

MISSOURI (29)

SPS-7

An expansion of  
MIDWEST PAVEMENT MANAGEMENT, INC.

1404 Concordia Avenue, St. Paul, MN 55104 — 612 / 644-2996  
FAX — 612 / 644-1045



Quality Services Since 1957

C G Kruse PE President  
Eugene L Skok Jr Ph D  
Director of Research  
Erland Lukanen PE  
Director of Engineering  
Robert L Orthmeyer PE  
General Manager

SME  
FILE  
COPY

File SPS 7-MD

May 22, 1990

Missouri Highway and Transportation Dept  
1511 Missouri Blvd.  
Jefferson City, MO 65109  
Attn: Mr. Bruce Loesch

RECEIVED

MAY 25 1990

SME Ann Arbor

Dear Bruce;

I am enclosing two copies of the drilling and sampling packet for the SPS sections. The SPS-7 section was located approximately 15 miles southwest of Festus, MO on US 67 on the northbound lane.

One of the packets enclosed in the plastic bag is to be placed inside of the shipping carton of the core samples that will be shipped to Law Engineering. I will send the testing lab at Braun Engineering a copy of this packet so they will have it on file in their office. As indicated in our phone conversation on Monday, please put Missouri SPS-7 and US 67 on the outside of all the boxes that are shipped.

Please pass along our thanks to the people that helped us out on the project. Things went well barring the rain we had on Tuesday and the morning of the 16th. Things seemed to get a slow start on Monday, but after everyone found out what had to be done, it seemed like everything worked well.

I will probably be seeing you sometime this summer during the SPS-3 project work. I found out on Monday that the contractor may revise his schedule as to complete the sites in the Canadian provinces in mid-July; therefore it appears like it will be the first part of August before the site in Missouri will be completed.

Sincerely,

BRAUN PAVEMENT TECHNOLOGIES, INC.

Ron Urbach

Ron Urbach  
Drilling Supervisor

cc: Encl:

RU/bw

CLIENT \_\_\_\_\_

FILE NUMBER \_\_\_\_\_

PROJECT SP5-7 : MISSOURI

DATE 4/12/90

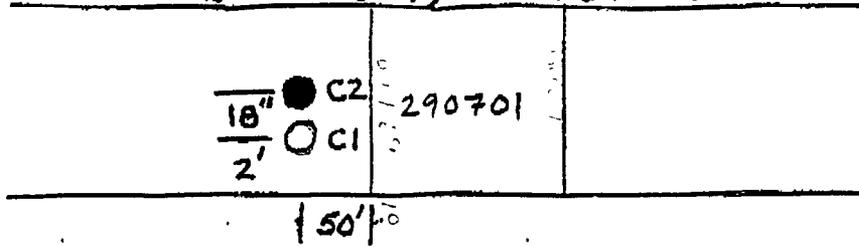
PRECONSTRUCTION SAMPLING LAYOUT

COMPUTED BY CTK

CHECKED BY \_\_\_\_\_



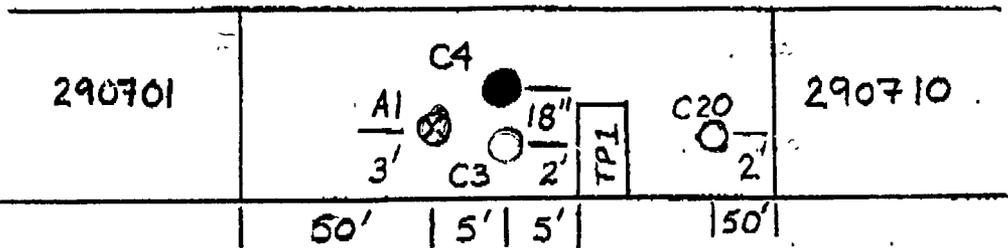
Note: Reference dimensions only, not to scale!



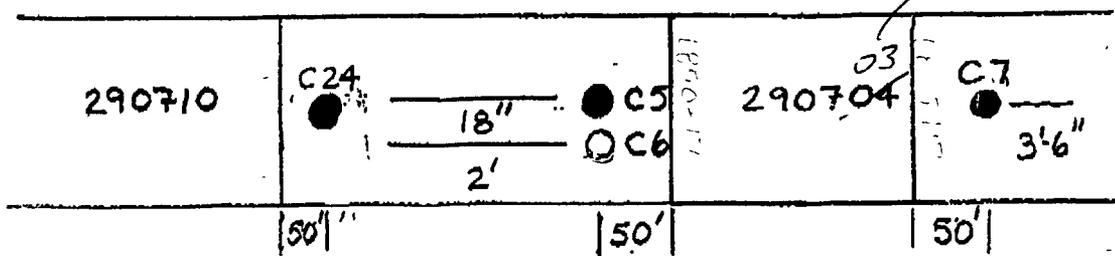
SAMPLING AREA 1

**LEGEND**

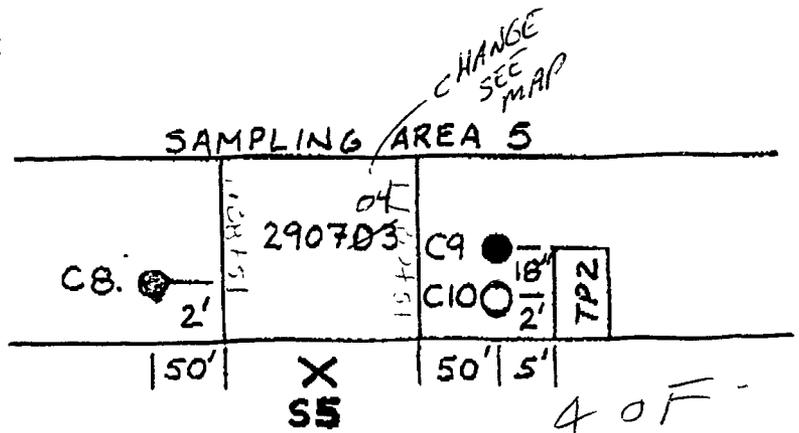
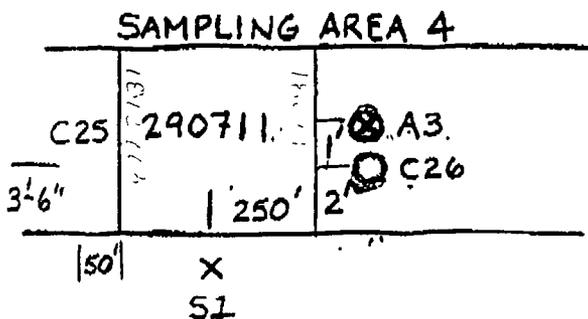
- ⊙ 12" BA CORE
- ✕ SHOULDER PROBE TO 20' BELOW PAVEMENT
- ⊗ 6" O.D. CORE, A-TYPE
- 4" O.D. CORE, C-TYPE
- 6" O.D. CORE, C-TYPE
- ▭ TEST PIT, 4'x6'x12" BELOW TOP OF SUBGRADE



SAMPLING AREA 2



SAMPLING AREA 3



CLIENT \_\_\_\_\_

FILE NUMBER \_\_\_\_\_

DATE \_\_\_\_\_

PROJECT PRE-CONSTRUCTION SAMPLING

COMPUTED BY \_\_\_\_\_

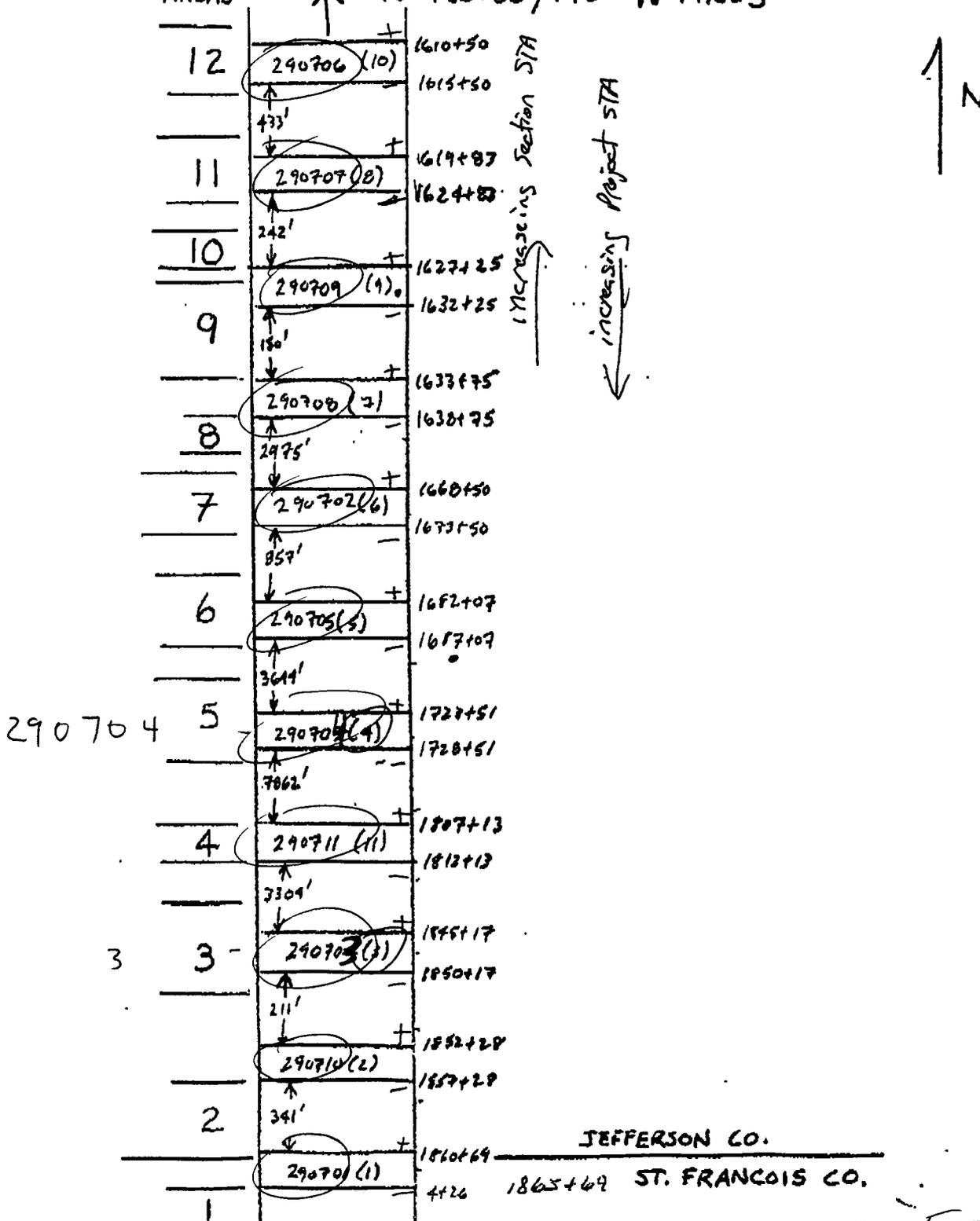
SPS-7 MISSOURI US-67 NB

CHECKED BY \_\_\_\_\_



soil and materials  
engineers, inc.

SAMPLING AREAS ↑ TO FESTUS, MO 11 MILES



20 FT



Soil and materials  
Engineers, Inc.

CLIENT \_\_\_\_\_

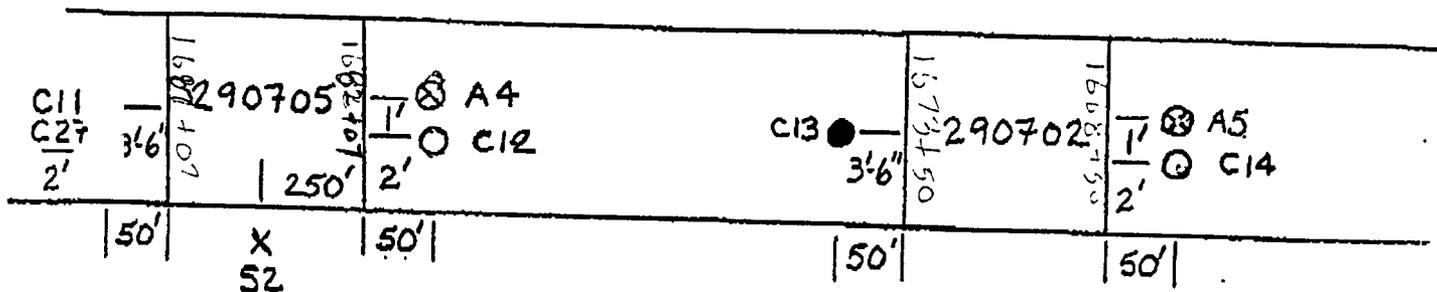
PROJECT \_\_\_\_\_

FILE NUMBER W/L

DATE \_\_\_\_\_

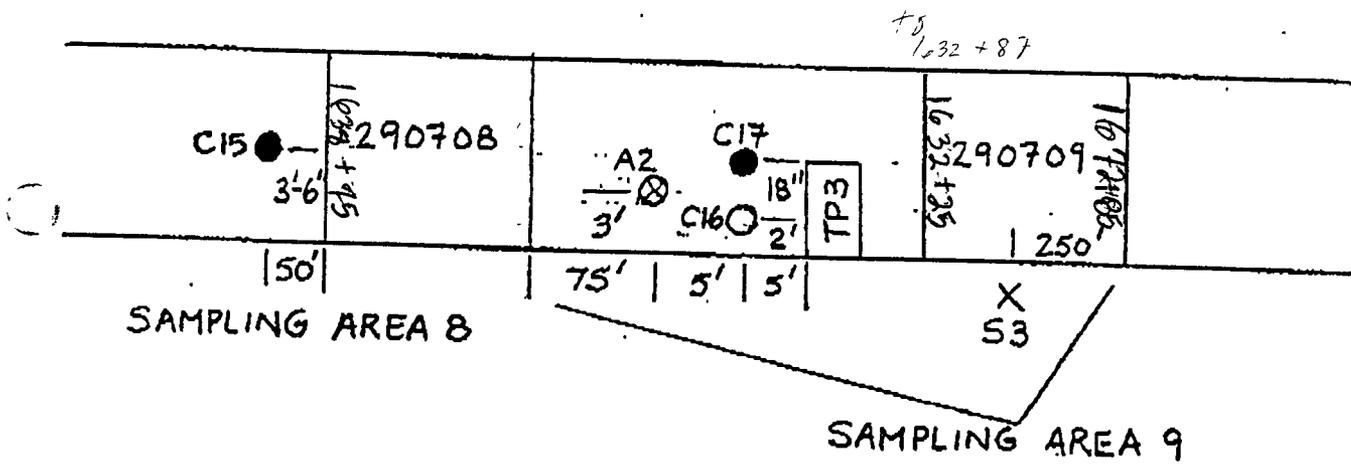
COMPUTED BY \_\_\_\_\_

CHECKED BY \_\_\_\_\_



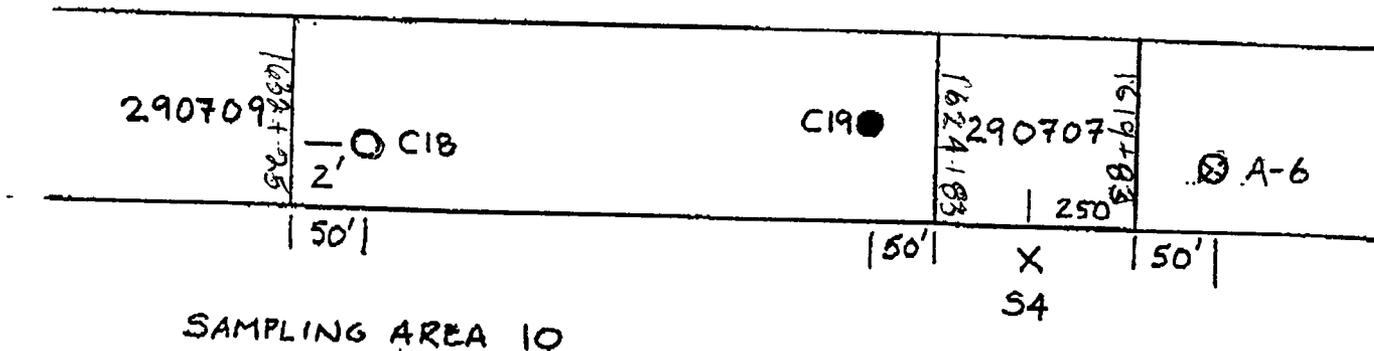
SAMPLING AREA 6

SAMPLING AREA 7



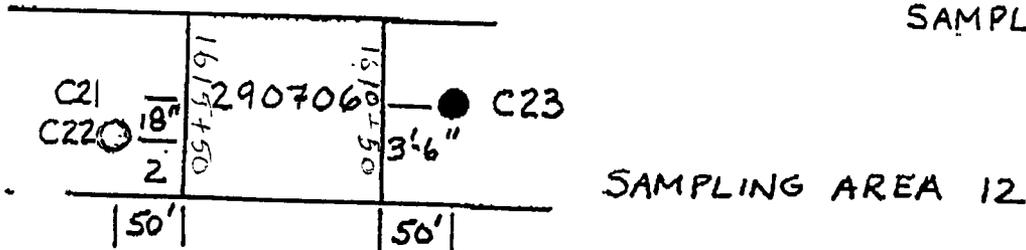
SAMPLING AREA 8

SAMPLING AREA 9



SAMPLING AREA 10

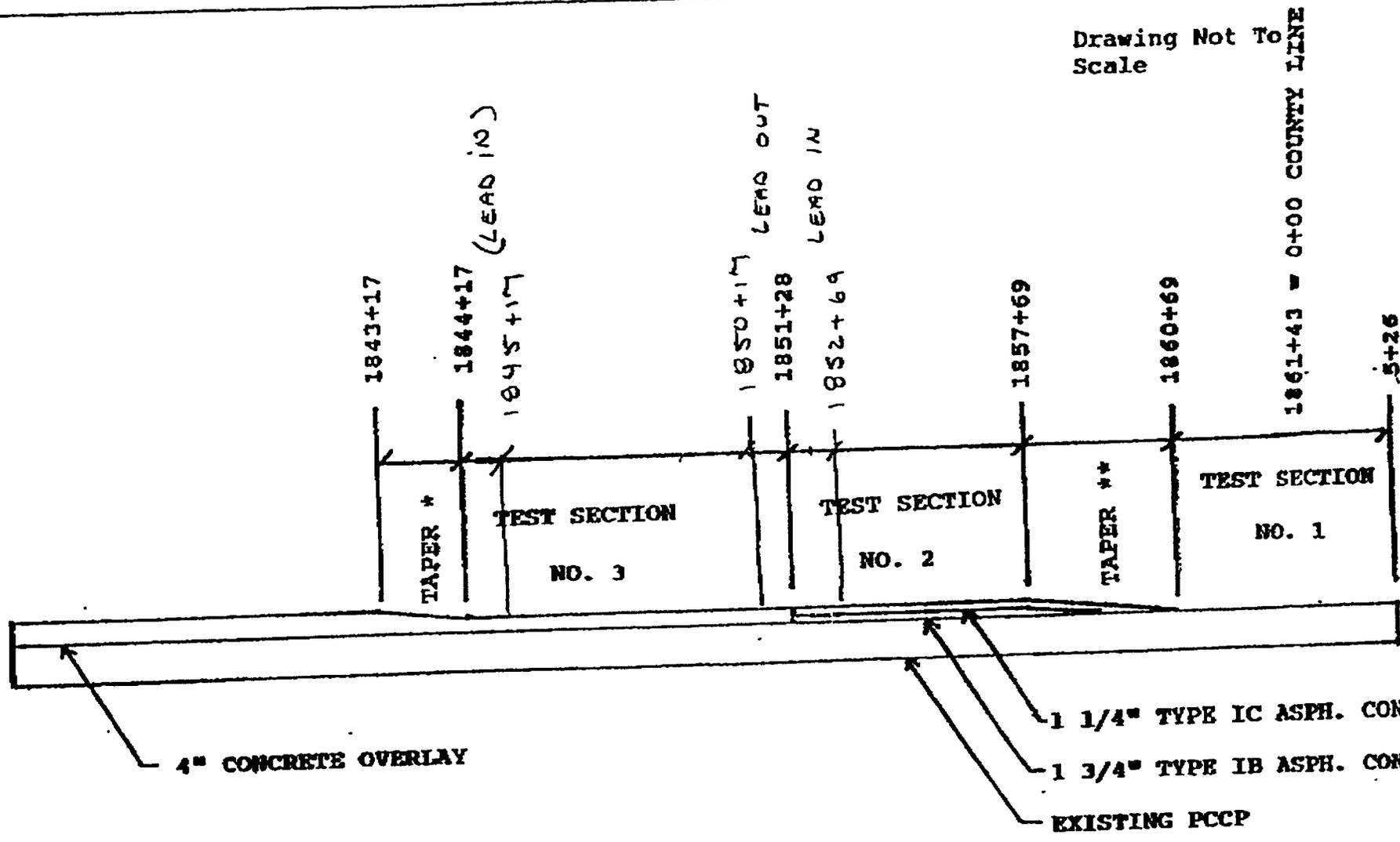
SAMPLING AREA 11



SAMPLING AREA 12

MISSOURISPS-7 CONSTRUCTION LAYOUT

<u>SHRP ID No.</u>	<u>MR SP-90-2D ID No.</u>	<u>Section Type</u>	<u>Study Section</u>	<u>Preparation Limits</u>
290701	1	Control Section	1860+69 to 4+26	5+26 to 1860+69
290702	6	3" Cold Milled Grouted	1673+50 to 1668+50	1674+50 to 1667+50
290703	4	3" Cold Milled No Grout	1728+51 to 1723+51	1729+51 to 1722+51
290704	3	3" Shotblasted No Grout	1850+17 to 1845+17	1851+28 to 1844+17
290705	5	3" Shotblasted Grouted	1687+07 to 1682+07	1688+07 to 1681+07
290706	10	5" Shotblasted Grouted	1615+50 to 1610+50	1616+50 to 1609+50
290707	8	5" Shotblasted No Grout	1624+83 to 1619+83	1625+83 to 1618+83
290708	7	5" Cold Milled No Grout	1638+75 to 1633+75	1639+75 to 1633+00
290709	9	5" Cold Milled Grouted	1632+25 to 1627+25	1633+00 to 1626+25
290710	2	3" Asphalt Section	1857+28 to 1852+28	1857+69 to 1851+28
290711	11	4" Concrete Overlay Typical of Project	1812+13 to 1807+13	1813+13 to 1806+13



Drawing Not To Scale

1861+43 = 0+00 COUNTY LINE

4" CONCRETE OVERLAY

1 1/4" TYPE IC ASPH. CONC.

1 3/4" TYPE IB ASPH. CONC.

EXISTING PCCP

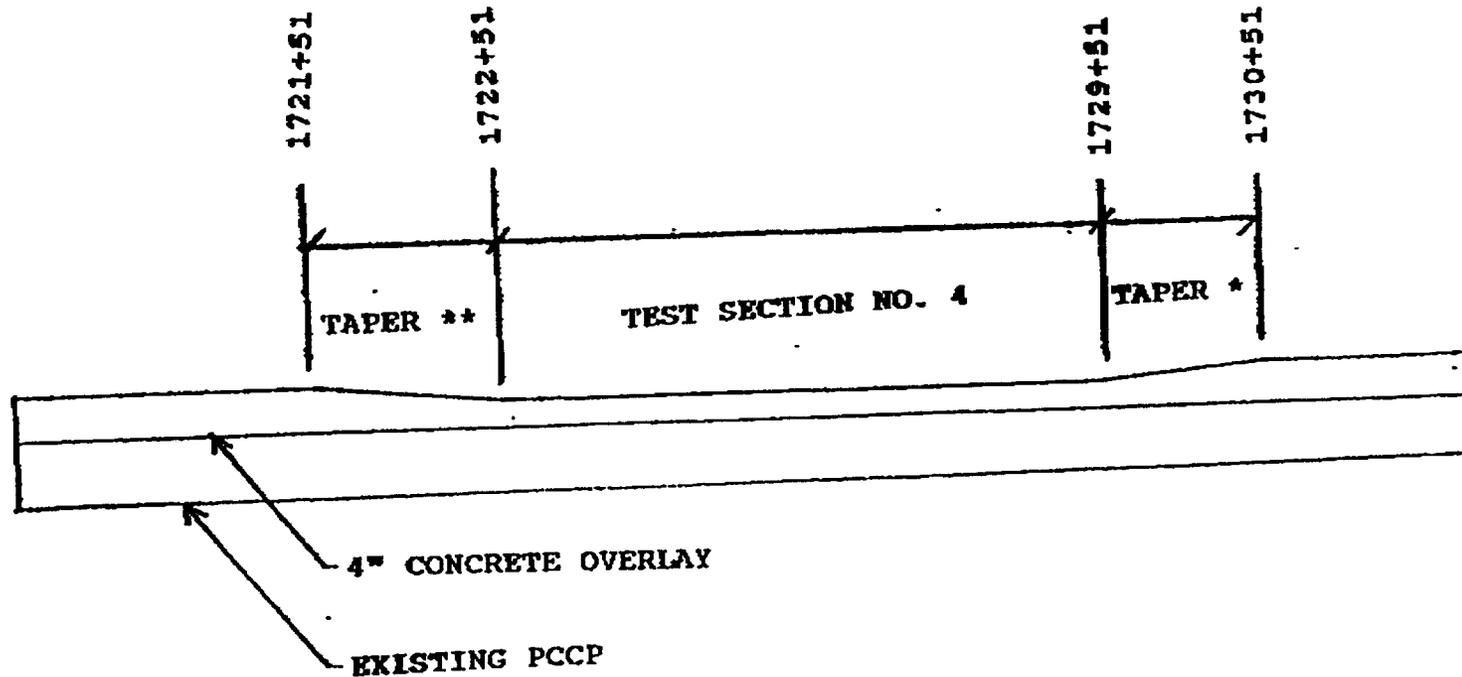
\* TRANSITION FROM 3" TO 4"

\*\* TRANSITION FROM 0" TO 3"

NOTE Description of these test sections are found in the special provisions. The test site locations are subject to change at the engineer's discretion.

COUNTY - JEFFERSON
ROUTE 67 <i>6-p. 67-925</i>
JOB NO. P-67-886

Drawing Not To  
Scale



\* TRANSITION FROM 4" TO 3"

\*\* TRANSITION FROM 3" TO 4"

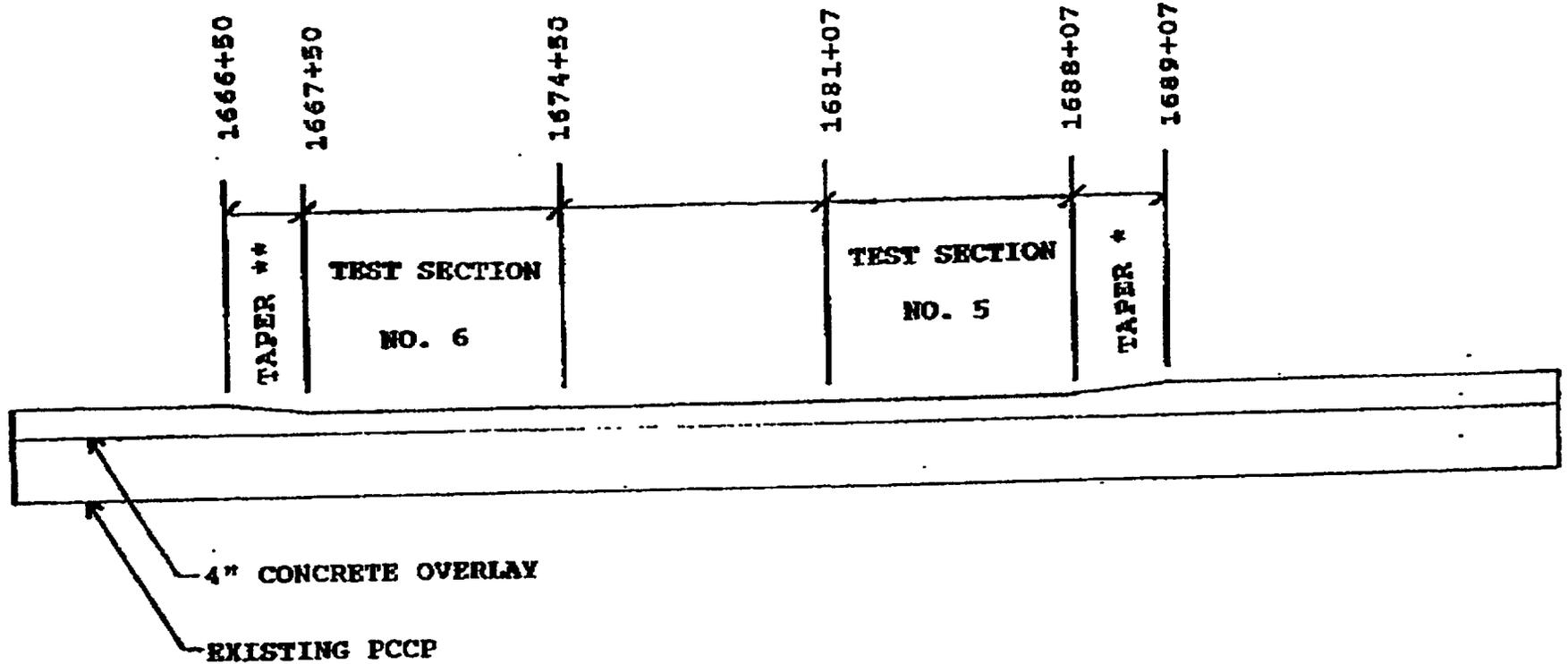
**NOTE** Description of these test sections are found in the special provisions. The test site locations are subject to change at the engineer's discretion.

COUNTY - JEFFERSON

ROUTE 67

JOB NO. 6-P-67-886

Drawing Not To Scale



\* TRANSITION FROM 4" TO 3"

\*\* TRANSITION FROM 3" TO 4"

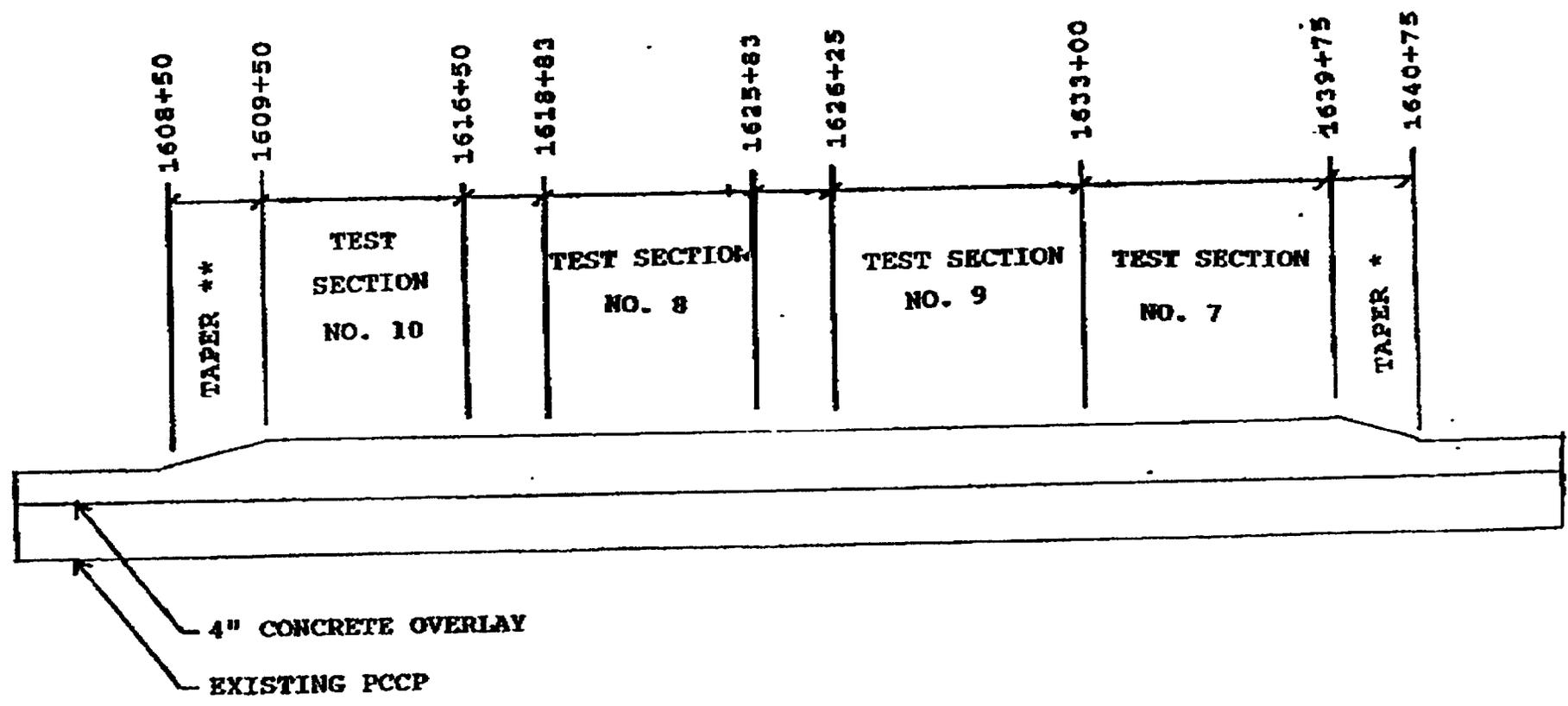
NOTE Description of these test sections are found in the special provisions. The test site locations are subject to change at the engineer's discretion.

COUNTY - JEFFERSON

ROUTE 67

JOB NO. P-67-886

Drawing Not To Scale

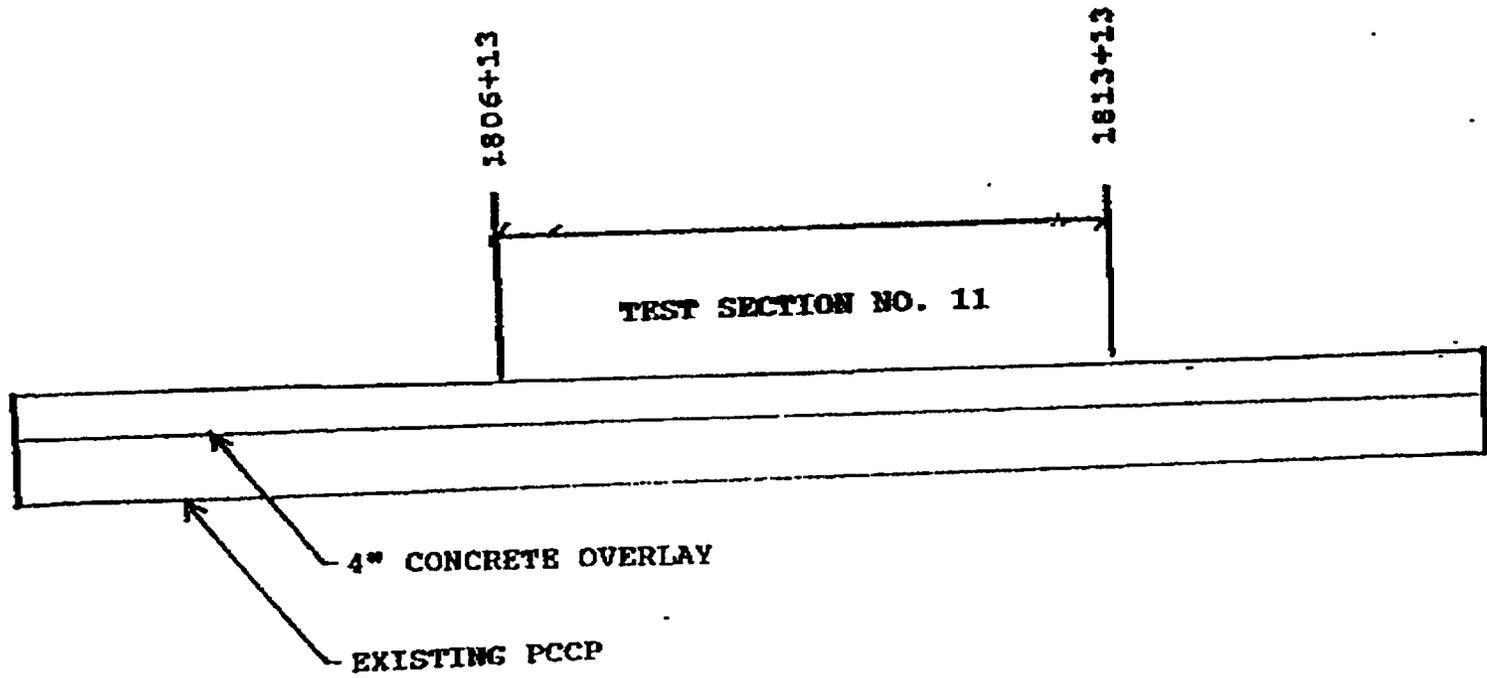


- \* TRANSITION FROM 4" TO 5"
- \*\* TRANSITION FROM 5" TO 4"

NOTE Description of these test sections are found in the special provisions. The test site locations are subject to change at the engineer's discretion.

COUNTY - JEFFERSON  
ROUTE 67  
JOB NO. 6-P-67-886

Drawing Not To Scale



**NOTE** Description of these test sections are found in the special provisions. The test site locations are subject to change at the engineer's discretion.

COUNTY - JEFFERSON  
ROUTE 67  
JOB NO.. 6-P-67-886

## TEST SITE SPS-7

	<u>Base</u>	<u>Subbase</u>
Core #290701      Sta 1860+19 Concrete Thickness - 8"	4" Crushed Limestone	Brown silty clay layer Red clay layer
Core #290710      Sta 1852+19 Concrete Thickness - 8 1/2"	4" Crushed Limestone	Grey silty clay layer Red grey clay layer
Core #290704      Sta 1844+67 Concrete Thickness - 8 1/2" Layer Asphalt Underseal	4" Crushed Limestone	Grey silty clay layer Red silty clay layer
Core #290711      Sta 1806+63 Concrete Thickness - 7 7/8" Layer Asphalt Underseal	6" Crushed Limestone	Crushed limestone 2'-0" hit rock ledge
Core #290703      Sta 1723+01 Concrete Thickness - 8 1/8"	2'-0" Crushed Limestone and soil	2'-4" Hit rock ledge or boulder
Core #290705      Sta 1681+57 Concrete Thickness - 8" Layer Asphalt Underseal	4" Crushed Limestone	Brown clay layer 2'-0" Hit rock ledge
Core #290702 Taken at 49' Sta 1668+01 Concrete Thickness - 8 1/4"	5" Crushed Limestone	Reddish-grey silty clay layer
Core #290708      Sta 1633+00 Concrete Thickness - 8 1/8"	4" Crushed Limestone	Grey silty clay layer Red clay layer Red clay with gravel layer

Base

Subbase

Core #290709 Sta 1626+75  
Concrete Thickness - 8 5/8"  
Layer Asphalt Underseal

1'-5" Crushed Limestone

1'-5" Hit rock Ledge

Core #290707 Sta 1619+33  
Concrete Thickness - 7 7/8"

4" Crushed Limestone

Mixture of brown silty clay  
with sand and gravel layer  
3'-4" Hit rock Ledge

Core #290706 Sta 1610+00  
Concrete Thickness - 8 3/8"  
Layer Asphalt Underseal

1'-5" Crushed Limestone

1'-5" Hit a boulder

MISSOURISPS-7 CONSTRUCTION LAYOUT

<u>SHRP ID No.</u>	<u>MR SP-90-2D ID No.</u>	<u>Section Type</u>	<u>Study Section</u>	<u>Preparation Limits</u>
290701	1	Control Section	1860+69 to 4+26	5+26 to 1860+69
5 290702 ✓	6	3" Cold Milled Grouted	1673+50 to 1668+50	1674+50 to 1667+50
7 290703 ✓	4	3" Cold Milled No Grout	1728+51 to 1723+51	1729+51 to 1722+51
9 290704 ✓	3	3" Shotblasted No Grout	1850+17 to 1845+17	1851+28 to 1844+17
6 290705 ✓	5	3" Shotblasted Grouted	1687+07 to 1682+07	1688+07 to 1681+07
1 290706 ✓	10	5" Shotblasted Grouted	1615+50 to 1610+50	1616+50 to 1609+50
2 290707 ✓	8	5" Shotblasted No Grout	1624+83 to 1619+83	1625+83 to 1618+83
4 290708 ✓	7	5" Cold Milled No Grout	1638+75 to 1633+75	1639+75 to 1633+00
3 290709 ✓	9	5" Cold Milled Grouted	1632+25 to 1627+25	1633+00 to 1626+25
10 290710 ✓	2	3" Asphalt Section	1857+28 to 1852+28	1857+69 to 1851+28
8 290711 ✓	11	4" Concrete Overlay Typical of Project	1812+13 to 1807+13	1813+13 to 1806+13

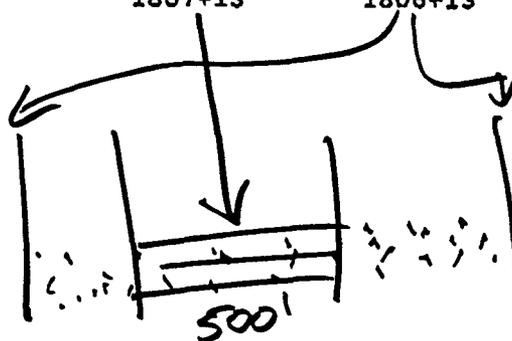
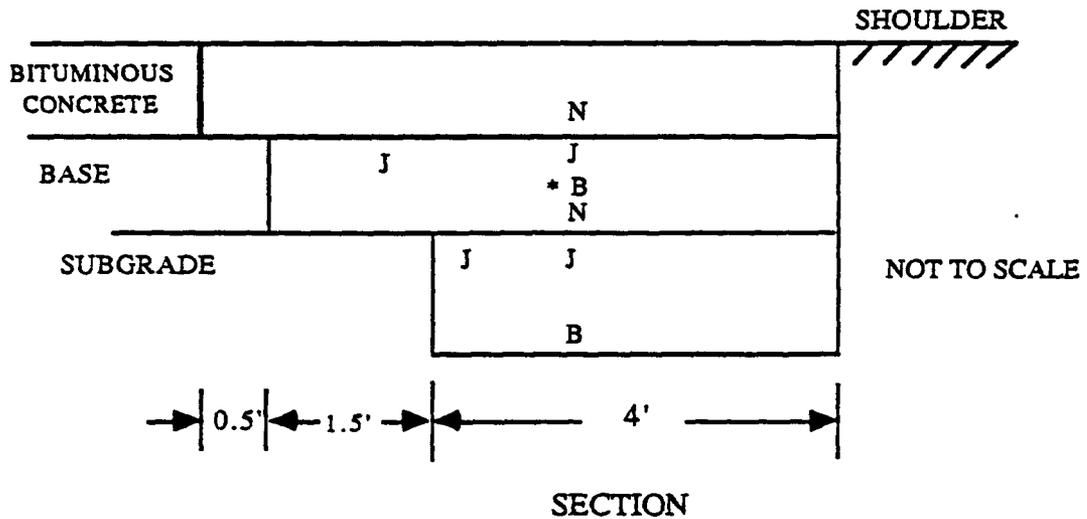
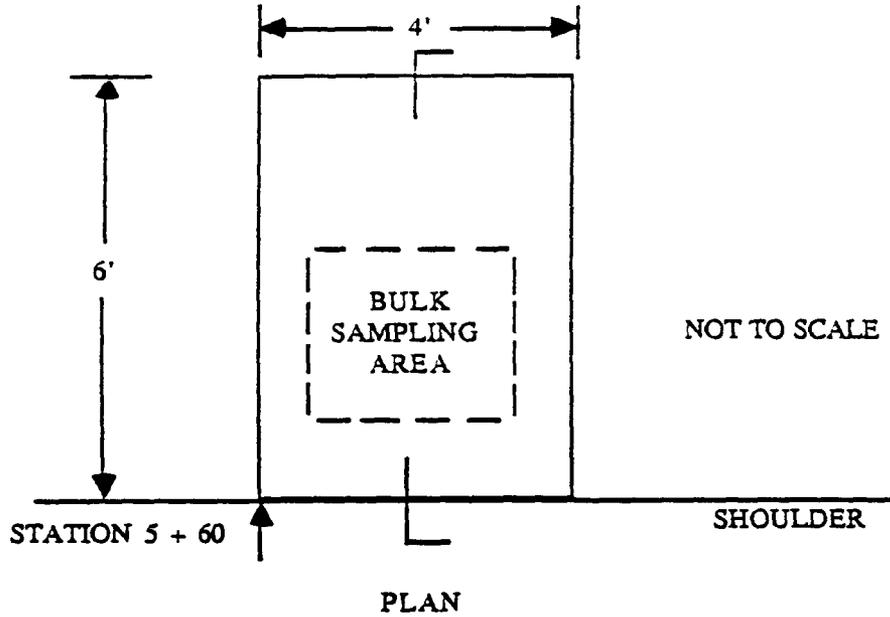


Table 1. Weight Requirements for Bulk Samples of Unbound Base, Subbase and Subgrade Layers.

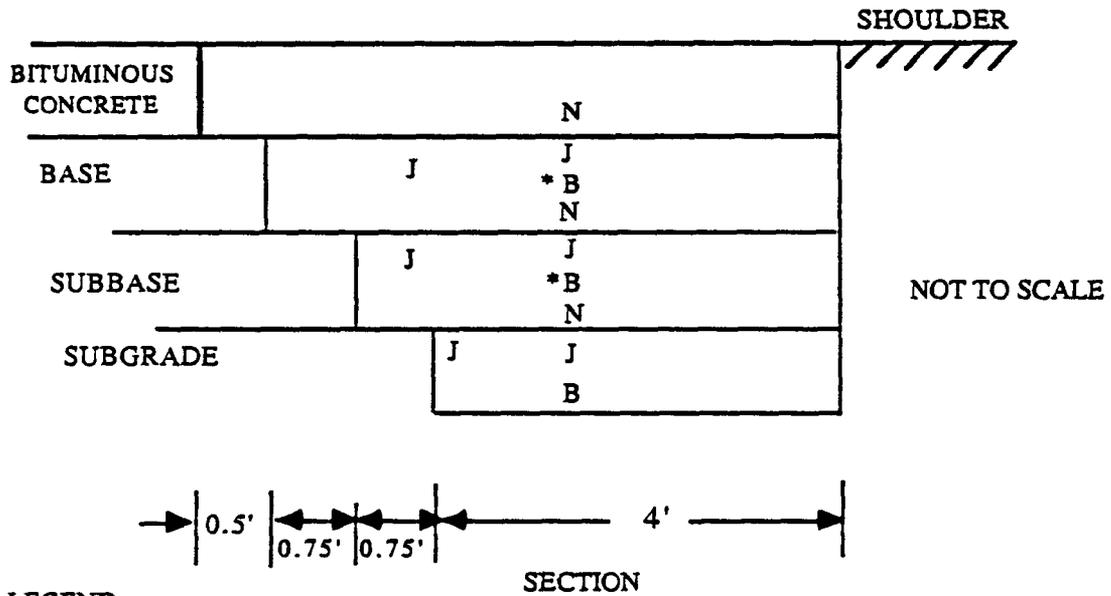
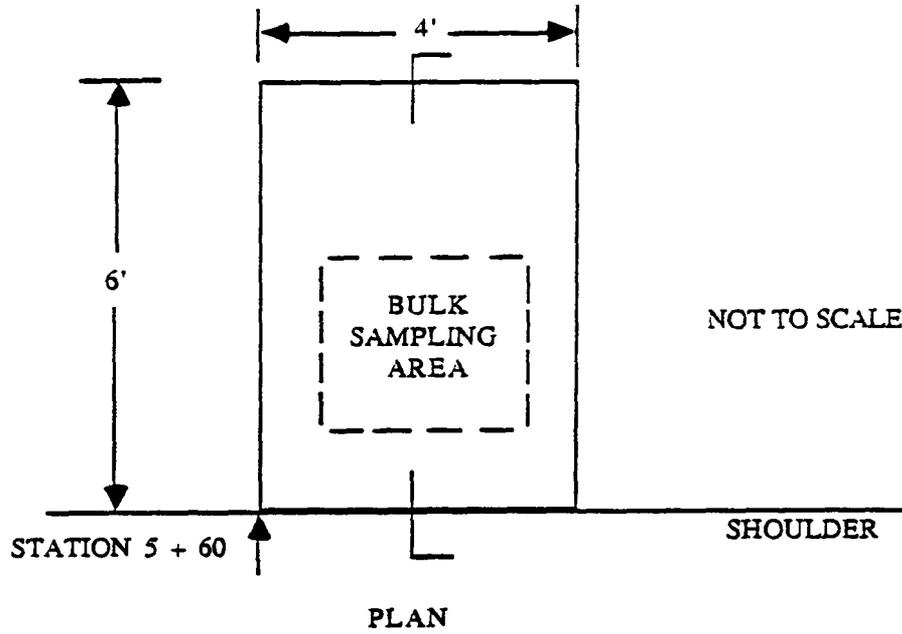
<u>Layer</u>	<u>Bulk Samples from 3-12" Auger Holes (BA1, BA2, and BA3)</u>	<u>Bulk Samples from Test Pit</u>
Unbound Base	200 lbs.	300 lbs.
Unbound Subbase	200 lbs.	300 lbs.
Subgrade		
o Coarse Grain	200 lbs.	300 lbs.
o Fine Grain	150 lbs.	200 lbs.



**LEGEND**

- N Nuclear Density Test (on AC surface and AC treated base, and subbase only)  
Nuclear Density and Moisture Test (on unbound base, subbase, and subgrade)
- J Jar Moisture Sample
- B Bulk Sample
- \* No Bulk Sample or Moisture Sample required for treated base and subbase

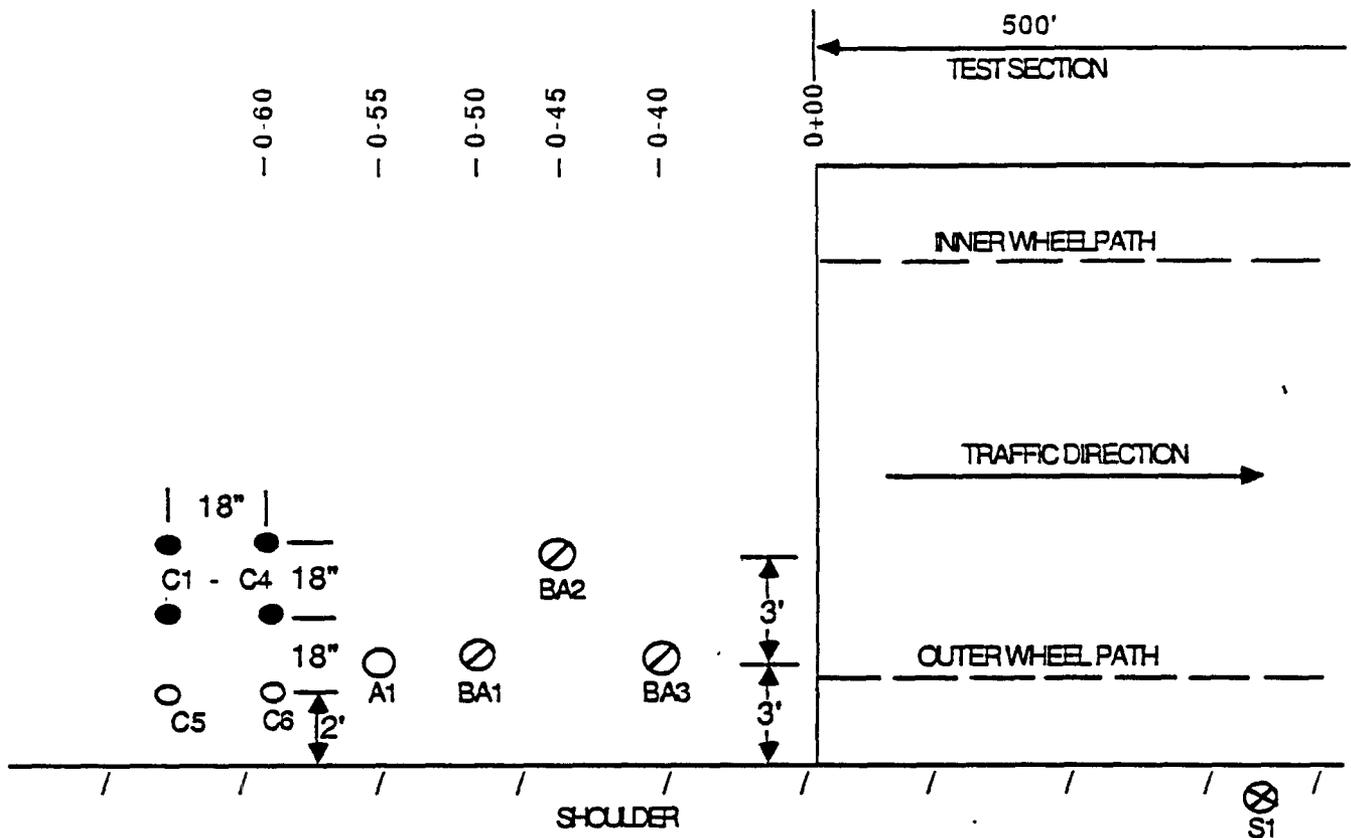
Figure 27. Typical Test Pit details for GPS Experiments 3, 4, 5, 7, 9 - (No Subbase)



**LEGEND**

- N Nuclear Density Test (on AC surface, and AC treated base and subbase only)
- Nuclear Density and Moisture Test (on unbound base, subbase and subgrade)
- J Jar Moisture Sample
- B Bulk Sample
- \* No Bulk Sample or Moisture Sample required for treated base or subbase

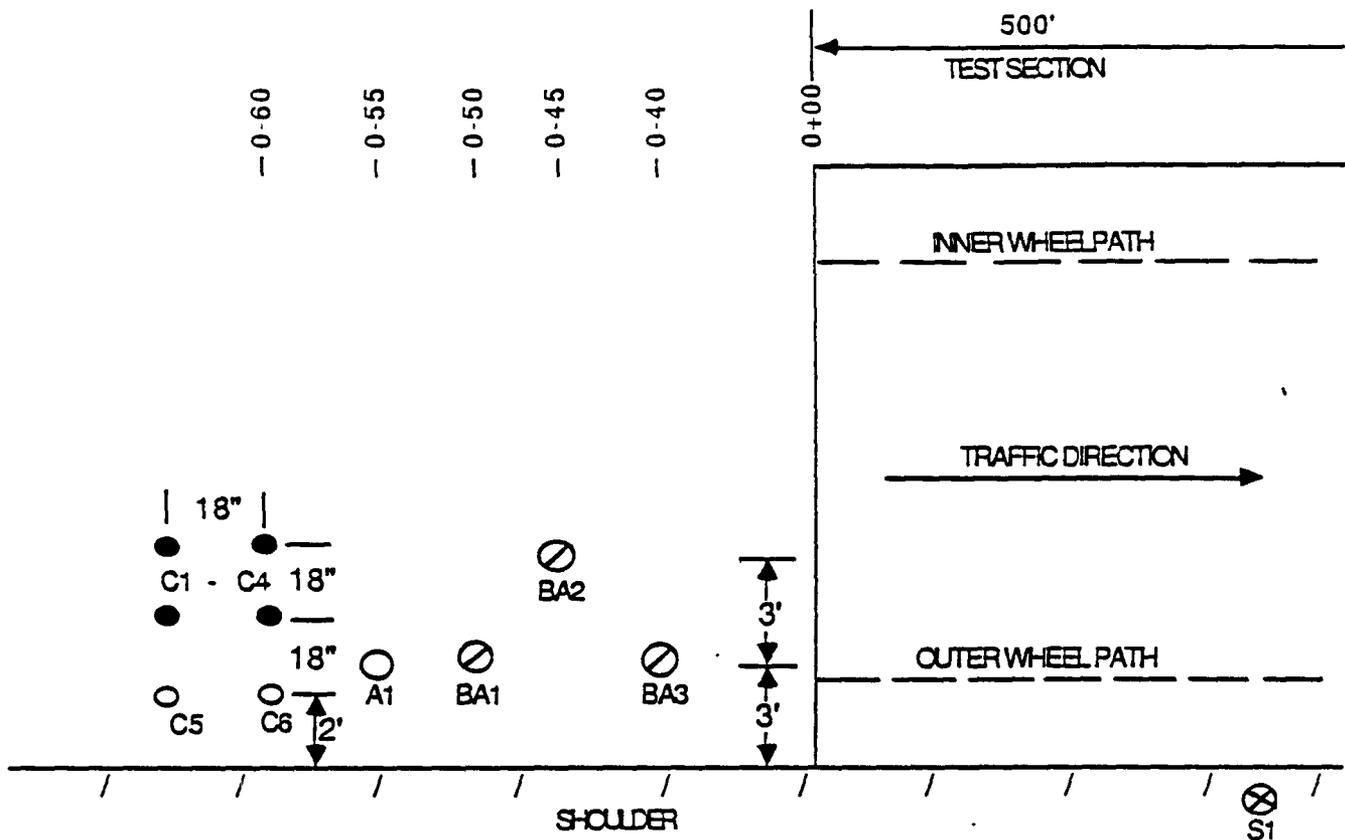
Figure 28. Typical Test Pit details for GPS Experiments 3, 4, 5, 7, 9 - (With Subbase)



(Not to scale)

- 4" OD Core of PCC pavement and treated layers: C1 - C4
- 6" OD Core of PCC pavement and 4" OD core of treated layers: C5 - C6
- 6" OD Core of PCC pavement and treated layers; augering of base and subbase; splitspoon sampling and/or Shelby tube sampling as directed by authorized SHRP representatives to 5' below top of subgrade: A1
- ⊘ 12" OD Core of PCC pavement and treated layers; augering of unstabilized base, subbase, and subgrade to 12" below top of subgrade for bulk sample retrieval: BA1, BA2, BA3.
- ⊗ Auger Probe - optional as directed by authorized SHRP representative: S1

**Figure 15. Sampling Point Locations Before Test Section - Experiment 4  
Jointed Reinforced Concrete Pavement**



(Not to scale)

- 4" OD Core of PCC pavement and treated layers: C1 - C4
- 6" OD Core of PCC pavement and 4" OD core of treated layers: C5 - C6
- 6" OD Core of PCC pavement and treated layers; augering of base and subbase; splitspoon sampling and/or Shelby tube sampling as directed by authorized SHRP representatives to 5' below top of subgrade: A1
- ⊘ 12" OD Core of PCC pavement and treated layers; augering of unstabilized base, subbase, and subgrade to 12" below top of subgrade for bulk sample retrieval: BA1, BA2, BA3.
- ⊗ Auger Probe - optional as directed by authorized SHRP representative: S1

**Figure 15. Sampling Point Locations Before Test Section - Experiment 4  
Jointed Reinforced Concrete Pavement**