SPS-6
Illinois(17)

VRON URBACI
3-20-91

3/15

Ron,
Please Review
and then I will
put in the Ill
SPS-6 Book
Gene

Skok
3-15-91

March 12, 1991

Mr. Cary Keller
3915 Research Park
Suite A-13
Ann Arbor, Michigan 48108

Dear Mr. Keller:

On January 21, 1991 you sent us a comparison of draft vs. final material sampling layouts for the SPS-6 located in Illinois.

As you are aware, the pre-construction samples that were collected do not correspond to the final guidelines set-up by SHRP. By examining the stations at which the pre-construction samples were collected, it is clear that the actual sample locations do not correspond to the draft sample locations either.

Enclosed are diagrams of the final sample locations which SHRP is requiring with the samples that were actually obtained pencilled in. Also enclosed is the substitution scheme which we suggest. The blanks indicate that no adequate substitutions could be made. Please review these documents and notify Christine Dell, at (217)782-6732, of any comments or recommended changes.

The best pre-construction experimental site layout records are the Pasco films which SHRP possesses. An examination of these films would allow a valid pre-construction map of the experiment sites layout to be created, thus clarifying the otherwise mysterious pre-construction materials sampling pattern.

If you require additional information, or if we can be of further assistance, feel free to contact us.

Very truly yours,

Eric E. Harm

Eric E. Harm
Engineer of Physical Reserch

2082i/CMD/bh

Enclosures

cc Dick Ingberg

SPS-6 Material Sampling January 1991	Recommended Substitutions
C1	C1
C2	C2
C3	C4
C4	C5
C5	C18/C19
C6 —	C17A
C7	C7
C8	C8
C9	
C10	C20
C11	C10/C11
C12	C13
C13	C12
C14	C15
C15	C21
C16	C9
C17	C26
C18	C29
C19	C28/C30
C20	C32
A1	A3
A2	
A3	A10
TP1	TP1
TP2	TP4
BA1	TP3
BA2	TP3
BA3	TP3

MEANS 6" OD CORE WAS SUBSTITUTED FOR A 4" OD CORE

C18/C19 = C18 PCC and C19 treated layers

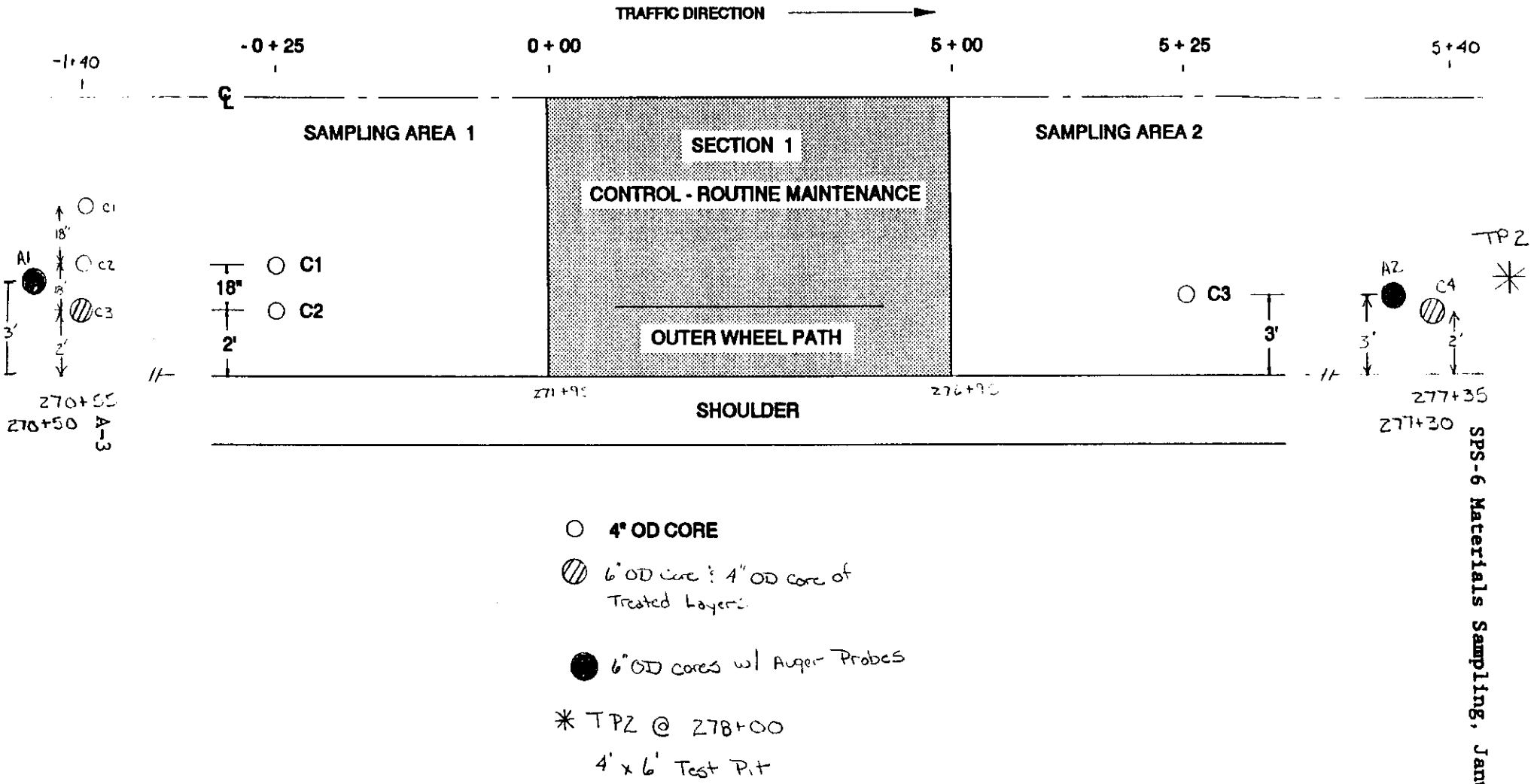


Figure A.2 Example of "Pre-Construction" Sampling Plan for Test Section 1

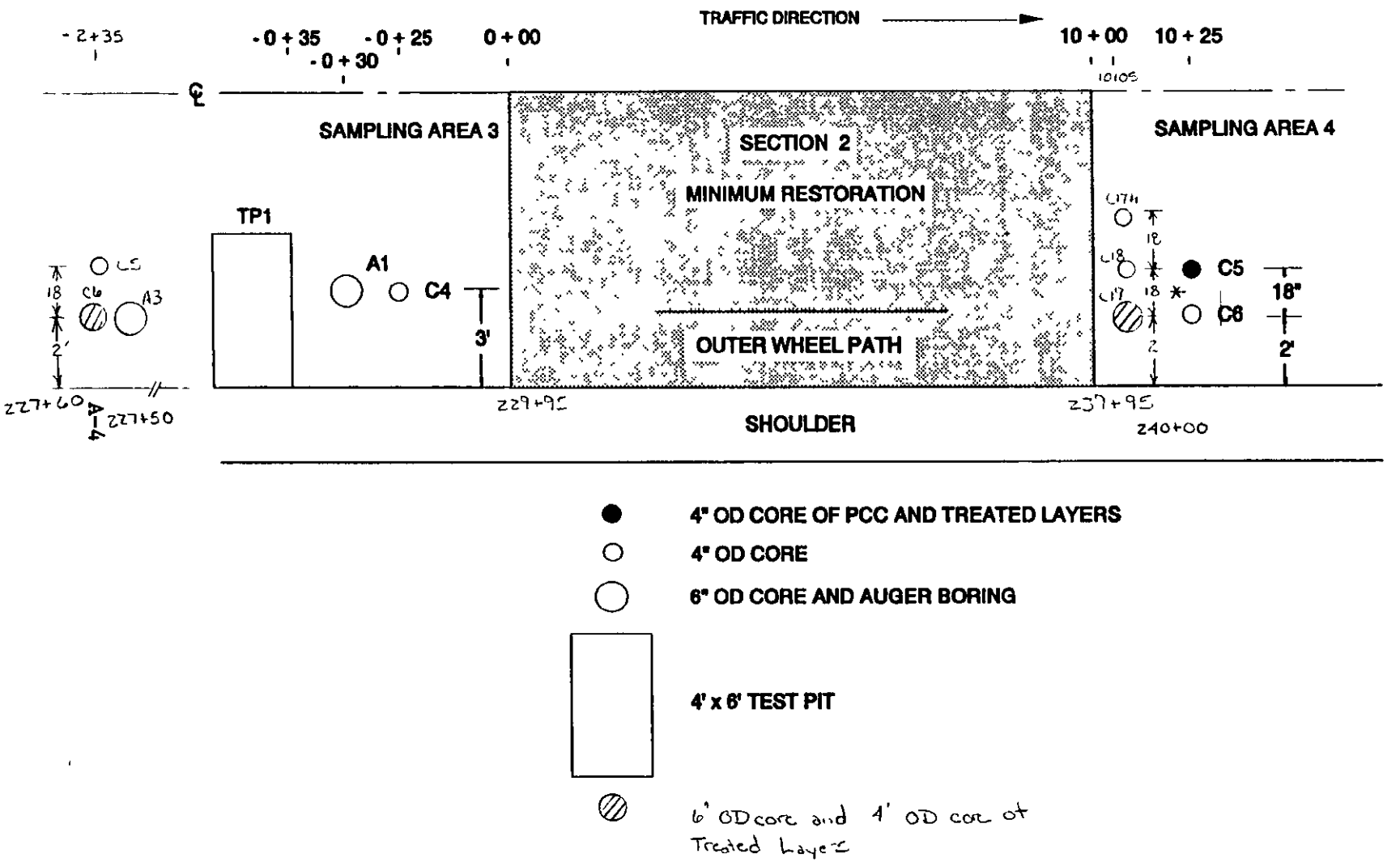
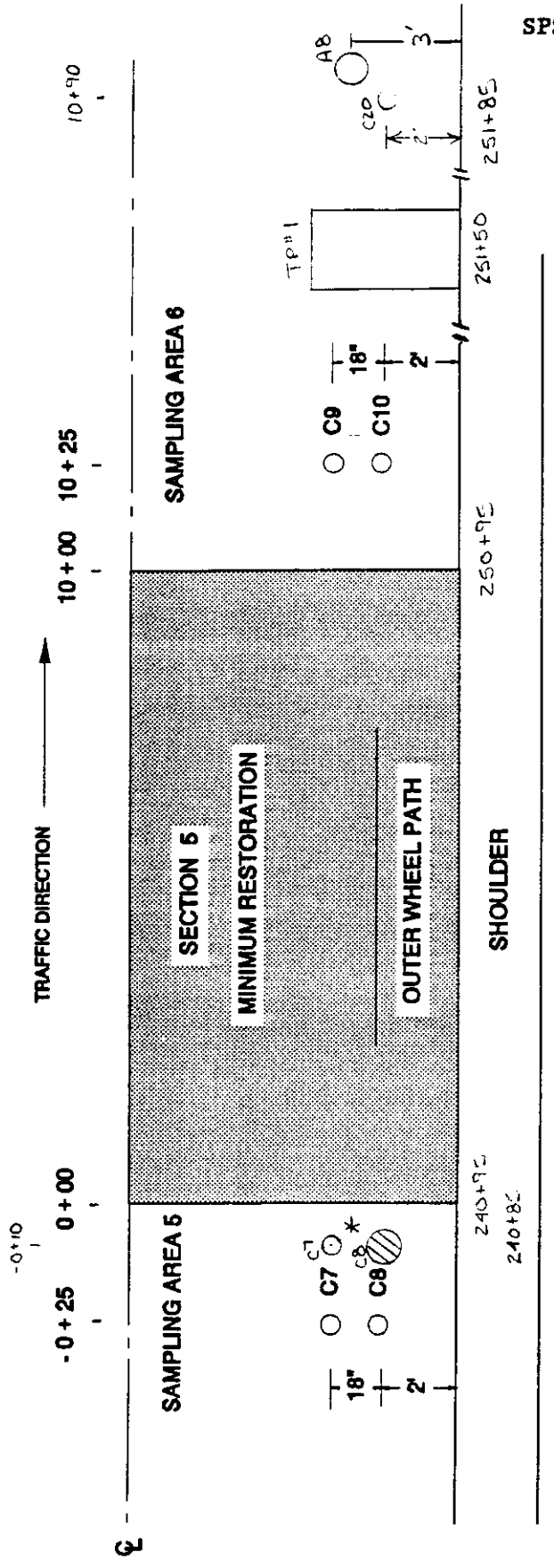


Figure A.3 Example of "Pre-Construction" Sampling Plan for Test Section 2

* A7 240+10
6" OD core w/ auger probe



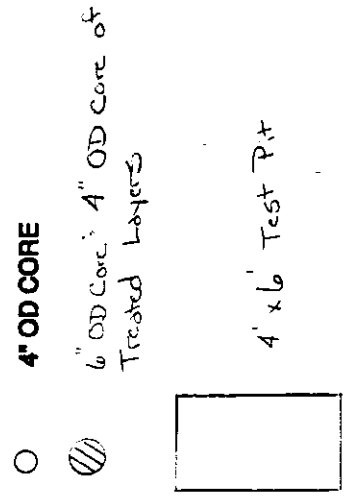


Figure A.4 Example of "Pre-Construction" Sampling Plan for Test Section 5

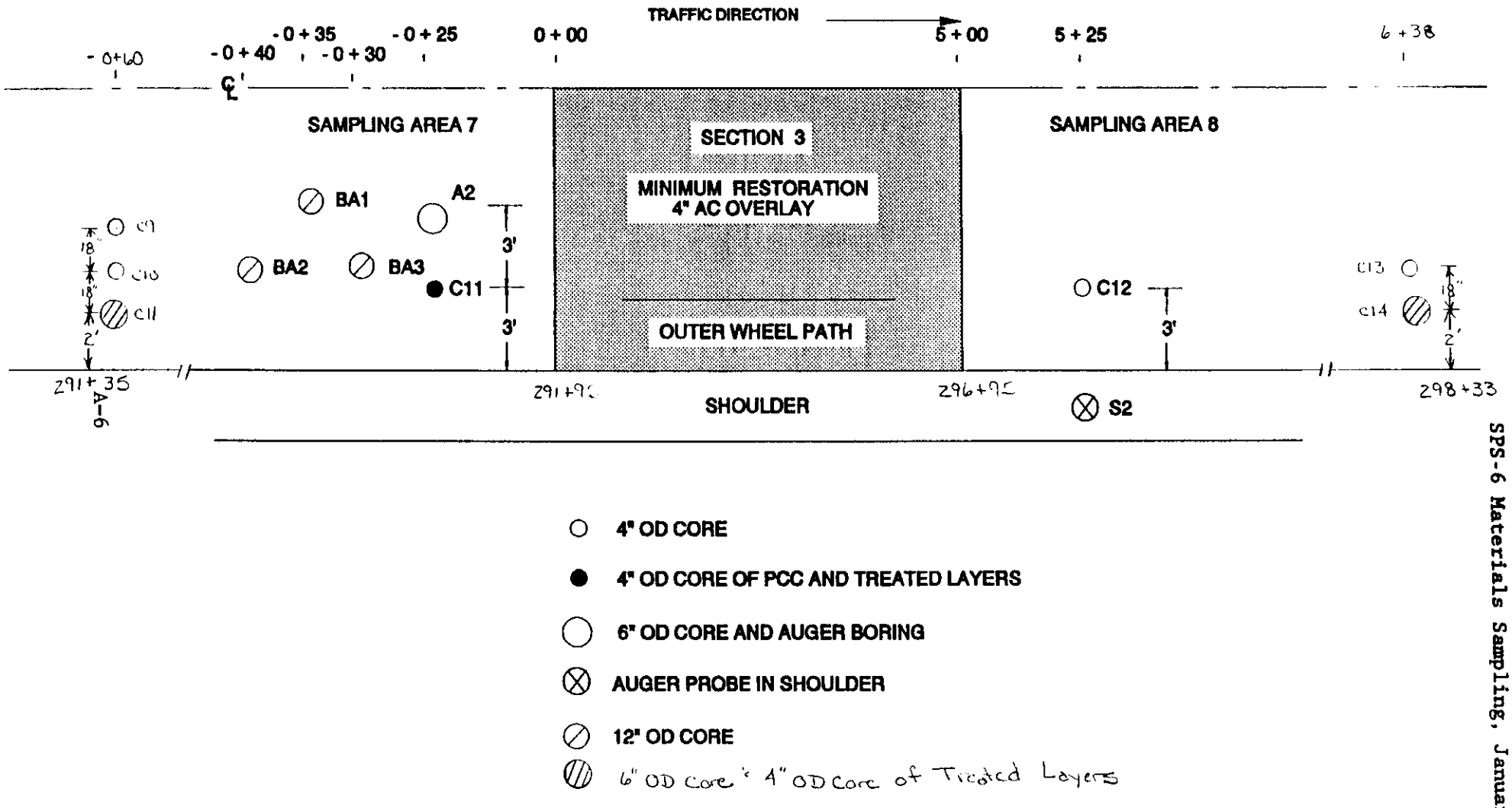


Figure A.5 Example of "Pre-Construction" Sampling Plan for Test Section 3

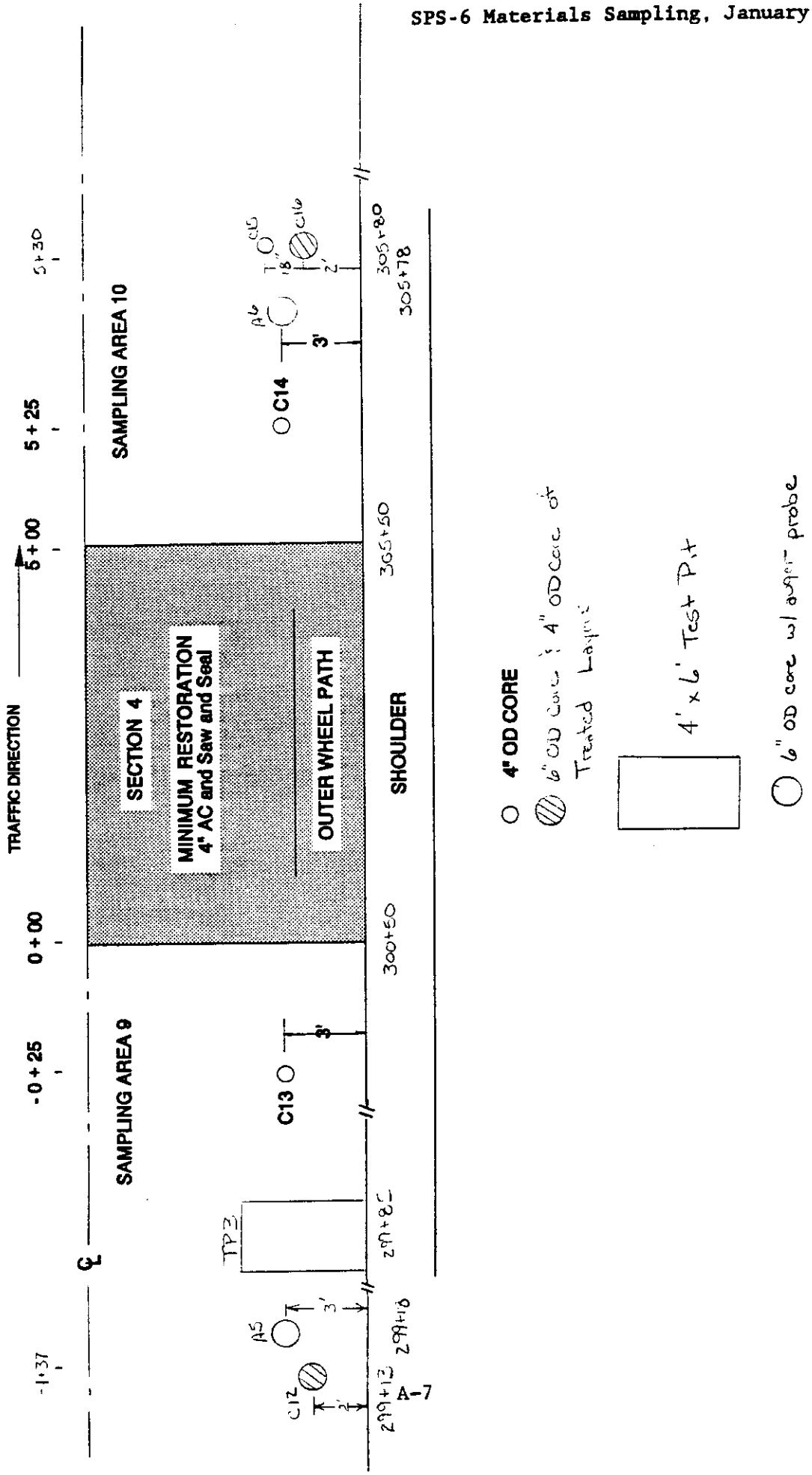


Figure A.6 Example of "Pre-Construction" Sampling Plan for Test Section 4

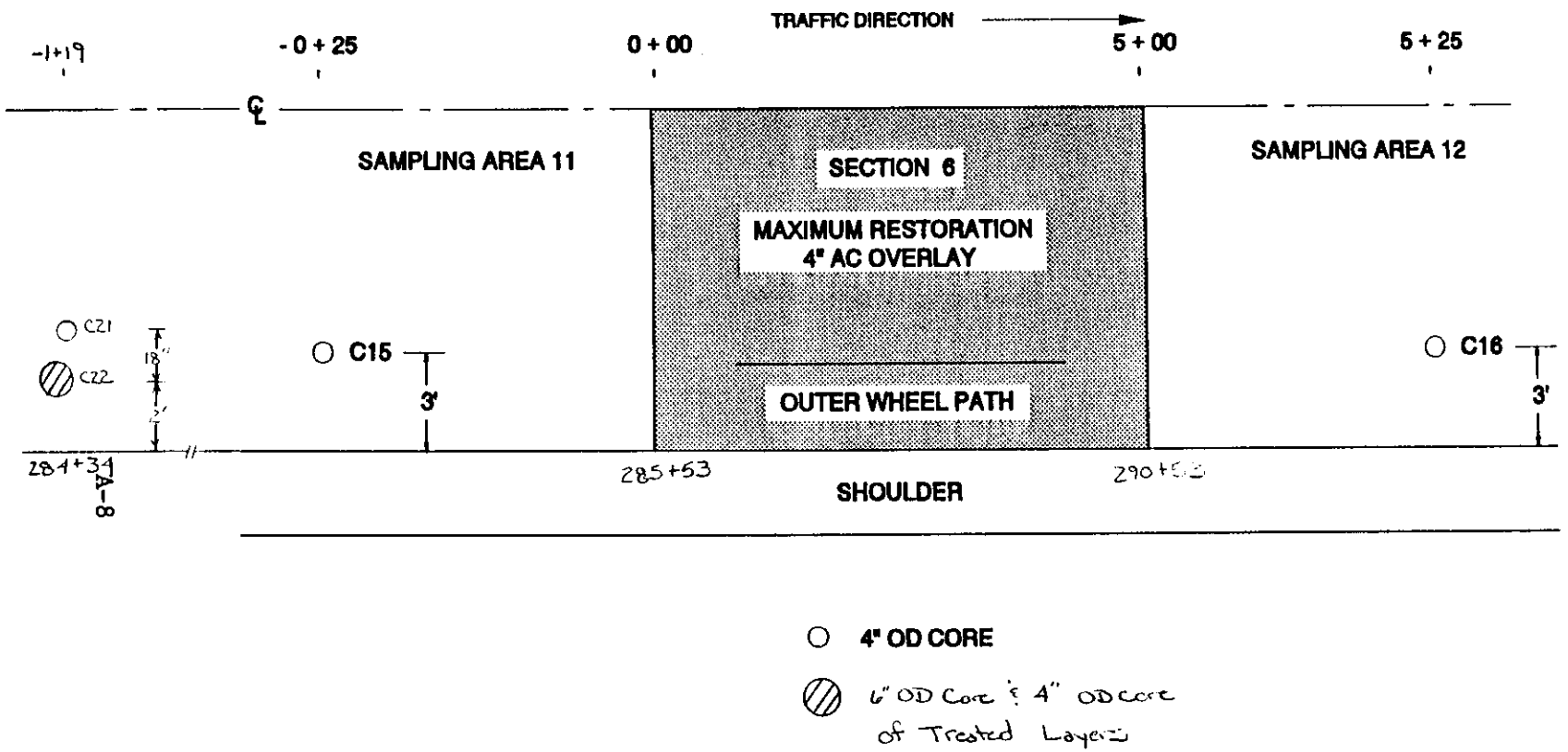
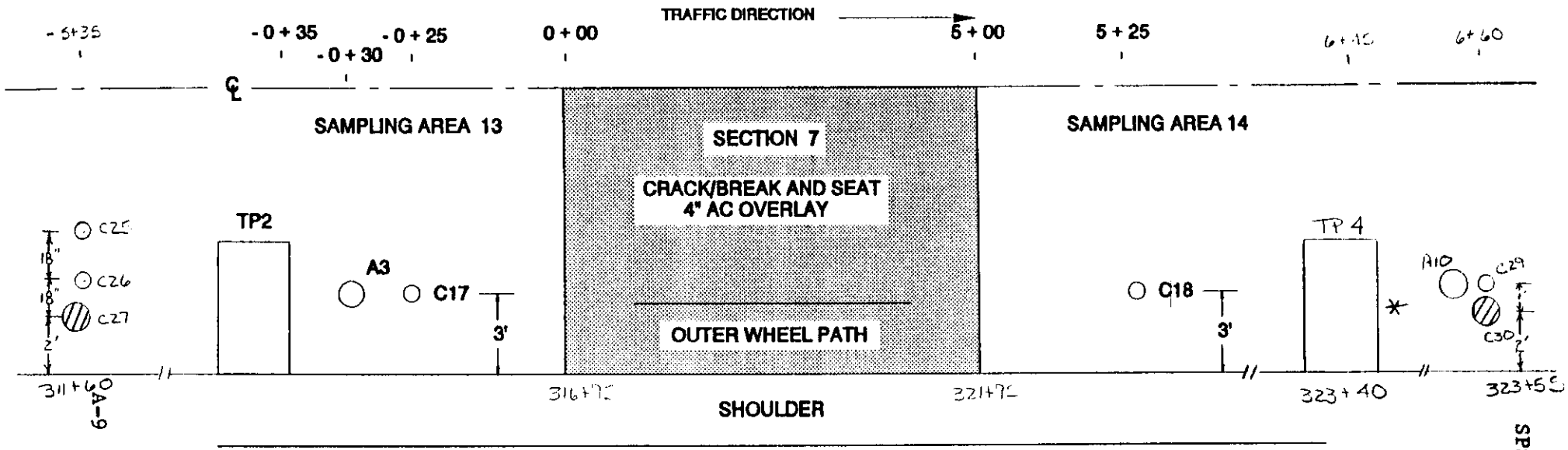


Figure A.7 Example of "Pre-Construction" Sampling Plan for test Section 6



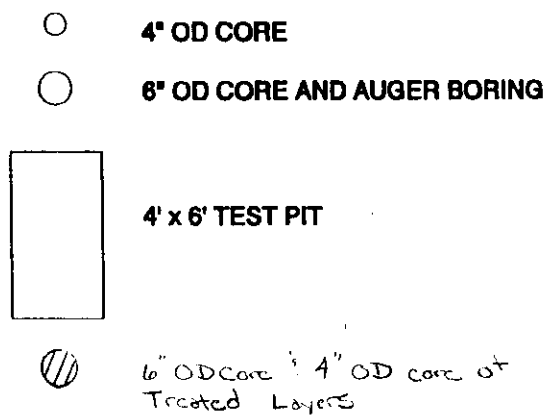
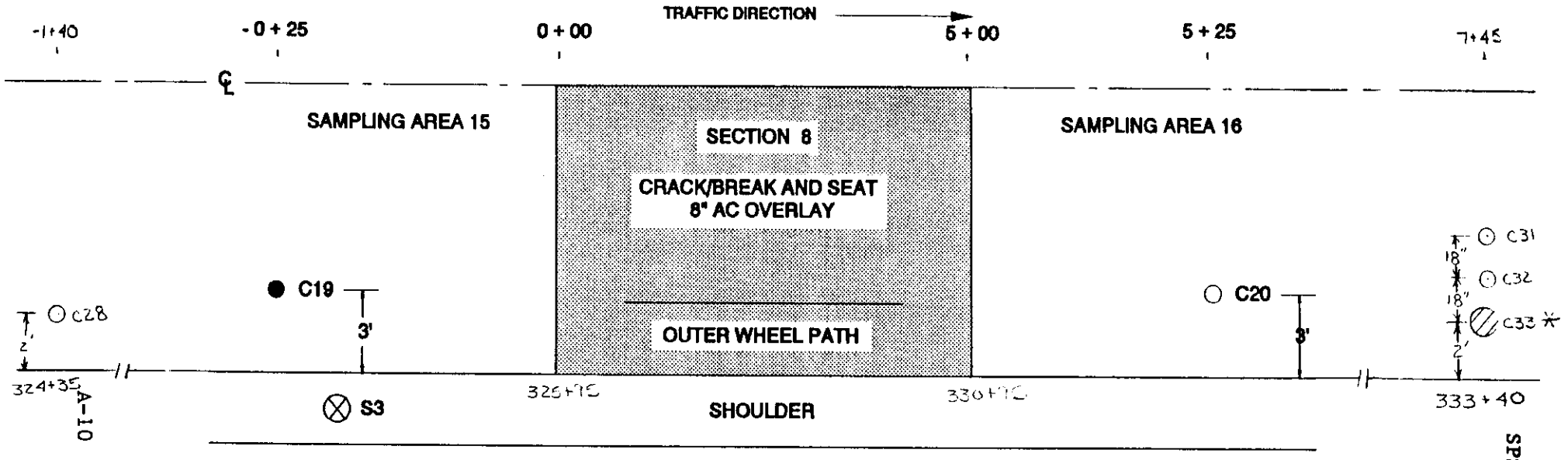


Figure A.8 Example of "Pre-Construction" Sampling Plan for Test Section 7

* A-11 323+50
6" OD core w/ auger probe



- 4" OD CORE
- 4" OD CORE OF PCC AND TREATED LAYERS
- AUGER PROBE IN SHOULDER
- 6" OD Core & 4" OD Core of Treated Layers

* A12 333+42
6" OD Core w/ auger probe

Figure A.9 Example of "Pre-Construction" Sampling Plan for Test Section 8

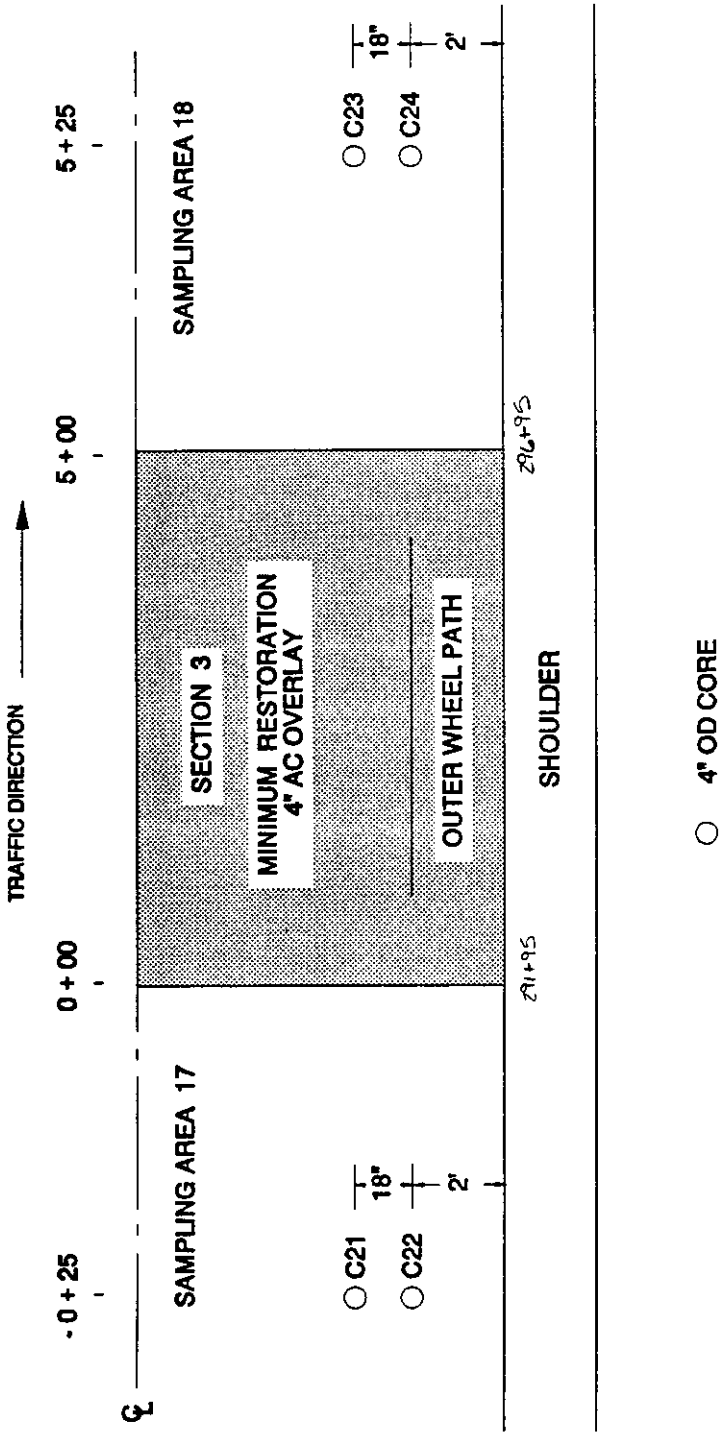


Figure B.2 Example of "Post-Construction" Sampling Plan for Test Section 3

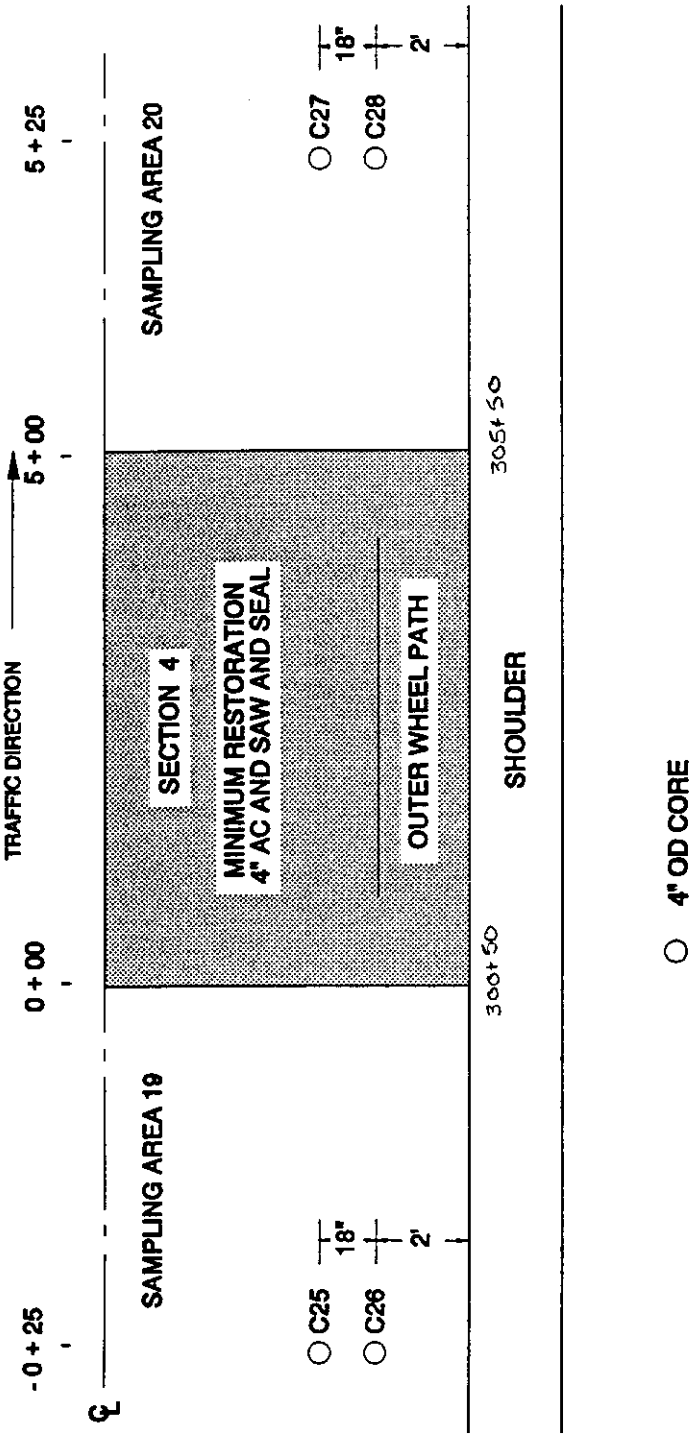


Figure B.3 Example of "Post-Construction" Sampling Plan for Test Section 4

4" - 2½" ÷ 1½"

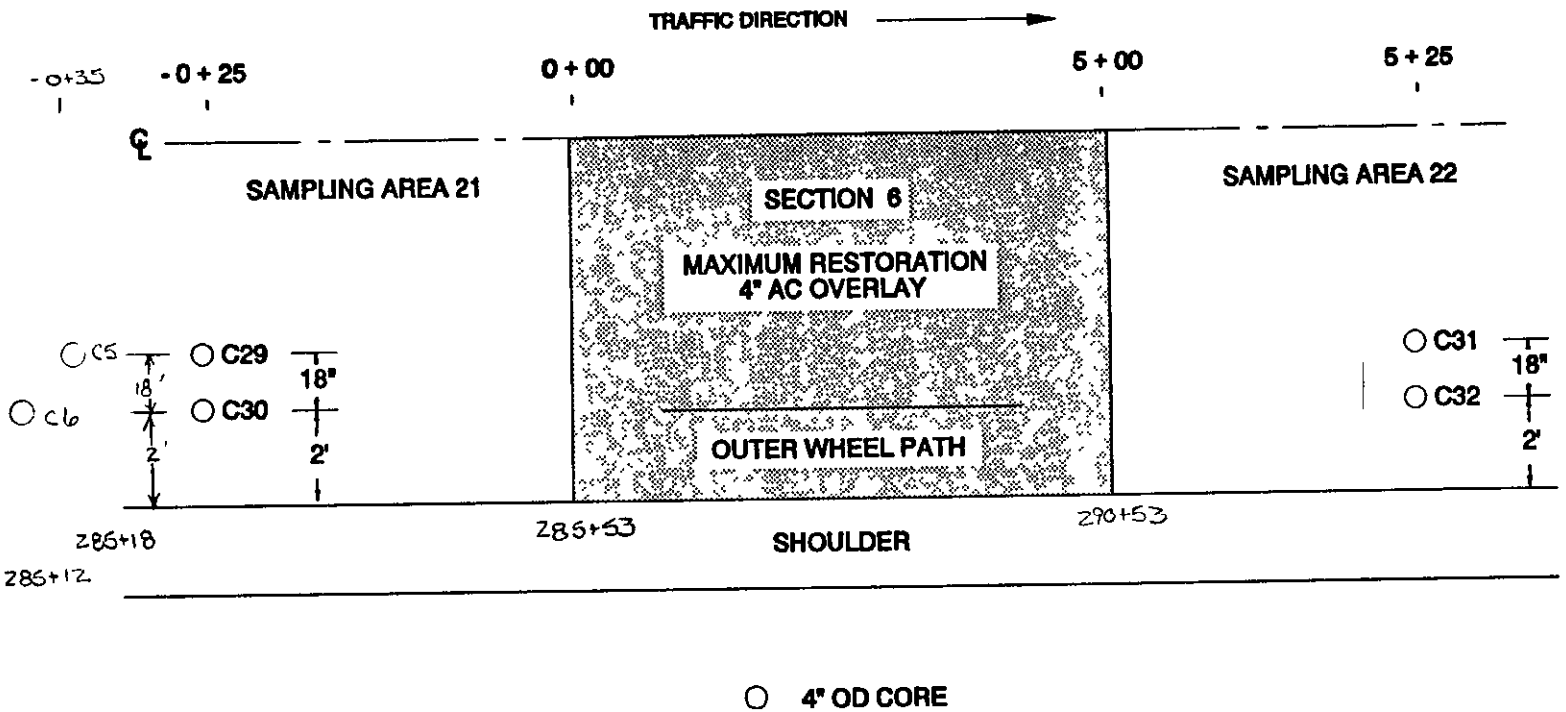


Figure B.4 Example of "Post-Construction" Sampling Plan for Test Section 6

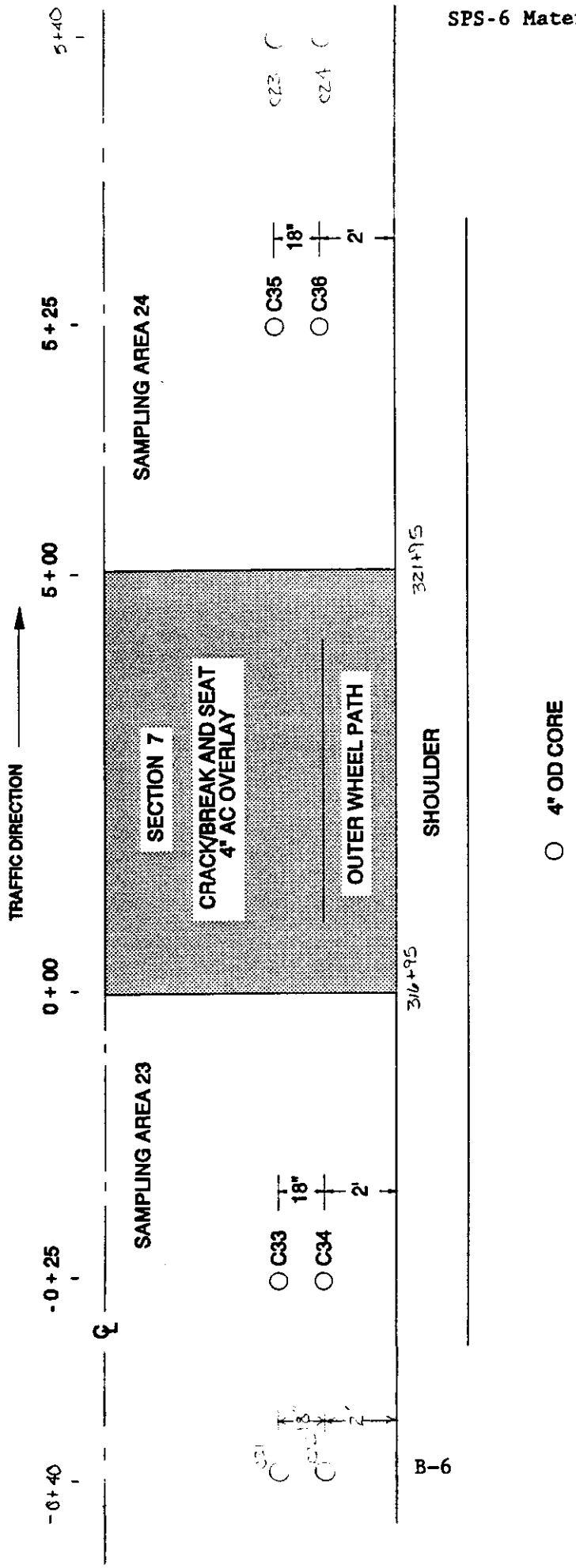
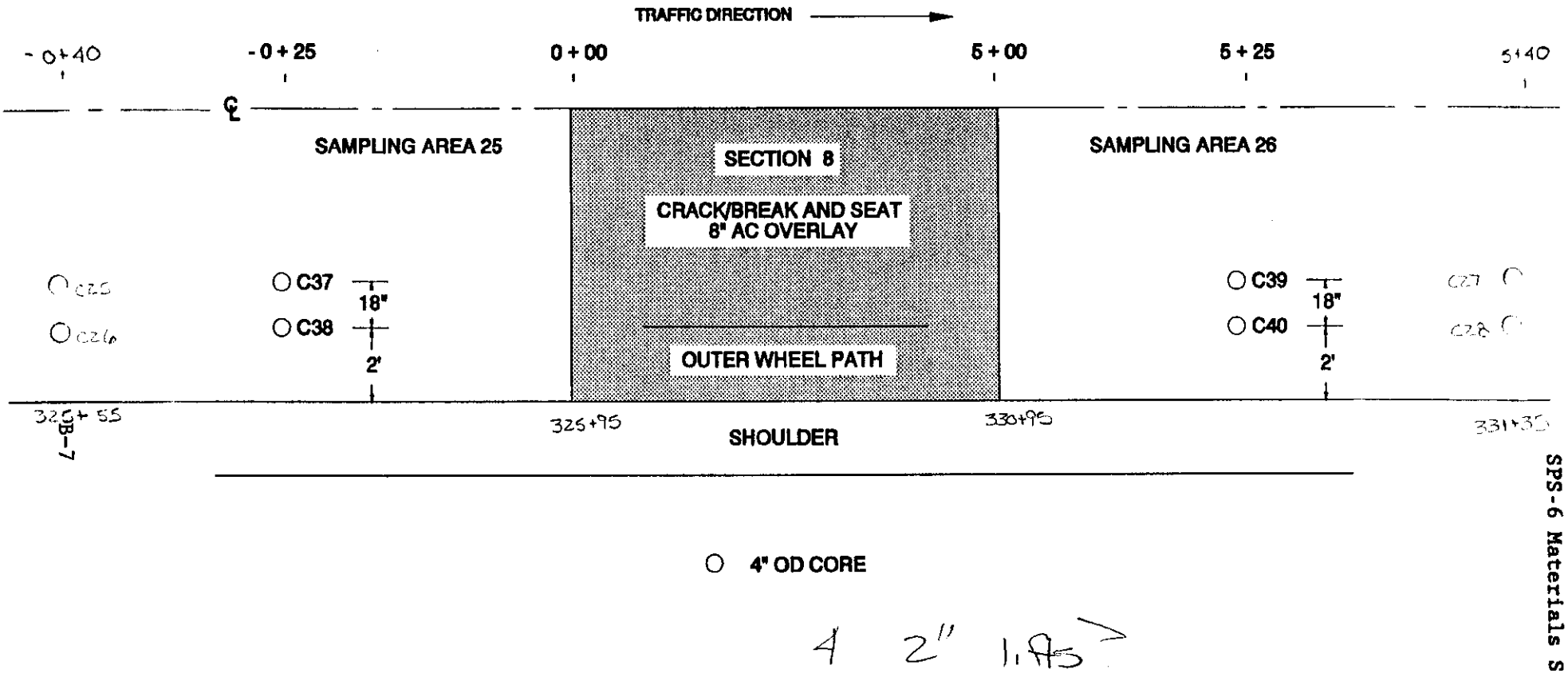


Figure B.5 Example of "Post-Construction" Sampling Plan for Test Section 7



4 2" 1.75

Figure B.6 Example of "Post-Construction" Sampling Plan for Tets section 8

RRG copy

PAVEMENT CONSULTANCY SERVICES

A DIVISION OF LAW ENGINEERING

Tech Memo: TM-PCS-3 Date: March 29, 1990

Distribution: Dr. Amir Hanna, Guy Dore, Bill Hadley, Neil Hawks, RCOCs, SREs

Authors: John Miller

Subject: Material Sampling and Testing for SPS-6

This memorandum presents the final recommended materials sampling and laboratory testing plan for SPS-6 experiment sites. Decisions reached at the March 23, 1990 Advisory Committee meeting have been incorporated into the attached summary tables. It must be understood that the plan presented here is applicable to an ideal site and would be modified according to local conditions to properly characterize the materials and account for within site variability.

To reiterate the reasoning behind selection of the test methods and frequency of sampling and testing in contrast to the approach used in SHRP General Pavement Studies (GPS), the SPS studies start with controlled construction of multiple test sections co-located on a project On an SPS-6 project there are 7 experimental test sections and one control section. Five of the test sections will have AC overlays. Due to the greater investment in construction of experimental test sections the opportunity to collect a complete historical data record starting from construction and the greater yield of information due to multiple test sections on the same site, a more rigorous materials testing program on SPS projects than is currently used on GPS projects is justified. Thus SPS projects have a greater strategic importance in achieving the goals of the SHRP Long Term Pavement Performance program.

The test plan will be incorporated into a set of guidelines for use by RCOC personnel in developing site-specific sampling and testing plans. Any additional comments should be forwarded as soon as possible so that the guidelines may be finalized.

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Beltsville, Maryland 20705-1242
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FAX (301) 604-5032

MAR 30 '90 15 23 FROM TRDF-MD TO BRAUN-MINN PAGE 002

TABLE 1

SPS-6 LABORATORY TESTING PLANS (PRE-CONSTRUCTION)

Material Type and Properties	SHRP Designation	SHRP GPS Protocol	Tests/Samples per Layer	Material Source/ Test Locations
PRE-CONSTRUCTION				
I. PORTLAND CEMENT CONCRETE				
Compressive Strength	PC01	P61	10	C1 C3 C5 C7 C9 C11 C13 C15 C17 C19 4"
Splitting Tensile Strength	PC02	P62	10	C2 C4 C6 C8 C10 C12 C14 C16 C18 C20 6"
PCC Coefficient of Thermal Expansion	------	FHWA	2	A1 A2 6"
Static Modulus of Elasticity	PC04	P64	6	C3 C5 C7 C11 C15 C17 4"
PCC Unit Weight	PC05		10	C1 C3 C5 C7 C9 C11 C13 C15 C17 C19
Core Examination / Thickness	PC06	P66	22	C1-C20 A1 A2
II. BOUND (TREATED) BASE AND SUBBASE				
Type and Classification of Material and Treatment	TB01	P31	3	C5 C11 C19
Pozzolanic/Cementitious: Compressive Strength	TB02	P32	3	C5 C11 C19
Asphalt treated: Dynamic Modulus (77F)	TB03	P33	3	C5 C11 C19
HMAC: Resilient Modulus	AC07	P07	3	C5 C11 C19
III. UNBOUND GRANULAR BASE AND SUBBASE				
Particle Size Analysis	UG01	P41	3	TP1 [BA1-3] TP2[1]
Sieve Analysis (washed)	UG02	P41	3	TP1 [BA1-3] TP2
Atterberg Limits	UG04	P43	3	TP1 [BA1-3] TP2
Moisture-Density Relations	UG05	P44	3	TP1 [BA1-3] TP2
Resilient Modulus	UG07	P46	3	TP1 [BA1-3] TP2
Classification	UG08	P47	3	TP1 [BA1-3] TP2
Permeability	UG09		3	TP1 [BA1-3] TP2
Natural Moisture Content	UG10	PP49	3	TP1 [BA1-3] TP2

NOTE: 1 Cores within brackets are from the same sampling location.

TABLE 1 cont'd

SPS-6 LABORATORY TESTING PLANS (PRE-CONSTRUCTION)

Material Type and Properties	SHRP Designation	SHRP GPS Protocol	Tests/Samples per Layer	Material Source/ Test Locations
IV. SUBGRADE				
Sieve Analysis	SS01	P51	3	TP1 [BA1-3] TP2
Hydrometer to 0.001mm	SS02	P42	3	TP1 [BA1-3] TP2
Atterberg Limits	SS03	P43	3	TP1 [BA1-3] TP2
Classification	SS04	P52	3	TP1 [BA1-3] TP2 A1 A2
Moisture-Density Relations	SS05	P55	3	TP1 [BA1-3] TP2
Resilient Modulus	SS07	P46	3	TP1 [BA1-3] TP2
Unit Weight	SS08		3	TP1 [BA1-3] TP2 A1 A2
Natural Moisture Content	SS09	P49	3	TP1 [BA1-3] TP2
Depth to Rigid Layer			3	S1 S2 S3

Figure 1. SPS-6 SITE LAYOUT AND SAMPLING LOCATION (PRECONSTRUCTION)

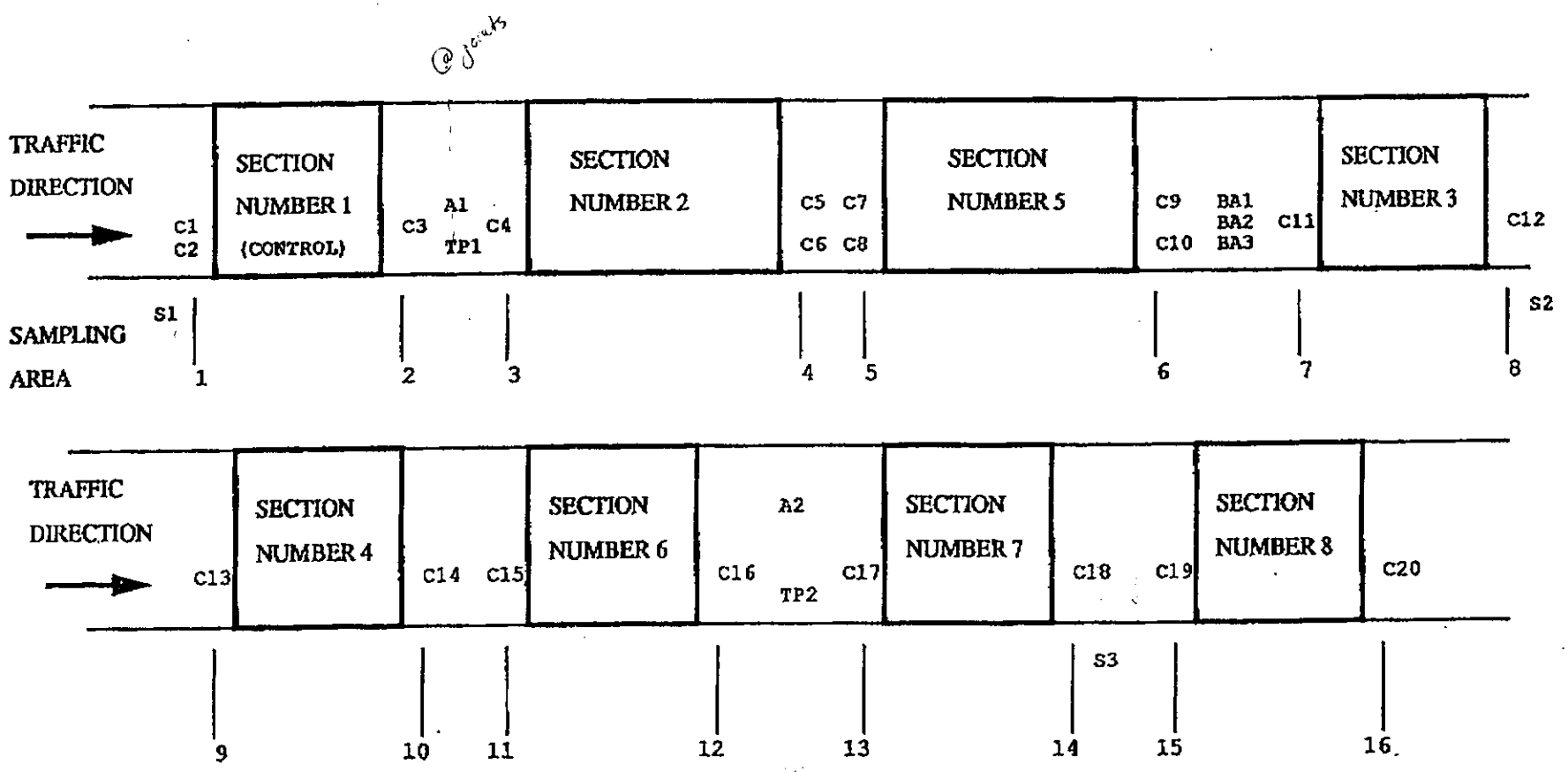

Figure 2. SPS-6 SITE LAYOUT AND SAMPLING LOCATION (POST-CONSTRUCTION)

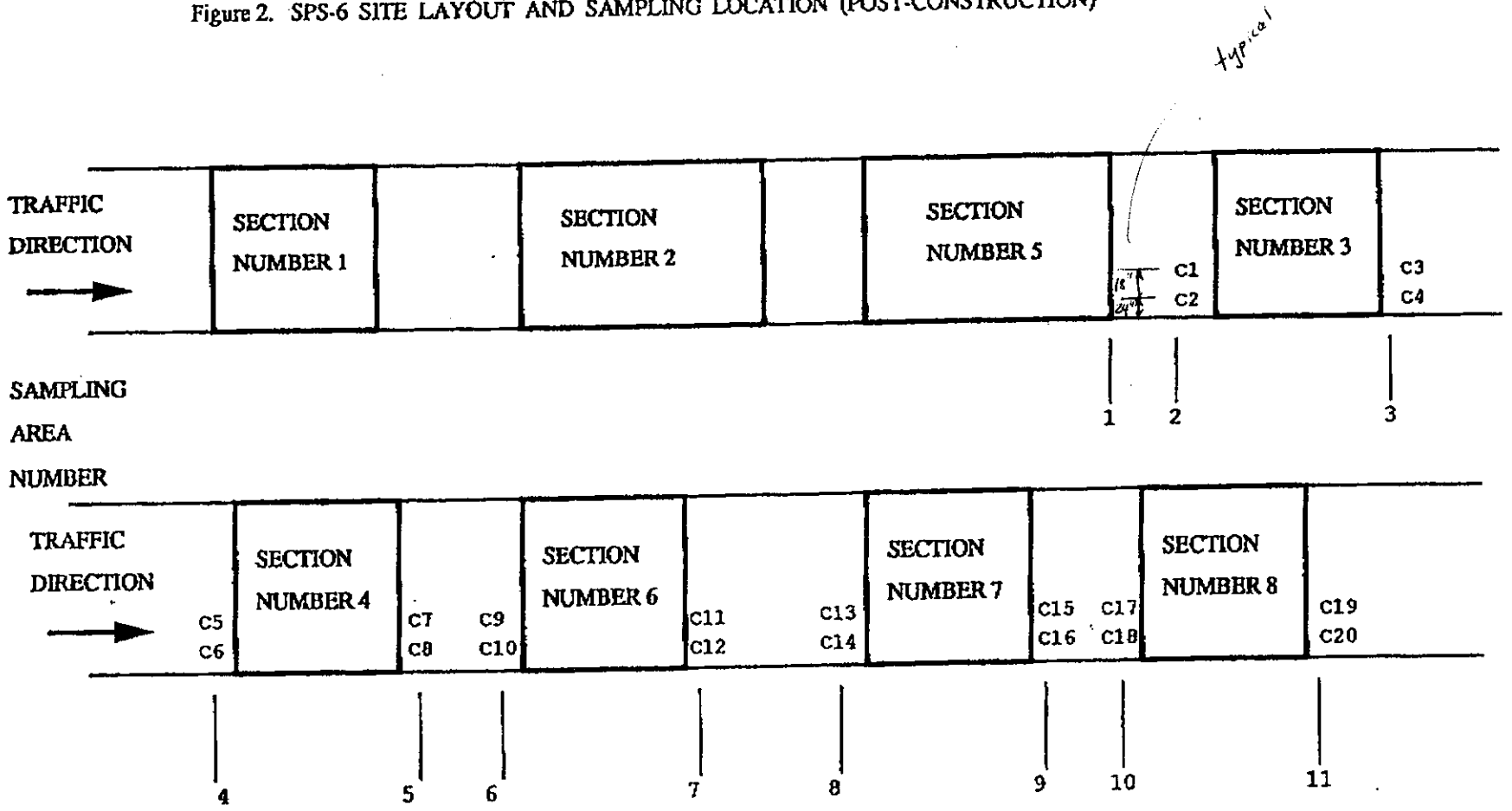

TABLE 2

SPS-6 LABORATORY TESTING PLANS (POST-CONSTRUCTION)

Material Type and Properties	SHRP Designation	SHRP GPS Protocol	Tests/Samples per Layer	Material Source/ Test Locations
A. ASPHALT CONCRETE:				
Core Examination/Thickness	AC01	P01	20	ALL CORES 4"&6"
Bulk Specific Gravity	AC02	P02	20	ALL CORES A-1 & A-2 Loc
Maximum Specific Gravity	AC03	P03	3	FROM UNCOMPACTED MIX
Asphalt Content (Extraction)	AC04	P04	3	FROM UNCOMPACTED MIX
Moisture Susceptibility	AC05		3	FROM UNCOMPACTED MIX
Creep Compliance	------	NOTE1	3	FROM UNCOMPACTED MIX
Resilient Modulus	AC07	P07	3	C1,C3 C11,C12 C19,C20 4" CORE
Tensile Strength	AC07	P07	3	C2 C10 18
B. EXTRACTED AGGREGATE:				
Bulk Specific Gravity:				
Coarse Aggregate	AG01		3	FROM UNCOMPACTED MIX
Fine Aggregate	AG02		3	FROM UNCOMPACTED MIX
Type and Classification:				
Coarse Aggregate	AG03		3	FROM UNCOMPACTED MIX
Fine Aggregate	AG03		3	[BA1-3] [TP] [BA4-6][2]
Roundness Index of Coarse Aggregate	------		3	[BA1-3] [TP] [BA4-6]
NAA Test for Fine Aggregate Particle Shape	AG05	P14A,NOTE 3	3	[BA1-3] [TP] [BA4-6]
Fine Aggregate	AG03		6	FROM UNCOMPACTED MIX, 3 PER MIX
Gradation of Aggregate	AG04	P14	3	FROM UNCOMPACTED MIX
C. ASPHALT CEMENT (FROM MIX):				
Abson Recovery	AE01		3	FROM UNCOMPACTED MIX
Penetration at 50F,77F,90F	AE02		3	FROM UNCOMPACTED MIX
Specific Gravity (60F)	AE04		3	FROM UNCOMPACTED MIX
Viscosity at 77F		ASTM D3205-86	3	FROM UNCOMPACTED MIX
Viscosity at 140F,275F	AE06		3	FROM UNCOMPACTED MIX

NOTE: 1 Creep compliance will be performed when suitable procedures are developed -- cores will be stored.
2 Cores within brackets are from the same sampling location.

2/12/91

soil and materials engineers, inc.

3915 Research Park Drive, Suite A-13
Ann Arbor, Michigan 48108

Confirmation No. (313) 994-5055
Telecopier No. (313) 994-5765

TELECOPIER TRANSMITTAL COVER SHEET

Total Number of Page 7 (Including Transmittal Sheet)

Please Deliver the Following Information:

TO: Name: Ron Urbach
Firm: BIP
Address: St. Paul, MN

FROM: Name: Cary T. Keller
SME Project #: P11500
Project Name: SHRP

MESSAGE: Here is my proposed post-construction testing plan. I realize that the way they took the cores makes some of them actually closer to the adjacent section. Since the difference is only about 90'± and the distance from the sections that they were taken is at least that, I feel that it will be easier to use the layout that I did since the core layouts are more similar. Also do you know if there are any new protocols for the tests that were dropped? I'll let you take a look at this then call you later in the morning. Thanks for your help.

Cary

If you do not receive all of the pages, please call back as soon as possible.

Operator: CTK