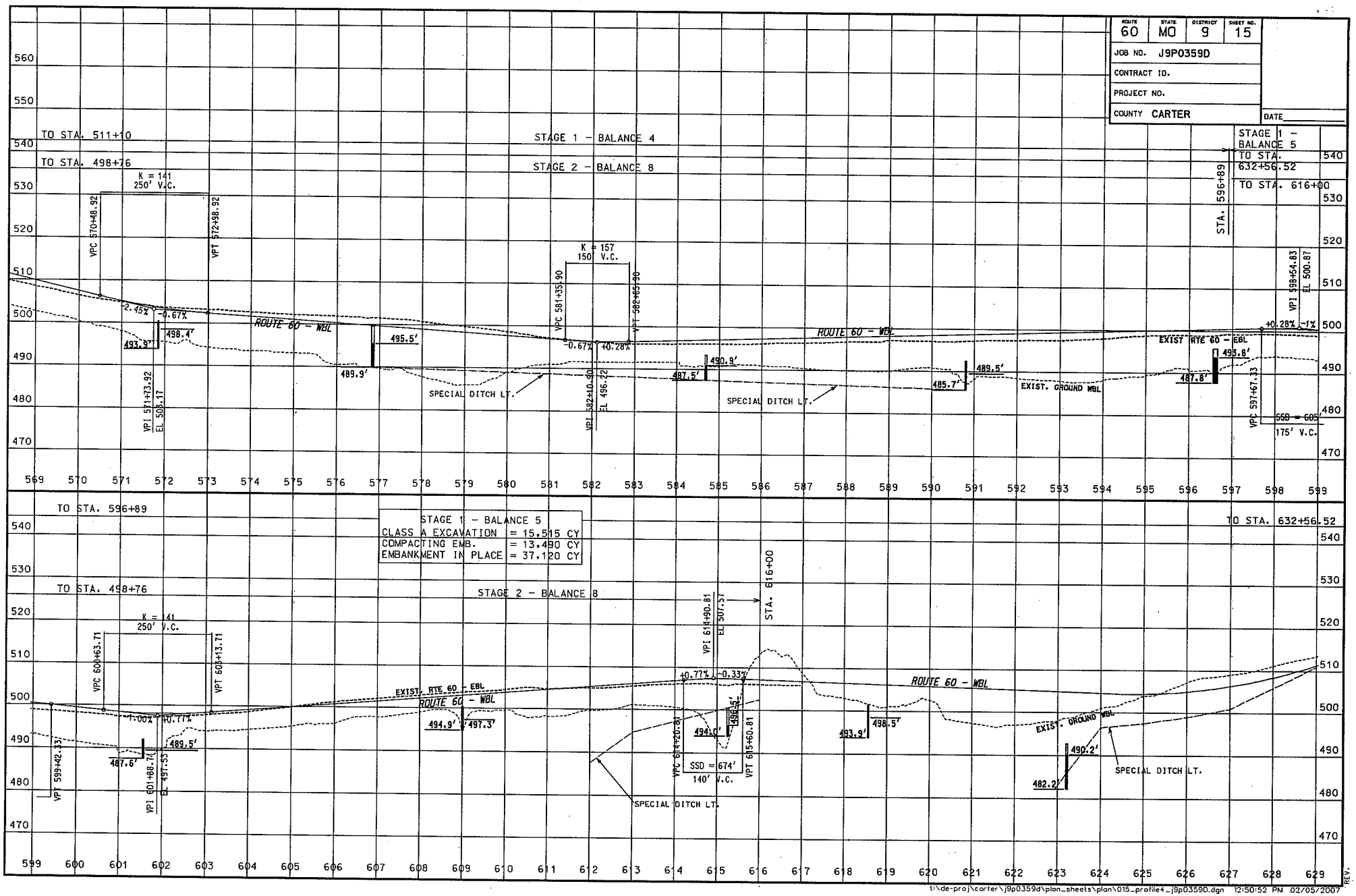
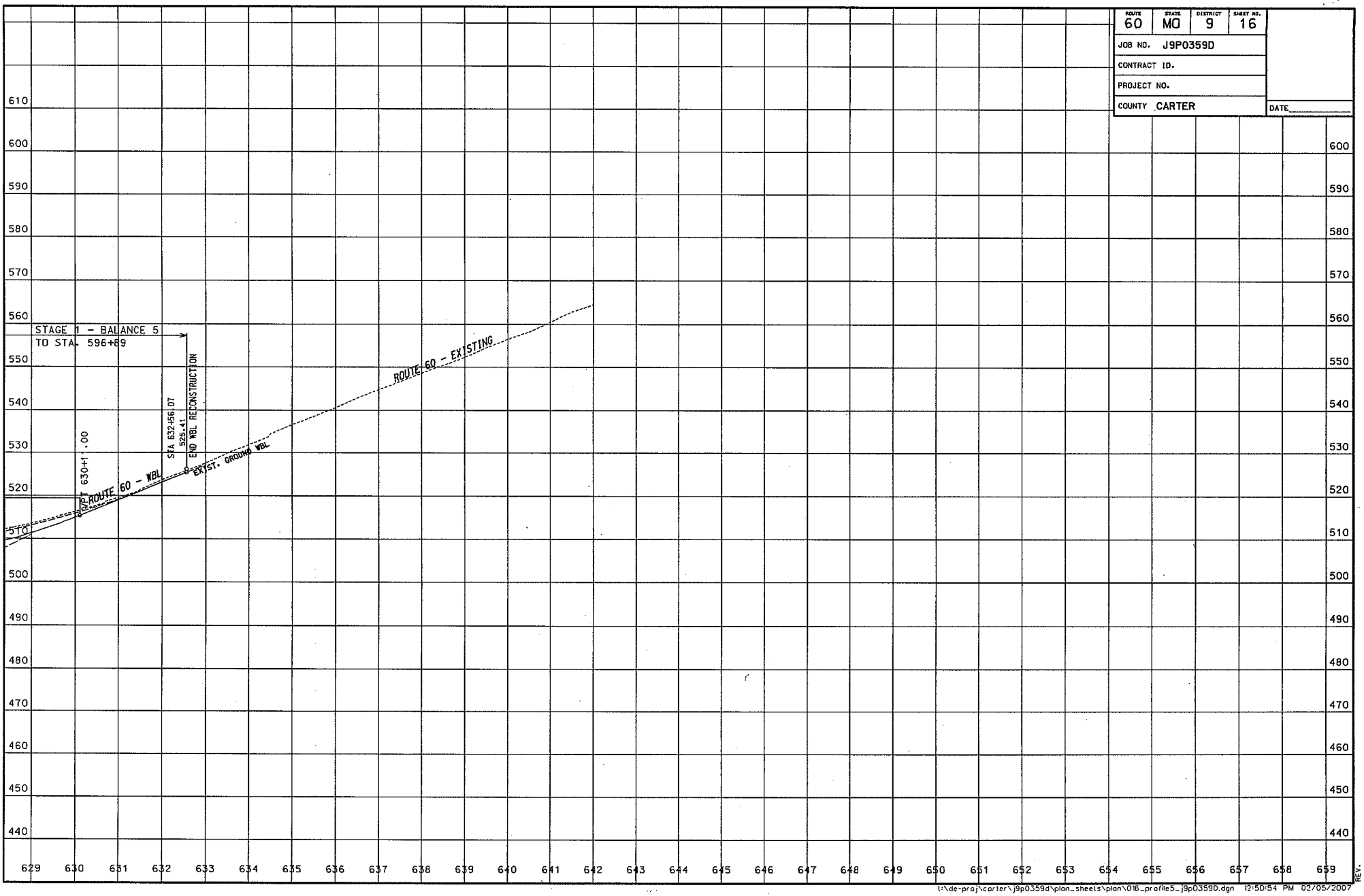

ROUTE 60 | STATE MO | DISTRICT 9 | SHEET NO. 15
JOB NO. J9P0359D
CONTRACT ID.
PROJECT NO.
COUNTY CARTER
DATE
TO STA. 511+10
TO STA. 498+76
STAGE 1 - BALANCE 4
STAGE 2 - BALANCE 8
K = 141
250' V.C.
VPC 570+48.92
VPT 572+98.92
-2.45%
-0.67%
493.9'
498.4'
VPI 571+73.92
EL 508.17
ROUTE 60 - WBL
489.9'
495.5'
SPECIAL DITCH LT.
K = 157
150' V.C.
VPC 581+35.90
VPT 582+85.90
-0.67%
+0.28%
VPI 582+10.90
EL 496.72
487.5'
490.9'
485.7'
489.5'
EXIST. GROUND WBL
EXIST RTE 60 - EBL
487.8'
493.8'
STA. 596+89
STAGE 1 - BALANCE 5
TO STA. 632+56.52
TO STA. 616+00
VPI 598+54.83
EL 500.87
+0.28%
-1%
VPC 597+67.33
SSD = 605'
175' V.C.
TO STA. 596+89
STAGE 1 - BALANCE 5
CLASS A EXCAVATION = 15,515 CY
COMPACTING EMB. = 13,490 CY
EMBANKMENT IN PLACE = 37,120 CY
TO STA. 632+56.52
TO STA. 498+76
STAGE 2 - BALANCE 8
K = 141
250' V.C.
VPC 601+63.71
VPT 603+13.71
-1.00%
+0.77%
VPT 599+42.33
VPI 601+68.71
EL 497.53
487.6'
489.5'
EXIST. RTE 60 - EBL
ROUTE 60 - WBL
494.9'
497.3'
SPECIAL DITCH LT.
VPI 614+90.81
EL 507.57
STA. 616+00
+0.77%
-0.33%
VPC 614+20.81
SSD = 674'
140' V.C.
VPT 615+60.81
494.0'
496.5'
ROUTE 60 - WBL
493.9'
498.5'
EXIST. GROUND WBL
490.2'
482.2'
SPECIAL DITCH LT.
REV.
t:\de-proj\carter\j9p0359d\plan_sheets\plan\015_profile4_j9p0359D.dgn 12:50:52 PM 02/05/2007


ROUTE 60 STATE MO DISTRICT 9 SHEET NO. 16
JOB NO. J9P0359D
CONTRACT ID.
PROJECT NO.
COUNTY CARTER
DATE
610
600
590
580
570
560
550
540
530
520
510
500
490
480
470
460
450
440
STAGE 1 - BALANCE 5
TO STA. 596+89
ROUTE 60 - EXISTING
EXIST. GROUND WBL
PT ROUTE 60 - WBL
630+11.00
STA 632+56.07
525.41
END WBL RECONSTRUCTION
629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659
REV.
I:\de-proj\carter\j9p0359d\plan_sheets\plan\016_profile5_j9p0359D.dgn 12:50:54 PM 03/05/2007